

Revolution in Mechatronics Power Supply to change the world of Heavy Machinery and Inspection Machines

Special topics for All-in-one type system power supply

Nipron takes into account standardization of power supplies wherever possible. Standardization may bring extra function to specific needs resulting in higher cost. However, it seems to be harder nowadays to produce customized products to meet individual customers. Because building safety and stability in power supplies requires a lot of efforts and time for design development and evaluation test, and also safety standard acquisition requires much time and cost. So far, there have been many power supply manufactures in Japan for customized power supplies. They meet specific requirements with Japanese sensitive and ingenious characteristics. Today they face repeatedly restructuring in manufacturing industry (hard) and many are forced to step down from their business despite they have good ability to maintain reliability.


We, Nipron, reflecting those circumstances, develop basic models of standardization-oriented products that can be easily modified.

This special topics show you high power multi output power supply (600 ~ 750W) in this stream.

Nonstop type (with UPS function)

GNSP series

24V+ATX output

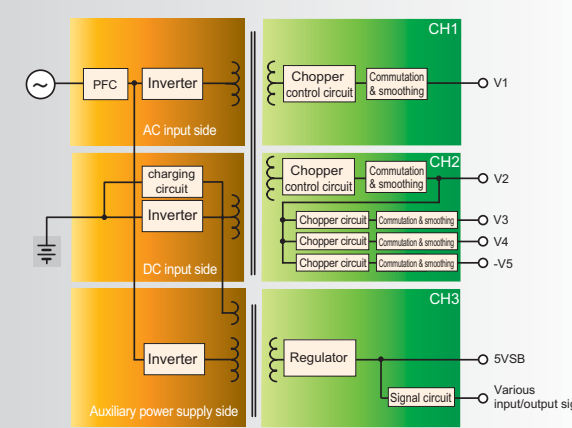


128 (3U)
82 (2U)
235

GNSP3-750-24X05
GNSP3-750-12X05

GNSP3-750-242405
GNSP3-750-241205
GNSP3-750-121205

[Ex.] GNSP3-750-24X05-TRP



AC input side: PFC, Inverter

DC input side: charging circuit, Inverter

Auxiliary power supply side: Inverter

CH1: Chopper control circuit, Commutation & smoothing (V1)


CH2: Chopper control circuit, Commutation & smoothing (V2, V3, V4, -V5)

CH3: Regulator (5VSB), Signal circuit (Various input/output signal)

General purpose type

GMX series

24V+ATX output

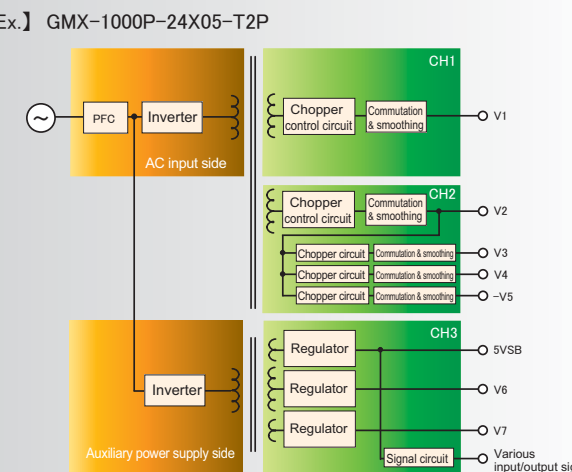


128 (3U)
82 (2U)
235

GMX-1000P-24X05
GMX-1000P-12X05

GMX-1000P-242405
GMX-1000P-241205
GMX-1000P-121205

[Ex.] GMX-1000P-24X05-T2P



AC input side: PFC, Inverter

DC input side: charging circuit, Inverter

Auxiliary power supply side: Inverter

CH1: Chopper control circuit, Commutation & smoothing (V1)

CH2: Chopper control circuit, Commutation & smoothing (V2, V3, V4, -V5)

CH3: Regulator (5VSB, V6, V7), Signal circuit (Various input/output signal)

Various lineup and customization support

<Note> Continuous output power for CH1 + CH2 is 708 to 720W, and 1080W for peak power.

No	CH1 Power output	CH2 Multi output	CH3 Auxiliary output	GNSP model name	GMX model name
1	+24V 15A (22.5A)	+3.3V 10A (20A) +5V 20A (30A) +12V 17A (40A)	-12V 0.3A +5VSB 1.5A 12/15V 8.4W 12/15V 6W	Negotiable	GMX-1000P-24X05-T2 (5) P
2	+24V 15A (22.5A)	+3.3V 10A (20A) +5V 20A (30A) +12V 17A (40A)	-12V 0.3A +5VSB 1.5A V6 V7	GNSP3-750-24X05-TRP	GMX-1000P-24X05-T0P
3	+12V 30A (45A)	+3.3V 10A (20A) +5V 20A (30A) +12V 17A (40A)	-12V 0.3A +5VSB 1.5A 12/15V 8.4W 12/15V 6W	Negotiable	GMX-1000P-12X05-T2 (5) P
4	+12V 30A (45A)	+3.3V 10A (20A) +5V 20A (30A) +12V 17A (40A)	-12V 0.3A +5VSB 1.5A V6 V7	GNSP3-750-12X05-TRP	GMX-1000P-12X05-T0P
5	Any value between +24 and 48V 360W (540W)	Any value between +3.3 and +12V 130W (150W)	Any value between +12 and +36V 230W (360W)	Negotiable	GMX-1000P-□-T2 (5) P
6	Any value between +24 and 48V 360W (540W)	Any value between +3.3 and +12V 130W (150W)	Any value between +12 and +36V 230W (360W)	GNSP3-750-□-TRP	GMX-1000P-□-T0P
7	Any value between +12 and 24V 360W (540W)	Any value between +3.3 and +12V 130W (150W)	Any value between +12 and +36V 230W (360W)	Negotiable	GMX-1000P-□-T2 (5) P
8	Any value between +12 and 24V 360W (540W)	Any value between +3.3 and +12V 130W (150W)	Any value between +12 and +36V 230W (360W)	GNSP3-750-□-TRP	GMX-1000P-□-T0P
9	+24V 15A (22.5A)	+24V 15A (22.5A)	Parallel connection with CH1 is available At parallel connection: 30A (45A)	GNSP3-750-242405-TRP	GMX-1000P-242405-T0P
10	+24V 15A (22.5A)	+12V 30A (45A)		GNSP3-750-241205-TRP	GMX-1000P-241205-T0P
11	+12V 30A (45A)	+12V 30A (45A)	Parallel connection with CH1 is available At parallel connection: 60A (90A)	GNSP3-750-121205-TRP	GMX-1000P-121205-T0P
12	Any value between +12 and 48V 360W (540W)	Any value between +15 and +36V 360W (540W)	+5VSB 1.5A 12/15V 8.4W 12/15V 6W	Negotiable	GMX-1000P-□-T2 (5) P
13	Any value between +12 and 48V 360W (540W)	Any value between +15 and +36V 360W (540W)	+5VSB 1.5A V6 V7	GNSP3-750-□-TRP	GMX-1000P-□-T0P

