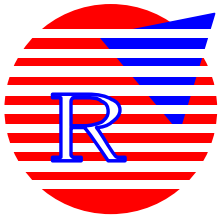
RC802-120B×2 4E1 Optical Multiplexer
User Manual



Beijing Raisecom science & technology Ltd. Co

Content

Chapter 1 RC802-120B×2（Version A）Overview

1.1 product introduction

RC802-120B×2 is an ideal transmission device of optical fiber for point to point networks, middle and small capacity networks, such as wireless communication base stations, private communication networks and switch networks. It can be applied to either public networks or various private-owned networks. It can be managed by RC004-NMS1 inside MPU slot of RC004-16

1.2 product parameter

1.2.1 E1 interface characteristic：

rate： 2048Kbps±50ppm

line code： HDB3

impedance of interface：75Ω（unbalanced）or 120Ω（balanced）

Electrical characteristics: complies with ITU-T G.703

Transfer characteristics: complies with ITU-T G.823

Input jitter tolerance: complies with ITU-T G.823

1.2.2 Optical interface characteristic：

rate： 100Mbps

line code： 4B5B

fiber connector：SC

Optical transmission：

Launch power：≥-5 dBm Receiving sensitivity：≤-35 dBm

Wavelength：1310nm Transmission distance：>40km

1.2.3 Auxiliary data channel

RS232，rate：0~64Kbps

1.2.4 Power supply

RC004-16 chassis provides power supply

1.2.5 Environment

Temp：0 ~ 45℃

Humidity：≤90%（25℃）

1.2.6 Dimension

RC004-16：436mm(W)×440mm(H)×360mm(D)

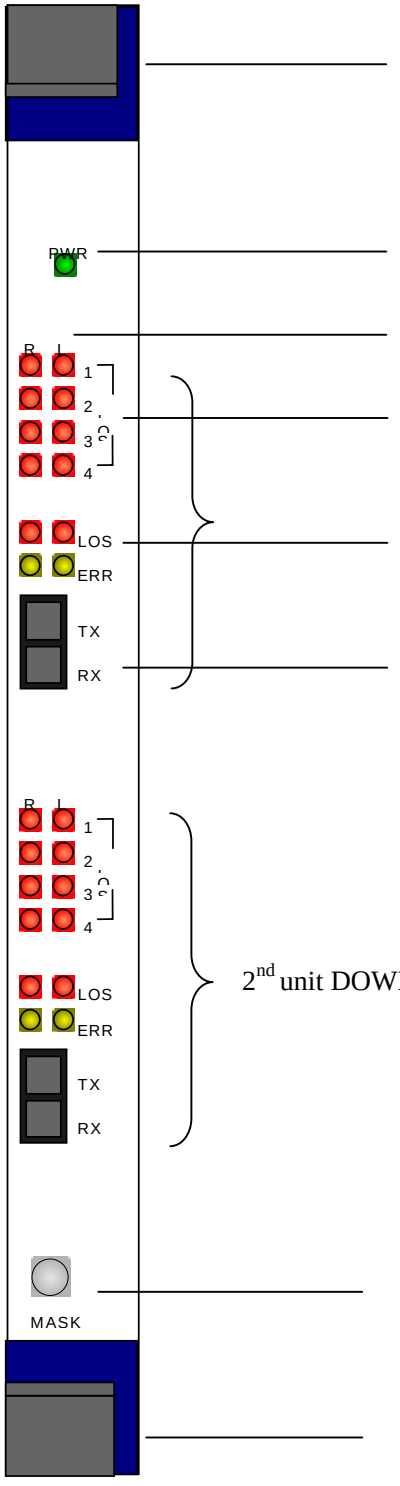
1.3 Interconnection

1.3.1 Slide-in module RC802-120 B × 2 one module can connect to two standalone RC801-120B.

1.3.2 It is suggested RC802-120B×2 not connect with other brand-name’s multiplexers at the optical link, but can be connected with Raisecom’s other dual fiber multiplexers.

Chapter 2 Instruction

2.1 Introduction of front panel



Top fixed spanner

Power indicator（Green）：On, built-in power working in good condition

The row (L) indicates “local”
The row below indicates “Remote”

E1 LOS alarm(red):When E1receiving signal is loss，it turns red

Optical alarm: when receiving signal is loss，LOS turns red. When receiving signal is error, ERR is yellow. Some reasons about alarm found in NMS software, including LOF, error bit rate exceeded 10^{-3} and 10^{-6}

Optical interface: For dual-strand device，optical interface is DSC/PC. TX means sending，RX means receiving.

2^{nd} unit DOWN, the components definition are the same to 1^{st} unit

Mask/ No mask：
“ON”: Mask unused E1' s alarm; “OFF”: No mask unused E1' s alarm. This button enables two units.

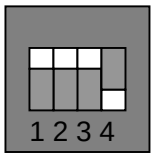
Fixed spanner on bottom

Figure1: RC802-120B×2 front panel

2.2 Internal DIP-Switch setting

2.2.1 Impedance setting of E1 interface

There are 8 groups 4-bit DIP-Switch. They are UP1、UP2、UP3、UP4、DW1、DW2、DW3、DW4. The DIP-Switch can't be control by NMS. So they must be configured manually.



