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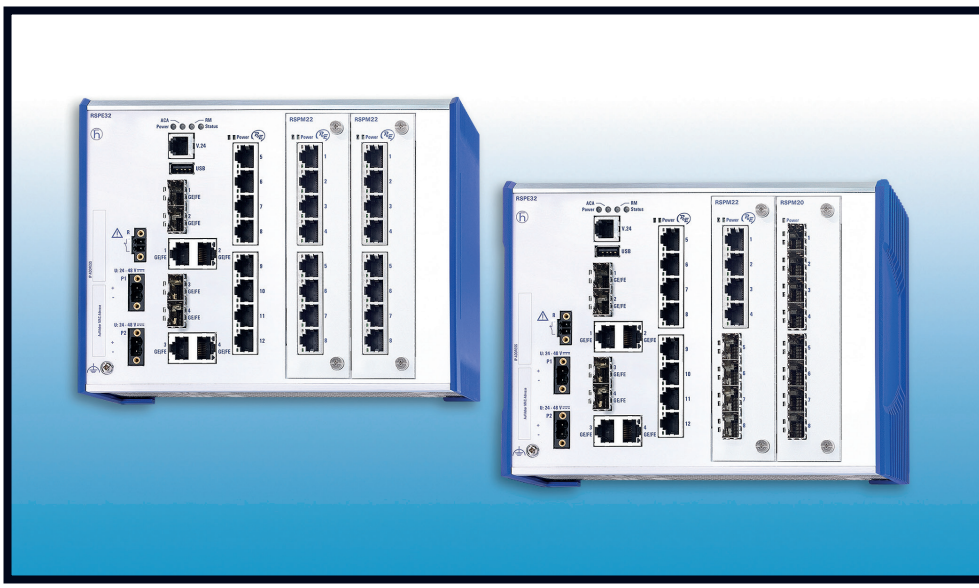
Product Bulletin

**PB 1094HE**

## RSPE switches from Hirschmann™

Thanks to a range of media modules, the managed industrial Ethernet switches in the new RSPE family offer maximum flexibility, a future-proof network design and best-possible investment protection.



**Standardized redundancy protocols with no data loss technology, combined with comprehensive security mechanisms, precise synchronization and optional Layer 3 software, ensure 100 percent availability for data communication and high productivity for systems and machines.**

- Future-proof network design and best-possible investment protection
- Maximum productivity for machines and systems
- All-around protection against network attacks and operating errors

Based on Belden's tried-and-tested RSP family, the new managed RSPE switches guarantee highly available data communication and precise time synchronization in accordance with IEEE1588v2. They also allow flexible installations in which the network design can be quickly adapted to cope with changing application needs.

Because media modules can be added to the basic switch devices in next to no time, practical and cost-effective solutions are guaranteed. Modules are available with different numbers of twisted pair and SFP ports, plus PoE/PoE+ support. When it comes to implementing future-proof, high-performance networks, the switches leave almost nothing to be desired.

### Applications

The RSPE switches are the devices of choice whenever future-proof solutions are required to deliver maximum network availability even under extreme environmental conditions.

Specially certified for a range of application scenarios, the switches guarantee highly available and cost-effective applications in the energy sector – from power transmission and distribution through to power generation from renewable energy sources.

They can be used equally well in other branches of industry, such as transportation, road and rail traffic, cable cars, ports and airports.

### Customer benefits

Permanent access to systems and machines is an absolute prerequisite for profitable business processes. The world of automation, however, is changing rapidly. The switches in the RSPE family enable your data communication to keep pace at all times. Thanks to their modular concept, they provide maximum flexibility, a future-proof network design and best-possible investment protection.

What's more, you can always be confident of enjoying the highest possible performance. These RSPE switches boast uninterruptible redundancy protocols, comprehensive security mechanisms and precise synchronization, supporting reliable networking even with applications that have rigorous real-time requirements.