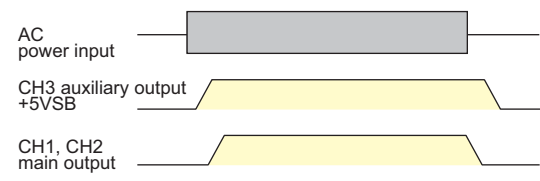
CH2 output

* Output combination is allowed such as single output, two outputs, three outputs and four outputs.
* () shows peak power for 5 seconds at the max.
Though continuous power rating is 360W, but approximately continuous 450W max can be obtained if CH1 output is reduced.

CH3 output

* +5VSB is synchronized with AC mains as standby output.
* Installed to all models as standard and continuous 15A load is available.
* Optional V6 and V7 are independent output and synchronized with +5VSB.

Rising and falling characteristics

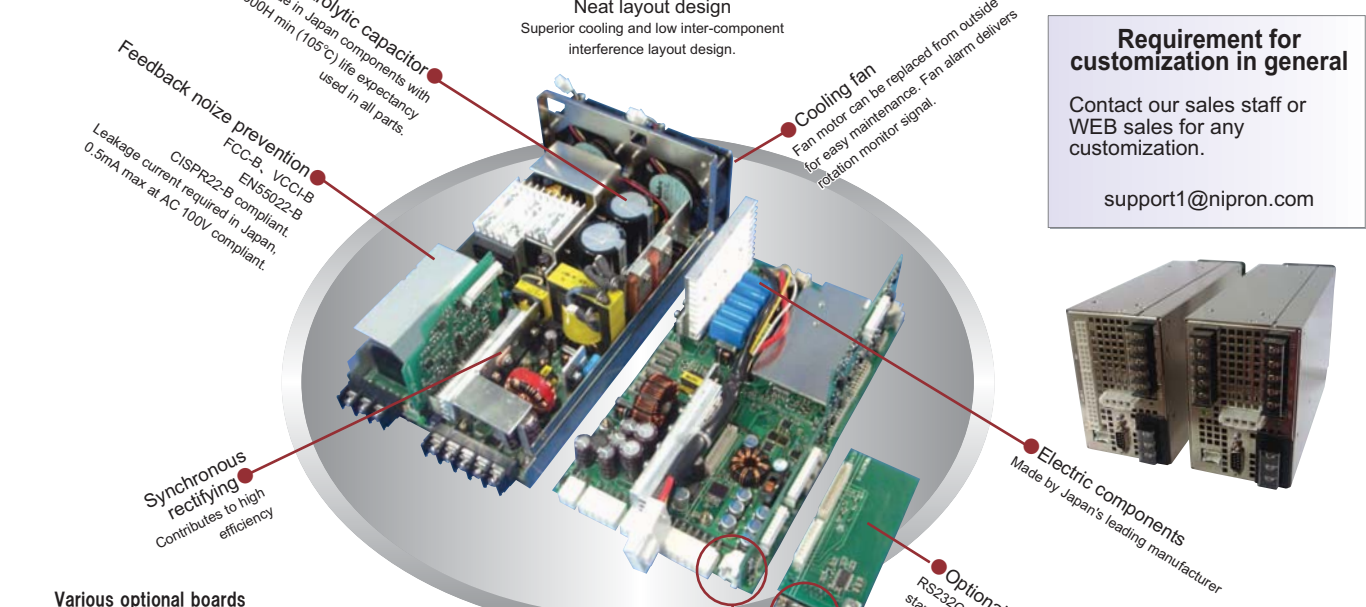


AC power input

CH3 auxiliary output +5VSB

CH1, CH2 main output

No. 1, 2, 3, 4, 9, 10, and 11 have been in the market. For No. 5, 6, 7, 8, 12, and 13, we are ready to hear your requirement to go ahead.



- Electrolytic capacitor:** Made in Japan components with 4,000h min (105°C) life expectancy used in all parts.
- Neat layout design:** Superior cooling and low inter-component interference layout design.
- Cooling fan:** Fan motor can be replaced from outside for easy maintenance. Fan alarm delivers rotation monitor signal.
- Requirement for customization in general:** Contact our sales staff or WEB sales for any customization. support1@nipron.com
- Electric components:** Made by Japan's leading manufacturer
- Synchronous rectifying:** Contributes to high efficiency
- Feedback noise prevention:** FCC-B, VCCI-B, EN55022-B, CISPR22-B compliant. Leakage current required in Japan, 0.5mA max at AC 100V compliant.
- Various optional boards:**
 - for GNSP, GMX Device server board
 - for GMX Auxiliary power supply
 - for GNSP RS232C board
- Optional PCB:** RS232C drive circuit is equipped as standard. USB communication or sequence change of rising can be customized according to your requirement.
- Backup control**
- Output sequence control**
- Automatic startup by scheduling**
- ON/OFF control working with the system**
- Independent small capacity power supply**
- Digital control with microcomputer**

Functions and Features

1. GNSP is Nonstop power supply

- Only with connecting to external 48V Lead battery, you can get Not-stop and uninterruptible power supply instead of UPS.
- No limitation of battery capacity (AH)
- New battery package, with the same dimension as power supply, equipping intelligence function in Ni-MH battery such as lifetime notice, scheduling, is under development.

2. Flexible to maximize power

- Load balancing terminals are equipped. (Fig. 1)

3. ATX + 24V or 12V output

- High power multiple outputs are on demand. (Fig. 2)

4. Independent two systems with high power

- Equipped with completely insulated two-system DC high power output (CH1, CH2) the outputs can be ON-OFF controlled by external signal individually.
- Multiple GNSP power supplies can be backed up by external battery in common use.
- For standard type, CH1 and CH2 output operate synchronously with AC mains activation.

