

SIEMENS



Room Automation Station DXR2 Configuration and Sizing Guidelines

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DXR2 Controllers

BACnet MS/TP DXR2.M

UI (Universal Input) supports: DI (Digital Input) for HVAC, as well as NTC 10k Type 2, NTC 100k, NTC 3k, LG-NI1000, PT1000, and 0 to 10V. All Desigo CC DXRs have an internal room communication bus (DC 29 50 mA) for a bus length up to 262 feet (80 meters) and an additional USB interface for tooling.

Product Description	Part Number	Part Number, Smoke Control Listed	Preloaded Application Types	Inputs/Outputs
DXR2.M11 Room Automation Station	DXR2.M11-101B	DXR2.M11-101K	<ul style="list-style-type: none"> Fan Coil Application Type Heat Pump Application Type Active or Passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 1 x DI 2 x UI Outputs 6 x Triac (AC 24V) 2 x AO (0 to 10V)
DXR2.M12P Room Automation Station	DXR2.M12P-102B	DXR2.M12P-102K	<ul style="list-style-type: none"> Variable Air Volume Application Type Fan Powered Box Application Type Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 1 x DI 2 x UI 1 x Δ P sensor Outputs 6 x Triac (AC 24V) 2 x AO (0 to 10V)
DXR2.M12PX Room Automation Station	DXR2.M12PX-102B (Version with 60 data points)	DXR2.M12PX-102K (Version with 60 data points)	<ul style="list-style-type: none"> Variable Air Volume Application Type Fan Powered Box Application Type Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 1 x DI 2 x UI 1 x Δ P sensor Outputs 6 x Triac (AC 24V) 2 x AO (0 to 10V)
DXR2.M12P and Actuator Combination	DXR2.M12P-102B-GDE	—	<ul style="list-style-type: none"> Variable Air Volume Application Type Fan Powered Box Application Type Pre-wired GDE Actuator Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 1 x DI 2 x UI 1 x Δ P sensor Outputs 6 x Triac (AC 24V) 2 x AO (0 to 10V)
DXR2.M18 Room Automation Station	DXR2.M18-101B	DXR2.M18-101K	<ul style="list-style-type: none"> Fan Coil Application Type Heat Pump Application Type Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 2 x DI 4 x UI Outputs 8 x Triac (AC 24V) 4 x AO (0 to 10V)
DXR2 connector kit	DXR2.CONNECTORS	—	<ul style="list-style-type: none"> Includes I/O, power, PL-Link, and IP or MS/TP connectors 	—

BACnet/IP DXR2.E

Product Description	Part Number	Part Number, Smoke Control Listed	Preloaded Application Types	Inputs/Outputs
DXR2.E12P Room Automation Station	DXR2.E12P-102B	DXR2.E12P-102K	<ul style="list-style-type: none"> Variable Air Volume Application Type Fan Powered Box Application Type Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 1 x DI 2 x UI 1 x ΔP sensor Outputs 6 x Triac (AC 24V) 2 x AO (0 to 10V)
DXR2.E12PX Room Automation Station	DXR2.E12PX-102B (Version with 60 data points)	DXR2.E12PX-102K (Version with 60 data points)	<ul style="list-style-type: none"> Variable Air Volume Application Type Fan Powered Box Application Type Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 1 x DI 2 x UI 1 x ΔP sensor Outputs 6 x Triac (AC 24V) 2 x AO (0 to 10V)
DXR2.E17 Room Automation Station	DXR2.E17C-103B	—	<ul style="list-style-type: none"> Variable air flow, pressurized room control One HVAC segment Coordination of up to eight fume hoods Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones OR <ul style="list-style-type: none"> Fume hood control One lighting zone 	Inputs 3 x DI 4 x UI 2 x resistive inputs, SCOM Outputs 4 x Triac 4 x AO
DXR2.E17 Room Automation Station	DXR2.E17CX-103B (Version with 60 data points)	—	<ul style="list-style-type: none"> Variable air flow, pressurized room control Two HVAC segments Coordination of up to eight fume hoods Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones OR <ul style="list-style-type: none"> Fume hood control One lighting zone 	Inputs 3 x DI 4 x UI 2 x resistive inputs, SCOM Outputs 4 x Triac 4 x AO
DXR2.E18 Room Automation Station	DXR2.E18-101B	DXR2.E18-101K	<ul style="list-style-type: none"> Fan Coil Application Type Heat Pump Application Type Active or passive chilled beam Radiant ceiling, radiator Four lighting zones Two shade zones 	Inputs 2 x DI 4 x UI Outputs 8 x Triac (AC 24V) 4 x AO (0 to 10V)

