

1. FEATURES/SPECIFICATIONS

1.1 MVC3003-4020

- Enhanced Overvoltage Capability, including 1200V maximum DC Link trip.
- Compatible with MV DELTA Transistor Bridge types MVD300-4601 and MVDL643-4701.

1.2 MVC3003-4025

- Used with MVC3003-4020 or MVC3003-4030, in multibrige DELTA systems.

1.3 MVC3003-4030 & MVC3003-6030

- Enhanced Overvoltage Capability, including 1275V maximum DC Link trip.
- Compatible with MV DELTA Transistor Bridge types MVDL800-4701 and MVDL1000-4701.
- User configurable Timed Overvoltage trip.
- **MVC3003-6030** is enhanced EMC version of MVC3003-4030 for Marine projects but otherwise identical to - 4030

2. BOX CONTENTS

- One MVC3003-40xx DELTA SMPS Unit.
- This instruction sheet (T1973EN).

3. RELATED DOCUMENTS

Failure to comply with any of the general requirements for installation, operation and maintenance provided in the technical manuals will significantly increase the risk of maloperation, fire or electric shock.

- T1689 MV3000e DELTA Technical Manual.
- T1693 MV3000e DELTA Liquid Cooled System Manual.
- T1930 MV3000e DELTA Mains Voltage Monitor Instruction Sheet.

4. SAFETY INSTRUCTIONS

Care has been taken with the design of this product to ensure that it is safe. However, in common with all products of this type, misuse can result in injury or death. Therefore, it is very important that the instructions in this document and on the product are observed during transportation, commissioning, operation, maintenance and disposal.

This instruction sheet must be regarded as part of the product. It should be stored with the product and must be passed on to any subsequent owner or user.

Local safety laws and regulations must always be observed.

Persons working on the product must be suitably skilled and should have been trained in that work for these products.

The product is a component designed for incorporation in installations, apparatus and machines.

The product must not be used as a single item safety system. In applications where maloperation of the product could cause danger, additional means must be used to prevent danger to persons.

Product approvals and certifications will be invalidated if the product is transported, used or stored outside its ratings or if the instructions in this manual are not observed.

Third party approvals to safety standards UL508C and CSA C22.2 No 14 are marked on the product.

In The European Union:

- Products within the scope of the Low Voltage Directive, 2006/95/EC are CE marked.
- The product complies with the essential protection requirements of the EMC directive 2004/108/EC, when installed and used as described in this manual.
- The requirements of the EMC Directive should be established before any installation, apparatus or machine, which incorporates the product, is taken into service.
- A machine must not be taken into service until the machine has been declared in conformity with the provisions of the Machinery (Safety) Directive, 2006/42/EC.

5. DOCUMENT HISTORY

Revision Number	Date Of Revision	Details
Issue 0001		Initial Release
Issue 0002		Company name change
Issue 0003		
Issue 0004	Aug 2012	Company name change.
Rev 0005	April 2013	Company name change, etc.

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6. DISPOSAL

This equipment or any part of the equipment should be disposed of in accordance with the laws of the country of use.

Modern high technology materials have been used in the manufacture of the equipment to ensure optimum performance. Care has been taken with the selection of these materials to minimise risks to health and safety. However, some materials require special consideration during disposal.

7. SCOPE

This publication should be read in conjunction with the appropriate Standard Product and/or MV DELTA Technical Manuals. This publication should be regarded as part of the product; it should be retained for the life of the product and passed on to any subsequent owner or user.

8. SPECIFICATIONS

8.1 DC LINK OVERVOLTAGE TRIP LEVELS

SMPS Type	Timed Overvoltage Level	Instantaneous Overvoltage Level
MVC3003-4020	1188V ($\pm 1\%$)	1188V ($\pm 1\%$)
MVC3003-4030 & 6030	1188V ($\pm 1\%$)	1262V ($\pm 1\%$)
MVC3003-4025	N/A	1290V nominal

8.2 MECHANICAL DETAILS

Unit weight	1.8kg (4lbs)
Dimensions Width	245mm (9.65ins)
Height	220mm (8.66ins) excluding mounting brackets
Depth	65mm (2.56ins)

