

VaultGard Communications
Network Underground Communication Solutions



VaultGard™

EATON

Powering Business Worldwide



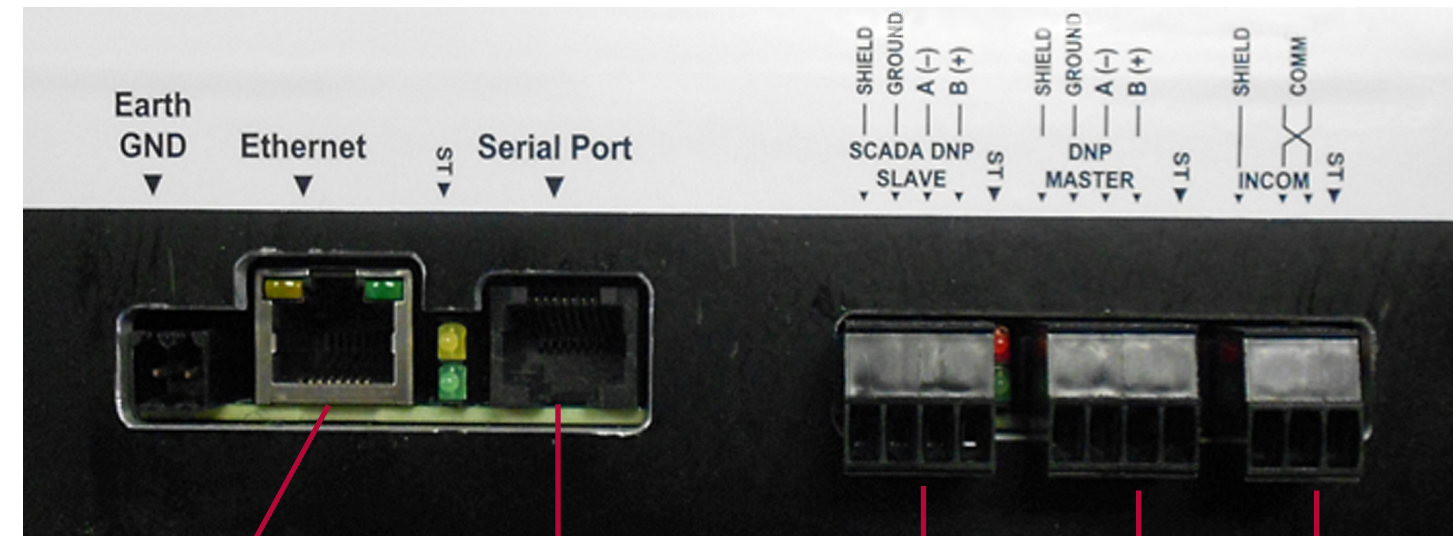
Can You Imagine...

In the future, a network communications solution that combines intelligence, user-friendliness, and security specifically designed for the network vaults?

This time is NOW...The VaultGard is SCADA for Secondary Networks

VAULTGARD HAS INTEGRATED GRAPHICS WHICH DISPLAY EXPANDED CAPABILITIES AND ENHANCED FUNCTIONALITY THAT TRACKS SUCH VITAL NETWORK PROTECTOR PERFORMANCE METRICS AS:

- Connect up to 32 devices on 1 unit
- DNP 3.0 protocol output
- Email Alert Notification
- Comprehensive data monitoring (voltage, current, power metrics, etc.)
- Alarms, logging (live and historical), trending, and graphing of captured data
- Easy to navigate on-board web pages (no software needed)



- Secure LAN
- Fiber Optic Transceiver
- Local Wi-Fi
- Cellular Modem
- DNP over IP

