



data communications

The Access Company

Ordering Options

ACE-201.....	5	FCD-2L.....	25
ACE-201/622.....	5	FCD-E1, FCD-T1.....	25
ACE-2002, ACE-2002E.....	5	FCD-E1A.....	25
ACE-202.....	5	FCD-E1E.....	25
ACE-2002/2002E/202 Modules.....	5	FCD-E1I.....	26
ATM.....	5	FCD-E1L, FCD-T1L.....	26
CES.....	6	FCD-E1LC, FCD-T1LC.....	26
LAN.....	6	FCD-E1M, FCD-T1M.....	27
HDLC.....	6	FCD-E1M, FCD-T1M Modules.....	27
ACE-3100.....	6	HS-Q/N.....	27
ACE-3105.....	6	HS-S.....	27
ACE-3200.....	7	FCD-IP.....	27
ACE-3220.....	7	FCD-IPD.....	28
ACE-3205.....	8	FCD-IPL.....	28
ACE-3400.....	8	FCD-IPM.....	28
ACE-3402.....	9	FCS-155.....	28
ACE-3600.....	9	FCS-622.....	28
ACE-52.....	10	FOM-20.....	29
Airmux-200.....	10	FOM-40.....	29
Airmux-400.....	11	FOM-485.....	29
AMC-101.....	12	FOM-5A, FOM-6A.....	29
APD-2HS.....	12	FOM-6MP.....	29
APD-8.....	12	FOM-E1/T1.....	29
APS-8, APS-16, APS-24.....	12	FOM-E3, FOM-T3.....	30
ASM-10/8.....	13	FOM-E3/ETH, FOM-T3/ETH.....	30
ASM-20.....	13	FOMi-40.....	30
ASM-31.....	13	FOMi-E1/T1.....	30
ASM-40.....	13	FOMi-E3, FOMi-T3.....	30
ASM-60.....	13	FPS-8.....	31
ASM-61.....	13	Gmux-2000.....	31
ASM-MN-214.....	14	Gmux-2000 Modules.....	31
ASM-MN-214 Modules.....	14	GMUX-M-CT3-PW-1.....	31
ASMi-31.....	14	E1-CE-SRV/21, T1-CE-SRV/28.....	31
ASMi-52.....	14	E1-PW/28, T1-PW/28.....	31
ASMi-52L.....	15	GbE/2.....	31
ASMi-54.....	15	STM1, OC3.....	32
ASMi-54L.....	15	VCA-E1/16/12, VC-T1/16/12.....	32
BE-1.....	15	HBT.....	32
DXC-100.....	15	IMX-2.....	32
DXC-100 Modules.....	16	IMX-2T1/E1.....	32
D8E1T1.....	16	IMX-4E1.....	32
D8HS.....	16	IMX-4T1.....	32
DE3.....	16	IMXi-4.....	33
DOC-3.....	16	IPmux-11.....	33
DROUTER.....	16	IPmux-14.....	33
DSTM-1.....	16	IPmux-155L.....	33
DT3.....	16	IPmux-16.....	34
DXC-2.....	16	IPmux-1E.....	34
DXC-4.....	16	IPmux-2L.....	34
DXC-8R/10A/30.....	16	IPmux-4L.....	34
DXC-8R/10A/30 Modules.....	17	IPmux-216.....	35
D4E1, D8E1.....	17	IPmux-24.....	36
D4SL, D8SL.....	17	IPmux-4.....	36
D4T1, D8T1.....	17	IPmux-8.....	36
D8HS.....	17	IPVgate-20A.....	37
D8U.....	17	IPVgate-20B.....	37
DE1B.....	17	IPVgate-20L.....	37
DE3.....	17	IPVgate-20P.....	37
DFSTM-1.....	17	IPVgate-30.....	37
DHS.....	18	IPVsuite-200.....	37
DIM.....	18	IPVsuite-Billing.....	37
DT1B.....	18	Kilomux-2100/2104.....	37
DT3.....	18	Kilomux-2100/2104 Modules.....	38
Egate-100.....	18	KAI.....	38
Egate-20.....	18	KDI.....	38
ETX-102.....	19	KHS.1.....	38
ETX-201.....	19	KHS.2.....	38
ETX-201A.....	20	KHS.703.....	38
ETX-202.....	21	KHS.U.....	38
ETX-202A.....	21	KLS.1/N.....	38
ETX-204A.....	22	KLS.2.....	38
ETX-550.....	23	KM-Ringer, Ringer-2000, Ringer-2200N.....	38
F-TEL.....	23	KMBE.....	38
FCD-155.....	23	KML.1-5.....	38
FCD-155E.....	24	KML.10.....	38
FCD-24.....	24	KML.11.....	38



KML.6	38	MIC-21T/24C	48
KML.7	38	MIC-21T/35C	48
KML.8	39	MIC-232/485	49
KML.F	39	MIC-232/530	49
KVC.1M	39	MIC-24/11	49
KVF.4	39	MIC-24/35	49
KVF.6	39	MIC-24/CL	49
KVF.8	39	MIC-24T/21C	49
LA-104	39	MIC-35T/21C	49
LA-110	39	MIC-35T/36C	49
LA-130	39	MIC-35T/530C	49
LA-210	40	MIC-36T/35C	49
LBT	40	MIC-530T/35C	49
LRS-102	40	MIC-P/S1	49
LRS-102 Modules	40	MiRIC-E1, MiRIC-T1	49
ASMi-54C	40	MiRIC-E3, MiRIC-T3	49
ASMi-54C/N	41	MiRiCi-E1T1	49
OP-108C	41	MiRiCi-E3T3	49
OP-106C	41	MiTOP-E1/T1	49
OP-34C	41	MiTOP-E3/T3	49
OP-25C	41	MMS	49
LRS-16	41	Model Descriptors 5620	49
LRS-20	42	MPS	49
LRS-24	42	MTE-1	49
LRS-24 Modules	42	MTE-2	49
ASMi-52CD	42	Optimux-108	50
FOMi-40C	42	Optimux-106	50
FOMi-E1/T1C	42	Optimux-108L	50
FOMi-E3, FOMi-T3	42	Optimux-1551	50
ASM-40CD	42	Optimux-1553	51
M-EFC	42	Optimux-34	51
M-EFC/U	42	Optimux-25	51
Megaplex-104, Megaplex-204	42	Optimux-45	52
Megaplex-2100/2104	42	Optimux-45L	52
Megaplex-2100/2104 Modules	43	Patch-21UB, Patch-28UB, Patch-28B	52
ACM	43	PFH-4	52
HS-2	43	PRBm-20	52
HS-6N, HS-12N	43	RADview-SC/TDMoIP	53
HS-703	43	RADview-SC/Vmux	53
HS-DP/3, HS-DP/6	43	RADview-EMS	53
HS-ETH	43	RADview-SC/IPV	53
HS-ETH/SW	43	RIC-155	53
HS-Q/N	43	RIC-155GE	53
HS-RN	43	RIC-622GE	53
HS-S	44	RIC-E1, RIC-T1	53
HS-U, HS-U-6, HS-U-12	44	RIC-E3/ETH, RIC-T3/ETH	54
HSF-1, HSF-2	44	RICi-155GE	54
LS-6N, LS-12	44	RICi-16	54
ML-1/2E1/T1, MLF-1/2E1/T1	44	RICi-4E1, RICi-4T1, RICi-8E1, RICi-8T1	54
ML-20N	44	RICi-622GE	55
ML-8E1, ML-8T1	44	RICi-E1, RICi-T1	55
ML-IP	44	RICi-E3, RICi-T3	55
MSL-8	44	RICi-SE	55
Ringer-2100R, Ringer-2000, Ringer-2200N	44	RSD-1	55
VC-16A	45	RSD-10	56
VC-4/4A, VC-8/8A, VC-16	45	S-RPT	56
VC-4/OMNI	45	SFP Transceivers	56
VC-6/LB, VC-6/4LB	45	SPD-703-1	57
VC-6A	45	SPD-E1	57
VF-24/30/48/60	45	SPD-T1/802	57
VFS-24/30/48/60	45	SPH-16	57
Megaplex-4100	45	SPS-2HS	57
Megaplex-4100 Modules	46	SPS-3	57
ASMi-54C	46	SPS-3S	57
M8E1, M8T1	47	SPS-4	58
MPW-1	47	SPS-6, SPS-12	58
M8SL	47	SRM-31A	58
M16E1, M16T1	48	SRM-31S	58
OP-108C, OP-108C	48	SRM-3A	58
OP-34C, OP-25C	48	SRM-3D	58
HSF-2	48	SRM-5A, SRM-5D	58
HS-6N	48	SRM-5S, SRM-6S	58
HS-703	48	SRM-5TX	58
HS-12N	48	SRM-6AC	58
HS-RN	48	SRM-9	58
HS-S	48	TinyBridge-100	59
HS-U, HS-U-6, HS-U-12	48	U-RPT	59
LS-6N	48	Vmux-110	59
LS-12	48	Vmux-210	59
VC-4/4A/8/8A/16	48	Vmux-2100	59
VC-4/OMNI	48	Vmux-2120	60
MIC Series	48	Vmux-400	60



VSC.....	60	WEB RANger-II	60
VSC-X.....	60		



ACE-201 Multiservice Network Termination Unit
ACE-201*/@/#!/&#
 * Power supply
 AC 100-240 VAC
 DC -48 VDC
 @ Redundant power supply
 ACR Dual 100 to 240 VAC
 DCR Dual -48 VDC
 & STM-1/OC-3 ATM port (155 Mbps) and connector
 SC13M-155 1310 nm, multimode, short haul, SC
 ST13M-155 1310 nm, multimode, short haul, ST
 SC13L-155 1310 nm, single mode, short haul, S.1.1, SC
 ST13L-155 1310 nm, single mode, short haul, S.1.1, ST
 SC13LH-155 1310 nm, single mode, long haul, L.1.1, SC
 ST13LH-155 1310 nm, single mode, long haul, L.1.1, ST
 # Gigabit Ethernet port and connector
 UTP-1000 1000BaseT, electrical
 LC85Sx-1000 1000BaseSx, 850 nm multimode, LC, SFF
 LC13Lx-1000 1000BaseLx, 1310 nm single mode, LC, SFF

Supplied Accessories
 DC adapter kit For DC unit
 RM-34 Hardware kit for mounting one unit in a 19" rack

Optional Accessories
 CBL-DB9F-DB9M-STR DB-9 to DB-9 control port cable

ACE-201/622 Multiservice Network Termination Unit
ACE-201/#!/&/622
 # Power supply
 AC Single 100 to 240 VAC
 DC Single -48 VDC
 ACR Dual 100 to 240 VAC
 DCR Dual -48 VDC
 # Gigabit Ethernet interface and connector type
 UTP 1000BaseT, electrical RJ-45
 GBE-85M/LC 1000BaseSX, 850 nm multimode laser, LC, SFF
 GBE-13L/LC 1000BaseLX, 1310 nm single mode laser, LC, SFF

Supplied Accessories
 DC adapter kit For DC unit
 RM-34 Hardware kit for mounting one ACE-201 unit in a 19" rack

Optional Accessories
 CBL-DB9F-DB9M-STR DB-9 to DB-9 control port cable

ACE-2002, ACE-2002E Multiservice Access Concentrators
ACE-2002/#!/@
ACE-2002E/#!/@
 # Power supply
 AC 100-230 VAC
 DC -48 VDC
 24DC 24 VDC
 @ Redundant power supply R Redundant power supply (same as the first one)

Supplied Accessories
 RM-ACE-2002/P2 Hardware kit for mounting one ACE-2002 unit in a 19" rack
 RM-ACE-2002E/P2 Hardware kit for mounting one ACE-2002E unit in a 19" rack

Optional Accessories
 CBL-DB9F-DB9M-STR DB-9 to DB-9 control port cable

For ACE-2002/2002E Modules see below.

ACE-202 Dedicated Multiservice Access Concentrator
ACE-202/#!/@/%
 # Power supply
 AC 100-250 VAC
 DC -48 VDC
 @ Redundant power supply R Redundant power supply (same as the first)
 % Fixed interface for slot 3 and a slot 4
 NULL No fixed interface
 LAN Ethernet/Fast Ethernet port (RJ-45)

LAN/CES/E1 One Ethernet/Fast Ethernet port (RJ-45) and one balanced E1 CES port (RJ-45)
 LAN/CES/T1 One Ethernet/Fast Ethernet port (RJ-45) and one T1 CES port (RJ-45)
 IMA-UNI/E1 Four E1 IMA/UNI ports (RJ-45)
Note: Two additional plug-in modules can be ordered separately.

Supplied Accessories
 AC power cord or DC power connection kit
 RM-34 Hardware kit for mounting one ACE-202 unit in a 19" rack

Optional Accessories
 CBL-DB9F-DB9M-STR DB-9 to DB-9 control port cable

ACE-2002/2002E/202 Modules
ACE-M/+
 + **ATM** STM-1, STM-4, IMA and ATM UNI Modules

E1	E1 balanced G.703
T1	Electrical G.703
E3	E3 UNI
T3	T3 UNI
UTP/25	25.6 Mbps, UTP
CX/BNC/155	155 Mbps, electrical, unbalanced (G.703)
IMA-UNI/4E1	4 balanced IMA/UNI E1
IMA-UNI/4E1/UNB	4 unbalanced IMA/UNI E1
AL	
IMA-UNI/4T1	4 IMA/UNI T1
IMA-UNI/8E1	8 balanced IMA/UNI E1 (ACE-2002E only)
IMA-UNI/8E1/UNB	8 unbalanced IMA/UNI E1 (ACE-2002E only)
AL	
IMA-UNI/8T1	8 IMA/UNI T1 (ACE-2002E only)
FC13L/155	155 Mbps, single mode, 1310 nm, short-haul laser, FC
FC13L/155D	Dual port, single mode, 1310 nm, short-haul laser, STM-1/OC-3, FC (ACE-2002 and ACE-2002E only)
FC13L/155R	Dual port APS redundancy, single mode, 1310 nm, short-haul laser, STM-1/OC-3, FC (ACE-2002 and ACE-2002E only)
FC13LH/155	155 Mbps, single mode, 1310 nm, long-haul laser, FC
FC13LH/155D	Dual port, single mode, 1310 nm, long-haul laser, STM-1/OC-3, FC (ACE-2002 and ACE-2002E only)
FC15LH/155	155 Mbps, single mode, 1550 nm, long-haul laser, FC
SC13L/155	155 Mbps, single mode, 1310 nm, short-haul laser, SC
SC13L/155D	Dual port, single mode, 1310 nm, short-haul laser, STM-1/OC-3, SC (ACE-2002 and ACE-2002E only)
SC13L/155R	Dual port APS redundancy, single mode, 1310 nm, short-haul laser, STM-1/OC-3, SC (ACE-2002 and ACE-2002E only)
SC13L/155J	155 Mbps, single mode, 1310 nm, short-haul laser, SC for the Japanese market
SC13L/622	622 Mbps, single mode, 1310 nm, short-haul laser, SC (ACE-2002 and ACE-2002E only)
SC13LH/155	155 Mbps, single mode, 1310 nm, long-haul laser, SC
SC13LH/155D	Dual port, single mode, 1310 nm, long-haul laser, STM-1/OC-3, SC (ACE-2002 and ACE-2002E only)
SC13LH/155R	Dual port APS redundancy, single mode, 1310 nm, long-haul laser, STM-1/OC-3, SC (ACE-2002 and ACE-2002E only)
SC13LH/155J	155 Mbps, single mode, 1310 nm, long-haul laser, SC for the Japanese market
SC13LH/622	622 Mbps, single mode, 1310 nm, long-haul laser, SC (ACE-2002 and ACE-2002E only)
SC13M/155	155 Mbps, multimode, 1310 nm, SC
SC13M/155D	Dual port, multimode, 1310 nm, SC (ACE-2002 and ACE-2002E only)
SC13M/155R	Dual port APS redundancy, multimode, 1310 nm, SC
SC13M/622	622 Mbps, multimode, 1310 nm, SC (ACE-2002 and ACE-2002E only)
SC15LH/155	155 Mbps, single mode, 1550 nm, long-haul laser, SC
SC15LH/155J	155 Mbps, single mode, 1550 nm, long-haul laser, SC for the Japanese market



4T1 Four T1 ports
Note: Unbalanced E1 interface is provided via an adapter cable, which can be ordered separately (see CBL-RJ45/2BNC/E1/X in Optional Accessories).
 ! Abis optimization over E1 (Default=no support)
 AB Abis optimization support for 4 E1 ports

* Software license pack (Default=ATM network functionality)
 P1 ATM and packet-switched network functionality, not including clock recovery over packet
 P2 Complete functionality, including clock recovery over packet
 P3 ATM and PSN uplink including software support for synchronization over packet, and MPLS LDP software functionality
 P4 ATM and PSN uplink, including MPLS LDP software functionality, not including clock recovery over packet

~ Optional clock recovery hardware component
 A Clock recovery hardware component
Note: For activating the clock recovery hardware, the PACK2 software license pack is required. It is possible, however, to order the hardware only, for future software upgrade.

? Enclosure type (Default=regular enclosure)
 H Industrially hardened enclosure

Supplied Accessories
 AC power cord For AC unit
 AC/DC adapter plug (for wide range only) AC/DC adapter plug (for wide range only)
 DC adapter kit For 24 VDC unit only

Optional Accessories
 CBL-LC/#/ & LC to SC/ST/FC fiber optic converter cable for operation with multimode or single mode fibers. The cable is 2 meters (6.5 ft) long.

Connector
 SC SC connector
 ST ST connector
 FC FC connector

& Fiber
 MM Multimode fiber
 SM Single mode fiber

CBL-DB9F-DB9M-STR Standard DB-9 to DB-9 control port cable
 CBL-RJ45/2BNC/E1/X Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced connectors (if unbalanced E1 interface is ordered)

RM-35/@ Hardware kit for mounting one or two ACE-3100 units into a 19" rack

@ Mounting kit
 P1 For mounting one unit
 P2 For mounting two units

WM-35 A hardware kit for mounting one ACE-3100 unit on a wall

ACE-3105-SW/! Software upgrade pack
 ! Software pack
 PACK1 PW over PSN functionality
 PACK2 Clock recovery functionality
 LDP LDP functionality

ACE-3200 Cell-Site Gateway
 ACE-3200/#/@/\$/!/~/~
 # Power supply and redundancy
 AC Single 100 to 240 VAC
 DC Single -48 VDC
 ACR Dual 100 to 240 VAC
 DCR Dual -48 VDC
 24DC Single 20 to 36 VDC
 24DCR Dual 20 to 36 VDC

@ Number of STM-1/OC-3c ports
 S0 Without STM-1/OC-3c ports
 S2 Two STM-1/OC-3c ports (two SFP cages)

Note: SFP transceivers for the STM-1/OC-3c ports are ordered separately. For more information, refer to Optional Accessories.

\$ UNI/IMA/CES ports
 8E1 8 E1 UNI/IMA/CES ports
 8T1 8 T1 UNI/IMA/CES ports
 16E1 16 E1 UNI/IMA/CES ports
 16T1 16 T1 UNI/IMA/CES ports

Note: Unbalanced E1 interface is provided via an adapter cable, which can be ordered separately (see CBL-RJ45/2BNC/E1 in Optional Accessories).
 ! Abis optimization over E1 (Default=no Abis support):

AB Abis optimization support for up to 6 E1 ports
 & Ethernet (Default=two built-in electrical RJ-45 ports)
 SFP-ETH Two empty SFP cages
Note: Fiber optic Ethernet ports require SFP transceivers fitted into the empty cages.

* Software license pack (Default=ATM)
 PACK1 ATM and packet-switched network functionality, not including clock recovery over packet
 PACK2 Complete functionality, including clock recovery over packet

~ Clock recovery hardware component
 A Clock recovery hardware component
Note: For activating the clock recovery hardware, the PACK2 software license pack is required.

? Enclosure type (Default=regular enclosure)
 H Industrially hardened enclosure

Supplied Accessories
 AC power cord For AC unit
 DC adapter kit For DC unit
 RM-34 Hardware kit for mounting one ACE-3200 unit into a 19" rack

Optional Accessories
SFP Transceivers
 SFP-1 Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
 SFP-2 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
 SFP-3 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
 SFP-4 Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
 CBL-LC/#/ & LC to SC/ST/FC fiber optic converter cable for operation with multimode or single mode fibers. The cable is 2 meters (6.5 ft) long.

Connector
 SC SC connector
 ST ST connector
 FC FC connector

& Fiber
 MM Multimode fiber
 SM Single mode fiber

CBL-RJ45/2BNC/E1/X Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced coaxial connectors (if unbalanced E1 interface is ordered)

CBL-DB9F-DB9M-STR Standard DB-9 to DB-9 control port cable
 WM-34 Hardware kit for mounting one ACE-3200 unit on a wall.
 ACE-3200-8-SW/! Software upgrade pack for a unit with 8 or 16 E1/T1 ports
 ! Software pack
 Pack1 PW over PSN functionality
 Pack2 Clock recovery functionality
 LDP LDP functionality

ACE-3220 Cell-Site Gateway
 ACE-3220/!/#/\$/+2/@/~/?
 ! Power supply
 AC Single 100 to 240 VAC
 DC Single -48 VDC
 ACR Dual 100 to 240 VAC
 DCR Dual -48 VDC
 24DC Single 24 VDC
 24DCR Dual 24 VDC

SDH/SONET ports (default=none)
 S1 1xOC-3c/STM1-UNI
 \$ E1/T1 ports (Default=8E1/T1)
 8E1 8 E1 ports
 8T1 8 T1 ports
 16E1 16 E1 ports
 16T1 16 T1 ports

+2 FE ports (Default= RJ-45 slots)
 4SE 4 SFP slots

@ Software license pack (Default=ATM)
 P1 ATM and PSN functionality, not including clock recovery over packet
 P2 Complete functionality, including clock recovery over packet



P3	ATM and PSN uplink including software support for synchronization over packet, and MPLS LDP software functionality
P4	ATM and PSN uplink, including MPLS LDP software functionality, not including clock recovery over packet
~	Clock recovery hardware component
A	Clock recovery hardware component
AS	Synchronization over Packet hardware component & Synchronous Ethernet hardware component
S	Synchronous Ethernet hardware component

Note: For activating the clock recovery hardware, the P2 or P3 software license pack is required. It is possible, however, to order the hardware only, for future software upgrade.

? Enclosure	
H	Industrially hardened enclosure

Optional Accessories

ACE-CSG-IF/C1 Modular interfaces and peripherals

C1 Interface	
2AV-A	2 ADSL2+ ports (Annex A)
2AV-B	2 ADSL2+ ports (Annex B)
4SH	4 SHDSL.bis ports
AV-A	1 ADSL2+ port (Annex A)
GBE	Gigabit Ethernet port

SFP Transceivers

SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-9F	Fast Ethernet, RJ-45, 100 BaseT, 100 m (328 ft)
SFP-9G	Gigabit Ethernet, RJ-45, 100 BaseT, 100 m (328 ft)
CBL-LC/#/ &	LC to SC/ST/FC fiber optic converter cable for operation with multimode or single mode fibers. The cable is 2 meters (6.5 ft) long.

# Connector	
SC	SC connector
ST	ST connector
FC	FC connector
& Fiber	
MM	Multimode fiber
SM	Single mode fiber

CBL-RJ45/2BNC/E1/X Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced coaxial connectors (if unbalanced E1 interface is ordered)

CBL-DB9F-DB9M-STR Standard DB-9 to DB-9 control port cable

RM-34 Hardware kit for mounting one ACE-3200 unit into a 19" rack

WM-34 Hardware kit for mounting one ACE-3200 unit on a wall.

ACE-3200-8-SW/! Software upgrade pack for a unit with 8 or 16 E1/T1 ports

! Software pack	
P1	PW over PSN functionality
P2	Clock recovery functionality
LDP	LDP functionality

ACE-3205 Cell-Site Gateway

ACE-3205/#/%/+/\$/!/&/'/~/?

# Power supply and redundancy	
AC	Single 100 to 240 VAC
DC	Single -48 VDC
ACR	Dual 100 to 240 VAC
DCR	Dual -48 VDC
24	Single 20 to 36 VDC
24R	Dual 20 to 36 VDC
% SHDSL Port (Default=no SHDSL ports)	

SH	Four SHDSL Ports
+ ADSL2+ Ports (default=no ADSL2+ ports)	
2+A	Two ADSL2+ Annex A ports
2+B	Two ADSL2+ Annex B ports

Note: At least one type of DSL ports must be ordered.

\$ E1/T1 ports	
8E1	8 E1 ports
8T1	8 T1 ports
16E1	16 E1 ports
16T1	16 T1 ports

Note: Unbalanced E1 interface is provided via an adapter cable, which can be ordered separately (see CBL-RJ45/2BNC/E1/X in Optional Accessories).

! Abis optimization over E1 (Default= no support)	
AB	Abis optimization support for up to 6 E1 ports
& Ethernet port type (Default=two built-in electrical RJ-45 ports)	
SE	Two empty SFP cages

Note: Fiber optic Ethernet ports require SFP transceivers to fit into the empty cages.

* Software license pack (Default= ATM network functionality)	
P1	ATM and PSN functionality, <u>not including</u> clock recovery over packet
P2	Complete functionality, <u>including</u> clock recovery over packet

Note: For activating the clock recovery hardware, the PACK2 software license pack is required.

~ Clock recovery hardware component	
A	Clock recovery hardware component

Note: For activating the clock recovery hardware, the P2 software license pack is required. It is possible, however, to order the hardware only, for future software upgrade.

? Enclosure type (Default=regular enclosure)	
H	Industrially hardened enclosure

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit
RM-34	Hardware kit for mounting one ACE-3205 unit into a 19" rack

Optional Accessories

SFP Transceivers

SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
CBL-LC/#/ &	LC to SC/ST/FC fiber optic converter cable for operation with multimode or single mode fibers. The cable is 2 meters (6.5 ft) long.

# Connector	
SC	SC connector
ST	ST connector
FC	FC connector
& Fiber	
MM	Multimode fiber
SM	Single mode fiber

CBL-RJ45/2BNC/E1/X Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced coaxial connectors (if unbalanced E1 interface is ordered)

CBL-DB9F-DB9M-STR Standard DB-9 to DB-9 control port cable

WM-34 Hardware kit for mounting one ACE-3200 unit on a wall.

ACE-3205-8-SW/! Software upgrade pack for a unit with 8 or 16 E1/T1 ports

! Software pack	
P1	PW over PSN functionality
P2	Clock recovery functionality
LDP	LDP functionality

ACE-3400 Cellular Backhaul Aggregation Unit

ACE-3400/#

# Power supply and redundancy	
AC	Single 100 to 240 VAC
DC	Single -48 VDC
ACR	Dual 100 to 240 VAC
DCR	Dual -48 VDC



ACE-MC/*/~	ACE-3400 main card
* Main card	
155	STM-1/OC-3c to GbE
155-CH	Channelized STM-1/OC-3 to ATM STM-1/OC-3c with redundancy
32E1B	32 balanced E1s
32E1U	32 unbalanced E1s
32T1	32 T1s
63E1B	63 balanced E1s
63E1U	63 unbalanced E1s
63T1	63 T1s
~	Optional software license pack
PACK1	Pseudowire functionality
ACE-IF-155/^/&	ACE-3400 ATM interface module
^	Fiber
13L	Single mode, 1310 nm
13LH	SM, 1310 nm, long haul
13M	Multimode, 1310 nm
&	Connector
SC	SC connector
ACE-IF-GbE/@	ACE-3400 GbE interface module
@	Port
SFP	SFP cage (empty)
UTP	100BaseT, electrical
<i>Note: Fiber optic Gigabit Ethernet modules require SFP transceivers that are fitted into the empty cage. For technical specifications refer to the SFP Transceivers data sheet, available on RAD's Web site and for ordering information see the SFP transceiver options in this document.</i>	
<i>Supplied Accessories</i>	
AC power cord	For AC unit
DC adapter kit	For DC unit
RM-39	Hardware kit for mounting one ACE-3400 unit into a 19" rack
CBL-RJ45/D9/F/STR	RJ-45 to DB-9 control port adapter cable
<i>Optional Accessories</i>	
ACE-PPANEL/BNC/21	Patch panel adapter with 21 unbalanced BNC connectors
ACE-PPANEL/RJ45/28	Patch panel adapter with 28 balanced RJ-45 connectors
<i>Note: For more information about the supplied Patch Panel kit, refer to the Patch Panel Adapters data sheet, available on RAD's Web site.</i>	
CBL-RJ45/2BNC/E1/X	Interface adapter for converting a balanced E1 RJ-45 station clock connector to a pair of BNC unbalanced coaxial connectors (if unbalanced E1 station clock source is used)
ACE-PS/*!	ACE hot-swappable power supply unit
*	Power supply
AC	100 to 240 VAC
DC	-48 VDC
ACE-FTC/ACE-3400	Fan tray card (for replacement)
ACE-MC-SW/!	Software upgrade pack
!	Software pack
Pack1	PW over PSN functionality
LDP	LDP functionality
ACE-3402	Cellular Backhaul Aggregation Unit
ACE-3402/#	
#	Power supply
AC	Single 100-240 VAC
DC	Single -48 VDC
ACR	Dual 100-240 VAC
DCR	Dual -48 VDC
ACE-MC/*/~	ACE-3402 main card
*	Main card
155	STM-1/OC-3 to GbE
155-CH	Channelized STM-1/OC-3 to ATM STM-1/OC-3c with redundancy
~	Software license pack (Default=ATM network functionality)
PACK1	Pseudowire functionality
ACE-IF-155/^/&	ACE-3402 ATM interface module
^	Fiber
13L	Single mode, 1310 nm
13LH	SM, 1310 nm long haul
13M	Multimode, 1310 nm
&	Connector
SC	SC connector

ACE-IF-GbE/@	ACE-3402 GbE interface module
@	Port
SFP	SFP cage (empty)
UTP	100BaseT, electrical
<i>Note: Fiber optic Gigabit Ethernet modules require SFP transceivers that are fitted into the empty cage. For technical specifications refer to the SFP Transceivers data sheet, available on RAD's Web site and for ordering information see the SFP transceiver options in this document.</i>	
<i>Supplied Accessories</i>	
AC power cord	For AC unit
DC adapter kit	For DC unit
RM-36	Hardware kit for mounting one ACE-3402 unit into a 19" rack
CBL-RJ45/D9/F/STR	Control port adapter cable (RJ-45 to DB-9)
<i>Optional Accessories</i>	
SFP Transceivers	
SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-9G	GbE interface, RJ-45 connector, 100m (238 ft)
CBL-RJ45/2BNC/E1/X	Interface adapter for converting a balanced E1 RJ-45 station clock connector to a pair of BNC unbalanced coaxial connectors (if unbalanced E1 station clock source is used)
ACE-PS/*!	ACE hot-swappable power supply unit
*	Power supply
AC	100 to 240 VAC
DC	-48 VDC
ACE-FTC/ACE-3402	Fan tray card (for replacement)
ACE-MC-SW/!	Software upgrade pack
!	Software pack
Pack1	PW over PSN functionality
LDP	LDP functionality
ACE-3600	Cellular Backhaul Aggregation Unit
ACE-3600/#	
#	Power supply and redundancy
AC	Single 100 to 240 VAC
DC	Single -48 VDC
ACR	Dual 100 to 240 VAC
DCR	Dual -48 VDC
ACE-MC/*	ACE-3400 main card
*	Main card
155-4/PACK-1	STM-1/OC-3c to GbE
<i>Note: For full system redundancy, order two main module units.</i>	
~	Optional software license pack
PACK1	Pseudowire functionality
ACE-IF-GbE/+/@	ACE-3600 ATM interface module
+	STM-1/OC-3c ports
S4	Four STM-1/OC-3c ports (four empty SFP cages)
@	GbE port
SFP	SFP cage (empty)
ACE-IF-GbE/@	ACE-3400 GbE interface module
<i>Note: Fiber optic Gigabit Ethernet modules require SFP transceivers that are fitted into the empty cage. For technical specifications refer to the SFP Transceivers data sheet, available on RAD's Web site and for ordering information see the SFP transceiver options in this document.</i>	
<i>Supplied Accessories</i>	
AC power cord	For AC unit
DC adapter kit	For DC unit
RM-36	Hardware kit for mounting one ACE-3600 unit into a 19" rack
CBL-RJ45/D9/F/STR	RJ-45 to DB-9 control port adapter cable



Optional Accessories

SFP Transceivers

SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-9G	GbE interface, RJ-45 connector, 100m (238 ft)
CBL-LC/##/	LC to SC/ST/FC fiber optic converter cable for operation with multimode or single mode fibers. The cable is 2 meters (6.5 ft) long.

# Connector	
SC	SC connector
ST	ST connector
FC	FC connector
& Fiber	
MM	Multimode fiber
SM	Single mode fiber
CBL-RJ45/2BNC/E1/X	Interface adapter for converting a balanced E1 RJ-45 station clock connector to a pair of BNC unbalanced coaxial connectors (if unbalanced E1 station clock source is used)

ACE-PS/* ACE hot-swappable power supply unit

* Power supply	
AC	100 to 240 VAC
DC	-48 VDC

ACE-FTC/ACE-3600 Fan tray card (for replacement)

ACE-MC-SW/! Software upgrade pack

! Software pack	
LDP	LDP functionality

ACE-52 Multiservice Network Termination Unit

ACE-52/##/ & /* / %

# Power supply	
AC	100-230 VAC
DC	-48 VDC
& ATM interface	
SC13L-155	155 Mbps, single mode, 1310 nm, short haul laser S1.1, SC connector
SC13LH-155	155 Mbps, single mode, 1310 nm, long haul laser L1.1, SC connector
SC13M-155	155 Mbps, multimode 1310 nm, SC connector
ST13L-155	155 Mbps, single mode, 1310 nm, short haul laser S1.1, ST connector
ST13LH-155	155 Mbps, single mode, 1310 nm, long haul laser L1.1, SC connector
UTP-25	25.6 Mbps ATM

* Ethernet interface	
ETH	Single 10/100BaseT
2ETH	Dual 10/100BaseT

% Optional CES port:	
CESE1	Single balanced E1 CES port, RJ-45 connector
CESE1-UNBAL	Single unbalanced E1 CES port, RJ-45 connector (via an adapter cable)
CEST1	Single balanced T1 CES port, RJ-45 connector

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit
CBL-RJ45/2BNC/E1	Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced connectors (if unbalanced E1 interface is ordered)
CBL-DB9F-DB9M-STR	DB-9 to DB-9 control port cable
RM-35/@	Hardware kit for mounting one or two ACE-52 units into a 19" rack

@ Mounting kit	
P1	For mounting one unit
P2	For mounting two units

Airmux-200 Broadband Wireless Multiplexer

Indoor Unit

Airmux-200/IDU/~ / UTP/*	Indoor unit
--------------------------	-------------

Airmux-200/IDUE-4	Extended indoor unit with redundant DC power supply, 4 E1 ports, 2 FE ports, multiple clocks
Airmux-200/IDU-R/ & / a	Indoor unit with TDM bypass

Outdoor Unit

Airmux-200/ODU/##/ ^	Outdoor unit
Airmux-200/ODU-HE/!	Outdoor unit, high-end
Airmux-200/ODU-HE/!!/ EXT	Outdoor unit, high-end, for external antenna connection
Airmux-200VS/ < < / EXT	Outdoor unit for video surveillance application, external antenna
Airmux-200VS/ < < / INT	Outdoor unit for video surveillance application, integrated antenna
Airmux-200/ODU-HE/ @ / CMB	Outdoor unit, high-end, configurable via Combo Configuration tool
Airmux-200/ODU-HE/ @ / CMB/ EXT	Outdoor unit, high-end, configurable via Combo Configuration tool, external antenna

Power Over Ethernet

Airmux-200/= / ~ / POE	Outdoor unit with POE device with integrated antenna
Airmux-200/+ / ~ / EXT/ POE	Outdoor unit with POE device for external antenna
Airmux-200/POE-8/ a	Indoor device feeding 8 ODU's via PoE ports with AC and DC
Airmux-200/POE-AC/ a	PoE device with AC plug
Airmux-200/POE-DC/ > >	PoE device with DC plug
Airmux-200/OPOE	Outdoor POE device with AC

Collocation Hubs

Airmux-200-HSSU	Hub site sync unit to connect 8 collocated outdoor units and 2 additional HSSUs
-----------------	---

Airmux-200/LC

Airmux-200L/? / % / EXT/ a	Low Ethernet traffic, ODU, POE
Airmux-200L/? / % / INT/ a	Low Ethernet traffic, ODU, POE, and integrated antenna <i>Note: Available with F58F only.</i>
Airmux-200LC/? / % / EXT/ a	Collocated, Low Ethernet traffic, ODU, POE
Airmux-200LC/? / % / INT/ a	Collocated, Low Ethernet traffic, ODU, POE, and integrated antenna <i>Note: Available with F58F only</i>

Note: All Airmux-200 products support the narrow channel bandwidth, in addition to 20 MHz, except for the following that support 20 MHz only:

- ODU with the frequencies 4.9F, 5.3E, 5.3F, 5.4E, 5.4E-HG, 5.4E-LG, 5.4IC, 5.8UK
- POE with frequencies 4.9FP, 5.3E, 5.4E, 5.4E-HG, 5.4E-LG

Airmux-200L and Airmux-200LC support 5 MHz channel bandwidth only.

~ Power supply	
115	115 VAC power supply
230	230 VAC power supply
ACOC	AC open-ended
ACUK	UK
IDU-E only	
48	-48 VDC power supply
24	24 VDC power supply

Note: The Airmux-200 IDU-E may be ordered with AC redundant power supplies only. The power supply of the single power supply option is not removable.

