

#### The Application Note is specific to the Unidrive M60x through M800x

### Updating Unidrive M Firmware

<u>Scope</u> – The firmware for the Unidrive M series models M60x through M80x are intended to be fieldupgradable via a communication link as using M-Connect hosted on a PC/Laptop running one of the supported versions of the Microsoft Windows Operating System and a communication link. The Apple Mac OS X and Linux are not supported.

The firmware revision on the host Unidrive M must be (at least) up to a revision of 01.00.00.00 to use this procedure, and a SI-Keypad must available.

It is recommended that any beta units hosting a firmware revision below 01.00.00.00 be returned to the factory for upgrade. Special equipment is required to bring any units below revision 01.00.00.00 to a revision of 01.00.00.00 as an initial step. After that is accomplished, one can use M-Connect for any firmware upgrade to a higher revision.

M-Connect is also used to upgrade the firmware on the Factory Fit Module (FFM) Ethernet option that is a standard on a number of these models. One typically will bring both the Unidrive M as well as the FFM Ethernet to the latest firmware revision in the same session.

This Quick note will illustrate using M-Connect version 01.05.00 to upgrade a M700 (above revision 01.00.00.00) to a firmware revision of 01.06.00.00 and the onboard FFM Ethernet option to 1.02.02.06 using an Ethernet communication link. The M701 fitted with a FFM RS-485 option is similar, but there is no firmware to upgrade on the FFM RS-485 and hence, no second step.

**Equipment Required** – A PC / Laptop running XP Pro SP3, Vista Business SP1 32-bit or Windows 7 Pro (32-bit or 64-bit) with CT M-Connect installed is recommended. A firmware image for both the Unidrive M and the FFM Ethernet will also be required.

A functional Ethernet link (or RS-485 link for a M701) between the PC/Laptop and the Uni-M is also required. Functional, in that it is possible to "ping" the M70x0 (or M702) from the PC/Laptop running M-Connect at the intended ipv4 address.

Note that the Uni-M must be powered to follow this procedure. Also note that this procedure assumes operating the M60x, M70x or M80x to be upgraded (and host the FFM-Ethernet) with full DC Link voltage present. When operated on reduced DC Link voltage (such as with a Unidrive M Demo), one must use the SI-Keypad and enter a value of 1001, followed by a reset to save the changes made.



#### Step by Step Instructions - Phase 1 Drive Update:

Run M-Connect. The opening screen appears. Click on "Scan Settings".



Check and confirm the Discovery Settings. The following are for a M700 or M702 using an Ethernet link. One would de-select the Ethernet option and select the RTU option for a M701 and a RS-485 link. Then "click" Save | Scan for drives.

Discovery Settings			×
Protocols to search:	RTU Ethernet		
Ethernet			
Network Adapters:			
Name	Status D	iscover	
IP to Drives	Up	1	•
Emerson WAN	Up		
Loopback Pseudo-Interface 1	Up		•
6TO4 Adapter	Up		• •
Scan for drives on application start			
Save   Scan for drives	Save	С	ancel



The target to be upgraded should be successfully discovered the Quick Drive Tasks pane. Note that if multiple Unidrive M(s) are present, one may observe more than one potential target. Select the drive to be upgraded in the Quick Drive Tasks



The next image illustrates the drive selected and the Drive Dashboard opened. Click the Change Firmware.

		Unidrive M Connect - Quick Drive Tasks		- 0 <b>- X</b>
Set mode Reset Default Save Change Reset Control	Viceo			
Quick Drive Tasks <	Drive Dashboard ×		✓ Properties	
Sort by: Connection	Drive Dashboard		Drive Prop	erties
Ethernet	A central place to access key configuration, setu	and monitoring tools on the drive.	Name:	1700
(Unnamed) Unidrive M700 (192.16	Drive Operations		Mode: RFC-S Model: 032000	150
	Set mode and region 👏 Reset	55 Default Parameters Save	Change Firmware Rating: 0.75kW	V (5A)
Unide	File Operations		Voltage: 2007	00.00
	Drive to file	Cloning	Serial No.: 432813	16157
M	Ci210 Stot 3			
	Motor Setup 🚯 Motorized F	ot 💿 Threshold Detector 🚯 Motor Fee	back Setup 😥 Logic Function	
Et	hernet 🧟 Ramps Setup 🚥 Motor Stop	Mode 🚥 Digital I/O 🖉 Analog I/O	Speed References	
	Autotune			
	Diagnostics and Monitoring			
< <u> </u>	Parameters & 🐼 Onboard Sc Disgrams	pe 🕕 Parameter Reference 🔮 Drive Trip I Guide	og 😳 Destination Conflicts	
Scan for Scan Add				
Quick Drive Tasks				
Project				-14-1-1-1
Commissioning tool			Properties Help Mo	v1.5.0.33634



