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RC831-30-FV35 User Manual

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If you have comments on the RC831-30-FV35 specification, instead of the web page above, please send comments to:

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We hope to hear from you!

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Release Notes

Date of Release	Manual Version	Revisions
20071114	200706	REV.A

General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

Safety Symbols

This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.

Protective earth: the marked lug or terminal should be connected to the building protective earth bus.

Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached.
Please observe the following precautions:
• Before turning on the chassis with optic module, make sure that the fiber optic cable is intact and is connected to the transmitter.
• Do not attempt to adjust the laser drive current.
• Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.
• The use of optical devices with the equipment will increase eye hazard.
• Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.
ATTENTION: The laser beam may be invisible!

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 product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

All extension slots are not hot-swappable

Before operating modules in the electricity conditions, please be noticed that optical transceivers shall be connected with optical fiber wires or shield with optical transceiver cover for fear that laser light harms to operator's eyes.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be

present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. If an earth lug is provided on the product, it should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in earthed racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Connection of AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

Connection of DC Mains

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC mains systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC supply is electrically isolated from any AC source and that the installation complies with the local codes.

Before connecting the DC supply wires, ensure that power is removed from the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

Preventing Electrostatic Discharge Damage

Modules which can be plugged into chassis are sensitive to damage from static electricity. Conversely, static voltages as high as 35,000V can be generated just by handling plastic or foam packing material, or by sliding assemblies across plastic and carpets. Not exercising the proper electrostatic discharge (ESD) precautions can result in intermittent or complete component failures. To minimize the potential for ESD damage, observe the following guidelines:

• Always use an ESD-preventive antistatic wrist strap or ankle strap and ensure that it makes good skin contact.

• When removing or installing a component, make sure the equipment end of your antistatic strap leash is connected to the ESD connection sockets on the front of the chassis or to a bare metal surface on the chassis. Avoid contact between the component and your clothing. The wrist strap only protects the component from ESD voltages on the body; ESD voltages on your clothing can still cause component damage.

• Always place a card component-side-up on an antistatic surface, in an antistatic card rack, or in a static shielding bag. If you are returning the item to the factory, immediately place it in a static shielding bag.

• Handle Modules by the metal card carrier edges only; Avoid touching the board or any connector pins.

Chapter 1 Product Overview

1.1 Overview

RC831-30-FV35 is a stand-alone single-optical-port PDH multiplexer independently developed by Raisecom Technology Co., Ltd. RC831-30-FV35 is a fiber transmission device aiming at network access market. It can transmit 1 line of V.35 data on 1 line of fiber and realize remote network management.

1.2 Function Features

- Remote device manageable
  In support of remote management while work in pair of modular multiplexer for SNMP network management
- Indication for both local and remote site alarms
- Remote device power-off detection and alarm notification
- ALS function is supported to effectively control the output of optical signal in no connection status
- 1 M34 interface for the transmission of 1 line of V.35 data
- Local and remote V.35 loopback testing function makes line testing, device open and maintenance convenient.
- The V.35 interface supports both framed E1 and unframed (transparent) E1 transmission mode.
  For V.35 interface working at framed mode, the bandwidth of the V.35 interface can be configured to N x 64Kbps (N=1~31) by setting a succession of bits of the corresponding DIP switch and the bandwidth can also be configured by assigning time slots in the network management system.
- The V.35 interface provides 3 clock modes: internal clock (internal timing), line-in clock (follows the E1 line timing), V.35 terminal clock (follows the V.35 interface timing).
- When the V.35 interfaces on both sides of the communication are working at framed E1 mode, the timeslot configuration of the local device will automatically follow the configuration of the remote device.
- The inbuilt bit error testing unit together with various loopback patterns completes line diagnosis and testing.
- Power consumption < 10W, and stable and reliable operation is guaranteed.
- Adopt grand-scale ASIC chip
  Low power consumption
  4-layer circuit board design guarantees high reliability.

1.3 Ordering information

Device Model	Description
RC831-30-FV35-M-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, multi-mode, transmission distance 0~2km, single power supply, 220V AC power supply.
RC831-30-FV35-S1-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, single-mode, transmission distance 0~25km,

	single power supply, 220V AC power supply.
RC831-30-FV35-S2-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, single-mode, transmission distance 10~60km, single power supply, 220V AC power supply.
RC831-30-FV35-S3-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, single-mode, transmission distance 15~120km, single power supply, 220V AC power supply.
RC831-30-FV35-SS13-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, single-strand, two-wavelength, optical interface Tx wavelength 1310nm, transmission distance 0~25km, single power supply, 220V AC power supply.
RC831-30-FV35-SS15-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, single-strand, two-wavelength, optical interface Tx wavelength 1550nm, transmission distance 0~25km, single power supply, 220V AC power supply.
RC831-30-FV35-SS23-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, single-strand, two-wavelength, optical interface Tx wavelength 1310nm, transmission distance 10~50km, single power supply, 220V AC power supply.
RC831-30-FV35-SS25-AC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, single-strand, two-wavelength, optical interface Tx wavelength 1550nm, transmission distance 10~50km, single power supply, 220V AC power supply.
RC831-30-FV35-M-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, multi-mode, transmission distance 0~2km, single power supply, -48V DC power supply.
RC831-30-FV35-S1-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, single-mode, transmission distance 0~25km, single power supply, -48V DC power supply.
RC831-30-FV35-S2-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, single-mode, transmission distance 10~60km, single power supply, -48V DC power supply.
RC831-30-FV35-S3-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, dual-strand, single-mode, transmission distance 15~120km, single power supply, -48V DC power supply.
RC831-30-FV35-SS13-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface,

	single-strand, two-wavelength, optical interface Tx wavelength 1310nm, transmission distance 0~25km, single power supply, -48V DC power supply.
RC831-30-FV35-SS15-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, single-strand, two-wavelength, optical interface Tx wavelength 1550nm, transmission distance 0~25km, single power supply, -48V DC power supply.
RC831-30-FV35-SS23-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, single-strand, two-wavelength, optical interface Tx wavelength 1310nm, transmission distance 10~50km, single power supply, -48V DC power supply.
RC831-30-FV35-SS25-DC	Stand-alone device, 1 line of V.35 signal, 1 optical interface, single-strand, two-wavelength, optical interface Tx wavelength 1550nm, transmission distance 10~50km, single power supply, -48V DC power supply.

