Introduction of CIM10

CIM10 serves as your gateway to seamless IoT edge connectivity and management. With its robust system monitoring, versatile network support, advanced security features, and seamless integration capabilities, CIM10 empowers you to unlock the full potential of your IoT ecosystem. From device integration to user application support, CIM10 offers a streamlined experience, ensuring scalability, flexibility, and security at every step.

Hardware Information

CIM10 is equipped with the following hardware specifications:

- 1Nos Ethernet Port
- 1Nos Power Port (12v to 24v DC)
- 1Nos Connector for the Modbus RS485, Digital Input 1 & 2, Analog Input 1 & 2, and Ground
- 1Nos USB Mini Port for the power and backend tasks
- 1Nos Micro HDMI Port
- 1Nos Micro SD Card Slot
- 1Nos SIM Card Slot
- 1Nos GPS Antenna Slot
- 1Nos GSM Antenna Slot
- 4Nos LEDs (GPS LED, Bluetooth LED, LTE /GPRS LED, Power LED)

Application Interface

CIM10 comes with an integrated web UI that can be accessed through its default IP address.

- Default IP: 192.168.1.100
- Default Subnet: 255.255.255.0
- Default Gateway: 192.168.1.1

Steps to Open WebUI

- Open any web browser like Google Chrome, Firefox, Microsoft Edge, etc., on your PC or laptop.
- Open a new tab and enter the default IP address of CIM10 (e.g., 192.168.1.100) into the address bar and press Enter.
  Note: Ensure that your PC or laptop is in the same IP range.
- Once the webpage opens, it will prompt you to enter login credentials.
- Use the following credentials:
  Username: iEdgeAdmin
  Password: iEA@12345 or iEAcX#t6V)
  Note: Do not include the double quotes.
- After successful login, the system status page will appear.

WebUI Features

- System Status
    - In the System Status, users can view CPU consumption, memory consumption, network interface, volume backup, device uptime, network transport, active network interface, latitude, longitude, RTC, and time zone configuration.
    - Users can configure NTP servers manually or automatically from the RTC and Time Zone settings. By default, the Primary NTP Server is set to "time.google.com," and the Secondary NTP Server is set to "time1.google.com." To use these default NTP servers, simply check the "Use NTP Default Server" box.
    - Users can export CPU consumption, memory consumption, network interface, and volume backup data in various formats such as PNG, JPEG, PDF, SVG, ASV, and XLS.
- Network
    - In the "Network" section, there are four options available:

- Ethernet
    - In the Ethernet configuration, the following options are available:
      Enable/Disable Interface
      DHCP Server/Static IP Address
    - When DHCP Mode is selected, the CIM10 will automatically obtain an IP address from the DHCP server available on the LAN network. And when Static IP Address Mode is selected user needs to set a manual IP Address.
- GSM / LTE
    - In the GSM / LTE configuration, the following options are available:
      Enable/Disable Interface
      Serial Port (Should be the default)
      APN Name (Which will be different as per the used SIM)
      Modem Name
    - There are two options are there in the “Modem name”:
      2G and 4G
    - On the right side GSM / LTE Status will be visible, there are below mentioned options are available:
      IP Address
      Gateway
      Signal Strength
      Registration
      Status
      Operator Name
      IMEI
- Port Forwarding
    - In this webUI section user will be able to forward Ethernet port and GSM SIM card-related settings

- Firewall Settings
    - In this webUI section user will be able to configure and manage the Ethernet port and GSM SIM card-related settings
- Peripherals
    - In this webUI section user will be able to Digital Input, Analog Input, and GPS.
- Device
    - In this webUI section user will be able to create the devices that need to communicate with the CIM10.
    - Here Modbus RTU, Modbus TCP, OPC UA, BACnet IP, PROFINET, Ethernet/IP, and Vibit_BP Protocols are available for the communication.
- Tags
    - In this webUI section user will be able to access MQTT Topics of the individual tags for the specific devices.
- Integration
    - In this webUI section user will be able to assign and configure details for the MQTT Server / Broker. For the Transport, there are 4 options are there, CIM Cloud, MQTT, AWS, and Asure.
- User Application
    - CIM10 supports Python SDK as the user can write the Python script / Custom Application by using Python SDK.
- Package Manager
    - In this webUI section user will be able to see the current package versions and well user can update the packages.
- Service Manager
    - In this webUI section user will be able to see the status of the specific Services related to Network, Peripheral, Device, Integration, and User Application. Also, the user can Enable / Disable services, turn ON / OFF Debug logs, can Start / Restart / Stop services.
- Board Configuration
    - In this webUI section user will be able to Enable /Disable specific service and service configuration settings. Users can disable the specific Service/service configuration settings to decrease load.

