



SAFETY & INSTALLATION INSTRUCTIONS FOR KW SERIES

GETTING STARTED

PLEASE READ GENERAL, SAFETY & INSTALLATION INSTRUCTIONS BEFORE OPERATING THIS POWER SUPPLY.

Power supplies are dispatched with internal voltage set potentiometer at 50V and the internal current trip level set potentiometer at maximum.

Fit supplied test plug which is linked to select internal current trip control. Select internal or external voltage control by fitting appropriate link and connect trip reset circuit or switch.

High voltage output is switched on when Pin 1 is taken low.

When mains power is applied to the unit, it will power up in the trip condition. Reset by taking pin 1 high (fitted with internal pull up to +15V).

Trip is reset by taking Pin 1 high.

GREEN LED IS ON WHEN MAINS POWER IS APPLIED.

AMBER LED IS ON WHEN THE UNIT IS TRIPPED.

AMBER LED IS OFF WHEN THE HIGH VOLTAGE OUTPUT IS ON.

- a. Apply mains power.
- b. Reset trip (pin 1 high).
- c. Turn HV on (pin 1 low).
- d. Turn up output voltage by either adjusting the internal voltage potentiometer or increasing the analogue control voltage whilst monitoring the output voltage.

DO NOT WORK ON HIGH VOLTAGE CIRCUITS CONNECTED TO THIS POWER SUPPLY UNLESS MAINS POWER IS DISCONNECTED.

PLEASE READ CAREFULLY BEFORE INSTALLING OR OPERATING THIS POWER SUPPLY

SPECIFICATION

UNIT	OUTPUT	RIPPLE
KW1/250P or N	50V to 1kV @ 250mA	<0.25% p/p
KW2.5/100P or N	100V to 2.5kV @ 100mA	<0.25% p/p
KW5/50P or N	250V to 5kV @ 50mA	<0.25% p/p
KW10/25P or N	500V to 10kV @ 25mA	<0.25% p/p
KW15/16P or N	750V to 15kV @ 16mA	<0.25% p/p
KW30/8P or N	1.5kV to 30kV @ 8mA	<0.25% p/p
Input Voltage	200 to 264V ac 50/60Hz at 2.2A.	
Operating Temperature	0°C to +45°C.	
Storage Temperature	-35°C to +85°C.	
Size	365 x 220 x 76mm.	

GENERAL

On receipt the unit should be carefully unpacked and inspected to ensure that no transit damage has occurred. Provided that this inspection is satisfactory and reveals no evidence of damage then installation can proceed.

This unit is designed for use from an AC supply of between 200V min and 264V max. AC rms 50/60Hz. It is not designed to operate from impedance terminated (IT) systems. If an electrical test is to be carried out prior to fitting the power supply, it is essential that the person undertaking this work be a qualified electronics technician who is fully aware of the hazards of AC line operated equipment in general and the particular dangers associated with high voltage switch mode power supplies.

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Metallic or conductive tools should not be used to adjust any of the potentiometers. The unit has no user serviceable parts and should not be dismantled.

DO NOT HANDLE OR TOUCH THESE UNITS WHEN THE AC LINE SUPPLY IS CONNECTED. AFTER DISCONNECTION FROM THE AC LINE, ALLOW 5 MINUTES BEFORE HANDLING SO THAT ALL THE CAPACITORS CAN DISCHARGE. To ensure that the output is fully discharged short to ground before touching any high voltage circuit.

Care should be taken not to operate the unit outside the specified limits given above, failure to do so may damage the unit. For continued protection against fire hazard replace only with the same type and rating of fuse. The unit is short circuit proof but care should be taken that the high voltage is not shorted into one of the control pin connections.

COMPLIANCE WITH SAFETY STANDARDS

The unit is designed to meet Normalised European Safety Standards and hence installation of the power supply unit into the equipment should comply with the following requirements.

- a. The external wiring of the Power Supply is part of the fixed wiring of the equipment.
- b. The output is classed as hazardous and must therefore not be accessible to operators.
- c. A PROTECTIVE EARTH must be provided for safety in accordance with EN61010 Part 1 : 1993 : Clause 6.5.1.
- d. An appropriate Mains Isolation switch (Mains on/off) should be fitted between the AC input of the unit and the equipment electrical supply plug to allow equipment servicing. To minimise the measured earth leakage current a double pole isolation switch is recommended.
- e. The unit is intended to be installed in an electrical enclosure and should not be accessible to the operator. Access should be restricted to authorised service personnel only, with use of a tool. Care should be taken to prevent access to the interior of the unit and protect against items (e.g. tools or wires) inadvertently entering the interior of the unit.

INSTALLATION

The outputs of these units are considered hazardous in the meaning of EN61010 and should be installed such that they cannot become accessible. The output should be connected such that the shortest creepage and clearance path is to a protective earth connection.

Adequate ventilation should be provided to keep the unit cool and the ventilation slots and fan inlet should not be covered in any way. The ambient air temperature around the fan inlet must not exceed 45 °C. The unit will operate in any orientation, however it is not recommended to operate with the side fitted with the fan as the lowest face. Standard colour coded wires are used for the AC connections namely brown for live, blue for neutral and yellow-green for earth. ENSURE that a LOW IMPEDANCE

connection is made to PROTECTIVE EARTH prior to connecting the AC line and neutral. The safety earth conductor must not contain any switches or fuses.

Under worst case conditions the unit draws a current of 2.2A rms and any cabling fitted in series with the units mains input supply cable must be of a suitable type and rating. After switch off, allow unit to cool for 2 minutes before re-applying power to allow the inrush current limiting resistors to reset. The unit is fitted with a 3.15AT 250V HRC AC fuse. Fuses may be fitted externally to the unit to protect interconnecting wiring etc. but these should be of the same type and of at least the same rating as that fitted to the unit.

Ensure that the output is connected to the load prior to operation of the unit and that a good low impedance high voltage joint is made. Sharp points on either the high voltage or return joint should be avoided as this will cause corona which will make the output appear noisy. In general a tracking distance (creepage distance) of 25mm (1 inch), per 10kV is advised as a minimum to ensure no breakdown or corona occurs, a much greater distance will be required under adverse conditions. Care must be taken not to damage the cable inner when forming the connections.

During arcing currents exceeding 1000 Amps will flow. It is important that these currents return to the high voltage power supply by the shortest possible route using the screen of the output cable. Failure to observe this will result in the control terminals of the unit seeing large voltage spikes during arcing and radiation of electromagnetic interference.

CONNECTIONS - 15 PIN D TYPE MALE

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| PIN 1 | HV on. Low (<1.5V) unit operates. Open circuit resets trip. |
| PIN 2 | Analogue voltage input. 0 to +10V gives 0 to max. O/P voltage. |
| PIN 3 | Link to pin 4 for external 10V control. |
| PIN 4 | LINK |
| PIN 5 | Link to pin 4 for internal pot control of voltage level. |
| PIN 6 | Voltage monitor. 0 to +10V represents 0 to max. O/P. Tolerance ±5%. |
| PIN 7 | Current trip signal, on = +15V, 0 = trip or off. |
| PIN 8 | nc |
| PIN 9 | Analogue voltage input 0 to +10V gives 0 to max. current trip level. |
| PIN 10 | Link to Pin 11 for external 0 to +10V control of current trip level. |
| PIN 11 | LINK |
| PIN 12 | Link to Pin 11 for internal pot control of trip level. |
| PIN 13 | Current monitor. 0 to +10V represents 0 to max. current. |
| PIN 14 | 0 volt. |
| PIN 15 | 0 volt for control signals. |