

# Ethernet Switch



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	SWCE-3232	SWCE-2114	SWCE-2310	SWM-3640	SWM-3656	SWM-2828	SWM-2428	SWM-2410	SWCED-2112	SWCED-2316	SWDL-I-4TPSTX	SWMD-I-8TX-2GSF	SWMD-I-8TPS-2GSF
Type	10 Gigabit Carrier Ethernet CE 2.0	10 Gigabit Carrier Ethernet CE 2.0	Gigabit POE+ Carrier Ethernet CE 2.0	10 Gigabit Layer 3	10 Gigabit Layer 3 POE+	10 Gigabit POE+	Gigabit	Gigabit	10 Gigabit Carrier Ethernet CE 2.0	Gigabit Ethernet POE+ DIN	Fast Ethernet DIN	Gigabit DIN	Gigabit POE DIN
Total number of ports	32	15	10	40	56	28	28	10	12	16	6	10	10
10 Gigabit Ethernet ports	4x SFP+	2x SFP+	-	8	8	4	-	-	2x SFP+	-	-	-	-
Gigabit ports 10/100/1000BT	24 + 1	8 + 1	8x POE+	32	48 POE option	24 (*) POE option	24 (*) POE option	8 POE option	8	12 4x POE+ option	-	-	-
Gigabit SFP ports	4x SFP 2.5 / GbE / 100FX	4x SFP 2.5 / GbE / 100FX	2x SFP 2.5 / GbE / 100FX	2 + 2x combo	4x combo	4 combo (*) 24x SFP option	4 (*) 28x SFP option	2	2x SFP 2.5 / GbE / 100FX	4x SFP 2.5 / GbE / 100FX	-	2	2
10/100BT copper ports	-	-	-	24	-	-	-	-	-	-	1 + 4x POE 30W	8	8x POE 4x 30W + 4x 15W
100FX optical ports	-	-	-	24	-	-	-	-	-	-	1	-	-
Protocols	VLAN 802.1q GVRP, GARP QoS 802.1p IGMP Snooping Flow ctl 802.3x 802.1x, Radius Port trunking Port mirroring NTP client - relay STP, RTSP, MSTP EVC, E-Lan/E-Tree G.8031 / 8032 802.3ah Y.1731 IP routing, OSPF 50ms Ring Protection	VLAN 802.1q GVRP, GARP QoS 802.1p IGMP Snooping Flow ctl 802.3x 802.1x, Radius Port trunking Port mirroring NTP client - relay STP, RTSP, MSTP EVC, E-Lan/E-Tree G.8031 / 8032 802.3ah Y.1731 IP routing 50ms Ring Protection	VLAN 802.1q GVRP, GARP QoS 802.1p IGMP Snooping Flow ctl 802.3x 802.1x, Radius Port trunking Port mirroring NTP client - relay STP, RTSP, MSTP EVC, E-Lan/E-Tree G.8031 / 8032 802.3ah Y.1731 IP routing 50ms Ring Protection	IP routing v4/v6 RIP, OSPF, BGP VLAN 802.1q Q-in-Q GVRP QoS 802.1p IGMP Snooping 802.1X Port trunking LACP Port mirroring DHCP relay - server NTP client - relay STP, RSTP, MSTP 50ms Ring Protection	IP routing v4/v6 RIP, OSPF, BGP VLAN 802.1q Q-in-Q GVRP QoS 802.1p IGMP Snooping 802.1X Port trunking LACP Port mirroring DHCP relay - server NTP client - relay STP, RSTP, MSTP 50ms Ring Protection	VLAN 802.1q S-VLAN, C-VLAN Q-in-Q GVRP