Ever-evolving smart buildings require new approach.

As buildings grow in size and become more complex, building systems need to be smarter and more reliable.

To that end, successful modern building control & management incorporates advanced technologies such as IoT, Cloud, and Big Data, in order to become more automated, intelligent, and eco-friendly.

Now is the time for you to innovate your buildings and to satisfy the needs of building owners, operators, and tenants with smart building solution.

**requirements of smart building solution**

- Building owner
  - Increased building value
  - Increased rental income
  - Eco-friendly building

- Operator
  - Maintenance cost reduction
  - Efficient energy management
  - Professional building operation

- Tenant
  - Increased work productivity
  - Efficient use of space
  - Personalized service

**Samsung SDS BMS** will help your **smart building management**.
Samsung SDS BMS

Samsung SDS BMS (Building Management Solution) is a comprehensive technology solution for reducing energy consumption and operating costs across the building’s entire subsystems including HVAC and electricity.

Highlights

- Data analytics based building management
  Fault detection & diagnosis engine analyze data and provide optimal operational guidelines.

- Wireless networks
  Wireless sensors and devices improve application of mobility and flexibility.

- Design and setup automation tools
  Standard template and automated mapping tools enable control logic and graphic design to be quick and easy, while device simulator verifies data and reduces deployment costs.

- Seamless operation using mobile devices
  Mobile devices allow quick on-site response and efficient management anywhere, anytime.

- High availability architecture
  Offer strong identification and sophisticated methods for accessing to sensitive data and support redundancy for reliability.

Components

- **BMS Base**
  Monitor and control HVAC and electricity to improve operational efficiency.

- **BMS Energy**
  Analyze energy consumption pattern and identify saving opportunities, while managing energy control algorithm.

- **BMS Facility**
  Manage building facilities and resources including equipment and materials, while providing standard work procedure and equipment analysis.

- **BMS Integration**
  Monitor subsystems through a single point of access, and scale up to manage multi-building complex.
**BMS Base** is a solution that automatizes building operation.

Monitor HVAC and electricity in real time, enabling prompt and effective response.

**Data Collection and Trend Analysis**
- Real-time data collection and monitoring
- Efficient data gathering, analysis and storage
- High resolution trend logs

**System Integration**
- BACnet® system
- Industry standard open protocol support (KNX®, XML®, OPC®)

**Design and Setup Automation tools**
- Standard template
- Control logic, graphic design mapping tool
- Device simulator

**Web and Mobile Support**
- HTML5 web support
- Data access through mobile devices on-site or remotely

**High Availability Architecture**
- Reliable operation in a redundant system configuration
- System backup and restoration support

---

**BMS Energy** is a solution for efficient energy management.

Manage energy consumption by analyzing data usage, while maintaining a comfortable environment.

**Monitoring**
- Energy consumption monitoring and tracking
- Equipment operation status management
- Energy dashboard

**Equipment Performance Analysis**
- Facility performance analysis based on energy consumption data
- Operational guidelines for energy savings

**Energy Consumption Analysis and Alarm**
- Real-time alarm notification
- Easy-to-follow energy saving guidelines for non-experts

**Building Operation Optimization**
- Facility operation condition analysis
- HVAC control optimization

---

1. BACnet: Building Automation and Control NETworks
2. KNX: OSI-based network communications protocol for intelligent buildings
3. XML: Extensible Markup Language
4. OPC: OLE for Process Control

---
**BMS Facility** is a facility management solution that supports standard work procedure.

Perform preventive maintenance on facilities and equipment based on mobile, while managing materials efficiently.

**BMS Integration** is an integration solution for a single or multi-site buildings.

Integrate HVAC, electricity, fire alarm and parking system for a single or multi-site buildings.
Samsung SDS BMS hardware consists of various controllers to integrate and control different subsystems of a building. It also supports BACnet protocol to maximize compatibility, while providing flexibility to integrate other systems.
Network Controller

The Samsung SDS network controllers are used in conjunction with a BACnet router and BBMD (BACnet Broadcast Management Device) to provide alarm monitoring, data logging, scheduling, and logic control services and integrate with other controllers through a variety of communication channels. Flash memory and battery-supported SRAM are used to prevent data loss in the event of a power shortage. It seamlessly interfaces with 3rd party controllers via industry standard open protocols using RS-485 ports.

