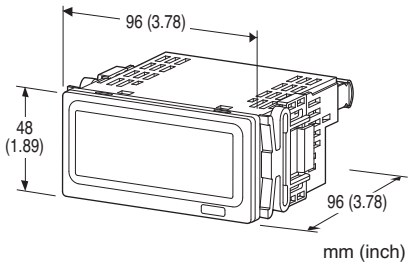
Digital Panel Meters 40 Series

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



CE

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: Σ – Δ
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, µA, mA, A, kA, mW, W,
kW, var, kvar, Mvar, VA, Hz, Ω, kΩ, MΩ,
cm, mm, m, m/sec, mm/min, cm/min, m/min,
m/h, m/s^2, inch, ℓ, ℓ/s, ℓ/min, ℓ/h, m^3, m^3/sec,
m^3/min, m^3/h, Nm^3/h, N·m, N/m^2, g, kg, kg/h,
N, kN, Pa, kPa, MPa, t, t/h, ℃, °F, %RH, J,
kJ, MJ, rpm, sec, min, pH, %, ppm, etc.

INPUT SPECIFICATIONS

■ **Thermocouple**

Input resistance: 1 MΩ minimum
Burnout sensing: ≤ 0.1 µA
Conformance range:
K (CA) -150 to +1370℃ or -238 to +2498°F
J (IC) -180 to +1000℃ or -292 to +1832°F
T (CC) -170 to +400℃ or -274 to +752°F
R 200 to 1760℃ or 392 to 3200°F

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Operational range:
K (CA) -180 to +1400℃ or -292 to +2552°F
J (IC) -210 to +1030℃ or -410 to +1886°F
T (CC) -200 to + 430℃ or -328 to +806°F
R 170 to 1790℃ 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):
±1°C rdg ± 1digit, ±2°F rdg ± 1digit
K wide range (400 – 1370°C, 752 – 2498°F):
±3℃ rdg ± 1digit, ±6°F rdg ± 1digit
J: ±1℃ rdg ± 1digit, ±2°F rdg ± 1digit
T: ±1℃ rdg ± 1digit, ±2°F rdg ± 1digit
R: ±3℃ 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 ℃/℃
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

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)

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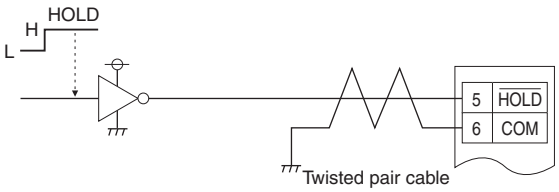
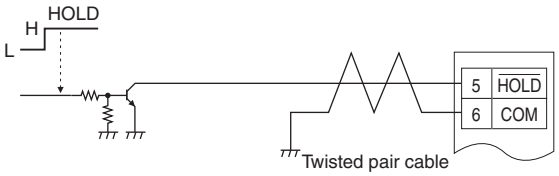
DISPLAY HOLD COMMAND

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

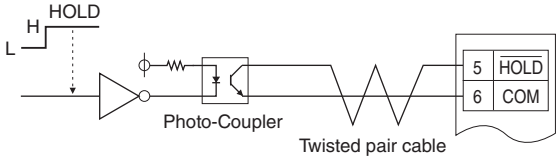
(a) 5V-CMOS



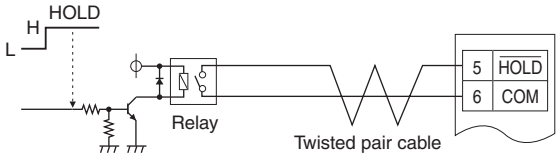
(b) Transistor



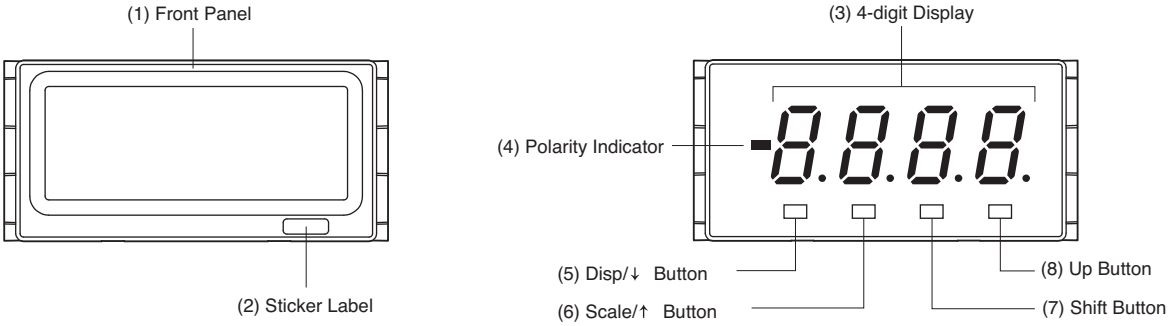
(c) Photo-Coupler



(d) Relay



EXTERNAL VIEW



■ COMPONENT IDENTIFICATION

No.	COMPONENT	FUNCTIONS
(1)	Front panel	Removed at conguration.
(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 set-ting item.
(8)	Up button	Used to select setting value.

