

Connection Master



**Mission critical multiservice access platform
for utility, corporate and enterprise customers**

Connection Master provides true multiservice capabilities to support a very wide range of legacy voice and data interfaces transported over Next Generation SDH. It has the performance capabilities to handle almost any type of applications including POTS (Plain Old Telephony Service) and SCADA (Supervisory Control and Data Acquisition). Very low latency means that time-critical applications, such as teleprotection, can be supported in the future.

Connection Master is designed to be backward compatible with your existing network – for example, with Nokia Siemens Networks' Dynanet and FMX2 product families. Mission critical reliability is built-in.

The internal architecture has a modular structure that uses high-speed, point-to-point buses to meet both current and future needs offering a growth path to carrier Ethernet.

Trunk interfaces: SDH STM-1/4/16

Versatility:

- 64 kbit/s cross-connection functionality for legacy TDM services (voice and data)
- Optimized for strictly time critical, low latency applications
- Power-over-Ethernet functionality
- High capacity TDM and Ethernet based tributary units
- High availability via redundant critical modules

Management

Connection Master seamlessly interfaces with any Network Management System (NMS) via its powerful NorthBound Interface (NBI). The interface enables users to access the features and settings of the device itself and easily provision services. It also supports a wide range of management functions:

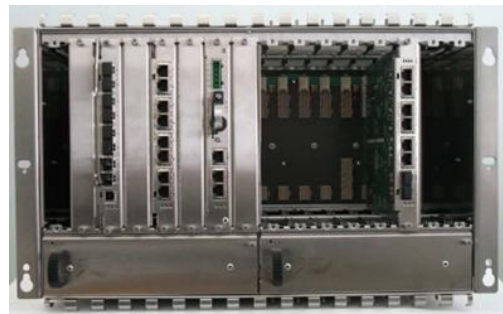
- Fault management
- Inventory management
- Performance management



6-slot subrack



8+8-slot CM/Dynanet subrack



16-slot subrack

Local Craft Terminal

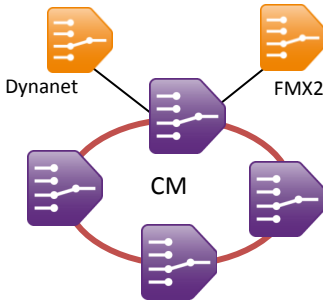
Connection Master can be managed locally or remotely either with Windows based Local Craft Terminal (LCT; graphical UI) or Command Line Interface (CLI). The LCT allows the user to access all functions of Connection Master while CLI is the embedded management application accessible via SSH.

Connection Master



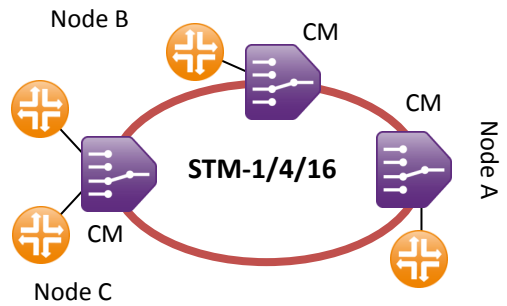
Application examples

Connection to legacy layer

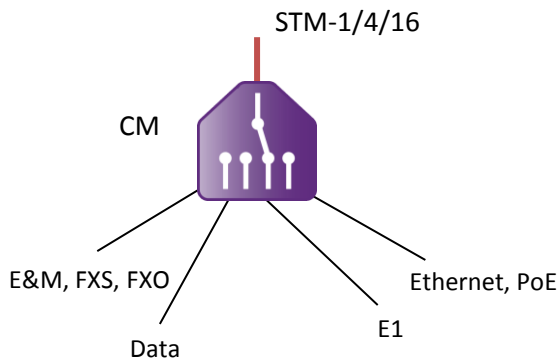


Metro rings

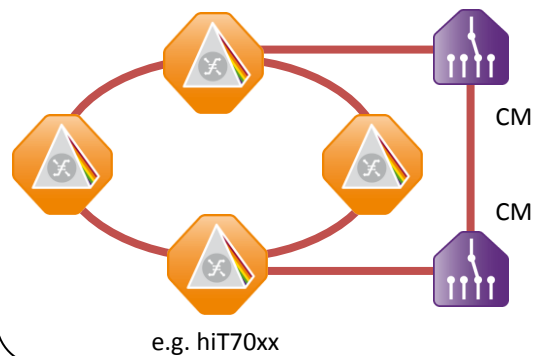
providing Ethernet transport or SDH connectivity



