

SHDSL.bis and Fiber
Up to 300Mbps
Ethernet

FlexDSL MiniFlex

SHDSL.bis and Optical Mini DSLAM



Features

- Up to 15.2Mbps Data Transmission per Copper Pair
- SHDSL and SHDSL.bis, TC-PAM16/32
- Additional TC-PAM4/8/64/128 Available
- 100 Mbps Fiber Optical Tributary Interface
- Integrated Layer 2 managed Ethernet Switch:
 - 4x Gigabit Ethernet Uplink (2x TP / 2x SFP)
 - 8x 10/100Mbps
- Rapid Spanning Tree, Ethernet Ring Protection, Link Aggregation, VLAN, QoS
- Point-to-Point, Point-to-Multipoint & Ring Operation
- Console Port, Telnet, Web, SNMP Management
- 24/48VDC and/or 110/230VAC Redundant Powered, Low Power Consumption
- Included Primary Protection
- Repeater supported and available
- 19" & 2U Height or Robust DIN-Rail Metal Enclosure
- Industrial Temperature Range Available

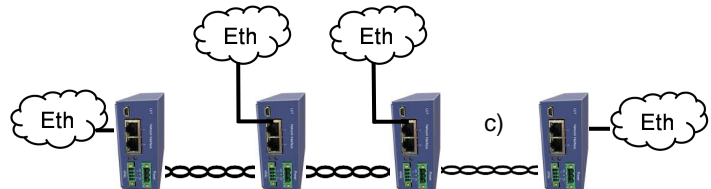
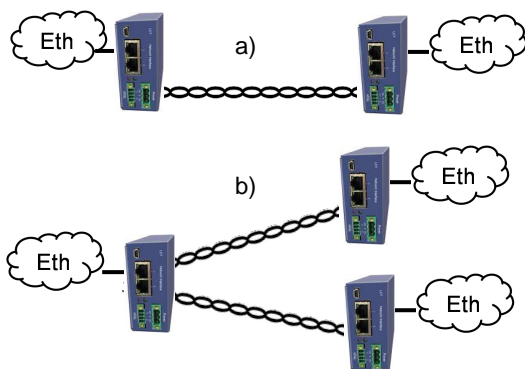
The FlexDSL **MiniFlex** platform is a special part of the **Orion3** product family. Beside of having up to 10 dual **Orion3 SHDSL.bis Extended** line cards there is a feature-rich managed layer 2 Ethernet switch included. This switch has 8 auto-sensing front accessible 10/100Base-T ports as well as 2 gigabit Ethernet ports with fiber connectivity (SFP) and 2 gigabit Ethernet ports with copper connectivity (RJ-45). The inside backplane connect this switch to all Orion3 line cards through additional 10 Ethernet 10/100 Base-T ports.

The FlexDSL Orion3 SHDSL.bis Extended product family offers a broad range of products, which are based on the latest SHDSL.bis standards (ITU-T G.991.2 & ETS TS 101 524), while also being fully interoperable with all our existing SHDSL equipment (Orion1 & Orion2).

SHDSL.bis Extended allows symmetrical data transmission at speeds up to 15.2Mbps over a single pair of copper. In addition, the dual Orion3 line card also supports DSL channel bonding for 2 copper pairs in order to achieve speeds to 30.4Mbps! Using the link aggregation feature of the additional integrated switch, the FlexDSL MiniFlex can transmit up to 300Mbps over 20 copper pairs. This incredible speed makes Fiber installations in a lot of places needless.

