

Desigo™ Room Automation

Compact actuating room automation stations, BACnet/IP, AC 24 V (Actuating DXR)

DXR1.E10PL-112 DXR1.E10PL-113



Combination of room automation station and actuator for buildings with increasing demand on functionality and flexibility in Room Automation, VAV and FPB applications.

- Compact, configurable room automation station in combination with actuator for HVAC
- QMX2.. and QMX3.. room units
- BACnet IP communications (BTL certified)
- 2-port Ethernet switch
- USB interface
- KNX PL-Link bus to connect sensors, actuators, and operator units (including bus power)
- Operating voltage AC 24 V
- Built-in 10 Nm actuator
- Internal 0...500 Pa differential pressure sensor
- Plug-in terminal blocks

Features

Configurable

The DXR1.. automation stations provide the infrastructure for systems and application-specific functions which can be configured.

Compact series

The compact build allows direct mounting on the damper shaft. It is designed for VAV and FPB.

Plug-in terminal blocks

Plug-in terminal blocks for easy exchange of room automation stations.

Integrated actuator

The actuator gear base is integrated into the housing of the actuating DXR. It supports dampers with up to 10 Nm torque.

Use

Desigo Room Automation offers the highest level of flexibility for energy-optimized solutions while satisfying requirements for temperature control, ventilation and comfort using standard tools and established workflows.

Preinstalled application types

- Variable (VAV), Fan Powered Box (FPB) and constant air volume flow
 - With staged and modulating electric heating
 - With modulating hot water / chilled water with room or supply air temperature control
- Radiant ceiling: cooling, cooling and heating (2-pipe), or cooling / heating (4-pipe), heating
- Radiator: hot water, electric stepped or modulated controlled

Application options

- Separate temperature and air volume flow setpoints for all 4 operating modes
- Separate minimum and maximum cooling and heating flow setpoints
- Single-stage, multiple-stage or variable fan control (FPB / DXR1.E10PL-113)
- Chilled water and hot water valve
- Extract air volume flow control

Functions

The selected application and its parameters as well as input and output configuration determine the room automation station's functionality.

A detailed description of functionality is available in the ABT (Automation Building Tool) online help.

Communication

- 2-port Ethernet switch for cost-effective cabling via line topology

Note: DXR1 supports cabling based on daisy chain topology. The max. number is 20 devices and in the event of a failed automation station, all other stations are no longer reachable. DXR1 can be cabled as ring topology if higher reliability is required. This requires support for layer 2 switches RSTP (Rapid Spanning Tree Protocol) as well as SNMP monitoring and that any loss of superposed system is reported. In the event of a fault, switching the communication paths can take between 10 and 30 seconds. DXR1 routes the RSTP protocol for the switches. It does not actually process the RSTP protocol. Further information can be found in Application Guide for BACnet Networks in Building Automation (A6V11159798).
- USB connection for service, commissioning and firmware download
- KNX PL-Link communication with room operator units, sensors and actuators

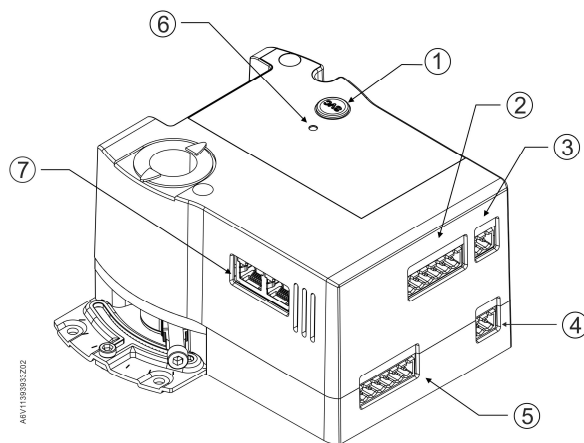
LED indication

| LED | Color | Activity | Function |
|-----|-------|---------------------------|---|
| Run | Green | Steady ON | Device is ready for operation |
| | | Steady OFF | Device is not powered |
| | | Regular flashing | Start-up or the program is stopped |
| | Red | Steady OFF | OK |
| | | Steady ON | Program error Communications error (KNX PL-Link) Hardware fault |
| | | Rapid flashing | Wrong or corrupt software No application loaded |
| | | Blinking per wink command | Physical device identification |
| | | | |

Service button (SVC)

Physical identification on the network.

