G-4500 RTU

User Manual

Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

Warning

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1

Tables of Content

Chapter 1 Introduction	3
Chapter 2 Hardware	9
2.1 Supported Product	9
2.2 Hardware Specifications	. 11
2.3 Pin Assignments of G-4500 series	20
2.4 Operation Mode Switch	
2.6 DI/DO/AI Internal Structure and Wire Connection	22
2.7 GPRS/GSM Installation	24
2.8 GPS Installation (Option)	25
2.9 LED indicators	
Chapter 3 Upload firmware to G-4500	27
3.1 Hardware connection	27
3.1 Upload Software	29
3.1.1 Upload the firmware to G-4500 via COM Port	29
3.1.2 Upload the firmware to G-4500 via Ethernet	32
Chapter 4 Installing G-4500 RTU Utility	.34
4.1 Installing .NET Compact Framework	34
4.2 Installing G-4500 RTO Othity	
Chapter 5 G-4500 RTU Utility operation	.41
5.1 Hardware connection	.41
5.2 Modbus Device wire connection	.43
5.3 Main menu	.44
5.4 Login	.46
5.5 Main parameter	
5.6 Import/Export Parameters	61
5.7 Device Time	62
5.8 DO control/DI status	63
5.9 Signal Quality	64
5.10 Version	
5.11 System	.00
5.12 LUD INFORMATION	.08
5.13 Data log	. / 1

Chapter 1 Introduction

1.1 Overview

The G-4500 RTU is an intelligent Active GPRS Remote Terminal Unit which is built-in the specified firmware in G-4500 series. Within the high performance CPU, the G-4500 RTU series can handle a large of data and are suit for the hard industrial environment. They feature GPRS/GSM module, Ethernet interface, optional GPS module, 3 digital inputs, 3 digital outputs, 8 analog inputs, 2 RS-232 and 1 RS-485 ports. That can be used in various application fields to transfer data by GPRS or Ethernet. G-4500 RTU is suited for Remote data acquisition in various harsh environments. It is designed for communicating with Modbus RTU devices and provides active data transmission via GPRS connection. Except for the Modbus RTU's data, the built-in I/O and GPS data also can be transferred to RTU Center software by the defined period or DI/AI trigger. With the built-in redundancy communication paths of GPRS and Ethernet in G-4500 RTU, the data would be guaranteed to transfer to host. When GPRS or Ethernet connects failed, it will immediately switch to a different connection method in order to achieve data monitoring sustainability. Furthermore, G-4500 RTU provides simple I/O linkage control and the built-in I/O recorders in SD card.

We also provide M2M RTU center software with friendly Graphic interface to manage the GPRS RTU products easily. Users can monitor the I/O data and status of GPRS RTU devise by the interface on PC. By using the M2M RTU API tool and M2M RTU center software, any remote monitoring system can be achieved easily and efficiently. For SCADA system, the M2M.OPC server is provided to connect to SCADA by OPC interface.



• Easy to Establish GPRS Network Applications

It is a big headache for engineers to establish the GPRS applications because the dynamic IP management is required. Applying G-4500 RTU and M2M RTU center software, the dynamic IP addresses can be managed between them. The remote GPRS RTU product would connect to M2M RTU Center automatically. Therefore, all remote GPRS RTU devices can be managed by s single centralized M2M GPRS RTU Center software with a fixed IP address.

Moreover, there are M2M API tool and OPC server for engineers to develop the GPRS applications by VB, VC or SCADA development tools conveniently without any IP address management effort.

• Active data transmission

G-4500 RTU devices with active I/O transmission mechanism can raise the communication. Unlike the traditional poll communication, G-4500 RTU would transfer the data by the defined time, DI trigger or AI hi/lo alarm. In addition to improve the way of communication, that can also reduce the AP effort.

• Redundant communication paths in GPRS and Ethernet

There are GPRS and Ethernet communication interfaces in G-4500 RTU. Through the setting in G-4500 RTU Utility, you can set the primary and backup paths to communicate with M2M RTU Center. When the primary path is failed, G-4500 RTU can use the backup path to communicate to M2M RTU Center to ensure the data can transfer to PC. That can raise the reliability of communication effectively.

• Modbus RTU device connectivity

The G-4500 RTU is built-in Modbus RTU protocol. That can make any Modbus RTU device connect to G-4500 RTU. By the way of G-4500 RTU, Modbus RTU devices can be used in GPRS remote system.

• Simple Local I/O link Control

There are I/O built-in GPRS RTU devices of ICP DAS. Therefore, these products can be the GPRS I/O devices. Expect for these local I/O data can be sent to the host PC, the I/O link function of them help users to do the simple control in local field. For example: the DI trigger or high/low AI alarm can driver the DO channel.

• Built-in I/O Data Logging

GPRS RTU products provide an external SD interface. Users can set which built-in I/O need to record in SD memory card for one day in a single file.

4

1.2 Features:

- Automatic/continuous GPRS Link Management
- Support Modbus RTU protocol to connect to Max 10 Modbus RTU devices via RS-485 port.
- Support M2M OPC server for SCADA system.
- Easy-to-use API tool for users to develop their applications by various program development tools
- Built-in I/O make GPRS RTU be the GPRS I/O devices.
- Support LCD display in G-4500D-SIM340, G-4500PD-SIM340
- I/O data recorded in SD card
- Ethernet and GPRS redundant communication paths
- Local I/O linkage function to make the simple local control
- Power supply 10 ~ 30 V_{DC}

1.3 Communication and Software Architecture:

The cellular service provider often assigned dynamic IP with private IP address on GPRS network. That often causes the problem of communication with the host PC in most traditional solutions. To resolve this issue, they often use the high-cost public, static IP addresses for each device, DDNS solution, or buy VPN service. Instead of the above solutions, ICP DAS provides the active transmission method in G-4500 RTU devices. Each G-4500 RTU device would register and send data to M2M RTU Center automatically. That just needs a fixed IP in the Host PC for M2M RTU Center and M2M OPC server or other program can exchange data with M2M RTU Center. It is a good way to eliminate the IP management issue for users than the traditional solution.



1.4 Applications:

- Digital Signage
- Energy Management
- HVAC & Refrigeration
- Security & Access Control
- Vehicle tracking system



Remote Control/Monitor System



Car Monitor System



GIS system

Redundant Communication System

How to use G-4500 RTU in your applications



Chapter 2 Hardware

2.1 Supported Product

The G-4500 RTU is an intelligent Active GPRS Remote Terminal Unit which is built-in the specified firmware in G-4500 series including G-4500-SIM300 series, G-4500-SIM340 series and G-4500-3GWA series.







Products supports for G-4500 RTU firmware

Product Type	Description
G-4500-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller with LCD display (RoHS)
G-4500P-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller with GPS function (RoHS)
G-4500PD-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller with LCD display and GPS function (RoHS)
G-4500-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display (RoHS)
G-4500P-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with GPS function (RoHS)
G-4500PD-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display and GPS function (RoHS)
GD-4500-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller (RoHS)
GD-4500D-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display (RoHS)
GD-4500P-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with GPS function (RoHS)
GD-4500PD-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display and GPS function (RoHS)
G-4500-3GWA CR	Tri-band 3G WCDMA M2M Mini-PAC (RoHS)
G-4500D-3GWA CR	Tri-band 3G WCDMA M2M Mini-PAC with LCD display (RoHS)
G-4500P-3GWA CR	Tri-band 3G WCDMA M2M Mini-PAC with GPS function (RoHS)
G-4500PD-3GWA CR	Tri-band 3G WCDMA M2M Mini-PAC with LCD display and GPS function (RoHS)

