IPC1100 Module Hardware Manual

(HW V1.4 or higher)

UDP Technology

Table of Contents

1. INTRODUCTION

IPC module compresses video data from analog camera (PAL/NTSC) and transmits compressed high resolution live video stream data over the network. IPC module supports 1channel 25/30fps at D1

Main features

- High Quality Compression in real time streaming
- IPC1100 provides high quality MPEG-4 and MJPEG encoding at D1 in real time. Main features

Network

- RTP/RTSP and unicast/multicast are supported.

Streaming

- IPC1100 module supports de-interlacing by hardware.

Video/Audio

- Loop out is supported
- IPC1100 supports two ways audio
  Transmits to client - G.711 by software
  Receives from client - one digital audio

Additional Features

- Motion detection by hardware
- RS-485 serial port
- RS-232C serial port for some devices like a POS terminal
- On Screen Display (OSD) by hardware
- Power over Ethernet(Optional)

SDK

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

2. Product Description

2.1. Function Specifications

Disclaimer: Changes are periodically added to the information herein without prior notice and it does not guarantee that the information herein is most up-to-date. Some of figures and specifications may not be identical to the ones you have.

IPC module specification is shown as following Table 1.

		IPC module
Video	Input Channel	1 Ch
	Output Channel	1 Loop Out
	Compression	MPEG-4, MJPEG
	Resolution	D1, 2CIF, CIF, QCIF
	Compression FPS	25/30fps@D1
Audio	Input/Output Channel	1/1ch
	Data Format	PCM(software compression : G.711, uLaw)
Network		10/100 Base-T
DI/DO		1/1
RS-232C		Supported
RS-485/422		Supported
Deintrelacing		Supported by hardware
Motion Detection		Supported by hardware
OSD		Supported by hardware
Video Stream Encryption		AES
Protocol		SMTP, DHCP, UDP, TCP, RTP, RTSP(Unicast, Multicast)

Table 1. Specification for IPC module

2.2. Electrical characteristics

2.2.1. Recommended operation conditions

Parameter		Min	Typ	Max	Units
Video Input Range	Peak to peak amplitude	0.5	1	1.4	V
	Sync Amplitude	143	286	400	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

2.2.2. Power consumption (Max±5%)

Parameter	Max	Units
Input Voltage	12	V
Current	330	mA
Consumption	3.96	W

Note: Input voltage can be max±15%.

2.3. Operation Environments

Parameter	Limited Range
Ambient Operating Temperature	0 ℃ ~ 60 ℃ (32 ℉ ~ 140 ℉)
Ambient Operating Humidity	Up to 85% RH

3. Components

3.1. Description of components

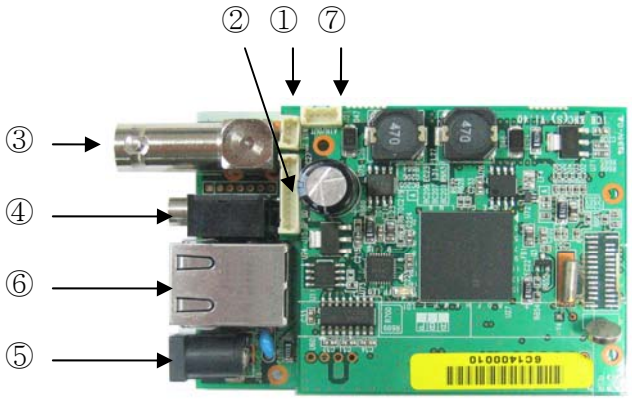


Figure 1. IPC module V1.4

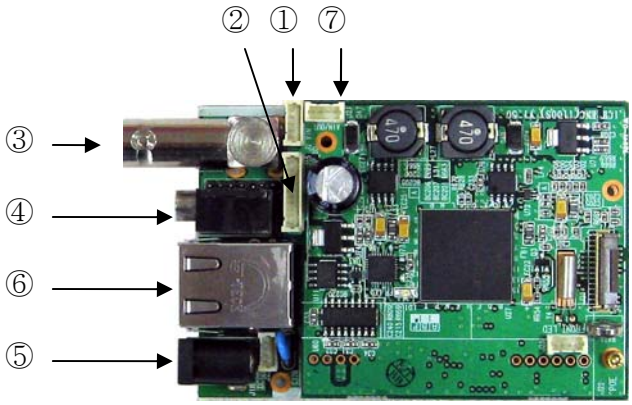
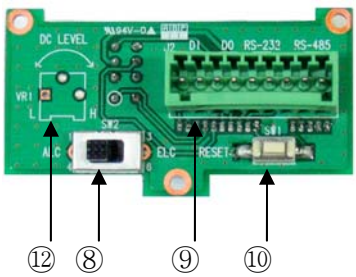


