

**SHDSL.bis Modem Repeater**  
**Ethernet Add/Drop**  
**Up to 60.8Mbps**

## Features

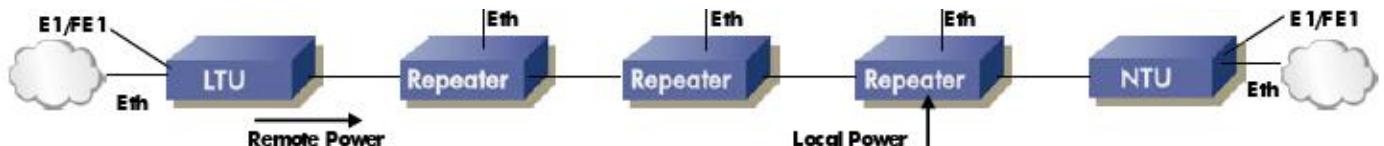
- SHDSL and SHDSL.bis (TC-PAM16/32/64/128)
- Up to 15.2Mbps over single and up to 60.8Mbps over quadruple pair copper
- Up to 4 Repeaters in Line
- Add/Drop Ethernet Bridge (10/100BaseT)
- Console Port, Telnet, Web, SNMP Management
- Locally or Remotely Line Powered
- Low Power Consumption
- Desktop, DIN Rail, IP67 and IP68 Housings
- Industrial temperature range from (-40°C to +85°C)
- OEM Versions Available



The FlexDSL Orion Series of SHDSL.bis products include a unique range of SHDSL Industrial grade Modems & Repeaters. The support of TCPAM8, TC-PAM16, and TC-PAM32 line coding allows seamless integration into existing DSL infrastructures, which is also the reason why FlexDSL Orion modems & repeaters are used by numerous SHDSL manufacturers around the world.

The support of SHDSL.bis allows the extension of symmetrical data and voice transmission at speeds of up to 15.2Mbps over a single pair of copper. Additionally, the FlexDSL Orion Series SHDSL.bis modems & repeaters support DSL channel bonding with up to four copper pairs in order to extend speeds up to 60.8Mbps! FlexDSL Orion Series SHDSL.bis modems & repeaters offer an add/drop Ethernet bridge (10/100BaseT) facility, ensuring maximum connectivity at sites where the business case may not justify expensive DSL nodes.

Like all FlexDSL Orion products, FlexDSL Orion Series SHDSL.bis modems & repeaters are based on industrial components and manufactured according to the highest quality standards thus providing additional value due to extended temperature range operation and high reliability. A comprehensive set of desktop, DIN Rail; IP67 & IP68 housings make FlexDSL Orion Series modems & repeaters the product of choice whatever the environment.



A typical application for FlexDSL Orion Series LTU, NTU Modems & Repeaters



FlexDSL Orion Series providing data links for Road, Rail & Air Traffic Control Systems

## SHDSL.bis Modem Repeater Ethernet Add/Drop Up to 60.8Mbps



## FlexDSL Orion Series IP20

2/4 & 8 wire SHDSL.bis with E1, Nx64 and Ethernet Interfaces.

- SHDSL.bis based on TC-PAM4/8/16/32/64/128 for single and multiple pair operation
- Up to 15.2Mbps over single and up to 60.8Mbps over quadruple pair copper
- Multiservice E1 (G.703/704) and Nx64 (V.35/36, X.21) Ethernet Interfaces
- Daughterboard's: RS-232/485/422, In-/Output, Real Time Clock, Memory for Log, Bluetooth
- Layer 2 managed Ethernet Switch with VLAN support (10/100BaseT)
- Spanning Tree (RSTP) for ring applications
- Built-in cross-connect (Multipoint)
- Regenerator/Repeater versions available
- Remote line power feature (120/200VDC)
- Console, Telnet, and SNMP management
- Tabletop, Sub-rack, and Mini-rack form factors
- Extended temperature range
- High quality and high performance

### Model: IP20 Series

DSL Version: SHDSL / SHDSL.bis / Extended

Modulation: TC-PAM4 / TC-PAM8 / TC-PAM16 / TC-PAM32 / TC-PAM64 / TC-PAM128

Data Rate: 128kbps – 60.8Mbps

Copper Pairs: 1.2 or 4

Modes: Master / Slave / Auto/Repeater

Interface: 1x Nx64k (E1), 2x Ethernet 10/100BaseT (Layer 2 Managed Switch)

