

F&eIT Series

10M/100M AUTO-MDIX

Switching HUB

(8-port)

**SH-8008(FIT)H**

User's Manual

CONTEC CO.,LTD.

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# Check Your Package

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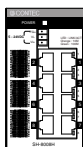
Thank you for purchasing the CONTEC product.

The product consists of the items listed below.

Check, with the following list, that your package is complete. If you discover damaged or missing items, contact your retailer.

## Product Configuration List

- Unit...1
- Interface connector plug...1
- This User's Manual ...1
- EU Declaration of Conformity...1



Unit



Interface connector plug



User's Manual



EU Declaration  
of Conformity

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# 1. Before Using the Product

This chapter provides information you should know before using the product.

## About the Unit

SH-8008(FIT)H is an IEEE-802.3(Ethernet)/IEEE-802.3u(Fast Ethernet) compliant, 8-port switching HUB unit, equipped with full-duplex communication support, AutoMDI/MDI-X feature, and auto-recognition function of communication rates (10Mbps/100Mbps) and communication methods (half/full duplex) by the auto-negotiation feature. SH-8008(FIT)H uses Category 3 or 5, 5e, 6 UTP (unshielded twist pair) cables, or STP (shielded twist pair) cables. For 100Mbps transfer rate, use cables equal to or greater than Category 5.

Please read this manual carefully so that you can build a system by connecting the Switching Hub Unit to external devices.

## Features

- The Switching HUB Unit's auto-negotiation feature automatically recognizes communication rates and communication methods, thus permits a connection to devices such as F&eIT series controller modules <CPU-CAXx(FIT)GY\*1, CPU-SBxx/xxx(FIT)GY\*1> and I/O Assist Server unit <SVR-IOAx(FIT)GY\*1>. It also provides eight AutoMDI/MDI-X ports.
  - Similar to other F&eIT series products, the system, in the unit itself, incorporates a 35-mm DIN rail mounting mechanism as a standard item.
  - Equipped with FG pin for power supply connector.
- \*1 The Assist Server is available in different product models. "x" in each model number represents a blank or one numeric character. (This is applicable to the rest of this document.)

## Customer Support

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

### Web Site

Japanese <http://www.contec.co.jp/>  
English <http://www.contec.com/>  
Chinese <http://www.contec.com.cn/>

### Latest product information

CONTEC provides up-to-date information on products.

CONTEC also provides product manuals and various technical documents in the PDF.

### Free download

You can download updated driver software and differential files as well as sample programs available in several languages.

### Note! For product information

Contact your retailer if you have any technical question about a CONTEC product or need its price, delivery time, or estimate information.

## Limited One-Year Warranty

CONTEC F&EIT products are warranted by CONTEC CO., LTD. to be free from defects in material and workmanship for up to one year from the date of purchase by the original purchaser.

Repair will be free of charge only when this product is returned freight prepaid with a copy of the original invoice and a Return Merchandise Authorization to the distributor or the CONTEC group office, from which it was purchased.

This warranty is not applicable for scratches or normal wear, but only for the electronic circuitry and original products. The warranty is not applicable if the device has been tampered with or damaged through abuse, mistreatment, neglect, or unreasonable use, or if the original invoice is not included, in which case repairs will be considered beyond the warranty policy.

## How to Obtain Service

For replacement or repair, return the device freight prepaid, with a copy of the original invoice. Please obtain a Return Merchandise Authorization Number (RMA) from the CONTEC group office where you purchased before returning any product.

\* No product will be accepted by CONTEC group without the RMA number.

## Liability

The obligation of the warrantor is solely to repair or replace the product. In no event will the warrantor be liable for any incidental or consequential damages due to such defect or consequences that arise from inexperienced usage, misuse, or malfunction of this device.

# Safety Precautions

Understand the following definitions and precautions to use the product safely.

## Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. Understand the meanings of these labels to operate the equipment safely.

⚠ DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.



