

Autonics High Accuracy PID Temperature Controller TK4 SERIES INSTRUCTION MANUAL



Thank you for choosing our Autonics product. Please read the following safety considerations before use.

Safety Considerations

- Please observe all safety considerations for safe and proper product operation to avoid hazards. Warning Failure to follow these instructions may result in serious injury or death. Caution Failure to follow these instructions may result in personal injury or product damage. 1. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. 2. Install on a device panel to use.

- Caution 1. When connecting the power input and relay output, use AWG 20 (0.50mm²) cable or over and tighten the terminal screw with a tightening torque of 0.74-0.90Nm. 2. Use the unit within the rated specifications. 3. Use dry cloth to clean the unit, and do not use water or organic solvent. 4. Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present. 5. Keep metal chip, dust, and wire residue from flowing into the unit.

Ordering Information

TK 4 N - 1 4 R N table detailing options for Standard, Heating & Cooling, Power supply, Input/Output option, Size, and Digit.

- 1. In case of TK4N/SP Series, option control selection and digital input will be limited due to number of terminals. 2. "S" represents SSR drive output support models which SSR function (standard ON/OFF, cycle, phase) control are available. 3. Select "R" or "C" type in case of using heating&cooling control and "N" type in case of using standard control.

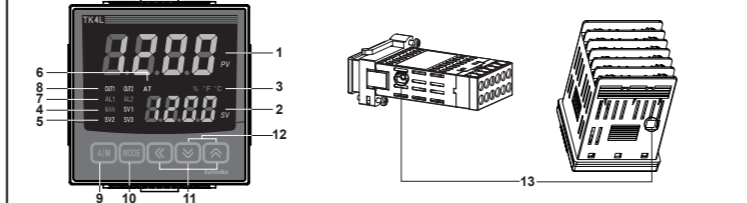
Shaded descriptions are upgraded or added functions from the before TK Series. The above specifications are subject to change and some models may be discontinued without notice.

Specifications

Table of specifications for TK4N, TK4SP, TK4S, TK4M, TK4W, TK4H, TK4L series. Includes columns for Series, Power, Allowable voltage range, Display method, Input type, Display accuracy, Control output, Alarm output, Option, Control method, Hysteresis, Proportional band, Integral time, Derivative time, Control period, Manual reset value, Sampling period, Dielectric strength, Vibration, Relay life cycle, Insulation resistance, Noise immunity, Memory retention, Environ -ment, Protection, Insulation type, Approval, and Weight.

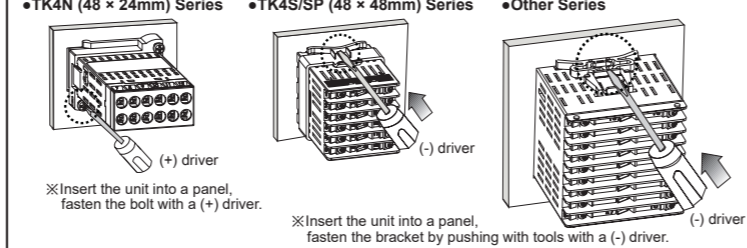
- At room temperature range (23°C±5°C): Thermocouple K, J, T, N, E type, below -100°C / Thermocouple L, U, PLII, Cu50Ω, DPT 50Ω; Thermocouple R, S, B, C, G type: (PV ±0.5% or ±5°C, select the higher one) ±1-digit. Thermocouple C, G, R, S type, below 200°C: (PV ±0.3% or ±3°C, select the higher one) ±1-digit.

