

Powerterm CP

Cathodic Protection System
Installation & Maintenance Manual





SCOPE

Products Covered by this Manual

This User Manual provides information on how to install, configure and maintain the Powerterm CP System.

This manual covers the following product Models:

Model	Description
C2140A	Powerterm CPI A800 Controller
C2151B	Powerterm L120P Transformer Rectifier
C2152B	Powerterm L120R Transformer Rectifier for remote control
C2156A-0	Powerterm LC90 Cathodic Protection Controller
C2156A-11	Powerterm LC90G1e Cathodic Protection Controller with GSM and Ethernet.
C2256A-11	Powerterm LC90XG1e Cathodic Protection Controller with GSM and Ethernet.
C2260A	Powerterm L144 Transformer Rectifier
C2270A-XX	Powerterm AE800 Transformer Rectifier
C6333A	Powerterm Multiplexer Board
C6175B	Powerterm Communications Patch Panel
PT8071iE	PowerView Touch Screen
C2265A	Powerterm L03R 3 channel Analogue TR Control Module
C2283-XX	Powerterm A800R-Series Transformer Rectifier
C2284-XX	Powerterm A1500R-Series Transformer Rectifier
C2285-XX	Powerterm A3000R-Series Transformer Rectifier
C2286-XX	Powerterm A4500R-Series Transformer Rectifier
C2287-XX	Powerterm A9000R-Series Transformer Rectifier

Other products mentioned in this manual have separate User Manuals detailing their features and performance.

Full specifications for each of these products can be found in their individual data-sheets.

Manual Revision History

Date	Revision	Comments
25 July 2012	1	Initial Issue
15 May 2009	2	Teleterm M2G added
20 July 2009	3	Added Patch Panel inter-wiring diagram
25 July 2012	4	Added LC90
28 March 2013	5	General Edits. Fixed DIP Switch settings.
27 March 2015	7	Removed M2G Reference.
23 October 2015	8	Removed sections on system design. Updated for CP specifications. Added CPI's, A800's and L144's.



23 November 2015	9	Removed chapter on Mechanical Installation. Changed the network address configuration description.
24 March 2016	10	Added the Troubleshooting chapter.
15 February 2017	11	Added L03, A800R-Series and LC90X models.

Software Copy Available

This manual is available in Adobe Acrobat pdf format.

The pdf file is named UMPTCPR11.pdf



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1 General Description

1.1 Overview

The Powerterm CP system provides the latest technology in the implementation of impressed current cathodic protection where reference half-cell logging or monitoring is desirable.

Figure 1-1 below shows the configuration of a typical Powerterm CP system.

