

# ALSPA MV3000 Delta Controller

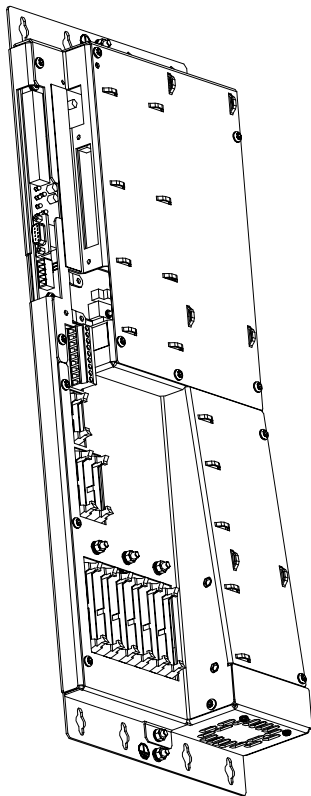
## Part Number MVC3001-4003, MVC3001-4013

### Features / Specifications :

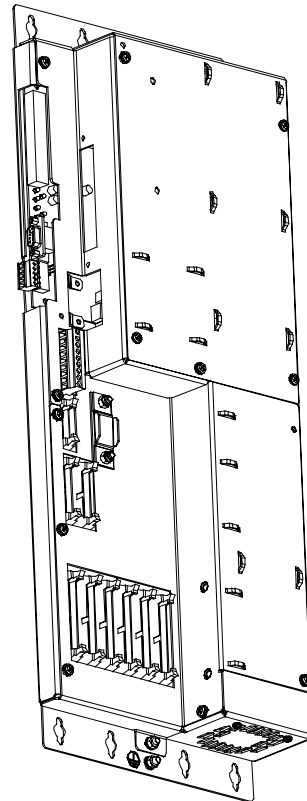
- Common Drive Controller for the ALSPA MV3000 range of DELTA based Inverter AC Drives
- Contains all the necessary communications to provide the basis for a complete AC Drive system
- 40MHz Processor
- Range of option modules available  
2<sup>nd</sup> CAN Port for DeviceNet or CANopen:  
PROFIBUS DP: Ethernet
- Supports improved diagnostics
- MVC3001-4013 Digital Signal Processor (DSP) Ready

### Box Contents

ALSPA MV3000 DELTA Controller MVC3001-4003 or  
ALSPA MV3000 DELTA Controller MVC3001-4013  
This Instruction Sheet (T2112EN)



MVC3001-4003



MVC3001-4013

# ALSPA MV3000 Delta Controller

## 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	ALSPA MV DELTA Technical Manual
T1693	ALSPA MV DELTA Liquid Cooled System Technical Manual
T1641	GD DELTA Technical Manual
T1676	ALSPA MV3000 Getting Started Manual
T1679	ALSPA MV3000 Software Technical Manual

## Introduction

The MVC3001-4003 DELTA Controller is the Common Drive Controller (CDC) for the ALSPA MV3000 range of DELTA based inverters.

It provides all the control and monitoring functions for an MV DELTA or MV-LCD AC Drive.

The controller is supplied in a 'stand-alone' cassette form for mounting in an enclosure. It derives an electrical supply from an associated transistor bridge module and includes facilities for communication with both the transistor and rectifier bridge modules.

## Serial Communications And Networking

In-built RS232 and RS485 serial ports supporting MODBUS and ESP protocols up to 38.4kBaud

In-built Opto-isolated CANport supporting DeviceNet and CANopen protocols

## Associated Modules

### User I/O Modules

MVC3002-4001 - User I/O Termination Panel

### Transistor Bridge Modules

MVD282-4501: MVD300-4601: MVD377-4501: MVDL643-4701: MVDL771-4501: MVDL800-4701: MVDL1000-4701

### Rectifier Bridge Modules

GDR391-4401: GDR391-4601: GDR633-4401: GDR633-4601: GDR721-4601: GDR872-4401: GDR872-4601: GDR1168-4401: GDR1168-4601: MVR1600-4601: MVDL2100-4601

### Option Modules

MVS3000-4001 ALSPA MV3000 Drive Data Manager

MVS3012-4001 ALSPA MV3000 Single Ethernet Module

MVS3012-4002 ALSPA MV3000 Dual Ethernet Module

MVS3007-4002 ALSPA MV3000 PROFIBUS Fieldbus Coupler

MVS3009-4001 ALSPA MV3000 MicroPEC Applications Processor

MVS3011-4001 ALSPA MV3000 2<sup>nd</sup> CANport Module

# ALSPA MV3000 Delta Controller

## Specifications

### 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 and dust)	Pollution Degree 2 (IEC 60664-1, UL 840, CSA C22.2 No. 0.2-93) i.e. clean, free from dust, condensation and conductive or corrosive gases.

