Shinko

SPEC. SHEET

Temperature Control Boards

Model : NTB-13A

■ Name

Temperature control boards

■ Model

Output		
Relay contact	Non-contact voltage	Current
NTB-13A-R/E	NTB -13A-S/E	NTB -13A-A/E

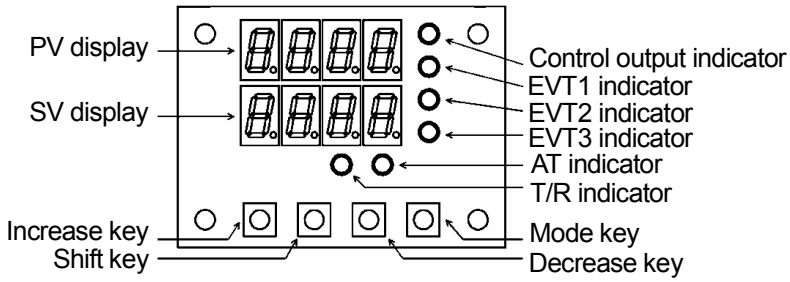
■ Rating

Input: Thermocouple K, J
External resistance, 100Ω or less

Input	Scale range		Resolution
K	–200 to 1370℃	–320 to 2500℉	1℃ (℉)
J	–200 to 1000℃	–320 to 1800℉	1℃ (℉)

■ General structure

Indicating structure:



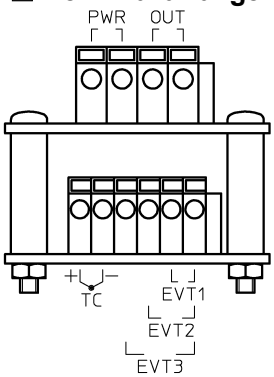
Displays

PV display: Indicates PV.
7-segment Red LED display 4-digit
Character size, 8 x 4 (H x W)mm
SV display: Indicates SV.
7-segment Green LED display 4-digit
Character size, 8 x 4 (H x W)mm

Action indicators

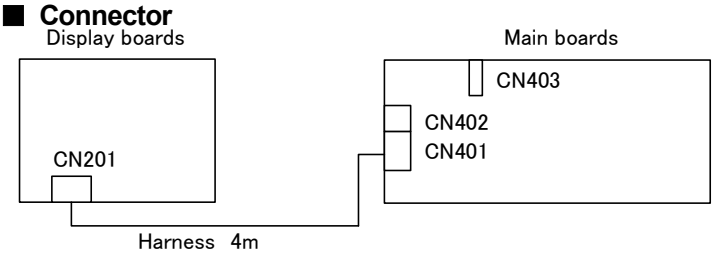
Control output indicator (Orange): Lights when control output is ON.
(For DC current output, flashes at a cycle of 0.25 seconds corresponding to the Output MV.)
EVT1 indicator (Green): Lights when EVT1 (Event output 1) is ON.
EVT2 indicator (Red) : Lights when EVT2 (Event output 2) is ON.
EVT3 indicator (Red) : Lights when EVT3 (Event output 3) is ON.
AT indicator (Yellow) : Flashes while auto-tuning or auto reset is performing.
T/R indicator (Yellow) : Lights during console communication (TX output).

■ Terminal arrangement



PWR: Supply voltage 100 to 240V AC
EVT1: Event output 1
EVT2: Event output 2
EVT3: Event output 3
OUT: Control output
TC: Thermocouple input

■ Connector



CN201, CN401 : Connector between boards
CN402 : Current transformer input (W option)
CN403 : Console connector

■ Supply voltage

Supply voltage: 100 to 240V AC, 50/60Hz
Allowable voltage fluctuation: 85 to 264V AC

■ Standard functions

High limit, Low limit, High/Low limits, High/Low limit range alarm, Process high alarm, Process low alarm, High limit alarm with standby, Low limit alarm with standby, High/Low limits alarm with standby, Loop break alarm

