

AGENT-2 S42R



Modular design



IEC61850/IEEE1613 Modular Managed 24-port 10/100BASE + 4-port GbE Advanced Ethernet Switches with SFP options Front or Rear Ports

Overview

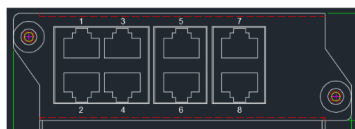
IEC61850-3 & IEEE1613 Certified for power substation applications, this Line of Modular Switches comes with a combination of twenty four 10/100BASE-TX/FX/BX ports split in three slots – with up to eight ports in every slot –, plus four 10/100/1000BASE-TX and/or Gigabit SFP combo (1000BASE-SX/LX/BX) ports in a package. This Line of Switches functions at temperatures ranging from -40°C to 85°C (-40°F to 185°F). Fully manageable via SNMP, Web Browser, Telnet or Console port, this Line is designed to integrate 10/100Mbps networks into fibre optic Gigabit backbones. Four Gigabit SFP combo ports can be fibre optic or copper ports. This Line also supports Snooping, Multiple and Rapid Spanning Tree for Redundancy, QoS for priority queuing, and port mirroring. Users may choose among SNMP RMON, Web browser or Telnet for remote monitoring and configuration. It also supports rate control, which allows users to set the maximum bandwidth on each port individually.

For particular situations, we have the option to manufacture the AGENT-2 S42R equipment to order, with the service ports on the front or rear of the chassis.

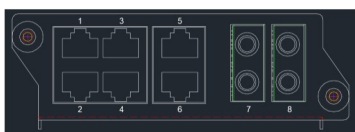
Features

- Complies with IEC61850-3 & IEEE1613 Environmental requirements for power substation automation Systems.
- 1000Mbps-Full-duplex.
- 10/100Mbps-Full/Half-duplex, Auto-Negotiation, Auto-MDI/MDIX.
- Full wire-speed forwarding rate
- Complies with EN50121-4 environmental requirement for Railway application
- Supports RSTP/MSTP/STP for Ethernet redundancy and GOOSE Message
- Zero Packet Loss pass by GOOSE Message
- IP Multicast Filtering through IGMP Snooping V1, V2 & V3
- Port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- Up to 384 VLAN from 4096 set
- IEEE802.1p QoS with four priority queues
- MAC-based trunking and LACP
- DHCP Client/Server
- IEEE802.1x Security
- Bandwidth Rate Control
- Per-port programmable MAC address locking
- Up to 24 Static Secure MAC addresses per port
- Port mirroring
- Supports NTP synchronization
- Management Options:
 - * RS-232 Serial Console,
 - * SSL,
 - * Telnet,
 - * SNMP V1, V2c & V3,
 - * RMON,
 - * Web Browser, and
 - * TFTP Upgrade.
- Password protected administrative account
- -40°C to 85°C (-40°F to 185°F) operating temperature range

Submodule ordering Information

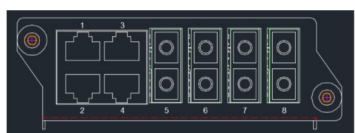


SM42R-800-000: 8 Ports 10/100 Base T Connector RJ45



SM42R-620-XXX: 6 Ports 10/100 Base T Connec: RJ45 plus 2 Optical ports 100FX (xxx)

700—MM 2Km WDM-B S	800—MM 5Km WDM-A SC	900—MM 5Km WDM-B SC
A00—SM 20Km SC	B00—SM 40Km SC	H00—SM 20Km ST
P00—SM 20Km WDM-A SC	Q00—SM 20Km WDM-B SC	R00—SM 40Km WDM-A SC



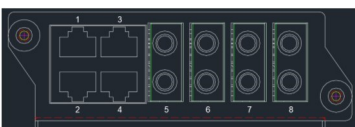
SM42R-420-XXX: 4 Ports 10/100 Base T Connector RJ45 plus 2 Optical Ports 100FX (xxx)

100—MM 2Km SC	200—MM 2Km ST	600—MM 2Km WDM-A SC
700—MM 2Km WDM-B ST	800—MM 5Km WDM-A S	900—MM 5Km WDM-B SC
A00—SM 20Km SC	B00—SM 40Km SC	H00—SM 20Km ST
P00—SM 20Km WDM-A SC	Q00—SM 20Km WDM-B SC	R00—SM 40Km WDM-A SC
S00—SM 40Km WDM-B SC		



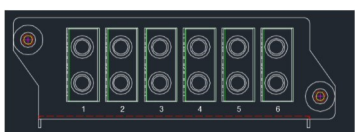
SM42R-240-XXX: 2 Ports 10/100 Base T Connector RJ45 plus 4 Optical Ports 100FX (xxx)