On the following window, select "Drive firmware V0x.xx.xx.xx". Click on "Browse..."

S Firmware Transfer	<b>X</b>
Firmware Transfer     Download a firmware file	G Back O Next
Current Firmware versions on the Drive Select the target to update  Drive firmware V01.05.00.00  Ethernet Firmware V01.02.02.06  Slot 3 MCi210 V01.02.00.08	
Select a file Enter or browse for the file you want to download Filename: C\Users\jim;jeffers\Documents\02 CT Documentation\Uni-M\FFM-Ethernet\UniM_Eth_V01020206\UniM_ Firmware Details	Eth.
Ethernet Application Image V1.2.2.6	
Drive Enable Drive is disabled.	

Navigate to the drive firmware image you intend to load into the Unidrive M.

Select firmware file	i-M → Firmware → U	Jni3 01060000	<b>≁ 4</b> <sub>7</sub> ≤	Search Uni3 010600	20	x P
Organize 🔻 Nev	w folder	/		:	· 🗖	?
<ul> <li>★ Favorites</li> <li>■ Desktop</li> <li>Music</li> <li>■ Recent Places</li> <li>■ Documents</li> <li>■ Documents</li> <li>■ Libraries</li> <li>■ Documents</li> <li>Music</li> <li>■ Pictures</li> <li>■ Subversion</li> <li>■ Videos</li> </ul>	File name: Uni3 0106	Documents Uni3 01060000 Name Uni3 01060000	library .img	Arrange by:	Folder <b>v</b>	•
				<u>O</u> pen	Cancel	

Click Open to select, and then "Next" in the previous image to proceed.





The following window will appear. Left-click the "Update Firmware" button to begin the transfer from the PC/Laptop to the host Unidrive M.

Firmware Transfer
Simmare Transfer Source State
Download The Firmware When the firmware download process is started, Unidrive M Connect (and any HMI or PLCs) will lose communication with the drive. Make sure that no other PC applications are attempting to communicate with the drive before this process is started, otherwise they will lose communications. If the drive is using serial communications, ensure that the connection is point-to-point and not multi-drop. Programming new firmware will cause the drive mode and all the drive parameters to return the factory default values. It is recommended that the drive parameters are saved before firmware programming.
File name: C:\Users\jim;effers\Documents\02 CT Documentation\Uni-M\Firmware\Uni3 01060000\Uni3 01060000.img File type: Unidrive M Drive Firmware WARNING: do not remove power from the drive or interrupt communications with the drive during firmware programming. This may result in corruption of the drive or option firmware.
Update Firmware

Once the transfer is complete, the host Unidrive M will actually execute the upgrade and this screen will be displayed. Note that that a trip is now present and that the firmware revision displayed is still is the original revision.

Drive Unidrive M Connect - Quick Drive Tasks	
The Home Actions Drive Tools Viewo	
🛛 💫 🗤 😽 🕲 👘 👘 🛃	
Set mode Reset Debuilt Save Owinge Drive File to Goning and region Parameters Filmweet to file drive	
Centrol File Operators	
Quick Drive Tasks < Drive Dashboard *	Properties • 4 ×
sort by Connection V W Dashboard	MCi210
Ethernet     A central place to access key connguration, setup and monitoring tools on the drive.	Option ID: 310
Unnamed (1921) Operations	Version: V01.00.00.76
Drive neset	
Status	
Ethernet Interface	
P address 192,168,1100 MA2 address 003001E010ABE	
MULIZU Gateway mode: Switch VLAN: Disabled	
Interface	
Status: Links Down	
Frames per second: 0	
Synchronization Information Jitter: Ons	
Synchronized: 🔯 No	
Diagnostics and Monitoring	
Parameters & D Parameter Reference	
0 ** 1	
Scan for Scan Add	
drives Settings Drive	
🙀 Quick Drive Taaks	
Project	
	Properties Help Monitoring
Commitsioning tool	V1.5.0.33634



At this point, the initial clean-up is done with the SI-Keypad. Observe a trip indication on the SI-Keypad of "trip EEPROM.Fail.1" indication.



