

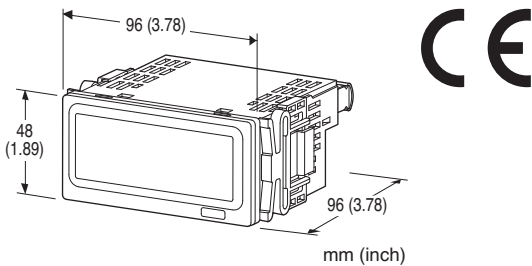
Digital Panel Meters 40 Series

THERMOCOUPLE INPUT DIGITAL PANEL METER

(4 digits, process meter)

Functions & Features

- 4 digit (± 9999) panel meter
- HOLD functions
- High visible, 0.8" (20.3mm) high and bright LED



MODEL: 40DT-T1-[1][2]

ORDERING INFORMATION

- Code number: 40DT-T1-[1][2]
- Specify a code from below for each [1] and [2].
(e.g. 40DT-T1-R/Q)
- Specify the specification for option code /Q
(e.g. /SET)

INPUT

T1:

- K (CA) (Usable range -150 to +1370°C, -238 to +2498°F)
- J (IC) (Usable range -180 to +1000°C, -292 to +1832°F)
- T (CC) (Usable range -170 to +400°C, -274 to +752°F)
- R (Usable range 200 to 1760°C, 392 to 3200°F)

[1] POWER INPUT

AC Power

K3: 100 - 120V AC

(Operational voltage range 85 - 132 V, 47 - 66 Hz)

L3: 200 - 240V AC

(Operational voltage range 170 - 264 V, 47 - 66 Hz)

DC Power

R: 24 V DC

(Operational voltage range 24 V ± 20 %, ripple 10 %p-p max.)

[2] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet
(No. ESU-9535)

GENERAL SPECIFICATIONS

Construction: Panel flush mounting

Connection: M3 screw terminals (torque 0.6 N·m)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Input to power

Linearization: Standard

Cold junction compensation: CJC sensor attached to the input terminals

A/D conversion: $\Sigma - \Delta$

Sampling rate: 10 times/sec. (100 msec.)

Averaging: None or moving average

Setting: (Front button)

- Input type
- Temperature unit
- Moving average
- Brightness
- Others

DISPLAY

Display: 4 digits of 20.3 mm (0.8 inch) height, 7-segment, red LED

Display range: -9999 to 9999

Minimum display/setting scale: 1°C or 1°F

Zero indication: Higher-digit zeros are suppressed.

Over-range indication:

'S.ERR' blinks surpassing the permissible range.

'B.ERR' blinks at burnout.

Engineering unit indication: Sticker label attached

DC, AC, mV, V, kV, μ A, mA, A, kA, mW, W, kW, var, kvar, Mvar, VA, Hz, Ω , k Ω , M Ω , cm, mm, m, m/sec, mm/min, cm/min, m/min, m/h, m/s², inch, l, l/s, l/min, l/h, m³, m³/sec, m³/min, m³/h, Nm³/h, N·m, N/m², g, kg, kg/h, N, kN, Pa, kPa, MPa, t, t/h, °C, °F, %RH, J, kJ, MJ, rpm, sec, min, pH, %, ppm, etc.

INPUT SPECIFICATIONS

■ Thermocouple

Input resistance: 1 M Ω minimum

Burnout sensing: $\leq 0.1 \mu$ A

Conformance range:

K (CA) -150 to +1370°C or -238 to +2498°F

J (IC) -180 to +1000°C or -292 to +1832°F

T (CC) -170 to +400°C or -274 to +752°F

R 200 to 1760°C or 392 to 3200°F

Operational range:

K (CA) -180 to +1400°C or -292 to +2552°F

J (IC) -210 to +1030°C or -410 to +1886°F

T (CC) -200 to + 430°C or -328 to +806°F

R 170 to 1790°C or 339 to 3254°F

■ **Hold Input:** Dry contact input

Detecting level: ≤ 1.5 V

Sensing: Approx. 5V, 1 mA DC

INSTALLATION

Power consumption

•AC: Approx. 1.0 VA

•DC: Approx. 0.3 W

Operating temperature: -10 to +55°C (14 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Panel flush mounting

