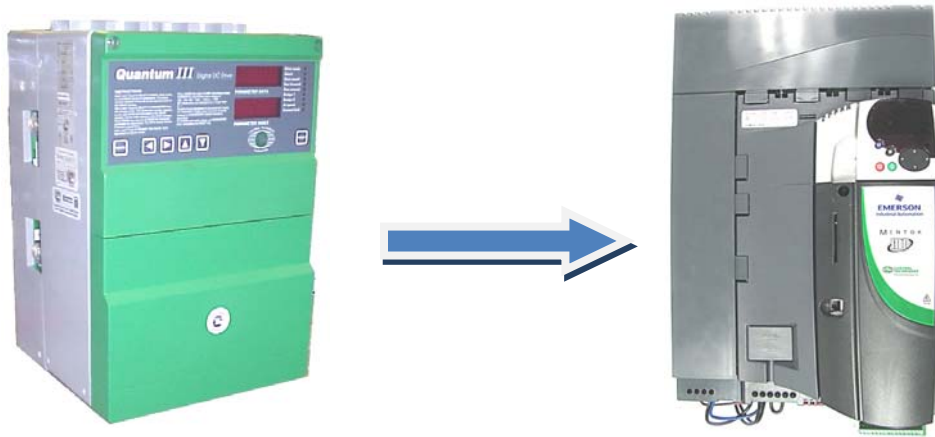


## Quantum III to Quantum MP Conversion Guide

This Application Note is pertinent to the Size 1 QIII and QMP drives

The Quantum III series was a popular 3 phase digital DC motor speed control introduced in the United States back around 1994. The Quantum III was retired after a good 16 year drive life. The new generation Quantum MP series of DC motor Drives was designed to replace the Quantum III. The Quantum MP brings a whole new range of application possibilities due in large to the ability of the QMP to utilize the wide offering of standard option modules our AC drive family enjoys. This application note provides a cross-reference guide for the new drive as well as mechanical dimension comparisons to aid in the replacement of the Quantum III drive. In addition, wiring conversion and jumper settings are discussed to facilitate changeover.



### References

[Quantum MP  
SM-I/O 120V Module  
Adv. Mentor MP User Guide](#)

[Start up Guide Mentor MP  
Mentor MP User Guide](#)

### Software

[CT Soft](#)

[CT Scope](#)

### Communication Cables

The same communications cable that is used with the Mentor MP, Unidrive SP, Affinity, Commander SK, Commander SE and SX can be used with the Quantum MP. The cable can either have a USB or 9 pin serial connection for further information on this select the link below.

[Computer Cables to utilize CTSoft](#)



**SCIGATE AUTOMATION (S) PTE LTD**

No.1 Bukit Batok Street 22 #01-01 Singapore 659592  
Tel: (65) 6561 0488 Fax: (65) 6562 0588  
Email: sales@scigate.com.sg Web: www.scigate.com.sg

