

## Full Coil versus Half Coil

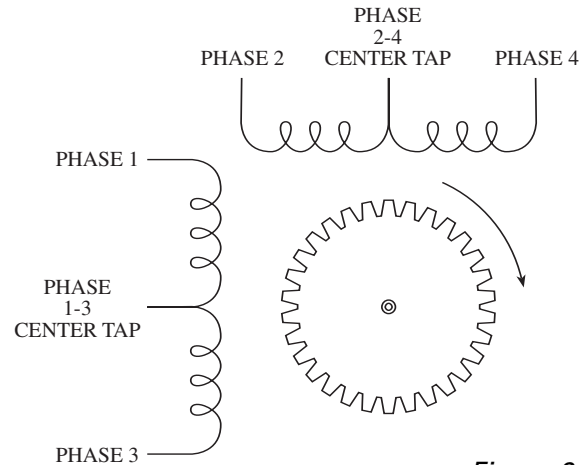


Figure 2

Manufacturer	Phase 1	Phase 1-3 C.T.	Phase 3	Phase 2	Phase 2-4 C.T.	Phase 4
Rapidsyn	Red	Black	Red/White	Green	White	Green/White
Superior	Red	Black	Red/White	Green	White	Green/White
Oriental	Black	Yellow	Green	Red	White	Blue
Sigma (Pac-Sci)	Black	Black/Orange/White	Orange	Red	Red/Yellow/White	Yellow
Bodine	Brown	White/Brown	Orange	Red	White/Red	Yellow

### Pin #7 Full/Half (SDM7) No Connect (HDH7)

This pin should be left unconnected on the microstepping MDM-7 drive. Half step mode double the resolution, providing 400 steps per revolution from standard 1.8 degree stepping motors. The default (unterminated) state of this line selects full step; if it is connected to Power Supply Ground (pin #1 or pin #12) the motor will operate in half step mode. Note that this input is not opto-isolated and is referenced to Power Supply Ground. The choice of which drive mode (full or half step) to use is usually a one time decision; this pin will either be left floating or be tied to pin #1 or #12. If dynamic control of this pin is desired, an opto-isolator may be used to short the pin to power supply ground, while maintaining isolation from the control circuitry.

The principal benefits of half-stepping are the doubling of resolution and increased smoothness during low speed operation. The step rate for any given motor shaft speed will be twice as high as that required for full step operation. The primary resonance of stepping motors, which occurs between 1/2 and 2

revolutions per second, results in noisy operation and the potential for lost steps near these speeds. Half step operation is very effective in reducing the effect of this resonance. Our microstepping MDM-7 drive provides even higher suppression of the primary resonance, and smoother low speed operation.

### Pin #8 Direction

This pin sets the direction of motor rotation for subsequent step pulses. The level on this pin must be established at least 100 microseconds prior to issuing step pulses. The correlation between the level at the Direction pin and the direction of motor rotation varies with the coil connections to pins #3 to #6; the specific equivalence for Rapidsyn and Superior motors is as follows: if pins #3, #4, #5, and #6 are wired to motor lead colors red, black, green, and white respectively, then a low level applied to the Direction pin will result in counterclockwise rotation, as viewed facing the stepping motor drive shaft. For other motor manufacturers, wire the motor and check; as described above, simply reversing any pair of motor leads (after carefully shutting off D.C. power) will reverse the direction sense.