Note: Among RC831 series devices with optical transceivers for dual-strand fiber, the devices with same optical transceivers can inter-connect with each other. For example, RC831-30-FV35-S1 can be inter-connected with RC831-60-FV35-S1, RC8311-240-BL-S1 and other RC831 series devices with S1 optical transceivers.

Among RC831 series devices adopting optical transceivers for single-strand fiber, device with SS13 can communicate with device with SS15, while device with SS23 can communicate with device with SS25. For example, RC831-30-FV35-SS13 can be inter-connected with RC831-30-FV35-SS15, RC831-60-FV35-SS15 and other RC831 series devices with SS15 optical transceivers.

Chapter 2 Technical Specifications

2.1 Technical specifications of the optical interface

- Bit rate: 150Mbps
- Line coding: scrambled NRZ
- Interface type: SC interface (FC interface made to order)
- Optical transmission parameter: different optical transceivers have different optical interface parameters, please see the table below.

Optical transceiver	Wavelength (nm)	Transmitting Optical Power (dBm)	Overload (dBm)	Extinction Ratio (dB)	Receiving Sensibility (dBm)	Transmission Distance (Km)
M	1310	-20 ~ -14	> -14	> 8.2	< -28	0 ~ 2
S1	1310	-15 ~ -8	> -8	> 8.2	< -34	0 ~ 25
S2	1310	-5 ~ 0	> -8	> 8.2	< -34	10 ~ 60
S3	1550	-5 ~ 0	> -10	> 10	< -36	15 ~ 120
SS13	1310	-12 ~ -3	> -8	> 8.2	< -30	0 ~ 25
SS15	1550	-12 ~ -3	> -8	> 8.2	< -30	0 ~ 25
SS23	1310	-5 ~ 0	> -8	> 8.2	< -32	10 ~ 50
SS25	1550	-5 ~ 0	> -8	> 8.2	< -32	10 ~ 50

Note: The transmission distance in the table indicates the maximal transmission distance in typical optical fiber condition. The transmission distance that can be realized depends on the factual status of the network.

2.2 Power supply

AC power supply

- Voltage: 220V
- Allowance: 175 ~ 265V
- Frequency: 50Hz

or:

- Voltage: 110V/230V
- Allowance: 85 ~ 265V
- Frequency: 50Hz/60Hz

DC power supply

- Voltage: -48V
- Allowance: -36 ~ -72V

or:

- Voltage: +24V
- Allowance: +18 ~ +36V

Power consumption: < 10W

2.3 Operating environment

- Operating temperature: 0 ~ 60□
- Operating humidity: ≤ 90% (25□)

2.4 Storing environment

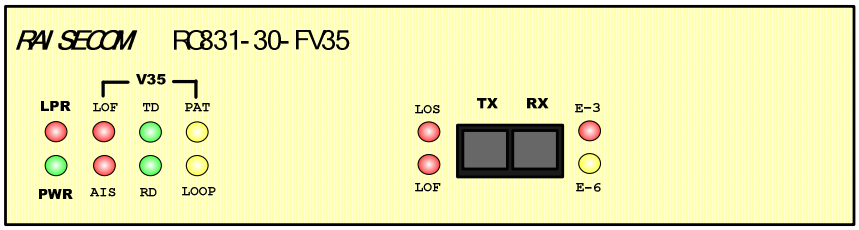
- Storing temperature: -40 ~ 80□
- Storing humidity: 5% ~ 90%, no condensation

2.5 Outline and structure

- Physical outline: nonstandard stand-alone device
- Dimension: 38mm (Height) x 186mm (Width) x 142mm (Depth)
- Net Weight: 0.9 Kg

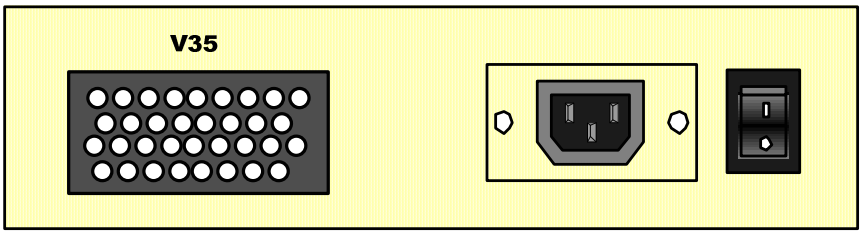
Chapter 3 Device Appearance and Descripiton

