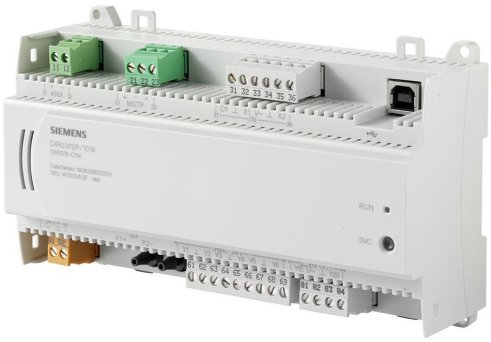
SIEMENS

Desigo™ DXP

Primary automation station, BACnet MS/TP, 24 V

DXP2.M18



Automation station for control of single zone, variable air and constant air, rooftop units.

- Compact, configurable primary automation stations for RTU applications.
- Operating temperature suitable for rooftop installation.
- Communication BACnet MS/TP (BTL certified).
- KNX PL-Link bus to power and connect sensors, actuators, and operator units (including bus power).
- USB interface.
- 18 I/O: 4 universal inputs, 2 digital inputs, 8 triac outputs, 4 analog outputs.
- Operating voltage AC 24 V.
- Mounted on standard DIN rails.
- Plug-in terminal blocks.

Features

- Built for rooftop unit control.
- Operating temperature suitable for installing in rooftop unit enclosures.
- Applications cover a wide array of single zone, constant and variable air options.
- Fully programmable
- Operational modes (Comfort, Standby, Economy, Protection, etc.).

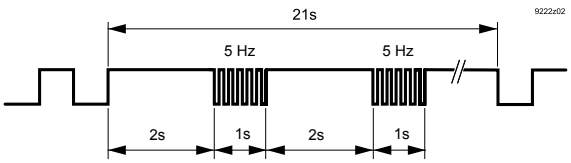
Functions

The selected application and its parameters as well as input and output configuration determine the primary automation station's functionality. A detailed description of functionality is available in the ABT (Automation Building Tool) online help.

Communication

- BACnet MS/TP.
- 2-Port Ethernet switch for cost-effective cabling via line topology.
- USB connection for service and commissioning, firmware download, and LAN access.
- The following functions are available with the KNX PL-Link bus:
  - Communication with room operator units, switches, sensors and actuators.
  - Plug-and-play connection of Siemens field devices with KNX PL-Link.

LED indication and Service button

	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
			
SVC (Service button)	--	Short press	Physical identification on the network
	--	Factory reset	1. Power off the device. 2. Power on the device. 3. Wait until the RUN LED lights up and turns off again, then press the Service button. 4. Keep the Service button pressed until the RUN LED lights up, then release the button. The device restarts. 5. Wait until the device has fully started – unconfigured (green RUN LED on, red SVC LED flashes)

Technical design

Power supply

The power supply provides controlled voltages for inputs and outputs. The primary automation stations also supply DC 24 V (max. 100 mA) field supply. The supply is located in the device to simplify wiring and diagnostics.

The processor controls the power supply. This ensures clean conditions for field devices connected to the I/Os during startup, shutdown, and undervoltage.

Bus power supply

The primary automation station includes the bus power for KNX PL-Link. The bus power is switched on by default, but can be switched off via web interface or configuration in the Automation Building Tool (ABT).

The internal KNX PL-Link supply cannot be operated parallel to external power supplies. The internal KNX PL-Link power must be switched off during the engineering phase for external power. This is typically the case if the 50 mA from the internal supply is not enough to supply all devices connected on the KNX PL-Link bus.

Type summary

The devices are supplied without terminal covers. The terminal covers must be ordered separately. See **Accessories**.

Type	Order number	Description	Inputs	Outputs
DXP2.M18-110BR	S55375-C107	DXP2.M18 Primary Automation Station	2 DI, 4 UI	8 DO Triacs, 4 AO 0...10 V

Accessories

Type	Order number	Designation
DXA.H180	S55376-C120	Terminal cover for DXP.. 180 mm, 2 pieces
	985-124	499 Ohm Resistor Kit

Product documentation

Related documents such as the environmental declarations, CE declarations, etc., can be downloaded from the following Internet address:

https://siemens.com/bt/download

Notes

Safety

⚠ CAUTION

National safety regulations

Failure to comply with national safety regulations may result in personal injury and property damage.

