Multi-purpose Manager Installation
Installation Guide for MPM-UN, MPM-GW and MPM-VAV

MPM-UN

MPM-VAV

MPM-GW

Schneider Electric

MPM Installation Guide

WHO SHOULD READ THIS GUIDE

This guide is for integrators of SmartStruxureTM Lite solutions. It provides important information for getting you started with the set-up and configuration of your building efficiency management system.

Ensure you follow the instructions to ensure a successful and trouble-free installation at the client's site.

WHO SHOULD READ THIS GUIDE

Read this entire guide: The information contained in this guide helps you work effectively and minimizes the likelihood of any critical issues occurring during installation. Keep this document handy when doing your installation.

Prepare your equipment before going to customer site: Commission and configure the equipment before you arrive at the customers site. Successful installation of your SmartStruxure Lite system requires proper preparation and planning. Planning in advance saves resources, prevents wasted effort, and saves time and money for you and your customer.

ABOUT THIS GUIDE

This guide provides instructions for the physical installation of the hardware components of your SmartStruxure Lite system. It also provides overviews of creating a network of Multi-purpose Manager (MPM) devices for the following:

- MPM-UN Multi-purpose Manager
- MPM-VA VAV Manager
- MPM-GW Wireless Manager

Overview

Multi-Purpose Management Devices are flexible lines of site and zone Managers. They allow facility Managers and Contractors to install and manage integrated solutions for HVAC, lighting, and metering. They are also a quick and efficient link between multiple devices based on many standard protocols.

The Building Expert web building energy management system is embedded in the MPM Devices. The devices are also BACnet and oBIX compliant for integration into larger StruxureWare systems.

MPM - UN

The MPM-UN is an electronic device designed to monitor and control various end-devices for building automation applications. The Manager consists of a printed circuit board housed in a plastic shell casing.

External connectors are available for the following:
- 6 universal inputs
- 4 analog outputs
- 2 binary outputs (dry contact)
- LAN (Ethernet cable)
- RS-485 device (Modbus)
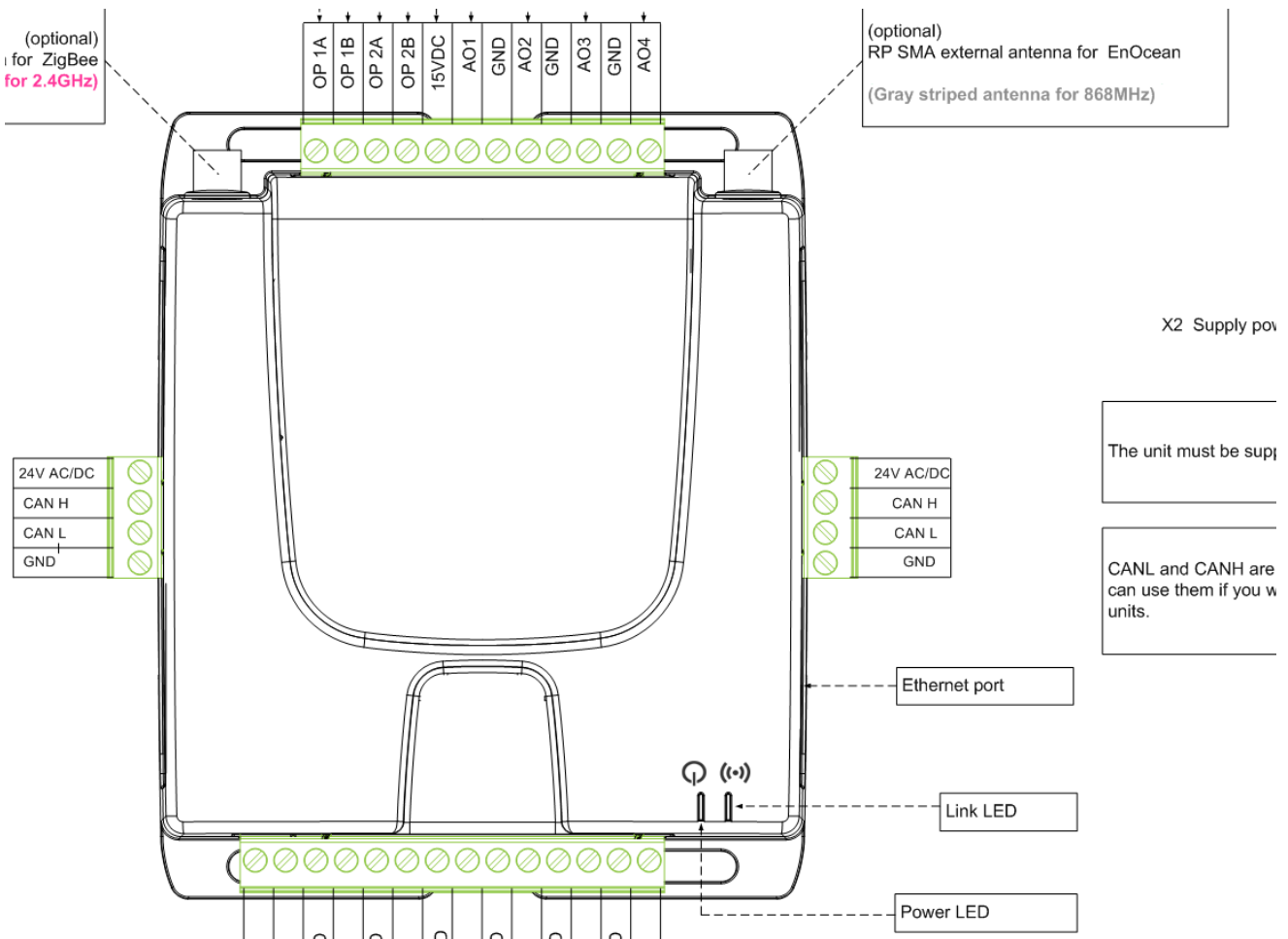- CANbus
- Power supply

