



TT-INFRA SENSOR SA2500

Measure More
Sense Better

Technical Note Series

TT-INFRA SENSOR (SA2500)

IMPORTANT OPERATION INFORMATION



- Type BF Equipment
- Internally powered equipment
- Continuous operation



WARNING

- Explosion Hazard; Do not use in the presence of a flammable anesthetic mixture with air, or with Oxygen or Nitrous Oxide.
- Not to be immersed in water.



CAUTION

- Connection of customer supplied circuits to Thought Technology sensor products has the potential to damage the sensor. Such damage is not covered by warranty.



ATTENTION

- For research only. Not for use in diagnostic procedures.
- To prevent voiding warranty by breaking connector pins, carefully align white guiding dot on sensor plug with slot on sensor input.

MAINTENANCE AND CALIBRATION

- Wipe with a clean cloth
- Factory testing and calibration ensure equipment accuracy and frequency response.
- No preventative inspections required;

STORAGE

- Temperature -23C – +60C
- Humidity (non-condensing) 10% – 90%
- Atmospheric pressure 700 – 1060 KPa

TRANSPORTATION

- Temperature -23C – +60C
- Humidity (non-condensing) 10% – 90%
- Atmospheric pressure 700 – 1060 KPa

PRODUCT OVERVIEW



The TT-Infra is a sensitive infrared temperature sensor designed for assessment of temperature variations over the skin. Scan both Temperature and SEMG Simultaneously by simply snapping a MyoScan SEMG sensor to the back of the TT-Infra sensor. Scan in half the time - or watch changes in both measures in real time.

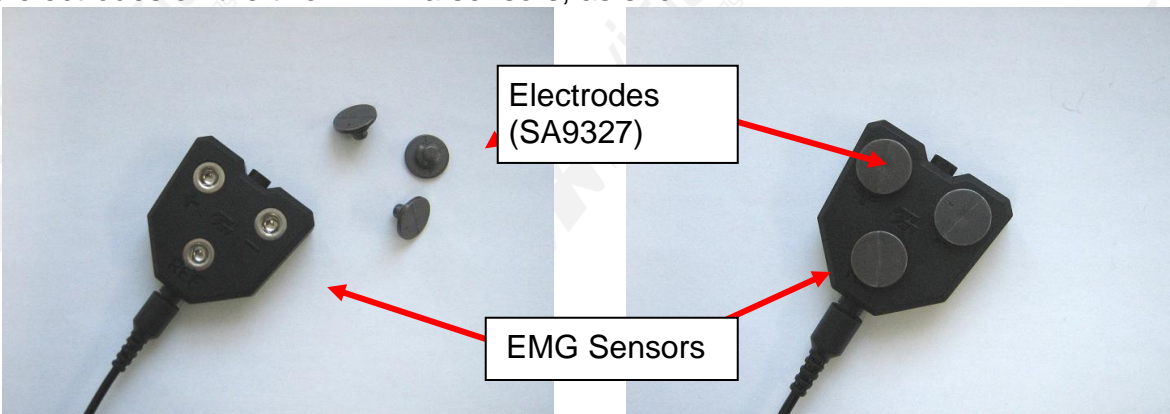
SENSOR PLACEMENT

Temperature control

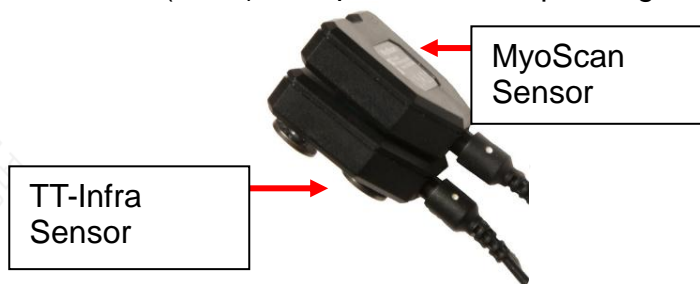
The temperature of the examining room must be stable. The room must be draft-free, the doors and windows must be closed. Keep the instrumentation and the examinee away from heat, air conditioning and direct exposure to sunlight.

Preparing the instrumentation

Affix the electrodes on the two TT-Infra sensors, as shown:



- Snap each MyoScan sensor (EMG) on top of the corresponding TT-Infra sensor, as shown:



- Put conductive electrode paste or cream on the EMG electrodes (grey area only).
- Place the sensors on the examinee (on their back, for instance, as shown in the next photograph). Position your hands so that the electrodes remain stable and do not move. Apply gentle pressure on the sensor so that the 3 electrodes make good contact with the skin.

