MINI-LINK PORTFOLIO

Common Antenna

Common Radio

MINI-LINK TN

MINI-LINK PT

MINI-LINK CN

MINI-LINK LH

Ericsson SP

Common Management

ML PT KEY FEATURES

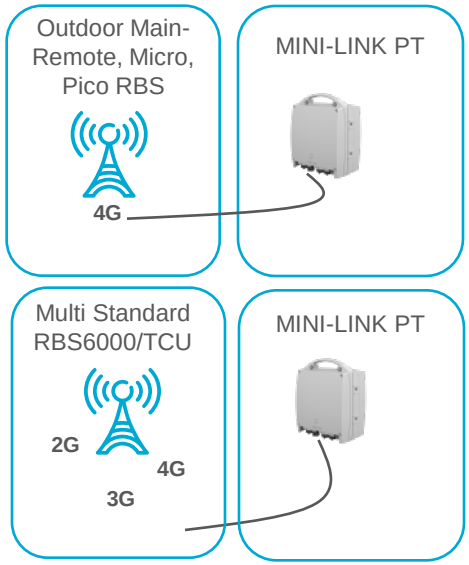
- MINI-LINK PT 2020
  - 1024QAM
    - 570 Mbps @ 56MHz (ETSI)
    - 600 Mbps @ 60MHz (ANSI)
  - Hop compatible with MINI-LINK TN/CN
  - XPIC and Header compression
  - High Power via SW license
- MINI-LINK PT 6020
  - 1Gbps @ E-Band (70/80GHz) in 250 MHz
  - Header compression
  - High Power via SW license
- MINI-LINK PT 3060
  - 400 Mbps @ 60GHz-Band in 50 MHz
  - Header Compression
  - Camera alignment tool
- Packet functionalities:
  - Jumbo Frames
  - QoS SPQ, WFQ and WRED
  - Quality aware Ethernet, IP and MPLS
  - Sync Ethernet, Transparent Synch over Packet,1588v2 TC
  - Service OAM – FM/PM
  - RSTP
- Security

MINI-LINK PT

Packet microwave solution

MINI-LINK PT 2020

PACKET NODE

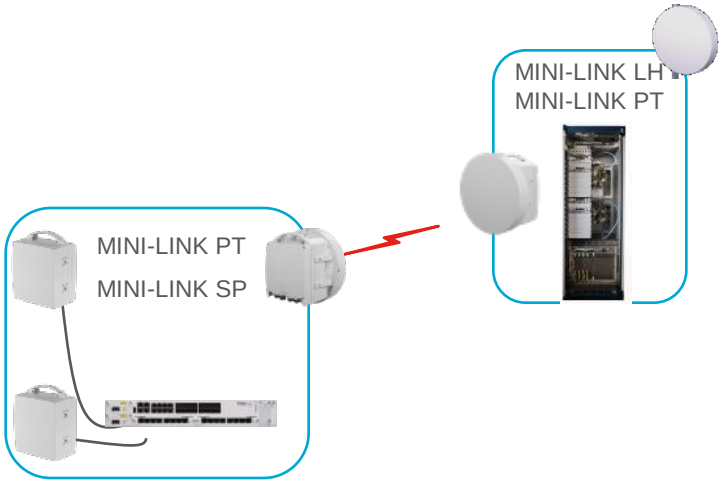


- Suitable for outdoor Main-Remote, Micro and Pico RBS implementation
- High capacity with traditional frequency band:
  - 570 Mbps @ 56MHz (ETSI)
  - 600 Mbps @ 60MHz (ANSI)
  - XPIC
  - 10-15 % extra capacity with Header Compression
- Support LOS and NLOS configurations

OPTIMIZED TCO

- Easy to install
  - Save 20% on installation cost
- Zero footprint
  - Save up to 33% on site cost
- Reduced power consumption
  - Typical 32W

MINI-LINK PT 6020
SHORT HOPS AND FIBER EXTENSION

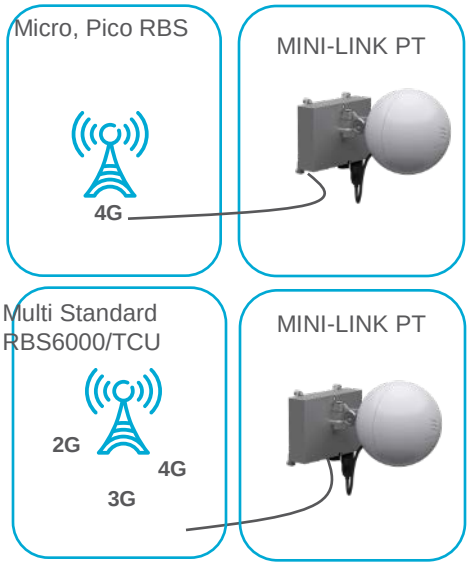


- All outdoor packet solution suitable for metropolitan areas
- Complement as fiber extension reaching Gigabit capacity everywhere
- Higher capacity with new frequency band:
  - 1Gpbs @ E-Band (70/80GHz) in 250MHz channel

E-BAND

- Higher capacity in a single carrier for metropolitan hops
- New unused frequency band
- Potential lower annual spectrum cost
- Faster time to market

MINI-LINK PT 3060
SMALL CELL PACKET NODE



- Designed for small cell deployment
- Friendly and innovative design
- Easy installation, camera alignment
- 60 GHz un-licensed band
  - 300 Mbps @ 50 MHz

SMALL CELL

- Easy and flexible installations
  - Easy alignment
  - Support LOS & NLOS configuration
- Fast time to market
  - 60 GHz Un-licensed band

MINI-LINK PT FAMILY SNAPSHOT

	MINI-LINK PT 2020 ETSI & ANSI	MINI-LINK PT 6020 ETSI & ANSI	MINI-LINK PT 3060 ETSI & ANSI
Capacity	› Up to 565 Mbps Ethernet (ETSI) in one frequency channel › Up to 510 Mbps Ethernet (ANSI) in one frequency channel	›1 Gbps over the hop in one frequency channel	› Up to 300 Mbps over the hop in one frequency channel
Configurations	› 1+0 › 2*(1+0) with CCDP & XPIC › MINI-LINK PT + MINI-LINK SP as one NE › HW prepared for 1+1 SD/HSB and Radio Link bonding using MINI-LINK SP › HW prepared for 1+1 Equipment protection	› 1+0 › 2*(1+0) with CCDP & XPIC › MINI-LINK PT + MINI-LINK SP as one NE › HW prepared for 1+1 SD/HSB and Radio Link bonding using MINI-LINK SP › HW prepared for 1+1 Equipment protection	› 1+0 › MINI-LINK PT + MINI-LINK SP as one NE › HW prepared for 1+1 HSB and Radio Link bonding using MINI-LINK SP
Frequencies	› 6-42 GHz	› 70/80 GHz (E-band)	› 60 GHz
Frequency channels	› 7 – 56 MHz (ETSI) › 10 – 50 MHz (ANSI)	› 7 – 250 MHz	› 50 MHz
Modulations	› 4-1024 QAM › Adaptive Modulation	› 4 – 64 QAM › Adaptive Modulation	› 4 – 256 QAM › Adaptive Modulation
Interfaces	› Traffic: 1 x GE (SFP) and Fixed Electrical › Local Management: 10/100BASE-T (RJ-45) › Power: -48V Power over Ethernet › XPIC: Ericsson all outdoor XPIC interface	› Traffic: 1 x GE (SFP) and Fixed Electrical › Local Management: 10/100BASE-T (RJ-45) › Power: -48V Power over Ethernet	›Traffic: 1 x GE (SFP) and Fixed Electrical › Local Management: 10/100BASE-T (RJ-45) › Power: -48V Power over Ethernet
Power consumption	32- 42 W Eco Mode	40 W	30 W
Antennas	Same as for MINI-LINK RAU, including Super High Performance Antenna	Special Antenna for E-band	Integrated 60 GHz-band Antenna