**A new product to serve your needs.**
**Be certain.**

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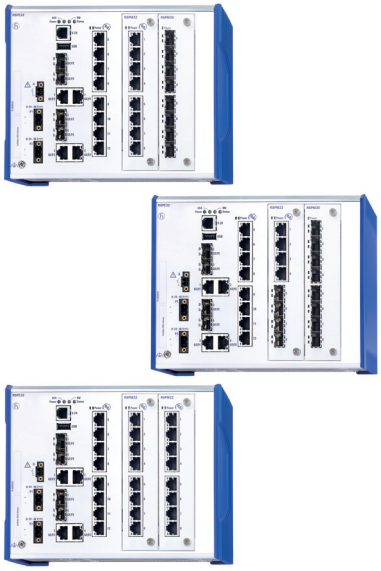
## RSPE switches from Hirschmann™



The compact and extremely robust RSPE switches comprise a basic device with eight twisted pair ports and four combination ports that support Fast Ethernet or Gigabit Ethernet. The basic device – optionally available with the HSR (High-Availability Seamless Redundancy) and PRP (Parallel Redundancy Protocol) uninterruptible redundancy protocols, plus precise time synchronization in accordance with IEEE 1588 v2 - can be extended to provide up to 28 ports by adding two media modules. Different combinations of copper or fiber ports (plus PoE/PoE+) can be selected depending on the module type.

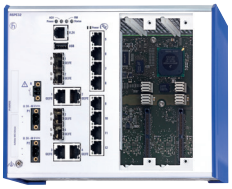
The RSPE switches also provide comprehensive management, diagnostic and filtering features, as well as numerous redundancy methods, bringing all-around security to your network. The Layer 3 version offers full wired speed IPv4 routing with lowest latency.

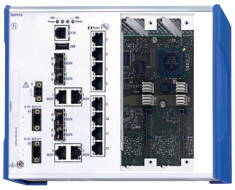
Further features include an extended operating temperature range from -40°C to +70°C, high vibration resistance and broad immunity to electrostatic discharges.

These flexible RSPE switches enable you to reduce costs by future-proofing your high-performance networks.

### Benefits at a glance

- Future-proof design and best-possible investment protection thanks to the maximum flexibility provided by the media modules
- Up to 28 Fast Ethernet or Gigabit Ethernet ports for twisted pair cable and fiber optic cable (via SFP)
- Maximum productivity for systems and machines thanks to completely interruption-free data communications
- Router redundancy, static port and VLAN based routing for increased reliability and security
- Comprehensive security mechanisms bringing all-around network protection
- Reliable networking of applications with rigorous real-time requirements thanks to precise time synchronization in accordance with IEEE 1588 v2
- Cost-effective powering of devices via PoE/PoE+
- Comprehensive management, diagnosis and filter functions
- Broad immunity to electrostatic discharges plus high vibration resistance
- Operating temperature range from -40° C to +70° C (standard model: 0°C to +60°C)
- Compact stainless steel housing for DIN rail mounting
- Special certifications:
  - Energy sector: IEC 61850-3, IEEE 1613
  - Hazardous areas: ISA-12.12.-01 Class 1 Div. 2 Group A, B, C, D
  - Safety applications: EN61131, EN60950, UL61010-1/-2-201
  - Marine: GL - Germanischer Lloyd Compass Safe Distance
  - Transportation: NEMA TS2, EN 50121-4
- Can be ideally combined with all Ethernet products from Hirschmann™, GarrettCom™ and Belden®





