Product Specifications

made on March 18, 2015

The specifications are for eNSP-300P-L20-1*S, which consists of Power supply eNSP-300P-L20-00S, Nonstop unit BU-300P-24P, and Interface unit .
eNSP-300P-L20-1*S with battery pack supplies DC output to the load at even AC black out.
*1 is for nonstop unit BU-300P-24P.
*2 is for interface unit SU-RS.
*3 is for interface unit SU-BU.
*4 is for interface unit SU-US2.

General specifications (As specified at normal temperature and humidity, unless otherwise noted.)

	Item	Specifications	Measuring conditions, etc.
AC input	Rated input voltage	AC100 – 240V	Wide range
	Input voltage range	AC85 – 264V	
	Rated frequency	50 / 60 Hz	Range 47 – 63Hz
	Inrush current	50A peak or less (AC 100V), 100A peak or less (AC 240V)	At rated output and cold start
	Input	330VA or less	At rated input, at continuous and maximum output
		495VA or less	At rated input, at peak output
	Efficiency	68% typ(AC100V), 71% typ(AC240V)	At rated outputs
	Power factor	98% typ(AC100V), 92% typ(AC240V)	
*1 DC input	Rated input voltage	DC24V	Rated input voltage of nonstop unit BU-300P-24P
	Over discharge Voltage	19V typ (Battery circuit shut down)	BU-300P-24P cuts battery line off at this voltage.
	Efficiency	67% typ	Efficiency in nonstop unit BU-300P-24P at rated in/output

Remark

About the model name of eNSP-300 series.

eNSP-300P-L20-**S
①②

① Nonstop unit : "0" without nonstop unit "1"with nonstop unit(BU-300P-24P)
② Interface unit: "0" without interface unit
"1"with RS-232C interface unit (SU-RS)
"2"with buzzer interface unit (SU-BU)
"6"with USB interface unit (SU-US2)

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Drawn by	Checked by	Approved by	Model No.	Drawing No.
Yodo	Ishibashi	Yamamoto	eNSP-300P-L20-**S (** : 00,10,11,12,16)	2722-19-4-520 1/9

Product Specifications made on March 18, 2015

	Item	Specifications	Measuring conditions, etc.
Environmental specifications	Room temperature	0 – 50℃	Except battery pack. Temperature gradient 15℃/H. Output power is derated from 100% to 60% according to temperature from 40 ℃ to 50℃.
	Storage temperature	-25 – 70℃	Temperature gradient 15℃/H
	Relative humidity	Operating 10 – 90%, Non operating 10 – 95%	No condensation
	Vibration	At amplitude 0.15mm, frequency 10 – 55Hz, sweep cycle 10, to be endurable for 45 minutes to the each direction of X, Y, and Z.	JIS-C-60068-2-6 (JIS-C-0040-1995)
	Shock	At acceleration 150m/s^2, shock-affecting time 11ms, shock is given one time to the each direction of X, Y and Z. No malfunction, damage, slacks, dislocations are seen.	JIS-C-60068-2-27 (JIS-C-0041-1995)
Insulation	Dielectric strength	Between AC input and connected FG, DC output and DC input: AC 1.5kV/minute.	
	Insulation resistance	Between AC input and connected FG, DC output and DC input: 50MΩ or more.	DC 500V
	Leak current	0.5mA or less (AC100V)/1mA or less (AC240V)	YEW. TYPE3226 or equivalent(1kΩ)
Others	Line noise immunity	Impulse: ±2kV, Cycle: 10-50ms (Pulse width 100ns, 800ns)	Meet output specification and no faulty operation (*4) with interface unit SU-US2,Impulse:±1.5kV.
	Surge immunity	±2kV common mode (L-FG, N-FG) ,±2kV normal mode(L-N)shall be surged 5 times for each, at 0°, 90°, and 270° respectively not to cause failure.	Conforms to IEC-61000-4-5
	Conducted and radiated emissions	Meet VCCI class B, FCC class B, EN55022 class B	Measured for power supply unit only, at rated output
	Harmonic correction	Meet IEC61000-3-2 class D, EN61000-3-2 class D	At rated input and output
	Safety standard	UL60950, CSA C22.2 No.60950 EN60950	Approved
	Cooling system	Forced air cooling (Temperature sensing type variable-speed fan motor built in the power supply)	Revolution of fan motor varies upon temperature and load. When PS_ON# is "H", the fan speed is low. (*1) An alarm signal output when the Fan motor stops.
	Product quality grade	Industrial use (FA)	
	Warranty period	Three year guarantee after delivery. Repair or replacement at no cost when defect is found due to the manufacture's fault.	To be used at normal condition
Remark			

