Creator

User Manual

Creator Software User Manual

This is the User Manual for the Creator software that can be used to design SmartView series and the HA-401 products, and is intended for system integration, programming and maintenance personnel.

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Chapter 1 Introduction to Creator

Creator is a professional development toolkit especially designed for the **SmartView (or HA-401) series** of devices produced by ICP DAS. **Creator** can be used to integrate several commonly used PLC communication protocols, providing rich and flexible object editing tools that allow easy navigation and adjustment of window management, repeated import and export of data in order to shorten the development process, simple uploading or updating of SmartView (or HA-401) projects using the built-in TCP transport, and the construction of control systems, ranging from a small and simple local control/monitoring application to management systems for large buildings, factories, and engine rooms, etc.



1.1 Features

- Supports commonly used PLC Communication Protocols
- Easy to create HMI Projects without the need for complex coding
- Diverse range of HMI Objects and Functions, including:
 - Alarms, Schedules, Recipes, Data Logging, Macros, etc.
- Update Projects via Ethernet
- Supports MQTT
- Online/Offline Simulation
- Supports Multiple languages (Traditional Chinese/Simplified Chinese/English)

Chapter 2 Introduction to the SmartView Series of Devices

The **SmartView** series of devices from ICP DAS combines a RISC-based CPU board, a TFT LCD touch screen and a ruggedized flat panel computer, and includes a wide range of software, such as HMI and MQTT, which are perfect for a variety of control and HMI applications. The **SmartView** series provides a variety of connection options, including Gigabit Ethernet, RS-232 and RS-485 ports.



The operating system is pre-installed in the onboard Flash memory, and Remote I/O expansion is available using ICP DAS Ethernet I/O modules and RS-485 I/O modules. The SmartView series is designed for panel-mount installation. The front panel is NEMA 4/IP65 rated, meaning that it can withstand sprayed water, humidity, and extreme dust, and can be operated over a wide ambient temperature range of -10°C to +60°C. The fan-less design provides the ultimate in reliability with no moving parts.

2.1 Hardware Features

The SmartView series delivers the most comprehensive configuration and remote system upgrade solutions to meet specific application requirements. The following is an overview of the hardware and software features that have been designed to simplify installation, configuration, and application.

- TFT LCD: 7", 10.4", or 15"
- Active M2M Transmission Mechanism: MQTT
- Makes connectivity for the "internet of things" and mobile devices easily
- Hard Real-time Capability
- Power over Ethernet (PoE)
- NEMA 4/IP65 Compliant Front Panel
- Ultra-Rugged Construction and Reliable Design
- Operating Temperature: -10 to +60°C

2.2 Specifications

The following is a summary of the specifications for the SmartView series of devices.

Models	S V - 2 2 0 1	S V - 4 2 0 1	S V - 6 2 0 1	
LCD Display				
Size	7" (16:9)	10.4" (4:3)	15" (4:3)	
Resolution	800 x 480	800 x 600	1024 x 768	
Brightness (cd/m2)		400		
Contrast Ratio		500 : 1		
LED Backlight Life	20,000	50,0)00	
Touch Panel	4-wire, resistive type;5-wire, resistive type;Light Transmission: 80%Light Transmission: 80%			
LED Indicators		2 (PWR, Run)		
System Software				
OS	Linux			
CPU Module				
CPU		RISC-based		
SDRAM	512 MB			
MRAM	128 KB			
Flash	256 MB			
Memory Expansion	microSD socket SD socket (Supports up to 32 GB) (Supports up to 32 GB)		ocket up to 32 GB)	
EEPROM	16 KB			
RTC (Real Time Clock)	Yes			
Hardware Serial Number	Yes, 64-bit Hardware Serial Number			
Rotary Switch	Yes (0 to 9)			
Audio	Earphone-out			

Models	S V - 2 2 0 1	S V - 4 2 0 1	SV-6201			
Communication Interface						
Ethernet		1x RJ-45, 10/100/1000 BaseT	Χ			
COM1	RS-232/4	85 (DB9 Connector); 2500 V[)C isolated			
COM2	RS-232/4	85 (DB9 Connector); 2500 V[)C isolated			
СОМЗ	RS-485 (Terminal Block, Data+, Data-); 2500 V		Data+, Data-); 2500 VDC ted			
Mechanical						
Dimensions (W x L x H)	213 x 148 x 44 (mm)	291 x 229 x 54 (mm)	381 x 305 x 65 (mm)			
Installation	Panel Mounting					
Ingress Protection	Front Panel: NEMA 4 /IP65					
Environment						
Operating Temperature	-10 to +60°C					
Storage Temperature	-20 to +70°C					
Ambient Relative Humidity	10 to 90% RH (Non-condensing)					
Power						
Power from Terminal Block	Yes, +12 to +48 VDC					
Power from PoE	Yes, IEEE 802.3af					
Isolation	- 1 kV					
Consumption	6 W	13 W				

2.3 Hardware Overview

The SmartView series of devices is equipped with a variety of interfaces and peripherals that can be integrated with external systems. The following is an overview of the integrated components.

Front View



Item	Description		
LED Indicators	The SmartView device contains two system LED indicators that display the status of the device, as shown below.		
	LED Indicator	Color (ON State)	Description
	PWR	Green	The power is on
	RUN	Red	The power is on and the OS is running

Side View

SV-2201 SV-4

SV-4201 / SV-6201



Item	Description		
microSD Socket	The microSD socket enables the SmartView operating system to be restored		
	via a microSD card, or to expand the memory to up to 32 GB.		
Rotary Switch	The Rotary Switch is the operating mode selector switch that provides seven functions, and is used to select the operating mode for the SmartView device.		
SD Socket	The SD socket enables the SmartView operating system to be restored via an SD card, or to expand the memory to up to 32 GB.		
DIP Switch	The DIP Switch is a binary switch. Each individual DIP Switch represents a unique value, which is combined to form the device address.		









SV-6201



Item	Description			
Earphone-Out	The SmartView series of devices includes an earphone output jack that can be			
	used to output audio.			
Rotary Switch	The Rotary Switch	is an operating mo	ode selector switch that provides	و
	seven functions wh	nich can be used to	o select the operating mode for	2 0
	the SmartView device.			
LAN Port	The SmartView series of devices includes an Ethernet port Link/Act 100M/1G			
	that can be connec	cted to an external	l computer or other	
	device via an Ether	net cable.		
	LED Indicator	State (Color)	Description	
	100M/1G	ON (Orange)	Network Speed: 1 G	
	100101/10	OFF	Network Speed: 10/100 M	
		ON (Green)	The Link is active	
	Link/Act	OFF	The Link is inactive	
		Blinking(Green)	Network activity	
Power	The SmartView series of devices includes either a 3- or 5-pin terminal block,			
	depending on the I	model. Two pins a	re used for power input and the other 1 c	or 3
	pins are used for th	ne Frame Ground/	COM3, as illustrated in the diagrams belo	w.
	SV 2201 SV 4201 / SV 6201		SV-4201 / SV-6201	
	<u>57 2201</u>		57 42017 57 6201	
	СЦЦЦ	ЦС		
		#		
	PWR	F.G		
	P.GND)	PWR D+	

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RxD

Data+ TxD

Iso.GND

Data

COM1 (RS-232/RS-485)

The COM1 port is a 9-pin RS-232/RS-485 connector. The pin arrangement for the COM1 port is shown in the diagram.

Port Type: Male Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps Data Bits: 5, 6, 7, 8 Parity: None, Even, Odd, Mark (Always 1), Space (Always 0)

The COM1 port can be configured as either RS-232 or RS-485, although only one can be selected at a time and the configuration depends on the pin connections, as described below:

RS-232 (RXD, TXD, CTS, RTS and GND) **RS-485** (Data+ and Data-)

Note that no software configuration or hardware jumper is needed.

COM2 (RS-232/RS-485)

The COM2 port is a 9-pin RS-232/RS-485 connector. The pin arrangement for the COM2 port is shown in the diagram.

Port Type: Male Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps Data Bits: 5, 6, 7, 8 Parity: None, Even, Odd, Mark (Always 1), Space (Always 0)

The COM2 port can be configured as either RS-232 or RS-485, although only one can be selected at a time and the configuration depends on the pin connections as described below:

RS-232 (RXD, TXD, CTS, RTS and GND) **RS-485** (Data+ and Data-)

Note that no software configuration or hardware jumper is needed.

COM3 (2-wire RS-485) for SV-4201 / SV-6201

The COM3 port is a 2-wire RS-485 connector. The connections for the COM3 port are shown in the diagram.





2.4 Dimensions

The diagrams below provide an overview of the dimensions and the panel cutout that can be used to define any enclosure specifications. Be sure to leave room for potential expansion if other components may be integrated into the system at a later date. All dimensions are in millimeters.





2.5 Mounting the Hardware

The SmartView series of devices can be mounted on a panel with a maximum thickness of 5 mm. Adequate access space should be made available at the rear of the instrument panel for wiring and servicing purposes.



To ensure proper ventilation for the SmartView device, a minimum of 50 mm of space should be available between the top and bottom edges of the SmartView device and the enclosure panel.

Models	Depth
SV-2201	32.7 mm
SV-4201	40.2 mm



1. Cut a hole in the panel to the specified size. The dimensions of the panel cut-out for the SmartView device are shown below.

Model	Panel Cutout (Width x Height)
SV-2201	197 mm x 133 mm, \pm 1 mm
SV-4201	276 mm x 214 mm, \pm 1 mm



2. Attach the SmartView device to the cutout hole.



3. Insert the mounting clips for the panel into the upper and lower ventilation holes.



4. Attach the mounting clips to the panel using a screw.





Recommended Screw Torque: 3.4 to 4.5 kgf-cm.

Chapter 3 Software Installation

The following provides details related to the installation of the Creator software, including the recommended operating system and hardware specifications.

3.1 Hardware and Software Specifications

Before installing the Creator software, ensure that both the hardware specifications and operating system are sufficient to allow the efficient performance of the software.

3.1.1 Recommended Operating Systems

- Microsoft Windows 7 or later
- Microsoft .Net Framework version 3.5 or later

3.1.2 Recommended Hardware Specifications

- CPU: 1.8 GHz or better
- Memory: Minimum of 1Gb RAM
- Hard Disk: At least 40G of free space
- Display: Full-color display that supports a resolution of 800*600 or better

3.2 Installation Procedure

3.2.1 Installing from the companion CD

• Automatic:

After inserting the companion CD into the CD-ROM, Windows will automatically launch the installation file. Note that if the "Autorun" feature is not enabled in Windows, this function will not work and the manual method described below must be used.

• Manual:

Double-click the Creator_Setup.exe file that can be found in the root directory of the CD-ROM to launch the installation file.



3.2.2 Setup Wizard

Install the software **Creator** by following the instructions given in the Setup Wizard.

Click the Next button to begin the installation process.



 On the Select Start Menu Folder screen, either allow the shortcuts to be created in the default Start Menu folder, or click the Browse... button to select an alternate folder, and then click the Next button to continue.





 On the Select Destination Location screen, either click the Next button to install Creator into the default folder, or click the Browse... button to select an alternate folder, and then click the Next button to continue.

🗊 Setup - Creator	🛛
Select Start Menu Folder Where should Setup place the program's shortcuts?	3
Setup will create the program's shortcuts in the follo	wing Start Menu folder.
To continue, click Next. If you would like to select a different	folder, click Browse.
Creator	Browse
< <u>B</u> ack	Next > Cancel

 On the Select Additional Tasks screen, check the Create a desktop icon checkbox to create a shortcut on the desktop, and then click the Next button to continue. On the Ready to Install screen, verify that the settings are correct, and then click the Install button to begin the installation.



 Once the installation has been completed, click the Finish button to exit the Setup Wizard.

<u>Note</u>:

To automatically launch Creator once installation is complete, check the **Launch Creator** checkbox.

통 Setup	- Creator	_	K
Read: Set	y to Install up is now ready to begin in	stalling Creator on your computer.	5
Clic cha	:k Install to continue with th ange any settings.	e installation, or click Back if you want	to review or
Di St	estination location: C:[ICPDAS\Creator art Menu folder: Creator dditional tasks: Additional icons: Create a desktop icon		
<]	< Back	tall Cancel

 The Setup Wizard will display a progress bar to indicate the status of the installation process.
 Click the Cancel button to stop the installation if necessary.

朦 Setup - Creator	. . ×
7	Completing the Creator Setup Wizard
	Setup has finished installing Creator on your computer. The application may be launched by selecting the installed icons.
	Click Finish to exit Setup.
	☑ Launch Creator
	Einish

3.2.3 Execute the Creator software



To launch Creator, double-click the shortcut that was created on the desktop.

Alternatively click the **Start** button, and then point to **All programs**. Point to the **Creator** folder and then click **Creator**.

	🛅 HTML Help Workshop	•
All programs(P)	🛅 ISaGRAF 3.4	+
r in programo(E) 🦻	🛅 Creator	🕨 🍓 Creator
	🛅 ICPDAS	🕨 🌆 Uninstall Creator
	🏉 Internet Explorer	
🥶 Start	🗐 Outlook Express	

Chapter 4 Overview of the Software Interface

4.1 Program Window Interface

The diagram below provides an overview of the Creator interface, including the various menus and view areas, each of which is described in more detail below.

						Device		Cre	ator
wove Handle	Menu	Standard	Design	Screen	Status	Language	e Stat	tus Lang	uage
	Toolbar	Toolbar	Toolbar	Тоо	lbar	Toolbar	Tool	bar Too	lhar
=	1		1				1	100	
Creator									x
	-			· · · ·					
≡ Project Edit View	Tools Windov	v Help		╙╷╢╫╺╿り ╤		🔋 🔉 🗉 O:Lan	guage 0	English	- >
= 🗋 💕 🛃 🔤	💁 🖪 🖳 🖄	00 90	X × A	古 后 100%	• 💽 🕀	ି ୍ 🔍 🔛	💶 📑 🖥	tate 0 💌	
Project View	🕂 🗶 🛃 Start	up 1 : Screer	1				E	3 Toolbox	Ψ×
🗆 🕨 My Project	^						<u> </u>	Drafting	
🖻 🧰 Alam								Cursor	<u>^</u>
Digital		(_		
Project View	/							Kectangle	
Connections							_	A Label	=
Variables								Picture	_
🔜 📶 Sub-macros									
Recipe			Scree	en Design A	Area			Tool Bo	x 🛛
- 🏹 Data Sampling									
- 🚰 Screen Control								Line	
Cheduler	-							ح^>Multi Line	-
Password			Ш]			>	General	
	Simple	Complete						Switch	
Scroon Viou	Property \	liew					πχ	Recipe	
Screen view		1						Alarm	
Object View	-Ge	neral	PageCode 1	1	Back Color	0, 0, 0	~	Campline	
Object view	Ev Ev	ent 👻	Screen Type	Base Screen 🛛 😽				sanpung	s
Screen Object V	iew 🛛						-	Keyboard	ł
🔟 Library 📃 Output	View 👫 Search								
	•								

Library Output View Search

Menu Toolbar	The Menu Toolbar contains the six main functions of the Creator application.
	The tree structure can be expanded by clicking the menu.
Tools Toolbar	The Tools Toolbar contains icons for the most commonly used functions. Icons
	for other functions are also contained in the toolbars for the Design, Language,
	Status, Object, View and Toolbox functions. Hovering the mouse over the icon
	will display instructions for using the function.
Screen Design Area	The Screen Design Area is the main working area in the Creator application,
	and is used for designing, editing, and viewing the HMI screen and functions

4.2 Menu Toolbar

E Project Edit View Tools Window Help

The **Menu Toolbar** provides access to the major features and commands for the Creator software. The following is an overview of the options available in the Menu Toolbar, together with a description of each.

Function Menu	Item	Description
	New (Ctrl+N)	Used to create a new project
Project Open(Ctrl+0		Used to open an existing project
New Ctrl+N	Close	Used to close the currently open project
	Save(Ctrl+S)	Used to save the currently open project
Save Ctrl+S Save as Ctrl+Shift+S Exit	Save as (Ctrl+Shift+S)	Used to save the currently open project using a different name
	Exit	Used to exit the Creator software
	Undo	Used to reverse the previous action. Note that this option only applies to the screen design area.
	Redo	Used to restore the previous undo action. Note that this option only applies to the screen design area.
Edit	Сору	Used to copy the selected object
🖌 Undo	Paste	Used to paste the object that was copied or cut
🔁 Redo	Cut	Used to cut the selected object
눱 Сору	Delete	Used to delete the selected object
Paste K Cut	Search (Ctrl+F)	Used to search for a specific object or variable on the screen, or in the project.
× Delete	Group	Used to combine the selected objects as a group
Search Ctrl+F	Ungroup	Used to restore elements combined in a group into individual objects
년 Ungroup	Layer	Used to move an object to the front, the back, or up or down one layer
Layer	Align	Used to align the objects
Size > Screen >	Size	Used to set several objects to the same width, height, or size. (Note that the size of multiple objects can be adjusted simultaneously by clicking and holding the Ctrl key while selecting the objects, and then clicking one of the objects as the target to change all of the selected objects to the same size.)
	Screen	Used to save the screen as an a image file

Function Menu		ltem	Description
View		Project View	Used to open the Project function panel
Project View		Screen View	Used to open the Screen panel
	Screen View	Object View	Used to open the Object function panel
	Object View	Property View	Used to open the Property function panel
	Property View	Output View	Used to open the Output function panel
	Search View	Search View	Used to open the Search function panel
	Toolbox	Toolbox	Used to open the Toolbox panel
	Library	Library	Used to open the Library function panel
	Toolbar 🕨	Toolbar	Used to open or hide the Toolbar
		Compiler (F5)	Used to compile a Creator project
	Taola	Upload (F6)	Used to upload a Creator project to the SmartView device
1	Compiler F5	Download from HMI	Used to download a Creator project from the HMI device (Available Soon)
	Download from HMI	Simulate Offline (F8)	Used to simulate a project without needing to connect to the PAC
	Simulate online F7	Simulate Online (F7)	Used to simulate a project by directly connecting to the PAC
	Configuration Ctrl+G	Recipe Editor	Used to open a Recipe (.rp) file for editing
		Configure (Ctrl+G)	Used to configure the user interface and design surface
Window1 Startup21: Screen132: Screen243: Screen3			 Used to switch between the different currently open windows After clicking the "Window" menu, the Startup window and a list of all the currently open windows will be displayed. Click the name of a window to switch to that window. The checked item is the window currently being viewed.
	Help	Show Startup	Used to switch to the startup screen
	Show Startup Connect Manual	Connect Manual	Used to open the Creator PLC Connection Manual, which is stored in C:\ICPDAS\Creator\Manual by default
Version		Version	Used to show the version information for the Creator software

4.3 Standard Toolbar

The **Standard Toolbar** contains shortcut buttons for the most commonly used tasks required by users of the Creator software. Hovering the mouse over the icon will display instructions for using the function

🗋 📂	8	🛃 💽	R 9	6	🖺 🔏	\times	면면
100%	•	$\overline{\mathbb{Q}}$		Ŀ			

The following is an overview of the options available in the Standard Toolbar, together with a description of each.

	Used to create a new project	×	Used to delete the currently selected object
2	Used to open an existing project	8 8	Used to search for an object or variable
	Used to save the current project	<u>E</u>	Used to group the currently selected objects into a single element
1	Used to compile a Creator project	互	Used to separate previously grouped elements into individual objects
<u>¢</u>	Used to upload a Creator project to the SmartView device	100% 💌	The Zoom tool for the screen design area
	Used to simulate the project in Online mode	E	Used to increase the zoom percentage
	Used to simulate the project in Offline mode	Q	Used to decrease the zoom percentage
р	Used to reverse the previous action	Q	Used to restore the size of the screen area to 100%
6	Used to restore the previous undo action		Used to show or hide the gridlines on the screen area
	Used to copy the currently selected object	Ŧ	Used to align an object to the gridlines.
Ĝ	Used to paste the object currently present in the clipboard		more details)
×	Used to cut the currently selected object	Ċ	Used to lock an object in position

4.4 Creator Language Toolbar

The **Creator Language Toolbar** provides the ability to manage the language used for the Creator interface. Note that the user can change the language settings anytime.



The following is an overview of the language options available in the Creator Language Toolbar.

Engl	ish	Sets the Creator interface display language to English
Chin	ese (Traditional)	Sets the Creator interface display language to Traditional Chinese
Chin	ese (Simplified)	Sets the Creator interface display language to Simplified Chinese

4.5 Arrange Toolbar

The **Arrange Toolbar** contains shortcut buttons that provide the ability to arrange and manage the positioning of screen objects contained in a project, including editing object layers, alignment, and size, etc., as well as other adjustments.



The following is an overview of the options available in the Arrange Toolbar, together with a description of each.

-	Used to move the currently selected object to the top level	9] }	Used to align the vertical centers of the currently selected objects	
	Used to move the currently selected	÷	Used to align the horizontal centers of the	
	object forward by one level		currently selected objects	
	Used to move the currently selected		Used to equally distribute the currently	
	object backward by one level		selected objects in a horizontal direction	
	Used to move the currently selected		Used to equally distribute the currently	
	object to the bottom level		selected objects in a vertical direction	
	Used to align the left edges of the		Used to scale the currently selected objects so	
₽	currently selected objects	<mark>k≡≯</mark>	that they are the same width	
=	Used to align the right edges of the	T	Used to scale the currently selected objects so	
4	currently selected objects	.	that they are the same height	
THE	Used to align the top edges of the	5-7	Used to scale the currently selected objects so	
.111	currently selected objects		that they are the same size	
ılı	Used to align the bottom edges of the currently selected objects	Note that the size of multiple objects can be adjusted simultaneously by clicking and holding the Ctrl key while selecting the objects, and then clicking one of the objects as the target to change all of the selected objects to the same size.		

0: English

0: English

4.6 Screen State Toolbar

The Screen State Toolbar is used to preview all objects on the screen by changing the value of the state to 0 (OFF) or 1 (ON). See Section 8.3 Switch for more details.

4.7 **Device Language Toolbar**

The Device Language Toolbar is used to adjust the language settings for a device when previewing the screen, and is used in situations such as previewing an object in different languages and text fonts. See Section 11.3 Language for more details.

4.8 Screen Design Area

The Screen Design Area is the area used for designing and previewing the HMI screen that will be displayed on the SmartView device. A customized interface can be constructed for an HMI project by adding, editing, or deleting objects.

4.9 **Screen View**

The Screen View panel is used to display all the HMI screens related to the current project. HMI screens can be added, edited, deleted, or copied, and folders can be created to classify the screens. Right-click on a screen item can open, delete, or rename this screen.

4.10 **Object View**

The **Object View** panel provides a list of all objects contained on the current screen. Double-click an object can locate it on the screen, and press the F2 key can rename the object.



1: Chinese (Traditional)

2: Chinese (Simplified)







*



4.11 Project View

The **Project View** panel provides quick access to all the functions that are available once you have created a project. Each of which is described in more detail below.

Double-clicking any items will open their own settings screen allowing the parameters for the function to be edited. Each of which is described in more detail in the following sections.



The following is an overview of each type of function available for use in a project.

	<u>Digital</u>	Used to add and/or edit a Digital Alarm function	1	Screen Control	Used to add and/or edit a Screen Control function
	Analog	Used to add and/or edit an Analog Alarm function	10	<u>Scheduler</u>	Used to add and/or edit a Scheduler function
	Alarm Settings	Used to edit the settings for an Alarm message function		Password	Used to add and/or edit a Password function
*	<u>Connections</u>	Used to add and/or edit a Connection function	۲	Language	Used to configure the display languages
<u></u>	<u>Variables</u>	Used to add and/or edit a Variable function	6	<u>Image</u> <u>Manager</u>	Used to manage the image library
	Sub-Macro	Used to add and/or edit a Sub-Macro function	@	<u>Settings</u>	Used to configure the properties of a project
	<u>Recipe</u>	Used to add and/or edit a Recipe function	()	MQ Settings	Used to configure the MQTT settings
200	Data Sampling	Used to add and/or edit a Data Sampling function			

4.12 Toolbox

The **Toolbox** panel provides quick access to all the tools that are available once you have created a project. The Toolbox contains a number of different categories, including Drafting, General, Switch, Recipe, Alarm, Sampling, Keyboard, and etc. Each of which are described in more detail below.

To add an object to the HMI screen, click the name of the object in the relevant category of the Toolbox to select it, and then click the desired position on the Screen Design Area to place it. Or click and hold the left mouse button to drag a proper size for this object to add it on the screen, and then set the attributes in the Property View window. Refer to <u>Chapter 8</u> Basic Object Usage for more details regarding the use of objects.



Drafting
Cursor
🔲 Rectangle 💌
A Label
SPicture
📌 Polygon
Circle
∖ Line
☆Multi-Line
E Calibration
⊞Table
General
Switch
Recipe
Alarm
Sampling
Keyboard
HA Seriel

The following is an overview of each category of tool that is available from the Toolbox.

Drafting	This category includes tools that can be used to add items such as static graphics, static text, and display types, etc.		
General	This category includes tools that can be used to display items such as dynamic values, dynamic graphics, the date and time, and form charts, etc.		
Switch	This category includes tools that allow actions such as basic control, manual triggering, multistage control, and page control, etc.		
Recipe	This category includes the operating objects needed for a specific recipe		
Alarm	This category includes tools specifically designed for alarms, such as alarm viewers and alarm log operations, etc.		
Sampling	This category includes tools that allow the creation of data sampling views, and real-time/history trend charts, etc.		
Keyboard	rd This category includes the operating objects needed for the on-screen keyboard.		

4.13 Property View

The **Property View** panel is used to edit the properties of a specific object, allowing a number of parameters and attributes to be manipulated and controlled, such as the font size and color, any images and borders, and text effects, etc., and will be automatically displayed when an object is added or selected. More details regarding the Property View for specific objects can be found in the <u>Chapter 8</u>.



4.14 Output View

The **Output View** panel is used to display any messages that may be generated while compiling, uploading or simulating a project. Double-click the error message can automatically locate the object on the screen, e.g., Screen1 in this example.

0ι	Dutput View			×
		Message		*
Γ	٩	Checking Project Settings	_	
	٩	Checking Connections		-
	٩	Checking Variables		
	٢	Checking Screens and Components		
	٩	Checking 'Screen1'		
	×	The Read variable for BitSwitch is not defined !		
	×	The Write variable for BitSwitch is not defined !		÷
Output View III Library A Search				

4.15 Search

The **Search** option allows a search to be performed to locate specific screens, objects, or variables within a project based on the range set in the Search window. To access the Search function, either click the **Search** tool button, or click **Search** from the **Edit** menu in the **Menu Toolbar**.

4.15.1 Search Settings

After clicking the **Search** button, the **Search** dialog box will be displayed. Enter the relevant details and then click the **OK** button to execute the search.

Search			
Search			
Target Tag_3	▼		
Туре	Range		
C Screen/Object	O Screen 1		
	All Screens		
• Variable	O Project		
OK Cancel			

The following is an overview of the parameters contained in the **Search** dialog box.

Used to enter the full name of the screen, object, or variable to be searched for. Note that the search keyword is case sensitive, so the keyword "Variable" will produce different results to a

	soarch for the knyword "variable" And all	
Target	Search for the Reyword Variable . And, an	Sea
	the keywords that have been searched for	Targ
	previously will be displayed in the drop-down	Тур
	menu.	

Search		
Target		·
Туре	Tag_3	

TypeUsed to select the search type, which can be either a screen or an object, or a variable.RangeUsed to select the search range. If the "Screen" option is selected, the search will only be
performed on the specified screen. Selecting "All Screens" will perform a search on all HMI
screens contained in the project. Selecting "Project" will perform a search of the entire project,
including the screens and variables, etc.

4.15.2 Search Results View

Once a search has been completed, the results will be displayed in the **Search Results** View. Double-click an entry to open the location of the item indicated in the result.

Search 'Tag_3' 🕞 🗙					
	Title	Location	Comment		
>	🖃 Screen				
	- Numeric	Screen No.: 1	Read variable		
	Numeric	Screen No.: 1	Write variable		
<[III)>					
Output View III Library 🎇 Search 'Tag_3'					

4.16 Object Library

The Creator Library provides a convenient method of managing components and functions. The Library can be accessed by clicking the **Library** button, or by clicking **Library** from the **View** menu in the **Menu Toolbar**.

The default **System** library contains a variety of categories of pre-configured objects that can be used in a project. Custom libraries can also be created to store commonly used objects so that they can be easily added to a project the next time it is needed. This approach helps to avoid the need to repeatedly configure the properties of an object each time it is used.



4.16.1 Working with the Creator Library

To open the Creator Library view, click the **Library** tab at the bottom of the Creator interface.

The Library drop-down menu will contain a list of all currently existing libraries, including the default **System** library and any custom libraries that may have been created and saved.



To open a specific library, select an option from the Library drop-down menu. Alternatively, click the **Tool** (...) button to create a new library, open an existing library, or remove a library.

The following is an overview of the options available in the Creator Library.

Library	System		Used to select a library, , including the default System and any custom libraries that may have been created and saved
_	Ŵ	New Library	Used to create a new library
(Tool)	t	Open Library	Used to open an existing library
	700	Remove Library	Used to delete the currently open library, not including "System"
E			Used to increase the display size of the object icons in the Library
$\overline{\mathbf{Q}}$			Used to reduce the display size of the object icons in the Library

4.16.2 Creating a new Library

To create a new library, click the **Tool** (...) button in the Library panel and select **New Library** from the shortcut menu to open the **New** dialog box.



- 1. Enter a name for the library in the Library Name text field and click the Browse (...) button for assigning a path where the library file will be stored.
- 2. Locate the required folder, enter a file name, and click the Save button to create a new lib file.
- 3. Click the OK button in the New dialog box to create the new Library option.
4.16.3 Opening an Existing Library

To open an existing library, click the **Tool** (...) button in the Library panel and select **Open Library** from the shortcut menu.

Library	
Library System	- $+$ $-$
Pine Switch Multi-State	Mew Library
	Open Library
<u> </u>	Remove Library
Output View 🗰 Library	

- 1. Locate the folder containing the desired .lib file.
- 2. Select the .lib file and then click the Open button. The Library will then be displayed in the Library view.

	G Open Part Library G ↓ ≪ ICPDAS ↓ Creator ↓ ↓	ス 「尋 Creator タ
	組合管理 ▼ 新増資料夾	
	Graphics HMI Library Management Output PLC Resource Resource Ib_test1.lib lib_test123.lib SysLib.lib	
Library	檔案名稱(N): lib_test1.lib ▼ L	ibrary(*.lib)
Library lib_test1	File Name	開啟酱檔(O) 取消
test lib_test1		Open

4.16.4 Removing a Library

To remove an existing Library, select the name of the library from the **Library** drop-down menu, and then click the **Tool** (...) button and select **Remove Library** from the shortcut menu. This library option will then be deleted from the drop-down menu. Note that this library can be opened again.



4.16.5 Adding an Object to the Library

Once an object has been placed on the **Screen Design Area**, and its properties have been configured, the object can be added to a library for future use. To add an object to a library, click the object to select it, right-click the object to display the shortcut menu, and then click the **Add to Library** option.

In the **Add to Library** dialog box, click the **New** button to create a new library (or select an existing library name from the **Library** drop-down menu). Enter a **Catalog** name (or select an existing catalog name from its drop-down menu), and then enter a name for the object. Click the **OK** button to save the object in the library.



4.16.6 Managing an Object

Once an object has been added to a library, it can be inserted to the screen, renamed or deleted by right-clicking the object and selecting the required action from the shortcut menu.

<u>Note:</u> You can also use it by dragging the object to the Screen Design Area.



The following is an overview of the options available in the shortcut menu.

Add to Screen	Used to place an object on the Screen Design Area. The selected object will be placed in the top left corner of the currently opened screen.
Rename	Used to rename the object
Delete	Used to delete an object from the Library. Click this option to delete the object.

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4.17 Configuration

The **Configuration** dialog box is used to select the basic options for the Creator Interface, and includes options for the User Interface and the Design Surface, each of which is described in more detail below.

To access the Configuration page, click **Configuration** from the **Tools** menu in the **Menu Toolbar**.

4.17.1 User Interface

The User Interface dialog box allows parameters such as the Interface type, style, and font to be adjusted.

🕄 Configuration		x	
User Interface	Interface	SDI	
Design Surface	Style	Caramel 💟	
	Font	Calibri	
		OK Cancel	

The following is an overview of the options available in the **User Interface** dialog box.

Interface	Used to change the type of interface, and offers two options SDI: Single document interface MDI: Multiple document interface	S: SDI SDI MDI
Style	Used to change the color and style of the user interface. Six options are available: Caramel, Black, Blue, iMaginary, Money Twins, and Lilian.	Caramel Caramel Black Blue iMaginary Money Twins Lilian
Font	Used to configure the font displayed for the interface	

To configure the User Interface, select an interface type from the **Interface** drop-down menu, then select a style and font from the respective drop-down menus, and then click OK.

4.17.2 Design Surface

The **Design Surface** dialog box allows parameters such as the grid size, hints, and design pattern to be adjusted.

🔁 Configuration	×
User Interface	Snap to grid
Design Surface	🗌 Display grid
	Grid size
	Horizontal 12
	Vertical 7
	Show Object Information
	Default Design Pattern
	Simple
	OK Cancel

The following is an overview of the options available in the **Design Surface** dialog box

Snap to grid	Used to automatically snap to the grid when add an object to the screen.		
Display grid	Used to show or hide the grid on the design screen		
Grid size	Used to configure the horizontal and vertical size of the grid The valid range is 4 to 64 pixels		
Show Object Information	Used to show the coordinates and size for an object when dragging it on the screen	★ X:360 Y:90 W:60 H:60	
Default Design Pattern	Used to select the default design pattern for the screen, which can be either Simple or Complete.	Complete 🖌 Simple Complete	

To configure the Design Surface, check the checkboxes for the relevant items, adjust the grid size or the design pattern as necessary, and then click the OK button. If the Design Pattern settings have been changed, Creator must be restarted before they will take effect.

4.18 Customizing the Interface

The Creator interface can be customized depending on individual requirements, and each panel can be positioned to suit personal preference. If the arrangement of the panels is adjusted, the current positions will be saved when Creator is closed.

4.18.1 Repositioning a Panel

To move a panel to a new position, click and hold the **Title Bar** for the panel and drag it so that it is close to any **Anchor Point**, as illustrated below, and then release the mouse button. The panel will then be relocated to that area of the screen.



4.18.2 Auto-hiding a Panel

The **Auto-hide** function allows you to gain a little more screen space by configuring Creator to automatically hide a specific panel whenever the panel is not active.

The panel will be reactivated whenever the mouse pointer is positioned over the tab for an inactivated panel. To enable the **Auto-hide** function, click the **Pin** icon at the top of the Project View window, as illustrated.



the mouse pointer is hovered over a tab.

Chapter 5 Project Setup

The following provides details of how to create a new project, including choosing the HMI model and configuring the connection parameters, etc.

5.1 Creating a new Project

Follow the instructions described below to create a new project in the Creator software.

5.1.1 Create a New Project

A new project can be created using a variety of methods, each of which is described below.

From the **Project** menu, click the **New** item to begin creating a new project. Alternatively, click the **New** button in the **Standard** toolbar, or click the **New project** item on the **Startup** screen.



5.1.2 Select the SmartView Model

A dialog box will be displayed allowing the SmartView Series HMI Model to be selected. Choose an appropriate option from the **HMI** drop-down menu and then click the **OK** button. The **New Project Wizard** will then be displayed.

Select an	HMI Model	×
HMI	SV-2201]
Panel S Width = SDRAM MRAM Flash = Touch f RS-232 USB Ho Etherne	Gize = 7 inch = 800 = 480 I = 512 MB = 128 KB = 256 MB Panel 2/485 Port x 2 ost et	
	V OK X Cance)

5.1.3 Enter the Project Information

In the **New Project Wizard**, enter a name for the project in the **Project Name** field, and then enter an appropriate description and version number, if necessary, in the respective fields. Click the **Next** button to continue.

New Project Wizard				— ×
Project Information	l			
Project Name				
Description				
				^
				\sim
Version				
1.0				
	🗲 Back	Next	Complete	X Cancel

5.1.4 Configuring the Connection

On the "**Connections**" dialog box, configure the communication protocol and other parameters for the connection by entering the relevant information in the respective fields, each of which is described in more detail below.

New Project Wizard			8
Connections			
COM1 COM2 ETH1			
Mitsubishi - FX Series CPU 🔽 RS232, 9	500, 7, Even, 1		2
Name Connection Mode	Configuration	Comment	
	New	Edit Remov	/e
(Back 🚽 Next	🖌 Complete	ncel

1. Select the communication protocol for the SmartView to connect to PLC device by first selecting the tab for the COM port, and then selecting the appropriate option from the drop-down menu.

Modico	on - ModBus RTU Slave 🛛 RS232, 9600,	8, None, 1	2
rotoc	ol	Comment	
-	🍡 ModBus ASCII Master	Comment	
-	🍡 ModBus ASCII Slave		
-	NodBus ASCII Slave(FC use 06H)		
	🍾 ModBus RTU Master		
	💊 ModBus RTU Slave 🍗		
. L.	ModBus RTU Slave(FC use 06H)		

2. Configure the communication parameters to be used for the port by clicking the **Port Configuration** button to open the **Port Settings** dialog box.

In the **Port Settings** dialog box, select the required values for the device to be connected from the respective drop-down menus, then click the **OK** button to continue.

ort Settings		Port Configuration
-Communication Pa	arameters	
Interface	RS232	
Baud Rate	9600	
Data Bits	8	
Parity	None	•
Stop Bits	1	9
Timeout (ms)	1000	× ×
Delay Time (ms)	0	× v
Retry Count	3	× v
Set connection to	o offline when retry count exceeded	d

3. Create a new connection

Initially, no connections will be listed in the **Connections** dialog box, so a new connection must be created. Click the **New** button to open the **Connection Editor** dialog box. In the **Connection Editor** dialog box, enter a name for the new connection and configure the communication parameters, including the COM Port and the Station number (Net ID), and then click the **OK** button to close the dialog box. Once the connection settings have been completed, the new connection will be listed in the **Connections** dialog box. Click the **Next** button to continue.

				Connection Editor	
New Project Wizard			•••	Name	Connect_1
Connections				Port	COM1
COM1 COM2 ETH1				Connection Mode	Online
Modicon - ModBus RTU S	il 🔽 RS232, 96	00, 8, None, 1		PLC.	
Name	Connection Mode	Configuration	Comment	PEC .	
Connect_1	Online	Station No : 1		Station 1	
				Comment	
		New	Edit Remove		
	(Back 🚽 Next	Complete X Cancel		
					OK Cancel

5.1.5 Importing System Variables

After clicking the **Next** button from the previous step, the **Variable Settings** dialog box will be displayed.

To import any system variables, click the **Yes** option button in the **Import System Variables** section of the **Variable Settings** page, or click **No** if the variables are not going to be imported, and then click the **Complete** button to finish creating the project.

Import System Variables		
 Yes No 		
If colocting Voc	devide alieb the Mariables item in the	
in selecting res	double-click the <u>variables</u> item in the	
Project View p	anel to view the System Variables.	
Project View p (See Chapter 7	anel to view the System Variables. Variables for more details)	
Project View p (See Chapter 7	anel to view the System Variables. Variables for more details)	
Project View p (See Chapter 7	anel to view the System Variables. Variables for more details)	

[45]

5.2 Compiling the project

Before a project can be transferred and used on a SmartView device, it must be compiled. The following provides instructions for how to perform this task.

5.2.1 Launch the Compiler



To begin compiling the project, either click the Compiler button in the **Standard Toolbar** to launch the built-in compiler or, alternatively, click the **Compiler** item from the **Tools** menu.

5.2.2 Display the Compilation Results

As the project is being compiled, the results of the compilation process will be automatically displayed in the pop-up **Output View** window. If there are any errors in the code, an error message will be displayed in red. Double-click the error message to automatically locate the object on the screen so that it can be corrected. See Section <u>4.14 Output View</u> for more details. Once the error has been corrected, compile the project again. If further errors are encountered, repeat the process until no errors are found.

Output V	iew	PX
	Message	
(i)	Image Total:0 Bytes	
(I)	===== Font Data =====	
(i)	Tahoma 701488 bytes	
() () () () () () () () () ()	===== Project Data =====	
(I)	User Data Total Capacity:0%	
(I)	User Font Total Size:685kb / 102398kb o	
	Compilation Successful!	-
🗰 Library	Output View	

Once the project is successfully compiled, the message "Compilation Successful" will be displayed at the end of the output stream.

5.3 Simulating a Project Offline

Creator includes a built-in simulator that allows a project to be simulated on a Host PC without the need to be physically connected to the destination PAC controller by using the Host PC as an HMI platform. This can be particularly advantageous when the target device is not available while developing a project.



To begin the simulation, either click the **Simulate Offline** button in the **Standard Toolbar** to launch the simulator or, alternatively, click the **Simulate Offline** item from the **Tools** menu.

Simulating a Project Online 5.4

Creator includes a built-in simulator that allows a project to be simulated on a Host PC that is already connected to the destination PAC by using the Host PC as an HMI platform. This can be advantageous when the target device is connected to the Host PC while developing a project. The online simulation can be performed continuously for up to 30 minutes.



To begin the simulation, either click the Simulate Online tool icon button in the Standard Toolbar to launch the simulator or, alternatively, click the Simulate Online item from the Tools menu.

(Simulate Offline)





(Simulate Online)

5.5 Uploading a Project

Creator provides the ability to upload a project to a SmartView device via the Ethernet, or via a Serial port (See <u>Section 5.6.5 Upload Tab</u> for more details about the settings).



To upload a project to a SmartView device, either click the **Upload** button in the Standard Toolbar, or, alternatively, click the Upload item from the Tools menu.

Once uploaded, the HMI pages will be displayed on the screen of the SmartView device.

5.6 Configuring the Project Settings

The **Settings** function in the **Project View** panel allows the settings to be configured for items such as the HMI (Model and Station No., etc.), the project information, password protection, the touch panel and backlight parameters, as well as the project upload parameters, including the connection, mode, IP address and font etc.

To configure the settings for a project, click the **Settings** function from the **Project View** panel. The **Settings** page contains five tabs, HMI, Information, Protect, Backlight/Touch Panel, and Upload. More details related to these tabs are provided in the following sections.