Serial Debugging Port

DNP to SCADA Master

DNP Slave Port

Eaton INCOM Devices

- MPCV
- DIM
- DRAM
- NP-ARMs

Technology at work for you

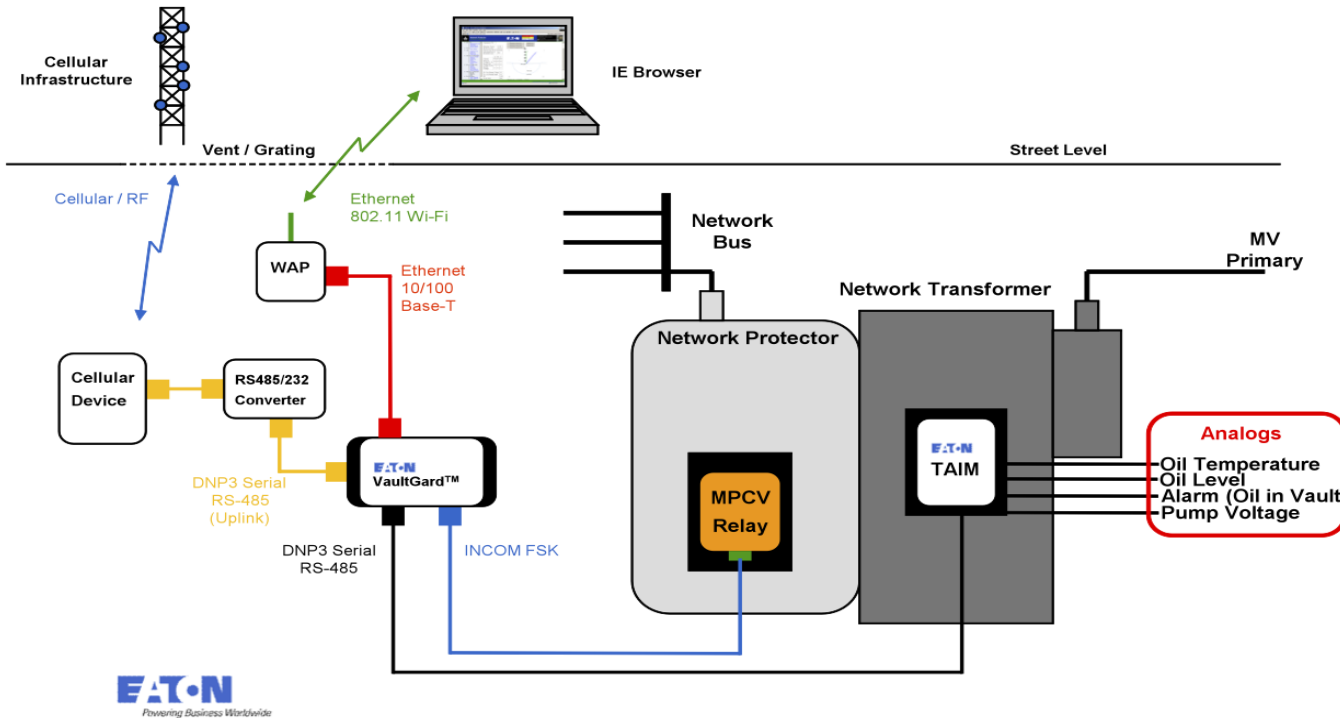
CONNECTING UTILITIES TO THE TECHNOLOGY RESOURCES THEY NEED

With an aging workforce and a slowly declining knowledge base, it has become increasingly important for utility crews to look for safer, more user-friendly systems. Reliability and Safety are of the utmost importance in today's utility environment.

Through the incorporation of Eaton's communications solutions, you will see an increase in your Maintenance Interval times. This allows for a shift away from time-based maintenance toward predictive, usage-based diagnostics for maintenance.

VaultGard brings a wealth of information from the Utility Vault to the fingertips of utility personnel in a user-friendly web interface or into existing SCADA. Information contained in VaultGard can be trended and analyzed different ways to determine predictive maintenance schedules. Through VaultGard, protectors can be opened and safety features activated remotely, mitigating potential danger to the operator before they enter the vault.

Network Vault



The standard VaultGard is provided in a NEMA-4X (IP66) rugged Wall-mount enclosure.

By request or specification, special enclosure solutions can be provided.

The VaultGard™ Communications Platform from Eaton is certain to be the next generation communications product for Network Protectors, providing monitoring and remote control for vault systems.

Certain to be your number one preventive maintenance tool, the VaultGard™ Communications Platform will discover network issues before they cause costly system-wide problems.

SYSTEM VIEW

The VaultGard System View allows the user to see all devices on their system from a single convenient summary page.

Name	Status	Breaker Pos	I _A	I _B	I _C	V _N (A) (B) (C)	V _T (A) (B) (C)	V _P (A) (B) (C)	Power (kW)	kVAR	PF	Ops Count	Temp	Aux2	Aux3	Aux4
/INCOM/Network/020	Closed	Closed	199	201	202	277 274 275	276 275 275	0.5 0.7 0.1	143	83	0.86	15	28.0	Active	Inactive	Active
/INCOM/Network/030	Closed	Closed	199	201	203	276 276 274	275 277 274	0.5 0.7 0.1	144	82	0.87	1	29.0	Active	Inactive	Active
/INCOM/Network/031	Closed	Closed	199	201	197	277 274 274	277 275 274	0.5 0.7 0.1	143	79	0.87	5	29.0	Active	Inactive	Active
/INCOM/Network/032	Closed	Closed	199	201	197	277 275 274	276 276 274	0.5 0.7 0.1	143	79	0.87	7	29.0	Active	Inactive	Active

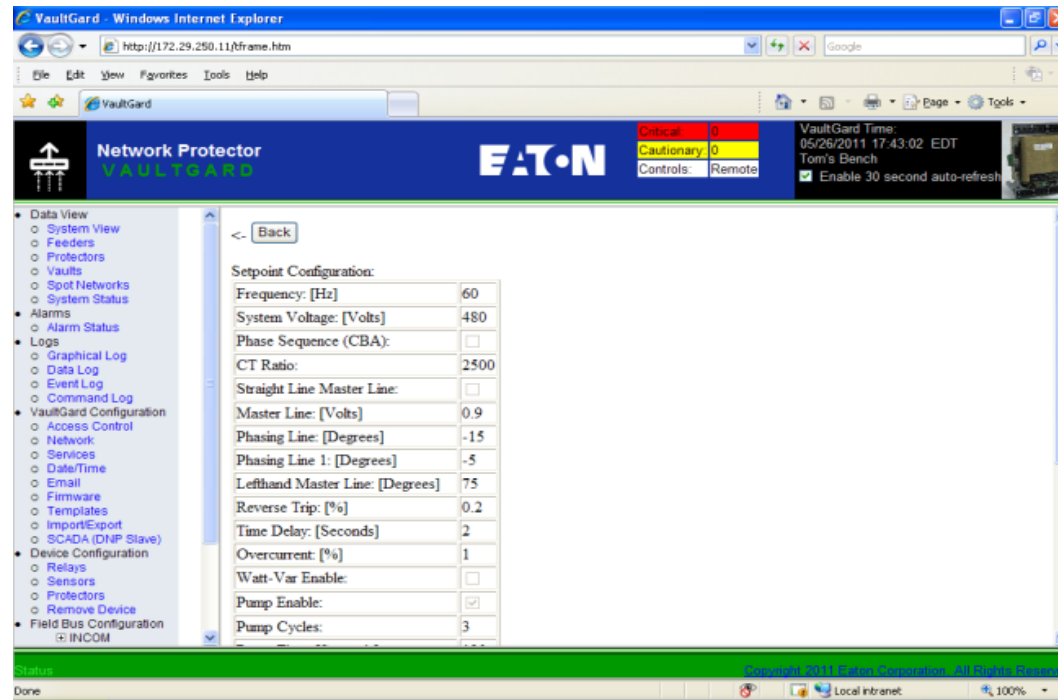
Name	Analog1	Analog2	Analog3	Analog4	Analog5	Analog6	Analog7	Analog8
/DNP/RS485-1/3	27.2	3.2	-9.9	-9.9		100		

PAN ID	Device name	Sensor Value
C12	TSr04snCff	24.4 A
C12	TSr04sn006	24.4 C
C12	CSr01snC09	---

Name	Digital1	Digital2	Digital3	Digital4	Digital5	Digital6	Digital7	Digital8
/INCOM/Network/008	1	0	0	1	0	0	0	1