8.3 TOOL REQUIREMENTS

- Medium Pozi-Drive screwdriver
- M5 socket

8.4 ENVIRONMENT

Storage	Temperature Range	-25°C to +55°C (-13°F to 130°F)
	Relative Humidity	5% to 95%, non-condensing
	Altitude	Not critical below 40°C (104°F)
Transport	Temperature Range	-25°C to +70°C (-13°F to 158°F)
	Relative Humidity	≤ 95% RH non-condensing
	Altitude	Not critical below 40°C (104°F)
	Vibration, Drop	IEC 60721-3-2 Class 2M1
Operating	Temperature Range	- 0°C to +50°C (+32°F to 104°F)
	Relative Humidity	5% to 95% non-condensing
	Altitude	1000m
	Vibration	IEC 60721-3-3 Class 2M1 & EN50178
	Cooling Air	Pollution Degree 2 (IEC 60664-1, UL840, CSA C22.2 No. 0.2-93) i.e.
	(pollution & dust)	clean, free from dust, condensation and conductive or corrosive gases

9. INTRODUCTION

The MVC3003-40xx DELTA SMPS units provide the electronic supplies for the DELTA Transistor Bridge Module and the MV3000e DELTA Controller in systems operating from 575-690VAC. The SMPS unit derives its supply from the D.C. Link.

These variants have been designed specifically for use in systems with poor supply regulation.

9.1 MVC3003-4020

For MVD300-4601 and MVDL643-4701, the upper limit on VDC is the same for both the timed and instantaneous overvoltage. Fitting this SMPS unit allows for small improvements in system voltages, but no timed overvoltage flexibility.

MVC3003-4020 should be installed in DELTA position 1 only.

9.2 MVC3003-4030 & - 6030

In accordance with the improved capabilities of MVDL800-4701 and MVDL1000-4701 over previous DELTA Transistor Bridge designs, this variant allows a higher DC link transient withstand level. The Timed Overvoltage trip level can be exceeded for a user configurable period (maximum 7.5s) before the drive is tripped. If the second level is reached the drive is tripped instantly.

MVC3003-4030 should be installed in DELTA position 1 only.

9.3 MVC3003-4025

These SMPS units are designed to be installed in DELTA positions 2 to 6 in multi bridge DELTA systems. Their overvoltage trip level is set to 1290V nominal, and is intended to be a back-up for the master trip circuitry in MVC3003-4020 and MVC3003-4030. The analogue volts feedback is disabled in this variant.

NOTE: If this variant is installed in DELTA position 1, the system will trip on DC Link Undervolts.

10. FITTING INSTRUCTIONS

10.1 AIR COOLED TRANSISTOR BRIDGE

One MV SMPS fits directly onto the front of each MV DELTA Transistor Bridge Module.

Proceed to fit the SMPS unit after the transistor module is installed in the enclosure as follows:

- a) Fit all power cabling to the DELTA Transistor Bridge before fitting the SMPS unit
- b) Loosely fix the two M5 pozi-head fixing screws (with captive spring washer) to the upper face of the module as shown in Figure 1
- c) Mount the SMPS unit onto the two M5 fixing screws on the DELTA Transistor Bridge and fully tighten the screws
- d) Remove the blanking plug from TB1 on the front of the DELTA Transistor Bridge and connect the DC cable assembly to TB1
- e) Connect the 40 way ribbon cable from PL3 on the DELTA Transistor Bridge to PL2 on the SMPS daughter board, 20X4344

