E1. Temperature Controllers

Temperature controllers are used to identify measured temperature and release output to maintain desired temperatures.

E1-1	Panel Mount	TN Series	Two-Degree-of-Freedom PID Temperature Controllers
		TX Series	LCD PID Temperature Controllers
		TK Series	Simultaneous Heating & Cooling Output PID Temperature Controllers
		KPN Series	Bar Graph Temperature Controllers
		TCN Series	Dual Display PID Temperature Controllers
		TC Series	Single Display PID Temperature Controllers
		TA Series	Analog Non-Indication Type PID Temperature Controllers
		TF3 Series	Refrigeration Temperature Controllers
		TC3YF Series	Refrigeration Temperature Controllers
		TH4M Series	LCD Temperature / Humidity Controllers
		T3 / T4 Series	Thumbwheel Switch Temperature Controllers
		T3 / T4 Series	1-Channel Digital Temperature Indicators
		KN-1000B Series	Bar Graphic Temperature Indicators
		KN-2000W Series	1-Channel Digital Temperature Indicators
E1 - 2	DIN-Rail Mount	TMH Series	Modular 2 / 4-Channel PID Temperature Controllers with Screw Connector
		TM Series	Modular 2 / 4-Channel PID Temperature Controllers with Screwless Connector
		TR1D Series	Independent Single Display PID Temperature Controllers

Two-Degree-of-Freedom PID Temperature Controllers

TN Series

Features

control environments



Specifications

Power su	vlac	100 - 240 VAC~, 50/60 Hz ±10%		
Power consumption		≤ 8 VA		
Display type		11 segment, LCD type (operating value display part: 7 segment)		
Sampling period		50 / 100 / 250 ms (parameter)		
Input specification		Refer to Autonics website		
Option	СТ	• 0.0–50.0 A (primary current measurement range)		
input		• CT ratio: 1/1,000 • Measurement accuracy: ±5% F.S. ±1digit		
	Digital	 Contact - ON: ≤ 2 kΩ, OFF: ≥ 90 kΩ Non contact - residual voltage ≤ 1.0 V, leakage current ≤ 0.1 mA Outflow current: ≈ 0.5 mA per input 		
Control	Relay	250 VAC~ 3A 1a		
output	SSR	12 VDC== ±2 V, ≤ 20 mA		
	Current	DC 0 - 20 mA or DC 4 - 20 mA (parameter), Load resistance: \leq 500 Ω		
Option	Alarm	250 VAC~ 3 A 1a		
output	Transmission	DC 4 - 20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S.)		
	Communication	RS485		
Control	Туре	ON/OFF, P, PI, PD, PID		
type	Multi SV	≤4SV		
	Group PID	≤ 8 group		
	Zone PID	4 zones		
	ARW (Anti Reset Windup)	50 to 200 %		
Program	Program	≤ 10 patterns		
control	Step	≤ 200 steps (1 pattern: ≤ 20 steps)		
	Setting type	Time setting		
Hysteresi	S	Thermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F · Analog: 1 to 100 digit		
Proportional band (P)		0.1 to 999.9 °C (0.1 to 999.9%)		
Integral ti	me (I)	0 to 9,999 sec		
Derivative	e time (D)	0 to 9,999 sec		
Control cy	/cle (T)	Relay / SSRP output: 0.1 to 120.0 sec Selectable current or SSR drive output: 1.0 to 120.0 sec		
Manual re	set	0.0 to 100.0%		
Dielectric	strength	Between the charging part and the case: 3,000 VAC \sim 50/60 Hz for 1 min		
Vibration		0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Relay life	Mechanical	• OUT1/2: ≥ 5,000,000 operations • AL1/2/3/4/5/6: ≥ 20,000,000 operations		
cycle	Electrical	• OUT1/2: ≥ 200,000 operations • AL1/2/3/4/5/6: ≥ 100,000 operations		
Insulation	resistance	≥ 100 MΩ (500 VDC== megger)		
Insulation	type	Double insulation or reinforced insulation (mark: 🔟, dielectric strength between the measuring input part and the power part: 3 kV)		
Noise immunity		±2 kV square shaped noise by noise simulator (pulse width: 1 µs) R-phase, S-phase		
Memory retention		≈ 10 years (non-volatile semiconductor memory type)		
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient humidity		35 to 85%RH		
Protection	n structure	IP65 (Front panel, IEC standards)		
Loader port		• TNS: top side • TNH, TNL: front side		
Accessor	у	Bracket		
Unit weight (packaged)		• TNS: ≈ 128 g (≈ 156 g) • TNH: ≈ 184 g (≈ 286 g) • TNL: TNL: ≈ 301 g (≈ 443 g)		
Approval		(E . * 11) []		
Comm. pr	otocol	Modbus RTU/ASCII, Sync-Master, PLC ladderless		



 \cdot 2-DOF PID algorithm optimized for various

- Program control and fixed control models available
 Up to 10 patterns X 20 steps program setting (program control model)
- Timer function for preset operation (fixed control model)
- Simultaneous heating / cooling and automatic / manual control function
- Control functions: Group PID, Zone PID, Anti Reset Windup (ARW)
- Control status monitoring of up to 10 events
- RS485 communication output model available
 Communication protocols:

Modbus RTU / ASCII, PLC ladderless, Sync-Master

- Communication speed: up to 115,200bps
- Heater burnout alarm function (CT input)
- Parameter setting via PC
- Comprehensive Device Management Software (DAQMaster) provided
- Communication converter connection with front loader port (TNH, TNL only)
- Shortcut key setting with front user key button [U]
- Easy maintenance with detachable terminal blocks



View product detail

LCD PID Temperature Controllers

TX Series



Features

- 50 ms high-speed sampling rate and
 ± 0.3 % display accuracy
- Large LCD display with easy-to-read
 white PV characters
- Switch between current output and SSR drive output
- SSR drive output (SSRP function) control options: ON / OFF control, cycle control, phase control
- Communication output model available: RS485 (Modbus RTU)
- Parameter configuration via PC (RS485 communication): DAQMaster software included (comprehensive device management software)
- Compact, space-saving design with 45 mm depth: 30% rear-length size reduction compared to similar-sized (48 × 48 mm) models from Autonics Terminal protection cover sold separately: RSA-COVER

*Korea Patent Registration 30-2020-0020300, Korea Patent Registration 10-1651262, U.S.A. Patent Registration 10281339, Japan Patent Registration 6603317, China Patent Registration ZL201580039398.2, Germany Patent Application 112015003239.8

*Korea Design Registration 30-0999138

Specifications

Series		TX Series
Power supply		100 - 240 VAC~ 50/60 Hz ±10%
Power consumption		≤ 8 VA
Sampling	period	50 ms
Input spec	cification	Refer to Autonics website
Control	Relay	250 VAC~ 3 A, 30 VDC== 3 A, 1a
output	SSR	TX4S: 12 VDC≕ ±2 V, ≤ 20 mA TX4M/H/L: 13 VDC≕ ±3 V, ≤ 20 mA
	Current	DC 4–20 mA or DC 0–20 mA (parameter), Load resistance: \leq 500 Ω
Alarm output	Relay	AL1/2: 250 VAC~ 3 A 1a
Option output	PV transmission	DC 4 - 20 mA (Load resistance: \leq 500 Ω , Output Accuracy: ±0.3% F.S.)
	RS485 Comm.	Modbus RTU
Display ty	ре	11 Segment (Red, Green, Yellow), LCD type
Control type	Heating, Coo l ing	ON/OFF, P, PI, PD, PID Control
	Heating& Cooling	
Hysteresi	5	1 to 100 (0.1 to 50.0) °C/°F
Proportion	nal band (P)	0.1 to 999.9 °C/°F
Integral ti	me (I)	0 to 9,999 sec
Derivative	time (D)	0 to 9,999 sec
Control cy	rcle (⊤)	0.5 to 120.0 sec
Manual re	set	0.0 to 100.0%
	Mechanical	≥ 5,000,000 operations
cycle	Electrical	\ge 200,000 operations (resistance load: 250 VAC \sim 3 A)
Dielectric	strength	Between all terminals and case: 3,000 VAC \sim 50/60 Hz for 1 min
Vibration		0.75 mm amplitude at frequency 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
Insulation	resistance	≥ 100 MΩ (500 VDC megger)
Noise imm	nunity	$\pm 2~\text{kV}$ square shaped noise (pulse width 1 $\mu s)$ by noise simulator R-phase, S-phase
Memory r	etention	\approx 10 years (non-volatile semiconductor memory type)
Ambient t	emperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Protection structure		IP50 (Front panel, IEC standards)
Insulation type		Double or reinforced insulation (mark: , , dielectric strength between primary circuit and secondary circuit: 3 kV)
Approval		CE CNUS ERE
Unit weig	nt (packaged)	• TX4S: ≈ 87 g (≈ 146 g) • TX4M: ≈ 143 g (≈ 233 g) • TX4H: ≈ 133 g (≈ 214 g) • TX4L: ≈ 206 g (≈ 290 g)
Comm. pr		Modbus RTU
01) When usir	ng the unit at low t	emperature (below 0°C), display cycle is slow.

01) When using the unit at low temperature (below 0°C), display cycle is slow.



View product detail

Simultaneous **Heating & Cooling Output PID** Temperature Controllers

TK Series



TK4SP

≤ 8 VA

AC: ≤ 8 VA, DC ≤ 5W

TK4H

24 VAC~ 50/60 Hz ±10%, 24-48 VDC== ±10%

100 - 240 VAC \sim 50/60 Hz ±10%

≈ 70 g (≈ 140 g) ≈ 85 g (≈ 130 g)

100 - 240 VAC \sim 50/60 Hz ±10%

ткам

≈ 105 g (≈ 150 g) ≈ 140 g (≈ 210 g)

TK4L

Features

- 50 ms high-speed sampling rate and ± 0.3 % display accuracy
- Simultaneous heating and cooling control function
- · Switch between current output and SSR drive output
- SSR drive output (SSRP function) options: ON / OFF control, cycle control, p
- · Communication output models av RS485 (Modbus RTU)
- Parameter configuration via PC (RS485 communication)
- DAQMaster software included (comprehensive device management
- software)
- Communication converter sold separately: SCM-US (USB to serial converter), SCM-38I (RS-232C to RS485 converter), SCM-US48I (USB to RS485 converter)
- User-friendly parameter features
- Heater disconnect alarm function (CT input) - Current transformer (CT) sold separately: CSTC-E80LN, CSTC-E200LN, CSTS-E80PP
- SV preset function (up to 4 set values) using digital input terminals

Available in various DIN sizes:

48 × 24, 48 × 48, 72 × 72, 96 × 48, 48 × 96, 96 × 96 mm



View product detail

			AC/DC type	24
control	Power		AC type	≤
control	consumpt	tion	AC/DC type	A
	Unit weigl	nt (p	ackaged)	\approx
hase control	Sampling period			50
	Input spee	cifica	ation	Re
vailable:	Option	СТ	input	•
	input			٠
		Dia	ital input	

Specifications

AC type

AC type

consumption AC/DC type -

Unit weight (packaged)

Power supply AC type

AC/DC type -

TK4N

≤ 6 VA

TK4W

Series

Power

supply

Power

Series

Power sup	opiy AC type	100-240 VAC~ 50/80 HZ ±10%					
	AC/DC type	24 VAC~ 50/60 Hz ±10%, 24-48 VDC== ±10%					
Power	AC type	≤ 8 VA					
consumpt	tion AC/DC type	AC: ≤ 8 VA, DC ≤ 5W					
Unit weigh	ht (packaged)	$\approx 141 \text{ g} (\approx 211 \text{ g}) \qquad \approx 141 \text{ g} (\approx 211 \text{ g}) \qquad \approx 198 \text{ g} (\approx 294 \text{ g})$					
Sampling	period	50 ms					
Input spec	cification	Refer to Autonics website					
Option input	CT input	O.0-50.0 A (primary current measurement range) · CT ratio: 1/1,000 Measurement accuracy: ±5% F.S. ±1digit					
	Digital input	 Contact - ON: ≤ 2 kΩ, OFF: ≥ 90 kΩ Non contact - residual voltage ≤ 1.0 V, leakage current ≤ 0.1 mA Outflow current: ≈ 0.5 mA per input 					
Control	Relay	250 VAC~ 3 A, 30 VDC== 3 A 1a					
output	SSR	11 VDC±2 V, ≤ 20 mA					
	Current	DC 4-20 mA or DC 0-20 mA (parameter), Load resistance: \leq 500 Ω					
Alarm output	Relay	AL1, AL2: 250 VAC~ 3 A 1a • TK4N AL2: 250 VAC~ 0.5 A 1a (≤ 125 VA)					
Option	Transmission	DC 4 - 20 mA (Load resistance: ≤ 500 Ω, Output accuracy: ±0.3% F.S.)					
output	RS485 comm.	Modbus RTU					
Display ty	pe	7 segment (red, green, yellow), LED type					
Control type	Heating, Cooling Heating & Cooling	ON/OFF, P, PI, PD, PID Control					
Hysteresis		Thermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F Analog: 1 to 100 digit					
	nal band (P)	0.1 to 999.9 °C/°F (0.1 to 999.9%)					
Integral ti		0 to 9,999 sec					
Derivative		0 to 9,999 sec					
Control cy	/cle (T)	Relay output, SSR drive output: 0.1 to 120.0 sec Selectable current or SSR drive output: 1.0 to 120.0 sec					
Manual re	set	0.0 to 100.0%					
Relay life cycle	Mechanical	OUT1/2: ≥ 5,000,000 operations AL1/2: ≥ 20,000,000 operations (TK4H/W/L: ≥ 5,000,000 operations)					
	Electrical	≥ 100,000 operations					
Dielectric	strength	Between power source terminal and input terminal: 2,000 VAC \sim 50/60 Hz for 1 min					
Vibration		0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Insulation	resistance	≥ 100 MΩ (500 VDC megger)					
Noise imm	nunity	±2 kV square shaped noise by noise simulator (pulse width: 1 µs) R-phase, S-phase					
Memory retention		≈ 10 years (non-volatile semiconductor memory type)					
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)					
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)					
Protection structure		IP65 (Front panel, IEC standards) • TK4SP: IP50 (Front panel, IEC standards)					
Insulation	type	Double insulation or reinforced insulation (mark: [], dielectric strength between the measuring input part and the power part: 2 kV)					
Accessory	у	Bracket, Terminal protection cover (TK4N)					
Approval							
Comm. pr	otocol	Modbus RTU					

Bar Graph

Temperature Controllers

KPN Series



Features

- High speed sampling of 50 ms and ± 0.3 % display accuracy
- Enable to check control output operation
 amount by adopting bar graph
- Simultaneous heating / cooling control and automatic / manual control for high performance control
- Selection function of current output or SSR drive output
- Parameter setting available via PC (USB and RS485 communication)
 Free device comprehensive management program (DAQMaster)
- Communication converter sold separately: SCM-US (USB / Serial converter), SCM-38I (RS232C / RS485 converter), SCM-US48I (USB / RS485 converter)
- Multi-SV (Max. 4) function
 (select via digital input terminal)
- Heater break alarm
- CT sold separately: CSTC-E80LN, CSTC-E200LN, CSTS-E80PP
- Small size (rear length: 60 mm)
- Multi input / multi range



