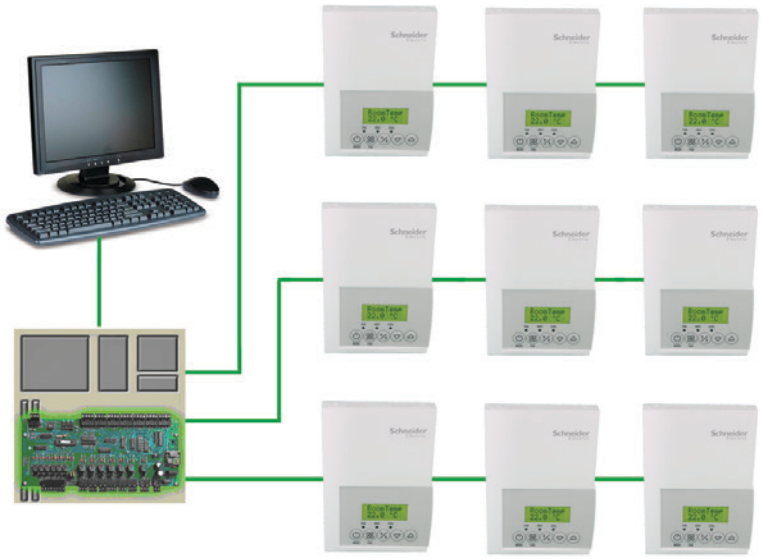
PIR Ready SE7200, SE7300 & SER7300 Series

24 Vac Zoning, Fan Coil and
Line-Voltage Fan Coil Controllers
For Commercial and Lodging HVAC Applications



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Schneider Electric

SE7200, SE7300 AND SER7300 SERIES PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS)

Vendor Name: Schneider Electric

Supported BACnet® Services: The BACnet® communicating controller meets all requirements for designation as an Application Specific Controller (B-ASC). The BACnet controller series supports the following BACnet Interoperability Building Blocks (BIBBs).

Application Service	Designation
Data Sharing – Read Property - B	DS-RP-B
Data Sharing – Read Property Multiple - B	DS-RPM-B
Data Sharing – Write Property - B	DS-WP-B
Device Management - Device Communication Control - B	DM-DCC-B
Device Management – Dynamic Device Binding - B	DM-DDB-B
Device Management – Dynamic Object Binding - B	DM-DOB-B

Note 1: The controller does not support segmented requests or responses.

SE72xx Series

SE73x5X Lodging

SE73x0X Commercial

SER7300

SC3000 Relay Pack

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OBJECTS TABLE

Object Name	Type and Instance	Object Property	Controller Parameter
SE7200X5x45B SE73xxX5X45B	Device	Object_Identifier Property 75 (R,W)	Unique ID number of a device on a network
		Object_Name Property 77 (R,W)	Unique name of a Device on a network
		Model Name Property 70 (R)	Controller Model number
		Firmware Revision Property 44 (R)	Current BACnet® firmware revision used by the controller
		Protocol Version Property 98 (R)	Current BACnet® firmware protocol version Default is Version 1
		Protocol Revision Property 139 (R)	Current BACnet® firmware protocol revision Default is Version 2
		Max ADPU Length Property 62 (R)	Maximum ADPU Length accepted Default is 244
		ADPU Timeout Property 10 (R)	ADPU timeout value Default is 60 000 ms
		Application-Software-Version Property 12 (R)	Controller base application software version Default is based on current released version
		Max_Master (R,W)	Maximum master devices allowed to be part of the network. 0 to 127, default is 127
		MS/TP_Address Property 1001 (R,W)	BACnet® MS/TPMS-TP MAC Address. Proprietary attribute. Default is as assigned by configuration
		MS/TP_Baud_Rate Property 1002 (R,W)	BACnet® MS/TPMS-TP Baud-Rate. Proprietary attribute. Range is: 1 = 9.6 KBps, 2 = 19.2 KBps, 3 = 38.4 KBps, 4 = 76.8 KBps and 5 = Auto Baud Rate. Index 5 is *Write only*. Reading attribute will state current Baud rate used. Writing index 1 to 4 will fix the Baud rate to the desired value.

