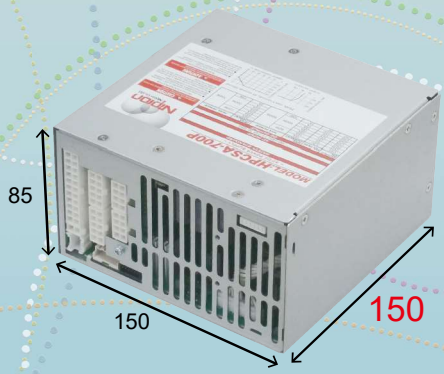
Industrial grade ATX power supply

HPCSA-700P series



Continuous: **600W** Peak: **700W**

A new ATX power supply HPCSA-700P is now available. HPCSA-700P is a large capacity, high efficiency ATX power supply unit with the maximum efficiency of 89%. Compared with Nipron' s 650 W power supply units, its depth is 30 mm shorter while the power capacity has been increased. In addition, the standby power consumption is held to 0.1 Wtyp, satisfying the ErP Directive. Also, there is a plan to introduce a variation with various features supporting IoT, enabling life expectancy prediction, operational status monitoring, etc.

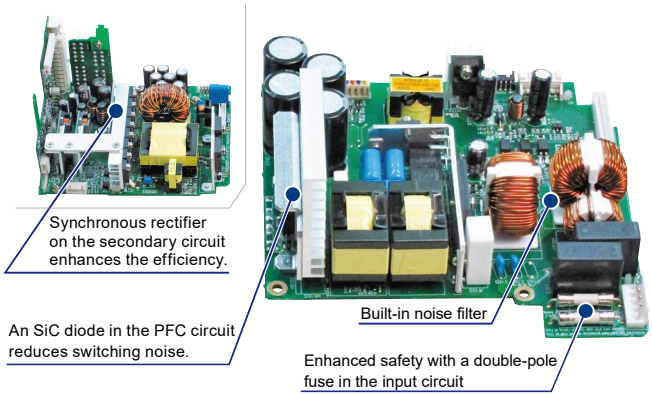
IoT compatible model will be in the lineup. Such matters are possible!

- ☐ *Forecast of life*
- ☐ *I²C communication function*
- ☐ *Variable setting function of overcurrent protection circuit*
- ☐ *Monitoring function*
- ☐ *Output voltage rising adjustment*

Outline of product

High quality and reliability

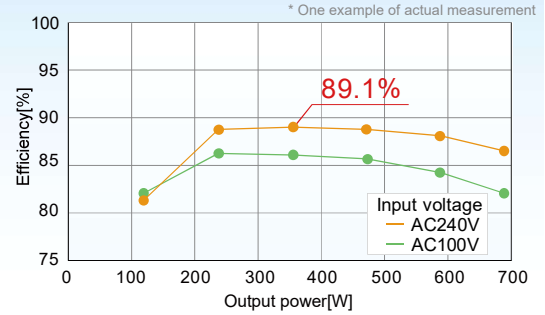
● Parts layout ensuring superior quality and high reliability



High-efficiency circuit reduces amount of heat generation

It achieves maximum efficiency of 89% typ. It reduces significantly power loss, minimizes power consumption during operation of equipment and contributes to mitigation of environmental load.

Efficiency graph

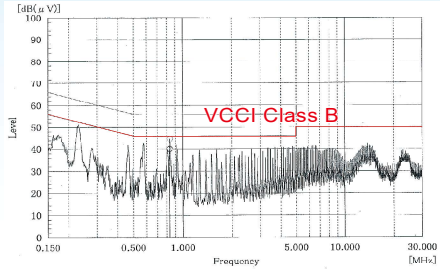


Low noise and low leakage current are offered

While reducing the leakage current, the conducted emission of even a single power supply unit clears the VCCI Class B regulation thanks to the enhanced noise filter circuit, optimization of parts layout, etc.It is not necessary to install an external noise filter, leading to a reduction in the cost and man-hour.

