

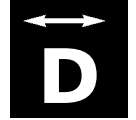


DESCRIPTION

The IFS EtherNav™ D7600 series of Managed Ethernet Switches provide robust transmission of 10/100 BASE-T Ethernet data. Unlike most Ethernet switches, these environmentally hardened units are designed for direct deployment in difficult out-of-plant or roadside operating environments, and are available for use with either conventional CAT-5e copper or optical transmission media. Depending upon the configuration ordered, up to 9 electrical or 6 electrical and 3 optical ports are available for easily implementing point-to-point, linear add-drop/ drop-and-repeat, star, or true self-healing ring and mesh network system architectures. The electrical ports support the 10/100 Mbps (10/100 BASE-T) Ethernet IEEE 802.3 protocol, and auto-negotiating and auto-MDI/MDIX features are provided for simplicity and ease of installation. A 1000 BASE-T or 1000 BASE-FX port (specified at time of order) is optionally available for optically or electrically linking D7600 series switches when additional IP communications ports are required, allowing simple and cost-effective future expansion of the network if required. Available for use with multi-mode or single mode optical fiber, these network managed (through SNMP), Layer 2 switches are optically (100 BASE-FX) and electrically compatible with any IEEE 802.3 compliant Ethernet device. Plug-and-play design ensures ease of installation, and no electrical or optical adjustments are ever required. LED indicators are provided for rapidly ascertaining the operating status of the managed switch and network, and these units are available in stand-alone/shelf-mount, wall-mount, rack-mount or DIN-rail mounting configurations.

APPLICATION EXAMPLES

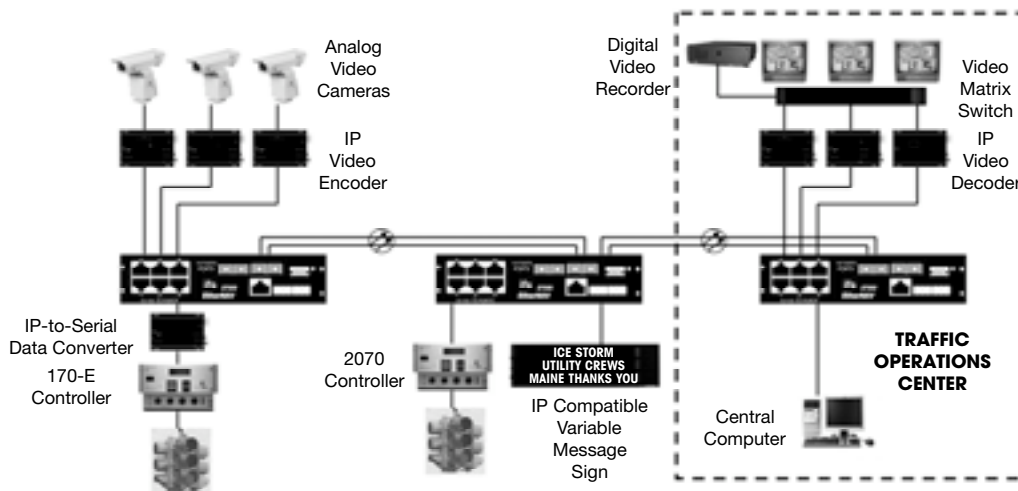
- ITS Traffic Signalization & Surveillance/ Incident Detection Networks
- Industrial and Factory Automation
- Integrated IP-Video and Data Transmission Networks
- Industrial Security Access Control Systems



FEATURES

- Environmentally hardened for direct deployment in difficult unconditioned out-of-plant and roadside installations.
- Tested and certified by an independent laboratory for full compliance with the environmental requirements (ambient operating temperature, mechanical shock, vibration, humidity with condensation, high-line/low-line voltage conditions and transient voltage protection) of NEMA TS-1/TS-2 and CALTRANS Traffic Signal Control Equipment Specifications.
- Extended Ambient Operating Temperature Range, -40° C to +74° C
- NTCIP Compatible
- 10/100/1000 BASE-T and 100/1000 BASE-FX Compatible (Depending on configuration ordered)
- High Singlemode Optical Power Budget Available
- Available in Stand-Alone/Shelf-Mount, Wall-Mount, Rack-Mount and DIN Rail Mounting Configurations
- Redundant Power Supply Capability Reduces Possibility of Single-Point-of-Failure for Highest Possible Reliability
- Fully Configurable Through Web-Based or SNMP Network Management
- Fully supports IGMP and IP Multicasting and Filtering
- Port Based VLAN (IEEE 802.1Q)
- Rapid Spanning Tree Protocol (IEEE 802.1W)
- Designed and Manufactured in the USA
- Readily Available – 48 Hour Delivery
- Comprehensive Lifetime Warranty

