

## Performance and Warranties Profile for 10 Gigabit 10GX System Certified Installations

### Overview:

Belden will provide its authorized PartnerAlliance Networking Installers, for the benefit of their end users, with both an extended Belden Component Warranty and a Lifetime Application Assurance Program for all Belden Certified Networking Systems installed by the Certified PartnerAlliance Networking Installer.

The extended Belden Component Warranty and the Lifetime Application Assurance Program are offered to the Certified PartnerAlliance Networking Installer by Belden Inc., in accordance with the following terms and conditions.

This Warranty and this Lifetime Application Assurance Program apply only to Belden Certified Networking Systems installed by the Certified PartnerAlliance Networking Installer in compliance with the PartnerAlliance Networking Agreement.

A Belden Certified Networking System is a structured cabling system that has been engineered, designed and installed by the Belden Certified PartnerAlliance Networking Installer. The engineering, design and installation of the Belden Certified Networking System must be performed in accordance with all applicable Belden guidelines, practices, and other Belden Program Documentation in effect at the time of installation. Belden structured cabling installations that meet these requirements will receive a Certification Registration Number and certification plaque or certificate from Belden and will then be designated as a Belden Certified Networking System, eligible for the extended Belden Component Warranty and Lifetime Application Assurance Program described below.

In order to maintain the validity of the extended Belden Component Warranty and the Lifetime Application Assurance Program, the Belden Certified Networking System must be maintained in accordance with the Belden End User Guide in effect at the time of installation.

### Extended Belden Component Warranty:

Belden warrants that;

1. The Belden components installed in the Belden Certified System are covered by a manufacturer's warranty against defects in material and workmanship for a period of twenty-five (25) years from the date of installation, at the original installation location.
2. The Belden Certified System will meet or exceed the UTP channel transmission requirements specified by:

Category 6A ANSI/TIA-568.2-D and ISO/IEC 11801-1 (edition 1), Class E

Once an installed Belden passive component has been deemed defective by Belden, Belden shall repair or replace, at Belden's discretion, the defective component. Belden may use refurbished materials in either repair or replacement procedures, and the repaired or replaced component will be warranted for the balance of the original twentyfive year warranty period, or, ninety (90) days, whichever is longer.

The repair or replacement of a defective component under this warranty includes the reasonable costs of labor required to repair or replace the defective component. The decision of repair or replacement of components, and the selection of labor services to perform the repair or replacement are at the sole discretion of Belden Inc.

### Lifetime Application Assurance Program:

In addition to the extended Belden Component Warranty, Belden also provides a Lifetime Application Assurance Program for all Belden Certified Networking Systems.

Belden's Lifetime Application Assurance Program warrants that the Belden Certified Networking System will be capable of supporting all industry standard applications during its entire installation life at its original installation location.

Industry standard applications include;

1. All Category 6A applications identified in the current (at time of installation) Belden Program Documentation, and;
2. Any Category 6A applications introduced at a future date by recognized standards bodies and user forums that use ANSI/TIA-568.0-D, ANSI/TIA-568.1-D, and ANSI/TIA-568.2-D, or Class D or E in ISO/IEC 11801-1 (edition 1) and 11801-2 (edition 1) channel specifications for cabling.

In the event that the Belden Certified Networking System is unable to support an existing or future industry standard application as defined above, and such failure can be attributed to a deficiency in the Belden Certified Networking System, Belden will provide at, its expense, reasonable expertise, Belden materials and labor as required to remedy the problem and/or resolve the claim. The decision of repair or replacement of materials, and the selection of labor services to perform the remedial services are at the sole discretion of Belden Inc.

### Limitations:

Belden Inc. will not be liable for, nor pay for, any loss of use of the Belden Certified Networking System or products; costs of substitute goods, facilities or services; or for any other economic losses or incidental, consequential or exemplary damages.

This extended Belden Component Warranty and Lifetime Application Assurance Program for the Belden Certified Networking System does not cover any deficiencies in the System which result from failure to comply with Belden Design Guides, Program Documentation and installation procedures as well as ANSI/NECA/BICSI 568-2006, Standard for Installing Commercial Building Telecommunications Cabling. Belden connectivity conforms to requirements of IEC 60603-7 and is interoperable with all connectivity meeting this requirement. This warranty does not cover products not supplied by Belden Inc., including port damage to active equipment.

The following plugs are not covered by this warranty:

1. C6PFCU-B24
2. CAPFCU-B25
3. C5PFCF-B25
4. CAPFCF-B25

Belden Inc. shall not be liable for damages or defects resulting from circumstances beyond its control, including but not limited to, any misuse, abuse, neglect, alternation, unauthorized or improper repairs, acts of God or accidental damage or exposure (including without limitation damage by fire, water, paint, chemicals or natural disaster). Repair or replacement of the Belden Certified Networking System by Belden Inc. is your exclusive remedy.

