AP3P225

255A Atom Panel™ Smart Panelboard

20"W x 9.8"D x 60"H

Features

Load and Demand Management
Programmable Input Relays (Users configure Atom Switch response to relay input for the entire panel)
TCP/IP over Ethernet Communication
Press-Fit Powder-Coated Busbar
Polycarbonate Front Window
Optional E-Ink Display

Input Voltage	208/120VAC - 480/277VAC
Max Current	225A
Phase	3
Wire	4
AC Interrupting Capacity	150KAIC
MLO or MCB	MLO
Main Lugs Size	#6AWG - #300KCMIL AL/CU
Atom Switch Slots	14
Max. Atom Switch Rating per Slot	100A
Neutral Rating	100%
Standard	UL 67
NEMA rating	1
Programmable Relay Inputs	5
Communications Protocols	TCP/IP

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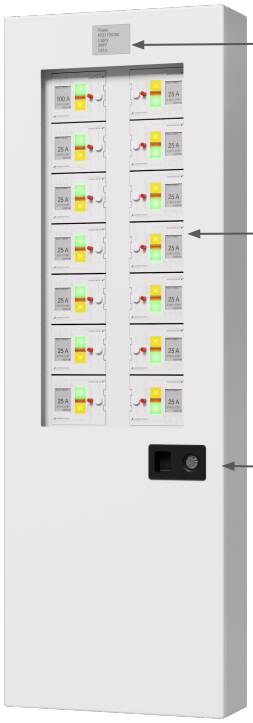
Operational Overview

The Atom Panel houses the Atom Switch circuit breakers and connects all Atom Switches to the Gateway, which in turn host the Atom web application. The Gateway aggregates the data from each Atom Switch in the Atom Panel with the data available through the Atom Power application. The user accesses the application through an ethernet connection, no requirement for downloading software. Through the hosted web services on the gateway, any device within the LAN with the proper credentials, can connect to the application. On the e-link display, located on the front panel, you have access to information such as, panel name, feeder, voltage and breaker status.

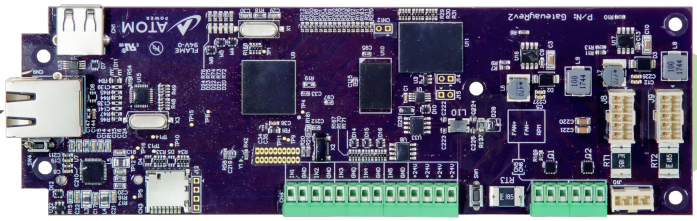


20”W x 9.8”D x 60”H

Atom Gateway

Each Atom Panel contains one Atom Gateway. At the heart of the Gateway is a host processor which contains the Atom Power Application. Along with hosting the web application, the Gateway communicates with each Atom Switch and provides customer external relay inputs (if used). The external relays are used if the customer requires an external method to open/close the Atom Switches within the panel and are programmable through the Atom Power Application. The switching scenarios available to be programmed are virtually innumerable and can be programmed to any sequence based on pre-setup with the application. The Gateway is energized via an internal 200-500VAC to 24VDC power supply unit (PSU) which is tapped off of phases A and B at the main lugs. The Gateway then provides the necessary 24VDC and communication to the Atom Switches in the Atom Panel.

Atom Gateway (7.5” x 2.3125”)



