



TPDIN-Monitor-WEB3

Web Based Monitor and Control

- Remote Power Stations
- Backup Power Systems
- Solar Systems
- Wind Powered Systems
- Industrial Sense & Control
- Process Automation



Congratulations! on your purchase of the TPDIN-Monitor-WEB3 System Monitor. Please take a moment to review this Qwik Install Guide before installation.



Recommended Tools and Supplies: Small Flat Blade Screwdriver, 35mm x 7.5mm DIN Rail

Important!: Before you get started, please go to support.tyconsystems.com, download the latest firmware for your particular model and upgrade the unit.

Security: Please be sure to set a username and password on the Network page to secure the user interface. Also set your own Telnet username/password and enable Telnet so that you can reboot the unit remotely in case of a browser access issue.

Qwik Install

STEP 0: The *TPDIN-Monitor-WEB3* can be used to monitor Qty 4 1V-80V Voltages, four Currents (Qty 1 +/- 10A, Qty 1 shunt and Qty 2 +20A) and two temperatures (1 internal and 1 external). There are four 10A relays that can be used to control power to four devices. Two of the relays (CH1,CH2) are normally closed type and two are normally open type (CH3,CH4). They can be automatically controlled by voltage, current, temperature, ping watchdog or time.

NOTE: There is an RS232/485 input for interfacing to Tycon MPPT solar controllers. If connected to the Tycon MPPT solar controller, all system parameters such as PV volts, PV current, Battery Volts, Battery Current, Load Volts and Load Current are accessible via the WEB3.

STEP 1: Install the *TPDIN*[®] to a suitable DIN rail mount.

STEP 2: Connect the voltages to be monitored to the V1 to V4 voltage ports. Voltages between 1 and 80volts DC can be monitored.

STEP 3: Connect the currents to be monitored to the I1-I3 current ports. I1 and I2 can read currents from 0.1 to 20A. I3 can read positive or negative currents to +/-10A. I3 can be used to measure current flowing into and out of a battery to see if the battery is charging or discharging. I4 is designed to be used with a current shunt to be able to read higher currents. It is also capable of reading +/- current.

STEP 4: Connect any power to devices you want to be under relay control to the CHI—CH4 10A relays. The CH1 and CH2 relays are normally closed relays and the CH3 and CH4 are normally open relays. When the relay is in it's default position it draws zero power. When it is switched to the opposite position, it draws up to 0.5W. When the Open/Closed indicator in the user interface is Green, the relay is not using any power. When it is Red, the relay is using up to 0.5W.

STEP 5: Connect the External Temperature sensor to the included green wire terminal connector. There is no polarity. Plug the wire terminal connector to the "Temp." connector location. Locate the external temperature sensor where you want to measure external temperatures. You can extend the wire lengths if desired by soldering additional wires to the existing wires. You can measure temperatures from -40C to +125C

STEP 6: The *TPDIN-Monitor-WEB3* can be powered with 10-57VDC thru the wire terminal connector #7 or via 802.3af/at PoE or Passive 24V to 48V PoE thru the RJ45 PoE/DATA port. If powered by both wire terminal and PoE port, the port with highest voltage has priority.

Important!: Tycon recommends using shielded CAT5/6 cable to connect to the RJ45 port on the WEB3. This will ensure proper grounding of the port.

STEP 7: Download the Java based Discovery Tool from support.tyconsystems.com. Your computer must have java installed to use the discovery tool (java.com).

The *WEB3* ships with IP addressing by DHCP enabled. The discovery tool will find the IP address of the device so you can access the web control panel. If not connected to a DHCP server the default IP address is 192.168.1.6

STEP 8: Open the Web control panel of the unit by using the discovery tool or typing the units known IP address into a browser. The unit will serve up the Monitor web page. The monitor page is where all the voltage, current, temperature and relay status can be seen. Relays can also be controlled manually from this page. There is a cycle button by the relays if you want to automatically cycle a relay from open to closed

and back. The Cycle Delay is specified on the SYSTEM page.

You can modify any labels directly on the monitor page. Click “Save Labels” to save your customizations.

STEP 9: Open the System Page. Here you can set a static IP Address. You can also set access security by entering a user name and password (10 characters max). You can also set a unique Host Name to identify the Monitor. Sensor offsets can be entered to fine tune the readings to match another piece of measuring equipment or to compensate for line loss.

