

EcoStruxure[™] Connected Room Solutions

Creating the Room of the Future

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Buildings are becoming smart and digitized





Delivering the Room of the Future with EcoStruxure Connected Room Solutions

Connectivity Hub for Efficiency and Personalized Occupant Experience

Harness the **power of today's smart buildings** and the **IoT** to modernize building infrastructure

- for easier expansions and retrofits with a digital, future-ready infrastructure
- to deliver responsive and personalized experiences to tenants and their occupants
- to benefit from higher operational and energy efficiencies



Increase Building Value

Optimize power and operations-level savings and efficiency: **open, secure, BACnet IP-based solution** provides easy BMS integration and access to roomlevel data to improve performance

Future-ready to leverage **wireless connectivity** for on-demand tenant services, wayfinding, asset tracking, space utilization, and other smart building applications

Improve CapEx with a **modular solution**; quickly and easily change floor layouts with flexible rezoning application

Enhance Occupant Comfort and Productivity

- Create safer, healthier and more comfortable
 people-centric work environments
 - Expand occupant-focused apps, services & amenities to boost productivity and satisfaction
 - Accommodate tenants' changing floor space needs with minimum disruption to day-to-day activities
 - Meet environmental and regulatory requirements with **customizable environments**

Increase Engineering Efficiency

Easily integrate with any BMS and across multiple subsystems and sensors with more than six **open industry standard protocols**

Increase repeatability, lower installation cost, and reduce project duration with **standard applications**

Configure and commission prior to having a network infrastructure in place with **mobile commissioning**; record test results during commissioning

Creating the Room of the Future

Today: Connected systems are separate with integration, if any, *at the floor level*



- Duplicated efforts for installation/ check-out
- Common to have duplicated devices in the room
- Meticulous planning required during construction
- Cluttered user experience, no mobile interface
- Integration cannot handle building change
- Many points of failure are introduced



Future: Integration *in the room* delivers an optimum occupant experience & lifetime efficiencies



- Efficient installation and check-out
- Zero effort integration
- Elegant user experience
- Easy rezoning for future needs
- Seamless integration



EcoStruxure™ Connected Room Solutions Creating the Room of the Future

 Powered by an IP controller at the room level (RP-C)

- Insight-Sensor for CRS provides people counting and detection of sound, light, presence, temperature and humidity for CRS
- Integrated light, blinds, temperature control, and room sensors
- Ability to integrate with occupant apps and workplace management software



EcoStruxure Connected Room Solutions

Architectural Diagram



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RP-C Controller

The foundation of the Connected Room Solutions

- Modular BACnet/IP Controller
- Controls and interfaces with all subsystems and IoT devices in a room
- Integrated solution with standard light and blind control interfaces
- 2 configurable RS485 ports for Room bus, Sensor bus or Modbus
- Built-in wireless capabilities, and open protocols for interface with industry standard IoT devices
 - -Bluetooth-native and Zigbee 3.0 (via adapter)
 - Freely programmable controller supported by a range of tested and validated configurable applications







RP-C Controllers

Easily transform and future-proof buildings

- Flexible deployment
 - Standalone or integrated with any building management system (BMS)
- Extensible architecture
 - Designed for HVAC and lighting and blind control
 - Control and interface with all subsystems and loT devices in a room used wired/ wireless technologies such as Zigbee and BLE
- Adaptable within the existing infrastructure
 - Easily add IoT-based services like automated fault detection and navigation
 - Easy restructure floor plans using Software defined zoning



Lighting & Blinds Expansion Modules

- Expansion models for simple and sophisticated lighting control
 - DALI and 0-10V Interface (options available with and without power distribution)
- Blind control with high- or low-voltage extension models with power distribution
 - Uses Relay or Standard Motor Interface (SMI)
- Easy and direct installation with connectors on ceiling near the controlled equipment – no enclosure needed
- Room-level data available to optimize power consumption
- Additional energy savings achieved with complete shut-off to lights in "off" position





Lighting & Blind Control Occupant-centric

 Control lighting using motion detection and light intensity measurement from the Multi-Sensor or SpaceLogic Sensors

- Daylight harvesting ensures adequate natural lighting in the space thereby minimizing use of artificial light
- Human-centric lighting lets occupant adjust lighting color temperature based on their task to ensure optimum productivity
- Blind control optimizes lighting and temperature based on conditions provided from weather stations, solar glare sensing, or by tracking the sun's position

*Formerly known as SmartX





SpaceLogic[™] Insight-Sensor

The most efficient way to balance comfort and energy consumption in a building

 The all-in-one Insight-Sensor combines people counting, sound, light, presence, temperature and humidity into a single sensor



- It is part of the Connected Room Solutions, powered through the Room Controller to integrate with Light, Blinds and HVAC
- Enables a proactive way of sensing and controlling for the well-being and comfort of occupants in an energy efficient way to meet the future of digital smart buildings.