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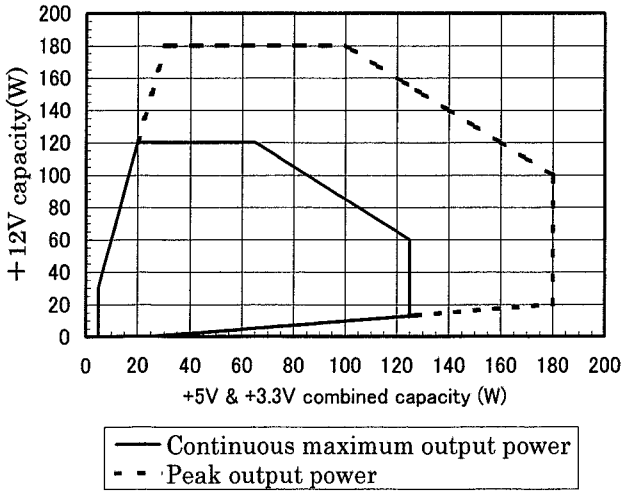
Drawn by	Checked by	Approved by	Model No.	Drawing No.
Yodo	*Ishibashi*	*Yamamoto*	eNSP-300P-L20-**S (** : 00,10,11,12,16)	2722-19-4-520

Output specifications (As specified at normal temperature and humidity, unless otherwise noted.)

Item			CH1	CH2	CH3	CH4	CH5	CH6 (5VS)	Measuring conditions, etc.
Output rating	Rated voltage (V)		5	3.3	12	-5	-12	5	
	Minimum current (A)		1	0	0	0	0	0	Required minimum load
	Continuous maximum rating	Rating: Rated current(A)	14	9.4	7	0.3	0.8	1.5	Total rated output power 203.6W
		Rating: Rated output power(W)	70	31	84	1.5	9.6	7.5	
		Maximum current(A)	21	14	10	0.3	0.8	1.5	Total rated output power 203.6W (Note) Output power distribution is shown as follows.
		Maximum output power(W)	125 or less		120 or less	1.5	9.6	7.5	
			185						
	Peak output power	Peak current(A)	30	28	15	0.3	0.8	2.5	Total peak output power 303.6W within 5 seconds, and interval of 3 minutes or more. For backup operation, the specified battery pack for 300W is used, and battery voltage should be more than DC20V for the battery operation. (Note) Cross distribution of output power carries out as follows.
		Peak output power(W)	180 or less		180 or less	1.5	9.6	12.5	
			280						

Cross distribution of output power

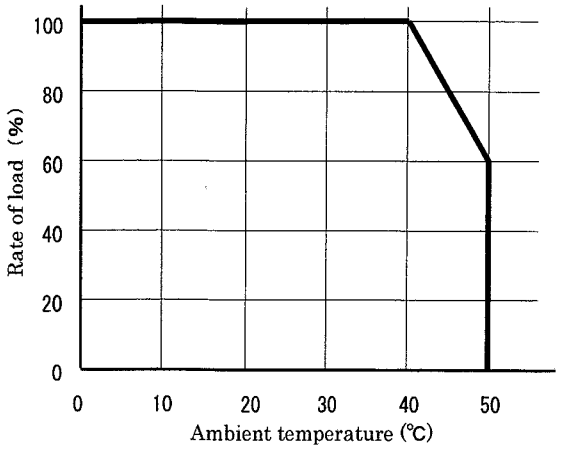
Following chart shows the cross distribution of output power between the sum of +5V & +3.3V and +12V.



Output power distribution chart

Output rating to ambient temperature

In case of exceeding 40℃ at ambient temperature (at air inlet), output power should be derated as shown below.