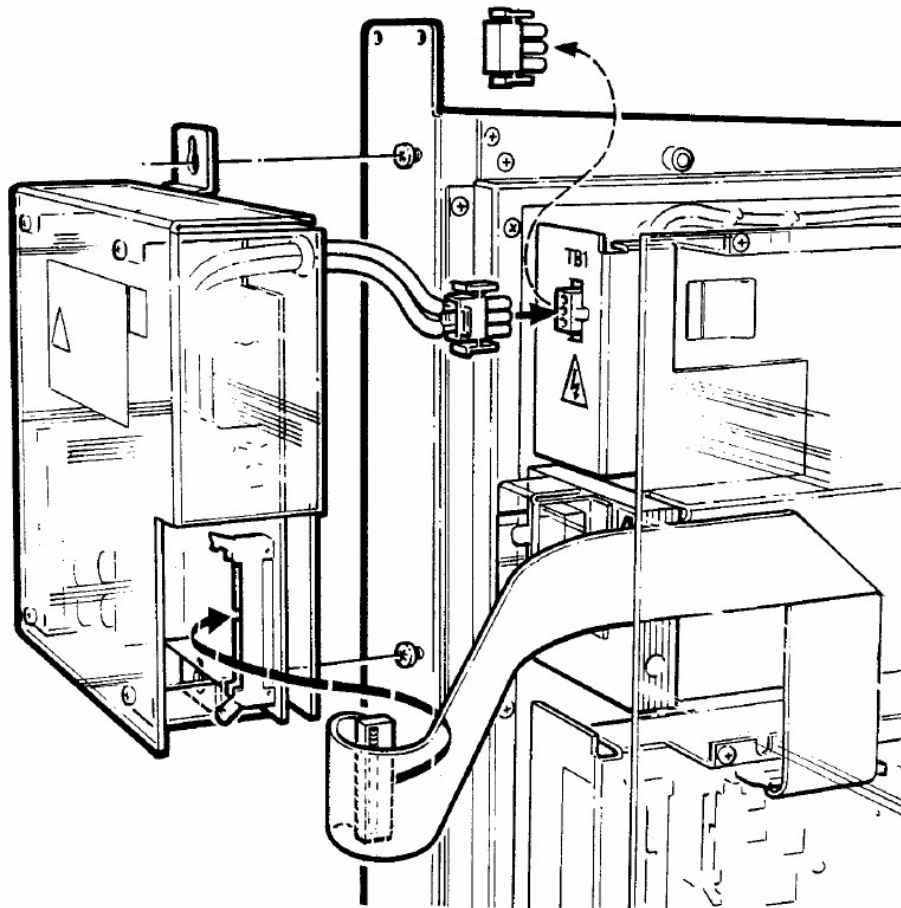


Figure 10-1. – Fitting an SMPS to an Air Cooled MV DELTA Module

10.2 LIQUID COOLED TRANSISTOR BRIDGE

One MV SMPS fits directly onto the front of each MV DELTA Transistor Bridge Module.

Proceed to fit the SMPS unit after the transistor module is installed in the enclosure as follows:

- a) Fit all power cabling to the DELTA Transistor Bridge before fitting the SMPS unit (to gain access to all terminals,
- b) Remove the back plate from the DELTA Transistor Bridge by loosening all M5 fixings and lifting off)
- c) Refit the back plate
- d) Mount the SMPS unit, using the three locating tabs and secure with three M5 Nyloc nuts (supplied with the Transistor Bridge) onto the M5 studs
- e) Note: For MVC3003-4025B & MVC3003-4030B, which have a flat mounting bracket, if bump stops are fitted to the transistor module back plate, these will need to be removed before fitting the SMPS unit.
- f) Remove the blanking plug from TB1 on the front of the DELTA Transistor Bridge and connect the DC cable assembly to TB1
- g) Connect the 40 way ribbon cable from PL3 on the DELTA Transistor Bridge to PL2 on the SMPS daughter board, 20X4344.

