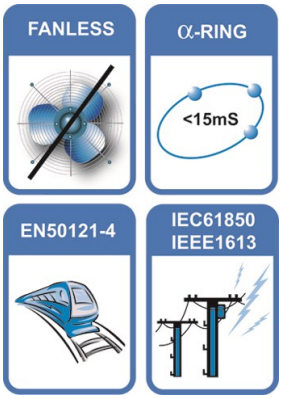
Hardened Ethernet Switch—IEC61850

Version 1.0 – August 11

SWM-HE-M



Benefits

Standards:

- IEEE: 802.3, 802.3u, 802.3x, 802.3ab, 802.3z, 802.1d, 802.1p, 802.1Q, 802.3w

Hardened design

- Operating temperature : -40 to +75°C / -40 to 167 °F
- EN61000-6-2 industrial EMI
- EN50121-4 Railway class
- IEC61850/IEEE1613 Power Substation automation system

Modular system 4 Slots, w modules

- 4 Gigabit or Combo ports
- 8 x 10/100Bt ports
- 6 x 100FX MM or SM
- 4 x 10/100Bt and 2 or 4 100FX ports

Chassis

- AC or
- DC chassis –36V to –72V
- IP30 metal chassis

ETHERNET SWITCH FOR ELECTRIC SUBSTATION AND TRAIN STATION

The SWM-HE-M is a modular Layer 2 manageable hardened switch supporting up to 4 Gigabit Ethernet uplinks and 24 Ethernet 10/100Base-TX or 100FX ports.
This hardener design comply to the distribution of Ethernet in the Electrical Substation and to the Train station.
Its operating temperature covers the range of –40 to +75 °C, -40 to 167 °F. All devices are tested 72 hours during the production at 85°C.
The 19" design has an IP30 protection and is chock and vibration resistant. This switch is fanless.
Thanks to his design the SWM-HE-M comply with the EMS/Environment for train/metro station according to EN50121-4 and can be use for power substation automation system according to IEC61850-3 IEEE1613.
The SWM-HE-M owns 4 slots for tributaries and aggregate Ethernet port.
The slot 4 is used to supply 4 uplinks copper module 10/100/1000Baset or 4 Combo ports module with copper and optical 1000SX/LX/ZX ports with GE.
The 3 others slots can be feet with the following modules:

- 8 Ethernet 10/100Baset
- 6 Ethernet 10/100Baset plus 2 100FX
- 4 Ethernet 10/100Baset plus 4 100FX
- 6 Ethernet 100FXS

All this optical interface are fixed interfaces with SC or ST connectors.

This switch is manageable trough a web interface, in telnet or the consol port , with menu or in CLI or in SNMP V1/2c/3. It's provide with an RMON interface to facilitate the deployment.
The SWM-H-M switch is a perfect solution for mission critical applications that require optimized security. It provides RSTP and MSTP protocols as well as the Alpha Ring function that ensures a very fast recovery delay over Ring topologies, bellow 15 ms.
Secure access is provided by the Radius authenticate 802.1x but also the Per-port programmable MAC address locking or the 24 static addresses per port set-up.
The SWM-H switches support a lot of protocols for QoS, VLAN and video traffic optimization such as IGMP snooping, 802.1q and GVRP. Each port can be assigned a four level priority queuing policy and a rate limiting.

Switch Ethernet

- Layer 2 switching
- Spanning Tree: STP, RSTP & MSTP
- Alpha Ring : <15 ms recovery delay for Ring topologies
- 8192 MAC address memory
- IGMP Snooping
- Rate limiting, broadcast storm protection
- Per port VLAN
- 802.1Q VLAN tagging
- S-VLAN Q-in-Q *
- GRVP
- QoS : 802.1p per port, per TOS / DSCP , 4 level priority queuing
- Trunking
- Mirroring
- 802.1x authentication
- Per-port MAC address locking
- 24 MAC address static per port
- NTP, SNTP v4

APPLICATIONS:

- Utilities
- Power station
- Power distribution
- Transportation
- Train
- Defense
- Factory

