APPLIED KILOVOLTS

SHW Const I

Jan08

SAFETY & INSTALLATION INSTRUCTIONS FOR HW SERIES WITH CONSTANT CURRENT O/P CONTROL OPTION.

PLEASE READ CAREFULLY BEFORE INSTALLING OR OPERATING THIS POWER SUPPLY

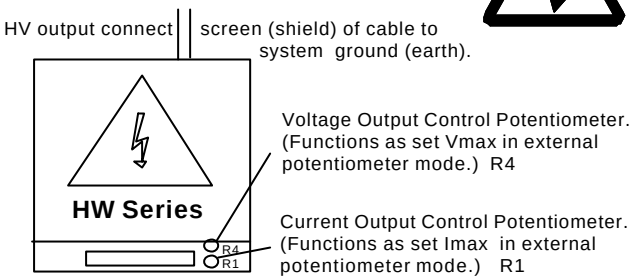
Power Supply Warning Symbols

Caution,

Risk of electric shock

Caution

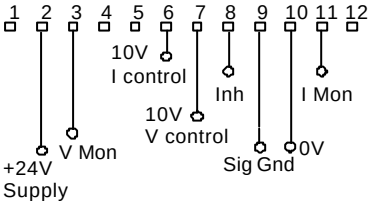
Refer to accompanying documentation



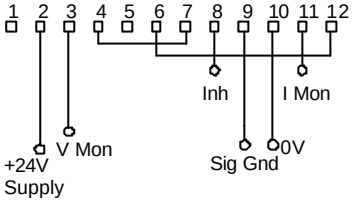
AA= Option Code:
IP = Precision Current Monitor
CP=Const I option (+Prec Imon)

e.g. Order Code:
HW001P**IP**300 +1kV 100mA with Precision Current Monitor
HW050N**CP**300 -50kV 2mA with constant current option (+ precision Current Monitor)

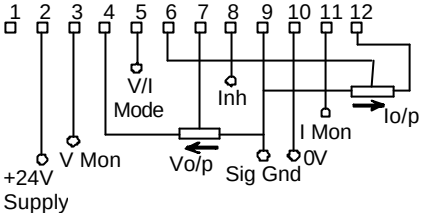
External Voltage Control



Internal Potentiometer Control



External Potentiometer Control



Pin 1	No connection.	Pin 7	Voltage Control i/p 0 to +10V gives 0 to max O/P.
Pin 2	+ 24 Volt at 6 Amps power input.	Pin 8	Low (<1.5V) unit operates. Resets trip.
Pin 3	Voltage monitor. 0 to +10V represents 0 to max O/P. Tol ± 5%. R source = 10 kohm.		High or OC = unit OFF
		Pin 9	0 volt for signal. All control & monitor signals are referenced to this pin.
Pin 4	Link to pin 7 for internal potentiometer control (see diagrams).	Pin 10	Power 0 volt return.
Pin 5	I/V Mode o/p, L= Voltage Mode	Pin 11	Current monitor. 0 to +10V represents 0 to max current. Tol. ±5%. R source = 10 K.
Pin 6	Current Control i/p 0 to +10V.	Pin 12	Link to pin 6 for internal pot control (see diagrams).

Pair of Back to Back diodes and 10R are connected between pins 9 & 10

The Molex pins are part no 8500108 & the 12 pin socket 10011124 AK order Code M12

Mode o/p (pin 5) is an open collector transistor – max current 10mA, max volts 30V

SPECIFICATION:

UNIT	OUTPUT		RIPPLE	SIZE (mm)
HW001P & N	50V to 1kV	@ 100mA	<0.1% p/p	230 x 135 x 60
HW2.5P & N	100V to 2.5kV	@ 40mA	<0.1% p/p	230 x 135x 60
HW005P & N	250V to 5kV	@ 20mA	<0.1% p/p	230 x 135 x 60
HW010P & N	500V to 10kV	@ 10mA	<0.1% p/p	230 x 135 x 60
HW020P & N	1kV to 20kV	@ 5mA	<0.1% p/p	280 x 135 x 60
HW030P & N	1.5kV to 30kV	@ 3mA	<0.1% p/p	280 x 135 x 60
HW040P & N	2kV to 40kV	@ 2.5mA	<0.5% p/p	280 x 135 x 60
HW050P & N	3kV to 50kV	@ 2mA	<0.5% p/p	280 x 135 x 60

Input Supply Voltage 24Vdc ± 10% at 6A .

