

6 DIGITAL MICRO-PROCESS FLOW TOTALIZER

with 1~4 ALARMS / ANALOG OUTPUT / RS-485

KFM-C

FEATURES

- High brightness 0.56" LED display: -199999~999999
- Flow unit selectable: Liter / Gal / C.C. / m³
- K factor programmable for pulse output per liter
- N / R / C relay output mode selectable
- 2~4 alarms output programmable (Hi or Lo) / Analog output (15 bit resolution) / RS-485 communication optional (The above option can exist together)
- Reset / Pause count by external control terminal available
- High stability, non-flammable case (PC), high safety
- CE approval



ORDER INFORMATION: KFM-C - Code 1 - Code 2 - Code 3 Code 4 Code 5

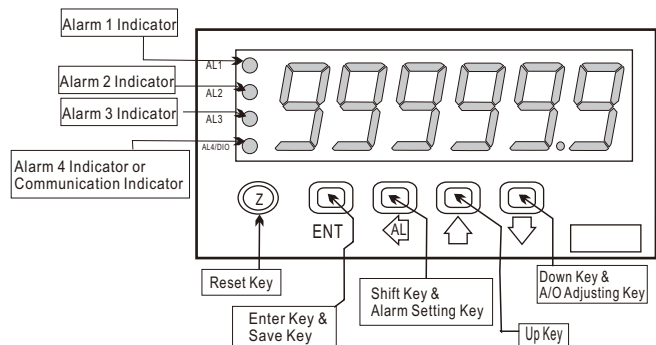
Code 1	Input Signal	Code 1	Input Signal	Code 2	Aux. Power	Code 2	Alarm Output	Code 2	Alarm Output	Code 4	Analog Output	Code 5	RS-485
N5	NPN(5V)	VA	AC 2~60V	A	AC/DC 100/240V	N	None	O1	1 Open Collect	N	None	N	None
N2	NPN(12V)	VB	AC 60~600V	D	AC/DC 22~60V	R1	1 Relay	O2	2 Open Collect	A	4~20mA	Y	Yes
P5	PNP(5V)	VC	Pick-up 50mV~1.5V			R2	2 Relays	O3	3 Open Collect	V	0~10V		
P2	PNP(12V)	VD	Pick-up 500mV~15V			R3	3 Relays	O4	4 Open Collect	O	Option		
CT	Contact	VE	DC 24Vp			R4	4 Relays						
		O	Option										

**1: NPN(5V), PNP(5V) offers excitation power DC5V; NPN(12V), PNP(12V) offers excitation power DC12V for flow sensors using.
 2: Please use PNP/NPN(5V/12V) or DC24Vp for DC pulse input.

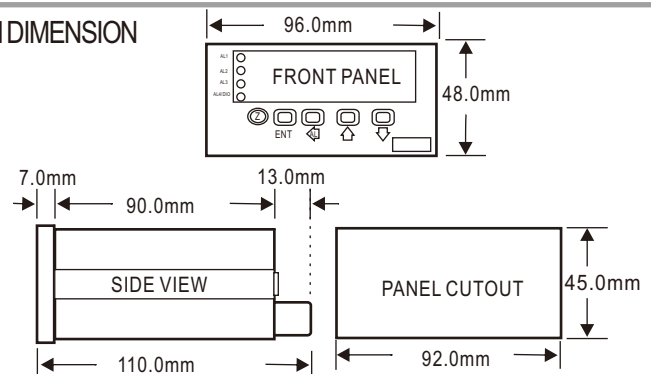
SPECIFICATION

- ◆ Display Screen: #4221mg(0.56S) red LED;
- ◆ Max. Input Frequency: 7KHz
- ◆ Display Range: 0~99999
- ◆ Parameters Setting: Push buttons
- ◆ Back Up Memory: EEPROM
- ◆ Alarm Action: "≥ (Hi) on" or "< (Lo) on"
- ◆ Relay Contact: AC 277V / 7A; DC 30V / 7A
- ◆ Relay Output Mode: N / R / C (depends on 1st alarm setpoint)
- ◆ Alarm Run Time: 1~99 sec
- ◆ Analog Output Resolution: 15 bit
- ◆ Output Response Time: <250 msec (0~90%)
- ◆ Output Capability: Voltage Output: <20mA
Current Output: <10V
- ◆ Communication: RS-485 Modbus RTU mode
- ◆ Baud Rate: 38400 / 19200 / 9600 / 4800 bps
- ◆ Temperature Coefficient: 100ppm / °C (0~60 °C)
- ◆ Operating Temperature: 0~60 °C
- ◆ Operating Humidity: 20~90% RH (non-condensing)
- ◆ Storage Temperature: -10~70 °C
- ◆ Storage Humidity: 20~90% RH (non-condensing)
- ◆ Power Supply: AC/DC 100~240V; AC/DC 22~60V
- ◆ Power Consumption: 8.5VA (all functions output)
- ◆ Surge Test: 1.5KVac / 1min (Input / Power)