2.2 Hardware Specifications

• G-4500-SIM300 Specifications

	ltem	G-4500-SIM300	G-4500D-SIM300	G-4500P-SIM300	G-4500PD-SIM300	
CPU		80 MHz internal microprocessor				
SRAM/FI	ash	512K/512K , real ti	12K/512K , real time clock, watchdog timer			
NVRAM		31 bytes, battery ba	1 bytes, battery backup, data valid up to 10 years			
EEPRON	1	16 KB, retention >	40 years. 1,000,000	erase/write cycles		
Comm. I	nterface					
COM por	ts	COM1:5-wire RS-2	COM1:5-wire RS-232; COM2: RS-485; COM3:3-wire RS-232			
Ethernet		10/100 Base-TX Et	hernet controller			
GPRS In	terface					
Frequence	cy Band	Tri-band 900/1800/	(1900 MHz			
GPRS co	onnectivity	GPRS class 10/8; 0	GPRS station class E	3		
DATA GI	PRS	Downlink transfer:	Max. 85.6 kbps; Upli	nk transfer: Max 42.8kl	ops	
GPS Inte	erface					
Support (Channels	-		32		
				Tracking = up to -159 dBm (with external LNA)		
Sensitivit	nsitivity -			Cold start = up to -146 dBm (with extern LNA)		
Acquisitio	on Time	_		Hot start (Open Sky) =	= 2 s(typical)	
Λοφαιοια				Cold start (Open Sky) = 36 s(typical)		
Protocol	Support	-		NMEA 0183 version 3	.01	
LCD Inte	erface					
Conoral	Effective display area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)	
General	Module		93 mm x 70 mm x		93 mm x 70 mm x	
	Dimension	-	1.6 mm (W x H x T)		1.6 mm (W x H x T)	
			Expected life is		Expected life is	
Life Time		-	more than 100,000	-	more than 100,000	
			nours under normal		nours under	
			op blocker!			

Power					
Protection	Power reverse pola	ower reverse polarity protection			
Frame Ground Protection	ESD, Surge, EFT,	Hi-Pot			
Power Requirement	15W; Unregulated	+10 VDC ~ +30 VDC	;		
Power Consumption	Idle: 75 mA @ 24 \	/DC; Data Link: 150	~ 400 mA (peak) @ 24	VDC	
LED Indicators					
System	Red				
GPRS	Yellow	Yellow			
GPS	Green		Yes		
Mechanical					
Casing	letal				
Dimensions	47 mm x 142 mm x	47 mm x 142 mm x 168 mm (W x L x H)			
Installation	DIN-Rall and wall n	nount			
Environment					
Operating Temperature	-20 ~ +70 °C	-15 ~ +55 °C	-20 ~ +70 °C	-15 ~ +55 °C	
Storage Temperature	-40 ~ +80 °C	-20 ~ +70 °C	-40 ~ +80 °C	-20 ~ +70 °C	
Humidity	5~90% RH, non-co	ondensing			

G-4500-SIM340 Specifications

	Item	G-4500-SIM340	G-4500D-SIM340	G-4500P-SIM340	G-4500PD-SIM340
CPU		80 MHz internal microprocessor			
SRAM/FI	ash	512K/512K , real ti	512K/512K , real time clock, watchdog timer		
NVRAM		31 bytes, battery ba	31 bytes, battery backup, data valid up to 10 years		
EEPRON	1	16 KB, retention >	40 years. 1,000,000	erase/write cycles	
Comm. I	nterface				
COM por	ts	COM1:5-wire RS-232; COM2: RS-485; COM3:3-wire RS-232			
Ethernet		10/100 Base-TX Et	hernet controller		
GPRS In	terface				
Frequenc	cy Band	Quad-band 850/90	0/1800/1900 MHz		
GPRS co	onnectivity	GPRS class 10/8; (GPRS station class E	3	
DATA GI	PRS	Downlink transfer:	Max. 85.6 kbps; Upli	nk transfer: Max 42.8kl	ops
GPS Inte	erface				
Support (Channels	-		32	
Consitivit				Tracking = up to -159 dBm (with external LNA)	
Sensitivit	у	-		Cold start = up to -146 dBm (with external LNA)	
Acquicitie				Hot start (Open Sky) =	= 2 s(typical)
Acquisitio	n nme	-		Cold start (Open Sky)	= 36 s(typical)
Protocol	Support	-		NMEA 0183 version 3.01	
LCD Inte	rface				
General	Effective display area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)
Concrui	Module Dimension	-	93 mm x 70 mm x 1.6 mm (W x H x T)	-	93 mm x 70 mm x 1.6 mm (W x H x T)
Life Time		-	Expected life is more than 100,000 hours under normal operation	-	Expected life is more than 100,000 hours under normal operation
Power					
Protectio	n	Power reverse pola	arity protection		

Frame Ground Protection	ESD, Surge, EFT, Hi-Pot			
Power Requirement	15W; Unregulated	+10 VDC ~ +30 VDC	;	
Power Consumption	Idle: 75 mA @ 24 \	/DC; Data Link: 150	~ 400 mA (peak) @ 24	VDC
LED Indicators				
System	Red			
GPRS	Yellow			
GPS	Green		Yes	
Mechanical				
Casing	Metal			
Dimensions	17 mm x 142 mm x 168 mm (W x L x H)			
Installation	DIN-Rall and wall n	DIN-Rall and wall mount		
Environment				
Operating Temperature	-20 ~ +70 °C	-15 ~ +55 °C	-20 ~ +70 °C	-15 ~ +55 °C
Storage Temperature	-40 ~ +80 °C	-20 ~ +70 °C	-40 ~ +80 °C	-20 ~ +70 °C
Humidity	5~90% RH, non-co	ndensing		

GD-4500-SIM340 Specifications

	ltem	GD-4500-SIM340	GD-4500D-SIM340	GD-4500P-SIM340	GD-4500PD-SIM340		
CPU		80 MHz internal m	icroprocessor				
SRAM/F	lash	512K/512K , real ti	512K/512K , real time clock, watchdog timer				
NVRAM		31 bytes, battery b	1 bytes, battery backup, data valid up to 10 years				
EEPRON	Л	16 KB, retention >	40 years. 1,000,000	erase/write cycles			
Comm.	Interface						
COM po	rts	COM1:5-wire RS-2	232; COM2: RS-485;	COM3:3-wire RS-232	2		
Ethernet		10/100 Base-TX E	thernet controller				
GPRS In	terface						
Frequen	cy Band	Quad-band 850/90	00/1800/1900 MHz				
GPRS co	onnectivity	GPRS class 10/8;	GPRS station class I	В			
DATA G	PRS	Downlink transfer:	Max. 85.6 kbps; Upli	ink transfer: Max 42.8	kbps		
GPS Inte	erface						
Support	Channels	-		32			
Sensitivity		_		Tracking = up to -159 dBm (with external LNA)			
				Cold start = up to -146 dBm (with external LNA)			
A e e vieiti		-		Hot start (Open Sky)	= 2 s(typical)		
Acquisiti	on Time			Cold start (Open Sky) = 36 s(typical)			
Protocol	Support	-		NMEA 0183 version 3.01			
LCD Inte	erface						
General	Effective display area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)		
General	Module	_	93 mm x 70 mm x	_	93 mm x 70 mm x		
	Dimension		1.6 mm (W x H x T)		1.6 mm (W x H x T)		
Life Time	9	-	Expected life is more than 100,000 hours under	-	Expected life is more than 100,000 hours under normal		
Power							
Protoctic	n an	Power roverse sel	arity protoction				
Protection Power reverse polarity protection							

Frame Ground Protection	ESD, Surge, EFT, Hi-Pot			
Power Requirement	15W; Unregulated	+10 VDC ~ +30 VD0	C	
Power Consumption	Idle: 75 mA @ 24 \	/DC; Data Link: 150	~ 400 mA (peak) @ 24	4 VDC
LED Indicators				
System	Red			
GPRS	Yellow			
GPS	Green	Green Yes		
Mechanical				
Casing	Plastic			
Dimensions	30 mm x 140 mm x 172 mm (W x L x H)			
Installation	DIN-Rall and wall r	DIN-Rall and wall mount		
Environment				
Operating Temperature	-20 ~ +70 °C	-15 ~ +55 °C	-20 ~ +70 °C	-15 ~ +55 °C
Storage Temperature	-40 ~ +80 °C	-20 ~ +70 °C	-40 ~ +80 °C	-20 ~ +70 °C
Humidity	5~90% RH, non-co	ondensing		