Output current and output power rating chart

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Drawn by	Checked by	Approved by	Model No.	Drawing No.
Yodo	Ishibashi	Yamamoto	eNSP-300P-L20-**S (** : 00,10,11,12,16)	2722-19-4-520

Product Specifications

made on March 18, 2015

Item			CH1	CH2	CH3	CH4	CH5	CH6 (5VS)	Measuring conditions, etc.
Output characteristics	Set voltage at shipping	Voltage (V)	5.05	3.3	12.0	-5.0	-12.0	5.0	At AC100V input (3-terminal-regulator is used each for -5V, -12V, and 5VS output)
		Accuracy(%)	±1	±1	—	—	—	—	
		Current(A)	Rated current						
	Regulation(%)		±4 or less	±4 or less	±10 or less	±5 or less	±5 or less	±5 or less	Total of the regulations under full range of temperature, input and load conditions, and also under the distribution chart.
	Maximum ripple voltage (mV_{p-p})		50 or less	50 or less	150 or less	50 or less	100 or less	50 or less	Lead wire is connected to the output connectors and measured with 47uF across the measurement points.
	Maximum spike voltage (mV_{p-p})		100 or less	100 or less	200 or less	100 or less	200 or less	100 or less	
	Dynamic load fluctuation (mV)		100 or less	100 or less	—	—	—	—	+12V output only varies from 50% to 100% of peak load and others are rated load.
	Over current protection(A)		37 or more	32.5 or more	16 or more	105% or more of the peak current			If one of O.C.P on CH1, 2, &3 works, all outputs except CH6 stop. (*1)For backup operation, if one of O.C.P on CH1, 2, &3 works, all outputs stop.
	Recovery		Recovery is made by resupplying AC or PS_ON# signal to "H" →"L". (*1) Note that recovery from backup operation is made by resupplying AC only.			Auto-recovery			(*1) Regarding CH6 at the backup operation, it recovers by resupplying AC.
	Over voltage protection(V)		5.74 – 7.0	3.76 – 4.3	13.4 – 15.6	—	—	—	Recovery is made by resupplying AC or PS_ON# signal to "H". (*1) Note that recovery from backup operation is made by resupplying AC only.
	Rise time		Within 100ms						Rise time is from 10% to 90% of output.
	(*1) Charge voltage		27.3V typ (Full of charge with temperature compensation at 25℃)						The charge is made through Backup unit (BU-300P-24P) to specified battery pack (Lead acid battery) at AC input operation.
	(*1) Charge current		0.5±0.2A (Battery voltage at 24V)						

Remark

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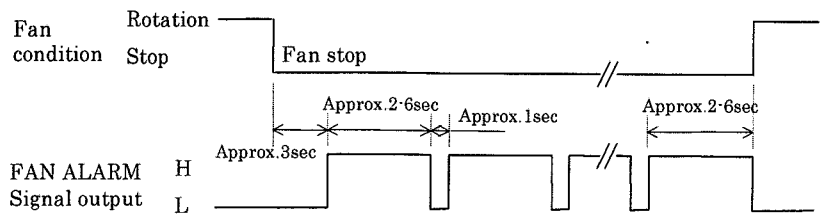
Drawn by	Checked by	Approved by	Model No.	Drawing No.
Yodo	*Ishibashi*	*Yamamoto*	eNSP-300P-L20-**S (** : 00,10,11,12,16)	2722-19-4-520

Signal input/output specifications (As specified at normal temperature and humidity, unless otherwise noted.)

