

HFE1600 Series

1600W 1U Hot Swap Front End Power Supplies

- 25.2W/in³ power density
- Internal ORing MOSFET & Current Share
- Climate Savers Computing efficiency standards
- Up to 8000W in 1U rack
- Single and dual output 1U racks
- PMBus™ (I²C) and LAN options



Key Market Segments & Applications

Power for Distributed Power Architecture
Industrial Automation

HFE1600 Features and Benefits

Features

- 1U high
- Internal ORing MOSFET & Current Share
- Status monitoring signals

Benefits

- Utilizes less system space
- Suitable for N+1 redundancy
- Easier system monitoring including PMBus™ and LAN

Specifications

ITEMS	MODELS		
	(2)	VAC	
Input Voltage Range	(2)	VAC	85 - 265VAC, 47 - 63Hz. See model selector for power derating
Input Current (Max) 100/230VAC		A	12.4 / 8.1A
Inrush Current		A	<35A
Power Factor Correction		-	Meets EN61000-3-2, PF > 0.98 at full load
Temperature Coefficient		%/°C	<0.02%/°C
Overcurrent Protection		%	105 - 120%
Overvoltage Protection	(1)	%	110% (Tracking). Cycle AC to reset or utilize Remote On/Off
Overtemperature Protection	(1)	-	Shutdown with automatic restart. Warning signal provided
Hold up time		ms	>10ms, 100/230VAC Input, 80% loading
Leakage Current		mA	< 0.75 / 1.5mA 100/230VAC, 60Hz
Remote Sense Compensation		-	HFE1600-12: 0.25V/wire, HFE1600-24: 0.5V/wire, HFE1600-32: 0.75V/wire, HFE1600-48: 1V/wire
Indicators		-	AC OK: Green LED, DC OK / Fail: Green / Red LED
Remote On/Off		-	Unit ON: 0 - 0.6V or short, OFF: 2 - 15V or open circuit
Parallel Operation		-	Yes, single wire current share, 90% accuracy, up to 10 units
AC Fail Signal		-	Open Collector, ON when AC is within 85 - 270VAC
DC Good Signal		-	Open Collector, ON when output is above 85 to 95% of setpoint (tracking)
Remote Adjust	(1)	-	By either external 0 - 5V signal or 1k potentiometer
I ² C Interface	(1)	-	Isolated from output, Add suffix /S, PMBus compatible
Auxiliary Output		-	11.2 - 12.5V, 0.5A, 240mV ripple and noise
Operating Temp. (-TB Rack)		°C	-10°C to +70°C, derate 2%/°C from 50°C to 60°C, 2.5%/°C from 60°C to 70°C
Operating Temp. (-IEC320 Rack)		°C	-10°C to +60°C, derate 2%/°C from 50°C to 60°C
Storage Temperature		°C	-30°C to +85°C
Humidity (Non condensing)		%RH	Operating: 10 - 90%RH, Storage: 10 - 95%RH
Cooling		-	Two variable speed internal fans, airflow exits across input/output connector
Withstand Voltage		-	I/P to O/P 3kVAC, I/P to Ground 2kVAC, O/P to Ground: HFE1600-12, -24V 500VAC, HFE1600-48 1.5kVAC
Isolation Resistance		Ω	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC
Vibration (Basic transportation)		-	Meets IEC61068-2-64
Shock (Basic transportation)		-	Meets IEC61068-2-27
Safety Agency Certifications		-	UL60950-1, EN60950-1, CE Mark
Line Dip		-	Complies with SEMI F47 (200VAC line only)
Conducted and Radiated EMI		-	EN55022 & FCC part 15; Conducted class B, Radiated class A
Immunity		-	IEC61000-4-2 (lv 2,3), -3 (lv 2), -4 (lv2), -5 (lv3,4), -6 (lv2), -8 (lv 4), -11
Size (W x H x D)		mm	Power Supply: 85 x 41 x 300, Rack: 445 x 44 x 365
Weight		g	Power Supply: 1550g, Rack: 4800g
Warranty		yrs	3