5. RS232C type optional board

- This function is standard for GNSP power supplies.

6. Customization of optional boards

- Sequence timing of rising and falling of CH1 and CH2 can be set to customer's requirement by exclusive micro computer that is installed. (Fig. 4)
- Load of power output such as 24V can be shut down sequentially by control of external FET switch for effective use of backup time. (Fig. 5)
- Also we have another board which provides stabilized two (V1 and V2) DC small outputs (14.4W max.) isolated each other.
- **With a board installing device server, monitoring, communication, and control can be performed. (See following page.)**

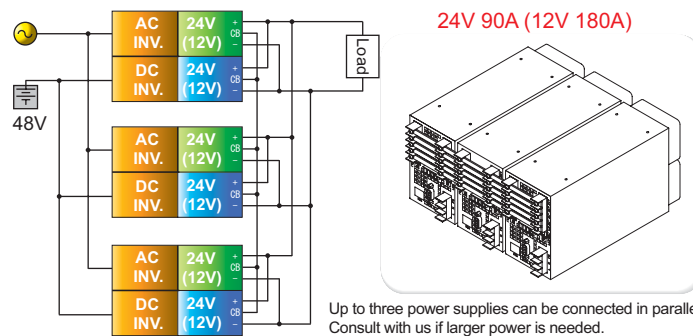
General Specification

Items	Specification	
AC Input	Rated voltage	AC100-240V (AC85~264V)
	Input frequency	50/60Hz (47-63Hz)
	Efficiency	80% typ (AC100V), 85% typ (AC240V) (At rated input/output)
	Power factor	96% min (AC100V), 90% 以上 (AC240V) (At rated in/out/output)
	Inrush current	31A peak(AC100V), 75A peak (AC240V) Within 5ms (At rated in/out/output and cold start 25°C)
Battery	Rated voltage	DC48V (Corresponds to dedicated battery package) (No battery startup)
	Battery discharge cut-off voltage	36V typ (Battery circuit shuts down)
	Efficiency (at battery operation)	80% typ (At rated input/output)
GNSP series only	At dedicated lead battery pack connected	Charging voltage 54V typ (At 25°C and full charge, with temperature compensating) Charging current 0.5±0.2A (At battery voltage 48V)
	Operating temperature/humidity	-10-70°C/10-90% (There shall be no condensation)
Environment	Storage temperature/humidity	-25-70°C/10-95% (There shall be no condensation)
	Vibration	Acceleration of 2G with vibration frequency of 10-55Hz for 10 sweep cycles in the X/Y/Z direction (JIS-C-60068-2-6, at no operation)
Mechanical shock		Lift one bottom edge up to 50mm and let it fall. Repeat three times for each of four edges. No malfunction. (JIS-C-60068-2-31, at no operation)
	Dielectric strength	AC input—DC input/DC output: AC3000V/min, AC input—FG: AC2000V/min DC output—FG: AC500V/min, +24V output—other outputs: AC500V/min
Insulation	Insulation resistance	AC input—FG/DC input/DC output: 50MΩ min, DC input—FG: 50MΩ min DC input—DC output: 50MΩ min, +24V output—other outputs: 50MΩ min (at DC500V)
	Leakage current	0.5mA max (AC100V)/1mA max (AC200V)/1.2mA max (AC240V)
EMC	Line noise immunity	±2000V (plus width 100ns and 1000ns, cycle period: 30-100Hz, normal and common mode with positive and negative polarities for 10 minutes each. (Measured by IEC61000-4-5))
	Electrostatic discharge	EN61000-4-2
	Radiated, radio-frequency EM field	EN61000-4-3
	Fast transient burst	EN61000-4-4
	Lightning surge	EN61000-4-5
	Conducted disturbances induced by radio-frequency	EN61000-4-6
	Power source frequency magnetic field	EN61000-4-8
	Voltage dip/regulation	EN61000-4-11
	Conducted emission	VCCI-B, FCC-B, EN55022-B, CISPR22-B (Measured with power supply single body)
	Harmonic current regulation	IEC61000-3-2 (At rated input/output)
Others	MTBF	46,000 H min (by EIAJ RCR-9102)
	Weight	3.0 kg typ
	Dimensions	82(W) × 128(H) × 235(W)

Flexible to maximize power

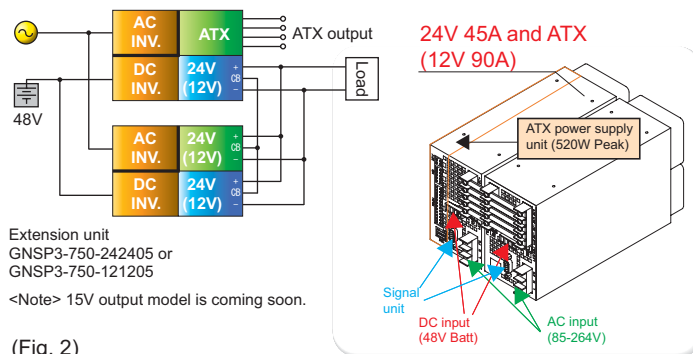
When power becomes short in single GNSP power supply, higher power can be available by parallel connection of each single power supply unit. In that case, make sure to connect current balancing terminals (CB) each other so that load current of each unit becomes balanced.

■ If single output, large capacity power supply is needed...



(Fig. 1)

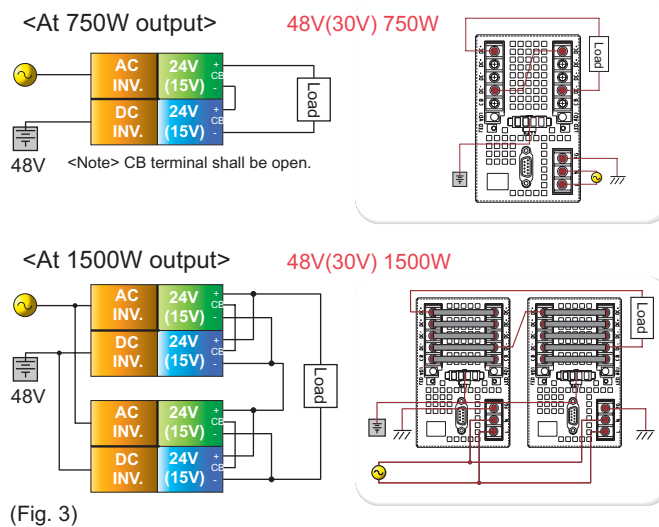
■ If large capacity of ATX power supply with 24V or 12V output is needed...