Business Hours: Monday - Friday 8.30am - 6.15pm

## Drive Cross References

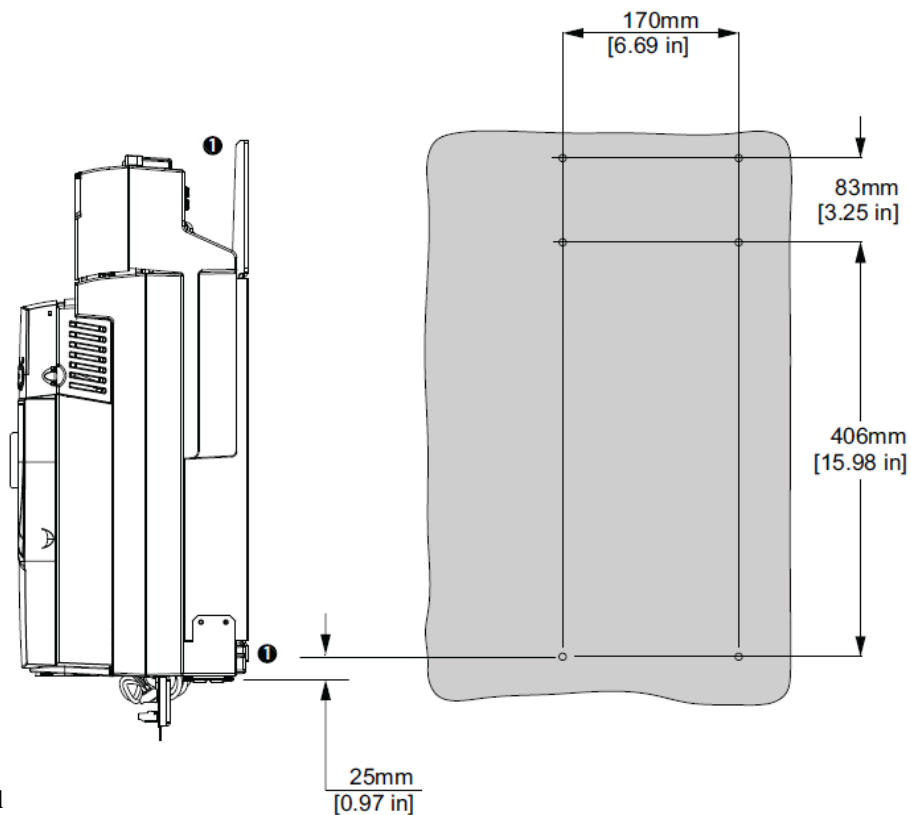
Armature Voltage			Quantum III						Armature Voltage			Quantum MP							
240 Vdc		500 Vdc	HP		Output A	Non Regen		Regen Order	240 Vdc		500 Vdc	HP		Non Regen	Regen Order	Frame	Output A		
HP	HP	55°C	Frame	Order Code	Code	HP	HP	Order Code	Code	Frame	40°C								
10	20	38	1A	9500-8302	9500-8602	10	25	QMP45A4	QMP45A4R	1A	45								
15	30	55		9500-8303	9500-8603	20	40	QMP75A4	QMP75A4R		75								
30	60	108	1B	9500-8305	9500-8605	40	75	QMP155A4	QMP155A4R	1B	155								
50	100	172		9500-8306	9500-8606	60	125	QMP210A4	QMP210A4R		210								
75	150	277	2A	9500-8307	9500-8607	100	200	QMP350A4	QMP350A4R	2A	350								
100	200	338		9500-8308	9500-8608			400	800		QMP400A4	QMP400A4R	400						
125	250	428		9500-8309	9500-8609			150	300		QMP550A4	QMP550A4R	550						
150	300	508	2B	9500-8310	9500-8610	200	400	QMP700A4	QMP700A4R	2C	700								
200	400	675		9500-8311	9500-8611			250	500		Contact the Systems Center for Mentor MP packaged pricing								
250	500	820	3	9500-8315	9500-8615	300	600												
300	600	985		9500-8316	9500-8616	350	700												
350	700	1150		9500-8317	9500-8617	400	800												
400	800	1250		9500-8318	9500-8618	450	900												
450	900	1470		9500-8319	9500-8619	500	1000												
500	1000	1620		9500-8320	9500-8620														

## Dimensions

CAD drawings can be found on our website [www.EmersonCT.com](http://www.EmersonCT.com) under [Drawings](#).

Dimensions: (in)	Quantum III		Quantum MP	
	Frame	H x W x D	Frame	H x W x D
	1A	15 x 10 x 10.5	1A	22.6 x 13 x 8.7
	1B	15 x 10 x 12.3	1B	22.6 x 13 x 9.8
	2A	35 x 20.3 x 12	2A	35 x 20.3 x 12.9
	2B	36 x 20.3 x 14	2B	36.8 x 20.3 x 12.9
			2C	38.7 x 20.3 x 12.9

