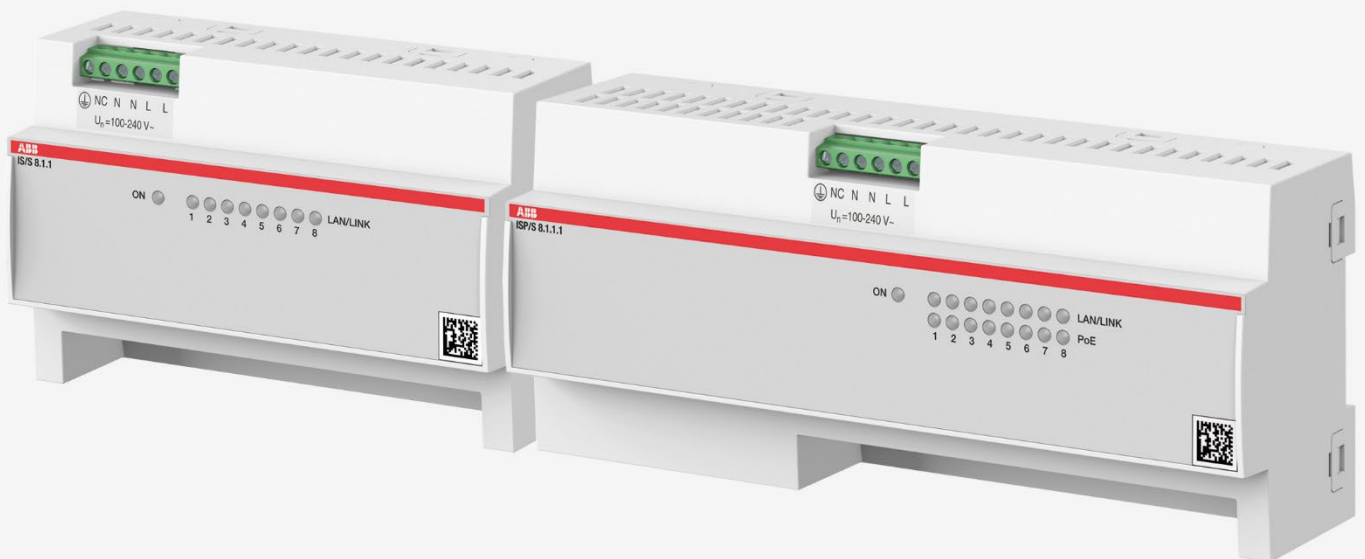


PRODUCT MANUAL

# Smart Buildings

## IS/S 8.1.1, ISP/S 8.1.1.1

### IP Switches





# Smart Buildings

## Contents

<b>Contents</b>		Page
<b>1</b>	<b>General .....</b>	<b>3</b>
1.1	Using the product manual .....	3
1.2	Legal disclaimer .....	3
1.3	Explanation of symbols .....	3
1.4	Important information .....	4
1.5	Symbol explanation .....	4
<b>2</b>	<b>Safety .....</b>	<b>5</b>
2.1	General safety instructions .....	5
2.2	Certified usage .....	5
2.3	Strain relief .....	5
2.4	Device casing .....	6
2.5	Qualification requirements for personnel .....	6
2.6	National and international safety regulations .....	6
2.7	Grounding the device .....	6
2.8	Shielding ground .....	7
2.9	Requirements for connecting electrical wires .....	7
2.10	Supply voltage .....	8
2.11	FCC note .....	8
2.12	Recycling note .....	8
2.13	About this Manual .....	8
<b>3</b>	<b>Product Overview .....</b>	<b>9</b>
3.1	Product Overview .....	9
3.2	Product name designation .....	9
3.3	Ordering details .....	9
3.4	IS/S 8.1.1 IP Switch .....	10
3.4.1	Dimension drawing .....	11
3.4.2	Connection diagram .....	12
3.4.2.1	Front view .....	12
3.4.2.2	View from below .....	13
3.4.3	Operating and display elements .....	14
3.4.3.1	Display elements .....	14
3.4.3.2	Device state .....	14
3.4.3.3	Port-Status .....	14
3.4.4	Technical data .....	15
3.4.5	Ethernet Ports .....	16
3.4.6	Network range .....	16
3.4.7	Other underlying technical standards .....	16
3.5	ISP/S 8.1.1.1 IP Switch-PoE .....	17
3.5.1	Dimension drawing .....	18
3.5.2	Connection diagram .....	19
3.5.2.1	Front view .....	19
3.5.2.2	View from below .....	20
3.5.3	Operating and display elements .....	21
3.5.3.1	Display elements .....	21
3.5.3.2	Device state .....	21
3.5.3.3	Port-Status .....	21
3.5.4	Technical data .....	22
3.5.5	Ethernet PoE Ports .....	23
3.5.6	Derating .....	23
3.5.7	Network range .....	24
3.5.8	Underlying technical standards .....	24

# Smart Buildings

## Contents

3.6	Pin assignments .....	25
3.7	Power supply .....	26
3.8	Ethernet ports .....	26
3.8.1	10/100-Mbit/s twisted pair port.....	26
3.8.2	Support of PoE .....	27
3.8.3	10/100-Mbit/s PoE port .....	27
<b>4</b>	<b>Installation .....</b>	<b>29</b>
4.1	Checking the package contents.....	29
4.2	Installing and grounding the device .....	29
4.2.1	Installing the device onto the DIN rail .....	29
4.2.2	Grounding the device.....	30
4.3	Connecting the terminal blocks.....	30
4.3.1	Supply voltage .....	30
4.4	Connecting data cables .....	31
4.5	Attach touch protection .....	31
4.6	Operating the device.....	31
<b>5</b>	<b>Monitoring the ambient air temperature.....</b>	<b>33</b>
<b>6</b>	<b>Maintenance and service.....</b>	<b>35</b>
<b>7</b>	<b>Disassembly .....</b>	<b>37</b>
7.1	Removing the device .....	37
<b>8</b>	<b>Appendix.....</b>	<b>39</b>
8.1	Scope of delivery .....	39

# Smart Buildings

## General

### 1 General

#### 1.1 Using the product manual

This manual provides detailed technical information relating to the function, installation and programming of the Smart Buildings device.

