CS2-MC Multifunction A/B Phase Counter

■ 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.
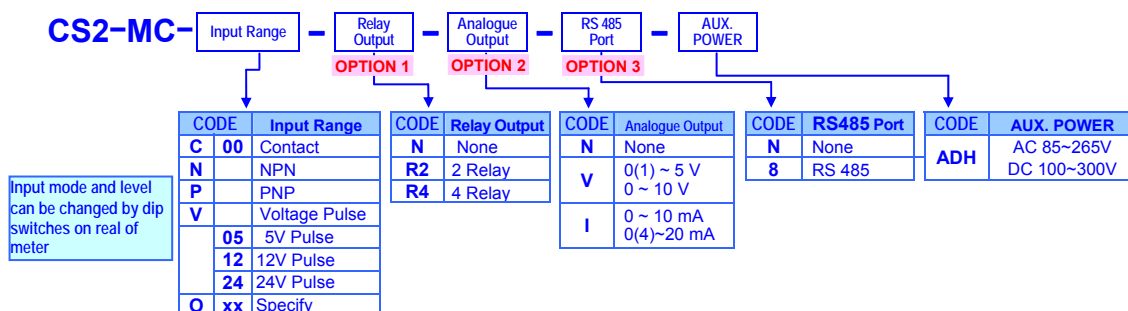
■ FEATURE

- 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.

■ ORDERING INFORMATION

CS2−MC− [Input Range] − [Relay Output] (OPTION 1) − [Analogue Output] (OPTION 2) − [RS 485 Port] (OPTION 3) − [AUX. POWER]

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
O	xx	Specify

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 85~265V DC 100~300V

■ 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
- doYn: 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

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: [rY.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: ≥ 1000Ω;
Current: 4(0)~20mA: ≤ 600Ω 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 (with 1 or 2 stop bit) settable
Address: 1 ~ 255 programmable
Distance: 1200M max
Terminate resistor: 150Ω.

Power

Power supply: AC 85~265V / DC 100~300V
Excitation supply: Excitation supply has to match the input mode / 30mA
Power consumption: ≤ 5.0VA maximum
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
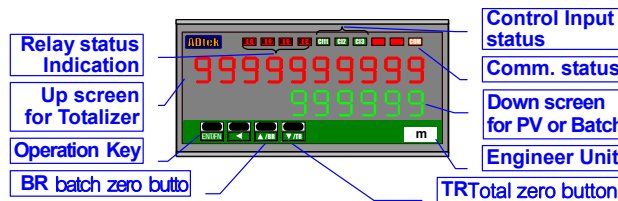**Safety (LVD):** EN 61010-1:2001

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
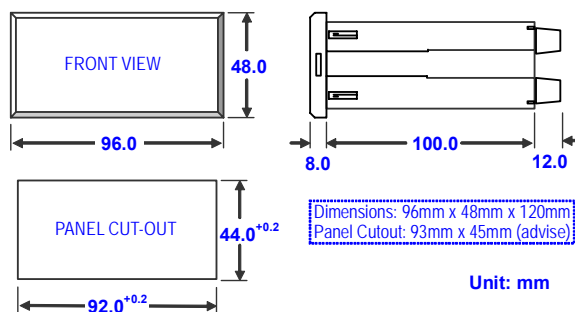**Vibration test:** 1~800Hz, 3.175g^2/Hz

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, 1.3mm^2~3.5mm^2 (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
TRTotal zero button

■DIMENSIONS

FRONT VIEW
48.0
96.0
8.0
100.0
12.0

PANEL CUT-OUT
44.0$^{+0.2}$
92.0$^{+0.2}$

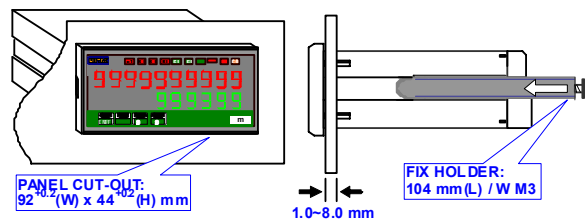Dimensions: 96mm x 48mm x 120mm
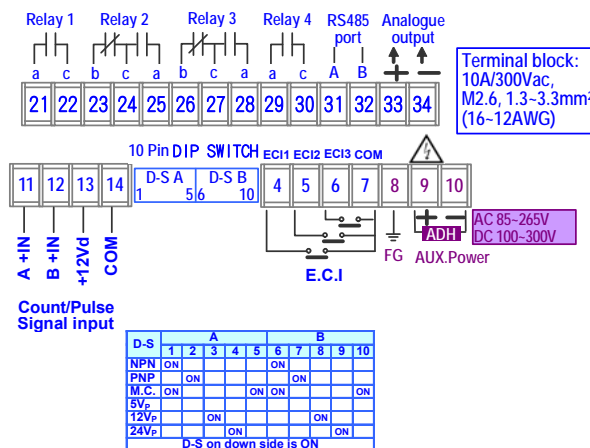Panel Cutout: 93mm x 45mm (advise)