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PARAMETER LIST

■ ZERO & SPAN ADJUSTMENTS

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

■ DISPLAY SETTING MODE

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

*1. While "rESt" 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.

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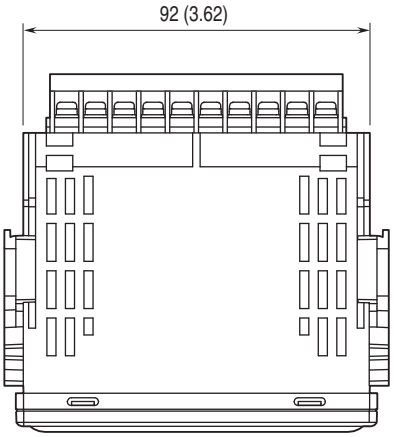
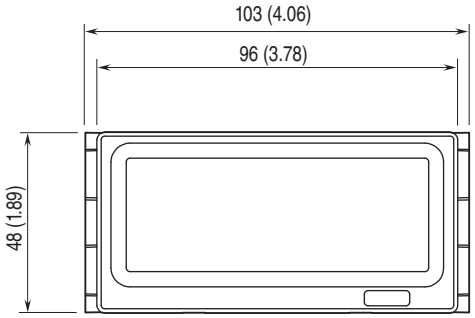
DIMENSIONS unit: mm (inch)

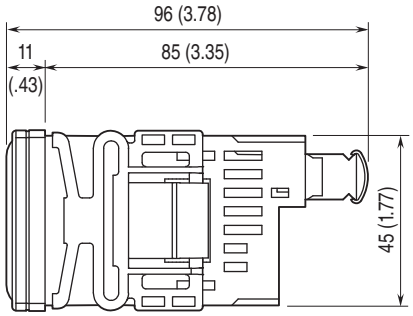
■ TOP VIEW



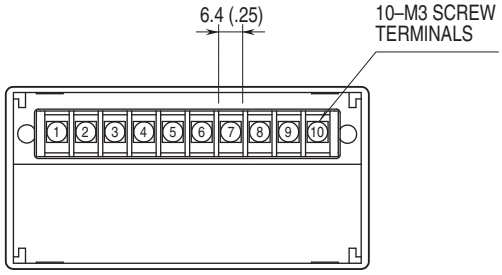
■ FRONT VIEW



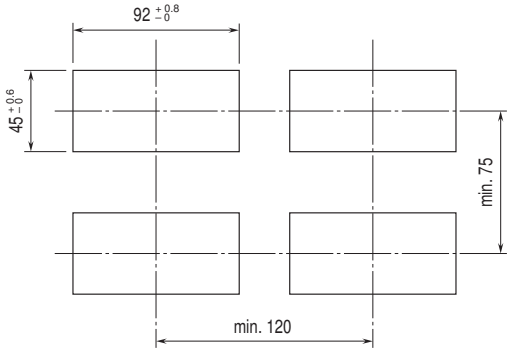
■ SIDE VIEW



■ REAR VIEW



PANEL CUTOUT unit: mm



Panel thickness: 1.6 to 8.0 mm

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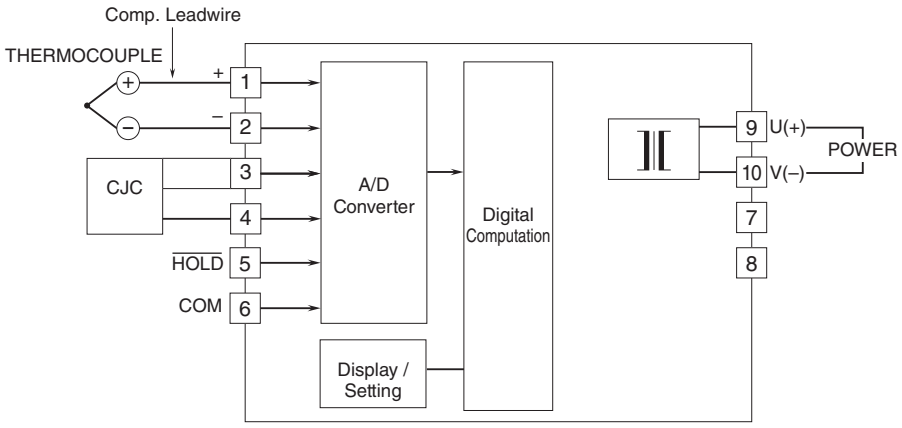
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



⚠ Specifications are subject to change without notice.

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