Conducted emission characteristics

[100 VAC with the rated load] * One example of actual measurement



Leakage current

[with the rated load] * One example of actual measurement

Input voltage	100 VAC	240 VAC
Leakage current value	0.1mA	0.24mA

Other features

- Low standby power consumption of 0.1 Wtyp (ErP Directive compatible)
- Min. load current of 0 A for all outputs
- Temperature controlled variable speed fan
- Double sided through-hole circuit board

IoT compatible model HPCSA-700P-E2S-IoT will be in the lineup

* For details, please contact us.

Forecast of life

Operating time is weighed by monitoring operating conditions including fan speed, internal temperature of a power supply unit, load condition, etc. and remaining life is forecasted.

Monitoring function

Respective input and output conditions inside a power supply unit are recorded and output to the outside by communication function.

- Respective output voltages and currents
- Input voltage and input power
- Fan speed
- Operating temperature
- State of abnormality protection operation, etc.

Uniform control of input and output conditions

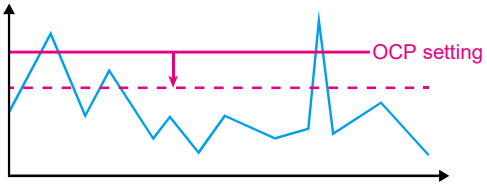
Records of failures in a system are kept.

I²C communication function

It supports communication according to I2C standard which has rich experience as internal communication for industrial machinery, etc. It provides highly reliable high-speed communication. With an additional optional communication board, it can respond to various requirements including USB, RS-232C, etc.

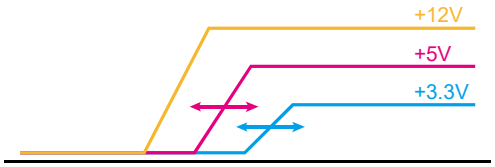
Variable setting function of overcurrent protection circuit

Standard setting for overcurrent protection (OCP) is so made as to meet with the upper limit of respective systems. For example, however, “in the case that +3.3 V system and +5 V system are seldom used,” it is possible to make setting from external PC that overcurrent protection operates with smaller current than standard. Thus, it is possible to provide optimized protection for equipment.



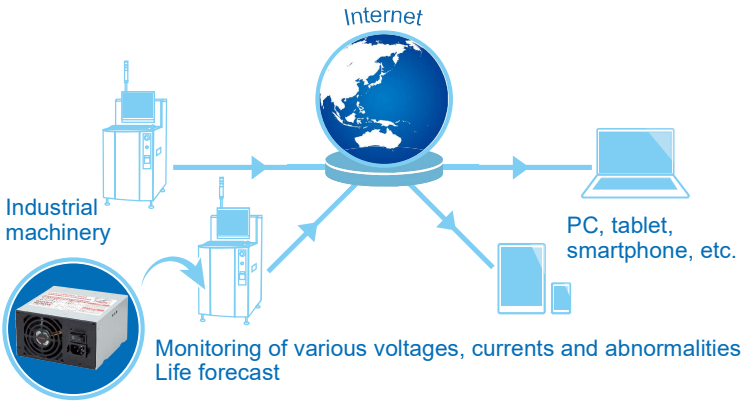
Output voltage rising adjustment

Against a problem of compatibility between PC and a power supply unit which may occur rarely due to difference in rising timing of output voltages, it is possible to make setting from external PC that rising timing is individually adjusted and thus cause can be examined and a countermeasure can be taken smoothly.



