CIMCON
digital
solutions for the digital economy

CIM

The most versatile IoT edge platform that drives digital transformation at scale within budget and on time

Sensor Data

- Wired or Wireless Sensor
- PLC/DAQ Energy Meter
- Vision Camera/Video Camera
- Machine Status

Industrial-grade Edge hardware and software

- Peripheral services
- Device connectvity services
- Data ingeston, store & forward and data quality validation services
- Edge AI/ML, Rule and analytics
- Secured data transfer

Private/Public Cloud

AWS / Azure / Google

Client Data Center

CIMCON Digital's CIM Platform is at the core of several industrial IoT applications in use globally by various utilities in Water, Power, Oil & Gas as well as factories. It packs 30+ years of experience connecting industrial assets such as machines, sensors, cameras, vibration sensors, SCADA systems and PLCs using a variety of protocols and interfaces over wired or wireless networks to deliver the outcomes that our customers demand and expect from us.

KEY FEATURES

▸ **Multiple Wired and Wireless Connectivity Options:**

Equipped with on board Analog and Digital IOs, RS485, USB- Host, HART, Bluetooth and ZigBee Mesh Network to connect with various local and Remote field Sensors and Devices for ingesting data. Also supports RS232, Gigabit-Ethernet, Wi-Fi and Cellular Networks (2G / 4G / NBIoT) for host Server/Cloud connectivity with various industry standard protocols such as MODBUS, DNP3, SNMP, HTTP, FTP, SMTP, MQTT etc.

▸ **High Speed IO Expansion:**

It has got dedicated high speed RS-485 expansion bus to cater to applications with large IO count.

▸ **Power Over Ethernet (POE+):**

Provides POE+ port, to power and connect IP camera or any such peripheral.

▸ **Computing at the Edge:**

CIM is powered with a 1GHz Quad processor that offers ample processing power at the Edge. This allows compute intensive AI/ML algorithms, video analytics, processing of large volumes of data for real time alerts and notifications to be performed close to the asset for fastest possible response time without the costly overhead of communicating the data into the cloud.

▸ **Device Manager (iCloud) :**

Managing devices connected to the CIM at scale and enterprise-wide in a secure manner is critical.

▸ **On Board Sensors:**

On board sensor options of Accelerometer, Temperature, Humidity and Ambient Pressure to monitor the environment in which the unit is operating.

▸ **Data Lake (iData):**

Its all about the data. Data contains invaluable information about your assets, how they are performing, and if they are at risk of failing in the future. If you listen to what the data is saying, you can avoid costly asset failures and downtime. With CIMCON Digital's intelligent iData platform, all your structured, semi structured or fully unstructured data is securely stored in iData's Data Lake. This data can be easily accessed by developers, data scientists, and analysts for tasks such as reporting, visualization, advanced analytics, and machine learning.

▸ **Ease of Configuration:**

Multiple user interface options such as USB debug, TFT touch screen, NFC and Bluetooth to connect to a smart device allow unlimited flexibility to users for device configuration, run time data capture on-site analysis.

▸ **Security:**

Secured Provisioning, Communication and Data Integrity is ensured by enhanced Cyber Security architecture both at IT and OT level.

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APPLICATION AREAS

▸ **Smart Water :**
- Water Generation, Water Treatment Plants, Filtration Bed and Sewage Treatment Plant Operations.
- Water leak detection, Chlorine leak detection, Starter panel heat/smoke detection.
- Pump House premise security with image/video capturing, Un-authorized access or water theft detection.
- Pump and Tube Well Motor preventive maintenance with help of useful data analytics and alarm generation i.e., detect Excessive Motor Vibration, Pump Dry Running, Locked Rotor condition etc. by monitoring various parameters (Voltage, Current, Power, Flow, Vibration and Temperature).

▸ **Smart Building :**
- Energy efficiency analysis and optimization opportunities.
- Access control and safety.
- Space utilization and parking management.

▸ **Smart Manufacturing :**
- Machine efficiency and power consumption analysis.
- Machine fault detection and diagnosis.
- Quality analytics.

▸ **Oil & Gas distribution network :**
- Real time monitoring of critical parameters in Cathodic Protection application i.e., TR Current, TR Voltage, PSP.
- Time stamped with Geographical location information History Data log and Trend generator.

▸ **Gas Compressor and Dispenser Monitoring :**
- Temperature and Pressure parameter monitoring of Gas station with Alarm generation.
- Compressor loading and suction pressure Remote control.

▸ **IIOT Gateway :**
- With multiple wired and wireless connectivity options it can act as a Protocol Converter/Gateway to cater to any legacy application upgrade requirement in a plug-and-play manner.