Ordering Lists
- NC-100 / GM-100

Features
- 32Bit/RISC CPU
- SRAM data backup
- 4 Channel communication ports (RS-485) for other systems interfaces
- BACnet MS/TP or BACnet LonTalk
- Remote firmware upgrade
- LCD & LED displaying device status

Technical Specification
- Processor: ARM9 32-Bit RISC
- Power Voltage: 24 VAC (Min. 18 VAC / Max. 30 VAC), 50/60 Hz
- Max. 20 VA
- BACnet/IP
- Digital I/O: 2 point, 4 Digital Inputs & 4 Digital Outputs
- Analog I/O: 8 Analog Inputs & 8 Analog Outputs
- Communication port options (BACnet MS/TP or BACnet LonTalk): Digital I/O from 8 point, 8 Digital Inputs & 8 Digital Outputs
- Processor: 32-Bit RISC
- Power Voltage: 24 VAC (Min. 20 VAC / Max. 30 VAC), 50/60 Hz
- Max. 20 VA
- BACnet/IP
- Digital I/O: 2 point, 4 Digital Inputs & 4 Digital Outputs
- Analog I/O: 8 Analog Inputs & 8 Analog Outputs
- Communication port options (BACnet MS/TP or BACnet LonTalk): Digital I/O from 8 point, 8 Digital Inputs & 8 Digital Outputs

IP Digital Controller

The BTL certified (B-BC) BACnet controller services BACnet request/response events with BACnet Advanced Work Stations (B-AWS) via direct BACnet/IP connection. The AAC-300 or AAC-500 features independent surveillance & control, scheduling, alarm, event management, energy management, data trend, logging and data storage.

Ordering Lists
- AAC-300
- AAC-500S/D

Features
- 32Bit/RISC CPU
- SRAM data backup
- Support programmable logic compliant with IEC 1131-3 standard (FBD)
- Communication ports (BACnet/IP, RS-232)
- Remote firmware upgrade
- LCD & LED displaying device status
- Numerical keypad allows local control & monitoring
- No field communication module available
- AAC-500S/D included internal web browser functionality for setup and monitoring

Technical Specification
- Processor: ARM9 32-Bit RISC
- Power Voltage: 24 VAC (Min. 20 VAC / Max. 30 VAC), 50/60 Hz
- Max. 20 VA
- BACnet/IP
- Digital I/O: 2 point, 4 Digital Inputs & 4 Digital Outputs
- Analog I/O: 8 Analog Inputs & 8 Analog Outputs
- Communication port options (BACnet MS/TP or BACnet LonTalk): Digital I/O from 8 point, 8 Digital Inputs & 8 Digital Outputs

Ordering Lists
- AAC-300
- AAC-500S/D

Features
- 32Bit/RISC CPU
- SRAM data backup
- Support programmable logic compliant with IEC 1131-3 standard (FBD)
- Communication ports (BACnet/IP, RS-232)
- Remote firmware upgrade
- LCD & LED displaying device status
- Numerical keypad allows local control & monitoring
- No field communication module available
- AAC-500S/D included internal web browser functionality for setup and monitoring

Technical Specification
- Processor: ARM9 32-Bit RISC
- Power Voltage: 24 VAC (Min. 20 VAC / Max. 30 VAC), 50/60 Hz
- Max. 20 VA
- BACnet/IP
- Digital I/O: 2 point, 4 Digital Inputs & 4 Digital Outputs
- Analog I/O: 8 Analog Inputs & 8 Analog Outputs
- Communication port options (BACnet MS/TP or BACnet LonTalk): Digital I/O from 8 point, 8 Digital Inputs & 8 Digital Outputs
BACnet MS/TP based Controller

The BTL certified (B-BC) SDC-100 BACnet controller connects network controllers through the BACnet MS/TP protocol. It features independent monitoring, control, scheduling & alarm, event management, data trend/logging, and energy management. Up to 30, 8-bit I/O modules can be connected for input/output expansion. The SDC-100D (Standard) model features both digital and analogue I/O ports (AI/AO/DI/DO) while the SDC-100D model only supports digital I/O (DI/DO) ports.

VAV Controller

The VC-100 controller is utilized in VAV (Variable Air Volume) applications by controlling an external damper actuator and differential air pressure sensor to regulate airflow to maintain a comfortable indoor environment (external actuator and sensor required). The VC-100 controller supports BACnet MS/TP telecommunication. MVC-150 is an internal damper type VAV controller that supports the BACnet MS/TP telecommunication protocol. Desired room conditions are maintained by controlling air volume through the adjustment of the internal actuator damper aperture (internal pressure sensor and actuator included).
VAV Wireless Communication Converter

Used in conjunction with the Samsung SDS VAV (Variable Air Volume) Controllers such as VC-100, MVC-150, Z-CONVERTER is a wireless communication converter that can switch the wired communication to the wireless network IEEE802.15.4. Using Z-CONVERTER can build MVC-150 and VC-100 wirelessly.