For IDU, the default power supply is -20 to -60 VDC. AC power in the IDU is supplied by an AC/DC adapter.

a AC plug	
ACEU	European
ACES	US
ACUK	UK
ACOC	Open-ended
>> Power supply	



48	-48 VDC power supply	^ EXT	Outdoor unit with dedicated connector for external antenna connection
24	24 VDC power supply		
? Net Ethernet throughput		<i>Note: If EXT is not specified, Airmux-200/ODU is supplied with an integrated antenna</i>	
2	2 Mbps	& TDM Interface	
= Frequency band and regulation		E1	E1 interface
F24F	2.412-2.462 GHz, FCC	T1	T1 interface
F24HP	High-power F24		
F54E	5.500-5.700 GHz, ETSI	<i>Optional Accessories</i>	
F54HP	High-power F54	Airmux-ANT/\$	External antenna supplied with 1m (3.3 ft) cable
F58F	5.740-5.835 GHz FCC	\$ External antenna	Grid is a grid antenna, fp is a flat panel antenna, and dish is a dish antenna
+ Frequency band and regulation		17/F2X/db/fp	17 dBi, 2.7-2.9 GHz
F24E-LG	2.412-2.472 GHz, ETSI, low-gain	18/F5X/db/fp	18 dBi, 5.x GHz
F24F	2.412-2.462 GHz, FCC	21/4.9/db/fp	21 dBi, 4.9 GHz
F24HP	High-power F24	22/5.3/db/fp	22 dBi, 5.3 GHz
F53E	5.180-5.320 GHz, ETSI	22/5.4/db/fp	22 dBi, 5.4 GHz
F53HP	High-power F53	22/5.8/db/fp	22 dBi, 5.8 GHz
F54E-HG	High-gain F54E	24/2.4/db/grid	24 dBi, 2.4 GHz
F54E-LG	Low-gain F54E	24/2.5/db/grid	24 dBi, 2.4 GHz
F54HP	High-power F54	27/4.9/db/dish	27 dBi, 4.9 GHz
F58F	5.740-5.835 GHz FCC	28/5.3/db/fp	28 dBi, 5.3 GHz
@ Frequency band and regulation		28/5.4/db/fp	28 dBi, 5.4 GHz
F54IC	F54 Canada	28/5.8/db/fp	28 dBi, 5.8 GHz
F58IDA	F58 WPC India	29/5.8/db/dish	29 dBi, 5.8 GHz
F58F	F58 FCC	32/5.3/db/dish	32.5 dBi, 5.3 GHz
# Frequency band and regulation		32/5.4/db/dish	32.5 dBi, 5.4 GHz
F23HP	2.312-2.387 GHz, high power	32/5.8/db/dish	32.5 dBi, 5.8 GHz
F24HP	High-power F24		
F24E-LG	Low-gain F24E		
F24F	2.412-2.462 GHz, FCC		
F53E	5.180-5.320 GHz, ETSI		
F53HP	High-power F53		
F54E	5.500-5.700 GHz, ETSI		
F54E-HG	High-gain F54E		
F54E-LG	Low-gain F54E		
F54IC	F54 Canada		
F54HP	High-power F54		
F58F	5.740-5.835 GHz, FCC		
F58E	5.740-5.835 GHz, ETSI		
<i>Note: F23HP, F24HP, F24E-LG, F53E, F54E-LG and F54E-HG are available with external antenna only.</i>			
% Frequency band and regulation			
F24F	2.412-2.462 GHz, FCC		
F24HP	2.4 GHz high-power		
F58F	5.740-5.835 GHz FCC		
! Frequency band and regulation			
F24F	2.412-2.462 GHz, FCC		
F24HP	High-power F24		
F25BRS	2.500-2.690 GHz, BRS, FCC		
F49F	4.850-4.980 GHz, FCC		
F54E	5.500-5.700 GHz, ETSI		
F54HP	High-power F54		
F58E	5.740-5.835 GHz, ETSI		
F58F	5.740-5.835 GHz FCC		
F59HP	5.725-5.950 GHz		
F60HP	F60HP 5.805-6.020 GHz		
!! Frequency band and regulation			
F24F	2.412-2.462 GHz, FCC		
F24HP	High-power F24		
F25BRS	2.500-2.690 GHz, BRS, FCC		
F25BRS	2.500-2.690 GHz, BRS, FCC		
F27HP	High-power F27		
F49F	4.950-4.980 GHz, FCC		
F54E-LG	F54E low-gain		
F54IC	5.500-5.700 GHz, Canada		
F54HP	F54 high-power		
F58F	5.740-5.835 GHz, FCC		
F58UK	5.740-5.835 GHz, UK		
F58E	5.740-5.835 GHz, ETSI		
F59HP	5.725-5.950 GHz		
F60HP	5.805-6.020 GHz		
<< Frequency band and regulation:			
F24F	2.4 GHz FCC (default), 2.4 GHz universal		
F54E	5.4 GHz ETSI (default), 5.8 GHz ETSI		
F58F	5.8 GHz FCC (default), 4.9 GHz universal, 5.3 GHz universal, 5.4 GHz universal, 5.8GHz WPC, 5.9GHz universal		
* IDU interface			
E1	E1 interface		
T1	T1 interface		
2E1	2 x E1 interfaces		
2T1	2 x T1 interfaces		
ETH	Ethernet interface only Interface IDU-E		
		CBL-Airmux-UTP/@	Assembled cable for permanent connection between indoor and outdoor units
		@ Cable length	
		25	25m (82 ft) cable
		50	50m (164 ft) cable
		75	75m (246 ft) cable
		100	100m (328 ft) cable
		CBL-HSS/@@	Assembled cable for permanent connection to HSS
		@@Cable length	
		5	5m (16.4 ft) cable
		15	15m (49.2 ft) cable
		50	50m (164 ft) cable
		100	100m (328 ft) cable
		MHS-kit	Cable and patch panel assembly (8 x RJ-45 Y-connections) for Monitored Hot Standby configuration
		RM-33	Hardware kit for mounting one Airmux-200 AIND unit into a 19" rack
		PS-AC/a	Power adaptor for IDU, 90-240 VAC, 48VDC (spare unit)
		PS-E-AC/a	Power adaptor for IDU-E, 90-240 VAC, 48VDC (spare unit)
		a AC Plug	
		ACEU	European
		ACUS	US
		ACUK	UK
		ACOC	Open-ended
		Airmux-400	All-indoor Wireless Broadband Multiplexer
		Airmux-400/IDUE/*	Indoor unit with 2 Ethernet ports and redundant DC power supplies
		Airmux-400/POE/a	Power-over-Ethernet (POE) device
		Airmux-400/ODU/#	Outdoor unit with integrated antenna
		Airmux-400/ODU/#/+	Outdoor unit with integrated antenna
		Airmux-400/ODU/@/+/EXT	Outdoor unit for external antenna connection
		* IDU-E interface	
		4TDM	4 TDM ports, 2 Ethernet ports
		8TDM	8 TDM ports, 2 Ethernet ports
		16TDM	16 TDM ports, 2 Ethernet ports
		ETH	2 Ethernet ports
		# Frequency band and regulation	
		F24F	2.4 GHz, FCC/IC
		F49F	4.9 GHz, 5.x GHz (default - 4.9 GHz), FCC/IC
		F54E	5.x GHz (default - 5.4 GHz), ETSI
		F54U	5.x GHz (default - 5.4 GHz universal)
		F58F	5.x GHz (default - 5.8 GHz), FCC/IC
		F58IDA	5.8 GHz, WPC India
		@ Frequency band and regulation	
		F2449F	2.x GHz, 4.9 GHz, 5.x GHz (default - 4.9 GHz), FCC/IC



F2454U	2.x GHz, 5.x GHz (default – 5.4 GHz universal)
F2458F	2.x GHz, 5.x GHz (default - 5.8 GHz), FCC/IC
F2458IDA	2.x GHz, 5.x GHz (default - 5.8 GHz), WPC India
F2448U	5.x GHz, 2.4 GHz, (default – 4.8 GHz universal band)
F54E	5.x GHz (default - 5.4 GHz), ETSI
+ Ethernet throughput	
10M	10 Mbps
50M	50 Mbps
100M	100 Mbps

Optional Accessories

Airmux-400/ANT/\$	External antenna supplied with 1m (3.3 ft) cable
\$ External antenna	
19/2427/fp	19 dBi, 2.4-2.7 GHz, flat panel
22/4451/fp	22 dBi, 4.4–5.1 GHz, flat panel
22/5760/fp	22 dBi, 5.7–6.05 GHz, flat panel
23/4958/fp	23 dBi, 5.150-5.875 GHz, flat panel
23/5160/fp	23 dBi, 5.140–6.000 GHz, flat panel
28/5260/dish	28 dBi, 5.250–6.000 GHz, dish
CBL-Airmux-UTP/@	Assembled cable for permanent connection between indoor and outdoor units

@ Cable length	
25	25m (82 ft)
50	50m (164 ft)
75	75m (246 ft)
100	100m (328 ft)

Airmux-400/PS-E-AC/a	Power adaptor for IDUE, 90-240 VAC, 48 VDC (spare unit)
----------------------	---

a AC plug	
ACEU	European
ACUS	US
ACUK	UK
ACIDA	India
ACAU	Australia
ACAG	Argentina
ACOC	Open-ended

Airmux-HSSU	Hub site sync unit to connect 8 collocated outdoor units and 2 additional HSSUs
CBL-HSS/@@	Assembled cable for permanent connection to HSS

@ Cable length:	
@	
5	5m (16.4 ft) cable
15	15m (49.2 ft) cable
50	50m (164 ft) cable
100	100m (328 ft) cable
MHS-kit	Cable and patch panel assembly (8 × RJ-45 Y-connections) for Monitored Hot Standby configuration

Airmux-Lightning-Protection	External lightning protection kit for IDU, PoE unit and ODU
-----------------------------	---

AMC-101	Universal Media Converter and Repeater
AMC-101/~	
~ Power supply	
AC	100-240 VAC
DC	-48 VDC
AMC-M/#	Interface module for AMC-101
# Interface for AMC-101	
<i>Note: Each AMC-101 unit houses two different interfaces.</i>	

Electrical interface modules:

STP/155/*	STP, 155 Mbps, DB-9 connector
CX/BNC155	Coax, 155 Mbps, BNC connector
CX/DIN/155	Coax, 155 Mbps, DIN 47295 1.6/5.6 coax

Fiber Optic Interfaces modules:

MM/ST/85	850 nm, multimode, ST connector
MM/SC/85	850 nm, multimode, SC connector
MM/FC/85	850 nm, multimode, FC connector
MM/SC/13/*	1310 nm, multimode, SC connector
MM/ST/13/*	1310 nm, multimode, ST connector
SM/SC/13L/*	1310 nm, multimode, laser, SC connector
SM/ST/13L/*	1310 nm, multimode, laser, ST connector
SM/FC/13L/*	1310 nm, multimode, laser, FC connector
SM/SC/13LH/*	1310 nm, multimode, long haul laser, SC connector
SM/ST/13LH/*	1310 nm, multimode, long haul laser, ST connector
SM/FC/13LH/*	1310 nm, multimode, long haul laser, FC connector
SM/ST/15L/*	1550 nm, multimode, laser, ST connector
SM/FC/15L/*	1550 nm, multimode, laser, FC connector

SM/SC/15LH/*	1550 nm, multimode, long haul laser, SC connector
SF1/SC	Transmit 1310 nm, Receive 1550 nm, laser WDM, SC connector
SF2/SC	Transmit 1550 nm, Receive 1310 nm, laser WDM, SC connector
SF3/*	1310 nm, laser single fiber, SC-APC connector
* Transmission	
R	Retimed
T	Transparent

Notes:

- Typical ranges are calculated according to attenuation of 0.4 dB/km for 1310 nm and 0.25 dB/km for 1550 nm interfaces.
- FO interfaces (except AMC-M/MM/ST, SC, FC/85) support transparent or retimed configurations (if ordered). Add R for a retimed interface. For example AMC-M/SM/SC/13L/R.
- The Fast Ethernet and FDDI protocols are supported by the retimed modules only.

Optional Accessories

RM-101	Hardware kit for mounting one or two AMC-101 units in a 19" rack
--------	--

APD-2HS

Miniature 2-Channel Multiprotocol FRAD/PAD
Note: External power supply can be ordered separately (see P/S-AC/5/1200 in Optional Accessories below).

Supplied Accessories

CBL-8H/F	Adapter cable for V.35 interface
CBL-RJ45/D9/F/STR	Adapter cable for connecting an ASCII terminal to an asynchronous port

Optional Accessories

P/S-AC/5/1200	Standalone regulated 115-230 VAC to 5 VDC/1200 mA power supply
---------------	--

APD-8

8-Channel FRAD / X.25 PAD

APD-8/*/#	
* Power supply	
24	24 VDC
48	48 VDC
# Main link interface	
V24T	V.24/RS-232 (DTE)
V24C	V.24/RS-232 (DCE)
V35T	V.35 (DTE)
V35C	V.35 (DCE)
V36T	V.36 (DTE)
X21T	V.21 (DTE)
530T	RS-530 (DTE)
IBE	ISDN BRI 'S' interface
IBU	ISDN BRI 'U' interface
DDS	Integral CSU/DSU
UTP	10BaseT interface

Supplied Accessories

DC adapter kit	
CBL-RJ45/D9/F/STR	Adapter cable for connecting an ASCII terminal to an asynchronous port
CBL-8H/F	Adapter cable for V.35 (if V.35 interface is ordered)
CBL-530/499/F	Adapter cable for V.36 (if V.36 interface is ordered)
CBL-530T/21C/F	Adapter cable for X.21 (if X.21 interface is ordered)

APS-8, APS-16, APS-24

Multiprotocol FRADs/PADs and Packet Switches

APS-8/*/*	8 Asynchronous Ports
APS-16/*/*	16 Asynchronous Ports
APS-24/*/*	24 Asynchronous Ports
# Power supply	
AC	AC power supply
24	24 VDC
48	48 VDC
* Special interface	
NULL	Without special interface
DDS	Integral CSU/DSU
IBE	ISDN BRI 'S' interface
IBU	ISDN BRI 'U' interface
UTP	Integral 10BaseT interface
BNC	Integral 10Base2 interface
APS-M/&	Interface Modules
& Link interface	
V24T	V.24/RS-232 (DTE)
V24C	V.24/RS-232 (DCE)
V35T	V.35 (DTE)
V35C	V.35 (DCE)



V36T	V.36/RS-449 (DTE)
X21T	X.21/V.11 (DTE)
530T	RS-530/RS-422 (DTE)
Supplied Accessories	
AC power cord	For AC unit
DC adapter kit	For DC unit
CBL-RJ45/D9/F/STR	Adapter cable for converting RJ-45 control to DB-9 control
CBL-8H/F	Adapter cable for V.35 (if V.35 interface is ordered)
CBL-530/499/F	Adapter cable for V.36 (if V.36 interface is ordered)
CBL-530T/21C/F	Adapter cable for X.21 (if X.21 interface is ordered)
ASM-10/8	
ASM-10/8/SA/*	Standalone with internal power supply
ASM-10/8/R	Card for ASM-MN-114 19" modem rack
ASM-MN-214/+/&	19" Modem rack for 14 cards
* Standalone power supply	
115	115 VAC
230	230 VAC
+ Rack main power supply	
115	115 VAC
230	230 VAC
48	-48 VDC
& Rack secondary power supply	
Same options as the main power supply	
ASM-20	
ASM-20-2*/+/#	Standalone
ASM-20-2R/+	Card for the ASM-MN-214 19" rack
# Power supply	
115	115 VAC
230	230 VAC
48	-48 VDC
24	24 VDC
+ Interface	
V24	V.24/RS-232 (up to 64 kbps)
V35	V.35
530	RS-530
X21	X.21
V36	V.36/RS-449
703	G.703 Codirectional (64 kbps)
UTP	Built-in Ethernet bridge, 10BaseT with RJ-45
BNC	Built-in Ethernet bridge, 10BaseT with BNC connector
<i>Note: When using V.35 or X.21 interfaces for ASM-20-2R, the CIA adapter is required.</i>	
# G.703 codirectional connector	
TB	Terminal block connector
RJ	RJ-45 connector
Optional Accessories	
RM-17	Hardware for mounting one or two standalone units in a 19" rack
CIA/&	Connector Interface Adapter for the ASM-MN-214 19" rack
& CIA connector	
V35/1	Adapting one modem card's 25-pin connector into one V.35, 34-pin connector
X21	Adapting two adjacent modem cards' 25-pin connectors to two X.21, 15-pin connectors
ASM-31	
ASM-31/~/+	2-wire multirate short range modem
ASM-31R/+	Card for the ASM-MN-214 19" rack
~ Power supply	
115	115 VAC
230	230 VAC
48	-48 VDC
24	24 VDC
+ Interface	
V24	V.24/RS-232 (up to 64 kbps)
V35	V.35
530	RS-530
X21	X.21
703/TB	G.703 Codirectional (64 kbps) interface with terminal block connector
703/RJ	G.703 Codirectional (64 kbps) interface with RJ-45 connector
UTP	IR-ETH module with RJ-45 connector
IP	IR-IP module

Supplied Accessories	
AC power cord (when AC power supply is ordered)	
DC adapter (when DC power supply is ordered)	
Optional Accessories	
RM-17	Hardware for mounting one or two standalone units in a 19" rack
CIA/&	Connector Interface Adapter for the ASM-MN-214 19" rack
& Adapter for ASM-31 card version	
V35/1	Adapting one modem card's 25-pin connector into one V.35, 34-pin connector
X21	Adapting two adjacent modem cards' 25-pin connectors to two X.21, 15-pin connectors
ASM-40	
ASM-40-1/~/+/j	High-Speed Short-Range Modem
ASM-40-1/R/+/j	Standalone
	Card
<i>Note: When using V.35, X.21, V.36, or one of the Ethernet interface modules in the ASM-MN-214 rack, a special interface adapter is required.</i>	
~ Power supply	
AC	100-240 VAC
48	-48 VAC
+ DTE interface	
V24	V.24 interface
V35	V.35 interface
X21	X.21 interface
530	RS-530 interface
703TB	G.703 Codirectional interface, terminal block connector
703RJ	G.703 Codirectional interface, RJ-45 connector
703	G.703-HDB3 balanced interface
703UB	G.703-HDB3 unbalanced interface
UTP	IR-ETH module, RJ-45 connector
UTP/QN	IR-ETH/QN module
j Line connector	
TB	Balanced terminal block connector
B	Balanced DB-15 connector
UB	Unbalanced BNC coax connector
Supplied Accessories	
AC power cord	For AC unit (standalone units)
DC adapter kit	For DC unit (standalone units)
Optional Accessories	
CBL-530/449F	Adapter cable converting one DB-25 connector into one DB-37 connector
CIA/\$	Connector interface adapters for the ASM-MN-214 modem rack
\$ CIA connector	
V35/1	Converting one DB-25 DTE connector into one 34-pin connector
X21/1	Converting one DB-25 DTE connector into one DB-15 connector
ETHERNET	Converting one DB-25 DTE connector into one RJ-45 connector
TB-BNC/214	Converting one terminal block line connector into two BNC coax connectors
RM-28	Special hardware for mounting one or two ASM-40 standalone units in a 19" rack
ASM-60	
ASM-60/CO/#	4-Wire Symmetrical VDSL-Based Modem
ASM-60/CPE/#	Central office installation
# DTE interface	Customer premises installation
UTP	IR-ETH module with RJ-45 connector
UTP/QH	IR-ETH/QH module
ASM-61	
ASM-61/AC/CO	2-Wire Symmetrical VDSL-Based Modem
ASM-61/AC/CPE	Central office installation
	Customer premises installation
Supplied Accessories	
AC power cord	For AC unit
DC adapter kit	For DC unit
Optional Accessories	
RM-33-2	Hardware kit for mounting one or two ASM-61 units into a 19" rack



ASM-MN-214 Hub for Short Range Modems
 ASM-MN-214/*/#/& 19" hub
 ASM-214-PS/* Power supply
 * Power supply
 115 115 VAC supply
 230 230 VAC supply
 48 48 VDC supply
 24 24 VDC supply
 # Redundant power supply
 115 115 VAC supply
 230 230 VAC supply
 48 48 VDC supply
 24 24 VDC supply
 & Line connector (Default=terminal block)
 RJ RJ-45
 BNC 2 BNC

Supplied Accessories
 AC power cord For AC unit
 DC adapter kit For DC unit

Optional Accessories
 CIA+ Mechanical adapter converting DB-25 connectors into standard connectors

+ CIA connector
 X21/1 D-type, 15-pin connector for single modem card
 V35 V.35 34-pin connector for one modem card

ASM-MN-114-BP Blank panel for ASM-MN-214

ASM-MN-214 Modules

See the module option of:
 ASM-10/8 FCD-1L FOM-E1/T1
 ASM-31 FCD-2L RIC-E1, RIC-T1
 ASM-40 FOM-40 SPD-703-1

ASMi-31 Sync/Async 2-Wire Manageable IDSL Modem
 ASMi-31-2/M/*/# Master
 ASMi-31-2/S/*/# Slave
 * Power supply
 115 115 VAC
 230 230 VAC
 48 48 VDC
 24 24 VDC
 # DTE interface
 V24 V.24/RS-232 interface
 V35 V.35 interface
 V36 V.36/RS-449 interface
 530 RS-530 interface
 X21 X.21 interface
 G703TB G.703 Codirectional (64 kbps) interface with terminal block connector
 G703RJ G.703 Codirectional (64 kbps) interface with RJ-45 connector
 UTP IR-ETH module with RJ-45 connector
 IP IR-IP module

Supplied Accessories
 AC power cord For AC unit
 DC adapter kit For DC unit

Optional Accessories
 PCU Portable control unit with protective casing for the slave ASMi-31 unit
 RM-28 Hardware kit for mounting one or two units in a 19" rack

ASMi-52 2/4-Wire SHDSL Standalone Modem
 ASMi-52/@/*/#/%/\$/?/!+
 @ 24 VDC Power Supply (Default= wide-range AC/DC power supply):
 24V 24 VDC option
 * DTE interface
 X21 X.21 interface
 V35 V.35 interface
 E1 E1 interface (standalone only)
Note: For E1 unbalanced, order cable CBL-RJ45/2BNC/E1/X.
 RS530 RS-530 interface
 ETH 10/100BaseT interface (for ASMi-52CD only)
 T1 T1 interface
 # Line interface
 2W 2-wire interface
 4W 4-wire interface
 % Second interface

ETH 10/100BaseT interface (Standalone with E1 or serial DTE interfaces only)
 V.35 V.35 interface (Standalone with E1 interfaces only)
 \$ AR 6-pin alarm relay port
 ? ME Metal enclosure
 + Extended Temperature (Default=0°-50°C/ 32°-122°F)
 ETR -20° to 70°C (-4° to 158°F)

ASMi-52/24/ETH/4W/ME/AR/RAIL 4-wire SHDSL rail-mount modem 24 VDC version
 ASMi-52/ETH/4W/ME/AR/RAIL 4-wire SHDSL rail-mount modem, wide-range AC/DC power supply
Note: The line interface is TB for rail-mount versions.
 ASMi-52CD^*/4W/RJ-45 Dual-modem, 4-wire, card version for LRS-24 modem rack
 ASMi-52CQ^*/2W/& Quad-modem, 2-wire, card version for LRS-24 modem rack

^ Chassis
 F ETSI- LRS-24 rack
 B ANSI- LRS-24 rack
 * DTE interface
 X21 X.21 interface
 V35 V.35 interface
 RS530 RS-530 interface
 ETH 10/100BaseT interface (ASMi-52CQ only)
 T1 T1 interface (ASMi-52CD only)
 E1B E1 balanced interface
 E1UB E1 unbalanced interface
 UTPQN IR-ETH/QN interface (for ASMi-52CD only)
 & Line interface connector
 RJ RJ-11
 TB Terminal block
 RJ45 RJ-45
Note: ASMi-52CQ cards with E1 or T1 interface are available with terminal block line connectors only.

Supplied Accessories
 AC/DC adaptor plug For -48 VDC unit
 PLUG-DC/TB-s DC adaptor plug (default wide-range power supply)

Optional Accessories
 ASMi-52 Cables
 CBL-RJ45/2BNC/E1/X Interface adapter for converting balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors
 CBL-DB9F-DB9M-STR Control port cable
 ASMi-52CD Cables
 CBL-SCS26/530/F One SCSI-26 to one female RS-530 (DB-25) connector
 CBL-SCS26/X21/F One SCSI-26 to one female X.21 (DB-15) connector
 CBL-SCS26/V35/F One SCSI-26 to one female V.35 (34-pin) connector
 CBL-LRSI25/DB25/UB/M One DB-25 to four male BNC coax connectors
 ASMi-52CQ Cables
 CBL-CQ-RS530 One SCSI-68 to four female RS-530 (DB-25) connectors
 CBL-CQ-V35/BTA One SCSI-68 to four female V.35 (34-pin) connectors
 CBL-CQ-X21 One SCSI-68 to four female X.21 (DB-15) connectors
 CBL-LRSI21/DB25/UB/M One DB-25 to eight male BNC coax connectors
 CBL-LRSI21/DB25/UB/F One DB-25 to eight female BNC coax connectors
 RM-33-2 Kit for mounting 1 or 2 dual-interface unit/s (plastic enclosure) in a 19" rack
 RM-35/@ Kit for mounting 1 or 2 unit/s (metal enclosure) in a 19" rack
 @ Rack mounting kit
 P1 For mounting one unit
 P2 For mounting two units



<p>ASMi-52L 2/4-Wire SHDSL Modem ASMi-52L/*/# Standalone ASMi-52L/24V/4ETH/#RAIL/ETR 2/4-wire SHDSL rail-mount modem (TB interface) with 4ETH user interface, 24 VDC power supply and extended temperature support</p> <p>* DTE interface X.21 X.21 interface V.35 V.35 interface E1 G.703 E1 ETH 10/100BaseT port 4ETH 4 10/100BaseT with integrated switch</p> <p># Line interface 2W 2-wire interface 4W 4-wire interface</p> <p><i>Supplied Accessories</i> Power cord For AC unit AC/DC adapter -48 VDC</p> <p><i>Optional Accessories</i> CBL-DB9F-DB9M-STR Control port cable CBL-RJ45/2BNC/E1/X Interface adaptor for converting a balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors RM-33-2 Hardware kit for mounting one or two ASMi-52L units in a 19" rack.</p> <p>ASMi-54 SHDSL.bis Modem ASMi-54/\$/@/#/^/*/% Standalone ASMi-54C See LRS-102 modules \$ DC Power Supply (Default=wide-range AC/DC) 24V 24 VDC @ User interface (Default=no E1 interface) E1 E1 # Ethernet interface (mandatory) 4ETH Four-port ETH module with 4 x RJ-45 connectors ^ Extended temperature Extended temperature for device with 4 X ETH interface: (Default=0°-50°C/32°-122°F) ETR -20° to 70°C (-4° to 158°F) range</p> <p>* SHDSL interface 2W 2-wire (1 pair), plastic enclosure 4W 4-wire (2 pairs), plastic enclosure 8W 8-wire (4 pairs), metal enclosure</p> <p>% Enclosure RAIL Rail mount enclosure (2/4-wire only)</p> <p><i>Supplied Accessories</i> Power cord AC/DC AD/DC adapter for -48 VDC</p> <p><i>Optional Accessories</i> RM-33-2 Hardware kit for mounting one or two plastic ASMi-54 units in a 19" rack. RM-35/@ Hardware kit for mounting one or two metal ASMi-54 units in a 19" rack.</p> <p>@ Rack mount kit P1 One unit P2 Two units</p> <p>CBL-DB9F-DB9M-STR Control cable</p> <p>CBL-RJ45/2BNC/E1 Interface adapter for converting a balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors</p> <p>ASMi-54L SHDSL.bis Modem ASMi-54L/\$/#/*/@/^ \$ DC power supply (Default=wide-range AC/DC power supply) 24V 24 VDC # Ethernet interface (mandatory) 4ETH Four-port ETH module with 4 RJ-45 connectors</p> <p>* SHDSL interface 2W 2-wire interface 4W 4-wire interface</p> <p>@ User interface (Default=no E1 interface): E1 E1</p>	<p>^ Extended temperature for device with 4 X ETH interface (Default=0°-50°C/32°-122°F) ETR -20° to 70°C (-4° to 158°F) range (according to special request)</p> <p><i>Supplied Accessories</i> Power cord For AC unit AC/DC adapter -48 VDC</p> <p><i>Optional Accessories</i> RM-33-2 Hardware kit for mounting one or two ASMi-54L units in a 19" rack. CBL-DB9F-DB9M-STR Standard 9-pin male to female RS-232 control port cable CBL-RJ45/2BNC/E1 Interface adaptor for converting a balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors</p> <p>BE-1 Coax to Twisted Pair Converter for E1 BE-1/M BNC male connectors BE-1/F BNC female connectors</p> <p>DXC-100 Multiservice Access Nodes <i>Basic Unit</i> DXC-100-MN 6U high modular optional redundant DACS rack, 19" flush rack-mount kit, no system modules, no PS modules</p> <p><i>Power supply modules</i> DXC-100M-PS/AC 6U high, 100 to 240 VAC power supply module DXC-100M-PS/48 6U high, -48 VDC power supply module</p> <p><i>System modules</i> DXC-100M-SMC.2-? System manager controller DXC-100M-XNM-M Node manager for Nest 1 only DXC-100M-XCC-? Expansion cross-connect module for Nest 1 only DXC-100M-XLC-M Expansion link controller module, for Nests 2 to 8 only</p> <p>? Module (Default=main and interface module set) M Main, front-mounted module IO Interface, rear-mounted module I/O modules See separate data sheets for details.</p> <p><i>Protection switch redundant unit</i> DXC-100PSX-MN 3U high, N:1 redundancy system chassis with front-mounted fan and filter, no power supplies, no system modules DXC-100PSX-NC 3U high, nest controller module for DXC-100PSX, with DB-9 connector (only one required per chassis) DXC-100PSX-PS/48 3U high, -48V DC power supply module for DXC-100PSX</p> <p><i>Network management systems</i> RV-PC-SW/TDM RADview PC for TDM applications RV-HP-SW/TDM RADview HPOV for TDM applications RV-LIC/DXC-100 RADview activation key for DXC-100</p> <p><i>Supplied Accessories</i> AC power cord For AC unit DC adapter kit For DC unit RM-DXC-100/19/CNTR 19" rack-mount kit, center mount RM-DXC100PSX/19 19" mounting kit for DXC-100PSX (one flush kit supplied with the unit) CBL-100PSX-DNC DXC-100PSX nest controller module cable, 50 cm (20 in), DB-9 (male) to DB-9 (male) (one cable supplied with the DXC-100PSX-NC module) CBL-DXC-100-ALARM DSMC.2 interface DB-9 to X.25 alarm cable (one cable supplied with the DSMC.2 module)</p> <p><i>Optional Accessories</i> CBL-DXLC/3 DXLC to DXCC cable, 4 twisted pairs, 3m (10 ft) long CBL-DXLC/6 DXLC to DXCC cable, 4 twisted pairs, 6m (20 ft) long RM-DXC-100/23/# 23-inch mounting kit for DXC-100 RM-DXC-100PSX/23/# 23-inch mounting kit for DXC-100PSX</p> <p># Rack mount placement CNTR Center mounting FLUSH Flush mounting</p>
---	--



DXC-100 Modules

D8E1T1 8-Port E1/T1 Interface Module
 DXC-100M/8E1T1-?
 ? Module (Default=main and interface module set)
 M Main, front-mounted module
 IO Interface, rear-mounted module

Optional Accessories

DXC-100PSXM-8E1T1/*
 3U DXC-100PSX 8E1/T1 interface module

* Module
 P Primary module
 R Redundancy module (one module is required per system)

Note: One telco interconnection cable (CBL-100PSX-D8E1T1) is provided with each DXC-100PSX module to connect to DXC-100

CBL-DXC-100-D8E1T1/BAL/X
 Cable for D8E1T1, 5m (15 ft), RJ-48M 50-pin female Telco connector to 8 x RJ-45 connectors

D8HS 8-Channel High-Speed Data Module
 DXC-100M-8HS-? 8-channel, 56/64 kbps, high-speed data module (6U)
 ? Module (Default=for set with main and interface modules)
 M Main, front-mounted module
 IO Interface, rear-mounted module

Note: A separate cable is required for each channel.

Cables

The following cables adapt the micro D-26 connectors to the specified applications. Cable length is 5m (16.4 ft).

CBL-DXC-100-D8HS /RS422/@
 RS-422/RS-449 interface with DB-37 (male) connector

CBL-DXC-100-D8HS /RS530/@
 RS-530 interface with DB-37 (male) connector

CBL-DXC-100-D8HS /RS530A/@
 RS-530A interface with DB-25 (male) connector

CBL-DXC-100-D8HS /V35/@
 V.35 interface with M-34 (male) connector

CBL-DXC-100-D8HS /X21
 X.21 interface with DB-15 (male) connector, DCE-to-DTE

CBL-DXC-100-D8HS /RS232
 RS-232 interface with DB-25 (male) connector, DCE-to-DTE

@ Cable (Default=straight cable, DCE-to-DCE)
 X Cross-cable, DCE-to-DCE

DE3 E3 Multiplexer Module
 DXC-100M-E3-?
 ? Module (Default=main and interface module set)
 M Main, front-mounted module
 CX-IO Interface, rear-mounted module

DXC-100PSXM-E3T3/*
 3U E3/T3 interface module for DXC-100PSX protection switch 1:N unit

* Module
 P Primary module
 R Redundancy module (one per a group of primary modules)
Note: One BNC interconnection cable, CBL-100PSX-E3T3, is provided with each DXC-00PSXM-E3T3/P module

Optional Accessories

CBL-DXC-100-E3T3 DXC-100 BNC-75 Ω (male) to BNC-75ohm (male) interconnection cable for DE3 and DT3 modules, 5m (15') long.

Note: Two cables are required for each interface module.

DOC-3 OC-3 Module
 DXC-100M-OC-3-M 6U 1-port OC-3 main module, front-mounted
 DXC-100M-STM1OC3-IO/\$
 6U 1-port OC-3 or STM-1 rear-mounted interface with fiber optic interface, SC connectors

\$ Interface range
 15 Short-haul, up to 15 km/9.3 mi
 40 Long-haul, up to 40 km/24.8 mi

DROUTER 32-Channel (2 Mbps) Router Module
 DXC-100M-ROUTER-?

6U 32-channel IP/IPX routing module
 ? Module (Default=for complete main and interface module set)
 M Main front-mounted module only
 IO Interface rear-mounted module only

DSTM-1 STM-1 Multiplexer Module

DXC-100M-STM-1-M 1-port STM-1 main module, 6U, front-mounted
 DXC-100M-STM1OC3-IO/\$

1-port STM-1 or OC-3 rear-mounted interface with fiber optic interface, 6U, SC connectors

\$ Interface range
 15 Short-haul, 0 to 15 km/9.3 mi
 40 Long-haul, 0 to 40 km/24.8 mi

DT3 T3 Multiplexer Module
 DXC-100M-T3-?

6U T3 multiplexer module with G.747 support
 ? Module (Default=for complete main and interface module set)
 M Main, front-mounted module only
 CX-IO Interface, rear-mounted module only

Optional Accessories

DXC-100PSXM/E3T3/*
 3U E3/T3 interface module for DXC-100PSX protection switch 1:N unit

* Module
 P Primary module
 R Redundancy module (one per group of primary modules)

Note: One BNC interconnection cable, CBL-100PSX-E3T3, is provided with each DXC-100PSXM/E3T3/P module

CBL-DXC-100-E3T3 DXC-100 BNC-75 Ω (male) to BNC-75 Ω (male) interconnection cable for DE3 and DT3 modules, 5m (15 feet) long.

Note: Two cables are required for each interface module.

DXC-2 T1/E1 Converter and Timeslot Cross-Connect Machine

DXC-2/~/&/%
 ~ Power supply
 100 100 VAC operation
 115 115 VAC operation
 230 230 VAC operation
 48 -48 VDC operation

& Link interface (Default=one T1 and one E1 port)

2T1 Dual T1 ports

2E1 Dual E1 ports

CSU/LTU (Default=without CSU/LTU)

C1 CSU/LTU in port 1

C2 CSU/LTU in port 2

Supplied Accessories

RM-1/NEW Mechanical adaptor, for mounting one or two units (side by side) in a 19" rack

DXC-4 E1/T1 Grooming Device

DXC-4/#/&
 # Number of link channels
 4 4 E1/T1 ports
 8 8 E1/T1 ports

& Redundant power supply
 R Redundant power supply

Supplied Accessories

AC power cord For AC unit

DC adapter kit For DC unit

Optional Accessories

RM-35/@ Hardware kit for mounting one or two units in a 19" rack

@ Mounting kit
 P1 For mounting one unit
 P2 For mounting two units

DXC-8R/10A/30

Basic units, additional system modules, and I/O modules are ordered separately. When ordering I/O modules, see module data sheets.



DXC-30-3/?/*/~ Includes 3U-high chassis with 15 I/O slots, one power supply, and one common logic module
 DXC-10A-3/?/~ Includes 1U-high chassis with 5 I/O slots, one power supply, and common logic module
 DXC-8R-3/?/~ Includes 1U-high chassis with 4 I/O slots, two power supplies, and two common logic modules

System modules

DXC-30M-CL.3/? Common Logic modules for DXC-8R, DXC-10A or DXC-30
 DXC-30M-PS/~ Power supply module for DXC-30
 DXC-8RM-PS/48 DC power supply module for DXC-8R
 ? Management port interface
 UTP Ethernet 10/100BaseT
 V24 V.24/RS-232 dial port
 * R Power supply and common logic redundancy
 ~ Power supply
 AC 100 to 240 VAC operation
 48 -48 VDC operation
 48HP DXC-30 high-power chassis only (A fan tray must be used for this unit.)

