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Find the *Kepco HSF 5-20* at our website: *Click HERE*

146-1954

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**Behind every power supply challenge that involves reliability, flexibility and tight space...
there is a Kepco Series HSF/HSP solution.**

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Series HSF 600W/1200W/1500W

SERIES HSF

The Kepco HSF series of hot-swappable plug-in power supplies are designed to be combined in an N+1 fault-tolerant power system. Built-in forced current sharing and or-ing diodes are provided for this purpose. HSF may also be used independently as a multi-output power supply.

CE

This KEPCO product is backed by a firm 5-YEAR WARRANTY



Metered Version HSF
(Add suffix "M" to the model number)

For full product specs:
www.kepcopower.com/hsf.htm

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FEATURES

- Plug-in construction. Easy mount and dismount.
- User configurable combinations of 50, 100, 150, 350, 600 and 1200/1500 watt plug-in modules.
- Parallel for N+1 redundancy with or-ing diodes built in.
- All models have active PFC (Power Factor Correction).
- NEBS TR-WWT-4063 qualified.
- Front panel voltage trimming.
- Keyed construction to prevent incorrect module placement. The HSF are keyed according to their voltage rating. When the corresponding rack adapter key (pin) is installed by a user, only an HSF of the correct voltage can be inserted into the keyed slot.
- All HSF provide separate remote error sense terminals: 0.25V drop/wire.
- Forced current share is used to configure an N+1 system. When the current share bus of paralleled HSF are connected together, the load current divides equally. If one unit fails, the remaining units will divide the load equally among themselves and continue to supply uninterrupted current to a critical load. The failed unit is isolated by built-in or-ing diodes.
- A built-in relay provides either normally open (close on failure) or normally closed (open on failure) contacts that may be used to provide an external failure indication.
- The HSF obtain mains power and provide output via a 24 pin connector that mates with a corresponding connector in the rack adapter.
- Reset button (350W only). Restores output after an overvoltage or overcurrent or thermal overload induced shutdown.
- Safety: designed to meet UL 1950,CSA C22.2 No. 234 (M90) level 3 and EN60950 (a-c input only).
- Bellcore requirements: designed to meet NEBS GR-63-CORE specifications. Certified for an RA 19-6B with six HSF 150W plug-ins tested per GR-63-CORE, level 4 (earthquake and office vibration).

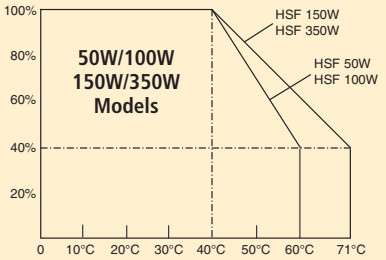
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HSF 50W / 100W / 150W / 350W MODEL TABLE