	Item	Specifications
Input signal	Output ON/OFF control (PS_ON#)	At the "H" or "Open", CH1 – 5 outputs stop. (*1) Battery does not supply at "H" or "Open" signal at battery backup operation.
	+3.3V SENSE	Sensing terminal for +3.3V. It compensates line drop by connecting to load.
	(*1) Battery shut down signal (TTL level)(SHUT DOWN_T)	Battery does not supply at "L". (need for 15ms or more) (It is for battery backup operation only.)
	(*1+*2) Battery shut down signal for RS232C (SHUT DOWN_R)	Battery does not supply at +2.4V or more. (need for 15ms) (It is for battery backup operation only.)
Output signal	+5VS	PS_ON# signal is nothing related with AC operation. (*1) At the backup operation, It stops when a PS_ON# signal is "H" or "OPEN". (*1) When AC input stops, +5VS stops at "H" or "open" of PS_ON# signal.
	Output OK signal (PWR_OK)	When CH1 (+5V) output is normal, it is "H". (Detect delay time: 200 – 400ms)
	(*1) AC failure signal (TTL level) (AC FAIL_T)	When AC input is too low or failure, it is "H". (Detecting time is 20 – 500ms which is depends upon output power.)
	(*1+*2) AC failure signal for RS232C (AC FAIL_R)	When AC input is too low or failure, it outputs -9V(typ). (Detecting time is 20 – 500ms which is depends upon output power.)
	(*1+*4) AC failure detection signal for USB (AC FAIL_U)	Data signal equivalent to 'Negative' of AC FAIL_R signal is delivered at low AC input or power failure detection (Detecting time is 20 – 500ms which is depends upon output power.)
	(*1) Battery low signal(TTL level) (BATT LOW_T)	When battery voltage is lower than 20V(typ), it outputs "H". (If the battery pack is not connected to the backup unit, it outputs "L".)
	(*1+*2) Battery low signal for RS232C (BATT LOW_R)	When battery voltage is lower than 20V(typ), it outputs –9V(typ). (If the battery pack is not connected to the backup unit, it outputs +9V(typ).)
	(*1+*4) Low battery voltage signal for USB (BATT LOW_U)	Data signal equivalent to 'Negative' of BATT LOW_R signal is delivered when battery voltage falls down to 20V typ. (Data signal equivalent to 'Positive' of BATT LOW_R signal is delivered when battery pack is not connected)
	(*1) Fan alarm signal (FAN ALARM)	When a fan stops, it outputs signal as shown below. 
	(*1+*3) Buzzer sound	Buzzer goes off at power failure (Sound level is adjustable by a variable resistor) Note: Buzzer may go off for several seconds at AC power-on and AC power-off

Remark

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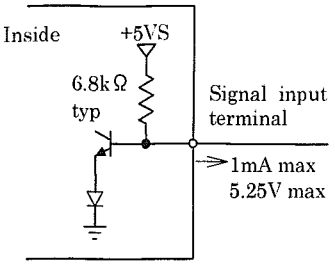
Drawn by	Checked by	Approved by	Model No.	Drawing No.
Yodo	*Ishibashi*	*Yamamoto*	eNSP-300P-L20-**S (** : 00,10,11,12,16)	2722-19-4-520 5/9

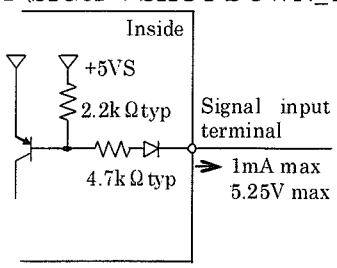
Signal input circuit (MA20P,SIG6P)

(MA20P : PS_ON#)



("L"≦0.8V, 2.0V≦"H")

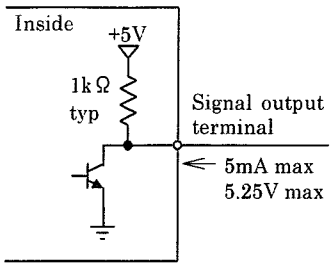
*1 (SIG6P : SHUT DOWN_T)



("L"≦0.4V, 2.4V≦"H")

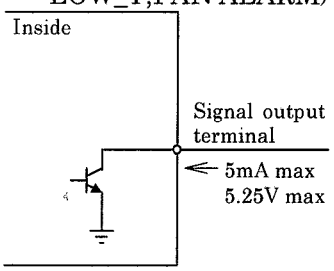
Signal output circuit MA20P,SIG6P,SIG2P)

(MA20P : PWR_OK)



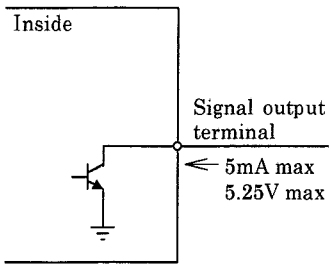
("L"<0.4V)

