Digital Large Display Meter Model 4013 (BCD input)

I-01574

Please take care that this instruction manual is certainly delivered to the person in charge of operating it. For safety and proper use of this product, please observe the following caution and also read the instruction manuals to follow before the initial operation.

M WARNING

To avoid an electrical shock, preserve followings.

- Turn the power off when wiring.
- Do not touch terminals when turning the power on.
- Locate away from the wet place.

A CAUTION

Do not install the product in the following conditions.

- Where it is exposed to direct sunlight.
- Where ambient temperature or humidity is high.
- Where it is exposed to excessive noise or static electricity.
- Where there is constant vibration or shock.

Check at Delivery

• When the product is delivered to you, please check that its specifications conform to your requirement and that there is no damage in transit. This product is carefully inspected before delivery from factory under our strict quality control program, but if you find any defect or inconvenience, please inform us of the model name, serial number etc. of the product.

Cautions for Use

- •No power on-off switch is provided on the model 4013 so it immediately starts to work when connected to the power source. The rated data of this instrument is, however, defined with the pre-heating for 15 minutes or more.
- •When the product is installed in the cabinet, perform the appropriate heat radiation to keep less than 50°C in it.

■Standard Specifications

Model Name 4013 - □ - □ - □ - □ - □ - □ - □

[1]Input signal

No.	Input		
1	TTL level		
2	12V Voltage		
3	24V Voltage		
4	12V Open collector		
5	24V Open collector		

[2] Power Supply

No.	Power
3	AC 100~120V
5	AC 200~240V
9	DC 24V

[3] Mounting

I	No.	Туре			
	51	Wall-mount			
	52	Hanging-mount			
	53	Sticking-mount			

[4]Display

No.	Color
(Blank	Red LED
)	
G	Green LED

[5] Logic Switching

No.	Signal
(Blank)	Standard
A01	Polarity (POL)
A02	Latch (LATCH)

Switch POL or LATCH oppositely against standard.

■ General Specifications

Display : 5 digit red or green LED (character height 56mm) with zero-suppress function.

Numbers : BCD code parallel input (0,1,2,3,4,5,6,7,8,9,A,b,C,d,E,F)Polarity (POL) : (-) sign lit $(5 \times 9 \text{mm})$, L at positive logic, H at negative logic

Decimal Point (DP) : Lit at L level

P/N logic switching : Logic switching for polarity and numbers. H at positive logic, L at negative logic.

Latch (LATCH) : Hold read out (numbers, polarity and decimal point) at L level

Synchronization (SYNC) : Display is updated at the rising point of the remote synchronization signal.

Lamp test (LT) : Blink all segments from 10⁰ to 10⁴ digit, polarity and decimal point by short-circuiting DATA and

COM with a non-voltage contact.

Insulation Resistance : Input terminals – Case DC500V $100M\Omega$ or more

Power terminals - Case $DC500V 100M \Omega$ or more Power terminals - Input terminals $DC500V 100M \Omega$ or more

Withstanding Voltage : Input terminals – Case AC1500V for 1 minute

Power terminals

- Case AC1500V for 1 minute
Power terminals

- Input terminals AC1500V for 1 minute

(DC power supply AC 500V for 1 minute)

Power Supply : AC 100~120V 50/60 Hz

AC 200~240V 50/60 Hz

DC 24V

Allowable supply voltage : AC 85~132V 50/60 Hz

AC 170~250V 50/60 Hz

DC 20~30V

Power Consumption : Approx. 10VA at AC 100V. Approx. 13VA at AC 200V. Approx. 200mA at DC 24V.