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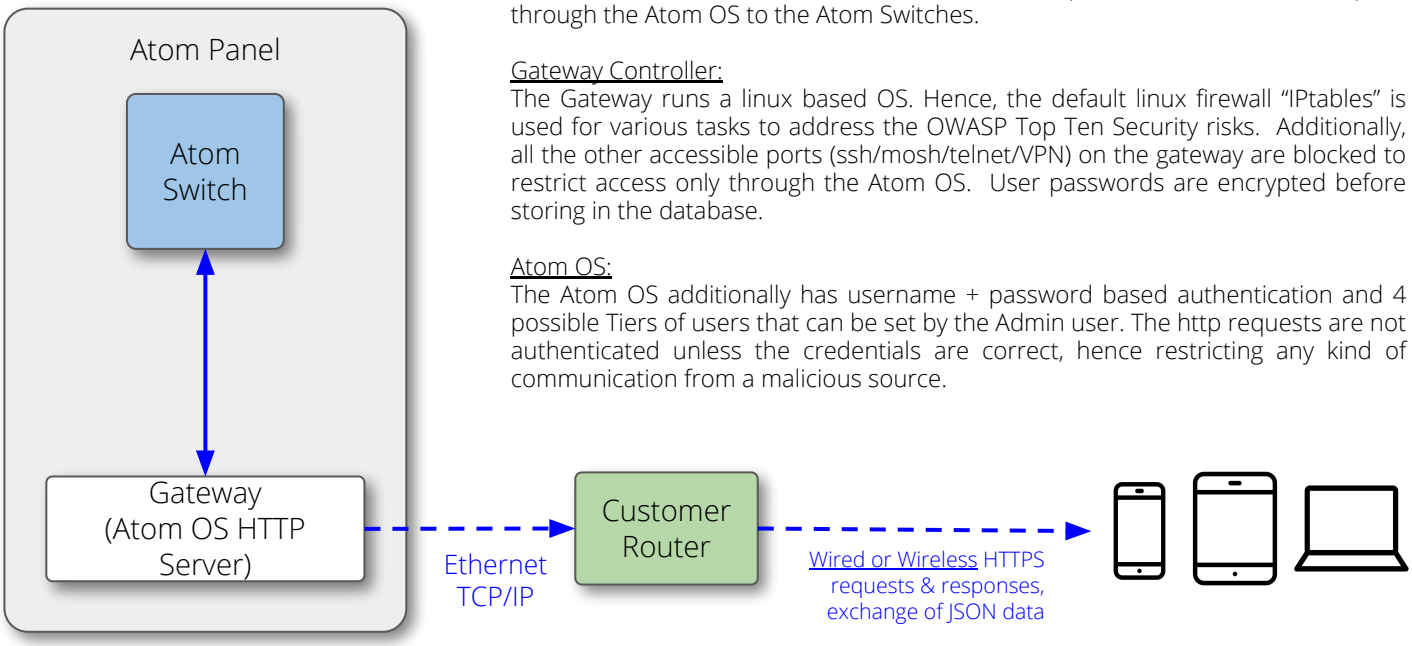
Network Architecture & Security

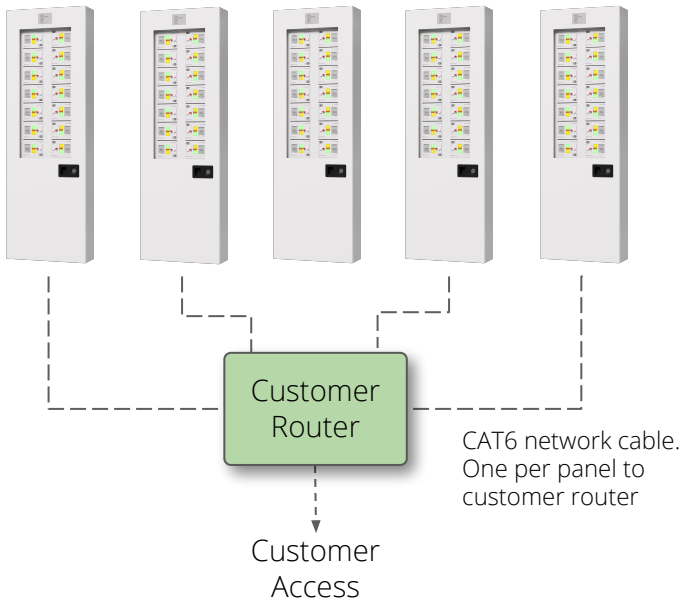


General Overview:
Atom Switches send and receive information to/from the Atom Gateway. The Atom Gateway processes the data and organizes it in a database through the Backend Service and host the data on the Atom Application. The Atom Application also serves as the user interface as it receives user inputs 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 http requests are not authenticated unless the credentials are correct, hence restricting any kind of communication from a malicious source.

Atom OS with Multiple Atom Panels in a Facility



It is generally desirable to not have a singular server manage an electrical infrastructure. With this in mind, Atom Power developed the Atom OS software and corresponding Atom Gateway. In the likely case where multiple Atom Panels are installed within a facility, each Atom Gateway acts as its own server. Therefore, each Atom OS within each Atom Panel will mirror its individual data onto all other connected Atom Panels within the system as long as they are connected to the same network (see adjacent diagram). This has the advantage that if any of the Atom Panels are taken down for maintenance or otherwise, as long as at least one (1) Atom Panel is energized, then the Atom OS will be accessible by the customer.

