

# ADVANCED Optical Modular Sensor Platform

## Voltage, Current, Temperature & Vibration Sensing



### Product Overview

The m410 Modular Optical Sensor Platform is the brain focal point 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 of Current & Voltage Sensing:

- R<sup>9</sup>235: GridView™ Overhead Sensors (35kV, 1kA)
- R<sup>9</sup>135: GridView™ Overhead Voltage Sensor (35kV)
- R<sup>i</sup>135: GridView™ Standoff Insulator Sensor (4kV to 35kV)
- R<sup>e</sup>120 GridView™ 200A Voltage Deadbreak Elbow Sensor
- R<sup>e</sup>160 GridView™ 600A Voltage Deadbreak Elbow Sensor

#### Vibration Sensing (One & Two Channel Modules)

- R<sup>vi</sup>100 One Channel Vibration Sensor Module
- R<sup>vi</sup>200 Two Channel Vibration Sensor Module

#### Temperature Sensing (One & Two Channel Modules)

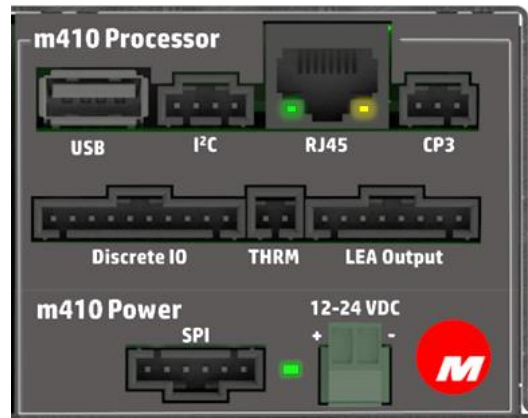
- R<sup>t</sup>100: One Channel Temperature Sensor Module
- R<sup>t</sup>200: Two Channel Temperature Sensor Module

### Application:

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 R<sup>9</sup>235 GridView™ Overhead Sensors, allows for a true “plug & play” solution. The small enclosure size and multiple analog & digital output options allows the m410 to interface to virtually any industrial and substation automation platform.

### Measurement Data Logging:

The m410 Modular Optical Sensor Platform provides standard 16GB and supports external memory devices via the USB-A port for data logging or event recording. All data can be retrieved remotely thru SFTP (secure File Transfer Protocol) or locally, using user defined access.



### GridView Onboard Administrator:

The GridView Onboard Administrator is the enclosure management subsystem and firmware base that supports the m410 enclosure and all the managed devices contained within the enclosure. The GridView Onboard Administrator provides a single point from which to perform basic management tasks on modules within the enclosure. Micatu’s Onboard Administrator performs configuration steps for the enclosure, enables run-time management and configuration of the enclosure components, and informs you of problems within the enclosure through alerts, SNMP, or the display port console.

### Digital & Analog Inputs & 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, which includes both wireless, wired or local data collection, including wireless 3G/4G-modems, external memory and daisy chaining of multiple m410’s for high availability (HA) applications and multiple substation feeder monitoring.

#### Supported Communication Ports:

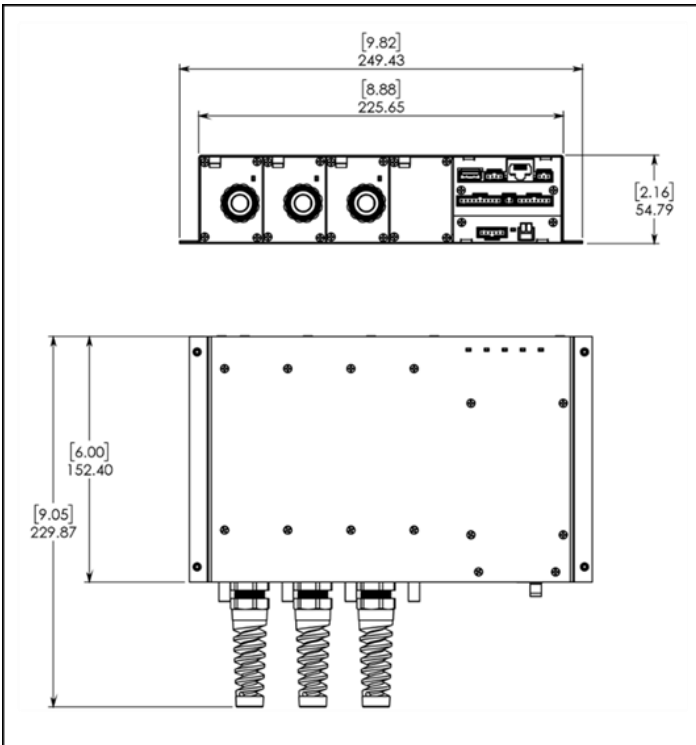
- Inter-Integrated Circuit (I2C)
- Universal Serial Bus Host (USB-A)
- Serial Peripheral Interface (SPI)
- RJ45 Ethernet

