

New

Type USFS High Voltage, Ultra-Stable, Low TC Selected Resistor Sets

Total Set Resistance up to 100 Megohm with **Absolute TC of 2 ppm/°C**
Voltage Ratings up to 5000 Volts DC - Custom Selected Resistor Sets Available

Type USFS - Ultra-Stable Selected Resistor Sets are designed for use in High Voltage Systems that require the very best temperature stability and long term stability. These Selected Resistor Sets are manufactured with Caddock's Tetrinox® Resistance Film System.

The individual USF Style resistors that form these Ultra-Stable Selected Resistor Sets are individually characterized using automated data acquisition systems and then selected to form a Set Resistance with an Absolute Temperature Coefficient (TC) of 2 ppm/°C maximum.

The low Voltage Coefficient (VC) of the USF370 and USF371 Style resistors used in these selected resistor sets achieves excellent voltage stability over the operating voltage range.

Multiple USFS Selected Resistor Sets can be used in series to form a string of resistors that achieves a higher total resistance and a higher voltage rating with 2 ppm/°C overall temperature coefficient. For Custom Selected Resistor Sets contact Applications Engineering.



Model Number	① Operating Voltage	② Number of Resistors	③ Set Resistance	④ Set Tolerance	⑤ Set TC	⑥ Set VC	Set Schematic
USFS-3-370-30M-B2	3 kV DC	3	30 Megohm	0.10%	2 ppm/°C	0.008 ppm/V	Fig. 1A
USFS-5-370-50M-B2	5 kV DC	5	50 Megohm	0.10%	2 ppm/°C	0.005 ppm/V	Fig. 1B
USFS-5-371-100M-B2	5 kV DC	5	100 Megohm	0.10%	2 ppm/°C	0.005 ppm/V	Fig. 1C

Specifications for the Selected Resistor Sets:

All specifications are valid for the Set Resistance, which is formed by the series connection of the resistors in the selected Resistor set.

- ① Operating Voltage:** The continuous operating voltage for the set of resistors connected in series. This continuous voltage may be exceeded by a maximum of 10%.
- ② Number of Resistors:** The number of resistors in each Selected Resistor Set, described by the Caddock Part Number.
- ③ Set Resistance:** The total resistance of the set of resistors connected in series.
- ④ Set Tolerance:** The Tolerance of the Set Resistance, measured at low voltage (DC) at +23°C ±2°C.
- ⑤ Set TC:** The Temperature Coefficient of the Set Resistance, measured at +10°C and +50°C, ref. to +25°C.
- ⑥ Set VC:** The Voltage Coefficient of the Set Resistance, measured at 10% and 100% of the Operating Voltage.

Storage Temperature Range: -35°C to +85°C.

High Voltage Design Note: The specifications for these high voltage resistor sets are based upon the proper high voltage field stress management, thermal design, and material selection for the housing which encloses the high voltage resistor set. The design of the housing is the responsibility of the user. These resistors are compatible with many high voltage potting materials, but issues regarding potting material adhesion, bubble free potting, and electrical insulation/isolation are the responsibility of the user.

Dielectric Absorption: The USF resistors are engineered by Caddock to minimize dielectric absorption. The circuit board, potting, or encapsulation materials that are in contact with, or in circuit with the USF resistors, can exhibit dielectric absorption behavior that can affect the performance of the circuit. The user is responsible for the selection of materials and the design so that dielectric absorption and its effects on the performance of the circuit are minimized.

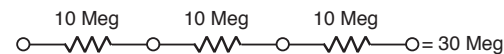


Figure 1A: Schematic of the three 10 Megohm USF370 Style resistors in a USFS-3-370-30M-B2 Selected Resistor Set, which are connected in series to form the 30 Megohm Resistance.

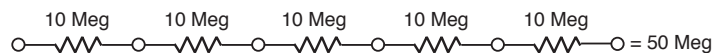


Figure 1B: Schematic of the five 10 Megohm USF370 Style resistors in a USFS-5-370-50M-B2 Selected Resistor Set, which are connected in series to form the 50 Megohm Resistance.

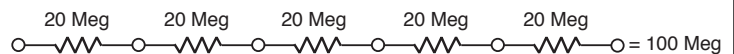
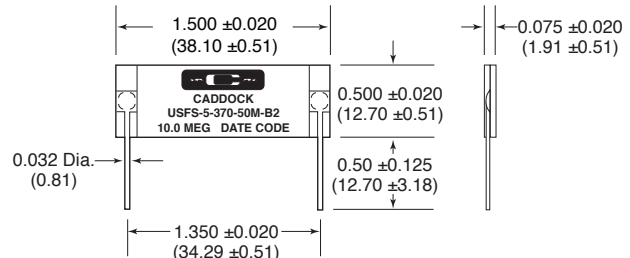


Figure 1C: Schematic of the five 20 Megohm USF371 Style resistors in a USFS-5-371-100M-B2 Selected Resistor Set, which are connected in series to form the 100 Megohm Resistance.

Figure 2 and Table: Physical Dimensions and Specifications of the individual USF370 and USF371 Style Resistors that form USFS Selected Resistor Sets



Resistor Style	Resistance	Tolerance	TC
USF370 Style	10 Meg	±0.20%	±10 ppm/°C
USF371 Style	20 Meg	±0.20%	±10 ppm/°C

CADDOCK ELECTRONICS, INC.

e-mail: caddock@caddock.com • web: www.caddock.com

For Caddock Distributors listed by country see caddock.com/contact/dist.html

Sales and Applications Engineering

17271 North Umpqua Hwy.

Roseburg, Oregon 97470-9422

Phone: (541) 496-0700

Fax: (541) 496-0408