



Nidec

Quick Start Guide

Digitax HD M75X Series

Variable speed AC drive
for Servo motors



Original Instructions

For the purposes of compliance with the EU Machinery Directive 2006/42/EC.

General information and access to additional documentation

This guide is intended to provide basic information required in order to set-up a drive to run a motor. For more detailed installation and operational information, please refer to the relevant drive documentation which is available to download from:

www.drive-setup.com/digitaxhd



Warnings, Cautions and Notes



WARNING

A Warning contains information which is essential for avoiding a safety hazard.



CAUTION

A Caution contains information which is necessary for avoiding a risk of damage to the product or other equipment.

NOTE

A **Note** contains information which helps to ensure correct operation of the product.



WARNING

This guide does not include safety information. Incorrect installation or operation of the drive, could cause personnel injury or equipment damage. For essential safety information, please refer to the relevant drive documentation or safety booklet supplied with the drive.

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EU Declaration of Conformity

1. Product range

Unidrive-M, Commander, Digitax HD and derivative products. Adjustable speed AC motor drives, including option modules and accessories.

2. Name and address of the manufacturer and authorised representative

Manufacturer	Authorised representative in the EU
Nidec Control Techniques Ltd The Gro Pool Road Newtown Powys SY16 3BE UK Registered in England and Wales. Company Reg. No. 01236886 Telephone: 00 44 1686 612000 E mail: cthoadmin@mail.nidec.com Web: www.controltechniques.com	Nidec Netherlands B.V. Kubus 155 3364 DG Sliedrecht Netherlands.

3. Responsibility

This declaration is issued under the sole responsibility of the manufacturer.

4. Object of the declaration

Variable speed drives

Model number	Interpretation	Nomenclature aaaa - bbc ddddde
aaaa	Basic series	C200, C300, M100, M101, M200, M201, M300, M400, M600, M700, M701, M702, M708, M709, M750, M751, M752, M753, M754, M880, M881, M882, M888, M889, E300, F300, F600, H300, HS30, HS70, HS71, HS72, M000, RECT
bb	Frame size	01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12
c	Voltage rating	1 = 100 V, 2 = 200 V, 4 = 400 V, 5 = 575 V, 6 = 690 V
dddd	Current rating	Example 01000 = 100 A
e	Drive format	A = 6P Rectifier + Inverter (internal choke), D = Inverter, E = 6P Rectifier + Inverter (external choke), T = 12P Rectifier + Inverter (external choke)

The model number may be followed by additional characters that do not affect the ratings.

Accessories

Model No.	Model number
Option Modules	SI-Applications Compact, SI-Applications Plus, SI-CANOpen, SI-CiA417, SI-DeviceNet, SI-Encoder, SI-EtherCAT, SI-Ethernet, SI-Interbus 500kBd, SI-Interbus 2MBd, SI-IO, SI-IO 24 Plus, SI-Powerlink, SI-PROFIBUS, SI-PROFINET V2, SI-Universal Encoder, PTi210, SI-PROFINET RT, SI-Safety, MCi200, MCi210, MiS210, MiS250, KI-485 Adaptor, AI-485 Adaptor, AI-485 Adaptor 24V, AI-Backup adaptor, AI-Smart adaptor
Control pods	Mxxx-STANDARD011100A0100, Mxxx-MASTER11100A0100, M000-FOLLOWER011100A0100 (where Mxxx denotes M600, M700, M701, M702, HS70, HS71 or HS72)
Displays, keypads, other accessories	KI-Keypad, KI-Keypad RTC, KI-HOA keypad RTC, KI-Compact Display, KI-Compact 485 adaptor, Remote Keypad (LCD), Remote Keypad RTC, CI-Keypad, CI-485 Adaptor, Capacitor module M75C

5. Declaration

The object of the declaration is in conformity with the relevant European Union harmonisation legislation.

Low Voltage Directive (2014/35/EU)

Electromagnetic Compatibility Directive (2014/30/EU)

Restriction of Hazardous Substances Directives (2011/65/EU and 2015/863/EU).

Regulation 2019/1781 of directive 2009/125/EC (Energy related products)

6. References to the relevant harmonised EN standards

The variable speed drive products listed above have been designed and manufactured in accordance with the following European harmonised standards:

EN 61800-5-1:2007 + A1:2017 + A11: 2021	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
EN 61800-3: 2018	Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods
EN 61000-6-2: 2019	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-4: 2019	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
EN 61000-3-2:2019+A1:2021	Electromagnetic compatibility (EMC) - Part 3-2: Limits for harmonic current emissions (equipment input current ? 16 A per phase)
EN 61000-3-3:2013+A1:2019 + A2:2021	Electromagnetic compatibility (EMC) - Part 3-3: Limitation of voltage changes, voltage fluctuations and flicker in public, low voltage supply systems, for equipment with rated current ? 16 A per phase and not subject to conditional connection

7. Responsible person



Jonathan Holman-White
Vice President, Research and Development
Date: 8th November 2023
Newtown, Powys, UK

These electronic drive products are intended to be used with appropriate motors, controllers, electrical protection components and other equipment to form complete end products or systems. Compliance with safety and EMC regulations depends upon installing and configuring drives correctly, including using the specified input filters.

