



# ISCOM4300 EOS (Ethernet over SDH) User Manual

**Raisecom Technology Co., Ltd**

02/2005

# Contents

1. Overview.....	3
1.1. Main features.....	3
1.2. Part number explanation .....	3
1.3. Dimension .....	4
2. Parameters .....	5
2.1. Basic configuration .....	5
2.2. Optical interface parameters .....	5
2.3. Ethernet interface .....	5
2.4. CONSOLE interface .....	5
2.5. SNMP interface .....	5
2.6. Clock .....	5
2.7. Power supply.....	5
2.8. Ambience .....	5
3. Usage guide .....	6
3.1. Front panel explanation .....	6
3.2. Rear panel.....	6
4. Function & Application .....	7
4.1. Process mechanism .....	7
4.2. Basic application .....	7
4.3. Clock .....	7
4.4. Protection switch .....	7
5. Installation .....	9
5.1. Notice .....	9
5.2. Installation steps.....	9
5.2.1 Prepare the cables .....	9
5.2.2 Connect the 155M SDH interface.....	9
5.2.3 Connect the Ethernet interface.....	9
5.2.4 Connect SNMP network management interface.....	9
5.2.5 Connect CONSOLE interface.....	9
5.2.6 Power on .....	10
6. Q & A .....	11
7. Appendix: Making CONSOLE cable .....	12

# 1. Overview

ISCOM4300 is a compact high-density Ethernet-over-SDH network edge access platform. It is designed for fully utilizing the existing SDH network resources to provide subscribers with SLA MAN or even WAN Ethernet access service. It introduces standard encapsulation technology and advanced VCG/LCAS. This is a more Ethernet-service-specialized MSTP technology, which cannot only communicate with existing MSTP, but also provide dynamic adjustable dedicated network/line access on  $N \times VC12/N \times VC3$  bandwidth. It decreases the cost of access for subscribers, and increases the network resource utilization for operators. In the initial period of MSTP deployment, it provides operators with secure, effective, easy, and simple solutions for MAN/WAN Ethernet dedicated line service.

## 1.1. Main features

- Provide two STM-1 interfaces and can be configured as 1+1 protection mode and two-way independent mode;
- Support the virtual concatenation of VC12 and VC3, the service bandwidth is adjustable, maximum granularity is 2M and the maximum jitter between VCG members can be 24ms.
- Support LCAS function;
- Provide 16 Ethernet interfaces and support 3 types of encapsulation: GFP, LAPS and PPP.
- Master/slave clock mode supports clock holding, locking, and free running compliant with G.813 standard.
- Provide SNMP and CONSOLE network management interfaces and ECC embedded channel, available for both local and remote field upgrade and is very convenient for maintenance.
- Provide fault alarm and performance monitor, optical interface and E1 interface provide loop back function for convenient equipment maintenance.
- Total power consumption <25W, high reliability
- Temperature: -5 – 50 °C

## 1.2. Part number explanation

Part number: ISCOM4300-X-Y

Explanation:

ISCOM4300: Raisecom series EOS equipments

155: STM-1 speed

X: optical connector mode, M/S1/S2/S3, please refer to table 1-1:

M: 0-2km

S1:0-25km

S2:10-60km

S3:15-120km

Y: power supply type, AC/DC:

AC: 220V

DC:-48V

**Table 1-1 ISCOM4300 optical connector**

Rate Mbps	Type	Connector	Wave length nm	TX power dBm	Over load point dBm	Optical RX sensitivity dBm (BER=E-10)	Typical transmission distance Km	Optical loss dB/Km
STM-1	M	SC	1310	-18- -14	-14	< -29	0- 2	3
	S1	SC	1310	-15- -8	-8	< -34	0- 25	0.5

	S2	SC	1310	-5- 0	-8	< -34	10- 60	0.5
	S3	SC	1550	-5- 0(DFB)	-10	< -36	15- 120	0.25

### 1.3. Dimension

OPCOM4300 adopts international 19-inch chassis and is convenient for installation.  
Dimension: 440(W)\*43.6(H)\*235(D)

