A scalable compact grid edge automation platform

Eaton's SMP™ DA-3050 is a powerful automation platform that combines multiple functions into one rugged product to provides secure and reliable data acquisition and management. Its compact and versatile design makes it an excellent edge intelligence node for distribution utilities.

The SMP DA-3050 is an enabler for grid edge situational awareness, feeding ADMS/SCADA systems with quality data.

It also improves reliability with rapid decentralized decision-making, removing the burden on centralized systems.

The Linux-based SMP DA-3050 automation platform is robust and developed for harsh operating environment.

It comes in four models, creating a homogeneous system with a single point of access for all data.

Key benefits

- Enables grid edge situational awareness, providing quality data to enterprise applications

- Facilitates Distributed Energy Resources (DER) integration with local automation at the edge

- Improves utilization of existing assets and extend their lifetime (vendor agnostic)

- Improves grid resiliency with its advanced cybersecurity features

- Reduces deployment costs and optimizes device life cycle using centralized management with Eaton's IED Manager Suite

- Ensures compliance with future requirements with its evolutive platform

- Improves reliability with rapid decision making at the edge

- Facilitates commissioning and troubleshooting with its SMP Tools and HMI interface

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Use cases and applications

- **Real-time monitoring for improved grid resilience and power quality:** The automation platform enables distribution automation applications by feeding them quality data in real-time. It allows for swift fault detection, location, isolation, and service restoration, reducing outage durations and improving customer satisfaction. You immediately achieve increased observability: Distribution operators can maintain optimal voltage levels, reducing equipment wear and enhancing customer satisfaction. ROI stems from reduced downtime, minimized operational costs, enhanced service reliability, improved customer experience and extended equipment life.

- **Interoperability with the integration of legacy equipment:** The automation platform can extend the life of legacy equipment by acting as a security gateway, replacing old RTU/PLC and managing a high volume of data coming from older IEDs that can benefit from its extensive communication and hardwired I/Os connectivity. ROI arises from extended equipment life, strengthened cybersecurity, and reduced costs of using a multifunctional platform.

- **File and data processing for data-driven decision-making:** The automation platform can collect and process grid edge data and feed reliable data analytics to inform grid planning and operational decisions, leading to optimal resource allocation and capital expenditure. ROI is evident in optimized investments and enhanced grid efficiency.

- **Remote operation and control**: Remote control mechanisms reduce manual interventions, saving operational costs and improving response times. ROI includes reduced labor costs and enhanced asset management.

- **Efficient DER integration:** The automation platform monitors the edge to help improve the grid stability and reliability affected by DERs/EV integration at the grid edge. Feeding ADMS/SCADA systems with quality data allows for raising the edge situational awareness and supporting operators in their decision process to maintain voltage level stability and address reverse power flow issues. The automation platform can also optimize the use of distributed energy resources (DER) by implementing control logic at the grid edge, reducing the burden on the centralized system. Finally, it provides equipment health data to optimize maintenance schedules and reduce unplanned outages. ROI arises from enhanced service reliability, increased revenue generation, efficient and optimized resource usage, decreased downtime and extended equipment lifespan.

Security

- Cybersecure device with IEC 62443 (undergoing certification), IEEE 1686, and IEC 62351 compliance

- Provides secure remote access to any device

- Single sign-on support with IED Manager Suite (IMS)

- Shares several security features of the SMP Gateway automation platform family, including user authentication, complex passwords, security event logging and monitoring, TLS encryption, X.509,

Simplified specifications (complete specifications are available in the SMP DA-3050 Catalog, CA912016EN)

General features

- Full SMP Tools integration
- Fully supported by IED Manager Suite*
- Linux-based OS
- Advanced software tools:
  - Enable containerized customer applications*
  - Integrated cellular LTE modem CAT-M1/NB IoT* (optional)
- NERC CIP-compliant electronic perimeter
- Built-in web server
- Automation Functions
- IEC 61131-3 compatible SoftPLC (CODESYS)*
- Transparent connections (passthrough)*
- Protocol translation and data concentration
- Device redundancy*, network redundancy (PRP)*
- Built-in self-diagnostics
- Real-time clock with battery backup
- Built-in watchdog timer
- Power supply monitoring
- Flexible licensing
- HMI with remote display for real-time values and alarms through web browser and optional local display* for local control and status monitoring.
- Syslog support
- SNMP*
- Remote management via REST API

Protocols

Client: IEEE 1815-2012 DNP3, IEC 61850 Ed.2*, IEC 61850 GOOSE, IEC 60870-5 101*/104*, Modbus, OPC UA*
Server: IEEE 1815-2012 DNP3, IEC 61850 GOOSE, IEC 60870-5 101*/104, Modbus*, OPC UA*
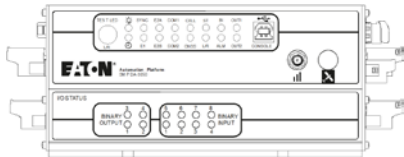
Security features

- Built-in firewall/malware protection
- Local/Global (IMS) security*
- Certificate management (CSR, PKCS#12)
- Remote access management*
- User account management:
  - Strong passwords
  - User accounts and user groups
  - Detailed group permissions
- Security event logging and monitoring
- Account lockout
- Retrievable access logs for auditing
- All system components digitally signed
- Digital signature is validated before using the system
- Certificate-based user authentication*