Weight: 210 g (0.46 lb)

PERFORMANCE

Accuracy

K narrow range (-150 – +400°C, -238 – +752°F):

$\pm 1^{\circ}\text{C}$ rdg ± 1 digit, $\pm 2^{\circ}\text{F}$ rdg ± 1 digit

K wide range (400 – 1370°C, 752 – 2498°F):

$\pm 3^{\circ}\text{C}$ rdg ± 1 digit, $\pm 6^{\circ}\text{F}$ rdg ± 1 digit

J: $\pm 1^{\circ}\text{C}$ rdg ± 1 digit, $\pm 2^{\circ}\text{F}$ rdg ± 1 digit

T: $\pm 1^{\circ}\text{C}$ rdg ± 1 digit, $\pm 2^{\circ}\text{F}$ rdg ± 1 digit

R: $\pm 3^{\circ}\text{C}$ rdg ± 1 digit, $\pm 6^{\circ}\text{F}$ rdg ± 1 digit

Cold junction compensation error:

$\pm 3^{\circ}\text{C}$ at $25 \pm 10^{\circ}\text{C}$

$\pm 5.4^{\circ}\text{F}$ at $77 \pm 18^{\circ}\text{F}$

Temp. coefficient: ± 0.1 °C/°C

Line voltage effect: ± 2 digits over voltage range

Insulation resistance: ≥ 100 M Ω with 500 V DC

Dielectric strength: 1500 V AC @1 minute (input to power to ground)

STANDARDS & APPROVALS

CE conformity:

EMC Directive (2004/108/EC)

EMI EN 61000-6-4: 2007

EMS EN 61000-6-2: 2005

Low Voltage Directive (2006/95/EC)

EN 61010-1: 2001

Installation Category II

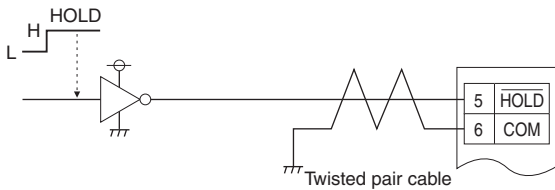
Pollution Degree 2

Input to power: Reinforced insulation (300 V)

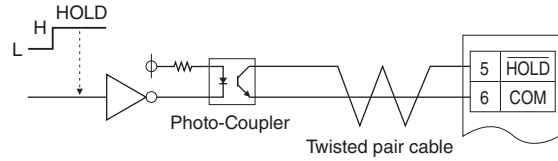
DISPLAY HOLD COMMAND

Displayed value is held with an external HOLD command input. Connect the contacts across HOLD to COM.

