

# Nipron eNSP3-450P-S20-H0V/H1V/H2V/H6V Specifications

Date of issue: June 24, 2005

## General specifications

### AC input

|                       | Specification                                      | Conditions  |
|-----------------------|--|---|
| Nominal input voltage | 100 V to 240 V AC                                  | Universal input range. Maximum DC output is derated from 100% to 90% according to AC input voltage from 90 V to 85 V (see output specifications.) Minimum startup voltage: 80 V ± 10 V AC |
| Input voltage range   | 85 V to 264 V AC                                   |   |
| Input frequency       | 50 Hz or 60 Hz                                     | Allowable frequency range: 47 Hz to 63 Hz   |
| Inrush current        | ≤ 31 A peak at 100 V AC<br>≤ 75 A peak at 240 V AC | At rated output and cold start (25°C)   |
| Input power           | ≤ 513 VA at 100 V AC<br>≤ 487 VA at 240 V AC       | At rated input and maximum continuous output  |
|                       | ≤ 679 VA at 100 V AC<br>≤ 643 VA at 240 V AC       | At rated input and peak output  |
| Efficiency            | 73% typ. at 100 V AC,<br>77% typ. at 240 V AC      | At rated output   |
| Power factor          | 99% typ. at 100 V AC,<br>97% typ. at 240 V AC      | At rated output   |

### DC input

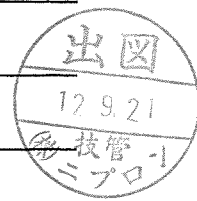
|                                    | Specification                          | Conditions                            |
|------------------------------------|--|---------------------------------------|
| Nominal input voltage              | 24 V DC                                | Conformable to specified battery pack |
| Battery "end of discharge" voltage | 17 V typ. (battery input is shut off.) |                                       |
| Efficiency                         | 73% typ.                               | At rated input and output             |

### Operating/storage environment

|                       | Specification   | Conditions   |
|-----------------------|---|--|
| Operating temperature | 0°C to 60°C   | Excludes battery pack.<br>Temperature gradient: ≤ 15°C/hr<br>Output power is derated from 100% to 70% according to temperature from 45°C to 60°C (refer to output specifications). |
| Storage temperature   | -25°C to 70°C   | Temperature gradient: ≤ 15°C/hr  |
| Humidity              | 10% to 90% RH for operation,<br>10% to 95% RH for standby | At no condensation   |

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| Drawn by  | Checked by | Approved by  | Model No.                               | Drawing No.             |
|-----------|------------|--------------|---|-------------------------|
| E. Tanaka | K. Yamada  | Y. Matsubara | eNSP3-450P-S20-H*V<br>(*: 0, 1, 2, 6) ▲ | 2779-01-4-520 A<br>1/11 |



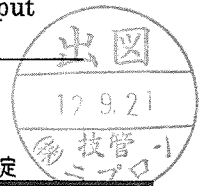
|                  |  |   |
|------------------|--|---|
|                  | mode and storage.  |   |
| Vibration        | Withstands for 45 minutes at amplitude of 0.075 mm, frequencies from 10 Hz to 55 Hz and 10 repetitive sweep cycles for each of orthogonal X, Y and Z directions.         | At no operation.<br>According to JIS-C-60068-2-6  |
| Mechanical shock | No failure is detected by the test that one side of bottom is lifted up (to slant the unit) and, for each of 4 sides, let it fall down 3 times from the height of 50 mm. | At no operation.<br>According to JIS-C-60068-2-31 |

#### Electrical insulation

|                       | Specification  | Conditions  |
|-----------------------|--|---|
| Hi-Pot                | 1500 V AC for 1 minute, between AC input and interconnected DC input, DC output and FG.  | (FG: Frame Ground)                                  |
| Insulation resistance | $\geq 50 \text{ M}\Omega$ between AC input and interconnected DC input, DC output and FG | At 500 V DC   |
| Leakage current       | $\leq 0.5 \text{ mA}$ at 100 V AC,<br>$\leq 1 \text{ mA}$ at 200 V AC                    | Tested with YEW 3226 or equivalent (1 k $\Omega$ ). |

#### Other specifications

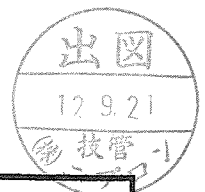
|                                 | Specification   | Conditions  |
|---------------------------------|---|---|
| Electrostatic discharge (ESD)   | Contact discharge: $\pm 6 \text{ kV}$ , 10 times  | IEC61004-4-2 (Test level 3).<br>No failure and no operating error.                  |
| Line noise immunity             | $\pm 2000 \text{ V}$ for 10 minutes at a pulse width of 100 ns/1000 ns, frequencies from 30 Hz to 100 Hz, positive/negative polarity, normal/common mode pulse. | Measured with INS-410. No variance in DC output voltage and no operating error.     |
| Surge voltage                   | 5 repetitive tests with a common mode pulse of $\pm 2 \text{ kV}$ , a normal mode pulse of $\pm 1 \text{ kV}$ and pulse width of $1.2 \times 50\mu\text{s}$ .   | IEC61000-4-5 (Installation environment class 3). No failure and no operating error. |
| EMI                             | EN55022 class B (CISPR22), VCCI class B and FCC class B   | Measured for power supply unit only.  |
| Line frequency harmonic current | IEC 61000-3-2 (Ver. 2.1) class D and EN61000-3-2 (A14) class D  | At rated input and output   |



