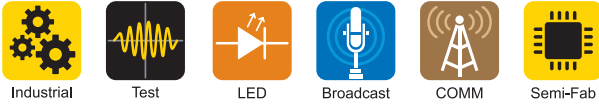


300-1500W Single Output Industrial Power Supplies

<https://product.tdk.com/en/power/hws>
www.emea.lambda.tdk.com/hws



The ultra reliable, conservatively rated HWS series of 300W to 1500W AC-DC power supplies has a limited lifetime warranty, unique to the industry. The series accepts a wide range 85 to 265Vac input with output voltages from 3.3V to 48V. The products are certified to IEC 62368-1, UL 508 (select models) and are SEMI F47 compliant. They also meet conducted and radiated emission standards without additional filtering or shielding.

Features	Benefits
• Limited Lifetime Warranty	• Low Cost of Ownership
• Very Conservative Electrolytic Capacitor Ratings	• Long Service Life
• Class B Conducted and Radiated EMI	• Easier System EMC Compliance
• UL 508 Certified on Select Models	• Suitable For Industrial Control Equipment

Model Selector									
Model	Output Voltage (V)	Adjustment Range (V)	Maximum Current (A)	Peak Current (A) ⁽¹⁾	Load Reg (mV)	Line Reg (mV)	Ripple Noise (mV)	Oversvoltage (V)	Efficiency (115/230Vac) (%)
HWS300-3	3.3	2.64 - 3.96	60	-	30	20	120	4.13 - 4.95	74 / 77
HWS600-3	3.3	2.64 - 3.96	120	-	30	20	120	4.13 - 4.95	75 / 78
HWS1000-3	3.3	2.64 - 3.96	200	-	40	20	120	4.13 - 4.95	71 / 73
HWS1500-3	3.3	2.64 - 3.96	300	-	60	36	150	4.12 - 4.95	72 / 75
HWS300-5	5	4.0 - 6.0	60	-	30	20	120	6.25 - 7.25	79 / 82
HWS600-5	5	4.0 - 6.0	120	-	30	20	120	6.25 - 7.25	80 / 83
HWS1000-5	5	4.0 - 6.0	200	-	40	20	120	6.25 - 7.0	76 / 78
HWS1500-5	5	4.0 - 6.0	300	-	60	36	150	6.25 - 7.0	77 / 81
HWS1000-6	6	4.8 - 7.2	167	-	60	36	150	7.5 - 8.4	79 / 81
HWS1500-6	6	4.8 - 7.2	250	300	60	36	150	7.5 - 8.4	79 / 82
HWS1000-7	7.5	6.0 - 9.0	134	160	60	36	150	9.38 - 10.5	80 / 82
HWS1500-7	7.5	6.0 - 9.0	200	240	60	40	150	9.37 - 10.5	81 / 83
HWS300-12	12	9.6 - 14.4	27	-	96	48	120	15.0 - 17.4	80 / 83
HWS600-12	12	9.6 - 14.4	53	-	96	48	120	15.0 - 17.4	80 / 83
HWS1000-12	12	9.6 - 14.4	88	100	100	48	150	15.0 - 17.4	83 / 85
HWS1500-12	12	9.6 - 14.4	125	-	72	48	150	15.0 - 17.4	82 / 85
HWS300-15	15	12.0 - 18.0	22	-	120	60	150	18.8 - 21.8	82 / 85
HWS600-15	15	12.0 - 18.0	43	-	120	60	150	18.8 - 21.8	82 / 85
HWS1000-15	15	12.0 - 18.0	70	80	120	60	150	18.8 - 21.8	83 / 85
HWS1500-15	15	12.0 - 18.0	100	-	90	60	150	18.7 - 21.8	83 / 87
HWS300-24	24	19.2 - 28.8	14	16.5	192	96	150	30.0 - 34.8	82 / 85
HWS600-24	24	19.2 - 28.8	27	31	192	96	150	30.0 - 34.8	82 / 85
HWS1000-24	24	19.2 - 28.8	44	50	150	96	150	30.0 - 34.8	85 / 87
HWS1500-24	24	19.2 - 28.8	65/70 ⁽²⁾	105	144	96	200	30.0 - 34.8	84 / 88
HWS1000-36	36	28.8 - 43.2	29.3	33.3	150	144	200	45.0 - 49.7	85 / 88
HWS1500-36	36	28.8 - 43.2	42/46.5 ⁽²⁾	70	150	144	200	45.0 - 49.7	84 / 88
HWS300-48	48	38.4 - 52.8	7	-	384	192	200	55.2 - 64.8	82 / 85
HWS600-48	48	38.4 - 52.8	13	-	384	192	200	55.2 - 64.8	82 / 85
HWS1000-48	48	38.4 - 52.8	22	25	300	192	200	55.2 - 64.8	86 / 88
HWS1500-48	48	38.4 - 52.8	32	-	288	192	200	55.2 - 64.8	86 / 90
HWS1000-60	60	48.0 - 66.0	17.6	20	360	240	400	69.0 - 75.0	85 / 88
HWS1500-60	60	48.0 - 66.0	25.6/28 ⁽²⁾	42	360	240	400	69.0 - 75.0	86 / 90