View product detail

Childs Number Supplier Power supplier S0 × 240 VAC~ 50/60 Hz Power supplier 51 VA Sampling period 50 ms Input specification Refer to Autonics website Option input CT input • 0.0-50.0 A (primary current measurement range) • CT ratio: 1/1,000 Input specification Refer to Autonics website 0.0 Option input CT input • 0.0-50.0 A (primary current measurement range) • CT ratio: 1/1,000 Relay 250 VAC~ 5 A 1a 0.0 Output SR 11 VD C=± 2.V ± 2.0 mA Current DC 4-20 mA or DC 0-20 mA (parameter), load resistance: ± 500 Ω Option output Transmission DC 4 - 20 mA (load resistance: ± 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) R5485 Modbus RTU Modbus RTU Option output R5485 Modbus RTU Cocling Heating, Cocling Properioalisand (P) Hysteresit * Thermocouple, RTD: 1 to 10 (0.1 to 10.0.0) *C/*F * Analog: 1 to 100 digit Properioalisand (P) 0 to 9.999 sec Derivative time (D) 0 to 9.999 sec 0 to 10.003	Series		KPN Series	
Power corsumption ≤ 15 VA Sampling period 50 ms Input specification Refer to Autonics website Option input CT input 0.0-50.0 A (primary current measurement range) + CT ratio: 1/1,000 Input specification 1 = 5 VDC = or 4 = 20 mA (Current Input: External resistance 250 Ω) Input specification 1 = 5 VDC = or 4 = 20 mA (Current Input: External resistance 250 Ω) Control Relay 250 VAC ~ 5 A 1a Output SSR 11 VDC = 20 mA (Do C > 20 mA (parameter), load resistance: ≤ 500 Ω output accuracy: ±0.3% F.S. ±1-digit) Output Relay 250 VAC ~ 3 A 1a Output Relating, Couremt Vo/OFF, P, PI, PD, PID Control Output Relating, Couring Modus RTU Primerosuphe, RTD: 1 to 100 (0 1 to 100.0) *C/F Analog: 1 to 100 cigit Primerosuphe, RTD: 1 to 100 (0 1 to 100.0) *C/F Analog: 1 to 100 cigit Primerosuphe, RTD: 1 to 100 (0 1 to 100.0) *C/F -10 to 120 see [Flay output model] Not 10 S99 99 sec 0 to 100.0% Portivative: > 00 to 0000 seeritions Vibration: > 01 to 120.0 see [Flay output model] -10 to 100 see [Flay output model] <td< th=""><th></th><th>amhr</th><th></th></td<>		amhr		
Sampling ⊨ried 56 ms Input specification Refer to Autonics website Option Properties CT input 0 0.0-50.0 A (primary current input: External resistance 250 Ω) Digital input 0 1.5 VDC= or 4 - 20 mA (Current Input: External resistance 250 Ω) Digital input 0 2.5 VDC= or 4 - 20 mA (Current Input: External resistance 250 Ω) Corront 0 Relay 2.5 VAC~ 5 A 1a Output 0 Current DC 4-20 mA (Do C 0-20 mA (parameter), load resistance: s 500 Ω Attach 0 Current DC 4-20 mA (load resistance: s 500 Ω, on upticat accuracy: ±0.3K F.S. ±1-digit) Relay C50 VAC~ 3 A 1a Corront 0 Option 0 Relating, Cooling Modbus RTU Relating, Cooling Modbus RTU Segment (red, green), control output bar graph (red, green), LED type Corling Heating, Cooling No/FF, P, PI, PD, PID Control Propericative im (0) 0 to 9.99 sec Corron Derivative im (0) 0 to 9.99 sec Corron Option 1 0 to 10.00% C/FF Named reversion 0 to 10.00 operations Corron Outo 100.00 Correr 0 to 10.00%<				
Input spe=ifection Refer to Autonics website Option (nput) CT input < 0.0-50.0 A (primary current measurement range) + CT ratio: 1/1,000 Remote SV 1 = 5 VDC=: or 4 = 20 mA (current input: External resistance 250 Ω) Digital input Contact - OR: 2 kΩ, OFF: 2 b kΩ Non contact - residual votage ≤ 1.0 V, leakage current ≤ 0.1 mA Output Relay 250 VAC~ 5 A 1a Output CC 4-20 mA or DC 0-20 mA (parameter), boad resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Relay DC 4-20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Relay DC 4 - 20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Relay DC 4 - 20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Robus RTU Segment (red, green), control output bar graph (red, green), LED type Cocling Modbus RTU Cocling N/OFF, P, PI, PD, PID Control Proporticature No 10 0.939 eC Proporticature 0 10 9.999 seC Cocling 0 10 9.999 seC Proporticature 0 10 10.000 operations Proporticature 0 10 10.000 operations Col 10 0.0% 10 10 0.000				
Option input CT input <0.0-50.0 A (primary current measurement range) - CT ratio: 1/1,000		-		
input Remote SV 1 - 5 VDC=: or 4 - 20 mA (Current Input: External resistance 250 0) Digital input : Contract - ON: ≤ 2 KQ, OFF: ≥ 90 KQ Non contact - residual voltage ≤ 1.0 V, leakage current ≤ 0.1 mA Control output Relay 250 VAC ~ 5 A 1a SR 11 VDC=::::::::::::::::::::::::::::::::::::				
Netlice 34 Fe of Contact - ON: 2 (λ), OF: 2 bol λ2 Digital input - Contact - ON: 2 (λ), OF: 2 bol λ2 Anno contact - residual voltage ≤ 1.0 V, leakage current ≤ 0.1 mA Control Relay 250 VAC~ 5 A 1a Current DC 4-20 mA or DC 0-20 mA (parameter), load resistance: ≤ 500 Ω Alarm Relay 0 Current DC 4-20 mA or DC 0-20 mA (parameter), load resistance: ≤ 500 Ω Output Relay 0 Current DC 4-20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Presonome Relating, Option Relating, Presonome Presonome Control Heating, Cooling Heating, Heating & ON/OFF, P, PI, PD, PID Control Preportiona To 10 99.9 e/C/F (0.1 to 99.9 %) Integral time (I) 0 to 9.99 sec Control Hor 10 120.0 sec [relay output model] Manuerset 0.0 to 10.00% Relay [ife Mechanical 100,000 operations Cycle 100,000 operations (load resistance: 250 VAC~ 3 A) Delectric< strength Between power source te				
Control Relay SNon contact - residual voltage ≤ 1.0 V, leakage current ≤ 0.1 mA Control SR 250 VAC~ 5 A 1a Current D C 4-20 mA or DC 0-20 mA (parameter), load resistance: ≤ 500 Ω Alam Relay 250 VAC~ 3 A 1a Output Transmission DC 4 - 20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Relay DC 4 - 20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Reads Control Quitput Post Transmission DC 4 - 20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Reading Control Quitput accuracy: ±0.3% F.S. ±1-digit) Post Transmoscuple, RTD: 1 to 100 (ol.1 to 100.0) °C/°F Post Post Thermoccuple, RTD: 1 to 100 (ol.1 to 100.0) °C/°F Post Properiative To 10 99.99 sec Control Control Or 10 0.99 sec Control Col 00.0% Post Control Properiative Fol 00.000 operations Edition 2 00.000 operations Post Post Post Properiative Fol 00.000 operations Cont 10.00 % Post Po	mpar			
output File SR 11 VDC=±2 V, ≤ 20 mA Qurrent DC 4-20 mA or DC 0-20 mA (parameter), load resistance: ≤ 500 Q Alarm output Relay 250 VAC~ 3 A 1a Option output Relay 250 VAC~ 3 A 1a Diplay transmission DC 4 - 20 mA (load resistance: ≤ 500 Q, output accuracy; ±0.3% F.S. ±1-digit) Restag Modbus RTU Diplay transmission DC 4, 20 mA (load resistance: ≤ 500 Q, output accuracy; ±0.3% F.S. ±1-digit) Restag Modbus RTU Diplay transmission DC 4, 20 mA (load resistance: ≤ 500 Q, output accuracy; ±0.3% F.S. ±1-digit) Propertion Restag Modbus RTU Control Control Control Coling Propertion NOPF, P, PI, PD, DD Control Heating 8 Cooling Therrocouple, RTD: 1 to 100 (01 to 100.0) °C/°F Analog: 1 to 100 digit 0 to 9.999 sec Derivative time (D) 0 to 9.999 sec Oo to 100.0% 0 to 9.999 sec On to 100.0% 0 to 10.0% Relay fife Manual rest 100 (000 operations (load resistance: 250 VAC~ 3 A) Dielectrical 100,000 operations (load resistance: 250 VAC~ 3 A) Dielectrical 100,000 operations		Digital input		
SR Π (UC - 22 (n A or DC O-20 mA (parameter), load resistance: ≤ 500 Ω Alarm output Centre DC 4-20 mA or DC O-20 mA (parameter), load resistance: ≤ 500 Ω) Alarm output Centre DC 4 - 20 mA (load resistance: ≤ 500 Ω) output accuracy: ±0.3% F.S. ±1-digit) Display type T segment (red, green), control output bar graph (red, green), LED type Control Pleating, Cooling Modbus RTU Display type T segment (red, green), control output bar graph (red, green), LED type Control Pleating, Cooling Thermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F Analog: 1 to 100 digit Thermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F Proportionut U to 9.999 sec Oto 9.999 sec Derivative (T) 0 to 10.00% Stancial 210.00.000 operations Every Stancial 210.00.000 operations 200 VAC~ 3 A) Dielectric Strong Multi aut retimial: 2,000 VAC~ 50/60 Hz for 1 min Vibration C/S mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Memory retention 100 VG Storage: -20 to 60 °C (no freezing or condensation) Abient type 25 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Abient type		Relay	250 VAC~ 5 A 1a	
Alarm output Relay 250 VAC~ 3 A 1a Option output Transmission DC 4 - 20 mA (load resistance: ≤ 500 Ω, output accuracy: ±0.3% F.S. ±1-digit) Display type 7 segment (red, green), control output bar graph (red, green), LED type Ontrol type Heating, Cooling ON/OFF, P, PI, PD, PID Control Hysteresit * Thermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F - Analog: 1 to 100 digit Proportion band (P) 0 to 9,999 sec Derivative time (D) 0 to 9,999 sec Oot 100.00% 0 to 100.00% Relay file Mechanical Electrical ≥ 100,000 operations Electrical ≥ 100,000 operations (load resistance: 250 VAC~ 3 A) Dielectric strength Between power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Memory retention ≈ 100 VAC storage: 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Ambient tumidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Ambient tumidit 26 (file C Ouble or reinforced insulation (mark: E], dielectric strength between the measuring input part and the power	output	SSR	11 VDC±2 V, ≤ 20 mA	
output Image: first set in the set is the set i		Current	DC 4–20 mA or DC 0–20 mA (parameter), load resistance: \leq 500 Ω	
outputoutput accuracy: ±0.3% F.S. ±1-digit)R5485 ColingModbus RTUDisplar UPE7 segment (red, green), control output bar graph (red, green), LED typeControl UpePacing & CoolingHeating & CoolingN/OFF, P, PI, PD, PID ControlHysteresUPE• Thermcouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F • Analog: 1 to 100 digitProportio: Long 1 to 999.9 °C/° (OLI to 999.9%)Integral Une (f)0 to 99.99.9 °C/° (OLI to 999.9%)Displar UPE0 to 99.99.9 °C/° (OLI to 99.9%)Control CVE0 to 9.99.9 °C/° (OLI to 99.9%)Displar UPE0 to 9.99.9 °C/° (OLI to 99.9%)Displar UPE0 to 9.99.9 °C/° (OLI to 99.9%)Displar UPE0 to 10.00 %Control CVE0 to 10.00 %Control CVE• 0.00.00 perationsManual TESE0.00 to 100.0%Relay Inf CYCle≥ 10.00.00 operationsIntegral Unice> 0.00 to 100.0%Relay Inf CYCle> 10.00 operations (load resistance: 250 VAC~ 3 A)Dislectric> 10.00 (S00 VDC= megger)Nisse Immuny> 21.00 AUG (S00 VDC= megger)Nisse Immuny> 10.050 °C, storage: -20 to 60 °C (no freezing or condensation)Andiest Immuny> 10.050 °C, storage: 35 to 85%RH (no freezing or condensation)Andiest ImmunyS 50 85%RH, storage: 35 to 85%RH (no freezing or condensation)Andiest ImmunyProstectio: part and the power part: 2 kV)Ander Storage ImmunyProstectio: part and the power part: 2 kV)And the power part: 2 kV)Prostectio: part and the power pa		Relay	250 VAC~ 3 A 1a	
Comm. 7 segment (red, green), control output bar graph (red, green), LED type Display type 7 segment (red, green), control output bar graph (red, green), LED type Cooling 0N/OFF, P, PI, PD, PID Control Hysteres: > : Thermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F Proportion: > on 100 00000000000000000000000000000000		Transmission		
Control type Heating, Cooling ON/OFF, P, PI, PD, PID Control Hysteres/ Cooling - Thermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F - Analog: 1 to 100 digit Proportional band (P) 0.1 to 999.9 °C/°F (0.1 to 999.9%) Integral time (I) 0 to 9,999 sec Derivative time (D) 0.1 to 120.0 sec [relay output model] - 1.0 to 120.0 sec [relay output model] Manual reset 0.0 to 100.0% Relay life Mechanical ≥ 10,000,000 operations cycle Electrical ≥ 100,000 operations (load resistance: 250 VAC~ 3 A) Dielectric strength Between power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min for 2 hours Noise immunity + 2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Memory retention ≈ 10 secs (non-volatile semiconductor memory type) Ambient temperature +10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Protections tructure IP65 (front panel, IEC standards) Insulation type Bracket Approval Ce £ [fl Unit weight (packaget) KPNS2[]: ≈ 160 g (≈ 230 g) · KPNS3[-]: ≈ 160 g (≈ 230 g)			Modbus RTU	
type Cooling Function of the trans of transmission of the transmission of the transmission of transmissi transmission of transmission of transmissi transmi	Display ty	ре	7 segment (red, green), control output bar graph (red, green), LED type	
CoolingHysteresisThermocouple, RTD: 1 to 100 (0.1 to 100.0) °C/°F Analog: 1 to 100 digitProportionIntegral time (P)0 to 99.99 oc °C/°F (0.1 to 999.9%)Integral time (D)0 to 9.999 secControl Control			ON/OFF, P, PI, PD, PID Control	
Analog: 1 to 100 digitProportional band (P)0.1 to 999.9 °C/°F (0.1 to 999.9%)Integral time (I)0 to 9,999 secDerivative time (D)0 to 9,999 secControl cycle (T)0.1 to 120.0 sec [relay output model] -1.0 to 120.0 sec [SSR drive output model]Manual reserve0.0 to 100.0% Relay life (Electrical \geq 100,000 operations (Load resistance: 250 VAC~ 3 A)Dielectric strengthBetween power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min for 2 hoursVibrational (brack 2 k) \geq 100 MQ (500 VDC= megger)Noise immunity \geq 100 MQ (500 VDC= megger)Noise immunity \geq 100 sers (non-volatile semiconductor memory type)Ambient temperature Anbient tumidity10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)Protectional true previde time inforced insulation (mark: I), dielectric strength between the measuring input part and the power part: 2 kV)AccessoryBracketApprovalC E IHIUnit weight (packaged)Storage: 320 g) (KPN53]-I: ≈ 160 g (≈ 230 g) (KPN55]-I: ≈ 200 g (≈ 316 g)				
Integral time (I)0 to 9,999 secDerivative time (D)0 to 9,999 secControl $\nabla V = (T)$ 0.1 to 120.0 sec [relay output model]Note 120.0 sec [SSR drive output model]Manual reset0.0 to 100.0%Relay life $CycleMechanicalElectrical\geq 10,000 operations (load resistance: 250 VAC~ 3 A)Dielectric strengthBetween power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 minVibration0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z directionfor 2 hoursInsulation resistance\geq 100 M\Omega (500 VDC= megger)Noise immunity\leq 2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phaseMemory retention\approx 10 years (non-volatile semiconductor memory type)Ambient temperature-10 to 50°c, storage: -20 to 60°C (no freezing or condensation)Protection structureIP65 (front panel, IEC standards)InsulationUbub cor reinforced insulation (mark: [], dielectric strength between the measuring inputpart and the power part: 2 kV)AccessoryBracketApprovalC E HIUnit weight (packaged)·KPN52]-[]: $ 200 g ($ 316 g)$	Hysteresi	S		
Derivative time (D) 0 to 9,999 sec Control cycle (T) :0.1 to 120.0 sec [relay output model] Manual reset 0.0 to 100.0% Relay life cycle Mechanical ≥ 10,000,000 operations Electrical ≥ 10,000 operations (load resistance: 250 VAC~ 3 A) Dielectric strength Between power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Insulation resistance ≥ 100 MQ (500 VDC= megger) Noise imwunity ≤ 140 AQ (500 VDC= megger) Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient tumidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval CE EHI Unit weight (packaged) · KPN52□-□: ≈ 200 g (≈ 316 g)	Proportion	nal band (P)	0.1 to 999.9 °C/°F (0.1 to 999.9%)	
Control cycle (T) O.1 to 120.0 sec [relay output model] 10 to 120.0 sec [SSR drive output model] Manual reset 0.0 to 100.0% Relay life cycle Mechanical 2 10,000 operations [loctrical 2 10,000 operations (load resistance: 250 VAC~ 3 A) Dielectricstrength Between power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Insulation resistance 2 100 MQ (500 VDC== megger) Noise immunity 2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Memory retention ~10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient turidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation: reinforced insulation (mark: II, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C C E IHI Unit weight (packaged)	Integral ti	me (I)	0 to 9,999 sec	
Annual reset $\cdot 10$ to 120.0 sec [SSR drive output model]Manual reset0.0 to 100.0%Relay life cycleMechanical Electrical $\geq 10,000$ operations (load resistance: 250 VAC~ 3 A)DielectricTerm gthBetween power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 minVibration0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hoursInsulation resistance $\geq 100 M\Omega (500 VDC=megger)$ Noise $\pm 100 M\Omega (500 VDC=megger)$ Noise $\pm 100 M\Omega (500 VDC=megger)$ Ambient resistance $\approx 10 yaars (non-volatile semiconductor memory type)$ Ambient term protection $\approx 10 yaars (non-volatile semiconductor memory type)$ Protection $\Gamma 10 to 50^{\circ}C, storage: -20 to 60^{\circ}C (no freezing or condensation)Protection\Gamma 10 to 50^{\circ}C, storage: 35 to 85%RH (no freezing or condensation)Protection\Gamma 10 to 50^{\circ}C, storage: 35 to 85%RH (no freezing or condensation)Protection\Gamma 10 to 50^{\circ}C, storage: 35 to 85%RH (no freezing or condensation)Protection\Gamma 10 to 50^{\circ}C, storage: 35 to 85%RH (no freezing or condensation)Ambient term protection\Gamma 10 to 50^{\circ}C, storage: 35 to 85%RH (no freezing or condensation)Accessory\Gamma 10 to 50^{\circ}C, storage: 35 to 85%RH (no freezing or condensation)Accessory\Gamma 10 to 50^{\circ}C, storage: 35 to 85%RH (no freezing or condensation)Accessory\Gamma 2 to 50^{\circ}C, storage: 35 to 85\%RH (no freezing or condensation)Accessory\Gamma 2 to 50^{\circ}C, storage: 35 to 35\%RH (no freezing or condensation)Accessory\Gamma 2 to 50^{\circ}C, stor$	Derivative	e time (D)	0 to 9,999 sec	
Mechanical Protection ≥ 10,000,000 operations Dielectrical ≥ 100,000 operations (load resistance: 250 VAC~ 3 A) Dielectrical Between power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Insulation ≥ 100 MQ (500 VDC= megger) Noise immunity ≤ 2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Ambient temperature Ambient temperature 100 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Protection sto 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection the 50 vero reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval CE HI Unit weight (packaged) : KPN52□-□: ≈ 160 g (≈ 230 g), KPN53□-□: ≈ 160 g (≈ 230 g)	Control cy	/cle (T)		
cycle Electrical ≥ 100,000 operations (load resistance: 250 VAC~ 3 A) Dielectric strength Between power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Insulation resistance ≥ 100 MΩ (500 VDC= megger) Noise immunity ± 2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Memory retention ≈ 10 years (non-volatile semiconductor memory type) Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient structure IP65 (front panel, IEC standards) Insulation try Bracket Approval C € HII Viti weight (packaged) · KPN52□-□: ≈ 120 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g) · KPN53□-0: ≈ 200 g (≈ 316 g)	Manual re	set	0.0 to 100.0%	
Dielectric strength Between power source terminal and input terminal: 2,000 VAC~ 50/60 Hz for 1 min Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Insulation resistance ≥ 100 MQ (500 VDC== megger) Noise immunity ±2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Memory retention ≈ 10 years (non-volatile semiconductor memory type) Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C€ EIII Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Relay life	Mechanical	≥ 10,000,000 operations	
Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours Insulation resistance ≥ 100 MQ (500 VDC == megger) Noise immunity ±2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Memory retention ≈ 10 years (non-volatile semiconductor memory type) Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Bouble or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C € [HI] Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	cycle	Electrical	\geq 100,000 operations (load resistance: 250 VAC \sim 3 A)	
Insulation resistance ≥ 100 MΩ (500 VDC == megger) Noise immunity ±2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Memory retention ≈ 10 years (non-volatile semiconductor memory type) Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C€ ENIC Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g) · KPN53□-0: ≈ 160 g) <td>Dielectric</td> <td>strength</td> <td>Between power source terminal and input terminal: 2,000 VAC \sim 50/60 Hz for 1 min</td>	Dielectric	strength	Between power source terminal and input terminal: 2,000 VAC \sim 50/60 Hz for 1 min	
Noise immunity ±2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase Memory retention ≈ 10 years (non-volatile semiconductor memory type) Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C€ EHI Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Vibration			
Memory retention ≈ 10 years (non-volatile semiconductor memory type) Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C€ EIII Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Insulation	resistance	≥ 100 MΩ (500 VDC megger)	
Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation) Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C€ ENI Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Noise imm	nunity	±2 kV square shaped noise (pulse width 1 µs) by noise simulator R-phase, S-phase	
Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation) Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C€ ENI Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Memory r	etention	\approx 10 years (non-volatile semiconductor memory type)	
Protection structure IP65 (front panel, IEC standards) Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C € ENI Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)	
Insulation type Double or reinforced insulation (mark: □, dielectric strength between the measuring input part and the power part: 2 kV) Accessory Bracket Approval C € ENI Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)	
part and the power part: 2 kV) Accessory Bracket Approval C € ENI Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g)	Protection structure		IP65 (front panel, IEC standards)	
Approval C € [H] Unit weight (packaged) · KPN52□-□: ≈ 160 g (≈ 230 g) · KPN53□-□: ≈ 160 g (≈ 230 g) · KPN55□-□: ≈ 220 g (≈ 316 g)	Insulation type			
Unit weight (packaged) • KPN52□-□: ≈ 160 g (≈ 230 g) • KPN53□-□: ≈ 160 g (≈ 230 g) • KPN55□-□: ≈ 220 g (≈ 316 g)	Accessory		Bracket	
• KPN55□-□: ≈ 220 g (≈ 316 g)			C€ERE	
Comm. protocol Modbus RTU	Unit weigl	nt (packaged)		
	Comm. protocol		Modbus RTU	

