

Matched AC Drive and Vector Duty Motor Solutions



ACCU-Torq Vector Duty AC Motors
Unidrive M200 AC Drives
Unidrive M700 AC Drives

0.25 - 20 HP
230 V | 460 V | 575 V



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Nidec Motor Corporation Matched AC Drive and Motor Solutions

Nidec world-class matched solutions bring together Control Techniques' AC drives and US Motors' induction motors. Unidrive M700 high performance AC drives and Unidrive M200 general purpose AC drives have been matched with ACCU-Torq Vector Duty Steel and Aluminum motors to make selection easy for all applications.

ACCU-Torq® Vector Duty AC Drive Applications

ACCU-Torq® TENV motors and Unidrive M variable frequency AC drives are used in constant torque applications requiring rated torque across a wide speed range utilizing closed or open loop (sensorless vector) controls. **Applications include material handling, packaging machinery, cranes and hoists, positive displacement pumps, DC motor replacements, and other industrial machinery.** **Unidrive M700** is an ideal choice for both closed and open loop applications requiring high performance motor control. **Unidrive M200** is an economical solution for open loop general purpose applications.

ACCU-Torq® Vector Duty Key Features

Horsepower: 0.25 – 20 HP

Speed Range: 5000:1

Poles: 4 and 6

Rated Voltages: 230/460 and 575 Volts

Temp Rise: Continuous duty at 40°C Ambient

Insulation: Class F

Warranty: Three year limited warranty



ACCU-Torq
TENV Motor

Optimize your machine designs with the dynamic performance of ACCU-Torq® motors.

Product Features:

- Totally Enclosed Non-Ventilated Construction (TENV)
- Constant torque operation; zero to base speed on vector drives
- Constant power (HP) operation to twice base speed
- Optimized for operation with IGBT and intelligent power module AC drives (NEMA® Design A)
- F-1 Standard, field convertible to F-2 for 180 frame and above
- Normally closed thermostats standard
- Shaft grounding ring option on all ratings
- Encoder provision on all ratings (***Avtron ASSEMAV32 recommended**)
- Brake provision on all ratings

*An Encoder is required for closed loop operation

†All marks shown within this document are properties of their respective owners.

Unidrive M Overview and Specifications



Unidrive M200
Frame Size 2

Unidrive M700
Frame Size 3

Unidrive M is designed specifically for industrial applications and meets the highest environmental safety and electrical conformance.

Unidrive M Specifications:

- Ambient temperature -20 °C to 40 °C (-4 °F to 104 °F) as standard. Up to 55 °C (131 °F) with derating
- Humidity 95 % maximum (non-condensing) at 40 °C (104 °F)
- Random Vibration: Tested in accordance with IEC 60068-2-64
- Mechanical Shock Tested in accordance with IEC 60068-2-29
- Storage temperature -40 °C to 60 °C (-40 °F to 140 °F)
- Electromagnetic Immunity complies with EN 61800-3 and EN 61000-6-2
- In compliance with IEC/EN61000-4-2/3/4/5/6/11, IEC/EN61000-6-1/2/3, IEC/EN61800-3 Immunity
- Safe Torque Off, independently assessed by TÜV to IEC 61800-5-2 SIL 3 and EN ISO 13849-1 PLe (Unidrive M700)
- UL 508C (Electrical Safety), cULus listed



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Open/Closed Loop

Unidrive M700 AC Drives for Class Leading Performance

Unidrive M700 delivers maximum machine throughput through superior motor control for single and multi-axis applications. Onboard real-time Ethernet (IEEE 1588 V2), PLC, advanced motion control and high speed I/O for position capture enables machine builders to easily create more sophisticated and flexible machines. The onboard Ethernet is also compatible with EtherNet/IP, Modbus TCP, and Real Time Motion over Ethernet (RTMoE) for maximum network flexibility. The Unidrive M702 variant provides dual safety inputs while the Unidrive M701 has Modbus RTU/RS485 connections.