(1) See installation manual for detailed specifications & test methods

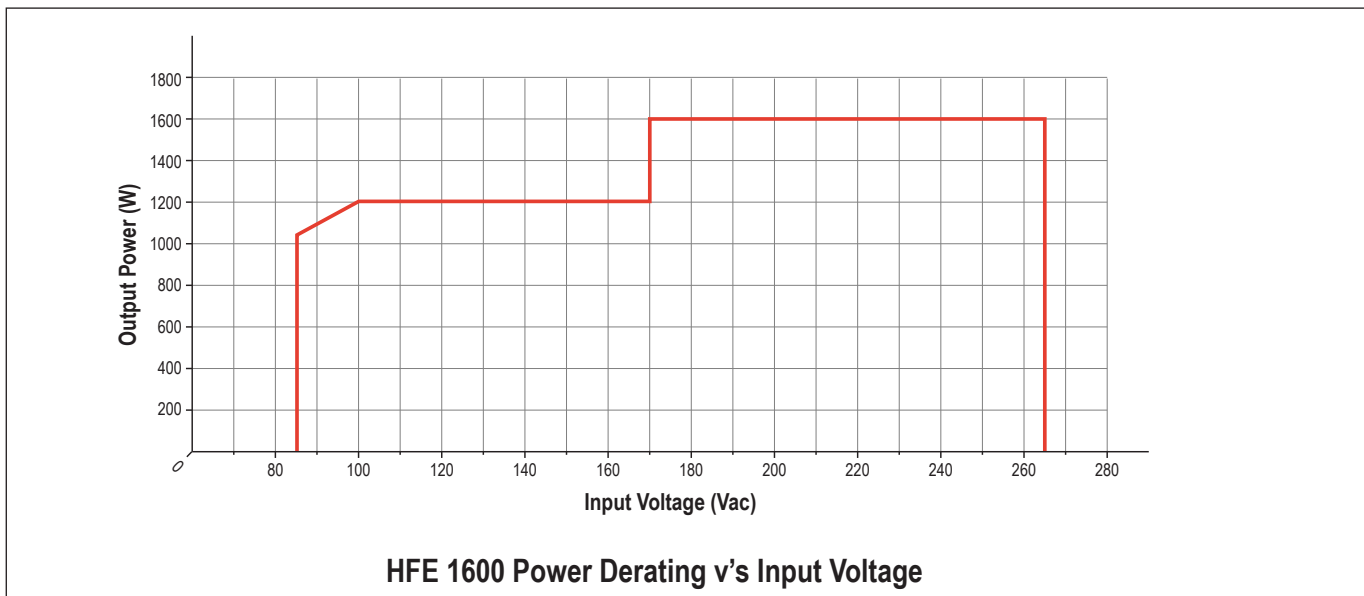
(2) Derate output power linearly 1%/V from 100VAC to 85VAC input

Model Selector						
Model	Output Voltage	Adjust Range (1)	Max Current (Vin>170VAC)(2)	Max Power (Vin>170VAC)(2)	Max Current (100<Vin<170VAC)(2)	Max Power (100<Vin<170VAC)(2)
HFE1600-12	12V	9.6 - 13.2V	133A	1596W	100A	1200W
HFE1600-12/S	12V	9.6 - 13.2V	133A	1596W	100A	1200W
HFE1600-24	24V	19.2 - 29V	67A	1608W	50A	1200W
HFE1600-24/S	24V	19.2 - 29V	67A	1608W	50A	1200W
HFE1600-32	32V	25.6 - 38.4V	47A	1504W	37.5A	1200W
HFE1600-32/S	32V	25.6 - 38.4V	47A	1504W	37.5A	1200W
HFE1600-48	48V	38.4 - 58V	33A	1584W	25A	1200W
HFE1600-48/S	48V	38.4 - 58V	33A	1584W	25A	1200W

Model	Load Reg	Line Reg	Ripple & Noise	Efficiency (%) ⁽³⁾	IP°C
HFE1600-12	60mV	30mV	240mV	87 / 90%	-
HFE1600-12/S	60mV	30mV	240mV	87 / 90%	Yes
HFE1600-24	120mV	60mV	240mV	88 / 90%	-
HFE1600-24/S	120mV	60mV	240mV	88 / 90%	Yes
HFE1600-32	160mV	80mV	320mV	88 / 90%	-
HFE1600-32/S	160mV	80mV	320mV	88 / 90%	Yes
HFE1600-48	240mV	120mV	480mV	89 / 92%	-
HFE1600-48/S	240mV	120mV	480mV	89 / 92%	Yes