### Fitting Instructions

The ALSPA MV 3000 DELTA Controller must be installed as per the instructions in the relevant technical manuals (see 'Related Documents' above).

### Important Notes on Grounding and Bonding for Reliable Operation/EMC

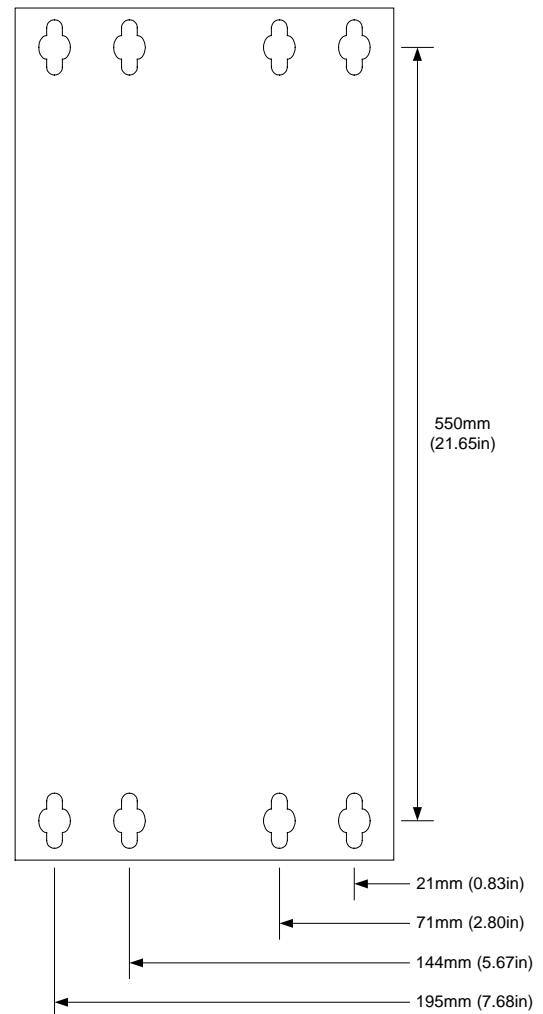
The location of the controller and its associated earthing/bonding is essential to the reliable operation of the system in terms of EMC compliance. Comprehensive details on this are available from ALSTOM but in brief:

- The CDC should be mounted inside the cubicle adjacent to the other DELTA components
- The metalwork of the ALSPA MV3000 DELTA Controller should be bonded substantially to the other ALSPA MV DELTA components with wide, low inductance conductors
- Avoid the use of painted back sheets or cross rails
- Do not mount the ALSPA MV3000 DELTA Controller on the enclosure door

# ALSPA MV3000 Delta Controller

## General Mounting Details

- Controller dimensions :  
Height 582mm (22.91in)  
Width 215mm (8.46in)  
Depth 67mm (2.63in) max
- Allow a minimum ventilation space of 50mm (2in) above and below the controller



## Commissioning

The ALSPA MV 3000 DELTA Controller will be commissioned as part of an AC Drive and instructions are given in the relevant technical manuals (see 'Related Documents' above).

## General Precautions

If the equipment is not to be used immediately then it should be stored in its original packing in a clean and dry environment.

During handling always observe good, anti-static handling precautions.

# ALSPA MV3000 Delta Controller

## Use of MVC3001-4003 as a Spare/Replacement for MVC3001-4001 / MVC3001-4002

MVC3001-4003 is fully compatible with MVC3001-4002 Controllers.

This product may also be used as a compatible spare or upgrade to earlier controllers MVC3001-4001.

In this case, the following differences should be noted:

When replacing -4001 with -4003 type, allowance needs to be made for the different CAN communications connector. On the earlier type, the CAN port was situated on the I/O panel away from the controller. On the new type, the CAN port (TB4A) is on the controller itself.

For the -4003, cabling will need to be extended from the I/O panel to the new TB4A on the controller. TB4A requires the use of a 5 way plug.

From May 2003 the plug is supplied with the controller, ALSTOM part number for the plug is 80109/231.

## General Advice For Controller Replacement

### Introduction

Where this controller is used as a spare for an existing installation then the following advice may be useful. It is assumed that the user is familiar with the operation of the MV3000 Drives System and has access to the necessary product manuals.