The Manager is compatible with BACnet (IP/Ethernet) and oBix. The device has optional wireless modules to enable bidirectional communication with EnOcean and ZigBee devices. As well, Managers may also communicate with each other wirelessly using their ZigBee modules.

USES

Multi-purpose Managers are fully programmable and are designed with wireless lighting and HVAC applications in mind. They can also be used to control a wide range of wired and wireless (EnOcean and ZigBeecompatible) end-devices, including light sensors, light switches, relays, room controllers, card readers, and magnetic door contacts. They are also targeted for commercial, industrial, and institutional buildings.

MPM-UN Pinout

The below figure shows the pinout information for the MPM - UN. Make sure you must remove the pink cap from the MPM before you install the pink-striped ZigBee antenna.

(optional)
for ZigBee
for 2.4GHz)

OP 1A | OP 1B | OP 2A | OP 2B | 15VDC | AO1 | GND | AO2 | GND | AO3 | GND | AO4

(optional)
RP SMA external antenna for EnOcean

(Gray striped antenna for 868MHz)

X2 Supply pov

The unit must be sup

CANL and CANH are
can use them if you w
units.

| 24V AC/DC |
| CAN H |
| CAN L |
| GND |

| 24V AC/DC |
| CAN H |
| CAN L |
| GND |

Ethernet port

Link LED

Power LED

MPM - VA VAV

The MPM-VA VAV Manager is an electronic device designed to monitor and control various end-devices for building automation purposes, including VAV boxes. It can also control various end-devices for building automation applications.

The device consists of a printed circuit board housed in a plastic shell casing.