(Fig. 2)

■ If large capacity of power supply with 30V or 48V output is needed...

15V or 24V output is to be connected in series.

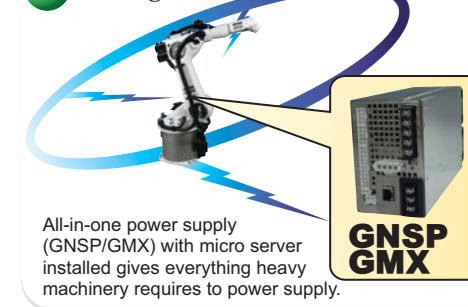


(Fig. 3)

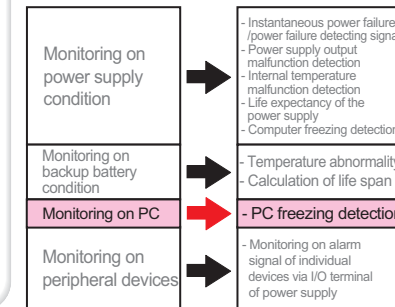
As network power supply

With a board installing device server, **Monitoring, Communication, and Control** can be performed.

Monitoring



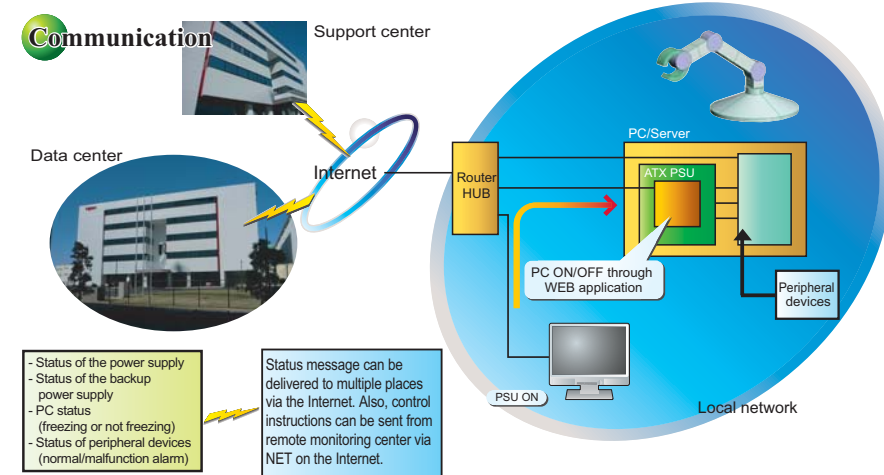
Remote monitoring



Monitoring freeze-up condition of specific PC, the power supply can be rebooted automatically or remotely to unfreeze the PC

■ Remote communication is available as the power supply works via the Internet.

Function of the power supply with micro server equipped

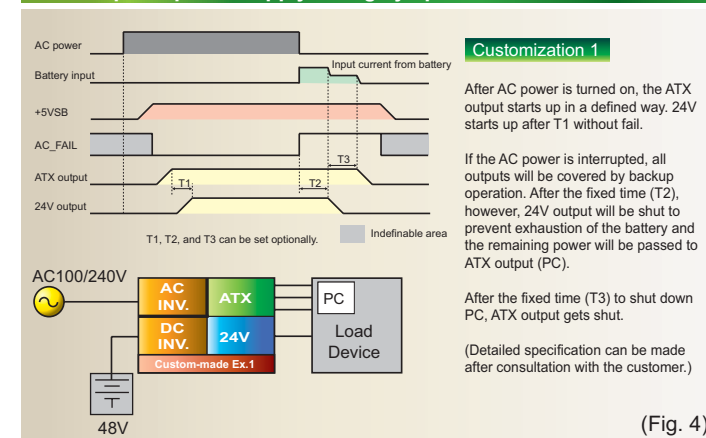


Intelligence battery package for GNSP is coming soon!

48V battery package (Ni-MH battery compatible with Lead battery) for GNSP is under development. This battery package is to be operated and controlled by Mi-Pack Manager (application software) already in the market. With connecting to the board which installs device server and to this package, you can operate heavy machinery and inspection devices according to scheduling. In addition, maintenance information can be sent to remote places using battery lifetime diagnostic function via the Internet.

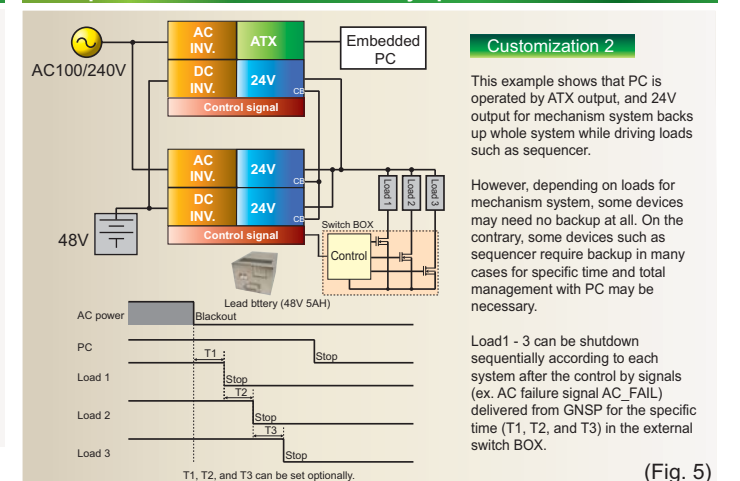


■ Example of power supply timing by optional board customization



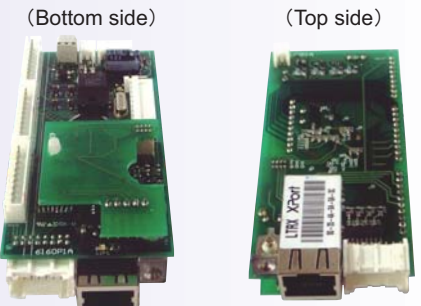
(Fig. 4)

■ Sequential shutdown of 24V loads by optional board customization



(Fig. 5)

7. Optional board built into device server



• Control from the distance

CH1 and CH2 outputs can be ON/OFF controlled and shut down individually from the distance via the Internet. To achieve this, special software for shutdown function must be installed in the PC. <Note> Protection such as Password authentication to prevent external illegal access is equipped.