Technical / Mechanical design



| | | | |
|---|--|---|---|
| 1 | Service button (SVC) for sending device identification | 2 | 2 UIs (universal input), 1 AO (analog output), 1 DI (digital input) |
| 3 | Power supply | 4 | KNX interface |
| 5 | 4 DOs (digital Triac output) | 6 | Status information LED (bi-color) |
| 7 | 2-port Ethernet switch | | |

Housing

The housing consists essentially of flame retardant, non-brominated plastic.

Type summary

| Product No. | Stock No. | Inputs | Outputs | Description | Quantity |
|----------------|-------------|--|---------------------------------------|-----------------|---|
| DXR1.E10PL-112 | S55499-D458 | 2 universal inputs, 1 digital input | 4 digital outputs, 1 analog output | VAV application | Single package / multiple package (10) |
| DXR1.E10PL-113 | S55499-D459 | 2 universal inputs, 1 digital input | 4 digital outputs, 1 analog output | FPB application | Single package / multiple package (10) |

Ordering

When ordering, indicate product number, stock number and description.

Equipment combinations

Remote sensors and room operator units

| Type of unit | Product No. | Stock No. | Temperature | Humidity | Air quality indication | Datasheet* |
|----------------------------------|--------------------------|-------------|-------------|----------|------------------------|-------------|
| Sensors | AQR2570N + AQR2532NNW | S55720-S203 | √ | - | - | CE1N1411en |
| | | S55720-S136 | | | | |
| | AQR2570N + AQR2535NNW | S55720-S203 | √ | √ | | CE1N1411en |
| | | S55720-S141 | | | | |
| | AQR2576N+ AQR2530NNW | S55720-S207 | - | - | - | CE1N1411en |
| | | S55720-S137 | | | | |
| | AQR2576N+ AQR2532NNW | S55720-S207 | √ | - | - | CE1N1411en |
| | | S55720-S136 | | | | |
| | AQR2576N+ AQR2535NNW | S55720-S207 | √ | √ | √ | CE1N1411en |
| | | S55720-S141 | | | | |
| | QMX3.P30 | S55624-H103 | √ | - | - | CM2N1602en |
| QMX3.P40 | S55624-H116 | √ | √ | - | CM2N1602en | |
| QMX3.P70 | S55624-H104 | √ | √ | √ | CM2N1602en | |
| UP 258D12 (presence detector) | 5WG1258-2DB12 | - | - | - | A6V10489489 | |
| Room operator units | QMX2.P33 | S55624-H118 | √ | | | A6V11207411 |
| | QMX3.P34 | S55624-H105 | √ | | | CM2N1602en |
| | QMX2.P43 | S55624-H117 | √ | √ | | A6V11207411 |
| | QMX3.P74 | S55624-H106 | √ | √ | √ | CM2N1602en |

* The documents can be downloaded from <http://siemens.com/bt/download> by specifying the Datasheet number as shown in the above table.

Controller and actuators

| Type of unit | Product no. | Stock no. | Datasheet* |
|------------------------|--------------|-------------|-------------|
| VAV compact controller | GDB181.1E/KN | S55499-D134 | CE1N3547en |
| | GLB181.1E/KN | S55499-D135 | CE1N3547en |
| Ball valve actuator | GDB111.9E/KN | S55499-D203 | A6V10631832 |
| | GLB111.9E/KN | S55499-D207 | A6V10631832 |

* The documents can be downloaded from <http://siemens.com/bt/download> by specifying the product number as shown in the above table.

