



In this world driven by technology, instrumentation & control engineering drives industrial growth, whilst process control is a vital concept of it. The functionality and complexity of Process Control has increased. Sciencetech 2472 Temperature Measuring WorkBench consists of an instrument panel and working area. This system comprises of latest components, which reflect the latest technological innovations in this field. Temperature Measuring WorkBench allow user and industry professionals to understand the concepts and working of temperature measuring instruments and control.

Sciencetech 2472 Temperature Measuring WorkBench is a complete setup to control process through two point (On/Off) and three point (PID) controllers. Temperature can be controlled through an DAQ which has 8 digital inputs and 8 digital outputs and 8 analog inputs. Sciencetech 2472 also gives the exposure to Industrial components like Temperature Transmitter, Temperature Sensor, Thermocouple, RTD, PID controller, Radiation Pyrometer, and Heater etc. Users can learn how to install, operate, program and tune the instruments for controlling the processes. All electrical components are connected to the control panel to allow user to measure signals and connect devices in wide variety of control configuration including open loop (manual control) and close loop (PID control, ON/OFF control).

Features

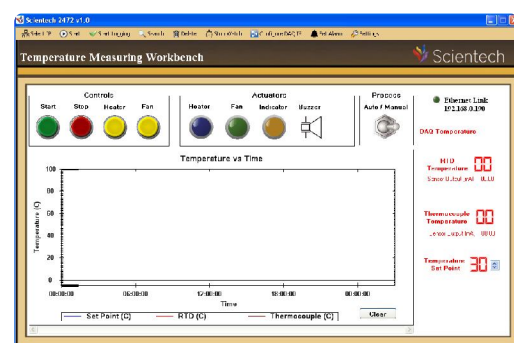
- 7" Human Machine Interface (HMI)
- Types of Controller DAQ, HMI & Industrial PID Controller
- Temperature Transmitter for RTD & Thermocouples
- Industrial RTD & Thermocouple Sensor
- Start, Stop, Heater, Fan button. Indicators for Audio, Visual, Heater and Fan
- Interface with Ethernet based DAQ
- Real-time DAQ interface with ADC, DAC & digital input/output
- Supplied with Dashboard Software for supervisory control of the process with data acquisition
- PC Based Data Logging
- Temperature Measurement and control
- Heavy duty WorkBench
- Electrical control panel
- SCR Power Controller for Heater
- Automatic and Manual control
- Process Control by On/Off Controller
- Process Control by PID with auto tuning
- Process loop tuning & stable process
- User friendly, self explanatory system
- Practice troubleshooting skills
- Experiments configurable through patch board
- Enhanced electrical safety considerations
- Caster wheel (with locking mechanism) at the legs of WorkBench for easy movement
- MCB provided with AC supply for safety purpose
- Academic and vocational study for process control engineers and plant technicians

Scope of Learning

Study and use of:

- DAQ Digital Input
- DAQ Digital Outputs
- DAQ Analog Inputs
- RTD Characteristics
- Thermocouple Characteristics
- RTD Temperature Transmitter Characteristics
- Thermocouple Temperature Transmitter Characteristics
- RTD & Thermocouple Temperature measurement using Process Indicator.
- Temperature measurement using Radiation Pyrometer
- Set-Alarm using software
- On/Off controller using Software & Industrial PID Controller
- Proportional controller using Software & Industrial PID Controller
- Proportional-Integral controller using Software & Industrial PID Controller
- Proportional-Integral-Derivative controller using Software & Industrial PID Controller
- Process Control & Monitor by HMI
- Creating Application/Screen in HMI
- Downloading and Uploading programs in HMI
- HMI Communication with DAQ
- Creating Alarm Message in HMI
- Creating Trend in HMI

Software window



Technical Specifications

Data Acquisition System (DAQ) : 1 no.

Analog Inputs : 8 nos.
 Digital Inputs : 8 nos.
 Digital Outputs : 8 nos.
 ADC Resolution : 24 Bit
 RS485 Interface : Yes
 Ethernet Interface : Yes
 Data Logging : Yes

Human Machine Interface (HMI) : 1 no.

Supply : +24V DC
 CPU : 32-bits 400MHz RISC
 Storage : 128M FLASH + 64M DDRAM
 Display size : 7 inch
 Resolution : 800x480 TFT LCD 65,536 colors
 Interface : RS485
 Touch Screen : High precision four-wire resistive

Industrial PID Controller : 1 no.

