

STRAT Communication Driver

Communication Driver with STRATON
PC Base Control

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Introduction

The STRAT driver enables communication between the Studio system and Straton PC Base Control, according to the specifications discussed in this document.

This document was designed to help you install, configure and execute the STRAT driver to enable communication with these devices. The information in this document is organized as follows:

- **Introduction:** Provides an overview of the STRAT driver documentation.
- **General Information:** Provides information needed to identify all the required components (hardware and software) used to implement communication between Studio and the STRAT driver.
- **Installing the Driver:** Explains how to install the STRAT driver.
- **Configuring the Driver:** Explains how to configure the STRAT driver.
- **Executing the Driver:** Explains how to execute the driver to verify that you installed and configured the driver correctly.
- **Troubleshooting:** Lists the most common error codes for this protocol and explains how to fix these errors.
- **Sample Application:** Explains how to use a sample application to test the STRAT driver configuration.
- **Revision History:** Provides a log of all modifications made to the driver and the documentation.



Notes:

- This document assumes that you have read the “Development Environment” chapter in the Studio *Technical Reference Manual*.
- This document also assumes that you are familiar with the Windows NT/2000/XP environment. If you are unfamiliar with Windows NT/2000/XP, we suggest using the **Help** feature (available from the Windows desktop **Start** menu) as you work through this guide.

General Information

This chapter explains how to identify all the hardware and software components used to implement communication between the Studio STRAT driver and the OpenControl Monitor.

The information is organized into the following sections:

- Device Characteristics
- Driver Characteristics

Device Characteristics

To establish communication, you must use devices with the following specifications:

- **Manufacturer:** COPALP S.A.

For a list of the devices used for conformance testing, see “Conformance Testing” on page 4.

Driver Characteristics

The STRAT driver is composed of the following files:

- **STRAT.INI:** Internal driver file. *You must not modify this file.*
- **STRAT.MSG:** Internal driver file containing error messages for each error code. *You must not modify this file.*
- **STRAT.PDF:** Document providing detailed information about the STRAT driver.
- **STRAT.DLL:** Compiled driver.

Notes:

- All of the preceding files are installed in the `/DRV` subdirectory of the Studio installation directory.
- You must use Adobe Acrobat® Reader™ (provided on the Studio installation CD-ROM) to view the **STRAT.PDF** document.

You can use the STRAT driver on the following operating systems:

- Windows 2000
- Windows NT
- Windows Vista
- Windows 7

For a list of the operating systems used for conformance testing, see “Conformance Testing” on page 4.

The STRAT driver supports the following data type:

T5 Runtime Data Type	Write	Read
BOOL	•	•
INT	•	•
DINT	•	•
REAL	•	•
LREAL	•	•
STRING	•	•
TIME	•	•
UDINT	•	•

Conformance Testing

The following hardware/software was used for conformance testing:

- Cable: None

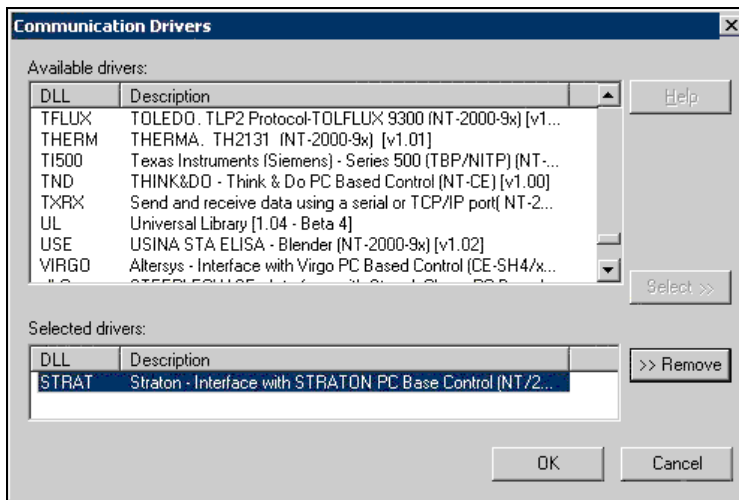
Driver Version	Studio Version	Operating System (development)	Operating System (runtime)	Equipment
1.00	6.1	Windows XP Professional	Windows XP Professional	Straton Control Unlimited and SoftNC
2.00	6.1	Windows XP Professional	Windows XP Professional	SoftNC

Installing the Driver

When you install Studio version 5.1 or higher, all of the communication drivers are installed automatically. You must select the driver that is appropriate for the application you are using.