CHANGE SETPOINTS REMOTELY

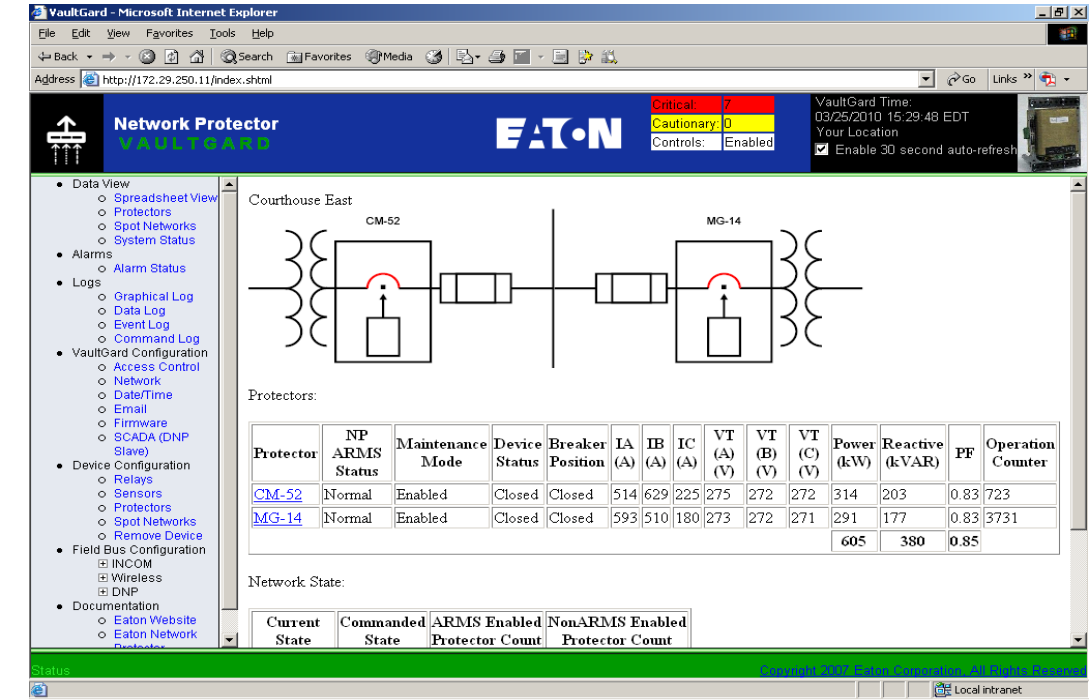
The VaultGard web-interface provides a user-friendly means of adjusting the set-points to your MPCV relay remotely.



SPOT NETWORK VIEW

View the one-line diagram of each of your Spot Networks, which displays the network protector names along with their Open/Close status, attached to a common network bus.

The spot network view shows a summary of the real and reactive power for a spot network, and also allows for control of multiple ARMS devices from a single click.



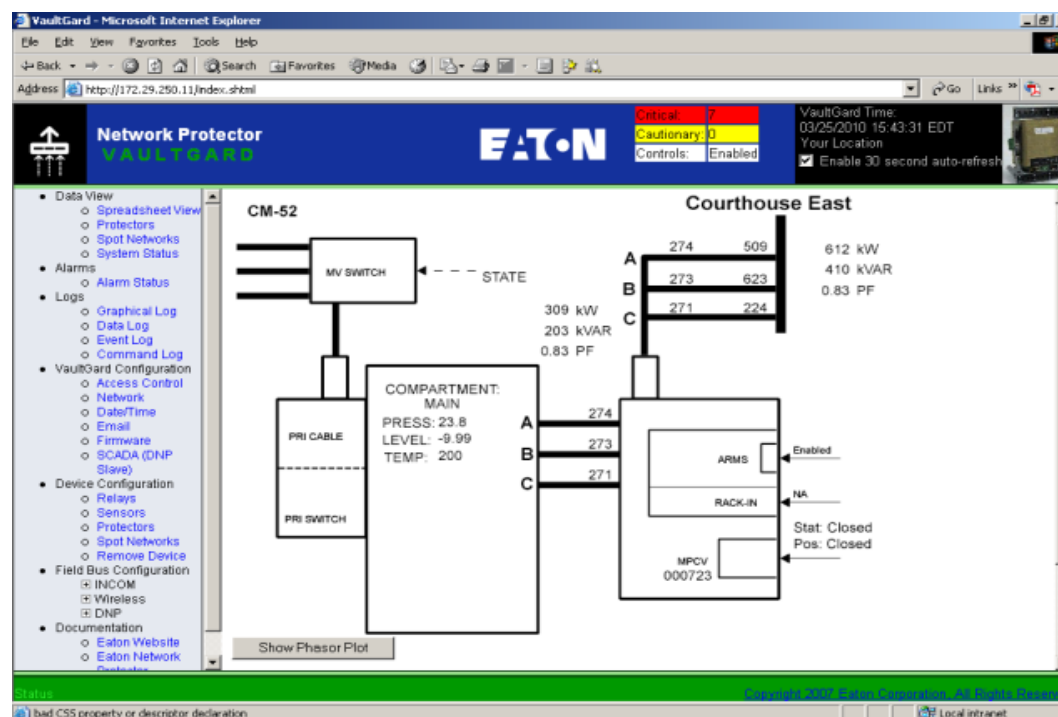
NETWORK PROTECTOR VIEW

View your system-critical information on a protector-by-protector basis.

See data including the Network and Transformer oltag, Current, Power and power factor.

Also control protector features like ROBO and protective close, as well as the ARMS IDM maintenance mode.

