Magnum PXR low-voltage switchgear
Automatic transfer and intelligent control

Intelligent designs in simplified packages

Increase uptime and simplify switchgear design by specifying one of Eaton's pre-engineered automatic transfer and intelligent control packages for Magnum PXR low-voltage switchgear. The packages are designed with features to meet typical customer applications while still maintaining the flexibility to meet specific requirements. The packages are available on front and rear access in standard and designs. Classified by the interface, the automatic transfer and intelligent control packages are as follows:

- Eaton ATC-900 controller
- Eaton programmable logic controller (PLC) with Eaton touch screen
- Power Xpert® dashboard

Powering Business Worldwide

Eaton ATC-900 controller

Main-Main, Main-Generator or Generator-Generator

This controller can be utilized for transfer in a lineup with Main-Main, Main-Generator or Generator-Generator application (no tie breaker present). This option will include selector switches for Auto/Manual as well as Generator Start/Stop/Exercise.

Include the optional 7" human-machine interface (HMI) remote annunciator controller (RAC), a color touch-screen display for an easy-to-use interface to monitor and control up to eight ATC-900 controllers. The remote annunciator supports serial RS-485 Modbus RTU and Modbus TCP/IP natively and can connect to ethernet via a serial to ethernet gateway.

Control pushbuttons

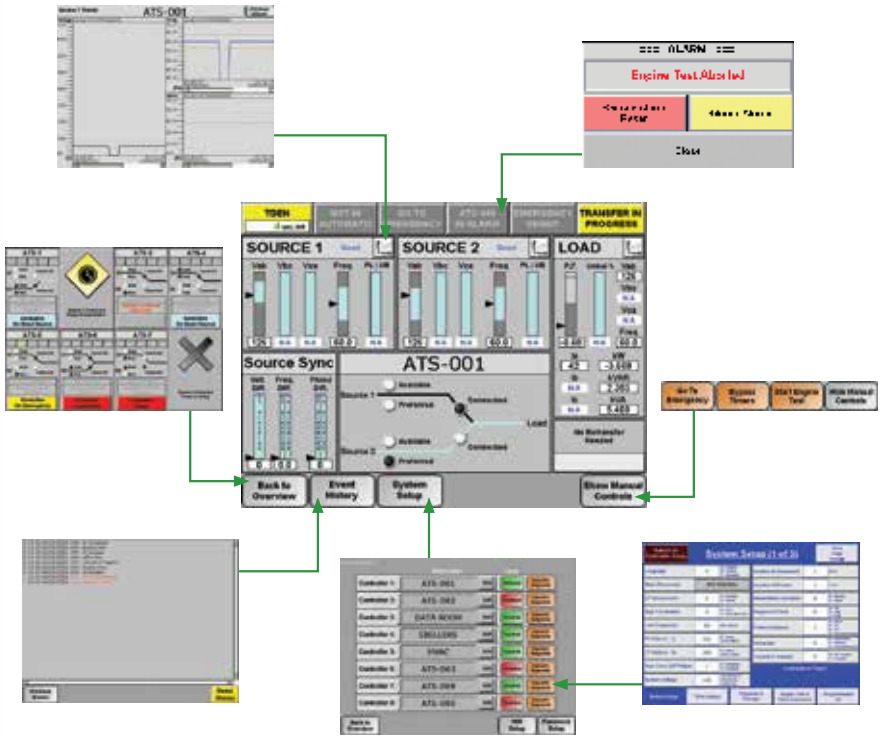
- Go-to-emergency/cancel go-to-emergency
- Start/stop engine test
- Alarm silence
- Bypass timers
- Manual retransfer

Status indicators

- S1/S2 available
- S1/S2 preferred
- S1/S2 connected
- S1/S2 status (under-/overvoltage, under-/overfrequency, etc.)
- Emergency inhibit
- Lockout/monitor mode
- Closed on emergency
- Go-to-emergency active
- Engine test active
- Transfer in progress
- Source 1 voltage metering
- Source 2 voltage metering
- Load voltage metering (includes current if direct current-current transformer (DCT) module is installed)
- Waiting for manual retransfer
- History of events

For detailed information on the features of the ATC-900 and the remote annunciator, refer to documentation, **TD140001EN** and **IB140012EN**.

