

EMC4 counter/grating table

Operating instruction

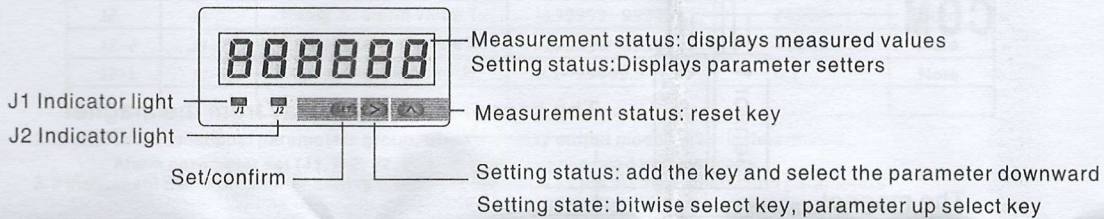
Input signal: switching value, level pulse (low level: -30v + 0.6v; High level :+4V +30V)
 External sensor: photoelectric tube, proximity switch, hall sensor, Angle, line, displacement grating sensor, encoder
 The counter supplies 5V and 24V(load 20mA) dc voltage to the sensor And 30mA dc current
 Counter can set multiplier A, multiplier b, initial value C, decimal dot, Meet measurement accuracy
 Current count value, set count alarm value, set count function parameters The power lost is not lost
 Various relay output modes meet the field control requirements

This product includes addition and subtraction counting and phase recognition counting (raster table) a total of two counts of the counter, the customer is in
 Please set the time strictly according to the instruction.

1. technical indicators of instruments

Working power supply: subject to the logo of the enclosure (non-standard voltage can be customized)
 Digital tube display: 0.56"
 Contact capacity of relay: AC220V/3A (resistive load)
 Contact life of relay: 10 times
 Highest measuring frequency: 30KHz (raster table: 15KHz);
 Display range: -199999 -----999999
 Over-limit display: "EEEEEE"
 Ambient temperature: 0 C +50 C humidity: less than 85%RH
 Overall dimensions: 96 x 48 x 82mm (horizontal type)
 Opening size: 92 x 45 mm
 The counter can be set as multiplying rate A, multiplying rate b, and initial value C, and the display value = impulse input value x A ÷ b + C

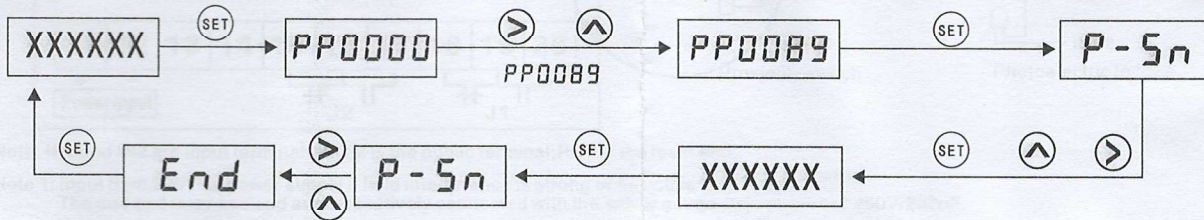
2. Instrument panel



3. Set the meter counting mode, function parameters and alarm parameters

1. Set the meter counting method

1.1 setting method (entry mode: enter password PP0089 after pressing (SET))



Instructions: pp0000(PP0000) prompts the client to enter the password, and p-sn (P-5n) prompts The customer sets the count mode, and the output value of the meter is 00000!, that is, the meter output When factory for adding and subtracting counter (high speed). See counting method number table for details.

1.2 count method number table

Count mode number	Count way	Diagram and description of counter working mode
000001	Addition and subtraction counter High speed: 30 ~30 KHz	<p>In1 and In2 are the input terminals. When the In1 end receives the signal, The counter is added. When the In2 terminal receives the signal, the counter is reduced.</p>
000002	Addition and subtraction counter Low speed: 0 ~30 Hz	<p>In1 and In2 are the input terminals. When In2 and In1 receive phase difference of 90degrees B and A signals in order, the counter is automatically superimposed and recognized, which is shown as adding the count. When In1 and In2 receive the A and B signals with A phasedifference of 90 degrees in order, the counter is automatically recognized as decrement</p>
000003	Phase recognition counter (i.e. grating table)	<p>In1 and In2 are the input terminals. When In2 and In1 receive phase difference of 90degrees B and A signals in order, the counter is automatically superimposed and recognized, which is shown as adding the count. When In1 and In2 receive the A and B signals with A phasedifference of 90 degrees in order, the counter is automatically recognized as decrement</p>

Note: the signal input of this meter is falling edge effective!

Thus, the sensor whose output is a contact is represented by the instantaneous count from breaking to closing. The sensor whose output is the level signal is represented by the instantaneous count of jump from high level to low level (this type of sensor is also divided into two types: NPN and PNP. The sensor with an output of NPN outputs a low level when the sensor is effective, while the one with a PNP output a high level when the sensor is effective!).

Therefore, different sensors have different performance in practical application (NPN type is the effective instantaneous count of the sensor, PNP type is the invalid instantaneous count of the sensor).

