



Benefits of PowerView CP for Steel Structures

IoT enabled TR technology reduces life cycle cost of steel cathodic protection

APPLICATION NOTE

- Distributed architecture minimises cabling and reduces installation cost.
- Real-time remote monitoring provides 24/7 assurance of system performance.
- Full remote control and testing reduces site visits.
- High Efficiency Transformer Rectifiers reduce power bills and give a greener footprint.
- Smaller size reduces space requirements.



Overview

Omniflex has developed the PowerView CP Cathodic Protection system to bring the latest "IoT" communications capability to Impressed Current Cathodic Protection. This system has been in development for several years and is now well proven in use.

The key features include the highest efficiency Transformer/Rectifiers (T/R's) available, web based remote monitoring, control and testing, and reliable industrial grade hardware designed for long life and easy serviceability.

The benefits include optimum life cycle costs, field proven reliability, unprecedented remote control and real-time 24/7 monitoring regardless of the location of your assets under protection.



Internal view of a TRU cabinet showing 8 TR modules

Communications to the core

At the heart of every PowerView CP Transformer Rectifier module is an intelligent microprocessor capable of communicating with the outside world.

The "Internet of Things" ("IoT") is becoming a popular buzzword. PowerView CP has been providing this capability for almost a decade. This capability enables complete remote monitoring and control of every system without additional add-on hardware.

Settings can be changed, output parameters measured and system testing performed remotely on these 'Smart' T/R's without any add-on measuring equipment being required.

User Friendly Touch Screen

An intuitive touch screen gives you an easy-to-use interface for managing your system locally.



User friendly touch screen interface

High Efficiency T/R's

Unlike traditional AC mains transformers which draw a standing load regardless of the load drawn on the output, the PowerView CP Smart T/R's use more modern switch-





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mode power supply technology to deliver smoother, more efficient outputs at up to 90% efficiency regardless of the output settings.

These Smart T/R's are also much smaller and lighter than traditional transformer based T/R's allowing reduced enclosure sizes and lower installation costs.

Remote Communications in any environment

PowerView CP systems communicate over the mobile phone network, or by satellite in remote locations.

This provides full remote monitoring and control of the system, which improves system availability and reduces the number of necessary site visits.



A typical sheet steel pile wharf with distributed PowerView CP system installed

Serviceability

All components including the Smart T/R modules are designed for easy replacement providing simple servicing in any location.

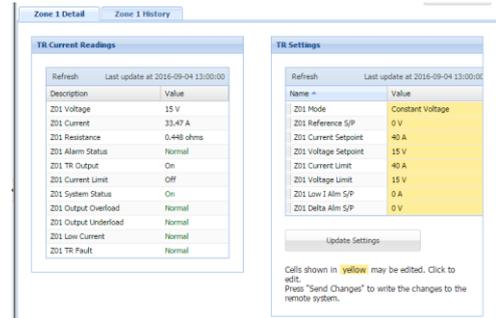


Simple TRU connections

Access via the Web with Cloud Storage

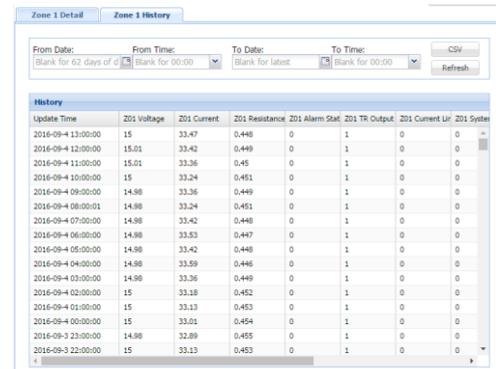
Remote access to the PowerView CP systems is achieved via the Data2Desktop web based monitoring service.

No additional software or specialised computer equipment is required for this remote monitoring and control. All remote monitoring and control functions are performed through a standard web browser.



T/R parameters and Settings on the website

All data is logged to the cloud to ensure secure long term storage and easy access from your browser.



T/R history page on the website

Each user on the system must be authenticated with a username and password to access the data.

