Eaton automatic transfer switch

# The switch to Eaton should be **automatic**


EATON

*Powering Business Worldwide*

# Built with experience

In critical power applications, there is no room for error. You need a transfer switch that is built to last. With more than 100 years of experience, Eaton can engineer reliable solutions to meet the specific demands of your application—completely designed and customized to your needs.

**Around-the-clock reliable power**

In today's business critical environment, customers are driving our transformation from a leading global electrical assemblies provider into a customer-centric solutions partner who understands your business. We do this through in-depth collaboration with customers combined with subject-matter experts who study the issues inherent in electrical power distribution and control systems.

Eaton offers the broadest selection of UL® 1008 Listed automatic transfer switches in the market, which deliver a host of features and benefits to meet your application needs, including:

- Contactor and circuit breaker construction
- Open-delayed, open-in-phase and closed transition switching
- Bypass isolation type
- Automatic transfer switch controller and remote annunciator family
- Integrated service entrance option
- Arcflash Reduction Maintenance System™ (ARMS)
- Field adaptable design
- Industry-leading UL 1008 Listed withstand close-on ratings
- Easy integration into switchboards and motor control centers
- Three-source switching solutions

# Specifically engineered to meet electrical reliability requirements

**CONTACTOR**

## Contactor transfer switches

- Compact design and user-friendly front access interface simplifies routine operation, testing, maintenance and user programming
- UL 1008 Listed with a short-circuit and short-time rating
- Rated for 40–3000 A up to 600 V in two-, three- or four-pole configurations
- Available in open-delayed, open-in-phase and closed transition
- Automatic and non-automatic styles
- Available with Eaton's Arcflash Reduction Maintenance System (ARMS) to reduce the incident energy levels for downstream equipment during periods of maintenance
- Integral service entrance rated option

**MOLDED CASE**

## Molded case transfer switches

- High withstand close-on ratings on low amperage transfer switches without frame derating.
- 100% rated for 30–1000 A up to 600 V in two-, three- or four-pole configurations
- Available in open-delayed transition
- Automatic, non-automatic and manual styles
- Integral service entrance rated option
- Permanently affixed operating handle allows for safe manual operation under full load
- Self-protecting switching contacts

**POWER FRAME**

## Power frame transfer switches

- UL 1008 Listed with a short-circuit and short-time rating. The use of optional electronic trip units allows performance curve shaping to facilitate proper system coordination and application
- Rated for 200–5000 A up to 600 V in two-, three- or four-pole configurations, and available in open-delayed, open-in-phase and closed transition
- Automatic and non-automatic styles
- Integral overcurrent protection option
- Drawout construction is available for applications such as critical life support systems where preventive maintenance, inspection and testing must be accomplished while maintaining continuous power to the load
- Available with Eaton's Arcflash Reduction Maintenance System (ARMS) to reduce the incident energy levels for downstream equipment during periods of maintenance
- Optional bus flange connections
- Open frame design for integration into new or existing distribution lineup
- Integral service entrance rated option
- Magnum™ power switch/circuit breaker construction

# Bypass isolation transfer switches

The bypass isolation switch is designed for applications where maintenance, inspection and testing must be performed while maintaining continuous power to the load. This is typically required in critical life support systems and standby power situations calling for safe system maintenance with no power disruptions. Eaton offers bypass options in both contactor and power frame transfer switches.

## BYPASS ISOLATION CONTACTOR

### Bypass isolation contactor transfer switches

- Rated for 100–3000 A up to 600 V
- UL 1008 Listed with a short-circuit and short-time rating
- Available in open-in-phase, open-delayed or closed transition
- Front accessible with top and/or bottom entry available
- Dual ATS technology allows both the ATS and the bypass switch to operate automatically
- Drawout capabilities on both ATS and bypass compartments allow preventive maintenance, inspection and testing to be accomplished while maintaining continuous power to the load
- Integral safety interlocks automatically open main contacts prior to the ATS or bypass switch being withdrawn and isolated for test
- Compartmentalized design provides protective steel barriers between workers and energized components

## BYPASS ISOLATION POWER FRAME

### Bypass isolation power frame transfer switches

- Rated for 200–5000 A in open-delayed, open-in-phase and closed transition configurations
- UL 1008 Listed with a short-circuit and short-time rating. The use of optional electronic trips allows performance curve shaping to facilitate proper system coordination and application
- Rear/side/top or bottom entry cable access with an optional front access cubicle
- Integral overcurrent protection option
- Drawout capabilities on both ATS and bypass compartments allow preventive maintenance, inspection and testing to be accomplished while maintaining continuous power to the load
- Available with Eaton's Arcflash Reduction Maintenance System (ARMS) to reduce the incident energy levels for downstream equipment during periods of maintenance
- Integral service entrance rated option
- Optional bus flange connections
- Magnum power switch/circuit breaker construction

