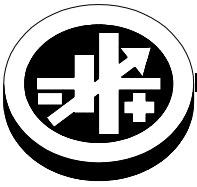


# INSTRUCTION SHEET



**KEPCO** An ISO 9001 Company.

**HSL**  
**200W** CE

## 200W HOT SWAP POWER LOAD

### I — INTRODUCTION

**SCOPE OF MANUAL** This Instruction Sheet covers the installation and operation of the Kepco HSL Series of resistive power loads.

**DESCRIPTION** HSL power load (Figure 1) is a fan-cooled resistive load designed for use with Kepco RA 60 or similar plug-in rack adapters as a hot replaceable module in a redundant power system. Bench top operation is also supported. The purpose of the HSL is to provide the minimum 10% per pair current requirement of HSP in cases where a system operates a pair of redundant HSP power supplies at values less than the recommended factory settings.

Mechanical keying eliminates the risk of incorrect module insertion. Tool-operated latches on the front panel guard against casual removal of an operating module.

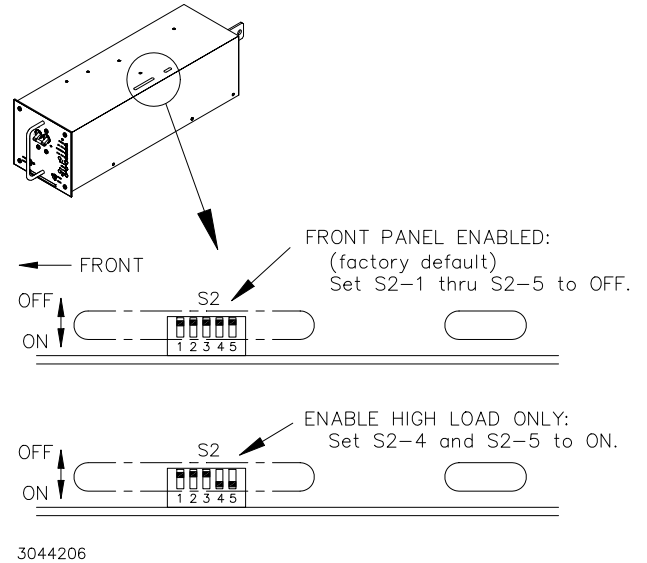
Each HSL is comprised of a group of wire-wound resistors connected in a series-parallel configuration. HSL models have two setting for resistance: high and low. Monitoring of the bus voltage and sink current is provided from the front panel. See Table 1 for high and low resistance values and minimum/maximum voltage ratings

**TABLE 1. HSL SERIES MODELS**

MODELS <sup>(1)</sup>	VOLTAGE RANGE (V)	RESISTANCE (OHMS)	
		HIGH	LOW
HSL 24—8.5	4.8 - 32	7.5	3.75
HSL 28-7.2	5.6 - 36	10	5
HSL 48—3.0	9.6 - 63	40	20
HSL 125-0.7	19.2 - 160	480	240

A 5-position DIP switch provides an override of the front panel HIGH LOAD/LOW LOAD switch to always set the HSL to HIGH LOAD (lowest resistance value, maximum sink current).

HSL loads are nominally rated for the same voltage as HSP power supplies; when inserted in an HSP-compatible rack adapter, they share the same bus voltage. The  $\pm$ DC output bus bars on HSP connect to the  $\pm$ DC input bus bars on HSL via the rack adapter.



**FIGURE 1. DIP SWITCH FACTORY DEFAULTS**

Two form C relays provide flag signals available at the 37-pin I/O connector on the rear panel. See Table 2 for pin assignments.:

- **LOAD ON OUTPUT STATUS** indicates an internal failure of the load components or when an Overtemperature is detected (most likely due to a fan failure).
- **HIGH-LOW LOAD** are flag signals to indicate whether the load is set to HIGH or LOW. HIGH LOAD is the normally closed state of the relay.

Four LED indicators are provided on the front panel (see Figure 3 for details).

HSL loads are designed to operate from the DC Output bus voltage supplied by the corresponding HSP, and are based on the same nominal HSP voltage adjustment HSL models do not need AC power input. Cooling is provided via an internal d-c fan. All HSL components are powered from the DC output bus via DC-DC converters

A front panel switch-selectable meter permits monitoring of both bus voltage ( $V_{BUS}$ ) and sink current ( $I_{LOAD}$ ).

Protection against overtemperature failures (internal fan failure) is provided by self-resettable thermostats.