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| E. Tanaka | K. Yamada  | Y. Matsubara | eNSP3-450P-S20-H*V<br>(*: 0, 1, 2, 6)<br>$\Delta$ | 2779-01-4-520 A<br>2/11 |

|                           |                    |  |   |
|---------------------------|--------------------|--|---|
| Safety regulation         |                    | Compliance with UL60950, CSA C22.2 No. 60950 and EN60950                                     |   |
| Cooling                   | Forced air cooling | Fan motor speed is controlled by a thermo sensor, which detects temperature inside the unit. | Note: During the standby mode of operation controlled by PS_ON# signal, the fan operates slowly only when the detected temperature is high. |
|                           | Fan speed mode     | Slow and Fast modes are selectable by a switch on the top panel.                             | Set to Slow mode when shipped from factory. Fast mode fixes the fan speed.  |
| Product reliability grade |                    | FA (Factory Automation grade)  | Nipron's quality criteria   |
| Warranty                  |                    | 3-year return-to-Nipron repair or replacement with new one after delivery to customer.       | Warranty is applied to the use under specified operating conditions.  |
| Weight (mass)             |                    | 1.8 kg typ.  |   |



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## DC Output specifications

### DC output ratings

|                              |                         | CH1  | CH2             | SH3              | CH4                          | CH5                | Conditions  |
|------------------------------|-------------------------|--|-----------------|------------------|------------------------------|--------------------|---|
| Voltage rating               |                         | 3.3 V  | 5 V             | 12 V             | -12 V                        | 5 VSB              |   |
| Minimum current required     |                         | 0 A  | 0 A             | 0 A              | 0 A                          | 0 A                | The minimum output current required for accurate voltage regulation.  |
| Current rating               |                         | 11.5 A   | 16 A            | 18 A             | 0.5 A                        | 2 A                | Total output power rating 350 W   |
| Output power rating          |                         | 38 W   | 80 W            | 216 W            | 6 W                          | 10 W               |   |
| Maximum continuous output*1  | Current                 | 20 A   | 22 A            | 22 A             | 0.5 A                        | 2 A                | Maximum total continuous output power 350 W   |
|                              | Power                   | 160 W  |                 | 264 W            | 6 W                          | 10 W               |   |
| 334 W                        |                         |  |                 |                  |                              |                    |   |
| Peak output*1 (≤ 5 s)        | Current                 | 30 A   | 33 A            | 30 A             | 0.5 A                        | 2.5 A              | Total peak output power 450.5 W for the duration within 5 s. (See Note 2 for repetitive peak output.)                                       |
|                              | Power                   | 200 W  |                 | 360 W            | 6 W                          | 12.5 W             |   |
|                              |                         | 432 W  |                 |                  |                              |                    |   |
| Voltage accuracy             |                         | ± 4%   | ± 4%            | ± 5%             | ± 5%                         | ± 5%               | See Note 3.   |
| Maximum ripple voltage (p-p) |                         | 50 mV  | 50 mV           | 120 mV           | 120 mV                       | 50 mV              | See Note 4.   |
| Maximum spike voltage (p-p)  |                         | 100 mV   | 100 mV          | 170 mV           | 170 mV                       | 100 mV             |   |
| Rise time (Tr)               |                         | 0.1 ms ≤ Tr ≤ 70 ms  |                 |                  |                              |                    | Rise time from 10% to 95% of final voltage.   |
| Over-current protection      | OCP point               | ≥ 31 A   | ≥ 34 A          | ≥ 28 A (≥ 31 A*) | ≥ 105% of rated peak current |                    | At rated input. (Note 5: The OCP point in parenthesis applies when total output power for 3.3 V, 5 V and 12 V is less than max peak power.) |
|                              | Limiter characteristics | All outputs except for CH5 are disabled. All outputs are disabled in case of battery backup operation. |                 |                  | Fold back type               | Same as CH1 to CH3 |   |
|                              | Recovery (AC input)     | Re-entry of AC input or PS_ON# signal going to L from H  |                 |                  | Automatic                    |                    |   |
|                              | Recovery (DC input)     | Re-entry of AC input   |                 |                  | Auto-matic                   | Same as CH1 to CH3 |   |
| Over-Voltage protection      | OVP point               | 3.76 V to 4.3 V  | 5.74 V to 7.0 V | 13.4 V to 15.6 V | NA                           |                    |   |

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|           |            |              |  |                         |
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| E. Tanaka | K. Yamada  | Y. Matsubara | eNSP3-450P-S20-H*V<br>(*: 0, 1, 2, 6)<br>△ | 2779-01-4-520 A<br>4/11 |

|                          |  |    |  |
|--------------------------|--|----|--|
| Limiting characteristics | All outputs except for CH5 are disabled. All outputs are disabled in case of battery backup operation. | NA |  |
| Recovery (AC input)      | Re-entry of AC input or PS_ON# signal going to L from H  | NA |  |
| Recovery (DC input)      | Re-entry of AC input   | NA |  |

Note 1: Output power is derated depending on ambient temperature as shown in Figure 1.

When AC input voltage is below 90 V, the output power should be derated as shown in Figure 2.

Note 2: The duty ratio of repetitive peak output is less than 10% (1:9) as shown in Figure 3.

Note 3: Includes the dependence on temperature, input voltage and load variances.

Note 4: Ripple and spike voltages are defined as measured voltages across a 10 $\mu$ F electrolytic capacitor and a 0.1 $\mu$ F ceramic capacitor connected in parallel between the output connector and circuit common.