# Transfer switch monitor

## Bring new life to legacy transfer switches

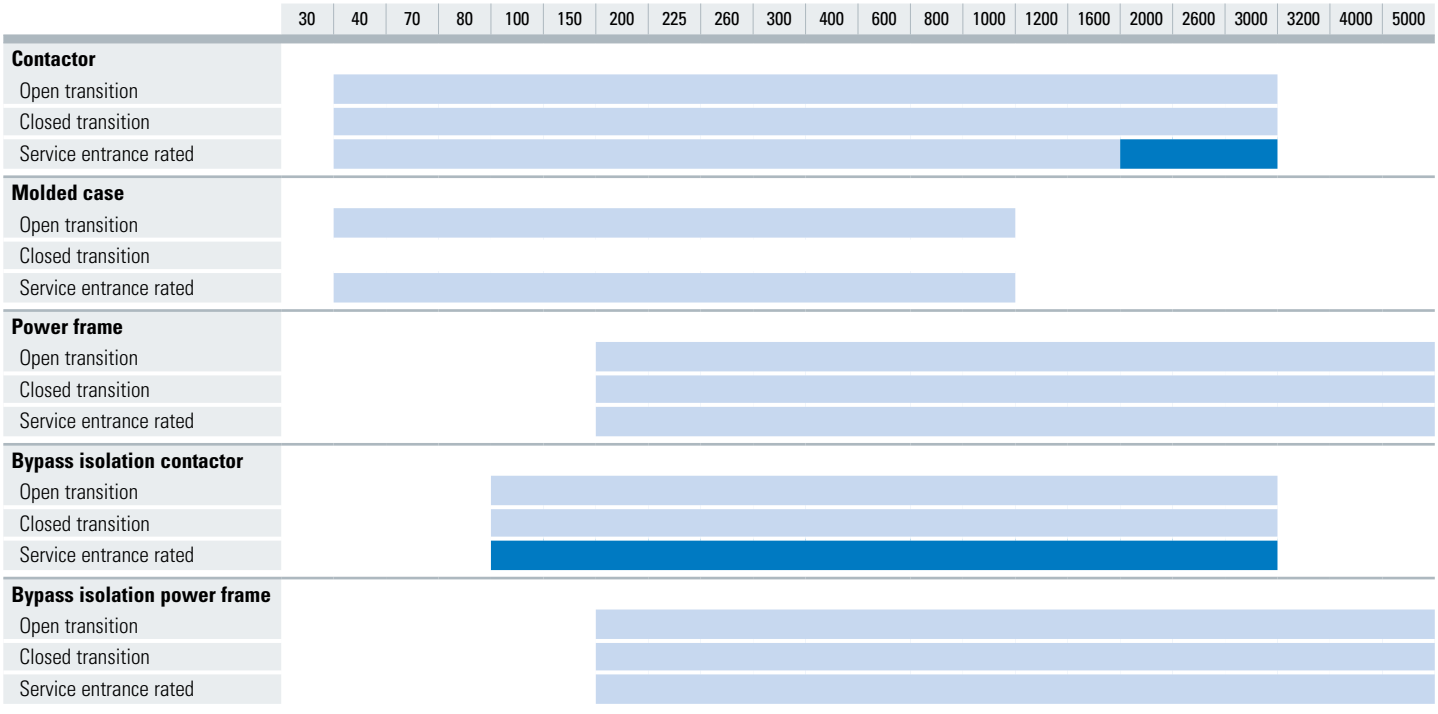
Bring new life and modern intelligence to legacy transfer switches with Eaton's Transfer Switch Monitor (TSM-900)—the industry's first retrofit designed to add real-time communications to existing transfer switch equipment. With a compact footprint and versatile design, the solution can be integrated with nearly any transfer switch model, building management system (BMS) or power management system (PMS) for in-depth monitoring, simplified maintenance and enhanced reliability.

Featuring Eaton's TSM-900

### Features and benefits

| Improve operational intelligence | Make informed decisions | Enhance reliability | Manage system capacity | Facilitate centralized testing and reporting |
|---|---|---|---|---|
| • Gain system level visibility of transfer switch status and condition<br>• Maximize flexibility with field-programmable inputs and relay outputs<br>• Actively monitor and inventory transfer switch equipment that is integral to an essential electrical system and loads served<br>• Understand conditions leading up to an unplanned outage and guide corrective action by leveraging detailed event log with time-stamped sequence of operation, meter values, and high-speed data capture | • Measure and benchmark real-time metering data (voltage, frequency, current, power, power factor, power demand)<br>• Prioritize investments and actions such as equipment upgrades or targeted energy audits<br>• Time synchronize transfer switch status and events with other system equipment | • Reduce response time and minimize duration of electrical disruptions<br>• Actively survey transfer switches deployed over a large area and spot issues requiring immediate action<br>• Analyze data to identify changes in performance<br>• Assess risk and schedule service to ensure Emergency Power Supply System (EPSS) viability | • Evaluate system loading and identify reserve capacity<br>• Accurately plan for future renovation or expansion<br>• Monitor mechanical equipment loading and optimize for efficiency | • Conduct routine transfer switch testing remotely via Serial or Ethernet communication<br>• Retrieve "transfer time" for insertion into a BMS/PMS generated report to comply with regulatory requirements including The Joint Commission Report<br>• Automate testing process to reduce time and labor burden associated with canvassing facility, local test initiation, logging results and compiling records |

### Transfer switch types by amperage rating




Available via Eaton satellite as an integrated assembly solution.