100—MM 2Km SC	200—MM 2Km ST	600—MM 2Km WDM-A SC
700—MM 2Km WDM-B ST	800—MM 5Km WDM-A SC	900—MM 5Km WDM-B SC
A00—SM 20Km SC	B00—SM 40Km SC	H00—SM 20Km ST
P00—SM 20Km WDM-A SC	Q00—SM 20Km WDM-B SC	R00—SM 40Km WDM-A SC
S00—SM 40Km WDM-B SC		



SM42R-440-XXX: 4 Ports 10/100 Base T Connector RJ45 plus 4 Optical Ports 100FX (xxx)

100—MM 2Km SC	200—MM 2Km ST	600—MM 2Km WDM-A SC
700—MM 2Km WDM-B ST	800—MM 5Km WDM-A SC	900—MM 5Km WDM-B SC
A00—SM 20Km SC	B00—SM 40Km SC	H00—SM 20Km ST
P00—SM 20Km WDM-A SC	Q00—SM 20Km WDM-B SC	R00—SM 40Km WDM-A SC
S00—SM 40Km WDM-B SC		



SM42R-420-XXX: 6 Optical Ports 100FX (xxx)

100—MM 2Km SC	200—MM 2Km ST	600—MM 2Km WDM-A SC
700—MM 2Km WDM-B ST	800—MM 5Km WDM-A SC	900—MM 5Km WDM-B SC
A00—SM 20Km SC	B00—SM 40Km SC	H00—SM 20Km ST
P00—SM 20Km WDM-A SC	Q00—SM 20Km WDM-B SC	R00—SM 40Km WDM-A SC
S00—SM 40Km WDM-B SC		



SM42R-004-00V: 4 Ports 10/100/1000 Base T combined with 4 socket 1000FX SFP



M42R-004-XXX: 4 Optical Ports 1000 FX (xxx)

043—MM 550m SC	044—MM 2Km SC	045—MM 550m ST
04A—SM LX 10Km SC	04B—SM LX 20Km SC	04C—SM 40Km SC
04R—SM LX 20Km WDMA SC	04S—SM LX 20Km WDMB SC	

Characteristics of Optical Interfaces

MultiMode 2Km, SC or ST

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	90	100	155
Optical Transmit Power (dBm)	-19		-13
Output Centre Wavelength (nm)		1310	
Input Centre Wavelength (nm)		1310	
Optical Rx Sensitivity (dBm)			-31
Maximum Input Power (dBm)	-8		
Line Attenuation (dB)	0		12

MultiMode 2Km, BIDI WDMA, SC or ST

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	90	100	155
Optical Transmit Power (dBm)	-15		-8
Output Centre Wavelength (nm)	1480	1550	1580
Input Centre Wavelength (nm)	1260	1310	1360
Optical Rx Sensitivity (dBm)			-30
Maximum Input Power (dBm)	-8		
Line Attenuation (dB)	0		15

MultiMode 2Km, BIDI WDMB, SC or ST

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	90	100	155
Optical Transmit Power (dBm)	-15		-8
Output Centre Wavelength (nm)	1260	1310	1360
Input Centre Wavelength (nm)	1480	1550	1580
Optical Rx Sensitivity (dBm)			-30
Maximum Input Power (dBm)	-8		
Line Attenuation (dB)	0		15

SingleMode 20Km, SC or ST

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	90	100	155
Optical Transmit Power (dBm)	-15		-8
Output Centre Wavelength (nm)		1310	
Input Centre Wavelength (nm)		1310	
Optical Rx Sensitivity (dBm)			-34
Maximum Input Power (dBm)	-3		
Line Attenuation (dB)	0		18

SingleMode 40Km, SC or ST

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	90	100	155
Optical Transmit Power (dBm)	-10		0
Output Centre Wavelength (nm)		1550	
Input Centre Wavelength (nm)		1550	
Optical Rx Sensitivity (dBm)			-34
Maximum Input Power (dBm)	-3		
Line Attenuation (dB)	3		24

SingleMode 40Km, BIDI WDMA, SC or ST

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	90	100	155
Optical Transmit Power (dBm)	-8		-3
Output Centre Wavelength (nm)	1480	1550	1580
Input Centre Wavelength (nm)	1260	1310	1360
Optical Rx Sensitivity (dBm)			-33
Maximum Input Power (dBm)	-3		
Line Attenuation (dB)	0		25

SingleMode 40Km, BIDI WDMB, SC or ST

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	90	100	155
Optical Transmit Power (dBm)	-8		-3
Output Centre Wavelength (nm)	1270	1310	1360
Input Centre Wavelength (nm)	1480	1550	1580
Optical Rx Sensitivity (dBm)			-33
Maximum Input Power (dBm)	-3		
Line Attenuation (dB)	0		25

SingleMode 40Km, 1000FX, SC

PARAMETER	MIN	TYP	MAX
Transmission Speed (Mbit/s)	900		1300
Optical Transmit Power (dBm)	-2		+3
Output Centre Wavelength (nm)		1310	
Input Centre Wavelength (nm)		1310	
Optical Rx Sensitivity (dBm)			-24
Maximum Input Power (dBm)	-3		
Line Attenuation (dB)	6		22

