



AFAN-02

AFAN-04

AFAN-03-AC

AFAN-04-AC

1U Universal Cooling Fan



Warranty

All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year, beginning from the date of delivery to the original purchaser.

Warning!

ICP DAS assumes no liability for any damage resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, nor for any infringements of patents or other rights of third parties resulting from its use.

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Contents

1.	INTRODUCTION	4
1.1	FEATURES.....	5
2.	SPECIFICATIONS.....	6
2.1.	SYSTEM SPECIFICATIONS	6
2.2.	FAN MODULE SPECIFICATIONS.....	7
2.3.	PIN ASSIGNMENTS.....	9
3.	DIMENSIONS	11
4.	INSTALLATION	15
5.	FAQ.....	17
	Q01 : How to replace the defective fan ?	17
6.	REVISION HISTORY.....	21

1. Introduction

AFAN-02 / AFAN-04 / AFAN-03-AC /AFAN-04-AC is a 1U general-purpose fan module developed by ICP DAS. It is designed with many advantages for the thermal management of computer room or industrial equipment. The main features are included as below.

- [1] **Fan Modules:** AFAN-02 / AFAN-04 /AFAN-03-AC/ AFAN-04-AC equips with 2/4/3/4 fan modules separately and provides active air convection, which effectively reduces the operating temperature of the equipment and improves the stability and safety of the system.
- [2] **Power supply and protection:** 24V_{DC} & 110 V_{AC} power supply with built-in 5A fuse overvoltage protection to ensure the safety of equipment operation.
- [3] **Monitoring and Alarm:** Built-in fan fault indicator and DO Relay alarm output allow users to monitor the fan operation status through the remote monitoring center's DI connector, which helps to detect and handle fan faults in time to avoid system damage due to overheating.
- [4] **Hot-swappable support:** Supports hot-swappable replacement of fan modules in case of failure without shutting down the system, which further improves system maintenance efficiency.
- [5] **Installation Compatibility:** AFAN-04/ AFAN-04-AC is compatible with EIA RS-310-C standard, it can be installed in 19" racks, which is in line with the installation specification of general equipment in the server room.

In summary, the AFAN-02/04 & AFAN-03/04-AC is a high-performance, easy-to-maintain fan module with a variety of protection features, suitable for use in a wide range of equipment and systems that require stable heat dissipation.

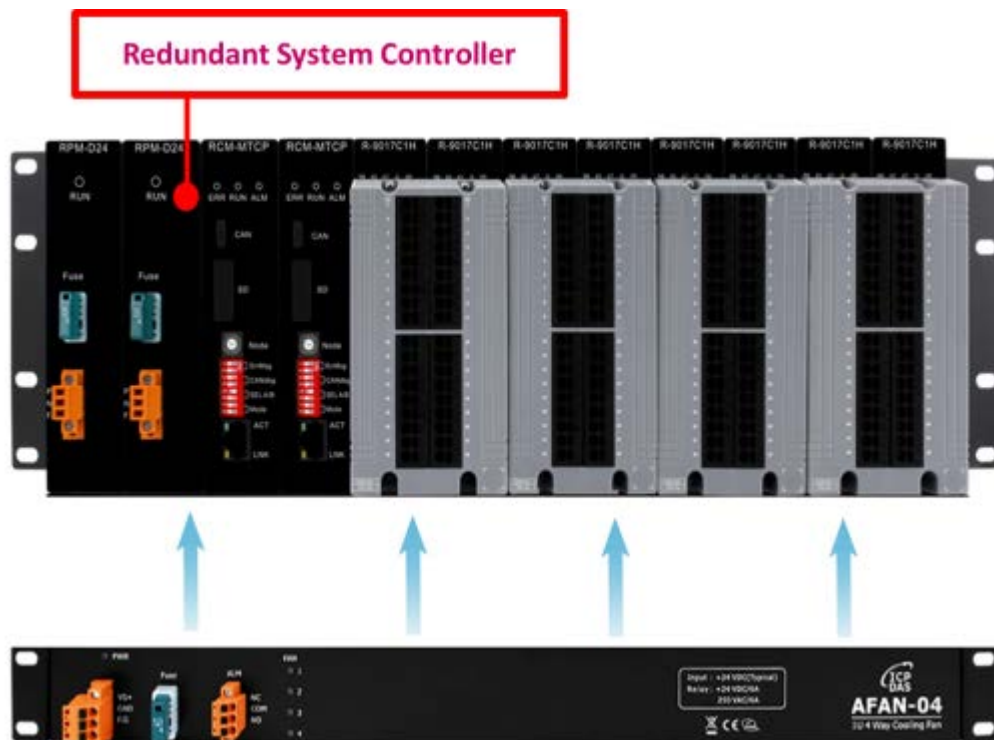


Fig 1-1 : AFAN-02/04/03-AC/04-AC Application

1.1 Features

- Supports direct 24V_{DC} / 110 V_{AC} mains power input
- Fan Module : AFAN-02/04/03-AC/04-AC equips 2/4/3/4 fan modules respectively (hot-swap).
- Diagnostic Functions :
 - Individual fault LED for each fan.
 - DO Relay alarm output for any fan failure or power loss.
- Failure of any fan does not affect others.
- Overvoltage protection (5A fuse).
- Installation of AFAN-04/AFAN-04-AC is compatible with EIA RS-310-C 19" rack mounting.