# Transfer switch withstand and close-on ratings

### UL 1008 listed short-circuit withstand and close-on ratings (kA), up to 480 V ❶

| Ampere rating | Number of poles | Short-circuit (0.05 sec) ❷ | | | | | | | Short-circuit (specific circuit breaker) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Contactor | | | Molded case | Bypass contactor | | Power frame (Magnum) | Contactor | | | Bypass contactor | |
| | | C2 | C3/C5 ❸ | F5/G5 | | C3/C5 | F5/G5 | | C2 | C3/C5 | F5/G5 | C3/C5 | F5/G5 |
| 30 | 2, 3, 4 | NA | NA | NA | 65 | NA | NA | NA | NA | NA | NA | NA | NA |
| 40 | 2, 3, 4 | 10 | 30 | NA | NA | NA | NA | NA | 30 | 50 | NA | NA | NA |
| 70 | 2, 3, 4 | NA | NA | NA | 65 | NA | NA | NA | NA | NA | NA | NA | NA |
| 80 | 2, 3, 4 | 10 | 30 | NA | NA | NA | NA | NA | 30 | 50 | NA | NA | NA |
| 100 | 2, 3, 4 | 10 | 30 | NA | 65 | 30 | NA | NA | 30 | 50 | NA | 50 | NA |
| 150 | 2, 3, 4 | 10 | 30 | NA | 65 | 30 | NA | NA | 30 | 50 | NA | 50 | NA |
| 200 | 2, 3, 4 | 10 | 30 | NA | 65 | 30 | NA | 100 | 30 | 50 | NA | 50 | NA |
| 225 | 2, 3, 4 | 30 | 30 | NA | 65 | 30 | NA | 100 | 50 | 50 | NA | 50 | NA |
| 260 | 2, 3, 4 | 30 | 30 | NA | NA | 30 | NA | 100 | 50 | 50 | NA | 50 | NA |
| 300 | 2, 3, 4 | NA | NA | NA | 65 | NA | NA | 100 | NA | NA | NA | NA | NA |
| 400 | 2, 3, 4 | 30 | 30 | NA | 65 | 30 | NA | 100 | 50 | 50 | NA | 50 | NA |
| 600 | 2, 3, 4 | NA | 50 | NA | 65/50 ❹ | 50 | NA | 100 | NA | 65 | NA | 65 | NA |
| 800 | 2, 3, 4 | NA | 50 | 100 | 50 | 50 | 100 | 100 | NA | 65 | 100 | 65 | 100 |
| 1000 | 2, 3, 4 | NA | 50 | 100 | 50 | 50 | 100 | 100 | NA | 65 | 100 | 65 | 100 |
| 1200 | 2, 3, 4 | NA | 50 | 100 | NA | 50 | 100 | 100 | NA | 65 | 100 | 65 | 100 |
| 1600 | 2, 3, 4 | NA | 50 | 100 | NA | 50 | 100 | 100 | NA | 65 | 100 | 65 | 100 |
| 2000 | 2, 3, 4 | NA | NA | 100 | NA | NA | 100 | 100 | NA | NA | 100 | NA | 100 |
| 2600 ❺ | 2, 3, 4 | NA | NA | 100 | NA | NA | 100 | 100 | NA | NA | 100 | NA | 100 |
| 3000 | 2, 3, 4 | NA | NA | 100 | NA | NA | 100 | 100 | NA | NA | 100 | NA | 100 |
| 3200 | 2, 3, 4 | NA | NA | NA | NA | NA | NA | 100 | NA | NA | NA | NA | NA |
| 4000 | 2, 3, 4 | NA | NA | NA | NA | NA | NA | 100 | NA | NA | NA | NA | NA |
| 5000 | 2, 3, 4 | NA | NA | NA | NA | NA | NA | 100 ❻ | NA | NA | NA | NA | NA |

❶ See Eaton distribution catalog for additional ratings at 240 V and 600 V.

❷ For open transition (C2 switching mechanism) and closed transition (C3 switching mechanism) transfer switches rated 40–200 A, the time duration is 0.025 seconds.

❸ For closed transition transfer switches rated 40–200 A (C3 switching mechanism), the short-circuit withstand close-on ratings in column C2 apply.

❹ Rating varies based on molded case frame size. See Eaton distribution catalog for more information.

❺ For power frame, ampere rating is 2500 A.

❻ UL 1066 short-circuit withstand rating.