3.1 Device front panel

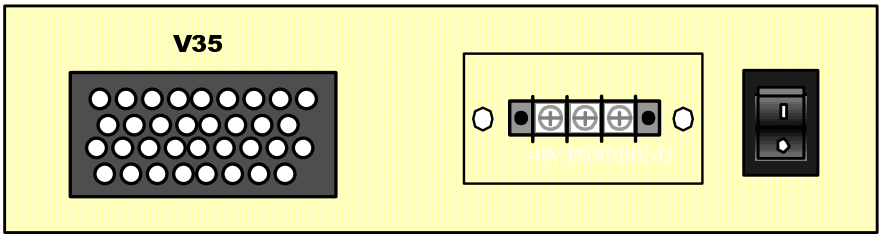


3.2 Device rear panel

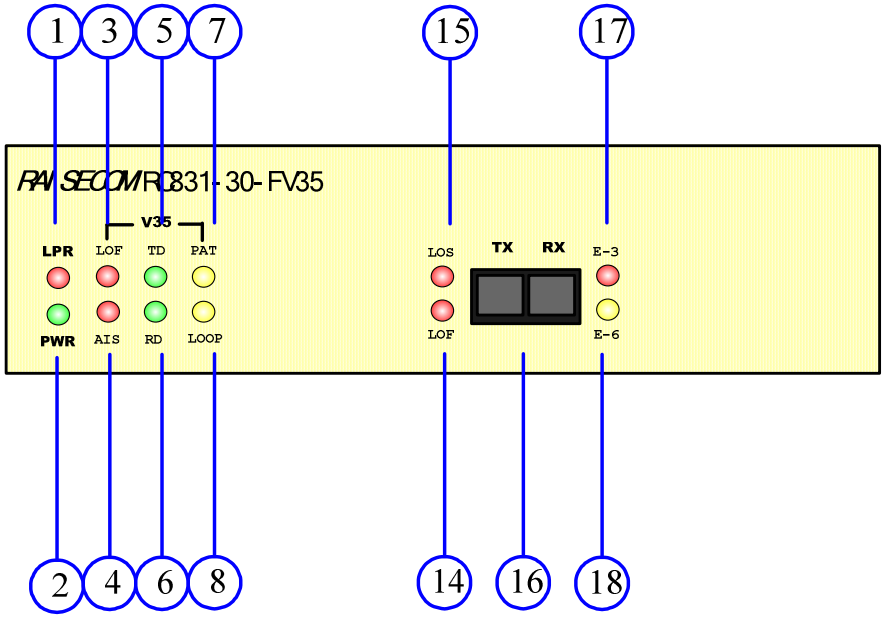
RC831-30-FV35 with AC power supply:



RC831-30-FV35 with DC power supply:



3.3 Indicator definition



The indicators on the device front panel show the current working status of device power supply, optical interface, and E1 interface. The definition of the indicators is described in the table below:

Number	Indicator	Color	Description
Indicators for the power supply			
1	**LPR**	Red	Remote device power-off indicator. *ON*: both the local and remote devices are operating normally when the remote system is power off. *OFF*: other status
2	**PWR**	Green	Power supply indicator. *ON*: the power supply is working normally.
Indicators for the V.35 interface			
3	**LOF**	Red	V.35 interface data channel, loss of G.704 frame from fiber receiving signal alarm indicator *ON*: local E1 LOF alarm only OR alarm occurs on both local and remote site. *Flickering*: remote E1 LOF alarm only
4	**AIS**	Red	V.35 interface data channel, fiber receiving signal AIS alarm indicator

			ON: local AIS alarm only OR alarm occurs on both local and remote site *Flickering*: remote AIS alarm only
5	**TD**	Green	V.35 interface TD signal indicator *Flickering*: There is TD signal (transmission data) data flow at the V.35 interface. The frequency of the flicker depends on the bit rate of the interface. When the rate is 64Kbps, the flicker is the slowest. When the rate is 2048Kbps, the flicker is the fastest. *OFF*: No TD signal (transmission data) data flow at the V.35 interface.
6	**RD**	Green	V.35 interface RD signal indicator. *Flickering*: There is RD signal (receiving data) data flow at the V.35 interface. The frequency of the flicker depends on the rate of the V.35 interface. When the rate is 64Kbps, the flicker is the slowest. When the rate is 2048Kbps, the flicker is the fastest. *OFF*: No RD signal (receiving data) data flow at the V.35 interface.
Indicators for the testing function			
7	**PAT**	Yellow	Bit error testing indicator. *ON*: received the pattern sent by the bit error testing unit and the line is normal without error bit. *Turn OFF for at least 1s*: received the pattern sent by the bit error testing unit, but error bit has been spotted on the line. *OFF*: The bit error testing function is disabled.
8	**LOOP**	Yellow	V.35 interface loopback status indicator *ON*: V.35 interface local loopback *Flickering*: V.35 interface remote loopback *OFF*: no loopback at the V.35 interface
Indicators for the optical interface			

14	**LOF**	Red	*ON*: local optical interface receiving signal Loss of Frame (LOF) alarm *Flickering*: remote optical interface receiving signal LOF alarm
15	**LOS**	Red	*ON*: local optical interface loss of receiving signal alarm *Flicking*: remote optical interface loss of receiving signal alarm
17	**E-3**	Red	*ON*: the BER of local optical interface receiving signal exceeds 1E-3 *Flickering*: the BER of remote optical interface receiving signal exceeds 1E-3
18	**E-6**	Yellow	*ON*: the BER of local optical interface receiving signal exceeds 1E-6 *Flickering*: the BER of remote optical interface receiving signal exceeds 1E-6

3.4 Interface description

There is an optical interface and an E1 interface on the front panel of the device. The interfaces are described in the table below:

Number	**Interface**	**Interface Type**	**Description**
16	Optical interface	SC	Local Fiber interface

