



TPDIN™-SC48-20

MPPT Solar Controller with Passive PoE Switch

- Wireless Base Stations and Client Devices
- Surveillance Cameras
- Remote Control
- Remote Lighting
- Off Grid Electronics



Congratulations! on your purchase of the TPDIN™-SC48-20 20A MPPT Solar Controller with 7 Port Gigabit Passive PoE Switch. Please take a moment to review this Qwik Install Guide before use.

Please take serious note of the following warnings:



WARNING: Do Not Reverse PV Connection Polarity.

WARNING: Do Not Connect PV to Battery Input.

WARNING: Do Not Reverse Battery Polarity.

Permanent Damage to your Unit Will Result !

Safety: For your own protection, follow these safety rules.

- **Perform as many functions as possible on the ground**
- **Do not attempt to install on a rainy, windy or snowy day or if there is ice or snow accumulation at the install site or if the site is wet.**
- **Make sure there are no people, pets, etc. below if you are working on a roof or ladder.**



Recommended Tools: Small Flat Blade Screwdriver, Phillips Screwdriver

Qwik Install

STEP 1: Remove Large 4 Pin and Small 2 Pin Green connectors from the top of the unit.

STEP 2: Attach the TPDIN™-SC48-20 to a DIN Rail mount. To mount to a flat plate remove the DIN Rail bracket from the back by removing 5 screws and mount to a plate using the two wall mount tabs provided. There is a green ground screw for connecting one of the tabs to earth or chassis ground. **Important!** Please make sure that the air flow to the bottom and top of unit is not blocked or unit may overheat and shut down.

Note: The Unit is removed from the DIN rail by pushing up on the unit and at the same time moving the bottom of the unit forward.

STEP 3: Attach 48VDC battery wires (BAT+ and BAT-) and solar panel wire (PV--) to the Large Green connector. Make sure the 3 connections are tight in the connectors and not clamping on wire insulation. **IMPORTANT! Make sure the polarity is correct. Damage to the unit can occur if polarity is reversed or if PV wires are connected to the battery input.**

STEP 4: Double check the wiring is correct and then plug the Large Green connector into the top of the controller. The Charging LED on the front panel should light for about 60 sec. Now connect the PV+ wire to the green connector. **Note:** Always connect battery first and disconnect battery last from the controller.

Note: All LED's except the Charging LED will initially be off until the settings are changed in the web user interface.

STEP 5: If you will be using the Aux Output, connect your load wires to the Small Green 2 Pin Connector. Be sure the wire connections are tight. Be sure the voltage polarity is correct. Plug the Aux connector into the Aux Output socket. If you won't be using the Aux Output, just plug the empty connector back into the socket.

STEP 6: Connect Thermocouple cable to the 2 pin green connector. The Thermocouple does not have a polarity. Connect the Thermocouple cable assembly ring lug to one of the battery terminals. It can be connected to the + or - terminal. Plug the thermocouple 2 pin green connector to the socket labelled "Temp Sensor".

STEP 7: There is an amber LED which will light on any PoE port that is powered. If the amber LED is off it means the power is off to that port. By default all ports are off. Connect your network or PC to one of the unpowered ports.

STEP 8: The default IP address is 192.168.1.6 The unit may also get an IP address from a DHCP server. We have a free discovery tool available at <http://tyconsystems.com/index.php/support/tpdin-firmware>

This tool will find the controller no matter what IP address it is on, even across subnets. Your computer IP address will need to be on the same subnet as the controller in order to access the web browser control panel of the controller.

STEP 9: Open your browser and type the IP address of the controller into the browser address field. Navigate to the **Monitor Page**. This where you can setup the port output voltages (24V or 48V or OFF), set port labels, and see information such as battery status, temp, input volt-ages and currents, and load power.

The screenshot shows the 'Monitor' page of a controller. At the top is a green navigation bar with links: Monitor, Graphs, Log, Network, System, Control, Alerts, SNMP, Upgrade. Below this is a table of port settings:

Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Aux
ON	ON	ON	ON	ON	ON	OFF	ON
Cycle	Cycle	Cycle	Cycle	Cycle	Cycle	Cycle	Cycle
24V ▾	48V ▾	24V ▾	48V ▾	24V ▾	48V ▾	OFF ▾	48V ▾

Below the table is a checkbox labeled 'Disable Confirm' which is unchecked.

System status information is displayed in two columns:

Battery Voltage	53.6V	Log Memory Used:	1 %
Battery Current	0.5A	Controller Time:	12/16/2016 13:13:36
Input Voltage	66.5V	Uptime:	0 days 05:24:30
Input Current	0.4A	Model:	TPDIN-SC48-20
Load Watts	0W	MPPT Version:	2.005
Battery Temp	80.4F	Version:	3.1.2 UNLICENSED
Battery Status	FLOAT		

At the bottom left is a 'Save Labels' button.