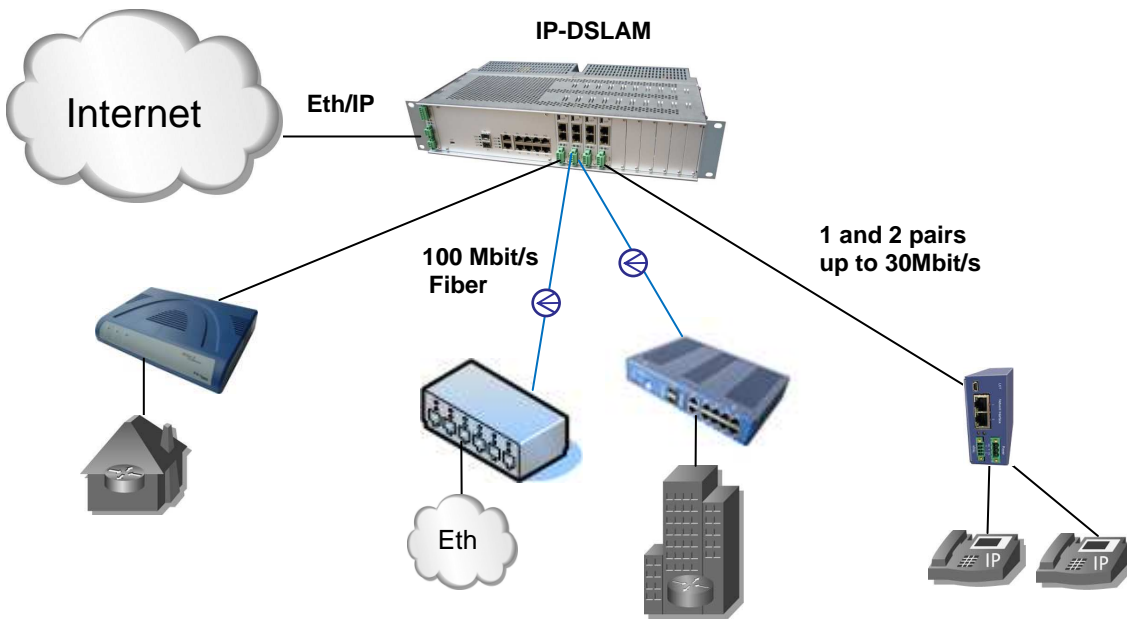
In addition to SHDSL.bis, the **MiniFlex** platform supports subscriber access over Fiber Optic. The optical line card has build-in SFP jack for standard 100 Mbps Ethernet module. The protocol is compatible with third-party switches, media converters, etc. Like all FlexDSL Orion products, the MiniFlex and its line cards are based on industrial components and are manufactured according to highest quality standards providing additional value due to the extended temperature range and higher reliability. The combination of comprehensive functions providing maximum flexibility together with the higher quality of the FlexDSL MiniFlex make it the perfect choice for your access needs.

Possible Application: Point-to-Point & Point-to-Multipoint

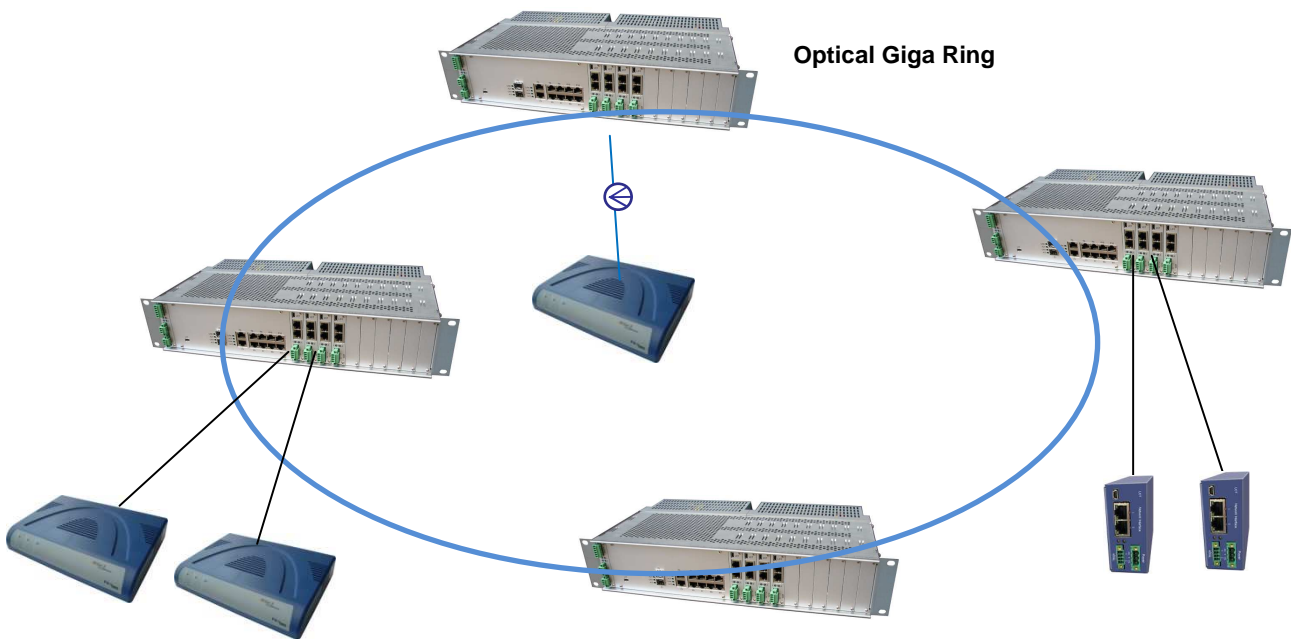


- a) Ethernet Transmission Point-to-Point
- b) Ethernet Transmission Point-to-Multipoint
- c) Ethernet Add/Drop over a Long Copper Line

