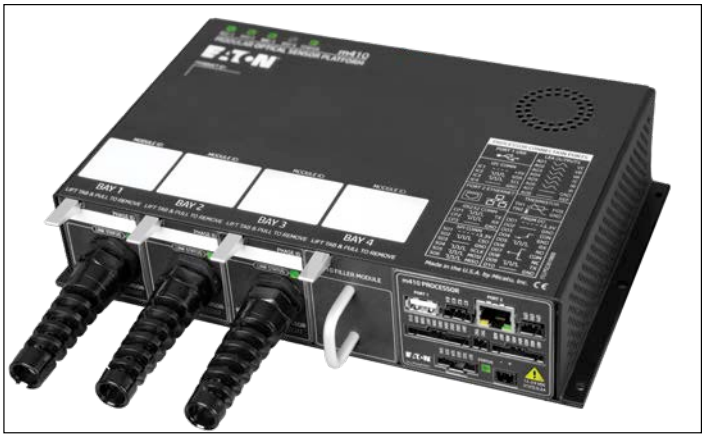
GridAdvisor Insight m410 optical system processor



M410

The m410 modular optical sensor platform is a cost-effective solution for monitoring the electrical distribution grid for precise voltage and current measurement, as well as vibration and temperature condition monitoring. The m410 has four modular bays that allow for any sensing combination, including sensing of voltage, current, vibration and temperature and has the capability for enabling future expansion modules. For distribution grid monitoring, the m410 when combined with RG235 GridAdvisor optical overhead sensors, allows for a true "plug & play" solution. The small enclosure size and multiple analog and digital output options allows the m410 to interface to virtually any industrial and substation automation platform.

Product overview

The m410 modular optical sensor platform is the brain of the advanced optical modular sensor platform. The unique modular design of the m410 ensures "future proofing" to meet the changing needs of monitoring the distribution grid. The m410 is the first, "all optical" modular sensing platform with numerous "plug & play" sensor module options. The m410 can support any combination of the following sensor modules:

Three-phase current and voltage sensing

- RG series: GridAdvisor overhead line hanging optical sensors
- RP series: GridAdvisor line-post optical sensors
- RI series: GridAdvisor standoff insulator optical sensor (4 kV to 35 kV)
- RE series: GridAdvisor underground elbow optical sensor

Analog output modules

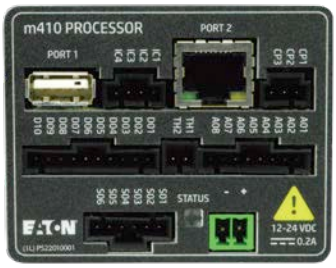
- MA120: modular 0–120 Vac analog signal output module

Measurement data logging

The m410 modular optical sensor platform has 16 GB of on-board storage with 1 GB reserved for measurement data logging, enabling extensive data capture without reliance on or taxing of communications networks. All data can be retrieved remotely through SFTP (secure file transfer protocol) or locally, using user-defined access.

Centralized management

The m410 leverages a centralized management subsystem and firmware base that supports the m410 enclosure and all the managed devices contained within the enclosure. This provides a single point from which to perform basic management tasks on modules within the enclosure. The system performs configuration steps for the enclosure, enables run-time management and configuration of the enclosure components, and flags exceptions within the enclosure through alerts, SNMP or the display port console.



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Digital and analog inputs and outputs

The m410 modular optical sensor platform supports multiple digital, analog, relay and communication port inputs and outputs. All sensor modules are hot-swappable with field upgradeable hardware and software. The m410 processor allows for "future proofing" via multiple communication protocols over standard interfaces for integration to a variety of devices, systems and communications networks.

Supported communication ports

- Inter-integrated circuit (I2C)
- Serial peripheral interface (SPI)
- RJ45 Ethernet

Supported communication protocols

- SCADA communications (over TCP/IP): DNP3

The m410 modular optical sensor platform natively supports the DNP3 protocol for standards-based digital integration to other DNP3 devices and systems. The m410 also provides a digital to analog conversion via LEA (low energy analog) output from 0 to 10 Vac or 0 to 120 Vac via an optional expansion module for local control and retrofit controller applications. Ten software configurable discrete inputs and outputs allow for relay control, security switching or alarming inputs or outputs. External temperature measurements are supported using a standard thermistor input and reportable both in digital or analog outputs.