Battery Voltage: Shows the present battery voltage

Battery Current: Shows current flowing into or out of the battery. A positive current means the battery is charging. A negative current means the battery is discharging.

Input Voltage: Shows the solar panel or DC input voltage.

Input Current: Shows the solar panel or DC input current.

Load Watts: Shows the total power being supplied to all loads.

Battery Temperature: Shows the temperature of the battery. FAULT means the temp probe is disconnected.

Battery Status: Shows charge state when charging (Bulk, Absorb, Float) and shows capacity % when discharging.

NOTE: Double check the port voltage setting for each port and then connect all your devices to the controller switch ports.

IMPORTANT! Please be sure to make sure you are using the correct PoE voltage. Do not turn on the port power to the specific port until you

double check that the device that is plugged in is compatible with the passive PoE voltage selected. Passive PoE voltage is supplied on Ethernet pins 4,5(V+) and 7,8(V-).

STEP 10: Navigate to the **Network Page** . This is where you can change the communications port, IP Address, set user names and passwords.

Monitor Graphs Log Network System Control Alerts SNMP Upgrade

Network Configuration

HTTP Port:	<input type="text" value="80"/>		
Host Name:	<input type="text" value="TPDIN-SC48-20"/>		
IP Address:	<input type="text" value="192.168.1.6"/>	<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
Subnet Mask:	<input type="text" value="255.255.255.0"/>		
Default Gateway:	<input type="text" value="192.168.1.1"/>		
Preferred DNS:	<input type="text" value="192.168.1.1"/>		
Username:	<input type="text"/>	Telnet Username:	<input type="text" value="admin"/>
Password:	<input type="text"/>	Telnet Password:	<input type="text" value="....."/>

STEP 11: Navigate to the **System Page**. This is where you can set the time settings and Misc System settings.

Monitor Graphs Log Network System Control Alerts SNMP Upgrade

Time Settings

Controller Time:	<input type="text" value="12/16/2016 13:12:38"/>	(mm/dd/yy HH:MM:SS)
PC Time:	<input type="text" value="12/16/2016 13:12:38"/>	<input type="button" value="Sync"/>
<input checked="" type="checkbox"/> Enable NTP	<input type="text" value="pool.ntp.org"/>	
GMT:	<input type="text" value="-7"/>	

System Configuration

Temperature:	<input checked="" type="radio"/> F	<input type="radio"/> C
Log Interval:	<input type="text" value="60"/>	minutes
Cycle Delay:	<input type="text" value="5"/>	seconds
<input type="checkbox"/> Balance charge	<input type="text" value="90 days"/>	<input type="button" value="Start Balance Charge"/>
Load Off Volts:	<input type="text" value="45.8V"/>	
Load On Volts:	<input type="text" value="48.2V"/>	

Time Settings: Enable and set Network Time Protocol (NTP) and set time zone (Mountain time is GMT -7). Sync internal clock with PC.

System Configuration:

Set temperature default units as deg F or C.

Set log file write interval. Data Logger holds up to 15,000 records.

Set cycle delay: When cycle is clicked on a port on the monitor page, the port will cycle to the opposite state and wait till the cycle time expires, then revert to it's original state.

Balance Charge: Sometimes it's beneficial to do a balance charge on the batteries to balance all the batteries within an array. The balance charge shouldn't be done too often or the life of the batteries will be reduced. The interface allows an automatic balance charge every 60 days or 90 days. We recommend 90 days or disabled.

Load Off and Load On Volts: When the battery voltage falls below the Load Off voltage, the load is turned off and when it rises above the Load On voltage, the load is turned back on. We recommend using the default values.

STEP 12: Navigate to the **Control Page**. This is where you can setup ping control and other available controls for the ports. The controls are separate into 1 set of controls for the Auxiliary port and another set of controls for the PoE ports. Controls available are Time Control, Tem-

Monitor Graphs Log Network System Control Alerts SNMP Upgrade

Aux Control: Aux		Save Aux Control	
<input checked="" type="checkbox"/> Time Control:	from 08:00 AM to 08:02 AM	off	else on
<input type="checkbox"/> Temp Control:	from 32 to 32 °F	-	else -
<input type="checkbox"/> Voltage Control:	from 0.0 to 0.0 Volts	-	else -
<input type="checkbox"/> Ping Control:	0.0.0.0	if 0 fails	- else -
Port Control: Port 1		Save Port Control	
<input type="checkbox"/> Time Control:	from 08:05 AM to 08:07 AM	on	else off
<input type="checkbox"/> Temp Control:	from 80 to 89 °F	on	else off
<input type="checkbox"/> Voltage Control:	from 48.0 to 50.0 Volts	off	else on
<input checked="" type="checkbox"/> Ping Control:	192.167.10.200	if 1 fails	cycle else on

perature Control, Battery Voltage Control, and Ping Control. You can use multiple controls providing for compound functionality. When more than 1 control is enabled, the priority is top to bottom.

