

YOU NEED KEPCO'S PLUG-IN HOT SWAPS WHEN...

...YOUR EQUIPMENT BAY IS SHORT ON SPACE.

Give us 3U x 19" and get:

- (3) 1000W plug-in power supplies or (6) 150W plug-ins or (8) 100W plug-ins or (8) 50W plug-ins or mix the 50, 100 and 150W modules in the rack.

...YOU HAVE TO STAY ON-LINE, NO MATTER WHAT.

Kepeco's plug-in, fault tolerant, hot swap power supplies current share and have built-in or-ing diodes for real N+1 redundancy.

...YOU NEED TO MIX 'N MATCH.

Kepeco's hot swap power supplies range from 3.3~48V; 50, 100, 150 and 1000 watts per module; up to 3000W per 3U rack.



Series HSF 50-150W plug-in modules for multi output or N+1 redundancy



Series HSP 1000W plug-in modules for multi output or N+1 redundancy

LOOK INSIDE FOR PROBLEM SOLVING DETAILS

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SERIES HSF

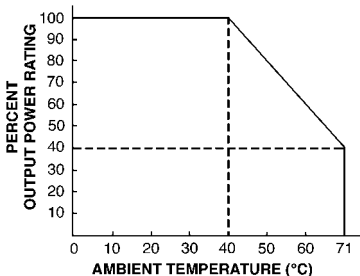
The Kepco HSF series of hot-swappable plug-in power supplies are designed to be combined in an N+1 fault-tolerant power system. Built-in forced current sharing and or-ing diodes are provided for this purpose. HSF may also be used independently as a multi-output power supply.

HSF are designed as plug-ins to a Kepco series RA 19-(X)B rack. The RA 19-6B will accommodate six 150W plug-in modules. The RA 19-8B will accommodate eight 50W or 100W plug-in modules. The RA 19-7B will accommodate three 150W and four 50W or 100W plug-in modules. It will also accommodate four 150W and three 50W or 100W plug-in modules.

The front panel of each plug-in HSF module contains an on-off switch and a "V d-c on" light. When HSF modules are paralleled, the module with the highest voltage setting automatically becomes the "master" (indicated by the front panel "master on" light). The other units are slaves, track the voltage setting of the master and equally share the load current. The front panel voltage adjustment trimmer provides adjustment of the output voltage. A pair of test points provide access at the front panel to measure the voltage.



**FIGURE 1:
OUTPUT POWER RATING
VS. AMBIENT TEMPERATURE**



HSF MODEL TABLE

| MODEL | OUTPUT VOLTS | ADJUSTMENT RANGE | OVP SETTING (VOLTS) | OUTPUT CURRENT AMPS 0-50°C | CURRENT LIMIT (AMPS) | SW RIPPLE mV typ max | | NOISE (spike) mV max |
|------------------------|--------------|------------------|---------------------|----------------------------|----------------------|----------------------|-----|----------------------|
| 50 WATT MODELS | | | | | | | | |
| HSF 5-10 | 5 | 4.5-5.5 | 7.0~8.0 | 0-10.0 | 10.5~12.0 | 30 | 60 | <120 |
| HSF 12-4.2 | 12 | 11.4-12.6 | 13.7~15.7 | 0-4.2 | 4.4~5.1 | 35 | 70 | <190 |
| HSF 15-3.4 | 15 | 13.5-16.5 | 17.0~19.0 | 0-3.4 | 3.6~4.1 | 45 | 90 | <220 |
| HSF 24-2.1 | 24 | 22.5-25.5 | 27.0~30.5 | 0-2.1 | 2.2~2.6 | 50 | 100 | <310 |
| HSF 48-1 | 48 | 45.0-51.0 | 53.5~60.0 | 0-1 | 1.1~1.3 | 60 | 150 | <350 |
| 100 WATT MODELS | | | | | | | | |
| HSF 5-20 | 5 | 4.5-5.5 | 7.0~8.0 | 0-20 | 21.0~24.0 | 30 | 65 | <120 |
| HSF 12-8.3 | 12 | 11.4-12.6 | 13.7~15.7 | 0-8.3 | 8.7~10.0 | 35 | 70 | <190 |
| HSF 15-6.6 | 15 | 13.5-16.5 | 17.0~19.0 | 0-6.6 | 7.0~8.0 | 40 | 80 | <220 |
| HSF 24-4.2 | 24 | 22.5-25.5 | 27.0~30.5 | 0-4.2 | 4.4~5.2 | 50 | 110 | <310 |
| HSF 28-3.5 | 28 | 26.5-29.5 | 32.0~35.0 | 0-3.5 | 3.7~4.2 | 60 | 140 | <330 |
| HSF 48-2 | 48 | 45.0-51.0 | 53.5~60.0 | 0-2 | 2.1~2.4 | 80 | 220 | <530 |
| 150 WATT MODELS | | | | | | | | |
| HSF 5-30 | 5 | 4.5-5.5 | 7.0~8.0 | 0-30 | 32.0~36.0 | 30 | 60 | <120 |
| HSF 12-12 | 12 | 11.4-12.6 | 13.7~15.7 | 0-12 | 13.0~15.0 | 35 | 70 | <190 |
| HSF 15-10 | 15 | 13.5-16.5 | 17.0~19.0 | 0-10 | 11.0~13.0 | 40 | 80 | <220 |
| HSF 24-6 | 24 | 22.5-25.5 | 27.0~30.5 | 0-6 | 6.3~7.5 | 50 | 110 | <310 |
| HSF 28-5 | 28 | 26.5-29.5 | 32.0~35.0 | 0-5 | 5.3~6.1 | 60 | 140 | <330 |
| HSF 48-2.8 | 48 | 45.0-51.0 | 53.5~60.0 | 0-2.8 | 3.0~3.5 | 80 | 220 | <530 |