Press the enter button to clear the fault, and then enter a value of 1244 into parameter #00.000 and press the enter button to default the Unidrive M. Note that the Unidrive M will be in Open-Loop mode at this point. Save the configuration via a value of 1000 entered into parameter #00.000 (or a value of 1001 if the DC buss is below rated value) and press the enter button to execute. Cycle the power at this point, and clear any faults observed and save.

Cycle the power, and then re-start M-Connect, if necessary. Reconfirm the scan settings, and then "Scan for Drives". This time, the following window will look like:

## CONTROL TECHNIQUES

7078 Shady Oak Road, Eden Prairie, MN 55344-3505 +1 952 995-8000 www.controltechniques.com





Note that if we were only going to upgrade the drive firmware, we could be almost done. Proceed to the section "**Clearing the Fault log**" to finish. However the next section covers upgrading the FFM-Ethernet firmware, which usually needs to be done on a M700 or M702 at the same time as the drive firmware is upgraded.

#### Step by Step Instructions – Phase 2 Clear faults and FFM-Ethernet update:

The first steps are done from the SI-Keypad. At a minimum, the FFM Ethernet interface needs to be configured so that from power up, DCHP is off and the ipv4 address is at the expected value. In this case that is value is 192.168.1.100.

Set:

#4.02.005	to Off	DHCP Select
#4.02.006	to 192.168.1.100	IP Address
#4.20.02	to On (wait for Off)	Reset (self resets)
#00.000	to 1000 (or 1001)	Save value <enter></enter>

Cycle power and confirm that the Unidrive M is present at the expected ipv4 address in the Quick Drive Task pane. See the image on the next page for a screen shot of this.





Left click the Unidrive M at 192.168.1.100 (in this case) to select and work with this unit. Then select the FFM-Ethernet in the Drive Dashboard.

Drive							_ • ×
File Home Actions Drive Tools	Views						
📀 ڬ 🖸 🛀 🚱		2					
Set mode Reset Default Save Change and region Parameters Firmware	Drive File to Clo to file drive	ning					
Control	File Operations						
Quick Drive Tasks <	Drive Das	hboard × Drive Trip Log ×				Properties	* û ×
Sort by: Connection	👧 Dri	ve Dashboard				Dr	ive Properties
Ethernet	A cer	ntral place to access key con	figuration, setup and m	onitoring tools on the driv	re.	Name:	A REAL PROPERTY OF
(Unnamed)	-	Drive Operations				Mode:	Open-Loop
0nidrive M/00 (192.168.1.100) 080 Inhibited	000	Drive Operations				Model:	04400172
	-0-	🧭 Set mode and region	D Reset	<b>55</b> Default Parameters	Save	Rating:	7.5kW (17.2A)
	Unidrive M700	-				Voltage:	400V
		Change Firmware				Version:	V01.06.00.00
	100	File Operations				Serial No.:	2125000214
	Ethernet			-			
		Drive to file	File to drive	Cloning Cloning			
		Setup					
		0	•	<b>A</b>	<b>A</b>		
		Motor Setup	Motorized Pot	Threshold Detector	Motor Feedback Setup		
		Logic Function	Can Ramps Setup	Motor Stop Mode	Digital I/O		
			_	•			1
		Analog I/O	Speed References	🖉 Autotune			1
		Disquestiss and Menitori					
< >		Diagnostics and Moniton	ng				
🚅 مو 🕰		Parameters & Diagrams	Onboard Scope	Parameter Reference     Guide	Drive Trip Log		
Scan for Scan Add							
drives Settings Drive		Destination Conflicts					
Quick Drive Tasks							
Project							
12							Hale Mariharian
	[					Properties	nep Monitoring
Commissioning tool							V150039094

#### CONTROL TECHNIQUES 7078 Shady Oak Road, Eden Prairie, MN 55344-3505



## Clearing the Fault Log

Click on the Drive Trip Log tab.