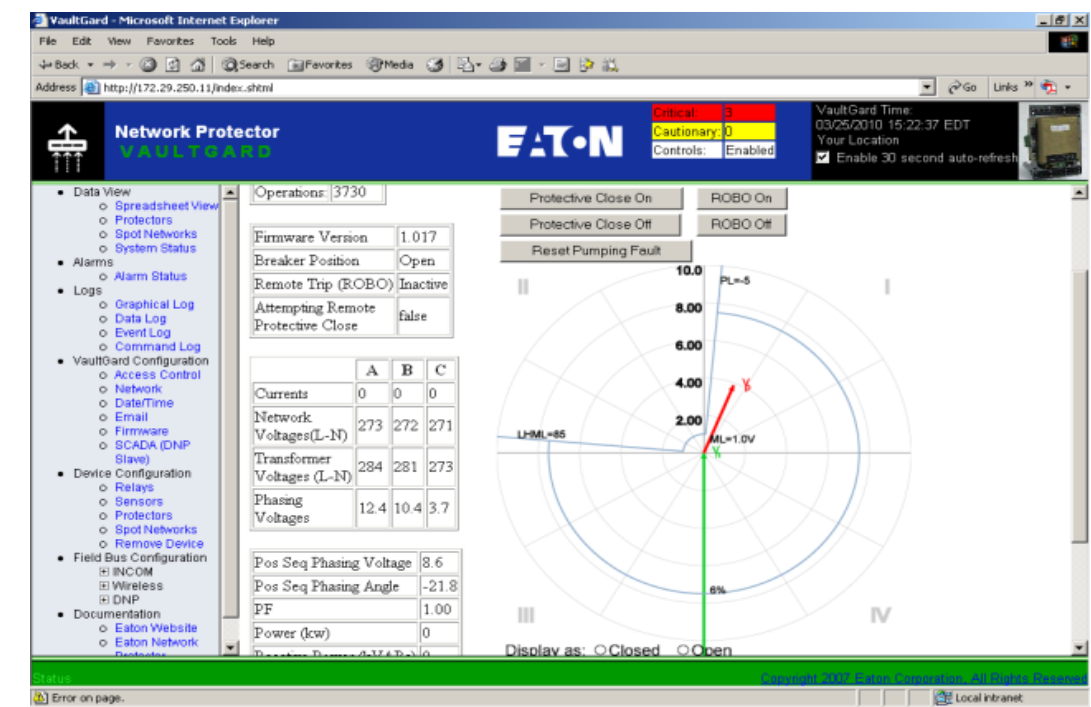
Now it is possible to activate the ARMs mode and rack out the Network Protector. All before you leave to go to the vault!



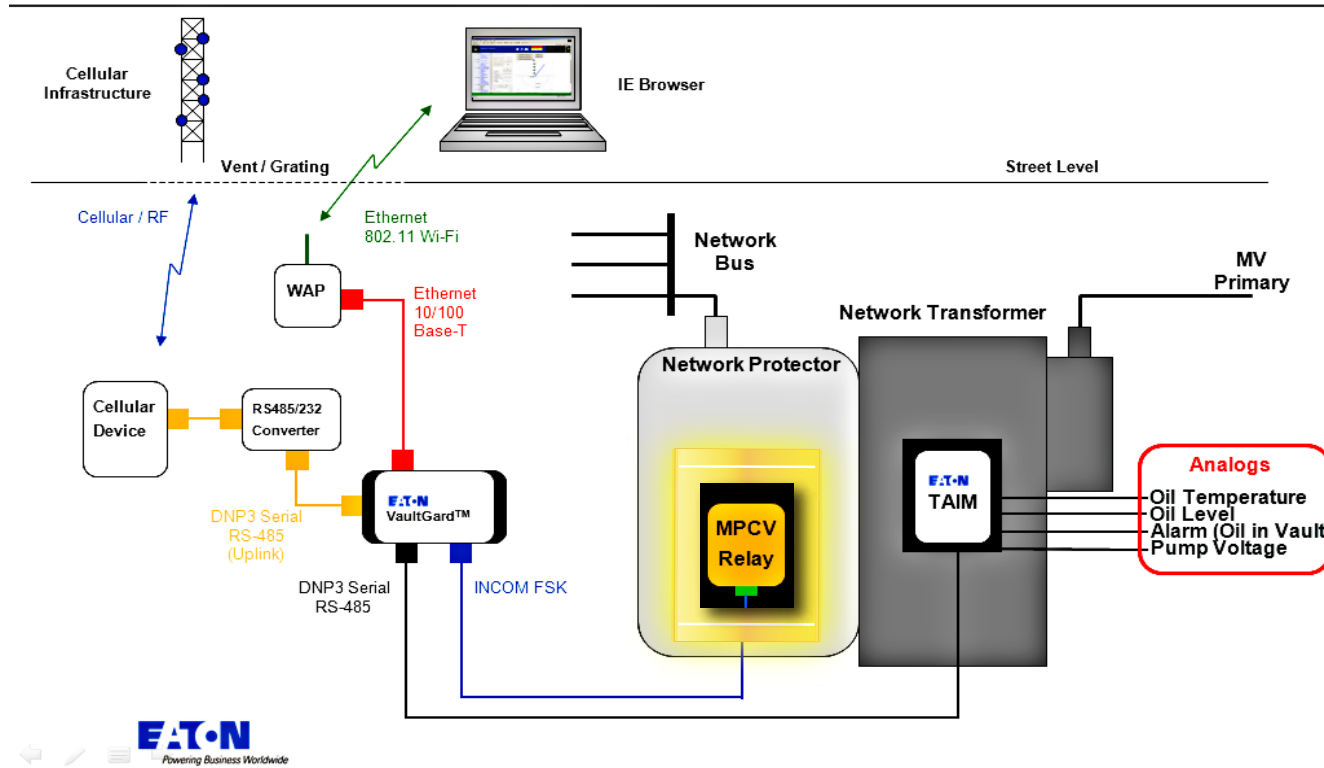
PHASOR DIAGRAM

These plots automatically adjust to reflect the current relay state and curves, and can be used to detect errors, send alerts, and show where problems exist within the network.

This functionality is pre-installed and no additional software is required.



Network Vault



The MPCV is used by more utilities than any network relay on the market!



Access and display information from the MPCV such as:

- Voltages
- Currents
- Power Factor
- Status
- Temperature
- Phasing voltage
- Pos. sequence phase voltage (complex form)
- Watts and Vars
- Failed to Open or Failed to Close

Designed for safety, communications, and ease of use.

Each MPCV relay is enclosed in a solid brass casted .25" submersible enclosure. LEDs on the front of the relay alert the user if the relay senses adverse or problematic conditions.

MPCV Network Protector Relay

INCREASE THE CAPABILITIES OF YOUR NETWORK PROTECTORS

The MPCV Network Relay brings the proven performance of a sequence based microprocessor design in order to give your NWPS in service the most intelligent relay available in the market.

The advantages of the MPCV are:

Gull Wing Trip Curve- Built in 5 degree shift in trip curve for high X/R transformers.

Powered from both the Network and Transformer side.

