![Control Techniques logo]

UNIDRIVE M700

HIGH POWER FLEXIBLE SERVO SOLUTION

DRIVE OBSESSED

UNIDRIVE M700
SERVO MODE

Control Techniques has set the standards in motor control since 1973.

Unidrive M700 delivers maximum machine throughput through greater control with single- and multi-axis network synchronization. Onboard real-time Ethernet (IEEE 1588 V2), advanced motion control and high speed I/O for position capture enables machine builders to easily create more sophisticated and flexible machines.

Other Unidrive M700 benefits include:

Maximize machine productivity through integration with centralized control systems

- Ethernet IEEE 1588 V2 hardware implementation for maximum synchronization accuracy
- Integrated dual port Ethernet switch for easy connectivity
- Up to three SI modules to add position feedback, I/O, machine control and fieldbus communications

Maximize machine productivity through shaft performance with any motor technology

- High bandwidth motor control algorithm for servo motors
- Flexible feedback from robust resolvers to high resolution encoders

SOFTWARE INCLUDED

2 YEAR Digital Drive Warranty

5 YEAR Digital Drive Warranty

c UL us   ISO 9001 APPROVAL   RoHS Compliant   CE   C N1652   TÜV CERTIFIED   SIL3 Safety Integrity Level

UNIDRIVE M700
ONBOARD MOTION CONTROL

Onboard PLC and Advanced Motion Controller

Simple onboard CODESYS-based PLC with a real-time task for interfacing with the drive's 1.5 axis Advanced Motion Controller. Key features include:

- 250 μs cycle time
- Electronic gearbox
- Homing function
- Motion profile generator
- Interpolated CAM
- High speed position freeze

Plug in Motion and Machine Controllers

Expand the capabilities of this powerful drive series with plug-in option modules. Choose from:

- MCi200 Machine Controller programmed with Machine Control Studio IEC61131 software
- MCi210 Machine Controller with additional high speed I/O and Ethernet ports
- PTi210 Motion Made Easy controller programmed with PowerTools Studio software

Flexible universal encoder port

Increase flexibility and reduce system costs through simultaneously connecting up to three* high performance encoder channels as standard. As an example, the drive can interface with a feedback encoder, reference encoder and provide a simulated encoder output without the need for additional option modules.

- Two universal encoder input channels
  - Support for standard incremental and SinCos encoders, including those with absolute commutation signals
  - Support for communications based encoders with up to 4 Mb rate and line compensation to support long cable lengths of up to 100 m (support includes, EnDat 2.2, HIPERFACE and SSI)
  - Support for Resolver for feedback in harsh environments
- One simulated encoder output
  - Position reference for CAMs, digital lock and electronic gearbox applications
  - Implemented through hardware to maximize performance

 * Functionality is dependent upon the encoder types being used.

Typical applications:

- Speed and position control for gearing and ratio control, winding (coilers), web handling, metal cutting, flying shear, rotary knife, test stands, printing, packaging machines, textiles, woodworking, tire manufacturing

Unidrive M700 Series Variants:

M700 – Servo Drive with Ethernet Communications and Single Safe Torque Off Channel

M701 – Servo Drive with Modbus RTU Communications and Single Safe Torque Off Channel (Unidrive SP replacement)

M702 – Servo Drive with Ethernet Communications and Dual Safe Torque Off Channels

UNIDRIVE M700
SERVO MODE

Key data:

Input Power:	200 to 240 Vac or 380 to 480 Vac
Supply phases:	1Ø or 3Ø
Continuous output power rating:	0.75 kW to 2.8 MW

User-friendly control connections:	**M700/M701 models** 3 x Analog inputs, 3 x Digital inputs, 2 x Analog outputs, 3 x Digital I/O, 1 x STO, 1 x Relay
	M702 models 3 x Digital inputs, 3 x Digital output, 2 x STO, 1 x Relay

Standard features

Intelligence:	Onboard PLC and Advanced Motion Controller
Onboard comms:	M700 & M702 – Ethernet, M701 – RS485
Feedback:	2 x Encoder inputs
	1 x Simulated encoder output
Machine safety:	M700 & M701 - 1 x Safe Torque Off (STO) terminal
	M702 – 2 x STO terminals
Keypad:	No keypad as standard
Option slots:	3
Parameter cloning via:	PC tools, Smartcard, SD card

Options

Keypad:	Advanced plain-text, multi-language LCD with or without real-time clock
	Remote mountable plain text multi-language LCD

