



- Limited Lifetime Warranty
- UL508 Approved
- SEMI F47 Compliant (high line AC)
- Universal Input (85 - 265VAC)
- High Efficiency
- RoHS Compliant Design

## HWS300-1500 Series

Single Output Industrial Power Supplies

### Key Market Segments & Applications

- Factory Automation
- Test & Measurement
- Automated Service

### HWS300-1500 Features and Benefits

#### Features

- Limited Lifetime Warranty
- High Efficiency
- Wide Range AC Input

#### Benefits

- Lower Cost of Ownership
- Easier System Cooling
- Supports Global Use

#### Specifications

MODEL		HWS300	HWS600	HWS1000	HWS1500
ITEMS					
Input Voltage range (47-63Hz)	-	85 - 265VAC or 120 - 330VDC			
Input Current (Typ) (1)	A	5V: 3.8/1.9; 12-48V: 4.2/2.1	5V: 7.5/3.6; 12-48V: 8.1/3.9	3.3V: 9.6/5.0; 5-60V: 13.5/7.0	3.3V: 15/8 5-60V: 19/10
Inrush Current (1)	A	20 / 40			
Power Factor	-	Meets EN61000-3-2			
Temperature Coefficient	-	<0.02%/°C			
Overcurrent Protection	-	>105% (>101% of peak current for peak current capable models)			
Overvoltage Protection	V	See table on page 2 (Recycle AC or remote on/off to reset)			
Hold Up Time (Typ)	ms	20 (HWS1500-7 - 16ms)			
Leakage Curr. (at 240VAC, 60Hz)	mA	<0.75mA		<1.2mA	<1.5mA
Remote Sense	-	Yes			
Indicator	-	Green LED = ON			
Remote on/off	-	Yes (Isolated from output)			
Parallel operation	-	Single wire connection (up to 5 units)			
DC Good	-	Yes			
Remote Adjust (PV)	-	External voltage adjusts output, see options table			
Operating Temperature	°C	-10 to +70°C, derate linearly to 50% load from 50 to 70 (2, 3)			
Storage Temperature	°C	-30 to +85°C			
Humidity (non condensing)	-	Operating: 10 - 90%RH, Non operating 10 - 95%RH			
Cooling	-	Internal fan			
Withstand Voltage (4)	-	Input to Ground 2.5kVAC, Input to Output 3kVAC, Output to Ground 500VAC for 1 min.			
Isolation Resistance	-	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC			
Vibration (non operating)	-	10 - 55Hz (1 minute sweep), 19.6m/s <sup>2</sup> constant X, Y, Z 1 hour			
Shock	-	< 196.1 m/s <sup>2</sup>			
Safety Agency Approvals (5)	-	IEC/EN/UL/CSA 60950-1 and 62368-1, EN50178, UL508, CE Mark			
Line Dip	-	Complies with SEMI F47 (200VAC line only)			
Conducted & Radiated EMI	-	EN55011 / EN55022, FCC VCCI (HWS300, 600 & 1000: Class B, HWS1500: Class A)			
Recommended EMI Filter	-	RSEN-2006	RSEN-2010	RSEN-2020	RSEN-2030
Immunity	-	IEC61000-4-2, -3, -4, -6 (Level 3), -5, -8 (Level 4), -11			
Weight (Typ)	g	1,000	1,600	3,200	3,800
Size	mm	61 x 82 x 165	100 x 82 x 165	240 x 126.5 x 82	280 x 126.5 x 82
MTBF (6)	hrs	2,145,809	1,998,996	1,087,031	1,152,309
Warranty	yrs	Limited Lifetime Warranty			