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 RM-DXC8R 19" mounting kit for DXC-8R
 RM-DXC10A 19" mounting kit for DXC-10A
 RM-DXC30 19" mounting kit for DXC-30

Optional Accessories

CBL-DB9F-DB9M-STR Control port cable
 DXC-30M-FT/# Fan tray for DXC-30
 # Power supply for fan tray
 AC 100 to 240 VAC operation
 48 -48 VDC operation

DXC-8R/10A/30 Modules

D4E1, D8E1

DXC-M-4E1 4-Port E1 Interface Module
 DXC-M-8E1 8-Port E1 Interface Module

Optional Accessories

CBL-G703-8/RJ45 Adapter cable for converting the DB-44 connector to 8 RJ-45 balanced connectors (D8E1 only)
 CBL-G703-8/COAX Adapter cable for converting the DB-44 connector to 8 pairs of BNC unbalanced connectors (D8E1 only)
 CBL-RJ45/2BNC/E1/X Adapter cable for converting the RJ-45 connector to BNC unbalanced connectors

D4SL, D8SL

DXC-M-8SL-E1 Eight-port, 2-wire SHDSL E1 link module
 DXC-M-4SL-E1/\$ Four-port, 2-wire SHDSL E1 link module

\$ Line interface
 STUC Central site module
 STUR Remote site module

Optional Accessories

CBL-D4SL-STUC Adapter cable for D4SL (central site module), splits a single DB-25 connector into 4 x RJ-45 balanced connectors
 CBL-D4SL-STUR Adapter cable for D4SL (remote site module), splits a single DB-25 connector into 4 x RJ-45 balanced connectors
 CBL-D8SL-RJ45/X Adapter cable for D8SL, splits a single DB-25 connector into 8 x RJ-45 balanced connectors
 DXC-30M-FT/~ Fan tray (for the DXC-30 chassis only)

~ Fan tray power supply
 AC 100 to 240 VAC
 48 -48 VDC

D4T1, D8T1

DXC-M-4T1L Four-port framed T1 interface module
 DXC-M-8T1L Eight-port framed T1 interface module
 DXC-M-4T1 Four-port framed and unframed T1 interface module
 DXC-M-8T1 Eight-port framed and unframed T1 interface module

Optional Accessories

CBL-D8T1-RJ45/X Adapter cable for converting the DB-25 connectors to 8 RJ-45 connectors (D8T1 only)
 CBL-G703-8/RJ45 Adapter cable for converting the DB-44 connector to 8 RJ-45 connectors (D8T1L only)

D8HS

DXC-M-8HS 8-Channel High-Speed Data Module

Optional Accessories

CBL-D8HS-RS530 Splitter cable to convert the 200-pin D8HS connector to eight DB-25 RS-4530 connectors
 CBL-D8HS-V35/M Splitter cable to convert the 200-pin D8HS connector to eight 34-pin male V.35 connectors
 CBL-D8HS-V35/F Splitter cable to convert the 200-pin D8HS connector to eight 34-pin female V.35 connectors
 CBL-D8HS-X21 Splitter cable to convert the 200-pin D8HS connector to eight DB-15 X.21 connectors

D8U

DXC-M-8U 8-port "U" Interface Module

Optional Accessories

CBL-D8U-RJ45/X Adapter cable for D8U, splits a single DB-25 connector into 8 x RJ-45 balanced connectors.

DE1B

DXC-M-E1B/\$/#/+ Two-port E1 Link Module

\$ Link interface
 C Built-in LTU (copper interface only)
 BP Port bypass
 BP/C Built-in LTU and optional port bypass (copper interface only)
 # Link connector (Default=copper interface with coaxial BNC connectors)
 ST ST connectors
 FC FC/PC connectors
 SC SC connectors
 + Laser optical interface wavelength and transmitter (not relevant with copper interface)
 85L 850 nm, multimode
 13L 1310 nm, single mode
 15L 1550 nm, single mode

Optional Accessories

CBL-RJ45-Y/CROSS Cross-cable for providing Y-cable redundancy. Includes four RJ-45 connectors.

DE3

DXC-M-E3/#+ E3 Multiplexer Module

Link connector (Default=electrical interface with coaxial BNC connectors)
 ST ST fiber connectors
 FC FC/PC fiber connectors
 SC SC fiber connectors
 + Optical interface wavelength and transmitter (not relevant with electrical interface)
 85L 850 nm, multimode, laser, VCSEL
 13L 1310 nm, single mode, laser diode
 15L 1550 nm, single mode, laser diode

DFSTM-1

DXC-M-FSTM1/#/+* STM-1 Multiplexer Module

Link connector (Default=electrical interface with coaxial BNC connectors)
 ST ST fiber connectors
 FC FC/PC fiber connectors
 SC SC fiber connectors
 + Optical interface wavelength and transmitter (not relevant with copper interface)
 13L 1310 nm, single mode, laser
 15L 1550 nm, single mode, laser
 * Interface for a second port (Default=one port)
 R Identical to the first port
 R/CX Coax interface
 R/#+ Fiber-optic interface (see above)



Optional Accessories

DXC-30M-FT/~ Fan tray for the DXC-30 chassis
 ~ Fan tray power supply
 AC 100 to 240 VAC operation
 48 -48 VDC operation

DHS

DXC-M-HS/^ Dual-channel high speed data module
 ^ User ports
 V35 V.35
 530 V.11/RS-422 interface with RS-530 connector (adaptable to V.36/RS-449 via cable)
 X.21 X.21
 V24 V.24
 ETUB Ethernet bridge port with 10/100BaseT (UTP) interface
 ETUR Ethernet router port with 10BaseT (UTP) interface

Optional Accessories

The following cables adapt the DHS 25-pin connector to the specified applications. Cable length is 2m (6 ft). A separate cable is required for each channel.

CBL-HS2/V/1/@ Connecting a V.35 DTE using DCE clock mode
CBL-HS2/V/2/@ Connecting a V.35 DCE using DTE1 clock mode
CBL-HS2/V/3/@ Connecting a V.35 DCE using DTE2 clock mode
CBL-HS2/R/1/@ Connecting a V.36/RS-449 DTE using DCE clock mode
CBL-HS2/R/2/@ Connecting a V.36/RS-449 DCE using DTE1 clock mode
CBL-HS2/R/3/@ Connecting a V.36/RS-449 DCE using DTE2 clock mode

@ Connector
 F Female connector
 M Male connector

DIM

DXC-M-DIM/^ Digital Inverse Multiplexer Module
 ^ User port interface
 V35 V.35 interface
 530 RS-530 interface
 X.21 X.21 interface
 HSSI High Speed Serial Interface
 E1 E1 interface (E1 over two T1 links)
 ETUB Ethernet bridge port with 10/100BaseT (UTP) interface

Optional Accessories

The following cables adapt the DIM V.35 user ports DB-25 connectors to the specified applications. Cable length is 2m (6 ft).

CBL-HS2/V/1/@ Adaptor cable for connecting a V.35 DTE using DCE clock mode
CBL-HS2/V/2/@ Adaptor cable for connecting a V.35 DCE using external DCE clock mode

@ Connector
 F Female connector
 M Male connector

DT1B

DXC-M-T1B/\$/#+ Two-port T1 link module
 \$ CSU option
 C Built-in CSU option (copper interface only)
 BP Port bypass
 BP/C Built-in CSU and optional port bypass (copper interface only)
 # Link connector (Default=copper interface with coaxial BNC connectors)
 ST ST connectors
 FC FC/PC connectors
 SC SC connectors
 + Optical interface wavelength (not relevant with copper interface)
 85L 850 nm, multimode, laser, VCSEL
 13L 1310 nm, single mode, laser
 15L 1550 nm, single mode, laser

Optional Accessories

CBL-MP-RJ45/STR Straight cable for balanced T1 connection
CBL-MP-RJ45/CROSS Cross-cable for balanced T1 connection
CBL-RJ45-Y/CROSS Cross-cable for providing Y-cable redundancy. Includes four RJ-45 connectors, two on each side.

DT3

DXC-M/T3/#+ T3 Multiplexer Module
 # Link connector (Default=electrical interface with coaxial BNC connectors)
 ST ST fiber connectors

FC FC/PC fiber connectors
 SC SC fiber connectors
 + Optical interface wavelength and transmitter (not relevant with electrical interface)
 85L 850 nm, multimode, laser, VCSEL
 13L 1310 nm, single mode, laser diode
 15L 1550 nm, single mode, laser diode

Egate-100

Egate-100-T3/!/+/+/TR Channelized Ethernet gateway with SFP slots for STM-1/OC-3 interfaces
Egate-100/!/+/+/TR/S Channelized Ethernet gateway with SFP slots for STM-1/OC-3 interfaces
 ! Power supply (PS)
 AC 100 to 230 VAC
 ACR Dual 100 to 230 VAC
 48 48 VDC
 48R Dual 48 VDC
 # TDM Interface
 SFP1 Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
 SFP2 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
 SFP3 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
 2XSFP1 Two SFP-1 (see above for specifications)
 2XSFP2 Two SFP-2 (see above for specifications)
 2XSFP3 Two SFP-3 (see above for specifications)
 NULL Two empty SFP slots
 + Ethernet Port
 SFP5 Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
 SFP6 Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
 SFP7 Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
 SFP8 Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)
 UTP Built-in 10/100/1000BaseT, RJ-45 connector
 NULL Empty SFP slot

Note: It is strongly recommended to order this device with original RAD SFPs installed. This will ensure that prior to shipping, RAD has performed comprehensive functional quality tests on the entire assembled unit, including the SFP devices. RAD cannot guarantee full compliance to product specifications for units using non-RAD SFPs.

TR Tributary Ports

T3 Option
 1T3 One T3 port (ports 2 and 3 are disabled)
 3T3 Three T3 ports

STM-1/OC-3 option

DIS Activation of 30 E1 and 42 T1 ports
 FULL Activation of 63 E1 and 84 T1 ports

S NEBS compliancy

N3 NEBS level 3, 2 and 4 compliant

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 RM-34 Hardware kit for mounting one Egate-100 unit into a 19" rack
 CBL-DB9F-DB9M-STR Control port cable

Optional Accessories

WM-34 Hardware kit for mounting one Egate-100 unit on a wall

Egate-20

Egate-20/C/\$ Channelized Ethernet Gateway
 C Interface
 CH Channelized
 \$ Port
 E1 Balanced E1 port
 E1U Unbalanced E1 port
 T1 T1 port

Note: Unbalanced E1 interface is provided via an adapter cable (CBL-RJ45/2BNC/E1, see Supplied Accessories).

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit



CBL-RJ45/2BNC/E1	Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced coaxial connectors (if an unbalanced E1 interface is ordered)	WM-35	Hardware kit for mounting one ETX-201/H unit with metal enclosure on a wall
<i>Optional Accessories</i>		CBL-DB9F-DB9M-STR	Control port cable
RM-35/@	Hardware kit for mounting one or two Egate-20 units into a 19" rack	ETX-201	Carrier Ethernet Demarcation Device
@ Mounting kit (Default=Both kits):		ETX-201/?/!/+/1/+2/+3	
P1	Kit for mounting one unit	? Power supply (Default=wide range AC/DC power supply)	
P2	Kit for mounting two units	WRDC	24 to -48 V Wide range DC power supply (for temperature-hardened enclosure only)
WM-35	A hardware kit for mounting one Egate-20 unit on a wall	! Temperature range (Default=regular enclosure)	
CBL-DB9F-DB9M-STR	DB-9 to DB-9 control port cable	H	Temperature-Hardened enclosure (requires temperature-hardened SFP transceivers)
ETX-102	Carrier Ethernet Demarcation Device	+1 Port 1 (network) interface	
ETX-102/?/!/+/1/+2/+3		SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
? Power supply (Default=wide range AC/DC power supply)		SFP-1D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)
WRDC	24 to -48V Wide range DC power supply (for temperature-hardened enclosure only)	SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
! Temperature range	Temperature range (Default=regular enclosure)	SFP-2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
H	Temperature-Hardened enclosure (requires temperature-hardened SFP transceivers)	SFP-2H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)
+1 Port 1 (network) interface		SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)	SFP-3D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-1D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)	SFP-3H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)	SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)	SFP-4D	Fast Ethernet/STM-1, DDM, internal calibration, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-2H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)	SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)	SFP-5D	Gigabit Ethernet, DDM, internal calibration, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-3D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)	SFP-5H	Gigabit Ethernet, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-3H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)	SFP-5DH	Gigabit Ethernet, DDM, internal calibration, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)	SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-10A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)	SFP-6D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-10B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)	SFP-6H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-18A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)	SFP-7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
SFP-18B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)	SFP-7D	Gigabit Ethernet, DDM, internal calibration, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
SFP-19A	Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	SFP-8	Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)
SFP-19B	Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	SFP-8D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)
NULL	Empty SFP slot	SFP-8H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 40.0 km (24.8 mi)
UTP	1 UTP	SFP-8DH	Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)
+2 Port 2 (network/user) interface (see +1 options above)		SFP-10A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
+3 See +1 (Port 1) above	Port 3-6 (user) interface and combination	SFP-10B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
+3 Port 3-6 (user) interface		SFP-17A	Gigabit Ethernet, Tx -1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
1UTP	1 UTP (port 3) 4 10/100BaseT ports	SFP-17B	Gigabit Ethernet, Tx -1490 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
4UTP	Four built-in 10/100/1000BT, RJ-45 connectors	SFP-18A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
<i>Supplied Accessories</i>		SFP-18B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
AC power cord	For AC unit		
DC adapter kit	For DC unit		
<i>Optional Accessories</i>			
RM-33-2	Hardware kit for mounting one or two ETX-102 units into a 19" rack		
RM-35/@	Hardware kit for mounting one or two ETX-102/H units into a 19" rack		
@ Mounting kit (Default=Both kits):			
P1	Kit for mounting one unit		
P2	Kit for mounting two units		



SFP-19A	Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-19B	Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	SFP-4D	Fast Ethernet/STM-1, DDM, internal calibration, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-20	Gigabit Ethernet, 1550 nm, single mode, laser, 120.0 km (74.5 mi)	SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-22A	Gigabit Ethernet, Tx -1490 nm, Rx -1570 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)	SFP-5D	Gigabit Ethernet, DDM, internal calibration, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-22B	Gigabit Ethernet, Tx -1570 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)	SFP-5H	Gigabit Ethernet, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
NULL	Empty SFPport slot	SFP-5DH	Gigabit Ethernet, DDM, internal calibration, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
UTP	Built-in 10/100/1000BaseT	SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
+2 Port 2 (network/user) interface (see +1 options above)		SFP-6D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
+3 Port 3-6 (user) interface	SFP-1-3UTP	SFP-6H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
	SFP-1 transceiver (port 3) and 3 UTP, ports 4-6	SFP-7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
1SFP-1-3UTP	SFP-1 transceiver (port 3) and 3 UTP, ports 4-6	SFP-7D	Gigabit Ethernet, DDM, internal calibration, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
1SFP-2-3UTP	SFP-2 transceiver (port 3) and 3 UTP, ports 4-6	SFP-8	Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)
1SFP-2D-3UTP	Port 3:SFP-2D transceiver	SFP-8D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)
	Ports 4-6: 3 built-in 10/100BaseT ports (RJ-45 connector)	SFP-8H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 40.0 km (24.8 mi)
1SFP-2H-3UTP	Port 3:SFP-2H transceiver	SFP-8DH	Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)
	Ports 4-6: 3 built-in 10/100BaseT ports (RJ-45 connector)	SFP-10A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
1SFP-3-3UTP	SFP-3 transceiver (port 3) and 3 UTP, ports 4-6	SFP-10B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
1SFP-4-3UTP	SFP-4 transceiver (port 3) and 3 UTP, ports 4-6	SFP-17A	Gigabit Ethernet, Tx -1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
1SFP-5-3UTP	SFP-5 transceiver (port 3) and 3 UTP, ports 4-6	SFP-17AD	Gigabit Ethernet, DDM, internal calibration, Tx - 1310 nm, Rx - 1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
1SFP-10A-3UTP	SFP-10A transceiver (port 3) and 3 UTP, ports 4-6	SFP-17B	Gigabit Ethernet, Tx -1490 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
1SFP-10B-3UTP	SFP-10B transceiver (port 3) and 3 UTP, ports 4-6	SFP-17B	Gigabit Ethernet, Tx - 1490 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
1SFP-18A-3UTP	SFP-18A transceiver (port 3) and 3 UTP, ports 4-6	SFP-17BD	Gigabit Ethernet, DDM, internal calibration, Tx - 1490 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
1SFP-18B-3UTP	SFP-18B transceiver (port 3) and 3 UTP, ports 4-6	SFP-18A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
1SFP-19A-3UTP	SFP-19A transceiver (port 3) and 3 UTP, ports 4-6	SFP-18AED	Fast Ethernet/ STM-1, DDM, external calibration, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
1SFP-19B-3UTP	SFP-19B transceiver (port 3) and 3 UTP, ports 4-6	SFP-18B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
1Null-3UTP	Port 3-4 with SFP-8, Port 5-6 with UTP Empty SFP slot	SFP-18BED	Fast Ethernet/ STM-1, DDM, external calibration, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
1UTP	1 UTP port (port 3)	SFP-19A	Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)
4UTP	Four built-in 10/100/1000BT, RJ-45 connectors4 UTP ports	SFP-19B	Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)
<i>Supplied Accessories</i>		SFP-20	Gigabit Ethernet, 1550 nm, single mode, laser, 120.0 km (74.5 mi)
AC power cord	For AC unit	SFP-21AED	Gigabit Ethernet, DDM, external calibration, Tx - 1310 nm, Rx - 1490 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)
DC adapter kit	For DC unit	SFP-21BED	Gigabit Ethernet, DDM, external calibration, Tx - 1490 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)
<i>Optional Accessories</i>			
RM-33-2	Hardware kit for mounting one or two ETX-102 units into a 19" rack		
RM-35/@	Hardware kit for mounting one or two ETX-102/H units into a 19" rack		
@	Mounting kit (Default=Both kits):		
P1	Kit for mounting one unit		
P2	Kit for mounting two units		
WM-35	Hardware kit for mounting one ETX-201/H unit with metal enclosure on a wall		
CBL-DB9F-DB9M-STR	Control port cable		
ETX-201A	Carrier Ethernet Demarcation Device		
ETX-201/!/+1/+2/+3			
! Power supply	(Default for units with 3 ports=built-in AC/DC power supply, default for units with 4-6 ports=built-in AC power supply)		
WRDC	24 to -48 V Wide range DC power		
+1 Port 1 (network) interface			
UTP	UTP Ethernet port (RJ-45-connector)		
SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)		
SFP-1D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)		
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)		
SFP-2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)		
SFP-2H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)		
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)		
SFP-3D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)		
SFP-3H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)		



SFP-22A	Gigabit Ethernet, Tx -1490 nm, Rx -1570 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)	SFP-22B	Gigabit Ethernet, Tx -1570 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)
SFP-22B	Gigabit Ethernet, Tx -1570 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)	NULL	Empty SFP slot
SFP-23A	Gigabit Ethernet, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)	+2 Port 2 (network/user) interface (see +1 options above)	
SFP-23AED	Gigabit Ethernet, DDM, external calibration, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)	+3 Port 3 or 3-6 (user) interface	Port 3 with UTP (built-in 10/100/1000BaseT)
SFP-23B	Gigabit Ethernet, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)	1UTP	Single built-in 10/100/1000BT, RJ-45 connector
SFP-23BED	Gigabit Ethernet, DDM, external calibration, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)	1SFP-5	Single SFP-5
SFP-30	10/100/1000BaseT (with SGMII), RJ-45 connector, 100 m (238 ft)	1SFP-6	Single SFP-6
NULL	Empty SFPport slot	1SFP-7	Single SFP-7
+2 Port 2 (network/user) interface:	Refer to the network port 1 options above	1SFP-8	Single SFP-8
+3 Ports 3-6 (user) interfaces and combinations:		1NullUTP	Port 3 with empty SFP slot, Port 4 with UTP
1NULL	Port 3: 1 empty SFP slot	2Null-2UTP	Port with SFP 5-6 with UTP
1UTP	Port 3: 1 10/100BaseT UTP port (RJ-45 connector)	4UTP	Ports 3-6 with UTP
1NULL3UTP	Port 3: 1 empty SFP slot	4SFP-5	Four SFP-5
	Ports 4-6: 3 built-in 10/100BaseT ports (RJ-45 connector)	4SFP-5H	Ports 3-6: 4 SFP-5H transceivers
2NULL2UTP	Ports 3-4: 1 empty SFP slot	4SFP-6	Four SFP-6
	Ports 5-6: 2 built-in 10/100BaseT ports (RJ-45 connector)	4SFP-6H	Ports 3-6: 4 SFP-6H transceivers
4NULL	4 empty SFP slots	4SFP-7	Four SFP-7
4UTP	4 10/100BaseT UTP ports (RJ-45 connector)	4SFP-8	Four SFP-8
		4SFP-8H	Ports 3-6: 4 SFP-8H transceivers
		4Null	Ports 3-6 with empty SFP slots
Supplied Accessories		Supplied Accessories	
AC power cord	For AC unit	AC power cord	For AC unit
DC adapter kit	For DC unit	DC adapter kit	For DC unit
Optional Accessories		Optional Accessories	
RM-35/+	Hardware kit for mounting one or two units into a 19" rack	RM-35/@	Hardware kit for mounting one or two units into a 19" rack
+ P1	Kit for mounting one unit	@ Rack mounting kit	
P2	Kit for mounting two units	P1	Kit for mounting 1 unit
WM-35	Hardware kit for mounting one unit on a wall	P2	Kit for mounting 2 units
CBL-DB9F-DB9M-STR	Control port cable	WM-35	Hardware kit for mounting one unit on a wall
		CBL-DB9F-DB9M-STR	Control port cable
ETX-202	Carrier Ethernet Demarcation Device		
ETX-202/?/!/+/1/+2/+3		ETX-202A	Carrier Ethernet Demarcation Device
? Power supply (Default=AC/DC wide range)		ETX-202A/?/+1/+2/+3	Carrier Ethernet Demarcation Device
WRDC	24 to -48 VWide range DC power supply (for temperature-hardened enclosure only)		
! Temperature range	Temperature range (Default=regular enclosure)	ETX-202A/H/!/+/1/+2/+3	Hardened version
H	Temperature-Hardened enclosure (requires temperature-hardened SFP transceivers)		<i>Note: requires industrially-hardened SFP transceivers. The temperature-hardened version is available only with six ports.</i>
+1 Port 1 (network) interface		? Power supply (Default= Single AC power supply in 1U 8.4" enclosure)	
UTP	Built-in 10/100/1000BaseT	WRDC	Single wide-range DC power supply in 1U 8.4" enclosure
SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)	! Power supply for temperature-hardened enclosure	
SFP-5H	Gigabit Ethernet, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)	ACR	Dual AC power supply in 1U 17.4" enclosure
SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)	DCR	Dual wide-range DC power supply in 1U 17.4" enclosure
SFP-6H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 10.0 km (6.2 mi)	+1 Port 1 (network) interface	
SFP-7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)	UTP	Built-in 10/100/1000BaseT
SFP-8	Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)	SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-8H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 40.0 km (24.8 mi)	SFP-1D	Fast Ethernet/ STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-17A	Gigabit Ethernet, Tx -1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)	SFP-2	Fast Ethernet/ STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-17B	Gigabit Ethernet, Tx -1490 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)	SFP-2D	Fast Ethernet/ STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-20	Gigabit Ethernet, 1550 nm, single mode, laser, 120.0 km (74.5 mi)	SFP-2H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-22A	Gigabit Ethernet, Tx -1490 nm, Rx -1570 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)	SFP-3	Fast Ethernet/ STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
		SFP-3D	Fast Ethernet/ STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)
		SFP-3H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)
		SFP-4	Fast Ethernet/ STM-1, 1310 nm, single mode, laser, 80 km (49.7 mi)
		SFP-4D	Fast Ethernet/ STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 80 km (49.7 mi)
		SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
		SFP-5D	Gigabit Ethernet, DDM, internal calibration, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
		SFP-5H	Gigabit Ethernet, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)



SFP-5DH	Gigabit Ethernet, DDM, internal calibration, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)	SFP-30	10/100/1000BaseT (with SGMII), RJ-45 connector, 100 m (238 ft)
SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)	NULL	Empty SFP slot
SFP-6D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode, laser, 10.0 km (6.2 mi)	+2 Port 2 (network/user) interface (see +1 options above)	
SFP-6H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 10.0 km (6.2 mi)	+3 Port 3 or 3-6 (user) interface1UTP	Port 3 with UTP (built-in 10/100/1000BaseT)
SFP-7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)	1NULL	Port 3: 1 empty SFP slot
SFP-7D	Gigabit Ethernet, DDM, internal calibration, 1550 nm, single mode, laser, 80.0 km (49.7 mi)	1UTP	Port 3: 1 built-in 10/100/1000BaseT port (RJ-45 connector)
SFP-8	Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)	1NULL3UTP	Port 3: 1 empty SFP slot
SFP-8D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)	2NULL2UTP	Ports 4-6: 3 built-in 10/100/1000BaseT ports (RJ-45 connector)
SFP-8H	Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 40.0 km (24.8 mi)	4NULL	Port 3: 1 empty SFP slot
SFP-8DH	Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)	4UTP	Ports 3-4: 1 empty SFP slot
SFP-10A	Fast Ethernet/ STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)		Ports 5-6: 2 built-in 10/100/1000BaseT ports (RJ-45 connector)
SFP-10B	Fast Ethernet/ STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)		4 empty SFP slots
SFP-17A	Gigabit Ethernet, Tx -1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)		4 built-in 10/100/1000BaseT ports (RJ-45 connector)
SFP-17AD	Gigabit Ethernet, DDM, internal calibration, Tx - 1310 nm, Rx - 1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)		
SFP-17B	Gigabit Ethernet, Tx -1490 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)		
SFP-17BD	Gigabit Ethernet, DDM, internal calibration, Tx - 1490 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)		
SFP-18A	Fast Ethernet/ STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)		
SFP-18AED	Fast Ethernet/ STM-1, DDM, external calibration, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)		
SFP-18B	Fast Ethernet/ STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)		
SFP-18BED	Fast Ethernet/ STM-1, DDM, external calibration, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)		
SFP-19A	Fast Ethernet/ STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)		
SFP-19B	Fast Ethernet/ STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)		
SFP-20	Gigabit Ethernet, 1550 nm, single mode, laser, 120.0 km (74.5 mi)		
SFP-21AED	Gigabit Ethernet, DDM, external calibration, Tx - 1310 nm, Rx - 1490 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)		
SFP-21BED	Gigabit Ethernet, DDM, external calibration, Tx - 1490 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)		
SFP-22A	Gigabit Ethernet, Tx -1490 nm, Rx -1570 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)		
SFP-22B	Gigabit Ethernet, Tx -1570 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)		
SFP-23A	Gigabit Ethernet, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)		
SFP-23AED	Gigabit Ethernet, DDM, external calibration, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)		
SFP-23B	Gigabit Ethernet, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)		
SFP-23BED	Gigabit Ethernet, DDM, external calibration, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)		
		Supplied Accessories	
		AC power cord	For AC unit
		DC adapter kit	For DC unit
		Optional Accessories	
		RM-34	Hardware kit for mounting one unit with 17.4" enclosure in a 19" rack
		RM-35/+	Hardware kit for mounting one or two units with 8.4" enclosure in a 19" rack
		+ Rack mount kit (Default=both kits)	
		P1	Kit for mounting 1 unit
		P2	Kit for mounting 2 units
		WM-34	Hardware kit for mounting one ETX-202A unit with 17.4" enclosure on a wall
		WM-35	Hardware kit for mounting one ETX-202A unit with 8.4" enclosure on a wall
		CBL-DB9F-DB9M-STR	Control port cable
		ETX-204A	
		ETX-204A /?/!/BT/B/_	Carrier Ethernet Demarcation Device in a 19" enclosure (swappable power supplies)
		? Temperature range (Default=Regular enclosure):	
		H	Temperature-hardened enclosure
		! Power supply (Default=Single AC power supply in 1U 8.5" enclosure)	
		AC	Single AC power supply
		DC	Single -48 DC power supply
		24DC	Single 24 DC power supply
		ACR	Dual AC power supply
		DCR	Dual -48 DC power supply
		24DCR	Dual 24 DC power supply
		BT Enclosure	
		19	19" metal enclosure for single power supplies only (for dual power supplies, 19 is not needed)
		B Number of user ports (Default=2 user ports):	
		4	4 user ports
		- Timing (Default=No hardware support for synchronization over packet):	
		SYE	SyncE full support
		ETX-204A /?/!/ B/_	Carrier Ethernet Demarcation Device in a 1/2 19" enclosure (fixed power supplies)
		? Temperature range (Default=Regular enclosure):	
		H	Temperature-hardened enclosure
		! Power supply (Default=Single AC power supply in 1U 8.5" enclosure)	
		AC	Single AC power supply
		DC	Single -48 DC power supply
		24DC	Single 24 DC power supply
		B Number of user ports (Default=2 user ports):	
		4	4 user ports
		- Timing (Default=No hardware support for synchronization over packet):	
		SYE	SyncE full support
		Supplied Accessories	
		AC power cord	For AC unit
		DC adapter kit	For DC unit
		Optional Accessories	
		RM-34	Hardware kit for mounting one unit with 17.4" enclosure in a 19" rack
		RM-35/+	Hardware kit for mounting one or two units with 8.4" enclosure in a 19" rack
		+ Rack mount kit (Default=both kits)	
		P1	Kit for mounting 1 unit
		P2	Kit for mounting 2 units



SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)	FCD-155-PACK1	Software key for activity IP tunneling management option
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)	SFP	For redundancy, order two SFP transceivers
SFP-11	STM-1E, mini-BNC connector, DIN 1.0/2.3, 135m (442 ft)	TRANSCEIVERS	
SFP-18a	STM-1/OC-3, Tx – 1310, Rx – 1550, 9/125 single mode (single fiber), laser (WDM), LC connector	STM-1/OC-3 Uplink	
SFP-18b	STM-1/OC-3, Tx – 1550 Rx – 1310, 9/125 single mode (single fiber), laser (WDM), LC connector	SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-19a	STM-1/OC-3, Tx – 1490 Rx – 1570, 9/125 single mode (single fiber), laser (WDM), LC connector	SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-19b	STM-1/OC-3, Tx – 1570 Rx – 1490, 9/125 single mode (single fiber), laser (WDM), LC connector	SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
* STM-1/OC-3 Uplink		SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)	SFP-11	STM-1E, mini-BNC connector, DIN 1.0/2.3, 135m (442 ft)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)	SFP-18A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)	SFP-18B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
# GbE User		SFP-19A	Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)
SFP-5	GbE, 850 nm multimode VCSEL	SFP-19B	Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)
SFP-6	GbE, 1310 nm single mode laser (LX-SM)		
SFP-7	GbE, 1550 nm single mode laser, long haul LX-H (ZX)		
SFP-8D	GbE, 1310 nm single mode laser, long haul (LX-H)		
Supplied Accessories		GbE	
AC power cord	For AC unit	SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
DC adapter kit	For DC unit	SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
CBL-DB9F-DB9M-STR	Control port cable	SFP-7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
Optional Accessories		SFP-8D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)
CBL-RJ45/2BNC/E1/X	Cable for converting a balanced E1 interface to an unbalanced E1 interface. Contains one RJ-45 balanced connector and two unbalanced BNC coaxial connectors.	Supplied Accessories	
CBL-SMB-BNC/M/E	Cable for adapting two mini-BNC connectors to two full-sized BNC connectors (for SFP-11)	RM-34	Hardware for mounting one unit in a 19" rack
CBL-G703-8/^	8E1/8T1 interface cables for the DB-44 port connector (one cable required per interface):	CBL-SMB-BNC/M/E	Cable for adapting two mini-BNC connectors to full-sized BNC connectors (supplied with SFP-11)
^ Connector		Optional Accessories	
RJ45	Splits into 8 E1/T1 balanced RJ-45 connectors	CBL-DB9F-DB9M-STR	Control port cable
RJ45/X	Splits into 8 E1/T1 balanced RJ-45 connectors (cross-cable)	FCD-155E-PS/AC	100-240 VAC power supply module
COAX	splits into 8 pairs of E1 unbalanced BNC male connectors	FCD-155E-PS/48	-48 VDC power supply module
OPEN	8 x 4 unterminated free leads 2m (6.6 ft)	CBL-G703-8/^	8E1/8T1 interface cables for the DB-44 port connector (one cable required per interface)
RM-35/@	Hardware kit for mounting one or two units in a 19" rack	^ Connector	
@ Mounting kit		RJ45	Splitting into 8 E1/T1 balanced RJ-45 connectors
P1	Mounting one unit	RJ45/X	Splitting into 8 E1/T1 balanced RJ-45 connectors (cross-cable)
P2	Mounting two units	COAX	Splitting into 8 pairs of E1 unbalanced BNC male connectors
WM-35	Hardware for mounting one unit on the wall	OPEN	8 x 4 unterminated free leads 2m (6.6 ft)
FCD-155E	STM-1/OC-3 Add/Drop Multiplexer	CBL-G703-14/#	14E1/14T1 interface cable for the DB-62 port connector
FCD-155E*/&/&/\$		CBL-G703-28/#	Two CBL-G703-14/# interface cables for the DB-62 port connector, to provide 21E1/28T1 capacity
<i>Note: SFP transceivers are not included in the chassis for the uplink and/or the fiber GbE interfaces (see SFP Transceivers).</i>		# Connector	
* Power supply		RJ45	Splitting into 14 E1/T1 balanced RJ-45 connectors
AC	100 to 240 VAC	COAX	Splitting into 14 E1 unbalanced BNC male connectors
AD	Redundant 100 to 240 VAC and -48 VDC power supply	OPEN	14 x 4 unterminated free leads 2m (6.6 ft)
48	-48 VDC	PATCH	Connection to 2 Telco connectors 2m (6.6 ft)
ACR	Redundant AC power supply	OP-A-ADAPTOR-28RJ	Patch panel, two CBL-G703-14/Patch cables are not included
48R	Redundant DC power supply	OP-A-ADAPTOR-21BNC-FCD155E	Patch panel, includes two CBL-G703-14/Patch cables
24R	+24 VDC		
& LAN interface		FCD-24	Integrating E1 Multiplexer
2U	2 bridging 10/100BaseT ports	FCD-24*/##/ &	4 channels
6U	2 bridging and 4 transparent 10/100BaseT ports	FCD-24-2*/##/ &	2 channels
GE	1 10/100/1000BaseT (GbE) port, copper interface and SFPsocket	* E1	E1 sub-link
\$ PDH interface		# Data channels interface	
8E1	8 x E1 G.703 ports	V35	V.35 interface
8T1	8 x T1 G.703 ports	X21	X.21 interface
21E1	21 x E1 G.703 ports		
28T1	28 x T1 G.703 ports		
E3	1 x E3 G.703 ports		
T3	1 x T3 G.703 ports		
21E1E3	1 x E3 ports and 21 x E1 ports		
21E1T3	1 x T3 ports and 21 x E1 ports		
28T1T3	1 x T3 ports and 28 x T1 ports		



530	RS-530 interface
V36	V.36/RS-449 interface (via supplied conversion cables)
& LTU	Integral LTU (Default=without LTU)
FCD-2L	E1 or Fractional E1 Access Unit
FCD-2L/~!&/@	Standalone
FCD-2L/R!&/@	Card for ASM-MN-214 Rack
~ Power supply	
AC	110 VAC to 240 VAC
48	-48 VDC
24	24 VDC
& Data port interface	
530	RS-530
V35	V.35
X21	X.21
V36	V.36/RS-449
ETUB	UTP (10BaseT) Ethernet bridge
ETUQ	UTP (10BaseT) Ethernet bridge with VLAN support
@ LTU	
LTU	Integral line termination unit

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit
Cables	Interface adapter cables for DB-25 channel connectors (DCE clock mode only). Cable length is 2m (6 ft).