5.6.1 HMI Tab

The HMI tab contains options that allow the settings for the target HMI device to be configured, each of which are described in more detail below.

🜐 Settings			×
HMI Information	n Protect	Backlight / Touch Panel Upload	
HMI	SV-2201		
Station No.	0		
Initial screen	1	~	
Buzzer	ON	•	
Screen Rotation	0		

The following is an overview of the options available in the HMI tab.

нмі	Used to specify the target model for the project		
Station No.	Used to specify the local station number for the PAC, and the valid range is 0 to 255		
Initial Screen	Used to specify which screen will be set as the home page for the HMI project		
Buzzer	Used to specify the initial state of the buzzer switch		
Coroon Dotation	Used to specify whether or not the screen can be rotated.		
Screen Rotation	Note that this function will be available soon.		

To configure the settings for a specific HMI device, select a target model from the **HMI** drop-down menu, and then enter the device ID in the **Station No**. field. Select the required values from the **Initial Screen**, and **Buzzer** drop-down menus to complete the settings.



5.6.2 Project Information Tab

The **Information** tab contains options that allow important information about the project to be specified, each of which is described in more detail below.

🔅 Settings		×
HMI Information	Protect Backlight / Touch Panel Upload	_
Project Name	My Project	
Project Description		
	~	
Project Version	1.0	

The following is an overview of the options available in the **Information** tab.

Project Name	Used to assign a name for the project
Project Description	Used to enter a description for the project
Project Version	Used to specify a version number for the project

Enter a name for the project in the **Project Name** field, and then, if necessary, enter an appropriate description and version number in the respective fields.

Note that completing these details is not compulsory, but doing so may be helpful for the future development of a project.

5.6.3 Protect Tab

The **Protect** tab contains options that allow password protection to be added to the project, or to enable protection that restricts unauthorized access to the Control Panel.

👸 Settings
HMI Information Protect Backlight / Touch Panel Upload
Enable password protection for the project
Password
The password may be comprised of any character up to a maximum of 128.
Enable parsword protection for the Control Danal
Enable password protection for the Control Panel
Password
The password may only contain digits from 0 to 9, with a maximum length of ten digits.

The following is an overview of the options available in the **Protect** tab.

Enable password protection	Used to enable or disable password protection for the project	
for the project		
Password	Used to assign a password for the project	
Enable password protection	Used to enable or disable password protection for accessing the	
for the Control Panel	Control Panel	
Descused	Used to assign a password to prevent unauthorized access to the	
Password	Control Panel	

To enable password protection for the project, check the checkbox and enter a password. Note that the password may be comprised of any character, with a maximum of 128 characters.

To restrict unauthorized access to the Control Panel, check the checkbox and enter a password. Note that this password may only be comprised of digits from 0 to 9, with a maximum of ten digits.

5.6.4 Backlight/Touch Panel Tab

The **Backlight/Touch Panel** tab contains options that allow the duration that the backlight on an HMI device is active to be adjusted, or to control the touch screen functionality by using a variable. For more details related to the usage of variables, see Chapter 7 Variables.

acklight Time 10) 🚺 Minute	
Touch Panel Cont	rol	This function will be available soon.
Variable	•	
when the tag valu	e is 0 and the backlight is off, the	touch screen is disable;

The following is an overview of the options available in the **Backlight/Touch Panel** tab.

Backlight Time		Used to specify the duration that the backlight is active		
En	Enable	Used to enable or disable the control functions for the touch panel		
Touch Panel Control	Variable	Used to assign the control variables, where: 0: The Backlight is OFF 1: The Backlight is ON For more details related to the usage of variables, see Chapter 7 Variables.		

5.6.5 **Upload Tab**

The Upload tab contains options that are used to configure the connection for an HMI project, as well as to enable or disable the various options relating to the project. See Section 5.5 Uploading a Project for more details.

	Protect ba	ickiight / Touc	
Target	SmartView	~	
HMI Connection			✓ Upload Project
Connection Mod	e Ethernet	•	Upload fonts not present on the HMI device
			Upload Runtime Program

The following is an overview of the options available in the **Upload** tab.

Target		Used to select the Upload target device, which can be a SmartView device	
ConnectionHMIModeConnectionIP Address		Used to select the connection mode, which can be Ethernet	
		Used to specify the IP Address of the target device. Note that this option is only applicable to Ethernet connection mode	
Upload Proje	ct	Used to specify whether or not the project should be uploaded	
Upload fonts not present		Used to specify whether or not any fonts that are not present on the HMI	
on the HMI device		device should be uploaded with the project	
Upload Runtime Program		Used to specify whether or not the latest Runtime program should be	
		uploaded with the project if the runtime program does not currently exist	
		on the target	

Click the Upload tab in the Settings dialog box and then select the target and the connection mode from the respective drop-down menus. Enter the IP address in the IP Address text field and enable or disable the various options relating to the project as necessary.

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Chapter 6 Connections

The **Connections** function is used to create, edit, and manage the communication ports, protocols and parameters that are used for a specific project, which will be described in more detail below. The available COM ports that will be displayed completely depend on the specific SmartView model being used. The protocol and parameters for the SmartView ports used to connect to the PLC controller should be configured according the requirements of the specific PLC.



To access the **Connections** page, double-click the **Connections** function in the **Project View** panel. The following is an overview of the **Connections** interface.

Connections				
New Edit COM1 COM2	Delete	Copy Pas ection Port	Cut	
Modicon - ModBus F	RTU SI 💌 RS232,	9600, 8, None, 1		The Communication
Name	Connection Mode	Configuration	Comment	Protocol/Parameters
> Connect_1	Online	Station No : 1		has been created
Connect_2	Online	Station No : 1		
				Pasting the previous copied item

The following is an overview of the interface for the **Connections** page.

New	Used to create a new connection. See Section 6.1 Connection Editor for more details	
Edit	Used to open the Connection Editor dialog box for the selected connection allowing the details to be edited. See Section 6.1 Connection Editor for more details	
Delete	Used to delete the selected connection item(s)	
Сору	Used to copy all settings for the selected connection item(s) (without the name)	
Paste	Used to paste the connection item(s) that was copied	
Cut	Used to cut the selected connection item(s). Note that if you click the Paste button later, the connection information will be pasted to the last item.	
Connection Port	Used to specify the port type to be assigned to the connection, which can be either COM (Serial Port) or ETH (Ethernet Port). The buttons that will be displayed depend on the model selected. Note that if the model used for the project is changed, any settings that are not supported by the new model will be deleted.	
Communication Protocol	 Used to specify the communication protocol to be assigned to the connection. Note that only one protocol can be selected for each port, with the following limitations: A maximum of 32 connections can be created when connected to a Slave device. A maximum of 1 connection can be created when connected to a Master device. 	
Communication Parameters	Used to specify the communication parameters to be assigned to the connection. Click the Port Configuration button (

6.1 Connection Editor

The **Connection Editor** dialog box is used to assign the properties for a new connection, or to edit the details for an existing connection. To open the **Connection Editor** dialog box, click either the **New** or the **Edit** button in the **Connection** page, as illustrated in the diagram above.

Connection Editor	Connection Editor
Name Connect_1	Name Connect_3
Port COM1	Port ETH1
Connection Mode	Connection Mode
PLC Only COMx can be selected	PLC Only ETHx can be selected
Station 1	IP 192 168 0 1
	Port 502
	Station 1
Comment	Comment
OK Cancel	OK Cancel

The following is an overview of the options available in the **Connection Editor** dialog box.

Name		Used to assign a name for the connection	
Port Used to spe		Used to specify which port is assigned to the connection. Note that the settings cannot be directly switched between COM ports and Ethernet ports	
Connection ModeUsed to specify the initial connection mode when uploading the device: Online: The initial connection mode is "Online". Offline: The initial connection mode is "Offline". Offline: The initial connection mode is "Offline". Click the Port Configuration button ("") to open the Port Setting Note that the status of the connection mode can be changed us Defente Section 0.2.4 Section Putter for every detail.		Used to specify the initial connection mode when uploading the settings to the HMI device: Online: The initial connection mode is "Online". Offline: The initial connection mode is "Offline". Click the Port Configuration button () to open the <u>Port Settings</u> dialog box. Note that the status of the connection mode can be changed using an object function. Refer to <u>Section 8.3.4 Connection Button</u> for more details	
	Station	Used to specify the Station ID of the remote device	
PLC IP Address		Used to specify the IP address of the remote device	
	Port	Used to specify the TCP port number to be used, normally set as 502	
Comments Used to add any comments related to the connection		Used to add any comments related to the connection	

6.2 Communication Parameters

The **Port Settings** dialog box is used to assign the properties of a new connection, or to edit the details for an existing connection. The parameters displayed in the dialog depend on the type of connection, as illustrated below.

The following is an overview of the options available in the **Port Settings** dialog box.

	Serial Port	Interface	Used to specify the interface type and can be either RS232, RS422, or RS485
Port Settings	≥rameter.	Baud Rate	Used to specify the Baud Rate to be used for the port
Interface	RS232	Data Bits	Used to specify the Data length to be used for the port
Baud Rate	9600	Parity	Used to specify the checksum mode to be used for the port
Parity	Even	Stop Bits	Used to specify the Stop bit length to be used for the port
Stop Bits Timeout (ms)	1 200	Timeout	Used to specify the timeout duration before a connection failure occurs
Delay Time (ms)	0	Delay Time	Used to specify the Delay time between commands
Retry Count	3 So offline when retry count exceeded	Retry Count	Used to specify the number of connection attempts that should be made when the connection fails
	OK X Cancel	Set connectio	on to offline when retry count exceeded

Used to automatically set the connection to Offline Mode if the number of connection attempts exceeds the configured retry count value

Timeout (ms)	Used to specify the timeout duration before a connection failure occurs		
Delay Time (ms)	Used to specify the Delay time between commands		
Retry CountUsed to specify the number of connection attempts that should be made if the connection fails			
Set connection to offline when retry count exceeded			

Used to automatically set the connection to Offline Mode if the number of connection attempts exceeds configured retry count value

Ethernet i oit					
Port Settings	X				
Timeout (ms)	1000				
Delay Time (ms)	0				
Retry Count	3				
Set connection to offline when retry count exceeded					
✓ 0	K Cancel				

Ethernet Port

Chapter 7 Variables

The **Variables** function is used to create, edit, and manage the variables that are used in a specific project, and will be described in more detail below.

To access the Variable page, double-click the **Variables** function in the **Project View** panel.



-	Variables							E
	New	Edit	Del	ete	Сору	Paste	Cut	
	Search	Export	Imp	ort	Cycle Edit	Import Sys T	Tag	
	Name	Connection	DataType	Address		····· · · · · · · · · · · · · · · · ·		1
1	Sys_Screen	Internal_HMI	WORD	@S0	The follow	ing are the s	system variables	on t =
	Sys_Langu	Internal_HMI	WORD	@S1	1 Full	Speed	[R] The language ind	ex o 🗕
	Sys_Year	Internal_HMI	WORD	@S2	1 Full	Speed	[RW] System date	Year
	Sys_Month	Internal_HMI	WORD	@S3	1 Full	Speed	[RW] System date	Mont
	Sys_Day	Internal_HMI	WORD	@S4	1 Full	Speed	[RW] System date	Day 1
	Sys_Week	Internal_HMI	WORD	@S5	1 Full	Speed	[R] System date W	/eek, 🤜

The following is an overview of the options available on the Variables page.

New	Used to create a new variable			
Edit	Used to edit a selected variable item			
Delete	Used to delete the selected variable item(s)			
Сору	Used to copy the selected variable item(s) to the system clipboard			
Paste	Used to paste the variable item(s) from the system clipboard			
Cut	Used to cut the selected variable item(s) to the system clipboard			
Search	Used to search the entire project for references to the variable. Select the name of a			
	variable to be used as a keyword.			
Export	Used to export all variable(s) to a CSV file			
Import	Used to import all variable(s) from a CSV file			
Cuelo Edit	Used to specify a fixed period of time that defines how often the variable reads data			
	from a device			
Import Sys Tag	Used to import commonly used built-in system variables			

7.1 Description of a Variable

A variable is one of the most basic units in a Control System. Depending on functional requirements, variables can be used to access any temporary values related to the connected devices, as well as for internal event simulation and logic operations. The data acquired via the variable can then be used to achieve different purposes using HMI objects, such as alarms, data sampling, recipes, and so on.

7.1.1 The Usage of Variables

Data Readability:

All variables can be named according to the devices that are used so that it's much easier to identify the purpose of the variable and to maintain the Creator project.

• Easy Template Editing:

If a device that is being used needs to be replaced for any reason, there is no need to amend all the functions that use the variable. Simply modify the address used by the variable.

• Prioritized Adjustment:

The update speed for variables can be adjusted to achieve the most efficient communication.

7.1.2 Variable Category

• External Variables:

External variables are used to read/write the external data. The address used in the variable must be set to the Modbus address of the connected device.

Addressing	
Register Address	0x 1x 3x 4x
	✓ X

• Internal Variables:

Internal variables are used for the internal use of the HMI device. The address used in the variable is defined by the user based on one of two registers:

@S Register: Used to temporarily store the value(s) for the system variable@R Register: Used to temporarily store the value(s) for the user-defined variable

• Array Variables:

Array Variables are used for variables where the data length is greater than "1" (e.g., using **ten** WORDs).

Addressing		
Register	/ /@R	
Address	<u>ē</u> Š	`
		🖌 📎

7.1.3 Variable Types

Each variable used in Creator has a specific type, which determines the size and layout of the memory used for the variable, the range of values that can be stored within that memory, and the set of operations that can be applied to the variable.

Туре	Number of Bits	Valid Value Range
BOOL	1	0, 1
BYTE	8	0 to 255
CHAR	8	-128 to 127
WORD	16	0 to 65535
INT	16	-32768 to 32767
DWORD	32	0 to 4294967295
LONG	32	-2147483648 to 2147483647
FLOAT	32	-3.4e38 to +3.4e38 (IEEE Floating-Point)

The following is an overview of the types of variable that can be used in Creator.

7.2 Creating and Editing Variables

To create a new variable, click the **New** button on the **Variable** page to open the **Add New Variable** dialog box as noted in <u>Chapter 7</u>, which allows the parameters to be configured for items such as the connection type, the variable type, and the address, etc., each of which are described in more detail below.

Add New Variable		Edit Variable	
Name	Tag_1	Name	Light_1
Connection	Connect_1	Connection	Internal_HMI
Туре	BOOL (1bit)	Туре	BOOL (1bit)
Address		Address	@R1.1
Length	1	Length	1
Update Cycle Time	Full Speed	Update Cycle Time	Full Speed
	Enable as global variable		Enable as global variable
Comments		Comments	Entrance Lighting
	OK Cancel		OK Cancel

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7.2.1 Add New Variable

To create a new variable, enter a unique name for the Tag in the **Name** text field of the **Add New Variable** dialog box, as the figure above. Select a connection method from the **Connection** drop-down menu, and then select a type for the Tag from the **Type** drop-down menu. In the **Address** text field, click the **Addressing** (...) button to select a specific address or simply enter the address of the tag. Note that the address style will be different based on the **Connection** settings. Enter a data **Length** for the variable, and then select an time option from the **Update Cycle Time** drop-down menu. If desired, check the **Enable as global variable** item and enter any comments in the **Comments** text box. Click the **OK** button to save the changes.

Edit Variable

To edit an existing variable, amend any details in the **Edit Variable** dialog box as necessary, and then click the **OK** button to save the changes.

The following is a description of each of the parameters contained in the Add New variable or the Edit variable dialog box:

Name

The **Name** parameter is used to specify a user-defined name for the variable. **Note:** It is recommended that a different name be defined for each variable as Creator uses Macro names that are based on the variable name.

Connection

The **Connection** parameter is used to specify the connection to be accessed by the variable. Select either an existing connection which has previously been configured in the Connections tab (see <u>Chapter 6</u> Connections), or selects the **Internal_HMI** option to access an internal variable.

Type

The **Type** parameter is used to specify the data type for the variable and can be selected as any one of BOOL, BYTE, CHAR, WORD, INT, DWORD, LONG or FLOAT types. Refer to Section <u>7.1.3 Variable Type</u> for more details.

Address

The **Address** parameter is used to specify the reference address when accessing the device data, and can be either the Communication address or the Internal address, each of which are described below.

Address		
Addressing		Addressing
Register @R Address 3 Bit 1	•	Register @S Address O:Current Screen No.
The address is "@R3.1"	✓ X	The address is "@S0"
		[59]

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A. Communication address

The **Communication address** is used to specify the address for accessing data from an external device. The format of the address style will be different depending on the communication protocol selected (e.g., "b1" or "0x2").

B. Internal address

The Internal address is used to specify the address of the internal variable.

@S (System parameters)

There are a number of built-in system variables that can be imported from the **Variables** page (see <u>Chapter 7 Variables</u>), each of which is shown in the table below. For more details regarding each system variable, check the **Comment** field, as illustrated in the diagram below.

The following is an overview of the system variables available for import to the Creator project.

@S0:	Sys_Screen	@S6:	Sys_Hour	@S14:	Sys_LoginUser
@S1:	Sys_Language	@S7:	Sys_Minute	@S15:	Sys_LoginPower
@S2:	Sys_Year	@S8:	Sys_Second	@S20:	Sys_RecipeTableID
@S3:	Sys_Month	@S11:	Sys_BacklightTimer	@S21:	Sys_RecipeRecordIndex
@S4:	Sys_Day	@S12:	Sys_AutoLogout	@S23:	Sys_CpuLoading
@S5:	Sys_Week	@S13:	Sys_Buzzer		

@R (User-defined parameters)

The @R parameter is used to define the starting address of a variable (unit: Byte). If the data type is BOOL (Bit), the address will be displayed with a decimal number (i.e., Bit0 to Bit7), for example, @R5.7 denotes that the variable Address is set to "5", the Bit is set to "7".

	Variables Connection									
	New Edit Delete Copy Paste Cut									
	Search Export Import Cycle Edit Import Sys Tag									
	Name	Connection	DataType	Address 🛆	Length	Update Cycle (ms)	Comments			
>	Tag_1	Modbus ASCII Slave1	BIT	0x1	1	Full Speed				
	Tag_2	Modbus TCP Client1	BIT	b1	1	Full Speed				
	Tag_3	Internal_HMI	BIT	@R3.1	1	Full Speed	•			
	Sys_Screen	Internal_HMI	WORD	@S0	1	Full Speed	[R] The cur 🥃			

Length

The **Length** parameter is used to define how much data exists within a variable. If the length is set to greater than 1, it will be defined as an Array Variable. For example, assume that the starting address is set to **@R100**, the data type is set to **"WORD" (2 Bytes)**, and the length is set to **3**, it denotes that the access range will be **@R100 to @R105**.

Array Index	Configured Address
0	@R100, @R101 (the WORD data type uses 2 Bytes)
1	@R102, @R103 (the WORD data type uses 2 Bytes)
2	@R104, @R105 (the WORD data type uses 2 Bytes)

Note: Array variable may not be supported by certain PLC devices, or if the data type is set to "BOOL" as the length is fixed as "1".

Update Cycle Time

The **Update Cycle** Time parameter is used to specify the cycle time in milliseconds (ms) for updating the variable values. When set to Full Speed, the update will be performed without any delay. To add additional time options, click the **Cycle Edit** button, see Section 7.3 Cycle Edit for more details.

• Enable as global variable

The **Enable as global variable** checkbox is used to enable the variable as a global variable so that any object functions which reference this variable will operate correctly whatever page the HMI screen is switched to.

Comments

The **Comments** parameter is used to enter an appropriate description for the variable.

7.2.2 Using Variables

When configuring the object in the **Property View** panel, most of them must be assigned a Read/Write variable. As illustrated in the diagram below, you can click the button (, and choose a variable which has been defined in the **Variables** page previously. Alternatively, you can click the button (, to add or edit or clear the variable. For more details about the objects, see <u>Section 8.2 General Objects</u>.

Variable											
Read	Тао	9	-	× (See	Section	7.2.1 for r	more details	s.
						New					
Write	M	Name	Δ	\ T		Edit	ion	Address	Length	Comment	
	Tag	_7		Byt			IMI	@R81	1		
Notify Variable	Tag	_8		Byt		Clear	IMI	@R82	1		
	Tag	_9		DW	ord	Interna	I HMI	@R83	1		
	Tag	_word		Wo	rd	Interna	HMI	@R33	1	5	~
	*										//.

7.3 Cycle Edit

The **Update Cycle Time** parameter defines how often the variable reads data from a device and is a fixed period of time. It is recommended that the cycle time be configured to a value that is suitable for the conditions.

For example, when measuring a temperature that changes slowly, it would be more beneficial to set the cycle time to a value greater than 1 second. However, when monitoring a motor where the measurement changes rapidly and it is critical that the current value is known quickly, it would be advantageous to set the cycle time to a lower value such as 100 ms.

Creator provides a range of time options by default, such as 100 ms, 500 ms, and 1 second, etc., but custom update cycle times can also be configured using the **Cycle List** dialog box.

To access the **Cycle List** dialog box, click the **Cycle Edit** button on the **Variables** page.

	🔶 Var	riables								
	N	lew	Edit	De	lete	Сору		Paste	Cut	
	Sei	arch	Export	Im	port	Cycle Ed	it Imp	ort Sys Ta	ag	
	Nam	ne	Connection	DataType	Address	Length	Update Cy	cle (ms)	Comments	^
>	Sys_	Screen	Internal_HMI	WORD	@S0	1	Full Speed		[R] The current page on t	=
	Sys_	Langu	Internal_HMI	WORD	@S1	1	Full Speed		[R] The language index o	🖳
	Sy:	Cycle List	w Edit	t De	lete	Сору	Cut	P	Paste	
	57.	Nan	ne		Cycle Tim	e (ms)		∆ Cor	nments	
		100	ms				1	100		
		> 500	ms				:	500		
	1 second 1000									
		10 s	econds		10000					
		1 m	nute		60000					
		1 ho	ur				3600	000		

The following is an overview of the options available in the **Cycle List** dialog box.

New	Used to create a new Cycle Time	Сору	Used to copy the selected Cycle Time (s)
Edit	Used to edit the selected Cycle Time	Cut	Used to cut the selected Cycle Time (s)
Delete	Used to delete the selected Cycle Time (s)	Paste	Used to paste the copied or cut Cycle Time (s)

To add a new Cycle Time item, click the **New** button in the **Cycle List** dialog box to display the **Cycle Edit** dialog box.



The following is an overview of the options available in the **Cycle Edit** dialog box.

Name	Used to specify a name for the new Cycle List item					
Cycle Time	Used to specify the cycle time in milliseconds (ms). The valid range is from0 to 3,600,000 ms					
Comments	Used to enter a description for the Cycle List item					

Enter a name for the new Cycle Time in the **Name** text field, and then enter a Cycle time in milliseconds in the **Cycle Time** field. If desired, enter any comments in the **Comments** text box, and then click the **OK** button to save the changes.

7.4 Array Variables

The Array variable can be used to access multiple data at one time. Therefore, if the data length of the variable is greater than 1, the variable will be referred to as an Array Variable. For example, assume that the starting address is set to **@R100**, the data type is set to **"WORD" (2 Bytes)**, and the length is set to **3**, it denotes that the access range will be **@R100 to @R105**.

Array Index	Configured Address
0	@R100, @R101 (the WORD data type uses 2 Bytes)
1	@R102, @R103 (the WORD data type uses 2 Bytes)
2	@R104, @R105 (the WORD data type uses 2 Bytes)

🖉 Variables						
New	Edit	Delete		Сору	Paste	Cut
Search	Export	Import	Cy	cle Edit	Import Sys Tag	
Name	Connection	DataType	Address	Length	Update Cycle (ms)	Comments
Tag_1	Internal_HMI	WORD	@R100	3	Full Speed	
Tag_2	Internal_HMI	WORD	@R106	3	Full Speed	J
Tag_3	Internal_HMI	BYTE	@R112	1	Full Speed	
Tag_4	Internal_HMI	BYTE	@R113	1	Full Speed	
Device_01	Connect_1	BIT	0x1	1	Full Speed]
Device_02	Connect_2	INT	3x10	1	Full Speed	
Device_03	Connect_2	INT	3x12	1	Full Speed	
*						

7.5 Suggestions for Using Variables

The speed that the data is updated on the HMI screen is dependent on the traffic on the communication port. If there is heavy traffic, the update speed will be slower. If a large number of variables are used to display data on the HMI screen, the loading on the communication port will become greater. The Creator provides an optimization function, but is only applicable when the addresses of the variables are continuous.

For example, suppose a screen exists that uses the three addresses @R0, @R100, and @R200. As the addresses are not continuous, the Creator will generate three communication records. However, if the addresses are set to @R0, @R2 and @R4, the sequence becomes continuous, meaning that the system will only generate a single communication record. Moreover, if you use the external variable (e.g., "Device_01" as the figure above), the address of the variable is depending on the connected device.

Chapter 8 Basic Object Usage

The **Toolbox** contains four categories of basic objects, including Drafting, General, Switch, and Keyboard. These objects can be used to transfer data to the graphical user interface on the HMI screen via either an external and/or an internal variable. Objects can also be used to perform control various processes. The functions for the advanced objects found in the Toolbox, which include Recipe, Alarm and Data Sampling objects, need to be configured before the object can be used. For more details related to the usage of a specific object type, refer to the descriptions provided in the sections below.

To create an object, first click the name of the desired object in the relevant category of the Toolbox. Position the mouse cursor on the Screen Design Area, and then click and hold the left mouse button to drag the object until it is the desired size and shape, as illustrated in the diagram below, and then release the mouse button.

Alternatively, click the name of the object in the relevant category of the Toolbox to select it, and then click the desired position on the Screen Design Area to place it with the default size.

To edit the attributes of the object at a later date, click the object to open the Property View panel for that object.

Startup 1 : Screen1			×	Toolbox	ŦΧ
R	Q			Drafti	ng
			\mathbf{i}	Rectan	gle
	.	2		A Label	
<((III			~ Image	
Simple Complete					n
Property View	r.		₽×	Circle	
Rectangle1	Outline		Fill	Line	
- General - Border	Foreground Cold	or 0, 0, 0 💌	Foreground Color 255, 255, 255	∰ ∭ Multi-L	ine
Glisten	Width	1	Background Color 255, 255, 255	E Calibrat	tion
- Offset - Dynamic Size	Style	Solid	Style	⊞Table	
Conditional Display	De stere els			Gene	ral
Position and Size	Rectangle			Swite	h
- Other	Style	Right-a 💌		Recip	pe
	Adjust			Aları	m
	Width	10 🔅 %		Sampl	ing
	Height	10 %		Keybo	ard
				HA Se	riel

Drafting Objects 8.1

The Drafting category of the Toolbox includes a variety of objects that can be used to create and edit general geometric figures, calibration functions, tables, and other graphic type HMI objects, each of which are described in more detail in the following sections.

8.1.1 Rectangle



The **Rectangle** object can be used to create a rectangular shape on the screen. The attributes for the Rectangle object, including the size, style, and the color, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Rectangle** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Rectangle** object.

Property View		Ψ×
Property View Rectangle General Border Glisten Offset Dynamic Size Conditional Display Position and Size Other	Outline Foreground Color 255, 128, 0 Width 2 Style Solid Style Style Style Adjust Width 2 %	
	Width 2 % Height 5 %	

General Properties

The General Properties dialog box is used to configure the display style for the Rectangle object, including the outline color and width, the fill color and the style of the rectangle.

The following is an overview of the options available in the **General Properties** section of the Property View for the Rectangle object.

Outline	Foreground Color	Used to specify the color to be used for the outline of the Rectang object			
		[66]			

Width		Used to specify the width to be used for the outline of the Rectangle object in pixels
	Style	Used to specify the style to be used for the outline of the Rectangle object, which can be either None or Solid
	Foreground Color	Used to specify the foreground color of the Rectangle object
cill	Background Color	Used to specify the background color of the Rectangle object
	Style	Used to specify the pattern style of the Fill for the Rectangle object, which can be None (i.e., transparent), Solid, or Style1 to Style 52
Destendo	Style	Used to specify the style of the Rectangle object, which can be Right-angled, Round Rectangle, or Slice Rectangle
Rectangle	Adjust	Used to adjust the width and the height of the Rounded or Slice type Rectangle object

• See Section 8.5 Common Attributes for details about the others attributes of the Label object. Border (1), Glisten, Offset, Dynamic Size, Conditional Display, Position and Size, and Other.

8.1.2 Label

É.

The Label object can be used to add text to the screen. The attributes for the Label object, Label including the size and style of the font, as well as the alignment, can be adjusted as desired.

The text can be displayed in different languages based on the language of the current Operating System, see Section 11.3 Language for more details. See Chapter 8 Basic Object Usage for details of how to create an object.

After creating a Label object, the Property View panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the Label object.

Property View					Ŧ ×
E Label	Font	Calibri,12		Alignment	Top-Left 💽
Border	Foreground Color	0, 0, 0 💌	Background Color 255, 25	5, 255 💌	💌 Transparent
- Text Shadow	Label		L		~
Glisten					
Offset					
- Conditional Display					
Position and Size					
- Other					V

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• Generally Properties

The **General Properties** dialog box is used to configure the display style for the **Label** object, including the font for the text, the foreground and background color, and the alignment, etc.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Label** object.

Font	Used to specify the font style and size for the text that will appear on the Label object
Foreground Color	Used to specify the color of the text to be used for the Label object
Background Color	Used to specify the background color of the Label object
Alignment	Used to specify the position of the text within the border of the Label object
Transparent	Used to specify whether or not the background color will be shown as transparent when displayed on the screen
Label	Used to specify the text that will be displayed on the Label object

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Label object.
 <u>Border (1)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.1.3 Image (Picture)



The **Image** object can be used to add an image to the screen. The attributes for the **Image** object, including the size and alignment of the image, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Image** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Image** object.



• General Properties

The **General Properties** dialog box is used to load or clear an image that is displayed on the screen for the **Image** object, and to configure the size, alignment, and transparency, etc.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Image** object.

Load	Used to load an image from the Image Manager . See Section 11.4 Image Manager for more details.				
Clear	Jsed to clear the currently loaded image				
Auto Size	Used to specify whether or not the image should be automatically stretched to fit the size of the Image object				
Using Transparent	Used to specify whether or not the selected color will be shown as transparent when displayed on the screen				
Alignment	Used to specify the position of the image within the border of the Image object				

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Image object. <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Dynamic Size</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.1.4 Polygon



The **Polygon** object can be used to create a polygon shape on the screen. The attributes for the polygon, including the color, fill, and style, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

The process for creating a **Polygon** object is slightly different to that of other objects because you need to click the desired position on the Screen Design Area several times to create multiple paths. The polygon consists of four nodes, meaning that four paths will be created. After creating the position of the initial node, continue clicking to create the nodes for the other corners, and double-clicking the ending nodes to complete



create the nodes for the other corners, and double-clicking the ending nodes to complete the **Polygon** object. The polygon can be modified later by adjusting the position of an individual node.

After creating a **Polygon** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Polygon** object.

Property View					P ×
Polygon General Border Glisten Offset Dynamic Size Canditional Display	Outline Foreground Color Width Style	0, 128, 128 2 Solid	Fill Foreground Color Background Color Style	255, 128, 0 0, 192, 192	
- Conditional Display - Position and Size - Other					

• General Properties

The **General Properties** dialog box is used to configure the display style for the **Polygon** object, including the outline color and width, and the fill style of the polygon.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Polygon** object.

Outline	Foreground Color	Used to specify the color to be used for the outline of the Polygon object
	Width	Used to specify the width for the outline of the Polygon object in pixels
	Style	Used to specify the style for the outline of the Polygon object, which can be either None or Solid
	Foreground Color	Used to specify the foreground color of the Polygon object
Fill	Background Color	Used to specify the background color of the Polygon object
	Style	Used to specify the pattern style for the Fill for the Polygon object, which can be None (i.e., transparent), Solid, or Style1 to Style 52

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Polygon** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Dynamic Size</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.1.5 Circle



The **Circle** object can be used to create a circular shape on the screen. The attributes for the circle, including the color, width, and style, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Circle** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Circle** object.

Property View				Ŧ X
 □- Circle □- General □- Border □- Glisten □- Offset □- Dynamic Size □- Conditional Display □- Position and Size □- Other 	Outline Foreground Color Width Style	0, 192, 192 💉 3	Fill Foreground Color Background Color Style	255, 255, 0 ♥ 0, 192, 0 ♥ Style1 ♥

General Properties

The **General Properties** dialog box is used to configure the display style for the **Circle** object, including the outline color and width, and the fill style for the circle.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Circle** object.

Outline	Foreground Color	Used to specify the color to be used for the outline of the Circle object
	Width	Used to specify the width for the outline of the Circle object in pixels
	Style	Used to specify the style for the outline of the Circle object, which can be either None or Solid
Fill	Foreground Color	Used to specify the foreground color of the Circle
	Background Color	Used to specify the background color of the Circle object
	Style	Used to specify the pattern style for the Fill for the Circle object, which can be None (i.e., transparent), Solid, or Style1 to Style 52

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Circle** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Dynamic Size</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.1.6 Line



The **Line** object can be used to create a single line on the screen. The attributes for the line, including the color, width, and style, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Line** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Line** object.

Property View			₽ 🗙
 □ Line □ General □ Border □ Glisten □ Offset □ Dynamic Size □ Conditional Display □ Position and Size □ Other 	Outline Foreground Color Width Style	0, 0, 0 💉 5 🗘 Solid 👻	

General Properties

The **General Properties** dialog box is used to configure the display style for the **Line** object, including the outline color and width, and the style of the line.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Line** object.

Outline	Foreground Color	Used to specify the color to be used for the Line object
	Width	Used to specify the width of the Line object in pixels
	Style	Used to specify the style to be used for the Line object, which can be either None or Solid

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Line object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Dynamic Size</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.
8.1.7 Multi-Line



The **Multi-Line** object can be used to create an abstract shape on the screen. The attributes for the Multi-Line object, including the color, width, and style, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Multi-Line** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Multi-Line** object.

Property View			Ŧ ×
MultiLine General Glisten Offset Dynamic Size Conditional Display Position and Size	Outline Foreground Color Width Style	0, 0, 0 💌 1 🗘 Solid 💌	
- Other			

General Properties

The **General Properties** dialog box is used to configure the display style for the **Multi-Line** object, including the outline color and width, and the style of the multi-line shape.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Multi-Line** object.

Outline	Foreground Color	Used to specify the color to be used for the Multi-Line object
	Width	Used to specify the width of the Multi-Line object in pixels
	Style	Used to specify the style to be used for the Multi-Line object, which
	Julyic	can be either None or Solid

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Multi-Line** object.
 <u>Border (1), Glisten, Offset, Dynamic Size, Conditional Display, Position and Size</u>, and <u>Other</u>.

8.1.8 Calibration



The **Calibration** object is used in conjunction with the **Bar Graph** object to create a visual representation of calibration data. The attributes for the **Calibration** object, including the color and style of the Scale and the Values used on the Bar Graph can be adjusted as desired.

See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object. For more details related to the Bar Graph object, see <u>Section 8.2.8</u> Bar Graph.



After creating a **Calibration** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Calibration** object.

Property View		ŦΧ
 Calibration General Paramemters Border Glisten Offset Conditional Display Position and Size Other 	Scale Direction Right Line Width 2 2 Main Scale 4 2 192, 0, 0 192, 0, 0 Minor Scale 3 2 102, 102, 1 102, 102, 1 Show Perch Show Perch Show Perch Show Perch	

General Properties

The **General Properties** dialog box is used to configure the display style for the **Calibration** object, including the direction, and the color, width and intervals for the scales of the calibration.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Calibration** object.

Direction	Used to specify the direction of the scale, and can be set to Right, Up, Left, and Down
Main Scale	Used to specify the interval used for the main scale. The valid range is 2 to 100
Minor Scale	Used to specify the interval used for the minor scale. The valid range is 0 to 100
Line Width	Used to specify the width of the lines used for the scale in pixels
Main Color	Used to specify the color used for the main scale
Minor Color	Used to specify the color used for the minor scale
Show Perch	Used to enable whether the vertical axis is displayed for the scale

• Parameters Properties

The **Parameters Properties** dialog box is used to configure the attributes for the scale values of the **Calibration** object, including the maximum and minimum values, the maximum number of digits, and the color and font used for the text.

Paramemters					
Maximum	10	\$	Figure Length	2	\$
Minimum	0	0	Dot Position	0	\$
Text Color	0, 0, 0	*	Reverse		🕑 Display
Font	Tahoma,14.25				

The following is an overview of the options available in the **Parameters** section of the Property View for the **Calibration** object.

Maximum	Used to specify the maximum value for the calibration scale						
Minimum	Used to specify the minimum value for the calibration scale						
Figure Length	Used to specify the maximum number of digits that can be displayed for the values on the calibration scale. For example, if Maximum is set to 123, and the Figure Length is set to 2, the scale value will be displayed as 23. In this case, if the Display Length is set to 3 or above, the scale value will still be displayed as 123.						
Dot Position	Used to specify the position of the decimal point (for example, if Maximum is set to 10, the Figure Length is set to 2, and the Dot Position is set to 1, the scale value will be displayed as 1.0)						
Text Color	Used to specify the color used for the value displayed on the calibration scale						
Reverse	Used to specify whether or not the direction of the value displayed on the calibration scale should be reversed. For example, when reversed, the sequence $0 - 5 - 10$ will be displayed as $10 - 5 - 0$						
Display	Used to specify whether or not the value is to be displayed						
Font	Used to specify font style and size used for the text on the calibration scale						

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Calibration** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.1.9 Table



The **Table** object can be used in conjunction with all kinds of objects to display data in a table format. The attributes for the **Table** object, including the number of columns and rows to be included in the table, as well as the color and width of the border, can be adjusted as desired.

See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object. After creating a **Table** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Table** object.

Property View		₽ 🗙
□-Table	Format	Color
Border	Column Count 4	Border Color 0, 0, 0
Glisten	Row Count 3	
- Offset		Back Color 192, 255, 255
- Conditional Display	Distribute Columns Evenly	
- Position and Size	Distribute rows evenly	✓ Transparent
Other	Distribute rows evenly	

General Properties

The **General Properties** dialog box is used to configure the display style for the **Table** object, including the number of columns and rows, and the colors to be used for the table.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Table** object.

Column Count	Used to specify the number of columns in the table
Row Count	Used to specify the number of rows in the table
Distribute Columns Evenly	Used to evenly distribute the width of the columns
Distribute Rows Evenly	Used to evenly distribute the height of the rows
Border Color	Used to specify the color to be used for the border of the table
Back Color	Used to specify the background color to be used for the table
Transparent	Used to specify whether or not the background color will be set to transparent

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Table** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.2 General Objects

The **General** category of the Toolbox includes a variety of HMI objects that can be used to create and edit state images and text, text and numeric displays, date and time functions, and bar graphs and charts, etc., each of which are described in more detail in the following sections.

8.2.1 State Image



The **State Image** object can be used to graphically display a variable value using either an image or a text. The attributes for the State Image object, including the size and alignment of the image or text, can be adjusted as desired. See <u>Chapter</u> <u>8 Basic Object Usage</u> for details of how to create an object.

After creating a **State Image** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **State Image** object.

General
Cursor
🔄 State Image
State Text
88 Numeric
I Numeric Table
AI TextBox
7 Date
🕒 Time
🚽 Bar Graph
C Dial-Semicircle
Dial-Circle
Drop Down List
XY Chart
Connection View
🗢 Password List

Property View		Ŧ X
 StatePicture General Graph Text Border Text Shadow Glisten Offset Conditional Display Position and Size Other 	State Read Tag Format Value Text Font Calibri,12,Bold	

General Properties

The **General Properties** dialog box is used to configure the state variable to be used for the **State Image** object, as well as the format, together with the font and size for the text to be displayed. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

The following is an overview of the options available in the **General Properties** section of the Property View for the **State Image** object.

State	Read Tag	Used to specify which variable is used to read data For more details related to the usage of variables, see <u>Chapter 7 Variables</u> .											
	Format	Used to the stat	Used to specify the format that will be used to display the state value, as described below. Bit Index Value Value										
		<u>Boolea</u>	<u>n:</u>										
		If the v	If the variable value is equal to 0, the state value will be 0.										
		If the v	ariable	value	is not e	equal to	o 0, the	state v	/alue w	vill be 1			
		For exa the pict (See Gr	mple, ture or aph ar	if the v • text w nd Text	alue of ill be d Proper	a varia isplaye rties fo	able wh d depe r more	nich dat ends on details	a type the se)	is WOF tting of	RD (16-bit) is 32, state value 1.		
		State V	alue Ra	ange: 0	, 1								
		<u>Bit Inde</u> If the v If the v	<u>ex:</u> ariable ariable	e value e value	is equa is not e	il to 2 ⁿ , equal to	the sta o 2 ⁿ , no	ate valu o pictur	ie will e/text	be n. will be	displayed.		
		For exa	mple,	if the v	alue of	a varia	able wh	nich dat	a type	is BYTE	(8-bit) is 32 (i.e., 2	2 ⁵)	
		the pic	ture or	text w	ill be d	isplaye	d depe	nds on	the se	tting of	state value 5.	·	
		-	MSB							LSB			
			2 ⁷	2 ⁶	2 ⁵	2 ⁴	2 ³	2 ²	2 ¹	2 ⁰			
			0	0	1		0	0	0	0			
		State V	alue Ra	ange: 0	to 31								
		Value:											
		The var	iable v	alue is	the sta	ate valu	ie.						
		For exa the pict State V	For example, if the value of a variable which data type is DWORD (32-bit) is 32, the picture or text will be displayed depends on the setting of state value 32. State Value Range: 0 to 2147483647										
Toyt		Lisod to	sneci	fy the f	ont an	d size f	or the	tovt to	ho dicr	haved			

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• Graph Properties

The **Graph Properties** dialog box is used to configure the attributes for the state graphic used for the **State Image** object.

New	Remove	Template			
Image	Start	End	Property		
\odot	0	0	Auto Size Middle-	Center 💌	
	1	1	✓ Transparent 255, 0, 2	255 💌	
			Glisten None	~	
			Load Clear		

The following is an overview of the options available in the **Graph Properties** section of the Property View for the **State Image** object.