G-4500-3GWA Specifications

ltem		G-4500-3GWA	G-4500D-3GWA	G-4500P-3GWA	G-4500PD-3GWA	
CPU		80 MHz internal micro	80 MHz internal microprocessor			
SRAM/FI	ash	512K/512K , real time	12K/512K , real time clock, watchdog timer			
NVRAM		31 bytes, battery bac	kup, data valid up to	o 10 years		
EEPRON	1	16 KB, retention > 40	years. 1,000,000 e	rase/write cycles		
Comm. I	nterface					
COM por	ts	COM1:5-wire RS-232	2; COM2: RS-485; C	COM3:3-wire RS-232		
Ethernet		10/100 Base-TX Ethe	ernet controller			
3G Interf	ace					
Frequenc	y Band	Tri-band 2100/1900/8	850 MHz			
Data Tra	nsmission	UMTS / HSDPA / HS Downlink transfer: Ma	UMTS / HSDPA / HSUPA Downlink transfer: Max. 7.2Mbps; Uplink transfer: Max 5.76Mbps			
GSM Inte	erface					
Frequenc	y Band	Quad-band 850/900/	1800/1900 MHz			
GPRS co	onnectivity	GPRS class 12/10; GPRS station class B				
DATA G	PRS	Downlink transfer: Ma	ax. 85.6 kbps; Uplin	k transfer: Max 42.8k	kbps	
GPS Inte	erface					
Support (Channels	-				
Sensitivit	у	Tracking = up to -159 dBm (with exter LNA) Cold start = up to -146 dBm (with exter LNA)		9 dBm (with external 46 dBm (with external		
Acquisitio	on Time	-		Hot start (Open Sky) = 2 s(typical) Cold start (Open Sky) = 36 s(typical)		
Protocol	Support	-		NMEA 0183 version	3.01	
LCD Inte	rface					
	Effective display area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)	
General	Module Dimension	-	93 mm x 70 mm x 1.6 mm (W x H x T)	-	93 mm x 70 mm x 1.6 mm (W x H x T)	

G-4500 RTU User Manual

Life Time	-	Expected life is more than 100,000 hours under normal operation	-	Expected life is more than 100,000 hours under normal operation
Digital Output				
Output Channel	3			
Output Type	Open Collector (Sink	/NPN)		
Load Voltage	+30 VDC max.			
Load Current	100 mA max.			
Isolated Voltage	Non-isolated			
Digital Input				
Input Channel	3			
Input Type	Source(Dry Type), Co	ommon Ground		
Off Voltage Level	+1 V max.			
On Voltage Level	+3.5 ~ +30 V			
Isolated Voltage	Non-isolated	Non-isolated		
Analog Input				
Input Channel	8			
Resolution	12 - bit			
Input Range/Type	0 ~ 20 mA	0 ~ 20 mA		
Sample Rate	1 KHz max. (Read or	1 KHz max. (Read one channel)		
Power				
Protection	Power reverse polarit	ty protection		
Frame Ground Protection	ESD, Surge, EFT, Hi	ESD, Surge, EFT, Hi-Pot		
Power Requirement	15W; Unregulated +1	0 VDC ~ +30 VDC		
Power Consumption	Idle: 75 mA @ 24 VD	C; Data Link: 150 ~	400 mA (peak) @ 24	4 VDC
LED Indicators				
System	Red			
3G/GSM	Yellow			
GPS	Green		Yes	
Mechanical				

Casing	Metal				
Dimensions	47 mm x 142 mm x 1	7 mm x 142 mm x 168 mm (W x L x H)			
Installation	DIN-Rall and wall mo	IN-Rall and wall mount			
Environment					
Operating Temperature	-20 ~ +70 °C	-15 ~ +55 °C	-20 ~ +70 °C	-15 ~ +55 °C	
Storage Temperature	-40 ~ +80 °C	-20 ~ +70 °C	-40 ~ +80 °C	-20 ~ +70 °C	
Humidity	5~90% RH, non-cond	lensing			

2.3 Pin Assignments of G-4500 series



2.4 Operation Mode Switch

When users want to use G-4500 RTU firmware, they must upload the firmware in init mode. The figure shows how to set G-4500 into Run, Lock or init modes.



	Operation Mode Switch		
	OS can execute autoexec.bat		
KUN	Flash can be read/wirte.		
I Pup	OS can execute autoexec.bat		
LNUIT	Flash is read only (lock).		
	OS can not execute autoexec.bat		
	Flash can be read/wirte.		

2.6 DI/DO/AI Internal Structure and Wire Connection

• DI mode- NC (normal close)

The NC mode is used as normal close in relay application as follows. The logical value of DI is 1 when the relay is ON in normal use. When the relay is triggered as relay open, the logical value of DI is 0.



• DI mode- NO (normal open) and Counter

The wire connection in counter and NO modes are the same. The NO mode is used as normal open in relay application as follows. The logical value of DI is 0 when the relay is close in normal use.



• DO wire connection



• AI wire connection

Note: Users have not used Alx channel, please connect Alx with AGND.

2.7 GPRS/GSM Installation

SIM Card Installation



• GPRS/GSM Antenna Installation



2.8 GPS Installation (Option)



• GPS Antenna Installation

2.9 LED indicators



There are three LED indicators to help users to judge the various conditions of G-4500 RTU. The description is as follows :

SYS(Red) : System LED is to indicate if the G-4500 RTU is normal or fail.

Act	Link	GSM Fail or Hardware initialization	PIN code is wrong or don't install SIM card
Blanking (1 sec)	Blanking (2 sec)	Always on	Blinking per 50 ms

GSM (Yellow) : The modem LED can indicate the status of GSM module.

Modem normal	Modem fail
	Off
Blanking (3 sec)	or
	Blanking (not 3 sec)

GPS (Green)(Option) : The GPS LED can indicate the status of GPS module.

GPS Fail	Search GPS	Receive GPS data
Always off	Always on	Blanking (1 sec)

Chapter 3 Upload firmware to G-4500

3.1 Hardware connection

When users want to use G-4500 RTU, they need to upload G-4500 RTU firmware to G-4500 series hardware. (The G-4500 series supported for G-4500 RTU firmware are listed in Chapter 2). There are 2 kinds of interfaces which are RS-232 and Ethernet ports to download the firmware-. Use the COM Port of Host PC connects to G-4500 with cable CA-0910. Please refer to the picture below.



Power Supply (+10 ~ +30 V_{DC})

• Turn the dip switch to INIT mode and restart the G-4500 power



3.1 Upload Software

• Download the MiniOS7 Utility software

http://ftp.icpdas.com/pub/cd/8000cd/napdos/minios7/utility/minios7_utility/

• MiniOS7 Utility document

http://ftp.icpdas.com/pub/cd/8000cd/napdos/minios7/utility/minios7_utility/mini os7_utility.pdf

• G-4500 RTU firmware:

http://ftp.icpdas.com/pub/cd/usbcd/napdos/m2m/rtu/g-4500_rtu/software/firm ware/

3.1.1 Upload the firmware to G-4500 via COM Port

(1) Choose MenuBar > Connection, and then click new connection.

🚵 MiniO	57 Utility Verion	3 .1.1 (build 3.	.1.1.1)		
🔯 File	Connection -	🚸 Command	Configuration	n 📑 Tools (🎯 Help 👻
l l. i	New connectio	n F2		A c	
LOOK IN:	Last Connectio	n Alt+F2 √3			
Mama	<u>D</u> isconnect	Ctrl+F2	Size Ture		
	Search	E12	File Folder	r	201 0
irmwa	ie search and		File Folde	r	20
in i	ge		File Folde	ſ	201 🖉

(2) Select your number of COM Port.

COM1		~		
Senal For			10-7	UUF
Baud Rate:	115200	~	IP:	192.168.255.1
Data Bit:	8	~	Port	10000
Parity:	0(None)	~		
Stop Bit:	1	~		

Serial Port Parameters (Fixed)

Baud Rate	115200
Data Bit	8
Parity	0 (None)
Stop bit	1

(3) Select the G45_RTU.exe and autoexec.bat, and then click the

"Upload" Button to upload the firmware.



(4) Turn the dip switch to RUN mode and restart the G-4500 power after upload the firmware successfully.



3.1.2 Upload the firmware to G-4500 via Ethernet

(1) Choose MenuBar > Connection, and then click Search.