## Handling Precautions

### CAUTION

- Do not modify the unit. CONTEC will bear no responsibility for any problems, etc., resulting from modifying this unit.
  - Do not use or store the equipment in a hot or cold place, or in a place that is subject to severe temperature changes. (Operating temperature range: 0 - 50°C)
  - Do not use or store the equipment in a place subject to direct sunlight or near a heating device, such as a stove.
  - Do not use or store the equipment in a dusty or humid place. (Operating humidity range: 10 - 90%, no condensation)
  - As this product contains precision electronic components, do not use or store in environments subject to shock or vibration.
  - Do not use or store the product near equipment generating a strong magnetic field or radio waves.
  - If you notice any strange odor or overheating, please unplug the power cord immediately.
  - In the event of an abnormal condition or malfunction, please consult the dealer from whom the equipment was purchased.
  - To avoid electric shock, please do not touch the system with a wet hand.
  - Do not open the unit casing. CONTEC will disclaim any responsibility for equipment whose casing has been opened.
  - Do not modify the product. CONTEC will bear no responsibility for any problems, etc., resulting from modifying this product.
  - Regardless of the foregoing statements, CONTEC is not liable for any damages whatsoever (including damages for loss of business profits) arising out of the use or inability to use this CONTEC product or the information contained herein.
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### FCC PART 15 Class A Notice

#### **NOTE**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference at his own expense.

#### **WARNING TO USER**

Change or modifications not expressly approved the manufacturer can void the user's authority to operate this equipment.

## Environment

Use this product in the following environment. If used in an unauthorized environment, the board may overheat, malfunction, or cause a failure.

Operating temperature

0 - 50°C

Operating humidity

10 - 90%RH(No condensation)

Corrosive gases

None

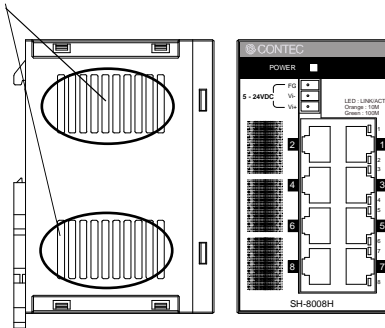
Floating dust particles

Not to be excessive

## Inspection

Inspect the product periodically as follows to use it safely.

\*The ventilation slits are not covered,  
and neither dust nor alien substance is attached to the ventilation slits



## Storage

When storing this product, keep it in its original packing form.

- (1) Put the unit in the storage bag.
- (2) Wrap it in the packing material, then put it in the box.
- (3) Store the package at room temperature at a place free from direct sunlight, moisture, shock, vibration, magnetism, and static electricity.

## Disposal

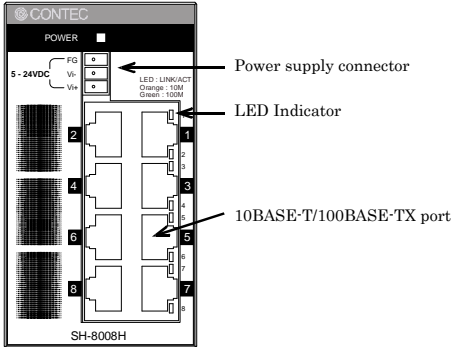
When disposing of the product, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.



## 2. Nomenclature of unit Components and Their Settings

### Names of unit Components

Figure 2.1 shows the nomenclature of unit components.



**Figure 2.1. Names of unit Components**

**Table 2.1. LED Indicators**

LED name	Number of LED	LED display
Comm. status LED	LINK/ACT : ORANGE(8) :10M GREEN(8) :100M	OFF : Not connected to Ethernet ON : Connected to Ethernet Flashing : Communicating
POWER LED	POWER: GREEN (1)	OFF : Power off ON : Power on

**Table 2.2. Connectors**

Name	Function
10BASE-T/ 100BASE-TX port	Ports 1 - 8 This is the port for connecting the PC (LAN Adapter) and other HUB units and bridges. Auto-switching of communication rates (10Mbps/100Mbps) and communication methods (half/full duplex)
Power supply connector	2-piece power supply detachable connector, FG pin Dedicated plug (MC1.5/3-ST-3.5, made by PHOENIX CONTACT Corp.) as a standard item. Screw-in cable connection.



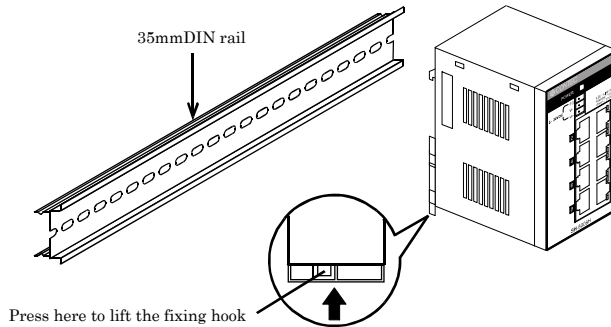
## 3. Installation and Connection

### Installation Method

#### Mounting on a DIN Rail

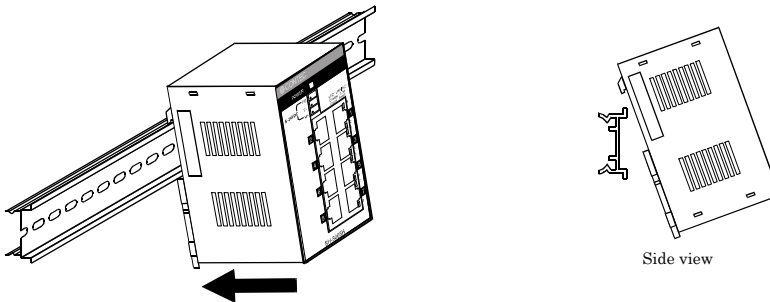
Mounting procedure

- (1) Pushing the fixing hook with a flat-blade screwdriver renders it into a lock-enabled condition.