Processor

- ARM processor
- Secure boot

Memory

- Flash: 8 Gigabits NAND Flash
- RAM: 1 Gigabit LP-DDR4 or 4 Gigabits

Connectivity

- Up to 64 device connections (basic is 8)
- Up to 8 control center connections (basic is one)
- Up to 20,000 data points (basic is 5,000)
- DNP3 secure authentication* V2 and V5

*: Features are coming soon

Communications

- Serial:
  Two 2-wire RS-232/485
  with multidrop support* (up to 32 devices)
  One USB 2.0 Type B console port
- Ethernet:
  2 x 10/100BASE-T
  1 x SFP-based for 1000B-LX, 100B-FX, up to 2 km (LC) or 10/100/1000B-T RJ45*
- LTE Cellular modem*: CAT-M1/NB IoT (optional)
- GNSS* (optional, hardware ready)

Time synchronization/distribution

- Server: SNTP*, DNP3, IEC-60870-5-104 protocols
- Client: SNTP, DNP3 protocols
- IRIG-B: Unmodulated input*/output*

Environmental conditions

- Operating (at CPU 100% usage):
  –40 °C to +75 °C (–40 °F to +167 °F)
- Storage:
  –40 °C to + 85 °C (–40 °F to +185 °F)
- Humidity: 5 to 95%, non-condensing
- Maximum altitude: Up to 2000 m (6561.7 feet)

Local display for HMI* (option)

- Capacitive touch TFT LCD display
- Display resolution: 1024x600 @60 Hz
- Dimension: 177,8 mm (7 inches)

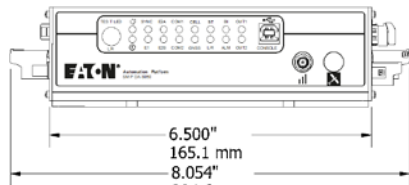## Warranty

- 10-year limited warranty

Electrical

- Internal power supply supports:
  24, 48 Vdc nominal
  External power supply options to convert to 24 Vdc (DIN rail-mount):
  85—264 Vac, 90—350 Vdc, 3.5 A
  9—36 Vdc, 2.5 A
- 10 W consumption (controller only)
- Lifetime built-in battery

Installation/Dimensions

- DIN rail, rack or wall-mount installation
- Basic unit only (SMP DA-3050 model):
  49.2 mm H x 114.3 mm W x 165.1 mm L
  1.94 in. H × 4.5 in. W × 6.5 in. L
- With I/O modules (Height):
  with 1 I/O module (SMP DA-3051 model): 75.4 mm (2.97 in.)
  with 3 I/O modules (SMP DA-3052 and SMP DA-3053 models): 130 mm (5.12 in.)
- Controller (basic unit): 454 g/1 lb
  each I/O module: 454 g/1 lb

I/Os on the Basic unit (controller)

- 1 x 24 — 48 Vdc DI
- 2 x alarm contact DO (Form C)
- 1 x 48 Vdc AI

Digital I/O module (AC or DC)

- 8 x DI: software selectable
  ± 24—48 V, ± 125 V
- 4 x DO: Form C relays (all DO # odd)
  Form A relays (all DO # even)

Analog I/O module

- 4 x AI: software selectable
  ±10 V, ±20 mA, ±2 mA, ±1 mA,
  16-bits +sign resolution
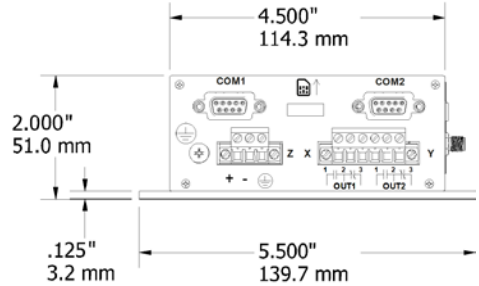- 4 x AO: software selectable
  ±10 V, ±20 mA, 12-bits resolution

Dimension drawings

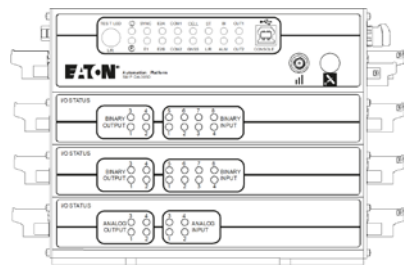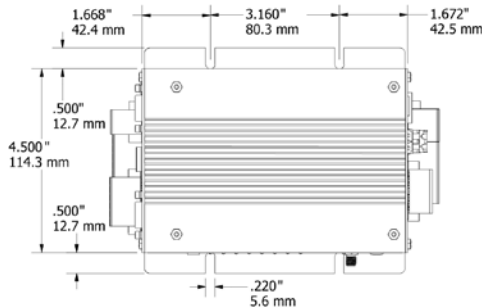Controller with one I/O module - Front view

Controller with 3 I/O modules - Front view (SMP DA-3052 shown)

Controller - Front view
6.500" 165.1 mm
8.054" 204.6 mm

Controller - Top view and mesurement
1.668" 42.4 mm   3.160" 80.3 mm   1.672" 42.5 mm
.500" 12.7 mm   4.500" 114.3 mm   .500" 12.7 mm
.220" 5.6 mm
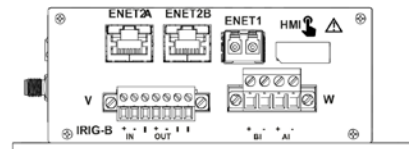
Controller - Left view and measurment
4.500" 114.3 mm
2.000" 51.0 mm
.125" 3.2 mm
5.500" 139.7 mm

Controller - Right view

For Eaton's product information, call **1-877-834-0009**
or visit: **Eaton.com/smartgrid**

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