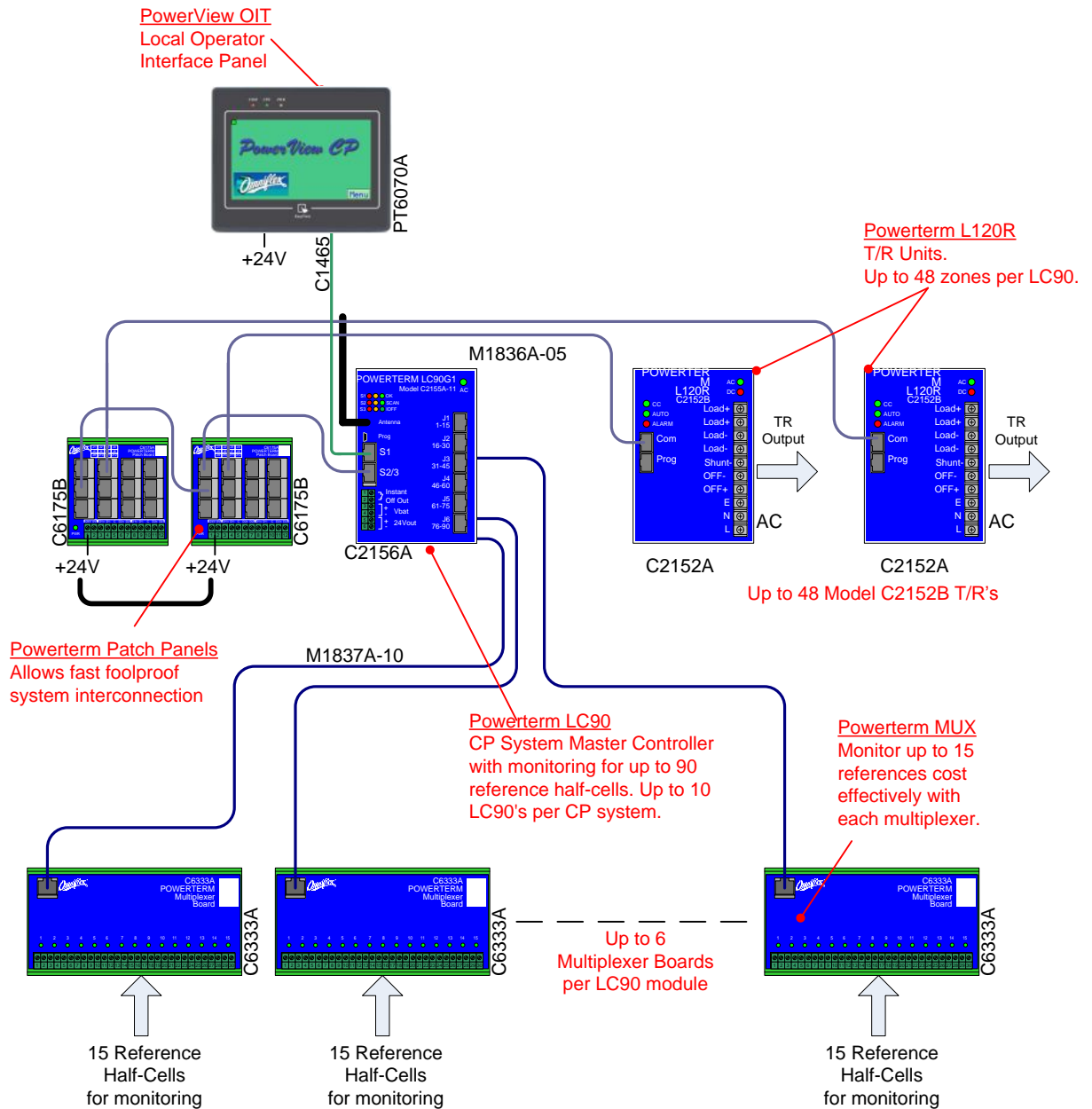


Figure 1-1 Typical Powerterm CP System Configuration

The components that make up the system are as follows:

1.2 PowerView CP Touch Screen

This colour touch-screen provides a rugged intuitive local user interface to the PowerView CP System.

Features include:

- Rugged touch screen interface with over 1 million operations specified
- Screen Saver turns the screen off when not being used extending the life of the screen and saving unnecessary power
- Simple menu gives easy structured access to all settings and readings.
- Graphical bar graph displays each T/R output and reference input.
- Simply change any setting with a pop-up keypad.
- Two levels of password protection ensure changes can only be made by authorised personnel.
- Initiate automatic Instant-Off and Depolarisation Tests, and view the results on the screen when completed.

Touch screen options available include:

Model	Description	Features
MT8071iE	7 inch, panel mounted Touch Screen	65536 colours Graphical display of test results Use for systems up to 48 T/R's and 90 references

1.3 Powerterm LC90 Controller Module

The Powerterm LC90 provides the master control function in a fully monitored cathodic protection system.

Features include:

- Monitoring for up to 90 reference half cells (using Model C6333A Multiplexer Boards) with ultra-high impedance.
- Automated Instant-Off and Depolarisation Testing with storage of the results of the last test performed, minimising the time required on site.
- Control and monitoring of up to 99 Powerterm intelligent Transformer/Rectifier modules.
- GSM modem and Ethernet (on selected model) for remote monitoring and control via the Data2Desktop web service.

1.4 Powerterm CPI Module

The Powerterm CPI is an interface board for control of up to 4 high-power Powerterm A800 Transformer/Rectifiers, as well being able to read up to 15 reference half cells (using Model C6333A Multiplexer Boards) with ultra-high impedance.

1.5 Powerterm A-Series TR Modules

The Powerterm A-Series are high power Transformer/Rectifier for use in Impressed Current Cathodic Protection systems.

These modules can supply up to 9000 W, with over-load and over-voltage protection.

They are single channel TR's, with the exception of the TR2-800, which is a 2 channel TR with up to 800 Watts per channel.

The A800S and A1500S Transformer/Rectifier modules require a Powerterm CPI in order to be integrated into a system. Up to 4 A800S/A1500S TR's can be controlled with a single CPI. The A800R, A1500R, A3000R, A4500R, A9000R TR's do not require a CPI in order to be integrated into a system.

Model	Max Power (W)	-15	-24	-36	-48	-60
C2280A-XX TR2-800-XX	800 per channel	15 V 50 A				
C2281A-XX A800S-XX	800	15 V 50 A	24 V 30 A			
C2282A-XX A1500S-XX	1500	15 V 100 A				
C2283A-XX A800R-XX	800	15 V 50 A	24 V 30 A	36 V 20 A	48 V 15 A	60 V 12 A
C2284A-XX A1500R-XX	1500	15 V 100 A	24 V 60 A	36 V 40 A	48 V 30 A	60 V 25 A
C2285A-XX A3000R-XX	3000	15 V 150 A	24 V 120 A	36 V 80 A	48 V 60 A	60 V 50 A
C2286A-XX A4500R-XX	4500	15 V 300 A	24 V 180 A	36 V 120 A	48 V 90 A	60 V 75 A
C2287A-XX A9000R-XX	9000	15 V 450 A	24 V 360 A	36 V 240 A	48 V 180 A	60 V 150 A

1.6 Powerterm L144R 4 Zone TR Module

The Powerterm L144R is a high efficiency, 4-channel Transformer/Rectifier for use in Impressed Current Cathodic Protection systems.

