• 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.

• Ground safety interlock: An interlock circuit ensures that the test set chassis is connected to system ground before the output of the test set can be energized.

• Accessory outlet: A ground-fault-protected 120-volt outlet with a capacity of 1.2 kVA is provided for convenient connection of accessory equipment. Other voltages are available internally for customer-installed outlets.

## INSTRUMENTATION AND CONTROLS

• MemAmp™ Digital Ammeter: Specifically designed and manufactured to accurately measure the short-duration currents utilized when testing and determining instantaneous trip points, this is a high-accuracy, solid-state instrument with a digital display.

For measuring short-duration currents, this instrument includes a read-and-hold memory circuit which retains the reading until the output is again initiated. If the output is again initiated, the meter automatically resets, and then measures and indicates the output current. It will also function as a standard ammeter which continuously measures the output current. A low range is provided for measuring the low-amplitude currents associated with ground trip elements.

• Digital timer: A specially designed Multi-Amp solid-state, digital timer is incorporated to measure the elapsed time of the test in either seconds or cycles. It features extensive shielding and noise-suppression circuitry to ensure accurate and reliable operation under the most demanding field conditions. Accuracy of the timer, which incorporates a crystal-controlled oscillator, is independent of the power-line frequency.

• Timer control circuitry: No electromechanical relay or relay contacts are used anywhere in the timer-initiating circuit. A completely solid-state circuit automatically starts the timer when the output current starts to flow and automatically stops it when the device under test operates. This circuit will accommodate a variety of test conditions including:

l.When testing a circuit breaker or a device which has no auxiliary contacts to monitor (such as a single-pole circuit breaker), the timer starts when the output current starts to flow and stops when the output current is interrupted.

2. When testing a device and monitoring normally closed contacts, the timer starts when the output current starts to flow and stops when the contacts open.

3. When testing a device and monitoring normally open contacts, the timer starts when the output current starts to flow and stops when the contacts close.

• Digital voltmeter: This solid-state instrument can be used to measure the input voltage to the test set or the output voltage from the test set. It can also be used as a diagnostic tool to evaluate contact condition by measuring the voltage drop across breaker contacts while subject to high current.

• Panel indicators: Panel lamps, which are incorporated for operator safety and convenience, indicate:

1. Input power to test set ON
2. Output of test set ENERGIZED
3. Breaker under test CLOSED
4. Thermal NORMAL, WARNING or SHUTDOWN
5. Ground interlock OPEN

• External initiate circuit: allows initiation of the test from a remote location when desired

## SPECIFICATIONS

### Input

Because the CB-8100 Series is used all over the world to test low-voltage circuit breakers, there are a number of test sets designed to contend with the many different input voltages and frequencies. When ordering, select the test set which best suits the power system available. The input power requirements for the CB-8100 Series are as follows:

| Model No. | **Input** Voltage (single-phase) | **Input** Frequency | **Input Current** |
|---|---|---|---|
| CB-8130 | 460 V +/-5% | 60 Hz | 200 **A** |
| CB-8131 | 380 V ±5% | 50 Hz | 200 **A** |
| CB-8132 | 415 V ±5% | 50 Hz | 200 **A** |
| CB-8160 | 460 V ±5% | 60 Hz | 350 **A** |
| CB-8161 | 380 V ±5% | 50 Hz | 350 **A** |
| CB-8162 | 415 V ±5% | 50 Hz | 350 **A** |

### Output

**Output Circuit:** The output of the test set is easily adjustable from zero to the maximum of current available through the impedance of the device under test. Two output ranges are provided to accommodate a variety of load circuit impedances. 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.

**Output Connections:** To provide maximum utilization of the output available from the test set, each set is equipped with a Multi-Amp stab adapter board and stab sets CBS-1 and 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 which will not connect directly to the stabs.

