STR Stepper Drives

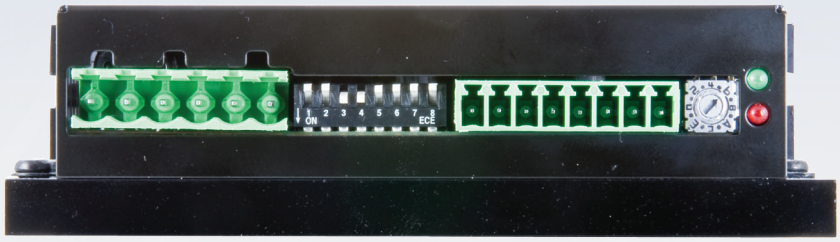
Applied Motion Products

High Performance Step Motor Control

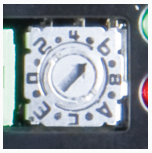
Three versions: STR2, STR4 and STR8 capable of driving motors from HT08 to HT34.

- ✓ Switch Selectable Parameters
- ✓ Anti-Resonance
- ✓ Microstepping
- ✓ Microstep Emulation
- ✓ Self Test

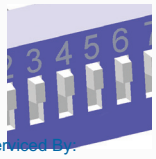
Simple Setup - No Software Required



Motor Selection - Optimized current settings for standard motors are stored on the drive and are selectable via on-board rotary or dip switches



Drive Configuration - On-board dip switches are used to configure running current, idle current, load inertia ratio and step resolution.



For more information, please visit www.applied-motion.com/STR

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Specifications

AMPLIFIER TYPE	Dual H-bridge, 4 quadrant
CURRENT CONTROL	**STR2:** 4 state PWM at 16 kHz **STR4/8:** 4 state PWM at 20 kHz
OUTPUT CURRENT	**STR2:** 0.3 - 2.2 A/phase (peak of sine) **STR4:** 1.12 - 4.5 A/phase (peak of sine) **STR8:** 2.35 - 8.0 A/phase (peak of sine)
POWER SUPPLY	**STR2:** External 12 - 48 VDC power supply required **STR4:** External 24 - 48 VDC power supply required **STR8:** External 24 - 75 VDC power supply required
PROTECTION	Over-voltage, under-voltage, motor/wiring shorts (phase-to-phase, phase-to-ground)
IDLE CURRENT	50% or 90% of running current, switch selectable
MODES OF OPERATION	Step (pulse) & direction or CW/CCW pulse (pulse-pulse); selected via jumper under drive cover
STEP RESOLUTION	Dip switch selectable resolution: 200, 200 SMOOTH, 400, 400 SMOOTH, 2000, 5000, 12800, or 20000 s/r
ANTI-RESONANCE (Electronic Damping)	Raises the system damping ratio to eliminate midrange instability and allow stable operation throughout the speed range and improves settling time. Dip switch setting for range of load-to-motor inertia ratio.
SELF TEST	Dip switch for automatically rotating step motor back and forth. Useful for testing motor and power supply connections.
MICROSTEP EMULATION	Performs high resolution stepping by synthesizing fine microsteps from coarse steps. Available with full (200 SMOOTH) and half (400 SMOOTH) step resolutions.
STEP INPUT	5-24V, optically isolated, sinking (STR2) or differential (STR4/8). Minimum pulse width = 250 ns. Maximum pulse frequency = 150 kHz or 2 MHz, user selectable. Function = step or CW pulse.
DIRECTION INPUT	5-24V, optically isolated, sinking (STR2) or differential (STR4/8). Minimum pulse width = 250 ns. Maximum pulse frequency = 150 kHz or 2 MHz, user selectable. Function = direction or CCW pulse.
ENABLE INPUT	5-24V, optically isolated, sinking (STR2) or differential (STR4/8). Function = disable motor when closed.
FAULT OUTPUT	30V/80mA max, optically isolated, sinking or sourcing. Function = closes on drive fault.
DRIVE/MOTOR SETTINGS	**Motor select** (select part number from pre-defined list): dip switches (STR2) or rotary switch (STR4/8) **Running current** (100%, 90%, 80% or 70%): dip switches **Idle current** (50% or 90%): dip switch **Load inertia ratio** (0-4X or 5-10X): dip switch **Step size** (resolution): dip switches **Step pulse type** (step & direction or CW/CCW pulse): jumper under drive cover **Step pulse noise filter** (150 kHz or 2 MHz): dip switch (STR2) or jumper under drive cover (STR4/8) **Self test** (rotate motor back and forth): dip switch
DIMENSIONS	**STR2:** 3.65 x 2.2 x 0.82 inches (not including mating connectors) **STR4/8:** 4.65 x 2.97 x 1.3 inches (not including mating connectors)
WEIGHT	**STR2:** 4.7 oz (including mating connectors) **STR4/8:** 10.8 oz (including mating connectors)
OPERATING TEMPERATURE	0 to 85 °C (32 - 185 °F), interior of electronics section
AMBIENT TEMPERATURE	0 to 50 °C (32 - 122 °F), drive must be mounted to suitable heatsink
HUMIDITY	90% non-condensing
AGENCY APPROVALS	RoHS CE (EMC): EN 61800-3:2004 CE (LVD): EN 61800-5-1:2003