*1(SIG6PAC FAIL_T,BATT LOW_T,FAN ALARM)



("L"<0.4V)

(SIG2P : FAN ALARM)



("L"<0.4V)

Sequence signal pin assignment

CN No.	Pin No.	Cable color	Signal
MA20P	8	Gray	PWR_OK
	9	Purple	+5VS
	13	Brown	+3.3V SENSE
	16	Green	PS_ON#
SIG6P	1	Black	COM
	2	Yellow	SHUT DOWN_T
	3	Blue	AC FAIL_T
	4	White	BATT LOW_T
	5	—	NC
	6	Purple	FAN ALARM
SIG2P	1	Black	COM
	2	Purple	FAN ALARM
DSUB	1	——	BATT LOW_R
	4	——	SHUT DOWN_R
	8	——	AC FAIL_R
USB	USB1.1 compliant (B type connector)		

・DSUB signal level is compatible with the ADM232AARN(Analog Devices).
・GND is common to power output GND.

Remark

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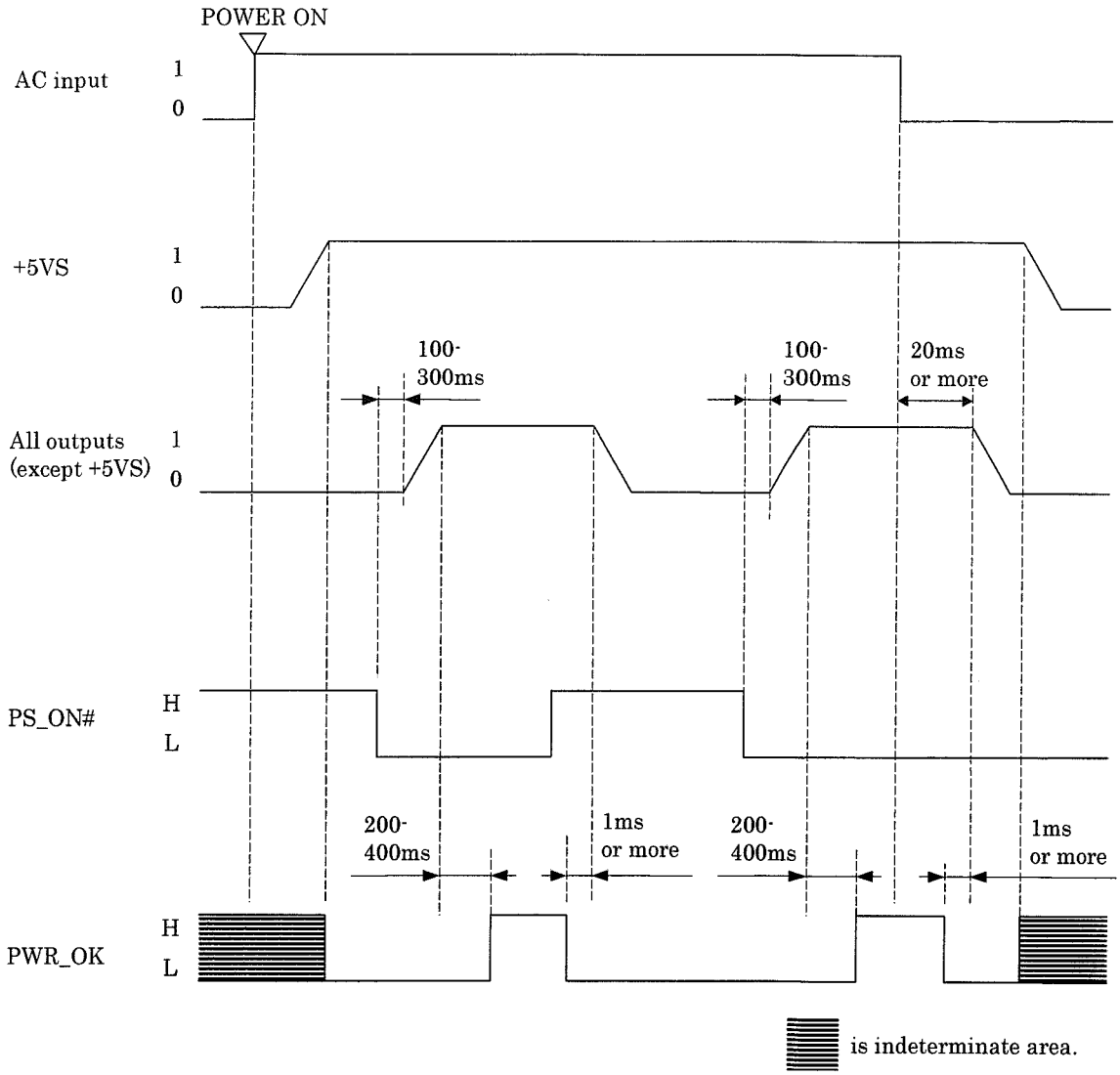
Yodo	*Ishibashi*	*Yamamoto*	eNSP-300P-L20-**S (** : 00,10,11,12,16)	2722-19-4-520 6/9