- Anti-Pump Protection Algorithm- Reduces pumping on Network Protectors per your setpoints

- Sensitive and Non-Sensitive trip setpoints
- Built-in time delay function
- Circular Close option permits close at lower loads while assuring the watt flow is into the network

REMOTE OPERATION AND CONTROL

- Remote Open Block Open Command-Trips and blocks Network Protector Open under wired or wireless communications
- Protective Remote Closing Command- Advanced Safety Algorithm insures a positive close without sacrificing safety
- Advanced safety algorithms insure that the MPCV always call for a trip under adverse

COMMUNICATIONS CAPABILITY

The MPCV Relay has the capability of communicating via DNP 3.0, Ethernet TCP/IP, and 802.11 b/g protocols using VaultGard™ communication platform. The MPCV data can be transferred directly into the customer SCADA system.

The Benefits of a Microprocessor Design

Our enhanced sequence filtering algorithm provides exceptional performance and stability over a wide range of temperatures and voltages in comparison with a power-based algorithm.

Configure the MPCV from your Smartphone!

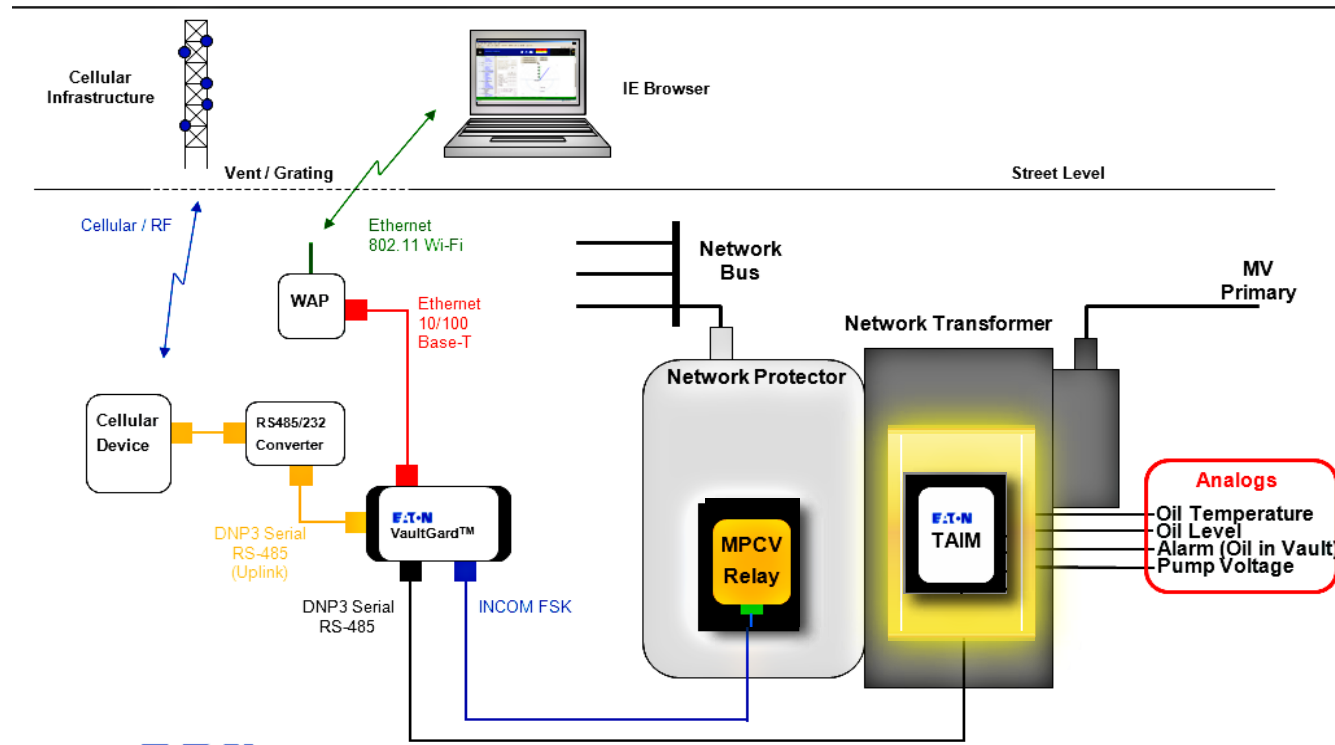
With the MyMPCV App, you can use your iPhone, iPad, or iPod

to make setpoint changes to the MPCV, as well as save common configurations locally on your device.



Transformer Analog Input Module

Network Vault



Pressure Transducer



Transformer Temperature Sensor (RTD) and Transformer fluid level gauges.

Transformer Monitoring for Network Vaults



Transformer Level Gauge

TAIM

In addition to traditional mechanical monitoring and protection, electronic transformer monitoring further improves reliability, safety, and the availability of key decision making information by automating control and making

The Transformer Analog Input Module (TAIM) allows utilities to see information that was never before available remotely. The TAIM can collect critical data from the Transformer including accurate readings for Oil Temperature, Compartment Pressure, and Oil Level.