#### 1.2 Legal disclaimer

We reserve the right to make technical changes or modify the contents of this document without prior notice.

The agreed properties are definitive for any orders placed. ABB AG accepts no responsibility whatsoever for potential errors or possible lack of information in this document.

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#### 1.3 Explanation of symbols

1.	Instructions in specified sequence
2.	
▶	Individual actions
a)	Priorities
1)	Processes run by the device in a specific sequence
•	1st-level list
○	2nd-level list

Table 1: Explanation of symbols

### 1.4 Important information

**Note:** Read these instructions carefully and familiarize yourself with the device before trying to install, operate, or maintain it. The following notes may appear throughout this documentation or on the device. These notes warn of potential hazards or call attention to information that clarifies or simplifies a procedure.

### 1.5 Symbol explanation

Notes and warnings are represented as follows in this manual:



#### **DANGER –**

DANGER draws attention to an immediately dangerous situation, which will inevitably result in a serious or fatal accident if not observed.



#### **WARNING –**

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



#### **CAUTION –**

CAUTION indicates a possible danger which, if not avoided, may result in minor injuries.

#### **Note**

NOTE provides information about procedures that do not involve the risk of injury.

## 2 Safety

### 2.1 General safety instructions

You operate this device with electricity. Improper usage of the device entails the risk of physical injury or significant property damage. The proper and safe operation of this device depends on proper handling during transportation, proper storage and installation, and careful operation and maintenance.

- Before connecting any cable, read this document, and the safety instructions and warnings.
- Operate the device with undamaged components exclusively.
- The device is free of any service components. In case of a damaged or malfunctioning device, turn off the supply voltage and contact ABB support. Further information is available at [www.abb.com](http://www.abb.com).
- Disconnect the device from the power supply before mounting and demounting.

### 2.2 Certified usage

- Use the product only for the application cases described in the Smart Buildings product information, including this manual.
- Operate the device only in a closed casing (distribution board).
- Operate the product only according to the technical specifications.  
See IS/S 8.1.1 IP-Swich [3.4.4 Technical data on page 15](#) or  
see ISP/S 8.1.1.1 IP-Swich PoE [3.5.4 Technical data auf Seite 22](#).
- Ensure that the minimum distance of 0.39 in (10 mm) between data lines/telecommunication lines and power lines is maintained.
- Connect to the product only components suitable for the requirements of the specific application case.
- The device is a modular installation device for quick installation in distribution boards on 1.38 in (35 mm) mounting rails to EN 60715.

### 2.3 Strain relief

**Note:** If the strain relief is insufficient, there is a risk of torsion, contact problems and creeping interruptions.

- Relieve the connection points of cables and lines from mechanical stress.
- Design strain relieves in such a way that they prevent any mechanical damage to cables, wires or conductors caused by external influences or their own weight.
- To prevent damage to device connections, connectors and cables, follow the instructions for proper installation in accordance with DIN VDE 0100-520:2013-06, sections 522.6, 522.7 and 522.13.

### 2.4 Device casing

Only technicians authorized by the manufacturer are permitted to open the casing.

- Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- Keep the ventilation slits free to ensure good air circulation.  
See IS/S 8.1.1 IP-Swich [3.4.4 Technical data on page 15](#) or  
see ISP/S 8.1.1.1 IP-Swich PoE [3.5.4 Technical data auf Seite 22](#).
- The installation position can be selected as required.

### 2.5 Qualification requirements for personnel

- Only allow qualified personnel to work on the device.

Qualified personnel have the following characteristics:

- Qualified personnel are properly trained. Training as well as practical knowledge and experience make up their qualifications. This is the prerequisite for grounding and labeling circuits, devices, and systems in accordance with current standards in safety technology.
- Qualified personnel are aware of the dangers that exist in their work.
- Qualified personnel are familiar with appropriate measures against these hazards in order to reduce the risk for themselves and others.
- Qualified personnel receive training on a regular basis.

### 2.6 National and international safety regulations

Verify that the electrical installation meets local or nationally applicable safety regulations.

### 2.7 Grounding the device

The device is grounded via a 6-pin terminal block.

- Use a wire diameter for the ground conductor that is no smaller than the diameter of the supply voltage connection, however of at least 0.5 mm<sup>2</sup> (AWG20).



### 2.8 Shielding ground

The shielding ground of the connectable twisted pair cables is connected to the ground connection as a conductor.

- Beware of possible short circuits when connecting a cable section with conductive shielding braiding.

### 2.9 Requirements for connecting electrical wires

Before connecting the electrical wires, always verify that the requirements listed are complied with.

#### General requirements for connecting electrical wires

The following requirements apply without restrictions:

- The electrical wires are voltage-free.
- The cables used are permitted for the temperature range of the application case.
- Relevant for North America:  
Exclusively use 60/75 °C (140/167 °F) or 75 °C (167 °F) copper (Cu) wire.
- Enable the supply voltage for the device only when the following requirements are fulfilled:
  - the terminal blocks are wired correctly
  - the device casing is closed.

#### Requirements for connecting the supply voltage

The following requirements apply without restrictions:

- The supply voltage corresponds to the voltage specified on the type plate of the device.
- The power supply complies with overvoltage category I or II or III.
- The power supply has an easily accessible disconnecting device (for example a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
- The power supply cable is suitable for the voltage, the current and the physical load. Smart Buildings recommends a wire diameter of 0.5 mm<sup>2</sup> (AWG20).
- A back-up fuse is located in the outer conductor of the power supply.  
The neutral conductor is on ground potential at both voltage inputs. Otherwise, a back-up fuse is also located in the neutral conductor.  
Regarding the properties of this back-up fuse:  
See IS/S 8.1.1 IP-Swich [3.4.4 Technical data on page 15](#) or  
see ISP/S 8.1.1.1 IP-Swich PoE [3.5.4 Technical data auf Seite 22](#).
- The cross-section of the ground conductor is the same size as or bigger than the crosssection of the power supply cables.