This model can supply up to 3 Amps / 20 Volts (Max 120W combined among the 4 outputs), with short-circuit and surge protection, and can be run in either voltage control or current control mode. It has an intelligent computer interface for communication with the CP System Master Controller, allowing them to be controlled remotely.

1.7 Powerterm L120P/R TR Module

The Powerterm L120P and L120R are high efficiency Transformer/Rectifiers for use in Impressed Current Cathodic Protection systems.

Both models can supply up to 8 Amps / 20 Volts Max (100W) with short-circuit and surge protection, and have an intelligent computer interface for communication with the CP System Master Controller and touch screen.

The L120P also has a local reference input for constant potential control and a local Instant Off switch input for stand alone operation in small systems that do not have automatic reference monitoring and a Powerterm CP System Master Controller.

Options available include:

Model	Description	Features
C2151B	Powerterm 8 Amps / 20 Volts Max (100W) Transformer/Rectifier with integral reference input and Instant Off contact input.	Use in small systems without a Master Controller or reference monitoring.
C2152B	Powerterm 8 Amps / 20 Volts Max (100W) Transformer/Rectifier for remote monitoring and control operation.	Use with the Model C2156A Powerterm CP Master Controller for systems with reference monitoring and remote control.

1.8 Powerterm L03 3 Channel Analogue TR Control Module

The L03 provides an interface between the Powerterm CP system and older, third party, analogue controlled TR's. This allows older systems to be integrated into the Powerterm CP system, including remote monitoring and control. Having 3 channels, the L03 can control up to 3 analogue TR's. The analogue TR's can be either controlled by either voltage and current limiting or just voltage or current limiting, as required by the analogue interface.

1.9 Powerterm Multiplexer Board

The Model C6333A Powerterm Multiplexer Board provides inputs for 15 reference half cells. Up to 6 of these modules can be plugged into the Powerterm LC90 controller to provide individually isolated ultra-high input impedance monitoring. Each reference input is relay switched only when reading, minimising the current drain on the reference cells and ensuring longest life.

1.10 Powerterm Patch Board

The Model C6175B Powerterm Patch Board reduces panel wiring time and wiring errors by providing fool proof and fast system interconnection using reliable ready-made patch cables.

Up to 12 modules can be connected to a single Powerterm Patch Board, and Patch Boards can be interconnected for larger systems.

1.11 Data2Desktop Service

The LC90G1e is a powerful Remote Terminal Unit providing an interface for the CP system to the web based Data2Desktop service via the mobile phone network or Ethernet. Where mobile phone access is not available, satellite communication access can be provided as an alternative.

The Data2Desktop service provides secure remote access to the cathodic protection system from any standard web browser, allowing very efficient remote monitoring and control of the system.

Alarms can be configured to be sent by email or SMS, and regular email reports can be generated.

1.12 Powerterm PSU/Charger

For remotely monitored applications, it is useful to power the system with a standby battery so that power failures and other faults can be reported. The Powerterm PT2000C is a combined power supply/battery charger from the Powerterm range suited for these applications.

2 Address Configuration

The PowerView CP network system consists of a primary network and multiple secondary networks. In order to communicate, the network address of each unit needs to be set.