CBL-HS2/V/1/#	For 34-pin V.35, DCE
CBL-HS2/R/1/#	For 37-pin V.36, DCE
CBL-HS2/X/1/#	For 15-pin X.21, DCE

# Connector	
F	Female
M	Male

Optional Accessories

RM-9	Hardware kit for mounting one or two units side-by-side in a 19" rack
Cables	Interface adapter cables for DB-25 channel connectors (DTE1 and DTE2 clock modes). Cable length is 2m (6 ft)

CBL-HS2/*/#

* Interface, clock mode	
V/2	34-pin V.35, DTE1
V/3	34-pin V.35, DTE2
R/2	37-pin V.36/RS-449, DTE1
R/3	37-pin V.36/RS-449, DTE2

# Connector	
F	Female
M	Male

CIA-FCD2L* Mechanical adapter for converting DB-25 connectors into standard connectors for FCD-2L/R

* Interface	
V35/1	V.35 interface
X21/1	X.21 interface
ETU/1	Ethernet interface

FCD-E1, FCD-T1 E1/T1 or Fractional E1/T1 Access Unit

FCD-E1/*/~!&/%	E1 or fractional E1
FCD-T1/*/~!&/%	T1 or fractional T1

* Sublink	
S1	Drop-and-insert copper E1/T1 sublink

~ Power supply	
AC	100 to 240 VAC
48	-48 VDC

& Data port interface	
530	RS-530
V35	V.35
X21	X.21
V36	V.36/RS-449

% Second data port interface (optional)	
530	RS-530
V35	V.35
X21	X.21
V36	V.36/RS-449
ETU	UTP (10BaseT) Ethernet bridge with VLAN support

Supplied Accessories

Power cord	For AC unit
DC adapter kit	For DC unit
CBL-HS2/V/1	For 34-pin V.35
CBL-HS2/R/1	For 37-pin V.36/RS-449

CBL-HS2/X/1	For 15-pin X.21
-------------	-----------------

Optional Accessories

CBL-HS2/*/#	
* Interface, clock mode	
V/2	34-pin V.35, DTE1
V/3	34-pin V.35, DTE2
R/2	37-pin V.36/RS-449, DTE1
R/3	37-pin V.36/RS-449, DTE2

# Cable connector	
F	Female
M	Male

CBL-DB9F-DB9M-STR Control port cable
RM-17 Kit for mounting one or two FCD-E1 or FCD-T1 units into a 19" rack

FCD-E1A E1 or Fractional E1 Access Unit

FCD-E1A/*/~!&/%/#+

E1 or Fractional E1 Access Unit

* Sub-E1 port (optional)	
S1	Drop-and-insert sub-E1 port

~ Power supply	
AC	100 to 240 VAC
48	-48 VDC

\$ Management port interface	
V24	V.24/RS232 (DB-9)
UTP	Ethernet 10BaseT (UTP)

& Data port interface	
530	RS-530
V35	V.35
X21	X.21
449	V.36/RS-449 interface

% Second data port interface (optional)	
530	RS-530
V24	V.24 interface
V35	V.35
X21	X.21
449	V.36/RS-449 interface
ETUB	IR-ETH UTP Ethernet bridge (10BaseT)
ETUQ	IR-ETH/Q UTP Ethernet bridge VLAN (10BaseT)
ETQN	IR-ETH/QN UTP Ethernet bridge VLAN (10/100BaseT)

ETUR IR-IP UTP Ethernet router (10BaseT)

S0	4xS0 ISDN
IBE	ISDN backup "S" interface

# Link connector (default=G.703 electrical/copper)	
ST	ST fiber
FC	FC/PC fiber
SC	SC fiber

+ Optical interface	
85	850 nm, single mode, laser
13L	1310 nm, single mode, laser
1550L	1550 nm, single mode, laser

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit

The following cables (suitable for use in DCE clock mode only) are supplied for each data port interface specified. Cable length is 2m (6 ft):

CBL-HS2/V/1	For 34-pin V.35, DCE
CBL-HS2/R/1	For 37-pin V.36, DCE
CBL-HS2/X/1	For 15-pin X.21, DCE

Optional Accessories

RM-17	Hardware kit for mounting one or two units side-by-side in a 19" rack
CBL-HS2/*/#	Adapter cables for DB-25 channel connectors

* Interface, clock mode	
V/2	34-pin V.35, DTE1
V/3	34-pin V.35, DTE2
R/2	37-pin V.36/RS-449, DTE1
R/3	37-pin V.36/RS-449, DTE2

# Connector	
F	Female
M	Male

FCD-E1E Managed E1 and Fractional E1 Access Device

FCD-E1E/@/+/&/*

@ TDM interface:	
1E1	1 balanced E1 as uplink
1E1CX	1 unbalanced E1 as uplink
2E1	Balanced E1 and sub E1
2E1CX	Unbalanced E1 and sub E1



+ Ethernet interface (Default=no Ethernet):
 UTP 10/100BaseT Ethernet port (bridge and management)
 UTPM 10/100BaseT Ethernet port (management only)
 & Data port interface
 V35 V.35
 V36 V.36/RS-449
 530 RS-530
 X21 X.21
 V24 V.24/RS-232 (asynchronous)
 * Enclosure (Default=plastic):
 L Metal, with LCD
 FCD-E1E/SW/\$ Software upgrade pack for enabling bridge and management services on the Ethernet port

Supplied Accessories

AC/DC adapter plug

CBL-HS2/*/#

* Interface, clock mode

V/1 34-pin V.35, DCE
 V/2 34-pin V.35, DTE1
 V/3 34-pin V.35, DTE2
 R/1 37-pin V.36/RS-449, DCE
 R/2 37-pin V.36/RS-449, DTE1
 R/3 37-pin V.36/RS-449, DTE2
 X/1 15-pin X.21, DCE

Connector

F Female
 M Male

Optional Accessories

CBL-DB9F-DB9M-STR Control port cable

CBL-RJ45/2BNC/E1 RJ-45 to BNC adaptor cable

RM-33-2 Hardware kit for mounting one or two FCD-E1E units into a 19-inch rack

RM-35/@ Kit for mounting 1 or 2 FCD-E1E/L units (metal enclosure) in a 19-inch rack

@ Rack mount kit:

P1 Mounting one unit
 P2 Mounting two units

FCD-E11 E1 or Fractional E1 Access Unit with "S" Interface

FCD-E11/\$/~&/@

\$ Sub-E1 port (optional)

S1 Drop-and-insert sub-E1 port

~ Power supply

AC 115/230 VAC
 48 -48 VDC

& Data port interface

530 RS-530 interface
 V35 V.35 interface
 X21 X.21 interface
 449 RS-449 interface

@ Optional link interface

LTU Integral line termination unit

Supplied Accessories

AC power cord For AC unit

DC adapter kit For DC unit

The following cables (suitable for use in DCE clock mode only) are supplied for each data port interface specified. Cable length is 2m (6 ft):

CBL-HS2/V/1 34-pin V.35
 CBL-HS2/R/1 37-pin V.36/RS-449
 CBL-HS2/X/1 15-pin X.21

Optional Accessories

The following cables convert 25-pin data port connectors into the respective interface. Cable length is 2m (6 ft).

CBL-HS2/*/#

* Interface, clock mode

V/2 34-pin V.35, DTE1
 V/3 34-pin V.35, DTE2
 R/2 37-pin V.36/RS-449, DTE1
 R/3 37-pin V.36/RS-449, DTE2

Connector

F Female
 M Male

CBL-DB9F-DB9M-STR Control port cable

RM-17 Hardware kit for mounting one or two units side-by-side in a 19" rack

FCD-E1L, FCD-T1L E1/T1 or Fractional E1/T1 Managed Access Units

FCD-E1L/*/~&/% E1/fractional E1

FCD-T1L/*/~&/% T1/fractional T1

* E1 main link interface

B Balanced with RJ-45 connector
 U Unbalanced with BNC connector

~ Power supply voltage

AC 110 VAC to 240 VAC
 48 -48 VDC

& Data port interface

530 RS-530
 V35 V.35
 X21 X.21
 V36 RS-449

% Second data port interface (optional)

530 RS-530 interface
 V35 V.35 interface
 X21 X.21 interface
 V36 RS-449 interface
 ETQN IR-ETH/QN Ethernet bridge VLAN (10/100BaseT)
 ETUB IR-ETH/QN Ethernet bridge (10/100BaseT)
 ETUR IR-IP Ethernet router (10BaseT)

Supplied Accessories

AC power cord

DC adapter plug

CBL-HS2/* Adapter cables for DB-25 channel connectors for use in DCE clock mode only. Cable length is 2m (6 ft).

* Data port interface

V/1 34-pin V.35, DTE1
 R/1 34-pin V.35, DTE2
 X/1 37-pin V.36/RS-449, DTE1

CBL-HS2/*/# Adapter cables for DB-25 channel connectors for use in DTE clock mode only. Cable length is 2m (6 ft).

^ Interface, clock mode

V/2 34-pin V.35, DTE1
 V/3 34-pin V.35, DTE2
 R/2 37-pin V.36/RS-449, DTE1
 R/3 37-pin V.36/RS-449, DTE2

Connector

F Female
 M Male

Optional Accessories

CBL-DB9F-DB9M-STR Control port cable

RM-28 Hardware for mounting one or two units in a 19" rack

FCD-E1LC, FCD-T1LC

E1/T1 or Fractional E1/T1 Access Units

FCD-E1LC/*/~&/% E1 or fractional E1

FCD-T1LC/*/~&/% T1 or fractional T1

& Data port interface

530 RS-530
 V35 V.35
 X21 X.21
 V36 RS-449

* Sub-E1/T1 port (optional)

S Drop-and-insert E1/T1 sublink

% Second data port interface

530 RS-530
 V35 V.35
 X21 X.21
 V36 RS-449
 V24 V.24
 ETQN IR-ETH/QN Ethernet bridge VLAN (10/100BaseT)

Supplied Accessories

Power cord

AC/DC adapter plug

CBL-HS2/V/1 34-pin V.35

CBL-HS2/R/1 37-pin V.36/RS-449

CBL-HS2/X/1 15-pin X.21



Optional Accessories

RM-33-2	Hardware for mounting one or two units in a 19" rack
CBL-DB9F-DB9M-STR	Control port cable
CBL-RJ45/2BNC/E1/X	RJ-45 to BNC adaptor cable (for unbalanced main link interface)
CBL-RJ45/2BNC/E1	RJ-45 to BNC adaptor cable (for unbalanced sublink interface)
CBL-HS2/*/#	Adaptor cables for DB-25 channel connectors, for operation in the DTE1 and DTE2 clock modes
* Interface, clock mode:	
V/2	34-pin V.35, DTE1
V/3	34-pin V.35, DTE2
R/2	37-pin V.36/RS-449, DTE1
R/3	37-pin V.36/RS-449, DTE2
# Cable connector type	
F	female
M	male

FCD-E1M, FCD-T1M Modular E1/T1 or Fractional E1/T1 Access Units Supporting Megaplex-2100 Modules

FCD-E1M/*/~/\$/&/#+	Modular E1/fractional E1
FCD-T1M/*/~/\$/&/#+	Modular T1/fractional T1
* Sub-E1 port (optional)	
S1	Drop-and-insertcopper E1/T1 port
~ Power supply	
AC	100 to 240 VAC
48	-48 VDC
\$ Management port interface	
V24	V.24/RS232 (DB-9)
UTP	Ethernet 10BaseT (UTP)
& Data port interface option	
530	RS-530
V35	V.35
X21	X.21
V36	V.36/RS-449
ETUB	IR-ETH UTP Ethernet bridge (10BaseT)
ETUQ	IR-ETH/Q UTP Ethernet bridge with VLAN support (10BaseT)
ETUR	IR-IP UTP Ethernet router (10BaseT)
# Link connector (Default=G.703 copper interface)	
ST	ST connector
SC	SC connector
FC	FC/PC connector
+ Optical interface wavelength/transmitter	
85	850 nm laser, multimode
13L	1310 nm laser, single mode
15L	1550 nm laser, single mode

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit

The following cables (suitable for use in DCE clock mode only) are supplied for each data port interface specified.

Cable length is 2m (6 ft):

CBL-HS2/V/1/#	34-pin V.35, DCE
CBL-HS2/R/1/#	37-pin V.36, DCE
CBL-HS2/X/1/#	15-pin X.21, DCE

Optional Accessories

RM-34	Hardware kit for mounting one unit in a 19" rack
CBL-HS2/*/#	Adapter cables for DB-25 channel connectors. Cable length is 2m (6 ft).
* Interface, clock mode	
V/2/#	34-pin V.35, DTE1
V/3/#	34-pin V.35, DTE2
R/2/#	37-pin V.36/RS-449, DTE1
R/3/#	37-pin V.36/RS-449, DTE2
# Connector	
F	Female
M	Male

FCD-E1M, FCD-T1M Modules

HS-Q/N	
MP-2100M-HS-Q/N 4	4-Channel High Speed Data Module for MP-2100/210

Optional Accessories

CBL-SCS26/*/#	Adaptor cables for HS-Q/N module 26-pin SCSI connectors. Each cable converts to a connector of the specified (a separate cable is required for each channel). Cable length is 2m (6 ft).
---------------	--

* Interface, clock mode	
V35	V.35 interface 34-pin
V36	V.36/RS-449 interface 37-pin
530	RS-530 interface 25-pin
X21	X.21 interface, 15-pin
# Cable connector	
F	Female
M	Male

HS-S

MP-2100M-HS-S	4-channel ISDN "S" interface data module for MP-2100/2104
---------------	---

Optional Accessories

If power feed is required, refer to the Ringer ordering options.

FCD-IP

E1/T1 or Fractional E1/T1 Access Unit with Integrated Router
--

FCD-IP/~/\$/+/*

~ DC power supply	
DC	-20 to -72 VDC
\$ Primary WAN interface with optional second data port	
E1/#	E1 or fractional E1 (RJ-45 only)
T1/#	T1 or fractional T1
E1?!/#	E1 or fractional E1 with built-in fiber optic modem
T1?!/#	T1 or fractional T1 with built-in fiber optic modem

Note: T1 cannot work in ring topology

# Optional second WAN interface	
V24T	V.24/RS-232 (DTE)
V24C	V.24/RS-232 (DCE)
V35T	V.35 (DTE)
V35C	V.35 (DCE)
530T	RS-530 (DTE)
530C	RS-530 (DCE)
V36T	V.36/RS-422/RS-449 (DTE)
V36C	V.36/RS-422/RS-449 (DCE)
X21T	X.21 (DTE)
X21C	X.21 (DCE)

Note: All synchronous data ports are equipped with 25-pin D-, female connectors. Adapter cables for the V.35, V.36 and X.21 interfaces are supplied with the unit.

? Fiber optic connector	
ST	ST connector
FC	FC/PC connector
SC	SC connector
! Optical interface wavelength	
85	850 nm, multimode, LED
13L	1310 nm, single mode laser diode
15L	1550 nm, single mode laser diode

+ LAN interface	
U	10/100BaseT (UTP)
2U	2 x 10BaseT (UTP)
4U	4 x 10/100BaseT (UTP) built-in switch

Note: 2U cannot work in ring topology

* Sub-E1/T1, analog voice or ISDN backup interfaces	
S	Sub-E1/T1 port (RJ-45 only)
2S	2 sub-E1/T1 ports (RJ-45 only)
3S	3 sub-E1/T1 ports (RJ-45 only)
FXS	4 FXS voice channels
FXO	4 FXO voice channels
E&M	4 E&M voice channels
IBE	ISDN "S" interface
IBU	ISDN "U" interface
FXS/S	4 FXS voice channels and one sub-E1/T1 port
FXO/S	4 FXO voice channels and one sub-E1/T1 port
E&M/S	4 E&M voice channels and one sub-E1/T1 port
IBE/S	ISDN "S" interface and one sub-E1/T1 port
IBU/S	ISDN "U" interface and one sub-E1/T1 port



Notes:

- The second WAN option is not available when configuring E1/T1 with an ISDN backup.
- The dual LAN configuration is not available when configuring E1/T1 with an ISDN backup.
- The line cannot be fiber for options 3S, FXS/S, FXO/S, E&M/S, IBE/S, or IBU/S.
- 3S (3 sub-E1/T1 ports) cannot be installed with an additional FXO, FXS, E&M, IBE, or IBU.
- FXO cannot work with an SHDSL line.

Supplied Accessories

CBL-RJ45/D9/F/6FT	Control port cable	Power cord
AC power cord	For AC unit	
DC adapter kit	For DC unit	

Optional Accessories

CBL-RJ45/2BNC/E1	Interface adapter for converting a balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors
------------------	---

RM-17	Hardware kit for mounting one or two FCD-IP units into a 19" rack
-------	---

FCD-IPD Dual E1 Router

FCD-IPD/~E1/+

~ -24/-48 VDC power supply (Default=AC)

+ LAN interface

U	10/100BaseT (UTP)
4U	4 × 10/100BaseT (UTP) built-in switch

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit

Optional Accessories

RM-17	Hardware kit for mounting one or two FCD-IPD units into a 19" rack
-------	--

FCD-IPL E1 or Fractional E1 Access Unit with IP Router

FCD-IPL/E1/U/* E1 or fractional E1 access unit with IP router

FCD-IPL/SW/* Software upgrade for FCD-IPL

Note: When a software upgrade is ordered, RAD sends a code used for activating a required feature.

* Pack 1 Enabling QoS functionality

Optional Accessories

RM-33-2	Hardware kit for mounting one or two FCD-IPL units into a 19" rack
---------	--

CBL-DB9F-DB9M-STR	Control port cable
-------------------	--------------------

FCD-IPM E1/T1 or Fractional E1/T1 Modular Access Device with Integrated Router

FCD-IPM/~/\$/+/*

~ DC power supply

DC 24/48 VDC

\$ Primary WAN interface with optional second data port

E1/# E1 or fractional E1

T1/# T1 or fractional T1

E1/?/!/# E1 or fractional E1 with built-in fiber optic modem

T1/?/!/# T1 or fractional T1 with built-in fiber optic modem

? Fiber optic connector

ST ST connector

FC FC connector

SC SC connector

! Optical interface wavelength

85 850 nm, multimode

13L 1310 nm, single mode laser

15L 1550 nm, single mode laser

Second WAN interface (optional)

V24T V.24/RS-232 DTE

V35T V.35 DTE

530T RS-530 DTE

V36T V.36 DTE

X21T X.21 DTE

+ LAN interface

B 10Base2 (BNC)

U 10/100BaseT (UTP)

2B 2 × 10Base2 (BNC)

2U 2 × 10BaseT (UTP)

UB 1 × 10BaseT (UTP)

1 × 10Base2 (BNC)

4U 4 × 10/100BaseT (UTP) built-in switch

* Sub-E1/T1, analog voice or ISDN backup interfaces for E1/T1

S Sub-E1/T1

FXS 4 built-in FXS voice ports

FXO 4 built-in FXO voice ports

E&M 4 built-in E&M voice ports

IBE ISDN "S" interface

IBU ISDN "U" interface

FCD-IPM-M/~/@/^^ FCD-IPM module

& I/O module

S-E1 Sub-E1 module

S-T1 Sub-T1 module

S-2E1 2-port sub-E1 module

S-2T1 2-port sub-T1 module

VC4 Four analog voice ports module

VC8 Eight analog voice ports module

Vxx Universal data module

SWITCH 5-port 10/100 BaseT Ethernet switch

@ DCE port interface

V24C V.24 interface

V35C V.35 interface

530C RS-530 interface

V36C V.36 interface

X21C X.21 interface

^ Analog voice module

FXS FXS voice module

FXO FXO voice module

E&M E&M voice module

Notes:

1. The second WAN option is not available when configuring E1/T1 with an ISDN backup.

2. The dual LAN configuration is not available when configuring E1/T1 with an ISDN backup.

3. The 2-port sub-E1/T1 and 8-port analog voice modules occupy both slots.

Optional Accessories

RM-34	Hardware for mounting one FCD-IPM unit in a 19" rack
-------	--

Cables Adapter cables for DB-25 synchronous data interface connectors

CBL-530/V35/F One male DB-25 to one female 34-pin (V.35) connector

CBL-530/449/F One male DB-25 to one female DB-37 (V.36) connector

CBL-530T/21C/F One male DB-25 to one female DB-15 (X.21) connector

FCS-155 Fiber Channel to STM-1/OC-3 Converter

FCS-155E/AC/\$/+/#

\$ Redundant power supply

AC 100 to 240 VAC

+ FC optical interface

850 850 nm multimode, multimode, diode

VCAT VCAT support (SONET only)

Optional Accessories

RM-35/@	Hardware for mounting one or two units in a 19" rack
---------	--

@ Rack mounting kit type

P1 One unit

P2 Two units

RM-34	Hardware for mounting one FCS-155E unit in a 19" rack
-------	---

FCS-622 Fiber Channel to STM-4/OC-12 Converter

FCS-622/~/\$/+/#

FCS-622E/~/\$/+/#

~ Power supply

AC 100 to 240 VAC

DC -48 VDC

\$ Additional power supply

DC -48 VDC

+ FC optical interface

850 850 nm multimode, multimode, diode

VCAT VCAT support (SONET only)

Optional Accessories

RM-35/@	Hardware for mounting one or two units in a 19" rack
---------	--

@ Rack mounting kit type

P1 One unit

P2 Two units



Note: When ordering SFx options, do not specify fiber optic connector #.

Optional Accessory

RM-33-2 Hardware for mounting one or two FOM E1/T1 units in a 19" rack

FOM-E3, FOM-T3 E3/T3 Fiber Optic Modems

FOM-E3/~/#/ab E3

FOM-T3/~/#/ab T3

~ Power supply
AC 100 to 240 VAC
48 -20 to -72 VDC

a Connector
ST ST connector
SC SC connector
FC FC connector
SC-APC SC-APC connector

Note: SC-APC connector can only be ordered with SG3 transmitter

b Optical wavelength and transmitter
85 850 nm, multimode, VCSEL
13MM 1310 nm, multimode, LED
13L 1310 nm, single mode, laser
15L 1550 nm, single mode, laser
13LH 1310 nm, single mode, long-haul laser
15LH 1550 nm, single mode, long-haul laser
SF1 Tx 1310 nm, Rx 1550 nm, WDM laser
SF2 Tx 1550 nm, Rx 310 nm, WDM laser
SF3 Tx/Rx 1310 nm, WDM laser

Note: SF1 and SF2 transmitters can only be ordered with SC connector and SF3 transmitter can only be ordered with SC-APC connector

Supplied Accessories

AC power cord For AC unit
DC adapter kit For DC unit

Optional Accessories

RM-9 Hardware kit for mounting one or two FOM-E3 or FOM-T3 units in a 19" rack

FOM-E3/ETH, FOM-T3/ETH

10/100BaseT over E3/T3 Fiber Optic Modems

FOM-E3/ETH/ab/q E3

FOM-T3/ETH/ab/q T3

a Fiber optic interface
ST ST connector
SC SC connector
FC FC connector

b Optical wavelength, fiber and transmitter
85 850 nm, multimode VCSEL
13MM 1310 nm, multimode, laser
13L 1310 nm, single mode, laser
15L 1550 nm, single mode, laser
13LH 1310 nm, single mode, long haul laser
15LH 1550 nm, single mode, long haul laser
SF1 Transmit 1310 nm, receive 1550 nm, WDM laser
SF2 Transmit 1550 nm, receive 1310 nm, WDM laser
SF3 Transmit/receive 1310 nm, WDM laser

q Power supply
AC 100 to 240 VAC
DC 20 to 72 VDC

FOMi-40 Fiber Optic Modem with Remote Management

FOMi40/~/*/#/^ Standalone Unit

FOMi40CB/#/^ Front card version for ETSI LRS-24 modem rack

FOMi40CF/#/^ Back card version for ANSI LRS-24 modem rack

FOMi40CDB/#/^ Double fiber optic modem, back card version for ANSI LRS-24 modem rack

FOMi40CDF/#/^ Double fiber optic modem, front card version for ETSI LRS-24 modem rack

~ Standalone unit power supply
115 115 VAC
230 230 VAC
48 -48 VDC
24 24 VDC

* Standalone unit
M Master
S Slave

Optical interface
SC85 850 nm multimode, SC
ST85 850 nm multimode, ST
FC85 850 nm multimode, FC/PC
SC13L 1310 nm laser diode, SC

ST13L 1310 nm laser diode, ST
FC13L 1310 nm laser diode, FC/PC
SC15L 1550 nm laser diode, SC
ST15L 1550 nm laser diode, ST
FC15L 1550 nm laser diode, FC/PC

^ DTE interface
V24 V.24 RS-232
V35 V.35
530 RS-530
X21 X.21
V36 V.36/RS-449
703/% G.703 Codirectional (64 kbps)
E1 E1 (2048 kbps) (not available in FOMi-40CD)
T1 T1 (1544 kbps) (not available in FOMi-40CD)
UTP/QN 10/100BaseT built-in Ethernet/802.3 bridge
% G.703 interface connector (standalone unit only)
TB Terminal block
RJ RJ-45
PCU Portable control unit with protective casing

Supplied Accessories

AC power cord For AC unit
DC adapter kit For DC unit

Optional Accessories

RM-9 Hardware kit for mounting one or two FOMi-40 units in a 19" rack

FOMi-E1/T1 E1/T1 Fiber Optic Modem with Remote Management

FOMi-E1/T1/M/~/# Master

FOMi-E1/T1/S/~/# Slave

FOMi-E1/T1CF/# Single modem card for the ETSI LRS-24 rack

FOMi-E1/T1CB/# Single modem card for the ANSI LRS-24 rack

FOMi-E1/T1CDF/#/\$ Dual modem card for the ETSI LRS-24 rack

FOMi-E1/T1CDB/#/\$ Dual modem card for the ANSI LRS-24 rack

~ Power supply for standalone unit

115 115 VAC
230 230 VAC
24 24 VDC
48 -48 VDC

Fiber optic interface

ST85 850 nm, multimode VCSEL, ST connector
ST13L 1310 nm, laser diode, ST connector
ST15L 1550 nm, laser diode, ST connector
FC85 850 nm, multimode VCSEL, FC connector
FC13L 1310 nm, laser diode, FC connector
FC15L 1550 nm, laser diode, FC connector
SC85 850 nm, multimode VCSEL, SC connector
SC13L 1310 nm, laser diode, SC connector
SC15L 1550 nm, laser diode, SC connector

\$ E1 line connector for dual modem card
RJ RJ-45 balanced
DIN Mini-BNC unbalanced

Supplied Accessories

AC power cord For AC unit (for standalone units)
DC adapter kit For DC unit (for standalone units)

Optional Accessories

PCU Portable control unit with protective casing for FOMi-E1/T1 slaves
RM-9 Hardware kit for mounting one or two standalone FOMi-E1/T1 units in a 19" rack

FOMi-E3, FOMi-T3 E3, T3, and HSSI Manageable Fiber Optic Modems

FOMi-E3/*/#/\$/^ E3 and HSSI standalone

FOMi-T3/*/#/\$/^ T3 and HSSI standalone

FOMi-E3CF/#/&/\$ E3 card for LRS-24 ETSI version

FOMi-E3CB/#/&/\$ E3 card for LRS-24 ANSI version

FOMi-T3CF/#/&/\$ T3 card for LRS-24 ETSI version

FOMi-T3CB/#/&/\$ T3 card for LRS-24 ANSI version

* Power supply

AC 110-230 VAC
AGR Redundant 110-230 VAC
24 24 VDC
24R Redundant 24 VDC
48 -48 VDC
48R Redundant -48 VDC

Fiber optic connector

ST ST
SC SC
FC FC/PC



Note: For SF1, SF2, and SF3 interfaces, only the SC connector is available.

& Optical wavelength	
85	850 nm, multimode, VCSEL
13MM	1310 nm, multimode, LED
13L	1310 nm, single mode, laser diode
13LH	1310 nm, single mode, long-haul laser diode
15L	1550 nm, single mode, laser diode
15LH	1550 nm, single mode, long-haul laser diode
SF1	1310 nm transmit and 1550 m receive (over single fiber)
SF2	550 nm transmit and 1310 nm receive (over single fiber)
SF3	1310 nm transmit and 1310 nm receive (over single fiber)

Note: For single fiber connection (WDM), one of the devices must be ordered with an SF1 interface and the other with an SF2 interface.

\$ Redundant fiber optic link	
R	Redundant fiber optic link (see # and &, above, for options)
^ Station clock or HSSI	(standalone units only)
STC	Station clock (not available for units with HSSI interface)
HSSI	HSSI

FPS-8 Multiprotocol Fast Packet Switch for X.25 / Frame Relay / IP / Async / HDLC

FPS-8/*/\$	8-port fast packet switch
* DC power supply	
24	24 VDC
48	48 VDC
\$ LAN interface	
UTP	10BaseT port
BNC	10Base2 port
UTP/BNC	10BaseT and 10Base2 ports
UTP/UTP	Dual 10BaseT ports
FPS-M/#	FPS interface module
# Interface	
V24D	Dual V.24 port
V35D	Dual V.35 port
V35V24	Dual V.35 and V.24 port
530D	Dual RS-530 port
V36D	Dual V.36 port
X21D	Dual X.21 port
UTP/UTP	Dual UTP port

Note: All X.21, V.35 and V.36 interfaces include an adapter cable (see Supplied Accessories).

Supplied Accessories

Power cable	
CBL-RJ45/D9/F/STR	Adapter cable for converting RJ-45 control to DB-9 control
CBL-8H/F	Adapter cable for V.35 (if V.35 interface is ordered)
CBL-530/499/F	Adapter cable for V.36 (if V.36 interface is ordered)
CBL-530T/21C/F	Adapter cable for X.21 (if X.21 interface is ordered)

Gmux-2000 Hub-Site Pseudowire and Voice Trunking Gateway

Standard Gmux-2000 systems are comprised of a chassis, service modules (control, power supply, etc), and interface modules (GbE, STM-1, OC-3, E1, T1 and servers). For minimal required combinations of the service and interface modules in the chassis, see the data sheet. See separate module data sheets for interface module details and ordering information.

GMUX-2000/*/*	Gmux-2000 chassis with service modules (1 power inlet, 2 or 3 power supplies, 1 fan unit)
% Power supply/power inlet	
AC	AC power inlet and 2 AC power supply modules
48	DC power inlet module and 2 DC power supply modules
ACR	AC power inlet and 3 AC power supply modules
48R	DC power inlet module and 3 DC power supply modules
* Rack	
A	ANSI chassis
E	ETSI chassis
GMUX-M/@/#	Gmux-2000 service module
@ Service module	
PI	Power inlet module
PS	Power supply module
CL	Control and timing module
CL-VMX	Control module for voice compression applications
VC-MGT	Inband management module for voice compression applications (see note below)

FANS	Fan unit module
	Note: GMUX-M/ VC-MGT modules are required for managing Gmux-2000 inband over a TDM link, when no GbE module is installed in the chassis.
# Power inlet and power supply module	
AC	AC power inlet module and 100-240 VAC power supply module
48	DC power inlet module and -48 VDC power supply module

Supplied Accessories	
RM-2000	Hardware kit for mounting one Gmux-2000 chassis into a 19" rack
RM-2000E	Hardware kit for mounting one Gmux-2000 chassis into an ETSI rack

Optional Accessories	
NPS-101/!/?	1:N external protection chassis for pseudowire and voice compression modules. The ordering options include: chassis, two PSU (AC/DC), backup modules, necessary cables
! CT3	1:N protection for Gmux-M-CT3 modules
PW	1:N protection for Gmux-M-E1/T1-PW-28
VC12	1:N protection for 12 E1/T1 ports voice compression modules
VC16	1:N protection for 16 E1/T1 ports voice compression modules
VC2	1:N protection for voice compression modules with only the channelized E1/T1
? Number of Gmux chassis modules in the that are protected by the NPS-101:	
1	One protected working module (1:1)
2	Two protected working modules(1:2)
3	Three protected working modules(1:3)
4	Four protected working modules(1:4)
5	Five protected working modules(1:5)
6	Six protected working modules(1:6)

GMUX-P PANEL-28-PW/^	Patch panel for Gmux-M-E1/T1-PW-28 modules including cables)
^ Interface	Interface
BAL	One protected working module (1:1)
UNBAL	Unbalanced BNC patch panel

Gmux-2000 Modules

GMUX-M-CT3-PW-1	Pseudowire Channelized T3 Circuit Emulation Module with External Interface
E1-CE-SRV/21, T1-CE-SRV/28	
GMUX-M-E1-PW-SRV-21	Pseudowire E1 Circuit Emulation Server Modules
GMUX-M-T1-PW-SRV-28	Pseudowire T1 Circuit Emulation Server Modules
E1-PW/28, T1-PW/28	
GMUX-M-E1-PW-28/@	Pseudowire E1 Circuit Emulation Module with External Interface
GMUX-M-T1-PW-28	Pseudowire T1 Circuit Emulation Module with External Interface
@ E1 Interface	
BAL	Balanced E1 interface
UNBAL	Unbalanced E1 interface

Optional Accessories	
GMUX-PPANEL-28-PW/#	Patch panel and cable assembly, 28 connectors
# Interface	
BAL	Balanced interface, RJ-45 connector
UNBAL	Unbalanced interface, BNC connector
CBL-G703-14-PATCH	Cable for connecting E1-PW/28 to a patch panel

GbE/2	
GMUX-M-GBE-N/\$/\$	PSN Gigabit Ethernet interface module
\$ SFP	
SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
SFP-8	Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)



SFP-9G	GbE interface, RJ-45 connector, 100m (238 ft)
Null	SFP-ready slot
UTP	10/100/100BaseT interface
STM1, OC3	
GMUX-M/STM1&	Dual-port STM-1 interface module
GMUX-M/OC3&	Dual-port OC-3 interface module
& Interface	
CX	Unbalanced coax BNC connectors
MM850SC	Multimode fiber 850 nm, SC connectors
MM13SC	Multimode fiber 1310 nm, SC connectors
SM13SC	Single mode fiber 1310 nm, SC connectors
SM13LHSC	Single mode fiber 1310 nm, long haul, SC connectors
SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-10A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
SFP-10B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
SFP-18A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
SFP-18B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
SFP-19A	Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)
SFP-19B	Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)
Null	Empty SFP slots
VCA-E1/16/12, VC-T1/16/12	
GMUX-M/VCA-E1*	E1 voice compression module
GMUX-M/VCA-T1*	T1 voice compression module
GMUX-M/MG-/VCA-E1*	Media Gateway E1 voice module
GMUX-M/MG-VCA-T1*	Media Gateway E1 voice module
* Number of user interfaces	
12	12 user interfaces
16	16 user interfaces
<i>Optional Accessories</i>	
CBL-TELCO-RJ45/16E1	Adapter cable for connecting a Telco-64 port to 16 RJ-45 balanced E1 or T1 connectors
CBL-TELCO-OPEN/@	Open-ended cable for connecting Telco-64 port to E1/T1 equipment
@ Cable length	
2m	2m (6.5 ft) cable
10m	10m (32.8 ft) cable
CBL-RJ-45/2BNC/E1	Adapter cable for the main link E1 interface. The cable converts balanced RJ-45 connector into a pair of unbalanced BNC coaxial connectors.
HBT	
HBT*/#	High Speed Bit Error Rate Tester
HBT-M/#	Interface module
* Specify	
115	115V operation
230	230V operation
# Interface	
V24	V.24/RS-232
V35	V.35
530	RS-530
X21	X.21
G703-E1	E1 balanced
G703-E1/UB	E1 unbalanced
G703-T1	T1

G703-64	64 kbps
When ordering, please specify the interface required by the tester. Additional interface modules can be ordered separately.	
IMX-2	
IMX-2/@/#/\$	ISDN Inverse Multiplexer and Backdrop Unit Inverse Multiplexer with one data port, one ISDN BRI interface, and one leased line channel
@ Data port interface	
V35	V.35
V36	V.36/RS-449
530	RS-530
530A	RS-530A
X21	X.21
# Leased line interface	
V35	V.35
V36	V.36/RS-449
530	RS-530
530A	RS-530A
X21	X.21
\$ ISDN interface standard	
IBE	ISDN-BRI "S" interface
IBU	ISDN-BRI "U" interface
<i>Supplied Accessories</i>	
<i>Cables</i>	
All data and network port interfaces terminate in 26-pin high-density D-, female connectors. Conversion cables are supplied automatically, in accordance with the interface ordered. The cables for the V.35, V.36/RS-449, RS-530, or X.21 physical interfaces have a female connector on the user side. If a male connector is required on the user side, it should be specified in the Ordering notes. The RS-530A version has only a male connector option. To order an additional conversion cable, specify CBL-SCS26/a/b	
a Physical interface	
V35	V.35, 34-pin
V36	V.36/RS-449, 37-pin
530	RS-530, 25-pin
SCS26	RS-530A, 26-pin
X21	X.21, 15-pin
b Connector on the user side	
M	Male connector
F	Female connector
<i>Optional Accessory</i>	
RM-17	Hardware for mounting one or two standalone units in a 19" rack
IMX-2T1/E1	
IMX-2T1/E1/~/*/?	E1 to 2 x T1 Inverse Multiplexer
~ Power supply	
AC	115/230 VAC
48	-48 VDC
* Drag-and-insert data port interface	
V35	V.35 interface
703	G.703 interface
? Built-in CSU	
CSU	Built-in CSU on T1 ports
IMX-4E1	
IMX-4E1/#/*/~/%	E1 Inverse Multiplexer
# Number of E1 links	
2	2 E1 links
4	4 E1 links
* Data port interface	
V35	V.35
530	RS-530
V36	V.36/RS-449 (via supplied conversion cable)
X21	X.21
HSSI	High-speed serial
ET	IR-ETH (UTP)
ET/QH	IR-ETH/QH (UTP)
~ Power supply	
AC	100 to 240 VAC
48	-48 VDC
% Built-in LTU	
LTU	Built-in LTU
IMX-4T1	
IMX-4T1/#/*/~/%	T1 Inverse Multiplexer
# Number of T1 links	
2	2 T1 links



4	4 T1 links
* Data port interface	
V35	V.35
530	RS-530
V36	V.36/RS-449 (via supplied conversion cable)
X21	X.21
HSSI	High speed serial
ET	IR-ETH (UTP)
ET/QH	IR-ETH/QH (UTP)
~ Power supply	
AC	115/230 VAC
48	-48 VDC
% Built-in LTU	
CSU	Built-in CSU

IMXi-4	Managed Inverse Multiplexer
IMXi-4/~*/&/<	
~ Power supply	
AC	100 to 240 VAC
48	-48 VDC
* Interface	
ETU	10/100BaseT interface
& Network link technology	
SL	SHDSL
E1	E1
T1	T1
< E1 interface	
B	Balanced
U	Unbalanced

Supplied Accessories
CBL-RJ45/2BNC/E1 Adapter cable for converting one balanced RJ-45 connector to two unbalanced BNC connectors (supplied when unbalanced E1 interface is ordered)

CBL-RJ45/D9/F/6FT Adapter cable for connecting the RJ-45 connector to the serial communication port of a standard terminal or PC with a 9-pin D-connector

Optional Accessories
RM-35/@ Hardware kit for mounting one or two units in a 19" rack

@ Mounting kit
P1 For mounting one unit
P2 For mounting two units

IPmux-11	TDM Pseudowire Access Gateway
IPmux-11/+&/%<	
+ TDM interface	
E1	Balanced E1 interface
E1CX	Unbalanced E1 interface
T1	T1 interface

Note: Unbalanced E1 interface is provided via RJ-45 to BNC adapter cables supplied with the product.

& Network Ethernet interface	
UTP	10/100BaseT interface, RJ-45 connector
MM13LC	Multimode 1310 nm 100BaseFx interface, LC connector
SM13LC	Single mode 1310 nm 100BaseFx interface, LC connector
% UTP	10/100BaseT user interface, RJ-45 connector

Supplied Accessories
AC power cord For AC unit
DC adapter kit For DC unit
CBL-RJ45/2BNC/E1/X RJ-45 to BNC adapter cable (if an unbalanced E1 interface has been ordered)

Optional Accessories
RM-33-2 Hardware kit for mounting one or two IPmux-11 units into a 19" rack

IPmux-14	TDM Pseudowire Access Gateway
IPmux-14/*+&/%<	
IPmux-14/24/+&/%<	
IPmux-14/H/+&/%<	

* Special timing mechanism (leave blank for default - standard timing capabilities)
T Accurate clock recovery
A Highly accurate clock recovery

Note: Only standard timing capabilities are available for IPmux-14 with two E1/T1, serial data interfaces and 24 VDC power supply.