STEP 10: Open the Relays Page. This is where you can set the relay controls. Relays can be controlled by Time, Temp, Voltage, Current, Ping or Periodic. The controls can be setup as compound controls so more than 1 control can be setup for a single relay. The control above has priority.

STEP 11: Open the Email Page. This is where you can setup the SMTP server. The WEB3 supports unencrypted (Port 25) and TLS (Port 587). Gmail security requires 2-step verification. You need to get and use an app password from your Gmail account.

STEP 12: Open the Alerts Page. This is where you can setup multiple email alerts. An alert will be sent when the measurement is outside the min/max window.

Other Pages

Network: On this page you setup the network parameters and passwords. Set DHCP or static addressing. If using static IP, be sure to set a valid gateway and DNS or else the email alerts won't work. Set a username and password to secure the web interface. Set your own username and password for Telnet and enable Telnet. Telnet will allow you to reboot the unit in case there is some problem accessing the unit through a web browser.

SNMP: You setup the SNMP access on this page. The unit supports SNMP walking and extracting data via SNMP programs such as Cacti. The relays can also be controlled via SNMP. The unit does not support SNMP traps.

Upgrade: Go to this page to update the firmware. Download the latest firmware from Tyconsystems.com/support/firmware. Select the downloaded file and click on “Upgrade and Reboot”. Note: Do not navigate away from this page during upgrade or the upgrade will be aborted.

Log: You will find a sequential log file of system events here. You can set the log interval on the System page. The log memory status can be seen on the Monitor Page. When the memory reaches 100% the new data will bump the old data. The log holds 4048 records.

Graph: You can graph single or multiple parameters. Click on “Show

All” to see all the data. To print the graph do a screen capture and save as a graphic file.

MPPT: This is where you can see the data from a connected Tycon MPPT solar controller. The data will also be added to the log file. You can also toggle the load connected to the solar controller on/off.

TECH CORNER

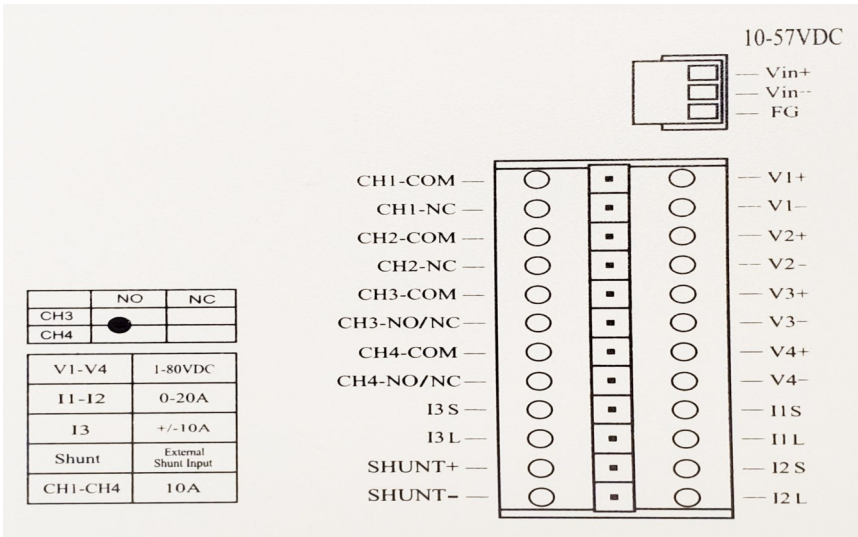
Additional Information you may find useful

1. **FUSE:** The *TPDIN-Monitor-WEB3* has an external mini blade 2A fuse. If the *WEB3* doesn't power up, check the fuse.
2. **LIMITS:** Don't exceed 80V on the voltage inputs or 20A on the current inputs or 10A on the relays or the unit could be damaged. This kind of damage isn't covered under warranty.
3. **MOISTURE:** The *WEB3* is designed to be used indoors or outdoors in a weatherproof enclosure. Avoid getting the *WEB3* wet. This kind of damage isn't covered under warranty.
4. **TELNET:** The unit can be accessed via TELNET to see the present readings and also control the relays. You can toggle relays using the number keys on the computer #1-4. You can also reboot the unit by typing "r". Default TELNET user name = admin and password = tycon
5. **BATTERY STATUS:** If measuring voltage of battery systems typical state of charge readings are as follows. These readings are without any load on the battery. For max battery life don't discharge under 50%:

State Of Charge	Sealed or Flooded Lead Acid	GEL Battery	AGM Battery
100%	12.7+Volts	12.9+Volts	12.8+Volts
75%	12.4 Volts	12.7 Volts	12.6 Volts
50%	12.2 Volts	12.4 Volts	12.3 Volts
25%	12.0 Volts	12.0 Volts	12.0 Volts
10%	11.8 Volts	11.8 Volts	11.8 Volts

6. **Operating Power:** The *TPDIN-Monitor-WEB3* has extremely low operating power, typically less than 1.5W. CH1,CH2 relays are normally closed type and CH3,CH4 are normally open type so in typical operation they don't use any power until they are energized. If the relays are turned on, the power usage will increase by 0.5W per relay.

