

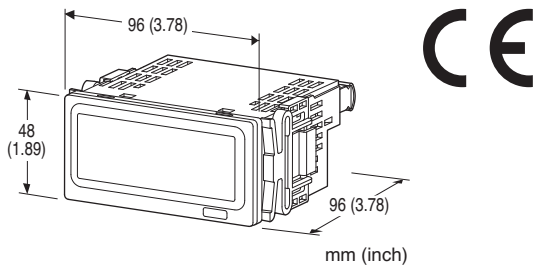
Digital Panel Meters 40 Series

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 of [1] and [2].
(e.g. 40DT-T1-R/Q)
- Specify the specification for option code /Q
(e.g. /C01/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 380 to 1760°C, 716 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 (multiple selections)

COATING (For the detail, refer to M-System's web site.)

Moving parts and indicators are not coated.

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

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)

Solderless terminal: Refer to the drawing at the end of the section.

Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,Ltd

Applicable wire size: 0.25 to 1.65 mm² (AWG 22 to 16)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Input to power

Cold junction compensation: CJC sensor attached to the input terminals

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

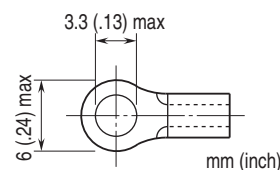
Sampling rate: 10 times/sec. (100 msec.)

Averaging: None or moving average

Setting: (Front button)

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

Recommended solderless terminal



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 MΩ minimum

Burnout sensing: ≤ 0.1 μA

Usable range (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 380 to 1760°C or 716 to 3200°F

Operational range:

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

J (IC) -210 to +1030°C or -346 to +1886°F

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

R 170 to 1790°C or 338 to 3254°F

■ **Hold Input:** Dry contact input

Detecting level: ≤ 1.5 V

Sensing: Approx. 5 V DC, 1 mA

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):

±1°C rdg ± 1digit, ±2°F rdg ± 1digit

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

±3°C rdg ± 1digit, ±6°F rdg ± 1digit

J: ±1°C rdg ± 1digit, ±2°F rdg ± 1digit

T: ±1°C rdg ± 1digit, ±2°F rdg ± 1digit

R: ±3°C rdg ± 1digit, ±6°F rdg ± 1digit

Cold junction compensation error:

±3°C at 25 ±10°C

±5.4°F at 77 ±18°F

Temp. coefficient: ±0.1 °C/°C

Line voltage effect: ±2 digits over voltage range

Insulation resistance: ≥ 100 MΩ with 500 V DC

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

STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Installation Category II

Pollution Degree 2

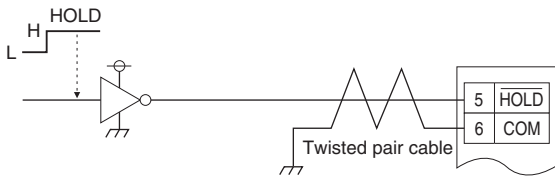
Input to power: Reinforced insulation (300 V)

RoHS Directive

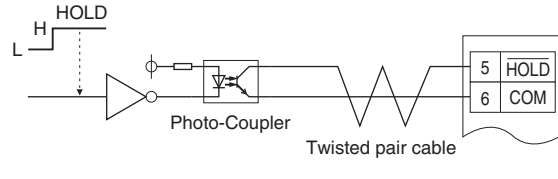
DISPLAY HOLD COMMAND

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

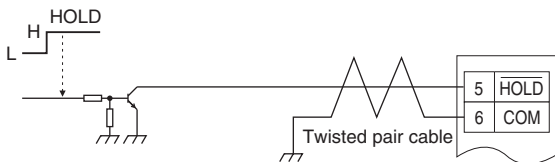
(a) 5V-CMOS, TTL



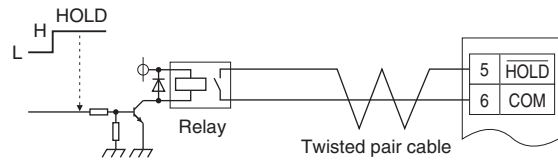
(c) Photo-Coupler



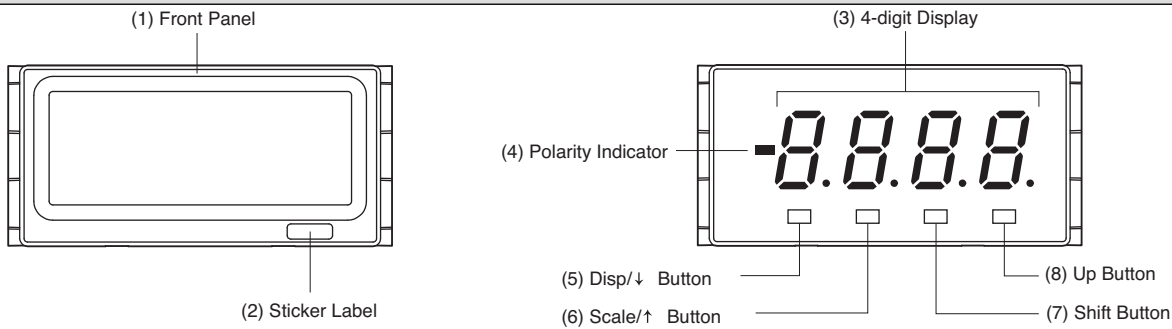
(b) Transistor



(d) Relay



EXTERNAL VIEW



COMPONENT IDENTIFICATION

No.	COMPONENT	FUNCTIONS
(1)	Front panel	Removed at conuguration.
(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	DEFAULT VALUE
Input type	<i>K</i>	K thermocouple (usable range -150 to +1370°C, -238 to +2498°F)	<i>K</i>
	<i>J</i>	J thermocouple (usable range -180 to +1000°C, -292 to +1832°F)	
	<i>T</i>	T thermocouple (usable range -170 to +400°C, -274 to +752°F)	
	<i>R</i>	R thermocouple (usable range 380 to 1760°C, 716 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	<i>-0.150</i>
Span adjustment	<i>-9999 - 9999</i>	Adjustment value for 100% of measurement range	<i>1370</i>
Temperature unit	<i>C</i>	Display in Celsius	<i>C</i>
	<i>F</i>	Display in Fahrenheit	