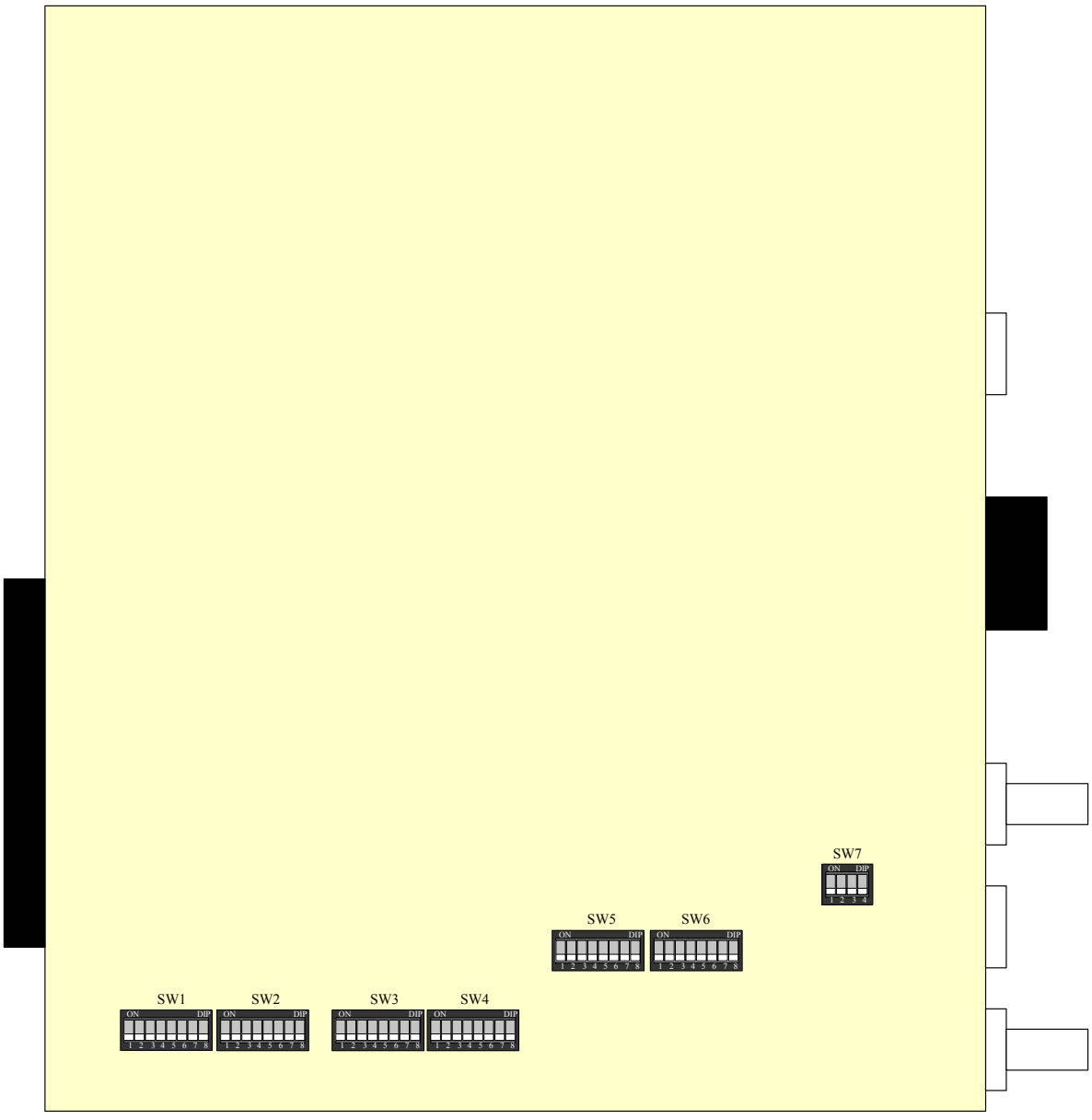
One V.35 interface is located on the rear panel of the device. It is described in the table below:

Interface	**Interface Type**	**Description**
V.35 interface	M34	Local V.35 interface.

Chapter 4 Device Settings

4.1 DIP switch description

4.1.1 DIP switch location



The bottom view of the device

4.1.2 DIP switch description

6 8-bit DIP switches and 1 4-bit DIP switch locate on the bottom of the device. They are named SW1, SW2, SW3, SW4, SW5, SW6, SW7, and their locations are shown in the figure above. For SW1~6, the 8 bits from the left to the right are bit 1~8; for SW7, the 4 bits from the left to the right are bit 1~4. When a bit of the switch is turned to the lower side, it means that the bit is turned OFF. When a bit of the switch is turned to the upper side, it means that the bit is turned ON.

4.1.2.1 Timeslot configuration DIP switch SW1~4

In the tables below, "√" indicate Enable; "×" indicates Disable.

SW1 definition (default all OFF)

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Definition	**V.35 Channel Transmit Mode**	**TS1**	**TS2**	**TS3**	**TS4**	**TS5**	**TS6**	**TS7**
ON	Framed	√	√	√	√	√	√	√
OFF	Unframed	×	×	×	×	×	×	×

SW2 definition (default all OFF)

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Definition	**TS8**	**TS9**	**TS10**	**TS11**	**TS12**	**TS13**	**TS14**	**TS15**
ON	√	√	√	√	√	√	√	√
OFF	×	×	×	×	×	×	×	×

SW3 definition (default all OFF)

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Definition	**TS16**	**TS17**	**TS18**	**TS19**	**TS20**	**TS21**	**TS22**	**TS23**
ON	√	√	√	√	√	√	√	√
OFF	×	×	×	×	×	×	×	×

SW4 definition (default all OFF)

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Definition	**TS24**	**TS25**	**TS26**	**TS27**	**TS28**	**TS29**	**TS30**	**TS31**
ON	√	√	√	√	√	√	√	√
OFF	×	×	×	×	×	×	×	×

ⓘ Note:

1. If the SW1-1 is set to be unframed mode, then the switches for TS1 ~ TS31 are inapplicable.
2. If the SW1-1 is set to be framed mode, then the switches for TS1 ~ TS31 are not allowed to be OFF at the same time. Only when at least 1 timeslot is enabled, will the framing be realized.

4.1.2.2 Function setting switch SW5

In the tables below, "√" indicate Enable; "×" indicates Disable.