ATC-900 controller display



Interface from the HMI remote annunciator controller

Eaton PLC with Eaton touch screen

The Eaton PLC and Eaton touch screen can provide automatic main-tie-main transfer to increase uptime and efficiency. The desired sequence of operation can be selected with the following features:

- Open and closed retransfer (manually initiated retransfer included)
- Customer selectable retransfer (PLC program will have both open and closed)
- Select to trip via HMI
- Preferred source selection
- Basic generator control (start signal, cool down timer, 81 over- and under-frequency relays, run/auto/switch)

Eaton programmable logic controller

Eaton XP-503 panel PC

Automatic main-tie-main transfer sequence of operation

Open transition

- Loss of power at main breaker #1 (52-1)
  - Voltage device detects loss of normal voltage
  - Adjustable time delay (default 5s, settable range 1–60s)
  - Main breaker 52-1 opens
  - Adjustable time delay (default 2s, settable range 1–10s)
  - Tie breaker 52-T closes
- Loss of power at main breaker #2 (52-2)
  - Voltage device detects loss of normal voltage
  - Adjustable time delay (default 5s, settable range 1–60s)
  - Main breaker 52-2 opens
  - Adjustable time delay (default 2s, settable range 1–10s)
  - Tie breaker 52-T closes
- Loss of power at main breaker #1 (52-1) and main breaker #2 (52-2)
  - No action is taken
- Return of power at main breaker #1 (52-1) after loss of power at main breaker #1 (52-1)
  - Voltage device detects normal voltage
  - Adjustable time delay (default 10s, settable range 1–300s)
  - Tie breaker 52-T opens
  - Adjustable time delay (default 2s, settable range 1–10s)
  - Main breaker 52-1 closes
- Return of power at main breaker #2 (52-2) after loss of power at main breaker #2 (52-2)
  - Voltage device detects normal voltage
  - Adjustable time delay (default 10s, settable range 1–300s)
  - Tie breaker 52-T opens
  - Adjustable time delay (default 2s, settable range 1–10s)
  - Main breaker 52-2 closes

Optional closed transition—return to normal (follows same sequence as open transition for loss of power)

- Return of power at main breaker #1 (52-1) after loss of power at main breaker #1 (52-1)
  - Voltage device detects normal voltage
  - Adjustable time delay (default 10s, settable range 1–300s)
  - Device 25 (sync-check relay) verifies synchronism
  - Main breaker 52-1 closes
  - Adjustable time delay (default 2s, settable range 1–10s)
  - Tie breaker 52-T opens
- Return of power at main breaker #2 (52-2) after loss of power at main breaker #2 (52-2)
  - Voltage device detects normal voltage
  - Adjustable time delay (default 10s, settable range 1–300s)
  - Device 25 verifies synchronism
  - Main breaker 52-2 closes
  - Adjustable time delay (default 2s, settable range 1–10s)
  - Tie breaker 52-T opens

System requirements

Hardware specification		
HMI module	1366 x 768 pixel resolution (**XP-503 WXGA**)	Document: **MN048014-EN**
PLC	Eaton logic controller (**ELC2-PV28NNDR**)	Document: **D05003001E**
PLC COMM	Ethernet communication module (**ELC-COENETM**)	Document: **IL05001002E**

Power Xpert dashboard

The Power Xpert dashboard provides a view of intelligent devices installed in a switchgear assembly. It allows continuous monitoring and control of various parameters.

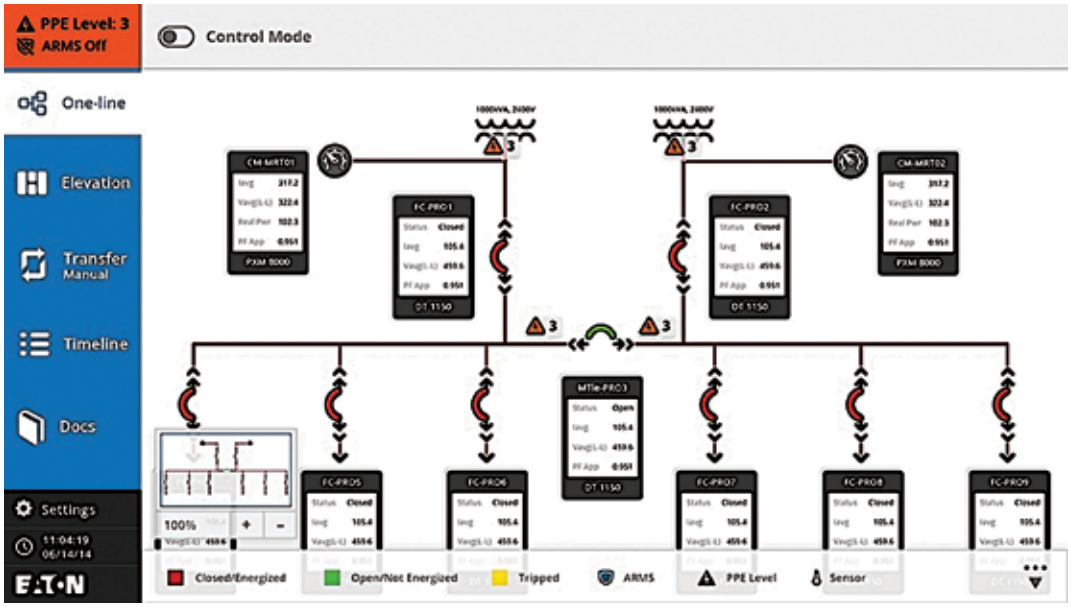
The dashboard can be integral to the switchgear assembly or remotely mounted offering a monitoring and control option outside the arc flash zone.

