

# WEL Wiring Quick Tips:

Note: Full product descriptions are located in the WEL User Guide:  
[http://www.WELServer.com/support\\_files/WEL\\_User\\_Manual\\_2.5.pdf](http://www.WELServer.com/support_files/WEL_User_Manual_2.5.pdf)

Additional installation help is provided at <http://www.welserver.com/install.htm>

**My 1-wire devices use a standard color code:**

Black:	Ground
Yellow:	1-Wire Bus Signal
Red:	Optional +V power

Note: These colors are marked in small print on the WEL next to the terminal block. Some third-party devices do not use these color codes, so please refer to the website for additional wiring tips and tricks:

## Temperature Sensors.

There are four types of encapsulated temperature sensors: Some don't have standard colors

Type 1: Black plastic, Long Leads

1-Wire **Ground**: Sensor's **Black** wire connects to Black Bus wire  
1-Wire Bus: Sensor's **Yellow** wire connects to Yellow Bus wire.

Type 2: 1" Stainless Steel, Short Leads (non Standard)

1-Wire **Ground**: Sensor's **Grey** wire connects to Black Bus wire  
1-Wire Bus: Sensor's **Blue** wire connects to Yellow Bus wire.

Type 3: 3" Stainless Steel, Long Leads (non Standard)

1-Wire **Ground**: Sensor's **Brown** wire connects to Black Bus wire  
1-Wire Bus: Sensor's **Blue** wire connects to Yellow Bus wire.

Type 4: Black epoxy dipped (potted) sensors (non Standard)

1-Wire **Ground**: Sensor's **Brown** wire connects to Black Bus wire  
1-Wire Bus: Sensor's **Blue** wire connects to Yellow Bus wire.

## 1-Wire Enabled Current-Switch Module. (WEL-CS)

One pair of standard bus wires: Black and Yellow.

Black is Ground and is wired to the Black 1-Wire GND signal  
Yellow is the bus Signal and is wired to the Yellow 1-Wire OW signal  
(Standard color usage)

## **DIY Digital input module. (DIGIN-DIY)**

2 pairs of wire are required for this device to operate:

1-Wire pair:

Labeled **B** and **Y** for Black and Yellow wires.

Black is Ground and is wired to the Black 1-Wire GND signal.

Yellow is the bus Signal and is wired to the Yellow 1-Wire OW signal.

(Standard color usage)

**NOTE: if multiple DIY units are shipped as a single piece, only one set of 1-Wire Y/B wires need be connected. The 1-wire bus is automatically extended from one board to the next.**

Contact closure pair:

Labeled **B** and **R** for Black and Red.

Black wire has 100K pull-down, so current will flow from Red wire to Black wire.

Note: CR9321 Current Switch may be connected Red to R, Black to B.

Pure mechanical switch may be wired either way.

**Additional Non 1-Wire devices:**

### **CR9321-NPN Current Switch**

This device has a red and black wire. There is an NPN phototransistor between these two wires. The Collector is connected to the red wire and the Emitter is connected to the Black wire. To connect this device to the WEL, the black wire must be connected to either of the 2 WEL Run Common terminals (R COM), and the Red wire is connected to one of the 8 WEL Run inputs.

### **WNB-3Y-208-P-300Hz Watt Node**

The second-generation Watt Node (WNB) from Continental Control Systems ([www.CcontrolSys.com](http://www.CcontrolSys.com)) has up to three digital pulse outputs. These outputs are labeled P1, P2 & P3 on the Watt-Node, and they share a common "return" labeled "COM". For typical power measurement, only COM and P1 need to be wired to the WEL. P2 is also required if you are doing Net Metering power measurement.

The Watt-Node's "COM" should be wired to "Gnd" on the WEL's J5 connector, and the Watt-Node's P1 and P2 can be wired to any of the 4 WEL pulse inputs (P1 to P4)

**I recommend that you use the WEL's P3 and P4 inputs for measuring power consumption, leaving P1 and P2 for slower pulse type devices. If you use P3 and 4 as suggested, these will appear as device ID 8 and 9 on the WEL's Device list (after the 8 run monitor inputs).**

When monitoring a Grid Tied PV home, the Watt-Node P1 channel sends pulses when the net power is into the home. Conversely, P2 sends pulses when net power is into the grid. These can be named appropriately and displayed independently in the WEL, or they can be combined using "expressions".

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