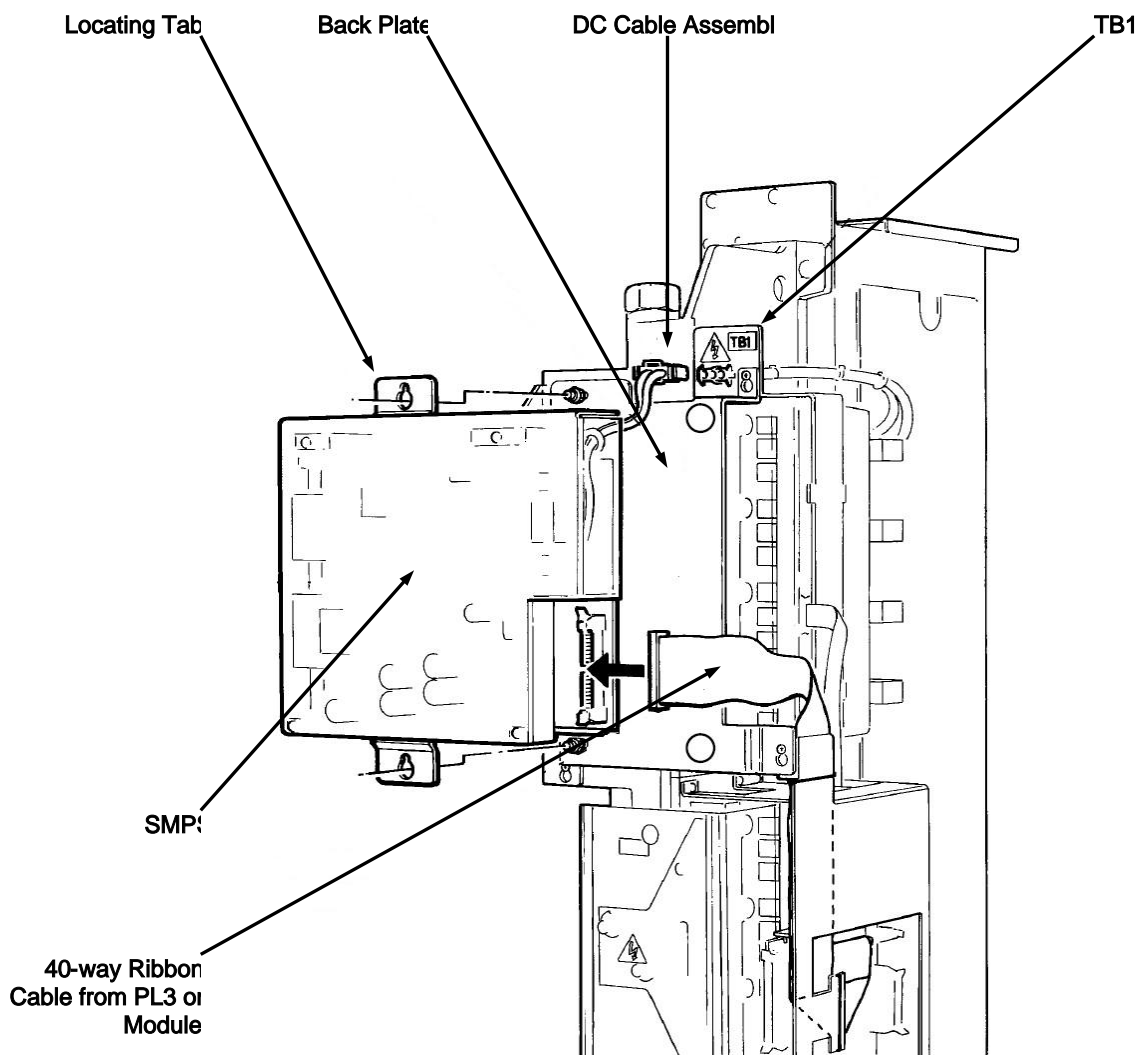
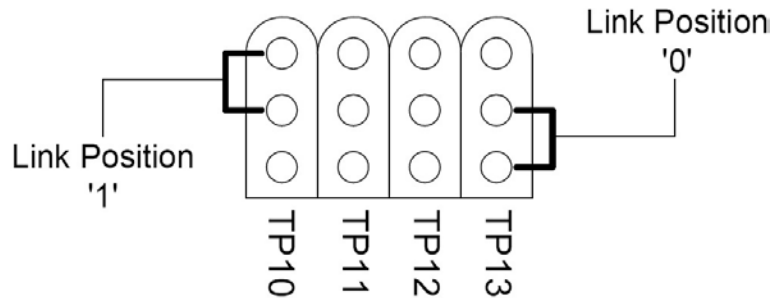


Figure 10-2. – Fitting an SMPS to a Liquid Cooled MV DELTA Module

11. CONFIGURING THE TIMED OVERVOLTAGE TRIP DURATION

MVC3003-4020 and MVC3003-4030 are both fitted with 20X4344 daughter boards. This board contains the configuration links for the Timed Overvoltage trip duration. The table below shows the link settings and their corresponding duration.



An abbreviated version of the table is shown on the PCB legend.

20X4344 Configuration Links				Duration (seconds)
TP10	TP11	TP12	TP14	
0	0	0	0	0.0
0	0	0	1	0.5
0	0	1	0	1.0
0	0	1	1	1.5
0	1	0	0	2.0
0	1	0	1	2.5
0	1	1	0	3.0
0	1	1	1	3.5
1	0	0	0	4.0
1	0	0	1	4.5
1	0	1	0	5.0
1	0	1	1	5.5
1	1	-	-	6.0
1	1	0	1	6.5
1	1	1	0	7.0
1	1	1	1	7.5

Table 11-1. – Link Settings & Durations

12. DC OVERVOLTAGE – ORIGIN DISCRIMINATION

By monitoring the AC supply and the DC Link voltage it is possible to discriminate between a supply induced overvoltage and a motor/load derived overvoltage (for example regeneration of power through the output bridge beyond the braking capacity connected to the DC Link).

For this discrimination a MVC3006-4001 Mains Voltage Monitor unit and the appropriate firmware are required.

With this hardware and software arrangement, the following actions will occur:

12.1 MAINS INDUCED OVERVOLTAGE

In this case both the mains voltage and the DC Link will have reached predefined threshold levels. The PWM will be inhibited until the DC Link falls below 1188V (±1%) when the software will perform an auto restart operation and flycatch the load.

12.2 MOTOR/LOAD INDUCED OVERVOLTAGE

A DC Link transient without an accompanying AC supply transient will be treated in the normal way and the drive will trip.

13. CONTACT DETAILS FOR SALES, SERVICE AND SUPPORT

www.avidcontrolsinc.com

Please refer to your local technical support centre if you have any queries about this product.

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