Connector Pinouts

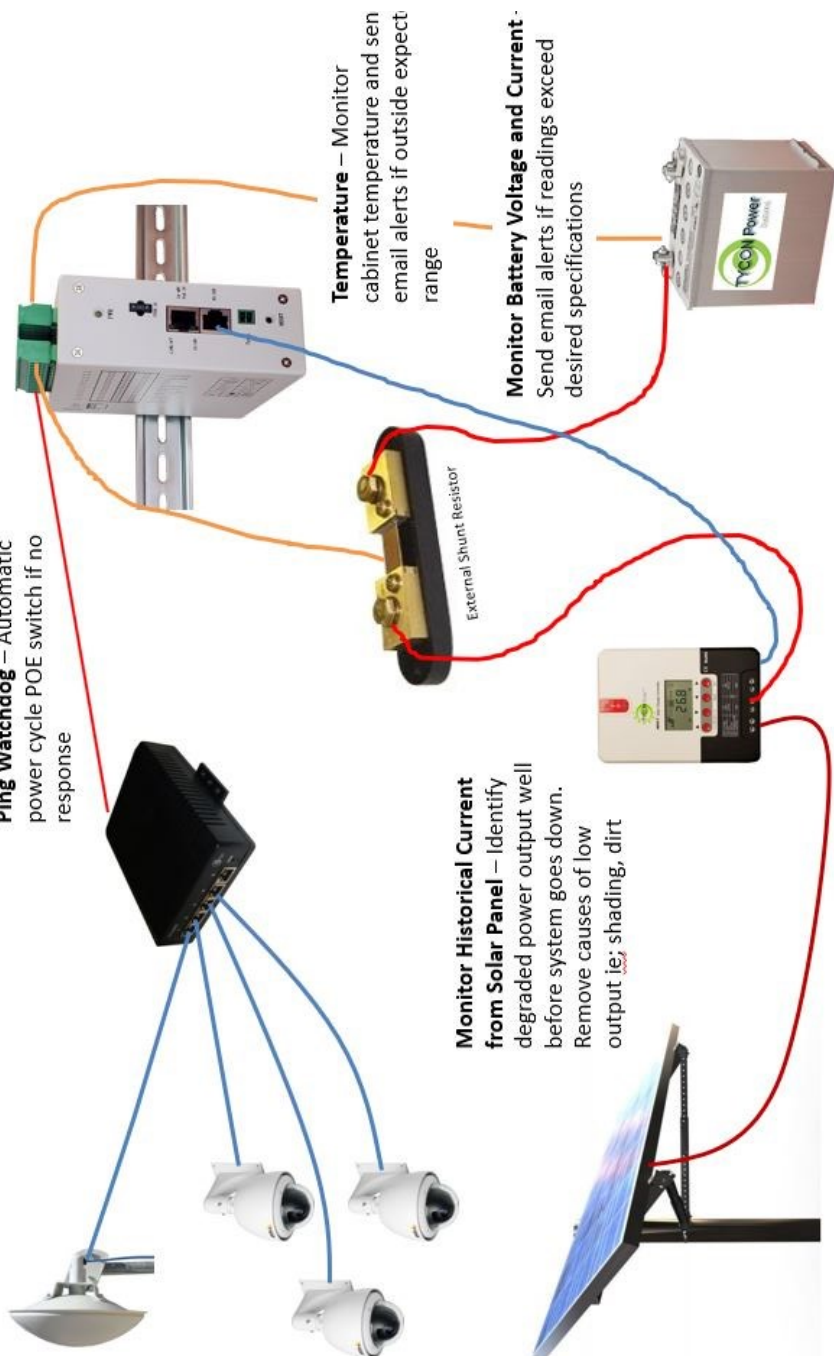


Specifications

Voltage Measurement (DC)	V1, V2, V3, V4 = 1-80VDC
Voltage Meas Accuracy	+/- 0.1V
Current Measurement (DC)	I1, I2 = 0.1A to 15A (20A Peak), I3 = +/-10A I4 Supports Ext Current Shunts – Input Range +/- 25mV
Current Meas Accuracy	+/- 0.1A
Common Mode Volt Range	-20V to +80V
Temperature Measurement	T1, T2 = -40C to 125C
Temp Measurement Type	T2 = Embedded, T1 = External Sensor (included)
Temp Measurement Accuracy	+/- 1 degC
Relays	CH1, CH2 (NC) ; CH3, CH4 (NO) = 10A 30VDC, 125 -250VAC
Relay Control	CH1, CH2, CH3, CH4 = Manual or Automatic based on Volts, Amps, Temperature, Ping or Time
Power Requirements	10-57VDC Wire Terminal or 802.3af/at Class 0 PoE or 24V Passive PoE 1.5W All Relays Off, 3.5W All Relays On
Accessibility	Via Web Browser and SNMP and Telnet
Data-Logger	FIFO, Max 4048 data sets, Prog log interval
Connections	Removable Wire Terminal
Wire Size	12AWG Max
Mounting	DIN Rail
Operating Temperature	-40C to +75C (-40F to 167F)
Humidity (RH)	0% - 90%
Dimensions (LxWxH)	125 x 102 x 46mm (4.9" x 4" x 1.8")
Weight	410g (14.5 oz)
Warranty	3 Years

Typical Application

Ping Watchdog – Automatic power cycle POE switch if no response



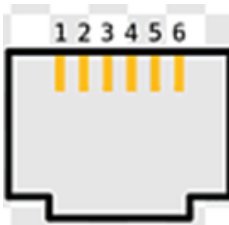
Monitor Historical Current from Solar Panel – Identify degraded power output well before system goes down. Remove causes of low output i.e; shading, dirt

Temperature – Monitor cabinet temperature and send email alerts if outside expected range

Monitor Battery Voltage and Current – Send email alerts if readings exceed desired specifications

7. **WIRE TYPE:** When using the monitor in high current applications (>10A), it's important to use a 10-12AWG stranded wire with many fine strands. This type of wire will provide a low resistance electrical connection to the green connectors. If using coarse strand wire such as THHN, there will be higher resistance in the connection which will generate excessive heat at high currents, possibly causing damage to the connectors. NEC Wire Class C and D are acceptable.
