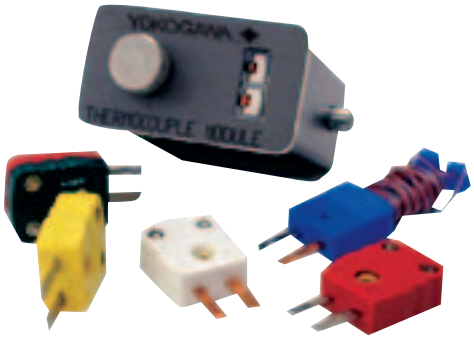
General Specifications

TIO0110 SENSOR MODULE

Thermocouple, mV Measure & Simulate Module for use with YPC4000 and YPC 4010

The **TIO0110** is a thermocouple (T/C) measurement and simulation module for use with the Yokogawa **YPC 4000 Series Multi-Function Tester**. The module will accurately measure or source ±110 milli-Volts (mV) for any of twelve (12) different T/C types according to NIST 175, ITS-90 (default) or ITS-68 standards. In the measure mode, the TIO0110 module converts mV dc to temperature value in the user-selected temperature unit (°F, °C, °R or °K) and per the selected standard. Milli-volts can also be displayed for direct reading or trouble shooting needs. In the source mode, the TIO0110 module sources an accurate mV signal to simulate a T/C input to a receiving device. Users can enter the precise simulation temperature value, change the value with ramping controls on the YPC, or set-up and select from three Auto-step test procedures per T/C type. Test points are determined by the user and can be stepped through automatically or manually as desired. See T/C Table on page 2 for available T/C types and measurement / simulation accuracy.
Field recalibration of the module is provided by the YPC's "Rcal" feature. "Rcal" can be used to re-calibrate the module alone or the module with dedicated RTD for "match set" accuracy. The module + RTD option provides the best possible measurement accuracy for the most demanding measurement applications.

TIO0100 Sensor Module with Mini-T/C socket



TIO0110 Sensor Module with Connector Accessories

T/C calibration coefficients are factory loaded into module memory for instant access by the base YPC unit. Field recalibration of the module is provided by the YPC's "Rcal" feature.

Available certifications include:
- NIST traceable mV functions – standard
- CE Mark
- Intrinsically Safe – YPC Laboratories per CSA C22.2 & UL 913
  Class I Division I, Groups A, B, C & D

Accessories:
- A36857 wire kit 1 for E, J, K, N, T types
- A36858 wire kit 2 for B, K, R, S types
- A36881 mV meas / sim cable

Specifications for TIO0100 Module

Specifications: TIO0100
Input impedance: > 10 megohms
Warm-up time: ≤ 1 Minute to full rated accuracy
mV Accuracy : ± 0.025% R + 0.005% FS
Temperature Effect: ≤ 2uV/°C
T/C Meas. Accuracy: ± 0.3°C for E, J, K, N, & T types
T/C Meas. Accuracy: ± 1.0°C for B, R & S types
T/C Meas. Accuracy: ±0.5°C for C, D, M & P types
Cold junction effect: ± 0.5°C max
Resolution: ± 0.1° or ± 1° for T/Cs, ± 0.001 for mV
Voltage range: ± 110.000 mV dc
Temperature: Storage: -40° F to 140° F (-40° C to 60° C)
Operating: 23° F to 122° F (-5° C to 50° C)

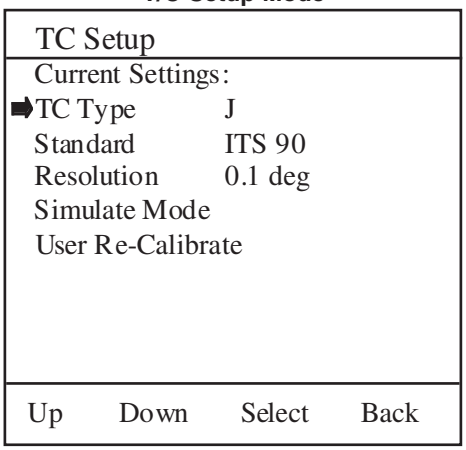
Connector - Measure: standard mini-T/C connector
- Source: standard mini-T/C connector
Power: supplied from MFT (simulate mode only)
Units: °F, °C, °R, °K, mV
Weight: 3 ozs

YOKOGAWA ◆
Yokogawa Corporation of America
Dart Road, Newnan, GA 30265, USA
Tel: 1-800-888-6400

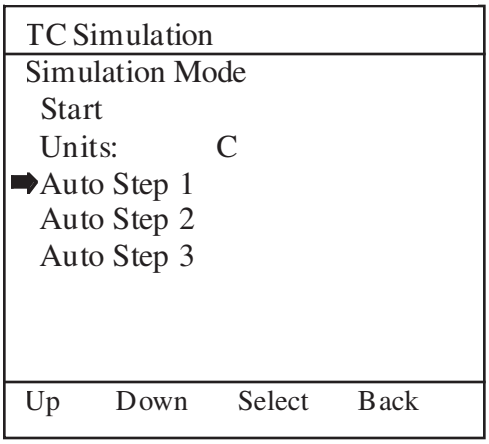
GS 61A YPCTIO-01E-A

1st Edition November 2004

YPC Display for T/C Setup Mode



YPC display for T/C Simulation Mode



TIO0110 Module Accuracy
(does not include T/C error)

T/C Type	Measurement Range	Measurement Accuracy	Simulation Accuracy
J	-210° C to +1200°C	±0.3° C	±0.5° C
K	-200° C to +1372°C	±0.5° C	±0.5° C
T	-200° C to + 400°C	±0.3° C	±0.5° C
E	-200° C to +1000°C	±0.3° C	±0.5° C
N	-200° C to +1300°C	±0.3° C	±0.5° C
R	- 50° C to +1768°C	±1.0° C	±1.0° C
S	0° C to +1768°C	±1.0° C	±1.0° C
B	250° C to +1820°C	±1.0° C	±1.0° C
C	0° C to +2315°C	±0.5° C	±0.5° C
D	0° C to +2315°C	±0.5° C	±0.5° C
M	0° C to +1410°C	±0.5° C	±0.5° C
P	0° C to +1395°C	±0.5° C	±0.5° C