VALIANT COMMUNICATIONS LIMITED

www.valiantcom.com

VCL-V.35 Interface
Fiber Optic Modem

User Manual

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Warranty

This Valiant product is warranted against defects in material and workmanship for a period of one year from the date of shipment. During the warranty period, Valiant will, at its discretion, either repair or replace products which prove to be defective. For warranty service or repair, this product must be returned to a service facility designated by Valiant. The buyer shall prepay shipping charges to Valiant and the company shall pay shipping charges to return the product to the buyer. However, the buyer shall pay all the shipping charges, duties and taxes for products returned to Valiant from another country.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the buyer, buyer-supplied firmware or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product or improper site preparation or maintenance.

Exclusive Remedies

The remedies provided herein are the buyer's sole and exclusive remedies. Valiant shall not be liable for any direct, indirect, special, incidental or consequent damages, whether based on contract or any legal theory.

Notice

Safety Warnings

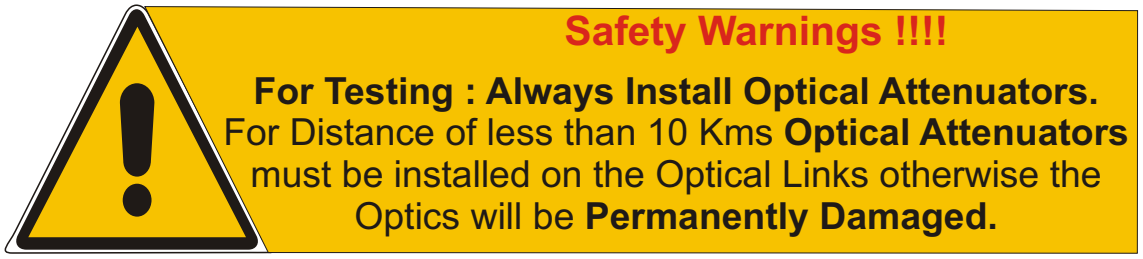
The exclamation point within a triangle is intended to warn the operator or service personnel of operation and maintenance factors relating to the product and its operating environment which could pose a safety hazard.

Always observe standard safety precautions during installation, operation and maintenance of this product. Only a qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this instrument. No adjustment, maintenance or repairs should be performed by either the operator or the user.

UALITY ASSURANCE PROGRAM

Valiant's products are designed and manufactured under a strict Quality Assurance Program based on the ISO 9000 philosophy and principles. Valiant pays very special attention to its vendor development program which ensures an "end-product" of the highest quality at the most cost effective prices.

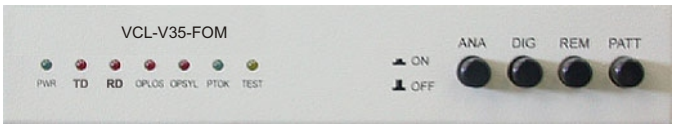
INDEX



Introduction

The VCL-V.35 Fiber Optic Modem provides the user the capability to establish communication between two V.35 interfaces or between an E1/FE1 interface and a “n”x64 V.35 interface over an optical fiber link.

Front view



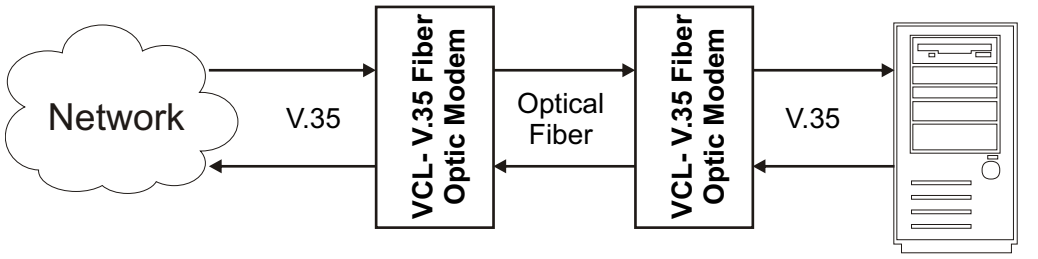
VCL-V.35 Interface Fiber Optic Modem

It establishes a secure, long range data fiber link between computers, routers, multiplexers and other V.35 or E1 data communication devices.

