COMTRAN
Innovative Systems. Engineered Solutions.

VITALink®
Circuit Integrity Cable

VITALink® Armored 2 Hour Fire Resistive Circuit Integrity Coaxial Cable

INSTALLATION GUIDE
For 5 AWG Armored
2 Hour Fire Resistive Applications

Listed 60°C
Listed Type CMP
Listed to CATVP
Listed to UL 2196
Installation Guide Dated September 2022

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SCOPE

VITALink® Armored 2-Hour Fire Resistive Circuit Integrity Coaxial Cable is a unique coax which offers superior fire endurance capabilities along with the well-established benefits & features associated with NEC Type CMP cable designs. This coaxial cable is a significant part of a Wireless Communication System. The purchaser should specify a high-quality cable and have a visual inspection procedure that will identify any damage to the cable occurring during transit. In doing so, the purchaser ensures that any issues that might affect the quality of the project are addressed before the installation of the cables.

INTRODUCTION

The following instructions are for the VITALink® Armored 2-Hour Fire Resistive Circuit Integrity Coaxial Cable listed to UL 2196/ULC S139. The National Electrical Code, Canadian Electrical Code, and all applicable rules and regulations, including federal, state, or provincial, local, and municipal or territorial laws should be followed.

ELECTRICAL CIRCUIT INTEGRITY SYSTEM

Electrical Circuit Integrity Systems consist of components and materials that are intended to provide protection for specific fire alarm and control wiring systems with respect to the circuit integrity upon exterior fire exposure.

Ratings apply only to the entire integrity system assembly, constructed using the combination of components specified in the system. Individual components and materials are designated for use in a specific system(s) for which corresponding ratings have been developed and are not intended to be interchanged between systems. Ratings are not assigned to individual system components or materials.

The Electrical Circuit Integrity System is evaluated by the fire exposure and water hose stream test as described in the Standard UL 2196/ULC-S139. The system contains the construction details of the tested configuration. The conductor size, cable type, and voltage rating, etc. are construction details that are also provided. Cables are listed to NEC and CEC Types and constructed to:

The Electrical Circuit Integrity System was tested with high galvanized steel-strut channels. The hardware, clamps, strut, etc., unless otherwise noted, are to be made of steel so that these components do not melt in fire.

The supports are an important part of The Electrical Circuit Integrity Systems. The maximum distance between the supports is listed in the system and should not be exceeded. The type of support and the distance between the steel supports is unique to that specific system and is for all sizes/types of cable unless otherwise noted in a specific system.

The VITALink® Armored Coaxial Cable was tested in both horizontal with offsets configurations and vertical configurations and the support mechanisms are detailed in the system.

This system shall be installed in accordance with all provisions of the National Electric Code and/or the Canadian Electric Code, as applicable to location, and as amended by the details of each individual system (such as type of supports and distance between supports).

NOTE: Authorities having jurisdiction should be consulted in all cases as to the specific requirements covering the installation and use of these classified systems.

The following instructions are for the VITALink® Armored 2-Hour Electrical Circuit Integrity System. These requirements must be followed to maintain the 2-Hour rating in a fire rated area. It is assumed that the installation was properly designed. Comtran Engineering support should be contacted for questions not addressed in the instructions.

DESIGN/SYSTEM/CONSTRUCTION/ASSEMBLY USAGE DISCLAIMER

- Authorities Having Jurisdiction (AHJ) should be consulted prior to construction and in all cases as to the requirements covering the installation and use of products, equipment, systems, devices, and materials.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated for compliance with UL 2196 applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies.
- Type CMP to UL 444 harmonized with CSA C22.2 No. 214

The following cables are approved for use per UL 2196 Standard.

Part Number	Nominal Core Diameter (in/mm)	Nominal Armor Diameter (in/mm)	Nominal Jacket Diameter (in/mm)	Minimum Bend Radius (in/mm)	Approximate Net Weight (Lbs./1000 Ft)
36820	0.188”/4.780	0.550”/13.970	0.630”/16.00	8”/203.20	270
36821	0.188”/4.780	0.550”/13.970	0.630”/16.00	8”/203.20	270

COMTRAN VITALINK XXXXX-CI Meets UL2196 0.188 – 100362 c(ETL)us CMP -- (ETL)us CATVP - - 000002 M

Note: XXXXX represent the part numbers.

RECEIVING & PRODUCTION INSPECTION

Upon receipt of the order, verify that all contents were delivered per Bill of Lading and inspect for damage. If anything is missing or shipping damage is found, note the missing product or damage on the Bill of Lading and request that the driver signs the note before his departure. This is necessary if a claim needs to be filed with the shipping company.