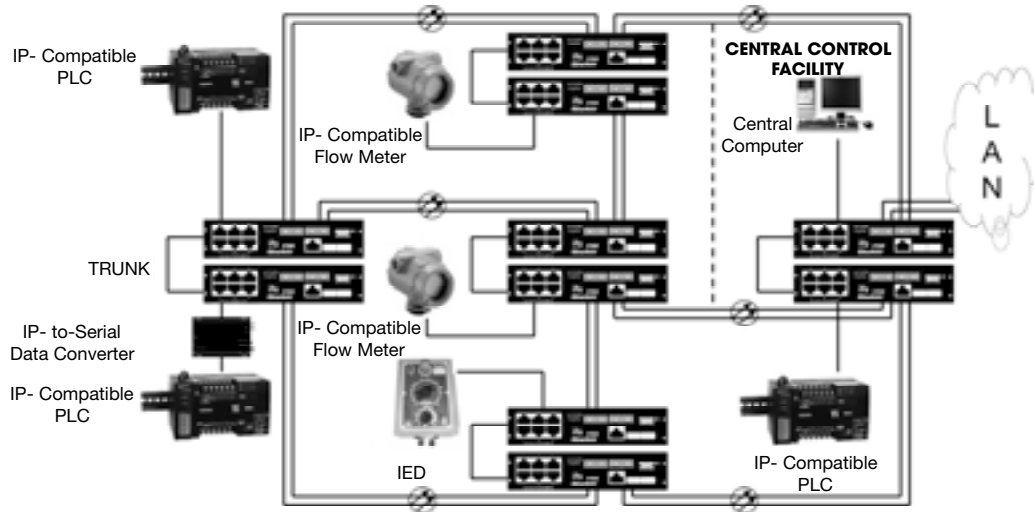
TYPICAL ITS SYSTEM DESIGN (Linear Add-Drop Network Architecture)



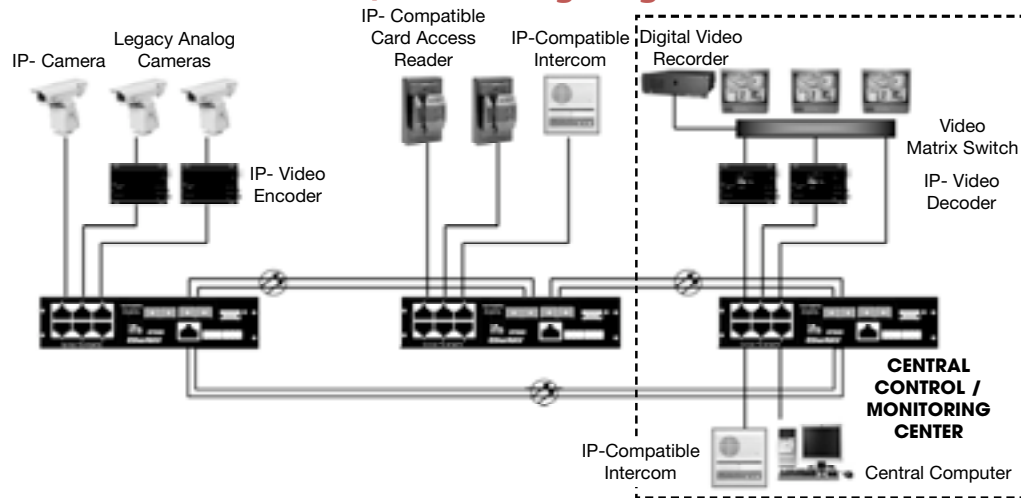
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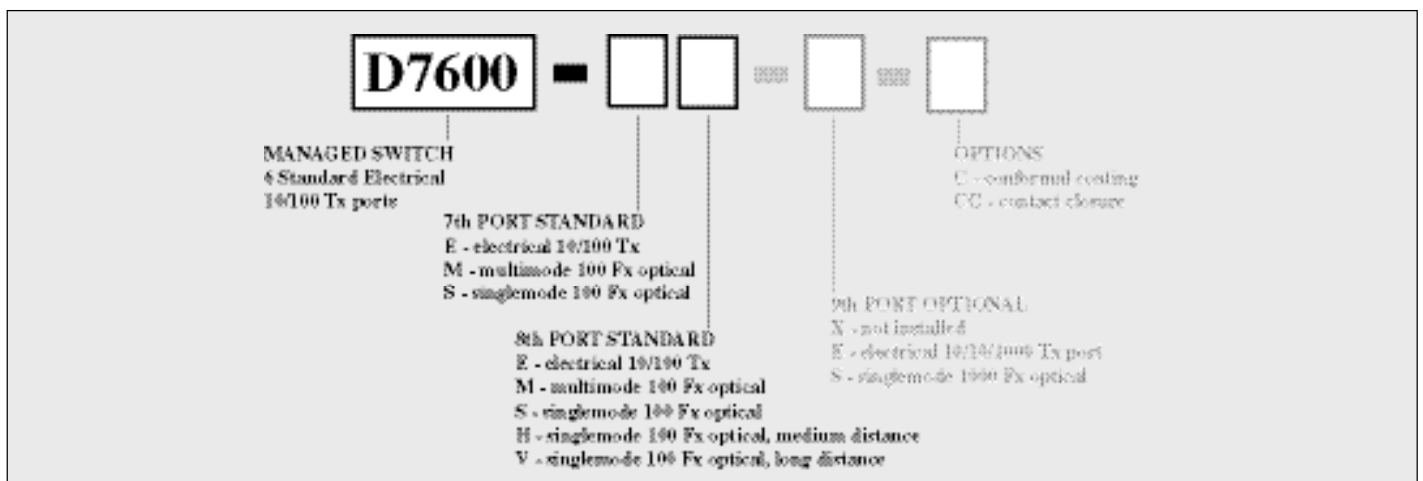
TYPICAL FACTORY AUTOMATION DESIGN (Mesh Network Architecture)