### 2.10 Supply voltage

The supply voltage is only connected with the ground connection via protective elements.

### 2.11 FCC note

#### Supplier's Declaration of Conformity

#### 47 CFR § 2.1077 Compliance Information

#### Building Automation Switch

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### 2.12 Recycling note

After usage, this device must be disposed of properly as electronic waste, in accordance with the current disposal regulations of your county, state, and country.

### 2.13 About this Manual

The user manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device.

Documentation mentioned in the that is not supplied with your device as a printout can be found as PDF files for downloading on the Internet at: <https://www.abb.com>

# Smart Buildings

## Product Overview

### 3 Product Overview

#### 3.1 Product Overview

The device is a modular installation device (MDRC). The module width of the device is eight and twelve space units. It is designed for installation in distribution boards on 1.38 in (35 mm) mounting rails.

#### 3.2 Product name designation

Abbreviation	Description
I	IP
S	Switch
X	P = PoE
/S	MDRC
X	8 = 8 Ports
X	1 = PoE - 55 W
X	1 = Fast Ethernet (100 Mbit/s) / Unmanaged
X	1 = Version 1

Table 2: Product name description

#### 3.3 Ordering details

Description	MB	Type	Order No.	Packaging unit [pcs.]	Weight 1 pc. [g]
IP Switch	8	IS/S 8.1.1	2CDG120082R0011	1	250
IP Switch-PoE	12	ISP/S 8.1.1.1	2CDG120083R0011	1	410

Table 3: Ordering details

# Smart Buildings

## Product Overview

### 3.4 IS/S 8.1.1 IP Switch



*Fig. 1: Device illustration IS/S 8.1.1 example of an IP Switch*

The device is designed for the special requirements of building automation. The device is designed for installation in electrical distribution boards and small casings for rapid mounting on a 1.38 in (35 mm) mounting rail in accordance with EN 60715. The device meets the relevant industry standards, provides very high operational reliability, even under extreme conditions, and also longterm reliability and flexibility.

# Smart Buildings Product Overview

## 3.4.1

### Dimension drawing

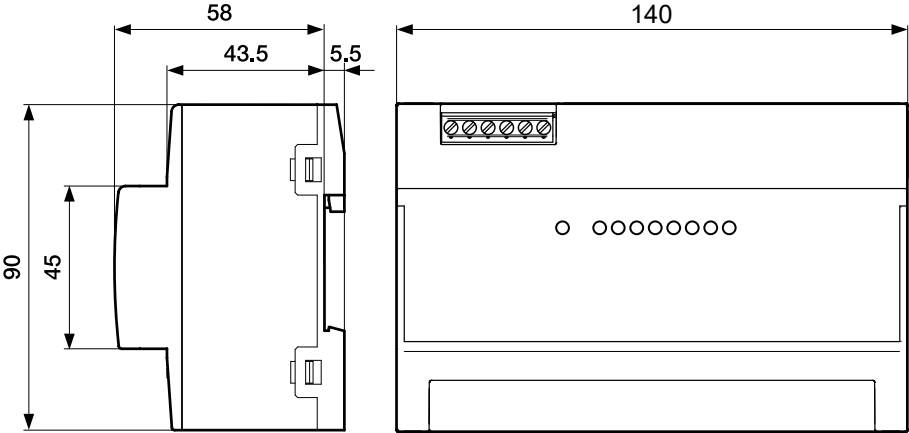


Fig. 2: Dimension drawing

# Smart Buildings

## Product Overview

### 3.4.2 Connection diagram

#### 3.4.2.1 Front view

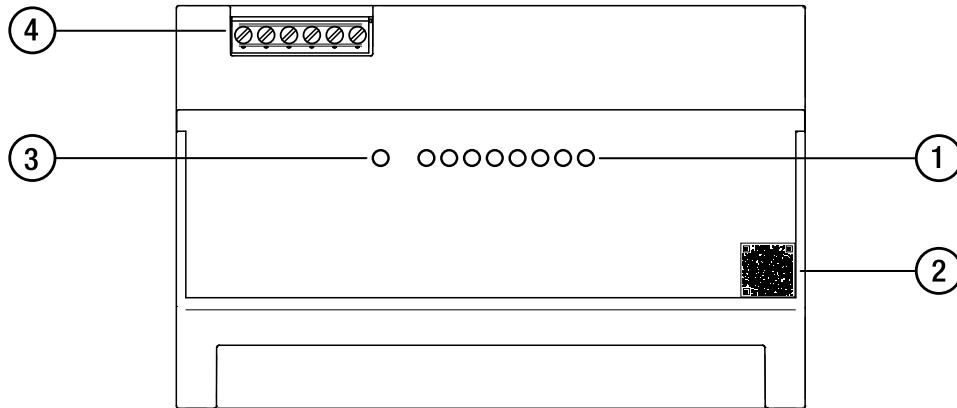


Fig. 3: IS/S 8.1.1 example of a IP Switch

#### Legend

- 1 LED display elements for port status
- 2 Data matrix code
- 3 LED display element for device status
- 4 6-pin terminal block with screw lock

#### **i** Note

The packaging and the front of the device are labeled with matrix codes (QR codes or data matrix codes). These codes are used for unique identification of the device and include the following information:

- Device serial number
- Link to the product page
- Order number

The matrix codes can be read using any mobile device with an appropriate app.