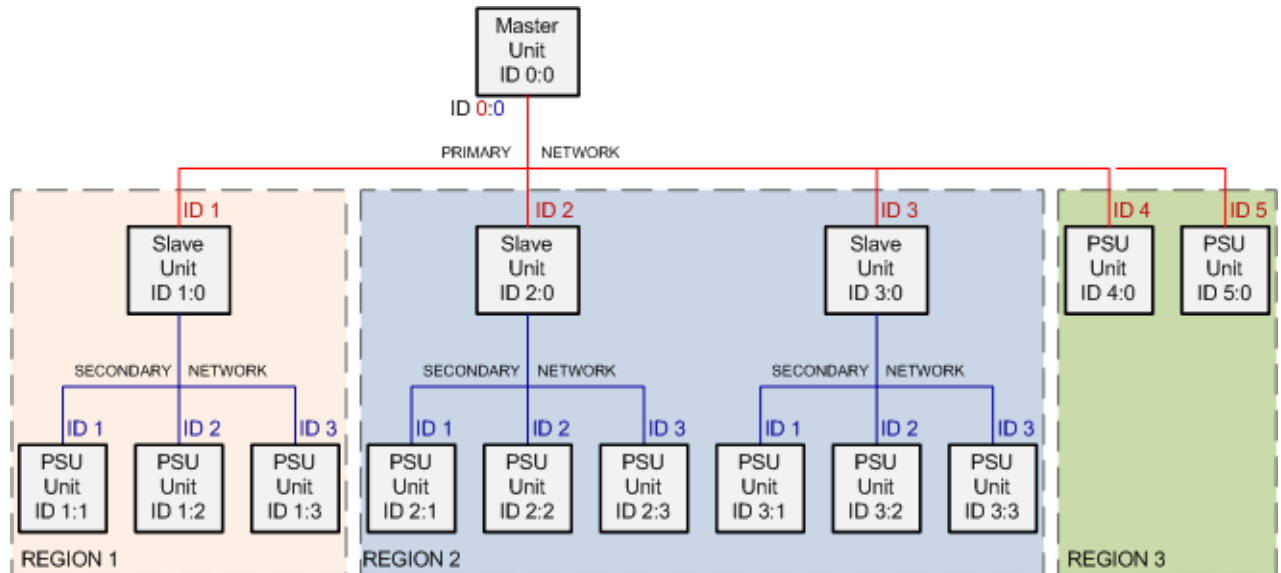


Figure 2-1: PowerView CP Network Architecture.

The primary network consists of a master LC90 controller module and up to 99 other primary units in a master slave configuration. Each LC90 controller module on the primary network (including the master) can control and read data from the TR modules on its secondary network.

(Note: CPI modules may lie on the primary network, but cannot have a secondary network.)

The secondary network consists of TR modules, controlled by their primary module. LC90 controller modules act as master of their secondary network and do not need their secondary address set.

2.1 Setting the address on an LC90

The address of an LC90 is set using the DIP switches located on the underside of the unit. The DIP switch represents the ID as a binary number with switch 1 as the least significant bit.

There is 1 master LC90 in each system. This unit must have its address set to 0.

LC90's set as slaves on the primary network have valid addresses of 1-99.

See below for assistance with determining the switch positions.

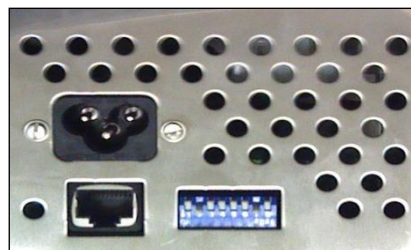


Figure 2-2 LC90 Address DIP switch, Ethernet connector and AC Connector.

2.2 Setting the address of an L144R

The network address of an L144 is set by the dials on the front of the unit. Valid addresses are from 1 to 89. The first dial, marked “x10”, represents the 10’s digit. The second dial, marked “x1”, represents the unit’s digit. For example, the address 23 can be set by setting the x10 dial to 2 and the x1 dial to 3. Addresses 1 to 9 are set by setting the x10 dial to 0.

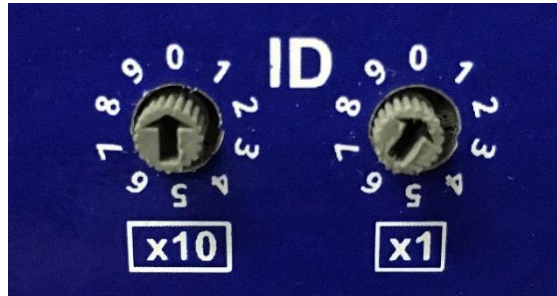


Figure 2-3: L144 ID Dials set to address 01.

2.3 Setting the address on an L120P/R

Similarly to an LC90, the address of an L120P/R is set using the DIP switches located on the underside of the unit. The DIP switch represents the ID as a binary number with switch 1 as the least significant bit. Valid addresses are 1-99.

See below for assistance with determining the switch positions.

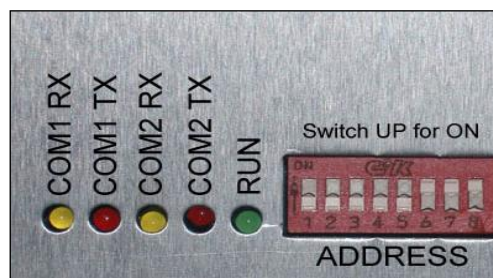


Figure 2-4 L120x Address DIP Switch and Communication LED's

2.4 Setting the address on a CPI or TR2-800

The address of a CPI must be set in software. To do this requires the use of a computer with an RS232 serial communications port and the Omniset software.

2.5 Setting the address on an A800S, A1500S

The bus address of an A800 on the I2C bus of a CPI is set using the single dial located near the output terminals. Valid addresses are 1-4.

2.6 Setting the address of an L03

The network address of an L03 is set by the dials on the front of the unit. Valid addresses are from 1 to 89. The first dial, marked “x10”, represents the 10’s digit. The second dial, marked “x1”, represents the unit’s digit. For example, the address 23 can be set by setting the x10 dial to 2 and the x1 dial to 3. Addresses 1 to 9 are set by setting the x10 dial to 0.