TYPICAL SECURITY SYSTEM DESIGN (Self-Healing Ring Network Architecture)



UNDERSTANDING THE D7600 NUMBERING SYSTEM



SPECIFICATIONS

SWITCHING PERFORMANCE

Switching Method:	Store and Forward
Port Latency:	HQ <1mS @50 Mbps MQ <4-5mS @37.5 Mbps LQ <16mS @12.5 Mbps
MAC Addresses:	Self Learning, up to 4000 addresses
VLANs:	Up to 64 port, tag based
QoS:	Port access control, port mirroring, 8-group trunking.

PROTOCOLS SUPPORTED

RTP/ID, TCP/IP w/full multicast support.
DNS and DHCP

CONFIGURATION

IEEE 802.3 Compliant	
Data Interface:	Ethernet Layer 2 Device
Data Rate:	10/100 Mbps (10/100 BASE-T or 10/100 BASE-FX). 1000 Mbps throughput available at optional optical or CAT-5e linking port.
Number of Ports:	8; 9 if ordered with optional 1000 BASE-T or 1000 BASE-FX linking port.

OPERATING WAVELENGTH

D7600-MM	1310 nm, multimode
D7600-SM	1310 nm, singlemode

OPTICAL EMITTER

Multimode Units:	Vertical Cavity Surface Emitting Laser (VCSEL)
Singlemode Units:	Laser Diode

NUMBER OF FIBERS REQUIRED

2, 4 or 6 depending upon configuration
ordered. See Ordering Information.

CONNECTORS

Optical:	Multimode: SC* Singlemode: SC*, standard. *Type ST connector available; consult factory for additional information.
Power:	Terminal Plug with screw clamps
Data:	RJ-45

NETWORK MANAGEMENT

- SNMP V2c
- Supports RMON for Ethernet Agent
- Supports Telenet/TFTP

NETWORK STANDARDS SUPPORTED

IEEE:	802.3	10 BASE-T
IEEE:	802.3 u	100 BASE-T, 100 BASE-FX
IEEE:	802.3 ab	1000 BASE-T, 1000 BASE-FX
IEEE:	802.1d	Spanning Tree
IEEE:	802.1w	Rapid Spanning Tree
IEEE:	802.1q	VLAN
IEEE:	802.1p	Class of Service (CoS)

ELECTRICAL & MECHANICAL

Power Supply Rated to:	+12 VDC @1 A +24 VDC @0.5A
Power Consumption:	10 Watts Max.
Voltage Regulation:	Solid-state; independent on each board
Current Protection:	Automatic Resettable Solid-State Current Limiters provide unconditional protection against major faults.
Circuit Board:	Meets IPC Standard
Size (in./ cm.) (LxWxH):	Stand-Alone/Shelf-Mount, Wall-Mount & DIN-Rail Mounting Configurations: 8.25"/17.8 x 6.5"/ 12.5 x 1.75"/2.5. DIN-Rail mount units are available in either side-mount or rear-mount versions. See Ordering Information.
Shipping Weight:	< 2.75 lbs./1.25 kg

SUMMARY FAULT/ALARM CONTACT CLOSURE

Form C, normally-open contacts rated at 24 VDC at 0.5 A, 10W, resistive
load. Consult factory for additional details.

ENVIRONMENTAL

Operating Temp:	-40° C to +74° C
Storage Temp:	-40° C to +85° C
Relative Humidity:	0% to 95% (non-condensing)†
MTBF:	>100,000 hours

† May be extended to condensation conditions by adding suffix '-C' to
model number for conformal coating.