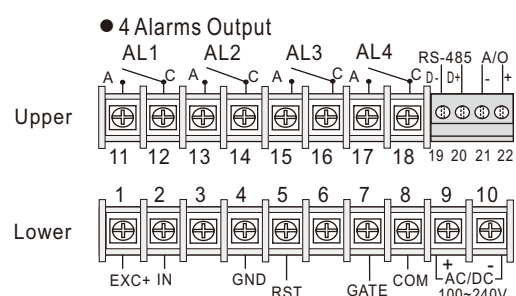
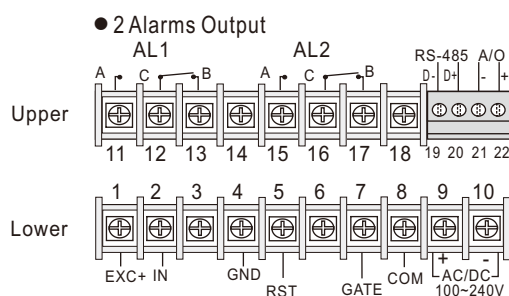
FRONT PANEL & KEY FUNCTIONS



DIMENSION

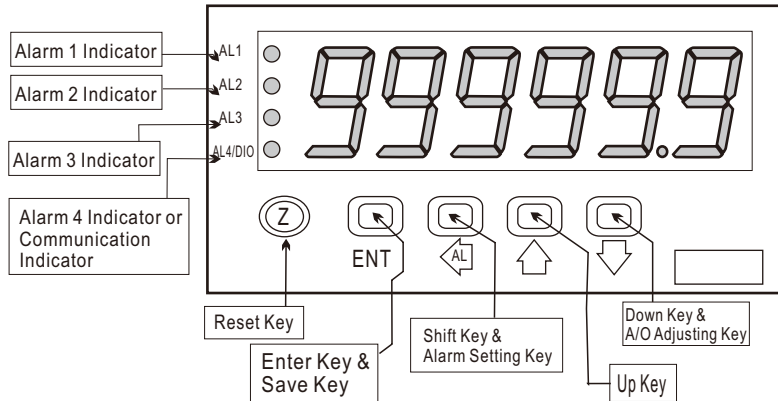


WIRING CONNECTION



* Please understand key indicators & functions at the first operation.

FRONT PANEL & KEY FUNCTIONS



Key Name	Symbol	Descriptions
Reset Key	Ⓩ	1. Press this key to enable the reset function.
Enter Key & Save Key	ENT	1. In the measuring status, press this key can enter to parameter pages. 2. In the parameter setting, press this key can save the value & go to next parameter.
Shift Key & Alarm Setting Key	AL	1. In the measuring status, press this key for 3 sec can enter to alarm setting page (The selecting digit will be flashed) 2. In the parameter setting, press this key can move the cursor left.
Up Key	⬆	1. In the parameter setting, press this key can increase the digits.
Down Key & A/O Adjusting Key	⬇	1. In the measuring status, press this key for 3 sec can enter to analog output adjustment. 2. In the parameter setting, press this key can decrease the digits.

- ** 1. The following block charts are parameters codes, parameter codes & parameters will alternate flashing if the parameters can be modified.
- 2. To modify the parameters, please press ⬆⬆⬆, and press ENT to save the parameter after the modification.
- 3. Please don't forget the new pass code after modification.
- 4. In any pages, press ⬆ & ⬇, or don't press any keys for 2 minutes that will back to measuring status.