Power: 36 to 230VDC, accepts local and remote power

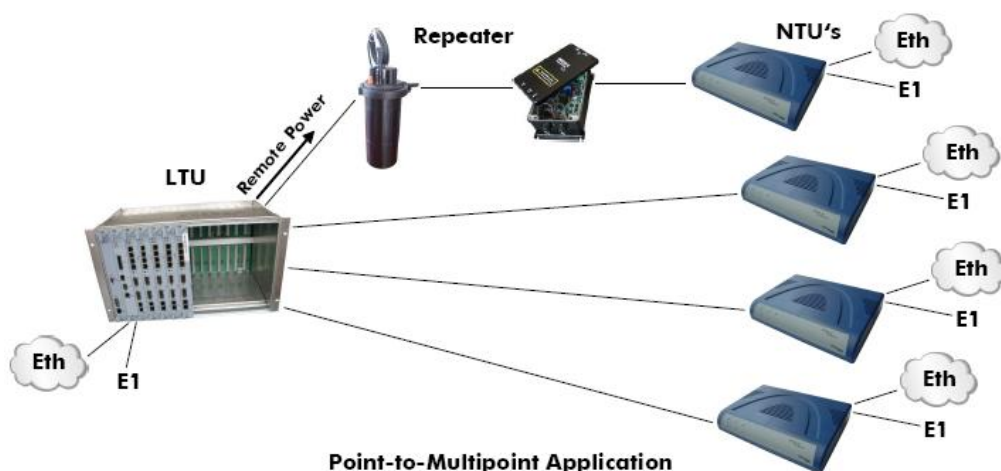
Physical Interfaces: RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)

Management: Console Port, Telnet, HTTP and SNMP

Power Supply: 90-260VAC option with FG-PAM-PA48G (not included)



Data links for Building and Automation Control Systems



## SHDSL.bis Modem Repeater Ethernet Add/Drop Up to 30.4Mbps



## FlexDSL Orion Series IP30 DIN-Rail 2 & 4 wire SHDSL.bis with E1, Nx64 and Ethernet Interfaces.

When Rail mounting is a requirement the FlexDSL Orion Series IP30 Modems & repeaters with IP30 DIN Rail Metal Enclosures is the right choice, extending 2 wire SHDSL (TC-PAM16/32/64/128) up to 15.4Mbps.

The IP30 units offer Ethernet add/drop functionality (10/100BaseT, Bridge) and come in a blue (RAL 5003) powder coated metal housing with white labelling. The Modem/Repeaters can be powered locally or remotely over the DSL line. Therefore, it is configurable as power "endpoint" terminating power transmitted over the DSL line or power "pass-through" passing power on to another Modem, Repeater or CPE device on the DSL line.

### Model: IP30 Series

DSL Version: SHDSL / SHDSL.bis

Modulation: TC-PAM16 / TC-PAM32/ TC-PAM64/ TC-PAM128

Data Rate: 128bps – 30.4Mbps

Copper Pairs: 1 or 2

Modes: Master / Slave/Repeater

Interface: 1x Ethernet Bridge (10/100BaseT) 1xE1

Power: -48VDC, accepts local and remote line power

Physical Interfaces: RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL),

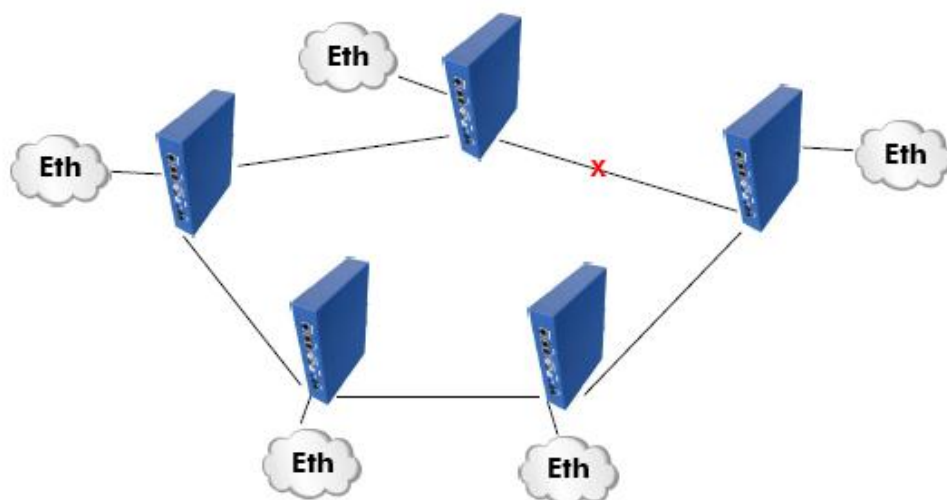
Molex (Power), DB9 (Management)

Management: Console Port, Telnet, HTTP, and SNMP via TCU

Power Supply: Not included (option FG-PAM-PA48x or FG-SR2-RP)

Dimensions: 220x165x45cm (L x W x H)

Operating temperature: -25 – +80°C



Ring Application



## SHDSL.bis Modem Repeater Ethernet Add/Drop Up to 30.4Mbps



## FlexDSL Orion Series IP67 2 & 4 wire SHDSL.bis with Ethernet Interfaces.

This FlexDSL Orion Series IP67 Modem/Repeater extends single or dual pair SHDSL (TC-PAM16/32/64/128). It offers Ethernet add/drop functionality (10/100BaseT, Bridge) and is protected in an IP-67 thermoplastic enclosure. The IP67 unit can be powered locally or remotely over the DSL line. Therefore, it is configurable as power "end-point" or "pass-through".