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OBJECTS TABLE

Object Name	Type and Instance	Object Property	SE7200C5x45B	SE7200F5x45B	SE7300C5x45B	SE7305C5x45B	SE7350C5x45B	SE7355C5x45B	SE7300F5x45B	SE7305F5x45B	SE7350F5x45B	SE7355F5x45B	SE7300F5x45B-2572
Room Temperature	AV 7	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Room Temp Override	BV 8	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Outdoor Temperature	AV 9	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Room Humidity	AV 10	Present_Value (R,W)					√	√			√	√	
A02 ECM Value	AV 10	Present_Value (R,W)											√
Room Humid Override	BV 11	Present_Value (R,W)					√	√			√	√	
Supply Temperature	AI 12	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Dehumidification Lockout	BV 13	Present_Value (R,W)					√	√			√	√	
AUX Command	BV 14	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Sequence of Operation	MV 15	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
System Mode	MV 16	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Fan Mode	MV 17	Present_Value (R,W)			√	√	√	√	√	√	√	√	√
Occupancy Command	MV 18	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Keypad Lockout	MV 19	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Control Output	GRP 20	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
PI Heating Demand	AV 21	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
PI Cooling Demand	AV 22	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Dehumidification Status	BI 23	Present_Value (R)					√	√			√	√	
Controller Status	GRP 24	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
AUX Status	BI 25	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Output 2	MV 26	Present_Value (R)	√	√	√	√	√	√					
Output 1	MV 27	Present_Value (R)	√	√	√	√	√	√					
Fan Status	MV 28	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
BI 1 Status	BI 29	Present_Value (R)			√	√	√	√	√	√	√	√	√
BI 2 Status	BI 30	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
UI 3 Status	BI 31	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Local Motion	BI 32	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Effective Occupancy	MV 33	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Controller Alarms	GRP 34	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Window Alarm	BI 36	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Filter Alarm	BI 37	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Service Alarm	BI 38	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Temperature Setpoints	GRP 38	Present_Value (R)	√	√	√	√	√	√	√	√			
Occupied Heat Setpoint	AV 39	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Occupied Cool Setpoint	AV 40	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Stand-by Heat Setpoint	AV 41	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Stand-by Cool Setpoint	AV 42	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Unoccupied Heat Setpoint	AV 43	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Unoccupied Cool Setpoint	AV 44	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√

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OBJECTS TABLE

Object Name	Type and Instance	Object Property	SE7200C5x45B	SE7200F5x45B	SE7300C5x45B	SE7305C5x45B	SE7350C5x45B	SE7355C5x45B	SE7300F5x45B	SE7305F5x45B	SE7350F5x45B	SE7355F5x45B	SE7300F5x45B-2572
General Options 1	GRP 45	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
BI 1 Configuration	MV 46	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
BI 2 Configuration	MV 47	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
UI 3 configuration	MV 48	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Menu Scroll	BV 49	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Auto Mode Enable	BV 50	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Temperature Scale	BV 51	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Pipe Number	MV 52	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Out#1 Config	MV 53	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
AUX Configuration	MV 54	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
General Options 2	GRP 45	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Password Value	AV 56	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Fan Mode Sequence	MV 58	Present_Value (R,W)			√	√	√	√	√	√	√	√	√
Heating Setpoint Limit	AV 58	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Cooling Setpoint Limit	AV 59	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Setpoint Type	BV 60	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Setpoint Function	BV 61	Present_Value (R,W)			√	√	√	√	√	√	√	√	√
Temporary Occupancy Time	MV 62	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Deadband	AV 63	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Reheat Time Base	BV 64	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Proportional Band	MV 65	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Auto Fan	BV 66	Present_Value (R,W)			√	√	√	√	√	√	√	√	√
Stand-by Time	AV 67	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Unoccupied Time	AV 68	Present_Value (R,W)	√	√	√	√	√	√	√	√	√	√	√
Humidity Models Configuration Options	GRP 69	Present_Value (R)					√	√			√	√	
RH Display	BV 70	Present_Value (R,W)					√	√			√	√	
RH Setpoint	AV 71	Present_Value (R,W)					√	√			√	√	
Dehumidification Hysterisys	AV 72	Present_Value (R,W)					√	√			√	√	
Dehumidification MAX Cooling	AV 73	Present_Value (R,W)					√	√			√	√	
Output Configuration Options	GRP 74	Present_Value (R)	√	√	√	√	√	√	√	√	√	√	√
Control type	BV 75	Present_Value (R,W)	√		√	√	√	√					
Floating Motor timing	MV 76	Present_Value (R,W)	√		√	√	√	√					
On Off Control CPH	MV 77	Present_Value (R,W)	√		√	√	√	√					
Direct Reverse Acting	BV 78	Present_Value (R,W)		√					√	√	√	√	√