Unit Description



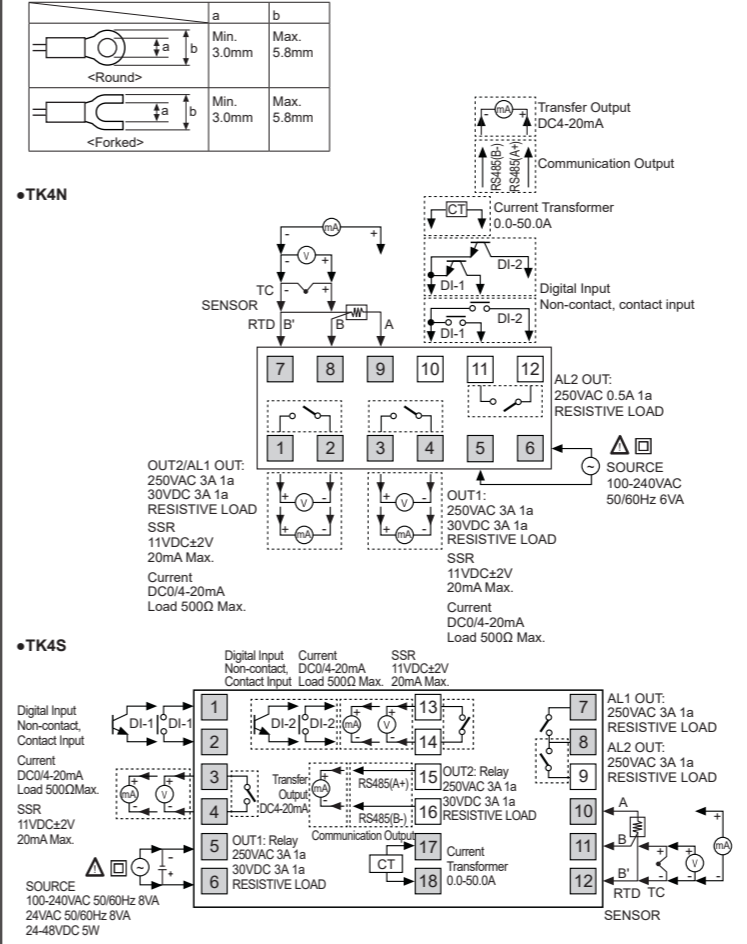
- 1. Measured value (PV) display part: RUN mode: It displays currently measured value (PV). Setting mode: It displays the parameter. 2. Set value (SV) display part: RUN mode: It displays the set value (SV). Setting mode: It displays the set value of the parameter. 3. Manual (%C/P%) indicator: It displays the unit set at display unit [%: °C, %: %] in parameter 3 group. (In case of TK4N, % is not supported).

Installation

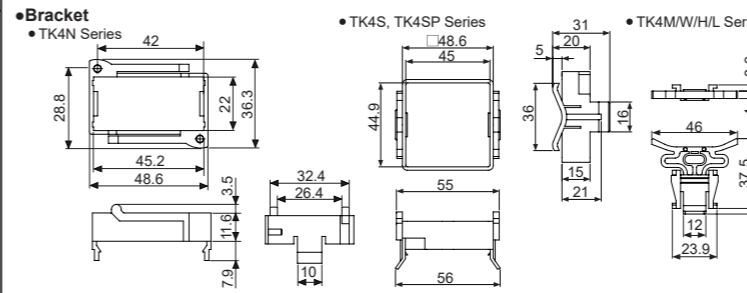
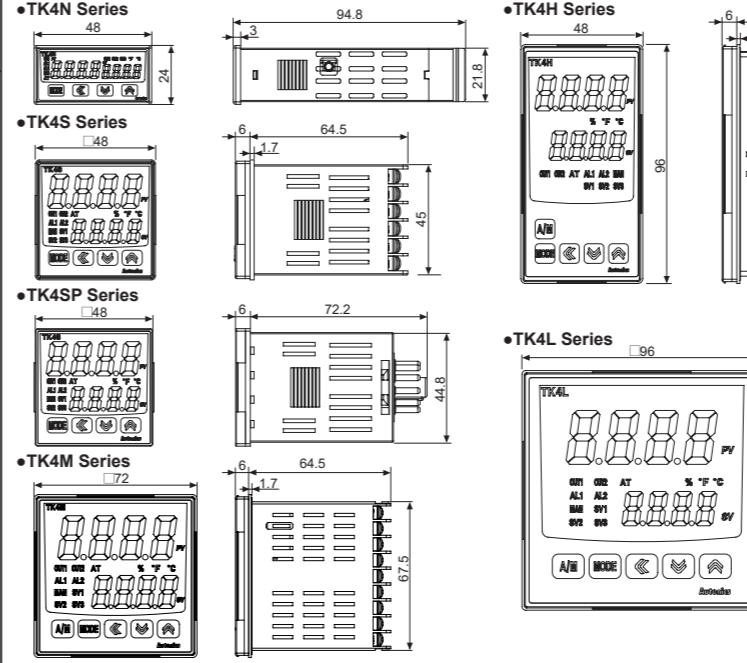


Connections

Standard model has shaded terminals only. When the operation mode of heating&cooling OUT2 relay output model is heating or cooling control, the OUT2 is usable as alarm output 3 (except TK4N Series).