## Technical Information

| Product Description | | |
|---|---|---|
| **Type** | **RSPE30-xx, RSPE32-xx** | **RSPE35-xx, RSPE37-xx** |
| **Description** | Modular Managed Industrial Switch DIN Rail, fanless design | |
| **Switching/Routing** | HiOS Hirschmann Operating System | |
| **Port type and quantity** | Ports in total up to 28, Basic unit: 4 x FE/GE Combo ports plus 8 FE TX ports, expandable with two slots for media modules with 8 FE ports each | |
| **Number of fiber ports** | 16 fiber ports: 4 GE/FE basic unit plus 12 FE with media modules | |
| **Power over Ethernet (PoE)** | PoE, PoE+ option with up to 24 Ports and 120 Watt | |
| **More Interfaces** | | |
| **V.24 interface** | 1 x RJ11 socket | |
| **USB and SD card slot** | 1 x to connect auto-configuration adapter ACA22 (USB) or ACA31 (SD-card) | |
| **Power Requirements** | | |
| **Operating Voltage** | 24 - 48 VDC redundant, or 60 - 250 VDC and 110 - 230 VAC optional redundant, PoE/PoE+ with 48/54 VDC | |
| **Power Consumption** | maximum 34W plus PoE | maximum 36W plus PoE |
| **Mechanical Construction** | | |
| **Mounting** | DIN Rail | |
| **Protection Class** | IP30 | |
| **Dimensions (WxHxD)** | 209 (217) x 164 x 120 mm (EEC) | |
| **Weight** | 2,2 kg; 2,5 kg EEC, plus media modules | |
| **Software** | | |
| **Supported HiOS software Levels** | Layer 2 Standard (L2S), Layer 2 Advanced (L2A) or Layer 3 Standard (L3S) | |
| **Software Layer 2 Standard** | | |
| **Management** | V.24 web-interface, Telnet, SSHv2, HTTP, HTTPS, TFTP, SCP, SFTP client, SNMP v1/v2/v3, Traps, LLDP-MED, SSH client | |
| **Diagnostics** | LED, persistent logging, syslog, signal contact, device status indication, port mirroring N:1, RMON (1,2,3,9), TCPDump, LLDP, SFP management (temperature, optical input and output power), switch dump, configuration check dialog, system information, self tests on cold start, Management Address Conflict Detection, Copper cable test, Port Monitor, duplex mismatch detection, snapshot configuration feature, SFLOW | |
| **Configuration** | Command line interface (CLI), WEB based management, fully featured MIB support, BOOTP/DHCP client with auto configuration, DHCP option 82, DHCP server per port and pool per VLAN, HiDiscovery, auto-configuration adapter ACA31 and ACA21, Automatic configuration undo (roll-back), text based configuration file, CLI scripting, Telnet | |
| **Security** | MAC based port security, Port-based access control with 802.1x, 802.1x enhancements with Guest/Unauthenticated VLAN and RADIUS VLAN assignment, Integrated Authentication Server (IAS), Basic wired-speed Ingress ACLs (MAC,IPv4) per port and per VLAN, Automatic Denial-of-Service Prevention, Restricted Management Access (ACLs), Different privilege levels, configurable password policies, configurable number of login attempts, account locking, HTTPS certificate management, CLI/SNMP logging, Security Status Monitor, Audit Trail, Remote Authentication via RADIUS, Local User Management | |
| **Redundancy functions** | MRP (Media Redundancy Protocol IEC62439-2), RSTP 802.1D-2004 (IEC62439-1), Link Aggregation, Link backup | |
| **Enhanced Redundancy functions** | | IEC62439-3 redundancy Fast MRP, PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy) |
| **Industrial profiles** | IEC61850 protocol (MMS Server, Switch Model) | |
| **Filter** | QoS (8 classes), CoS queue management, interface trust mode, TOS/DSCP prioritization, port priority (IEEE802.1D/p), VLAN (IEEE802.1Q), Voice VLAN, IGMP snooping/querier per VLAN (v1/v2/v3), unkown multicast filtering, independent VLAN learning, static unicast/multicast address entries, fast aging, MVRP (Multiple VLAN Registration Protocol), MMRP (Multiple MAC Registration Protocol), MRP (Multiple Registration Protocol) | |
| **Time synchronization** | PTPv2 TC two-step, SNTP server and client, Buffered RTC | |
| **Flow control** | Flow control (IEEE802.3X), egress interface shaping, ingress storm protection, Queue-Shaping / max. Queue Bandwidth | |
| **Miscellaneous** | Port power down, cable crossing, dual software image support, VLAN unaware mode, access to management restricted by VLAN | |
| **Software Layer 2 Advanced in addition** | | |
| **Security** | Further 802.1x enhancements (Multi-client authentication per port, MAC Authentication Bypass, RADIUS Policy Assignment), DHCP Snooping, Dynamic ARP Inspection, Extended wired speed Ingress ACLs (MAC,IPv4) per port and per VLAN, ACL flow based limiting, Time based ACL | |
| **Redundancy functions** | MRP over Link Aggregation, Sub Ring Manager | |
| **Filter** | Protocol based VLAN, MAC based VLAN, IP subnet based VLAN, IP Ingress DiffServ classification and policing | |
| **Software Layer 3 Standard in addition** | | |
| **Layer 3** | Full wired speed IPv4 routing with lowest latency; Port based Routing (up to 28 interfaces), VLAN based Routing ( up to 8 interfaces), Static Unicast Routing (up to 64 IPv4 routes and 512 ARP Entries), Static Route Tracking, Proxy ARP, VRRP with HiVRRP extension, VRRP tracking, ICMP Filter, Loopback Interface, IGMP Proxy (Multicast Routing) | |