GENERAL MODE OPERATING PROCEDURES

Block Charts	Display	Descriptions	Default	
Power ON	10000	Measuring Status	Present value for measurement	
Press: ⬆ for 3 sec	AL 1	Alarm 1 Setpoint (AL1)	Press ⬆⬆⬆ to modify alarm 1 setpoint.	00000
Press: ENT	AL 2	Alarm 2 Setpoint (AL2)	Press ⬆⬆⬆ to modify alarm 2 setpoint.	00000
Press: ENT	AL 3	Alarm 3 Setpoint (AL3)	Press ⬆⬆⬆ to modify alarm 3 setpoint.	00000
Press: ENT	AL 4	Alarm 4 Setpoint (AL4)	Press ⬆⬆⬆ to modify alarm 4 setpoint.	00000
Press: ENT		Analog Output: "ZERO" & "SPAN" Adjustment		
Power ON	10000	Measuring Status	The following steps are only available for analog output.	
Press: ⬆ for 3 sec	APEro	A/O Zero Adjustment (AZero)	Press ⬆ to select adjusting speed rate, press ⬆⬆ to modify the A/O zero. PS: To use this function to adjust the real A/O zero.	00000
Press: ENT	ASPA n	A/O Span Adjustment (ASPA n)	Press ⬆ to select adjusting speed rate, press ⬆⬆ to modify the A/O span. PS: To use this function to adjust the real A/O span.	00000

- Remark: 1. There are 4 parameter groups of "System Setting Group(SYS)", "Alarm Setting Group(roP)", "Analog Output Setting Group (AoP)" & "RS485 Setting Group(doP)" for modification.
2. Press ⬆ to select each group page, and press ENT to enter each group or parameter page for modification or saving the parameters.
3. Some of optional functions of parameter pages still exist, but the functions are disable.

PROGRAMMING MODE OPERATING PROCEDURES

Block Charts	Display	Descriptions	Default	
Power On	10000	Measuring Status	Present value for measurement	
Press: ENT	PCod	Pass Code (P.Cod)	Press ⬆⬆⬆ to enter pass code.	00000
Press: ENT	P.Code Correct	Pass code is correct that will enter to parameter groups. Pass code is wrong that will back to measuring status;		
Press: ⬆	5YS	System Setting Group (SYS)		
Press: ⬆	roP	Alarm Setting Group (roP)		
Press: ⬆	AoP	A/O Setting Group (AoP)		
Press: ⬆	doP	RS485 Setting Group (doP)		

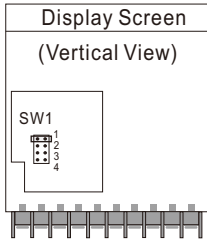
Display	Descriptions	Default
SYS System Setting Page (SYS)	System Setting Group Procedures	
dPc K Factor Decimal Point Setting (dPK) Press $\uparrow \downarrow$ to select K factor decimal point (0, 1, 2, 3, 4). EX: if the value shows "0.00" that means the decimal point is 2 digits.		00000
KF K Factor Setting (KF) Press $\leftarrow \uparrow \downarrow$ to modify K factor (0 ~ 99999)		1000
Unit Flow Unit Setting (Unit) Press $\uparrow \downarrow$ to modify the unit (Liter, Gal, C.C., m ³)		LitEr
dP Decimal Point Setting (dP) Press $\uparrow \downarrow$ to select decimal point (0, 1, 2, 3, 4). EX: if the value shows "0.00" that means the decimal point is 2 digits.		Customers specify
CodE Pass Code Setting (CodE) Press $\leftarrow \uparrow \downarrow$ to modify pass code (0~19999). PS: Please don't forget the new pass code after modification.		00000
LoCK Key Lock Setting (LoCK) Press $\uparrow \downarrow$ to lock the keys, using key lock function only can view the parameters, but cannot modify any values. PS: no (unlock), YES ("ENT" unlock, others lock).		no
indi Indicator 4 Setting (indi) Press $\uparrow \downarrow$ to modify indicator 4 for AL4 or DIO.		Customers specify
Alarm Setting Group Procedures		
roP Alarm Setting Page (roP) The following steps are only available for alarm output.		
ACT1 Alarm 1 (ACT1) Press $\uparrow \downarrow$ to modify alarm value that is \geq (Hi) or $<$ (Lo) for alarm action.	Alarm Action Setting	Hi
ACT2 Alarm 2 (ACT2) PS: 1. There are 4 alarms output optional. 2. This page is exist without alarm output, but the function will be disabled.		
ACT3 Alarm 3 (ACT3)		
ACT4 Alarm 4 (ACT4) 3. Press ENT to save the value and go to the next parameter.		
oP.modE Alarm Mode Setting (oP.ModE) Press $\uparrow \downarrow$ to modify alarm output mode (N, R, C). N: manual; R: return; C: continue		n
oP.tiME Alarm Run Time Setting (oP.tiME) Press $\leftarrow \uparrow \downarrow$ to modify alarm run time (1~99).		0000
A/O Setting Group Procedures		
RoP A/O Setting Page (AoP) The following steps are only available for analog output.		
PoLAr A/O Polarity Setting (PoLAr) Press $\uparrow \downarrow$ to select output for positive or negative pole. PS: Voltage output, NO: positive pole output (0~+10V) YES: positive & negative pole output (-10~+10V)		no
AnLo A/O Low Scale Setting (AnLo) Press $\leftarrow \uparrow \downarrow$ to adjust A/O low scale to correspond to the display value (programmable). EX: A/O is 0~10V, the display is 10.0 to output 0V, this value must be set for 10.0.		000000
AnHi A/O Hi Scale Setting (AnHi) Press $\leftarrow \uparrow \downarrow$ to adjust A/O hi scale to correspond to the display value (programmable). EX: A/O is 0~10V, the display is 90.0 to output 1 0V, this value must be set for 90.0.		999999