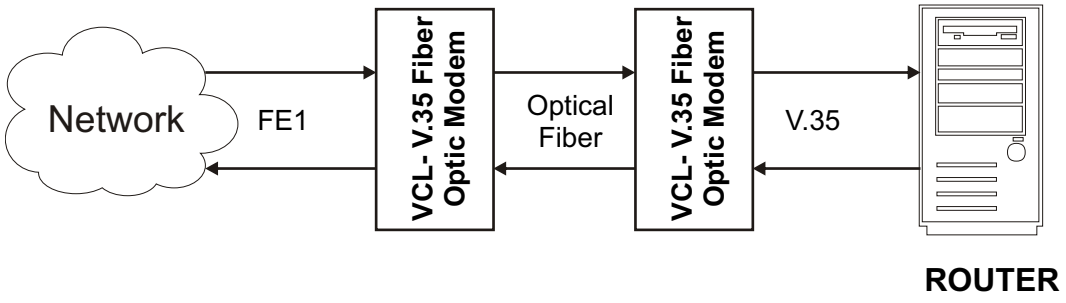
The primary application for the VCL-V.35 Fiber Optic Modem is to establish point-to-point fiber link at ranges longer than any copper modem can achieve. The clock options are Internal/External/ Slave Clock - three clock mode option.

Safety Warnings !!!!

For Testing : Always Install Optical Attenuators.
For Distance of less than 10 Kms **Optical Attenuators** must be installed on the Optical Links otherwise the Optics will be **Permanently Damaged.**



Application -1



Application -2

Technical Specifications

V.35 Interface

Interface type	V.35
Interface mode	DCE
Interface bit rate	nx64 Kbps (n=1-32)
Connector	DB-25 (Female)
Adapter	DB-25 (Male) to M34 Winchester (Female)

Optical Interface Specifications - 850nm Multi Mode

Transmitter Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Center Wavelength	830nm	850nm	860nm
Output Spectral Width (RMS)			0.85nm
Average Output power	-10dBm		-3dBm
Output optical Eye	Complaint with ITU-T G.957		
Connectors	FC		

Receiver Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Receive Sensitivity	-24dBm		
Maximum Input Power			-3dBm
Operating Wavelength	-10dBm	850nm	
Connectors	FC		

Optical Interface Specifications - 1310nm Single Mode

Transmitter Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Center Wavelength	1260nm	1310nm	1360nm
Output Spectral Width (RMS)			6nm
Average Output power	-15dBm	-12dBm	-8dBm
Output optical Eye	Complaint with ITU-T G.957		
Connectors	FC		

Receiver Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Receive Sensitivity	-32dBm		
Maximum Input Power			-15dBm
Operating Wavelength	1100nm		1600nm
Connectors	FC		

Optical Interface Specifications - 1550nm Single Mode

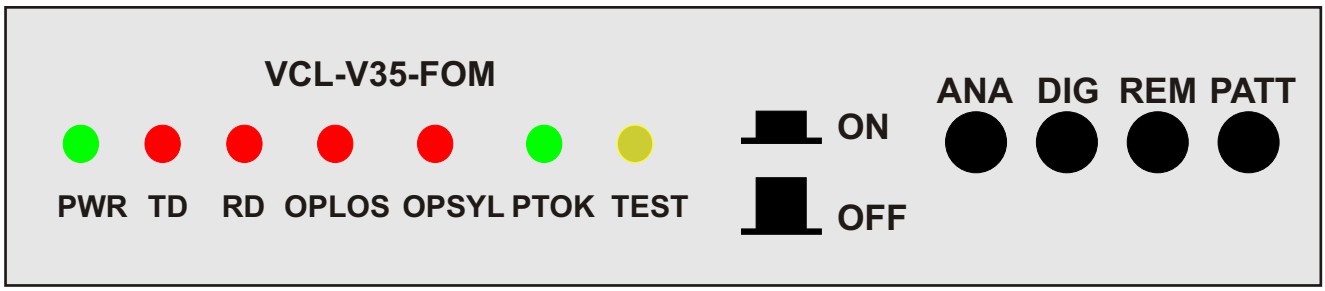
Transmitter Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Center Wavelength	1480nm	1550nm	1580nm
Output Spectral Width (RMS)			4nm
Average Output power	-15dBm	-12dBm	-8dBm
Output optical Eye	Complaint with ITU-T G.957		
Connectors	FC		

Receiver Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Receive Sensitivity	-32dBm		
Maximum Input Power			-15dBm
Operating Wavelength	1100nm		1600nm
Connectors	FC		

