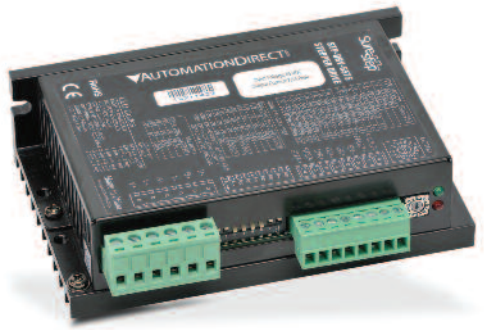
STP-DRV-6575 MICROSTEPPING DRIVE



Note: STP-DRV-6575 Drives are suitable for driving 2-phase and 4-phase stepping motors with 4, 6, or 8 leads.

WARNING

To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area. It is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call our technical support at 770-844-4200.

This publication is based on information that was available at the time it was printed. At ***Automationdirect.com***® we constantly strive to improve our products and services, so we reserve the right to make changes to the products and/or publications at any time without notice and without obligation. This publication may also discuss features that may not be available in certain revisions of the product.

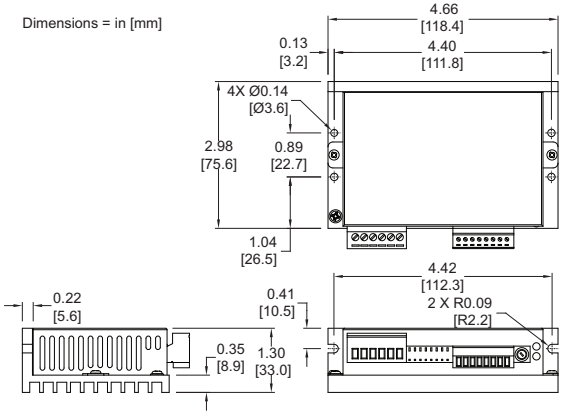
***Sure*Step™ Microstepping Drive Specifications**		
Part Number		**STP-DRV-6575**
Input Power		24–65 VDC (external power supply required; fuse at 7A fast-acting)
Output Current		1.0–7.5 A/phase (peak of sine)
Current Controller		Dual H-bridge digital MOSFET, 4-quadrant PWM at 20 kHz
Input Signals	**Step**	5–24 VDC nominal (range: 4–30 VDC); optically isolated, differential. Minimum pulse width = 250ns. Maximum pulse frequency = 150 kHz or 2MHz (user selectable). Function = Step or Step CW pulse.
	Direction	5–24 VDC nominal (range: 4–30 VDC); optically isolated, differential. Minimum pulse width = 250ns. Maximum pulse frequency = 150 kHz or 2MHz (user selectable). Function = Direction or Step CCW pulse.
	Enable	5–24 VDC nominal (range: 4–30 VDC); optically isolated, differential. Function = disable motor when closed.
Output Signal	**Fault**	30 VDC / 80mA max, optically isolated photodarlington, sinking or sourcing. Function = closes on drive fault.
Rotary Switch Selectable Function		Select motor based on part number, or by motor current.
Jumper Selectable Functions	**Step Pulse Type**	Step and Direction: Step signal = step/pulse; Direction signal = direction. Step CW & CCW: Step signal = CW step; Direction signal = CCW step.
	Step Pulse Noise Filter	Select 150 kHz or 2MHz
DIP Switch Selectable Functions	**Current Reduction**	Reduce power consumption and heat generation by limiting motor running current to 100%, 90%, or 80% of maximum. Current should be increased to 120% if microstepping. (Torque is reduced/increased by the same %.)
	Idle Current Reduction	Reduce power consumption and heat generation by limiting motor idle current to 90% or 50% of running current. (Holding torque is reduced by the same %.)
	Load Inertia	Anti-resonance and damping feature improve motor performance. Set motor and load inertia range to 0–4x or 5–10x.
	Step Resolution	For smoother motion and more precise speed, set the pulse step resolution to 20000, 12800, 5000, 2000, 400 smooth, 400, 200 smooth, or 200 steps/rev.
	Self Test	Automatically rotate the motor back and forth two turns in each direction in order to confirm that the motor is operational.
Drive Cooling Method		Natural convection (mount drive to metal surface)
Mounting		Use (2) #6 screws to mount wide or narrow side to metal surface
Removable Connectors		Motor & Power Supply: screw terminal blocks Phoenix Contact 1757051 Signals: screw terminal blocks Phoenix Contact 1803633
Weight		10.8 oz [306g] – (including mating connectors)
Operating Temperature		0–85 °C [32–185 °F] – (interior of electronics section)
Ambient Temperature		0–50 °C [32–122 °F] – (drive must be mounted to suitable heat sink)
Humidity		maximum 90% non-condensing
Agency Approvals		CE (EMC & LVD); RoHS