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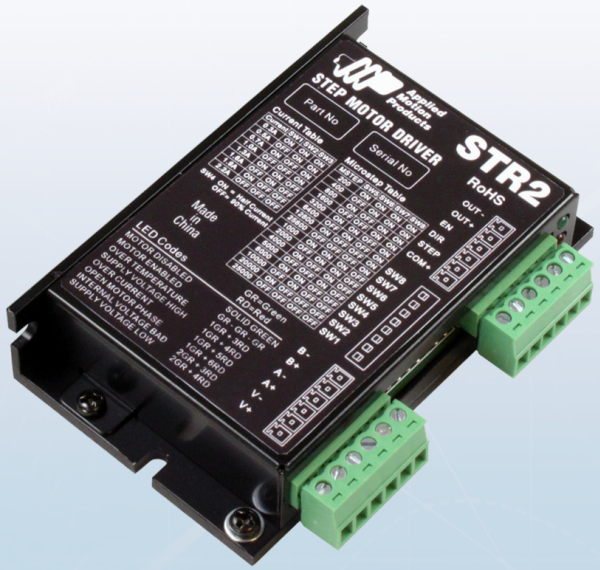
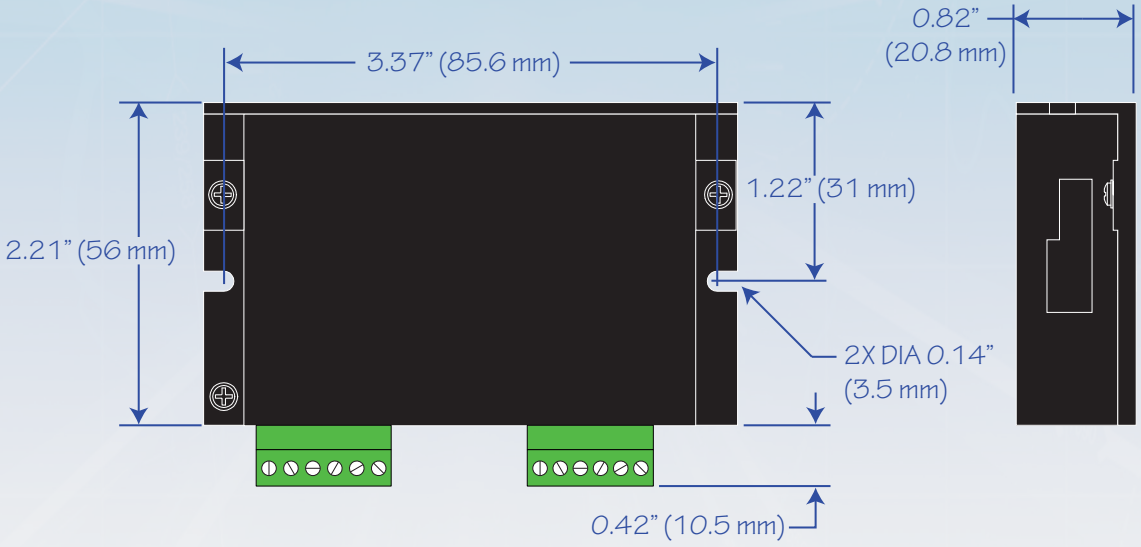
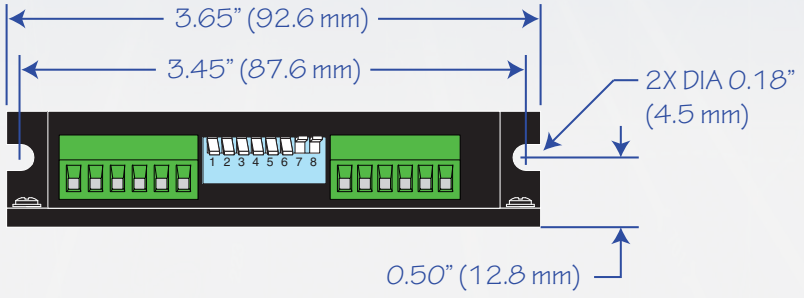
STR2 Motor Table & Dimensions

