# NVE40K
# Hardware Manual

UDP Technology

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# Safety and Regulatory Information

**WARNING**: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. THE APPARATUS MUST NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD BE PLACED ON THE APPARATUS.

**CAUTION:** TO PREVENT ELECTRICAL SHOCK, IF THE UNIT IS PROVIDED WITH A POLARIZED PLUG, DO NOT CONNECT THE PLUG INTO AN EXTENSION CORD, RECEPTACLE, OR OTHER OUTLET UNLESS THE PLUG CAN BE FULLY INSERTED WITH NO PART OF THE BLADES EXPOSED.

**CAUTION:** TO ENSURE REGULATORY AND SAFETY COMPLIANCE, USE ONLY THE PROVIDED POWER AND INTERFACE CABLES.

**CAUTION:** DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

**CAUTION:** FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.

**CAUTION:** RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

**RACK MOUNT INSTRUCTIONS**

A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

**FCC COMPLIANCE**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, induding iinterference that may cause undesired operation.

**CE COMPLIANCE**

This is A class product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

# 1. Introduction

NVE40K compress video/audio data and transmit the compressed video/audio data through the network in real time. NVE provides a high quality video image with a limited bandwidth and storage capacity. These products are ideally suited for a wide range of surveillance and remote monitoring applications. Main features are highlighted below.

NVE40K
***Main features***

- 19" / 4U Aluminum Sub-Rack
- Support up to 10 units of 4 ch NVE Blades (Total 40 channels @ D1)
- Hot-swappable NVE blade, fan unit and power unit
- Identification of each Sub-Rack and each blade unit ( for easy and quick maintenance)
- Temperature Sensor included
- Detect power supplier unit operation ( Self-diagnosing)
- Detect fan unit operation (Self-diagnosing)
- Applied device: NVE4000A-R (It is the blade version of NVE4000A)

NVE4000A-R
***Main features***

- High Quality Compression in real time streaming
- NVE provides high quality MPEG-4 and MJPEG encoding at D1 in real time.

***Network***

- RTP/RTSP and unicast/multicast are supported.

***Streaming***

- support dual streaming mode such as different codec/resolution/bit rate and so on.
- support de-interlacing by hardware.

***Video/Audio***

- Support quad view in external monitor.
- Support two ways audio (NVE100 supports only audio input)
  Transmits to client - G.711 by software
  Receives from client - one digital audio

***Additional Features***

- RS-485 serial port for Pan/Tilt/Zoom. (Except NVE100)
- RS-232C serial port for some devices like a POS terminal. (Except NVE100)
- Motion detection by hardware.
- On Screen Display (OSD) by hardware.

***SDK***

- Four types (RTSP, UDA5, ActiveX, HTTP-API) are provided for application development.

# 2. Subrack

## 2.1. Specifications

NVE40K and NVE4000A-R specification is shown as following

| | | |
|---|---|---|
| Construction | | Aluminum, 19” / 4U Sub-Rack |
| Applied Device | | NVE4000A-R |
| Available Slots | | 10 ea (Hot Swappable Blades) |
| Power | Input | 85 ~ 264 VAC, 47~63Hz, 2A |
| | Type | Dual Power Supply |
| Connector (Each slot) | Video Input | 4 ch (BNC Type) |
| | Audio Input | 4 ch (2.5 mm Pitch Terminal Block, Pluggable) |
| | Audio Output | 1 ch (2.5 mm Pitch Terminal Block, Pluggable) |
| | Digital Input/Output | 4 / 2 ch (2.5 mm Pitch Terminal Block, Pluggable) |
| | RS-232C/RS-485 | 1 / 1 ea |
| | Network | 10/100 Base-T |
| Fan Unit | | 1,800 rpm x 3ea |
| Temperature | | 0 $^{o}$C ~ 60 $^{o}$C (32 $^{o}$F ~ 140 $^{o}$F) |
| Humidity | | Upto 85% RH |
| Dimension | | 482.6(W) x 177(H) x 322(D) mm |
| Weight | | 7,420 g (Power Cable included) + 1,300 g (NVE4000A-R x 10ea) |