SW5 definition:

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Definition	Timing 1	Timing 2	TS_FLOW Timeslot follow	BERT Bit error testing	RX CLK phase	Fault pass-through	Local or Remote loopback setting	Enable or disable loopback
ON	*	*	√	√	Negative	√	E1 local	loopback
OFF	*	*	×	×	Positive	×	E1 remote	NO loopback

- Bit 1~2: clock mode selection switch Timing 1 and Timing 2 (default both ON)

The operation manner of the clock of the device is decided by bit1 and bit2 of SW5, the definition is shown in the table below:

Bit 1	Bit 2	Clock Mode
OFF	OFF	Internal clock (internal timing)
OFF	ON	V.35 terminal clock (timing follows the V.35 interface)
ON	OFF	
ON	ON	Line-in clock (timing follows E1 line)

- Bit 3: timeslot auto-following function switch TS_FLOW(default OFF)

Bit 3	Timeslot auto-following function
ON	Enable
OFF	Disable

The following requirements must be satisfied before having the local timeslot setting follow the remote timeslot setting.

1) The devices of this series are applied in pair and they are deployed point to point.
2) There is no PCM equipment that occupies the Sa4 bit series connecting in the E1 link
3) The local device must be set to be working with line-in clock mode.

After the above requirements being satisfied, please turn ON the switch for timeslot auto-following function of the local device to enable the auto-following function. Then, the timeslot occupation and framing mode (PCM30/PCM31) setting of the local device will automatically follow the setting of the

remote device.

- Bit 4: bit error testing enable/disable switch BERT (default OFF)

Bit 4	**BERT**
ON	Enable the inbuilt bit error testing function
OFF	Disable the inbuilt bit error testing function

There is an inbuilt bit error testing unit in the device. Its main function is to generate a pattern in the format of 2E15-1-Std and send it to the E1 line side. Loading the generated pattern to suitable data channel, together with different loopback mode, the pattern will be return to the device that generated it for testing. The result of the testing will be shown by the PAT indicator on the front panel. When bit error is detected, the PAT indicator will turn OFF for at lease 1s, and turn back to yellow if there is no new bit error has been detected.

When the bit error testing function is enabled, the testing sequence will be inserted into the data channel of the user. The function is applicable in both framed mode and unframed (transparent) mode. When using this function, the V.35 service will stop.

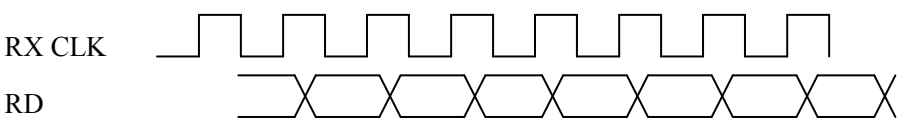
Note: Together with different loopback mode, the bit error testing function completes loopback testing. When the local bidirectional loopback function is disabled, users can use patch cord to simulate local loopback. However, this method does not apply to devices with single-strand optical transceivers or dual-strand S3 optical transceivers. When conducting the loopback testing, the indicator PAT turning yellow means that the received testing pattern is correct. If the loopback mode is set to be remote bidirectional loopback, the whole process that the signal goes through the network will be tested.

- Bit 5: RX CLK phase selection switch (default OFF)

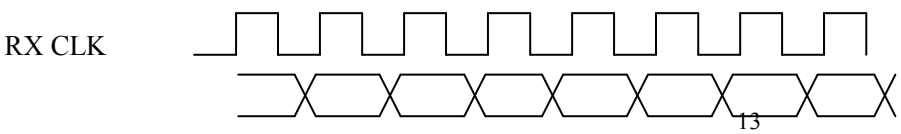
Bit 5	**RX CLK**
ON	RX CLK phase negative
OFF	RX CLK phase positive

The RX CLK phase selection switch is designed for adjusting the difference in the phase relationship between V.35 interface clock and data of routers from different manufacturers. When setting the RX CLK to OFF, the device is able to pass the testing at the V.35 synchronizing WAN interface of Cisco series routers.

RX CLK positive: data is sent to RD signal at the falling edge of the RX CLK clock signal



RX CLK negative: data is sent to RD signal at the rising edge of the RX CLK clock signal.



RD

Note: The phase relation of the TX CLK signal and TD signal of this device is self-adjusted. There is no need for user setting.

- Bit 6: fault pass-through function switch (default OFF)

Bit 6	**Fault pass-through function**
ON	Enable
OFF	Disable

When the fault pass-through function is enabled, the device will pass the information of optical receiving side alarm and E1 transmitting side alarm to the DCD and CTS signal of the V.35 interface, namely, the optical receiving side alarm will have the DCD signal of the V.35 interface shut down and the optical transmitting side alarm will lead to the shutdown of CTS signal of the V.35 interface. When the fault pass-through function is disabled, the DCD signal and CTS signal of the V.35 interface will be effective signal.

When the fault pass-through function is enabled, local alarm of the multiplexer indicates that fault occurs on the receiving side of fiber optic. As a result, the DCD signal of the V.35 interface will be shut down and the DTE device will react accordingly.

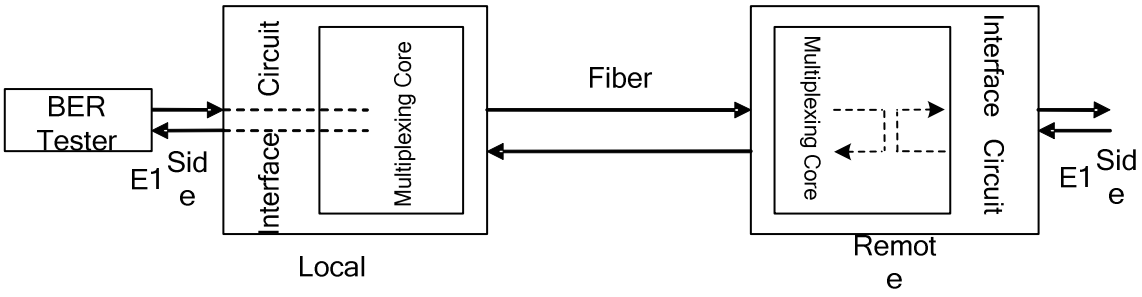
When the fault pass-through function is enabled, remote alarm of the multiplexer indicates that fault occurs on the transmitting side of fiber optic. Consequently, the CTS signal of the V.35 interface will be shut down, and the DTE device will react accordingly.