TECHNICAL SPECIFICATIONS

Size (approx.)	368mm x 391mm x 145mm (1.45" x 1.54" x 0.57")
Weight	12.5g (0.44oz)
Temperature range	19.80°C – 40.21°C (67.64°F – 104.38°F)
Absolute accuracy	±0.5°C (±0.9°F)
Ambient operating temperature (for paired relative accuracy)	21°C – 25°C (69.80°F - 77°F)
Paired relative accuracy	±0.25°C (±0.45°F)
Measurement resolution	0.02°C (±0.036°F)

INTERFACING WITH 3RD PARTY DATA ACQUISITION SYSTEM

Recommended Connectivity for Electrical Safety

Thought Technology recommends the use of TT Sensor Isolator SE9405AM when interfacing client connected sensor(s) to line powered equipment(s) or devices.

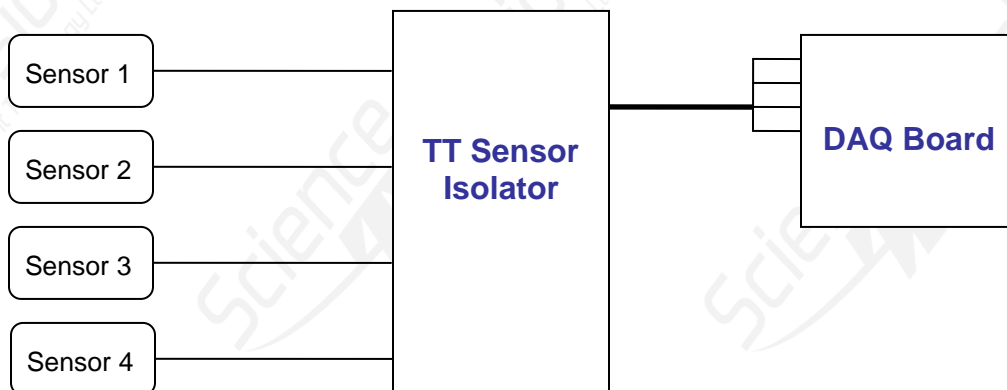


The TT Sensor Isolator SE9405AM is an interface device providing medical grade electrical isolation between the client connected sensors and the acquisition system. It provides the equivalent of Two Means of Client Protection under IEC 60601-1, and supplies battery power to the sensors. Using this device ensures Thought Technology sensors are safely interfaced to the analog inputs of line-powered systems such as computers with DAQ cards.

Note that this device isolates only between sensors and the DAQ interface, not between different sensor channels.

The TT Sensor Isolator can interface up to 4 sensors to a DAQ card. TT Sensor Isolator can be connected to the DAQ card in two ways:

- via two stereo jacks, or
- via a DB-15 connector; a BNC interface cable (SA9409BNC) or a pigtail cable (SA9409PGT) can be provided with the unit.



For more detailed information on the Sensor Isolator 4[∞], consult the Thought Technology Science

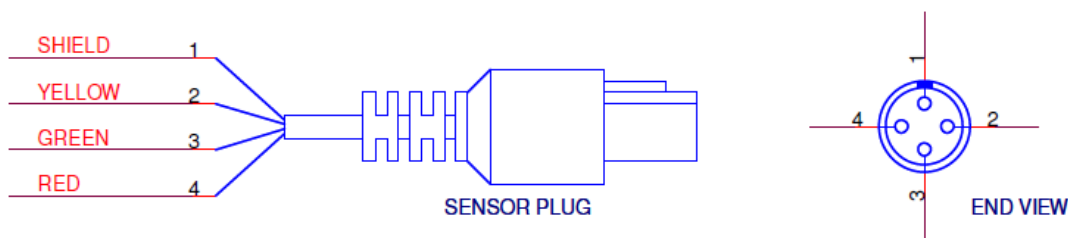
Division website or contact the sales department or an authorized distributor.

Direct Connectivity for Electrically Isolated Systems

The following notes are provided for qualified users to directly interface Thought Technology sensors with external systems.

To interface with a sensor, a single sensor cable may be cut in half. Both sides can then be used to make custom interfacing cables by stripping the outer insulation of each required conductor. The sensor cable contains 4 color coded conductors. The table below shows the color coding and pin connector assignment.

Pin	Color code	Function	Note
1	metal (shield)	ground	Signal and power ground, connection required.
2	yellow	auxiliary (sensor ID)	No connection required.
3	green	signal	Sensor output signal
4	red	sensor power	Supply voltage, +7.26V referenced to ground. Note: sensor performance may be sensitive to supply voltage.



Notes:

1. The nominal supply voltage for this sensor is 7.26V. The sensor can safely be used with a supply voltage of up to 9V.

Recommended Specifications for DAQ Hardware

- Recommended resolution of 0.15mV (16-bit ADC over 10V span) or better
- Minimum input range:
 - If connected via SE9405AM Sensor Isolator, choose 0-5V (unipolar) or ±5V (bipolar)
 - If directly connected to DAQ, choose ±5V (bipolar).

Simplified Transfer Function

$$V_{out} = 0.08076T + 0.0645$$

$$T_C = 12.382V_{out} - 0.7993$$

$$T_F = 22.288V_{out} + 30.561$$

Temperature in Celsius to output voltage in volts

Voltage [V] conversion to temperature [°C]

Voltage [V] conversion to temperature [°F]