Table 1. Specification for NVE40K

## 2.2. Power Consumption

**Minimum – Including 1 x NVE4000A-R40 (V1.42) and no fan unit**

| | |
|---|---|
| Input Voltage | 12 V |
| Current | 812 mA |
| Consumption | 9.74 W |

**Maximum – Including 10 x NVE4000A-R40 (V1.42) and 3 fan units**

| | |
|---|---|
| Input Voltage | 12 V |
| Current | 10382 mA |
| Consumption | 124.58 W |

**Rack case & fan unit (Without NVE4000A-R40)**

| | |
|---|---|
| Rack case | 32 mA |
| Fan unit(1ea) | 850 mA |

## 2.3. Unit view

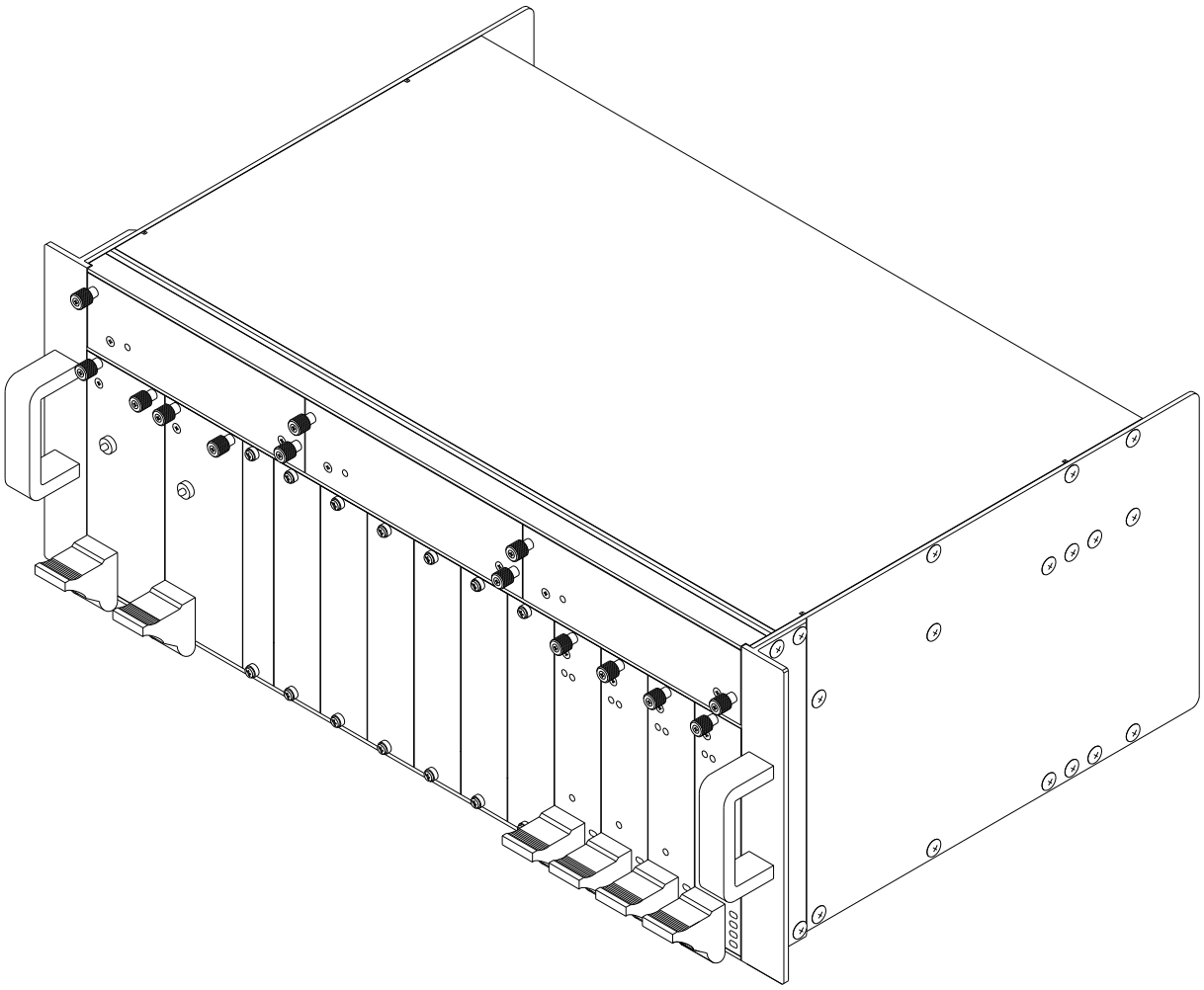


Figure 1. NVE subrack

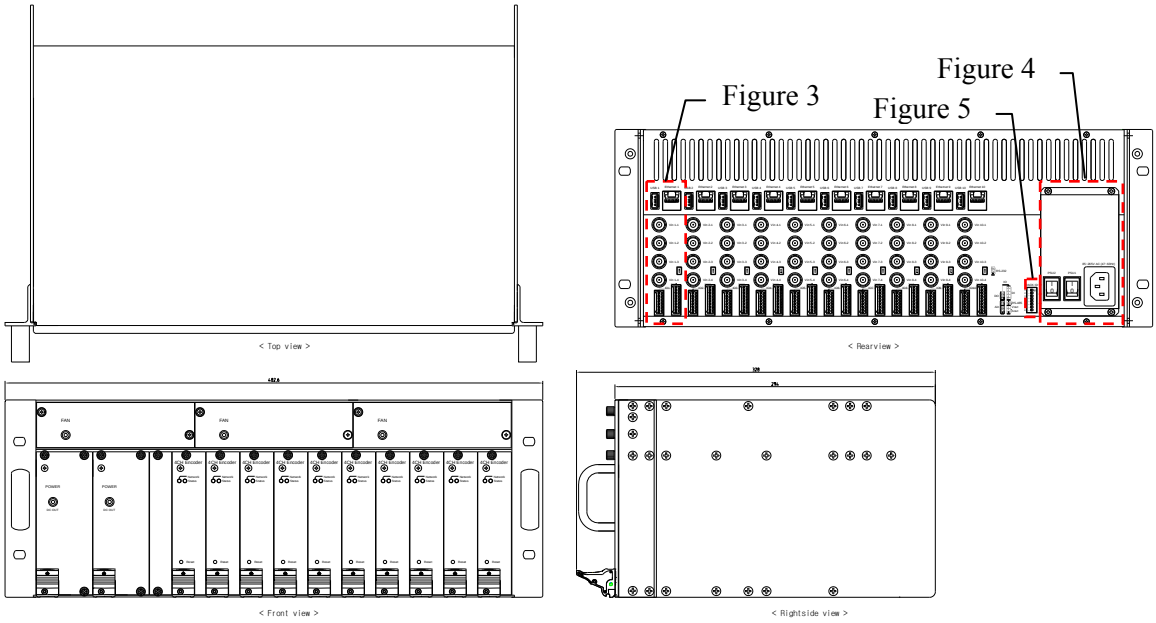



Figure 2. Front, rear, top and bottom view of subrack

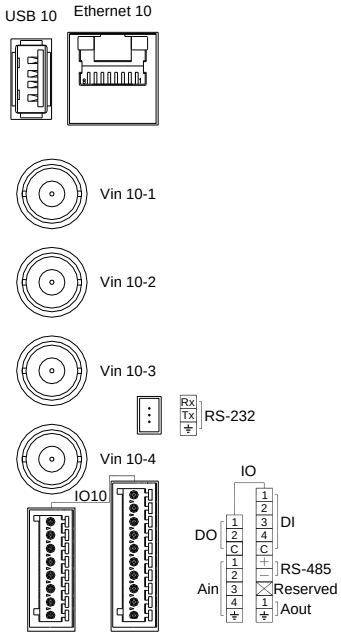



Figure 3. Detailed rear view of subrack (video, audio, digital input/output, etc.)