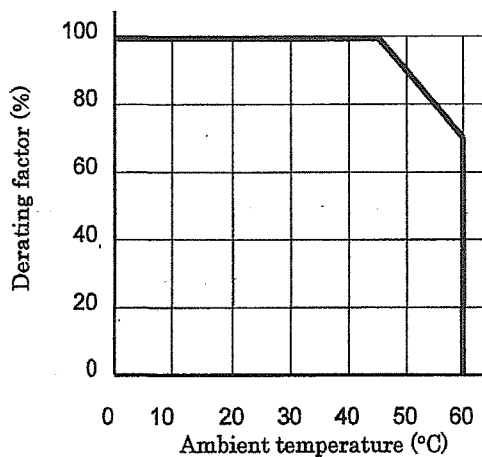


Figure 1. Output power derating vs. ambient temperature  
When ambient temperature exceeds 45°C, derate (decrease) the maximum continuous/peak output current and power in accordance with Figure 1.  
(Multiply the output current/power by the derating factor.)

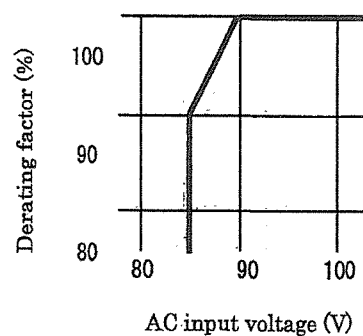


Figure 2. Output power derating vs. AC input voltage

When the AC input voltage is below 90 V, derate the maximum continuous/peak output current and power in accordance with Figure 2.

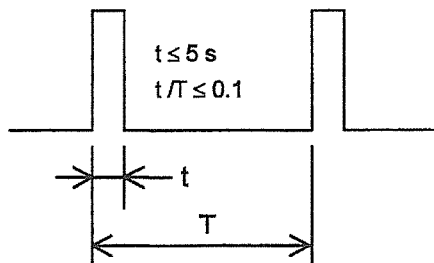


Figure 3. Duty ratio of repetitive peak output current and power



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|           |            |              |  |                         |
|-----------|------------|--------------|--|-------------------------|
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| E. Tanaka | K. Yamada  | Y. Matsubara | eNSP3-450P-S20-H*V<br>(*: 0, 1, 2, 6) $\Delta$ | 2779-01-4-520 A<br>5/11 |

### Battery charge output

|               | Battery type      |                | Specification    | Conditions   |
|---------------|-------------------|----------------|------------------|--|
| Charge output | Ni-MH battery     | Charge voltage | 35 V max         | See Note 1.  |
|               |                   | Charge current | 0.7 A max        | See Note 2.  |
|               | Lead-acid battery | Charge voltage | 27.3 V typ.      | At 25°C, full charge, and with temperature compensation. |
|               |                   | Charge current | 0.5 A ± 0.2 A DC | At a battery voltage of 24 V.                            |

Note 1: Charge voltage is automatically set to appropriate voltage for the specified Ni-MH battery pack.

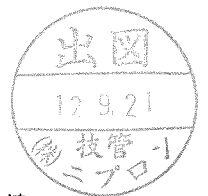
Note 2: The specified battery pack has a battery charge control function managed by a micro-controller chip.

### Available battery packs and battery backup time

| Battery type | Battery pack model number   | Conversion cable | Power supply output power in battery backup operation |        |         |         |            |            | Safety *Note 2 |
|--------------|-----------------------------|------------------|---|--------|---------|---------|------------|------------|----------------|
|              |                             |                  | ≤150 W  | ≤200 W | ≤250 W  | ≤300 W  | ≤350 W     | ≤450 W     |                |
| Lead-acid    | BS05A-P24/2.2L (5 inch bay) | Required         | 5 min   | 3 min  | 2 min   | NA      | NA         | NA         | NA             |
|              | RBS01A-P24/2.2L (Removable) | Required         | 5 min   | 3 min  | 2 min   | NA      | NA         | NA         | NA             |
|              | BS11A-P24/2.3L (5 inch bay) | NA               | 5 min   | 3 min  | 2 min   | 1 min   | In seconds | NA         | Approved       |
|              | RBS02A-P24/2.3L (Removable) | NA               | 5 min   | 3 min  | 2 min   | 1 min   | In seconds | NA         | Approved       |
|              | BS12A-P24/5.0L              | NA               | 20 min  | 13 min | 9 min   | 6.5 min | 5 min      | In seconds | Approved       |
| Ni-MH        | BS08A-H24/2.0L              | Required         | 3 min   | NA     | NA      | NA      | NA         | NA         | NA             |
|              | BS06A-H24/2.5L (5 inch bay) | Required         | 9 min   | 6 min  | NA      | NA      | NA         | NA         | NA             |
|              | BS06B-H24/2.5L (5 inch bay) | Required         | 9 min   | 6 min  | NA      | NA      | NA         | NA         | NA             |
|              | BS10A-H24/2.0L (5 inch bay) | NA               | 9 min   | 6 min  | 4.5 min | 3.5 min | In seconds | NA         | Approved       |

Note 1: The battery backup time is approximate time in initial use of battery and is not specified (The backup time is not guaranteed.) Unit of time: in minutes.

Note 2: Compliance with safety regulations.