New	Used to add a new image item, and the double click the Image, Start, or End fie configure an image or state values	New Image	Remove Start 0 1 2	TemplateEnd012	
Remove	Used to remove the selected image iter	m(s)			
Template	 Used to add/open a template, or add a To create a user-defined state image 1. Click the Template button to go to the Select Graph Template dialog box. 2. Select one of image types from the Template drop-down menu. 	Select Graph Templ New Template C Template Lan State ICO State ICO Ima Ima Ima Swit Swit O001	the template Te ate open Template np 2 State N_M ye_L ge_M ge_S tp 2 State tch 2 State tch_L 0002	e. mplate	Rename Rename
	3. Click the Insert button to go to the Graph Edit dialog box. You can enter a name for this state image.	Insert	Delete Edi	t OK	Cancel
	[]	79]			



• Text Properties

The **Text Properties** dialog box is used to configure the attributes of the text used for the **State Image** object.

	New	Remove		
	Start	End	Text	Property
	0	0	ON	Foreground Color 255, 128, 0
	1	1	OFF	
				Background Color 0, 192, 0 🔛 Transparent
				Glisten Slow 💌
				Alignment Middle-Center 💌
				ON

The following is an overview of the options available in the **Text Properties** section of the Property View for the **State Image** object.

New	Used to add a new text item, and then you can double click the Start, End or Text field to configure state values or the text	NewRemoveStartEndText00ON11OFF22				
Remove	Used to remove the selected text item(s)					
Foreground Color	Used to specify the color to be used for th	ie text				
Background Color	Used to specify the color to be used for the background of the object					
Transparent	Used to specify whether or not the background color will be shown as transparent when displayed on the screen	Property Fore Color 255, 128, 0 Back Color 0, 192, 0 Glisten Slow Text Align Middle-Center On				
Glisten	Used to specify the Glisten speed for text based on state values					
Alignment	Used to specify the position of the text within the border of the object					
Text	Used to specify the text to be displayed. Click a text item and enter the text.					

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **State Image** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.2.2 StateText



The **State Text** object can be used to display a variable value using a text message. The attributes for the State Text object, including the size and style of the font, as well as the alignment, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **State Text** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **State Text** object.

Property View		Ψ×
 StateText General Text Border Text Shadow Glisten Offset Conditional Display Position and Size Other 	State Read Tag Format Value Text Font Calibri,12	

General Properties

The **General Properties** dialog box is used to configure the state variable to be used for the **State Text** object, as well as the format, together with the font and size for the text to be displayed. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

The following is an overview of the options available in the General Properties section of the Property View for the **State Text** object.

State	Read Tag	Used to specify which variable is used to read data For more details related to the usage of variables, , see <u>Chapter</u>	7 Variables
	Format	Used to specify the format that will be used to display the state value, as described below. Boolean: If the variable value is equal to 0, the state value will be 0. If the variable value is not equal to 0, the state value will be 1.	Value 💌 Boolean Bit Index Value
		[82]	

		For example, if the value of a variable which data type is WORD (16-bit) is 32, the text will be displayed depends on the setting of state value 1. (See Text Property for more details)											
State	State Value Range: 0, 1FormatBit Index: If the variable value is equal to 2 ⁿ , the state value will be n. If the variable value is not equal to 2 ⁿ , no text will be displayed For example, if the value of a variable which data type is BYTE the text will be displayed depends on the setting of state value MSBMSBLSB 2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0 00100000State Value Range: 0 to 31						ed. E (8-bit) is ie 5.	; 32 (i.e.,	2 ⁵)				
		Value:The variable value is the state value.For example, if the value of a variable which data type is DWORD (32-bit) is 32,the text will be displayed depends on the setting of state value 32.State Value Range: 0 to 2147483647											
Text	Font	Used to	o speci	fy the f	font an	d size f	or the ⁻	text to	be disp	blayed			

• Text Properties

The Text Properties dialog box is used to configure the attributes of the text used for the State Text object.

New	Remove		
Start	End	Text	Property
0	0	State Text	Foreground Color 0, 0, 0
			Background Color 192, 192, 0 💽 📄 Transparent
			Glisten None 💌
			Alignment Middle-Center 💌
			State Text

The following is an overview of the options available in the **Text Properties** section of the Property View for the **State Text** object.

New	Used to add a new text item, and then you can double click the Start, End or Text field to configure state values or the text Remove Start End Text 0 0 State Text 1 1					
Remove	Used to remove the selected text item(s)					
Foreground Color	Used to specify the color to be used for the text					
Background Color	Used to specify the color to be used for the background of the object					
Transparent	Used to specify whether or not the background color will be shown as transparent when displayed on the screen State Text State Text					
Glisten	Used to specify the Glisten speed for text based on state values					
Alignment	Used to specify the position of the text within the border of the object					
Text	Used to specify the text to be displayed. Click a text item and enter the text.					

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **State Text** object.
 <u>Border (1)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.2.3 Numeric



The **Numeric** object can be used to read/write the variable value, or convert the read value depends on the display Type. The attributes for the Numeric object, including the size and style of the font, as well as the alignment, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Numeric** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Numeric** object.

General Properties

The **General Properties** dialog box is used to configure the operating mode, the variable attributes, and the display format to be used for the **Numeric** object. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Numeric** object.

Operating Mode		Used to configure the operating mode of a variable, and can be set to "Read" or "Read / Write". Section		
Variable	Read	Used to specify the variable to be read		
	Write	Used to specify the variable to be write		
	Notify Variable	Used to specify the variable which used to display the state of data write. The state value of the variable will be set to 1 when a data write occurs.		

	Display Type	Used to specify the format to be used for the variable value. Five options are available: Decimal, Signed Decimal (i.e., the Read/Write data can be a positive or negative value), Octal, Hexadecimal, and BCD Code
	Display Length	Used to specify the number of digits that will be displayed
Format	Decimal Position	Used to specify the position of the decimal point (read from the right). E.g., when using a BYTE variable, the valid value range is 0 to 255. If the Decimal Position = 2, and the Display Type is Decimal, the valid range will become 0.00 to 2.55.
	Padding Zeros	Used to specify whether or not to add leading zeros to the insufficient number of digits. E.g., if the Display Length = 3, the result for a value of "55" will be displayed as "055".
	Use * to Show	Used to specify whether * will be displayed rather than the actual value. This is usually used for passwords or other sensitive information

For example, to add one **State Text** and three **Numeric** objects on the screen.

Read	### ### ##.#
State Text	Numeric (1) / Numeric (2) / Numeric (3)
General Properties:	General Properties:
Read Variable: Tag1 (Data Type: BOOL)	Operating Mode: "Read / Write"
	Read / Write Variable: Tag2 (Data Type: INT)
Text Properties:	Notify Variable: Tag1 (Data Type: BOOL)
To display "Read" if the state value is equal 0.	Display Type: Decimal / Signed Decimal / Hexadecimal
To display " Write " if the state value is equal 1 .	Display Length: 3
	Decimal Position: 0/0/1

If the Numeric (1) is set to **32**, i.e., 20 (Hex.), the **State Text** will be shown as **Write**, the **Numeric** (2) will be shown as **+32**, and the **Numeric** (3) will be shown as 2.0.



• Font Properties

The **Font Properties** dialog box is used to configure the attributes of the font used for the **Numeric** object.

Font					
Font	Tahoma,12		Alignment	Middle-Center	•
Foreground Color	0, 0, 0 💌	Background Color	192, 255, 255 💌	📃 Transparent	

The following is an overview of the options available in the **Font Properties** section of the Property View for the **Numeric** object.

Font	Used to specify the font and size used for the read value
Alignment	Used to specify the position of the read value within the border of the object
Foreground Color	Used to specify the color to be used for the read value
Background Color	Used to specify the color to be used for the background of the object
_	Used to specify whether or not the background color will be shown as transparent
Transparent	when displayed on the screen

Range Properties

The **Range Properties** dialog box is used to configure the maximum and minimum values and the alarm color for the **Numeric** object, which will be activated if the range of value is exceeded.

	Constant 💌	
💌 Enable	Constant	
Set Range	Variable	Exceed Max. Value
Maximum	Constant	Foreground Color 255, 255, 255
	0	Background Color 0, 0, 0
		Blow Min. Value Base Color Palette
Minimum	Constant 💌	Foreground Co
	0	Background C
		G O O
4	5 6 B E	
	2 3 C F	
0	Ent	ter Cancel

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The following is an overview of the options available in the **Range** section of the Property View for the **Numeric** object.

Set Range	Maximum	Used to specify the maximum value with a constant or a variable
	Minimum	Used to specify the minimum value with a constant or a variable
	Foreground Color	Used to specify the color to be used for the exceeding value
Exceed	Background Color	Used to specify the color to be used for the background of the object
Max. Value	Transparent	Used to specify whether or not the background color will be shown
		as transparent when displayed on the screen
Below Min. Value	Foreground Color	Used to specify the color to be used for the exceeding value
	Background Color	Used to specify the color to be used for the background of the object
	Transparent	Used to specify whether or not the background color will be shown
		as transparent when displayed on the screen

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Numeric** object. Border (1), Text Shadow, Glisten, Security, Offset, Conditional Display, Conditional Control, Position and Size, Keyboard, Event, and Other.

8.2.4 Numeric Table



The **Numeric Table** object can be used to read/write values of an array variable in a table format. The attributes for the **Numeric Table** object, including the number of columns and rows to be included in the table, as well as the color and width of the border, etc., can be adjusted as desired.

See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object. After creating a **Numeric Table** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Numeric Table** object.

Property View				×
Property View	Operating Mode Variable Display Type Display Length Decimal Position	Tag_7 ♥ ••• Decimal ♥ 3 ◊ 0 ◊	Data Fields Data Display Mode Horizontal Number of Columns 3 Number of Rows 2 Border Color 0, 0, 0	
Glisten Security Offset Conditional Display Conditional Control Position and Size Keyboard	Decimal Position	0 📦	Border Color 0, 0, 0 🕑 Distribute columns evenly Distribute rows evenly	
- Event - Other				

General Properties

The **General Properties** dialog box is used to configure the attributes for the variable to be used in the **Numeric Table** object and the display format for the data. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Numeric Table** object.

Operating	perating Variable	Used to specify an Array variable Note that if the data length of the variable is greater than "1",
Mode		it called Array Variable (see <u>Section 7.4</u> for more details)

		Used to specify the format to be used for the variable value
	Display Type	Five options are available:
		Decimal, Signed Decimal (i.e., the Read/Write data can be a
		positive or negative value), Octal, Hexadecimal, and BCD Code
	Display Length	Used to specify the number of digits that will be displayed
		Used to specify the position of the decimal point (read from the
	Decimal Position	right). E.g., when using a BYTE variable, the valid value range is 0
	Decimariosition	to 255. If the Decimal Position = 2, and the Display Type is
		Decimal, the valid range will become 0.00 to 2.55.
		Used to specify whether or not to add leading zeros to the
	Padding Zeros	insufficient number of digits. E.g., if the Display Length = 3, the
		result for a value of "55" will be displayed as "055".
	Read Only	Used to specify whether or not the variable is only for read data
		Used to specify the direction in which the array data is
	Data Display Mode	displayed:
		1: Display the data horizontally from left to right
		2: Display the data vertically from top to bottom
Column	Number of Columns	Used to specify the number of columns in the table
	Number of Rows	Used to specify the number of rows in the table
	Border Color	Used to specify the color for the border of the table
	Distribute Columns evenly	Used to equally distribute the width of the columns in the table
	Distribute Rows evenly	Used to equally distribute the height of the rows in the table

In this case, we configure the "Tag_5" as an Array variable, the data length is **4**, and the data type is Byte.

Operating Mode	Data Fields
Variable Tag_5	Data Display Mode 🛗 Horizontal 💌
Display Type Decimal 💌	Number of Columns 3
Display Length 3	Number of Rows 2
Decimal Position 1	Border Color 192, 64, 0 💌
💌 Padding Zeros	Distribute columns evenly
Read Only	Distribute rows evenly

Note that you can write data in the range of 0.0 to 25.5 in the numeric table.



 Font Style Properties
 The Font Style Properties dialog box is used to configure the attributes of the text used for the Numeric Table object.

The following is an overview of the options available in the Font Style Properties section of the Property View for the Numeric Table object.

Font		
Font Style	Tahoma,12	
Alignment	Middle-Center	•
Fore Color	0, 0, 0	~
Background Color	255, 255, 255	•
	Back Transparent	

Font Style	Used to specify the font and size used for the read value in the table
Alignment	Used to specify the position of the read value within the border of the object
Fore Color	Used to specify the color to be used for the read value in the table
Background Color	Used to specify the color to be used for the background of the object
	Used to specify whether or not the background color will be shown as transparent
Back Transparent	when displayed on the screen

Range Properties

The **Range Properties** dialog box is used to configure the maximum and minimum values and the alarm color for the **Numeric Table** object, which will be activated if the range of value is exceeded.

💌 Enable	Constant 🛛 👻		
Range	Constant		
Maximum	Variable	Exceed Max. Value	
Consta	nt 🕑	Foreground Color 255, 255, 255	
0	•	Background Color 0, 0, 0	
Minimum		Below Min. Value Base Color Palette	_
Consta	nt 💌	Foreground Colc	
0		Background Cold	•
78	9 A D		
4 5	0 B E 3 C F		
0	Ent	iter	

The following is an overview of the options available in the **Range** section of the Property View for the **Numeric Table** object.

Set Range	Maximum	Used to specify the maximum value with a constant or a variable
	Minimum	Used to specify the minimum value with a constant or a variable
	Fore Color	Used to specify the color to be used for the exceeding value
Exceed	Back Color	Used to specify the color to be used for the background of the object
Max. Value	Back Transparent	Used to specify whether or not the background color will be shown
		as transparent when displayed on the screen
Below Min. Value	Fore Color	Used to specify the color to be used for the exceeding value
	Back Color	Used to specify the color to be used for the background of the object
	Back Transparent	Used to specify whether or not the background color will be shown
		as transparent when displayed on the screen

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Numeric Table object. Border (1), <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Keyboard</u>, <u>Event</u>, and <u>Other</u>.

8.2.5 Text Box



The **Text Box** object can be used to display or input a variable value as an ASCII character. The attributes for the **Text Box** object, including the size and style of the font, as well as the alignment, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Text Box** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Text Box** object.

Property View		Ŧ×
 □ TextBox □ General □ Text □ Border □ Text Shadow □ Glisten □ Offset □ Conditional Display □ Position and Size □ Keyboard □ Other 	General Variable Tag_5 Update Mode Data change Ubse * to show Allow Input	Data Format Character Length 1 Byte Storage Order of Multi-byte Data AB-Storage from High byte.

General Properties

The **General Properties** dialog box is used to configure the update mode and data format of the variable used for the **Text Box** object. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Text Box** object.

	Variable	Used to specify the access variable to be used, which can also be an array variable	
General	Update Mode	Used to specify the update mode, where: 1: Change data 2: Bit detonate (Rising Edge) $(0 \rightarrow 1)$ 3: Bit detonate (Falling Edge) $(1 \rightarrow 0)$ 4: Bit state change (Rising/Falling Edge) $(0 \rightarrow 1 \text{ or } 1 \rightarrow 0)$	
	Use * to Show	Used to specify whether or not * will be displayed rather than the actual value. This is usually used for passwords or other sensitive information.	
	Allow Input	Used to specify whether or not input functions are enabled	

	Character Length	Used to specify th	e amount of i	memory occup	ied by each chara	cter
		Used to specify the storage order of multi-byte data, where:				
		AB : Big Endian				
		The value will be s	stored from th	ne High byte to	the Low byte.	
			- /T			
		E.g., if the variable (Type=Word, Length=1) value is 4142 (Hex), and the character length is set to 1 Byte, the order that the value will be stored in the memory is $41_{(Hex)}$, $42_{(Hex)}$.				
		The read data for	this object wi	II be AB _(ASCII)		
		Variable Value	Memory	Address	TextBox Value	
		41 42	E.g. 1000	E.g. 1001	ABusen	
		41 4∠(Hex)	41 (Hex)	42 _(Hex)	AD(ASCII)	
		In this case, if the	character len	gth is set to 2 I	Byte, the read dat	a for
Data		this object will be	$\boldsymbol{A}_{(\text{ASCII})}.$ If you	write data to t	his object, e.g., C ₍	ASCII),,
Format	Storage Order of	the value will be 4	1300 _(Hex)			
	Multi-byte Data	BA: Little Endian				
		The value will be stored from the High byte to the Low byte.				
		E.g., if the variable (Type=Word, Length=1) value is 4142 $_{(Hex)}$, and the character length is set to 1 Byte, the order that the value will be stored in the memory is $42_{(Hex)}$, $41_{(Hex)}$.				
		The read data for this object will be BA _(ASCII)				
		Variable Value	Memory Address		TextBox Value	
		41.42	E.g. 1000	E.g. 1001	D.A	
		41 42 (Hex)	42 (Hex)	41 _(Hex)	BA(ASCII)	l
		In this case, if the this object will be the value will be 0	character len B _(ASCII) . If you 0043 _(Hex)	gth is set to 2 I write data to t	Byte, the read data his object, e.g., C ₍	a for ASCII), ,

times The formula for the maximum character length to be displayed and the input is as follows:

The maximum character length = the Variable length (in Bytes) / the Character length (in Bytes)

The Variable length = the Type length of the variable * the Array length of the Variable

Text Properties

The **Text Properties** dialog box is used to configure the attributes of the text used for the **Text Box** object.

Text	
Font Tahoma,12	•
Alignment Middle-Center	•
Foreground Color 0, 0, 0	
Background Color 255, 255, 255	•
💌 Transparent	

The following is an overview of the options available in the **Text Properties** section of the Property View for the **Text Box** object.

Font	Used to specify the font and size used for the read value in the table	
Alignment	Used to specify the position of the read value within the border of the object	
Foreground Color	Used to specify the color to be used for the read value in the table	
Background Color	Used to specify the color to be used for the background of the object	
	Used to specify whether or not the background color will be shown as transparent	
Transparent	when displayed on the screen	

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Text Box** object.
 <u>Border (1)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, <u>Keyboard</u>, and <u>Other</u>.

8.2.6 Date



■ The **Date** object can be used to display the current system date. The attributes for yyyy/mm/dd 📮 the Date object, including the size and style of the font, as well as the alignment, can be adjusted as desired.

See Chapter 8 Basic Object Usage for details of how to create an object. After creating a Date object, the Property View panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the Date object.

Property View			₽ 🗙
 DisplayDate General Border Text Shadow Glisten Offset Conditional Display Position and Size Other 	General Format Alignment Font	yyyy/mm/dd Middle-Center Tahoma,12	 ✓ Foreground Color 0, 0, 0 ✓ Background Color 255, 255, 255 ✓ ✓ Transparent

General Properties

The General Properties dialog box is used to configure the display format for the Date object, including the font and colors, etc.

The following is an overview of the options available in the General Properties section of the Property View for the Date object.

Format	Used to specify the format used to display the date, where: 1: yyyy/mm/dd (Year, Month, Day) 2: dd/mm/yyyy (Day, Month, Year) 3: mm/dd/yyyy (Month, Day, Year)
Alignment	Used to specify the position of the Date text within the border of the object
Font	Used to specify the style and size of the font used for the Date text
Foreground Color	Used to specify the color to be used for the Date text
Background Color	Used to specify the color to be used for the background of the Date object
Transparent	Used to specify whether or not the background will be set to transparent

See Section 8.5 Common Attributes for details about the others attributes of the Date object. Border (1), Text Shadow, Glisten, Offset, Conditional Display, Position and Size, and Other.

8.2.7 Time



The **Time** object can be used to display the current system time. The attributes for the Date object, including he size and style of the font, as well as the alignment, can be adjusted as desired.

See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object. After creating a **Time** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Time** object.

Property View		₽ 🗙
 □ DisplayTime □ General □ Border □ Text Shadow □ Glisten □ Offset □ Conditional Display □ Position and Size □ Other 	General Format HH:MM v Alignment Middle-Center v Font Tahoma,12 v	Foreground Color 0, 0, 0 Background Color 255, 255, 255 Transparent

General Properties

The **General Properties** dialog box is used to configure the display format for the **Time** object, including the font and colors, etc.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Time** object.

	Used to specify the format used to display the time, where:
Format	1: HH:MM (Hours : Minutes)
	2: HH:MM:SS (Hours : Minutes : Seconds)
Alignment	Used to specify the position of the Time text within the border of the object
Font	Used to specify the style and size of the font used for the Time text
Foreground Color	Used to specify the color to be used for the Time text
Background Color	Used to specify the color to be used for the background of the Time object
Transparent	Used to specify whether or not the background will be set to transparent

• See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Time** object. <u>Border (1), Text Shadow, Glisten, Offset, Conditional Display, Position and Size</u>, and <u>Other</u>.

8.2.8 Bar Graph

The **Bar Graph** object can be used to display a variable value as a bar graph. The attributes for the Bar Graph object, including the size and style of the font, as well as the alignment, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.



After creating a **Bar Graph** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Bar Graph** object.

Property view		🕂 🕹 🗶
 BarGraph General Range 	Variable Read	Bar Graph Orientation Up
- Alert - Border - Glisten	Fill	Fill
- Offset - Conditional Display - Position and Size	Foreground Color 0, 0, 0 Background Color 255, 255, 255 Style Solid	Background Color 255, 255, 255 Style

General Properties

The **General Properties** dialog box is used to configure the variable attributes and format for the **Bar Graph** object, including the font and colors, etc. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Bar Graph** object.

Variable	Read	Used to specify the variable to be read
Bar Graph Orientation	Orientation	Used to specify the orientation of the bars in the Bar Graph and can
	Onentation	be Up, Down, Left, or Right

Fill (Set Filled Region)	Foreground Color	Used to specify the base color and the palette to be used for the foreground color of the filled region
	Background Color	Used to specify the base color and the palette to be used for the background of the filled region
	Style	Used to specify the style of the fill
Fill	Foreground Color	Used to specify the base color and the palette to be used for the foreground color of the unfilled region
(Set Unfilled Region)	Background Color	Used to specify the base color and the palette to be used for the background of the unfilled region
	Style	Used to specify the style of the fill

Fill	Fill	
Foreground Color 0, 0, 0	Foreground Color	0, 0, 0
Background Color 255, 255, 255 💌	Background Color	Base Color Palette
Style Solid 💌	Style	
		R O O G O O B O O

• Range Properties

The **Range Properties** dialog box is used to configure the maximum and minimum values of the scales used for the **Bar Graph** object by using the constant or the variable. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

Set Range				
Maximum	Constant	•	100	•
Minimum	Constant	•	0	•
	Constant	-		
	Variable			

Cancel

The following is an overview of the options available in the **Range Properties** section of the Property View for the **Bar Graph** object.

Maximum	Used to specify the maximum value for the Bar Graph scale
Minimum	Used to specify the minimum value for the Bar Graph scale

• Target Properties

The **Target Properties** dialog box is used to configure the target value and the line style for the **Bar Graph** object.

	💌 Enable			
Set Target	Set Target		Outline	
Target Variable	 Target 	Constant 💌 O	Foreground Color Width Style	255, 255, 255 💌 1 🗘

The following is an overview of the options available in the **Target Properties** section of the Property View for the **Bar Graph** object.

Set Target	Target	Used to specify the way to set the target value, and can be set to	
		Constant or Variable	
	Value	Used to specify a value or a variable as a target value	
Outline	Foreground Color	Used to specify the color to be used for the target line	
	Width	Used to specify the width to be used for the target line	
	Style	Used to specify the style to be used for the target line	

Alert Properties

The **Alert Properties** dialog box for the **Bar Graph** object is used to configure the alert range and the display style of the object if the maximum or minimum value of Alert is exceeded.

Enable			E.g., if the read value is 100,
Alert Kalige			the Bar Graph will be
Maximum	Constant 🕑 🤉	0	displayed as the figure below:
Minimum	Constant 💌 3	0	Tag_1
Alert maximum		Alert minimum	100
Fill		Fill	
Foreground Color Background Color	255, 224, 192 💌	Foreground Color 0, 192, 192 Background Color 0, 128, 128	← 90 ← 60 (Target Line)
			4 -30
Style	💥 Style52 💌	Style Style9	

The following is an overview of the options available in the **Alert Properties** section of the Property View for the **Bar Graph** object.

	Maximum	Used to specify the maximum value for the Alert Range
Set Alert Range	Minimum	Used to specify the minimum value for the Alert Range
	Foreground Color	Used to specify the foreground color be displayed when the maximum alert value is exceeded
Alert Maximum	Background Color	Used to specify the background color be displayed when the maximum alert value is exceeded
	Style	Used to specify the style of the fill
	Foreground Color	Used to specify the foreground color be displayed when the minimum alert value is exceeded
Alert Minimum	Background Color	Used to specify the background color be displayed when the minimum alert value is exceeded
	Style	Used to specify the style of the fill

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Bar Graph** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.2.9 Dial-Semicircle / Dial-Circle

The **Circular/Semicircular Dial** object can be used to graphically display a variable value as either a circular or a semicircular Dial- meter. The attributes for the Circular/Semicircular Dial object, including the size and style of the font, as well as the alignment, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.



After creating a **Circular/Semicircular Dial** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Circular/Semicircular Dial** object.

Property View					Ŧ ×
□- CircleDial	General			Semicircular Di	ial
General	Read Variable				
Value	Redu Valiable		×		
Block	Meter			Fill	
Border	Matar Chila	Maior Carlo	E	Foreground Color	102 102
Glisten	Meter Style	Major Scale	J 🔽	Foreground Color	, 192, 192
Offset	Orientation	Down 📉 Minor Scale	5 🗘	Background Color 2	55, 255, 255 💌
Conditional Display	Indicator Color	255, 💌 Scale Color	255, 💌	Style	Solid 💌
Other					
	Note that the Po	sition attribute can e	nly ho sot f	or a somicirclo sty	
	Note that the Pos	sition attribute can d	only be set to	or a semicircle sty	ie

Property View		
□- CircleDial1	General	Circular Dial
General	Read Variable	
Value		
Block	Meter	Fill
Border	Notes Style	Foreground Calar 0, 102, 0
Glisten		Foreground Color 0, 192, 0
Offset	Minor Scale 3	Background Color 255, 255, 255 💌
Conditional Display Position and Size	Indicator Color 255, 💌 Scale Color 255, 💌	Style Solid 💌
Other		

• General Properties

The **General Properties** dialog box is used to configure the variable attributes and style to be used for the meter of the **Circular/Semicircular Dial** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Circular/Semicircular Dial** object.

General	Read Variable	Used to specify the variable to be read. For more details related to the usage of variables, see <u>Chapter 7 Variables</u> .		
Meter	Meter Style			
	Orientation	Used to specify the base position of the meter: Left, Right, Up, Down Note that the Position parameter can only be set for a semicircle style dial		
	Indicator Color	Used to specify the color of the indicator		
	Major Scale	Used to specify the interval used for the main scale		
	Minor Scale	Used to specify the interval used for the minor scale		
	Scale Color	Used to specify the color to be used for the scales		
	Foreground Color	Used to specify the base color and the palette to be used for the foreground color		
Fill	Background Color	Used to specify the base color and the palette		
	Style	Used to specify the style of the fill, and can be selected from: None, Solid, and Style1 to Style52		

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• Value Properties

The **Value Properties** dialog box is used to configure the values to be displayed for the scale of the meter together with the format.

Value		
Maximum	Constant 💌 100	Display Length 3
Minimum	Constant 💌 0	Decimal Position 0
Font	Constant	
Font Color	255, 255, 255 💌 📃 Reverse	🕑 Display

The following is an overview of the options available in the **Value Properties** section of the Property View for the **Circular/Semicircular Dial** object.

Maximum	Used to specify the maximum value for the scale with a constant or a variable
Minimum	Used to specify the minimum value for the scale with a constant or a variable
Display Length	Used to specify the number of digits that will be displayed
	Used to specify the position of the decimal point (read from the right).
Decimal Position	E.g., if the Display Length = 3 and the Decimal Position = 1, then the displayed value
	"100" (or 50) will be shown as "10.0" (or 5.0)
Font	Used to specify the type and size of the font to be used for the scale value
Font Color	Used to specify the color of the font to be used for the scale value
Reverse	Used to specify that the value will be shown in reverse order
Display	Used to specify whether or not the values will be displayed

• Block Properties

The **Block Properties** dialog box is used to configure a meter block and its style. Note that a maximum of five blocks can be configured.

	Block				
	Numb	er of Blocks 3	•		
	Block	End Value	Foreground Color	Background Color	Style
25 ⁵⁰ 75	1:	25	0, 192, 0 🕑	255, 255, 255 💌	Solid 💌
	2:	75	255, 128, 0 💌	255, 255, 128 💌	IIII Style29 💌
	3:	100	255, 0, 0 🛛 👻	255, 255, 255 💌	Solid 💌
<u></u>					

The following is an overview of the options available in the **Block Properties** section of the Property View for the **Circular/Semicircular Dial** object.

Number of Blocks	Used to specify the number of blocks to be used for the meter
Block End Value	Used to specify the ending value for the color-coded blocks
Foreground Color	Used to specify the foreground color of the fill style to be used for the block
Background Color	Used to specify the background color of the fill style to be used for the block
Style	Used to specify the style of the fill

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Circular/Semicircular
 Dial object. <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.2.10 Drop Down List



The Drop-down List object can be used to display a prescribed number of variable values as a drop-down list. The attributes for the Drop-down List object, including the size and style of the font, as well as the alignment, can be adjusted as desired. See Chapter 8 Basic Object Usage for

details of how to create an object.

After creating a **Drop-down List** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Drop-down List** object.

Property View			₽×
□ DropDownList	Variable		Drop-down List
General			
State	Read Tag	Tag_2	Font Tahoma,12
Border	Write Tag	Tag_2	Background Color 0, 0, 0
Glisten			
Offset	Write Notify Tag	Tag_3 💌 😶	Select
- Conditional Display	State Format	Value 💌	Foreground Color 255, 255, 255 💌
- Conditional Control			
Position and Size	Item Count	3	Background Color 192, 0, 0
Other			

General Properties

The General Properties dialog box is used to configure the variables and the state values to be used for the Drop-down List object, together with the attributes such as font, size and color for the text to be displayed. For more details related to the usage of variables, see Chapter 7 Variables.

The following is an overview of the options available in the General Properties section of the Property View for the Drop-down List object.

	Read Tag	Used to specify which variable is used to read da	ata				
Variable	Write Tag	Used to specify which variable is used to write data					
	Write Notify Tag	Used to specify the write notification variable and set it to 1.					
	For more details related to the usage of variables, see <u>Chapter 7 Variables</u> .						
		Used to specify the format that will be used to	Value 💌				
		display the state value, as described below.	Boolean Bit Index				
	State Format	Boolean:	Value				
		If the variable value is equal to 0, the state value will be 0.					
		If the variable value is not equal to 0, the state value will be 1.					
		[106]					

For example, if the value of a variable which data type is WORD (16-bit) is 32, the text will be displayed depends on the setting of state value 1. (See **State Property** for more details)

State Value Range: 0, 1

Bit Index:

Variable

If the variable value is equal to 2^n , the state value will be n. If the variable value is not equal to 2^n , no text will be displayed.

For example, if the value of a variable which data type is BYTE (8-bit) is 32 (i.e., 2^5), the text will be displayed depends on the setting of state value 5.

	State Format	MSB							LSB	
		2 ⁷	2 ⁶	2 ⁵	2 ⁴	2 ³	2 ²	2 ¹	2 ⁰	
		0	0	1	0	0	0	0	0	
		State Value Ra	ange: 0	to 31						
		Value:								
		The variable v	alue is	the sta	ate valu	ie.				
		For example,	if the v	alue of	a varia	able wł	nich dat	ta type	is DW0	ORD
		(32-bit) is 32,	the te	kt will b	e displ	ayed d	epends	s on the	e settin	g of
		state value 32	2.							
		State Value Ra	ange: 0	to 214	74836	47				
	Item Count	Used to speci drop-down lis	fy the r st (e.g.,	numbe 3)	r of vis	ible rov	ws to b	e show	n first i	n the
Drop-down	Font Used to specify the font drop-down list		font and size for the text to be displayed in the					n the		
List	Background Color	Used to specify the color to be used for the background of the drop-down list								
Select	Foreground Color	Used to speci the selected i	fy the o tem in	color of the dro	f the te op-dow	xt to b ın list	e used	for	Item2 Item	
	Background Color	Used to speci be used for th	fy the one seleo	color of	f the ba m in th	ackgrou ne drop	und to o-down	list	Item2 Item3	

• State Properties

The State Properties dialog box is used to configure the state display and the text for the drop-down list.

New 👇	Remove		
Start	End	Text	Property
0 1	0	Item Item2	Foreground Color 255, 255, 255
2	2	Ļ	Background Color 0, 192, 0 🕥 📄 Transparent
			Glisten None 💌
			Alignment Middle-Center 💌

The following is an overview of the options available in the **State Properties** section of the Property View for the **Drop-down List** object.

New	Used to add an item, and then you can set the text to be displayed when the
	valiable value meets the start/ End values.
Remove	Used to remove the selected item
Foreground Color	Used to specify the text color, e.g., "Item3" as the figure
Background Color	Used to specify the color to be used for the background of the text
Transparent	Used to specify whether or not the background color will be shown as transparent when displayed on the screen
Glisten	Used to specify the Glisten speed for the selected item
Alignment	Used to specify the position of the text within the border of the object

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Drop-down List** object. <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, and <u>Other</u>.
8.2.11 Trend Graph (XY Chart)



The **Trend Graph** object can be used to display a range of variable values as a Trend Graph. The attributes for the Trend Graph object, including the size and style of the font, as well as the color, can be adjusted as desired. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Trend Graph** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Trend Graph** object.

Property View		₽ ×
 □- TrendGraph □- General □- Limit Line □- X Axis Property □- Y Axis Property □- Y Axis Property □- Curve □- Border □- Glisten □- Offset □- Conditional Display □- Position and Size □- Other 	Distance Up 5 0 Right 5 0 Down 5 0	X/Y Chart Grid Color 65, 78, 255 B.G. Color 255, 255, 205 Font Calibri,9,Bold Text Color 0, 128, 128

General Properties

The **General Properties** dialog box is used to configure the display format for the trend graph.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Trend Graph** object.

Distance (pixels)	Used to specify the up/down/left/right margin for the trend graph
Grid Color	Used to specify the color of the grid lines for the trend graph
B.G. Color	Used to specify the color of the background to be used for the trend graph
Font	Used to specify the type and size of the font to be used for the text on the trend graph
Text Color	Used to specify the color of the text for the trend graph

• Limit Line Properties



The **Limit Line Properties** dialog box is used to configure maximum and minimum limits for the trend graph, including the limit value based on either a constant or a variable, the width of the line and the color. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

Max. Limit		Min. Limit	
💌 Use		💌 Use	
	Constant	14-1	Constant 20
Value	Constant 💌 80 🔍	Value	
Line Width	2	Line Width	2 Constant
	-		Variable
Line Color	255, 0, 0 🔛	Line Color	255, 255, 0 💌

The following is an overview of the options available in the Limit Line Properties section of the Property View for the Trend Graph object.

	Value	Used to specify the upper limit for the y-axis of the trend graph			
Max. Limit Line	Line Width	Used to specify the width of the line in pixels			
	Line Color	Used to specify the color of the line to indicate the maximum limit			
	Value	Used to specify the lower limit for the x-axis of the trend graph			
Min. Limit Line	Line Width	Used to specify the width of the line in pixels			
	Line Color	Used to specify the color of the line to indicate the minimum limit			

• X-axis Properties

The **X-axis Properties** dialog box is used to configure the title, the label, the major and minor scale, and the grid lines for the X-axis of the **Trend Graph** object.

Title			Major So	cale	Minor So	cale
💌 Use	Name	TitleName	💌 Use		💌 Use	
Label			Count	4	Count	4
✓ Use			Color	255, 0, 0 🛛 👻	Color	0, 0, 192 🛛 🛃
Max.	Constant	300 🗘	Grid		Grid	
Min.	Constant	0	💌 Use	Grid Line	💌 Use	Grid Line
			Style	······ Dash Line 🖌	Style	Dash Line 💌
Value Length	3		Width	1	Width	1
Decimal Position	1		Color	255, 0, 0 💌	Color	0, 0, 192 🔛

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The following is an overview of the options available in the X-axis Properties section of the Property View for the Trend Graph object.



Title	Name	Used to specify a title for the X-axis		
	Max	Used to specify the maximum value to be displayed for the X-axis		
	Min	Used to specify the minimum value to be displayed for the X-axis		
Label	Value Length	Used to specify the number of digits that will be displayed		
	Decimal Position	Used to specify the position of the decimal point (read from the right). E.g., if the Display Length = 3, and the Decimal Position = 1, then the value "300" will be displayed as "30.0"		
	Count	Used to specify the interval to be used for the major scale of the X-axis		
wajor Scale	Color	Used to specify the color to be used for the major scale of the X-axis		
Minor Scolo	Count	Used to specify the interval to be used for the minor scale of the X-axis		
	Color	Used to specify the color to be used for the minor scale of the X-axis		
	Use Grid Lines	Used to specify whether or not grid lines should be displayed for the major scale of the X-axis		
Grid	Style	Used to specify the style of the grid to be used for the major scale of the X-axis		
(Major Scale)	Width	Used to specify the width of the grid lines to be used for the major scale of the X-axis		
	Color	Used to specify the color of the grid lines to be used for the major scale of the X-axis		
	Use Grid Lines	Used to specify whether or not grid lines should be displayed for the minor scale of the X-axis		
Grid	Style	Used to specify the style of the grid to be used for the minor scale of the X-axis		
(Minor Scale)	Width	Used to specify the width of the grid lines to be used for the minor scale of the X-axis		
	Color	Used to specify the color of the grid lines to be used for the minor scale of the X-axis		

• Y-axis Properties

The **Y-axis Properties** dialog box is used to configure the title, the label, the major and minor scale, and the grid lines for the Y-axis of the **Trend Graph** object.

Title			Major Sc	ale	Minor Sc	ale
💌 Use	Name	TitleName	💌 Use		💌 Use	
Label			Count	6	Count	1
✓ Use			Color	255, 0, 0 🛛 🛃	Color	0, 0, 192 🛛 👻
Max.	Constant	100	Grid		Grid	
Min.	Constant	0	💌 Use (Grid Line	💌 Use G	Grid Line
			Style	······ Dash Line 🛛 🖌	Style	— Solid Line 💌
Value Length	4		Width	1	Width	1
Decimal Position	0		Color	255, 128, 0	Color	0, 128, 128 🛛 💌

The following is an overview of the options available in the Y-axis Properties section of the Property View for the Trend Graph object.



Title	Name	Used to specify a title for the Y-axis
	Max	Used to specify the maximum value to be displayed for the Y-axis
	Min	Used to specify the minimum value to be displayed for the Y-axis
Label	Display Length	Used to specify the number of digits that will be displayed
	Decimal Position	Used to specify the position of the decimal point (read from the right). E.g., if the Display Length = 4, and the Decimal Position = 1, then the value "100" will be displayed as "10.0"
Major/Minor	Count	Used to specify the interval to be used for the Major/Minor scale of the Y-axis
Scale Color		Used to specify the color to be used for the Major/Minor scale of the Y-axis
	Use Grid Lines	Used to specify whether or not grid lines should be displayed for the Major/Minor scale of the Y-axis
Grid	Style	Used to specify the style of the grid to be used for the Major/Minor scale of the Y-axis
(Major/Minor Scale)	Width	Used to specify the width of the grid lines to be used for the Major/Minor scale of the Y-axis
	Color	Used to specify the color of the grid lines to be used for the Major/Minor scale of the Y-axis

Curv	e Properties			I	100	
The	Curve Properties dia	log box allows	the attributes and s	tyle used		
to di	splay the curve for th	ne Trend Grap l	h object to be config	ured,	Ž 50- / \ / \ /	N/II-
and i	s based on a variable	e. For more de	tails related to the u	sage of		 *
varia	bles, see <u>Chapter 7 \</u>	<u>/ariables</u> .			0 150	300
	Current				_	····· f
	Curve					
	Add Delete	Variable	Tag_2	••••		
	Serial No	Line		Point		
	1 2	Graphic Styl	e Sawtooth Line 🛛 💌	Style	Solid Square 💌	
		Style	— Solid Line 🛛 👻	Heigth	6	
		Width	1	Width	6	
		Color	0, 192, 0 💌	Color	0, 192, 192 💌	

The following is an overview of the options available in the **Curve Properties** section of the Property View for the **Trend Graph** object.

Add		Used to add a curve to the trend graph (e.g., No.3, No.4, etc.)		
Delete		Used to remove one or more curve from the trend graph		
Variable		Used to specify the variable to be used for the curve. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>		
	Graphic Style	Used to specify the style to be used for the curve, and can be selected from: Curve, Sawtooth Line, or Bar Chart		
Line Set	Style	Used to specify the line style to be used for the curve, and can be selected from: Solid Line or Dash Line		
	Width	Used to specify the width to be used for the curve		
	Color	Used to specify the color to be used for the curve		
	Style	Used to specify the style to be used for the trace point		
	Height	Used to specify the height to be used for the trace point		
Point Set	Width	Used to specify the width to be used for the trace point		
	Color	Used to specify the color to be used for the trace point		

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Trend Graph** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.2.12 Connection View (Available soon)

The **Connection View** object can be used to display connection data that allows the status of the connection to be monitored and controlled. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Connection View** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured.

No.	Name	Com Port	State	
 0	Connect1	сом1	On Line	
1	Connect2	COM1	On Line	þ
 2	Connect3	COM1	On Line	
 3	Connect4	COM1	On Line	

The following is a description of how to configure the properties for the **Connection View** object.

Property View		Ŧ×
 □- ConnectView General Column Border Glisten 	General Row Height 26 Font Calibri,12	Main Text Color 255, 255, 💌 Background Color 64, 64, 64
- Authority Level - Offset - Conditional Display - Position and Size - Other	Column Title Text Color 255, 255, • Background Color 255, 128, 0 •	Select Text Color 0, 0, 0 Background Color 0, 192, 192

General Properties

The **General Properties** dialog box is used to configure the display format for the **Connection View** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Connection View** object.