▸ **Mesh Networking**
- CIMCON Digital's CIM comes with Bluetooth Low Energy (BLE) capabilities. One of the often-used BLE feature is the mesh networking capability. This allows intelligent applications in the edge device to manage a group of sensors, being able to apply a configuration to group of sensors in the mesh, and also to gather sensor states. Thus, the BLE mesh feature enables awareness of the sensor network with very optimized resource utilization.

Ready to use Micro Services Catalogue

- GNU/Debian Linux user space
- SDK – Python
- SDK – C/C++
- PLC Flow execution engine
- Node-RED Flow execution engine
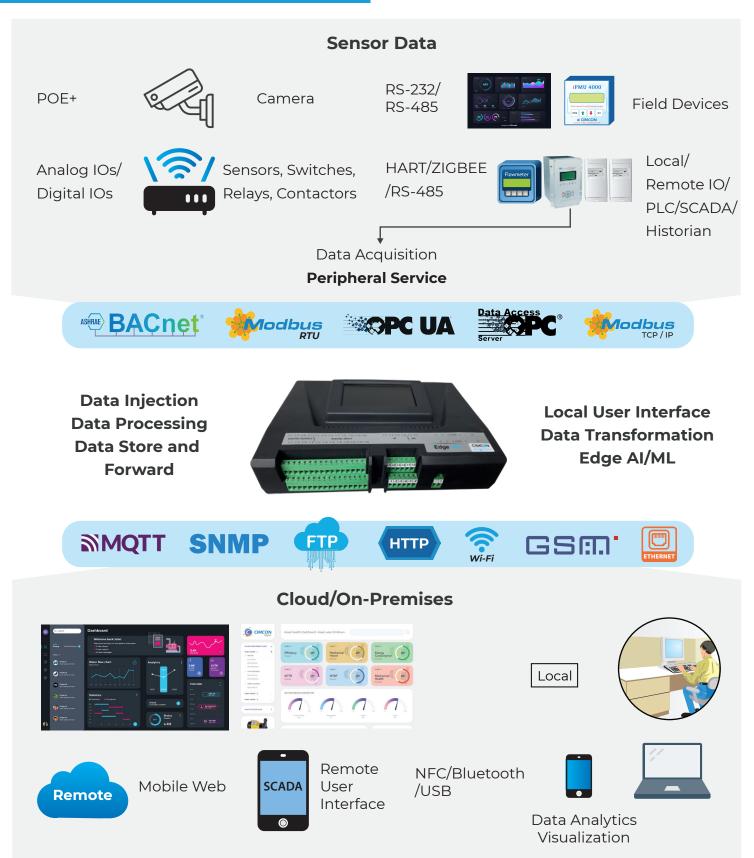- FFT Analytics Service

- Video Analytics Service
- AWS IoT Core Connector
- Azure IoT Connector
- Google IoT Core Connector
- Things Worx Connector

To learn more about CIMCON Digital's Products, please contact us at info@cimcondigital.com

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HOW IT WORKS

Sensor Data

POE+   Camera   RS-232/RS-485   Field Devices

Analog IOs/Digital IOs   Sensors, Switches, Relays, Contactors   HART/ZIGBEE/RS-485   Local/Remote IO/PLC/SCADA/Historian

Data Acquisition
Peripheral Service

ASHRAE **BACnet**®   **Modbus** RTU   **OPC UA**   Data Access **OPC**® Server   **Modbus** TCP / IP

Data Injection
Data Processing
Data Store and Forward

Local User Interface
Data Transformation
Edge AI/ML

MQTT   SNMP   FTP   HTTP   Wi-Fi   GSM   ETHERNET

Cloud/On-Premises

Local

Remote   Mobile Web   SCADA   Remote User Interface   NFC/Bluetooth/USB   Data Analytics Visualization

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EDGE MANAGER

Features

- Asset Inventory
- Device Inventory
- Customer Management
- User Management
- Telemetry Visualization
- User Defined Workflows
- Rules based Data Routing
- Device Health Monitoring
- Device Administration
- Device Fleet Dashboard
- Firmware Management
- Device Profile Management
- Sensor Library
- Alarm Management
- Notifications
- App White Labelling

Integrations

- External MQTT
- HTTP REST API
- Outbound HTTP Webhook
- SMTP
- SMPP – SMS via Network Provider
- Twilio – SMS via Aggregator
- OPC UA Adapter
- AWS IoT Core
- AWS Kinesis
- Azure Event Hub
- Azure IoT Hub
- IBM Watson
- Sig Fox Adapter
- Ocean Connect
- Custom TCP/UDP

Recommended System Specifications

- GNU/Debian Linux user space
- PostgreSQL 13+ - Master data
- Cassandra 3.10+ - Telemetry Management
- OpenJDK – Application Runtime
- Minimum Hardware or Equivalent Cloud VM
- CPU – 2 x Intel Xeon Quad Core 2.6 GHz
- RAM – 64 GB or higher
- Storage - 3 x 2TB with RAID 1 setup
- Baseline Configuration
- 5000 edge devices
- 5000 gateways
- 120 data points per milli second