MOUNTING THE DRIVE

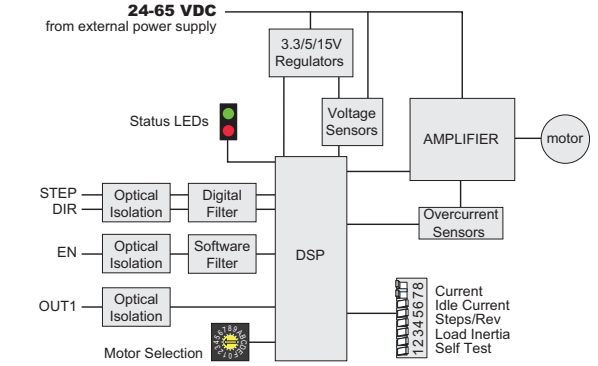
The STP-DRV-6575 drive can be mounted on the wide or the narrow side of the chassis using (2) #6 screws. Fasten the drive securely to a smooth, flat, metal surface that will help conduct heat away from the chassis. Otherwise, forced air flow from a fan may be required to prevent overheating. ***WARNING***:

- Never mount the drive in a space where there is no air flow, or where other devices can heat the surrounding air to 50˚C [122˚F].
- Never put the drive where it can get wet, or where metal or other electrically-conductive particles can get on the circuitry.
- Always provide air flow around the drive. Minimum allowable spacing between multiple drives is 0.5 in [13 mm].

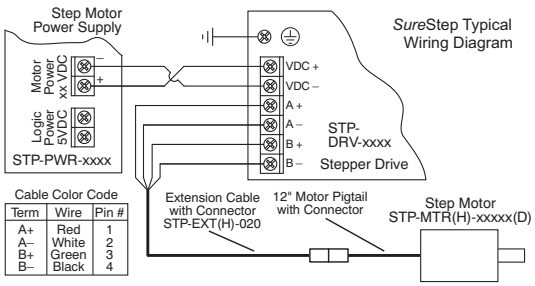
DIMENSIONS



BLOCK DIAGRAM

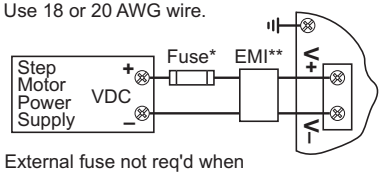


TYPICAL WIRING DIAGRAM



CONNECTING THE POWER SUPPLY

- Connect the green ground screw to earth ground
- Use 18 or 20 AWG wire.



* External fuse not req'd when using an STP-PWR-xxxx P/S; fuse is internal.
** CE use requires an EMI line filter.

STP-PWR-48xx or STP-PWR-3204 power supplies from AutomationDirect are good choices to power the step-motor drive.

If the power supply you choose does not have a fuse on the output, you will need to install a fast-acting 7A fuse on the "+" power supply lead.

WARNING: Do not to reverse the polarity from the power supply to the drive. Reverse connection will destroy your drive and void the warranty.

CONNECTING THE MOTOR

WARNING: When connecting a step motor to the STP-DRV-6575 drive, be sure that the motor power supply is switched off. When using a motor not supplied by *AutomationDirect*, secure any unused motor leads so that they can't short out. Never disconnect the motor while the drive is powered up. Never connect the motor leads to ground or directly to the power supply. (See Typical Wiring Diagram on the back side of this data sheet for the step motor lead color code of *AutomationDirect*-supplied motors.

CONNECTING THE INPUT SIGNALS

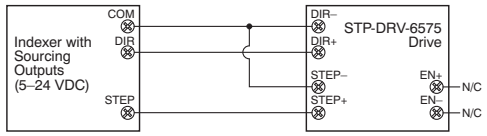
The STP-DRV-6575 drive has three inputs:

- STEP: a high speed digital input for step pulse commands; 5–24 VDC logic
- DIR: a high speed digital input for the direction signal; 5–24 VDC logic
- EN: a 5-24V input for commanding the removal of power from the motor; also clears faults and re-enables the motor in the case of drive faults, e.g. over-current/short-circuit faults

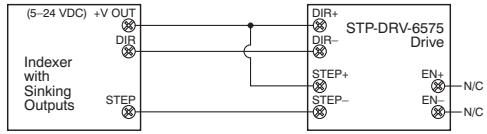
Note: STEP and DIR inputs can be converted to STEP CW and STEP CCW by moving the internal jumper S3.

