

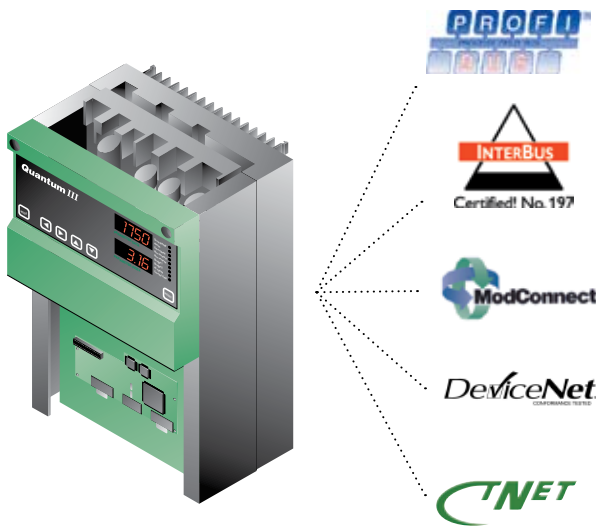
# Mentor II/Quantum III

## Options / Software / Accessories

### NETWORK COMMUNICATION CARDS

The fieldbus interface cards provide high-speed communications using the popular networks and protocol. These networks allow large amounts of data to be transferred quickly to and from network nodes. The RS485 channel is optically isolated (CTNet is transformer isolated) for added protection.

#### Network Communications



### APPLICATION CARDS (MD29 & MD29AN)

The MD29 and MD29AN application cards contain a high-speed microprocessor which provides a low-cost facility for a system designer to write application specific programs without needing a PLC or other stand-alone controller. The add-on cards fit into a 40-pin header within the Mentor II and Quantum III drive. It is programmed (via the RS232 port) using our Control Techniques SyPTPro (System Programming Toolkit) that complies with IEC 61131-3 Ladder / Function Block or DPL (Drive Programming Language). In addition to the application coprocessor, the MD29AN CTNet card supports peer-to-peer cyclic and broadcast messaging at rates up to 5M baud.

The application cards use dual port RAM to provide intimate high-speed bidirectional access. They can read and modify any parameter within the drive, enabling customized real-time calculations under a multi-tasking run-time environment. The Intel i960 32-bit RISC processor and 256 K of user program FLASH memory (equivalent to >2000 lines of ladder logic or basic instruction code) provide a powerful base for a designer to accomplish complex algorithms for demanding time-critical process control.

The optically isolated RS485 channel serves as a communication port for our CTIU operator interface units. It is fully configurable, supporting multiple communication modes including an ANSI 2 or 4-wire protocol at data rates up to 38.4k baud. A Modbus protocol with RTU and ASCII follower modes is also available.

32-bit coprocessor (MD-29) .....9729-9000

32-bit coprocessor with CTNet.....MD29AN-RevD

Communication Protocol	Interface Module Order Code	System Configuration
Profibus-DP	MD-24	Master / Follower
Interbus-S	MDIBS	Master / Follower
CTNet*	MD-29AN*	Peer-to-peer
DeviceNet	MD-25	Master / Follower
Modbus RTU*	9729-9000	Master / Follower
Modbus Plus	9500-9100	Master / Follower

\* CTNet and Modbus RTU cards contain full coprocessor ability. Refer to the Application Cards (MD29 and MD29AN) for more information.

See page 381 for complete CTNet integration details.



MD-29



MD-29AN

# Mentor II/Quantum III PC to Drive Accessories

## DRIVE CONFIGURATION TOOL (MENTORSOFT)

MentorSoft is a complimentary Windows-based drive configuration tool designed to enable the complete control and display of all parameters within a Mentor II or Quantum III. Functions within MentorSoft allow data to be uploaded, viewed and saved or retrieved from disk, modified and printed. It can be used offline in the office or online on the plant floor. MentorSoft communicates with the drive via the computer's serial port to the drive's RS485 port using a communications cable — order code (CTD-PC-485-XXX). (XXX=ft.).

See Software Section for details including CTScope digital oscilloscope software.



## OPERATOR INTERFACE (CTVue)

The powerful CTVue HMI line and integrated drivers for Control Technique drives make it easy to integrate HMI with CT drives. The broad offering of CTVue HMI's are easy to program with the free and easy to use CTVue configurator software. The broad hardware offering also ensures there is a CTVue HMI that balances your price and functionality needs.

The CTVue configuration software includes built in parameter list for the Mentor II & Quantum III drives. Standard pre-manufactured cables are available to connect between the CTVue and drive.

For more information, refer to the Options and Accessories Section.

## REMOTE I/O BOX (I/O BOX)

The I/O Box expands the I/O capabilities of the Mentor II and Quantum III drives. The I/O Box is connected to the drive through the MD29/AN application card using an optically isolated RS485 serial link.



## Remote I/O Box Specifications

<i>Voltage</i>	110 to 240 VAC $\pm 10\%$
<i>Frequency</i>	48 to 62 Hz
<i>Phase</i>	1 $\emptyset$
<i>RS485 interface</i>	Supports binary protocol at data rates up to 38.4kbaud for connection to a single drive.

