



VCL-V.35 Interface Fiber Optic Modem

User Manual

Warranty

This Orion product is warranted against defects in material and workmanship for a period of one year from the date of shipment. During the warranty period, Orion 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 Orion. The buyer shall prepay shipping charges to Orion 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 Orion from another country.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the buyer, the 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. Orion shall not be liable for any direct, indirect, special, incidental or consequential damages, whether based on contract or any legal theory.

Notice

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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 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.



QUALITY ASSURANCE PROGRAM

Orion's products are designed and manufactured under a strict Quality Assurance Program based on the ISO 9000:2008 philosophy and principles. Orion pays very special attention to its vendor development program which ensures an "end-product" of the highest quality at the most cost effective prices.

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Product Overview

The VCL-V.35 Fiber Optic Modem provides the user the capability to establish communication between two V.35 interfaces (or N*64 Kbps fractional V.35) over an optical fiber link.

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

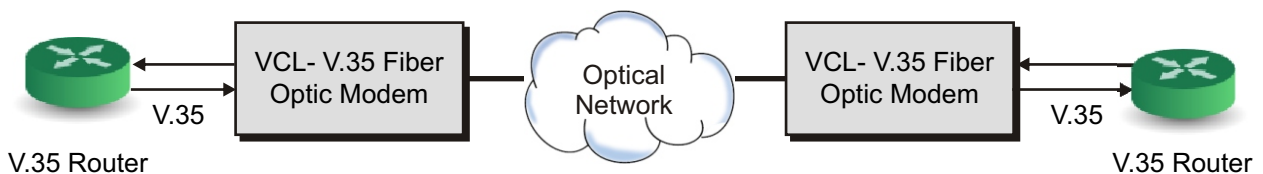


**VCL-V.35 Interface
Fiber Optic Modem**

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 Diagram



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
Optical 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 - 1510nm Single Mode

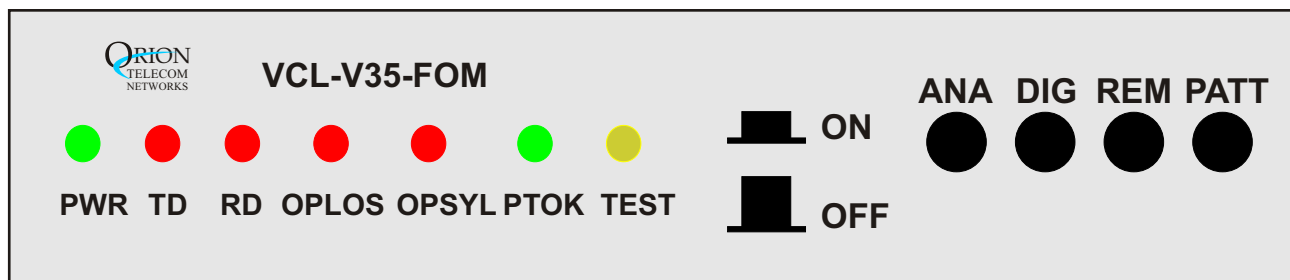
Transmitter Optical Characteristics

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		

Front View



LED Indications

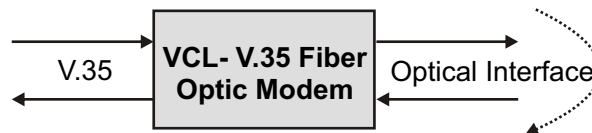
S. No.	LEDs	Color	Description
1	PWR	Green	ON indicates that input power supply is OK.
2	TD	Yellow	Flashing LED indicated V.35 interface is transmitting data.
3	RD	Yellow	Flashing LED indicated V.35 interface is receiving Data.
4	OPLOS	Red	Optical link break alarm. Solid RED indicates there is local alarm and flashing RED indicate there is an alarm at the remote end (AIS).
5	OPSYL	Red	No frame synchronization code is detected in the input signal of optical interface. Solid RED Indicates an alarm of local end and flashing to indicates 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.

Push-button and Switch Indications

Four push-button switches are available on the front panel. The switches are in “ON” mode when pressed and in OFF mode when released.

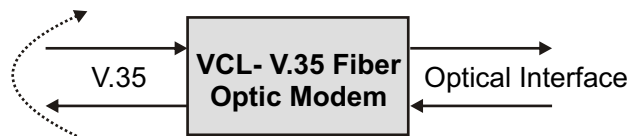
ANA: This switch initiates a internal loopback on the optical interface so that the V.35 data being received from Tx Pins of V.35 interface by the system is transmitted back to the Rx Pins of the V.35 Interface.