Product documentation


| Topic | Title | Document ID: |
|--------------------------------------|---|--------------|
| Installation, cable length, topology | Desigo Room Automation installation guide | CM111043 |
| Engineering and commissioning | ABT online help | N/A |
| Installation instruction | Mounting instructions | A6V11393918 |
| Commissioning | Quick guide | A6V11526405 |
| Product environmental declaration | | A6V11805930 |
| EU declarations (CE) | | A6V11791489 |

Documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:

<http://siemens.com/bt/download>

Notes

Security

| | |
|---|--|
|  | ⚠ CAUTION |
| | National safety regulations Failure to comply with national safety regulations may result in personal injury and property damage. <ul style="list-style-type: none">• Observe national provisions and comply with the appropriate safety regulations.• Use only properly trained technicians for mounting, commissioning and servicing. |

Engineering

Identification

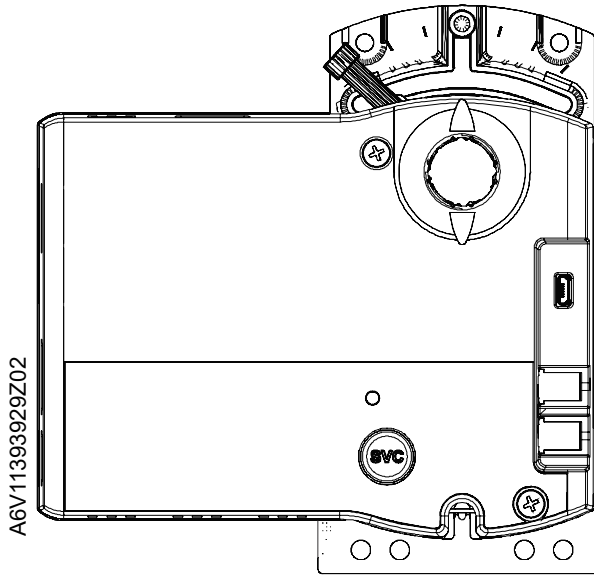
Each device has a unique serial number to ensure efficient commissioning. It is provided on the adhesive barcode reader. The serial number can be read directly into the engineering tool using a barcode reader.

Wiring

Wiring must be sufficiently insulated to the available rated voltage. Sizing and fusing of the wiring depend on the connected load.

Mounting

The automation station is mounted directly on a damper shaft.



See the mounting instructions (document ID: A6V11393918) for detailed information.

Differential pressure sensor

- Avoid bends and pressure when attaching the tube.
- Connect the "+" connection on the side with the higher pressure and the "-" connection on the side with the lower pressure.
- Connection tubes (interior diameter) of 4 mm.
Air tube connection kit DXA.T50 for connection of tubes with 6.5 mm (interior diameter).
- The maximum tube length is 2 m.

Installation

Applies to devices with supply output (AC 24 V or mains voltage) such as Triac output or output to supply a field device.



▲ WARNING

No internal line protection for supply lines to external consumers

Risk of fire and injury due to short-circuits

- Adapt the line diameters as per local regulations to the rated value of the installed fuse.

Maintenance

The automation station is maintenance-free.

Disposal



The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Technical data

Power data

| Power supply | |
|-------------------------------|-----------------|
| Operating voltage (SELV/PELV) | AC 24 V +/-20 % |
| Frequency | 50 or 60 Hz |
| Power consumption | 12 VA max. |

| Transformer requirements and recommended voltages | |
|---|--|
| Type | Class 2, AC 24 V, 50 / 60 Hz, SELV, PELV |

Functional data

| Functional data | |
|------------------------------|--|
| Nominal torque | 10 Nm |
| Nominal rotary angle | 90° |
| Maximum rotary angle | 95° ± 2° |
| Runtime for 90° rotary angle | 150 s |
| Shaft size | 8...16 mm, round 8...10 mm, round (with centering insert) 6...12.8 mm square |
| Minimum shaft length | 20 mm |