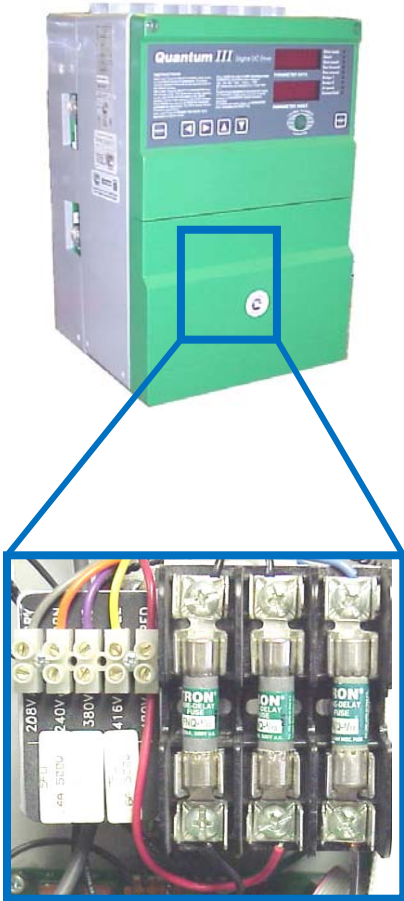
## Mounting



## Transformer Configuration

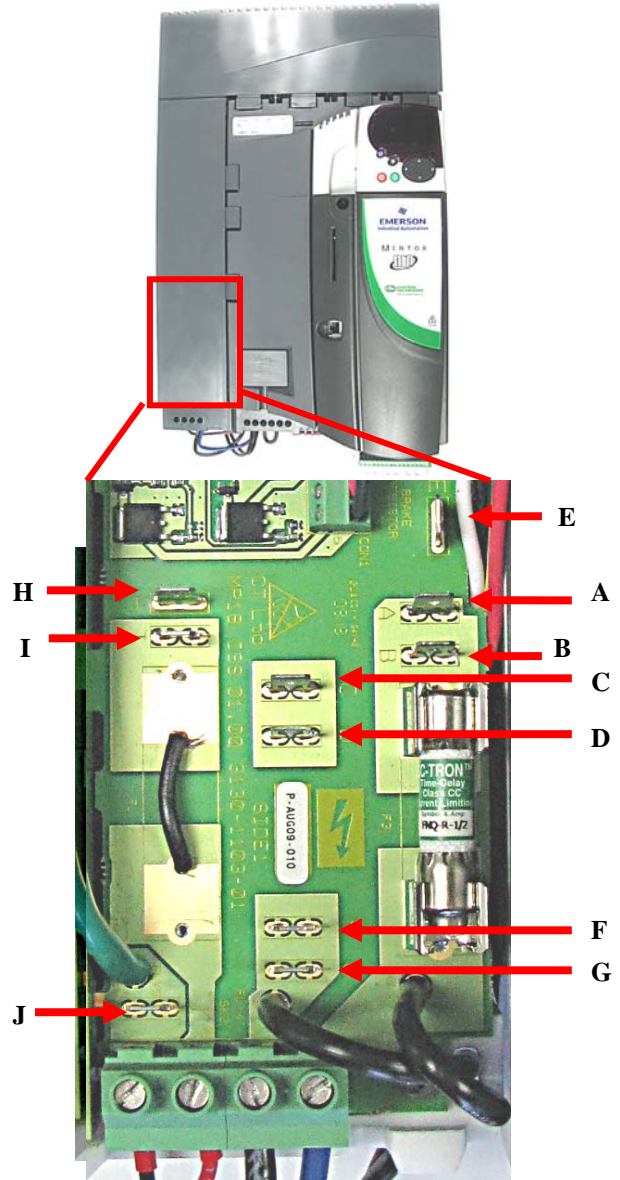
Both Quantum III and the Quantum MP drives are preconfigured for 480Vac input from manufacturing. The original setting of the red wire on the Quantum III drive will dictate what jumpers need to be changed on the Quantum MP.

### Quantum III Transformer Configuration



**Quantum III Transformer Configuration**  
(Pictured Above shows a unit set for 480V)

### Quantum MP Transformer Configuration



The Quantum MP can be configured for the same voltages as the Quantum III Drive, but there will be multiple wires that need to be changed.

Place colored wires to letter spade terminals as listed per table to the right.

Transformer
Lead Color
Red
Yellow
Orange
Gray
Black
White
Blue
Purple

Transformer	AC Supply Voltage L1/L3				
	208V	240V	380V	416V	480V
Red	B	B	B	B	B
Yellow	F	F	D	D	D
Orange	A	A	E	C	C
Gray	E	E	C	E	E
Black	G	G	G	G	G
White	J	J	J	J	J
Blue	H	I	H	H	I
Purple	I	H	I	I	H

## Default Programming

Like its' predecessor, the Quantum MP has several parameters that need to be set within the drive. This programs the drive to be configured to the SM-120V option module and armature contactor. The Quantum MP default parameters are listed below.

### Quantum MP Default File

Parameter	Quantum MP default	Mentor MP default	Description
5.16	1	0	Selects where the drive reads Armature voltage
6.40	1	0	Sequencer Latching
7.15	Volt	th	Analog Input Configured for Voltage
8.22	0	10.33	Unselect the Digital Input Destination
8.23	0	6.30	
8.24	0	6.32	
8.26	0	6.31	
9.04	17.06	0	External Trip Configuration
9.05	1	0	
9.09	0.1	0	
9.10	10.32	0	
9.37	1	0	
17.21	6.39	0	Not Stop
17.22	6.34	0	Run command Input
17.23	6.31	0	Jog Forward Input
17.24	6.33	0	Forward / Reverse Input
17.25	10.33	0	Drive Reset Input
17.28	6.55	0	Contactor Enabled Input



If you set these manually, perform a store to make them take effect.