Figure 2. IPC module V1.5

Front side



Back side

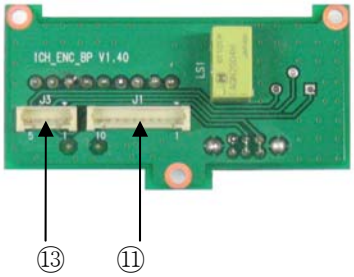


Figure 3. Backpanel V1.4 of IPC module

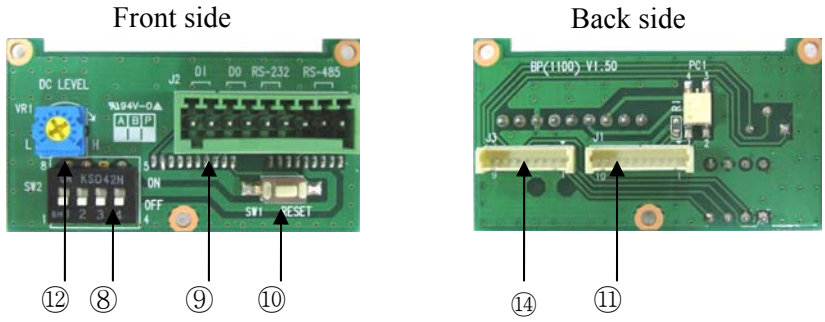


Figure 4. Backpanel V1.5 of IPC module

① 3-pin connector for video input (JP2)

This connector is used for video input and also supplying power to CCD camera module..

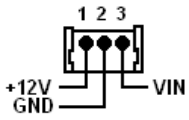


Figure 5. 3-pin connector for video input (V1.4)

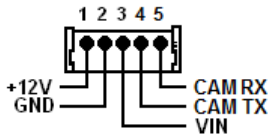


Figure 6. 5-pin connector for video input (V1.5)

② 10-pin connector for connecting to backpanel (J15)

It is connector to backpanel by using 10 pin cable (It is provided.). See the J1 of back panel.

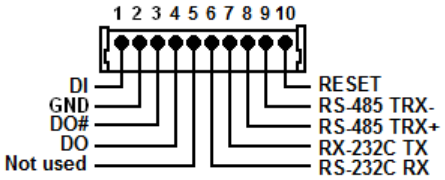


Figure 7. 10-pin connector for connecting packpanel

If the back panel UDP provides is not used, connect RESET and DO as following figure for factory luores.

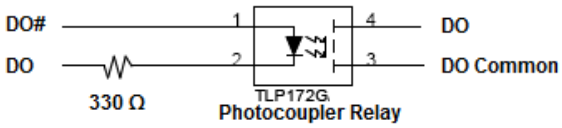


Figure 8. DO connection

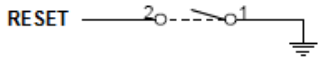


Figure 9. Reset Switch

③ BNC connector for video output (Loop Out) (J16)

It is loop back video output port

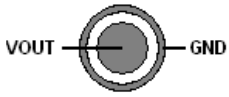


Figure 10. BNC connector for video output

④ Audio Input/Output Jack (J17)

IPC provides one input channel and one output channel using stereo jack. Left is for audio input and Right is for audio output.

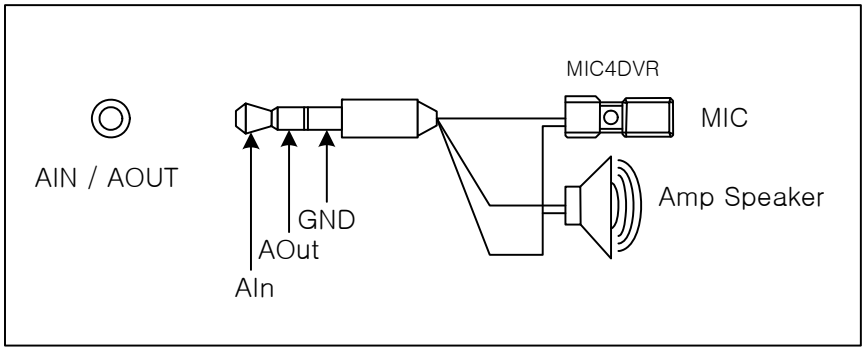


Figure 11.. Audio Input/Output Jack

Caution

Please pay attention to electric characteristics during installation.
(Detailed instructions are being prepared.)

⑤ Power Socket (J18)

It uses DC12V 1A power supply.

Figure 12. Power Socket

⑥ LAN Connector (J1)

It supports 10/100 Base T Ethernet

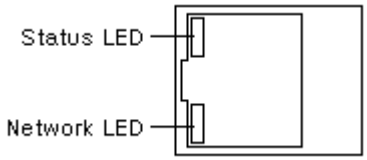


Figure 13. RJ45 LAN connector

⑦ 4-pin connector for audio input/output(J21)

This connector is connected Audio Input/Output Jack.(J17) physically.

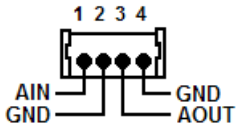


Figure 14. Connector for Audio input/output

⑧ Switch for camera mode(SW2)

Figure 15. Camera mode switch of V1.4 or earlier version

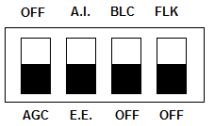


Figure 16. Camera mode switch of V1.5 or later version

AGC(Automatic Gain Control) ON/OFF switch

The automatic gain function automatically adjusts picture in accordance with the brightness of subject. (Initial setting: ON)

A.I.(ALC)/E.E.(ELC)

Electronic or Auto IRIS shutter control (Initial setting: A.I)

ALC.(Automatic Lens Control) is for most surveillance purpose.
ELC (Electronic Lens Control) is mainly for scientific, industrial and medical use.