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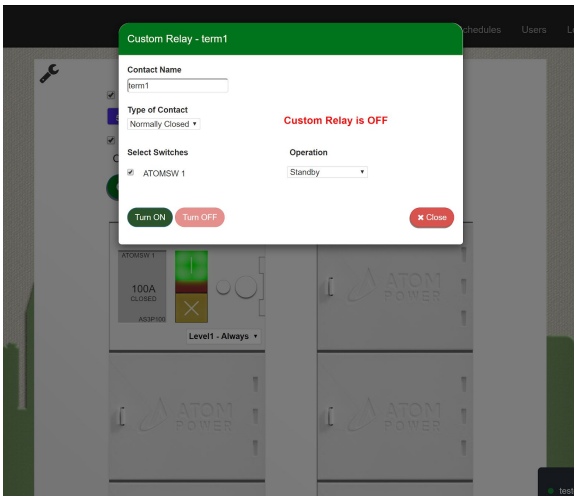
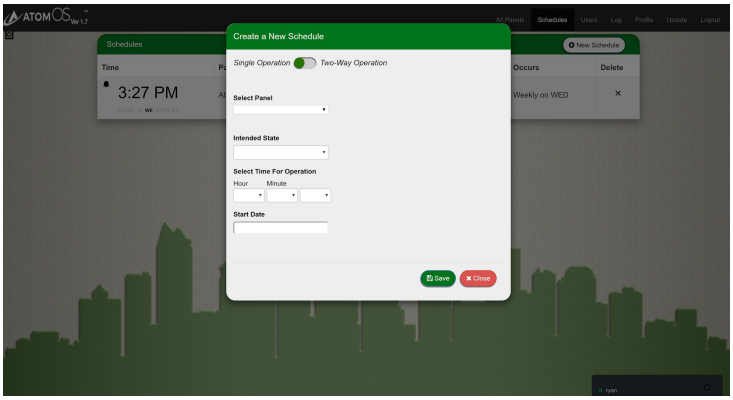
Atom OS™ Enablement of Atom Panel features

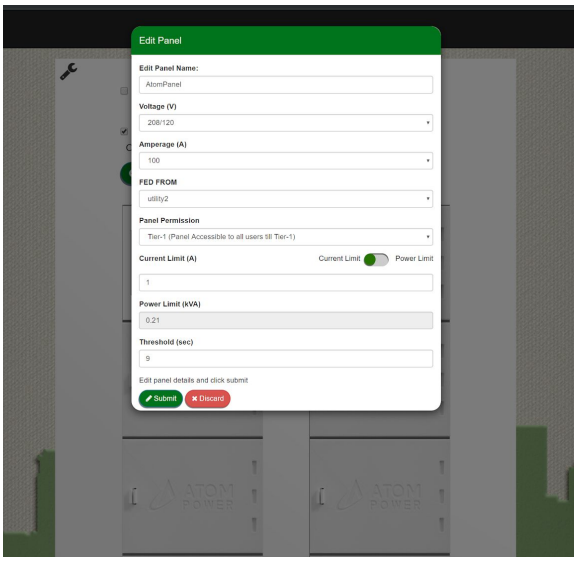
Main Panel Screen in Atom OS



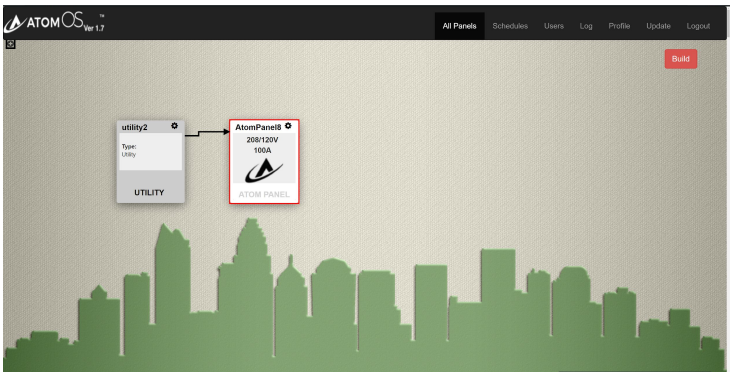
Customer Relay Input Menu on Atom OS



Power Scheduling Menu on Atom OS



Atom Panel Information input



All panels on the Network Screen

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