Features of power supply unit compatible with IoT

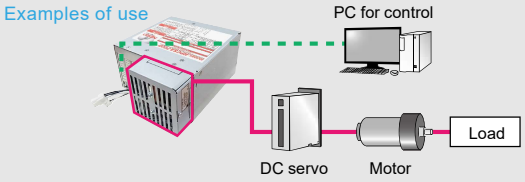
Iot (Internet of Things) is a system in which everything is connected with internet. Connection of things with internet enables remote measurement, recognition, control, etc., grasping and improving rate of operation for manufacturing facilities, identification of failure spot of production facilities, improvement of product quality, energy management, etc.
Since HPCSA-700P of our company allows for monitoring of various voltages, currents and abnormalities and life forecast, it enables early detection of abnormality of respective devices, avoiding stop of a device due to life (Improvement of RAS function), grasping load factor of respective equipment from power consumption, peak power reduction control, etc.



Expansion of features supported

*+24 V/+48 V output**

The HPCSA-700P series allows the user to add a +24 V or +48 V output, which is not offered in ordinary ATX power supply units. Therefore, the unit may be used for both control and motive power, eliminating the necessity to prepare an additional single output power supply.
In addition, the +24 V/+48 V circuit is isolated from the ATX outputs to enable a stable operation of the PC even if a parallel connection is made to a device with large noise, such as a motor.



*A countermeasure against instantaneous power failure / blackout**

If it is connected with a capacitor pack or a battery package, it allows for a countermeasure against instantaneous power failure / blackout.

■ Capacitor pack

Photograph of internal view

■ Battery pack

* Please contact Nipron since these options are not standard models.

Desktop PC Power Supply HPCSA-700P series

Model	*Description*	*Stock*
HPCSA-700P-E2S	--------	Standard stock
HPCSA-700P-E2S-IoT	IoT compatible model (with I²C communication feature)	To be confirmed on request

■Model Name Coding

HPCSA - 700 P - E 2 S - IoT

① ② ③ ④ ⑤ ⑥ ⑦

1. Series name
2. Output power
3. Peak power available
4. EPS output
5. +3.3V output equipped
6. Standard
7. IoT compatible (with I²C communication feature)

Features

- Double-sided through hole PCB suitable for industrial use.
- High efficiency achieved by the use of a synchronous rectifier and SiC diode
- Low noise & low leakage current Conducted emission VCCI Class B, leakage current 0.2 mA or less (for 100 VAC)
- Low standby power consumption compatible with the ErP Directive (0.1 Wtyp)
- Min. load current is 0A for all outputs.
- Safety standard approved (IEC/UL/CSA60950-1)
- By building in the thermal-sensing variable speed fan, noise reduction can be realised.
- IoT compatible model (with I²C communication feature) included in the lineup

Safety standard / Approval	UL	CSA	EN	CE	CCC
Reliability Grade	HFA	FA	HOA	OA	

Function

DC start | RS 232C | USB | TTL | PFC | Silence | 5VSB FAN | TSFC FAN | Connection | RoHS

Input

AC input	85 - 264V (worldwide range, PFC mounted)

Output

Output voltage	*+3.3V*	*+5V*	*+12V1*	*+12V2*	*+12V3*	*-12V*	*+5VSB*
Max. current / max. power (continuous)	16A	16A	18A	18A	18A	1A	2A
	Total 90W		Total 600W				10W
	Total 600W						
Peak current / peak power (5 sec max.)	20A	20A	25A	25A	25A	1A	3A
	Total 120W		Total 700W				15W
	Total 700W						
Min. current	0A	0A	0A	0A	0A	0A	0A

Dimensions

W×H×D (mm)	150×85×150

Output connector (optional component)

Main 20+4pin | Main 24pin | Main 20pin | AT | AUX | 12V 4pin | 12V 8pin | PCI-E 6pin | PCI-E 6+2pin | HDD | S-ATA | FDD

General Specification Condition: at normal temperature and humidity unless otherwise specified