Universal inputs

| Analog inputs: DC 0...10 V | |
|----------------------------|----------|
| Operating range | 0...10 V |
| Resolution | 10 mV |

| Analog inputs: sensors | | | |
|------------------------|-----------------|--------------------|----------------|
| Type | Measuring range | Accuracy | Resolution |
| LG / DIN-Ni 1000 | 0...50 °C | +/- 0.5 K at 25 °C | 0.1 K at 25 °C |
| Pt1K, 375 / 385 | | | |
| NTC10K / NTC100K | | | |

| Digital inputs | |
|-----------------------------|--|
| 0/1 digital signal (binary) | For potential-free contacts |
| Sampling voltage/current | DC 15 V, 7 mA |
| Contact resistance | Max. 200 Ω (closed) Min. 50 kΩ (open) |
| Delay | 10 ms |
| Pulse frequency | Max. 20 Hz |

Outputs

| Analog output | |
|----------------|-----------|
| Control range | 0...10 V |
| Resolution | 5 mV |
| Output current | Max. 1 mA |

| Triac outputs | |
|--------------------|---|
| Number of channels | 4 |
| Type | Requires AC 24 V source to allow switching: switching to phase (AC 24 V) or neutral (\perp) |
| Current rating | 0.5 A max. per channel |
| Voltage rating | AC 24 V +/-20 % |
| Max. load | 12 VA per channel |

Pressure sensor

| Pressure sensor | |
|--------------------------|---------------|
| Measurement range | 0...500 Pa |
| Sample rate | \leq 500 ms |
| Overload range | 0...100 kPa |
| Measuring range accuracy | 3 % |
| Zero point accuracy | 0.2 Pa |
| Resolution | 12 Bit |

Connections

| Interfaces | |
|-------------|--|
| Ethernet | Plugs: dual RJ45, 10M/100M fast Ethernet Interface type: IEEE 802.3 compliance Cable type: 100 M STP CAT 5 |
| USB (2.0) | Type Micro B |
| KNX PL-Link | Terminal: 5.08 mm, 2 pin DPSU: 50 mA, non-standard DPSU |

KNX PL-Link: Consider maximum bus load and different device types (two devices of the same type are not supported).

| Wiring connections | |
|----------------------------|---|
| Wiring lengths for signals | KNX PL-Link: max. 80 m with internal bus power Signal lines: max. 80 m For analog inputs: max. 30 m |

Conformity

| Ambient conditions and protection classification | |
|--|--|
| Classification per IEC/EN 60730 | |
| Function of automatic control devices | Type 1 |
| Pollution degree | 2 |
| Overvoltage category | III |
| Design type | Device suited for use with equipment of safety classes I and II |
| Degree of protection of housing to IEC EN 60529 | |
| Room automation station | IP20 |
| Climatic ambient conditions | |
| Transport (packaged for transport) as per IEC EN 60721-3-2 | Class 2K3 Temperature -25...70 °C Air humidity 5...95 % (non-condensing) |
| Operation as per IEC/EN 60721-3-3 | Class 3K5 Temperature -5...50 °C Air humidity 5...95 % (non-condensing) |
| Mechanical ambient conditions | |
| Transport as per IEC/EN 60721-3-2 | Class 2M2 |
| Operation as per IEC/EN 60721-3-3 | Class 3M2 |

| Standards, directives and approvals | |
|---|---|
| Product standard | IEC/EN 60730-1 Automatic electronic controls for household and similar use |
| EU conformity (CE) | A6V11791489 |
| RCM conformity | A6V11791498 |
| EAC conformity | Eurasian conformity |
| UL Approbation Federal Communications Commission | UL as per UL916, http://ul.com/database cUL as per CSA – C22.2 No. 205 FCC CFR 47 Part 15 Class B |
| ICES003 | CAN ICES-3 (B)/NMB-3(B) |
| Environmental compatibility | The product environmental declaration (A6V11805930*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal). |

* The documents can be downloaded from <http://siemens.com/bt/download>.

