

STR Stepper Drives

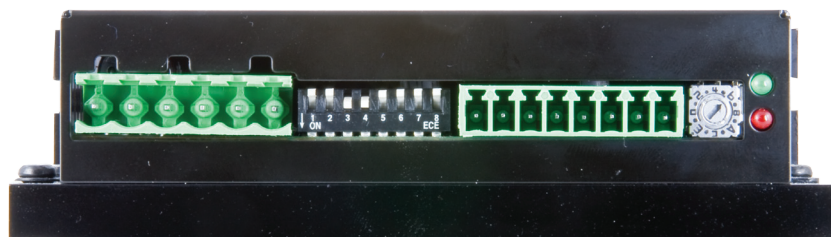
High Performance Step Motor Control



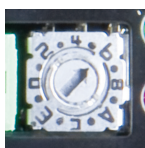
Three versions: STR2, STR4 and STR8 capable of driving motors from HT08 to HT34.

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

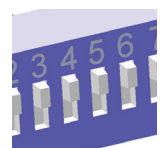
Simple Setup - No Software Required



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.

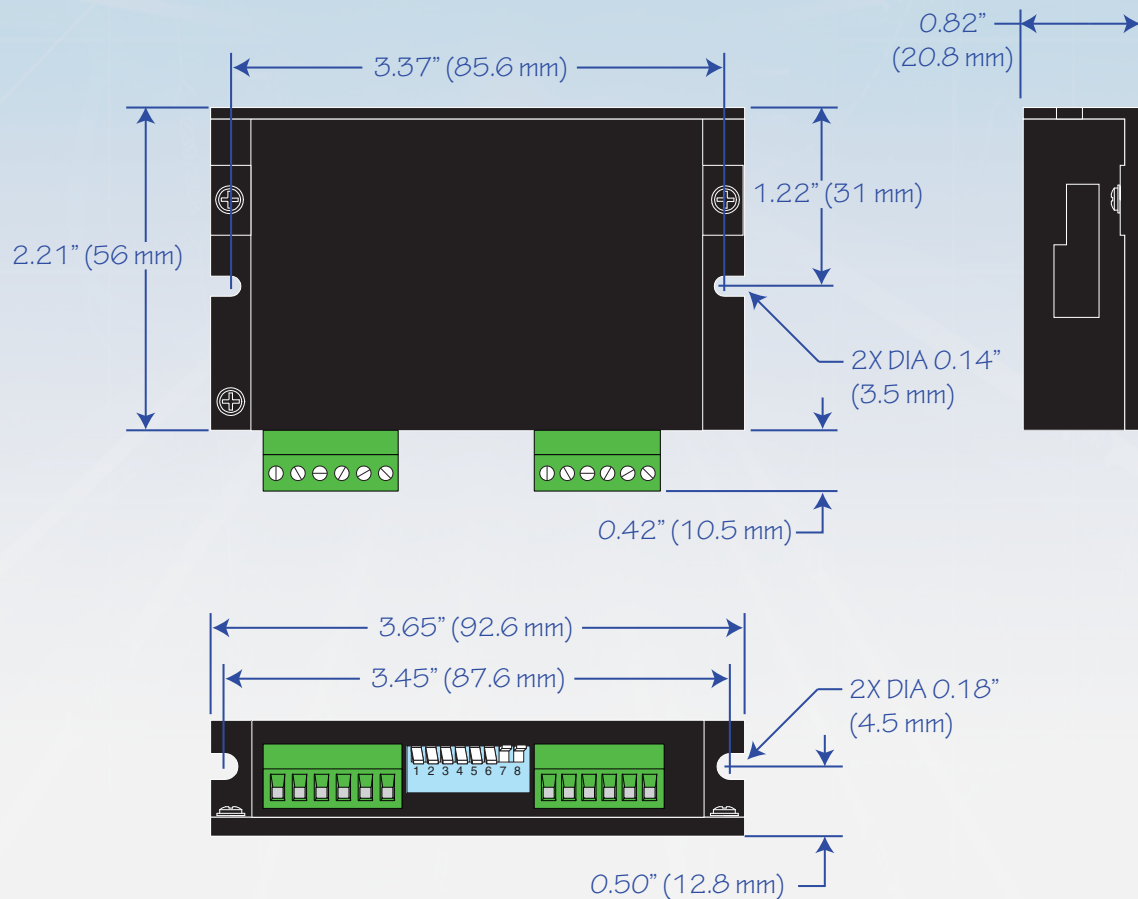
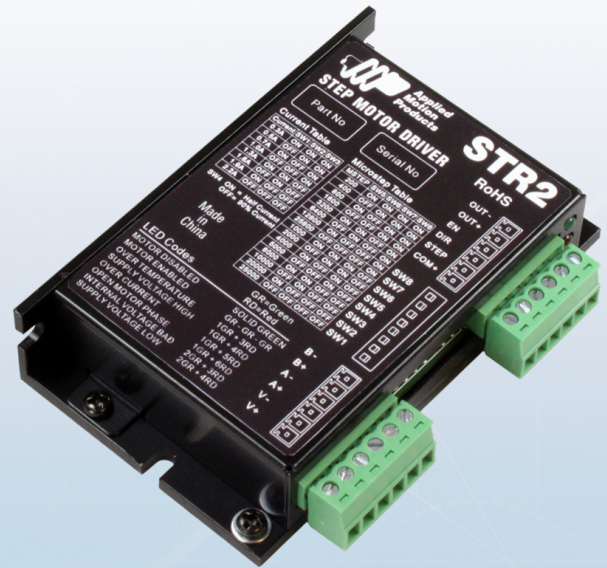