• Monitoring information mail delivery

Monitoring information such as "Power supply status," "Presence of Freeze-up of PC," "Alarm information on peripheral devices," can be delivered by mail.

• Freeze-up monitoring and reset of PC

Freeze-up status of PC connected to GNSP or GMX power supply can be monitored and the status notice can be delivered to reboot the PC manually after confirmation from the distance. In addition, Automatic reboot is available depending on setting.

• Automatic shutdown by time at backup operation

The power supply can be shut down automatically by time when it reaches to the specific time during backup operation.

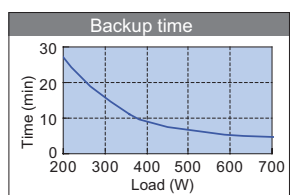
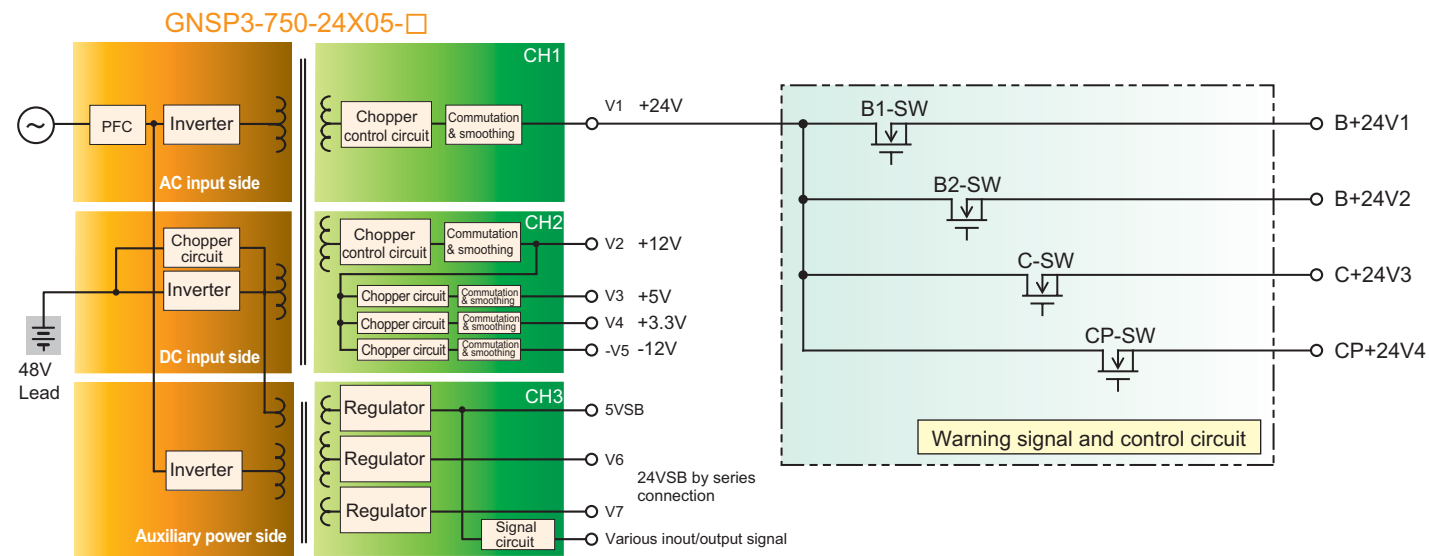
Application example: Power supply for ATM (Automatic Transaction Machine)

- Input specification: AC100V/200V, Prevention measures needed against harmonic current.
- Customer request specification

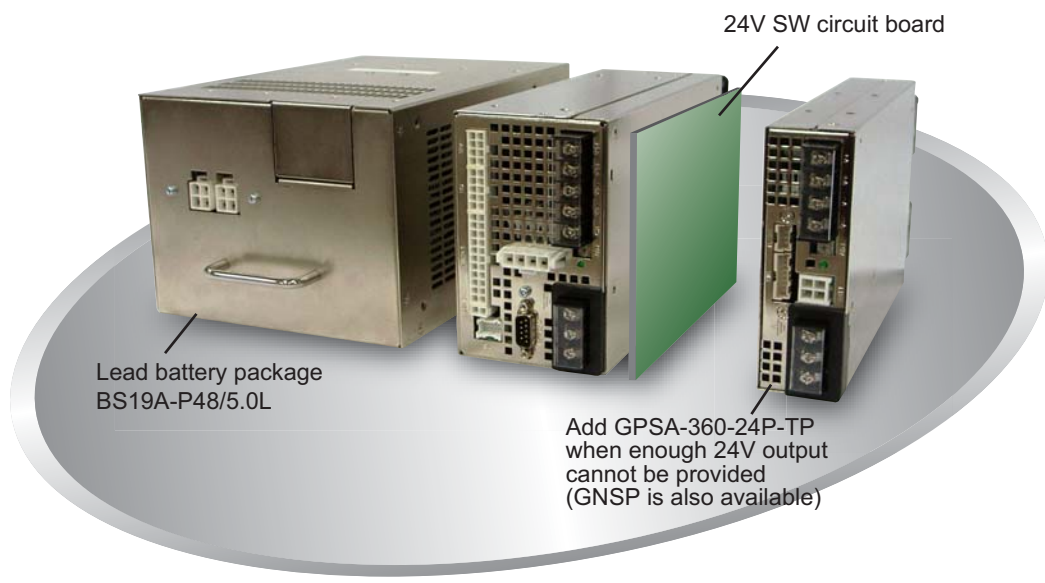
Output voltage	+5VSB	+24VSB	+3.3V	+5V	+12V	-12V	B+24V1	B+24V2	C+24V3	CP+24V4	Output capacity
Continuous (thermal average)	0.5A	18W	4A	10A	10A	0.03A	11A	1.5A	2A	2.5A	650W
Max output	0.5A	18W	4.5A	16A	14A	0.03A	25A	2A	2A	15A	1000W
Control signal	Always-output		Output by PS_ON				B signal ON	C signal	CP signal		

