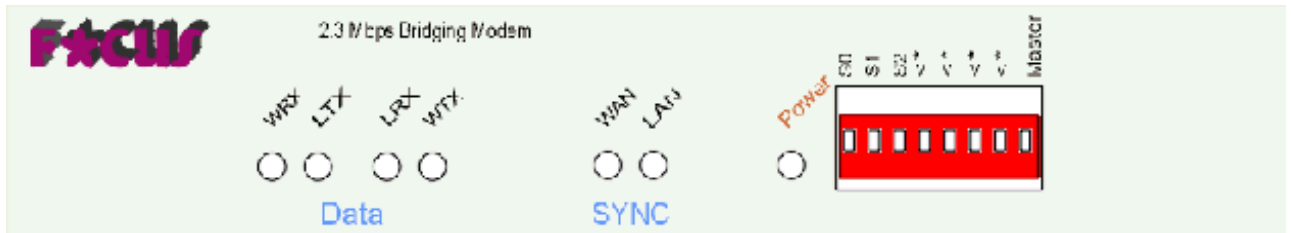


Single pair 4.6 Mbps G.shdsl Bridging modem with 10baseT interface.



F*CUS

Front Panel



Data transmission indicator LEDs

LAN and WAN synchronization indicators

Mode setup dipswitches

Rear Panel



Line connector. Pins 4 & 5

Power socket 6V DC jack

10 Base T connector R45.

General Information

Focus G.sh Digital Subscriber Line (G.shdsl) bridging modem provides a symmetrical transmission speed up to 4.6 Mbps through G.shdsl connection over single copper line. This G.shdsl device allows to choose the connection speed based on demand and cost. Besides, it can be configured in either server or client mode providing a point-to-point connectivity between two sites.

A pair of Focus G.shdsl modems offer a cost effective solution for bandwidth-hungry applications such as video-conferencing and distance learning over twisted wire pair. It is an ideal symmetrical high speed solution for LAN-to-LAN connectivity and Internet Access.

Technical specification

Power	6V/600mA non-stabilized
dimensions:	150*180*30mm
weight:	0.35 kg
Interfaces:	RJ45 10baseT. (DTE mode, not crossed) RJ45 line connection pins 4 & 5 Power Jack connector
Speed:	256 kbit/s up to 4608 kbit/s preset with dipswitch
Line coding:	TC-PAM 16 and TC-PAM-32
Ambient temp.:	-20°C do +60°C

LAN interface specs.

Data cache:	256 frames
MAC address cache:	10.000 pos
Automatic MAC address removal after 5 minutes	
Ethernet frame padding removal for frames shorter than 64 bytes.(empty byte padding is not transmitted over DSL line)	
RJ 45 connector pin-out according to data terminal specs.	
LAN interface is isolated up to 1.5kV.	

WAN interface specs

Line interface is optimized for twisted pair telephone grade line with 130 ohm impedance. Lines with impedance not matching 130 ohm will result in sub optimal transmission performance.

WAN interface is isolated with transformer guaranteed to withstand 2kV .

Range

Usable range depends on the copper line quality. Maximum range for 0.5mm copper line should be as follows :

8km with 272 kbps
5km with 1024 kbps
4km with 2312 kbps
2km with 4608 kbps

Range for 0.6mm copper line is respectively:

10km with 272 kbps
7.5km with 1024 kbps
5.5km with 2312 kbps
3km with 4608 kbps

Above listed values were verified during real world operations. In practice range will depend on many factors such as noise and line route.

Line interface of the modem is based on state-of-the-art chipset for Mindspeed. Board design , electronic components and manufacturing process has been optimized to ensure maximum transmission performance can be achieved.

Control panel indicators

- WRX WAN data received
- WTX WAN data transmitted
- LRX LAN data received
- LTX LAN data transmitted
- WAN LINK WAN in sync
- LAN LINK LAN presence detected
- POWER power on

Additional hidden indicator aside of Power indicator blinks during boot-up process (for about 5 secs after power-on) as well as during WAN link set up. This indicator should be off while WAN is in sync.

DIP switch settings

Desired transmission speed is set by dipsw section marked S0,S1,S2,S3,S4. The 32 combinations are listed in the table below with the respective speed ranging from 256 to 4608 kbps. L- denotes dipsw is LOW , H denotes dipsw is HIGH.

