

# Monitoring RPM and Current Using a P14 Node, MINI-BEAM, and Current Transducer



## Technical Note

### Initial Steps and Equipment Needed

---

The required equipment includes:

- DX80N9X1S-P14 Performance Node with multiple I/O options and an internal battery
- SM312LPQD-76885 Retroreflective MINI-BEAM optimized for low power operation for use with Sure Cross devices
- MQDC1-501.5 Cordset with 5-pin M12/Euro-style quick disconnect connector
- Self-powered AC current transducer
- Windows-based PC running the User Configuration Tool v2 (downloaded from the Banner website)

Follow these basic steps to use a frequency counter to measure RPM and to use an AC current transducer to monitor current.

1. Connect the network's Gateway to your PC.
2. Configure the Performance P14 Node
3. Wire the MINI-BEAM to the P14 Node.
4. Wire the ac current transducer to the P14 Node.
5. Define the analog input parameters.
6. Test the configuration.

### Configure the P14 Node

---

Configure the P14 Node to use the MINI-BEAM and ac current transducer.

For detailed information about the P14 Node and how to configure it, refer to its datasheet, p/n [194838](#).

1. Set jumper J2 on the battery base board to V (voltage). The default position is C (current).
2. Set jumper J3 on the battery base board to the 3 position (counter input) to activate the counter input. The default position is position 4, the thermistor input.
3. Verify the P14 Node is set to operate in Analog Configuration. DIP switch 2 must be in the off position (default setting). The P14 Node is configured to operate the MINI-BEAM and AC Current Transducer.

### Wire the MINI-BEAM to the P14 Node

---

1. Connect the MQDC1-501.5 cordset to the MINI-BEAM.
2. Wire the white wire (load) into the P14's terminal pin 6.
3. Wire the blue wire (ground) into the P14's terminal pin 5.
4. Wire the brown wire (5 V dc) into the P14's terminal pin 3.
5. Cut or tape the black and gray wires.

### Wire the AC Current Transducer to the P14 Node

---

1. Wire the current transducer's ground pin to the P14's pin 2.
2. Wire the current transducer's voltage output pin to the P14's pin 4.

### Define the Analog Input Parameters

---

Before configuring the Node, verify the P14 has been bound to a Gateway and that the Gateway is connected to a computer with the User Configuration Tool (UCT) software.

The P14 Node requires some basic parameter changes to read the MINI-BEAM and current transducer data and to properly operate the sensors. Follow these steps to:

- Select the input type
  - Set the input units
  - For the MINI-BEAM, set the switch power parameters
  - Set the sample rate and report rate for the sensors' inputs
1. On the UCT, go to the **Configuration** > Device **Configuration** screen.
  2. Click the arrow next to Node 1 to display the parameters.

3. Enable input 3 and click the arrow next to Input 3 to display its parameters.  
Input 3 will be configured for the MINI-BEAM.
4. From the input type drop-down list, select Frequency Counter 2.
5. In the I/O **Configuration** section:
  - a) Select 16-bit Asynchronous Counter from the Units drop-down list.
  - b) Enter your Sample rate (hours:minutes:seconds). For this example, we are sampling the MINI-BEAM every 1 minute.
  - c) Enter your Report rate. For this example, we are reporting the MINI-BEAM data every 1 minute.
  - d) In the Report type drop-down list, select Analog.
6. In the Switched power **options** section:
  - a) In the Power supply drop-down list, select Switch power 1.
  - b) In the Output voltage drop-down list, select 5V. (Refer to the MINI-BEAM datasheet, p/n [134420](#) for the MINI-BEAM specifications.)
  - c) Enter your Warmup time: 00:00:00.250.
7. Under the Serial **options** section, select Serial address 2.

8. Click SEND to send these I/O parameters to the network or click SEND I/O Points to send all I/O parameters to the wireless network.
9. Enable input 2 and click the arrow next to Input 2 to display its parameters.  
Input 2 will be configured for the current transducer.
10. From the input type drop-down list, select Analog Input 1.
11. In the I/O **Configuration** section:
  - a) Select 0–10V from the Units drop-down list.
  - b) Enter your Sample rate (hours:minutes:seconds). Select the same sample rate as the MINI-BEAM.
  - c) Enter your Report rate. Select the same report rate as the MINI-BEAM.
12. Click SEND to send these I/O parameters to the network or click SEND I/O Points to send all I/O parameters to the wireless network.

## Test Your Configuration

To test your configuration settings, read the sensor data.

1. Go to the Register View screen.
2. Select the wireless device from the drop-down list. For example, select Node 1 to read Node 1's register values.
3. Click Read registers to retrieve the data from the selected wireless devices.  
The register values display.