

**Industrial Computer Products Data Acquisition System** 



### Intelligent Multiport Serial to GPRS Gateway with I/O

# User manual V1.0



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Version Record

Version	Ву	Date	Description
1.00	Kane	2012/06/24	Release Version

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# 1. Introduction

The RMV-511 is an intelligent multiport serial to GPRS gateway with I/O for industry M2M applications. It is designed for linking RS-485 devices to a GPRS network and remote I/O monitor. The user-friendly Axiom Driver/Utility and VxServer allow users to easily turn the built-in COM ports of the RMV-511 into standard COM ports on a PC. By virtue of its protocol independence, a small-core OS and high flexibility, the RMV-511 is able to meet the demands of every network-enabled application. In addition, the RMV-511 also supports GPRS network automatic re-connection function when the RMV-511 is broke the GPRS network by something happened. It also supports remote I/O monitor via virtual COM by Modbus RTU protocol. M2M solution will improve the service quality and reduce operating costs. Many application areas can be improved by using RMV-511.



### 1.1 Features

- Support GSM/GPRS 850/900/1800/1900 MHz
- Virtual COM Extend Real COM Ports via GPRS
- Support GPRS network automatic re-connection function
- Remote I/O Control via utility COM by Modbus RTU Protocol
- 1\*Utility Port for Configuration
- 1\*RS485, 6\*DI, 2\*DO, 1\*AI
- Power Reverse Polarity Protection
- Power supply +10 VDC ~ +30 VDC

# 1.2 Applications

PLC remote maintenance



Remote serial devices monitor



# 2. Hardware

# 2.1 Specifications

System	
CPU	32 bit CPU
SRAM	64 Kbytes
Flash Memory	512 Kbytes
RTC	Gives time(sec, min, hour) & data, leap year compensation
WDT(watchdog)	Yes
GSM/GPRS Module	
Frequency Band	Quad-band: 850/900/1800/1900 MHz
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz)
Compliant with GSM Phase 2/2+	Class 1 (1 W @ 1800/1900 MHz)
Coding Schemes	CS 1, CS 2, CS 3, CS 4
Download	Max download speed 85.6 kbps
Upload	Max upload speed 42.8 kbps
GPRS multi-slot	Class 10/8
Serial ports	
Utility port	RS-232: TxD, RxD, GND (use for device configuration and debug)
COM1	RS-485: D+, D- (use for communication with other devices)
Baud Rate	2400、4800、9600、19200、38400、57600 and 115200 bps
Digital Input	
Channels	6
Input Type	Sink or Source, Isolated channel with common power or ground
OFF Voltage Level	+1V max
ON Voltage Level	+3.5 ~ 30 V <sub>DC</sub>
Isolated Voltage	3750 V <sub>rms</sub>
Digital Output	
Channels	2
Output Type	Open-Collector(NPN)(100mA@30V <sub>DC</sub> )
Load Voltage	+30 V max
Load Current	100 mA max
Isolated Voltage	3750 V <sub>rms</sub>

Analog Input	
Channels	1
Resolution	12 bits
Input Range/Type	0~20 mA
Power	
Protection	Reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environmental	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Ambient Relative Humidity	5 ~ 95% RH, non-condensing

# 2.2 Appearance and Pin Assignments

The following figure shows the appearance of RMV-511.

Antenna	a DI/	DO
0	000000	
		00000
BAT Con	SIM Card	COM Port & Power Input

	DI/I	00	
Terminal		Pin	
No.		Assignment	
	01	DIO	
	02	DI1	
DI	03	DI2	
DI	04	DI3	
	05	DI4	
	06	DI5	
DI COM	07	DI COM	
DO PWR	08	DO PWR	
DO	09	DO0	
DO	10	DO1	
DO GND	11	DO GND	
N/A	12	N/A	
Ain+	13	Ain+	
Ain-	14	Ain-	



COM Po	rt & P	ower Input
Terminal		Pin
No.		Assignment
Ground for COM	01	GND
Utility Port	02	RxD1
RS-232	03	TxD1
COM1	04	D+
RS-485	05	D-
Popot	06	RST+
Reset	07	RST-
Power Input:	08	DC.+VS
+10 ~ 30 V <sub>DC</sub>	09	DC.GND
Frame Ground	10	F.G

# 2.3 Dimensions



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## 2.4 DI/DO internal Structure and Wire Connection

#### (1) DO Internal Structure



#### (2) DI Internal Structure



## 2.5 LED Indicators

There are three LED indicators to help users to judge the various conditions in the RMV-511. The description is as the following:

(1) EXT (Red): The External Power LED indicated status whether the power is supplied or not. The description is as the following:

The Power is active	The Power is not active
ON	OFF

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

GSM module normal	GSM module failed
	Off
Blinking (3 sec)	Or
	Blinking (not 3 sec)

(3) STA (Orange): The system LED indicated whether the RMV-511 is normal of failed.