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com

## Technical Information

| Product Description Media Modules for RSPE | | | |
|---|---|---|---|
| **Type** | **RSPM20-4Z64Z6xx** | **RSPM20-4T14Z6xx<br>RSPM22-4T14Z6xx (PoE type)** | **RSPM20-4T14T1xx<br>RSPM22-4T14T1xx (PoE type)** |
| **Port type and quantity** | 8 FE SFP slots | 4 FE SFP slots / 4 FE TX ports (PoE option) | 8 FE TX ports (PoE option) |
| **Weight** | 290 g | 220 g | 130 g |

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com

| Common Technical Data Basic Units and Media Modules | |
|---|---|
| **Type** | **RSPE30, RSPE32, RSPE35, RSPE37, RSPM20, RSPM22** |
| **Gigabit ETHERNET Network Size** | |
| **Twisted pair (TP)** | 0 - 100 m |
| **Multimode fiber (MM) 50/125 µm** | 0 - 550 m, 7,5 dB link budget; 62.5/125 µm 0 - 275 m, 7,5 dB link budget (with M-SFP-SX/LC) |
| **Single mode fiber (SM) 9/125 µm** | 0 - 20 km, 11 dB link budget (with M-SFP-LX/LC); 14 - 42 km, 5-20 dB link budget (with M-SFP-LX+/LC) |
| **Single mode fiber (LH) 9/125 µm** | 23 - 80 km, 5 - 22 dB link budget (with M-SFP-LH/LC); 71 - 128 km, 15 - 30 dB link budget (with M-SFP-LH+/LC) |
| **Fast ETHERNET Network Size** | |
| **Twisted pair (TP)** | 0 - 100 m |
| **Multimode fiber (MM) 50/125 µm** | 0 - 5000 m, 8 dB link budget; 62.5/125 µm, 0 - 4000 m, 11 dB link budget (with M-Fast SFP-MM/LC) |
| **Singlemode fiber (SM) 9/125 µm** | 0 - 25 km, 13 dB link budget (with M-Fast SFP-SM/LC); 25-65 km, 10-29 dB link budget (with M-Fast SFP-SM+/LC) |
| **Singlemode fiber (LH) 9/125 µm** | 47-104 km, 10-29 dB link budget (with M-Fast SFP-LH/LC) |
| **Network Size - Cascadibility** | |
| **Line - / star topology** | Any |
| **Ring structure** | >200 switches MRP |
| **Fault recovery time** | 0ms with PRP or HSR |
| **Ambient Conditions** | |
| **Operating Temperature** | 0°C to 60°C, or -40° to +70°C, IEC 60068-2-2 Dry Heat Test +85°C 16 Hours, optional Conformal Coating |
| **Storage/Transport Temperature** | -40°C to +85°C |
| **Relative Humidity (non-condensing)** | 5% to 95% |
| **Approvals Configurable** | |
| **Safety of industrial Control Equipment** | EN60950-1, EN 61131-2 , UL61010-1/-2-201 (pending) |
| **Substation** | IEC61850-3, IEEE1613 |
| **Ship** | GL - Germanischer Lloyd Compass Safe Distance Test – IEC 60945:2002 chapter 11.2 (pending) |
| **Hazardous Locations** | ISA-12.12.-01 Class 1 Div. 2 Group A, B, C, D (pending) |
| **Transportation** | NEMA TS2, EN50121-4 |
| **Scope of Delivery and Accessories** | |
| **Device replacement and logging** | ACA31 (SD card) 942 074-001, ACA22-USB EEC 942 124-001 |
| **Empty module slot cover** | RSPM-cover - Order No. 942 131-001 |
| **Reliability** | |
| **Warranty** | 5 years (standard) |

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com

Configurator

## RSPE30/RSPE32/RSPE35/RSPE37 Switch Configurations

R S P E 3 5 - 2 4 0 4 4 O 7 T 9 9 - T K 9 V T 9 9 H H P P 2 A 0 4 . 0

**Design**

RSPE30 = Standard Version
RSPE32 = Standard Version with PoE(+) Capability
**RSPE35** = Standard Version with Enhanced Redundancy HSR, PRP, Fast MRP
RSPE37 = Standard Version with Enhanced Redundancy HSR, PRP, Fast MRP and PoE(+)