STR2 Motors					
Switch	Motor	Wiring	Current	Holding Torque	Rotor Inertia
			A	oz-in	g-cm²
1 2 3	HT08-020	4 leads	0.42	2.4	1.9
1 2 3	HT08-021	4 leads	0.42	4.4	4.0
1 2 3	HT11-012	4 leads	1.20	7.4	8
1 2 3	HT11-013	4 leads	1.20	15.3	18
1 2 3	5014-842	4 leads	1.20	26	20
1 2 3	HT17-268	parallel	1.61	31	38
1 2 3	HT17-271	parallel	2.04	52	57
1 2 3	HT17-275	parallel	2.04	78	82
1 2 3	HT23-595	series	2.20	76	135
1 2 3	HT23-598	series	2.20	158	260
1 2 3	HT23-601	series	2.20	269	460







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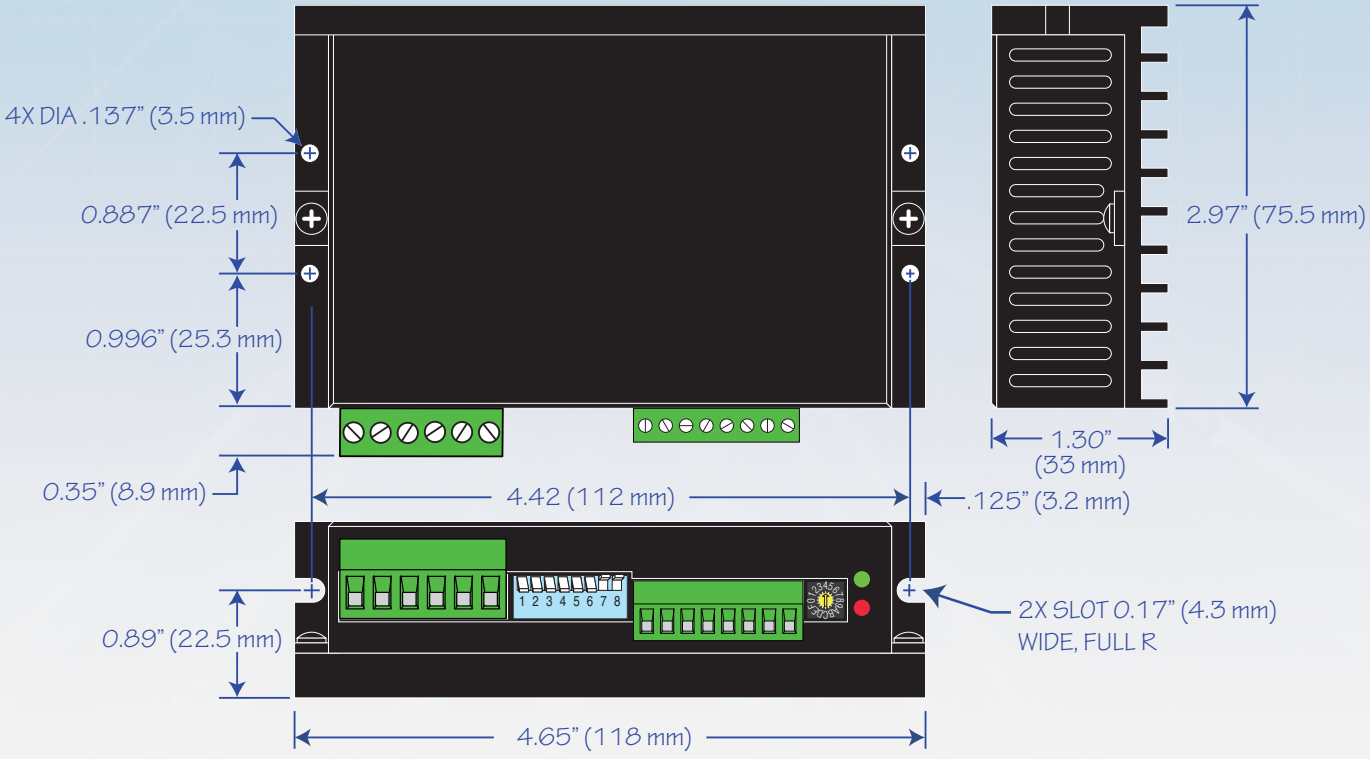
STR4/STR8 Motor Tables & Dimensions

