

# SmartStruxure Lite Solution

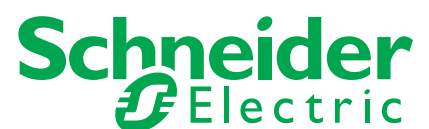
## MPM Series VAV Manager

Smart  Compatible

Site and zone managers providing wired and wireless integrated control solutions for HVAC, lighting, and metering, as well as remote management via StruxureWare™ Building Expert.



Get Control. Get Efficient. Get Value.



# SmartStruxure Lite solution VAV Manager Features



## AT A GLANCE

### Networking

- Ethernet connector for BACnet Ethernet/IP
- 802.15.4 wireless mesh (25 nodes/network)
- Wired serial bus for daisy chain (CANbus)

### Third-party interoperability

- BACnet, EWS, oBIX, FTP
- EnOcean (wireless)
- ZigBee Pro (wireless)
- Modbus
- CANbus

### Inputs/Outputs

- Inputs: 6 universal (analog: 4-20mA, 0-10V, digital: dry contact, thermistor: 1-100K)
- Outputs: 2 relay, 4 analog
- EnOcean (wireless): 49 devices
- ZigBee Pro (wireless): 30 peripherals

### VAV control

- Flow sensor
- Damper actuator

### Other

- Real-time clock
- 400MHz processor
- 64MB of RAM
- 4GB of Flash for local storage
- StruxureWare Building Expert

### Accessories

- ZigBee and EnOcean antenna
- Antenna cable extension

Multi-Purpose Management devices (MPM-VAV) enable the control, monitoring, and management of entire sites via StruxureWare Building Expert. They can also be used for wired and wireless zone control in larger buildings.

## Control Features

- Pressure sensor with actuator (option)
- Supports VAV functionality and applications
- Control of wired end-devices (6 inputs, 6 outputs)
- Wireless control of EnOcean end-devices (optional, 49 points per MPM).
- Wireless control of ZigBee Pro end-devices (optional, 30 peripherals per MPM).
- Modbus.
- Programmable via StruxureWare Building Expert.
- Points visible through BACnet®, EcoStruxure® Web Services (EWS), and oBIX®.
- Real-time response to scripting/graphical programming.

## Applications

Supports variable-air-volume, HVAC, lighting, and metering applications, including:

- HVAC and lighting room and zone control
- Unitary equipment such as rooftop HVAC units, air handling units, heat pumps, and dehumidification units
- Mechanical rooms and equipment cabinets
- Wireless meters and sub-meters
- Metering, where Modbus option enables management of a wide variety of power meters and other metering devices. Can also manage wireless meters and sub-meters

## Networking Between Units

- Wireless: ZigBee Pro wireless mesh network (self-forming/healing, 25 nodes per network)
- Wired: Daisy chain
- IP/Ethernet: Ethernet port

## Embedded Gateway

- EnOcean (wireless) to BACnet IP/oBIX/EWS
- ZigBee Pro (wireless) to BACnet IP/oBIX/EWS
- Modbus to BACnet IP/oBIX/EWS

## StruxureWare™ Building Expert

All MPM models have an embedded web server hosting Building Expert, a web-based intelligent building management system that allows complete configuration and management of small sites. Building Expert offers dashboards, maps, graphical programming, scripting, scheduling, trend logging and more. It is the perfect mini-iBMS for small and medium buildings. It can also be integrated with other SmartStruxure solutions.

## Accessories

- Replacement ZigBee Pro antenna
- Replacement EnOcean antenna for 868MHz and 902 MHz (315 MHz not available)
- Antenna cable extension

# SmartStruxure Lite solution VAV Manager Specifications

## Specifications

### Power

#### Voltage

24VAC;  $\pm 15\%$ ; 50/60HZ

24VDC  $\pm 10\%$

#### Typical consumption

5 VA + Output (VAC), 1.6 W + Output (VDC)

#### Battery

CR1220 3v Lithium Coin Cell Battery

### General

#### Processor

ARM9 32-bit, 400MHz

#### Memory

64MB flash

#### Storage

4GB flash for local storage

#### Real-time clock

Battery backed (10,000 hours)

#### Communication

ZigBee Pro, EnOcean, BACnet

CANbus (125-500 Kbps)

Ethernet (10/100 Mbps)

### Enclosure

#### Material

Rigid ABS

#### Dimensions

132mm (5.20in) x 126mm (4.96in)

#### Rating

UL94V0-5VB

#### Mounting

Din-rail, wall or ceiling mount

### Environmental

#### Operating Temperature

0°C (32°F) to 60°C (140°F)

#### Storage Temperature

-20°C (-4°F) to 60°C (140°F)

#### Relative Humidity

0 to 90% non-condensing

### Inputs

#### Quantity

6 universal inputs (configurable)

#### Analog inputs

Current: 4-20mA with 249 external resistor

Voltage: 0-10V

#### Digital inputs

Dry contacts

#### Thermistor

1 k - 100 k

### Resolution

14-bit

### Outputs

#### Analog (x4)

0-12V, nominal 50mAmax each, 12-bit resolution

#### Relay (x2)

24V, 1.1 Amp per relay

### RS485

#### Supported protocols

Modbus

### Flow sensor

#### Offset / Drift

No offset, no drift

#### Measurement range

-500 to +500 Pa

(-5 to +5 mbar/-2 to +2 inch H<sub>2</sub>O)

#### Accuracy

3% m.v.

#### Mounting sensitivity

Not sensitive to mounting orientation

#### Offset stability

< 0.1 Pa/year

### Damper actuator (optional)

#### Motor

LM24E

#### Torque

45 lb-in [5 Nm]

#### Angles of rotation

0 to 95°

#### Fits shaft diameter

1/4" to 3/4"

#### Power consumption

3 VA Class 2 power source from MPM

### EnOcean (optional)

#### Frequency

315MHz, 868MHz, or 902MHz

#### Receiver Sensitivity

-95dBm

#### Conducted Output Power

5dBm

#### Range

Recommended: 45ft/15m

Line of sight: 100ft/30m

#### Antenna

External whip, RP SMA 0dBi

### ZigBee Pro (optional)

#### Frequency

2400 – 2483.5MHz, 16RF channels

#### Data rate / Mod.type

250Kbps

#### Receiver Sensitivity

-101dBm/-105dBm (amplified)

#### Nominal Output Power

8dBm/18dBm (amplified)

#### Range

Recommended to MPM: 150ft/50m

Line of sight to MPM: 300ft/100m

Recommended to peripherals: 50ft/17m

Line of sight to peripherals: 100ft/30m

#### Antenna

External whip, RP SMA 2.5dbi

### StruxureWare™ Building Expert

#### Software type

Embedded web interface

#### Local installation

None necessary

#### Browser compatibility

Firefox ESR

Internet Explorer 10 (only)

Google Chrome

Safari (Mac only)

### Agency approvals

Energy Management Equipment, UL 916, Fourth Edition, December 23, 1998, rev. December 17, 2007

CSA Standard for Signal Equipment C22.2 No. 205-M1983 (R2004)

CFR47 FCC Part15, Subpart B:2009

ICES-003: Issue 4 (2004)

CE:

Japanese Radio Law

RoHS

### Disclaimer

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

**NOTE: All MPM-VAV models produced as of June 2016 no longer include the battery. The battery has been replaced with a Super Cap.**

# Disclaimer

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- this device may not cause harmful interference
- this device must accept any interference received, including interference that may cause undesired operation.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- this device may not cause interference
- this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

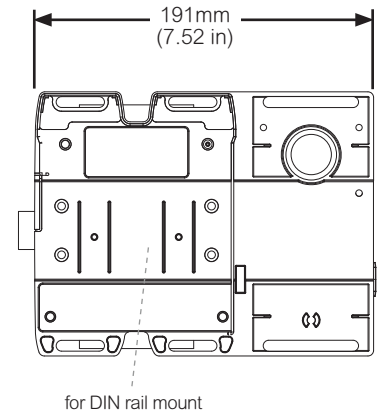
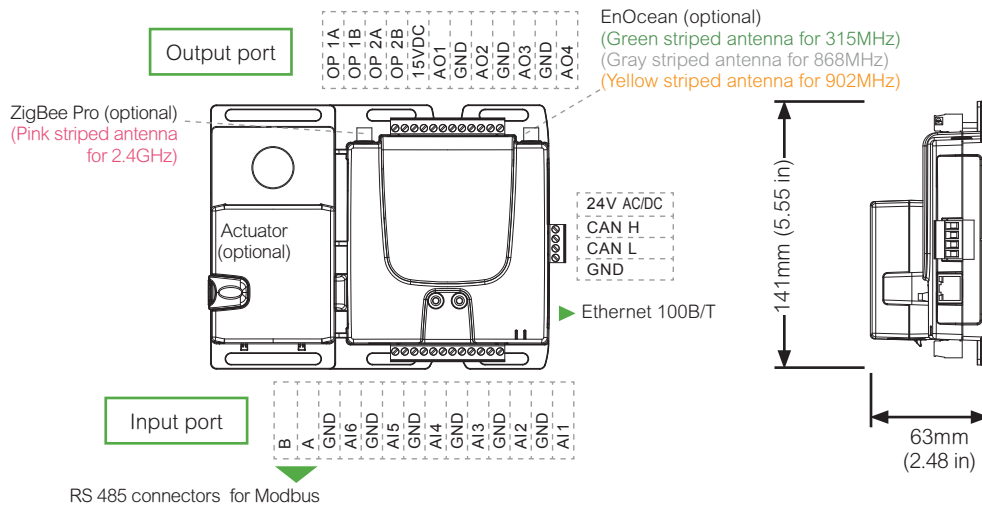
- l'appareil ne doit pas produire de brouillage
- l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications not approved by the manufacturer could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm during normal operation. This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.



# SmartStruxure Lite solution VAV Manager



## Ordering information

Part numbers	Manager		EnOcean*			ZigBee Pro	I/O		VAV	
	Building Expert	StruxureWare integration	315 MHz	868 MHz	902 MHz	High power	6 inputs	6 outputs	Modbus	Flow sensor
MPM-VA-004-5045	x	x					x	x	x	x
MPM-VA-014-5045	x	x				x	x	x	x	x
MPM-VA-C04-5045	x	x	x				x	x	x	x
MPM-VA-C14-5045	x	x	x			x	x	x	x	x
MPM-VA-D04-5045	x	x		x			x	x	x	x
MPM-VA-D14-5045	x	x		x		x	x	x	x	x
MPM-VA-E04-5045	x	x			x		x	x	x	x
MPM-VA-E14-5045	x	x			x	x	x	x	x	x
MPM-VS-004-5045	x	x					x	x	x	x
MPM-VS-014-5045	x	x				x	x	x	x	x
MPM-VS-C04-5045	x	x	x				x	x	x	x
MPM-VS-C14-5045	x	x	x			x	x	x	x	x
MPM-VS-D04-5045	x	x		x			x	x	x	x
MPM-VS-D14-5045	x	x		x		x	x	x	x	x
MPM-VS-E04-5045	x	x			x		x	x	x	x
MPM-VS-E14-5045	x	x			x	x	x	x	x	x

Accessories	EnOcean Antenna		ZigBee Antenna	Cable
	868 MHz	902 MHz	Antenna	Extension
MPM-ACC-ANT-010			x	
MPM-ACC-ANT-D00	x			
MPM-ACC-ANT-E00		x		
MPM-RAEC-5045				x

\*EnOcean: Contact EnOcean for the latest information about the frequency in your country.  
 315MHz: Americas, Hong Kong, India, Japan, Thailand, Taiwan  
 868MHz: Europe, China, Malaysia, Singapore, Vietnam, New Zealand  
 902MHz: USA has transitioned to 902 MHz in 2013. Other countries may do so as well.



Replacement Antenna



Cable Extension