# Smart Buildings

## Product Overview

### 3.4.2.2

#### View from below

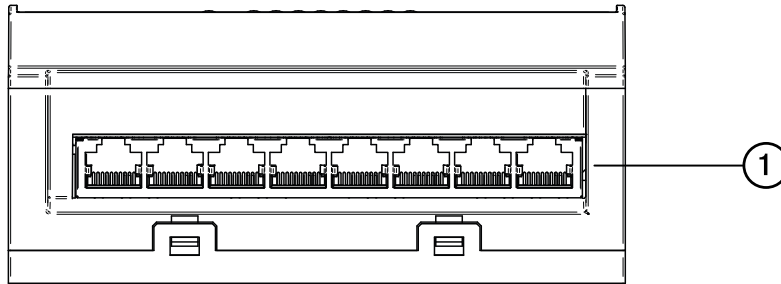


Fig. 4: IS/S 8.1.1 example of a IP Switch

#### Legend

- 1 8 × RJ45 socket for 10/100-Mbit/s Twisted Pair connections

# Smart Buildings

## Product Overview

### 3.4.3 Operating and display elements

#### 3.4.3.1 Display elements

After the supply voltage is switched on, the device performs a self-test. During this process, various LEDs light up.

#### 3.4.3.2 Device state

This LED provides information on the status of the power supply.

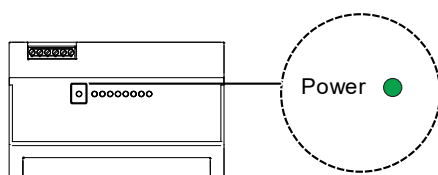


Fig. 8: LED display elements for device status

Color	Activity	Meaning
green	lights up	Supply voltage is on Device is ready for operation
-	none	Supply voltage is too low Device is not ready for operation

#### 3.4.3.3 Port-Status

These LEDs provide port-related information.

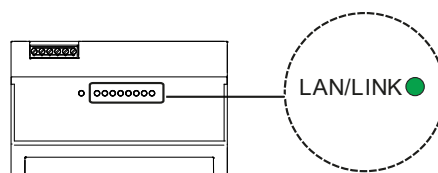


Fig. 9: LED display elements for port status

LAN/LINK (link status/data)	Color	Activity	Meaning
	green	lights up	Device detects a valid link
		flashing	Device is transmitting and/or receiving data
	-	none	Device detects an invalid or missing link



# Smart Buildings

## Product Overview

### 3.4.4

#### Technical data

<b>Dimensions</b> W × H × D	IP Switch IS/S 8.1.1	See <a href="#">3.4.1 Dimension drawing on page 11</a>
<b>Modular width</b>		8 MW
<b>Mounting Position</b>		Any
<b>Weight</b>		8.82 oz (250 g)
<b>Supply voltage</b>	1 voltage input	
	Rated voltage range	100 V AC ... 240 V AC, 50 Hz ... 60 Hz
	Voltage range incl. maximum tolerances	85 V AC ... 264 V AC, 47 Hz ... 63 Hz
	Power consumption/power output	max. power consumption 1.4 W Power output 4.8 Btu (IT)/h
	Connection type	6-pin terminal block with screw lock
		Tightening torque 4.4 lb-in ... 5.3 lb-in (0.5 Nm ... 0.6 Nm)
		min. conductor diameter 0.14 mm <sup>2</sup> (AWG26)
		max. conductor diameter 1.5 mm <sup>2</sup> (AWG16)
	Stripping length	6 mm
	Power loss buffer	10 ms at 115 V AC 40 ms at 230 V AC
	Back-up fuse	16 A with 1.5 mm <sup>2</sup> (AWG16) or smaller according to the wire cross-section used
	Peak inrush current	25 A at 115 V AC 45 A at 230 V AC
	Overvoltage category	III according to EN 60664-1
<b>Climatic conditions during operation</b>	Ambient air temperature <sup>1)</sup>	+23 °F ... +140 °F (-5 °C ... +60 °C) Derating
	Humidity	20 % ... 90 % (non-condensing)
	Air pressure	Without derating • min. 795 hPa (+6562 ft; +2000 m) • max. 1060 hPa (-1312 ft; -400 m) With derating +23 °F ... +122 °F (-5 °C ... +50 °C) • min. 700 hPa (+9842 ft; +3000 m)
<b>Climatic conditions during storage</b>	Ambient air temperature <sup>1)</sup>	-40 °F ... +185 °F up to 3 months (-40 °C ... +85 °C) -40 °F ... +158 °F up to 1 year (-40 °C ... +70 °C) -40 °F ... +122 °F up to 2 years (-40 °C ... +50 °C) +32 °F ... +86 °F up to 10 years (0 °C ... +30 °C)
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure	• min. 600 hPa (+13123 ft; +4000 m) • max. 1060 hPa (-1312 ft; -400 m)
<b>Pollution degree</b>		2 according to EN 60664-1
<b>Protection classes</b>	Degree of protection	IP20
<b>Fire classification</b>		Flammability V-0 as per UL 94
<b>Certificates and declarations</b>	CE declaration of conformity	→ <a href="#">9AKK107992A2179</a>

<sup>1)</sup> Temperature of the ambient air at a distance of 2 in (5 cm) from the device

Table 4: Technical data

# Smart Buildings

## Product Overview

### 3.4.5 Ethernet Ports

8 x 10/100-Mbit/s twisted pair port	
according to the IEEE 802.3 10BASE-T/100BASE-TX standard	
Port RJ45 socket	
Port supports:	<ul style="list-style-type: none"><li>• Autonegotiation</li><li>• Autopolarity</li><li>• Autocrossing</li><li>• 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode</li><li>• 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode</li></ul>

Table 5: Ethernet Ports

### 3.4.6 Network range

10/100-Mbit/s twisted pair port	
Length of a twisted pair segment	max. 328 ft (100 m) (for Cat5e cable)

