

# WELPULSE-6 Module.

User Guide. Rev 1.0 - 7/24/12

The latest WEL unit provides 6 pulse counter inputs, which are sufficient for most installations. However, if a user is monitoring a LOT or power circuits, or other “rate” devices like water or gas meters, then it may be necessary to add additional pulse counter inputs.

A WELPULSE-6 Module provides 6 Pulse Counter inputs via a single 1-Wire bus connection. These pulse inputs can be mechanical contact closures (like magnetic reed switches) or solid state closures (like open collector hall-effect or optical isolated outputs). To enable the WELPULSE-6 to count high frequency (> 1kHz) pulse streams the module required an external power supply.

Typically this power is provided from the WEL’s Raw-DC output and fed to the module via the Red wire in the Black/Yellow/Red twisted Triad provided in the WEL Starter Kit.



## Pulse Counter Sensor hookup

*Note: Read the Software Setup section BEFORE hooking the Module up to the 1-Wire bus.*

The WELPULSE-6 hardware includes an on-board 5V regulator so the incoming power supply voltage can be anywhere in the 9-12V range. Unless there is a compelling reason otherwise, **I recommend**

using the WEL's Raw DC voltage output to power the WELPULSE-6 module. To do this, connect the RED bus wire to the WEL's +V Raw Output terminal on J3.

The WELPULSE-6 Module provides an 8-terminal screw-connector for hooking up the pulse inputs. This mimics the pulse input connector on the WEL itself. There is a common terminal for each set of three pulse inputs. This is ideal for connecting to the terminals on a WattNode wattmeter, but can also be used for many other configurations.

The P1-P6 inputs have 1K pull-up resistors (tied to +5V), so to signal a pulse, the external hardware must short the input connector to COM.

Note that these inputs will NOT tolerate any voltage above 5V, so always ensure that you only connect them to Contact or Open Collector type outputs.

### **Software Setup**

Because the WELPULSE-6 module uses three "Dual Counter " 1-Wire chips to provide the 6 counter inputs, they must be Scanned and identified in order to clearly define which devices represent which pulse channels. Essentially, they must be added to the 1-wire bus a pair at a time, so they show up in the correct order.

To begin, locate the small "Dip Switch" block on the module labeled "ENABLE". Slide both switches to the OFF position (away from the word "ENABLE"). This ensures that ONLY pulse channels 1 and 2 are connected to the 1-wire bus.

Now, connect the module to the 1-wire bus. Since you will be making power connections during this process, I strongly recommend powering the WEL down for this step. Once the connections have been made, power up the WEL.

When the WEL discovers the Pulse Counter inputs, it will add them to the device list as a pair of devices. The first device will be type 29 and the second one will be type 6. These correspond to P1 and P2 respectively. Verify that the two devices appear. You can name them at this time, or wait till later.

Now you need to slide Dip Switch #1 into the ON position. This switch is labeled P3/4.

Once the switch is on, perform a manual Bus Scan on the 1-wire bus to locate the next two counters.

When the WEL discovers the new Pulse Counter inputs, it will add them to the device list as a pair of devices. The first device will be type 29 and the second one will be type 6. These correspond to P3 and P4 respectively. Verify that the two devices appear. You can name them at this time, or wait till later.

Finally, repeat this operation for Dip Switch #2 to locate Pulse inputs 5 and 6.

You should now have 6 new pulse counter inputs which correspond to P1-P6.

With the default scaling (Scale = 1.0 Offset = 0.0), these devices will read the number of pulses counted each minute. NOTE: the values for these devices only update ONCE A MINUTE, so don't panic if you don't see an immediate change. You can change the scale to convert the count into any other engineering unit, like Gallons per hour, Watts or even RPM. You can also set the Treatment letter for either device (on the devices page) to calculate total Gallons or WattHours.

See the WEL user manual for more details on Treatments.

Tips:

- Two identical 1-Wire terminal blocks are provided for hooking up the GND, BUS and PWR lines. These two blocks can act as a feed-through to eliminate the need for splicing additional wires onto a 1-Wire bus run. The bus can be run in one end and out the other.
- Six "white" areas have been provided on the module to help document which signals are connected to which inputs. Use a fine tipped sharpie to label each input's function to make future debugging easier.
- Once you've finished making all your connections, give each wire a tug to ensure that it's gripped firmly by the screw terminals.