- Observe national provisions and comply with the appropriate safety regulations.

Mounting

The primary automation stations can be snapped onto standard rails or screwed onto a flat surface.

Mounting position

Ambient temperature -40...70 °C (-40...158°F)
• Equipment panel, horizontal - From left to right - From right to left • Equipment panel, vertically Not allowed • Overhead or on a horizontal surface Not allowed

Installation

⚠ WARNING	
	Electric shock Incorrect installation of the device may lead to electric shock injuries when touching the device! • Install the device in a lockable cabinet or use terminal covers. • Do not install the device in locations where children are likely to be present. • Conductors with a cross-section of 0.5 mm2 (AWG24) or greater shall comply with the requirements of IEC 60332-1-2 and IEC 60332-1-3 or IEC TS 60695-11-21.

⚠ WARNING	
	Risk of fire and injury due to short circuits! • Adapt as per local regulations the wiring cross section to the rated value of the installed fuse.

⚠ CAUTION	
	Risk of damage to laptop for failure to comply with AC 24V grounding Burning and damage to the laptop or other device connected to the DXP2 USB Device port · USB Device port is short circuit limited but not isolated. Were AC 24V is not properly grounded voltage will be present on the USB Device port ground which may damage connected equipment not designed to handle AC 24V. · Recommend always connecting to DXP2 USB Device port through a USB isolator with minimum 2 KV and fixed 12 Mbps speed for fastest firmware upgrades.

Strain relief

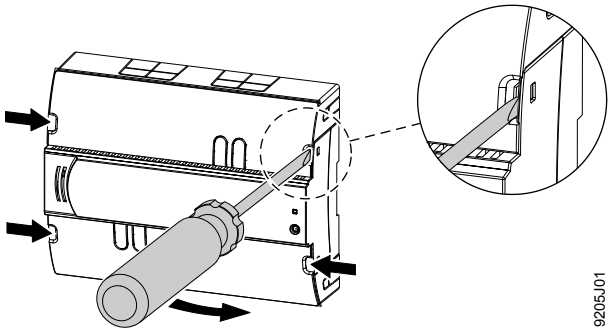
Strain relief protects flexible electrical wiring against mechanical stress.

The wiring must be fixed using cable binders to the tabs on the housing base.

Terminal cover

Break off the cable inlets to insert the cables to the room automation station.

To take off the terminal cover:



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.

Technical data

Housing

Color	RAL 7035 (light-gray)
Dimensions	per DIN 43880, 180 mm x 104.5 mm x 59.5 mm, see dimensions
Weight DXP2.M18 Terminal cover Packaging	 ca. 350 g ca. 80 g ca. 40 g

Function data

Processor	Texas Instruments AM3351, 400 MHz
RAM	128 MByte SDRAM (DDR3) 512 MByte NAND Flash
Communication A/D Resolution (analog in) D/A Resolution (analog out)	 14 Bit 12 Bit

Power data

Power supply	
Operating voltage	AC 24 V -15%/+20%
Frequency	50/60 Hz
Power consumption including connected field devices	Max. 64 VA
Internal fuse	4 A irreversible
SELV/PELV Transformer with secondary current limitation of max. 10 A or external secondary current fuse Non-renewable fuse Circuit breakers	 Max. 10 A, slow-blow Max. 13 A, characteristic B, C, D as per EN 60898

Power supply	
NEC Class 2 Transformer with secondary current limitation of max. 4 A or external secondary current fuse Non-renewable fuse Circuit breakers	 Max. 4A slow-blow Max. 4A, characteristic B, C, D as per EN60898
Transformer secondary neutral connected to approved building ground.	

Apparent power (VA) for transformer design

Load	Power
Base load including I/O without load by field devices	6 VA
Max. output load Triac at 250 mA each	8 x 6 = 48 VA
Max. load KNX PL-Link at 50 mA	4 VA
Max. load for DC 24 V field supply at 100 mA	6 VA
Power consumption including connected field devices	64 VA

Inputs

The inputs are protected against incorrect wiring AC 24 V.

