CAPSCAN 2000

Drift-free, in-process capacitance measurement solution

► Accurately, consistently correlate in-process and post-process measurements for the highest quality cable performance

► Predict potential SRL failures through real-time analysis of fast capacitance variations

► Precisely capture readings on wet or dry trough installations at high line speeds
Get Greater Consistency Between In-Process & Post-Process Capacitance Measurements

As datacom cable manufacturers face more challenging specifications for Structural Return Loss, Near- and Far-end Cross Talk and Attenuation, it’s more important than ever to catch problems as they develop – not after the fact. Because downgrading or rejecting finished cable robs you of productivity and profitability. That’s why correlating in-process and post-process measurement results accurately and consistently is so important.

The CapScan 2000 gauging system solves this problem by enabling you to correlate this process data through on-line, high-speed measurements of cable capacitance. A combination of low signal-to-noise ratio and proprietary, drift-free electronics enable the system to deliver highly accurate and consistent measurements. The CapScan 2000 system also offers the following advantages:

► Minimal external interference due to the complete EMC shielding of an all-in-one, stainless steel design
► Enhanced accuracy due to a unique self-balancing bridge, automatic gain, and automatic self-calibration
► Superior repeatability due to Digital Signal Processor (DSP) running complex filtering algorithms

Range of gauge heads
The KG2008 model is the standard gauge for most applications. It may be mounted at any location in the trough. Special versions are available for installation in multi-pass through applications.

The KG2016 and KG2025 models are designed for use on larger diameter cables, up to 25 mm (1 in.), for applications including special CATV, coax, cell phone, and TV antennae extrusions.

Flexible connectivity
For maximum flexibility, CapScan 2000 models are available in Profibus, DeviceNet, and RS-232 versions. This makes connecting to your PLC, PC, or Beta LaserMike controller easier than ever before.

- **CapScan 2000-RA** Communication port: RS-232, and analog. Used with PC/PLC.
- **CapScan 2000-P** Communication port: Profibus DP slave. Used with Profibus DP network.
- **CapScan 2000-D** Communication port: DeviceNet slave. Used with DeviceNet network.

*RS-232 is standard on all versions.

Special applications

**On-line SRL Analysis**
To eliminate costly datacom Structural Return Loss (SRL) failures, a unique CapScan 2000 system option uses a Fast Fourier Transform (FFT) algorithm in the DSP to predict potential SRL failures through real-time analysis of fast capacitance variations. (In-head FFT is available on DeviceNet and Profibus versions). This data can then be accessed via the communications port for use in SRL analysis. In addition, the CapScan 2000 system can be used with the Beta LaserMike SRL Predictor, a comprehensive predictive analysis tool for CAT 5e/6/7 and coaxial cables, by utilizing the fast analog output.

**Dry trough installation**
In certain trough installations, it is not possible to naturally flood the gauge head bore (as required for accurate measurement). In this situation, high-pressure end caps can be supplied. These include connections for water and are designed to ensure the highest level of measurement accuracy for these applications.

Making Light Work
The CapScan 2000 system can be easily connected to the KI1000 indicator unit for simple, reliable data indication. The KI1000 connects to the gauge via CANBUS, one of the most robust data links available today. With this reliable digital data link, you can be assured fast data transmission from your capacitance gauge to the display for quick response to product changes. Its robust design ensures uninterrupted operation of your line. Plus, flexible input/output (I/O) options are available to meet your individual communications needs.

KI1000: Provides basic display, I/O, and tolerancing features. Powered from 100-230 VAC.

KI1000 NET: Provides basic display, I/O, and tolerancing features. Powered from DeviceNet network.