STR4 Motors					
Switch	Motor	Wiring	Current	Holding Torque	Rotor Inertia
			A	oz-in	g-cm²
0	Custom 1*	Reserved for custom configurations			
1	Custom 2*	Reserved for custom configurations			
3	HT17-278	Parallel	2.4	113	123
3	HT17-268	Parallel	1.6	31.4	35
4	HT17-271	Parallel	2	51	54
5	HT17-275	Parallel	2	62.8	68
6	HT23-594	Parallel	3.4	76.6	120
7	HT23-598	Parallel	4.5	159.3	300
8	HT23-601	Parallel	4.5	237	480
9	HT24-100	Parallel	3.36	123	280
A	HT24-105	Parallel	4.5	166	450
B	HT24-108	Parallel	4.5	332	900
C	HT34-485	Series	4.5	585	1400
D	HT34-486	Series	4.5	1113	2680
E	HT34-504	Series	3.816	396	1100
F	HT34-505	Series	3.816	849	1850

STR8 Motors					
Switch	Motor	Wiring	Current	Holding Torque	Rotor Inertia
			A	oz-in	g-cm²
0	Custom 1*	Reserved for custom configurations			
1	Custom 2*	Reserved for custom configurations			
2	Custom 3*	Reserved for custom configurations			
3	HT23-603	Parallel	6	354	750
4	HT23-594	Parallel	3.4	76.6	120
5	HT23-598	Parallel	5	177	300
6	HT23-601	Parallel	5	264	480
7	HT24-100	Parallel	3.36	123	280
8	HT24-105	Parallel	4.8	177	450
9	HT24-108	Parallel	4.8	354	900
A	HT34-485	Parallel	8	507	1400
B	HT34-486	Parallel	8	965	2680
C	HT34-487	Parallel	8	1439	4000
D	HT34-504	Parallel	7.56	396	1100
E	HT34-505	Parallel	7.56	849	1850
F	HT34-506	Parallel	6.72	1260	2750