2. Specifications

2.1. System Specifications

Modules	AFAN-02		AFAN-04
LED Indicators			
Power Status (Normal : Light up)	1 power status LED		
Fan Status (Error : Light up)	2 fan status LED	4 fan status LED	
Diagnosis			
Alarm Mechanism	Relay * 1 (6 A @ 30 V _{DC}) (alarm output when any fan failure or power loss)		
Relay Rating			
Contact material	AgSnO ₂ ,AgNi		
Contact rating (Res. load)	6A 250 V _{AC} /30 V _{DC}		
Operate time (at nomi. volt.)	≤8ms		
Release time (at nomi. volt.)	≤4ms		
Electrical endurance	3 x 10 ⁴ OPS (Test Conditions : Resistive load, 85°C, 1s on, 9s off)		
Mechanical endurance	1 x 10 ⁷ OPS		
EMS Protection			
ESD (IEC 61000-4-2)	±4 kV Contact, ±8 kV On Air		
EFT (IEC 61000-4-4)	±1 kV for power line		
Surge (IEC 61000-4-5)	±1 kV for power line		
Power Requirements			
Rated Voltage	24 V _{DC} ±10%		
Power Dissipation	5.76W (0.24A @ 24 V _{DC})	7.2W (0.3A @ 24 V _{DC})	
Connector	3-pin screw terminal		
Protection			
Overvoltage Protection	5A Fuse (6.3A ² · s)		
Mechanical			
Dimensions (W x L x H)	299 x 144 x 45 mm	480 x 131 x 45 mm	
Installation	Wall-mounted		
Environment			
Operating Temperature	-10°C ~ +70°C		
Storage Temperature	-30°C ~ +80°C		
Humidity	10 to 90% RH, Non-condensing		

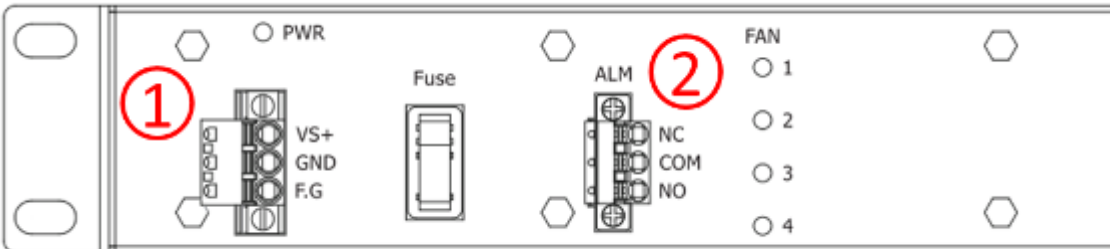
Modules	AFAN-03-AC		AFAN-04-AC	
LED Indicators				
Power Status (Normal : Light up)	1 power status LED			
Fan Status (Error : Light up)	3 fan status LED		4 fan status LED	
Diagnosis				
Alarm Mechanism	Relay * 1 (6 A @ 30 V _{DC}) (alarm output when any fan failure or power loss)			
Relay Rating				
Contact material	AgSnO ₂ ,AgNi			
Contact rating (Res. load)	6A 250 V _{AC} /30 V _{DC}			
Operate time (at nomi. volt.)	≤8ms			
Release time (at nomi. volt.)	≤4ms			
Electrical endurance	3 x 10 ⁴ OPS (Test Conditions : Resistive load, 85°C, 1s on, 9s off)			
Mechanical endurance	1 x 10 ⁷ OPS			
EMS Protection				
ESD (IEC 61000-4-2)	±4 kV Contact, ±8 kV On Air			
EFT (IEC 61000-4-4)	±1 kV for power line			
Surge (IEC 61000-4-5)	±1 kV for power line			
Power Requirements				
Rated Voltage	AC 110V ±10%, 60Hz			
Power Dissipation	6.6W (0.097A @ 110 V _{AC})		8W (0.114A @ 110 V _{AC})	
Connector	3-pin screw terminal			
Protection				
Overvoltage Protection	5A Fuse (6.3A ² · s)			
Mechanical				
Dimensions (W x L x H)	407 x 171 x 45 mm		480 x 171 x 45 mm	
Installation	Wall-mounted			
Environment				
Operating Temperature	-10°C ~ +70°C			
Storage Temperature	-30°C ~ +80°C			
Humidity	10 to 90% RH, Non-condensing			