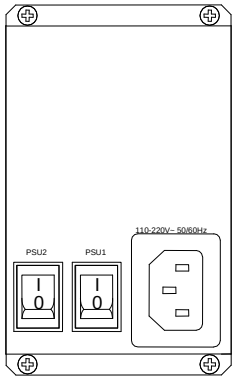



Figure 4. Detailed rear view of subrack (power cord)

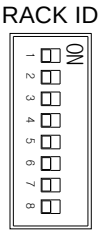



Figure 5. Detailed rear view of subrack (RACK ID)

## 2.4. Mechanical characteristics

Mechanical characteristics of subrack:

- Dimension
  - Width (inch): 19 "
  - Height (U): 4 U
  - Depth (mm): 288 mm

# 3. NVE blade

## 3.1. Specifications

| | | NVE4000A-R | |
|---|---|---|---|
| | | 4ch MPEG-4 100/120fps@D1 | |
| | | Single Mode | Dual Mode |
| Video | Input channel | 4ch | 2ch |
| | Output Channel | 1 Quad | 2 Loop Out |
| | Compression | MPEG-4, MJPEG Selectable per Channel | |
| | Resolution | D1, 2CIF, CIF, QCIF | |
| | Compression FPS | 100/120fps@D1 | |
| Audio (Optional) | Input/Output Channel | 4/1ch | 2/1ch |
| | Data Format | PCM(software compression : G.711, uLaw) | |
| Network | | 10/100 Base-T | |
| De-interlacing | | Supported by hardware | |
| Motion Detection | | Supported by hardware | |
| OSD | | Supported by hardware | |
| Video Stream Encryption | | AES | |
| Protocols | | SNTP, DHCP, UDP, TCP, RTP, RTSP(unicast/ multicast) | |

| Parameters | | Min | Typical | Max | Units |
|---|---|---|---|---|---|
| Video input range | Peak to peak amplitude | 0.5 | 1 | 1.35 | V |
| | Sync amplitude | 143 | 286 | 386 | mV |
| | Horizontal lock range | - | - | ±6.2 | % of line length |
| | Color sub-carrier Lock-in range | - | - | ±450 | Hz |
| Audio input range | | 0.01 | 1 | 2.5 | Vp-p |

Table 2. Specification for NVE4000A-R

## 3.2. Unit view

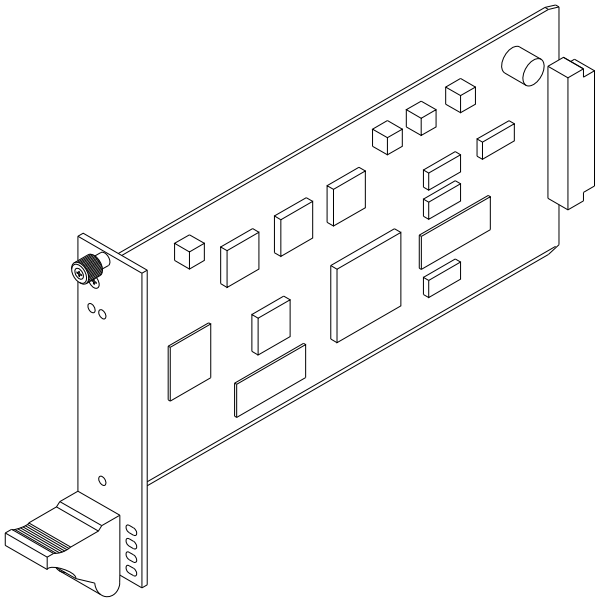


Figure 6. NVE blade

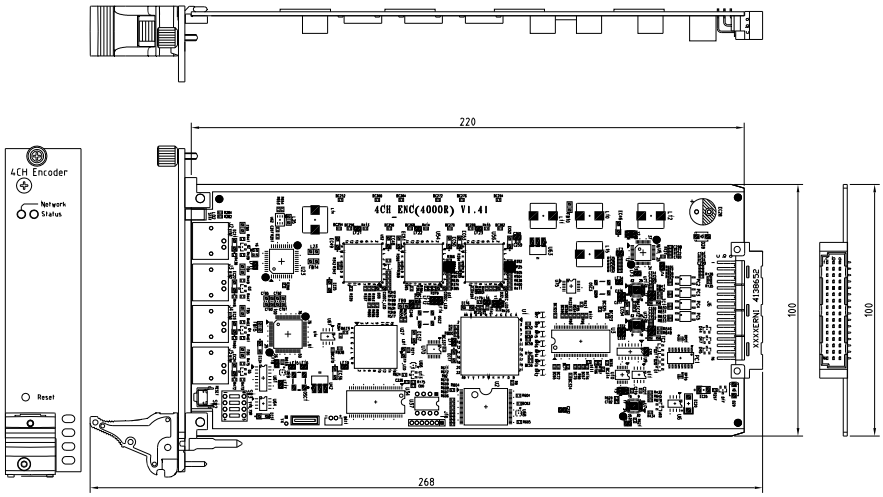



Figure 7. Front, top, side view of a blade

## 3.3. Mechanical characteristics

Mechanical characteristics of a blade:

- Dimension (Unit: mm): 30.1 (W) x 128.4 (H) x 220 (D)

## 3.4. Ejecting and inserting blades

### Ejecting a blade

1. Unscrew four collar screws.
2. Grasp the inject/eject handle of the blade and push it down as shown in below figure.
3. Remove the blade from the rack.

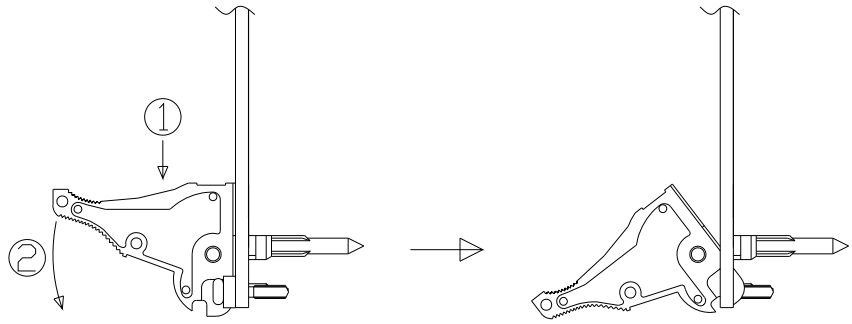



Figure 8. Ejecting a blade

### Inserting a blade

1. Make sure that the inject handle is in the outward position.
2. Insert the blade into the rack.
3. Grasp the inject handle of the blade and pull it up.
4. Screw four collar screws.

## 3.5. Factory Default Settings

Factory default settings are as follows:

- IP address: 192.168.xx.yy (refer to 2.3 Serial Number / MAC Address)
- Mask: 255.255.0.0
- Gateway: 192.168.0.1
- User ID: root
- Password: pass

MAC address = 00-13-23-01-23-45 → IP address = 192.168.35.69

Convert the Hexadecimal number to Decimal number

Factory Default (FD) initialization procedure is as follows:

1. Turn ON the power.
2. Press “Reset” button when Status LED starts blinking rapidly.
3. Release “Reset” button when Status LED blinks slowly.

## 3.6. Rebooting

Reset can be carried out as follows:

1. Press Reset for 1 second.
   When Reset function is activated, Status LED and Network LED will blink together, twice. User may stop pressing Reset at this point.

2. When “Reset” function has been completed, LEDs will stop blinking.

# 4. Power Supplier Unit

## 4.1. Specifications

- AC/DC Switched Mode Power Supplier Unit (PSU)
- 19" 3U Rack Mountable, 10HP, DC12V, 150W