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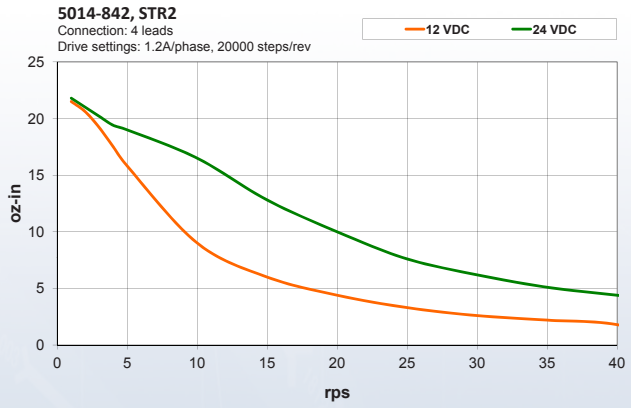
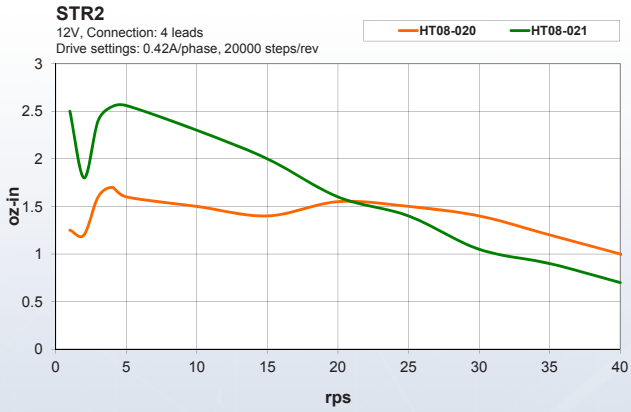
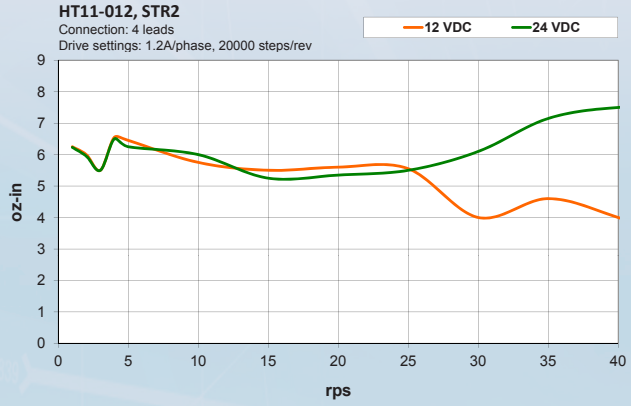
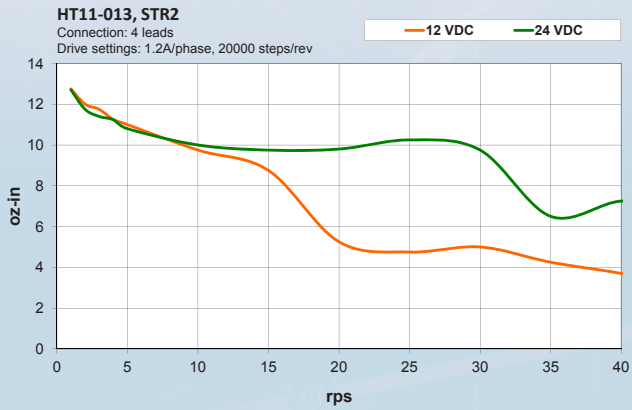
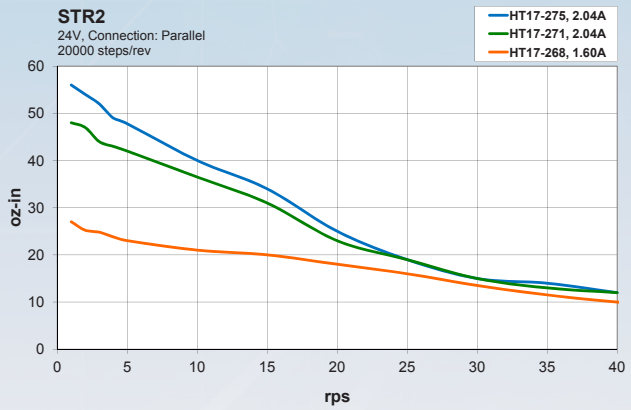
STR2 Torque Curves