Dimensions



Terminal Cover

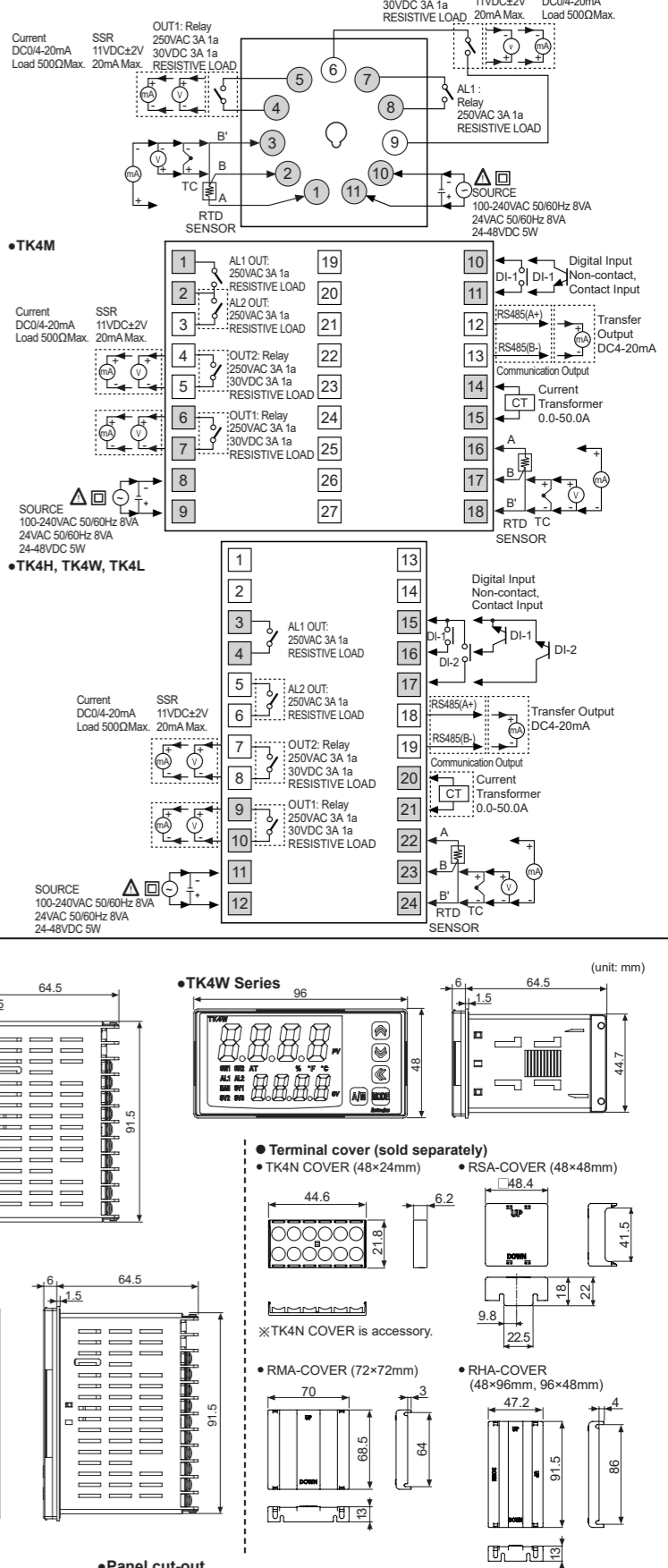