The drives must be installed only by professional installers who are familiar with requirements for safety and EMC. Refer to the Product Documentation. An EMC data sheet is available giving detailed information. The assembler is responsible for ensuring that the end product or system complies with all the relevant laws in the country where it is to be used.

EU Declaration of Conformity (including 2006 Machinery Directive)

1. Product model

Unidrive-M, Digitax HD and derivative products incorporating a Safe Torque Off (STO) function used as a safety component of a machine. Only the Safe Torque Off function may be used as a safety component of a machine.

2. Name and address of the manufacturer and authorised representative

Manufacturer	Authorised representative in the EU
Nidec Control Techniques Ltd The Gro Pool Road Newtown Powys SY16 3BE UK Registered in England and Wales. Company Reg. No. 01236886 Telephone: 00 44 1686 612000 E mail: cthoadmin@mail.nidec.com Web: www.controltechniques.com	Nidec Netherlands B.V. Kubus 155 3364 DG Sliedrecht Netherlands.

3. Responsibility

This declaration is issued under the sole responsibility of the manufacturer.

4. Object of the declaration

Model number	Interpretation	Nomenclature aaaa - bbc ddddde
aaaa	Basic series	M600, M700, M701, M702, M708, M709, CSD1, HS70, HS71, HS72, E200, E300, M880, M881, M882, M889, F300, F600, H300, M751, M753, M750, M754
bb	Frame size	01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12
c	Voltage rating	1 = 100 V, 2 = 200 V, 4 = 400 V, 5 = 575 V, 6 = 690 V
ddddd	Current rating	Example 01000 = 100 A
e	Drive format	A = 6P Rectifier + Inverter (internal choke), D = Inverter, E = 6P Rectifier + Inverter (external choke), T = 12P Rectifier + Inverter (external choke)

The model number may be followed by additional characters that do not affect the ratings.

(Refer to the Revision List: 01_205_5270_03_22_RL_2022_08_24.docx).

5. Declaration

The safety function STO within the Unidrive-M series fulfils the requirements of SIL 3 of EN 61800-5-2 / EN 61508 and Cat 4 / PLE of EN ISO 1384901 and can be used in safety related applications up to these safety levels and in the application area of EN IEC 62061:2021.

Further it can be used for electric passenger and goods lifts within the scope of EN 81-20, clause 5.9.2.5.4 d) as a SIL 3 drive control featuring a defined interface for stopping of the drive by a means of static elements.

The object of the declaration is in conformity with the following European Union harmonisation legislation:

Machinery Directive (2006/42/EC)

Electromagnetic Compatibility Directive (2014/30/EU)

Type examination has been carried out by the following notified body:

TUV Rheinland Industrie Service GmbH, Am Grauen Stein, D-51105 Köln, Germany

Notified body identification number: 0035

EC type-examination certificate number: 01/205/5270.03/22 dated 2022-08-26, valid until 2027-08-26.

6. References to the relevant harmonised standards used

The variable speed drive products listed above have been designed and manufactured in accordance with the following European harmonised standards:

EN 61800-5-2:2017	Adjustable speed electrical power drive systems - Part 5-2: Safety requirements - Functional
EN 61800-5-1:2007 + A1: 2017 + A11: 2021, 4.3, 5.2.3.8, 5.2.6	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
EN ISO 13849-1:2015	Safety of Machinery, Safety-related parts of control systems, General principles for design
IEC 61508 Parts 1 - 7:2010	Functional safety of electrical/ electronic/programmable electronic safety-related systems

7. Responsible person



Jonathan Holman-White
Vice President, Research and Development
Date: 8th November 2023
Newtown, Powys, UK

These electronic drive products are intended to be used with appropriate motors, controllers, electrical protection components and other equipment to form complete end products or systems. Compliance with safety and EMC regulations depends upon installing and configuring drives correctly, including using the specified input filters.

The drives must be installed only by professional installers who are familiar with requirements for safety and EMC. Refer to the Product Documentation. An EMC data sheet is available giving detailed information. The assembler is responsible for ensuring that the end product or system complies with all the relevant laws in the country where it is to be used.