Dual Display

PID Temperature Controllers

TCN Series

Features

• Dual digital display (PV / SV)

± 0.5 % display accuracy

SSR drive output

phase control

for easier reading

Registration IDP0032166

• 100 ms high-speed sampling rate and

• SSR drive output (SSRP function) control options: ON / OFF control, cycle control,

Compact design with large display panels

*Korea Patent Registration 10-1002582, U.S.A. Patent Registration 8645000, Japan Patent Registration 3184816, China Patent Registration ZL200980111733.X, Vietnam Patent Registration 1-0012131, India Patent Registration 291573, Indonesia Patent

• Switch between relay output and



Series		TCN4 -22	TCN4 -24	
Power supp	bly	24 VAC~ 50/60 Hz ±10% 24 - 48 VDC== ±10%	100 - 240 VAC~ 50/60 Hz ±10%	
Power cons	sumption	AC: ≤ 5 VA, DC: ≤ 3 W	≤ 5 VA	
Sampling p	eriod	100 ms		
Input speci	fication	Refer to Autonics website		
Control	Relay	250 VAC \sim 3A, 30 VDC= 3A, 1a		
output	SSR	12 VDC±2 V, ≤ 20 mA		
Alarm outp	ut	250 VAC~ 1 A 1a		
Display typ	е	7 Segment (red, green), LED type		
Control type	Heating, Cooling	ON/OFF, P, PI, PD, PID Control		
Hysteresis		1 to 100 (0.1 to 50.0) °C/°F		
Proportiona	al band (P)	0.1 to 999.9 °C/°F		
Integral tim	e (I)	0 to 9,999 sec		
Derivative t	time (D)	0 to 9,999 sec		
Control cyc	le (⊤)	0.5 to 120.0 sec		
Manual res	et	0.0 to 100.0%		
Relay life	Mechanica l	≥ 5,000,000 operations		
cycle	Electrical	OUT1/2: ≥ 200,000 operations (load resistance: 250 VAC \sim 3 A) AL1/2: ≥ 300,000 operations (load resistance: 250 VAC \sim 1 A)		
Dielectric s	trength	Between input terminal and power terminal: 1,000 VAC \sim 50/60 Hz for 1 min	Between input terminal and power terminal: 2,000 VAC \sim 50/60 Hz for 1 min	
Vibration		$0.75\ mm$ amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Insulation r	esistance	≥ 100 MΩ (500 VDC megger)		
Noise immu	unity	± 2 kV square shaped noise (pulse width: 1 $\mu s)$ by noise simulator R-phase, S-phase		
Memory ref	tention	\approx 10 years (non-volatile semiconductor memory type)		
Ambient te	mperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)		
Insulation type		Mark: , double or reinforced insulation (dielectric strength between the measuring input part and the power part: 1 kV)		
Approval		CE : RI 💿		
Unit weight (packaged)		• TCN4S: ≈ 100 g (≈ 147 g) • TCN4M: ≈ 133 g (≈ 203 g) • TCN4H: ≈ 124 g (≈ 194 g) • TCN4L: ≈ 179 g (≈ 275 g)		



Single Display

PID Temperature Controllers

TC Series

Features

• Single digital display (switch between PV and SV)

SSR drive output

phase control

for easier reading

maintenance (TCN4S---P)

± 0.5 % display accuracy

 $\cdot\,100~\text{ms}$ high-speed sampling rate and

• SSR drive output (SSRP function) control options: ON / OFF control, cycle control,

Compact design with large display panels

· Connector plug types offer easier wiring and

Switch between relay output and



Specifications

Series		TC4-2	TC4-4	
Power supp		24 VAC~ 50/60 Hz ±10%	100 - 240 VAC~ 50/60 Hz ±10%	
Power supply		24-48 VDC== ±10%	100 - 240 VAC.~ 50/60 HZ ±10%	
Power cons	sumption	AC: ≤ 5 VA, DC: ≤ 3 W	≤ 5 VA	
Sampling p	eriod	100 ms		
Input speci	fication	Refer to Autonics website		
Control	Relay	250 VAC \sim 3 A, 30 VDC= 3 A, 1a		
output	SSR	12 VDC==±2 V, ≤ 20 mA		
Alarm outp	ut	250 VAC~ 1 A 1a		
Display typ	e	7 Segment (red, green, yellow), LED type		
Control type	Heating, Cooling	ON/OFF, P, PI, PD, PID Control		
Hysteresis		1 to 100 (0.1 to 50.0) °C/°F		
Proportiona	al band (P)	0.1 to 999.9 °C/°F		
Integral tim	e (I)	0 to 9,999 sec		
Derivative t	time (D)	0 to 9,999 sec		
Control cyc	le (T)	0.5 to 120.0 sec		
Manual res	et	0.0 to 100.0%		
Relay life	Mechanical	OUT1/2, AL1/2: ≥ 5,000,000 operations		
cycle	Electrical	OUT1/2: ≥ 200,000 operations (load resistance: 250 VAC~ 3A) AL1/2: ≥ 300,000 operations (load resistance: 250 VAC~ 1 A)		
Dielectric s	trength	Between input terminal and power terminal: 1,000 VAC \sim 50/60 Hz for 1 min	Between input terminal and power terminal: 2,000 VAC \sim 50/60 Hz 1 min	
Vibration		0.75 mm amplitude at frequency 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Insulation r	esistance	≥ 100 MΩ (500 VDC megger)		
Noise immu	unity	Square shaped noise (pulse width: 1 $\mu s)$ by noise simulator ±2 kV R-phase, S-phase		
Memory re	tention	\approx 10 years (non-volatile semiconductor memory type)		
Ambient te	mperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient hu	imidity	35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)		
Insulation type		Mark: , double or reinforced insulation (dielectric strength between the measuring input part and the power part: 1 kV) Mark: , double or reinforced insulation (dielectric strength between the measuring input part and the power part: 2 kV) 		
Approval				
Unit weight (packaged)		$\begin{array}{l} \bullet \mbox{ TC4S: \approx 94 g (\approx 141 g)$} \bullet \mbox{ TC4SP: \approx 76 g (\approx 174 g)$} \bullet \mbox{ TC4Y: \approx 85 g (\approx 174 g)$} \bullet \mbox{ TC4M: \approx 133 g (\approx 174 W: \approx 122 g (\approx 194 g)$} \bullet \mbox{ TC4H: \approx 122 g (\approx 155 g (\approx 254 g)$} \end{array}$	204 g)	



Controllers

Analog Non-Indication Type PID Temperature Controllers

TA Series

Features

Auto-tuning PID temperature control

Deviation indicators (green, red LED)
 Control output indicator (red LED)

Sensor disconnect display function

• Built-in microprocessor

Stop control output function using analog dial

• PID and ON / OFF control: toggle via external switch



Series TA Series Power supply 100 - 240 VAC~ 50/60 Hz ±10% Power consumption ≤ 4 VA Sampling period 100 ms Power sufficience DTD: DDt1000 (allowable line registence per o wire; <e 0)<="" td=""></e>
Power consumption ≤ 4 VA Sampling period 100 ms
Sampling period 100 ms
Input specification • RTD: DPt100Ω (allowable line resistance per a wire: ≤5 Ω) • Thermocouple: K (CA), J (IC)
Control Relay 250 VAC~ 3 A, 30 VDC== 1 A 1c
output SSR 12 VDC==±2 V, ≤ 20 mA
Display type PV deviation, Error display (red, green), LED type
Setting method Front dial
Setting accuracy • At room temperature (23 °C ±5 °C) Over 100 °C model: F.S.±2%, below 100 °C model: F.S.±3% • Out of room temperature range Over 100 °C model: F.S.±3%, below 100 °C model: F.S.±4%
Control ON / OFF Hysteresis: 2°C (fixed)
type PID Control Control cycle: relay output 20 sec / SSR drive output 2 sec
Relay life Mechanical ≥ 10,000,000 operations (18,000 operations/time)
cycle Electrical ≥ 100,000 operations (900 operations/time)
Dielectric strength Between input terminal and power terminal: 2,000 VAC~ 50/60 Hz for 1 min
Vibration 0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Insulation resistance $\geq 100 \text{ M}\Omega \text{ (500 VDC} = \text{megger)}$
Noise immunity Square shaped noise (pulse width: 1 µs) by noise simulator ±2 kV R-phase, S-phase
Memory retention ≈ 10 years (non-volatile semiconductor memory type)
Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Insulation type Double or reinforced insulation (mark: , dielectric strength between the measuring inp part and the power part: 2 kV)
Approval CE C SU Is EAE
Unit weight (packaged) ・ TAS: ≈ 69 g (≈ 107 g) ・ TAM: ≈ 109 g (≈ 171 g) ・ TAL: ≈ 147 g (≈ 232 g)



Refrigeration

Temperature Controllers

TF3 Series



Features

 Standard installation size for refrigeration panels (W 70.3 × H 28.2mm)

Specifications

- Various compressor load current capacity: 5 A, 16 A, 20 A
- Various user-friendly functions
- Defrost sync function : simultaneous defrost operation of multiple controllers (up to 6 units)
- RTC (Real Time Clock) function : night mode operation and real-time defrost control
- Built-in alarm function
- Remote monitoring of real-time temperature and output control (using TFD series remote display unit, sold separately)
- Communication output models available: RS485 (Modbus RTU)
- Parameter configuration via PC (RS485 communication): DAQMaster software included (comprehensive device management software)
- IP65 protection structure (IEC standard): front panel only

Series		TF3 Series
Power	AC	100 - 240 VAC~ 50/60 Hz ±10%
supply	AC / DC	24 VAC~ 50/60 Hz ±10%, 12-24 VDC== ±10%
Power	AC	≤ 8 VA
consumption	AC / DC	AC: ≤ 5 VA, DC: ≤ 3 W
Sampling peri	od	500 ms
Input specifica	ation	Refer to Autonics website
Option input	Digital input	 Contact - ON: ≤ 1 kΩ, OFF: ≥ 100 kΩ Non contact - residual voltage ≤ 1 V, leakage current ≤ 1 mA Outflow current: ≈ 4 uA
Control output	Compressor (COMP)	250 VAC~ 5 A / 30 VDC= 5 A / 1a 250 VAC~ 16 A / 24 VDC= 16 A / 1c 250 VAC~ 20 A 1a
	Defrost (DEF)	250 VAC~ 10 A / 24 VDC== 10 A / 1a
	Auxiliary (AUX)	250 VAC~ 5 A / 30 VDC= 5 A / 1a
RS485 comm	unication	Modbus RTU
Display type		7 segment (red), LED type
Control type		ON/OFF Control
Hysteresis		0.5 to 5.0 °C, 2 to 10 °F
Relay life cycle	Mechanical	 COMP (5 A 1a), AUX: ≥ 5,000,000 operations COMP (16 A 1c), DEF: ≥ 20,000,000 operations COMP (20 A 1a): ≥ 10,000,000 operations
	Electrical	 COMP (5 A 1a), AUX: ≥ 50,000 operations (load resistance: 250 VAC ~ 5 A) COMP (16 A 1c): ≥ 30,000 operations (load resistance: 250 VAC ~ 16 A) COMP (20 A 1a): ≥ 100,000 operations (load resistance: 250 VAC ~ 20 A) DEF: ≥ 100,000 operations (load resistance: 250 VAC ~ 10 A)
Dielectric strength	AC	Between all terminals and case, power and input circuit: 3,000 VAC ~ 50 / 60 Hz for 1 min
	AC / DC	Between all terminals and case, power and input circuit: 1,000 VAC ~ 50 / 60 Hz for 1 min
Vibration		1.5 mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Insulation resi	stance	≥ 100 MΩ (500 VDC== megger)
Noise immunity		Square shaped noise by noise simulator (pulse width 1 $\mu s)$ ±2 kV R-phase, S-phase
Memory retention		\approx 10 years (non-volatile semiconductor memory type)
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Protection structure		IP65 (front panel, IEC standards)
Approval		CE c C c C c C c C c c c c c c c c c c c
Unit weight (p	ackaged)	≈ 105 g (≈ 207 g)



Controllers

Refrigeration

Temperature Controllers

TC3YF Series

Features

• ON / OFF control

upon request.

Temperature range
Thermistor (NTC):

- RTD (Pt100 Ω):

cooling control

Input correction function

Standard input type: thermistor (NTC)
 - RTD (Pt100Ω) input models available

-40.0 to 99.9 °C -40 to 212 °F)

-99.9 to 99.9 °C (-148 to 212 °F) • Various functions available for optimal

Auto / manual defrost selection,
 compressor start-up delay, restart delay,
 minimum ON time, end-defrost delay,
 evaporator fan operation delay

• Operation cycle programming available to protect contents in case of error



Series	Series		TC3YF Series		
Power su	ipply	AC	100 - 240 VAC~ 50/60 Hz		
		DC	12-24 VDC		
Allowabl	Allowable voltage range		90 to 110% of rated voltage		
Power			≤ 4 VA		
consum	otion	DC	≤ 8 W		
Sampling	g period		500 ms		
Input spe	ecification		Refer to Autonics website		
Display a	iccuracy		At room temperature (23 ±5 °C): (PV ±0.5% or 1 °C higher one) rdg ±1 digit Out of room temperature range: (PV ±0.5% or 1 °C higher one) rdg ±1 °C		
Control output	Compress (COMP)	or	250 VAC~ 5 A 1a, 30 VDC== 5 A 1a		
	Defrost (D	EF)	250 VAC \sim 10 A 1a		
	Evaporation- fan (FAN)		250 VAC~ 5 A 1a, 30 VDC= 5 A 1a		
Display t	уре		7 segment (red), LED type		
Control t	уре		ON/OFF Control		
Hysteres	sis		0.5 to 5.0 °C, 2 to 50 °F		
Relay	Mechanical		≥ 20,000,000 operations		
life cycle	Electrical		• COMP, DEF: ≥ 50,000 operations (load resistance: 250 VAC \sim 5 A) • FAN ≥ 100,000 operations (load resistance: 250 VAC \sim 10 A)		
Dielectri	c strength		Between all external terminals and case: 2,000 VAC \sim 60 Hz for 1 min		
Vibratior	ı		0.75 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Malfunct	ion vibratio	on	0.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min		
Insulatio	n resistanc	e	≥ 100 MΩ (500 VDC megger)		
Noise im	munity	AC	± 2 kV square shaped noise (pulse width 1 μs) by noise simulator R-phase, S-phase		
		DC	$\pm 500~V$ square shaped noise (pulse width 1 μs) by noise simulator R-phase, S-phase		
Memory	Memory retention		\approx 10 years (non-volatile semiconductor memory type)		
Ambient temperature		re	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient humidity			35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)		
Protectio	on structure	e	IP65 (Front panel, IEC standards)		
Approva	I	AC	e 🔊 🕼 (Except RTD option models) 🔣		
	DC		EAC		
Unit weig	Unit weight (packaged)		≈ 143 g (≈ 229 g)		



LCD

Temperature / Humidity Controllers

TH4M Series



Features

- Simultaneous control of temperature and humidity
- LCD display with easy-to-read white and blue characters
- Input correction of temperature and humidity
- Output delay time setting
- Deviation high / low-limit alarm output
- Dedicated temperature / humidity sensor THD-RM (accessory)

Specifications

Model		TH4M-24R	
Power supply		100 - 240 VAC~ 50/60 Hz ±10%	
Power consumption		≤ 8 VA	
Sampling	period	1 sec	
Disp l ay accuracy	Temperature	 At room temperature (25 °C ±5 °C): ≤ ±1.0 °C Out of room temperature range: ≤ ±2.0 °C 	
	Humidity	 At room temperature (25 °C ±5 °C): ≤ ±3.0%RH (20 to 90%RH), ≤ ±5.0%RH (below 20%RH, over 90%RH) Out of room temperature: ≤ ±5.0%RH (all range) 	
Display	Temperature	-20.0 to 60.0 °C	
range	Humidity	10.0 to 100.0%RH	
Using	Temperature	-20.0 to 60.0 °C	
range	Humidity	10.0 to 100.0%RH	
Control output ⁰¹⁾	Temperature (OUT1)	Relay: 250 VAC \sim 3 A, 30 VDC $=$ 3 A, 1a	
	Humidity (OUT2)	Relay: 250 VAC \sim 3 A, 30 VDC= 3 A, 1a	
Alarm output	Relay	AL1/2: 250 VAC~ 3 A, 1a	
Display ty	pe ⁰²⁾	11-Segment (temperature: white, humidity: blue), other display (yellow) LCD type	
Control ty	ре	ON/OFF control	
Relay life	Mechanical	≥ 5,000,000 operations	
cycle	Electrical	\geq 200,000 operations (resistance load: 250 VAC \sim 3 A)	
Dielectric	strength	Between primary circuit and secondary circuit: 3,000 VAC \sim 50/60 Hz for 1 min	
Vibration		0.75 mm amplitude at frequency 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Insulation	resistance	≥ 100 MΩ (500 VDC megger)	
Noise imm	nunity	± 2 kV square shaped noise (pulse width 1 $\mu s)$ by noise simulator R-phase, S-phase	
Memory retention		\approx 10 years (non-volatile semiconductor memory type)	
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)	
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)	
Insulation type		Double or reinforced insulation (mark: , dielectric strength between primary circuit and secondary circuit: 3 kV)	
Approval		CE	
Unit weight		≈ 144 g	
)1) Connect to a load using the s		same nower supply. Connecting to a load from a different nower supply may cause safety issues	

01) Connect to a load using the same power supply. Connecting to a load from a different power supply may cause safety issues. 02) When using the unit at low temperature (below 0°C), display cycle is slow.