Multiservice access

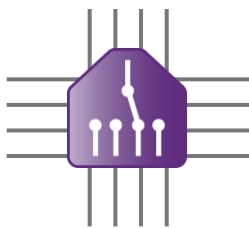


Ring MUX/Partial ring extensions/overlays

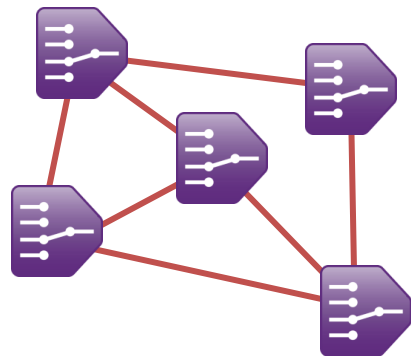


Local cross-connect

VC-4, VC-3, VC12, DSO



Meshed critical networks



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Equipping options



	6-Slot Subrack		8+8-Slot Subrack CM/Dynanet		16-Slot Subrack CM/CM	
Tributaries	CM 2...4		CM 4...6 (+ 8 Dynanet units)		CM 12...14	
Subrack slot	Equipping		Equipping		Equipping	
1	Redundant power	Tributary	Tributary		Tributary	
2	Redundant trunk	Tributary	Tributary		Tributary	
3	Trunk (control unit)		Trunk (control unit)		Trunk (control unit)	
4	Primary power ¹⁾		Redundant trunk	Tributary	Redundant trunk ²⁾	Tributary
5	Tributary		Tributary		Tributary	
6	Tributary		Tributary		Tributary	
7			Primary power ¹⁾		Primary power ¹⁾	
8			Redundant power	Tributary	Redundant power	Tributary
9...16			8 x Dynanet unit ³⁾		8 x Tributary	
Fan	1 standard		1 standard; fanless option see note ⁴⁾		1...2 optional; fanless option see note ⁴⁾	

¹⁾ Power adapter unit in the primary power slot is mandatory because the local Ethernet management and external synchronization are connected to it.

²⁾ When two trunk units are used, they can either work in a hot-standby mode or as individual control units each with their own dedicated tributary units.

³⁾ When eventually Dynanet units are not needed anymore, the 8 Dynanet slots can be converted to 8 Connection Master slots.

⁴⁾ If T32001.11 SDH trunk for Extended Temperature is used, a fan unit is not necessarily needed (up to +45 °C).

Power adapter options	6-Slot Subrack	8+8-Slot Subrack CM/Dynanet	16-Slot Subrack CM/CM
Power Adapter DC 48V CM	x	x	-
Power Adapter DC 24-60V/48V CM	x	-	-
Power Adapter DC 48V Bus Ext. CM	-	x ¹⁾	x

¹⁾ Mandatory for 16-slot operation.

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Technical data - interfaces

CU SDH / CU SDH Extended Temperature	T32001.01 / T32001.11
Low Order cross-connect capacity	2016 x 2016 VC-12s
High Order cross-connect capacity	32 x 32 VC-4s
LO/HI order VCAT	32 groups
Ethernet encapsulation	GFP, LAPS, PPP/HDLC: 32 channels
SDH protection	MSP 1+1 uni-directional MSP 1+1 bi-directional SNCP/UPSR ring
SFP interfaces	4 x STM16/4, 4 x STM-4/1 (T320001.01) 4 x STM-4/1 (T320001.11)
Cooling	T32001.01: Forced cooling; fan is mandatory T32001.11 Extended Temperature: Passive cooling; fan is not mandatory (up to +45 °C)
Ethernet Unit 1000BT, 8 Ports	T32002.01
RJ-45 interface	6 x 10/100/1000BASE-T Full duplex or half duplex Auto negotiation
SFP interface	1 x 10/100/1000BASE 1 x 1000BASE
Maximum frame size	1632 bytes
PoE PSE	IEEE802.3af
PoE PSE maximum power	13 W
E1/T1 Unit, 8 ports, 75 ohm / 120 ohm	T32003.01 / T32003.11
G.703 interface	8 x SMB (T32003.01) 8 x RJ-45 (T32003.11)
Impedance	75 ohm (T32003.01) 120 ohm (T32003.11)
Framing	G.704 or unframed
E1 interface	Short haul, maximum attenuation 6 dB
Data Unit V and X, 4 ports	T32004.01
4-port SSC interface	V.28, V.11, V.35, X.21, RS-530, RS-530A
Interface type	DCE or DTE
Transmission mode	Asynchronous / synchronous: V.28, V.11, V.35, X.21, RS-530, RS-530A Asynchronous: By using async / sync conversion (ITU-T Rec. V.14 or over sampled)
Transmission rate	48 kbit/s, 56 kbit/s, nx64 kbit/s up to 1984 kbit/s Subrates by using V.110 rate adaptation: 0.6...56 kbit/s
Alarms	Loss of signal, Loss of clock, Loss of V.110 frame
Loopbacks	Loop to line (local loop), Loop to equipment