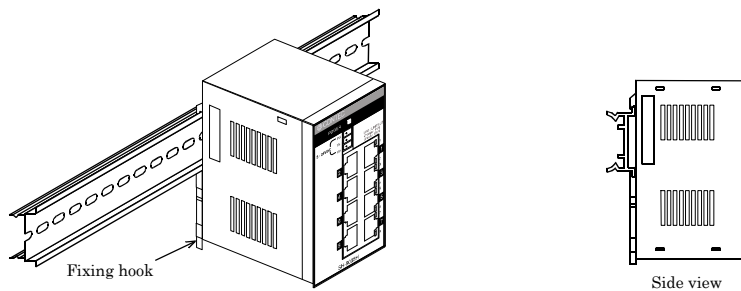
**Figure 3.1. Mounting on a DIN rail < 1 / 3 >**

- (2) Hook the unit from the upper part of the DIN rail, and press the lower part of the unit onto the DIN rail.



**Figure 3.1 Mounting on a DIN rail < 2 / 3 >**

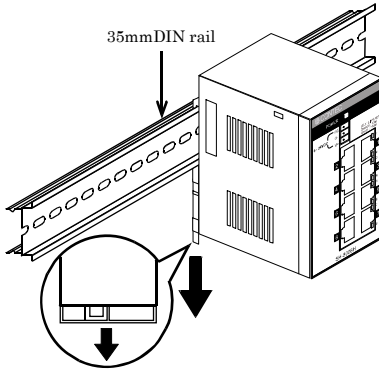
(3) The fixing hook is automatically locked, and the unit can be mounted in one-touch.



**Figure 3.1. Mounting on a DIN rail < 3 / 3 >**

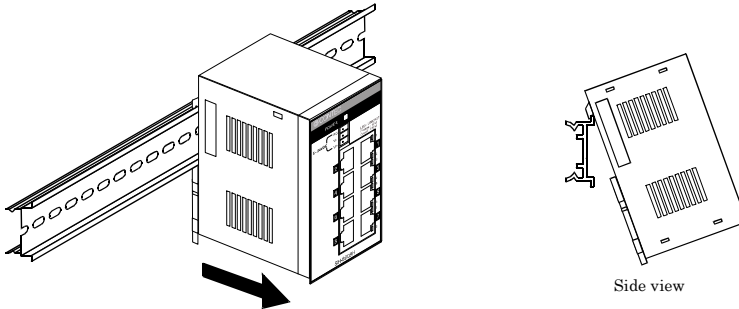
## Removal procedures

- (1) Lower the fixing hook for the unit to unlock it.



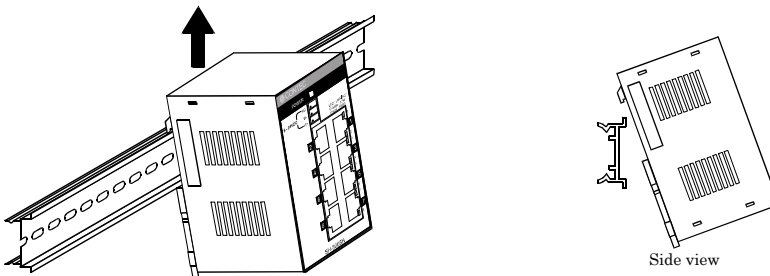
**Figure 3.2. Removing the unit from the DIN rail < 1 / 3 >**

- (2) With the fixing hook unlocked, pull the lower part of the unit toward you.



**Figure 3.2. Removing the unit from the DIN rail < 2 / 3 >**

- (3) By lifting the unit, you can easily remove it from the DIN rail.



**Figure 3.2. Removing the unit from the DIN rail < 3 / 3 >**



# Connection Method

## Supplying the Power to the Switching HUB Unit

The Switching HUB Unit and power supply unit (POW-DD10GY, etc) can be cable connected using the detachable connector that is provided on either the unit face or the unit face.