+ TDM interface	
2E1	2 balanced E1 interfaces
2E1CX	2 unbalanced E1 interfaces
2T1	2 balanced T1 interfaces
4E1	4 balanced E1 interfaces
4E1CX	4 unbalanced E1 interfaces
4T1	4 balanced T1 interfaces
SER	Single serial data interface

Note: Unbalanced E1 interfaces are provided via RJ-45 to BNC adapter cables supplied with the product.

& Network Ethernet interface	
UTP	10/100BaseT interface, RJ-45 connector
MM13LC	Multimode 1310 nm LED, LC connector
SM13LC	Single mode 1310 nm laser, LC connector
SM15LC	Single mode 1550 nm laser, LC connector
SM13LCH	Single mode 1310 nm laser, LC connector (IPmux-14/H only)
SM13LHLC	Single mode 1310 nm long haul laser, LC connector (IPmux-14/H only)
SM15LCH	Single mode 1550 nm laser, LC connector (IPmux-14/H only)

% User Interface	
UTP	10/100BaseT user Ethernet interface, RJ-45 connector

Supplied Accessories
AC power cord For AC unit
DC adapter kit For DC unit
CBL-RJ45/2BNC/E1/X RJ-45 to BNC adapter cable (if an unbalanced E1 interface has been ordered)

Optional Accessories
The following cables convert the IPmux-14 25-pin data port connector into the respective interface. Cable length is 2m (6 ft).

CBL-HS2/V/1/\$	Adapter cable for connecting a data port in DCE timing mode to V.35 equipment
CBL-HS2/V/2/\$	Adapter cable for connecting a data port in DTE1 timing mode to V.35 equipment
CBL-HS2/V/3/\$	Adapter cable for connecting a data port in DTE2 timing mode to V.35 equipment
CBL-HS2/R/1/\$	Adapter cable for connecting a data port in DCE timing mode to V.36/RS-449 equipment
CBL-HS2/R/2/\$	Adapter cable for connecting a data port in DTE1 timing mode to V.36/RS-449 equipment
CBL-HS2/R/3/\$	Adapter cable for connecting a data port in DTE2 timing mode to V.36/RS-449 equipment
CBL-HS2/X/1/\$	Adapter cable for connecting a data port in DCE timing mode to X.21 equipment

\$ Connector	
F	Female
M	Male
CBL-DB9F-DB9M-STR	Control port cable
RM-33-2	Hardware kit for mounting one or two IPmux-14 units into a 19" rack
RM-35/@	Hardware kit for mounting one or two IPmux-14/A or IPmux-14/H units into a 19" rack

@ Rack mounting kit
P1 For mounting one unit
P2 For mounting two units
WM-35 Hardware kit for mounting one IPmux-14/A or IPmux-14/H unit on a wall

IPmux-155L Hub-Site Pseudowire Access Gateway

IPmux-155L!/#/C/\$/+1/+3	
! Power supply	
ACR	Dual 100 to 240 VAC
48R	Dual -48 VDC
# STM-1 interface	
NULL	SFP-ready slot
1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
2H	Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)
3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
3H	Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)



4E1CX	4 unbalanced E1 (IPmux-4L only)	N	Empty SFP enclosure
{	Serial interface type (Default=no serial interface):	1	SFP-1 transceiver, Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
V35	V.35 interface		SFP-2 transceiver, Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
V36	V.36/RS-449 interface	2	Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)
RS530	RS-530 interface	2H	SFP-3 transceiver, Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
X21	X.21 interface		Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)
RS232	RS-232 interface		SFP-4 transceiver, Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
+1	Fiber optic Ethernet interface type (Default=two 10/100BaseT ports)	3	SFP-10A transceiver, Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
N	SFP-ready slot		SFP-10B transceiver, Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)	3H	SFP-18A transceiver, Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)	4	SFP-18B transceiver, Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)	10A	SFP-19A transceiver, Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, single mode (single fiber), laser (WDM), 80 km (49.7 mi)
4	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 80 km (49.7 mi)	10B	SFP-19B transceiver, Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, single mode (single fiber), laser (WDM), 80 km (49.7 mi)
10A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)	18A	SFP-5 transceiver, Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
10B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)	18B	Gigabit Ethernet, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
UTP	10/100BaseT (IPmux-4L only)	19A	SFP-6 transceiver, Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
Note:	<i>For single-fiber applications, a device with the SFP-10A interface should always be used opposite a device with the SFP-10B interface, and vice versa.</i>	19B	SFP-7 transceiver, Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
~	Clock recovery (Default=standard clock recovery):		SFP-8 transceiver, Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)
A	Advanced clock recovery mechanism (per E1 port)		Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 40.0 km (24.8 mi)
Supplied Accessories		5	SFP-17A transceiver, Gigabit Ethernet, Tx - 1310 nm, Rx - 1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
Power cord		5H	SFP-17B transceiver, Gigabit Ethernet, Tx - 1490 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)
AC/DC adapter plug	For DC unit		SFP-20 transceiver, Gigabit Ethernet, 1550 nm, single mode, laser, 120.0 km (74.5 mi)
Optional Accessories	<i>The following cables convert the IPmux-2L 25-pin serial data port connector into the respective interface. Cable length is 2m (6 ft).</i>	6	SFP-22A transceiver, Gigabit Ethernet, Tx - 1490 nm, Rx - 1570 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)
CBL-HS2/V/1/\$	Adapter cable for connecting a data port in DCE timing mode to V.35 equipment	6H	SFP-22B transceiver, Gigabit Ethernet, Tx - 1570 nm, Rx - 1490 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)
CBL-HS2/V/2/\$	Adapter cable for connecting a data port in DTE1 timing mode to V.35 equipment	7	SFP-9F transceiver, Fast Ethernet, RJ-45 connector, 100m (238 ft)
CBL-HS2/V/3/\$	Adapter cable for connecting a data port in DTE2 timing mode to V.35 equipment	7H	SFP-9G transceiver, GbE interface, RJ-45 connector, 100m (238 ft)
CBL-HS2/R/1/\$	Adapter cable for connecting a data port in DCE timing mode to V.36/RS 449 equipment	17A	UTP
CBL-HS2/R/2/\$	Adapter cable for connecting a data port in DTE1 timing mode to V.36/RS-449 equipment	17B	+2 Network/user interface - see above
CBL-HS2/R/3/\$	Adapter cable for connecting a data port in DTE2 timing mode to V.36/RS-449 equipment	20	+3 User interface - see above
CBL-HS2/X/1/\$	Adapter cable for connecting a data port in DCE timing mode to X.21 equipment		Note: See Data Sheet for valid port combinations.
\$	Cable connector		Supplied Accessories
F	Female	22A	Power cord
M	Male	22B	DC power connection kit
CBL-DB9F-DB9M-STR	Control port cable	9F	CBL-RJ45/2BNC/E1/X
RM-33-2	Hardware kit for mounting one or two units on a wall	9G	RM-34
IPmux-216	TDM Pseudowire Access Gateway		
IPMUX-216/@/?/~/\$/+1/+2/+3			
@	Power supply		
AC	Single 100 to 240 VAC		
48	Single -48 VDC		
ACR	Dual 100 to 240 VAC		
48R	Dual -48 VDC		
AC48	One 100 to 240 VAC and one -48 VDC		
?	Enclosure (Default=regular device)		
H	Environmentally hardened device		
~	Clock recovery (Default=standard clock recovery)		
A	Advanced clock recovery mechanism		
\$	TDM interface		
8E1	8 balanced E1 interfaces		
8E1CX	8 unbalanced E1 interfaces		
8T1	8 T1 interfaced		
16E1	16 balanced E1 interfaces		
16E1CX	16 unbalanced E1 interfaces		
16T1	16 T1 interfaces		
Note:	<i>Unbalanced E1 interfaces are provided via RJ-45 to BNC adapter cables supplied with the product.</i>		
+1	Network interface		



WM-34	Hardware kit for mounting one IPmux-216 unit on a wall	22B	Gigabit Ethernet, Tx -1570 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)
CBL-DB9F-DB9M-STR	Control port cable	9F	Fast Ethernet, RJ-45 connector, 100m (238 ft)
IPmux-24	TDM Pseudowire Access Gateway	9G	GbE interface, RJ-45 connector, 100m (238 ft)
IPmux-24/#/!/?/~/*/\$/+1/+2/+3		UTP	10/100BaseT
# Ethernet interface (Default=Fast and Gigabit Ethernet)		+2 Network/user interface - see above	
FE Fast Ethernet interface only		+3 User interface - see above	
! Power supply (Default=wide range AC/DC)		<i>Supplied Accessories</i>	
WRDC Wide range DC power supply only		AC power cord	For AC unit
? Temperature range (Default=regular enclosure)		AC/DC adapter plug	For DC unit
H Environmentally hardened enclosure		CBL-RJ45/2BNC/E1/X	RJ-45 to BNC adapter cable (if an unbalanced E1 interface is ordered)
~ Clock recovery (Default=standard clock recovery mechanism)		<i>Optional Accessories</i>	
A Advanced clock recovery mechanism per TDM port		RM-35/@	Hardware kit for mounting one or two IPmux-24 units into a 19-inch rack
* Carrier-class package (Default=without)		@ Rack mounting kit	
C Carrier-class package		P1	Kit for mounting one unit
\$ TDM interface		P2	Kit for mounting two units
1E1 Single balanced E1 interface		RM-33-2	Hardware kit for mounting one or two IPmux-24/FE units on a wall
1E1CX Single unbalanced E1 interface		WM-35	Hardware kit for mounting one IPmux-24 unit on a wall
1T1 Single T1 interface		CBL-DB9F-DB9M-STR	Control port cable
2E1 2 balanced E1 interfaces		IPmux-4	TDMoIP Gateway
2E1CX 2 unbalanced E1 interfaces		IPmux-4/&/*	For IP Networks (BASIC UNIT)
2T1 2 T1 interfaces		& Power supply	
4E1 4 balanced E1 interfaces		AC	100 to 240 VAC
4E1CX 4 unbalanced E1 interfaces		48	36 to 72 VDC
4T1 4 T1 interfaces		* Redundant power supply	
+1 Network interface		R	Redundant identical power supply
N SFP-ready slot		IPmux-4M/#/+ETH	E1/T1 Optional Modules
1 Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)		<i>Note: A single module must be ordered in conjunction with the IPmux-4 basic unit.</i>	
2 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)		# Supported service	
2H Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)		E1	E1 interface, with RJ-45 connector
3 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)		T1	T1 interface, with RJ-45 connector
3H Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)		E1CX	E1 interface, with mini BNC connectors
4 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 80 km (49.7 mi)		+ Number of ports	
10A Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)		1	1 port
10B Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)		4	4 ports
18A Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)		<i>Optional Accessory</i>	
18B Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)		RM-11	Hardware for mounting IPmux-4 units in a 19" rack
19A Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)		IPmux-8	TDM Pseudowire Access Gateway
19B Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)		IPMUX-8/&/*	
5 Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)		& Power supply	
5H Gigabit Ethernet, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)		AC	100 to 230 VAC
6 Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)		-48	-40 to -57 VDC
6H Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 10.0 km (6.2 mi)		* Redundant power supply	
7 Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)		R	Redundant identical power supply
8 Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)		<i>Interface modules</i>	
17A Gigabit Ethernet, Tx -1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)		<i>Note: At least one E1/T1 module and one Ethernet module must be ordered per IPmux-8 chassis.</i>	
17B Gigabit Ethernet, Tx -1490 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)		IPMUX-8M/#/\$	IPmux-8 TDM module
20 Gigabit Ethernet, 1550 nm, single mode, laser, 120.0 km (74.5 mi)		# TDM interface	
22A Gigabit Ethernet, Tx -1490 nm, Rx -1570 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)		E1	Balanced E1 interface, RJ-45
		E1CX	Unbalanced E1 interface, RJ-45 (RJ-45 to BNC adapter cable is supplied)
		T1	Balanced T1 interface, RJ-45
		\$ Number of ports for E1 and T1 modules	
		4	Four ports
		IPMUX-M/ETH/~	1-port Ethernet module
		~ Ethernet network port	
		UTP	10/100BaseT interface, RJ-45
		MM-LC	100BaseFx interface, multimode fiber, LC
		SM-LC	100BaseFx interface, single mode fiber, LC
		IPMUX-M/4ETH/4UTP	4-port Ethernet module with four copper ports
		IPMUX-M/4ETH/@/3UTP	4-port Ethernet module with one SFP fiber optic and three copper ports
		IPMUX-M/4ETH/@/@/2UTP	4-port Ethernet module with two SFP fiber optic and two copper ports
		@ SFP transceiver	



SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
NULL	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit
CBL-RJ45/2BNC/E1/X	RJ-45-to- BNC adapter cable (if an unbalanced E1 interface is ordered)
CBL-DB9/DB9/NULL	Control port cross-cable
RM-ACE-202	Hardware kit for mounting one IPmux-8 unit into a 19" rack

IPVgate-20A

Analog VoIP Gateway Router

IPVgate-20A/*/\$/#

* Voice ports	
2FXS	2 voice ports
4FXS	4 voice ports
\$ Uplink	
ADSL	ADSL2+ Annex A
ADSLB	ADSL2+ Annex B
ETH	Ethernet
SFP	Empty SFP slot, up to 100 Mbps
# WLAN interface (optional)	
WiFi	WiFi interface

Supplied Accessories

External wall mounted +5 VDC power supply
Analog RJ-11 telephony cable

IPVgate-20B

BRI VoIP Gateway Router

IPVgate-20B/*/\$

* Voice ports	
2ISDN	2 BRI ports - 4 voice channels
4ISDN	4 BRI ports - 8 voice channels
\$ Uplink	
ADSL	ADSL
ETH	Ethernet

Supplied Accessories

External wall mounted +5 VDC power supply
ISDN RJ-45 regular cable

Optional Accessories

Additional wall-mounted 48 VDC power supply for ISDN phones support (IPVgate-20B-48V)

IPVgate-20L

Analog VoIP Gateway Router

IPVgate-20L/*/\$/#

* Telephony interface	
2FXS	Two FXS telephony ports
\$ Uplink	
ADSL	ADSL2+ Annex A
ADSLB	ADSL2+ Annex A
ETH	Ethernet
# WLAN interface	
WiFi	WiFi interface

Supplied Accessories

External wall mounted +5 VDC power supply
Analog RJ-11 telephony cables

IPVgate-20P

PRI VoIP Gateway Router

IPVgate-20P/*

* PRI interface	
E1	E1
T1	T1

Supplied Accessories

Power Cord (VAC)
E1/T1 RJ-45 regular cable
E1/T1 RJ-45 cross cable

Optional Accessories

CBL-DB9F-DB9M-STR Control port cable

IPVgate-30

IP-PBX System for SMB

IPVgate-30/%/2FXS/\$/#

%	Number of supported IP phones s (or Soft Phones) in addition to the 2 built-in FXS ports
8IP	Up to 8 IP Phones, with up to 2 VoIP trunks
20IP	Up to 20 IP Phones, with up to 4 VoIP trunks
\$ Uplink	
ADSL	ADSL2+ Annex A
ADSLB	ADSL2+ Annex A
ETH	Ethernet
SFP	SFP empty slot
# WLAN interface (default=no WiFi)	
WiFi	WiFi interface

Supplied Accessories

External wall mounted +5 VDC power supply

IPVsuite-200

SIP Softswitch & Provisioning System

IPVSUITE-200/400/HWCL

High-availability cluster including the total of 4 servers: 2 front end and 2 back end.

IPVsuite-LIC/*

IPVsuite CPE Licenses

* Number of licenses

100	Package of 100 licenses
500	Package of 500 licenses
1000	Package of 1000 licenses
5000	Package of 5000 licenses

RAD-ONSITE-RVS

Installation and training for IPVsuite-200 system

RADCARE-INT'L-IPVS

Annual maintenance for IPVsuite-200 system

IPVsuite-Billing

Prepaid & Postpaid Billing for VoIP Telephony Systems

IPVSUITE-BILLING

Full postpaid & prepaid billing system for IPVsuite-200, including servers, 500k minutes per month (customizations not included)

IPVSUITE-BILLING-LIC/1M

Software license for upgrading to 1M minutes per month

RAD-ONSITE-RVS/BILLING

Installation for IPVsuite billing system

RADCARE-INT'L-IPVS/BILLING

Annual maintenance for IPVsuite billing system. First year is included in the basic package.

Kilomux-2100/2104

Data, Voice, Fax and LAN Integrating Modular Multiplexer

Basic units include: chassis, single power supply, single main link and common logic. (All I/O modules, as well as additional system, main link and power supply modules, are ordered separately).

KM-2100/~/*?/&/% 12-I/O slot Modular Multiplexer

KM-2104/~/*? 4-I/O slot Modular Multiplexer

~ Power supply

24	24 VDC (KM-2100 only)
48	-48 VDC
48HP	-48 VDC high power (56W) (KM-2100 only)
AC	100-240 VAC

* Management interface (in addition to supervisory port; Default=V.24/RS-232 dial port)

EU Ethernet 10BaseT (UTP)

? Main link interface

V35	V.35
V24	V.24/RS-232
V36	V.36/RS-422/RS-530
X21	X.21
703	G.703, co-directional
DDS	Standard DDS
T1	Fractional T1, G.703/G.704
E1	Fractional E1, G.703/G.704
S	ISDN "S" interface
IP	TDMoIP main link with Ethernet 10/100BaseTX UTP interface

& Fiber optic interface connector (KM-2100 only)

ST	ST connector
FC	FC/PC connector

% Fiber optic interface wavelength and transmitter

85 850 nm, multimode, LED



13L	1310 nm, single mode, laser diode
15L	1550 nm, single mode, laser diode
+ CSU for long haul links (T1 main link interface only), (Default=without CSU):	
CSU	With CSU
<i>System Modules (for KM-2100 chassis only)</i>	
KM-2100M-KCL.2/*	Common Logic module
* Management interface (Default=serial RS-232)	
EU	Ethernet 10BaseT UTP
KM-2000M-KPS.#	Power Supply module
# Input voltage and power	
3	-48 VDC, 25W
5	24 VDC, 25W
7	-48 VDC, 56W
KM-2100M-KPS.8	Power Supply module 100-240 VAC, 130W
<i>Supplied Accessories</i>	
CBL-530/V35/F	Adapter cable for converting 25-pin RS-530RS-530 interface to 34-pin V.35 interface (supplied with KM-2104/~/*V35)
CBL-530/449/F	Adapter cable for converting 25-pin RS-530RS-530 interface to 37-pin RS-449 interface (supplied with KM-2100/~/*V36KM-2100/~/*V36 and KM-2104/~/*V36KM-2104/~/*V36 main links)
CBL-KVF6/8-DL	Cable for downloading software upgrades from a PC into the KVF.6/KVF.8/KML.11 3-pin terminal block DL connector (supplied with KVF.6, KVF.8 and kmL.11 modules, as well as with KM-2100/2104KM-2100/2104 chassis with IP main link)
PLUG-DC	Open connector plug for DC power inlet (supplied with KM-2104/48)
PLUG-DC/TB	Open terminal block connector plug for DC power inlet (supplied with KM-2100/24 and KM-2100/48 options)
PLUG-DC/TBRM-DXC10A	Open terminal block connector plug for DC power inlet (supplied with KM-2100/24 and KM-2100/48 options)19-inch rack mount kit for KM-2104
RM-DXC10A	19-inch rack mount kit for KM-2104
RM-DXC30	19-inch rack mount kit for KM-2100
<i>Optional Accessories</i>	
CBL-SP-9	Straight cable with one male and two female DB-9 connectors
CBL-FANI	Cable for an external fan connection
CBL-ETH/UTP/STR	Straight cable for LAN connection
CBL-ETH/UTP/CROSS	Cross cable for LAN connection

Kilomux-2100/2104 Modules

KAI	
KM-2100M-KAI	Alarm Indication Module for the Kilomux-2100 enclosure.
KDI	
KM-2000M-KDI/*	Bypass Module
* Multidrop (Default=without multidrop):	
M	V.24/RS-232 connector for multidrop/polling

KHS.1

KM-2000M-KHS.1	2-Channel High Speed Data Module
For cables see below	

KHS.2

KM-2000M-KHS.2	2-Channel Synchronous Data Module
----------------	-----------------------------------

Optional Cables for KM-2000M-KHS.1 and KM-2000M-KHS.2:

CBL-HS2/*/#	Adapter cable for KHS.2's DB-25 channel connectors. Converts to connector of specified (separate Cable is needed for each connector). Cable must be chosen to match the desired clock mode. Cable length is 2 m (6 ft).
-------------	---

* Interface, clock mode

V1	34-pin V.35, DCE
V2	34-pin V.35, DTE1
V3	34-pin V.35, DTE2
R1	37-pin V.36/RS-449, DCE
R2	37-pin V.36/RS-449, DTE1
R3	37-pin V.36/RS-449, DTE2
X1	15-pin X.21, DCE (30 cm/1ft long)

Connector (on user side)

F	Female
M	Male

KHS.703

KM-2100M-KHS.703	2-Channel, G.703 Codirectional Module for Kilomux-2100/2104
------------------	---

KHS.U

KM-2000M-KHS.U/S	ISDN "U" Interface Data Module
------------------	--------------------------------

KLS.1/N

KM-2000M-KLS.1	2 Channel Low Speed Data Module
----------------	---------------------------------

KLS.2

KM-2000M-KLS.2	Four-Channel Statistical Multiplexing Data Module
----------------	---

KM-Ringer, Ringer-2000, Ringer-2200N

RINGER-2000/+/#/*	Standalone power supply unit, supports up to 60 voice channels
-------------------	--

+ DC feed voltage output

24	-24 VDC
48	-48 VDC

Ring voltage output (optional)

72	Ring voltage output
----	---------------------

Note: +72 VDC is provided by AC-powered models; +60 VDC is provided by DC-powered models

* Power supply

115	115 VAC
230	230 VAC
48	-48 VDC
24	-24 VDC

Note: not all ordering option combinations are possible. Following are the available combinations: RINGER-2000/24/72/115

RINGER-2000/24/72/230

RINGER-2000/24/72/24

RINGER-2000/48/72/115

RINGER-2000/48/72/230

RINGER-2000/48/72/24

RINGER-2000/48/115 (no ring voltage)

RINGER-2000/48/230 (no ring voltage)

KM-RINGER/^	Power supply module for Kilomux chassis, supports up to 32 voice channels
-------------	---

Note: a CBL-RINGER-2 splitter cable is supplied with each KM-Ringer

^ Power supply

AC	115 to 230 VAC
48	-48 VDC
24	-24 VDC

RINGER-2200N/~/&	Standalone power supply unit, supports up to 120 voice channels
------------------	---

& Power supply (input)

115	115 VAC
230	230 VAC

~ +/-48 VDC Power Supply (Default=-48 VDC only)

P +48 VDC and -48 VDC outputs

Cables

CBL-RINGER-1	Cable for connecting a Ringer 3-pin DC-output connector to a single module
CBL-RINGER-4	Splitter cable for connecting a Ringer 3-pin DC-output connector to up to four modules
CBL-RINGER-6	Splitter cable for connecting a Ringer 3-pin DC-output connector to up to six modules

KMBE

KM-2100M-KMBE/UTP	Enhanced 10BaseT Ethernet Router/Bridge Module for KM-2100/2104
-------------------	---

KML.1-5

KM-2000M-KML.1/N	Main Link Modules
------------------	-------------------

KM-2000M-KML.2/N

KM-2000M-KML.3/N

KM-2000M-KML.4/N

KM-2000M-KML.5/N

KML.10

KM-2000M-KML.10	ISDN "S" interfaceLeased/Switched Line Main Link Module
-----------------	---

KML.11

KM-2100M-KML.11	IP main link module for KM-2100/2104
-----------------	--------------------------------------

Supplied Accessories

CBL-KVF6/8-DL	Cable, with an RS-232 DB-9 connector for downloading software upgrades from a PC to KML.11 using the 3-pin DL connector
---------------	---

KML.6

KM-2000M-KML.6/N	Main Link CSU/DSU Interface
------------------	-----------------------------

KML.7

KM-2000M-KML.7/*	Fractional T1 Interface Main Link Module
------------------	--

* CSU (Default=No CSU)



CSU With CSU
KML.8 Fractional E1 Interface Main Link Module (without LTU)

KM-2000M-KML.8/*
 * LTU (Default=No LTU)
 LTU With LTU

KML.F
 KM-2000M-KML.F/*/# Fiber Optic Interface Main Link Module

* Connector ST connector
 ST FC/PC connector
 FC
 # Optical wavelength
 85 850 nm, multimode, LED
 13 1310 nm, single mode, LED
 13L 1310 nm, single mode, laser diode
 15L 1550 nm, single mode, laser diode

KVC.1M
 KM-2000M-KVC.1M/*#/*

2-Channel PCM/ADPCM Voice Module
 # Echo Cancellor (Default=no EC)
 EC Echo Cancellation
 * Analog interface
 E&M 2/4-wire E&M, -12V
 E&M48 2/4-wire E&M, -48V
 E&M/POS 2/4-wire E&M, -12V, positive E&M signaling
 E&M/PML 2/4-wire E&M, -12V, positive M-lead signaling
 FXS 2-wire FXS
 FXSP FXS with internal ringer (23 VRMS)
 FXO 2-wire FXO

Note: KM-Ringer or Ringer-2000 is required to support the FXS and the E&M/48 interfaces.

KVF.4

KM-2000M-KVF.4/* 2-Channel Low Bit Rate Voice/Fax Module for KM-2100/2104 and KM-2100/2104

* Voice interface
 E&M 2-wire or 4-wire E&M
 EM/E 2-wire or 4-wire E&M with external -48 VDC
 FXS 2-wire FXS
 FXS3 2-wire FXS with reverse polarity and pulse metering
 FXSP 2-wire FXS with built-in Ringer (only for KVF.4)
 FXO 2-wire FXO
 FXO3 2-wire FXO with reverse polarity and pulse metering
 S0 ISDN (only for KVF.4)
 S0/P ISDN with built-in phantom feeder (only for KVF.4)

Optional Accessories

KVF.4/FXS, and KVF.4/FXS3 modules require an external -48 VDC source for feed and ring voltage. This power can be provided by a KM-Ringer or a Ringer-2000 (see KM-Ringer, Ringer-2000, Ringer-2200 above.)

KVF.6

KM-2100M-KVF.6/* E1/T1 Voice Compression Module for KM-2100/2104

* Module
 12T Half T1 trunk
 16E Half E1 trunk
 24T Full T1 trunk
 31E Full E1 trunk

KVF.8

KM-2100M-KVF.8/* 8-Channel Analog Voice Compression Module for KM-2100/2104

* Voice interface
 E&M 2-wire or 4-wire E&M interface
 FXS 2-wire FXS interface
 FXO 2-wire FXO interface

Supplied Accessories

CBL-KVF8/E&M Octopus cable for splitting the E&M module SCSI 68-pin connector into 8 x RJ-45 connectors, for direct connection to user equipment. Cable length is 2m (6 ft).

CBL-KVF8/FXOS Octopus cable for splitting the FXS/FXO module DB-25 connector into 8 x RJ-11 connectors, for direct connection to user equipment. Cable length is 2m (6 ft).

CBL-Ringer-1 Cable with a Ringer 3-pin DC output connector applying power to KVF.8 DC PWR-IN connector

CBL-KVF6/8-DL Cable with an RS-232 DB-9 connector for downloading software upgrades from a PC to KVF.8 using the 3-pin DL connector.

Optional Accessories

KM-Ringer, or Ringer-2000, or Ringer-2200N Used as source for feed and ring voltages to FXS modules and certain E&M applications. See Ringer ordering options.

LA-104

LA-104/\$ High Speed ATM IAD
 \$ WAN interface
 SHDSL SHDSL interface
 E1/BAL Balanced E1 interface
 E1/UNBAL Unbalanced E1 interface (via RJ-45 to BNC adapter cable)
 T1 T1 interface

Supplied Accessories

P/S-AC/5/3.3/-48 External power supply unit
 CBL-RJ45/D9/F/STR Control port cable
 CBL-RJ45/2BNC/E1 Interface adapter for converting a balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors (if an unbalanced E1 interface is ordered)

Optional Accessories

RM-33 Hardware kit for mounting one LA-104 unit into a 19" rack

LA-110

LA-110/~/\$/*/#/@ Advanced Integrated Access Device

LA-110/~/\$/*/#/@
 ~ Power supply (Default=an AC power supply)
 DC DC power supply
 \$ Network interface
 SHDSL 2-wire SHDSL
 SHDSL/4W 4-wire SHDSL
 SHDSL/IMA IMA over 4 x 2-wire SHDSL
 ADSLA ADSL Annex A
 E1 Balanced E1
 * Optional ADPCM compression
 VC4 ADPCM FXS, 4 TS
 VC8 ADPCM ISDN, 8 TS
 VC30 ADPCM E1, 30 TS

Note: ADPCM compression is not available for units with IMA over SHDSL network interfaces.

Voice interface
 E1 E1
 T1 T1
 FXS 4-port FXS (units with single SHDSL or ADSL network interfaces only)
 ISDN 4-port ISDN (units with single SHDSL or ADSL network interfaces only)
 Note: E1 and T1 user ports are not available for units with ADSL network interfaces

@ Serial data interface
 V35 V.35 interface
 X21 X.21 interface
 Note: V.35 and X.21 serial data ports are not available for units with ISDN, FXS user or ADSL network interfaces.

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit

Optional Accessories

RM-33-2 Hardware kit for mounting one or two LA-110 units into a 19" rack
 CBL-RJ45/2BNC/E1 RJ-45 to BNC adapter cable for unbalanced E1 network or user interface
 CBL-DB9F-DB9M-STR Control port cable

LA-130

LA-130/\$/E1/#/@/*/! DSL Cell-Site Gateway

\$ Network interface
 SHDSL SHDSL
 1+A One ADSL2+ Annex A port
 1+B One ADSL2+ Annex B port
 # Number of Ethernet ports
 ETH One 10/100BaseT
 4ETH Four 10/100BaseT
 @ Functionality
 Basic Non-upgradeable to PW functionality unit with 4 UNI/IMA E1 ports
 Pack1 Software upgrade for enabling pseudowire functionality



Note: If no functionality is specified, LA-130 is supplied as an ATM-only unit. It can be upgraded to the pseudowire functionality by ordering the Pack1 software package.

- * Recovered clock capability
- A Advanced adaptive clock for the Pack1- units
- ! Unit
- H Temperature-hardened unit

Supplied Accessories

- Power cord
- DC adapter plug

Optional Accessories

- CBL-RJ45/2BNC/E1 RJ-45 to BNC adapter cable
- CBL-DB9F-DB9M-STR Control port cable
- RM-35/@ Hardware kit for mounting one or two LA- 130 units into a 19" rack

- @ Rack mounting kit
- P1 For mounting one unit
- P2 For mounting two units
- LA-130-SW/PACK1 Software upgrade pack for enabling pseudowire functionality

LA-210 EFM DSL Network Termination Unit

LA-210/ESHDSL/!/\$*/!/@/#

- ! SHDSL interface
- 2W 2-wire SHDSL interface
- 4W 4-wire SHDSL interface
- 8W 8-wire SHDSL interface
- \$ Operation mode (Default=Bridge mode)
- EVPL Ethernet Virtual Private Line services using Ethernet flows
- * Number of Ethernet ports:
- ETH One Ethernet port
- 4ETH Four Ethernet ports
- @ TDM port
- E1 One E1 port
- T1 One T1 port
- # Serial port
- V35 V.35 port
- X21 X.21 port

License Packages

- LA-210-2W-EVPL Software license for 2-wire SHDSL interface
- LA-210-4W-EVPL Software license for 4-wire SHDSL interface
- LA-210-8W-EVPL Software license for 8-wire SHDSL interface

Supplied Accessories

- AC power cord
- DC connection kit

Optional Accessories

- CBL-DB9F-DB9M-STR Control port cable
- RM-33-2 Hardware kit for mounting one or two units into a 19" rack

LBT Bit Error Rate Tester

LBT/*

- * Power supply
- 115 115 volts operation
- 230 230 volts operation

LRS-102 Modular Converter Rack

LRS-102/@/\$/#

- @ E1 connector (for OP-108C):
- UNBAL Unbalanced
- \$ Power supply
- AC One standard AC
- ACR Dual standard AC
- DC One standard DC
- DCR Dual standard DC
- AD One standard AC + one standard DC
- ACL* One LP* AC
- ACLPR Dual LP AC
- DCLP One LP DC
- DCLPR Dual LP DC
- ADLP One LP AC + one LP DC

*LP=low-consumption power supply

- # Number of common logic cards:
- CL1 Single CL.1
- CL1R Dual CL.1
- CLS1 Single CL.1 with station clock
- CLS1R Dual CL.1 with station clock

For ordering modem cards, see individual data sheets.

Supplied Accessories

- AC power cord
- DC adapter plug
- RM-MP-MX-23/19 Hardware kit for mounting one LRS-102 unit into both 19-inch and 23-inch racks
- MP-2100-RM-ETSI/19 Hardware kit for mounting one LRS-102 unit into an ETSI rack (fits also 19-inch rack)

Optional Accessories

- LRS-102-PS/~ Additional power supply module
- ~ Power supply
- AC 100 to 240 VAC, 200W
- DC -48 VDC, 250W
- ACL* 100 to 240 VAC, 112W
- DCLP -48 VDC, 112W
- LRS-102-CL/# Additional common logic card
- CBL-SP-9 Control port cable

LRS-102 Modules

ASMi-54C Ethernet over SHDSL.bis 8-Port Module

ASMi-54C/ETH/#

- # Interface and Connectors
- UTP 2 UTP (RJ-45 connectors)
- SFP\$ 2 SFP sockets including SFP transceivers (see below for a)
- \$ SFP transceivers for Ethernet 100BaseFx Interface
- 1 Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
- 1D Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)
- 2 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
- 2D Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
- 3 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
- 3D Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)
- 10a Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
- 10b Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
- 18a STM-1/OC-3, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM) , 40 km (24.8 mi)
- 18b STM-1/OC-3, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM) , 40 km (24.8 mi)
- 19a STM-1/OC-3, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)
- 19b STM-1/OC-3, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)



Optional Accessories

CBL-DB26-8SHDSL Cable for splitting a single 26-pin connector into 8 x RJ-45 connectors
E1 over SHDSL/SHDSL.bis module

ASMi-54C/N

ASMi-54C/E1/N

Optional Accessories

CBL-DB26-8SHDSL Cable for splitting a single 26-pin SHDSL.bis connector to 8 x RJ-45 connectors
CBL-G703-8/RJ45 Splitter cable for splitting the 44-pin E1 connector to 8 E1 balanced RJ-45 connectors

CBL-G703-8/RJ45/X Splitter cross-cable for splitting the 44-pin E1 connector to 8 E1 balanced RJ-45 connectors

CBL-G703-8/COAX Splitter cable for splitting the 44-pin E1 module connector to 8 pairs of E1 unbalanced BNC connectors

CBL-G703-8/OPEN/2M Open-ended cable with DB-44 connector for balanced E1 applications

OP-108C 4-Channel E1 and Ethernet Multiplexer, module for LRS-102

OP-106C 4-Channel T1 and Ethernet Multiplexer, module for LRS-102

OP-108C/^/!/+

OP-106C!/+/

^ E1 connector
B Balanced (RJ-45)
U Unbalanced (BNC connectors on a special LRS-102 rack, E1 only)

! Optional user port
ETH 10/100BaseT User Ethernet port

+ Uplink interface connector
SFP1 LED, 1310 nm, multimode, LC only
SFP2 Laser, 1310 nm, single mode, LC only
SFP3 Long-haul laser, 1310 nm, single mode, LC only
SFP4 Long-haul laser, 1550 nm, single mode, LC only
SFP10A Laser WDM, Tx -1550 nm, Rx -1310 nm, single mode, single fiber, LC only (SF1)

SFP10B Laser WDM, Tx -1310 nm, Rx -1550 nm, single mode, single fiber, LC only (SF2)

SFP24 VSCSEL, 850 nm, multimode, LC only
SFP18A Laser WDM, Tx -1310 nm, Rx -1550 nm, single mode, single fiber, LC only

SFP18B Laser WDM, Tx -1550 nm, Rx -1310 nm, single mode, single fiber, LC only

SFP19A Laser WDM, Tx -1310 nm, Rx -1550 nm, single mode, single fiber, LC only

SFP19B Laser WDM, Tx -1550 nm, Rx -1310 nm, single mode, single fiber, LC only

2XSFP1 Dual SFP1 modules
2XSFP2 Dual SFP2 modules
2XSFP3 Dual SFP3 modules
2XSFP4 Dual SFP4 modules
2XSFP10A Dual SFP10A modules
2XSFP10B Dual SFP10B modules
2XSFP18A Dual SFP18A modules
2XSFP18B Dual SFP18B modules
2XSFP19A Dual SFP19A modules
2XSFP19B Dual SFP19B modules
2XSFP24 Dual SFP24 modules
4XSFP1 Quad SFP1 modules
4XSFP2 Quad SFP2 modules
4XSFP3 Quad SFP3 modules
4XSFP4 Quad SFP4 modules
4XSFP10A Quad SFP10A modules
4XSFP10B Quad SFP10B modules
4XSFP18A Quad SFP18A modules
4XSFP18B Quad SFP18B modules
4XSFP19A Quad SFP19A modules
4XSFP19B Quad SFP19B modules
4XSFP24 Quad SFP24 modules

Note: For single fiber applications, a device with the SF1 interface should always be used opposite a device with the SF2 interface, and vice versa. The SF3 interface works opposite another SF3.