First Use	No connected to VxServer	Successful	Wrong PIN/PUK code
1 1131 030		connection	
Off	Blinking(500 ms)	Blinking (1 sec)	Blinking (50 ms)

## 2.6 Installing RMV-511

If users want to start RMV-511 normally, it needs to follow these steps to install the RMV-511 below:

- A. Install the GSM antenna
- B. Plug in the normal SIM card (Before apply the SIM card, confirm it is OK by mobile phone.)
- C. Pin08 and Pin09 connect to the DC.+VS and DC.GND of the power supply.
- D. Follow the section 2.4 to wire the I/O connection.
- E. If you want to use the backup power, please connect the Li-battery to RMV-511.



# 3. Installing the RMV-511 Utility

# 3.1 Installing .NET Framework

It needs the runtime environment with .NET Framework 2.0 or above to execute the RMV-511 Utility in the PC. If there has .NET Framework 2.0 or above in the PC, the section 3.1 can be omitted.

- Microsoft .Net Framework Version 2.0: <u>http://www.microsoft.com/downloads/details.aspx?FamilyID=0856ea</u> <u>cb-4362-4b0d-8edd-aab15c5e04f5&DisplayLang=en</u>
- Microsoft .Net Framework Version 3.5: <u>http://www.microsoft.com/downloads/details.aspx?familyid=333325F</u> <u>D-AE52-4E35-B531-508D977D32A6&displaylang=en</u>

1. Press "Next" to the next step.

🖥 Microsoft .NET Framework 2.0 Setup	
Welcome to Microsoft .NET Framework 2.0 Setup	
This wizard will guide you through the installation process.	
	Next > Cancel

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

End-User Licer	se Agreement				~
	TWARE SUPPLEME	NTAL LICENSE T	ERMS		
supplement to yo software (the "so not have a licens	ation (or based on u u. If you are licens ftware"), you may e for the software. 	ed to use Micro use this suppler You may use a	soft Windows nent, You ma	operating sy y not use it i	/stem f you do
					Print

3. The installation process would be going

Hicrosoft .NET Framework 2.0 Setup	
Installing components	
The items you selected are being installed.	
Installation Progress:	
Generating script operations for action:	
Updating component registration	
	Cancel

4. 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

# 3.2 Installing the RMV-511 Utility

Plug in the shipment CD into the PC,

Execute\RMV-511\Software\RMV-511\_Utility\_Setup\_Vx.xx.exe The installation figure is as follows:

1. Press "Next" to start the installation procedure.



2. Select the installation path. The default path is "C:\ICPDAS\RMV-511\_Utility". Press "Next" to the next step.



3. Select the "Start Menu Folder", Press "Next" to the next step.

B Setup - RMV_Utility	
Select Start Menu Folder Where should Setup place the prog	ram's shortcuts?
	am's shortcuts in the following Start Menu folder. d like to select a different folder, click Browse.
CPDAS RMV_Utility	Browse
	Press " Next" button
	< Back Next > Cancel

4. Select additional tasks. Press "Next" to the next step

Setup - RMV_Utility	
Select Additional Tasks Which additional tasks should be performed	d?
Select the additional tasks you would like S then click Next.	etup to perform while installing RMV_Utility,
Additional icons:	
Create a desktop icon	
	<b>B B B B B B B B B B</b>
	Press "Next" button
	< Back Next > Cancel

5. Click "Install" to start to install the RMV-511 Utility



6. Click "Finish" to finish installing RMV-511 Utility



# 4. The RMV-511 Utility operation description

### 4.1 Main Menu

The main menu of RMV-511 Utility includes the following sections:



(1) Tool Menu:

These tools include all the function operation of the RMV-511 Utility. The description is as the following:

1. Project:

The parameters of the RMV-511 can be saved as the project file. The operation functions include "New", "Open", "Save", "Save as...", and etc...

