F Series Actuator/ITB controlled by APECS 4500

John Tranoudis - 2024-09-27 - Engine Articles

Many customers want to upgrade their actuator on their engine with an F Series but they don't know how to make it work as their current APECS 4500 controller provides a current PWM (6A). The steps are the following

1) Using APECS Tool (ACT) change the APECS calibration parameter TPC_PERIOD from 100Hz to 400Hz. The values in TPC_PERIOD are in µsec (10^-6).

We know Hz = 1/t , so t = 1/Hz

Hence t = 1/400 = 0.0025 sec = 2500µsec.

The Duty Cycle output of the APECS 4500 is typically read 10% higher in the F-Series.

A default setting of TPC_Duty_LMX .945=95% is used in the APECS. If the PWM Duty Cycle High Shutdown is used in the F-Series it will cause the F-Series to shutdown at any APECS duty cycle output >90%. In this case you can set the TPC_Duty_LMX value <0.90 (typically .85, <90%) until the shutdown does not occur or simply set the F-Series shutdown to an alarm in the F-Series wset file.

2) Wiring

A) For F Series 14 pin

Connect J1-5 and J1-8 from APECS 4500 to 18 and 10 pins respectively. To make it work connect a 1KΩ resistor across pins 18 and 15 on the F Series.

B) For F Series 23 pin

Connect J1-5 and J1-8 from APECS 4500 to 12 and 7 pins respectively. To make it work connect a 1KΩ resistor across pins 12 and 11 on the F Series.