## 2. Parameters

### 2.1. Basic configuration

- Main circuit board: 16 FE interfaces and two STM-1 optical interfaces
- Power supply module: 220VAC or -48VDC;
- Management interface: CONSOLE, SNMP network management interface

### 2.2. Optical interface parameters

- Rate: 155.52Mb/s
- Line coding: NRZ
- Connector type: SC
- Virtual concatenation: VC12 and VC3
- LCAS

### 2.3. Ethernet interface

- Rate:10/100M auto negotiation
- Connector: RJ-45
- IEEE802.3
- IEEE802.3x PAUSE flow control
- Support AUTO-MIDX auto sensing
- Encapsulation: LAPS, GFP and PPP

### 2.4. CONSOLE interface

- Connector: RJ-45
- Compliant with RS232
- Rate: 9600bps

### 2.5. SNMP interface

- Connector: RJ-45
- IEEE802.3
- 10/100M auto negotiation
- Support AUTO-MIDX auto sensing

### 2.6. Clock

- Locking, holding and free running
- Frequency accuracy:

Free running:  $\leq \pm 4.6 \times 10^{-6}$  (According to G.811 basic clock)

Holding:  $\leq \pm 0.37 \times 10^{-6}$  (24 hours)

- Clock capture and unlock range:  $\geq \pm 4.6 \times 10^{-6}$

### 2.7. Power supply

- Power supply voltage: DC -48V, range: -36V- -72V  
AC 220V, range: 180V- 260V
- Power consumption: <25W

### 2.8. Ambience

- Temperature: -5°C -50°C
- Humidity:  $\leq 90\%$  (35°C)

### 3. Usage guide

#### 3.1. Front panel explanation

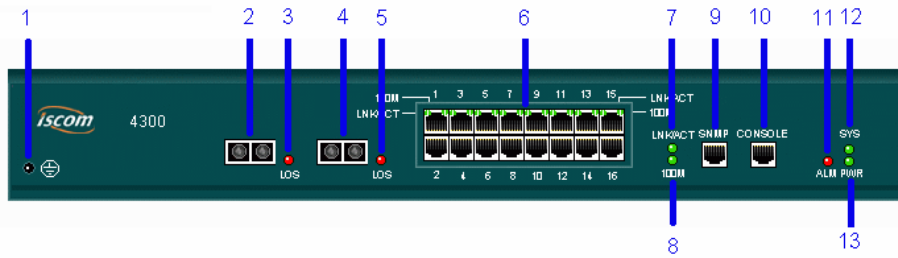


Figure 3.1 front panel

Table 3-1 front panel explanations of ISCOM4300

Number	Explanation	Indicator color	Description
1	Grounding		
2, 4	1 <sup>st</sup> and 2 <sup>nd</sup> optical port		STM-1 optical ports
3, 5	LOS indicator	Red	ON, loss of signal; OFF, normal
6	Ethernet interface and indicator	Green	1-16 Ethernet interfaces. There are two indicators for each interface: LNK/ACT and 100M.
7	LNK/ACT indicator	Green	LNK/ACT indicator for SNMP. ON indicates connection is good and flashing indicates data is being transmitting.
8	100M indicator	Green	100M indicator for SNMP, ON indicates the interface is working at 100M.
9	SNMP interface		SNMP network management interface, RJ-45 connector
10	CONSOLE		Local management interface connects to PC serial interface
11	ALM	Red	General alarm indicator, ON when there is any alarm
12	SYS	Green	System indicator, flashing indicates system works normal
13	PWR	Green	Power supply indicator, ON indicates working well

#### 3.2. Rear panel



Figure 3-2 rear panel

Table 3-2 ISCOM4300 rear panel explanation

Number	Explanation	Indicator color	Description
1	Power supply interface		220V AC, or -48V DC

## 4. Function & Application

### 4.1. Process mechanism

The service process mechanism is: encapsulate ingress Ethernet frames by GFP, LAPS or PPP, map the encapsulated frames to VCG, and then transmit them through SDH/MSTP network to the other end. In the other end of network, unencapsulate GFP/LAPS/PPP frames and forward to Ethernet ports.

