



RC315/316-FE (Rev. A)
10/100M Auto-negotiation
Copper-to-Fiber
Media Converter

User Manual

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1. Safety Notice



Please read the following notice carefully before installing and using the device, Raisecom shall not be responsible for any loss that caused by violating safety notice.



RC315/316-FE (Rev. A) has high sensitivity optical interface, so the power of optical transceiver output interface must be checked before connecting. To avoid damaging, it is not allowed that the optical power of transceiver's output interface is higher than that of RC315/316-FE.



RC315/316-FE (Rev. A) is an integrated device which has precise elements, please avoid violent shake and impact, and do not disassemble or maintain the device yourself. If it is required, please do it under the guide of our technical staff following anti static steps. Please contact us if there is any need.



There must be grounding protection for the sake of safety; do not disassemble the device yourself, we regard this as you waiver your rights of repair guarantee.

2. Overview

2.1. Model Description

RC315/RC316-FE series media converters include the following product articles:
RC315-FE-S1, RC315-FE-S2, RC316-FE-S1, and RC316-FE-S2.

Part Number	Description
RC315-FE-S1	Stand-alone, 10/100Mbps auto-sensing, single strand, single mode, 0-25km, RJ45/SC-PC
RC315-FE-S2	Stand-alone, 10/100Mbps auto-sensing, single strand, single Mode, 10-50km, RJ45/SC-PC
RC316-FE-S1	Host site/Remote site module, 10/100Mbps auto-sensing, single strand, single mode, 0-25km, RJ45/SC-PC
RC316-FE-S2	Host site/Remote site module, 10/100Mbps auto-sensing, single strand, single mode, 10-50km, RJ45/SC-PC

3. Technical Specification

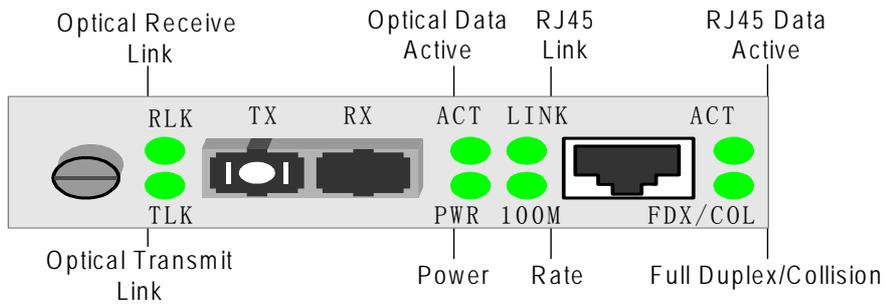
3.1. Optical Parameters

PART NUMBER	Interface	Wavelength (nm)	Launch Power (dBmW)	Receiving Sensitivity (dBmW)	Typical Range (Km)	Attenuation (dB/Km)
RC315-FE-S1	SC/PC-RJ45	1310	-12 ~ -3	< -30	0 ~ 25	0.5
RC315-FE-S2	SC/PC-RJ45	1310	-12 ~ -3	< -30	0 ~ 25	0.5
RC316-FE-S1	SC/PC-RJ45	1550	-5 ~ 0	< -32	10 ~ 50	0.5
RC316-FE-S2	SC/PC-RJ45	1550	-5 ~ 0	< -32	10 ~ 50	0.5

4. Construction & Indicator

4.1. Front view and indicators

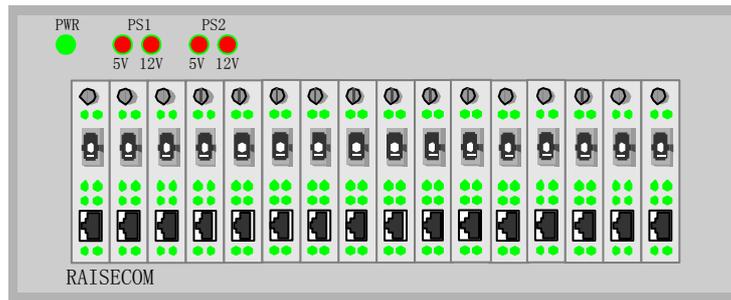
1. Front view of RC315/316-FE:



Explanation of RC315/316-FE 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.
RJ45 Interface	RJ45 Link	LINK	ON: Rj45 link works in good condition; OFF: RJ45 link down.
	Duplex Mode /Collision	FDX/COL	ON: RJ45 works at full duplex mode; OFF: RJ45 works at half duplex mode; Flashing: Half duplex and collision occurs.
	RJ45 Data Active	ACT	Flashing: Transmitting data in RJ45 interface.
	Bit Rate	100M	ON: Rate is 100M; OFF: Rate is 10M.
Power Supply	Power	PWR	ON: Power supply works in good condition; OFF: Power supply disconnected.

