

M0313 Modbus to FF built-in module User Manual



沈阳中科博微科技股份有限公司

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Caution

1. Please don't take off/install module at random.

2. Please check if the power of module meets the power qequest in the User Manual.

Version:

V2.0

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Microcyber Corpoartion 2016

The technical data may change at any time.

Company Introduction

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Microcyber Corporation. established as a high-tech enterprise by the Shenyang Institute of Automation Chinese Academy of Sciences, mainly engages in advanced industrial control systems, equipments, instruments and chips for industrial process automation control solutions in the research, development, production and application. Microcyber undertakes a number of national scientific and technical key task and "863" project, and has Liaoning Province networked control systems engineering research center. The company successfully developed the FF H1 fieldbus protocol stack which is number one to be approved internationally in China, and the Industrial Ethernet Protocol(HSE) which is number one to be approved in China, and the domestic first fieldbus instrument which has a function of national-level intrinsically safe explosion--proof and safety barrier. Also Microcyber participated in the drafting of the domestic first Ethernet-based industrial automation protocol standards (Ethernet for Plant Automation, EPA). As a result, serial products are composed of configuration, control software, embedded software, control system, instrument chip to the OEM board, and make Microcyber be an industrial automation products provider in full range, and also further Microcyber's leading position in the field of fieldbus technology.

Microcyber is the FF member, the HART member and the Profibus National Organization (PNO) member.

Microcyber passes the Authentication of ISO 9001 Quality System, and has an outstanding innovative R&D team, plentiful practical experiences of design of the Automatic engineering, a leading product series, a huge market network, a strict quality management system and an excellent enterprise culture. All these further a solid foundation of entrepreneurship and sustainable development for Microcyber.

Microcyber Inc. is looking forward to the long-term smooth and close cooperation with you.

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Section 1 Summary

Modbus-FF built-in module realizes the conversion function from MODBUS Protocol to Foundation Fieldbus F1 Protocol.It is one of the Microcyber M-serise modules, which have features of same size, same interface, easy to upgrade and easy to configure.It is an ideal choice for user to develop fieldbus devices. As Modbus master station, M0313 Modbus to FF module communicates with Modbus-RTU device via TTL interface, and it can convert the data of Modbus-RTU device to FF device variable output.M0313 Modbus to FF module is shown in Figure Figure 1.1:



Figure 1.1 M0313 Modbus to FF Built-in Module

1.1.1 Features

1.1.2 Same Size

The Microcyber M series built-in modules have the same size: 65mm (length) *42mm (width) 。

1.1.3 Same Interface

The connector of Microcyber M series built-in modules is 2.54 pitch 16 pin, function of them are compatible.

1.1.4 Easy to Upgrade

Please replace the different kind of Micrcyber M series modules to realize the different protocols of devices.

1.1.5 Easy to configure

Please use the special tool provided by Microcyber Corporation for configuration, it is easy to operate .



1.2 Product Development Process







1.3 Outer Size Diagram

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Figure 1.2Outer size of built-in module(Unit: mm)

1.4 Structure Diagram



Figure 1.3 Whole structure of built-in module

1	DIP switch S1	2	DIP switch S2	3	LED2 Modbus communication light
4	Communication interface	5	LED1 FF communication light		

Section 2. Installation

2.1 External Interface

M0313 Modbus to FF built-in modul's terminal distribution and meaning is shown as figure 2.1:



Figure 2.1 M0313 Modbus to FF built-in modul's terminal distribution and meaning

2.1.1 Communication interface JP1

JP1	Communication	interfac's m	eaning is	shown as	below:
-					

Pin	I/O	Name	Description	Pin	I/O	Name	Description
1	I	VCC_IS	The signal isolation power supply, provided by baseboard	2	I	GND_IS	The signal isolated power ground, provided by baseboard.
3	I	/RES	CPU Reset, low active	4	I/O	NC	Reserved
5	0	TXD	CPU TXD	6	0	RTS-485	RS-485 control port*
7	I/O	NC	Reserved	8	I	RXD	CPU RXD
9	0	NC	Reserved	10	I/O	Status	Communication indicating light
11	I/O	BUS+	Bus Power Supply+	12	I/O	BUS-	Bus Power Supply-
13	I/O	NC	Reserved	14	I/O	NC	Reserved
15	I/O	NC	Reserved	16	I/O	NC	Reserved

*: It is used for coonection with RS-485 communication chip.

2.1.2 Configuration of DIP Switch

There is a 3-position DIP switch S1 and a 8-position DIP switch S2 for M0313 Modbus to FF built-in module, shown as figure Figure 2.1

Νο	Name	Description
1	RST	Reset, reset device data to factory original.Power off the device at first, and made the switch at ON,and then power on the device,the device shall be reseted to factory original.
2	WP	Writhe protection, all the write operation for FF communication module shall be refused, which avoid data modification at random.

The description fo DIP switch S1 is shown as below:

3	S/E	Simulation switch, used for "simulation function".
---	-----	--

The description fo DIP switch S2 is shown as below:

No	Name	Description
1	1	Standing off
2	2	Standing off
3	4	Standing off
4	8	Standing off
5	16	Standing off
6	32	Standing off
7	64	Standing off
8	М	Set the work mode, configuration mode(ON)and normal work mode(OFF)

2.2 Installation of Module

There are three Φ 3 location hole in the module. The module can be fixedly installed in the user's board with three hexagonal prism.

Section 3. Working Principle

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M0313 Modbus to FF built-in module is a module supporting Modbus and FF protocol.As FF device, it can communicate with Modbus devices, read Modbus data to FF device by simply configuration, and transfer data to control system through FF bus.System Wiring Diagramof Modbus to FF built-in module is shown in Figure 3.1:



Figure 3.1 System Wiring Diagram of M0313 Modbus to FF built-in module

M0313 Modbus to FF built-in module support 1 Modbus slave device,8 groups of analog input outputand discreter input output parameters,totally 32 channels provided. It configures Modbus device's data into transducer block's parameters via Modbus register, and provides data support for FF system via channels betweenvariables and AI,AO,DI and DO function blocks. Principle Diagram for Modbus to FF built-in module is shown in Figure 3.2:



Figure 3.2 M0313 Principle Diagram for Modbus to FF built-in module

Section 4. Configuration of module

4.1 **Topologic connection**

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FF device support many net topologies shown as Figure 4.1. The bus connection of FF instrument is shown in Figure 4.2, in order to ensure the bus signal quality ,the terminal matching resistances should be connected to the 2 ends of the bus. The bus maximum length is 1900m, with a repeater, the legth can be extended to 10 kilometers.