Signal input/output specifications (As specified at normal temperature and humidity, unless otherwise noted.)

Signal input/output specifications (Without battery backup unit and battery pack)



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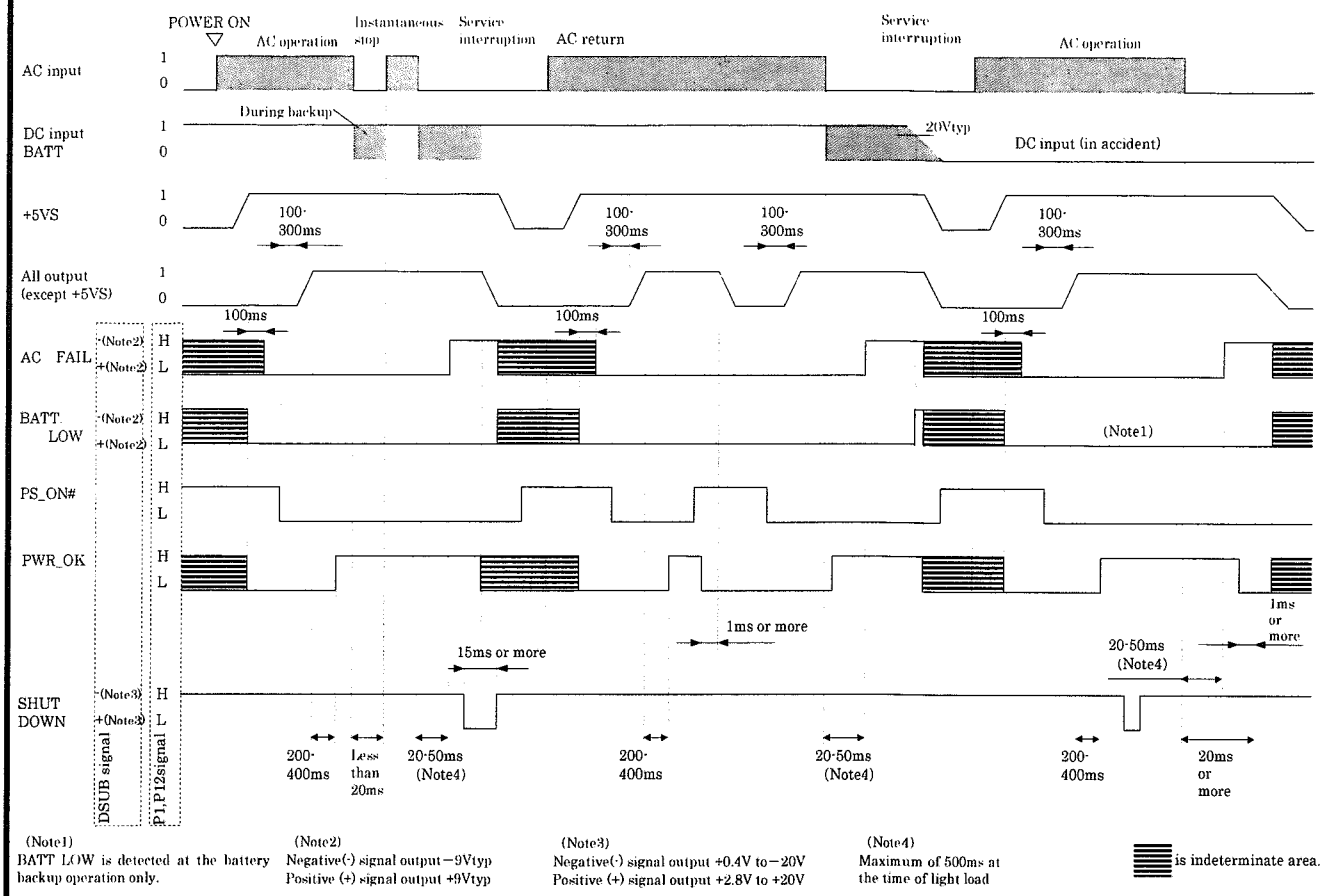
Yodo	*Ishibashi*	*Yamamoto*	eNSP-300P-L20-**S (** : 00,10,11,12,16)	2722-19-4-520 7/9