Features:

- Remotely open/close circuit breakers through control mode
- Initiate a transfer scheme in a main-tie-main switchgear for uninterrupted power supply
- Ability to configure/monitor alarms for various devices
- Provides a rich interface to monitor parameters of all devices and study the trends of those parameters

One line view

- The one line view shows the lineup of all the configured devices with their top five parameters in the widget; it graphically represents the power flow between various configured devices

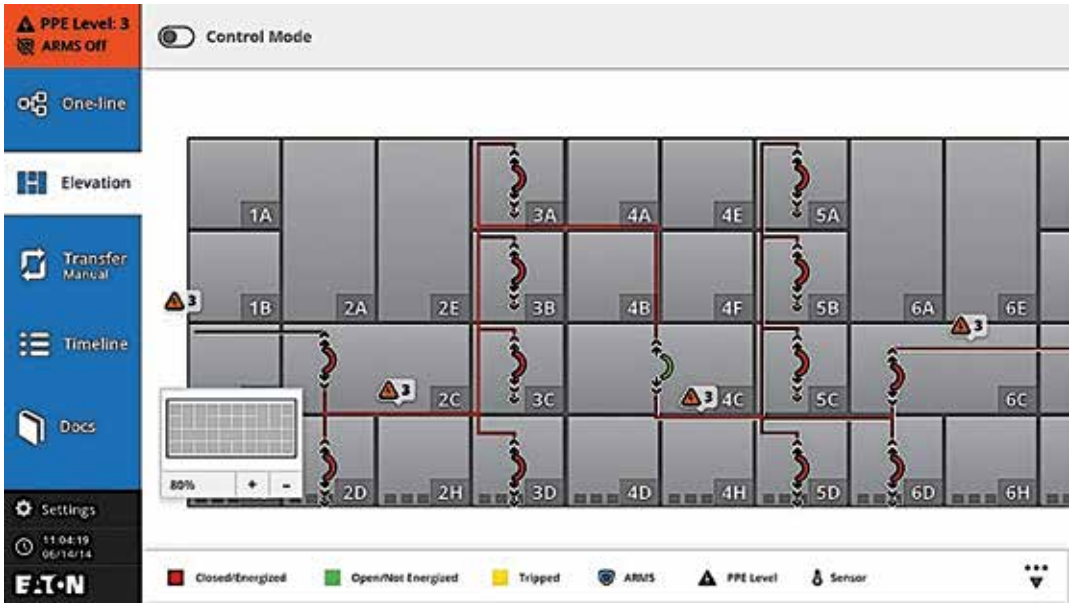


- Clicking on a **widget** provides the top 16 parameters of the device; this again is programmable
- Clicking on the **more** button in the top parameter's sidebar opens the device details page
- Device details page allows user to customize the top parameters, alarms, trends, etc.

- The navigator at the bottom can be used to move between various sections of the lineup
- The timeline is highlighted if any alarm is active