2.2. Fan Module Specifications

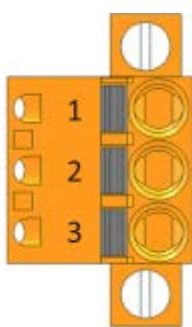
MECHANICAL CHARACTERISTIC				
MOTOR DESIGN		Brushless DC motor		
BEARING		2 ball		
MATERIALS OF FRAME		Thermoplastic PBT of UL 94V-0		
MATERIALS OF FAN BLADE		Thermoplastic PBT of UL 94V-0		
DIRECTION OF ROTATION		Counter-clockwise viewed from front of fan blade		
MOUNTING HOLES		Diameter 4.3 mm in 8 holes		
WEIGHT		75 g		
ELECTRIC CHARACTERISTIC				
RATED VOLTAGE		+24 V _{DC}		
RATED CURRENT		36 mA / Max. 45mA		
RATED POWER CONSUMPTION		0.89 WATTS / Max. 1.08 WATTS		
OPERATING VOLTAGE RANGE		8~27.6 V _{DC}		
STARTING VOLTAGE		8 V _{DC} (25 °C Power On/Off)		
OPERATING TEMPERATURE RANGE		-10~70°C		
STORAGE TEMPERATURE RANGE		-40~80°C		
RATED SPEED		2600 RPM ±15% at rated voltage		
AIR FLOW		33 CFM		
STATIC PRESSURE		0.11 Inch-H2O		
ACOUSTIC NOISE		28 dB(A)		
INSULATION CLASS		UL Class A		
INSULAITON RESISTANCE (PLASTIC HOUSING)		10M ohm at 500 V _{DC} for one minute or AC 600V for 2 Seconds between housing and lead wire(+)		
MTBF		70K (hours @ 40°C, 65% humidity, 90% CL.)		
PROTECTION		Automatic Restart, Polarity Protection		
SAFETY				
Safety	UL	CUR	TUV	CE
No.	E77551	E77551	V	V

Note: This hardware specification is only for one fan module. AFAN-04 can support Max. 4 fan module.

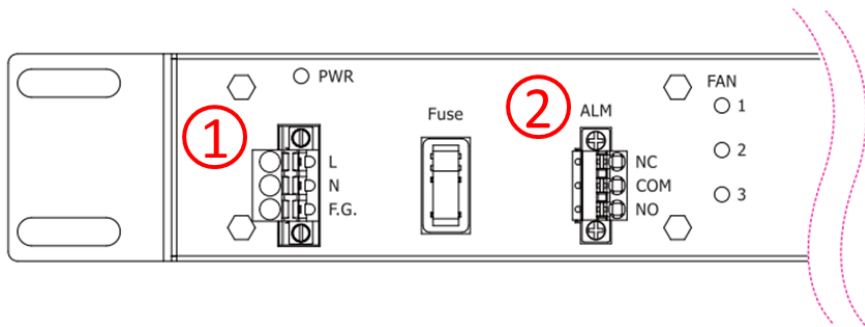
2.3. Pin Assignments



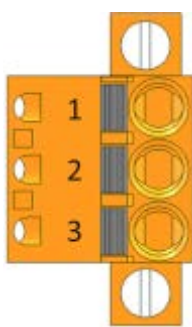
1. DC Input(AFAN-02/04) :



Pin	Description
1	24 V _{DC} ±10%
2	24 V_GND
3	F.G



2. AC Input(AFAN-03/04-AC) :

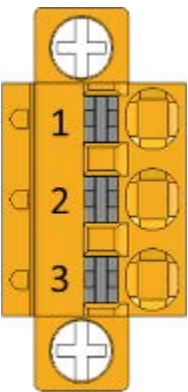


Pin	Description
1	AC(L)
2	AC(N)
3	F.G.

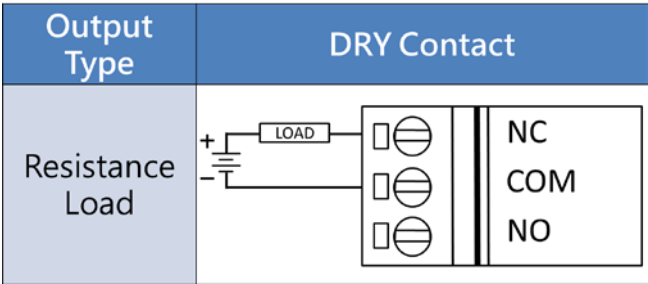
3. DO Relay Output :

[1] Relay COM and NC will turn on when any fan module fails.

[2] To remotely obtain the status of the fan module, please connect the COM and NC of the relay to the DI module channel (the circuit needs to be wired by users), when the DI channel lights up, it indicates that the fan module is abnormal.

