

## SAFETY & INSTALLATION INSTRUCTIONS FOR MS0.2MZZ065 POWER SUPPLY

**PLEASE READ CAREFULLY BEFORE INSTALLING OR OPERATING THIS POWER SUPPLY**

### Power Supply Warning Symbols

Caution,  
Risk of electric shock



Caution  
Refer to accompanying documentation



### Pin connections

Input Connector: Harting type 0918-540-6813

Output pin connections:

Pin 1 Supply 1 I/P prog. Hi  
Pin 2 Supply 1 I/P prog. Lo  
Pin 3 Supply 1 O/P monitor Hi  
Pin 4 Supply 1 O/P monitor Lo  
Pin 5 Supply 2 I/P prog. Hi  
Pin 6 Supply 2 I/P prog. Lo  
Pin 7 Supply 2 O/P monitor Hi  
Pin 8 Supply 2 O/P monitor Lo  
Pin 9 Supply 3 I/P prog. Hi  
Pin 10 Supply 3 I/P prog. Lo  
Pin 11 Supply 3 O/P monitor Hi  
Pin 12 Supply 3 O/P monitor Lo  
Pin 13 Supply 4 I/P prog. Hi  
Pin 14 Supply 4 I/P prog. Lo  
Pin 15 Supply 4 O/P monitor Hi  
Pin 16 Supply 4 O/P monitor Lo  
Pin 17 Supply 5 I/P prog. Hi  
Pin 18 Supply 5 I/P prog. Lo  
Pin 19 Supply 5 O/P monitor Hi  
Pin 20 Supply 5 O/P monitor Lo

Pin 21 Supply 6 I/P prog. Hi  
Pin 22 Supply 6 I/P prog. Lo  
Pin 23 Supply 6 O/P monitor Hi  
Pin 24 Supply 6 O/P monitor Lo  
Pin 25 Linked to pin 27  
Pin 26 Linked to pin 28  
Pin 27 Linked to pin 25  
Pin 28 Linked to pin 26  
Pin 29 Linked to pin 31  
Pin 30 Linked to pin 32  
Pin 31 Linked to pin 29  
Pin 32 Linked to pin 30  
Pin 33  
Pin 34 +15V input  
Pin 35 0V (+15V)  
Pin 36 -15V input  
Pin 37 0V (+24V)  
Pin 38 0V (+24V)  
Pin 39 +24V input  
Pin 40 +24V input

QM 12 way socket:  
right angle pcb mounting  
Burndy SMS12GE5

Pin 1 output 1  
Pin 2 output 2  
Pin 3 output 3  
Pin 4 output 4  
Pin 5 output 5  
Pin 6 output 6  
Pin 7 nc  
Pin 8 nc  
Pin 9 nc  
Pin 10 nc  
Pin 11 0 volt (load return)  
Pin 12 0 volt (load return)

Note:- Programme Lo and Monitor Lo are **all** connected to pin 35, 0V ( $\pm 15V$ ). Separate signal 0V ( $\pm 15V$ ) Pin 35, and power 0V (+24V) Pins 37 and 38 are provided; these are held to within +0.5V by back to back diodes or may optionally be connected by an on board link.

### Electrical Specification

Output Voltage: -200V to +200V controlled by -10V to +10V analogue signal.  
(each channel)  
Output current: 100uA per channel.  
Control: -10V gives -200V  $\pm 2\%$ , +10V gives +200V  $\pm 2\%$ .  
Ripple: Less than 25mV peak to peak, ripple frequency 50 kHz.  
Load regulation: Less than 100ppm.  
Line regulation: Less than 100ppm.  
Temperature co-efficient: 25ppm per  $^{\circ}C$ .  
Output monitor: -8V to +8V represents -200V to +200V  $\pm 5\%$  on the corresponding output.

**Input Supply Voltages** (All supplies Impulse limited to (overvoltage) Category I of IEC60364-4-443.)

24Vdc  $\pm 10\%$  at 0.5A .

+15V d.c.  $\pm 0.5V$  at 0.05A, & -15V d.c  $\pm 0.5V$  at 0.05A.

### Mounting

By 4 off M4 studs.

### 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  $0^{\circ}C$  to  $+45^{\circ}C$ ,  
Storage Temperature  $-35^{\circ}C$  to  $+85^{\circ}C$ .

Maximum relative humidity 80% for temperatures up to  $31^{\circ}C$ , decreasing linearly to 50% relative humidity at  $40^{\circ}C$ ,  
For use in an environment of pollution degree 2.

## 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 either 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 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:latest: 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 fuses and so should be operated from a current limited supplies of <1 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 (ground) conductor must not contain any switches or fuses.

Under worst case conditions the unit draws a current of .5A 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 50°C. The unit will operate in any orientation, however it is not recommended to operate with the side fitted with the silk-screen 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 voltages cannot be shorted into one of the control pin connections.