(1) Current limit is a rectangular type, not foldback.

HSF GENERAL SPECIFICATIONS

| SPECIFICATION | RATING/DESCRIPTION | CONDITION |
|-----------------------------|---|---|
| Temperature | 0° to 71°C (see figure 1) | Operating |
| | -40°C to +85°C | Storage |
| Humidity | Up to 95% RH | Non-condensing Operating & storage |
| Shock | 20g, 3 axes (11msec ±5msec pulse duration) | Non-operating 3 shocks each axis |
| Vibration | 5-10Hz: 10mm amplitude 3 axes | Non-operating 1 hour each axis |
| | 10-55Hz: 2g, 3 axes | |
| Isolation Output-Case | 500V d-c; 100M Ohm | 25°C, 65% RH |
| Type of construction | Plug-in | |
| Cooling | Convection | |
| | Withstand voltage 50W | Input-Output: 3.75KV a-c for 1 minute Input-Case: 2KV a-c for 1 minute |
| Withstand voltage 100W,150W | Input-Output: 3KV a-c for 1 minute | 25°C, 65% RH Y caps removed |
| | Input-Case: 2KV a-c for 1 minute | |
| Safety | UL 1950; EN 60950; CSA 22.2 No. 950-95 | |



HSF are CE marked per the Low Voltage Directive (LVD), EN60950



FEATURES

- **Built-in EMI filter:** Attenuates the conducted noise below the requirements of both FCC and VDE 0871 for Class B computing devices.
- **Remote error sensing:** All HSF provide separate remote error sense terminals: 0.25V drop/wire.
- **Forced current share:** 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.
- **Alarm:** 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.
- **Plug-in connector:** The HSF obtain mains power and provide output via a 24 pin connector that mates with a corresponding connector in the rack adapter.
- **Keying:** 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.
- **Safety:** Designed to meet UL 1950, CSA C22.2 No. 234 (M90) level 3 and EN 60950 (a-c input only).



FAW 100W Model

For applications that do not require hot-swap plug-in capabilities, see Kepco FAW-series power modules. They bolt to your chassis and provide a stable 15, 25, 50, 100 or 150W output.