Also, if the SMARTCARD that was shipped with the drive is available, the defaulted parameters are loaded to that card.

To load the Quantum MP default parameters:

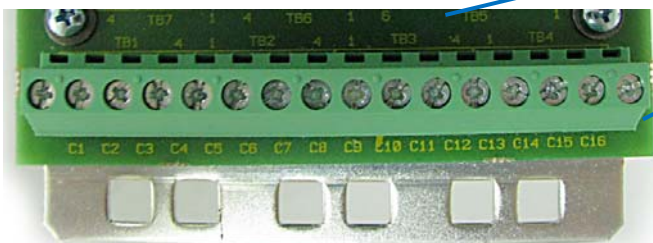
- 1) Insert the SMARTCARD into the drive
- 2) Then using Menu XX.00, Set the Data value to 6200
- 3) Press the **M** (Mode) button then Press the Red Reset button
- 4) Save Parameters to the drive



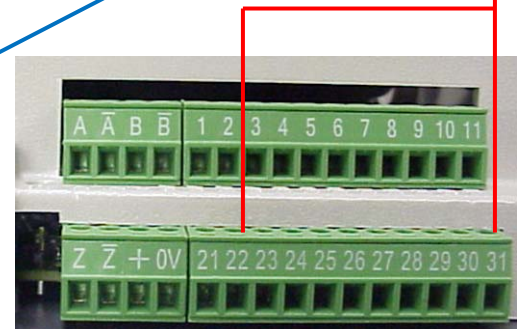
## Quantum MP Control Wiring (MP 10 User Interface)

Quantum III 9500-4025 120V Terminal	Quantum MP MP10 Board 120V Terminal	Functions
1	C1	120 Vac Output
2	No connection	Dead Terminal
3	No connection	Dead Terminal
4	C4	External Trip
5	C5	120 Vac Output
6	C6, C7 or C9	/Stop
7	C8	Run
8	C11	120 Vac Output
9	C10	Jog
10	C13	120 Vac Output
11	C12	Rev
12	C14	Drive Reset
13	C15	120 Vac Output
14	C16	Drive On Output
15		*
16		*
17		*
18		*
19		*
20		*
21		*
22		*
23		*
24		*
25	C15	Neutral

\* Each individual program will need to be examined to determine how this function can now be implemented with the new Quantum MP. An additional SM-120 module may be needed.



**MP 10 User Interface**

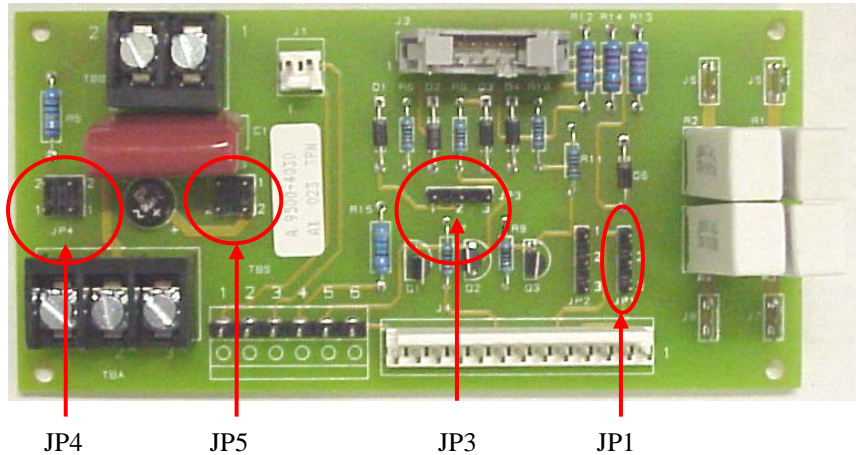


On the main control pod an Enable will need to be added connecting Terminals 22 – 31. The unit will not run with out this connection.