4.2 Introduction for Function

Default configuration of Modbus to FF built-in module has 1 RES function block,4 for each AI,AO,DI,DO,PID function block and Modbus transducer block(Modbus_TB)complying to FF specifications.AI,AO,DI,DO respectively supports 8 channels(CHANNEL), channel is corresponding to analot/discrete input and output parameters of Modbus transducer block.

Function Block name	Description
Resource (RES)	Resource block is used to describe the device identity in the field, such as device name, manufacture, serial number. There is no input or output parameter in the resource block. Generally, there is noly one resource block for each device.
Modbus_TB(MTB)	Configure Modbus communication parameters via transducer block, such as baud rate, stop bit, communication overtime, etc., Modbus communication configuration parameter.
Analog Input (AI)	Analog input function block is used to achieve transducer block input data and transfer to other function blocks, has the function of range conversion, square root, cut mantissa, etc.
Analog Output (AO)	Analog output function block is used to transfer output data to transducer block, then to operate physical device.
Discrete Input (DI)	Discrete input function block, achieve transducer block input data and transfer to other functions blocks.
Discrete Output (DO)	Discrete output function block is used to transfer discrete output data to transducer block, then to operate physical device.
Proportional Integral Derivative (PID)	PID function block has the function of PID control and setting point adjustment, process value(PV) filtering and alarm, output tracking, etc.

4.3 Parameter Specification for ModbusTransducer Block

Including NI-Configurator software as an example of how to configure Modbus transducer block. Shown as Figure 4.3, the MODBUS transducer block provides 8 couples of Analog input output and 8 couples of digital input output parameters, which are process parameters, user can choose the configuration for at least 1 analog input and 1 digital input. In addition, the MODBUS transducer block also provide 10 couples of 32-bit floating points, 10 couples of 16-bit floating points and 10 couples of 8-bit floating points, 1 couple of 32-bit string parameter, can be used for configuration parameter. All above parameters configured by Modbus general configuration tool, but not FF configuration software.

Note: The eighth position M of DIP switch S2 should be in "OFF" state, i.e. under normal work mode.

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0001050312-M0313-00000001 : Modbus_TB	(MTB)	- C X
Apply Values		
Modbus_TB (MTB) 🛛 🗹 🖾 🖼	🖶 \$\$ 🔲 🗃 🚱	
Periodic Updates 2 (sec) ÷		
00S Auto		
Process I/O Config Alarms Diagnostics Trends	Others	
Parameter Value	Type & Extensions Help	•
GENERIC_FLOAT_PARAM_1 0	🜇 Range=0 - 40 🛛 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_2 0	📷 Range=0 - 40 🛛 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_3 0	📷 Range=0 · 40 🛛 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_4 0	📷 Range=0 · 40 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_5 0	📷 Range=0 · 40 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_6 0	📷 Range=0 · 40 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_7 0	Range=0 - 40 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_8 0	📷 Range=0 - 40 🛛 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_9 0	📷 Range=0 · 40 Parameter no	t used. No device
GENERIC_FLOAT_PARAM_10 0	Range=0 · 40 Parameter no	t used. No device
GENERIC_USIGN32_PARAM_1 0	📷 Range=0 - 1240 Parameter no	t used. No device 🔤
GENERIC_USIGN32_PARAM_2 0	👧 Range=0 · 1240 Parameter no	t used. No device 🗐
GENERIC_USIGN32_PARAM_3 0	📷 Range=0 - 1240 Parameter no	t used. No device
GENERIC_USIGN32_PARAM_4 0	📷 Range=0 - 1240 Parameter no	t used. No device
GENERIC USIGN32 PARAM 5 0	📷 Range=0 - 1240 Parameter no	t used. No device +
Write Changes	Bead All	

图 4.3 Modbus 变换块

4.3.1 BAD_STATUS Parameter Description

If the communication failed, the related bit will be set as 1, otherwise, it will be 0.

BIT	PARAMETER	BIT	PARAMETER	BIT	PARAMETER	BIT	PARAMETER
0	MOD_IN1	8	MOD_OUT1	16	MOD_IN_D1	24	MOD_OUT_D 1
1	MOD_IN2	9	MOD_OUT 2	17	MOD_IN_D 2	25	MOD_OUT_D 2
2	MOD_IN3	10	MOD_OUT 3	18	MOD_IN_D 3	26	MOD_OUT_D 3
3	MOD_IN4	11	MOD_OUT 4	19	MOD_IN_D 4	27	MOD_OUT_D 4
4	MOD_IN5	12	MOD_OUT 5	20	MOD_IN_D 5	28	MOD_OUT_D 5
5	MOD_IN6	13	MOD_OUT 6	21	MOD_IN_D 6	29	MOD_OUT_D 6
6	MOD_IN7	14	MOD_OUT 7	22	MOD_IN_D 7	30	MOD_OUT_D 7
7	MOD_IN8	15	MOD_OUT 8	23	MOD_IN_D 8	31	MOD_OUT_D 8

4.3.2 ERR_LOOK_RESULT Parameter Description

ERR_LOOK_RESULT, data inquiry function for input output parameter negative response. User is able to inquiry about every input output response value, reading ERR_LOOK_RESULT parameter will receive the communication response data of this parameter.(Please using Modbus general configuration tool to inquiry parameters). ERR_LOOK_RESULT, 0 means there is no failure. 0x01 – 0x0B is standard negative data, and 0xFF means slave station communication is in failure.

Value	Parameter Description	Value	Parameter Description
0x00	OK	0x06	Slave Device Busy
0x01	Illegal Function	0x08	Memory Parity Error
0x02	Illegal Data Address	0x0A	Gateway Path Unavailable
0x03	Illegal Data Value	0x0B	Gateway Target Device Failed To Response
0x04	Slave Device Failure	0xFE	Function Code Mismatch
0x05	Acknowledge	0xFF	Communication Failure

4.4 Communication Parameter for Modbus Transducer Block

The user is able to configure the Modbus communication parameter, such as common parameter, analog input, analog output, digital input, digital output, floating point data, data USIGN32, data USIGN16, data USIGN8 and data Octet etc.