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[Temperature / Humidity sensor]

Model		THD-RM
Power supply		3.3 VDC== ±2%
Power cor	sumption	≤ 1.3mA
Response time		15 sec
accuracy	Temperature	 At room temperature (25 °C ±5 °C): ≤ ±1.0 °C Out of room temperature: ≤ ±2.0 °C
	Humidity	 At room temperature (25 °C ±5 °C): ≤ ±3.0%RH (20 to 90%RH), ≤ ±5.0%RH (below 20%RH, over 90%RH) Out of room temperature: ≤ ±5.0%RH (all range)
Sensing range	Temperature	-20.0 to 60.0 °C
	Humidity	10.0 to 100.0%RH
Communication type		I2C communication output
Dielectric strength		Between primary circuit and case: 500 VAC \sim 50/60 Hz for 1 min
Vibration		0.75 mm amplitude at frequency 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
Ambient temperature		-20 to 60 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity		0 to 100%RH, storage: 35 to 85%RH (no freezing or condensation)
Cable		Ø4 mm, 4 seam , 2 m (tensile strength: 1kgf/s)
Approval		CE
Unit weight		≈ 56 g

Thumbwheel Switch

Temperature Controllers

T3 / T4 Series



Features

 Various control output options: relay, SSR drive, current

 \cdot 2 independent set points and control outputs for heating and cooling control (T4LP)

• Various sizes (W 48 × H 48, W 48 × H 96, W 72 × H 72, W 96 × H 96 mm)

Specifications

I

Series		T3/T4 Series
Power supply		100 - 240 VAC~ 50/60 Hz ±10%
Power consumption		≤ 5 VA
Sampling period		100 ms
Input specifi	cation	Refer to Autonics website
Display accuracy ⁰¹⁾		 At room temperature (23 °C ±5 °C): (PV ±0.5% or ±1°C higher one) ±1 digit Out of room temperature range: (PV ±0.5% or ±2 °C higher one) ±1 digit
Control output	Relay ⁰²⁾	OUT1: 250 VAC~ 5 A / 30 VDC= 5A 1c, OUT2: 250 VAC~ 2 A / 30 VDC= 2A 1c
	SSR	12 VDC==±2 V, ≤ 20 mA
	Current	DC 4-20 mA, Load resistance: \leq 500 Ω
Option outp	ut	250 VAC~ 2 A 1c
Alarm output setting range		F.S. 0 to 10% (volume switch)
Option output setting range		0 to 50 °C (volume switch)
Reset range		F.S3 to 3% (volume switch)
Display type		7 segment (red), LED type
Control type		ON/OFF, Proportional control
Hysteresis		F.S. 0.2 to 3% (T3S: F.S. 0.5%) (volume switch)
Proportional	band	F.S. 1 to 10% (T3S: F.S. 3%) (volume switch)
Proportional	cycle	20 sec
Relay life	Mechanica l	≥ 5,000,000 operations
cycle	Electrical	OUT1: ≥ 100,000 operations, OUT2: ≥ 200,000 operations
Dielectric st	rength	Between input terminal and power terminal: 2,000 VAC \sim 50/60 Hz for 1 min
Vibration		0.75 mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Insulation resistance		≥ 100 MΩ (500 VDC megger)
Noise immunity		± 2 kV square shaped noise by noise simulator (pulse width 1 $\mu s)$ R-phase, S-phase
Memory retention		\approx 10 years (non-volatile semiconductor memory type)
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Approval		EAC
Unit weight (packaged)		• T3S: ≈ 95 g (≈ 135 g) • T3H, T3HA, T3HS: ≈ 176 g (≈ 239 g) • T4M, T4MA: ≈ 180 g (≈ 246 g) • T4L, T4LA, T4LP: ≈ 222 g (≈ 310 g)
01) In case of the	e T3S Series an	d the decimal point display models

01) In case of the T3S Series and the decimal point display models At room temperature (23 °C ±5 °C): (PV ±0.5% or ±2 °C higher one) ±1 digit Out of room temperature range; (PV ±0.5% or ±2 °C higher one) ±1 digit
02) Dual setting output of the T4LP is fixed as relay output and, it is also available as alarm output.



View product detail

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1-Channel Digital

Temperature Indicators

T3 / T4 Series

Features



Specifications

 Various control output options : 		
relay, SSR drive, current		

• 2 independent set points and control outputs for heating and cooling control (T4LP)

• Various sizes (W 48 × H48, W 48 × H 96, W 72 × H 72, W 96 × H 96 mm)

Series	T3/T4 Series
Power supply	100 - 240 VAC~ 50/60 Hz ±10% (T3NI: 12 -24 VDC== ±10%)
Power consumption	≤ 5 VA (T3NI: ≤ 1 W)
Input specification	Refer to Autonics website
Display accuracy ⁰¹⁾	 At room temperature (23 °C ±5 °C): (PV ±0.5% or ±1°C higher one) ±1 digit Out of room temperature range: (PV ±0.5% or ±2 °C higher one) ±1 digit
Display type	7 Segment (red), LED type
Dielectric strength	Between input terminal and power terminal: 2,000 VAC \sim 50/60 Hz for 1 min
Vibration	$0.75 \mbox{ mm}$ amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Insulation resistance	≥ 100 MΩ (500 VDC megger)
Noise immunity	$\pm 2~\text{kV}$ square shaped noise (pulse width 1 $\mu\text{s})$ by noise simulator R-phase, S-phase
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity	35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Accessory	Bracket
Approval	ERC
Unit weight (packaged)	• T3NI: ≈ 25 g (≈ 48 g) • T4YI: ≈ 123 g (≈ 181 g) • T4WI: ≈ 140 g (≈ 231 g) • T3SI: ≈ 80 g (≈ 120 g) • T3HI: ≈ 137 g (≈ 203 g) • T4MI: ≈ 137 g (≈ 202 g) • T4LI: ≈ 185 g (≈ 274 g)
	and the decimal point display models

At room temperature (23 ° c ± 5 °C): (PV ±0.5% or ± 2 °C higher one) ±1 digit Out of room temperature range: (PV ±0.5% or ±3 °C higher one) ±1 digit



View product detail

Bar Graphic

Temperature Indicators

KN-1000B Series



Features

- \cdot High accuracy with 16 bit ADC (± 0.2 % F.S.)
- Multi-input
- Thermometer 12 types
- RTD 5 types
- Analog: current 2 types / voltage 4 types
- 101 LED bar graph (green)
- Various output options
- Alarm output: 2 points / 4 points
- 4 20 mA transmission output (isolated), RS485 Communication output
- Various functions
- Bar graph alarm display
- High / Low peak input monitoring
- Alarm output (upper / lower, sensor break)
- Transmission output / display scale
- Digital input (DI), etc.
- Built-in power supply for sensor / transmitter (24 VDC==)
- Small size (rear length: 70 mm)

Specifications

Series		KN-1000B Series		
		AC voltage	DC voltage	
Power supply		100 - 240 VAC~ 50/60 Hz	24 VDC	
Allowable voltage range		90 to 110% of rated voltage		
Power consumption		≤ 6 VA	≤ 4 W	
Sampling p	eriod	Thermocouple, RTD: 250 ms Analog: 100) ms	
Input specification		Refer to Autonics website		
Digital	Contact	• ON: $\leq 2 \text{ k}\Omega$ • OFF: $\geq 90 \text{ k}\Omega$		
input	Non contact	Residual voltage: ≤ 1.0 V Ieakage current: ≤ 0.03 mA		
	Outflow current	≈ 0.2 mA		
Option	Alarm	+ 2 point relay: 250 VAC \sim 3 A 1c $$ + 4 point relay: 250 VAC \sim 1 A 1a		
output	PV transmission	ISOLATED DC 4-20 mA (Load resistance: \leq 600 Ω)		
	RS485 comm.	Modbus RTU		
Display type		7 Segment (red), Graph bar (green)		
Alarm outp	ut Hysteresis	1 to 999 digit		
Relay life cycle	Mechanical	 2 point: ≥ 10,000,000 operations 4 point: ≥ 20,000,000 operations 		
	Electrical	 2 point: ≥ 100,000 operations (load resistance: 250 VAC~ 3 A) 4 point: ≥ 500,000 operations (load resistance: 250 VAC~ 1 A) 		
Dielectric s	strength	Between input terminal and power terminal: 2,000 VAC \sim 50/60 Hz for 1 min		
Vibration		$0.75\ mm$ amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Insulation resistance		≥ 100 MΩ (500 VDC megger)		
Noise immunity		± 2 kV square shaped noise (pulse width 1 μs) by noise simulator		
Memory retention		\approx 10 years (non-volatile semiconductor memory type)		
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)		
Approval		C E ERE		
Unit weight (packaged)		≈ 182 g (≈ 304 g)		
Comm. protocol		Modbus 1.1 RTU		



Controllers

1-Channel Digital

Temperature Indicators

KN-2000W Series



Features

 \cdot High accuracy with 16 bit ADC (± 0.2 % F.S.)

Specifications

KN-200

• Max. display range: -19999 to 19999

• Multi-input

- Thermometer 12 types
- RTD 5 types
- Analog: Current 2 types / voltage 6 types

Auto display color change function

- Selectable indicator colors when error occurs or alarm operates
- Various output options
- Alarm output: 2 points / 4 points
- 4 20 mA transmission output (isolated), RS485 Communication output
- Various functions
- High / Low peak input monitoring
- Alarm output (upper / lower, sensor break)
- Transmission output/display scale
- Digital input (DI), etc.
- Built-in power supply for sensor / transmitter (24 VDC)

Series		KN-2000W Series		
		AC voltage	DC voltage	
Power supply		100 - 240 VAC \sim 50/60 Hz	24 VDC	
Power consumption		≤ 8 VA	≤ 3 W	
Sampling period		Thermocouple, RTD: 250 ms Analog: 100) ms	
Input speci	fication	Refer to Autonics website		
Digital	Contact	• ON: ≤ 2 kΩ • OFF: ≥ 90 kΩ		
input	Non contact	 Residual voltage: ≤ 1.0 V → Leakage current: ≤ 0.03 mA 		
	Outflow current	≈ 0.2 mA		
Option	Alarm	+ 2 point relay: 250 VAC \sim 3 A 1c $$ + 4 point relay: 250 VAC \sim 1 A 1a		
output	PV Transmission	ISOLATED DC 4-20 mA (Load resistance: \leq 600 Ω)		
	RS485 comm.	Modbus RTU		
Display type		7 Segment (Red, Green, Yellow), LED type		
Alarm outp	ut Hysteresis	1 to 999 digit		
Relay life cycle	Mechanical	 2 point: ≥ 10,000,000 operations 4 point: ≥ 20,000,000 operations 		
	Electrical	 2 point: ≥ 100,000 operations(Load resistance: 250 VAC~ 3 A) 4 point: ≥ 500,000 operations (Load resistance: 250 VAC~ 1 A) 		
Dielectric s	trength	Between input terminal and power terminal: 2,000 VAC \sim 50/60 Hz for 1 min		
Vibration		$0.75\ mm$ amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Insulation r	resistance	≥ 100 MΩ (500 VDC= megger)		
Noise imm	unity	± 2 kV square shaped noise (pulse width 1 μs) by noise simulator		
Memory re	tention	\approx 10 years (non-volatile semiconductor memory type)		
Ambient te	mperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient hu	umidity	35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)		
Approval		C E ERE		
Unit weight (packaged)		≈ 200 g (≈ 332 g)		
Comm. protocol		Modbus 1.1 RTU		



Modular 2/4-Channel PID Temperature Controllers with Screw Connector

TMH Series



Features

• Common

- Easy maintenance with detachable body and base terminal
- Power supply and communication with expansion connectors (up to 32 units)

• [TMH2/4 Series (Control Module)]

- Multi-channel (2-channel / 4-channel) input and output control: Expandable up to 32 units (64-channels / 128-channels)
- 50 ms high-speed sampling rate and
 ± 0.3 % measurement accuracy
- Simultaneous heating and cooling control function and auto / manual control mode

• [TMHA (Analog Input /

- Output Option Module)] - 4 channels, various input types / temperature
- ranges / transmission outputs
- 50 ms high-speed sampling rate and
- ± 0.3% measurement accuracy

• [TMHE (Digital Input /

- Alarm Output Option Module)]
- 8 digital inputs / 8 alarm outputs

• [TMHCT (CT Input Option Module)]

- 8 CT inputs

• [TMHC (Communication Modules)]

- Allows connection of control modules and option modules to master devices
- Connect up to 32 control / option modules per communication model



View product detail

Controllers

Specifications

[Control module]

Model	TMH2	TMH4
No. of channels	2 channels	4 channels
Sampling period	50 ms (2 channels or 4 channels synchronou	is sampling)
Input specification	Thermocouple, RTD, Analog (refer to 'Input S	pecification")
CT input	 0.0 - 50.0A (primary current measurement CT ratio: 1/1,000, • Measurement accuracy 	
Digital input	 Connect input ON: ≤ 1 kΩ, OFF: ≥ 100 kΩ Solid state input Residual voltage: ≤ 0.9 V, Leakage current: ≤ 0.5 mA Outflow current: ≈ 0.3 mA per input 	-
Control type	Heating, cooling, heating & cooling: ON/OFF,	P, PI, PD, PID control
Control output	Relay: 250 VAC ~ 3 A 1a mechanical life cycle: ≥ 10,000,000 operati electrical life cycle: ≥ 100,000 operations SSR: 12 VDC= ± 3 V, ≤ 20 mA Current ⁰¹ : DC 4 - 20 mA or DC 0 - 20 mA (I	,
Alarm output	250 VAC~ 3 A 1a Mechanical life cycle: ≥ 10,000,000 operations Electrical life cycle: ≥ 100,000 operations	-
Communication	Modbus RTU	
Hysteresis	 Thermocouple / RTD: 1 to 100 (0.1 to 100) ° Analog: 1 to 100 digit 	C/°F
Proportional band (P)	 Thermocouple / RTD: 1 to 999 (0.1 to 999.9 Analog: 0.1 to 999.9 digit)) °C/°F
Integral time (I)	0 to 9,999 sec	
Derivative time (D)	0 to 9,999 sec	
Control period (T)	Relay output, SSR drive output: 0.1 to 120.0 sec Selectable current or SSR drive output: 1.0 to 120.0 sec	
Manual reset	0 to 100 (0.0 to 100.0) %	
Insulation type	Double insulation or reinforced insulation (mark: ,, dielectric strength between the measuring input part and the power part: 1 kV)	
Unit weight (packaged)	 Basic module: ≈ 178 g (≈ 251 g) Expansion module: ≈ 173 g (≈ 246 g) 	
01) When the control output is	set to the current output, the heater current value me	phitoring function through the CT input terminals is not

01) When the control output is set to the current output, the heater current value monitoring function through the CT input terminals is not available.

