BACSYS
ADVANCED EDGE IOT PLATFORM

APEX 100

APEX is an edge controller, gateway and IoT edge hardware powered by the BACSYS platform, delivers intuitive, scalable, and reliable control for Building Automation Systems. It offers robust performance, optimising everything from operations, comfort to energy usage. Gain valuable insights to make smarter decisions and reach your sustainability goals.

Key Features

- Outstanding performance with 64 bit processor
- Built-in Web Application for Monitoring and Control of Equipment, Devices & Sensors
- Flexible and easy configuration with built in Rule Engine & Configuration Studio
- Highly Secure using X.509 Digital Certificate Authentication for the Devices & Platform
- Seamless Integration with 3rd Party BMS & SaaS based IoT Platforms
- Built on the Powerful Ontology model for Buildings, Project Haystack
- Supports one IP network and up to 3 X RS485 channels.
- Supports Industry Standard Protocol Stacks such as BACnet IP, BACnet MS/TP, Modbus TCP/IP, Modbus RTU, MQTT, M-Bus Master
- Leverages Project Haystack Data Semantic Model for Integration and Standardisation
- Supports and integrates with LoRa Wireless and IO Modules, Devices and sensors
- Integrated 4G/LTE modem for secure cloud connectivity and real-time monitoring

Applications

- HVAC Controls, Energy Management and Building Automation System
- Smart Lighting and Environmental Controls
- Industrial Automation

Technical Specification

Hardware

Central processing unit (CPU)
Quad-core Cortex-A72 ARM 64-bit @ 1.5GHz

Operating System
Linux

Random Access Memory (RAM)
1GB LPDDR4 RAM

Flash memory
8GB eMMC-Flash

Network
1 X Gbps Ethernet RJ45
- BACNET IP (10/100 Mbit/s, RJ45)
- MODBUS TCP/IP (10/100 Mbit/s, RJ45)

USB
1 X USB Type C (CLI Interface / Debug)

Other Ports
3 X RS485
- BACNET MSTP (9.6, 19.2, 38.4, 76.8, 115.2 Kbps)
- MODBUS RTU (2.4 Kbps to 115.2 Kbps)

Optional Module
- **Network**
  1 X 2.4 GHz, 5.0 GHz IEEE 802.11 b/g/n/ac wireless
  1 X Bluetooth 5.0, BLE
- **Lora Specification**
  LoRa 868 or 915
  From 863 to 870 MHz 3.56dBi or
  902 to 928 MHz 4.51 dBi
  Tx power up to 27dBm
  Rx sensitivity -139dBm@SF12, BW 125 kHz
- **GSM Specification (4G / LTE / GSM)**
  GSM850 33dBm, EGSM900 33dBm, DCS1800 30dBm, PCS1900 30dBm
  WCDMA B1-2-5-8 24dBm
  LTE-FDD B1-3-4-5-7-8-12-13-18-19-20-26-38-40-4123dBm
  Rx sensitivity -110dBm, 698~960MHz 1.0~5.0dBi, 1710~2690MHz -1.0~3.8dBi

Power	**Operating Voltage** 24VDC, ranges from 9 to 30 V DC **Overvoltage Protection** Maximum overvoltage protection 36V DC. Terminals have short-circuit protection. **Power Consumption** Standby: 110mA Maximum: 200mA
Environmental	**Storage Temperature** 0 ~ 85°C **Operating Temperature** 0 ~ 60°C **Relative Humidity** 10% ~ 90% non-condensing
Mounting	**DIN Rail** YES **Wall Mounting** YES **Protection Class** IP20