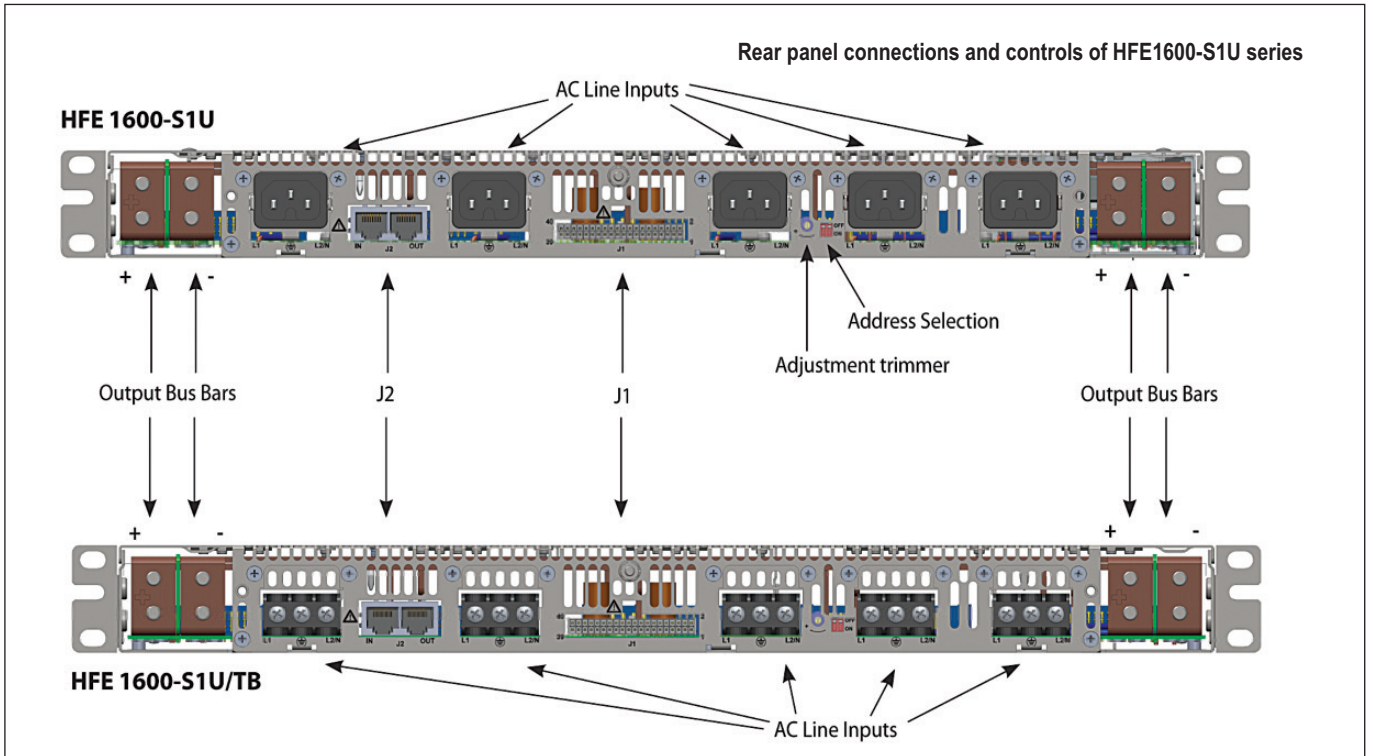
(3) At 75% load, 100 / 230VAC input

Rack and Accessories		
Model	Description	Maximum Rack Current
HFE1600-S1U	Five slot 19" rack, IEC320 input connectors (5)	266A per side (532A total)
HFE1600-S1U-TB	Five slot 19" rack, Terminal Block input connectors (5)	266A per side (532A total)
HFE1600/BP	One slot blanking panel, four provided with each rack	
HFE1600-D1U	Four slot (two isolated pairs), dual output 19" rack, IEC320 input connectors (4)	266A per side
HFE1600-D1U-TB	Four slot (two isolated pairs), dual output 19" rack, Terminal Block input connectors (4)	266A per side
HFE1600-LAN	Plug in LAN module. Takes up one rack slot. For use with /S models only	

