

1-Channel Digital Temperature Indicators

KN-2000W Series
INSTRUCTION MANUAL

TCD210154AE

Autonics

Thank you for choosing our Autonics product.

Read and understand the instruction manual and manual thoroughly before using the product.

For your safety, read and follow the below safety considerations before using.

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

Keep this instruction manual in a place where you can find easily.

The specifications, dimensions, etc are subject to change without notice for product improvement Some models may be discontinued without notice.

Follow Autonics website for the latest information.

Safety Considerations

- Observe all ‘Safety Considerations’ for safe and proper operation to avoid hazards.
- ▲ symbol indicates caution due to special circumstances in which hazards may occur.

▲ Warning Failure to follow instructions may result in serious injury or death

01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.(e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)

Failure to follow this instruction may result in personal injury, economic loss or fire.

02. Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.

Failure to follow this instruction may result in explosion or fire.

03. Install on a device panel to use.

Failure to follow this instruction may result in fire or electric shock.

04. Do not connect, repair, or inspect the unit while connected to a power source.

Failure to follow this instruction may result in fire or electric shock.

05. Check ‘Connections’ before wiring.

Failure to follow this instruction may result in fire.

06. Do not disassemble or modify the unit.

Failure to follow this instruction may result in fire or electric shock.

▲ Caution Failure to follow instructions may result in injury or product damage

01. Use the unit within the rated specifications.

Failure to follow this instruction may result in fire or product damage

02. Use a dry cloth to clean the unit, and do not use water or organic solvent.

Failure to follow this instruction may result in fire or electric shock.

03. Keep the product away from metal chip, dust, and wire residue which flow into the unit.

Failure to follow this instruction may result in fire or product damage.

04. Check the polarity of the measurement input before wiring.

Failure to follow this instruction may result in explosion or fire.

Cautions during Use

- Follow instructions in ‘Cautions during Use’. Otherwise, it may cause unexpected accidents.
- For connecting the power, use the crimp terminal (M3.5, max. 7.2 mm)
- 24 VDC≡ power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Keep away from high voltage lines or power lines to prevent inductive noise. Do not use near the equipment which generates strong magnetic force or high frequency noise.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Use twisted pair wire for communication line.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in ‘Specifications’)
 - Altitude Max. 2,000 m
 - Pollution degree 2
 - Installation category II

Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website .

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① Alarm output 0: No (Option output: Transmission is not available) 2: 2 alarm 4: 2 alarm	② Option Output 0: No 1: PV transmission 4: Communication 5: PV transmission + Communication	③ Power supply 0: 100-240 VAC 50/60 Hz 1: 24 VDC
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Product Components

- Product
- Instruction manual
- Bracket ×2

Software

Download the installation file and the manuals from the Autonics website.

■ DAQMaster

DAQMaster is comprehensive device management program. It is available for parameter setting, monitoring.

Specifications

KN-2000W Series		
Series	AC voltage	DC voltage
Power supply	100 - 240 VAC~ 50/60 Hz	24 VDC≡
Permissible voltage range	90 to 110 % of rated voltage	
Power consumption	≤ 8 VA	≤ 3 W
Sampling period	• Thermocouple, RTD: 250 ms • Analog: 100 ms	
Input specification	Refer to 'Input Type and Using Range'.	
Digital input	Contact	• ON: ≤ 2 kΩ • OFF: ≥ 90 kΩ
	Non contact	• Residual voltage: ≤ 1.0 V • Leakage current: ≤ 0.03 mA
Outflow current		≈ 0.2 mA
Option output	Alarm	• 2 point relay: 250 VAC~ 3 A 1c • 4 point relay: 250 VAC~ 1 A 1a
	PV Transmission	ISOLATED DC 4-20 mA (Load resistance: ≤ 600 Ω)
RS485 comm.		Modbus RTU
Display type	7 Segment (Red, Green, Yellow), LED type	
Alarm output 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 strength		
Between the charging part and the case: 2,000 VAC~ 50/60 Hz for 1 min		
Vibration	0.75 mm amplitude at frequency of 5 to 55 Hz 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	≈ 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)	
Certification	CE UK ENEC	
Unit weight (packaged)	≈ 200 g (≈ 332 g)	