Specifications

| | |
|--|---|
| 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 |

STR2 Motor Table & Dimensions

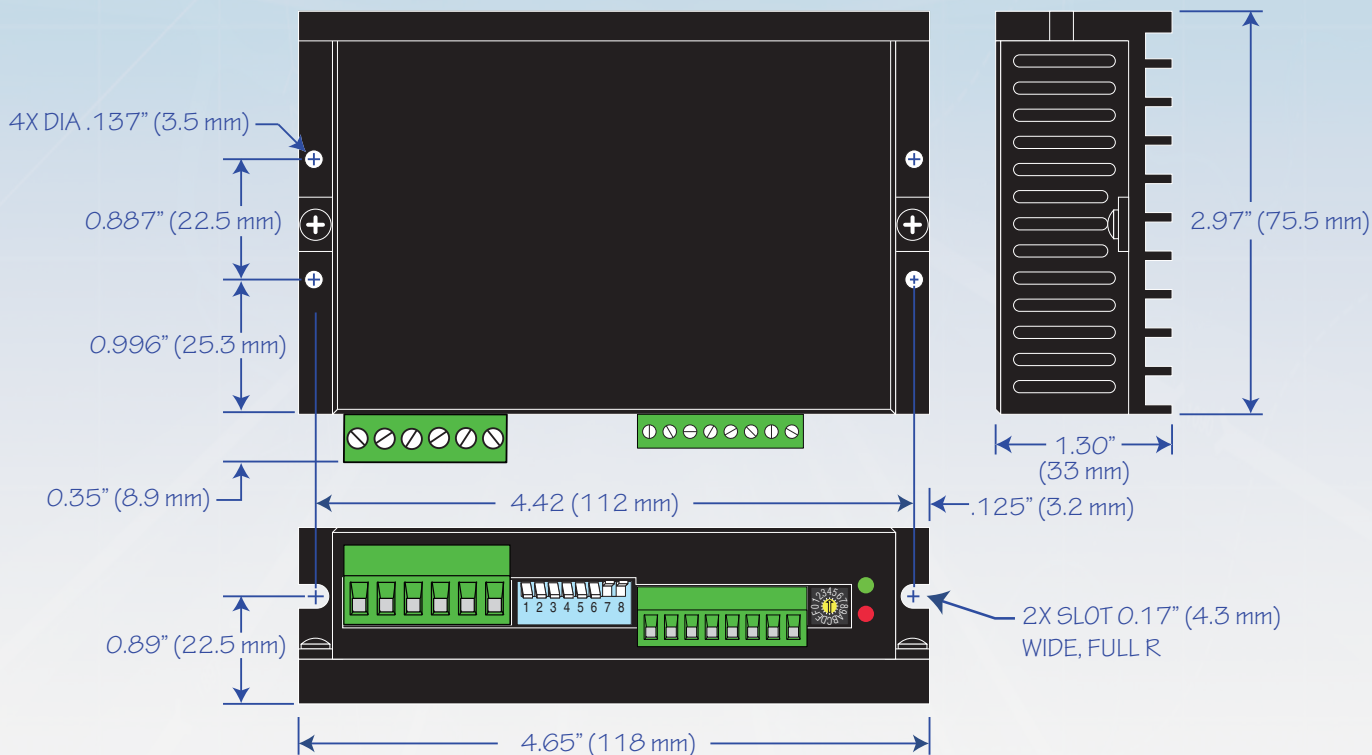
| STR2 Motors | | | | | |
|---|----------|----------|---------|----------------|-------------------|
| Switch | Motor | Wiring | Current | Holding Torque | Rotor Inertia |
| | | | A | oz-in | g-cm ² |
|  | HT08-020 | 4 leads | 0.42 | 2.4 | 1.9 |
|  | HT08-021 | 4 leads | 0.42 | 4.4 | 4.0 |
|  | HT11-012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



