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CUDEVICES Leadshine SureStep®

SureStep® Stepper Motors

High-torque Stepping Motors

SureStep high-torque stepping motors are designed to handle a wide range of automation applications such as woodworking, assembly, and test machines.

Available in both single-shaft and dual-shaft configurations:

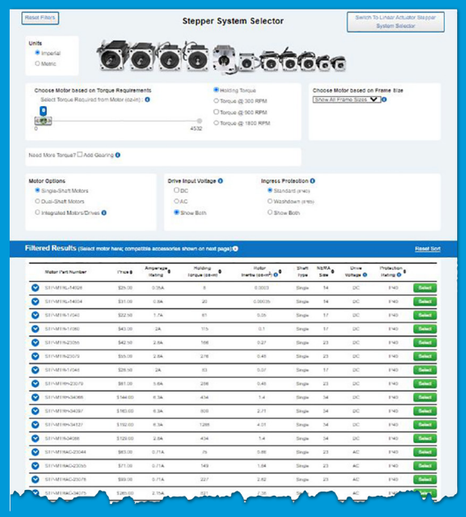
- NEMA 14, 17, 23, 34 and 42 mounting flanges
- Holding torque ranges from 8 to 4532 oz-in
- 1ft. cable and locking connector included
- Optional 6, 10, or 20-foot extension cables with locking connectors for interface to step drives
- Extension cables can be easily cut to length, if desired
- Square frame design produces high torque
- 1.8° per step, 200 steps per revolution
- CE compliant

Dual shaft motors feature:

- All "D" model (dual-shaft) step motors come with pre-drilled holes in the rear end cap for easy encoder mounting
- Encoder included with "E" model (for position feedback)
- Encoder adapter plate available for NEMA 42 motors

IP65 Stepper Motors ("W" Models):

- Available in single-shaft models only
- NEMA 17, 23, and 34 frame sizes
- Holding torque ranges from 61 to 1288 oz-in.
- 1.8° per step, 200 Steps per Revolution
- Waterproof white epoxy coating on the motor laminations
- 1-foot pigtail cable with IP65-rated connector
- Extension cables with IP65 connector: 6, 10, 20 ft lengths.
- Special bearings and seals to keep moisture out of the motor
- CE Compliant



Need help selecting a Stepper System
Use our interactive selector tool to configure and order…

…and get all the required AND optional accessories on your first order!

Stepper Drives SureStep®

Leadshine 2-phase Digital Stepper Drives

High-quality, 2-phase, digital stepper drives offering a basic feature set at an unbeatable value.

- All drives support step and direction control (some support CW/CCW)
- Model DM805-AI also supports multiple analog control modes
- Motor auto-configuration on power up
- Micro-stepping for smooth motor movement
- Wide range of input voltages supported (12-110 VDC, 18-80 VAC)
- Pulse input frequency up to 200kHz
- Soft-start at power on
- Automatic idle-current reduction
- Over-voltage and overcurrent protection
- Removable screw terminals for easy hook-up
- Optically-isolated inputs ready for +5VDC logic or use dropping resistors for 12/24VDC; switch selectable 5/24VDC (EM series only)
- No software required for configuration; DIP switch and/or rotary-dial setup
- DIP switch used for built-in self-test, microstep resolution selection, current level selection, and optional idle-current-reduction
- Optional Pro Tuner software for EM-S Series and DM-805-AI drives
- NEMA 11, 14, 17, 23, 24, 34 and 42 frame size step motors supported

Leadshine

SureStep High-performance Stepper Drives

SureStep stepper drives use advanced microstepping technology to smooth the motor motion and stepping response.

Standard drive features:

- Six models: 5 with DC input, 1 with AC Input (high-bus voltage)
- 2-phase digital stepper drives
- High-speed pulse input: pulse and direction, CW/CCW
- Wide range of input voltages supported (12-80 VDC, 115/230 VAC)
- Pulse input frequency up to 2MHz
- Automatic idle-current reduction
- Over-voltage and overcurrent protection
- NEMA 11, 14, 17, 23, 24, 34 and 42 frame size step motors supported
- On-board or removable screw terminals for easy hook-up
- Optically-isolated inputs ready for +5VDC logic or 5-24 VDC available
- No software or add-on resistors required for drive configuration; DIP switch and/or rotary-dial set-up
- DIP switch used for built-in self-test, microstep resolution selection, current level selection, and optional idle current reduction

SureStep®

Advanced drive features:

Two models with all the features of the standard drives, plus:

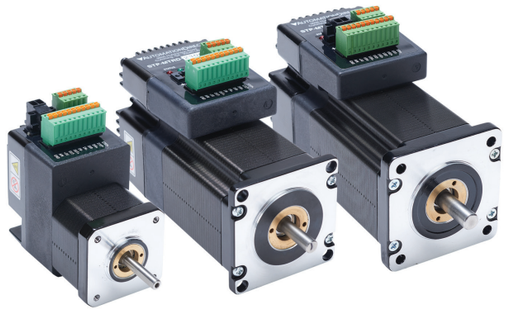
- Software configurable (no DIP switches)
- 200 - 51,200 microsteps (software selectable)
- Higher output currents (up to 10A)
- High-speed pulse input (pulse/direction, CW/CCW, A/B quadrature)
- Adjustable input filtering for smooth motion and quiet operation
- Analog velocity mode (0-5V or potentiometer)
- Internal indexer allows point-to-point moves via ASCII commands (SCL over RS-232)

SureStep® Stepper Systems

SureStep® Integrated Motor and Drive Systems

Integrated drive/motor units that combine accurate position and speed control will save panel space, require less wiring, and are less expensive!

- DC power supply required (12-48 VDC or 12-70 VDC)
- Pulse Input (Step/Direction, CW/CCW, A/B Quad), Internal Indexing, and Analog Velocity control modes available
- Digital input filtering
- "E" models include an encoder (externally-wireable for Standard models, internal-only for Advanced models)
- Three optically isolated digital inputs, 5 to 24 volts
- Step input signal smoothing (microstep emulation), performs high resolution stepping by synthesizing coarse steps into fine microsteps
- Dynamic smoothing, software-configurable filtering for use in removing spectral components from command sequence, reduces jerk, limiting excitation of system resonance
- Anti-resonance (electronic damping): raises the system-damping ratio to eliminate midrange instability and allow stable operation throughout the speed range of the motor
- Idle current reduction range of 0-90% of running current after a delay selectable in milliseconds (Standard models = 50/90%, DIP switch selectable)
- Configurable hardware digital noise filter, software noise filter
- Non-volatile storage, configurations are saved in FLASH memory on-board the DSP
- Dynamic current control, software configurable for running current, accel current, idle current, to make motion smoother and the motor run cooler



Integrated systems combine a high-performance microstepping drive with a high-torque stepper motor to provide simple and accurate control of position and velocity where open or closed-loop control is desired, and cost is a factor.

Standard Integrated Motors/Drives (STP-MTRD-x)

- Configurable via DIP switches
- Available torque from 68 to 210 oz-in
- Configurable via DIP switches
- Available torque from 68 to 210 oz-in
- Models with optional encoder ("E" models) have an externally wireable encoder which can provide feedback to an external controller

Advanced Integrated Motors/Drives (STP-MTRD-xR)

- Step and Direction, CW/CCW, and AB Quadrature/Encoder following
- Velocity and position modes (internal indexing)
- Control via streaming SCL commands over RS-485
- RS-485 ASCII (2- or 4-wire) communications
- Models with optional encoder ("E" models) have an internal encoder to provide improved position and speed control
- Four "Variable I/O" points, 5 to 24 volts (NEMA 24 models)
- Analog input for speed and position, 0 to 5 VDC
- Configurable via SureMotion Pro software
- Available torque from 54 to 340 oz-in

SureStep® Linear Actuators

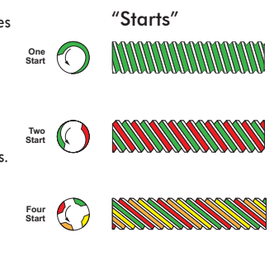
PITCH VS LEAD

"Pitch" refers to the number of threads per inch of a screw, while "lead" indicates the amount of travel per revolution. Lead is typically used to specify ball screws.

Pitch and lead values are equivalent with single start screws.

For multiple start screws: lead equals pitch multiplied by the number of starts.

Multi-start screws have increased bearing surface for extra thrust.



Optional screw end machining: bearing journal and groove for snap ring. Ready to mount!

Triangular flange nut (standard) fits confined spaces. Optional circular nut also available

Nine standard "leads" in stock: 1.25mm/rev, 3mm/rev, 6mm/rev, 8mm/rev, 10.2mm/rev, 0.25in/rev, 0.5in/rev, and 1.0in/rev:

- Small leads provide high thrust
- Large leads allow high speed

Three standard screw lengths in stock: 6-in, 9-in, & 12-in

Three standard motor cable lengths in stock: 6-ft, 10-ft and 20-ft

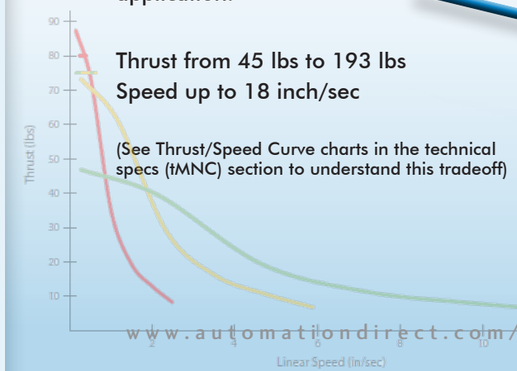
Wide variety of actuators in stock for immediate delivery!