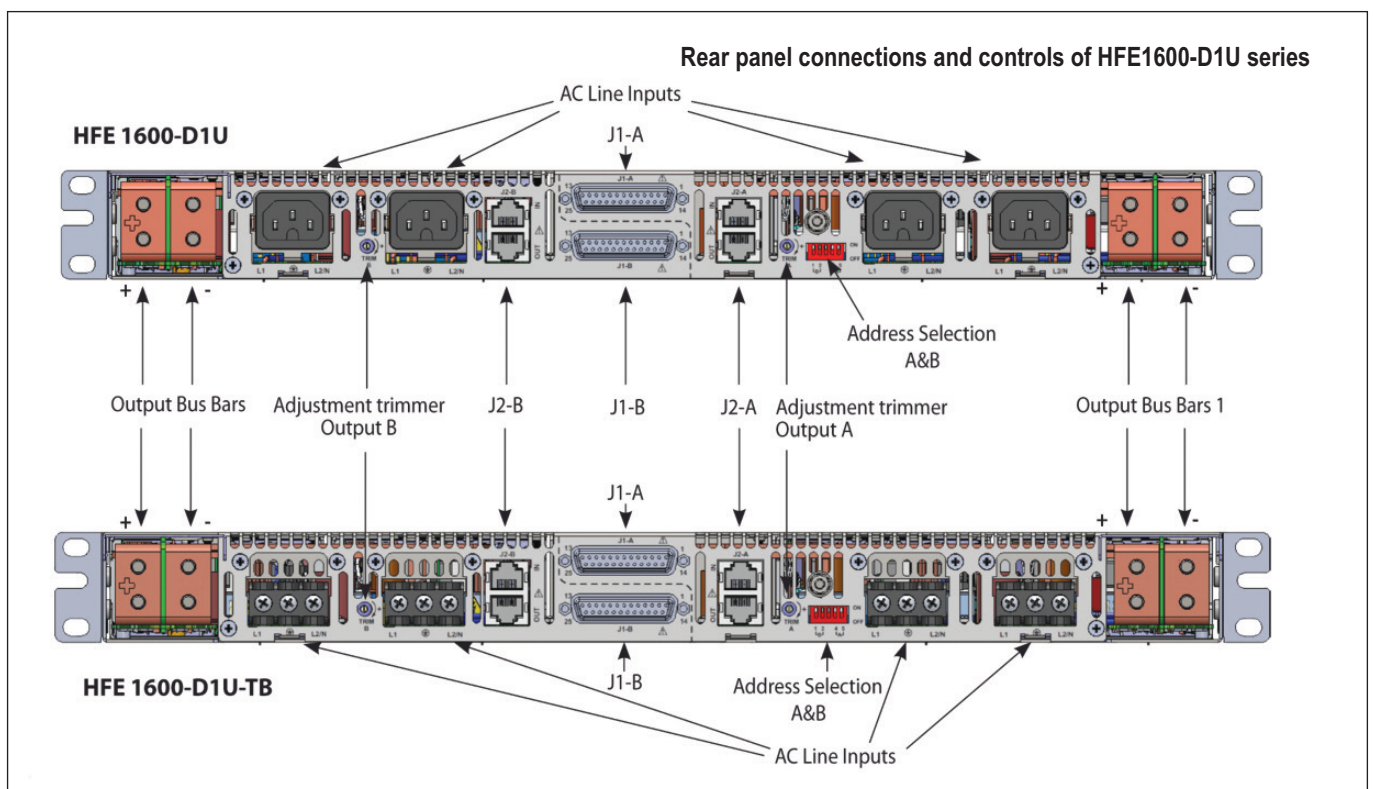


Available Rack Types