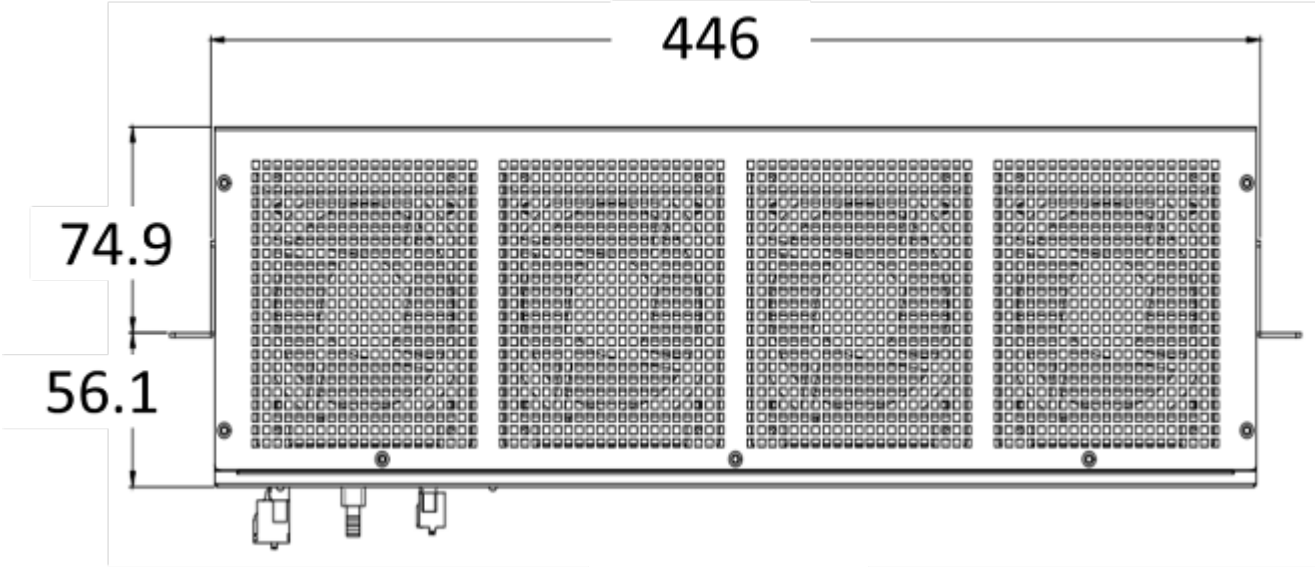


Pin	Description
1	Relay output: NC.
2	Relay output: COM
3	Relay output: NO.
Form C, 6A	

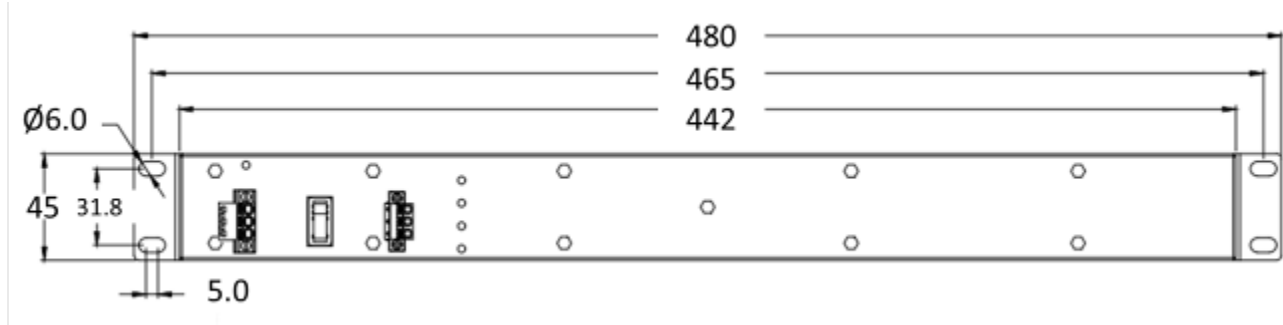


3.Dimensions

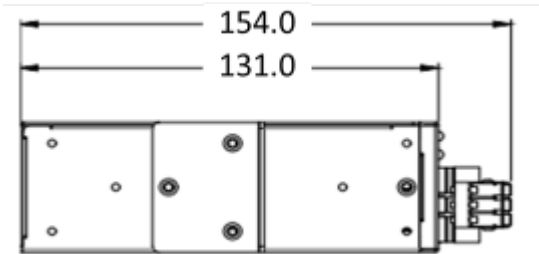
[AFAN-04] (Unit:mm)