Drive	-	Unidaye M C	onnect - Quick Drive Tasks	- • • • × •
File Home Actions Drive Tools V Set mode Reset Default Save Change Firmware t Control	Ceno Ceno			
Quick Drive Tasks <	Drive Dashboard × Drive Trip _g ×			
Sort by: Connection	Drive Dashboard A central place to access key o	onfiguration, setup and i	nonitoring tools on the drive.	Drive Properties Unidrive M700 Name:
(Unnamed) Unidrive M700 (192.168.1.100)	Drive Operations			Mode: Open-Loop
050 Inhibited	OGO Set mode and region	D Reset	💋 Default Parameters 🛛 👪 Save	Model: 044001/2 Rating: 7.5kW (17.2A) Voltage: 400V
	Change Firmware		$\backslash$	Version: V01.06.00.00
	File Operations			Serial No.: 2125000214
	Ethernet Drive to file	File to drive	Cioning	
	Setup			
	Notor Setup	Motorized Pot	👩 Threshold Detector 🛞 Mator Feedback Setup	
	Dogic Function	🧟 Ramps Setup	🚥 Motor Stop Mode 🛛 🚥 Digital I/O	
	Analog I/O	Speed References	🖉 Autotune	
	Diagnostics and Monite	oring		
۵ 🧇 🚡	Parameters & Diagrams	Onboard Scope	Parameter Reference     Guide     Drive Trip Log	
Scan for Scan Add drives Settings Drive	Destination Conflicts			
Quick Drive Tasks				
1 <u>9 mart</u>				Properties Help Monitoring
Commissioning tool				V1.5.0.33634

 $\wedge$ 

The previous EEPROM.Fail trip (at least) should still be present.

Drive		Unidrive M Connect - Quick D	ive Tasks		- 0 <b>- X</b> -
File Home Actions Drive Tools View	ns				
Set mode Reset Default and region Control	ap Cap Solo ve File to Cloning file Operations				
Ouick Drive Tasks	Drive Dashboard * Drive Trip Log *				Properties 🗸 🖡 🗙
Sort by: Connection	Drive Trip Log				Drive Properties
Ethernet	Display the drive trip log and trip	p diagnostic information.			Name:
(Unnamed) Unidrive M700 (192.168.1.100)	The drive is not tripped, current s	tate is inhibit		🍤 Reset 👫 Clear Log	Mode: Open-Loop 📰
020 Inhibited	(trip data is historic)				Model: 044001/2
	Trip Trip Code Description	Date Time Sub-trip			Rating: 7.5kW (17.2A)
New	1 31 EEPROM Fail	Day 0 00:00:00 1			Voltage: 400V
12 B	2 0 None	Day 0 000000 0			Version: V01.06.00.00
	4 0 None	Day 0 00:00:00 0			Serial No.: 2125000214
	5 0 None	Day 0 00:00:00 0			
	6 0 None	Day 0 00:00:00 0			
	7 0 None	Day 0 00:00:00 0			
	8 0 None	Day 0 00:00:00 0			
Old	9 0 None	Day 0 00:00:00 0			
est	10 0 None	Day 0 00:00:00 0			
6	Trip EEPROM Fail				
	Value 31				
	Short description				
				CHD	
E	EEPROM Fail trip indicates that default parame	eters have been loaded because of the reaso	s given below.		
	Sub trip Pearon				
	1 The most significant digit of the in channed	nternal parameter database version number h	15		
· · · · · · · · · · · · · · · · · · ·	2 The CRC's applied to the paramet indicate that a valid set of paramet	ter data stored in internal non-volatile memor sters cannot be loaded.	(		
🔎 帿 🐂	3 The drive mode restored from inte	mal non-volatile memory is outside the allow	ed .		
Scan for Scan Add	4 The drive derivative image has been	en changed and it has changed the customis	ation		
drives Settings Drive	of the drive core menus.				
Quick Drive Tasks	5 The power stage hardware has be drive core menus.	een change and changed the customisation of	f the		
Project	6 The internal I/O hardware has bee drive core menus.	on change and changed the customisation of	the		
1	7 The position feedback interface h	ardware has been change and changed the		-	Properties Help Monitoring
Commissioning tool			and the second secon		V1.5.0.33634



Left-click on the "Clear Log" icon, to clear out the fault history.