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Technical data - interfaces

Data Unit G.703/64k, 8 ports	T32004.02
RJ-45 interface	8 x G.703 / 64 kbit/s
Impedance	120 ohm
Signaling	co-directional / contra-directional
VF/E&M Unit, 8 ports	T32005.01
Smart Serial interface	8 x 2-wire / 4-wire
Impedance 4-wire	600 ohm
Impedance 2-wire	600 ohm 900 ohm 600 ohm + 2.16μF 900 ohm + 2.16μF 270 ohm + 750 ohm 150 nF 220 ohm + 820 ohm 120 nF 220 ohm + 820 ohm 115 nF 370 ohm + 620 ohm 310 nF
Signaling	3 x E and 3 x M
FXS Unit, 8 ports	T32005.12
RJ-45 interface	8 x connectors
Integrated ring generator	25 Hz / 50 Hz
Impedance	600 ohm 900 ohm 600 ohm + 2.16μF 900 ohm + 2.16μF 270 ohm + 750 ohm 150 nF 220 ohm + 820 ohm 120 nF 220 ohm + 820 ohm 115 nF 370 ohm + 620 ohm 310 nF
Signaling	R2 / Hot Line
FXO Unit, 16 ports	T32005.21
RJ-45 interface	8 x connectors
Management	Windows based Multiservice Manager Management also supported via SNMP interface (version 2c) Management Information Bases(MIBs): Connection Master Private MIB, RFC 1213 and SONET MIB

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Technical data - mechanics

Subrack 6-Slot	T32009.01
Installation capacity	2...4 tributary units
Subrack 8+8-Slot CM/Dynanet	T32009.02
Installation capacity	4...6 tributary units Positioned for flexible expansion from PDH to SDH. Easy adaptation from E1 to SDH with existing Nokia Siemens Networks' Dynanet units (use of 8 slots). 8 Dynanet slots can be converted to 8 Connection Master slots.
Subrack 16-Slot CM/CM	T32009.04
Installation capacity	12...14 tributary units
NOTE!	All the above subrack models support control unit redundancy and the tributary units to be introduced in the later releases of Connection Master. Also, all subrack models can house 1 or 2 power adapter units.
Fan Unit for 6-Slot Subrack	T32007.01
Maximum rotation	6900 rpm
Life time of fans	8 years (at +20 °C ambient temperature)
Air flow	75 m ³ /h (6900 rpm)
Fan Unit for 8+8-Slot and 16-Slot Subrack	T32007.02
Maximum rotation	6000 rpm
Life time of fans	8 years (at +20 °C ambient temperature)
Air flow	130 m ³ /h (6000 rpm)

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Technical data - power

Power Supply AC/DC 2x1kW	T32006.02 (Emerson NS211/R48-1000)
Maximum output power / module	1000 W (20.9 A @ -48 VDC, +40 °C) 600 W (12.6 A @ -48 VDC, +65 °C)
Efficiency	Minimum 92%
Input voltage range	85...300 VAC (single phase, 3-wire)
Input frequency range	45...65 Hz
Temperature operating range	-40...+75 °C (derating)
Power Adapter DC 48V	T32008.01
Input voltage range and output power	Min. -40.5 V Max. -57.0 V Max. out 400 W Breaker size 10 A
Power Adapter DC 24-60/48V	T32008.02
Input voltage range and output power	Min. -20.0 V (max. out 120 W) Max. -72.0 V (max. out 150 W) Breaker size 10 A
Power Adapter DC 48V Bus Extension	T32008.11
Input voltage range and output power	Min. -40.5 V Max. -57.0 V Max. out 400 W Breaker size 10 A