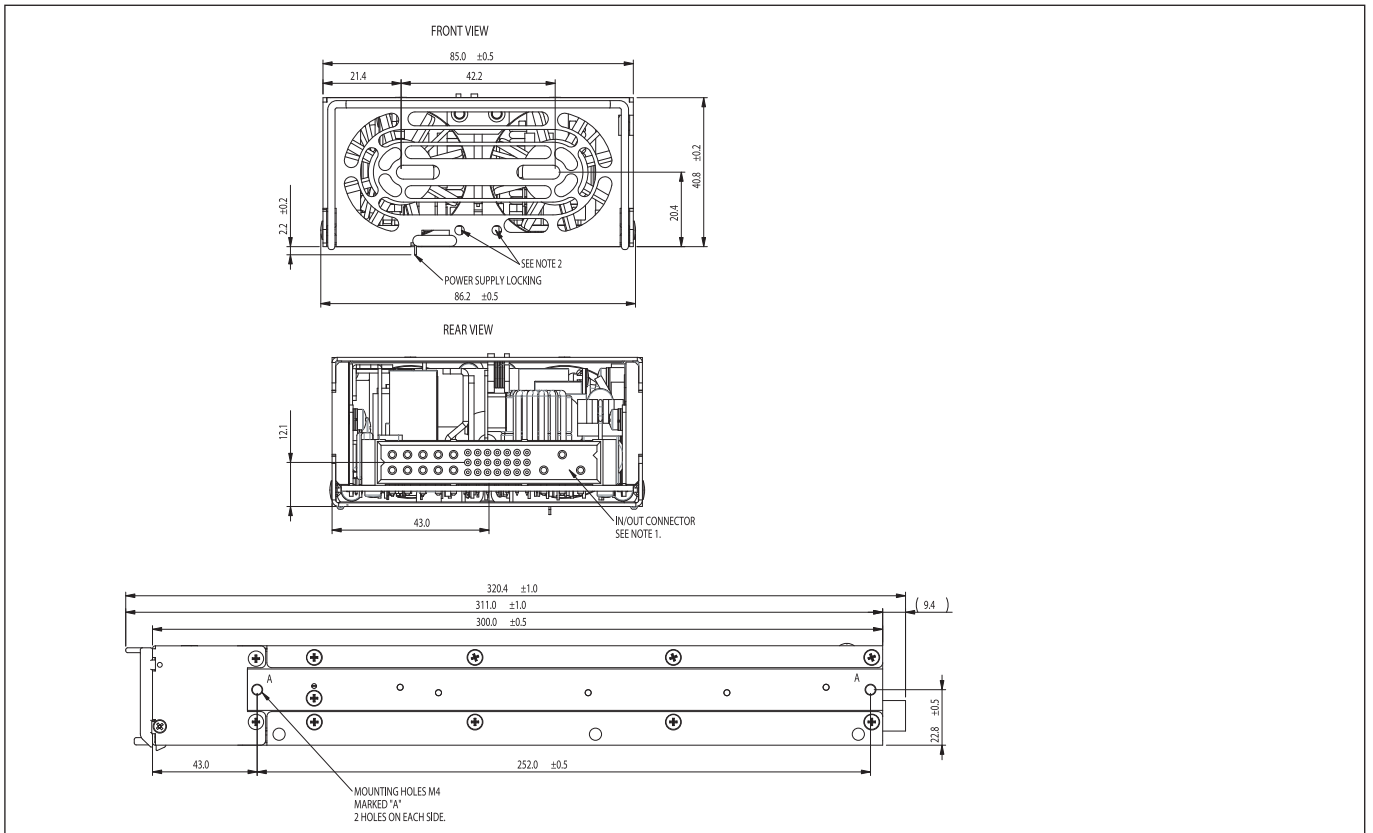
HFE1600-S1U - Five slot 19' rack single common output



