CS2-MC   Multifunction A/B Phase Counter   ADTEK

■DESCRIPTION

The CS2-MC provides dual input(A/B phase) and display with high speed, counting, control and communication (Modbus RTU mode) of Pulse from encoder, proximity switch, photo switch or flow meter for counting, length and position control.   There are 3 external control input (DI) in standard and the optional 4 Relay, 1 Analogue, and RS485 port available. The relays are also support N, C, R, E mode and Hi/Lo energized for batch / totalizer and position control.
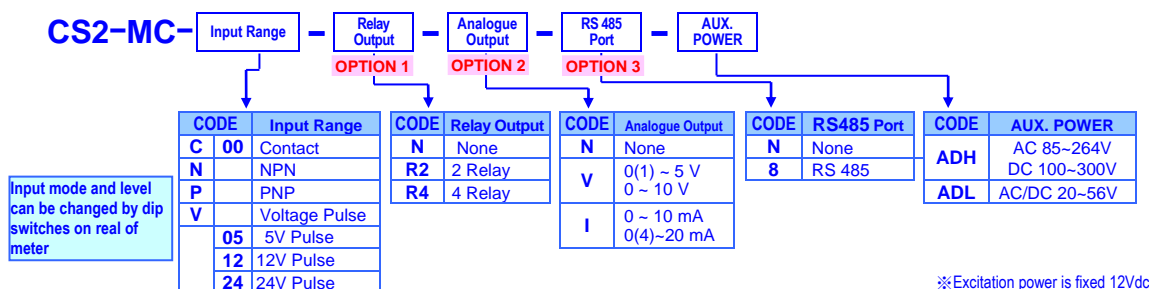
■FEATURE

- Measuring Pulse 0.01Hz~6KHz(A/B phase: 3KHz for each channel); Contact / NPN / PNP / Voltage Pulse can be switch on rear of meter
- Double figures，can be set to display the Totalizer 、Batch、Batch count
- CS2-MC Multifunction Counter design of the two groups pulse signal input, coupled with Proximity switch, Photoelectric sensor, Encoder ... . etc., execution count(plus / less count), location-based, batch and other displays, control, and remote communication capabilities.
- 4 relay can be individual programmed for N/R/C/E/do mode with timer function.
- 3 external control input can be individual programmed for Reset, Gat of totalizer and/or batch
- Analogue Output and RS485(Modbus RTU mode) available in option

■Application

- With the proximity switches, photoelectric switches, encoders ...etc., do the count (plus / less count), length, location, location,,batch etc. displays, control, and remote communication capabilities.

CS2-MC

■ORDERING INFORMATION

CS2-MC- [Input Range] - [Relay Output] - [Analogue Output] - [RS 485 Port] - [AUX. POWER]

OPTION 1   OPTION 2   OPTION 3

Input mode and level can be changed by dip switches on real of meter

CODE		Input Range
C	00	Contact
N		NPN
P		PNP
V		Voltage Pulse
	05	5V Pulse
	12	12V Pulse
	24	24V Pulse

CODE	Relay Output
N	None
R2	2 Relay
R4	4 Relay

CODE	Analogue Output
N	None
V	0(1) ~ 5 V / 0 ~ 10 V
I	0 ~ 10 mA / 0(4)~20 mA

CODE	RS485 Port
N	None
8	RS 485

CODE	AUX. POWER
ADH	AC 85~264V DC 100~300V
ADL	AC/DC 20~56V

※Excitation power is fixed 12Vdc

■TECHNICAL SPECIFICATION

Input

Input Frequency	Input Mode	Input Level
0.01Hz ~ 50 Hz	Mech. Contact	
Up or Down Mode: 0.01Hz ~ 6 kHz A/B Phase Mode: 0.01Hz ~ 3KHz(each)	NPN	High Level: over 2/3 of input level Low Level: under 1/3 of input level
	PNP	
	Voltage Pulse	

Input Mode(NPN, PNP, Contact) & Level(5Vp, 12Vp, 24Vp) changeable by dip switch of rear terminal block.