Perform the following steps to select the driver from within the application:

1. Open Studio from the **Start** menu.
2. From the Studio main menu bar, select **File** → **Open Project** to open your application.
3. Select **Insert** → **Driver** from the main menu bar to open the *Communication Drivers* dialog.
4. Select the **STRAT** driver from the *Available Drivers* list, and then click the **Select** button.



Communication Drivers Dialog

5. When the **STRAT** driver displays in the **Selected Drivers** list, click the **OK** button to close the dialog.

Note:

It is necessary to install the StratExe.exe file. It must be located in the `\DRV` directory on your computer to enable communication between the host and the Straton software.

Attention:

For safety reasons, you must use special precautions when installing the physical hardware. Consult the hardware manufacturer's documentation for specific instructions in this area.

Configuring the Driver

After opening Studio and selecting the STRAT driver, you must configure the driver. Configuring the STRAT driver is done in two parts:

- Specifying communication parameters
- Defining tags and controls in the *STANDARD DRIVER SHEETS* (or Communication tables)

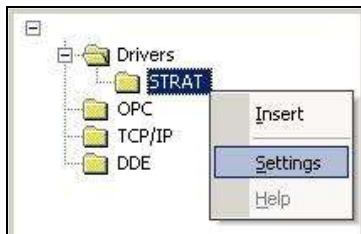
Worksheets are divided into two sections, a *Header* and a *Body*. The fields contained in these two sections are standard for all communications drivers — except the **Station**, **Header** and **Address** fields, which are driver-specific. This document explains how to configure the **Station**, **Header** and **Address** fields only.

Note:
For a detailed description of the Studio *STANDARD DRIVER SHEETS*, and information about configuring the standard fields, review the product's *Technical Reference Manual*.

Setting the Communication Parameters

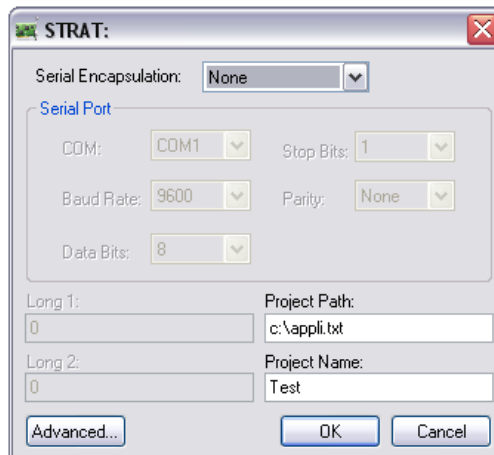
Use the following steps to configure the communication parameters, which are valid for all *Driver* worksheets configured in the system:

1. From the Studio development environment, select the **Comm** tab located below the *Workspace* pane.
2. Click the *Drivers* folder in the *Workspace* pane to expand the folder.
3. Right-click on the *STRAT* subfolder. When the pop-up menu displays, select the **Settings** option:



Select Settings from the Pop-Up Menu

The *STRAT: Communication Parameters* dialog displays:



Communication Parameters Dialog

4. Specify the custom parameters as noted in the following table:

Parameter	Default Value	Description	Requirement
Project Path	-	Path to the saved Straton Project.	Optional
Project Name	-	Name of the Project, this can be found on the project file inside the "<proj>" tag. Example <proj>=Test , in this case the name of the Project Name should be Test	Required

5. Click the **Advanced** button on the *Communication Parameters* dialog to open the *Advanced Settings* dialog, and configure the necessary settings.

Notes:

- Do not change any of the other *Advanced* parameters at this time. You can consult the *Studio Technical Reference Manual* for information about configuring these parameters in the future.
- Generally, you must change the *Advanced* parameter settings if you are using a DCE (Data Communication Equipment) converter (232/485 for example), modem, and so forth between the PC, the driver and the host. You must be familiar with the DCE specifications before adjusting these configuration parameters.

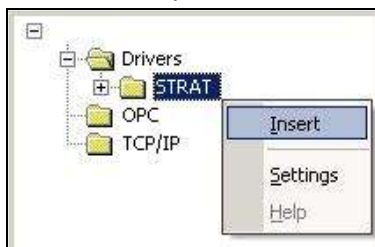
Configuring the Driver Worksheets

This section explains how to configure the *STANDARD DRIVER SHEET*s (or Communication tables) to associate application tags with the device addresses. You can configure multiple *Driver* worksheets — each of which is divided into a *Header* section and *Body* section.