QoS 802.1p IGMP Snooping Flow ctl 802.3x Authentic 802.1x Port trunking LACP Port mirroring DHCP relay - server NTP client - relay STP, RSTP, MSTP 50ms Ring Protection	VLAN 802.1q S-VLAN, C-VLAN Q-in-Q GVRP QoS 802.1p IGMP Snooping Flow ctl 802.3x Authentic 802.1x Port trunking LACP Port mirroring DHCP relay - server NTP client - relay STP, RSTP, MSTP 50ms Ring Protection	VLAN 802.1q S-VLAN, C-VLAN Q-in-Q GVRP QoS 802.1p IGMP Snooping Flow ctl 802.3x Authentic 802.1x Port trunking LACP Port mirroring DHCP relay - server NTP client - relay STP, RSTP, MSTP 50ms Ring Protection	VLAN 802.1q GVRP, GARP QoS 802.1p IGMP Snooping Flow ctl 802.3x 802.1x, Radius Port trunking Port mirroring NTP client - relay STP, RTSP, MSTP EVC, E-Lan/E-Tree G.8031 / 8032 802.3ah Y.1731 IP routing 50ms Ring Protection	VLAN 802.1q GVRP, GARP QoS 802.1p IGMP Snooping Flow ctl 802.3x 802.1x, Radius Port trunking Port mirroring NTP client - relay STP, RTSP, MSTP EVC, E-Lan/E-Tree G.8031 / 8032 802.3ah Y.1731 IP routing 50ms Ring Protection	Transparent	VLAN 802.1q GVRP QoS 802.1p IGMP Snooping 802.1X STP, RSTP, MSTP A.Ring 15 ms NTP, SNTP Port Trunking	VLAN 802.1q GVRP QoS 802.1p IGMP Snooping 802.1X STP, RSTP, MSTP A.Ring 15 ms NTP, SNTP Port Trunking
Management	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Console telnet - ssh http, https snmp v1,v2,v3	Not manageable Alarm relay	Console telnet, ssh snmp v1, v2, v3	Console telnet, ssh snmp v1, v2, v3
Industrial temperature range	Yes	Yes	Yes	Yes	Yes	Yes	Light industry	Light industry	Yes	Yes	Yes	Yes	Yes
Industrial EMI	Yes	Yes	Yes	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes
Railway environment	-	-	Yes	-	-	-	-	-	Yes	Yes	-	opt.	opt.
Electric Substation environment	-	-	-	-	-	-	-	-	Yes	Yes	-	opt.	opt.
Power supply	1x AC 1 or 2x 24-48 Vdc	1x AC 1 or 2x 24-48 Vdc	1 or 2x 48 Vdc	1x AC or 48Vdc	1 or 2x AC or 48 Vdc	1x AC or 48Vdc 2x 48Vdc	1x AC or 48Vdc	1x AC or 48Vdc	1 or 2x 24-48 Vdc	24-48 Vdc	48 Vdc	12-48 Vdc	12-48 Vdc
Format	1U / 19"	1U / compact	1U / compact	1U / 19"	1U / 19"	1U / 19"	1U / 19"	1U / compact	DIN	DIN	DIN	DIN	DIN
Size WxDxH mm	442x185x44	327x172x44	216x130x44	440x350x44	444x350x44	440x310x44	440x310x44	308x324x40	110x76x46	110x76x46	105x93x61	145x125x50	145x125x50