Input range:
Up or Down Mode: 0.01Hz~6kHz
A/B Phase Mode: 0.01Hz~3kHz(each channel)
⚠ when RS485 communication , limited to 0.01Hz~2kHz(each channel)

Input type: 7 type selectable:
AbP-1:   A/B phase with Quadrature x 1
AbP-2:   A/B phase with Quadrature x 2
AbP-4:   A/B phase with Quadrature x 4
idu: dual individual input
Cnd: Anti-Coincidence Add/Subtract
UP: up counting
doUn: down counting

Trigger mode:
AU-bU: A and B are low level to high level
AU-bd: A is low level to high level and B is high level to low level
Ad-bU: A is high level to low level and B is low level to high level
Ad-bd: A and B are high level to low level

Display & Functions

LED:
Numeric:
 Up screen: 10 digits, 0.28" red high-bright LED
 Down screen: 6 digits, 0.28" green high-bright
Relay output indication: 4 square red LED
RS 485 communication: 1 square orange LED
E.C.I. function indication: 3 square green LED

Up screen selection: Can be set show Totalizer or Batch count
Down screen   Can be set show Batch
Display the multiplier: Cnt.SF set range: 0.10000~9.99999
  Display value=pulse x multiplier(Cnt.SF)
Decimal Point: Settable: 0 / 0.0 / 0.00 / 0.000 / 0.0000 / 0.00000
Over Flow indication: Fixed Re-cycle counting
Default start value fun.: Settable 0~999999

ADTEK

Control Functions(option)

Relay:	4 **relay**
	relay 2 & 3: FORM-C, 5A/230Vac, 10A/115V
	relay 1 & 4: FORM-A, 1A/230Vac, 3A/115V
Energized mode:	N / R / C / E mode or DO mode
N / R / C / E mode:	[rⴗ.ot] Period of Relay on: 0:00.0~9(m):59.9(s)
DO Fun.:	Energized by RS485 command of master

Analogue output(option)

Accuracy:	≤ ± 0.1% of F.S.; 16 bits DA converter
Ripple:	≤± 0.1% of F.S.
Response time:	≤100 m-sec. (10~90% of input)
Isolation:	AC 2.0 KV between input and output
Output range:	Specify either Voltage or Current output in ordering
	Voltage: 0~5V / 0~10V / 1~5V programmable
	Current: 0~10mA / 0~20mA / 4~20mA
Output capability:	Voltage: 0~10V: ≥ 2000Ω;
	Current: 4(0)~20mA: ≤ 500Ω max
Functions:	[AoLS] output range low to versus the value of parameter
	Settable range -199999~999999(Batch) /
	-1999999999~9999999999(Total)
	[AoHS] output range high to versus the value of parameter
	Settable range -199999~999999(Batch) /
	-1999999999~9999999999(Total)
Digital fine adjust:	[AoPro] Settable range : -32768~32767
	[AoSPn] Settable range : -32768~32767

RS 485 Communication(option)

Protocol:	Modbus RTU mode
Baud rate:	1200/2400/4800/9600/19200 programmable
Data bits:	8 bits
Parity:	Even、Odd or none
Stop bits:	1 or 2
Address:	1 ~ 255 programmable
Distance:	1200M max
Terminate resistor:	150Ω.