## 4.2. Unit view

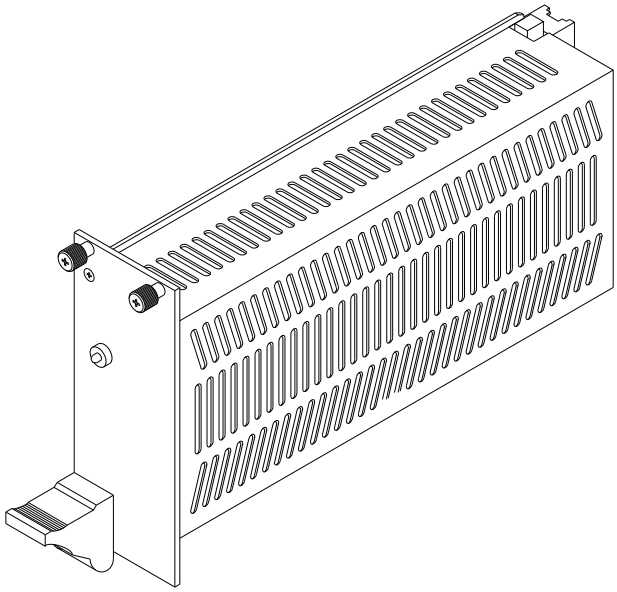


Figure 9. Power supplier unit

## 4.3. Electrical characteristics

**Specification for only Power supply**

| Parameter | | Units | Value |
|---|---|---|---|
| Nominal Output Voltage | | V | 12 |
| Maximum Output Current | | A | 13 |
| Maximum Output Power | | W | 156 |
| Efficiency(Typical) (*1) | 100V AC | % | 83 |
| | 200V AC | % | 86 |
| Input Voltage Range (*2) | | - | 85~265VAC(47~63Hz) |
| Input Current(Typical) (*1) | | A | 1.9/0.95 |
| Inrush Current(Typical) | | - | 14A at 100VAC,<br>28A at 200VAC,<br>Ta=25℃, Cold Start |
| Power Factor (*1) | | - | 0.99/0.95 |
| Output Voltage Range | | V | 9.6~14.4 |
| Maximum Ripple & Noise (*3) | 0≤Ta≤60℃ | mV | 150 |
| | -10≤Ta≤0℃ | mV | 180 |
| Maximum Line Regulation (*4) | | mV | 48 |
| Maximum Load Regulation (*5) | | mV | 96 |
| Temperature Coefficient | | - | Less than 0.02%/℃ |
| Over Current Protection (*6) | | A | 13.6~ |
| Over Voltage Protection (*7) | | V | 15.0~17.4 |
| Hold-up Time(Typical) (*8) | | - | 20ms |
| Leakage Current (*9) | | - | Less than 0.5mA.<br>0.3mA(Typical) at 100VAC<br>0.5mA(Typical) at 230VAC |

- NOTE -

*1. At 100/200VAC, Ta = 25 and maximum output power.
*2. At 100~240VAC(50/60Hz)
*3. Measure with JEITA RC-9131A probe, Bandwidth of scope: 100MHz.
*4. 85~265VAC, constant load.
*5. No load-Full load, constant input voltage.
*6. Constant current limit and Hiccup with automatic recovery.
Not operate at over load or dead short condition for more than 30sec.
*7. OVP circuit will shutdown output, manual reset (Re power on).
*8. At 100/200VAC, nominal output voltage and maximum output current.
*9. Measured by the each measuring method of UL, CSA, EN and DENAN (at 60Hz).

## 4.4. Environmental characteristics

| Parameter | Units | Value |
|---|---|---|
| Operating Temperature (*1) | - | -10~+60℃<br>(-10~+40℃:100%,<br>+50℃:60%,<br>+60℃:20%) |
| Operating Humidity | - | 30~90%RH (No Dewdrop) |
| Storage Temperature | - | -30~+85℃ |
| Storage Humidity | - | 10~95%RH (No dewdrop) |

- NOTE -
*1. Load (%) is percent of maximum output power or maximum output current, whichever is greater.

## 4.5. Mechanical characteristics

- Construction Format: 10HP x 3U compatible
- Dimension (Unit: mm): 50.8(W) x 128.4(H) x 236(D)
- Weight (Unit: g): 812
- Cooling: Free Air Convection

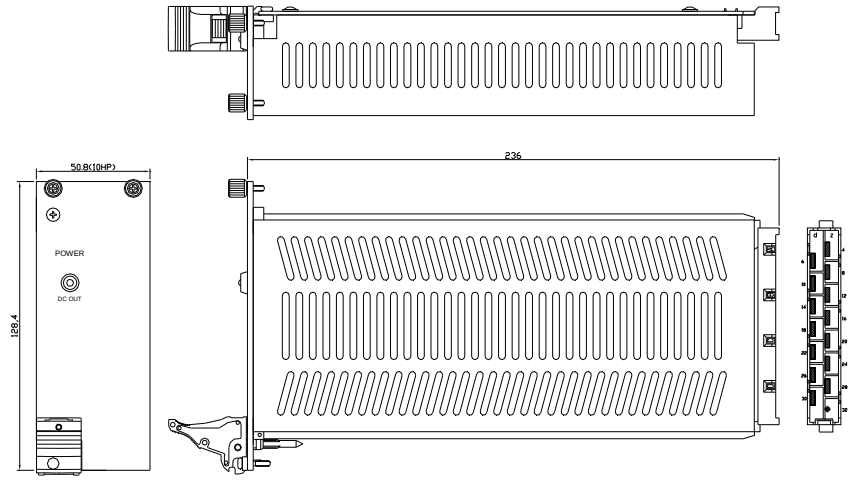
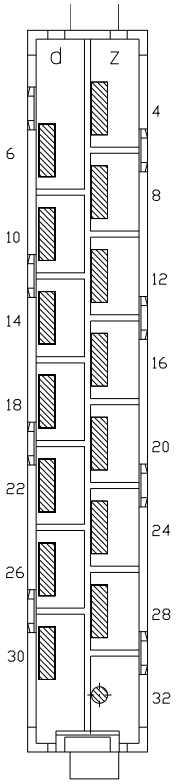