■ Installation specifications

External dimensions
Display boards: 60 x 44 x 25 (W x H x D)mm
Main boards : 103 x 41 x 44 (W x H x D)mm
Mounting: Screw mounting (M3)
Power consumption: Approx. 6VA
Ambient temperature: 0 to 50℃ (32 to 122℉)
Ambient humidity: 35 to 85%RH (Non-condensing)
Weight: Display boards: Approx. 30g, Main boards: Approx. 70g
Accessories:
Cable between display and main boards: 4m
When Heater burnout alarm (W option) is added: CT (CTL-6S) 1 piece

■ Options

Heater burnout alarm output (Option code: W)

Watches the heater current with CT (current transformer), and detects the heater burnout.
Rating: 20A
Setting range: Internal event main setting (Heater burnout alarm) range: 0.0 to 20.0A
Internal event sub setting: Not available
Setting the main set value to 0 (zero) disables the function.
Setting accuracy: Within ±5% of the rated value
Action point: Set value

■ Console communication

Function change and unit information reading can be executed from the external computer, using the console connector.

Communication protocol: Shinko protocol
Communication line : C-MOS level
Communication method : Half-duplex communication start-stop synchronization
Communication speed : 9600bps
Data bit : 7 bits
Parity : Even parity
Stop bit : 1
Exclusive cable : CMA (Made by Shinko Technos Co., Ltd.)

■ Attached functions

Sensor correction, Set value lock, Power failure countermeasure, Self-diagnosis, Automatic cold junction temperature compensation, Burnout, Input abnormality, Warm-up indication

■ Setting structure

Function keys

(1) Increase key : Increases the numerical value.
(2) Decrease key: Decreases the numerical value.
(3) Shift key : Moves to the next digit (Right ⟶ left).
(4) Mode key : Selects the setting mode. By pressing this key for 3sec, the unit proceeds to Standby mode or Output MV indication mode depending on the Mode key allocation function selection.

■ Indicating performance

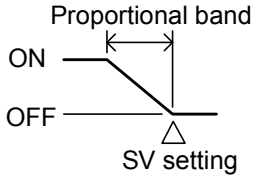
Indication accuracy:
Within ±0.3% of each input span±1digit
Less than 0℃ (32℉): Within ±0.5% of each input span±1digit
Input sampling period: 0.25 seconds

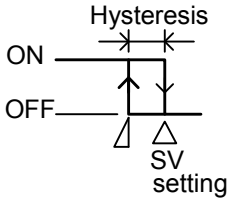
■ Controlling performance

Setting accuracy: The same as the Indication accuracy
Controlling action

- PID action (With auto-tuning function)
- PI action: When setting the derivative time to 0
- PD action (With auto-reset function): When setting the integral time to 0
- P action (With auto-reset function): When setting the integral and derivative time to 0
- ON/OFF action: When setting the proportional band to 0

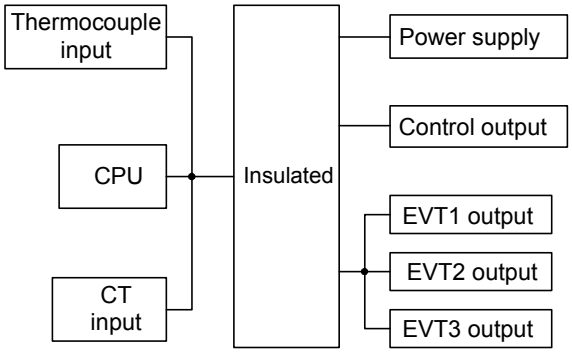
Proportional band (P) : 0 to 1000℃ or 2000℉
Integral time (I) : 0 to 1000sec.
Derivative time (D) : 0 to 300sec.
Proportional cycle : 1 to 120sec.
ARW : 0 to 100%
ON/OFF hysteresis : 0.1 to 100.0℃ (℉)
Output high, low limit : 0 to 100% (DC current output: –5 to 105%)





■ Insulation and dielectric strength

Circuit insulation configuration



Insulation resistance: 10MΩ or more, at 500V DC
When Control output is non-contact voltage output or DC current output, Control output is not insulated from EVT1 to EVT3.

Dielectric strength

Between input terminal and power terminal ---------- 1.5kV AC for 1 minute
Between output terminal and power terminal -------- 1.5kV AC for 1 minute

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