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Modbus configuration tool for common patameter is shown as Figure 4.4, more details please see the Appendix 3,

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	K0	æ							
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	換い第三日が大くな		8						
	数字统入数据个数		8	-					
	80字编出数36个28		8						
	運動設備全数		10						
	US95N32数据个数		10						
	USIGN16數據个数		10						
	USIGN 889唐个和		10						
4#	Octet String #150 / #2		2						
FF	波特车		9600						
PA	275210		8						
	124012	and the second se	(RISE	-					
	10355-M		π.						
	91212		1						
	math (1-255)		1						
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	重发次数		3	7.					
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Figure 4.4 Modbus Modbus configuration tool

In addition to the common parameter, all the data can be configured as read-write, data format, register address and function code, users can flexibly configure as required. Due to the different parameter type support different Modbus function code, so the selection of corresponding data format is needed after choosing the function code, not aptional data format is automatically set to gray by software, user selection is not allowed, shown as Figure 4.5:

Modbus通用配置工具	7.8	10 m	5 00 H	5 / 1.1	to Autom	And DATE AN		
文件 工具 帮助								
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FFH1	协议	类型: FFH1		_	_	_		
	ø	数列表: 模	以輸入参数	▼ 下载当前页参数			操作提示 已完成该设备的参数上 传	
	索引	读写模式	读功能码	写功能码	数据类型	寄存器地址	141	
	0	只读・	READ INPUT REI	NONE 🔻	Unsigned8_0 🔹	40000		
	1	只读 🔹	READ HOLDING -	NONE •	Float_1032 🔹	40002		
	2	只读 🔹	READ INPUT RE	NONE 🔻	Unsigned16_10 🔹	40004		
	3	只读 ▼	READ HOLDING -	NONE -	Float_1032 🔹	40006		
▲ 又1+/年 ▲ FF	4	只读 🔹	READ INPUT REI -	NONE -	Unsigned16_01 🔹	40008		
🖹 FF.xml	5	只读 🔹	READ HOLDING -	NONE -	Float_1032 🔹	40010		
Þ 📕 PA	6	只读 🔹	READ HOLDING -	NONE -	Float_1032 🔹	40012		
	7	只读 🔹	READ HOLDING -	NONE -	Float_1032 🔹	40014		
		fr						
通讯正常								

Figure 4.5 Parameter Configuration

Both separately download parameter in data interface and together download via Download button are available after configuration.

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Note:For more detailed applying method of Modbus general configuration tool, please refer to software help file. Note: The eighth position M of DIP switch S2 should be in "ON" state, i.e. under configuration mode.

4.5 Example for configuration of Modbus Slave station

Communication parameter of User's Modbus slave station is shown as below:

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NO.	Parameter	Value
1	Baud Rate	9600 bps
2	Data Bits	8
3	Parity	Even-parity Check
4	Physical Standard	TTL
5	Stop Bits	1
6	Address	1
7	CRC	Normal
8	Timeout	300ms
9	Number of Retry	3

User's Modbus slave station support function code 03(Read Holding Registers)and function code 16(Preset Multiple Registers),the register of device parameter is allocated as shown below:

Register Address (decimalism)	Data Format	Registers Definition
4112	Float Inverse	Representation of instantaneous flow float
4114	Float Inverse	Representation of instantaneous velocity float
4116	Float Inverse	Representation of flow percentage float representation(the battery powered type is preserved)
4118	Float Inverse	Representation Fluid conductance ratio float
4120	Long Inverse	Integer part of positive accumulation value
4122	Float Inverse	Decimal part of positive accumulation value
4124	Long Inverse	Integer part of negative accumulation value negative
4126	Float Inverse	Decimal part of negative accumulation value
4128	Unsigned short	Unit of instantaneous flow
4129	Unsigned short	Unit of accumulation total quantity

Step 1.

Please check if the eighth position M of DIP switch S2 is in "ON" state. If not, please switch it to "ON" state.

Step 2.

Open the Modbus general configuration tool software, set up the serial port, and scan the equipment online, as shown below:



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5	Fato: 0x0105 19949500: 0x0312						
COM12 FFH1							
	MATS WIT				1		
	参約5000000000000000000000000000000000000						
	89	a					
	教授任業時 志		和果王政				
	说集修列号 (十六进制)		000000000000				
	權與總入戰操个数		8				
	guseen an		8				
	数字输入数据个数		8				
	款李输出素操个数		1				
	洋兵数据个数		10				
	USIGN 32 数据个数		10				
	USIGN16被募个数		10				
	USIGN 的 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一		10				
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A PA	25 <u>5</u> 2		8	•			
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	物理标准		TR.				
	#1G		1	•			
	助徒(1~255)		1				
	CRC		正常				
	sib) (300~1030\$\$\$9.)		300				
	IX/M		3				
Contraction of the local division of the loc	物质学家在君		(QN)((入)(第1))				



Step 3.

Set parameter in the public parameter table according to the parameter of users Modbus slave station, as shown below:

	-									
🔸 🐱 🤝	v.									
±51 4 COM12	「Page 0x0105 (20年前回の) 0x3312									
FFH1	moarb. min									
	*2714: 0.3*2 · Teles7*2			Artiko Posta Parota						
	88									
	求持章	9000								
	219Q									
	19817	(Ret 12								
	167815-B	m								
A 2月1日間 A A FF	616	1	•							
# FE.aml	1202 (1-255)	1								
	cac	EN.								
	est) (300-1800@8/)	300								
	Trail	2								
10.00	作员中欧市局	(SUMA #	11 .							

Figure 4.6 Configuration of communication parameter

Step 4.

Modify public parameter according to the users device parameter list, the analog input data is 8,USIGN16 parameter is 2, the others is 0, as shown below:

Modbus通用配置工	A		الكاني ا								
神 工具 報助											
् 💥 🍕	ð 👧										
4 主机 4 COM12	「第四」 660105 一段後安整10: 660312										
FFH1	你以关想。FFH1										
	多数列表: 公共多数 • 下载当前页多数		福州和基示 巴布成该设备的非								
	88	a									
	数据配置标志	数据无效									
	设新学列号(十六进制)	0000000000									
	模拟输入数据个数	8									
	權均輸出数据个数	0	4								
🗼 文件库	数字输入数据个数	0									
# FF	数字输出数据个数	0									
PA	浮点数据个数	0									
	USIGN32数据个数	0									
	USIGN16数据个数	2									
	USIGN8数据个数	0	_								
1 100 107 1	Octet String数据个数	0									

Figure 4.7 Configuration of other public parameter

Step 5.

