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Data Sheet

MSSTAC5-2V

CANopen Step Drive

Description

The MSSTAC5 series are compact digital stepper drives with multiple control options and many sophisticated features. Step motors run smoother and faster than ever with features of advanced current control. Operates on a CANopen communication network and conforms to CiA301 and CiA402.
The MSSTAC5 provides enhanced high-speed characteristics compared with a DC input driver.

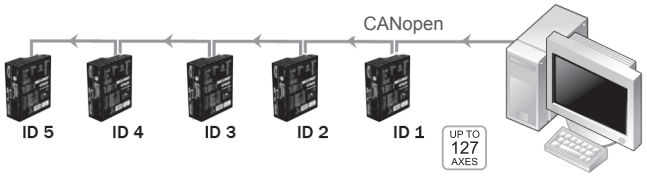
Control Options

Q Programming

- Create/edit stand-alone programs
- Multi-tasking
- Math Functions
- Internal Data Register access
- Complex operations like Repeat Loops and IF..THEN type routines
- Program operation while communicating with Host Controller

Host Control

- CANopen protocols CiA301 and CiA402
- Profile position,profile velocity and homing modes
- Execute stored Q programs



Connections - Inputs & Outputs

INPUTS/OUTPUTS: S and Q models

X1, X2 inputs: Optically isolated, differential, 5-24 VDC logic (2.5V switching threshold),
minimum pulse width = 250 nsec, maximum pulse frequency = 2 MHz, maximum current = 10 mA.

X3, X4 inputs: Optically isolated, differential, 5-24 VDC logic (2.5V switching threshold),
minimum pulse width = 250 nsec, maximum pulse frequency = 2 MHz, maximum current = 10 mA.

Y1, Y2 outputs: Optical darlington, sinking or sourcing, 30 VDC max, 100 mA max, voltage drop = 1.2V max at 100 mA.

Analog input: Single-ended. Range is software selectable 0-5, +/-5, 0-10, or +/-10 VDC. Software configurable offset, deadband, and filtering.

Resolution is 12 bits (+/- 10 volt range), 11 bits (+/-5 or 0-10 volt range), or 10 bits (0-5 volt range). 100 kohms internal impedance.

Encoder Options

The optional encoder integrated into the housing of the motor adds extra functions with no increase in unit size.

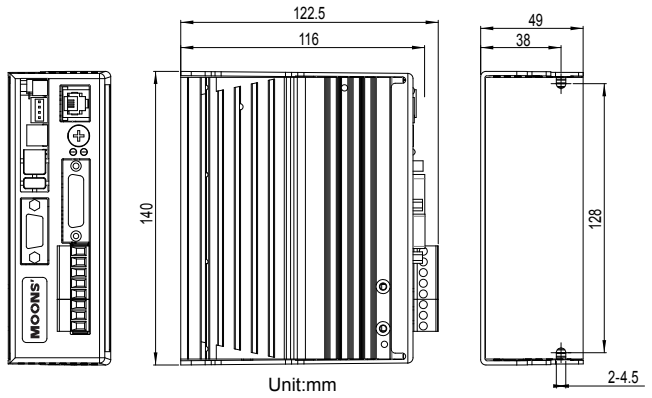
- Stall Detection – detects motor stalling and triggers a fault
- Stall Prevention – prevents motor stalling and provides position maintenance when the motor is stopped

Ordering Options

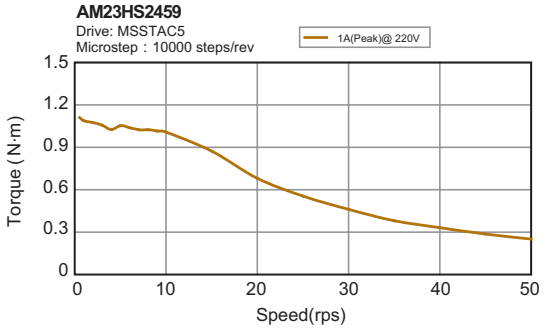
MSSTAC5- C - E - 2V

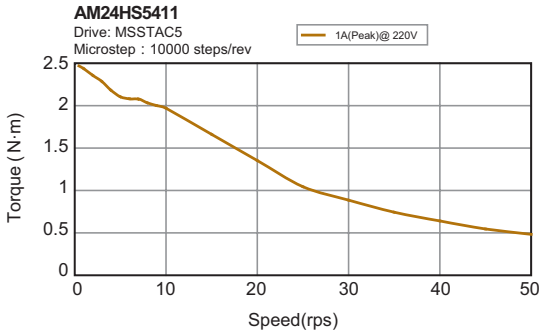
- Series
- Control: C=CANopen Type
- Feedback: N=None, E=Encoder Option Card
- Input Voltage: 2V = 220VAC

