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Product Datasheet

www.Applied-Motion.com

ST5-C-CE

DC CANopen Advanced Microstep Drive w/ Encoder Input

1pc. - 585.00
50pc. - 438.75



Product Features

- *Advanced current control microstepping drive with built-in CANopen networking*
- *CANopen DS301 and DSP402 supported*
- *Profile position and velocity modes*
- *Several homing modes*
- *Objects for Q programming*
- *Objects for data registers*
- *Wide current range 0.1 to 5.0 A/phase (peak of sine) with idle current reduction*
- *Advanced anti-resonance algorithm*
- *Torque ripple smoothing*
- *Microstepping and Microstep Emulation*
- *8 digital inputs, 4 digital outputs, optically isolated*
- *2 analog inputs, +/-10 volt range*
- *Encoder feedback connector for Stall Prevention & Stall Detection*
- *RS-232 cable and mating connectors included*

Description

The ST5-C-CE stepper drive is a DC-powered microstepping drive for controlling two-phase, bipolar step motors. It offers advanced current control and a sophisticated 3rd generation anti-resonance algorithm that electronically dampens motor and system resonances to improve motor smoothness and usable torque over a wide speed range. The drive also employs electronic torque ripple smoothing and microstep emulation to greatly reduce motor noise and vibration. The drive must be powered from 24-48 VDC and can output up to 5.0 A/phase (peak-of-sine) to the step motor. Over-voltage, over-temperature and over-current protection features prevent damage while running in adverse conditions. The drive is complemented by a specifically matched set of NEMA 11 through NEMA 23 frame stepper motors (see Related and Recommended products below).

The ST5-C-CE is designed to operate on a CANopen communication network and conforms to Can in Automation (CiA) DS301 and DSP402 specifications. It supports Profile Position, Profile Velocity, and Homing modes, as well as the ability to run stored Q programs via Applied Motion-specific CANopen objects. The drive is setup and configured using Applied Motion's *ST Configurator™* software. Preconfigured motor setup files included with *ST Configurator™* make it easy to set up the drive for optimum results.

For connecting to external devices such as control signals, incremental encoders, limit switches, proximity or photoelectric sensors, PLC I/O, lamps, and other devices, the drive comes with 8 digital inputs, 4 digital outputs, and 2 single-ended analog inputs (analog inputs can be wired together as 1 differential analog input). Adjustable digital filters are present on the digital inputs for enhanced reliability in noisy environments.

The drive comes with an RS-232 port for configuration and programming. It also comes with a CANopen port for connecting to the CANopen data network.

The ST5-C-CE comes with an encoder feedback connector for applications that demand a higher level of position control than ordinary open-loop step motor systems can provide. Use our double-shaft step motors with incremental encoders and activate either Stall Detection or Stall Prevention in the drive. Stall Detection notifies the system as soon as the required torque is too great for the motor, which results in a loss of synchronization between the rotor and stator, also known as stalling. Stall Prevention automatically adjusts motor speed to maintain synchronization of the rotor to the stator under all conditions. This unique feature allows step motors to operate in a much broader range of applications than previously possible, such as torque-control. The Stall Prevention feature also performs static position maintenance, which maintains the position of the motor shaft when at rest. Additionally, the inclusion of the optional encoder allows the motor to be precisely homed to the index (marker) pulse.

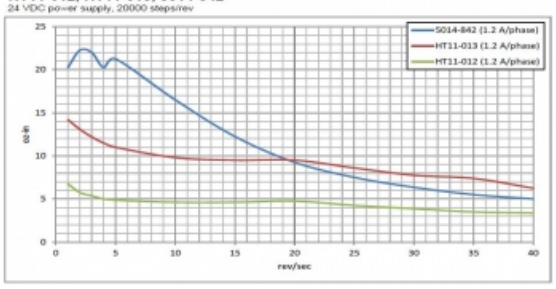
All ST drives are CE approved and RoHS compliant.