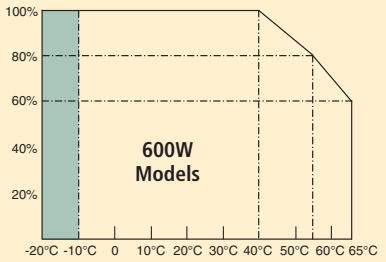
MODEL	OUTPUT VOLTS	ADJUSTMENT RANGE	OVP SETTING (VOLTS)	OUTPUT CURRENT AMPS 0-40°C	CURRENT[1] LIMIT MIN. (AMPS)	SW RIPPLE mV typ	NOISE (spike) max
50 WATT MODELS							
HSF 5-10PFC	5	4.3-5.3	5.7~6.4	0-10.0	10.5	80	<120
HSF 12-4.3PFC	12	11.4-12.6	13.5~15.5	0-4.3	4.5	100	<150
HSF 15-3.5PFC	15	13.5-16.2	16.8~18.8	0-3.5	3.6	100	<150
HSF 24-2.2PFC	24	22.5-25.5	26.8~30.3	0-2.2	3.3	100	<150
HSF 48-1.1PFC	48	44.0-52.0	54.8~59.9	0-1.1	1.15	130	<200
100 WATT MODELS							
HSF 5-20PFC	5	4.3-5.3	5.7~6.4	0-20	21.0	80	<120
HSF 12-8.5PFC	12	11.4-12.6	13.7~15.7	0-8.5	8.92	100	<150
HSF 15-7PFC	15	13.5-16.5	17.0~19.0	0-7.0	7.35	100	<150
HSF 24-4.5PFC	24	19.2-26.0	27.0~30.5	0-4.5	6.82	100	<150
HSF 28-3.8PFC	28	26.5-29.5	32.0~35.0	0-3.8	3.99	100	<150
HSF 48-2.1PFC	48	44.0-52.0	53.5~60.0	0-2.2	2.2	130	<200
150 WATT MODELS							
HSF 5-30PFC	5	4.3-5.3	5.6~6.5	0-30	31.5	30	<120
HSF 12-13PFC	12	9.6-13.2	13.7~15.7	0-13	13.65	35	<150
HSF 15-10PFC	15	12.5-16.5	17.0~19.0	0-10	10.5	40	<150
HSF 24-6.5PFC	24	19.2-26.4	27.0~30.5	0-6.5	10.5	50	<150
HSF 28-5.5PFC	28	22.4-30.8	32.0~35.0	0-5.5	5.78	60	<150
HSF 48-3.3PFC	48	38.4-52.8	53.5~60.0	0-3.3.8	3.46	80	<200
350 WATT MODELS							
HSF 3.3-70	3.3	2.65-3.5	4.0~30.0[2]	0-70	73.0	30	<100
HSF 5-70	5	4.0-5.5	4.0~30.0[2]	0-70	73.0	30	<100
HSF 12-30	12	9.6-13.2	4.0~30.0[2]	0-30	31.5	40	<150
HSF 15-24	15	12.0-16.5	4.0~30.0[2]	0-24	25.2	40	<175
HSF 24-16	24	19.2-26.5	4.0~30.0[2]	0-16	16.8	60	<200
HSF 28-13	28	22.4-30.8	4.0~30.0[2]	0-13	13.6	60	<200
HSF 48-7.5	48	38.4-52.8	4.0~30.0[2]	0-7.5	7.8	60	<300

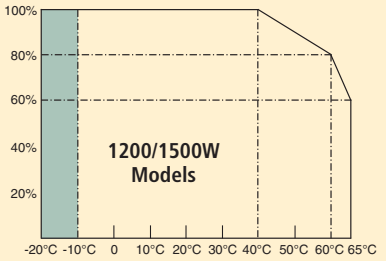
(1) Current limit is a rectangular type, not foldback.
(2) OVP Setting = % tracking above output.

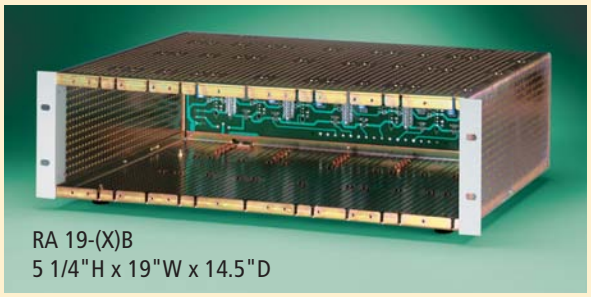
FIGURE 1
Output Power vs. Ambient Temperature



THE POWER SUPPLY WILL START UP BETWEEN -20 TO -10°C BUT MAY NOT MEET PUBLISHED SPECIFICATIONS






RA 19-(X)B
5 1/4"H x 19"W x 14.5"D

HSF 600W MODEL TABLE

MODEL [1]	OUTPUT Volts	ADJUSTMENT RANGE [2] Volts	EXTERNAL PROGRAMMING RANGE[(3] Volts	OVP SETTING Volts	OUTPUT CURRENT Amps	CURRENT LIMIT [4] Amps	RIPPLE/NOISE mV p-p
HSF 12-53	12	0-13.8	0-14.4	16.8-19	53	55.6-68.9	180/220
HSF 15-43	15	0-17.4	0-18.0	21-24	43	45.1-55.9	180/220
HSF 24-27	24	0-28.2	0-28.8	33.6-38.4	27	28.3-35.1	220/320
HSF 28-23	28	0-33.0	0-33.6	39.2-44	23	24.1-29.8	220/320
HSF 48-13	48	0-52.2	0-52.8	57.6-60	13	13.7-16.9	220/320

(1) For metered version, add suffix "M". (2) Front panel trimpot. (3) 0-6V External voltage source (0-5.5V for 48 Volt model).
(4) Square type. After cause is removed, output voltage restored automatically.