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SER7300 SERIES

Object Name	Type and Instance	Object Property	SER7300A5x45B	SER7305A5x45B	SER7350A5x45B	SER7355A5x45B
Room Temperature	AV 7	PV (R,W)	√	√	√	√
Room Temp Override	BV 8	PV (R,W)	√	√	√	√
Outdoor Temperature	AV 9	PV (R,W)	√	√	√	√
Room Humidity	AV 10	PV (R,W)			√	√
Room Humid Override	BV 11	PV (R,W)			√	√
Supply Temperature	AI 12	PV (R)	√	√	√	√
Dehumidification Lockout	BV 13	PV (R,W)			√	√
Sequence of Operation	MV 15	PV (R,W)	√	√	√	√
System Mode	MV 16	PV (R,W)	√	√	√	√
Fan Mode	MV 17	PV (R,W)	√	√	√	√
Occupancy Command	MV 18	PV (R,W)	√	√	√	√
Keypad Lockout	MV 19	PV (R,W)	√	√	√	√
Control Output	GRP 20	PV (R)	√	√	√	√
PI Heating Demand	AV 21	PV (R)	√	√	√	√
PI Cooling Demand	AV 22	PV (R)	√	√	√	√
Dehumidification Status	BI 23	PV (R)			√	√
Controller Status	GRP 24	PV (R)	√	√	√	√
Fan Status	MV 28	PV (R)	√	√	√	√
BI 1 Status	BI 29	PV (R)	√	√	√	√
BI 2 Status	BI 30	PV (R)	√	√	√	√
Local Motion	BI 32	PV (R)	√	√	√	√
Effective Occupancy	MV 33	PV (R)	√	√	√	√
Controller Alarms	GRP 34	PV (R)	√	√	√	√
Window Alarm	BI 35	PV (R)	√	√	√	√
Filter Alarm	BI 36	PV (R)	√	√	√	√
Service Alarm	BI 37	PV (R)	√	√	√	√
Temperature Setpoints	GRP 38	PV (R)	√	√	√	√
Occupied Heat Setpoint	AV 39	PV (R,W)	√	√	√	√
Occupied Cool Setpoint	AV 40	PV (R,W)	√	√	√	√
Stand-by Heat Setpoint	AV 41	PV (R,W)	√	√	√	√
Stand-by Cool Setpoint	AV 42	PV (R,W)	√	√	√	√
Unoccupied Heat Setpoint	AV 43	PV (R,W)	√	√	√	√
Unoccupied Cool Setpoint	AV 44	PV (R,W)	√	√	√	√
General Options 1	GRP 45	PV (R)	√	√	√	√
BI 1 Configuration	MV 46	PV (R,W)	√	√	√	√
BI 2 Configuration	MV 47	PV (R,W)	√	√	√	√
Menu Scroll	BV 49	PV (R,W)	√	√	√	√
Auto Mode Enable	BV 50	PV (R,W)	√	√	√	√
Temperature Scale	BV 51	PV (R,W)	√	√	√	√
Pipe Number	MV 52	PV (R,W)	√	√	√	√
General Options 2	GRP 55	PV (R)	√	√	√	√
Password Value	AV 56	PV (R)	√	√	√	√
Fan Mode Sequence	MV 57	PV (R,W)	√	√	√	√
Heating Setpoint Limit	AV 58	PV (R,W)	√	√	√	√
Cooling Setpoint Limit	AV 59	PV (R,W)	√	√	√	√
Setpoint Type	BV 60	PV (R,W)	√	√	√	√

