

# DDA-16, DDA-30 and DDA-60

## Digital Data Acquisition Instrumentation and Control System



- Drop-in retrofit capabilities to the Model CB-9116, Model CB-8130 and Model CB-8160 Circuit Breaker Test Sets
- Digital Signal Processing (DSP) technology
- Variable pulse time and firing-angle output-current control
- Simplified operation
- Complies with NEMA - AB-4 Test Guidelines

### DESCRIPTION

The Megger Models DDA-16, -30 and -60 are the latest in control systems for the high-current circuit breaker test systems. The system is designed not only to be installed into new Megger high-current circuit breaker test sets but also to be reverse compatible. The system can be easily installed into existing Multi-Amp Model CB-9116, Model CB-8130 and Model CB-8160 Circuit Breaker Test Sets.

### APPLICATIONS

Models DDA-16, -30 and -60 use Model DDA-1 Digital Data Acquisition Instrumentation and Control Module to control the circuit breaker test sets and also measure the reactions of the breaker under test. Model DDA-1 was specifically designed to provide precise control of the output current and accurate metering of the breaker under test.

The retrofit capabilities allow a user of Multi-Amp circuit breaker test sets the capability to upgrade existing systems to today's testing standards. Without the expense of purchasing a new system.

Only simple hand tools are required to install these models into the Model CB-9116, Model CB-8130 or Model CB-8160 test sets.

### FEATURES AND BENEFITS

Model DDA-1: The Digital Data Acquisition Instrumentation and Control Module uses the latest in Digital Signal Processing (DSP) technology. This technology provides complete digital control of the SCRs and digitally samples the output current for high-accuracy measurements.

Digital ammeter: Model DDA-1 digitally samples the output current and mathematically calculates the current that is supplied to the breaker under test. This process increases the accuracy of the ammeter systems and provides extreme flexibility in what current value is displayed. For example, when the test set is delivering a continuous current, the digital ammeter is sampling the output waveform continuously and can therefore display a true rms value of the current.

For measuring short-duration currents, Model DDA-1 can calculate the output current in the following three ways through selection from the soft control buttons on the panel:

1. For any output current greater than half a cycle, Model DDA-1 can calculate the true rms value of the output-current pulse. For any input pulse less than half a cycle, a true rms measurement is invalid.
2. For any current pulse, Model DDA-1 can measure the peak current and calculate an anticipated rms value of the current from the peak current.

This multiple-current calculation feature is also useful when testing different styles of solid-state trip devices. This feature allows the test set to simulate a similar type of current calculation that is being used by the various solid-state trip devices.

Digital timer: Because of the DDA Series Digital Signal Processing technology, the system knows exactly when current is present and when the

breaker under test opens. This provides a high-accuracy timing even when testing the instantaneous trip function on fast-acting breakers. The digital timer can display the breaker trip time in cycles as well as seconds.

A completely digital 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:

1. When testing a circuit breaker or a device which has no auxiliary contact 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 output current starts to flow and stops when the contacts close.

Digital voltmeter: Model DDA-1 can be used to measure the input voltage to the test set or the output voltage from the test set. It also can be used as a diagnostic tool to evaluate contact condition by measuring the voltage drop across breaker contacts while subject to high current.

Initiating control circuit: Fully digital initiating control circuit provides both pulsed and maintained control modes of output duration. The pulsed mode automatically pulses the output to any programmed pulse duration. This provides additional testing capabilities for electromechanical and solid-state trip devices. A short pulse duration also limits the pre-heating of the breaker under test while setting the test current.

In the maintained mode, the output remains energized until manually turned off or, during timing test, until the device under test operates, which both stops the timer and de-energizes the output.

Zero dc offset: Use of digitally controlled SCRs instead of a contactor to initiate the output of the test set eliminates closing-time error and thereby ensures precise initiation at the zero crossover point of the output-current waveform every time. Initiation at the zero crossover point ensures symmetrical output current by eliminating dc offset in the current waveform. Therefore, accurate and repeatable test results are ensured even with very short-duration currents, as when conducting tests of instantaneous or short-time-delay trip elements.

The digital control of the SCRs also allows the unit to initiate at any point within 90 degrees of the zero crossover point of the output-current waveform. This will allow the intentional insertion of a dc offset into the waveform for a complete investigation of a breaker's operation.

Panel Indicators: Panel lamps incorporated for operator safety and convenience indicate:

1. Output of the set ENERGIZED
2. Thermal WARNING or SHUTDOWN
3. GROUND INTERLOCK open
4. OVER RANGE of ammeter

External initiate circuit: Allows initiation of the test set from a remote location when desired.

## SPECIFICATIONS

### Digital Ammeter

#### Operating Mode

Memory  
Continuous

#### Digital Display

5-digit display with 0.281 in. (7 mm) numerals

#### Ranges

200/2000/20,000/200,000 A

#### Overall Ammeter System Accuracy

Continuous  $\pm 1\%$  of reading  
Peak Pulse  $\pm 2\%$  of reading  
RMS Pulse  $\pm 1.5\%$  of reading

### Digital Timer

#### Digital Display

5-digit display with 0.281-in. (7 mm) numerals

#### Ranges

0.0001 to 99,999 seconds  
0.0001 to 99,999 cycles

#### Accuracy

$\pm 0.005\%$  of reading

### Digital Voltmeter

#### Operating Mode

Input voltage  
Output voltage  
External voltage

#### Digital Display

5-digit display with 0.281 in. (7 mm) numerals

#### Ranges

0 to 600 V

#### Accuracy

$\pm 1\%$  of reading

#### Dimensions

5.2 H x 19 W x 4.7 D in.  
132 H x 483 W x 119 D mm

#### Weight

5.5 lbs (2.5 kg)

**ORDERING INFORMATION**

<b>Item (Qty)</b>	<b>Order No.</b>
Model DDA-16 (as retrofit to Model CB-9116)	DDA-16
Model DDA-30 (as retrofit to Model CB-8130)	DDA-30
Model DDA-60 (as retrofit to Model CB8160)	DDA-60
<b>Included Accessories</b>	
Model DDA-1 Instrumentation and Control System (1)	15980
Wire harness (1)	
SCR initiate board (1)	
Installation manual (1)	

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