Unidrive M700
Frame Size 3

KL keypad
ordered
separately



Unidrive M700 Key Data

- 1 HP to 4,200 HP Heavy Duty
- Drive Rating: IP21 / UL open class standard, UL type 1 available with optional conduit kits
- Control Connections: M700/M701—3x Analog I/O, 6x Digital I/O, 1x Relay, 1x STO M702—4 Digital I/O, 1x Relay, 2x STO
- Keypad: Ordered separately, advanced plain text, multi-language LCD with or without Real-Time Clock
- Integrated dual port Ethernet (EtherNet/IP, Modbus TCP, and RTMoE) or RS-485 (Modbus RTU)
- Add up to three SI modules to add I/O, machine control (PLC), network communications, and additional encoder feedback options
- Class leading speed control for gearing, ratio control, winding (coilers), web handling, flying shear, and more

ACCU-Torq Vector Duty Steel and Aluminium Motors - 230 V and 460 V							Unidrive M700 AC Drives	
Motor Rated Power (HP)	RPM (Max Safe RPM)	NEMA Frame	Motor Order Code	Motor Rated Current (A)	Voltage (V)	Motor Enclosure	Unidrive M700 Order Code* - 230 V	Unidrive M700 Order Code* - 460 V
0.25	1800 (3600)	56C	UN14T2BC	1.1/0.5	230/460	TENV	M70x-03200050A	M70x-03400025A
0.33	1800 (3600)	56C	UN13T2BC	1.2/0.6	230/460	TENV	M70x-03200050A	M70x-03400025A
0.5	1800 (3600)	56C	UN12T2BC	1.6/0.8	230/460	TENV	M70x-03200050A	M70x-03400025A
1	1800 (3600)	143TC	UN1T2BC	3.4/1.7	230/460	TENV	M70x-03200050A	M70x-03400025A
	1800 (3600)	56C	UN1T2BFC	3.4/1.7	230/460	TENV	M70x-03200050A	M70x-03400025A
	1200 (2400)	145TC	UN1T3BC	3.9/1.9	230/460	TENV	M70x-03200050A	M70x-03400025A
1.5	1800 (3600)	145TC	UN32T2BC	4.9/2.4	230/460	TENV	M70x-03200050A	M70x-03400025A
2	1800 (3600)	145TC	UN2T2BC	5.9/2.9	230/460	TENV	M70x-03200066A	M70x-03400031A
	1200 (2400)	184TC	UN2T3BC	6.5/3.3	230/460	TENV	M70x-03200066A	M70x-03400045A
3	1800 (3600)	182TC	UN3T2BC	10.6/5.3	230/460	TENV	M70x-03200106A	M70x-03400062A
	1200 (2400)	213TC	UN3T3BC	9.6/4.7	230/460	TENV	M70x-03200106A	M70x-03400062A
5	1800 (3600)	184TC	UN5T2BC	14.6/7.4	230/460	TENV	M70x-04200185A	M70x-03400078A
	1200 (2400)	215TC	UN5T3BC	16.8/8.4	230/460	TENV	M70x-04200185A	M70x-03400100A
7.5	1800 (3600)	213TC	UN7T2BC	19.7/9.9	230/460	TENV	M70x-04200250A	M70x-03400100A
	1200 (2400)	254TC	UN7T3BC	20.8/10.4	230/460	TENV	M70x-04200250A	M70x-04400150A
10	1800 (3600)	215TC	UN10T2BC	26.6/13.3	230/460	TENV	M70x-06200330A	M70x-04400150A
	1200 (2400)	256TC	UN10T3BC	26.6/13.3	230/460	TENV	M70x-06200330A	M70x-04400150A
15	1800 (3600)	254TC	UN15T2BC	37.8/18.7	230/460	TENV	M70x-06200440A	M70x-05400270A
20	1800 (3600)	256TC	UN20T2BC	52.5/26	230/460	TENV	M70x-07200610A	M70x-05400270A