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SER7300 SERIES

Object Name	Type and Instance	Object Property	SER7300A5x45B	SER7305A5x45B	SER7350A5x45B	SER7355A5x45B
Setpoint Function	BV 61	PV (R,W)	√	√	√	√
Temporary Occupancy Time	MV 62	PV (R,W)	√	√	√	√
Deadband	AV 63	PV (R,W)	√	√	√	√
Proportional Band	MV 65	PV (R,W)	√	√	√	√
Auto Fan	BV 66	PV (R,W)	√	√	√	√
Stand-by Time	AV 67	PV (R,W)	√	√	√	√
Unoccupied Time	AV 68	PV (R,W)	√	√	√	√
Humidity Models Config Options	GRP 69	PV (R)			√	√
RH Display	BV 70	PV (R,W)			√	√
RH Setpoint	AV 71	PV (R,W)			√	√
Dehumidification Hysterisys	AV 72	PV (R,W)			√	√
Dehumidification MAX Cooling	AV 73	PV (R,W)			√	√
SER models Configuration Options and Status	GRP 81	PV (R)	√	√	√	√
RUI 1 Configuration	MV 82	PV (R,W)	√	√	√	√
RBI 2 Configuration	MV 83	PV (R,W)	√	√	√	√
Heat CPH	MV 84	PV (R,W)	√	√	√	√
Cool CPH	MV 85	PV (R,W)	√	√	√	√
Heat NO NC	BV 86	PV (R,W)	√	√	√	√
Cool NO NC	BV 87	PV (R,W)	√	√	√	√
Heat Demand Limit	AV 88	PV (R,W)	√	√	√	√
Cool Demand Limit	AV 89	PV (R,W)	√	√	√	√
Pulsed Heat	MV 90	PV (R,W)	√	√	√	√
RUI 1 Status	BI 91	PV (R)	√	√	√	√
RBI 2 Status	BI 92	PV (R)	√	√	√	√
Cooling Valve Status	BI 93	PV (R)	√	√	√	√
Heating Valve Status	BI 94	PV (R)	√	√	√	√
Fan Control	MV 95	PV (R,W)	√	√	√	√

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STANDARD OBJECT TYPES SUPPORTED

Object Type	Supported Objects	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
Analog Input	☑	☐	☐	Reliability	Out_of_Service
Analog Value	☑	☐	☐	Reliability	Present_Value[a] Out_of_Service[a] Object_Name[b]
Binary Input	☑	☐	☐	Reliability Active_Text Inactive_Text	Out_of_Service
Binary Value	☑	☐	☐	Reliability Active_Text Inactive_Text	Present_Value Out_of_Service
Device	☑	☐	☐	Max_Master Max_Info_frames	Object_Identifier Object_name Max_Master
Group	☑	☐	☐	N/A	N/A
Multi-state Value	☑	☐	☐	Reliability States_Text	Present_Value[d] Out_of_Service[d]

Notes

a : Present_Value and Out_of_Service properties are writable for every AV objects except :

- PI Heating Demand (AV21)
- PI Cooling Demand (AV22)

b : Present_Value property for Room Temperature (AV7) and Room Humidity (AV10) is writable only if Room Temp Override (BV8) is enabled and Room Humidity Override (BV11) is enabled respectively.

c : Object_Name property is writable for the following object only :

- Room Temperature (AV7)

d : Present_Value and Out_of_Service properties are writable for every MV objects except :

- Output 2 (MV26)
- Output 1 (MV27)
- Fan Status (MV28)
- Effective Occupancy (MV33)

PROPRIETARY PROPERTIES

Property name	ID	BACnet® Data type	Description
Major_Version	1045	CharacterString	The version number of the BACnet® communications module. This is the hardware version number.
MS/TP_Address	1001	Unsigned	Display the MAC layer address of the module.
MS/TP_Baud_Rate	1002	Unsigned	Display the communication baud rate of the module.
Sensor_Offset	1005	REAL	Display the temperature or humidity calibration value. The range is –5.0 deg F to 5.0 deg F for temperature and –15% to 15% for humidity.

