AS3P50
50A Atom Switch™
Solid State Circuit Breaker
Generation 2

Features

- Ultra-fast Circuit Protection
- Mitigates Fault before Propagation
- Digital Remote Control
- Power Flow Scheduling
- Low Impedance Arc Flash Mitigation
- Dynamic & Adjustable Time Current Curve
- Virtual Relays

Applications

- Motor Controls
- Critical to Safety
- High Density EV Chargers
- Transfer Switching
- Distributed Energy Resources (DER)
- Anywhere for Remote Operation

Input Voltage 208/120VAC - 480/277VAC
Poles 3
Frame Size 50A
Long Time Trip Setting Range 15A - 50A
Long Time Trip Settable Increments 15, 20, 25, 30, 35, 40, 45, 50 amp
Minimum Opening Time 3 μS
Input Frequency 60Hz
Interrupting Rating 150kA across all voltage classes
Continuous Current Rating 100%
Ambient Operating Temperature -10°C - 40°C
Storage temperature -40°C - 85°C
Humidity 0 to 95%, non condensing
Load Side Connection #14AWG - 1/0AWG, Cu/Al
Standards UL 489
Metering Amps at +/- 3% accuracy, Volts
Over/under voltage Relay +/- 5% or 10%, 1-20s
Over/under frequency Relay Adjust range +/- 10%, 1 Hz steps
Voltage Balance Relay +/- 5% or 10%, 1-20s
Undercurrent Relay 10-99A, 1-20s

Forthcoming

- Integrated Motor Soft-Starting
- Motor Overload Protection
- Revenue Grade Metering
- Current Limiting

Soft Starting 1-20s, 30-100% voltage
Soft Stopping 1-20s
Motor Overload Class 10, 20, 30 (selectable)
Kick Start 0.1-2s, 30-100% voltage

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Operational Overview

The Atom Switch provides critical information at glance. The green button marked “PUSH TO CLOSE” lights up when the breaker is closed, the red light in the center marked “OPEN” lights up when the breaker is open, and the yellow button marked “PUSH FOR STANDBY” lights up when the breaker is in “Standby Mode”. Standby Mode is a condition where the breaker is mechanically closed, but the solid-state devices stop current flow, thus, power can be restored instantly. The breaker can also be remote controlled in this way by toggling between the Standby and Closed state in the Atom OS application. When the Atom Switch is closed, pressing the button marked “PUSH TO OPEN” will open the circuit and trigger the AIR GAP OPEN condition. When the air gap is open, the button marked “PUSH TO RESET” ejects. This button also functions as a safety lockout/tagout device, as there is a hole through the button which allows lockout devices to easily be installed. Each Atom Switch has a user-assigned name which shows up on its e-ink display along with breaker trip status and trip rating. E-ink technology keeps this information on screen even after power loss. After trip, the type of fault detected will also be displayed above the breaker rating.

Time-Current Curves & Loading Data

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Atom Panel™ Integration

The Atom Panel houses the Atom Switch circuit breakers and provides the necessary communication of all Atom Switches to the Gateway which provides the Atom OS web application to the user. All Atom Switches communicate via serial communication to the Gateway, the Gateway provides the aggregation of all serial data and outputs this through the Atom OS via one ethernet connection and one IP address to the user. This provides the user access to the Atom OS without downloading any software and can be used on any device, anywhere with the necessary credentials.

Network Architecture & Security

General Overview:
Atom Switches send and receive information to/from the Atom Gateway. The Atom Gateway processes the data and organizes it in a database through the Backend Service and host the data on the Atom Application. The Atom Application also serves as the user interface as it receives user inputs and sends these request through the Atom OS to the Atom Switches.

Gateway Controller:
The Gateway runs a linux based OS. Hence, the default linux firewall “Iptables” is used for various tasks to address the OWASP Top Ten Security risks. Additionally, all the other accessible ports (ssh/mosh/telnet/VPN) on the gateway are blocked to restrict access only through the Atom OS. User passwords are encrypted before storing in the database.

Atom OS:
The Atom OS additionally has username + password based authentication and 4 possible Tiers of users that can be set by the Admin user. The https requests are not authenticated unless the credentials are correct, hence restricting any kind of communication from a malicious source.
Atom OS™ Enablement of Atom Switch features

TCC Menu on Atom OS

Virtual Relay Menu on Atom OS

Motor Controls Menu on Atom OS

Metering Menu on Atom OS