HSF 1200W / 1500W MODEL TABLE

MODEL [1]	OUTPUT Volts	ADJUSTMENT RANGE Volts	OVP SETTING Volts	OUTPUT CURRENT Amps	OUTPUT CURRENT Amps	OUTPUT POWER Watts	OUTPUT POWER Watts	CURRENT LIMIT Amps	RIPPLE/NOISE mV p-p
Condition, a-c input				85-132V a-c	170-265V a-c	85-132V a-c	170-265V a-c		
HSF 24-50	24	16.8-30.5	32-35	37.5	50	900	1200	55-65	250/350
HSF 48-32	48	33.6-54.0	56-60	18.7	32	897.6	1536	33.6-36.8	350/450

(1) For metered version, add suffix "M".

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Four HSF modules shown in RA 19-1U Housing


Rear View

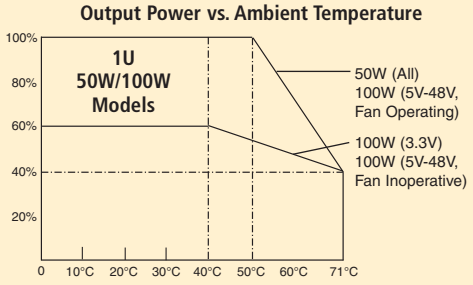
HSF 1U RACK HOUSING

The RA 19-1U rack adapter mounts up to four HSF 50, 100 or 150 Watt-1UR power supplies. Each plug-in power supply is equipped with a power on/off, indicator LEDs and voltage test points.

The RA 19-1U provides access to the DIP switches and rack keying without disassembling the rack. It also provides a redundant scheme with modules 1 and 3 being powered from one a-c input and modules 2 and 4 from a second a-c input. Module numbering is left to right facing the front panel.

The rack adapters permit almost any combination of independent, series and/or parallel-redundant operation. Parallel pairs in series provide increased voltage with N+1 redundancy. Each 1U rack adapter can provide up to 200V (series), 140A (parallel), or 100V/70A (parallel-redundant, N+1 pairs). System capability is further increased by multiple 1U rack adapters in parallel/series.