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[Option module]

Model	TMHA-42AE	
No. of channels	4 channels	
Sampling period	50 ms (4 channels synchronous sampling)	
Input specification	Thermocouple, RTD, analog (refer to 'Input Sp	pecification')
Transmission output	DC 4 - 20 mA or DC 0 - 20 mA (Load: ≤ 500 §	ລ)
Communication	Modbus RTU	
Insulation type	Double insulation or reinforced insulation (ma measuring input part and the power part: 1 kV	
Unit weight (packaged)	≈ 161 g (≈ 234 g)	
Model	TMHE-82RE	TMHCT-82NE
No. of channels	8 points	8 points
Input specification	 Digital input Connect input ON: ≤ 1 kQ, OFF: ≥ 100 kΩ Solid state input Residual voltage: ≤ 0.9 V, Leakage current: ≤ 0.5 mA Outflow current: ≈ 0.3 mA per input 	 CT input 0.0-50.0 A (primary current measurement range) CT ratio: 1/1,000 Measurement accuracy: ±5% F.S. ±1 digit
Alarm output	250 VAC~ 3 A 1a, • Mechanical life cycle: ≤ 10,000,000 operations • Electrical life cycle: ≤ 100,000 operations	-
Communication	Modbus RTU	
Insulation type	Double insulation or reinforced insulation (mark: , dielectric strength between the measuring input part and the power part: 1 kV)	-
Unit weight (packaged)	≈ 166 g (≈ 239 g)	≈ 148 g (≈ 221 g)

[Communication module]

Model		TMHC-22LE	TMHC-22EE
Communi -cation	COM1	Connection type: RS422 / RS485	Connection type: Ethernet (10(1000
	COM2	 Protocol: Modbus RTU, PLC Ladderless communication 	(10/100BaseT) • Protocol: Modbus TCP
	PC loader	TTL (Protocol: Modbus RTU)	
Insulation type		Double insulation or reinforced insulation (mark: 回, dielectric strength between the measuring input part and the power part: 1 kV)	
Unit weight (packaged)		≈ 147 g (≈ 219 g)	≈ 129 g (≈ 200 g)

[Common]

Power supply ⁰¹⁾	24 VDC
Allowable voltage range	90 to 110% of rated voltage
Power Consumption	≤ 5 W (for max. load)
Display type	None- parameter setting and monitoring is available at external devices
Memory retention	\approx 10 years (non-volatile semiconductor memory type)
Insulation resistance	100 MΩ (500 VDC megger)
Dielectric strength	Between the charging part and the case: 1,000 VAC \sim 50/60 Hz for 1 min
Vibration	0.75mm amplitude at frequency of 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
Noise immunity	Square shaped noise by noise simulator (pulse width 1 μ s) ±0.5 kV
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH (no freezing or condensation)
Accessory	Expansion connector: 1, module lock connector: 2
Protection structure	IP20 (IEC standard)
Approval	CE CAN US IS EAL

01) The control extension/option/communication module uses the power voltage from the control basic module.

Modular 2/4-Channel PID Temperature Controllers with Screwless

Connector

TM Series

Features

- Multi-channel (4-channel: TM4 / 2-channel: TM2) input and output control
- High-speed sampling cycle
 (4-channel: 100ms / 2-channel: 50ms)
- Module connection and expansion with expansion connectors
- Communication between modules
- No additional power supply wiring
- Expandable up to 31 units (124-channels / 62-channels)
- Simultaneous heating and cooling control function
- Isolated input channels (dielectric strength: 1000 VAC)
- Switch between current output and SSR drive output (TM2- 2C)
- Parameter configuration via PC (USB and RS485 communication)
- DAQMaster software included (comprehensive device management software)
- Communication converter sold separately:
 SCM-US (USB to serial converter), SCM-38I
 (RS-232C to RS485 converter), SCM-US48I
 (USB to RS485 converter)
- Easy wiring and maintenance with various connectors: sensor input connector, control output connector, power / communication connector
- Heater disconnect alarm function (CT input)
- Current transformer (CT) sold separately: CSTC-E80LN, CSTC-E200LN
- Various input types and temperature ranges



View product detail



Series		TM2	TM4	
No. of cha	nnels	2 channels	4 channels	
Power supply		24 VDC== ±10%		
		90 to 110% of rated voltage		
Power cor	sumption	≤ 5 W (for Max. load)		
Sampling	period	50 ms (2 channels synchronous sampling)	100 ms (4 channels synchronous sampling)	
Input spec	cification	Refer to Autonics website		
Option input	CT input	 0.0-50.0 A (primary current measurement range) CT ratio: 1/1,000 Measurement accuracy: ±5% F.S. ±1 digit 	-	
	Digital input	 Contact ON: ≤ 1 kΩ, OFF: ≥ 100 kΩ Non contact residual voltage: ≤ 1.5 VDC leakage current: ≤ 0.1 mA Outflow current: ≈ 0.5 mA per input 	-	
Control	Relay	250 VAC~ 3 A 1a, 30 VDC= 3 A 1a		
output	SSR	12 VDC== ±3 V, ≤ 30 mA	22 VDC== ±3 V, ≤ 30 mA	
	Current	DC 4 - 20 mA or DC 0 - 20 mA (Load resistan	nce: ≤ 500 Ω)	
Alarm output		250 VAC \sim 3 A 1a	-	
RS485 Comm.		Modbus RTU		
Display type		None- parameter setting and monitoring is available at external devices		
Control type	Heating, Cooling	ON/OFF, P, PI, PD, PID Control		
	Heating & Cooling			
Hysteresis		1 to 100 (0.1 to 100) °C/°F		
Proportional band (P)		0.1 to 999.9 °C/°F		
Integral tir	me (I)	0 to 9,999 sec		
Derivative	time (D)	0 to 9,999 sec		
Control cy	rcle (T)	0.1 to 120.0 sec		
Manual re	set	0.0 to 100.0 %		
Relay life	Mechanical	≥ 10,000,000 operations		
cycle	Electrical	\ge 100,000 operations (250 VAC \sim 3 A load re	esistance)	
Dielectric	strength	Between input terminal and power terminal: 2,000 VAC \sim 50/60 Hz for 1 min		
Vibration		0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Insulation resistance		100 MΩ (500 VDC== megger)		
Noise immunity		$\pm 0.5~\text{kV}$ square shaped noise (pulse width 1 $\mu s)$ by noise simulator		
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)		
Channel insulation		Dielectric strength 1,000 VAC \sim		
Insulation type		Double insulation or reinforced insulation (ma measuring input part and the power part: 1 $\rm k$		
Approval		C C C SN us 🖾 EAE		
Unit weight (packaged)		 Basic module: ≈ 152 g (≈ 217 g) Expansion module: ≈ 143 g (≈ 208 g) 	 Basic module: ≈ 174 g (≈ 239 g) Expansion module: ≈ 166 g (≈ 231 g) 	
Comm. protocol		Modbus RTU		

Independent Single Display

PID Temperature Controllers

Compact, space-saving design with

50 ms high-speed sampling and
 ± 0.3 % display accuracy

Simultaneous heating / cooling and automatic / manual control function
Switch between current output and

- Protocol: Modbus RTU or ASCII

• RS485 communication output model available

- Communication speed: up to 115,200 bps

- Comprehensive device management software

 Heater disconnect alarm function (CT input)
 Current transformer (CT) sold separately: CSTC-E80LN, CSTC-E200LN, CSTS-E80PP

TR1D Series

Features

22.5 mm width size

SSR drive output

• Easy mount on DIN rails

Parameter setting via PC
 (USB or RS485 communication)

(DAQMaster) provided

Screen protection function *1 Korea Patent Registration 10-2019-0158569, Korea Design Registration 30-1065663, China Design Registration 202030164351.2



Specifications

Series		TR1D Series
Power supply		100 - 240 VAC~ 50/60 Hz
Allowable voltage range		90 to 110% of rated voltage
Power consumption		≤ 8 VA
Sampling	period	50, 100, 250 ms
Input spe	cification	Refer to Autonics website
Option input CT input • 0.0~50.0 A (primary current measurement range) • CT ratio: 1/1,000, • Measurement accuracy: ±5% F.S. ±1digit		• CT ratio: 1/1,000,
Control	Relay	250 VAC~ 3 A 1a
output	SSR	12 VDC= ±3 V, ≤ 20 mA
	Current	DC 4-20 mA or DC 0-20 mA (parameter), Load: \leq 500 Ω
Option	Alarm	AL1, AL2: 250 VAC~ 3 A 1a
output	Transmission	DC4-20 mA (Load resistance: \leq 500 Ω , Output accuracy: ±0.3% F.S.)
	RS485 comm.	Modbus RTU / ASCII
Display ty	/pe	7 segment (red), 4-digit
Control type		ON/OFF, P, PI, PD, PID Control
Hysteresis		Control output: 1 to 100 °C/°F (0.1 to 100.0 °C/°F) Alarm output: 1 to 100 °C/°F (0.1 to 50.0 °C/°F)
Proportio	nal band (P)	0.1 to 999.9 °C
Integral time (I)		0 to 9,999 sec
Derivativ	e time (D)	0 to 9,999 sec
Control c	ycle (T)	Relay output: 0.5 to 120.0 sec, SSR drive output: 0.5 to 120.0 sec
Manual re	eset	0.0 to 100.0%
Dielectric	strength	Between the power part and the case: 3,000 VAC \sim 50/60 Hz for 1 min
Vibration		0.75 mm amplitude at frequency of 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
Relay life	Mechanical	OUT1/2, AL1/2: ≥ 5,000,000 operations
cycle	Electrical	OUT1/2, AL1/2: \geq 100,000 operations (resistance load: 250 VAC \sim 5 A)
Insulation	resistance	≥ 100 MΩ (500 VDC== megger)
Insulation	i type	Double insulation or reinforced insulation (dielectric strength between the power part and the case: $3 \mbox{ kV})$
Noise immunity		Square shaped noise (pulse width: 1 μs) by noise simulator ±2 kV R-phase, S-phase
Memory retention		\approx 10 years (non-volatile semiconductor memory type)
Ambient temperature		-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity		35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Approval		CE EHE
Unit weight (packaged)		≈ 123.5 g (≈ 194.5 g)
Comm. p	rotocol	Modbus RTU / ASCII



View product detail



E2. Digital Panel Meters

Multi panel meters are used to measure and monitor various industrial processes including voltage, current, frequency, and pressure.

E2-1 Panel Meters	MX4W Series	LCD Multi Panel Meters		
	MT4N Series	4-Digit Multi Panel Meters		
	MT4W Series	4-Digit Multi Panel Meters		
	MT4Y Series	4-Digit Multi Panel Meters		
	M4NN Series	4-Digit Multi Panel Meters		
	M4N Series	Panel Meters (Indicator)		
	M4M Series	Indicator / Thumbwheel Switch Panel Meters		
	M4W Series	Indicator / Thumbwheel Switch Panel Meters		
	M4Y Series	Panel Meters (Indicator)		
	M5W Series	Panel Meters (Indicator)		
	M4NS / M4YS Series	Loop-Power Panel Meters (Indicator)		
	M4V Series	Digital Panel Meters for Mosaic Panels (Indicator)		
2-2 Pulse Meters	LR5N-B Series	Revolutions / Frequency Pulse Meters (Indicator)		
	MP5M Series	Thumbwheel Switch Multi Pulse Meters		
	MP5S / MP5Y / MP5W Series	Multi Pulse Meters		

LCD Multi Panel Meters

MX4W Series



Features

- LCD display with easy-to-read white PV characters
- Isolated input and power modules allow powering of multiple units using a single power supply

Specifications

- Compact, space-saving design (rear-length: 20 mm): reduced rear-length size by 80 % compared to same DIN size panel meters (MT4W)
- Various input options (by model)
 Input options: DC / AC voltage, DC / AC current
- \cdot Maximum allowed input: 500 VDC=, 500 VAC \sim , DC 5 A, AC 5 A
- Display range: -9999 to 9999
- High / low-limit display scale function
- AC frequency measurement (range: 0.100 to 1200 Hz)
- Preset output: OUT1, OUT2
 (NPN / PNP open collector output)
- Power factor display / output function: displays analog outputs (1 - 5 V, 4 - 20 mA) from power factor converters as -0.50 to 1.00 to 0.50
- Various functions: peak display value monitoring, display cycle delay, zero-point adjustment, peak display value correction, etc.
- \cdot Power supply: 24 240 VAC ~ 50 / 60 Hz, 24 240 VDC= universal



View product detail

Model	MX4W-V-F	MX4W-A-F					
Input type	DC / AC voltage	DC / AC current					
Max. allowable input	Dependent on the input type						
+DC input	\approx –10 to 110 % F.S. for each measured input r	\approx –10 to 110 % F.S. for each measured input range					
-DC input	\approx –110 to 110 % F.S. for each measured input range						
AC input	\approx 110 % F.S. for each measured input range						
Display method	12-segment LCD ⁰¹ - measurement value display part: white, character height: 19 mm - other display parts: red, green, yellow (indicator: white)						
Display accuracy	Dependent on the ambient temperature						
23 ± 5 °C (DC input)	± 0.1 % F.S. rdg ± 2-digit	± 0.1 % F.S. rdg ± 2-digit ⁰²⁾					
23 ± 5 °C (AC input)	± 0.3 % F.S. rdg ± 3-digit	± 0.3 % F.S. rdg ± 3-digit					
0 to 50 °C	± 0.5 % F.S. rdg ± 3-digit	± 0.5 % F.S. rdg ± 3-digit ⁰³⁾					
Display cycle	0.2 to 5.0 sec (select per 0.1 sec)						
Display scale	-9999 to 9999 (4-digit)						
A / D conversion method	$\Sigma\Delta$ (Sigma Delta) analog-to-digital converter						
Sampling cycle (DC input)	50 ms						
Sampling cycle (AC input)	16.6 ms						
Resolution	1/20,000						
Preset output	NPN / PNP open collector output model						
Load voltage	≤ 30 VDC==						
Load current	≤ 100 mA						
Residual voltage	NPN open collector output: ≤ 1 VDC== / PNP open collector output: ≤ 2 VDC==						
Unit weight (packaged)	≈ 77 g (≈ 100 g)						
Approval	CE c Mus						
01) When using the unit at low to 02) 5 A terminal: ± 0.3 % F.S. ro 03) 5 A terminal: ± 1 % F.S. rdg		aracteristics of LCD. Control output operates normally.					
Power supply	24 - 240 VDC= ± 10 %, 24 - 240 VAC~ ± 10	0 % 50 / 60 Hz					
Power consumption	DC: ≤ 3 W, AC: ≤ 5 VA						
Insulation resistance	≥ 100 MΩ (500 VDC megger)						
Dielectric strength	Between all terminals and case: 3,000 VAC \sim	50 / 60 Hz for 1 min					
Noise immunity	\pm 2 kV square wave noise (pulse width: 1 $\mu s)$	by the noise simulator					
Vibration	0.75 mm double amplitude at frequency of 10 direction for 2 hours) to 55 Hz (for 1 minute) in each X, Y, Z					
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 direction for 10 min	to 55 Hz (for 1 minute) in each X, Y, Z					
Shock	300 m/s ² (\approx 30 G) in each X, Y, Z direction for	3 times					
Shock (malfunction)	100 m/s² (\approx 10 G) in each X, Y, Z direction for	3 times					
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezi	ng or condensation)					
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no fre	ezing or condensation)					
Insulation type	Symbol: , double or reinforced insulation (die input part and the power part: 1 kV)	electric strength between the measurement					

4-Digit Multi Panel Meters

MT4N Series



Features

- \cdot Various input / output options (by model)
- Input options: DC voltage, DC current, AC voltage, AC current
- Output options: RS485 communication output, transmission output (DC 4 - 20 mA), NPN / PNP open collector output, relay contact output (default option: indicator / no output)
- \cdot Maximum allowed input: 50 VDC==, DC 500 mA, 250 VAC \sim , AC 5A
- Display range: -1999 to 9999
- High / low-limit display scale function
- AC frequency measurement (range: 0.1 to 9999 Hz)
- Various functions:
- peak display value monitoring, display cycle delay, zero-point adjustment, peak display value correction, PV transmission output (DC 4 - 20 mA) scale, etc.
- Power supply:
- 12 24 VDC= / VAC \sim , 100 240 VAC \sim



View product detail

Model	MT4N-DV-	MT4N-DA-🗆	MT4N-AV-	MT4N-AA-					
Input type	DC voltage	DC current	AC voltage ⁰¹⁾	AC current ⁰¹⁾					
Max. allowable input	110 % F.S. for each measured input range								
Display method	7-segment (red) L0	7-segment (red) LCD (character height: 9 mm)							
Display accuracy	Dependent on the	Dependent on the ambient temperature							
23 ± 5 °C	± 0.1 % F.S. rdg ± 2	2 digit ⁰²⁾	± 0.3 % F.S. rdg ± 3	3 digit					
-10 to 50 °C	± 0.5 % F.S. rdg ± 3	3 digit							
Max. display range	-1999 to 9999 (4 c	ligit)							
A / D conversion method	Practical oversamp	ling using successive ap	oproximation ADC						
Sampling cycle	50 ms		16.6 ms						
Unit weight (packaged)	≈ 64 g (≈ 127 g)								
Approval	C€ERE								
01) Available frequency display 02) 5 A terminal: ± 0.3 % F.S. ro									
Preset output	None (indicator) / F	Relay / NPN open collect	tor / PNP open collecto	or output model					
Relay		Contact capacity: 125 VAC \sim 0.3 A, 30 VDC = 1 A Contact composition: N.O (1a)							
NPN / PNP open collector	Output capacity: ≤ 12 - 24 VDC= ± 2 VDC=, 50 mA resistive load								
Sub output	None (indicator) / Transmission (DC 4 - 20 mA) / RS485 communication output model								
Transmission (DC 4 - 20 mA)	Resolution: 1/12,000 (load resistance: ≤ 600 Ω) Response time: ≤ 450 ms								
RS485 communication	Protocol: Modbus RTU								
Power supply	12 - 24 VDC== ± 10 %, 12 - 24 VAC~ ± 10 % 50 / 60 Hz / 100 - 240 VAC~ ± 10 % 50 / 60 Hz model								
Power consumption (DC / AC voltage)	3 W / 5 VA ^{oŋ}								
Power consumption (AC voltage)	5 VA								
Insulation resistance	≥ 20 MΩ (500 VDC	= megger)							
Dielectric strength (DC / AC voltage)	Between external t	erminal and case: 1,000	VAC \sim 50 / 60 Hz for 1	min					
Dielectric strength (AC voltage)	Between external to	erminal and case: 2,000	VAC \sim 50 / 60 Hz for 1	min					
Noise immunity	± 2 kV square wave	e noise (pulse width: 1 µ	s) by the noise simulat	or					
Vibration	0.75 mm double an for 2 hours	nplitude at frequency of	10 to 55 Hz (for 1 min)	in each X, Y, Z direction					
Vibration (malfunction)	0.5 mm double am for 10 min	0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction							
Shock	300 m/s² (≈ 30 G) i	n each X, Y, Z direction	for 3 times						
Shock (malfunction)	100 m/s² (≈ 10 G) in	each X, Y, Z direction fo	or 3 times						
Ambient temp.	-10 to 50 °C, storag	ge: - 20 to 60 °C (no free	zing or condensation)						
Ambient humi.	35 to 85 %RH, stor	age: 35 to 85 %RH (no ⁻	freezing or condensati	on)					
Insulation type	Symbol: 🔲, double input part and the p	or reinforced insulation (oower part: 1 kV)	dielectric strength betw	veen the measurement					
Comm. protocol	Modbus RTU								
01) Except MT4NE5: 5 \	N / 8 VA								