STR4/STR8 Motor Tables & Dimensions

| STR4 Motors | | | | | |
|-------------|-----------|------------------------------------|---------|----------------|-------------------|
| Switch | Motor | Wiring | Current | Holding Torque | Rotor Inertia |
| | | | A | oz-in | g-cm ² |
| 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 |

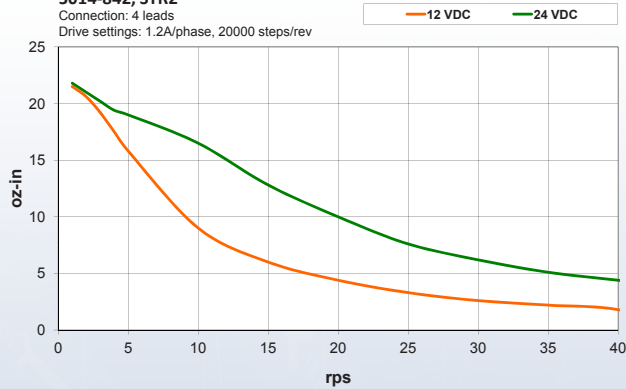
| STR8 Motors | | | | | |
|-------------|-----------|------------------------------------|---------|----------------|-------------------|
| Switch | Motor | Wiring | Current | Holding Torque | Rotor Inertia |
| | | | A | oz-in | g-cm ² |
| 0 | Custom 1* | Reserved for custom configurations | | | |
| 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 |



