RFD-200 S3

portable relay test set

Vanguard Instruments Company, Inc.
www.vanguard-instruments.com

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The RFD-200 S3 is a portable relay test set that delivers performance verification testing of electromechanical, electronic, and microprocessor-based protective relays in their operating installations. The RFD-200 S3 is a rugged test set suitable for testing a variety of protection relays operated in both indoor and outdoor environments. The unit's ergonomic design and intuitive control panel layout make it ideal for first-time users who have little or no training.

Built-in Digital Timer

The RFD-200 S3's digital timer features independent start and stop trigger inputs designed to measure the time between event transitions and to display the elapsed time in both milli-seconds and cycles. The RFD-200 S3's timer has three different trigger inputs – Internal Trigger, Dry-Contact, or Wet-Contact. The Internal Trigger can start or stop the timer by sensing the application or removal of the unit's voltage or current source. The Dry-Contact can trigger the timer by detecting a change in state of the dry-contact input. Similarly, the Wet-Contact can trigger the timer by detecting a change in state of the voltage input. Thus, the three inputs can trigger the timer by the presence or removal of the unit's voltage or current source or by changes in voltage or current states.

AC Current Source

An AC current source with three outputs (10A, 40A, and 100A) provides test current to relays. The current source output can be programmed to synchronize with the RFD-200 S3's timer. After a test is completed, the test current reading is latched and displayed on the LCD screen. This feature reduces the possibility of overheating the relay coils.

Auxiliary Output Contact

A set of NO/NC dry contacts change state when a test is initiated.

AC Voltage Source

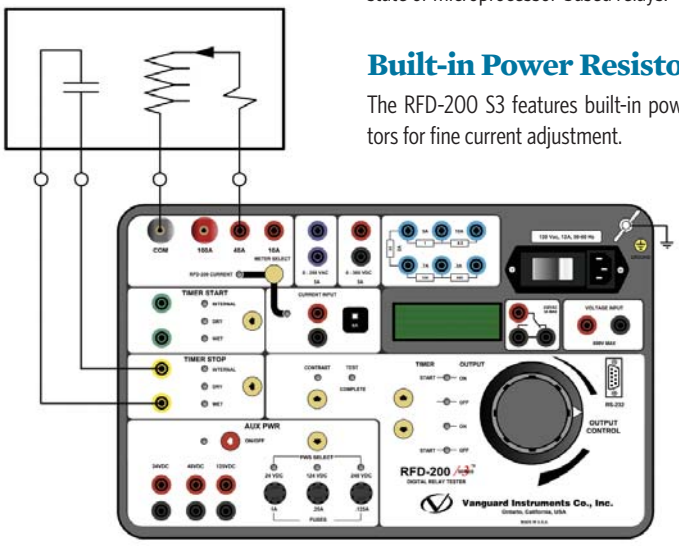
An AC voltage source is available for testing relays up to 250 Vac. The AC voltage source output can be programmed to synchronize with the RFD 200 S3's timer.

DC Voltage Source

A 0 – 300 Vdc voltage source is also available. The DC voltage source can also be programmed to synchronize with the RFD-200 S3's timer.

Volt Meter

One volt meter input (0 to 600 V input range) is available on the RFD-200 S3.



Ampere Meters

The test current is displayed on the unit's backlit LCD screen that is viewable in both bright sunlight and low-light levels. The current measuring range is from 0.00 to 250 A. A second ampere meter is also available and can be used to read an external current input. The external current input is rated at 6 A max and is protected by a circuit-breaker.

Auxiliary AC/DC Power Supplies

The RFD-200 S3 provides three power supplies (24 Vdc, 48 Vdc and 124 Vdc) for powering solid-state or microprocessor-based relays.

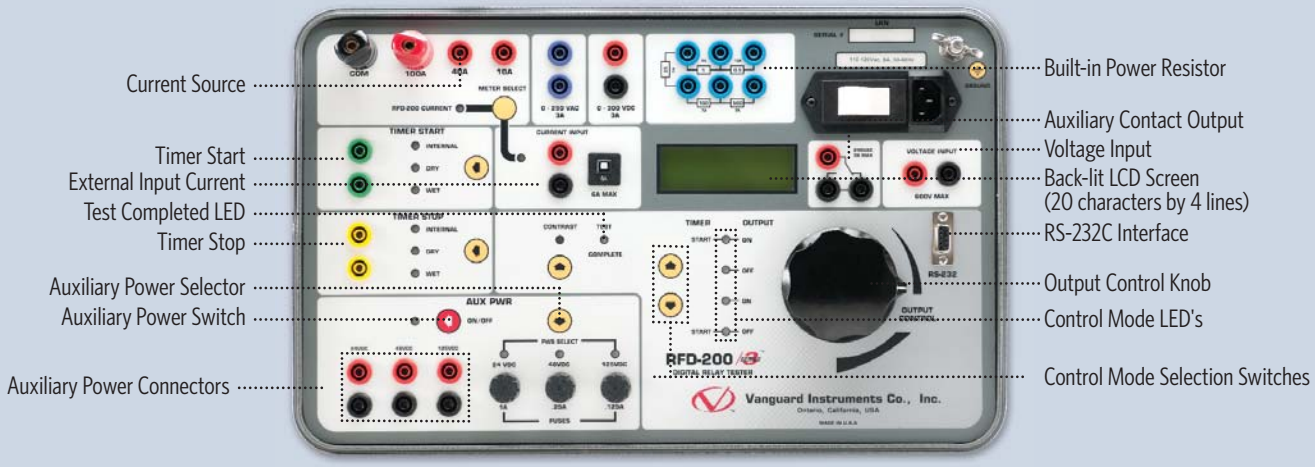
Built-in Power Resistors

The RFD-200 S3 features built-in power resistors for fine current adjustment.

