SHDSL.bis Repeater

Up to 11.4Mbps

Ethernet Add/Drop

Flex DSL ®
Telecommunications AG

FlexDSL Orion 2
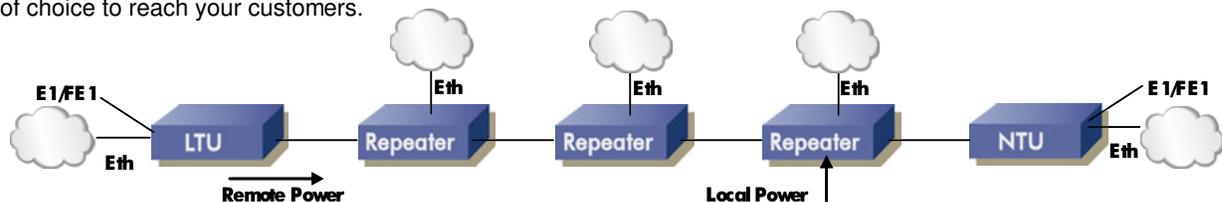## TDM Based SHDSL.bis Repeater

Features

- SHDSL and SHDSL.bis (TC-PAM16/32)
- Up to 5.7Mbps over Single and up to 11.4Mbps over Dual pair of Copper
- Up to 4 Repeaters in Line
- Add/Drop Ethernet Bridge (10/100BaseT)
- Console Port, Telnet, Web, SNMP Management
- Locally or Remotely Powered
- Low Power Consumption
- Desktop, DIN Rail, and IP67 Housings
- OEM Versions Available

The FlexDSL Orion 2 SHDSL.bis product family includes a unique range of SHDSL repeaters. The support of TC-PAM8, TC-PAM16, and the new TC-PAM32 line coding allows seamless integration into existing DSL infrastructures, which is also the reason why FlexDSL Orion 2 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 5.7Mbps over a single pair of copper. Additionally, the FlexDSL Orion 2 SHDSL.bis repeaters support DSL channel bonding with up to two copper pairs in order to extend speeds up to 11.4Mbps! FlexDSL Orion 2 SHDSL.bis repeaters offer an add/drop Ethernet bridge (10/100BaseT) facility, ensuring maximum connectivity at sites where the business case may not jusify expensive DSL nodes.

Like all FlexDSL Orion products, FlexDSL Orion 2 SHDSL.bis repeaters are also 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, and IP67 housings should make FlexDSL Orion 2 repeaters your product of choice to reach your customers.

Specifications are subject to change without notice

FlexDSL Orion 2 SHDSL.bis Standalone Repeater

The most common FlexDSL Orion 2 Repeater extends single pair SHDSL (TC-PAM16/32) up to 5.7Mbps. It offers Ethernet add/drop functionality (10/100BT, Bridge) and comes in a plastic desktop housing. The repeater can be powered locally or remotely over the DSL line. Therefore it is configurable as power "end-point" terminating power transmitted over the DSL line, or power "pass-through", passing power on to another repeater or CPE device on the DSL line.

The Orion 2 SHDSL.bis Repeater comes in a robust blue (RAL 5003) desktop plastic housing with a dark gray (RAL 7001) LED sticker with black labeling. The housing is stackable and was designed for in-door use only.

Model:	**FG-PAM-RGN-Eth-PL, V51**
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	192kbps - 5.7Mbps
Copper Pairs:	1
Modes:	Master / Slave
Interface:	1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	RJ48 (E1 not used), 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:	220x155x50cm (LxWxH)
Operating temperature:	-25 – +80ºC

FlexDSL Orion 2 SHDSL.bis DIN Rail Repeater

When Rail mounting is a requirement the FlexDSL Orion 2 Repeater with DIN Rail case is the right choice, extending single pair SHDSL (TC-PAM16/32) up to 5.7Mbps. it offers Ethernet add/drop functionality (10/100BT, Bridge) and comes in a blue (RAL 5003) powder coated metal housing with white labeling.

The repeater can be powered locally or remotely over the DSL line. Therefore, it is configurable as power "end-point" terminating power transmitted over the DSL line or power "pass-through" passing power on to another repeater or CPE device on the DSL line.

Model:	**FG-PAM-RGN-Eth-RL, V51**
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	192kbps - 5.7Mbps
Copper Pairs:	1
Modes:	Master / Slave
Interface:	1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	RJ48 (E1 not used), 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 (LxWxH)
Operating temperature:	-25 – +80ºC

Specifications are subject to change without notice

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FlexDSL Orion 2 SHDSL.bis IP67 Repeater

This FlexDSL Orion 2 Repeater extends single or dual pair SHDSL (TC-PAM16/32). It offers Ethernet add/drop functionality (10/100BT, Bridge) and is protected by an IP-67 plastic housing. The repeater can be powered locally or remotely over the DSL line. Therefore, it is configurable as power "end-point" or "pass-through".

The Orion 2 SHDSL.bis 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 ℃ to +120 ℃. A black print indicates interfaces and LED's. Standard color is grey RAL 7035, while the cover is transparent; other colors 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.