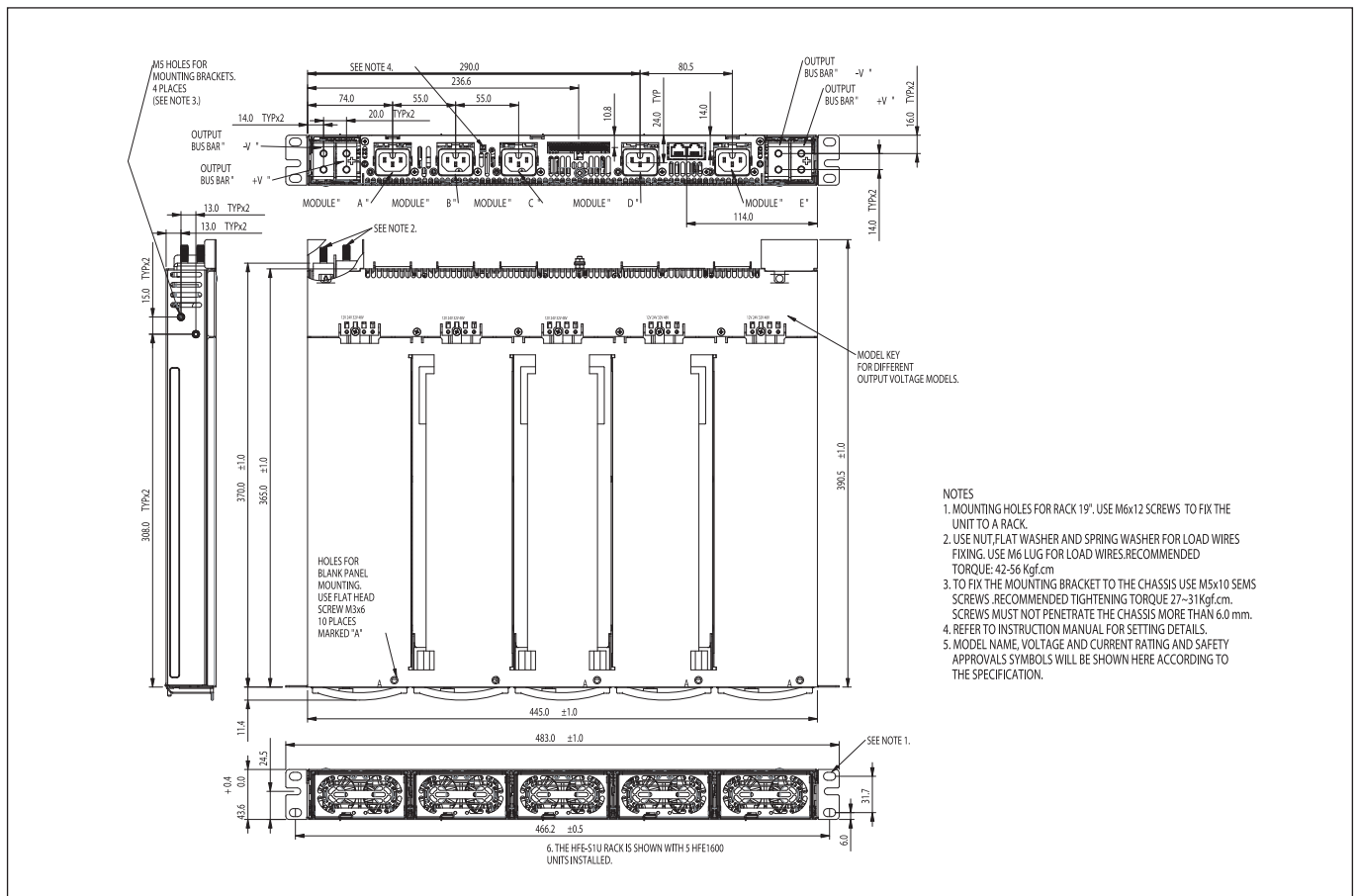
HFE1600-D1U - Four slot (two isolated pairs), dual output 19' rack