The standard stabs supplied with each unit accommodate all of the following breakers:

| | | | |
|---|---|---|---|
| AK-15 | DB-50 | K-225 | LA-1600 |
| AK-35 | DB-75 | K-600 | G-25A |
| AK-50 | DB-100 | K-1600 | FP-15 |
| AKR-30 | KA | LA-25 | FP-25 |
| DB-15 | KB | LA-50 | FP-50 |
| DB-25 | KC | LA-600 | |


*Simple and sturdy controls reduce the need for operator training and the possibility of equipment failure.*

**Maximum Output Current**

At rated input voltage, the CB-8100 Series will produce the following outputs:

| Model No. | | Output Current | |
|---|---|---|---|
| | Maximum Continuous Current | Maximum Current Through a Circuit Breaker | Maximum Current Through a Short Circuit |
| CB-8130 | 4500 A | 35,000 A | 60,000 A |
| CB-8131 | 4446 A | 28,000 A | 48,000 A |
| CB-8132 | 4446 A | 28,000 A | 48,000 A |
| CB-8160 | 6250 A | 60,000 A | 100,000 A |
| CB-8161 | 6175 A | 50,000 A | 80,000 A |
| CB-8162 | 6175A | 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.

## Instrumentation

**Mem Amp Digital Ammeter**

**Operating Mode (switch-selected)**

Memory
Continuous

**Digital Display:** 3'/>digit display with 0.4-in. (10-mm) numerals

**Ranges (switch-selected)**

0 to 199.9 A
1.999 kA
19.99 kA
199.9 kA

**Overall Ammeter System Accuracy**

Instrument: ±0.5% of reading, ±0.1% of full scale

Transducer: ±1% of reading

## Digital Timer

**Display:** 6-digit display with 0.375-in. (9-mm) numerals

**Ranges (switch-selected)**

0 to 99.9999 s
0 to 9999.99 s
0 to 99999.9 cycles

**Accuracy**

Seconds Mode: ± least significant digit (0.0001 or 0.01, depending on range in use) or ±0.0025% of reading, whichever is greater

Cycles Mode: ±0.5 cycle

**Digital Voltmeter**

**Operating Mode (switch-selected)**

Input voltage
Output voltage
External voltage

**Digital Display:** 3'/-digit display with ±0.5-in. (13-mm) numerals

**Ranges (autoranging)**

0 to 1.999/19.99/199.9/600 V

**Accuracy:** ±0.25% of reading, ± LSD

## Dimensions and Weight

| Model No. | WEIGHT | | DIMENSIONS | |
|---|---|---|---|---|
| | lb | kg | HXWXD(In.) | H X W X D (cm) |
| CB-8130 | 1000 | 465 | 46 X 46 X 28 in. | 117X117X71 cm |
| CB-8131 | 1000 | 465 | 46 X 46 X 28 in. | 117X117X71 cm |
| CB-8132 | 1040 | **472** | 46 X 46 X 28 in. | 117X117X71 cm |
| CB-8160 | 1200 | 545 | 46 X 55 X 28 in. | 117X117X71 cm |
| CB-8161 | 1200 | 545 | 46 X 55 X 28 in. | 117X117X71 cm |
| CB-8162 | 1250 | 567 | 46 X 55 X 28 in. | 117 X 117X71 cm |

## OPTIONAL ACCESSORIES

**Protective Cover**

A tough cover made of heavweight. reinforced, vinyl-coated nylon is available for protecting the test set from oil, dust or other particulate matter during storage. It conforms to MIL-C-43006D and passes M1L-C-20696B test for oil and hydrocarbon resistance. It will withstand continuous exposure to temperatures ranging from -40 to 82= C (-40 to 180° F), and the fire-retardant material is treated with fungal and ultraviolet ray inhibitors.

## Model CBS-3 Stabs

Stab Sets CBS-1 and CBS-2 accommodate all circuit breakers listed under the Output Connections section of the test set's specifications. However, each of the breakers listed under the heading of CBS-3 requires a different set of stabs designed specifically for that one type of breaker.