RS-CS-LS Series

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

These small, rugged substituters can satisfy most requirements.

Features:

- 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.
- Standard accuracies of 1%, 0.1%, and 0.05% available.
- Broad choice of standard and optional models.
  A full line of standard substituters satisfies most requirements.
- Direct readings eliminate potential mistakes that come from rotary or slide-switch boxes.
- For easy value readings, ranges are separated by color-coded switches and numbers.
- The units are small, rugged, and portable.
- Combination units, such as Resistance and Capacitance Substituter (RCS-500), are available.

Options:

- Shielded case with grounding post
- Panel mounting
- Protection fuse

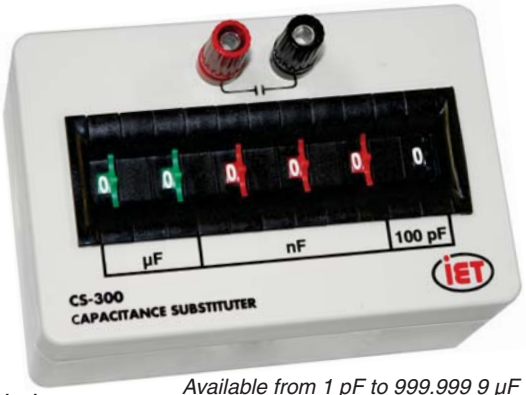
See also:

- Higher accuracy: **HARS-X**, **HACS-Z**, and **1491** Series
- Laboratory standards: **SRX**, **SCA**, and **1482** Series
- Programmable models: **PRS/PCS/PLS Series**
- Transfer standard: **SR-1030**
- Higher power: **HPRS Series**
- Higher resistance: **HRRS Series**
- Higher voltage: **HRRS-5kV** and **HRRS-10kV Series**
- Precision RTD simulators: **RTD Series**

R-Box

RS Series: Digital Resistance Substituter

Available from 0.01 Ω to 299,999,999.9 Ω (RS-200 Shown)



C-Box

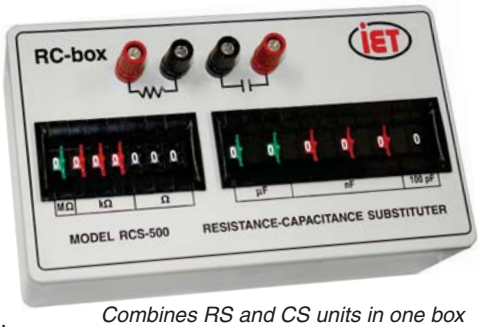
CS Series: Digital Capacitance Substituter

Available from 1 pF to 999.999 9 μF (CS-300 Shown)

L-Box

LS Series: Digital Inductance Substituter

Available from 1 μH to 99.999 99 H (LS-400 Shown)



RC-Box

RCS Series: Digital Resistance-Capacitance Substituter

Combines RS and CS units in one box (RCS-500 Shown)

Standard Models

RS Series -- Standard Models

Model	RS-200	RS-201	RS-200W	RS-201W	RS-200-2W	RS-201W-2W	RS-RTD	RCS-500	RCS-502
Type	Resistance	Precision Resistance	Wide-Range Resistance	Wide-Range Precision Resistance	High-Power Resistance	High-Power Wide-Range Resistance	RTD Simulator	Resistance/ Capacitance	Precision Resistance/ Capacitance
Accuracy*	±(1% + 25 mΩ)	±(0.1% + 25 mΩ)	±(1% + 36 mΩ)	±(0.1% + 36 mΩ)**	±(1% + 25 mΩ)	±(0.1% + 36 mΩ)**	±(0.1% + 25 mΩ)	Combines RS-200 and CS-300	Combines RS-201 and CS-301
Decades	7		9		7	9	6		
Range	0 to 9,999,999 Ω		0 - 99,999,999.9 Ω		0 - 9,999,999 Ω	0 - 99,999,999.9 Ω	0-9,999.99 Ω		
Resolution	1 Ω		0.1 Ω		1 Ω	0.1 Ω	0.01 Ω		
Ratings***	0.5 W (rising to 2.5 W at step 9)				2 W (rising to 10 W at step 9)		0.5 W		
Residual	≤0.39 Ω (≤0.056 Ω/decade)		≤0.5 Ω (≤0.056 Ω/decade)		≤0.39 Ω	≤0.5 Ω	≤0.34 Ω		
Components	Metal-film resistors; Manganin wire ≤0.9 Ω								
Mechanical	A		B		A	B	A	C	

