

- Limited Lifetime Warranty
- -10°C to +71°C Operation (-40°C start up)
- Universal Input (85 - 265VAC)
- Conformally coated PCB's
- RoHS Compliant Design

## HWS-/HD Series

Single Output Industrial Power Supplies

### Key Market Segments & Applications



### HWS-/HD Features and Benefits

#### Features

- Limited Lifetime Warranty
- Conformally coated PCB's
- Wide Range AC Input

#### Benefits

- Lower Cost of Ownership
- Operates in Harsh Environments
- Supports Global Use

### Specifications

MODELS		HWS30A HWS50A	HWS100A HWS150A	HWS300	HWS600	HWS1000	HWS1500	
ITEMS								
Input Voltage range	(4)	85 - 265VAC (47-63Hz) or 120 - 370VDC			85 - 265VAC (47-63Hz) or 120 - 330VDC			
Input Current (Typ)	(1)	A	0.65 / 0.4 0.7 / 0.35	1.3 / 0.65 1.9 / 0.95	4.1 / 2.1	8.1 / 3.9	13.5 / 7.0 19 / 10	
Inrush Current	(1)	A	14 / 28		20 / 40			
Power Factor	-	Meets EN61000-3-2						
Temperature Coefficient	-	<0.02%/°C						
Overcurrent Protection	-	>104%						
Overvoltage Protection	V	Yes (See table on page 2)						
Hold Up Time (Typ)	ms	20						
Leakage Current (60Hz)	mA	<0.5mA		<0.75mA		<1.2mA	≤1.5mA	
Remote Sense	-	No		Yes				
Indicator	-	Green LED = ON						
Remote On/Off	-	No		Yes (Isolated from output)				
Parallel operation	-	No		Single wire connection (5 units max)				
DC Good	-	No		Yes				
Remote Adjust (PV)	-	No		No		Yes (3)		
Operating Temperature & Derating		HWS30-150: -10°C to +71°C, (derating applies above 50°C please refer to individual model specification for derating graph) HWS300-1500: -10°C to +71°C, (-10 to +50°C: 100%, derate linearly to 50% load from +50 to +71°C) Guaranteed start up at -40°C (see specification sheets on website for details and derating)						
Storage Temperature		-40°C to +85°C						
Humidity (non condensing)	-	Operating: 30-90%RH (10 - 90% on HWS300-1500), Non operating 10-95%RH						
Cooling	-	Convection			Internal fan			
Withstand Voltage (2)	-	Input to Ground 2kVAC, Input to Output 3kVAC, Output to Ground 500VAC for 1 min.						
Isolation Resistance	-	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC, >10M Output to remote on/off 100VDC						
Vibration (non operating)	-	MIL-STD-810F 514.5 Category 4, 10						
Shock (in packaging)	-	MIL-STD-810F 516.5 Procedure I, VI (<196.1m/s <sup>2</sup> )						
Safety Agency Approvals	-	UL60950-1, CSA60950-1, EN60950-1, EN50178, CE Mark						
Line Dip	-	Complies with SEMI F47 (200VAC line only)						
Conducted & Radiated EMI	-	EN55011 / EN55022-B, FCC-B, VCCI-B (Curve A for HWS1500)						
Immunity	-	IEC61000-4-2, -3, -4, -5, -6, -8, -11, IEC61000-6-2						
Weight (Typ)	g	200 260	420 470	1000	1600	3200	3800	
Size (WxHxD) with cover	mm	31.5 x 82 x 95 31.5 x 82 x 120	33 x 82 x 160 42 x 82 x 160	61 X 82 X 165	100 X 82 X 165	126.5 X 82 X 240	126.5 X 82 X 280	
MTBF (5)	hrs	8,169,868 3,726,622	2,963,512 2,676,081	2,145,809	1,998,996	1,087,031	1,152,309	
Warranty	-	Limited Lifetime Warranty (See TDK-Lambda terms & conditions)						

Notes: (1) 100/200VAC input. (2) HWS300-600 2.5kVAC Input to ground. (3) 1-6V program voltage input to adjust output 20-120% (typical) of nominal. See instruction for details & models with this feature.