Power

Power supply:	ADH: AC 85~264V / DC 100~300V
	ADL: AC/DC 20~56V
Excitation supply:	12Vdc,30mA; Excitation power is fixed 12Vdc
Power consumption:	≤ 5.0VA
Back up memory:	EEPROM

Electrical Safety

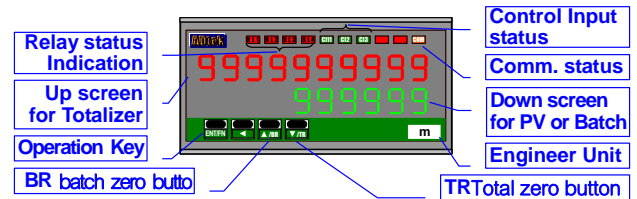|	
Dielectric strength:	AC 2.0 KV for 1 min,, Between Power / Input / Output / Case
Insulation resistance:	≥100M ohm at 500Vdc, Between Power / Input / Output / Case
Isolation:	Between Power / Input / Output
EMC:	EN 55011:2002; EN 61326:2003
Safety (LVD):	EN 61010-1:2001

Environmental

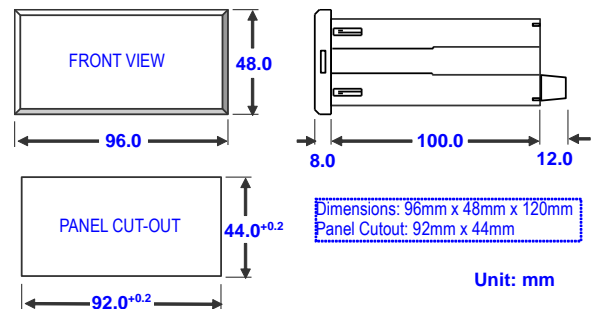|	
Operating temp.:	0~60 ˚C
Operating humidity:	20~95 %RH, Non-condensing
Temp. coefficient:	≤ 100 PPM/˚C
Storage temp.:	-10~70 ˚C
Enclosure:	Front panel: IEC 549 (IP54); Housing: IP20
Vibration test:	1~800Hz, 3.175g²/Hz

Mechanical

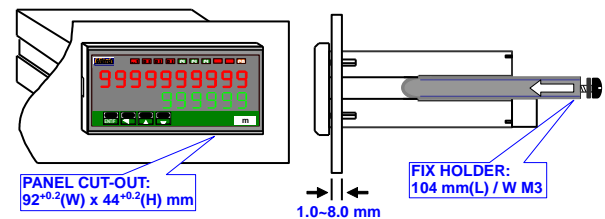|	
Dimensions:	96mm(W) x 48mm(H) x 120mm(D)
Panel cutout:	92mm(W) x 44mm(H)
Case material:	ABS fire-resistance (UL 94V-0)
Mounting:	Panel flush mounting
Terminal block:	Plastic NYLON 66 (UL 94V-0); 10A/300Vac, M2.6, 1.3mm²~3.5mm² (16~12AWG)
weight:	310g

■FRONT PANEL

- Relay status Indication
- Up screen for Totalizer
- Operation Key
- BR batch zero butto
- Control Input status
- Comm. status
- Down screen for PV or Batch
- Engineer Unit
- TR Total zero button

■DIMENSIONS

FRONT VIEW — 48.0 — 96.0
PANEL CUT-OUT — 44.0+0.2 — 92.0+0.2
8.0 — 100.0 — 12.0

Dimensions: 96mm x 48mm x 120mm
Panel Cutout: 92mm x 44mm

Unit: mm

■INSTALLATION

The meter should be installed in a location that does not exceed the

PANEL CUT-OUT: 92+0.2(W) x 44+0.2(H) mm

FIX HOLDER: 104 mm(L) / W M3

1.0~8.0 mm

■CONNECTION DIAGRAM

Relay 1 Relay 2 Relay 3 Relay 4 RS485 port Analogue output

a	c	b	c	a	b	c	a	a	c	A	B	+	−
21	22	23	24	25	26	27	28	29	30	31	32	33	34

Terminal block: 10A/300Vac, M2.6, 1.3~3.3mm² (16~12AWG)