Top View

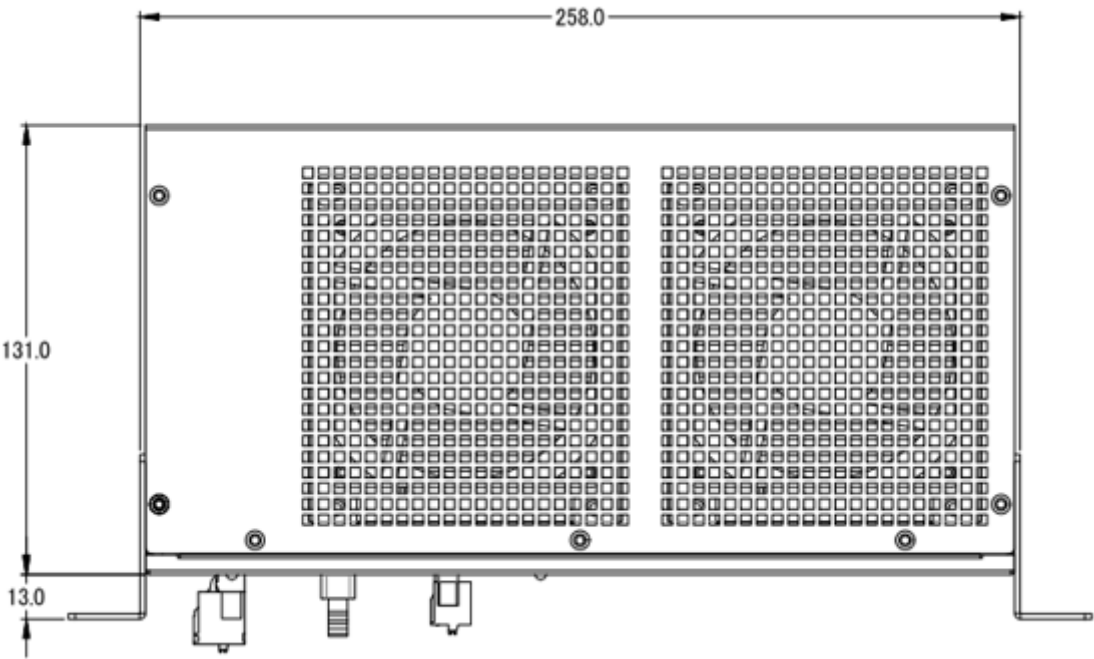


Front View

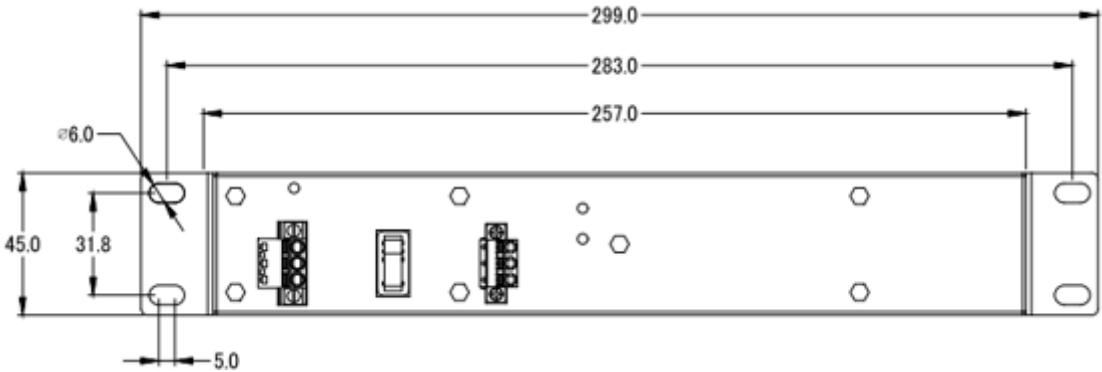


Left Side View

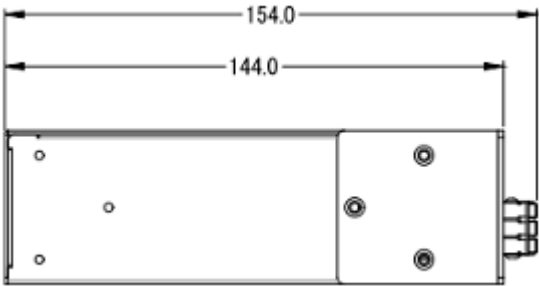
[AFAN-02] (Unit:mm)