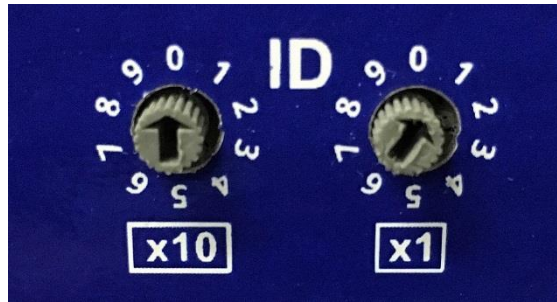


Figure 2-5: L03 ID Dials set to address 01.

2.1 Setting the address of an A800R, A1500R, A3000R, A4500R, A9000R

The network address of an A800R, A1500R, A3000R, A4500R or A9000R is set by the dials on the front of the unit. Valid addresses are from 1 to 99. The first dial, marked "x10", represents the 10's digit. The second dial, marked "x1", represents the unit's digit. For example, the address 23 can be set by setting the x10 dial to 2 and the x1 dial to 3. Addresses 1 to 9 are set by setting the x10 dial to 0.

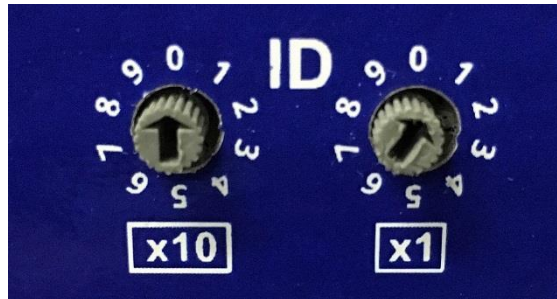


Figure 2-6: L03 ID Dials set to address 01.

Table 2-1: LC90 and L120x DIP Switch Settings

Network ID	Switch (1 = ON, 0 = OFF)							
	1	2	3	4	5	6	7	8
0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0
3	1	1	0	0	0	0	0	0
4	0	0	1	0	0	0	0	0
5	1	0	1	0	0	0	0	0
6	0	1	1	0	0	0	0	0
7	1	1	1	0	0	0	0	0
8	0	0	0	1	0	0	0	0
9	1	0	0	1	0	0	0	0
10	0	1	0	1	0	0	0	0
11	1	1	0	1	0	0	0	0
12	0	0	1	1	0	0	0	0
13	1	0	1	1	0	0	0	0
14	0	1	1	1	0	0	0	0
15	1	1	1	1	0	0	0	0
16	0	0	0	0	1	0	0	0
17	1	0	0	0	1	0	0	0
18	0	1	0	0	1	0	0	0
19	1	1	0	0	1	0	0	0
20	0	0	1	0	1	0	0	0
21	1	0	1	0	1	0	0	0
22	0	1	1	0	1	0	0	0
23	1	1	1	0	1	0	0	0
24	0	0	0	1	1	0	0	0

Network ID	Switch (1 = ON, 0 = OFF)							
	1	2	3	4	5	6	7	8
25	1	0	0	1	1	0	0	0
26	0	1	0	1	1	0	0	0
27	1	1	0	1	1	0	0	0
28	0	0	1	1	1	0	0	0
29	1	0	1	1	1	0	0	0
30	0	1	1	1	1	0	0	0
31	1	1	1	1	1	0	0	0
32	0	0	0	0	0	1	0	0
33	1	0	0	0	0	1	0	0
34	0	1	0	0	0	1	0	0
35	1	1	0	0	0	1	0	0
36	0	0	1	0	0	1	0	0
37	1	0	1	0	0	1	0	0
38	0	1	1	0	0	1	0	0
39	1	1	1	0	0	1	0	0
40	0	0	0	1	0	1	0	0
41	1	0	0	1	0	1	0	0
42	0	1	0	1	0	1	0	0
43	1	1	0	1	0	1	0	0
44	0	0	1	1	0	1	0	0
45	1	0	1	1	0	1	0	0
46	0	1	1	1	0	1	0	0
47	1	1	1	1	0	1	0	0
48	0	0	0	0	1	1	0	0
49	1	0	0	0	1	1	0	0

	Switch (1 = ON, 0 = OFF)							
Network ID	1	2	3	4	5	6	7	8
50	0	1	0	0	1	1	0	0
51	1	1	0	0	1	1	0	0
52	0	0	1	0	1	1	0	0
53	1	0	1	0	1	1	0	0
54	0	1	1	0	1	1	0	0
55	1	1	1	0	1	1	0	0
56	0	0	0	1	1	1	0	0
57	1	0	0	1	1	1	0	0
58	0	1	0	1	1	1	0	0
59	1	1	0	1	1	1	0	0
60	0	0	1	1	1	1	0	0
61	1	0	1	1	1	1	0	0
62	0	1	1	1	1	1	0	0
63	1	1	1	1	1	1	0	0
64	0	0	0	0	0	0	1	0
65	1	0	0	0	0	0	1	0
66	0	1	0	0	0	0	1	0
67	1	1	0	0	0	0	1	0
68	0	0	1	0	0	0	1	0
69	1	0	1	0	0	0	1	0
70	0	1	1	0	0	0	1	0
71	1	1	1	0	0	0	1	0
72	0	0	0	1	0	0	1	0
73	1	0	0	1	0	0	1	0
74	0	1	0	1	0	0	1	0