Communication Interface

■ RS485

Comm. protocol	Modbus 1.1 RTU
Maximum connection	32 units
Synchronous method	Asynchronous
Comm. method	Two-wire half duplex
Comm. effective range	≤ 1,200 m (≤ 700 m recommended)
Comm. speed	1,200 / 2,400 / 4,800 / 9,600 (default) / 19,200 bps (parameter)
Data bit	8 bit (fixed)
Parity bit	None (fixed)
Stop bit	1 bit (fixed)

Input Type and Using Range

Input type	Display	Using range (°C)	Using range (°F)
Thermo-couple	K (CA)	ℰ℄ ~ ℰ℄	- 200.0 to 1350.0 - 328 to 2462
	J (IC)	ℰ℄ ~ ℄	- 200.0 to 800.0 - 328.0 to 1472.0
	E (CR)	ℰ℄ ~ ℰ	- 200.0 to 800.0 - 328.0 to 1472.0
	T (CC)	ℰ℄ ~ ℰ	- 200.0 to 400.0 - 328.0 to 752.0
	R (PR)	ℰ℄ ~ ℞	0.0 to 1750.0 32 to 3182
	B (PR)*	ℰ℄ ~ ℞	400.0 to 1800.0 752 to 3272
	S (PR)*	ℰ℄ ~ ℄	0.0 to 1750.0 32 to 3182
	N (NN)*	ℰ℄ ~ ℞	- 200.0 to 1300.0 - 328 to 2372
	C (W5)*	ℰ℄ ~ ℄	0 to 2300 32 to 4172
	L (IC)*	ℰ℄ ~ ℄	- 200.0 to 900.0 - 328.0 to 1652.0
	U (CC)*	ℰ℄ ~ ℄	- 200.0 to 400.0 - 328.0 to 752.0
	Platinel II*	ℰ℄ ~ ℙ	0.0 to 1390.0 32 to 2534
RTD	Cu50Ω*	ℰ℄ 50	- 200.0 to 200.0 - 328.0 to 392.0
	Cu100Ω*	ℰ℄ 10	- 200.0 to 200.0 - 328.0 to 392.0
	JPt100Ω	℄ℙ ℰ. ℄	- 200.0 to 600.0 - 328.0 to 1112.0
	DPt50Ω	℄ℙ ℰ. 5	- 200.0 to 600.0 - 328.0 to 1112.0
	DPt100Ω	℄ℙ ℰ. ℄	- 200.0 to 850.0 - 328.0 to 1530.0
Analog	Current	0.00 - 20.00mA	℞. ℞ ℞ ℄
		4.00 - 20.00mA	℞. ℞ ℞ 2
	Voltage	- 50.00 - 50.00mV	℞. ℞ ℞ ℄
		- 200.0 - 200.0mV	℞. ℞ ℞ 2
		- 1.0000 - 1.0000V	℞ - ℞ ℄
		- 1.000 - 10.000V	℞ - ℞ 2

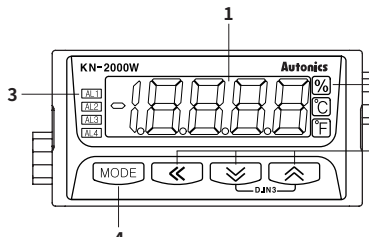
- Above input types which have the * mark are not displayed. To display the above input types, supply the power with pressing the [M] key.

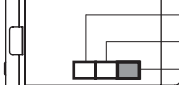
■ Display accuracy

Input type	Using temperature	Display accuracy
Thermocouple	At room temperature (25 °C ±5 °C)	PV ±0.2% F.S. ±1 digit • Thermocouple below -100 °C: (PV ±0.4% F.S.) ±1digit
	Out of room temperature range	PV ±0.3% F.S. ±1 digit

- In case of TC-T, TC-U, ±2.0 °C will be added to the degree standard.