10 Pin DIP SWITCH   ECI1 ECI2 ECI3 COM

11	12	13	14	D-S A 1 5 6 10	D-S B	4	5	6	7	8	9	10

A +IN B +IN +12Vdc COM

Count/Pulse Signal input

E.C.I

FG

ADH AC 85~264V DC 100~300V
ADL AC/DC 20~56V

AUX.Power

D-S	A					B				
	1	2	3	4	5	6	7	8	9	10
NPN	ON					ON				
PNP					ON		ON			
M.C.			ON					ON		ON
5Vp	ON					ON				
12Vp			ON					ON		
24Vp		ON				ON			ON	

D-S on down side is ON
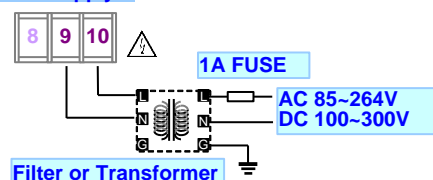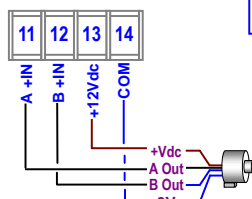
Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker

Power Supply

| 8	9	10

1A FUSE

AC 85~264V DC 100~300V

Filter or Transformer

Sensor input connection

11	12	13	14
A +IN	B +IN	+12Vdc	COM

Please change the dip-switch on rear of meter to match input the mode and level

D-S	A						B			
	1	2	3	4	5	6	7	8	9	10
NPN						ON				
PNP		ON					ON			
M.C.				ON	ON					ON
5V$_P$										
12V$_P$				ON				ON		
24V$_P$				ON				ON		

D-S on down side is ON

⚠ **Connected to 11 (A + IN), 12 (B + IN) pin signal level required toclear the high and low potential,Do not floating (high impedance).**

+Vdc
A Out
B Out
0V

RS485 Communication Port

A B
+ −

29	30	31	32
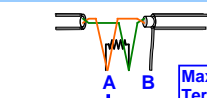
Max.Distance: 1200M
Terminate Resistor
(at latest unit):
120~300ohm/0.25W
(typical: 150ohm)

Analog retransmit output

+ −

31	32	33	34

■ FUNCTION DESCRIPTION

Display & Functions

Display the multiplier:

Display value=pulse x multiplier(*Cnt.SF*)

Shows the multiplier can be set to the range
of 0.100000 - 9.99999with a different decimal point position

Default start value fun.:

Counter reset after the [inPUt GroUP]] in [oFSEt set the startingvalue (for example: 200),Will be starting from the default value (200) number of the startingproduct.

Control Functions

Relay energized mode:

This table provides four relay output options, you can choose the corresponding control volume and mass execution N / R / C / E four control output
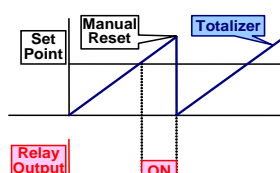
N MODE:
When the condition of **Set Point** is met.
1. the relay will be energized;
2. The totalizer will run as same as usual; until manual reset by front key or by rear terminal, the totalizer will be reseted to "0" and the relay will be de-energized.
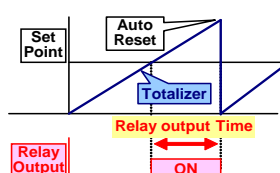
R MODE:
When the condition of **Set Point** is met:
1. The relay will be energized; until the time is over Relay output time (**rY.1**(or 2)**.ot**).
2. The totalizer will run as same as usual; until the time is over Relay output time (**rY.1**(or 2)**.ot**),The totalizer will be reseted to "**0**
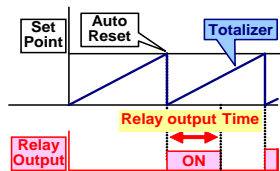
C MODE:
When the condition of **Set Point** is met:
1. The relay will be energized; until the time is over Relay output time (**rY.1**(or 2)**.ot**).
2. The totalizer will be reseted to "**0**", then counts-up from "0".
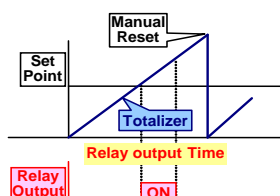
E MODE:
When the count reaches the set value:
1. relay output, until *rY.ot* (Relay output time) to set time has elapsed,the relay will revert to the (de-energized)
2. count the number will continue to plot, until the
▶ button manual reset by the panel
▶ reverted by the ECI terminal short circuitCount value from "0" to re-plot several