ACCU-Torq Vector Duty Steel and Aluminium Motors - 575 V							Unidrive M700 AC Drives	
Motor Rated Power (HP)	RPM (Max Safe RPM)	NEMA Frame	Motor Order Code	Motor Rated Current (A)	Voltage (V)	Motor Enclosure	Unidrive M700 Order Code* - 575 V	
0.5	1800 (3600)	56C	UN12T2GC	0.6	575	TENV	M70x-05500030A	
1	1800 (3600)	145TC	UN1T2GC	1.4	575	TENV	M70x-05500030A	
2	1800 (3600)	145TC	UN2T2GC	2.3	575	TENV	M70x-05500030A	
3	1800 (3600)	182TC	UN3T2GC	4.3	575	TENV	M70x-05500069A	
5	1800 (3600)	184TC	UN5T2GC	5.9	575	TENV	M70x-05500069A	
7.5	1800 (3600)	213TC	UN7T2GC	7.9	575	TENV	M70x-06500100A	
10	1800 (3600)	215TC	UN10T2GC	10.5	575	TENV	M70x-06500150A	
15	1800 (3600)	254TC	UN15T2GC	14.9	575	TENV	M70x-06500150A	
20	1800 (3600)	256TC	UN20T2GC	20.8	575	TENV	M70x-06500230A	

Order String - Frame Size Key	M70x Drive Range:
Example: M70x-XX_-----Y	M700 = Ethernet, single STO input
XX = Frame Size (03-11 above)	M701 = RS485, single STO input
	M702 = Ethernet, dual STO inputs
Y =	
A - AC in AC out	
E - Requires external line reactor	

*Add 10101AB100 to the base order code when ordering standard US (60 Hz) default products

Notes:

Ratings are for Heavy Duty, 3 kHz switching frequency

An Encoder is required for close loop operation



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Open Loop

Unidrive M200 AC Drives Provide World-Class Quality at Value Pricing

The Unidrive M200 delivers benchmark open loop drive control and a high level of functionality in an economical package. PLC functionality, plug-in I/O options and industry standard fieldbus, Ethernet and Modbus RTU communications ensure that in more complex applications Unidrive M200 can deliver more than the average general purpose drive - giving you lower cost solutions and better productivity for your motor control applications. The Unidrive M201 variant includes a keypad mounted speed reference potentiometer for convenient local control.

Unidrive M200 Key Data

- 0.33 HP to 150 HP Heavy Duty
- Drive Rating: IP21 / UL open class standard, UL type 1 with optional conduit kits
- Control Connections: 3x Analog I/O, 5x Digital I/O, 1x Relay
- Keypad: Fixed LED, Unidrive M201 variant includes keypad mounted speed reference potentiometer



Unidrive M200 Frame Size 3



Unidrive M201 variant



- SI option slot available to add I/O or network communications (frame size 2 and up)
- Ideal for speed control of conveyers, fans, pumps, and mixers where their function are controlled remotely with fieldbus or Ethernet Communications

ACCU-Torq Vector Duty Steel and Aluminium Motors - 230 V and 460 V							Unidrive M200 AC Drives - 230 V and 460 V	
Motor Rated Power (HP)	RPM (Max Safe RPM)	NEMA Frame	Motor Order Code	Motor Rated Current (A) 230/460	Voltage (V)	Motor Enclosure	Unidrive M200 Order Code* - 230 V	Unidrive M200 Order Code* - 460 V
0.25	1800 (3600)	56C	UN14T2BC	1.1/0.5	230/460	TENV	M20x-02200024A	M20x-02400013A
0.33	1800 (3600)	56C	UN13T2BC	1.2/0.6	230/460	TENV	M20x-02200024A	M20x-02400013A
0.5	1800 (3600)	56C	UN12T2BC	1.6/0.8	230/460	TENV	M20x-02200024A	M20x-02400013A
1	1800 (3600)	143TC	UN1T2BC	3.4/1.7	230/460	TENV	M20x-02200042A	M20x-02400018A
	1800 (3600)	56C	UN1T2BFC	3.4/1.7	230/460	TENV	M20x-02200042A	M20x-02400018A
	1200 (2400)	145TC	UN1T3BC	3.9/1.9	230/460	TENV	M20x-02200056A	M20x-02400023A
1.5	1800 (3600)	145TC	UN32T2BC	4.9/2.4	230/460	TENV	M20x-02200056A	M20x-02400032A
2	1800 (3600)	145TC	UN2T2BC	5.9/2.9	230/460	TENV	M20x-02200075A	M20x-02400032A
	1200 (2400)	184TC	UN2T3BC	6.5/3.3	230/460	TENV	M20x-02200075A	M20x-02400041A
3	1800 (3600)	182TC	UN3T2BC	10.6/5.3	230/460	TENV	M20x-04200133A	M20x-03400056A
	1200 (2400)	213TC	UN3T3BC	9.6/4.7	230/460	TENV	M20x-04200133A	M20x-03400056A
5	1800 (3600)	184TC	UN5T2BC	14.6/7.4	230/460	TENV	M20x-04200176A	M20x-03400094A
	1200 (2400)	215TC	UN5T3BC	16.8/8.4	230/460	TENV	M20x-04200176A	M20x-03400094A
7.5	1800 (3600)	213TC	UN7T2BC	19.7/9.9	230/460	TENV	M20x-05200250A	M20x-04400135A
	1200 (2400)	254TC	UN7T3BC	20.8/10.4	230/460	TENV	M20x-05200250A	M20x-04400135A
10	1800 (3600)	215TC	UN10T2BC	26.6/13.3	230/460	TENV	M20x-06200330A	M20x-04400135A
	1200 (2400)	256TC	UN10T3BC	26.6/13.3	230/460	TENV	M20x-06200330A	M20x-04400135A
15	1800 (3600)	254TC	UN15T2BC	37.8/18.7	230/460	TENV	M20x-06200440A	M20x-05400270A
20	1800 (3600)	256TC	UN20T2BC	52.5/26	230/460	TENV	M20x-07200610A	M20x-05400270A