🔯 File 🛛	🕨 Connection 두 🐟 Con	amand 🛐 C	onfiguration 📑 To	ols 🥔 Help 🝷	
Look jn:	<u>N</u> ew connection Last Connection Alt+	F2 F2	💌 🧿 🌶 📂		
Name	Disconnect Ctrl+	F2 Size	Туре	Modified	At
🚞 bin 📗	Search F	12	File Folder	2008/12/22 下午 06:	
🚞 FIRM 🕷	'ARE		File Folder	2008/12/22下午 06:	
🛅 OS_IM/	AGE		File Folder	2008/12/22 下午 06:	
冯 7188хи	. ini	1KB	組態設定値	2009/8/27 下午 05:15	Α
icpdas		1KB	網際網路捷徑	2008/12/22下午 06:	Α
Noad232	2 411	88KB	應用程式擴充	2007/1/31 下午 12:52	Δ

(2) Double-Click your G-4500.

<u>.</u>	<u>,</u>	line .		fur-	
UDP Poll		192.168.0.99	uP-4500	Alias	

(3) Select the **G45_RTU.exe** and **autoexec.bat**, and then click the "Upload" Button to upload the firmware.



(4) Turn the dip switch to RUN mode and restart the G-4500 power after upload the firmware successfully.



Chapter 4 Installing G-4500 RTU Utility

In this chapter, we explain how to use G-4500 RTU Utility to configure your G-4500 RTU.

Note: It needs the runtime environment with .NET Framework 2.0 or above to execute the G-4500 RTU Utility in the PC. If there has .NET Framework 2.0 or above in the PC, the section 3.1 can be omitted.

4.1 Installing .NET Compact Framework

Plug shipment CD into the PC

Microsoft .Net Framework Version 2.0:

http://www.microsoft.com/downloads/details.aspx?FamilyID=0856eacb-4362-

4b0d-8edd-aab15c5e04f5&DisplayLang=en

Microsoft .Net Framework Version 3.5:

http://www.microsoft.com/downloads/details.aspx?familyid=333325FD-AE52-

4E35-B531-508D977D32A6&displaylang=en

The install figure is as follows:

• Press "Next" to the next step.

Next >

 Select the "I accept the terms of the License Agreement" and "Install " to the next step.

G-4500 RTU User Manual

End-licer Lice	nse Aareement			~
	inse ngreemene			
MICROSOFT SC	FTWARE SUPPLEMEN	TAL LICENSE TERMS		
MICROSOFT .N	ET FRAMEWORK 2.0			
1 22 1	11 11	11 F		. 💌
				Print
y clicking "I acc	ept the terms of the L	icense Agreement"	and proceeding to	use the
y clicking "I acc roduct, I indica	ept the terms of the L te that I have read, u	icense Agreement" nderstood, and agr	and proceeding to eed to the terms o	use the of the End-User

• The installation process would be going



• After finishing the installation, press "Finish" to exit the program.

Hicrosoft .NET Framework 2.0 Setup	
Setup Complete	
Microsoft .NET Framework 2.0 has been successfully installed.	
It is highly recommended that you download and install the latest service packs and security updates for this product.	
For more information, visit the following Web site:	
Product Support Center	
	Finish
4.2 Installing G-4500 RTU Utility

Plug in the shipment CD into the PC FTP:

http://ftp.icpdas.com/pub/cd/usbcd/napdos/m2m/rtu/g-4500_rtu/software/utility/ CD: /m2m/rtu/g-4500_rtu/software/utility/

Execute Setup.exe

The installation figure is as follows:

• Press "Next" to start the installation procedure.



 Select the installation path. The default path is "C:\ICPDAS\G-4500_RTU_Utility". Press "Next" to the next step.

Setup - G-4500_RTU_Utility	
Select Destination Location Where should G-4500_RTU_Utility be i	installed?
Setup will install G-4500_RTU	LUtility into the following folder.
C:\ICPDAS\G-4500_RTU_Utility	Browse
At least 1.3 MB of free disk space is rec	quired.
	K Back Next > Cance

Select the start menu folder path. The default path is " ICPDAS\G-4500_RTU_Utility". Press "Next" to the next step.

j∯ Setup - G-4500_RTU_Utility 📃 🗐 🗙
Select Start Menu Folder Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder. To continue, click Next. If you would like to select a different folder, click Browse.
ICPDAS\G-4500_RTU_Utility Browse
Cancel

Press "Next" to the next step.

٠

j ³ Setup - G-4500_RTU_Utility	
Select Additional Tasks Which additional tasks should be performed?	
Select the additional tasks you would like Setup to perform while installing G-4500_RTU_Utility, then click Next.	
Additional icons:	
Create a desktop icon	
< Back Next >	Cancel

• Press "Next" to the next step.

ji Setup - G-4500_RTU_Utility	
Ready to Install Setup is now ready to begin installing G-4500_RTU_Utility on your computer.	
Click Install to continue with the installation, or click Back if you want to review or change any settings.	
Destination location: C:\ICPDAS\G-4500_RTU_Utility Start Menu folder: ICPDAS\G-4500_RTU_Utility Additional tasks: Additional icons: Create a desktop icon	
< Back Install	Cancel

Press "Finish" to finish the installation procedure.

B Setup - G-4500_RTU_U	itility 📃 🗐 🔀
	Completing the G-4500_RTU_Utility Setup Wizard Setup has finished installing G-4500_RTU_Utility on your computer. The application may be launched by selecting the installed icons. Click Finish to exit Setup. I Launch G-4500_RTU_Utility
	Finish



◆ Launch G-4500 RTU Utility from the start menu "Start→All Programs→ICPDAS→G-4500_RTU_Utility→ G-4500_RTU_Utility".

Chapter 5 G-4500 RTU Utility operation

5.1 Hardware connection

When you want to configure G-4500 RTU with G-4500 Utility, using the COM Port of Host PC connects to G-4500 with cable CA-0910. You can select COM1 or COM3 on your G-4500. Please refer to the picture below.

Utility Software



Power Supply (+10 ~ +30 V_{DC})

• Turn the dip switch to RUN mode and restart the G-4500 power



5.2 Modbus Device wire connection

G-4500 RTU provides Modbus RTU Master Protocol to connect to Modbus RTU Devices by RS-485 port (COM2) of G-4500.



Power Supply (+10 ~ +30 V_{DC})

5.3 Main menu

The main menu of G-4500 RTU Utility includes the following sections:



Tool menu

- "COM": Set the COM port number in PC connecting to G-4500.
- ♦ Login/Logout

There are import and export functions in "File" item. The functions would be enabled when "Main parameters" window is open.

Export: The function can export the parameters as .par file from the "Main parameters" windows.

Import : The parameters would be shown in "Main parameters" window from the specific .par file.

- Version: Including the firmware and Utility version information.
- System: Provide users for recovering G-4500 RTU to factory and resetting G-4500.
- Exit: To exit G-4500 RTU utility

4 function items:

 "Main parameter": The main parameter setting of G-4500 includes Station ID, GPRS Username, GPRS Password, GPRS APN, Remoter server IP, Remote server Port, Local Ethernet IP, Local Ethernet Mask, Local Gateway, 10 Modbus device,

- "Device time": Display and set the RTC time of G-4500 RTU. It is also can get the information of the last and next time of the return report.
- "DO Control/DI status": Display the status of I/O and control the DO output.
- "Signal Quality": Show the GSM signal strength.

Status Line

Show the related information during the operation procedure including:

- The com port number of PC
- The communication setting of COM Port
- The status of COM Port
- The result of Utility operation

5.4 Login

It needs to login into G-4500 RTU to set its parameters. The description is below:

- (1) Select the COM port number of PC.
- (2) Press the "login" button



If the pin code in G-4500 RTU is not correct, the SYS led would be blanking per 50 ms and G-4500 utility would ask for users to input Pin or PUK code.

(1) Asking for inputting PIN code:

If the PIN code is effective, the "Enter SIM PIN/SIM PUK" window would pop-up as follows. If the number of times for inputting the wrong PIN code is more than the allowed number, the PIN code would be ineffective. And the "PUK code" window would pop up.

