ProSwitch® Industrial
Unmanaged Workgroup Switches

Models: ES-Standard
ESH-Hardened
ESX-Extreme

Key Highlights

▸ Four 10/100Base-TX ports plus your choice of fiber or copper for two additional ports of connectivity

▸ Multi and singlemode available with ST, SC, MTRJ connectors

▸ Choice of high temperature models for factory floor or outdoor applications

▸ All models include Link-Loss-Learn (LLL) feature for use in self-healing LAN structures

▸ ESH and ESX series designed for NEBS compliance, including shock, vibration and altitude

▸ Ambient temperature rating:
ES models: 32° to 105°F
                       0° to 40°C
ESH models: -13° to 140°F
                       -25° to 60°C
ESX models: -40° to 167°F
                       -40° to 75°C

▸ Auto-cross negotiation (no cross over cable required)

▸ VLAN support (VLAN tagged data packets will be received and transmitted by the ES models)

▸ ESH and ESX models provide power alarm relay

▸ DIN-Rail or rack mount options

▸ Backed by a 3-year warranty

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ProSwitch Workgroup Switches
Four Fixed 10/100Base-TX Ports
Plus Two Additional Ports in Fiber and/or Copper

ES-6TX   **ES-4TX2ST**   **ES-5TX1SC**

Waters Network Systems' ProSwitch®-ES Edge Series of workgroup switches are the ideal solution for small groups of nodes at the network edge that need to be connected into the larger LAN infrastructure.

This compact design provides a maximum of six ports. The base models have four 10/100Base-TX ports with your choice of fiber or copper for the additional two ports. You can choose between one or two additional 10/100Base-TX ports or one or two 100Base-FX ports. Fiber port choices are available in a variety of connector types supporting either multi or singlemode.

The ProSwitch®-ES models are available in standard (office - ES), hardened (factory floor - ESH) and extreme-rated (outdoor - ESX) models. These three temperature rated models combined with the variety of fiber choices, make the ES Series the best price-to-value ratio for a variety of LAN applications.

The ProSwitch®-ESH (hardened rated models) are designed for factory floor applications with an operational temperature range of -25°C to 60°C. The ProSwitch®-ESH models are high temperature units built with high-grade components and are constructed using a special thermal technique (patent pending) and a metal case for heavy duty industrial applications. In addition to a hardened AC power option and jack, terminals for internal DC power choices at 8 to 15V, 24V or -48V DC are included. Two terminals provide connections to monitor an internal power-sense relay. No internal air flow is required for cooling, so the switch will resist dust, dirt, moisture, smoke and insects.

The ProSwitch®-ESX (extreme temperature rated models) are designed for temperature environments typically seen in uncontrolled sheltered applications. The ESX models are rated for -40°C to 75°C and are built with the same high-grade components as the ESH models. In addition to a premium rated AC power option and jack, terminals monitor the power-sense relay. Internal DC power choices at 8 to 15V, 24V or -48V DC are included. When used outdoors, the ESX models should be sheltered from the elements.

Mounting choices include stand-alone, DIN-rail or rack mount tray. All ES models have two sets of LED indicators. This versatile family of small edge switches uses the latest networking technology and innovative product packaging to provide flexible LAN connectivity for a variety of network applications.

ProSwitch Ethernet Workgroup Switches

ORDERING INFORMATION

Model	Description
Standard Temperature Workgroup Switches	
ES-6TX	6-port 10/100Base-TX RJ45 ports
ES-5TX1SC/ST/MT	6-port switch with 5 10/100Base-TX RJ45 ports, plus 1-port 100Base-FX MM fiber with either SC, ST or MTRJ connector
ES-5TX1SSC/SST-20	6-port switch with 5 10/100Base-TX RJ45 ports, plus 1-port 100Base-SX SM (20km) fiber with either SC or ST connector
ES-5TX1SSC-40	6-port switch with 5 10/100Base-TX RJ45 ports, plus 1-port 100Base-LX SM (40km) fiber with SC connector
ES-4TX2SC/ST/MT	6-port switch with 4 10/100Base-TX RJ45 ports, plus 2-ports 100Base-FX MM fiber with either SC, ST or MTRJ connectors
ES-4TX2SSC/SST-20	6-port switch with 4 10/100Base-TX RJ45 ports, plus 2-ports 100Base-SX SM (20km) fiber with either SC or ST connectors
ES-4TX2SSC-40	6-port switch with 4 10/100Base-TX RJ45 ports, plus 2-ports 100Base-LX SM (40km) fiber with either SC connectors

