DESCRIPTIVE BULLETIN

Zenith TruONE MV ATS

Medium voltage automatic transfer switch

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Introduction

The Zenith TruONE MV ATS provides quality and reliability for critical power applications from 5 kV to 15 kV.

Backed by 80+ years of experience in manufacture of automatic transfer switches, as well as extensive experience in the design and development of paralleling switchgear systems, Zenith TruONE MV ATS provides the reliable answer to critical medium voltage switching applications. Like all ABB Zenith switches, the Zenith TruONE MV ATS is supported by a nationwide network of field service facilites.

Applicable industries
The Zenith TruONE MV ATS is designed for use in the most critical applications: hospitals, data centers, military sites, airports, communications facilities, and computer installations. Zenith TruONE MV ATS fits the need for dependable continuity of power where emergency or standby applications exist.

Construction
The Zenith TruOne MV ATS is built on a medium voltage switchgear platform with two vacuum circuit breakers used as switching elements. The circuit breakers are interlocked to ensure that only one set of contacts can be closed at any one tme. A microprocessor ATS control module is used for status monitoring and transferring operations.

The control module is physically isolated from the power portion by an insulating barrier. The completed unit is enclosed in a NEMA1 cabinet (outdoor enclosure optional) and is both front and rear accessible.

Operation
When the normal source of power fails or voltage drops below an adjustable threshold (preset at 80 percent), the ATS is called to begin its sequence. After an adjustable time delay (preset at 3 sec.), the engine generator starts. When the emergency source reaches 90 percent of voltage and 95 percent of frequency, the normal breaker is tripped open, and after an adjustable time delay, the emergency breaker is driven to the closed position. The load is now transferred to the emergency source.

When the normal source voltage is restored to an adjustable value (preset at 90 percent), the voltage sensing verifies source stability and allows the return to normal sequence to begin. After an adjustable time delay (preset at 30 min.), the emergency breaker trips open, and the normal breaker is closed. The load is now restored to the normal line. The generator then runs on a time adjustable cool down cycle, and shuts down.

Features
- Dual-breaker automatic transfer switch in a medium voltage switchgear construction
- Draw-out vacuum circuit breakers
- Compliance with ANSI C37.20.2
- Draw-out PT design on Utility and Generator sides facilitates removal of control fuses while the system is in operation
- Control module is completely isolated from power section
- Standard indication of source availability
- Bypass option provides two additional breakers as backup switching elements, allowing maintenance of the primary breakers while maintaining power to the load

Medium voltage switchgear ATS platforms

Zenith TruOne MV ATS can be implemented on ABB medium voltage switchgear product lines:

- Advance
- SafeGear
- SafeGear HD
- ReliaGear ND

Medium voltage metal-clad switchgear ratings (5 kV and 15 kV)

- 5 kV system: 4160 V typical, 25, 31.5, 40, 50 and 63 kA
- 15 kV system: 12.47 kV, 13.2 kV, 13.8 kV, 14.4 kV typical, 25, 31.5, 40, 50 and 63 kA
- 3 phase, 3 wire typical (4 wire special)
- 1200 A, 2000 A, 3000 A spring charged vacuum circuit breaker
- Magnetically actuated breakers 5, 15 kV, up to 50 kA and 3000 A
- Up to 63 kA AIC, indoor or C37.20.2 outdoor enclosure requirements which exceed the requirements of NEMA 3R (non-walk-in or sheltered aisle enclosures)
- Front and rear access
- Rear primary connection; front secondary connection
- ANSI breakers
- Bus and cables compartmentalized by metal barriers
- Insulated bus
- UL testing based on ANSI
- UL Label; CSA certification also available
- Up to 4000 A main bus available (requires forced air cooling)
- Available as digital and with asset health monitoring options

— 01
Advance

— 02
ReliaGear ND

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Medium voltage circuit breakers

The switching elements in Zenith TruONE MV ATS are ABB medium voltage vacuum circuit breakers built to ANSI/IEEE standards:

- ADVAC, ADVAC G, AMVAC (for Advance and SafeGear, SafeGear HD)
- Vmax (for ReliaGear ND)

ABB medium voltage vacuum circuit breakers are installed in the ATS using a drawout design typical of metal-clad switchgear.

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ADVAC spring charged breaker

— 04
AMVAC magnetically actuated breaker

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Breaker compartment on Advance

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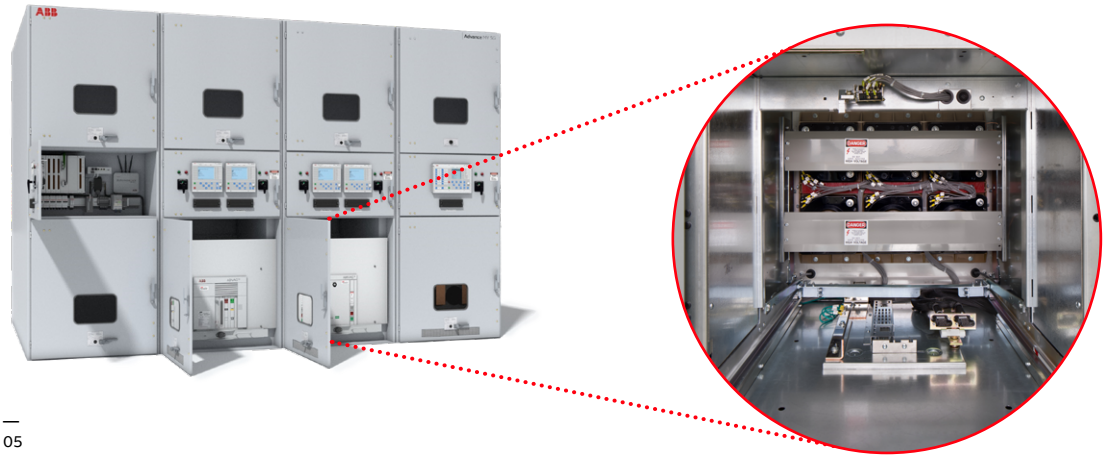

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Microprocessor controller Zenith MX350

With powerful integrated features, the Zenith MX350 microprocessor ATS controller offers expanded programmability and field adaptability.

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MX350 ATS controller used in Zenith TruONE MV ATS

MX350 features

- Graphical control panel with 320x240 pixel color LCD, LED status indicators, navigation/ control keys
- Voltage and frequency protection with programmable pickup/dropout thresholds
- Open or closed transition control
- Adjustable stable source timers
- Programmable generator exerciser
- Elevator pre-signal timer and output contacts
- Load shed alarm/output signal
- Event recorder
- Modbus RTU serial or Modbus TCP/IP Ethernet communication options
- Multiple level user defined passwords

Protection option with Relion relays

REF615 Relion relay offers enhanced features such as diagnostics, preventive maintenance, arc-flash mitigation and security.

Features and benefits

- Utility protective relay for Source-1
- Generator or utility protective relay for Source-2
- Drawout unit design
- Extensive protection functionality, either with sensors or conventional instrument transformers
- Current, voltage, power and frequency metering
- Breaker control capability with option for sequence programming, can replace ATS controller if desired
- Communications: IEC61850, Modbus TCP, DNP3.0
- IEEE1588 V2 for high-accuracy time synchronization
- Multiple hardwired I/O points with expansion options
- Large, easy-to-read LCD
- Password protection with multiple access levels
- 100 event disturbance recorder for in-depth analysis
- PCM600 software – one single tool for managing settings, signal configuration and disturbance handling
- Arc flash detection option

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REF615 Relion relay

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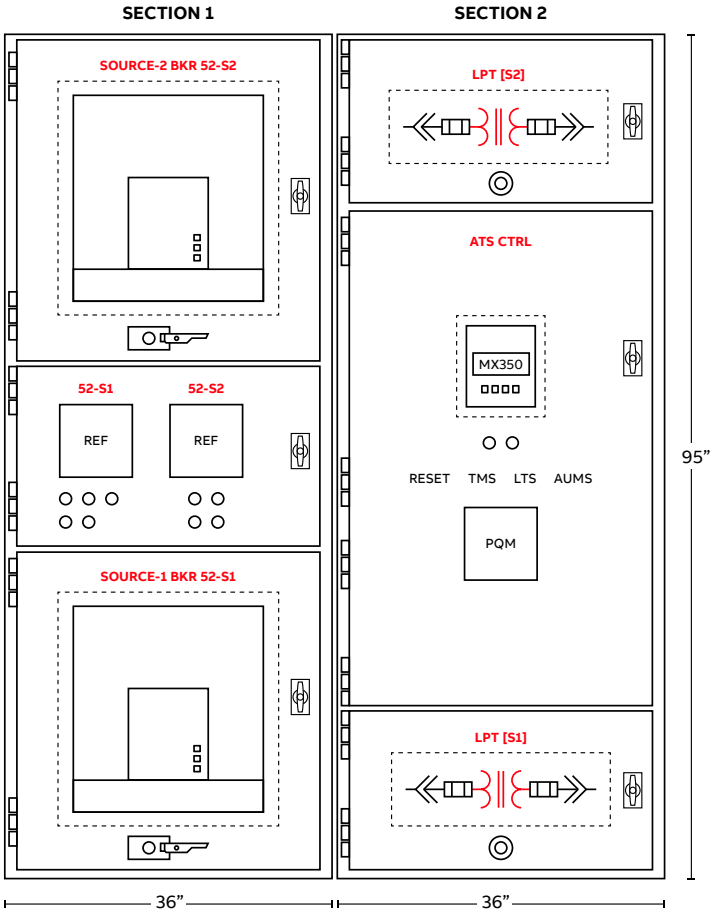
Layout, dimensions, and single line drawings



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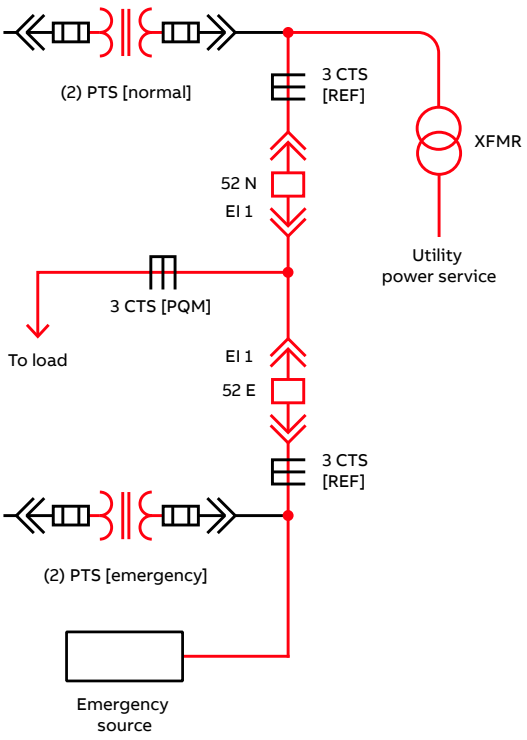

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Front View Layout: Zenith TruONE MV ATS

Note: dimensions shown for MV ATS using Advance switchgear line

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Single line drawing of Zenith TruOne MV ATS

Zenith TruONE MV ATS basic controls

- MX350 controller
- Control switches: Reset, auto-manual, light test
- Emergency breaker control switch with open/closed LED status lights and failed to close
- Normal breaker control switch with open/closed LED status lights and failed to close

Options

- REF: Relion REF615 protection relay
- PQM: Power quality meter

Dimensions

- NEMA-1: 95”(H) × 72”(W) × 92”(D)
- Outdoor enclosure, non-walk in: 109”(H) × 72”(W) × 99.5”(D), bypass option adds 36” to width