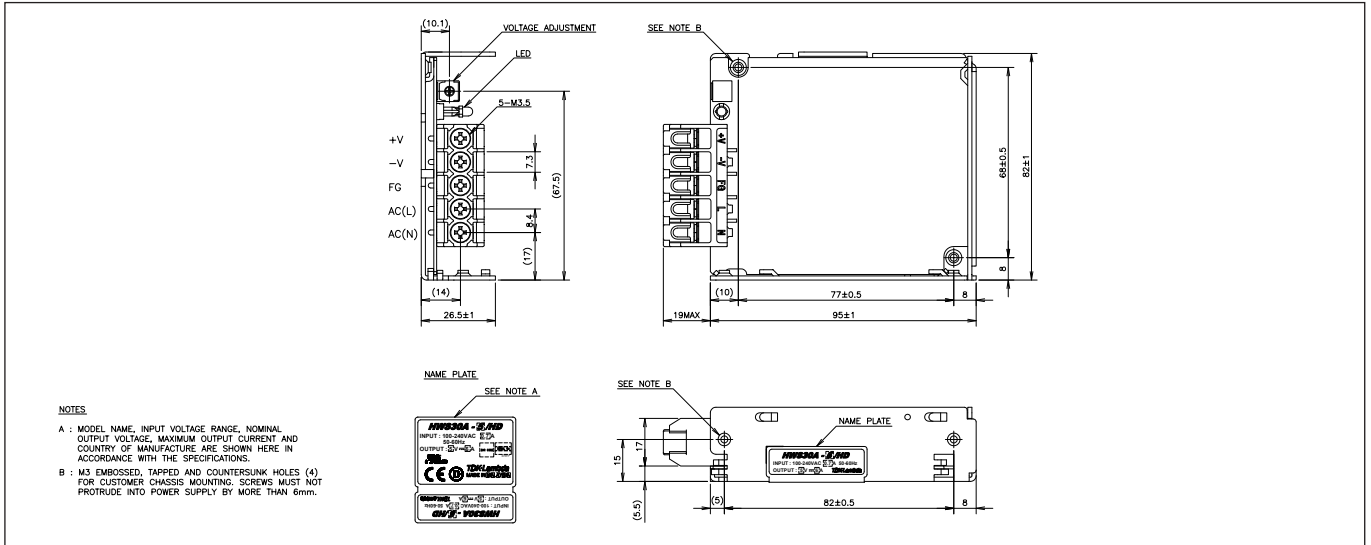
Notes cont from page 1: (4) Consult Sales Office for use under DC Input conditions (5) According to Telcordia document SR-332, issue 3 "Reliability Prediction Procedure for Electronic Equipment"  
 Conditions: ambient temp. 25°C, 230Vac input, full load (figures shown for 24V models)