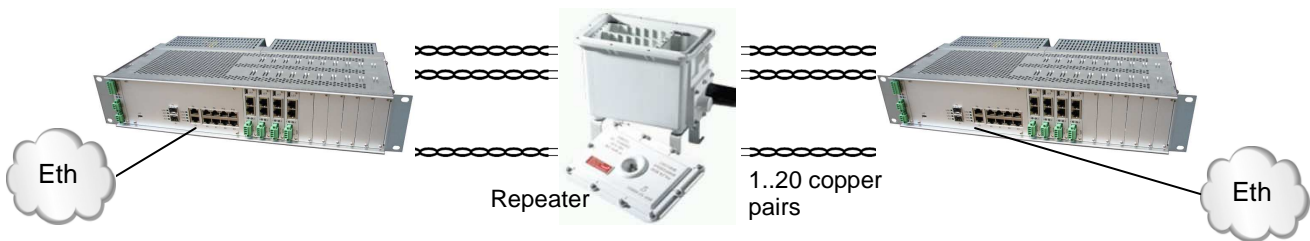
Possible Application: Typical Internet Service Provider (ISP) Application



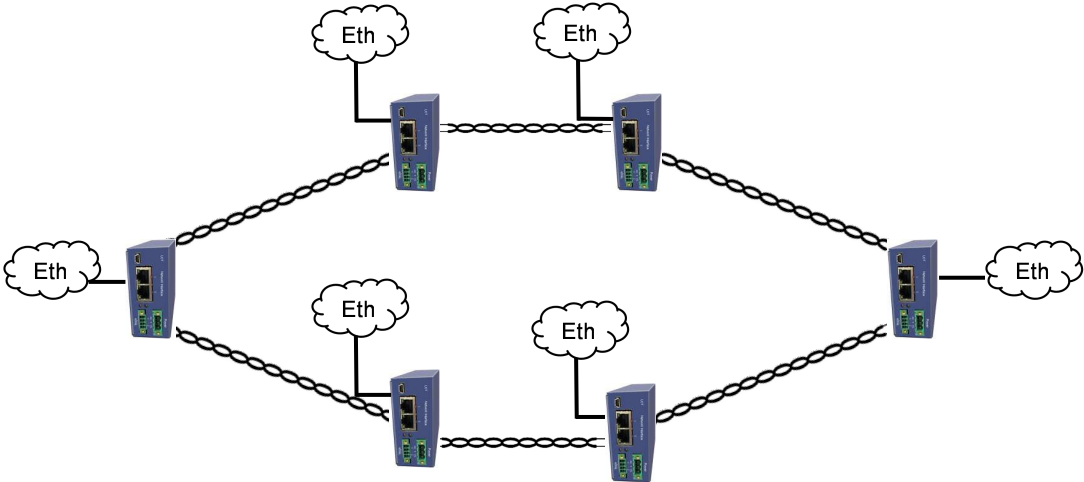
Possible Application: Ring with the 19" MiniFlex Racks



Possible Application: Bonding of up to 20 Copper Pairs, 300Mbps Link



Possible Application: Ring with the MiniFlex Dinrail Modems



MiniFlex Rack with included Switch for 10 Linecards



Model: MF-MR2N-SW-12Eth,V1

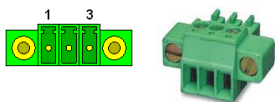
- Switch Interfaces: 8x Ethernet 10/100BaseT (Auto Sensing)
2x Gigabit Ethernet 1000Base-T
2x Gigabit Ethernet SFP
1x USB 2.0 (Local Consol Port)
10x Ethernet 10/100BaseT on Backplane to Line Card
- Physical Interfaces: RJ45 (Ethernet), SFP (Ethernet), Mini-B (USB)
- Management: Local Console Port, Telnet/SSH, Web, SNMP v1 and V2c
- L2 Features: **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 In switching and protection
- 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
- Qos: **Quality of Service**
8 Priority Queues/port
WRR, Strict Priority
WRR/WDDR+Strict Priority
802.1p
Port-Based CoS
CoS based on MAC DA/SA
Bandwidth Control per Port
- Access Control List**
MAC+Port Binding, VLAN+Port Binding
- Security: **Port Security**
Trust Port, Port Blocking, Private VLAN, Port Powering Off
MAC address learning limit per port
DoS check, Management IP list
- Alarm Interface: Major and Minor Alarm Relais