2. Exit:

Exit the RMV-511 Utility

3. COM Port:

The COM Port number of the host PC connecting to the RMV-511.

4. Connect:

Connecting to the RMV-511.

5. Download:

Downloading the settings to the RMV-511 device.

- 6. Upload:
  - Uploading the settings from the RMV-511 device to RMV-511 Utility.
- 7. System:

Providing some system operations including "Signal Quality" < "Reboot RMV-511" < "Input PIN/PUK" < "Recover Default Settings" < "System status" < "Firmware Version".

(2) Parameter groups:

There are four parameter groups in the RMV-511 Utility including: "System" and "COM Port"

- (3) Parameters:Show or set the parameters.
- (4) Description:

A particular or minute account

(5) Status Bar:

This bar can show the operation procedure of the RMV-511 Utility. From left to right, they are:

- 1. The used com port number
- 2. Communication configuration of the COM Port
- 3. The current status of the COM port
- 4. The address of the RMV-511
- 5. The result for operating the functions

## 4.2 File Menu

This tool provides users to operate the project file. It can save the RMV-511 configuration as the file or upload the settings from the file. It is convenient to manage a lot of RMV-511s. The explanation is as the following:

Project	Exit	
New		Connect
Ope	n	Pa
Save	è	
Save	as	

New: Opening a new file

Open: Opening a exited file

Save: Saving the file.

If the parameters are changed or save the uploading parameters from the RMV-511, you can use this function to save these configurations.

Save as: Saving the file as another name

## 4.3 Connecting to the RMV-511

For connecting to the RMV-511, you can follow the steps below.

(1) Select the COM port of the host PC and connect to the Utility port of RMV-511.



(2) Press "Connect" to connect to the RMV-511. If the connection is failed, check the COM port settings and wiring.

🐝 Universal Utility for	RMV Series	
Project Exit		
COM5 🗸	S Connect	M Dow

## 4.4 Parameters

The parameters would be shown in the right of the windows if click the tree field in the left side of the RMV-511 Utility. Press the parameters' "Value" filed can change these parameters as the following figure. There are 12 items in the system field below.

Internet u	Server Server Port ser name	VxComm Mode 1 1.2.3.4 11000 GUEST	Description         Read Only         Read Only         Type remote ser         Type remote ser
Remote S Remote S Internet u	Server Server Port ser name	1.2.3.4 11000	Type remote ser Type remote ser
Remote S Internet u	Server Port ser name	11000	Type remote ser
Internet u	ser name		
		CHEST	
Internet a		00101	This parameter
Internet p	assword	GUEST	This parameter
Internet A	PN	INTERNET	This parameter
Virtual IP		127.0.11.99	Range: 127.0.0
Module A	lias	ICPDAS	Module's alias,
Heartbea	at Time	10	Heartbeat Time
Com End	d Method	0	This parameter
Com End	d Param.	2	This parameter
-Descript Poor O			
COM5 115200,n,8,1 COM Port Connu		ead all parameters successfully!!	

Parameters	Description
Protocol	RMV-511 support protocol. Read only
Address	The address of the RMV-511. Read only
Remote Server	The remote VxServer server's IP or domain name
Remote Server Port	The remote VxServer server's Port
GPRS User name	GPRS user name
GPRS password	GPRS password
GPRS APN	GPRS APN (access point name)
Virtual IP	Virtual IP. Range: 127.0.0.1~127.255.255.254 , This parameter
VIITUALIP	can't be the same with other device.
Module Alias	Module Alias. (max. 7 character)

Heartbeat Time	Heartbeat time. Range	e: 10 sec. ~ 65535 se	C.
Com End Method	Com End Method 0: Fixed Time. It is as complete a data when no data came at a fixed time	Com End Param. 2 ms~ 65535 ms	Remark
	1: Fixed Length <sup>,</sup> It is as complete a data when the length of a data more than fixed length	1 ~ 1000	The RMV-511 will transmit a data when there is a data more than
Com End Param.	2: Fixed end byte. It is as complete a data when receives the fixed end byte. Like "CR" (0x0d)	yte. It a eives 0 ~ 255 pyte.	- 1000 bytes.

### 4.5 Download/Upload Parameters

(1) Download parameters

As the configuration is finishing, the function can download the parameters to the RMV-511 by clicking "Download" as the following figure.