Drive	-			Unidrive M	Connect - Quick Drive	Tasks					- 0	×
File Home Actions Drive Tools	Views											
0 5 5 🖬 🚱	Sin Sin 🛃											
Set mode Reset Default Save Change and region Parameters Firmware	Drive File to Cloning to file drive											
Control	File Operations									_		
Quick Drive Tasks <	Drive Dashboard	Norive Trip Log	×					$\sim$	-	Properties		ųΧ
Sort by: Connection	<b>Q</b> Drive	Trip Log							Ollina	Dri	ve Properties	
- Ethernet	Display th	e drive trip log a	nd trip diagnostic	c informati	on.					Name	monive wi/ou	-
(Unnamed)	The drive is	not tripped our	root state is inhib						-	Mode	Open-Loop	
Unidrive M700 (192.168.1.100)	(trip data is	s historic)	rent state is initio	n.			5	Reset	Clear Log	Model:	04400172	
	Trip Trip Code D	escription	Date	Time	Sub-trip					Rating:	7.5kW (17.2A)	
		one	Day 0	00:00:00	0					Voltage:	400V	
	1 3 0 N	one	Day 0	00:00:00	0					Version:	V01.06.00.00	
	4 0 N	one	Day 0	00:00:00	0					Serial No.:	2125000214	
	5 0 N	one	Day 0	00:00:00	0							
	6 0 N	one	Day 0	00:00:00	0							
	7 0 N	one	Day 0	00:00:00	0							
1	8 0 N	one	Day 0	00:00:00	0							
	019 0 N	one	Day 0	00:00:00	0							
	2 10 0 N	one	Day 0	00:00:00	0							
	Trip	None							^			
	Value	0										
	Short description											
	No trip has been st	and in this position i	n the trip lea									
	No trip has been so	sieu in uns posición i	n the trip log.									1.2
									CHO			100
	Trip	OHt Brake										
	Value	101										
< >	Short description											
🔎 🧇 🐂	This trip indicates the	nat braking IGBT ove	r-temperature has bee	en detected b	ased on firmware the	rmal model.						
Scan for Scan Add												
drives Settings Drive	Recommended ad	tions:										
Nuick Drive Tasks	Check brakir	ng resistor value is g	reater than or equal to	the minimur	n resistance value.							
Project												
	Trip	OHt Control										
	L	laa							•	Properties		
Commissioning tool											V150	1.33634

Now, left-click on the "Change Firmware".

<u>^</u>	$\langle$					
File Home Actions Drive a	Views		Unidrive M Con	nect - Quick Drive Tasks		
Set mode and region Reset Default Parameters Control	Drive File to Clo to file drive File Operations	ning				
Quick Drive Tasks <	Drive Das	hboard × Drive Trip Log ×				✓ Properties ✓ # ×
Sort by: Connection	🔀 Dri	ve Dashboard				Unidrive M700
Ethernet	A cen	itral place to access key con	figuration, setup and me	onitoring tools on the drive	2.	Name:
(Unnamed) Unidrive M700 (192.168.1.100)		Drive Operations				Mode: Open-Loop
Mow Inhibited	000	Set mode and region	5 Reset	<b>G</b> Default Parameters	Save	Rating: 7.5kW (17.2A)
	Drive Unidrive M700		-		8160	Voltage: 400V
		Change Firmware				Version: V01.06.00.00
		File Operations				Serial No.: 2125000214
	Ethernet	Drive to file	File to drive	Cloning		
		Setup				
		Motor Setup	Motorized Pot	Threshold Detector	Notor Feedback Setup	
		Dogic Function	🧟 Ramps Setup	Motor Stop Mode	Digital I/O	
		Analog I/O	Speed References	🕗 Autotune		
		Diagnostics and Monitori	ng			
۵ 🖋 🚡		Parameters & Diagrams	Onboard Scope	Parameter Reference Guide	Drive Trip Log	
Scan for Scan Add drives Settings Drive		Destination Conflicts				
Quick Drive Tasks						
Project						
						Properties Help Monitoring
Commissioning tool						VI.SUSSOA



Left-click the Ethernet Firmware V0X.XX.XX.XX radio-button option.

Then Browse... to the image of the firmware file to be loaded. Click -> Next image.