Resistance sensor, analog (inputs X...)		
Type	**Range (over range)**	**Resolution**
AI 1000 Ohm *)	1 kΩ (0...1.05 kΩ)	1 Ω
AI 2500 Ohm *)	2.5 kΩ (0...2.625 kΩ)	2.5 Ω
AI 10 kOhm *)	10 kΩ (0...10.5 kΩ)	10 Ω
AI 100 kOhm *)	100 kΩ (0...105 kΩ)	100 Ω

Temperature measurement, analog (inputs X...)		
Type	**Range (over range)**	**Resolution**
AI PT1K 375 (NA) *)	-40...70 °C (-45...75 °C) -40...158 °F (-49...167 °F)	25 mK 0.045 °F
AI PT1K 385 (EU) *)	-40...70 °C (-45...75 °C) -40...158 °F (-49...167 °F)	25 mK 0.045 °F
AI (LG-)Ni1000 *)	-40...70 °C (-45...75 °C) -40...158 °F (-49...167 °F)	25 mK 0.045 °F
AI Ni1000 DIN *)	-40...70 °C (-45...75 °C) -40...158 °F (-49...167 °F)	25 mK 0.045 °F
AI T1 (PTC) *)	-40...70 °C (-45...75 °C) -40...158 °F (-49...167 °F)	100 mK 0.18 °F
AI NTC10K	-40...70 °C (-45...75 °C) -40...158 °F (-49...167 °F)	25 mK (25 °C) 0.045 °F (77 °F)
AI NTC100K	-10...70 °C (-15...75 °C) 14...158 °F (5...167 °F)	25 mK (25 °C) 0.045 °F (77 °F)

*) A fixed value of 1 Ω is calibrated to correct line resistance.

Voltage measurement, analog (inputs X...)		
Type	**Range (over range)**	**Resolution**
AI 0...10 V	0...10 V (-1...11 V)	2 mV
AI 0...10 V standard	0...100% (-10...110%)	2 mV
Open connection: Negative voltage -1.5 V, 8 µA (line failure detection) Use 499Ω Resistor Kit (see Accessories) to convert 4-20mA input to 0-10V input and power 4-20mA device from DC 24V sensor supply.		

Digital input (inputs X... or D...)	
Contact query voltage	Universal input: 18 V Digital input: 21 V
Contact query current	Universal input: 1.2 mA, 7.4 mA initial current Digital input: 1.6 mA; 9.4 mA initial current
Contact resistance for closed contacts	Max. 100 Ω
Contact resistance for open contacts	Min. 50 kΩ

Outputs

The outputs are protected against short circuiting and incorrect wiring AC 24 V.

Analog (outputs Y10...Y40)			
Type	**Range (over range)**	**Resolution**	**Output current**
AO 0-10 V	0...10 V (0…10.5 V)	2 mV	Max. 1 mA
AO 0-10 V standard	0...100% 0% = 0 V, 100% = 10 V (0...10.5 V)	2 mV	Max. 1 mA

Switching outputs Triac (outputs Y1...Y8)	
Type	High side The Triac closes the contact to AC 24 V
Switching voltage	AC 24 V
Permissible load	250 mA / 6 VA per output (cos phi 0.35)
Protection	Short-circuit proof

Power supply for field devices (output V+)	
Output voltage	DC 24 V
Permissible load	100 mA/2.4 W
Protection against overload	Short-circuit proof

Connections

Interfaces	
MS/TP	Interface type: RS485 Galvanic isolation: Yes Baud rates: 9600, 19200, 38400, 57600, 115200 bps Protocol: BACnet over MS/TP Short-circuit proof protection against faulty wiring at max. AC 24 V
USB (2.0)	Plug: Type B Data rate: 12 Mbps maximum, not isolated, short circuit protected
KNX	Type: KNX TP1 PL-Link, galvanic isolation Baud rate: 9.6 kbps Bus power: 50 mA Short-circuit proof, and protected against faulty wiring at max. AC 24 V