	Items		Specification							Measurement conditions, etc.
AC Input	Rated Voltage		100-240 VAC(85*-264 VAC)							Worldwide range, *Refer to Fig.1
	Input Frequency		50 / 60Hz							47 - 63Hz
	Efficiency		84% typ.(100 VAC),88% typ.(240 VAC)							At rated output
	Power Factor		96% min.(100 VAC),90% min.(240 VAC)							
	Inrush Current		15A peak(100 VAC),36A peak(240 VAC)							At rated output, cold start (25℃) Reclosing interval of 1 min or longer
	Input Current		7.1A typ.(100 VAC),2.9A typ.(240 VAC)							At rated output
Output	Rated Voltage		+3.3V	+5V	+12V1	+12V2	+12V3	-12V	+5VSB	
	Rated Current		10A	10A	15A	15A	12A	0.5A	1A	Reference value during the measurement of input/output characteristics
	Max. Current / Power		16A	16A	18A	18A	18A	1A	2A	Max. output power: 600W Refer to the derating condition
			52.8W	80W	216W	216W	216W	12W	10W	
			90W max.		600W max.					
			600W max.							
	Peak Current / Power		20A	20A	25A	25A	25A	1A	3A	Peak output power: 700W Time: 5 sec or less Duty ratio of repetitive load: 10% or less
			66W	100W	300W	300W	300W	12W	15W	
			120W max.		700W max.					
			700W max.							
	Min. Current		0A	0A	0A	0A	0A	0A	0A	* Refer to the minimum load condition is Fig. 4 below.
	Total Voltage Accuracy (%)		±5 max.	±5 max.	±5 max.	±5 max.	±5 max.	±5 max.	±5 max.	The point of voltage measurement is the output connector terminal on the power supply and the voltage drop due to the contact resistance of paired connector is not included.
	Max. Ripple Voltage (mVp-p)		50 max.	50 max.	80 max.	80 max.	80 max.	80 max.	50 max.	Two wires are coming out from the output connector and connected into one at the edge. 47μF electrolytic capacitor and 0.1μF ceramic capacitor are placed on it and it is measured.
	Max. Spike Voltage (mVp-p)		100 max.	100 max.	200 max.	200 max.	200 max.	200 max.	100 max.	
Protection	Overcurrent Protection	OCP Point (A)	5 sec or longer after exceeding the max. current					Short protection		Measurements done with no load except for the voltage measurement
			21 min.	21 min.	26 min.	26 min.	26 min.			
		Method	All outputs of +3.3 V, +5 V, +12 V1, +12 V2, +12 V3 and -12 V are shut down.					Hold down current limiting	All outputs shutdown	All outputs shut down with a +5VSB short-circuit (automatic recovery)
		Recovery	Reclosing AC input, or switching PS_ON# signal from 'H' to 'L'					Automatic recovery		AC reclosing period of 1 min or longer
	Overvoltage Protection	OVP Point (V)	3.8-4.3	5.7-7.0	13.4-15.6			-	5.7-7.5	
		Method	All outputs of +3.3 V, +5 V, +12 V1, +12 V2, +12 V3 and -12 V are shut down.					-	All outputs shut down	
		Recovery	Reclosing AC input, or switching PS_ON# signal from 'H' to 'L'					-	AC reclosing	AC reclosing period of 1 min or longer. The period shall be 10 mins or longer during the OVP operation of +5VSB line.
Environment	Operating Temp. / Humidity		0 to 60°C* / 10 to 90%							No condensation *Refer to Fig.3
	Storage Temp. / Humidity		-20 to 70°C / 10 to 95%							No condensation
	Vibration		Acceleration amplitude: 2g (10-55Hz) Sweep cycles: 10, Test duration: 45 minutes each axis							JIS-C-60068-2-6, at no operation
	Mechanical Shock		Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges							JIS-C-60068-2-31, at no operation
Insulation	Dielectric Strength		AC input - FG/DC output: 1500 VAC for 1 minute							Cut-off current: 10mA
	Insulation Resistance		AC input - FG/DC output: 50MΩ min.							at 500 VDC
	Leakage Current		0.2mA max. (100 VAC) / 0.4mA max. (200 VAC) / 0.5mA max. (240 VAC)							IEC 60950 compliant
EMC	Line Noise Immunity		±2000V (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, normal/common mode with pos./neg. polarity for 10 minutes each)							No fluctuation of DC output or malfunction
	Electrostatic Discharge		EN61000-4-2 compliant							
	Radiated, Radio-Frequency EM Field		EN61000-4-3 compliant							
	Fast Transient Burst		EN61000-4-4 compliant							
	Lightning Surge		EN61000-4-5 compliant							
	RF Conducted Immunity		EN61000-4-6 compliant							
	Magnetic Field Immunity		EN61000-4-8 compliant							
	Voltage Dip / Regulation		EN61000-4-11 compliant							
	Conducted Emission		VCCI-B, FCC-B, EN55022-B compliant							Measured by single unit
	Harmonic Current Regulation		IEC 61000-3-2 Class A compliant							At rated input/output
Others	Safety Standard		UL60950-1, CSA60950-1 (c-UL) approved EN60950, PSE (ministerial ordinance) compliant, CE Marking (LVD, EMC)							
	Cooling System		Forced air cooling: thermal-sensing variable speed fan embedded							The speed changes with the temperature and the load condition.
	Output Grounding		Connected chassis (FG)							
	Output Hold-up Time		PWR_OK holds up 16ms min. after AC failure *Characteristic data: Fig.15							At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided through hole PCB)							Follow our standard
	MTBF		70,000H min.							Based on EIAJ RCR-9102
	Weight		2.0 kg typ							
	Warranty		3 years after delivery. If any faults belong to us, the defective unit shall be repaired or replaced at our cost.							Except for errors caused by operation not listed