Model Selector												
Model	Voltage V	Adjust Range V(3)	Max Curr. A	Peak Curr. A(2)	Max. Pwr. W	Peak Power W	Load Reg mV	Line Reg mV	Ripple Noise mV	Over-voltage V	Eff. typ % (1)	
HWS300-3	3.3V	2.64 - 3.96	60	-	198		30	20	120	4.13 - 4.95	74/77	
HWS600-3	3.3V	2.64 - 3.96	120	-	396		30	20	120	4.13 - 4.95	75/78	
HWS1000-3	3.3V	2.64 - 3.96	200		660		40	20	120	4.13 - 4.62	71/73	
HWS1500-3	3.3V	2.64 - 3.96	300		990		60	36	150	4.12 - 4.62	72/75	
HWS300-5	5V	4 - 6	60	-	300		30	20	120	6.25 - 7.25	79/82	
HWS600-5	5V	4 - 6	120	-	600		30	20	120	6.25 - 7.25	80/83	
HWS1000-5	5V	4 - 6	200		1000		40	20	120	6.25 - 7	76/78	
HWS1500-5	5V	4 - 6	300		1500		60	36	150	4.0 - 6.0	77/81	
HWS1000-6	6V	4.8 - 7.2	167		1002		60	36	150	7.5 - 8.4	79/81	
HWS1500-6	6V	4.8 - 7.2	250	300	1500	1800	60	40	150	4.8 - 7.2	79/82	
HWS1000-7	7.5V	6 - 9V	134	160	1005	1200	60	36	150	9.38 - 10.5	80/82	
HWS1500-7	7.5V	6 - 9V	200	240	1500	1800	60	40	150	6.0 - 9.0	81/83	
HWS300-12	12V	9.6 - 14.4	27	-	324		72	48	150	15 - 17.4	80/83	
HWS600-12	12V	9.6 - 14.4	53	-	636		72	48	150	15 - 17.4	80/83	
HWS1000-12	12V	9.6 - 14.4	88	100	1056	1200	100	48	150	15 - 17.4	82/85	
HWS1500-12	12V	9.6 - 14.4	125	-	1500		72	48	150	15 - 17.4	82/85	
HWS300-15	15V	12 - 18	22	-	330		90	60	150	18.8 - 21.8	80/83	
HWS600-15	15V	12 - 18	43	-	645		90	60	150	18.8 - 21.8	81/84	
HWS1000-15	15V	12 - 18	70	80	1050	1200	120	60	150	18.8 - 21.8	83/85	
HWS1500-15	15V	12 - 18	100	-	1500		90	60	150	18.7 - 21.8	83/87	
HWS300-24	24V	19.2 - 28.8	14	16.5	336	396	144	96	150	30 - 34.8	82/85	
HWS600-24	24V	19.2 - 28.8	27	31	648	744	144	96	150	30 - 34.8	82/85	
HWS1000-24	24V	19.2 - 28.8	46	58.5	1104	1404	150	96	150	30 - 34.8	85/87	
HWS1500-24	24V	19.2 - 28.8	65/70 (1)	105	1560	2520	144	96	200	30 - 34.8	84/88	
HWS1000-36	36V	28.8 - 43.2	30.7	39	1104	1404	150	144	200	45 - 49.7	85/88	
HWS1500-36	36V	28.8 - 43.2	42/46.5 (1)	70	1512	2520	150	144	200	45 - 49.7	84/88	
HWS300-48	48V	38.4 - 52.8	7	-	336		288	192	350	55.2 - 64.8	82/85	
HWS600-48	48V	38.4 - 52.8	13	-	624		288	192	350	55.2 - 64.8	83/86	
HWS1000-48	48V	38.4 - 52.8	23	29	1104	1404	300	192	200	55.2 - 64.8	86/88	
HWS1500-48	48V	38.4 - 52.8	32	-	1536		288	192	200	55.2 - 64.8	86/90	
HWS1000-60	60V	48 - 66	18.4	23.4	1104	1404	360	240	400	69 - 75	85/88	
HWS1500-60	60V	48 - 66	28	42	1536	2520	360	240	400	69 - 75	86/90	

**Notes**

- (1) 100/200VAC
- (2) 200-265VAC Input, 10s maximum on time with 35% duty cycle
- (3) Use program input (PV) to adjust from 20-120% of nominal (20-110% for 48V models)

Options	
Suffix	Description
Blank	HWS300-1500 the cover is fitted as standard
/A	Not Applicable
/PV	HWS300, 600 (Standard on HWS1000 & 1500 all output voltages): 1-6V program voltage input to adjust output 20-120% of nominal (20-110% for 48V) (12V-48V models only for 300 & 600W):
/HD	See HWS30-1500/HD Datasheet for details. -40 to +71(74)°C operation, conformally coated PCBs
/ME	See HWS30-1500/ME Datasheet for details. UL60601-1, EN60601-1 medical approvals

**Specification Notes (See Page 1):**

- (1) 100/200VAC
- (2) HWS start up -20°C. (-40°C see options table)
- (3) HWS1000/1500 with 85VAC input:  
See installation manual  
HWS1000: -10 to +71°C.  
HWS1000-5 derate linearly above 40°C
- (4) 2kVAC HWS1000/1500 Input to ground
- (5) UL60601-1, EN60601-1, see options.  
UL508; HWS300/600 5V, 12V, 24V & 48V models
- (6) According to Telcordia document SR-332, issue 3 "Reliability Prediction Procedure for Electronic Equipment" Conditions: ambient temp. 25°C, 230Vac input, full load (figures shown for 24V models)

## Outline Drawing HWS300 -1500 Series

**SIGNAL CONNECTOR INFORMATION**

OUTLINE PIN ASSIGN

ACCESSORIES

- COVER FOR WAFER REMOVAL STOP (ATTACHED ON TOP OF SHIPMENT)
- SHORT REEVE (ATTACHED ON ONE OF SHIPMENT)
- SHORT REEVE (ATTACHED ON ONE OF SHIPMENT)

SIGNAL CONNECTOR USED

PART DESCRIPTION	PART NAME	MANUFACT
12B-PHDS	S12B-PHDS	JST

MATCHING HOUSINGS, PINS & TOOL

PART DESCRIPTION	PART NAME	MANUFACT
PHDR-12VS	PHDR-12VS	JST
SPHD-002T-P0.5(AWG28-24)	SPHD-002T-P0.5(AWG28-24)	JST
SPHD-001T-P0.5(AWG26-22)	SPHD-001T-P0.5(AWG26-22)	JST
YPH-620	YPH-620	JST
YC-610R	YC-610R	JST

OPTIONAL MODELS

MODEL	COSMET
HWS300-*	<input type="checkbox"/>
HWS300-1*CE2	<input type="checkbox"/>
HWS300-1*CE5	<input type="checkbox"/>

**HWS300 Notes**

A: Model name, nominal output voltage and maximum output current are shown in the name plate in accordance with the specifications.