Display	Descriptions	Default
doP RS485 Setting Page (doP) The following steps are only available for RS-485.		
Addr Address Setting (Addr) Press $\leftarrow \uparrow \downarrow$ to modify address (0~255).		00000
bAUd Baud Rate Setting (bAUd) Press $\uparrow \downarrow$ to select baud rate (38400/19200/9600/4800).		19200
PARi Parity Setting (PARi) Press $\uparrow \downarrow$ to select parity (n.8.2/n.8.1/even/odd).		n8.2
FrAmE Frame Setting (FrAmE) Press $\uparrow \downarrow$ to select frame type. (NO:Hi \rightarrow Lo, YES:Lo \rightarrow Hi)		no

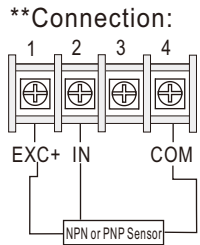
Error Code of Self-Diagnosis	
Display	Descriptions
E-00	EEPROM reading/writing suffers the interference (about 1 million times).
**Please check the wiring connection is correct first, if the problem still exist, please return the meter to the factory.	
**Relay Output Mode Descriptions:	
N: (Manual); the relay is on when the present value reaches the alarm setpoint, the present value is still counted and the relay don't deactivate until manual reset by "reset key" or "external control terminal". Then the present value is reset to zero.	
R: (Return); the relay is on when the present value reaches the alarm setpoint, the present value is counted until the relay output time is terminated. Then the present value is reset to zero.	
C: (Continue); the relay is on when the present value reaches the alarm setpoint, the present value is reset to zero. And the relay is still on until the relay output time is terminated.	

Input Signal Modification

**To Select the pin to modify the input signal for different sensors.
PS: In dual input type, excitation power must be the same.



SW1	JUMPER	DEFINITION
● ●	1	Open: 12V; Close: 5V
● ●	2	Open: 10KHz; Close: 400Hz
● ●	3	Open: NPN; Close: PNP
● ●	4	Open: PNP; Close: NPN



NPN (5V): 0~400 Hz

JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

NPN (5V): 0~10 KHz

JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

NPN (12V): 0~400 Hz

JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

NPN (12V): 0~10 KHz

JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

PNP (5V): 0~400 Hz

JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

PNP (5V): 0~10 KHz

JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

PNP (12V): 0~400 Hz

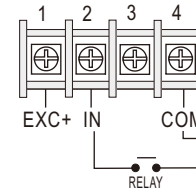
JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

PNP (12V): 0~10 KHz

JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

**Connection:

Relay Contact: NPN 0~400 Hz



JUMPER	SW1/SW2
1	● ●
2	● ●
3	● ●
4	● ●

**For relay input type, please select NPN 0~ 400 Hz.

Modbus RTU Mode Protocol Address Table

Data: 16Bit/32Bit, +/- is 8000~7FFF (-32768~32767), 80000000~7FFFFFFF(-2147483648~2147483647)