🥑 Firmware Transfer			
Firmware Trans	fer Ile		G Back O Next
Current Firmware vo Select the target to update Drive firmware V01.06. Ethernet Firmware V01	00.00 .01.02.08		
Select a file Enter or browse for the file you Filename: C\Users\jim.jr Firmware Details Ethernet Application Ima	want to download ffers/Documents/02 CT Documenta ge V1.2.2.6	ation\Uni-M\FFM-Ethernet\UniM_Eth_V(	01020206\UniM_Eth_  Browse
Drive Enable Drive is disabled.			

This illustrates the "Ready to Update Firmware" window, with all relevant options selected. When ready, click the green Update Firmware" image to initiate the transfer and update.

) Firmware Transfer	
Back	Nex
Download The Firmware	
When the firmware download process is started, Unidrive M Connect (and any HMI or PLCs) will lose communication with the drive.	
Make sure that no other PC applications are attempting to communicate with the drive before this process is started, otherwise they will lose commu	nication
If the drive is using serial communications, ensure that the connection is point-to-point and not multi-drop.	
Programming new firmware will cause the drive mode and all the drive parameters to return the factory default values. It is recommended that the dr parameters are saved before firmware programming.	ive
file name:	
C:\Users\jim.jeffers\Documents\02 CT Documentation\Uni-M\FFM-Ethernet\UniM_Eth_V01020206\UniM_Eth_V01020206.img	
File type:	
Drive Ethernet firmware	
WARNING: do not remove power from the drive or interrupt communications with the drive during firmware programming. This may result in corruption of the drive or option firmware.	
	Update irmwar
	Close



Download finished and internal update completed.

Drive	Unidrive M Connect - Quick Drive Tasks	
File Home Actions Drive Tools		
Set mode Reset Default Save Change and region Parameters Firmware	The Teto Coning to feed to be a second to be a seco	
Control Outick Drive Tasks	File Operators	• Properties • 4 ×
Sort by Connection	S Firmware Transfer	Option Properties
Ethernet	Firmware Transfer	Ethernet Option ID: 430
Unidrive M700 (192) 344.1.100		Version: V01.01.02.08
080 Natification	Download The Firmware	
	When the firmware download process is started, Unidrive M Connect (and any HMI or PLCs) will lose communication with the drive.	
	Make sure that no other PC applications are attempting to communicate with the drive before this process is started, otherwise they will lose communications.	
	Programming new firmware will cause the drive mode and all the drive parameters to return the factory default values. It is recommended that the drive parameters are saved before firmware programming.	
	El File name:	
	C:\Users\jim.jeffers\Documents\02 CT Documentation\Uni-M\FFM-Ethernet\UniM_Eth_V01020206\UniM_Eth_V01020206.img	
	File type: Drive Ethemet firmware	
	WARNING: do not remove power from the drive or interrupt communications with the drive during firmware programming. This may result in corruption of the drive or option firmware.	
	Starting St-Ethernet firmware download Once file has been downloaded there will be a further wait for the firmware write operation to complete. This will be a tarted 30,000,000,000,000,000,000,000,000,000,	
< >	√ Close	
🔎 🔏 📱	Download Complete	
drives Settings Drive		
🍕 Quick Drive Tasks		
Project		
		Properties Help Monitoring
Commissioning tool		V1.5.0.33634

#### **Clean Up and Finish**

The steps are done from the SI-Keypad. The FFM-Ethernet needs to be defaulted, and saved. Usually, FFM Ethernet interface needs to be configured so that from power up, DCHP is off and the ipv4 address is at the expected value. In this case that is value is 192.168.1.100.

Set:

#4.20.03	to On	Default (self reset when #4.20.003 self resets).
#4.20.02	to On (wait for Off)	Reset (self resets)
#4.02.005	to Off	DHCP Select
#4.02.006	to 192.168.1.100	IP Address
#4.20.02	to On	Reset (self resets)
#00.000	to 1000 (or 1001)	Save value <enter></enter>

Cycle power and confirm that the Unidrive M is present at the expected ipv4 address in the Quick Drive Task pane.

**Resources:** can be found on our website: <u>www.controltechniques.com</u> For help contact techsupport.cta@mail.nidec.com, or call Technical Support at 952-995-8000, 24/7/365