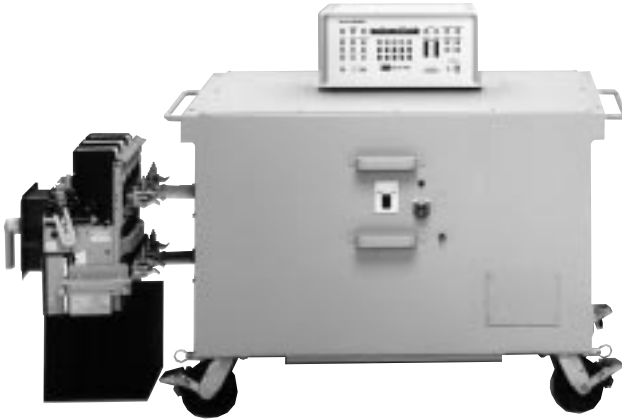


PS-9130 and PS-9160

Universal Circuit Breaker Test Sets



- Automated Testing
- Proven power train
- Zero dc offset
- Rugged instrumentation and controls
- Direct connection of draw-out type breakers
- Integral clock/calendar
- Easy-to-read display

DESCRIPTION

The Model PS-9130 and Model PS-9160 Series Universal Circuit Breaker Test Sets are specifically designed to test low-voltage power circuit breakers and molded-case circuit breakers that are equipped with thermal magnetic or solid-state trip devices by simulating an overload or fault condition.

Model PS-9130 and Model PS-9160 are controlled by the Model PLC-2000 Prime Logic Controls. This microprocessor monitors the output, stores the test data and performs the automatic test functions. After the test information is stored, Model PLC-2000 can print the test data using a built-in RS-232 printer port.

Each test set is an integrated test system that provides a variable high-current output. Each incorporates all the control circuitry and instrumentation necessary to test direct-acting circuit breakers accurately, efficiently and safely. The unique transformer and circuit design results in a high-capacity test set in a compact size.

APPLICATIONS

Universal in application, the test sets will test virtually all low-voltage molded-case and metal-clad direct-acting ac circuit breakers produced by General Electric, Westinghouse, Federal Pacific Electric, Square D, Gould, ABB, ITE, Siemens and other manufacturers.

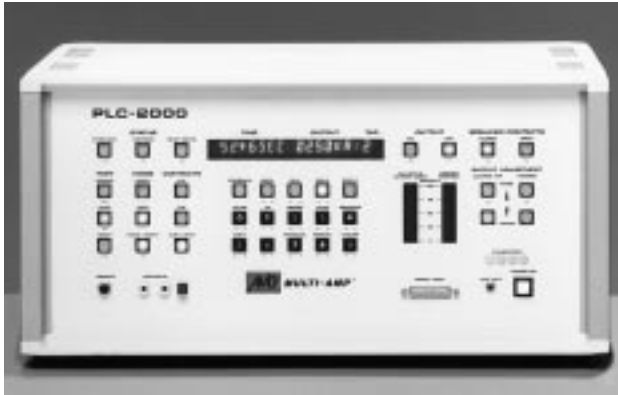
Model PS-9130 is rated for testing breakers rated up to 3000 amperes. Model PS-9160 is rated for testing breakers rated up to 6000 amperes. Rugged and reliable, these circuit breaker test sets will provide years of trouble-free operation.

The test sets also may be used for other high-current applications such as performing ratio tests on current transformers and heat runs or primary injection testing on high-voltage breakers and their associated protective relays.

Model PS-9130 and Model PS-9160 have identical features, instrumentation and operational characteristics. The only changes in specifications among the units are their size, weight and maximum output current capacity.

FEATURES AND BENEFITS

- **Proven power train:** The high-current transformers and SCR-initiate system have been used in the field for more than 10 years. This field-proven technology ensures that the new test sets will perform to the most demanding testing needs.
- **Construction:** These test sets are built for years of trouble-free, reliable operation. They feature rugged instrumentation and controls designed to withstand the vibration and shock of frequent transportation.
- **Output stabs:** The stab sets permit direct connection of drawout type breakers. Their long length allows easy connection without any interference between the test set enclosure and the breaker.



Model PLC-2000 performs automatic test functions, monitors output and stores and prints test data.