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PROPERTY VALUE RANGE RESTRICTIONS

Object name	Object Type and instance	Minimum range value	Maximum range value	Default value
Room Temperature	AV 7	-39.9°F (-40°C)	121.9°F (50°C)	N/A
Outdoor Temperature	AV 9	-39°F (-40°C)	121.9°F (50°C)	N/A
Room Humidity	AV 10	5%	90%	N/A
A02 ECM Value	AV 10	0 %	100%	N/A
Supply Temperature	AI 12	-39.9°F (-40°C)	121.9°F (50°C)	N/A
PI Heating demand	AV 21	0%	100%	0%
PI Cooling demand	AV 22	0%	100%	0%
Occupied Heat Setpoint	AV 39	40°F (4.5°C)	90°F (32°C)	72°F (22°C)
Occupied Cool Setpoint	AV 40	54°F (12°C)	100°F (37.5°C)	74°F (24°C)
Stand-by Heat Setpoint	AV 41	40°F (4.5°C)	90°F (32°C)	72°F (22°C)
Stand-by Cool Setpoint	AV 42	54°F (12°C)	100°F (37.5°C)	74°F (24°C)
Unoccupied Heat Setpoint	AV 43	40°F (4.5°C)	90°F (32°C)	62°F (16.5°C)
Unoccupied Cool Setpoint	AV 44	54°F (12°C)	100°F (37.5°C)	80°F (26.5°C)
RH Setpoint	AV 45	30%	100%	50%
Dehumidification Hysterisys	AV 46	2%	20%	5%
Dehumidification MAX cooling	AV 47	20%	100%	100%
Password Value	AV 56	0	1000	N/A
Heating Setpoint Limit	AV 58	40°F (4.5°C)	90°F (32°C)	90°F (32°C)
Cooling Setpoint Limit	AV 59	54°F (12°C)	100°F (37.5°C)	54°F (12°C)
Deadband	AV 63	2°F (1°C)	5°F (2.5°C)	2°F (1°C)
Stand-by Time	AV 67	0.5 Hours	24.0 Hours	0.5 Hours
Unoccupied Time	AV 68	0.0 Hours	24.0 Hours	0.0 Hours
RH Setpoint	AV 71	30%	95%	50%
Dehumidification Hysterisys	AV 72	2%	20%	5%
Dehumidification MAX Cooling	AV 73	20%	100%	100 %
Heat Demand Limit	AV 88	0%	100%	N/A
Cool Demand Limit	AV 89	0%	100%	N/A

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PROPERTY ENUMERATION SETS FOR BV OBJECTS AND BI OBJECTS

Object Name	Object Type and instance	Inactive_Text	Active_Text	Default value
Room Temp Override	BV 8	Normal	Override	Normal
Room Humidity Override	BV 11	Normal	Override	Normal
Dehumidification Lockout	BV 13	Disabled	Enabled	Enabled
AUX Command	BV 14	Off	On	Off
Dehumidification Status	BI 23	Off	On	Off
Aux Status	BI 25	Off	On	Off
BI 1 Status	BI 29	Deactivated	Activated	Deactivated
BI 2 Status	BI 30	Deactivated	Activated	Deactivated
UI 3 Status(*)	BI 31	Deactivated	Activated	Deactivated
Local Motion	BI 32	No Motion	Motion	No Motion
Window Alarm	BI 35	Off	On	Off
Filter Alarm	BI 36	Off	On	Off
Service Alarm	BI 37	Off	On	Off
Menu Scroll	BV 49	No Scroll	Scroll Active	Scroll Active
Auto Mode Enable	BV 50	Disabled	Enabled	Enabled
Temperature Scale	BV 51	°C	°F	°F
Setpoint Type	BV 60	Permanent	Temporary	Permanent
Setpoint Function	BV 61	Dual Setpoints	Attached Setpoints	Dual Setpoints
Reheat Time Base	BV 64	15 minutes	10 seconds	15 minutes
RH Display	BV 70	Disabled	Enabled	Disabled
Control Type	BV 75	On/Off	Floating	On/Off
Direct/ Reverse Acting	BV 78	Direct Acting	Reverse Acting	Direst Acting
Heat NO NC	BV 86	Normally Opened	Normally Closed	Normally Closed
Cool NO NC	BV 87	Normally Opened	Normally Closed	Normally Closed
RUI 1 Status	BI 91	Deactivated	Activated	Deactivated
RBI 2 Status	BI 92	Deactivated	Activated	Deactivated
Cooling Valve Status	BI 93	Off	On	Off
Heating Valve Status	BI 94	Off	On	Off
RH Display	BV 88	Disabled	Enabled	Disabled
Dehumidification Lockout Functions	BV 92	Disabled	Enabled	Enabled
Dehumidification Output Status	BI 93	Off	On	N/A

