



Thermal Mass Flow Meter/Controller

MODEL 8700 SERIES

RS-485 Communications Instruction Manual
(Modbus RTU)

KOFLOC Corp.

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1 . Foreword

This document describes the specifications and operation of the Modbus (RTU) communications function installed as a standard feature in Model 8700.

The wiring, installation and operating procedures, other than communications, are presented in a separate instruction manual. Prior to use, please read it also.

2 . RS-485 Communication Specifications

Synchronization	Start-stop
Transmission speed	9600bps
Start bit	1 bit
Data length	8 bits
Stop bit	1 bit
Parity	None
Transmission system	Half duplex (3-wire type)
Insulation	Communication – control circuit: Uninsulated Communication – power supply: Uninsulated
Setting of ID at shipment	001

3 . Supported Modbus Function Cord

Read Coil Status	0x01
Read Holding Register	0x03
Read Input Register	0x04
Force Single Coil	0x05
Preset Single Register	0x06

4 . Data Address

Classification	Address	Operation	Range
Coil	00001	RUN key action selection (d-07)	00: RUN key not used 01: RUN key used
	00002	Flow rate setting method selection (d-01)	00: Digital setting (Modbus) 01: Analog setting
	00003	Selection of action when alarm occurs (d-14)	00: Control continue & alarm output normally on 01: Forced fully closed & alarm output normally on
	00004	Direct setting function (d-26)	00: No function 01: Function used
	00005	Auto zero (d-08)	00: No function 01: Function used
	00006	0-2% range indication setting (d-29)	00:0-2% flow rate indication 01:0 indication
Input Register	30001	Instantaneous flow rate	-9999~9999
	30002	Integrated flow rate (lower 4 digits)	0000~9999
	30003	Integrated flow rate (middle 4 digits)	0000~9999
	30004	Integrated flow rate (upper 4 digits)	0000~9999
	30005	SP8 (Analog set flow rate))	0~Full Scale※3
Holding Register	40001	SP No. being used	00: SP0 01: SP1 02: SP2 03: SP3 04: SP4 05: SP5
	40002	Key lock setting (d-06)	00: No key lock 01: Key lock of settings other than flow rate setting (SP) 02: Key lock of all settings

	40003	Event 1 output type allocation (d-18)	00: Not used (normally off) 01: On when integration flow rate event occurs 02: On when flow rate is OK 03: On when operation mode =Control 04: On when operation mode = Fully opened 05: On when operation mode = Fully closed
	40004	Event 2 output type allocation (d-19)	00: Not used (normally off) 01: On when integration flow rate event occurs 02: On when flow rate is OK 03: On when operation mode =Control 04: On when operation mode = Fully opened 05: On when operation mode = Fully closed
	40005	Flow rate alarm set type (d-13)	00: Not used 01: Only upper limit alarm used 02: Only lower limit alarm used 03: Upper/lower alarms used
	40006	Flow rate indication reference condition selection (d-02)	00:20°C, 1 atm 01:0°C, 1 atm 02:25°C, 1 atm
	40007	PV filter (instantaneous flow rate averaging) (d-27)	00: No PV filter 01: Moving average of sampling 2 times 02: Moving average of sampling 4 times 03: Moving average of sampling 8 times 04: Moving average of sampling 16 times 05: Moving average of sampling 32 times
	40008	Indication update cycle (Indicator) (d-28)	00: No update cycle 01: 50-msec cycle 02: 100-msec cycle 03: 200-msec cycle 04: 500-msec cycle 05: 1000-msec cycle
	40009	Indication decimal point position function (d-31)	00: No decimal point (1000) 01: Decimal point used (100.0) 02: Decimal point used (10.00) 03: Decimal point used (1.000)
	40010	Flow rate OK judgment range (d-22)	0005~1000 (0.5%~100.0% FS)

40011	Flow rate deviation upper limit alarm value (d-15)	0005~1000 (0.5%~100.0% FS)※1
		0000~1000 (0.0%~100.0% FS)※2
40012	Flow rate deviation lower limit alarm value (d-16)	0005~1000 (0.5%~100.0% FS)※1
		0000~1000 (0.0%~100.0% FS)※2
40013	Flow rate deviation alarm judgment delay time (d-17)	0005~9999 (0.5sec~999.9sec)
40014	Event output 1 delay time (d-20)	0000~9999 (0.0sec~999.9sec)
40015	Event output 2 delay time (d-21)	0000~9999 (0.0sec~999.9sec)
40016	Integration event flow rate (lower 4 digits) (d-10)	0000~9999
40017	Integration event flow rate (middle 4 digits) (d-11)	0000~9999
40018	Integration event flow rate (upper 4 digits) (d-12)	0000~9999
40019	Auto zero function delay time (d-09)	0000~9999 (0.0sec~999.9sec)
40020	SP upper limit flow rate (d-32)	0000~1000 (0.0%~100.0% FS)
40021	SP lower limit flow rate (d-33)	0000~1000 (0.0%~100.0% FS)
40022	SP0 (Set flow rate) (d-35)	0~Full Scale※3
40023	SP1 (Expanded set flow rate) (d-36)	0~Full Scale※3
40024	SP2 (Expanded set flow rate) (d-37)	0~Full Scale※3
40025	SP3 (Expanded set flow rate) (d-38)	0~Full Scale※3
40026	SP4 (Expanded set flow rate) (d-39)	0~Full Scale※3
40027	SP5 (Expanded set flow rate) (d-40)	0~Full Scale※3

	40028	Full scale flow rate (d-30)	0100~9999
	40029	Operation mode	00: Valve fully opened 01: Valve control 02: Valve fully closed

※1:In case of a controller

※2:In case of a meter

※3:Control may not operate when inputting a value less than 2% of full scale.

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