Elevation view

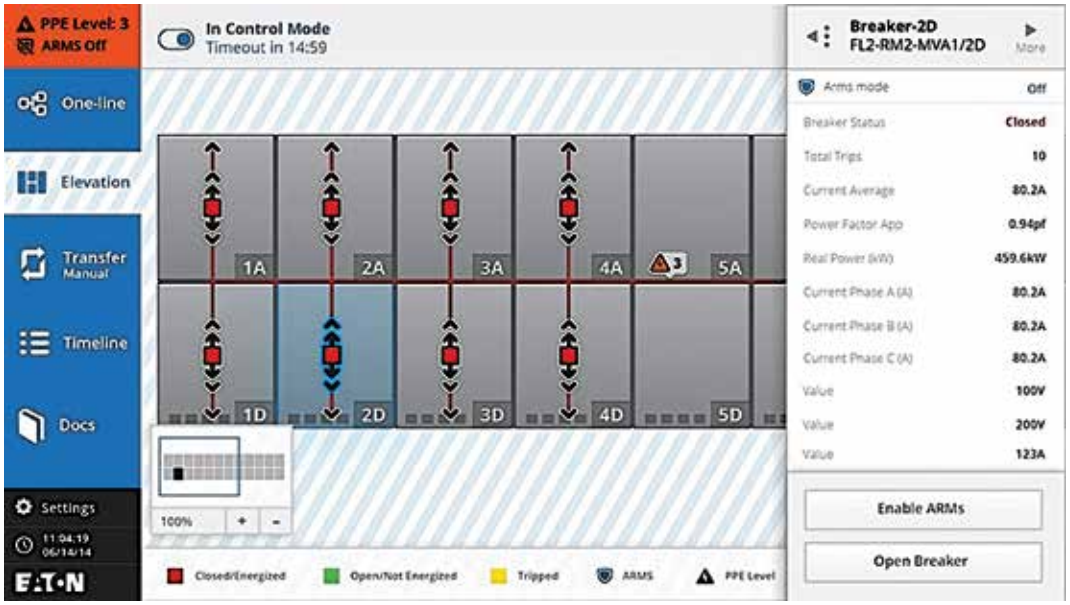
- The elevation view shows a physical front view of the switchgear lineup with the status of breakers and buses
- Any alarm or fault causes the corresponding compartment to be highlighted



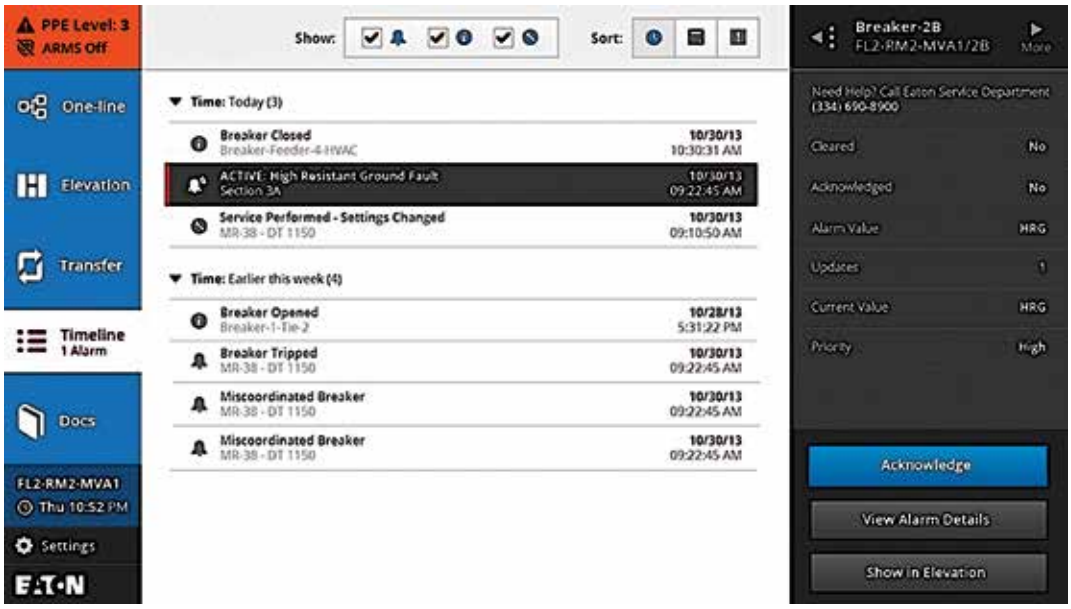
- The navigator shows the visible portion of the lineup; clicking on a **widget** provides the top 16 parameters of the device