STR2 Torque Curves

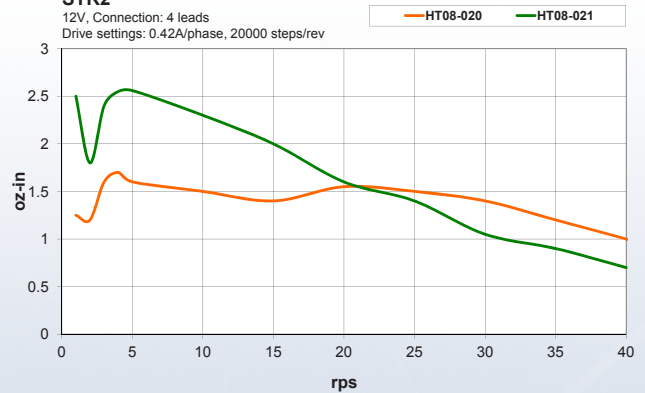
5014-842, STR2

Connection: 4 leads
Drive settings: 1.2A/phase, 20000 steps/rev



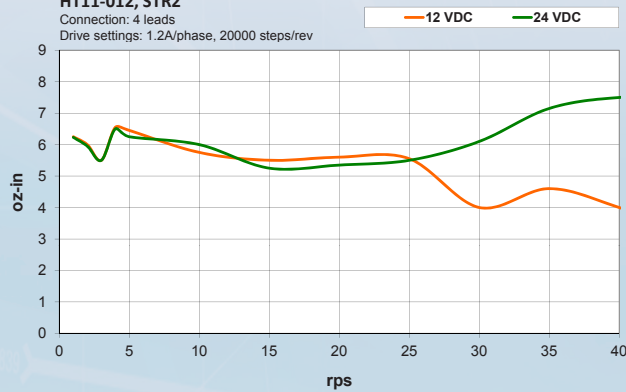
STR2

12V, Connection: 4 leads
Drive settings: 0.42A/phase, 20000 steps/rev



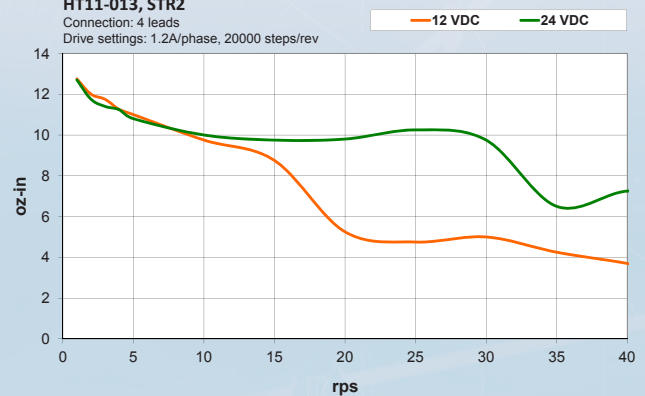
HT11-012, STR2

Connection: 4 leads
Drive settings: 1.2A/phase, 20000 steps/rev



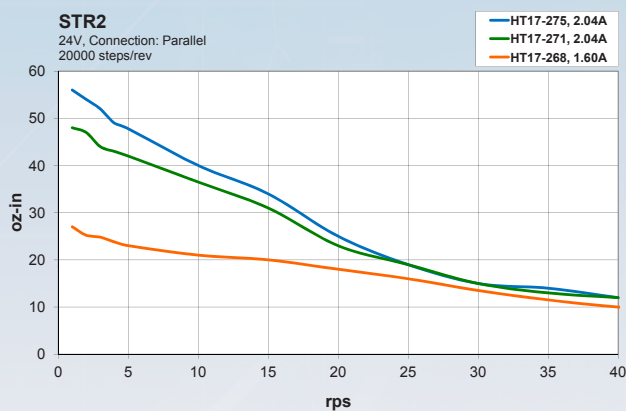
HT11-013, STR2

Connection: 4 leads