Table 6: Network range: 10/100/ Mbit/s twisted pair port

### 3.4.7 Other underlying technical standards

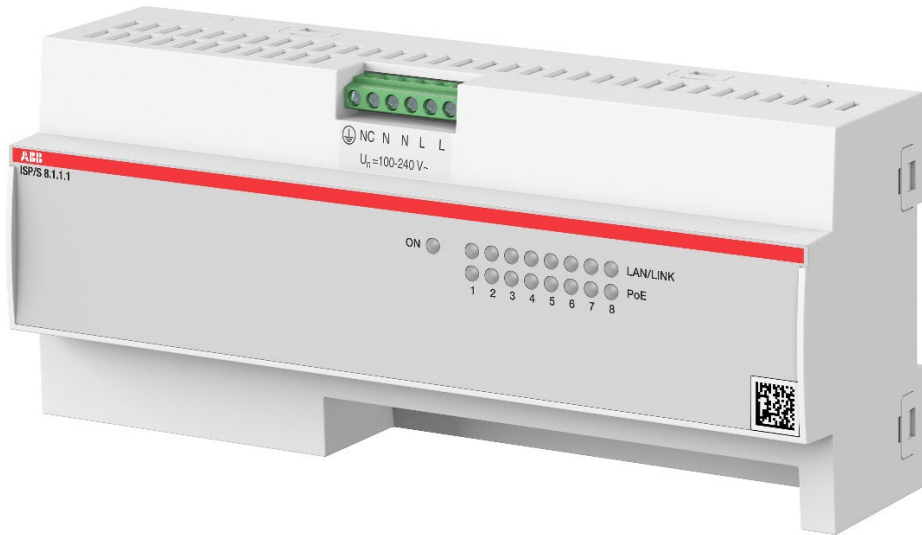
Name	
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
FCC 47 CFR Part 15	Code of Federal Regulations
UL/IEC 61010-1, UL/IEC 61010-2-201	Safety for Control Equipment

Table 7: List of the technical standards

The device has an approval based on a specific standard exclusively if the approval indicator appears on the device casing.

The device generally fulfills the technical standards named in their current versions.

### 3.5 ISP/S 8.1.1.1 IP Switch-PoE



*Fig. 5: Device illustration ISP/S 8.1.1.1 Example of an IP Switch-PoE*

The device is designed for the special requirements of building automation. The device is designed for installation in electrical distribution boards and small casings for rapid mounting on a 1.38 in (35 mm) mounting rail in accordance with EN 60715. The device meets the relevant industry standards, provides very high operational reliability, even under extreme conditions and also longterm reliability and flexibility.

# Smart Buildings

## Product Overview

### 3.5.1

#### Dimension drawing

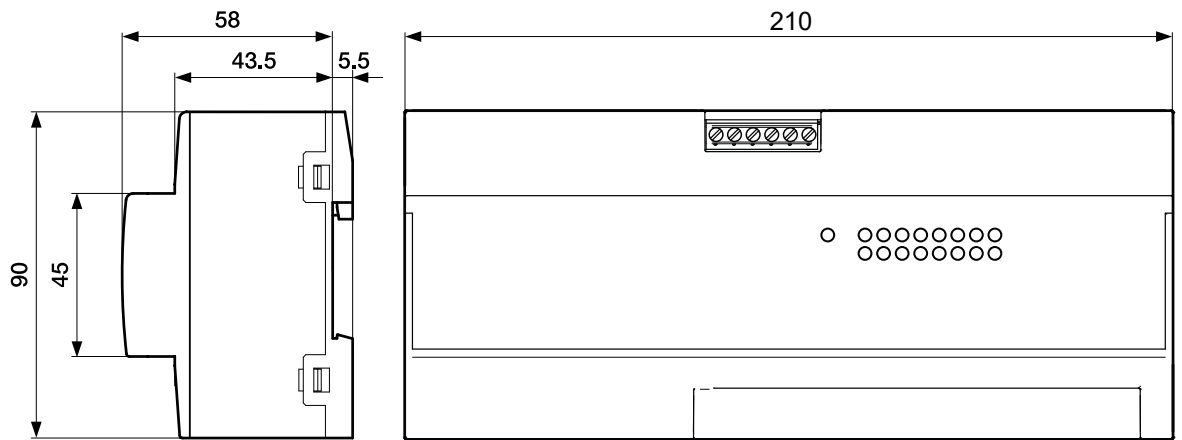


Fig. 6: Dimension drawing

# Smart Buildings

## Product Overview

### 3.5.2 Connection diagram

#### 3.5.2.1 Front view

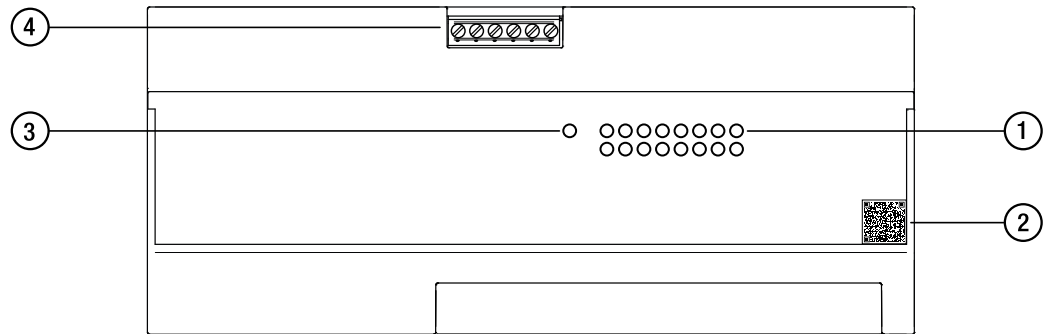


Fig. 7: ISP/S 8.1.1.1 example of a IP Switch-PoE

#### Legend

- 1 LED display elements for port status and PoE status
- 2 Data matrix code
- 3 LED display element for device status
- 4 6-pin terminal block with screw lock

#### **①** Note

The packaging and the front of the device are labeled with matrix codes (QR codes or data matrix codes). These codes are used for unique identification of the device and include the following information:

- Device serial number
- Link to the product page
- Order number

The matrix codes can be read using any mobile device with an appropriate app.