### 4.2. Basic application

Refer to figure 4-1 for basic application of ISCOM4300:

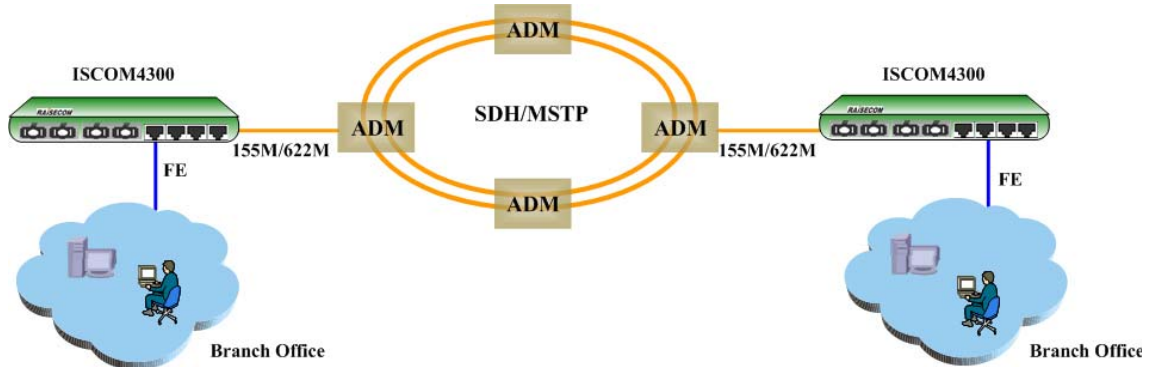


Figure 4-1 basic application

### 4.3. Clock

The clock of ISCOM4300 is compliant with G.813 standard.

#### 1. Clock mode

- ✓ Locking: clock is locked with outside input clock signal.
- ✓ Holding: clock module will work at the last input signal frequency when the input clock signal reference is lost.
- ✓ Free running: clock module will work at the inside oscillator frequency.

#### 2. Clock source select

The clock mode of OPCOM4300 is related to master/slave station. Master station uses free running mode and slave station uses recovered clock. For slave station, there are two recovered clock references: the first optical line (primary reference clock) and the second optical line (standby reference clock). OPCOM4300 will switch the reference clock from the first optical line to the second if the primary reference clock is not available (including there is LOS and the frequency offset is more than 4.6ppm), and if the primary reference clock has recovered it will switch back.

#### 3. Clock source switching

There won't be error bit and too much jitter if OPCOM4300 is forced to switch from master station to slave station or from slave station to master station, and it is compliant with ITUT standard.

Every index is compliant with ITUT standard when OPCOM4300 changes the recovered clock reference (e.g. if there is LOS)

### 4.4. Protection switch

OPCOM4300 provides 1+1 multiplex segment protection and can be configured as not

switching, automatic protection switch and force protection switch by network management system. The conditions of automatic protection switch are as follows: SPI-LOS, RS-LOF, MS-AIS, MS-EXC, and MS-SD, RS-TIM optional.

For 1+1 multiplex segment protection, the protection switching only happens at RX end. Optical port 1 is working channel and optical port 2 is protection channel.

Switching restore is configured by network management, and the protection restore happens after the optical line works well for 5-12 minutes, the waiting time is configured by network management (range is 5-12 minutes)



## 5. Installation

### 5.1. Notice

Please check the equipment, part number and the number according to package list, check whether the equipment is damaged. If the equipment is affected by damp, please dry it.

Please follow the following steps for installation and configuration:

- Read this manual carefully
- Prepare the optical fiber and Ethernet cable
- Fix and install the equipment
- Connect the fiber or the cable
- Configure the equipment according to configuration guide
- User the equipment normally

### 5.2. Installation steps

#### 5.2.1 Prepare the cables

Cables need to be prepared are:

**Table 5-1 Specifications of the cables that need to be prepared**

Interface	Cable specification
10/100Mbps Ethernet ports and SNMP interface	100Base-T category-5 UTP, maximum length is 100 m.(Provided by users)
CONSOLE cable	Refer to appendix.(Provided by Raisecom)
Optical patch cord	SC/SC or SC/FC, single mode or multi mode according to user's requirement.
Power supply interface	AC, 220V/10A power supply cable. DC, - -48V/10A power supply cable.