(*) This object will be linked to the value of the 'UI 3 Configuration' object.
When the 'UI 3 Configuration' object value is 0, 3 or 4, the value will be set to 'Deactivated'

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PROPERTY ENUMERATION SETS FOR MV OBJECTS

Object Name	Object Type and Instance	BACnet® Index	Text	Default Value
Sequence of Operation	MV 15	1	Cooling Only	Heating only
		2	Heating Only	
		3	Cooling & Reheat	
		4	Heating & Reheat	
		5	Cool/Heat4P	
		6	Cool/Heat4P&Reht	
System Mode **Note 1**	MV 16	1	Off	**Note 2**
		2	Auto	
		3	Cool	
		4	Heat	
Fan Mode **Note 3**	MV 17	1, 2, 3 or 4	Note 4	**Note 5**
Occupancy Command	MV18	1	Local Occupancy	Depends on network command
		2	Occupied	
		3	Unoccupied	
Keypad lockout	MV19	1	Level 0	Level 0
		2	Level 1	
		3	Level 2	
		4	Level 3	
		5	Level 4	
		6	Level 5	

Note 1 : Enumeration sets for MV16 depends on Sequence of Operation (MV15) value upon device discovery. If required enumeration is not present, set MV15 to desired value and rediscover MV16 object. Available enumeration will now reflect required configuration.

Note 2 : Default value of MV16 depends on MV15 value upon device discovery

MV15 Index	Function	Default Value is BV50 Enabled	Default Value is BV50 Disabled
1	Cooling Only	Cool	Cool
2	Cooling with Reheat	Auto	Heat
3	Heating Only	Heat	Heat
4	Heating with Reheat	Heat	Heat
5	Cooling/Heating 4 Pipes	Auto	Heat
6	Cooling/Heating 4 Pipes with Reheat	Auto	Heat

Note 3 : Enumeration sets for MV17 depends on Fan Mode Sequence (MV58) value upon device discovery. If required enumeration is not present, set MV58 to desired value and rediscover MV17 object. Available enumeration will now reflect required configuration.

Note 4 & 5 Available state text and default value depends on Fan Mode Sequence (MV58) value upon device discovery.

MV17 Index	Function MV58 State Text Index	Default Value
1	1 Low - 2 Med - 3 High	High
2	1 Low - 2 High	High
3	1 Low - 2 Med - 3 High - 4 Auto	High
4	1 Low - 2 High - 3 Auto	High
5	1 Auto -2 On	Auto

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Object Name	Object ID	BACnet Index	Text	Default value
Output 2 **Note 6**	MV 26	**Note 7**	**Note 7**	**Note 7**
Output 1 **Note 8**	MV 28	**Note 9**	**Note 9**	**Note 9**
Fan status	MV 28	1	Off	Off
		2	Low	
		3	Med	
		4	High	
Effective occupancy	MV 33	1	Occupied	Depends on local occupancy
		2	Unoccupied	
		3	Temporary Occupied	
		4	Stand-by	

Note 6 : Enumeration sets for MV26 depends on Control Type (BV75) value and Pipe Number (MV52) value upon device discovery. If required enumeration is not present, set BV75 and MV52 to desired value and rediscover MV26 object. Available enumeration will now reflect required configuration.

Note 7 : