MiniFlex G.SHDSL.bis Mini DSLAM

**Features**

- SHDSL and SHDSL Bis (TC-PAM16/32/64/128)
- Upto 15.2 Mbps over single and up to 300 Mbps over 20 copper pairs
- Integrated Layer 2 managed Ethernet Switch: 4x Gigabit Ethernet Uplink (2x TP / 2x SFP) - 8x 10/100 Mbps
- Rapid Spanning Tree, Ethernet Ring Protection, Link Aggregation, VLAN, QoS
- Point-to-Point, Point-to-Multipoint and Ring
- Console Port, Telnet, Web, SNMP Management
- 24/48VDC and 110/230VAC Redundant Power
- Repeater supported and available
- 19” with 2U height

**SHDSL.bis**

**Up to 300 Mbps**

**Ethernet**

FlexDSL MiniFlex Applications

Typical Internet Service Provider (ISP) Application

Bonding of up to 20 Copper Pairs, 300 Mbps Link
Description of MiniFlex Devices

The MiniFlex consists of the following devices:
- Mini-rack with integrated managed Ethernet switch and alarm/DC power front access
- DC or AC power supplies (redundancy is possible)
- Line card SHDSL bis extended

Mini-Rack with Integrated Switch
The Mini-Rack is designed for a 19” rack and has a height of 2U (89mm). The depth is 180mm without any power supply and 248mm with the power supply equipped. All connections (except AC power!) are accessible in the front. Beside the connection to two DC power supplies and the alarm relay outputs, there is an integrated layer 2 managed Ethernet switch with the following main functionalities:
- Spanning Tree and Ethernet Ring
  - IEEE 802.1D Spanning Tree Protocol (STP)
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
  - Ethernet Ring Protection Mechanism, 50ms rapid ln switching and protection
- Port Mirroring, Jumbo Frames support (up to 9216 bytes)
- VLAN
  - 4K IEEE 802.1q VLANs, Port-based VLAN, MAC-Based VLAN, Private VLAN
  - GVRP, Q-in-Q, VLAN Translation
- Link Aggregation
  - Static Trunk, Dynamic Trunk, IEEE 802.3ad LACP, Load Balancing
- Multicast Features
  - IGMP v1, v2, v3, IGMP Snooping, IGMP Groups, Multicast VLAN
- Quality of Service (QoS)
  - 8 Priority Queues/port, Bandwidth Control per Port
  - WRR, Strict Priority, WDRR/WDDR + Strict Priority
  - 802.1p, Port-Based CoS, CoS based on MAC DA/SA
- Access Control List
  - MAC + Port Binding, VLAN + Port Binding
- Port Security
  - Trust Port, Port Blocking, Private VLAN, Port Powering Off
- MAC address learning limit per port, DoS check, Management IP list
- Management
  - Local Console Port (USB), Telnet/SSH, Web, SNMP v1 and V2c
Specifications MiniFlex Rack

Interfaces

1000Base-X Gigabit Ethernet (P1, P2)
Standard: IEEE-802.3, VLAN IEEE-802.1Q, QoS IEEE-802.1P
Data Rate 1000Base-X, Full/Half Duplex
Protocols Data, Telnet, SNMP, WEB
Connector Type SFP
Recommended 1.25Gbps SFP Transceiver (1000Base-LX interface):
- EOLS 1312-10D
- HSFP-24-3311S-22F

1000Base-T, Gigabit Ethernet (P3, P4)
Standard: IEEE-802.3, VLAN IEEE-802.1Q, QoS IEEE-802.1P
Data Rate 1000Base-T, Full/Half Duplex
Protocols Data, Telnet, SNMP, WEB
Signal Level Ethernet
MDI / MDI-X auto crossover Supported
Auto Negotiation Supported
Connector Type RJ45, 8 pin

10/100Base-T Ethernet (P5-P12, SHDSL Line Card)
Standard: IEEE-802.3, VLAN IEEE-802.1Q, QoS IEEE-802.1P
Data Rate 10/100Base-T, Full/Half Duplex
Protocols Data, Telnet, SNMP, WEB
Signal Level Ethernet
MDI/MDI-X auto crossover Supported
Auto Negotiation Supported
Connector Type RJ45, 8 pin

SHDSL Line Interface
Specification ITU-T G.991.2-G.shdsl, ITU-T G.991.2-G.shdsl.bis
Line Code TC-PAM16/32, Extended: TC-PAM4/8/64/128
Impedance 135W
Transmit Power 13.5 (Annex A) or 14.5 (Annex B) dBm @ 135W
Number of Pairs 1 or 2
Bit Rate 192 to 5704kbit/s, Extended: 128 to 15232kbit/s
Connector Type Phoenix Mini Combicom 4 pin: MC 1, 5/4-GF-3, 5
Overvoltage Protection ITU-T Rec. K.20/K.21

Power Supply
Specification ETSI ETS 300 132-2
MF-FS48, V1
Input Voltage 18-72VDC
Connector Type Phoenix Mini Combicom 3 pin: MC 1, 5/5-GF-3, 5
MF-PS110/230, V1
Input Voltage 90-264VAC, 47-63Hz
Connector Type IEC 60320-1, C14, 10A/250VAC
UL 498, CSA C22.2 no. 42
Power Consumption
(All DSL links up, Ethernet on)
Typical. 15W for MiniFlex without SHDSL Line Cards
Typical. 3.5W for each SHDSL Line Card

Climatic Conditions
Storage: ETS 300 019-1-1 Class 1.2 (-25°C … +55°C)
Transportation: ETS 300 019-1-2 Class 2.3 (-40°C … +70°C)
Operation: ETS 300 019-1-3 Class 3.2 (-5°C … +45°C)
Higher Operation Temperature range available on request (-20°C … +70°C)

10.3.2 EMC and Safety Standards
EN 300386 V1.4.1:2008 EN 61000-4-2/A2:2001
EN 50121-4:2006 EN 61000-4-3:2006
EN 60950-1:2006 EN 61000-4-4:2006
EN 55022:2006, Class B EN 61000-4-5:2006
EN 55024/A2:2003 EN 61000-4-6:2007
EN 61000-4-6/A1:2001

Physical Dimensions and Weight
Dimension with Power Supply:
482(W)x248(D)x89(H) mm
19” (W), 2U (H)
Weight without Line Cards < 4.4kg
Weight with 10 Line Cards < 5.5kg