🔜 Entry SIM PIN / SIM PUK	×
Times Remain to Input SIM PIN : 3 Please Input SIM PIN Code :	
oк	

(2) Asking for inputting PUK code

If the PIN code is ineffective, the "PUK code" window would pop-up as follows. As the number of times for inputting the wrong PUK code is more than allowed number, the SIM card would be ineffective forever. Therefore, it is important to input the correct PUK code.

🔜 Entry SIM PIN / SIM PUK	×
Times Remain to Input SIM PUK: 10 Please Input SIM PUK Code:	
Please Input New SIM PIN Code :	
ОК	

If the PIN or PUK code is correct, the STA led would blank per second. Users can operate other function of G-4500 in this utility.

5.5 Main parameter

There are 4 tree pages in "Main parameter" window. They are "Main Parameters, Local IO Parameters, Modbus Parameters and Device Status" pages.

After configuring those pages, press "Write to Device" button to save these settings to G-4500 RTU. Then, reset G-4500 to enable these settings.

The "Read Form Device" button can help users to read back these settings from G-4500 RTU. In addition, these setting would be read from G-4500 RTU when the "Main Parameter" window pops up from the main menu.

Main Parameters

The following page is "Main Parameters". Users can refer the explanation below :

G-4500 RTU Utility ¥er 1.00 Relea	SB			
COM11 - Logout File - Ver	sion System • Exit			
Device Parameters				Σ
			Read Fo	rm Device
- Main Parameters	Parameter	Value		Message
Local IO Parameters Modbus Parameters	Station ID	4		1 ~ 65535
Device Status	Update Time	1		1 ~ 999999, Unit: sec
	Heartbeat Time	0		1 ~ 3600, 0: Disable, Unit: sec
	Connect Method	0	~	0: Only GPRS, 1: Only Ethernet
	Enable GPS	0	~	1: Enable, 0: Disable,it will retur
	GPRS Username	GUEST		GPRS Username
	GPRS Password	GUEST		GPRS Password
	GPRS APN	INTERNET		GPRS APN (Access Point Name)
	DNS Server	168.95.1.1		DNS Server
	Remote Server	61.221.131.37		Please fill in your Remote's IP o
	Remote Server Port	10000		Default: 10000
	Modbus BaudRate	9600	~	2400 ~ 115200 bps
	Modbus Parity	0	~	0: None,1: Even, 2: Odd
	Modbus DataBit	8	~	DataBit: 7/8
	Modbus StopBit	1	~	StopBit: 1/2 (When StopBit is 2,
	Modbus Time Out	500		1 ~ 65535, Unit: ms
	Local Ethernet IP	192.168.0.99		Local Ethernet IP
Detailed Message 1 ~ 65535				

Parameter	describe
Station ID	The device Station ID would be shown in the Remote OPC
	Server. It can identify the different G-4500 device in the
	Remote OPC Server. (Range: 1 ~ 65535)
Update time	Set report time interval. The G-4500 RTU will send the data
	to M2M RTU Center by the update time. The based unit is:
	sec.
	(Range: 1 ~ 999999 secs)
Heartbeat Time	Set heartbeat time interval. When the G-4500 update time is
	too long to terminate the GPRS connection by ISP, the
	heartbeat time will report smaller package to keep GPRS
	connection. (unit: sec) (Range: $1 \sim 3600$)
	Note: Some ISP companies would terminate the GPRS
	connection when the GPRS connection has any data flow
	for some time
Connect Method	4 methods are supported for G-4500 RTU to connect to
	Remote server
	1) Only GPRS
	2) Only Ethernet
	3) GPRS Master, Ethernet Slave (Redundancy system)
	4) Ethernet Master, CPRS Slave (Redundancy system)
Enable CBS	The setting can enable or disable GPS function of C 4500
	The setting can enable of disable GFS function of G-4500
	NON ODC Server. Thet would report #CDDMC format
	M2M.OPC.Server. That would report \$GPRINC format.
GPRS Username	The setting is important factor when connecting to a GPRS
	network. Check with your GPRS service provider for details.
GPRS Password	The setting is important factor when connecting to a GPRS
	network. Check with your GPRS service provider for details.
GPRS APN	The setting is important factor when connecting to a GPRS
	network. Check with your GPRS service provider for details.
	Access point name (APN) is the name used to identify a
	general packet radio service (GPRS) bearer service in the
	GSM mobile network. The APN defines the type of service
	that is provided in the packet data connection. You can get
	this APN by ISP.
DNS Server	The Domain Name System (DNS) is a hierarchical naming

	system for computers, services, or any resource connected
	to the Internet or a private network. You must give this value
	which is DNS server IP if you want to connect remote server
	by domain name.
Remote Server	Connect to assignable remote server. It can be remote
	server's IP or remote server's Domain name.
Remote Server Port	Connect to assignable remote server port.
Modbus Baudrate	COM 2 of G-4500 baud rate.
	(Range: 2400 ~ 115200 bps)
Modbus Parity	COM 2 of G-4500 parity.
	(0: None,1: Even, 2: Odd)
Modbus DataBit	COM 2 of G-4500 data bit.
	(DataBit: 7/8)
Modbus StopBit	COM 2 of G-4500 stop bit.
	(StopBit: 1/2 (When StopBit is 2, the data bit must be 7 bit))
Modbus Time out	Set the timeout of connecting to Modbus Device. (unit: sec)
	(Range: 1 ~ 65535)
Local Ethernet IP	Local Ethernet IP of the G-4500
Local Ethernet Mask	Local Ethernet Mask of the G-4500
Local Ethernet Gateway	Local Ethernet Gateway of the G-4500
Enable LCD	The setting can enable or disable LCD function of G-4500
	RTU. If enable, the LCD show information about G-4500
	status.
Enable SD	The setting can enable or disable SD function of G-4500
	RTU. If enable, the G-4500 record the data into SD card.
	(*.csv data format)
Interval Time of Modbus	Users can control interval time of Modbus command by
command	themselves.
	0 ~ 1000, Unit: ms. 0: Use system default, other: User define

· Local I/O Parameters (I/O linkage)

The following page is "Local IO Parameters". Users can refer to the explanation below :

DI linkage

vice Parameters			
			Read Form Device Write to Device
Main Parameters	Parameter	Value	Message
Local IO Parameters	DIO Type	0	 D: NO (Normally Open), 1: NC (
DI U DI 1	DI O Trigger Time	5	DI Trigger Time (D ~ 999)(Unit:s
DI 2	DI O Recovery Time	5	DI Recovery Time (D ~ 999)(Unit
AI 0	DI 0 DO 0 Type	2	🐱 DO 0 Type, 0: Disable, 1: Time,
AI 2	DI 0 DO 0 Time	0	DO 0 Time (0 ~ 999)(Unit:sec.)
AI 3	DIO DO 1 Type	0	🖌 DO 1 Type, 0: Disable, 1: Time,
AI 4	DI 0 DO 1 Time	0	DO 1 Time (0 ~ 999)(Unit:sec.)
AI6	DI 0 DO 2 Type	0	🚽 DO 2 Type, 0: Disable, 1: Time,
- AI 7	DI 0 DO 2 Time	0	DO 2 Time (0 ~ 999)(Unit:sec.)
Modbus Parameters			
Device Status			
Detailed Mercere			
0: NO (Normally Open), 1: NC (1	Normally Close)		

Parameter	describe
DI Type	0: NO (Normally Open), 1: NC (Normally Close)
DI Trigger Time	Range: 0 ~ 999, unit: sec
DI Recovery Time	Range: 0 ~ 999, unit: sec
DO 0 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 0 function.
	2) 1: Time, when the DIn has different status, the DO 0
	would output during DO 0 Time.
	3) 2: State, changes with the DI state
DO 0 Time	DO 0 outputting time
	(unit: sec) (Range: 0 ~ 999)
DO 1 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 1 function.
	2) 1: Time, when the DIn has different status, the DO 1

G-4500 RTU User Manual

	would output during DO 1 Time.
	3) 2: State, changes with the DI state
DO 1 Time	DO 1 outputting time
	(unit: sec) (Range: 0 ~ 999)
DO 2 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 2 function.
	2) 1: Time, when the DIn has different status, the DO 2
	would output during DO 2 Time.
	3) 2: State, changes with the DI state
DO 2 Time	DO 2 outputting time
	(unit: sec) (Range: 0 ~ 999)





