

STTC Simplex Thermocouple Input

Functional Description

The Simplex Thermocouple Input (STTC) terminal board is a compact terminal board designed for DIN-rail or flat mounting. The board has 12 thermocouple inputs and connects to the PTCC thermocouple processor board or to the YTCC pack on the Mark VIeS SIS. The on-board signal conditioning and cold junction reference is identical to those on the larger TBTC board. High-density Euro-Block type terminal blocks are mounted to the board, and two types are available. An on-board ID chip identifies the board to the processor for system diagnostic purposes.

Compatibility

Control System	STTC Functionality
Mark VIe control	PTCC I/O pack works with the STTC. The I/O pack plugs into the DC-37 pin connector and communicates with the controller over Ethernet. Only simplex systems are supported.
Mark VIeS Safety control	Board revisions STTCS1A and STTCS2A are IEC 61508 safety certified with YTCC.

Board Revision	Mark VIe control IS220PTCC	Mark VIeS Safety control IS200YTCC	Comments
STTCH1A	Yes, all versions	No	Fixed terminals
STTCH2A	Yes, all versions	No	Plug in terminals
STTCS1A	Yes, all versions	Yes, all versions	Fixed terminals, IEC 61508 safety certified with YTCC
STTCS2A	Yes, all versions	Yes, all versions	Plug in terminals, IEC 61508 safety certified with YTCC

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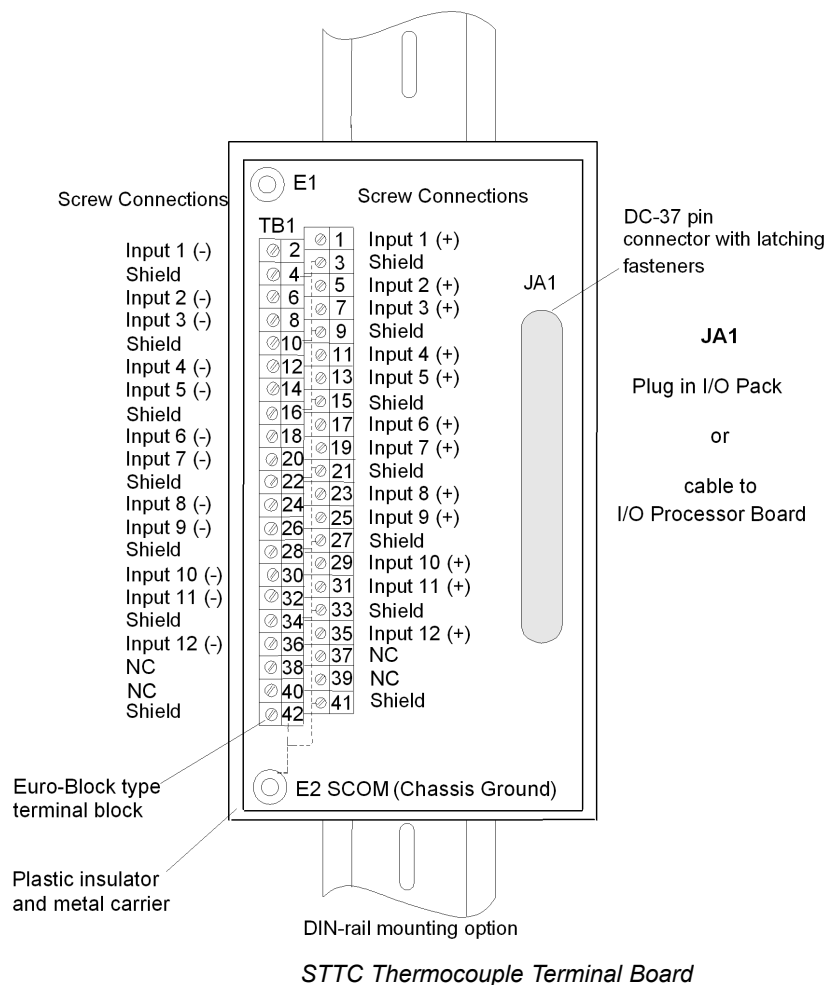


Installation

Shield screws are provided on this board, internally connected to SCOM.

The STTC and a plastic insulator mount on a sheet metal carrier, which mounts on a DIN rail. The STTC and insulator mount on a sheet metal assembly that bolts directly in a panel. Thermocouples are wired directly to the terminal block using typical #18 AWG wires. The Euro-block type terminal block has 42 terminals that can be fixed or removable.

Note Shield screws are provided on this board, internally connected to SCOM.



Note Shields should be terminated on designated terminals on TB1.