🐝 RMV-511	Utility		- August			X
Project	Exit					
COM5		S Disconnect	🎮 Download 🛤 Uplo	ad 🔄 I/O Monitor	🙀 System 🔸	

#### (2) Upload Parameters

"Uploading" button can upload the parameters from the RMV-511 as the following figure.

😽 RMV-511	Utility		- Agent				
Project	Exit						
COM5	×	S Disconnect	🛤 Download	🛤 Upload	I/O Monitor	🙀 System 🔹	

## 4.6 I/O Monitor

(1) Press "I/O monitor" can show the I/O status.



(2) This function is used to control DO0 and DO1 channels and show the status of DI channels and AI value. It will automation get the IO status per 5 sec.



#### Text field:

A.AI/DI/DO Monitor :

- > Online : Get I/O status succeed.
- Offline : Get I/O status failed.
- B.DI0 ~ DI5 \ DO0 ~ DO1 :
  - Green : The voltage logic is high
  - Red : The voltage logic is low
- C.AI : The AI current value
- (3) If you want to set the DO output ON/OFF, click the DO0/1 picture



# 4.7 System

### 4.7.1 Signal Quality

Click "System->Signal Quality" can show the signal quality windows to know the GSM signal strength.



Field Description:

The strength is divided into 5 sections shown in percentage.

Operation:

Read : Read the GSM signal strength from the RMV-511.

### 4.7.2 Reboot the RMV-511

Clicking "System->Reboot RMV-511" button can reset the RMV-511 as follows.



### 4.7.3 Inputting the PIN/PUK

When the RMV-511 starts and the STA LED is blanking per 50 ms, it is needed to input the PIN or PUK code in the RMV-511. In this condition, click "System->Input PIN/PUK" button to set the PIN/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.

Times Remain to Input SIM PIN :	
3 Please Input SIM PIN Code :	
ОК	

(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	X
Times Remain to Input SIM PUK:	
10	
Please Input SIM PUK Code:	
Please Input New SIM PIN Code :	
ОК	

### 4.7.4 Recover to the Factory Settings

It can recover the RMV-511 to the default settings by clicking "System->Recover Default Settings".



### 4.7.5 Inquiring System status

Press "System  $\rightarrow$  System status" in tool menu, and the window would show the RMV-511 working status



Field instruction:

Connect Status:

- Connected: Get RMV-511 status is succeed.
- Disconnected: Get RMV-511 status is failed.

➤ Text color:

- Blue: The step is finish.
- Black: The step is unfinished.

### 4.7.6 Inquiring Firmware Version

Press "System->Firmware Version" in tool menu, and the window would show the versions of the RMV-511 Utility and firmware.

	🙀 System 👻	
	Signal Quality	
	Reboot RMV-511	
	Input PIN/PUK	
	Recover Default Settings	
	System Status	
	Firmware Version	
Version I	Information	3
10.20	N	
Firmwai	re Version:	
PMV	With IO Ver1.0.0 2013/05/29	
I XIVI V	VIII110 VEI1.0.0 2015/03/23	
Utility Ve	ersion:	
		2
Unive	rsal Utility Ver 2.02	
h.		
		٦
	Deed	
	Read	
<u> </u>		
		-

# 5. How to use the RMV-511 Utility through the Virtual com to access remote the parameters of the RMV-511

# 5.1 The necessary software installed





- Download Microsoft .Net Framework Version 2.0: <u>http://www.microsoft.com/downloads/details.aspx?FamilyID=0856eacb-4362-4b0</u> <u>d-8edd-aab15c5e04f5&DisplayLang=en</u>
- Download VxServer software: <u>http://m2m.icpdas.com/VxServer.html</u>
- Download VxComm Driver software: <u>http://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/vxcomm\_driver/2k/</u>
- Download RMV-511 Utility software: <u>http://ftp.icpdas.com/pub/cd/usbcd/napdos/RMV-511/software/</u>

# 5.2 Setting the VxServer and VxComm Driver

(1) Verify that the device has been connected up

) 127.0.11.99	RMV-511	ICPDAS	2	10	223.136.98.173	Pomoto Client Port 2020	<b>a</b> 74%
Date / Time	Message						
013/06/25 11:59:23	The Remote	e Virtua IP "127.0.11.	99" establishes a new o	connection. (IP: 223	3.136.98.173, PORT: 2020)		
013/06/25 11:56:29	Server Star	ted(Local IP: 125.227	.224.157, Local PORT:	11000)			

