

## Table of Contents

Table of Contents .....	i
CD60M & CD80M Quick Reference Guide .....	iii
INTRODUCTION .....	1
SPECIFICATION .....	3
GETTING STARTED .....	5
INSTALLATION .....	17
MAINTENANCE & TROUBLESHOOTING .....	37
APPENDIX A .....	41
Index .....	43

## User Guide Change Summary

The following is a summary of the primary changes to this user guide since the last version was released. This user guide, version 1600.192.02, supersedes version 1600.192.01.

When a user guide is updated, the new or changed text is differentiated with a change bar in the outside margin (this paragraph is an example). If an entire chapter is changed, the change bar is located on the outside margin of the chapter title.

Major changes introduced at revision 02 are:

LVD Compliance

EMC installation guidelines

Warning symbols used on the CD60M/CD80M series of drives have the following meanings:



Refer to the accompanying documentation



Protective conductor terminal



Risk of electric shock



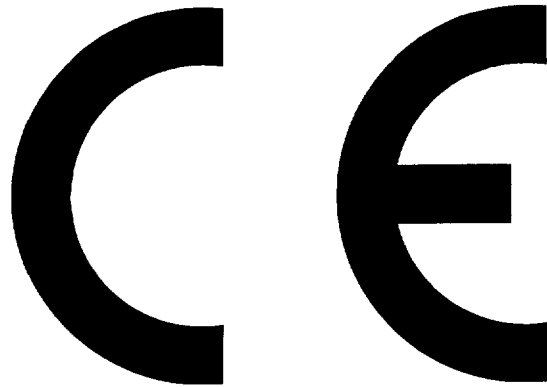
Alternating current



Hot surface



Frame or chassis terminal



**Product Type:** CD60M, CD80M Stepper Drives

**The above products are in compliance with the requirements of directives**

- **73/23/EEC** Low Voltage Directive
- **93/68/EEC** CE Marking Directive

The CD60M/CD80M Series of drives are sold as complex components to professional assemblers, as components they are not compliant with Electromagnetic Compatibility Directive 89/336/EEC. However, information is offered in this User Guide on how to install these drives in a manner most likely to minimise the effects of drive emissions and to maximise the immunity of drives from externally generated interference.

## CD60M & CD80M Quick Reference Guide

### Overview

The CD60M and CD80M are rack-mounting ministep drives designed to operate with standard 2/4 phase motors operating at 120V (nominal), yet retaining pin-compatibility with previous CD drives.

### Outline specification

Nominal operating voltage	120V DC
Operating voltage range	48 to 140V DC +10% -15%
Output current, RMS	6A (CD60M), 7.8A (CD80M)
Output current, peak	8.5A (CD60M), 11A (CD80M)
Max. power supply current (at 120V)	4A (CD60M), 5.5A (CD80M)
Max. step frequency	200kHz at 4000 steps/rev
Min. step pulse width	1 $\mu$ s (recommended setting for Compumotor indexes)
Signal input levels:	
Direct	Low <+2V or S/C to 0V, high +10 to +12V or O/C (4k7 pull-up to +12V built-in)
Via opto motherboard	TTL, low <0.8V, high >3.5V, max. current 20mA
Signal output levels:	
Direct	NPN open-collector transistor, +30V max off, 0.4V on at 15mA max.
Via opto motherboard	Free NPN transistor (collector = Fault +), 28V max off, 0.8V on at 5mA max

### Connections direct to edge connector

2a Motor B-	2c Motor B-
4a Motor B+	4c Motor B+
6a Motor A-	6c Motor A-
8a Motor A+	8c Motor A+
10a n/c	10c Opto supply out
12a HV in (120V DC)	12c HV in
14a HV in	14c HV in
16a Power 0V	16c Power 0V
18a Power 0V	18c n/c
20a Fault out	20c n/c
22a Zero phase out*	22c n/c
24a External reset*	24c n/c
26a Direction in	26c n/c
28a Clock in*	28c n/c
30a Energise in*	30c n/c
32a Reserved	32c n/c