Fig.1 Derating for Low Input Voltage

When the input voltage is 90 VAC or less, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

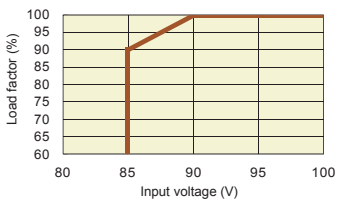


Fig.2 Duty Ratio

Peak current/power shall be 5 sec or less continuously. For repetitive loads, duty ratio shall be 10% or less.

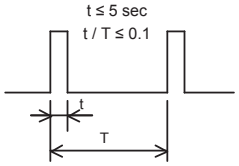


Fig.3 Temperature Derating

When the ambient temperature (near the airflow inlet) exceeds 40°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

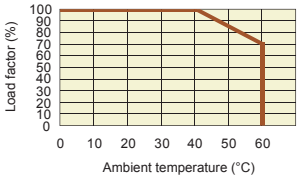
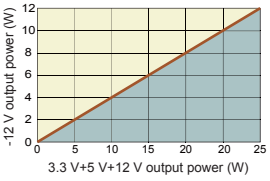
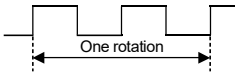


Fig.4 Min. load condition

The accuracy of output voltage on the -12 V line is defined within the region shown below.Also, use the minimum load power of 0.5% of the peak load applied as the normal operation range of PWR_OK signal.



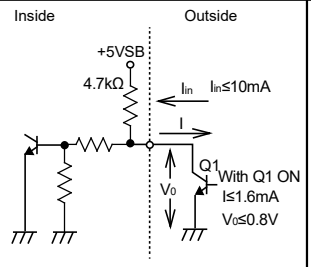
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