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

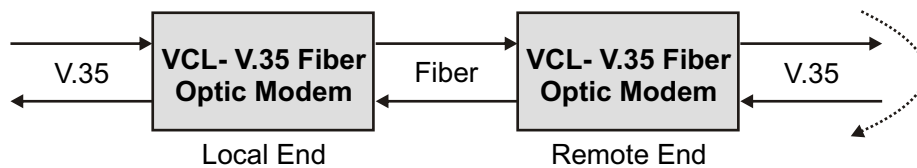


DIG: This switch initiates a internal loopback on the V.35 Interface so that the data being received from the Tx Pins of optical fiber is sent back on the Rx Pins of optical fiber through the V.35 Interface.

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.



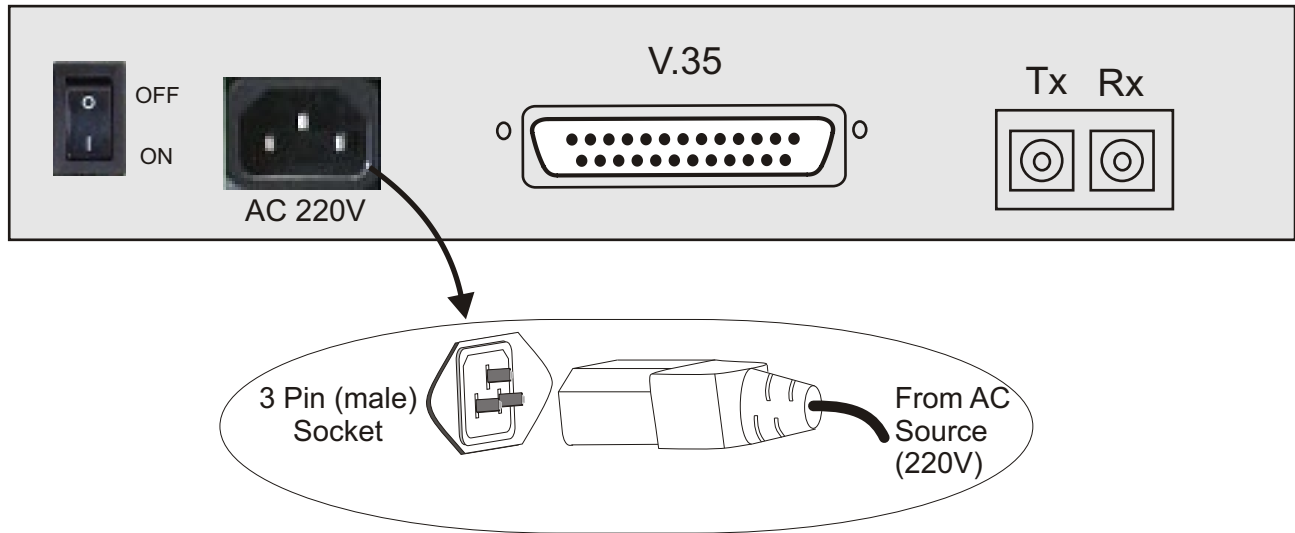
PATT: This switch initiates a data link integrity test by generating a pseudo random pattern.

Important: 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.