(2) Execute VxComm Utility, then click "Search Servers"

Vector       Configure Server         Ad Serveral       Vector       Port       Virtual COM       Baudrate         Web       Vector       Vector       Vector       Vector       Vector       Vector         Exit       Name       Alias       IP Address       Sub-net Mask       Gateway       MAC Address       DHCP         RMV-511       ICPDAS       127.0.11.99       255.255.255       127.0.11.99       fftff:/ft0Bc0bc63       OFF	VxComm Utility [ v2.12.0;	2, May.24, 201	13]										
Web       Web         Exit       Name         Allas       IP Address         Sub-net Mask       Gateway         MAC Address       DHCP         RMv-511       ICPDAS         127.0.11.99       fftf:7ft00:0b:63         OFF	<u>File Server Port Tools</u>												
With Marcon Server(s)         Web         Exit         Name       Alias         IP Address       Sub-net Mask         Gateway       MAC Address         DHCP         RMV-511       ICPDAS         127.0.11.99       255.255.255         127.0.11.99       If:ff:7f:00:0b:63         OFF		P			Configure Server						Configure Por	t	
Madd Server(i)         Web         Search Servers         Configuration (UDP)         Exit             Name       Alias       IP Address       Sub-net Mask       Gateway       MAC Address       DHCP             RMV-511       ICPDAS       127.0.11.99       255.255.255       127.0.11.99       ff:ff:7f:00:0b:63       OFF	VXC orderiver & utility	V×Comm	n Servers					Port	Virtual COM	Baudrate			
Web         Web         Search Servers         Configuration (UDP)         Exit         Name       Alias         IP Address       Sub-net Mask         Gateway       MAC Address         DHCP         RMY-511       ICPDAS         127.0.11.99       255.255.255         127.0.11.99       ff:ff:7f:00:0b:63         OFF	Where remote screet devices become part of your PC												
Web         Search Servers         Configuration (UDP)         Exit         Name       Alias       IP Address       Sub-net Mask       Gateway       MAC Address       DHCP         RMV-511       ICPDAS       127.0.11.99       255.255.255       127.0.11.99       fffff7E00:0b:63       OFF	Add Server(s)												
Configuration (UOP)         Exit         Name       Alias       IP Address       Sub-net Mask       Gateway       MAC Address       DHCP         RMV-511       ICPDAS       127.0.11.99       255.255.255       127.0.11.99       fffff7f:00:0b:63       OFF	X Remove Server												
Configuration [UDP]           Exit           Name         Alias         IP Address         Sub-net Mask         Gateway         MAC Address         DHCP           RMV-511         ICPDAS         127.0.11.99         255.255.255         127.0.11.99         ff:ff:7f:00:0b:63         OFF	🙆 Web												
Configuration [UDP]           Exit           Name         Alias         IP Address         Sub-net Mask         Gateway         MAC Address         DHCP           RMV-511         ICPDAS         127.0.11.99         255.255.255         127.0.11.99         ff:ff:7f:00:0b:63         OFF	Search Servers												
Name     Alias     IP Address     Sub-net Mask     Gateway     MAC Address     DHCP       RMV-511     ICPDAS     127.0.11.99     255.255.255     127.0.11.99     ff:ff:7f:00:0b:63     OFF	Configuration (UDP)												
RMV-511 ICPDAS 127.0.11.99 255.255.255 127.0.11.99 ff:ff:7f:00:0b:63 OFF	Exit												
RMV-511 ICPDAS 127.0.11.99 255.255.255 127.0.11.99 ff:ff:7f:00:0b:63 OFF													
		Name	Alias	IP Address	Sub-net Mask	Gateway	MAC Address	DHCP					
		RMV-511	ICPDAS	127.0.11.99	255.255.255.255	127.0.11.99	ff:ff:7f:00:0b:63	OFF					
	Status	1											

(3) Select your device, then click "Add Server(s)"

✓ VxComm Utility [v2.12.0 File Server Port Tools		13]									
	ø			Configure Serve	r					Configure Port	
VxComment Where reased is your to	V×Comn	n Servers					Port	Virtual COM	Baudrate		
Add Server(s)											
Remove Server											
Web Web											
Configuration (UDP)											
Exit											
					Ĩ,						
	RMV-511	ICPDAS	127.0.11.99	255.255.255.255	127.0.11.99	ff:ff:7f:00:0b:63	OFF				
Status											

(4) IP Range=> check "Maps virtual COM ports to "Port I/O" on servers".