ordering information

Part number **RFD-200 S3**	RFD-200 S3 and cables
Part number **RFD-200 S3 CASE**	RFD-200 S3 shipping case

RFD-200 S3 Controls & Indicators



RFD-200 S3 specifications

type	portable relay test set
physical specifications	17"W x 12½"H x 12"D, (42.7 cm x 32.0 cm x 30.5 cm); Weight: 35 lbs (15.9 kg)
input power	100 – 120 Vac or 200 – 240 Vac (factory pre-set), 50/60 Hz
ampere meter input ranges	Internal input range: 0 – 250 A; Accuracy: 2% of reading ±10 mA, External AC input range: 0 – 6A; Accuracy: 1% of reading ±10mA; External DC input range: 0 - 6A; Accuracy: 0.5% of reading ±1 count Measurement Method: True RMS for AC
volt meter input range	0 – 600.0V; AC accuracy: 1% of reading ±1 count; DC accuracy 0.5% of reading ±1 count Measurement Method: True RMS for AC
power resistors	5 Ω/50 W, 1 Ω/50 W, 25 Ω/50 W, 100 Ω/50 W, 500 Ω/50 W
dry contact output	3A, 240 Vac or 120 Vdc
auxiliary power supplies	24 Vdc @ 1 A, 48 Vdc @ 0.25 A, 124 Vdc @ 0.125 A
safety	Designed to meet IEC61010 (1995), UL61010A-1, CSA-C22.2 standards
environment	Operating: -10°C to +50°C (+15°F to +122°F); Storage: -30°C to +70°C (-22°F to +158°F)
humidity	90% RH @ 40°C (104°F) non-condensing
altitude	2,000 m (6,562 ft) to full safety specifications
options	transportation case
warranty	one year on parts and labor

NOTE : the above specifications are valid at nominal voltage and ambient temperature of +25°C (+77°F). Specifications are subject to change without notice.

Timer Second Display (in seconds and cycles - 50/60 Hz programmable)

range	resolution	accuracy
0 to 9.999 sec	1 ms	±(1 ms + 0.01%)
10.00 to 99.99 sec	10 ms	±(10 ms + 0.01%)
100.00 to 999.999 sec	100 ms	±(100 ms + 0.01%)

Timer Cycles Display

range	resolution	accuracy
0 to 9.999 cycles	0.1 cycles	±(0.1 cycle + 0.01%)
1,000 to 49,999 cycles / 50 Hz	1 cycle	±(1 cycle + 0.01%)

AC Current Output

range	no-load voltage	load voltage	load current	load/unload time
10A	90 Vac	75 Vac	10A	2 min / 15 min
40A	25 Vac	20 Vac	40A	1 min / 15 min
100A	10 Vac	7.25 Vac	100A	1 min / 15 min
100 A	10 Vac	3 Vac	250A	1 sec / 5 min

AC Voltage Output

range	no-load voltage	load voltage	load current	load/unload time
250 Vac	260 Vac	240 Vac	3A	10 min / 45 min

DC Voltage Output

range	no-load voltage	load voltage	load current	load/unload time
300 Vdc	300 Vdc	250 Vdc	2A	10 min / 45 min

Instruments designed and developed by the hearts and minds of utility electricians around the world

Vanguard Instruments Company, (VIC), was founded in 1991. Currently, our 28,000 square-foot facility houses Administration, Design & Engineering, and Manufacturing operations. From its inception, VIC's vision was, and is to develop and manufacture innovative test equipment for use in testing substation EHV circuit breakers and other electrical apparatus.

The first VIC product was a computerized circuitbreaker analyzer, which was a resounding success. It became the forerunner of an entire series of circuitbreaker test equipment. Since its beginning, VIC's product line has expanded to include microcomputer-based, precision micro-ohmmeters, single and three phase transformer winding turns-ratio testers, transformer winding-resistance meters, mega-ohm resistance meters, and a variety of other electrical utility maintenance support products.

VIC's performance-oriented products are well suited for the utility industry. They are rugged, reliable, accurate, user friendly, and most are computer controlled. Computer control, with innovative programming, provides many automated testing functions. VIC's instruments eliminate tedious and time-consuming operations, while providing fast, complex, test-result calculations. Errors are reduced and the need to memorize long sequences of procedural steps is eliminated. Every VIC instrument is competitively priced and is covered by a liberal warranty.

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August, 2012