Instruction Manual

Digital Large Display Meter Model 4012 (Analog input)

I-01683

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.

A 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.

▲ 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 4012 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

[1] Input signal

Model	Measuring Range	Input Resistance	Accuracy ※	Overload	
4012-03	±1.9999 V	1MΩ	$\pm (0.1\% \text{ of rdg} + 2 \text{ digit})$	DC±250 V	
4012-04	±19.999 V	1MΩ	$\pm (0.1\% \text{ of rdg} + 2 \text{ digit})$	DC±250 V	
4012-05	±199.99 V	10ΜΩ	$\pm (0.1\% \text{ of rdg} + 2 \text{ digit})$	DC±500 V	
4012-09	DC1~ 5 V	1MΩ	$\pm (0.1\% \text{ of rdg} + 5 \text{ digit})$	DC±250 V	
4012-V1	DC0~ 1 V	1MΩ	$\pm (0.1\% \text{ of rdg} + 2 \text{ digit})$	DC±250 V	
4012-V2	DC0~ 5 V	1ΜΩ	$\pm (0.1\% \text{ of rdg} + 2 \text{ digit})$	DC±250 V	
4012-V3	DC0~10 V	1MΩ	$\pm (0.1\% \text{ of rdg} + 2 \text{ digit})$	DC±250 V	
4012-19	DC4~20mA	13 Ω	$\pm (0.1\% \text{ of rdg} + 5 \text{ digit})$	DC±150mA	
4012-A1	DC0~ 1mA	200 Ω	$\pm (0.1\% \text{ of rdg} + 2 \text{ digit})$	DC± 50mA	

Power voltage

 $12V \pm 5\%$

 $24V \pm 5\%$

* Accuracy: Defined at 23°C±5°C, 45 to 75%RH

Temperature coefficient: ± 200 ppm/°C within the 0 to 50°C temperature range.

[2]Power	Supply
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[5]Display No.

(Blank)

G

^			
31	Sensor	power	supply

No.

(Blank)

3

5

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

Color

Red LED

Green LED

[6]Ontion

[6]Option	
No.	Function
(Blank)	N/A
A01	Display sampling 1 second
A02	Fixed 10 ⁰ digit to 0
A03	Display sampling 1 second, Fixed 10 ⁰ digit to 0

Output current

[4] Mounting

Туре

Wall-mount

Hanging-mount

Sticking-mount

No.

51

52

53

TSURUGA ELECTRIC CORPORATION

No sensor power supply

150mA

100mA

■General Specifications Display 0~19999 red or green LED(character height 56mm) with zero-suppress function. Full scale display -19999~+19999 Offset display -19999~+19999 Scaling Function Offset Fixing Function Function to fix a display reading of input less than offset value to the offset value. Hold Function Measured data is held (Not isolated from input). Decimal Point Programmable by the terminal plate (Not isolated from input)... Over-range indication Blinking with 130% display. When exceeded 19999, blinking with 0000. Resolution 1/20000 Approx. 400ms Display Cycle Single ended, floating input. Input Type A/D Conversion Δ - Σ conversion system. Normal mode (NMR) - 50dB or more. Noise Rejection Common mode (CMR)-110dB or more. Noise from power line-1000V Insulation Resistance Input terminals - Case DC500V 100M Ω or more. · Power supply terminals - Case DC500V 100M Ω or more. Power supply terminals - Input terminals DC500V 100M Ω or more. AC1500V each for 1 min. Withstanding Voltage Input terminals - Case AC1500V each for 1 min. Power supply terminals - Case AC1500V each for 1min. Power supply terminals - Input terminals (DC power supply AC 500V for 1 minute) Power Supply : AC100~120V 50/60Hz AC200~240V 50/60Hz DC24V : AC85~132V 50/60Hz Allowable power supply AC170~250V 50/60Hz DC20~30V Power Consumption : No sensor power supply Approx. 6VA at AC100V Approx. 8VA at AC200V Approx. 100mA at DC24V : With sensor power supply Approx. 13VA at AC100V Approx. 17VA at AC200V Approx. 230mA at DC24V : $0 \sim 50^{\bar{o}} \hat{C}$ **Operating Temperature** -20~70°C Storage Temperature Weight Approx. 2.5kg Specified character Digit Protection IP44 (Wall-mount and Hanging-mount) IP65 (Sticking-mount with water-proof works)