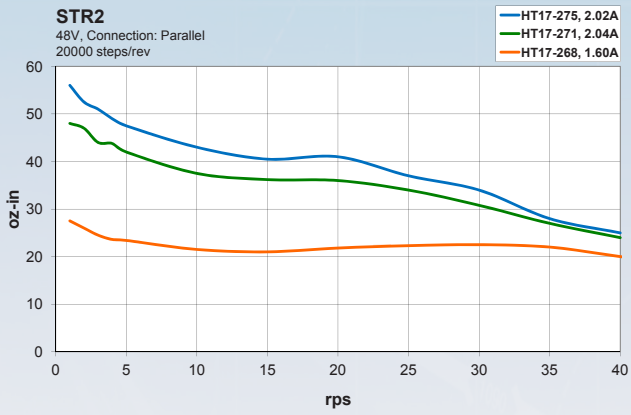


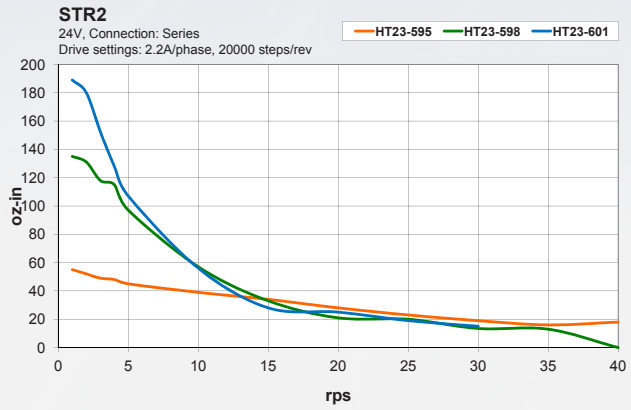


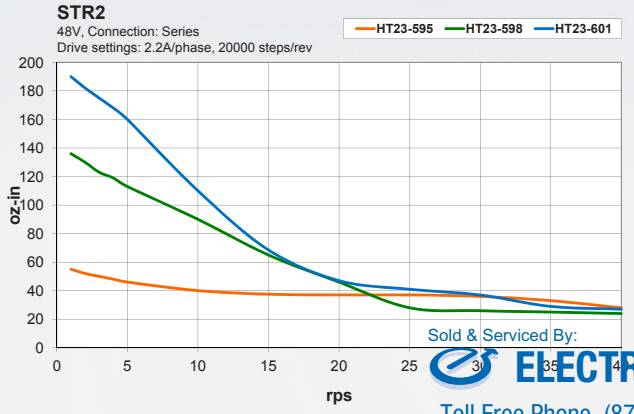












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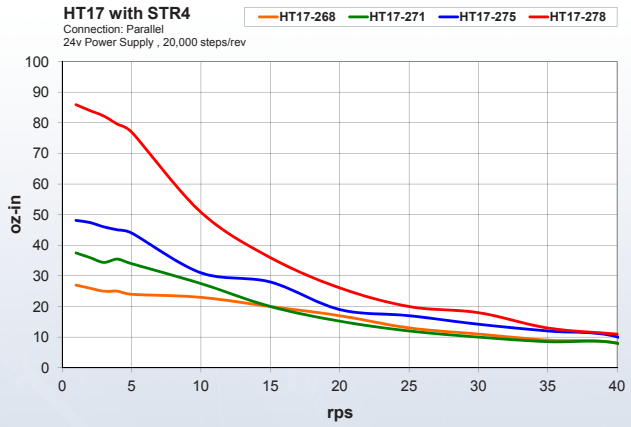
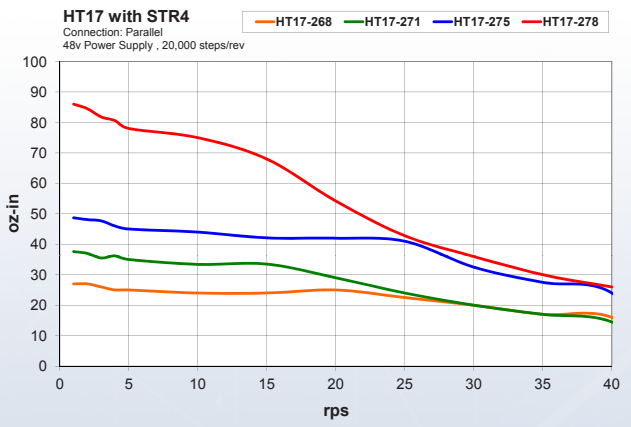
STR4/STR8 Torque Curves