External connectors are available for the following:
- 6 universal inputs
- 4 analog outputs
- 2 binary outputs (dry contact)
- 1 damper actuator
- 1 pressure sensor
- LAN (Ethernet cable)
- RS-485 device (Modbus)
- CANbus
- Power supply

The device has a pressure sensor and is equipped with an optional damper actuator. The device also has optional embedded EnOcean and ZigBee wireless modules to enable bidirectional communication with EnOcean and ZigBee devices. The Managers can communicate with each other wirelessly using their ZigBee modules.
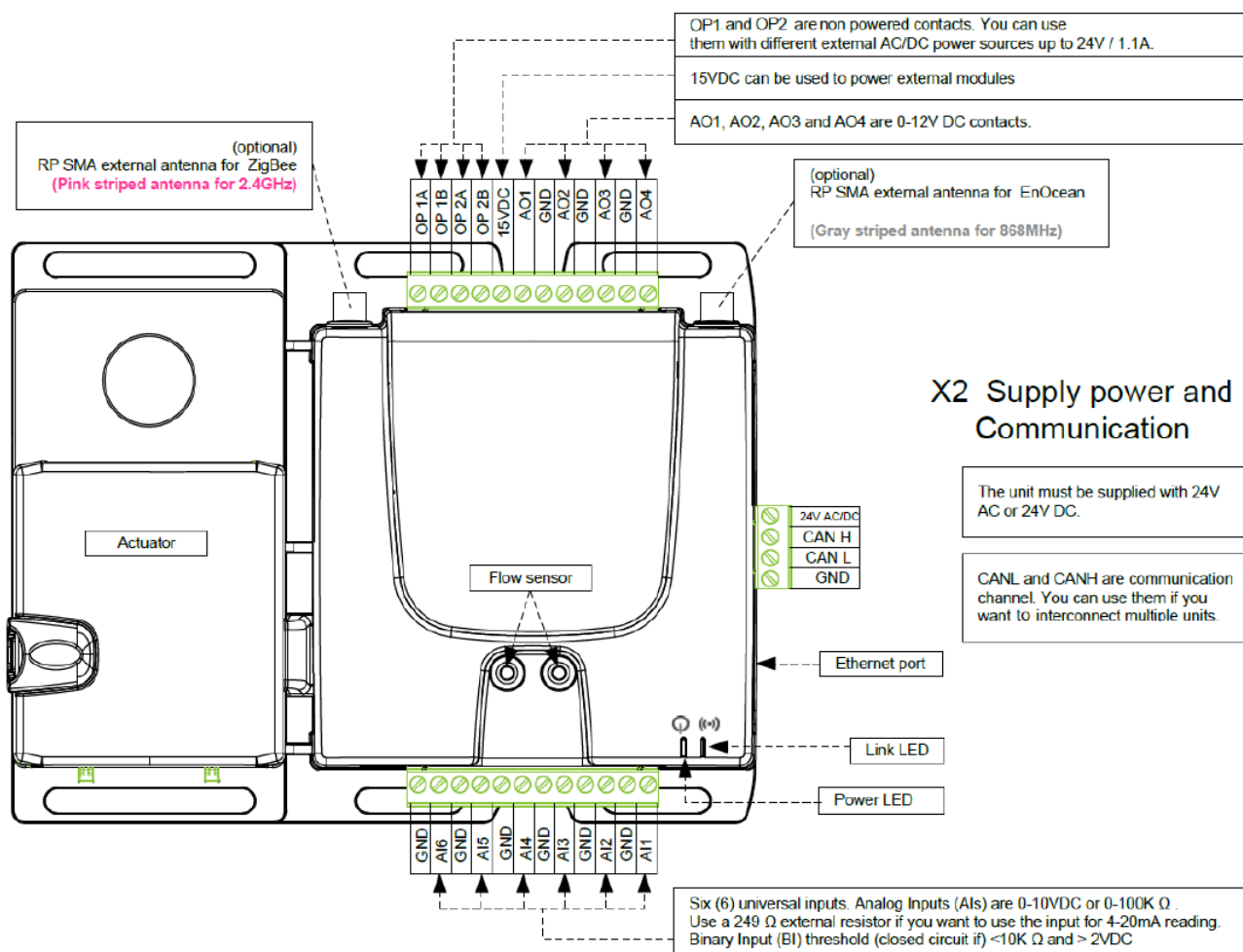
USES

The MPM-VA VAV Managers are fully programmable and are designed with VAV control in mind. In addition to all the features of the MPM, The VAV Manager has a pressure sensor and a damper actuator for direct control of VAV boxes.