					Compr	Dpx	Slave
S1	S2	S3	S4	S5			
Auto	L	L	L	L	L	L	L
256	H	L	L	L	L	L	L
384	L	H	L	L	L	L	L
512	H	H	L	L	L	L	L
640	L	L	H	L	L	L	L
768	H	L	H	L	L	L	L
896	L	H	H	L	L	L	L
1024	H	H	H	L	L	L	L
1152	L	L	L	H	L	L	L
1280	H	L	L	H	L	L	L
1408	L	H	L	H	L	L	L
1536	H	H	L	H	L	L	L
1664	L	L	H	H	L	L	L
1792	H	L	H	H	L	L	L
1920	L	H	H	H	L	L	L
2048	H	H	H	H	L	L	L

c.d.							
S1	S2	S3	S4	S5			
2176	L	L	L	L	H	L	L
2304	H	L	L	L	H	L	L
2432	L	H	L	L	H	L	L
2560	H	H	L	L	H	L	L
2688	L	L	H	L	H	L	L
2816	H	L	H	L	H	L	L
2944	L	H	H	L	H	L	L
3072	H	H	H	L	H	L	L
3200	L	L	L	H	H	L	L
3328	H	L	L	H	H	L	L
3456	L	H	L	H	H	L	L
3584	H	H	L	H	H	L	L
3712	L	L	H	H	H	L	L
3840	H	L	H	H	H	L	L
3968	L	H	H	H	H	L	L
4608	H	H	H	H	H	L	L

Setting all speed dipsw low activates auto negotiation feature denoted AUTO. AUTO negotiates optimal speed for the given line in the range from 144 up to 2.3mbps.

Compr switch activates ethernet frame padding removal for frames shorter than 64 bytes. This feature will increase speed for small frames. Compression switch setting has to be identical on both modems in a connected pair.

„Dpx” in high position activates duplex mode on the LAN link.

This switch can only be on when the connected LAN device is forced into 10baseT duplex mode. LAN interface does not support auto negotiation. Modem connected to a LAN device supporting auto negotiation will always be detected as semi-duplex device. Therefore setting LAN duplex should only be done in a forced mode. Improper usage of the duplex feature will result in high frame lost statistics.

Slave switch in low position sets modem in central office equipment mode HTU-C. Slave switch high sets remote mode HTU-R.

Choosing speeds higher than 2,3Mbps sets line coding to TC-PAM-32. For lower speeds TC-PAM-16 is used. For speeds higher than 2.3Mbps both modems must have matching speed settings. For speeds lower than 2.3Mbps final speed is forced by HTU-C device. The HTU-R modem in this case can use any setting lower than 2.3Mbps.

Speed negotiation is performed by both modems by using G.hs protocol. G.hs negotiation phase is functional for TC-PAM-16 code (speeds up to 2.3Mbps).

TC-PAM line coding used in Focus G.shdsl modem provides far better performance than 2B1Q technology used in SDSL modems. Thanks to this technique average speed has increased from 60% to 100% compared to SDSL modems used on the same line.

Instalation

Device installation requires three cables to be connected to appropriate sockets. LAN 10baseT connector should be plugged into LAN socket. Copper twisted pair line should be plugged into LINE socket and 6VDC supplied to POWER socket. Pins 4 and 5 (middle pair) of the line socket are used for transmission line connection.

LAN socked is connected like in a terminal device. Connection to the Ethernet Switch should therefore be done with a „straight” cable. Connection to the network card should be done with „cross over” cable.

Two modems working in a pair on two ends of a line should be set to different modes HTU-C on one end and HTU-R on the other end. (rightmost dipswitch down and up).

It takes from 10 to 30 seconds to establish a connection depending on the speed. During link negotiation WRX indicator may blink occasionally. Once stable link is established WAN SYNC link blue indicator goes on.

Correct LAN connection will be acknowledged by LAN sync indicator lamp. Transmitted traffic is monitored by four indicators LTX LRX WTX WRX blinking.

Warranty conditions

1. Warranty covers repairs during 12 months from the purchase.
2. All repairs will be done within 14 days from delivery of modems to the service center.
3. Devices should be shipped to the manufacturer for repair upon prior notice. Buyer is responsible for proper shipment of the devices.
4. All damages due to external reasons such as improper handling, electric discharges are excluded from warranty.
5. Service center can deny warranty repair if devices have been opened, repaired or modified by the buyer.

Seller

Date