Adding Servers				×			
IP Range Server O	ptions   Port Options						
Server Informatio	on						
Server Name :	RMV-511	🔽 🔽 Get n	ame automat	ically			
IP Range Start :	127.0.11.99	🗹 Skip	duplicated IP				
IP Range End :	IP Range End : 127.0.11.99						
Includes the follo	wing special IP :						
□ 0 (Net)   2	54 (Gateway) 🔲 255	(Broadcas	t)				
Virtual COM and	I/O Port Mappings —						
COM Port :	сомз –						
Fixed baudrate	e, use current settings	of servers					
🔽 Maps virtual C	COM ports to "Port I/O"	on servers	<b>.</b>				
			ОК	Cancel			

(5) Advanced Options, please follow the below parameter settings

Parameters	Fixed value
Keep Alive Time	1
Connection Broken	3
Connect Timeout	1
Command Port	10000
Virtual I/O Port	9999

Adding Servers			×
IP Range Server Options Port	Options		1
The following items are all PC s	ide settings, not	device settings.	
Keep Alive Time (Seconds) :	1		
Connection Broken (Seconds) :	3		
Connect Timeout (Seconds) :	1		
Command Port (TCP):	10000		
Virtual I/O Port (TCP):	9999		
		ОК	Cancel

#### (6) Tools => Restart Driver

VxComm Utility ( v2.12.02	2. May 24, 201	31								
File Server Port Tools										
	ystem Informa estart Driver	tion		Configure Server						Configure Port
driver & utility							Port	Virtual COM	Baudrate	
VxCommon Audity Where remote long to become part of your PC	-RMV-	511 (127.0	.11.99)				Port I/O Port 1	COM3 COM4	N/A Dynamic	
Add Server(s)										
X Remove Server										
🥭 Web										
Search Servers										
Configuration (UDP)										
Exit										
	Name	Alias	IP Address	Sub-net Mask	Gateway	MAC Address	DHCP			
	RMV-511	ICPDAS	127.0.11.99	255.255.255.255	127.0.11.99	ff:ff:7f:00:0b:63	OFF			
	1									

(7) Click "Restart Driver"

	∀жСопп	Utility : Restarting I	Driver			×	
	STOP	Restart the drive Make sure you			oorts first.		
	Status	: Driver is not runr	ning.				
		Restart Driver		Cancel			
VxComm Utility [v2.12.02, Mey.24, File Server Port Tools	2013 ]						
		Port I/O			Config	jure Port	
	mm Servers MV-511 (127.0.11.9	9		Port Virtual COM Port I/O COM3	Baudrate N/A		
Add Server(s)			1	Port 1 COM4	Dynamic		
Remove Server		Port 1					
🥭 Web							
Search Servers							
Configuration (UDP)							

I. Port I/O: The port I/O can configure the system parameter via RMV-511 utility, it can also get the I/O status and control the DO. I/O control methods please refer the chapter 6.

DHC

II. Port 1 : The Port 1 mapping to the COM1 of RMV-511

 Name
 Alias
 IP Address
 Sub-net Mask
 Gateway
 MAC Add

 RMV-511
 ICPDAS
 127.0.11.99
 255.255.255.255
 127.0.11.99
 ff:ff:7f:00

(8) According the Port I / O of VxComm Utility to select the com port of RMV-511 Utility, then click "RMV-511 Utility => Connect"

VxComm Utility [ v2.12.02	2, May.24, 2013 ]			
File Server Port Tools	ß	Configure Server	Configure Port	1
VxComm			Port I/O COM3 N/A	
Add Server(s)				
Remove Server				
🧭 Web				
Configuration (UDP)				
Exit				
	Name Alias IP Address	Sub-net Mask Gateway MAC Address	рнср	
	RMV-511 ICPDAS 127.0.11.99	255.255.255.255 127.0.11.99 ff:ff:7f:00:0b:63	OFF	
r				
	Itility for RMV Series			
Project	Exit			
COM5		d In Link ad the Sys	em -	Description
Project(	none	Value		Description
(9) The r	emaining steps	s, please refer to Ch	apter 4	
	🎉 RMV-511 Utility	af 87		
	Project Exit	Disconnect I Download I Upload I I/O N	Ionitor 🖕 System 👻	
	B Project(none)	Parameters Value	Description	1
		Connect to the device su	ccessfully!!	
			確定	
		Description		
	COM5 115200,n,8,1	COM Port Connected 0		

# 6. Modbus RTU Protocol

The RMV-511 supports the Modbus RTU protocol. The communication Baud Rates range from 2400bps to 115200 bps. The number of data bits is fixed to 8, the parity and stop bits are fixed as no parity and 1 stop bit.