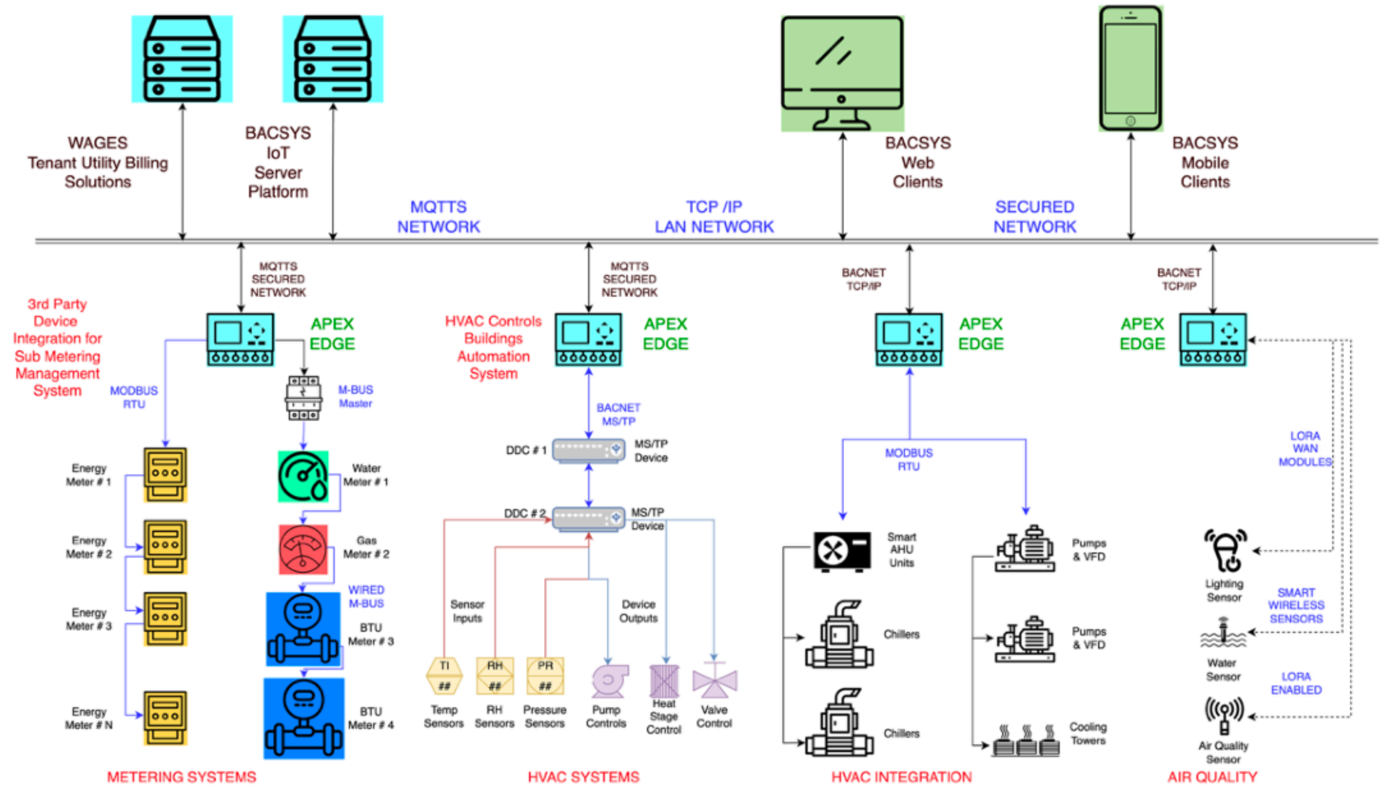
- Based on the cable length, resistance and its quality, supports up to 30 devices per network.
- APEX 100 supports either LoRa Wan or GSM module as optional module.
- Use of LoRaWAN and GSM frequencies may be restricted in your region: Verify compatibility with local LoRaWAN and GSM frequency bands when selecting the hardware type for your region products using wireless technology are subject to international and national approvals.

Ordering Information

Part Code	Description
APEX100-B	Base Apex Controller Hardware includes three isolated RS485 ports, one 100/1000MB Ethernet ports, Type-C Port for Backup & Restore.
APEX100-BG	Base Apex Controller Hardware includes three isolated RS485 ports, one 100/1000MB Ethernet ports, Type-C Port for Backup & Restore, and **GSM 4G/LTE modem for Cloud or remote data connectivity**
APEX100-BL	Base Apex Controller Hardware includes three isolated RS485 ports, one 100/1000MB Ethernet ports, Type-C Port for Backup & Restore, and **LoRa Transceiver for communication with LoRa devices & Gateway**
APEX200-BW	Base Apex Controller Hardware includes three isolated RS485 ports, one 100/1000MB Ethernet ports, Type-C Port for Backup & Restore, **WiFi and Bluetooth built-in adapters**

SYSTEM ARHICTECTURE

BACSYS IoT Platform & APEX Edge Controllers for Building & Industrial Automation Systems



Description: Typical BACSYS Solution driven System Architecture for Building and Industrial Automation Systems **Revision: V 1.1** **Date: 12th Feb 2025**	**Supported Protocols: BACnet, Modbus, MQTT, Rest API, M-Bus** **Supported Systems: HVAC, Energy, Fire, Security, Electricity, DG, Water, BTU (Chilled & Hot), Gas** **Applications: Buildings, Small & Medium Industrial Applications**	**Created By: BACSYS Technical Support Team (hello@bacsys.ai)** **Reviewed By: BACSYS Product Team** **Approved By: BACSYS Product Team**

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