Ethernet Switch—IEC61850

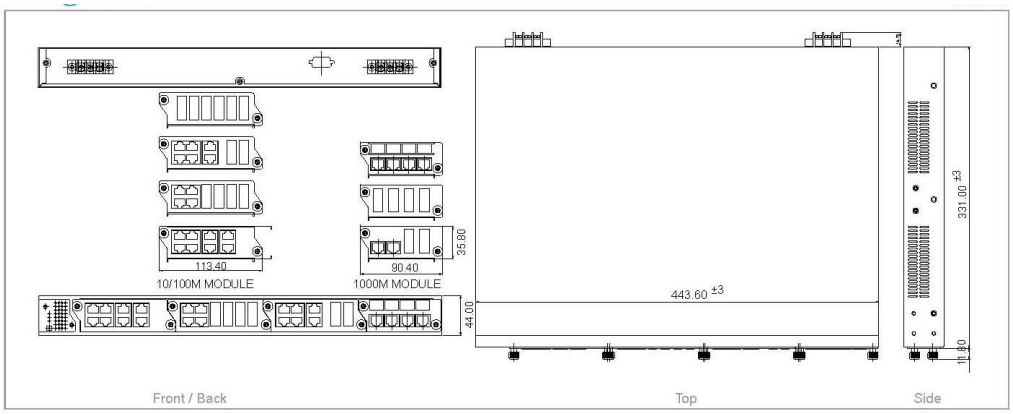
CXR provides you the right Ethernet switch for your application

Unmanageable
Manageable
Layer 2
Layer 3

Industrial Hardened

On board

POE...



SPECIFICATIONS

- **Standards**
  IEEE 802.3u 100Base-TX/FX
  IEEE 802.3 10Base-T
  IEEE802.3ab 1000Base-T,
  IEEE802.3z 1000SX/1000LX/1000ZX
- **Ethernet layer 2 protocols**
  IEEE 802.1d Spanning Tree Protocol
  IEEE 802.1w RSTP
  IEEE 802.1s MSTP
  IEEE 802.3x Flow Control
  IEEE 802.1Q VLAN Tagging
  IEEE 802.1p QoS, 4 Priority Queues
  IEEE802.1x Authentication
  Per port access control
  Access Control List
  Local MAC address data base - 24 address
  Per port rate limiting
- **Ethernet ports**
  10/100 BaseT : 8, 16 or 24 ports
  100 optical : 8, 16 or 24 ports with SFP sockets
  10/100/1000BT : uo-to 4 Gigabit ports
  Combo 10/100/1000BT and 1000FX SFP slots : up-to 4 Gigabit ports - SPF
  MDI/MDI-X on RJ45 Ethernet ports
- **Performance**
  12,8 Gbps switching fabrics
  Up-to 1,488,100 pps
- **MAC address memory :** 8,192 addresses
- **VLAN** Per port and 802.1q
- **Redundancy :** Port mirroring
- **QoS**
  Priority queuing : 4 priority queues per port
  IEEE 802.1p
  IP v4 ToS / DSCP - IPv6 Traffic Class
  source/destination MAC addresses
- **Power supply**
  1 DC input : 48 Vdc , 36-75 Vdc or
  1 AC inputs : 110-230 Vac or
  1 AC 110-230Vac and 88-370Vdc
  Max power consumption : 43 W
- **Management :**
  Console, CLI, Telnet and Web interface
  SNMP V1 & V2c, RMON, TFTP, NTP servers
- **Temperature range**
  Operating -40°C to 75°C / -40 to 167 °F
  Pick -40°C to 85°C / -40 to 185 °F
  Stocking -40°C to 85°C / -40 to 185 °F
- **Hygrometry :** 5% to 95% RH
- **Standards**
  EN-60950-1, UL-60950-1
  CE, FCC Part 15 classe A
  EN 61000-6-2
  EN 61000-4-2
  EN 61000-4-3
  EN 61000-4-4
  EN 61000-4-5
  EN 61000-4-6
  EN 61000-4-8
  IEC60068-2-6 Fc (Vibration)
  IEC60068-2-27 Ea (Chock)
  IEC60068-2-32 Ed (Chock)
  NEMA TS1/2 : USA traffic control
  IEC61850-3 & IEEE1613 : industrial supply
  EN50121-4 : railway environment
- **Size** (LxPxH)
  Single power supply module :
  343 x 442 x 44.2 mm,
  13,5"x17,4"x1.7''
- **Weight** 4,4 kg / 9,66 lb
- **Led indicator**
  Power status 1 / 2
  Per port 10/100 / 1000
  Link/activity
  Speed
- **MTBF :** 200 000 hours