HSF INPUT CHARACTERISTICS

| SPECIFICATION | | RATING | | | CONDITION |
|---|-------|---------------------------------|------|------|---|
| a-c Voltage | nom | 120-240V a-c | | | Single phase |
| | range | 95-264V a-c | | | |
| d-c Voltage | range | 125-370V d-c(1) | | | Polarity insensitive |
| Brown-out voltage | min | 85V a-c/110V d-c | | | Ripple, source and load effect increase |
| Frequency | nom | 50-60Hz | | | Single phase |
| | range | 47-440Hz(2) | | | |
| EMI | | FCC and VDE 0871 | | | Conducted Class B |
| Soft-start circuit | | Thermistor or thyristor limiter | | | |
| Leakage current | max | 0.5mA UL method | | | 120V a-c 50-60Hz |
| | max | 0.75mA VDE method | | | 240V a-c 50-60Hz |
| Startup time | max | 50W<500ms 100 & 150W<200ms | | | From turn on until d-c output reaches nominal |
| Holdup time | typ | 20msec | | | 120V a-c |
| | min | 15msec | | | 100V a-c |
| INPUT CURRENT | | | | | |
| (Amperes) | | | | | |
| a-c Current | typ | 50W | 100W | 150W | 120V a-crms |
| | | max | 1.2 | 2.4 | |
| | max | 50W | 100W | 150W | 240V a-c rms |
| | | typ | 0.5 | 1.0 | |
| Fuse value | | 3.0 | 5.0 | 6.3 | 250V type 5x20mm |
| Initial turn-on surge, first half cycle | | 45 | 45 | 45 | 120V a-c rms |
| | | 90 | 90 | 90 | 240V a-c rms |
| Efficiency | typ % | 76 | 76 | 76 | Max load, nominal output |
| Circuit type | | Forward Converter | | | |
| Switching frequency | typ | 120KHz | | | Nominal load |

(1) Note: Safety agency approvals are valid only for a-c input because of the fuse rating

(2) At 440Hz the leakage current exceeds the UL safety specification

HSF OUTPUT CHARACTERISTICS

| SPECIFICATION | | RATING | | CONDITION |
|-------------------------|-----------|--------|--|--|
| Source Effect | typ | 1.0% | | 95-132 or 190-264V a-c |
| | max | 2.0% | | |
| Load Effect | typ | 1.0% | | 10% to 100% load |
| | max | 2.0% | | |
| Temperature Effect | typ | 1.0% | | Nominal input, rated load 0-40°C |
| | max | 2.0% | | |
| Combined Effect | typ | 2.0% | | Includes source, load and temperature |
| | max | 4.0% | | |
| Time Effect (drift) | typ | 0.1% | | 0.5-8.5 hr, max load, 25°C |
| | max | 0.5% | | |
| Recovery Characteristic | excursion | <±4% | | Step load 50-100%, rise time >50µs |
| | recovery | 2ms | | |

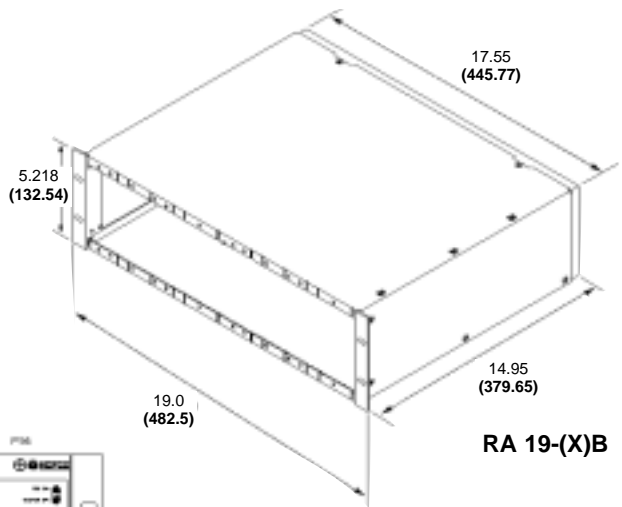


ACCESSORIES FOR HSF MODELS

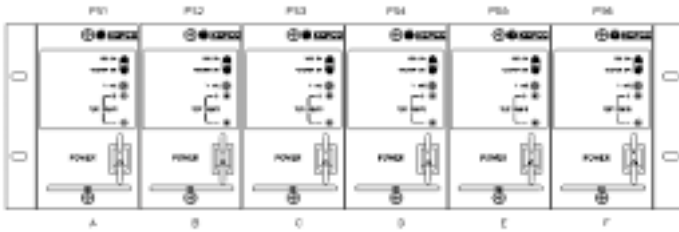
OUTLINE DIMENSIONAL DRAWINGS

Fractional dimensions in light face type are in inches.
are in inches.