Unit: mm

■INSTALLATION

The meter should be installed in a location that does not exceed the maximum operating temperature and provides good air circulation

PANEL CUT-OUT:
92$^{+0.2}$(W) x 44^{+02}(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, 1.3~3.3mm^2
(16~12AWG)

10 Pin DIP SWITCH   ECI1 ECI2 ECI3 COM

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

A +IN   B +IN   +12Vd   COM

ADH   AC 85~265V DC 100~300V
FG   AUX.Power
E.C.I

Count/Pulse Signal input

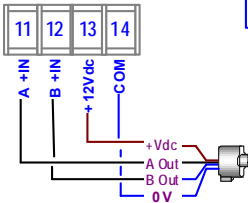| D-S	A						B			
	1	2	3	4	5	6	7	8	9	10
NPN	ON						ON			
PNP		ON						ON		
M.C.			ON	ON					ON	
5V$_P$										
12V$_P$			ON					ON		
24V$_P$				ON					ON	

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 |

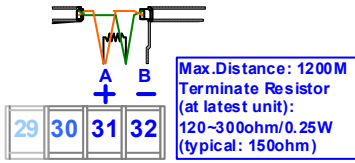1A FUSE
AC 85~265V
DC 100~300V
Filter or Transformer
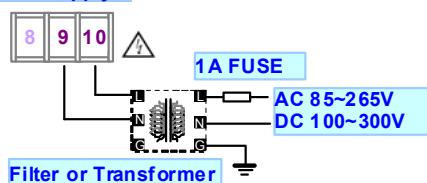
Sensor input connection

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

+Vdc
A Out
B Out
0 V

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						ON				
PNP		ON						ON			
M.C.			ON	ON				ON			ON
5V$_P$					ON						
12V$_P$				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).

RS485 Communication Port

29	30	31	32

A + B −

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

Analog retransmit output

31	32	33	34

+ −
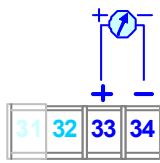
■FUNCTION DESCRIPTION

Display & Functions
Display the multiplier:
Display value=pulse x multiplier($CntSF$)
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 rSlot (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

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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.
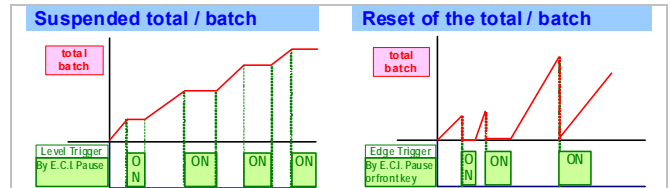
External Control Inputs (ECI):
The three external control inputs are individually programmable to perform specific meter control or display functions. All E.C.I. have been designed in level trigger actions. Please pay attention, the ECI1 or ECI2 input will be disable while UP or Down Key has been set 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
total batch
Level Trigger By E.C.I. Pause
ON ON ON ON

Reset of the total / batch
total batch
Edge Trigger By E.C.I. Pause orfrontkey
ON ON ON

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

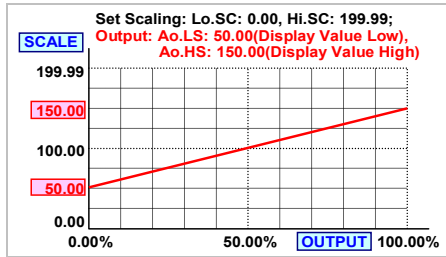9999999999   9999999999

Flowmeter
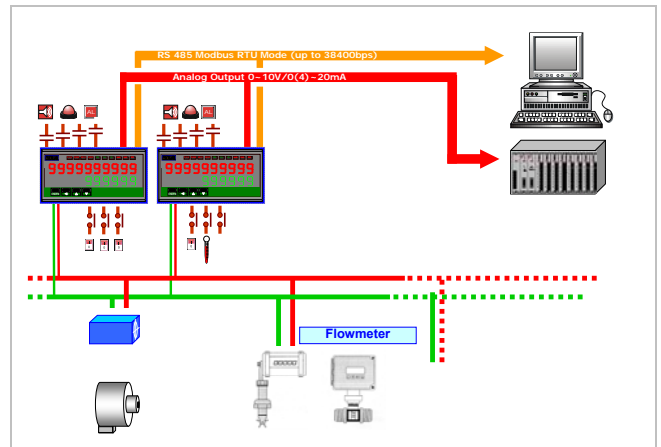
Analogue output(option)
Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.
Output range: Voltage: 0~5V / 0~10V / 1~5V programmable
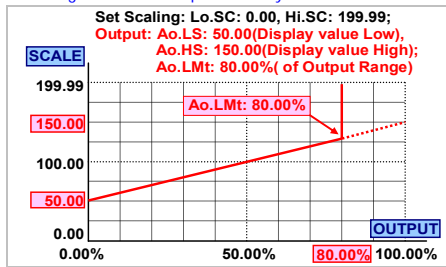Current: 0~10mA / 0~20mA / 4~20mA programmable
Fun.: **Ao.HS**: To setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS: To setting the Display value Low to versus output range Low(as like as 4mA in 4~20)