Drive settings: 1.2A/phase, 20000 steps/rev



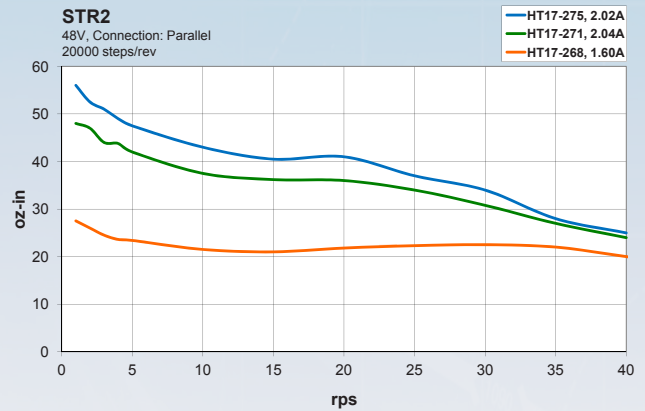
STR2

24V, Connection: Parallel
20000 steps/rev



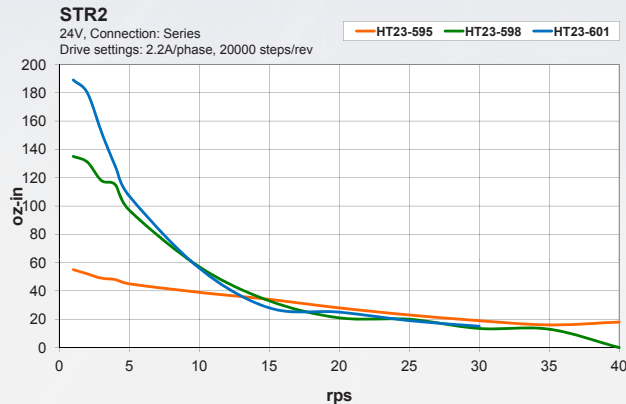
STR2

48V, Connection: Parallel
20000 steps/rev



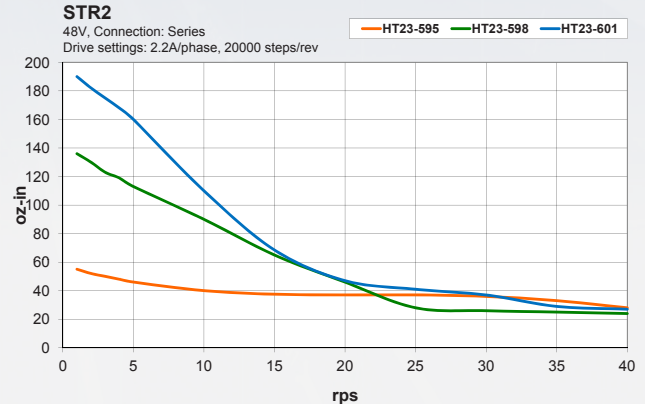
STR2

24V, Connection: Series
Drive settings: 2.2A/phase, 20000 steps/rev



STR2

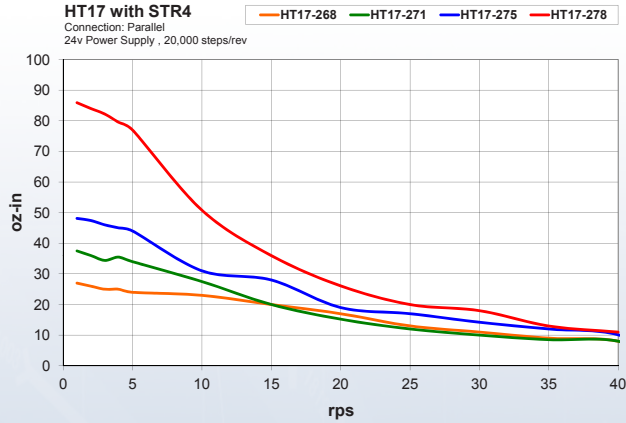
48V, Connection: Series
Drive settings: 2.2A/phase, 20000 steps/rev