The DSR signal of the device will always be effective signal after device electrifying.

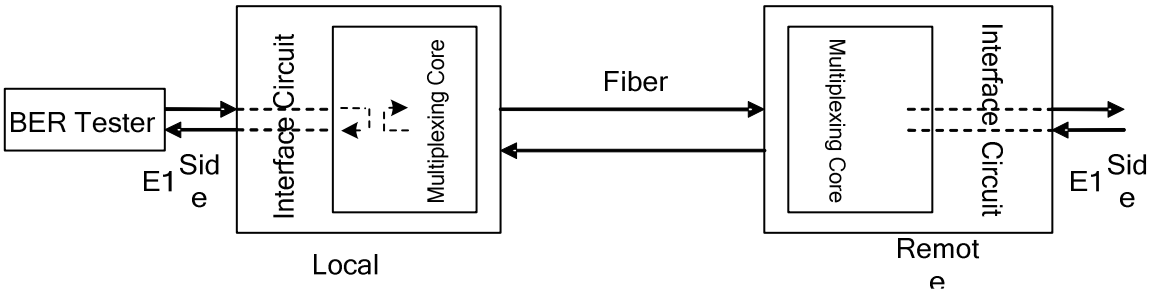
- Bit 7~8: Loopback switch (default OFF)

SW5	**Bit 7**	**Bit 8**
ON	Local loopback	Loopback enable
OFF	Remote loopback	Loopback disable

The Bit 7 of the function setting DIP switch SW5 is for setting the point for loopback, that is, for setting the loopback to “remote loopback” or “local loopback”. The loopback setting is effective on both E1 line and V.35 line. The loopback of RCMS2801 series devices have two directions. The following two figures show the loopback point and loopback direction of remote loopback and local loopback.



Set up the "remote loopback" on the local PDH multiplexer



Set up the "local loopback" on the local PDH multiplexer

Note:

1. When setting up remote loopback testing, please make sure that there is no alarm at the optical interface in advance.
2. When setting up any loopback at the local multi-service multiplexer, please ensure that all E1-LOOP loopback control switches on the opposite device are OFF.

4.1.2.3 Function setting switch SW6

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Definition	Reserved			Optical interface ALS	Reserved switch			
ON				Enable	Please keep the factory settings!			
OFF				Disable				

4.1.2.4 Reserved DIP switch SW7

SW7 is reserved by the manufacturer. It has not meanings.

4.1.3 Default settings

The default status of the Bit 1 and Bit 2 of SW5 is ON. The settings of Bit 5~8 of SW6 follow the rule in the table below according the optical transceivers the device applies. The default status of all other switches is OFF.

SW6-5	SW6-6	SW6-7	SW6-8	Optical transceiver
ON	ON	ON	ON	M (1310 Tx and Rx)
ON	ON	ON	OFF	S1 (1310 Tx and Rx)
ON	ON	OFF	ON	S2 (1310 Tx and Rx)
ON	ON	OFF	OFF	S3 (1550 Tx and Rx)
ON	OFF	ON	ON	SS13 (1310 Tx, 1550 Rx)
ON	OFF	ON	OFF	SS15 (1550 Tx, 1310 Rx)
ON	OFF	OFF	ON	SS23 (1310 Tx, 1550 Rx)
ON	OFF	OFF	OFF	SS25 (1550 Tx, 1310 Rx)

The meaning of the default settings:

The device works in transparent mode and follows line-in clock. The timeslot auto-following function, bit error testing function and all loopback testing function are disabled on the device. The RX CLK phase of the V.35 interface is positive.

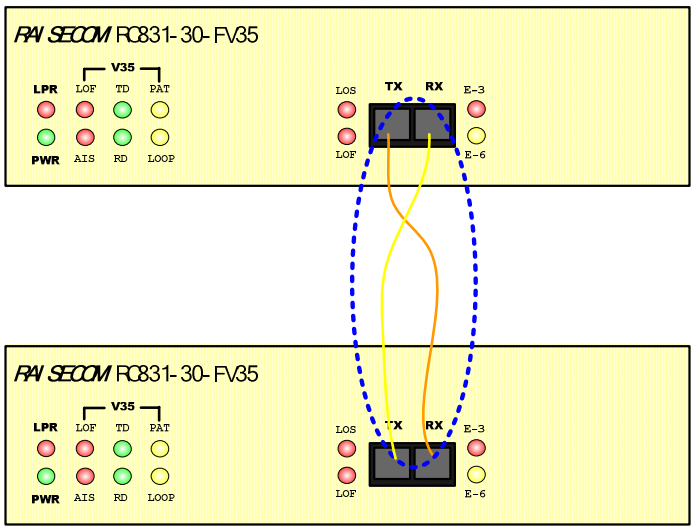
Chapter 5 Basic Connection and Typical Application