In E.E. mode, a continuously variable electronic shutter is employed to automatically control the exposure time of the CCD image sensor according to the incoming light level. With this mode selected, a fixed or manual IRIS lens can be used instead of an auto IRSI lens.
In A.I. mode, the CCD shutter speed is fixed to 1/60 sec@NTSC, 1/50 sec@PAL and the incoming light level is controlled by the auto IRIS lens.

BLC (backlight compensation) ON/OFF switch

When switched on, the function adjusts exposure to compensate for situations where the subject is lit from behind. (Initial setting: OFF)

FLK ON/OFF switch

If the camera is used with 50Hz luorescent lighting, there is flicker on the screen.
In this case, F.L.K function should be set to on position. But F.L.K function should be set to OFF in 60Hz power source. (Initial setting: OFF)

⑨ 9-pin terminal block (J702)

The terminal block provides three functions. (DI/DO, RS232C, RS485)

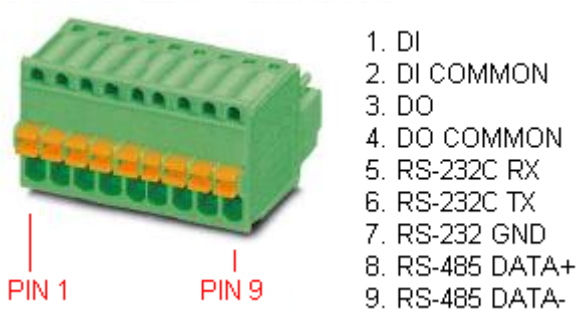


Figure 17. 9 pin terminal block

DI/DO

The IPC module provides 1 channel digital input/output. The digital input supports relay/voltage type of sensor (selected by software). There will be no electrical damage when there is a confliction between the selection and the hardware connection. It just won't work as expected.

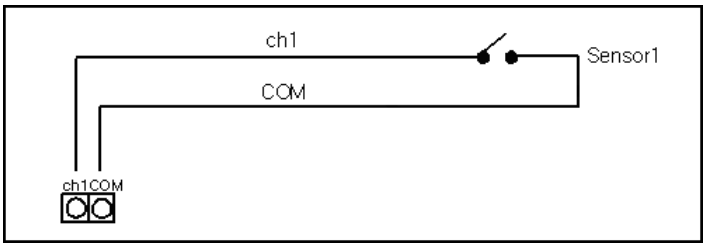


Figure 18 Relay Type Digital Input Connection

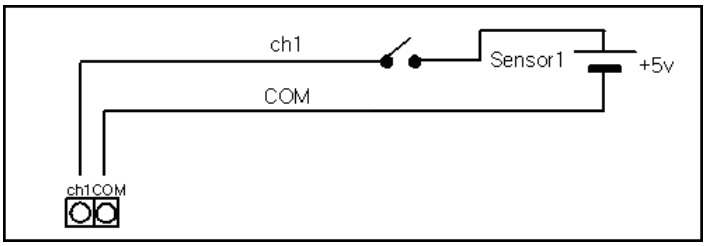


Figure 19 Voltage Type Digital Input Connection

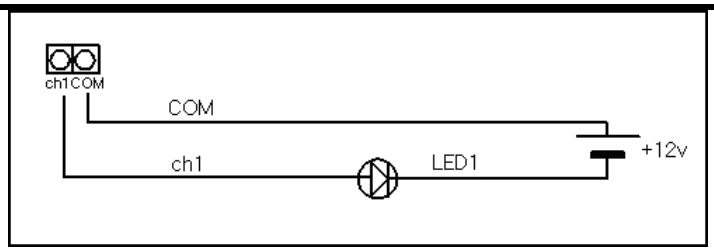


Figure 20 Digital Output Connection

Caution

Please pay attention to electric characteristics during installation.
(Detailed instructions are being prepared.)

Caution

Do not use voltage and relay type sensor together.

RS-232C

The RS-232C is used for devices such as Point of Sales (POS) system

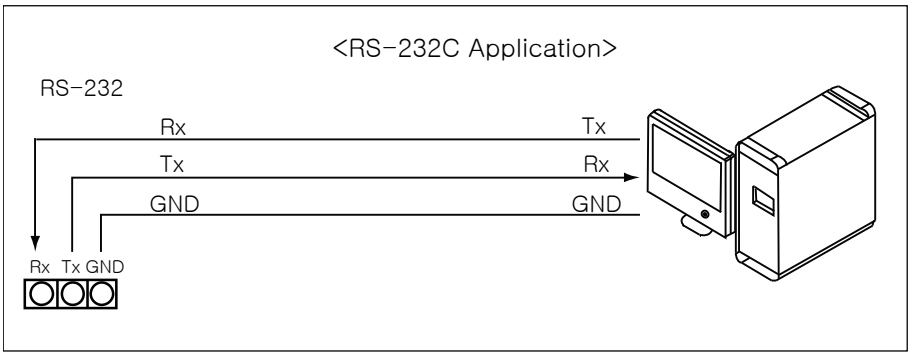


Figure 21 RS-232C Connection

RS485

RS-485 is used to control the PTZ camera and serial equipment.