P1 DXR2

Product Description	Part Number	Part Number, Smoke Control Listed	Preloaded Application Types	Inputs/Outputs
P1 DXR2. T12P Room Automation Station	DXR2.T12P-102B	N/A	<ul style="list-style-type: none"> Variable Air Volume Application Type Fan Powered Box Application Type 	Inputs 2 x AI 2 x UI 1 X BI 1 x ΔP sensor Outputs 2 x AO 6 x BO
P1 DXR2. T18P Room Automation Station	DXR2.T18P-101B ¹⁾	N/A	<ul style="list-style-type: none"> Variable Air Volume Application Type Fan Powered Box Application Type Fan Coil Unit Application Type Heat Pump Application Type 	Inputs 4 x AI 4 x UI 2 X BI Outputs 4 x AO 8 x BO

¹⁾ T18 hardware does not have onboard DP sensing. If T18 hardware is selected for VAV or FPB, a DP sensor must be wired.

Conformity

Standards, Directives and Approvals	
UL Listing	UL916; UL864 ¹⁾ (Smoke Control 'K' variant only)
Suitable for plenum area installation	UL1995
Federal Communications Commission	FCC CFR 47 Part 15 Class B
CSA Compliance and cUL certification	C22.2 No. 205
Environmental compatibility - RoHS Compliant	The product environmental declaration contains data on environmentally compatible product design and assessments (composition, packaging, environmental benefit, and disposal).
BACnet BTL Listing ²⁾	BTL-AAC
CEC Title 24 Supported	—
ASHRAE 90.1 Supported	—
Quality	ISO 9001 (Quality)

¹⁾ Smoke Control not applicable for P1 DXR.

²⁾ N/A for P1 DXR connected on P1 protocol bus.

Room Sensors and Accessories

Product Description	Part Number
Temperature Sensor with switches	QMX3.P02
Temperature Sensor	QMX3.P30
Temperature Sensor with display	QMX3.P34 (with Green Leaf LED) QMX2.P33 (without Green Leaf LED)
Temperature Sensor with display and switches	QMX3.P37
Temperature and Relative Humidity Sensor	QMX3.P40
Temperature and Relative Humidity Sensor with display	QMX2.P43
Temperature, Relative Humidity and CO2 Sensor	QMX3.P70
Temperature, Relative Humidity and CO2 Sensor with display	QMX3.P74
Semi-Flushmount Temperature Sensor	QAA2570.2532
Semi-Flushmount Temperature and Relative Humidity Sensor	QFA2570.2535
Semi-Flushmount Temperature, Relative Humidity and CO2 Sensor	QPA2576.2535
Touch Screen Room Operator	QMX7.E38
Fume Hood Operating Display Panel	QMX3.P87-1WSC
USB-PL Link Interface (Required for commissioning)	S55800-Y101

Category	Part Num	Temp Sensor	Humidity Sensor	CO ₂ Sensor	Air Quality LED	Display w Touch Keys	Display w Buttons	Config Touch Keys	Green Leaf LED	Label Window
Room Sensors (Std.)	QMX3.P30 ¹⁾	x								
	QMX3.P40 ¹⁾	x	x							
	QMX3.P70 ¹⁾	x	x	x	x					
Room Sensors (Semi-Flushmount)	QAA2570.2532	x								
	QFA2570.2535	x	x							
	QPA2576-2535	x	x	x						
Room Units	QMX3.P02 ¹⁾	x						x		x
	QMX2.P33	x					x			
	QMX3.P34 ¹⁾	x				x			x	
	QMX3.P37	x				x		x	x	x
	QMX2.P43	x	x				x			
	QMX3.P74 ¹⁾	x	x	x		x	x		x	
Room Operator	QMX7.E38	Does not include sensing capability; select appropriate room sensing device above Compatible with DRX2.E series controllers only Requires ABT Pro for configuration								
Accessories	S55800-Y101	OCI702 USB-PL Link Interface w/ Power Supply (for commissioning)								

¹⁾ Including 1WSB, 1BSC, and 1WNB variants

Conformity

Standards, Directives and Approvals	
UL Listing	UL916
Federal Communications Commission	Part 15 of the FCC rules
CSA compliance	C22.2 No 205 – Signal equipment C22.2 No 0 – General Requirements
RCM Mark conformity (EMC)	AS/NZS 61000-6-3
Environmental compatibility - RoHS Compliant	The product environmental declaration (CM2E1602) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, and disposal).

PL-Link Devices

The following PL-Link Devices are supported by the DXR2 controller for Total Room Automation (TRA).

Part Number	Short Number	Description
SWITCHES		
5WG12852DB13	UP 285/13	UP285/13 Switch, Wall 1-Pair, Style W/ LED
5WG12862DB13	UP 286/13	UP286/13 Switch, Wall 2-Pair, Style W/ LED
5WG12872DB13	UP 287/13	UP287/13 Switch, Wall 4-Pair, Style W/ LED
5WG12872DB15	UP 287/15	UP287/15 Switch, Wall 4-Pair, Style W/ IR
5WG12212DB13	UP221/13	UP221/13 Switch, Wall 1-Pair, i-System W/ LED
5WG12222DB13	UP222/13	UP222/13 Switch, Wall 2-Pair, i-System W/ LED
5WG12232DB13	UP223/13	UP223/13 Switch, Wall 3-Pair, i-System W/ LED
5WG12232DB15	UP223/15	UP223/15 Switch, Wall 3-Pair, i-System
ROOM SENSORS AND ROOM UNITS		
QMX3.P02 ¹⁾	QMX3.P02	Temperature Sensor with switches
QMX3.P30 ¹⁾	QMX3.P30	Temperature Sensor
QMX2.P33	QMX2.P33	Temperature Sensor with display (without Green Leaf LED)
QMX3.P34 ¹⁾	QMX3.P34	Temperature Sensor with display (with Green Leaf LED)
QMX3.P37 ¹⁾	QMX3.P37	Temperature Sensor with display and switches
QMX3.P40	QMX3.P40	Temperature and Relative Humidity Sensor
QMX2.P43	QMX2.P43	Temperature and Relative Humidity Sensor with display
QMX3.P70 ¹⁾	QMX3.P70	Temperature, Relative Humidity and CO2 Sensor
QMX3.P74 ¹⁾	QMX3.P74	Temperature, Relative Humidity and CO2 Sensor with display
QMX3.P87-1WSC	QMX3.P87	Fume Hood Operator Display Panel (for use with DXR2.E17C or DXR2.E17CX)
QFA2570.2535	QFA2570.2535	Semi-Flush Mount RH/T sensor
QPA2576.2535	QPA2576.2535	Semi-Flush Mount RH/T/CO2 sensor
QAA2570.2532	QAA2570.2532	Semi-Flush Mount Temp sensor
ROOM OPERATOR		
QMX7.E38	QMX7.E38	Touch Screen Room Operator

Part Number	Short Number	Description
MOTION AND BRIGHTNESS SENSORS		
5WG12582DB12	UP 258D12	UP 258D12 Combo Presence Detector, Brightness sensor
5WG12552DB21	UP 255D21	Brightness sensor
DIGITAL SWITCH INTERFACE		
5WG12202DB31	UP220D31	UP220D31 Digital Switch Interface, 4 In/Output
POWER SUPPLY		
5WG11254CB23	JB 125C23	Decentralized power supply, 80mA, 120 Vac
POWERED SIGNAL INPUT		
5WG12604CB23	JB 260C23	Binary input, 4x AC/DC 12 to 230V
SWITCHING ACTUATORS		
5WG15104CB23	JB 510C23	Dual Relay Output, 2x 10A @ AC 120 to 277V
5WG15124CB23	JB 512C23	Single Relay Output 1x 16/20A @ AC 120 to 277V, 1x 15A @ AC 347V
5WG15134CB23	JB 513C23	Triple Relay Output JB 513C23, 3x 6A @ AC 120 to 277V
5WG15274CB23	JB527C23	0...10 V Dimmer Module, One channel
5WG15264CB23	JB526C23	0...10 V Dimmer Module, Two channel
SHADE AND BLIND CONTROL		
5WG15204CB23	JB 520C23	Single shade and blind control, 1x 6A, AC 120V
5WG15214CB23	JB 521C23	Dual shade and blind control, 2x 6A, AC 120V
LINE VOLTAGE UNIVERSAL DIMMER (120 VOLTS)		
5WG15254CB23	JB 525C23	Universal dimmer JB 525C23, 1x 125 VA

¹⁾ Including 1WSB, 1BSC, and 1WNB variants.

ABT Site

Product Description	Product Number (ASN)
ABT Site License 1 Year	571-860-1P2
ABT Pro License 1 Year	571-861-1P2
License Dongle (Optional)	S55802-Y148
OCI702 USB PL-Link Interface	S55800-Y101

System Requirements

Windows 10 or Windows 7 64-bit Professional, Enterprise, Ultimate or Windows 8.1 64-bit
Video card and monitor capable of supporting 1280 x 1024 resolution with a minimum of 16-bit color
8 GB free disk space with a minimum of 2 GB available
4 GB RAM (Minimum) 8 GB or more (recommended)
Any dual-core processor or better (Intel® Pentium® D/AMD Athlon™ 64 X2 or better)
USB 2.0 port
.Net Framework 4.5

Obtaining an ABT Site License

To generate an ABT Site license, use your office's CSID to order the ABT Site part number. An email containing the license information (EntitlementID and ActivationID) is sent within 24 hours to the email address associated with the order. Activate the license on the local computer using the License Management Utility (LMU) that is installed with ABT Site. Refer to LMU online help for detailed instructions on activating the license.

Save the Entitlement and Activation ID string in a safe place for future reference (for example, in case you need to move the license to a new computer or reformat the hard drive).

Optionally, you can purchase and load the license onto a dongle instead of the computer. The dongle makes the license portable.

Product Compatibility

DXR2 Product Compatibility	
Management Level	Desigo CC 2.1 and later ¹⁾
	Insight 3.14 and later ²⁾
Automation Level	Field Panel Web Server Firmware 3.4 and later
Field Level	Desigo CC DXR BACnet MS/TP and IP ³⁾
	PL Link Devices
	QMX... Room Units
	QMX7 Room Units
	Semi-Flushmount Sensors

¹⁾ P1 DXR requires Desigo CC 3.1 and later.

²⁾ P1 DXR does not support Apogee Insight. However, some features may be compatible.

³⁾ P1 DXR MS/TP only.

Scenario	ABT Site Version*	App. Library Version	DXR/FW Version	User Impact / Recommendation
Everything new	3.0.1 ¹⁾ or 3.1.1	2.1	2.1	None
New tool and app library but old inventory DXR/FW/App	3.0.1 ¹⁾ 3.1.1	2.1	1.20.54.312	Load new application and firmware ²⁾ to device
New tool, old app library and DXR/FW/App1	3.0.1 ¹⁾ 3.1.1	1.2.1	1.20.54.312	None
Old tool and app library2	1.2.1	1.2.1	1.21.29.104	Update application template in project Load old application and firmware ²⁾ to device
Everything old	1.2.1	1.2.1	1.20.54.312	None

¹⁾ ABT Site 3.0.1 is also referred to as 2.1.