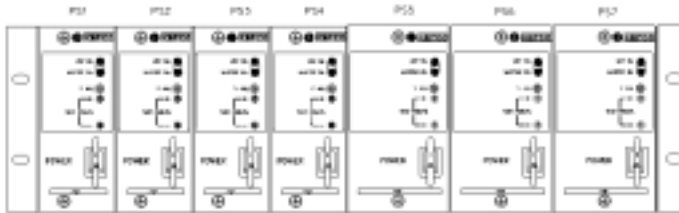
Dimensions in bold face type are in millimeters.



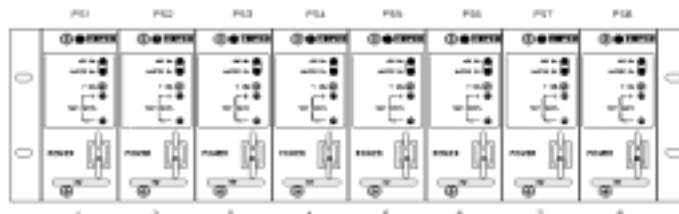
RA 19-(X)B



RA 19-6B Rack Adapter with (6) 150W HSF Installed



RA 19-7B Rack Adapter with (4) 100W and (3) 150W HSF Installed



RA 19-8B Rack Adapter with (8) 100W HSF Installed

RA 19-(X)B ACCESSORIES

| Accessory | Part Number | Use |
|------------------------|-------------|------------------------------|
| Filler Panel 1/24 Rack | RFP 19-24 | Cover unused 1/24 rack slots |
| Filler Panel 1/12 Rack | RFP 19-12 | Cover unused 1/12 rack slots |
| Filler Panel 1/8 Rack | RFP 19-18 | Cover unused 1/8 rack slots |
| Filler Panel 1/6 Rack | RFP 19-16 | Cover unused 1/6 rack slots |
| Filler Panel 2/8 Rack | RFP 19-28 | Cover unused 2/8 rack slots |
| Filler Panel 2/6 Rack | RFP 19-26 | Cover unused 2/6 rack slots |
| Filler Panel 3/8 Rack | RFP 19-38 | Cover unused 3/8 rack slots |
| Filler Panel 1/2 Rack | RFP 19-48 | Cover unused 1/2 rack slots |

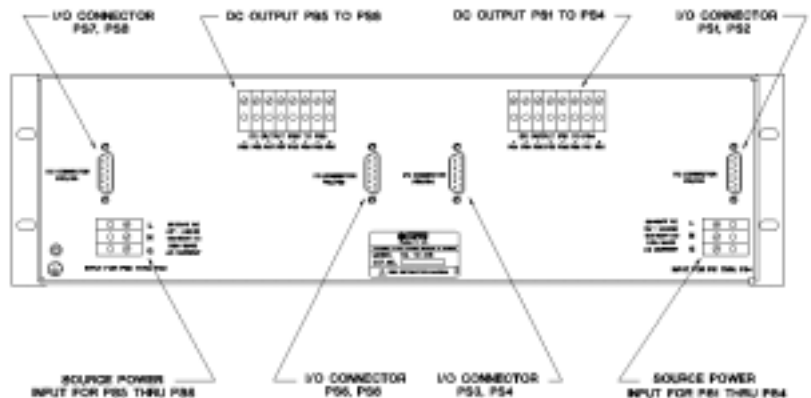
| Weights | English | Metric |
|------------|---------|--------|
| RA 19-(X)B | 22 lbs | 10Kg |
| 50W | 4 lbs | 1.8Kg |
| 100W | 5 lbs | 2.3Kg |
| 150W | 5.5 lbs | 2.5Kg |

RA 19-8B Rack Adapter Rear Panel

This is the standard rear panel configuration. Other connector options are available. Please consult the factory.

The I/O Connector functions are brought out as follows:

- 1- Error sense (+S, -S) for each position.
- 2- Output voltage (+V, -V) for each position to permit wiring for local sense.
- 3- Current share bus (one) connection brought out for each pair of modules. (Each pair internally connected using DIP switches on the backplane).
- 4- Output status alarm contacts (Form C) for each position.



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, option R, are capable of hot swapping when plugged into Kepco's RA 60 series rack adapters. 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 also be remotely adjusted.