DO(Digital Output):

Energized by RS485 command of master. The function was designed to get remote control by RS485 command of master. The typical application is to control a switch in field from computer center as like as digital output(DO) of PLC.

External Control Inputs (ECI):

The three external control inputs are individually programmable to perform specific meter control or display functions. All E.C.I. have been designed in level trigger actions. Please pay attention, the ECI1 or ECI2 input will be disable while UP or Down Key has been set to be "YES".

Input mode: 2 ECI points, Contact Implementation can be set individually and the total volume-related functions
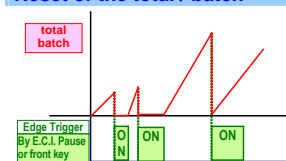
Power or batch power reset:
Total suspended and / or batch several the plot reset of the total and / or batch to "0"

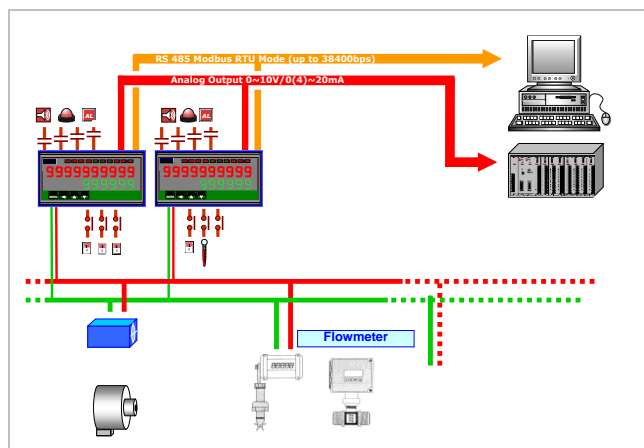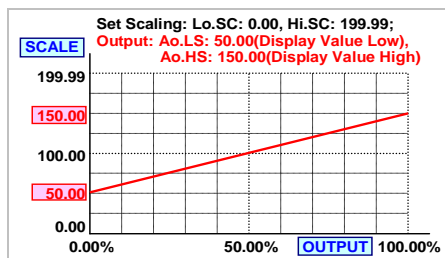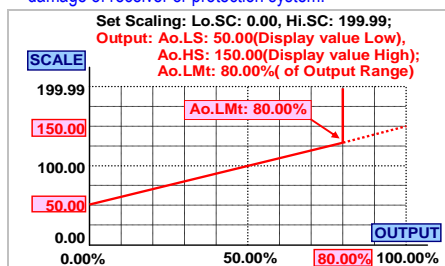| Suspended total / batch	Reset of the total / batch
total batch	total batch
Level Trigger By E.C.I. Pause	Edge Trigger By E.C.I. Pause or front key

Enter the confirm time: This function is mainly to avoid the scene of the disturbance caused by the malfunction surge; Please note, thistime setting is every 16 milliseconds (16msecond) for Units, please refer to the following example

[dEbnC] set to be 5, it means
5 x 16 msecond = 80 msecond

That, contact input must be greater than 60msecond, the instrument Will identify the correct input, otherwise ignore this input.

RS 485 communication(option)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400 bps. It's not only convenience to remote monitoring, display for reading and ECI status, but also for remote control in the case that doesn't have any DIO device in the field.