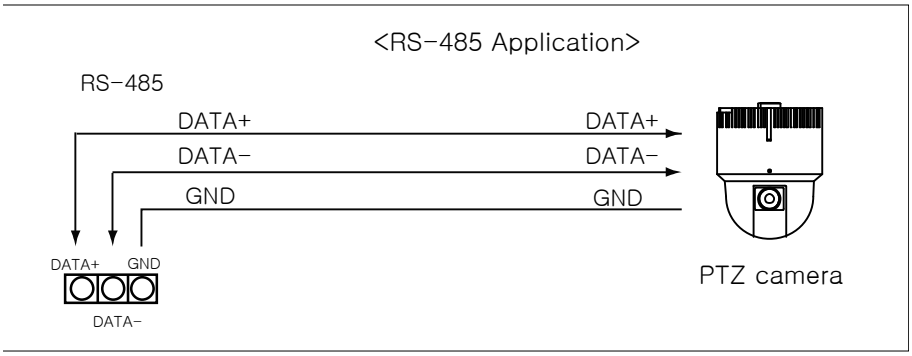


Figure 22 RS-485 Connection

⑩ Reset switch (SW1)

Reset switch is used for restarting NVE or resetting NVE as Factory Default (FD). Refer to '4.1. Factory Default Setting' for detailed procedures.

⑪ 10-pin connector for connecting to backpanel (J1)

It is connector to IPC module by using 10 pin cable (It is provided.). See the J15 of IPC moduel.

⑫ Potentiometer for DC Level (VR1)

This is for adjusting the overall light level manually when using a DC type lens. To make the monitor picture brighter, turn clockwise and to make the monitor picture darker, turn counterclockwise.

⑬ 5-pin connector for connecting to CCD Module (J3)

This is for transferring the configuration of the CCD module at back panel to CCD module.

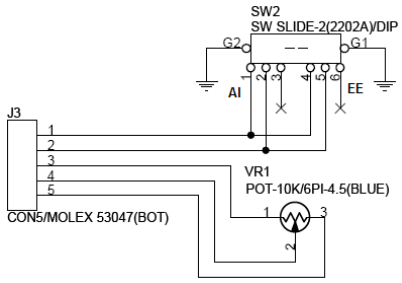


Figure 23 5-pin connector for connecting to CCD Module

⑭ 9-pin connector for connecting to CCD Module (J3)

This is for transferring the configuration of the CCD module at back panel to CCD module.

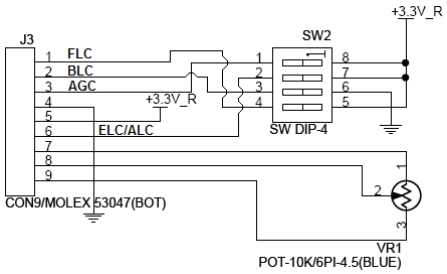


Figure 24 9-pin connector for connecting to CCD Module

3.2. Serial Number / MAC Address

Serial number and MAC address is attached on the bottom of IPC1100 as shown in Figure 23.

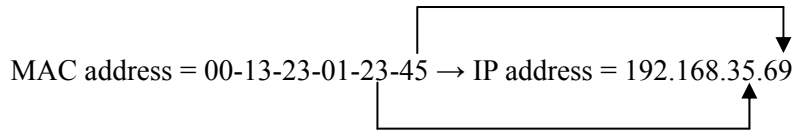
Figure 25. Serial Number / MAC Address

4. Operation Description

4.1. 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

Note



* MAC address is on the PCB of IPC module.

Factory Default (FD) initialization procedure is as follows

1. Turn ON the power.
2. Press “Reset” button when Status LED at LAN connector start to blink very rapidly.
3. Release “Reset” button when Status LED at LAN connector is blinking slowly.

4.2. Rebooting

Reset can be carried out as follows:

Figure 2008. Press Reset for 1 second.
When Reset function is activated, Status LED and Network LED at LAN connector will blink together, twice. User may stop pressing Reset at this point.
2. When “Reset” function has been completed, LEDs will stop blinking.

5. Power over Ethernet (PoE)

The PoE module used in IPC Module is commercially available module without modification. The standard IPC Module does not include PoE module in it. PoE module is included on the request of a customer. For the detailed information, please contact sales person.
The PoE module is designed to extract power from a conventional twisted pair Category 5 Ethernet cable, conforming to the IEEE 802.3af Power-over-Ethernet (PoE) standard.
IEEE 802.3af allows for two power options for Category 5 cables and the PoE module have two pairs of power inputs pins: - VA1&2 and VB1&2 to accommodate this.
The PoE module signature and control circuit provides the PoE compatibility signature and power classification required by the Power Sourcing Equipment (PSE) before applying up to 15W power to the port. The PoE module is compatible with Class 0 to Class 3 equipment.
The high efficiency DC/DC converter operates over a wide input voltage range and provides a regulated low ripple and low noise output. The DC/DC converter also has built-in overload and short-circuit output protection.