Control feature

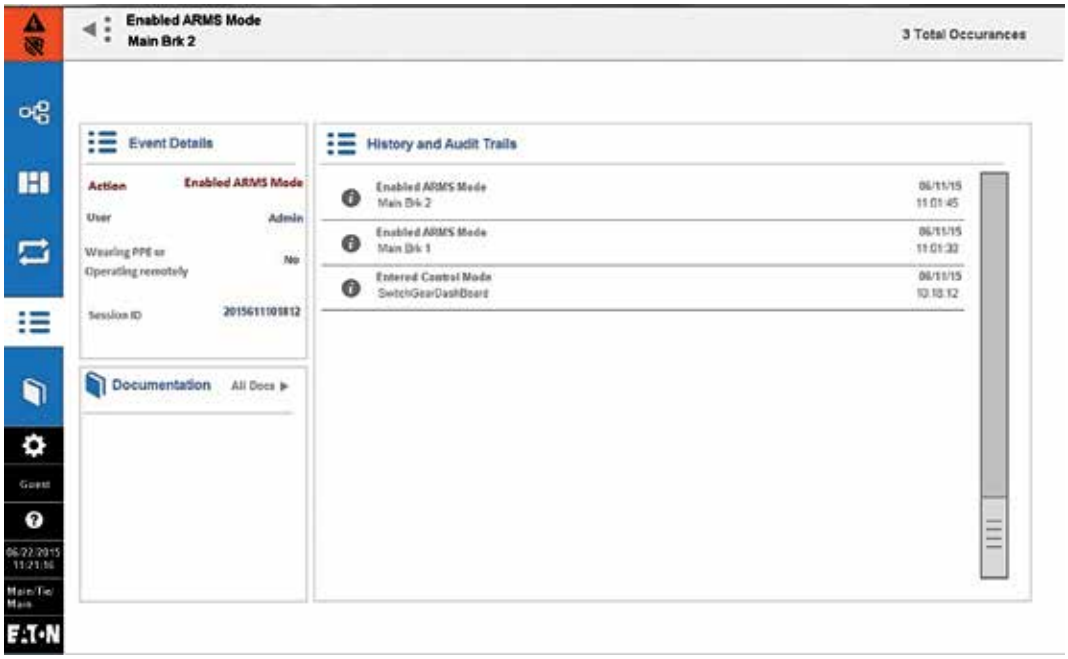
- Control mode allows user to open/close breakers remotely; control mode can be entered from one line or elevation view
- For breakers equipped with remote operation via communication, users can enable the Arcflash Reduction Maintenance System™ and see a visual indication on screen symbolized by blue hatched bus lines



- Clicking on an **alarm** opens the sidebar as follows; the alarm can be acknowledged by clicking the **tab**

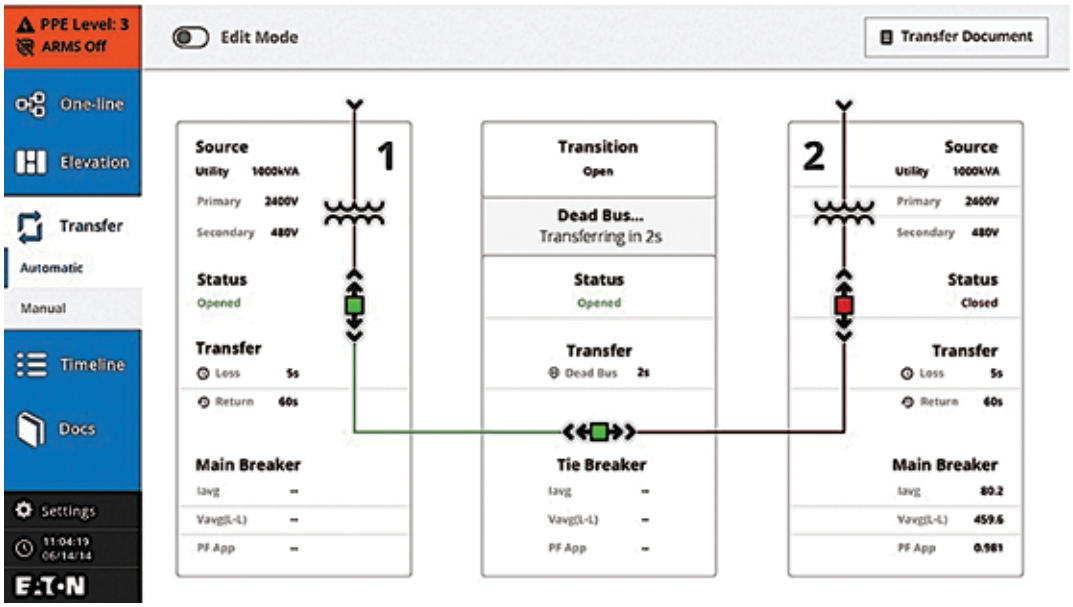


- Clicking on **view alarm details** opens the alarm details page; this page lists the alarm information, such as: time of occurrence, value of occurrence and all the instances of the same alarm



Transfer view

- The dashboard allows user to configure how a transfer will take place in case of a power failure
- User can set the transfer to be automatic or manual; this type of transition can be configured as open/closed



Docs view

- Docs from the menu list the support documents provided with the switchgear; one can navigate between various documents using the right arrow at bottom
- On entering the edit mode, more documents can be added under switchgear or manual sections

System requirements

Hardware specification		
HMI module	XP-503 panel PC (**XP-503-15-A10-A00-1V** or **XP-503-21-A10-A00-1V**)	Document: **MN048014-EN**

For more information, visit
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