SIEMENS

Desigo™ DXP

Primary Automation Station, BACnet/IP, 24 VAC

DXP2.E18

Automation station with increased functionality and flexibility to support the demands for control of single zone, variable and constant air, rooftop units.

- Compact, fully programmable primary automation stations for RTU applications (US units only, other units of measure available in future release).
- Operating temperature suitable for rooftop installation.
- BACnet/IP communications (BTL certified).
- 2-port Ethernet switch for daisy chaining.
- KNX PL-Link bus to power and connect sensors, actuators, and operator units.
- 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.).

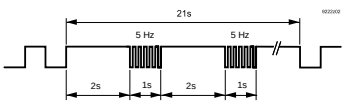
Functions

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 configuration document or application guide.

Communication

- 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.
  - Integration of common devices using KNX S-Mode (ETS engineering required).

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, flashes red)

RTU applications

- Supply air fan control
  - Single or multiple stage constant volume
  - Variable speed variable volume
- Cooling coil control
  - Supply temperature control
  - Modulating direct expansion (DX) control
  - Modulating DX with hotgas reheat control
  - 2 stage with fixed and modulating DX control
  - Chilled water valve control
  - Single or multiple stage DX control
- Heating coil
  - Supply temperature control
  - Modulating electric heating coil control
  - Hot water valve control
  - 1 to 4 electric heating stage control
- Outdoor air damper control
  - Ventilation and economizer
  - Mixed air temperature control
  - Supply air temperature control

Additional applications

- Radiator/Baseboard: hot water, steam or electric (staged or modulating)
- Radiant ceiling including cooling or heating (2-pipe or 4-pipe) control
- Greenleaf energy efficiency determination and display.
- Configurable plant operating modes (heating, cooling, warm up, cool down, flush/purge, and so on).
- Lighting and shades / blinds

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.E18-110BR	DXP2.E18-110BR	DXP2.E18 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

Topic	Title	Document ID
Application sheet	Single Zone VAV RTU with DX Cooling, Gas Heat and Outdoor Air Damper	A6V14272073
Application guide	HvacLgtShd36NA RTU DXP Application Guide	A6V14342200
Configuration document	Configuration of Desigo DXP Single Zone VAV Rooftop Unit	A6V11565070
Installation and mounting	See DXR Installation instructions	A6V10550039

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

www.siemens.com/bt/download

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.E18 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. 66 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
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						
Base Model	**Base load**	**Max. load Triac output AC 24V~ 0.25 A each**	**Max. load all Aux. outputs AC 24V~**	**Max. load KNX PL-Link (at 50 mA)**	**Max. load DC 24V+ (2.4 W)[)]**	**Max. Allowed Power consumption including connected field devices**
DXP2.E18	8	8 x 6 = 48	-	4	6	66

NOTE:
To calculate the total VA, add the Base Load + the number of Triacs + field supplies+ KNX PL-Link devices.
This cannot exceed the maximum power consumption. See the *Wiring Guidelines* for more information.

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	
Ethernet	Plugs: 2 x RJ45, screened Interface type: 10Base-T/100BASE-TX, IEEE 802.3 compatible Bitrates: 10/100 Mbps, autosensing Protocol: BACnet over UDP/IP
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	Ethernet 100 m (328 ft) maximum 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
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.

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