Unified Enterprise Wide Management

The PowerView CP system enables all your CP assets to be monitored and controlled from a web-based single platform. This avoids the need to support multiple software systems and infrastructure.

Even legacy CP systems can be integrated into the system to provide a single platform for monitoring your CP assets.





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Transformer Rectifiers

The 'A' Series 'blade' T/R's

Omniflex developed the 'A' series T/R's specifically for high current applications, where space and energy efficiency are a concern.

These self-contained T/R's are designed in a vertical 'blade' shape to easily accommodate multiple units in a single enclosure. They can be combined in a single panel or distributed down the length of the wharf or bridge to reduce costly high current field cabling.



The 'A' series 'blade' T/R

Intelligent features such as constant voltage and constant current operation, low current alarms, open and short circuit detection and independent voltage and current monitoring make these units the most advanced TR's available.

Remote Monitoring

As for all T/R's in the PowerView CP range, the 'A' series T/R's include intelligent monitoring and control of all the key parameters such as output voltage and current,

The 'A' Series T/R 'blade' range

The 'A' series T/R's come in three basic sizes each with five different voltage/current ranges:

Code	Model	Power	*-15	*-24	*-36	*-48	*-60
C2283A-xx	A800R-xx*	800W	15V 50A	24V 30A	36V 20A	48V 15A	60V 12A
C2284A-xx	A1500R-xx*	1500W	15V 100A	24V 60A	36V 40A	48V 30A	60V 25A
C2285A-xx	A3000R-xx*	3000W	15V 150A	24V 120A	36V 80A	48V 60A	60V 50A

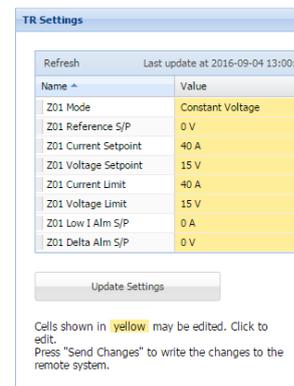
load resistance, temperature etc. including alarms when the system not meet performance criteria.



Setting the T/R from the touch screen

Remote Control

The output voltage and current settings etc. can be viewed and set remotely via the Data2Desktop website.



Setting the T/R from the web site

Alarms

Alarm set points can be set for various conditions such as low output current, underload and overload.

When connected to the web, these alarms can be sent via SMS, email or notifications to your phone





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Remote Monitoring, Control and Testing

Master Controller

In every PowerView CP system is a master control module. This intelligent module contains all the functionality required to co-ordinate and automate the T/R's and local reference readings from a location, to collect readings and to communicate with the Data2Desktop web service.



The Master Controller

Web based Monitoring

When connected to the Data2Desktop web service, all T/R readings are uploaded regularly to the cloud based storage where is saved securely for long term backup. This historical data can be accessed from any web browser using your username and password to login.

Alarms

Any abnormal conditions at each CP site will report back to the Data2Desktop web service where the alarms are logged, and sent to those users registered to receive alarms. These alarm notifications will occur automatically without the user needing to remember to check the system.

Time Synchronisation

The Master Controller and every T/R is equipped with a clock synchronised with the server for accurate time. This allows synchronised switching of T/R's and reading of references across an entire site, even if the TR's are distributed across the site.



Testing from the touch screen

Remote Testing

Using the remote control and time synchronisation capability of the system, all CP testing can be initiated remotely from a web browser and the data uploaded to the Data2Desktop web service, from where all test results can be downloaded for reporting purposes.

Status of All CP Tests	
Description	Value
Periodic Reference Snapshot	Enabled
Reference Snapshot	Idle
Periodic Zone Snapshot	Enabled
Zone Snapshot	Idle
Periodic Instant Off Test	Enabled
Instant Off Test	Idle
Manual Instant Off Test	Idle
Depolarisation Test	Idle
Interference Test	Idle
System Status	On

Testing from the web site

SCADA Interface

Where you require integration with a third party SCADA telemetry system, the built-in Modbus/TCP port in the Master Controller provides access to all relevant data.