Figure 10. Front, top, side view of PSU

## 4.6. Pin Description

- Mating Connector: DIN61412-H15 Female




| Pin # | Signal Name | |
|---|---|---|
| 4 | Output +12V | DC OUTPUT |
| 6 | | |
| 8 | Sense +V | Assorted Signal |
| 10 | Sense 0V | |
| 12 | Output 0V | DC OUTPUT |
| 14 | | |
| 16 | NC | |
| 18 | NC | |
| 20 | NC | |
| 22 | NC | |
| 24 | NC | |
| 26 | NC | |
| 28 | AC LINE | AC INPUT |
| 30 | AC Neutral | |
| 32 | FG | |

Figure 11. Pin connection of PSU

# 4.7. Ejecting and inserting PSU

## Ejecting a PSU

1. Unscrew four collar screws.
2. Grasp the inject/eject handle of the PSU and push it down as shown in below figure.
3. Remove the PSU from the rack.

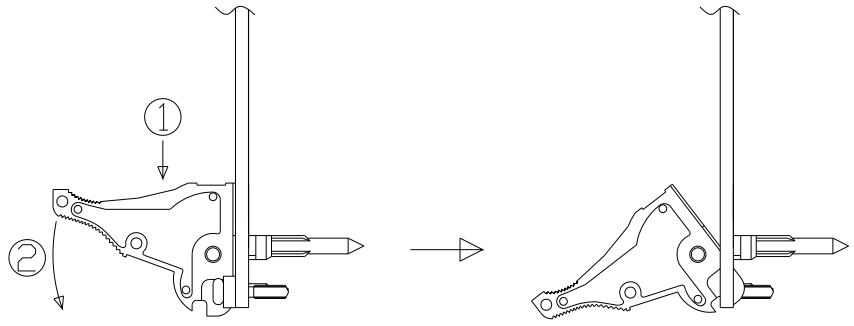



Figure 12. Ejecting a PSU

## Inserting a PSU

1. Make sure that the inject handle is in the outward position.
2. Insert the PSU into the rack.
3. Grasp the inject handle of the PSU and pull it up.
4. Screw four collar screws.