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Technical data - interfaces

Data Unit G.703/64k, 8 ports	T32004.02
RJ-45 interface	8 x G.703 / 64 kbit/s
Impedance	120 ohm
Signaling	co-directional / contra-directional
VF/E&M Unit, 8 ports	T32005.01
Smart Serial interface	8 x 2-wire / 4-wire
Impedance 4-wire	600 ohm
Impedance 2-wire	600 ohm 900 ohm 600 ohm + 2.16µF 900 ohm + 2.16µF 270 ohm + 750 ohm 150 nF 220 ohm + 820 ohm 120 nF 220 ohm + 820 ohm 115 nF 370 ohm + 620 ohm 310 nF
Signaling	3 x E and 3 x M
FXS Unit, 8 ports	T32005.12
RJ-45 interface	8 x connectors
Integrated ring generator	25 Hz / 50 Hz
Impedance	600 ohm 900 ohm 600 ohm + 2.16µF 900 ohm + 2.16µF 270 ohm + 750 ohm 150 nF 220 ohm + 820 ohm 120 nF 220 ohm + 820 ohm 115 nF 370 ohm + 620 ohm 310 nF
Signaling	R2 / Hot Line
FXO Unit, 16 ports	T32005.21
RJ-45 interface	8 x connectors
Management	Windows based Multiservice Manager Management also supported via SNMP interface (version 2c) Management Information Bases(MIBs): Connection Master Private MIB, RFC 1213 and SONET MIB

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Technical data - Mean Time Between Failures (MTBF)

Product	MTBF (years)
T32001.01 CU SDH	26
T32001.11 CU SDH ET	26
T32002.01 Ethernet Unit 1000BT, 8 Ports	60
T32003.01 E1/T1 Unit, 8 ports, 75 ohm	104
T32003.11 E1/T1 Unit, 8 ports, 120 ohm	114
T32004.01 Data Unit V and X, 4 ports	69
T32004.02 Data Unit G.703/64k, 8 ports	62
T32005.01 VF/E&M Unit, 8 ports	tbd
T32005.12 FXS Unit, 8 ports	tbd
T32005.21 FXO Unit, 16 ports	tbd
T32006.02 Power Supply AC/DC 2x1kW	16
T32007.01 Fan Unit for 6-Slot	190
T32007.02 Fan Unit for 8+8-Slot	208
T32008.01 Power Adapter DC 48V	120
T32008.02 Power Adapter DC 24-60/48V	82
T32008.11 Power Adapter DC 48V Bus Extension	57
T32009.01 Subrack 6-Slot (with fan)	143
T32009.02 Subrack 8+8-Slot CM/Dynanet (with fan)	99
T32009.04 Subrack 16-Slot CM/CM (without fan)	326

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Technical data - environmental and safety

Climatic: 6-slot subrack with fan	Operation: EN300 019-1-3, Class 3.1 (-5 to +50 °C) Storage: EN 300 019-1-1 Class 1.2 (-25 to +55 °C) Transport: EN 300 019-1-2 Class 2.3 (-40 to +70 °C)
Climatic: 8+8 and 16-slot subrack with fan	Operation: EN300 019-1-3, Class 3.2 (-5 to +55 °C) Storage: EN 300 019-1-1 Class 1.2 (-25 to +55 °C) Transport: EN 300 019-1-2 Class 2.3 (-40 to +70 °C)
Climatic: 8+8 and 16-slot subrack without fan and with SDH trunk for Extended Temperature	Operation: EN300 019-1-3, Class 3.1 (-5 to +45 °C) Storage: EN 300 019-1-1 Class 1.2 (-25 to +55 °C) Transport: EN 300 019-1-2 Class 2.3 (-40 to +70 °C)
EMC	EN 300 386 V1.4.1...1.6.1, class B EN 55022, class B
Safety	EN 60950-1



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