Type	Items	Specification	Note
Input Signal	Output ON / OFF Control Signal (PS_ON#)	+3.3V, +5V, +12V, and -12V outputs shutdown with 'H' or 'OPEN' input.	
	+3.3V SENSE*1	The input terminal to detect the voltage of +3.3V output; by connecting to the load terminal, only the line drop of the + side of the output cable is compensated.	
	FAN Control Signal (FAN_C)	The control terminal of fan motor; the fan motor is forcibly rotated at full speed at 'L' input.	
Output Signal	Normal Output Signal (PWR_OK)	'H'signal is delivered at normal output (detection delay time: 100 - 500ms).	
	Fan Monitor Signal (FAN M)	Two cycle pulses per one rotation of the fan motor are delivered (open collector output). Duty ratio of the pulse shall be 0.5 typ. (Interval between the signals becomes longer at low speed and shorter at high speed.) The signal remains 'L' or 'OPEN' when the fan stops caused by any failure or malfunction.	

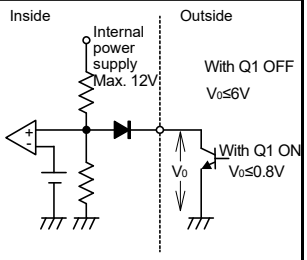
Signal Circuit

Input Signal Circuit

(PS_ON#)

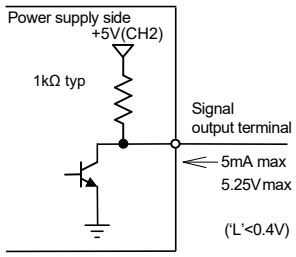


FAN_C signal input circuit

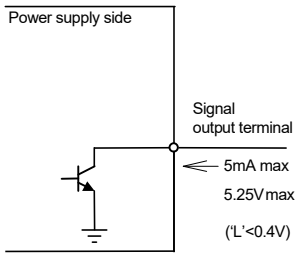


Output Signal Circuit

(PWR_OK)