CONNECTING THE INPUT SIGNALS – STEP & DIRECTION

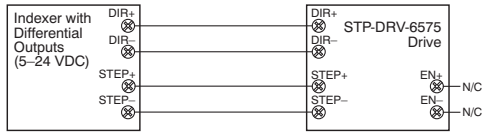
Connecting STP-DRV-6575 Drive to Indexer with Sourcing Outputs



Connecting STP-DRV-6575 Drive to Indexer with Sinking Outputs

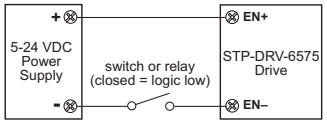


Connecting STP-DRV-6575 Drive to Indexer with Differential Outputs

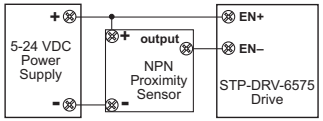


CONNECTING THE INPUT SIGNALS – ENABLE

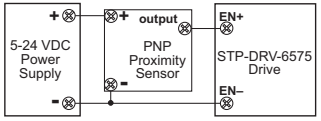
Connecting STP-DRV-6575 Drive EN to Switch or Relay



Connecting STP-DRV-6575 Drive EN to NPN



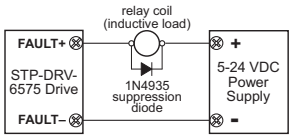
Connecting STP-DRV-6575 Drive EN to PNP



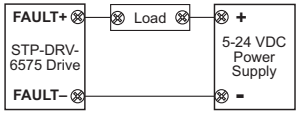
CONNECTING THE FAULT OUTPUT SIGNAL

Do not connect more than 30 VDC. Current must not exceed 80 mA.

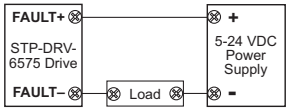
Connecting STP-DRV-6575 Fault Output to Inductive Relay



Connecting Fault Output as Sinking Output



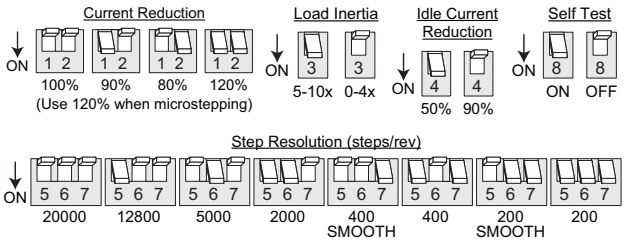
Connecting Fault Output as Sourcing Output



ROTARY SWITCH SETTINGS – MOTOR SELECTION

STP-DRV-6575 Motor Selection Table									
Motor Data						Drive Configuration Data			
Motor STP-MTR -xxxxx	Current (A/phase)	Holding Torque (oz-in)	Roter Inertia (oz-in²)	Inductance (mH)	Resistance (Ω)	Torque (mN-m)	Inertia (g-cm²)	Current (peak sine A)	Rotary Switch Position
n/a	reserved								0–2
n/a	1.3	custom NEMA 17							3
n/a	4.0	custom NEMA 23							4
n/a	4.0	custom NEMA 34							5
-17040	1.7	61	0.28	3.03	1.60	434	51	2.04	6
-17048	2.0	83	0.37	2.65	1.40	586	82	2.40	7
-17060	2.0	125	0.56	3.30	2.00	883	37	2.40	8
-23055	2.8	166	1.46	2.36	0.08	1172	271	3.36	9
-23079	2.8	276	2.60	3.82	1.10	1949	475	3.36	A
-34066	2.8	434	7.66	7.70	1.11	3065	1402	3.36	B
H-23079	5.6	287	2.60	1.18	0.40	2025	371	6.72	C
H-34066	6.3	428	7.66	1.52	0.25	3021	1402	7.56	D
H-34097	6.3	803	14.80	2.07	0.03	5668	2708	7.56	E
H-34127	6.3	1292	21.90	4.14	0.49	9123	4008	7.56	F

DIP SWITCH SETTINGS (FACTORY DEFAULT = ALL SWITCHES OFF)



JUMPER SETTINGS

Jumpers S3 and S4 are located on the internal circuit board. They can be accessed by removing the drive's front cover.

Jumper S3 – Step Pulse Type

- Jumper in "1-2" position – Step & Direction (factory default)
- Jumper in "1-3" position – Step CW / Step CCW

Jumper S4 – Step Pulse Noise Filter

- Jumper in "1-2" position – 2MHz
- Jumper in "1-3" position – 150 kHz (factory default)

Remove connectors and cover to access Jumpers S3 and S4. They are located on the upper left corner of the circuit board.