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## Input/Output signal specifications

### Input/Output signals

|               | Signal  | Function  |
|---------------|---|---|
| Input signal  | Output On/Off control (PS_ON#)                                | High or OPEN input disables all DC outputs on CH1 to CH5  |
|               | +3.3 V SENSE  | Input terminal for detecting CH1 (+3.3 V) output voltage. Connecting this input to the load allows +3.3 V output voltage to be compensated for line drop (the voltage drop on circuit common line is not compensated).      |
|               | TTL-Battery input shut down (SHUT_DOWN_T)                     | Low input ( $\geq 60$ ms) shuts off the backup battery. Valid in backup operation only.   |
|               | RS232C Battery input shut down (SHUT_DOWN_R) [Model H1V only] | Positive input ( $\geq 2.4$ V, $\geq 60$ ms) shuts off the backup battery. Valid in backup operation only.  |
| Output signal | Output Normal (PWR_OK)  | Outputs TTL High level when all DC outputs are normal (Voltage detection time: 100 ms to 500 ms)  |
|               | TTL-AC Power Fail (AC_FAIL_T)                                 | Outputs TTL High level when AC input voltage is too low or interrupted. Detection threshold voltage is 75 V AC typ. and detection delay time is 20 ms to 40 ms after AC input shuts off.                                    |
|               | RS232C-AC Power Fail (AC_FAIL_R) [Model H1V only]             | Outputs Negative voltage (-9 V typ.) when AC input voltage is too low or interrupted. Detection threshold voltage is 75 V AC typ. and detection delay time is 20 ms to 40 ms after AC input shuts off.                      |
|               | USB AC Power Fail (AC_FAIL_U) [Model H5V only] $\Delta$       | Outputs a data corresponding to Negative AC_FAIL_R signal when AC input voltage is too low or interrupted. Detection threshold voltage is 75 V AC typ. and detection delay time is 20 ms to 40 ms after AC input shuts off. |
|               | TTL Battery Voltage Low (BATT_LOW_T)                          | Outputs TTL High level when battery terminal voltage is too low ( $\leq 19$ V typ.). Outputs TTL Low level when backup battery is not connected.  |
|               | RS232C Battery Voltage Low (BATT_LOW_R) [Model H1V only]      | Outputs Negative voltage (-9 V typ.) when battery terminal voltage is too low ( $\leq 19$ V typ.). Outputs Positive voltage (9 V typ.) when backup battery is not connected.  |



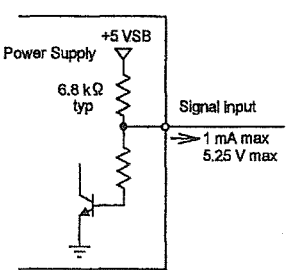
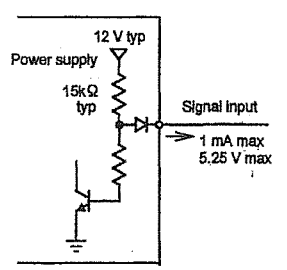
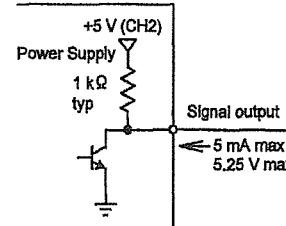
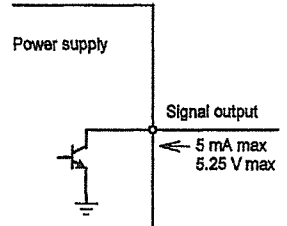
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|-----------|------------|--------------|--|-------------------------|
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|   |   |
|---|---|
| USB Battery Voltage Low (BATT LOW_U)<br>[Model H6V only]<br>△ | Outputs a data corresponding to Negative BATT LOW_R signal when battery terminal voltage is too low ( $\leq 19$ V typ.). Outputs a data corresponding to Positive BATT LOW_R signal when backup battery is not connected. |
| Buzzer<br>[Model H2V only]                                    | Generates buzzer when AC input is interrupted. Buzzer level is variable. (See note 1)   |
| Fan monitor (FAN M)   | Outputs a square wave signal at the rate of 2 pulses per 1 turn of fan motor operation.   |

Note 1: Buzzer may operate for a few seconds when AC input is turned on or off.

### Signal input/output circuit configuration

|                       | PS_ON#  | SHUT DOWN_T   | SHUT DOWN_R (H1V only)                           |   |
|-----------------------|---|---|--|---|
| Signal input circuit  |  <p>(<math>L \leq 0.8</math> V, <math>2.0</math> V <math>\leq</math> H)</p> |  <p>(<math>L \leq 0.4</math> V, <math>2.4</math> V <math>\leq</math> H)</p> | Analog Devices ADM232AARN or equivalent is used. |   |
|                       | PWR_OK  | AC FAIL_T,<br>FAN M,<br>BATT LOW_T  | AC FAIL_R,<br>BATT LOW_R<br>(H1V only)           | AC FAIL_U,<br>BATT LOW_U<br>(H6V only) △  |
| Signal output circuit |  <p>(<math>L &lt; 0.4</math> V)</p>  |  <p>(<math>L &lt; 0.4</math> V)</p>  | Analog Devices ADM232AARN or equivalent is used. | Complies with USB1.1 (B type connector)<br><br>Note:<br>Installation of USB to RS232C conversion driver software is required. |