MINI-LINK PT FAMILY SNAPSHOT

	MINI-LINK PT 2020 ETSI & ANSI	MINI-LINK PT 6020 ETSI & ANSI	MINI-LINK PT 3060 ETSI & ANSI
QoS	Ethernet, IP and MPLS priority aware QoS › 8 priority levels › SPQ, WFQ ›HW prepared for Policing	Ethernet, IP and MPLS priority aware QoS › 8 priority levels › SPQ, WFQ, WRED › HW prepared for Policing	Ethernet, IP and MPLS priority aware QoS › 8 priority levels › SPQ, WFQ, WRED › HW prepared for Policing
Network Sync	› Sync Ethernet (in/out) › Transparent sync over packet ›HW prepared for 1588v2 TC	› Sync Ethernet (in/out) › Transparent sync over packet › HW prepared for 1588v2 TC	› Sync Ethernet (in/out) › Transparent sync over packet › HW prepared for 1588v2 TC
DCN	**In-band DCN over VLAN:** Customer or Provider VLAN (Q/S-tagged) › IP addressing over Ethernet › Configurable L2 and L3 priority for DCN traffic	**In-band DCN over VLAN:** Customer or Provider VLAN (Q/S-tagged) › IP addressing over Ethernet › Configurable L2 and L3 priority for DCN traffic	**In-band DCN over VLAN:** Customer or Provider VLAN (Q/S-tagged) › IP addressing over Ethernet › Configurable L2 and L3 priority for DCN traffic
Ethernet functions	› Ethernet PM counters - Continuous - During intervals (15min/24h) › 9k Jumbo frames › Secure protocols SSH, SFTP, SNMPv3, RADIUS/TACACS+ › Link OAM & Service OAM FM/PM › HW prepared for Radio Link Header compression › RSTP	› Ethernet PM counters - Continuous - During intervals (15min/24h) › 9k Jumbo frames › Secure protocols SSH, SFTP, SNMPv3, RADIUS/TACACS+ › HW prepared for Link & Service OAM › HW prepared for Radio Link Header compression › RSTP	› Ethernet PM counters - Continuous - During intervals (15min/24h) › 9k Jumbo frames › Secure protocols SSH, SFTP, SNMPv3, RADIUS/TACACS+ › HW prepared for Link & Service OAM › HW prepared for Radio Link Header compression › RSTP

ML CN KEY FEATURES

- Compact Node
  - 1+0 and 1+1 working and hot standby
  - 2+0
  - No FAN unit
  - 2 SFP for Gbps ports
  - 4 electrical Gbps ports
  - 200 years traffic availability per terminal, IDU+ODU
  - Easy to install and repair
  - 1024QAM with XPIC
  - Radio Link Bonding
  - Hitless Adaptive Modulation
  - 7 – 56 MHz channel bandwidth
  - Support for RAU X, RAU Xu, RAU N and RAU
  - Integrated L2 Ethernet switch and aggregation
    - 6 GE switch ports to front plane
    - 1 FE switch port to front plane (DCN)
    - 7 Gbps switch capacity, full-duplex

MINI-LINK CN 510 R2

Compact microwave solution

ML TN KEY FEATURES

- Advanced microwave functionalities
  - 1024QAM with XPIC
    - 1.1 Gbps @ 56 MHz (ETSI)
    - 1 Gbps @ 50 MHz (ANSI)
  - Radio Link Bonding up to 4+0
  - Hitless Adaptive Modulation
  - LDPC, improving system gain up to 3dB
  - Protected 2+0
- Functionalities towards packet only migration
  - Circuit Emulation (CES)
  - Ethernet Switching Protection
  - Protection of rings using RSTP or MSTP
  - QoS SPQ and WFQ
  - Quality aware Ethernet, IPv4/6 and MPLS
  - 1588v2, Sync E
  - Service OAM
- Security
  - Secure protocols (SSH, SFTP, SNMPv3)
  - RADIUS/TACACS+

MINI-LINK TN

Market Leader

Microwave solution

PLUG-IN UNITS
MINI-LINK TN R5

SUB RACKS

- AMM 2p B , 6p C, 6p D and 20p B

NPU'S

- NPU3 C, NPU3 D
- NPU1 C

MODEMS

- MMU2 H, MMU2 F, MMU2 K, MMU3 A, MMU3 B

INTERFACE BOARDS

- ETU2 B and ETU 3
- LTU3 12/1
- LTU 16/1, 32/1
- LTU B 32/1 - CES
- LTU2 155

OTHER BOARDS

- SAU 3

AMM 2P B
END AND REPEATER NODE

- 2 slots for modem units, 2+0 or 1+1
- 1 half slot for additional plug-in unit
- 1 half slot for Node Processor Unit
- Unused modem slots can be used for other plug-in units
- Mix Ethernet, PDH, SDH and ATM
- Power supply protected, -48V/+24V
- Magazine height: 1 U (w. fan)