HWS	300	-	3	/	-										
Series	Nominal power level and product size	Output voltage 3 (3.3V), 5, 6, 7 (7.5) 12, 15, 24, 36, 48, 60		<table border="1"> <tr> <td>blank</td> <td>No options</td> </tr> <tr> <td>/A</td> <td>Not applicable. The HWS300-1500 models have a cover fitted as standard</td> </tr> <tr> <td>/PV</td> <td>1 to 6V output program voltage for HWS300, 600. Standard on HWS1000 & 1500</td> </tr> <tr> <td>/HD</td> <td>See HWS/HD datasheet for details. -40°C start-up & pcb coating</td> </tr> <tr> <td>/ME</td> <td>See HWS/ME datasheet for details. IEC60601-1 medical certification</td> </tr> </table>		blank	No options	/A	Not applicable. The HWS300-1500 models have a cover fitted as standard	/PV	1 to 6V output program voltage for HWS300, 600. Standard on HWS1000 & 1500	/HD	See HWS/HD datasheet for details. -40°C start-up & pcb coating	/ME	See HWS/ME datasheet for details. IEC60601-1 medical certification
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/ME	See HWS/ME datasheet for details. IEC60601-1 medical certification														

Specifications						
Model		HWS300	HWS600	HWS1000	HWS1500	
Input						
AC Input Voltage Range	Vac	85 - 265				
Input Frequency	Hz	47 - 63				
DC Input Voltage range ⁽³⁾	Vdc	120 - 330				
Input Current (100/200Vac) ⁽⁴⁾	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: 15.0/8.0 5-60V: 19.5/10.0	
Inrush Current (100/200Vac)	A	20 / 40 (Typical at cold start)				
Leakage Current (240Vac, 60Hz)	mA	<0.75	<0.75	<1.2	<1.5	
Power Factor (100/200Vac)	-	0.99 / 0.95	0.99 / 0.95	0.98 / 0.95	0.98 / 0.94	
Harmonic Compliance	-	Meets IEC61000-3-2 Class A				
Hold Up Time (typ)	ms	20				
Efficiency	-	See model selector table				
Conducted & Radiated EMI	-	EN55011 / EN55032-B, FCC-B, VCCI-B. (HWS1500: Class A)				
Immunity	-	See immunity table				
Safety Certifications and Markings	-	IEC/EN/UL/CSA62368-1, 60950-1, EN50178-1, UL508(5), CE Mark and UKCA Mark				

Immunity					
Test	Standard	Test Level	Criteria	Notes See IEC61000 immunity test report on website	
ESD	EN61000-4-2	Air ± 8kV and contact ± 4kV	A/B	HWS300, HWS600; B	
Radiated Susceptibility	EN61000-4-3	80M -1GHz: 10V/m 1.4 - 2.0GHz: 3V/m 2.0 - 2.7GHz: 1V/m	A	-	
Electrical Fast Transient Burst	EN61000-4-4	± 2kV	A/B	HWS300, HWS600; B	
Surge	EN61000-4-5	Normal ± 2kV Common ± 4kV	A/B	HWS300, HWS600; B	
Conducted Susceptibility	EN61000-4-6	10Vrms	A	-	
Magnetic Fields	EN61000-4-8	30A/m	A	-	
Voltage Dips	EN61000-4-11	30% 10ms	A	-	
		60% 100ms	B	-	
		100% 5000ms	B	-	
SEMI F47 Line Dip	SEMI F47	-	-	At input voltages > 200Vac	