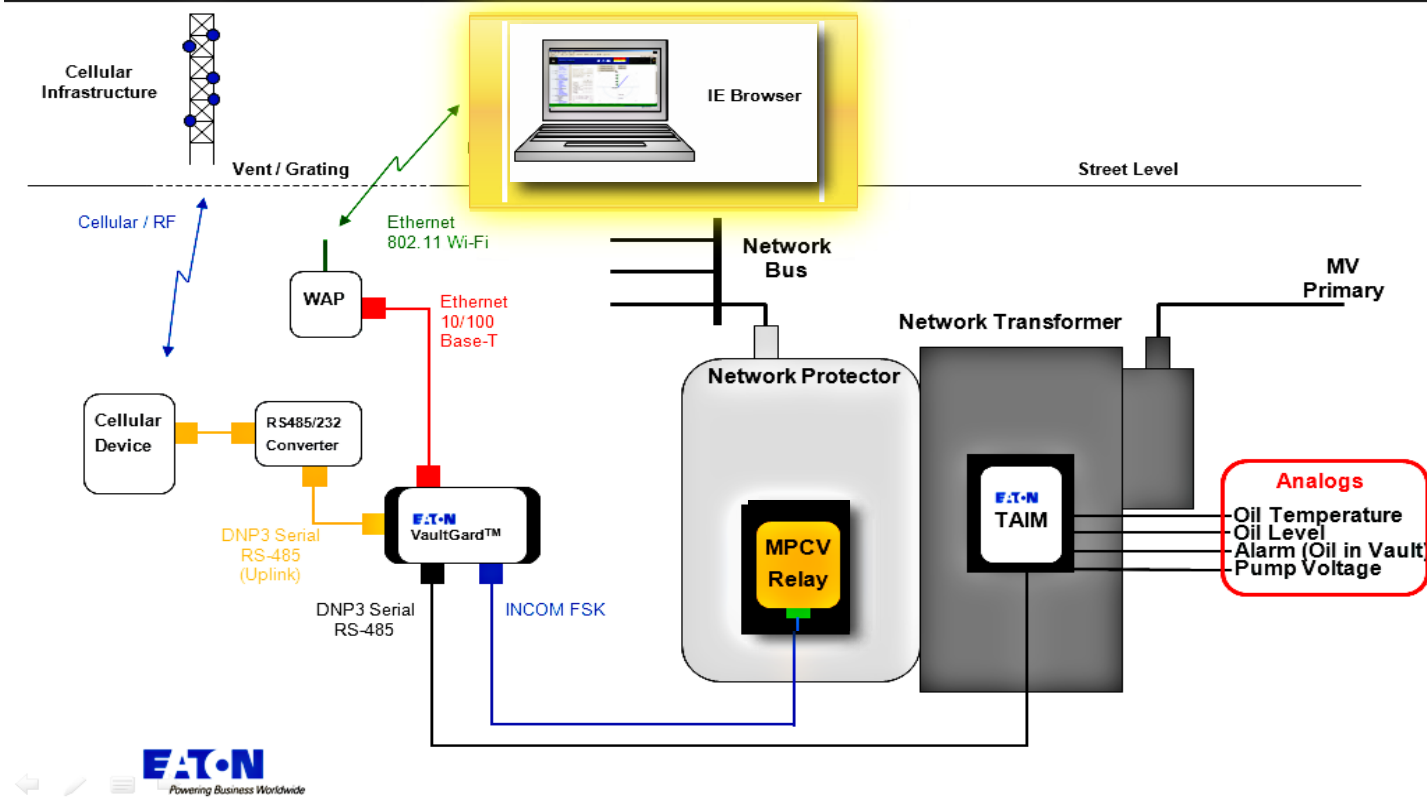
Optional: Floor-mount stand



Vault Ambient Temperature Sensor (RTD)

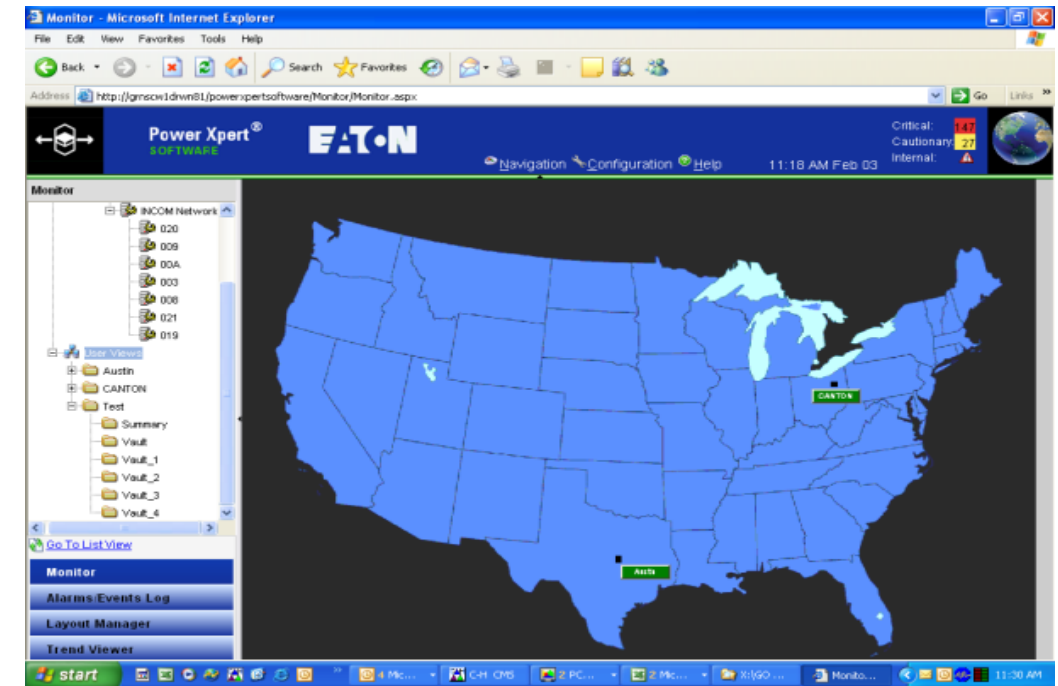
Power Xpert Solutions System Integration