Optional Card Accessories

CBL-G703-8/RJ45 Kit for mounting 1 or 2 units in a 19-inch rack
CBL-G703-8/RJ45/X Splitter cross-cable for splitting the 44-pin card connector to 8 E1 or 8 T1 balanced RJ-45 connectors
CBL-G703-8/COAX Splitter cable for splitting the 44-pin OP-108C card connector to 8 pairs of unbalanced BNC connectors
CBL-G703-8/OPEN/2M Open-ended cable with DB-44 connector on the LRS-102 side for balanced E1 or T1 applications

OP-34C

OP-25C

OP-34C!/+/

16 E1, Ethernet or Data over E3 or Fiber multiplexer module
16 T1, Ethernet or Data Fiber multiplexer module

! Ethernet port (Default=no Ethernet):
ETH 10/100BaseT Ethernet port

+ Uplink interface

SFP-12 E3 interface, SMB connector (OP-34 only)
SFP-1 Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4 Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-10A Fast Ethernet/STM-1, DDM, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
SFP-10B Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
2XSFP12 Dual SFP-12 modules
2XSFP1 Dual SFP-1 modules
2XSFP2 Dual SFP-2 modules
2XSFP3 Dual SFP-3 modules
2XSFP4 Dual SFP-4 modules
2XSFP10A Dual SFP-10a modules
2XSFP10B Dual SFP-10b modules

Supplied Accessories

CBL-SMB-BNC/M SMB to BNC adapter cable (supplied with SFP-12)

Optional Accessories

CBL-G703-8/RJ45/ETH Splitter cable for splitting each 44-pin card connector to 8 E1 or 8 T1 balanced RJ-45 connectors and one Ethernet RJ-45 connector
CBL-G703-8/COAX/ETH Splitter cable for splitting each 44-pin OP-34C card connector to 8 pairs of unbalanced BNC connectors and one Ethernet RJ-45 connector

LRS-16

Managed SHDSL Modem Concentrator

LRS-16/\$/16E1/2W/*

\$ Power supply
AC 100 to 240 VAC
ACR dual 100 to 240 VAC
48 -48 VDC
48R dual -48 VDC
AC48 one AC, one DC
* Ethernet management port interface and connectors (Default=2UTP with RJ-45 SHDSL port connectors)
2UTP 2 UTP
UTP/SFPa 1 UTP + 1 SFP socket including SFP transceivers
a SFP transceivers for Ethernet 100BaseFX Interface
1 Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
1D Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)
2 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
2D Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
3 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
3D Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)



10A	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
10B	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
18A	STM-1/OC-3, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
18B	STM-1/OC-3, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
19A	STM-1/OC-3, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)
19B	STM-1/OC-3, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)

Supplied Accessories

AC power cord (when AC power supply is ordered)
 DC adapter plug (when DC power supply is ordered)
 RM-34 For mounting one unit in a 19" rack

Optional Accessories

CBL-DB9F-DB9M-STR

Control port cable

CBL-RJ45/2BNC/E1

RJ-45 to BNC adaptor cable

CBL-DB26-8SHDSL

Cable for splitting a single 26-pin connector into 8 x RJ-45 connectors

LRS-20

Modular Converter Rack

LRS-20/*/#/##&

LRS-20-PS/*

Power supply module for LRS-20

* Power supply

115	115 VAC
230	230 VAC
48	-48 VDC

Redundant power supply

R Redundant power supply (same as the first power supply)

& Common logic module

MNG Common logic module

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 RM kit For mounting LRS-20 into a 19" rack
 CBL-LRS-20-CLI RJ-45 to DB-9 adapter cable for an ASCII terminal connection

LRS-24

12-Slot Modem Rack with SNMP Management

LRS-24*/\$/CM2/UTP

12-slot modem rack with CM2/UTP control module card, power supply, and SNMP management

* Physical enclosure

F	ETSI standard, 7U, connectors at the front
B	ANSI standard, 4U, connectors at the back

\$ Power supply

AC	100 to 240 VAC
ACR	Dual 100 to 240 VAC
48	-48 VDC
48R	Dual -48 VDC
AC48	One AC, one DC

Optional Accessories

CBL-DB9F-DB9M-STR

Control port cable

LRS-24 Modules

ASMi-52CD

2/4-wire SHDSL modem/multiplexer (see [ASMi-52](#))

FOMi-40C

Fiber optic modem with remote management (see [FOMi-40](#))

FOMi-E1/T1C

E1/T1 fiber optic modem with remote management (see [FOMi-E1/T1](#))

FOMi-E3, FOMi-T3

E3, T3 and HSSI manageable fiber optic modems (see [FOMi-E3](#), [FOMi-T3](#))

ASM-40CD

High-Speed Short-Range Dual Modem Card

ASM-40CD/*/#/\$

* Rack type

F	ETSI
B	ANSI

Digital interface

V24	V.24 interface
V35	V.35 interface
V36	V.36 interface
X21	X.21 interface
530	RS-530 interface
UTP	Built-in Ethernet bridge with VLAN support
UTP/QN	Built-in Ethernet/Fast Ethernet bridge with VLAN support

\$ Internal phantom feeding power supply (default=none)

P Internal phantom feeding power supply

Optional Accessories

LRS-PS-FEED

Standalone power supply for remote power feeding via LRS-24

M-EFC

Miniature Ethernet Fiber Optic Converter/Transceiver

M-EFC/*

* Optical interface

ST85	850 nm, multimode, ST connector
ST13	1300 nm, single mode, ST connector
FC85	850 nm, multimode, FC connector
FC13	1300 nm, single mode, FC connector

M-EFC/U

Miniature Ethernet UTP to Fiber Optic Converter

M-EFC/U/*/\$

* Optical interface

ST85	850nm, multimode, ST connector
ST13	1300nm, single mode, ST connector
FC85	850nm, multimode, FC connector
FC13	1300nm, single mode, FC connector

\$ Power supply

AC 90-264 VAC switching power supply with integral AC connector (may be ordered separately as P/S-A/C/12/800)

Note: While M-EFC/U can operate with any 12 VDC' 150 mA power supply' the CE approval requires use of the RAD power supply listed above.

Megaplex-104, Megaplex-204

Compact Voice Channel Banks

MP-104/AC/E1/8/FXS

E1 8-Port

MP-204/AC/E1/16/FXS E1

16-Port with AC power supply

Supplied Accessories

P/S-AC/5/3.3/-48 External power supply for MP-104
 CBL-RJ45/D9/F/6FT Control port cable with male RJ-45 and female DB-9 connectors

Optional Accessories

CBL-RJ45/2BNC/E1

Adapter cable for converting the E1 main link RJ-45 connector into a pair of BNC connectors for unbalanced coax interface

RM-33-2

Hardware for mounting one MP-104 unit with external power supply in a 19" rack

Megaplex-2100/2104

Modular Integrated Access Multiplexers

Standard Megaplex-2100/2104 systems are comprised of a basic unit, as well as main link and I/O modules, which are ordered separately.

Basic units include a chassis, single Common Logic (CL) module, single power supply, and power supply cables.

MP-2100/~&/2# 4U-high chassis with 12 module slots and CL.2 common logic module

MP-2104/~+/# 2U-high chassis with 5 module slots and CL.2 common logic module

System modules

System modules can be ordered separately for redundancy or special requirements

MP-2100M-PS/* Higher Power Supply Module for MP-2100

MP-2100M-CL.2/# Common Logic Module

~ Power supply input voltage

115	115 VAC
230	230 VAC
24	24 VDC
24/FLG	24 VDC with floating ground
48	-48 VDC

& Redundancy (MP-2100 only) (Default=for 1 x PS, 1 x CL)

R Full (2 x PS, 2 x CL)

+ Built-in ringer for MP-2104



RI	Built-in ringer (only). (Default=without ringer)
# CL	second management port (in addition to standard 9-pin DCE port)
UTP	Ethernet 10BaseT (UTP)
BNC	Ethernet 10Base2 (BNC)
V24	V.24/RS-232 DTE

System Modules

System modules can be ordered separately for redundancy or special requirements.

MP-2100M-PS/~	Power supply module for MP-2100
MP-2100M-CL.2/#	Common logic module

Supplied Accessories

AC power cord	For AC unit
DC adapter plug	For DC unit
RM-MP-MX-23/19	Hardware kit for mounting one MP-2100 unit into both 19-inch and 23-inch racks
RM-MP-2104-MN	Hardware kit for mounting one MP-2104 unit into a 19" rack

Optional Accessories

CBL-SP-9/SH	Standard DB-9 to DB-9 control port cable
-------------	--

Megaplex-2100/2104 Modules

ACM

MP-2100M-ACM	Alarm and Diagnostics module for MP-2100/MP-2104
--------------	--

Note: This module is supported only by Megaplex systems with CL.2 common logic

HS-2

MP-2100M-HS-2	2-Channel high speed data module for MP-2100/2104
---------------	---

Optional Accessories

CBL-HS2/*/#	Adapter cable for HS-2's DB-25 channel connectors. Converts to connector of specified (separate cable is needed for each connector). The cable must be chosen to match the desired clock mode. Cable length is 2 m (6 ft)
-------------	---

* Interface, clock mode

V1	34-pin V.35, DCE
V2	34-pin V.35, Ext-DCE
V3	34-pin V.35, DTE
R1	37-pin V.36/RS-449, DCE
R2	37-pin V.36/RS-449, Ext-DCE
R3	37-pin V.36/RS-449, DTE
X1	15-pin X.21, DCE
X2	15-pin X.21, Ext-DCE

Connector (on user side)

F	Female
M	Male

HS-6N, HS-12N

MP2100M-HS-6N/^	6-channel high speed data module for MP-2100/2104/4100
MP2100M-HS-12N/^	12-channel high speed data module for MP-2100/2104/4100

^ Interface

232	V.24/RS-232
V35	V.35
422	V.11/RS-422 (for V.36/RS-449, RS-530 or X.21)

Optional Accessories

CBL-SCS68/3/*/#/&	Cable for converting each of the HS-6N/12N's 68-pin SCSI connectors into 3 separate channel connectors with the physical interface specified
-------------------	--

Note: a separate cable is required for each of the four HS-12N/two HS-6N channel connectors.

* Cable connector interface

232	V.24/RS-232, 25-pin
V35	V.35 interface, 34-pin
V36	V.36/RS-449, 37-pin
530	RS-530, 25-pin
X21	X.21, 15-pin

Cable length (Default=2m (6.5 ft))

3M	3m (9.8 ft)
5M	5m (16.4 ft)

& Connector

F	Female
M	Male

HS-703

MP-2100M-HS-703	4-channel G.703 codirectional data module for MP-2100/2104 and MP-4100
-----------------	--

HS-DP/3, HS-DP/6

MP-2100M-HS-DP/3	3-channel OCU-DP data module for MP-2100/2104
MP-2100M-HS-DP/6	6-channel OCU-DP data module for MP-2100/2104

HS-ETH

MP-2100M-HS-ETH/*/UTP/#/&	Ethernet Bridge/Router Module for MP-2100/2104
---------------------------	--

* Bridge/router

B	10BaseT Bridge
V	10BaseT Bridge with VLAN
F	10/100BaseT Bridge with VLAN
R	10BaseT Router

Number of LAN interfaces

1	1 channel
2	2 channels
4	4 channels

~ Internal bus support

CD	Support of internal buses C and D
----	-----------------------------------

HS-ETH/SW

MP-2100M-HS-ETH/SW/UTP/4	4-Port Ethernet Bridge module with L2 Switch for MP-2100/2104
--------------------------	---

HS-Q/N

MP-2100M-HS-Q/N	4-Channel High Speed Data Module for MP-2100/2104
-----------------	---

Optional Accessories

CBL-SCS26/*/#	Adaptor cables for HS-Q/N module 26-pin SCSI connectors. Each cable converts to a connector of the specified (a separate cable is required for each channel). Cable length is 2m (6 ft).
---------------	--

* Cable connector interface

V35	V.35 interface, 34-pin
V36	V.36/RS-449 interface, 37-pin
530	RS-530 interface, 25-pin
X21	X.21 interface, 15-pin

Connector

F	Female
M	Male

HS-RN

MP-2100M-HS-RN	4-Channel Low Speed Data Module with HDLC rate adaptation for MP-2100/2104 or MP-4100
----------------	---

MP-2100M-HS-RN/V110

	4-Channel Low Speed Data Module with V.110 rate adaptation
--	--

Optional Accessories

Y-cables for splitting each of the HS-RN module's 25-pin channel connectors into two separate 25-pin connectors:

CBL-HSR/F	Female
CBL-HSR/M	Male

Note: A separate cable is required for each of the two HS-RN channel connectors.



HS-S	
MP-2100M-HS-S	4-channel ISDN "S" interface data module for MP-2100/2104 and MP-4100 For Power Feed, see Ringer data sheet.
<i>Optional Accessories</i>	
HS-U, HS-U-6, HS-U-12	
MP-2100M-HS-U	4-channel ISDN "U" interface data module for MP-2100/2104
MP-2100M-HS-U-6	6-channel ISDN "U" interface data module for MP-2100/2104 and MP-4100
MP-2100M-HS-U-12	12-channel ISDN "U" interface data module for MP-2100/2104 and MP-4100
<i>Optional Accessories</i>	
CBL-HSU6	Octopus cable for splitting the SCSI 50-pin connector of HS-U-6 into 6 x RJ-45 connectors, for direct connection to user equipment. Cable length is 2m (6 ft).
CBL-HSU12	Octopus cable for splitting the SCSI 50-pin connector of HS-U-12 into 12 x RJ-45 connectors, for direct connection to user equipment. Cable length is 2m (6 ft).
HSF-1, HSF-2	
MP-2100M-HSF-1/ST/85	Single port fiber optic teleprotection interface module for MP-2100/2104
MP-2100M-HSF-2/ST/85	Dual-port fiber optic teleprotection interface module for MP-2100/2104 and MP-4100
LS-6N, LS-12	
MP-2100M-LS-6N	6-Channel Low Speed Data Module for MP-2100/2104 and MP-4100
MP-2100M-LS-12	12-Channel Low Speed Data Module for MP-2100/2104 and MP-4100
<i>Optional Accessories</i>	
CBL-LS12/#	Octopus cable for splitting one 68-pin SCSI female module connector into six 25-pin D-channel connectors, for direct connection to DTE equipment. Cable length is 2m (6 ft).
# Cable D- connectors	
F	Female
M	Male
ML-1/2E1/T1, MLF-1/2E1/T1	
MP-2100M-ML-1@	Single Copper Interface Main Link Module for MP-2100/2104
MP-2100M-ML-2@/^	Dual Copper Interface Main Link Module for MP-2100/2104
MP-2100M-MLF-1@/#/+	Single Fiber Optic Interface Main Link Module for MP-2100/2104
MP-2100M-MLF-2@/#/+	Dual Fiber Optic Interface Main Link Module for MP-2100/2104
@ Link	
E1	E1 link(s)
T1	T1 link(s)
# Fiber optic connector	
ST	ST connector
SC	SC connector
FC	FC connector
+ Fiber optic interface wavelength	
85	850 nm, multimode, laser
13L	1310 nm, single mode, laser
15L	1550 nm, single mode, laser
^ Port bypass	
BP	Port bypass between dual copper links.
<i>Optional Accessories</i>	
CBL-MINIBNC-BNC/*	Cable for converting from ML-1E1/ML-2E1 module's mini BNC unbalanced connectors to standard BNC interface. (A separate cable must be ordered for each individual mini BNC connector.)
CBL-MINIBNC-MINIBNC/*	Cable for connecting the ML-1E1/ML-2E1 module's mini BNC unbalanced connectors to another mini BNC interface. (A separate cable must be ordered for each individual mini BNC connector.)
* Cable length	
2.5METER	2.5m/8.2 ft
5METER	5m/16.4 ft

ML-20N	
MP-2100M-ML-20N/#/*	Single/Dual n x 64 kbps Main Link Module for MP-2100/2104
# Number of ports	
1	Single port
2	Two ports
* Interface	
AMI	AMI
V35	V.35
RS449	RS-449 (via supplied cable)
RS530	RS-530
X21	X.21
<i>Supplied Accessories</i>	
CBL-530/449/F	Adaptor cable for connecting V.36/RS-449 user equipment to the module RS-530 connector
ML-8E1, ML-8T1	
MP-2100M-ML-8E1	8-port E1 module with balanced interface for MP-2100 and MP-2104 chassis
MP-2100M-ML-8T1	8-port T1 module for MP-2100 and MP-2104 chassis
<i>Optional Accessories</i>	
CBL-G703-8/RJ45/ST	Splitter cable with station clock for splitting the 44-pin module connector to 8 E1 or 8 T1 balanced RJ-45 connectors
CBL-G703-8/RJ45/ST/X	Splitter cross-cable with station clock for splitting the 44-pin module connector to 8 E1 or 8 T1 balanced RJ-45 connectors
CBL-G703-8/OPEN/2M	Open-ended cable with DB-44 connector on the megaplex side for balanced applications
<i>Note: All the cables are 2m (6.6 ft) long.</i>	
ML-IP	
MP-2100M-ML-IP/*/@	TDMoIP Main Link Module for MP-2100/MP-2104
* Uplinks interface (User port is always UTP)	
UTP	Copper interface with RJ-45 connectors
ST/85	850 nm multimode fiber with VCSEL transmitter, ST connectors
FC/85	850 nm multimode fiber with VCSEL transmitter, FC connectors
ST/13L	1310 nm single mode fiber with laser transmitter, ST connectors
FC/13L	1310 nm single mode fiber with laser transmitter, FC/PC connectors
@ Echo Cancellor (Default=no echo canceller)	
1E	Echo canceller (supports up to 30 voice channels)
MSL-8	
MP-2100M-MSL-8/E1	8-Port E1 module with 2-wire SHDSL interface for Megaplex-2100 and Megaplex-2104 chassis
<i>Optional Accessories</i>	
CBL-MSL8-SCS40/RJ45	Cable for splitting MSL-8 single 40-pin SCSI connector to 8 x RJ-45 connectors
Ringer-2100R, Ringer-2000, Ringer-2200N	
RINGER-2000/+/#/*	Standalone power supply unit, supports up to 60 active voice channels
+ DC battery (feed) voltage output	
24	-24 VDC
48	-48 VDC
# Ring voltage (Default=without ring voltage)	
72	Ring voltage output
<i>Note: +72 VDC is provided by AC-powered models; +60 VDC is provided by DC-powered models</i>	
* Power Supply (operating (input) voltage)	
115	115 VAC
230	230 VAC
48	-48 VDC
24	-24 VDC
<i>Note: Only the following ordering option combinations are possible:</i>	
RINGER-2000/24/72/115	
RINGER-2000/24/72/230	
RINGER-2000/24/72/24	
RINGER-2000/48/72/115	
RINGER-2000/48/72/230	
RINGER-2000/48/72/48	
RINGER-2000/48/115 (no ring voltage)	
RINGER-2000/48/230 (no ring voltage)	



RINGER-2100R/^\n^\n	Power supply module for Megaplex-2100, supports up to 32 active voice channels
Power supply: Operating AC	(input) voltage: 115 to 230 VAC
48	-48 VDC
24	-24 VDC
RINGER-2200N/&/~\n&\n~\n	Standalone power supply unit, supports up to 120 active voice channels
Power supply: Operating	(input) voltage: 115 VAC
115	230 VAC
230	
Output	
ISDN	+48 VDC and -48 VDC outputs (Default=for -48 VDC only)

Supplied Accessories

AC power cord	
3-wire open-end cable	ISDN option only
KM-2004/RM	Hardware for mounting the Ringer-2000 unit in a 19" rack
RING-2200-RM	Hardware kit for mounting the Ringer-2200N unit into a 19" rack

Optional Accessories

CBL-RINGER-1/TB	Cable for connecting a Ringer-2000 3-pin DC-output DIN (circular) connector to a 3-pin TB Megaplex DC-input connector
CBL-RINGER2200N-1/TB	Cable for connecting a Ringer-2200N TB DC-output connector to a 3-pin TB Megaplex DC-input connector
CBL-RINGER2200N-2/TB	Cable for connecting a Ringer-2200N TB DC-output connector to two Megaplex chassis

VC-16A

MP-2100M-VC16A	16-Channel ADPCM/PCM Voice Module with No Signaling
----------------	---

Optional Accessory

CBL-VC16A	Cable for splitting the VC-16A's single 64-pin Telco connector into 16 x RJ-45 connectors
-----------	---

VC-4/4A, VC-8/8A, VC-16

MP-2100M-VC-4/#	4-Channel PCM Voice Module
MP-2100M-VC-8/#	8-Channel PCM Voice Module
MP-2100M-VC-16/#	16-Channel PCM Voice Module
MP-2100M-VC-4A/#	4-Channel ADPCM Voice Module
MP-2100M-VC-8A/#	8-Channel ADPCM Voice Module
# Interface	
E&M	E&M interface
E&M/POS	E&M interface with positive signaling (for VC-8 and VC-16 only)
E&M/EXT	E&M interface operating at -48 VDC
E&M/4WIRE	E&M interface with enhanced gain levels (for VC-16, VC-8, VC-4)
FXS	FXS interface with Telco connector (for VC-16, VC-8, VC-8A; and with RJ-12 connectors for VC-4, VC-4A)
FXS/RJ	FXS interface with RJ-12 connectors (for VC-8)
FXS/24VDC	FXS module operating with 24 VDC (for VC-16 only*)
FXO	FXO with Telco connector (for VC-16, VC-8, VC-8A; and with RJ-12 connectors for VC-4, VC-4A)
FXO/RJ	FXO with RJ-12 connector (for VC-8, VC-8A)

Note: VC-4/FXS, VC-4A/FXS, VC-8/FXS/RJ and VC-8A/FXS modules support both -24 and -48 VDC.

Optional Accessories

Octopus cables for splitting the high-density module (VC-8 and VC-16) connector(s) into separate channels with RJ-12/RJ-45 connectors, for direct connection to user equipment. Cable lengths are 2m (6 ft):	
CBL-VC16/FXSO	Cable with 16 x RJ-12 connectors, for splitting the VC-16/FXS or VC-16/FXO's single 50-pin Telco connector
CBL-VC8/FXSO	Cable with 8 x RJ-12 connectors, for splitting the VC-8/FXS or VC-8/FXO's single 50-pin Telco connector
CBL-KVF8/E&M	Cable with 8 x RJ-45 connectors, for splitting a single VC-8/E&M or VC-16/E&M 68-pin SCSI connector

When ordering FXS or E&M modules, a RINGER may be required. For ordering refer to the RINGER ordering information in this list.

Note: FXS modules require a -48 VDC (nominal) source for feed and ring voltages. This power can be provided by a Ringer-2000/2200N unit or Ringer-2100R module. E&M applications may also require -48 VDC. (-48 VDC-powered chassis, or AC-powered MP-2104 chassis with built-in ringer option, do not require an additional Ringer.)

VC-4/OMNI

MP2100M-VC-4/E&M/OMNI	Omnibus PCM voice module for MP-2100/2104/4100 with E&M signaling
-----------------------	---

VC-6/LB, VC-6/4LB

MP-2100M-VC-6/LB	6-Channel PCM Voice Module for Local Battery Telephones for MP-2100/2104
MP-2100M-VC-6/4LB	4-Channel PCM Voice Module for Local Battery Telephones with PBX support for MP-2100/2104

Optional Accessories

The modules in an AC-powered MP-2100 chassis may require a -48 VDC (nominal) source for feed and ring voltages. This power can be provided by a Ringer-2000/2200N unit or Ringer-2100R module (see Ringer ordering options). -48 VDC-powered chassis, or AC-powered MP-2104 chassis with built-in ringer option, do not require an additional Ringer.

VC-6A

MP-2100M-VC-6A/*/?/#	6-channel PCM/ADPCM voice module for MP-2100/2104
----------------------	---

* Ground-start/ loop-start signaling (Default=wink-start/loop-start (relevant only for FXS or FXO))

G	Ground-start/ loop-start signaling
? Encoding	(Default=for module with both PCM and ADPCM encoding)
P	PCM encoding only
# Interface	
E&M	E&M interface
FXS	FXS interface
FXO	FXO interface

Optional Accessories

CBL-VC16	Octopus cable with six RJ-45 connectors, for connecting the VC-6A/E&M's single 50-pin TELCO connector directly to user equipment. Cable length is 2m (6 ft).
----------	--

Note: For AC-powered chassis, a Ringer-2000 or Ringer-2100R is required to provide -48 VDC feed and ring voltages for FXS interfaces. E&M applications that need -48 VDC also require a Ringer.

(-48 VDC- or 24 VDC-powered MP-2100 chassis, as well as AC-powered MP-2104 chassis with built-in ringer option, do not require a Ringer.) See Ringer ordering options.

VF-24/30/48/60

MP-2100M-VF-24/T1	Single T1 Digital Voice Compression Module for MP-2100/2104
MP-2100M-VF-30/E1	Single E1 Digital Voice Compression Module for MP-2100/2104
MP-2100M-VF-48/T1	Dual T1 Digital Voice Compression Module for MP-2100/2104
MP-2100M-VF-60/E1	Dual E1 Digital Voice Compression Module for MP-2100/2104

Optional Accessories

MP-CBL-RJ45/2BNC/E1	Adapter for VF-30/60 modules converting an E1 port RJ-45 connector into a pair of BNC connectors for unbalanced coax interface
---------------------	--

VFS-24/30/48/60

MP-2100M-VFS-24/1T1	Single T1 Digital Voice Compression Server Module for MP-2100/2104
MP-2100M-VFS-30/1E1	Single E1 Digital Voice Compression Server Module for MP-2100/2104
MP-2100M-VFS-48/2T1	Dual T1 Digital Voice Compression Server Module for MP-2100/2104
MP-2100M-VFS-60/2E1	Dual E1 Digital Voice Compression Server Module for MP-2100/2104

Optional Accessories

MP-CBL-RJ45/2BNC/E1	Adapter for VFS-30/60 modules converting an E1 port RJ-45 connector into a pair of BNC connectors for unbalanced coax interface
---------------------	---

Megaplex-4100

MP-4100-MN	Next Generation Multiservice Access Node Megaplex-4100 chassis with no PS or CL.1 module
MP-4100-1/*/%/&/^\n	Megaplex-4100 chassis equipped with PS CL.1 modules

* Power supply modules
115 Single, 115 VAC



230	Single, 230 VAC
24	Single, +24 VAC
48	Single, -48 VAC
115R	Dual, 115 VAC
230R	Dual, 230 VAC
24R	Dual, +24 VAC
48R	Dual, -48 VAC
%	Link option (defaults for CL.1 module with no links)
155	Single CL.1 module with dual STM-1/OC-3 links, SFP sockets
GBEUTP	Single CL.1 module with dual GbE links, UTP connectors
GBESFP	Single CL.1 module with dual GbE links, SFP sockets
155GBEUTP	Single CL.1 module with STM-1/OC-3 and GbE links; SFP sockets for STM-1/OC-3, UTP connectors for GbE
155GBESFP	Single CL.1 module with STM-1/OC-3and GbE links; SFP sockets for both
R	Two CL.1 modules, no link
155R	Two CL.1 modules, each with dual STM-1/OC-3 links, SFP sockets
GBEUTPR	Two CL.1 modules, each with dual GbE links, UTP connectors
GBESFPR	Two CL.1 modules, each with dual GbE links, SFP sockets
155GBEUTPR	Two CL.1 modules, each with STM-1/OC-3 and GbE links; SFP sockets for STM-1/OC-3, UTP connectors for GbE
155GBESFPR	Two CL.1 modules, each with STM-1/OC-3and GbE links; SFP sockets for both
&	Number and of SFPa transceivers for STM-1/OC-3 links (155/155R, 155GBEUTP/155GBEUTPR, or 155GBESFP/155GBESFPR ordering options)
SFPa	One SFP transceiver
2xSFPa	2 SFPs on a single CL.1 or one SFP on each CL.1
4xSFPa	2 SFPs on each CL.1
a	SFP Type of STM-1/OC-3 receiver
1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
4	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 80 km (49.7 mi)
11	STM-1E, mini-BNC connector, DIN 1.0/2.3, 135m (442 ft)
^	Number and of SFPb transceivers for GbE links (GBESFP/ GBESFPR or 155GBESFP/ 155GBESFPR ordering options)
SFPb	One SFP transceiver
2xSFPb	2 SFPs on a single CL.1 or one SFP on each CL.1
4xSFPb	2 SFPs on each CL.1
b	SFP Type of GbE receiver
5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
8D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)

Note: For the complete list of SFPs, refer to the SFP Transceivers ordering options. It is strongly recommended to order with original RAD SFPs installed. This will ensure that prior to shipping, RAD has performed comprehensive functional quality tests on the entire assembled unit, including the SFP devices. RAD cannot guarantee full compliance to product specifications for units using non-RAD SFPs.

MP-4100M-PS/~ Power supply module

~ Power supply modules

115	Single, 115 VAC
230	Single, 230 VAC
24	Single, +24 VAC
48	Single, -48 VAC

MP-4100-CL.1/#/\$/@ CL.1 module with cross connect and 10/100BaseT management port

Link option (Default=for CL.1 module with no links)

155	Single CL module with dual STM-1/OC-3 links, SFP sockets
GBEUTP	Single CL module with dual GbE links, UTP connectors
GBESFP	Single CL module with dual GbE links, SFP sockets
155GBEUTP	Single CL module with STM-1/OC-3 and GbE links; SFP sockets for STM-1/OC-3, UTP connectors for GbE
155GBESFP	Single CL module with STM-1/OC-3 and GbE links; SFP sockets for both
\$	Number and of SFP transceivers for STM-1/OC-3 links (155, 155GBEUTP, or 155GBESFP ordering options)
SFPa	One SFP transceiver
2xSFPa	2 SFPs on a single CL.1
@	Number and of SFP transceivers for GbE links (GBESFP or 155GBESFP ordering options)
SFPb	One SFP transceiver
2xSFPb	2 SFPs on a single CL.1

Note: The list of SFP transceivers (SFPa, SFPb) for ordering with CL.1 is the same as for ordering the Chassis package (see above). Note that unlike the SFPs listed under Optional Accessories below, the ordering string for transceivers coming with the Chassis/CL.1 does not include a hyphen. For example, to order an SFP-1 transceiver on a CL.1 module you should specify SFP1 and not SFP-1, as when ordering optional transceivers.

Supplied Accessories

AC power cord	When AC power supply is ordered
DC adaptor plug	When DC power supply is ordered
RM-MP-MX-23/19	Hardware kit for mounting one MP-4100 unit into both 19-inch and 23-inch racks
MP-2100-RM-ETSI/19	Hardware kit for mounting one MP-4100 unit into ETSI rack (fits also 10-inch rack)
CBL-DB9F-DB9M-STR	Standard DB-9 to DB-9 control port cable

Optional Accessories

SFP options for STM-1/OC-3 Link

SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-11	STM-1E, mini-BNC connector, DIN 1.0/2.3, 135m (442 ft)

SFP options for GbE Link

SFP-5	Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP-6	Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP-7	Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)
SFP-8D	Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)

Megaplex-4100 Modules

ASMi-54C

MP-4100M-ASMi-54C/ETH/#

Ethernet over SHDSL.bis 8-Port Module

#	Interface and Connectors
UTP	2 UTP (RJ-45 connectors)
SFPa	2 SFP sockets including SFP transceivers (see below for a)
a	SFP transceivers for Ethernet 100BaseFx Interface
1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
1D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)
2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)



3D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)	3XUTP 3XNULL 3XSFPa	3 UTP (RJ-45 connectors) 3 SFP sockets without SFP transceivers 3 SFP sockets including SFP transceivers (see below for a)
10a	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)	a	SFP transceivers for Ethernet 100BaseFx Interface
10b	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)	1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
18a	STM-1/OC-3, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)	1D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)
18b	STM-1/OC-3, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)	2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
19a	STM-1/OC-3, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
19b	STM-1/OC-3, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
	<i>Note: All the cables are 2m (6.6 ft) long.</i>	3D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)
Optional Accessories		10a	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
CBL-DB26-8SHDSL	Cable for splitting a single 26-pin connector into 8 x RJ-45 connectors. Cable length is 2m (6 ft).	10b	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
M8E1, M8T1		18a	STM-1/OC-3, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
MP-4100M-8E1/#	8-port E1 module for Megaplex-4100	18b	STM-1/OC-3, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
MP-4100M-8T1/#	8-port T1 module for megaplex-4100	19a	STM-1/OC-3, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)
# Interface and Connectors		19b	STM-1/OC-3, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)
3XUTP	3 UTP (RJ-45 connectors)	9F	Fast Ethernet, RJ-45 connector, 100m (238 ft)
3XNULL	3 SFP sockets without SFP transceivers	M8SL	8-Port E1 module with 2-wire SHDSL interface for Megaplex-4100
3XSFPa	3 SFP sockets including SFP transceivers (see below)	MP-4100M-8SL/#	
a	SFP transceivers for Ethernet 100BaseFx Interface	# Interface and Connectors	
1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)	3XUTP	3 UTP (RJ-45 connectors)
1D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)	3XNULL	3 SFP sockets without SFP transceivers
2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)	3XSFPa	3 SFP sockets including SFP transceivers (see below for a)
2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)	a	SFP transceivers for Ethernet 100BaseFx Interface
3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)	1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
3D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)	1D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)
10a	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)	2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
10b	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)	2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
18a	STM-1/OC-3, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)	3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
18b	STM-1/OC-3, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)	3D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)
19a	STM-1/OC-3, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	10a	Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
19b	STM-1/OC-3, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	10b	Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM) , 20 km (12.4 mi)
Ethernet 100BaseTx (Electrical) Interface		18a	STM-1/OC-3, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
9F*	Fast Ethernet, RJ-45 connector, 100m (238 ft)	18b	STM-1/OC-3, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)
Optional Accessories		19a	STM-1/OC-3, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)
CBL-G703-8/RJ45	Splitter cable for splitting the 44-pin module connector to 8 E1 or 8 T1 balanced RJ-45 connectors		
CBL-G703-8/RJ45/X	Splitter cross-cable for splitting the 44-pin module connector to 8 E1 or 8 T1 balanced RJ-45 connectors		
CBL-G703-8/COAX	Splitter cable for splitting the 44-pin M8E1 module connector to 8 pairs of unbalanced BNC connectors		
CBL-G703-8/OPEN/2M	Open-ended cable with DB-44 connector on the Megaplex side for balanced E1 or T1 applications.		
MPW-1	TDM Pseudowire Access Gateway		
MPW-1/#			
# Interface and Connectors			