ACCU-Torq Vector Duty Steel and Aluminium Motors - 575V							Unidrive M200 AC Drives	
Motor Rated Power (HP)	RPM (Max Safe RPM)	NEMA Frame	Motor Order Code	Motor Rated Current (A) 230/460	Voltage (V)	Motor Enclosure	Unidrive M200 Order Code* - 575 V	
0.5	1800 (3600)	56C	UN12T2GC	0.6	575	TENV	M20x-05500030A	
1	1800 (3600)	145TC	UN1T2GC	1.4	575	TENV	M20x-05500030A	
2	1800 (3600)	145TC	UN2T2GC	2.3	575	TENV	M20x-05500030A	
3	1800 (3600)	182TC	UN3T2GC	4.3	575	TENV	M20x-05500069A	
5	1800 (3600)	184TC	UN5T2GC	5.9	575	TENV	M20x-05500069A	
7.5	1800 (3600)	213TC	UN7T2GC	7.9	575	TENV	M20x-06500100A	
10	1800 (3600)	215TC	UN10T2GC	10.5	575	TENV	M20x-06500150A	
15	1800 (3600)	254TC	UN15T2GC	14.9	575	TENV	M20x-06500150A	
20	1800 (3600)	256TC	UN20T2GC	20.8	575	TENV	M20x-06500230A	

Order String - Frame Size Key	M20x Drive Range:
Example: M20x-XX_ _ _ _ _ A	M200 = Fixed LED keypad
XX = Frame Size (01 to 9 above)	M201 = Fixed LED keypad with speed reference potentiometer
A = AC in AC out	
Y = E - Requires external line reactor	

*Add 10101AB100 to the base order code when ordering standard US (60Hz) default products



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How to Order an ACCU-Torq Motor

Example ordering instructions, line items:

1. Motor Order Code
2. Encoder Order Code - optional (Avtron ASSEMAV32 Recommended)
3. Brake Order Code— optional

An Encoder is required for close loop operation with Unidrive M700.



ACCU-Torq Motor Options

Encoder and Brake options come pre-assembled to the motor from the factory

Factory Recommended							
Encoders							
Make	Model	Order Code	Bearings	Sensor	Duty	Connector	Frames
Avtron	AV32	ASSEMAV32	Yes	Optical	Mill	MS 10-Pin	TENV 56-256
Avtron	AV56	ASSEMAV56*	No	Magnetic	Heavy, brake	10-Pin Industrial	TENV 56-256
Avtron	HS25A	ASSEMHS25A	Yes	Optical	Light	MS 10-Pin	TENV 56-256
Dynapar	HS20	ASSEMHS20	Yes	Optical	Light	MS 10-Pin	TENV 56-256
Dynapar	ST56	ASSEMST56*	No	Magnetic	Heavy, brake	MS 10-Pin	TENV 56-256
EPC	260	ASSEM260	Yes	Optical	Light	MS 10-Pin	TENV 56-256

All encoders listed have Line-Driver Outputs, 1024 PPR, and ship with connector plugs.