AGENCY COMPLIANCE

FCC PART 15
COMPLIANT



MADE IN THE USA

Complies with FDA Performance Standard for Laser Products,
Title 21, Code of Federal Regulations, Subchapter J and NEMA TS-1/TS-2.

Available at:
www.ifs.com

- A & E Specifications, (CSI)
- AutoCAD Drawings
- Operation Manuals
- Technical Bulletins



ORDERING INFORMATION

WAVELENGTH 1310 NM	PART NUMBER	DESCRIPTION	FIBERS REQUIRED	OPTICAL PWR BUDGET	MAX. DISTANCE*
ELECTRICAL (Wavelength N/A)	D7600-EE-X	8 ports 10/100 TX electrical	N/A	N/A	328 ft. (100 m)
	D7600-EE-E	8 ports 10/100 TX electrical 1 port 10/100/1000 TX electrical			
MULTIMODE 62.5/125µm**	D7600-MM-X	6 ports 10/100 TX electrical 2 ports 100 FX optical MM - both ports	4	10 dB	1.2 miles (2 km)
	D7600-MM-E	6 ports 10/100 TX electrical 2 ports 100 FX optical MM - both ports 1 port 10/100/1000 TX electrical	4		
MULTIMODE 62.5/125µm**	D7600-MM-S	6 ports 10/100 TX electrical 2 ports 100 FX optical MM - both ports 1 port 1000 FX optical SM	6	10 dB, MM 10 dB, SM	1.2 miles (2 km) MM 17 miles (28 km) SM
	D7600-MS-X	6 ports 10/100 TX electrical 1 port 100 FX optical MM 1 port 100 FX optical SM	4	10 dB, MM 13 dB, SM	1.2 miles (2 km) MM ▲23 miles (37 km) SM
	D7600-MS-E	6 ports 10/100 TX electrical 1 port 100 FX optical MM 1 port 100 FX optical SM 1 port 10/100/1000 TX electrical	4	10 dB, MM 13 dB, SM	1.2 miles (2 km) MM ▲23 miles (37 km) SM
	D7600-MS-S	6 ports 10/100 TX electrical 1 port 100 FX optical MM 1 port 100 FX optical SM 1 port 1000 FX optical SM	6	10 dB, MM 13 dB, SM 100FX 10 dB, SM 1000FX	1.2 miles (2 km) MM ▲23 miles (37 km) SM 100FX 17 miles (28 km) SM 1000FX
SINGLEMODE 9/125µm	D7600-EE-S	8 ports 10/100 TX electrical 1 port 1000 FX optical SM	2	10 dB, SM	17 miles (28 km) SM
	D7600-SS-X	6 ports 10/100 TX electrical 2 ports 100 FX optical SM - both ports	4	13 dB, SM	▲23 miles (37 km) SM
	D7600-SS-E	6 ports 10/100 TX electrical 2 ports 100 FX optical SM - both ports 1 port 10/100/1000 TX electrical	4	13 dB, SM	▲23 miles (37 km) SM
	D7600-SS-S	6 ports 10/100 TX electrical 2 ports 100 FX optical SM - both ports 1 port 1000 FX optical SM	6	13 dB, SM 100FX 10 dB, SM 1000FX	▲23 miles (37 km) SM 100FX 17 miles (28 km) SM 1000FX
ACCESSORIES*	PS-12VDC — 12 Volt DC Plug-in Power Supply (1 Supply Included). (2) Supplies Required for Redundant Power Supply Operation. D7600-W — Wall-Mount Brackets D7600-DS — DIN Rail, Side-Mount Bracket D7600-DB — DIN Rail, Rear-Mount Bracket D7600-RS — Rack-Mount, Single Bracket D7600-RD — Rack-Mount, Dual Bracket				
OPTIONS	Add '-C' for Conformally Coated Printed Circuit Boards (Extra charge, consult factory) Add '-CC' for Contact Closure ▲Add '-H' in place of the 'S' for 19 dB Optical Power Budget, Singlemode (100FX-Ports Only) - 33 miles (54 km) Max. Distances ▲Add '-V' in place of the 'S' for 34 dB Optical Power Budget, Singlemode (100FX-Ports Only) - 60 miles (97 km) Max. Distances				

* Optical transmission distance is limited to optical loss of the fiber and any additional loss introduced by connectors, splices and patch panels. Distance can also be limited by fiber bandwidth. **For 50/125 Fiber, subtract 4 dB from Optical Power Budget.

♦ All power supply accessories are third party manufactured.



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Due to our continued effort to advance technology, product specifications are subject to change without notice.