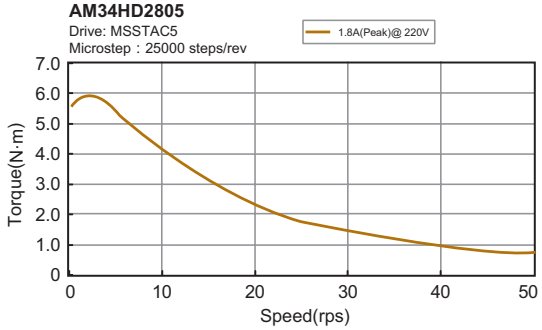
Mechanical Drawings



Torque Curves







Software

The **ST Configurator** software simplifies the set-up of the MSSTAC5 step drive. Motor settings, control options, I/O configuration and optional encoder settings are set and downloaded to the drive.

SCL (Serial Command Language) Setup Utility is a small terminal program that will stream serial commands directly to the drive to test and verify the commands and their operation.

Q Programmer allows for sophisticated programming of Q drives for stand-alone operation. Programs can be created, edited, and saved or downloaded to the drive. Existing programs can be opened from files or uploaded from the drive.

Features

Dynamic Current Control - By configuring running current and idle current, the motion is smoother and the motor runs cooler.

Anti-Resonance – The MSSTAC5 calculates a system's natural frequency and applies damping to control resonance. This improves mid-range stability, allows higher speeds and greater torque utilization, and also improves settling times.

Micro-Step Emulation – By synthesizing coarse, low-resolution pulses into fine high-resolution micro-steps, low-resolution systems can still provide smooth motion.

Command Signal Smoothing – By softening the effect of immediate changes in velocity and direction, the motion of the motor is less jerky. This also reduces wear on mechanical components.

Technical Specifications

Power Amplifier	
Amplifier Type	Digital MOSFET, dual H-bridge, 4 quadrant
Current Control	4 state PWM at 16 KHz
Power Supply	MSSTAC5-2V: 94-265 VAC, 50/60Hz
Protection	Over-voltage, under-voltage, over-temp, motor/wiring shorts (phase-to-phase, phase-to-ground), internal amplifier shorts
Idle Current Reduction	Reduction range of 0 - 90% of running current after a delay selectable in milliseconds
Ambient Temperature	0 - 40°C (32 - 104°F) when mounted to a suitable heatsink
Humidity	90% non-condensing
Controller	
Current Control	Advanced digital current control provides excellent high speed torque
Microstep Resolution	Software selectable from 200 to 51200 steps/rev in increments of 2 steps/rev
Speed Range	Speeds up to 50 rps
Distance Range	Over 10,000,000 revolutions (at 200 steps/rev)
Noise Filtering	Programmable hardware digital noise filter, software noise filter
Serial Commanding	Supports Serial Command Language (SCL)
Encoder Feedback	Optional 4000 counts/rev encoder feedback
Non-Volatile Storage	Configurations are saved in FLASH memory on-board the DSP
INPUTS/OUTPUTS: S and Q models	X1, X2 inputs: Optically isolated, differential, 5-24 VDC logic (2.5V switching threshold), minimum pulse width = 250 nsec, maximum pulse frequency = 2 MHz, maximum current = 10 mA. X3, X4 inputs: Optically isolated, differential, 5-24 VDC logic (2.5V switching threshold), minimum pulse width = 250 nsec, maximum pulse frequency = 2 MHz, maximum current = 10 mA. Y1, Y2 outputs: Optical darlington, sinking or sourcing, 30 VDC max, 100 mA max, voltage drop = 1.2V max at 100 mA
Analog Input AIN	Analog input: Single-ended. Range is software selectable 0-5, +/-5, 0-10, or +/-10 VDC. Software configurable offset, deadband, and filtering. Resolution is 12 bits (+/- 10 volt range), 11 bits (+/-5 or 0-10 volt range), or 10 bits (0-5 volt range). 100 kohms internal impedance.
Communication Interface	RS-232 and CANopen
5 volt User Output	4.8 - 5.0 volts @ 100mA maximum

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