Top View

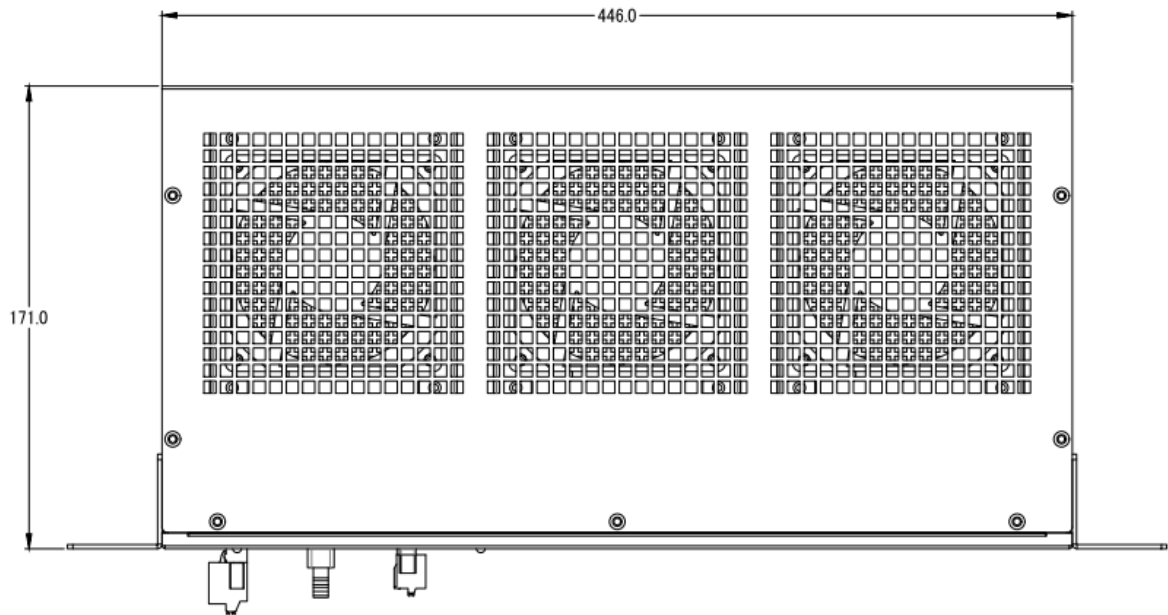


Front View

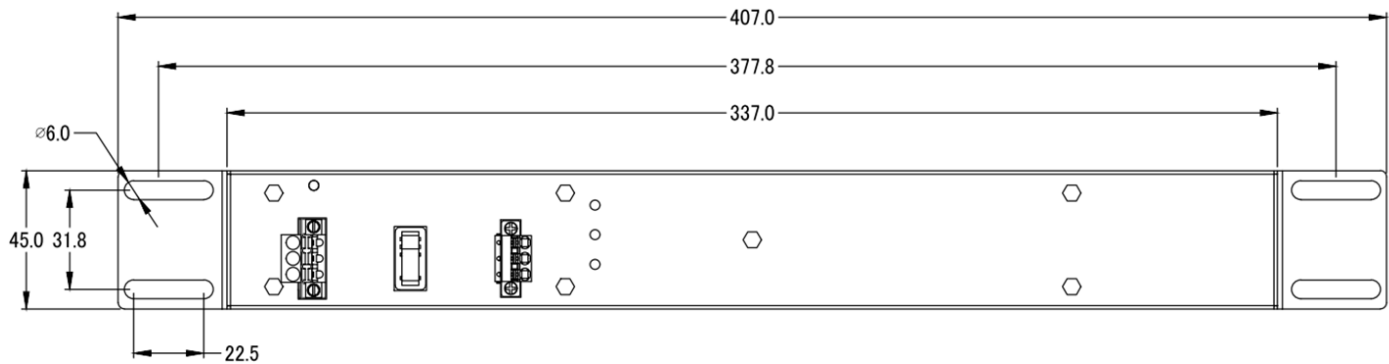


Left Side View

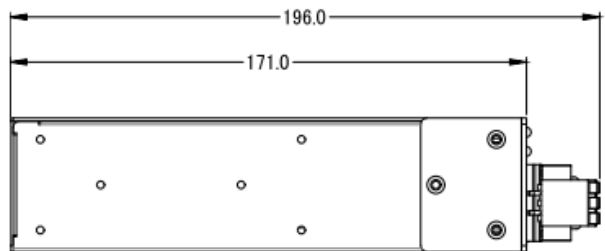
[AFAN-03-AC] (Unit:mm)