### UL 1008 listed short-circuit and short-time withstand and close-on ratings (kA), up to 480 V ❶

| Ampere rating | Number of poles | Short-circuit (specific fuse) ❷ | | | | | | | Short-time (0.5 sec) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Contactor | | | Molded case | Bypass contactor | | Power frame (Magnum) | Contactor | Bypass contactor | Power frame (Magnum) |
| | | C2 | C3/C5 | F5/G5 | | C3/C5 | F5/G5 | | G5 | G5 | |
| 30 | 2, 3, 4 | NA | NA | NA | 200 | NA | NA | NA | NA | NA | NA |
| 40 | 2, 3, 4 | 100 | 200 | NA | 200 | NA | NA | NA | NA | NA | NA |
| 70 | 2, 3, 4 | NA | NA | NA | 200 | NA | NA | NA | NA | NA | NA |
| 80 | 2, 3, 4 | 100 | 200 | NA | 200 | NA | NA | NA | NA | NA | NA |
| 100 | 2, 3, 4 | 100 | 200 | NA | 200 | 200 | NA | NA | NA | NA | NA |
| 150 | 2, 3, 4 | 100 | 200 | NA | 200 | 200 | NA | NA | NA | NA | NA |
| 200 | 2, 3, 4 | 100 | 200 | NA | 200 | 200 | NA | 200 | NA | NA | 85 |
| 225 | 2, 3, 4 | 200 | 200 | NA | 200 | 200 | NA | NA | NA | NA | NA |
| 260 | 2, 3, 4 | 200 | 200 | NA | 200 | 200 | NA | NA | NA | NA | NA |
| 300 | 2, 3, 4 | NA | NA | NA | 200 | NA | NA | 200 | NA | NA | 85 |
| 400 | 2, 3, 4 | 200 | 200 | NA | 200 | 200 | NA | 200 | NA | NA | 85 |
| 600 | 2, 3, 4 | NA | 200 | NA | 200 | 200 | NA | 200 | NA | NA | 85 |
| 800 | 2, 3, 4 | NA | 200 | 200 | 200 | 200 | 200 | 200 | 85 | 85 | 85 |
| 1000 | 2, 3, 4 | NA | 200 | 200 | 200 | 200 | 200 | 200 | 85 | 85 | 85 |
| 1200 | 2, 3, 4 | NA | 200 | 200 | NA | 200 | 200 | 200 | 85 | 85 | 85 |
| 1600 | 2, 3, 4 | NA | 200 | 200 | NA | 200 | 200 | 200 | 85 | 85 | 85 |
| 2000 | 2, 3, 4 | NA | NA | 200 | NA | 200 | 200 | 200 | 85 | 85 | 85 |
| 2600 | 2, 3, 4 | NA | NA | 200 | NA | 200 | 200 | 200 | 85 | 85 | 85 |
| 3000 | 2, 3, 4 | NA | NA | 200 | NA | 200 | 200 | 200 | 85 | 85 | 85 |
| 3200 | 2, 3, 4 | NA | NA | NA | NA | NA | NA | 200 | NA | NA | 85 |
| 4000 | 2, 3, 4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 85 ❸ |
| 5000 | 2, 3, 4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 85 ❸ |

❶ See Eaton distribution catalog for 240 V and 600 V ratings.

❷ See Eaton distribution catalog for specific fuse classes.

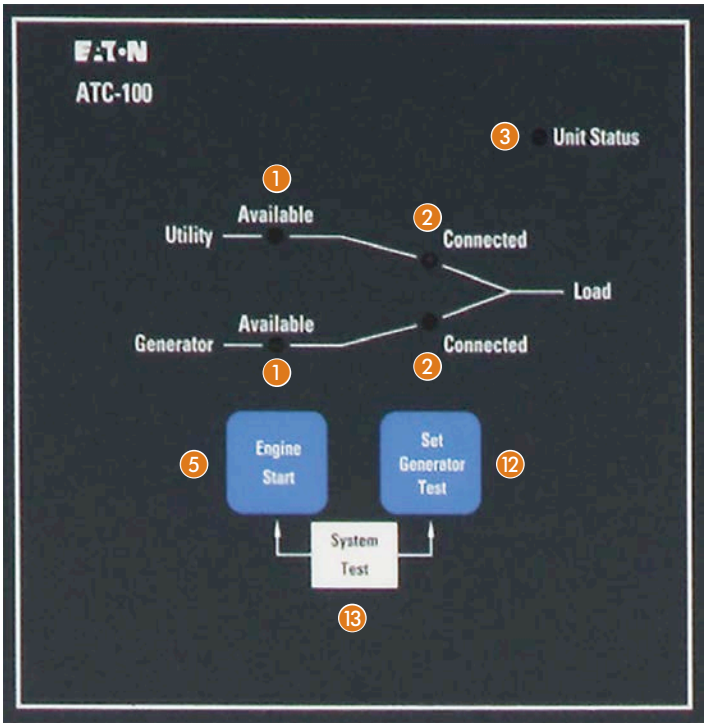
❸ UL 1066 short-time withstand rating.

# Automatic transfer switch controller family

An automatic transfer switch controller is the key component that provides the intelligence to sense the proper conditions to initiate a transfer and retransfer of the switch. Eaton's transfer switches come with the design flexibility of being applied with a variety of controllers.

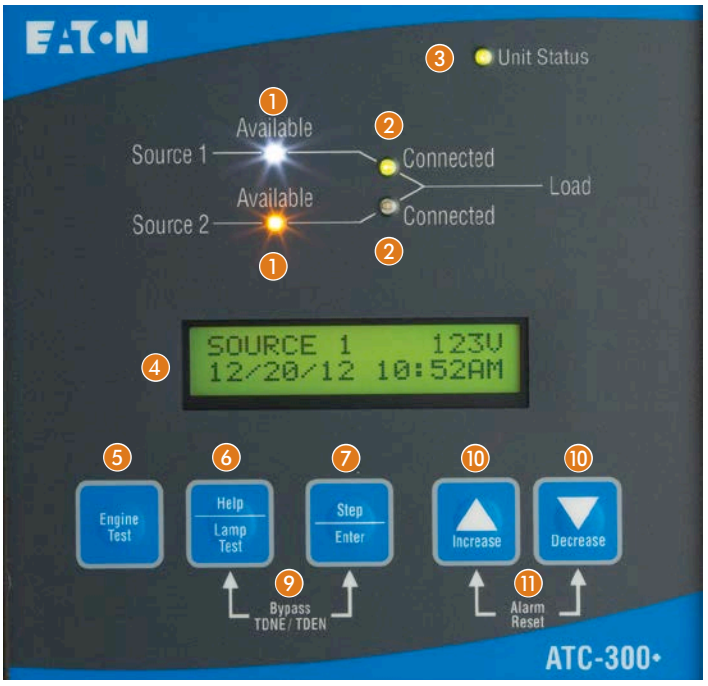
## ATS CONTROLLER FEATURES

1. Source availability indication
2. Source position indication
3. Diagnostic status indication
4. Liquid crystal display (LCD)
5. Engine start pushbutton
6. Help/lamp test pushbutton
7. Step/enter pushbutton
8. Navigation pushbuttons
9. Bypass timer pushbuttons
10. Increase/decrease pushbuttons
11. Alarm reset pushbuttons
12. Set generator test pushbutton
13. System test pushbutton