FCC regulations

Modification of this device to receive cellular radio telephone service signals is prohibited under FCC rules and federal law.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Statement

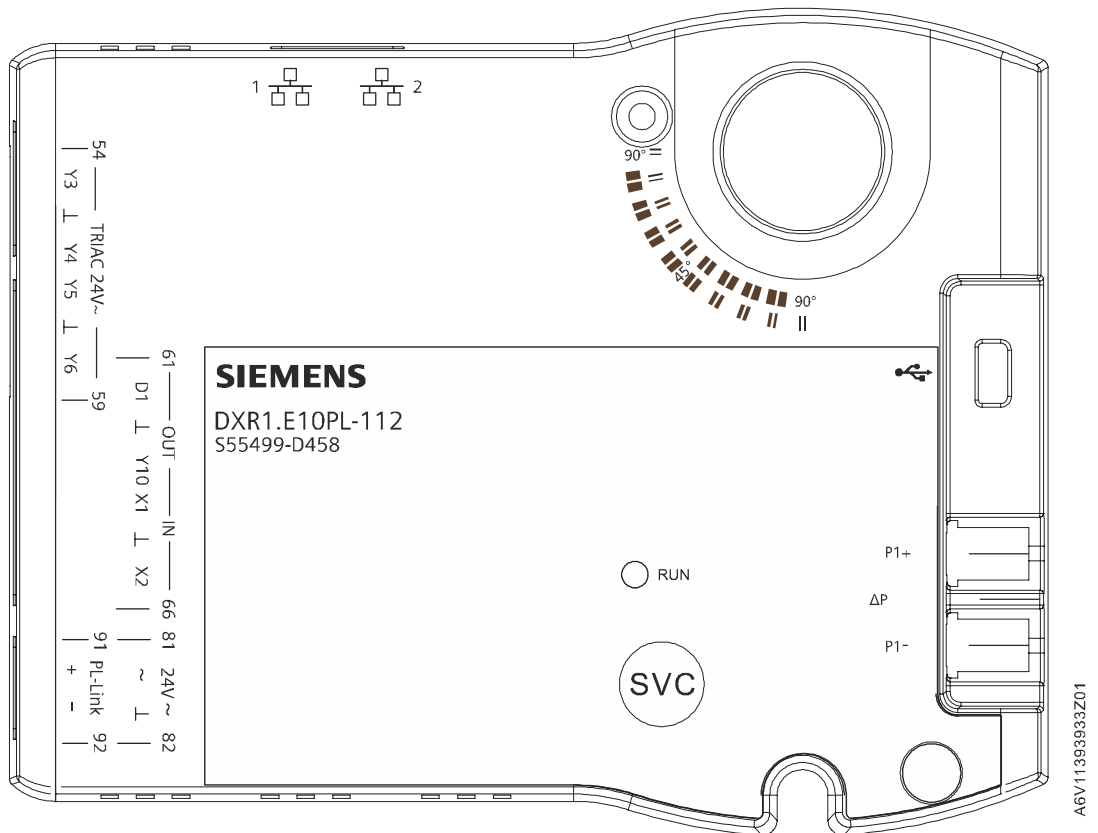
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

General

| General information | |
|---------------------|--|
| Color | Light gray |
| Dimensions | L × W × H = 137 × 143 × 82 mm |
| Weight | Net weight: 666.0 g Gross weight: 891.8 g |

