G128-0001 | Installation & commissioning

A thermocouple input feeds two independently configurable alarm decisions. The module supplies dry-contact outputs; the connected controller defines the resulting plant action.

THERMOCOUPLE — T/C + / -

G128 INPUT — CJC + range

DUAL LOGIC — A / B trip

CONTACTS — PLC / alarm

Terminal allocation

Circuit	Terminal identity	Commissioning observation
Thermocouple	41 positive; 42 negative	Confirm actual thermocouple polarity and input-junction condition.
DC supply	21 positive; 22 negative	Measure operating voltage at the module with outputs connected.
Relay A	52 common; 51 NO; 53 NC	Check both contact states at normal input and A trip.
Relay B	12 common; 11 NO; 13 NC	Check both contact states at normal input and B trip.
Unused positions	43 and 23 have no connection	Do not use these positions as signal or shield returns.

Before energizing

Record the installed loop

Photograph the complete G128-0001 marking and current switch positions before removing wiring.

Separate three circuits

Identify low-level thermocouple wiring, DC supply and external relay loads on the panel drawing.

Check contact semantics

Determine whether the PLC reads the common-to-NO or common-to-NC leg for each alarm.

Keep calibration traceable

Have a calibrated thermocouple millivolt source and acceptance thresholds available.

Reference basis: Eurotherm Ultra SlimPak G128-0001, 721-0654-00-H. Confirm the delivered unit and installed alarm drawing.

Configure the input and alarm intent

Make all switch changes with DC power removed. The field selection must be documented as a coherent group: sensor type, input range, trip direction, failsafe behavior and thermocouple burnout direction.

Decision	What the technician selects	How to prove it
Sensor type	B, E, J, K, R, S or T thermocouple	Match the probe tag and the source simulator type.
Temperature span	One documented range for the selected type	Use the manufacturer SW1/SW2 table; do not infer from a neighboring range.
Trip A / Trip B	Independent HI or LO sense	Sweep temperature through each threshold in the intended direction.
Failsafe	Energized normal versus non-failsafe contact logic	Remove DC power under a controlled test and observe the external input.
Burnout	Upscale or downscale response	Open the thermocouple under a safe test and confirm expected alarm state.

Standard factory preset, only when another configuration was not specified

Input	Trip plan	Other selections
J thermocouple, 0–350 °C	A high / B low	Dual SPDT; non-failsafe; A/B deadband at 0.25%

A fielded module may differ from this preset. Compare SW1/SW2 positions on the actual supplied unit and verify the measured thresholds; a printed default is not an as-found calibration record.

Power-off control

Remove and verify DC power before moving any range or function switch.

Range selection

Use the G128 table for the chosen thermocouple and temperature span; record both switch banks.

Trip semantics

Set A and B individually, then prove each relay with its own input sweep.

Burnout behavior

Include an open-input test to ensure the selected fault direction supports the intended process action.

Calibrate at the final installation

The manufacturer recommends final calibration after approximately one to two hours of warm-up and thermal equilibrium. Use a calibrated thermocouple source connected to the actual input terminals.

Step	Action	Acceptance evidence
01 Prepare	Confirm thermocouple type, span, polarity and SW1/SW2 selections.	Record the final switch map and source type.
02 Stabilize	Apply DC supply in the installed cabinet and allow thermal equilibrium.	Record stable supply and ambient.
03 Set A	Turn A deadband to minimum. Apply the A trip input and adjust its setpoint from the correct side.	Record measured A transition and contact sense.
04 Reset A	With the trip established, vary input to the intended reset point and adjust A deadband.	Record A trip and reset temperatures separately.
05 Set B	Repeat the trip procedure with the independent B setpoint.	Record measured B transition and contact sense.
06 Reset B	Set B deadband and prove the recovery direction.	Record B trip and reset temperatures separately.
07 Fault proof	Check open thermocouple and controlled loss of module power.	Record both relay states and downstream alarm response.

Interpreting the 100 ms dynamic qualification

The input must remain beyond the setpoint continuously for the qualifying interval; a brief excursion need not change the relay. The same principle applies to recovery outside the deadband. Test slowly enough to distinguish the static threshold from the time-qualified transition.

Release criterion

The commissioning record should show switch positions, input source, measured A/B trip and reset points, normal and power-loss contacts, and the PLC or annunciator response. Compare those observations with the approved machine alarm philosophy rather than with the factory preset alone.

Engineer the external relay circuit

Both outputs are dry SPDT contacts. The two setpoints are separate, but the external circuit and the selected failsafe mode determine whether a loss of module power is interpreted as an alarm.

Contact/load question	Engineering answer
What is the resistive load limit?	5 A at 120 V AC or 28 V DC; 2 A at 240 V AC. Validate the actual switched load.

Contact/load question	Engineering answer
What happens with an inductive DC coil?	Use suppression directly across the load; the data sheet shows a reverse-biased diode with adequate peak reverse voltage.
What happens with an inductive AC coil?	Use a suitably rated MOV and RC snubber across the load with short leads, per the manufacturer circuit.
How is a PLC digital input proven?	Measure COM–NO and COM–NC at normal, trip and power-loss states, then confirm the PLC logic resolves all three.
How is electrical noise separated?	Observe thermocouple input and relay transition while checking supply, routing and shield practice independently.

State matrix to test on the actual circuit

Injected condition	A contact observation	B contact observation	Downstream check
Normal process input	Measure selected leg	Measure selected leg	No unintended process alarm
A threshold crossed	Confirm A transition	Observe B independently	Correct A indication/action
B threshold crossed	Observe A independently	Confirm B transition	Correct B indication/action
DC power removed	Record both contacts	Record both contacts	Expected fail-safe response

Relay service life depends on load type and suppression. A contact rated for a resistive load should not be assumed to have the same endurance when switching an inductive coil.

Installation and diagnostic release

Observation	Likely check	Next controlled action
Green input LED off	DC supply and terminal polarity	Measure module voltage and verify the supply circuit.
Green LED flashes fast	Input above selected full scale	Check sensor type, range switches and applied thermocouple millivolts.
Green LED flashes slowly	Input below selected range	Check open/reversed lead, burnout selection and cold-junction wiring.
Red trip LED on; PLC quiet	Relay leg or downstream logic	Measure the selected contact and PLC input rather than changing calibration.
Trip point drifts	Thermal equilibrium or junction condition	Stabilize cabinet, inspect junction and repeat calibrated-source test.

Rail and cabinet constraints

Horizontal rail

The documented operating ambient is 0–55 °C for horizontal DIN-rail mounting.

Vertical group

For five or more vertically mounted modules, the manufacturer recommends circulating air or an HS01 heat sink.

Terminal access

Leave room to inspect top-entry screws and route six wire entries on each side without bending sensor leads sharply.

Final record

Retain the complete model, selected input type/range, A/B thresholds and contact proof with the panel drawing.