NEMA17 and NEMA23 motor sizes in multiple stack lengths to match the thrust & speed of your application.

Thrust from 45 lbs to 193 lbs

Speed up to 18 inch/sec

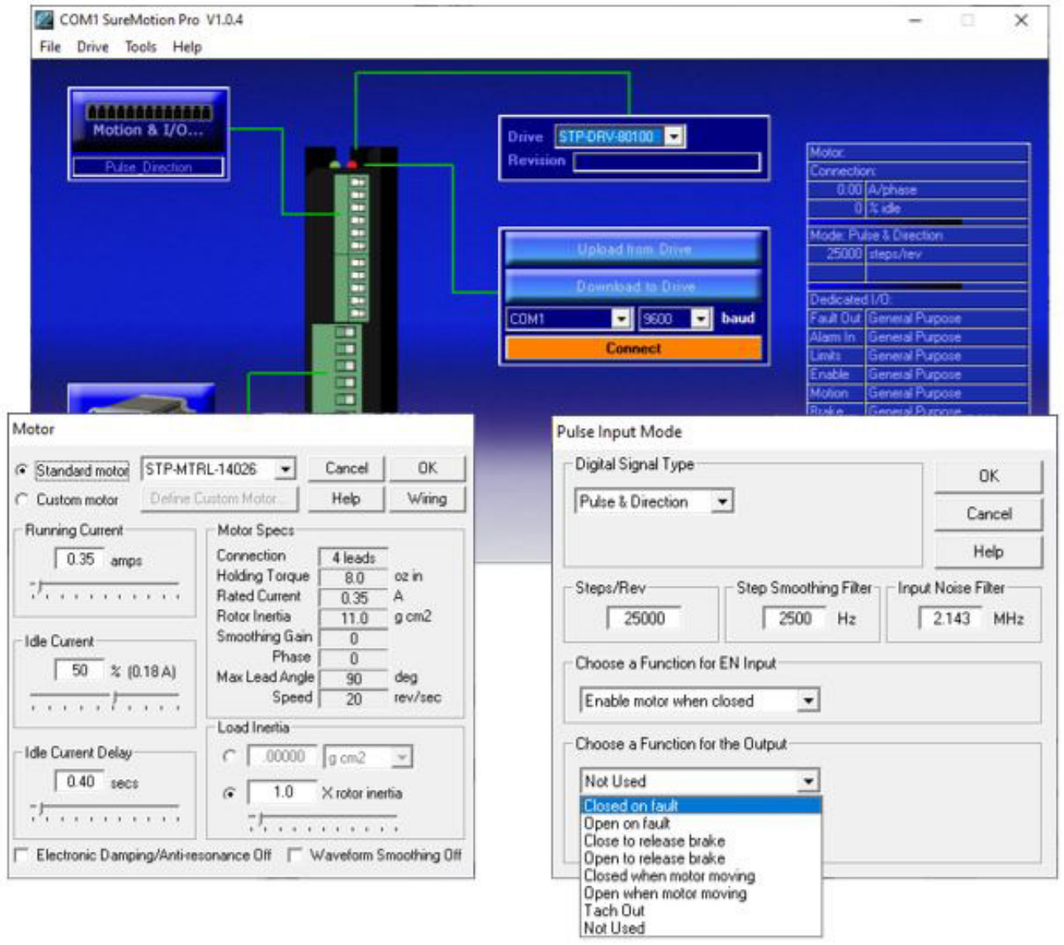
(See Thrust/Speed Curve charts in the technical specs (tMNC) section to understand this tradeoff)



Need Feedback? Optional rear motor shaft and threaded holes for encoder mounting

Stepper Software

SureMotion Pro



FREE configuration software for advanced stepper drives and advanced integrated motor/drives (software is not required for standard drives)

- Available for SureStep advanced drives: STP-DRV-4850, -80100, & STP-MTRD-xxxxxR
- Used for easy configuration and setup of the drive, including drive, motion control mode, I/O, motor
- Open, save, upload, download configuration files to advanced drives and drive/motors
- Status monitor screen aids in troubleshooting alarms and faults
- Self Test mode verifies motor wiring and functionality
- SCL terminal window allows testing/verification of SCL (serial ASCII) commands before PLC programming begins.
- Help files include technical data, application information, advanced setup, serial command instructions

Stepper Power Supplies

SureStep Linear Power Supplies

These unregulated linear power supplies offer full load outputs of 32 VDC/4A, 48 VDC/5A, 48 VDC/10A, & 70 VDC/5A; and are perfectly suited to power SureStep and Leadshine stepper drives and stepper motors.