# 5. Fan Unit

## 5.1. Description

- 19” 1U rack mountable fan unit
- 3 DC fans

## 5.2. Unit view

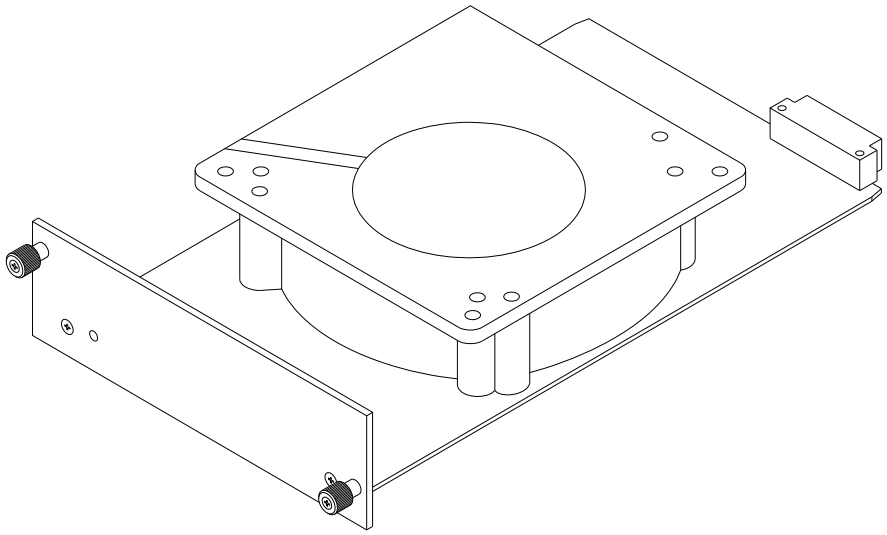


Figure 13. Fan unit

| Name | Remarks |
|---|---|
| Status LED | Fan on & off |
| DC Status Lamp | In power switch |
| DC Inlet | DC power input terminal |
| DC Outlet | DC power output terminal |

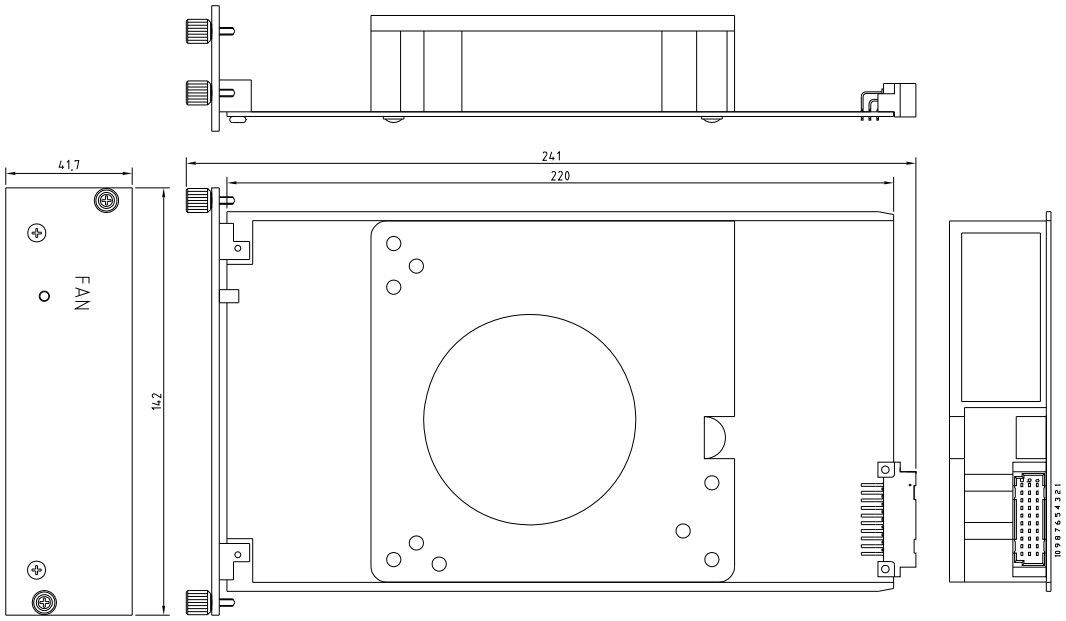



Figure 14. fan unit

## 5.3. Electrical characteristics

| Parameter | | Units | Value |
|---|---|---|---|
| Input Voltage | Rated Voltage | V | DC 12 |
| | Operating Voltage | | DC 6 ~ 13.8 |
| Input Power | | W | 3.60 |
| Maximum Air Flow | | m3/min | 0.63 x 3EA = 1.89<br>(At Average Value in Free Air) |
| Fan Speed | | min-1 | 1800 |

## 5.4. Environmental characteristics

| Parameter | | Value |
|---|---|---|
| Allowable Ambient Temperatur Range | Operating | -10~+60℃ |
| | Storage | -40~+60℃ |
| Expected Life | | 20℃ 100,000 Hours (Failure Rate 10%) |

## 5.5. Mechanical characteristics

Mechanical characteristics of fan unit:

- Dimension
  - Width (inch): 19 "
  - Height (U): 1 U
  - Depth (mm): 270 mm
- Number of DC fans (EA): 3

# Revision History

| Rev. | Date | History |
|---|---|---|
| A | 2007-01 25 | Created. |
| B | 2008-10-14 | Power consumption is added |
| C | 2008-11-25 | Video input range of blades added |
| D | 2009-05-04 | Resolution modified (Half D1 - > 2CIF) |