4-Digit Multi

Panel Meters

MT4W Series



Features

- Various input / output options (by model)
 Input options: DC voltage, DC current,
- AC voltage, AC current
- Output options: RS485 communication output, low speed serial output, BCD dynamic output, transmission output (DC 4 - 20 mA), NPN / PNP open collector output, relay contact output (default option: indicator / no output)
- Maximum allowed input:
 500 VDC=, DC 5 A, 500 VAC~, AC 5 A
- Display range: -1999 to 9999
- High / low-limit display scale function
- AC frequency measurement (range: 0.1 to 9999 Hz)
- Various functions: peak display value monitoring, display cycle delay, zero-point adjustment, peak display value correction, PV transmission output (DC 4 - 20 mA) scale, etc.
- Power supply:
 12 24 VDC=, 100 240 VAC~
- DIN W 72 × H 36 mm



View product detail

Madal							
Model	MT4W-DV-	MT4W-DA-		AC current ⁰¹⁾			
Input type	DC voltage	DC current	AC voltage ⁰¹⁾	AC current			
Max. allowable input	110 % F.S. for each measured input range 7-segment (red) LED (character height: 14.2 mm)						
Display method	e , ,		mm)				
Display accuracy	Dependent on the am						
23 ± 5 °C	± 0.1 % F.S. rdg ± 2 ± 0.1 % F.S. rdg ± 2 ± 0.3 % F.S. rdg ± 3 ± 0.3 % F.S. rdg ± 4 digit digit digit digit						
-10 to 50 °C	± 0.5 % F.S. rdg ± 3 d	0					
Max. display range	-1999 to 9999 (4 digi	·					
A / D conversion method	ΣΔ (Sigma Delta) ADC						
Sampling cycle	50 ms		16.6 ms				
Unit weight (packaged)	≈ 211 g (≈ 326 g)						
Approval	CE 📲 us ⁰³⁾ ERE						
 01) Available frequency display, 02) 5 A terminal: ± 0.3 % F.S. rd 03) Except power supply 12 - 2 	lg ± 3 digit	°C): ± 0.1 % F.S. rdg ± 2 digi	it				
Preset output	None (indicator) / Rela	ay / NPN open collector	r / PNP open collector o	output model			
Relay	Contact capacity: 250 VAC \sim 3 A, 30 VDC= 3 A Contact composition: N.O (1a)						
NPN / PNP open collector	Output capacity: \leq 12 - 24 VDC= \pm 2 VDC=, 50 mA resistive load						
Sub output	None (indicator) / BCD Dynamic / Transmission (DC 4 - 20 mA) / Low speed serial / RS485 Communication output model						
BCD Dynamic / Low speed serial	NPN open collector output Output capacity: ≤ 12 - 24 VDC=, 50 mA resistive load						
Transmission (DC 4 - 20 mA)	Resolution: 1/12,000 (Response time: ≤ 450	load resistance: ≤ 600) ms	Ω)				
RS485 communication	Protocol: Modbus RTU	J					
Model	MT4W-00-10		MT4W-00-40				
Power supply	12 - 24 VDC== ± 10 %		100 – 240 VAC \sim ± 10) % 50 / 60 Hz			
Power consumption	5 W		5 VA				
Insulation resistance	Between external terr	minal and case: ≥ 100 N	IΩ (500 VDC== megger	r)			
Dielectric strength	Between external terr	minal and case: 2,000 V	AC \sim 50 / 60 Hz for 1 m	nin			
Noise immunity	± 2 kV square wave no	bise (pulse width: 1 µs) b	y the noise simulator				
Vibration	0.75 mm double ampl for 2 hours	itude at frequency of 10	0 to 55 Hz (for 1 min) in	each X, Y, Z direction			
Vibration (malfunction)	0.5 mm double amplit for 10 min	ude at frequency of 10	to 55 Hz (for 1 min) in e	each X, Y, Z direction			
Shock	300 m/s² (≈ 30 G) in e	each X, Y, Z direction fo	r 3 times				
Shock (malfunction)	100 m/s ² (≈ 10 G) in ea	ach X, Y, Z direction for	3 times				
Relay life cycle	Mechanical: ≥ 20,000 Electrical: ≥ 100,000 c	,000 operations operations (250 VAC \sim	3A resistive load)				
Ambient temp.	-10 to 50 °C, storage:	-20 to 60 °C (freezing	or condensation)				
Ambient humi.	35 to 85 %RH, storage	e: 35 to 85 %RH (freezin	g or condensation)				
Insulation type	Symbol: , double or input part and the pow	reinforced insulation (di ver part: 1 kV)	electric strength betwe	en the measurement			
Comm. protocol	Modubus RTU						

4-Digit Multi Panel Meters

MT4Y Series



Features

- \cdot Various input / output options (by model)
- Input options: DC voltage, DC current, AC voltage, AC current
- Output options: RS485 communication output, low speed serial output, BCD dynamic output, transmission output (DC 4 - 20 mA), NPN / PNP open collector output, relay contact output (default option: indicator / no output)
- \cdot Maximum allowed input: 500 VDC==, DC 5 A, 500 VAC \sim , AC 5 A
- Display range: -1999 to 9999
- High / low-limit display scale function
- AC frequency measurement (range: 0.1 to 9999 Hz)
- Various functions: peak display value monitoring, display cycle delay, zero-point adjustment, peak display value correction, PV transmission output (DC 4 - 20 mA) scale, etc.
- Power supply:
- 12 24 VDC==, 100 240 VAC \sim
- DIN W 96 × H 48 mm



View product detail

Model	MT4Y-DV-4	MT4Y-DA-4	MT4Y-AV-4	MT4Y-AA-4					
Input type	DC voltage	DC current	AC voltage ⁰¹⁾	AC current ⁰¹⁾					
Max. allowable input	110 % F.S. for each m	110 % F.S. for each measured input range							
Display method	7-segment (red) LED	7-segment (red) LED (character height: 14.2 mm)							
Display accuracy	Dependent on the am	nbient temperature							
23 ± 5 °C	± 0.1 % F.S. rdg ± 2 digit	± 0.1 % F.S. rdg ± 2 digit ⁰²⁾	± 0.3 % F.S. rdg ± 3 digit	± 0.3 % F.S. rdg ± 3 digit					
-10 to 50 °C	± 0.5 % F.S. rdg ± 3 d	igit							
Max. display range	-1999 to 9999 (4 dig	it)							
A / D conversion method	Σ∆ (Sigma Delta) ADC								
Sampling cycle	50 ms		16.6 ms						
Unit weight (packaged)	≈ 134 g (≈ 213.5 g)								
Approval	CE e sau us EHE								
01) Available frequency display 02) 5 A terminal: ± 0.3 % F.S. re		°C): ± 0.1 % F.S. rdg ± 2 dig	it						
Preset output	None (indicator) / Rel	ay / NPN open collecto	r / PNP open collector (output model					
Relay		Contact capacity: 250 VAC \sim 3 A, 30 VDC $=$ 3 A Contact composition: N.O (1a)							
NPN / PNP open collector	Output capacity: \leq 12 - 24 VDC= \pm 2 VDC=, 50 mA resistive load								
Sub output	None (indicator) / BCD Dynamic / Transmission (DC 4 - 20 mA) / Low speed serial / RS485 Communication output model								
BCD Dynamic / Low speed serial	NPN open collector output Output capacity: ≤ 12 - 24 VDC, 50 mA resistive load								
Transmission (DC 4 - 20 mA)	Resolution: 1/12,000 (Response time: ≤ 450	load resistance: ≤ 600) ms	Ω)						
RS485 communication	Protocol: Modbus RT	U							
Power supply	100 - 240 VAC \sim ± 10	% 50 / 60 Hz							
Power consumption	5 VA								
Insulation resistance	Between external terr	minal and case: ≥ 100 N	IΩ (500 VDC== megge	r)					
Dielectric strength	Between external terr	minal and case: 2,000 V	/AC \sim 50 / 60 Hz for 1 n	nin					
Noise immunity	± 2 kV square wave n	oise (pulse width: 1 µs)	by the noise simulator						
Vibration	0.75 mm double amp for 2 hours	litude at frequency of 1	0 to 55 Hz (for 1 min) in	each X, Y, Z direction					
Vibration (malfunction)	0.5 mm double amplit for 10 min	ude at frequency of 10	to 55 Hz (for 1 min) in e	each X, Y, Z direction					
Shock	300 m/s² (≈ 30 G) in e	each X, Y, Z direction fo	r 3 times						
Shock (malfunction)	100 m/s ² (≈ 10 G) in e	ach X, Y, Z direction for	3 times						
Relay life cycle	Mechanical: ≥ 20,000 Electrical: ≥ 100,000 d),000 operations operations (250 VAC \sim	3A resistive load)						
Ambient temp.	-10 to 50 °C, storage:	-20 to 60 °C (no freez	ing or condensation)						
Ambient humi.	35 to 85 %RH, storage	e: 35 to 85 %RH (no free	zing or condensation)						
Insulation type	Symbol: □, double or input part and the pov	reinforced insulation (di ver part: 1 kV)	electric strength betwe	en the measurement					
Comm. protocol	Modubus RTU								

4-Digit Multi Panel Meters

M4NN Series

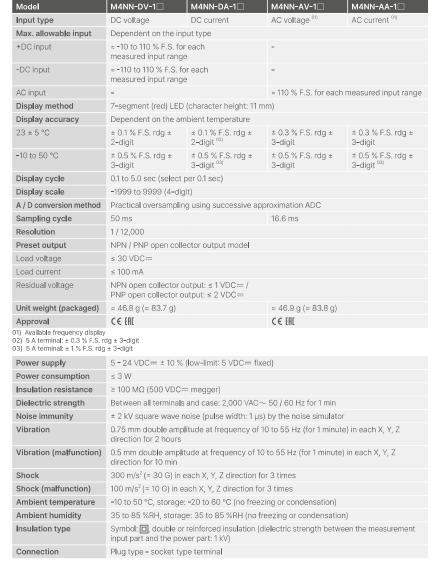


Features

- Various input / output options (by model)
 Input options: DC voltage, DC current,
- AC voltage, AC current
- Output options: NPN open collector / PNP open collector (default: indicator / no output)

Specifications

- Isolated input and power modules allow powering of multiple units using a single power supply
- Display range: -1999 to 9999
- High / low-limit display scale function
- AC frequency measurement (range: 0.1 to 9999 Hz)
- Preset output mode: OUT1, GO, OUT2 (NPN / PNP open collector output)
- Power factor display function: displays analog input (1 - 5 V, 4 - 20 mA) from power factor converters as -0.50 to 1.00 to 0.50
- Various functions: peak display value monitoring, display cycle delay, zero-point adjustment, peak display value correction
- Power supply: 5 24 VDC== (isolated type)





View product detail

Panel Meters

(Indicator)

M4N Series



Features

Input options (by model)

- Input options: DC voltage, DC current
- Auto-zero adjustment and hold display value function
- Max display value: 1999
- 7-segment LED display
- Compact size: DIN W 48 × H 24 mm
- Power supply: 5 VDC=, 12 24 VDC=

Specifications

Model	M4N-DV-🗆	M4N-DA-	M4N-DI-□X			
Input type	DC voltage	DC current	DC 4 - 20 mA			
Max. allowable input	≈ 150 % F.S. for each mea	sured input range				
Display method	7-segment (red) LED (cha	racter height: 10 mm)				
Display accuracy	0.2 % F.S. rdg ± 1-digit					
Sampling time	2.5 times / sec					
Display scale	-1999 (4-digit)					
Operation method	Dual integral method					
Sampling cycle	300 ms					
Response speed	≈ 2 sec (0 to 1999)	≈ 2 sec (0 to 1999)				
Unit weight	≈ 44 g					
Approval	ERC					
Power supply	5 VDC== ± 10 % / 12 - 24 V	VDC== ± 10 % model				
Power consumption	2 W					
Insulation resistance	≥ 100 MΩ (500 VDC== me	egger)				
Dielectric strength	2,000 VAC ~ 50 / 60 Hz fo	or 1 min				
Noise immunity	±100 V square wave noise	e (pulse width: 1 µs) by the	noise simulator			
Vibration	0.75 mm double amplitude direction for 1 hours	e at frequency of 10 to 55 F	Hz (for 1 minute) in each X, Y, Z			
Vibration (malfunction)	0.5 mm double amplitude direction for 10 min	at frequency of 10 to 55 Hz	z (for 1 minute) in each X, Y, Z			
Shock	300 m/s² (≈ 30 G) in each	X, Y, Z direction for 3 times	3			
Shock (malfunction)	100 m/s ² (≈ 10 G) in each >	X, Y, Z direction for 3 times				
Ambient temperature	-10 to 50 °C, storage: -20	to 60 °C (no freezing or co	ndensation)			
Ambient humidity	35 to 85 %RH, storage: 35	5 to 85 %RH (no freezing o	r condensation)			



View product detail

Controllers

Indicator / Thumbwheel Switch Panel Meters

M4M Series



Specifications

Input type	DC	AC	DC	AC	Power	Rotation,	Scaling	
input type	voltage	voltage	current	current		speed	Scaling	
Max. allowable	≤ 300 VDC=	= ≤ 400 VAC~	≤ DC 2 A	≤ AC 5 A	≤ 10 VDC==	≤ 10 VDC== ≤ 10 VAC∼	DC 4 - 20 m	
input	≈ 150 % F.S	. for each measur	ed input rang	je ⁰¹⁾				
Disp l ay method	7-segment	(red) LED (character height: 10 mm)						
Disp l ay accuracy	Dependent	on the input type						
DC input	± 0.2 % F.S.	rdg ± 1-digit						
AC input	± 0.5 % F.S.	rdg ± 1-digit						
Display scale	1999							
Sampling time	2.5 times / s	ec						
Response speed	≈ 2 sec (0 to	999)						
Sampling cycle	300 ms							
Operation method	Dual integra	Jral method						
Unit weight	Dependent	ent on the output						
Indicator	≈ 262 g							
Single setting	≈ 290 g							
Dual setting	≈ 316 g							
Approval	ERE							
1) At 400 VAC \sim i	input: ≈ 120 % F	.S. for each measure	id input range					
Output	li	ndicator	5	Single setting	3	Dual setting	g	
Power supply	⁰¹⁾ 1	10 / 220 VAC \sim ±	10 % 50 / 60	Hz				
Power consum	nption D	ependent on the	input type					
DC input	2	W	3	3 W		3 W		
AC input	4	VA	Ę	5 VA		5 VA		
Contact capac				250 VAC~ 3 150 VDC== 3		250 VAC~ 150 VDC==		
Contact comp	osition -		1	lc×1		1c × 2		
Insulation resi	stance ≥	100 MΩ (500 VD	C== megger)					
Dielectric stre	ngth 2	,000 VAC~ 50 / 6	60 Hz for 1 mi	in				
Noise immunit	y ±	1 kV square wave	noise (pulse	width: 1 µs) b	y the noise sim	ulator		
Vibration	0	0.75 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 1 hours						
Vibration (malf		0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 10 min						
Shock	3	00 m/s² (≈ 30 G)	in each X, Y, I	Z direction fo	r 3 times			
Shock (malfun	ction) 1	00 m/s² (≈ 10 G) ir	n each X, Y, Z	direction for	3 times			
Relay life cycle	e N	lechanical: ≥ 10,0 lectrical: ≥ 100,00			3A resistive loa	ad)		
Ambient temp	erature -	-10 to 50 °C, storage: -25 to 65 °C (no freezing or condensation)						

 Ambient temperature
 -10 to 50 °C, storage: -25 to 65 °C (no freezing or condensation)

 Ambient humidity
 35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)

 01) Power supply 24 - 70 VDC=, 100 - 240 VAC~ 50 / 60 Hz options are also available to order.

Features

- Max. display value: 1999
- Auto-zero function and hold display value function
- Linear display based on input specification
- Display output values (0 10 VDC=-) from power converters
 (options available for DC 4 - 20 mA, 1 - 5 VDC=-)
- RMS or AVG value selection (AC voltage)
- •7-segment LED display
- DIN standard size models

View product detail





Scaling

Wattmeter

Voltmeter



Ammeter



Tachometer / Speed Meter

Indicator / Thumbwheel Switch

Panel Meters

M4W Series



current

≤ 300 VDC== ≤ 400 VAC~ ≤ DC 2 A

curre

≤ AC 5 A ≤ 10 VDC=

Features

- Max. display value: 1999
- Auto-zero function and hold display value function
- · Linear display based on input specification
- Display output values (0 10 VDC----) from power converters
 (options available for DC 4 - 20 mA, 1 - 5 VDC----)

Specifications

voltage

Input type

allowable

Max.