19b	STM-1/OC-3, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM) , 80 km (49.7 mi)	SFP10A	Laser WDM, Tx -1550 nm, Rx -1310 nm, single mode, single fiber, LC only (SF1)
Ethernet 100BaseTx (Electrical) Interface 9F	Fast Ethernet, RJ-45 connector, 100m (238 ft)	SFP10B	Laser WDM, Tx -1310 nm, Rx -1550 nm, single mode, single fiber, LC only (SF2)
Optional Accessories		2XSFP12	Dual SFP-12 modules
CBL-MSL8-SCS40/RJ45		2XSFP1	Dual SFP-1 modules
Cable for splitting the M8SL single 40-pin SCSI connector to 8 x RJ-45 connectors		2XSFP2	Dual SFP-2 modules
		2XSFP3	Dual SFP-3 modules
		2XSFP4	Dual SFP-4 modules
		2XSFP10a	Dual SFP-10a modules
		2XSFP10b	Dual SFP-10b modules
M16E1, M16T1		HSF-2	See Megaplex-2100 Modules for details
MP-4100M-16E1	16-port SHDSL E1 module	HS-6N	HS-U, HS-U-6, HS-U-12
MP-4100M-16T1	16-port SHDSL T1 module	HS-703	LS-6N
Optional Accessories		HS-12N	LS-12
CBL-G703-8/RJ45		HS-RN	VC-4/4A/8/8A/16 VC-4/OMNI
Splitter cable for splitting each 44-pin module connector to 8 E1 or 8 T1 balanced RJ-45 connectors		MIC Series	Miniature Interface Converters
CBL-G703-8/RJ45/X		MIC-24/11/*	Selectable, 25-pin male/female DTE connector
Splitter cross-cable for splitting each 44-pin module connector to 8 E1 or 8 T1 balanced RJ-45 connectors		MIC-24/35/*	Selectable, 25-pin male DTE connector (1), 34-pin male/female DCE connector (2)
CBL-G703-8/COAX		MIC-232/530/*	Selectable, 25-pin male DTE connector (1), 25-pin male/female DCE connector (2)
Splitter cable for splitting each 44-pin M16E1 module connector to 8 pairs of unbalanced BNC connectors		MIC-24T/21C	V.24/RS-232 DTE, X.21 DCE, 25-pin male DTE connector (1), 15-pin male DCE connector (2)
CBL-G703-8/OPEN/2M		MIC-21T/24C/#	X.21 DTE, 15-pin male/female DTE connector (1)
Open-ended cable with DB-44 connector on the Megaplex side for balanced E1 or T1 applications		MIC-35T*/21C	V.35 DTE, X.21 DCE, 34-pin male/female DTE connector (1), 15-pin male DCE connector (2)
OP-108C, OP-108C		MIC-21T/35C/+	X.21 DTE, V.35 DCE, 15-pin female DTE connector (1), 34-pin male/female DCE connector (2), power supply
MP-4100M-OP-108/ETH/+	4-Channel E1 and Ethernet Multiplexer Modules	MIC-21T/36C/*	X.21 DTE to V.36 DCE
MP-4100M-OP-106/ETH/+	4-Channel T1 and Ethernet Multiplexer Modules	CBL-36T/21C	V.36/RS-422 DTE, X.21 DCE, 37-pin female DTE connector (1), 15-pin male DCE connector (2)
+ SFP fiber optic link interface		CBL-530T/21C/*	RS-530 DTE, X.21 DCE, 25-pin female DTE connector (1), 15-pin male/female DCE connector (2)
SFP1	LED, 1310 nm, multimode, LC only	MIC-21T/530C	X.21 DTE, RS-530 DCE, 15-pin female DTE connector (1), 25-pin male DCE connector (2), power supply
SFP2	Laser, 1310 nm, single mode, LC only	CBL-530/449/*	Bidirectional, 15-pin male DTE connector (1), 37- pin male/female DCE connector (2)
SFP3	Long-haul laser, 1310 nm, single mode, LC only	MIC-530T/35C/*	RS-530 DTE, V.35 DCE, 25-pin female DTE connector (1), 34-pin male DCE connector (2)
SFP4	Long-haul laser, 1550 nm, single mode, LC only	MIC-35T*/530C	V.35 DTE, RS-530 DCE, 34-pin male/female DTE connector (1), 25-pin male DCE connector (2)
SFP10A	Laser WDM, Tx -1550 nm, Rx -1310 nm, single mode, single fiber, LC only (SF1)	MIC-35T*/36C	V.35 DTE, V.36/RS-422 DCE, 34-pin male/female DTE connector (1), 37-pin male DCE connector (2)
SFP10B	Laser WDM, Tx -1310 nm, Rx -1550 nm, single mode, single fiber, LC only (SF2)	MIC-36T*/35C/#	V.36/RS-422 DTE, V.35 DCE, 37-pin male/female DTE connector (1), 34-pin male DCE connector (2)
SFP24	VSCSEL, 850 nm, multimode, LC only	# Connectors	
SFP18A	Laser WDM, Tx -1310 nm, Rx -1550 nm, single mode, single fiber, LC only	M-M	Both male connectors
SFP18B	Laser WDM, Tx -1550 nm, Rx -1310 nm, single mode, single fiber, LC only	* Connectors	
SFP19A	Laser WDM, Tx -1310 nm, Rx -1550 nm, single mode, single fiber, LC only	F	Female connector
SFP19B	Laser WDM, Tx -1550 nm, Rx -1310 nm, single mode, single fiber, LC only	M	Male connector
2XSFP1	Dual SFP1 modules	<i>Note: This option refers only to those connectors where the information above specifies "male/female". Default=male connector.</i>	
2XSFP2	Dual SFP2 modules	+ External power supply	
2XSFP3	Dual SFP3 modules	P/S-A/C/9/500	90 to 264 VAC external power supply (should be ordered separately)
2XSFP4	Dual SFP4 modules	MIC-21T/24C	Miniature Interface Converter, X.21 DTE to V.24 DCE
2XSFP10A	Dual SFP10A modules	MIC-21T/24C/#	Miniature interface converter
2XSFP10B	Dual SFP10B modules	# Interface connectors (Default=female DTE connector)	
2XSFP18A	Dual SFP18A modules	M-M	Both male connectors
2XSFP18B	Dual SFP18B modules	MIC-21T/35C	Interface Converter, X.21 DTE to V.35 DCE
2XSFP19A	Dual SFP19A modules	MIC-21T/35C/*/+	
2XSFP19B	Dual SFP19B modules	* Connector on the DCE side (Default=male connector)	
2XSFP24	Dual SFP24 modules	F	Female
4XSFP1	Quad SFP1 modules	M	Male
4XSFP2	Quad SFP2 modules	+ External power supply	
4XSFP3	Quad SFP3 modules	P/S-AC/9/500	90 to 264 VAC external power supply
4XSFP4	Quad SFP4 modules	OP-34C, OP-25C	
4XSFP10A	Quad SFP10A modules	MP-4100M-OP-34/ETH/+	16-Channel E1, Ethernet over E3 or Fiber Multiplexer Module
4XSFP10B	Quad SFP10B modules	MP-4100M-OP-25/ETH/+	16-Channel T1, Ethernet over Fiber Multiplexer Module
4XSFP18A	Quad SFP18A modules	+ SFP fiber optic link interface	
4XSFP18B	Quad SFP18B modules	SFP-12	Electrical coax, SMB (OP-34C only)
4XSFP19A	Quad SFP19A modules	SFP1	LED, 1310 nm, multimode, LC only
4XSFP19B	Quad SFP19B modules	SFP2	Laser, 1310 nm, single mode, LC only
4XSFP24	Quad SFP24 modules	SFP3	Long-haul laser, 1310 nm, single mode, LC only
		SFP4	Long-haul laser, 1550 nm, single mode, LC only



MIC-232/485	Interface Converter, RS-232 to RS-485	MIC-530T/35C	Miniature Interface Converter, RS-530 DTE to V.35 DCE
MIC-232/485/*/+	Connector on the V.24/RS-232 side	MIC-530T/35C/*	* DCE side interface connector
F	Female	F	Female
M	Male	M	Male
	Connector on the RS-485 side (Default=terminal block)		
RJ-11	RJ-11 jack		
RJ-45	RJ-45 plug on a 2 m (6 ft) cable		
RJ-45S	RJ-45 socket		
<i>Optional Accessory</i>			
P/S-AC/9/500	90 to 264 VAC external power supply		
MIC-232/530	Miniature Interface Converter		
MIC-232/530/*			
* Connector			
F	25-pin, female		
M	25-pin, male		
MIC-24/11	V.24/RS-232 to V.11/RS-422 Interface Converter		
MIC-24/11/*/@			
* Connector			
F	Female		
M	Male		
@ V.11 connector (Default=terminal block)			
RJ11	RJ-11 jack, mounted directly		
RJ45	RJ-45 plug on a 2m / 6 ft cable		
RJ45S	RJ-45 jack, mounted directly		
MIC-24/35	Miniature Interface Converter		
MIC-24/#/35/*			
# V.24 connector (Default=male connector)			
F	25-pin, female		
* V.35 connector			
M	34-pin, male		
F	34-pin, female		
MIC-24/CL	Current Loop Interface Converter		
MIC-24/CL/A/*	Active unit, interface converter for current loop		
* Active unit (Default=20 mA)			
60	60 mA, factory set		
MIC-24/CL/P/+	Passive Unit, Interface converter for current loop		
+ Connector			
F	Female 25-pin connector		
M	Male 25-pin connector		
<i>Optional Accessory</i>			
P/S-AC/12/800	90 to 264 VAC external power supply for MIC-24/CL/A		
MIC-24T/21C	Miniature Interface Converter, V.24 DTE to X.21 DCE		
MIC-35T/21C	Miniature Interface Converter V.35 DTE to X.21 DCE		
MIC-35T/21C/*			
* DTE side interface connector			
F	Female connector		
M	Male connector		
MIC-35T/36C	Miniature Interface Converter, V.35 DTE to V.36 DCE		
MIC-35T*/36C/#			
* DTE side interface connector (Default=male)			
F	Female connector		
# DCE side interface connector (Default=male)			
F	Female connector		
MIC-35T/530C	Miniature Interface Converter, V.35 to RS-530 DCE		
MIC-35T/530C/*			
* DTE side interface connector			
F	Female		
M	Male		
MIC-36T/35C	Miniature Interface Converter, V.36 DTE to V.35 DCE		
MIC-36T/35C/#			
# Interface connectors (Default=female DTE)			
M-M	Both male connectors		
		MIRIC-E1, MIRIC-T1	Miniature Fast Ethernet to E1/T1 remote bridge
		MIRIC-E1	E1
		MIRIC-T1	T1
		MIRIC-E3, MIRIC-T3	Miniature Fast Ethernet to E3/T3 Remote Bridge
		MIRIC-E3/CBL-BNC	Miniature Fast Ethernet to E3 remote bridge with two 30 cm (11.8 in) SMB-to-BNC cable adapters
		MIRIC-T3/CBL-BNC	Miniature Fast Ethernet to T3 remote bridge with two 30 cm (11.8 in) SMB-to-BNC cable adapters
		MIRICI-E1T1	Intelligent Miniature Ethernet to E1/T1 Remote Bridge
		MIRICI-E1T1/+	
		* SFP port	
		FE	Fast Ethernet
		GbE	Gigabit Ethernet
		<i>Optional Accessory</i>	
		SFP-CA	Configuration adapter module for configuring MIRICI-E3T3 by connecting it to a PC
		MIRICI-E3T3	Intelligent Miniature Ethernet to E3/T3 Remote Bridge
		+ SFP port	
		FE	Fast Ethernet
		GbE	Gigabit Ethernet
		<i>Supplied Accessory</i>	
		CBL-1023-BNC	Two 30 cm (11.8 in) DIN 1.0/2.3-to-BNC cable adapters
		<i>Optional Accessory</i>	
		SFP-CA	Configuration adapter module for configuring MIRICI-E3T3 by connecting it to a PC
		MITOP-E1/T1	SFP-Format TDM Pseudowire Gateway
		<i>Optional Accessory</i>	
		SFP-CA	Configuration adapter module for configuring unit by connecting it to a PC
		MITOP-E3/T3	SFP-Format TDM Pseudowire Gateway
		MITOP-E3T3/FE/*	
		* Enclosure (default=regular enclosure)	
		H	Temperature-hardened enclosure
		<i>Optional Accessory</i>	
		SFP-CA	Configuration adapter module for configuring unit by connecting it to a PC
		MMS	2-Channel Modem Sharing Device
		Model Descriptors 5620	
		MD-SW/*	Integrating RAD ATM Access Products into Alcatel 5620 nmS
		* 5620 MD module	5620 Model Descriptor
		ACE-50	5620 MD/ACE-50
		ACE-101	5620 MD/ACE-101
		ACE-202	5620 MD/ACE-202
		ACE-2002	5620 MD/ACE-2002
		ACE-2002E	5620 MD/ACE-2002E
		LA-110	5620 MD/LA-110
		MPS	2-Channel Port Sharing Device
		MTE-1	Miniature Tail-End Adapter
		MTE-2	Miniature Tail-End Adapter



Optimux-108 4-Channel E1 and Ethernet Multiplexer
Optimux-106 4-Channel T1 and Ethernet Multiplexer
 OP-108C, OP-106C See [LRS-102 Modules](#)
 OP-108/~!^%!/!#/+/\$!/?
 OP-106/~!^%!/!#/+/\$!/?
 OP-108-M/#/+/\$!/? **Note:** For ordering the Optimux-108 card version or coax uplink, please contact the Optimux Product Line Manager.
 OP-106-M/#/+/\$!/? Additional uplink module
 ~ Power supply
 24 24 VDC
 ^ E1 connector
 B Balanced (RJ-45)
 U Unbalanced (BNC)
 % Redundant power supply
 R Second (redundant) power supply
 ! Optional user port
 ETH 10/100BaseT User Ethernet port
 V35 V.35 interface (see *Optional Accessories*)
 # Uplink interface connector
 ST ST connector
 FC FC/PC connector
 SC SC connector
Note: ST and FC connectors are not available for the single fiber options.
 + Fiber optic link interface
 85L 850 nm, multimode, VCSEL
 13 1310 nm, multimode, LED
 13L 1310 nm, single mode, laser diode
 15L 1550 nm, single mode, laser diode
 13LH 1310 nm, single mode, long-haul laser diode
 15LH 1550 nm, single mode, long-haul laser diode
 SF1 Transmit 1310 nm laser (WDM), receive 1550 nm
 SF2 Transmit 1550 nm laser (WDM), receive 1310 nm
 SF3 Transmit and receive at 1310 m laser diode
 \$ Extended temperature version (Default=no extended temperature support)
 H Extended temperature support (13L, 15L, 13LH, 15LH fiber link versions only)
 * Redundant uplink module (Default=single uplink)
 D Second main link module
Note: For single fiber applications, a device with SF1 interface is always used opposite a device with SF2 interface, and vice versa. An SF3 interface works only opposite another SF3 interface.
 ? Enclosure (Default=plastic enclosure)
 ME Metal enclosure
Supplied Accessories
 AC power cord For AC unit
 DC adapter kit For DC unit
 CBL-MUSB-DB9F Control port cable
 CBL-RJ45-DB9F Alarm port cable
Optional Accessories
 RM-33-2 Kit for mounting 1 or 2 units in a 19" rack
 RM-35/@ Hardware kit for mounting one or two metal units in a 19-inch rack
 @ Rack mount kit (Default=both kits)
 P1 Mounting one unit
 P2 Mounting two units
V.35 interface cables
 CBL-AMP-M34 Smart Serial to M34 interface
 CBL-AMP-DB25-ISO2110 Smart Serial to ISO 2110 interface
 CBL-AMP-DB25-TLBS Smart Serial to Telebras interface
Optimux-108L Basic-Managed Four-Channel Fiber E1 Multiplexer
 OP-108L/~!^%!/!#/+
 ~ Power supply (Default=AC/DC wide-range power supply)
 -48 VDC -40 to -57 VDC
 * Ethernet management port (Default=with management port)
 BM No Ethernet management port
 ? Enclosure (Default=plastic enclosure)
 ME Metal Enclosure
 ^ E1 connector
 B Balanced (RJ-45)
 U Unbalanced (BNC)
 ! Optional user port (Default=no user port)
 ETH 10/100BaseT Ethernet
 # Uplink interface connector
 ST ST connector

FC FC/PC connector
 SC SC connector
Note: ST and FC connectors are not available for the single fiber options.
 + Fiber optic link interface
 85L 850 nm, multimode, VCSEL
 13 1310 nm, multimode, LED
 13L 1310 nm, single mode, laser diode
 15L 1550 nm, single mode, laser diode
 13LH 1310 nm, single mode, long-haul laser diode
 15LH 1550 nm, single mode, long-haul laser diode
 SF1 Transmit 1310 nm laser (WDM), receive 1550 nm
 SF2 Transmit 1550 nm laser (WDM), receive 1310 nm
 SF3 Transmit and receive at 1310 m laser diode
Supplied Accessories
 AC power cord For AC unit
 DC adapter kit For DC unit
Optional Accessories
 RM-33-2 Kit for mounting 1 or 2 units in a 19" rack
Optimux-1551 STM-1/OC-3 Terminal Multiplexer
 Main link modules, tributary modules, interface adaptors, cables and mounting kits are all ordered separately.
Note: To ensure good ventilation during operation, all empty slots must be covered by blank panels.
 OP-1551!^/\$!/#!/?!/+^ STM-1/OC-3 Terminal Multiplexer
 * Tribute interface module
 2128 Module with 21xE1, or 28xT1 links
 4256 Module with 42xE1, or 56xT1 links
 6384 Module with 63xE1, or 84xT1 links
 2x2128 Two 2128 modules
 2x4256 Two 4256 modules
 2x6384 Two 6384 modules
 \$ Station clock
 STC Optional station clock
Note: For tributary module redundancy, order two modules. Each tributary module may be defined either as E1 or T1 channels.
 # Power supply
 AC 100 to 240
 48 -48 VDC
 AD Redundant 100 to 240 VAC and -48 VDC power supplies
 ! Redundant power supply
 R Redundant power supply (same as above)
 ? Main link connector
 ST ST fiber
 SC S fiber
 FC FC fiber
Note: For single fiber connection, only SC connectors are available. For 1310 nm multimode LED option, only SC and ST connectors are available.
 + Optional wavelength and transmitter (not relevant with CX option)
 CX Electric interface with coaxial BNC connectors
 13 1310 nm, multimode LED
 13L 1310 nm, single mode, laser diode
 15L 1550 nm, single mode, laser diode
 13LH 1310 nm, single mode, long haul laser diode
 15LH 1550 nm, single mode, long haul laser diode
 85L 850 nm, multimode VCSEL
 SF1 Transmit 1310 nm, receive 1550 nm
 SF2 Transmit 1550 nm, receive 1310 nm
 SF3 1310nm single wavelength laser
Note: For single-fiber applications, a device with the SF-1 connector should always be used opposite the device with the SF-2 connector, and vice versa. The SF-3 connector can be used on both sides of the link.
 ^ Second main link
 D Optional second main link
Supplied Accessories
 AC power cord For AC unit
 DC adapter plug For DC unit
 OP-1551-FT Fan tray module (one included)
 RM-36 Hardware for mounting a single Optimux-1551 in a 19" rack.
Optional Accessories
 Additional tributary module



OP-1551-M/*/\$ *Additional tributary module*
Note: Each module should be ordered separately.

OP-M/?/+ Main link interface only

OP-1551-PS/AC 100 to 240 VAC Power Supply

OP-1551-PS/48 -48 VDC Power Supply

OP-A/ADAPTOR/% Patch panel interface to convert Telco into channel connectors

% Patch panel interface

21BNC/1551 Patch panel with 21 BNC unbalanced E1 interfaces

28RJ Patch panel with 28 RJ-45 balanced E1/T1 interfaces

Note: Two CBL-TELCO-TELCO/2M cables included with each patch panel

CBL-TELCO- Adaptor cable if patch panel is not required, Telco

OPEN/2M 64 pin, open ended, 2 meters (6.5 feet).

CBL-TELCO- Adaptor cable if patch panel is not required, Telco

RJ45/2M 64 pin, open ended, 2 meters (6.5 feet).

CBL-TELCO-RJ45-CROSS/2M Extension cable Telco 64-pin to 14 RG-45 connectors with cross connections, 2 meters (6.5 feet).

CBL-TELCO- Extension cable if patch panel is not required, Telco

TELCO/2M 64-pin to Telco 64-pin, 2 meters (6.5 feet).

Note: Six Telco-Telco cables are required to support all the tributary channels. Two CBL-TELCO-TELCO/2M cables are included with each OP-A/ADAPTOR patch panel

Blank panels

Note: To ensure good ventilation during operation, all empty slots must be covered by blank panels.

OP-1551-PS-BP Power supply blank panel

OP-M-BP Main module blank panel

OP-1551-M-BP Tributary interface module blank panel

Optimux-1553 STM-1/OC-3 Terminal Multiplexer

OP-1553/*/\$/#/!/?/+/^ Main link modules and tributary modules are ordered separately.

OP-1553-M/*/\$ *Additional tributary module*
Note: Each module should be ordered separately.

OP-M/?/+ Main link interface module

* Tributary interface module

3E3T3 Module with three E3/T3 links

2x3E3T3 Two E3T3 modules

\$ Station clock

STC Optional station clock

Note: For tributary interface module redundancy, order two modules. Each tributary modules may be defined either as E1 or T1 channels.

Power supply

AC 100 to 240 VAC

48 -48 VDC

AD 100 to 240 VAC with redundant -48 VDC power supply

! Redundant power supply

R Redundant power supply of same

? Main link connector

ST ST fiber

SC SC fiber

FC FC fiber

Note: For single-fiber connection, only SC connectors are available. For 1310 nm multimode LED option, only SC and ST are available.

+ Optical wavelength and transmitter (not relevant with CX option)

CX Electrical interface with coaxial BNC connectors

13 1310 nm, multimode LED

13L 1310 nm single mode, laser diode

15L 1550 nm single mode, laser diode

13LH 1310 nm single mode, long haul laser diode

15LH 1550 nm single mode, long haul laser diode

85L 850 nm, multimode VCSEL

SF1 Transmit 1310 nm, receive 1550 nm

SF2 Transmit 1550 nm, receive 1310 nm

SF3 1310nm single wavelength laser

Note: For single-fiber applications, a device with the SF-1 connector should always be used opposite the device with the SF-2 connector, and vice versa. The SF-3 connector can be used on both sides of the link.

^ Second main link

D Optional second main link

Supplied Accessories

AC power cord For AC unit

DC adapter plug For DC unit

RM-34 Hardware kit for mounting a single Optimux-1553 unit into a 19" rack.

Optional Accessories

CBL-DB9F-DB9M-STR Control port cable

Power Supply

OP-1553-PS/AC 100 to 240 VAC

OP-1553-PS/48 -48 VDC

Optimux-34

Optimux-25

OP-34/?/+*!%/\$/#/& 16 E1, Ethernet or Data over E3 or Fiber Multiplexer

OP-25/+*!%/\$/#/& 16 T1, Ethernet or Data over Fiber Multiplexer

? E1 connectors (OP-34)

B Balanced (RJ-45)

U Unbalanced (BNC)

UBR Unbalanced (IEC-169/13, 2U high)

+ Alarm port (Default=no alarm port)

A Alarm port

* Power supply (Default=one wide range power supply module)

R Redundant wide range power supply

DC Single +24/-48 VDC

DCR Redundant +24/-48 VDC power supply

% V.35 user port (Default=no V.35 user port)

V35 DB-25 connector with ISO-2110 pinout

V35T DB-25 connector with Telebras pinout

\$ Activation key (Default=no activation key)

PACK1 Software key for activating the 10/100BaseT User Ethernet port

Uplink interface

Note: For single-fiber applications, a device with the SFP10A interface should always be used opposite a device with the SFP10B interface, and vice versa. The SFP13 interface operates opposite another SFP13.

SFP-1 Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)

SFP-2 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)

SFP-3 Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)

SFP-4 Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)

SFP-10A Fast Ethernet/STM-1, DDM, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)

SFP-10B Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)

SFP-12 E3 interface, SMB connector (OP-34 only)

& Redundant main link (Default=one main link)

D Redundant main link

OP-34-PACK1 Software key for activating the 10/100BaseT User Ethernet port

OP-25-PACK1 Software key for activating the 10/100BaseT User Ethernet port (expires after 30 days)

OP-34-PACK1-DEMO Evaluation software key for activating the 10/100BaseT User Ethernet port (expires after 30 days)

OP-25-PACK1-DEMO Evaluation software key for activating the 10/100BaseT User Ethernet port (expires after 30 days)

OP-34-PS Power Supply Module. Wide range 100-240 VAC/-48 VDC power supply module for adding a redundant power supply to an existing unit or replacing the original power supply module.

OP-25-PS Power Supply Module. Wide range 100-240 VAC/-48 VDC power supply module for adding a redundant power supply to an existing unit or replacing the original power supply module.

Supplied Accessories

AC/DC Power Cord

Optional Accessories

CBL-RJ45/BNC/E1/X RJ-45 to BNC adapter cross-cable (if unbalanced E1 interface is ordered). One cable is supplied per E1 link. (OP-34)

OP-34-PS-BP Blank panel for power supply module

OP-25-PS-BP Blank panel for power supply module

CBL-8H/M/1METER V.35, DB-25 to M-34 cable

CBL-DB9F-DB9M-STR Control port cable

CBL-SMB-BNC/M SMB to BNC adapter cable (supplied with SFP-12)

RM-34 Hardware kit for mounting one 1U Optimux-34 unit in a 19" rack

RM-36 Hardware kit for mounting one 2U Optimux-34 unit in a 19" rack



Optimum-45

Optimum-45L

OP-45/& ^/~ @/? #/+/\$/f	21 E1 or 28 T1 over T3 or Fiber Optic Multiplexer
OP-45L/& ^/~ @/? #/+/\$	Low-cost 21 E1 or 28 T1 over T3 or Fiber Optic Multiplexer
OP-45-M/#/+	Uplink interface module
& Channel interface	
B	Balanced E1/T1 interface
U	Unbalanced E1 interface
^ User interfaces	
4X	4T1/3E1 balanced
8X	8T1/6E1 balanced
12X	12T1/9E1 balanced
21X	8T1/6E1 balanced
28X	28T1/21E1 balanced
~ Power supply	
AC	100 to 240 VAC
48	-48 VDC
24	24 VDC
AD	100 to 240 VAC with redundant -48 VDC (OP-45 only)
@ Redundant power supply (Default=one power supply)	
R	Second (redundant) power supply (identical to the first power supply)
? Station Clock (Default=no station clock)	
STC	Optional station clock
# Uplink connector	
CX	Electrical interface with coaxial BNC connectors
FC	FC fiber
SC	SC fiber
ST	ST fiber

Notes: For single fiber, single wavelength connection (SF3 interface module), only SC connectors are available. For 1310 nm multimode LED option, only SC and ST connectors are available.

+	Optical wavelength and transmitter
85L	850 nm, multimode VCSEL laser diode
13	1310 nm, multimode LED
13L	1310 nm, single mode, laser diode
15L	1550 nm, single mode, laser diode
13LH	1310nm, single mode, long haul laser diode
15LH	1550 nm, single mode, long haul laser diode
SF1	Single fiber for transmit 1310 nm, receive 1550 nm
SF2	Single fiber for transmit 1550 nm, receive 1310 nm
SF3	Single fiber for 1310 nm single wavelength laser.

Note: For single-fiber applications, a device with the SF-1 interface should always be used opposite the device with the SF-2 interface, and vice versa. The SF-3 interface can be used on both sides of the link.

\$	Redundant uplink
D	Redundant uplink (Default=main link only)
f	Wireless signal support
WR	Wireless signal support

Supplied Accessories

RM-34	Hardware for mounting a single Optimum-45L in a 19" rack (one included with each unit)
-------	--

AC power cord

DC connection kit

CBL-OP-45	Monitoring cable
DB9F-DB9M	Terminal cross adapter

Optional Accessories

CBL-DB9F-DB9M-STR	Terminal straight cable
CBL-MINIBNC-BNC	Mini-BNC to BNC adapter cable

Optional Accessories – Optimum-45 only

OP-A/ADAPTOR/%	Patch panel interface adaptors to convert Telco into channel connectors
----------------	---

% Patch panel interface	
21BNC/45L	Patch panel with 21 BNC unbalanced E1 interfaces, includes one CBL-TELCO-TELCO/UB cable
28RJ	Patch panel with 28 RJ-45 balanced E1/T1 interfaces, includes two CBL-TELCO-TELCO/2M cables.

CBL-TELCO-OPEN/2M

Adaptor cable telco 64 pin, open ended, 2m long.

Note: Two Telco-Open cable sets need to be ordered to support all of the tributary channels.

CBL-TELCO-TELCO/2M

Extension cable for balanced interface, telco 64 pin to telco 64 pin, 2m long

CBL-TELCO-TELCO/UB

Extension cable for unbalanced interface, telco 64 pin to telco 64 pin, 2m long

RM-34/ETSI

Hardware for mounting a single Optimum-45L in a 19" (ETSI) rack

WM-34

Hardware for mounting a single Optimum-45L on the wall

Patch-21UB, Patch-28UB, Patch-28B

Patch Panel Adapters

OP-A/ADAPTOR/21BNC/1551

For Optimum-1551 (21 unbalanced BNC connectors)

OP-A/ADAPTOR/21BNC/T3L

For Optimum-45 (21 unbalanced BNC connectors)

OP-A/ADAPTOR/28RJ

For Optimum-45 and Optimum-1551 (28 balanced RJ-45 connectors)

GMUX-PPANEL-28-PW/RJ45

Patch panel adapter for E1-PW/28, T1-PW/28, with 28 RJ-45 balanced connectors

ACE-PPANEL/BNC/21

For ACE-3400 (21 unbalanced BNC connectors)

ACE-PPANEL/RJ45/28

For ACE-3400 (28 RJ-45 balanced connectors)

Supplied Accessories

CBL-TELCO-TELCO/2M	Telco-to-Telco cable for Optimum-1551 (balanced or unbalanced) or Optimum-45 (balanced)
CBL-TELCO-TELCO/UB	Telco-to-Telco cable for Optimum-45 (unbalanced)
CBL-2DB62/2TELCO	DB62-to-Telco cable for E1-CE/28 and T1-CE/28 (balanced and unbalanced) for Gmux-2000
CBL-TELCO-TELCO-A/2M	Telco-to-Telco cable for ACE-3400 (balanced or unbalanced)

PFH-4

Power Feeding Hub

PFH-4/DC/180V/2P

180 VDC, 2-pair interface

PFH-4/DC/120V/4P

120 VDC, 4-pair interface

PFH-4/DC/180V/4P

180 VDC, 4 -pair interface

Supplied Accessories

3-pin female adapter plug	For DC power input
Dual-pin female plugs	For line input
Dual-pin male plugs	For line output

Optional Accessories

RM-35/@	Hardware kit for mounting one or two units in a 19" rack
@ Mounting kit	
P1	For mounting one unit
P2	For mounting two units

PRBm-20

E1/T1 Monitoring Probe

PRBm-20/*/~|

*	Number of monitored channels	
4		4 channels
8		8 channels
~	Power supply	
AC		100 to 240 VAC
48		-48 VDC

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit

Optional Accessories

CBL-TELCO50-OPEN/2M	2m (6.6 ft) cable with 50-pin Telco connector at one end and open on other end
RM-35/@	Hardware kit for mounting one or two units in a 19" rack
@ Mounting kit	
P1	For mounting one unit
P2	For mounting two units



RADview-SC/TDMoIP

Network Management System for Pseudowire Applications
 Service center for TDMoIP applications
 # Operating system
 PC PC-based system
 GEN All systems (PC and Unix)
 @ Installation
 DEMO 60-day, fully functional evaluation version
 UPG Upgrade of an existing installation

RADview-SC/Vmux Network Management System for Voice Trunking Applications

RADVIEW-EMS/&/?
 & Operating system
 PC PC-based system
 UNIX Unix-based system
 ? Installation type
 UPG Upgrade
 Demo Time-limited demo version

RADview-EMS Carrier Class Element Management System

RADVIEW-EMS/&/?
 & Operating system
 PC PC-based system
 UNIX Unix-based system
 ? Platform
 PACK1 RADview-EMS standalone
 PACKSNMPC RADview-EMS over SNMPc
 PACKHP RADview-EMS over HPOV
 RVP RADview Points voucher, to use at RAD Value Point website for activating licenses, managing licenses, or ordering more licenses.

RADview-SC/IPV IP Telephony Management System

RIC-155 10/100BaseT to STM-1/OC-3c Network Termination Unit

Interface converter
 RIC-155/#/&
 # SDH/SONET connector
 BNC Electrical, coax connector
 ST Fiber optic ST connector
 SC Fiber optic SC connector
 FC Fiber optic FC connector
 SC/APC Fiber optic SC/APC connector (SF3 option only)
 & Optical wavelength, fiber and transmitter
 13L 1310 nm, single mode, laser diode
 13LH 1310 nm, single mode, long haul laser
 15LH 1550 nm, single mode, long haul laser (SC connector only)
 SF1 WDM laser, transmit 1310 nm, receive 1550 nm, SC connector only
 SF2 WDM laser, transmit 1550 nm, receive 1310 nm SC connector only
 SF3 Laser diode, 1310 nm transmit and receive, SC/APC connector only

Note: For WDM connection, one of the devices must be ordered with an SF1 interface and the other with an SF2 interface.

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit

Optional Accessories

RM-35/@ Hardware kit for mounting one or two RIC-155 units in a 19" rack
 @ Rack mounting kit
 P1 For mounting one unit
 P2 For mounting two units
 WM-35-TYPE1 Hardware kit for mounting one RIC-155 unit on a wall
 CBL-DB9-DB9/NULL Control port cable

RIC-155GE Gigabit Ethernet to STM-1/OC-3c Network Termination Unit

RIC-155GE/*%/\$/&/+/[^]
 * Power supplies
 AC 100 to 230 VAC
 48 -48 VDC
 ACR Dual 100 to 230 VAC NEBS compliance
 48R Dual -48 VDC NEBS compliance
 % STM-1/OC-3c connector

SC Fiber optic SC connector
 ST Fiber optic ST connector
 \$ STM-1/OC-3c optical wavelength
 13 1310 nm multimode, 2.3 km (1.4 miles), SC connector.
 13L 1310 nm single mode S1.1, 15 km (9.4 miles), SC connector.
 13LH 1310 nm single mode L1.1, 40 km (25 miles), SC connector.
 & Gigabit Ethernet port
 85 850 nm multimode, 270 m (1000 ft), LC connector.
 13L 1310 nm single mode, 5 km (3.1 miles), LC connector
 15LH 1550 nm single mode, 40 km (25 miles), LC connector
 UTP 1000BaseT, 100m (330 ft), RJ-45 connector
 + NEBS-3 compliance (Default=8.5 inch)
 N3 NEBS-3 compliant (19")
 ^ Alarm Relay port option (1/2 19" unit only)
 ALM For alarm relay port

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 RM-34 Hardware kit for mounting one 19-inch unit (NEBS-compliant unit only)
 CBL-DB9F-DB9M-STR DB9-to-DB9 control port cable (NEBS-compliant unit)

Optional Accessories

RM-35/@ Hardware kit for mounting one or two 8.5-inch units in a 19" rack
 @ Rack mounting kit
 P1 For mounting one unit
 P2 For mounting two units
 WM-34 Hardware kit for mounting one NEBS-compliant unit on wall
 WM-35-1 Hardware kit for mounting one 8.5-inch unit on wall
 CBL-DB9F-DB9M-STR DB9-to-DB9 control port cable

RIC-622GE

RIC-622GE!![^]/+/^S Gigabit Ethernet to STM-4/OC-12c converter
 ! Power supply
 AC 100 to 240 VAC
 48 -48 VDC
 ACR Dual 100 to 240 VAC
 48R Dual -48 VDC
 ^ SFP optical interface type for STM-4 port
 SFP-14D STM-4, DDM, internal calibration, 1310 nm, multimode, laser, 0.5 km (0.3 mi)
 SFP-15 STM-4, 1310 nm, single mode, laser, 15 km (9.3 mi)
 SFP-16 STM-4, 1550 nm, single mode, laser, 80 km (49.7 mi)
 NULL Two empty SFP slots
 + Gigabit Ethernet interface
 13L 1000BaseLX, 1310 nm single mode, 5 km (3.1 miles), LC connector
 85 1000BaseSX, 850 nm multimode, 270m (1000 ft), LC connector
 UTP Built-in 1000BaseT, RJ-45 connector
 S NEBS-3 compliancy (default=not NEBS-3 compliant)
 N3 NEBS-3 compliant

Supplied Accessories

AC power cord For AC unit
 DC power connection kit If DC power supply is ordered
 RM-34 Hardware kit for mounting one regular RICi-155GE unit in a 19-inch rack (if the non-NEBS option is ordered)

Optional Accessories

CBL-DB9F-DB9M-STR Control port cable

RIC-E1, RIC-T1 E1, T1 Interface Converters
 RIC-E1/*/# E1
 RIC-T1/*/# T1
 RIC-E1/R/# E1, card for ASM-MN-214 card cage
 RIC-T1/R/# T1, card for ASM-MN-214 card cage
 * Power supply



AC	100 to 240 VAC
24	24 VDC
48	-48 VDC
# DTE interface	
V35	V.35 interface
X21	X.21 interface
V36	V.36 interface
530	RS-530 interface
UTP	IR-ETH module with RJ-45 connector
UTP/QN	IR-ETH/V module
UTP/IP	IR-IP module

RIC-E3/ETH, RIC-T3/ETH

	10/100BaseT to E3/T3 Interface Converter
RIC-E3/ETH/*	E3
RIC-T3/ETH/*	T3
* Power supply	
AC	100 to 240 VAC
DC	-40 to -60 VDC

Optional Accessories

RM-9	Hardware kit for mounting one or two RIC-E3/ETH, RIC-T3/ETH units in a 19" rack
------	---

RICi-155GE

RICi-155GE*/%/&/S	Gigabit Ethernet over 2 x STM-1/OC-3c Network Termination Unit
-------------------	--

* Power supply	
AC	100 to 240 VAC
48	-48 VDC
ACR	Dual 100 to 240 VAC
48R	Dual -48 VDC
% Gigabit Ethernet port interface	
SFP5	Single SFP-5 transceiver, Gigabit Ethernet, 850 nm, multimode, VCSEL
SFP6	Single SFP-6 transceiver, Gigabit Ethernet, 1310 nm, single mode, laser
SFP6D	Single SFP-6D transceiver, Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode, laser
2XSFP5	Dual SFP-5 transceivers
2XSFP6D	Dual SFP-6D transceivers
2XUTP	Dual built-in 10/100/1000BT RJ-45 connector
NULL	Two empty SFP slots

Note: if single SFP is ordered, second slot is empty

& SDH/SONET port interface	
SFP1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP2D	Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)
2XSFP1	Dual SFP-1 transceivers
2XSFP2	Dual SFP-2 transceivers
2XSFP2D	Dual SFP-2D transceivers
NULL	Two empty SFP slots

Note:

If single SFP is ordered, second slot is empty.

S	NEBS-3 compliancy (Default=19 inch)
N3	NEBS-3 compliant (23")

Supplied Accessories

AC power cord	For AC unit
DC power connection kit	If DC power supply is ordered
CBL-DB9F-DB9M-STR	Control port cable

Optional Accessories

RICi-155GE-PS/AC	100-240 VAC power supply module
RICi-155GE-PS/48	-48 VDC power supply module
RM-34	Hardware kit for mounting one regular RICi-155GE unit in a 19-inch rack (if the non-NEBS option is ordered)
RM-34-23	Hardware kit for mounting one NEBS-compliant RICi-155GE unit in a 23-inch rack (if the NEBS option is ordered)
WM-34	Hardware kit for mounting one regular RICi-155GE unit on a wall (if the non-NEBS option is ordered)

RICi-16

RICi-16/B/@/*/#/!/\$/?	Ethernet over bonded PDH Network Termination Unit
------------------------	---

B	E1/T1 ports (Default=16 ports)
---	--------------------------------

16E1	16 E1 ports
16T1	16 T1 ports
8E1	8 E1 ports
8T1	8 T1 ports
4E1	4 E1 ports
4T1	4 T1 ports
2T3	2 T3 ports
@ T3 ports (Default=no T3 ports):	
2T3	2T3 ports
* License pack for PDH link activation	
Pack 1	8 E1/T1 links
Pack 2	12 E1/T1 links
Pack 3	16 E1/T1 links
# Operation mode (Default=bridge)	
EVPL	Enable Ethernet Virtual Private Line services using Ethernet flows
! Ethernet SFP port (Default=4 x Ethernet UTP ports)	
NULL	SFP-ready slot
SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)
SFP-9F	Fast Ethernet, RJ-45 connector, 100m (238 ft)
SFP-10A	Fast Ethernet/STM-1, Tx 1310 nm, Rx 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
SFP-10B	Fast Ethernet/STM-1, Tx 1550 nm, Rx 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
Power supplies (Default=one power supply)	
R	Two power supplies
\$ E1 interface (Default=balanced)	
U	Unbalanced E1 interface via RJ-45 to BNC adapter cable
? Temperature range (Default=normal temperature range, NEBS non-compliant)	
H	Temperature-hardened, compliant with NEBS level 3, s 2, 3, and 4/

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit
CBL-RJ45/2BNC/E1	RJ-45 to BNC adapter cable (if an unbalanced E1 interface is ordered)

Optional Accessories

CBL-DB9F-DB9M-STR	Control port cable
RM-34	Hardware kit for mounting one units in a 19" rack
WM-34	Hardware kit for mounting one RICi-16 unit on a wall
RICi-16-PS	Spare wide-range power supply module (100-240 VAC/-48 VDC)

RICi-4E1, RICi-4T1, RICi-8E1, RICi-8T1

	Fast Ethernet over Multiple E1/T1 Lines Network Termination Units
RICi-8E1!/\$/+/?	Over eight E1s network termination unit
RICi-8T1!/\$/+/?	Over eight T1s network termination unit
RICi-4E1!/\$/+/?	Over four E1s network termination unit
RICi-4T1!/\$/+/?	Over four T1s network termination unit
! Power supply (Default=AC/DC power supply):	
24	24 VDC (temperature-hardened version only)
\$ E1 interface	
U	Unbalanced E1 interface
+ SFP for Ethernet port 3 and 4 (Default=UTP port):	
SFP-1	Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)
SFP-2	Fast Ethernet/ STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-2H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP-3	Fast Ethernet/ STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-3H	Fast Ethernet/ STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)
SFP-4	Fast Ethernet/ STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)



SFP-10A	Fast Ethernet/ STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
SFP-10B	Fast Ethernet/ STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)
NULL	Empty SFP slot

Note: The /H version of the unit requires temperature-hardened SFP transceivers.