CS Series -- Standard Models

Model	CS-300	CS-301	CS-301L	CS-300H
Type	Capacitance	Precision Capacitance	Low Precision Capacitance	High Capacitance
Accuracy*	±(4% + 3 pF)	±(1% + 3 pF)	±(1% + 3 pF)	**<100 µF:** ±(4% + 3 pF) **≥100 µF:** ±6%
Decades	6		7	
Range	0 to 99.999 9 µF		0 - 9.999 999 µF	0 - 999.999 9 µF
Resolution	100 pF		1 pF	100 pF
Ratings***	100 V (25 V for 10 - 100 µF)		100 V	100 V (25 V for 10 - 1000 µF)
Residual	≤42 pF (≤7 pF/decade)		≤49 pF (≤7 pF/decade)	
Components	1-900 pF: mica 1-9 µF: Polyester		0.001 - 0.9 µF: Polypropylene 10-900 µF: Tantalum	
Test Cond.	1 kHz; 1 Vrms; for ≥10 µF: 120 Hz, series model; 23°C			
Mechanical	B			

***Accuracy:**
After subtraction of residual impedance
Traceable to SI

****Accuracy for RS-201W & RS-201W-2W:**
<10 MΩ: as shown above
≥10 MΩ: 0.2%

*****Rating:**
Subject to switch maximum dielectric strength of 750 Vdc peak or 550 Vrms, switching

LS Series -- Standard Models

Model	LS-400A	LS-400	LS-400L
Type	Inductance	High Inductance	Low Inductance
Accuracy*	±(2% + 0.5 µH)		
Decades	3	4	6
Range	0 to 999 mH	0 - 9.999 H	0-999.999 mH
Resolution	1 mH	1 mH	1 µH
Frequency Response	See **http://www.ietlabs.com/ls-series-inductance-decade-box.html**		
Residual	≤0.17 Ω; ≤1 µH (≤0.056 Ω/decade)	≤0.23 Ω; ≤1 µH (≤0.056 Ω/decade)	≤0.34 Ω; ≤1.5 µH (≤0.056 Ω/decade)
Components	Toroidal Inductors		
Test Cond.	1 kHz; 0.1 Vrms; series model; 23°C		
Mechanical	B		C

Switches:
10-position thumbwheel switches
make-before-break

Maximum switch voltage:
750 Vdc peak or 550 Vrms, switching

Mechanical:
A: 8.1 x 7.9 x 5.6 cm; 184 g (3.2" x 3.1" x 2.2"; 6.5 oz)
B: 12.1 x 7.9 x 5.6 cm; 235 g (4.7" x 3.1" x 2.2"; 8.3 oz)
C: 18.8 x 11.6 x 6 cm; 410 g (7.4" x 4.3" x 2.4"; 14 oz)

Optional Models

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

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

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

No. of Decades
- 1 to 10

Resolution
- 0.01Ω to 100 MΩ
- 1 pF to 100 µF
- 1 µH to 10 H

Packaging/Options
- **WC:** Standard
- **PM:** Panel Mount w/out case
- **SC:** Shielded Case
- **FP:** Supplied with 2A fuse (residual increases by 0.06 Ω)
- *Other*: Consult IET Labs

Rating
- *blank*: Standard
- 1W
- 2W
- *Other*: Consult IET Labs