Programmable Resistance Decade Substituter

PRS-300

This microprocessor-controlled, programmable resistance decade box provides highly accurate and stable resistance values.

The programmable resistance box features a user-friendly interface, resistances from 0.1 Ω to 20 MΩ and resolution of 1 μΩ.

Manual control via front panel and computer control via standard USB Interface or optional IEEE-488.2 and Ethernet interfaces.

Ideal for both laboratory and industrial applications requiring highly reliable and automated switching of resistance.

No zero subtraction makes the PRS-300 suitable for RTD Resistance Temperature Detection calibration.

Can be used at an automated resistance carousel with built-in EIA "preferred value" resistance tables of 1% (E96), 5% (E24), 10% (E12) increments or user specified increment.

PRS 300 Resistance Substituter

Features:

- Resistance range from 1 μΩ to 20 MΩ
- Accuracy: ±(70 ppm + 1 mΩ)
- No zero subtraction required
- Precision wire-wound and metal foil resistors
- Automated adjustment process requires no manual trimming of resistors
- Built-in RTD tables for PT100 and PT1000
- Standard USB interface for computer control
- Optional IEEE-488.2 and Ethernet Interfaces
- LabView drivers for control, and adjustment using the Keysight 3458A or Fluke 8508A

The PRS-300 dramatically improves the most important aspects of the older manual resistance decades. It introduces 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 and RTD Simulators.

The PRS-300 was designed with the right mix of features for it to be efficient for both manual and automated application in both laboratory and production environments.

With its wide range the PRS-300 was designed to replace multiple decade boxes and reduce test time.

With its industry leading 5 year warranty all aspects of the PRS-300 focus on reliability, reduced ownership costs and simplicity out of the box.

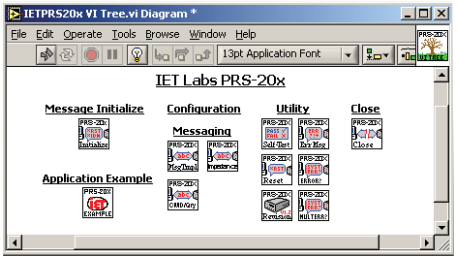
The simple user interface makes the PRS-300 well suited for high accuracy requirements for both manual and automated applications such as RTD simulation, DMM calibration, circuit trimming, and load testing.

LABVIEW DRIVERS

LabView instrument drivers are available for control, and adjustment of the PRS-300.

These drivers are written based on the National Instruments instrument template, using VISA handles and standard initialize, configure and query functions.

The drivers can be used with the USB, Ethernet or GPIB interfaces.



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SPECIFICATIONS

User interface:

Numeric keypad to enter resistance value with digital display.

Accuracy: ±(70 ppm + 1 mΩ) 2 and 4 Terminal

Minimum setting: 0.1 Ω

Resolution: 1 μΩ

Range: 0.1 Ω- 20 MΩ

Stability: ±50 ppm/year

Thermal emf: < 15 μV

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

Resistors: Precision wire-wound and metal foil

RTD Tables:

9 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.

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%

Terminals:

Four 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 the chassis ground and to the earth ground.
Switching time: <1 second per change

Power requirements:

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

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").

Weight:
Bench model: 5.5 kg (12 lb) weight specifications are nominal.

Remote Control:

USB: USB Type B connector standard on rear panel

Remote Control Options:

IEEE:
GPIB standard 24 pin connector, conforms to IEEE-488.2; SCPI 1994.0 command set; Hardware or software configurable 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

ORDERING INFORMATION

STANDARD MODELS

PRS-300 Programmable Resistance Substituter
Includes: Instruction Manual
Calibration Certificate Traceable to SI

INTERFACE OPTIONS

PRS-300-ieee-ethernet IEEE/Ethernet Interface

OTHER OPTIONS

PRS-300-RM Rack mount ears