Fan & Valve Control Algorithm

Type
- FAN Control Algorithm
- Valve Control Algorithm

Ordering Lists
VC-NET

Specifications
- Processor: Atmel Mega Core
- Wireless network status monitoring
- Optimized wireless channel selection

Features
- Analog Inputs: 850-1500 Ω
- 12-bit (±200 mV in 0-10 VDC)
- 2 Channels: Binary Dry Contact
- 2 Channels: 0-10 VDC (Max. Current 10 mA/Ch) or Relay BO (Max. 24 VAC, 1A)
- 4 Channels: Relay Outputs (Max. 24 VAC, 1A)
- Resolution: 16-bit

HW specification

FCU Controller

The WPC-100 is a BACnet MS/TP networked fan coil unit controller that provides control of fan coil units, heaters, or other similar equipment. It has 5-touch input and a 7-segment display for simple operation. The WPC-100 supports 3 types of valves (On/Off, Floating, and Proportional) and 3 fan-speed phases. Auxiliary binary output is also provided for controlling lighting or auxiliary equipment.

Ordering Lists
WPC-100

Specifications
- Processor: Cortex M3 32-Bit RISC
- Supply Voltage: ACDC 24V, 200 mA (Max.)
- Power Consumption: 5W (Max.)
- Communication: RS-485 (BACnet MS/TP), IEEE802.15.4
- Controller Addressing: DIP switch set, 1 to 30, Wireless Channel Select: Rotary Switch
- Certification: CE Mark, KC

Features
- 2 Pipe On/Off Control
- 2 Pipe Flow Control
- 2 Pipe Proportional Control
- 3 Steps (High, Middle, Low), Control: Manual / Auto

HW specification
Analog and Binary Extension Module for Network Controllers

BXM-IO is a BTL-certified (B-ASC) expansion module for analog and binary data collection points. Its main role is to connect BACnet modules to a network controller using the BACnet MS/TP protocol. Sub-modules are connected to a digital controller through a NXM-Bus (RS-485) network. Depending on the physical characteristics of the monitored object, up to 15 modules may be connected together.

**Ordering Lists**

- BXM-MA (BACnet MS/TP or NXM-Bus telecommunication and power)
- BXM-AI (Analog input expansion module)
- BXM-DI (Binary input expansion module)
- BXM-AO (Analog output expansion module)
- BXM-DO (Binary output expansion module)
- BXM-PWR (30W Power module)
- BXM-EX (UI 20CH, UO 12CH expansion module)

**Supply Voltage**

24 VAC (Min. 20 VAC / Max. 30 VAC), 50/60 Hz

**Power Consumption**

Max. 20 VA

**Communication**

RS-485 (BACnet MS/TP)

**Controller Addressing**

DIP switch set, 1 to 31

**Terminal Specification**

- Input, Output and Power : Pluggable screw terminal blocks
- BXM-Bus : 3 wire pluggable screw terminal blocks
- CE Mark, KC, FCC, BTL, UL, ALC, BACnet Application Specific Controller

**Ambient Conditions**

- Operating : 0 ~ 55 °C, 10 ~ 90% RH
- Storage : -20 ~ 70 °C, 5 ~ 95% RH

**Dimensions (H × W × D)**

- BXM-MA/BXM-AI/BXM-DI/BXM-AO/BXM-DO/BXM-PWR/BXM-EX : 102 mm x 137 mm x 67 mm
- BXM-EX : 102 mm x 210 mm x 67 mm

**Weight**

- BXM-MA/BXM-AI/BXM-DI/BXM-AO/BXM-DO/BXM-PWR/BXM-EX : 102 g (Min.)
- BXM-EX : 270 g (Max.)

**Features**

- Easy BXM-IO Module addition and removal
- BACnet MS/TP or legacy protocol expansion module
- 3rd Party Communication : RS-485 (1 Port)
- 16-bit
- 8-bit (±200 mV in 0-10 VDC)
- Analog Input
- 8 Channels : 850-1550 Ω
- 0-10 VDC, 0-20 mA
- 1-4 Channels : 0-10 VDC (Max. Current 10 mA/Ch) or 4-20 mA
- 5-8 Channels : 0-10 VDC (Max. Current 10 mA/Ch)
- Analog Output
- 8 Channels : Relay Outputs (Max. 250V, 1 A)
- 3rd Party Communication : RS-485 (1 Port)
- Digital Input
- 8 Channels : Binary Dry Contact
- Digital Output
- 8 Channels : Relay Outputs (Max. 250V, 1 A)
- 3rd Party Communication : RS-485 (1 Port)