VCL-V.35 Interface
Fiber Optic Modem

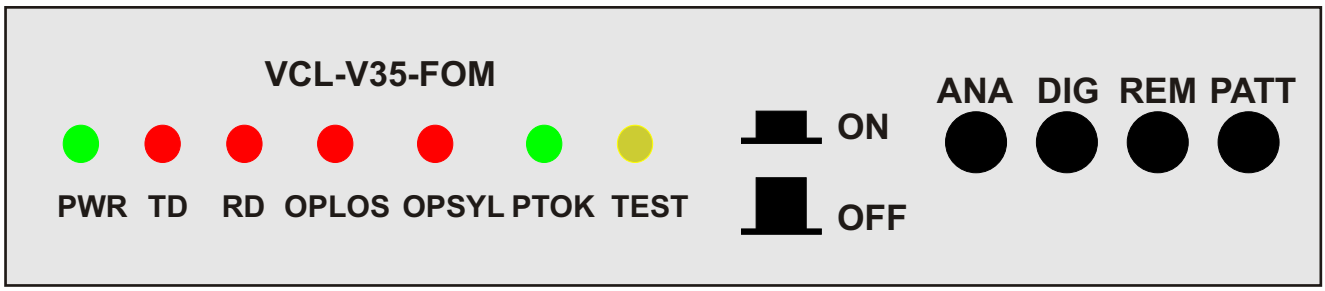


Front view of the shelf

LEDs Indications

S. No.	LEDs	Color	Description
1.	PWR	Green	ON indicates that input power supply is OK.
2.	TD	Yellow	Flashing to indicate there is data input in V.35 data interface; the faster the flashing speed is, the higher the speed of V.35 interface is. This is a V.35 data speed indicator.
3.	RD	Yellow	Flashing to indicate there is data input in V.35 data interface; the faster the flashing speed is, the higher the speed of V.35 Interface is. This is a V.35 data speed indicator.
4.	OPLOS	Red	Optical link break alarm; Constantly “ON” to indicate there is local alarm, and flashing to indicate there is an alarm at the remote end.
5.	OPSYL	Red	No frame synchronization code is detected in the input signal of optical interface. Constantly “ON” to Indicate an alarm of local end and flashing to indicate there is an alarm at the remote end.
6.	PTOK	Green	Pseudo code normally detected.
7.	TEST	Yellow	Local device or remote device in test mode.

VCL-V.35 Interface
Fiber Optic Modem



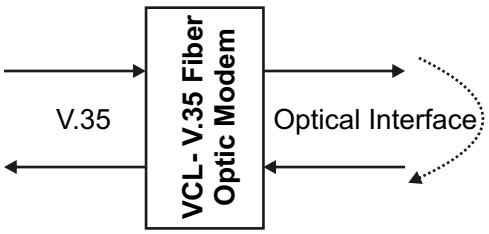
Front view of the shelf

Push - button and Switch Indications

Four push - button switches are available on the front panel. The switches are in "ON" mode when pressed or in OFF mode when released. They are respectively from left to right.

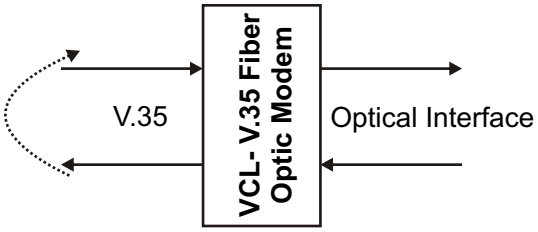
ANA: This switch initiates a internal loopback on the optical interface so that the V.35 data being received (on Rx pins) by the system is transmitted back on the same V.35 interface (on Tx pins).

This test may be used to verify the integrity of the V.35 data interface connections.

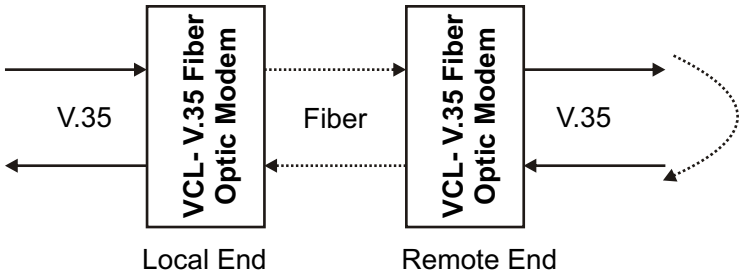


DIG: This switch initiates a internal loopback on the V.35 interface so that the data being received on the optical (Rx) fiber is sent back on the optical (Tx) fiber through the V.35 interface.