1 Product information

1.1 Ratings

Table 1-1 Drive ratings, cable sizes and fuse ratings

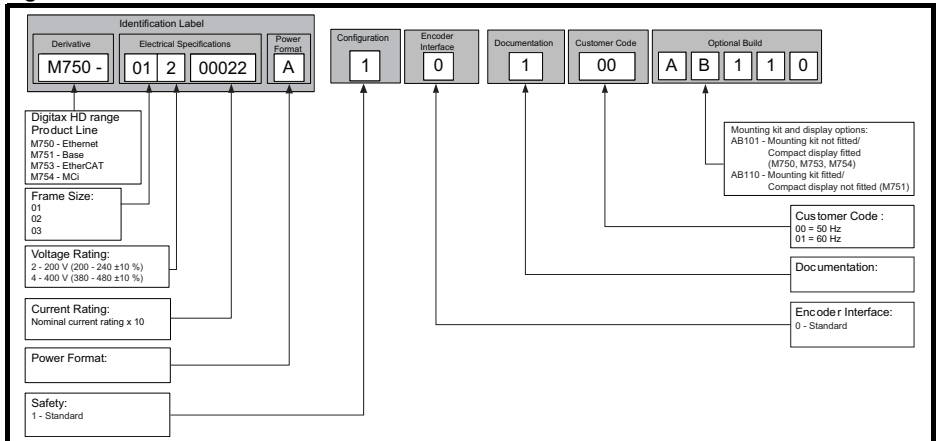
Model	No of input phases	Typical AC input current (single axis)	AC Fuse ratings (single axis)		Cable size (single axis)				Nominal current	Peak current	Typical continuous output power
					Input**		Output				
		A	IEC gG	UL Class CC, J or T*	mm²	AWG	mm²	AWG	A	A	kW
01200022	1	3.7	8	15	0.75	14	0.75	24	1.1	6.6	0.3
01200040	1	6.9	12	15	1.5	14	0.75	22	2.2	12	0.7
01200065	1	11.4	16	15	2.5	12	0.75	20	3.5	19.5	1.1
02200090	1	17.7	25	25	4	10	0.75	16	5.6	27	1.8
02200120	1	23	32	30	6	10	0.75	16	7.5	36	2.3
03200160	1	31.5	32	40	6	8	1.5	14	10.8	48	3.4
01200022	3	5.8	8	15	0.75	14	0.75	20	2.2	6.6	0.7
01200040	3	7.9	12	15	1.5	14	0.75	18	4	12	1.3
01200065	3	10.5	16	15	2.5	14	0.75	16	6.5	19.5	2
02200090	3	16.7	25	25	4	10	1	14	9	27	2.7
02200120	3	20.3	32	30	6	10	1.5	12	12	36	3.7
03200160	3	27.9	32	40	6	8	2.5	12	16	48	5
01400015	3	3.1	6	15	0.75	14	0.75	20	1.5	4.5	0.8
01400030	3	4.8	8	15	0.75	14	0.75	20	3	9	1.6
01400042	3	5.3	8	15	0.75	14	0.75	18	4.2	12.6	1.9
02400060	3	10.1	16	25	2.5	14	0.75	16	6	18	3.1
02400080	3	12.1	16	25	2.5	12	0.75	14	8	24	4.2
02400105	3	14.9	20	25	4	12	1.5	14	10.5	31.5	5.6
03400135	3	20.8	32	30	6	10	2.5	12	13.5	40.5	6.9
03400160	3	22	32	30	6	10	2.5	12	16	48	7.6

* These are fast acting fuses.

** Short circuit rating - Input current based on a symmetrical supply fault level of 5 kA. For UL installations with a short circuit current rating greater than 5 kA refer to the *Digitax HD M75X Series Installation and Technical Guide*.

1.2 Model number

Figure 1-1 Model number



1.3 Drive features

Figure 1-2 Feature diagram (Frame 1 shown)