Model Selector												
Model	Voltage (V)	Adjust Range (V)	Max Curr. (A)	Peak <sup>(3)</sup> Curr. (A)	Max. Power (W)	Peak <sup>(3)</sup> Power (W)	Load Reg (mV)	Line Reg (mV)	Ripple Noise (mV)	Over voltage (V)	Efficiency <sup>(1)</sup> typ %	
HWS30A-3/HD	3.3	2.97 - 3.96	6		20		40	20	120	4.13 - 4.95	70/73	
HWS50A-3/HD	3.3	2.97 - 3.96	10		33		40	20	120	4.13 - 4.95	76/78	
HWS100A-3/HD	3.3	2.97 - 3.96	20		66		40	20	120	4.13 - 4.95	78/81	
HWS150A-3/HD	3.3	2.97 - 3.96	30		99		40	20	120	4.13 - 4.95	78/81	
HWS300-3/HD	3.3	2.64 - 3.96	60		198		30	20	120	4.13 - 4.95	74/77	
HWS600-3/HD	3.3	2.64 - 3.96	120		396		30	20	120	4.13 - 4.95	75/78	
HWS1000-3/HD	3.3	2.64 - 3.96	200		660		40	20	120	4.12 - 4.62	71/73	
HWS1500-3/HD	3.3	2.64 - 3.96	300		990		60	36	200	4.12 - 4.62	72/75	
HWS30A-5/HD	5	4.0 - 6.0	6		30		40	20	120	6.25 - 7.25	77/80	
HWS50A-5/HD	5	4.0 - 6.0	10		50		40	20	120	6.25 - 7.25	82/84	
HWS100A-5/HD	5	4.0 - 6.0	20		100		40	20	120	6.25 - 7.25	83/86	
HWS150A-5/HD	5	4.0 - 6.0	30		150		40	20	120	6.25 - 7.25	83/86	
HWS300-5/HD	5	4.0 - 6.0	60		300		30	20	120	6.25 - 7.25	79/82	
HWS600-5/HD	5	4.0 - 6.0	120		600		30	20	120	6.25 - 7.25	80/83	
HWS1000-5/HD	5	4.0 - 6.0	200		1000		30	20	120	6.25 - 7.0	76/78	
HWS1500-5/HD	5	4.0 - 6.0	300		1500		60	36	200	6.25 - 7.0	77/81	
HWS1000-6/HD	6	4.8 - 7.2	167		1002		30	20	150	7.5 - 8.4	79/81	
HWS1500-6/HD	6	4.8 - 7.2	250	300	1500	1800	60	36	200	6.25 - 7.0	79/82	
HWS1000-7/HD	7.5	6.0 - 9.0	134	160	1005	1200	30	20	150	9.37 - 10.5	80/82	
HWS1500-7/HD	7.5	6.0 - 9.0	200	240	1500	1800	60	40	200	9.37 - 10.5	81/83	
HWS30A-12/HD	12	9.6 - 14.4	2.5		30		96	48	150	15.0 - 17.4	81/83	
HWS50A-12/HD	12	9.6 - 14.4	4.3		51.6		96	48	150	15 - 17.4	81/83	
HWS100A-12/HD	12	9.6 - 14.4	8.5		102		96	48	150	15 - 17.4	83/86	
HWS150A-12/HD	12	9.6 - 14.4	13		156		96	48	150	15 - 17.4	83/86	
HWS300-12/HD	12	9.6 - 14.4	27		324		72	48	150	15 - 17.4	80/83	
HWS600-12/HD	12	9.6 - 14.4	53		636		72	48	150	15 - 17.4	80/83	
HWS1000-12/HD	12	9.6 - 14.4	88	100	1056	1200	72	48	150	15 - 17.4	82/85	
HWS1500-12/HD	12	9.6 - 14.4	125		1500		72	48	150	15 - 17.4	82/85	