Nipron
GNSP3-750-24X05-□

Output voltage	CH3 auxiliary output			CH2 multi output			CH3 power output				Output capacity	
	+5VSB	+12V	+12V	+3.3V	+5V	+12V	-12V	+24V power output				
Cont. output	Rated	1.5A	8.4W	6W	10A	20A	17A	0.3A	15A (Peak 30A)			720W
	Thermal average of real road	0.5A	Series connection 24V 18W	4A	10A	10A	10A	0.03A	11A 1.5A 2A 2.5A			650W
	Peak	1.5A	24V 18W	10A	20A	17A	0.3A	25A 2A 2A 15A			1080W	
Control signal	Always-output		Output by PS_ON				B1-SW	B2-SW	C-SW	CP-SW		
During backup operation	Warning board backup 20W: 2 hours typ			Shutdown of ATX board (PC) 200W: 3 minits typ			All outputs 650W, backup 2 minutes					



(Image)



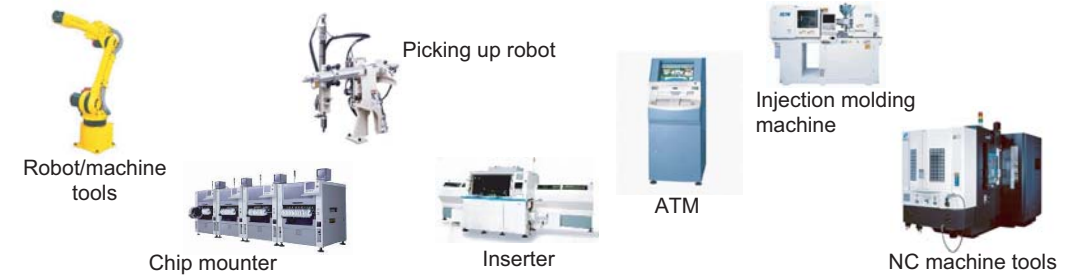
Give us any inquiry on power supply. Nipron Web Sales

<http://www.nipron.co.jp/>

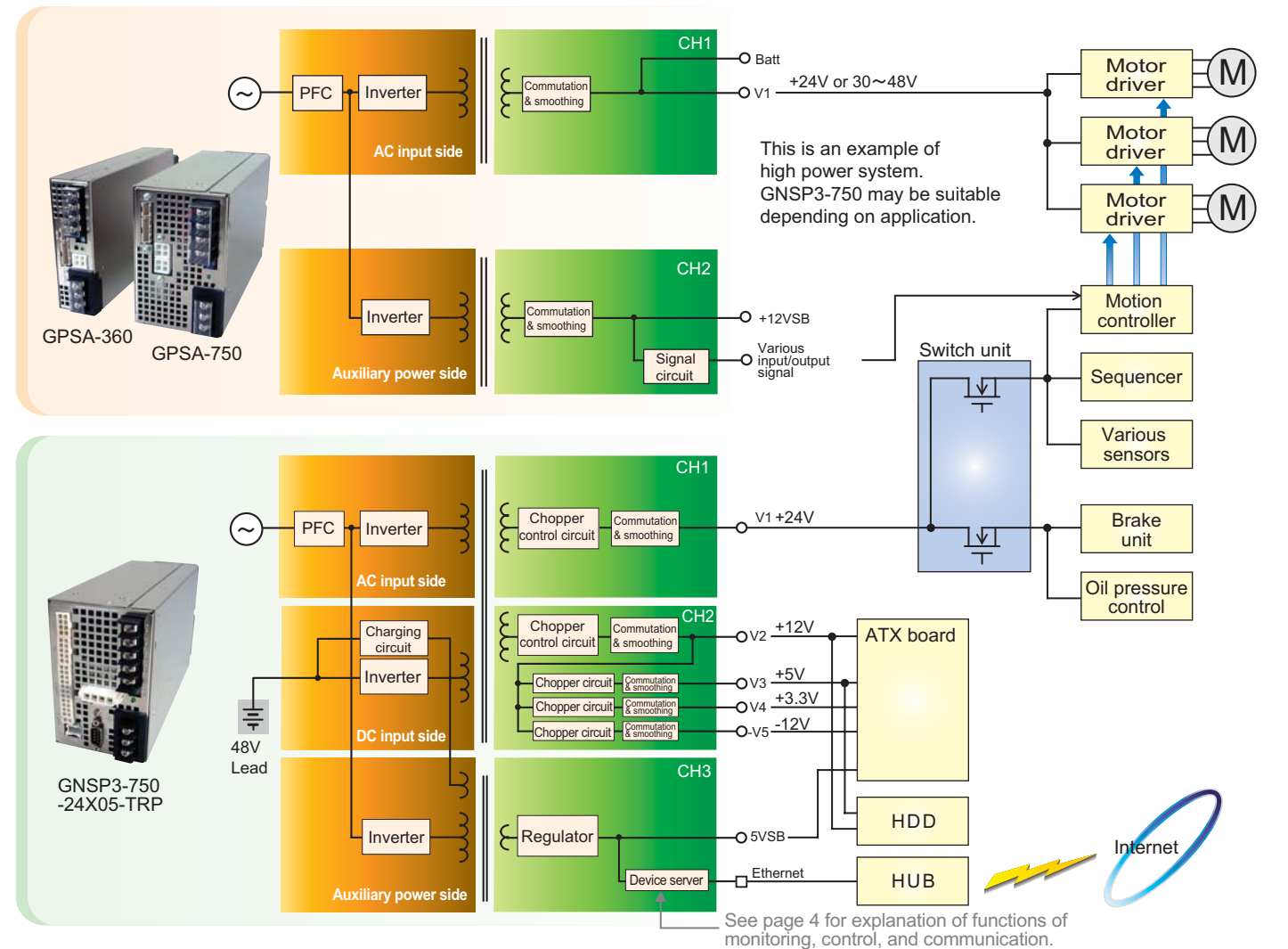
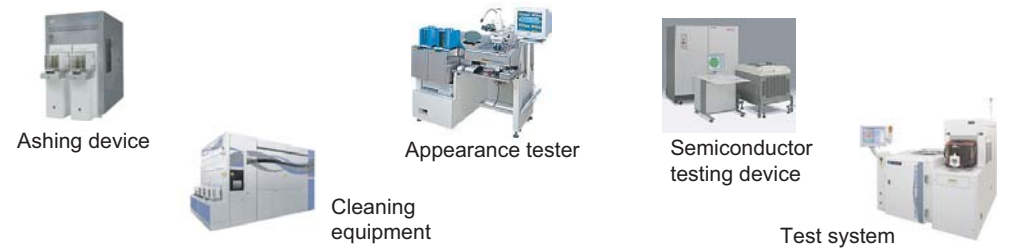
Application example: Power supply for Robot/Heavy machinery/Semiconductor Equipment/Inspection machine