FIGURE 1
Output Power vs. Ambient Temperature



For more information:
www.kepcopower.com/hsf.htm

HSF 1UR MODEL TABLE

MODEL	OUTPUT VOLTS(1)	ADJUSTMENT RANGE	OVP SETTING (VOLTS)	OUTPUT CURRENT AMPS(1) 0-40°C	OVERCURRENT LIMIT (2) (AMPS)	SW RIPPLE mV typ	NOISE (SPIKE) mV max
50 WATT MODELS							
HSF 5-10-1UR	5	4.3-5.3	5.7~6.4	0-10.0	10.5	80	<120
HSF 12-4.3-1UR	12	11.4-12.6	13.5~15.5	0-4.3	4.5	100	<150
HSF 15-3.5-1UR	15	13.5-16.5	16.8~18.8	0-3.5	3.6	100	<150
HSF 24-2.2-1UR	24	22.5-25.5	26.8~30.3	0-2.2	3.3	100	<150
HSF 48-1.1-1UR	48	45.0-51.0	54.8~59.9	0-1.1	1.15	130	<200
100 WATT MODELS							
HSF 3.3-25-1UR(3)	3.3	2.8-3.5	3.75~4.7	0-25	26.0	80	<120
HSF 5-20-1UR	5	4.3-5.3	5.6~6.4	0-20	20.7	80	<120
HSF 12-8.4-1UR	12	11.4-12.6	13.3~15.4	0-8.4	8.65	100	<150
HSF 15-6.7-1UR	15	13.5-16.5	16.8~18.8	0-6.7	6.8	100	<150
HSF 24-4.2-1UR	24	19.2-26.0	26.5~30.0	0-4.2	4.5	150	<200
HSF 28-3.5-1UR	28	26.5-29.5	29.7~34.7	0-3.5	3.6	150	<200
HSF 48-2-1-1UR	48	44.0-52.0	54.5~59.5	0-2	2.05	200	<300
150 WATT MODELS							
HSF 3.3-35-1UR(3)	3.3	2.8-3.5	3.75~4.7	0-35	38.5	80	<120
HSF 5-30-1UR	5	4.3-5.53	5.6~6.4	0-30	33.0	80	<120
HSF 12-12-1UR	12	11.4-12.6	13.3~15.4	0-12	13.7	100	<150
HSF 15-10-1UR	15	13.5-16.5	16.8~18.8	0-10	11.0	100	<150
HSF 24-6.3-1UR	24	19.2-26.0	26.5~30.0	0-6.3	10.5	150	<200
HSF 28-5.3-1UR	28	26.5-29.5	29.7~34.7	0-5.3	5.94	150	<200
HSF 48-3.1-1UR	48	44.0-52.0	54.5~59.5	0-3.1	3.52	200	<300

(1) See Temperature vs Output Power Curve.
Maximum Power Rating (W) = Nominal Output Volts (V) x Maximum Output Current (A). Reducing voltage allows operation without degradation at higher current as long as maximum power rating is not exceeded.
(2) Overcurrent Limit is rectangular (50W) or hiccup type (100W, 150W). After the overload is removed, output is automatically restored.
(3) Forced current sharing not available.

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Three HSP models shown in RA 60 Housing

SERIES HSP

The Kepco HSP series comprises a group of ten models, seven 1000 watt power supplies with outputs from 3.3 volts to 48 volts and three 1500 watt power supplies with outputs from 24 volts to 48 volts. All models feature current-sharing for parallel redundant N+1 operation. Models with the OR-ing diode (suffix R), are capable of hot swapping when plugged into Kepco's RA 60 series rack adapter. A mechanical keying scheme allows the user to define which power supply will plug into a specified slot in the housing. Output voltage and current limit settings are adjustable from the panel and may be remotely adjusted.

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This KEPCO product is backed by a firm 5-YEAR WARRANTY



Metered Version HSP
(Add suffix "M" to the model number)

FEATURES

- Remote sensing (0.5V for 3.3 and 5V models, 0.8V for all others).
- Control/programming of the voltage channel, current limit, overvoltage set point. The output voltage is remotely trimmable by resistance. Both the output voltage and current limit are adjustable over the range 20%-100%.
- Setpoint monitors for voltage and current permit online adjustment of output limits.
- Switch selectable Bellcore-type current "walk-in" characteristic for battery charger applications.
- Front panel status indicators, duplicated by form C relay contact status flags at rear panel connector: POWER, DC FAIL, OVERTEMP, FAN FAIL.
- Safety Agency Approvals: Recognized component with SELV output per UL 60950, CSA 950, VDE IEC 950/EN60950 for a-c mains operation.
- HSP are capable of sustaining full load operation through the loss of one full mains cycle at any source voltage without indication of failure. If mains power is lost for more than one cycle, HSP provides a flag, a minimum of 5 milliseconds before the output loses regulation. Total effective hold-up time exceeds 27 milliseconds.
- 5" x 5" cross-section plug-ins meet EIA standard for 3U height. Fit three abreast in EIA standard 19" equipment racks (four abreast in 24" racks).
- HSP are fully protected for any overload including a short circuit. Normal overload protection is continuous current limiting. A switch selectable option will latch the power off after 20 seconds to avoid damage to load wires. An overvoltage protector latches the power off whenever the output exceeds a user-set limit.
- Remote control of HSP is provided via one of two isolated TTL-level signals, one normally high and the other normally low. An internal 5V supply powers this circuit and provides the auxiliary 5V, 100mA output. This voltage is available whenever source power is applied, whether or not the main output is inhibited. The main output is normally ON if no remote logic is applied.
- HSP meet all EN50082-2 (heavy industrial) immunity levels including mains lightning surge. See also ANSI C62.41.