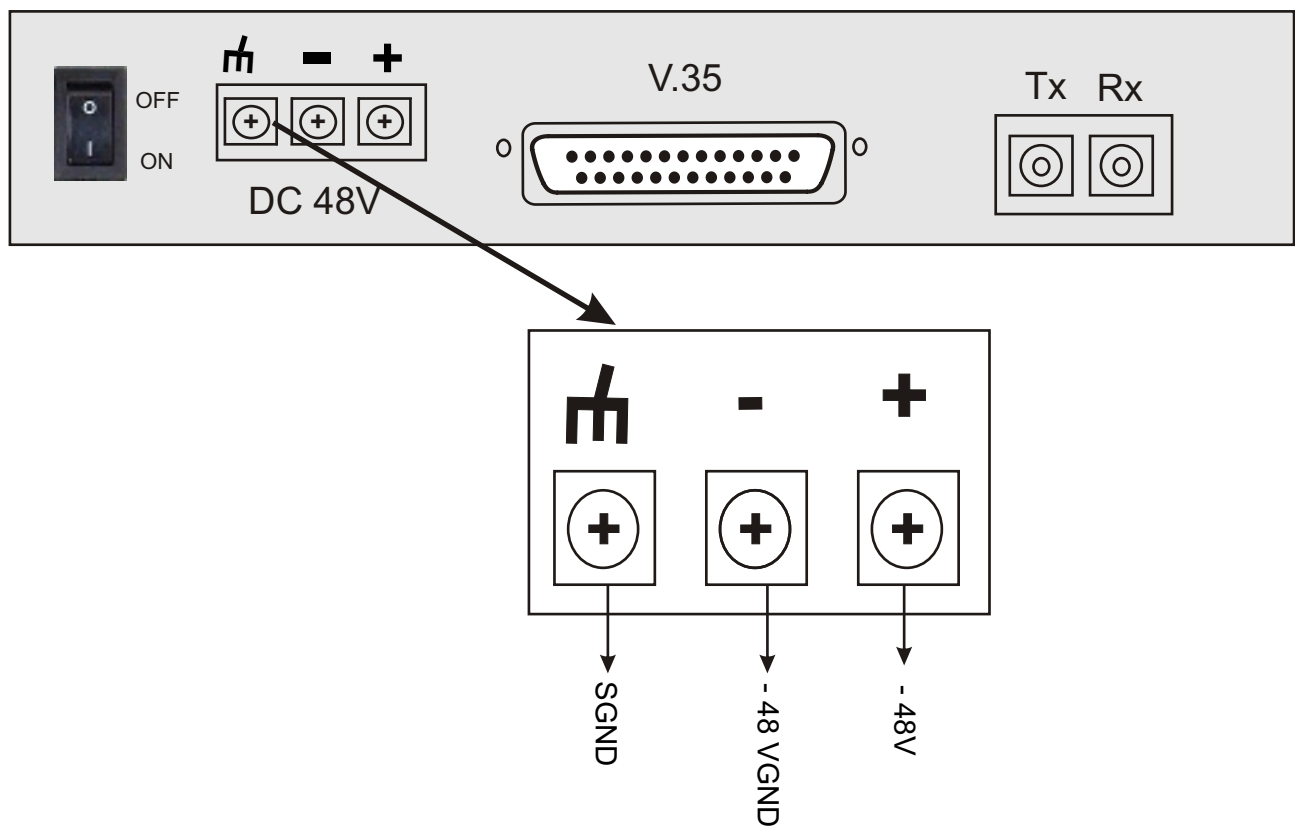
When PATT switch is used to do a data link integrity test please ensure that the far end in a loopback mode to complete the test circuit.