Al linkage

vice l'arameters			
		📐 Read F	orm Device) 💎 Write to Device
Main Parameters	Parameter	Value	Message
Local IO Parameters	ALO Hi Alarm Value	0	Hi Alarm Value (0 ~ 20 mA)(Sup
DI 1	Al O Hi Trigger Time	0	Hi Alarm Trigger Time (0 ~ 999)(
DI 2	Al 0 Hi Recovery Time	0	Hi Alarm Recovery Time (0 ~ 99
ALD ALL	AI 0 Hi Alarm DO 0 Type	0	🖌 Hi Alarm DO O Type, O: Disable,
AI 2	AI 0 Hi Alarm DO 0 Time	0	Hi Alarm DO 0 Time (0 ~ 999)(U
- AI 3	AI 0 Hi Alarm DO 1 Type	0	🖌 Hi Alarm DO 1 Type, 0: Disable,
- AI 4 - AI 5	AI 0 Hi Alarm DO 1 Time	0	Hi Alarm DO 1 Time (0 ~ 999)(U
- AI 6	ALO Hi Alarm DO 2 Type	0	🖌 Hi Alarm DO 2 Type, 0: Disable,
AI7	AI 0 Hi Alarm DO 2 Time	0	Hi Alarm DO 2 Time (0 ~ 999)(U
⊕ Modbus Parameters - Device Status	ALO Lo Alarm Value	0	Lo Alarm Value (0 ~ 20 mA)(Su
	AI O Lo Trigger Time	0	Lo Alarm Trigger Time (0 ~ 999)(
	AI 0 Lo Recovery Time	0	Lo Alarm Recovery Time (0 ~ 99
	AI 0 Lo Alarm DO 0 Type	0	🖌 Lo Alarm DO 0 Type, 0: Disable
	AI 0 Lo Alarm DO 0 Time	0	Lo Alarm DO 0 Time (0 ~ 999)(U
	Al 0 Lo Alarm DO 1 Type	0	🖌 Lo Alarm DO 1 Type, 0: Disable
	AI 0 Lo Alarm DO 1 Time	0	Lo Alarm DO 1 Time (0 ~ 999)(U
	Al 0 Lo Alarm DO 2 Type	0	🖌 Lo Alarm DO 2 Type, 0: Disable

Parameter	describe
AI Hi Alarm Value	0 ~ 20 mA
AI Hi Trigger Time	Range: 0 ~ 999, unit: sec
AI Hi Recovery Time	Range: 0 ~ 999, unit: sec
Hi Alarm DO 0 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 0 function.
	2) 1: Time, when the DIn has different status, the DO 0
	would output during DO 0 Time.
	3) 2: State, changes with the DI state
Hi Alarm DO 0 Time	DO 0 outputting time
	(unit: sec) (Range: 0 ~ 999)
Hi Alarm DO 1 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 1 function.
	2) 1: Time, when the DIn has different status, the DO 1
	would output during DO 1 Time.
	3) 2: State, changes with the DI state
Hi Alarm DO 1 Time	DO 0 outputting time
	(unit: sec) (Range: 0 ~ 999)

Hi Alarm DO 2 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 2 function.
	2) 1: Time, when the DIn has different status, the DO 2
	would output during DO 2 Time.
	3) 2: State, changes with the DI state
Hi Alarm DO 2 Time	DO 2 outputting time
	(unit: sec) (Range: 0 ~ 999)
AI Lo Alarm Value	0 ~ 20 mA
AI Lo Trigger Time	Range: 0 ~ 999, unit: sec
AI Lo Recovery Time	Range: 0 ~ 999, unit: sec
Lo Alarm DO 0 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 0 function.
	2) 1: Time, when the DIn has different status, the DO 0
	would output during DO 0 Time.
	3) 2: State, changes with the DI state
Lo Alarm DO 0 Time	DO 0 outputting time
	(unit: sec) (Range: 0 ~ 999)
Lo Alarm DO 1 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 1 function.
	2) 1: Time, when the DIn has different status, the DO 1
	would output during DO 1 Time.
	3) 2: State, changes with the DI state
Lo Alarm DO 1 Time	DO 1 outputting time
	(unit: sec) (Range: 0 ~ 999)
Lo Alarm DO 2 Type	There are 3 types to set:
	1) 0: Disable, Disable the DO 2 function.
	2) 1: Time, when the DIn has different status, the DO 2
	would output during DO 2 Time.
	3) 2: State, changes with the DI state
Lo Alarm DO 2 Time	DO 2 outputting time
	(unit: sec) (Range: 0 ~ 999)



Modbus Parameters

This page can help users to configure the parameters of Modbus Devices connected to G-4500 RTU. The maximum number of Modbus devices connected to G-4500 RTU is 10.

Add a new ICP DAS's Modbus Device

			Read For	m Device
Main Parameters	Parameter	Value	Nead 10	Message
Local IO Parameters	Add button	Add		Add a new Modbus device
Modbus Parameters — Modbus device 0 Device Status	Device Name	M-7011	~	Modbus Device Name
	Device Addr.	1		Modbus Device Addr (1 ~ 247)
	DI Counts	1		Modbus FC 2 (0 ~ 32)
	DI Start Addr.	0		Modbus FC 2 (0 ~ 65535)
	DO Counts	2		Modbus FC 1 (0 ~ 32)
	DO Start Addr.	32		Modbus FC 1 (0 ~ 65535)
	Al/Counter Counts	1		Modbus FC 4 (0 ~ 16)
	Al Start Addr.	0		Modbus FC 4 (0 ~ 65535)
	Al Data Format	Engineering	~	Modbus Data Format
	Al Type code	[00]-15~15m∨	~	Modbus Type code
	AO Counts	0		Modbus FC 3 (0 ~ 16)
	AO Start Addr.	0		Modbus FC 3 (0 ~ 65535)
	AO Data Format		~	Modbus Data Format
	AO Type code		~	Modbus Type code
Datailed Macrom				
retaued Intessage Add a new Modbus device				

Parameter	describe
Add button	Add a new Modbus Device
Device Name	Select Modbus Device.
Device Addr.	Modbus device Addr. (Range: 1 ~ 247)
DI Counts	Range: 0 ~ 32
DI Start Addr.	Range: 0 ~ 65535
DO Counts	Range: 0 ~ 32
DO Start Addr.	Range: 0 ~ 65535
AI Counts	Range: 0 ~ 32
AI Start Addr.	Range: 0 ~ 65535
AI Data Format	AI Data Format (If not ICP DAS Modbus product, the value
	is 255)
AI Type code	AI Type code
AO Counts	Range: 0 ~ 32
AO Start Addr.	Range: 0 ~ 65535
AO Data Format	AO Data Format (If not ICP DAS Modbus product, the value
	is 255)
AO Type code	AO Type code

After finishing setting a Modbus Device, press "Add" button to add the Modbus device to G-4500 RTU.

vice l'arameters				
			Read For	rm Device 😽 Write to Devi
Main Parameters	Parameter	Value		Message
- Local IO Parameters - Modhus Parameters	Add button	Add		Add a new Modbus device
Modbus device 0	Device Name	M-7011	~	Modbus Device Name
Device Status	Device Addr.	1		Modbus Device Addr (1 ~ 247)
	DI Counts	1		Modbus FC 2 (0 ~ 32)
	DI Start Addr.	0		Modbus FC 2 (0 ~ 65535)
	DO Counts	2		Modbus FC 1 (0 ~ 32)
	DO Start Addr.	32		Modbus FC 1 (0 ~ 65535)
	Al/Counter Counts	1		Modbus FC 4 (0 ~ 16)
	Al Start Addr.	0		Modbus FC 4 (0 ~ 65535)
	Al Data Format	Engineering	~	Modbus Data Format
	Al Type code	[00]-15~15m∨	~	Modbus Type code
	AO Counts	0		Modbus FC 3 (0 ~ 16)
	AO Start Addr.	0		Modbus FC 3 (0 ~ 65535)
	AO Data Format		~	Modbus Data Format
	AO Type code		~	Modbus Type code
Jetailed Message				
Modbus Device Addr (1 ~ 247)				

■ Add other company's Modbus Device

Except for Modbus products of ICP DAS, G-4500 RTU can connect to any Modbus RTU devices. Users can follow the steps to do that.