The 1000 watt HSP have a wide range a-c input (90-277V a-c). The 1500 watt models operate from 180-277V a-c mains. Both feature an active power factor correction (PFC) front end to suppress harmonic generation per EN 60555-2 and EN 61000-3-2.

HSP have optional built-in "or-ing" diodes for redundancy paralleling and a "hot-swap" capability. These are specified by appending the suffix "R" to the model number.

Three HSP models shown in RA 60 Housing



HSP INPUT CHARACTERISTICS

| SPECIFICATIONS | | RATING/DESCRIPTION | CONDITION |
|-----------------------------|----------|------------------------------------|--|
| a-c Voltage 1000W models | nominal | 100-250V a-c | Single phase |
| | range | 90-277V a-c | Wide range |
| a-c Voltage 1500W models | nominal | 200-250V a-c | Single phase |
| | range | 180-277V a-c | Wide range |
| d-c Voltage ⁽¹⁾ | 1000W | 125-420V d-c ⁽¹⁾ | Polarity insensitive |
| | 1500W | 250-420V d-c ⁽¹⁾ | Polarity insensitive |
| Brownout Voltage | 1000W | 75V a-c | |
| | 1500W | 150V a-c | |
| Source Frequency | | 47-440Hz | >63Hz, input leakage current exceeds tabulated value |
| Source Current | 120V a-c | 1000W: 11.0A rms | Typical |
| | 240V a-c | 1000W: 5.5A rms 1500W: 8.0A rms | |
| Power Factor | Typical | 0.99 | |
| | Minimum | 0.96 | |

(1) Safety approval is for a-c operation only.



HSP are CE marked per the Low Voltage Directive (LVD), EN60950



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 3.3-230 | 3.3 | 2.3-3.6 | 4.29 | 230 | 173 | 105 | 20 | 30 | 100 | 71 |
| HSP 5-200 | 5 | 3.5-5.5 | 6.5 | 200 | 150 | 95 | 20 | 30 | 100 | 72 |
| HSP 12-84 | 12 | 8.4-13.2 | 15.6 | 84 | 63 | 40 | 20 | 40 | 120 | 73 |
| HSP 15-66 | 15 | 10.5-16.5 | 19.5 | 66 | 49.5 | 31.4 | 20 | 40 | 150 | 76 |
| HSP 24-42 | 24 | 16.8-26.4 | 31.2 | 42 | 31.5 | 20 | 20 | 60 | 240 | 77 |
| HSP 28-36 | 28 | 19.6-30.8 | 36.4 | 36 | 27 | 17 | 20 | 60 | 280 | 78 |
| HSP 48-21 | 48 | 33.3-59.2 | 62.4 | 21 | 16 | 10 | 20 | 60 | 480 | 80 |
| 1500 WATT MODELS | | | | | | | | | | |
| HSP 24-60 | 24 | 16.8-26.4 | 31.2 | 60 | 45 | 28.6 | 20 | 60 | 120 | 77 |
| HSP 28-53 | 28 | 19.6-30.8 | 36.4 | 53 | 39.8 | 25.2 | 20 | 60 | 140 | 78 |
| HSP 48-30 | 48 | 33.3-59.2 | 62.4 | 30 | 22.5 | 14.3 | 20 | 60 | 240 | 80 |

FEATURES

- Remote sensing.
- Control/programming of voltage, current, current limit and OVP.
- Current walk in control.
- Safety agency approvals: UL 1950, CSA 22.2 no. 234, TÜV EN 60950.
- HSP meet ANSI C62.41/EN 61000-4-5 guidelines for with-standing surges on the mains.
- HSP are ~ 5" x 5" cross-section plug-ins that mount three abreast in a standard 5.25" x 19" rack adapter. Output voltage settings and current limit can be pre-set so an HSP can be plugged in without powering down the system.
- 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. The main output voltage is remotely trimmable by resistance. Both the output voltage and current limit are adjustable over the range 20%-100% by a 0-10V analog voltage.