Example of system power supply considering mutual interlock including blackout backup of power supplies used for each device

Robot/Heavy machinery



Semiconductor manufacturing/Inspection equipment

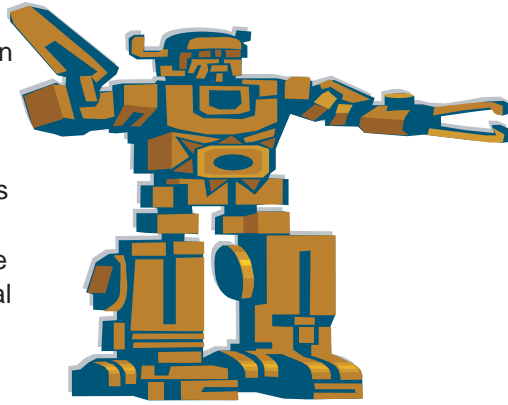


Most suitable power supply for your system will be advised. Nipron Web Sales

<http://www.nipron.co.jp/>

Application example: Power supply for machines that use multiple PCs

Occasionally one system uses three to five PCs such as robot. For example, one PC is used for robot eye (CCD camera) and image processing, and second PC is for sensing or I/O, and, others may be used for communication system or as upper server to manage information on whole robot system. For the system like this, whole PCs must be totally controlled to manage mutual interlock including start-up and shutdown procedure. For that case, our GNSP model, GNSP3-750-242405-TRP (two 24V outputs type) performs total management of power supplies in PC and main uninterruptible power supply function when used as below. Also, with device server which is one of optional boards equipped in this power supply, mutual communication with remote places such as monitoring, control, and communication can be proceeded via the network bringing considerable advantage for remote maintenance.



Example of three PCs and mechanism system (24V) are integrated

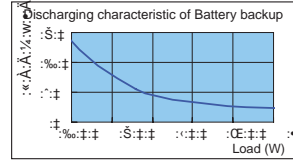
■ e l q n Q K U S N K P R P R N S K r p n

- CH1 output
24V 15A continuous (Peak 22.5A 5 sec)
- CH2 output (insulated perfectly from CH1)
24V 15A
+5VSB

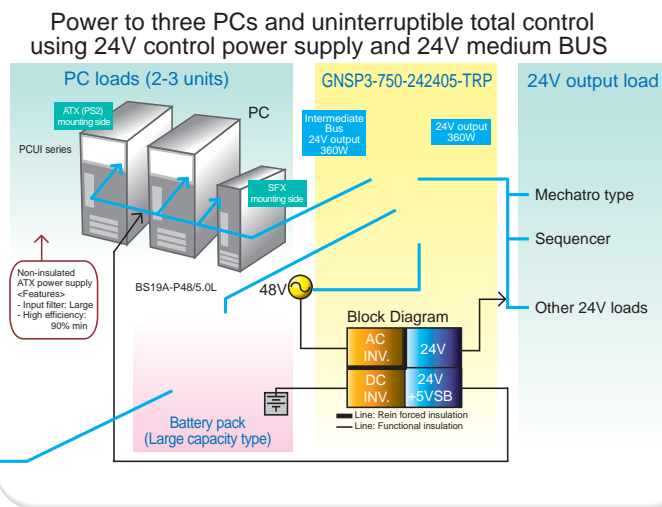
Under the circumstance of Non-stop power supply (uninterruptible power), total power management (total monitoring and control) on multiple PCs and mechanism system driven by 24V can be performed.

<<PCUI type ATX power supply as load of CH2>>

- Input DC24V (21.6~26.4V)
- Output
+3.3V 10Amax
+5V 10Amax
+12V 10Amax
-12V 0.3A
+5VSB 1A (Peak 2A)



This unit is non-isolated ATX power supply, but works without any problem in parallel connection of several PCs as input filter capacity is large.

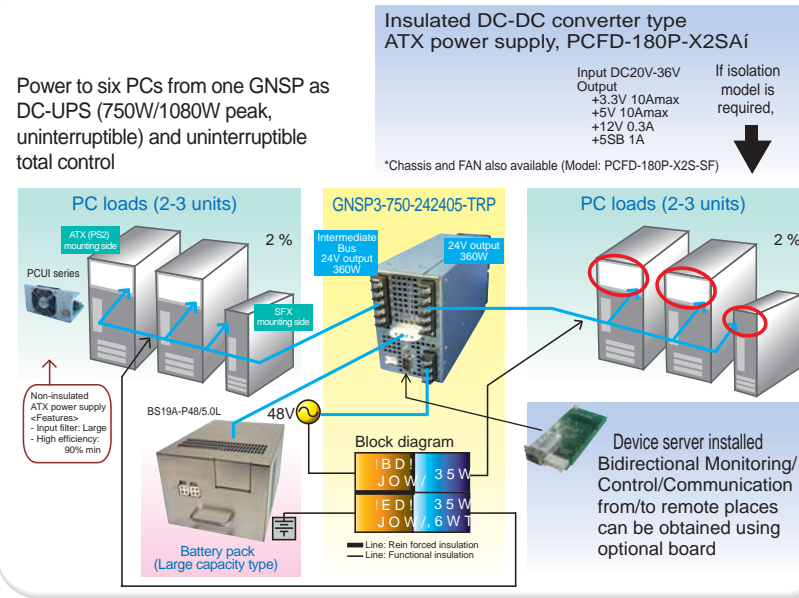
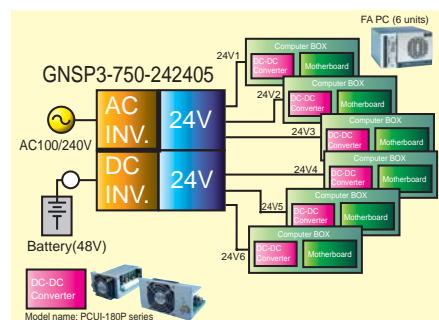


Example of two 24V power supplies control power supplies of six PCs and conduct backup operation at blackout

■ e l q n Q K U S N K P R P R N S K r p n

- CH1 output
24V 15A continuous (Peak 22.5A 5 sec)
- CH2 output (insulated perfectly from CH1)
24V 15A
+5VSB