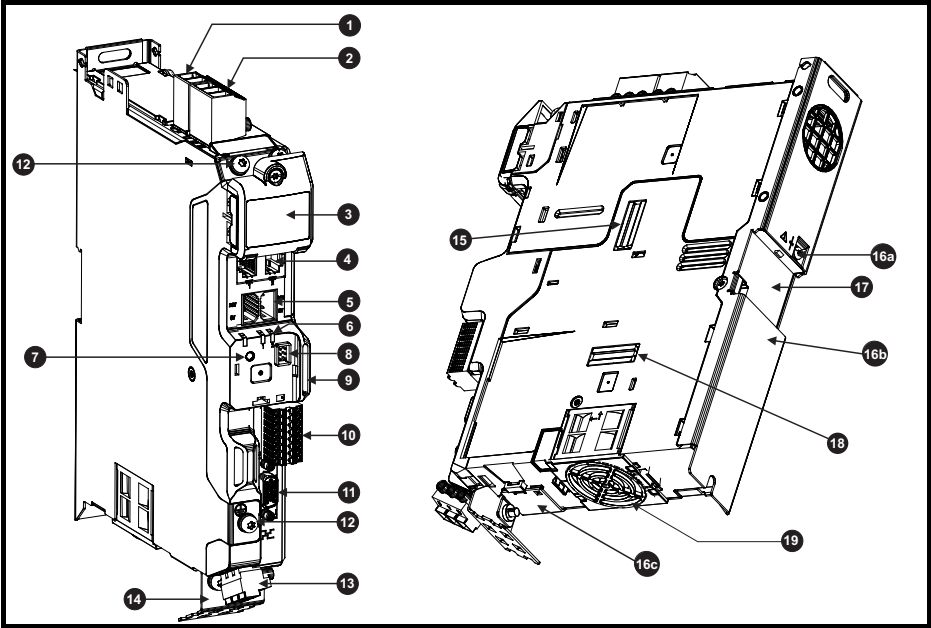


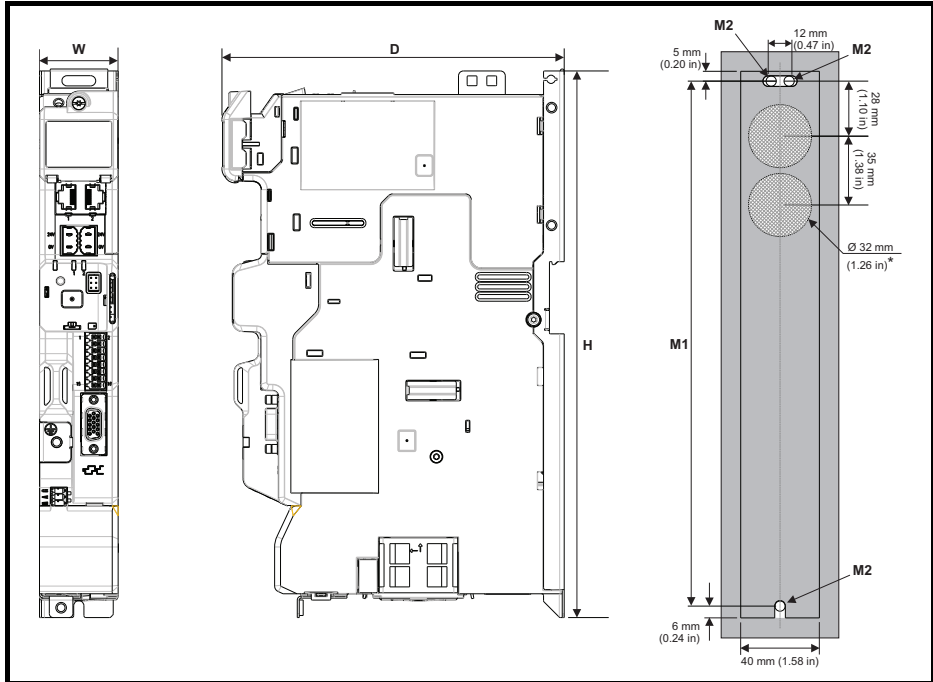
Table 1-2 Key to features of the drive

Number	Description
1	Braking terminals
2	AC supply terminals
3	DC bus terminal cover
4	Communication port connections
5	External 24 V supply terminals
6	Status and communication LEDS
7	Reset
8	Display connection
9	SD card slot
10	Control and holding brake terminals
11	Position feedback connection
12	Ground screw
13	Motor terminals
14	Cable screen bracket
15	Option module slot 1 cover*
16a	Internal EMC filter screw (frame 1)
16b	Internal EMC filter screw position (frame 2)
16c	Internal EMC filter screw position (frame 3)
17	DIN rail alignment
18	Option module slot 2 cover*
19	Cooling fan

* Additional SI-Option mounting kit required when connecting option modules where not already installed.

2 Mechanical installation

Figure 2-1 M75X dimensions (Frame 2 shown)



* Cut outs only required for rear venting, refer to the *Digitax HD M75X Series Installation and Technical Guide* for further information.

Table 2-1 Dimensions by frame size (refer to Figure 2-1)

Frame size	H		W**		D		M1		M2 (Ø)*	
	mm	in	mm	in	mm	in	mm	in	mm	in
1	233	9.17	40	1.58	174	6.85	222	8.74	5.2	0.21
2	278	10.95	40	1.58	174	6.85	267	10.51	5.2	0.21
3	328	12.91	40	1.58	174	6.85	317	12.48	5.2	0.21

* For single axis stand alone drives, two M5 screws are required in the top mounting position and one in the lower mounting position. For multi axis (side by side installation) with no DIN rail attachment, one M5 screw is required in the top mounting position and one in the lower mounting position for each drive. For multi axis (side by side installation) with DIN rail attachment one M5 screw in the top mounting position is sufficient to fix the drive to the back plate.

** 62 mm (2.44 in) with option module support installed.

NOTE

- All frame sizes require a minimum clearance of 100 mm (3.94 in) above and below the product.
- A minimum clearance of 10 mm (0.39 in) should be maintained between the enclosure side wall and the drive.

Drives may be mounted side by side (0 mm). For further information on mechanical installation refer to the *Digitax HD M75X Series Installation and Technical Guide*.

3 Electrical installation

A simplified diagram of the electrical connections / terminals is included on the back page of this manual.

3.1 Control stage external 24 Vdc supply requirements

An external 24 Vdc supply is required to provide power to the control circuits within the drive.



The drive will power down if the external 24 Vdc power supply is removed, but high voltages may still be present on the AC input, DC bus, brake resistor and motor output terminals.

Table 3-1 Working voltage range and maximum fuse rating for the external 24 Vdc input

All frame sizes	
Nominal operating voltage	24.0 Vdc
Minimum continuous operating voltage	20.4 Vdc
Maximum continuous operating voltage	28.8 Vdc
Minimum start up voltage	20.4 Vdc
Maximum fuse rating	30 A

Table 3-2 Typical input current and power requirements for the external 24 Vdc input

Device	Typical input current with 24V supply (mA)	Typical input power (W)
Digitax HD frame 1 or 2 drive*	905	22
Digitax HD frame 3 drive*	1050	25
High current brake output	1200	29
SI-option module	450	11

* Typical 24 Vdc input current demand with inverter in the run condition, encoder connection, KI Compact Display fitted and cooling fan(s) at full speed.