**Technical Specifications**

- Processor : Cortex-M3 32-Bit RISC
- Memory : 256 kB ROM, 4 kB RAM
- Communication : RS-485 (BACnet MS/TP)

**Certification**

- CE Mark, KC, FCC, BTL, UL, ALC, BACnet Application Specific Controller

---

**Analog and Binary Extension Module for Digital Controllers**

The NXM-IO are extension modules for digital controllers that are used for expanding analog modules and binary points. Digital controllers physically support 4 types of NXM-IO (AI/AO/DI/DO) port depending on the physical characteristics of target objects.

**Ordering Lists**

- NXM-MA (Analog input expansion module)
- NXM-AO (Analog output expansion module)
- NXM-DI (Binary input expansion module)
- NXM-DO (Binary output expansion module)
- NXM-PWR (30W Power module)
- NXM-VFD (Legacy protocol communication module)

**Supply Voltage**

24 VAC (Min. 20 VAC / Max. 30 VAC), 50/60 Hz

**Power Consumption**

Max. 20 VA

**Communication**

- RS-485 (NXM-Bus)
- 3-Wire pluggable screw terminal blocks

**Controller Addressing**

DIP switch set, 1 to 31

**Ambient Conditions**

- Operating : 0 ~ 55 °C, 10 ~ 90% RH
- Storage : -20 ~ 70 °C, 5 ~ 95% RH

**Dimensions (H × W × D)**

- NXM-MA/NXM-AI/NXM-DI/NXM-DO/NXM-PWR : 102 mm x 137 mm x 67 mm
- NXM-VFD : 102 mm x 210 mm x 67 mm

**Weight**

- NXM-MA/NXM-AI/NXM-DI/NXM-DO/NXM-PWR/BXM-EX : 102 g (Min.)
- NXM-VFD : 270 g (Max.)

**Features**

- Easy NXM-IO Module addition and removal
- Briefer MS/TP or legacy protocol expansion module
- 16-bit
- 8-bit (±200 mV in 0-10 VDC)
- Analog Input
- 8 Channels : 850-1550 Ω
- 0-10 VDC, 0-20 mA
- 1-4 Channels : 0-10 VDC (Max. Current 10 mA/Ch) or 4-20 mA
- 5-8 Channels : 0-10 VDC (Max. Current 10 mA/Ch)
- Analog Output
- 8 Channels : Relay Outputs (Max. 250V, 1 A)
- 3rd Party Communication : RS-485 (1 Port)
- Digital Input
- 8 Channels : Binary Dry Contact
- Digital Output
- 8 Channels : Relay Outputs (Max. 250V, 1 A)
- 3rd Party Communication : RS-485 (1 Port)

**Technical Specifications**

- Processor : Cortex-M3 32-Bit RISC
- Memory : 256 kB ROM, 4 kB RAM
- Communication : RS-485 (NXM-Bus)

**Certification**

- CE Mark, KC, FCC, BTL, UL, ALC, BACnet Application Specific Controller
Wireless AP, Router, Temperature and Humidity Sensor

The ZAP and Z-ROUTER modules are used to communicate with wireless temperature and humidity sensors. Sensors are connected to an AP using the IEEE802.15.4 network protocol. Direct connection of the wireless temperature and humidity sensors to the ZAP module is possible using the Z-ROUTER. The Z-THSENSOR module sends temperature and humidity information over an IEEE802.15.4 wireless network. The module is capable of scanning network conditions and automatically selecting the best wireless channel (manual configuration possible).

Z-WPT-100

Z-WPT-100 is a wireless controller attached to interior walls. Z-WPT-100 measures building temperature and humidity and provides measurement information as well as input temperature by user to the AP or controllers such as VC-100, MVC-150 through IEEE802.15.4 wireless network protocol.

