RS • CS • LS • Series

Economical, indispensable tools for a variety of uses in engineering, design, troubleshooting, or service.

Best Substituter Value Available

- Direct reading — No fumbling with multiple slide or rotary switches
  The IET family of digital substituters uses convenient side by side thumbwheel switches. Simply dial in the desired values and use.
- Accurate
  In addition to standard 1% economical units, tolerances of 0.1%, 0.05%, 0.01%, and others are available.
- Broad choice of standard and optional models with many powerful features
  A full line of standard substituters will satisfy most requirements. Other IET families of precision products include:
  - Laboratory standards
  - Transfer standards
  - Programmable control
  - RTD simulation
  - High power
  - Very high resistance
- Error proof
  Since the impedance values are set and read directly, no mistakes can be made as with rotary or slide switch decade boxes. No need to examine and sum groups of switches — simply read one number.
- Color coded
  Different colored switches separate the various impedance ranges.
- Compact, convenient, and rugged
  Made of high impact plastic, these substituters are very portable and reduce clutter on a busy lab bench.

OPTIONS

- Shielded case with grounding post
- Panel mounting
- Low residual impedance switch
- Protection fuse
- Programmable control (See p. 23)

R-box

RS Series
Digital
Resistance
Substituter

Available from 0.01 Ω to 299,999,999.9 Ω
(RS-201 shown)

C-box

CS Series
Digital
Capacitance
Substituter

Available from 1 pF to 999.9999 µF
(CS-300 shown)

L-box

LS Series
Digital
Inductance
Substituter

Available from 1 µH to 99.99999 H
(LS-400 shown)

RC-box

RCS Series
Digital Resistance-Capacitance
Substituter

The RC-box, shown on the right, combines the features and specifications of both the R-box and the C-box in one convenient package. Ideal for setting timers, oscillators, and filters, the resistance and capacitance may be used independently, in series, or in parallel. A shorting link allows them to be coupled or separated.

Combination Resistance-Capacitance
(RCS-500 shown)

RS • CS • LS • Series

SPECIFICATIONS - STANDARD MODELS

Model	RS-200	RS-201	RS-200W	RS-201W	CS-300	CS-301	RCS-500	RCS-502	LS-400	LS-400A
Type of Substituter	Resistance	Precision Resistance	Wide Range Resistance	Wide Range Precision Resistance	Capacitance	Precision Capacitance	Resistance-Capacitance	Precision Resistance-Capacitance	Wide-Range Inductance	Inductance
Accuracy*	±(1%+25 mΩ)	±(0.1%+25 mΩ)	±(1%+30 mΩ)	±(0.1%+30 mΩ)	±(4%+3 pF)	±(1%+3 pF)	Combines RS-200 and CS-300	Combines RS-201 and CS-301	±(2%+0.5 µH)	±(2%+0.5 µH)
Decades	7		9		6				4	3
Range	0 - 9,999,999 Ω		0-99,999,999.9 Ω		0 - 99.9999 µF				0 - 9.999 H	0 - 999 mH
Resolution	1 Ω		0.1 Ω		100 pF				1 mH	1 mH
Type of Components	Metal film resistors; wirewound or resistance wire for 0.9 Ω and under				100 - 900 pF: mica 0.001 - 0.009 µF: polystyrene 0.01 - 0.9 µF: polycarbonate 1 - 9 µF: polyester 10 - 90 µF: polarized tantalum				Toroidal Inductors	
Ratings	0.5 W**				100 V (20 V for 10 - 100 µF)				See table below	
Residual Impedance†	0.3 Ω (0.04 Ω/dec.)†, typical		0.3 Ω (0.04 Ω/dec.)†, typical		30 pF(5 pF/dec) typical				0.2 Ω (0.04 Ω/dec.)†, typical	
Physical	8.1 x 7.9 x 5.6 cm; 184 g (3.2 x 3.1 x 2.2 in; 6.5 oz.)		12 x 7.9 x 5.6 cm; 235 g (4.7 x 3.1 x 2.2 in; 8.3 oz)		12 x 7.9 x 5.6 cm; 235 g (4.7 x 3.1 x 2.2 in; 8.3 oz)		18.8 x 11 x 6 cm, 410 g (7.4 x 4.3 x 2.4 in, 14 oz)		12 x 7.9 x 5.6 cm, 230 g (4.7 x 3.1 x 2.2 in, 8 oz)	

* Accuracy after subtraction of the Residual Impedance; traceable to NIST.
LS-400 and LS-400A Test Conditions: 1 kHz; 1 Vrms; series model; 23°C.

** Higher power resistance substituters (1 W or higher) available; see optional models below or HPRS data sheet.

† Residual Impedance may be reduced to 0.04 Ω or 5 pF for lowest decade with LR Option. This makes for more effective usage at low impedances. Lowest decade is isolated from others with a switch when desired.

Additional information for Inductance Substituters

Inductance	Frequency Range	Max. Q	Rating
0.1 - 0.9 mH	300 Hz - 2 MHz	100 @ 800 kHz	700 mA
1 - 9 mH	300 Hz - 1 MHz	80 @ 40 kHz	500 mA
10 - 90 mH	300 Hz - 800 kHz	80 @ 40 kHz	300 mA
0.1 - 0.9 H	300 Hz - 200 kHz	40 @ 20 kHz	100 mA
1 - 9 H	200 Hz - 20 kHz	30 @ 8 kHz	20 mA
10 - 90 H	200 Hz - 6 kHz	60 @ 2 kHz	4 mA

OPTIONAL MODELS

In order to satisfy any requirements for decade substituters, construct a part number from the table below, or consult IET Labs.

RS - F - 4 - 0.1 - WC - ___ (Example: 0.1 Ω - 999.9 Ω, 1%, Resistance Substituter in a standard case)

Type of Substituter
- RS: Resistance
- CS: Capacitance
- LS: Inductance

Tolerance
- X:* 0.01%
- Q: 0.02%
- A: 0.05%
- B: 0.1%
- C: 0.5%
- F: 1%
- G: 2%
- H: 4%

No. of Decades
- 1 to 10

Impedance per Step for Lowest Decade
- 0.01 Ω to 100 MΩ (in Ω)
- 1 pF to 100 pF
- 1 µH to 10 H

Packaging
- WC: Packaged in a standard case with binding posts
- PM: Supplied without case for panel mounting or other application

Rating
- Blank: Standard rating
- OTHER: Specify

* See HARS and HACS Series for standards grade resistance and capacitance substituters.

OPTIONS

-CC-25	Dual Lead Clip - plugs into dual binding posts for convenient lead connections
-LR	Residual Impedance is reduced to 0.04 Ω or 5 pF on lowest decade
-SC	Shielded case with grounding terminal
-PM	Panel mounting version
-FP	Unit supplied with series 2 A fuse for added protection (User may substitute other fuses; residual impedance will increase by 0.06 Ω for 2 A fuses)
-LP	Unit supplied with low profile binding post

OTHER VERSIONS

Programmable Version	See PRS/PCS/PLS data sheet (p. 17)
High Power Version	See HPRS data sheet (p. 16)
High Accuracy Version	See HARS data sheets (p. 11)
High Resistance Version	See HRRS data sheet (p. 15)

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