SCALE

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)

199.99
150.00
100.00
50.00
0.00
0.00%   50.00%   **OUTPUT**   100.00%

*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.*
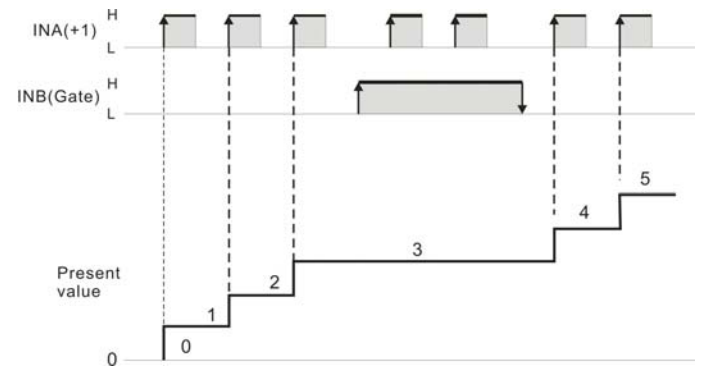
Ao.LMt(**Output High Limit**): can be set range0.00~
110.00%；User can set the high limit of output to avoid a
damage of receiver or protection system.。

SCALE

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)

199.99
150.00
100.00
50.00
0.00

Ao.LMt: 80.00%

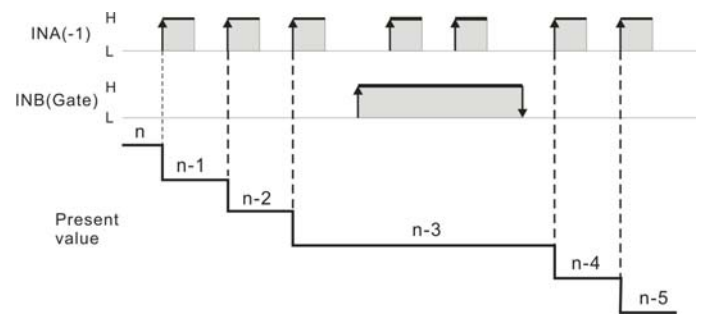0.00%   50.00%   **80.00%**   100.00%   **OUTPUT**

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.
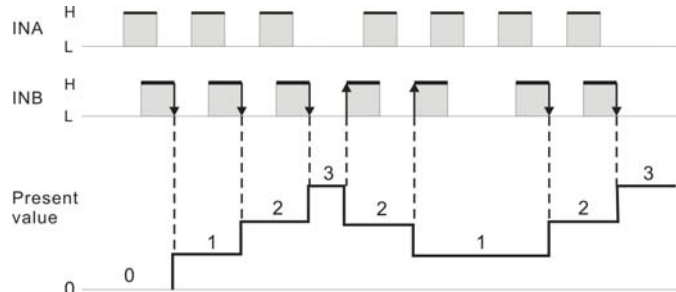
UP mode:

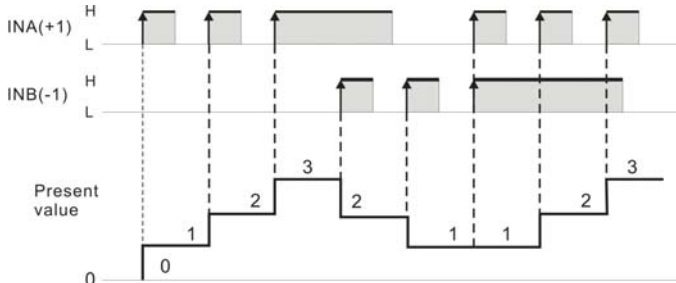INA(+1)   H / L
INB(Gate)   H / L
Present value
5
4
3
2
1
0

DOWM mode:

INA(-1)   H / L
INB(Gate)   H / L
Present value
n
n-1
n-2
n-3
n-4
n-5

Counting
AB-PHASE:

INA   H / L
INB   H / L
Present value
0   1   2   3   2   2   1   2   3
3

UP/DOWN   Individual (Individual counting model):

INA(+1)   H / L
INB(-1)   H / L
Present value
0   1   2   3   2   2   1   1   2   3

UP/DOWN   Command(Command model)):

INA   H / L
INB(+or-)   H / L
Present value
0   1   2   3   2   1   2   3