8. **Reset to Factory Defaults:** Power up unit. Wait at least 20 seconds. Press reset button and hold for 10 seconds to reset to factory defaults. If reset button is held for longer than 30 seconds, the unit will roll back to the last stable factory firmware. Only use this if the unit has an unrecoverable error.
9. **Shunt Resistor:** The unit is capable of reading a shunt voltage up to +/-25mV into I4 input. Just enter the shunt resistor ohms on the system page and the correct current will be displayed on the monitor page.
10. **Branding:** You can brand the TPDIN-Monitor-WEB3 with your own logo, colors and suppress the Tycon footer. Just access the custom.htm page by entering <IP Address>/custom.htm in a browser. You can change the parameters on this page and save. If you have multiple units to update with your brand, get the branding correct on one unit then go to the brand.htm page. Copy and paste the code to a txt file. Open the next unit brand.htm page and upload the new text file to the unit. All custom parameters will be uploaded from the single file.
11. Modbus Serial Interface to Tycon MPPT Solar Controllers

RS232 RJ12 Socket Pinout



Pin	Function
1	RS232-RX
2	RS232-TX
3	GND
4	GND
5	RS485 B/Z
6	RS485 A/Y

Interface Cable PN	Tycon MPPT Model Number
TPDIN-CABLE-232	TP-SC24-20N-MPPT TP-SC24-40N-MPPT TP-SC48-60-MPPT
TPDIN-CABLE-485	TP-SC24-30N-MPPT TP-SC24-60N-MPPT TP-SC48-60P-MPPT

Limited Warranty

The TPDIN® products are supplied with a limited 36 month warranty which covers material and workmanship defects. This warranty does not cover the following:

- Parts requiring replacement due to improper installation, misuse, poor site conditions, faulty power, etc.
- Lightning or weather damage.
- Physical damage to the external & internal parts.
- Products that have been altered, or defaced.
- Products that have been subjected to voltages or currents greater than the published ratings.
- Water damage for units that were not mounted according to user manual.
- Usage other than in accordance with instructions and the normal intended use.

Notes