Open the options page of analog input parameter, firstly choose the needed function code, secondly choose the data type of analog input data, finally enter the register address.

● Modbus通用配置工具	-								
文件 工具 帮助									
ا 😔 😫 ک									
▲ 主机 ▲ COM12 FFH1	厂商ID: 0x0105	设备类型ID: 0x0312							
	索引读写模式	读功能码	写功能码	数据类型	寄存器地址 ■ 连续	据.			
	<mark>0</mark>	READ HOLDING REGISTER 🔻	NONE •	Float_3210 •	4112				
	<mark>1</mark>	READ HOLDING REGISTER •	NONE	Float_3210 •	4114				
	<mark>2</mark> 只读 ▼	READ HOLDING REGISTER •	NONE •	Float_3210 •	4116				
	3 _{只读} ▼	READ HOLDING REGISTER •	NONE •	Float_3210 •	4118				
	<mark>4</mark> 只读 ▼	READ HOLDING REGISTER •	NONE •	Float_3210 •	4120				
	<mark>5</mark> 只读 ▼	READ HOLDING REGISTER •	NONE •	Float_3210 •	4122				
	<mark>6</mark> 只读 ▼	READ HOLDING REGISTER •	NONE •	Unsigned32_3210 🔹	4124				
	7 只读 •	READ HOLDING REGISTER •	NONE •	Float_3210 •	4126				
▷ 】 文件库									
20版 出除 保存 导入 通讯正常									

Figure 4.8 Configuration of analog input parameter

Note: The register address is a actual address, if the register address presented by users Modbus slave device is addressing, then need to minus 1 to get the actual address.

Step 6.

USIGN16 data paremeter options page, firstly choose the read-write mode of USIGN16 data, secondly choose the data type and using function code, finally enter the register address, as shown below:



Figure 4.9 USIGN16 data paremeters configuration

Step 7

Return to the public parameters options page, modify the mark of data configuration to "Data Valid", click on the botton of "BULK DOWNLOAD", write the configuration data to the device, as shown below:

. 💥 🌖									
1	厂商ID: 0x0105 设备类型D: 0x0312								
FFH1	协议类型: FFH1	MIQUEED FFH1							
					播作福示				
	参数列表: 公共参数 • 下截当前页参数								
	88	a l							
	封護配置特定		数据有效						
	设备序列号(十六进制)		00000000000						
	模拟输入数据个数		8						
	模拟输出数据个数		0	-					
	数字输入数据个数		0	•					
	数字输出数据个数		0	•					
	浮点数据个数		0						
	USIGN32款据个数	P70%	0						
	USIGN16数据个数		2						
	USIGN8数据个数		0	-					
	Octet String数据个数		0						
文件库	波特率		9600	•	_				
# FF.xml	#3月位		8						
A PA	检验位		偶校验						
	物理标准		TTL						
	停止位		1		_				
	地址(1~255)		1						
	CRC		正常		_				
	超时(300~1000変秒)		300						
	重发次数		3						
	纳涅条的音赛		101/140 \ (#191)						

Figure 4.10Enable data is valid and download parameter

Step 8.

Switch the eighth position M of DIP switch S2 to the "OFF" state, using the NI configuration software to connect the device into FF network, to check the transducer blocks parameter, as shown below:

0001050312-M0313-3C2B71EA : Modbus_TB (MTB)							
Apply Values							
Modbus_TB (MTB) 📓 📓 🕍 🔤 🖳 🖶 🛟 🛅 👔 🕐							
✓ Periodic Updates 2 (sec)							
00s Auto	_						
Auto		1					
Process I/O Config Alarms Dia	gnostics Trends Others		1				
Parameter	Value	Type & Extensions	Help 🔺				
🗉 💿 BLOCK_ALM			The block ala				
- UNACKNOWLEDGED	🚮 Uninitialized	enu	A discrete eni 📃 📗				
-ALARM_STATE	am Uninitialized	enu	A discrete ent 🗏				
- TIME_STAMP	07/06/2015 20:31:24 (N	AM/DD/Y 🚇	The time wher				
- SUB_CODE	dut OfService	enu	An enumeratic				
	dyn U	18	The value of t				
BAD_STATUS	0x00000000	enu	Bad Status				
ERR_LOOK_RESULT	Ok	enu	Err Look Resu				
			Modbus Analc				
E-VALUE	am 234	F	A numerical g				
di STATUS	<u></u>						
- QUALITY	Good_Cascade	enu	QUALITY				
- SUBSTATUS	NonSpecific	enu	SUBSTATUS				
	NotLimited	enu	LIMITS				
			Modbus Anak				
	6H 543		A pumerical g				
EL STATUS	200 343		A namenear q				
FQUALITY	Good Cascade	enu	QUALITY				
- SUBSTATUS	NonSpecific	enu	SUBSTATUS				
LIMITS	NotLimited	čnu	LIMITS				
H MUD_IN3	700	_	Modbus Analc				
	dyn 789	· ·	A numerical q				
	Good Casaada	_					
	NonSpecific	enu	SUBSTATUS				
	NotLimited	enu	LIMITS				
•			•				
Write Chang	es	Read Al					

Figure 4.11 Detection of Modbus slave devices data via FF configuration software

By applying above steps, you can make the FF device works normly. The Modbus slave devices data are transferred to AI, AO, DI and DO function blocks via transducer block parameter.

If the function block is not in the Auto status, then the data will not be updated.Please refer to the solving method in the section 4.6.

4.6 Reason of unsuccessfully Switch Transducer Block to Auto

Status

There are multiple reasons why transducter block can't be turned into Auto status.You can figure these problems out by checking the state of eighth position M of DIP switch S2,and parameter BLOCK_ERR, XD_ERROR, BAD_STATUS and ERR_LOOK_RESULT of transducer block

Situation 1

After the device is power on, if the parameter values of XD_ERROR function block is "Configuration error", the ERR_LOOK_RESULT is "OK", the BAD_STATUS is "0x00000000". Please check if the eighth

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position M of DIP switch S2 is in "OFF" state. If not, please switch it to "OFF" state. (Under normal work mode)



Figure 4.12 OOS situation 1 of transducer block

Situation 2

After the device is power on, if the parameter values of XD_ERROR function block is "Configuration error", the ERR_LOOK_RESULT is "Comm Failure", the BAD_STATUS for example is "MOD_IN1", it indicates that there is configuration problem with communication parameter. Please check the situation of configuration of communication parameter via Modbus general configuration tool.