MODEL NUMBER

SWM-HE-M-A	Modular hardened Layer 2 Ethernet switch, 1U 19", 3 slots for 8 FE/FX, 1 slot for 4 uplink ports GE combo, VLAN tagging 802.1q,QoS 802.1p, port trunking, RSTP, Alfa-Ring <15ms, SNMP V3, working temperature -40 à +75°C, compliant EN50121-4 (train station) & IEC61850-3/IEEE1613 (energy substation), power supply AC 90-264Vac and DC 88-370Vdc.
SWM-HE-M-B	Modular hardened Layer 2 Ethernet switch, 1U 19", 3 slots for 8 FE/FX, 1 slot for 4 uplink ports GE combo, VLAN tagging 802.1q,QoS 802.1p, port trunking, RSTP, Alfa-Ring <15ms, SNMP V3, working temperature -40 à +75°C, compliant EN50121-4 (train station) & IEC61850-3/IEEE1613 (energy substation), power supply DC 48Vdc.
MOD-SWM-HE-4CB	Module for hardened switche SWM-HE-M, 4 uplink Combo 10/100/1000BaseT and SFP 1000SX/LX/ZX
MOD-SWM-HE-8TX	Module for hardened switche SWM-HE-M, 8 ports 10/100Baset
MOD-SWM-HE-6FM2	Module for hardened switche SWM-HE-M, 6 ports 100FX MM 2km SC connector
MOD-SWM-HE-6FS20	Module for hardened switche SWM-HE-M, 6 ports 100FX SM 20km SC connector

SFP MODULES	**Standard range -5 to +70°C**
SFP-GSX-MM	SFP module 1000SX w DD, multimode 850nm, budget 8,0dB for 550m, connector LC
SFP-GSX-MM-1310	SFP module 1000SX w DD, multimode 1310nm, budget 16,0dB for 2km, connector LC
SFP-GLX-SM20	SFP module 1000LX w DD, single-mode 1310nm, budget 17,0dB for 20km , connector LC
SFP-GZX-SM50	SFP module 1000ZX w DD, single-mode 1550nm, budget 19,0dB for 50km , connector LC
SFP-GZX-SM80	SFP module 1000ZX w DD single-mode 1550nm, budget 24,0dB for 80km , connector LC
SFP-GZX-SM120	SFP module 1000ZX w DD single-mode 1550nm, budget 24,0dB for 80km , connector LC
SFP-GLX-SM20W13	SFP module 1000LX w DD, single-mode 1310nm WDM single fiber, budget 13,0dB for 20km , connector LC
SFP-GLX-SM20W15	SFP module 1000LX w DD, single-mode 1550nm WDM single fiber, budget 13,0dB for 20km , connector LC
SFP-GLX-SM80-Cxx	SFP module 1000LX w DD, CWDM lambda au choix de 1430 to 1610nm, budget 24,0dB for 80km, connector LC
SFP-GLX-SM120-Cxx	SFP module 1000LX w DD, CWDM lambda, choice from 1430 to 1610nm, budget dB for 120km, connector LC
	Extended Temperature -40°C to +85°C
SFP-GSX-MM-H	SFP module 1000SX w DD, multimode 850nm, budget 8,0dB for 550m, connector LC
SFP-GLX-SM10-H	SFP module 1000LX w DD, single-mode 1310nm, budget 13,0dB for 10km , connector LC

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