²⁾ ABT Site tool automatically detects if the application of the DXR in the project is newer (or older) than the application in the device and upgrades (or downgrades) automatically when needed. See the ABT Site Release Notes for more details.

System Limits

For mixed or existing BACnet MS/TP FLN networks where DXR2s are added, the maximum limit of 50 FLN devices remains.

For dedicated DXR2 networks (BACnet MS/TP and BACnet IP):

- All IP/MSTP routers must have their MAX_INFO_FRAMES set to a minimum of 50.
- MAX_MASTER should be set to the highest node on the network to eliminate unnecessary Poll For Master Sequences.
- All devices should be consecutively addressed. There should be no gaps in Mac addresses.
- All devices should be set to the highest baud rate possible. The recommended minimum is 76800.
- There is a maximum of 80 devices on a single BACnet MS/TP or BACnet IP network (with the latest field panel firmware).

!	<p><i>NOTICE</i></p> <p>P1 DXR Not Supported on Wireless FLN P1 DXR devices are not supported on the Wireless Field Level Network (FLN).</p>
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To support 80 devices, the DXR2... devices can have limited use of grouping (that is, 20 remote group members per network).

Baud Rates

Baud rate	9,600	19,200	38,400	76,800	115,200
Max	16	32	80	80	80

APDU Timeout Recommendations

# of devices	APDU Timeout (seconds)
80	15
32	10
16	5

Data Point Limits

DXR2 controllers are limited to a maximum number of data points. The following items contribute to the data point:

- **Onboard I/Os:** Each used onboard I/O counts for one data point (DP).
- **PL-Link devices:** Each connected PL-Link device counts for a fixed number of data points (DP). Please see the section PL-Link Devices [→ 13] for details.
- **S-Mode devices:** Each connected S-Mode device (Ethernet DXR only) counts for one DP for the device, plus one DP for each used group address.
Example: GAMMA N526 Switch/Dim actuator (0 to 10V dimming)
 - 1 Output channel = 4 DP using groups for on/off, dim up/down, set value, and value feedback.

DXR2 Controllers

The following table lists DXR2 controllers and their maximum supported data point count limit:

Part Number	Max. number of onboard I/O and PL-Link data points
DXR2.M11-101B	30
DXR2.M12P-102B	30
DXR2.M12PX-102B	60
DXR2.T12P-102B	30
DXR2.M18-101B	60
DXR2.T18-101B	60
DXR2.E12P-102B	30
DXR2.E12PX-102B	60
DXR2.E17C-103B	30
DXR2.E17CX-103B	60
DXR2.E18-101B	60

The following table lists Smoke Control Listed DXR2 controllers and their maximum supported data point count limit:

Part Number, Smoke Control Listed	Max. number of onboard I/O and PL-Link data points
DXR2.M11-101K	30
DXR2.M12P-102K	30
DXR2.M12PX-102K	60
DXR2.M12P-102K-GDE	30
DXR2.M18-101K	60
DXR2.E12P-102K	30
DXR2.E12PX-102K	60
DXR2.E18-101K	60

PL-Link Devices

PL-Link devices have a fixed count whereas KNX S-Mode devices are counted according to group addresses used.