The controls have 3 available actions: On, Off or Cycle. They also have an ELSE action. For instance if a user wants to turn on a port only during a certain time like from 8AM to 5PM, they would set the time from 8:00AM to 5:00PM then select ON else OFF. This would turn the port on only from 8:00AM to 5:00PM and it would be off the rest of the day.

STEP 13: Navigate to the **Alerts Page**. This is where you setup the email alerts. You can set one or multiple alert triggers based on Battery Voltage, Battery Temperature, Ping Alert, Periodic Alert, If the unit is in an under-voltage shutdown condition or if the unit is in an overcurrent condition.

SPECIFICATIONS

Subject to change without notice

	TPDIN™-SC48-20
<i>Controller Type</i>	MPPT
<i>Solar Input Voltage</i>	62VDC to 85VDC
<i>Solar Input Current</i>	20A Maximum
<i>Battery Voltage</i>	48VDC
<i>Fuse Type</i>	58V Fast Blo Auto Blade Type (Littlefuse 142.6185.5206)
<i>Low Voltage Disconnect</i>	45.8V to 47.8V
<i>Low Voltage Disconnect recovery</i>	48.1V to 49.2V
<i>Battery Type</i>	GEL or AGM
<i>External DC Input</i>	62V to 75VDC, 3A
<i>External DC Input Connector</i>	4p mini DIN
<i>PoE Switch</i>	Qty 7 10/100/1000Mb
<i>PoE Output Power (Numbers shown are for 48V PoE. Divide by 2 for 24V PoE)</i>	Port 1-3 35W Passive PoE+ Port 4-7 18W Passive PoE
<i>Port Surge Protection</i>	15KV
<i>Auxiliary Output</i>	3A Max
<i>Measurement Accuracy (V / I / T)</i>	+/-0.1V, +/- 0.1A, +/- 1Deg
<i>Power Consumption</i>	3W typ
<i>Data Logger</i>	FIFO, 15,000 records
<i>Wire Size</i>	8AWG Solar/Batt 12AWG Aux Output
<i>Operating Temperature</i>	-40C to +65C -40F to +149F
<i>Operating Humidity</i>	0% to 90%
<i>Warranty</i>	2 Years

Be sure to specify the SMTP server port and credentials. You can send alerts to two separate email addresses.

TECH CORNER

Additional Information you may find useful

RESET TO FACTORY DEFAULTS: There is a button on the top of the controller labelled FACTORY DEFAULT. Pressing and holding this button for over 5 seconds will reset to factory defaults.

RESET the CONTROLLER: There is a button on the top of the controller labelled RESET. Pressing this button immediately resets the controller. This is the same as power cycling the controller.

FRONT PANEL LED's:

Charging— Solid Green (*Bulk*) , Flashing (*Float*)

Aux Output—24V Green / 48V Yellow

Ext Input—Green (*powered from 4 pin mini DIN*)

Overload—Red (*The load is drawing too much power*)

DC INPUT: The unit can be powered via the solar input or a secondary DC Input. By using the DC input you can create a hybrid power system which uses the sun when available or a DC source like a Grid connection or generator when the sun isn't available. The power on the solar input always takes priority so the DC input won't be used unless there is no sun.

UPS (non solar) Operation: The unit can also be used as a high powered UPS or battery backup system by providing 65VDC 18A into the PV +and - inputs. Tycon offers a AC to DC power supply to accomplish this. The power supply can be connected in parallel with PV panels.

SNMP: The controller can be accessed via HTTP or SNMP. SNMP enables remote management via an SNMP control server. MIB file can be found at <http://tyconsystems.com/index.php/support/tpdin-firmware>

Graphs: The graphs show the data in the LOG file. If there is no data in the log file there will be no graph display. Turn on logging on the System page by setting a Log Interval. Graphs can be captured to a graphics file using any screen capture program including the Snipping Tool supplied with Windows.

LOG: The log displays all the important events which happen in the device in addition to the data logging. The log file will show when the

system went through a reset or power cycle. It will also show when a port was turned on or off. Please note that after a reset or power cycle the log file may show a random date and time until it can recapture the correct time.

To export the log file to Excel, Copy and Paste the log file records to a text editor like Windows Notepad. Save the text file. Open excel and then open the text file in Excel. Choose space delimited when opening the file. This will import to excel with all the data columns intact.

Limited Warranty

The TPDIN™-SC48-20 Solar Controller with PoE Switch is supplied with a limited 24 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 opened, altered, or defaced.
- Water damage.
- Usage other than in accordance with instructions and the normal intended use.

Tycon Systems Inc.
14641 S 800 W Suite A
Bluffdale, UT 84065
support@tyconsystems.com
PH: 801-432-0003