RS 485 Modbus RTU Mode (up to 38400bps)
Analog Output 0~10V/0(4)~20mA

Flowmeter

Analogue output(option)

Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range:
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable

Fun.:
Ao.HS: To setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS: To setting the Display value Low to versus output range Low(as like as 4mA in 4~20)

CS2-MC

Set Scaling: Lo.SC: 0.00, Hi.SC: 199.99;
Output: Ao.LS: 50.00(Display Value Low),
Ao.HS: 150.00(Display Value High)

The range between Ao.HS and Ao.LS should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

Ao.LMt(Output High Limit): can be set range 0.00~110.00%; User can set the high limit of output to avoid a damage of receiver or protection system. 。


Set Scaling: Lo.SC: 0.00, Hi.SC: 199.99;
Output: Ao.LS: 50.00(Display value Low),
Ao.HS: 150.00(Display value High);
Ao.LMt: 80.00%(of Output Range)

Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

UP mode:
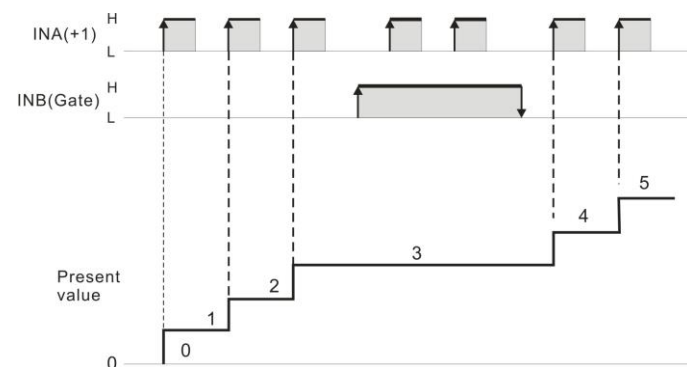
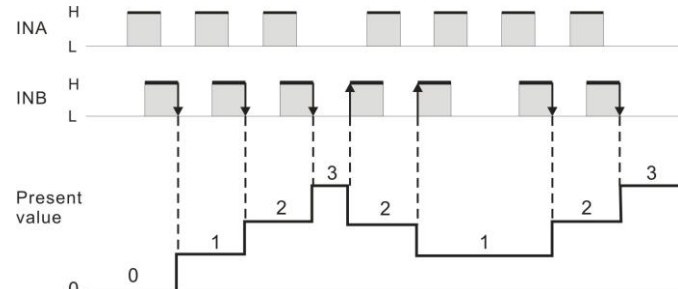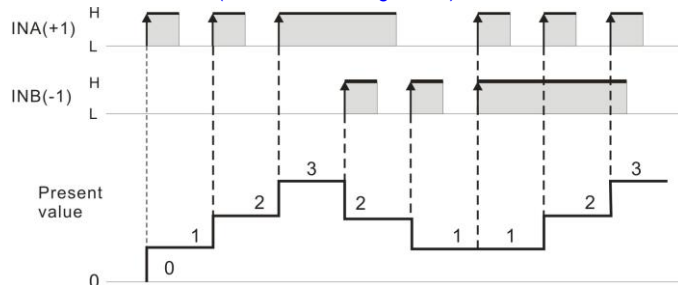DOWM mode:
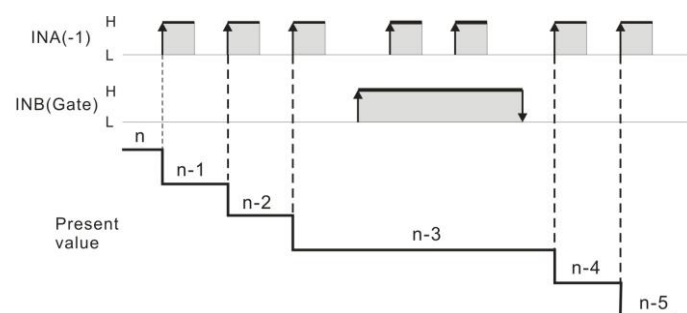
Counting

AB-PHASE:

UP/DOWN   Individual (Individual counting model):

UP/DOWN   Command(Command model)):