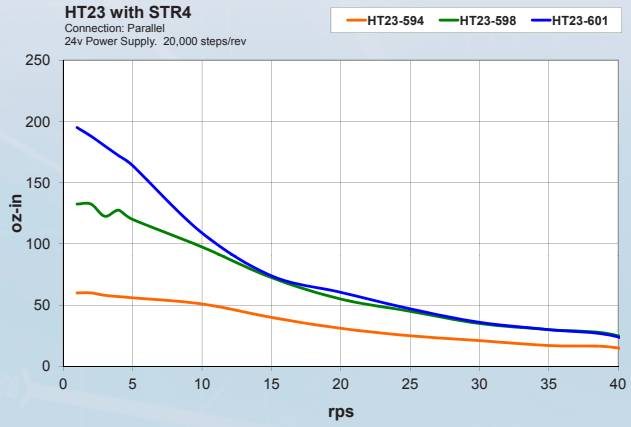
HT17 with STR4
Connection: Parallel
24v Power Supply , 20,000 steps/rev



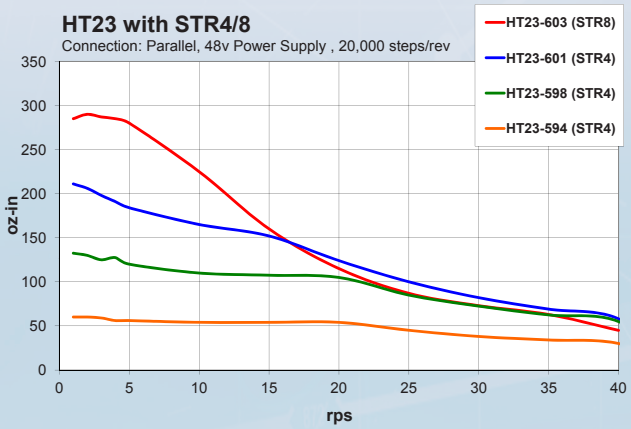
HT17 with STR4
Connection: Parallel
48v Power Supply , 20,000 steps/rev



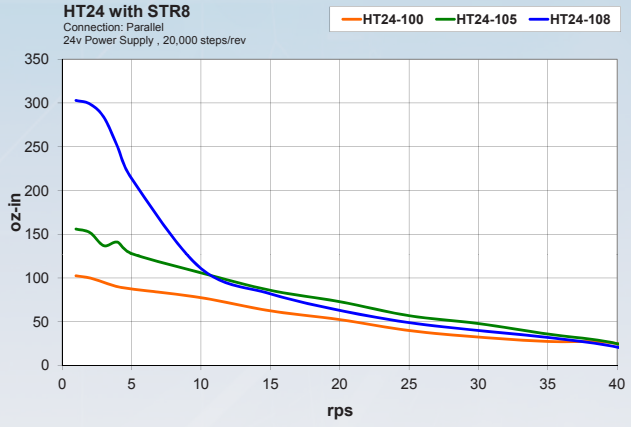
HT23 with STR4
Connection: Parallel
24v Power Supply. 20,000 steps/rev



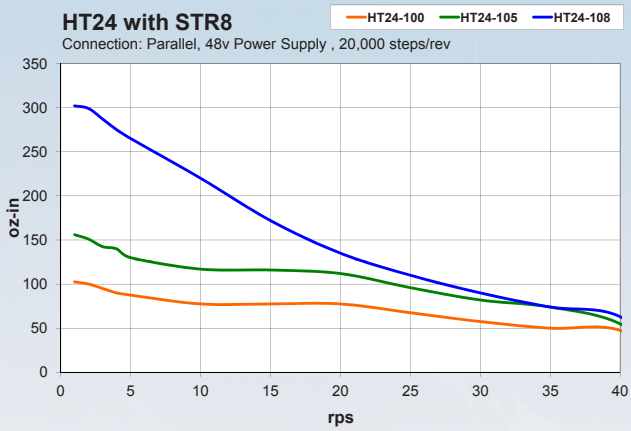
HT23 with STR4/8
Connection: Parallel, 48v Power Supply , 20,000 steps/rev