The Orion Series SHDSL.bis Modem/Repeater's thermoplastic enclosure is light, easily mountable, and its impact resistance is very high. It is made of polycarbonate, which is suitable for demanding conditions and also for outdoor use. The temperature resistance of polycarbonate ranges from -50 °C to +120 °C. A black print indicates interfaces and LED's. Standard colour is grey RAL 7035, while the cover is transparent; other colours are available on request. Cable entries are achieved by two PG13 cable glands for DSL connection and a PG7 cable gland for local power. Two IP67 protected RJ45 connectors provide access to an Ethernet add/drop port and to the system's local configuration interface.

### Alternative Enclosures

For harsh environments and outdoor use FlexDSL Orion IP67 Modem/ Repeater's are also available in cost effective and high profile aluminium enclosures.

The Orion IP67 Black SHDSL.bis Modem/ Repeater's aluminium enclosure is easily mountable, and is the best possible fit when environmental protection is required. It is made of die cast Aluminium and is suitable for rough conditions and outdoor use.

The black high end IP67 enclosure offers an external LED status indication and additional IP67 protected RJ45 interfaces for Ethernet and console port access, indicated by white labels.

### Model: IP67

DSL Version: SHDSL / SHDSL.bis

Modulation: TC-PAM16 / TC-PAM32/ TC-PAM64/ TC-PAM128

Data Rate: 128kbps -30.4Mbps

Copper Pairs: 1 or 2

Modes: Master / Slave/Repeater

Interface: 1x Ethernet Bridge (10/100BaseT)

Power: -48VDC, accepts local and remote power

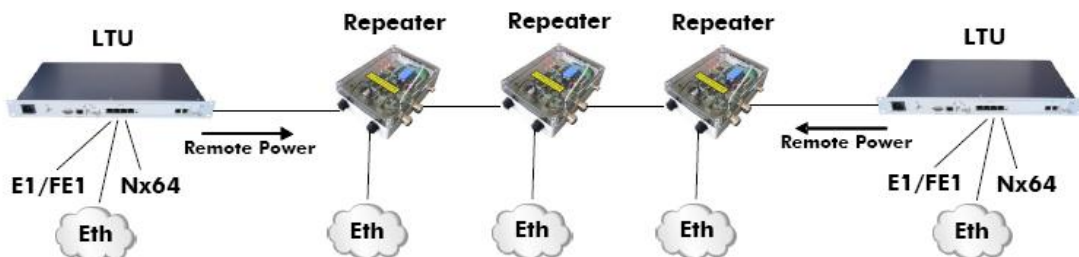
Physical Interfaces: RJ45 (Ethernet), Terminal Block (SHDSL, Power), RJ45 (Management)

Management: Console Port, Telnet, HTTP, and SNMP via TCU

Power Supply: Not included (option FG-PAM-PA48x or FG-SR2-RP)

Dimensions: 280x200x75cm (L x W x H)

Operating temperature: -25 – +80°C



**Ethernet Add/Drop Repeater Application with Remote Power  
providing Data links for Green Energy control systems.**

**SHDSL.bis Modem Repeater**  
**Ethernet Add/Drop**  
**Up to 30.4Mbps**

**FlexDSL Orion Series IP68**  
**2 & 4 wire SHDSL.bis with Ethernet Interfaces.**

## FlexDSL Orion Series IP68

### Special Modem/Repeater Enclosures for Subsoil and Underground Applications

The IP-68 enclosures are made from the same materials as cables, meaning wherever a cable is used an IP-68 enclosure can also be used. The high-end polyethylene is particularly resistant to alkaline earths, salt water, fungal and purification bacteria. Thanks to the ingenious design and compact construction the IP-68 enclosure is absolutely watertight. Consequently, they are ideal for direct use in subsoil, underground or aerial applications.

### Subsoil, Underground or Aerial Applications

FlexDSL Orion Series Modem/Repeaters have more features than the corresponding products from competitors.

- Components have industrial temperature range (-40°C to +85°C)
- Components are never run on the specification limits
- Programmable, flexible and intelligent design, using High-class chipsets
- Complete solution design, including repeaters and remote line power
- Industry leading performance, with low power, long life and high quality design

The Orion1, 2 and 3 DSL Modems, Repeaters and Systems are based on the G.SHDSL standard (ITU Rec. G.991.2), what represents the best of several symmetric DSL technologies that have been combined into a single industry standard providing rate adaptation, greater reach and performance, spectral compatibility, lower power and application flexibility.



### Typical Application with Orion's Modems