Keep the cable length no greater than 50cm (for AWG24 - 16). (no greater than 20cm for AGW28, no greater than 35cm for AWG26).

Compatible cables are AWG28 - 16. Strip the cable jacket off about 7mm. The fastening torque for the cable core should be 0.22 - 0.25Nm.

Third-party DC output power supply units can also be connected in the same way.

### ⚠ CAUTION

- Because the power supply unit generates heat, a minimum spacing of 2.0 cm should be provided between the SH-8008(FIT)H and any adjoining units, and care should be taken so that the ventilation holes are not covered.
- Input power requirements of the SH-8008(FIT)H: 5 - 24VDC $\pm$ 5%, 0.54 - 0.15A (Max.)

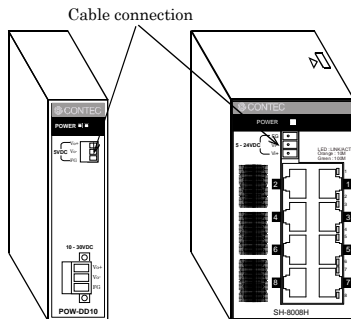


Figure 3.3. Connecting the Switching HUB Unit to the DC-DC power supply unit

## 4. Connecting to a Network

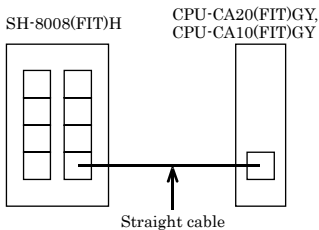
### Network Cables

Cables meeting the following specifications should be used:

- Equal to or greater than Categor 3 UTP, STP cable (for 10BASE-T)
- Equal to or greater than Categor 5 UTP, STP cable (for 100BASE-TX)
- There are straight/cross UTP and STP cables. Auto MDI/MDI-X feature allows connection of your Switching HUB unit to a personal computer (LAN adapter) or another HUB unit and a bridges using either a straight or cross cable.

### Connecting a Personal Computer, another HUB unit or bridge

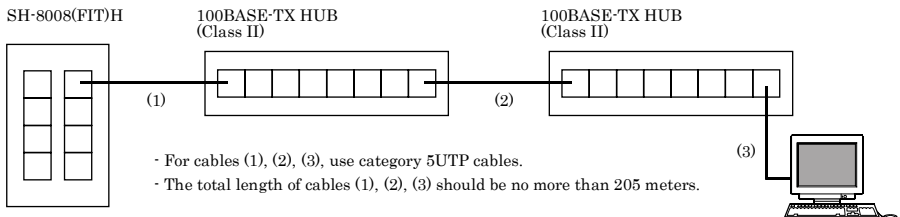
When connecting the Switching HUB unit to a personal computer, an F&EIT series controller unit, another HUB unit or a bridge, use any 10BASE-T/100BASE-TX port and either a straight or cross cable.



**Figure 4.1.** Connecting example to a personal computer, another HUB unit, or a controller unit

### Limitations on the 100M HUB

In the case of a 100BASE-TX HUB(ClassII), the HUB can be cascade-connected for a maximum of two levels. The maximum allowable cable length per segment is 205 meters.



**Figure 4.2.** Limitations on the 100M HUB

## Limitations on the 10M HUB

In the case of a 10BASE-T HUB, the number of HUB that can be connected in a cascading fashion using UTP cables is 4 levels. The maximum allowable UTP cable length between cascade-connected HUB is 100 meters.