Accessory : Connector by DDK (57-30360)

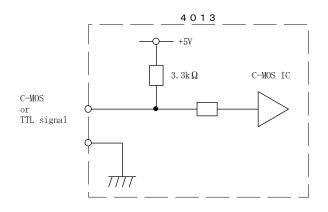
Protection : IP44 (Wall-mount and Hanging-mount)

IP65 (Sticking-mount with water-proof works)

■Input level

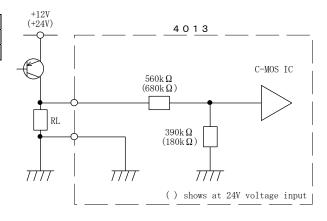
• TTL level input (Fin=1.0) "H"= 3.5~5V

"L"= $0 \sim 1.5$ V



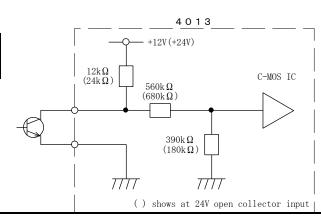
Voltage input

12V voltage	24V voltage
"H"= 8.4~12V	"H"= 16.8~24V
"L"= 0~1.9V	"L"= 0~3.8V



• Open collector (OC) input

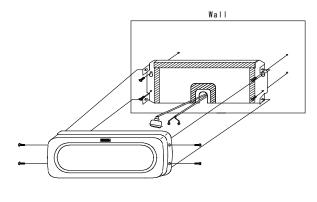
12V OC	24V OC
"H"= 8.5~12V	"H"= 16.8~24V
"L"= 0~1.9V	"L"= 0~3.8V



■Mounting

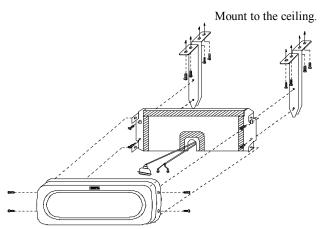
• Wall-mount (model code-51)

Cut the case bottom or side to pull out lead wires.



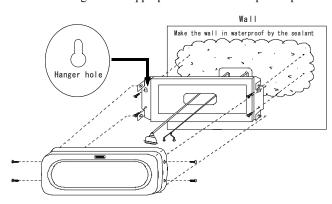
• Hanging-mount (model code-52)

Fix lifting brackets to the ceiling by screws. Fixing points should be locating 40mm away from the wall to keep maintenance space.



• Sticking-mount (model code-53)

Use coaching bond or appropriate sealant to keep IP65 protection.

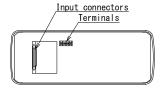


⚠ CAUTION

• Hanger hole of the mounting panel should be upright position as shown in the drawing.

■ Each function

• Location of terminals and input connectors



• Decimal point position



■Terminal Arrangement and Explanation

⚠ CAUTION

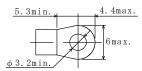
- Do not use the meter with wrong wiring as it may cause breakage of meter or equipment connected.
- To avoid an electric shock;
 - Turn off the power when the wiring work is done.
 - Do not do the wiring work in the humid environment or with the wet hands.
 - Do not touch the power source terminals while the meter is powered.

• Terminal Arrangement

No.	P2(+)	P1(-)
	1	2
Function	Supply	voltage

Terminal screws: M3

Fastening torque: 0.46~0.62N·m Crimp terminal: As shown on the right.



• Power Supply [P1(-), P2(+)]

The power source voltage to be supplied to the instrument is specified on the terminal plate at delivery from factory.

O AC power source (3)...... Use the instrument within the range AC85~132V.

O AC power source (5)...... Use the instrument within the range AC170~250V.

O DC power source (9)...... Use the instrument within the range DC20~30V.

Connect +24 of DC power source to P2(+), and 0V side to P1(-).

A CAUTION

• Do not use the product with the voltage out of the rated range as it may cause breakage of the products.