HWS30A-15/HD	15	12.0 - 18.0	2		30		120	60	150	18.8 - 21.8	81/84	
HWS50A-15/HD	15	12.0 - 18.0	3.5		52.5		120	60	150	18.8 - 21.8	81/83	
HWS100A-15/HD	15	12.0 - 18.0	7		105		120	60	150	18.8 - 21.8	83/86	
HWS150A-15/HD	15	12.0 - 18.0	10		150		120	60	150	18.8 - 21.8	83/86	
HWS300-15/HD	15	12.0 - 18.0	22		330		90	60	150	18.8 - 21.8	80/83	
HWS600-15/HD	15	12.0 - 18.0	43		645		90	60	150	18.8 - 21.8	81/84	
HWS1000-15/HD	15	12.0 - 18.0	70	80	1050	1200	90	60	150	18.7 - 21.8	83/85	
HWS1500-15/HD	15	12.0 - 18.0	100		1500		90	60	150	18.7-21.8	83/87	
HWS30A-24/HD	24	19.2 - 28.8	1.3		31.2		192	96	200	30 - 34.8	83/86	
HWS50A-24/HD	24	19.2 - 28.8	2.2		52.8		192	96	150	30 - 34.8	82/84	
HWS100A-24/HD	24	19.2 - 28.8	4.5		108		192	96	150	30 - 34.8	84/87	
HWS150A-24/HD	24	19.2 - 28.8	6.5		156		192	96	150	30 - 34.8	85/88	
HWS300-24/HD	24	19.2 - 28.8	14	16.5	336	396	144	96	150	30 - 34.8	82/85	
HWS600-24/HD	24	19.2 - 28.8	27	31	648	744	144	96	150	30 - 34.8	82/85	
HWS1000-24/HD	24	19.2 - 28.8	46	58.5	1104	1404	144	96	150	30 - 34.8	85/87	
HWS1500-24/HD	24	19.2 - 28.8	65/70	105	1560/1680	2520 <sup>(1)</sup>	144	96	200	30 - 34.8	84/88	
HWS1000-36/HD	36	28.8 - 43.2	30.7	39	1104	1404	150	144	200	45 - 49.7	85/88	
HWS1500-36/HD	36	28.8 - 43.2	42/46.5	70	1512/1674	2520 <sup>(1)</sup>	150	144	200	45 - 49.7	84/88	
HWS30A-48/HD	48	38.4 - 52.8	0.65		31.2		384	192	200	55.2 - 64.8	82/83	
HWS50A-48/HD	48	38.4 - 52.8	1.1		52.8		384	192	200	55.2 - 64.8	83/85	
HWS100A-48/HD	48	38.4 - 52.8	2.1		100.8		384	192	200	55.2 - 64.8	84/87	
HWS150A-48/HD	48	38.4 - 52.8	3.3		158.4		384	192	200	55.2 - 64.8	85/88	
HWS300-48/HD	48	38.4 - 52.8	7		336		288	192	350	55.2 - 64.8	82/85	
HWS600-48/HD	48	38.4 - 52.8	13		624		288	192	350	55.2 - 64.8	83/86	
HWS1000-48/HD	48	38.4 - 52.8	23	29.2	1104	1404	288	192	200	55.2 - 60.0	86/88	
HWS1500-48/HD	48	38.4 - 52.8	32		1536		288	192	200	55.2 - 64.8	86/90	
HWS1000-60/HD	60	48.0 - 66	18.4	23.4	1104	1404	360	240	400	69.0 - 75.0	85/88	
HWS1500-60/HD	60	48.0 - 66	28	42	1536	2520	360	240	400	69.0 - 75.0	86/90	