# Smart Buildings

## Product Overview

### 3.5.2.2

#### View from below

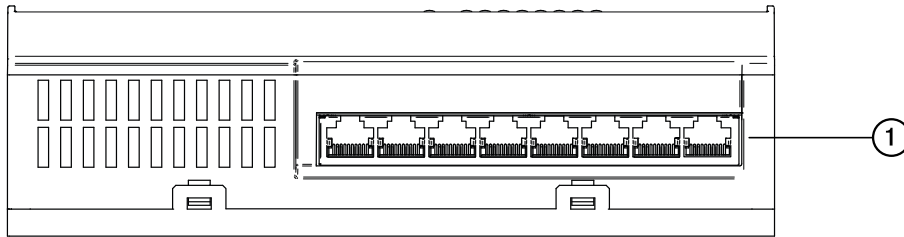


Fig. 8: ISP/S 8.1.1.1 example of a IP Switch-PoE

#### Legend

- 1 8 × RJ45 socket for 10/100-Mbit/s Twisted Pair connections

# Smart Buildings

## Product Overview

### 3.5.3 Operating and display elements

#### 3.5.3.1 Display elements

After the supply voltage is switched on, the device performs a self-test. During this process, various LEDs light up.

#### 3.5.3.2 Device state

This LED provides information on the status of the power supply.

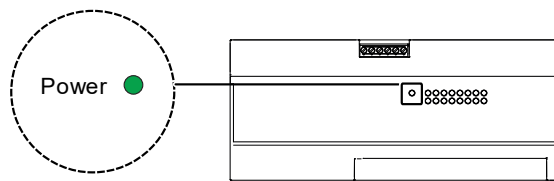


Fig. 8: LED display elements for device status

Color	Activity	Meaning
green	lights up	Supply voltage is on Device is ready for operation
-	none	Supply voltage is too low Device is not ready for operation

#### 3.5.3.3 Port-Status

These LEDs provide port-related information.

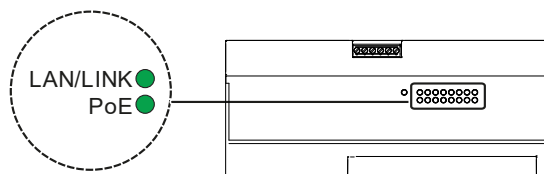


Fig. 9: LED display elements for port status

LAN/LINK (link status/data)	Color	Activity	Meaning
	green	lights up	Device detects a valid link
		flashing	Device is transmitting and/or receiving data
	-	none	Device detects an invalid or missing link

PoE	Color	Activity	Meaning
	green	lights up	Powered device is supplied with power
		flashing 1 time a period	No power supply of the Powered Device as the power output required by the Powered Device cannot be provided on this port
	-	none	No powered device connected

# Smart Buildings

## Product Overview

### 3.5.4

#### Technical data

<b>Dimensions W × H × D</b>	IP Switch ISP/S 8.1.1.1	See <a href="#">3.5.1 Dimension drawing on page 18</a>	
<b>Modular width</b>		12 MW	
<b>Mounting Position</b>		Any	
<b>Weight</b>		14.46 oz (410 g)	
<b>Supply voltage</b>	1 voltage input		
	Rated voltage range	100 V AC ... 240 V AC, 50 Hz ... 60 Hz	
	Voltage range incl. maximum tolerances	85 V AC ... 264 V AC, 47 Hz ... 63 Hz	
	Power consumption/power output (without PoE load)	max. power consumption	2.5 W
		Power output	8.6 Btu (IT)/h
	Power consumption/power output (with PoE load inc. 55 W PoE)	max. power consumption	11 W + 55 W PoE
		Power output e	37.6 Btu (IT)/h + 55 W PoE
	Connection type	6-pin terminal block with screw lock	
		Tightening torque 4.4 lb-in ... 5.3 lb-in (0.5 Nm ... 0.6 Nm)	
		min. conductor diameter	0.14 mm <sup>2</sup> (AWG26)
		max. conductor diameter	1.5 mm <sup>2</sup> (AWG16)
	Stripping length	6 mm	
	Power loss buffer	10 ms bei 115 V AC 30 ms bei 230 V AC	
	Back-up fuse	16 A with 1.5 mm <sup>2</sup> (AWG16) or smaller according to the wire cross-section used	
	Peak inrush current	30 A at 115 V AC 50 A at 230 V AC	
	Oversvoltage category	III according to EN 60664-1	
<b>Climatic conditions during operation</b>	Ambient air temperature <sup>1)</sup>	+23 °F ... +140 °F (-5 °C ... +60 °C) Derating	
	Humidity	20 % ... 90 % (non-condensing)	
	Air pressure	Without derating <ul style="list-style-type: none"> <li>min. 795 hPa (+6562 ft; +2000 m)</li> <li>max. 1060 hPa (-1312 ft; -400 m)</li> </ul> With derating +23 °F ... +122 °F (-5 °C ... +50 °C) <ul style="list-style-type: none"> <li>min. 700 hPa (+9842 ft; +3000 m)</li> </ul>	
<b>Climatic conditions during storage</b>	Ambient air temperature <sup>1)</sup>	-40 °F ... +185 °F (-40 °C ... +85 °C)	up to 3 months
		-40 °F ... +158 °F (-40 °C ... +70 °C)	up to 1 year
		-40 °F ... +122 °F (-40 °C ... +50 °C)	up to 2 years
		+32 °F ... +86 °F (0 °C ... +30 °C)	up to 10 years
	Humidity	10 % ... 95 % (non-condensing)	
	Air pressure	<ul style="list-style-type: none"> <li>min. 600 hPa (+13123 ft; +4000 m)</li> <li>max. 1060 hPa (-1312 ft; -400 m)</li> </ul>	
<b>Pollution degree</b>		2 according to EN 60664-1	
<b>Protection classes</b>	Degree of protection	IP20	
<b>Fire classification</b>		Flammability V-0 as per UL 94	
<b>Certificates and declarations</b>	CE declaration of conformity	→ <a href="#">9AKK107992A2180</a>	

<sup>1)</sup> Temperature of the ambient air at a distance of 2 in (5 cm) from the device

Table 8: Technical data



# Smart Buildings

## Product Overview

### 3.5.5

#### Ethernet PoE Ports

<b>8 x 10/100-Mbit/s twisted pair port</b>	
According to the IEEE 802.3af (Class 1, 2, 3) 10BASE-T/100BASE-TX standard	
Total power	55 W
<ul style="list-style-type: none"> <li>Maximum power delivered per port</li> </ul>	15.4 W
<ul style="list-style-type: none"> <li>Maximum power at the Powered Device</li> </ul>	12.95 W
Port RJ45 socket	
Port supports:	<ul style="list-style-type: none"> <li>Autonegotiation</li> <li>Autopolarity</li> <li>Autocrossing</li> <li>100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode</li> <li>10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode</li> </ul>

Table 9: Ethernet PoE Ports

### 3.5.6

#### Derating

Note the derating values for PoE device variants. The derating values depend on the ambient air temperature of the power supply unit combined with the PoE load and the input voltage.