Specifications

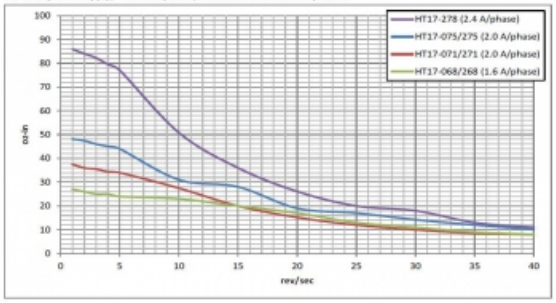
Model Number:	ST5-C-CE
Part Number:	5000-137
Supply Voltage:	24-48 VDC
Supply Voltage Type:	DC
Control Modes:	CANopen
Output Current:	0.1-5.0 A/phase
Communication Ports:	RS-232 CANopen
Encoder Feedback:	Yes
Step Resolution:	Full Half Microstepping Microstep Emulation
Idle Current Reduction:	0-90%
Setup Method:	Software setup
Digital Inputs:	8
Digital Outputs:	4
Analog Inputs:	1 differential or 2 single-ended
Dimensions:	5.0 x 3.0 x 1.75 inches
Weight:	10.4 oz
Operating Temperature Range:	0-70 °C
Ambient Temperature Range:	0-55 °C
Ambient Humidity:	90% max, non-condensing
Status LEDs:	1 red, 1 green
Circuit Protection:	Short circuit Over-voltage Under-voltage Over-temp

Torque Curves

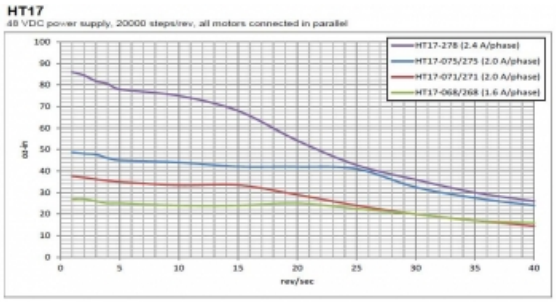
HT11-012, HT11-013, 5014-842
24 VDC power supply, 20000 steps/rev



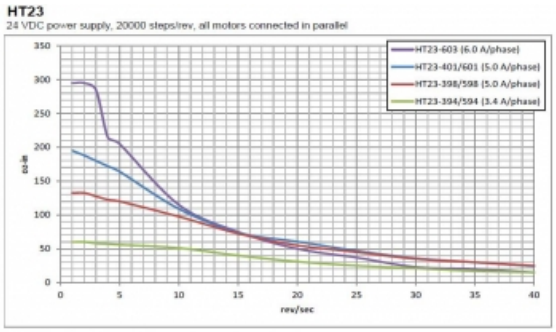
HT17
24 VDC power supply, 20000 steps/rev, all motors connected in parallel



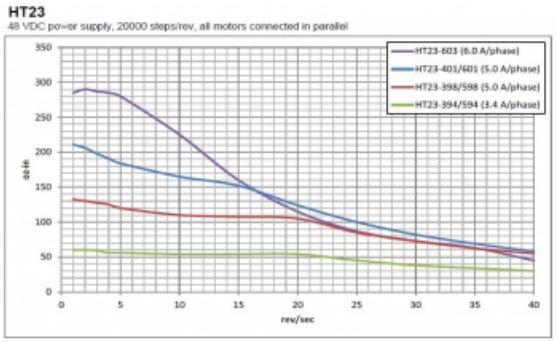
HT17
48 VDC power supply, 20000 steps/rev, all motors connected in parallel



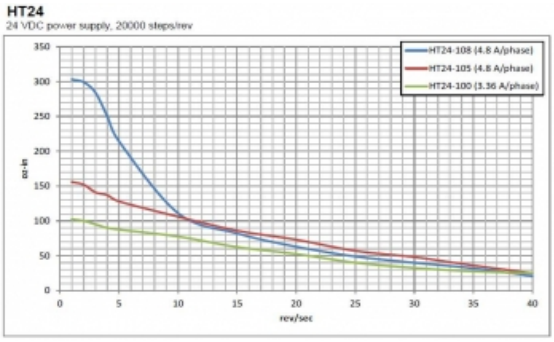
HT23
24 VDC power supply, 20000 steps/rev, all motors connected in parallel



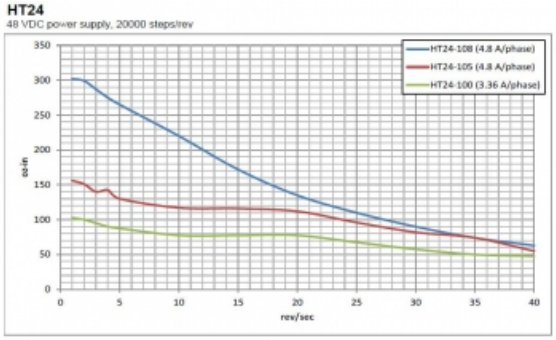
HT23
48 VDC power supply, 20000 steps/rev, all motors connected in parallel