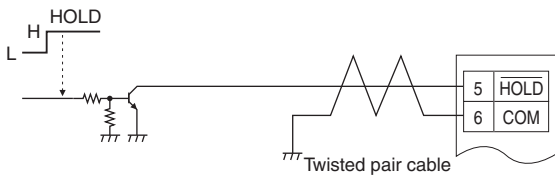
(a) 5V-CMOS



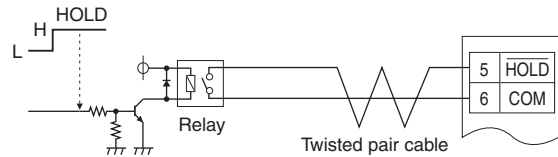
(c) Photo-Coupler



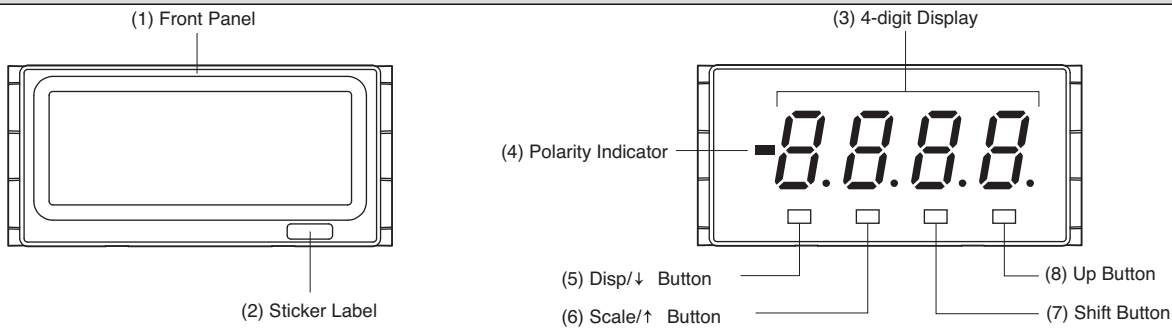
(b) Transistor



(d) Relay



EXTERNAL VIEW



COMPONENT IDENTIFICATION

No.	COMPONENT	FUNCTIONS
(1)	Front panel	Removed at conformation.
(2)	Sticker label	Engineering unit label position
(3)	4-digit display	4-digit LED display. Range: 0 to 9999
(4)	Polarity indicator	Turns on when negative value is displayed
(5)	Disp/↓ button	Used to move on to the display setting modes; or to shift through setting items in each setting mode.
(6)	Scale/↑ button	Used to move on to the zero/span adjustment modes; or to shift through setting items in each setting mode.
(7)	Shift button	Used to move on to the setting standby status and shift through display digits in each setting item.
(8)	Up button	Used to select setting value.

PARAMETER LIST

■ ZERO & SPAN ADJUSTMENTS

PARAMETER	DISPLAY	FUNCTION	INPUT CODE	DEFAULT VALUE
Input type	<i>μ</i>	K thermocouple (usable range -150 to 1370 °C, -238 to 2498 °F)	T1	<i>μ</i>
	<i>υ</i>	J thermocouple (usable range -180 to 1000 °C, -292 to 1832 °F)		
	<i>τ</i>	T thermocouple (usable range -170 to 400 °C, -247 to 752 °F)		
	<i>ρ</i>	R thermocouple (usable range -200 to 1760 °C, 392 to 3200 °F)		
Zero adjustment	<i>-9999-9999</i>	Adjustment value for 0% of measurement range To distinguish from span adjustment, the first decimal point is blinking	T1	<i>-0.150</i>
Span adjustment	<i>-9999-9999</i>	Adjustment value for 100% of measurement range	T1	<i>1370</i>
Temperature unit	<i>℄</i>	Display in Celsius	T1	<i>℄</i>
	<i>℉</i>	Display in Fahrenheit		

■ DISPLAY SETTING MODE

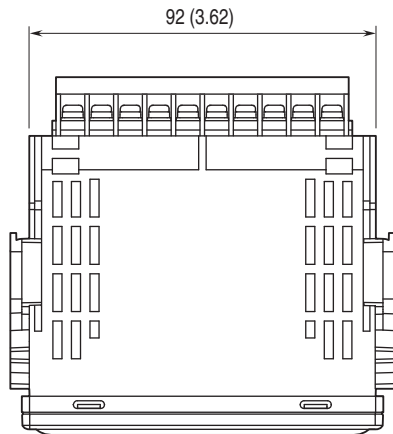
PARAMETER	DISPLAY	FUNCTION	DEFAULT VALUE
Moving Average	<i>R oFF</i>	No moving averaging	<i>R 4</i>
	<i>R 2</i>	Moving average with 2 samples	
	<i>R 4</i>	Moving average with 4 samples	
	<i>R 8</i>	Moving average with 8 samples	
	<i>R 16</i>	Moving average with 16 samples	
Brightness	<i>℄ 1</i>	Brightness level 1 (dark)	<i>℄ 5</i>
	<i>℄ 2</i>	Brightness level 2	
	<i>℄ 3</i>	Brightness level 3	
	<i>℄ 4</i>	Brightness level 4	
	<i>℄ 5</i>	Brightness level 5 (bright)	
CJC Sensor	<i>℄ on</i>	CJC sensor Enabled	<i>℄ on</i>
	<i>℄ oFF</i>	CJC sensor Disabled	
Initialization	<i>r oFF</i>	Non-initialization	<i>r oFF</i>
	<i>r ESt</i>	Initialize settings (change to factory settings) *1	
Version Indication	<i>-</i>	Version number, indication only	<i>-</i>

*1. While "*r ESt*" is shown, pressing Disp/↓ button or Scale/↑ button initializes settings.