Reduce Site Visits

All the features of remote monitoring, testing and control can significantly reduce the number of site visits required to maintain a cathodic protection system, providing significant cost savings and improved cathodic protection assurance over the life of your assets.





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Remote Monitoring and Testing of Legacy Systems

Remote Monitoring of existing Systems

PowerView CP may be added to existing CP systems without the need to change out the existing transformer/rectifier units.

PowerView CP can still be used to remotely monitor parameters such as output voltage and current, and to remotely control interruption of the TR output to perform synchronised CP testing etc.

In some cases, remote control can also be implemented using conventional analogue inputs/outputs to control the output levels of the T/R. This depends upon the level of control provided by the legacy T/R.

Remote Testing of existing CP systems

When existing systems are connected into the PowerView CP system, the same level of on/off control and monitoring can be achieved.

This allows these legacy systems to be seamlessly integrated into your enterprise wide PowerView CP infrastructure.

Time Synchronised Switching

The PowerView CP Controller provides the facility to switch an external contactor time synchronised with all other TR's in the system to perform instant off testing etc.

Remote Alarm Monitoring

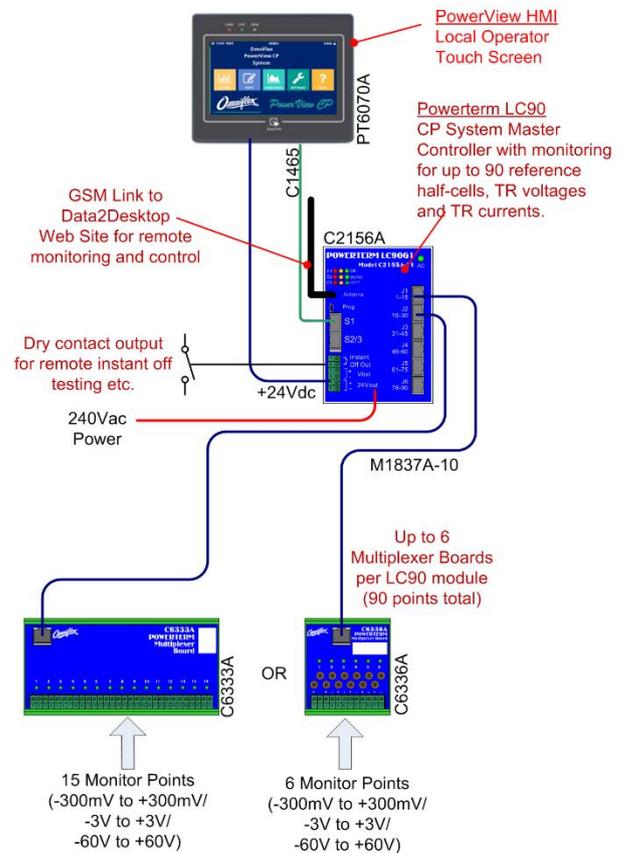
When monitored by the PowerView CP system, legacy CP systems can also send notifications of alarm events through the PowerView CP system.

Secure Long Term Logging

By monitoring your legacy CP systems with PowerView CP, long term logs of system performance are saved securely on the Data2Desktop web site for later download in convenient csv format for reporting.

SCADA Integration

All the parameters and control available to the PowerView CP system can be also be accessed from a SCADA computer using Modbus/TCP if required.



Omniflex

Omniflex has been designing and manufacturing electronic products and systems for the automation and control industry since 1965.

We specialise in providing solutions to industry in the fields of Remote Monitoring, Critical Alarm and Event Management, and Energy Management.

Omniflex has expanded its range to include specialist products for impressed current cathodic protection systems called **PowerView CP**. This system harnesses our depth of experience in power control and remote monitoring in harsh environments to bring reliable enterprise wide solutions to the challenges associated with managing cathodic protection systems over many remote locations.

Working with leading experts in the field of cathodic protection, we have designed a system that is assisting to reduce operating costs and improve performance an oversight with these kinds of systems.