STR4/STR8 Torque Curves

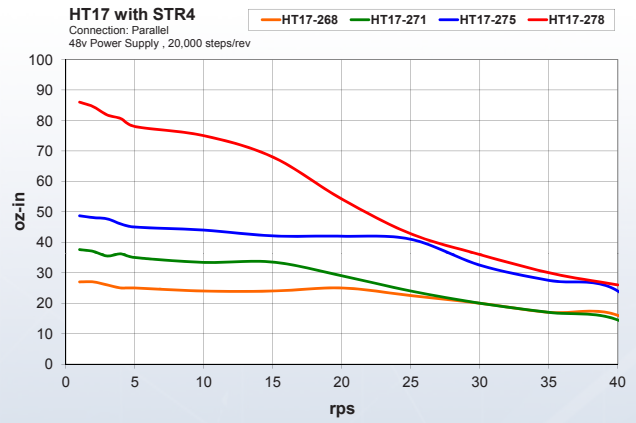
HT17 with STR4

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



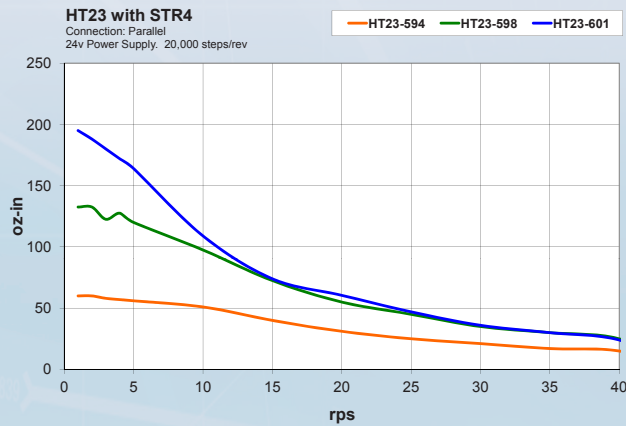
HT17 with STR4

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



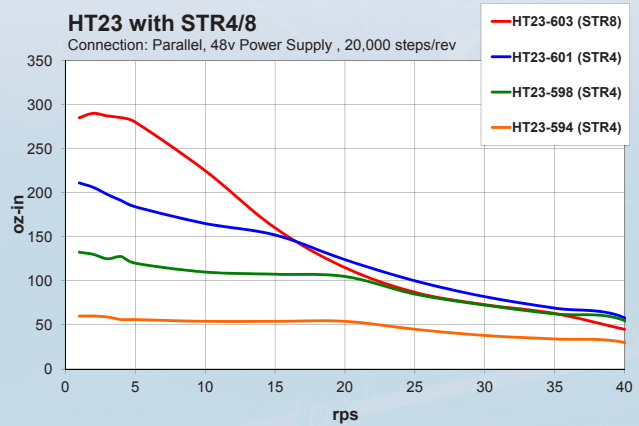
HT23 with STR4

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



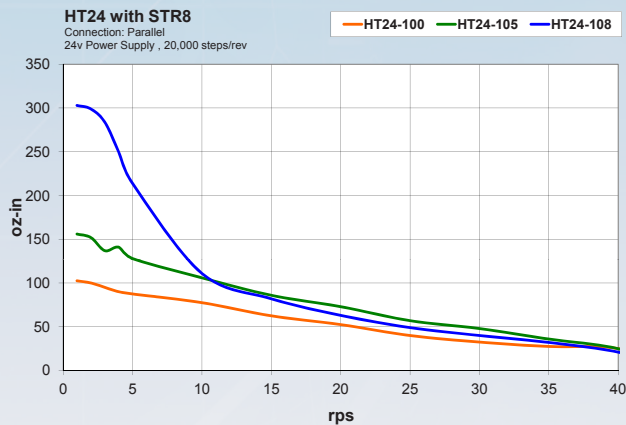
HT23 with STR4/8

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



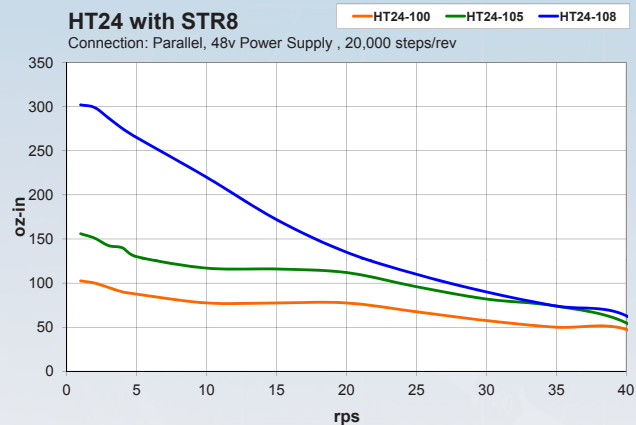
HT24 with STR8

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



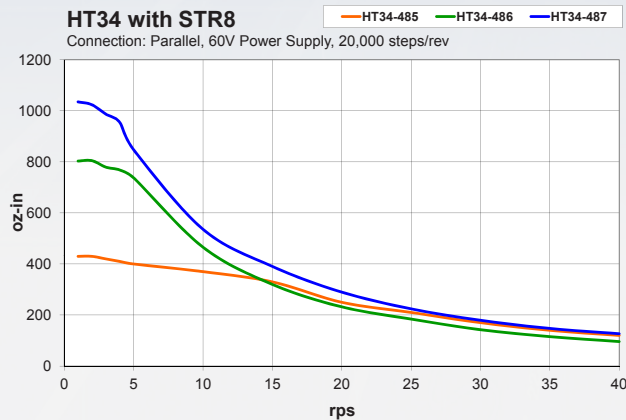
HT24 with STR8

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



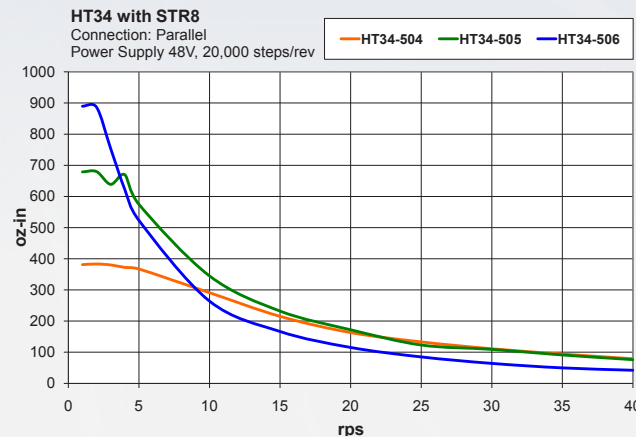
HT34 with STR8

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