CIM10 Analog Input Configuration steps

For Physical connection: CIM10 has onboard PERIPHERAL IO

Analog Input (2 Nos), 12-bit resolution, 0-10V / 4-20mA input

IO expansion: Yes, Modbus IO (External on Modbus RS-485)

CIM10 has 8 Pin Connector and from that 8 Pins 3pins AI-1, AI-2, GND will be used,

Example: A Flow meter will have two wires for its 4-20mA analog output one wire will be for Signal and the other will be for Ground,

so, on CIM10, the signal wire from the flow meter will be connected to AI-1 or AI-2 Pin and the Ground wire will be connected to GND Pin

For Web page configuration

There will be below mentioned fields on the configuration page of CIM10

- Pin Number: to add Ai inputs for configuration
- Sampling rate (Sec): reads data on the configured frequency
- Destination: if the user wants data on the Cloud, then the user can select the desired cloud service (Configured in the integration section of CIM10)
- Name: The user can give the desired Analog input name
- Device ID: The user has to add the CIMCON Cloud Device ID
- Channel Type: The user will select Analog Input type Voltage or Current
- Engg. Scale Low: for current User will set 4, Voltage user will set 0
- Engg. Scale High: for current User will set 20, For Voltage user will set 10
- Scale Low: The user will set the desired low value for Scaling
- Scale High: The user will set the desired High value for Scaling

For example, the user has connected one Flow meter on an Analog input AI-1 pin and wants to configure it in CIM10, and 4-20mA will be scaled in 0-100 percent,

Then Below will be the Configuration settings in CIM10

- Pin Number: 1
- Sampling rate (Sec): 10
- Destination: CIMCON Cloud
- Name: Flow Meter
- Device ID: 1122334455667788
- Channel Type: Current
- Engg. Scale Low: 4
- Engg. Scale High: 20
- Scale Low: 0
- Scale High: 100

CIM10 Digital Input Configuration steps

For Physical connection: CIM10 has onboard PERIPHERAL IO

Digital Input (2 Nos), 12/24V DC operated

CIM10 has 8 Pin Connector and from that 8 Pins 3 pins DI-1, DI-2, and GND will be used,

Example: A Pressure Sensor will have two wires for its Digital output one wire will be for Signal and the other will be for Ground,

so, on CIM10, the signal wire from the Pressure Sensor will be connected to DI-1 or DI-2 Pin and the Ground wire will be connected to GND Pin

At specific pressure thresholds, the pressure sensor detects and measures the pressure. Based on the predefined parameters, it generates a digital output signal, which is captured and interpreted by the CIM10.

For Web page configuration

There will be below mentioned fields on the configuration page of CIM10

- Pin Number: to add DI inputs for configuration
- Sampling rate (Sec): reads data on the configured frequency
- Destination: if the user wants data on the Cloud, then the user can select the desired cloud service (Configured in the integration section of CIM10)
- Pin Name: The user can give the desired Digital input name
- Device ID: The user has to add the CIMCON Cloud Device ID
- Status: The user can see the real-time status of the Digital Input from this field.

For example, the user has connected one Pressure Sensor to a Digital input AI-1 pin and wants to configure it in CIM10.

- Pin Number: 1
- Sampling rate (Sec): 10
- Destination: CIMCON Cloud
- Pin Name: Pressure Sensor
- Device ID: 1122334455667788

CIM10 CIM Cloud Integration

➢ Integration Configuration Steps:

1. Navigate to the "Integration" section located on the left side of the CIM10 Web UI.
2. Click on the "+" icon within the Integration section.
3. Choose "CIM Cloud" from the list of options and provide an appropriate name for this Integration.
4. Click "Save" to create the CIM Cloud Integration.
5. Refresh the Integration by clicking the Refresh button located at the top right corner.
6. Click on "Edit" for the created Integration.
7. Note that the "Transport Name" and "Protocol" fields are not editable as they are determined by previous selections.
8. For any other options, please contact the CIMCON Support Team.

➢ Integration Options Definitions:

- **End Point:** Enter the CIM Cloud IP Address in this section.
- **HTTP Port:** Add HTTP Port **8080** in this section.
- **MQTT Port:** Add MQTT Port **1883** in this section.
- **MQTTs Port:** Add MQTTs Port **8883** in this section.
- **Username (Email):** Enter the Username of the CIM Cloud Account in this section.
- **Password:** Enter the appropriate Password of the Username (Email) in this section.
- **Authentication:** Define MQTT Authentications in this field by clicking on “Add Authentication” from the top right corner. For each Authentication, fill in the following details:
    1. **Device ID:** Enter the unique Device ID automatically defined for the device on the CIM Cloud.
    2. **Auth Type:** Choose between “MQTT X.509” or “MQTT Basic”.
    3. **Client ID:** Automatically generated after saving.
    4. **User:** Automatically generated after saving.
    5. **Password:** Automatically generated after saving.
    6. **Remove:** Delete specific Authentication if needed.
- **Incoming Message:** Subscribe to specific topics from the CIM Cloud using this option.
- **Outgoing Message:** Push device data or service data to the CIM Cloud using this option. Fill in the following details:
    1. **App Name:** Select the specific field containing device data or service data.
    2. **Type:** Choose between Data, Event, Response, and Attribute. Data is commonly selected.
    3. **Client ID:** Select the specific Device ID assigned for the device.
    4. **Topic:** Write the default MQTT Topic **“v1/devices/me/telemetry”** for sending data to the CIM Cloud.
- Click the “Save” button to save the Integration Configuration.