



digital indicator TRM-006A

Most Superior Indicator with Advanced Multiple Functions! Low Price, Easy Operation & Selectable Input!!



тоно

TRM-006A

TOHO ELECTRONICS INC.

TRM-006A

8888

DIGITAL TRN-006A

Features

•Suitable for diversified inputs

Accepts temperatures from thermocouples and resistance thermometers, as well as currents or voltages

Remote monitoring, using communication function

In conformity with RS-485, optionally sets the communication function, which is applicable for managing data in fields with computers connected

Peak/bottom hold function

Holds maximum measurement (peak value) and minimum measurement (bottom value) during operation for reading them anytime

External standard

It has acquired the external standards "UL", "cUL", and "CE", and is compliant with "IP66" equivalent The 6 substances regulated by the RoHS Directive are not used

Names of components



•Up to 2 events of outputs (1-event output as the standard feature) Allows up to 2 events of outputs as an option, where the setting changeable through front keys depending on conditions of generated contact outputs or operations

 $DIN48 \times 96$

Sized in conformity with

Power supply for sensors Equips the power source for external supply of 12 VDC, which is usable as power source for sensors and such

Digital PV filter

Mounts the primary delay filter, which is applicable for removing high-frequency noises and such, as a standard feature for inputting measured data

PV	Indicates measured values and characters			
AL1	Lights up when the event output 1 is turned on			
AL2	Lights up when the event output 2 is turned on			
СОМ	Lights up when the communication function (option) is effective (Blinks during communication)			
MODE	Used when screens are to be switched (Set parameters saved)			
«	Used when figures are to be moved at setting			
	Used for increasing the set value			
	Used for decreasing the set values			

Standard specifications

	•					
Types of inputs	Thermocouple	K, J, R, T, N, S or B (External resistance within 0.5μ V/1 Ω) Key switching available				
	RTD	Pt100 or JPt100 (External resistance 10Ω or less per line)				
	Current/voltage	0 to 5VDC/1 to 5VDC (Input resistance of 500kΩ or more), 4 to 20mA (Input resistance of 250Ω) Key switching available				
Indication	Indication of set value/character	4 figures, green, 14mm				
	Setting indication	4 figures, red, 8mm				
	Function indication	Red LED (AL1 and AL2), green LED (COM)				
Sampling interval		250mS				
Display precision	Thermocouple	Either \pm (0.3% +1digit) or \pm 2°C of the reference value, whichever larger (ambient temperature of 23 \pm 10°C) Note: \pm 3°C for -100 to 0°C, \pm 4°C for -200 to -100°C, and no specification for 400°C or lower with thermocouple B				
	RTD	Either \pm (0.3% +1digit) or \pm 0.9°C of the reference value, whichever larger (ambient temperature of 23 \pm 10°C) Either \pm (0.3% +1digit) or 1.5°C, whichever larger (ambient temperature of 0 to 50°C)				
	Current/voltage	Full span \pm (0.3% + 1digit) (ambient temperature of 23 \pm 10°C), where full span = setting range				
Memory element		EEPROM				
Input power sourc	e	100 to 240VAC, 50/60Hz, and 24VAC/VDC ±10%, 50/60Hz				
Weight		300g or less				
Power consumption	n	10VA (240VAC), 6VA (24VAC), and 4W (24VDC)				
Accessory		Instruction manual and fixing bracket				
Ranges of ambient tem	perature and humidity for service	0 to 50°C, 20 to 90% RH (no dew allowed)				
Ranges of ambient tem	perature and humidity for storage	₂ −25 to 70°C (no freeze or dew allowed), 5 to 95% (no dew allowed)				
Function	PV compensation, zero point setting	Thermocouple/RTD: -199 to 999 or -199.9 to 999.9 °C, Current/voltage: -1999 to 9999 digit (decimal point in designated location)				
	PV compensation, gain setting	Multiplied by 0.50 to 2.00				
	Digital PV filter	0 to 99 sec (Filter OFF at "0")				
	PV hold	Hold of the measured value 1) No hold, 2) Peak hold (PV MAX value saved), 3) Bottom hold (PV MIN value saved), 4) Peak/bottom hold (PV MAX/MIN value saved)				
	Instant power-off	No effect on operation by power-off within 1cycle				
	Insulation resistance	Between measurement terminal and casing: $20M\Omega$ at $500VDC$, and between power supply terminal and casing: $20M\Omega$ at $500VDC$				
	Withstand voltage	Between measurement terminal and casing: 1min at 1000VAC, and between power supply terminal and casing: 1min at 1500VAC				
	Blind function	Available with no display of arbitrary parameter screen				
	Burnout (cut wire)	Thermocouple/RTD: Overscale 0 to 5VDC: Equivalent to 0 input 1 to 5VDC/4 to 20mA: Underscale				
	Setting of decimal point	Indication of figures after the decimal point, with/without				
	Priority screen	Available with indication of arbitrary parameter screens in the operation mode (9pcs)				
	Lock function	4-mode selection (lock OFF, ALL, lock of the operation mode and lock other than the operation mode)				
External standard	The 6 substances	Lead: 1,000ppm or less				
	regulated by the RoHS	Mercury: 1,000ppm or less				
	Directive are not used	Cadmium : 100ppm or less				
		Hexavalent chromium compound : 1,000ppm or less				
		Polybrominated biphenyls(PBB): 1,000ppm or less				
		Polybrominated diphenyl ether(PBDE) : 1,000ppm or less				
	UL/cUL/CE Markings	·				