Specifications					
Model		HWS300	HWS600	HWS1000	HWS1500
Output					
Switching Frequency	kHz	190	190	46	3-5V: 45, 6-7V: 55, 12-60: 70
Line Regulation	-	See Model Selector Table			
Load Regulation	-	See Model Selector Table			
External Load Capacitance (Maximum)	uF	3.3V, 5V; 10,000, 12V, 15V; up to 5,000, 24V; up to 5,000, 48V; 1,000			
Ripple & Noise	-	See Model Selector Table			
Temperature Coefficient	%/°C	0.02			
Minimum Load	-	No minimum load required			
Overcurrent Protection	%	>105 (>101 of peak current for peak current capable models)			
Overvoltage Protection	-	See model selector table. Latching (unit shutdown), cycle AC input to reset			
Remote Sense	-	Yes			
Remote On/Off	-	Yes (Isolated from output)			
Indicators	-	Green LED indicates DC is OK			
Parallel Operation	-	Single wire connection (up to 5 units). See instruction manual			
Environmental					
Operating Temperature	°C	-10 to +70, derate linearly to 50% load from 50 to 70 ⁽⁶⁾			
Storage Temperature	°C	-30 to +85			
Humidity (non condensing)	%RH	Operating: 10 - 90, Non operating 10 - 95			
Cooling	-	Internal fan			
Altitude	m	2,000	2,000	3,000	2,000
Withstand Voltage (For 1 minute)	Vac	Input to ground 2,500, Input to output 3,000, Output to ground 500 for 1 minute		Input to ground 2,000, Input to output 3,000, Output to ground 500 for 1 minute	
Isolation Resistance	MΩ	>100 at 25°C, 70%RH & 500Vdc			
Vibration (Non-operating)	-	10-55Hz (Sweep for 1min.), 19.6m/s ² Constant X,Y,Z 1 hour each			
Shock (Non-operating)	-	Less than 196m/s ²			
Other					
Weight (Typ)	g	1,000	1,600	3,200	4,000 (<12V 3,800)
Size (WxHxD)	mm	61 x 82 x 165	100 x 82 x 165	126.5 x 82 x 240	126.5 x 82 x 280
Size (WxHxD)	Inches	2.4 x 3.23 x 6.5	3.94 x 3.23 x 6.5	5 x 3.25 x 9.45	5 x 3.25 x 11
Connectors	-	Screw terminals			
Case Material	-	Aluminum			
MTBF - Telcordia SR-332 issue 3*	Hours	2,145,809	1,998,996	1,087,031	1,152,309
Warranty	Years	Limited lifetime warranty (See website for terms & conditions)			

Notes:

See website for detailed specifications, test methods and installation manual

(1) 200-265Vac input, 10s maximum on time with 35% duty cycle

(2) Rating at 100 / 200Vac input

(3) Safety certified for AC input only

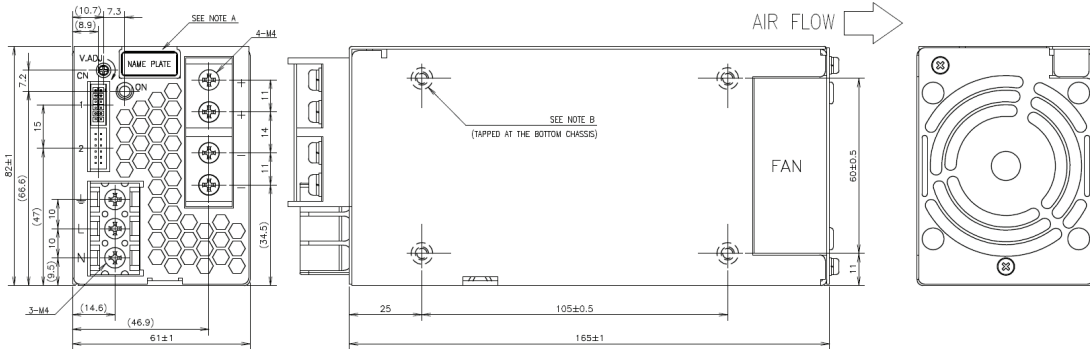
(4) See website for input current on 3.3V models