## II — INSTALLATION

**KEYING.** The units are keyed by voltage at the factory. Refer to Figure 2 for details.

**MOUNTING THE POWER LOAD** To insert in a Kepco Rack Adapter, release the two cap head screw retaining latches (see Figure 3) by loosening the cap-head screw approximately 1/2 turn CCW (use 5/32" hex key) and slide to open (up) position. Insert power supply in the slot, then retighten the cap-head screws CW until snug. **DO NOT OVERTIGHTEN!** To release, follow the same procedure, except lift the latch to the top of the slot. Be sure to move the latch completely up or down to ensure full engagement/disengagement of the latching mechanism. When HSL is not installed in rack adapter, secure latch in open (up) position to prevent damage.

For all installations, provide adequate clearance around air inlet and exhaust locations.

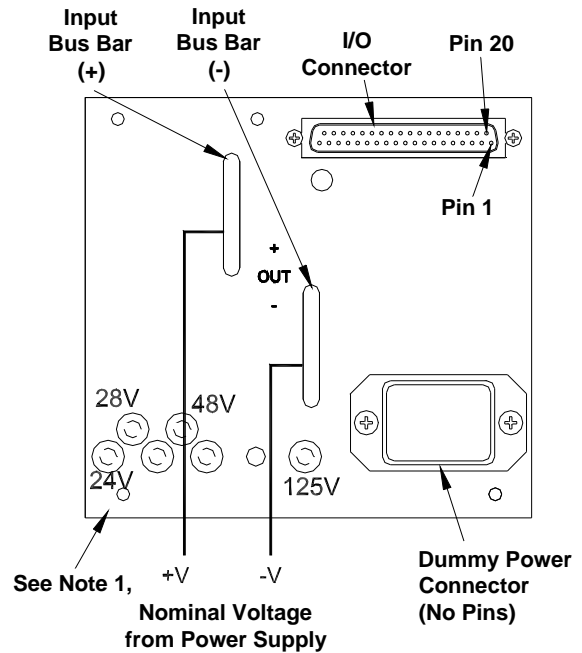
**CONNECTIONS:** When used with Kepco plug-in rack adapters, there is no need of any load wiring: The HSP  $\pm$  d-c output bus is connected to the HSL  $\pm$  d-c input bus via the rack adapter.

Load connections to the HSL load are via bus bars protruding from the rear panel (see Figure 2). Observe polarities: negative load wire must be connected to negative power supply wire, and positive load wire to positive power supply wire.

Power supply cables or bus bar attachments should use either the clearance hole of the HSL bus bar, using a 5/16" UNC nut, bolt and lockwasher, or the rack adapter studs using hardware supplied with the rack adapter. The proper hardware is critical to maintaining intimate contact between the load conductor and bus.

**TABLE 2. I/O CONNECTOR PIN ASSIGNMENTS**

PIN NO.	DESCRIPTION OF FUNCTION
1 to 10	NO CONNECTION
11	HIGH/LOW LOAD_ COMMON CONTACT
12	LOAD ON OUTPUT STATUS - COMMON CONTACT
13	LOAD ON OUTPUT STATUS - NORMALLY CLOSED CONTACT
14 to 28	NO CONNECTION
29	LOW LOAD _ 2 - NORMALLY OPEN CONTACT
30	HIGH LOAD _ 1 NORMALLY CLOSED CONTACT
31	LOAD ON OUTPUT STATUS - NORMALLY OPEN CONTACT
32 to 37	NO CONNECTION



**NOTES:**

1. Keyways and Plugs for module keying (for use with Kepco plug-in Rack Adapters). Unplugged hole denotes module accepted.
2. Connections for bench top operation shown using threaded hole on  $\pm$  bus bars.
3. For rack adapter, plug module into any available slot.

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**FIGURE 2. HSL REAR PANEL**

**PRELIMINARY ELECTRICAL CHECK** A simple operational check after unpacking and before equipment installation is advisable to ascertain whether the power load has suffered damage resulting from shipping.

**NOTE: The HSL load will not operate unless its terminals are connected to output terminals of power supply and the power supply is on !**

1. Verify that HSL DIP switch positions are set to the factory default (see Figure 1).
2. Connect a power supply to the + and – input terminals of the HSL load (see “Connections:” on page 2). The power supply must have the same nominal voltage as the HSL and must be able to deliver more current than the maximum current rating of the load.