The definition is as following:

1st	2nd	3rd	4th
ON	ON	ON	OFF
75Ω unbalanced signal effective			

Or

1st	2nd	3rd	4th
OFF	OFF	OFF	ON
120Ω balanced signal effective			

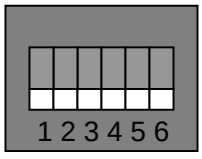
As shown in figure above, the default status is set as "75Ω unbalanced signal BNC interface effective".

- 75ohm unbalanced: besides setting DIP-Switch, E1 interface should be installed CC4B-8G coax adapter on DB37 connector; this adapter converts DB37 interface to eight CC3 coax connector. It fits 4 E1 channel input and 4 E1 channel output.

- 120ohm balanced: besides setting 8 groups DIP-Switch according to the table above, E1 interface should be plugged DB37 connector to fetch twisted pairs. About line order of DB37 for twisted pairs to see appendix A.

2.2.2 DIP-Switch setting

There are 2 groups 6-bit DIP-Switch on the underside of PCB module. Component number is SW1、SW2. SW1 is for 1st unit; SW2 is for 2nd



The definition is the same to RC801-120B on front panel.

6-bit DIP-Switch is defined as following:

- 1st ~ 4th: loop-back

1st	2nd	3rd	4th	Loop-back
OFF	OFF	OFF	OFF	No loop-back (default)
OFF	OFF	OFF	ON	1st E1
OFF	OFF	ON	OFF	2nd E1
OFF	OFF	ON	ON	3rd E1
OFF	ON	OFF	OFF	4th E1
ON	ON	ON	ON	All E1lines

Note: Only two test method can be set: single E1 channel loop-back or all E1 channels loop-back. When single E1 channel loop-back is testing, the other channels are working without disturbance.

When it is default status, loop-back can be configured directly by NMS.

- 5th bit：Choice of loop-back type

5th bit	Choice of loop-back type
OFF	Remote loop-back enable
ON	Local loop-back enable

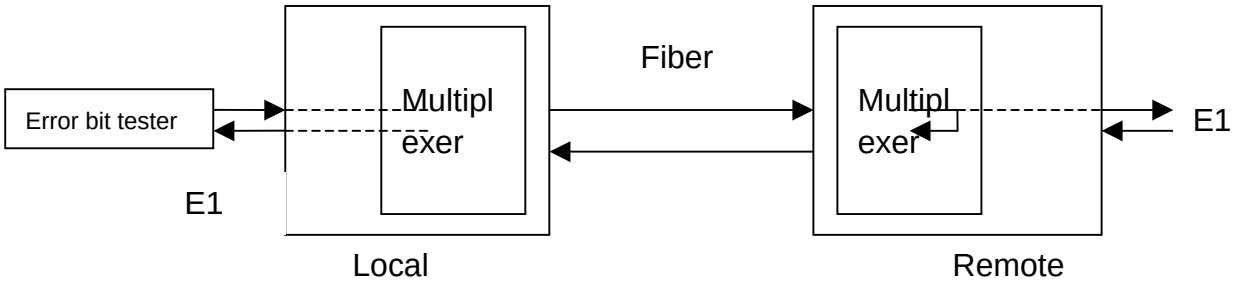


Figure2: sketch map of setting remote loop-back on local site

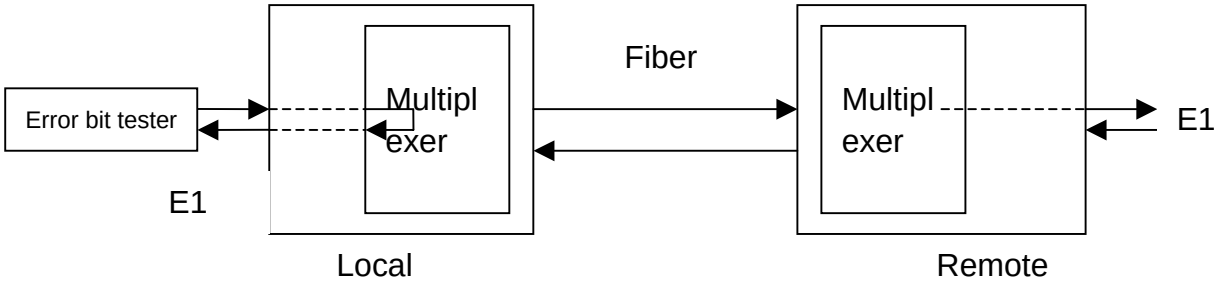


Figure3: sketch map of setting local loop-back on local site

Note：When any loop-back is setting on local site, 1st ~4th loop- back DIP-switch of remote site must be all off.

DIP-Switch of remote loop-back default setting is configured as enable. This status can neither be inquired nor controlled by NMS. So it should not be modified. Only when you test device's performance right or not, DIP-Switch is for auxiliary function. Please keep default setting when loop-back is controlled by NMS.