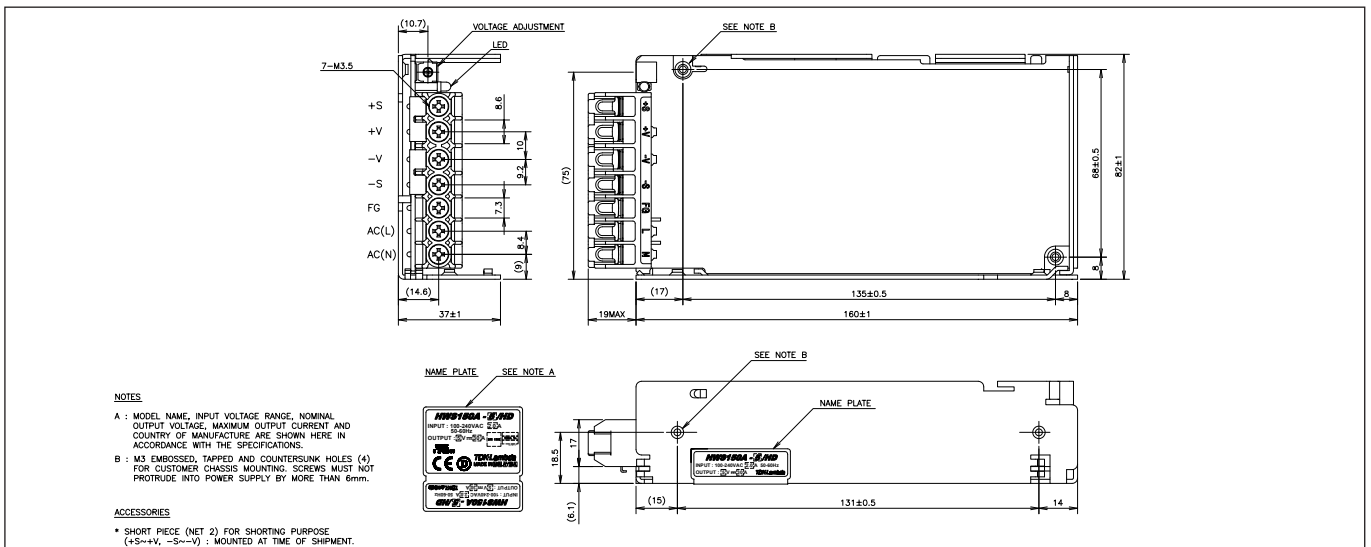
Notes: (3) Peak load for 10s maximum on time, 35% duty cycle at >200V input

