

TECHNICAL DATA

E1 Tributaries

2048 kbit/s according to ITU-T G.703, G.704 and G.706

2w/4w analog voice interface with E/M signaling

Impedance 600 Ω

Relative levels

2w/4w input and output levels in steps -16 up to +4 dBr
0.1 dB

E/M signaling

output (E) ≤ 50 mA/150 V
input (M) ≤ 500 Ω (2 mA)

2 wire analog voice interface ATC

Impedance 600 Ω

Relative levels

output -4 dBr±3 dB (in 0.1 dB steps)
input -3 dBr±3 dB (in 0.1 dB steps)

Loop current ≤ 60 mA

Loop resistance ≤ 350 Ω

Ringing load impedance > 1 kΩ + 0.47μF

Ringing detection level 15 up to 35 V_{eff} /25 Hz

Maximum ringing voltage 90 V_{eff}

Ringing frequency 16 up to 50 Hz

Metering

frequency(standard/option) 16/12 kHz ± 1%
sensitivity level 85 mV

2 wire analog voice interface ATA

Impedance ETSI/600 Ω

Relative levels

output -7 dBr±3 dB (in 0.1 dB steps)
input 0 dBr±3 dB (in 0.1 dB steps)

Loop feeding 48 V/2x400 Ω,
loop resistance up to 1200 Ω,

Ringing signal from ring generator (GZV15) 50 do 75 V_{eff}/25 Hz

Metering

frequency (standard/option) 16/12 kHz ± 1%

2 wire analog voice interface LB

Impedance 600 Ω

Relative levels

output -4 dBr±3 dB (in 0.1 dB steps)
input -3 dBr±3 dB (in 0.1 dB steps)

Ringing load impedance > 1 kΩ + 0.47μF

Ringing detection level 15 up to 35 V_{eff} /25 Hz

Maximum ringing voltage 90 V_{eff}

Ringing frequency 16 do 50 Hz

Ringing signal from ring generator (GZV15) 50 do 75 V_{eff}/25 Hz

64 kbit/s digital interface

according to ITU-T G.703, codirectional

n x 64 kbit/s digital interface

according to ITU-T V.11/X.21 or V.35

Asynchronous/synchronous digital interface V.24/V.28

transparent transmission up to 115.6 kbit/s

ISDN interface

U interface channel structure: 2B+D
line code: 2B1Q
according to ETSI ETR 080

SHDSL interface

according to ETSI TS 101 524 and ITU-T G.991.2

Ethernet bridge interface

10/100 BaseT and 100 BaseFX according to IEEE 802.3

External clock reference

2048 kHz according to ITU-T G.703/10

TMN interface

SUNCE-M (proprietary) F (RS232/V.24 or 10/100 BaseTX Ethernet), Q2 (RS485), Q2Et (10/100 bT)

SNMP/V1/V2/V3 RFC 3895 (DS1/E1), RFC 2494 (DS0), RFC 4316 (SHDSL) Proprietary MIB extension for DS0

Operating temperature range

-5°C up to +45°C (class 3.2)

Access Systems

FM-MSAN (FM8x2) MULTISERVICE ACCESS MULTIPLEXER



- Multiservice Access Node (MSAN)
- Universal access PSTN
- 8 to 72 external and 16 to 80 internal links 2 Mbit/s
- Digital channel cross-connect between all 88 links (non blocking)
- Concentrator according to V5.2 up to 2400 subscribers, for remote multiplexers and/or V5.2 access nodes
- Protocol conversion V5.2-CAS
- Built in optical transmission, TDMoIP access, multiple conference and service channels available



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Applications

FM-MSAN access multiplexer is designed to allow transmission of voice and data in access telecommunication networks. It can be configured as access multiplexer, drop/insert, cross-connect and fractional multiplexer and concentrator according to V5.2.