The existing -4001 controller will use an earlier version of software and/or hardware. Software versions commenced at V1.0 in May 1999 through to V11.01 in January 2004 and beyond. The earlier hardware controller was MVC3001-4001 (25Mhz controller).

The version of firmware can be determined using the Drive Data Manager (keypad) by setting parameter P1.31=2 (All Menus Open) and accessing parameter P99.04 (Firmware Rev. Number).

The MV3000 Getting Started Manual T1676 details navigation of Menus and Parameters via the Drive Data Manager.

This latest controller has been designed to be compatible with earlier versions and will offer improvements and enhancements on these earlier versions. The policy of ALSTOM is to always supply the latest version of firmware.

In general, the default parameters will be the same, in some cases more have been added to allow better control of the drive. In previous issues of firmware you would not have had access to these, hence the factory defaults in most cases will be sufficient.

If the controller being replaced has early firmware then you must perform the following: -

### Replacing a Controller Equipped With Firmware Version V1.00 to V6.00

During a calibration run, Bridge Linearisation values are calculated and stored in the controller. These parameters aid with the stable running of the motor. They are now made visible to the user (from V6.03) as parameters P11.70 through P11.77 and, as such, can be now be saved to the ALSPA Drive Data Manager or via ALSPA Drive Coach. This means that if an ALSPA MV3000 Controller (MicroCubicle or DELTA) with the above firmware needs to be replaced, then a calibration run must be performed to set these values in the new controller.

The MV3000 Getting Started Manual T1676 gives more information on commissioning and calibration runs, where update notice 440,009 details the firmware changes. Update notices are available upon request from Alstom Technical Support.

In addition see Replacing a Controller Equipped With Firmware V6.03 to V7.00

# ALSPA MV3000 Delta Controller

## Replacing a Controller Equipped With Firmware Version V6.03 to V7.00

Vector Control can now be run in one of two modes, High Dynamic Mode or Optimum Volt Mode.

High Dynamic Mode is the same vector control as present on ALSPA MV3000 AC Drives up to and including Firmware Version 7.00. It is selected by setting parameter P12.35=0 (Vector Fluxing Mode).

Note that from V8.00 Firmware the default for this parameter is Optimum Volt Mode P12.35=1

Update notice 440,011 details the firmware changes and mode of operation.

## Replacing a Controller Equipped With Firmware Version V8.00 to V11.73

General improvements have been made to control algorithms and although not essential you may wish to consider a calibration run to fully benefit from these changes.

Update notices 440,012, 440,013 and 440,015 detail the firmware changes.

## Replacing a Controller Equipped With Firmware V11.73 or Earlier

From Firmware Version V11.86 and later, the AC Loss Ridethrough feature (P35.12=1) is no longer available in VVVF mode (P99.01=1). It is only available in Vector Control.

If this feature is required then it will be necessary to switch to Vector Control (P99.01=2). In order for the drive to operate correctly in this mode, a calibration run for the drive-motor combination will be necessary (see Related Documents above).

## Basic Steps in Controller Replacement

You will require a full copy of the original parameter set to allow the new controller to be configured. This information should have been saved after the drive was commissioned, either in the keypad or via Drive Coach. If you do not have this but can still communicate with the controller, then the Drive parameters must be backed up before the controller is replaced. To do this using the Drive Data Manager (Keypad) set Parameter 99.16=4 (Save to Keypad). Confirm your choice (ENTER) at which point the current drive parameter settings will be stored to the keypad flash memory.

When you are sure you have a backup of the parameters replace the control PCB, ensuring you observe the static and electrical precautions detailed in the product manuals.

On power up the drive will show TRIP 19 – NEW PCB. It is important that you set P10.35=2 (New Control PCB). Afterwards, attempt to reset this trip before you proceed.

Restore the original drive parameter settings. If you previously used the Drive Data Manager (Keypad) set Parameter 99.16=5 (Recall Keypad). The keypad will detect if the Firmware version in the new controller is different to that of the old. If so the warning message "Firmware not fully Compatible" will be displayed. Continue with the recall by confirming your choice (ENTER) at which point the parameter settings will be stored to new controller.

Refer to the guidance given above and check effected parameters, then perform a calibration run if required.

**Note :** Some users with earlier versions of firmware may have had special "development parameters" modified which will not be part of the normal defaults. This is a highly unusual situation and will only have occurred if ALSTOM engineers have visited site and advised the customer of such changes. In these cases refer to the ALSTOM service department.

# ALSPA MV3000 Delta Controller

## Customer Support and Training

Please refer to your local technical support centre if you have any queries about this product. Contact telephone numbers are shown on the back cover.

# ALSPA MV3000 Delta Controller

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