Programmable Resistance Decade Substituter

PRS-330

The PRS-330 is a programmable decade resistor and RTD simulator that allows you to automate your source resistance and temperature controller testing.

Applications:

- Calibration of resistance meters
- Calibration of temperature controllers and indicators
- Automated test systems requiring a precision resistive load

NEW

The PRS-330 brings performance and features not previously available in any programmable remote controlled or manual resistance box.

For calibration and laboratory applications see the

- **PRS-370 Self-Adjusting Programmable Decade Substituter**

For calibration and laboratory applications, requiring even better accuracy, the PRS370 can leverage your existing Keysight 3458A or Fluke 8508A DMM to achieve an accuracy of better than 10 ppm.

NEW & ADVANCED FEATURES

- Accuracy of 70 ppm + 1 mΩ
- 6 Digit or 1 µΩ resolution
- Resistance range from 0.1 Ω to 20 MΩ
- Use for RTD applications is straightforward without additional "subtractions"
- Built-in PT100 and PT1000 tables
  May be used with 2 or 4 terminal connections
- Large color touchscreen and intuitive interface
- Reduced number of components and resistors for longer term reliability
- Standard USB, Ethernet and GPIB interfaces for remote-control
- Front and rear binding posts for ease of connection
- Easy adjustment of resistors via firmware
- Industry leading 5 year warranty

GENERAL DESCRIPTION

The PRS-330 was designed with the right mix of powerful features for both manual and automated application in both laboratory and production environments.

The PRS-330 utilizes a large state-of-the-art color capacitive touchscreen which provides super fast response time. Even in low or bright light conditions the display provides exceptional clarity with large fonts and easy-to-read menus.

Breadcrumbs always let you know where you are in the menu system.

The versatility of USB, Ethernet or GPIB interfaces allows you to completely automate your testing.

IET Labs also recognizes cyber security is a concern and has taken numerous measures in the PRS-330 to minimize this threat and protect your company.

PRS-330 SOURCE RESISTANCE MODE

In Source Resistance mode the PRS-330 operates as a conventional programmable decade resistor and uses a minimal number of precision resistors to achieve an accuracy of 70 ppm + 1 mΩ with 6 digit resolution.

The PRS-330 features an advanced algorithm to create a easy to use programmable decade resistor with 30% improved accuracy and 1000 times better resolution than traditional laboratory decade boxes.

Calibration history of each internal resistor can be reviewed to show drift and performance. The calibration history data can be retrieved via SCPI command for further analysis.

PRS-DMM Software is available to provide customers an easy, and automated way to adjust all the internal resistors using a Fluke 8508A or Keysight 3458A DMM and PC.

With its industry leading 5 year warranty all aspects of the PRS-330 focus on reliability, reduced ownership costs, and simplicity out of the box.

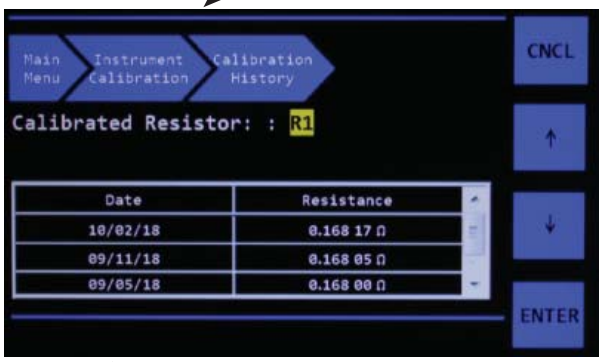
Touch resistance value to bring up entry screen or just enter resistance using keypad

Source Resistance Screen

Increment and decrement buttons allow an operator to increase or decrease resistance by fixed value or percent with a single button press

See relevant setup parameters on the main screen

Breadcrumbs allow easy navigation in menus



Calibration History Screen shows each calibrated resistor value and calibration date

Resistance Entry Screen allows use of keypad or touchscreen to enter resistance value

PRS-330 RTD SIMULATION

RTD simulation mode makes calibration of RTD transmitters, temperature indicators and temperature controllers easy and intuitive.

The PRS-330 simulates an RTD output using real resistors without the need for translation tables or zero subtraction.

Temperature in Fahrenheit or Celsius can be directly entered via touchscreen or SCPI command. The PRS-330 will automatically select the correct source resistance based upon the temperature entered.

RTD simulation for PT-100 and PT-1000 come programmed as standard for both Fahrenheit and Celsius.

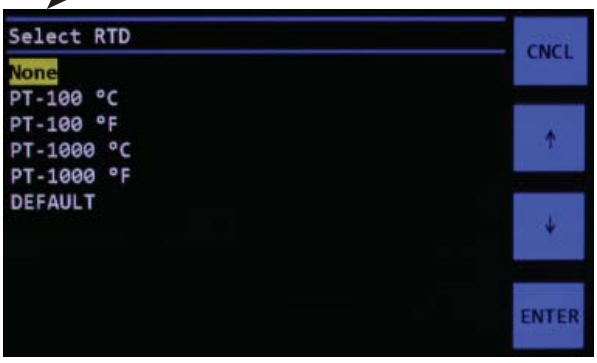
Simulation for other RTD probes can easy be entered and saved into memory.