Network Vault



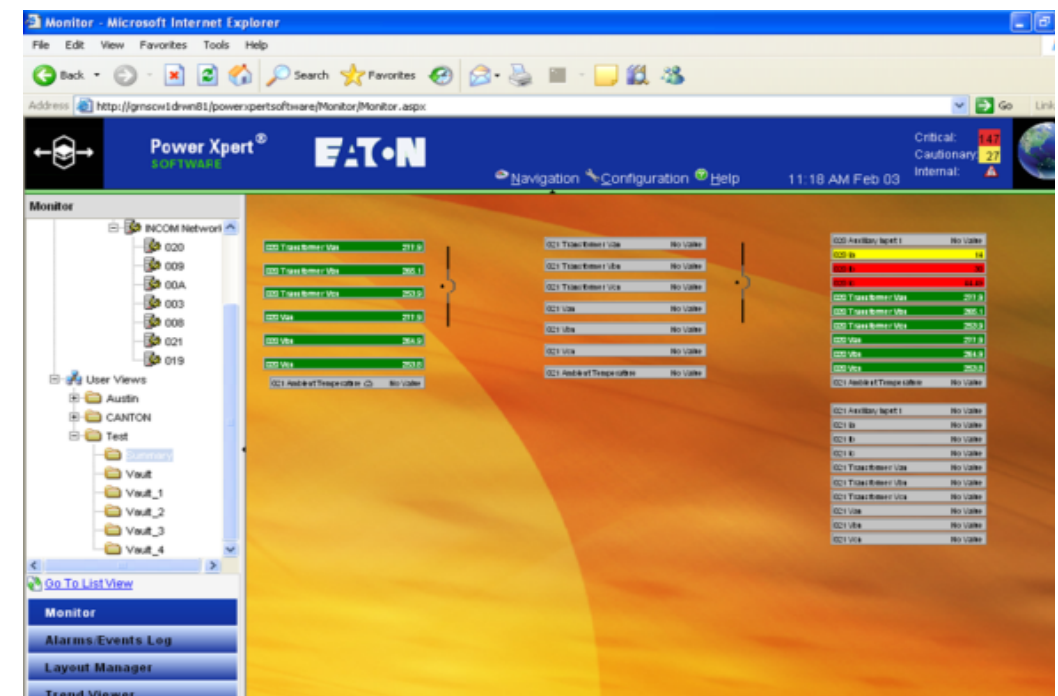
CUSTOM MAPS

The Power Xpert Layout Editor allows the user to create custom maps from an available library, as well as upload an existing map or drawing to incorporate into their system.



STATUS VIEW

The user can create screen templates to display critical system information and controls, as well as set custom color coding for easy analysis.

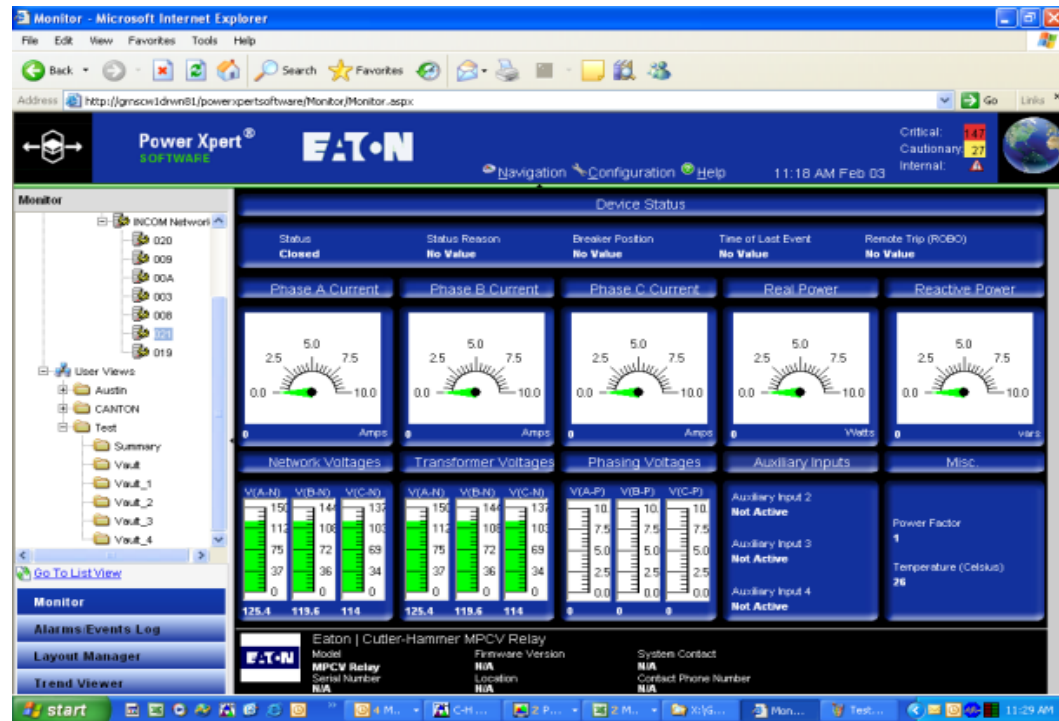


Power Xpert is an optional software package that can network all your Vaultgards together and let you customize your own look by selecting the many visual tools available such as gauges, dials or icons.

In addition, you can import your own maps and add visual indicators for your own custom and system automation!

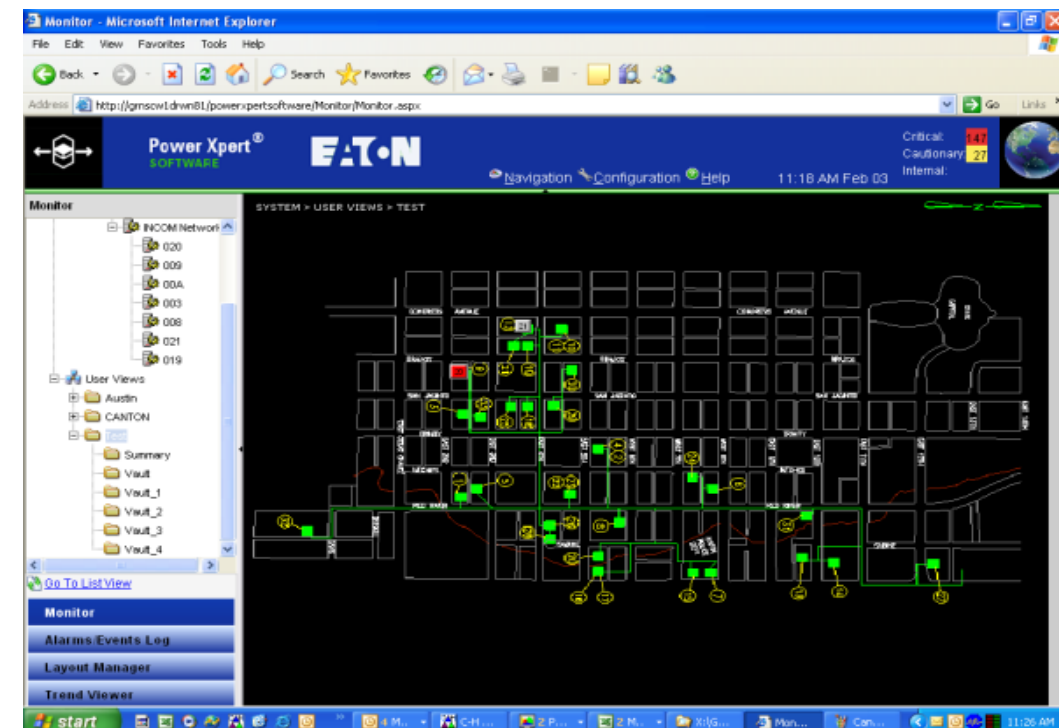
CUSTOM GAUGES/ METERS

Information can be displayed in a variety of ways, including an available library of gauges and meters to display information in an easy-to-understand manner.