## Quantum III Jumper Settings

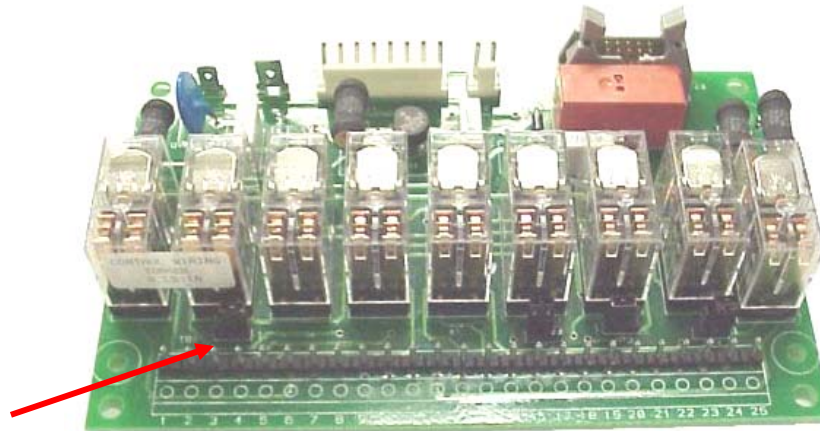
Quantum III used multiple links and jumpers throughout the entire drive to arrange for a specific application. All of the previous link settings are now configured inside the drive digitally. The link positions will determine the parameters that are set in the new Quantum MP.

### Tach Board (9500-4030)



- JP1** 1 – 2 additional digital input. The value of **Par # 8.15** from the Quantum III will be needed. This value will determine what function of this digital input and what will be placed into the **QMP Par #17.25**  
2 – 3 Drive reset (**QMP Par #17.25** will be set for **10.33**)
- JP3** 1 – 2 Opens the contactor and Coasts to a Stop (**QMP Par # 6.01 = 0**)  
2 – 3 Contactor will remain close until Zero Speed is reached and then open the contactor.  
(**QMP Par # 6.01 = 1**)
- JP4 & JP5** 1 – 1 Configures the drive for a DC Tach (**QMP Par # 3.53 to 1**)  
2 – 2 Configures the drive for a AC Tach (**QMP Par # 3.53 to 2**)

### Relay Board (9500-4025)



- JP1** 1 – 2 Two wire start/stop (**QMP – Par. #6.40 Off**)  
2 – 3 Three wire start/stop (**QMP – Par. #6.40 On** default value)

**Note: In most cases terminal 15-23 were not often used. An additional SM-120 module may need to achieve these additional functions of the Quantum III. Please contact Technical Support for further assistance at 800-367-8067.**

## Analog Inputs & Outputs

**Inputs** – All Quantum III drives came with the capability of **Five** analog inputs, although they were seldom used. The Quantum MP comes standard with 3 analog inputs, but with the addition of some SM Option Modules, you will be able to achieve the additional analog inputs if desired/needed.

**Outputs** – The Quantum III had 4 analog outputs, 3 of which could be programmed and scaled. The Quantum MP has 3 outputs, 2 of which are programmable and scalable.

## Digital Inputs & Outputs

**Inputs** – Quantum III models came with the capability of **Four** digital inputs free for programming. The Quantum MP will allow for up to 6 digital inputs.

**Outputs** – The Quantum III had 4 digital outputs free for customer use. The Quantum MP has 3 digital and 2 relay outputs that can be programmed for customer use.

## Second Processor

**MD 21 / MD 29** – The second processor was used to solve various applications beyond the intrinsic features within the Mentor II / Quantum III. Some examples of common applications that utilized the additional option module were **external PID Loop Control, S-ramp Acceleration and Digital Locking with Ratio Control**. Those and other simple applications can now be handled internally by the Mentor / Quantum MP. ( PID control in Menu 14, S-Ramp in Menu 2 and Digital Lock with Ratio Control in Menu 13 )



More complex applications that utilized the MD29 would be replaced using either SM-Apps Plus or possibly SM-Apps Lite. MD29AN modules would be replaced using SM-Apps Plus.



### General module conversion list

MD24	→	<a href="#">SM- Profibus</a>
MD25	→	<a href="#">SM-DeviceNet</a>
MD29	→	<a href="#">SM- Apps Plus</a> or possibly SM-Apps Lite
MD29AN	→	<a href="#">SM- Apps Plus</a>

**Questions: Ask the Author ??**

Josh Kibler  
Product Support Technician

Tel: 800-367-8067  
Email: [Josh.Kibler@Emerson.com](mailto:Josh.Kibler@Emerson.com)