5.1. Features

- IEEE802.3af compliant
- Small SIL package size – 56mm (L) x 14mm (H)
- Overload and short-circuit protection
- 1500V isolation (input to output)

5.2. Mechanical characteristics

Dimension: 56mm (L) x 14mm (H)

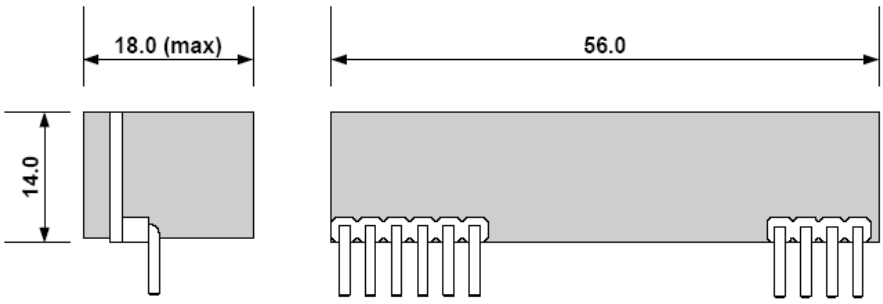


Figure 26. Dimension of PoE module

The following pictures show PoE module installed in the products.

Figure 27. IPC1100 without PoE module

Figure 28. IPC1100 with PoE module installed

5.3. PoE compatibility

With non Power Sourcing Equipment (PSE)
When it is connected with non PSE, the power adaptor should be connected.

With power adaptor
Connecting both PSE and power adaptor does not do any harm to the products. Disconnecting power adaptor while it is operating does not stop operation. The product continues to work without rebooting.

5.4. Power classification

The PoE Power Class supported by IPC/NVE is as following Table 2.

Model	Power Class
IPC1100 IPC3100 IPC3500 NVE100 NVE1000 NVE2000 NVE4000	0
IPC4100 IPC4500 IPC5100	Not applicable

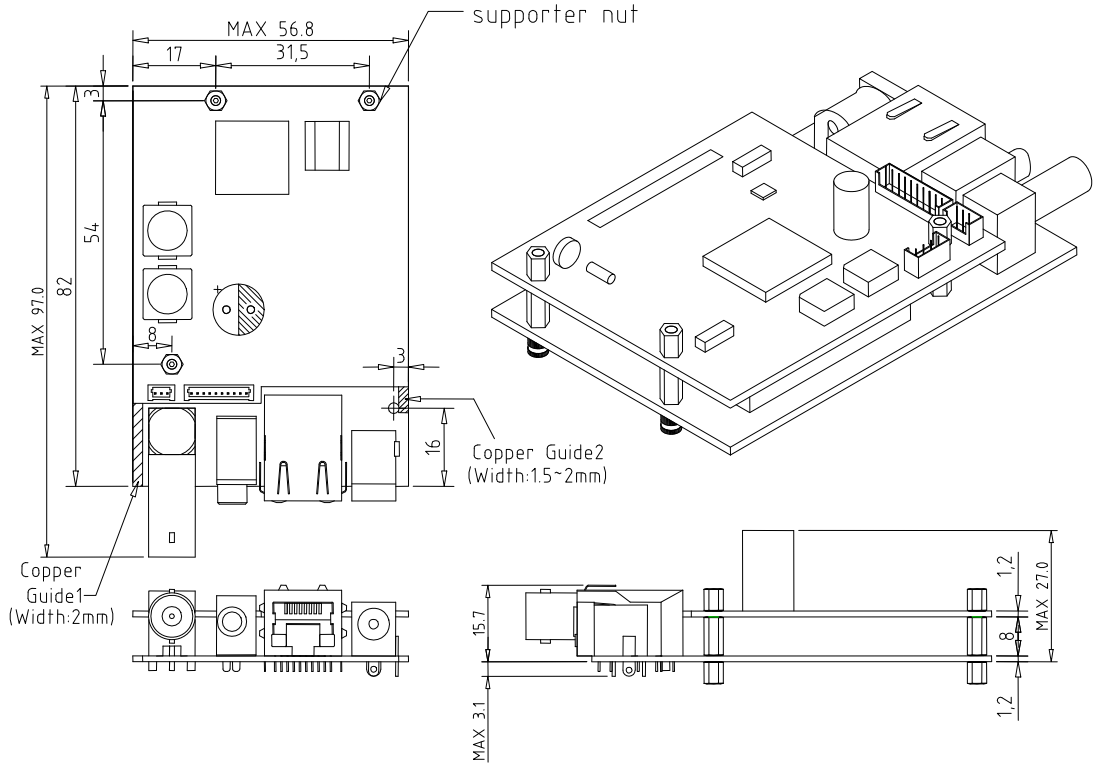
Table 2. Power Class supported by IPC/NVE

Table 3 shows IEEE 802.3af power classes.

Class	Usage	Minimum Power Levels Output at the PSE	Maximum Power Levels at the Powered Device
0	Default	15.4W	0.44 to 12.95W
1	Optional	4.0W	0.44 to 3.84W
2	Optional	7.0W	3.84 to 6.49W
3	Optional	15.4W	6.49 to 12.95W
4	Reserved for Future Use	Treat as Class 0	Reserved for Future Use

Table 3. IEEE 802.3af PSE and Powered Device Power Classifications

6. DIMENSIONS



* Dimension is in millimeter.