Configuring the *STANDARD DRIVER SHEET*

Use the following steps to create a new *STANDARD DRIVER SHEET*:

- From the Studio development environment, select the **Comm** tab, located below the *Workspace* pane.
- In the *Workspace* pane, expand the *Drivers* folder, and right-click the *STRAT* subfolder.
- When the pop-up menu displays, select the **Insert** option.



Inserting a New Worksheet

Note:

To optimize communication and ensure better system performance, you must tie the tags in different *Driver* worksheets to the events that trigger communication between each tag group and the period in which each tag group must be read or written. Also, we recommend configuring the communication addresses in sequential blocks to improve performance.

The STANDARD DRIVER SHEET displays (similar to the following figure):

STRAT001.DRV

Description:
 Straton Driver Increase priority

Read Trigger: Enable Read when Idle: 1 Read Completed: Read Status:

Write Trigger: Enable Write on Tag Change: 1 Write Completed: Write Status:

Station: 127.0.0.1:1100 Header: Min:
 Max:

	Tag Name	Address	Div	Add
1	Straton_Tag1	DISECONDS		
2	Straton_Tag2	RREAL		
3	Straton_Tag3	STESTSTRING		
4	Straton_Tag4	DITESTARRAY		
*				

STANDARD DRIVER SHEET

In general, all parameters on the *Driver* worksheet (except the **Station**, **Header** and **Address** fields) are standard for all communication drivers, but they will not be discussed in this document. For detailed information about configuring the standard parameters, consult the *Studio Technical Reference Manual*.

- Use the following information to complete the **Station**, **Header** and **Address** fields on this worksheet.
 - Station** field: <IP Address>:<Port>
 - Header** field: No Header (keep this field blank)
 - Address** field: Type here the name of the Database Tag

Examples Table

Header	Address
(leave this blank)	DISECONDS
(leave this blank)	RREAL

Browsing Tags

This feature enable the Indusoft to automatically connect on the T5 runtime and acquire the Tags (Symbols) and display it to the customer.

Configuring the Browsing Tag feature

- 1 - Fill the Station on the Standard Driver Sheet with the correct information. Follow the pattern:
<IP>:<Port> Example: 127.0.0.1:1100

The screenshot shows the configuration window for STRAT001.DRV. The 'Station' field is highlighted with a red box and contains the text '127.0.0.1:1100'. Below the form is a table with the following data:

	Tag Name	Address	Div	Add
1	Straton_Tag1	DISECONDS		
2	Straton_Tag2	RREAL		
3	Straton_Tag3	STESTSTRING		
4	Straton_Tag4	DITESTARRAY		

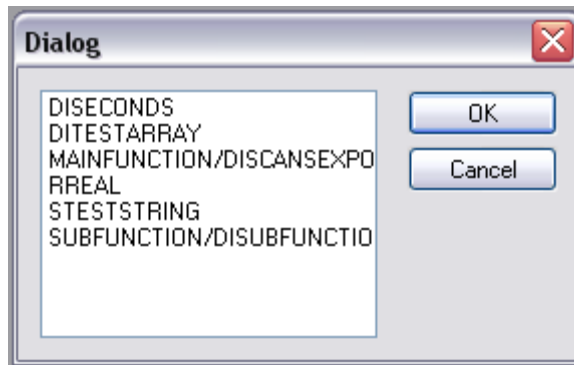
Setting the Station

- 2 - Click with the right button inside the Address area, a menu should appear.

The screenshot shows the same configuration window as above, but with a context menu open over the 'Address' column of the tag table. The menu options are:

- Browser...
- Copy Ctrl+C
- Cut Ctrl+X
- Paste Ctrl+V
- Insert Copied Cells
- Insert Line
- Delete Line

3- The Tag names should appear in a dialog.



4- Select the value and click ok, the Tag name will be placed on the Sheet.

 **BROWSING TAG ERRORS:**

If the Station is invalid or if the IP connection could not be succeeded , in the output window a message will be shown:

“Unable to Load Symbols”