This test may be used to verify the integrity of the optical link.



REM: This switch initiates a loopback at the remote side. It may be used to verify the complete data link integrity between the local and the remote V.35 interface.



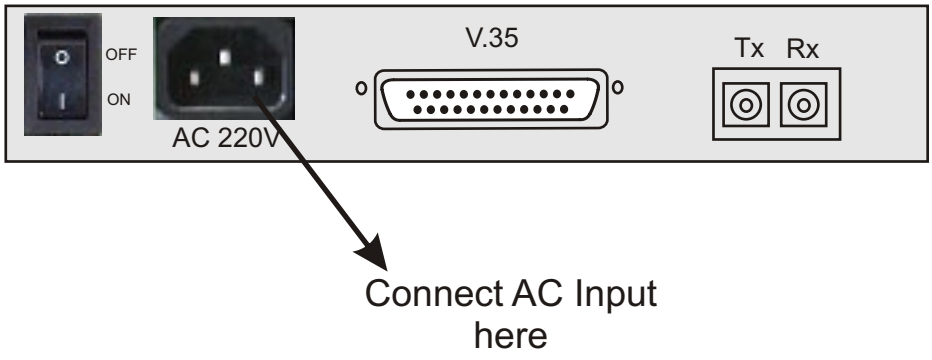
PATT: This switch initiates a data link integrity test by generating a pseudo random pattern.

Important:

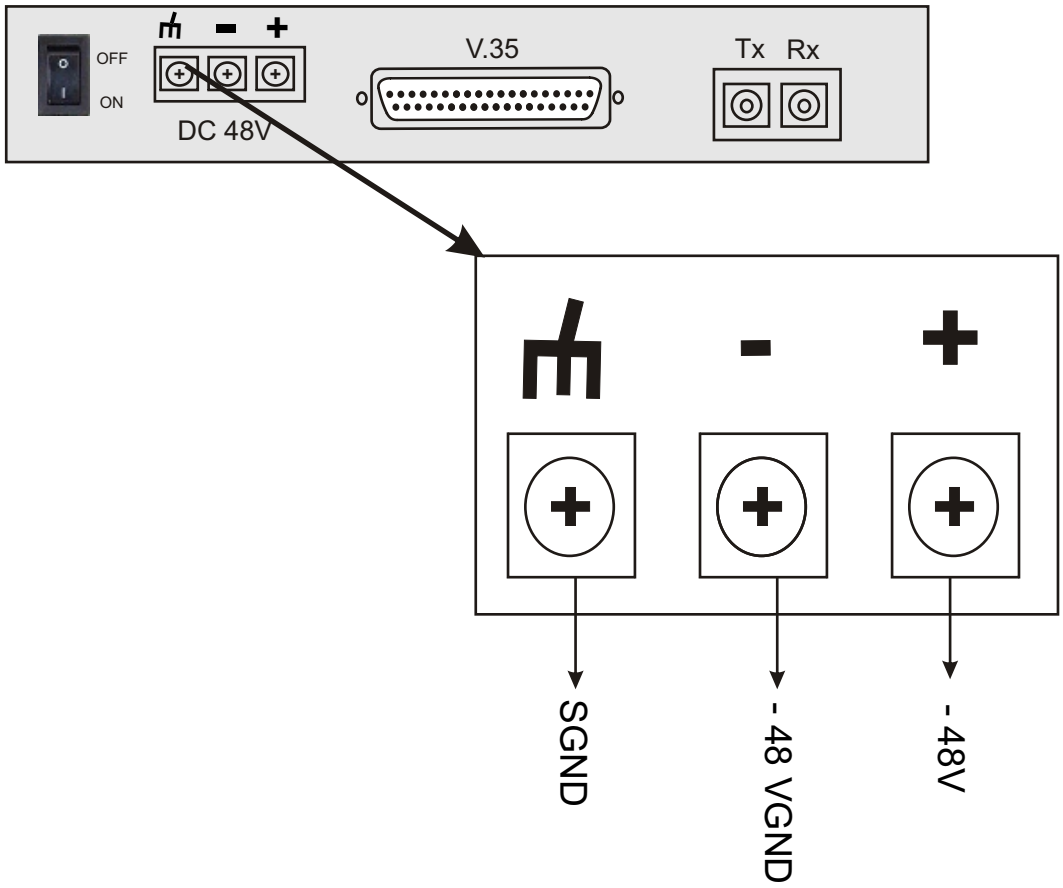
1. All switches must be in OFF condition during normal operations. Whenever a test switch is used to initiate a test, the normal communications shall be disrupted.
2. When PATT switch is used to do a data link integrity test please ensure that the far end in a loopback mode to complete the test circuit.