General	Row Height	Used to specify the height of the table row
	Font	Used to specify the type and size of the font to be used for the text
Column	Text Color	Used to specify the color of the text to be used for the title
Title	Background Color	Used to specify the color of the background to be used for the title
Main	Text Color	Used to specify the color of the text to be used for the list data
	Background Color	Used to specify the color of the background to be used for data cells

Select	Text Color	Used to specify the color to be used for the list data text when it has been selected		
	Background Color	Used to specify the color of the background of the data cell when it has		
		been selected		

Column Properties

The Column Properties dialog box is used to configure the attributes of the data table for the **Connection View** object, including the number of columns, the width, and the format.

Column						
Add	Delete	Up Dow	/n	The column	i data d f 5	
Serial No 🛆	Name	Column Tyoe		Name	Test	
1	No.	Row Order				
2	Name	Connect Name	=	Format	Row Order	*
3	Com Port	Com Port Name				
4	State	Connect State		Width	50	•
> 5	Test	Row Order	~			

The following is an overview of the options available in the Column Properties section of the Property View for the Connection View object.

	Add	Used to add a specific column to the data table
	Delete	Used to delete a specific column from the data table
Column		Used to move the selected row up, i.e., move the specific column to the
Column	ΟÞ	left in the data table
	Down	Used to move the selected row down, i.e., move the specific column to
		the right in the data table
	Name	Used to specify name for the column, which will be used for the column
		headings in the data table
Column Data	F	Used to specify the format of the column, and can be selected from:
	Format	Row Order, Connection Name, COM Port, and Connection State.
	Width	Used to specify the width of the column

• See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the object. Border (1), Glisten, Offset, Authority Level (Security), Conditional Display, Position and Size, and Other.

8.2.13 Password List

The **Password List** object can be used to display a list of passwords for the specific authority level that has been configured in the Password screen, and can also be edited in real-time. Only passwords for the current and lower level(s) relative the authority level of the current user will be displayed. Passwords for higher level(s) will not be shown in the list. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

	Password	Rule
1	123	9
2	AC5	0
3		0
4	\$Lk3	0
5		0
6		0
7		0
8		0
9		0
10		0
· · · · · ·		

After creating a **Password List** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Password List** object.

Property View				
Password View Conoral	Column Width	Text		
Border	Group Index 25	Color 0, 0, 0		
Glisten	Password Width 100	Background Color 0, 205, 205 💌		
- Conditional Display	Authority Width 60	Choice		
 Position and Size Keyboard 	Foot	Text Color 255, 255,		
Other	Calibri,12			

General Properties

The **General Properties** dialog box is used to configure the display style and format for the **Password List** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Password List** object.

	Group Index	Used to specify the width of the Index column (See Section 11.2 Password for the "Group Index")
Column Width	Password Width	Used to specify the width of the Password column
(Pixels)	Authority Width	Used to specify the width of the Rule column
	Fort	Used to specify the type and size of the font to be used for the
	FONT	text.
	Text Color	Used to specify the color to be used for the text
Text	Background Color	Used to specify the color of the background to be used for
		table cells
	Text Color	Used to specify the color of the text when the table cell has
		been selected
Choice	Background Color	Used to specify the color of the background for the table cell
		that has been selected

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the object. <u>Border (1), Glisten, Offset, Conditional Display</u>, <u>Position and Size</u>, <u>Keyboard</u>, and <u>Other</u>.

8.3 Switch Objects

The **Switch** category of the Toolbox includes a variety of objects that can be used to add switch functionality for single action switches, such as a light switch, multistage switches, or Jog switches. These switches can then be used to perform increment/decrement operations, such as on/off, in/out, previous/next, or up/down, etc., each of which are described in more detail in the following sections.



The **Function Button** object is provided in each of the **Switch**, **Recipe**, **Alarm** and **Sampling** categories and can be used to execute up to 16 functions, such as recipe transmission, changing screens, or incrementing and decrementing variable values, etc. When the button is clicked, the functions that have been defined will be executed in sequence. The functions that can be defined for the **Switch Function Button** object include:

Set ON/Set OFF	Momentary/Toggle	Change Screens	Change Language
Complex State	Jog+/-	Login/Logout	Show Calculator
Show /Hide Window	Write Constant/Set Value	Return to the Previous	Screen

8.3.1 Bit Switch (Set ON/OFF)



The **Bit Switch** object can be used to control the state of a bit variable (ON/OFF), switching between two states, where OFF is 0 and ON is 1. The **Bit Switch** object allows four action types, including Set ON, Set OFF, Momentary, and Toggle , each of which are described in more detail in the following sections.

See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object. After creating a **Bit Switch** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Bit Switch** object.



General Properties

The **General Properties** dialog box is used to configure the variable to be used for the **Bit Switch** object, as well as the switch type.

Read Type Set ON Set ON Set OFF Momentary Toggle	Write		•
Type Set ON Set ON Set OFF Momentary Toggle	Read		•••••
Set ON Set OFF Momentary Toggle	Туре	Set ON	
Set OFF Momentary Toggle		Set ON	
Momentary Toggle		Set OFF	
Toggle		Momentary	
		Toggle	

The following is an overview of the options available in the **General Properties** section of the Property View for the **Bit Switch** object.

Write	Used to specify the Write variable to be used. For more details related to the usage of variables, see <u>Chapter 7 Variables</u> .		
Read	Used to specify the Read variable to be used. For more details related to the usage of variables, see <u>Chapter 7 Variables</u> .		
Туре	Used to specify t 1. Set ON: 2. Set OFF: 3. Momentary: 4. Toggle:	he action performed by the switch, where: Clicking the switch will set the variable to ON. Clicking the switch will set the variable to OFF. Clicking and holding the switch will set the variable to ON, but releasing it will set the variable to OFF. Clicking the switch will alternate the variable between ON and OFF	

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Bit Switch** object.
 <u>Text, Image, Border (2)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.

8.3.2 Multistage Switch



The **Multistage Switch** can be used for the multistage sequence control. The Multistage Switch object provides multiple state properties compared to the Bit Switch, and can be used to configure the status for the different speeds of a motor or a multi-action mode switch.

See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object. After creating a **Multistage Switch** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Multistage Switch** object.

Property View 🏴 🗙				
- MultiStageSwitch	Writer Tag_2 Font Tahoma,12	•		
Text	Read Tag_2 Alignment Middle-Center 💌			
Picture	Type Value			
- Border	Number			
- Text Shadow				
Glisten	Direction Next Cycle			
Security				
Offset				
- Conditional Display	In this case, every time you click the switch, the variable			
- Conditional Control	value (i.e., Tag_2) will be 0 , 1, 2, 3, 19 , 0 , 1, 2,			
- Position and Size				
Event				
Other				

General Properties

The **General Properties** dialog box is used to configure the variables for the **Multistage Switch** object together with the switch actions. For more details related to the usage of variables, see <u>Chapter 7</u> <u>Variables</u>.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Multistage Switch** object.

Write	Used to specify the Write variable to be used. For more details related to the usage of variables, see <u>Chapter 7 Variables</u> .
Read	Used to specify the Read variable to be used. For more details related to the usage of variables, see <u>Chapter 7 Variables</u> .

	Bit Index:									
	The initial value of the variable is "0", and the variable value must be 2^n , the state value is n.									
	For exam	nple,								
	1) If the	e value of a	BYTE (8-	bit) varial	ole is 32 (i	.e., 2⁵), th	ne state va	alue is 5.		
		MSB							LSB	
		2 ⁷ =128	2 ⁶ =64	2 ⁵=32	2 ⁴ =16	2 ³ =8	2 ² =4	2 ¹ =2	2 ⁰ =1	
		0	0	1	0	0	0	0	0	
	 If the Stages is set to "3", the Direction is set to "Next", and the Cycle is checked, then 									
Туре	the variable value will be $0 \rightarrow 1 \rightarrow 2 \rightarrow 4 \rightarrow 1 \rightarrow 2 \rightarrow 4$ when you press the button.									
	<u>Value:</u>									
	The initial value of the variable is "0", and the variable value is the state value.									
	For example, 1) If the value of a BYTE (8-bit) variable is 32, the state value is 32.									
	2) If the Number is set to "4", the Direction is set to "Before", and the Cycle is checked,							ked,		
	then the value will be $0 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 0 \rightarrow 3 \rightarrow 2 \rightarrow 1$ when you press the button.									
Number	Used to specify the number of stages to be used for the switch									
	Used to	specify the	e sequenc	e in whicl	h the actio	on will be	performe	ed:		
	Next : Pressing the switch will advance the action to the next stage									
Direction	Before: Pressing the switch will return the action to the previous stage									
	Note that you can define the actions based on the variable values in the Event properties.									
	Used to	specify wh	ether or i	not the ac	tions are	to be rep	eated as a	a continuo	ous cycle,	, where:
Cycle	Next: Th	e actions v	vill be pe	rformed i	n the sequ	uence stag	ge1→stag	;e2→stag	e3→stage	e1
	Before:	The action:	s will be p	erformed	l in the se	quence st	age 1→st	tage 3→st	tage 2→s	tage 1
Font	Used to	specify the	type and	l size of th	ne font to	be used f	or the tex	ĸt.		
Alignment	Used to	specify the	position	of the tex	kt within t	he borde	r of the o	bject		

• Text Properties

The **Text Properties** dialog box is used to configure the color and format of the text to be used for the **Multistage Switch** object.

New	Remove		
Start	End	Text	Property
0	0	0	Foreground Color 0.0.0
1	5	1	
5	15	2	Background Color 255, 255, 255 💌 💌 Transparent
15	20	3	3
			×

The following is an overview of the options available in the **Text Properties** section of the Property View for the **Multistage Switch** object.

New	Used to add a new text item, and then you can double click the Start, End or Text field to configure values or the text	New Start 0 1 2	End 0 1 2	re Text ON OFF		
Remove	Used to remove the selected text item(s)					
Foreground Color	Used to specify the color to be used for the text					
Background Color	Used to specify the color to be used for the background of the object					
Transparent	Used to specify whether or not the backgor transparent when displayed on the screer	round col า	or will be sho	own as		

Picture Properties

The **Picture Properties** dialog box is used to configure the images used by the **Multistage Switch** object to represent the conditions at different stages.

	New	Remove	Template	
	Image	Start	End	Property
0 0				💌 Auto Size
		1	Transparent 0, 0, 0	
		5		
		15		
Fc th wi	or example, if the e specified icon ill be displayed.	e variable value (yellow) and te	Load Clear	
I			1	

The following is an overview of the options available in the **Picture Properties** section of the Property View for the **Multistage Switch** object.

	Used to add a new image item, and the	en you can	New	Remove	Template
	double click the Image, Start, or End fie	eld to	Image	Start	End
New	configure an image or values			0	0
			Ŏ	1	1
				2	2
Remove	Used to remove the selected image iter	m(s)			
Kelliove	Used to add/open a template, or add a	stato imago in	the templat	2	
	Osed to add/open a template, or add a	state inage in		3.	
	To create a user-defined state image			Template	
				~	
	1. Click the Template button to go	Select Graph Templa	ate pen Template		
	to the Select Graph lemplate	Template Lam	in 2 State		Rename
			N_M		
		State ICON			
			ge_M ge_S		
	2. Select one of image types from	Swite	p 2 State ch 2 State		
	the lemplate drop-down menu.	Swite	ch_L	002	004
		0001	0002 0	003 0	004
					_
	3. Click the Insert button to go to				
	the Graph Edit dialog box. You				
Template	image	``````````````````````````````````````			li
	intage.	🖳 Graph Editor		_	
		Create Delete	8		4 / 32
	4. Click the Curete button to odd a	Name User-defied	d 01		
	4. Click the Create button to add a State item and then click the				
	Load button to load an image.	N 2			
	, i i i i i i i i i i i i i i i i i i i	0 1	2	3	
		·			
	E Click the OK button to cave the	State			
	settings.		State 3		
			Use Transparent	0.0.0	
			Transparent	0, 0, 0	
			Load	Clear	
				OK	Cancel

Auto Size	Used to specify whether or not the image should be automatically stretched to fit the size of the object (Enable) (Disable)
Transparent	Used to specify whether or not the background color of image will be shown as transparent when displayed on the screen.
Load	Used to select an image to be used from the Image Manager . See Section 11.4 "Image Manager" for more details.
Clear	Used to clear the currently loaded image

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Multistage Switch** object. <u>Border (2)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.

8.3.3 Switch Function Button

The Function Button can be used to execute a wide range of functions, such as transmitting recipes, changing screens, or incrementing and decrementing values, etc. When a button is pressed, any functions that have been defined will be executed sequentially, and a maximum of 16 functions can be implemented. The **Function Button** object is available in the each of the **Switch, Recipe, Alarm**, and **Sampling** categories.

The **Switch Function Button** object provides the ability to set a variable to either ON or OFF, set a switch action to momentary or toggle, change screens, increment or decrement values, facilitate complex state switching, read and write constant values or set a specific value, change languages, log in or out from the system, show or hide specific windows, and display other applications such as a calculator, etc.



See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object. After creating a **Switch Function Button** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Switch Function Button** object.

Switch Function Button Add Remove Move Up Move Down General Text Text Picture Security Security Change Screen Change Screen Scren Screen S
 Conditional Display Conditional Control Position and Size Event 9 Writer Constant 10 Change Language 11 Set Value 12 Change Screen 12 Orange Screen

• General Properties

The **General Properties** dialog box is used to configure the actions that can be performed by the **Switch Function Button** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Switch Function Button** object.

Add	Used to add a function. The default option is the "Change Screen" function A maximum of up to 16 functions can be used for one button
Remove	Used to remove a selected function
Move Up	Used to move the selected item up
Move Down	Used to move the selected item down
Function	Used to select the function from the Function drop-down menu

Introduction of Functions:

The following is an overview of the functions that can be used in conjunction with the **Switch Function Button** object.

Set ON

The **Set ON** function is used to set the status of a specified variable to ON when the button is clicked.

For more details related to the usage of variables,

see	<u>Cha</u>	pter	7	Varia	abl	es.

Function	Set ON	•
Write	••••	

To use this function, select the **Set ON** option from the Function drop-down menu and then select the required variable from the drop-down menu, or click the **Browse** (...) button to add/edit/clear a variable.



Set OFF

The **Set OFF** function is used to set the status of a specified variable to OFF when the button is clicked.

For more details related to the usage of variables,	Function	Set OFF	•
see Chanter 7 Variables			
see <u>enapter / vanables</u> .	Write	× ···	

To use this function, select the **Set OFF** option from the Function drop-down menu and then select the required variable from the drop-down menu, or click the **Browse** (...) button to add/edit/clear a variable.



Momentary

The **Momentary** function is used to set the button action to Momentary so that the status of the specified variable will be set to ON when the button is clicked, but will be set to OFF when the button is released. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.



To use this function, select the **Momentary** option from the Function drop-down menu, and then select the required variable from the drop-down menu, or click the **Browse** (...) button to add/edit/clear a variable.



Toggle

The **Toggle** function is used to set the button action to Toggle so that when the button is clicked, the Read value will be inverted (e.g., ON to OFF) and assigned to the specified Write variable.

For more details related to the usage of variables	Function	Toggle	*
see Chapter 7 Variables	Write		
see <u>enapter / vanables</u> .	Read		

To use this function, select the **Toggle** option from the Function drop-down menu, and then select the required variable from the drop-down menu, or click the **Browse** (...) button to add/edit/clear a variable.



Change Screen

The Change Screen function is used to transfer to	Function	Change Screen	*
the assigned screen.	PageCode	1	
		1	

2

To use this function, select the **Change Screen** option from the Function drop-down menu, and then select the required **Screen no.** from the PageCode drop-down menu. (See <u>Section 4.9 Screen View</u>)

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Return Front Screen

The **Return Front Screen** function is used to return to the previous screen.

Function	Return Front Screen
	1

To use this function, select the **Return Front Screen** option from the Function drop-down menu.

■ Jog +/- (Available soon)

The **Jog +/-** function is used to progressively increment or decrement the value of a variable based on a specific increment interval, and write the new value to a specified variable.

	Function	Jog +/-	*
The function provides the same functionality as for	Write		
the Jog Button. For more details related to the	Read		
usage of variables, see <u>Chapter 7 Variables</u> .	Limit	0	
	Interval	0	

The following is an overview of the options available for the **Jog +/-** function.

Write	Used to specify the variable to be written.
	For more details related to the usage of variables, see Chapter 7 Variables.
Read	Used to specify the variable to be read.
	For more details related to the usage of variables, see Chapter 7 Variables.
Limit	Used to specify the maximum or minimum values for the increment
Interval	Used to specify the increment interval value

To use this function, select the **Jog +/-** option from the Function drop-down menu, select the required **Read** and **Write** variables from the respective drop-down menus, or click the **Browse** (...) button to add/edit/clear a variable, and then enter a value for both the **Limit** and **Interval** options.



Complex State

The **Complex State** function can be used for the multistage sequence control, for example, to configure the different speeds of a motor or a multi-action mode switch.

The user can assign the variable type (i.e., **Bit Index** or **Value**) and the number of stages for multistage control. The variable value starts at 0, and will be changed according to the Sequence setting when the button is clicked.

This function provides the same functionality as for a multistage switch. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

Function	Complex State	
Write		• •••
Read		• •••
Туре	Value	•
Stages	2	\$
Sequence	Forward	~
	📃 Cycle	

The following is an overview of the options available for the **Complex State** function.

Write	Used to specify the Write variable to be used.									
Read	Used to	Used to specify the Read variable to be used.								
	<u>Bit Inde</u>	Bit Index:								
	The initial value of the variable is "0", and the variable value must be 2^n , the state value is n.									
	For example, if the value of a BYTE (8-bit) variable is 32 (i.e., 2 ⁵), the state value is 5.									
		MSB							LSB	
		2 ⁷ =128	2 ⁶ =64	2 ⁵=32	2 ⁴ =16	2 ³ =8	2 ² =4	2 ¹ =2	2 ⁰ =1	
		0	0	1	0	0	0	0	0	
	1) If the	e Stages is	set to " 3 "	, the Seq ı	uence is s	et to " For	ward", ar	nd the Cyc	cle is chec	:ked,
	then									
	the v	variable val	ue will be	e 0 > 1 > 2	> 4 > 1 >	2 > 1 whe	en you pro	ess the bu	itton.	
Туре	2) If the	If the Stages is set to "3", the Sequence is set to "Reverse", and the Cycle is checked,								
	then	the variab	le value v	vill be 0 >	4 > 2 > 1	> 4 > 2 > 2	1 when yo	ou press t	he buttor	۱.
	Value:									
	The initi	al value of	the varial	ole is "0",	and the v	ariable va	alue is the	e state val	ue.	
	For exan	nple, if the	value of a	a BYTE (8-	bit) varia	ble is 32,	the state	value is 3	2.	
	1) If the	e Stages is	set to " 3 "	, and the	Sequence	e is set to	"Forware	d ", and th	e Cycle is	
	chec	ked, then t	he variab	ole value v	vill be 0 >	1 > 2 > 0	> 1 > 2 w	hen you p	press the	button.
	2) If the	e Stages is	set to " 3 "	, the Seq	uence is s	et to " Re	verse", ar	nd the Cy	cle is chea	:ked,
	then	the variab	le value v	vill be 0 >	2 > 1 > 0	> 2 > 1 w	hen you p	press the l	outton.	

Stages	Used to specify the number of stages to be used for the switch.
	Used to specify the sequence in which the action will be performed:
Convence	Forward: Pressing the button will advance the action to the next stage
Sequence	Reverse: Pressing the button will return the action to the previous stage
	Note that you can define the actions based on the variable values in the Event properties.
	Used to specify whether or not the actions are to be repeated as a continuous cycle
Cycle	If the Stages = "4", the Type = "value", the actions will be performed in these sequence
	Forward: 0 > 1 > 2 > 3 > 0 > 1 (click the Switch Function Button 5 times)
	Reverse: 0 > 3 > 2 > 1 > 0 > 3 (click the Switch Function Button 5 times)

To use this function, select the **Complex State** option from the Function drop-down menu, select the required **Read** and **Write** variables from the respective drop-down menus, or click the respective **Browse** (...) button to add/edit/clear a variable. Select a **Type** from the Type drop-down menu, and then enter a value for the **Stage** option and specify a **Sequence** from the Sequence drop-down menu. To specify whether the function is to be repeated as a continuous cycle, check the **Cycle** checkbox.

The following will take a simple example. The user can use this function according to the application needs.1) dd and configure three objects on the screen as the following settings.



2) Click the **Simulate Offline** button (**I or** "F8") on the toolbar, and then click the **Function Button** to view the change.



Write Constant

The **Write Constant** function is used to write a constant value to a specific variable. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.

Function	Write Constant	*
Write		
Constant	0	

To use this function, select the **Write Constant** option from the Function drop-down menu, select the required **Write** variable from the drop-down menu, or click the **Browse** (...) button to add / edit / clear a variable, and then input a value for the **Constant** from the Constant spin-edit menu.



Change Language

The Change Language function is used to change the current language settings.

To use this function, select the **Change Language** option from the Function drop-down menu, and then select the required **Language Code** from the

Function	Change Language	-
Language	0	

Language drop-down menu, which can be selected from English, Traditional or Simplified Chinese.

See Section 11.3 Language for more details related to the Language setting.

Set Value

The **Set Value** function is used to write an input value to a specific variable.

		1	Name	Туре	Connection	Address	Length	
Function	Set Value	Та	ig_1	Byte	Internal HMI	@R0	1	
Write				1				
Format	Decimal	N	ew					1
Torriac		E	dit	For more	details relat	ed to the	usage of	
Decimal Position	0	С	ear	variables,	, see <u>Chapte</u>	r 7 Variab	les.	
Keyboard Style Personalized Keyboard System Keyboard								1
Screen No.			Person	iaiizeu Keyb	Uaru			
💌 Limit								
Max. Constant	• • • • • • • • • • • • • • • • • • •		7	8 9 A	D <-			
Min. Constant	MAX: 255		4	5 6 B	E CR			
					Enter			

The following is an overview of the options available for the **Set Value** function.

Write	Used to specify the variable to be written						
Format	Used to specify the value format and can be set to either Decimal or Hexadecimal						
	Used to specify position of the decimal point	nt (read from the right).					
Decimal Position	Decimal Position E.g., if the decimal position is set to "1", the input value is "100", and then "						
	be written to the specified variable						
Keyboard Style	Used to specify the keyboard style, which c	an be configured as either the system					
keyboard or a customized keyboard (see Section 8.4 Keyboard Objects)							
Screen No	Used to specify the page number of the Window screen for the customized						
Screen No.	keyboard, see Section 8.4 Keyboard Objects for more details						
Limit	Used to specify whether or not a maximum and minimum value should be used						
Max.	Used to specify the maximum limit value based on a specified constant or variable						
Min.	Used to specify the minimum limit value based on a specified constant or variable						
Note: If the write variable is Tag_1 (Byte) and the Max./Min. is a Constant, the valid range (0 ~ 255) will							
be shown when the user moves the cursor over the							
drop-down menu (see the figure above). If the Max./Min. is a Max. Variable 💽							
Variable, the related drop-down menu will be appeared. Min. Variable 💌							

To use this function, select the **Set Value** option from the Function drop-down menu, select the required **Write** variable from the Write drop-down menu, or click the **Browse** (...) button to add/ edit/clear a variable, and then select a **Format, Decimal Position, Keyboard Style** and **Screen No.** (for the customized keyboard) from the respective drop-down menus. To specify whether a maximum and minimum value should be used, check the **Limit** checkbox, select the Constant or Variable for writing value, and then enter the maximum and minimum values or specify a variable from the respective drop-down menus.

Login

The Login function is used to configure the login	Function	Login	
authority level for a user.	Tancaon		
	Function	Logout	~

Logout

The **Logout** function is used to configure the logout authority level for a user.

See **Section 11.2 Password** to configure the password for each authority level. After clicking the **Login** button on the HMI screen, you can have access permissions depends on the input password. "9" is the highest level which allows the user to operate all objects on the screen. After completing operations, click the **Logout** button to back to the operating status with level 0.

To use this function, select the **Login/Logout** option from the Function drop-down menu.

Show Window

The **Show Window** function is used to open a customized keyboard on the screen.

Function	Show Window	~
Window Page		•

To use this function, select the **Show Window** option from the Function drop-down menu, and then select the required page number of the Window screen from the Window Page drop-down menu.

Hide Window

The **Hide Window** function is used to close a customized keyboard on the screen.

Function	Hide Window	•
Window Page		•

To use this function, select the **Hide Window** option from the Function drop-down menu, and then select the required page number of the Window screen from the Window Page drop-down menu.

Show Calculator

The **Show Calculator** function is used to display the embedded calculator tool.

Function	Show Calculator	-
----------	-----------------	---

To use this function, select the **Show Calculator** option from the Function drop-down menu.

The user can see Section 9.2.6 for the **Recipe** function, see Section 9.6.2 for the **Alarm** function, and see Section 9.8.3 for the **Sampling** function.

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Switch Function Button** object. <u>Text</u>, <u>Image</u>, <u>Border (2)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.

8.3.4 Connect Button (Available soon)



The **Connect Button** object can be used to control whether or not the specified connection is set to either Online or Offline. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

After creating a **Connect Button** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Connect Button** object.

Property View	₽ 🗙
 ConnectButton General Text Picture Border Text Shadow Glisten Security Offset Conditional Display Conditional Control Position and Size Event Other 	Select Connection Connect_1 Connect_2 Connect_4 Connect_3

• General Properties

The **General Properties** dialog box is used to select which of the existing connections is to be controlled. See <u>Chapter 6 Connections</u> for more details on settings.

Select Connection	
Connect_1	

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Connect Button** object. <u>Text</u>, <u>Image</u>, <u>Border (2)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.

8.3.5 Jog (+ / -) Button (Available soon)



The **Jog Button** object can be used to progressively increment or decrement the value of a variable, and then write the new value to a specific variable. See <u>Chapter 8 Basic Object</u> <u>Usage</u> for details of how to create an object.

After creating a **Connect Button** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Connect Button** object.

Property View		₽×
⊡ JogButton	Read	
- Text	Write	
- Picture Border	Limit	Constant 💌 100 📦
Text Shadow	Increment Mode	Fast 💌
Glisten	DelayTime (ms)	1000
- Security - Offset	Jog Speed (ms)	500
- Conditional Display	Interval	+1
- Conditional Control		+1
Position and Size		-1
Event		
- Other		

• General Properties

The **General Properties** dialog box is used to configure the attributes for the **Jog Button** object, allowing the value of a variable to be progressively incremented or decremented based on a specific increment interval, and then write the new value to a specified variable.

For more details related to the usage of	Read	Tag_9	*
variables, see <u>Chapter 7 Variables</u> .	Write	Tag_9	~
	Limit	Constant 💌 100	
	Increment Mode	Fast	•
	DelayTime (ms)	1000	🗘 ms
	Jog Speed (ms)	500	ᅌ ms
	Interval	+1	•

The following is an overview of the options available in the **General Properties** section of the Property View for the **Jog Button** object.

Read	Used to specify the variable to be read.		
Write	Used to specify the variable to be written.		
Limit	Used to specify the maximum or minimum limit based on the Constant or Variable		
Increment Mode	Used to specify the Increment Mode when the button is pressed (or held down): Fast Mode: Only increments the interval value by +1 or -1 Fixed Mode: User defined interval value.		
Delay Time	Used to specify how long will it starts accumulating values when the button is held down		
Jog Speed	Used to specify the jog speed when the button is held down		
Interval	Used to specify the increment interval value		

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Jog Button object. Text, Image, Border (2), Text Shadow, Glisten, Security, Offset, Conditional Display, Conditional Control, Position and Size, Event, and Other.

8.4 Keyboard Objects

The **Keyboard** category of the **Toolbox** includes objects that can only be added to the Window-type screen and can be used for designing the customized keyboard that will be displayed on the HMI screen.

Some of objects come with the keyboard function, such as Numeric, Numeric table, Text-Box, Password List, Recipe Numeric /Text, etc. The user can choose the system keyboard or the personalized keyboard in the Keyboard Properties dialog box of these objects.

For using the customized keyboard, first the user needs to create a Window-type screen and design a layout for the on-screen keyboard. See steps below:

To create a Window screen

- 1. Click the **New screen** button in the **Screen View** panel to open the New Screen dialog box.
- 2. Choose **Window** in the **Screen Type** drop-down menu, and then click the **OK** button.

Screen View 🖳 🔀 Startup 📑 1 : Screen 1	Toobox 🕂 🗙
	Drafting
My Project Screen View	General
2: Screen2	Switch
	Recipe
	Alarm
1: Screen1	Sampling
2: Screen2	Keyboard
3: Screen3	Cursor
New Screen	😼 Keyboard Label
Property View	Keyboard Button
- Screen1 Name Screen3	Keyboard State Button
-Event	
Position and Si Page Code 3	
Proje Obje S Other Window 2	HA Seriel
Screen Type	
Back Color Base Screen	
Window	
OK 🔪 Cancel	

To configure a keyboard layout

To create the Keyboard object, click the name of the object in the **Keyboard** category of the **Toolbox** to select it, and then either drag out the proper size of shape on the screen or click the desired position on the screen to place the object. To open the **Property View** for that object, click the object and then configure its properties.

- 3. In the Window screen, configure the appearance for the keyboard in the Property View panel.
- 4. Add the Keyboard Label object for the numeric input. See Section 8.4.1.
- 5. Add the Keyboard Button object as a numeric button. See Section 8.4.2.

You can also add the **Keyboard State Button** object (see Section 8.4.3), if necessary. Each of these objects will be described in more detail in the following sections.

Screen View	🛯 👼 Startup 🛛 🧮 1 : Screen 1	2 : Screen2 3 : Screen3	3 Toolbox	Ŧ×.
ଢ 🖪 🗙 🖥				Drafting
⊡ • My Project	Keyboard-01	- X		General
2: Screen2		123 50		Switch
3: Screen3		Kaukaand State But	+	Recipe
	7 8	4. Keyboard Label	lon	Alarm
				Sampling
	4 5	6 D - Delete		Keyboard
			🗼 Cui	rsor
	1 5 Keyb	oard Button +/-	BB Key	/board Label
	S. Reyb		🔲 🔲 Key	/board Button
	Simple Complete		📕 🔲 Key	/board State Button
	Property View	₽ >	2	
	Screen3 Conoral	PageCode 3 🕼 Back Color 128, 128, 128 💌		
	Event	Screen Type Window 💌		
	Position and Size	Show Title Show Hide Button Show Close Button		
	Other	Title Set		
		Fore 255, 255, 255 💌 Back Color 255, 188, 42 💌		
		Font Style Calibri,14.25 \cdots Title Height 30 📦		
Brain Ohin C		Title Text Keyboard-01		HA Seriel
Proje Obje				The Serier

The system Keyboard:

Keyboard		X
0.00	CLR	
Мах: 655.35		Min: 0.00
7 8 9	≮•	
4 5 6	+/-	
0 .	ENT	

8.4.1 **Keyboard Label**



The **Keyboard Label** object can be used to display the current numeric value that has been 123 entered via the user-defined keyboard. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

Note that this object can only be added to the Window-type screen, see Section 8.4 for more details.

After creating a **Keyboard Label** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Keyboard Label** object.

Property View		₽ X
 □- KeyboardLabel □ General □ Border □ Text Shadow □ Glisten □ Offset □ Conditional Display □ Position and Size □ Other 	General Format Input Value Font Tahoma,12 Alignment Middle-Right	Color Foreground Color 0, 0, 0 Background Color 255, 255, 255 Back Transparent

General Properties

The General Properties dialog box is used to configure the display format to be used for the Keyboard **Label** object, including the font, text alignment, and colors, etc.

The following is an overview of the options available in the General Properties section of the Property View for the Keyboard Label object.

		Used to specify the display style, where Input Value: Displays the current input value
		Minimum: Displays the minimum value in the input range
General	Format	
		Note that the value of the input range is based on the data type of the
		variable to be specified in the object. See 7.1.3 Variable Type for more
		details, and see Section 8.5 (M) Keyboard Properties to find out which
		objects are available.

General	Font	Used to specify the type and size of the font to be used for the text
		shown on this object
	Alignment	Used to specify the horizontal and vertical position of the text within
		the border of the object
Color Return	Foreground Color	Used to specify the color of the text to be used for the object
	Background Color	Used to specify the color of the background to be used for the object
	Return Front Screen	Used to specify whether or not the background color will be shown as
		transparent when displayed on the screen

• See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Keyboard Label** object. <u>Border (1)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

8.4.2 Keyboard Button



The **Keyboard Button** object can be used to create the numeral key or the function key on the user-defined keyboard. See <u>Chapter 8 Basic Object Usage</u> for details of how to create an object.

Note that this object can only be added to the Window-type screen, see <u>Section 8.4</u> for more details.

After creating a **Keyboard Button** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Keyboard Button** object.

Property View					₽ ×
■-KeyboardButton General	Ke	ey State	Multi State 💌		
Font		State	Key State	Property	
Text		0	Key - Back Space	Key Type	Control Key
Picture	>	1	Key - Delete		
Border		2		Control k	(ey
- Text Shadow		3		Enter	
Glisten				Space	
Security				📃 Back Sp	pace
Offset				M Delete	
- Conditional Display					
Conditional Control					
- Position and Size					
Event					
Other					

General Properties

The **General Properties** dialog box is used to configure the key state or type to be used for the **Keyboard Button** object.

Ke	ey State	Single State 🛛 💌	
	State	Key State	Property
>	0	Key - 5	Key Type Character Key Character Key Character Key 5

The following is an overview of the options available in the **General Properties** section of the Property View for the **Keyboard Button** object.

Key State		 Used to specify the type of button, where: 1. Single State 2. Multiple States. A maximum of 4 functions can be assigned that can be switched by using the Keyboard State Button object.
State		Used to indicate the index number for the State
Key State (f	unction)	Used to indicate the function that has been assigned
Property	Кеу Туре	Used to specify the type of key, where: 1. Control Key 2. Character Key
	Control Key	Used to specify the function when the Key Type attribute has been set to Control Key, where: 1. Enter 2. Esc 3. Space 4. Backspace 5. Delete
	Character Key	Used to configure the input for a single character when the Key Type attribute has been set to Character Key.

• Font Properties

The **Font Properties** dialog box is used to configure the type and size of the font to be used for the text on the **Keyboard Button** object, as well as the alignment.

Font		
Font	Calibri,12,Bold	•••
Alignment	Middle-Center	~

The following is an overview of the options available in the **Font Properties** section of the Property View for the **Keyboard Button** object.

Font	Used to specify the font and size of the text displayed on the key
Alignment	Used to specify the horizontal and vertical alignment of the text displayed on the
Auginnent	key within the border of the object

• Text Properties

The **Text Properties** dialog box is used to configure the text to be displayed for the **Keyboard Button** object. There are two state types - Single state and multiple states.

	If you choose the Single Sta	te option:
	State Text	Property
General Properties - Ko 1. Single State 2. Multiple states (sup If you choose the Mul	ey State: port 4 states) tiple states option:	Foreground Color 0, 0, 0 Background Color 255, 255, 255 Transparent 5
State Te	Property	
0 0 - Back Space	Foreground Color 0, 0, 0 Background Color 255, 255, 255 Transparent 1 - Delete	The foreground color, background color and background transparency attributes can be individually configured by selecting the required entry and editing the attributes as necessary.

The following is an overview of the options available in the **Text Properties** section of the Property View for the **Keyboard Button** object.

State		Used to indicate the index number for the State	
Text		Used to display a preview of the input text or edit the text	
	Foreground Color	Used to specify the color to be used for the text	
Property	Background Color	Used to specify the color of the background to be used for the key	
	Transparent	Used to specify whether or not the background color will be shown	
		as transparent when displayed on the screen	
	Text	Used to enter the text to be displayed.	

• Picture Properties

The **Picture Properties** dialog box is used to configure single or multiple images to be used for the **Keyboard Button** object.



<u>General Properties - Key State</u> If you choose the **Single State** option **General Properties - Key State**

If you choose the Multiple states option (supports 4 states):

The foreground color, background color and background transparency attributes can be

individually configured by selecting the required entry and editing the attributes as necessary.



The following is an overview of the options available in the **Picture Properties** section of the Property View for the **Keyboard Button** object.

State		Used to indicate the index number for the State	
Image		Used to display a preview of the image or mouse double-click it to load the image from the Image Manager window (see Section 11.4 for more details)	
	Auto Size	Used to specify whether or not the image should be automatically stretched to fit the size of the object	
Property	Transparent	Used to specify whether or not the specified color of the image will be shown as transparent when displayed on the screen $ \text{Property} \\ \hline \\ \text{Auto Size} \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1$	
	Load	Used to select an image from the Image Manager to be used for the button. See Section 11.4 "Image Manager" for more details.	
	Clear	Used to clear the currently loaded image	

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Keyboard Button** object. <u>Border (2)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.
8.4.3 Keyboard State Button



The Keyboard State Button object can be used to switch states when the key state of the
 Keyboard Button (see <u>Section 8.4.2</u>) is set as multi-state. See <u>Chapter 8 Basic Object Usage</u>
 for details of how to create an object.

Note that this object can only be added to the Window-type screen, see <u>Section 8.4</u> for more details.

After creating a **Keyboard State Button** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Keyboard State Button** object.

Property View		Ŧ 🗙
 KeyboardStateButton General Font Text Picture Border Text Shadow Glisten Security Offset Conditional Display Conditional Control Position and Size Event Other 	State Action Key State Change State State - 0 State - 0 State - 1 State - 2 State - 3	

General Properties

The **General Properties** dialog box is used to configure the action that will be performed when the keyboard state is changed.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Keyboard State Button** object.

State		
Action	Next State	•
State Count	2	•
	1	
	2	
	3	3
	4	

		Used to specify the way to switch the keyboard states, where:
	Action	1. Key State (Switch to the assigned state)
		2 . Next State (Switch to the next state)
		3 . Previous State (Switch to the previous state)
State		Used to specify which State No. will be switched to.
	Change State	Note that the State 0 to State 3 are defined in the Keyboard Button object,
		see <u>Section 8.4.2</u> for more details
		Used to specify the number of states will be switched when the Action is set to
	State Count	Next State or Front State

• Font Properties

The **Font Properties** dialog box is used to configure the type and size of the font to be used for the text on the **Keyboard State Button** object, as well as the alignment.

Font		
Font	Calibri,12,Bold	
Alignment	Middle-Center	•

The following is an overview of the options available in the Font **Properties** section of the Property View for the **Keyboard State Button** object.

Font	Used to specify the font and size of the text displayed on the key	
Alignment	Used to specify the horizontal and vertical alignment of the text displayed on the key	
	within the border of the object	

• Text Properties

The **Text Properties** dialog box is used to configure the text to be displayed for the **Keyboard State Button** object. Single or multiple states text can be configured.

	Sin	gle Stat	e Text:	
		State	Text	Property
	>	0	State 0	Foreground Color 0, 0, 0
				Background Color 255, 255, 255 💌
<u>General P</u>	rope	rties - A	Action:	State 0
1. Key Sta	ite			

M	ultiple st	tates Text:	
	State	Text	Property
	0	State 0	Foreground Color
Conoral Droportion Action	1	State 1	
	2		Background Color 255, 255, 255 💌
2. Next State	3		✓ Transparent
3. Previous States			State 1

The foreground color, background color and background transparency attributes can be individually configured by selecting the required entry and editing the attributes as necessary.

The following is an overview of the options available in the **Text Properties** section of the Property View for the **Keyboard State Button** object.

State		Used to indicate the index number for the State	
Text		Used to display a preview of the input text or edit the text	
	Foreground Color	Used to specify the color to be used for the text	
	Background Color	Jsed to specify the color of the background to be used for the key	
Property	Transparent	Used to specify whether or not the background color will be shown	
	nansparent	as transparent when displayed on the screen	
	Text	Used to enter the text to be displayed.	

Picture Properties

The **Picture Properties** dialog box is used to configure single or multiple images to be used for the **Keyboard State Button** object.





The foreground color, background color and background transparency attributes can be individually configured by selecting the required entry and editing the attributes as necessary.

The following is an overview of the options available in the **Picture Properties** section of the Property View for the **Keyboard State Button** object.

State		Used to indicate the index number for the State	
Image		Used to display a preview of the image or mouse double-click it to load the image from the Image Manager window (see Section 11.4 for more details)	
	Auto Size	Used to specify whether or not the image should be automatically stretched to fit the size of the object	
Property	Transparent	Used to specify whether or not the specified color of the image will be shown as transparent when displayed on the screen $ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	
	Load	Used to select an image from the Image Manager to be used for the button. See Section 11.4 "Image Manager" for more details.	
	Clear	Used to clear the currently loaded image	

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Keyboard State Button object. <u>Border (2)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.

8.5 Common Attributes

The Toolbox contains eight categories of objects, including <u>8.1 Drafting Objects</u>, <u>8.2 General Objects</u>, <u>8.3 Switch Objects</u>, <u>8.4 Keyboard Objects</u>, <u>9.2 Recipe Objects</u>, <u>9.6 Alarm Objects</u> and <u>9.8 Sampling Objects</u>. All objects need to be configured before they can be used. This section provides the introductions to attributes that are common to all objects, each of which is described in the following sections.

The following table shows the Section numbers for all objects which is convenient for you to go back to view the description for individual objects.

Toolbox – 8.1.x Drafting Objects:

1. <u>Rectangle</u>	2. <u>Label</u>	3. <u>Image</u>	4. <u>Polygon</u>	5. <u>Circle</u>
6. <u>Line</u>	7. <u>Multi-Line</u>	8. Calibration	9. <u>Table</u>	

Toolbox – 8.2.x General Objects:

1. <u>State Image</u>	2. <u>StateText</u>	3. <u>Numeric</u>	4. <u>Numeric Table</u>	5. <u>Text Box</u>
6. <u>Date</u>	7. <u>Time</u>	8. <u>Bar Graph</u>	9. Dial-Semicircle / D	<u>)ial-Circle</u>
10. <u>Drop Down List</u>	11. <u>Trend Graph</u>	12. <u>Connection View</u>	13. Password List	

Toolbox – 8.3.x Switch Objects:

1. Bit Switch 2. Multistage Switch 3. Function Button 4. Connect Button 5. Jog (+ / -) Buttor

Toolbox – 8.4.x Keyboard Objects:

1. <u>Keyboard Label</u> 2. <u>Keyboard Button</u>	3. <u>Keyboard State Button</u>
--	---------------------------------

Toolbox – 9.2.x Recipe Objects:

1. <u>Recipe Numeric</u>	2. <u>RecipeText</u>	3. <u>Recipe List / Record List</u>
4. <u>Record View</u>	5. <u>Recipe Table View</u>	6. Function Button (Recipe)

Toolbox – 9.6.x Alarm Objects:

1. <u>Alarm View</u>2. <u>Function Button (Alarm)</u>

Toolbox – 9.8.x Sampling Objects:

1. <u>Real-time / History Trend Chart</u> 2. <u>Data Sampling View</u> 3.	E Function Button (Sampling)
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A. Text Properties

The **Text Properties** dialog box is used to configure the font, color, and alignment of the text used for the object in both the ON and OFF states.