(Note) Parallel operation of CH1 and CH2
Perfect balancing of Loads by connecting current balancing terminals



Check sheet for power supply specification selection

When modification in GNSP/GMX series is required, fill out this sheet and send a copy to the address below by fax or e-mail with the copy attached

To	Sales strategy group Nipron Co., Ltd. 1-3-30, Nishinagasu-cho, Amagasaki-city, Hyogo 660-0805, Japan Tel: 81-6-6487-0611	Company name			
		Person in charge	Name	Department	
FAX	+81-6-6487-2212	Contact info	TEL	FAX	
E-mail	support1@nipron.com	E-mail			

Confirmation of your specification		Answer
1	Input specification of the power supply is AC100/200V (85-264V, Worldwide input specification with PFC circuit).	@OKA@NG
2. Battery	(1) Do you need battery backup operation during power failure?	@YesAi@No
	(2) Battery pack type	<ul style="list-style-type: none"> Lead: <Standard product> BS19A-P48/5.0LB48V 5AHBé Prepare other battery pack at your (customer's) side. (There is no limit about 48V capacity) @Use this product @Yes Ni-HM (compatible type of Lead battery): <Under development> Ni-HM battery with "Mi-Pack" Manager" (application software) - Life span calculation, scheduling function, and communication are available. @Would like Nipron to develop this product in hurry @Consider the adoption of this product after being ready
3. Output	(1) Auxiliary power supply (standby) output +5V (1.5A) is equipped as standby output of standard function. Do you need other voltage of standby output? <Note> Except standard 5V standby output, 2 more standby outputs are available. (Use V6 and V7) *1 V6 and V7 are insulated and outputs in synchronization with 5VSB *2 Output capacities of V6 and V7 are: V6+V7=14.4W max	<ul style="list-style-type: none"> V6 output (8.4W) @12VBE7ABéAi@5VBE56ABéAi@Others BE C VAIC CA Bé V7 output (6W) @12VBE5ABéAi@5VBE4ABé @Others BE C VAIC CA Bé V6+V7 (in series) @24VBE5ABéAi@VBE4ABé @Others BE C VAIC CA Bé
	(2) CH1 power output - Voltage, continuous current, peak current, and peak output time <Note> Continuous rated output power of CH1 shall be 360W max (peak 540W), but able to take continuous 450W typ max if CH2 outputs lower power. Total continuous output power of CH1 and CH2 shall be 708W - 720W.	@12VAi@15VAi@24V @30VAi@48VAi@Others (C C VBé Current (Continuous C C AAPeak C C AC C S)
	(3) CH2 multi output <Note> Able to choose output type from single output, 2 outputs, 3 outputs, and 4 outputs. Continuous rated output power shall be 360W max, but able to take continuous 450W typ max if CH1 outputs lower power.	<ul style="list-style-type: none"> 1st output @+3.3V (Continuous C C AAPeak C C A)Ai@Don't need 2nd output @+5V (Continuous C C AAPeak C C A)Ai@Don't need 3rd output @+12V (Continuous C C AAPeak C C A)Ai@Don't need 4th output @+12V (0.3A)Ai@Don't need Other outputs from 1st to 3rd output @Other (C C VAContinuous C C AAPeak C C A)
	(4) Extension unit (In case CH1 cannot provide enough power)	<ul style="list-style-type: none"> Do you need extension unit? @Yes (Add C C W)Ai@No If yes, do you need battery backup operation during power failure? @YesAi@No If no, use GPSA/OZP/Other power supply.
4. Optional function	(1) Do you need RS232C signal connector in order to shutdown PC at battery backup operation during power failure?	@YesAi@No
	(2) Would you like to take another method that is different from (1) at backup operation during power failure, for shutdown of each outputs and falling sequence? (Ex. Timer stop)	<ul style="list-style-type: none"> Customize of the optional board @NeedAi@Don't need Use the device server function @YesAi@No
	(3) Would you like to monitoring PC freezing and reset it? <Note> Optional board with built-in device server (GB-DS) is required.	<ul style="list-style-type: none"> Automatic recovery by internal setting of the power supply @NeedAi@Don't need Remote recovery from a distance @NeedAi@Don't need
	(4) Do you need functions as remote control, monitoring, abnormal notice, and so on? <Note> Optional board with built-in device server (GB-DS) is required for controlling from a distance.	<ul style="list-style-type: none"> Functions (@NeedAi@Don't need) @Remote on/off @Power failure detection @Abnormal power supply noticeAi@Monitoring internal temperature of the system @FAN rotating speed monitoringAi @Expectancy of life spanAi@Abnormal notice by e-mailAi (Number of e-mail addresses: C C)
	(5) Do you need rising/falling sequence of CH1/CH2 outputs? <Note> Customization of optional board is required. (Timer setting) - If you don't need them, use standard RS232C board. CH1/CH2 of standard product rises and falls in synchronization with AC input.	<ul style="list-style-type: none"> T1 C C C->C C ms T2 C C C->C C ms T3 C C C->C C ms
	(6) In order to use battery capacity efficiently, do you need sequentially disconnected sequence of CH1 output load? <Note> Customization of optional board and external switch are required.	<ul style="list-style-type: none"> T1 C C C->C C Bé T2 C C C->C C Bé T3 C C C->C C Bé
	(7) Do you need these functions provided by management software "Mi-Pack" Manager? - Calculation/notice of the Ni-HM battery life span - Scheduling operation	<ul style="list-style-type: none"> Would you like to ask Nipron to make external FET switch and PCB of the controller? @YesAi@No Calculation/ Notice of the battery life span @Need (@Calculation of battery life span @Notice)Ai@Don't need Scheduling operation @NeedAi@Don't need Notice function @NeedAi@Don't need
	(8) Information such as alarm signal from the component, which is not Nipron power supply and embedded in the same system, needs to be transformed to a distance via device server unit?	<ul style="list-style-type: none"> Unit names and signals you need (Able to accept max 4 I/O signals) 1. 2. 3. 4.
5. System/Others	(1) Would you like to ask Nipron to integrate some components into a case at Nipron side, such as extension power supply unit, battery pack, and switch controller? <Note> Dimensions of the power supply cannot be changed.	@YesAi@No
	(2) Do you need customization of output cable?	@YesAi@No
	(3) If you have any further request, please let us know.	

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