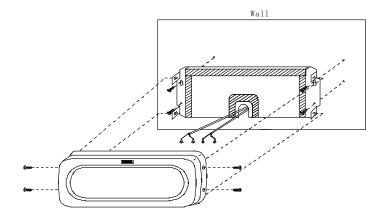
■Optional specifications

• Display sampling change Enable to fix 1 second

10⁰ digit to 0
Enable to fix to 0

■ Mounting

- Wall-mount (model code-51) Cut the case bottom or side to pull out lead wires.

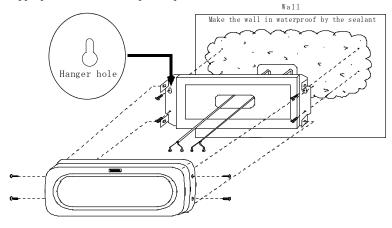


• Hanging-mount (model code-52)

Fix lifting brackets to the ceiling by screws. Mount to the ceiling. Fixing points should be locating 40mm away from the wall to keep maintenance space. 51

• Sticking-mount (model code-53)

Use coaching bond or appropriate sealant to keep IP65 protection.

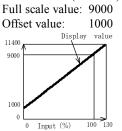


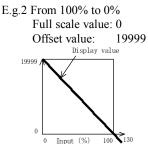
▲ CAUTION
•Hanger hole of the mounting panel should be upright position as shown in the drawing.

■Scaling

Full scale value and Offset value are programmable within the range from -19999 to +19999. Refer to "Parameter Setting."

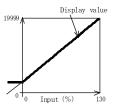
E.g.1 From elevation (over 0%) to suppression (below 100%)





■Offset fixing

Display can be fixed to the offset value when the input value is lower than the offset value. Refer to "Parameter Setting."



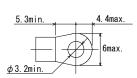
Terminal Arrangement

Terminal	INHi	INLo	COM	HOLD	DP1	DP2	DP3	Dp4	P2(+)	P1(-)
Function	1	2	3	4	5	6	7	8	9	10
	+	-	Common	Hold	10 ¹ dig	10 ² dig	10 ³ dig	10 ⁴ dig	Power	
1 unotion	Input			Decimal point						

(Option)

Terminal	+V	0V		NC						
	11	12	13	14	15	16	17	18	19	20
Function	Sensor power supply		-	Ι	-	-	_	—	—	—

Terminal screws:M3Fastening torque:0.46~0.62N·mCrimp terminal:As shown on the right.



• Input terminals (INHi, INLo)

Pay attention to the polarity when wiring. Connect input of higher electric potential to Hi. Input and power line shall lay separately. Otherwise, display may be unstable.

• Hold (HOLD)

Display can be held by connecting the Hold terminal and the Common terminal.

Active "L" In≦-1mA, "L"=0~0.8V, "H"=3.5~5V

Hold terminal is not isolated to the input. Use a photo-coupler or switch to insulate. It is essential when using the input floating. When using plural numbers of the product, the hold terminal should be insulated at each instruments.

• Decimal point (DP1~DP4)

Decimal point is programmable. Connect and short-circuit the desired decimal point terminal and the common terminal.

Active "L", $In \leq -1mA$, "L"=0~0.8V, "H"=3.5~5V

Those terminals are not isolated to the input. Use a photo-coupler or switch to insulate. It is essential when using the input floating.

• Common (COM)

For Hold and Decimal point terminals.

• 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.

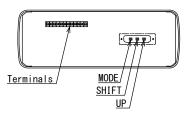
Connect +24 of DC power source to P2(+), and 0V side to P1(-).

CAUTION

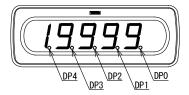
• Do not use the product with the voltage out of the rated range as it may cause breakage of the products.