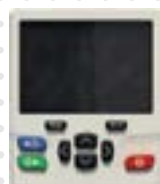|	
SI Modules:	Machine Control MCi200; MCi210; PTi210
	Communications SI-ETHERCAT, SI-PROFIBUS, SI-ETHERNET, SI-DEVICENET, SI-CANOPEN, SI-PROFINET-V2
	Additional I/O SI-I/O
	Feedback SI-ENCODER SI-UNI-ENCODER (Universal Encoder)
	Safety SI-SAFETY MiS210
	Legacy SyPT SI-APPS-PLUS
Cloning:	SMARTCARD-64; CTSD8GB; SD-CARD-ADAPTOR

CTSD8GB

SMARTCARD-64

SD-CARD-ADAPTOR

KI-KEYPAD-LCD
KI-KEYPAD-RTC

REMOTE-KEYPAD-RTC

REMOTE-KEYPAD

UNIDRIVE M700
ORDERING INFORMATION

230 VAC, Three Phase Input, 3-Phase Output, 50/60 Hz Input		
Unidrive M700 Order Code*	Current (Amps rms)	
	Continuous	Peak
M70x-03200050A10101AB100	5	10
M70x-03200066A10101AB100	6.6	13.2
M70x-03200080A10101AB100	8	16
M70x-03200106A10101AB100	10.6	21.2
M70x-04200137A10101AB100	13.7	27.4
M70x-04200185A10101AB100	18.5	37
M70x-05200250A10101AB100	25	50
M70x-06200330A10101AB100	33	66
M70x-06200440A10101AB100	44	88
M70x-07200610A10101AB100	61	122
M70x-07200750A10101AB100	75	150
M70x-07200830A10101AB100	83	166
M70x-08201160A10101AB100	113.7	232
M70x-08201320A10101AB100	114	264

460 VAC, Three Phase Input, 3-Phase Output, 50/60 Hz Input		
Unidrive M700 Order Code*	Current (Amps rms)	
	Continuous	Peak
M70x-03400025A10101AB100	2.5	5
M70x-03400031A10101AB100	3.1	6.2
M70x-03400045A10101AB100	4.5	9
M70x-03400062A10101AB100	6.2	12.4
M70x-03400078A10101AB100	7.8	15.6
M70x-03400100A10101AB100	9.2	18.4
M70x-04400150A10101AB100	15	30
M70x-04400172A10101AB100	16.1	32.2
M70x-05400270A10101AB100	20.3	40.6
M70x-05400300A10101AB100	24	48
M70x-06400350A10101AB100	35	70
M70x-06400420A10101AB100	35	84
M70x-06400470A10101AB100	35	94
M70x-07400660A10101AB100	57	132
M70x-07400770A10101AB100	59	154
M70x-07401000A10101AB100	73	200
M70x-08401340A10101AB100	109	268

Order String - Frame Size Key	M70x Drive Range:
Example: M70x-XX_ _ _ _ _ _ -Y	M700 = Ethernet
XX = Frame Size (03-11 above)	M701 = Unidrive SP replacement (RS485)
Y = A - built-in reactor / E - External line reactor	M702 = Dual STO inputs

Notes:
Ratings are at 6 kHz switching frequency.
For ratings other than 6 kHz refer to appropriate Power Installation Guide.

Models M70x-03200050A to 03200106A and
M70x-03400025A to 03400062A do not include an internal reactor.
Higher power ratings are available.