HSP OUTPUT CHARACTERISTICS

| SPECIFICATIONS | | RATING/DESCRIPTION | CONDITION |
|---|------------|--|--|
| Output setting range | | -30% to +10% | Of nominal output |
| | | -30% to +25% | 48V Models only |
| Source effect | typ | 0.05% | Nominal \pm 15% |
| | max | 0.1% | |
| Load effect | typ | 0.05% | 5%-100% load operation between 0-5% load results in increased ripple and degraded transient response |
| | max | 0.1% | |
| Temperature effect | typ | 0.01% | Per degree C (0 to 50°C) |
| | max | 0.02% | |
| Combined effect (source, load temperature & time) | typ | 0.15% | |
| | max | 0.3% | |
| Time effect (drift) | typ | 0.05% | 0.5-8.5 hours |
| | max | 0.1% | |
| Start up time | max | 1 second | Any source/load |
| Recovery characteristics | Excursion | <3% of Nominal Output | 50-100% load |
| | Recovery | 1000W: 100 μ sec 1500W: 300 μ sec | Return to 1% of setting |
| Ride through | min | 21.5 Milliseconds | From loss of source to flag signal |
| Hold-up time | min | 5 Milliseconds | After signal flag |
| Overshoot | turn on | +3% max | Any source 5%-100% load |
| | turn off | none | |
| Error sense | 3.3 & 5V | 0.25V | Voltage allowance per wire |
| | All others | 0.4V | |
| Series connection (output floats) | | 500V | Maximum voltage off ground |
| Parallel connection (for redundancy) | | Current shares within 5% of rated load | 5-100% load, hot-swappable |
| Selective overvoltage shutdown | | Adjustable 100-140% of nominal; factory set to 130% | Latched, reset by cycling source power off |
| Current limiting | | Constant current mode Factory set 110% of I_0 max | Optional shutdown mode with 20 second delay |
| Remote on/off | RC-1 | Normally high | Isolated form C or TTL |
| Remote on/off | RC-2 | Normally low | Isolated form C or TTL |
| Over temperature | | Thermostat, auto re-start | With hysteresis |

HSP GENERAL SPECIFICATIONS

| SPECIFICATIONS | | RATING/DESCRIPTION | CONDITION |
|----------------------|--------------|--|--|
| Temperature | | -20° to +71°C (see model table) | Operating |
| | | -40° to +85°C | Storage |
| Humidity | | 0 to 95% RH | Non condensing operating & storage |
| Shock | | 20g 11msec \pm 50% half sine | Non-operating 3-axes 3 shocks each axis |
| Vibration | | 5-10Hz 10 mm double amplitude | Non operating 1 hour each axis |
| | | 10-55Hz 2g | |
| Altitude | operating | Sea level to 10,000 ft | |
| | storage | Sea level to 160,000 ft | |
| Isolation | Output-case | 500V d-c | 25°C, 65%RH |
| Withstand voltage | Input-output | 3000V a-c rms | 25°C, 65%RH |
| | Input-case | 1500V a-c rms | |
| Safety | | UL 1950; VDE EN 60950; CSA 122.2 No. 234-M90 level 5 | Information Technology Equipment |
| Type of construction | | Enclosed, plug-in style includes status LEDs, circuit breaker, handle, voltage/current trimmers, monitor test points | Stand alone or rack mountable into RA 60 Accommodates up to 3 units |
| Cooling | | Internal d-c fan | Exhaust to rear |

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KEPCO®

THE POWER SUPPLIER™
SINCE 1946



Rear View of the HSP plug-in module



Rear view, cover removed, of the rack housing showing the heavy-duty bus-bar connections that make HSP's "Hot Swap" practical. Note: The a-c input connector is supplied with a mating connector, too.



Series HSM
Modular version for
hard wired applications

For applications that do not require hot-swap plug-in capabilities, see Kepco Series HSM power modules. They bolt to your chassis and provide a stable 1000W output.

HSP SIGNALS AND FLAGS

| SPECIFICATIONS | RATING/DESCRIPTION | | CONDITION |
|---|--------------------|---|-------------------------------------|
| Status Flags (Form C dry relay contacts) | POWER | Indicates low source voltage signal asserted 5 msec prior to loss of output voltage | Both NO and NC available |
| | OUTPUT | Indicates normal operation | |
| | OVER TEMP | Over temperature shutdown | |
| | FAN FAIL | Failure of internal fan | |
| Status Indicators front panel LEDs | POWER | Green | Lit when a-c is sufficient |
| | DC FAIL | Red | Lit when output failure is detected |
| | OVER TEMP | Yellow | Lit when thermostat activates |
| | FAN FAIL | Red | Lit when fan failure is detected |