**Number of Fast Ethernet Ports**

**24** = 24 x 10/100 Mbit/s

**Number of Gigabit Ethernet Ports**

**04** = 04 x 10/100/1000 Mbit/s

**Uplink Ports**

**4O7** = 04 x Combo Ports (10/100/1000 Mbit/s)

**Port Configuration**

**T99** = 04 x Combo Ports (10/100/1000 Mbit/s)

**Temperature Range**

S = 0°C to +60°C
**T** = -40°C to +70°C
E = -40°C to +70°C inclusive Conformal Coating

**Power Supply**

CC = 02 x 24 to 60 V DC
**K9** = 01 x 60 to 250 V DC and 110 to 230 V AC
KK = 02 x 60 to 250 V DC and 110 to 230 V AC
PP = 02 x 47 to 57 V DC (PoE) or 53 to 57 V DC (PoE+)

**Approvals**

Z9 = CE, FCC, EU Safety
X9 = CE, FCC, EU Safety, US Safety, Hazardous Locations
VY = CE, FCC, EU Safety, US Safety, Substation
VU = CE, FCC, EU Safety, US Safety, Substation, Marine
**VT** = CE, FCC, EU Safety, US Safety, Substation, Transportation
UY = CE, FCC, EU Safety, US Safety, Marine
UT = CE, FCC, EU Safety, US Safety, Marine, Transportation
Y9 = CE, FCC, EU Safety, US Safety
V9 = CE, FCC, EU Safety, Substation
U9 = CE, FCC, EU Safety, Marine
T9 = CE, FCC, EU Safety, Transportation
TY = CE, FCC, EU Safety, US Safety, Transportation

**Software Packages**

**99** = Reserved

**OEM Type**

**HH** = Standard

**Hardware Configuration**

S = Standard
M = Fast MRP
**P** = PRP
H = HSR

**Software Configuration**

**E** = Hirschmann Standard Configuration

**Software Version**

2S = HiOS Layer 2 Standard
**2A** = HiOS Layer 2 Advanced
3S = HiOS Layer 3 Standard

**Software Release**

**04.0** = Software Version 04.0
XX.X = Current Software Release

**NOTE:** The last five categories (**OEM type, configurations, software version** and **software release**) are optional.

## RSPM20/RSPM22 Media Module Configurations

R S P M 2 2 - 4 T 1  4 T 1 - T  Z 9  H H  S  E  X X . X

**Design**

RSPM20 = Standard Version
**RSPM22** = Standard Version with PoE(+) Capability

**Port Configuration A**

4Z6 = 4 x SFP Slot (100 Mbit/s)
**4T1** = 4 x (100 Mbit/s) Twisted Pair (TX)/RJ45

**Port Configuration B**

4Z6 = 4 x SFP Slot (100 Mbit/s)
**4T1** = 4 x (100 Mbit/s) Twisted Pair (TX)/RJ45

**Temperature Range**

S = 0°C to + 60°C
**T** = -40°C to + 70°C
E = -40°C to + 70°C inclusive Conformal Coating

**Approvals**

**Z9** = CE, FCC, EU Safety
Y9 = CE, FCC, EU Safety, US Safety
X9 = CE, FCC, EU Safety, US Safety, Hazardous Locations
V9 = CE, FCC, EU Safety, Substation
VY = CE, FCC, EU Safety, US Safety, Substation
VU = CE, FCC, EU Safety, US Safety, Substation, Marine
VT = CE, FCC, EU Safety, US Safety, Substation, Transportation
U9 = CE, FCC, EU Safety, Marine
UY = CE, FCC, EU Safety, US Safety, Marine
UT = CE, FCC, EU Safety, US Safety, Marine, Transportation
T9 = CE, FCC, EU Safety, Transportation
TY = CE, FCC, EU Safety, US Safety, Transportation

**OEM Type**

**HH** = Customization

**Hardware Configuration**

**S** = Standard

**Software Configuration**

**E** = Entry (without configuration)

**Software Release**

**XX.X** = Current Software Release
99.9 = No Software Release

**NOTE:** The last four categories (**OEM Type, hardware configuration, software configuration** and **software release**) are optional.

