

**RC111/RC112 Series
Bandwidth Controllable
10/100 Mbps Auto-Sensing
Copper to Fiber
Media Converter**

User Manual



Beijing Raisecom Science & Technology Co., Ltd

CONTENT

CHAPTER 1. RC111/RC112-FE-XX COPPER TO FIBER MEDIA

CONVERTER INTRODUCTION..... 2

1.1 PRODUCT ARTICLE DESCRIPTION	2
1.2 PRODUCT SPECIFICATION	2
1.3 EXPLANATION FOR THE FRONT PANEL AND INDICATORS.....	3
1.3.1 <i>The Indicators on the Front Panel</i>	3
1.3.2 <i>The Definition of Indicators</i>	3
1.3.3 <i>16-Slot Chassis (for RC112) Front Panel Sketch</i>	4

CHAPTER 2. CONNECTION CONFIGURATION..... 5

2.1 MEDIA CONVERTER INTERCONNECTION	5
2.2 CONNECTION WITH OTHER EQUIPMENT (AT RJ45 PORT).....	5
2.3 FULL DUPLEX CONFIGURATION (RJ45 PORT).....	6
2.3.1 <i>RC111/RC112 Series RJ45 Interface Auto-negotiation</i>	6
2.3.2 <i>RC111/RC112 Series RJ45 in Forced Status</i>	6
2.4 CONNECTION WITH OTHER EQUIPMENT (AT OPTICAL PORT).....	6

CHAPTER 3. INSTALLATION AND PREPARATION..... 7

3.1 MATCHING FIBER-OPTIC CABLE WITH MEDIA CONVERTER.....	7
3.2 TYPES OF FIBER-OPTIC CABLE	7
3.3 RJ45 INTERFACE	7
3.4 INSTALLATION OF CHASSIS (FOR RC112).....	7
3.5 INSTALLATION OF DC POWER SUPPLY (FOR RC112).....	8
3.6 AMBIENCE.....	8
3.7 POWER SUPPLY.....	8
3.8 DIMENSIONS.....	8

CHAPTER 4. DIP-SWITCH SETUP..... 9

4.1 EXPLANATION FOR SW4 SETUP:	9
4.2 THE FACTORY DEFAULT SETUP FOR SW4	10

CHAPTER 5. NETWORK MANAGEMENT.....11

5.1 CARD/MODULE INFORMATION REVIEW:	11
5.2 CARD CONFIGURATION	11
5.3 CARD RESET	11

Chapter 1. RC111/RC112-FE-XX Copper to Fiber Media Converter

Introduction

1.1 Product Article Description

RC111/RC112-FE(A) series media converters include the following product articles: RC111-FE(A)-M, RC111-FE(A)-S1, RC111-FE(A)-S2, RC111-FE(A)-S3, RC112-FE(A)-M, RC112-FE(A)-S1, RC112-FE(A)-S2, RC112-FE(A)-S3.

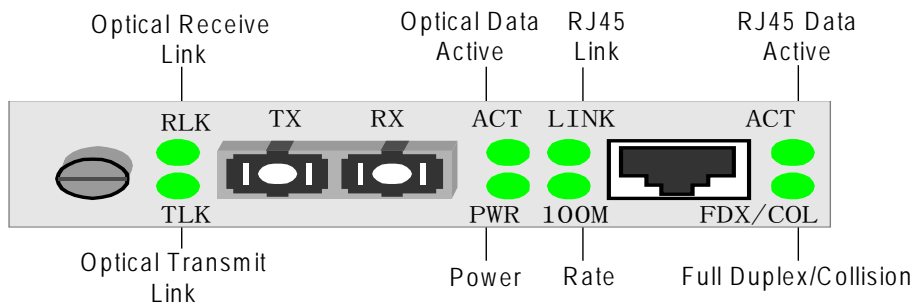
Article Number	Description
RC111-FE(A)-M	Stand-alone, 10/100Mbps auto-sensing, multi-mode, 0-2km, RJ45/DSC
RC111-FE(A)-S1	Stand-alone, 10/100Mbps auto-sensing, single mode, 0-25km, RJ45/DSC
RC111-FE(A)-S2	Stand-alone, 10/100Mbps auto-sensing, single Mode, 10-60km, RJ45/DSC
RC111-FE(A)-S3	Stand-alone, 10/100Mbps auto-sensing, Single Mode, 15-120km, RJ45/DSC
RC112-FE(A)-M	Host site/Remote site module, 10/100Mbps auto-sensing, multi-mode, 0-2 km, RJ45/DSC
RC112-FE(A)-S1	Host site/Remote site module, 10/100Mbps auto-sensing, single mode, 0-25 km, RJ45/DSC
RC112-FE(A)-S2	Host site/Remote site module, 10/100Mbps auto-sensing, single mode, 10-60 km, RJ45/DSC
RC112-FE(A)-S3	Host site/Remote site module, 10/100Mbps auto-sensing, single mode, 15-120 km, RJ45/DSC