HSP CURRENT HARMONICS, SOURCE TRANSIENTS AND EMI SPECIFICATIONS

| PARAMETER | DOCUMENT | SPECIFICATION |
|-------------------------------|----------------------------------|--|
| IMMUNITY⁽¹⁾ | | |
| Radiated RF (Ampl. mod.) | EN 61000-4-3 | 10V/m, 80-1000MHz |
| Radiated RF (Pulse mod.) | EN 61000-4-3 | 10V/m, 900MHz |
| Magnetic Field | EN 61000-4-8 | 30A/M, 50Hz |
| Electrostatic Discharge | EN 61000-4-2 | 4KV (contact) 8KV (air) |
| Conducted RFI | EN 61000-4-6 | 10Vrms, 0.15-80MHz |
| Electrical Fast Transient | EN 61000-4-4 | 2KV, Tr/Th = 5/50ns |
| Surge (CM, DM) | EN 61000-4-5 | 4KV (CM) Tr/Th = 8/20µs 2KV (DM) Tr/Th = 8/20µs |
| EMISSIONS | | |
| Conducted RF | FCC Class A CISPR 22, Class A | 0.45-30MHz 0.15-30MHz |
| Current Harmonics | EN 60555-2 and EN 61000-3-2 | 0-2KHz |

(1) All immunity levels meet the requirements for heavy industrial applications per EN 50082-2 using Criteria A (no operational effect).

HSP PHYSICAL CHARACTERISTICS

| SPECIFICATIONS | RATING/DESCRIPTION | | CONDITION |
|-------------------|---------------------------------------|---------------------|---|
| Dimensions | English | 5.38" x 5.22" x 16" | Excluding front latch, circuit breaker, handle and rear connections |
| | Metric | 137 x 133 x 406 mm | |
| Weight | English | 19lbs | |
| | Metric | 8.6Kg | |
| Source connection | 3 pin IEC connector | | Compatible with molded line cord |
| Load connection | Two bus bars 1.25" x 0.125" x 2.5" | | Keyed for plug-in housing |
| Signal connection | 37 Pin D-subminiature connector | | |

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Use The Reverse Side To Tell Us Your Needs

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E-Mail: powerman@netreach.net

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E-Mail: hickam@aol.com Also covers Canada West (BC)

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Tel: (408) 745-1102 • Fax: (408) 745-1106
E-Mail: nsw@pacbell.net

SYNERTEK MARKETING - Arcadia, California
Tel: (818) 357-0371 • Fax: (818) 303-5796
E-Mail: main@synertekmkt.com

EARLE ASSOCIATES INC. - San Diego, California
Tel: (619) 278-5441 • Fax: (619) 278-5443
E-Mail: earle.associates.distrib@symbios.com

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E-Mail: 105050.3447@compuserve.com

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E-Mail: rhoran@base8.com

BASE EIGHT, INC. - Arlington Heights, Illinois (Eastern Region)
(Main Office) Tel: (847) 670-1680 • Fax: (847) 670-1737
E-Mail: 75117.3565@compuserve.com

TECREP CORPORATION - Hazelwood, Missouri
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STAR ENGINEERING SALES CORP. - Milwaukee, Wisconsin
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EQS SYSTEMS Chesterland, Ohio (Main Office)
Tel: (216) 729-2222 • Fax: (216) 729-2257
E-Mail: sales@eqssystem.com

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E-Mail: gene@eicorp.com

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NORTHERN TECHNICAL SALES - Pittsford, New York
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E-Mail: ntsoffice@aol.com

CONTECH INSTRUMENTATION INC.
Northern NJ, NY metro, Westchester, Rockland
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E-Mail: contech@soho.ios.com

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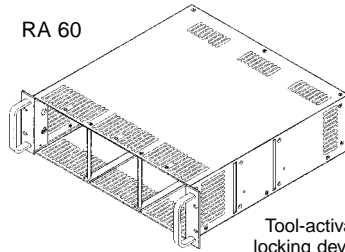
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City _____ State _____ Zip _____

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ACCESSORY HOUSINGS FOR HSP MODELS

RA 60



Tool-activated locking devices mount HSP modules

RA 60

19" Rack (3) HSP Modules
3 slots wired in parallel for redundancy
hot swap connectors