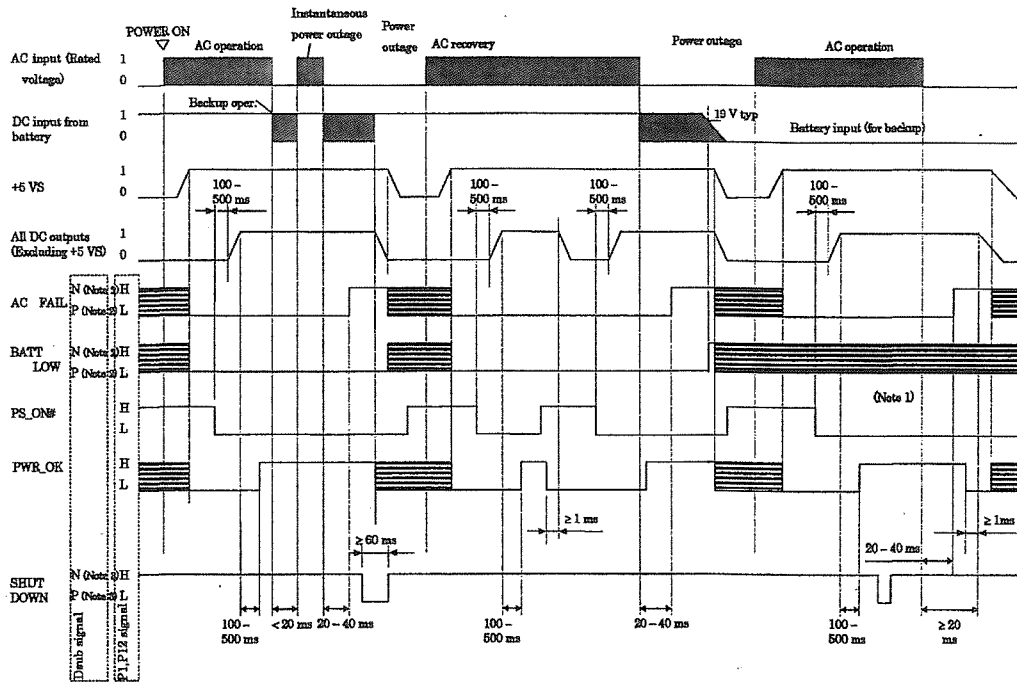
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# Timing Diagram

(Timing of signals for the eNSP3-450P-S20-H1V with the SU-RS installed and backup battery connected.)



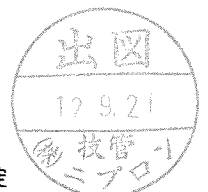
(Note 1) BATT LOW signal may not be outputted depending on the battery voltage because of battery charger output.

(Note 2) Negative output is -9 V typ  
Positive output is +9 V typ

(Note 3) Negative input is +0.4 V to -50 V  
Positive input is +2.8 V to +30 V

Indefinable area

Note: When auto shutdown is performed in Windows 2000/XP environment, do not use the shutdown signal. Use the Remote OFF control signal supported by APM or ACPI function after OS ends.



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### Current ratings of output connector pins

The maximum allowable continuous current for each of output connector pins is shown in Table 1.

The sum of the shared currents for the same output must be less than the maximum current specified for each output.

Table 1. Output connector current ratings

| Connector | Pin | Output       | Max. current |       |
|-----------|-----|--------------|--------------|-------|
| MAIN      | 1   | +3.3 V SENSE | 10 mA        |       |
|           | 2   | +3.3 V       | 6.0 A        |       |
|           | 3   | GND          | 6.0 A        |       |
|           | 4   | +5 V         | 6.0 A        |       |
|           | 5   | GND          | 6.0 A        |       |
|           | 6   | +5 V         | 6.0 A        |       |
|           | 7   | GND          | 6.0 A        |       |
|           | 8   | PWR_OK       | 5 mA         |       |
|           | 9   | +5 VSB       | 2.5 A        |       |
|           | 10  | +12 V        | 6.0 A        |       |
|           | 11  | +12 V        | 6.0 A        |       |
|           | 12  | +3.3 V       | 6.0 A        |       |
|           | 13  | +3.3 V       | 6.0 A        |       |
|           | 14  | -12 V        | 1.0 A        |       |
|           | 15  | GND          | 6.0 A        |       |
|           | 16  | PS_ON#       | 1 mA         |       |
|           | 17  | GND          | 6.0 A        |       |
|           | 18  | GND          | 6.0 A        |       |
|           | 19  | GND          | 6.0 A        |       |
|           | 20  | NC           | -            |       |
|           | 21  | +5 V         | 6.0 A        |       |
|           | 22  | +5 V         | 6.0 A        |       |
|           | 23  | +5 V         | 6.0 A        |       |
|           | 24  | GND          | 6.0 A        |       |
| 12 V      | 1   | GND          | 7.0 A        |       |
|           | 2   | GND          | 7.0 A        |       |
|           | 3   | GND          | 7.0 A        |       |
|           | 4   | GND          | 7.0 A        |       |
|           | 5   | +12 V        | 7.0 A        |       |
|           | 6   | +12 V        | 7.0 A        |       |
|           | 7   | +12 V        | 7.0 A        |       |
|           | 8   | +12 V        | 7.0 A        |       |
|           | HD  | 1            | +3.3 V       | 7.0 A |
|           |     | 2            | +5 V         | 7.0 A |
|           |     | 3            | GND          | 7.0 A |
|           |     | 4            | GND          | 7.0 A |
|           |     | 5            | +12 V        | 7.0 A |
|           |     | 6            | +3.3 V       | 7.0 A |
|           |     | 7            | +5 V         | 7.0 A |
|           |     | 8            | GND          | 7.0 A |
|           |     | 9            | GND          | 7.0 A |
|           |     | 10           | +12 V        | 7.0 A |
|           | SIG | 1            | AC FAIL_T    | 5 mA  |
|           |     | 2            | SHUT         | 1 mA  |
|           |     | 3            | BATT LOW_T   | 5 mA  |
|           |     | 4            | NC           | -     |
|           |     | 5            | FAN M        | 5 mA  |
|           |     | 6            | PS_ON#       | 1 mA  |
| 7         |     | GND          | 2.0 A        |       |
| 8         |     | +3.3 V SENSE | 10 mA        |       |
| 9         |     | NC           | -            |       |
| 10        |     | +5 VSB       | 2.0 A        |       |

Note: +3.3 V SENSE input signal at pin 8 of SIG connector is detected prior to the same signal at pin 1 of MAIN connector when both inputs are used. When the pin 8 of SIG connector is not used, the signal status at pin 1 of MAIN connector is detected.