VAV Managers can be used to control a wide range of wired and wireless (EnOcean and ZigBee-compatible) end-devices, including light sensors, light switches, relays, thermostats, card readers, and magnetic door contacts.

The devices are targeted primarily for commercial, industrial, and institutional buildings.

MPM-VA VAV Pinout

The below figure shows the pinout information for the MPM - VA VAV. Make sure you must remove the pink cap from the MPM before you install the pink-striped ZigBee antenna.

OP1 and OP2 are non powered contacts. You can use them with different external AC/DC power sources up to 24V / 1.1A.

15VDC can be used to power external modules

AO1, AO2, AO3 and AO4 are 0-12V DC contacts.

(optional)
RP SMA external antenna for ZigBee
(Pink striped antenna for 2.4GHz)

(optional)
RP SMA external antenna for EnOcean

(Gray striped antenna for 868MHz)

X2 Supply power and Communication

The unit must be supplied with 24V AC or 24V DC.

CANL and CANH are communication channel. You can use them if you want to interconnect multiple units.

24V AC/DC
CAN H
CAN L
GND

Ethernet port

Link LED

Power LED

Actuator

Flow sensor

OP 1A | OP 1B | OP 2A | OP 2B | 15VDC | AO1 | GND | AO2 | GND | AO3 | GND | AO4

GND | AI6 | GND | AI5 | GND | AI4 | GND | AI3 | GND | AI2 | GND | AI1

Six (6) universal inputs. Analog Inputs (AIs) are 0-10VDC or 0-100K Ω .
Use a 249 Ω external resistor if you want to use the input for 4-20mA reading.
Binary Input (BI) threshold (closed circuit if) <10K Ω and > 2VDC

MPM - GW

The MPM-GW wireless Manager is an electronic device designed to integrate wireless solutions to wired building automation systems.

Small buildings system gateways can integrate wireless end-devices, based on EnOcean and ZigBee protocols and standards, into BACnet building automation systems. They are all interoperable with any BACnet compliant building management system.

The MPM-GW is a printed circuit board housed in a plastic shell casing. Unlike the MPN-UN and MPM-VA, there are no physical (wired) I/Os on this manager.

The following connectors are concealed in a casing, giving the device a neutral look for installation in institutional or commercial environments:
- LAN
- CANbus
- Power supply

The MPM-GWs have optional embedded EnOcean and ZigBee wireless modules to enable bidirectional communication with EnOcean and ZigBee devices. The Managers can also communicate with each other wirelessly using their ZigBee modules.

USES

The MPM-GW Managers are fully programmable and are designed with wireless lighting and HVAC applications in mind. They can also control wired end-devices and compatible wireless ZigBee end-devices. Wireless end-devices including light sensors, light switches, relays, thermostats, card readers, and magnetic door contacts. MPM-GWs are targeted for installation in commercial, industrial, and institutional buildings.

MPM-GW Pinout

The below figure shows the pinout information for the MPM - GW. Make sure you must remove the pink cap from the MPM before you install the pink-striped ZigBee antenna.

RP SMA EXTERNAL ANTENNA FOR ZIGBEE
*PINK STRIPED ANTENNA FOR 2.4GHz
*Optional

RP SMA EXTERNAL ANTENNA FOR ENOCEAN
*GREY STRIPED ANTENNA FOR 868MHz
*YELLOW STRIPED ANTENNA FOR 902MHz
*Optional

SIDE VIEW

DETACHABLE SIDE PANEL

24 VAC AC/DC
CAN H
CAN L
GND

ETERNET 100 B/T

The Supply power and Communication connectors can be found under the removable left and right panels.