Part Number	Short Number	Description	Data Point Count	mA Rating
SWITCHES				
5WG12852DB13	UP 285/13	UP285/13 Switch, Wall 1-Pair, Style W/ LED	2	-9
5WG12862DB13	UP 286/13	UP286/13 Switch, Wall 2-Pair, Style W/ LED	4	-9
5WG12872DB13	UP 287/13	UP287/13 Switch, Wall 4-Pair, Style W/ LED	8	-9
5WG12872DB15	UP 287/15	UP287/15 Switch, Wall 4-Pair, Style W/ IR	8	-9
5WG12212DB13	UP221/13	UP221/13 Switch, Wall 1-Pair, i-System W/ LED	2	-9
5WG12222DB13	UP222/13	UP222/13 Switch, Wall 2-Pair, i-System W/ LED	4	-9
5WG12232DB13	UP223/13	UP223/13 Switch, Wall 3-Pair, i-System W/ LED	6	-9
5WG12232DB15	UP223/15	UP223/15 Switch, Wall 3-Pair, i-System	6	-9
ROOM SENSORS AND ROOM UNITS				
QMX3.P02 ¹⁾	QMX3.P02	Temperature Sensor with switches	9	-7.5
QMX3.P30 ¹⁾	QMX3.P30	Temperature Sensor	1	-7.5
QMX2.P33	QMX2.P33	Temperature Sensor with display (without Green Leaf LED)	3	-7.5
QMX3.P34 ¹⁾	QMX3.P34	Temperature Sensor with display (with Green Leaf LED)	3	-7.5
QMX3.P37 ¹⁾	QMX3.P37	Temperature Sensor with display and switches	11	-10
QMX3.P40	QMX3.P40	Temperature and Relative Humidity Sensor	2	-7.5
QMX2.P43	QMX2.P43	Temperature and Relative Humidity Sensor with display	4	-7.5
QMX3.P70 ¹⁾	QMX3.P70	Temperature, Relative Humidity and CO2 Sensor	3	-15
QMX3.P74 ¹⁾	QMX3.P74	Temperature, Relative Humidity and CO2 Sensor with display	5	-15
QMX3.P87-1WSC	QMX3.P87	Fume Hood Operator Display Panel (for use with DXR2.E17C or DXR2.E17CX)	3	-8
QFA2570.2535	QFA2570.2535	Semi-Flush Mount RH&T sensor	2 + used inputs	-7.5
QPA2576.2535	QPA2576.2535	Semi-Flush Mount RH/T/CO2 sensor	3 + used inputs	-7.5
QAA2570.2532	QAA2570.2532	Semi-Flush Mount Temp sensor	1 + used inputs	-7.5
MOTION AND BRIGHTNESS SENSORS				
5WG12582DB12	UP 258D12	UP 258D12 Combo Presence Detector, Brightness sensor	2	-10
5WG12552DB21	UP 255D21	Brightness sensor	1	-10
DIGITAL SWITCH INTERFACE				
5WG12202DB31	UP220D31	UP220D31 Digital Switch Interface, 4 In/Output	4	-10
POWER SUPPLY				
5WG11254CB23	JB 125C23	Decentralized power supply, 80 mA, 120 Vac	0	+80
POWERED SIGNAL INPUT				
5WG12604CB23	JB 260C23	Binary input, 4x AC/DC 12 to 230V	4	-10
SWITCHING ACTUATORS				
5WG15104CB23	JB 510C23	Dual Relay Output, 2x 10A @ AC 120 to 277V	2	-10

Part Number	Short Number	Description	Data Point Count	mA Rating
5WG15124CB23	JB 512C23	Single Relay Output 1x 16/20A @ AC 120 to 277V, 1x 15A @ AC 347V	1	-10
5WG15134CB23	JB 513C23	Triple Relay Output JB 513C23, 3x 6A @ AC 120 to 277V	3	-10
5WG15274CB23	JB527C23	0...10 V Dimmer Module, One channel	1	-15
5WG15264CB23	JB526C23	0...10 V Dimmer Module, Two channel	2	-15
SHADE AND BLIND CONTROL				
5WG15204CB23	JB 520C23	Single shade and blind control, 1x 6A, AC 120V	2	-10
5WG15214CB23	JB 521C23	Dual shade and blind control, 2x 6A, AC 120V	4	-10
LINE VOLTAGE UNIVERSAL DIMMER (120 VOLTS)				
5WG15254CB23	JB 525C23	Universal dimmer JB 525C23, 1x 125VA	1	-10

¹⁾ Including 1WSB, 1BSC, and 1WNB variants.

SCOM Devices

Part Number	Short Number	Description	Data Point Count	mA Rating
For use with DXR2.E17C or DXR2.E17CX				
DXA.S04P1	DXA.S04P1	Air Flow Pressure Sensor	1	-17
DXA.S12C	DXA.S12C	Sash Open Area Module (SOAM)	1	—

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