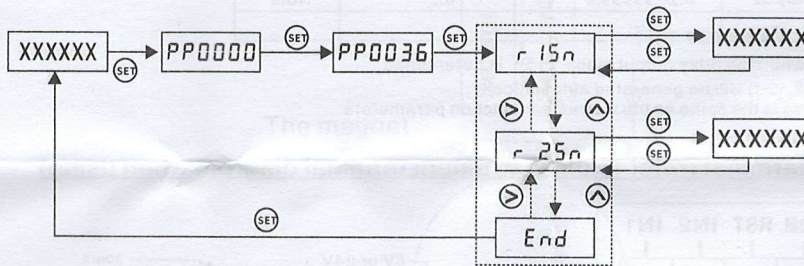
Please pay attention to this in practical application!

2. SET instrument function parameters (enter mode, enter password *PP0036* after pressing **SET**)

2.1 introduction of instrument function parameters

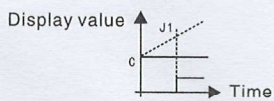
Parameter prompt	Parameter meaning	Options or Settings	The factory value	For note	
<i>r 15n</i>	r1Sn	Output mode of relay J1	1, 2, 3	1	Note 1
<i>r 25n</i>	r2Sn	Output mode of relay J2	1 ~ 11	1	Note 2
<i>R</i>	A	ratio	- 199999 ~ 999999	1	Note 3
<i>b</i>	b	ratio	1 ~ 999999	1	Note 3
<i>C</i>	C	The initial value	- 199999 ~ 999999	0	Note 3
<i>dot</i>	dot	Decimal point position	-----	Last position (not shown)	Note 3
<i>End</i>	End	Exit			

2.2 use block diagram to express the setting process of instrument function parameters



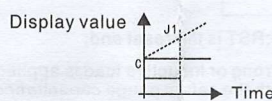
Note: use bitwise and add keys to enter password and set parameters. Use the parameter down select key and the parameter up select key to implement the parameter Fast select.

Note 1. Output mode of relay J1 (*r 15n*): 1, 2, 3



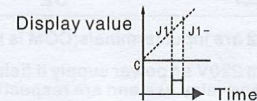
Number: 01

After counting to J1, the relay is sucked, The counter continues to count.



Number: 02

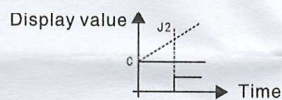
After counting to J1, the relay is released. The counter continues to count.



Number: 03

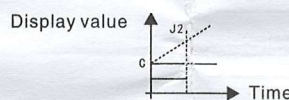
The relay is sucked after counting to J1. The relay is released after counting to j1-2 J1 > j1-2, the relay action is reversed)

Note 2. Output mode of relay J2 (*r 25n*): 1 ~ 11



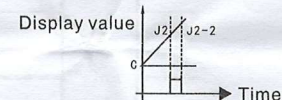
Number: 01

After counting to J2, the relay is sucked, The counter continues to count.



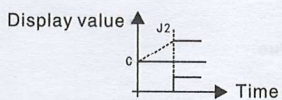
Number: 02

After counting to J2, the relay is released. The counter continues to count.



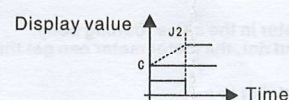
Number: 03

After counting to J2, the relay is sucked, The relay is released after counting to j2-2 (if J2 = j2-2, the relay will not operate; J2 > J2-2, Then the relay action is reversed.)



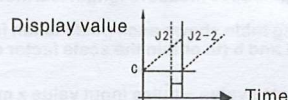
Number: 04

After counting to J2, the relay is sucked, The counter stops counting.



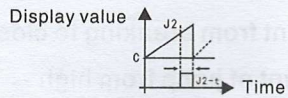
Number: 05

After counting to J2, the relay is released. The counter stops counting.



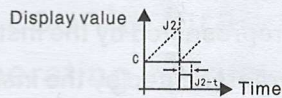
Number: 06

After counting to J2, the relay is sucked, After counting to j2-2, the relay is released. While the counter is reset, (if J2 = j2-2, the relay will not operate; J2 > j2-2 then relay action is reversed.)



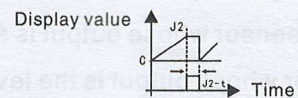
Number: 07

After counting to J2, the relay is sucked,
The counter continues to count;
The relay is released after j2-t delay.
Reset the counter.



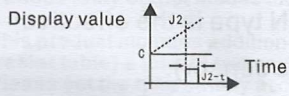
Number: 08

After counting to J2, the relay is sucked,
Reset the counter. Relay delay
J2-t is released.



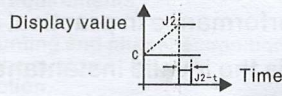
Number: 09

After counting to J2, the relay is sucked,
The counter stops counting;
The relay is released after j2-t delay.
Reset the counter.



Number: 10

After counting to J2, the relay is sucked,
The counter continues to count,
The relay is released after j2-t delay.



Number: 11

After counting to J2, the relay is sucked,
The counter stops counting.
The relay is released after j2-t delay.

