TOTALFLOW

Technical Bulletin 136

X Series Flow Computers

Configuring Quad AO Modules

Totalflow Technical Bulletin

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1. **Purpose**
   To inform customers about the versatility of the Quad AO module and how to properly configure the flow computer for output.

2. **Description**
   TFIO Modules are used to aid customers in sending and receiving data to and from a Totalflow. These modules are compatible with our X series flow computer (XFC) and our X series controller (XRC). The Analog Output module or Quad AO sends an analog signal out of the flow computer to some other device. This signal is a 4 to 20 ma signal that the receiving equipment uses.

   In this example the configuration has been setup to emulate a common 6600 Quad AO setup.

   AO 1 = Static Pressure  
   AO 2 = Differential Pressure  
   AO 3 = Temperature  
   AO 4 = Flow Rate
The far right hand tab shows the values we are using in this example to send to the Quad AO module. Take note of the register number for the item being sent to the AO module. The register number is to the left of the item description and will appear in an x.x.x format throughout PCCU entry mode. It is this number that actually tells the module where to find the data and what AO will use the data.
J1 = AO 1
J2 = AO 2
J3 = AO 3
J4 = AO 4

The Arrow (not the slot) indicates the Switch position.

Figure 3 – TFIQ Quad AO Module
Figure 3 above shows the TFIO module itself. It is important to note that the address selector goes in the “0” position for the first Quad AO module connected to the Totalflow. Once the module is on address position 0 and wired to the Totalflow go to the “Operations” in entry mode.

Once in operations click on the “capacity” tab and make sure that the periodic operations have a capacity of at least 4. Once this is done click send and proceed to the “Periodic” tab under operations. You may also want to set “descriptors” for yes if you would like to setup your own description for each operation.
Now for our first “periodic” operation (register 10.1.0) lets setup the AO push from the Totalflow. Under type choose “interval” and under interval set the time for the register to update. For example a time of 00:00:01 means that register will update continuously one time per second. Ours is set to one second. For “Operation” choose R1 > Out. Now under R1 enter our register for static pressure. In this case its 11.3.0. Then enter the output register to AO 1. This register is 7.83.4. We have now told the flow computer to send the register info from 11.3.0 (static pressure) to 7.83.4 (AO1 on the module). It will do this every second as designated in the interval.
The last step is to calibrate and scale the analog outputs. Go into calibration mode (note you must have PCCU 4.54 or newer) and select TFIO 4/AO:0 from the tree on the left.

From here you can choose each AO one by one. Make sure that the AO’s are in “manual mode”. Then proceed to calibrate the AO using a multimeter or amp meter on pins 3 and 4 (+ and -) of each corresponding AO’s. Make sure to enter the low and high value in milliamps for each AO. Then make sure the AO is scaled correctly. This is done in the engineering units portion of the screen. So if your SP had a low of 0 and a high reading of 1500 you would enter that under engineering units. This will allow the Totalflow to compute a corresponding milliamp value with static pressure.

Finally make sure you put check marks back in the boxes of the meter ID, found on the tree on the left hand side of the screen.
3. **Conclusion**
   The Quad AO module is one of the most versatile modules available and is used in a wide range of applications. They are easily configurable and by getting the appropriate register in the Totalflow you can send virtually any data found in the Totalflow.