? Temperature range (Default= standard temperature range):

H Temperature-hardened version

Note: The /H version of the unit requires temperature-hardened SFP transceivers.

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit
CBL-RJ45/2BNC/E1	RJ-45 to BNC adapter cable (if an unbalanced E1 interface is ordered)

Optional Accessories

RM-35/@ Hardware kit for mounting one or two units in a 19" rack

@ Rack mounting kit

P1 Mounting one unit

P2 Mounting two units

WM-35 Hardware kit for mounting one RICI-4 or RICI-8 unit on a wall

CBL-DB9F-DB9M-STR Control port cable

RICI-622GE

RIC-622GE/*%/&/S Gigabit Ethernet over STM-4/OC-12 NTU

* Power supply

AC	100 to 240 VAC
48	-48 VDC
ACR	Dual 100 to 240 VAC
48R	Dual -48 VDC

% Gigabit Ethernet port interface

SFP5	Single SFP-5 transceiver: Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)
SFP6	Single SFP-6 transceiver: Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
SFP6D	Single SFP-6D transceiver: Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode, laser, 10.0 km (6.2 mi)
2XSFP5	Dual SFP-5 transceivers
2XSFP6	Dual SFP-6 transceivers
2XSFP6D	Dual SFP-6D transceivers
2XUTP	Dual UTP ports
NULL	Two empty SFP slots

& SDH/SONET port interface

SFP15	Single SFP-15: STM-4, 1310 nm, single mode, laser, 15 km (9.3 mi)
SFP16	Single SFP- 16: STM-4, 1550 nm, single mode, laser, 80 km (49.7 mi)

2XSFP15	Dual SFP-15 transceivers
2XSFP16	Dual SFP-16 transceivers
NULL	Two empty SFP slots

S NEBS-3 compliancy (default=not NEBS-3 compliant)

N3 NEBS-3 compliant

Supplied Accessories

AC power cord	For AC unit
DC power connection kit	If DC power supply is ordered
CBL-DB9F-DB9M-STR	Control port cable

Optional Accessories

RICi-622GE-PS/AC	100-240 VAC power supply module
RICi-622GE-PS/48	-48 VDC power supply module
RM-34	Hardware kit for mounting one regular RICI-155GE unit in a 19-inch rack (if the non-NEBS option is ordered)
RM-34-23	Hardware kit for mounting one NEBS-compliant RICI-622GE unit in a 23-inch rack (if the NEBS option is ordered)
WM-34	Hardware kit for mounting one regular RICI-622GE unit on a wall (if the non-NEBS option is ordered)

RICi-E1, RICI-T1 Fast Ethernet over E1/T1 Intelligent Converter
 RICI-E1!/\$ E1
 RICI-T1! T1

! Power supply/Enclosure

24 24 VDC with temperature-hardened enclosure

? Temperature range

H Wide-range power supply (100 to 240 VAC or 48/60 VDC) with temperature-hardened plastic enclosure

Note: If this option is not selected, the unit is supplied with a wide-range power supply (100 to 240 VAC or 48/60 VDC).

& E1 Interface

U Unbalanced interface

Note: E1 unbalanced option is supported via an adapter cable (CBL-RJ45/2BNC/E1, see Supplied Accessories).

Supplied Accessories

AC power cord	For AC unit
DC adapter kit	For DC unit
CBL-RJ45/2BNC/E1	Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced coaxial connectors - supplied when ordering E1 unbalanced option (E1U)

Optional Accessories

CBL-DB9F -DB9M-STR

Control Port Cable

RM-33-2 Hardware kit for mounting one unit in a 19" rack

RM-35/@ Hardware kit for mounting one or two units in a 19" rack, for units with

@ Rack mounting kit

P1 Mounting one unit

P2 Mounting two units

WM-35 Hardware for mounting one unit on a wall

RICi-E3, RICI-T3 Fast Ethernet over E3/T3 Intelligent Converter

RICI-E3/\$ E3

RICI-T3/\$ T3

\$ H Temperature-hardened

Supplied Accessories

RM-33-2 Hardware kit for mounting one or two units in a 19" rack

Optional Accessories

CBL-DB9F-DB9M-STR

Control port cable

RICi-SE Fast Ethernet over Serial Line Intelligent Converter

RICI-SE/C

C Interface

X.21 X.21 serial interface (F)

V.35 V.35 serial interface (F)

Supplied Accessories

AC power cord	
DC adapter plug	
CBL-HS1/X21/CROSS	Cross cable for X.21 connection (if X.21 interface was ordered)
CBL-HS1/V.35/CROSS	Cross cable for V.35 connection (if V.35 interface was ordered)

Optional Accessories

CBL-DB9F-DB9M-STR

Control port cable

RM-33-2 Hardware kit for mounting one or two units in a 19" rack

RPT-I, RPT-O Miniature T1/E1 Repeater

RPT-I/* Indoor

RPT-O/* Outdoor

* Data rate

1 T1 data rate (1.544 Mbps)

2 E1 data rate (2.048 Mbps)

P/S-AC/9/500 90 to 264 VAC external power supply

RSD-1 Digital Sharing Device

RSD-1/*/& Standalone with internal power supply

* Power supply (Default = 115/230 VAC selectable)

48 -48 VDC operation

& Buffer on each subchannel (Default = no buffers)

B Buffers



Supplied Accessories

AC power cord, DC adapter plug (with DC power supply only)

RSD-10

8-Channel Digital Sharing Device

RSD-10/*

* Power supply (Default=115/230 VAC switchable)
48 -48 VDC

S-RPT

SHDSL Repeater

S-RPT/*/\$

2-wire, metal enclosure

S-RPT-4W/\$

4-wire, metal enclosure

* Enclosure (Default=plastic)

IP67

Metal Enclosure

\$ SHDSL.bis support (Default=no)

BIS

Interoperability with ASMi-54

Supplied Accessories

48 VDC power supply (European orders only)

CBL-RJ45-DB9/S-RPT

Control cable

SFP Transceivers

Small Form-Factor Pluggable Transceivers

Fiber Optic Fast Ethernet/STM-1/STM-4 SFPs

SFP-1

Fast Ethernet/STM-1, 1310 nm, multimode, LED, 2 km (1.2 mi)

SFP-1D

Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, multimode, LED, 2 km (1.2 mi)

SFP-2

Fast Ethernet/STM-1, 1310 nm, single mode, laser, 15 km (9.3 mi)

SFP-2H

Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 15 km (9.3 mi)

SFP-2D

Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 15 km (9.3 mi)

SFP-3

Fast Ethernet/STM-1, 1310 nm, single mode, laser, 40 km (24.8 mi)

SFP-3D

Fast Ethernet/STM-1, DDM, internal calibration, 1310 nm, single mode, laser, 40 km (24.8 mi)

SFP-3H

Fast Ethernet/STM-1, industrially hardened, 1310 nm, single mode, laser, 40 km (24.8 mi)

SFP-4

Fast Ethernet/STM-1, 1550 nm, single mode, laser, 80 km (49.7 mi)

SFP-4D

Fast Ethernet/STM-1, DDM, internal calibration, 1550 nm, single mode, laser, 80 km (49.7 mi)

SFP-10A

Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)

SFP-10AD

Fast Ethernet/STM-1, DDM, Tx - 1310 nm, Rx - 1550 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)

SFP-10B

Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)

SFP-10BD

Fast Ethernet/STM-1, DDM, Tx - 1550 nm, Rx - 1310 nm, single mode (single fiber), laser (WDM), 20 km (12.4 mi)

SFP-14D

STM-4, DDM, internal calibration, 1310 nm, multimode, laser, 0.5 km (0.3 mi)

SFP-15

STM-4, 1310 nm, single mode, laser, 15 km (9.3 mi)

SFP-16

STM-4, 1550 nm, single mode, laser, 80 km (49.7 mi)

SFP-18A

Fast Ethernet/STM-1, Tx - 1310 nm, Rx - 1550 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)

SFP-18B

Fast Ethernet/STM-1, Tx - 1550 nm, Rx - 1310 nm, 9/25 single mode (single fiber), laser (WDM), 40 km (24.8 mi)

SFP-19A

Fast Ethernet/STM-1, Tx - 1490 nm, Rx - 1570 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)

SFP-19B

Fast Ethernet/STM-1, Tx - 1570 nm, Rx - 1490 nm, 9/25 single mode (single fiber), laser (WDM), 80 km (49.7 mi)

SFP-24

Fast Ethernet/STM-1; 850 nm, 50/125 multimode, 2 km (1.2 mi); 62.5/125 multimode, 1 km (0.6)

Fiber Optic Gigabit Ethernet SFPs

SFP-5

Gigabit Ethernet, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)

SFP-5D

Gigabit Ethernet, DDM, internal calibration, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)

SFP-5DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)

SFP-5H

Gigabit Ethernet, industrially hardened, 850 nm, multimode, VCSEL, 0.55 km (0.3 mi)

SFP-6

Gigabit Ethernet, 1310 nm, single mode, laser, 10.0 km (6.2 mi)

SFP-6D

Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode, laser, 10.0 km (6.2 mi)

SFP-6DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1310 nm, single mode, laser, 10.0 km (6.2 mi)

SFP-6H

Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 10.0 km (6.2 mi)

SFP-7

Gigabit Ethernet, 1550 nm, single mode, laser, 80.0 km (49.7 mi)

SFP-7D

Gigabit Ethernet, DDM, internal calibration, 1550 nm, single mode, laser, 80.0 km (49.7 mi)

SFP-7DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1550 nm, single mode, laser, 80.0 km (49.7 mi)

SFP-8

Gigabit Ethernet, 1310 nm, single mode, laser, 40.0 km (24.8 mi)

SFP-8D

Gigabit Ethernet, DDM, internal calibration, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)

SFP-8DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1310 nm, single mode (single fiber), laser, 40.0 km (24.8 mi)

SFP-8H

Gigabit Ethernet, industrially hardened, 1310 nm, single mode, laser, 40.0 km (24.8 mi)

SFP-17A

Gigabit Ethernet, Tx -1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)

SFP-17B

Gigabit Ethernet, Tx -1490 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 10.0 km (6.2 mi)

SFP-20

Gigabit Ethernet, 1550 nm, single mode, laser, 120.0 km (74.5 mi)

SFP-20EDH

Gigabit Ethernet, DDM, external calibration, industrially hardened, 1550 nm, single mode, laser, 120.0 km (74.5 mi)

SFP-21A

Gigabit Ethernet, Tx -1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)

SFP-21AD

Gigabit Ethernet, DDM, internal calibration, Tx - 1310 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)

SFP-21B

Gigabit Ethernet, Tx -1490 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)

SFP-22A

Gigabit Ethernet, Tx -1490 nm, Rx -1570 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)

SFP-22B

Gigabit Ethernet, Tx -1570 nm, Rx -1490 nm, single mode (single fiber), laser (WDM), 80.0 km (49.7 mi)

SFP-23A

Gigabit Ethernet, Tx -1310 nm, Rx -1550 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)

SFP-23B

Gigabit Ethernet, Tx -1550 nm, Rx -1310 nm, single mode (single fiber), laser (WDM), 40.0 km (24.8 mi)

SFP-47DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1470 nm, CWDM, 24 dB, budget

SFP-49DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1490 nm, CWDM, 24 dB, budget

SFP-51DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1510 nm, CWDM, 24 dB, budget

SFP-53DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1530 nm, CWDM, 24 dB, budget

SFP-55DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1550 nm, CWDM, 24 dB, budget

SFP-57DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1570 nm, CWDM, 24 dB, budget

SFP-59DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1590 nm, CWDM, 24 dB, budget

SFP-61DH

Gigabit Ethernet, DDM, internal calibration, industrially hardened, 1610 nm, CWDM, 24 dB, budget

Electrical Interface SFPs

SFP-9F*

Fast Ethernet, RJ-45 connector, 100m (238 ft)



SFP-9G	GbE interface, RJ-45 connector, 100m (238 ft)	DC	Single 20 to 72 VDC
SFP-9GH	GbE interface, industrially hardened, RJ-45 connector, 100m (238 ft)	ACR	Double 100 to 240 VAC
SFP-11	STM-1E, mini-BNC connector, DIN 1.0/2.3, 135m (442 ft)	DCR	Double 20 to 72 VDC
SFP-12	E3 interface, SMB connector, 135m (442 ft)	RM	Rack mounting equipment (default=none)
SFP-E1T1/FE****	Fast Ethernet, E1/T1, remote bridge, RJ-45 connector	CT	Cable tray
SFP-E1T1/GbE****	Gigabit Ethernet, E1/T1, remote bridge, RJ-45 connector		
SFP-E3T3/FE****	Fast Ethernet, E3/T3, remote bridge, SMB		
SFP-E3T3/GbE****	Gigabit Ethernet, E3/T3, remote bridge, SMB		
SFP-PWE1T1****	TDM to Ethernet pseudowire gateway		
<i>Note:</i>			
* SFP-9F includes a LED indicator, along with an underside DIP switch which controls the autonegotiation mode.			
For more information, refer to the SFP-9F installation and operation manual.			
** With SFP-11 and SFP-12, 135m range is attainable when using RG59 B/U (at 78 MHz, in accordance with the square root of frequency law).			
*** SFP-E3/CBL-BNC and SFP-T3/CBL-BNC converters are supplied with SMB-to-BNC adapter cables.			
**** Designed to work with RAD products only. An internal mechanism in these SFP units checks whether the hosting device is a RAD product.			
<i>Supplied Accessories</i>			
CBL-MINIBNC-BNC	Two adapter cables for converting mini BNC connectors to regular BNC coaxial connectors (for SFP-11)		
CBL-SMB-BNC/M	Two adapter cable for converting SMB connectors to regular BNC coaxial connectors (for SFP-12)		
CLB-1023-BNC	Two adapter cable for converting mini BNC connectors to regular BNC coaxial connectors (for SFP-E3T3/FE and SFP-E3T3/GbE)		
SPD-703-1			
SPD-703-1/*/#	G.703 Rate and Interface Converter		
SPD-703-1/R/#	Card for the ASM-MN-214 modem rack		
* Power supply			
115	115 VAC		
230	230 VAC		
24	24 VDC		
48	-48 VDC		
# DTE interface			
V24	V.24 interface		
V35	V.35 interface		
V36	V.36 interface		
530	RS-530 interface		
X21	X.21 interface		
UTP	Built-in Ethernet bridge with RJ-45 connector		
BNC	Built-in Ethernet bridge with two BNC connectors		
CI A/&	Connector interface adapter for the ASM-MN-214 modem rack		
& Connector			
V35/1	Adapting one modem rack 25-pin connector to one V.35 34-pin connector		
X21/1	Adapting one modem rack 25-pin connector to one X.21 15-pin connector		
SPD-E1			
SPD-E1/*/#	E1/T1 Rate and Interface Converter		
* Power supply			
115	115 VAC		
48	-48 VDC		
# Data channel interface (Default=V.35)			
530	RS-530/422 interface		
SPD-T1/802			
SPD-T1/802/*	T1/E1 Rate and Interface Converter		
* Power supply			
115	115V power supply		
230	230V power supply		
-48	-48V power supply		
-24	-24V power supply		
<i>Optional Accessories</i>			
RM-1	Hardware for mounting one or two units into a 19" rack		
SPH-16			
SPH-16/#/RM	SFP Patching Hub		
# Power supply			
AC	Single 100 to 240 VAC		
		DC	Single 20 to 72 VDC
		ACR	Double 100 to 240 VAC
		DCR	Double 20 to 72 VDC
		RM	Rack mounting equipment (default=none)
		CT	Cable tray
		<i>Supplied Accessories</i>	
		AC power cord	(with AC power supply only)
		DC power cord	(with DC power supply only)
		<i>Optional Accessories</i>	
		RM-43	Hardware for mounting one unit into a 19" ETSI rack
		RM-43-19	Hardware for mounting one unit into a 19" non-ETSI rack (including cable tray)
		RM-43-19-H1	Hardware for mounting one units into a 19" non-ETSI rack
		SPS-2HS	
		Miniature Packet Switching Access Unit	
		SPS-2HS/&	
		& Port 1 (network) and port 2 (user) interface	
		V35/V35	V.35 on both ports
		V35/V24	V.35 network interface and V.24 user interface
		V24/V24	V.24 on both ports
		X21/X21	X.21 on both ports
		<i>Supplied Accessories</i>	
		CBL-8H/F	Adapter cable for V.24 and V.35 interface (if V.24 or V.35 interface is ordered)
		CBL-530T/21C/F	Adapter cable for X.21 interface (if X.21 interface is ordered)
		CBL-SPS-V.24	Splitter cable for ports with V.24 interface (if V.24 interface is ordered)
		CBL-SPS-V.35	Splitter cable for ports with V.35 interface (if V.35 interface is ordered)
		CBL-SPS-X.21	Splitter cable for ports with X.21 interface (if X.21 interface is ordered)
		<i>Optional Accessories</i>	
		P/S-AC/5/1200	Standalone regulated 115-230 VAC to 5 VDC/1200 mA power supply
		SPS-3	
		Miniature Packet Switching Access Unit	
		SPS-3/&	
		& Port 1 (network) and port 2 (user) interface	
		V35/V35	V.35 on both ports
		V35/V24	V.35 network interface and V.24 user interface
		V24/V24	V.24 on both ports
		X21/X21	X.21 on both ports
		<i>Supplied Accessories</i>	
		CBL-8H/F	Adapter cable for V.24 and V.35 interface (if V.24 or V.35 interface is ordered)
		CBL-530T/21C/F	Adapter cable for X.21 interface (if X.21 interface is ordered)
		CBL-SPS-V.24	Splitter cable for ports with V.24 interface (if V.24 interface is ordered)
		CBL-SPS-V.35	Splitter cable for ports with V.35 interface (if V.35 interface is ordered)
		CBL-SPS-X.21	Splitter cable for ports with X.21 interface (if X.21 interface is ordered)
		<i>Optional Accessories</i>	
		P/S-AC/5/1200	Standalone regulated 115-230 VAC to 5 VDC/1200 mA power supply
		SPS-3S	
		Multiprotocol FRAD/PAD Packet Switch	
		SPS-3S/*/#/\$	
		* Optional DC power supply	
		24	24 VDC
		48	48 VDC
		# Link 1 interface	
		V24	V.24/RS-232 interface
		V35	V.35 interface
		V36	V.36/RS-449 interface
		X21	X.21 interface
		530	RS-530 interface
		DDS	Integral DDS interface
		IBE	ISDN BRI 'S' interface
		IBU	ISDN BRI 'U' interface
		UTP	10BaseT Ethernet interface
		BNC	10Base2 interface
		\$ Link 2 and link 3 interface	
		V24	V.24/RS-232 interface
		V35	V.35 interface



V36 V.36/RS-449 interface
 X21 X.21 interface
 530 RS-530 interface

Note: All X.21, V.35 and V.36 interfaces include an adapter cable (see Supplied Accessories).

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 CBL-RJ45/D9/F/STR Adapter cable for converting RJ-45 control to DB-9 control
 CBL-8H/F Adapter cable for V.35 (if V.35 interface is ordered)
 CBL-530/499/F Adapter cable for V.36 (if V.36 interface is ordered)
 CBL-530T/21C/F Adapter cable for X.21 (if X.21 interface is ordered)

SPS-4

Multiprotocol Packet Switch

SPS-4/@-*/&-*

@ Link 1 interface
 V24 V.24 (RS-232) interface
 V35 V.35 interface

* Clocking mode
 DCE DCE mode
 DTE DTE mode

& Link 2 interface
 V24 V.24 (RS-232) interface
 V35 V.35 interface

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 CBL-8H/F Adapter cable for V.35 interface (if V.35 interface is ordered)
 CBL-RJ45/D9/F/STR Adapter cable for converting RJ-45 control to DB-9 control

Optional Accessories

CBL-DB9F-DB9M-STR DB-9 to DB-9 control port cable
 RM-33-2 Hardware kit for mounting one or two SPS-4 units into a 19" rack

SPS-6, SPS-12

Multiprotocol FRAD/PAD Packet Switches

SPS-6/*/\$ 6-port

SPS-12/*/\$ 12-port

* Optional DC power supply
 24 24 VDC
 48 48 VDC

\$ Special interface
 UTP 10BaseT Ethernet interface
 BNC 10Base2 interface
 IBE ISDN BRI 'S' interface
 IBU ISDN BRI 'U' interface
 DDS Integral DDS interface

Note: by default, special interfaces are not included.

SPS-M/# SPS interface module

Interface
 V24 V.24/RS-232 interface
 V35 V.35 interface
 V36 V.36/RS-449 interface
 X21 X.21 interface
 530 RS-530 interface

Note: All X.21, V.35 and V.36 interfaces include an adapter cable (see Supplied Accessories).

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 CBL-RJ45/D9/F/STR Adapter cable for converting RJ-45 control to DB-9 control
 CBL-8H/F Adapter cable for V.35 (if V.35 interface is ordered)
 CBL-530/499/F Adapter cable for V.36 (if V.36 interface is ordered)
 CBL-530T/21C/F Adapter cable for X.21 (if X.21 interface is ordered)

SRM-31A

Asynchronous 2-Wire Short Range Modem

SRM31-A/+

+ Power supply (Default= no power supply)
 115 115V VAC

230 230V VAC

SRM-31S

Synchronous 2-Wire Short Range Modem

SRM-31S/*

* DTE interface
 V24 V.24/RS-232 interface
 V35 V.35 interface

Supplied Accessories

P/S-AC/5/1200 DC adapter for 100 to 240 VAC

SRM-3A

Ultra Miniature Async Isolated Short Range Modem

SRM-3A/*/+

* Connector
 F Female 9-pin connector
 M Male 9-pin connector
 + Line interface (Default=Terminal Block)
 RJ-11 RJ-11 jack interface
 RJ-45 RJ-45 jack interface

SRM-3D

Ultra Miniature Async Short Range Modem

SRM-3D/*/+

* Connector
 F Female 9-pin connector
 + Line interface (Default=Terminal Block)
 RJ-11 RJ-11 jack
 RJ-45 RJ-45 jack

SRM-5A, SRM-5D

Miniature Async Short Range Modems

SRM-5A/*/+/NEW Transformer isolated

SRM-5D/*/+/NEW

* Connector
 F Female 25-pin connector
 M Male 25-pin connector
 + Line interface (Default=RJ-45 and terminal block connectors)
 RJ-11 RJ-11
 RJ-45 RJ-45

SRM-5S, SRM-6S

Synchronous Short Range Modems

SRM-5S/*/+ Miniature

SRM-6S/*/# Synchronous short range modem

* Connector
 F Female 25-pin connector
 M Male 25-pin connector
 # Line interface for SRM-6S

RJ-11 Default=terminal block
 RJ-11 jack
 RJ-45 RJ-45 jack
 + Line interface for SRM-5S (Default=terminal block and RJ-45)
 RJ-11 RJ-11 jack and terminal block

SRM-5TX

Asynchronous 2-Wire Short Range Modems

SRM-5TX/*/+ Sub-miniature

* DTE interface
 F Female connector
 M Male connector

+ Line interface for SRM-5TX (Default=terminal block and RJ-45 connector)

SRM-6AC

Asynchronous Multipoint Short Range Modem

SRM-6AC/*/+

* DTE connector
 F 25-pin female connector
 M 25-pin male connector
 + Line interface (Default=a terminal block)
 RJ11 RJ-11 socket
 RJ45S RJ-45 socket
 RJ45 RJ-45 plug on 2m (6 ft) cable

SRM-9

Miniature Sync/Async Short Range Modem

SRM-9/*/+

SRM-9/V.24/UP/+ Unpowered modem, V.24/RS-232 interface, female connector.

* DTE interface
 V24 V.24 interface, female connector
 V35 V.35 interface, female connector
 X21 X.21 interface, female connector
 530 RS-530 interface, female connector
 + Line interface (Default=terminal block)
 RJ45 RJ-45 jack



Supplied Accessories
P/S-AC/9/500 9V DC/ 90V to 264V AC power supply

TinyBridge-100 Miniature Remote Fast Ethernet bridge
TINYBRIDGE-100/#/\$
TINYBRIDGE-100/4W/\$
Miniature remote Fast Ethernet bridge with 4-wire WAN interface

WAN interface
V24 V.24/RS-232
V35F V.35 (female adapter cable supplied)
V35M V.35 (male adapter cable supplied)
V36 V.36 (adapter cable supplied)
530 RS-530
X21F X.21 (female adapter cable supplied)
X21M X.21 (male adapter cable supplied)

\$ Switching power supply
AC 100-240 VAC switching power supply with integral AC connector (may be ordered separately as P/S-AC/5/1200)

U-RPT IDSL Repeater
U-RPT/*/#
* External power supply (Default=remote power feeding)
P External power supply
Temperature range (Default=standard temperature range)
OET Extended temperature version

Vmux-110 Voice Trunking Gateway for Remote Sites
Vmux-110/*/+/%/&
* Power supply
AC Single 100 to 240 VAC
48 Single -36 to -72 VDC
24 Temperature-hardened, 20 to 32 VDC

+ Voice port
E1/30 Full E1 digital voice port
T1/24 Full T1 digital voice port
4FXS 4 analog FXS ports
8FXS 8 analog FXS ports
4FXO 4 analog FXO ports
8FXO 8 analog FXO ports
4E&M 4 analog E&M ports
8E&M 8 analog E&M ports

% Ethernet port
ETH-UTP Ethernet 10/100BaseT port

& Positive E&M signaling (default=without)
POS With positive E&M signaling

Supplied Accessories
AC power cord For AC unit
DC adapter kit For DC unit

Optional Accessories
CBL-VM110/? Serial link adapter cable
? Interface and clock mode
V35/DCE V.35, DCE mode
V35/DTE V.35, DTE mode
X21/DCE X.21, DCE mode
X21/DTE X.21, DTE mode
530/DTE RS-530, DTE mode

Note: An adapter cable is not required for connecting to RS-530 equipment when Vmux-110 operates in DCE clock mode.

CBL-KVF8/FXOS Adapter cable for converting the FXO/FXS interface D-25 connector to 8 x RJ-12 connectors
CBL-KVF8/E&M Adapter cable for converting the E&M interface 68-pin SCSI connector to 8 x RJ-45 connectors
CBL-RJ45/2BNC/E1 Interface adapter cable for converting the balanced E1 port RJ-45 connector into a pair of BNC connectors for unbalanced coax interface
RM-35 Hardware for mounting one or two Vmux-110 units in a 19" rack

Vmux-210 Analog Voice Trunking Gateway
Vmux-210/*/&/\$/%/#
* Power supply
AC Single 100 to 240 VAC
DC Single -36 to -72 VDC

& Uplink
E1 E1 uplink
T1 T1 uplink

\$ Number of FXS channels supported by analog voice port
12FXS Up to 12

15FXS Up to 15
24FXS Up to 24
30FXS Up to 30
% Adapter cable for the serial link
V35DCE V.35, DCE
V35DTE V.35, DTE
X21DCE X.21, DCE
X21DTE X.21, DTE
530DTE RS-530, DTE
NULL RS-530, DCE

Note: An adapter cable is not required for connecting to RS-530 equipment when Vmux-210 operates in DCE clock mode.

Telco adapter cable for voice channels
Telco50open 50-pin Telco connector to open-ended
Telco64open 64-pin Telco connector to open-ended
Telco50-24RJ12 50-pin Telco connector to 24 RJ-12 connectors
Telco64-30RJ12 64-pin Telco connector to 30 RJ-12 connectors
NULL No adaptor cable supplied

Supplied Accessories
AC power cord For AC unit
DC adapter kit For DC unit

Optional Accessories
CBL-RJ45/2BNC/E1 Interface adapter cable for converting the balanced E1 port R-45 connector into a pair of BNC connectors for unbalanced coax interface

Telco adapter cables for voice channels:
CBL-Telco50open 50-pin Telco connector to open-ended
CBL-Telco64open 64-pin Telco connector to open-ended
CBL-Telco50-24RJ12 50-pin Telco connector to 24 RJ-12 connectors
CBL-Telco64-30RJ12 64-pin Telco connector to 30 RJ-12 connectors
RM-34 Hardware kit for mounting one Vmux-210 unit into a 19" rack
RM-34-23 Hardware kit for mounting one Vmux-210 unit in a 23-inch rack
RM-34-ETSI Hardware kit for mounting one Vmux-210 unit in an ETSI rack

Vmux-2100 Voice Trunking Gateway
Vmux-2100/*/\$

Note: System includes rack, power supplies and power supply cables only. A Control Module and at least one Voice Compression Module must be ordered for every Vmux-2100 system. All modules can be ordered separately.

* Power supply
AC 100 to 240 VAC
48 -36 to -72 VDC
24 20 to 36 VDC

\$ Redundant power supply
R Redundant power supply (of same)

Modules
VMUX-M/M-ETH-# Control Module with single Ethernet port by default, and optional redundant E1, T1, or serial links

Redundant TDM link (Default=Ethernet port only)
E1 E1 link
T1 T1 link
SERIAL_LINK Serial link
VMUX-M/VCA-&/% Enhanced Voice Compression Module
VMUX-M/ML/&/% Channelized E1/T1 Main Link Module

& TDM interface
E1 E1 ports
T1 T1 ports

% Number of E1/T1 ports
2 2 ports
4 4 ports

VMUX-2100-PS/* Power Supply Module

Supplied Accessories
AC power cord For AC unit
DC adapter kit For DC unit
CBL-DB9F-DB9M-STR Control port cable
RM-VMUX-2100/19 Hardware kit for mounting one Vmux-2100 unit into a 19" rack

Optional Accessories
CBL-VM2100/? Serial link adapter Y-cable to split the 50-pin SCSI into two link connectors

? Interface and clock mode
V35/DCE V.35, DCE mode
V35/DTE V.35, DTE mode
X21/DCE X.21, DCE mode
X21/DTE X.21, DTE mode
530/DCE RS-530, DCE mode



530/DTE RS-530, DTE mode
 CBL-RJ45/2BNC/E1 Interface adapter cable for converting one Control module E1 port RJ-45 connector into a pair of BNC connectors for unbalanced coax interface

Note: For E1 Voice Modules and Channelized E1 Modules, conversion to unbalanced 75Ω interfaces must be performed externally (e.g., using RAD's BE-1).

RM-VMUX-2100/23 Hardware kit for mounting one Vmux-2100 unit into a 23" rack

Vmux-2120 Voice Trunking Gateway

Vmux-2120/*/?/@/\$

Note: System includes the chassis, redundant PS and one voice card for voice compression or 3G media gateway services. For a redundant voice card system (two voice cards), order an additional voice card.

Vmux-2120-M/*/?/@/\$ Voice cards for Vmux-2120.

Vmux-2120-LIC/! Vmux-2120 upgrade license to activate additional voice ports.

* Power supply
 ACR Redundant, 100 to 240 VAC, 50/60 Hz
 DCR Redundant, -48 (-36 to -72) VDC

? Voice cards:
 VC Voice Compression module
 VCMG 3G Media Gateway Voice Compression module

@ Voice ports
 4E1 4 E1 ports
 8E1 8 E1 ports
 12E1 12 E1 ports
 16E1 16 E1 ports
 4T1 4 T1 ports
 8T1 8 T1 ports
 12T1 12 T1 ports
 16T1 16 T1 ports

\$ Optional partial activation (Default=all ports are activated). For 16 port devices only.

2SK 2 activated ports
 4SK 4 activated ports
 8SK 8 activated ports
 12SK 12 activated ports

! Software key for activating additional voice ports on an existing module:

2SK Activate 2 additional voice ports
 4SK Activate 4 additional voice ports
 8SK Activate 8 additional voice ports

Supplied Accessories

AC power cord For AC unit
 DC adapter kit For DC unit
 RM-VMUX-2100/19 Hardware kit for mounting one Vmux-2120 unit into a 19" rack

Optional Accessories

CBL-DB9F-DB9M-STR Control port cable
 CBL-RJ45/2BNC/E1 Interface adapter cable for converting one Control module E1 port RJ-45 connector into a pair of BNC connectors for unbalanced coax interface
 RM-VMUX-2100/23 Hardware kit for mounting one Vmux-2100 unit into a 23" rack

Vmux-400 GSM A-bis/A-ter Optimization Gateway

VMUX-400/*/&/\$/%/#

* Power supply
 AC 100 to 240 VAC
 48 -48 (-36 to -72) VDC

& Redundant power supply
 R Redundant power supply (of same)

\$ Adapter cable for the serial link
 NULL RS-530, DCE or non-serial uplinks
 V35DCE V.35, DCE
 V35DTE V.35, DTE
 X21DCE X.21, DCE
 X21DTE X.21, DTE
 530DTE RS-530, DTE

% Number of E1/T1 user ports
 1E1 One E1 user port
 2E1 Two E1 user ports
 1T1 One T1 user port
 2T1 Two T1 user ports

Oscillator
 OCXO 2.048 MHz OCXO oscillator with up to 0.5 ppm differentiation

Note: The OCXO option is especially required in IP uplink configurations

Supplied Accessories
 AC power cord
 CBL-DB9F-DB9M-STR Control port cable
 RM-35/P1 Hardware for mounting one Vmux-400 unit in a 19" rack

Optional Accessories
 CBL-RJ45/2BNC/E1 Interface adapter cable for converting the balanced E1 port RJ-45 connector into a pair of BNC connectors for unbalanced coax interface

RM-35/P2 Hardware for mounting two Vmux-400 units in a 19" rack

WM-35 Hardware for mounting one Vmux-400 unit on a wall

VSC

VSC/* Voice and Signaling Converter
 VSC/R Standalone with internal power supply
 VSC-MN/* Card for VSC-MN 19" card cage
 19" card cage for up to 12/14 VSC/R cards. Power supply included

* Power supply
 230 230 VAC
 115 115 VAC
 100 100 VAC
 48 -48 VDC

VSC-X

VSC-X/* Voice and Signaling Converter
 VSC-X/R Standalone with internal power supply
 VSC-MN/* Card for VSC-MN 19" card-cage
 19" card-cage for 14 VSC-X/R cards. Power supply included

* Power supply
 230 230 VAC operation
 115 115 VAC operation
 100 100 VAC operation

WEB RANger-II

Internet Access Router
 WR2/~/\$/#/+/*
 ~ DC power supply
 DC 24/48 VDC
 \$ Primary WAN interface
 E1 E1 or fractional E1
 E1/# E1 or fractional E1 with optional second data port
 T1 T1 or fractional T1
 T1/# T1 or fractional T1 with optional second data port
 IBE/# ISDN "S" interface
 IBU/# ISDN "U" interface
 DDS AT&T DDS services interface
 V24 V.24/RS-232 interface
 V24D Dual V.24/RS-232 interface
 V35 V.35 interface
 V35D Dual V.35 interface
 530 RS-530 interface
 530D Dual RS-530 interface
 V36 V.36/RS-449 interface
 V36D Dual V.36/RS-449 interface
 X21 X.21 interface
 X21D Dual X.21 interface
 V35/V24 V.35 and V.24 interface combination
 # Optional second WAN interface
 V24 V.24/RS-232 interface
 V35 V.35 interface
 530 RS-530 interface
 V36 V.36/RS-422/RS-449 interface
 X21 X.21 interface

Note: When WEB RANger-II includes primary and secondary WAN interfaces, all synchronous data ports are equipped with 25-pin D- female connectors. Adapter cables can be ordered from RAD for V.35, V.36 and X.21 interfaces

+ LAN interface
 U 10BaseT (UTP) connector
 2U 2 × 10BaseT (UTP) connector
 * Optional sub-E1/T1, analog voice or ISDN backup interfaces for E1/T1
 S Sub-E1/T1
 FXS 4 FXS voice channels
 FXO 4 FXO voice channels
 E&M 4 E&M voice channels
 IBE ISDN "S" interface
 IBU ISDN "U" interface




Notes:

1. The second WAN option is not available when configuring E1/T1 with an ISDN backup.
2. The dual LAN configuration is not available when configuring E1/T1 with an ISDN backup.
3. The sub-E1/T1, FXS, FXO or E&M interfaces are available only with an E1 or T1 main link.

Optional Accessories

CBL-530/V35/F	Adapter cable with one male DB-25 to one female 34-pin (V.35) connector
CBL-530/449/F	Adapter cable with one male DB-25 to one female DB-37 (V.36) connector
CBL-530T/21C/F	Adapter cable with one male DB-25 to one female DB-15 (X.21) connector
RM-17	Hardware kit for mounting one or two WEB RANger-II units into a 19" rack.

	12 avenue des prés 78059 St Quentin en Yvelines Tel: 33 (0)1 77 55 03 00 Fax: 33 (0)1 30 44 11 95 E-mail: sales@cbnetworks.fr
http://www.cbnetworks.fr	