The Modbus function codes supported in the RMV-511 are 1,2,4,5 and 15. The Modbus address distribution is as the following table, its Net ID is 1.

#### **Commands and Description** 6.1

Request					
00	Net ID	1 Byte			
01	Function code	1 Byte			
02 ~ 03	02 ~ 03 Starting address				
04 ~ 05	DO count	2 Byte			
<ul> <li>Response</li> </ul>					
00	Net ID	1 Byte			
01	Function code	1 Byte			
02	Byte count of response (B=( DO count+7)/8)	1 Byte			
03 ~ (B+2)	Bit value	3-(B+2) Byte			

Read Digital Output(DO) status (Function code:1) (1)

(2) Read Digital Input status (Function code:2)

➢ Request				
00	Net ID	1 Byte		
01	Function code	1 Byte		
02 ~ 03	Starting address	2 Byte		
04 ~ 05	DO count	2 Byte		

#### Response

00	Net ID	1 Byte
01	Function code	1 Byte
02	Byte count of response (B=( DO count+7)/8)	1 Byte
03 ~ (B+2)	Bit value	3-(B+2) Byte

(3) Read Analog Input value (Function code:4)

> Request				
00	Net ID	1 Byte		
01	Function code	1 Byte		
02 ~ 03	Starting address	2 Byte		

04 ~ 05 AI count		2 Byte	
Response			
00	Net ID	1 Byte	
01	Function code	1 Byte	
02	Byte count of response (B=2*AI count)	1 Byte	
03 ~ (B+2)	AI value	3-(B+2) Byte	

(4) Set Digital Output (Function code:5)

#### Request

00	Net ID	1 Byte
01	Function code	1 Byte
02 ~ 03	Starting address	2 Byte
04	= FF: High, = 00: Low	1 Byte
05	= 00	1 Byte

#### ➢ Response

00	Net ID	1 Byte
01	Function code	1 Byte
02 ~ 03	Starting address	2 Byte
04	= FF: High, = 00: Low	1 Byte
05	= 00	1 Byte

### (5) Set multi Digital Output (Function code:15)

#### ➢ Request

00	Net ID	1 Byte
01	Function code	1 Byte
02 ~ 03	Starting address	2 Byte
04 ~ 05	Bit count	2 Byte
06	Byte count $B=(bit count+7)/8$	1 Byte
07 ~ (B+6)	Data to be written	1 Byte

#### Response

00	Net ID	1 Byte
01	Function code	1 Byte
02 ~ 03	Starting address	2 Byte
04 ~ 05	Bit count	2 Byte

# 6.2 Modbus address table

Address(Dec)	Address(Hex)	Description	Attribute
00129	00129 0x81	If function code = 1 Read DO0	R/W
00129		If function code = 5,15 Set DO0, 1:High, 0:Low	
00130		If function code = 1 Read DO1	
00130	0x82	If function code = 5,15 Set DO1, 1:High, 0:Low	R/W

### (1) DO status (Function Code:1,5,15)

#### (2) DI status (Function Code:2)

Address	Data Address	Description	Attribute
00000	0x00	Read DI0	R
00001	0x01	Read DI1	R
00002	0x02	Read DI2	R
00003	0x03	Read DI3	R
00004	0x04	Read DI4	R
00005	0x05	Read DI5	R

#### (3) AI status(Function Code:4)

Address	Data Address	Description	Attribute
30027	0x1B	Read AI value (hex)	R
30028	0x1C	Read AI value (engineering)	R

Note:

- 1. AI value(Hex) conversion formulas: AI = (AI Hex \* 20) / FFF
- 2. AI value(engineering) conversion formulas: AI = AI(engineering)/1000

### Example:

- (1) If read AI value(Hex) is "FF"
   AI = (FF \* 20) /FFF = (255\*20)/4095 = 1.25 mA
- (2) If read AI value(engineering) is "1250" AI = 1250/1000 = 1.25mA