Rear View

AC Power Supply

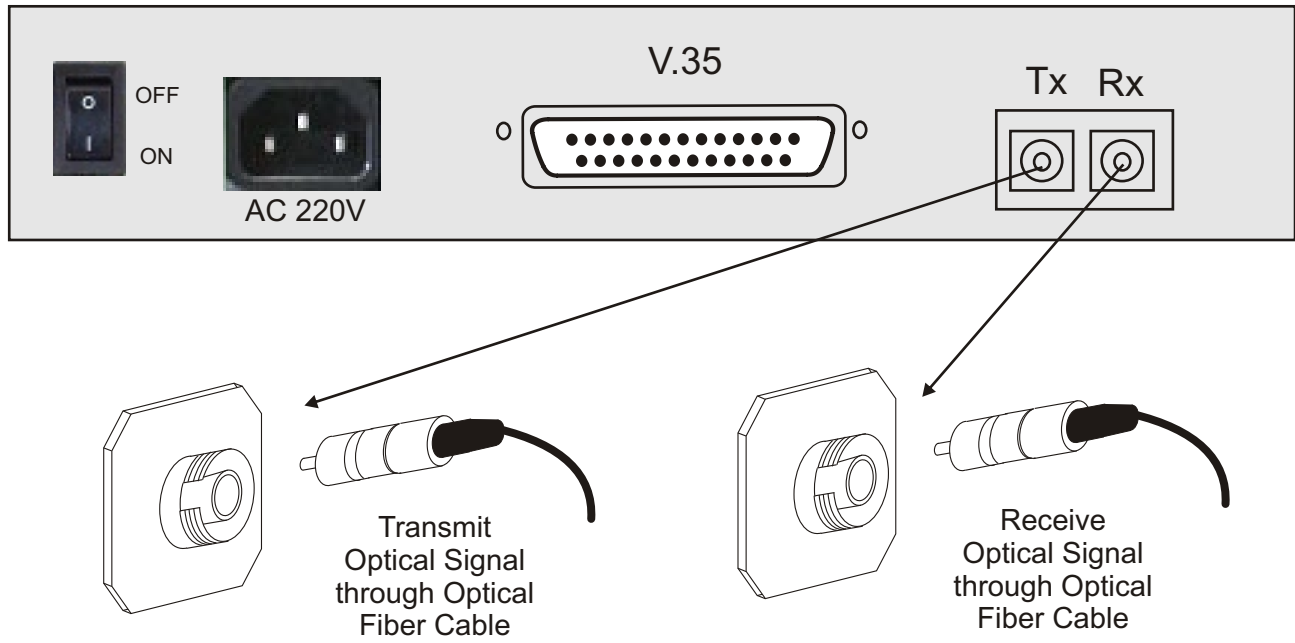


-48V DC Power Supply




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

Optical Connection



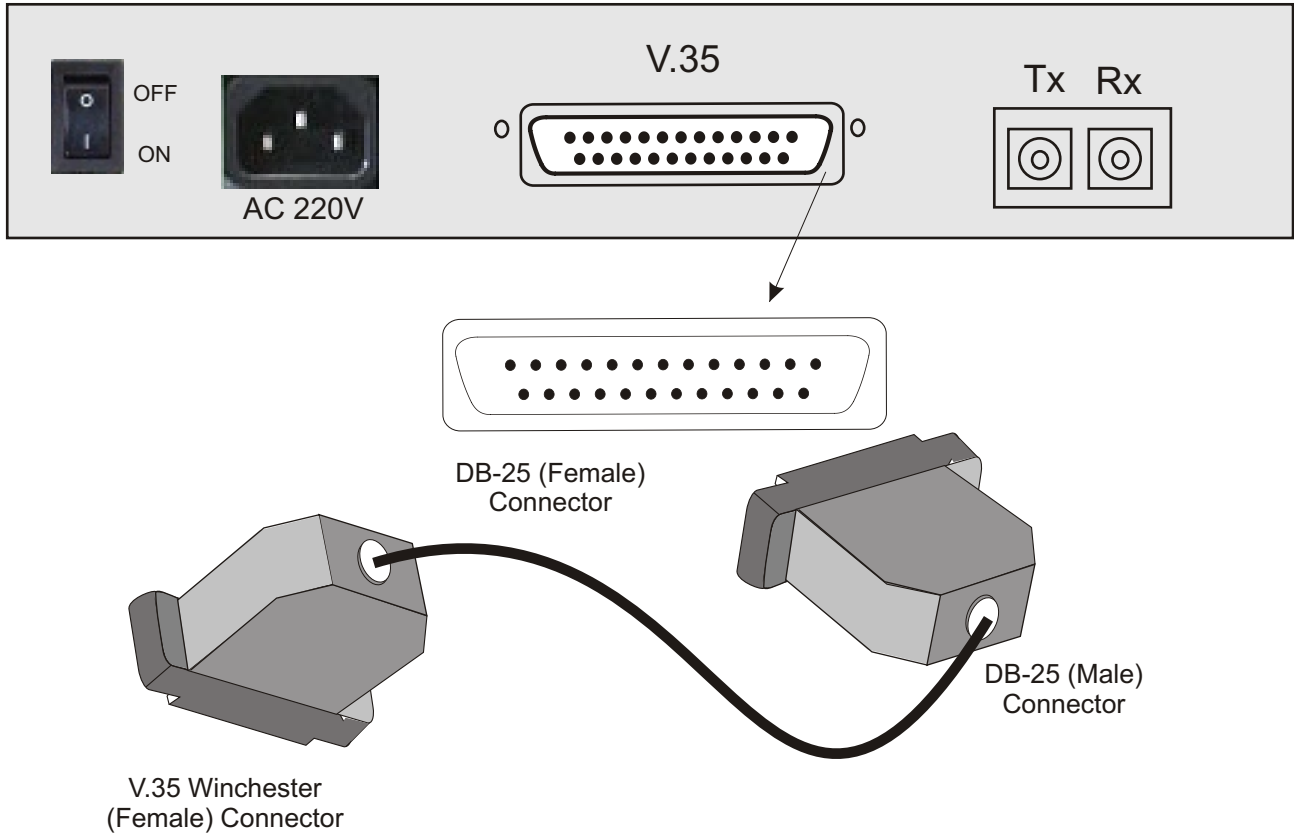
Note: Do not expose to the naked eye. Connect fiber cable to system when power is OFF.

Safety Warnings !!!!