VCL- V.35 Interface
Fiber Optic Modem

Rear view with AC Power supply



Rear view with -48 V DC Power supply

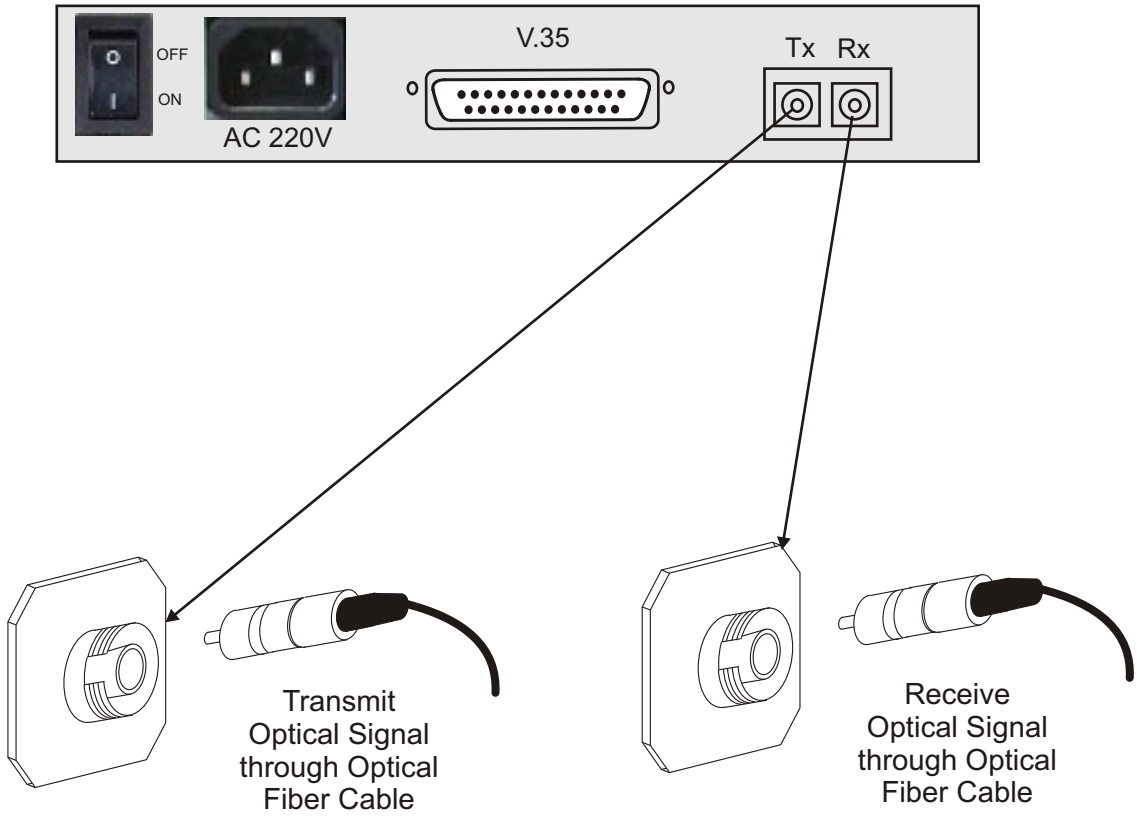


Note:

Please connect - 48V DC supply to the system as shown in above figure.