	Switch (1 = ON, 0 = OFF)							
Network ID	1	2	3	4	5	6	7	8
75	1	1	0	1	0	0	1	0
76	0	0	1	1	0	0	1	0
77	1	0	1	1	0	0	1	0
78	0	1	1	1	0	0	1	0
79	1	1	1	1	0	0	1	0
80	0	0	0	0	1	0	1	0
81	1	0	0	0	1	0	1	0
82	0	1	0	0	1	0	1	0
83	1	1	0	0	1	0	1	0
84	0	0	1	0	1	0	1	0
85	1	0	1	0	1	0	1	0
86	0	1	1	0	1	0	1	0
87	1	1	1	0	1	0	1	0
88	0	0	0	1	1	0	1	0
89	1	0	0	1	1	0	1	0
90	0	1	0	1	1	0	1	0
91	1	1	0	1	1	0	1	0
92	0	0	1	1	1	0	1	0
93	1	0	1	1	1	0	1	0
94	0	1	1	1	1	0	1	0
95	1	1	1	1	1	0	1	0
96	0	0	0	0	0	1	1	0
97	1	0	0	0	0	1	1	0
98	0	1	0	0	0	1	1	0
99	1	1	0	0	0	1	1	0

3 Software Upgrade

From time to time Omniflex will release updates to the firmware for components of the CP system. Upgrading of your system to the latest firmware releases is only recommended if you have had a problem specifically fixed in a later release, or if advised to do so by Omniflex. In most cases software updates do not invalidate working systems.

3.1 Upgrading firmware in the PT8070ie OIT

The software in these components can be upgraded using a standard USB memory stick. Follow these instructions to upgrade the firmware in the PowerView CP Touch Screen.

1. To Download a new firmware release using a USB flash disk, copy the software Folder supplied (e.g. "PT8071iE") to a USB flash disk (memory stick) formatted with a FAT32 file system.
2. Insert the flash disk into the touch screen's USB port located underneath it..
3. The following menu should pop up on the touch screen:

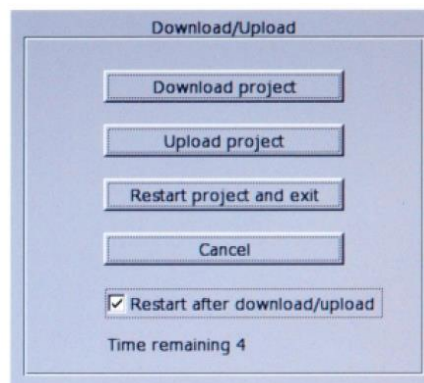


Figure 3-1 : PowerView CP Touch Screen download pop-up window.

4. Ensure that "Restart after download/upload" is checked and then press the "Download Project" button...
5. When download is selected, the following dialogue will appear requesting the download password and what data to download.



Figure 3-2: PowerView CP Touch Screen download password protection pop-up window.

Table 2: Description of download options for PowerTerm CP Touch Screen firmware update..

Password	Enter the <i>Download</i> password
Download Project Files	When checked, the OIT will check the specified folder for <i>project</i> data, and transfer it if it exists.
Download History Files	When checked, the OIT will check the specified folder for <i>history</i> data, and transfer it if it exists. History data includes Recipe , Event Log, and Data Log data

6. Enter the password (111111) using the popup on-screen keyboard
7. Ensure that only “Download Project Files” is checked and press the OK button.
8. The following directory dialogue will pop up...



Figure 3-3: PowerView CP Touch Screen download directory selection window.

9. Browse to the location of the “PT8071iE” folder on the USB stick and press the OK button.
10. The project will then begin to download and the HMI will reset after the download is complete.

4 Trouble Shooting

4.1 Communications Checklist

In most cases, if a module is communicating successfully on the network, then it will work properly, unless it is damaged. Successful communications to a module proves that the unit is powered and running. For this reason, it is recommended that

The communications diagnostics screen on the PowerView CP Touchscreen and be used to determine if a unit on either the primary or secondary networks is communicating. Please see the PowerView CP Touchscreen user manual for more information.

Network communications can also be seen from the website diagnostics page.

If a module is not communicating on the network, run through the following checklist:

1. Ensure the module is powered. Modules that require external power will have at least 1 LED lit when the module is powered.
2. Ensure the network cables are connected properly and securely. Check all the network cables between the module and the master LC90 control module. This can include the cable between an A800 series product and a CPI, the secondary network cables between a secondary master and the module and the primary network cable between the secondary network master and the primary network master. at both ends?

4.2 Ensure that the ID is correctly set for the module. See chapter 1.12. Powerterm PSU/Charger

For remotely monitored applications, it is useful to power the system with a standby battery so that power failures and other faults can be reported. The Powerterm PT2000C is a combined power supply/battery charger from the Powerterm range suited for these applications.