Supply Voltage : 230V AC
 Input : Accuracy 0.2%FS
 Thermocouple : K Type
 RTD : PT100
 Output : 4 to 20mA, Relay
 Control Algorithms : PID, P, PI, PD, On/Off
 PID Range : P : 0 to 200%
 I : 0 to 3600 Sec
 D : 0 to 900 Sec
 Communication : RS485

Human Machine Interface (HMI) window



Temperature Display : 2 nos.

Display : 4 Digit, 7 segment digital display
 Keys : 3 for digital setting
 Input Type : RTD (PT100) & Thermocouple
 Resolution : 1 or 0.1 degree
 Temperature Unit : Degree C
 Supply Voltage : 230V AC

RTD Sensors : 2 nos.

Type : RTD (PT100)
 Wire : 3 wire
 Rod Length : 6"
 Temperature Range : (-99 to 850°C)

Thermocouple Sensors : 2 nos.

Type : K Type
 Wire : 2 Wire
 Rod Length : 6"
 Temperature Range : -200 to 1250°C

Temperature Transmitter RTD : 1 no.

Range : 0-200°C
 Output : 4 to 20mA
 Type : Head mounted
 Input : RTD (PT100), 3 wire
 Loop Supply : 24V DC nominal (12 to 36)V DC

Temperature Transmitter Thermocouple : 1 no.

Range : 0-200°C
 Output : 4 to 20mA
 Type : Head mounted
 Input : Thermocouple (K Type)
 Loop Supply : 24V DC nominal (12 to 36)V DC

Radiation Pyrometer : 1 no.

Temperature Range : -30 °C to 350 °C (-22 °F to 662 °F)
 Response Time (95 %) : <500 ms (95 % of reading)
 Distance to spot ratio : 8:1 (calculated at 90% energy)
 Display resolution : 0.1 °C (0.2 °F)
 Power : 1 AA IEC LR06 battery

Panel Component Description

Digital Multimeter : 1 no.

DC Voltage : 0.1mV ~ 1000V

AC Voltage : 0.1 mV ~ 750V

DC Current : 0.1uA ~ 20A

AC Current : 0.1uA ~ 20A

Resistance : 0.1Ω ~ 40MΩ

Capacitance : 10pF ~ 200uF

Frequency : 0.1Hz ~ 30MHz

Multifunction Meter : 1 no.

Voltage : 10 - 230Vrms, Accuracy
± (1% reading + 2 digits)

Current : 0.2 - 5Arms, Accuracy
± (1% reading + 2 digits)

Active Power : 10-1500Watt, Accuracy
± (2% reading + 3 digits)

Push to on Switch : 4 nos.

Toggle Switch : 3 nos.

Indicator Lamp : 4 nos.

SSR (SCR Power Controller) : 1 no.

Heater : 1 no.

Power : 1000W

Supply : 230 V AC (1500Watt)

Fan : 2nos.

Supply : 230V AC

MCB : 1no.

Supply : 230V AC

Current : 16Ampere

Contactactor : 2 nos.

Supply : 230V AC

Power Indicator :1 no.

Caster Wheel : 4 nos. (2 with lock & 2 without lock)

Size : 75mm

Mercury Thermometer: 2 nos.

Included Accessories

4mm Patch Cord 30" : 5 nos. (Red)

4mm Patch Cord 30" : 5 nos. (Black)

4mm Patch Cord 30" : 5 nos. (Yellow)

4mm Patch Cord 30" : 5 nos. (Blue)

4mm Patch Cord 18" : 10 nos. (Yellow)

4mm Patch Cord 18" : 10 nos. (Blue)

Ethernet Cable : 1 no.

Universal Calibrator (Optional)

Type : Sourcing and measuring

Display : 5 digit, 7segment LCD

Resolution : 0.1Ω, 1ua, 1μV, 1mV

Accuracy : ± 0.02% of rdg ± 0.01% of FS ± 2

Range : 2000Ω, 20mA, 200mV, 20V RTD
(Resistance Temperature Detector) Sensor

Windows OS Based PC (optional)

Note: Windows OS Based Computer is required to explore DAQ experiments