Step1. Select "Custom" in Device Name item

Step2. Input your device name in User-defined Device Name item (Max. 20 character)

🌇 G-4500 R TU Utility Ver 1.00 Release			
COM11 - Logout File - Version	n System • Exit		
r Device Parameters			E -
	Step1.	R	ead Form Device
Main Parameters	Parameter	Value	Message
Local IO Parameters Medhus Parameters	Add button	Add	Add a new Modbus device
Device Status	Device Name	Custom	Modbus Device Name
	User-defined Device Name	User define name	The customer defines the Modb
	Device Addr.	1	Modbus Device Addr (1 ~ 247)
	DI Counts	0	Modbus FC 2 (0 ~ 32)
	DI Start Addr. Sten2	0	Modbus FC 2 (0 ~ 65535)
	DO Counts	0	Modbus FC 1 (0 ~ 32)
	DO Start Addr.	0	Modbus FC 1 (0 ~ 65535)
	Al/Counter Counts	0	Modbus FC 4 (0 ~ 16)
	Al Start Addr.	0	Modbus FC 4 (0 ~ 65535)

After add a new device.

🎬 G-4500 RTU Utility Yer 1.00 Release			
COM11 - Logout File - Version	1 System 🔹 Exit		
r Device Parameters			₽^^
		F	Read Form Device Write to Device
- Main Parameters	Parameter	Value	Message
· Local IO Parameters	Update button	Update	Update the Modbus information
Modbus device D	Delete button	Del	Delete the Modbus device
Borice Blatco	Device Name	Custom	Modbus Device Name
	User-defined Device Name	User define name	The customer defines the Modb
	Device Addr.	1	Modbus Device Addr (1 ~ 247)
	DI Counts	0	Modbus FC 2 (0 ~ 32)
	DI Start Addr.	0	Modbus FC 2 (0 ~ 65535)
	DO Counts	0	Modbus FC 1 (0 ~ 32)
	DO Start Addr.	0	Modbus FC 1 (0 ~ 65535)
	Al/Counter Counts	0	Modbus FC 4 (0 ~ 16)

Modify a Modbus Device

Step1. Select the Modbus device you want to modify in the left tree windows.

Step2. Select the Update button after modifying your parameters

- Delete a Modbus Device
- Step1. Select the Modbus device you want to delete

Step2. Select the Del button.

G-4500 RTU User Manual

🚰 G-4500 RTU Utility Yer 1.00 Relea	ise		
COMII - Logout File - Ver	rsion System • Exit		
r Device Parameters			
U	pdate button	I	Read Form Device Write to Device
— Main Parameters	Parameter	Value	Message
■ Local IO Parameters ■ Modbus Parameters	Update button	Update	Update the Modbus information
Modbus device 0	Delete button	Del	Delete the Modbus device
Device Status	Device Name	Custom	🐱 Modbus Device Name
	User-defined Device Name 🚩	User define name	The customer defines the Modb
	Device Add Del button	1	Modbus Device Addr (1 ~ 247)
	DI Counts	0	Modbus FC 2 (0 ~ 32)
	DI Start Addr.	0	Modbus FC 2 (0 ~ 65535)
	DO Counts	0	Modbus FC 1 (0 ~ 32)
	DO Start Addr.	0	Modbus FC 1 (0 ~ 65535)
	Al/Counter Counts	0	Modbus FC 4 (0 ~ 16)

After delete a device

🌃 G-4500 RTU Utility Ver 1.00 Release			
COM11 - Logout File - Versio	n System • Exit		
Device Parameters			2 [~]
		Read	Form Device
Main Parameters	Parameter	Value	Message
Local IO Parameters Modbus Parameters	Add button	Add	Add a new Modbus device
Device Status	Device Name		Modbus Device Name
	Device Addr.		Modbus Device Addr (1 ~ 247)
	DI Counts		Modbus FC 2 (0 ~ 32)
	DI Start Addr.		Modbus FC 2 (0 ~ 65535)
	DO Counts		Modbus FC 1 (0 ~ 32)
	DO Start Addr.		Modbus FC 1 (0 ~ 65535)
	Al/Counter Counts		Modbus FC 4 (0 ~ 16)
	Al Start Addr.		Modbus FC 4 (0 ~ 65535)

· Device Status

The following page is "Device Status". Users can refer to the explanation below :

Logout File Ve	rsion System • Exit		
BYINE Followerers		_	
			Read Form Device
Main Parameters	Parameter	Value	Message
a Local IO Parameters → Modbus Parameters	Update button	Update	Update the device status inform
- Modbus device 0	GPRS Status	0	GPRS Status, 0: Disconnect, 1:
- Modbus device 1	Ethernet Status	0	Ethernet Status, 0: Disconnect,
— Moabus aevice ∠ — Modbus device 3	SD Card Status	0	SD Card Status, 0: Inactive, 1:
Modbus device 4	Modbus Device 0 Status	1	Modbus Device 0 Status, 0: Ina
- Modbus device 5	Modbus Device 1 Status	1	Modbus Device 1 Status, 0: Ina
Modbus device 7	Modbus Device 2 Status	1	Modbus Device 2 Status, 0: Ina
- Modbus device 8	Modbus Device 3 Status	1	Modbus Device 3 Status, 0: Ina
Modbus device 9	Modbus Device 4 Status	1	Modbus Device 4 Status, 0: Ina
	Modbus Device 5 Status	1	Modbus Device 5 Status, 0: Ina
	Modbus Device 6 Status	1	Modbus Device 6 Status, 0: Ina
	Modbus Device 7 Status	1	Modbus Device 7 Status, 0: Ina
	Modbus Device 8 Status	1	Modbus Device 8 Status, 0: Ina
	Modbus Device 9 Status	1	Modbus Device 9 Status, 0: Ina
Detailed Message	11.100		
Update the device status informa	tion		
L			

Parameter	Description
Update button	Update the device status information
GPRS Status	0: Disconnect
	1: Connect
Ethernet Status	0: Disconnect
	1: Connect
SD Card Status	0: Inactive
	1: active
Modbus Device -n	n: 0 ~ 9,
	0: Inactive
	1: active

5.6 Import/Export Parameters

Users can use the import and export functions from the menu bar. This function would be enabled when the "Main Parameter" window is open. The explanation is below:

🌃 G-4500 R TU Utility ¥	er 1.00 Release	
COM11 - Logout	File • Version System • Exit	
r Device Parameters	Import Parameters	
	Export Parameters	Peed Farm Davies

Import Parameters : This function is used for reading back the setting of device parameters from .par file and displaying in "Main parameter" window. When pressing "import" button, a file selection window would pop up for users to choice the .par file.

nport Setting	9					?
Look in:	🔁 GT-530 Ut	ility	~	G 😰	📂 🛄•	
My Recent Documents	CHS CHS CHT CHT					
My Documents My Computer						
S	File name:	1			• (Open
My Network	Files of type:	Paramater file(*.par)			~	Cancel

Export Parameters: The function is used for saving the setting of "Main parameter" window as .par file. When pressing "Export" button, a file selection window would pop-up for users to save the setting as .par file in specific path.

Export Setting						? 🛛
Save in:	🚞 GT-530 Utility		~	00	1 📂 🛄 ·	
My Recent Documents	јал-СН5 јал-СНТ					
My Documents						
My Computer						
	File name:				~	Save
My Network	Save as type: 0	Operating Record File(*.csv)			*	Cancel

5.7 Device Time

This window provides the function to inquire and modify the time of G-4500 RTU. Besides, the next and last report times are also shown. The text field operation is below.

📷 Device Time		
Device Time	Command	
Device Time : 2010/02/05 10:41:09	Set	Set as Now
	R	ead

Text field :

Device time: show the time of G-4500 RTU. Users also can change the time in this field to key in the specific time.

Operation:

- (1) "Set as Now": Set the PC time to G-4500 RTU. After setting the time successfully, the information of G-4500 RTU time.
- (2) Set: Set the G-4500 RTU time according the "Device Time" field. After setting the time successfully, the information of G-4500 RTU time would be updated.
- (3) Read: Read back the time of G-4500 RTU, the next report time.