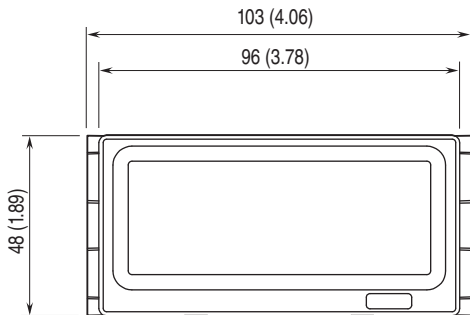
Activating "initialization" of Lockout Setting Mode, Ex-factory settings (/SET) or user's specified parameters will be deleted and overwritten with the factory default values. Notice that after this, Ex-factory settings with will be irrecoverable.

DIMENSIONS unit: mm (inch)

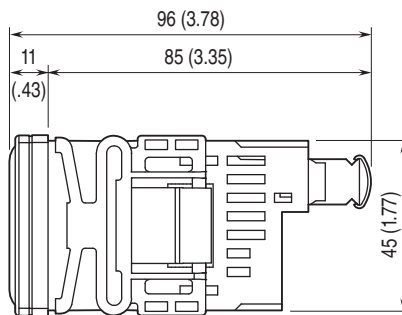
■ TOP VIEW



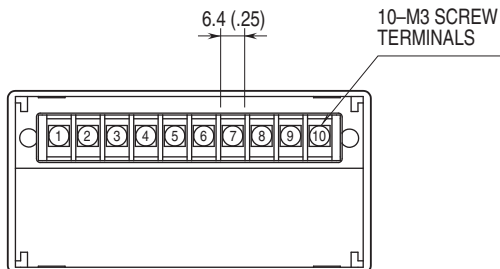
■ FRONT VIEW



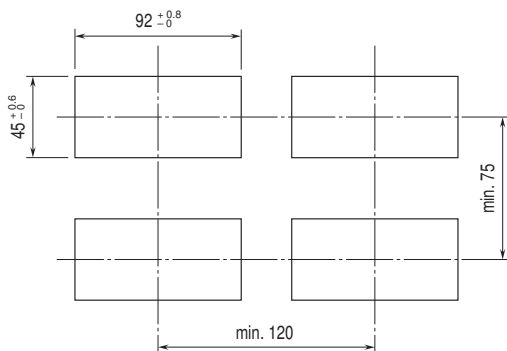
■ SIDE VIEW



■ REAR VIEW

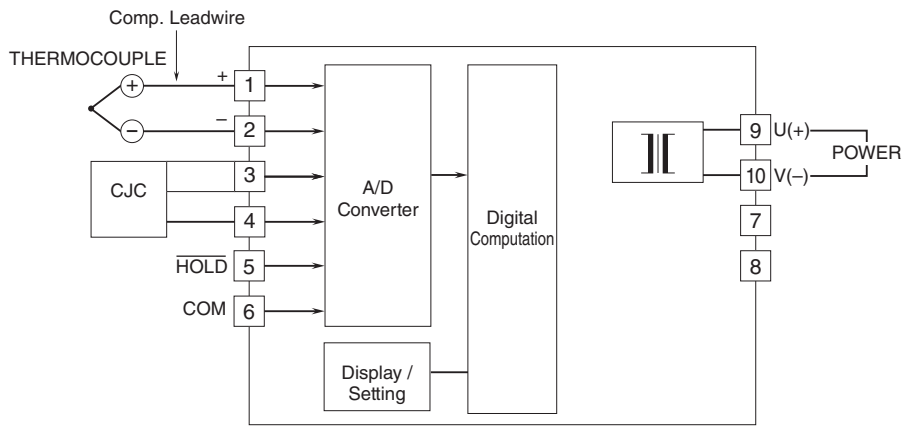


PANEL CUTOUT unit: mm



Panel thickness: 1.6 to 8.0 mm

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.