PT-100 and PT-1000 basic accuracy is ± 0.06°C from - 200°C to 850°C

The PRS-330 can be used as an automated resistance carousel with built-in EIA "preferred value" resistance tables of 1% (E96), 5% (E24), 10% (E12) increments making it ideal to select trimming resistors for your circuit.

PT-100C Display

Preprogrammed for PT-100 and PT-1000 for easy selection



PRS-330 INTERFACES

All settings such as IP address, GPIB address can be viewed and changed via the touchscreen. IP Address, Network Gateway, and Network Mask can all be set via front panel or remote command.

GPIB/ IEEE address can be set from 1 to 30 via front panel or remote command.

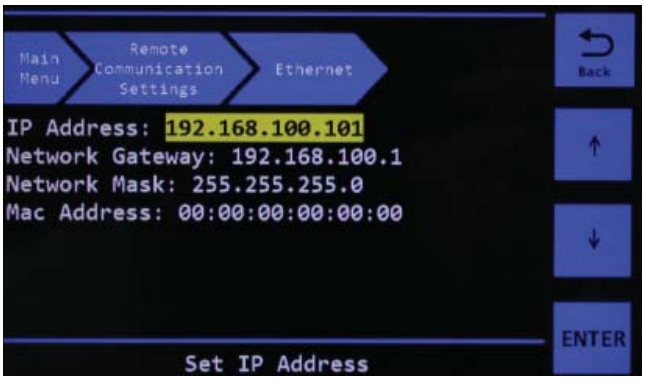
Security Statement
The PRS-330 contains a microcontroller, and runs proprietary firmware. The firmware can only be updated via a JTAG or similar cable and only accessed by removing the top cover of the instrument.

There are no facilities to update firmware via GPIB, USB or Ethernet interfaces on the PRS-330.

Windows or Linux are not used in this product.

A factory reset is provide which will reset the PRS-330 back to factory default including calibration data history and all other data that can be saved by a user.

PRS-330 Rear Panel



PRS-330 SPECIFICATIONS

User interface:

Numeric keypad, softkeys and color capacitive touchscreen

Accuracy:

±(70 ppm + 1 mΩ) 2 and 4 Terminal at 23°C ±5°C

Minimum setting: 0.100 000 Ω

Resolution: 1 µΩ or 6 digits

Range: 0.1 Ω - 20 MΩ

Stability: ±50 ppm/year

Thermal emf: < 15 µV

Resistance Error Front to Rear Binding Posts:

< ±(2 ppm + 20 µΩ)

Maximum Load: 2 A, 200 V (peak), 0.5 W whichever applies first

Resistors: Precision wire-wound and metal foil

TC of Resistors: < 1 ppm/°C for 1.37 Ω and above

Relays[1]: Silver Alloy contacts, expected life of 10^8 cycles

Switching time: <10 ms second per change

Switching: Fast, Open and Short

RTD Simulation:

5 RTD tables can be entered into memory to allow user selection of temperature and the correct value of resistance will automatically be programmed.

PT-100 and PT-1000 tables for both Fahrenheit and Celsius are pre-programmed into memory locations 1 to 4.

Adjustment:

Automatic adjustment procedure utilizing a high precision DMM eliminates the requirement for manual trimming of resistors.

Terminals:

Front and rear connections each consisting of 4 low-emf, gold-plated, tellurium-copper 5-way binding posts are used for **HI** and **LO** terminal pairs for **CURRENT** and **SENSE**. **GND** binding post is connected to the case, to chassis ground.

ac Frequency Response:

Residual capacitance terminals to GND: < 850 pF

Resistance	Typical ac/dc difference @ 1 kHz
0.1 Ω -10 kΩ	<100 ppm
10 - 100 kΩ	<200 ppm
100 kΩ - 1 MΩ	<1%
1 - 20 MΩ	<20%

Remote Control:

USB: USB Type B connector standard on rear panel and uses standard MCP2200 chip set

GPIB:

GPIB standard 24 pin connector, conforms to IEEE-488.2; SCPI 1994.0 command set
Addressing range of 1 to 30

Ethernet:

IEEE 802.3 compliant, Speeds 10 BaseT (10 Mb/s) and 100 BaseT (100 Mb/s), IP Address Static or DHCP, Factory setting 192.168.0.254 static

Power requirements:

90 - 264 Vac , 47 - 63 Hz., 30 Watts Max.

Fuse: T 0.8A, 250V, 5 x 20 mm

Environmental conditions:

Operating: 10°C to 40°C; <80% RH non-condensing
Storage: -40°C to 70°C; <90% RH non-condensing

Dimensions:

Bench model: 43 cm W x 8.9 cm H x 33 cm D (17" x 3.5" x 13") in front of panel: 3.8 cm (1.5").

Rack Mount: 47 cm W x 8.9 cm H x 33 cm D (19" x 3.5" x 13") in front of panel: 3.8 cm (1.5").

Weight:

[1] Note: Warranty covers relays up to expected life

ORDERING INFORMATION

STANDARD MODELS

PRS-330 Programmable Resistance Substituter
Includes:
- Instruction Manual
- Calibration Certificate Traceable to SI
- USB Type B Cable

OTHER OPTIONS

PRS-300-RM Rack mount ears