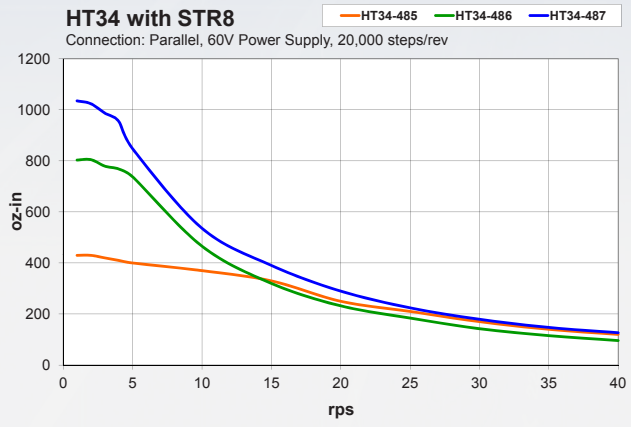
HT24 with STR8
Connection: Parallel
24v Power Supply , 20,000 steps/rev



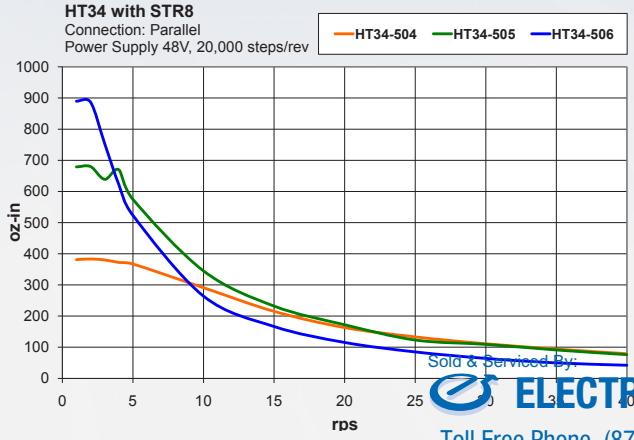
HT24 with STR8
Connection: Parallel, 48v Power Supply , 20,000 steps/rev



HT34 with STR8
Connection: Parallel, 60V Power Supply, 20,000 steps/rev



HT34 with STR8
Connection: Parallel
Power Supply 48V, 20,000 steps/rev



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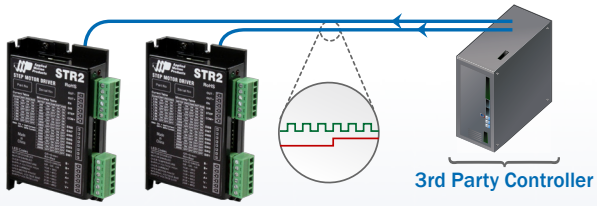
Features

Step & Direction

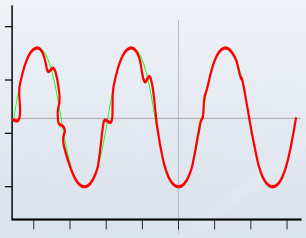
- Step & direction
- CW & CCW pulse



Best value for step & direction applications

Anti-Resonance/Electronic Damping

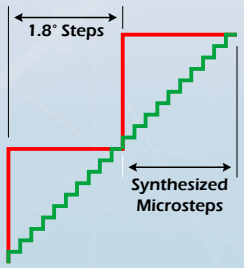
Step motor systems have a natural tendency to resonate at certain speeds. The STR drives automatically calculate the system's natural frequency and apply damping to the control algorithm. This greatly improves midrange stability, allows for higher speeds, greater torque utilization, and improves settling times.



Delivers better motor performance and higher speeds

Microstep Emulation

With Microstep Emulation, low resolution systems can still provide smooth motion. The drive can take low-resolution step pulses and create fine resolution micro-step motion.



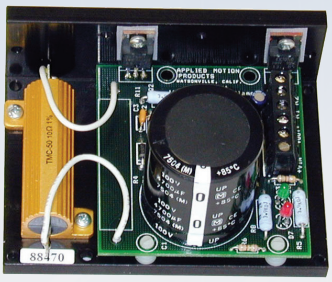
Delivers smoother motion in any application

Accessories

Power Supplies

Applied Motion also offers two matched power supplies for use with the STR drives. A 24VDC, 150W (part number PS150A24) and a 48VDC 320W version (part number PS320A48). These power supplies have current overload capability making them ideal for use with stepper drives.

RC-050 Regeneration Clamp



The RC-050 regeneration clamp is for use where regeneration from the motor may cause damage to the drive. In these cases the RC-050 is connected between the drive and power supply and absorbs regenerated energy.

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