Option specifications

Event output	Rated output Contact: 1a Contact: capacity: 250VAC, 2.4A (resistance load) Min. load: SVDC, 10mA Mechanical life: 5million times or more Electrical life: 0.2million times or more Contact output operation 1) No function 2) Upper/lower limit of absolute value (added function: hold and stand-by sequence) 3) Upper limit of absolute value (added function: hold and stand-by sequence) 4) Lower limit of absolute value (added function: hold and stand-by sequence) 5) Upper/lower limit range of absolute value (added function: hold and stand-by sequence) 0.1) Normal open 2) Normal close Other functions 1) Setting of upper/lower limit of output 2) Setting of sensitivity of output 3) Setting of delay timer of output					iquence) e) e) 1-by sequence)
Iransmission	Туре		Load resistance	Output response time	Output precision	Output resolution
transmission)	Voltage	0 to 10mVDC	500kΩ or more	600ms or shorter	$\pm 0.3\%$	Equivalent to the indication resolution or
		0 to 1VDC			$(23 C \pm 10 C)$	
		0 to 5VDC	1kΩ or more			higher
		1 to 5VDC				
		0 to 10VDC				
	Current	4 to 20mADC	600kΩ or more			
Communication	Communication standards	Conformity with I	RS-485			
	Communication method	Protocol	Proprietary to TOHO Electronics/MODBUS (RTU or ASCII)			
		Information direction	Hait duplex			
		Sync system	Asynchronous			
		Transmission code				
		Interface				
		Communication speed Character	Proprietary	4800/9600/ 1	9200BPS	
				Start bit	1 /2hite	
			Electronics	Stop bit	T/2DIts	
				Data length	7/8DITS	(NI
				Parity	None/odd No./	even No.
					1 to 00 station	
			MODBUS	Address Ctout hit	1 to 99 station	5
			(RTU)	Start bit	1 /2hite	
			(Stop bit	1/2DILS	
				Data length	8DITS	(NI
				Parity	None/odd No./	even No.
			MODBUS	Address	1 to 24/ station	15
			MODBUS	Start bit	Thit fixed	
			(ASCII)	Stop bit	1/2bits	
				Data length	/bits	
				Parity	None/odd No.	
			a. 250 c	Address	1 to 247 statio	ns
		Response delay time	e 0 to 250mS			
Power supply for driving sensor		Output voltage: 12VDC Allowable current: Max. 20mA (load resistance of 600Ω or more) Output precision: $\pm 1V$ (0 to 50° C)				