<b>Ambient air temperature</b>	<b>Permitted PoE load</b>
up to 45 °C (113 ° F)	55 W
45 °C ... 50 °C (113 °F ... 122 °F)	45 W
50 °C ... 55 °C (122 °F ... 131 °F)	37 W
55 °C ... 60 °C (131 °F ... 140 °F)	29 W

Tab. 10: Permitted PoE load in relation to ambient air temperature

<b>Input voltage</b>	<b>Derating of PoE load</b>
from 100 V AC	0 W
100 V AC ... 90 V AC	5 W
90 V AC ... 85 V AC	8 W

Tab. 11: Additional derating of PoE load in relation to input voltage

# Smart Buildings

## Product Overview

### 3.5.7 Network range

10/100-Mbit/s twisted pair port	
Length of a twisted pair segment	max. 328 ft (100 m) (for Cat5e cable)

Table 12: Network range: 10/100/1000 Mbit/s twisted pair port

### 3.5.8 Underlying technical standards

Name	
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
FCC 47 CFR Part 15	Code of Federal Regulations
UL/IEC 61010-1, UL/IEC 61010-2-201	Safety for Control Equipment

Table 13: List of the technical standards

The device has an approval based on a specific standard exclusively if the approval indicator appears on the device casing.

The device generally fulfills the technical standards named in their current versions.

### 3.6

### Pin assignments

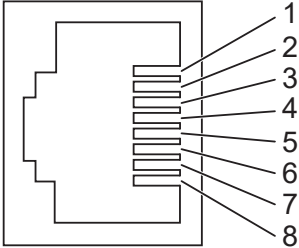
RJ45	Pin	10/100 Mbit/s	PoE
	MDI mode		
	1	TX+	Negative $V_{PSE}$
	2	TX-	Negative $V_{PSE}$
	3	R+	Positive $V_{PSE}$
	4	-	-
	5	-	-
	6	RX-	Positive $V_{PSE}$
	7	-	-
	8	-	-
	MDI-X mode		
	1	RX+	Negative $V_{PSE}$
	2	RX-	Negative $V_{PSE}$
	3	TX+	Positive $V_{PSE}$
	4	-	-
	5	-	-
	6	TX-	Positive $V_{PSE}$
7	-	-	
8	-	-	

Table 14: Pin assignments

# Smart Buildings

## Product Overview

### 3.7 Power supply

The following options for power supply are available:

- 6-pin terminal block  
You will find information on connecting the supply voltage here:  
[4.3 Connecting the terminal blocks on page 30.](#)

### 3.8 Ethernet ports

You can connect terminal devices and other segments at the ports of the device via twisted pair cables.

You find information on pin assignments for making patch cables here:  
See IS/S 8.1.1 IP-Swich [3.4.5 Ethernet Ports on page 16](#) or  
see ISP/S 8.1.1.1 IP-Swich PoE [3.5.5 Ethernet PoE Ports on page 23.](#)

#### 3.8.1 10/100-Mbit/s twisted pair port

This port is an RJ45 socket.

The 10/100 Mbit/s twisted pair port allows you to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX standard.

This port supports:

- Autonegotiation
- Autopolarity
- Autocrossing
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode

# Smart Buildings

## Product Overview

### 3.8.2 Support of PoE

The device variants with PoE support Power over Ethernet (PoE) in accordance with IEEE 802.3af.

The Power over Ethernet function is activated both globally and on the PoEcapable ports on delivery.

The devices are supplied with PoE voltage via the internal voltage supply. The PoE voltage to the twisted-pair cables is supplied via the wire pairs transmitting the signal (phantom voltage). The PoE voltage is uncoupled from the power supply.

The individual ports are not electrically insulated from each other.



#### CAUTION –

##### POTENTIAL EQUIPMENT DAMAGE

Ensure that the device does not exceed the specified maximum PoE power output.  
**Failure to follow these instructions can result in injury or equipment damage.**

For the maximum power available to PoE end devices in total, see the technical data:  
See ISP/S 8.1.1.1 IP-Swich PoE [3.5.5 Ethernet PoE Ports on page 23](#).

### 3.8.3 10/100-Mbit/s PoE port

This port is an RJ45 socket.

The 10/100 Mbit/s twisted pair port allows you to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX standard. The device is to be connected only to internal Ethernet networks without exiting a facility and being subjected to telecommunication network voltages (TNVs).

This port supports:

- Autonegotiation
- Autopolarity
- Autocrossing
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- Power over Ethernet (PoE)



## 4 Installation

On delivery, the device is ready for operation.

Perform the following steps to install the device:

- [4.1 Checking the package contents on page 29](#)
- [4.2 Installing and grounding the device on page 29](#)
- [4.3 Connecting the terminal blocks on page 30](#)
- [4.4 Connecting data cables on page 31](#)
- [4.5 Attach touch protection on page 31](#)
- [4.6 Operating the device on page 31](#)

### 4.1 Checking the package contents

- Check whether the package includes all items named in the section [8.1 Scope of delivery on page 39](#).
- Check the individual parts for transport damage.

### 4.2 Installing and grounding the device

You have the following options for mounting your device:

- [4.2.1 Installing the device onto the DIN rail on page 29](#)

#### 4.2.1 Installing the device onto the DIN rail

Prerequisite:

The device is for mounting on a 1.38 in (35 mm) DIN rail in accordance with DIN EN 60715.

