



Mass Flow Meter with indicator

EX-700R

RS-485 Communications Instruction Manual

KOFLOC Corp.

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1. Foreword

This document describes the specifications and handling of the Modbus (RTU) function. With reference to the Modbus (RTU) standard, please prepare for it by yourself.

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 Communications

Synchronization	Start-stop
Transmission speed	38400/19200/9600bps (Parameter: P-41)
Start bit	1bit
Data length	8bit
Stop bit	1bit
Parity	No parity/Odd parity/Even parity (Parameter: P-42)
Transmission system	3-wire half-duplex
Insulation	Communication – control circuit: Uninsulated Communication – power supply: Uninsulated
Communication ID setting range	1-247 (Parameter: P-40)

3 . Modbus Function Codes supported

Read Coil Status	0x01
Read Input Status	0x02
Read Holding Register	0x03
Read Input Register	0x04
Force Single Coil	0x05
Preset Single Register	0x06
ZERO Adjustment	0x41

Details of Vendor-defined function (ZERO Adjustment)

Queries

Communication ID	8bit
Function code	0x41
Error check	CRC (16 bit)

Response

Communication ID	8 bit
Function code	0x41
Error check	CRC (16bit)

Sensor zero adjustment is executed.

4. Data • Address list

Category	Address	Name	Description of set values
Coil	00001	(P-01) Low cut	0: Instantaneous flow rates below 0.5% F.S. are indicated. Negative values are also indicated. 1: Instantaneous flow rates below 0.5% F.S. are indicated as 0. Negative values are also indicated as 0.
	00002	(P-04)Integrated flow rate hold	0: The integrated flow rate value is reset when the power is turned off. 1: The integrated flow rate value is held after the power is turned off. The integrated flow rate value hold cycle is 1 minute.
Input Status	10001	Flow rate unit	0: cc, 1: L
Input Register	30001	Full scale flow rate [significand]	Mantissa portion of the full scale flow rate currently set for operation 0001 ~ 2000
	30002	Flow rate decimal point position [number of decimal places]	0: none, 1: digit, 2: digit, 3: digit
	30003	Instantaneous flow rate [significand]	-9999 ~ 9999 (As per the specifications)
Holding Register	40001	(P-30)Applicable gas	0: CF value, 1: N2(nitrogen), 2: Air, 3: H2(hydrogen), 4: He(helium), 5: Ar(argon), 6: O2(oxygen), 7: CO2(carbon dioxide), 8: CH4 (methane)
	40002	(P-31)CF value	0500 ~ 1500 (0.500 ~ 1.500)
	40003	(P-00)Reference condition on flow rate	0: 20°C(1atm), 1: 0°C(1atm), 2: 25°C(1atm)
	40004	(P-02)PV filter	0: No 1: Moving average of sampling 2 times 2: Moving average of sampling 4 times 3: Moving average of sampling 8 times 4: Moving average of sampling 16 times 5: Moving average of sampling 32 times
	40005	(P-03) Instantaneous flow rate indication update cycle	0: 25(ms), 1: 50(ms), 2: 100(ms), 3: 200(ms), 4: 500(ms), 5: 1(sec)
	40006	Integrated flow rate reach preset setting upper 4 digits	0000 ~ 9999
	40007	Integrated flow rate reach preset setting lower 4 digits	0000 ~ 9999 (Mantissa portion not including the decimal point)
	40008	(P-10)Event output 1	00: None 10: Instantaneous flow rate upper limit : ON 11: Instantaneous flow rate upper limit : OFF 20: Instantaneous flow rate lower limit : ON 21: Instantaneous flow rate lower limit : OFF 30: Instantaneous flow rate upper/lower limit : ON 31: Instantaneous flow rate upper/lower limit : OFF 40: Integrated flow rate reach : ON 41: Integrated flow rate reach : OFF 50: Integrating pulse : ON 51: Integrating pulse : OFF ※ON: Normal output, OFF: Inverted output
	40009	(P-11)Instantaneous flow rate upper limit preset setting	0000 ~ 9999
	40010	(P-12)Instantaneous flow rate lower limit preset setting	0000 ~ 9999
	40011	(P-13)Dead time	00 ~ 30(sec)
	40012	(P-14)Integrated flow rate reach preset setting upper 4 digits	0000 ~ 9999
	40013	(P-15)Integrated flow rate reach preset setting lower 4 digits	0000 ~ 9999

Holding Registe	40014	(P-20)Event output 2	00: None 10: Instantaneous flow rate upper limit : ON 11: Instantaneous flow rate upper limit : OFF 20: Instantaneous flow rate lower limit : ON 21: Instantaneous flow rate lower limit : OFF 30: Instantaneous flow rate upper/lower limit : ON 31: Instantaneous flow rate upper/lower limit : OFF 40: Integrated flow rate reach : ON 41: Integrated flow rate reach : OFF 50: Integrating pulse : ON 51: Integrating pulse : OFF ※ON: Normal output, OFF: Inverted output
	40015	(P-21)Instantaneous flow rate upper limit preset setting	0000 ~ 9999
	40016	(P-22)Instantaneous flow rate lower limit preset setting	0000 ~ 9999
	40017	(P-23)Dead time	00 ~ 30(sec)
	40018	(P-24)Integrated flow rate reach preset setting upper 4 digits	0000 ~ 9999
	40019	(P-25)Integrated flow rate reach preset setting lower 4 digits	0000 ~ 9999

5. Flow Rate Expression

The maximum full scale flow rate, full scale flow rate, instantaneous flow rate, set flow rate (digital) and set flow rate are expressed by a combination of the significand and flow rate decimal point position [number of decimal places] and flow rate unit.

Note that flow rate decimal point position [number of decimal places] and flow rate unit are used commonly for each flow rate and cannot be changed.

Examples are presented below:

<i>Full scale flow rate [significand]</i>	1000
<i>Flow rate decimal point position [number of decimal places]</i>	1: 1digit
<i>Flow rate unit</i>	0: cc
Full scale flow rate	100.0 (cc)

<i>Full scale flow rate [significand]</i>	1234
<i>Flow rate decimal point position [number of decimal places]</i>	3: 3digit
<i>Flow rate unit</i>	1: L
Instantaneous flow rate	1.234 (L)

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