Indication ranges

		Indicatio	on range	Setting range		
		Without decimal point	With decimal point	Without decimal point	With decimal point	
	К	-210 to 1382	-199.9 to 999.9			
	J	-210 to 860	-199.9 to 860.0			
	R	-10 to 1710				
Thermocouple	Т	-210 to 410	-199.9 to 410.0			
	N	-210 to 1310	-199.9 to 999.9			
	S	-10 to 1710				
	В	-20 to 1802				
DTD	Pt100	-199 to 530	-199.9 to 530.0			
NID	JPt100	-199 to 520	-199.9 to 520.0			
	0 to 5VDC	Approx -2% of se	tting of the lower			
	0 to1VDC	limit of scaling (SL	L) to approx. +12%	— 1999 to 9999	199.9 to 999.9 19.99 to 99.99 1.999 to 9.999	
	0 to 10mVDC	of setting of the up	oper limit of scaling			
Current/	0 to 10VDC	(SLH), within the set	tting range			
voltage	1 to 5VDC	Approx12% of s	etting of the lower			
	4 to 20mADC	limit of scaling (SL of setting of the up (SLH), within the set	L) to approx. +12% oper limit of scaling tting range			

Superior function

Bottom hold/peak hold

Maximum and minimum values (peak and bottom) of measurements (PV) can be saved for reference after power is turned on. Either peak or bottom value alone can be saved and indicated by setting.

During indicating the peak/bottom value, holding the UP key pushed for approx. 2sec or longer leads to resetting the indication.



Digital PV filter

Digital PV filter is a function to provide the CR filtering effect using software by calculating the primary delay with respect to a measurement (PV). The filtering effect can be set using the time coefficient (). (Time coefficient is defined as a time for the PV value to reach approx. 63% when inputs change in a stepping manner.)

Application of digital PV filter

- 1) Removal of high-frequency noise; effect of noise is mitigated when electric noise is applied on inputs.
- 2) Response to a drastic input change can be delayed.



Isolation

Power supply circuit					
	CPU circuit	Voltage of 12VDC for driving sensor			
DV in much		Transmission output			
Pvinput		Event output 1			
		Event output 2			
Communication RS-485					

Solid line: Insulated, dotted line: Not insulated

Terminal allocation



Terminal description

Communication	Connect terminal A/B of RS-485 with care. (Use a converter in case of other than RS-485.)
Transmission	Connect with care on polarity.
EV1 and EV2 (AL1 and AL2)	Available with polarity switching of normal open/normal close
Input of RTD	Connect terminal A/B/b with care.
Input of thermocouple, current or voltage	Connect with care on polarity.
Power supply for driving sensor	Connect with care on polarity.
In case of specification with 24VDC	Wire the "+" side with No. 10 side.



Input	0	Thermocouple (K, J, R, T, N, S or B)/RTD (Pt100 or JPt100)			Input switching	
	2	0 to 5VDC/1 to 5VDC/4 to 20mADC		20mADC	Input switching	
Option		В	Event output 2 (AL2: relay contact output)			
	F	Transmission output 1 to 5VDC				
	G	Transmission output 0 to 10VDC				
	Н	Transmission output 0 to 10mVDC				
	I	Transmission output 4 to 20mADC				
		К	Transmission output 0 to 1VDC			
		J	Transmission output 0 to 5VDC			
		М	Communication RS-485 (TOHO-exclusive protocol, MODBUS)			
Q			Power supply voltage for driving sensor (12VDC)			
Power supply/voltage				100 to 240VAC		
			24	24VAC/DC		

Panel cutting and outside dimension



Panel mounting





•Specifications are subject to change without notice. Note: The color printed in this catalog may be different from actual color.