MiniFlex Rack without Switch for 10 Linecards



Model: MF-MR2N,V1

- Alarm Interface: Major and Minor Alarm Relais



Model: MF-PS48, V1

- Input Voltage: 18 - 72 VDC, max. 90 Watts
Temperature: -20 to +70°C
Connector: 3 Pin Phoenix Mini Combi connector (Front access)



Model: MF-PS110/230, V1

- Input Voltage: 90 - 264 VAC, 47 - 63 Hz, max. 90 Watts
Temperature: -20 to +70°C
Connector: IEC 60320 Appliance Inlet C14 (Back access)

MiniFlex MiniRack 2U for 4 Linecards



Model: MF-MR-RAIL-2U4S,V1

Input Voltage: 18 - 72 VDC, max. 20 Watts, Dual Input, Fuse 2AT
Temperature: -20 to +70°C
Connector: 3 Pin Phoenix Mini Combicom connector (Front access)
Alarm Interface: Major and Minor Alarm Relays
Connector: 6 Pin Phoenix Mini Combicom connector (Front access)
Size: 110x181x88mm (WxLXH)

MiniFlex MiniRack Wallmount Kit



Model: MF-MR-RAIL-WALLMOUNT,V1

MiniFlex SHDSL.bis Line Card



Model: MF-PAM-SR2L-2Eth,V1

DSL Version: SHDSL / SHDSL.bis / Extended
Modulation: TC-PAM4 / TC-PAM8 / TC-PAM16 / TC-PAM32 / TC-PAM64 / TC-PAM128
Data Rate: 128kbps - 30.464Mbps, 2x 15.232Mbps
Copper Pairs: 2 with Modes Master / Slave / Auto / Multipoint / Multipair
Interfaces: 1x Ethernet 10/100BaseT on Backplane to Switch
1x USB 2.0 (Local Consol Port)
Physical Interfaces: Phoenix Mini Combicom (SHDSL), Mini-B (USB)
Management: Console Port, Telnet, Web and SNMP

MiniFlex Fiber Optic Line Card



Model: MF-FOM-SRL,V1

Fiber Optic: 100Base-FX
Data Rate: 100 Mbps
Line Budget: Dependent on SFP module type
Number of Fibre: 1 or 2, depending on the SFP module type
Modes: Auto
Interfaces: 1x Ethernet 10/100BaseT on Backplane to Switch
1x Ethernet 100Base-FX (SFP) on the front panel
1x USB 2.0 (Local Consol Port)
Physical Interfaces: SFP cage, Mini-B (USB)
Management: Console Port, Telnet, Web and SNMP

MiniFlex SHDSL.bis Dinrail Modem



Model: MF-PAM-RAIL2N-2Eth-24V, V1
MF-PAM-RAIL2N-2Eth-230V, V1

DSL Version: SHDSL / SHDSL.bis / Extended
Modulation: TC-PAM4 / TC-PAM8 / TC-PAM16 / TC-PAM32 / TC-PAM64 / TC-PAM128
Data Rate: 128kbps - 30.464Mbps, 2x 15.232Mbps
Copper Pairs: 2 with Modes Master / Slave / Auto / Multipoint / Multipair / Ring
Interface: 2x Ethernet 10/100BaseT (Layer 2 Managed Switch)
1x USB 2.0 (Local Consol Port)
Power: 18 to 72VDC or 85 to 264VAC & 120 to 370VDC, 4W Typ.
Physical Interfaces: RJ45 (Ethernet), Phoenix Mini Combicom (Power & SHDSL), Mini-B (USB)
Management: Console Port, Telnet, Web and SNMP
Temperature: Standard: -5 to +45°C, Extended: -25 to +80°C



MiniFlex Fiber Optic Dinrail Modem

Model: MF-FOM-RAILN-Eth-24V, V1
MF-FOM-RAILN-Eth-230V, V1

Fiber Optic: 100Base-FX
Data Rate: 100 Mbps
Line Budget: Dependent on SFP module type
Number of Fibre: 1 or 2, depending on the SFP module type
Modes: Auto
Interfaces: 1x Ethernet 10/100BaseT
1x Ethernet 100Base-FX (SFP) on the front panel
1x USB 2.0 (Local Consol Port)
Power: 18 to 72VDC or 85 to 264VAC & 120 to 370VDC, 4W Typ.
Physical Interfaces: RJ45 (Ethernet), SFP cage, Mini-B (USB)
Management: Console Port, Telnet, Web and SNMP
Temperature: Standard: -5 to +45°C, Extended: -25 to +80°C



MiniFlex Dinrail Wallmount Kit

Model: MF-RAILN-WALLMOUNT, V1