

DOBLE IN-SERVICE TESTING & ASSESSMENT

SPARK P3

Partial Discharge (PD) and Electromagnetic Interference (EMI) Analyzer

INSULATION SYSTEM DIAGNOSTICS FOR HIGH-VOLTAGE ASSETS



The Doble Spark P3 is the most universal PD and EMI analyzer available today. It utilizes a combination of various signal processing technologies that enable the user to identify the characteristics of insulation system deterioration that could lead to the failure of high voltage equipment in the field and in the laboratory. The Spark P3 enables the user to utilize any sensor capable of detecting PD, with its detectors covering frequencies from 9kHz to 2GHz.

A comprehensive range of detectors, acquisition and analysis tools enables users of all levels to acquire and review PD and EMI signals. The incorporated detectors and key features include:

- IEC 60270 integrative charge PD measurement for online/offline testing
- Ultra-Wide-Band integrative charge measurement 0.1MHz to 60MHz
- CISPR16 EMI measurement
- Narrowband HF PD detection $f < 60\text{MHz}$ (1MHz BW)
- Narrowband UHF PD detection $60\text{MHz} < f < 2\text{GHz}$ (6MHz BW)
- Acoustic Emission detection $< 500\text{kHz}$
- Freely adjustable gain/attenuation
- Freely adjustable measurement filters
- Total dynamic range $> 120\text{dB}$
- Various synchronization options
- Spectrum, Time Resolved, Phase Resolved, and Bar Graph data acquisition modes (depending on detector)

The incorporated detectors allow to utilize the Spark P3 across a wide range of applications and sensors, including:

- Rotating Machines (PD couplers, HFCT sensors)
- Power Transformers (HFCT sensors, UHF antennas, acoustic microphones)
- Instrument transformers (HFCT sensors, directional antennas)
- Switchgear (GIS/AIS - TEV sensors, UHF antennas, HFCT, acoustic microphones, spacer sensors, window sensors)
- Cables and accessories (HFCT, UHF sensors, acoustic sensors)
- FAT/SAT/offline-test: IEC 60270 Phase Resolved Pattern acquisition

FEATURES

- Universal detector suitable for most PD testing scenarios
- Guided mode for minimum operator requirements
- Freely configurable and pre-set test plans for various applications and automatic data acquisition
- Battery operated benchtop (lab) or Pelicase (site), 19 inch rack mount adapter available

BENEFITS

- Automatic data acquisition methods help inexperienced operators to obtain reliable results
- Guided measurements
- Automatic measurements and test plans (can be edited)
- Suits most PD/EMI applications
- Lightweight battery operated device (suitable for cabin and hold air travel)

GUIDANCE FOR INEXPERIENCED USERS

A "Wizard Mode" guides users new to the subject through the measurement and data acquisition procedure, limiting functionality and other elements to the minimum required to conduct the task. More experienced personnel can select "Expert Mode" to configure the system to perform measurements in any desired form.

MECHANICAL

| | |
|--------------------|--|
| Dimensions (WxHxD) | 47 x 35.7 x 17.6 cm 18.50 x 14.06 x 6.93 in |
| Weight | 9 kg/19.8 lbs |

ENVIRONMENTAL

| | |
|-----------------------|---|
| IP Classification | IP 67 (closed case) IP 40 (open lid outside of case) |
| Operating temperature | -20° to + 50°C/ -4° F to 122° F |
| Storage temperature | -20° to + 70°C/ -4° F to 158° F |

POWER SUPPLY

| | |
|---------------|-------------------------|
| | 115-230 VAC 50-60 Hz 2A |
| Battery | 7.2V 20Ah |
| Capacity | 6 hours |
| Charging time | 3 hours |

MANAGE TEST PLANS AND DATA

Doble's Spark measurement systems will integrate with Doble's Pulse™ companion PC software which enables the user to manage measurement data, edit test plans and asset information, visualize measurement data, and export individual data sets or entire test plans to report templates.



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SPARK P3 TECHNICAL SPECIFICATIONS

| SPECIFICATIONS | |
|---|--|
| HF Tuner | 9 kHz to 56 MHz |
| gain stages | -20dB, 0dB, 20dB |
| total dynamic range | >120dB |
| VHF/UHF Tuner | 56 MHz to 2 GHz |
| gain stages | -20dB, 0dB, 20dB, 40dB |
| total dynamic range | >120dB |
| | switchable 12V DC offset for external sensor amplifiers |
| UWB Detector | integrative charge measurement, including IEC 60270 compliant |
| gain stages | -20dB, 0dB, 20dB |
| total dynamic range | >120dB |
| detection level (Qiec) | <110fC |
| fmin | = 100kHz |
| fmax | = 60MHz |
| Acoustic Emission Detector | |
| gain stages | 0dB, 20dB |
| | switchable 28V DC offset for sensors with integrated amplifiers |
| Reference voltage input | DC to 500 kHz |
| gain stages | -40dB, -20dB, 0dB, 20dB |
| Input Channel Configurations | Channel Groups: 2 Group Configurations: BNC 1: UHF BNC 2: HF/UWB/EMI/Acoustic BNC 3: Sync/Acoustic |
| Detector modes | Spectrum analysis (Peak, Average, Quasi-Peak Time resolved (zero span) Phase resolved Acoustic |
| Tuner Sensitivity | 1uV |
| Number of PD input channels | 2 |
| Number of reference voltage/ acoustic emission channels | 2 |
| Power supply | 100-240V 2A |

Specifications are subject to change without notice.
Doble is an ISO 9001 & ISO/IEC 17025 & 17034 Certified Company.
Doble is an ESCO Technologies Company.
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