Figure 29. Dimension (HW v1.5)

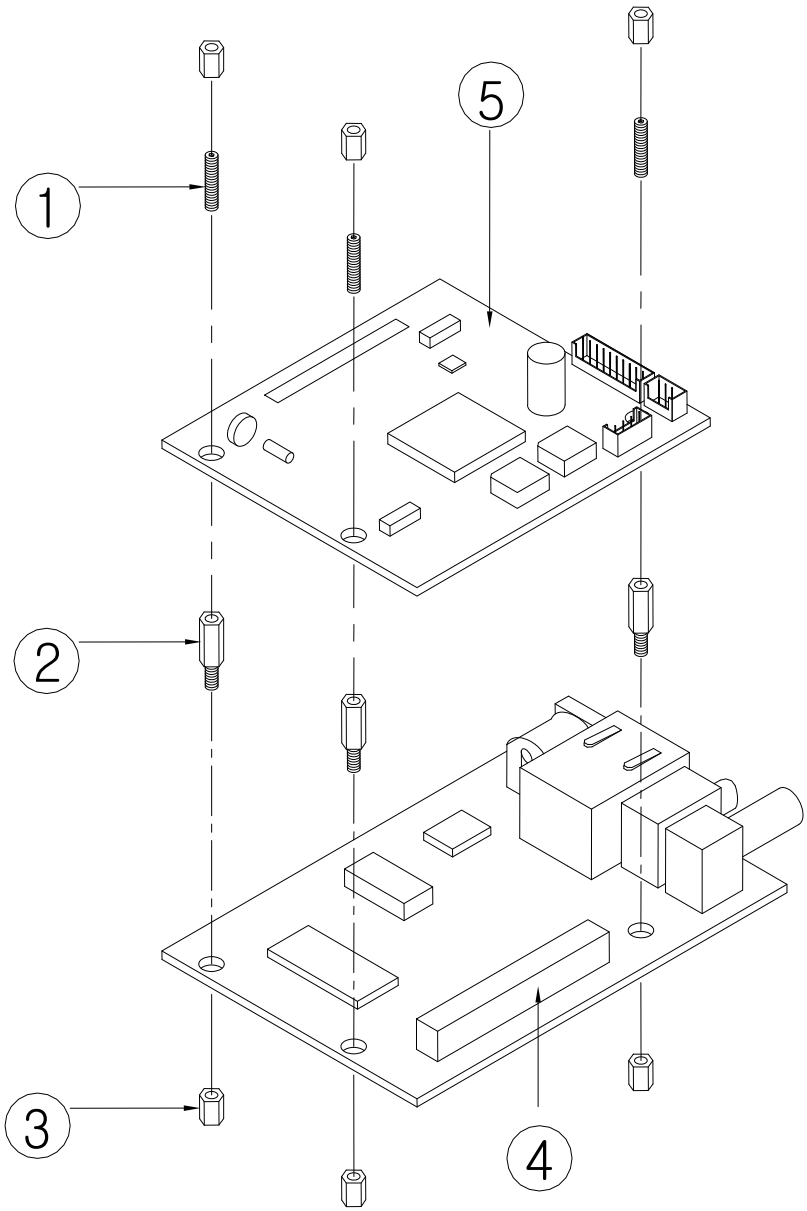
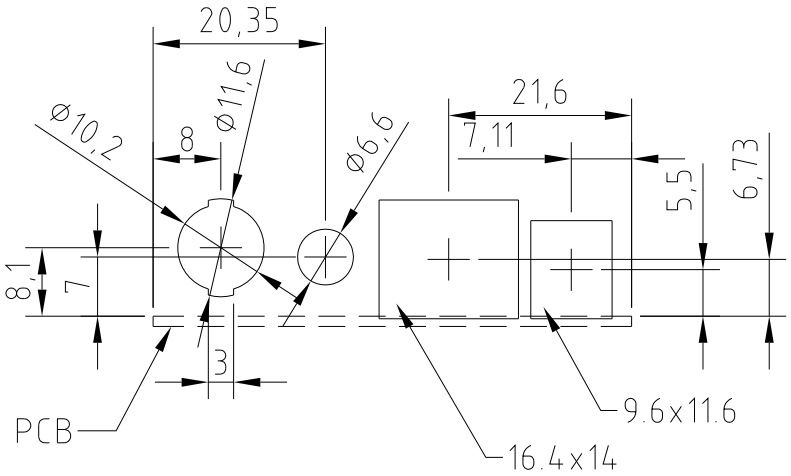


Figure 30. Assembly View (HW v1.5)



* Dimension is in millimeter.

Figure 31. Recommended Back-panel Hole Dimension (HW v1.5)

