

## ***Pulse Mode Totalizer Output***

The totalized flow can be represented by a pulse output to one of the MFTB relay outputs. It can be expressed as 100 cubic feet per pulse, 1000 pounds per pulse etc. Once assigned to a relay output each pulse will be an X millisecond contact closure. This emulates the mechanical systems which flip a switch after so many turns on a wheel. The pulse output is of no value in measuring rate because the update rate is too slow, about every 50 ms. To get rate with pulses, you need a changing frequency and this output will not work that fast. The pulse width is at least as long as the value set for the PULSE WIDTH in the Pulse Totalizer Setup menu, but is not guaranteed to be any minimum value. The same is true of the off time, which is at least 10 ms in 1.12 firmware and newer.

At the minimum pulse width of 50 ms, the maximum average rate of the pulse totalizer is 8 Hz. The instantaneous rate can exceed that by several orders of magnitude, if the pulse output rate does not need to match flow rate. Once the instantaneous rate drops below 8 Hz and given time, the pulse output will match the totalizer.

## **Pulse Relay Assignment**

If not already configured, one of the relays must be assigned to 'TOT PULSE OUT'.

Enter *Program Mode*, press **P**, the **654321** access code, and **E**. Press **2** to invoke the *Quick Jump* option entry method and select **Option #8** for the Relay Assignment menu. The meter will prompt for a Relay #. Use the numeric keys to enter either **1** or **2** for the desired relay # and **E** to accept the entry.

```
SELECT RELAY #  
> 1
```

The meter will next prompt for a function to assign to the entered relay #. Use the **^** or **v** key to change the selection to 'TOT PULSE OUT' then press **E** to accept the selection.

```
ASSIGN RELAY TO  
>TOT PULSE OUT ^v
```

In the example above, relay #1 is assigned to the pulse totalizer output function.

If the screen displays

```
RELAY IS USED!!
CHANGE IT>NO
```

then the selected relay is being used by another function. Change the response to 'YES' by pressing the **^** or **v** key and press **E** to accept the selection. The meter will reassign the relay to the PULSE TOTALIZER OUTPUT function and deassign the previously assigned function and turn it OFF, when applicable.

The meter will advance to the Setup Pulsed Output menu (alternatively, from the Quick Jump option entry, **Option #11** will invoke the Setup Pulsed Output menu).

### Totalizer Pulse Output Setup

The Totalizer Pulse Output setup is performed in *Program Mode*. Enter *Program Mode*, press **P**, the **654321** access code, and **E**. Press **2** to invoke the *Quick Jump* option entry method and select **Option #11** for the Pulse Output setup menu.

If the screen displays

```
PULSE OUTPUT IS
NOT INSTALLED!!
```

the meter was not purchased with this option. [Section I](#) defines each version of the hardware to check if this feature is available on your meter.

The meter will prompt to set the Totalizer Pulse Output feature ON or OFF. Use the **^** or **v** key to change the selection to 'ON' then press **E** to accept the selection.

```
PULSE OUTPUT
>ON          ^v
```

If the screen displays

```
DO1 IS USED!!
CHANGE IT>NO
```

then the relay is being used by another function. Change the response to 'YES' by pressing the **^** or **v** key and press **E** to accept the selection. The meter will automatically reassign the relay to the Totalizer Pulse Output function and deassign the previously assigned function. It is recommended, if the relay is

assigned to another function, the user should go through the Relay Assignment menu so that a previous configuration is not inadvertently changed; see section above (PULSE RELAY ASSIGNMENT).

After the Pulse Output function is turned ON, the meter will confirm the relay assignment as follows:

```
PULSE OUTPUT #1
ASSIGNED TO DO1
```

Press **E** or **P** to continue. The meter will next prompt for the Totalized Flow per pulse.

```
SCF PER PULSE
>100000.000
```

Here the accumulated flow per pulse is defined. The units of volume or mass per pulse depend on the system units. The example above is English and standard cubic feet. Using the numeric keys, type in the accumulated flow represented by each pulse, press **E** to accept the new value. In the example above, each pulse will represent 100,000 standard cubic feet.

The next screen will prompt for the Pulse Width which is the length of time that the contact will be closed for each pulse.

```
PULSE WIDTH
>50 MSEC
```

Using the numeric keys, type in the number of milliseconds to pulse the relay. The value of the pulse width can be between 50 to 2000 milliseconds. Press **E** to accept the value. The meter will exit from the Totalizer Pulse Output setup menu and return to the Program Mode Option Entry screen.

If the meter is configured with two Pulse Outputs, repeat the setup for the other Pulse Output.