5.1 Basic connection

5.1.1 Connect the optical interface

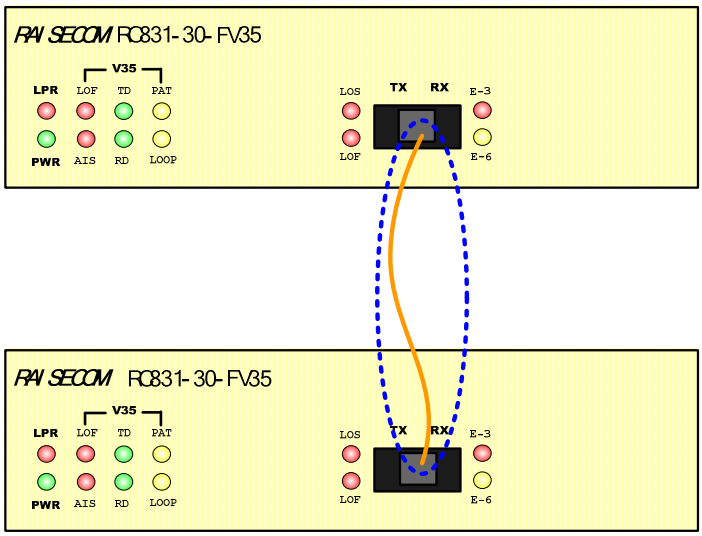
Insert the well-prepared fiber patch cord into the optical interface on the front panel of the device.

For device adopting optical transceivers M, S1, S2 or S3, the optical interface connection pattern is shown in the figure below. On the device panel, “TX” indicates output optical signal, while “RX” indicates input optical signal.



Optical interface connecting - 1

For device adopting optical transceiver SS13, SS15, SS23 or SS25, the optical interface connection manner is shown in the figure below. In this circumstance, the optical interface will receive as well as transmit signals. “TX” and “RX” on the device panel have no meaning. For details, please refer to the ordering information in section 1.3.



Optical interface connecting – 2

Note: Only inter-connection of optical transceiver SS13 and SS15 and inter-connection of optical transceiver SS23 and SS25 are allowed. Same type of optical transceivers can not communicate.

If the connection is correct, and there is receiving optical signal, the LOS alarm indicator on the front panel of the device will turn OFF after the device being electrified.

5.1.2 Connect to the power supply

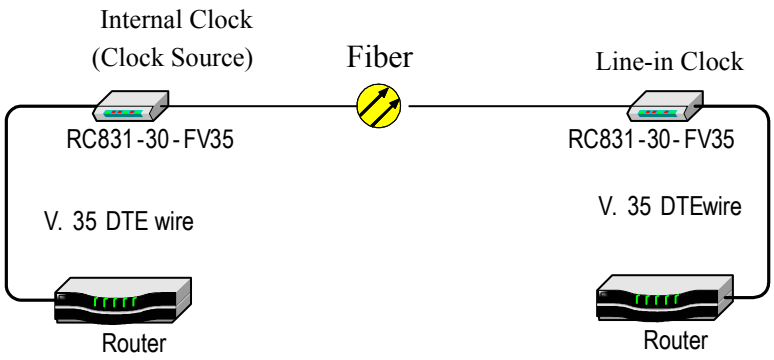
For device adopting 220V AC power supply, please plug the provided 220V AC power supply cable to a 220V standard 3-phase power supply socket. For device adopting -48V DC power supply, please connect the device with DC power supply using -48V DC power supply (connect the BGND terminal of the DC power supply interface of the device to the 0V ground of the power supply, connect the -48V terminal to the -48V power supply, and connect the PGND terminal to protection earth). For device using +24V DC power supply, the connecting is similar to that of the -48V DC power supply.

5.2 Typical application

The network topologies provided in this section are only for user's reference. Users should design their own topologies according to their factual need.

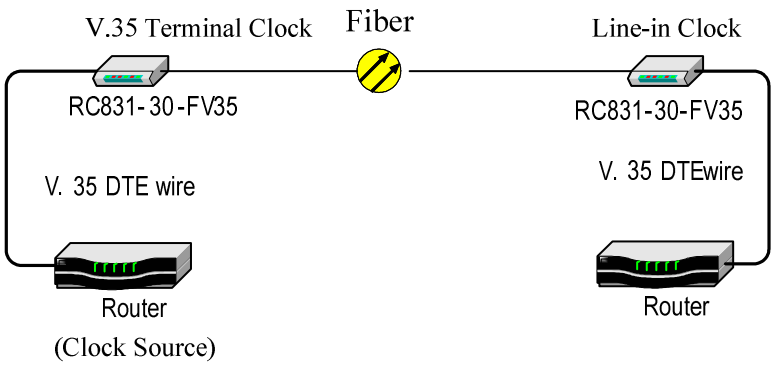
5.2.1 Point-to-point "internal clock – line-in clock" structure

When RC831-30-FV35 is connecting with a router or another device with V.35 interface in a point-to-point topology, the router must be working in the DTE mode. For the convenience of installation and debug, users can set the local PDH multiplexer with V.35 interface to internal clock mode, and set the remote PDH multiplexer with V.35 interface to line-in clock mode, that is, the clock source is on the local device with V.35 interface.



5.2.2 Point-to-point "V.35 terminal clock – line-in clock" structure

When the remote DTE device following the clock of local DTE device, that is, the TX CLOCK of local DTE serves as the internal clock source, users can set the clock of local PDH multiplexer with V.35 device to V.35 terminal clock mode and set the clock of remote PDH multiplexer with V.35 interface to line-in clock mode.


V.35 Terminal Clock
Fiber
Line-in Clock
RC831-30-FV35
RC831-30-FV35
V. 35 DTE wire
V. 35 DTEwire
Router
(Clock Source)
Router

Chapter 6 Network Management Features

6.1 Network management platform

RC831-30-FV35 can only be used as remote site device and be managed on the network management platform NView NNM V5.0 developed by Raisecom. Through the network management platform, users can view the status information of RC831-30-FV35, and control and configure it.