DATA LAKE

Features

- Multi Tenant System
- Domain Data Segregation
- Customer wise Segregation
- Telemetry Enrichment
- Application Defined Filtering
- Data Cleaning
- Time based Summarization
- Rule based Data Routing
- Data Access Accounting
- User Dashboard
- Archival
- Multi Format Exports

Integrations

- External MQTT
- HTTP REST API
- Outbound HTTP Webhook
- Tableau
- Azure Power BI
- AWS Quick Sight
- AWS SageMaker
- SFTP
- WebDAV
- NFS

Recommended System Specifications

- GNU/Debian Linux user space
- Cassandra 3.10+ - Telemetry Management
- OpenJDK – Application Runtime
- Minimum Hardware (in premises only)
- CPU – 2 x Intel Xeon Quad Core 2.6 GHz
- RAM – 128 GB or higher
- Storage - 3 x 1TB with RAID 1 setup
- Network storage – NAS on demand expansion
- Baseline Configuration
- 5000+ data points per milli second
- Base configuration for first 3 years
- Assumed annual 30% data growth

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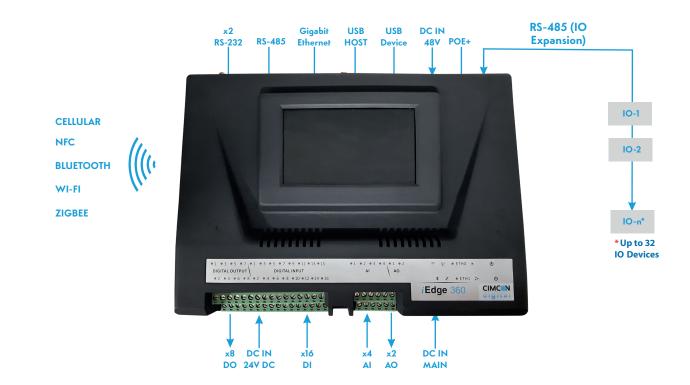
DEVICE TECHNICAL SPECIFICATIONS

• CORE	ARM Cortex-A9	Quad core, 1GHz
	RAM	2 GB
	Flash	4 GB
	microSD card slot	x1, for additional data storage
	RTC with battery backup	Yes
• PERIPHERAL IO	Digital Input	x16, Isolated, 24V DC operated
	Digital Output	x8, Isolated, 24V DC switched output
	Analog Input	x4, 16-bit resolution, +/-10V / 4-20mA input
	Analog Output	x2, 16-bit resolution, 0-10V output
	HART Interface	Optional (Over 4-20mA Analog Input channel)
	IO expansion	Over high speed RS-485 bus
• WIRED CONNECTIVITY OPTIONS	RS-232 port	x2
	RS-485 port	x2, Isolated
	POE+ Ethernet port	x1, 10/100 Mbps
	Gigabit Ethernet port	x1, 10/100/1000 Mbps
	USB Host	x1
	USB Device	x1 (Console)
• WIRELESS CONNECTIVITY OPTIONS	Cellular modem interface	Options of 4G/2G/NB-IoT
	Zigbee RF	2.4 GHz, IEEE 802.15.4, Data Rate: 250 kbps
	Wifi	x1 (802.11b/g/n)
	Bluetooth	x1 (4.0 BLE)
• USER INTERFACE OPTIONS	TFT touch	4.3", Capacitive touch
	NFC	Up to 100mm distance, ISO/IEC 14443-3 Type A standard
• SENSORS (OPTIONAL)	Accelerometer	3-axis, Digital
	Humidity	0-80% RH
	Pressure	50 kPa to 110 kPa absolute pressure
• POWER SUPPLY	DC operated	12V DC, 50W for Core
		24V DC, 50W for isolated Digital Ios
		48V DC, 50W for POE+
• ENCLOSURE	Plastic	ABS
	Mounting	Panel/Wall mount
• OPERATING CONDITION	Temperature	-20°C to + 55°C
	Humidity*	20%-90% RH, non-condensing
	IP*	Ip65
		* Panel installation

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INTERFACE LAYOUT

x2 RS-232 | RS-485 | Gigabit Ethernet | USB HOST | USB Device | DC IN 48V | POE+ | RS-485 (IO Expansion)

CELLULAR
NFC
BLUETOOTH
WI-FI
ZIGBEE

IO-1
IO-2
IO-n*

*Up to 32 IO Devices

DIGITAL OUTPUT | DIGITAL INPUT | AI | AO

ETH0
ETH1

iEdge 360

x8 DO | DC IN 24V DC | x16 DI | x4 AI | x2 AO | DC IN MAIN

MECHANICAL DIMENSIONS

50mm
35mm
175mm
245mm

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