Note 3. Relationship between display value and multiplier (R), multiplier (b) and initial value (c)
Display value = pulse input value x multiplier R ÷ multiplier b + initial value c
Set the decimal point (dot) position to ensure the resolution of the display value of the meter.

3. Set alarm parameters of the instrument

(enter the way, press Ⓜ and enter the password PPODD I)

3.1 introduction of instrument alarm parameters

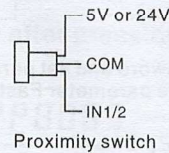
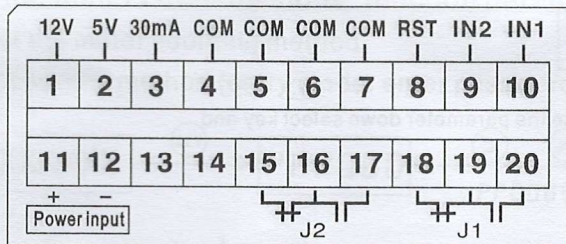
Parameter prompt	Parameter meaning	Options or Settings	The factory value	For note
J1	J1 Relay J1 alarm value 1	-199999~999999	20000	Note
J1-2	J1-2 Relay J1 alarm value 2	-199999~999999	40000	Note
J2	J2 Relay J2 alarm value 1	-199999~999999	20000	Note
J2-2	J2-2 Relay J2 alarm value 2	-199999~999999	40000	Note
J2-t	J2-t Delay value of relay J2	0.1~99999.9	0.1	Note
End	End Exit			

3.2 note: in the functional parameters group, when the relay output mode r x5n is determined,

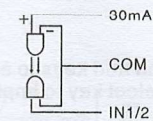
Alarm parameter set (J1, j1-2, J2, j2-2, j2-t) will be generated automatically.

3.3 instrument alarm parameter setting process is the same as the instrument function parameters

4. Wiring diagram of the instrument terminal (refer to the instrument terminal diagram when using)



Proximity switch

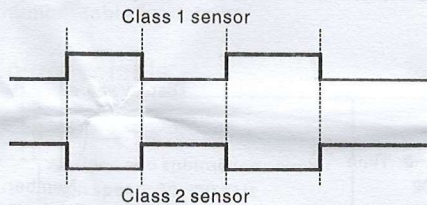


Photoelectric to tube

Note: IN1 and IN2 are input terminals; COM is the public terminal; RST is the reset end;

Note 1: input from 220V ac power supply if field interference is strong or inductive load is applied
The end and relay use end are respectively connected with the safety gauge capacitance of 250V/200nF.

Note 2: There are two types of sensors available in the market Output high level (output is normally closed), the second kind of opposite sensor is effective When output low level (output is normally open, which is NPN type).
The instrument can only be connected with type 2 sensor (NPN type) at factory (if any) For other requirements, please apply for customization).
If the user is using a PNP sensor, it is in use Need to be IN IN and COM right indirectly the resistances of 510 Ω (recommended).



5. Examples of instrument application

(1) a counter used to measure length is a meter

The following table shows each pulse taken from the meter meter in the same rotating body.

By setting A and b (to obtain the scale factor of the counter) and dot, the meter meter can get the required display value.

Counter display value = pulse input value x multiplier A ÷ multiplier b

Pulse per revolution	Circle diameter	The length of a unit pulse	Ratio	Setting method	Display range
1	10.5mm	$L = \pi d = 32.99\text{mm}$	32.99	A=3299, b=100, dot为---..	0-999992mm
1	10.5mm	$L = \pi d = 3.299\text{cm}$	3.299	A=3299, b=1000, dot为---.---	0-999996cm
1	10.5mm	$L = \pi d = 0.033\text{m}$	0.033	A=33, b=1000, dot为---.---	0-999999m

(2) the phase counter (grating table) can be recognized and used with the encoder

Select the appropriate encoder, and preliminarily calculate the length represented by the encoder unit pulse, and then set A, b and decimal dot. Make the meter reader get the required display value. When the error between the display value and the measured value is large, the value A and b can be adjusted to minimize the error.
The table below is for reference only

Number of pulses per revolution of sensor	The length of a unit pulse	Ratio	Setting method	Display range
1	12.3mm	12.3	A=123, b=10, dot为-----	0-999990mm
10	1.23mm	1.23	A=12, b=1000, dot为-----	0-999999mm

(3) the phase counter (used for measuring displacement) can be identified and used in conjunction with hall sensor

The magnet is embedded on the surface of the rotating shaft, and two hall sensors are placed side by side.
The magnet is embedded on the surface of the rotating shaft. When the rotating shaft is clockwise, the magnet passes through the sensor in order of 1 and 2, and the counter is counted down.
If the rotating shaft is counterclockwise, the magnet passes through the sensor in order of 2 and 1, and the counter is counted. Magnets have polarity requirements.
Make one end of the magnet through the sensor, the meter number changes, showing the correct polarity.
At present, our company has the sensor of bidirectional hall switch (including two hall sensors).
Sale with adding and subtracting counter and phase recognition counter.