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Rev. 08

# Ethernet Access and Extender Solutions

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Type	xDSL IP-DSLAM MSAN	Ethernet Optical Switch	EFM SHDSL.Bis Bridge CPE	EFM SHDSL.Bis Aggregation bridge	EFP SHDSL.Bis & SFP Drop & Insert Bridge	EFP SHDSL.Bis Drop & Insert Bridge	Ethernet Media Converter	VDSL2 CPE POL and POE	VDSL2 bridge CPE	E1-T1 CSU-DSU Ethernet bridge
<b>WAN interface</b>	ADSL + VDSL + SHDSL	2x SFP Gigabit Eth 2x SFP 100FX	1/ 2 copper pairs	1- 8 copper pairs 1x SFP Gigabit Eth	2x SFP GbE 2x SFP 100FX 2x 2 copper pair 60 Mb	2x 1 copper pair 30 Mb	1x optical port	VDSL2	VDSL2	E1 - T1
<b>Ethernet interface</b>	2x GE Uplinks	4x 10/100 BaseT POE PSE 4x SFP 100FX / GbE	4x 10/100 BaseT 1x POE PSE	4x 10/100/1000 BaseT 1x SFP Gigabit Eth	4x 10/100 BaseT POE PSE SFP 100FX / GbE	4x 2x 10/100 BaseT	1x 10/100/1000 BaseT or 1x 100 / 1000 / 10GE	4x 10/100 BaseT with POE	4x 10/100 BaseT	1x 10/100 BaseT
<b>Other interfaces</b>	GPON	4x RS232/RS485 4+2x Digital in / out	1x RS232	-	4x RS232/RS485 4+2x Digital in / out	2x RS232/RS485	-	Alarm relay	Alarm relay	-
<b>Max WAN throughput</b>	100 Mbps	1,000 Mbps SFP	22 Mbps	120 Mbps SHDSL-Bis 1,000 Mbps SFP	2x30 Mbps SHDSL.Bis 2x1,000 Mbps SFP	2x15 Mbps SHDSL.Bis	100 Mbps 1,000 Mbps 10 Gbps	2x 100 Mbps	100 Mbps	2 Mbps
<b>WAN Protocol</b>	ATM PTN EFM PPPoE, PPPoA	Ethernet	802.3ah, EFM	802.3ah, EFM Point to Point mini-DSLAM Ethernet	802.3ah, EFM	802.3ah, EFM	Ethernet	G.993.2	G.993.2	PPP - BCP HDLC
<b>Link Aggregation</b>	EFM	-	802.3ah, PAF	802.3ah, PAF	802.3ah, PAF	802.3ah, PAF	-	-	-	-
<b>Protocols</b>	VLAN Q-in-Q QoS, 802.1p, DSCP IGMP v2, v3 MSTP LACP	802.3X 802.1D VLAN 802.1q QoS, 802.1p, DSCP STP, RSTP 802.1X	802.3X 802.1D VLAN 802.1q Q-in-Q 802.1ad QoS, 802.1p, DSCP STP, RSTP	802.3X 802.1D VLAN 802.1q QoS, 802.1p, DSCP STP, RSTP 802.1X	802.3X 802.1D VLAN 802.1q QoS, 802.1p, DSCP STP, RSTP 802.1X	802.3X 802.1D VLAN 802.1q QoS, 802.1p, DSCP STP, RSTP 802.1X	802.3X 802.1D VLAN 802.1q Q-in-Q QoS, 802.1p, DSCP	802.3X 802.1D VLAN 802.1q QoS, 802.1p, DSCP	802.3X 802.1D VLAN 802.1q QoS, 802.1p, DSCP	VLAN 802.1q Q-in-Q 802.1ad QoS, 802.1p 802.3X 802.1D Data compression
<b>Management</b>	CLI, Batch SNMP v1, v2, V3 Telnet SSH CFM / EFM OAM 802.1X Radius	CLI http, https ssh snmp v3 ftp Syslog USB	CLI http, https ssh snmp ftp Syslog	CLI http, https ssh snmp v3 ftp Syslog USB	CLI http, https ssh snmp v3 ftp Syslog USB	CLI http, https ssh snmp v3 ftp Syslog USB	CLI http snmp ftp	Dip switches	Dip Switches	VT100 menus AT and CLI Telnet snmp ftp
<b>Power supply</b>	110-230 Vac 48 Vdc	24 - 48 Vdc	AC / 5 Vdc adaptor 24/48 Vdc	1x AC, 1 or 2x 48 Vdc	24 - 48 Vdc	12 - 24 Vdc	AC / 3.3 Vdc adaptor	POL & 48 Vdc	2x 12-48 Vdc	AC / 5 Vdc adaptor
<b>Format</b>	19" / 2U	Compact, DIN	Compact	Desktop or rackmount	Compact, DIN	Compact, DIN	Compact	Compact, DIN	Compact	Compact
<b>Size - WxDxH mm</b>	442 x 245 x 88	260x160x35	170x120x41	287x175x41	260x160x35	155x164x35	74 x 51 x 20	135x106.5x62	170x121x35	146x144x31