Model PLC-2000

- **Integrated clock/calendar:** The clock/calendar features a battery carry-over that allows the test data to be stored with the time and date of the test.
- **Easy-to-read display:** A bright, vacuum-fluorescent, alphanumeric display provides easy reading in both sun and low light.
- **High-accuracy digital memory ammeter:** This feature provides easy reading of instantaneous output by retaining the reading until the output is again initiated.
- **Bar-graph display:** An analog LED segmented bar-graph display provides at-a-glance approximation of output current.
- **High-accuracy digital timer:** An easy-to-read digital timer measures elapsed time in seconds or cycles. Selection of cycles or seconds allows easy comparison of test time to published trip curves of the circuit breaker during testing.
- **Preset initial conditions:** The following preset initial conditions provide flexibility in testing procedures: contact input, normally open/closed, audible continuity signal, current latch for breaker testing and momentary/maintain mode operation.
- **Maximum test time/current:** Pro- grammable maximum test time and maximum current ensure that the test set does not damage itself or the circuit breaker during test.
- **Series/parallel output mode:** This mode allows Model PLC-2000 to make the proper calculation for the output test configuration.
- **Tap selection:** This option from Model PLC-2000 provides coarse current control.
- **Versatile ammeter:** The ammeter operates as a real-time ammeter for overcurrent test or as a memory ammeter for instantaneous trip test.
- **Indicators:** The following indicators provide at-a-glance understanding of Model PS-9130 or Model PS-9160 operational status: thermal status, output on, input power breaker status, coarse output position, digital ammeter, plus continuity and interlock.

- **RS-232 printer interface:** The printer interface allows stored test data to be printed immediately after test or at the user's convenience.
- **Auto-jog:** This feature provides fully automatic, instantaneous trip test capabilities.

SPECIFICATIONS

Input

Because Model PS-9130 Series and Model PS-9160 Series are used all over the world to test low-voltage circuit breakers, a variety of models are offered to be compatible with the many different input voltages and frequencies.

Model No.	Input Voltage (single-phase)	Input Frequency	Input Current
PS-9130	460 V ±5%	60 Hz	200 A
PS-9131	380 V ±5%	50 Hz	200 A
PS-9132	415 V ±5%	50 Hz	200 A
PS-9160	460 V ±5%	60 Hz	350 A
PS-9161	380 V ±5%	50 Hz	350 A
PS-9162	415 V ±5%	50 Hz	350 A

Output

Output Circuit: The output of the test set is easily adjustable from zero to the maximum current available through the impedance of the device under test. For high-impedance devices, the output can be connected in series (with the provided series bar) to double the output voltage. The maximum current available from the test set is determined primarily by the impedance of the load circuit. The duration of the available current is determined primarily by thermal conditions within the test set.

Provisions are available to initiate the output of the test set from a remote position.

Output Connections: To provide maximum utilization of the output available from the test set, each set is equipped with a stab adapter board and stab set Model CBS-1 and Model CBS-2 for use with drawout style, metal-clad breakers.

The stabs eliminate the significant losses that occur if leads are used to connect the breaker under test to the test set.

Cables must be used when testing molded-case breakers or other devices that will not connect directly to the stabs.

Please refer to the catalog entry for the Multi-Amp Circuit Breaker Stab Sets to determine the uses of the included stab sets. If the included stab sets will not test all breakers, refer to the Model CBS-3 optional stab set list.

Maximum Output Current: At rated input voltage, Models PS-9130 and PS-9160 will produce the outputs listed in the table below.

Model No.	Output Current		
	Maximum Continuous Current	Maximum Current Through a Circuit Breaker	Maximum Current Through a Short Circuit
PS-9130	4500 A	35,000 A	60,000 A
PS-9131	4446 A	28,000 A	48,000 A
PS-9132	4446 A	28,000 A	48,000 A
PS-9160	6250 A	60,000 A	100,000 A
PS-9161	6175 A	50,000 A	80,000 A
PS-9162	6175 A	50,000 A	80,000 A

Duty Cycle: The test set will supply the rated continuous current indicated above for 30 minutes, followed by 30 minutes off.

Accessory Outlet

A ground-fault-protected, 120 volt outlet with a capacity of 1.2 kVA is provided for convenient connection of accessory equipment.