- 120/240 VAC selectable input
- 32V, 48V, 70V DC output models available
- Linear power supplies are much less susceptible to regeneration overvoltage from the motor than switching supplies
- Fusing included for both incoming AC and outgoing DC
- All models offer regulated 5VDC, 500mA output (with electronic overload protection) to power control signals between the stepper drive and the host controller (PLC)

Four Models:

- **STP-PWR-3204** (32 VDC @ 4A , 5VDC @ .5A)
- **STP-PWR-4805** (46.5 VDC @ 5A , 5VDC @ .5A)
- **STP-PWR-4810** (46.5 VDC @ 10A , 5VDC @ .5A)
- **STP-PWR-7005** (70 VDC @ 5A , 5VDC @ .5A)

RHINO Switching Power Supplies

The following RHINO switching power supplies have been tested with and are recommended for use with SureStep and Leadshine stepper drives. These supplies accept universal input voltages: 120/240 VAC / 120–375 VDC.

- **PSP12-xxx (12 VDC)**
- **PSB24-xxx (24 VDC)**
- **PSB48-xxx (48 VDC)**

Please note that regen clamps may be required in more situations with a switching supply (than with a linear power supply) IF braking regeneration is an issue in a specific application.

SureStep Regen Clamps

In many stepper systems, a regen clamp is required to limit the power supply bus-voltage when the motor is decelerating a significant load.

- Built-in power resistor (with heat sink) for continuous current handling
- Voltage range: 24-80 VDC; no user adjustments required
- Power: 50W continuous; 800W peak
- Indicators (LED):
  - Green = power supply voltage is present
  - Red = clamp is operating (usually when stepper is decelerating)

Stepper Encoders

Capacitive Encoders

AMT series encoders from CUI Devices are advanced capacitive encoders that are typically mounted to the back of a stepper motor but can also be used in many other applications

- Software configurable models with resolutions up to 4096 ppr using quadrature (that's over 16k counts!)
- DIP switch configurable units with up to 2048 ppr
- All AMT incremental encoders have quadrature output signals and are available in single-ended (totem-pole) and line driver output models
- Models available to use as replacement encoders for those pre-mounted on STP-MTR(x)-xxxxE stepper motors
- Add as an optional encoder (purchased separately) for standard integrated motor/drives and standalone dual-shaft motors in all NEMA 14, 17, 23, 34, and 42 motors
- All SureStep (D) model (dual shaft) motors come with pre-drilled holes in the rear end cap for easy encoder mounting (NEMA 42 models require STP-MTRA-42ENC encoder mounting plate)
- Installation tools and mounting hardware are included with all replacement encoders

Capacitive encoders are rugged

Derived from the same principles used in digital calipers, these encoders:

- Tolerate a range of environmental contaminants such as dust, dirt, and oil
- Offer excellent immunity to vibration and temperature extremes
- Longer life (no LED), smaller footprint, and lower current consumption (6 to 18 mA) than an optical encoder
- Immune to magnetic interference and electrical noise

SureStep® Modular Kit Encoders for Stepper Motors

Optical Stepper Encoders

- Optional encoders can be purchased separately for standard integrated motor/drives and standalone dual-shaft motors in all NEMA 14, 17, 23, 34, and 42 sizes
- All (D) model (dual-shaft) step motors come with pre-drilled holes in the rear end cap for easy encoder mounting (NEMA 42 models require STP-MTRA-42ENC encoder mounting plate)
- Pre-installed encoders on standalone dual-shaft motors and standard integrated motor/drives can be retrofitted with a different encoder if desired

Optical Encoders

- Fixed resolutions of 400 ppr or 1000 ppr
- Choose line driver or push-pull (totem) output signals

Replacement Stepper Encoders

Available for the pre-installed units on "E" model standard motors and integrated motor/drive standard models with encoders. Installation tool and mounting hardware is included with all replacement encoders.

AMT Viewpoint
FREE Stepper Encoder Configuration Utility

For configurable encoders STP-MTRA-ENC9, STP-MTRA-ENC10, AMT11, AMT31, AMT13, and AMT33

- AMT Viewpoint autodetects the encoder and allows PPR selection from 40 to 4096 ppr
- Viewpoint PC software utility connects to encoder using the AMT-PGRM-17C or AMT-PGRM-18C cable
- Software allows custom Z Pulse alignment at any position, before or after the encoder is installed