■ Arrangement of the input connector

Functi			Fu	ınction		
	1	1	19	1		
× 10 ⁰	2	2	20	2	× 10 ¹	
× 10	4	3	21	4	^ 10	
	8	4	22	8		
	1	5	23	1		
× 10 ²	2	6	24	2	× 10 ³	
× 10	4	7	25	4	^ 10	
	8	8	26	8		
DATA COM	9	27	DATA COM			
	1	10	28			
× 10 ⁴	2	11	29		NC	
× 10	4	12	30			
	8	13	31	DP1		
SYNC		14	32		DP2	
LATCH		15	33		DP3	
POL		16	34		DP4	
LT	17	35	DATA COM			
P/N		18	36	DATA COM		

■Function Table

• Data function

Ne	Negative logic (P/N="L")			Positive logic (P/N="H")				LT	LATCH	Numbara
8	4	2	1	8	4	2	1	LI	LAICH	Numbers
"H"	"H"	"H"	"H"	"L"	"L"	"L"	"L"	"H"	"H"	0
"H"	"H"	"H"	"L"	"L"	"L"	"L"	"H"	"H"	"H"	
"H"	"H"	"L"	"H"	"L"	"L"	"H"	"L"	"H"	"H"	υ
"H"	"H"	"L"	"L"	"L"	"L"	"H"	"H"	"H"	"H"	3
"H"	"L"	"H"	"H"	"L"	"H"	"L"	"L"	"H"	"H"	£
"H"	"L"	"H"	"L"	"L"	"H"	"L"	"H"	"H"	"H"	5
"H"	"L"	"L"	"H"	"L"	"H"	"H"	"L"	"H"	"H"	5
"H"	"L"	"L"	"L"	"L"	"H"	"H"	"H"	"H"	"H"	١-
"L"	"H"	"H"	"H"	"H"	"L"	"L"	"L"	"H"	"H"	8
"L"	"H"	"H"	"L"	"H"	"L"	"L"	"H"	"H"	"H"	9
"L"	"H"	"L"	"H"	"H"	"L"	"H"	"L"	"H"	"H"	8
"L"	"H"	"L"	"L"	"H"	"L"	"H"	"H"	"H"	"H"	م
"L"	"L"	"H"	"H"	"H"	"H"	"L"	"L"	"H"	"H"	u
"L"	"L"	"H"	"L"	"H"	"H"	"L"	"H"	"H"	"H"	ъ
"L"	"L"	"L"	"H"	"H"	"H"	"H"	"L"	"H"	"H"	т
"L"	"L"	"L"	"L"	"H"	"H"	"H"	"H"	"H"	"H"	т
*	*	×	*	*	*	*	*	"L"	"H"	Lighting
*	*	*	*	*	*	*	*	"H"	"L"	Hold

X: means H or L level

• Polarity function

Negative logic (P/N="L")	Positive logic (P/N="H")	LT	LATCH	Minus sign
"H"	"L"	"H"	"H"	Lighting
"L"	"H"	"H"	"H"	Shut-off
*	*	"H"	"L"	Hold
*	*	"L"	*	Lighting

X: means H or L level

■ Explanation of function

• Data input $(10^0 \sim 10^4)$

Input numeric data from 10⁰ to 10⁴ by parallel BCD code.

$$\begin{array}{c} \text{Pin 1 "1"} \\ \text{Pin 2 "2"} \\ \text{Pin 3 "4"} \\ \text{Pin 4 "8"} \end{array} \right\} \times 10^0 \, \text{digit} \qquad \begin{array}{c} \text{Pin 19 "1"} \\ \text{Pin 20 "2"} \\ \text{Pin 21 "4"} \\ \text{Pin 22 "8"} \end{array} \right\} \times 10^1 \, \text{digit} \\ \begin{array}{c} \text{Pin 5 "1"} \\ \text{Pin 6 "2"} \\ \text{Pin 7 "4"} \\ \text{Pin 8 "8"} \end{array} \right\} \times 10^2 \, \text{digit} \qquad \begin{array}{c} \text{Pin 23 "1"} \\ \text{Pin 24 "2"} \\ \text{Pin 25 "4"} \\ \text{Pin 26 "8"} \end{array} \right\} \times 10^3 \, \text{digit} \\ \begin{array}{c} \text{Pin 10 "1"} \\ \text{Pin 10 "1"} \\ \text{Pin 11 "2"} \\ \text{Pin 12 "4"} \\ \text{Pin 13 "8"} \end{array} \right\} \times 10^4 \, \text{digit} \\ \end{array}$$

Note: Set unassigned pins to L at positive logic or to H at negative.