### General Gauge Specifications

<table>
<thead>
<tr>
<th></th>
<th>KG2008</th>
<th>KG2016</th>
<th>KG2025</th>
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</thead>
<tbody>
<tr>
<td><strong>Cable range</strong></td>
<td>0.1–8 mm (0.004–0.32 in.)</td>
<td>0.1–16 mm (0.004–0.63 in.)</td>
<td>0.1–25 mm (0.004–0.98 in.)</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>Zero: ±0.1 pF/m, Gain: ± 0.2%</td>
<td>Zero: ±0.1 pF/m, Gain: ± 0.2%</td>
<td>Zero: ±0.3 pF/m, Gain: ± 0.5%</td>
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<tr>
<td><strong>SRL bandwidth</strong></td>
<td>3.0 GHz</td>
<td>2.0 GHz</td>
<td>2.0 GHz</td>
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<tr>
<td><strong>Short electrode length</strong></td>
<td>66.6 mm (2.62 in.)</td>
<td>100 mm (3.94 in.)</td>
<td>100 mm (3.94 in.)</td>
</tr>
<tr>
<td><strong>Long electrode length</strong></td>
<td>100 mm (3.94 in.)</td>
<td>150 mm (5.90 in.)</td>
<td>150 mm (5.90 in.)</td>
</tr>
<tr>
<td><strong>Gauge head dimensions</strong></td>
<td>Length: 447 mm (17.6 in.) with CAPS; 368 mm (14.49 in.) without CAPS Diameter: 50.8 mm (2.0 in.)</td>
<td>Length: 629.8 mm (24.8 in.) with CAPS; 573 mm (22.56 in.) without CAPS Diameter: 70 mm (2.76 in.)</td>
<td>Length: 727.6 mm (28.65 in.) with CAPS; 670.7 mm (26.4 in.) without CAPS Diameter: 76 mm (3.0 in.)</td>
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<tr>
<td><strong>Measurement range</strong></td>
<td>0 – 400 pF/m (0 – 120 pF/ft.)</td>
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<tr>
<td><strong>Resolution</strong></td>
<td>0.1 pF/m (0.01 pF/m option for averaging over 0.5 sec.)</td>
<td>0.03 pF/ft (0.003 pF/ft. with averaging over 0.5 sec.)</td>
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<tr>
<td><strong>Power supply</strong></td>
<td>11 to 25 VDC (DeviceNet standard), 6 W nominal, 9 W maximum</td>
<td></td>
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<tr>
<td><strong>Temperature range</strong></td>
<td>Electronic box 5 – 60° C (41 - 140° F), Gauge Head 5 – 90° C (41 - 194° F)</td>
<td></td>
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<tr>
<td><strong>Protection Rating</strong></td>
<td>Head: IP68 (NEMA 6P); Design: IP65 (NEMA 4)</td>
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</table>

*Accurate readings on wet or dry trough installations with line speeds up to 3000 m/min (10,000 ft/min).*

### CapScan 2000 Options

- High-pressure end caps for dry trough installations (KG2008 only)
- In-head FFT analysis (except KG2016HB)
- Fast analog output
- DeviceNet or ProﬁBus communications interface
- KI1000 capacitance indicator and conﬁguration module
- Calibration set
- Water-tight gland kit for installation of KG2008 in a spray trough
KI1000 Indicator Specifications

Functionality
- RS-232 output
- Programmable analog outputs (three available)
- Diagnostic contact
- Digital display and keypad
- Contact outputs
- Line speed input
- Line start/stop input
- ASCII printer output
- Statistics data

<table>
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<tr>
<th>Power Requirements</th>
<th>KI1000: 100 – 230 VAC, 50/60 Hz, 25 W</th>
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<tbody>
<tr>
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<td>KI1000 NET: 24 VDC, DeviceNet Power</td>
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<tr>
<td>Operating Temperature</td>
<td>41 – 113 °F (5 – 45 °C)</td>
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<tr>
<td>Dimensions (LxHxW)</td>
<td>Indicator Body (LxHxW): 243.8 x 142.2 x 111.8 mm (9.6 x 5.6 x 4.4 in.)*</td>
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<tr>
<td></td>
<td>Front Mounting Plate (WxH): 152.4 x 129.5 mm (6 x 5.1 in.)**</td>
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<tr>
<td>Weight</td>
<td>1.5 kg (3.3 lb.)</td>
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*Allow ample room for cabling.
**Refer to product manual for mounting hole dimensions.

Additional information on key features and options

Digital Display
- High-visibility, 5-digit LED display
- Preset capacitance and tolerance
- Configuration menu
- Out-of-tolerance indication

Printout
- Header: Line number and run number
- During Run: Position of faults
- Summary: Line number, run number, number of out-of-tolerance events, maximum capacitance, minimum capacitance, mean, and standard deviation

Options and Accessories (all models)
- Fast Analog Output: semi-programmable 1000 Hz output for FFT analysis
- Display Case: IP54 (NEMA 3) case for environmental protection
- 19-inch Subrack: Single and dual versions to mount the KI1000 in a 19-inch subrack

In line with its policy of continuous improvement, NDC reserves the right to revise or replace its products or services without prior notice. The information contained in this document may not represent the latest specification and is for indicative purposes only.