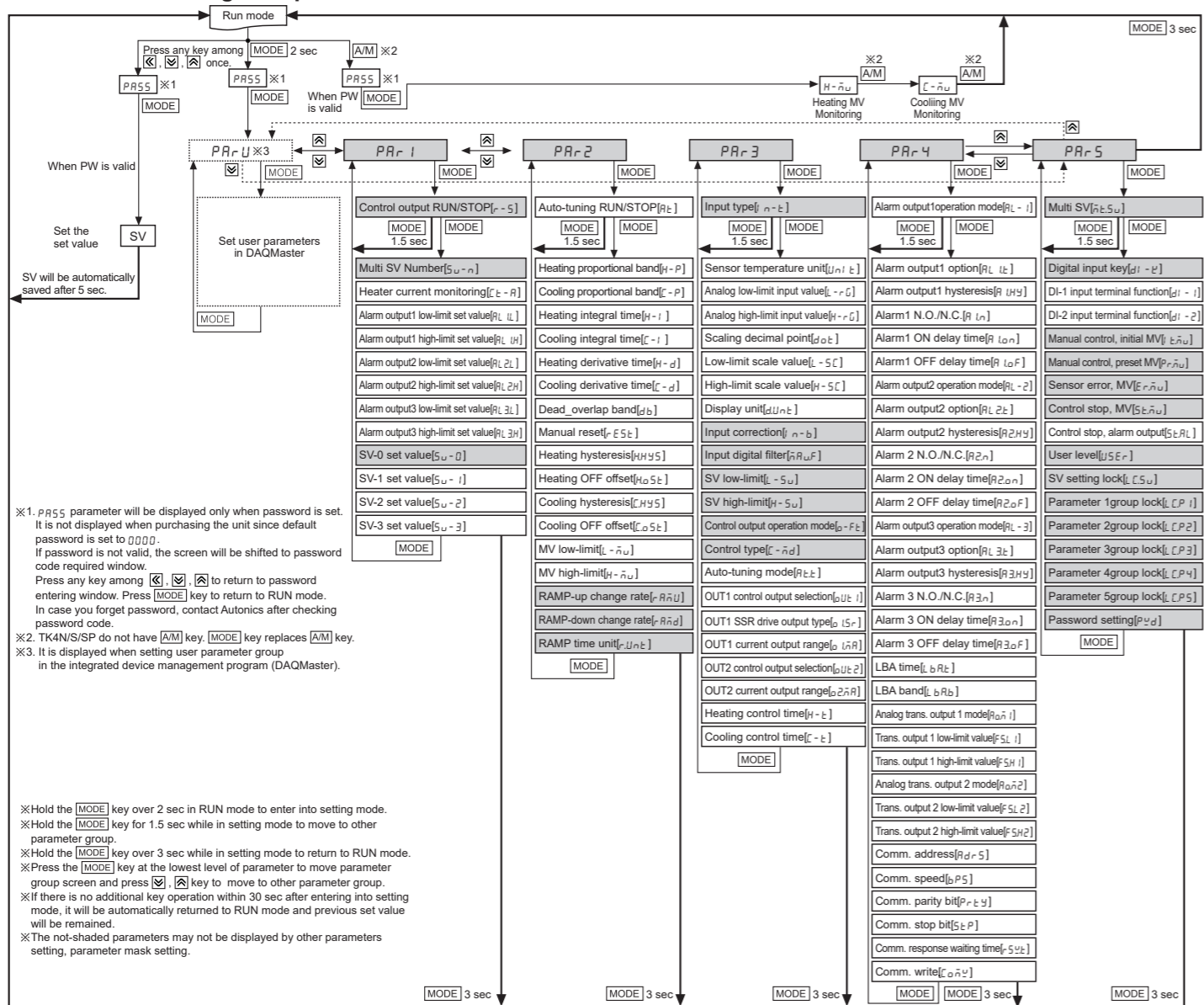