HT24
24 VDC power supply, 20000 steps/rev



HT24
48 VDC power supply, 20000 steps/rev



Software

Software:	ST Configurator™
Sample Code:	CANopen_Example.zip

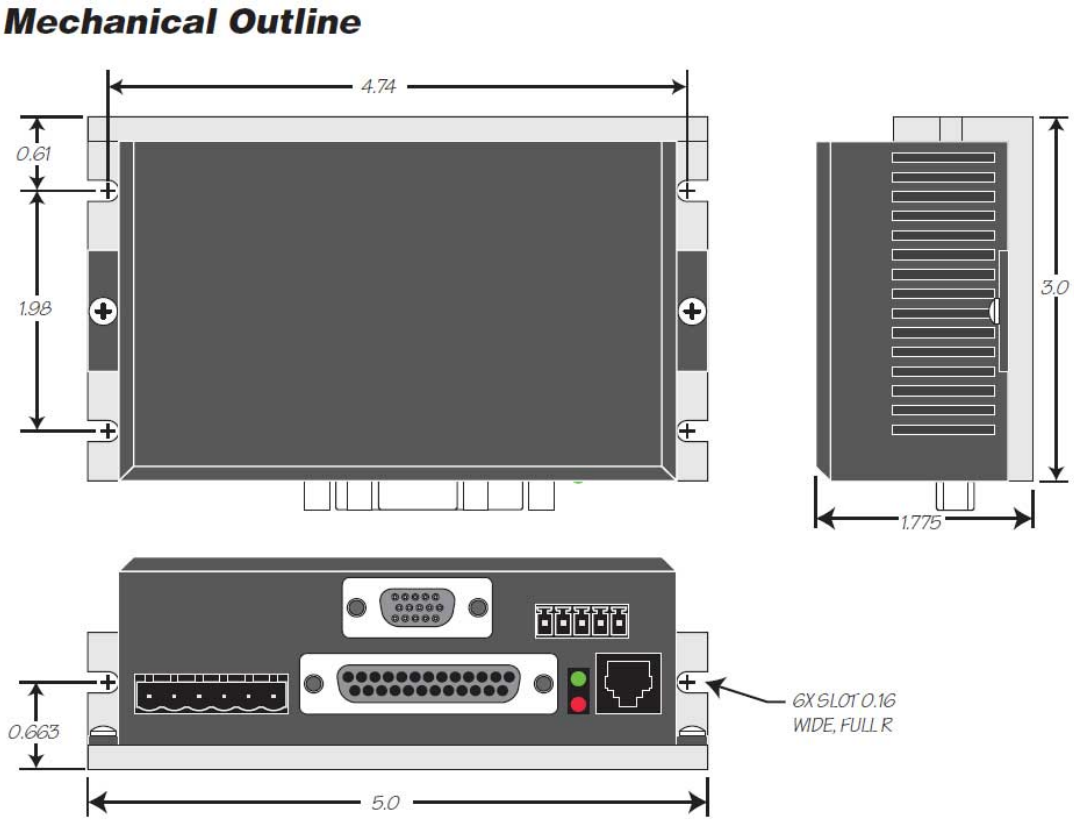
Downloads

Manuals:	ST5-10C_QuickSetup_920-0042C.pdf ST5-10-QSi_Hardware Manual_920-0004F.pdf CANopen_Manual_920-0025K.pdf
Datasheet:	http://s3.amazonaws.com/applied-motion-pdf/ST5-C-CE.pdf
Family Datasheet:	ST_Datasheet_925-0007.pdf CANopen_FAQ2.pdf ST-CANopen-EDS.eds
2D Drawing:	ST5_10 Dimensions.pdf ST_T_simple_3D.pdf
3D Drawing:	ST5_10-Q_Si_C_SIMPLE.igs
Speed-Torque Curves:	ST_speed-torque.pdf
Agency Approvals:	ST-Q-Si-C-IP_CE_DOC.pdf
Application Notes:	APPN0016_Simple-25-pin-mating-connections.pdf APPN0015_Make-a-serial-programming-cable.pdf

Pricing

	ST5-C-CE Part No. 5000-137
1pc.	$585.00
25pc.	$503.10
50pc.	$438.75
100pc.	Request a Quote for 100+ piece pricing.