■ DISPLAY SETTING MODE

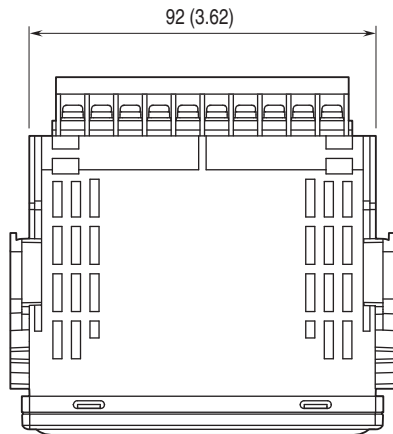
PARAMETER	DISPLAY	FUNCTION	DEFAULT VALUE
Moving Average	<i>OFF</i>	No moving averaging	<i>A 4</i>
	<i>A 2</i>	Moving average with 2 samples	
	<i>A 4</i>	Moving average with 4 samples	
	<i>A 8</i>	Moving average with 8 samples	
	<i>A 16</i>	Moving average with 16 samples	
Brightness	<i>C 1</i>	Brightness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

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

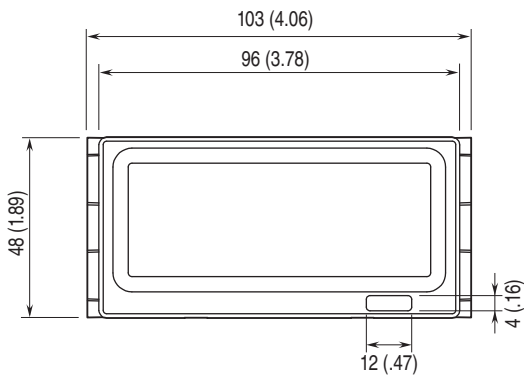
Activating "initialization", user's specified parameters will be deleted and overwritten with the factory default values. Notice that after this, Ex-factory settings will be irrecoverable.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

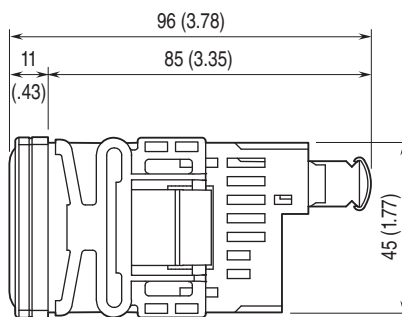
■ TOP VIEW



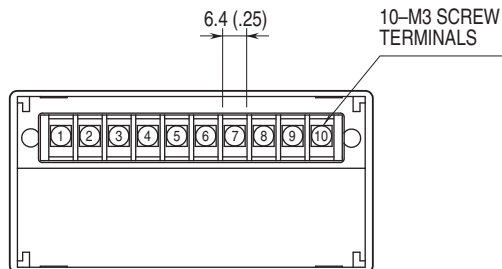
■ FRONT VIEW



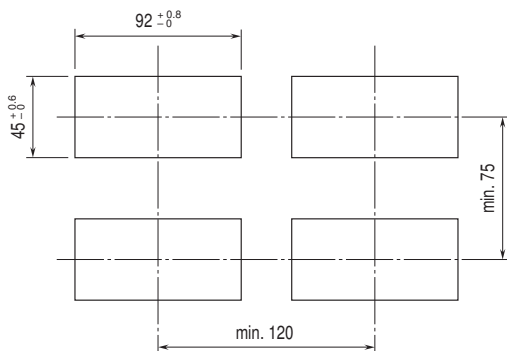
■ SIDE VIEW



■ REAR VIEW

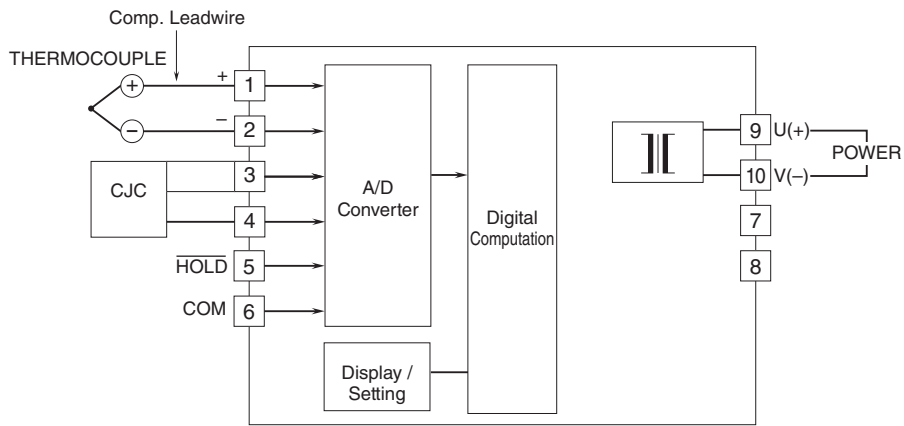


MOUNTING REQUIREMENTS unit: mm



Panel thickness: 1.6 to 8.0 mm

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.