For Objects:

Switch (<u>Bit Switch</u>, <u>Function Button</u>, <u>Connect Button</u>, <u>Jog (+ / -) Button</u>), Recipe (<u>Function Button Button</u>), (<u>Recipe</u>)), Alarm (<u>Function Button (Alarm</u>)), and Sampling (<u>Function Button (Sampling</u>))

Font	Tahoma,12 😶	Align	ment Mid	dle-Center		Bottom-Center 🕑
Off			On			
Co	or 0, 0, 0 💌		Color	0, 0, 0	~	
OF	F	->	ON			
		<-				
	15				~	

The following is an overview of the options available in the **Text Properties** section of the Property View for the object.

Font		Used to specify the type and size of the font to be used for the text of the button
Alignment		Used to specify the horizontal and vertical position of the text on the button within the border of the object
OFF	Color	Used to specify the text and its color to be shown when the button is in the OFF state
ON	Color	Used to specify the text and its color to be shown when the button is in the ON state

B. Image/Picture Properties

The **Image Properties** dialog box is used to configure the image used to indicate the status of the object in both the ON and OFF states.



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For Objects:

Switch (<u>Bit Switch</u>, <u>Function Button</u>, <u>Connect Button</u>, <u>Jog (+ / -) Button</u>), Recipe (<u>Function Button</u>), <u>(Recipe)</u>), Alarm (<u>Function Button (Alarm</u>)), and Sampling (<u>Function Button (Sampling</u>))

The following is an overview of the options available in the **Image Properties** section of the Property View for the object.

Template		Used to select a template for the button
		Used to specify whether or not the image should be stretched to fit the size of the
	Auto Size	object when the button is in the OFF/ON state
	Transparent	Used to specify whether or not the specific color will be shown as transparent
OFF		when the button is in the OFF/ON state
/	Color	Used to specify which color will be set to transparent when the button is in the
ON		OFF/ON state
		Used to select or add an image from the Image Manager to be used when the
	LOad	button is in the ON state. See Section 11.4 "Image Manager" for more details.
	Clear	Used to clear the currently loaded image

C. Border Properties (1)

The **Border Properties** dialog box is used to configure the border style and the line color for the object. Five options are available: None, Flat, Raised, Concave, and 3D.

Border		
Border Style	None	*
	None	
	🗌 Flat	
	Raised	
	Concave	
	🔲 3D	

For Objects:

<u>Drafting (All)</u>, <u>General (All)</u>, Keyboard (<u>Keyboard Label</u>), Recipe (<u>Recipe Numeric</u>, <u>RecipeText</u>, <u>Recipe List / Record List</u>, <u>Record View</u>, <u>Recipe Table View</u>), Alarm (<u>Alarm View</u>), and Sampling (<u>Real-time / History Trend Chart</u>, <u>Data Sampling View</u>)

Border		Border			Border		
Border Style	Flat 💌	Border Style	Concave	•	Border Style	🔲 3D	•
Line Color	255, 255, 255 💌	Dark Color	105, 105, 105	~	Dark Color	105, 105, 105	•
		Light Color	255, 255, 255	~	Light Color	255, 255, 255	~

The following is an overview of the options available in the **Border Properties** section of the Property View for the object.

Doudou Ctudo	Used to specify the style of the border.
Border Style	Five options are available: None, Flat, Raised, Concave, and 3D
Line Color Used to specify the border color if the Border Style is set to Flat	
Dark Calar	Used to specify the dark border color of the object if the Border Style is set to Raised,
Dark Color	Concave, or 3D
	Used to specify the light border color of the object if the Border Style is set to Raised,
Light Color	Concave, or 3D

D. Border Properties (2)

The Border Properties dialog box is used to configure the border style for the object.

For Objects:

<u>Switch (All)</u>, Keyboard (<u>Keyboard Button</u>, <u>Keyboard State Button</u>), Recipe (<u>Function Button (Recipe</u>)), Alarm (<u>Function Button (Alarm</u>)), and Sampling (<u>Function Button (Sampling</u>))



The following is an overview of the options available in the **Border Properties** section of the Property View for the object.

Style View		Used to specify the style used for the border, and can be selected from None, Flat, Raised-1, Raised-2, Raised-3, Raised-4, Raised-5
		Used to display a preview of the button <u>Notice:</u> you can click the button to view the color changes.
055	Color 1	Used to specify the color of the border on the top-left side when the button is in the OFF/ON state
OFF / ON	Color 2	Used to specify the color of the border on the bottom-right when the button is in the OFF/ON state
	Background Color	Used to specify the fill color of the background when the button is in the OFF/ON state

E. Text Shadow Properties

The Text Shadow Properties dialog box is used to enable the text shadow for the object.

For Objects:

Drafting (<u>Label</u>), General (<u>State Image</u>, <u>StateText</u>, <u>Numeric</u>, <u>Numeric</u>, <u>Table</u>, <u>Text Box</u>, <u>Date</u>, <u>Time</u>), <u>Switch (All</u>), <u>Keyboard (All</u>), Recipe (<u>Recipe Text</u>, <u>Function Button (Recipe</u>)), Alarm (<u>Function Button</u> (<u>Alarm</u>)), and Sampling (<u>Function Button (Sampling</u>))

The following is an overview of the options available in the **Text Shadow Properties** section of the Property View for the object.

ColorUsed to specify the color to be used for the text shadowX OffsetUsed to specify how far the text shadow will be displaced in the horizontal direction in pixelsY OffsetUsed to specify how far the text shadow will be displaced in the vertical direction in pixels

F. Glisten Properties

The **Glisten Properties** dialog box is used to configure the glisten speed for the object. Four options are available: None, Slow, Medium, and Fast.

For Objects:

Drafting (All), General (All), Switch (All), Keyboard (All), Recipe (All), Alarm (All), and Sampling (All)

G. Security (Authority Level) Properties

The **Security Properties** dialog box for the object is used to configure the operating authority level for a user, where 0 is the lowest authority and 9 is the highest.

The user can create the password for each authority level on the <u>Password</u> page in the **Project View** panel; see <u>Section 11.2</u> for more details. If the login authority level for the object is insufficient, a warning dialog box will be automatically displayed.

For Objects:

General (<u>Numeric</u>, <u>Numeric Table</u>, <u>Connection View</u>), <u>Switch (All</u>), Keyboard (<u>Keyboard Button</u>, <u>Keyboard</u> <u>State Button</u>), Recipe (<u>Recipe Numeric</u>, <u>Recipe List / Record List</u>, <u>Record View</u>, <u>Function Button (Recipe</u>)), Alarm (<u>Function Button (Alarm</u>)), and Sampling (<u>Function Button (Sampling</u>))



Authority Level	
0	

M Enable		_
Color	128, 128, 128 💌	
Y Offset	1	
X Offset	1	

H. Offset Properties

The **Offset Properties** dialog box is used to configure the horizontal and vertical movement offset values for the object, which are controlled via a variable. For more details related to the usage of variables, see <u>Section 7.2.2 Using Variables</u>.

For Objects:

Drafting (All), General (All), Switch (All), Keyboard (All), Recipe (All), Alarm (All), and Sampling (All)



💌 Enable			
Horizontal O	ffset		
Variable	•		
🕑 Enable			
Vertical Offs	et		
Variable	••••		

*

*

I. Dynamic Size Properties

The **Dynamic Size Properties** dialog box is used to enable the function that allows the width and/or height of the object to be changed dynamically during runtime, and is controlled via a variable. For more details related to the usage of variables, see <u>Section 7.2.2 Using Variables</u>.

For Objects:

Drafting (Rectangle, Image, Polygon, Circle, Line, Multi-Line)

J. Conditional Display Properties
 The Conditional Display Properties dialog
 box enables the function used to display or
 hide the object in specific conditions to be
 configured, and is controlled via a variable.
 For more details related to the usage of
 variables, see Section 7.2.2 Using Variables.

Variable		State
Start	0	🕞 Display
End	0	i Hide

💌 Enable

Dynamic Width

Variable

Dynamic Height

Variable

💌 Enable

As the figure shows, when Start $\ \leq \$ Value $\ \leq \$ End, the object will be hidden.

For Objects:

Drafting (All), General (All), Switch (All), Keyboard (All), Recipe (All), Alarm (All), and Sampling (All)

The following is an overview of the options available in the **Conditional Display Properties** section of the Property View for the object.

Variable	Used to specify the variable to be used for the conditional display.
Start	Used to specify the starting value for the conditional display. Note that the End value must be greater than or equal to the Start value.
End	Used to specify the ending value for the conditional display.
State	Used to specify whether the object to be displayed or hidden in specified conditions.

K. Conditional Control Properties

The **Conditional Control Properties** dialog box enables the function used to enable or disable the application function of the object in specific conditions to be configured, and is controlled via a variable. For more details related to the usage of variables, <u>Section 7.2.2</u> <u>Using Variables</u>.

Variable		~	State
Start	0		🔵 Enable
End	0	<u>^</u>	Oisable

As the figure shows, when Start \leq Value \leq End, the function of the object will be disabled.

For Objects:

General (<u>Numeric</u>, <u>Numeric Table</u>, <u>Drop Down List</u>), <u>Switch (All</u>), Keyboard (<u>Keyboard Button</u>, <u>Keyboard State Button</u>), Recipe(<u>Recipe Numeric</u>, <u>RecipeText</u>, <u>Function Button (Recipe</u>)), and Sampling (<u>Function Button (Sampling</u>))

The following is an overview of the options available in the **Conditional Control Properties** section of the Property View for the object.

Variable	Used to specify the variable to be used for the conditional control.
Start	Used to specify the starting value for the conditional control. Note that the End value must be greater than or equal to the Start value.
End	Used to specify the ending value for the conditional control.
State	Used to specify whether the function to be enabled or disabled in specified conditions.

L. Position and Size Properties

The **Position and Size Properties** dialog box is used to configure the relative position and size of the object.

Location	ı	Size		
×	324	\$ Width	64	
Y	56	\$ Height	64	٢

For Objects:

Drafting (All), General (All), Switch (All), Keyboard (All), Recipe (All), Alarm (All), and Sampling (All)

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The following is an overview of the options available in the **Position and Size Properties** section of the Property View for the object.

Location	Х	Used to specify the horizontal coordinate position for the object
(pixels)	Y	Used to specify the vertical coordinate position for the object
Size	Width	Used to specify the width of the object
(pixels)	Height	Used to specify the height of the object

Note that the coordinates for the upper left corner of the screen design area are (0,0).

M. Keyboard Properties

The **Keyboard Properties** dialog box is used configure the keyboard function that will be activated when a object is clicked.

	Keyboard	
For Objects:	Action	System Keybo 💌
General (<u>Numeric</u> , <u>Numeric Table</u> , <u>Text Box</u> , <u>Password List</u>) and		System Keyboard
Recipe (<u>Recipe Numeric</u> , <u>RecipeText</u> , <u>Recipe List / Record List</u> ,	Screen No.	Personalized Keyboard
Record View)		Hide Keyboard

The following is an overview of the options available in the **Keyboard Properties** section of the Property View for the object.

	System Keyboard	Used to enable an on-screen keyboard with a default style	
Demonstrad Keyboard	Used to enable the on-screen keyboard with the customized		
Action	Action Personalized Reyboard	style. See Section 8.4 Keyboard Objects for more details	
	Hide Keyboard	Used to disable the keyboard function	
Screen No.		Used to specify the page number of the Window screen	

N. Event Properties

The **Event Properties** dialog box is used to edit the macro procedure which will be used when the **Setting** condition (i.e., Release, Press, On Macro, or Off Macro) of the object is triggered. For more details related to the usage of Macros, see the 10-B Macros Section.

Release	Edit Clear
Preview	Choose the trigger condition
	Release Press On Macro Off Macro

The following is an overview of the options available in the **Event Properties** section of the Property View for the object.

Setting/Relea	ase/Press/On Macro/Off Macro: Used to choose the trigger condition for this object.		
Setting	 General (<u>Numeric</u>, <u>Numeric Table</u>) "Setting" means that the macro commands will be triggered after writing data to the variable. See General Properties. 		
Release Press On Macro Off Macro	 Switch (<u>Bit Switch</u>) Four types of trigger conditions can be selected; When the state of the button is Release, Press, On, or Off, the customized macro commands will be triggered. 		
Release Press	 Switch (<u>Multistage Switch, Function Button, Connect Button, Jog (+ / -) Button</u>), Recipe (<u>Function Button (Recipe</u>)), Alarm (<u>Function Button (Alarm</u>)), and Sampling (<u>Function Button (Sampling</u>)) ➢ Two types of trigger conditions can be selected; When the state of the button is Release, Press, the customized macro commands will be triggered. 		
Edit	Used to edit the macro command. When you click the Edit button as the figure above, the Macro Editor dialog box will be displayed, and then you can edit the macro command. See <u>Section 10.6 Macro Editor</u> for more details.		
Clear	Used to clear macro commands displayed in the Preview text box. For more details related to the usage of Macros, see Section 10-B Macros.		
Preview	Used to preview macro commands. For more details related to the usage of Macros, see Section <u>10-B Macros</u> .		

O. Other Properties

The **Other Properties** dialog box is used to assign a user-defined name and description for the object.

For Objects:	Name	Rectangle
Drafting (All), General (All), Switch (All),	Description	
Keyboard (All), Recipe (All), Alarm (All), and	Description	4
Sampling (All)		8

Chapter 9 Advanced Function and Object Usage

The Creator software provides a number of advanced functions and objects that can be used to perform enhanced operations. These are separated into two categories: **Function Management**, which can be used to create and manage the functions that are found in the **Project View** panel (see Section 4.11 "Project View" for details), and **Object Usage**, which can be used to add objects from the **Toolbox** (see Section 4.12 "Toolbox" for details) that use functions related to monitoring and control of the HMI screen.

The process for implementing the advanced functions is to first use the Recipe, Alarm, and Data Sampling functions that are accessed via the **Project View** panel to manage the advanced functions, and then use the Recipe, Alarm, and Data Sampling objects located in the **Toolbox** to design the HMI screen.



9 – (A) Recipe (Available soon)

A **Recipe** is usually used to configure and store device processes or machine parameters, which can then be downloaded from or uploaded to an HMI device. The recipe is stored in the internal memory, meaning that data can be retained after the device is powered off. There are two parts to the structure of a Recipe, the Element, and the Record, each of which are described below.

Element	Record
In a recipe, the device processes or machine	A Record is composed of a number of Elements,
parameters are defined as Elements and a	and a maximum of 32768 records can be created
maximum of 512 elements can be created for each	for each recipe.
recipe. An Element is used to set a mapping	
variable that can be assigned as a BIT, BYTE, CHAR,	
WORD, INT, DWORD, LONG or FLOAT data type.	

For example, the parameters related to a paper cutting process include the Product Name, and the Width (Element1) and the Length (Element2) of the cut. In this example, there are five different products based on the size of the paper to be cut. The structure of the recipe is shown on the right:

Ē	もま 言	2錄 🚽	
	名稱	Paper Width	Paper Length
	A3	29.7	42
	A4	21	29.7
	A5	14.8	21
	B4	25.7	36.4
>	B5	18.2	24.7 ᅌ

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9.1 Recipe Management

The Recipe function is used to create, edit, and manage a recipe, and a maximum of 20 recipes can be created. The basic structure of a recipe includes two components, an Element and a Record, which can be configured in the Recipe Editor dialog box, which is described in subsequent sections below.

In this example, suppose that the operators of a paper manufacturing facility wish to create a recipe to automate their paper cutting process. There are five different sizes of paper, including A3, A4, A5, B4 and B5, and the process parameters for the different sizes include the length and the width. The recipe for this process can be constructed in the following manner:

Recipe	Include a user-defined name for the recipe, e.g., "Paper Size Recipe".
Element	Specify the Elements to be included, e.g., Paper Width and Paper Length
Record	Provide the details of the paper size (A3, A4, A5, B4, B5), including the width and length for each size.

To access the Recipe page, double-click the **Recipe** function in the <u>Project View</u> panel. On the Recipe page, click an empty row in the table and click the Create button to create a new Recipe, and you can also double-click any row to create or edit a Recipe. See next Section for details.



The following is an overview of the options available on the **Recipe** page for the Recipe function.

Create	Used to create a recipe. A maximum of 20 recipes can be created.
Edit	Used to edit a recipe
Delete	Used to delete a recipe
Index	Used to indicate the index number of the Recipe
Information	Used to indicate the details of the Recipe

9.1.1 Recipe Editor

The Recipe Editor dialog box is used to add, edit, and manage the Elements and Records for a recipe, as well as configure the parameters of the recipe. On the Recipe page (see the previous page), double-click any row in the table (Index 0 in this example) to open the **Recipe Editor** dialog box, and then enter the details for the Name, Caption of the Recipe and a Comment. The usage of the Element and Record are described in subsequent sections below

R	ecip	e Editor	r							- 0 - X
Recipe Name Recipe										
Recipe Caption Recipe_01										
Comment For Printer										
		Add	Delete		Сору	Paste	Cut	Down	- U	p
	E	Element	Record							
		Index	Name	Caption	Variable	Fractional	Default	Use Range	Minimum	Maximum
	>	0	Paper Width	Width	Var_Width	1	0	-	0	0
		1	Paper Length	Length	Var_Length	1	0		0	0
	Best Column Width Language 0 Close									

The following is an overview of the options available in the **Recipe Editor** dialog box.

Recipe Name	Used to specify a name for the recipe				
Pacina Cantion	Used to specify the text that will be displayed on the HMI screen				
	Note that multiple languages can be used. See the Language item below				
Comment	Used to add a description for the recipe				
Element Tab	Used to access the Element data page				
Record Tab	Used to access the Record data page				
Add	Used to add a new Element or Record				
Element: 2 El	ement_0003 0 0 0 0				
Record: Record	0 0				

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Delete	Used to delete an Element or Record							
Сору	Used to copy an Element or Record							
Copy Copy (Index 1 / B5) and Element: 1 Pap 2 Eler Record: B5 B5 Paste Cut	Used to copy an Element or Record d Paste (will be pasted to the last row) er Length Length Var_Length 1 0 0 0 ment_0000 Length Var_Length 1 0 0 0 20 26 20 26 Used to paste an Element or Record Used to cut an Element or Record							
Cut (Index 1) and Paste Element: 2 Pape 2 Element 2 Element	e (will be pasted to the last row) ment_0000 Length Var_Length 1 0 0 0 per Length Length Var_Length 1 0 0 0 per Length Length Var_Length 1 0 0 0 ment_0000 Length Var_Length 1 0 0 0							
Down	Used to move the selected Element or Record down one row							
Up	Used to move the selected Element or Record up one row							
Best Column Width	Used to minimize the column width depends on characters in each cells							
Element Reco Index Nar > 0 Pap 1 Pap Element Reco	Element Record Index Name O Paper Width Vidth Var_Width 1 Paper Length Length Var_Length							
Index Name	Caption Variable Fractional Default Use Range Minimum Maximum							
> 0 Paper 1 Paper	Width Var_Width 1 0 Image: Constraint of the second							
LanguageUsed to configure or change the Caption text after selecting the specific language, see Section 11.3 Language for more details on language setting								
0:English 0:English 1:Chinese (T) 2:Chinese (S) Index > 0 1	Name Caption Variable Fractional Default Use Range Minimum Maximum Paper Width 寬(W) Var_Width 1 0 1 0 0 0 Paper Length 長(L) Var_Length 1 0 1 0 0 0							

9.1.2 Element Tab

In a recipe, the device processes or machine parameters are defined as **Elements** and a maximum of 512 Elements can be created for each recipe. The user can set the mapping variable for each element, and the data type can be assigned as a BIT, BYTE, CHAR, WORD, DWORD, INT, LONG or FLOAT.



The following is an overview of the options available in the **Element** tab of the **Recipe Editor** dialog box.

Index	Used to indicate the index number of the Element
Name	Used to indicate the name of the Element, which must be unique in the same recipe
Cantion	Used to specify the name that will be displayed on the HMI screen. Multiple languages
Caption	can be set after you choose the Language option, described on the previous page.
	Used to specify the variable for data access. Note that only numeric type variables are
Variable	supported. The Data type can be assigned as BIT, BYTE, CHAR, WORD, DWORD, INT, LONG
	or FLOAT. See Chapter 7 "Variable" for more details of how to set a variable.
Fractional	Used to specify the position of the decimal point
Default	Used to specify the default settings for an Element
Use Range	Used to specify whether the input range limitations should be enabled for the Element
Maximum	Used to specify the maximum value for the input range
Minimum	Used to specify the minimum value for the input range

To create the Element Data, first double-click the Recipe that has been created to open the **Recipe Editor** dialog box (see Section 9.1.1). On the **Element** tab, click the **Add** button to create a new Element. Enter the details for the Name, Caption, Variable and Fractional, etc., for the Element (Paper Width in this example) and then repeat this process for any additional Elements, for instance, Paper Length in this example.

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9.1.3 Record Tab

A **Record** is composed of a number of Elements, and a maximum of 32768 records can be created for each recipe. The Record Tab is used to create the Records related to a specific Element that has been previously created.

Add	De	lete	Сору	Paste	Cut	t Down Up
Element	cord					
Name Pa	oer W	/idth Pa	aper Length			
Elemen			Record Paper Width	Paper Length]◀	The column headers are displayed depends on the name of elements.
	>	Record Record	0	0] _	
		Record	0	0	$\left \right $	The default value of elements will be
		Record	0	0	٦ſ	displayed when adding a new item.

The following is an overview of the options available in the **Record** tab of the **Recipe Editor** dialog box.

Name Column	Used to specify the name of the Record
	Used to specify the value of the Element. The number of Element columns that
Element Column(s)	are displayed is based on the number of Elements that were created on the
	Element page (see Section 9.1.2 "Element Tab" for details)

In this example, there are five different sizes of paper, including A3, A4, A5, B4 and B5. To create the Record Data for the different sizes of paper, click the **Record** Tab in the **Recipe Editor** dialog box, and then click the **Add** button to create a new Record. Enter a name for the Record in the Name field and then enter the relevant values for both the Paper Width and Paper Length Elements in the respective fields. Repeat this process for all the required Records.

The recipe for this automating the paper cutting process can be configured as the figure below:

Element			Record	
		Name	Paper Width	Paper Length
		A3	29.7	42
		A4	21	29.7
		A5	14.8	21
		B4	25.7	36.4
	>	B5	18.2	24.7 ᅌ

9.2 Recipe Objects

The **Recipe** category of the Toolbox includes a variety of objects that can be used to view or modify the data for elements or records related to a specific recipe on the HMI screen, each of which are described in more detail in the following sections.

To create an object, first click the name of the desired object in the **Recipe** category of the Toolbox. Position the mouse cursor on the Screen Design Area, and then click and hold the left mouse button to drag the object until it is the desired size and shape, as illustrated in the diagram below, and then release the mouse button. After creating a

object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured.

Startup 1: Screen1	Toobox 🗜 🗙
	Drafting
+7%+// //	General
	Switch
	Recipe
Simple Complete	Cursor
	용 Recipe Numeric 🗉
RecipeNu 3	AI Recipe Text
General	Record List
Apparel	• •
Range Record Index Content 💌 0	Alarm
-Border	Sampling
- Shadow	Keyboard
Glisten	HA Seriel

The **Function Button** object is provided in each of the **Switch, Recipe, Alarm** and **Sampling** categories and can be used to execute up to 16 functions, such as recipe transmission, changing screens, or incrementing and decrementing variable values, etc.

When the button is clicked, the functions that have been defined will be executed in sequence. The **Recipe** functions that can be configured in the **Function Button** object include:

Recipe – Add	Recipe – Remove	Recipe – Upload	Recipe – Download
Recipe – Export	Recipe – Import	Recipe – First Record	Recipe – Prior Record
Recipe – Next Record	Recipe – Last Record		

Recipe
🕨 Cursor
BB Recipe Numeric
AI Recipe Text
⊏∎Record List
📼 Recipe List
Record View
Recipe Table View
Function Button

9.2.1 Recipe Numeric



Before using the **Recipe Numeric** object, you need to configure the **Recipe** function in the **Project View** panel, see <u>Chapter 9</u> for more details. This object is used to display the numerical data for the recipe record, see Section <u>9.1.3 Record Tab</u> for more details.

By using this object, you can also input value for the specified record, and the recipe will be directly updated the modified data, which will still be retained even after the device is switched off.

See <u>Section 9.2 Recipe Objects</u> for details of how to create an object. After creating a **Recipe Numeric** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Recipe Numeric** object.

General Properties

The **General Properties** dialog box is used to configure the display data and format to be used for the **Recipe Numeric** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Recipe Numeric** object.

	Posino Indov	Used to specify the index number of the recipe to be displayed
Recipe	Recipe index	Note that if the index number is invalid, the data will be displayed as blank
Data	Pocord Indov	Used to specify the index number of the record to be displayed
	Record Index	Note that if the index number is invalid, the data will be displayed as blank
Recipe	Element	Used to specify the index number of the element to be displayed
Data	Index	Note that if the element number is invalid, the data will be displayed as blank

	Can modify the data	Used to specify whether or not the function that allows the data to be modified is enabled
_	Format	Used to specify the format to be used to display the data: Decimal: The data will be displayed in decimal format Signed Decimal: The data will be displayed in decimal format, with a "+" or "-" sign Octal: The data will be displayed in octal format Hexadecimal: The data will be displayed in hexadecimal format BCD: The data will be displayed in BCD code format
Data Format	Figure Length	Used to specify the maximum number of digits that will be displayed, including any digits following the decimal point. Note that if the length of the data is greater than the value that is set, the data will be displayed as "*". E.g., if the Figure Length is set to 2, the result for a value of "25.7" will be displayed as "**"
	Fill Zero	Used to specify whether the padding zeroes would be added if the length of the data is less than the Figure Length . E.g., if the Figure Length is set to 4, the result for a value of "25.7" will be displayed as "025.7"

• Apparel Properties

The **Apparel Properties** dialog box is used to configure the display format for the **Recipe Numeric** object.

Apparel	
Fore Color	0, 0, 0 💌
Back Color	255, 255, 255 💌
Text Align	Middle-Cent 💌
Font	Tahoma,12 😐
💌 Transpar	ent

The following is an overview of the options available in the **Apparel Properties** section of the Property View for the **Recipe Numeric** object.

Fore Color	Used to specify the color for the text
Back Color	Used to specify the background color for the object
Text Align	Used to specify the position of the text in relation to the border of the object
Font	Used to specify the type and size of the font to be used for the text.
-	Used to specify whether or not the background color will be shown as transparent
Transparent	when displayed on the screen

Range Properties

The **Range Properties** dialog box is used to configure how the format of the **Recipe Numeric** object will change if the maximum or minimum values are exceeded.

💌 Use	
Exceed Max Value	Low Min Value
Fore Color 255, 255, 255	Fore Color 255, 255, 255 💌
Back Color 0, 0, 0	Back Color 0, 0, 0
🗹 Transparent	💌 Transparent

The following is an overview of the options available in the **Range Properties** section of the Property View for the **Recipe Numeric** object.

Use		Used to enable the Range function	
e	Fore Color	Used to specify the color for the text	
Exceed Back Color	Used to specify the background color for the object		
Max.	_ .	Used to specify whether or not the background color will be shown	
Value Transparent	Iransparent	as transparent when displayed on the screen	
	Fore Color	Used to specify the color for the text	
LOW	Back Color	Used to specify the background color for the object	
iviin.	_	Used to specify whether or not the background color will be shown	
Value Transparent		as transparent when displayed on the screen	

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Recipe Numeric** object. <u>Border (1)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Keyboard</u>, and <u>Other</u>.

9.2.2 **Recipe Text**



Before using the **Recipe Text** object, you need to configure the **Recipe** function in the Project View panel, see <u>Chapter 9</u> for more details. This object is used to display the Recipe Caption (e.g., Recipe 01, see Section 9.1.1), the Element Caption (e.g., Width, see

Section 9.1.2), or the Record Name (e.g., B5, see Section 9.1.3) which can be configured to allow or forbid the display name changed. The recipe will then be updated based on the data that has been modified, and the data will still be retained even after the system has been powered off.

See Section 9.2 Recipe Objects for details of how to create an object. After creating a Recipe Text object, the Property View panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the Recipe Text object.

Property View			Ŧ ×
 RecipeTextBox General Apparel Border Text Shadow Glisten Offset Conditional Display Conditional Control Position and Size Keyboard Other 	Data Display Data Recipe Index	Recipe List Caption Constant 🕑 0	

General Properties

The General Properties dialog box is used to specify the caption or name to be displayed for the Recipe Text object.

Data		D	ata	
Display Data	Recipe Module Name		Display Data	Element Caption
Recipe Index	Constant 💌 0		Recipe Index	Constant 🕑 0
Record Index	Constant 💌 0		Element Index	0
Edit Text	Can modify 💌			

The following is an overview of the options available in the **General Properties** section of the Property View for the **Recipe Text** object.

Display Data	Used to select the data to be displayed, which can be the recipe caption, the element caption or the record name
Recipe Index / Record Index	Used to assign an index number for the Recipe or the Record, which can be either a constant or a variable Note that if the index number is invalid, the data will be displayed as blank
Element Index	Used to assign an index number for the Element Note that if the index number is invalid, the data will be displayed as blank
Edit Text	Used to specify whether or not the display name is allowed to be modified To edit the name, click the object on the HMI screen and then enter a new name

• Apparel Properties

The **Apparel Properties** dialog box is used to configure the display format for the **Recipe Text** object.



The following is an overview of the options available in the **Apparel Properties** section of the Property View for the **Recipe Text** object.

Fore Color	Used to specify the color for the text
Back Color	Used to specify the background color for the object
Text Align	Used to specify the position of the text in relation to the border of the object
Font	Used to specify the type and size of the font to be used for the text.
Transparont	Used to specify whether or not the background color will be shown as
iransparent	transparent when displayed on the screen

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Recipe Text** object. <u>Border (1)</u>, <u>Text Shadow</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional Control</u>, <u>Position and Size</u>, <u>Keyboard</u>, and <u>Other</u>.

9.2.3 Recipe List / Record List

Before using the **Recipe List/Record List** object, you need to configure the **Recipe** function in the **Project View** panel, see <u>Chapter 9</u> for more details.



The **Recipe List/Record List** object is used to create a list of recipes or records. When a recipe or a record is selected from the list, its index value will be written to the specified variable. If the variable is set to a valid recipe/record index, the corresponding caption of the recipe (or the name of the record) will be displayed. However, if the index value is invalid, a blank row will be displayed.

For example, suppose there are five size of paper, including A3, A4, A5, B4 and B5, the index value of records is 0 to 4, and the record data has been created, see <u>Section 9.1.3 Record Tab</u>. The record list will be shown as the figure.



See <u>Section 9.2 Recipe Objects</u> for details of how to create an object. After creating a **Recipe List/Record List** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Recipe List/Record List** object.

Property View		t X
 RecipeComboBox General Apparel Border Glisten Security Offset Conditional Display Position and Size Keyboard Other 	Recipe Data Source Recipe List Recipe Index Variable	

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General Properties

The **General Properties** dialog box is used to configure the attributes for the **Recipe List/Record List** object. The attributes that will be displayed depend on whether the source is defined as either Recipe List or Record List.

Recipe Data		
Source	Recipe List	Recipe List
Recipe Index	Variable 💌	Recipe Record

The following is an overview of the options available in the **Recipe Data** dialog box in the **General Properties** section of the Property View for the **Recipe List/Record List** object when the **Recipe List** option is selected.

Source	Used to specify the display source, which can be either Recipe List or Recipe Record
Recine Index	Used to assign an index number for the Recipe, which can be either a constant or a
Recipe mack	variable. Note that if the index is invalid, the data will be displayed as blank

Recipe Data			
Source	Recipe Rec	ord	
Recipe Index	Constant	• 0	٢
Record Index		💌 🔤 🗹 Can se	et name

The following is an overview of the options available in the **Recipe Data** dialog box in the **General Properties** section of the Property View for the **Recipe List/Record List** object when the **Record List** option is selected.

Source	Used to specify the display source, which can be either Recipe List or Recipe Record			
Recine Index	Used to assign an index number for the Recipe, which can be either a constant or a			
	variable. Note that if the index is invalid, the data will be displayed as blank			
	Used to assign a variable for the Record. If one of the records is selected when the			
Record Index	HMI device is operating, the index number will be written to this variable.			
	Note that if the index is invalid, the data will be displayed as blank			
	Used to specify whether or not the name of the record is allowed to be modified			
Can set name	To edit the name, click the name and then enter a new name			

• Apparel Properties

The **Apparel Properties** dialog box is used to configure the display format for the **Recipe List/Record List** object.

Apparel	
Fore Color	0, 0, 0 💌
Back Color	255, 255, 255 💌
Text Align	Middle-Cent 💌
Font	Tahoma,12 😐
💌 Transpare	ent

The following is an overview of the options available in the **Apparel Properties** section of the Property View for the **Recipe List/Record List** object.

Fore Color	Used to specify the color for the text
Back Color	Used to specify the background color for the object
Text Align	Used to specify the position of the text in relation to the border of the object
Font	Used to specify the type and size of the font to be used for the text.
	Used to specify whether or not the background color will be shown as
Transparent	transparent when displayed on the screen

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Recipe List/Record List** object. <u>Border (1)</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, <u>Keyboard</u>, and <u>Other</u>.

9.2.4 Record View

9				1
	Element	Value		
	Element1	1		
	Element2	2		
_	Element3	3		
	Element4	4	▼	
	▲	Þ		

The **Record View** object is used to view the data of all the Elements contained in a record in a table format. Once the Recipe and Record index numbers have been assigned, the data (see <u>Section 9.1.1</u> for more details) will be automatically displayed. Click a Value displayed in the table allows the Element data to be directly modified.

See <u>Section 9.2 Recipe Objects</u> for details of how to create an object. After creating a **Record View** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Record View** object.

Property View	₽ ×
 RecipeRecordView General Apparel Border Glisten Security Offset Conditional Display Position and Size Keyboard Other 	Data Recipe Index Constant ♥ 0 ♥ Record Index Constant ♥ 0 ♥ ♥ Can modify the data

General Properties

The General Properties dialog box is used to configure the attributes for the Record View object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Record View** object.

Recipe Index	Used to assign an index number for the Recipe or the Record, which can be
Record Index	either a constant or a variable. Note that if the index is invalid, the data will be displayed as blank
Can modify the data	Used to specify whether or not the data is allowed to be modified To edit the data, click the item and then enter a new value.

• Apparel Properties

The Apparel Properties dialog box is used to configure the display format for the Record View object.

Column	Text	Select
Title Width 100	Fore Color 0, 0, 0	Fore Color 255, 255, 255
Data Width 100		
Font Calibri,12	Back Color 255, 255, 255 💌	Back Color 0, 0, 0

The following is an overview of the options available in the **Apparel Properties** section of the Property View for the **Record View** object.

	Title Width	Used to specify the width of the Element column		
	Data Width	Used to specify the width of the Value column		
Column	Font	Used to specify the type and size of the font to be used for the text in		
		the table		
	Fore Color	Used to specify the text color to be used for the data		
Text	Back Color	Used to specify the color to be used for the background of all data		
		cells		
	Fore Color	Used to specify the text color to be used for the selected data cell		
Select	Deck Caler	Used to specify the color to be used for the background of the		
	васк союг	selected data cell		

See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Record View** object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, <u>Keyboard</u>, and <u>Other</u>.

9.2.5 Recipe Table View

Ļ					
	N	D.	Name	Element	Element
	1		Record 1	++++++++	++++++++
	2	!	Record 2	#####	######
	3	;	Record 3	++++++++	++++++++
	4		Record 4	++++++++	++++++++
	┛				►

The **Recipe Table View** object is used to view the data of all the Elements and Records contained in a Recipe in a table format. Once a valid Recipe index number has been assigned, the data related to the recipe will be automatically displayed. Clicking a Record displayed in the table allows the index number to be written to the relevant variable. Note that this object is only used to view the Recipe data which cannot be modified.

See <u>Section 9.2 Recipe Objects</u> for details of how to create an object. After creating a **Recipe Table View** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Recipe Table View** object.

roperty View					
 RecipeTableView General Apparel Border Glisten Offset Conditional Display Position and Size Other 	Data Recipe Index Variable Record Index Variable Column 0 Index Width 50 0 Title Width 80 0 Data Width 60 0 Row Height 20 0	Format Data Format DEC			

General Properties

The **General Properties** dialog box is used to configure the attributes and format of the displayed recipe for the **Recipe Table View** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Recipe Table View** object.

	Recipe Index	Used to assign an index number for the Recipe, which can be either a constant or a variable. Note that if the index is invalid, the data will be displayed as blank
Data	Record Index	Used to retrieve the index number of the currently selected Record. When a record is selected, the index number for the Record will be written to the variable.
Column	Index Width	Used to specify the width of the column used for the index number

	Title Width	Used to specify the width of the column used for the name of the Record
	Data Width	Used to specify the width of the column used for the Recipe Element
	De Helshi	Used to specify the height of each row. If the height is lower less than the size
	Row Height	of the font, the size of the font will be used as the height of the row.
Format	Data Format	Used to configure the format used to display the data, which can be either
		decimal, Hexadecimal or BCD.

For example, we set the Recipe Index as "0", see <u>Section 9.1</u> for more details on how to create a new Recipe, and assign the variable "Tag3" with the data type "WORD" (see Chapter 7) to the Record Index field. In addition, we create the Numeric object to read/write the variable "Tag3". If you select No. 0 in the Recipe table, the Numeric object will display as "0", and if you select No. 2 in the **Recipe table**, the **Numeric** object will display as "0", and if you select No. 2 in the **Recipe table**, the **Numeric** object will display as "2".

No.	Name	Width	Length	
0	A3	29.7	42.0	
1	A4	21.0	29.7	
2	A5	14.8	21.0	
3	B4	25.7	36.4	
4	B5	18.2	24.7	ļ

Recipe Table View

Recipe Index: 0

Record Index: Tag3 (WORD)

Nı	Im	eric

0

Read/Write: Tag3 (WORD)

Apparel Properties

The **Apparel Properties** dialog box is used to configure the display format for the **Recipe Table View** object.

Text		Select	
Font	Calibri,12 😶	Fore Color	0, 0, 255 🛛 💌
Fore Color	0, 0, 0 💌	Back Color	255, 0, 0 🔛
Back Color	255, 255, 255 💌		

Width

29.7

21.0

14.8

25.7

18.2

Length

42.0

29.7

36.4

24.7

2

No.

0

1

2

3

4

Name

A3

A4

B4

B5

The following is an overview of the

options available in the Apparel Properties section of the Property View for the Recipe Table View object.

	Font	Used to specify the type and size of the font to be used for the text in the table			
lext	Fore Color	sed to specify the text color to be used for the data			
	Back Color	Used to specify the color to be used for the background of all data rows			
Select	Fore Color	Used to specify the text color to be used for the selected data row			
	Back Color	Used to specify the color to be used for the background of the selected			

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Recipe Table View** object. <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

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9.2.6 Recipe Function Button

Function Buttons can be used to execute a wide range of functions, such as transmitting recipes, changing screens, or incrementing and decrementing values, etc. When a button is pressed, any functions that have been defined will be executed sequentially, and a maximum of 16 functions can be implemented. The **Function Button** object is available in the each of the **Switch, Recipe, Alarm**, and **Sampling** categories.



The **Recipe Function Button** object provides the ability to add or remove a Recipe Record, upload or download a Recipe Record, import or export a Recipe, as well edit the Recipe Records, etc.

See <u>Section 9.2 Recipe Objects</u> for details of how to create an object. After creating a **Recipe Table View** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Recipe Table View** object.

roperty View			
Property View	Add Remove Up Down No. Function Function Change Screen 1 Change Screen PageCode Recipe - Add 1 Change Screen PageCode Recipe - Remove Recipe - Upload Recipe - Download Recipe - Export Recipe - Import Recipe - First Record		
Conditional Display Conditional Control Position and Size Event Other			

General Properties

The **General Properties** dialog box is used to configure the actions that can be performed by the **Recipe Function Button** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Recipe Function Button** object.

Add	Used to add a function. A maximum of up to 16 functions can be used for one button
Remove	Used to remove a selected function
Move Up	Used to move the selected item up
Move Down	Used to move the selected item down
Function	Used to select the function from the Function drop-down menu

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Recipe Functions:

The following is an overview of the functions that can be used in conjunction with the **Recipe Function Button** object.

Recipe - Add

The **Recipe - Add** function is used to add a new Record in the specified Recipe, and then the index number of the Record will be written to the referenced variable.

Function		Recipe	Recipe - Add		
Recipe Index	Con	istant	•	0	\$
Record Index					•

Recipe - Remove

0

0

а

Constant

Constant

The following is an overview of the options available for the **Recipe - Add** function.

Recipe Index	Used to assign an index number for the Recipe, which can be either a constant or a
	variable. See Section 9.1 Recipe Management for more details.
Record Index	Used to assign a variable for the Record. After clicking this function button, the index
	number will be written to this variable. See Chapter 7 Variables for more details.

For example, we set the Recipe Index as "0", and then assign the variable "Tag6" with the data type "BYTE" to the Record Index field. As the following conditions, when you click the Recipe function button, a Recipe Record will be added, and the index number of the record will be written to the variable "Tag6".

Recipe Table View	No.	Name	Width	Length		
Recipe Index: 0	0	A3	29.7	42.0		
Record Index: Tag6 (BYTE)	1	A4	21.0	29.7		Recipe Function Button
	2	A5	14.8	21.0	Recipe - Add	Recipe Index: 0
	3	B4	25.7	36.4		Record Index: Tag6 (BYTE)
	4	B5	18.2	24.7	5	
	5	New For	0.0	0.0	Numeric	
					Read: Tag6 (B	SYTE)

Recipe - Remove

Re

Re

The **Recipe - Remove** function is used to remove or delete the specified Recipe record.