Top View

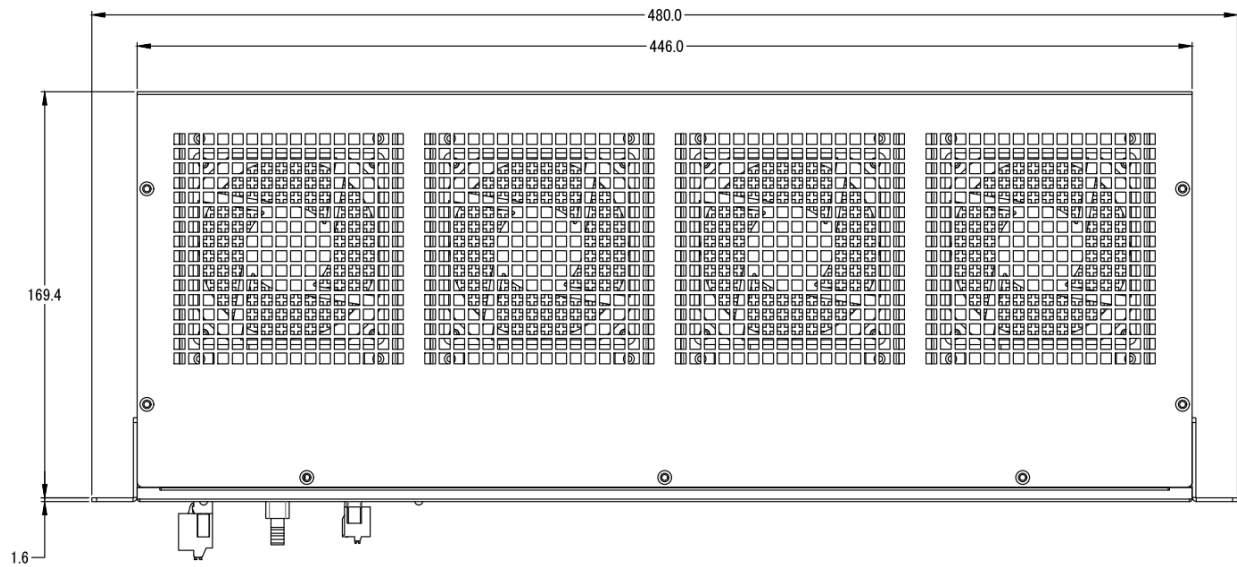


Front View

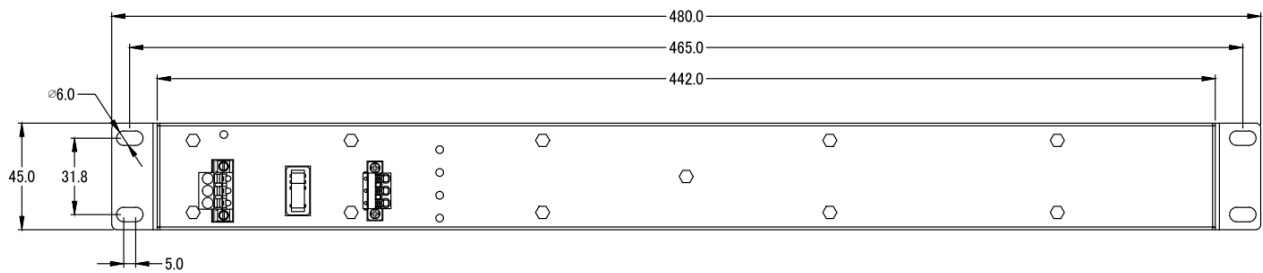


Left Side View

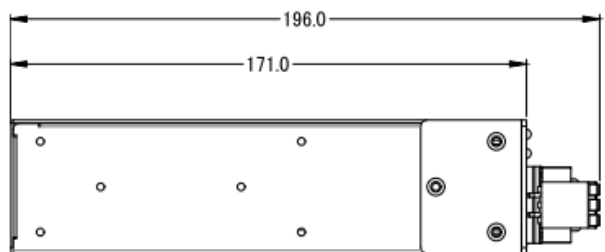
[AFAN-04-AC] (Unit:mm)



Top View



Front View



Left Side View

4. Installation

[1] Use a screwdriver and M6 screws to install AFAN-02/04/03-AC/04-AC on the cabinet

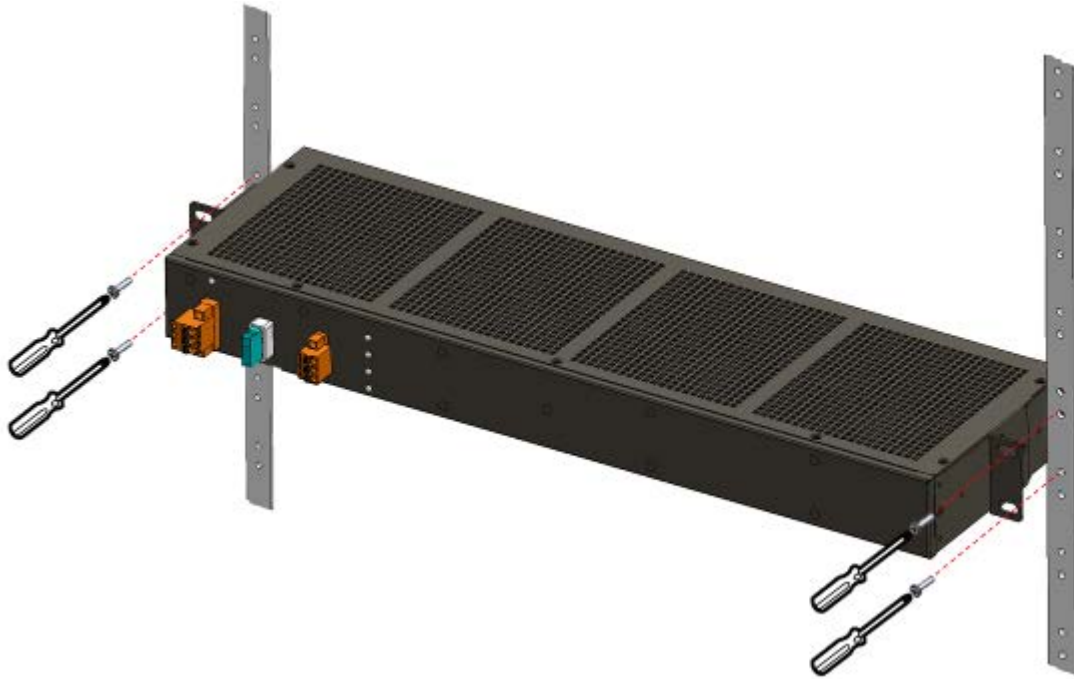


Fig. 4-1

[2] Installation Example.



Fig. 4-2

5.FAQ

Q01 : How to replace the defective fan ?

A01 : (2024/08/29)

1. Confirm the defective fan number:

- [1] Confirm the defective fan number by the LED of FAN on the panel (Fig. 5-1-1).
(Red light on means the corresponding fan is broken.) ◦
- [2] The fan number is shown in Fig. 5-1-2.