(5) UL508; HWS300/600 5V, 12V, 24V & 48V models

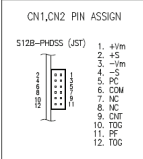
(6) Input and output voltage dependent. See installation manuals for derating curves

* 24V output model, 25°C ambient, full load, 230Vac input

Outline Drawing HWS300



SIGNAL CONNECTOR INFORMATION



- == ACCESSORIES ==
- * COVER FOR BARRIER TERMINAL STRIP -----1 (ATTACHED ON TERMINAL AT SHIPMENT)
 - * SHORT PIECE -----1 (SHORTING +V_{in} - +S, -V_{in} - -S, CN1 - TDG (ATTACHED ON CN1 AT SHIPMENT))

== SIGNAL CONNECTOR USED ==

PART DESCRIPTION	PART NAME	MANUFACT
PIN HEADER	S12B-PHSSS	JST

== MATCHING HOUSINGS, PINS & TOOL ==

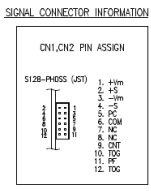
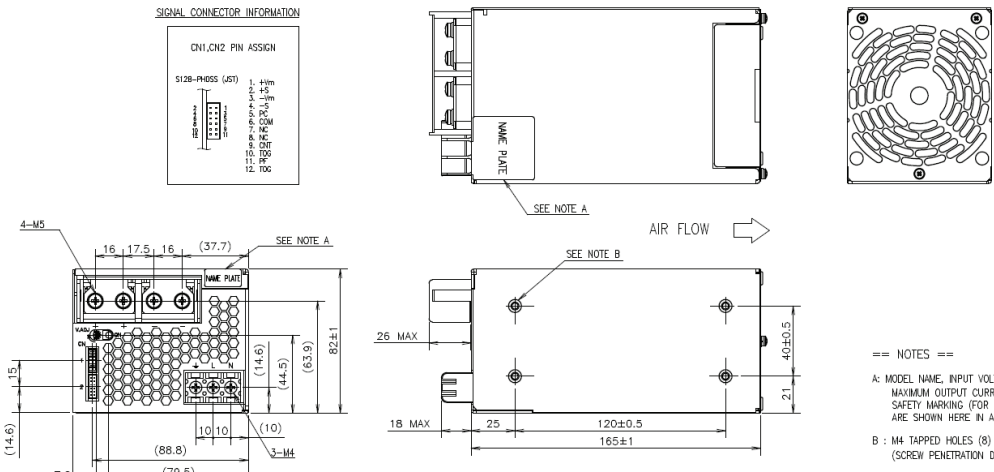
PART DESCRIPTION	PART NAME	MANUFACT
SOCKET HOUSING	PHDR-12VS	JST
TERMINAL PINS	SPHD-002T-P0.5(AWG28~24) SPHD-001T-P0.5(AWG28~22)	JST
HAND CRIMPING TOOL	YRS-620/SPHD-002T-P0.5 YC-610R/SPHD-001T-P0.5	JST

== OPTIONAL MODELS ==

MODEL	COATING
HWS300-*	—
HWS300-*/CO	○
HWS300-*/HD	○

- == NOTES ==
- A: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, COUNTRY OF MANUFACTURE AND SAFETY MARKING (FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- B: M4 TAPPED HOLES (8) FOR CUSTOMER CHASSIS MOUNTING. (SCREW PENETRATION DEPTH 6m/m MAX.)

