



<b>ETHERNET SWITCHES</b>	<b>ORDER NO.</b>
Magnum 12KX L2 Managed Switch	12KXR-1L1POE
Magnum 10KT L2 Managed Switch	10KTP-HSPLL-TF
Magnum 6K Managed Switch	6K32F-48V
<b>ROUTER / TERMINAL SERVER</b>	
DX940 Router/Terminal Server	DX940-4FXSFP-H
<b>WIRELESS</b>	
BAT Wireless Access Point	BAT54-F FCC
<b>MODULAR INDUSTRIAL PATCH PANEL (MIPP)</b>	
MIPP 1 x SM + 1 x DM fiber, standard DIN-rail, double module, SC/ SC Duplex adapters, MM/OM1, pigtails	MIPP-JD-2S1P
<b>SUBSTATION COMPUTER</b>	
Magnum 10C Substation Computer	10C-HSPHH-FTF
<b>MEDIA CONVERTERS</b>	
Dymec Media Converters	5845HRT
<b>TRAYOPTIC FIBER CABLE</b>	
TrayOptic fiber cable – 12 fiber 62.5 micron	I601255
TrayOptic fiber cable – 24 fiber 62.5 micron	I602455
<b>CONTROL CABLES</b>	
Belden UL 1277 Type TC Control Cable	27330A
<b>NETWORK MANAGEMENT SOFTWARE</b>	
Industrial HiVision, 25 nodes	943 156-025

### About this Configuration

Retrofit for substations with all Ethernet options complying with NERC-CIP, IEC-61850 and IEEE-1588, while enabling connection to existing serial devices. All Ethernet products are high speed and high throughput with redundant / resilient options. The multitude of switch options and power of Ethernet enables you to use one switch for all functions in smaller substations scaling to the very largest multi-switch substations on a single or multiple Ethernet networks for maximum design flexibility and efficiency.

### About The Products

All products listed are from Belden Inc., and include Belden, Hirschmann and GarrettCom brands designed for extreme environments and mission critical communications. Not all possible configurations, products or options are listed, so contact your local Belden representative or distributor to more exactly match your application needs.

### About Industrial HiVision

Ideally suited for auditing and monitoring network connections and throughputs, Industrial HiVision permits users to have realtime feedback from multiple switches regarding the network and link status

### About Magnum 6K/10K/12K Managed Ethernet Switches

Magnum managed Ethernet switches are specifically designed for power utilities in Smart Grid, featuring high port counts, advanced port configurability, and IEEE 1588v2 precision timing synchronization

### About DX940 Router/Terminal Server

Magnum routers and terminal servers are ideal for connecting existing serial devices to an Ethernet IP network. Multiple options exist for WAN connection, including cellular and T1.

### About BAT Wireless 802.11 Access Point

In cases where a hard-wired connection is not feasible, the BAT wireless Ethernet access point is an ideal solution, supporting 802.11a,b,g,h, and n.

### About Magnum 10C Substation Computer

Designed for substations, the 10C is resilient to power surges and other extreme environmental issues. to ensure mission critical applications on Linux or Windows run reliably

### About Media Converters

GarrettCom provides a full line of media converters, from simple Dymec serial to fiber media converters to copper to fiber Ethernet switches to protect signal integrity across the substation yard.

### About Modular Industrial Patch Panels (MIPP)

MIPP patch panels are an economical and space efficient way to reliably terminate both copper and fiber signals in a single panel.

### About Belden Cables

Over 70% of all signal transmission issues occur in the physical layer. All Belden cables are engineered to meet the demand of harsh environments to ensure reliable signal transmission with no loss in performance over the years it will be in operation.