RA 62

19" Rack (3) HSP Modules
2 slots wired in parallel,
1 independent
hot swap connectors

RA 63

19" Rack (3) HSP Modules
independent slots
hot swap connectors

RA 58

19" Rack (3) HSP Modules
independent slots, hardwire

To configure the above rack housings for 23" or 24" wide rack cabinets, add suffix -23E or -24E respectively

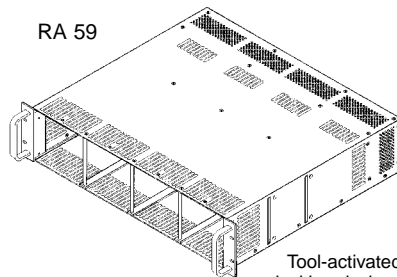
RA 59

24" Rack (4) HSP Modules
4 slots wired in parallel
hot swap connectors

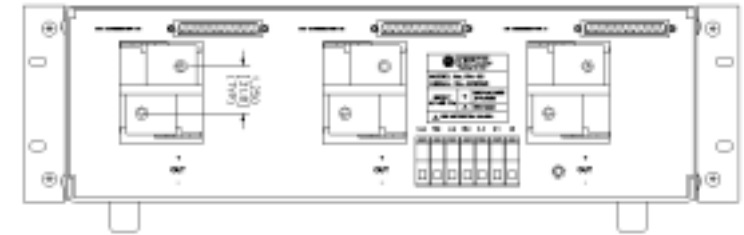
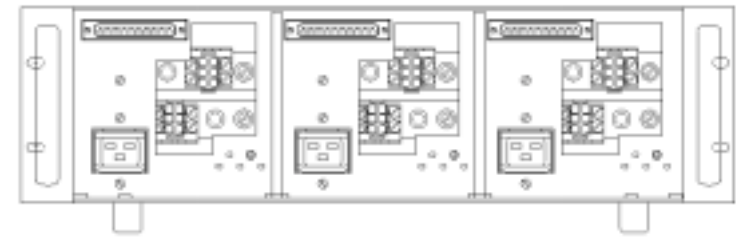
RA 61

24" Rack (4) HSP Modules
independent slots, hardwire

RA 59



Tool-activated locking devices mount HSP modules

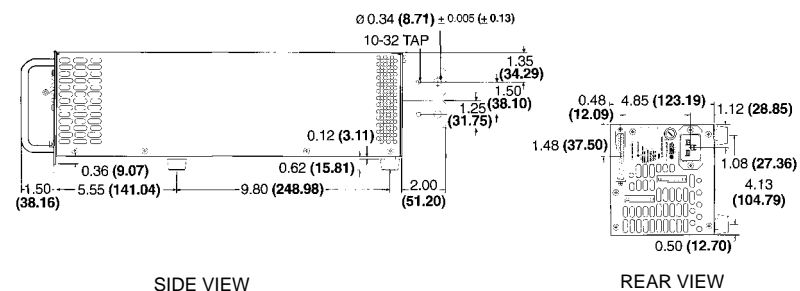
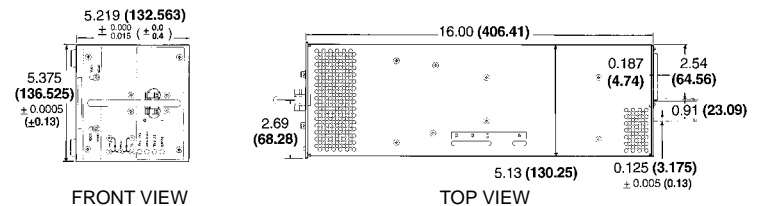


RA 60 front view (top), RA 60 rear view (bottom)

OUTLINE DIMENSIONAL DRAWINGS FOR HSP PLUG-IN MODULES

Fractional dimensions in light face type are in inches. dimensions in bold face type are in millimeters.

Tolerance: $\pm 1/64"$ (0.4) between mounting holes
 $\pm 1/32"$ (0.8) other dimensions



HSP ACCESSORIES

- 118-0776 line cord set with NEMA 5-20P termination (125V/20A)
- 142-0381 source power entry mating connector
- 142-0422 I/O mating connector
- 108-0203 I/O connector jackposts (set of two)
- 108-0296 I/O connector shell
- 101-0159 screw for mounting plastic feet



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