Therefore, a Digitax HD frame 3 drive using the high current brake output and fitted with two SI-option modules would have a typical input requirement of 3.15 A.

3.2 AC supply requirements

Table 3-3 Supply requirements

Model	Voltage	Input phases	Frequency range
Digitax HD M75X 200 V	200 V to 240 V ± 10 %	Single or three*	45 to 66 Hz
Digitax HD M75X 400 V	380 V to 480 V ± 10 %	Three*	

* Maximum supply imbalance: 2 % negative phase sequence (equivalent to 3 % voltage imbalance between phases).

The supply and motor ground connections are made using the M4 threaded holes in the metal side plate of the drive. Connections are located at the top and bottom of the drive, for further information refer to the *Digitax HD M75X Series Installation and Technical Guide*.

For EMC (Electromagnetic compatibility) requirements refer to the *Digitax HD M75X Series Installation and Technical Guide*.

3.3 DC supply requirements

The drive is able to operate from a DC supply with a range from 24 Vdc to the maximum DC volts as follows.

Minimum continuous operating voltage:	26 V
Minimum start up voltage:	32 V
Maximum recommended continuous DC voltage:	230 V drives: 375 V 400 V drives: 750 V
Over voltage trip threshold	230 V drives: 415 V 400 V drives: 830 V

3.4 Terminal size and torque settings

Table 3-4 Drive terminal data

Terminal description	Max cable size	Min cable size	Recommended torque	Tool
AC power terminal connector	6 mm ² (8 AWG)	0.5 mm ² (20 AWG)	0.7 N m (6.2 lb in)	2.5 mm flat blade screwdriver
Motor power terminal connector	4 mm ² (8 AWG)	0.5 mm ² (20 AWG)	0.5 N m (4.4 lb in)	
Brake terminal connector	6 mm ² (8 AWG)	0.5 mm ² (20 AWG)	0.7 N m (6.2 lb in)	
Control terminal	1.5 mm ² (16 AWG)	0.2 mm ² (24 AWG)		
+24 V supply connector	6 mm ² (8 AWG)	0.5 mm ² (20 AWG)	0.5 N m (4.4 lb in)	
DC busbar			2 N m (17.7 lb in)	T20 Torx screwdriver
Ground busbar			2 N m (17.7 lb in)	
Optional				
Internal EMC filter screw			0.8 N m (7.1 lb in)	T10 Torx screwdriver
Compact brake resistor mounting screw			0.8 N m (7.1 lb in)	T10 Torx screwdriver
Compact brake resistor thermistor screw			0.3 N m (2.7 lb in)	2.5 mm flat blade screwdriver

4 Getting started

See the rear cover of this user guide for a power and control connection diagram for the drive.

Digitax HD M75X series drives are factory configured in RFC-S mode which is suitable for controlling synchronous motors such as permanent magnet servo motors. If the drive is to be used to control a different type of motor, refer to the relevant Digitax HD M75x Control User Guide available from www.drive-setup.com/digitaxhd.

4.1 Understanding the display

Digitax HD series drives are supplied fitted with a KI-Compact Display (except Digitax HD M751). This display provides basic status information for the drive, a reset button and two hexadecimal rotary switches which can be used for setting the communications address.

Figure 4-1 KI-Compact Display



1. Single Character display.
2. Reset switch.
3. Rotary switch for the least significant setting of the communications address.
4. Rotary switch for the most significant setting of the communications address.

Table 4-1 Display / Keypad identification

Display Character	Description
	The drive is in the inhibit state. This indicates that the Safe Torque Off (STO) input is low, or the software enable is not present.
	The drive is in the ready state. This indicates that the drive is ready to run but a run command is not present.
	The output stage of the drive is active.
	The drive is in the under voltage state. Indicates that the d.c. bus voltage is below the under-voltage threshold.
	The drive is in the trip state. The display will show "E" and then a series of numbers relating to the trip. For example, E024-4 indicates an over temperature or open circuit of the thermistor connected to pin 15 of the position interface D-type connector.
	The display has lost communication with the drive.

The decimal point on the display will flash if the drive has an active alarm.

4.2 Communicating with the drive

4.2.1 Digitax HD M750 and M754: Ethernet communications

At default the Ethernet interface on the drive is configured to obtain an IP address via DHCP. The Connect and Machine Control Studio PC tools can scan any Ethernet connection on the PC and detect a drive to allow communications to be established. These PC tools can be downloaded from www.drive-setup.com/digitaxhd.

A fixed IP address for the drive can be configured in the following ways.

1. The Connect and Machine Control Studio PC tools can scan any connected Ethernet networks and detect an unconfigured drive to allow a fixed IP address to be set.
2. The rotary switches on the display can be used to define a fixed IP address. See section 4.2.4 Setting the communications address via the hexadecimal rotary switches for more information. If the rotary switches on the display are set to a non-zero value the drive will use a fixed IP address where the first three octets will be 192.168.1.zzz, and the final octet (host component) will be defined by the rotary switches. The subnet mask will be set as 255.255.255.0. For example, if the upper switch is set to 6 and the lower switch is set to 4 then the final octet will be 0x64 or 100, giving the drive a fixed IP address of 192.168.1.100.
3. If an optional remote keypad is connected to the drive, then a fixed IP address can be set by setting DHCP Enable (3.02.005) to 0 and then setting the required values in IP Address (3.02.006) & Subnet Mask (3.02.007) and resetting the Ethernet interface by setting Reset (3.00.007) to On. See the relevant *Digitax HD M75x Control User Guide* for information regarding connecting a remote keypad to the drive.

