DCM 3S-XLD
High-Performance, Twisted-Pair LAN Cable Test System

Features and Benefits
- Test Cat 5e, Cat 6/6A, and Cat 7 cables
- Highly reliable, fast, accurate solid-state switching technology
- 28-pair platform tests Alien Crosstalk in minutes
- Backbone and bundled cable testing
- Test seven 4-pair cables in one operation
- Simple, easy-to-use software for automated testing
- Time-saving, single-connection for HF and LF testing
- Automatic internal calibration routine completed in seconds

Test 4-Pair to 28-Pair Cables up to 1GHz
The DCM 3S-XLD automatic cable test system provides the most reliable and repeatable test platform available for testing high-performance, twisted-pair LAN data cables. The 3S-XLD includes a 28-pair test platform for testing up to seven 4-pair Unshielded (UTP) or Shielded (STP) cables connected at one time, as well as a one-step, 6 around 1, 28-pair Alien Crosstalk testing capability. The 4-pair ISTP fixture enables the testing of individually shielded twisted pairs (S/STP, ISTP) up to 1 GHz.

Each UTP test fixture includes insulation displacement clips that save time by automatically stripping the conductor insulation. Additional time is saved because only one cable connection is needed to test all the Low Frequency (LF) and High Frequency (HF) measurement parameters, eliminating the need for multiple cable hook-ups. Typical test time for a 4-pair cable is 90 seconds.

The fully integrated LCR meter measures all of the required LF parameters and enables the testing of very long cable lengths. The integrated vector network analyzer (VNA) quickly performs all of the required HF measurements. S-parameter calibration reference standards are fully integrated into the measurement system and automatically checked in seconds.
3S Solid-State Switching
The 3S-XLD utilizes a proprietary, high-performance, solid-state switching system that eliminates the need for electronic and mechanical relays. The use of solid-state components enables greater technical performance together with very high system test speed and reliability. The system incorporates balanced switching using only two baluns, enabling a very fast, automatic, full 2-port S-parameter calibration.

Cat 6A Alien Crosstalk
The 3S-XLD test solution provides a 28-pair platform for performing the 6 around 1 Alien Crosstalk testing in full compliance with TIA568-C.2 requirement for Cat 6A cables. Simply connect the seven cables, select the AXT test feature, and the system automatically performs the Alien Crosstalk test and provides a complete test report typically in less than 10 minutes.

Cat 7 ISTP (S/STP) Testing
The 3S-XLD includes software and hardware enabling testing of individually shielded twisted-pair cables up to 1 GHz. One set of 4-pair ISTP fixtures is included with each system. The specialized ISTP fixture utilizes WAGO® connectors and provides the additional shielding required for optimum testing performance of individually shielded twisted pairs.

Software Features include Bundled and Backbone Cable Testing
The 3S-XLD software enables fast, simple, and easy testing of 25-pair backbone cables (300 and 60 combinations), as well as bundled cables within cable and between cable reporting. Testing is performed in minutes.

Flexible and Expandable
The 3S-XLD is very fast and flexible, easy to use, and provides excellent correlation between various cable types. This is important to ensure proper correlation of the cable production and also provides greater flexibility for future expansion to newer cable types.

Easy to Use – No Special Training
With DCM systems, cable testing and data management is extremely simple and easy to perform. Entering or modifying cable test specifications takes only minutes and requires no special training. All documented specification limit equations are pre-programmed. All programs are Windows®-based and designed specifically for ease of operation saving valuable time and ensuring accuracy and reliability.
Compliance-Driven Testing

3S-XLD Measurement Parameters

The 3S-XLD utilizes the state-of-the-art, RF de-embedding techniques perfected with DCM’s RF/High Performance Coaxial Cable testing systems. Based on these methods, the 3S-XLD measurement parameter accuracies are provided at the actual point of each pair connection to the test fixtures providing highly accurate test results. Compliant with key industry cable testing standards, the 3S-XLD measurement parameters include:

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<thead>
<tr>
<th>Measured in accordance with ASTM D4566 and IEC 61156</th>
<th>Calculated in accordance with ASTM D4566 and IEC 61156</th>
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<tbody>
<tr>
<td>► Return Loss</td>
<td>► Propagation Delay Skew</td>
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<td>► Insertion Loss</td>
<td>► Characteristic Impedance</td>
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<tr>
<td>► Near End Crosstalk (NEXT)</td>
<td>► Structural Return Loss</td>
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<td>► Far End Crosstalk (FEXT)</td>
<td>► Resistance Unbalance</td>
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<tr>
<td>► Propagation Delay</td>
<td>► ELFEXT</td>
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<td>► Alien Crosstalk (AXT)</td>
<td>► Power Sum NEXT (PSNEXT)</td>
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<tr>
<td>► Keysight E4980AL LCR meter</td>
<td>► Power Sum ACRF (PSACRF)</td>
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System Details

System Configuration

Each 3S-XLD system includes:

► Measurement and control console containing the test fixtures
► Solid-state-switching
► Measurement hardware
► Keysight E4980AL LCR meter
► Vector Network Analyzer (VNA) – Keysight Technologies Model E5061B-215 standard
► Industrial computer, monitor, and printer
► Easy-to-use software for automated testing*
► Spare parts

Please request changes to the standard configuration, if desired.

*The standard Windows-based software includes the Test and Reporting Program, Specification Editor, Data Management Program, and Set-up/Calibration Tools.

System Calibration Documentation

Each 3S-XLD system is delivered with ISO 17025, ISO 9001, ASTM, and UL 568-C.2 compliant calibration certificates. All 3S-XLD system standards are traceable to the U.S. National Institute of Standards and Technology (NIST). In addition, annual system calibrations provided by NDC include all compliant calibration certificates.

Test Reporting

The system includes a variety of test report options which are easily selected by the operator or automatically by the test specification. Test reports include simple pass/fail summaries, extensive graphic analysis, and detailed discrete value reports.
Options to Expand System Capabilities

3S-XLD Options
NDC recognizes that customers have different testing requirements. The 3S-XLD system is designed for flexibility and expandability to enable customers to meet their specific needs. Various options and configurations are available with the 3S-XLD. Options may be purchased with the original equipment, or can typically be added later.

>> TCL/TCTL Measurement Option
The TCL/TCTL measurement option is available as a stand-alone system or as part of a system solution for the 3S-XLD. It provides the measurement of Transverse Conversion Loss/Transverse Conversion Transfer Loss. In accordance with ANSI/TIA requirements, Equal Level Transverse Conversion Transfer Loss (ELTCTL) is automatically calculated from Insertion Loss measurements. Termination of pairs is in full compliance with ANSI/TIA 568-C.2. Test panel and measurement software allows the testing and reporting up to 500 MHz.

>> Coaxial Cable HF Measurement Option**
An integrated test panel in the console and measurement software allows the testing and reporting of 50-ohm cables to 6 GHz and 75-ohm cables to 3 GHz for Characteristic Impedance, Input Impedance, Attenuation, Return Loss, SWR, Velocity of Propagation, and Average Characteristic Impedance.
** Upgrade standard VNA available for HF Coax Option with frequency ranges available up to 8.5 GHz.

>> Shielding Effectiveness Measurement CATS Option
This test fixture and measurement software option is available as a stand-alone system or as part of a system solution for the 3S-XLD. It allows the testing of shielded LAN-Data cables for Coupling Attenuation, Screening Attenuation, and Transfer Impedance.

Installation, Training and Technical Support
NDC offers on-site installation, training, and commissioning of all DCM automatic test systems. The NDC team provides worldwide support to answer all technical needs and to ensure that maximum test system efficiency is achieved.