1.2 Product Specification

ARTICLE NUMBER	Interface	Wavelength (nm)	Transmit Power (dBmW)	Receiving Sensitivity (dBmW)	Receiving Saturation (dBmW)	Supported Link Distance (Km)	Attenuation (dB/Km)
RC111-FE(A)-M	DSC-RJ45	1310	-18 ~ -14	-31	-14	0~2	3
RC111-FE(A)-S1	DSC-RJ45	1310	-13 ~ -3	-35	-3	0~25	0.5
RC111-FE(A)-S2	DSC-RJ45	1310	-5 ~ -0	-36	-3	10~60	0.5
RC111-FE(A)-S3	DSC-RJ45	1550/DFB	-5 ~ -0	-37	-3	15~120	0.25
RC112-FE(A)-M	DSC-RJ45	1310	-18 ~ -14	-31	-14	0~2	3
RC112-FE(A)-S1	DSC-RJ45	1310	-13 ~ -3	-35	-3	0~25	0.5
RC112-FE(A)-S2	DSC-RJ45	1310	-5 ~ -0	-36	-3	10~60	0.5
RC112-FE(A)-S3	DSC-RJ45	1550/DFB	-5 ~ -0	-37	-3	15~120	0.25

1.3 Explanation for the Front Panel and Indicators

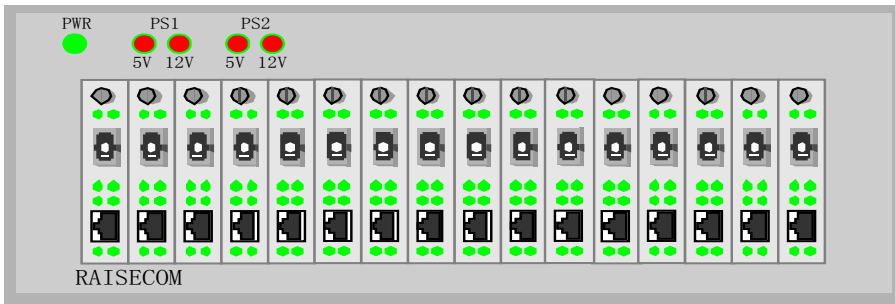
1.3.1 The Indicators on the Front Panel



1.3.2 The Definition of Indicators

Interface	Indicator Name	Indicator	The Status Explanation
Optical Interface	OPTICAL RECEIVE LINK	RLK	ON: Optical receive link works in good condition; OFF: Optical receive link fails.
	Optical Transmit Link	TLK	ON: Optical transmit link works in good condition; OFF and RLK ON: Optical transmit link fails.
	Optical Data Active	ACT	Flashing: Transmitting data in Optical interface.
	Power Supply	PWR	ON: Power supply works in good Condition; OFF: Power supply disconnected.
RJ45 Interface	RJ45 Link	LINK	ON: RJ45 link works in good condition; OFF: RJ45 link fails.
	Bit Rate	100M	ON: RJ45 bit rate is 100M; OFF: RJ45 bit rate is 10M.
	RJ45 Data Active	ACT	Flashing: Transmitting data in RJ45 interface.
	Full Duplex /Collision	FDX/COL	ON: RJ45 interface works in full duplex mode; OFF: RJ45 interface works in half duplex mode; Flashing: Half duplex mode and collision is detected.

1.3.3 16-Slot Chassis (for RC112) Front Panel Sketch



The working conditions displayed by each indicator are as follows:

- PWR: steady ON, the power supply of chassis is working in good condition.
- PS1-5V: steady OFF, the PS1 power supply to modules is in good condition.
- PS1-12V: steady OFF, the PS1 power supply to the electric fans is in good condition.
- PS2-5V: steady OFF, the PS2 power supply to modules is in good condition.
- PS2-12V: steady OFF, the PS2 power supply to the electric fans is in good condition.

Chapter 2. Connection Configuration

2.1 Media Converter Interconnection

When connecting other media converters, it is required to comply with the specific connection requirements according to the following table. Otherwise, link faults or abnormal data transmission will occur.