Mounting By 4 off M4 clearance holes.

Cleaning Use a lint free cloth soaked with isopropyl alcohol, ensuring the unit is completely dry before use.

Environmental Conditions

Indoor use only,
Altitude up to 2000m,

Operating Temperature 0°C to +45°C,
Storage Temperature -35°C to +85°C.

Maximum relative humidity 80% for temperatures up to 31ºC, decreasing linearly to 50% relative humidity at 40º C,

The unit is to be supplied from a current limited supply providing 24Vdc, impulse limited to (overvoltage) Category I of IEC60364-4-443.

For use in an environment of pollution degree 2.

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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.

If an electrical test is to be carried out prior to fitting the power supply, it is essential that the person undertaking this work has received appropriate technical training to be aware of the hazards to which that person may be exposed in performing the tests, and of measures to minimise the risks to themselves, and other personnel. 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 SUPPLY IS CONNECTED. AFTER DISCONNECTION FROM THE SUPPLY, ALLOW 30 SECONDS 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.

COMPLIANCE WITH SAFETY STANDARDS

The unit is designed to meet Normalised European Safety Standards for installation in equipment conforming to EN61010 and hence installation of the power supply unit into the equipment should comply with the following requirements.

a. A PROTECTIVE EARTH must be provided for safety in accordance with EN61010 Part 1 : Clause 6.5.1. The case of the units must be bonded to this protective earth.

b. The output is classed as hazardous and must therefore not be accessible to operators. The output must be isolated from accessible circuits by Double Insulation or a protective screen as defined in EN61010-1.

c. It is intended to be installed in an electrical enclosure and the unit and its input connector 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.

d. The unit is not fitted with a fuse and so should be operated from a limited supply of <8 amp.

INSTALLATION

The outputs of these units are considered hazardous 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. ENSURE that a LOW IMPEDANCE connection is made to the unit chassis from the system PROTECTIVE EARTH. The safety earth conductor must not contain any switches or fuses.

Under worst case conditions the unit draws a current of 6A and any input supply cable must be of a suitable type and rating. The unit is not fitted with a fuse and so should be operated from a limited supply. Fuses may be fitted externally to the unit to protect unit and interconnecting wiring etc. but these should be rated to prevent nuisance failures. Care should be taken in the design of the interconnecting wiring within the system to ensure that connectors with hazardous voltages cannot be connected to accessible circuits.

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 to earth 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 (shield) 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.

Adequate ventilation should be provided to keep the unit cool and the ventilation inlets should not be covered in any way. The ambient air temperature around the inlet must not exceed 45 °C. The unit is fitted with a thermal cut-out to protect itself should the ambient temperature exceed this level. To restart the unit it must be allowed to cool. De-asserting the INH input will then clear the trip. The unit will operate in any orientation, however it is not recommended to operate with the silk-screened face as the lowest face.

OPERATING NOTES

1/ HIGH VOLTAGES ARE DANGEROUS. ENSURE THE OUTPUT IS FULLY DISCHARGED BY SHORTING TO GROUND BEFORE TOUCHING ANY HIGH VOLTAGE CIRCUIT.

2/ The unit is short circuit proof but care should be taken that the high voltage cannot be shorted into one of the control pin connections.

3/ TO ENABLE THE UNIT, PIN 8 MUST BE TAKEN TO LESS THAN 1.5V WITH RESPECT TO PIN 9.

There are three trips, over-temperature, over-current, and arc. These are latching trips except for the arc trip, and are cleared by cycling pin 8 or removing Power from the unit.

4/ POWER SUPPLIES ARE DISPATCHED WITH INTERNAL POTENTIOMETER SET TO MAXIMUM. TURN DOWN TO ZERO BEFORE CONNECTING TO 24 VOLT SUPPLY.