Model:	FG-PAM-RGN-Eth-IPP, V56
	FG-PAM-RG2N-Eth-IPP, V58
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	192kbps - 5.7Mbps (FG-PAM-RGN-Eth-IPP, V56)
	192kbps - 11.4Mbps (FG-PAM-RG2N-Eth-IPP, V58)
Copper Pairs:	1 (FG-PAM-RGN-Eth-IPP, V56)
	2 (FG-PAM-RG2N-Eth-IPP, V58)
Modes:	Master / Slave
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 (LxWxH)
Operating temperature:	-25 – +80ºC

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FlexDSL Orion 2 SHDSL.bis IP67 Repeater

For harsh environments and outdoor use FlexDSL Orion 2 Repeaters are also available in cost effective and high profile aluminum enclosures, extending single or dual pair SHDSL (TC-PAM16/32). It offers Ethernet add/drop functionality (10/100BT, Bridge) and is protected by an IP-67 aluminum housing. The repeater can be powered locally or remotely over the DSL line. Therefore, it is configurable as power "end-point" or "pass-through".

The cost effective gray IP67 housing (RAL 7032) offers two PG13 cable glands for up to four cable entries.

Model:	**FG-PAM-RGN-Eth-IPL, V56**
	FG-PAM-RG2N-Eth-IPL, V58
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	192kbps - 5.7Mbps (FG-PAM-RGN-Eth-IPL, V56)
	192kbps - 11.4Mbps (FG-PAM-RG2N-Eth-IPL, V58)
Copper Pairs:	1 (FG-PAM-RGN-Eth-IPL, V56)
	2 (FG-PAM-RG2N-Eth-IPL, V58)
Modes:	Master / Slave
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:	290x170x70cm (LxWxH)
Operating temperature:	-25 – +80ºC

Specifications are subject to change without notice

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FlexDSL Orion 2 SHDSL.bis IP67 Repeater

The Orion 2 SHDSL.bis Repeater's aluminum enclosure is easily mountable, and is the best possible fit when environmental protection is required. It is made of die-cast aluminum, which is suitable for rough conditions and outdoor use.

The black high end IP67 enclosure offers an external LED indication about the repeater's status as well as additional IP67 protected RJ45 interfaces for Ethernet and console port access, which is moreover indicated by white labels.

Model:	**FG-PAM-RGN-Eth-IPH, V56**
	FG-PAM-RG2N-Eth-IPH, V58
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	192kbps - 5.7Mbps (FG-PAM-RGN-Eth-IPH, V56)
	192kbps - 11.4Mbps (FG-PAM-RG2N-Eth-IPH, V58)
Copper Pairs:	1 (FG-PAM-RGN-Eth-IPH, V56)
	2 (FG-PAM-RG2N-Eth-IPH, V58)
Modes:	Master / Slave
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:	310x170x110cm (LxWxH)
Operating temperature:	-25 – +80ºC
Remark:	external LED Indicator

Specifications are subject to change without notice

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FlexDSL Orion 2 SHDSL.bis IP68 Repeater

A Special Repeater for Subsoil and Underground Applications

This IP-68 enclosure is made of the same materials as the 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 putrefication 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.

Model:	**FG-PAM-RGN-Eth-IPS, V56**
	FG-PAM-RG2N-Eth-IPS, V58
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	192kbps - 5.7Mbps (FG-PAM-RGN-Eth-IPS, V56)
	192kbps - 11.4Mbps (FG-PAM-RG2N-Eth-IPS, V58)
Copper Pairs:	1 (FG-PAM-RGN-Eth-IPS, V56)
	2 (FG-PAM-RG2N-Eth-IPS, V58)
Modes:	Master / Slave
Interface:	1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	Terminal Block (SHDSL, Power),
	RJ45 (Management), internally
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (option FG-PAM-PA48x or FG-SR2-RP)
Dimensions:	430x178mm (LxD)
Operating temperature:	-25 – +80ºC

Specifications are subject to change without notice

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FlexDSL Orion 2 SHDSL.bis Repeater Overview

FlexDSL Orion 2 Repeater / Functionality	Standalone	Rail Mounting	Protected Housing	Single Pair	Dual Pair Bonding	Point-to-Point	Ethernet Bridge	Multi-Service	Ethernet Add/Drop	Cross Connect	Remote Power Source	Console Port Management	Telnet Management	Web Management	Optional SNMP Management
FG-PAM-RGN-Eth-PL, V51	■			■		■	■	■	■	■	■	■	■	■	■
FG-PAM-RGN-Eth-RL, V51		■		■		■	■	■	■	■	■	■	■	■	■
FG-PAM-RGN-Eth-IPP, V56			■	■		■	■	■	■	■	■	■	■	■	■
FG-PAM-RG2N-Eth-IPP, V58			■		■	■	■	■	■	■	■	■	■	■	■
FG-PAM-RGN-Eth-IPL, V56			■	■		■	■	■	■	■	■	■	■	■	■
FG-PAM-RG2N-Eth-IPL, V58			■		■	■	■	■	■	■	■	■	■	■	■
FG-PAM-RGN-Eth-IPH, V56			■	■		■	■	■	■	■	■	■	■	■	■
FG-PAM-RG2N-Eth-IPH, V58			■		■	■	■	■	■	■	■	■	■	■	■

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