Table for Panel cut-out dimensions showing Model, Size, and dimensions A, B, C, D.

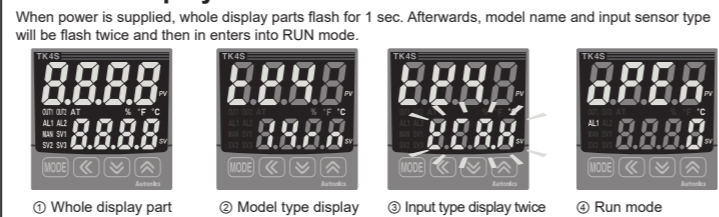
Flow Chart for Setting Group



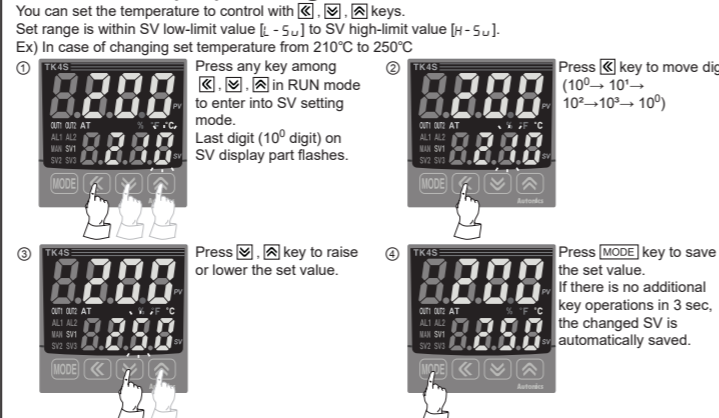
Input Types and Range

Table listing input types: Thermocouple (K, J, E, T, B, R, S, N, C, G), RTD (L, U, Platine II, Cu 50Ω, Cu 100Ω, JPt 100Ω, DP1 50Ω, DP1 100Ω, Nickel 120Ω), and Analog (Voltage, Current).

Initial Display When Power ON



Set Value (SV) Setting



Parameter Reset

Instructions on how to reset all parameters to factory defaults using the password function.

Parameter Mask

Explanation of the Parameter Mask function, which hides unnecessary parameters. Includes a diagram showing how to apply a mask to parameter groups PAr-2, PAr-3, etc.

User Parameter Group [PAr-U] Setting

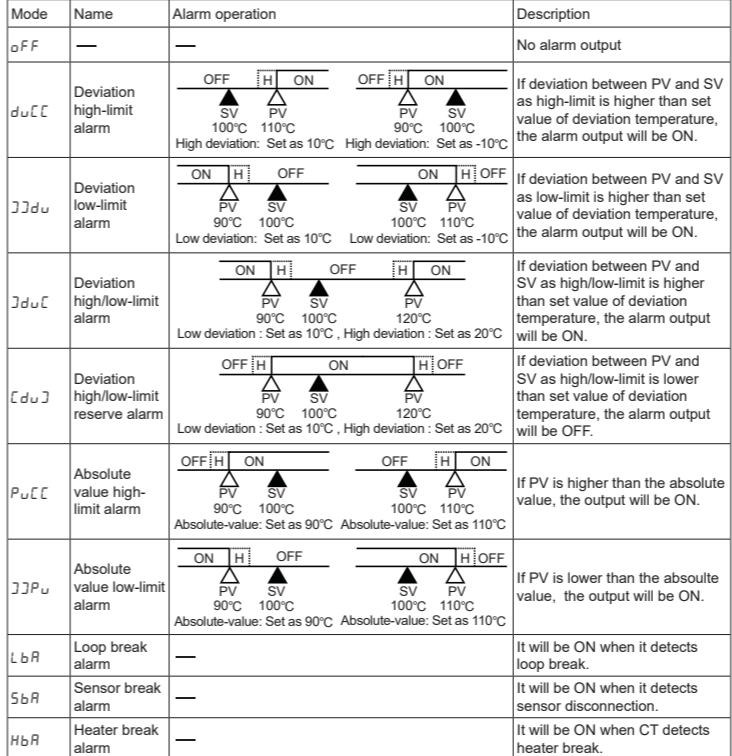
Instructions for setting the User Parameter Group (PAr-U). Includes a diagram showing the setting sequence for PAr-U parameters like RL-1, RL-2, etc.

Auto-tuning

Detailed description of the Auto-tuning process, including how to start it, when it stops, and the conditions for successful operation.

Alarm

Alarm operation



Alarm option

Table listing alarm options (RL-A to RL-F) and their descriptions.

Additional notes on alarm conditions and standby sequences for different alarm options.

Factory Default

Table of factory default values for SV setting groups (Su) and Password input parameters (PAr-1).

Parameter 2 group [PAr-2]

Table of factory default values for Parameter 2 group settings (RL-1 to RL-5).

Parameter 3 group [PAr-3]

Table of factory default values for Parameter 3 group settings (RL-1 to RL-5).

Parameter 4 group [PAr-4]

Table of factory default values for Parameter 4 group settings (RL-1 to RL-5).

Parameter 5 group [PAr-5]

Table of factory default values for Parameter 5 group settings (RL-1 to RL-5).

User Manual

Instructions on where to find the user manual and how to access it online.

Comprehensive Device Management Program [DAQMaster]

Information about the DAQMaster software, including system requirements and contact information.

Cautions during Use

- List of safety cautions and warnings for users, including instructions on wiring, power supply, and environmental conditions.

Major Products

Advertisement for Autronics corporation, listing various sensors and products, contact information, and the company website.