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Tachometer Output Calibration

Use the Tachometer Output Calibration potentiometer to precisely calibrate the APEX615n Controller/Drive's tachometer output, while monitoring the actual tachometer output at the Tach Out pin on the Drive Auxiliary connector. For example, a commanded velocity of 4000 rpm should produce Tach Out signal of 4 volts. Adjust the potentiometer until the Tach Out signal is measured at 4 volts.

Aligning the Resolver

You can operate the APEX615n in *alignment mode* if you need to align your motor's resolver.

This is a rarely used feature. Resolvers on APEX Series motors are aligned at the factory, and need no further adjustments. It is usually not necessary to align resolvers on other manufacturer's motors.

However, if you need to replace the resolver on a motor, if you have a motor with unknown characteristics, or if poor speed/torque performance leads you to suspect that the resolver is out of alignment, you can follow the procedure below.

To align the resolver, perform the following steps.

1. Turn OFF AC power to the APEX615n and remove the load from the motor. The motor's shaft must be free to turn.
2. Turn DIP Switch#3, position 2, ON. Turn ON AC power to the APEX615n.
3. Set all servo gains to zero `[SGPØ, SGIØ, SGVØ, SGAFØ, & SGVFØ]`.
4. For 2-pole-pair motor: Set offset voltage to negative one half volt `[SOFFS-Ø.5]`.
   For 3-pole-pair motor: Set offset voltage to positive one half volt `[SOFFSØ.5]`.
5. Enable the APEX615n drive `[DRIVE1]`. The motor shaft should turn and lock into position. If it does not lock into position, increase `SOFFS` slightly. Use only enough current in the motor to maintain holding torque. Excess current may cause motor overheating.
6. With the motor shaft locked in the alignment position, loosen the screws on the resolver so that it can turn.
7. Slowly rotate the resolver while you observe the APEX615n's front panel LEDs. When the resolver is in the correct position, both the MOTOR FAULT and the I^2T LIMIT LEDs will be illuminated. When the resolver is close to the correct position, only one of the LEDs will be illuminated. When the rotor is not close to the correct position, no LED will be illuminated.
8. With the resolver in the correct position (both LEDs illuminated), tighten the screws on the resolver so that its case can no longer rotate.
9. Turn off AC power, and turn DIP Switch#3, position 2, OFF.

Resolver alignment is now complete. You can resume normal operations.

While the APEX615n is in alignment mode, it commutates current as follows:

- For 2–pole motors: Current out of Phase B and into Phase C
- For 3–pole motors: Two equal currents out of Phases B and C. Both currents into Phase A

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