For full product specs:
www.kepcopower.com/hsp.htm

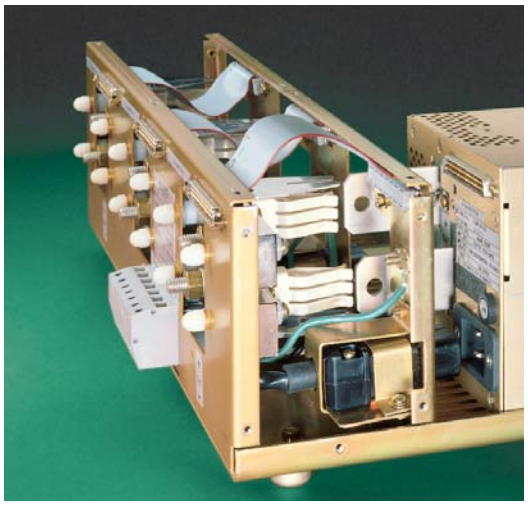
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HSP MODEL TABLE

SPECIFICATION	OUTPUT VOLTAGE		OVP SETTING	RATED OUTPUT CURRENT			RIPPLE		NOISE	EFFICIENCY
Unit	Volts		Volts	Amps			mV p-p		mV p-p	Percent
Condition	Factory Set	Adjustment Range	Factory Setpoint	50°C	60°C	71°C	Source max	Switching max	(Spike) 20MHz	100% Load Nominal input
1000 WATT MODELS										
HSP 3.3-230R	3.3	0.7-3.6	4.29	230	173	105	20	30	100	71
HSP 5-200R	5	1.0-5.5	6.5	200	150	95	20	30	100	72
HSP 12-84R	12	2.4-13.2	15.6	84	63	40	20	40	120	73
HSP 15-66R	15	3.0-16.5	19.5	66	49.5	31.4	20	40	150	76
HSP 24-42R	24	4.8-26.4	31.2	42	31.5	20	20	60	240	77
HSP 28-36R	28	5.6-30.8	36.4	36	27	17	20	60	280	78
HSP 48-21R	48	9.6-59.2	62.4	21	16	10	20	60	480	80
1500 WATT MODELS										
HSP 24-60R	24	4.8-26.4	31.2	60	45	28.6	20	60	120	77
HSP 28-53R	28	5.6-30.8	36.4	53	39.8	25.2	20	60	140	78
HSP 48-30R	48	9.6-59.2	62.4	30	22.5	14.3	20	60	240	80

Add suffix “M” to the model number, e.g. HSP 24-42MR, to designate factory installed voltmeter/ammeter.
Delete suffix “R” to remove or-ring diodes.



Rear view, cover removed, of the rack housing showing the heavy-duty bus-bar connections that make HSP’s “Hot Swap” practical

RA 60

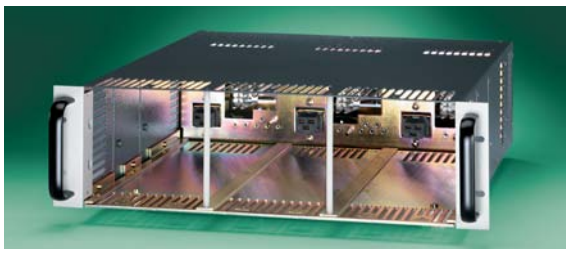
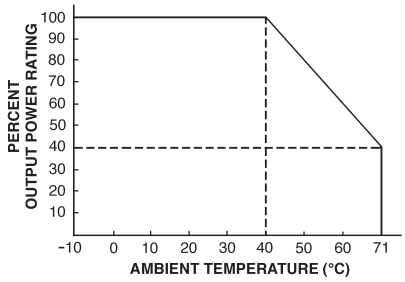


FIGURE 1
OUTPUT POWER RATING VS. AMBIENT TEMPERATURE



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