Signal input/output specifications (As specified at normal temperature and humidity, unless otherwise noted.)

(*1+*2)

Signal input/output specifications (With Backup unit BU-300P-24P, Signal interface unit SU-RS, and an exclusive battery pack)



(Note1) BATT LOW is detected at the battery backup operation only.

(Note2) Negative(-) signal output −9Vtyp, Positive (+) signal output +9Vtyp

(Note3) Negative(-) signal output +0.4V to −20V, Positive (+) signal output +2.8V to +20V

(Note4) Maximum of 500ms at the time of light load

is indeterminate area.

(The use of Windows 2000)

When UPS service and other service programs from Windows 2000 are used, Windows 2000 does not output SHUT DOWN signal to the power supply for power supply shutdown after the OS of PC closed under backup operation. It is recommended for the use of Windows 2000 that the customer can make power supply shutdown by REMOTE OFF, under the backup operation, by using of APM (Advanced Power Management) or ACPI (Advanced Configuration and Power Interface: Auto-stop at OS closing) function.

In this case, it is recommended that a cable (PS2601-02 by Nipron) is used in order to avoid mis-operation by a signal from Windows 2000 when AC fails during the start of PC.

The cable (PS2601-02) uses pin #1 for BATT LOW and pin #8 for AC FAIL and the rest of pins except pin #4 for SHUT DOWN is no connection.

(Note)

At AC operation, the mis-operation does not occur because the power supply does not receive SHUT DOWN signal.

(*1+*4)

About PSU shutdown by USB after backup operation.

PSU shutdown after backup operation should be done by SHUT DOWN_T signal from SIG6P signal connector, or REMOTE_OFF using APM or ACPI function.

Note: This PSU does not support shutdown by USB.

Please do the operation test at your side before use.

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Notes on use

1. Grounding ⚠Warning
   This power supply unit is manufactured as Class I apparatus. The earth terminal has to be grounded by an appropriate method for the purpose of security.

2. Electric shock ⚠Warning
   This power supply unit is integrated type device. An appropriate method has to be taken at the installation to avoid the electric shock from the high voltage portion.

3. Output short-circuit ⚠Caution
   Short-circuit of the output terminal may cause the serious accident by the sparks due to the instantaneous discharge of the inside capacitors. It may affect the life of this power supply unit, too.

4. Input inrush current limit circuit ⚠Caution
   The power thermistor is used to limit the surge current into the input capacitor at AC input. Switch on again after 60 seconds or more time passed, because excessive surge current flows when AC input switch is on before the power thermistor get cool down.

5. Noise at the power ON/OFF
   Low frequency sound noise may occur at the power input and power ON/OFF by the PS-ON signal. This is due to the low frequency vibration at the transition of choke coil used for the countermeasure of high harmonic wave. It will not affect the characteristics and life of the power supply unit.

6. How to handle the output cables
   Do not take and move the power supply unit by catching the output cable only. To transport and to move, the main body of the power supply unit must be held.

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