

DESCRIPTION

The LBCS142-CT provides high speed and multifunction, counting, control and communication (Modbus RTU mode) of Pulse from flow meter or encoder, proximity switch, photo switch for length control.

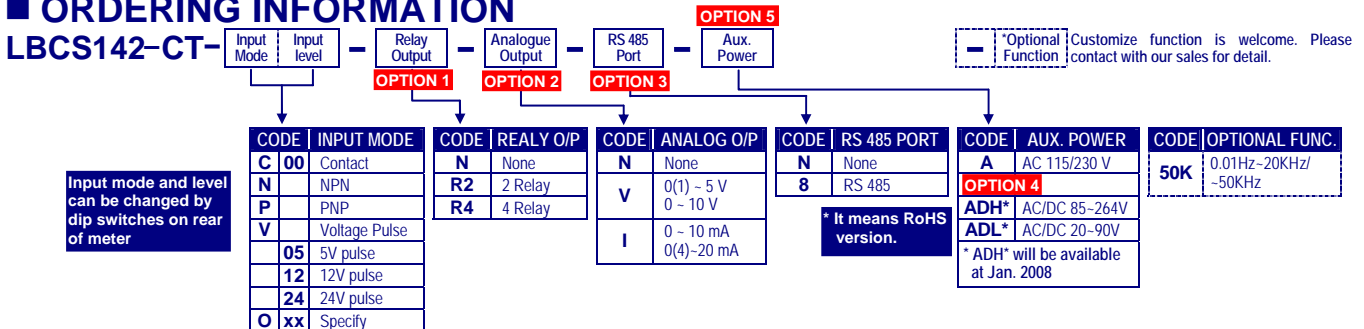
There are 3 external control input (DI) in standard and the optional 4 Relay, 1 Analogue, 1 Pulse and RS485 port available. They are also support N, R, C mode for totalizer control.



FEATURE

- Measuring Pulse 0.01Hz~20KHz(optional: over 20KHz~50KHz); Contact / NPN / PNP / Voltage Pulse can be switch on rear of meter
- 4 banks pre-set for all relay functions relative 4 difference application, and selectable by 3 External Control Inputs(E.C.I.) or front key in optional
- 4 relay can be individual programmed for N/R/C mode and energized time.
- 3 external control input can be individual programmed for Reset, Gat
- Analogue Output and RS485(Modbus RTU mode) available in option
- Comply to CE standard & RoHS

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input		
Input Frequency	Input Mode	Input Level
0.01Hz ~ 50 Hz	Contact	
0.01Hz ~ 50 Hz	NPN	High Level: 8~12V; Low Level: 0.0~4.0 V (with excitation supply 12Vdc)
0.01Hz ~ 20KHz	PNP	
0.01Hz ~ 50KHz (optional)	Voltage Pulse	High Level: over 2/3 of input level Low Level: under 1/3 of input level

> Input Mode & Level changeable by dip switch of rear terminal block.

Input range: 0.01Hz ~ 20KHz (-50KHz in option);
Sampling time: 0.01~20KHz; option: 0.01~50KHz
Response time: ≤100 msec + input frequency

Display functions
LED: Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED
 Relay output indication: 4 square red LED
 RS 485 communication: 1 square orange LED
 E.C.I. function indication: 3 square green LED
 -19999~99999;

Display Range: Settable Range: -19999~+99999 with decimal point
Factor Setting: settable 0 / 0.0 / 0.00 / 0.000 / 0.0000

Decimal Point: Settable: 0 / 0.0 / 0.00 / 0.000 / 0.0000
Over Flow indication: ovFL / Re-cycle counting programmable
Compensation setting: Option: Settable range: -19999~+99999
Digital adjustment: Option: Ct.SPn: Settable range: -19999~+29999

Control Functions(option)
Set-Points: Four set-points
Relay contact: Relay 2 & Relay 3: Dual FORM-C, 5A/230Vac, 10A/115V
 Relay 1 & Relay 4: Dual FORM-A, 1A/230Vac, 3A/115V
 N / R / C Mode
Energized Mode: Period of Relay on: 0:00.0~9(Minutes):59.9(Second)
 DO function: Energized by RS485 command of master.