Unit Descriptions

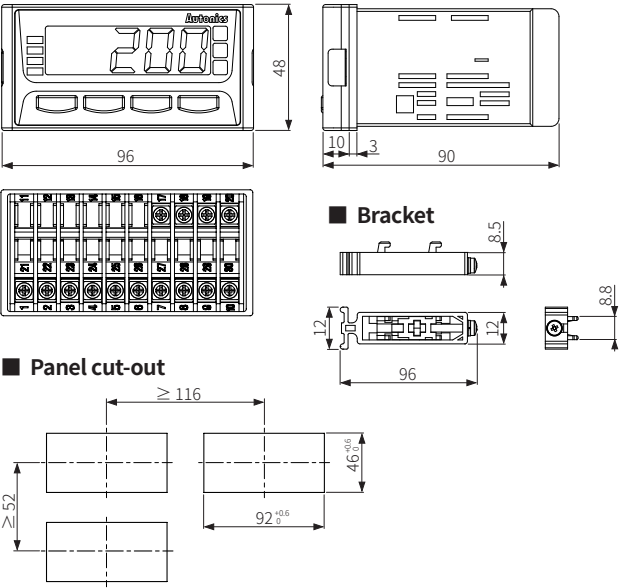
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 - Display part(Red)**
Run mode: Displays PV (Present value).
Setting mode: Displays parameter and setting value.
 - Unit Indicator**
Displays the set unit.
 - Alarm output indicator**
Turns ON when the alarm is ON
 - [MODE] key**
Used to enter parameter set mode, move to parameters, save SV and return to RUN mode.
 - 5. [◀], [▲], [▼] key**
Used to enter and change parameter setting value.
 - Selection switch for input specification**

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 - RTD / TC / mV / ±1 V:** Select it for RTD, Thermocouple, ±1 V, mV input
 - 1 - 10 V:** Select it for -1 - 10 VDC≡ input
 - 0 - 20 mA:** Select it for DC 0 (4) - 20 mA input (default)

- The setting of input type selection switch and the setting value of input type parameter should be same and it can display the proper measurement value.

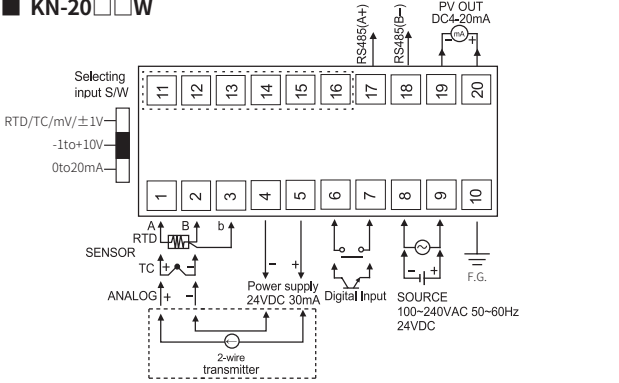
Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

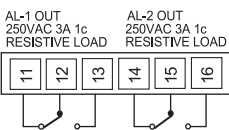


Connections

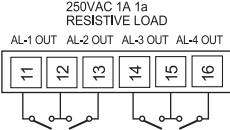
■ KN-20□□W



■ KN-22□□W



■ KN-24□□W



Errors		
Display	Description	Troubleshooting
<i>b U r n</i>	Flashes when input sensor is disconnected or sensor is not connected.	Check input sensor status.
<i>H H H H</i>	Flashes when PV is higher than input range. ⁽⁰¹⁾	When input is within the rated input range, this display disappears.
<i>L L L L</i>	Flashes when PV is lower than input range. ⁽⁰¹⁾	Check the setting condition and reset.
<i>E r r</i>	Flashes when there is an error of setting value	
<i>E r r I</i>	Flashes when parameter and selection switch setting for input specification are inconsistent	Check input specification.

01) Be careful that when *H H H H* / *L L L L* error occurs, the control output may occur by recognizing the maximum or minimum input depending on the control type.