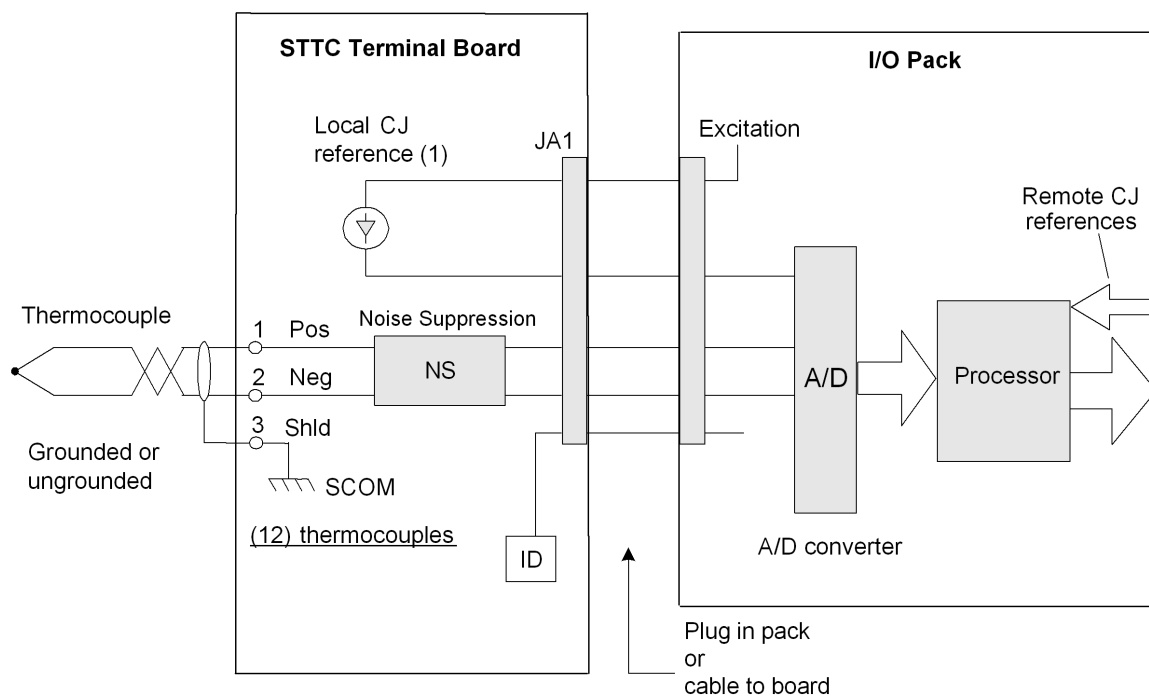
Two types of Euro-Block terminal blocks are available as follows:

- Terminal board STTCH1 and STTCS1 has a permanently mounted terminal block with 42 terminals.
- Terminal board STTCH2 and STTCS2 has a right-angle header accepting a range of commercially available plugged terminal blocks, with a total of 42 terminals.

Note E1 and E2 are holes for chassis grounding screws.

Operation

Connection of the STTC to the I/O pack or board that contains the A/D converter is displayed in the following figure. The I/O pack or board provides excitation for the cold junction (CJ) reference on the terminal board. The 12 thermocouple signals plus the CJ signal and the connection to the identity chip (ID) come through connector JA1.



STTC and I/O Processor

Specifications

Item	Specification
Number of channels	12 channels per terminal board
Thermocouple types	E, J, K, S, T thermocouples, and mV inputs if STTC is connected to PTCCH1 E, J, K, S, T, B, N, R thermocouples, and mV inputs if STTC is connected to PTCCH2
Span	-8 mV to +45 mV if STTC is connected to PTCCH1 -20 mV to +95 mV if STTC is connected to PTCCH2
Cold junction compensation	Reference junction temperature measured at one location
Cold junction temperature accuracy	Over the Celsius operating range: 1.1°C Over the Fahrenheit operating range: 2 °F
Fault detection	High/low (hardware) limit check Check ID chip on JA1 connector
Temperature	-30 to 65°C (-22 to 149 °F)

Diagnostics

Diagnostic tests to components on the terminal boards are as follows:

- Each thermocouple type has hardware-limit checking based on preset (non-configurable) high and low levels set near the ends of the operating range. If this limit is exceeded, a logic signal is set and the input is no longer scanned. If any one of the inputs hardware limits is set, it creates a composite diagnostic alarm.
- Each terminal board connector has its own ID device that is interrogated by the I/O board. The board ID is coded into a read-only chip containing the terminal board serial number, board type, revision number, and the J connector location. If a mismatch is encountered, a hardware incompatibility fault is created.
- When operating with the I/O processor a very small current is injected into each thermocouple path. This is done to detect open circuits and is of a polarity to create a low temperature reading should a thermocouple open.

Configuration

There are no jumpers or hardware settings on the terminal board.