

# Modular Resistance-Decade System

Series 1440

Code: 1440 E  
 Manufacturer: burster  
 Delivery: ex stock  
 Warranty: 24 months  
 Issue: 1.9.2003



1440-E

- Ranges from 10 x 0.1 Ω up to 10 x 10 MΩ
- Moderate Price
- For various applications
- Single decade, divider or multi-step decade
- Built-in precision resistors

## Application

This new modular resistance decade system meets a variety of requirements, either in the laboratory, in the test field or in the calibration room. Whether a precision voltage divider or a series resistance adjustable in accurately known values is required - the system offered is the solution to the problem. The maximum adjustable resistance is above 100 megohm; the minimum resistance step is 100 milliohm.

## Description

Many years of experience, proven technology and the use of proven materials, these factors form the basis of the modular resistance decade system of the 1440 series. The system consists of 9 single decades in the range of 10 x 0.1 Ω to 10 x 10 MΩ, 2 appropriate housings designed to accommodate a connection module each and 4 or 9 decade modules respectively. Dummy modules serve to fill the empty space if not all decade modules are placed in the housing.

An encapsulated switch and the decade resistors are cast in a plastic housing. Start and end of each decade as well as the root of the switch lead to plugs and terminal sockets respectively. The latter are according to DIN specification. Each individual decade module can thus be used either as a variable resistor or a voltage divider.

The high-quality stepping switch, carefully fabricated precision resistors out of own manufacturing line and proven technology warrant the desired high degree of reliability and stability. No maintenance, no servicing is needed.

**Technical Data**

Resistance range:	9 single decades from 10 x 0.1 Ω to 10 x 10 MΩ	Long-term stability:	< ± 0.02 % over years < 0.3 % p. a. with 1 KΩ to the 10 MΩ decades
Accuracy:	0.05 % to 1 %, dependent on resistance value	Power dissipation:	0.15 W per step
Calibration:	in Ohm absolute at 23 °C (73.4 °F)	Operating voltage:	650 V <sub>DC</sub> maximum to case
Resistance material:	MANGANIN®, metal film with the 1 kΩ to the 10 MΩ decades	Test voltage:	2 kV <sub>rms</sub> /50 Hz
Temperature coefficient:	≤ 10 ppm/K, ≤ 15 ppm with 1 kΩ to the 10 MΩ decades	Construction:	according to DIN 43783, part 1
Resistor structure:	chaperon winding, therefore especially low inductivity	Switching arrangement:	short-circuiting between two neighbouring contacts in the switching process
Time constant:	1 ... 20 · 10 <sup>-8</sup>	Switch positions:	12, limited to 11 steps
		Contact material:	gold contacts of the self-cleaning type
		Dimensions and weights:	see table below

**Order Information**

Model	Steps	Accuracy [%]	Nominal Current [mA]	R <sub>o</sub> [mΩ]	W x H x D [mm]	Weight (approx) [g]
1441	10 x 10 MΩ	± 1	0,035	< 10	35 x 67 x 77	90
1442	10 x 1 MΩ	± 0,2	0,35	< 10	35 x 67 x 77	90
1443	10 x 100 kΩ	± 0,05	1,2	< 10	35 x 67 x 77	90
1444	10 x 10 kΩ	± 0,05	3,5	< 10	35 x 67 x 77	90
1445	10 x 1 kΩ	± 0,05	12	< 10	35 x 67 x 77	90
1446	10 x 100 Ω	± 0,05	35	< 10	35 x 67 x 77	90
1447	10 x 10 Ω	± 0,08	120	< 10	35 x 67 x 77	90
1448	10 x 1 Ω	± 0,5	350	< 10	35 x 67 x 77	90
1449	10 x 0,1 Ω	± 1	1200	< 10	35 x 67 x 77	90
1431	Housing for 4 decades (price including of connection module)			< 50	184 x 70 x 90	710
1433	Housing for 9 decades (price including of connection module)			< 80	361 x 70 x 90	1230
1435	Connection module (as a spare)				35 x 67 x 77	60
1437	Dummy module (to cover missing module)				35 x 67 x 77	50
14DKD-1441	DKD-Calibration Certificate for model 1441					
14DKD-1442	DKD-Calibration Certificate for model 1442					
14DKD-1440	DKD-Calibration Certificate for models 1443 to 1449					
14WKS-1440	Proprietary Calibration Certification for models 1441 to 1449					

**Order Examples**

Requirement	burster supplies
10 precision resistors of 0.05 class; values 100, 200, 300, 400, 500, 600, 700, 800 und 1000 Ω	1 resistance decade model 1446 with 10 x 100 Ω ± 0.05 %
Series resistance adjustable in accurately known values, 10 000 Ω; adjustable in 1000 Ω steps; accuracy ± 0.05 %	1 resistance decade model 1445 with 10 x 1000 Ω ± 0.05 %
Precision voltage divider with 100 kΩ series resistance; for settings at 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 kΩ	1 resistance decade model 1444 with 10 x 10 kΩ ± 0.05 %
3-step precision resistance decade with 10 x (1 + 10 + 100) Ω	1 resistance decade each of models 1448, 1447, 1446 1 housing 1431; 1 dummy module 1437
4-step precision resistance decade with 10 x (0.1 + 1 + 10 + 100) Ω	1 resistance decade each of models 1449, 1448, 1447, 1446 1 housing 1431
6-step precision resistance decade with 10 x (0.1 + 1 + 10 + 100 + 1000 + 10 000) Ω	1 resistance decade each of models 1444 to 1449 1 housing 1433 and 3 dummy modules 1437
9-step precision resistance decade with 10 x (0.1 + 1 + 10 + 100 + 1000 + 10 000 + 100 000 + 1 000 000 + 10 000 000) Ω	1 resistance decade each of models 1441 to 1449 1 housing 1433