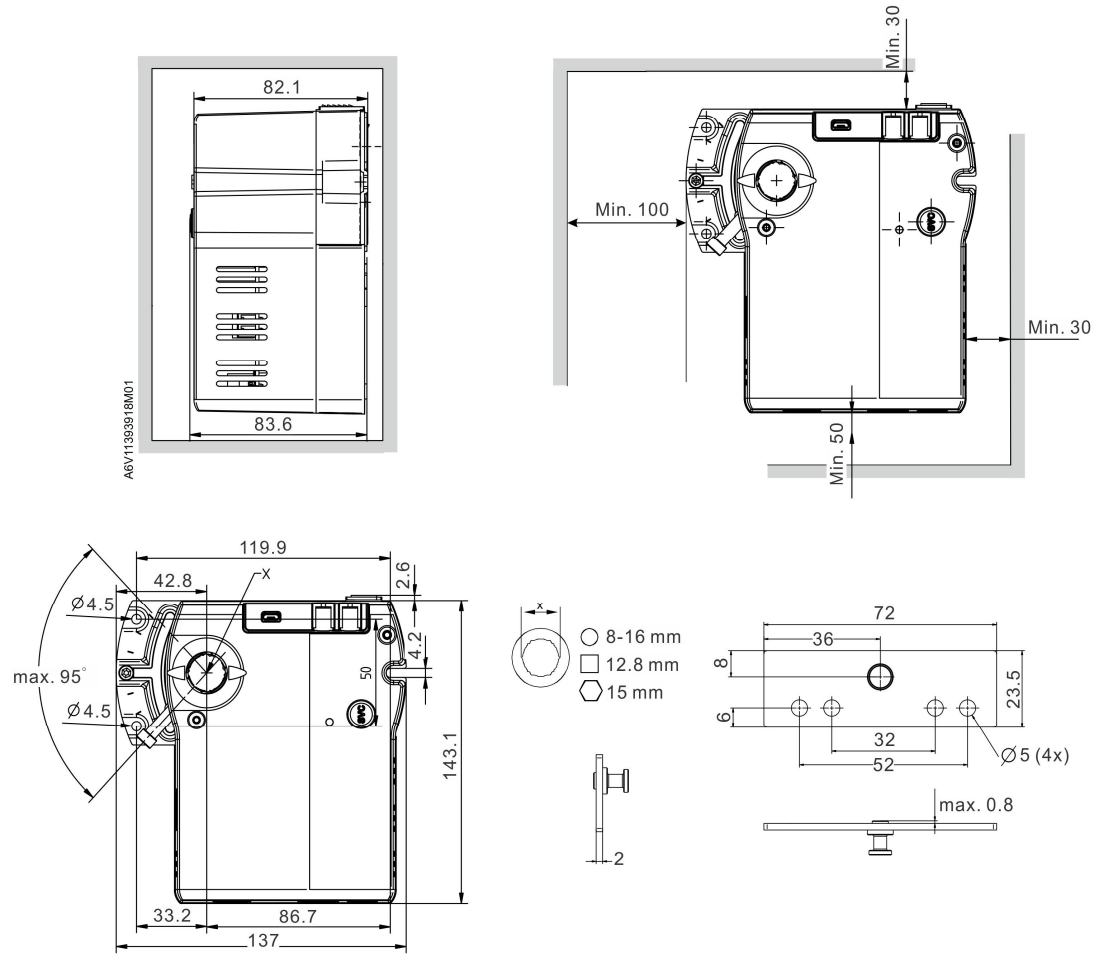
Connection terminals

DXR1.E10PL-112 and DXR1.E10PL-113



| Pin | Description | Terminal |
|---|---|----------|
| 1, 2 | IP connection | |
| USB | USB interface | |
| 81, 82 power 24 V~ | Power supply AC 24 V | V~ |
| | System neutral (must always be grounded at the transformer) | \perp |
| 91, 92 | KNX PL-Link | +, - |
| 61 | Digital input | DI |
| 62, 63 outputs | DC 0...10 V output | Y10 |
| 64...66 inputs | Universal input | X1, X2 |
| 54...56 Triac outputs | Digital output, switching to phase (AC 24 V) or neutral (\perp) | Y3, Y4 |
| 57...59 Triac outputs | Digital output, switching to phase (AC 24 V) or neutral (\perp) | Y5, Y6 |
| Δ P differential pressure detector | Connected to the higher pressure | P1+ |
| | Connected to the lower pressure | P1- |
| Service | Service button | SVC |
| Display | Operation LED | RUN |

Dimensions



Dimensions in mm

Issued by
Siemens Switzerland Ltd
Smart Infrastructure
Global Headquarters
Theilerstrasse 1a
CH-6300 Zug
Tel. +41 58 724 2424
www.siemens.com/buildingtechnologies

© Siemens Switzerland Ltd, 2019
Technical specifications and availability subject to change without notice.