Banks pre-set: 4 banks pre-set for all relay functions to relative 4 difference scaling, and selectable by 3 External Control Inputs(E.C.I.) Or front key

External Control Inputs(ECI)
Input Mode: 3 ECI points, Contact or open collect input, Level trigger
Functions: Gate / Reset / Offset / Bank selection(option) programmable
Debouncing Time: 5 ~255 x (8m seconds)

Analogue output(option)
Accuracy: ≤± 0.1% of F.S.; 16 bits DA converter
Ripple: ≤± 0.1% of F.S.
Response Time: ≤100 msec. (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 programmable
Output Capability: Voltage: 0~10V; ≥ 1000Ω;
 Current: 4(0)~20mA; ≤ 600Ω max
Functions: Ao.HS(output range high): Settable range: -19999~99999
 Ao.LS(output range Low): Settable range: -19999~99999
 Ao.LMT(output High Limit): 0.00~110.00% of output High
Digital Fine Adjust: Ao.Zro: Settable range: -19999~+99999
 Ao.SPn: Settable range: -19999~+99999

RS 485 Communication(optional)
Protocol: Modbus RTU mode
Baud Rate: 1200/2400/4800/9600/19200/38400 programmable
Data Bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Distance: 1200M
Terminate Resistor: 150Ω at last unit.

Electrical Safety

Dielectric Strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case
Insulation Resistance: $\geq 100M$ ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay / Analogue / RS485 /
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

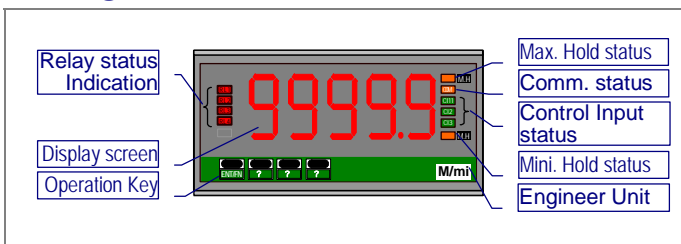
Mechanical

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, 1.3-2.0mm²(16-12AWG)
Weight: 550g / 350g(Aux. Power Code: ADH or ADL)

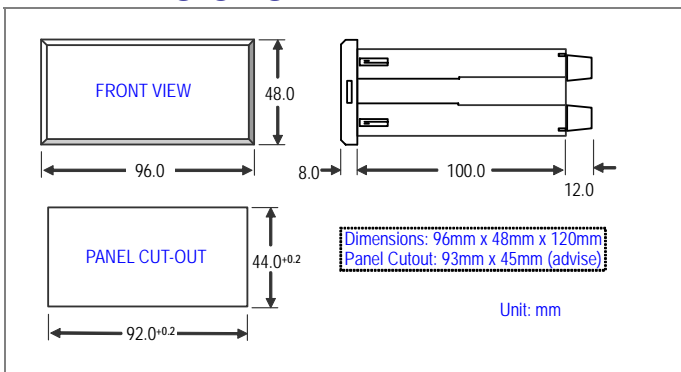
Power

Power Supply: AC115/230V,50/60Hz;
 Optional: AC/DC 85-264V or 20-90V(RoHS version)
Excitation Supply: DC12V, 24V/30mA maximum
Power Consumption: 5.0VA maximum
Back Up Memory: By EEPROM