- 6th bit：DIP-switch for Fault Pass Through

When FPT is disabled，it's similar to AIS of traditional multiplexers. When E1 signal on remote site is lost，the E1 output opposite of local site is "1"；when optical signal at local site is lost ，all E1 output are "1" on local site.

FPT enable: when there is alarm of LOS on any direction of optical interface，both sides E1 output can not transmit HDB3 coding. At this circumstance, alarm on terminal device (such as switches, converters, SDH) of E1 link will be LOS，not AIS alarm.

6th bit	FPT
OFF	Disable（complies with AIS ）
ON	Enable

This function is for some special need. It can be inquired, but can't be controlled. So if it is required to start, it must be forced manually.

Chapter 3 Installation and test

3.1 Installation

3.1.1 connecting

- E1 interface

There are two groups DB37 male connectors above every MPU slot of RC004-16. The first DB37 group from the top is for 1~4 E1 of 1st unit; the second DB37 is for 1~4 E1 of 2nd unit.

75ohm unbalanced: CC4B-8G adapter is installed on DB37 male connector.

CC3-K3 coax cable on adapter. It is suggested to connect with SYV 75-2-2 for 75ohm unbalanced.

120ohm balanced: it can be installed DB37 female adapter with twisted pair cable for E1 output/input on DB37 male connector on our PDH.

- Optical interface

Plug the SC fiber tail into optical interface (push hard until to the deep end). If not sure about transmission direction, it's advised first to turn on the power of device and then plug in the fiber cable.

3.1.3 Power supply connection

Open PWR of RC004-16.

When it is electrified, it is necessary to confirm no alarm on optical interface at first. There is no LOS alarm if optical interface is right. ERR is yellow when device is just electrified. The reason is that the moment of current coming can bring a little error bit. After 10~20 seconds, ERR is off. ERR includes LOS, LOF, 10^{-3} and 10^{-6}.

3.1.4 Mask unused E1 alarm

If the connected E1 links are working in good condition without any signal loss, while there is still another unused E1 link, the LOS alarm for unused E1 link may occur, which is called "unused E1 alarm". Press MASK/NO MASK button "on" to clear all the unused E1 alarm and all the E1 LOS alarm indicators will be off.

In the case unused E1 link alarm being masked, if the connected E1 sub-channel is disconnected, the LOS indicator of this sub-channel will still be on.

If power supply is cut off and turned on again, then the mask function will be disabled. Press button to "off" and then pressed to "on" again.

If after a period of operation, a new E1channel is needed, first disable the mask function and then connect E1 link.

Chapter 4 Troubleshooting

If there are any problems during installation and using, try the following proposals. If the problems can still not be solved, please contact distributors or hot-line technical support for help.

The following explanations and solutions for alarms at optical ports and LOS alarms at E1 ports are used to handling local alarm problems. For remote-end alarms, please handle them at remote site.

- Green PWR indicator not on

Answer: PS faults. Check whether PS is working properly and –48 PS connection is not reversed.

- LOS red indicator of optical port on

Answer: Loss of receiving signal occurs at optical port. Check whether the input fiber (RX) is connected well and ensure not reversed. Or check the receiving optical power with optical power test-meter, it should be greater than receiving sensitivity specification.

- Optical interface ERR on

Answer: It is normal that ERR alarm occurs for 10 seconds just after turning on the power, after 10 seconds the ERR indicator will be off. If ERR alarm occurs during operation, check whether optical RX port connects well and RX optical power.

- LOS red indicator of E1 sub-channel on

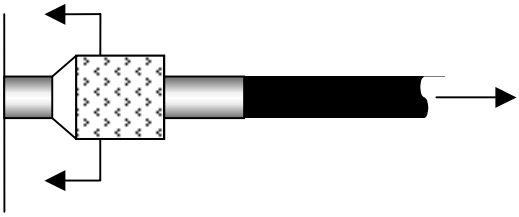
Answer: Loss alarm of RX signal at E1 sub-channel, no HDB3 signal is received. Check whether all E1 ports are connected well, or whether 75 Ω cable are reversely connected, or whether the wires of 75 Ω cable are in right order. If LOS alarm occurs at unused E1 sub-channel, press “mask” button to “on” to musk the alarm after finishing the configuration of device.

- Mask button is on, but there is still alarm in unused E1 sub-channel.

Answer: probably the mask function is disabled if power supply is cut off and then turned on. To solve is by pressing the mask button to “OFF”, and then pressing to “on” to enable mask function.

- How to take cable off from connector

Answer: push the part that is the biggest diameter of connector; don’t twist. Then pull off.



Appendix A Introduction of making cable

- 75ohm adopting DB37 coax adapter:
  It is suggested to connect with SYV 75-2-2 coax cable. The distance is less than 200 meters.

- 120ohm DB37 male connector is defined as following:

DB37 pin definition	1st	2nd	3rd	4th
OUT	3、4	7、8	11、12	15、16
IN	21、22	25、26	29、30	33、34

Others hang up. Twisted pairs can be jointing on DB37 female connector.