BELDEN
SENDING ALL THE RIGHT SIGNALS

Application Note

AN 112E

Cable Solutions for Outside Broadcast Events From Access Control to Giant Displays

Belden has cables for all aspects of OB operations, spanning remote high-definition camera positions, through large displays depending on broad bandwidth, commentary areas, media rooms in VIP boxes, data networks and fire safety, to access and security control.

Belden Provides Modern Sports Venues with Cost-effective High-technology Broadcast Cable Solutions to Enable Efficient Operation.

- **Belden guarantees return loss of -21 dB up to 4.5 GHz in its broadcast cables, ensuring long life and protecting user investment**
- **Optimal performance over long distances**
- **Increased safety of cabling infrastructure in outdoor applications**
- **Cables are easy to handle in the field, low on maintenance requirement, and easy to repair if necessary**
- **Cables perform just as well in the field, after installation, as in the production facility**

Venue operators need facilities that excite and involve spectators, whatever the event, sports or cultural. Belden addresses operator needs by offering a broad cabling solution that supports their growth plans without the need to renew infrastructure at each step. The main applications for cables within a venue and the recommended Belden solutions are:

- Camera positions around the field: Belden Triax14 7785A and SMPTE311 camera cable 7804E, together with pre-terminated cables for the camera (CA00270), wall (CA00273) and CCU (CA00277), reduce rigging time in advance of the event and afterwards.
- Outdoor large displays for replay of spectacular scenes: 7731A video cable terminated with FS11BNC provides highest bandwidth at the longest runs possible, maximising the benefit of HD and Clear images.
- Media rooms within VIP boxes: 1694A video cable terminated with 1694ABHD1 is easy to install, and provides high quality AV delivery, giving viewers a unique and memorable experience.
- Commentary area for TV channels: BE46312 cable (mic) and 1513C (12-pair) or 1512C (8-pair) used in pre-wired outdoor areas for radio and TV moderators increase the safety of the cabling infrastructure.
- Access control and security control: Permanent security controls using 500PTZ composite cable for access control, 513945 for CCTV, 1885ENH and MACH1000 for IP-based CCTV protect the building and ensure protection of investments.
- Data networks and fire safety: For data networks up to 10G, products 10GXE00 (F/UTP), AX104562 (jack), CAE0106 (patch cord), and AX104563 (panel) support all data communications for all IP-enabled systems (e.g. CCTV, BMS), and support future growth plans. The same is true for products for up to 40/100G networks: Fiber Express GCA806 (fiber), AX104240 (FX connector)and AX103143 (panel).
- Sound system: BE46379 cable serves loud-speaker zones distributed throughout the building, ensuring operation in normal use and emergencies.
- Wireless network: BAT300 F switch enables coverage of the various network operators, and provides an additional revenue stream.

System Requirements

- Venues should already be wired when outside broadcast trucks arrive, to reduce rigging time before (and after) the event.
- TV channels standardized on HD have now started using 3G for sports events. 3D now being pioneered will create another era of broadcasting.
- Camera teams need to deliver all formats with no downtime.
- Reliable and almost zero-maintenance cabling infrastructure is needed on longer runs by virtually every TV station and studio complex.

Be certain.
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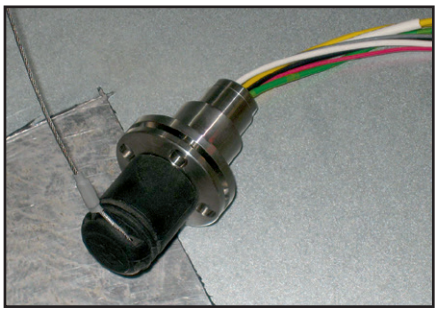
Belden® Solution



Belden cables, with such features as Installable Performance™ and guaranteed RL, meet broadcaster needs for reliable performance over ever-growing bandwidth for video applications in next-generation 1.5 Gps (compressed HD) and 3 Gps (uncompressed HD), as well as for 3D infrastructures. Other important advantages include:

- Belden Crush Resistance™ through high-density nitrogen gas-injected foam dielectric, delivering outstanding results for coaxial cables in any crush resistance test
- Superior pulling tension to facilitate installation.
- All Belden HD designed coaxial cables are available halogen-free, according to IEC 60754-1,2 and IEC 60332-3c.
- Finally, factory terminated cable assemblies provide security and reliability of the termination.

Why Belden

- Quality and Consistency – no connector issues and re-pulling of cable
- The right product design for every need
- Best-in-Class Technology
- High performance before and after installation
- Belden delivers customized solutions

Product Details

Belden® CCTV Coaxial Cables (513945, 500PTZ)
- Coaxial cable with solid copper conductor for low attenuation and easier termination
- True 75 ohm impedance – ensures no impedance mismatches for optimum whole-system
- Performance, quality signal transmission over long distances
- Sequential marking – for usage tracking during installation

Belden® HD Designed Coaxial Video Cables (7731A, 1694A)
- Guarantees return loss (-23 dB from 5 MHz to 1.6 GHz and -21 dB from 1.6 GHz to 4.5 GHz)
- Measure 75 ohms to 4.5 GHz to give the user REAL data for 1080p/50 applications
- Belden's high-density nitrogen-gas-injected foam resists deformation when bent or crushed
- Very low attenuation

Belden® Cat 7 Shielded Data Cables (1885ENH)
- 4-pair unshielded twisted pair (UTP) cables provide both signal transmission and Power over Ethernet (PoE) capabilities in a single cable, eliminating the need for an external power source
- Ensuring consistently high Installable PerformanceR both before and after installation
- Improved attenuation ensures stronger signal power
- Available in Spool-in-Box packaging for ease of installation, handling and inventory management

Belden® Camera Cables (Triax14 7785A, 7804E)
- Silver-plated copper triax or composite fiber cables, which can multiplex audio and video signals and power
- Meet all the requirements of the SMPTE 311 standard developed by the Society of Motion Picture and Television Engineers (SMPTE)
- Compatible with industry standard SMPTE 304M connectors

Customized TAC Fiber Solution
- Extremely strong, lightweight, and rugged cable design
- Highly resistant to abrasion, crushing and cut-through
- Superior bend performance
- Low memory effect – because of flexible PUR outer jacket

HD Camera SMPTE311 Assemblies
- Quality Control & Testing
- Uses the finest connector materials
- Manufactures all critical parts in our own facilities
- Uses quality Cable (Belden 7804x)
- Proper termination
- Further commercial benefits include time saving, reduced equipment investment, short delivery time

Hirschmann™ industrial switches – MACH1000 Family
- Temperature range from 0°C to +50°C
- USB interface for autoconfiguration adapter
- Various configuration and diagnostic functions
- High level of resistance to vibration and shocks

Wireless LAN Access Point/Client – BAT Familiy
- Extended temperature range: -40°C to at least +70°C
- Open platform provides maximum flexibility
- Up to 2 built-in wireless interfaces which support WLAN with 802.11n
- IEEE 802.11i with PSK, LEPS, 802.1x and RADIUS for maximum WLAN security

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