ATC-100


ATC-900



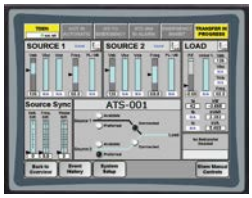

ATC-300+

# ATS controller features

| Description | Automatic controller | | |
|---|---|---|---|
| | ATC-100 | ATC-300+ | ATC-900 |
| Basic transfer control plant exerciser time delays self diagnostics and system settings | Standard | Standard | Standard |
| Source mimic diagram with LED indication | Standard | Standard | Standard |
| Engine test and start contact | Standard | Standard | Standard |
| Dual source control power input | Standard | Standard | Standard |
| Liquid crystal display (LCD) | | Standard | Standard |
| Programmable set points and plant exerciser | | Standard | Standard |
| Password protection | | Standard | Standard |
| Time-stamped history and event log | | Standard | Standard |
| Time delay bypass | | Standard | Standard |
| Go to source 2 control input | | Standard | Standard |
| Pre-transfer and general alarm control outputs | | Standard | Standard |
| Lockout and monitor modes | | Standard | Standard |
| Source status output relay contacts | | Standard | Standard |
| Serial communication port (Modbus® RTU) | | Standard | Standard |
| Manual retransfer control input | | Optional | Standard |
| Source 2 inhibit / load shed input | | Optional | Standard |
| USB port—metering data, setpoint and firmware management | | | Standard |
| Preferred source selection | | | Standard |
| Dual generator capability | | | Standard |
| User configurable inputs/outputs | | | Standard |
| Advanced diagnostics and troubleshooting with pre-/post-event data capture | | | Standard |
| Integrated load metering | | | Optional |
| Load management with selective load shed | | | Optional |
| DC voltage control power input | | | Optional |
| Three-source ATS—master/slave control | | | Optional |
| Ethernet communication ❶ | | Optional | Optional |

❶ Ethernet communication option requires use of serial port.

# Remote management




## HMi Remote Annunciator controller

Eaton's HMi Remote Annunciator Controller series provides users with the ability to remotely monitor and control multiple transfer switches from one intuitive, touchscreen user interface.

- Seven-inch color display with touchscreen graphical interface
- Remote monitor and control to include set point programming and metering data
- Password protection for all control and setup functions
- Mimic bus to include source availability, position indication and preferred source
- Date and time-stamped alarm history
- Flush-mount design
- Compatible with Eaton's ATC-300+ and ATC-900 automatic microprocessor controllers
- Serial (Modbus RTU) and Ethernet communication
- Audible alarm with silence feature

# Network connectivity

## Power Xpert® Gateway

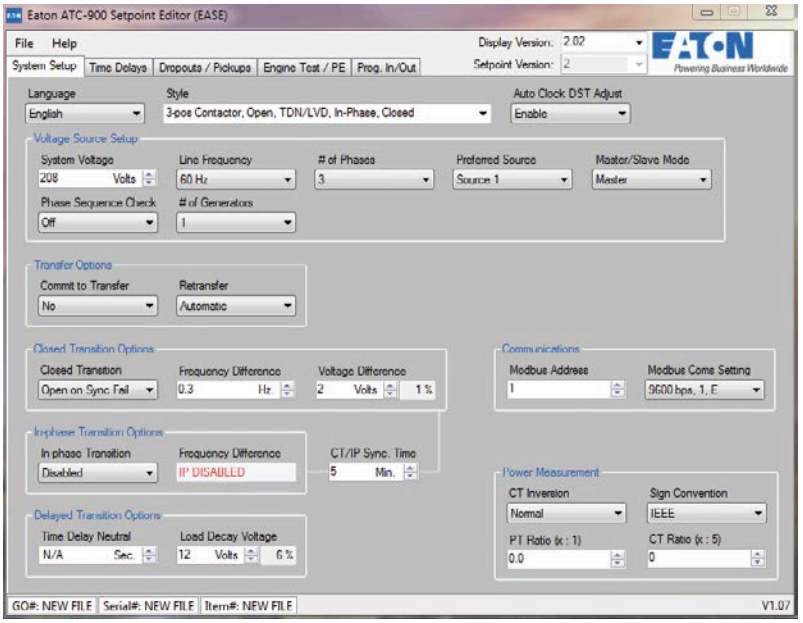
The Power Xpert Gateway allows you to easily integrate your Eaton automatic transfer switch directly into your Ethernet infrastructure.