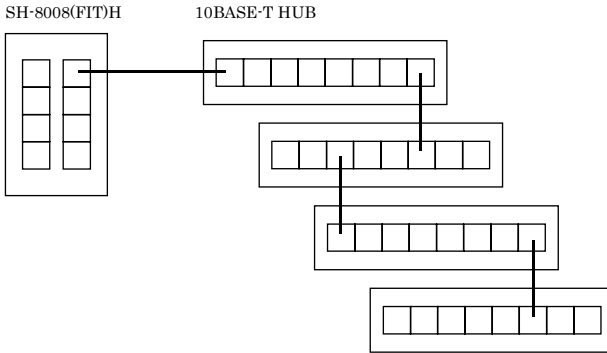


Figure 4.3. Limitations on the 10M HUB

# 5. System Reference

## Specification

**Table 5.1. Specifications**

Item	Specification
Ethernet standards	IEEE802.3/IEEE802.3u-compliant
Data transfer rate	10Mbps/100Mbps (auto-recognition)
Access method	CSMA/CD
Communications method	All ports: full/half duplex (auto-switching)
Topology	Star topology
Flow control	FullDuplex : IEEE802.3x compliant flow control HalfDuplex : Back pressure
Number of effective ports	8
Switching method	Store and forward
Address table	1,024 entries
Queue buffer	512Kbyte
Aging time	200 - 300 Sec
LED indicator	POWER(green), Link/ACT 10M(orange), Link/ACT 100M(green)
Filtering rate	8,130pps (in case of 10Mbps)/148,800pps (in case of 100Mbps)
Forwarding rate	8,130pps (in case of 10Mbps)/148,800pps (in case of 100Mbps)
Power supply voltage	5V - 24VDC±5% Use of a F&EIT series power supply unit recommended; or an off-the-shelf stabilized power supply unit
FG pin	Power supply connector equipped with FG pin
Power consumption (Max.)	For 5V input : 0.54A, For 12V input : 0.22A, For 24V input : 0.15A
External dimensions (mm)	52.4(W) x 64.7(D) x 94.0(H) (exclusive of protrusions)
Weight	160g
Module installation method	One-touch attachment of a 35mm DIN rail. Attachment mechanism contained in the system unit as a standard item

**Table 5.2. Installation Environment Requirements**

Item		Specification
Operating temperature		0 · 50°C
Storage temperature		-10 · 60°C
Humidity		10 · 90%RH(No condensation)
Floating dust particles		Not to be excessive
Corrosive gases		None
Line-Noise resistance	Line-noise *1	AC line/2kV, Signal line/1kV (IEC1000-4-4Level 3, EN61000-4-4Level 3)
	Static electricity resistance	Contact discharge/4kV (IEC1000-4-2Level 2, EN61000-4-2Level 2) Atmospheric discharge/8kV (IEC1000-4-2Level 3, EN61000-4-2Level 3)
Vibration resistance	Sweep resistance	10 · 57Hz/semi-amplitude 0.15mm, 57 · 150Hz/2.0G 40minutes each in X, Y, and Z directions (JIS C0040-compliant, IEC68-2-6-compliant)
Impact resistance		15G, half-sine shock for 11ms in X, Y, and Z directions (JIS C0041-compliant, IEC68-2-27-compliant)
Grounding		Class D grounding (previous class 3 grounding)

\*1 POW-AD22GY is used.

# External Dimensions

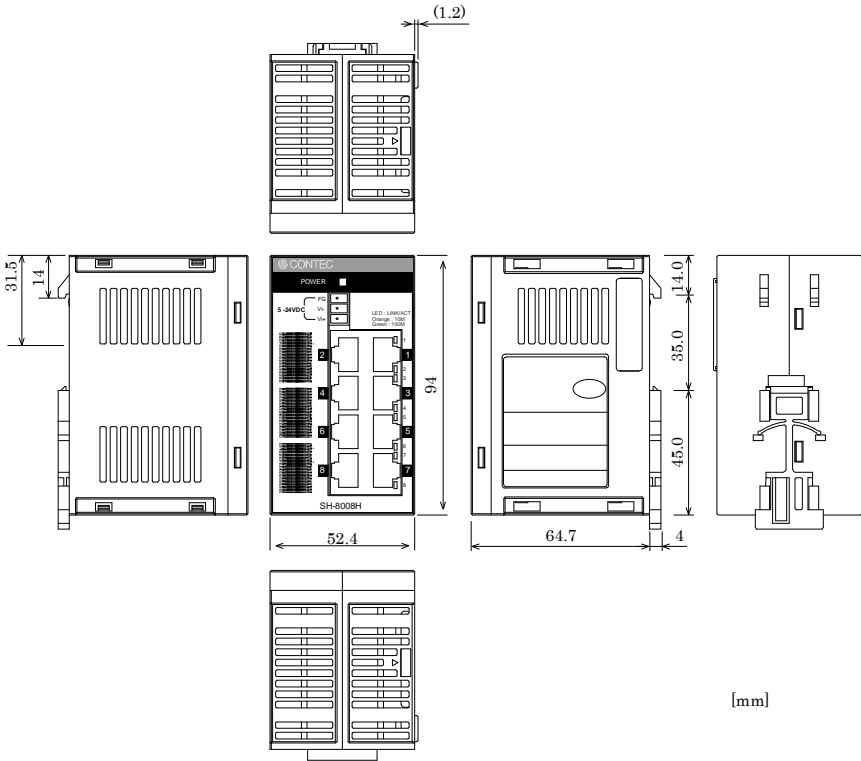


Figure 5.1. External dimensions

# SH-8008(FIT)H

## User's Guide

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CONTEC CO., LTD.

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