---

**Ordering Lists**

<table>
<thead>
<tr>
<th>Items</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Atmel Mega Core</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>ZAP: 24 VAC (Min. 20 VAC / Max. 30 VAC), 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER: DC 3V (AA Alkaline Battery x 2), 30 mA (Max.)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>ZAP: Max. 5 V / Max. 100 mA (Max.)</td>
</tr>
<tr>
<td></td>
<td>Z-THSENSOR-10: 30 mW (Max.)</td>
</tr>
<tr>
<td>Communication</td>
<td>ZAP: RS-485 (BACnet MS/TP or NXM-Bus), IEEE802.15.4</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER / Z-THSENSOR-10: IEEE802.15.4</td>
</tr>
<tr>
<td>Controller Addressing</td>
<td>ZAP: DIP switch set, 1 to 30</td>
</tr>
<tr>
<td>Ambient Conditions</td>
<td>ZAP: Operating: 0 ~ 55℃, 10 ~ 90% RH</td>
</tr>
<tr>
<td></td>
<td>Storage: 0 ~ 70℃, 8 ~ 95% RH</td>
</tr>
<tr>
<td>Dimensions (H x W x D) &amp; Weight</td>
<td>ZAP: 140 mm x 84 mm x 57 mm, 200 g (Max.)</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER / Z-THSENSOR-10: 128 mm x 128 mm x 25 mm, 110 g (Max.)</td>
</tr>
<tr>
<td>Terminal Specification</td>
<td>ZAP: Input, Output and Power: Pluggable screw terminal blocks, USB-ON-OFF</td>
</tr>
<tr>
<td>Certification</td>
<td>ZAP: CE Mark, KC, FCC, IC, BTL (B-ASC, BACnet Application Specific Controller)</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER / Z-THSENSOR-10: CE Mark, KC, FCC</td>
</tr>
</tbody>
</table>

**Features**

- Atmel Mega Core
- Wireless network status monitoring
- Optimized wireless channel selection
- Running on low electricity (Z-THSENSOR-10)

---

**Ordering Lists**

<table>
<thead>
<tr>
<th>Items</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Atmel Xmega 256</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>ZAP: 24 VAC (Min. 20 VAC / Max. 30 VAC), 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER: DC 3V (AA Alkaline Battery x 2), 30 mA (Max.)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>ZAP: Max. 5 V / Max. 100 mA (Max.)</td>
</tr>
<tr>
<td></td>
<td>Z-THSENSOR-10: 30 mW (Max.)</td>
</tr>
<tr>
<td>Communication</td>
<td>ZAP: RS-485 (BACnet MS/TP or NXM-Bus), IEEE802.15.4</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER / Z-THSENSOR-10: IEEE802.15.4</td>
</tr>
<tr>
<td>Controller Addressing</td>
<td>ZAP: DIP switch set, 1 to 30</td>
</tr>
<tr>
<td>Ambient Conditions</td>
<td>ZAP: Operating: 0 ~ 55℃, 10 ~ 90% RH</td>
</tr>
<tr>
<td></td>
<td>Storage: 0 ~ 70℃, 8 ~ 95% RH</td>
</tr>
<tr>
<td>Dimensions (H x W x D) &amp; Weight</td>
<td>ZAP: 140 mm x 84 mm x 57 mm, 200 g (Max.)</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER / Z-THSENSOR-10: 128 mm x 128 mm x 25 mm, 110 g (Max.)</td>
</tr>
<tr>
<td>Terminal Specification</td>
<td>ZAP: Input, Output and Power: Pluggable screw terminal blocks, USB-ON-OFF</td>
</tr>
<tr>
<td>Certification</td>
<td>ZAP: CE Mark, KC, FCC, BTI, BACnet Application Specific Controller</td>
</tr>
<tr>
<td></td>
<td>Z-ROUTER / Z-THSENSOR-10: CE Mark, KC, FCC</td>
</tr>
</tbody>
</table>

**Features**

- Atmel Xmega 256
- Wireless network status monitoring
- Optimized wireless channel selection

---

**Z-WPT-100**

- IEEE802.15.4 wireless network protocol
- Measures building temperature and humidity
- Sets and presents temperature and humidity
Value Proposition

Increase Asset Value
- Increase asset value by providing converged service through a building platform
- Promote eco-friendly image
- Enhance management efficiency and business performance

Enhance Operational Efficiency
- Extend equipment life time and enable efficient management
- Predict faults early on and reduce maintenance costs with performance analysis
- Lower energy costs through energy consumption analysis and operating guidance

Boost Productivity
- Improve tenant satisfaction with differentiated service
- Ensure better productivity with increased comfort
- Enable operation anywhere, anytime using mobile devices

Why Samsung SDS?

Samsung SDS BMS is here to help you innovating your building management.

Total solution provider
Provide a full package of device, solution, and service for energy efficiency and operational cost reduction.

Global standard
Comply with industrial standards and international certificates. (KC¹, CE², FCC³, UL⁴, BTL⁵, EAC⁶)

Credibility
Proven solutions that have numerous references such as offices, hospitals, data centers and discount store chains.


Building owner  Operator  Tenant