AMM 6P
MEDIUM SIZED AGGREGATION NODE

AMM 6p C - Modem slot optimized

- 5 slots for modem units, 5+0 or 2x(1+1)+1
- 1 half slot for additional plug-in unit

AMM 6p C

AMM 6p D - Small slot optimized

- 4 slots for modem units, 4+0 or 2x(1+1)
- 3 half slot for additional plug-in units

AMM 6p D

AMM 20P B
LARGE AGGREGATION NODE

- 1 slot for Node Processor Unit
- 19 slots for modem units, 19x(1+0) or 9x(1+1) + 1x(1+0)
- Unused modem slots can be used for other plug-in units
- Mix Ethernet, PDH, SDH and ATM
- Power supply, protected :
  - -48 V
  - +24 V by external PSU
- Magazine height:
  - 7 U magazine only
  - 10 U with fan and air inlet

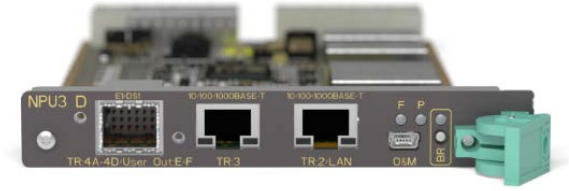
NPU
NODE PROCESSOR UNIT

- Mandatory plug-in card

- Centralized node processor:
  - OSPF router for DCN network
  - SNMP Master Agent
  - Configuration data stored in RMM
  - USB port for LCT connection
  - DCN Connection
  - Service OAM
  - Ethernet switch protection
  - Enhanced QoS
  - Secure protocols, RADIUS,TACACS+

NPU1 C

NPU3 C **NPU3 D**

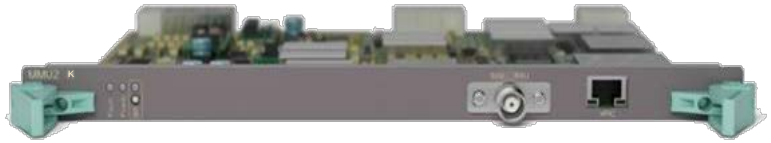


MMU
MODEM UNIT

- The MMU constitutes the indoor part of a Radio Terminal. It determines the traffic capacity and modulation scheme.

MMU3 A MMU3 B

MMU2 H MMU2 K



MMU2 F

- MMU3 A: for Native Ethernet including support for XPIC, Hitless Adaptive Modulation, Ethernet over PDH, and Native Ethernet.
- MMU3 B: for SDH traffic including support for XPIC.
- MMU2 F 155: for SDH traffic including support for XPIC
- MMU2 H and MMU2 K: for Native Ethernet including support for XPIC, Hitless Adaptive Modulation, Ethernet over PDH, and Native Ethernet.

INTERFACE BOARD

- The LTU – Line Termination Unit provides PDH or SDH traffic interfaces.
- The ETU - Ethernet Terminal Unit provides Ethernet traffic interfaces
- Fits in all AMM's
- Using Sofix connectors, each with 4xE1
- Impedance selectable per LTU board via SW configuration
- Provides Ethernet over PDH for Ethernet switch
- Provides extra Ethernet interfaces to the Integrated Ethernet switch

LTU 32/1 LTU B 32/1

LTU2 155

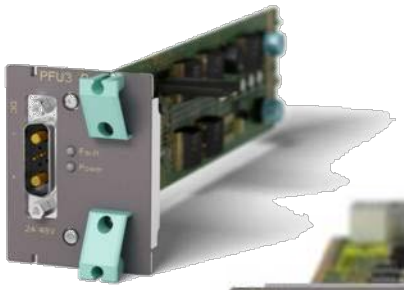
LTU 12/1

ETU2 B

ETU3 B

OTHER UNITS

- SAU3 - Service Auxiliary Unit
- User I/O via 6 input and 3 output relay ports
- Support for Multi-vendor DCN



- PFU - Power Filter Unit
- Power supply to AMM
- One PFU required, a second optional PFU for redundancy

- FAU - Fan Unit
- FAU1 for AMM 20p B
- FAU2 for AMM 6p C and AMM 6p D
- FAU4 for AMM 2p B