VCL- V.35 Interface
Fiber Optic Modem

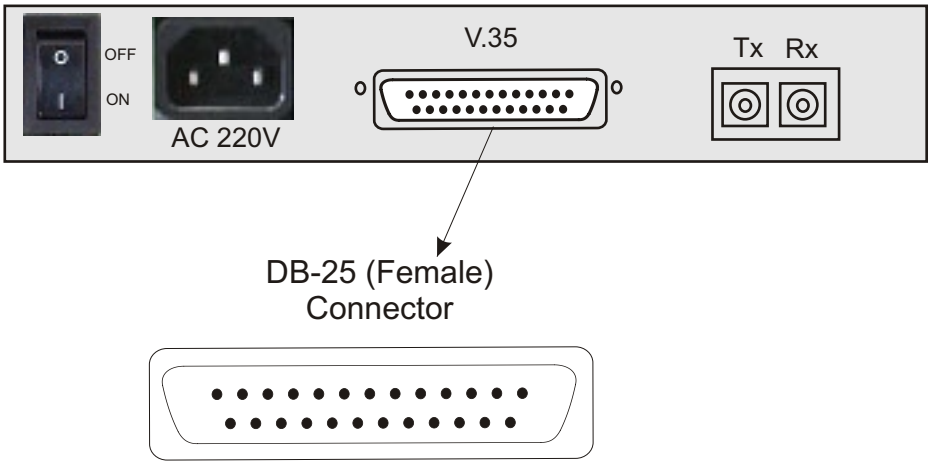
Rear view - Optical Connections



Note: Do not expose to the naked eye.
Connect Fiber Cable to System
When Power is OFF.

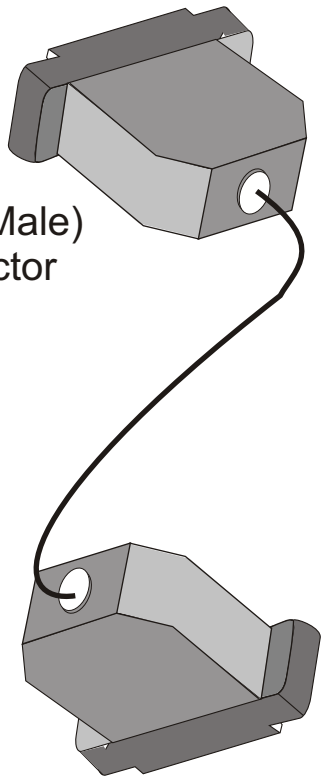
VCL- V.35 Interface
Fiber Optic Modem

Rear view - V.35 Connections



DB-25 (Female)
Connector

DB-25 (Male)
Connector



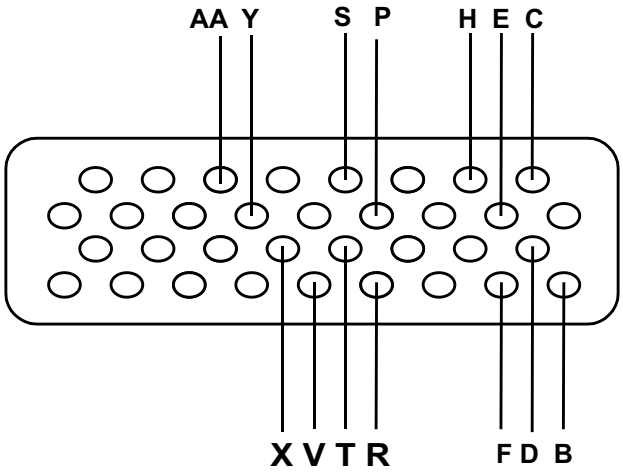
V.35 Winchester (Female) connector

V.35 (DCE) Interface Cable

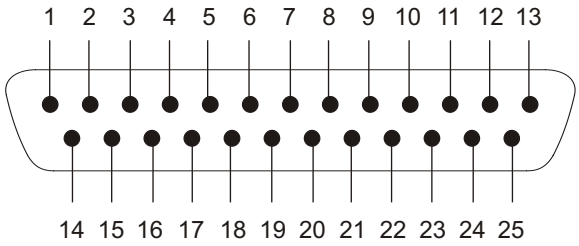
End 1	DB-25 (Male)
End 2	V.35 connector (Female)
Type of Cable	Twisted pair cable- solid conductor
No. of pairs	9
Connection	As per details given below

DB-25 (Male)	Signal on DB-25 (Male)	Signal on V.35	V.35 PIN	Source
1	Shelter	Shelter	A	
14	Transmit Data +	Transmit Data +	S	DTE
2	Transmit data -	Transmitter data -	P	DTE
12	Transmit Timing +	Transmit Timing +	AA	DCE
15	Transmit Timing -	Transmit Timing -	Y	DCE
9	Receive Timing +	Receive Timing +	X	DCE
17	Receive Timing -	Receive Timing -	V	DCE
16	Received Data +	Received Data +	T	DCE
3	Received Data -	Received Data -	R	DCE
20	DTR	DTR	H	DTE
6	DSR	DSR	E	DCE
4	RTS	RTS	C	DTE
5	CTS	CTS	D	DCE
8	DCD	DCD	F	DCE
7	Signal Ground	Signal Ground	B	
24	Sending Clk A (from DTE)	Sending Clk A (from DTE)	U	
11	Sending Clk B (from DTE	Sending Clk B (from DTE)	W	