0001050312-M0313-00000001 : Mc	odbus_TB (MTB)) î	0001050312-M0313-00000	001 : Mo	dbus_TB (MTB)		x	
Apply Values	A	Apply Values						
Modbus_TB (MTB) 🛛 🕅 🕍 🖆) 🔤 🖳 🚝 🛟 🛅 🚺 😧	м	Modbus_TB (MTB) 📓 🖄 🖄 🖳 🖳 🐑 😮					
Periodic Updates 2 (sec) 📫		F	Periodic Updates 2 (sec)	<u>^</u>				
OOS Auto		Г	OOS Auto					
Process I/O Config Alarms Diagnostics	Trends Others		Process I/O Config Alarms Dia	ignostics	Trends Others			
Parameter Value	Type & Extensions 🔺		Parameter	Value		Type & Extension	ns 🔺	
ST_REV 0	016 E		ST_REV	0		615	E	
● STRATEGY 0	016		STRATEGY	0		e16		
UPDATE_EVT UNACKNOWLEDGED UPDATE_STATE TIME_STAMP STATE_REVISION RELATIVE_INDEX 00 0 0 0 0 0 0 0 0 0 0 0 0	tialized III Balized III 1/1972 00:00:00 (MM/L ↔ III III III		UPDATE_EVT UNACKNOWLEDGED UPDATE_STATE TIME_STAMP STATIC_REVISION RELATIVE_INDEX	Gran Uninit Gran Uninit Gran 01/01 Gran 0 Gran 0	ialized ialized /1972 00:00:00 (MM/	600 600 (44) 616 616		
BLOCK_ALM UNACKNOWLEDGED ALARM_STATE Code TIME_STAMP STOPE CODE CODE Code VALUE Code Code	tialized tialized 1/1972 00:00:00 (MM/I ↔ r 100		BLOCK_ALM UNACKNOWLEDGED ALARM_STATE TIME_STAMP SUB_CODE VALUE	and Uninit and Uninit and 01/01 and 0ther and 0	ialized ialized /1972 00:00:00 (MM/	enu enu enu urg		
BAD_STATUS BAD_STATUS_1 MOD_IN BAD_STATUS_2 0x00000 BAD_STATUS_3 0x00000	11 600 1000 600 1000 600		BAD_STATUS BAD_STATUS_1 BAD_STATUS_2 BAD_STATUS_3	MOD_IN 0x000000 0x000000	1 000 000	ຣກນ ຣກນ ຣກນ		
ERR_LOOK_RESULT Comm Fa	ailure anu		ERR_LOOK_RESULT	Comm Fa	ilure	enu		
			□ • MOD_IN1 <				• •	
Write Changes	Read All		Write Changes		B	ead All		

Figure 4.13 OOS situation 2 of transducer block



Situation 3

After the device is power on, if the parameter values of XD_ERROR function block is "Configuration error", the ERR_LOOK_RESULT is "Function Code Mismatch", the BAD_STATUS for example is "MOD_IN1", it indicates that there is configuration problem with function code of parameter. Please check the situation of function code's configuration of parameter via Modbus general configuration tool.



Figure 4.14 OOS situation 3 of transducer block

Situation 4

After the device is power on, if the parameter values of XD_ERROR function block is "Configuration error", the ERR_LOOK_RESULT is "Data Type Mismatch", the BAD_STATUS for example is "MOD_IN_D1", it indicates that there is configuration problem with data type of parameter. Please check the situation of data type's configuration of parameter via Modbus general configuration tool.

	KU M0313 Mod ER	dbus to FF Built-in Module User I	Manua
OO01050312-M0313-00000001 : Moc Apply Values Modbus_TB (MTB)	bus_TB (MTB)	w 0001050312-M0313-00000001 : Modbus_TB (MTB) Apply Values Modbus_TB (MTB) Periodic Updateg 2 (sec) → OOS Auto Process 1/0 Config Alarms Diagnostics Trends OUS Auto Process 1/0 Config Alarms Diagnostics Trends Outoris STRATEGY 0 STATIC_REVISION HUPATE_STATE Curvinitalized THE STAPE OUT/01/1972 00:00:00 (M → The time when eval The State (MTB) Curvinitialized THE DI rides of the UNALT REVISION Curvinitialized	
Write Changes	Read All	Write Changes Read All	

Figure 4.15 OOS situation 4 of transducer block

Situation 5

After the device is power on, if the parameter values of XD_ERROR function block is "Data Integrity Error", the ERR_LOOK_RESULT is "Comm Failure", the BAD_STATUS for example is "MOD_IN1", it indicates that there is interrupt signal problem in the process of normal communication. Please check the device connection.



Figure 4.16 OOS situation 5 of transducer block

Situation 6

After the device is power on, if the parameter values of XD_ERROR function block is "Data Integrity Error", the ERR_LOOK_RESULT is "Illegal Data Address", the BAD_STATUS is "MOD_IN1", it indicates

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that there is read address problem in the process of normal communication.Please check the configuration of data register.



Figure 4.17 OOS situation 6 of transducer block

Situation 7

After the device is power on, if the parameter values of XD_ERROR function block is "Data Integrity Error", the ERR_LOOK_RESULT is "Illegal Function", the BAD_STATUS for example is "MOD_IN1", it indicates that there is function code matching problem in the process of normal communication. Please check the configuration of data's function code.