Instrumentation—Model PLC-2000

Digital Memory Ammeter

Display: Vacuum-fluorescent, 3 1/2 digit display
Ranges: 200/2000/20,000/200,000 A

Accuracy

±1% full scale, ± LSD after two cycles
 ±2% full scale on 200-A range

Digital Timer

Display: Vacuum-fluorescent 4-digit display
Ranges: 0.001 to 9999 s, 0.1 to 9999 cycles

Accuracy

Seconds Mode: ±0.0133 seconds, ±0.005% reading, ± LSD
Cycles Mode: ±0.1% reading, ± LSD

Protection

Fuse, circuit breaker and overload protective devices are incorporated. The output-initiating SCRs are forced-air cooled and temperature sensors provide protection from overheating. Emergency-stop pushbutton is provided to de-energize all input power to the test set.

Enclosure

For safety and mobility, the test set is housed in a rugged sheet-metal enclosure with a low center of gravity, tow ring, lifting eyes and large locking swivel casters with brakes. To increase maneuverability, all four casters swivel. They can also be locked easily into a fixed position when desired. The test set's compact size permits easy movement through narrow doors.

Dimensions

Model PS-9160 and PS-9130

34.5 H x 53.25 W x 26.25 D in.
 (88 H x 136 W x 67 D cm)

Model PLC-2000

10.75 H x 21.2 W x 9.75 D in.
 (27 H x 54 W x 24.8 D cm)

Weight

Model PS-9130: 1000 lb (454.5 kg)
Model PS-9160: 1200 lb (545.5 kg)
Model PLC-2000: 19 lb (8.6 kg)

Optional Accessories
Printer Package

The Model PLC-2000 controller is equipped with the ability to store and transfer test data to the RS-232 printer port. The test data can be printed immediately after a test is conducted or after an entire series of tests.

The printer package consists of a parallel printer, serial-to-parallel communication interface and all interconnecting cables.

Input Autotransformer

If the nominal input voltage for the test set is not available, or if use at various locations requires the use of a variety of input voltages, an autotransformer may be used.

The multi-tapped autotransformer is equipped with a power ON/OFF switch, appropriate sockets, plugs, interconnect and tap selector cables, and is housed in a rugged, sheet-metal enclosure with casters and handles.

All voltages are single-phase with a tolerance of ±5%. Input taps of 240 volts and below are not recommended for obtaining maximum output of the test set.

For other combinations of input and output voltages, contact Technical Sales.

Model No.	Input Tap Voltages	Output Volts	Frequency (Hz)	Weight (lb/kg)	Dimensions H X W X D (in./cm)
AT-1	208, 230, 575	460	60	620/282	24 X 23 X 23 61 X 58 X 58
AT-4	208, 230, 575	380	50	640/290	24 X 23 X 23 61 X 58 X 58



Model PS-9160 Universal Circuit Breaker Test Set

ORDERING INFORMATION

Item (Qty)	Cat. No.	Item (Qty)	Cat. No.
Model PS-9130	PS-9130		
Model PS-9131	PS-9131		
Model PS-9132	PS-9132		
Model PS-9160	PS-9160		
Model PS-9161	PS-9161		
Model PS-9162	PS-9162		
Included Accessories		Optional Accessories	
Standard stab sets	CBS-1 and CBS-2	Input autotransformer	AT-1, AT-4
Timer leads, 12 ft (3.7 m) [1 set]	2997	Interconnect leads, 10-ft (3-m), 4/0 cable [2]	17164
Input leads, 15-ft, 4/0 cable [2]	17163	Jumper lead, 1 ft (0.3 m) [1]	8139
Stab series bar [1]	5532	Printer package	801029
Logic cable interconnect [1]	5086229400	Serial-to-parallel converter [1]	11969
Metering cable interconnect [1]	5086233400	Serial cable, 3 ft (0.9 m) [1]	15300
Fuses		Parallel cable, 6 ft (1.8 m) [1]	12172
500 V, 6 A FNQ [2]	9377	Model CBS-3 stabs	Contact Technical Sales
250 V, 8 A MDA [5]	962		
250 V, 5 A MDA [2]	952		
250 V, 2 A MDA [5]	983		
Remote-start pushbutton [1]	5083505000		
Power cord for Model PLC-2000 [1]	6828		
Instruction manual [1]	14194		

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