- Remotely monitor and manage your automatic transfer switch from any computer, via a secure web browser interface
- Provides access to real time information from ATC-300+ and ATC-900 automatic transfer switch controllers and other Eaton communicating devices
- Ability to integrate your automatic transfer switch into existing building management or network management systems to include protocol translation
- Provides optional email notification of user-defined events
- Serial communication with support for Modbus RTU and INCOM protocols
- Ethernet communication with support for Modbus TCP/IP, DHCP, NTP, SMTP, BACNet/IP and SNMP network protocols
- Pass-through and cached data modes
- Dual RJ-45 network connectors for daisy-chain applications

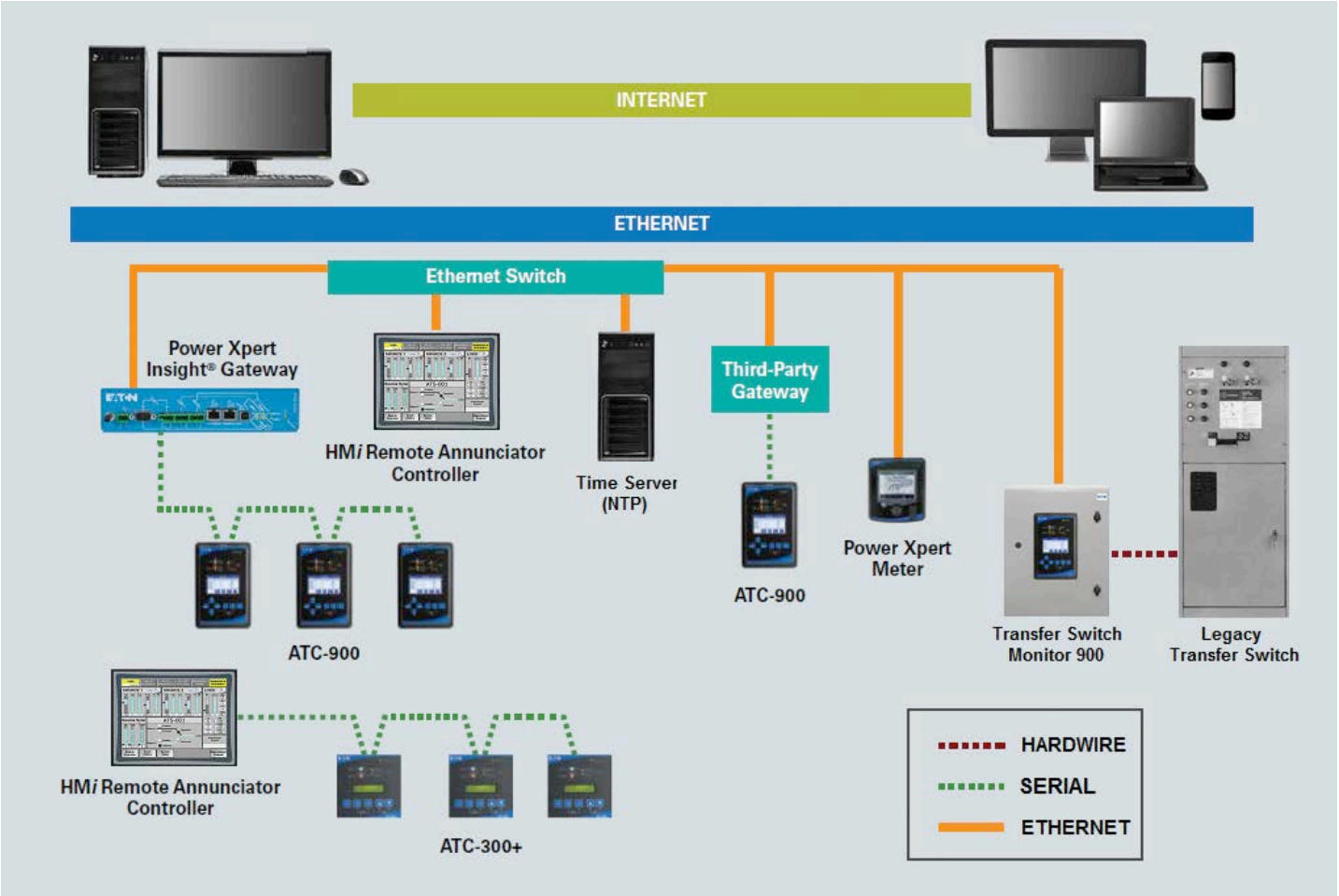
# EASE

Eaton's Setpoint Editor tool allows you to easily create, edit and save configuration files for upload to your ATC-900 controller or Transfer Switch Monitor 900 via a USB flash drive.

- Create one setpoint configuration file to simplify startup and commissioning
- Download an existing setpoint file to make edits, reproduce for use with new transfer switch equipment or forward to Eaton technical support




# Power Xpert Architecture



# Meter overview

Eaton's advanced meters provide accurate real-time system values, capture waveforms and system events, and display data directly on the device through on-board web servers or through a software monitoring solution.

Featuring options that can be integrated in Eaton's automatic transfer switches. For details, go to **Eaton.com/meters**.