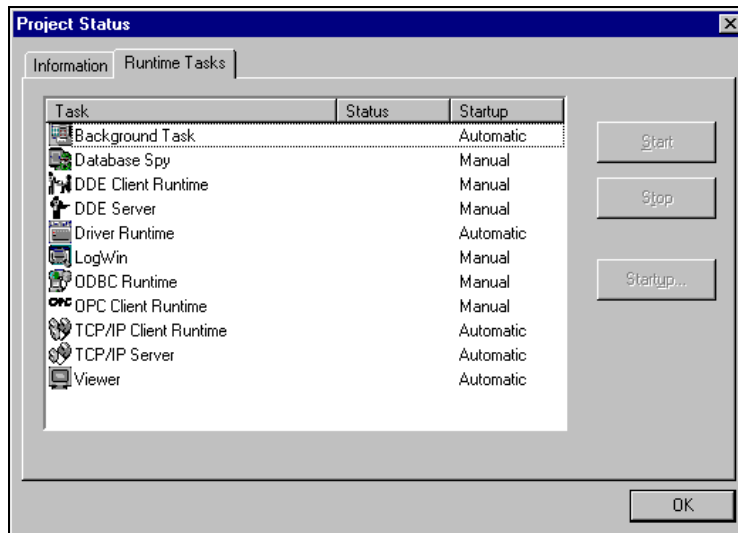
Executing the Driver

After adding the STRAT driver to a project, Studio sets the project to execute the driver automatically when you start the run-time environment.

To verify that the driver run-time task is enabled and will start correctly, perform the following steps:

1. Select **Project** → **Status** from the main menu bar.

The *Project Status* dialog displays:



Project Status Dialog

2. Verify that the *Driver Runtime* task is set to **Automatic**.
 - If the setting is correct, click **OK** to close the dialog.
 - If the **Driver Runtime** task is set to **Manual**, select the **Driver Runtime** line. When the **Startup** button becomes active, click the button to toggle the *Startup* mode to **Automatic**.
3. Click **OK** to close the *Project Status* dialog.
4. Start the application to run the driver.

Troubleshooting

If the STRAT driver fails to communicate with the device, the tag you configured for the **Read Status** or **Write Status** fields will receive an error code. Use this error code and the following table to identify the failure that occurred.

Error Code	Description	Possible Causes	Procedure to Solve
0	OK	Communication without problems	None required
2	Communication Error	<ul style="list-style-type: none">▪ Disconnected cables▪ PLC is turned off, in stop mode, or in error mode.▪ Wrong station number	<ul style="list-style-type: none">▪ Check cable wiring.▪ Check the PLC state – it must be RUN.▪ Check the station number.
3	Invalid Station	Station is invalid	Verify the IP and Port typed.
6	Invalid Tag	The tag specified does not exists on the T5 runtime.	Use the Browse feature to know what tags the currently T5 runtime has.

⇒ **Tip:**

You can verify communication status using the Studio development environment *Output* window (*LogWin* module). To establish an event log for **Field Read Commands**, **Field Write Commands** and **Serial Communication**, right-click in the *Output* window. When the pop-up menu displays, select the option to set the log events. If you are testing a Windows CE target, you can use the *Remote LogWin* of Studio (**Tools** → **Remote LogWin**) to get the log events from the target unit remotely.

If you are unable to establish communication with the PLC, try to establish communication between the PLC Programming Tool and the PLC. Quite frequently, communication is not possible because you have a hardware or cable problem, or a PLC configuration error. After successfully establishing communication between the device's Programming Tool and the PLC, you can retest the supervisory driver.

To test communication with Studio, we recommend using the sample application provided rather than your new application.

If you must contact us for technical support, please have the following information available:

- **Operating System** (type and version): To find this information, select **Tools** → **System Information**.
- **Studio version**: To find this information, select **Help** → **About**.
- **Driver Version**: To find this information, read the full description of the driver on the *Communication Drivers* dialog.
- **Communication Log**: Displays in the Studio *Output* window (or *LogWin* window) when the driver is running. Be sure to enable the **Field Read Commands**, **Field Write Commands** and **Serial Communication** for the *LogWin* window.
- **Device Model and Boards**: Consult the hardware manufacturer's documentation for this information.

Sample Application

You will find a sample application for drivers in the **/COMMUNICATION EXAMPLES/STRAT** directory. We strongly recommend that you check for a sample application for this driver and use it to test the driver before configuring your customized application, for the following reasons:

- To better understand the information provided in each section of this document.
- To verify that your configuration is working satisfactorily.
- To certify that the hardware used in the test (device, adapter, cable and PC) is working satisfactorily before you start configuring your own, customized applications.

 **Note:**

This application sample is not available for all drivers.

Use the following procedure to perform the test:

1. Configure the device's communication parameters using the manufacturer's documentation.
2. Open and execute the sample application.

 **Tip:**

You can use the sample application screen as the maintenance screen for your custom applications.

Revision History

Doc. Revision	Driver Version	Author	Date	Description of changes
A	1.00	Eric Vigiani	Dec/24/2004	Initial version
B	2.00	Paulo RB	Jan/20/2011	Changed driver API