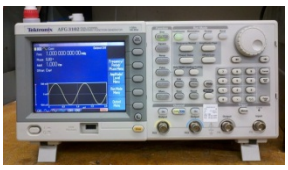
# TFM Module Calibration And Test Procedure

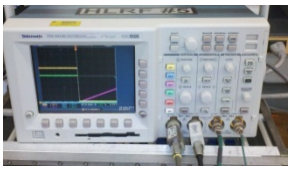
**Domeier, September 2012**

## Equipment List:

- Tektronix AFG3102 function generator



- 4 Channel Oscilloscope



- NIMM Crate, with Extender

- Multimeter

## Notes:

1. **Power the Module.** Connect the TFM module to the NIMM crate using the extender.

## Calibration:

2. **Power the Module.** Connect the TFM module to the NIMM crate using the extender.
3. **Create Input Signal.** Set the function generator to generate a 1 Vp-p sine wave.
4. **Calibrate Channel A.** Connect the output of the function generator to Channel A (Modulator) Turbine Monitor on the front panel. Connect the multimeter to Channel A (Modulator) Analog Monitor on the front panel.

   Set the frequency of the function generator to 62.5 Hz and slowly adjust pot R37 "ZERO ADJ." until the multimeter reads 1.000 V.

   Set the frequency of the function generator to 625 Hz and slowly adjust pot R38 "GAIN ADJ." until the multimeter reads 10.000 V.

   Repeat as necessary, until no further adjustments are required.
5. **Set Lower Trip Level for Channel A.** Adjust the voltage at T.P. 1 to 3.75 V using pot R9.
6. **Set Upper Trip Level for Channel A.** Adjust the voltage at T.P. 2 to 11.40 V using pot R13.
7. **Calibrate Channel B.** Connect the output of the function generator to Channel B (PA) Turbine Monitor on the front panel. Connect the multimeter to Channel B (PA) Analog Monitor on the front panel.

   Set the frequency of the function generator to 62.5 Hz and slowly adjust pot R39 "ZERO ADJ." until the multimeter reads 1.000 V.

   Set the frequency of the function generator to 625 Hz and slowly adjust pot R40 "GAIN ADJ." until the multimeter reads 10.000 V.

   Repeat as necessary, until no further adjustments are required.
8. **Set Lower Trip Level for Channel B.** Adjust the voltage at T.P. 3 to 3.75 V using pot R25.
9. **Set Upper Trip Level for Channel B.** Adjust the voltage at T.P. 4 to 11.40 V using pot R29.

## Test:

1. **Test Channel A.** Connect the output of the function generator to Channel A (Modulator) Turbine Monitor on the front panel. Connect Channel A (Modulator) Analog Monitor on the front panel to the oscilloscope. Connect J2-A (Channel A Analog Monitor), J2-C (Channel A Interlock Status), J2-E (Channel A Analog Monitor) to the oscilloscope. Set all oscilloscope channels to 2 V.

   Use the dial on the function generator to change the output frequency. The three analog monitors should increase and decrease in voltage accordingly with the changes in frequency.

   At the upper and lower trip levels, approximately 240 Hz (3.75 V) and 725 Hz (11.40 V) respectively, the interlock status will switch

from high (good) to low (bad), and the green "FLOW OK" LED on the front panel will switch from on (good) to off (bad).

2. **Test Channel A.** Connect the output of the function generator to Channel A (Modulator) Turbine Monitor on the front panel. Connect Channel A (Modulator) Analog Monitor on the front panel to the oscilloscope. Connect J2-B (Channel A Analog Monitor), J2-D (Channel A Interlock Status), J2-F (Channel A Analog Monitor) to the oscilloscope. Set all oscilloscope channels to 2 V.

   Use the dial on the function generator to change the output frequency. The three analog monitors should increase and decrease in voltage accordingly with the changes in frequency.

   At the upper and lower trip levels, approximately 240 Hz (3.75 V) and 725 Hz (11.40 V) respectively, the interlock status will switch from high (good) to low (bad), and the green "FLOW OK" LED on the front panel will switch from on (good) to off (bad).