Options	
Suffix	Description
Blank	No cover (except HWS300-1500 cover fitted as standard) /A Cover fitted (eg HWS100A-24/HDA) Deratings apply

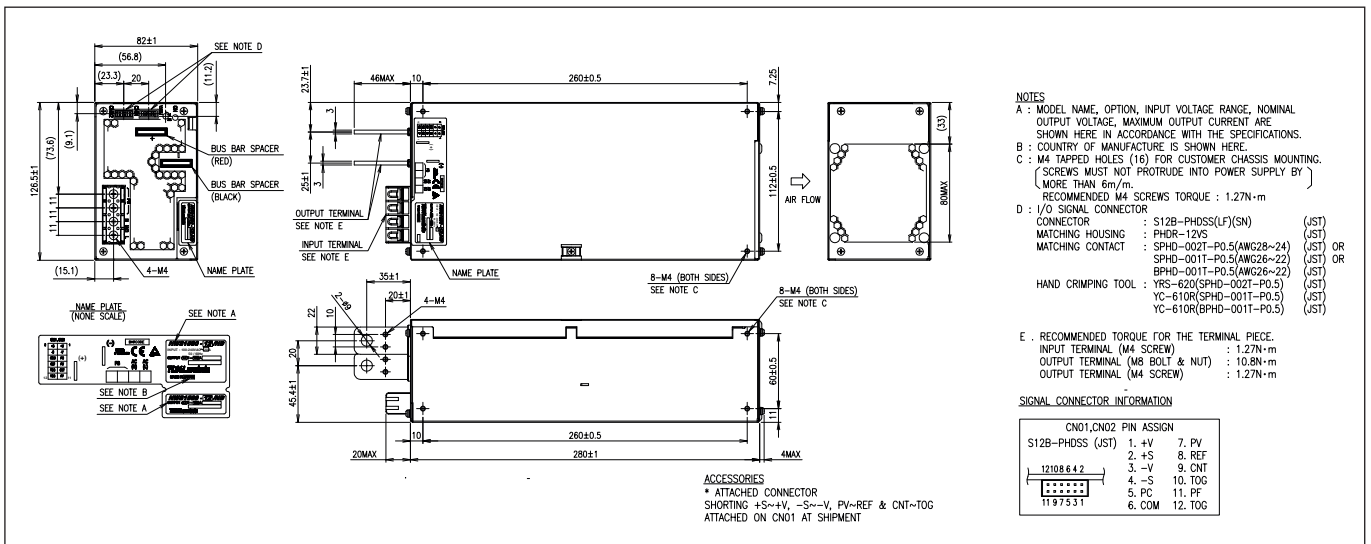
## Outline Drawing HWS30A/HDA Series



## Outline Drawing HWS150A/HDA Series



## Outline Drawing HWS1500 Series





**TDK-Lambda France SAS**

3 Avenue du Canada  
 Parc Technopolis  
 Bâtiment Sigma  
 91940 les Ulis  
 France  
 Tel: +33 1 60 12 71 65  
 Fax: +33 1 60 12 71 66  
[france@fr.tdk-lambda.com](mailto:france@fr.tdk-lambda.com)  
[www.fr.tdk-lambda.com](http://www.fr.tdk-lambda.com)



**Italy Sales Office**

Via dei Lavoratori 128/130  
 20092 Cinisello Balsamo (MI)  
 Italy  
 Tel: +39 02 61 29 38 63  
 Fax: +39 02 61 29 09 00  
[info.italia@it.tdk-lambda.com](mailto:info.italia@it.tdk-lambda.com)  
[www.it.tdk-lambda.com](http://www.it.tdk-lambda.com)



**Netherlands**

[info@nl.tdk-lambda.com](mailto:info@nl.tdk-lambda.com)  
[www.nl.tdk-lambda.com](http://www.nl.tdk-lambda.com)



**TDK-Lambda Germany GmbH**

Karl-Bold-Strasse 40  
 77855 Achern  
 Germany  
 Tel: +49 7841 666 0  
 Fax: +49 7841 5000  
[info.germany@de.tdk-lambda.com](mailto:info.germany@de.tdk-lambda.com)  
[www.de.tdk-lambda.com](http://www.de.tdk-lambda.com)



**Austria Sales Office**

Aredstrasse 22  
 2544 Leobersdorf  
 Austria  
 Tel: +43 2256 655 84  
 Fax: +43 2256 645 12  
[info@at.tdk-lambda.com](mailto:info@at.tdk-lambda.com)  
[www.de.tdk-lambda.com](http://www.de.tdk-lambda.com)



**Switzerland Sales Office**

Bahnhofstrasse 50  
 8305 Dietlikon  
 Switzerland  
 Tel: +41 44 850 53 53  
 Fax: +41 44 850 53 50  
[info@ch.tdk-lambda.com](mailto:info@ch.tdk-lambda.com)  
[www.de.tdk-lambda.com](http://www.de.tdk-lambda.com)



**Nordic Sales Office**

Haderslevvej 36B  
 DK-6000 Kolding  
 Denmark  
 Tel: +45 2911 9556  
[info@dk.tdk-lambda.com](mailto:info@dk.tdk-lambda.com)



**TDK-Lambda UK Ltd.**

Kingsley Avenue  
 Ilfracombe  
 Devon EX34 8ES  
 United Kingdom  
 Tel: +44 (0) 12 71 85 66 66  
 Fax: +44 (0) 12 71 86 48 94  
[powersolutions@uk.tdk-lambda.com](mailto:powersolutions@uk.tdk-lambda.com)  
[www.uk.tdk-lambda.com](http://www.uk.tdk-lambda.com)



**TDK-Lambda Ltd.**

Kibbutz  
 Givat Hashlosha 48800  
 Israel  
 Tel: +9 723 902 4333  
 Fax: +9 723 902 4777  
[info@tdk-lambda.co.il](mailto:info@tdk-lambda.co.il)  
[www.tdk-lambda.co.il](http://www.tdk-lambda.co.il)



**C.I.S.**

**Commercial Support:**  
 Tel: +7 (495) 665 2627  
**Technical Support:**  
 Tel: +7 (812) 658 0463  
[info@tdk-lambda.ru](mailto:info@tdk-lambda.ru)  
[www.tdk-lambda.ru](http://www.tdk-lambda.ru)

**Local Distribution**