**NOTE:** No a-c wiring is needed

3. **CAUTION: DO NOT repeatedly toggle circuit breaker as this may damage unit.** Set Power ON/OFF circuit breaker on front panel to ON. If actuator does not lock when released, wait a few seconds before trying again. The circuit breaker is “trip-free” design; if overload exists, contacts cannot be held closed by actuator.
4. Verify that green LOAD ON indicator is lit. Verify that LOAD OFF is not lit. Verify that HIGH LOAD and LOW LOAD indicators correspond to the position of the HIGH LOAD/LOW LOAD switch.
5. Use a DVM to measure voltage across the + and – input bus bars at the rear panel of the HSL. Verify that DVM reading agrees with the voltage shown on the front panel meter with the Meter Mode switch set to V.
6. Using DVM, measure voltage across test points V and COM; it should read full scale bus voltage measured in step 5 above.
7. Using DVM, measure voltage across test points I<sub>LOAD</sub> and COM. This voltage represents the current across a 0.027 Ohm internal sense resistor. Divide measured voltage by 0.027 to obtain the sink current of load in Amps.
8. Verify that front panel LED’s still appear as noted in step 4 above.
9. Turn off HSL front panel circuit breaker and turn off power supply. Disconnect d-c bus connections if a rack adapter was not used.

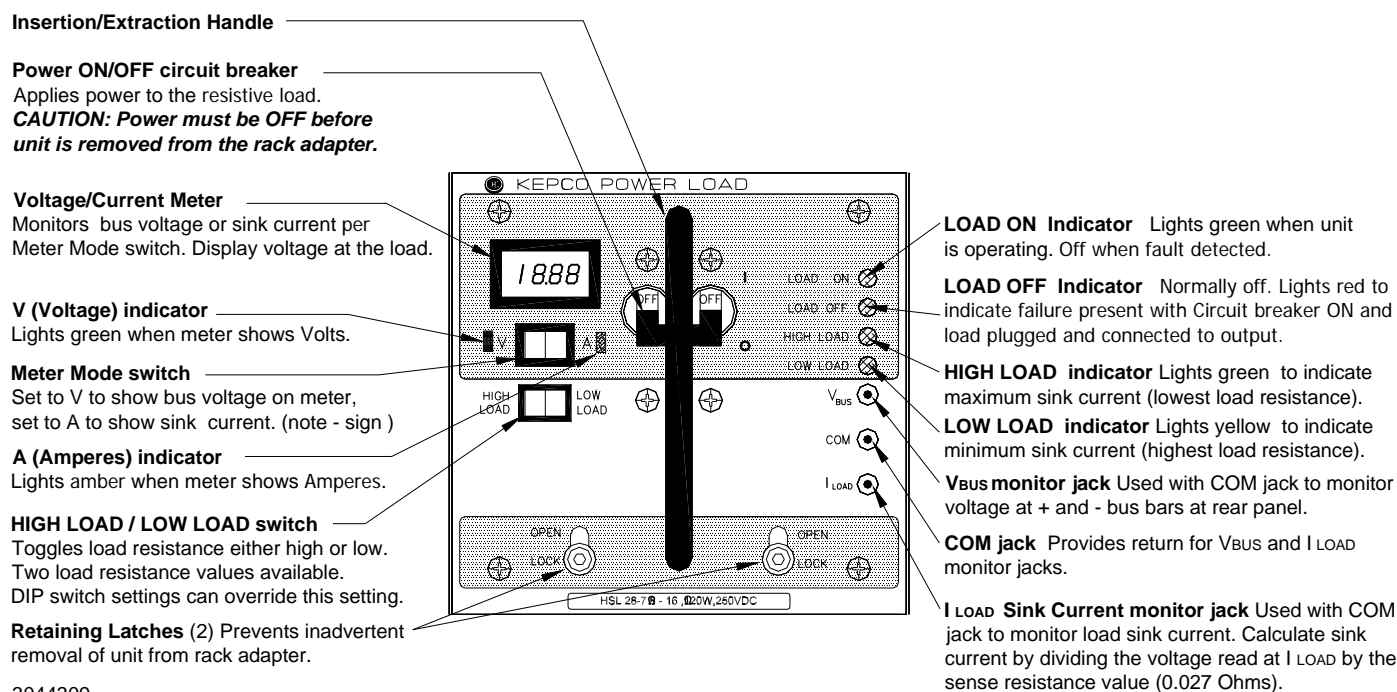
### III — OPERATION

**CAUTION: DO NOT repeatedly toggle the circuit breaker/switch as this may damage the unit.** Set Power ON/OFF circuit breaker to ON. When voltage is available at the load terminals , the green LOAD ON LED is on (see Figure 3).

if the V/A switch is set to V, actual bus voltage is displayed on the meter in Volts. if the V/A switch is set to A, the front panel meter represents the sink current (current drawn into the load).

The sink current value is affected by the position of the HIGH LOAD/LOW LOAD switch. The switch can be toggled between HIGH LOAD for maximum sink current and LOW LOAD for minimum.

**NOTE** If the DIP switch positions are set as shown in Figure 1 for “Enable HIGH LOAD only,” the HIGH LOAD/LOW LOAD switch setting is ignored and HIGH LOAD is always in effect.



**FIGURE 3. FRONT PANEL COMPONENT LOCATIONS**