2D Drawings



Products in the Series *CANopen Products*

Number	Supply Voltage	Control Modes	Output Current	Communication Ports	Encoder Feedback	1pc.
	12-70 VDC	CANopen	NA	RS-232, CANopen	Yes	$535.00
	12-70 VDC	CANopen	NA	RS-232, CANopen	No	$460.00
	12-70 VDC	CANopen	NA	RS-232, CANopen	Yes	$663.00
	12-70 VDC	CANopen	NA	RS-232, CANopen	No	$588.00
	12-48 VDC	CANopen	NA	RS-232, CANopen	Yes	$470.00
	12-48 VDC	CANopen	NA	RS-232, CANopen	No	$395.00
T10-C-CE	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	Yes	$682.00
T10-C-CN	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	No	$631.00
T5-C-CE	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	Yes	$585.00
T5-C-CN	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	No	$541.00
TAC6-C	94-135 VAC	CANopen	0.5-6.0 A/Phase	RS-232, CANopen	Yes	$1107.00
AC6-C-220	94-265 VAC	CANopen	0.5-3.2 A/Phase	RS-232, CANopen	Yes	$1212.00
V7-C-CE	24-80 VDC	CANopen	NA	RS-232, CANopen	NA	$585.00

Products in the Series *ST Stepper Drives*

Number	Supply Voltage	Control Modes	Output Current	Communication Ports	Encoder Feedback	1pc.
10-C-CE	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	Yes	$682.00
10-C-CN	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	No	$631.00
10-IP-EE	24-80 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-10.0 A/Phase	Ethernet, EtherNet/IP	Yes	$710.00
10-IP-EN	24-80 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-10.0 A/Phase	Ethernet, EtherNet/IP	No	$659.00
10-Plus	24-80 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-10.0 A/Phase	RS-232	No	$440.00
10-Q-EE	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-10.0 A/Phase	Ethernet	Yes	$726.00
10-Q-EN	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-10.0 A/Phase	Ethernet	No	$660.00
10-Q-NE	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus	0.1-10.0 A/Phase	RS-232	Yes	$580.00
10-Q-NF	24-80 VDC	Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus	0.1-10.0 A/Phase	RS-232	Yes	$557.00
10-Q-NN	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	0.1-10.0 A/Phase	RS-232	No	$515.00
10-Q-RE	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-10.0 A/Phase	RS-232, RS-485	Yes	$690.00
10-Q-RN	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-10.0 A/Phase	RS-232, RS-485	No	$630.00
T10-S	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	0.1-10.0 A/Phase	RS-232	No	$405.00
10-Si-NE	24-80 VDC	Si Programming	0.1-10.0 A/Phase	RS-232	Yes	$630.00
10-Si-NF	24-80 VDC	Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Si Programming, Q Programming, SiNet Hub Compatible, Velocity Control	0.1-10.0 A/Phase	RS-232	Yes	$636.00
10-Si-NN	24-80 VDC	Si Programming	0.1-10.0 A/Phase	RS-232	No	$580.00
5-C-CE	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	Yes	$585.00
5-C-CN	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	No	$541.00
5-IP-EE	24-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-5.0 A/Phase	Ethernet, EtherNet/IP	Yes	$655.00
5-IP-EN	24-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-5.0 A/Phase	Ethernet, EtherNet/IP	No	$607.00
T5-Plus	24-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-5.0 A/Phase	RS-232	No	$346.00
5-Q-EE	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-5.0 A/Phase	Ethernet	Yes	$614.00
5-Q-EN	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-5.0 A/Phase	Ethernet	No	$564.00
5-Q-NE	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	0.1-5.0 A/Phase	RS-232	Yes	$540.00
		Step & Direction, Streaming Commands,				

Number	Supply Voltage	Control Modes	Output Current	Communication Ports	Encoder Feedback	1pc.
		Velocity Control, Modbus				
5-Q-NN	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	0.1-5.0 A/Phase	RS-232	No	$467.00
5-Q-RE	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-5.0 A/Phase	RS-232, RS-485	Yes	$625.00
5-Q-RN	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-5.0 A/Phase	RS-232, RS-485	No	$570.00
ST5-S	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	0.1-5.0 A/Phase	RS-232	No	$302.00
5-Si-NE	24-48 VDC	Si Programming	0.1-5.0 A/Phase	RS-232	Yes	$579.00
5-Si-NF	24-48 VDC	Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Si Programming, Q Programming, SiNet Hub Compatible, Velocity Control	0.1-5.0 A/Phase	RS-232	Yes	$606.00
5-Si-NN	24-48 VDC	Si Programming	0.1-5.0 A/Phase	RS-232	No	$490.00