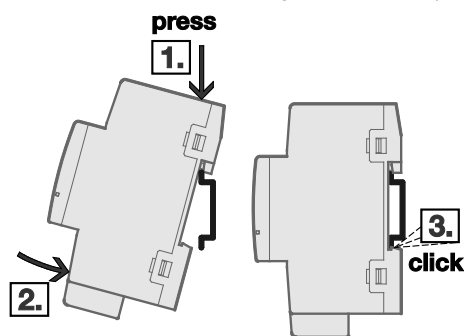


Fig. 10: Mounting on the DIN rail

Proceed as follows:

- Slide the upper snap-in guide of the device into the DIN rail.
- Push the device downwards and onto the DIN rail.
- Snap-in the device.

# Smart Buildings

## Product Overview

### 4.2.2 Grounding the device

Prerequisites:

- Use a wire diameter for the functional earth conductor that is no smaller than the diameter of the supply voltage connection, however of at least 0.5 mm<sup>2</sup> (AWG20).

The device is grounded via a 6-pin terminal block.

### 4.3 Connecting the terminal blocks



#### WARNING –

#### ELECTRIC SHOCK

Exclusively connect a supply voltage that corresponds to the type plate of your device.

Never insert sharp objects (small screwdrivers, wires, etc.) into the connection terminals for the supply voltage, and do not touch the terminals.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

The supply voltage is only connected with the ground connection via protective elements.

#### 4.3.1 Supply voltage

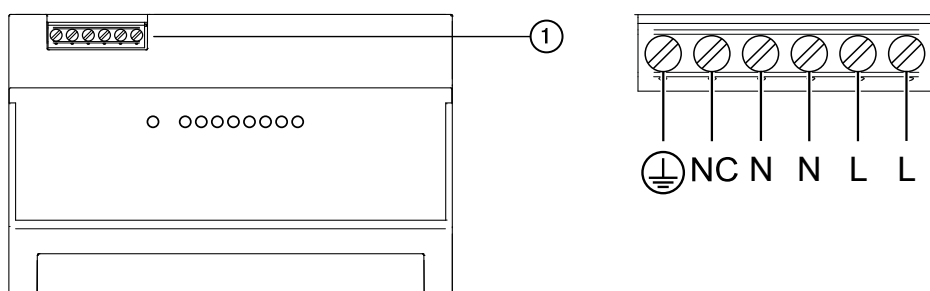


Fig. 12: (1) Connection for AC voltage on the device

#### Legend

Earth Symbol: Protective earthing

NC: Not connected

N: Neutral

L: Line



# Smart Buildings

## Product Overview

Type of the voltages that can be connected	Specification of the supply voltage
AC voltage	Rated voltage range AC: 24 V AC, 50 Hz ... 60 Hz Voltage range AC incl. maximum tolerances: 18 V AC ... 30 V AC, 47 Hz ... 63 Hz

Table 15: Type and specification of the supply voltage

Proceed as follows:

- Verify the required conditions for connecting the voltage supply.  
See [2.9 Requirements for connecting electrical wires on page 7](#).
- Connect the wires according to the pin assignment on the device with the clamps.
- Fasten the wires in the terminal block by tightening the terminal screws.

### 4.4 Connecting data cables

Note the following general recommendations for data cable connections in environments with high electrical interference levels:

- Keep the length of the data cables as short as possible.
- Use optical data cables for the data transmission between the buildings.
- Ensure that the minimum distance of 0.39 in (10 mm) between data lines/telecommunication lines and power lines is maintained.
- When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
- Verify that power supply cables and data cables do not run parallel over longer distances. To reduce inductive coupling, verify that the power supply cables and data cables cross at a 90° angle.
- Connect the data cables according to your requirements.  
See [3.8 Ethernet ports on page 26](#).

### 4.5 Attach touch protection

- Attach a suitable touch protection.

### 4.6 Operating the device

By connecting the supply voltage via the terminal block, you start the operation of the device.



### 5 Monitoring the ambient air temperature

Operate the device below the specified maximum ambient air temperature exclusively.

See IS/S 8.1.1 IP-Switch [3.4.4 Technical data on page 15](#) or  
see ISP/S 8.1.1.1 IP-Switch PoE [3.5.4 Technical data auf Seite 22](#).

The ambient air temperature is the temperature of the air at a distance of 2 in (5 cm) from the device. It depends on the installation conditions of the device, for example the distance from other devices or other objects, and the output of neighboring devices.



### 6 Maintenance and service

When designing this device, Smart Buildings largely avoided using high-wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to the specifications.

Depending on the degree of pollution in the operating environment, check at regular intervals that the ventilation slots in the device are not obstructed.



**CAUTION –**

**RISK OF TRANSIENTS OR ELECTROSTATIC DISCHARGES**

Do not open the housing.

Failure to follow these instructions can result in injury or equipment damage.



# Smart Buildings

## Disassembly

### 7 Disassembly

#### 7.1 Removing the device

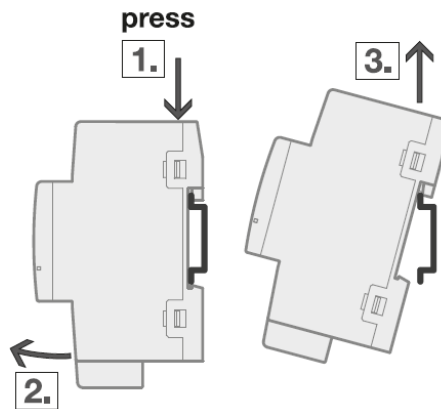


Fig. 13: Removal from the DIN rail

Proceed as follows:

- Disable the supply voltage.
- Remove the touch protection.
- Disconnect the power supply cables and signal lines.
- Disconnect the data cables.
- Disconnect the grounding.
- Press the device downwards and tilt the lower side towards you, then pull the device upwards away from the DIN rail.

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# Smart Buildings

## Appendix

### **8 Appendix**

#### **8.1 Scope of delivery**

The IP Switch is supplied together with the following components. The delivered items should be checked against the list below:

- 1x IP Switch IS/S 8.1.1 or 1x IP Switch ISP/S 8.1.1.1
- 1x installation and operating instructions



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