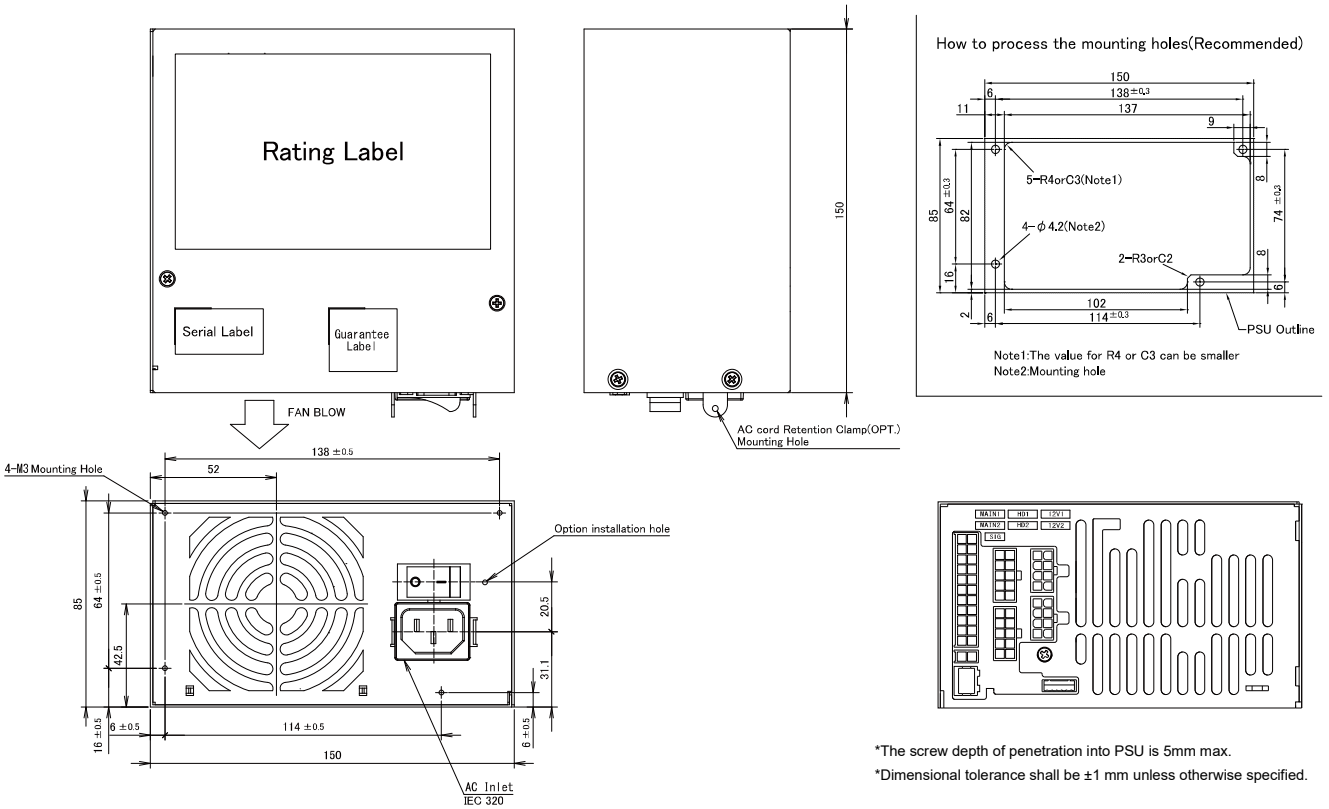


(FAN_M)



*1 Connect the +3.3 V SENSE signal to CH1 (+3.3) at the load end. The CH1 (+3.3 V) output may not satisfy the specification.
For further information on the communication specifications of HPCSA-700P-E2S-IoT, contact Nipron.

Outline Drawing

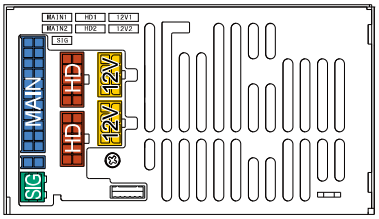


*The screw depth of penetration into PSU is 5mm max.
*Dimensional tolerance shall be ±1 mm unless otherwise specified.

Optional Components Sold Separately

Detachable Output Harness

Model	Length and Type of Connector
Main power cable MAIN	
WH-M2022-500	MAIN 500±10 → 20Pin
WH-M2022-300	MAIN 300±10 → 20Pin
WH-M2422-500	MAIN 500±15 → 24Pin
12V power cable 12V	
WH-V0808-500	12V 500±15 → 12V 8Pin
WH-V0408-500	12V 500±15 → 12V 4Pin
WH-VG208-500	12V 500±15 → 12V 4Pin, PCI-E 6Pin
WH-VV208-500-02	12V 500±10 → 12V 8Pin, 12V 8Pin
WH-VG208-500-02	12V 500±10 → 12V 8Pin, PCI-E 6Pin
WH-G0808-500	12V 500±10 → PCI-E 6+2Pin
WH-GG208-500	12V 500±10 → PCI-E 6Pin, PCI-E 6+2Pin
HD power cable HD	
WH-PP610-850	HD 550±15 → 150±15, 150±15 → peripheral (HD)
WH-PS610-850	HD 550±15 → 150±15, 150±15 → FD
WH-PS710-850	HD 550±15 → 150±15, 150±15; 850±15 → S-ATA
WH-PS810-1000	HD 550±15 → 150±15, 150±15, 150±15
SIG cable SIG	
WH-S0610-500	SIG 500±15 → SIG-1
WH-S0610-500-01	SIG 500±15 → SIG-2
WH-S0310-500	SIG 500±15 → SIG-3



Acceptable cable(s)

MAIN	12V	HD	SIG
1 model	2 model	2 model	1 model

Cable

Picture	Model	Type	Description
	WH6167-02	AC power cord	125 VAC 15A (tracking resistance type) [PSE]

Parts

Picture	Model	Type	Description
	ACC3027	AC power cable fall-out prevention fitting	A metal fitting to prevent fall-out of the AC power cable (WH6167-02)