Outline Drawing HWS600



- == ACCESSORIES ==
- * COVER FOR BARRIER TERMINAL STRIP -----1 (ATTACHED ON TERMINAL AT SHIPMENT)
 - * SHORT PIECE -----1 (SHORTING +V_{in} - +S, -V_{in} - -S, CN1 - TDG (ATTACHED ON CN1 AT SHIPMENT))

== SIGNAL CONNECTOR USED ==

PART DESCRIPTION	PART NAME	MANUFACT
PIN HEADER	S12B-PHSSS	JST

== MATCHING HOUSINGS, PINS & TOOL ==

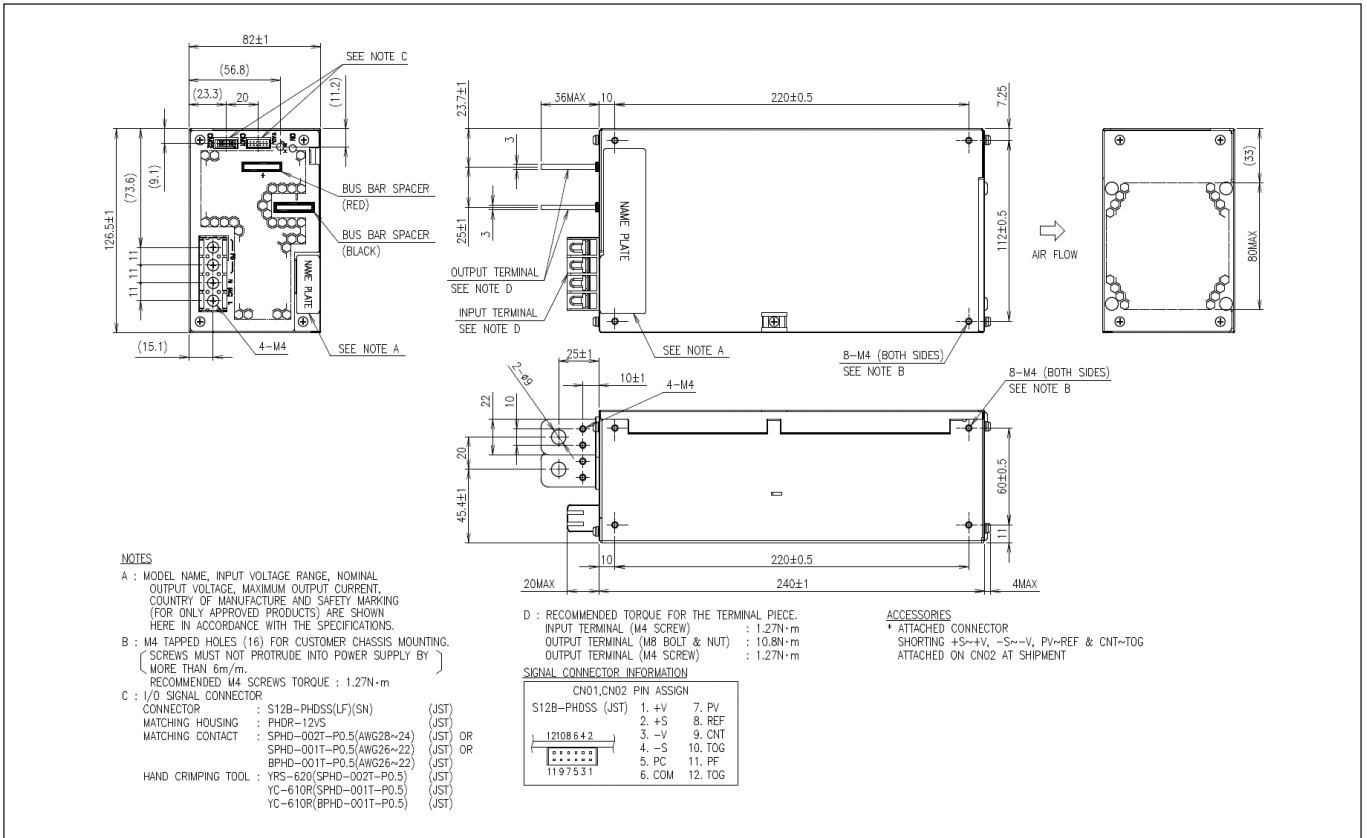
PART DESCRIPTION	PART NAME	MANUFACT
SOCKET HOUSING	PHDR-12VS	JST
TERMINAL PINS	SPHD-002T-P0.5(AWG28~24) SPHD-001T-P0.5(AWG26~22)	JST
HAND CRIMPING TOOL	YRS-620/SPHD-002T-P0.5 YC-610R/SPHD-001T-P0.5	JST