#### 5.2.2 Connect the 155M SDH interface

- Connect 155M SDH interface with optical fiber
- LOS indicator is OFF if the connection is correct.

#### 5.2.3 Connect the Ethernet interface

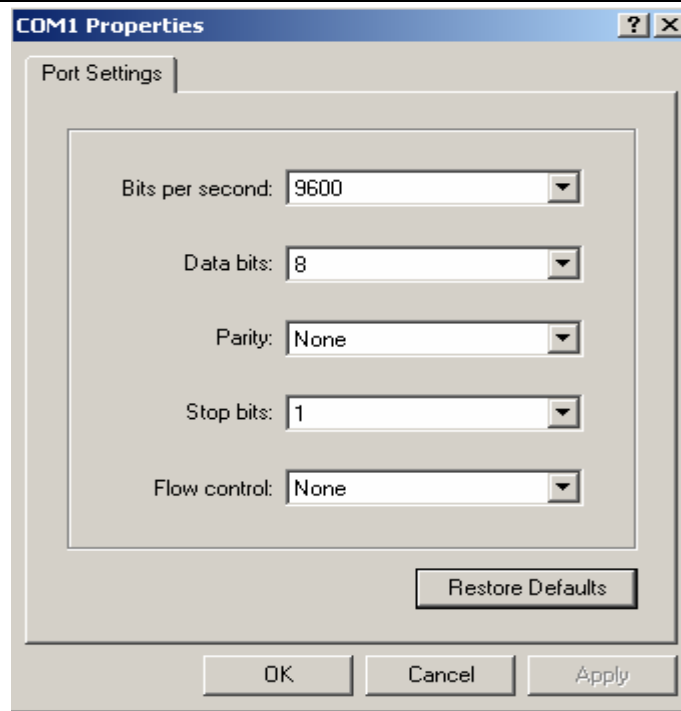
Connect the Ethernet cable with Ethernet interface, if the connection is good the LNK/ACT indicator will be ON.

#### 5.2.4 Connect SNMP network management interface

Connect the Ethernet cable with SNMP interface, if the connection is good the LNK/ACT indicator will be ON.

#### 5.2.5 Connect CONSOLE interface

- Connect the CONSOLE interface with RJ45 connector of the cable.
- Connect the DB9 connector of CONSOLE cable with PC's serial interface.
- Start Hyper Terminal program on PC and the configurations are:



Please refer to the network management user manual for network management configuration

### 5.2.6 Power on

If you use -48V DC as power supply, connect the "grounding connector" with protection grounding first, "-48V" with low level voltage cable and "0V" with high level voltage cable. Make sure of firm installation and no short-circuit, then power on.

If you use 220V AC, use the affixing power supply cable.

After powered on, PWR indicator light will be normal, and the system has finished initialized if SYS starts to flick

### 5.2.7 Configure the services

Please refer to the command guide and configuration guide for service configuration

## 6. Q & A

If you have problems during the installation or application, please try to solve them through the following suggestions. And if it does not work, please contact sales to get technical supports.

- PWR indicator turns OFF.

Check the power supply cable first, and then the power supply card.

- LOS alarms of SDH optical interface

That is to say, there is receiving signal loss. First, check whether the cable is connected correctly; second, if there are still alarms when self-loop the cable (perhaps optical attenuation is needed), change the cables; if there are still alarms then there is something wrong with device.

- Indicator light of Ethernet interface or SNMP network management interface is OFF.

First, check whether the cable works normally or not; then, check whether the devices connect to Ethernet interface or SNMP network management interface works normally or not. And make sure the cable is correct.

## 7. Appendix: Making CONSOLE cable

CONSOLE interface cable

CONSOLE interface uses RJ45 connector and the pin definition is as follows:

RJ-45 Pin number	Signal	Relative PC Pin number
1	NC	-
2	DSR#	6
3	RxD	3
4	GND	5
5	GND	5
6	TxD	2
7	DTR#	4
8	NC	-

“-” indicates not connect

# **BROADBAND to RAISECOM**

@2005 Raisecom Technology Co., Ltd.

All trademarks are the property of their respective owners.

Technical information may be subject to change without prior notification.