

*The newest and most advanced addition to the IET Labs Programmable Resistance Substituter (PRS) family*



*The microprocessor controlled PRS-300 brings performance features not previously available in any programmable remote controlled or manual resistance box.*

**New**

### NEW & ADVANCED FEATURES

- Basic accuracy of 70 ppm
- Resistance range from 100 mΩ to 20 MΩ
- Virtually automatic self-calibration
- No zero subtraction required - as is necessary with other manual or programmable units
- Use for RTD applications is straightforward without and "subtractions"
- Built-in RTD tables for PT100 and PT1000  
May be used with 2 or 4 terminals

- User friendly software
- Reduced number of components and resistors for longer term reliability
- Standard USB interface for computer control
- Optional IEEE-488.2 and ethernet interfaces
- LabView drivers for control, adjustment, and using the Keysight 3458A or Fluke 8508A; no need for manual adjustment

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.

The PRS-300 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 increments.

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.

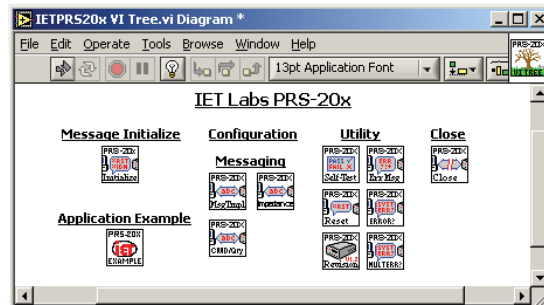
The simple user interface makes the PRS-300 well suited for high accuracy requirements for both manual and automated applications such as RTD simulation, DMM calibration, circuit trimming, and load testing.

### LABVIEW DRIVERS

LabView instrument drivers are available for control, adjustment, and calibration 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.



### SPECIFICATIONS

#### User interface:

Numeric keypad to enter resistance value with digital display.

**Accuracy:**  $\pm(70 \text{ ppm} + 1 \text{ m}\Omega)$  2 and 4 Terminal at 23°C  $\pm 5^\circ\text{C}$

**Minimum setting:** 0.1  $\Omega$

**Resolution:** 1  $\mu\Omega$  or 6 digits

**Range:** 0.1  $\Omega$ - 20 M $\Omega$

**Stability:**  $\pm 50$  ppm/year

**Thermal emf:** < 15  $\mu\text{V}$

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

**Resistors:** Precision wire-wound and metal foil

**Relays<sup>1</sup>:** Silver Alloy contacts with expected life of 10<sup>8</sup>

#### 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 $\Omega$ -10 k $\Omega$	<100 ppm
10 - 100 k $\Omega$	<200 ppm
100 k $\Omega$ - 1 M $\Omega$	<1%
1 - 20 M $\Omega$	<20%

<sup>1</sup>Note: Warranty does not cover relays beyond expected life

#### 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.

#### Environmental conditions:

**Operating:** 10°C to 40°C; <80% RH

**Storage:** -40°C to 70°C

#### 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