- RMS or AVG value selection (AC voltage)
- 7-segment LED display
- DIN standard size models

View product detail



Scaling

Wattmeter

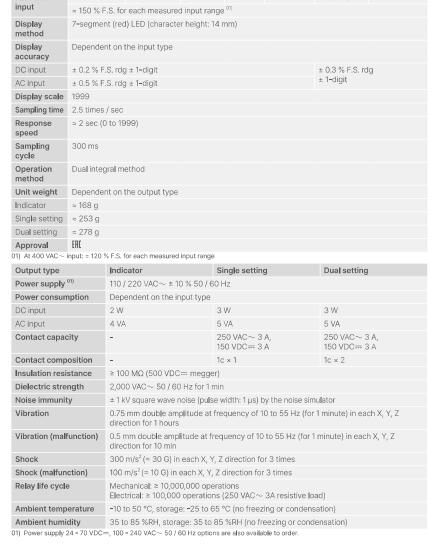
Voltmeter



Ammeter



Tachometer / Speed Meter



Scaling

DC 4 - 20 mA

≤ 10 VDC=

≤ 10 VAC~

Panel Meters

(Indicator)

M4Y Series



Specifications

Features

- Max. display value: 1999
- Auto-zero function and hold display value function
- Linear display based on input specification
- Display output values (0 10 VDC==) from power converters (options available for DC 4 - 20 mA, 1 - 5 VDC==)
- RMS or AVG value selection (AC voltage)
- •7-segment LED display
- DIN standard size models

View product detail



Scaling



Ammeter

Voltmeter



Wattmeter



Tachometer / Speed Meter

E2-1

Input type	DC vo l tage	AC voltage	DC current	AC current	Power	Rotation, speed	Scaling					
Max. allowable input	≤ 300 VDC	≤ 400 VAC~	≤ DC 2 A	≤ AC 5 A	≤ 10 VDC==	≤ 10 VDC== ≤ 10 VAC~	DC 4 - 20 mA					
	≈ 150 % F.S	. for each me	asured input	range ⁰¹⁾								
Display method	7-segment	(red) LED (ch	aracter heigh	it: 14 mm)								
Display accuracy	Dependent	on the input 1	type									
DC input	± 0.2 % F.S.	rdg ± 1-digit										
AC input	± 0.5 % F.S.	rdg ± 1-digit										
Display scale	1999											
Sampling time	2.5 times / s	ec										
Response speed	\approx 2 sec (0 to	5 1999)										
Sampling cycle	300 ms											
Operation method	Dual integra	Dual integral method										
Unit weight	≈ 144 g											
Approva	EAC											
01) At 400 VAC~ input: ≈ 120 %	% F.S. for each r	neasured input	range									
Power supply ⁰¹⁾	100 - 240 V	$AC\sim$ ± 10 %	50 / 60 Hz									
Power consumption	Dependent	on the input 1	type									
DC input	2 W											
AC input	4 VA											
Insulation resistance	≥ 100 MΩ (5	500 VDC== m	egger)									
Dielectric strength	2,000 VAC~	- 50 / 60 Hz 1	for 1 min									
Noise immunity	±1kV squar	e wave noise	(pulse width:	1 µs) by the n	oise simu l ator							
Vibration		0.75 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 1 hours										
Vibration (malfunction)	0.5 mm dou direction for		e at frequenc	y of 10 to 55 I	Hz (for 1 minu	te) in each X,	Υ, Ζ					
Shock	300 m/s² (≈	30 G) in eacl	n X, Y, Z direc	tion for 3 time	es							
Shock (malfunction)	100 m/s ² (\approx	10 G) in each	X, Y, Z direct	ion for 3 time	s							
Ambient temperature	-10 to 50 °C	, storage: -2	5 to 65 °C (no	o freezing or o	condensation))						
Ambient humidity	35 to 85 %F	RH, storage: 3	35 to 85 %RH	(no freezing	or condensat	ion)	-10 to 50 °C, storage: -25 to 65 °C (no freezing or condensation) 35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)					

Panel Meters

(Indicator)

M5W Series



Features

• Max. display value: 19999

- Linear display based on input specification
- Display output values (0 10 VDC----) from power converters (options available for DC 4 - 20 mA, 1 - 5 VDC----)
- RMS or AVG value selection (AC voltage)
- 7-segment LED display
- DIN standard size models

Specifications

Input type	DC voltage	DC current	Power	Rotation, speed	Scaling		
Max. allowable input	≤ 300 VDC==	≤ DC 2 A	≤ 10 VDC==	≤ 10 VDC	DC 4 - 20 mA		
	≈ 150 % F.S. for	each measured ir	nput range				
Display method	7-segment (red)	LED (character h	eight: 14 mm)				
Display accuracy	± 0.2 % F.S. rdg	± 1-digit					
Display scale	19999						
Sampling time	2.5 times / sec						
Response speed	≈ 2 sec (0 to 199	999)					
Sampling cycle	300 ms						
Operation method	Dual integral me	thod					
Unit weight	≈ 172 g	≈ 172 g					
Approval	EAC	ERC					
Power supply ⁰¹⁾	100 - 240 VAC \sim	± 10 % 50 / 60 H	lz				
Power consumption	2 W						
Insulation resistance	≥ 100 MΩ (500 \	/DC== megger)					
Dielectric strength	2,000 VAC ~ 50	2,000 VAC \sim 50 / 60 Hz for 1 min					
Noise immunity	± 1 the square wa	\pm 1 the square wave noise (pulse width: 1 µs) by the noise simulator					
Vibration		0.75 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 1 hours					
Vibration (malfunction)		0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 10 min					
Shock	300 m/s² (≈ 30 G) in each X, Y, Z	direction for 3 times				
Shock (malfunction)	100 m/s² (≈ 10 G) in each X, Y, Z d	irection for 3 times				
Ambient temperature	0 to 50 °C, stora	ge: - 25 to 65 °C	(no freezing or cond	lensation)			
Ambient humidity	35 to 85 %RH, s	torage: 35 to 85	%RH (no freezing or	condensation)			
1) Power supply 24 - 70 VDC=	= option is also availa	able to order.					

View product detail





Voltmeter

回線起回

Ammeter





Wattmeter



Tachometer / Speed Meter Ε

Controllers

Loop-Power

Panel Meters

(Indicator)

M4NS / M4YS Series



Features

- Loop-powered: power supplied by loop current
- Measured input: DC 4 20 mA
- Display range: -1999 to 9999
- High / low-limit display scale function
- Decimal point setting function
- Input high / low-value correction function
- Display peak value monitoring function
- Set peak value monitoring delay time

• Display cycle time setting (0.5 / 1 / 2 / 3 / 4 / 5 seconds)

• Error display function

- M4NS: DIN W 48 × H 24 mm
- M4YS: DIN W 72 × H 36 mm

Specifications

Model	M4NS-NA	M4YS-NA				
Input type	DC 4 - 20 mA					
Impedance between input lines ⁰¹⁾	≤ 600 Ω					
Display method	7-segment (red) LED (character height: 10 mm)	7-segment (red) LED (character height: 14 mm)				
Display accuracy	Dependent on the ambient temperature					
25 ± 5 °C	0.3 % F.S. rdg ± 1-digit					
-10 to 50 °C	0.4 % F.S. rdg ± 1-digit					
Display scale	-1999 to 9999 (4-digit)					
Display cycle	0.5, 1, 2, 3, 4, 5 sec					
Resolution	1 / 12,000					
Unit weight	≈ 44 g	≈ 110 g				
Approval	EAC					
01) Based on input power 24 VI						
Power supply	Loop powered type					
Insulation resistance	≥ 100 MΩ (500 VDC== megger)					
Dielectric strength	2,000 VAC ~ 50 / 60 Hz for 1 min					
Vibration	0.75 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 1 hours					
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 10 min					
Shock	300 m/s ² (\approx 30 G) in each X, Y, Z direction for	300 m/s² (≈ 30 G) in each X, Y, Z direction for 3 times				
Shock (malfunction)	100 m/s ² (\approx 10 G) in each X, Y, Z direction for 3	3 times				
Ambient temperature	-10 to 50 °C, storage: -25 to 60 °C (no freezing	ng or condensation)				
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezi	ing or condensation)				



View product detail

Digital Panel Meters

for Mosaic Panels

(Indicator)

M4V Series



Features

Various input options:

0 - 2 VDC=, 0 - 10 VDC=, 1 - 5 VDC=, DC 0 - 1 mA, DC 4 - 20 mA

- High / low-limit display scale function
- Display range: -999 to 9999
- Display accuracy: F.S ± 2 % rdg ± 1-digit
- Error display function
- Built-in microprocessor

Specifications

Model M4V Input type DC voltage, DC current Measurement input type 0 - 2 VDC=, 1 - 5 VDC=, 0 - 10 VDC=, DC 0 - 1 mA, DC 4 - 20 mA Max. allowable input ≈ 110 % F.S. for each measured input range Display method 7 -segment (red) LED (character height: 14 mm) Display accuracy Dependent on the ambient temperature
Measurement input type 0 - 2 VDC=, 1 - 5 VDC=, 0 - 10 VDC=, DC 0 - 1 mA, DC 4 - 20 mA Max. allowable input ≈ 110 % F.S. for each measured input range Display method 7 -segment (red) LED (character height: 14 mm) Display accuracy Dependent on the ambient temperature
type * 110 % F.S. for each measured input range Display method 7 -segment (red) LED (character height: 14 mm) Display accuracy Dependent on the ambient temperature
Display method 7 -segment (red) LED (character height: 14 mm) Display accuracy Dependent on the ambient temperature
Display accuracy Dependent on the ambient temperature
0 to 50 °C ± 0.2 % F.S. rdg ± 1-digit
-10 to 0 °C ± 0.3 % F.S. rdg ± 1-digit
Display cycle 0.5 sec
Unit weight $\approx 83 \text{ g}$
Approval ERC
Power supply 12 - 24 VDC== ± 10 %
Power consumption $\leq 2 \text{ W}$
Insulation resistance ≥ 100 MΩ (500 VDC megger)
Dielectric strength2,000 VAC~ 50 / 60 Hz for 1 min
Noise immunity ± 300 V square wave noise (pulse width: 1 µs) by the noise simulator
Vibration 0.75 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 1 hours
Vibration (malfunction) 0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 10 min
Shock 300 m/s ² (\approx 30 G) in each X, Y, Z direction for 3 times
Shock (malfunction) 100 m/s ² (\approx 10 G) in each X, Y, Z direction for 3 times
Ambient temperature -10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity 35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)



View product detail

Controllers

Revolutions / Frequency

Pulse Meters

(Indicator)

LR5N-B Series



Features

- 1-pulse input per revolution
- Display up to 10,000 RPM
- Built-in internal battery (power supply not required)
- Display RPM or RPS of rotating shaft or disc

Specifications

- AC voltage frequency display function
- IP66 protection structure (front panel)

Model	LR5N-B					
Display digits	4½-digit					
Display type	LCD Zero Blanking (character size: H 8.7 mm)					
Input type	IN 1: No-voltage input	IN 1: No-voltage input IN 2: Voltage input 1 IN 3: Voltage input 2				
Input signal level	Short-residual voltage : ≤ 0.5 V Short-circuit impedance : ≤ 10 kΩ	High input vol : 4.5 - 30 VDC Low input volt : 0 - 2 VDC==	age range	30 - 240 VAC~		
	Open-circuit impedance : ≥ 500 kΩ	Voltage: 3 - 30) vac \sim			
HOLD	YES					
Unit weight (packaged)	≈ 59 g (≈ 91.5 g)					
Power supply	Built-in battery (CR2477)					
Battery life cycle	\gtrsim 3 years (at \approx 20 °C)					
Insulation resistance	≥ 100 MΩ (500 VDC== megger)					
Dielectric strength	2,000 VAC \sim 50 / 60 Hz for 1 min (Cutoff current = 10 mA)					
Vibration	0.75 mm double amplitude at frequency of 10 to 55Hz (for 1 minute) in each X, Y, Z direction for 1 hour					
Vibration (malfunc.)	0.3 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 10 minute					
Shock	300 m/s²(≈ 30 G) in each X, Y	r, Z direction for	r 3 times			
Shock (malfunc.)	100 m/s² (≈ 10 G) in each X, Y	, Z direction for	3 times			
Ambient temp.	-10 to 55 °C, storage: -25 to 6	65 °C (no freezi	ng or condensa	ition)		
Ambient humid.	35 to 85 %RH, storage: 35 to	85 %RH (no fre	ezing or conde	nsation)		
Protection rating	IP66 (when using waterproof	rubber for front	: panel), termina	al cover (finger protector)		
Display unit	Display range		Display accur	racy		
RPM	1 to 10000 RPM		1 to 5000 RPN	1: F.S. ± 0.05 % ± 1-digit		
			5001 to 10000) RPM: F.S. ± 0.1 % ± 1-digit		
0.1RPM	0.1 to 1000.0 RPM		F.S ± 0.05 % ±	t 1–digit		
Hz	1 to 1000 Hz		F.S ± 0.1 % ± 1	-digit		
0.1Hz	0.1 to 100.0 Hz					
RPS	1 to 1000 RPS					



Thumbwheel Switch Multi

Pulse Meters

MP5M Series



Features

- •14 operation modes
- Frequency / revolutions / speed, passing speed, cycle, passing time, time interval
- Time differential, absolute ratio, density, length measurement 1 / 2, interval
- Accumulation, addition / subtraction (individual input), addition / subtraction (phase difference input)
- Various output models
- Relay single (high-limit) / double
 (high / low-limit) + NPN open collector output
- Various functions
- Prescale, monitoring delay, hysteresis, auto-zero, parameter lock
- NPN input (non-contact / contact) or PNP input (non-contact / contact)
- Display range: -19999 to 99999
- Various display units
- Power supply
- 100 240 VAC \sim 50 / 60Hz (AC type)
- 24 VAC~ 50 / 60 Hz, 24 48 VDC---(AC / DC type)

Specifications

Series	MP5M-□N	MP5M-□1		MP5M-🗆2
Input signal ⁰¹⁾	Solid state input 1: \le 50 kHz (pulse width: \ge 10 µs) Solid state input 2 ⁰² : \le 5 kHz (pulse width: \ge 100 µs) Contact input: \le 45 Hz (contact: \ge 12 VDC= 5 mA, pulse width: \ge 11 ms)			
Voltage input	Input impedance: 3.9 kΩ, [H]:	4.5 - 24 VDC=	, [L]: 0 - 1 VDC	
No-voltage input	Short-circuit impedance: ≤ 80 open-circuit impedance: ≥ 10		tage: ≤ 1 VDC 	=,
Display method	7-segment LED (zero blanking	g method)		
Character size	W 4 × H 8 mm			
Prescale	$0.0001 \times 10^{^9}$ to $9.9999 \times 10^{^9}$			
Hysteresis	-	0 to 9999 03)		
Display cycle	OFF ⁰⁴⁾ , 0.05, 0.5, 1, 2, 4, 8 sec	c (same as upda	ate output cycle	2)
Display range	-19999 to 99999			
Contact control output	Relay			
Туре	-	1c × 1		1a × 2
Capacity	-	250 VAC \sim 3 / A resistive load		250 VAC \sim 3 A, 30 VDC= 3 A resistive load
Solid-state control output	NPN open collector			
Туре	- ×1 ×2		× 2	
Capacity	-	≤ 30 VDC== 10	Am OC	≤ 30 VDC== 100 mA
Approval	CE : TI us EHE			
Unit weight (package)	≈ 168 g (≈ 243 g) ≈ 181g (≈ 256g)		g)	≈ 190 g (≈ 265 g)
 O1) Standard duty ratio 1:1 O2) Operation mode F7, F8: ≤ 1 kHz (pulse width: ≥ 500 μs) O3) The hysteresis setting range varies according to the decimal point setting position. O4) Only available operation mode F2, F14 				
Input	AC voltage		AC / DC voltage	
Power supply	100 - 240 VAC $\sim \sim$ ± 10 % 50 / 60 Hz		24 VAC~ ± 10 % 50 / 60 Hz, 24 - 48 VDC ± 10 %	
Power consumption	≤ 9 VA		AC: ≤ 6.5 VA, DC: ≤ 5 W	
External power supply	≤ 12 VDC ±10 % 80 mA			
and the second				

Memory retention	Number of inputs: 100,000 operations (non-volatile semiconductor memory type)
Relay life cycle	Mechanical: ≥ 5,000,000 operations Electrical: ≥ 100,000 operations (250 VAC \sim 3 A resistive load)
Insulation resistance	≥ 100 MΩ (500 VDC megger)
Dielectric strength	2,000 VAC \sim 60 Hz for 1 min
Noise immunity	\pm 2 kV the square wave noise (pulse width: 1µs) by the noise simulator
Vibration	0.75 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 1 hour
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 10 min
Shock	300m / s² (\approx 30G) in each X, Y, Z direction for 3 times
Shock (malfunction)	100m / s ² (\approx 30G) in each X, Y, Z direction for 3 times
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)



View product detail

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Controllers

Multi

Pulse Meters

MP5S / MP5Y / MP5W Series



Features

- •16 operation modes
- Frequency / revolutions / speed, passing speed, cycle, passing time, time interval
- Time differential, absolute ratio, error ratio, density, error, length measurement 1 / 2, interval
- Accumulation, addition / subtraction (individual input), addition / subtraction (phase difference input)
- Various output models
- Relay triple / quintuple output,
- NPN / PNP open collector quintuple output - BCD Dynamic output, PV transmission output (current output)
- RS485 communication output (Modbus RTU)
- Various function
- Prescale, delay monitoring, hysteresis, auto-zero, parameter lock, data bank (MP5W only)
- Display range: -19999 to 99999
- Various display units



View product detail

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Series	MP5S	MP5Y	MP5W
Input signal ⁰¹⁾	Solid state input 1: ≤ 50 kHz (p Solid state input 2 ⁰²⁾ : ≤ 5 kHz Contact input: ≤ 45 Hz (conta		dth: ≥ 11 ms)
Voltage input	Input impedance: 3.9 kΩ, [H]:	4.5 - 24 VDC==, [L]: 0 - 1 VDC=	
No-voltage input	Short-circuit impedance: ≤ 80 open-circuit impedance: ≥ 100) Ω, residual voltage: ≤ 1 VDC==) kΩ	
Display method	7-segment LED (zero blanking	g method)	
Character size	W 4 × H 8 mm	W 7 × H 14 mm	
Prescale	0.0001×10^{-9} to 9.9999×10^{9}		
Hysteresis	0 to 9999 03)		
Display cycle	OFF ⁰⁴⁾ , 0.05, 0.5, 1, 2, 4, 8 sec	(same as update output cycle)	
Display range	-19999 to 99999		
Output	Depending on models		
Relay	250 VAC \sim 3 A, 30 VDC= 3 A resistive load		
NPN / PNP open collector	≤ 30 VDC 30 mA		
BCD Dynamic	NPN open collector ≤ 30 VDC== 30 mA (Dynamic COM cycle (T) = 40 ms)		
PV transmission	DC 4 - 20 mA (load: \leq 500 $\Omega_{\rm c}$ resolution: 8,000 divisions) / DC 0 - 20 mA (load: \leq 500 $\Omega_{\rm c}$ resolution: 10,000 divisions)		
RS485 communication	Modbus RTU		
Product components	Product, instruction manual		
Bracket	Mounted	× 2	× 2
Unit sticker	× 1	× 1	× 2
Unit weight (package)	≈ 132 g (≈ 191 g) ≈ 140 g (≈ 230 g) ≈ 210 g (≈ 334 g)		
Approval	C€ c 9N us EHE		
11) Standard duty ratio 1:1 2) Operation mode F7, F8, F9, F10: ≤ 1 kHz (pulse width: ≥ 500 μs) 3) The hysteresis setting range varies according to the decimal point setting position.			