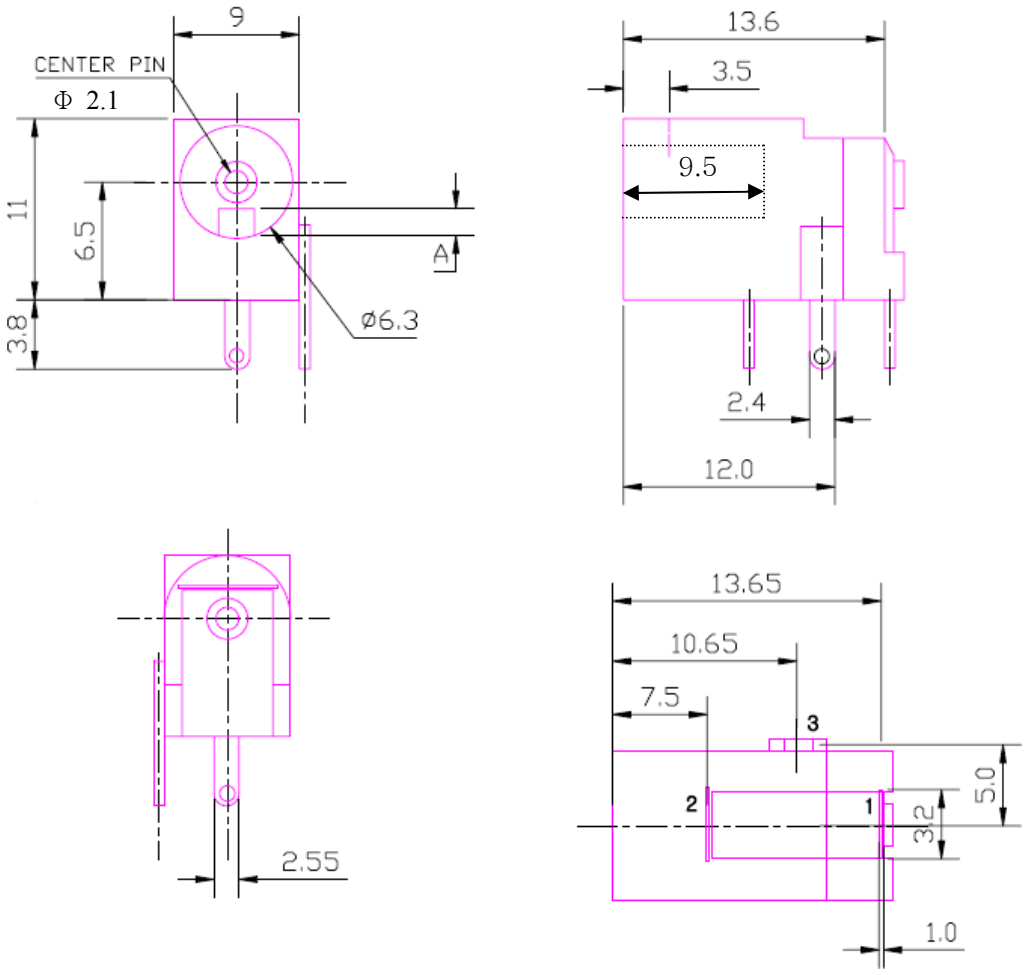


Figure 32. DC Power Jack Dimension (HW v1.5)