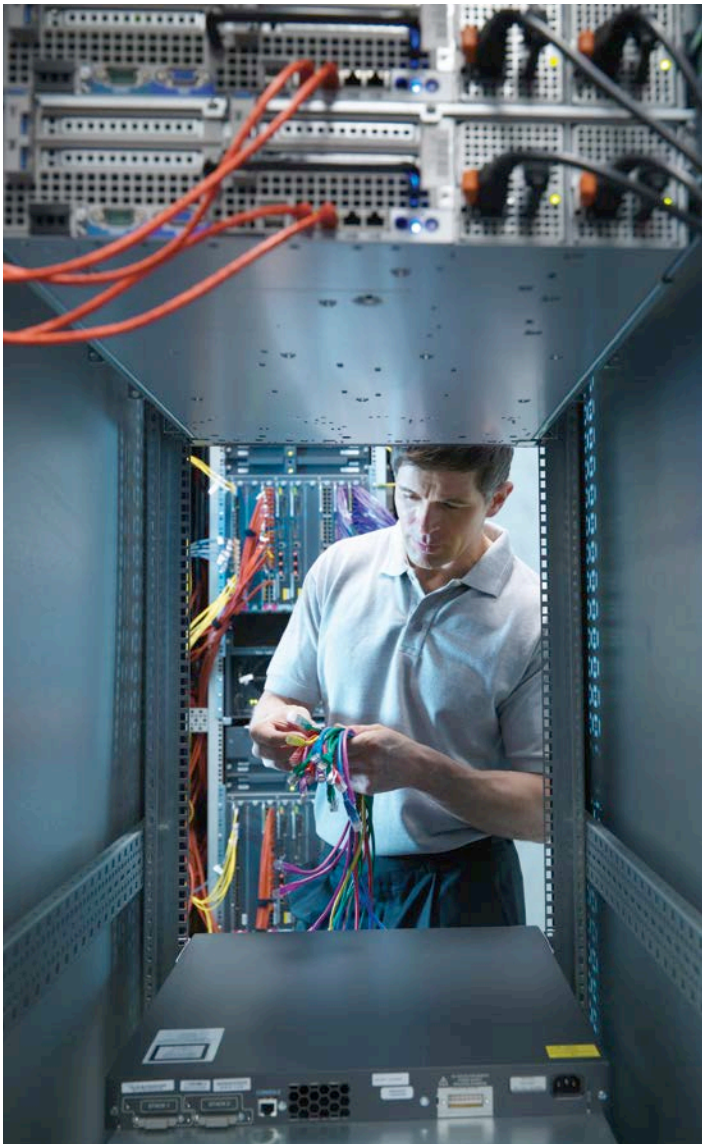
**Available metering options with Eaton transfer switches**

| Feature | ATC-900 (with DCT module) | IQ 100 Series | IQ 200 Series | Power Xpert 2000 Series | Power Xpert 4000/6000/8000 Series |
|---|---|---|---|---|---|
| **Instrumentation** | | | | | |
| Current, per phase | ■ | ■ | ■ | ■ | ■ |
| Current demand | — | ■ | ■ | ■ | ■ |
| Calculated neutral current | — | ■ | ■ | ■ | ■ |
| Voltage, per phase (L–L, L–N) | L–L only | ■ | ■ | ■ | ■ |
| Min./max. readings I, V | — | ■ | ■ | ■ | ■ |
| Min./max. readings PF, F, W, VAR,VA | — | Opt | ■ | ■ | ■ |
| Frequency | ■ | Opt | ■ | ■ | ■ |
| **Power** | | | | | |
| Real, reactive and apparent power (W, VAR, VA) | ■ | Opt | ■ | ■ | ■ |
| Power factor, total | ■ | Opt | ■ | ■ | ■ |
| Real, reactive and apparent power demand | — | Opt | ■ | ■ | ■ |
| **Demand methods** | | | | | |
| Block interval (sliding, fixed) | — | Opt | ■ | ■ | ■ |
| Energy | | | | | |
| Real, reactive and apparent energy, total (Wh, VAR, VAh) | — | Opt | ■ | ■ | ■ |
| **Data logging** | | | | | |
| Storage | — | — | Opt 128 KB | 256 MB | Std 2 GB<br>Opt 4 or 8 GB |
| **THD** | | | | | |
| % THD amps and volts | — | — | 40th | 40th | 127th |
| Interharmonics | — | — | — | — | Opt |
| **Waveform** | | | | | |
| Waveform recording, samples/cycle | — | — | — | Opt 64 or 512 | 4,096 |
| Ind. bar harmonics view | — | — | — | Opt 40th | 85th |
| Single cycle waveform view | — | — | — | Opt | X |
| **I/O** | | | | | |
| Digital input | — | — | Opt 2 or 3 | Opt 2 or 4 | 8 |
| Digital output | — | — | Opt 2 Form-C | Opt 2 Form-C | 3 |
| Analog output | — | — | Opt 3 | Opt 4 | — |
| **Communications** | | | | | |
| RS-485, Modbus RTU | ■ | Opt | ■ | ■ | ■ |
| RS-485, Modbus RTU/ASCII, KYZ output | — | Opt | ■ | ■ | ■ |
| Modbus TCP/IP (RJ-45) | Opt | Opt | ■ | ■ | ■ |
| HTTP (web pages), SMTP (email), NTP (time sync), SNMP | — | — | ■ | ■ | ■ |
| BACnet/IP | Opt | — | ■ | ■ | ■ |
| **Revenue accuracy** | | | | | |
| ANSI C12.20 (0.5 or 0.2%) | — | 0.50% | 0.20% | 0.20% | 0.20% |

■ = Standard feature.

# Services and support

Eaton's comprehensive, world-class service solutions for all Eaton power distribution, software and connectivity products are designed to improve costs, uptime, reliability, power quality and safety. We demonstrate our commitment to strong, lasting customer relationships through our technical expertise and expansive support network. With 240 field technicians in North America, 1,200 international authorized service providers and more than 100 dedicated customer support team members, we are well-positioned to solve your toughest power management challenges.