Host Site	Remote Site
RC112-FE(A)-M	RC112/111-FE(A)-M
RC112-FE(A)-S1	RC112/111-FE(A)-S1
RC112-FE(A)-S2	RC112/111-FE(A)-S2
RC112-FE(A)-S3	RC112/111-FE(A)-S3

2.2 Connection with Other Equipment (at RJ45 Port)

1. RC111/RC112 series copper-to-fiber media converters have the function of “MDI/MDIX auto-negotiation”, so both straight-through and crossover cables can be used to connect with other equipment.
2. When RJ45 interfaces of RC111/RC112 series media converters work in the forced status, the “MDI/MDIX auto-negotiation” function may fail. So it is suggested that the following connection types on the forced status adopted.

Media Converter	Other Equipment	Connection Type of RJ45
Media Converter	Switch	Straight-through
Media Converter	HUB	Straight-through
Media Converter	Router	Crossover
Media Converter	Network Interface Card	Crossover

2.3 Full Duplex Configuration (RJ45 Port)

2.3.1 RC111/RC112 Series RJ45 Interface Auto-negotiation

When the RJ45 interface of RC111/RC112 media converter is configured to “auto-negotiation”, the copper port/RJ45 of other network equipment must also be configured to “auto-negotiation” to ensure normal data transmission. If other equipment is working in forced status of full duplex mode, the media converters shall be fixed to “Full Duplex Mode”.

2.3.2 RC111/RC112 Series RJ45 in Forced Status

The RJ45 duplex mode of other network equipment must have the same configuration according to the following table, in order to transmit data properly.

Media Converter RJ45 Mode	Other Equipment RJ45 Mode
100M/Full Duplex	100M/Full Duplex
100M/Half Duplex	100M/Half Duplex
10M/Full Duplex	10M/Full Duplex
10M/Half Duplex	10M/Half Duplex

2.4 Connection with Other Equipment (at Optical Port)

Several mandatory conditions are required:

1. The same wavelength (single-strand, dual-wavelength media converter is not included)
2. The same bit rate
3. Matched optical power
4. Fast Ethernet protocol (IEEE 802.3u Fast Ethernet)

Chapter 3. Installation and Preparation

3.1 Matching Fiber-Optic Cable with Media Converter

RC111/RC112-FE-M series shall adopt multi-mode fiber, and connector of multi-mode fiber shall be DSC.

RC111/RC112-FE-S1/2/3 shall adopt single mode fiber, and connector of single mode fiber shall be DSC.

3.2 Types of Fiber-optic Cable

Fiber-optic cable for multi-mode fiber port: 62.5/125um multi-mode fiber or 50/125um multi-mode fiber.

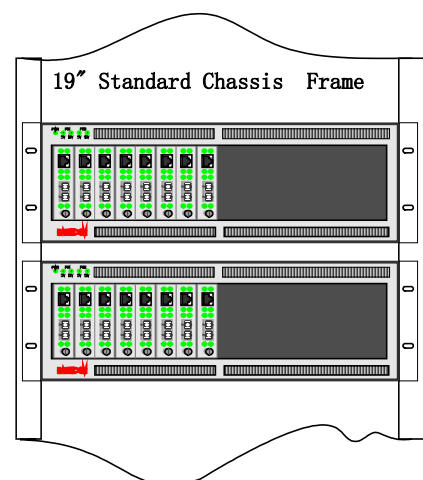
Fiber-optic cable for single mode fiber port: 9/125um single mode fiber.

3.3 RJ45 Interface

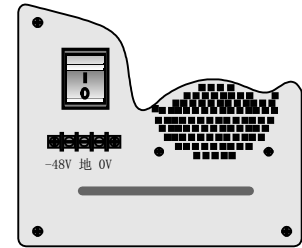
Cat.5 of twisted-pair shall be used. Please note that twisted-pair cables shall not be longer than 100 meters. For connection configuration, please see Chapter 2, Connection with Other Equipment (at RJ45 Port).

3.4 Installation of Chassis (for RC112)

The chassis can be fixed onto 19" rack. The fixing accessories of chassis are packed in the accessory box. If fixing the chassis with the rear hole, there'll be 3cm space between the front edge of chassis and the front edge of rack; if fixing with the front hole, the front edges will be in the same vertical level.



3.5 Installation of DC Power Supply (for RC112)



DC power supply provides three connectors: -48V, ground and 0V. These three connectors are connected respectively with -48V power cable, ground protection and 0V power cable.