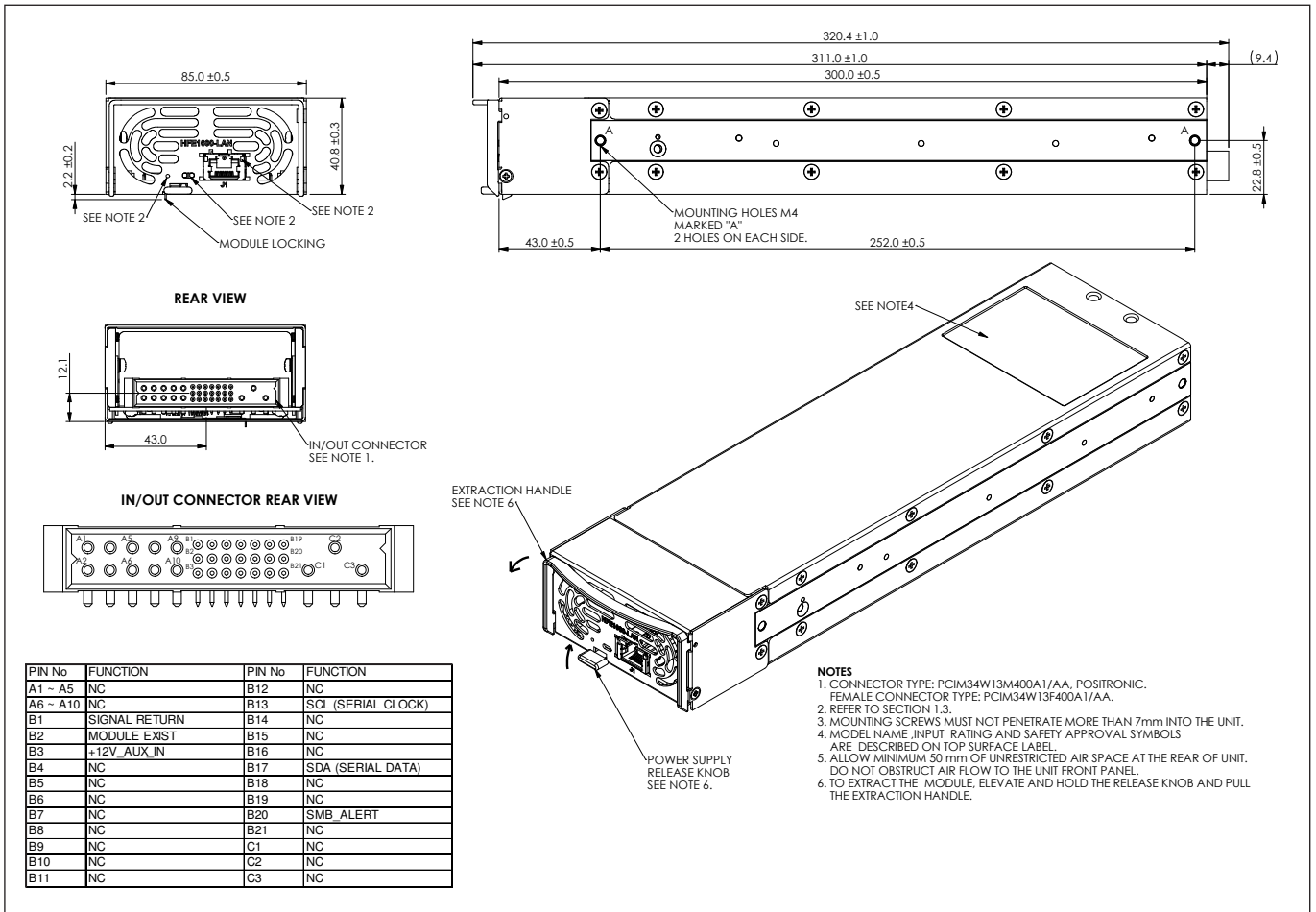
Outline Drawing HFE1600 Series



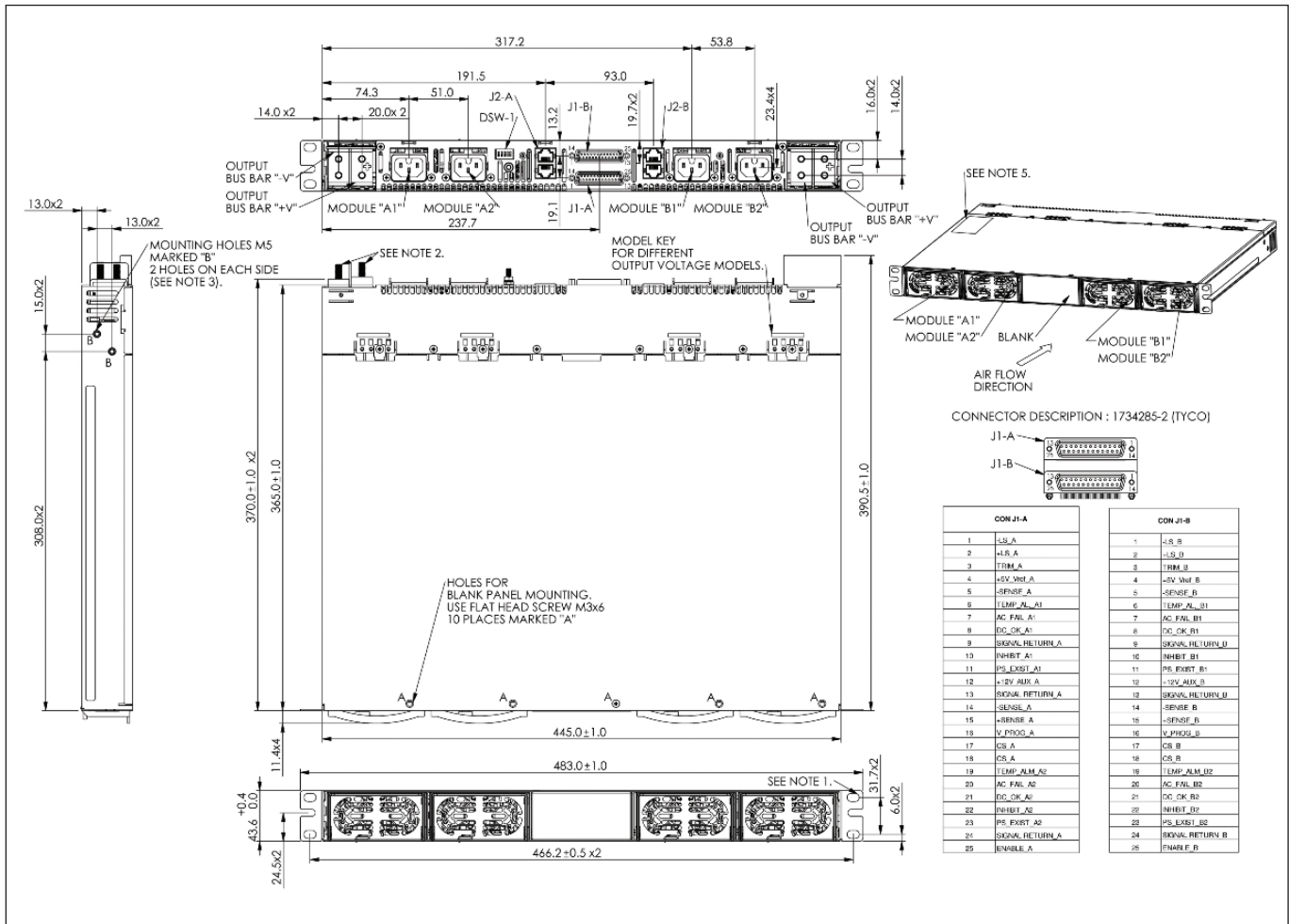
Outline Drawing HFE1600S1U Series



Outline Drawing HFE1600- LAN



Outline Drawing HFE1600 D1U Series



Notes:

1. Mounting holes for rack 19" Use M6 x 12 screws to fix the unit to a rack.
2. Use nut, flat washer and spring washer for load wires. Fixing - Use lug for stud M6 for load wires. Recommended torque: 42-56 Kgf.cm.
3. To fix the mounting bracket to the chassis use M5 x 10 SEMS screws. Recommended tightening torque 27-31Kgf.cm. Screws must not penetrate the chassis more than 6.0mm.
4. The HFE1600-D1U rack is shown with a 4 HFE1600 unit installed and 1 blank panel.
5. Model name, voltage and current rating and safety approvals symbols will be shown here according to the specification.



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
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
www.it.tdk-lambda.com



Netherlands

info@nl.tdk-lambda.com
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
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
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
www.de.tdk-lambda.com



Nordic Sales Office

Haderslevvej 36B
DK-6000 Kolding
Denmark
Tel: +45 2911 9556
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
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
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

www.tdk-lambda.ru

Local Distribution

Ihr Vertriebspartner:

HY-LINE[®]
POWER COMPONENTS

Inselkammerstraße 10
D-82008 Unterhaching
Tel: +49 (0)89 614 503 10
Fax +49 (0)89 614 503 20
E-Mail: power@hy-line.de
URL: www.hy-line.de