# TDM over IP, E1/T1 and SONET/SDH Multiplexers

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Type	TDM over IP 2x E1/T1	TDM over IP 4x E&M Leased Line FXO / FXS	TDM over IP 1x RS530, V35, X21	TDM over IP 4x E1 / T1	STM-x Optical Multiplexer Voice interfaces	16x E1 Inverse Multiplexer	SONET/SDH MPLS-TP ADM multiplexer	SDH ADM E1/T1 DACS MPLS-TP multiplexer	E1/T1 DS-0 DACS TDM over IP & VoIP	Carrier Ethernet MPLT-TP SDH / PDH	E1 or optical SFP multiplexer to 4x E&M
<b>Next Generation MPLS-TP / CE / PWEEE</b>	PWEEE	PWEEE	PWEEE	PWEEE	-	-	10GE MPLS-TP & CE PWEEE	10GE MPLS-TP & CE PWEEE	TDM over IP	MPLS-TP & CE PWEEE	-
<b>WAN interface</b>	Ethernet 1x SFP GbE 2x 10/100BT	Ethernet 2x SFP GbE 4x 10/100BT	Ethernet 1x SFP GbE 2x 10/100BT	Ethernet 2x GbE SFP 2x GbE RJ45	2x SFP	16x E1	STM-1/4/16 OC-3/12/48	STM-1/4 OC-3/12 TDM over IP	E1 / T1 TDM over IP	10GE CE & MPLS-TP	E1 or optical SFP
<b>SONET / SDH Terminal</b>	No	No	No	No	-	No	Yes	Yes	No	Yes	No
<b>SONET / SDH multiplexer at DS-1</b>	No	No	No	No	Y	No	Yes	Yes	No	No	No
<b>E1 / T1 channel bank and DS-0 multiplexer</b>	No	No	No	No	-	No	No	Yes	Yes	No	Yes
<b>Redundancy</b>	802.1q Trunking	No	No	802.1q Trunking	PSU + WAN	PSU	PSU + CPU + WAN	PSU + CPU + WAN	PSU + CPU + WAN	PSU + WAN	No
<b>Modularity</b>	No	No	No	No	2x Power supplies	No	2xPSU + 2xCPU/WAN slots + 8x tributary slots	2xPSU + 2xCPU-SDH + 12x Long Slots + 4x short slots	2xPSU + 2xCPU + 12x Long Slots + 4x short slots	2x PSU 4 slots for 10GE + SDH + PDH	No
<b>WAN capacity</b>	GbE	GbE	GbE	2x GbE	155 Mbps	16x E1	4x STM-16 OC-48	2x STM-4 OC-48	64 x E1 - T1	6x 10 GE	1x E1
<b>Tributary cards and Features</b>	2x E1 / T1 Nx 64 kbps  2x 10/100BT 1x SFP GbE  AAL1 over IP CES over IP SAT over IP up to 30 Bundles	2 or 4x E&M voice Leased Line 2 or 4x FXO / FXS 1x RS232 1x E1 (opt)  4x 10/100BT 2x SFP GbE  AAL1 over IP CES over IP SAT over IP up to 30 Bundles	1x Serial port RS530 / V35 X21 / RS232  2x 10/100BT 1x SFP GbE  AAL1 over IP SAT over IP HDLC over IP	4x E1/T1  2x Gigabit Ethernet RJ45  2x Gigabit Ethernet SFP  SAT over IP CES over IP  64 Bundles	4 or 8x E1 4x 10/100 ETH RJ45 4/8/16x voice FXO/FXS	Ethernet 2x 10/100/1000BT  HDLC GFP / VCAT PPP/BCP  802.1q Provider Bridge	16x E1/T1 32x E1/T1 63x E1/T1 3x E3/DS-3 1xGE / 8x10/100BT  2x 10/100/1000 plus 2x combo GE	<b>Long slots :</b> 4xE1 4xT1 8x ETH bridge - router TDM over IP, 2x ETH 5x RS232 sync - async 8x RS232 async 6x V35 - RS530 4x SHDSL 2 wires 2x SHDSL 2/4 wires 12/24x FXO 12/24x FXS 8xE&M <b>Mini slots:</b> 1x E1 1x T1 Optical fiber / 4x E1-T1 Ethernet bridge - router 3x RS232 async	<b>Long slots :</b> 4xE1 4xT1 8x ETH bridge - router TDM over IP, 2x ETH 5x RS232 sync - async 8x RS232 async 6x V35 - RS530 4x SHDSL 2 wires 2x SHDSL 2/4 wires 12/24x FXO 12/24x FXS 8xE&M <b>Mini slots:</b> 1x E1 1x T1 Optical fiber / 4x E1-T1 Voice over IP Ethernet bridge - router 3x RS232 async	2x 10GE SFP+ 4x STM-1 32x E1/T1 8x GE 8x SFP GE / FX	4x E&M 1x E1 1x SFP 1x Ethernet (mgt)
<b>Format</b>	Compact	DIN, compact	Compact	Compact 9" brackets	1U / 19"	1U / 19"	6U / 19"	5U / 19"	5U / 19"	1 U / 19"	Compact
<b>Power supply</b>	1x AC adaptor or 48 Vdc	48 Vdc or 12-24 Vdc	1x AC adaptor or 48 Vdc	24 - 48 Vdc AC adapter	1 or 2x AC and/or 48 Vdc	2x AC or 2x 48 Vdc	1 or 2x AC and/or 48 Vdc	1 or 2x AC and/or 48 Vdc	1 or 2x AC and/or 48 Vdc	1 x AC or 1 or 2x 48 Vdc	AC or 48 Vdc
<b>Size mm (WxDxH)</b>	170x120x41	220x140x44	170x120x41	218x124x44	438x226x44	432x200x44	433x280x264	434x220x225	434x220x225	438x225x44	433x280x264



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# Fiber Optic Media Converter, CSU-DSU, Modem