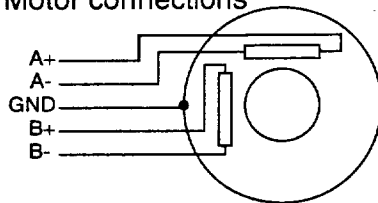
\*Active-low signals

**Connections using opto motherboard  
(25-way D-type socket SKT1)**

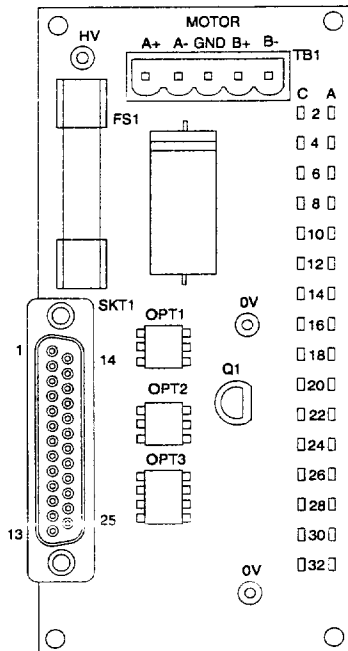
- |                   |                  |
|-------------------|------------------|
| 1 Step + in       | 16 Shutdown + in |
| 14 Step - in      | 17 Shutdown - in |
| 2 Direction + in  | 9 Fault + out    |
| 15 Direction - in | 21 Fault - out   |

Fuse rating 10A QB HBC (CD60M & CD80M)  
6.3mm x 32mm

**Motor connections**



**Layout of 10HP motherboard**



**Compatibility**

The Boost function has been eliminated on the CD60M/CD80M series of drives and the previous CD Boost terminal has now been used as a reset input.

**Power Supplies**

Both the CD60M and the CD80M only require a single DC motor supply. A current limited +12V DC supply generated on the card supplies optocouplers used on the 10HP motherboard via edge connector 10c (previously unused). The 10HP motherboard has faster optos and is needed when running at 50 rps and 4000 steps/rev. If a drive is used with a 14HP opto motherboard then a +24V DC supply will still be required for motherboard circuits, but its presence will not harm the drive.

CD60M & CD80M drives can be run from any DC voltage between 48V and 140V (+10% -15%). This means that at 120V there is ample headroom to allow for poor power supply regulation or pump-up during regeneration. Use PM2000CN power supply for operation at 120V DC, PM1200CN for operation at 85V DC.

Suitable transformers are; TO92 (600VA), TO73 (1200VA) for 85V DC or TO182 (1000VA) for 120V DC. Allow up to 450VA for the CD60M and 600VA for the CD80M at 120V (300VA and 450VA respectively at 85V).

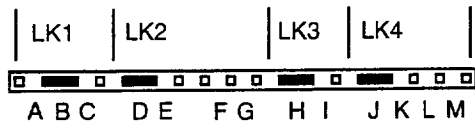
**Jumper Link Settings:** \*=Factory settings

Link No.	Option	Link Position	Value	
LK1	Standby current reduction	A	80% of full load	
		B*	50% of full load	
		C	Permanent (50%) standby	
LK2	Resolution	D*	4,000 steps/rev	
		E	2,000 steps/rev	
		F	1,000 steps/rev	
		G	400 steps/rev	
LK3	Energise	H*	Permanently energised	
		I	Energise externally controllable	
LK4	Motor current		CD60M	CD80M
		J*	6A	7.8A
		K	5.5A	7A
		L	4.4A	5.6A
		M	3.8A	4.9A

Motor currents are quoted as RMS values. Note: peak (one-phase-on) are 40% higher.

**Jumper Layout:** Shown in their factory settings

LK2 can occupy positions D, E, F or G - there is an unused position between E and F.



**Mounting:** 4.4 inch (111.7mm) EuroModule or 100mm EuroCard guides can be used

Drives should be mounted vertically within the rack to ensure the maximum flow of cooling air over the heatsink. In high duty cycle applications, fan cooling may be required during prolonged operation at speeds below 15 rps and at full current.