Address Configuration for details on how to set the address of a module.

4. Ensure that the primary and secondary network masters are configured to poll this unit. If it is not in the hardware setup, its master will not look for it on the network.
5. Ensure that the unit is not configured to be offline on the master modules, as this will make them deliberately not try to communicate to it on the network.

4.3 PowerView CP Touch Screen

4.3.1 The screen is not responsive

There are several reasons the touchscreen may be non-responsive.

Is the power LED, lit? There is an orange LED on the top, left side of the front of the touchscreen. If the LED is off, the touchscreen does not have power. Ensure the power is connected and that there are 24 Vdc across the power terminals of the touchscreen.

If the touch does have power and the power LED is lit orange, but the touchscreen is still not responsive, try resetting it by cycling power.

4.3.2 The touchscreen indicates there is a connection error or no response from target.

Check that the communications cable is secure and connects to the correct port of the target device. Typically port COM1 on the touchscreen and port S1 (socket J7) on an LC90 and port S1 (RS232 port) on a CPI.

4.4 Powerterm LC90 Controller Module

4.4.1 Understanding the LC90 LED's

The LED's on an LC90 can be used to help diagnose problems.

The AC LED.

The AC LED indicates that the unit has AC power supplied to it. This LED should always be on. If it is not, there is no power to the unit. Check that the AC supply cable is secure and connected to a powered source.

The OK LED.

The OK LED indicates that the firmware is running as it should. If this LED is not on, but the AC LED is, contact technical support.

The Red (Tx) and Yellow (Rx) LED's.

The red and yellow LED's flash every time a data packet is sent or received on the corresponding serial port. The yellow LED indicates a correctly received packet and the red LED indicates a sent data packet.

Typically, port S1 is used for the touchscreen, S2 is the LC90's secondary network and S3 is the primary network.

4.5 Powerterm CPI Module

4.5.1 Understanding the CPI LED's

The LED's on a CPI can be used to help diagnose problems.

The OK LED.

The OK LED indicates that there is power to the CPI and the firmware is running as it should. If this LED is not on, first check that the unit is powered with 9-30 Vdc across its input power terminals. If it is powered, but the OK LED is not lit, contact technical support.

The Red (Tx) and Yellow (Rx) LED's.

The red and yellow LED's flash every time a data packet is sent or received on the corresponding RS485 serial port, S2. The yellow LED indicates a correctly received packet and the red LED indicates a sent data packet. There are no LED's for the RS232 port, S1.

Typically, port S1 is used for the touchscreen if the unit is on the primary network, and S2 is used for network communications.

4.6 Powerterm A-Series TR Modules

4.6.1 Understanding the A-Series LED's

The LED's on an A-Series can be used to help diagnose problems. There are two sets of LED's. Those in the TR module itself and those on the control board.

4.6.1.1 Control Module LED's

For A800S and A1500, see Powerterm CPI module.

The CC LED.

The CC LED indicates that the zone is in constant current mode and has reached its current set point.

The CV LED.

The CV LED indicates that the zone is in constant voltage mode and has reached its voltage set point.

The CR LED.

The CR LED indicates that the zone is in constant reference mode and has reached its reference set point.

The AL LED.

The AL LED indicates that one of the zone is in an alarm state. It can be triggered by the low current and delta alarm settings or a fault in the TR.

The OK LED

The OK LED indicates that the firmware is running as it should. If this LED is not on, but AC power is on, contact technical support.

The Red (Tx) and Yellow (Rx) LED's.

The red and yellow LED's flash every time a data packet is sent or received on the RS485 serial port. The yellow LED indicates a correctly received packet and the red LED indicates a sent data packet. This port is typically used to place the TR on an LC90's secondary network.

4.6.1.2 TR Module LED's

They can be found near the front by the power and communications cable connectors and the ID switch. On some models the LED's can be difficult to see, but it is still clear when they are on.

The Green LED

The green LED will be on or flashing when the unit is powered but has no communications to the control board.

The Orange LED

The orange LED is steady on when the power supply is on and flashes when the power supply has power, but is set to OFF mode.

The Red LED

If the red LED is on or flashing, there is a failure in the unit. Take note of the LED flashing pattern and contact techsupport for further assistance.

4.7 Powerterm L144R 4 Zone TR Module

4.7.1 Understanding the L144 LED's

The LED's on an L144 can be used to help diagnose problems.

The AC LED.

The AC LED indicates that the unit has AC power supplied to it. This LED should always be on. If it is not, there is no power to the unit. Check that the AC supply cable is secure and connected to a powered source.

The DC LED.

The DC LED indicates the state of the internal, output relay. When this LED is lit, the output relay is closed and the outputs will follow their settings. When this LED is off, the output relay is open and all outputs are open-circuit.

The AL LED.

The AL LED indicates that one of the zones is in an alarm state. It can be triggered by the low current and delta alarm settings.

The CC LED.

The CC LED indicates that at least one of the zones is in constant current mode and has reached its current set point.