#### Supported wireless communication protocols includes:

- 802.11b/g/n wireless
- Bluetooth 4.0
- GPRS (general packet radio service)
- Ethernet with master or slave DNP 3.0 support

The m410 Modular Optical Sensor Platform also provides a digital to analog conversion via LEA (low energy analog) output from 0-10VAC or 0-120VAC via an optional expansion module for local control and retrofit controller applications. Ten software configurable discrete inputs and outputs allows 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.

## Unit Dimensions:



SKU: m410 (Shown with three R<sup>9</sup>235 modules)

Additional styles available. Contact your Micatu sales representative.

## 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 Output
- 7 Pin Low Energy Analog Outputs
- Serial Peripheral Interface (SPI)

#### Environmental:

- Temperature: -40°F to 185°F (-40°C to 85°C)
- Relative Humidity: 5% to 95% non-condensing

#### Power Requirements:

- 12 to 24 VDC (standard m410 Power Module)
- 96 to 265 VAC; 50 Hz + 60 Hz (m420 Power Module)

#### Standard Housing:

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

- NEMA 4X rain-tight rating
- Utility seal and padlocking provisions
- Gray construction

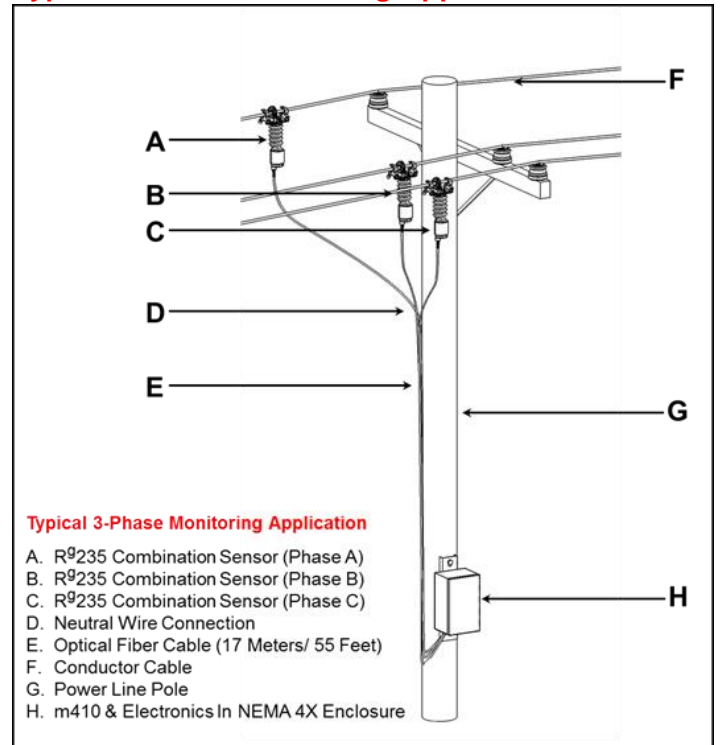
#### Included Components:

- m410 Modular Optical Sensor Platform
- Operational Manual
- NEMA 4X rain-tight rating Enclosure

#### Test Reports:

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

## Typical 3-Phase Monitoring Application:



**For more information please contact:**

*Eaton's GridAdvisor*

## Electronic Scannable QRC Formats:



*Vcard Information and digital PDF of the m410 Brochure*

## Note:

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