Wiring connections	
Pluggable screw terminals	Copper wire or copper stranded wire with connector sleeves 1 x 0.6 mm ø to 2.5 mm^2 (22 to 14 AWG) or 2 x 0.6 mm ø to 1 mm^2 (22 to 18 AWG) Copper stranded wire without connector sleeves 1 x 0.6 mm ø to 2.5 mm^2 (22 to 14 AWG) or 2 x 0.6 mm ø to 1.5 mm^2 (22 to 16 AWG)
Stripping length	6...7.5 mm (0.24...0.29 in)
Slotted screws	Size 1, tightening torque 0.6 Nm (0.44 lb-ft)
Wiring lengths for signals	MS/TP 1000 m (3290 ft) KNX PL-Link: 80 m (260 ft) with internal bus power or 300 m (990 ft) with external power supply Signal Lines: DI, DO and AO 80 m (260 ft); AI 100 KΩ, AI NTC10K, AI NTC100K 30 m (100 ft) or 80 m (260 ft), if shielded.

Conformity

Ambient conditions and protection classification	
Classification per IEC/EN 60730 Function of automatic control devices Pollution degree Overvoltage category	 Type 1 2 II
Protection against electric shock	Protection class III
Degree of protection of housing to IEC EN 60529	IP20 (without terminal cover) IP30 (with terminal cover)
Climatic ambient conditions • Storage / Transport (packaged for transport) as per IEC EN 60721-3-1 / IEC EN 60721-3-2 • Operation as per IEC/EN 60721-3-4	 • Class 1K22 / 2K12 Temperature -25...70 °C (-13... 158 °F) Air humidity 5...95% (non-condensing) • Class 4K23 Operation in sheltered dry locations, having no temperature or humidity control -40...70 °C (-40... 158 °F) See Mounting Air humidity 4...95% (non-condensing)
Mechanical ambient conditions Transport as per IEC/EN 60721-3-2 Operation as per IEC/EN 60721-3-3	 Class 2M4 Class 3M11

Standards, directives and approvals	
Product standard	IEC/EN 60730-1 Automatic electronic controls for household and similar use
Product family standard	IEC/EN 63044-x General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS)
Electromagnetic compatibility	For residential, commercial, and industrial environments
EU conformity (CE)	EU declaration of conformity [1)]
RCM conformity	RCM declaration of conformity [1)]
UL/cUL Certification	UL as per UL916, http://ul.com/database cUL as per CSA – C22.2 No. 205
CSA certification	C22.2, http://csagroup.org/services-industries/product-listing
Federal Communications Commission	FCC CFR 47 Part 15B
BACnet	BTL tested BACnet Advanced Application Controller (B-AAC) BACnet Protocol Revision 13

Standards, directives and approvals	
Environmental compatibility [1)]	The product environmental declaration [1)] contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).
Quality	ISO 9001 (Quality)

[1)] Documents can be downloaded at http://siemens.com/bt/download.

FCC Statement

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.

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

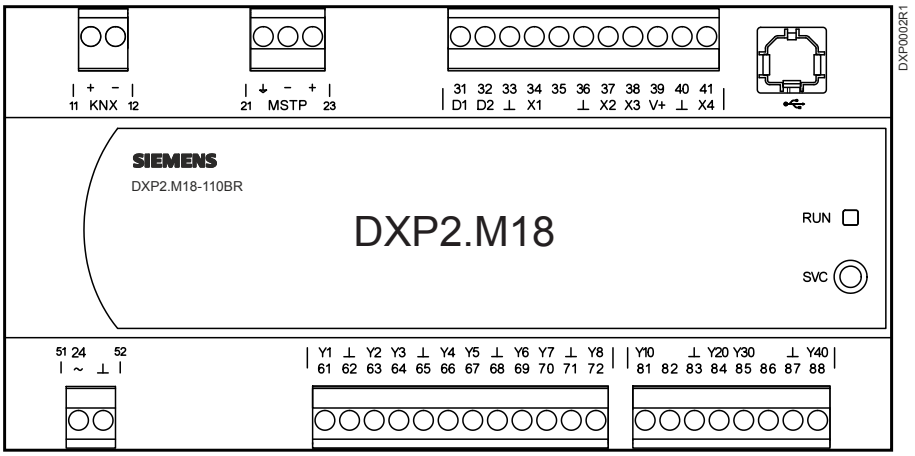
FCC Caution: Changes or modifications not expressly approved by Siemens Switzerland Ltd. could void user authority to operate the equipment. United States representative https://new.siemens.com/us/en/products/buildingtechnologies/home.html