STREET MAP LAYOUTS

Vault Status and Controls can be layered above a street map, so that the user may view a geographical layout, and drill down to a more detailed level by clicking on a hyperlink within the map.



Eaton has the most advance ArcFlash and Communications solutions in the Globe.

ARMS-IDM

The Network Protector Arc Reduction Maintenance System - Indicating Diagnostic Module is a new version of the Indicating Diagnostic Module that can sense fault current in either forward or reverse direction in addition to providing the utmost in arc flash protection.

When enabled, the innovative Arc Reduction Maintenance System establishes a preset instantaneous trip level that overrides the time delay function of traditional over current relays and schemes of the associated breaker. The trip initiation time is 4 ms and the device will detect non-directional faults.

When the ARM-IDM is enabled, the protective sensing looks into both the line and load side of the network protector.



Style #: IDM-ARMS

Stacklight

The Submersible Stacklight features 5 indicating lights, and connects to each protector via the Bulkhead Connection Box.

Features:

- Arms Maintenance Mode
- Breaker Open
- Breaker Closed
- Breaker in Test Position
- Breaker in Connect Position



Style #: SSL-100-5

TripSafe

TripSafe™ is designed to work with any MPCV Relay controlled network protector regardless of model or vintage. TripSafe™ provides enhanced transformer and network bus surge protection in addition to its ability to detect an unpowered MPCV relay.

TripSafe™ has an output TRIP contact that can be paralleled with the Network breaker trip contact to provide a backup trip mechanism for when bus voltages are sensed to be present and the MPCV is unpowered. It is engineered with appropriate algorithms to insure that noise or other disturbances will not cause nuisance tripping.



Style #: TRIPSAFE

RemRack

Eaton's CM-52 remote racking device provides a means of remotely connecting and disconnecting a network protector from the energized bus-work.

This is done while the door of the Network Protector remains bolted shut! This device helps mitigate any chance of arc flash exposure risk while disconnecting or re-connecting.

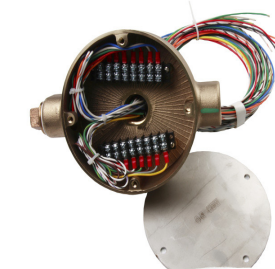


Style #: NWB2048G06

Bulkhead Penetrating Junction Box

The Bulkhead Penetrating Junction Box provides a means of feeding cable/wiring in/out of the Submersible Network Protector tank while maintaining submergibility.

The box features up to 16 wire connections to the Network protector. This allows the user to easily connect the MPCV relay to communications, as well as incorporate external alarms with the Network Protector.



Style #: NFX0012G07

Accessories For SmartGrid Applications

DRAM

Digital Relay Accessory Module

The DRAM addressable relay allows for up to 4 Form-C relay outputs, which provide a 'Pulse Relay' command for operating field devices.

The most common application for the DRAM would be for operating the Remote Racking system through communications, or interfacing with 3rd party equipment.



Style #: 70C1142G52

DIM

Digital Input Module

The DIM device allows for up to 8 drycontact digital inputs, which can be used to monitor various alarms within each vault.

Some common alarms used with the DIM are the Smoke Alarm, Vault Float Sensor, Moisture Sensor, NP Pressure Sensor, and intrusion alarms.



Style #: 66D2061G11

NP Pressure Sensor

The NP Pressure Sensor monitors the pressure inside of the Network Protector tank, and features a normally closed circuit to alarm the system if there is a drop in pressure within an enclosed tank.



Style #: NAS0026G01

NP Moisture Sensor



Style #: NAS0164G06

The NP Moisture Sensor is mounted at the bottom of the Network Protector tank, and monitors for the presence of any moisture within the tank.

It features a NO alarm contact which can be seen through communications via the DIM or through one of the MPCV's 3 spare Aux Inputs.

Smoke Alarm

The smoke alarm is powered from 120VAC and provides a Normally Open alarm circuit which can be brought back through communications via the Digital Input Module.



Style #: NTS00025

Vault Flood Alarm

Rugged float switch inside of a debris-resistant housing. This float switch alarm can be used in conjunction with the DIM to sense the presence of liquid up to a certain level in a Vault environment.



Style #: NAS0164G05



Style #: NAS0520G03

RemRack/ARMs Control Cabinet

Allows for control of up to 6 Remote Racking devices and 6 NP ARMs devices.

The user can enable Maintenance Mode on all protectors from a single illuminated switch. They can also Rack-In/Rack-Out the breakers, as well as see the breaker position via indicating lights.

Eaton is a total solutions provider and can provide turnkey installation and start-up services for communications and arc-flash solutions.

Eaton has more communications and automations deployment in secondary networks than anyone in the world.

Let us help you convert your Networks to the most advanced communication and automation system on the globe. For more details, please visit our website at www.eaton.com/nwp.

Eaton's electrical business is a global leader in electrical control, power distribution, uninterruptible power supply and industrial automation products and services.

Eaton's global electrical brands, including Cutler-Hammer®, Powerware®, Holec® and MEM®, provide customer-driven PowerChain™ Management solutions to serve the power system needs of the industrial, institutional, government, utility, commercial, residential, IT, mission-critical and OEM markets worldwide.

Eaton Corporation plc is a diversified power management company providing energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power.

The company is a global technology leader in electrical products, systems and services for power quality, distribution and control, power transmission, lighting and wiring products; hydraulics components, systems and services for industrial and mobile equipment; aerospace fuel, hydraulics and pneumatic systems for commercial and military use; and truck and automotive drivetrain and powertrain systems for performance, fuel economy and safety.

Eaton acquired Cooper Industries plc in 2012. The new company, Eaton Corporation plc, has approximately 100,000 employees and sells products to customers in more than 150 countries.

For more information, visit www.eaton.com.



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Printed in USA
Publication No. BR024001EN / LFD2013-2
March 2013