A版 △×1:2010.08.28 迄

| Drawn by  | Checked by | Approved by  | Model No.                               | Drawing No.              |
|-----------|------------|--------------|---|--------------------------|
| E. Tanaka | K. Yamada  | Y. Matsubara | eNSP3-450P-S20-H*V<br>(*: 0, 1, 2, 6) △ | 2779-01-4-520 A<br>10/11 |

## Warnings and Cautions on operation

### 1. WARNING: Grounding

This power supply is designed as safety class I apparatus. For operator safety, be sure to ground the power supply by connecting the Earth terminal to earth ground.

### 2. WARNING: Electrical shock hazards

High potentials exist inside the power supply. When integrating the power supply into an instrument or system, use appropriate safe procedure to avoid electrical shock hazards.

### 3. CAUTION: Do not short DC outputs

Do not short the DC outputs of the power supply. Shorting the outputs makes internal capacitors quickly discharge and cause dangerous spark and heat generation that may result in serious accident such as fire. Furthermore, it will shorten the operating life of power supply.

### 4. CAUTION: Power on procedure to prevent harmful inrush current

To restrict the surge current into smoothing capacitor, a power thermistor is used inside the unit. If AC input is re-entered soon without allowing the power thermistor to cool down after the AC input was disconnected before, an excessive surge current may flow into the power supply. Be sure to allow at least 60 seconds before the re-entry of AC input.

### 5. CAUTION: Hold the main unit for carrying the power supply

Do not grasp the output cables to hang the unit when carrying the power supply. Doing so will damage the output cables and connectors. Hold the main unit when carrying the power supply.

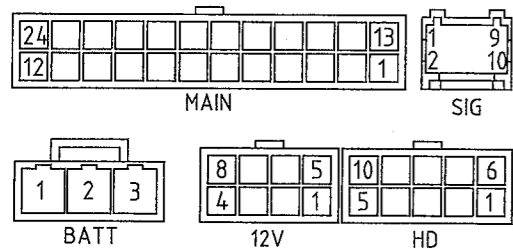
### 6. NOTE: Audible power-on noise

There is possibility that, when the power supply starts up, it generates audible noise for a moment. This noise is caused by a low frequency transient vibration of choking inductor (used for harmonic current suppression) or of another component. The noise does not affect the operating characteristics and operating life of the power supply.

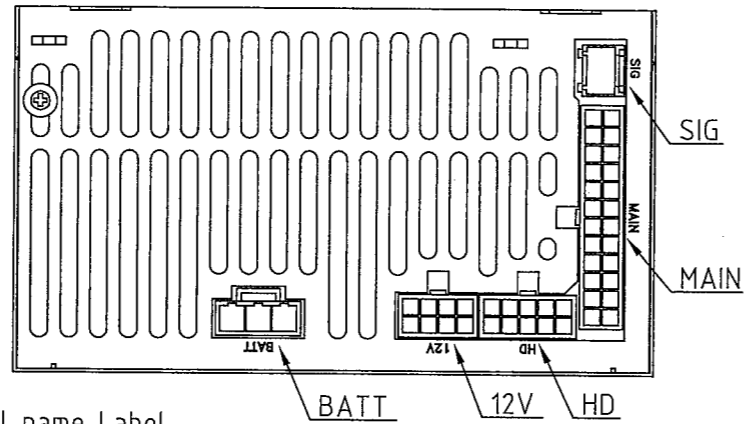


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| Drawn by  | Checked by | Approved by  | Model No.                              | Drawing No.              |
|-----------|------------|--------------|--|--------------------------|
| E. Tanaka | K. Yamada  | Y. Matsubara | eNSP3-450P-S20-H*V<br>(*: 0, 1, 2, 6)△ | 2779-01-4-520 A<br>11/11 |



※ Pin assignment



| MAIN    |             |         |          |
|---------|-------------|---------|----------|
| PIN No. | FUNCTION    | PIN No. | FUNCTION |
| 1       | +3.3V SENSE | 13      | +3.3V    |
| 2       | +3.3V       | 14      | -12V     |
| 3       | COM         | 15      | COM      |
| 4       | +5V         | 16      | PS_ON#   |
| 5       | COM         | 17      | COM      |
| 6       | +5V         | 18      | COM      |
| 7       | COM         | 19      | COM      |
| 8       | PWR_OK      | 20      | N.C.     |
| 9       | +5VSB       | 21      | +5V      |
| 10      | +12V        | 22      | +5V      |
| 11      | +12V        | 23      | +5V      |
| 12      | +3.3V       | 24      | COM      |