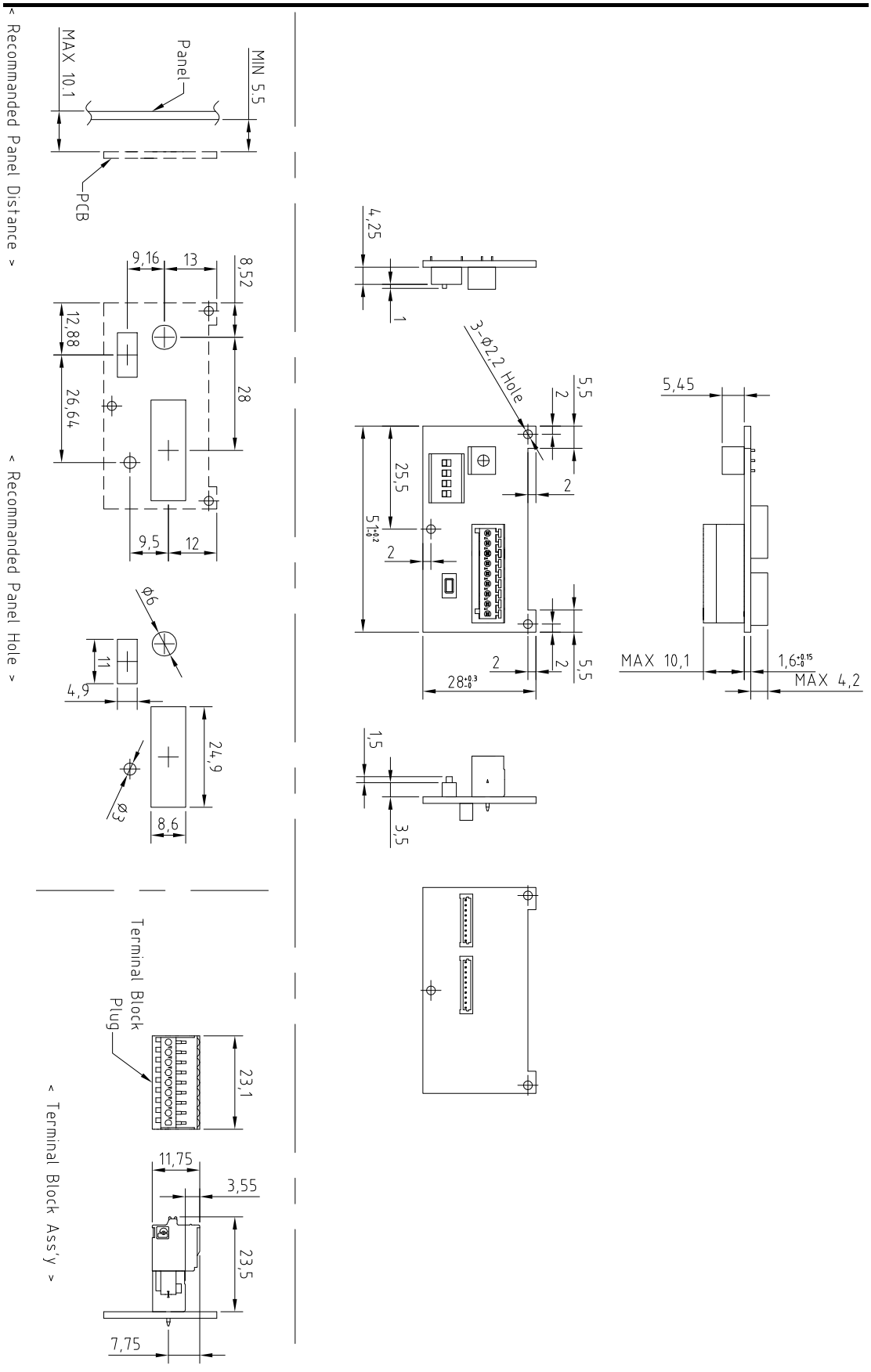


Figure 33. Back Panel Dimension (HW v1.5)

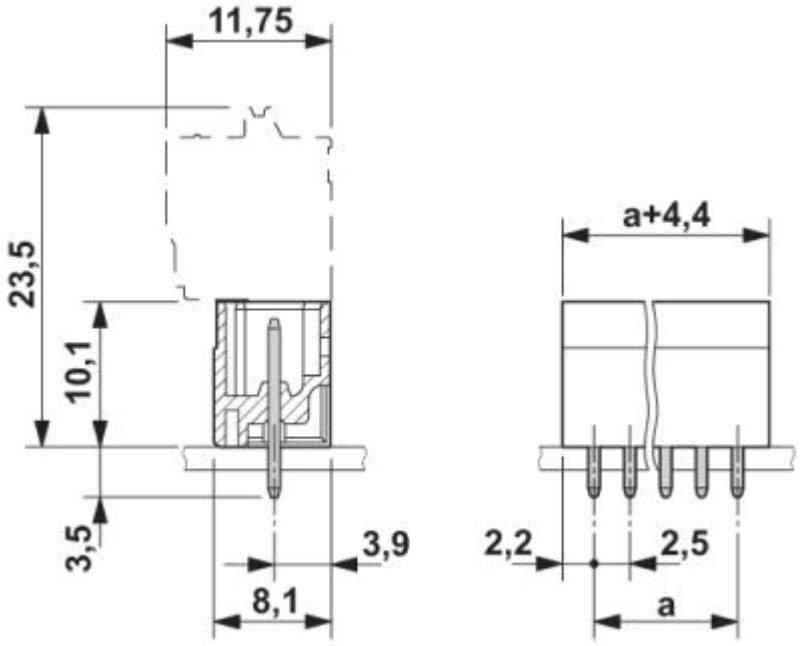


Figure 34. 9pin terminal block (Back Panel) Dimension (HW v1.5)

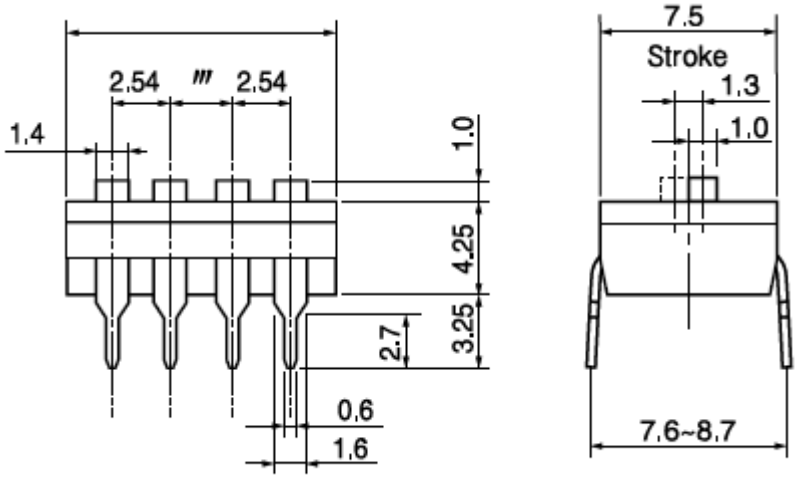


Figure 35. 4pin DIP Switch (Back Panel) Dimension (HW v1.5)

Revision history

Rev.	Date	History
A	2006-06-16	Created.
B	2007-02-27	Modified Factory Default.
C	2007-03-08	Modified the specification for HW V1.4
D	2007-04-13	Added the description of ALC/ELC and DC Level
E	2007-09-06	Added the description of HW V1.5
F	2007-09-10	Added the detailed dimension figure and changed the power consumption table.
G	2007-09-12	Changed the PoE class information
H	2007-09-14	Added more dimension
I	2007-09-17	Added dimension for DC power jack
J	2007-09-19	Added dimension figure for back panel (DIP Switch, terminal block)
K	2007-11-07	Fixed Figure 36
L	2007-11-08	Fixed Figure 30
M	2008-01-22	Add the description of connector J3 at backpanel
O	2008-04-18	Screw design changed
P	2008-10-14	Power consumption is changed
Q	2008-11-25	The video input range of electrical characteristics corrected
R	2009-05-04	Resolution modified (Half D1 ->2CIF)