The OK LED.

The OK LED indicates that the firmware is running as it should. If this LED is not on, but the AC LED is, contact technical support.

The Red (Tx) and Yellow (Rx) LED's.

The red and yellow LED's flash every time a data packet is sent or received on the RS485 serial port. The yellow LED indicates a correctly received packet and the red LED indicates a sent data packet. This port is typically used to place the L144 on an LC90's secondary network.

4.8 Powerterm L120P/R TR Module

4.8.1 Understanding the L120 LED's

The LED's on an L120 can be used to help diagnose problems.

The AC LED.

The AC LED indicates that the unit has AC power supplied to it. This LED should always be on. If it is not, there is no power to the unit. Check that the AC supply cable is secure and connected to a powered source.

The DC LED.

The DC LED indicates the state of the internal, output relay. When this LED is lit, the output relay is closed and the output will follow their settings. When this LED is off, the output relay is open and the output is open-circuit.

The ALARM LED.

The ALARM LED indicates that the zone is in an alarm state. It can be triggered by the low current and delta alarm settings.

The CC LED.

The CC LED indicates that the zone is in constant current mode and has reached its current set point.

The OK LED.

The OK LED is the green LED located on the left side of the L120, next to the DIP switch. It indicates that the firmware is running as it should. If this LED is not on, but the AC LED is, contact technical support.

The Red (Tx) and Yellow (Rx) LED's.

The red and yellow LED's are located on the left side of the L120, next to the DIP switch. They flash every time a data packet is sent or received on the corresponding serial port. The yellow LED indicates a correctly received packet and the red LED indicates a sent data packet. The 2 LED's on the left (furthest from the DIP switch) relate to the Com port and the next 2 LED's relate to the Prog port.

4.9 Powerterm L03 3 Channel Analogue TR Control Module

4.9.1 Understanding the L03 3 Channel Analogue TR Control Module LED's

The LED's on an L03 can be used to help diagnose problems.

The CC LED.

There are 3 CC LED's. 1 for each zone on the L03, as labelled above. The CC LED indicates that the corresponding zone is in constant current mode and has reached its current set point.

The CV LED.

There are 3 CV LED's. 1 for each zone on the L03, as labelled above. The CV LED indicates that the corresponding zone is in constant voltage mode and has reached its voltage set point.

The CR LED.

There are 3 CR LED's. 1 for each zone on the L03, as labelled above. The CR LED indicates that the corresponding zone is in constant reference mode and has reached its reference set point.

The AL LED.

There are 3 AL LED's. 1 for each zone on the L03, as labelled above. The AL LED indicates that one of the corresponding zone is in an alarm state. It can be triggered by the low current and delta alarm settings or by a digital input signal from one the connected TR.

The OK LED

The OK LED indicates that the firmware is running as it should. If this LED is not on, but AC power is on, contact technical support.

The Red (Tx) and Yellow (Rx) LED's.

The red and yellow LED's flash every time a data packet is sent or received on the RS485 serial port. The yellow LED indicates a correctly received packet and the red LED indicates a sent data packet. This port is typically used to place the L03 on an LC90's secondary network.

4.9.2 There are no LED's on or flashing

Check that the unit has power to its power input terminals.

4.9.3 The green LED is on or flashing

Check the communications cable between the TR and the CPI, ensuring a firm, connection.

4.9.4 The Red LED is on or flashing

There is a problem with the unit, take note of the LED flashing pattern and contact techsupport.

4.10 Powerterm Multiplexer Board

4.10.1 Understanding the Multiplexer Board LED's

The LED's on a multiplexer board will light up when the corresponding input channel is being read by.

If none of the LED's are on and the controller unit is trying to read from a channel on the mux board, check that the mux board cable is securely connected on both ends.

4.11 FAQ

4.11.1 The zone is setup, but will not turn on.

The most likely reasons for a zone not turning on are:

1. The product is not powered. – Ensure the product has the correct supply voltage across its input terminals
2. There is no communication to the product. – Check the section on communications issues at the beginning of this chapter.
3. The System is Off. – There is a button to turn the entire system on or off, regardless of the control mode of each zone. It is found on the Tests screen of the touchscreen.
4. The Maximum Voltage and Maximum Current are not set. – There are protected settings to limit the maximum outputs of each zone. See the touchscreen user manual for more details.

4.11.2 The reference readings are not working

The most likely reason for a reference reading error is that the range is not set. Check the settings and set it to an appropriate range. See the touchscreen user manual for more details.

4.11.3 The website is not receiving data

The 2 most likely reasons for a the website not receiving data are poor network coverage and incorrect settings. See the touchscreen user manual for more details on changing the web settings and viewing web connection diagnostics. If there is poor network coverage, you might need to move the controller module or install an aerial extender.

5 Technical Support

Lifetime technical support for all Omniflex products is available by email on support@omniflex.com.

Alternatively, you can check the knowledge-base on the Omniflex web site at www.omniflex.com.

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