Qty	Type / Description	Notes
1	Analog Input (12-bit)	$\pm 10$ VDC, 100k Ohms or 4-20 mA, 100 Ohms
4	Analog Input (10-bit)	$\pm 10$ VDC, 100k Ohms
3	Analog Output (10-bit)	$\pm 10$ VDC, 5 mA
8	Digital Input	+24 VDC, 10k Ohms
8	Digital Output	+24 VDC, 100 mA (200 mA total for all outputs)

## FIELD REGULATORS (FXM FAMILY)

The FXM family of field regulators is designed to control the field current of DC motors up to 90 amps. When used in conjunction with either the Mentor II or Quantum III variable speed DC drives, the field regulator is controlled directly via the drive parameters. This allows full customization of the field control for any application. The FXMs can be also be used as stand-alone units when retrofitting existing applications.



The field regulators are single phase, controlled thyristor rectifier bridges with a control logic PC board. The bridge can be configured by jumpers to operate in half (single quadrant) or full (two quadrant) control mode.

FXMs may be independently controlled by an external reference, or set for automatic field weakening (constant horsepower) or constant field current. Field economy control via contact or logic input and a field loss relay for protection are provided for stand-alone operation. The unit also has a bar graph display (10% increments of the selected range) for field current magnitude.

Order Code	Current A	Frequency Hz	Input Voltage VAC	Output Voltage* VDC
9500-9035	20	50	220 / 380 / 440	198 / 342 / 396
		60	240 / 480	216 / 432
9500-9032	50	50	220 / 380 / 440	198 / 342 / 396
		60	240 / 480	216 / 432
9500-9033	90	50	220 / 380 / 440	198 / 342 / 396
		60	240 / 480	216 / 432

\* Maximum output voltage equals 90% of input RMS line voltage.  
Field current is the controlled variable.

## CRITICAL COMPONENTS

### Minimize Your Machine Downtime Delays

All too often, spare parts are over-looked which results in a panic search, no less the possibility of costly Next Day shipping expenses. Having these items on hand can reduce the associated stress of machine downtime. To facilitate this effort, Control Techniques has assembled several levels of Critical Component kits to fit within your maintenance budget constraints. These pre-assembled kits represent a significant savings over purchasing the same items separately.



Mentor II Spare Part Kit Ordering Information		
Frame Size	Order Code	Description
M25 – M210 (non-regen and regen)	M25-210-SP	1 – MDA1 Control board 1 – MDA2B Interface board 6 – Power board fuses
M350 – M825 (non-regen and regen)	M350-825-SP	1 – MDA1 Control board 1 – MDA2B Interface board 6 – Fuses for MDA5 Filter board 6 – Fuses for MDA6 Power board
M900 – M1850 (non-regen)	M900-1850-SP	1 – MDA1 Control board 1 – MDA2B Interface board 1 – SCR heatsink assembly 6 – 6A fuses for MDA6 board 2 – 2A fuses for SD1 board 2 – 30A fuses for SD1 board
M900R–M1850R (regen)	M900R-1850R-SP	

Quantum III Spare Part Ordering Information	
Spare Part Order String	
A	B
1 – Set of burden resistors 6 – Line fuses (1- 3FU) (unless noted) 2 – Armature fuses (regen only) 6 – Transformer fuses 6 – Power board fuses (12 for 150-400 hp / 480V)	1 – Interface board (9500-4025) 1 – MDA-1 Control board 1 – MC Contactor (unless noted) 6 – Line fuses (1 - 3FU) (unless noted) 2 – Armature fuses (regen only) 6 – Transformer fuses 6 – Power board fuses (12 for 150-400 hp/480V)
Quantum Spare Part Order String	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">9500</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">8xxxSP</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">x</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">↑ Quantum III Product Family</div> <div style="text-align: center;">↑ Quantum Model number suffix (see page 311)</div> <div style="text-align: center;">↑ Spare Parts Kit: A or B</div> </div>	

## EXTENDED WARRANTY

An industry-leading two-year warranty is standard for Mentor II and Quantum III drives. The extended warranty increases the warranty period to five years.

Mentor II Model	Order Code
M25	M25WE
M45	M45WE
M75	M75WE
M105	M105WE
M155	M155WE
M210	M210WE
M350	M350WE
M420	M420WE
M550	M550WE
M700	M700WE
M825	M825WE
M900	M900WE
M1200	M1200WE
M1850	M1850WE

Quantum III Regen	Order Code
9500-8602	9500-8602WE
9500-8603	9500-8603WE
9500-8605	9500-8605WE
9500-8606	9500-8606WE
9500-8607	9500-8607WE
9500-8608	9500-8608WE
9500-8609	9500-8609WE
9500-8610	9500-8610WE
9500-8611	9500-8611WE
9500-8615	9500-8615WE
9500-8616	9500-8616WE
9500-8617	9500-8617WE
9500-8618	9500-8618WE
9500-8619	9500-8619WE
9500-8620	9500-8620WE

Quantum III Non-Regen	Order Code
9500-8302	9500-8302WE
9500-8303	9500-8303WE
9500-8305	9500-8305WE
9500-8306	9500-8306WE
9500-8307	9500-8307WE
9500-8308	9500-8308WE
9500-8309	9500-8309WE
9500-8310	9500-8310WE
9500-8311	9500-8311WE
9500-8315	9500-8315WE
9500-8316	9500-8316WE
9500-8317	9500-8317WE
9500-8318	9500-8318WE
9500-8319	9500-8319WE
9500-8320	9500-8320WE

DC Drives