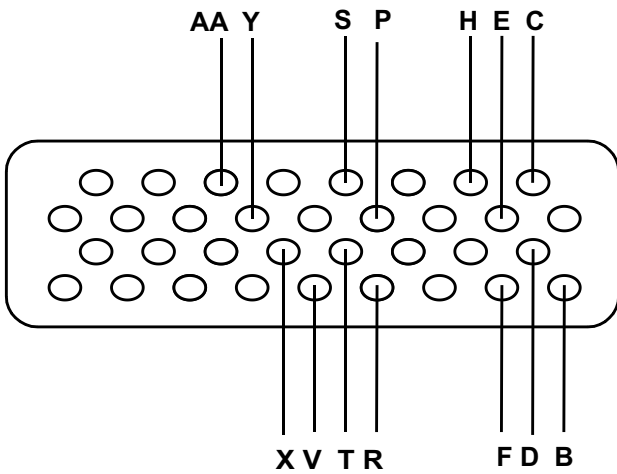


For Testing : Always Install Optical Attenuators. For Distance of less than 10 Kms **Optical Attenuators** must be installed on the Optical Links. Otherwise, the Optics will be **Permanently Damaged.**

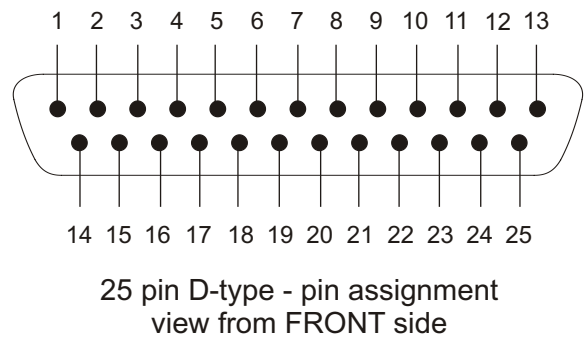
V.35 Connection



M/34 Winchester-Female



DB-25 Male Connector



Note: This cable supplied with the modem.