0001050312-M0313-00000001 : Modbus_TB (MTB)				001050312-M0313-000	000001 : Modbus_TB (1	VITB)	- • ×	
Apply Values			Apply Values					
Modbus_TB (MTB)	🗟 📓 🖶 🛟 🛅 🚺	2	Modbu	us_TB (MTB)	🎽 📓 🛗 🔤 🖳	₽ \$°		
Periodic Updates 2 (sec) ÷			Pe Pe	eriodic Updates 2 (sec)	*			
00S Auto			005	6 Auto				
Process I/O Config Alarms Diagnostics	Trends Others		Proc	ess 1/0 Config Alarms	Diagnostics Trends Ot	ners		
Parameter Value	Type (& Extensions	Par	ameter	Value	Type &	Help 🔺	
MODE_BLK	550		• S	T_REV	0	e16	The revision level of E	
ACTUAL MOOS	- Eng		🕒 🕒 S	TRATEGY	0	016	The strategy field ca	
NORMAL Auto	D enu enu	1		UPDATE_EVT			This alert is generati	
BLOCK EBB	OutOfService 🚥			-UNACKNOWLEDGED	Bm Uninitialized	enu	A discrete enumerat	
				-TIME_STAMP	01/01/1972 00:00:00	M	The time when eval	
• XD_ERRUR Sm Data I	ntegrity Error 🔤	'		- STATIC_REVISION - RELATIVE_INDEX	dyn U dyn D	616 616	The static revision c The OD index of the	
				BLOCK_ALM -UNACKNOWLEDGED -ALARM_STATE -TIME_STAMP -SUB_CODE -VALUE	Sm Uninitialized Sm Uninitialized Sm 01/01/1972 01:56:01 Sm 0 ut0fService Sm 0	enu enu M 🎂 enu	The block alarm is u A discrete enumerat A discrete enumerat The time when eval An enumeration spe The value of the as:	
			•	BAD_STATUS	1100 114		Bad Status	
				-BAD_STATUS_1 -BAD_STATUS_2 -BAD_STATUS_3	0x00000000 0x00000000	enu enu enu	Bad Status 1 for ML Bad Status 2 for Ge Bad Status 3 for Ge	
			e E	RR_LOOK_RESULT	Illegal Function	ຂອນ	Err Look Result	
<	< >						Modbus Analog Inpi 🥆	
Write Changes	Read All			Write Changes		Re	ad All	

Figure 4.18 OOS situation 7 of transducer block

Situation 8

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After the device is power on, if the parameter values of XD_ERROR function block is "Data Integrity Error", the ERR_LOOK_RESULT is "Unknown Exception Code", the BAD_STATUS is "MOD_IN1", it indicates that there is problem with device in the process of normal communication, the error return code fails to be resolved. Please check the specific communication configuration of Modbus slave device.

0001050312-M031	13-00000001 : Modbus_TB	(MTB)			0001050312-M0313-00	000001 : Mod	lbus_TB (N	1TB)		
Apply Values			Apply Values							
Modbus_TB (MTB) 🛛 🖄 🖄 🔤 📮 😂 🛟 🛅 🗃 🚱										
Periodic Updates	2 (sec) +			F	Periodic Updates 2 (sec	;) •				
				ſ	00S Auto					
1003					Propose 1/0 Config Alarma	Disconnection 1	rondo Oth	ers		
Process I/O Config A	arms Diagnostics Trends 0	thers			Process 170 Coning Alanins		Terius ou	Tune ?	l l l ala	
Parameter	Value	Type & Exte	Help		Parameter	value		j τype «	The revision level of	
HODE BLK	1.000.000	, ype a children	The actur		JI_ILV	0		016	The revision lever of	
- TARGET	Auto	600	This is the		STRATEGY	0		u16	The strategy field ca	
-ACTUAL	த 005	650	This is the						T 11 1 1 1	
- PERMITTED	Auto OOS	-	Defines t			and the first of a first of		_	I his alert is generati	
NORMAL	Auto		This is the		LIPDATE STATE	Uninitialized	1	enu	A discrete enumerat	
						01/01/197	, 2.00-00-00 (I		The time when eval	
BLOCK_ERR	other OutOfService	(m)	This pare		-STATIC_REVISION	a m 0 am 0		016 016	The static revision c	
• XD_ERROR	ன Data. Integrity Error	691	One of the		■ ● BLOCK_ALM – UNACKNOWLEDGED – ALARM_STATE – TIME_STAMP – SUB_CODE – VALUE	Som Uninitialized Som Uninitialized Som O1/01/197 Som OutOfServi Som O	1 1 2 01:58:46 (1 ce	680 680 7 🎱 880 880	The block alarm is u A discrete enumerat A discrete enumerat The time when eval An enumeration spe The value of the as:	
					BAD_STATUS BAD_STATUS_1 BAD_STATUS_2 BAD_STATUS_3	MOD_IN1 0x00000000 0x00000000		enu enu enu	Bad Status Bad Status 1 for MC Bad Status 2 for Ge Bad Status 3 for Ge	
					ERR_LOOK_RESULT	Unknown Exce	eption Code	enu	Err Look Result	
• []		F						Modbus Analog Inp 👻		
Write Changes Read All								R	ead All	

Figure 4.19 OOS situation 8 of transducer block

Situation 8

After the device is power on, if the parameter values of XD_ERROR function block is "Data Integrity Error", the ERR_LOOK_RESULT is "Slave Device Failure", the BAD_STATUS is "MOD_IN1", it indicates that there is problem with device in the process of normal communication, the error return code is "Slave Device Failure". Please check the status of Modbus slave device.

• 0001050312-M031	13-00000001 : Modbus_TB	(MTB)	X		0001050312-M0313-00	1000001 : Mod	bus_TB (M	TB)	
Apply Values					Apply Values				
Modbus TB (MTB)	M M M M M M M M		Modbus_TB (MTB) 🛛 🖄 🖄 🖳 🚆 🖶 😂 🛅 😧						
	2 (sec) -				✓ Periodic Updates 2 (sec	;			
	1 (000)				DOS Auto				
OOS Auto								_,	
Process 1/0 Config A	arms Diagnostics Trends 0	thers			Process 1/0 Config Alarms	Diagnostics T	rends Othe	as	
December	Value Inclusion	Tran 8 Euto	Line 1		Parameter	Value		Type &	Help
	Value	Type & Exte	The activ		ST_REV	0		ē16	The revision level of E
-TARGET	Auto	60.3	The actual This is the		STRATEGY	0		616	The strategy field ca
-ACTUAL	த 005	(27)	This is the						This slort is generate
- PERMITTED	Auto OOS		Defines t			and Ininitialized		enu	A discrete enumerat
- NORMAL	Auto	200	This is the		-UPDATE_STATE	Gon Uninitialized		enu	A discrete enumerat
BLOCK ERR	other OutOfService	(m)	This pare		- TIME_STAMP - STATIC REVISION	01/01/1972	2 00:00:00 (M	4	The time when eval The static revision c
					- RELATIVE_INDEX	dyn 0		u16	The OD index of the
 XD_ERROR 	👼 Data Integrity Error	(m)	One of the						The block alarm is a
					UNACKNOWLEDGED	601 Uninitialized		enu	A discrete enumerat
					-ALARM_STATE	an Uninitialized		enu	A discrete enumerat
					HIME_STAMP	- 3m U1/U1/19/2	2 U1:58:46 (M	a	I he time when eval
					L VALUE		,0	u8	The value of the as:
					🖃 💩 BAD STATUS				Bad Status
					BAD_STATUS_1	MOD_IN1		enu	Bad Status 1 for MC
					BAD_STATUS_2 BAD_STATUS_3	0x00000000 0x00000000		enu	Bad Status 2 for Ge Bad Status 3 for Ge
					ERR_LOOK_RESULT	Slave Device F	ailure	enu	Err Look Result
					E MOD IN1				Modbus Analog Inpl *
I € []					<				Þ
Write Chan	ges	Read All	1		Write Changes			Re	ad All