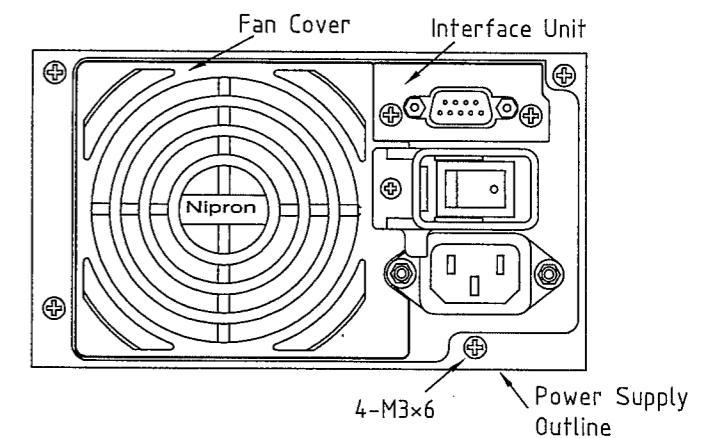
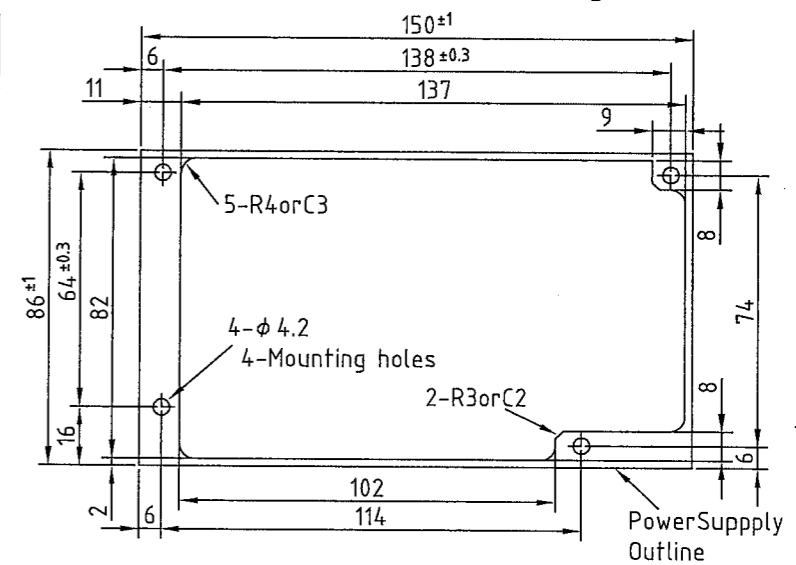
| 12V     |          |
|---------|----------|
| PIN No. | FUNCTION |
| 1       | COM      |
| 2       | COM      |
| 3       | COM      |
| 4       | COM      |
| 5       | +12V     |
| 6       | +12V     |
| 7       | +12V     |
| 8       | +12V     |

| HD      |          |
|---------|----------|
| PIN No. | FUNCTION |
| 1       | +3.3V    |
| 2       | +5V      |
| 3       | COM      |
| 4       | COM      |
| 5       | +12V     |
| 6       | +3.3V    |
| 7       | +5V      |
| 8       | COM      |
| 9       | COM      |
| 10      | +12V     |

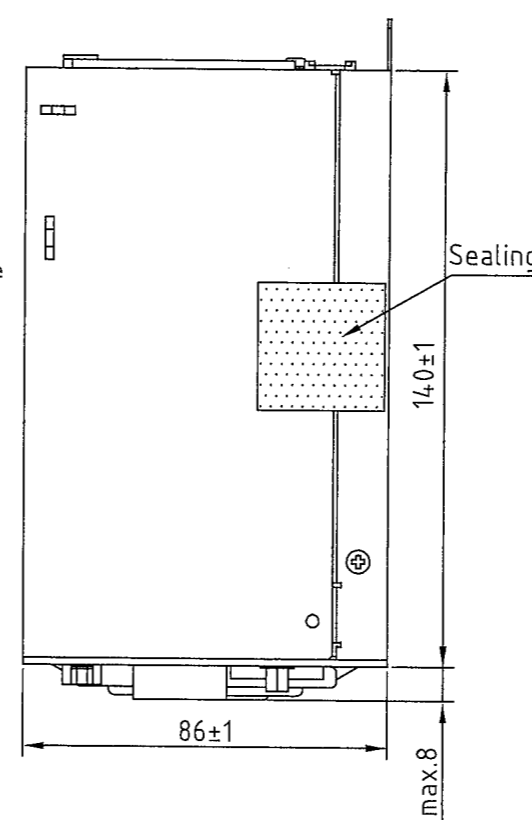
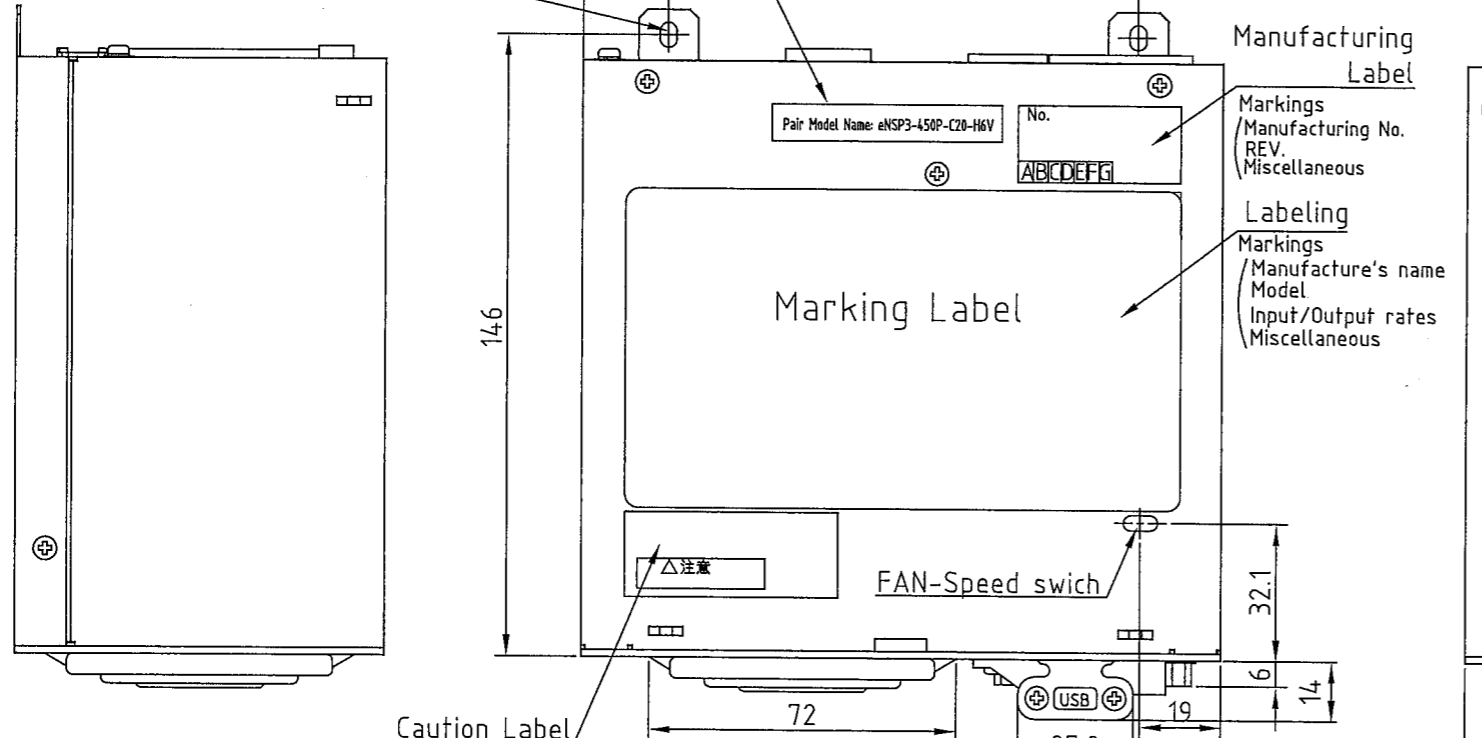
| SIG     |             |
|---------|-------------|
| PIN No. | FUNCTION    |
| 1       | AC FAIL_T   |
| 2       | SHUT DOWN_T |
| 3       | BATT LOW_T  |
| 4       | N.C.        |
| 5       | FAN M       |
| 6       | PS_ON#      |
| 7       | COM         |
| 8       | +3.3V SENSE |
| 9       | N.C.        |
| 10      | +5VSB       |

