# mCore®SDR

## Secure Data Router



**mCore®SDR** was purpose-built for the Industrial Internet of Things (IIoT) as a Secure Data Router, Advanced Protocol Converter, and an Edge Analytics Computer. With multiple layers of cybersecurity, a rugged environmentally-sealed enclosure including a wide temperature range, and a quad-core processor with the ability to perform up to 7 billion calculations per second, mCore®SDR is ready for the next generation of industrial IoT and Edge Analytics applications.

## Features:

**Protocol Support:**
CDL® (CAT Data Link®), S.A.E. J1939, Modbus RTU, Modbus TCP, Allen Bradley Controller Tags, OSI OMF, MQTT - Sparkplug B
Advanced CDL Driver for Automatic Network Recognition and Network Efficiency

**Security**
High Assurance Boot
Support for Bi-Directional Authentication
Hardware Encryption of data
SSL/TLS Encryption Sockets
Full Featured Enterprise Level Firewall
Jail Separated Web Server
HTTPS Secure Web Server User Interface
Secure Encryption Key Storage Location

**IIOT Enabled**
Utilizes OSIsoft®'s PI Connector Technology
MQTT for Secure SCADA Exception-Based Reporting
Onboard Data Buffering (to ensure data fidelity)

**LED Indicators for Power and Communications**

**Data and Storage Capacity**
Onboard Customer Data Logging
2GB of RAM Memory and 4GB of Onboard Non-Volatile
Factory Optional microSD Card Storage

**Processing Power**
Quad Core 800 MHz Processors with 5 Math Coprocessor

**Compact Footprint** – (L)4¼" x (W)3" x (H)5¼"

**Mounting**
DIN Rail or Optional Bulkhead Mount

**Power Protection**
Reverse Polarity Protected 8 - 48V Power Supply

## Environmental Ratings:

- IP66/IP67 Enclosure – Water and Dust Resistance
- Class I Div II Haz Loc Approved
- -40° to +70°C (for 8-28 VDC)
- 2-200 Hz 5G Vibration Resistance
- 25G Shock Tested

## Supported Industrial Datalinks:

- (1) CAT® Data Link Port
- (2) CANbus Ports
- (1) RS232 Serial Port
- (1) RS485 Serial Port
- (2) Ethernet Ports



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## Industrial Translator:

The mCore®SDR platform is designed to create a native interface between industrial engines, SCADA systems, Industrial Control Systems (ICS), other serial and Ethernet networks, and the applications that need real-time information from these systems. mCore®SDR makes data from the Ethernet and serial networks available to a wide range of serial and Ethernet protocols. mCore®SDRsupports the following serial datalinks: CAT® Data Link (CDL), CANbus, RS232, RS485, and Ethernet. Protocols currently include: CAT® Data Link (CDL), S.A.E. J1939, Modbus RTU, Modbus TCP, Allen Bradley Tags, OSI OMF, and MQTT.

## Secure Edge Data Router:

With two separate Ethernet ports and a host of serial ports, the mCore®SDR platform is designed to be a true network gateway device. It can be used as a single point of entry (host device) or as an access point between internal and external networks. mCore®SDR includes an enterprise-grade Linux firewall that is customizable for specific applications. While the firewall protects the core system and its connected endpoints from outside attacks , the tamper-resistant secure storage area protects software and data on the physical board.  As far as securing data transmission between systems, mCore®SDR's customizable X.509 certificate can be used to  authenticate with all modern web-based security protocols. The X.509 certificates, along with High Assurance Boot (HAB), bi-directional authentication, and SSL/TLS encryption sockets, prepare mCore®SDRfor the challenges of today's industrial IoT applications.

## Onboard Analytics Capability:

mCore®SDR was designed to provide an environment for performing edge analytics.  With built in and expandable data storage, the ability to ingest multiple data streams at a high velocity, an 800 MHz quad-core processor with (5) math coprocessors, mCore®SDR has the capability to model real-time, multi-variable data. Essentially, it's capable of performing 7 Billion calculations per second.

*One application of Edge Analytics on mCore®SDR is the hosting a physics-based model for reciprocating compressors to advise on safe machine operations to prevent catastrophic failure while providing guidance for production optimization. In the near future, we will be implementing an onboard analytics platform into mCore®SDR where single-channel and multi-channel analytics can be run at the edge in real-time.*

## Harsh Environment Capabilities:

mCore®SDR is IP66/IP67 rated, with temperature specifications of -40°C to +70°C, and Class I, Div II certifications. The rugged enclosure allows its use in the harshest environments. mCore®SDR can be deployed in hazardous location environments for oil and gas in an enclosure, or mounted externally in mining & marine applications, and can easily survive construction environments. It is also at home in factory or automation environments where heat and moisture make most gateway devices ineffective. A wide DC input range of +8VDC to 48VDC makes mCore an ideal solution for mobile environments.

## OSIsoft®'s PI Connector Technology:

mCore®SDR utilizes OSIsoft®'s PI Connector Technology to bring user data directly into PI, without need for additional communication devices. Data can be buffered to provide excellent data fidelity. For customers that do not currently utilize PI, or another monitoring system, Monico offers MonicoLive™, built on OSIsoft® PI, where dashboard screens are used for immediate feedback as to the overall health of your assets. When using mCore®SDR with MonicoLive™, you can make use of the same features and tools that are available to OSI PI users, along with our expertise, without the tremendous up-front cost. This can help companies move from a reactive to proactive approach to maintenance.