5.8 DO control/DI status

This page provides the function for controlling DO and reading the status of DIs in the Labs.



Text field

- (1) DI0 ~ DI2 \ DO0 ~ DO2 :
 - \diamond Grey : the voltage logic is high.
 - ♦ Red : the voltage logic is low

Operation

- (1) Read : Read back the status of DI0 ~ DI2 and DO0 ~ DO2 from G-4500.
- (2) DO0 ~ DO2 ON : Set the DO output on
- (3) DO0 ~ DO2 OFF : Set the DO output off

5.9 Signal Quality

This window can show GSM signal strength. It is used for users to know the GSM signal in Local site.

😸 Signal Qualit	у	X
	75%	1
]
	Read	
	Read	

Text field :

The strength is divided into 5 sections shown in percentage. Operation :

(1) Read : Read the GSM signal strength.

5.10 Version

Press "Version" in tool menu, and the window would show the version of Utility and firmware.



Text field:

(1) Firmware version: show the version information of G-4500 RTU's firmware

(2) Utility version: show the version information of G-4500 RTU's utility Operation:

Read: Read these information from G-4500 RTU.

5.11 System

"System" menu item provide recovering factory setting and resetting G-4500 RTU functions.

🚰 G-4500 I	RTU Utility V	er 1.00 Release			
COM11	- Logout	File - Version	System •	Exit	
			Reco	ver to Factory Settings	
			Rese	t G-4500	

Recover to Factory Settings

The function is used to recover G-400 RTU as factory settings including password. Select the Recover to Factory Settings.

Main Parameters	
Parameter	Default
Station ID	1
Update time	5
Heartbeat Time	0
Connect Method	0
Enable GPS	0
GPRS Username	GUEST
GPRS Password	GUEST
GPRS APN	INTERNET
DNS Server	168.95.1.1
Remote Server	
Remote Server Port	10000
Modbus Baudrate	9600
Modbus Parity	0
Modbus DataBit	8
Modbus StopBit	1
Modbus Time out	500
Local Ethernet IP	192.168.255.1
Local Ethernet Mask	255.255.0.0
Local Ethernet Gateway	192.168.255.254
Enable LCD	0
Enable SD	0
Interval time of Modbus Command	0

· Reset G-4500

The function is used to reset G-4500 by software. Select "Rest G-4500" button to reset G-4500.

5.12 LCD Information

If users choice the G-4500 series with LCD display, they can select the LCD enable in the G-4500 RTU utility. There is system information of G-4500 RTU will be shown in the LCD panel.

G-4500 RTU Utility Ver 1.00 Rele	ase rision System • Exit		
Device Parameters			
		Read I	Form Device Write to Device
Main Parameters	Parameter	Value	Message
■ Local IO Parameters ■ Modbus Parameters	Remote Server	61.221.131.37	Please fill in your Remote's IP o
Device Status	Remote Server Port	10000	Default: 10000
	Modbus BaudRate	9600	✓ 2400 ~ 115200 bps
	Modbus Parity	0	✓ 0: None,1: Even, 2: Odd
	Modbus DataBit	8	✓ DataBit: 7/8
	Modbus StopBit	1	✓ StopBit: 1/2 (When StopBit is 2,
	Modbus Time Out	500	1 ~ 65535, Unit: ms
	Local Ethernet IP	192.168.0.99	Local Ethernet IP
	Local Ethernet Mask	255.255.255.0	Local Ethernet Mask
	Local Ethernet Gateway	192.168.0.254	Local Ethernet Gateway
	Enable LCD	1	🗸 🕻 Disable, 1: Enable,it will sho 🍵
	Enable SD	Ū.	🗸 o. Disable, 1: Enable,it will recor
1201102-020-01-01-0			<u>×</u>
Detailed Message	information on the LCD nameL if your C 4	500 option the LCD namel	
U. DISADIE, T. ENADIE,IL WIII SNOW	information on the ECD panel, if your G-4:	500 option the LCD panel	
			<u>></u>

Support Hardwares G-4500D-SIM300, G-4500PD-SIM300, G-4500D-SIM340, G-4500PD-SIM340



Display information

Parameter	Descriptions						
Station ID:	The device Station ID would be shown in the Remote OPC						
	Server. It can identify the different G-4500 device in the						
	Remote OPC Server. (Range: 1 ~ 65535)						
Utime:	Set report time interval. The G-4500 RTU will send the data						
	to M2M RTU Center by the update time. The based unit is:						
	sec.						
	(Range: 1 ~ 999999 secs)						
Only GPRS/Only Ethernet/	4 methods are supported for G-4500 RTU to connect to						
GPRS(M),Eth(S)/	Remote server.						
Eth(M),GPRS(S)	1) Only GPRS						
	2) Only Ethernet						

3) GPRS Master, Ethernet Slave (Redundancy system)									
	4) Ethernet Master,	et Master, GPRS Slave (Redundancy system)							
GIP/EIP	The G-4500 GPRS	-4500 GPRS or Ethernet IP							
GSM ¥	Status	Descriptions							
	¥	GSM signal quality: 20%							
	¥	GSM signal quality: 40%							
	¥	GSM signal quality: 60%							
	¥ 	GSM signal quality: 80%							
	¥ 	GSM signal quality: 100%							
SIM Card:	Status	Descriptions							
	ОК	The status of sim card is OK							
	SIM Card:Err 1	SIM PIN. Module is waiting for SIM PIN							
	SIM Card:Err 2	SIM PUK. Module is waiting for SIM							
		PUK							
	SIM Card:Err 3	PH_SIM PIN. ME is waiting for phone to							
		SIM card (antitheft)							
	SIM Card:Err 4	PH_SIM PUK. ME is waiting for SIM							
		PUK (antitheft)							
	SIM Card:Err 5	SIM PIN2. PIN2, e.g. for editing the							
		FDN book possible only if preceding							
		Command was acknowledged with							
		+CME ERROR:17							
	SIM Card:Err 6	SIM PUK2. PUK2 possible only if							
		preceding Commandwas							
		acknowledged with error +CME							
		ERROR: 18							
	SIM Card:Err 7	SIM Card Error							
	SIM Card:Err 8	SIM Card not inserted							
Date:	year/month/date								
Time:	hour/minute/second	J							

5.13 Data log

G-4500 RTU provides an external SD interface. These local I/O and Modbus data are recorded in SD memory card for one day in a single file.

Note: The SD card must have more than 256 MB free spaces.

The file format is "*.csv" that divided each record with ",". The file name is according to the date, The G-4500 IO data, and Modbus device data would be saved in the file. For example: If the date is 2010/03/18, the file name would be 10031800.csv. The last "00" characteristics represent the first file in this day. If the setting of G-4500 RTU is changed, another file would be created as 10031801.csv.

File name format: YYMMDDXX.csv YY- Year (2000 ~ 2099) MM- Month (1 ~ 12) DD – Day (1~31) XX – 00 ~ 99

Recorder format in the data log file: Example: 2010/03/18 10:14:57 Modbus device M-7016 Address: 5 DI*1, DO*4, AI*2, AO*1

Record data:

Date	StationID	UpdateTime	GPS	DI0	DI1	DI2	DO0	DO1	DO2	AI0	Al1	Al2	AI3	Al4	AI5	Al6
20100318 101457	4	10	NULL	1	1	1	0	0	0	6	6	6	6	6	6	6
20100318 101502	4	10	NULL	1	1	1	0	0	0	6	6	6	6	6	6	6

AI7	AIType	AIDataFormat	Module [M-7016] Addr.	DI0	DO0	DO1	DO2	DO3	AI0	Al1	AIType
6	26	1	5	0	1	1	1	1	8	8	0
6	26	1	5	0	1	1	1	1	8	8	0

AIDataFormat	AOI0	AOType	AODataFormat
0	0	50	0
0	0	50	0

Note:

If the SD free space is less than 100 MB, the early files would be deleted by system until the free space is more than 100MB. At the same time, the warring information would be sent to M2M RTU Center.
Version Record

Version	Ву	Date	Description
1.00	Yide	2010/02/12	
1.01	Yide	2010/03/28	
1.02	Yide	2010/08/10	
1.03	Yide	2011/06/30	