6.2 Network management query

The indicator status of remote RC831-30-FV35 can be viewed on the network management platform. Also, the current configuration status and alarm information of E1 service and V.35 service can be queried on the network management system.

6.3 Network management configuration

When the RC831-30-FV35 is a remote device, the status of all functions set by DIP switches except for the E1 type switch is modifiable on the network management platform.

ⓘ **Note:** The latest configuring operation, whether it is completed by the network management system or a DIP switch, will always take effect.

Chapter 7 Device Installation Preparation and Connection

7.1 Pre-installation checking and preparing

Firstly, please check the model and the number of the device and spare parts according to the packing list. Please be sure that the appearance of the device is intact. If there is any evidence that the device has been affected by damp, please dry it before installation.

Please read this manual with caution before installing the device; please have all types of cables that are needed ready and make sure there are no short circuits and open circuits; please make sure that the power supply of the chassis works in the operating voltage range; please have the rack of the chassis device well earthed; please prepare BER tester, optical power meter for line quality testing.

7.1.1 Make sure that the E1 cable applied meet the requirement of the device

If the E1 line to which the RC831-30-FV35 will connect to is composed of PDH and SDH devices, please refer to the user manual of the corresponding device for parameters like E1 interface type, definition and impedance.

7.1.2 Make sure that the fiber applied matches the optical transceiver of RC831-30-FV35

For RC831-30-FV35-M, please use multi-mode fiber with SC/PC connector.

For RC831-30-FV35-S1/S2/S3, please use single-mode fiber with SC/PC connector.

For RC831-30-FV35-SS13/SS15/SS23/SS25, please use single-mode fiber with SC/PC connector.

7.1.3 Confirm the fiber cable type applied

The cable type for the interface of multi-mode fiber:

62.5/125um multi-mode fiber or 50/125um multi-mode fiber

The cable type for the interface of single-mode fiber:

9/125um single-mode fiber

7.2 Installation procedures

7.2.1 Device installation

Please fix the device firmly.

7.2.2 Cable connection

Please connect the cables in need according to factual situation. For details, please refer to Chapter 5 for “Basic Connection and Typical Application”.

7.2.3 Device electrifying

Hot-plugging of the cable connecting to the V.35 interface is strictly forbidden.

For device adopts -48V DC power supply, please connect the device to the protection earth first, that is,

connect the terminal in the middle of the DC power supply interface to the protection earth at first. Before electrifying, please connect the "-48V" terminal with cable of lower electrical potential and connect the "BGND" terminal with cable of higher electrical potential.

Please tighten the connection, and then turn on the power supply. The power supply status indicator PWR (Green) on the front panel of the device will turn ON to show that the power supply is working normally.

The device will begin to initialize and self-check after electrifying. The process will take no more than 10 seconds. During the initialization and self-checking, the optical interface status indicator LOF and E-6 may flicker for one time, which is a normal phenomenon. The system will begin its normal operation after 10 seconds.

During normal operation, if the optical interface is correctly connected, there will be no LOS, LOF, E-3, and E-6 alarms.

When devices on both ends are electrified with no connection to the V.35 interfaces, when the devices are working in the unframed mode, the indicator AIS may turn ON, which is a normal phenomenon. In this circumstance, the flickering of indictors TD and RD is normal too.

Appendix A FAQ

For some problems you may meet during installation and operation, please try to solve them following the suggestions below. For the problems can not be solved using the following suggestions, please contact with distributors for technical support.

- **The power supply indicator PWR (green) wouldn't turn ON.**
  Please check whether the power supply cable of the device is well connected and whether the power supply switch has been turned on.

- **The optical interface LOS indicator (red) turns ON.**

This indicates that loss of receiving signal (LOS) alarm occurs at the optical interface.

Firstly, please check whether the fiber is well connected to the optical interface.

Secondly, please form a self loop using the fiber (may need attenuation). If the alarm still exists, please replace the fiber and again form a self loop using the new fiber. If the optical interface LOS indicator is still ON, there is problem with the device.

- **The optical interface LOF indicator (red) turns ON.**
  Loss of frame alarm of the receiving signal at the optical interface occurs. Optical signal has been received, but the optical power may be around the critical receiving sensitivity. Please measure the receiving optical power and make sure that the TX interface of the optical interface of the remote device has been well connected.

- **Optical interface indicator E-3 (red) turns ON.**
  The bit error rate of the receiving signal at the optical interface exceeds 1E-3. Please check whether the optical interface has been well connected and please measure the receiving optical power as well.

- **Optical interface indicator E-6 (yellow) turns ON.**
  The bit error rate of the receiving signal at the optical interface exceeds 1E-6. The E-6 alarm may occur when the device is just electrified. This is a normal phenomenon and will last at most 10 seconds before the E-6 indicator turns OFF. If the E-6 alarm occurs during the normal operation of the device, please check whether the optical interface is well connected and please measure the optical power.

- **V.35 interface indicator AIS (red) turns ON.**
  When the device is working in unframed (transparent) mode, if the optical interface received AIS signal, the indicator (red) will turn ON. If there is no break-off on the line, the cause of the alarm may come from the following problems: maybe there is no router being connected to the V.35 interface of the remote device; the remote router may power off; the V.35 interface of the remote router may be shut down. When working together with routers from some manufacturers, since the V.35 interface of the remote router may mistakenly send out AIS signal when it is in idle status, the situation that the indicator turns ON or flicker but the communication is not affected may occurs. As the circumstance will not affect the communication, please consider and accept it as a normal phenomenon.

- **The V.35 interface suffers severe packet loss.**
  The possible causes are:

The clock setting is incorrect, which causes that the network is not working following one clock.

Please check the V.35 interface status of the router. If there is any input or output data error, the phase relationship of the RX CLK of the local or remote device may need adjustment.

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