• Polarity input (POL)

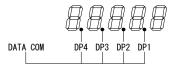
Minus sign (-) is lit. Set No. 16 pin to L at positive logic or to H at negative.

• Logic switching (P/N)

Input logic of numeric data (from $\times 10^0$ to $\times 10^4$) and polarity (POL) can switch positive or negative. Set No.18 pin to H at positive logic or to L at negative.

Decimal point (DP1~DP4)

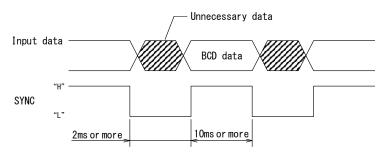
Decimal point can be set to desired position. Set No.31, 32, 33 and 34 pins for 10¹ to 10⁴ digits to L.



Note: Fix unassigned decimal point to H at voltage input.

• Synchronization (SYNC)

This enables BCD datum without hold to display H level only. BCD datum at L level does not display, and starts to display when switching from L to H. BCD datum at H level shall be hold.



Note: Fix to H at voltage input without synchronization (SYNC).

• Latch (LATCH)

This enables data, POL, and DP1~DP4 to hold. Set No.15 pin to L.

Note: Fix to H at voltage input without Latch (LATCH).

• Lamp test (LT)

All segment of 10^0 to 10^4 digit, minus sign (-), and decimal points are lit. Bridge pin 17 and pin 35 or 36 with a non-voltage contact irrespective of input level.

• Data common (DATA COM)

Pin 9, 27, 35, 36 are common for data, decimal point, logic switching, latch, lamp test, polarity, and synchronization. Those pins are internally connected.

NC

Do not use non-occupied NC pin for junction purpose.

■Option

• Function table when reversing logic of polarity against standard.

Negative logic (P/N="L")	Positive logic (P/N="H")	LT	LATCH	Minus sign
"L"	"H"	"H"	"H"	Lighting
"H"	"L"	"H"	"H"	Shut-off
*	*	"H"	"L"	Hold
*	*	"L"	*	Lighting

• Operation when reversing logic of latch (LATCH) against standard.

Data, polarity (POL), and decimal point (DP1~DP4) when setting pin 15 to H level.

■Maintenance

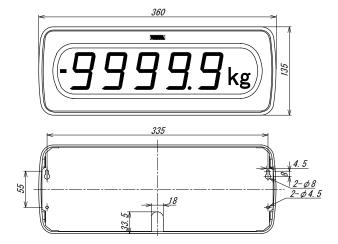
Store within the rated storage temperature ($-20 \sim +70^{\circ}$ C).

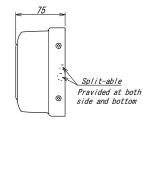
When the front panel or the case becomes dirty, wipe it with soft cloth.

For heavy dirt, wipe it lightly with the soft cloth wetted with the neutral cleaner thinned by water, and finish the cleaning with dry cloth. Do not use organic solvent like benzene or paint thinner as they may deform or discolor the case.

■ Dimensions

• Wall-mount

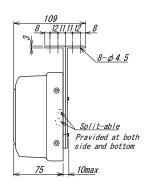


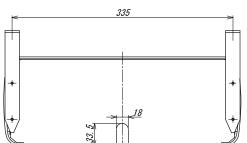


Unit:mm

• Hanging-mount







Unit:mm

• Sticking-mount 360 335 70



Unit:mm

Contact Information

Name : Tsuruga Electric Corporation

Address: 1-3-23 Minami-Sumiyoshi, Sumiyoshi-ku, Osaka-shi 558-0041 Japan