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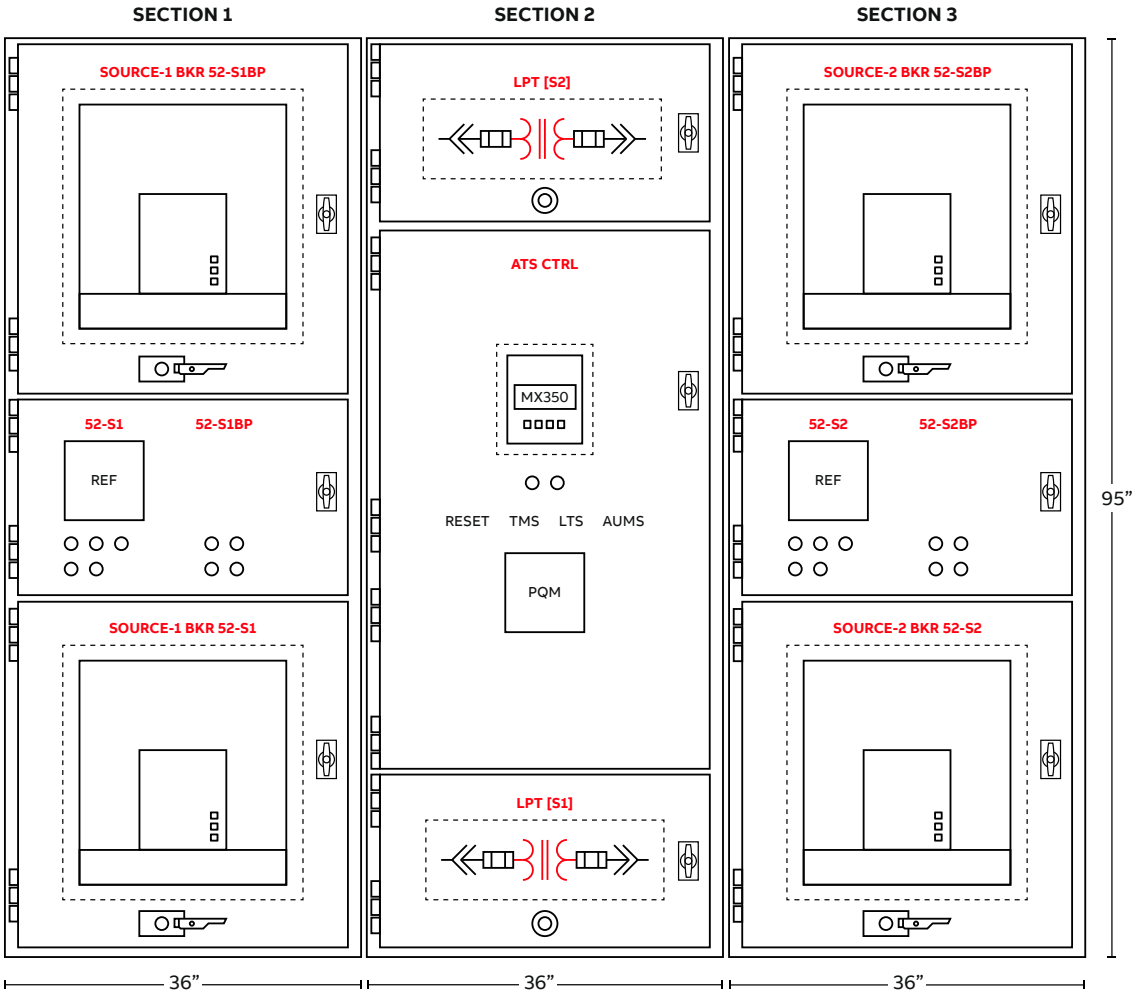
Front View Layout: Zenith TruOne ATS with bypass option

Note: dimensions shown for MV ATS using Advance switchgear line



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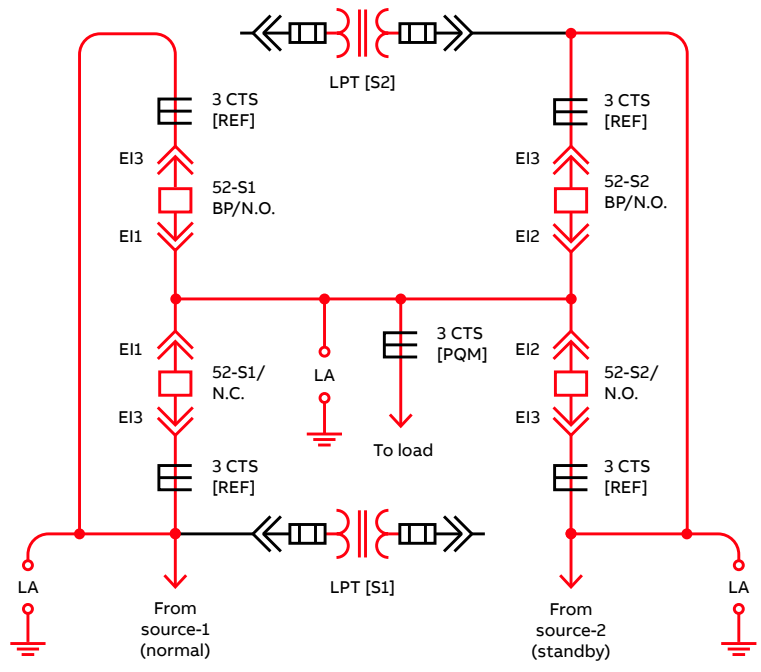
Single line diagram of Zenith TruOne MV ATS with bypass



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Bypass option details

Hardwired electrical interlocks (EI)

- EI1: between Source-1 normal breaker and its bypass breaker, ensuring only one breaker can be closed at a time
- EI2: between Source-2 standby breaker and its bypass breaker, ensuring only one breaker can be closed at a time
- EI3: between all four breakers, ensuring that only one breaker is allowed to close at a time
- LA: lightning arrester option

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