* x2 Supply power and Communication.

The unit must be supplied with 24V AC or 24VDC.

CANL and CANH are communication channel. You can use them if you want to interconnect multiple units.

24 VACAC/DC
CAN H
CAN L
GND

24 VAC AC/DC
CAN H
CAN L
GND

ETERNET 100 B/T

Link LED
Power LED

Installation

This sections explains how to install and power up your Manager(s).

Required Tools and Equipment

- One flat-blade screwdriver (1/8" wide or smaller)
- One straight-through Ethernet cable (RJ-45)
- Computer (PC, Mac, or Linux) with the Firefox browser (version 17 or later)
- Optional: Ethernet switch or hub if you want to connect your Manager to your local network.

Power Up Manager

The procedure shows how to add supply power to the MPM-UN, MPM-VA, and MPM-GW managers.

1. Using flat-head screwdriver, connect positive wire to 24V AC/DC pin on Manager
2. Connect second wire to GND pin on Manager.
3. Plug power supply into outlet after fastening wires.
4. Ensure the green LED on the MPM-UN/MPM-VA or the RJ-45 connector's LED on the MPM-GW's go on indicating the unit is powered.
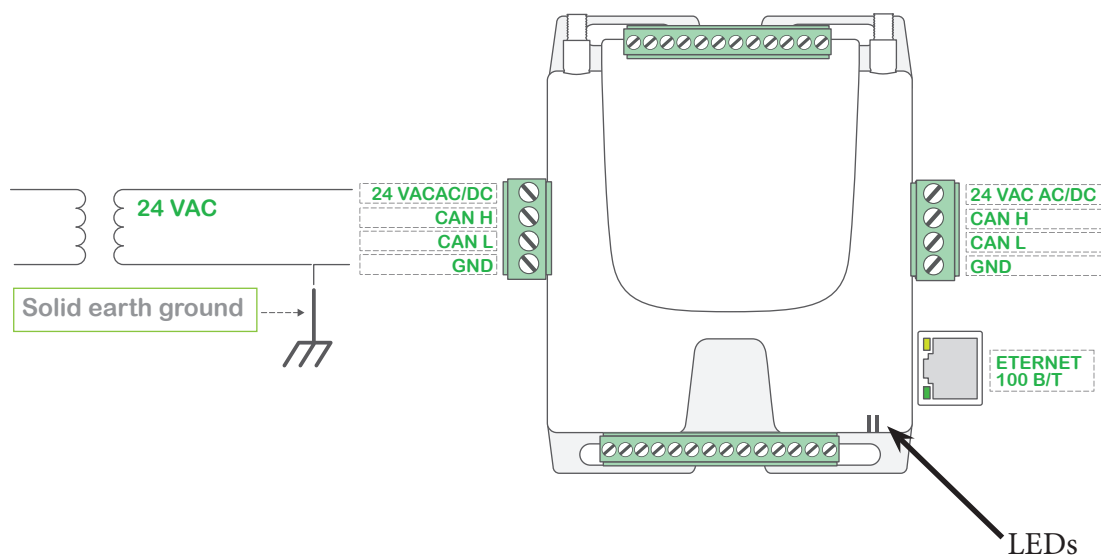
Networking

You can connect your Manager(s) directly to your computer or to your local area network (LAN).

IMPORTANT: Multipurpose Managers (MPMs) should not be connected directly to the Internet or any public network. The SmartStruxure™ Lite Managers can make any lighting or HVAC site remotely accessible through the internet, but they do not offer any intrinsic security options such as authentication, encryption, packet inspection or filtering. However, many third-party devices and software can make these features available to a SmartStruxure™ Manager. These solutions provide a safe authentication mechanism and configurable encryption options to properly secure one or multiple remote sites. Regardless of the type of connection you intend to use for your network, you must connect your MPM directly to your computer for its initial set-up.