Modbus	HEX	Name	Descriptions	Act
40001	0000	ID	Model number identification; KFM-C is "13"	R
40002	0001	STATUS	Current alarm output & external control input status display; range: 0000~00F0 (0~240) (0:OFF, 1:ON) (Bit7:AL4, Bit6: AL3, Bit5: AL2, Bit4: AL1)	R
40003	0002	POLAR	Analog output polarity setting; range: 0000~0001 (0~1) 0:NO, 1:YES	R/W
40004	0003	LOCK	Key lock setting; range: 0000~0001 (0~1) 0:NO, 1:YES	R/W
40005	0004	FRAME	Frame setting; range 0000~0001(0~1) 0:NO, 1:YES	R/W
40006	0005	INDI	Indicator 4 setting; range 0000~0001(0~1) 0:AL4, 1:DIO	R/W
40007	0006	ACT1	Alarm 1 act setting; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40008	0007	ACT2	Alarm 2 act setting; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40009	0008	ACT3	Alarm 3 act setting; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40010	0009	ACT4	Alarm 4 act setting; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40011	000A	UNIT	Flow unit setting; range: 0000~0002 (0~2) 0:Liter, 1:c.c., 2:m ³	R/W
40012	000B	DPK	K value decimal point setting; range: 0000~0005 (0~5) 0:10 ⁰ , 1:10 ⁻¹ ,... 5: 10 ⁻⁵	R/W
40013	000C	PVDP	Present Value decimal point setting; range: 0000~0005 (0~4) 0:10 ⁰ , 1:10 ⁻¹ ,... 5:10 ⁻⁵	R/W
40014	000D	PVOPM	Count mode setting; range 0000~0002(0~2) 0:N, 1:R, 2:C	R/W
40015	000E	BAUD	Baud rate setting; range: 0000~0003 (0~3) 0:38400, 1:19200, 2:9600, 3:4800	R/W
40016	000F	PARI	Parity setting; range: 0000~0003 (0~3), 0:N.8.2., 1:N.8.1., 2:EVEN, 3:ODD	R/W
40017	0010	ADDR	Address setting; range: 0000~00FF (0~255)	R/W
40018	0011	PVOPT	Present value relay output time setting; range: 0000~0063 (0~99)	R/W
40019	0012	AZERO	Analog output zero setting; range: D8F1~270F (-9999~9999)	R/W
40020	0013	ASPAN	Analog output span setting; range: D8F1~270F (-9999~9999)	R/W
40021	0014	CODE	Pass code setting; range: 00000000~000F423F (0~99999) Hi Bit	R/W
40022	0015		Pass code setting; range: 00000000~000F423F (0~99999) Low Bit	R/W
40023	0016	KF	KF Value setting; range: 00000001~000F423F (1~999999) Hi Bit	R/W
40024	0017		KF Value setting; range: 00000001~000F423F (1~999999) Low Bit	R/W
40025	0018	ANLO	Analog output low scale setting; range: FFFCF2C1~000F423F (-199999~999999) Hi Bit	R/W
40026	0019		Analog output low scale setting; range: FFFCF2C1~000F423F (-199999~999999) Low Bit	R/W
40027	001A	ANHI	Analog output hi scale setting; range: FFFCF2C1~000F423F (-199999~999999) Hi Bit	R/W
40028	001B		Analog output hi scale setting; range: FFFCF2C1~000F423F (-199999~999999) Low Bit	R/W
40029	001C	PVAL1	Present value alarm 1 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Hi Bit	R/W
40030	001D		Present value alarm 1 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Low Bit	R/W
40031	001E	PVAL2	Present value alarm 2 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Hi Bit	R/W
40032	001F		Present value alarm 2 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Low Bit	R/W
40033	0020	PVAL3	Present value alarm 3 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Hi Bit	R/W
40034	0021		Present value alarm 3 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Low Bit	R/W
40035	0022	PVAL4	Present value alarm 4 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Hi Bit	R/W

Modbus	HEX	Name	Descriptions	Act
40036	0023		Present value alarm 4 setpoint setting; range: FFFCF2C1~000F423F (-199999~999999) Low Bit	R/W
40037	0024	PV	Current present value setting; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40038	0025		Current present value setting; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W