

INSTRUCTION MANUAL

Sensoray Model 7409TB/7409TF Termination Boards

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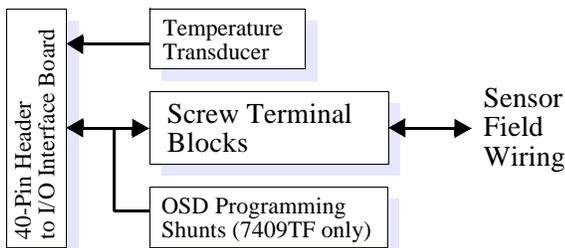
Sensoray models 7409TB and 7409TF (both referenced simply as “TB” unless otherwise specified) are robust, small footprint termination boards that break out flat cable conductors to screw terminals. A 40-pin header on the back side of the board facilitates panel mounting and supports direct connection to any of the following Sensoray products:

- ❑ All Smart A/D™ boards.
- ❑ Multi-function interface cards that utilize a 40-pin analog I/O connector, including models 421, 425 and 7421.
- ❑ Analog output interface cards that have a 40-pin analog I/O connector, such as model 7405.

Both TB models include an integral temperature transducer. When used with Sensoray Smart A/D™ boards, this sensor is connected to a dedicated measurement channel that is used for thermocouple reference junction compensation. No wiring or configuration of this sensor is necessary; it is hard-wired to the Smart A/D™ dedicated measurement channel.

Model 7409TF also includes programming shunts for enabling Open Sensor Detection (OSD) when used with Sensoray Smart A/D™ boards.

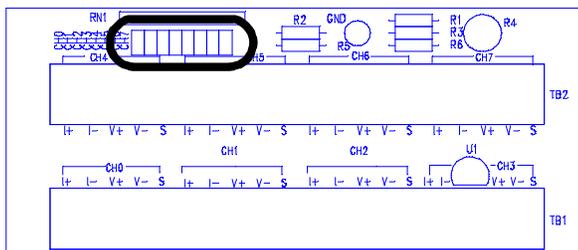
Fig. 1 — Block Diagram



7409TF Configuration Shunts

On model 7409TF only, programming shunts are provided to independently enable the OSD option for each Smart A/D™ channel. The option shunts are located as shown in the following diagram:

Fig. 2 — Open Sensor Detection (OSD) programming shunts



Some Smart A/D™ products have built-in OSD option shunts. *Do not install any OSD option shunts on the TB if your Smart A/D™ has built-in OSD option shunts; instead, install OSD shunts only on the Smart A/D™.* As for which channels should have OSD enabled, refer to your Smart A/D™ instruction manual for the recommended practice.

Field Wiring

Field wires need only be stripped of insulation, inserted into the terminal receptacles, and the screw tightened for a secure connection. The following sections discuss field wiring specifics for the various types of supported interface boards.

Smart A/D™ Connections

8- and 16-channel cards—Five screw terminals are provided for each channel: two for voltage sense (V+, V-), two for sensor excitation (I+, I-) and one for shield (S).

32-channel thermocouple cards—Two screw terminals are provided for voltage sense on each channel: either (V+, V-) or (I+, I-). In addition, one shared shield (S) terminal is provided for every two channels.

Two TB boards are required for each 16- or 32-channel Smart A/D™ interface card. Connect all sensors as described in your Smart A/D™ documentation.

Important note for thermocouple users:

Exposing the TB to thermal transients can severely degrade thermocouple measurement accuracy. If you are measuring thermocouples, insulate the TB from air flows such as ambient drafts and cooling fans. For best results, encase the TB in a protective enclosure.

Multi-Function I/O Card Connections

Two screw terminals are provided for voltage sense on each analog input channel (V+, V-) and two for each analog output channel (I+, I-). One shared shield (S) terminal is provided for each pair of analog input/output channels.