Refer to Appendix for more details.

Configure PC to Communicate with Manager

You must configure the network card you connect to your Manager directly to your computer. This procedure shows how to configure you Manager in a Windows operating systems. For Mac or Linux, use the platform-specific commands or applications.

1. In Control Panel, open **Network Connections** (Windows XP) or **Network and Sharing Center** (Windows 7).
2. Click **Local Area connection** and choose **Properties**.
3. Select **Internet Protocol Version 4** (TCP/IPv4) and then select **Properties**.
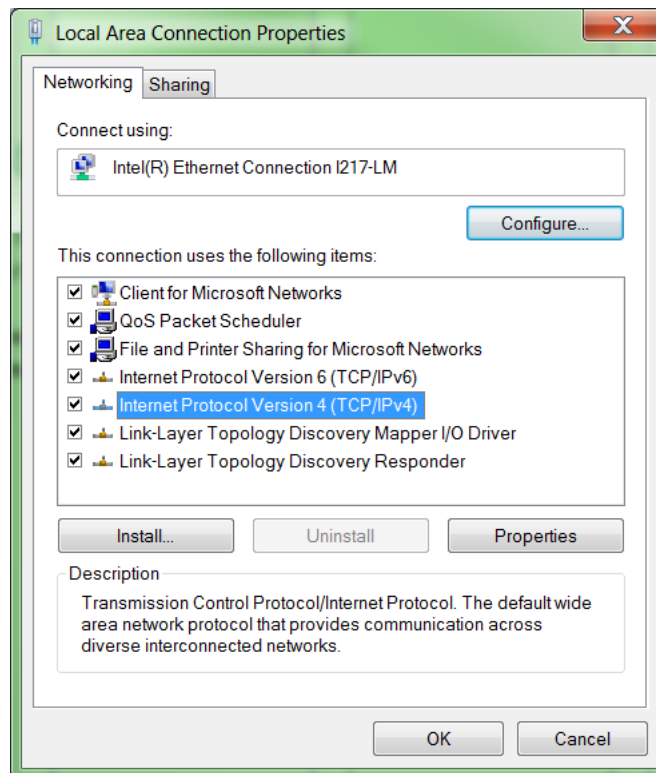
4. Enter properties as shown below.

Connect to LAN

By default, all Managers are configured with the same default IP address 10.50.80.3 (10.50.80.4 for the MPM-VA). Since the same IP address cannot be used twice on a single subnet without creating a conflict, you must configure the Manager's Ethernet settings before you connect them together. The IP addresses must be unique. Write down the IP addresses to avoid any confusion between managers.

NOTE: Check with your administrator to get access to network parameters if you want to connect the Manager to your local network.

Login to Building Expert

1. Open browser and enter default IP address of Manager.
Enter correct information to Building Expert splash screen and click Login.
NOTE: default username and password: 'admin'

Configure Manager in Building Expert

1. In **Explorer** tab, select Ethernet Configuration (ETH1).
2. Complete fields according to the below:
   » DNS: Complete this optional field if you want to use the email feature or access SNTP servers using hostname.
   » Gateway: Complete this optional field if, for example, you want to use the email feature or access SNTP servers.
   » IP: IP address of Manager must be unique on the local network. If a gateway is specified, both should be part of the same subnet.
   » Netmask: local network mask defining the subnet.
   » Email source: e-mail account used to send e-mails using your Manager (optional).
   » SMTP server: SMTP server used to send e-mails using your Manager (optional).
3. Click **Save**.

Specifiy Network Roles

The C2G1 object specifies the way the Manager communicates with its peers whenever using the inter-manager communication protocols (UDP, CANbus, and ZigBee). For each of the 3 protocols, you can enable or disable functionality, and specify its operating mode and property cast period. All 3 protocols are enabled by default. Disable or enable the protocols as required for your network.

