

# RS485 / MODBUS communication agreement Introduce

## 1. Communication settings

- Baud rate range (1200-19200).
- 8 bit data, 1 bit stop, none parity
- Baud rate and address can be modified in MMF menu (only MMF with 485 option)
- Factory communication default setting: 9600 NONE 8 1
- Default address: 01 (address range: 01~15)

## 2. Communication method

- RS485
- **Communication Frame: RTU**

## 3. Modbus protocol

- Reading from MMF code: 0X04
- Writing to MMF code: 0X10
- Reading operation: Read the data as given communication address and reading code;
- Writing operation: Write data as different types (float/ int/ long long) to different address;
- Follow the instructions in the address table instructions for operation;

## 4. Communication address

Read Register (16 bits)

Register Name (Read Register)	Number of registers	variable name	data type	description	attribute
0000-0001	2	flow rate	float		read only
0002-0005	4	Total flow	Long long		read only
0006-0007	2	Dp Value(Pa)	float		read only
0008-0009	2	Pressure value(kPa)	float		read only
0010-0011	2	Operating Temperature	float		read only
0012-0013	2	Operating Density	float		read only
0014	1	Flow Unit	int		read only
0015-0016	2	Current Percentage	float		read only
0017-0018	2	Current Output Value	float		read only
0019	1	Medium	int	0=gas 1=water 2=Saturated steam 3=superheated steam 4=liquid	Read/Write
0020-0021	2	Range	float	Maximum 8 integers+2 decimals	Read/Write
0022	1	Filter	int	Integer: 1-999 Unit: S	Read/Write
0023-0028	6	MMF Instrument Coefficient	Ascii	<ul style="list-style-type: none"> <li>● 3 bit integer+7 decimal</li> <li>● Synthesize a register for every 2-bit ascii code,</li> <li>● Using the "." of ascii for the dividing point</li> </ul>	Read/Write

				<ul style="list-style-type: none"> <li>● 3 integer+7 decimal + one decimal 0X2E</li> </ul>	
0029-0033	5	Expansion Coefficient Factor	Ascii	<ul style="list-style-type: none"> <li>● Synthesize a register for every 2-bit ascii code,</li> <li>● Using the"."of ascii for the dividing point</li> <li>● 1 integer+8 decimal + one decimal 0X2E</li> </ul>	Read/Write
From 0034-0093		For 10 points calibration		No order, can not find these	
0034-0035	2	Flow cut-off Point 1	long		Read/Write
0036-0039	4	Flow 0~1 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0040-0041	2	Flow cut-off Point 2	long		Read/Write
0042-0045	4	Flow 1~2 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0046-0047	2	Flow cut-off Point 3	long		Read/Write
0048-0051	4	Flow 2~3 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0052-0053	2	Flow cut-off Point 4	long		Read/Write
0054-0057	4	Flow 3~4 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0058-0059	2	Flow cut-off Point 5	long		Read/Write
0060-0063	4	Flow 4~5 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0064-0065	2	Flow cut-off Point 6	long		Read/Write
0066-0069	4	Flow 5~6 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0070-0071	2	Flow cut-off Point 7	long		Read/Write
0072-0075	4	Flow 6~7 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0076-0077	2	Flow cut-off Point 8	long		Read/Write
0078-0081	4	Flow 7~8 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0082-0083	2	Flow cut-off Point 9	Long		Read/Write
0084-0087	4	Flow 8~9 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0088-0089	2	Flow cut-off Point 10	Long		Read/Write
0090-0093	4	Flow 9~10 modify coefficient	Ascii	1 integer+6 decimal + one decimal 0X2E	Read/Write
0094-0097	4	Linear gain for all flow range (0.8~1.2)	Ascii	<ul style="list-style-type: none"> <li>● 1 bit integer+6 decimal</li> <li>● Synthesize a register for every 2-bit ascii code,</li> <li>● Using the"."of ascii for the dividing point</li> <li>● 1 integer+6 decimal + one decimal 0X2E</li> </ul>	Read/Write
0098	1	16bit status code	Int	Error code	read only

0099	1	Fixed value or changeable status code	Int	<ul style="list-style-type: none"> <li>● BIT0= 1: medium temperature is a fixed value, =0: temperature value from field measurement.</li> <li>● BIT1= 1: medium pressure is a fixed value, =0: pressure value from field measurement.</li> <li>● BIT3= 1: Dp value is a fixed value, =0: Dp value from field measurement.</li> </ul>	Read/Write
0100-0101	2	Fixed dp value	float	One decimal, used for setting the fixed dp value in simulation mode	Read/Write
0102-0103	2	Fixed pressure value	long	Fixed pressure value in simulation mode	Read/Write
0104-0105	2	Fixed Temper. value	long	Fixed temperature value in simulation mode	Read/Write
0106-0107	2	flow rate before Correction (no decimal)	float	Used for 10 points calibration	read only
0108-0109	2	Operation password	long	0X82219895	Read/Write
0110	1	Operation code	Int	0=calibration 100R 1=calibration 300R 2=Calibrate output zero 3=Calibrate output full scale 255=Reset factory data	Read/Write
0111-0112	2	Operation data	long	operand	read only

## 5. Examples

Reading Flow rate: **Read Register0,,Read Register1;**

Request PDU				
Slave address	Function code(reading)	Start Register	Number of input registers	CRC check
0X01	0X04	0X0000	0X0002	0X71CB
One-byte	One-byte	Two-bytes	Two-bytes	Two-bytes
		First high	First high	First low
Respond PDU				
Slave addr	Function code	Number of input byte	Received data	CRC check
0X01	0X04	0x04	0X409CC6B8 (4.89926) (decimal) )	0X7DB8
One-byte	One-byte	One-byte	Four-bytes	First low

Write Data : Write **Register 19 change** Medium to Register 19

Request PDU						
Slave addr	Function code	Start Register	Number of input registers	Number of byte	data	CRC check
0X01	0X10	0X0013	0X0001	0X02	0X0002	0X2532

One-byte	One-byte	Two-bytes	Two-bytes	One-byte		Two-bytes
		First high	First high		First high	First low
<b>Respond PDU</b>						
Slave addr	Function code	Start Register	Start Register			CRC check
0X01	0X10	0x0013	0X0001			0XF00C
One-byte	One-byte	Two-byte	Two-bytes			First low