Configurator

## HiOS – Hirschmann™ Operating System

### A new Operating System Generation for Managed Switches

Specially developed to meet requirements in the automation sector, this operating system is available in two Layer 2 versions (Standard and Advanced) and two Layer 3 versions (Standard and Advanced). The RSPE family supports the versions L2S, L2A and L3S. In addition to numerous management and diagnostic options, both Layer 2 Standard and Advanced versions provide precise time synchronization compliant with IEEE 1588v2, plus a variety of redundancy protocols. With no data loss technologies, the PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy) redundancy methods ensure smooth production processes. Comprehensive security mechanisms protect networks against attacks and operating errors, so also contributing to high network availability.

Supported by both the Standard and Advanced versions, management protocols include Telnet, SSHv2, HTTP, HTTPS, TFTP, SFTP, and SNMP v1/v2/v3. In addition to PRP and HSR, redundancy protocols also include MRP (Media Redundancy Protocol), Fast MRP and RSTP (Rapid Spanning Tree Protocol). Security mechanisms comprise MAC-based Port Security, Authentication (IEEE 802.1x), Guest/unauthenticated VLAN, Radius Client, Restricted Management Access, Local User Accounts, various Privilege Levels, Management Authentication via Radius, Account Locking, configurable Password Policy and Login Attempts, Audit Trail, CLI/SNMP Logging and HTTPS-certified Management.

The Advanced L2 version provides additional "Quality of Service" functions such as DiffServ, VLAN extensions, security mechanisms, such as Access Control List (ACL) and IEEE 802.1x Multi Client Authentication and additional redundancy features, like Sub Ring Manager and MRP over Link Aggregation. The Layer 3 version offers full wired speed IPv4 routing with lowest latency, Router redundancy, static port and VLAN based routing. Details can be found in the data sheet.

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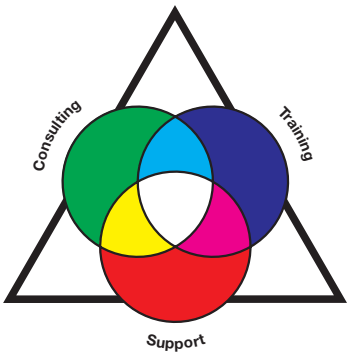
## The Belden® Competence Center




As the complexity of communication and connectivity solutions has increased, so have the requirements for design, implementation and maintenance of these solutions. For users, acquiring and verifying the latest expert knowledge play a decisive role in this. As a reliable partner for end-to-end solutions, Belden offers expert consulting, design, technical support, as well as technology and product training courses from a single source: Belden Competence Center. In addition, we offer you the right qualification for every area of expertise through the world's first certification program for industrial networks. Up-to-date manufacturer's expertise, an international service network and access to external specialists guarantee you the best possible support for products from Belden®, GarrettCom®, Hirschmann™, Lumberg Automation™ and Tofino Security™. Irrespective of the technology you use, you can rely on our full support – from the implementation to the optimization of every aspect of daily operations.

### Always Stay Ahead with Belden

**In a highly competitive environment, it is crucial to have reliable partners who are able to add value to your business. When it comes to signal transmissions, Belden is the number one solutions provider. We understand your business and want to know your specific challenges and targets to see how effective signal transmission solutions can push you ahead of the competition. By combining the strengths of our five leading brands, Belden®, GarrettCom®, Hirschmann™, Lumberg Automation™ and Tofino Security™, we are able to offer the solution you need. Today it may be a single cable, a switch or a connector, thus solving a specific issue; tomorrow it can be a complex range of integrated applications, systems and solutions.**

### About Belden

**Belden Inc., a global leader in high quality, end-to-end signal transmission solutions, delivers a comprehensive product portfolio designed to meet the mission-critical network infrastructure needs of industrial, enterprise and broadcast markets. With innovative solutions targeted at reliable and secure transmission of rapidly growing amounts of data, audio and video needed for today's applications, Belden is at the center of the global transformation to a connected world. Founded in 1902, the company is headquartered in St. Louis, USA, and has manufacturing capabilities in North and South America, Europe and Asia.**

**For more information, visit us at www.beldensolutions.com and follow us on Twitter@BeldenInc.**



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