1. Select C2G1 object.
2. Enable any necessary protocol to communicate with Manager.

Property Cast Period

The Property Cast Period defines the interval (or frequency) with which a passive node casts information to a monitor. The cast comprises all changed values detected by the passive node since the last request from the monitor. By default, a passive node casts its values to a monitor once every minute. This should interval should not be set to a value of less than 30 seconds.

Create Network on Monitor

Once all the Managers have been configured and properly connected, you must create the image of the network on the monitor. When looking at a MPM network through the monitor, you are looking at an image being refreshed periodically by the casting of changed values from the passive devices to the monitor.

Identifying Devices on the Network

Managers on the network are identified by the following two distinct numbers:

- **Node number:** fixed (uneditable) and unique number assigned to each Manager by the SmartStruxure Lite internal protocol.
- **Device number:** editable identifier that must be unique within the context of the extended network. The device number is used for integration with BACnet and SmartStruxure.

Change Device Number

1. In **Devices** tab, select Manager and click **Change any node instance number** icon.
2. Click in Instance Number field and enter a new instance number for Manager according to the following:
   » number must be greater than or equal to 50
   » number must be less than or equal to 3999950
   » number must be a multiple of 50 (50, 100, 150, etc)

Change Instance		
Object Name	Node Id	Instance Number
My Controller	N003E37	100

Save Autocomplete Close

3. Click **Save**.
   NOTE: The new instance number(s) may take time to propagate across the network and it may be necessary to restart Building Expert.

Setting up Manager in ZigBee Pro Network

Each Manager can be configured independently through ZigBee Settings (ZBC1) configuration object. All settings should be configured when you are connected directly to the Manager.

NOTE: Do not change ZBC1 parameters on a remote Manager as you will lose communication with the Manager. Ensure Coordinator is selected for Node Type.

ZIGBEE ROLES

In a ZigBee network, three types of devices are available:

1. **ZigBee Coordinator:** heart of the network. There can be only one coordinator per network. Its role is to act as a trust center to allow and approve all routers and end devices attempting to join its network.
2. **ZigBee Router:** link in the network. This route packets between other nodes, providing extended network range through a maximum of 30 hops. A router device is always set to 'On' to provide routes for other devices. It also acts as a parent for end devices.
3. **ZigBee End Device:** only has the functionality to achieve a specific task and communicate with a parent node, either the coordinator or a router. Examples of end devices are SEC-TE smart terminal controller and a SED-0 smart wireless actuator.

Configure ZigBee Settings

1. In **Devices** tab, select Manager and select **ZigBee Configuration (ZBC1)**.
2. Complete the necessary values below.
    NOTE: channel 26 is not a valid channel. Channels 15, 21, and 25 are recommended channels.
    NOTE: extended PAN ID must be 8 character string.
    NOTE: Set node type of only one Manager to be a network coordinator. For ease of operation, it is recommended to use the network monitor as coordinator.
    NOTE: leave **Permit Join** check box selected during commissioning.

Feedback and References

Disclaimer
We value your feedback about your experience using this application in a real world environment, and invite you to send us your comments about your implementation

References
Client name and/or description, location, commissioning date

Implementation description

Notes
There may be objects within the MPM database that are NOT used in this application
This application has only been tested in a Lab condition; therefore we cannot accept any responsibility for its accuracy.

Technical Support

For any issues with SmartStruxure Solution or SmartStruxure Lite, contact Schneider Electric Technical Support according to your region.

North America (NAM) Product Support
Building Management Systems (BMS): productsupport.NAM-BMS@schneider-electric.com
Field Devices: productsupport.NAM-HVAC@schneider-electric.com

Global Product Support
Building Management Systems (BMS): productsupport.NAM-BMS@schneider-electric.com

Field Devices: productsupport.NAM-HVAC@schneider-electric.com

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At Schneider Electric, we call this **Life Is On**.