The following is an overview of the options available for the **Recipe - Remove** function.

available for the recipe - remove function.				
ecipe Index	Used to assign the index number of the Recipe to be used, which can be either a constant or a variable. See Section 9.1 Recipe Management for more details.			
ecord Index	Used to assign the index number of the Record to be removed, which can be either			

Function

Recipe Index

Record Index

For example, we set the Recipe Index as "0", and set the Record Index as "2". When you click the Recipe function button, the Record (No.2) will be removed.

Recipe Recipe	e Table V e Index: (/ iew)						
No.	Name	Width	Length	Recipe Function Button Recipe Index: 0	No.	Name	Width	Length
0	A3	29.7	42.0	Record Index: 2	0	A3	29.7	42.0
1	A4	21.0	29.7		1	A4	21.0	29.7
2	A5	14.8	21.0	Recipe - Del	2	B4	25.7	36.4
3	B4	25.7	36.4		3	B5	18.2	24.7
4	B5	18.2	24.7					

Recipe - Upload

The **Recipe - Upload** function is used to upload the latest data from the connected device (refer to <u>Chapter6 Connections</u> and <u>Section 7.2 Editing</u> <u>Variables</u>) so that the current Recipe record can be updated.

Function	Recipe - Upload	~
Recipe Index	Constant 🕑 0	0
Record Index	Constant 🕑 0	\$
	🗹 Show Message	

The following is an overview of the options available for the Recipe - Upload function.

Recipe Index	Used to specify the index number of the Recipe to be used, which can be either a
	constant or a variable. See Section 9.1 Recipe Management for more details.
Record Index	Used to specify the index number of the Record to be updated, which can be either a
	constant or a variable. See Chapter 7 Variables for more details.
	Used to specify whether or not the confirmation dialog box will be displayed after
Show Message	you click the button

For example, we set the Recipe Index as "0", set the Record Index as "3", and check the **Show Message** checkbox. When you click the Recipe function button, the confirmation dialog box will be displayed. Make sure you want to overwrite the data, and click "Yes" button to update the Record (No.3).

Recipe Table View Recipe Index: 0

-				F
No.	Name	Width	Length	F
0	A3	29.7	42.0	F
1	A4	21.0	29.7	Г
2	A5	14.8	21.0	
3	B4	25.7	36.4	-
4	B5	18.2	24.7	

Recipe Function Button
Recipe Index: 0
Record Index: 3

Recipe - Upload



Recipe - Download

The **Recipe - Download** function is used to download the current data of the Recipe Record to the connected device (refer to <u>Chapter6 Connections</u> and <u>Section 7.2 Editing Variables</u>) so that it can be executed.

Function	Recipe - Download	-
Recipe Index	Constant 🕑 0	\$
Record Index	Constant 💌 0	¢
	🗹 Show Message	

The following is an overview of the options available for the **Recipe - Download** function.

Recipe Index	Used to specify the index number of the Recipe to be used, which can be either a
	constant or a variable. See Section 9.1 Recipe Management for more details.
Record Index	Used to specify the index number of the Record to be downloaded, which can be
	either a constant or a variable. See Chapter 7 Variables for more details.
	Used to specify whether or not the confirmation dialog box will be displayed after
Show Message	you click the button

For example, we set the Recipe Index as "0", and set the Record Index as "1". When you click the Recipe function button, the Record (No.1) will be downloaded to the PAC.



Recipe - Export

The **Recipe - Export** function is used to save all recipes as a file and then export it to the storage memory using the specified file name.

Function	Recipe - Export	•
File name	Recipe.rp	

To use this function, select the **Recipe - Export** option from the Function drop-down menu, and then enter a name for the **File** in the File Name text field.
Recipe - Import

The **Recipe - Import** function is used to import a recipe file from the storage memory to replace the current Recipe(s), see Section 9.1 for more details about the Recipe(s).

Function	Recipe - Import	~
File name	Recipe.rp	

To use this function, select the **Recipe - Import** option from the Function drop-down menu, and then enter a name for the **File** in the File Name text field.

Recipe – First Record

The **Recipe - First Record** function is used to select the first record, and the index number "0" will be written to the specified variable.

Function		Recipe	e - Firs	t Record	~
Recipe Index	Cor	istant	-	0	0
Record Index					•

The following is an overview of the options available for the Recipe - First Record function.

Recipe Index	Used to specify the index number of the Recipe to be used, which can be either a
	constant or a variable. See Section 9.1 Recipe Management for more details.
Record Index	Used to specify the index number of the Record to be set, which can be either a
	constant or a variable. See Chapter 7 Variables for more details.

In this case, each time you click the Recipe function button, the first record will automatically be selected, and the variable (e.g., Tag6) will be set to 0.

Recipe Table View



No.	Name	Width	Length	Recipe Index: 0	No.	Name	Width	Length
0	A3	29.7	42.0	Record Index: Tag6 (BYTE)	0	A3	29.7	42.0
1	A4	21.0	29.7		1	A4	21.0	29.7
2	A5	14.8	21.0	Recipe -	2	A5	14.8	21.0
3	B4 🕟	25.7	36.4		3	B4	25.7	36.4
4	B5	18.2	24.7	·	4	B5	18.2	24.7

■ Recipe – Prior Record

The Recipe - Prior Record function is used to select the previous record. If the value of the variable for

the Record Index is greater than 0, then the value will be decremented by 1; if the value is less than or equal to 0, then the value will be set to 0.

Function		Recipe	e - Pric	or Record	~
Recipe Index	Cons	tant	-	0	0
Record Index					•

The following is an overview of the options available for the **Recipe - Prior Record** function.

Recipe Index	Used to specify the index number of the Recipe to be used, which can be either a constant or a variable. See Section 9.1 Recipe Management for more details.
Record Index	Used to specify the index number of the Record to be set, which can be either a constant or a variable. See Chapter 7 Variables for more details.

In this case, when you click the Recipe function button, the previous record will automatically be selected, and the index number (e.g., 2) will be written to the variable (e.g., Tag6).

Recipe Table View Recipe Index: 0

Γ	No.	Name	Width	Length	Recipe Function Button	No.	Name	Width	Length
I	0	A3	29.7	42.0	Recipe Index: U Record Index: Tag6 (BYTE)	0	A3	29.7	42.0
Î	1	A4	21.0	29.7		1	A4	21.0	29.7
ĺ	2	A5	14.8	21.0	Recipe -	2	A5	14.8	21.0
	3	B4 📐	25.7	36.4		3	B4	25.7	36.4
Ī	4	B5	18.2	24.7		4	B5	18.2	24.7

Recipe – Next Record

The **Recipe - Next Record** function is used to select the next record. If the value of the variable for the Record Index is less than the total number of Records, then the value will be incremented by 1; if the value is greater than the total number, the value will not be changed.

Function		Recip	e - Prie	or Record	-
Recipe Index	Con	stant	~	0	0
Record Index					~

The following is an overview of the options available for the **Recipe - Next Record** function.

Recipe Index	Used to specify the index number of the Recipe to be set, which can be either a constant or a variable. See Section 9.1 Recipe Management for more details.
Record Index	Used to specify the index number of the Record to be set, which can be either a constant or a variable. See Chapter 7 Variables for more details.

In this case, when you click the Recipe function button, the next record will automatically be selected, and the index number (e.g., 4) will be written to the variable (e.g., Tag6).

Recipe Table View

Recipe Index: 0

No.	Name	Width	Length	Recipe Function Button Recipe Index: 0	No.	Name	Width	Length
0	A3	29.7	42.0	Record Index: Tag6 (BYTE)	0	A3	29.7	42.0
1	A4	21.0	29.7		1	A4	21.0	29.7
2	A5	14.8	21.0	Recipe -	2	A5	14.8	21.0
3	B4 🗼	25.7	36.4	Next Record	3	B4	25.7	36.4
4	B5	18.2	24.7		4	B5	18.2	24.7

Recipe – Last Record

The **Recipe - Last Record** function is used to set the value of the variable for the Record Index to the maximum value for the Record Index.

Function	Re	ecipe - La	ast Record	~
Recipe Index	Consta	nt 💌	0	
Record Index				~

The following is an overview of the options available for the **Recipe - Last Record** function.

Recipe Index	Used to specify the index number of the Recipe to be set, which can be either a
	constant or a variable. See Section 9.1 Recipe Management for more details.
Pocord Indox	Used to specify the index number of the Record to be set, which can be either a
Record Index	constant or a variable. See Chapter 7 Variables for more details.

In this case, when you click the Recipe function button, the last record will automatically be selected, and the index number (e.g., 4) will be written to the variable (e.g., Tag6).

Recipe Table View

Recipe Index: 0

r	Recipe Function Button								
1	No.	Name	Width	Length	Recipe Index: 0	No.	Name	Width	Length
I	0	A3	29.7	42.0	Record Index: Tag6 (BYTE)	0	A3	29.7	42.0
T	1	A4	21.0	29.7		1	A4	21.0	29.7
ľ	2	A5	14.8	21.0	Recipe -	2	A5	14.8	21.0
ľ	3	B4	25.7	36.4		3	B4	25.7	36.4
ľ	4	B5	18.2	24.7		4	B5	18.2	24.7

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Recipe Function** Button object. <u>Text</u>, <u>Picture</u>, <u>Border (2)</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional</u> <u>Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.

9 – (B) Alarms (Available soon)

Creator provides the ability to configure an Alarm object so that if the condition of the device becomes abnormal, such as when the temperature being monitored is too high or too low, etc., an alarm will be triggered. An alarm notification will then be displayed via on-screen messages, which can be either a text message or a visual warning, to inform the on-site operators that a problem has occurred, and to assist in troubleshooting the error, while also providing a record of the messages.

Alarm Features:

- 1. Up to 1000 alarm records can be displayed
- 2. All alarm records are stored in the retained memory so that they will not be cleared when the device is rebooted
- 3. Both Digital and Analog alarms can be recorded
- 4. The alarm scan cycle is one second
- 5. Up to 5000 Digital and Analog alarm records can be configured
- 6. Two types of alarm messages (scrolling text or static text) can be used to inform the triggering alarm
- 7. After an alarm is triggered, the HMI screen can be automatically switched to the alarm screen
- 8. Alarm records can be exported to the storage memory in a CSV file format by using the Alarm Function Button object

There are two components to the **Alarm** functionality, including Alarm Function Management and Alarm Object usage, each of which is described in more detail below:

Alarm Function Management:

This component is used to configure a function to be used in conjunction with an alarm, and including digital and analog alarms, together with the alarm message settings, as described below:

Digital	Used to configure an alarm that will be triggered based on digital data
Analog	Used to configure an alarm that will be triggered based on analog data
Alarm Settings	Used to configure any message that will be displayed when an alarm is triggered

For more details related to the usage of Alarm functions, see Section 9.3 Digital Alarm Management, 9.4 Analog Alarm Management, and 9.5 Alarm Settings.

Alarm Objects:

This component is used to add an Alarm object to the HMI screen, and includes the Alarm View object and the Alarm Function Button object, which can be used to view or to export, or to remove Alarm records.

For more details related to the usage of Alarm objects, see Section 9.6 Alarm Objects.

9.3 Digital Alarm Management

The **Digital** function is used to configure an alarm that will be triggered based on digital data.

Project View	×		
🖃 - 🕨 My Proj	ect		
🗄 🛅 Alarr	n		
- 📑 D	igital		
A	nalog		
Alarm Settings			

To open the **Digital** page, double-click the **Digital** item of the **Alarm** folder in the **Project View** panel. Check the **Enable** checkbox to allow the digital alarm functions to be added, edited, and managed.

	Digit Enable	Dy Paste Cut			
	Number	Variable	Detonate Active Alarm Caption		
>	> 1 Alarm_01		Rasing Edge	Alarm test-01	
*					

The following is an overview of the options available on the **Digital** page.

Enable	Used to enable the Digital Alarm function				
Vdd	Used to add the digital alarm				
Auu	(See Section 9.3.1 "Adding a new Digital Alarm" for more details)				
Editor	Used to edit the selected alarm				
Eultor	(see Section 9.3.2 "Editing an existing Digital Alarm" for more details)				
Delete	Used to delete the selected alarm				
Сору	Used to copy the selected alarm data				
Paste	Used to paste the alarm data that was copied or cut				
Cut	Used to cut the selected alarm data				

9.3.1 Adding a new Digital Alarm

The **Add New Digital Alarm** dialog box is used to configure a new Digital Alarm. As illustrated in the figure above, click the **Add** button on the **Digital** page to open the **Add New Digital Alarm** dialog box. Refer the following table to enter the details for the relevant attributes in the respective fields, and then click the **OK** button to save the new Alarm.

9.3.2 Editing an existing Digital Alarm

The **Edit Digital Alarm** dialog box is used to modify the attributes for an existing Digital Alarm. As illustrated in Section 9.3, click the **Editor** button on the **Digital** page to open the **Edit Digital Alarm** dialog box. Edit any of the details for the relevant attributes as necessary, and then click the **OK** button to save the new configuration.

U U	Add New Digital Alarm	
Edit Digital Alarm Variable Alarm 01 Detonate ActiveRasing Edge Alarm Page 0 Grade Macmon	Add New Digital Alarm Variable Detonate ActiveNo Action Alarm Page 0 Grade Message Record Record Detonate NotifyNot Use Alarm Caption Alarm Explain Alarm Group Group1 Group2 Group3 Group4	Alarm Group Group1 Group2 Group3 Group4 Group5 Group6 Group7 Group8 Group10 Group11 Group12 Group12 Group13 Group13 Group14 Group15 Group15 Group16 Group17 Select A Disable A
Record Record Detonate Notify Use Tag_1 Alarm Caption Alarm test-01 Alarm Explain	Group6 Group7 Group8 Group9 Group10 Group11 Group12 Group13 Group14 Group15 Group15	UK Caricer
	Group17 Select Al Disable A	

The following is an overview of the options available in either the Add New Digital Alarm or the Edit Digital Alarm dialog box.

Variable	Used to specify the variable that will be used to control the Alarm. For more details related to the usage of variables, see the Variables Section.		
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C	opyright © 2013 ICP DAS Co., Ltd. All Rights Reserved. 🖂 🛛 E-mail: service@icpdas.com		

	Licod to specify the trigger conditions for the Alarm, where:				
	No Actions				
	No alarm actions will be triggered				
	Rising Edge:				
	The Alarm will be triggered when the value of the variable changes from 0 to 1				
	Falling Edge:				
	The Alarm will be triggered when the value of the variable changes from 1 to 0				
Detonate Active	Rising and Falling Edges:				
	The Alarm will be triggered when the value of the variable changes from either 1 to 0				
	or from 1 to 0				
	High Level (ON):				
	The Alarm will be triggered when the value of the variable is 1				
	Low Level (OFF):				
	The Alarm will be triggered when the value of the variable value is 0				
	For more details related to the usage of variables, see the Variables Section.				
	Used to assign a specific HMI screen to be displayed if an alarm is triggered. Setting a				
Alarm Page	value of 0 means that the screen will not be changed.				
	Used to identify the alarm level using an icon, which will be displayed on the Alarm				
Grade	View object and can be defined as: Message (\mathbf{Q}) Warning $(\mathbf{\Lambda})$ and Error (\mathbf{X})				
Record	Used to specify whether or not the triggered alarm will be recorded in the Alarm				
	View object, see Section 9.6.1 for more details				
	Used to specify whether or not a notification will be issued when the alarm is				
Detonate Notify	triggered, which is configured using a variable. For more details related to the usage				
	of variables, see the Variables Section				
Alarm Cantion	Used to specify a caption for the alarm which will be displayed on the Alarm View				
	object				
	Used to provide an explanation of the alarm, which will be displayed when the alarm				
	record is double-clicked				
Alarm Group	Used to add this alarm to the specified group(s)				

The following is an Alarm View object; see Section 9.6.1 for more details.

		no.	Caption	Date	Time	Elapsed	
	0	1	Alarm1 🦷	2016/10/03	14:40	00:00:00	
Alarm Grade	⚠	2	Alarm2 Ala	rm Caption	14:40	00:00:00	Alarm Record
	×	3	Alarm3	2010/10/03	14:40	00:00:00	LJ

9.4 Analog Alarm Management

The **Analog** function is used to configure an alarm that will be triggered based on analog data.



To open the **Analog** page, double-click the **Analog** item of the **Alarm** folder in the **Project View** panel. Check the **Enable** checkbox to allow the digital alarm functions to be added, edited, and managed.

		Analogy							
\langle	Enable Add		Editor	Delete	Copy Paste Cut				
ſ		Number	Variable	Condition	Compare Value	Alarm Caption			
	>	1	Analog_Alarm01	=	Constant : 0	Alarm_A1			
-	*								

The following is an overview of the options available on the **Analog** page.

Enable	Used to enable the Analog Alarm function				
Vdd	Used to add the analog alarm				
Auu	(See Section 9.4.1 "Adding a new Analog Alarm" for more details)				
Editor	Used to edit the selected alarm				
Eultor	(see Section 9.4.2 "Editing an existing Analog Alarm" for more details)				
Delete	Used to delete the selected alarm				
Сору	Used to copy the selected alarm data				
Paste	Used to paste the alarm data that was copied or cut				
Cut	Used to cut the selected alarm data				

9.4.1 Adding a new Analog Alarm

The **Add New Analog Alarm** dialog box is used to configure a new Analog Alarm. As illustrated in the figure above, click the **Add** button on the **Analog** page to open the **Add New Analog Alarm** dialog box. Enter the details for the relevant attributes in the respective fields, and then click the **OK** button to save the new Alarm.

9.4.2 Editing an existing Analog Alarm

The **Edit Analog Alarm** dialog box is used to modify the attributes for an existing Analog Alarm. As illustrated in Section 9.4, click the **Editor** button on the **Analog** page to open the **Edit Analog Alarm** dialog box. Edit any of the details for the relevant attributes as necessary, and then click the **OK** button to save the new configuration.

- -	Add New Analogy Alarm	×
	Variable	Alarm Group
See Section 9.4.1 to know	Condition =	Group1
how to open this dialog box.	Compare Value constant III 0	Group2
L		Group3
	Alarm Page 0	Group5
	Grade Message	Group6
	Record Record	Group8
	Detonate Noti Not Use 💌	Group9
	Alarm Caption	Group11
	Alere Suchia	Group12
Edit Analogy Alarm	Alarm Explain	Group14
		Group15
Variable Analog_Alarm01	Alarm Group	Group16
Condition =	Group1	🔲 Group18 👿
	Group2	Select Al Disable A
Compare value Constant 🕑 0	Group3	
Alarm Page 0	Group5	OK Cancel
Grade Message	Group6	
Record Record	Group7	
	Group9	
Tag_2	Group10	
Alarm Caption Alarm_A1	Group12	
Alarm Explain Analog01	Group13	
	Group14	
	Group16	
	Group17	
	Group18	
	Select A Disable A	

The following is an overview of the options available in either the **Add New Analog Alarm** or the **Edit Analog Alarm** dialog box.

Variable	Used to specify the variable that will be used to control the alarm. For more details					
	related to the usage of variables, see the Variables Section.					
	Used to specify the method used to perform the comparison of values, where:					
	=: An alarm will be triggered if the value of the variable is equal to the value being					
	compared					
	>: An alarm will be triggered if the value of the variable is larger than the value					
	being compared					
Condition	>=: An alarm will be triggered if the value of the variable is larger than or equal to					
	the value being compared					
	<: An alarm will be triggered if the value of the variable is smaller than the value					
	being compared					
	<=: An alarm will be triggered if the value of the variable is smaller than or equal to					
	the value being compared					
	Used to specify the value to be used to compare the condition action, which is					
Compare Value	configured using either a constant or a variable. For more details related to the					
	usage of variables, see the Variables Section.					
Alarm Page	Used to assign a specific HMI screen to be displayed if an alarm is triggered. Setting a					
	value of 0 means that the screen will not be changed.					
Grade	Used to identify the alarm level using an icon, which will be displayed on the Alarm					
	View object, and can be defined as: Message (💟), Warning (🔼), and Error (🔀)					
Record	Used to id whether or not the message will be recorded in the Alarm View object,					
	see Section 9.6.1 for more details					
	Used to specify whether or not a notification will be issued when the alarm is					
Detonate Notify	triggered, which is configured using a variable. For more details related to the usage					
	of variables, see the Variables Section					
Alarm Cantion	Used to specify a caption for the alarm which will be displayed on the Alarm View					
	object					
Alarm Explain	Used to provide an explanation of the alarm, which will be displayed when the alarm					
	record is double-clicked					
Alarm Group	Used to add this alarm to the specified group(s)					

The following is an Alarm View object; see Section 9.6.1 for more details.

	no.	Caption	Date	Time	Elapsed	
	1	Alarm_A02	2016/10/05	14:09	000:00:31	
Alarm Grade	2	Alarm_A0 A	larm Caption	14:09	000:00:31	Alarm Record

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9.5 Alarm Settings



To open the Alarm Settings page, double-click the **Alarm Settings** item of the **Alarm** function in the **Project View** panel. Check the **Enable** checkbox to activate the attributes that can be used to configure the display style for the alarm message. Note that the message will not be displayed again when the triggering **condition** of the alarm is not satisfied (see Section 9.3 and 9.4).

Startup	arm Setting					
Alarm Message Set						
Enable						
Base Setting						
Object Type	Moving Sign 💌	Μ	loving Direction	Left 💌		Devidence
Position	Up 💌	Μ	loving Distance	8		Preview
Click Jump Page	No jump 💌	D	istance Time	200 🜔 ms		
Height	33	Μ	lessage Distance	32		
Text		1	Shadow		1	Screen
Text Color	0, 0, 0 💌		💌 Enable			
Back Color	255, 255, 255 💌		Color	0, 0, 0 💌		
Font	Tahoma,12 😶		Offset X	1		
Transparent			Offset Y	1		

The following is an overview of the options available in the Alarm Settings page.

Enable		Used to enable or disable the alarm message			
		Used to specify the type of display, where:			
	Object Type	Static: The alarm message will be displayed as a static text			
		Scrolling: The alarm message will be displayed as a scrolling text			
Deee	Position	Used to specify the position of the message and can be either up or			
Ваѕе		down			
Settings		Used to specify whether or not the HMI will display an assigned page			
	Click Jump page	when the alarm is triggered			
		Note that all page numbers created in the Screen View panel will be			
		automatically listed in the drop-down menu.			

	Height	Used to specify the distance of the message in relation to the screen
		Used to specify the scroll direction for the message, and can be selected
	Moving Direction	from Left, Right, Up, and Down. Note that this option is only applicable
		when the Object Type attribute is set to Scrolling.
		Used to specify the distance the message will move in pixels.
	Moving Distance	Note that a maximum of 32 pixels can be set, and this option is only
Base		applicable when the Object Type attribute is set to Scrolling.
Settings		Used to specify the interval between movements, in milliseconds.
	Distance Time	Note that a maximum of 10000 ms can be set, and this option is only
		applicable when the Object Type attribute is set to Scrolling.
		Used to specify the amount of blank space between each instance that
	Message Distance	the message is displayed. Note that a maximum of 64 pixels can be set,
		and this option is only applicable when the Object Type attribute is set
		to Scrolling.
		C C
	Text Color	Used to specify the color to be used for the alarm message text
	Text Color Back Color	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text
Tavt	Text Color Back Color	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm
Text	Text Color Back Color Font	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm message text
Text	Text Color Back Color Font	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm message text Used to specify whether or not the background color will be set to
Text	Text Color Back Color Font Transparent	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm message text Used to specify whether or not the background color will be set to transparent
Text	Text Color Back Color Font Transparent	Used to specify the color to be used for the alarm message textUsed to specify the color of the background to the alarm message textUsed to specify the type and size of the font to be used for the alarmmessage textUsed to specify whether or not the background color will be set totransparentUsed to specify whether the text shadow attribute is enabled or
Text	Text Color Back Color Font Transparent Enable	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm message text Used to specify whether or not the background color will be set to transparent Used to specify whether the text shadow attribute is enabled or disabled
Text	Text ColorBack ColorFontTransparentEnableColor	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm message text Used to specify whether or not the background color will be set to transparent Used to specify whether the text shadow attribute is enabled or disabled Used to specify the color to be used for the text shadow
Text Shadow	Text Color Back Color Font Transparent Enable Color	Used to specify the color to be used for the alarm message textUsed to specify the color of the background to the alarm message textUsed to specify the type and size of the font to be used for the alarmmessage textUsed to specify whether or not the background color will be set totransparentUsed to specify whether the text shadow attribute is enabled ordisabledUsed to specify the color to be used for the text shadowUsed to specify how far the text shadow will be displaced in the
Text Shadow	Text ColorBack ColorFontTransparentEnableColorOffset X	Used to specify the color to be used for the alarm message textUsed to specify the color of the background to the alarm message textUsed to specify the type and size of the font to be used for the alarmmessage textUsed to specify whether or not the background color will be set totransparentUsed to specify whether the text shadow attribute is enabled ordisabledUsed to specify the color to be used for the text shadowUsed to specify how far the text shadow will be displaced in thehorizontal direction in pixels
Text	Text Color Back Color Font Transparent Enable Color Offset X	 Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm message text Used to specify whether or not the background color will be set to transparent Used to specify whether the text shadow attribute is enabled or disabled Used to specify the color to be used for the text shadow Used to specify how far the text shadow will be displaced in the horizontal direction in pixels Used to specify how far the text shadow will be displaced in the vertical
Text Shadow	Text ColorBack ColorFontTransparentColorOffset X	Used to specify the color to be used for the alarm message text Used to specify the color of the background to the alarm message text Used to specify the type and size of the font to be used for the alarm message text Used to specify whether or not the background color will be set to transparent Used to specify whether the text shadow attribute is enabled or disabled Used to specify the color to be used for the text shadow Used to specify how far the text shadow will be displaced in the horizontal direction in pixels Used to specify how far the text shadow will be displaced in the vertical direction in pixels

9.6 Alarm Object

The **Alarm** category of the Toolbox includes a variety of objects that can be used to display the alarm and any messages on the HMI screen, or to export or remove the alarm record(s), each of which are described in more detail in the following sections.

Alarm
Cursor
📑 Alarm View
Function Button

To create an object, first click the name of the desired object in the **Alarm** category of the Toolbox. Position the mouse cursor on the Screen Design Area, and then click and hold the left mouse button to drag the object until it is the desired size and shape, as illustrated in the diagram below, and then release the mouse button. After creating a object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured.

Startup	: Screen1				×	Toobox 🗜 🗙
	Cantion	Date	Timo	Flansed		Drafting
	Message	yyyy/mm/dd	hhimm	hh'mm		General
	Worn	vvvv/mm/dd	hh:mm	hh:mm		Switch
× 3	Error	yyyy/mm/dd	hh:mm	hh:mm		Recipe
() 4	Select	yyyy/mm/dd	hh:mm	hh:mm		Alarm
		III			2	Cursor
Simple Complete						Alarm View
Property view 3					<u>+ ×</u>	
	GridLi	ne		Text	- î	
Column	= Тур	be Both	1 💌	Font	Calibri,12	Controlling
- Filter Group	p Co	lor 255	255 255	Back Color	0 0 0	Sampling
Border	. L	200,	, 200, 200			Keyboard
· · · · · · · · · · · · · · · · · · ·	▶			i Patro Patro	F.	HA Seriel

The **Function Button** object is provided in each of the Switch, Recipe, Alarm and Sampling categories and can be used to execute up to 16 functions, such as transmitting recipes, changing screens, or incrementing and decrementing variable values, etc. When the button is clicked, the functions that have been defined will be executed in sequence. The functions that can be defined for the **Alarm Function Button** object include:

- Export Alarm
- Remove Alarm

9.6.1 Alarm View

Before using the **Alarm View** object, you need to configure the Alarm function in the Project View panel; see 9-(B) Alarm section for more details. This object can be used to display a list of alarm records in the form of a table, including the type of alarm, the time and date of the alarm, as well as the duration of the alarm.

	No.	Caption	Date	Time	Elapsed
٢	1	Alarm_D1	2016/10/06	14:58	00:01:15
A	2	Alarm_A1	2016/10/06	14:59	00:00:26
×	3	Alarm_A2	2016/10/06	14:59	00:00:10

See <u>Section 9.6 Alarm Objects</u> for details of how to create an object. After creating a **Alarm View** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Alarm View** object.

Prop	erty View						Ŧ X
	AlarmView	GridLine		Text		Select	
	Column	Туре	Both 💌	Font	Calibri,12	Back Color	255, 255, 255 💌
	-Filter Group	Color	255, 255, 255 💌	Back Color	0, 0, 0 💌	Fore Color	0, 0, 0 💌
	- Border - Glisten	Data		Fore Color			
	- Offset	Filter Mode	Whole	Message	255, 255, 255 💌		
	- Position and Size	Date Format	YYYY / MM / 💌	Worn	255, 255, 255 💌		
	Other	Time Format	HH : MM	Error	255, 255, 255 💌		

General Properties

The **General Properties** dialog box is used to configure the display attributes for the **Alarm View** object, including the color and type for the table borders, and the format of the data.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Alarm View** object.

	Туре	 Used to specify borders to the alarm table, where: Nil: No Border Horizontal: Add all horizontal borders
Borders		 Vertical: Add all vertical borders Both: Add all boards
	Color	Used to specify the color of the borders for the alarm table

	Filter Mode		 Used to specify the filter mode for displaying specific types of alarm, where: 1. Whole: Displays all alarm records 2. Show Today: Displays only today's alarm records 3. Show Touch off: Displays only those records that still meet the triggering condition
Data	Date Format		 Used to specify the format of the date, where: 1. yyyy/mm/dd (Year, Month, Day) 2. dd/mm/yyyy (Day, Month, Year) 3. mm/dd/yyyy (Month, Day, Year)
	Time Format		Used to specify the format of the time, where: 1. HH:MM (Hours:Minutes) 2. HH:MM:SS (Hours:Minutes:Seconds)
	Font		Used to specify the type and size of the font to be used for the text
	Back Color		Used to specify the background color for alarm records
Text		Message	Used to specify the color of the text to be displayed for standard messages (see Section 9.3.2 or 9.4.2, the Grade option)
	Fore Color	Warning	Used to specify the color of the text to be displayed for warning messages (see Section 9.3.2 or 9.4.2, the Grade option)
	Error		Used to specify the color of the text to be displayed for error messages (see Section 9.3.2 or 9.4.2, the Grade option)
<u> </u>	Back Color		Used to specify the background color for the alarm record when it has been selected
Select	Fore Color		Used to specify the color of the alarm record when it has been selected

Give it a try: (Click the F8 key to perform the offline simulation)

- **Borders** Type: Horizontal Borders – Color: Green
- Select Background Color: Green Select - Foreground Color: Black
- Text Foreground Color
 - Message: Blue
 - Warning: Orange
 - Error: Red

	no.	Caption	Date	Time	Elapsed	
1	1	Message	yyyy/mm/dd	hh:mm	hh:mm	
⚠	2	Wom	yyyy/mm/dd	hh:mm	hh:mm	þ
×	з	Error	yyyy/mm/dd	hh:mm	hh:mm	
0	4	Select	yyyy/mm/dd	hh:mm	hh:mm	
						···

• Column Properties

The **Column Properties** dialog box for the **Alarm View** object is used to configure the column headings and style, as well as to specify which kinds of data should be displayed in the alarm table.



The following is an overview of the options available in the **Column Properties** section of the Property View for the **Alarm View** object.

	Add	Used to add column to the alarm table (up to a maximum of 8)		
		Used to delete the selected column(s) from the alarm table		
		To select multiple column, click the first row you want to select, and hold		
Column	Delete	down the Shift key (or the Ctrl key), and then click the last row (or click		
		each of the other columns you want to select).		
	Up	Used to move the selected data row up		
	Down	Used to move the selected data row down		
	Text Color	Used to specify the color of the text		
Set Color	Column Color	Used to specify the background color to be used for the column		
	News	Used to specify a name for the column, which will be used for the column		
	Name	headings		
		Used to specify the type of the column		
The Data of		Action Data: Used to indicate the date that the alarm was triggered		
n Row	Туре	Action Time: Used to indicate the time that the alarm was triggered		
		Restore Date: Used to indicate the date when the alarm was reset		
		Restore Time: Used to indicate the time when the alarm was reset		

		Alarm Caption:
		Used to display a caption for the alarm
		Alarm Grade:
		Used to display an icon for the different alarm types:
		(See Section 9.3.2 or 9.4.2 the Grade option)
		Message
		A Warning
The Data of	Time	K Error
n Pow	туре	Row Order:
n kow		Used to indicate the order in which the alarm messages will be displayed
		Elapsed Time:
		Used to display the duration between when the alarm is triggered and
		when the alarm is reset
		Alarm Value:
		Used to display the value of the variable that will cause the alarm to be
		triggered
	Width	Used to specify the width of the selected column
Give it a try:		Digital Alarm / Analog Alarm:
<u>Give it a try</u> :		<u>D</u> igital Alarm / <u>A</u> nalog Alarm: Alarm Caption (Type, Variable):
<u>Give it a try</u> :		<u>Digital Alarm / Analog Alarm:</u> Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03)
<u>Give it a try</u> :		<u>Digital Alarm / A</u> nalog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02)
<u>Give it a try</u> :	Cantion	Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02)
	Caption Alarm D1	Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02) Trigger Date Trigger Time Reset Time Duration Trigger Value 2016/10/12 11:04 00:02:27 1
	Caption Alarm_D1 Alarm_D3	Digital Alarm / Analog Alarm:Alarm Caption (Type, Variable):Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03)Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02)Trigger DateTrigger TimeReset TimeDurationTrigger Value2016/10/1211:0400:02:2712016/10/1211:0511:0600:01:001
No. 1 2 3	Caption Alarm_D1 Alarm_D3 Alarm_A1	Digital Alarm / Analog Alarm:Alarm Caption (Type, Variable):Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03)Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02)Trigger DateTrigger TimeReset TimeDuration2016/10/1211:042016/10/1211:052016/10/1211:052016/10/1211:05
Sive it a try ● 1 × 2 ▲ 3 × 4	Caption Alarm_D1 Alarm_D3 Alarm_A1 Alarm_D3	Digital Alarm / Analog Alarm:Alarm Caption (Type, Variable):Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03)Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02)Trigger DateTrigger TimeReset TimeDuration2016/10/1211:042016/10/1211:0511:0600:01:002016/10/1211:052016/10/1211:052016/10/1211:052016/10/1211:06
<u>Give it a try</u> : No. 1 × 2 ▲ 3 × 4	Caption Alarm_D1 Alarm_D3 Alarm_A1 Alarm_D3	Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02) Trigger Date Trigger Time Reset Time Duration Trigger Value 2016/10/12 11:04 00:02:27 1 2016/10/12 11:05 11:06 00:01:00 1 2016/10/12 11:05 00:01:33 1 2016/10/12 11:06 00:00:33 1
$\frac{\text{Give it a try}}{1}$ $\frac{1}{2}$ $\frac{3}{2}$ $\frac{3}{2}$	Caption Alarm_D1 Alarm_D3 Alarm_A1 Alarm_D3	Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02) Trigger Date Trigger Time 2016/10/12 11:04 2016/10/12 11:05 2016/10/12 11:05 2016/10/12 11:05 00:01:33 1 2016/10/12 11:06 00:00:33 1
$\frac{\text{Give it a try}}{1}$	Caption Alarm_D1 Alarm_D3 Alarm_D3 D1 - 1	Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02) Trigger Date Trigger Time Reset Time Duration 2016/10/12 11:04 2016/10/12 11:05 11:06 00:01:00 2016/10/12 11:06 00:01:33 1 2016/10/12 11:06 00:01:33 1 016/10/12 11:06 016/10/12 11:06
No. No. 1 X 2 A 3 X 4 Bit	Caption Alarm_D1 Alarm_D3 Alarm_D3 Alarm_D3	Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02) Trigger Date Trigger Time Reset Time Duration Trigger Date Trigger Time 2016/10/12 11:04 2016/10/12 11:05 11:06 00:01:00 2016/10/12 11:05 00:01:33 1 01 00:00:33 02-0 03-1 A1-1 A2-0 Set All OFF Function Button:
No. No. 1 2 A 3 A Bit Wi Wi Wi Wi	Caption Alarm_D1 Alarm_D3 Alarm_D3 Alarm_D3 D1_1 t Switch: rite/Read (Bard ()	Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02) Trigger Date Trigger Time Reset Time Duration Trigger Value 2016/10/12 11:04 00:02:27 1 2016/10/12 11:05 11:06 00:01:00 1 2016/10/12 11:05 00:01:33 1 2016/10/12 11:06 00:00:33 1 D2 - 0 D3 - 1 A1 - 1 A2 - 0 Set All OFF Sit): D01, D02, D03 Krite: D01, D02, D03 Krite: D01, D02, D03 N/// A02
No. No. 1 2 A 3 4 Bit Wi Wi Wi Tv	Caption Alarm_D1 Alarm_D3 Alarm_D3 Alarm_D3 D1-1 t Switch: rite/Read (N pe: Toggle (Digital Alarm / Analog Alarm: Alarm Caption (Type, Variable): Alarm_D1 (Message, D01), Alarm_D2 (Warning, D02), Alarm_D3 (Error, D03) Alarm_A1 (Warning, A01), Alarm_A2 (Error, A02) Trigger Date Trigger Time Reset Time Duration Trigger Value 2016/10/12 11:04 00:02:27 1 2016/10/12 11:05 11:06 00:01:00 1 2016/10/12 11:05 00:01:33 1 2016/10/12 11:06 00:00:33 1 D2 - 0 D3 - 1 A1 - 1 A2 - 0 Set All OFF Bit): D01, D02, D03 MORD): A01, A02 Function: Set OFF (5) Write: D01, D02, D03, A01, A02 Victick to ON or OFF) Use the top of top of the top of top

• Filter Group Properties

The **Filter Group Properties** dialog box for the **Alarm Viewer** object is used to configure the filter for displaying alarm records and can be defined using either a group or a variable.

When the **Group** Filter format is selected, a Dialog box containing a list of groups will be displayed. Select the required groups to filter the data based on that group. Note that you must specify the group number for each alarm first, see Section 9.3.2 or 9.4.2 for more details.



When the **Variable** Filter format is selected, a dialog box will be displayed that allows the required variable to be selected. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.



See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the Alarm Viewer object.
 <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

9.6.2 Alarm Function Button

Function Buttons can be used to execute a wide range of functions, such as transmitting recipes, changing screens, or incrementing and decrementing values, etc. When a button is pressed, any functions that have been defined will be executed sequentially, and a maximum of 16 functions can be implemented. The Function Button object is available in the each of the Switch, Recipe, Alarm, and Sampling categories.



The Alarm Function Button object provides the ability to export an alarm or remove an alarm.
 See Section 9.6 Alarm Objects for details of how to create an object. After creating a Alarm
 Function Button object, the Property View panel for the object will be automatically
 displayed allowing the various attributes of the object to be configured.

The following is a description of how to configure the properties for the **Alarm Function Button** object.

Property View		Ψ×
 FunctionButton General Text Picture Border Text Shadow Glisten Security Offset Conditional Display Conditional Control Position and Size Event Other 	Add Remove Move Up Move Down No. Function Function Change Screen 1 Change Screen PageCode Logout Export Alarm Remove Alarm Export Sampling Show Window Hide Window Show Calculator	

General Properties

The **General Properties** dialog box is used to configure the actions that can be performed by the **Function Button** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Function Button** object.

۸dd	Used to add a function
	A maximum of up to 16 functions can be used for one button
Remove	Used to remove a selected function
Move Up	Used to move the selected item up
Move Down	Used to move the selected item down
Function	Used to select the function from the Function drop-down menu

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Alarm Functions:

The following is an overview of the functions that can be used in conjunction with the **Alarm Function Button** object.

Export Alarm

The **Export Alarm** function is used to export the alarm history records to the storage memory using the specified file name. The **Export Type** option allows the choice between exporting all records, or only the records for the current day.

Function	Export Alarm	
File name	AlarmLog.csv	
Export type	All	~
Filter Group Type	Group	~
	☑ Unclassified Gr	oup 🔼
	Group1	
	Group2	
	Group3	
	Group4	×
	Select All	Disable All

The following is an overview of the options available for the **Export Alarm** function.

File Name	Used to specify the name to be used for the storage file		
	Used to specify the type of records to be stored, and can be selected from:		
Export Type	All: All alarms that have been logged since the device was started will be stored		
	Today: Only the alarm records relating to the current date will be stored		
	Used to specify the way to store the records, and can be selected from:Group: The alarm records will be stored based on the selected group number Note that you must specify the group number for each alarm first, see		
Filter Group Type	Section 9.3.2 or 9.4.2 for more details. Variable: The alarm records will be stored based on the value of the variable. For more details related to the usage of variables, see the Variables Section		
Select All	Used to select all Groups		
Disable All	Used to deselect all currently selected Groups		

To use this function, select the **Export Alarm** option from the Function drop-down menu, enter a name for the **File** in the File Name text field, select **All** records or **Today**'s records from the Export Type drop-down menu, and then select the **Group** way or the **Variable** way from the Filter Group Type drop-down menu.

If the Group option is selected, specify which Groups should be included in the Alarm History by selecting the required groups from the Groups section. If the **Variable** option is selected, select an existing variable from the drop-down menu, or click the **Browse** (...) button to add a new variable.

Remove Alarm

The **Remove Alarm** function is used to remove the alarm records that have been confirmed (or reset). The Remove Type option allows the choice between removing all confirmed records, or only removing those confirmed records for the current day.

Function	Remove Alarm	~
Remove Type	All	•
	All	
	Today	

To use this function, select the **Remove Alarm** option from the Function drop-down menu, and then select All records or Today's records from the Remove Type drop-down menu. When you click this button on the HMI screen, all confirmed records or those confirmed records for the current day will be removed.

See Section 8.5 Common Attributes for details about the others attributes of the Alarm Function Button object. Text, Picture, Border (2), Glisten, Security, Offset, Conditional Display, Conditional Control, Position and Size, Event, and Other.