Industry Canada statement

This device complies with ISED's license-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Connection terminals

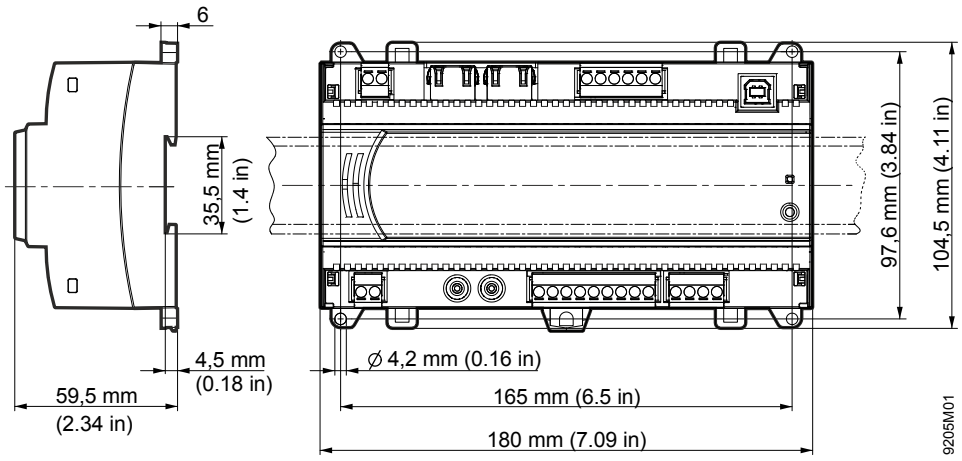


Terminal	Symbol	Description	Module	Channel
21...23 MS/TP	⏚, +, -	MS/TP connection		
11, 12 KNX	+, -	KNX connection		
31...41 inputs	D1, D2	Digital input	1	1, 2
	X1...X4	Universal input	1	5...8
	⊥	System zero		
	V+	Field supply DC 24 V for active sensors		
USB		USB interface		
51...52 power 24 V~	V~	Power SELV / PELV AC 24 V or NEC Class 2		
	⊥	System neutral (always ground to the transformer)		
61...72 Triacs	Y1...Y8	Switching output AC 24 V	11	1...8
	⊥	System zero		
81...88 analog outputs	Y10...Y40	Positioning output DC 0...10 V	21	1...4
	⊥	System zero		
Service	SVC	Service button		
Display	RUN	Operation LED		

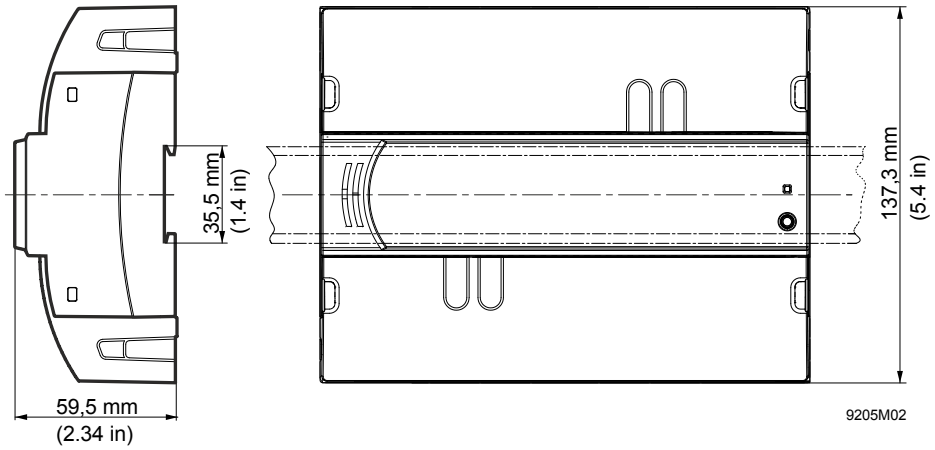
Dimensions

All dimensions in mm and inches

Without terminal cover



With terminal cover



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