Specifications

m410 four-bay modular optical signal processor

Communication ports

- Universal serial bus host (USB-A)
- Inter-integrated circuit (I2C)
- RJ45 Ethernet
- Console port
- 10-pin software definable discrete IO
- 2-wire thermistor port
- Low energy analog outputs (0–10 Vac)
- Serial peripheral interface (SPI)

Environmental

- Temperature operational: –40 °F to +185 °F (-40 °C to +85 °C)
- Relative humidity: 5% to 95% noncondensing

Power requirements

- 12–24 Vdc (standard m410 power module)

Available options

The enclosure is available in pole mount with the following features:

- NEMA® rated enclosures:
- Custom configured communication packages
- Integration to third-party meters and controllers

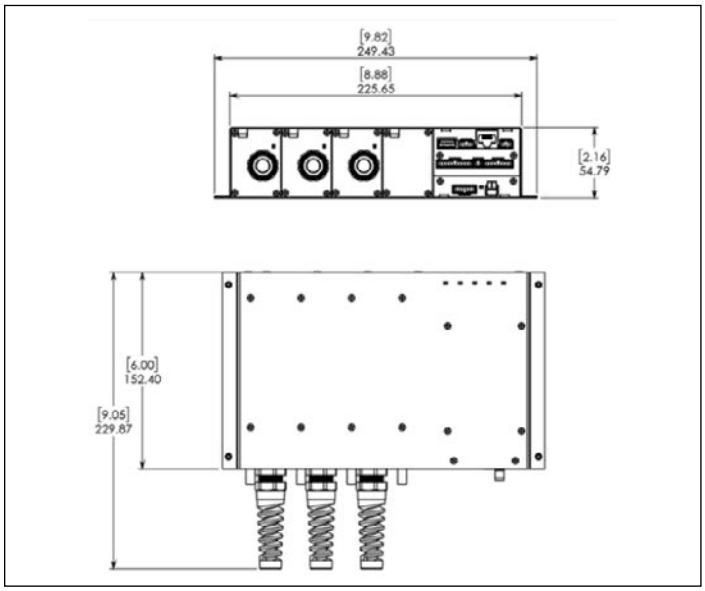
Included components

- m410 modular optical sensor platform
- Operational manual

Test reports

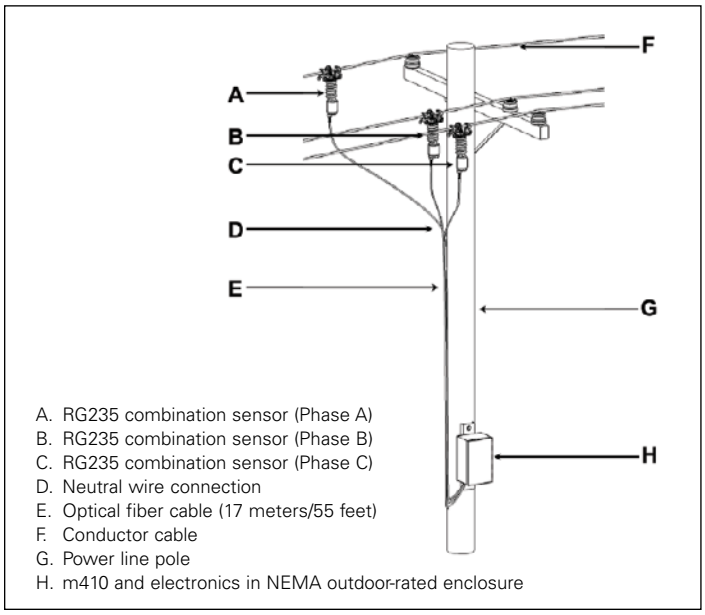
Test reports are stored electronically and can be emailed in various formats at the time of shipment.

Unit dimensions



SKU: m410 (shown with three optical sensor modules)
Additional styles available. Contact your Eaton sales representative.

Typical three-phase monitoring application



A. RG235 combination sensor (Phase A)
B. RG235 combination sensor (Phase B)
C. RG235 combination sensor (Phase C)
D. Neutral wire connection
E. Optical fiber cable (17 meters/55 feet)
F. Conductor cable
G. Power line pole
H. m410 and electronics in NEMA outdoor-rated enclosure

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