

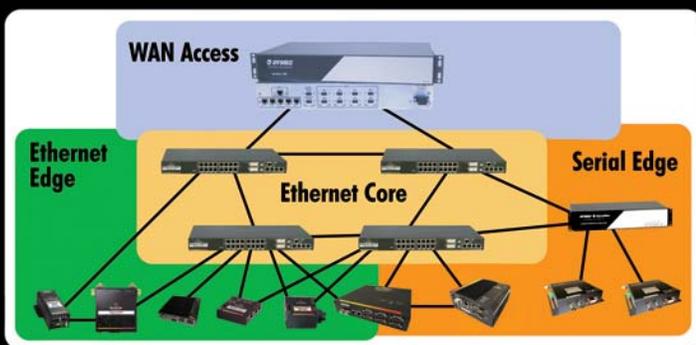
Substation Networking Products

GarrettCom, Inc. provides the Magnum, Dymec, and DynaStar lines of Ethernet, Serial, and WAN products for the power utilities. Products include hardened switches, converters, Serial Device Routers, terminal servers and WAN routers designed and tested for reliability in harshest conditions and temperatures. GarrettCom is known for its configurability, and offers the widest breadth of fiber options in the industry.

Additional features of GarrettCom products include:

- **Fiber built-in** to accommodate user selection of combinations of 10 Mb or 100 Mb or Gigabit fiber media (and RJ-45, too.)
- **High-EMI noise immunity**, reliable operation in the presence of substation electrical interference
- **NERC CIP** compliance for security
- **IEC 61850** compliance, including GOOSE messaging
- **IEEE 1613 Class 2 tested for substations**
- Power types such as: **125V, 110V, 48V DC**, and **worldwide AC**
- Extended ambient temperature range, **-40°C to +85°C**
- **UL Listed** for safety

A Strategic Industrial Network Architecture



Integrated Management and Security Software

Ethernet Edge:

Small and Medium Magnum Switches

Magnum 6K16V, up to 16 ports, all types; industrial Ethernet packaging for vertical mounting, convection cooled (no fans)

Magnum 6KQ, managed field switch with up to 16 ports of all media and connector types; advanced thermal design; metal case with a ribbed surface for optimum heat dissipation (no fans)

Magnum 6K8, up to eight ports, compact and configurable, managed field switch; IP53-rated, metal case is a heat sink (no fans)

Magnum 6K PoE Modules up to eight ports, Power Sourcing per IEEE 802.3af standard, for attaching PoE devices to 6K switches

Magnum **P62** (unmanaged) and **mP62** (managed) hardened 6+2 (six copper, two fiber) heavy-duty outdoor switches

Magnum Edge Switch Family, small un-managed, substation hardened, provides six switch ports, zero or one or two of which may be 100 Mb fiber with others 10/100 copper; models include **ES42**, **ESD42**, **PES42P** (PoE) and **IPS42** for AC/DC Power Supply

Magnum Converter Switch Family (Media Converters), Combine a Media Converter with a small Ethernet Switch and you get a Converter Switch. Offers two ports copper and one port fiber; four ports copper, or four ports copper PoE. Models include **CS14**, **CSN14**, **S14**, **PS14P** (PoE) & **Dymec Links Ethernet Converters**.

Ethernet Core:

Magnum 6K Managed Rack-mount Switches

Magnum 6K32TRC, up to 32 ports, advanced (patent pending) thermal design convection-cooled (no fans), reverse 1U rack-mount, configurable with 16 copper and up to 16 fiber and/or up to 4 Gigabit ports

Magnum 6K25e, up to 26 ports, configurable in all ports for media and port types, up to 8 Gb ports, up to 24 fiber ports

Magnum 6K32T Rack-mount package, 16 copper and up to 16 fiber and/or up to 4 Gig ports.

Magnum 6K16, up to 16 ports, configurable for all port and media types. Two 6K16s side-by-side fit in a 1U 19" rack.

Magnum MNS-6K software with SNMP, VLANs, Secure Web Management, CLI, RSTP, Telnet, DHCP and more.

Magnum MNS-6K-Secure software with **extra security**, SSH, SSL, Access Control, RADIUS, TACACS+, and more

Serial Edge:

Serial Device Servers, Converters, Routers

Magnum DX800 offers four Serial and four Ethernet port (including fiber), Combining features of a Serial Device Server, Ethernet Switch and IP Router in a single product

Magnum DX40 offers two Serial and two Ethernet ports (including fiber), Combining features of a Serial Device Server, Ethernet Switch and IP Router in a single product

Dymec Links Converters, Convert Serial copper to fiber; hardened with 125VDC. Includes **RS232 Single Channel**, **RS232 Multi-Channel**, and **RS485**. **Optical Stars**

DynaStar 1500 Ethernet Terminal Server (DS1500-ETS)

Integrates three often discrete networking functions: Terminal Server (Async serial device support), Ethernet switch (local switching and router access), and IP Router.

WAN Access:

DS1500-IFR Industrial Frame Router In a single product, the DS1500-IFR integrates five often discrete networking functions: Terminal Server, Ethernet switch, IP Router, Frame Relay Access Device, and DSU/CSU.

DS2000 Family Supports multiple serial and Ethernet interfaces, T1/E1 or DDS or other popular WAN interfaces. Robust advanced software for all types of substation network applications, including support for MPLS services.

To access this sheet online, go to <http://www.garrettcom.com/substation.pdf>

For Power Utilities:

http://www.garrettcom.com/power_plants.htm (includes substation network architecture and many white papers)

http://www.garrettcom.com/iec61850_ieee1613.htm

http://www.garrettcom.com/ieee1613_class2.htm

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