Stearns® 56000 Series Brakes					
Enclosure	Order Code	Coil Volts (V)	Nominal Static Torque	Enclosure	Frames
TENV	ASSEM630866	115/208-230	6 lb-ft	IP23, steel housing	56-256
TENV	ASSEM630865	115/208-230	10 lb-ft	IP23, steel housing	56-256
TENV	ASSEM630868	208-230/460	6 lb-ft	IP23, steel housing	56-256
TENV	ASSEM630867	208-230/460	10 lb-ft	IP23, steel housing	56-256

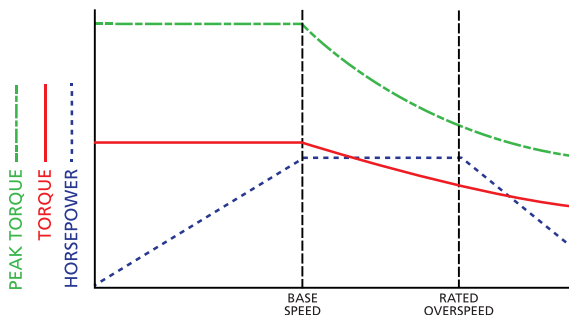
Connections to brakes: flying leads in brake enclosure.

Brakes rated for holding only, not to be applied for stopping.

Universal mount for vertical and horizontal mounted motors.

Shaft Grounding Ring	
Frames	Order Code
56 to 140	ASSEM645681
180	ASSEM645682
210	ASSEM645683
250	ASSEM645684

Constant Torque and Horsepower Curves



How to Order an AC Drive

Example ordering instructions, line items:

1. Drive Order Code
2. Keypad Order Code - optional
3. Option module Order Code - optional



Unidrive M AC Drive Options

Unidrive M700 Only Options		Unidrive M200 Only Options
UNIDRIVE M OPTIONS AND ACCESSORIES		
Option	Description	Order Code
Drive Configuration & Programming	Configuration software	UNIDRIVE-M-CONNECT
	Drive to PC USB cable (requires a RS485 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	Parameter cloning 4 GB (includes 4 GB SD card)	AI-SMART-ADAPTOR
	Parameter cloning (requires an SD card)	AI-BACKUP-ADAPTOR
	Remote display cable	UM-LCD-485-XXX**
	Plain text LCD display	KI-KEYPAD-LCD
	Plain text LCD keypad with real-time clock	KI-KEYPAD-RTC
Input / Output*	Remote LCD display with real-time clock	REMOTE-KEYPAD-RTC
	Remote LCD display	REMOTE-KEYPAD
	Extended I/O	SI-I/O
Communications*	PROFIBUS DP	SI-PROFIBUS
	DeviceNet	SI-DEVICENET
	CANopen	SI-CANOPEN
	PROFINET RT	SI-PROFINET
	EtherCAT	SI-ETHERCAT
	EtherNet/IP, Modbus TCP	SI-ETHERNET
Machine Control	Modbus RTU	KI-485-ADAPTOR
	Modbus RTU	AI-485-ADAPTOR
	Applications, SyPTPro	SI-APPS-PLUS
Application Programming Software & Diagnostics	Advanced machine control	MCI200
	Advanced machine control, Ethernet	MCI210
Feedback	PLC programming	MACHINE-CONTROL-STUDIO
	Digital oscilloscope	CTSCOPE
	DB15 to terminal breakout board for encoder feedback cable	SM-ETC
	TENV MS 10-pin encoder cable	ENCO-xxx***
	Encoder module	SI-ENCODER
Power Accessories	Universal encoder	SI-UNI-ENCODER
	External EMC filters	See Unidrive M Accessories brochure
Environmental Protection & Cable Management	Line & load reactors	
	Dynamic braking resistors	
	UL Type 1 conduit kits	
	IP65 & IP55 through panel mounting kits	

*Unidrive M200 frame sizes 2 and up accept 1 SI option; Unidrive M700 accepts up to 3 SI options

**XXX=cable length in 5 foot increments (max 330 ft), standard lengths are (005, 010, 015, 025 and 050).

***Ships with flying leads at drive end. Recommended to use SM-ETC for easy encoder drive connection. xxx = cable length in feet, standard lengths are (010, 015, 025, 050, 075, and 100).



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