FRONT PANEL

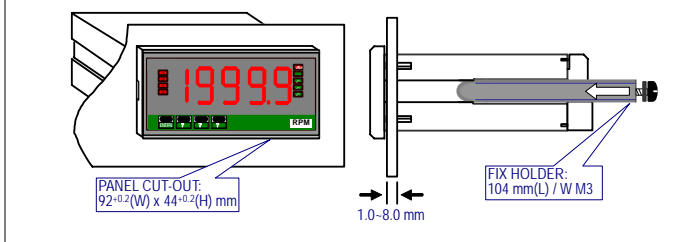


DIMENSIONS

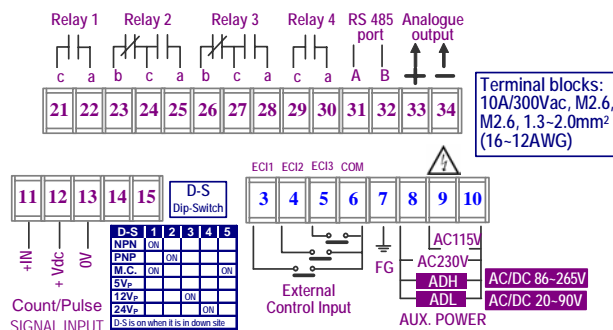


INSTALLATION

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

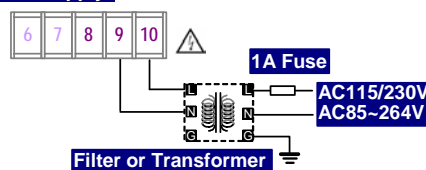


CONNECTION DIAGRAM

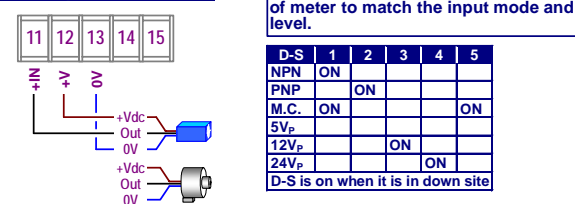


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

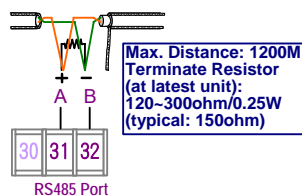
Power Supply



Sensor input connection



RS485 Communication Port



FUNCTION DESCRIPTION

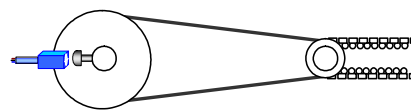
Display & Functions

Factor:

The factor can be set from -19999 to 99999 with decimal point. It also can be set 0.0001 as like as divider.

It is very popular application to install an encoder to measure the running length. The engineers normally know the factor is x length/pulse. It just sets the x into the function to show the length on meter.

An application, User installs the proximity switch to detect the RPM of left wheel, and want to show the running length of right wheel. It's easy to set the factor to do it.



Digital adjustment(option):

Sometimes, the counter will display an error due to the structure of machine or some reason. In the case, user can set the digital adjustment to compensate the value.

Users can get Fine Adjustment for Span of counting by front key of the meter, and "Just Key In" the value which user want to show the number.

The adjustment can be clear in function [C.S.C. L. r] .

Offset preset(Option):

CS2-CT can set a value(ex. 200) in [oFSEt] of [inPUt GroUP] to control the start counting value by external control input(E.C.I.) that has been set [oFSEt] .

- The counter will re-count from "0", when the E.C.I is open.
- The counter will re-count from "the value(200)", when the E.C.I is close

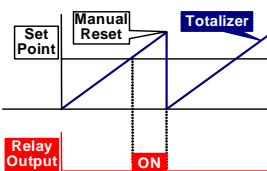
Over flow indication:

The screen can be programmable [ovFL] or [rCYCL] in [oFLMd] . [ovFL] that will be stop to count and show [ovFL], when it is overflow. [rCYCL] that will be re-counting from "0" when it overflow.

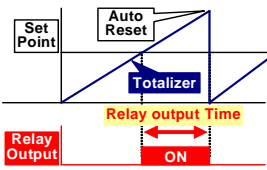
Control Functions(option)

Relay energized mode: N / R / C Mode programmable

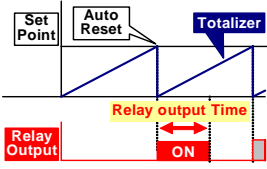
The 3 mode are very useful idea to control the totalizer, batch and batch counter. The relay energized condition is according to not only energized level, but also time and reset for totalizer, batch and batch counter.



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(2).ot] (Relay1(2) output time).
2. The totalizer will run as same as usual; until the time is over Relay output time [rY.1(2).ot] (Relay1(2) output time), The totalizer will be reset 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.ot] or [rY.2.ot].
2. The totalizer will be reset to "0", then counts-up from "0".

DO function:

The relay will be 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".

Gate function:

When the ECI close, the totalizer will stop to accumulate and keep the value until the ECI open.

Reset function:

When the ECI close, the totalizer will reset to "0", and start to count until the ECI open.