9 – (C) Data Sampling

Data sampling is used to access the current values of specific events or attributes and can be configured to detonate at a fixed time or following a predefined event. After reading the values from the device, the data is stored in the internal memory, meaning that the data can be retained after the device is powered off.

Data Sampling Features:

- 1. Provides support for the Trend Chart object that can be used to display data using a line graph style.
- 2. Provides support for the **Data Sampling View** object that can be used to displays data values using a table style.
- 3. Provides the ability to perform **Data Sampling** using either **Time Detonation** or **Bit Detonation** modes.
- 4. Provides the ability to export sampling data to a storage memory in a CSV file format using the Data Sampling Function Button.
- 5. The total size of the memory allocated for the data sampling is 512 KB.

There are two components to the **Data Sampling** functionality, including Data Sampling Function Management and Data Sampling Object usage, each of which is described in more detail below:

Data Sampling Function Management:

This component is used to configure a Data Sampling function that can be used to create, design, and manage Data Sampling functionality.

To access the **Data Sampling** page, double-click the **Data Sampling** option in the **Project View** panel.

Data Sampling Objects:

This component is used to add a Data Sampling object to the HMI screen, and includes options such as a Real-Time/History Trend Chart, the Data Sampling View, and the Data Sampling Function Button.

To access these **Data Sampling Objects**, click the name of the desired object in the **Sampling** category of the Toolbox. See Section 9.8 for more details.

9.7 Data Sampling Management

The Data Sampling function is used to configure the functions to be used in conjunction with the data sampling object, such as the sampling mode, the record mode, the overflow setting, etc.

To open the **Data Sampling** page, double-click the **Data Sampling** item in the **Project View** panel. On the **Data Sampling** page, you can create, edit and manage the Data Sampling function. Note that a maximum of 32767 data can be recorded, and the maximum size for each is 512 KB.



🛛 🔏 Data Sampling 🔤 🗠 🖸					
	Add	Edit Delet	е Сору	Paste	Cut
	Name	Mode	Read Variable	Record Count	Comment
>	Sampling_0	Time Detonate	Data_Array	100	
	Sampling_1	Bit Detonate	Data_Event	100	
*					

The following is an overview of the options available on the **Data Sampling** page.

Add	Used to add the Data Sampling Function		
	Used to edit the selected Data Sampling Function		
Edit	(see Section 9.7.2 "Editing an existing Data Sampling Function" for more details)		
Delete	Used to delete the selected Data Sampling Function		
Сору	Used to copy the selected Data Sampling Function data		
Paste	Used to paste the Data Sampling Function data that was copied or cut		
Cut	Used to cut the selected Data Sampling Function data		

9.7.1 Adding a new Data Sampling Function

The **Sampling Property Form** dialog box is used to configure a new Data Sampling Function. As illustrated in the figure above, click the **Add** button on the **Data Sampling** page to open the **Sampling Property Form** dialog box.

Refer the following table in the Section 9.7.2 to enter the details for the relevant attributes in the respective fields, and then click the **OK** button to save the new Data Sampling Function.

9.7.2 Editing an existing Data Sampling Function

The **Sampling Property Form** dialog box is used to modify the attributes for an existing Data Sampling Function. As illustrated in Section 9.7, click the **Edit** button on the **Data Sampling Management** page to open the **Sampling Property Form** dialog box.

Sampling Property I	Form		×		
General Name Mode	Sampling_0 Time Detonate	Overflow Is us Write	Set		
Read Variable		Sampling Property F	orm		×
Comment		General Name	Sampling 1	Overflow Set	
📃 Is use data k	eep function		Samping_1	💌 Is use	
Sampling Set		Mode	Bit Detonate 💌	Write	Overflow_01
Record Mode	Stop recording	Read Variable	Data_Event		
Detonate Time([1	Record Count	100	Stop Sampling Set	t
		Comment		🗹 Is use	
		⊻ Is use data ke	ep function	Read	Stop_01
		Sampling Set		Clear Control Set	
		Record Mode	Stop recording aut 💌	💌 Is use	
		Read	Sampling_01	🕑 Before clear	record , variable clear for 0
		Detonate Type	Down Detonate (1 💌	Read	Clear_01
					OK Cancel

The following is an overview of the options available in the **Sampling Property Form** dialog box.

Name	Used to specify a name for the Data Sampling Function		
Mode	Used to specify the sampling method, where:		
	Time Detonate: The data will be collected at a fixed period of time		
	Bit Detonate: The data will be collected when the status of the specified		
	Bit variable is TRUE, see the Sampling Settings - Detonate Time as below		
Read Variable	Used to specify the Read variable to be used, which can also be an array		
	variable. See Chapter 7 Variables for more details.		
Record Count	Used to specify the maximum number of sampling records, which can be		
	in the range of 1 to 32767		
Comment	Used to provide a description of the Data Sampling Function		
	Name Mode Read Variable Record Count Comment		

	ls use data	Used to enable the Retain Data function so that the data can be retained	
	keep function	after the system is powered off	
	Record Mode	Used to specify the action to be taken if a data sampling overflow occurs: Stop Recording Automatic: The Data Sampling function will automatically stop when a data overflow occurs First In, First Out (FIFO) : When a data overflow occurs, the data sampling function will remove the earliest record and add the new record at the end of the list	
	Detonate Time	Used to specify the sampling time when the Time Detonate option is selected as the Data Sampling mode	
Sampling Set	Read	Used to specify the variable that is to be used to control the Data Sampling function when the Bit Detonate option is selected as the Data Sampling mode. See Chapter 7 Variables for more details.	
	Detonate Type	Used to specify the triggered conditions for the Data Sampling Function when the Bit Detonate option is selected as the Data Sampling mode Down Detonate : The value of the Variable changes from 1 to 0 Up Detonate : The value of the Variable changes from 0 to 1 Up/Down Detonate : The value of the Variable changes from 0 to 1 or from 1 to 0. Only the Bit variable can be used, see Chapter 7 Variables for more details.	
	ls use	Used to enable the Overflow control function	
Overflow Set	Write	Used to set the Write variable to 1 when the number of data sampling records has reached the maximum. Only the Bit variable can be used, see Chapter 7 Variables for more details.	
Ston	ls use	Used to enable the Stop Sampling control function	
Sampling Set	Read	Used to specify that sampling should be stopped if the variable value is equal to 0. Only the Bit variable can be used, see Chapter 7 Variables for more details.	
	ls use	Used to enable the Clear control function	
	Before clear record, variable clear for 0		
Clear	lear Used to set the variable to 0 after removing the data sampling records		
Control Set	Read	Used to clear the data sampling records if the value of the variable is equal to 1. Only the Bit variable can be used, see Chapter 7 Variables for more details.	

9.8 Sampling Objects

The Sampling Objects category of the Toolbox includes a variety of objects that can be used to display items such as Trend Charts and Tables on an HMI screen, and to record processes), each of which are described in more detail in the following sections.

Sampling
Rursor
Real-Time Trend Chart
History Trend Chart
Function Button
📑 Data Sampling View

To create an object, first click the name of the desired object in the **Sampling** category of the Toolbox. Position the mouse cursor on the Screen Design Area, and then click and hold the left mouse button to drag the object until it is the desired size and shape, as illustrated in the diagram below, and then release the mouse button. After creating a object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured.

Startup 1:Screen1	Toobox 🕂 🗙
	Drafting
Date Time TagD	General
yyyy/mm/dd hh:mm:ss #####	Switch
yyyy/mm/dd hhammiss #####	Recipe
yyyy/mm/dd hh:mm:ss	Alarm
yyyy/mm/dd hh:mm:ss with 2	Sampling
	🗼 Cursor
Simple Complete	Real-Time Trend Chart
Property View	History Trend Chart
DataSamp 3 w General Title Column Select	Function Button
General Column ≡ Sampling Sampling_0 ♥ Text Color 255, 255, 2 ♥ Fore Color	Pata Sampling View
Border Glisten	
Offset	Keyboard
	HA Seriel

The Function Button object is provided in each of the Switch, Recipe, Alarm and Sampling categories and can be used to execute up to 16 functions, such as transmitting recipes, changing screens, or incrementing and decrementing variable values, etc. When the button is clicked, the functions that have been defined will be executed in sequence. The functions that can be defined for the **Sampling Function Button** object include:

• Export Sampling Data

9.8.1 Real-time/History Trend Chart

Before using the **Real-time/History Trend Chart** object, you need to configure the **Data Sampling Function** in the Project View panel; see Section 9.7 **Data Sampling Management** for more details. The **Real-time/ History Trend Chart** object can be used to periodically read data, display the value, and present the data as a line graph based on the numerical distribution.



The **Real-Time Trend Chart** can be used to instantly update the existing state, whereas the History Trend Chart can be used for later analysis based on long-term data sampling. See <u>Section 9.8 Sampling Objects</u> for details of how to create an object. After creating a **Real-time/ History Trend Graph** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Real-time/ History Trend Graph** object.

Property View		₽ 🗙
 □-TrendGraph □-General □-Limit Line □-X Axis Property □-Y Axis Property □-Y Axis Property □-Curve □-Border □-Glisten □-Offset □-Conditional Display □-Position and Size □-Other 	Distance Up 10 0 Down 5 0 Right 5 0	Trend Chart Grid Color 0, 128, 128 Font Calibri,9.75, Back Color 192, 255, 192 Text Color 64, 64, 64 Style Real-Time C Sampling Sampling_0

• General Properties

The **General Properties** dialog box is used to configure the display format and the attributes for the **Real-time/History Trend Chart** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Real-time/History Trend Chart** object.

Distance	Up/Down Left/Right	Used to specify the position of the Line Graph in relation to the border
	Grid Color	Used to specify the color of the grid for the Line Graph
	Back Color	Used to specify the background color of the Line Graph
Line Croph	Style	Used to specify which type of trend chart will be used, where:1. Real-time Line Graph2. Historical Line Graph
	Font	Used to specify the type and size of the font to be used for the text
	Text Color	Used to specify the color of the text
	Sampling	Used to specify which data sampling function will be used See Section 9.7 Data Sampling Management for more details

• Limit Line Properties

The **Limit Line Properties** dialog box is used to configure maximum and minimum limits of the **Real-time/History Trend Chart**, including the location of the limit line (based on either a constant or a variable), the width of the line and the color. For more details related to the usage of variables, see <u>Chapter 7 Variables</u>.



Max Limit	Min Limit
🕑 Use	💌 Use
Value Constant 💌 100 📦	Value Constant 🕑 0
Line Width	Line Width Constant
3	Variable
Line Color 255, 0, 0 💌	Line Color 255, 255, 0 💌

The following is an overview of the options available in the Limit Line Properties section of the Property View for the Real-time/History Trend Chart object.

	Value	Used to specify the upper limit for the Y-axis of the line graph
Max. Limit Line	Line Width	Used to specify the width of the line in pixels
	Line Color	Used to specify the color of the line to indicate the maximum limit
	Value	Used to specify the lower limit for the Y-axis of the line graph
Min. Limit Line	Line Width	Used to specify the width of the line in pixels
	Line Color	Used to specify the color of the line to indicate the minimum limit

X-axis Properties			100		
The X-axis Propert	t ies dialog box is used to c	onfigure the	80		
title, the label, the	major and minor scale, ar	nd the grid lines	60	-/	
for the X-axis of th	e Real-time/History Trenc	l Chart object. Major Scale	40 20 19/10/20 14:18:16	16 19/10/ 14:18 TitleNa	2016 19/10/2016 :46 14:19:16 me
Title Set		Major Scale		Minor Scale	
ive Na	ame TitleName	Count 3		✓ Use Count 3	
Label Set		Color 0, 1	92, 0 💌	Color 1	92, 64, 0 🕑
Show Time Length	1 📦 min.	Grid Set		Grid Set	
Date Format	dd/mm/aaaa/	💌 Use Grid L	ine	🕑 Use Gri	d Line
Time Format	hh:mm:ss	Style Width	Solid Line 💌	Style Width 1	Dash Line 💌
		Color 255	i, 128, 0 🛛 💌	Color	, 192, 192 🛛 💌

The following is an overview of the options available in the **X-axis Properties** section of the Property View for the **Real-time/History Trend Chart** object.

Title Set	Name	Used to specify a title for the X-axis
	Show Time Length	Used to specify the duration of the data line is displayed
Label Set	Date Format	Used to specify the format of the date, where: 1. None 2. yyyy/mm/dd (Year, Month, Day) 3. mm/dd/yyyy (Month, Day, Year) 4. dd/mm/yyyy (Day, Month, Year)
	Time Format	Used to specify the format of the time, where: 1. None 2. hh:mm:ss (Hours:Minutes:Seconds) 3. hh:mm (Hours:Minutes) 4. mm:ss (Minutes:Seconds)
Major Scale	Count	Used to specify the number of the major scale on the X-axis
	Color	Used to specify the color used for the major scale of the X-axis
Minor Scale	Count	Used to specify the number of scale between major scales on the X-axis
	Color	Used to specify the color used for the minor scale of the X-axis

Grid Set	Use Grid	Used to specify whether grid lines should be displayed for the major scale
(Major Scale)	Line	of the X-axis
	Style	Used to specify the style of the grid for the major scale of the X-axis
	Width	Used to specify the width of the grid lines for the major scale of the X-axis
	Color	Used to specify the color of the grid lines for the major scale of the X-axis
Grid Set	Use Grid	Used to specify whether grid lines should be displayed for the minor scale
(Minor Scale)	Line	of the X-axis
	Style	Used to specify the style of the grid for the minor scale of the X-axis
	Width	Used to specify the width of the grid lines for the minor scale of the X-axis
	Color	Used to specify the color of the grid lines for the minor scale of the X-axis

Y-axis Properties

The **Y-axis Properties** dialog box is used to configure the title, the label, the major and minor scale, and the grid lines for the Y-axis of the **Real-time/History Trend Chart** object.

1	100								
ы									
eNan	50-			<u> </u>					
Titk									
	0								
		19/10)/201	6 1	19/10	/2016	5 1	9/10/	2016
		15:22	:55		TitleN	ame		15:	23:55

Major Scale	Minor Scale
💌 Use	💌 Use
Count 3	Count 2
Color 0, 0, 255 💌	Color 192, 0, 192 💽
Grid Set	Grid Set
💌 Use Grid Line	💌 Use Grid Line
Style — Solid Line 💌	Style 🛛 Dash Line 💌
Width 2	Width 1
Color 128, 128, 255 💌	Color 255, 128, 255 💌
	Major Scale ✓ Use Count 3 Color 0, 0, 255 Grid Set ✓ Use Grid Line Style — Solid Line Width 2 Color 128, 128, 255

The following is an overview of the options available in the Y-axis Properties section of the Property View for the **Real-time/History Trend Chart** object.

Title Set	Name	Used to specify a title for the Y-axis
	Max	Used to specify the maximum value to be displayed for the Y-axis
	Min	Used to specify the minimum value to be displayed for the Y-axis
Lahel Set	Value Length	Used to specify the number of digits that will be displayed
		Used to specify the position of the decimal point (read from the
	Dot Position	right). E.g., if the Value Length = 4, and the Dot Position = 1, then
		the value "100" will be displayed as "10.0"
	Dot Position	Used to specify the position of the decimal point (read from the right). E.g., if the Value Length = 4, and the Dot Position = 1, then the value "100" will be displayed as "10.0"

Major Scale	Major Scale Count Used to specify the number of the major scale on the Y-axis			
	Color	Used to specify the color used for the major scale of the Y-axis		
Minor Scale	Count	Used to specify the number of scale between major scales on the		
		Y-axis		
	Color	Used to specify the color used for the minor scale of the Y-axis		
Grid Set	Use Grid Line	Used to specify whether grid lines should be displayed for the major		
(Major Scale)		scale of the Y-axis		
	Style	Used to specify the style of the grid for the major scale of the Y-axis		
	Width	Used to specify the width of the grid lines for the major scale of the		
		Y-axis		
	Color	Used to specify the color of the grid lines for the major scale of the		
		Y-axis		
Grid Set	Use Grid Line	Used to specify whether grid lines should be displayed for the minor		
(Minor Scale)		scale of the Y-axis		
	Style	Used to specify the style of the grid for the minor scale of the Y-axis		
	Used to specify the width of the grid lines for the minor scale of the			
		Y-axis		
	Color	Used to specify the color of the grid lines for the minor scale of the		
		Y-axis		

• Curve Properties

The **Curve Properties** dialog box is used to configure the attributes and style used to display the curve for the **Real-time/History Trend Chart** object, and is based on a variable. For more details related to the usage of variables, see the Variables Section.



Curve					
Add Delete	Index	0	¢		
Serial No	Line Set			Point Set	
1 2	Chart Style	Curve Line	•	Style	🔵 Solid Circle 🚽
	Style	— Solid Line	~	Heigth	5
	Width	2	٢	Width	5
	Color	192, 0, 192	<u>~</u>	Color	255, 128, 255 💌

The following is an overview of the options available in the **Curve Properties** section of the Property View for the **Real-time/History Trend Chart** object.

Add		Used to add a curve to the trend graph (e.g., No.3, No.4, etc.)			
Delete		Used to remove one or more curve from the trend graph			
Index		Used to specify the index number for the data when using the Array variable. E.g., if the data length of the variable is 3, the valid range is 0 to 2. See Chapter 7.4 Array Variables for more detail.			
	Chart Style	Used to specify the style to be used for the curve, and can be selected from: Curve, Sawtooth Line, or Bar Chart			
Line Set	Style	Used to specify the line style to be used for the curve, and can be selected from: Solid Line or Dash Line			
	Width	Used to specify the width to be used for the curve			
	Color	Used to specify the color to be used for the curve			
	Style	Used to specify the style to be used for the trace point			
Point Set	Height	Used to specify the height to be used for the trace point			
	Width	Used to specify the width to be used for the trace point			
	Color	Used to specify the color to be used for the trace point			

• See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Real-time/History Trend Chart** object. <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>.

9.8.2 Data Sampling View

Before using the **Real-time/History Line Graph** object, you need to configure the **Data Sampling Function** in the Project View panel; see Section 9.7 **Data Sampling Management** for more details.

The **Data Sampling View** object can be used to graphically display numerical of sampling data in a table format. The number of columns and rows to be included in the table, as well as the color and width of the border, etc., can be adjusted as desired.

Date	Time	Tag0	
20/10/2016	15:32:02	60	
20/10/2016	15:32:01	60	
20/10/2016	15:32:00	60	
20/10/2016	15:31:59	55	V

See <u>Section 9.8 Sampling Objects</u> for details of how to create an object. After creating a **Data Sampling View** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to be configured. The following is a description of how to configure the properties for the **Data Sampling View** object.

Property View						Ŧ X
 □ DataSamplingView □ General □ Column □ Border □ Glisten □ Offset □ Conditional Display □ Position and Size □ Other 	General Sampling Font	Sampling_0 v Calibri,12 ···	Title Column Text Color Back Color	255, 255, 2 💌 0, 0, 0	Select Fore Color Back Color	0, 0, 0 💌 255, 255, 2 💌

General Properties

The **General Properties** dialog box is used to configure the display format and attributes to be used for the **Data Sampling View** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Data Sampling View** object.

General	Sampling	Used to specify which data sampling function will be used
	Font	Used to specify the type and size of the font to be used for the text
Title Column	Text Color	Used to specify the color of the text to be used for the title row
	Back Color	Used to specify the color of the background to be used for the title row

Select	Fore Color	Used to specify the color to be used for the record text when it has been selected
	Back Color	Used to specify the color of the background for the record text when it
		has been selected

• Column Properties

The Column Properties dialog box is used to configure the column format and attributes of the data table for the Data Sampling View object, including the date, time, the column width, and the format.

Col	um	nn							
(,	Add	elete Up	Down	The column data of	of 1			
		Serial No 🛆	Title Name	Column Type	Title Name	Date	Column Type	Date	-
	>	1	Date	Date	Column Width		Data Correct		
		2	Time	Time	Column width	100	Date Format	yyyy/mm/dd	*
		3	Tag0	Data Sampling	Text Color	255, 255, 255 💌	Data Format	Decimal	~
					Column Color	0, 0, 0 💌	Fractional Digits	0	
						0, 0, 0		0	

The following is an overview of the options available in the Column Properties section of the Property View for the Data Sampling View object.

	Add	Used to add a column to the data table			
	Delete	Used to delete a column from the data table			
Column	Up	Used to move the selected column left in the data table			
	Down	Used to move the selected column right in the data table			
	Name	Used to specify the column headings depends on the Column Type			
	Column Width	Used to specify the width of the column			
	Text Color	Used to specify the color to be used for the data text			
		Used to specify the color of the background to be used for the data			
Column Data	Column Color	column			
		Used to specify the column type to be used, where:			
		1. Date			
	Column Type	2. Time			
		3. Data Sampling			

	Date Format	Used to specify the format used to display the date when the Date option is selected as the Column Type, where: 1. yyyy/mm/dd (Year, Month, Day) 2. dd/mm/yyyy (Day, Month, Year) 3. mm/dd/yyyy (Month, Day, Year)					
	Time Format	Used to specify the format used to display the time when the Time option is selected as the Column Type, where: 1. hh:mm:ss (Hours:Minutes:Seconds) 2. hh:mm (Hours:Minutes) 3. mm:ss (Minutes:Seconds)					
		The column data of 2					
		Column Width 100					
	Data Index	Used to specify the index number for the data when the Data Sampling is selected as the Column Type					
Column Data		The column data of 3 Title Name Tag0 Column Type Data Sampli •					
		Column Width 50 Data Index 0 Text Color 255, 255, 255 Data Format Decimal Column Color 0, 0, 0 Fractional Digits 0					
		Note that if using the Array variable, and if the data length of the variable is 3, the valid range is 0 to 2. See Chapter 7.4 Array Variables for more detail.					
	Data Format	Used to specify the format to be used for the data when the Data Sampling option is selected as the Column Type, where: 1. Decimal 2. Hexadecimal					
	Fractional Digits	Used to specify the number of decimal places to be displayed when the Data Sampling option is selected as the Column Type					

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Data Sampling View** object. <u>Border (1)</u>, <u>Glisten</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Position and Size</u>, and <u>Other</u>

9.8.3 Sampling Function Button

Function Buttons can be used to execute a wide range of functions, such as transmitting recipes, changing screens, or incrementing and decrementing values, etc. When a button is pressed, any functions that have been defined will be executed sequentially, and a maximum of 16 functions can be implemented. The Function Button object is available in the each of the Switch, Recipe, Alarm, and Sampling categories.



The **Sampling Function Button** object provides the ability to export sampling data to a storage memory in a CSV file format. See <u>Section 9.8 Sampling Objects</u> for details of how to create an object. After creating a **Sampling Function Button** object, the **Property View** panel for the object will be automatically displayed allowing the various attributes of the object to

be configured. The following is a description of how to configure the properties for the **Sampling Function Button** object.

Property View		₽ ×
 FunctionButton General Text Picture Border Text Shadow Glisten Security Offset Conditional Display Conditional Control Position and Size Event Other 	Add Remove Move Up Move Down No. Function Function Change Screen 1 Change Screen PageCode Logout Export Alarm Remove Alarm Export Sampling Show Window Hide Window Show Calculator	

General Properties

The **General Properties** dialog box is used to configure the actions that can be performed by the **Function Button** object.

The following is an overview of the options available in the **General Properties** section of the Property View for the **Function Button** object.

Vdd	Used to add a function
Auu	A maximum of up to 16 functions can be used for one button
Remove	Used to remove a selected function
Move Up	Used to move the selected item up
Move Down	Used to move the selected item down
Function	Used to select the function from the Function drop-down menu
	[216]
Data Sampling Function:

The following is an overview of the functions that can be used in conjunction with the **Sampling Function Button** object.

Export Sampling Data

The **Export Sampling Data** function is used to export the sampling records to the storage memory, e.g., a SD card, using the specified file name.

Function	Export Sampling	•
File name	Sampling.csv	
Sampling	Sampling_0	

To use this function, select the **Export Sampling Data** option from the **Function** drop-down menu, enter a name for the file in the **File Name** text field, and then select the source of the sampling data (see Section 9.7 Data Sampling Management for more details) from the **Sampling** drop-down menu.

 See <u>Section 8.5 Common Attributes</u> for details about the others attributes of the **Recipe Function** Button object. <u>Text</u>, <u>Picture</u>, <u>Border (2)</u>, <u>Glisten</u>, <u>Security</u>, <u>Offset</u>, <u>Conditional Display</u>, <u>Conditional</u> <u>Control</u>, <u>Position and Size</u>, <u>Event</u>, and <u>Other</u>.

Chapter 10 Scheduler and Macro Functions

10 – (A) Scheduler

The **Scheduler** function can be used to instruct the SmartView device to execute a specific task once a particular action performed by the HMI has been completed, which can be defined via either a timer control or a trigger event. The structure that must be defined for each Scheduler event includes:

Trigger:

Used to specify the condition(s) that will trigger the Scheduler action.

Action:

Used to specify the action that will be performed after the Scheduler condition is triggered.



Note:

Although there is no limit to the maximum number of Scheduler events that can be configured, if too many are assigned, or if an event is executed too frequently, the burden on the system may be too great and result in low efficiency. Consequently, the necessity and usage of Scheduler events should be carefully evaluated before creating an event so as to avoid this problem.

10.1 Scheduler Management

📻 Scheduler

Edit

Туре

Timer

Bit Control

😹 Startup

Name

> Schedule_1

Schedule_2

New

The Scheduler function is used to create, configure, and manage the Scheduler event, including the trigger and action properties for the event.

To access the Scheduler page, double-click the **Scheduler** function in the **Project View** panel and the Scheduler page will be displayed.

Delete

Action

Data Copy

Data Copy

Project View 🔉	2
⊒ <mark>≻ My Project</mark>	
🗄 🛅 Alarm	
🛛 📊 Digital	
🕂 📊 Analog	
🔤 🖬 Alarm Settings	
🔌 Connections	
🥜 Variables	
M Sub-macros	
Recipe	
🍟 - 🖓 Data Sampling	
🖓 🔤 Screen Control	
Scheduler	

The fellowing is an even iour of the	antiona available for the Cabadyle	ufunction in the Duanawin	View nend
i ne iollowing is an overview of the	options available for the Schedule	r lunction in the Proberty	view banel.

Comment

Copy

Paste

New	Used to add a new Scheduler event
Edit	Used to edit the selected Scheduler event
Delete	Used to delete the selected Scheduler event
Сору	Used to copy the selected Scheduler event
Paste	Used to paste the selected Scheduler event
Name	Used to specify a name for the Scheduler event, see Section 10.2
Туре	Used to specify the type of trigger condition, see Section 10.2
A	Used to specify the action that will be performed after the Scheduler event is triggered,
Action	see Section 10.2
Comments	Used to add an optional description for the Scheduler event, see Section 10.2

10.2 Adding /Editing a Schedule

Add a new Schedule

The **New Schedule** dialog box is used to configure a new Schedule event. Click the **New** button on the **Scheduler** page to open the **New Schedule** dialog box.

		Now Schodula
When the New Schedule dialog box is first of	opened, the Trigger tab	
will be displayed by default. Two other tabs,	Action and Comment,	Name Schedule_1
are also available, and are described in the r	elevant sections below.	Enable Control On Extern
		Trigger Action Comment
		Trigger Timer
Edit an existing Schedule		
The Edit Schedule dialog box is used to mod	lifv the attributes for an	Trigger Count
existing Schedule event Click the Edit butto	n on the Scheduler	minimum : 1 second
nage to open the Edit Schedule dialog box		
page to open the Luit Schedule dialog box.		
		OK Cancel
The Scheduler	Edit Schedule	
Now		
	Name Schedule_2	
Name Type	Enable Control On Extern	Tag 2 mm
Schedule_1 Timer		
Schedule_2 Bit Control	Trigger Action Com	ment
	Trigger Rit Control	
	Bit Collubi	
	Trigger Tag Tag 3	
Edit the relevant fields where necessary		
and then click the OK button to save the	Trigger Mode	
changes.	Positive Edge B Negative Edge	oth
-	Vegative Edge	
	0	Cancel

The following is an overview of the options available in the **Trigger** tab in the **Edit Schedule** dialog box.

Name	Used to specify a name for the Scheduler event		
Enable Control On	Used to specify whether or not a variable will be used to control the Scheduler		
External	event		
	Used to configure the trigger condition for the Scheduler event.		
Trigger Tab (default)	For more details, see Section 10.2.1 "Trigger Tab" below.		
	Used to configure the action that will be executed after the Scheduler event is		
Action Tab	triggered. For more details, see Section 10.2.2 "Action Tab" below.		
0	Used to add a description for the Scheduler event.		
Comment Tab	For more details, see Section 10.2.3 "Comment Tab" below.		

10.2.1 Trigger Tab

The **Trigger** tab in the **Edit Schedule** dialog box is used to configure the type of Trigger that will be used for the Scheduler event. Two options are available, **Timer** and **Bit Control**, each of which is described in more detail below.

• Timer

When the **Timer** option is selected, the action will be triggered within a fixed period of time, which is specified using the **Trigger Count** text field. Note that the maximum cycle time is 4,294,967 seconds, and the minimum is 1 second.

Enter the required Trigger Count value in the **Trigger Count** text field, and then click the **OK** button to save the changes.

Bit Control

When the **Bit Control** option is selected, the action will be triggered when there is a change in the state of the variable, as follows:

- Positive Edge: The action will be triggered if the state of the variable changes from 0 to 1
- 2. Negative Edge: The action will be triggered if the state of the variable changes from 1 to 0
- Both: The action will be triggered if any change occurs in the state of the variable

Select a **Trigger Tag** from the drop-down menu, and then click the option button for the required **Trigger Mode**. Click the **OK** button to save the changes. For more details related to the usage of variables, see the Variables Section.

Trigger Action Comment
Trigger Bit Control
Trigger Tag Tag_3
 Positive Edge Both Negative Edge
OK Cancel

Trigger Action Comment
Trigger Timer
Trigger Count 1 second(s). maximum : 4294967 seconds minimum : 1 second
OK Cancel

10.2.2 Action

The **Action** tab in the **Edit Schedule** dialog box is used to configure the action that will be executed after the Scheduler event is triggered. Four options are available, Copy Data, Run Macro, RTC Transmission, and RTC Transmission (Byte Format), each of which is described in more detail below. To configure an action, click the **Action** drop-down menu and select the required option.

Copy Data

When the **Copy Data** option is selected, the current value for the source variable will be copied to the destination variable after the Scheduler event is triggered. Note that an Array variable (see Section 7.4 Array Variables for details) can also be copied.

The following is an overview of the options available in the **Action** tab in the **Edit Schedule** dialog box when the **Copy Data** option is selected.

Tr	igger	Action	Comment			
Act	tion	Data Co	ру			•
9	Source 1	Tag [
	Destinat	ion Tag				
			(OK	Cano	cel

	Used to specify the source variable that is to be used to copy the data. The source		
Source Tag	can also be configured as an Array variable, see Section 7.4 Array Variables for		
	details		
Destination Tag	Used to specify the destination variable. The destination can also be configured as		
Destination lag	an Array variable, see Section 7.4 Array Variables for details		

Select the required **Source Tag** and **Destination Tag** from the respective drop-down menus, and then click the **OK** button to save the changes.

Run Macro

When the **Run Macro** option is selected, the specified Macro program will be executed after the Scheduler event is triggered.

Click the **Edit** button to write a Macro program in the Macro Editor dialog box (see Section 10.6 for more details), and then click the **OK** button to save the changes. For more details related to the usage of Macros, see Section 10 – (B) Macros.

Trigger	Action Comment
Action	Run Macro
Macro	Edit
	OK 🔪 Cancel

• RTC Transmission

When the **RTC Transmission** option is selected, the RTC data from the HMI device will be transmitted to the destination variable after the Scheduler event is triggered.

The following is an overview of the options available in the **Action** tab in the **Edit Schedule** dialog box when the **RTC Transmission** option is selected.

Trigger Action	Comment
Action RTC Tran	nsmission 💽
Destination Tag	Data Coded Decimal
Select RTC Data	
 ✓ Year ✓ Month ✓ Day ✓ Week 	 ✓ Hour ✓ Minute ✓ Second
	OK Cancel

Destination Tag	Used to specify the des Array variable (see Sect	tination variat	ole. The destination can al /ariables for details).	so be configured as an
Data Coded	Used to specify the forr Decimal or BCD.	nat that will b	e used to code the data, v	vhich can be either
	Used to specify which items are to be included in the RTC Data. If all data items in the Select RTC Data section are selected, the order that the data will be stored in the Array variable will be as follows:			
		Array Index	Data Order	
		0	Year	
		1	Month	
		2	Day	
		3	Week	
Select RTC Data		4	Hours	
		5	Minutes	
		6	Seconds	
	If any of the data items allocated to the next ar specified for the Array of compilation error will of must be set to at least 7	in the Select F ray index will F variable must F ccur, which me 7.	RTC Data section are not so be moved up the data ord be greater than the amou eans that when all items a	selected, the data item ler. Note that the length nt of stored data, or a are selected, the length

• RTC Transmission

When the **RTC Transmission (Byte Format)** option is selected, the RTC data from the HMI device will be transmitted to the destination variable in Byte format after the Scheduler event is triggered.

The following is an overview of the options available in the **Action** tab in the **Edit Schedule** dialog box when the **RTC Transmission (Byte Format)** option is selected.

	Used to specify the destination
- ·· ·· -	variable. The destination can also be
Destination lag	configured as an Array variable (see
	Section 7.4 Array Variables for details).
	Used to specify whether or not to add
Use Seconds	Seconds to the data
	Used to specify whether or not to
Use BCD Format	display data in BCD format
Format	Used to preview the result of the data

Trigger	Action	Comment	
Action	RTC Tran	smission (E	Byte Format) 🛛 🐱
Destinat	ion Tag		
Tag_1			
🕑 Use S	econd	📃 L	Jse BCD Format
Format		\backslash	
Tag	HIGH	- LOW	Preview
Tag[0]	Minut	9 1	13
Tag[1]	Hour	2	16
Tag[2]	Day	2	21
Tag[3]	Mont		LO
Tag[4]	Year		16
Tag[5]	Week)5
Tag[6]	Secon	d ()3
		ОК	Cancel

Note that the length specified for the Array variable must be greater than the amount of stored data, or a compilation error will occur, which means that when all items are selected, the length must be set to at least 7.

10.2.3 Comment

The **Comment** tab of the **Edit Schedule** dialog box is used to add an optional description for the Scheduler event.

Enter the desired information in the text field and then click the **OK** button to complete the settings.

Trigger	Action	Comment	
			~
			~
			Cancel
			Carleer

10 – (B) Macro

A Macro is a set of instructions that can be combined into a single program designed to perform specific control or logic operations. Importantly, attention should be paid to the rationality of the program logic when designing a Macro. For example, a Macro that generates an infinite loop may cause the system operation to become abnormal. In addition, a Macro that is configured to be executed too frequently or for too long may also cause lower overall effectiveness.

A Macro can be created and edited from several areas of the Creator application. For example, a Macro can be defined from the **Event** Property View panel for an object. A Macro can also be created by selecting **Run Macro** in the **Action** section in the **Edit Schedule** dialog box for the **Scheduler** function, or by selecting **Sub Macro** function form the **Project View** panel, each of which is described below.

Creating a Macro from the Event dialog box for the object:

To create a Macro using the **<u>Event</u>** dialog box for an object, click the object and then click **Event** in the **Property View** for that object, as illustrated in the example below.

Property View		₽ 🗙
Offset Conditional Display Enable Condition Position and Size Event Other	Release Preview	Edit Clear

Creating a Macro using the Run Macro Action in the Scheduler function:

To create a Macro using the **Run Macro** Action in the Scheduler function, double-click the **Scheduler** function in the **Project View** panel to open the Scheduler page. Double-click any existing Scheduler event (or add a new event) to open the Edit/New Schedule dialog box, click the Action tab and then select the **Run Macro** option from the drop-down menu, as illustrated in the example.



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Creating a Macro using the Sub Macro function in the Project View panel:

To create a Macro using the **Sub Macro** function, double-click the **Sub- macros** function in the **Project View** panel to open the **Sub-Macros** page. Click the **New** button to display the Sub Macro Editor dialog box, as illustrated in the example below.

Project View	M Sub-macros		8
B▶ <u>My Project</u>	New	Edit Delete	
Digital	△ Comment	Length	
Alarm Settings		Sub Macro Editor	
Connections	•	No.	
Sub-macros		Comment Macro_01	
Recipe		Macro	Edit
- XG Data Sampling			
Scheduler			
Password		Click to edit a Macro	
Settings			
🔅 MQ Settings			
		ОК	Cancel

Note:

The method for editing a Macro is the same for each of the Event, Scheduler or Sub Macro options, and will be introduced in the following descriptions using the Sub Macro option as an example.

10.3 Sub Macro Overview

A Sub Macro is an independent Macro program that can be called from a main Macro program using a *Call* command. A Sub Macro can be instructed to repeatedly call other Sub Macros for up to three cycles, but after more than three cycles the *Call* command will no longer be executed. Note that a maximum of 512 Sub Macro items can be created.





10.4 Sub Macro Management

The Sub Macro function can be used to create a new Sub Macro function or can be used to edit an existing Sub Macro.

	Sub-ma	acros				E
	New		Edit	Dele	te	
	No. \triangle	Comme	nt		Lengt	h
>	1	Macro_0	1			15
	2	Macro_0	2			13

To create a **Sub Macro**, double-click the **Sub Macro** function in the **Project View** panel. The Sub-macros page will then be displayed.

The following is an overview of the options available on the **Sub Macro** page.

New	Used to create a new Sub Macro. A maximum of 512 Sub Macro items can be created.
Edit	Used to edit the details of a selected Sub Macro
Delete	Used to delete a selected Sub Macro

To create a new Sub Macro, click the **New** button to display the **Sub Macro Editor** dialog box.

Click the **Edit** button to display the **Macro Editor** dialog box, see Section 10.6 Macro Editor for more details related to the usage. Enter the necessary commands and then click the **OK** button to save the changes.

See next section for an overview of the options available in the **Sub Macro Editor** dialog box for the **Sub Macro** function.

No.	3	
Comment		
Macro		Edit

10.5 Editing a Sub Macro

The **Sub Macro Editor** dialog box is also used to edit an existing Sub Macro function. Double-click any existing Sub Macro function in the Sub-macros page to display the **Sub Macro Editor** dialog box.

Sub-macros			8	
Now Edt	Delete	Sub Macro Editor		×
New	Delete	No.	1	
No. 🛆 Comment	L	Comment	Macro_01	
> 1 Macro_01		Macro		Edit
2 Macro_02		{Tag_1}={Tag	_2}	
The following is an overview of the options av	vailable in			
the Sub Macro Editor dialog box for the Sub I	Macro			
function.			ок	Cancel

No.	Used to specify the index number of the Sub Macro, which can be in the range of 1 to 512
Comment	Used to add a description for the Sub Macro, usually a name that can be easily recognized
Macro	Used to view and/or edit the instructions for the Sub Macro
Edit	Used to open the Macro Editor window. See Section 10.6 "Macro Editor" for more details

To edit an existing Sub Macro, click the **Edit** button to display the **Macro Editor** dialog box. Adjust any of the commands as necessary and then click the **OK** button to save the changes.

10.6 Macro Editor

The **Macro Editor** dialog box is used to write or edit a Macro program. To access the Macro Editor, click the **Edit** button in the **Sub Macro Editor** dialog box as noted before, or simply click anywhere in the **Macro** editing area and the Macro Editor window will be displayed allowing a Macro program to be written.

At the top of the Editor window is a menu that includes Check, Export, Import, and Macro Command functions, which can be used to quickly and accurately create a Macro.

To add a variable to the Macro program, click the Variable drop-down menu to select an existing variable, or click the "…" (💼) button to create a new variable, and then click the **Insert** button to insert the selected variable into the Macro code.



The following is an overview of the options available in the Macro Editor dialog box.

Check		Used to verify that the program is valid
Export		Used to export the Macro program as a text file in .txt format
Import		Used to import an existing Macro program in .txt format
Macro Command		Used to execute the Macro command
Variable	•	Used to select an existing variable, see Chapter 7 Variables for more details
		Used to create a new variable or edit/delete an existing variable
Insert		Used to insert the selected variable into the Macro code

10.7 Macro Command Tool

The **Macro Command** menu option in the **Macro Editor** dialog box provides a number of tools that can be used to prompt the syntax and parameters for a selected command, which can help prevent compilation errors.

Macro Command				
Edit(<u>E</u>) Co				
Command	<none></none>			
Syntax	<none></none>			
	ADD			
Param1	SUB			
Daram2	MUL			
Faranz	DIV			
Param3	MOD			
	MAX		V	

The following is an overview of the options available in the Macro Command dialog box

Edit	Used to insert the current command and close	Edit(E) Command(C) Insert(I)
	the Macro Command Tool window	Insert
Command	Used to select a command depends on the	Close
	category, where:	COPY(Param1,Param2)
	1. Arithmetic (e.g., ADD, MAX, AVG, etc.)	
	2. Logical (e.g., AND, OR, BCD, etc.)	Edit(E) Command(C) Insert()
	3. Bit Operation (e.g., BSET, BCLR, etc.).	Comman Arithmetic
	4. Data Transfer (e.g., MOV, COPY, etc.)	Syntax Bit Operation 2)
	5. Flow Control (e.g., IF, CALL, FOR, etc.)	Param1 Data Transfer MOV
	6. Screen Control (e.g., SHOWWINDOW, etc.)	Param2 Flow Control COPY
	7. Note (i.e., " ; ")	Param3 Screen Control > FILL
Insert	Used to insert the current syntax into the Macro	Note F
	program editing area	
Command	Used to select a command (unclassified)	Command COPY
Suptov	Licad to provide or adit the cuptor for the	Syntax COPY({Tag_5},{Tag_6})
Syntax		Param1 Variable 💌 Tag_5 💌 🚥
	selected command	Param2 Variable 💌 Tag_6 💌 🚥
Param	Used to configure the variables or the constant	Param3
1 to 3	to be used for the parameters	

10.8 Using a Variables in a Macro

Accessing a variable in a Macro is as simple as adding braces to the name of the required variable, for example, {TAG}, where **TAG** is the name of the variable. Note that the name of the TAG is **NOT** case sensitive.

If the variable to be accessed is an external variable, the HMI device will immediately initiate a communication request, and will not process the next command until that command is completed. Consequently, when a data operation is being performed, it is recommended that any external variables are first copied to an internal variable, which can then be used to perform any calculations in order to increase the efficiency of the program execution.