M/34 Winchester-Female



25 pin D-type - pin assignment
view from FRONT side



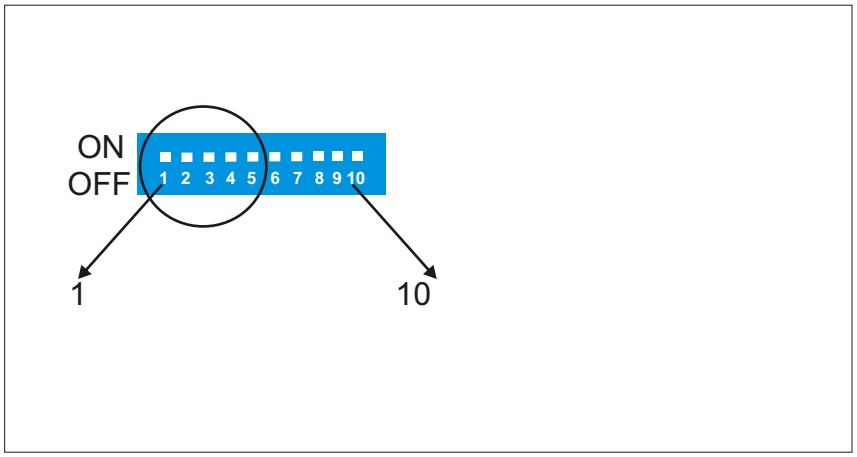
MALE CONNECTOR

DB-25 to M.34 Winchester adapter

Note: This cable supplied with the modem.

Data Rate Selection for V.35 Interface

Bottom View of V.35 Interface Fiber Optic Modem



Switches number 1-5 will be used for the data rate selection of V.35.

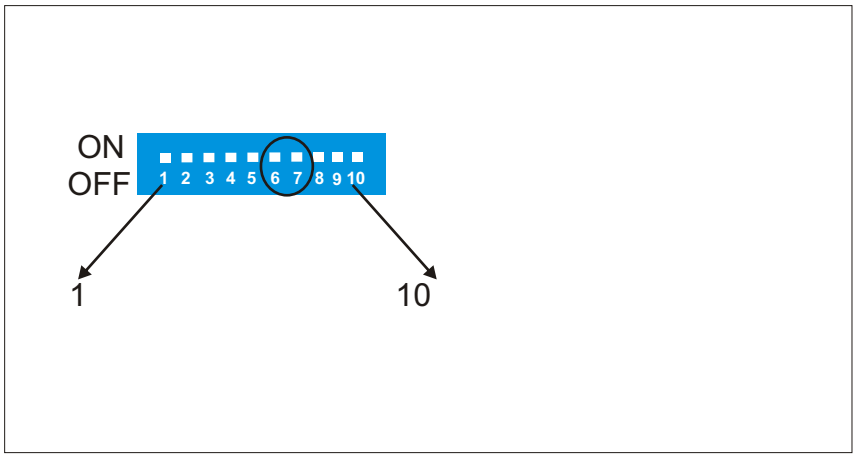
Refer the following table for different data rate selection of V.35 interface.

Switch No. 1	Switch No. 2	Switch No. 3	Switch No. 4	Switch No. 5	Data Rate of V.35 Interface (Kbit/s)
OFF	OFF	OFF	OFF	OFF	64
ON	OFF	OFF	OFF	OFF	128
OFF	ON	OFF	OFF	OFF	192
ON	ON	OFF	OFF	OFF	256
OFF	OFF	ON	OFF	OFF	320
ON	OFF	ON	OFF	OFF	384
OFF	ON	ON	OFF	OFF	448
ON	ON	ON	OFF	OFF	512
OFF	OFF	OFF	ON	OFF	576
ON	OFF	OFF	ON	OFF	640
OFF	ON	OFF	ON	OFF	704