4.2.2 Digitax HD M751: Serial communications

The default communications settings for the drive are a node address of 1, baud rate of 19200 baud, 8 data bits, 2 stop bits and no parity. A USB to EIA-485 serial communications cable (part number 4500 0096) is available to provide communication between a PC and the drive. The Connect PC tool can scan all COM ports on the PC to detect a connected drive. The Connect PC tool can be downloaded from www.drive-setup.com/digitaxhd.

For information regarding changing the serial communications settings, refer to the *Digitax HD M751 Control User Guide*.

An optional remote keypad can be directly connected to the serial communications port on the drive

4.2.3 Digitax HD M753: EtherCAT communications

An EtherCAT master can normally initiate communications with a connected device without the need to set an address or identifier on the device. However, if required an Explicit Device ID can be set on the drive via the rotary switches to allow the EtherCAT master to uniquely identify the drive. See section 4.2.4 Setting the communications address via the hexadecimal rotary switches for more information.

4.2.4 Setting the communications address via the hexadecimal rotary switches

The two hexadecimal rotary switches on the KI-Compact Display can be used to set the communications address in the range 0 (0x00) to 255 (0xFF). The upper rotary switch sets the most significant nibble, and the lower switch sets the least significant nibble. For example, if the upper switch is set to 6 and the lower switch is set to 4 then the address is 0x64 in hexadecimal which is 100 in decimal.

Changing either of the switches will cause the display to show the selected hexadecimal value for that switch for a period of 10s, after which the display will show confirmation of the setting of both switches in hexadecimal, followed by a hyphen (-), and then followed by the address in decimal.

Setting of the communications address via the rotary switches takes priority so if the communications address is to be set by another method, then ensure that both rotary switches are set to 0.

4.2.5 Using the optional KI-Compact 485 Adapter

The optional KI-Compact 485 Adapter (part number 82700000020300) can be used in place of the KI Compact Display to provide an EIA-485 serial communications port. This serial communications port allows either a remote keypad to be connected to the drive, or with the addition of the USB to EIA-485 serial communications cable (part number 4500-0096) can allow a PC to communicate with the drive. This serial communications port uses a fixed baud rate of 115200 baud with 8 data bits, 1 stop bit, no parity. At default the node address is 1 and this is not affected by the setting of the rotary switches on the KI-Compact Display.

4.3 Unimotor HD plug and play auto-configuration

Control Techniques Dynamics Unimotor hd servo motors manufactured from July 2025 onwards (serial number 2528xxxxx onwards) and fitted with one of the encoder types listed below, contain an electronic nameplate which a drive with firmware V01.61.01.00 or later, will automatically read on first power up.

On first power up the drive will automatically detect the encoder type and read the electronic nameplate from the encoder setting up all motor related parameters. This means that the drive will be ready to run the motor immediately after powering up without the need to enter motor data and perform an autotune. The drive is then ready to be optimized for the load and application.

- EnDat 2.2* (CTD feedback codes: EG, FG, EF, FF, GB, HB)
- EnDat 3**
- BiSS*

* The motor must either be using the HYB hybrid combined power and signal cable (single cable solution) or the feedback cable must be of the SE*E type.

** Where the hardware of the drive supports EnDat 3. Refer to the relevant *Digitax HD M75x Control User Guide* for more information.

4.4 Commissioning the drive

For information regarding setting up a Digitax HD M753 drive to be controlled via EtherCAT, go to the Digitax HD M753 page at www.drive-setup.com/digitaxhd.

For other models of Digitax HD or if the drive is not being set up via a controller, the recommended method for commissioning the drive is via the Connect PC tool which is available for download from www.drive-setup.com/digitaxhd. Connect provides a set of guided set up screens for commissioning the drive.

To manually setup up the drive via a remote keypad, refer to the relevant *Digitax HD M75x Control User Guide*.

5 Digitax HD M75X UL Listing Information

This section is intended to be used in conjunction with the *Digitax HD M75X Series Installation and Technical Guide*.

5.1 General

5.1.1 Scope

All models are cUL Listed to Canadian and US requirements.

The UL file reference is: NMMS / 7. E171230.

5.1.2 Applicant and Listee

Nidec Control Techniques Ltd

The Gro

Pool Road

Newtown

Powys

SY16 3BE

UK.

5.1.3 Manufacturer

Products are manufactured at several sites worldwide.

Primary manufacturing site:

Nidec Industrial Automation UK Ltd

Unit 79

Mochdre Industrial Estate

Newtown

Powys

SY16 4LE

UK.

The Manufacturing Location Code is: 8D14

5.1.4 Model numbers

The model numbers are shown in section 1.1 *Ratings*.