HT34 with STR8

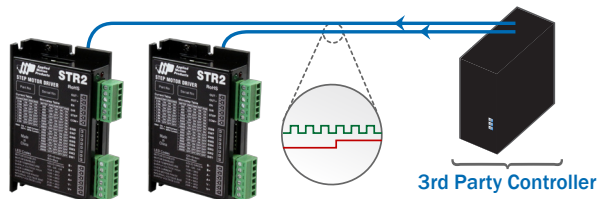
Connection: Parallel
Power Supply 48V, 20,000 steps/rev



Step & Direction

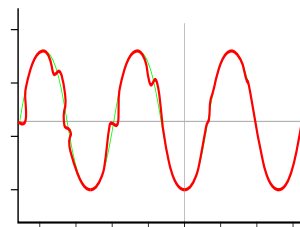
- Step & direction
- CW & CCW pulse

Best value for step & direction applications



Anti-Resonance/Electronic Damping

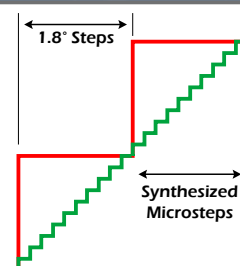
Step motor systems have a natural tendency to resonate at certain speeds. The STR drives automatically calculate the system's natural frequency and apply damping to the control algorithm. This greatly improves midrange stability, allows for higher speeds, greater torque utilization, and improves settling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



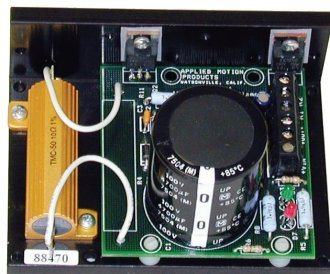
Delivers smoother motion in any application

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.