B: M4 tapped holes (8) for customer chassis mounting. (Screw penetration depth 6mm maximum.)

ACCESSORIES

- COVER FOR WAFER REMOVAL STOP (ATTACHED ON TOP OF SHIPMENT)
- SHORT REEVE (ATTACHED ON ONE OF SHIPMENT)
- SHORT REEVE (ATTACHED ON ONE OF SHIPMENT)

SIGNAL CONNECTOR USED

PART DESCRIPTION	PART NAME	MANUFACT
12B-PHDS	S12B-PHDS	JST

MATCHING HOUSINGS, PINS & TOOL

PART DESCRIPTION	PART NAME	MANUFACT
PHDR-12VS	PHDR-12VS	JST
SPHD-002T-P0.5(AWG28-24)	SPHD-002T-P0.5(AWG28-24)	JST
SPHD-001T-P0.5(AWG26-22)	SPHD-001T-P0.5(AWG26-22)	JST
YPH-620	YPH-620	JST
YC-610R	YC-610R	JST

OPTIONAL MODELS

MODEL	COSMET
HWS600-*	<input type="checkbox"/>
HWS600-1*CE2	<input type="checkbox"/>
HWS600-1*CE5	<input type="checkbox"/>

**HWS600 Notes**

A: Model name, nominal output voltage and maximum output current are shown in the name plate in accordance with the specifications.

B: M4 tapped holes (8) for customer chassis mounting. (Screw penetration depth 6mm maximum.)

**SIGNAL CONNECTOR INFORMATION**

CNO1, CNO2 PIN ASSIGN

ACCESSORIES

- ATTACHED CONNECTOR SHORING (+5V, -5V, PV-REF & CNT-TOG ATTACHED ON CNO2 AT SHIPMENT)

**HWS1000 Notes**

A: Model name, nominal output voltage and maximum output current are shown in the name plate in accordance with the specifications.

B: Country of manufacture is shown here.

C: M4 tapped holes (16) for customer chassis mounting. (Screws must not protrude into power supply by more than 6mm.)

D: I/O Signal Connector.

Connector: S12B-PHDS(LF)(SN) (JST)  
 Matching Housing: PHDR-12VS (JST)  
 Matching Contact: SPHD-002T-P0.5(AWG28-24) (JST) or SPHD-001T-P0.5(AWG26-22) (JST) or BPHD-001T-P0.5(AWG26-22) (JST)  
 Hand Crimping Tool: YRS-620(SPHD-002T-P0.5) (JST)  
 YC-610R(SPHD-001T-P0.5) (JST)  
 YC-610R(BPHD-001T-P0.5) (JST)

E: Recommended torque for the terminal piece

Input terminal (M4 screw):	1.27N·m
Output terminal (M8 bolt & nut):	10.8N·m
Output terminal (M4 screw):	1.27N·m

**SIGNAL CONNECTOR INFORMATION**

CNO1, CNO2 PIN ASSIGN

ACCESSORIES

- ATTACHED CONNECTOR SHORING (+5V, -5V, PV-REF & CNT-TOG ATTACHED ON CNO2 AT SHIPMENT)

OPTIONAL MODELS

MODEL	COSMET
HWS1500-*	<input type="checkbox"/>
HWS1500-1*CE2	<input type="checkbox"/>
HWS1500-1*CE5	<input type="checkbox"/>

**HWS1500 Notes**

A: Model name, option, input voltage range, nominal output voltage, maximum output current are shown in the name plate in accordance with the specifications.

B: Country of manufacture is shown here.

C: M4 tapped holes (16) for customer chassis mounting. (Screws must not protrude into power supply by more than 6mm.) Recommended M4 screws torque: 1.27N·m

D: I/O Signal Connector.

Connector: S12B-PHDS(LF)(SN) (JST)  
 Matching Housing: PHDR-12VS (JST)  
 Matching Contact: SPHD-002T-P0.5(AWG28-24) (JST) or SPHD-001T-P0.5(AWG26-22) (JST) or BPHD-001T-P0.5(AWG26-22) (JST)  
 Hand Crimping Tool: YRS-620(SPHD-002T-P0.5) (JST)  
 YC-610R(SPHD-001T-P0.5) (JST)  
 YC-610R(BPHD-001T-P0.5) (JST)

E: Recommended torque for the terminal piece

Input terminal (M4 screw):	1.27N·m
Output terminal (M8 bolt & nut):	10.8N·m
Output terminal (M4 screw):	1.27N·m



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