Figure 4.20 OOS situation 9 of transducer block

5 Maintenance

• Simple Maintenance

LED Indicator Light	Color	Normal Status	Abnormal Status	Abnormal Reason	Correction Method		
				No FF communication	Check FF master and interface		
			Light off	Power fault	Check power supply and connection		
FF Communication	Green	Flash		Internal fault	Contact technical support		
Communication			Lighton	No FF communication	Check FF master and interface		
			Light on	Internal fault	Contact technical support		
		Flash		Not connect slave device	Connect slave device		
			Light off	Slave device fault	Check slave and connection		
Modbus				Internal fault	Contact technical support		
Communication	Green			In configuration mode	Check situation of eighth position M of DIP switch S2		
			Light on	Not send data	Configuration fault		
				Internal fault	Contact technical support		

- Daily maintenance means cleaning device only.
- Fault maintenance: Please return to the factory if there's fault.

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6 Technical Specification

6.1 Basic Parameters

Measure Object	Modbus RTU slave device
FF Bus Power	9~32VDC
Quiescent current	≤14mA
Bus Protocol	Two-wire, FF Protocol
Insulating Voltage	Modbus and FF bus interface, 1000VAC
Temperature Scale	-40℃~85℃
Humidity Scale	5~95%RH
Start Time	≤5s
Refresh Time	0.2s

6.2 Performance Index

Electromagnetic	Meet GB/T 18268.1-2010
compatibility	Test method for FF port meets GB/T 18268.23-2010

6.3 Physical Properties

Weight	16 g
Structural Material	Coating: Polyester epoxy resin

6.4 Default Communication Parameters

Slave Address	1
Baud Rate	9600
Data Bit	8
Stop Bit	1
Calibration	EVEN
CRC Calibration	Low byte ahead

6.5 Supportive Modbus Function Code

1	Read loop status
2	Read discrete input status
3	Read keeping register value
4	Read input register value
5	Write loop
6	Write single register values
15	Write multiple loop
16	Write multiple register values

Appendix 1 Parameter List for Modbus Transducer Block

Index	Parameter	Data Type	Effective	Default	Storage	Functional Description
			Range	Values		
1	ST_REV	Unsigned16		0	S/RO	Static version
2	TAG_DESC	OctString(32)		Spaces	S	Bit No
3	STRATEGY	Unsigned16	4 44 055	0	S	Policy
4			1 10 255	0/9	े २	Alam
6		Bitstring(2)		0/3	D/RO	Frror
7	UPDATA EVT	DS-73			D	Static data update event
8	BLOCK_ALM	DS-72			D	Function block alarm
9	TRANSDUCER_TYPE	Unsigned16		65535	N/RO	Function block type
10	XD_ERROR	Unsigned8		0	D/RO	Function block error description
11	SENSOR_TYPE	Unsigned16		65535	D/RO	Sensor type
12	BAD_STATUS	DS-258			D/RO	Consist of three 32-bit state sub-parameter, any bit is set to 1 indicates that the
						corresponding command gets no response, the error code of parameter could be observed by configuration.
13	ERR_LOOK_RESULT	Unsigned8	0-255		D/RO	32 I/O command negative response of exception code index address, for example 0 indicates MOD_IN1 negative response code
14	MOD IN1	DS-65			D/RO	Analog input 1
15	MOD_IN2	DS-65			D/RO	Analog input 2
16	MOD_IN3	DS-65			D/RO	Analog input 3
17	MOD_IN4	DS-65			D/RO	Analog input 4
18	MOD_IN5	DS-65			D/RO	Analog input 5
19	MOD_IN6	DS-65			D/RO	Analog input 6
20	MOD_IN7	DS-65			D/RO	Analog input 7
21		DS-65			D/RO	Analog Input 8
23	MOD_OUT 2	DS-65			D/RO	Analog output 2
24	MOD_OUT 3	DS-65			D/RO	Analog output 2
25	MOD_OUT 4	DS-65			D/RO	Analog output 4
26	MOD_OUT 5	DS-65			D/RO	Analog output 5
27	MOD_OUT 6	DS-65			D/RO	Analog output 6
28	MOD_OUT 7	DS-65			D/RO	Analog output 7
29	MOD_0018	DS-65			D/RO	Analog output 8
30		DS-66			D/RO	Discrete input 1
32		DS-66			D/RO	Discrete input 3
33	MOD_IN_D4	DS-66			D/RO	Discrete input 4
34	MOD_IN_D 5	DS-66			D/RO	Discrete input 5
35	MOD_IN_D 6	DS-66			D/RO	Discrete input 6
36	MOD_IN_D 7	DS-66			D/RO	Discrete input 7
37	MOD_IN_D 8	DS-66			D/RO	Discrete input 8
38	MOD_OUT_D1	DS-66			D/RO	Discrete output 1
39		DS-66			D/RU	Discrete output 1
40		DS-66			D/RO	Discrete output 1
42	MOD_OUT_D 5	DS-66			D/RO	Discrete output 1
43	MOD_OUT_D 6	DS-66			D/RO	Discrete output 1
44	MOD_OUT_D 7	DS-66			D/RO	Discrete output 1
45	MOD_OUT_D 8	DS-66			D/RO	Discrete output 1
46	GENERIC_FLOAT_PARAM_1	DS-256			S	General float parameter 1
47	GENERIC_FLOAT_PARAM_2	DS-65			S	General float parameter 2
48 40	GENERIC_FLUAI_PARAM_3	DS-256			ି ୧	General float parameter 3
4 9 50	GENERIC FLOAT PARAM 5	DS-05			S	General float parameter 5
51	GENERIC FLOAT PARAM 6	DS-65			S	General float parameter 6
52	GENERIC_FLOAT_PARAM_7	DS-256			S	General float parameter 7
53	GENERIC_FLOAT_PARAM_8	DS-65			S	General float parameter 8
54	GENERIC_FLOAT_PARAM_9	DS-256			S	General float parameter 9
55	GENERIC_FLOAT_PARAM_10	DS-66			S	General float parameter 10
56	GENERIC_USIGN32_PARAM_1	Unsigned32			S	General 32-bit unsigned parameter 1
52	GENERIC USIGN32_PARAM_2	Unsigned32			2 C	General 32-bit unsigned parameter 2
59	GENERIC USIGN32 PARAM 4	Unsigned32			S	General 32-bit unsigned parameter A
60	GENERIC USIGN32 PARAM 5	Unsigned32			S	General 32-bit unsigned parameter 5
61	GENERIC_USIGN32 PARAM 6	Unsigned32			S	General 32-bit unsigned parameter 6
62	GENERIC_USIGN32_PARAM 7	Unsigned32			S	General 32-bit unsigned parameter 7
63	GENERIC_USIGN32_PARAM_8	Unsigned32			S	General 32-bit unsigned parameter 8
64	GENERIC_USIGN32_PARAM_9	Unsigned32			S	General 32-bit unsigned parameter 9
65	GENERIC_USIGN32_PARAM_10	Unsigned32			S	General 32-bit unsigned parameter 10
66	GENERIC USIGN16 PARAM 1	Unsigned16			5	General 16-bit unsigned parameter 1