| BATT    |              |
|---------|--------------|
| PIN No. | FUNCTION     |
| 1       | BATT +       |
| 2       | CHARGE CONT. |
| 3       | BATT -       |

Recommended a installation hole and 4 mounting holes



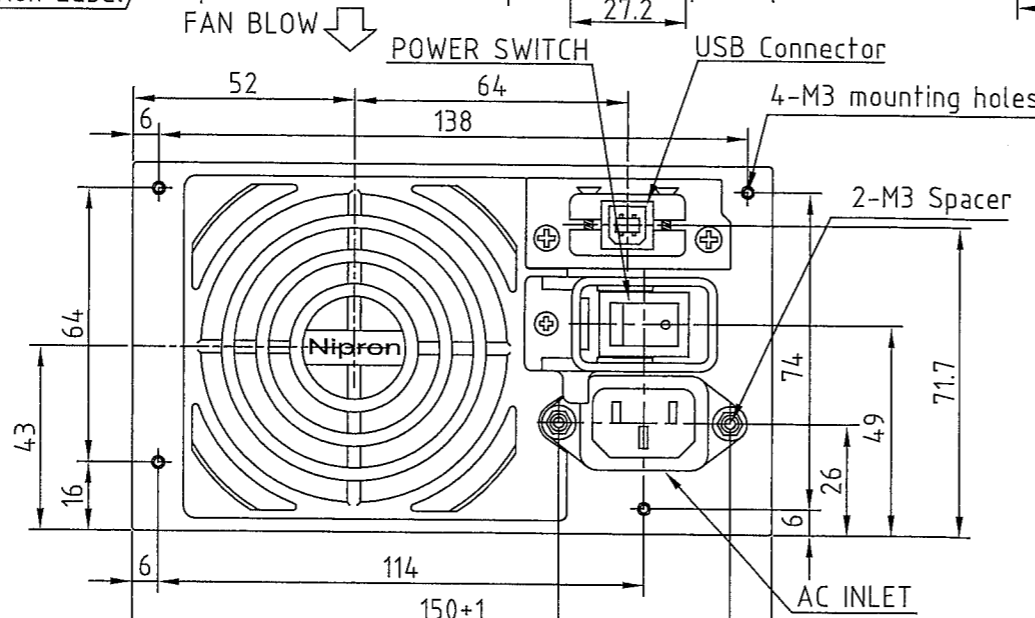
Installation hole and mounting screw holes(4pcs) are required, if replacement of a fan and to add or replace interface unit are necessary under the installed power supply on the personal computer case.



| USB     |          |
|---------|----------|
| PIN No. | FUNCTION |
| 1       | VBUS     |
| 2       | D-       |
| 3       | D+       |
| 4       | COM      |



| NAME          | TYPE                             |
|---------------|----------------------------------|
| AC INLET      | IEC320_Standard type             |
| POWER SWITCH  | A8L-21-12N2(OMRON) or equivalent |
| FAN           | DC12V 80□                        |
| USB connector | B type connector                 |



※ Tolerance ±0.5 unless otherwise noted.

|          |            |            |             |                      |           |             |                    |
|----------|------------|------------|-------------|----------------------|-----------|-------------|--------------------|
| DRAWN BY | CHECKED BY | CHECKED BY | APPROVED BY | SCALE                | MATERIALS | TITLE       | eNSP3-450P-C20-H6V |
| Nakagawa | Ishibashi  | Yamada     | Yamamoto    | UNITS m/m            | FINISH    |             |                    |
| ISSUED   | 2018.12.03 |            |             | 3RD ANGLE PROJECTION |           | DRAWING NO. | 3264-01-3-550      |