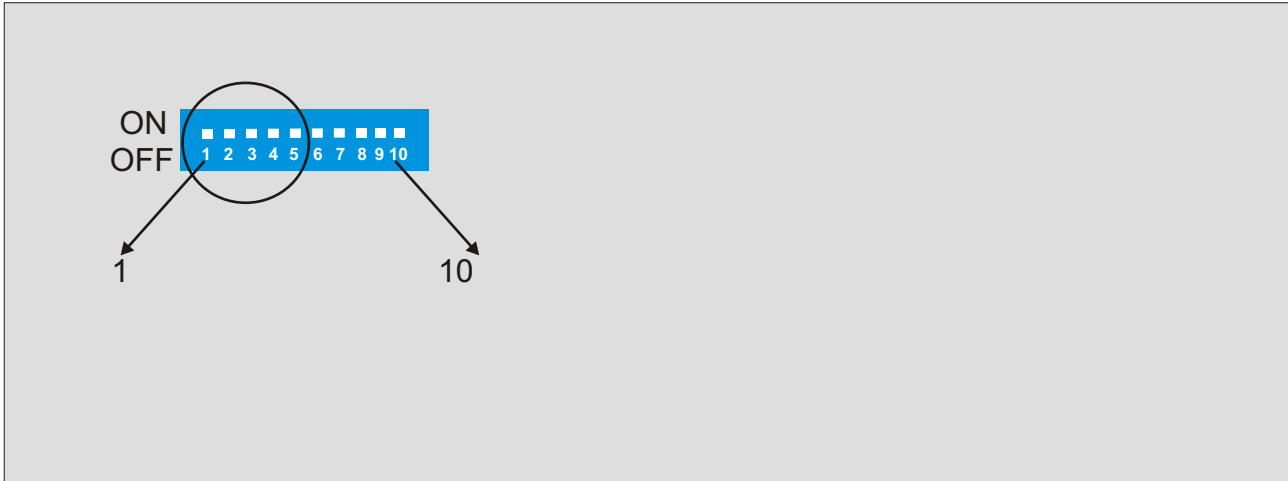
V.35 (DCE) Interface Cable

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	

Bottom View

Data Rate Selection for V.35 Interface



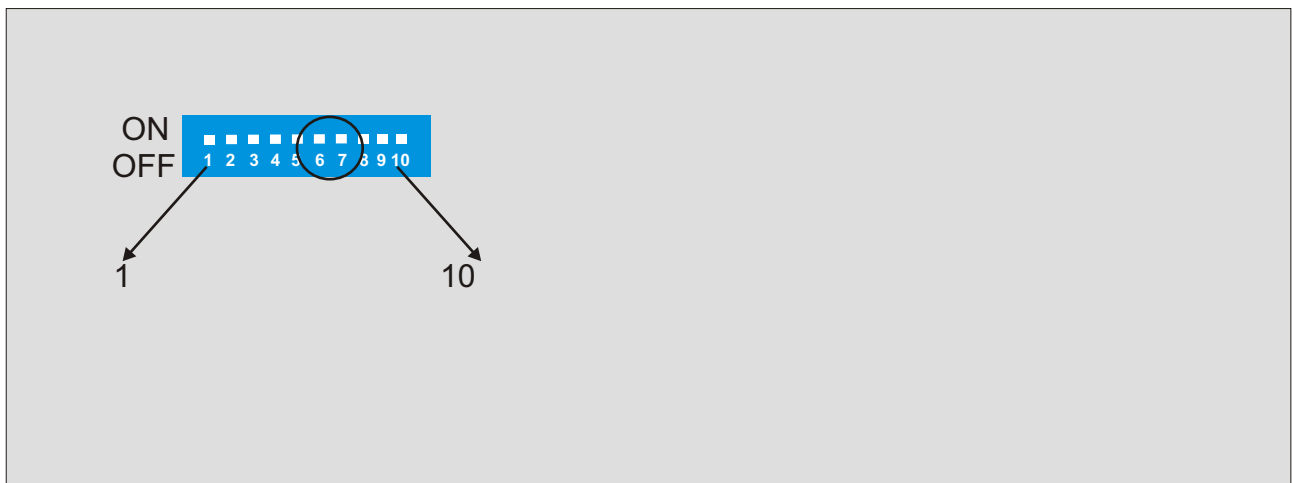
Switches number 1-5 will be used for the data rate selection of V.35.

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
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

Switch No. 1	Switch No. 2	Switch No. 3	Switch No. 4	Switch No. 5	Data Rate of V.35 Interface (Kbit/s)
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

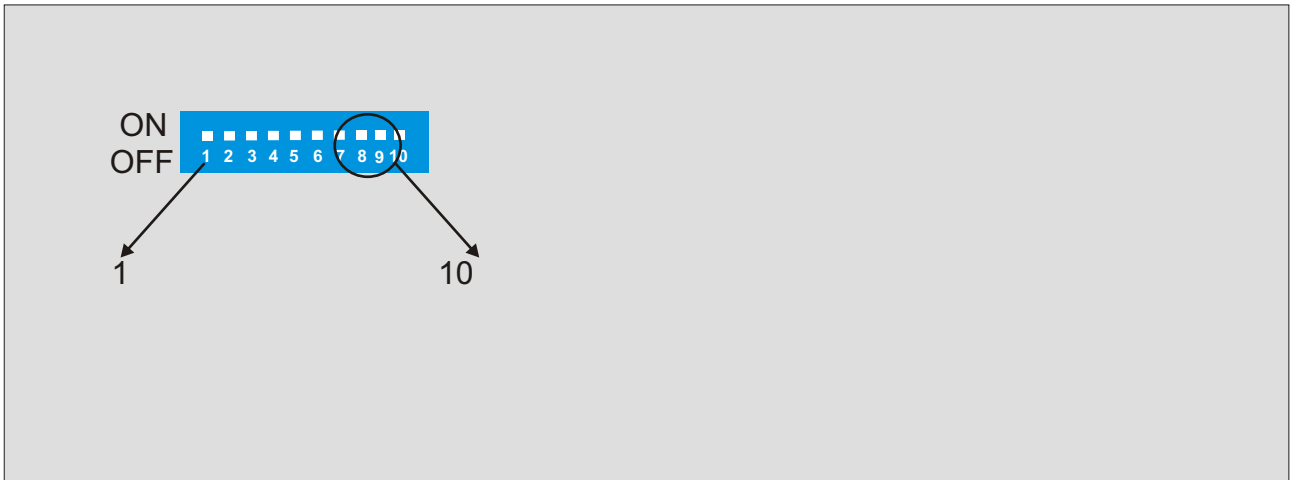
Phase setup of V.35 Interface



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. 6	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



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

Note: Operation and maintenance of network equipment require professional knowledge and experience. We recommend the equipment to be managed only by qualified technicians. Should you require technical assistance please consult the provider, or contact our SUPPORT DESK at support@oriontelecom.com

Technical specifications are subject to changes without notice.
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