Technical specifications

Technology

Ethernet Standards

IEEE802.3, 10Base-T,
IEEE802.3u, 100BaseT 100Base-Fx/Sx/Lx,
IEEE802.3ab, 1000Base-T,
IEEE802.3z, 1000Base-Sx/Lx
IEEE802.3x, Full Duplex
IEEE802.1d, MAC Bridges
IEEE802.1P, Priority management
IEEE802.1Q, VLAN management
IEEE802.1w, RSTP
IEEE802.1x, Authentication Services

Forward and Filtering Rate per Port

- ▶ 14,880pps for 10Mbps
- ▶ 148,810pps for 100Mbps
- ▶ 1,488,100pps for 1000Mbps

Total Switching and Forwarding Capacity

Higher than 12.8 GBit/s. Full wire speed. Non blocking

Packet Buffer Memory: 3M bits

Processing Type

- ▶ Store-and-Forward
- ▶ Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size: 8192 MAC addresses

Power

Input

- ▶ (W): 88~370VDC and 90 ~ 264VAC Internal Universal PSU
- ▶ Dual redundant Power Supply

Power Consumption: 42.7W Max.

Overload Current Protection: Present

Mechanical

Casing: Metal case; IP 40

Single Power Supply Dimensions

- ▶ 442mm (W) x 343mm (D) x 44.2mm (H)
- ▶ (17.4" (W) x 13.5" (D) x 1.74" (H))

Dual Power Supply Dimensions

- ▶ 442mm (W) x 343mm (D) x 44.2mm (H)
- ▶ (17.4" (W) x 13.5" (D) x 1.74" (H))

Weight: 4.5Kg (9.9lbs.)

Installation: Rack Mounting, front or rear ports

Interface

Ethernet Port

- ▶ 10/100BASE-TX: 24, 16, 8 or 0 ports
- ▶ 100BASE-FX: 0 to 18 ports
- ▶ Gigabit: 0, 2 or 4 ports

Console Port: RS-232 serial port with DB-9 connector

LED Indicators

- ▶ Per Unit: Power Status
- ▶ Per Port: 10/100TX, 100FX: Link/Activity (Green)
10/100/1000TX, 1000SX/LX: Link/Activity (Green)
SFP Selected: Selected/Unselected (Green)

Regulatory Approvals

General: IEC61850-3 and IEC1613 Compliant

ISO: Manufactured in an ISO9001 facility

Safety: UL60950-1

EMI:

FCC Part 15, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS:

EN61000-6-2

EN61000-4-2 Electrostatic Discharge

Level 4: Contact: $\pm 8\text{KV}$, Air: $\pm 15\text{KV}$

EN61000-4-3 Radiated RFI

Level 4: 35V/m, 80MHz to 1GHz, 1.4 to 2.7GHz, 80% AM

EN61000-4-4 Electrical Fast Transient

Level 4: Signal Ports and Power Ports: $\pm 4\text{KV}$

EN61000-4-5 Surge Immunity

Signal Ports and AC Power Ports: Level 4, $\pm 4\text{KV}$ Line-to-Earth

D.C. Power Ports: Level 3, $\pm 2\text{KV}$ Line-to-Earth

EN61000-4-6 Conducted RFI

Signal and Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM

EN61000-4-8 Magnetic Field Immunity

1000A/m @ 50, 60Hz

IEC61000-4-10 Oscillatory wave magnetic field

100kHz and 1MHz : 30A/m

IEC61000-4-11 Electromagnetic Compatibility:

Testing and Measurement Techniques for Power variations

IEC61000-4-12 Damped Oscillatory Wave:

1MHz < f < 1.5 MHz and 2.5KV < V < 3.0 KV First cycle

IEC61000-4-16 Power frequency immunity test

300V at 50Hz

IEC61000-4-18 Oscillatory wave immunity

100 kHz to 1MHz, 2.5kV Common Mode and Differential mode

IEEE1613: Power frequency withstand voltage:

Input power 2KV, Insulation resistance >550 M Ω

RJ45 Port 500V, Insulation resistance >550 M Ω

IEC60255-5: Impulse voltage

5Kv, Insulation resistance >550 M Ω

IEC60870-2-1: AC/DC power supply voltage variations

Environment

Operating Temperature: -40°C to 85°C (-40°F to 185°F)

Storage Temperature: -45°C to 85°C (-49°F to 185°F)

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

Environmental Test Compliance

IEC60068-2-6 Fc Vibration Resistance

1g @ 10 - 150Hz, Amplitude 0.35mm

(Operation/Storage/Transport)

IEC60068-2-27 Ea (Shock)

25g @ 11ms (Half-Sine Shock Pulse; Operation)

50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)

IEC60068-2-32 Ed (Free Fall)

1M (3.281ft.)

Guarantee

- ▶ 5 years