

500

Variable-Frequency AC Drive



Overview

The Series 500 variable speed AC drives offer both variable-frequency (V/Hz), sensorless or closed loop vector control. It is mainly used for controlling and adjusting the speed and torque of three-phase AC asynchronous motors. The UNICO Series 500 AC Drive uses vector control technology offering exceptional performance features for optimal torque control at a low speeds, excellent dynamic characteristics, and superior overload capability. It's user-programmable features and PC monitoring software offers a powerful set of functions and features. This makes the Series 500 extremely powerful across all industries requiring precise AC motor control for textile, papermaking, drawing, machine tools, packaging, food, fans, water pumps and other automated production equipment.

Features

- Compact-Design offering high power density
- Sensorless vector (SVC), Feedback vector (FVC) or voltage/frequency (V/F)
- Precise torque and current control
- Starting torque — 150% SVC, 180% FVC
- Auto torque boost for tough V/Hz applications
- Easy programming and auto-tune functions for quick commissioning –
- Flexible programmable I/O connection
- Supports up to 10 frequency reference settings and allows different methods of switching between frequency reference setting channels:
 - Digital setting
 - Analog voltage reference
 - Analog current reference
 - Pulse reference
 - Communication reference
- PID control for external processes
- Power dip ride-through
- Master- Slave speed or torque control
- UL, cUL, CE Listed
- Roll-in inverters for easier installation/service - 250 HP to 600 HP
- Flange mounting for better thermal management - Up to 200 HP
- Conformal coated modules as standard
- Built-in dynamic brake IGBT - up to 100 HP
- Built-in DC link reactor compliant with EN61800-3 - 25 HP to 600 HP
- Standard LED keypad with start/stop buttons



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Specifications Electrical

Input Supply

Voltage:	380 to 480 V AC, three-phase, Phase sequence insensitive
Voltage tolerance:	-15% of minimum, +10% of maximum
Frequency:	47 to 63 Hz
Displacement power factor:	1.00 at all loads and speeds
Overall power factor:	0.92 at rated load 25 to 600 Hp

Output Rating

Voltage:	Zero to input supply voltage, three-phase
Frequency:	Zero to 500 Hz
Switching frequency:	0.8 to 8 kHz

Service Conditions

Efficiency:	97% nominal at rated switching frequency
Overload current:	150% of rated for 60 sec

Power Range	0.5hp to 600hp
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Environmental

Operating temperature:	32° to 104° F (0° to 40° C)
(derating required):	32° to 122° F (50° C)
Storage temperature:	-40° to 140° F (-40° to 60° C)
Operating humidity:	95% maximum, noncondensing
Altitude:	To 3,300 ft (1,000 m) without derating
Vibration:	Less than 5.9 m/s ² (0.6 G)

Performance

Frequency Control

Range:	Zero to base speed at full torque Base speed to twice base speed at constant power
Resolution:	0.1 Hz with digital input Max frequency x 0.025% with analog input

Velocity Control

Range:	Zero to base speed at full torque Base speed to twice base at constant power
Regulation:	±0.001% of base speed, down to zero, with transducer ±0.5% of base speed, 2 Hz and above, without transducer

Torque Control

Starting torque:	zero to 150% (SVC) 180% (FVC) of rated
Regulation:	±3.0% of maximum with transducer ±5% of maximum without transducer for 10 Hz and above

Inputs and Outputs

Analog Inputs	Two 12-bit (0 to 10 VDC or 0 to 20 mA)
Analog Outputs	One 12-bit (0 to 10 VDC and 0 to 20 mA)
Digital Inputs	Five
Digital Outputs	One (open-collector driver rated 24 VDC @ 50 mA) One high speed - 100 kHz (OC 24 VDC @ 50 mA)
Relay Outputs	One NO/NC 250 VAC 3 A or 30 VDC 1 A
Serial	RJ485 for remote keypad and display unit

Serial Communications

- CANLink module with additional I/O
- Modbus RTU module with additional I/O
- Profibus-DP module
- CANopen module

Protection

Combination of hardware detection and software, faults that are available.

- Overcurrent during acceleration
- Overcurrent during deceleration
- Overcurrent at constant speed
- Overvoltage during acceleration
- Overvoltage during deceleration
- Overvoltage at constant speed
- Undervoltage
- AC drive overload
- Motor overload
- Phase loss on input side
- Phase loss on output side
- GBT overheat
- Short-circuit to ground
- Current detection fault
- Communication fault
- Motor auto-tuning fault
- Encoder fault
- PID feedback lost during running
- Speed error
- Motor overspeed
- Motor overtemperature
- Braking unit overload
- Short-circuit of braking circuit
- External fault
- Back EMF auto-tuning fault
- Load loss

Mounting

- Enclosure Option: IP20 from 0.5 HP to 50 HP (NEMA 1 with a kit), NEMA 1 standard 60 HP to 200 HP, chassis greater than 250 HP
 - Flange Mounting < 200 HP
 - Roll-in Inverters > 200 HP

Options

- LCD Alpha-Numeric menu-driven keypad with parameter storage
- Encoder (pulse generator) module
- Resolver feedback module
- Expanded digital and analog IO with Modbus RTU module
- Expanded digital and analog IO with CANlink module



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Specifications subject to change without notice.

Unico is a leading global innovator of motion-control solutions for industry. Founded in 1967, the company develops, manufactures, and services variable-speed drives, application-engineered drive products, integrated drive systems, and ancillary products that improve operations by increasing productivity, safety, and equipment life while lowering energy and maintenance costs.