

# DCS III Upgrade

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The DCS III upgrade offers many advantages over previous versions of the Digital Comparator Subsystem. New features accommodate more complex testing requirements.

Upgrading to the DCS III offers you:

- Five times more accuracy than the DCS II
  - Simultaneous insulation and hi-pot testing
  - Two step insulation test
  - Programmable compliance voltage
  - Software controlled calibration
  - Remote diagnostics support
  - Simplified maintenance
  - Calibration Verification Tool
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A high-speed software controlled calibration minimizes calibration time. The DCS III's new modular design and board level diagnostics simplify its maintenance. Also, the DCS III accuracy specifications are up to 5 times better than the DCS II.

Many applications require both insulation resistance and hi-pot testing. With the DCS III you can simultaneously run the insulation resistance measurements and hi-pot testing, significantly reducing test times.

Another DCS III feature is the two step insulation test. Some Units Under Test (UUTs) have sensitive circuitry that high voltage stimulus could damage. The two step insulation test first executes at a programmed low voltage. If the low voltage test passes, it will then execute the programmed high voltage. This allows detection of shorts and some leakage failures before high voltage is applied to the potentially sensitive product.

The DCS III also offers programming capabilities of a maximum compliance voltage. Previous DCS assemblies have a set maximum compliance voltage of about 30 volts.

Another advantage of the DCS III is that calibration is all software controlled. There is no adjusting potentiometers or measuring with external instruments. The calibration procedure consists of calling a program and typing one key on the keyboard. The entire procedure takes less than 5 minutes compared with up to 4 hours on the DCS II. Afterward, you can use DIT-MCO's Calibration Verification Tool (CVT-I) to ensure calibration is within limits.

You will find maintenance much easier with DCS III. The unit's modular design offers fast parts location and replacement. Software diagnostics isolate faults to a board level. Using a modem allows for remote diagnostics for faster problem resolution.

Even the DCS III's design has changed. Previous Digital Comparator subsystems consist of some wire wrap circuits and mother boards. The DCS III uses only printed circuit assemblies to ensure accuracy and reliability.

With T81 test software Version 4.0 or later, the DCS III is a "drop-in replacement" for the DCS II. The following tables illustrate the feature and accuracy advantages of the DCS III upgrade.



**Feature Comparison**

Features	DCS III	DCS II
DC Hi-pot Testing	Standard	Optional
AC Volts Measurement	Standard	Optional
Two-Step Insulation Testing	Standard	Not Available
Simultaneous Insulation and Hi-pot Testing	Standard	Not Available
Software Controlled Calibration	Standard	Not Available
Programmable Compliance Voltage	Standard	Not Available
Continuity Probe	Optional	Optional

**Accuracy Specification Comparison****2-Wire Measurement Accuracy**

Current Stimulus	Valid Test Range	DCS III	DCS II
0.005A to 0.0975A	10 ohm to 99.9K	±3% ±1 ohm	±10% ±1 ohm
0.100A to 2.5A	1 ohm to 99.9K	±1% ±0.5 ohm	±5% ±0.5 ohm

**4-Wire Measurement Accuracy**

Current Stimulus	Valid Test Range	DCS III	DCS II
0.005A to 0.0975A	0.1 ohm to 9.99 ohm	±3% ±0.03 ohm	±4% ±0.03 ohm
1A to 2.5A	0.01 ohm to 9.99 ohm	±1% ±0.003 ohm	±4% ±0.003 ohm

**Measurement for Accuracy of High Voltage Stimulus**

Voltage	Valid Test Range	DCS III	DCS II
30V to 98V	100K to 9.99M	±3%	±5%
100V to 498V	100K to 99.9M	±3%	±5%
500V to 1500V	100K to 99.9M	±3%	±5%
500V to 1500V	100M to 1KM	±5%	±5%

**Measurement Accuracy for Low Voltage Stimulus**

Voltage	Valid Test Range	DCS III	DCS II
0.25V to 0.975V	10 ohm to 10K	±5% ±10 ohm	±20% ±10 ohm
1V to 29.75V	10 ohm to 9.99M	±3% ±10 ohm	±20% ±10 ohm

**DC Voltage Measurement Accuracy**

Range	Resolution	DCS III	DCS II
0.010V to 0.999V	0.001V	±3% ±0.010V	±5% ±0.010V
1V to 9.99V	0.01V	±1% ±0.010V	±2% ±0.010V
10V to 99.9V	0.10V	±1% ±0.1V	±2% ±0.10V
100V to 1000V	1.00V	±1% ±1V	±2% ±1V

**Capacitance Measurements**

Value	Accuracy
10 to 99nf	±20%
100nf to 1000µf	±10%