Analog Output Card Connections

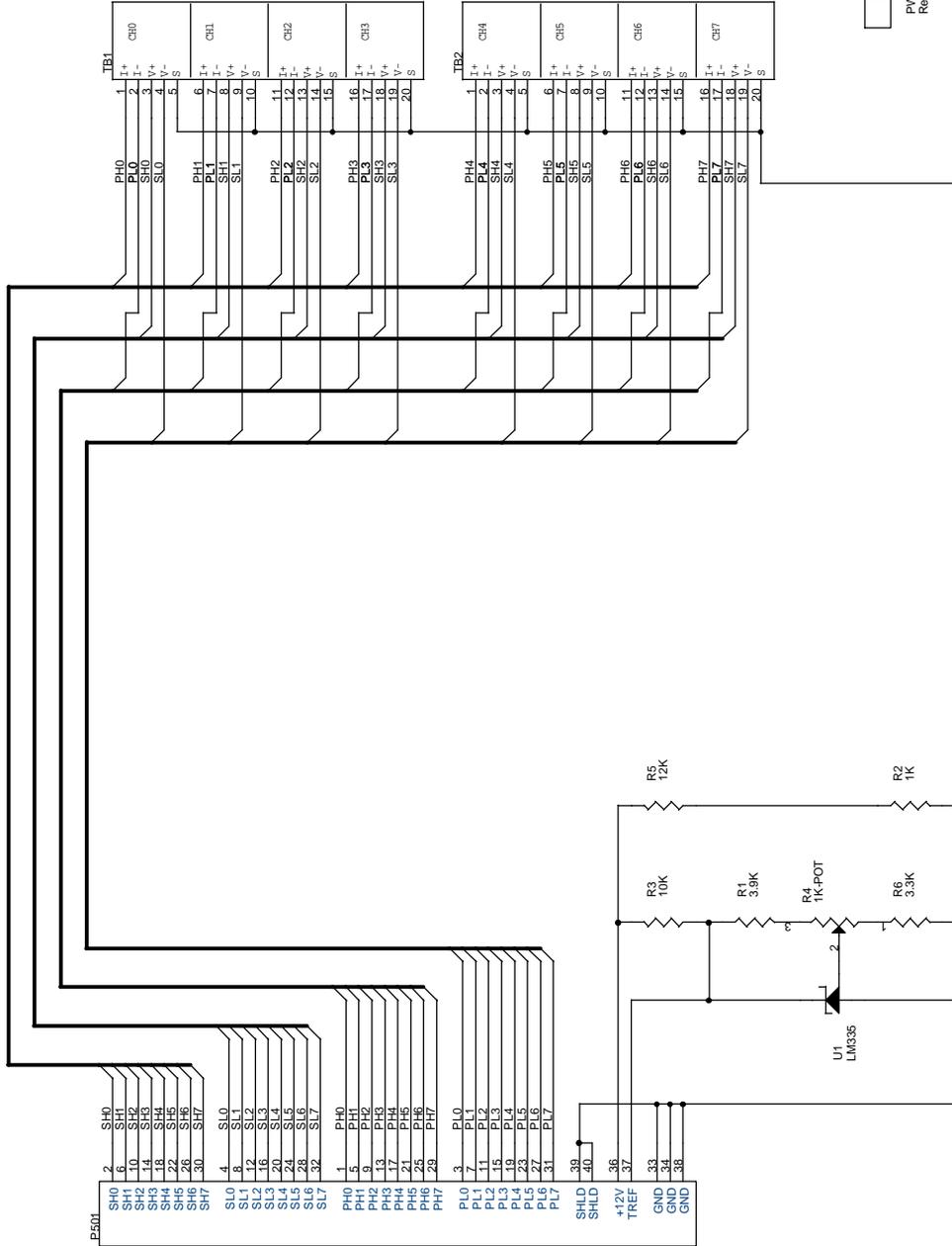
Five screw terminals are provided for each channel: Two for voltage output (V+, V-), two for current output (I+, I-) and one for shield (S).

Calibration

TB boards may be freely interchanged because their onboard temperature sensors are calibrated. Although the sensor is factory calibrated, it may be necessary to recalibrate it after extended time in service or due to exposure to extraordinary environmental stress.