5.1.5 Safety information

Important safety information is included with the safety booklet supplied with the drive.

5.1.6 Adjustments

The *Digitax HD M75X Series Installation and Technical Guide* gives details of all safety-relevant adjustments intended for the user. The identification or function of each control or indicating device and fuse is clearly marked in the diagrams in the *Digitax HD M75X Series Installation and Technical Guide*.

Maintenance adjustments are also described in the *Digitax HD M75X Series Installation and Technical Guide*. They should only be made by qualified personnel. Clear warnings are provided where excessive adjustment could lead to a hazardous state of the Power Drive System (PDS), Complete Drive Module (CDM) or Basic Drive Module (BDM). Any special equipment necessary for making adjustments is specified and described in 'Mechanical installation' (Chapter 3) of the *Digitax HD M75X Series Installation and Technical Guide*.

5.2 Electrical

5.2.1 Ratings

The electrical ratings are shown in section 1.1 *Ratings* on page 9.

5.2.2 Short circuit current rating

All drives:

5 kA when protected by Listed fuses as specified in the *Digitax HD M75X Series Installation and Technical Guide*.

100 kA when protected by recognised supplemental fuses as specified in the *Digitax HD M75X Series Installation and Technical Guide*.

5.2.3 Overvoltage category

The Over Voltage Category is OVC III.

OVC III applies to equipment permanently connected in fixed installations (Downstream of and including the main distribution board).

5.2.4 Input current, fuse ratings and cable sizes

Electrical installation shall be in accordance with the US National Electrical Code, the Canadian Electrical Code and any additional local codes, as required.

The ground (earth) connections and the DC power connections must use UL Listed ring terminals sized according to the field wiring. Only one cable is permitted to be connected to each field wiring terminal.

The recommended cable sizes and fuse ratings are shown in section 1.1 *Ratings* on page 9.

Drives must be installed using cables rated for 75 °C operation, copper wire only.

Opening of the branch-circuit protective device may be an indication that a fault has been interrupted. To reduce the risk of fire or electric shock, the equipment should be examined and replaced if damaged. If burnout of the current element of an overload relay occurs, the complete overload relay must be replaced.

Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code (NEC), The Canadian Electrical Code, and any additional local codes.

5.2.5 Motor cable size and maximum length

The recommended motor cable sizes and maximum length are shown in section 1.1 *Ratings* on page 9.

5.2.6 Multiple wiring arrangements

The drives are able to operate from either a single phase or a three-phase AC supply.

Additionally, the drives are able to operate from a DC supply with a range from 24 Vdc up to the maximum rated DC supply voltage. It is possible for the drive to go from operating on a normal line power supply voltage to operating on a much lower supply voltage without interruption. The wiring arrangements are shown in the 'Electrical installation' (Chapter 4) of the *Digitax HD M75X Series Installation and Technical Guide*.

5.2.7 External 24 V supply

An external 24 Vdc supply is required to power the low voltage circuits within the drive. The low voltage circuits are isolated from the live circuits. The 24 V supply must be protected by a supplemental fuse. Refer to the 'Electrical installation' (Chapter 4) of the *Digitax HD M75X Series Installation and Technical Guide*.

5.2.8 Common DC bus systems

Multiple drives can be connected together via a common DC bus. For further details, refer to 'Multi axis system design' (Chapter 5) of the *Digitax HD M75X Series Installation and Technical Guide*.

5.2.9 Solid state short circuit protection

Integral solid state short circuit protection is provided. However, this does not provide branch circuit protection.

In the event of a ground (earth) fault within the drive, the input protective devices (fuses or circuit breaker) provide overcurrent protection in the usual way. All AC drives incorporate solid state short circuit protection. If a ground (earth) fault occurs in the motor circuit, the solid-state protection operates, the inverter trips and all power switches (IGBTs) are switched off within a very short time, typically less than 10 μ s. The total trip time is unlikely to exceed 100 μ s. In the event of failure of the solid state short circuit protection, one or more of the inverter power devices then fails either open or short circuit. If the failure mode is open-circuit, the fault is interrupted. If the failure mode is short-circuit, the input protection devices (fuses or circuit breaker) clear the fault and open the circuit.

5.2.10 Motor overload protection and thermal memory retention

All drives incorporate internal overload protection for the motor load that does not require the use of an external or remote overload protection device. The method of adjustment of the overload protection is provided in section 4.4 *Current limits* on page 17. The protection levels are expressed as a percentage of full load current. In order for the motor protection to work properly, the motor rated current must be entered into Pr **00.046** or Pr **05.007**. The motor overload protection levels may be adjusted below 250 % (RFC-S/RFC-A) or 165 % (Open loop) if required. The duration of the overload is dependent on motor thermal time constant. The drives are provided with user terminals that can be connected to a motor thermistor to protect the motor from high temperature, in the event of a motor cooling fan failure.

5.3 Environmental

5.3.1 Enclosure rating

All drives are Open Type.