Banks selection function(option):

There are extra 3 banks can be selected by E.C.I. E.C.I.1 close means bank 1 has been selected. E.C.I.2 close means bank 2 has been selected. E.C.I.3 close means bank 3 has been selected. E.C.I. all open means bank 0 has been selected.

Debouncing time:

The function is for avoiding noise signal to into the meter. And The basic period is 8m seconds. It means you set the number that has to multiple 8m seconds.

For example:

[dEbNC] set to be 5, it means 5 x 8m seconds = 40m seconds

Analogue output(option)

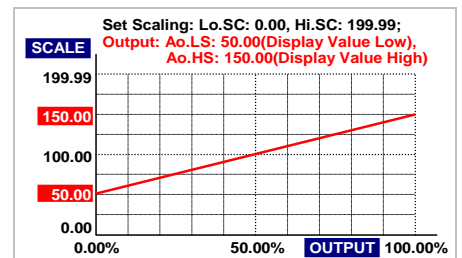
Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range:

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

Functions:

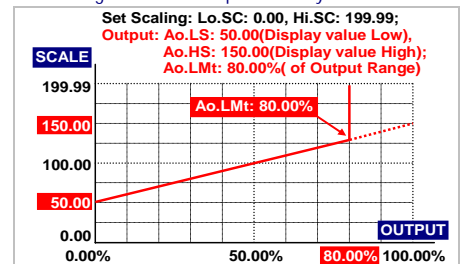
Ao.HS(output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS(output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



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.LM(output High Limit): 0.00~110.00% of output High

User can set the high limit of output to avoid a damage of receiver or protection system.



Fine zero & span adjustment:

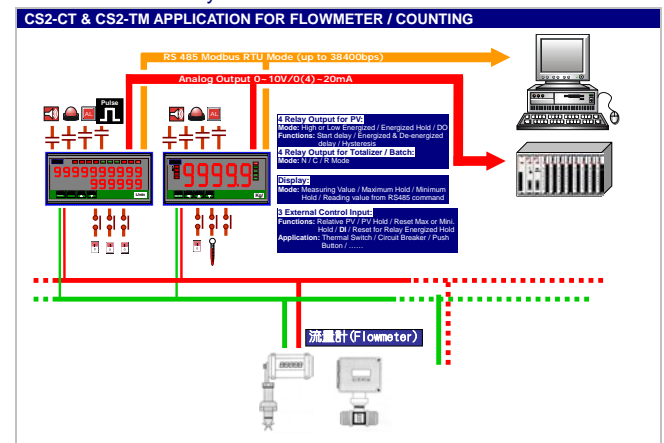
Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the meter the output.

[Ao.Zro] : Fine Zero Adjustment for Analog Output; Settable range: -38011~27524;

[Ao.Spn] : Fine Span Adjustment for Analog Output; Settable range: -38011~27524;

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.



Optional Function

Customize function with quantities is welcome. Please contact with our sales for detail. The appendix code of optional function will be add behind the code of auxiliary power as like as xxx-A-3BK.

■ BANK FUNCTION(Suffix-3BK)

- The function is for CS2 to control difference process with a same meter.
- For example; A pressure testing equipment; it has to measure multi-range with difference pressure transducers. The meter can be pre-set 4 groups parameter to show difference scale and relay energized in difference set-points. The operator just selects the bank number (bank1) to meet the process (product A). To make easier operating and to avoid mistake in process.
- The bank function is available in CS2-CT (optional) too. It's useful to control as like as filling machine, Air flow measurement with difference sensor.
- 4 banks pre-set for all relay functions relative 4 difference scaling, decimal point, and select by 3 External Control Inputs(E.C.I.) or front key.

■ Example:

Product A: Flow meter: 1.0000L/sec;
Output: 4~20mA Set-Point: 2.0000L

Product B: Flow meter: 5.000L/sec;
Output: 4~20mA Set-Point: 6.000L

Setting:

BANK1: **dp**:0.0000 **rY1.Md**: totL.C **rY1.SP**: 2.0000
rY1.rd: 0(M).00.5(S)

BANK2: **dp**:0.000 **rY1.Md**: totL.C **rY1.SP**: 6.0000
rY1.rd: 0(M).01.0(S)

ECI.1: Bank.1 **ECI.2**: Bank.2;