10.9 Macro Commands

The following is an overview of the commands that can be performed using a Macro, and are broken down into seven categories, Arithmetic, Logical, Bit Operation, Data Transfer, Flow Control, Screen Control, and Notes.

Arithmetic	Logical	Bit Operation	Data Transfer	Flow Control	Screen Control	Notes
<u>Section</u> <u>10.9.1</u>	<u>Section</u> <u>10.9.2</u>	<u>Section</u> <u>10.9.3</u>	<u>Section</u> <u>10.9.4</u>	<u>Section</u> <u>10.9.5</u>	<u>Section</u> <u>10.9.6</u>	<u>Section</u> <u>10.9.7</u>
<u>ADD</u>	AND	<u>BSET</u>	MOV	<u></u>	<u>SHOWWINDOW</u>	<u>;</u>
<u>SUB</u>	<u>OR</u>	<u>BCLR</u>	<u>COPY</u>	<u>ELSEIF</u>	HIDEWINDOW	
MUL	<u>XOR</u>	<u>BINV</u>	<u>FILL</u>	<u>ELSE</u>	SHOWSCREEN	
DIV	<u>NOT</u>			<u>ENDIF</u>		
MOD	<u>BCD</u>			<u>CALL</u>		
MAX	<u>BIN</u>			<u>RET</u>		
MIN	<u>SHL</u>			<u>LABEL</u>		
<u>AVG</u>	<u>SHR</u>			<u>GOTO</u>		
<u>SUM</u>				FORNEXT		
				DELAY		

A detailed description of all commands available in each category is provided in the sections below, including the related syntax for the command and an example of its usage.

Note: The use of external variables is not supported by the majority of the Macros listed above.

10.9.1 Arithmetic Macro Commands

• ADD

Description:

This Macro Command is used to add variable F1 to variable F2, and then save the result to variable F0.

Syntax:

F0 = F1 + F2

Parameters	F0: Result , F1: Augend , F2: Addend			
		Constant	Internal Variable	External Variable
Supported	FO		v	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	 Image: A set of the set of the	 Image: A set of the set of the	

Example:

Variables:

Name: F0; Address: @R0 ; Data Type: WORD; Data Length: 1 Name: F1; Address: @R100; Data Type: WORD; Data Length: 1 F1 = 50; F2 = 100 (constant)

Contents:

 ${F0} = {F1} + 100$

Result:

• SUB

Description:

This Macro Command is used to subtract variable F2 from variable F1, and then save the result to variable F0.

Note that if F0 is **not** a signed variable and the result is negative, an overflow will occur and the resulting value will be incorrect.

Syntax:

F0 = F1 - F2

Parameters	F0: F	Result, F1: Minuend,	F2: Subtrahend	
		Constant	Internal Variable	External Variable
Supported	F0		 ✓ 	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	 ✓ 	 ✓ 	

Example:

Variables:

```
Name: F0; Address: @R0 ; Data Type: WORD; Data Length: 1
Name: F1; Address: @R100; Data Type: WORD; Data Length: 1
F1 = 50; F2 = 10 (constant)
```

Contents:

 ${F0} = {F1} - 10$

Result:

• MUL

Description:

This Macro Command is used to multiply variable F1 by variable F2, and then save the result to variable F0.

Syntax:

F0 = F1 * F2

Parameters	F0: F	esult, F1: Multiplicar	nd, F2: Multiplier	
		Constant	Internal Variable	External Variable
Supported	F0		 ✓ 	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	v	 ✓ 	

Example:

Variables:

Name: F0 ;	Address: @R0	;	Data Type: WORD ;	Data Length: 1
Name: F1 ;	Address: @R100);	Data Type: WORD ;	Data Length: 1
F1 = 50 ; F2 =	= 100 (constant)			

Contents:

{F0} = {F1} * 100

Result:

• DIV

Description:

This Macro Command is used to divide variable F1 by variable F2, and then save the result to variable F0.

Syntax:

F0 = F1 / F2

Parameters	F0: F	Result, F1: Dividend,	F2: Divisor	
		Constant	Internal Variable	External Variable
Supported	FO		 ✓ 	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	v	 ✓ 	

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name : F1 ;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 50 ; F2 =	= 5 (constant)		

Contents:

 ${F0} = {F1} / 5$

Result:

• MOD

Description:

This Macro Command is used to divide variable F1 by variable F2, and then save the remainder to variable F0.

Syntax:

F0 = F1 % F2

Parameters	F0: F	tesult, F1: Dividend,	F2: Divisor	
Supported		Constant	Internal Variable	External Variable
Variable Type	F0		 ✓ 	
	F1	 ✓ 	 ✓ 	
	F2	 ✓ 	 ✓ 	

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1 ;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 45 ; F2 =	= 10 (constant)		

Contents:

{F0} = {F1} % 10

Result:

• MAX

Description:

This Macro Command is used to compare the values of variable F1 and variable F2, and then save the larger value to variable F0.

Syntax:

FO = MAX(F1, F2)

Parameters	F0: F	F0: Result, F1: Comparing value, F2: Comparing value				
		Constant	Internal Variable	External Variable		
Supported Variable Type	F0		 ✓ 			
	F1	 ✓ 				
	F2	v				

Example:

Variables:

Name: F0 ; Address: @R0 ; Data Type: WORD ; Data Length: 1 F1 = 50 (constant) ; F2 = 100 (constant)

Contents:

 ${F0} = MAX(50, 100)$

Result:

• MIN

Description:

This Macro Command is used to compare the values of variable F1 and variable F2, and then save the smaller value to variable FO.

Syntax:

FO = MIN(F1, F2)

Parameters	F0: F	F0: Result, F1: Comparing value, F2: Comparing value				
		Constant	Internal Variable	External Variable		
Supported	F0		 ✓ 			
Variable Type	F1	v	 ✓ 			
	F2	v				

Example:

Variables:

Name: F0; Address: @R0; Data Type: WORD; Data Length: 1 F1 = 50 (constant) ; F2 = 100 (constant)

Contents:

{F0} = MIN (50, 100)

Result:

• AVG

Description:

This Macro Command is used to calculate the average of the elements contained in Array variable F1, and then save the result to variable F0. The Macro adds all the values contained in the Array variable F1, and then divides the total by variable F2. Note that the F2 value is the total number of elements contained in the array F1.

Syntax:

F0 = AVG (F1, F2)

Parameters	F0: F	F0: Result, F1: Sum (Can be an Array), F2: Divisor				
		Constant	Internal Variable	External Variable		
Supported	F0		 ✓ 			
Variable Type	F1	 ✓ 	 ✓ 			
	F2	 ✓ 				

<u>Note</u>: The F2 value is the count for the number of values contained in the array.

Example:

Variables:

Name: F0; Address: @R0 ; Data Type: WORD; Da	Data Length: 1
--	----------------

Name: F1; Address: @R100; Data Type: WORD; Data Length: 10

F1 = { 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 }

F2 = 10 (This value is the count for the number of values contained in the array F1)

Contents:

{F0} = AVG(F1, 10)

Result:

• SUM

Description:

This Macro Command is used to calculate the sum of F2 elements from the F1 variable Array, and then save the total to variable F0.

Syntax:

F0 = SUM(F1, F2)

Parameters	F0: Result, F1: Sum (Can be an Array), F2: Length				
		Constant	Internal Variable	External Variable	
Supported	FO		 ✓ 		
Variable Type	F1	 ✓ 	 ✓ 		
	F2	 ✓ 	 ✓ 		

Example:

Variables:

Name: F0; Address: @R0 ; Data Type: WORD; Data Length: 1 Name: F1; Address: @R100; Data Type: WORD; Data Length: 10 F1 = { 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 } F2 = 5 (constant)

Contents:

 ${F0} = SUM(F1, 5)$

Result:

10.9.2 Logical Macro Commands

AND

Description:

This Macro Command is used to perform an AND operation on variables F1 and F2, and then save the result to variable F0.

Syntax:

F0 = AND(F1, F2)

Parameters	F0: F	Result, F1: Operator,	F2: Operator	
		Constant	Internal Variable	External Variable
Supported	FO		v	
Variable Type	F1	v	 ✓ 	
	F2	 Image: A set of the set of the	 ✓ 	

Example:

Variables:

Name: F0; Address: @R0 ; Data Type: WORD; Data Length: 1 Name: F1; Address: @R100; Data Type: WORD; Data Length: 1 F1 = 15 ; F2 = 5 (constant)

Contents:

 ${FO} = AND(F1, 5)$

Result:

• OR

Description:

This Macro Command is used to perform an OR operation on variables F1 and F2, and then save the result to variable F0.

Syntax:

FO = OR(F1, F2)

Parameters	F0: F	Result, F1: Operator,	F2: Operator	
		Constant	Internal Variable	External Variable
Supported	F0		 ✓ 	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	v	v	

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1 ;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 3 ; F2 =	5 (constant)		

Contents:

{F0} = OR(F1, 5)

Result:

• XOR

Description:

This Macro Command is used to perform an XOR operation on variables F1 and F2, and then save the result to variable F0.

Syntax:

FO = XOR(F1, F2)

Parameters	F0: F	Result, F1: Operator,	F2: Operator	
		Constant	Internal Variable	External Variable
Supported	F0		 ✓ 	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	v	v	

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1 ;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 3 ; F2 =	5 (constant)		

Contents:

{F0} = XOR(F1, 5)

Result:

• NOT

Description:

This Macro Command is used to perform a NOT operation on variable F1, and then save the result to variable F0.

Syntax:

F0 = NOT(F1)

Parameters	F0: F	F0: Result, F1: Operator				
		Constant	Internal Variable	External Variable		
Supported	FO		v			
Variable Type	F1	 ✓ 				

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = FF00H			

Contents:

{F0} = NOT(F1)

Result:

FO = OOFFH

• BCD

Description:

This Macro Command is used to convert the contents of variable F1 to BCD code, and then save the result to variable F0.

Syntax:

FO = BCD(F1)

Parameters	F0: F	F0: Result, F1: Operator				
		Constant	Internal Variable	External Variable		
Supported	FO		v			
Variable Type	F1	 ✓ 				

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1 ;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 12			

Contents:

 ${FO} = BCD(F1)$

Result:

F0 = 0012H

• BIN

Description:

This Macro Command is used to convert the contents of variable F1 to Binary code, and then save the result to variable F0.

Syntax:

FO = BIN(F1)

Parameters	F0: F	Result, F1: Operator		
		Constant	Internal Variable	External Variable
Supported	FO		v	
Variable Type	F1	 ✓ 		

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1 ;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 0012H			

Contents:

FO = BIN(F1)

Result:

• SHL

Description:

This Macro Command is used to shift the contents of variable F1 to the left of the bit defined by variable F2, and then save the result to variable F0.

Syntax:

F0 = SHL(F1, F2)

Parameters	FO: F	Result, F1: Operator,	F2: Offset	
		Constant	Internal Variable	External Variable
Supported	F0		 ✓ 	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	 Image: A set of the set of the	 ✓ 	

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1 ;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 000FH ;	F2 = 4 (constant)		

Contents:

$\{FO\} = SHL(F1, 4)$	The following shows the left-shift operation performed on four bits.		
	<u>Original</u> :	000F _(H) = 0000 0000 0000 1111 ₍₂₎	
Result:	<u>Result</u> :	00F0 _(H) = 0000 0000 1111 0000 ₍₂₎	

FO = OOFOH

• SHR

Description:

This Macro Command is used to shift the contents of variable F1 to the right of the bit defined by variable F2, and then save the result to variable F0.

Syntax:

F0 = SHR(F1, F2)

Parameters	F0: F	Result, F1: Operator,	F2: Offset	
		Constant	Internal Variable	External Variable
Supported	F0		 ✓ 	
Variable Type	F1	 ✓ 	 ✓ 	
	F2	v	 ✓ 	

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1
F1 = 1200H ;	F2 = 8 (constant)		

Contents:

 ${FO} = SHR(F1, 8)$

Result:

F0 = 0012H

The follow	wing shows the right-shift operation performed on eight bits.
<u>Original</u> :	1200 _(H) = 0001 0010 0000 0000 ₍₂₎
<u>Result</u> :	0012 _(H) = 0000 0000 0001 0010 ₍₂₎

10.9.3 Bit Operation Macro Commands

• BSET

Description:

This Macro Command is used to set the state of variable F0 to ON. Note that only the Bit data type is supported.

Syntax:

F0 = (ON)

Parameters	F0: R	F0: Result					
Supported		Constant	Internal Variable	External Variable			
Variable Type	F0		 Image: A second s				

Example:

Variables:

```
Name: F0; Address: @R0.5; Data Type: BIT; Data Length: 1
```

F0 = 0

Contents:

{F0} = (ON)

Result:

• BCLR

Description:

This Macro Command is used to set the state of variable F0 to OFF. Note that only the Bit data type is supported.

Syntax:

F0 = (OFF)

Parameters	F0: R	F0: Result				
Supported		Constant	Internal Variable	External Variable		
Variable Type	FO		v			

Example:

Variables:

Name: F0 ; **Address**: @R0.5 ; **Data Type**: BIT ; **Data Length**: 1 F0 = 1

Contents:

{F0} = (OFF)

Result:

• BINV

Description:

This Macro Command is used to reverse the contents of variable F1, and then save the result to variable F0. Note that only the Bit data type is supported.

Syntax:

FO = BINV(F1)

Parameters	F0: R	Result, F1: Operator		
		Constant	Internal Variable	External Variable
Supported	FO			
Variable Type	F1		 ✓ 	

Example:

Variables:

Name: F0 ;	Address: @R0.5 ;	Data Type: BIT ;	Data Length: 1
F1 = 1 (constant)			

Contents:

 ${FO} = BINV(F1)$

Result:

10.9.4 Data Transfer Macro Commands

• MOV

Description:

This Macro Command is used to assign the value of variable F1 to variable F0.

Syntax:

F0 = F1

Parameters	F0: Result, F1: Operator				
Supported Variable Type		Constant	Internal Variable	External Variable	
	F0		v	v	
	F1	 ✓ 	 ✓ 	 ✓ 	

Example:

Variables:

```
Name: F0; Address: @R0 ; Data Type: WORD; Data Length: 1
Name: F1; Address: @R100; Data Type: WORD; Data Length: 1
F0 = 0
F1 = 1234
```

Contents:

 ${FO} = {F1}$

Result:
• COPY

Description:

This Macro Command is used to copy the contents of variable F1 to variable F0. Note that the data type and the length of the source and target variables must be the same.

Syntax:

COPY(F0, F1)

Parameters	F0: Target Variable, F1: Resource Variable			
		Constant	Internal Variable	External Variable
Supported Variable Type	F0		 ✓ 	
	F1		 ✓ 	 ✓

Example:

Variables:

Name: F0; Address: @R0 ; Data Type: WORD; Data Length: 5 Name: F1; Address: @R100; Data Type: WORD; Data Length: 5 F0 = { 0, 0, 0, 0, 0 } F1 = { 10, 20, 30, 40, 50 }

Contents:

COPY(F0, F1)

Result:

F0 = { 10, 20, 30, 40, 50 }

• FILL

Description:

This Macro Command is used to fill the contents of variable F0 with the value from variable F1. Note that if variable F0 is an Array, each element of the array will be set to the value of variable F1.

Syntax:

FILL(FO, F1)

Parameters	F0: Target Variable, F1: Fill Value			
		Constant	Internal Variable	External Variable
Supported Variable Type	F0		 ✓ 	v
	F1	 ✓ 	 ✓ 	

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 5
F0 = { 10, 20	, 30, 40, 50 }		
F1 = 0 (const	ant)		

Contents:

FILL(F0, 0)

Result:

F0 = { 0, 0, 0, 0, 0 }

10.9.5 Flow Control Macro Commands

• IF

Description:

This Macro Command is used to create a conditional function that can be used as an argument in any command that takes a function argument, where:

- If the result of the Condition is True, execute the Command.
- If the result of the Condition is False, o nothing and go to the end of the Command.

Syntax:

IF (Condition)

Command

Condition:

- a. (FO==F1) Equal
- b. (FO<>F1) Not Equal
- c. (F0>F1) Greater Than
- d. (F0>=F1) Greater Than or Equal
- e. (FO<F1) Less Than
- f. (F0<=F1) Less Than or Equal

Note: The IF command needs to be closed with the ENDIF command.

Command:

All other Macro commands.

Parameters	F0: C	Comparison Parameter,	F1: Comparison Parameter		
		Constant	Internal Variable	External Variable	
Supported Variable Type	FO	 ✓ 	 ✓ 		
	F1	 ✓ 	 ✓ 		

Example:

Variables:

Name: F0; Address: @R0; Data Type: WORD; Data Length: 1

Contents:

{F0} = 200 IF ({F0} > 100) {F0} = 100 ENDIF

Result:

F0 = 100

• ELSEIF

Description:

This Macro Command is used to create a conditional function that can be used as an argument in any command that takes a function argument. The command is only executed if previous expressions in the IF command are False, where:

- If the result of Condition1 is True, execute Command1.
- If the result of Condition1 is False, then evaluate Condition 2.
- If the result of Condition2 is True, execute Command2.
- If the result of Condition2 is False, do nothing and end the evaluation.

Syntax:

IF (Condition 1)

Command 1

ELSEIF(Condition 2) Command 2

Condition:

- a. (FO==F1) Equal
- b. (FO<>F1) Not Equal
- c. (F0>F1) Greater Than
- d. (F0>=F1) Greater Than or Equal
- e. (FO<F1) Less Than
- f. (FO<=F1) Less Than or Equal

Note: The IF command needs to be closed with the ENDIF command.

Command:

All other Macro commands

Parameters	F0: Comparison Parameter,		F1: Comparison Parameter		
		Constant	Internal Variable	External Variable	
Supported	F0	 ✓ 	 Image: A set of the set of the		
Variable Type	F1	 ✓ 	 Image: A second s		

Example:

Variables:

Name : F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Contents :	(50) 20		

{F0} = 20 IF ({F0} > 100) {F0} = 100 ELSEIF({F0} < 50) {F0} = 0 Result: F0 = 0

ELSE

Description:

This Macro Command is used to create a conditional function that can be used as an argument in any command that takes a function argument. The function will execute a specified command if a particular condition is True and will execute a second command if the condition is false, where:

- If the result of the Condition is True, execute Command1.
- If the result of the Condition is False, execute Command 2 and end the evaluation.

Syntax:

IF (Condition)

Command 1

ELSE

Command 2

Condition:

- a. (FO==F1) Equal
- b. (FO<>F1) Not Equal
- c. (F0>F1) Greater Than
- d. (F0>=F1) Greater Than or Equal
- e. (FO<F1) Less Than
- f. (FO<=F1) Less Than or Equal

Note: The IF command needs to be closed with the ENDIF command.

Command:

All other Macro commands

Parameters	F0: C	Comparison Parameter,	F1: Comparison Parameter		
		Constant	Internal Variable	External Variable	
Supported Variable Type	FO	 Image: A set of the set of the	 Image: A set of the set of the		
	F1	 ✓ 	 Image: A set of the set of the		

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Contents:	${FO} = 50$ IF ({FO} > 100) ${FO} = 100$ ELSE ${FO} = 0$		
Result : F0 = 0	ENDIF	[2	57]

• ENDIF

Description:

This Macro Command is used to mark the end of an IF command sequence. Note that the ENDIF command can only be used in conjunction with IF or IF ... ELSEIF commands and must always be used for every IF statement in the command otherwise an error will occur.

Syntax:

IF (Condition)

Command

ENDIF

Note: The ENDIF command must always be used to close an IF command.

• CALL

Description:

This Macro Command is used to call a specified Sub Macro. A Sub Macro can be used to call Sub Macro itself or can also be used to call other Sub Macros. Recommend that not to call Sub Macro over three layers otherwise a program error may occur.

		Main Macro	1	Sub Macro 1	2	Sub Macro 2	3	Sub Macro 3
<u>Syntax</u> : CALL(F0)		 CALL 1		 CALL 2		 CALL 3		 RET
Daramatara	EQ: Sub Maara Number							

Parameters	F0: Sub Macro Number				
Supported		Constant	Internal Variable	External Variable	
Variable Type	FO	 ✓ 	✓		

Example:

Variables:

Name: F0; Address: @R0; Data Type: WORD; Data Length: 1

Contents:

CALL 5	; Call Sub Macro number 5
CALL 0	; No action taken as the Sub Macro number was invalid. Note that the base
	number for calling a Sub Macro is 1.
{F0} = 10	
CALL {F0}	; Call Sub Macro number 10

• RET

Description:

This Macro Command is used to instruct a Sub Macro to return to the original Macro, and is normally used in a Macro to indicate the end of the Macro.

Syntax:

RET





LABEL

Description:

This Macro Command is used to assign a label for the program. Note that this command is used in conjunction with the GOTO command. See the example below.

Syntax:

LABEL:

Note that the LABEL can be any user-defined name.

• GOTO

Description:

This Macro Command is used to instruct the program to execute a command in the location specified by the LABEL command. Note that each GOTO command must be used in conjunction with a previously created LABEL command, and that LABEL must exist within the same Macro.

Syntax:

GOTO LABEL

Example:

Variables:

Name: var ; Address: @R0 ; Data Type: WORD ; Data Length: 1

Contents:

```
{var} = 0
```

```
LABEL1: {var} = {var} + 1
```

```
IF ({var} <> 100)
```

```
GOTO LABEL1
```

ENDIF

Result:

var = 100

Note:

In this case, the program will perform **var = var+1** until **var** is equal to 100, so **var** = 0, 1, 2,99, and then perform **var** = 99+1 =100, then exit the program.

• FOR...NEXT

Description:

This Macro Command is used to repeat a command the number of times specified by variable F0. Note that the FOR...NEXT nested command can also be used.

Syntax:

FOR FO

Command

NEXT

Parameters	F0: Loop Count, F1: Result				
Supported		Constant	Internal Variable	External Variable	
Variable Type	FO	 ✓ 	 ✓ 		

Example:

Variables:

Name: F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
Name: F1;	Address: @R100 ;	Data Type: WORD ;	Data Length: 1

Contents:

{F1} = 0
{F0} = 10
For {F0}
 {F1} = {F1} + 1
NEXT

Result:

F1 = 55

• DELAY

Description:

This Macro Command is used to delay the execution time of the Macro or Sub Macro for the specified duration in milliseconds.

Syntax:

DELAY (F0)

Parameters	F0: Delay Time (ms)			
Supported		Constant	Internal Variable	External Variable
Variable Type	FO	 ✓ 	 ✓ 	

Example:

Variables:

Name : F0 ;	Address: @R0 ;	Data Type: WORD ;	Data Length: 1
F0 = 100			

Contents:

{F0} = 100

DELAY ({F0})

Note: In this case, the processing of the Macro will be delayed for 100 ms.

10.9.6 Screen Control Macro Commands

SHOWWINDOW

Description:

This Macro Command is used to open an existing Window-type screen. This is useful when you want to display a dialog box on the HMI screen, see Section 8.4 Keyboard Objects for more details about the Window-type screen. Note that if a page number of Base-type screen is assigned, no action will be taken.

Syntax:

SHOWWINDOW(F0, 0)

Note: The second parameter is fixed as 0.

Parameters	F0: Page Number			
Supported		Constant	Internal Variable	External Variable
Variable Type	FO	 Image: A set of the set of the	 ✓ 	

Example:

Variables:

Name: F0; Address: @R0; Data Type: WORD; Data Length: 1

Contents:

{F0} = 3

SHOWWINDOW({F0}, 0)

Result:

A screen will be opened where the page number is "3" and the screen type is "Window".

HIDEWINDOW

Description:

This Macro Command is used to close an existing Window-type screen. See Section 8.4 Keyboard Objects for more details about the Window-type screen. Note that if a page number of Base-type screen is assigned, no action will be taken.

Syntax:

HIDEWINDOW(F0)

Parameters	F0: Page Number			
Supported		Constant	Internal Variable	External Variable
Variable Type	F0	 ✓ 	 ✓ 	

Example:

Variables:

Name: F0 ; Address: @R0 ; Data Type: WORD ; Data Length: 1

Contents:

{F0} = 3 HIDEWINDOW({F0})

Result:

A screen will be closed where the page number is "3" and the screen type is "Window".

SHOWSCREEN

Description:

This Macro Command is used to open an existing Base-type screen, e.g., the Home page. Note that if a page number of Window-type screen is assigned, no action will be taken. See Section 8.4 Keyboard Objects for more details about the Window-type screen.

Syntax:

SHOWSCREEN (F0)

Parameters	F0: Page Number			
Supported		Constant	Internal Variable	External Variable
Variable Type	FO	v	v	

Example:

Variables:

Name: F0 ; Address: @R0 ; Data Type: WORD ; Data Length: 1

Contents:

{F0} = 1

SHOWSCREEN({F0})

Result:

A screen will be opened where the page number is "1" and the screen type is "Base Screen".

10.9.7 Note Macro Command

•;

Description:

This Macro Command is used to add a note or comment text to the Macro code.

Syntax:

; (comment)

Any text entered after the ";" character is considered as a note or comment.

Chapter 11 Other Functions and Optimized Design

This section provides a description of the other important functions contained in the Project View panel, including the Screen Control, Password, Language and Image Manager objects. In addition, details of a number of optimized design considerations that can be implemented in a project are also provided.

Screen Control Functions 11.1

The Screen Control function is used to control aspects of the HMI screen, such as switching screens or accessing specific pages.

The Screen Control function uses a combination of Read and Write variables to switch between screens, and also to obtain the current page number.

For more details related to the usage of variables, see Chapter 7 Variables.

🛯 Using	
Read Variable	Tag_1
	💌 The variable will be set as '0' after changing screen
otify	
	en replacement write in the page number to variable

The following is an overview of the options available in the Screen Control page.

	Use	Used to enable whether or not to display an HMI screen specified by the value of a variable.	
	Dood Variable	Used to specify the Read variable that will be used to control the	
Monitor	Read Variable	screen. See Chapter 7 Variables for more details	
	Reset the variable to "0"	Used to enable the function that specifies whether or not the	
	after changing screens	Read variable is reset to 0 when changing to another screen.	
		Used to specify whether or not the page number is written to the	
Notify	Use	Write variable when changing to another screen.	
	Muite Mexichle	Used to specify the Write variable.	
	write variable	See Chapter 7 Variables for more details	

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11.2 Password Function

The **Password** function is used to configure the different levels of password access permissions that can be specified to protect the functions in the project programs. A maximum of 10 password groups can be configured to provide a range of permission levels.

The lowest authority level is 0, which means that there are no restrictions on access permissions, whereas 9 is the highest authority and is intended for Admin level users.

If the authority level for the current user is not sufficient for the action to be performed, a login dialog box will automatically be displayed requesting that the user log in to the system using a password that has the required permissions.

Password				*
System idle Tim	e	When Logout	to jump page	^
0	Min.	🕑 Use Jump Page	0	
Group Index	Password		Power	
1			9	
2			0 💌	
3			3	
4			5	
5			6 7 =	
6			8	

The following is an overview of the options available in the **Password** page.

System Idle Time		Used to specify the duration of the system idle time in minutes. If there is no activity by the user within the specified period, the user will be automatically logged out from the system.
When	Use	Used to enable the jump page function when the user is logged out
Logout to	Jump Page	Used to configure the page number to be displayed to when the user is logged
jump page		out
Group Index		Used to indicate the index number of a password group. A maximum of 10
		password groups can be configured for the different password authority levels.
Password		Used to specify the login password for a group
Power		Used to configure the authority level for a group

To configure the password, enter a password in the text field, and select a level from the drop-down menu. In addition, enter an appropriate system idle time and the page number, if necessary, in the respective fields.

11.3 Language

The **Language** function is used to configure the language options to be used for the HMI screens. The language can be selected from English, Traditional Chinese, Simplified Chinese, or other and a maximum of 10 different font style configurations can be assigned.

Note that you can edit the display text for any objects on the HMI screen after changing the language option.

) 对 🔒	🖏 🖸 💽	🔣 🔪 🗉 O:Englisł	ו 💌
•)Language	🔁 1 : Screen 1		X
	Modify	Clear	Dyrault Disa	ble
	Language	Name	Font	Enabled 🔼
	0(*)	English	Tahoma , 12	True
	1	Language 1	Calibri , 12	True
	2	Language 2	SimSun, 12	True 🚽
	3	None	-	False
	4	None	-	False
	5	None	-	False 🔽

The following is an overview of the options available in the Language page.

Modify	Used to modify the settings for the selected Language item		
Clear	Used to clear the settings and parameters for the selected Language item		
Default	Used to specify the default display language when the HMI screens is executing The default language will be indicated with an asterisk (*).		
Enable/Disable	Used to enable or disable the selected language setting item		

When the language option "1: Chinese (T)" is selected, the text on the HMI screen will be displayed in Chinese. You can also edit the text you want to display in the **Property View** panel of each object

=	Project	Edit	View	Tools	Window	Help	=	•	=	State	>	English		- >
=	2	6	6	3 🛃	50	þ	B	# 1	=	1:Chi	nes	e (T)		
	Startup 1: Screen1 Language 1:Chinese (T)													
										2:Chi	nes	e (S)		_
		清隆	余		警報			涟	出					
		編號		標題		日期		٦ F	邿			回復時	間	
		1	Mes	sage	уууу/	mm/d	ld	hh:n	۱m		hł	n:mm		
<		2	Mor	n III	\\\\/	mm /d	ld	hh:n	hm		hł	n.mm	>	~

After clicking the **Modify** button, the **Edit Language** dialog box will be displayed, allowing the language and style to be modified.

To configure the display language, enter a name for the Language in the **Name** field, and then select the language from the **Language** drop-down menu. Click the **Browse** button (...) from the **Font** text box to select the desired font and then click the **OK** button to save the changes.

Edit Language	
Name	Language1
Language	English
Font	Tahoma,12
	💌 Enabled
	OK Cancel

The following is an overview of the options available in the **Edit Language** dialog box.

Name	Used to assign a name for the language setting					
Language	Used to specify the language to be displayed, which can be selected from English,					
Font	Iraditional Chinese, Simplified Chinese, or other					
Enabled	Used to specify whether or not this language setting is enabled					

11.4 Image Manager Function

All the images used on the HMI screens will be displayed in the Image Manager page. In addition to the system default images that can be included in a Creator project, custom images can also be added, allowing a unique customized HMI project to be designed.

After clicking the Add button to add the custom image to the **Image Manager** page, you can load the image in the Picture properties dialog box of the Property View panel for the HMI object. See Section 8.5 (B) Picture properties for more details.



The following is an overview of the options available in the Image Manager dialog box.

	Used to specify the View Settings for the Image Manager and there are two options:							
	Large Icons: View the images a	📰 View 🛛 属 Add						
	Details: Display all image names and dimensions							
View			Details					
	Name	Size	Preview					
	\$07-P-80X80-0.BMP \$07-P-80X80-1.BMP	{Width=80, Height=80}						
	\$50-R-60X90-0.BMP	{Width=60, Height=90}						
	C.jpg	{Width=60, Height=90} {Width=256, Height=256}						
	Used to add an image to the Im	ago Library Noto that only b	mp and ing format imagos					
Add								
	are supported.							
	Used to remove the selected image from the library. Note that if a linked image is							
Remove	removed, i.e., an image that has been used in the project, it will no longer be displayed							
	in the project.							
Export Image	Used to export the selected im	age from the library						

11.5 MQTT Function

The MQTT function in the Creator is only supported for the SmartView. MQTT is a machine-to- machine (M2M)/"Internet of Things" connectivity protocol. It was designed for publish /subscribe messaging between devices.



If a Publisher send a Topic message (e.g., "Temp1", "25") to the Broker, all the Subscriber that has subscribed to this Topic (e.g., "Temp1") will receive this message.

- E	BMQ Setting	s							8
N	MQConnections Subscribe topics Publish topics								
	New Edit Delete								
	Connecti	Broker ip	Broker	Enable	Will topic	Will pa	Will QoS	Will retain	Ī
*									

The user needs to conduct the following settings when using MQTT communication:

• The Broker Settings

Connection ID	Set the identifier for the Broker.	Broker 🛛					
Broker IP	Set the IP address of the Broker.	Connection ID Broker 01					
Broker Port	Set the Broker Port. (Defaults: "1883")	Broker ip 192.168.10.1					
Enable Will	Enable the Will Mechanism.	Broker port 1883					
Will Topic	Specify the topic for the Broker to publish when the Client is unexpectedly disconnect.	Enable will					
Will Payload	Set the topic message for the Broker to publish when the Client is unexpectedly disconnected.	Will topic Temperature-Taipei Will payload Temperature-Taipei is broken! Will QoS QoS 0					
	Set the <u>Q</u> uality <u>o</u> f <u>S</u> ervice for the Will function.	Will retain					
Will QoS	QoS 0: At most once delivery. Messages are delivered according to the best effort of the underlying network. No response and no retry mechanisms are defined in the protocol, so messages can get lost if the client unexpectedly disconnects or if the server fails, but, it's the fastest way to send a message.						

	QoS 1: At least once Delivery. For this level of service, if there is no response from the Broker, the Client will resend to make sure the message is arrive but duplicates may occur.
Will QoS	QoS 2: Exactly once delivery.
	This is the highest level of QoS. Additional protocol flows ensure that duplicate
	messages are not delivered to the receiving application.
Enable Retain	Whether to retain the Will message in the Broker.

• The Subscribe Topic Settings

Topic ID	When the text of the subscribed topic is too long, the user can enter a short and easy-to-remember alias. Note: This field is required and the content must be unique. You can copy and paste the Topic text.	Subscribe topic Topic ID 01-Bacnchiao Connection ID Broker 01 Topic Temperature-01 QoS QoS 1 Tag Word 2
Connection ID	Choose the needed Broker.	
Торіс	Set the subscribed topic.	
QoS	Set the <u>Q</u> uality <u>o</u> f <u>S</u> ervice for the received message.	OK Cancel
	 QoS 0: At most once delivery. Messages are delivered according t No response and no retry mechaniss can get lost if the client unexpected the fastest way to send a message. QoS 1: At least once Delivery. For this level of service, if there is resend to make sure the message is QoS 2: Exactly once delivery. This is the highest level of QoS. Ad messages are not delivered to the resource of the real QoS depends on the low 	o the best effort of the underlying network. ms are defined in the protocol, so messages dly disconnects or if the server fails, but, it's no response from the Broker, the Client will arrive but duplicates may occur. ditional protocol flows ensure that duplicate ecciving application. n set different QoS on the same topic, wer level.
	For example, if a client (Sub) subscri Client (Pub) with Qos 0: It will send	pes a topic with Qos 1 , then message with Qos 0.
	Client (Pub) with Qos 2: It will send	message with Qos 1.
Тад	Set the variable for receiving topic data.	

\bullet	The Publish Topic Settings	
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Topic ID	 When the text of the subscribed topic is too long, the user can enter a short and easy-to-remember alias. Note: This field is required and the content must be unique. You can copy and paste the Topic text. 	Publish topic Topic ID Connection ID Topic QoS	Taipei Broker 01 Temperature-Taipei QoS 1 Retain
Connection ID	Choose the needed Broker.	Tag	Word_1
Торіс	Set the published topic.	Publish mode	PublishByCycle
QoS	Set the <u>Q</u> uality <u>o</u> f <u>S</u> ervice for the received message.	Publish cycle(ms)	3000
	 QoS 0: At most once delivery. Messages are delivered according No response and no retry mechanic can get lost if the client unexpected the fastest way to send a message. QoS 1: At least once Delivery. For this level of service, if there is resend to make sure the message is QoS 2: Exactly once delivery. This is the highest level of QoS. Accord messages are not delivered to the Note: The publisher and the subscriber can but the real QoS depends on the log 	to the best e sms are defir edly disconne no response s arrive but d iditional prot receiving app an set differe ower level.	ffort of the underlying network. ned in the protocol, so messages cts or if the server fails, but, it's from the Broker, the Client will luplicates may occur. ocol flows ensure that duplicate plication. nt QoS on the same topic,
Enable Retain	Whether to retain the published message in	n the Broker.	
Тад	Set the variable for sending topic data.		
Publish mode	 Publish by cycle: Send periodically. Publish when tag value changed: Send 	if the data ch	anges.
Publish cycle (ms)	Set the interval time if using publish mode	1.	

11.6 Some Considerations for Optimizing the Design of a Project

When designing a project, there are a number of things that need to be taken into account to ensure that the final result performs in an optimal state. The following are some ideas that may help to improve the performance of the project.

- When using images, it would be preferable to avoid using the Auto Size functions to improve the performance of the project.
- It is recommended that the addresses for the variable are configured so that they are continuous as this helps to improve communication efficiency.
- It should be remembered that the more objects that exist on a screen, the slower the system speed will be. To mitigate the possibility of system overload, ICP DAS recommends that no more than 50 objects are present on a single screen.
- It is suggested that objects which need to be frequently updated are not placed so they overlap with other objects. This may help to improve the speed at which data is displayed.
- It is recommended that an appropriate update cycle time is specified for individual variables. For example, when measuring a temperature that changes slowly, it would be more beneficial to set the measurement cycle in the 500 to 1000 ms range. However, when monitoring the speed of a motor where the measurement changes rapidly, set the measurement cycle time to value in the range of 0 to 500 ms.
- When a macro needs to access an external variable, the system will immediately establish a connection, and the macro will not perform the next command until the external communication has been completed. Consequently, it is better to load the data of the external variables into the internal variables at once, and then perform any operations internally, as this can increase the efficiency of the macro.

Appendix 1: SmartView Operations

The following provides an overview of the operations that can be performed on the SmartView device, including how to execute a project either automatically or manually, together with details of the functions available in the Control Panel of the SmartView device.



A. Executing a Project Automatically

By default, the SmartView will automatically load and run the project once it boots up.

Note: To prevent the project from automatically loading, tap anywhere on the screen as it is loading, as illustrated below.



B. Executing a Project Manually

In some cases, you need to execute a project manually. For example, either after uploading a project to the SmartView, or after configuring most of functions in the Control Panel, the SmartView will not automatically run the project. Thus, you can tap the **Run Project** icon to manually execute a project.



C. Control Panel

The **Control Panel** is used to configure a variety of functions, each of which are described in more detail below, and include options such as changing the system date and time, configuring the IP settings and calibrating the sensitivity and accuracy of the touch screen, etc.

To access the Control Panel, tap the Control Panel icon and the settings screen will be displayed.



The following is an overview of the options available in the **Control Panel**.



C.1 Date/Time Settings



The **Date/Time Settings** function is used to adjust the system date and time for the SV-x201 device.

To adjust the Date and Time Settings for the SV-x201 device, tap the **Date/Time Settings** icon in the **Control Panel** to open the Date/Time Settings screen.



After tapping the value you want to adjust, the Numeric Keyboard will be displayed as below. Input the value for the year (or month / day / hour / minutes / seconds) field, and then tap the **Enter** button to complete the setting, as illustrated in the figure below. Finally, click the **OK** button to apply the settings.



The following is an overview of the options available in the Date/Time Settings screen for the Date/Time Settings function in the Control Panel

Date	Used to adjust the system date
Time	Used to adjust the system time
ОК	Used to apply the settings and exit the screen
Cancel	Used to exit the screen without saving the configuration settings

C.2 IP Settings



The **IP Settings** function is used to configure the IP address, Network Mask, Gateway address and DNS Server address for the SV-x201 device.

To configure the IP address, tap the **IP Settings** icon in the **Control Panel** to open the IP Settings screen. Enter the relevant details in the respective fields and then tap the **OK** button to apply the settings.

IP Address :	192	168	254	1	N.
Subnet Mask :	255	255	• 0	0	Y
Default Gateway :	192	168	1	• 1	
DNS Server :	211	- 78	• 130	• 2	
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The following is an overview of the options available in the IP Settings screen for the **IP Settings** function in the **Control Panel**.

IP Address	Used to specify the IP address for the SV-x201 device
Network Mask	Used to specify the Network Mask for the SV-x201 device
Gateway	Used to specify the Gateway address for the SV-x201 device
DNS Server	Used to specify the address of the DNS Server for SV-x201 device
Obtain an IP address	Used to specify whether or not the IP address for the project should be
via DCHP	obtained via a DCHP server
ОК	Used to apply the configuration settings and exit the screen
Cancel	Used to exit the screen without saving the configuration settings

C.3 Screen Calibration



The Screen Calibration function is used to calibrate the sensitivity of the touch screen and can be used to adjust the accuracy of the response to user input.

To calibrate the sensitivity and accuracy of the touch screen, tap the **Calibrate** icon in the **Control Panel** to open the Screen Calibration screen.

On the Calibration screen, tap and briefly hold the target (cross) in the center of the screen. Repeat this process as the target moves around the screen.

After completing the process, it will automatically return to the **Control Panel**.



C.4 NTP Server



The NTP (Network Time Protocol) Server can be used to automatically synchronize the system time of the SV-x201 device with a remote server.

To configure the NTP server, tap the **NTP** icon in the **Control panel** to open the NTP screen.

Choose one of the NTP server and the time zone, and check the Enable NTP checkbox and then tap the **OK** button to apply the settings.

NTP Server :	time1.google.com	
		time1.google.com time2.google.com time3.google.com time4.google.com
Time Zone :	GMT-12	time.windows.com
	Enable NTP	time-nw.nist.gov time-a.nist.gov time-b.nist.gov 自訂NTP何服器

The following is an overview of the options available in the NTP screen for the **NTP** function in the **Control Panel**.

NTP Server	Used to specify the NTP Server for updating the system time
Time Zone	Used to specify the Time Zone
Enable NTP	Used to enable the NTP function
ОК	Used to apply the settings and exit the screen
Cancel	Used to exit the screen without saving the configuration settings

C.5 Language Settings



The **Language** function is used to configure the language used for the SV-x201 device and can be selected from English, Traditional Chinese, or Simplified Chinese.

To adjust the interface language, tap the **Language** icon in the **Control panel** to open the Language screen. Choose the desired language in the drop-down list, tap the **Select** button to select it, and then tap the **OK** button to apply the settings.



D. Exit the Project

To exit the project and return to the Home screen, follow the procedure described below:

- 1. Tap and hold the top left-hand corner of the screen (A).
- 2. Slide your finger to the bottom left-hand corner of the screen (B).
- 3. Release your finger to exit the project.