5.3.2 Mounting

Drives may be mounted

- Singly
- Side by side
- Stacked one above another when fitted with a rear vent kit

The drives are equipped with a rear vent that allows heated air to be exhausted from the rear of the drive rather than the through the top. This mounting arrangement provides the following benefits:

- Reduction in enclosure size.
- Allow vertical stacking of drives.
- Reduce the need for a secondary enclosure fan.

Refer to the 'Mechanical Installation' (Chapter 3) of the *Digitax HD M75X Series Installation and Technical Guide*.

For compact multi axis installations, the rear venting kit allows drives to be vertically mounted one above the other, where this is the case, a minimum clearance of 100 mm (3.94 in) should be maintained between drives. A current derating must be applied to the drive if the rear vent kit is installed. Derating information is provided in the 'Technical Data' (Chapter 6) of the *Digitax HD M75X Series Installation and Technical Guide*. Failure to do so may result in nuisance tripping.

5.3.3 Operating temperature

The drives are suitable for use up to 40 °C (104 °F) surrounding air temperature. Operation up to 55 °C (131 °F) is permitted with de-rated output. Refer to the 'Technical Data' (Chapter 6) of the *Digitax HD M75X Series Installation and Technical Guide*.

5.3.4 Pollution degree

Drives are designed for operation in a pollution degree 2 environment or better (dry, non-conductive pollution only).

5.3.5 Plenum rating

The drives are not suitable for installation in a compartment (duct) handling conditioned air.



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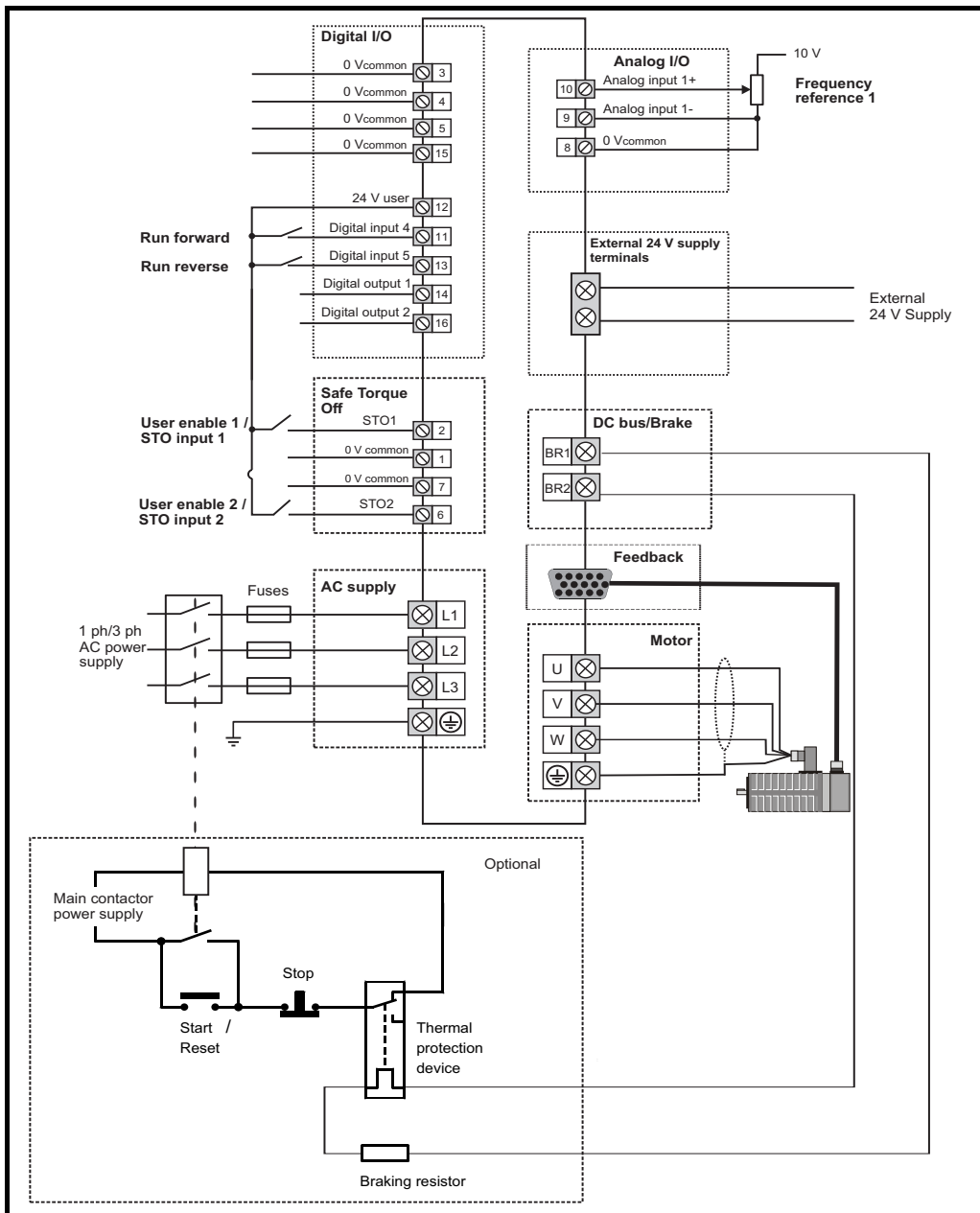
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