Note: All of the above listed models are available in either Hardened (ESH) or Xtreme (ESX) versions. For Hardened switches use the prefix ESH and for Xtreme switches use the prefix ESX. For additional product and performance information about the ES series, please contact Customer Service at 800.328.2275.

DC Power Options are available for all ES, ESH and ESX models.

SPECIFICATIONS

PERFORMANCE:
- 100Mbps HDX/FDX
- 10Base-T, 100Base-TX and 100Base-FX
- Auto-negotiation and auto-cross MDI-MDIX on RJ45 ports
- Non-blocking switching
- Packet buffer memory: 128KB
- Address buffer storage: 2K
- Address buffer age-out time = 300 seconds
- Alarm Terminal Block: CSH and CSX models

NETWORK STANDARDS:
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.1p

VLAN Support:
- Tagged VLAN fields transmitted and unchanged by converter switch

FIBER CABLE DISTANCES:
- MM Fiber: SC, ST and MTRJ, 2km
- SM Fiber: ST and SC, 20km
- SM Fiber: SC, 40km

NETWORK CABLE CONNECTORS:
RJ45:
- 100Mbps: Category 5 UTP/STP
- 10Mbps: Category 3, 4, 5 UTP

Fiber MM port connectors:
- SC, ST and MTRJ

Fiber SM port connectors:
- SC

EMI/SAFETY COMPLIANCE:
All Models:
- UL Listed (UL60950), cUL, CE
- Emissions meet FCC Part 15, Class A
- NEBS L3 and ETSI compliant

ESH and ESX Models
- IEEE 1613 Env. Std for Electric Power Substations
- IEC61850 EMC and Operating Conditions Class C for Power Substations

ESX Models
- NEMA TS-2/TEES for traffic control equipment
- Designed for above-the-ceiling (plenum)

AC POWER SUPPLY (EXTERNAL):
- Power input DC jack (8 to15V) is 2.5mm, center +ve with 6ft. DC cord
- Input: 95-125VAC@60Hz
- 100-240VAC@47-63Hz

DC POWER SUPPLY (Optional):
- 12VDC (range 8V to 15V)
- 24VDC (range 18V to 36V)
- 48VDC (range 30V to 60V)

OPERATING ENVIRONMENT:
Ambient:
- ES Models: 32° to 105°F (0° to 40°C)
- ESH Models: -13° to 140°F (-25° to 60°C)
- ESX Models: -40° to 167°F (-40° to 75°C)

Ambient Relative Humidity:
- All models: 5% to 95% (non-condensing)

Storage temperature:
- All models: -40° to 185°F (-40° to 85°C)

Altitude:
- All models: -200 to 50,000ft (-60 to 15,000m)

PHYSICAL CHARACTERISTICS:
Robust sheet metal (steel)
Dimensions:
- 3.6"H x 3.0"W x 1.7"D
- 9.2cm x 7.6cm x 4.3cm

Weight:
- All models: 13oz. (370g)
- ES and ESH power supply: 5.8oz (165g)
- ESX power supply: 7.9oz (225g)
- Cooling Method: Convection on ES models, case used as heat sink on ESH and ESX models

MOUNTING:
- Metal panel mounting clips included
- DIN-Rail mounting option (Model MC2)
- Rack-mount option (Model MC14Tray)
  - 2.25"H x 17"W x 6"D
  - 5.7cm x 43cm x 15cm

WARRANTY:
3 years (1 year on power supplies)