3.6 Ambience

Working temperature: -20-60°C

Humidity: 5%~90% non-condensing

3.7 Power Supply

RC111 series:

- ◆ Stand-alone: 110V/60Hz AC, 220V/50Hz AC or -48V DC

RC112 series:

- ◆ Single Slot Chassis: 110V/60Hz AC, 220V/50Hz AC or -48V DC
- ◆ 16-Slots Chassis: 110V/60Hz AC, 220V/50Hz AC or -48V DC

3.8 Dimensions

RC111 series:

- ◆ Standalone: 157(width) x 120(depth) x 32(height) mm

RC112 series:

- ◆ Single Slot Chassis: 155(width) x 39(height) x 120(depth) mm
- ◆ 16-Slots Chassis: 440(width) x 131(height) x 410(depth) mm

Chapter 4. Dip-switch Setup

RC111/RC112 series media converter has an 8-bit dip-switch SW4. The functions for each bit are as follows in sequence: auto-sensing enable/disable, bit-rate 100M/10M, full duplex/half duplex, vacant (reserved), fault-pass-through disable/enable, frame length 1916 bytes/1536 bytes, module type configuration.

4.1 Explanation for SW4 Setup:

Switcl	Contents	Status	Configuration Details
1	RJ45 auto-sensing or manual setup	ON	RJ45 is configured as manual setup
		OFF	RJ45 is configured as auto sensing
2	RJ45 manual 100M/10M setup	ON	RJ45 manual setup: bit rate is 10M
		OFF	RJ45 manual setup: bit rate is 100M
3	RJ45 manual setup: Full Duplex/Half Duplex	ON	If RJ45 manual setup: Half duplex If RJ45 auto-sensing: Auto-negotiation failing, work on half duplex mode
		OFF	If RJ45 manual setup: full duplex If RJ45 auto-sensing: Auto-negotiation failing, work on full duplex mode
4	Vacant (Reserved)		
5	Fault-pass-through switch disable/enable	ON	Enabled: If the optical link is disconnected, the RJ45 interface will be disabled
		OFF	Disabled: host RJ45 will always work
6	Over-sized frame configuration	ON	Over-sized frame up to 1536 bytes
		OFF	Over-sized frame up to 1916 bytes

Note: When SW4-1 is OFF (auto-sensing status), SW4-2 and SW4-3 will be disabled.

Remarks: The dip-switch of RC111-FE is on the back of the equipment.

SW4-7, SW4-8 are used to set up module types (it is prohibited for end-users to alter configuration).

See the following table:

SW4-7	SW4-8	Module Types
ON	ON	RC112-FE(A)-M
OFF	ON	RC112-FE(A)-S1
ON	OFF	RC112-FE(A)-S2
OFF	OFF	RC112-FE(A)-S3

4.2 the Factory Default Setup for SW4

	1	2	3	4	5	6	7	8
On								
Off	■	■	■	■	■	■		

Note: No. 4 bit is reserved.

Chapter 5. Network Management

5.1 Card/Module Information Review:

With network management software, the status of RC111/RC112 series can be reviewed at the host site, and controlled/configured. The status information on “Show Card Info” is as follows:

No.	Status Name/Control & Configure Items	Alternatives	Control & Configure Features
1	Module type	M, S1, S2, S3	Uncontrollable
2	Failure transfer	Enable/disable	Configurable
3	Frame length	1916Byte/1536Byte	Configurable
4	Receiving rate	N * 32kb/s	N is Configurable
5	Transmitting rate	N * 32kb/s	N is Configurable
6	RJ45 interface Link status	Up, Down	Uncontrollable
7	RJ45 interface auto-negotiation	Enable/manual	Configurable
8	RJ45 interface control	Open/close	Configurable
9	RJ45 interface duplex status	Full/half duplex	Configurable
10	RJ45 interface rate	10M, 100M	Configurable
11	Optical Interface: transmit Link	Up, Down	Uncontrollable
12	Optical Interface: receive Link	Up, Down	Uncontrollable
13	Optical Interface: signal	Normal/abnormal	Uncontrollable

5.2 Card Configuration

Options such as receiving rate, transmitting rate and RJ45 interface, etc. can be configured through “Configure Card”.

5.3 Card Reset

The host or remote-end modules can be reset through “Host Card Reset”. The frame length after the reset is 1,916Bytes, and the working mode of port RJ45 is auto-sensing.

BROADBAND To RAISECOM

Copyright Declaration: Beijing Raisecom Science & Technology Co., Ltd. is the owner of this manual booklet.

The part or whole of this manual are not allowed to use without Raisecom's permission.

All rights Reserved.

Address:

229, 4th North Loop Middle Road
617, Haitai Tower

Tel: 86-10-82883305

Fax: 86-10-82885200 **Post Code:** 100083

E-mail: export@raisecom.com

Website: www.raisecom.com