== OPTIONAL MODELS ==

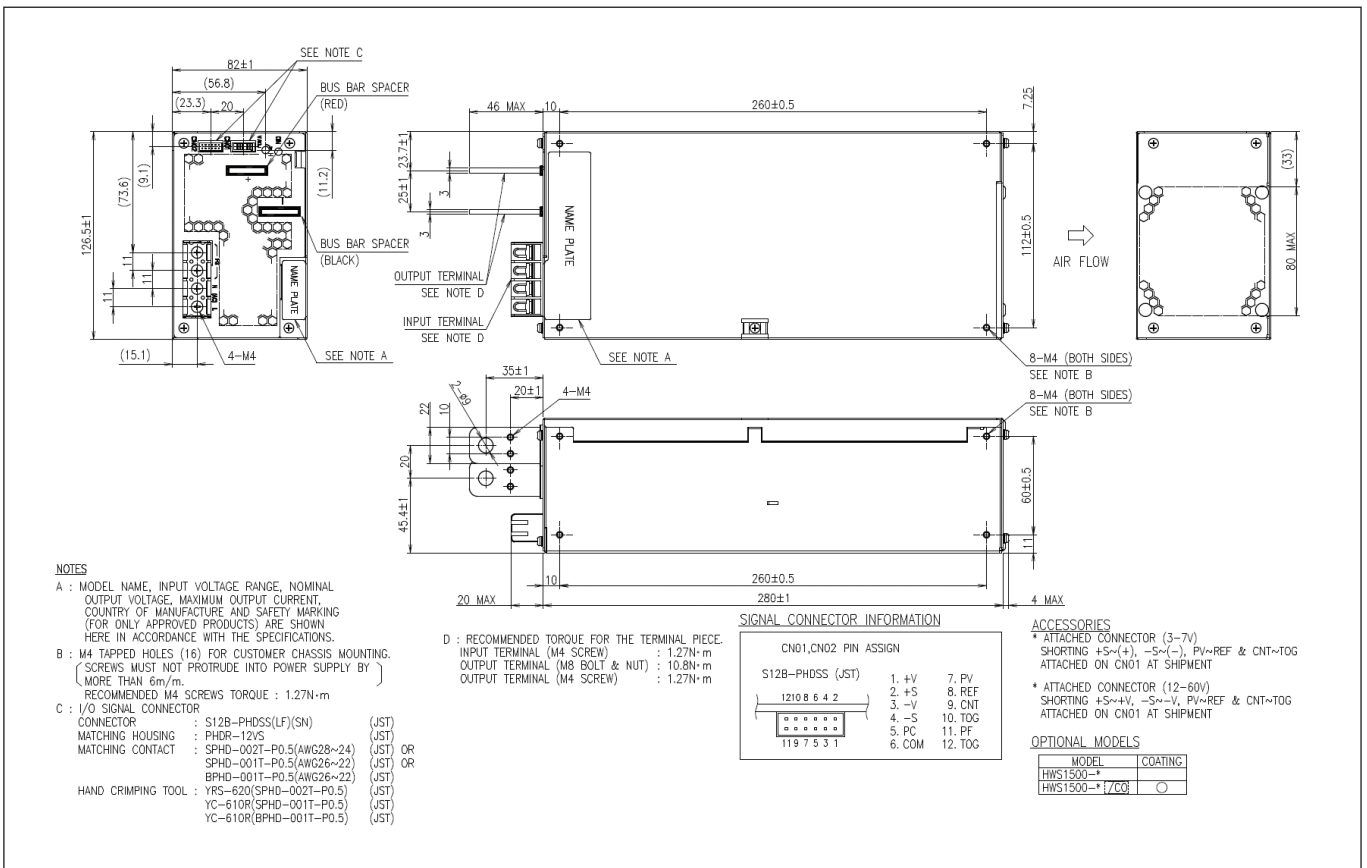
MODEL	COATING
HWS600-*	—
HWS600-*/CO	○
HWS600-*/HD	○

- == NOTES ==
- A: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, COUNTRY OF MANUFACTURE AND SAFETY MARKING (FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- B: M4 TAPPED HOLES (8) FOR CUSTOMER CHASSIS MOUNTING. (SCREW PENETRATION DEPTH 6m/m MAX.)

Outline Drawing HWS1000



Outline Drawing HWS1500





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