- Helps meet digital smart buildings requirements of well-being, comfort and energy efficiency
- Empowers building owners, tenants and occupants with customized Indoor Air Quality and optimized Energy Footprint covering all occupancy levels
- Provides sensor data through integration with Connected Room Solutions and EcoStruxure Building Operation, to be converted into customized indoor climate with perfect adaption to occupancy level and optimized energy footprint



SpaceLogic[™] Multi-Sensor

- A single sensor for occupancy detection and light level measurement
- Ensures efficient use of HVAC and lighting
- Enables occupants to optimize room comfort and program lighting for daylight or artificial lighting using light level measurements
- Quickly and simply connects data and power through the room bus to reduce installation complexity and cost





Relay Module

- Enables power supply and simple on/off control of lights
- Four relay outputs
- Wide operating voltage range of 100-277V for various applications





KNX Module

- Interface between the controller and KNX devices such as pushbuttons, sensors, and control units for lights, blinds, and room temperature
- Allows bi-directional control and monitoring of all parameters and functions of the connected KNX devices



Software Defined Zoning

Easily adapt for changing needs; reduce cost & complexity of room layout changes

- Increase flexibility of floor space and reduce the total cost of ownership
- Reduce lead time of changes *from weeks to seconds* with minimal re-wiring
- Perform changes using any web browser
 - No BACnet knowledge required
- Separate software module for EcoStruxure Building Operation
 - End user functionality in WebStation & WorkStation (licensed feature)





Standard Applications for Connected Room Solutions

Reduce engineering cost, improve quality and speed-up project delivery

- Available to download via Automated Engineering Tool (AET)
- Built on graphical and software components to enable easy adaptation and maintenance
- CRS standard applications are available for
 - Light Management offices/ meeting rooms etc.
 - Daylight Harvesting
 - Human-centric Lighting
 - Blind Control based on input from weather station
 - Blind Control based on solar radiation
 - Blind control based on sun tracking







Complementary Products

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EcoStruxure Building Commission Mobile App

Save time, improve productivity, and lower labor costs

- Configure RP-C Controllers without a server connection
- No need to physically connect with the ceiling unit
- Store e-commissioning mobile app log reports for verification
- Start pre-commission before the network infrastructure is in place
- Validate the room configuration directly from mobile devices to ensure optimized operation





SpaceLogic Room Sensors

One-touch control for light, blinds & scenes

Four sensors available

Multiple housing types
Medium -/+

Optimum

TemperatureHumidity

• CO₂

- Occupancy
- Off-screen buttons

Dimming

Configurable touchscreens*

One-Touch controls



Blind adjustment



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*Available depending on geography – please contact your offer marketing leader \Box



EcoStruxure[™] Building Engage Mobile App

Personalize occupant work environments, increase satisfaction

- Mobile app for building occupants
 - For IOS or Android
- Get a consistent intuitive experience between occupant app, room unit and remote control
- Use for room comfort control: fan, temperature, lighting and blinds
- Prepare for future connected services and other conveniences
- Available with language translation support





EcoStruxure Connected Room Solutions - Overview

Expand control to Create smarter, connected more occupied spaces **BACnet IP-based room controller** Control room climate Configurable or freely programmable Standard applications **RP-C** Controller • Ease of 12 & 16 points commissioning · Simplify maintenance • Zigbee 3.0 for wireless sensor data Living Space Sensors/ Works with most BACnet BMS Commission Engage the directly from occupant with mobile a targeted devices app **IoT Hub for** value-added Flexible, configurable services

*Formerly known as SmartX

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workspaces **Enriched with light & blind control** Onboard support for basic light and blind control Future-ready with sophisticated light and blind control

Room Units

Location

Awareness

Tagged

Data

SpaceLogic* Servers

Enhance with

Building Operation

Building Operation 3.x

Engineering Efficiency Tools – SpaceLogic consistency



Offline programming

Standard room

applications

Configurability



Custom Types

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EcoStruxure Connected Room Solutions - Summary

Future ready buildings for easier expansions and retrofits; enhance with value-added services

Personalize tenant and occupant experiences to increase satisfaction and productivity Benefit from higher operational and energy efficiencies to increase ROI



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