OPTIONS AT-A-GLANCE

Option	Description	Order Code
Drive Configuration & Programming	Configuration software	UNIDRIVE-M-CONNECT
	Drive to PC USB cable (requires a 485 adaptor)	CT-USB-CABLE
	8 GB SD card	CTSD8GB
	Smartcard 8k memory	SMARTCARD
	Smartcard 64k memory	SMARTCARD-64
	Smartcard with SD card adaptor, no SD card	SD-CARD-ADAPTOR
Operator Interfaces	Plain text LCD display	KI-KEYPAD-LCD
	Plain text LCD keypad with real-time clock	KI-KEYPAD-RTC
	Remote LCD display	REMOTE-KEYPAD
	Remote LCD display with real-time clock	REMOTE-KEYPAD-RTC
	Remote display cable	UM-LCD-485-XXX***
Input / Output	Extended I/O	SI-I/O
Communications	Modbus RTU	KI-485-ADAPTOR
	PROFIBUS DP	SI-PROFIBUS
	DeviceNet	SI-DEVICENET
	CANopen	SI-CANOPEN
	PROFINET RT	SI-PROFINET-V2
	EtherCAT	SI-ETHERCAT
	EtherNet/IP, Modbus TCP	SI-ETHERNET
Machine Control	Applications, SyPTPro	SI-APPS-COMPACT
	Advanced machine control	MCi200
	Advanced machine control, ethernet	MCi210
	Motion control	PTi210
Application Programming Software & Diagnostics	PLC programming	MACHINE-CONTROL-STUDIO
	Digital oscilloscope	CTSCOPE
	Motion programming	POWERTOOLS-PRO-STUDIO
Feedback	DB15 to terminal breakout board for encoder feedback cable	SM-ETC
	Encoder module****	SI-ENCODER
	Universal encoder****	SI-UNI-ENCODER
Power Accessories	External EMC filter	Consult factory
	Line & load reactors	
	Dynamic braking resistors	
Environmental Protection & Cable Management	UL Type 1 conduit kits	Consult factory
	Retrofit kits for Unidrive SP	
	Fan replacement kits	
	IP65 & IP55 through panel mounting kits	

***Shielded RS485 patch cable, CAT5e, conductive metal RJ45 connectors, XXX=cable length in 5 foot increments (max 330 ft), standard lengths are (005, 010, 015, 025 and 050)
****See Unidrive M700 Brochure for complete product details

See the Unidrive brochure for our full product offering including 575 V, 690 V solutions and high horsepower solutions up to 4,200 HP.

UNIDRIVE M700
RATINGS & DIMENSIONS

Ratings

Voltage ratings

200 V - 240 V ± 10%	✓
380 V - 480 V ± 10%	✓
500 V - 575 V ± 10%	✓
500 V - 690 V ± 10%	✓

Control mode

Open loop vector or V/Hz control for induction motor control	✓
Open loop Rotor Flux Control for induction motor control (RFC-A)	✓
Open loop permanent magnet motor control (RFC-S)	✓
Closed loop Rotor Flux Control for induction motors (RFC-A)	✓
Closed loop permanent magnet motor control (RFC-S)	✓
Active Front End (AFE) power quality converter	✓

Dimensions & Weights

Frame Size	Dimensions H x W x D (in)	Weight (lbs)
03	14.4 x 3.3 x 7.9	9.9
04	14.4 x 4.9 x 7.9	14.3
05	14.4 x 5.6 x 7.6	16.3
06	14.4 x 8.3 x 8.9	30.9
07	20 x 10.6 x 11.0	61.7
08	29.7 x 12.2 x 11.4	114.6
09A	41.3 x 12.2 x 11.4	146.6
09E	41.3 x 12.2 x 11.4	101.4
10E	41.3 x 12.2 x 11.4	101.4
11E	46.9 x 12.2 x 12.3	138.9

Heavy Duty rating:	1.0 HP to 4,200 HP (0.75 kW to 2.8 MW)
Normal Duty rating:	1.5 HP to 4,200 HP (1.0 kW to 2.8 MW)
Control connections:	**M700/M701 models**
	3 x Analog inputs, 3 x Digital inputs,
	2 x Analog outputs, 3 x Digital I/O,
	1 x Safe torque off input (STO), 1 x Relay
	M702 models
	3 x Digital inputs, 3 x Digital output,
	2 x Safe torque off input (STO), 1 x Relay
Intelligence:	Onboard PLC and Advanced Motion Controller
Onboard comms:	M700 & M702 – Ethernet, M701 – RS485
Feedback:	2 x Encoder inputs
	1 x Simulated encoder output
Keypad:	No keypad as standard, order separately
SI option slots:	3
Parameter cloning via:	PC tools, Smartcard, SD card

HOW TO SELECT A DRIVE

1. Motor Selection and Sizing
- Drive is selected to optimize motor performance in the application

2. Electrical Considerations
- What is the supply voltage?
    - —Single or three phase input power?
- What is rms and peak motor current requirements for the application?
    - —Select drive based on continuous current (Arms) and peak current requirements of the servo motor
    - —In servo mode(RFC-S) drives offer 200% peak current based on Heavy Duty Amps rating
- What switching frequency are the motor ratings based on?

3. Drive Mechanical Mounting
- Panel mounting – as standard
- Wall mounting – consult website

Nidec