

Economical, high-performance, high-resistance decade resistor for all laboratory, test, and calibration needs



5 Decade HRRS High-Resistance Substituter

Features:

- High accuracy - to .01%
- High stability - to 10 ppm/yr
- Excellent TC - as low as 5 ppm/°C
- Resistance from 10 Ω to 1 TΩ+
- Low voltage coefficient - as low as 0.2 ppm/V
- High-performance solid silver-alloy switches
- High-voltage versions available
- Rack mounting available
- Special and custom configurations available

See also:

- Higher accuracy: [HARS-X](#) or [HARS-LX Series](#)
- Higher power: [HPRS Series](#)
- Higher voltage: [HRRS-5kV](#) and [HRRS-10kV Series](#)
- RTD simulators: [RTD Series](#) -- without zero subtraction
- Programmable models: [PRS Series](#)

Specifications

| Resistance per step | Total decade resistance | Accuracy 18-28°C; <50% RH | | | Max voltage per step (V) | Maximum voltage (V) | Temperature coefficient (±ppm/°C) | Voltage coefficient (±ppm/V) | Stability (±ppm/yr) | Resistor type |
|---------------------|-------------------------|---|---------------|---------------|--------------------------|---------------------|-----------------------------------|------------------------------|---------------------|--------------------------|
| | | Q | B | F | | | | | | |
| 10 Ω | 100 Ω | ±(0.01%+2 mΩ) | ±(0.03%+2 mΩ) | ±(0.10%+2 mΩ) | 2.5 | 25 | 15 | - | 10 | Wirewound, non-inductive |
| 100 Ω | 1 kΩ | ±(0.01%+2 mΩ) | ±(0.03%+2 mΩ) | ±(0.10%+2 mΩ) | 8 | 80 | 5 | - | 10 | |
| 1 kΩ | 10 kΩ | ±0.01% | ±0.03% | ±0.10% | 23 | 230 | 5 | - | 10 | |
| 10 kΩ | 100 kΩ | ±0.01% | ±0.03% | ±0.10% | 70 | 700 | 5 | - | 10 | |
| 100 kΩ | 1 MΩ | ±0.01% | ±0.03% | ±0.10% | 230 | 2000 | 5 | - | 10 | |
| 1 MΩ | 10 MΩ | ±0.01% | ±0.03% | ±0.10% | 1000** | 2000 | 15 | <1 | 25 | Metal-oxide film |
| 10 MΩ | 100 MΩ | ±0.03% | ±0.10% | ±1% | 1000** | 2000 | 15 | <1 | 50 | |
| 100 MΩ | 1 GΩ | ±0.10% | ±0.20% | ±1% | 2000 | 2000 | 15 | 1 | 100 | High-voltage film |
| 1 GΩ | 10 GΩ | ±0.20% | ±0.50% | ±1% | 2000 | 2000 | 50 | 1 | 500 | |
| 10 GΩ | 100 GΩ | ±0.50% | ±1% | ±1% | 2000 | 2000 | 50 | 1 | 500 | |
| 100 GΩ | 1 TΩ | See HRRS-5kV Series if these values are required. | | | | | | | | |
| 1 TΩ | 10 TΩ | | | | | | | | | |

**To apply up to 2000 V for the first step, use the preceding decade at its "10" position. e.g. to obtain 1 MΩ with 2000 V max, set 100 kΩ switch to position "10."

Zero resistance

<3 mΩ per decade

Environmental conditions

Operating Conditions: 10°C to 40°C; <50% RH

Storage conditions: -40°C to 70°C

Terminals

Two five-way binding posts on 2 special, low-leakage, Kel-F insulating sockets, and one metal ground binding post electrically connected to the case

Max voltage to case

2000 V peak

Mechanical

| Model | Dimensions | Weight |
|------------|--|--------------------|
| 3 Decade | 31.2 cm W x 8.9 cm H x 10.2 cm D (12.3" x 3.5" x 4.0") | 1.4 kg (3.0 lb) |
| 4-5 Decade | 37.5 cm W x 8.9 cm H x 10.2 cm D (14.8" x 3.5" x 4.0") | 1.6 kg (4.0 lb) |
| 6-7 Decade | 43.9 cm W x 8.9 cm H x 10.2 cm D (17.3" x 3.5" x 4.0") | 2 kg (4.5 lb) |
| 8-9 Decade | 48.3 cm W x 17.8 cm H x 19.7 cm D (19.0" x 7.0" x 7.8") | 5.1 kg (11 lb) |



Ordering Information

| Model | Total resistance | Number of decades | Resolution |
|--------------|------------------|-------------------|------------|
| HRRS-*3-1M | 1.11 GΩ | 3 | 1 MΩ |
| HRRS-*3-10M | 11.1 GΩ | 3 | 10 MΩ |
| HRRS-*3-100M | 111 GΩ | 3 | 100 MΩ |
| HRRS-*4-100k | 1.111 GΩ | 4 | 100 kΩ |
| HRRS-*4-1M | 11.11 GΩ | 4 | 1 MΩ |
| HRRS-*4-10M | 111.1 GΩ | 4 | 10 MΩ |
| HRRS-*5-10k | 1.111 1 GΩ | 5 | 10 kΩ |
| HRRS-*5-100k | 11.111 GΩ | 5 | 100 kΩ |
| HRRS-*5-1M | 111.11 GΩ | 5 | 1 MΩ |
| HRRS-*6-1k | 1.111 11 GΩ | 6 | 1 kΩ |
| HRRS-*6-10k | 11.111 1 GΩ | 6 | 10 kΩ |
| HRRS-*6-100k | 111.111 GΩ | 6 | 100 kΩ |

| Model | Total resistance | Number of decades | Resolution |
|-------------|------------------|-------------------|------------|
| HRRS-*7-100 | 1.111 111 GΩ | 7 | 100 Ω |
| HRRS-*7-1k | 11.111 11 GΩ | 7 | 1 kΩ |
| HRRS-*7-10k | 111.111 1 GΩ | 7 | 10 kΩ |
| HRRS-*8-10 | 1,111.111 1 MΩ | 8 | 10 Ω |
| HRRS-*8-100 | 11.111 111 GΩ | 8 | 100 Ω |
| HRRS-*8-1k | 111.111 11 GΩ | 8 | 1 kΩ |
| HRRS-*9-10 | 11,111.111 1 MΩ | 9 | 10 Ω |
| HRRS-*9-100 | 111.111 111 GΩ | 9 | 100 Ω |

*To specify accuracy grade, replace * with "Q," "B," or "F" as required.

**To specify voltage, replace ** with either "5kV" or "10kV."

Options

- RM: Rack mountable case for standard 19" rack
- K: Kelvin-type 4-terminal posts
- RO: Rear output