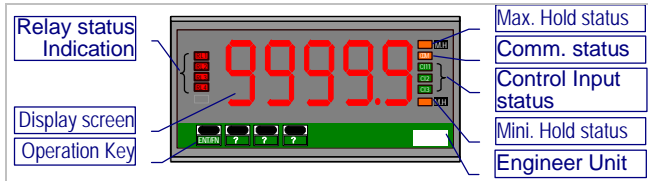
connect a selector (or DO of PLC) to ECI1 and ECI2

- The order want to produce **Product A**, to switch selector to A(Label **A** on panel), and then ECI.1 close, the square green LED bright. The meter will work base on the setting of bank1 and relay1 output on 2.0000.
- The second order want to produce **Product B**, to switch selector to B(Label **B** on panel), and then ECI.2 close, the square green LED bright. The meter will work base on the setting of bank2 and relay1 output on 6.000.
- Only 1 Bank can be selected. The priority is Bank1 > Bank2 > Bank3, if it is double selection.

■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input 120%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input -120%)	-ouFL		(Please check the input signal)
EEP / FAiL : EEPROM occurs error	EEP	FAiL	(Please send back to manufactory for repaired)
Ai.C.nG / Pu : Calibrating Input Signal do not process	Ai.C.nG	Pu	(Please process Calibrating Input Signal)
Ai.C. / FAiL : Calibrating Input Signal error	Ai.C.	FAiL	(Please check Calibrating Input Signal)
Ro.C.nG / Pu : Calibrating Output Signal do not process	Ro.C.nG	Pu	(Please process Calibrating Output Signal)
Ai.C. / FAiL : Calibrating Output Signal error	Ai.C.	FAiL	(Please check Calibrating Output Signal)

FRONT PANEL:



Numeric Screens

0.8"(20.0mm) red high-brightness LED for 5 digital present value.

I/O Status Indication

Relay Energized: 4 square red LED

- RL1** display when Relay 1 energized;
- RL2** display when Relay 2 energized;
- RL3** display when Relay 3 energized;
- RL4** display when Relay 4 energized;

External Control Input Energized: 3 square green LED

- ECI1** display when E.C.I. 1 close(dry contact)
- ECI2** display when E.C.I. 2 close(dry contact)
- ECI3** display when E.C.I. 3 close(dry contact)

RS485 Communication: 1 square orange LED

COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.

Max/Mini Hold indication: 2 square orange LEDs

MH displayed: When the display function has been selected in Maximum or Minimum Hold function.

Stickers:

Each meter has a sticker what are functions and engineer label enclosure.

Relay energized mode: **HH Hi Lo LL DO**

E.C.I. functions mode:

- PV.H** PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)
- M.RS** M.RS(Maximum or Minimum Reset) /
- R.RS** R.RS(Reset fo Relay Latch)

Engineer Label: over 80 types.

Operating Key: 4 keys for **ENTER** Enter(Function) / **ESC** Shift(Escape) / **UP** Up key / **DOWN** Down key

	Setting Status	Function Index
UP Up key	Increase number	Go back to previous function index
DOWN Down key	Decrease number	Go to next function index
ESC Shift key	Shift the setting position	Go back to this function index, and abort the setting
ENTER Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

Pass Word: Settable range:0000~9999;

User has to key in the right pass word so that get into **[Programming Level]**. Otherwise, the meter will go back to measuring page. If user forget the password, please contact with the service window.

Function Lock: There are 4 levels programmable.

- **None:** no lock all.
- **User Level:** User Level lock. User can get into User Level for checking but setting.
- **Programming Level:** Programming level lock. User can get into programming level for checking but setting.
- **ALL:** All lock. User can get into all level for checking but setting.

Front Key Function

- The **UP** Key can be set to be the same function as the setting of ECI1.
Ex. The ECI1 set to be **GRAB** and the function **[E I=UP]** set to be **YES** in **[ECI Group]**. When user presses **UP** Key, the PV will hold as like as ECI1 close.
 - The **DOWN** Key can be set to be the same function as the setting of ECI2.
Ex. The ECI2 set to be **rESEt** and the function **[E2=dn]** set to be **YES** in **[ECI GroUP]**. When user presses **DOWN** Key, the PV will show relative value as like as ECI2 close.
- If the front key function has been set, the terminal input for ECI will be disabling.