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Type	GPON OLT	GPON ONT GPON ONU	CWDM Active Multiplexer	Ethernet Media Converter	4xE1/T1 optical multiplexer	E1/T1 optical modem	RS530 optical modem	E1/T1 and RS530 SHDSL modem	E1-T1 CSU-DSU Ethernet bridge	RS530 E1 / T1 CSU-DSU	RS232/RS485 over Ethernet / IP	Voice Freq. Modem
<b>WAN interface</b>	GPON 8 or 16x GPON interfaces	GPON	CWDM	Copper or optical Ethernet	Optical	Optical	Optical	1/2x copper pairs	E1 - T1	E1 / T1	Ethernet copper or fiber	Leased Line and Dial-up
<b>Terminal interface</b>	4x 10GE 4x GE	4x GE Wi-Fi	GE & 10GE SDH SAN	100BT / 100FX 1,000BT / 1,000GX 10GbE / 10GbE copper or optical	4x E1T1 2x Eth 10/100/1000 2x SFP 1000	E1 / T1	RS232/RS530/V35/X21	E1 / T1 RS232/RS530/V35/X21	1x 10/100 BaseT	RS232/RS530/V35/X21	2x RS232 / RS485	RS232 - V35 - X21
<b>Other interfaces</b>	-	VoIP RF - TV	-	-	-	Ethernet 10/100	-	Ethernet 10/100	-	-	2+2x Digital in / out	-
<b>Max WAN throughput</b>	2.5 / 1.25 Gbps	2.5 / 1.25 Gbps	100x 10GE	10 GbE	2x Gigabit	2 Mbps	8 Mbps	2 Mbps	2 Mbps	2 Mbps	100 Mbps	33.6 kbps
<b>WAN Protocol</b>	G.984 G.988	G.984 G.988	CWDM	Ethernet	SAT over Eth / IP CS over Eth / IP	CMI	CMI	G.991.2	PPP - BCP HDLC	G704	Ethernet TCP / UDP	V21, V22, V32, V34 V27, V29, V33 Bell 202T
<b>Protocols</b>	VLAN, RSTP, LACP RIP, OSPF 802.3X QoS, 802.1p IGMP Snooping MLD Snooping	STP, RSTP VLAN IGMP Snooping 802.3x	Ethernet SDH	Ethernet	802.3X 802.1D VLAN QoS, 802.1p, DSCP				VLAN 802.1q Q-in-Q 802.1ad QoS, 802.1p 802.3X 802.1D Data compression		IP / UDP / TCP Raw, bloc, modem Telnet, Rlogin, Rtelnet RFC 2217 / COM port	MNP4-5 V42-V42Bis
<b>Management</b>	HTTP, HTTPS CLI Telnet, SSH snmp tftp Syslog	HTTP, HTTPS CLI Telnet, SSH snmp tftp Syslog	HTTP, HTTPS CLI Telnet, SSH snmp tftp Syslog	Dip switches FOCIR : http	http / https AT and CLI Telnet snmp v1,v2,V3 ftp	VT100 menus AT and CLI Telnet snmp ftp Alarm relay	VT100 menus AT and CLI Telnet snmp ftp Alarm relay	VT100 menus AT and CLI Telnet snmp ftp Alarm relay	VT100 menus AT and CLI Telnet snmp ftp	VT100 menus AT and CLI Alarm relay	VT100 menus AT and CLI http, https ftp snmp	VT100 menus AT and CLI Telnet snmp ftp Alarm relay
<b>Power supply</b>	Modular 110 - 230 Vac 48 Vdc	AC / 5Vdc adapter	Modular 110 - 230 Vac 48 Vdc	AC or 48Vdc adapter	24 - 48 Vdc 110-230 Vac adaptor	AC or 48 Vdc	AC or 48 Vdc	AC or 48 Vdc	AC / 5 Vdc adaptor	AC or 48 Vdc	AC or 12/24/48 Vdc	AC / 5 Vdc adaptor or 48 Vdc or AC
<b>Format</b>	1U / 19"	Compact	5U / 19"	Compact or rackmount	Desktop or rackmount	Desktop or rackmount	Desktop or rackmount	Desktop or rackmount	Compact	Desktop or rackmount	Compact	Desktop or rackmount
<b>Size mm (WxDxH)</b>	442 x 304 x 44	138 x 200 x 45	442 x 235 x 222	71x94x26	218x124x44	287x175x41	287x175x41	287x175x41	146x144x31	287x175x41	144x114x31	287x175x41



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