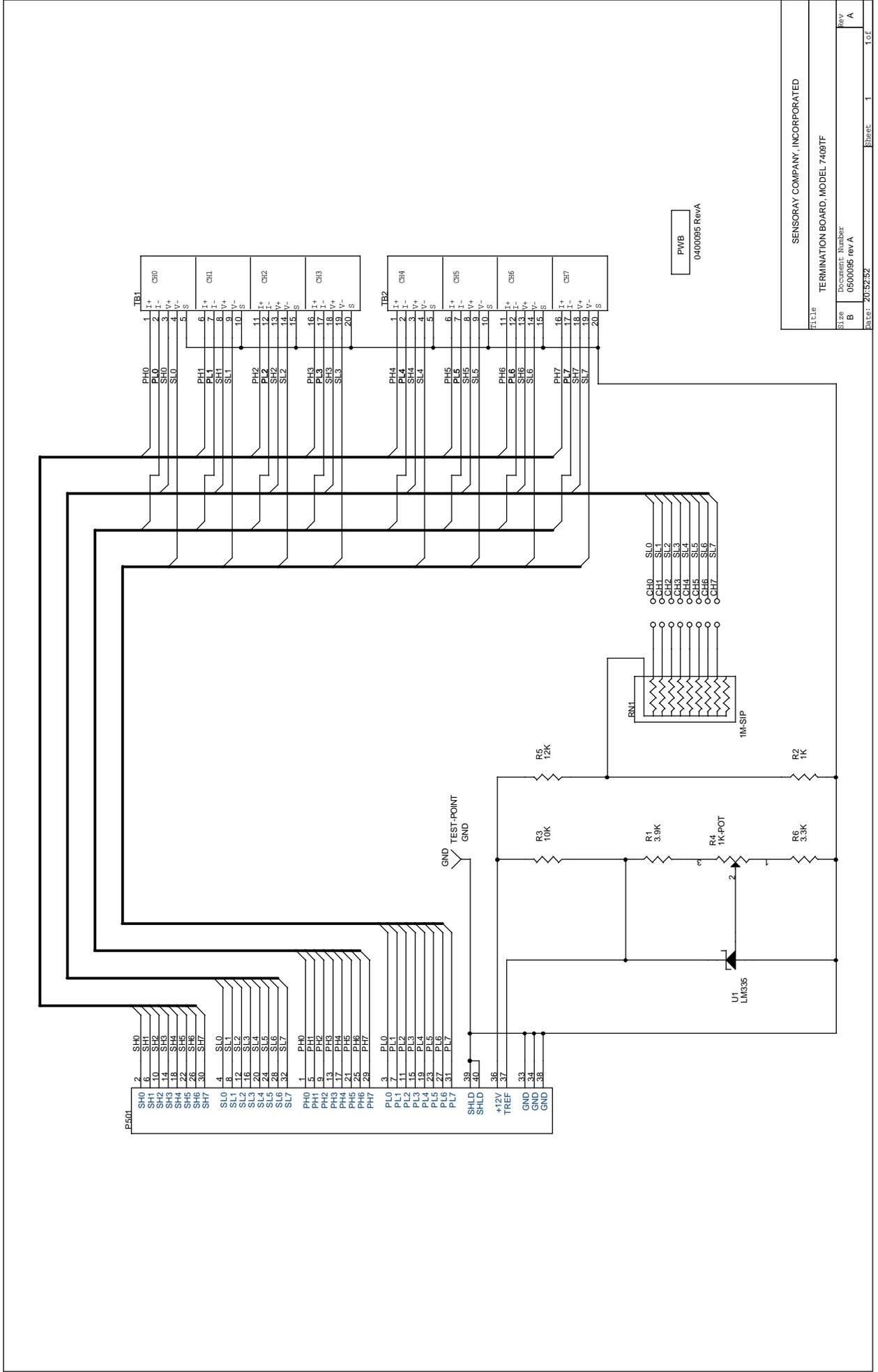
Calibration Procedure

1. Connect a calibrated Smart A/D™ to the TB. Connect a calibrated thermocouple to the TB and immerse the “hot” end into a precise, thermally controlled environment. Allow at least ten minutes after power-up for the system to warm up and stabilize.
2. On the TB, adjust potentiometer R4, reset and re-initialize the Smart A/D™ and read the thermocouple data.
3. Repeat step 2 until the Smart A/D™ indicates the correct thermocouple temperature.



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RevA

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