Features

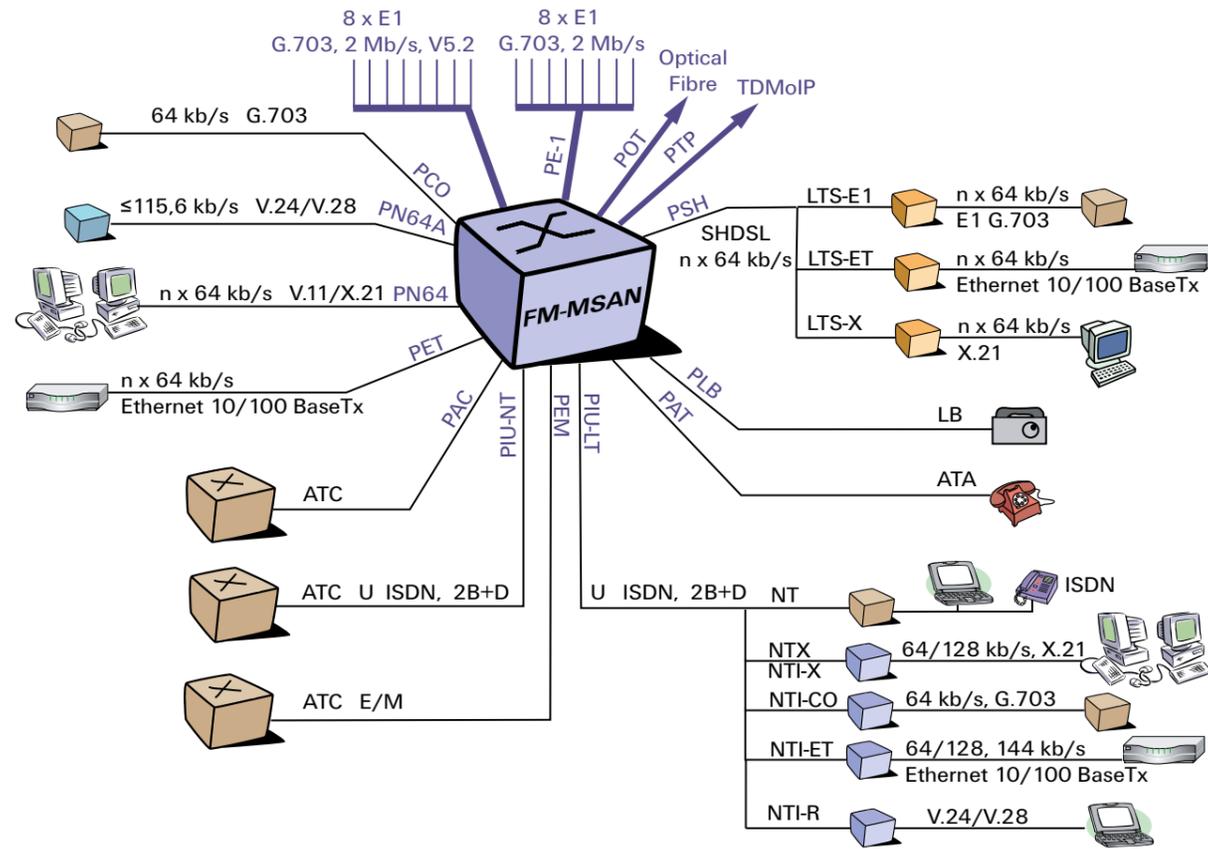
- Supports over 15 different transmission and subscriber, analog and digital interfaces
- Redundant central unit
- Cross-connect non-blocking switching fabric for up to 88 E1 links, CAS signalling included
- Up to 21 universal unit slots per subracks
- Up to 20 channels per unit
- Advanced traffic protection mechanism for E1 links
- Line test access
- Concentrator according V5.1/V5.2 protocol for POTS and ISDN-BRI/PRI
- Integrated Optical Transmission Unit
- Integrated TDM over IP Line Card
- NMS based on client server application with data base replication
- SNMP based agent

Configurations

- FMV- multiplex, cross-connect, control and power supply unit with V5.2 interface
- Various types of channel units with up to 20 user interfaces
- PE1 – 8xE1 interfaces unit, up to 8 units per FM-MSAN
- Rack configuration – 1 to 4 subracks, 21 (19, 12) universal unit slots, 2 special slots for central unit

User interfaces

- 2w/4w analog voice interface with E/M signaling
- 2w analog voice interface ATA – for direct connection to a phone
- 2w analog voice interface ATC – for direct connection to a exchange
- 2w analog voice interface LB – for direct connection to a phone with local battery supply
- 64 kbit/s digital interface, codirectional G.703
- n x 64 kbit/s digital interface with X.21 interface
- Asynchronous/synchronous digital interface V.24, up to 38.4 kbit/s
- ISDN basic rate access U interface
- SHDSL, n x 64 kbit/s interface
- Ethernet 10/100 BaseT and 100 BaseFX interface
- Conference connection



Channel units

- PEM10 – 10 channels 2w/4w with E/M signaling
- PAT10 – 10 channels, ATA interface
- PAT20 – 20 channels, ATA interface
- PAC10 – 10 channels, ATC interface
- PLB10 – 10 channels, LB interface
- PCO – 10 channels, 64 kbit/s digital interface, codirectional G.703
- PN64 – 4 channels, n x 64 kbit/s, V.11/X.21 interface
- PN64A – 8/4 channels, asynchronous/synchronous transmission from 2.4 up to 115.6 kbit/s, V24/V.28
- PIU-LT – 4 channels, ISDN U interface, 2B1Q for direct connection to a ISDN phone
- PIU-NT – 4 channels, ISDN U interface, 2B1Q for direct connection to a ISDN exchange
- PSH – 4 channels, SHDSL n x 64 kbit/s interface or 2 Mbit/s or Ethernet over SHDSL
- PET – 3 channels, n x 64 kbit/s Ethernet bridge with 10/100 BaseT or/and 100 Base FX interface
- PIO - 8 x digital I/O
- PCF – up to 5 conferences with up to 60 users
- POT - Integrated Optical Transmission unit with 1+1 APS and additional 2xE1
- PTP - TDM over IP Transmission Unit with additional 2xE1

Control and monitoring

Integrated network management system SUNCE-M provides continuous management of FM-MSAN and all other IRTTEL's SDH and PDH equipment (ODS155, OTS622 ...)

For NMS system integration we support standard interface based on SNMP protocol

Synchronization

- From internal built-in oscillator (± 25 ppm)
- From external 2 048 kHz clock
- From received clock on any external link
- From received clock on a chosen digital channel interface

Mechanical design

- Unit (233x160x20 mm) and (233x175x20mm)
- 19"/ETSI cabinet's rack (300x483/533x230 mm)
- 19"/ETSI cabinet for 4 subracks (2200x600x300 mm)
- ETSI cabinet for 3 subracks (1200x600x400 mm)
- Wall mount cabinet for 17 or 14 units and uninterruptable power supply (650x600x300 mm)