2. Front view of 16-slot chassis



Explanation of the indicators on 16-slot chassis is as follows:

PWR indicator: ON, chassis power supply works normal.

PS1-5V indicator: OFF, power supply PS1 for modules works normal, otherwise abnormal.

PS1-12V indicator: OFF, power supply PS1 for fans works normal, otherwise abnormal.

PS2-5V indicator: OFF, power supply PS2 for modules works normal, otherwise abnormal.

PS2-12V indicator: OFF, power supply PS2 for fans works normal, otherwise abnormal.

5. Function & Application

5.1. Interconnecting Media Converters

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

Host Site	Remote Site
RC316-FE-S1	RC315-FE-S1
RC316-FE-S2	RC315-FE-S2

5.2. Connecting MC with Other Devices (at RJ45 Port)

1. RC315/RC316-FE 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 RC315/RC316 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	RJ45 Cable Type
Media Converter	Switch	Straight-through
Media Converter	HUB	Straight-through
Media Converter	Router	Crossover
Media Converter	Network Interface Card	Crossover

5.3. Full Duplex Configuration (RJ45 Port)

5.3.1. RC315/RC316-FE Series RJ45 Interface Auto-negotiation

When the RJ45 interface of RC315/RC316 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”.

5.3.2. RC315/RC316-FE Series RJ45 in Forced Status

When RC315/RC316 series media converter is working in forced status, the RJ45 duplex mode configuration of other network equipment must comply with the following table, to ensure proper data transmission.

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

5.4. Connection with Other Equipment (at Optical Port)

Several mandatory conditions are required:

1. The same bit rate
2. Matched optical power
3. Fast Ethernet protocol (IEEE 802.3u Fast Ethernet)

6. Installation & Inspection

6.1. Matching Fiber-Optic Cable with Media Converter

RC315/316-FE-S1/2 series shall adopt single-mode single-strand fiber, and the connector shall be SC/PC.

6.2. 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.

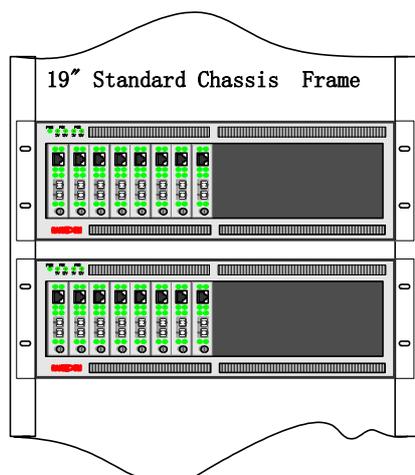
Fiber-optic cable for single mode fiber port: 9/125um single mode fiber.

6.3. 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).

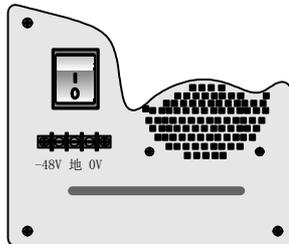
6.4. Installation of Chassis (for RC316)

The chassis can be fixed onto 19" rack. The fixing accessories of chassis are 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 the rack; if fixing with the front hole, the front edges will be in the same vertical level.



6.5. Installation of DC Power Supply (for RC316)

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.



6.6. Ambience

Working temperature: -20-60°C

Humidity: 5%~90% non-condensing

6.7. Power Supply

RC315 series:

- ◆ Stand-alone: 115/230V AC or -48V DC

RC316 series:

- ◆ Single Slot Chassis: 115/230V AC or -48V DC
- ◆ 16-Slots Chassis: 115/230V AC or -48V DC

Power consumption: 5W

6.8. Dimensions

RC315 series:

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

RC316 series:

- ◆ Modular: 91(width)*25(height)*155(depth) mm

7. DIP-switch Configuration

RC315/316-FE 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, and module type configuration.

7.1. Explanation for SW4 Setup:

Switch	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 fails, working on half duplex mode
		OFF	If RJ45 manual setup: full duplex If RJ45 auto-sensing: Auto-negotiation fails, working on full duplex mode
4	Vacant (Reserved)		
5	Fault-pass-through 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. 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
OFF	ON	RC315/316-FE-S1

7.2. Factory Default Setup for SW4

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

8. Network Management

8.1. Card/Module Information Review

With network management software, the status of RC315/316 series can be reviewed at the host site, and controlled/configured. The status information on “Show Module Info” is as follows:

No.	Status Name/Control & Configure Items	Options	Control & Configure Features
1	Module type	M, S1, S2, S3	Uncontrollable
2	Failure transfer	Enable/disable	Configurable
3	Frame length	1916Byte/1536Byte	Configurable
4	Receive rate	N * 32kb/s	N is Configurable
5	Transmit 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

8.2. Module Configuration

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

8.3. 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.

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