This is the only warranty on the Belden Certified Networking System. There are no other warranties, express or implied, made by Belden Inc.

## Belden 10 Gigabit 10GX System Cabling Solution:

In addition to the extended Belden Component Warranty and Lifetime Application Assurance Program described on the previous page, Belden Certified 10GX Systems that conform with the Belden 10GX System Channel Configuration are guaranteed to meet or exceed the following performance parameters for the duration of their installed lifetime at the original site of installation. All conditions regarding original design, installation and maintenance for Belden Certified Systems must be met in order to validate these performance parameter guarantees.

**Notes:**

Values proposed or statements represent guaranteed 10GX channel margin against ANSI/TIA-568-C.2-2009 Category 6A standard.

The margin is the additional headroom (in dB or %) compared to the minimum specified value for Category 6A at each frequency point over the specified frequency range.

The worst-case margin is determined at the frequency where the measured data point is closest to the limit line.

The Category 6A limit line equations are used to determine the worst case margin over the frequency range from 500 MHz to 625 MHz. This margin applies for worst-case short and long channel configurations as defined in ANSI/TIA-568-C.2 Annex J.

**Notes:**

1. In the frequency range from 20 MHz to 500 MHz.
2. NEXT and PSNEXT margins can be lower for short channels with more than two connectors using 10GX Shielded Modular Jacks.
3. Specified at 500 MHz.

Belden 10GX System Performance						
10GX System	10GXS UTP		10GX UTP		10GX F/UTP	
<b>Bandwidth</b>	625 MHz					
<b>Data Rate Capacity</b>	10 Gb/s					
<b>Frequency Range</b>	1-500 MHz	500-625 MHz	1-500 MHz	500-625 MHz	1-500 MHz	500-625 MHz
<b>Parameter</b>	*** Worst-Case Margin ***					
<b>Insertion Loss</b>	8% <sup>1</sup>	8%	3%	-	3%	-
<b>Return Loss</b>	3 dB	3 dB	2 dB	2 dB	2 dB	2 dB
<b>NEXT</b>	5 dB	2 dB	2.5 dB	-	2.5 dB <sup>2</sup>	-
<b>PSNEXT</b>	6 dB	3 dB	3.5 dB	1.5 dB	3.5 dB <sup>2</sup>	1.5 dB
<b>PSACRF</b>	12 dB	10 dB	10 dB	8 dB	10 dB	8 dB
<b>PSANEXT</b>	4 dB	4 dB	2 dB	-	10 dB	10 dB
<b>PSAACRN</b>	8 dB <sup>3</sup>	8 dB	3.5 dB <sup>3</sup>	-	11.5 dB <sup>3</sup>	10 dB
<b>PSAACRF</b>	12 dB	12 dB	-	-	12 dB	12 dB

System	Horizontal Cable	Connectivity	Patch Panels	Outlets
<b>10GX UTP System</b>	10GXS UTP System Cable  10GX UTP System Cable  10GX Pre-Term Cable Assemblies	10GX REVConnect Modular Jacks and Plugs	10GX Patch Panels  KeyConnect Modular and AngleFlex Patch Panels  KeyConnect Front Access Patch Panels  Flex Modular Patch Panels (MDVO -Style) <sup>1</sup>	KeyConnect Faceplates and Accessories
		10GX KeyConnect Modular Jacks		KeyConnect Adapters and Boxes
		10GX Modular Jacks (MDVO-style) <sup>1</sup>		MediaFlex Outlet Systems
		10GX KeyConnect RJ45 Couplers		Multi-User Outlet Box
		10GX Pigtailed		Multimedia Outlet Box
		10GX Patch Cords		Interface Plates (MDVO-style) <sup>1</sup>
		10GX IDC System		MDVO Adapters and Boxes <sup>1</sup>

Note<sup>1</sup>: Belden does not recommend mixing KeyConnect and MDVO-style footprints in the same project

<b>10GX Shielded System</b>	10GX Shielded System Cable  10GX Shielded Pre-Term Cable Assemblies	10GX Shielded REVConnect Modular Jacks and Plugs	KeyConnect Shielded Modular Patch Panels	KeyConnect Faceplates and Accessories
		10GX Shielded KeyConnect Modular Jacks		KeyConnect Adapters and Boxes
		10GX Shielded KeyConnect RJ45 Couplers		MediaFlex Outlet Systems
		10GX Shielded Pigtailed		Multi-User Outlet Box