Switch No. 1	Switch No. 2	Switch No. 3	Switch No. 4	Switch No. 5	Data Rate of V.35 Interface (Kbit/s)
ON	ON	OFF	ON	OFF	768
OFF	OFF	ON	ON	OFF	832
ON	OFF	ON	ON	OFF	896
OFF	ON	ON	ON	OFF	960
ON	ON	ON	ON	OFF	1024
OFF	OFF	OFF	OFF	ON	1088
ON	OFF	OFF	OFF	ON	1152
OFF	ON	OFF	OFF	ON	1216
ON	ON	OFF	OFF	ON	1280
OFF	OFF	ON	OFF	ON	1344
ON	OFF	ON	OFF	ON	1408
OFF	ON	ON	OFF	ON	1472
ON	ON	ON	OFF	ON	1536
OFF	OFF	OFF	ON	ON	1600
ON	OFF	OFF	ON	ON	1664
OFF	ON	OFF	ON	ON	1728
ON	ON	OFF	ON	ON	1792
OFF	OFF	ON	ON	ON	1856
ON	OFF	ON	ON	ON	1920
OFF	ON	ON	ON	ON	1984
ON	ON	ON	ON	ON	2048

Phase setup of V.35 Interface

Bottom View of V.35 Interface Fiber Optic Modem

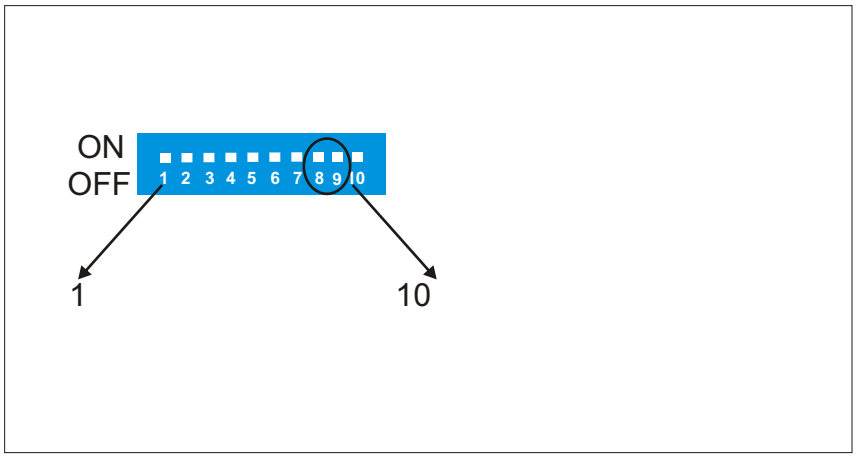


Switches number 6-7 will be used for setting the phase relationship of transmit and receive data and sending and receiving clocks for V.35 interface. It may be necessary to use this adjustment if the V.35 communication fails to start.

Switch No. 6	Switch No. 7	Phase setup V.35 Interface
ON	ON	The falling edge of the clock of V.35 Interface is used for transmit and receive data.
OFF	OFF	The rising edge of the clock of V.35 Interface is used for transmit and receive data.

Clock Selection

Bottom View of V.35 Interface Fiber Optic Modem



Switches number 8-9 will be used for selection of synchronization clock.

Switch No. 8	Switch No. 9	Synchronization Clock Settings
ON	OFF	System will work on its internal clock.
OFF	OFF	System will work loop-timed clock from the equipment which is connected on V.35 interface side.
ON	ON	System will work loop-timed clock from the equipment which is connected on optical side.

Switch number 10 will be unused and always be set on OFF condition.

Ordering Information

Sr. No.	Product Description	Part No.
1.	VCL-V.35 Fiber Optic Modem - 850 nm wavelength with AC power supply	VCL-V35 FOM-850-AC
2.	VCL-V.35 Fiber Optic Modem - 850 nm wavelength with DC power supply	VCL-V35 FOM-850-DC
3.	VCL-V.35 Fiber Optic Modem - 1310 nm wavelength with AC power supply	VCL-V35 FOM-1310-AC
4.	VCL-V.35 Fiber Optic Modem - 1310 nm wavelength with DC power supply	VCL-V35 FOM-1310-DC
5.	VCL-V.35 Fiber Optic Modem - 1550nm wavelength with AC power supply	VCL-V35 FOM-1550-AC
6.	VCL-V.35 Fiber Optic Modem - 1550 nm wavelength with DC power supply	VCL-V35 FOM-1550-DC

Technical specifications are subject to changes without notice.
Revision 03 - October 20, 2007.

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