Each function

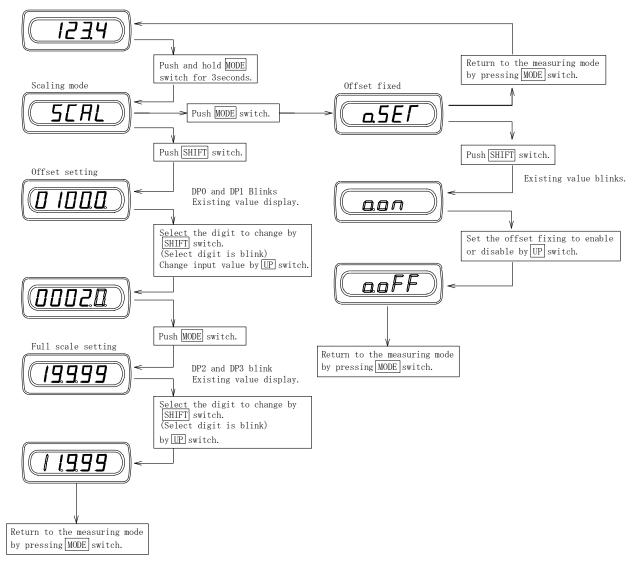
 Location of terminals and switches Removing the mounting panel comes terminals and switches into view.



• Decimal point position



• Operation Procedure diagram (Scaling mode and offset setting)

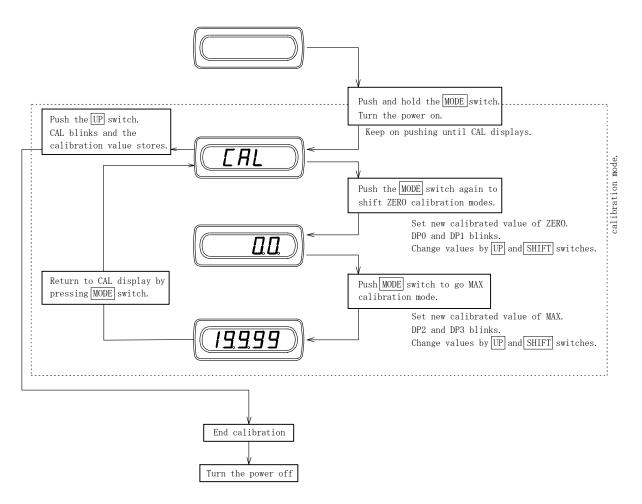


■ Maintenance

Store the instrument within the rated storage temperature $(-20 \sim 70^{\circ} \text{C})$. When the front panel or the case is cleaned, use soft cloth dipped with cleaner liquid. Do not use organic solvent like benzene or paint thinner as they may deform or discolor the case.

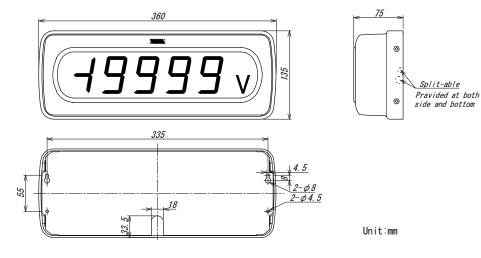
■Calibration

In order to maintain long term accuracy, periodical calibration at an interval of about one year is recommended. Make a calibration of the instrument with the ZERO and MAX volumes inside the front mask. Also, make a calibration in the ambient condition of $23^{\circ}C \pm 5^{\circ}C$, 75%RH or less.

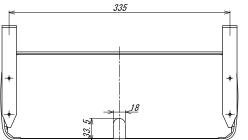


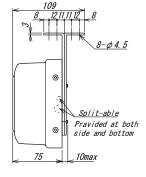
Use $\overline{\text{UP}}$ switch to increase value. Push and hold to continuously change. Use $\overline{\text{SHIFT}}$ switch to decrease value. Push and hold to continuously change.

- Dimensions
- Wall-mount

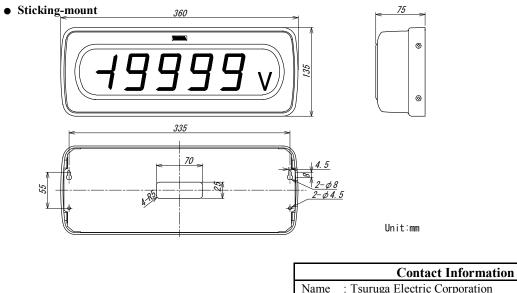


• Hanging-mount 360





Unit∶mm



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