04) Only available operation mode F2, F16

Specifications

Series

Input	AC voltage	AC / DC voltage	
Power supply	100 – 240 VAC \sim ± 10 % 50 / 60 Hz	24 VAC~ ± 10 % 50 / 60 Hz, 24 - 48 VDC== ± 10 %	
Power consumption	Depending on Series / power supply		
MP5S	≤ 7.5 VA	AC: ≤ 6 VA, DC: ≤ 4.5 W	
MP5Y	≤ 9 VA	AC: ≤ 7 VA, DC: ≤ 6.2 W	
MP5W	≤ 15 VA	AC: ≤ 11 VA, DC: ≤ 7 W	
External power supply	≤ 12 VDC== ± 10 % 80 mA		
Sub power supply ⁰¹⁾	≤ 24 VDC 30 mA		
Memory retention	Number of inputs: 100,000 operations (non-volat	ile semiconductor memory type)	
Relay life cycle	Mechanical: ≥ 10,000,000 operations (switching frequency 180 operations / min) Electrical: ≥ 100,000 operations (250 VAC \sim 3 A, 30 VDC= 3 A resistive load) (switching frequency 20 operations / min)		
Insulation resistance	≥ 100 MΩ (500 VDC megger)		
Dielectric strength	2,000 VAC \sim 60 Hz for 1 min		
Noise immunity	$\pm 2~\text{kV}$ the square wave noise (pulse width: 1 $\!$	us) by the noise simulator	
Vibration	0.75 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 1 hour		
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 10 min		
Shock	300m / s ² (\approx 30G) in each X, Y, Z direction for 3 times		
Shock (malfunction)	100m / s ² (\approx 30G) in each X, Y, Z direction for 3 times		
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)		
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)		
Comm. protocol	Modbus RTU (16-bit CRC)		
01) Only for MP5W			

HARDER SE

E3. Digital Display Units

Digital display units are available in various sizes, can display over 60 different characters and signals for various monitoring purposes.

E3-1 Display Units		DS / DA Series	High Performance Display Units (Serial / Parallel Input)
			High Performance Display Units (RS485 Input)
		D1AA Series	W 11 × H 22 mm 16-Segment Display Units
		D1SA Series	W 11 × H 22 mm 7-Segment Display Units
		D1SC-N Series	W 32 × H 57 mm 7-Segment Display Units
E3 - 2	Panel Mount Display Units	D5Y / D5W Series	Panel Mount 5 Digit Display Units

High Performance

Display Units (Serial / Parallel Input)

DS / DA Series



Features

- Simple wiring without soldering
- multi-stage connection using expansion connectors or ribbon cables
- power supply and data wiring required on base unit only
- Various input options
- Serial input
- Dynamic Parallel input
- RS485 communication (Modbus) input (Master, Slave)
- RS485 communication (Modbus) time sync display
- PT temperature sensor input
- PT temperature sensor + RS485 communication input
- Expandable up to 24 units with multi-stage connection
- Available in various sizes: 16 mm, 22.5 mm, 40 mm, 60 mm
- High luminance LED display
- Various unit display plates (switchable) with flashing or ON / OFF options
- Various display types
- 7-segment display and 16-segment
- Red and green display types
- Display 64 characters
- (0 to 9, A to Z, 27 symbols, decimal point)



View product detail

wouer				
Display color	Red / green model			
Power supply	12 - 24 VDC			
Allowable voltage range	90 to 110 % of power :	supply		
Current consumption (red)	≤ 20 mA	≤ 25 mA	≤ 55 mA	≤ 65 mA
Current consumption (green)	≤ 15 mA	≤ 20 mA	≤ 40 mA	≤ 45 mA
Characters size (W×H)	9 × 16 mm	11.2 × 22.5 mm	22.4 × 40 mm	33.6 × 60 mm
Noise immunity	± 500 V the square wa	ave noise (pu l se width:	1 µs) by the noise simu	lator
Ambient temperature	-10 to 55 °C, storage: -25 to 65 °C (no freezing or condensation)			
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)			
Protection rating	IP40 (front part)			
Approval	C€ERE			
Weight (packaged) ⁰¹⁾	≈ 12 g (≈ 52 g)	≈ 17 g (≈ 58 g)	≈ 28 g (≈ 63 g)	≈ 60 g (≈ 110 g)
01) The package weight of 16 mm / 22 mm expansion unit varies, it based on 3 packages. 16 mm: ≈ 77 g / 22 mm: ≈ 92 g				
Model	D S		D P	
Input method	Serial		Parallel	
Max. Clock ⁰¹⁾	≤ 2 kHz		Dynamic 1: ≤ 3 kHz Dynamic 2: ≤ 1.5 kHz	

		Dynamic 2: ≤ 1.5 kHz
Input logic	Positive logic (PNP), negative logic (NPN)	
Input resistance	20 kΩ	
Input level	High: 4.5 - 24 VDC=, Low: 0 - 1.2 VDC=	
Display character	64 characters and symbols display: 0 to 9, A	to Z, 27 symbols, decimal point
Max. number of multi-stage	24-unit	Dynamic 1: 6-unit (4-bit) or 4 units (6-bit) Dynamic 2: 24-unit (6-bit)

01) Based on 50 : 50 (%) of duty ratio (ON / OFF)

Specifications

Model

High Performance

Display Units (RS485 Input)

DS / DA Series



Features

- Simple wiring without soldering
- multi-stage connection using expansion connectors or ribbon cables
- power supply and data wiring required on base unit only
- Various input options
- Serial input
- Dynamic Parallel input
- RS485 communication (Modbus) input (Master, Slave)
- RS485 communication (Modbus) time sync display
- PT temperature sensor input
- PT temperature sensor + RS485
- communication input
- Expandable up to 24-units with multi-stage connection
- Available in various sizes: 16 mm, 22.5 mm, 40 mm, 60 mm
- High luminance LED display
- Various unit display plates (switchable) with flashing or ON / OFF options
- Various display types
- 7-segment display and 16-segment
- Red and green display types
- Display 64 characters
- (0 to 9, A to Z, 27 symbols, decimal point)



View product detail

Model	DS16-□□	D_22	D□40-□□	D_60
Display color	Red / green model			
Power supply	12 - 24 VDC			
Allowable voltage range	90 to 110 % of power :	supply		
Current consumption (red)	≤ 20 mA	≤ 25 mA	≤ 55 mA	≤ 65 mA
Current consumption (green)	≤ 15 mA	≤ 20 mA	≤ 40 mA	≤ 45 mA
Size (W×H)	9 × 16 mm	11.2 × 22.5 mm	22.4 × 40 mm	33.6 × 60 mm
Noise immunity	± 500 V the square wave noise (pulse width: 1 μs) by the noise simulator			
Ambient temperature	-10 to 55 °C, storage: -25 to 65 °C (non freezing or condensation)			
Ambient humidity	35 to 85%RH, storage: 35 to 85%RH (non freezing or condensation)			
Protection rating	IP40 (front part)			
Approval	C € ERE			
Weight (packaged) ⁰¹⁾	≈ 12 g (≈ 52 g)	≈ 17 g (≈ 58 g)	≈ 28 g (≈ 63 g)	≈ 60 g (≈ 110 g)
Comm. protocol	Modubus RTU			
01) The package weight of 16 mm / 22 mm expansion unit varies, it based on 3 packages. 16 mm: ≈ 77 g / 22 mm: ≈ 92 g				

Model	DDD-DT	DS□-□C
Input method	RS485 communication	RS485 communication (time)
Directly connected Autonics Series	CT6, CT4, MP5, MT4, TK / TX, TM2, TM4, THD	-
Display character (range)	64 characters and symbols display: 0 to 9, A to Z, 27 symbols, decimal point	World local time, 12/24-hour, summer time
Max. number of multi- stage	24-unit	10-unit
Comm. protocol	Modubus RTU	

W 11 × H 22 mm **16-Segment**

Display Units

D1AA Series



Features

- Displays 61 types of characters and signs (0 to 9, A to Z, 24 symbols, decimal point)
- Selectable input logic (positive / negative), data input type (parallel / serial)
- 16-segment in red/green
- Wide range of input signal level (Low : 0 - 1.2 VDC-, High : 4.5 - 24 VDC-)
- 12 24 VDC ---- power supply
- Multi-stage connection available

Specifications

Model	D1AA-RN	D1AA-GN	
Display method	16-segment LED (red)	16-segment LED (green)	
Power supply	12 - 24 VDC==		
Allowable voltage range	90 to 110 % of power supply		
Current consumption	≤ 32 mA		
Size	W 11 × H 22 mm		
Display character	61 characters and symbols (0 to 9, A to Z, 24	symbols, decimal point)	
Input	Parallel: Parallel 6 bits data, LATCH, decimal Serial : Serial 6 / 7 bits data, CLOCK, LATCH,		
Input resistance	20 kΩ		
Input level	High: 4.5 - 24 VDC==, Low: 0 - 1.2 VDC==		
Max. Clock 02)	≤ 3 kHz		
Output	Data output (serial input)		
Input logic	Positive logic (PNP), negative logic (NPN) sel	ectable (by inner soldering)	
Noise immunity	\pm 300 V the square wave noise (pulse width:	1 µs) by the noise simulator	
Ambient temperature	0 to 60 °C, storage: -10 to 85 °C (no freezing	or condensation)	
Ambient humidity	35 to 85 %RH (no freezing or condensation)		
Accessory	Connector (CT-10S)		
Approval	EAC		
Weight (packaged) ⁰³⁾	≈ 16 g (≈ 131 g)		
01) When applying the serial 6 I	hits input		

When applying the serial 6 bits input.
 Max. Clock is for 1:1 of duty ratio (ON, OFF ratio).
 The package weight is based on four.



View product detail

W 11 × H 22 mm 7-Segment Display Units

D1SA Series



Features

- Selectable decimal (0 to 9) / hexadecimal (0 to 9, A to F) display, input logic (positive / negative), data input method (serial / parallel)
- 7-segment, red / green display
- 12 24 VDC --- power supply
- Wide range on signal input voltage level (Low: max. 0 - 1.2 VDC---, High: 4.5 - 24 VDC---)
- Easy multi-stages connection
- Zero Blanking function

Specifications

Model	D1SA-RN	D1SA-GN	
Display method	7-segment LED (red)	7-segment LED (green)	
Power supply	12 - 24 VDC		
Allowable voltage range	90 to 110 % of power supply		
Current consumption	≤ 35 mA		
Size	W 11 × H 22 mm		
Display character	Decimal number: 0 to 9, decimal point Hexadecimal number: 0 to 9, A to F, decimal	point	
Input	Parallel: Parallel 4-bit data, LATCH, Zero Blar Serial: Serial 4 / 5-bit data, CLOCK, Zero Blar		
Input resistance	20 kΩ		
Input level	High: 4.5 - 24 VDC=, Low: 0 - 1.2 VDC=		
Max. Cock ⁰²⁾	≤ 3 kHz		
Output	Data output (serial input), Zero Blanking outp	but	
Input logic	Positive logic (PNP), negative logic (NPN) selectable (function set switches)		
Noise immunity	Between power terminals or input terminals : ± 300 V the square wave noise (pulse width	n: 1 µs) by the noise simulator	
Ambient temperature	0 to 60 °C, storage: -10 to 85 °C (no freezing	g or condensation)	
Ambient humidity	35 to 85 %RH (no freezing or condensation)		
Accessory	Connector (CT-10S)		
Approval	EAC		
Weight (packaged) ⁰³⁾	≈ 16 g (≈ 131 g)		
01) When applying the serial 4- 02) Max. Clock is for 50 : 50 (%			

02) Max. Clock is for 50 : 50 (%) of duty ratio (ON, OFF ratio).
03) The package weight is based on four.



View product detail

Controllers

W 32 × H 57 mm 7-Segment **Display Units**

D1SC-N Series



Features

- Selectable decimal (0 to 9) / hexadecimal (0 to 9, A to F) display, input logic (positive / negative), data input method (serial / parallel)
- •12 24 VDC --- power supply
- Wide range on signal input voltage level (Low: max. 0 - 1.2 VDC---, High: 4.5 - 24 VDC---)
- Zero Blanking function

Specifications

Model	D1SC-N			
Display method	7-segment LED (red)			
Power supply	12 - 24 VDC==			
Allowable voltage range	90 to 110 % of power supply			
Current consumption	≤ 70 mA			
Character size (W×H)	32 × 57 mm			
Display character	Decimal number: 0 to 9, decimal point, Minus Hexadecimal number: 0 to 9, A to F, decimal point, Minus			
Input method	Parallel: Parallel 4-bit data, LATCH, Zero Blanking, decimal point Serial : Serial 4/5-bit data, CLOCK, Zero Blanking, LATCH, decimal point ⁰¹			
Input resistance	12 kΩ			
Input level	High: 4.5 - 24 VDC, Low: 0 - 1.2 VDC			
Max. Clock 02)	≤ 3 kHz			
Output	Data output (serial input), Zero Blanking output			
Input logic	Positive logic (PNP), negative logic (NPN) selectable (function set switches)			
Insulation resistance	≥ 100 MΩ (500 VDC megger)			
Noise immunity	Between the power terminals or input terminals: \pm 300 V the square wave noise (pulse width: 1 $\mu s)$ by the noise simulator			
Ambient temperature	0 to 60 °C, storage: -10 to 85 °C (no freezing or condensation)			
Ambient humidity	35 to 85 %RH (no freezing or condensation)			
Approval	EAC			
Weight	≈ 100 g			

01) When applying the serial 4-bit input. 02) Max. Clock is for 50 : 50 (%) of duty ratio (ON, OFF ratio).



Panel Mount 5 Digit **Display Units**

D5Y / D5W Series



Features

Model	D5Y-M	D5W-M	D5W-MX	
Power supply	12 - 24 VDC==		110 / 220 VAC~ 50 / 60 Hz	
Allowable voltage range	90 to 110 % of power supply			
Current consumption	1.1 W		2 VA	
Size (W×H)	DIN 72 × 36 mm	DIN 96 × 48 mm		
Display method	7-segment LED Display			
Display digit / display range	4-digit / -9999 to 9999			
	5-digit ⁰¹⁾ / 0 to 99999			
Max. response CLOCK	100 Hz to 5 kHz ⁰¹⁾			
Input level	High: 5 - 24 VDC=-, Low: 0 - 1.2 VDC=-			
Input logic	Positive logic (PNP), negative logic (NPN)			
Input method	Static, Dynamic, 4 / 5-bit serial, Serial (16 / 20 / 25-bit)			
Insulation resistance	100 MΩ (500 VDC megger)			
Dielectric strength	2000 VAC ~ 50 / 60 Hz for 1 min			
Noise immunity	$\pm 1kV$ the square wave noise (pulse width: $1\mu s)$ by the noise simulator			
Vibration	$0.75\ mm$ double amplitude at frequency of 10 to 55 Hz (for 1 min) in each of X, Y, Z directions for 1 hour			
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each of X, Y, Z directions for 10 min			
Shock	300 m / s² (\approx 30 G) in X, Y, Z directions for 3 times			
Shock (malfunction)	100 m / s ² (\approx 10 G) in X, Y, Z directions for 3 times			
Ambient temperature	-10 to 50 °C, storage: -25 to 65 °C (no freezing or condensation)			
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)			
Approval	ERE			
Weight	≈ 75 g	≈ 165 g	≈ 267 g	
01) Except for Static input method				

- Various input specifications
- Static Parallel input, Dynamic Parallel input, 4 / 5-bit Serial input, 16 / 20 / 25-bit
- Serial input method
- Decimal point, minus sign display selection function - Display type by serial input, external DP terminal and Minus terminal
- Positive / negative logic input selection function
- Display digit selection function - 4-digit (-9999 to 9999), 5-digit (0 to 99999)
- · Zero blanking function selection function
- Selectable reversion function of latch signal