Items of concern:

1. Reels lying flat on their side.
2. Reels stacked on top of each other.
3. Reel flange damage.
4. Cable end cap damaged or missing.
5. Reel covering/lagging is damaged or missing

CABLE HANDLING AND STORAGE

When moving reels of cable, use the appropriate measures and equipment as to not damage the cable. Reels of cable cannot be dropped from any distance as internal cable damage may occur. Be sure the path that a reel of cable is being rolled is clear of debris.

The cable should be stored in a safe location and kept in protective packaging to ensure that damage or contamination is avoided before installation. Once unpackaged, the cable ends should be protected with end caps or wrapped with tape to ensure that no water or debris enters the end of the cable. Cable reels should be stored upright. They should not be laid flat or stacked.

CABLE INSTALLATION

Install the cable (Item 1) using strut channels (Item 2A) and cable clamps (Item 2B). Strut channels may be installed as back-to-back channel or in single channel configuration. The cables may be oriented in either vertical or horizontal configuration. At bends in the cable, a min. 8 in. radius shall be maintained. Strut channels shall be installed at max. 24 in. on center spacing. Use one cable clamp (Item 2B) per cable at each strut interface.

The cable support system consists of the following components: 12 GA Galvanized strut channels with dimensions 1-5/8 in. x 1-5/8 in. having holes max. 9/16 in. wide x 1-1/8 in. long on the base of the channel and spaced at min. 2 in. oc. or no holes. Strut channels must be fastened to wall or floor with fasteners spaced at max. 9 in. oc. and one at each end. 16 GA galvanized steel cable clamps 1-1/4 in. wide sized for 1/2 in. cable (Item 1) and designed for use with strut channels (Item 2A). Cable clamps use one galvanized steel bolt, min. #10 x 1-in. long with nut.

CONNECTOR INSTALLATION

Properly installed connectors are critical for the long-term reliability and performance of a cable system. Only approved connectors should be installed on VITALink® cables according to the connector installation instructions included with each connector. These instructions also identify the required tools for installation. Following the instructions will prevent connector DTF failure while providing excellent Return Loss and PIM performance for the Wireless Communication System.

When attaching one connector interface to another it is important to use the proper interface torque to prevent either over-tightening or under-tightening the interfaces. Either of these conditions will negatively affect system tests.

Recommended connector interface coupling torque values are:

INTERFACE TYPE	COUPLING TORQUE
N	1.25 ft-lb / 1.7 Nm
4.3-10	3.69 ft-lb / 5 Nm
7/16 DIN	20 ft-lb / 27.1 Nm

CABLE TESTING

Cables play an important role in the overall performance of the Wireless Communication System and should be tested to verify they have been properly installed. Using portable cable & antenna analyzers to characterize communication systems can simplify maintenance and overall performance significantly.

Return Loss/Structural Return Loss (VSWR)

Return Loss/VSWR measurements are used to characterize the quality of the cable system. If the match is outside the system specification, the DTF measurement can be used to troubleshoot problems, locate faults, and monitor changes over time.

Distance-To-Fault (DTF)

Distance-To-Fault is an analysis tool that is typically used to determine the length of a cable segment or troubleshoot a cable segment to determine the location of a fault. A Distance-To- Fault spike is commonly caused by an incorrectly installed connector, improper test equipment setup, inaccurate measurements, or damaged cable.

If a cable has been kinked, dented, or has been crushed during installation, a Distance-To-Fault measurement can help determine the location of the damage. Cables that have physical damage will usually have to be replaced to meet system requirements and ensure optimal long-term performance.

Note: Distance-To-Fault sweep results are to be used strictly as a troubleshooting tool and are not recommended as a replacement for return loss or as a pass/fail indicator for system performance.

TROUBLESHOOTING

Improper Connector Installation

Properly installed connectors are critical for the long-term reliability and performance of a cable system. Following installation instructions and using the required tools will prevent DTF faults and provide excellent return loss characteristics.

Improper Test Equipment Setup

Most portable test equipment available today have built-in tables that include propagation velocity and cable attenuation for different frequencies. If the test equipment does not have this data available, these values must be entered manually. Refer to the individual cable specification sheets for these values. The use of incorrect values will yield less accurate results for distances and/or signal reflection levels. Contact us for specific cable specs.

Inaccurate Measurements

Test equipment should be calibrated according to the manufacturer's instructions using precision calibration standards. Measurement uncertainty can be minimized by ensuring that the calibration standards are connected to the same point that will be connected to the cable being tested. Appropriate frequency range selection is critical for optimizing fault resolution and maximum distance for the measurement.

While this technical bulletin does not intend to cover all areas of a wireless project, every effort has been made to cover the main reasons for site performance issues. Learning the proper techniques and installation procedures for cables and connectors will save you time, money and yield maximum sweep test results.