## Technical support services

Combining strong technical product expertise with in-depth industry applications experience, the transfer switch technical support organization possesses an innate ability to answer your questions and troubleshoot issues remotely. From guiding a customer through a system setup to resolving critical alarms, this dedicated team of industry professionals is here to help.

## Primary services

- Installation, setup, usage and troubleshooting
- Internal field engineer support for complex installations
- Advanced application diagnostic support services

## The Eaton advantage

**Speed**

The support staff is available 24x7 and, on average, answers your call and begins working on your question or issue in an average of 120 seconds.

**Knowledge**

Support engineers average 11 years of experience plus continuing education in the field and classroom.

**Technology**

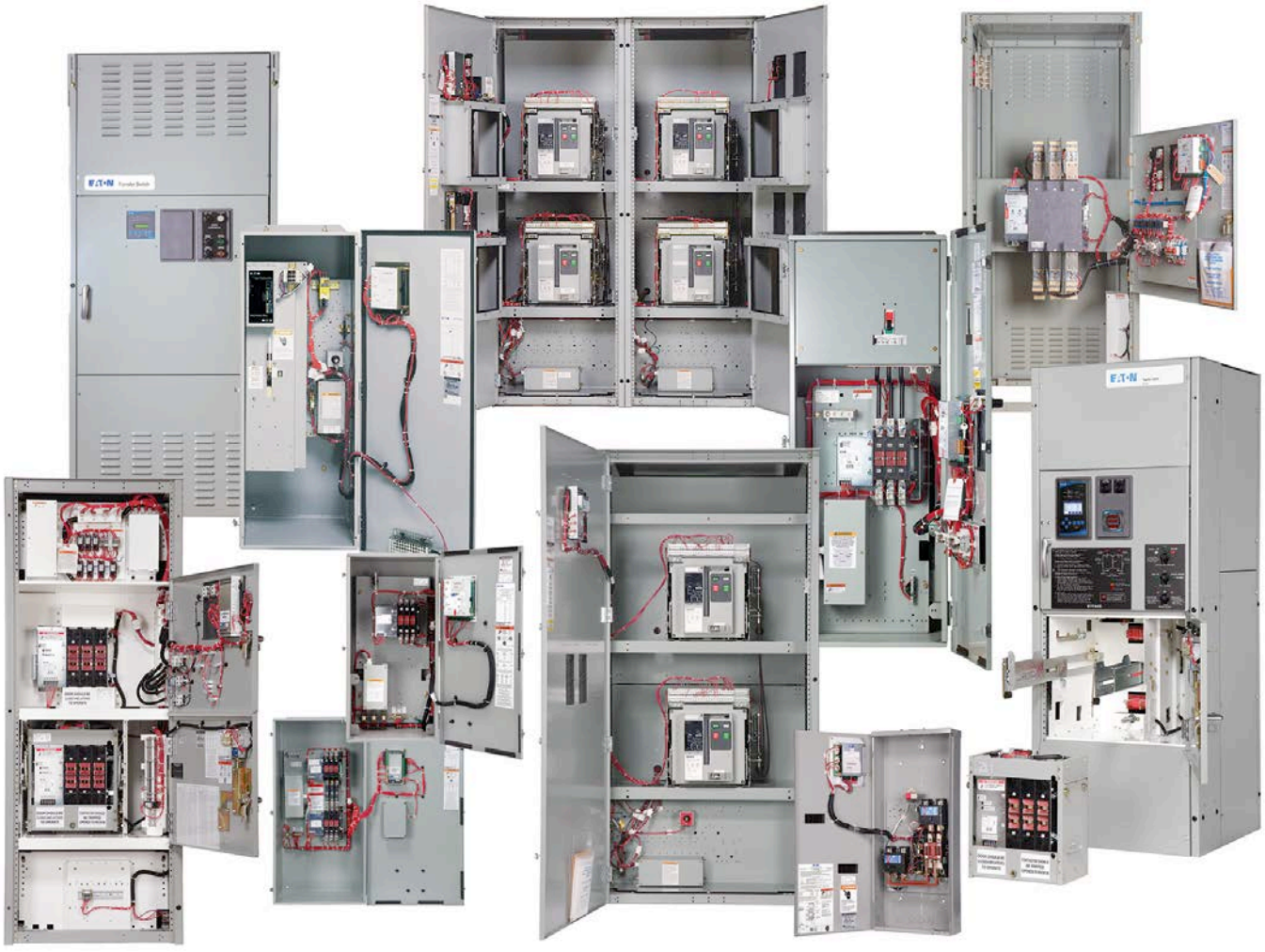
Our field service engineers are armed with the latest equipment, including Dranetz PX5 disturbance analyzers, Fluke 1750/435 power quality recorders and Hioki power quality analyzers.

**CUSTOM ORDER ENGINEERING**

In many cases, standard product can be custom-order engineered to meet your application needs. For additional information, please contact your local Eaton sales representative.

# The critical **need** for **reliable** backup **power**

Eaton offers the broadest range of automatic transfer switches available in today's critical power market, backed by a world-class service team with expert knowledge in electrical systems. Our expertise helps customers implement an automatic transfer switch solution specifically engineered to meet electrical reliability requirements regardless of application, budget or required customizations.



**Featuring Eaton's automatic transfer switches**

## For more details, visit **Eaton.com/ATS**

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Printed in USA
Publication No. BR140001EN / Z21963
January 2019



Powering Business Worldwide