		説 M0313 ER	Modbus	to FF	- Built	t-in Module User Manual
67	GENERIC_USIGN16_PARAM_2	Unsigned16			S	General 16-bit unsigned parameter 2
68	GENERIC_USIGN16_PARAM_3	Unsigned16			S	General 16-bit unsigned parameter 3
69	GENERIC_USIGN16_PARAM_4	Unsigned16			S	General 16-bit unsigned parameter 4
70	GENERIC_USIGN16_PARAM_5	Unsigned16			S	General 16-bit unsigned parameter 5
71	GENERIC_USIGN16_PARAM_6	Unsigned16			S	General 16-bit unsigned parameter 6
72	GENERIC_USIGN16_PARAM_7	Unsigned16			S	General 16-bit unsigned parameter 7
73	GENERIC_USIGN16_PARAM_8	Unsigned16			S	General 16-bit unsigned parameter 8
74	GENERIC_USIGN16_PARAM_9	Unsigned16			S	General 16-bit unsigned parameter 9
75	GENERIC_USIGN16_PARAM_10	Unsigned16			S	General 16-bit unsigned parameter 10
76	GENERIC_USIGN8_PARAM_1	Unsigned8			S	General 8-bit unsigned parameter 1
77	GENERIC_USIGN8_PARAM_2	Unsigned8			S	General 8-bit unsigned parameter 2
78	GENERIC_USIGN8_PARAM_3	Unsigned8			S	General 8-bit unsigned parameter 3
79	GENERIC_USIGN8_PARAM_4	Unsigned8			S	General 8-bit unsigned parameter 4
80	GENERIC_USIGN8_PARAM_5	Unsigned8			S	General 8-bit unsigned parameter 5
81	GENERIC_USIGN8_PARAM_6	Unsigned8			S	General 8-bit unsigned parameter 6
82	GENERIC_USIGN8_PARAM_7	Unsigned8			S	General 8-bit unsigned parameter 7
83	GENERIC_USIGN8_PARAM_8	Unsigned8			S	General 8-bit unsigned parameter 8
84	GENERIC_USIGN8_PARAM_9	Unsigned8			S	General 8-bit unsigned parameter 9
85	GENERIC_USIGN8_PARAM_10	Unsigned8			S	General 8-bit unsigned parameter 10
86	GENERIC_STRINGV_PARAM_1	Octet String(32)			S	General 32-bit strings parameter 1
87	GENERIC_STRINGV_PARAM_2	Octet String(32)			S	General 32-bit strings parameter 2

Appendix 2 Common parameter list

No	Parameter	Description
1	Data configure flags	Data configure flags 0xFEDCCDEF: Data Valid
0	Device's seriel number	UXUUUUUUUU: Data Invalid
2	Number of engling input data	Device's serial number SN (6 bytes)
3	Number of analog output data	Number of analog input data (0~6)
4	Number of input digital data	Number of input digital data (0~8)
5	Number of output digital data	Number of output digital data $(0 \sim 6)$
7	Number of float data	Number of float data $(0~0)$
8	Number of USIGN32 data	Number of USIGN32 data $(0~10)$
9	Number of USIGN16 data	Number of USIGN16 $(0 \sim 10)$
10	Number of USIGN8 data	Number of USIGN8 data (0~10)
11	Number of data Octet String	Number of data Octet String (0~2)
		Baud Rate
		0: 2400
40	Developete	1: 4800
12	Baud rate	2: 9600
		3: 14400
		4: 19200
		Data bit
13	Data bit	0: 8
		1: 7
		Check bit
		0: None
14	Check bit	1: Even
		2: Odd
		Interface type
45	Discusional action danal	0: TTL
15	Physical standard	1: RS232
		2: RS485
		Stop bit
16	Stop bit	0: One Stop Bit
	-	1: Two Stop Bits
47	Address	Slave station address(1~255), this address is the slave station
17	Address	address under normal working mode
		CRC Sequence-checking
18	CRC	0: Normal
		1: Swapped
19	Timeout	Timeout value (300~1000, unit ms)
20	Resend times	Resend times (1~10)
		View error parameter (0~73, all the 74 channel datas, which
21	View error parameter	respectively indicate analog input, analog output, digital input,
		digital output, float data, USIGN32 data、USIGN16 data、
		USIGN8 data and Octet String data)

Appendix 3 Model Selection Table for M0313 Module

MOD-FFH	1	M0313	M0313 Modbus to FF built-in module									
		Co	de	Maste	Master/Slave							
		N	1	Maste	Master Station							
				Co	Code Module Form							
				1	N	Gene	eral					
						С	de	Hard	ware I	nterface		
						٦	Γ	TTLI	evel			
								Co	de	Software I	nterface	
								Ν	Λ	Modbus R	TU	
										Code	Bus interface on module	
										Ν	No Bus inteface	
MOD-FFH	1-	Μ		N	1	Т		М		N —	 Selection Example 	

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