Fig. 5-1-1

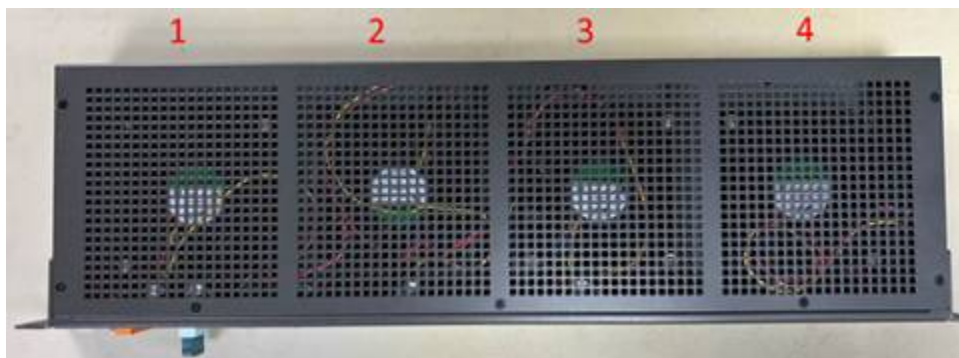


Fig. 5-1-2

2. Remove the defective fan:

- [1] Switch off the fan and remove the 4 fan fixing screws (Fig. 5-1-3).
- [2] Remove the defective fan (Fig. 5-1-4).
- [3] Unplug the defective fan (Fig. 5-1-5).

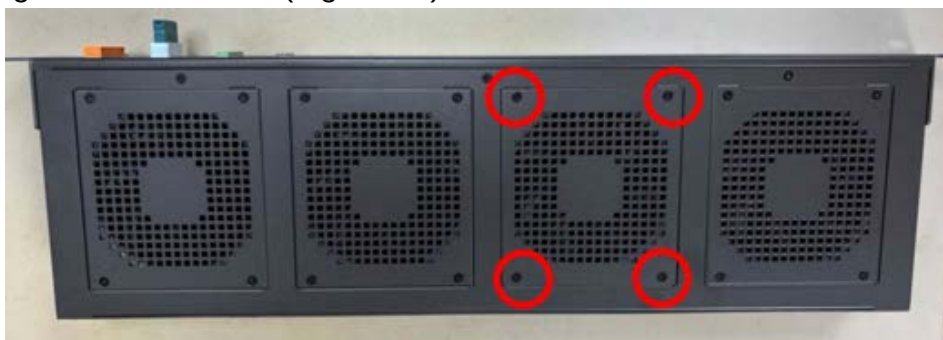


圖 5-1-3



Fig. 5-1-4



Fig. 5-1-5

3. Replace the normal fan:

- [1] Remove the 4 metal plate screws and take out the defective fan (Fig. 5-1-6).
- [2] Install the normal fan to the metal plate and lock the 4 screws (Fig. 5-1-7).

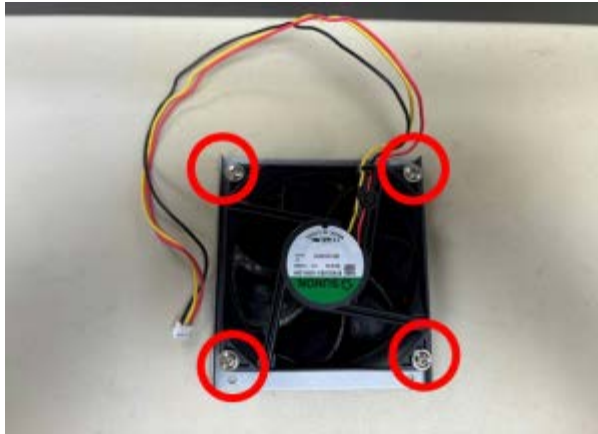


Fig. 5-1-6



Fig. 5-1-7

4. Mount the fan to the AFAN:

- [1] Plug in the fan's power plug (Fig. 5-1-8).
- [2] Mount the fan to the AFAN and lock the 4 fan fixing screws (Fig. 5-1-9).
- [3] Replacement is complete.



Fig. 5-1-8

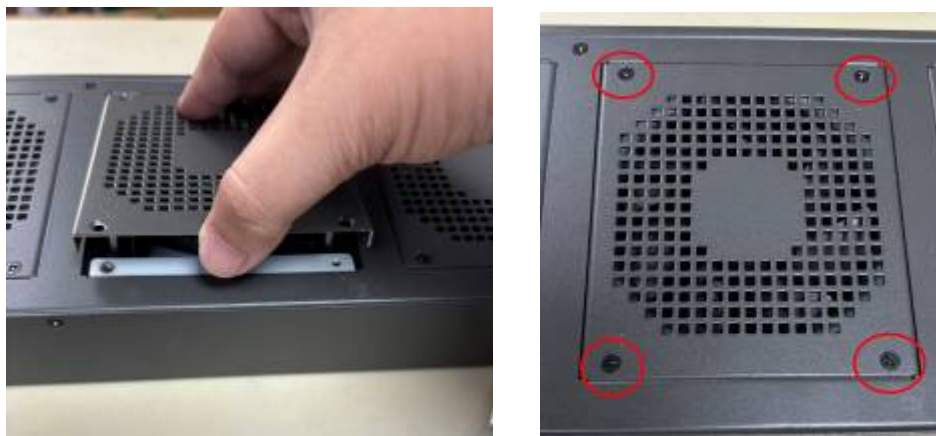


Fig. 5-1-9

6.Revision History

Revision	Date	Description of Change
1.00	2024/08/29	Document release.
1.10	2026/07/06	Add AFAN-03-AC & AFAN-04-AC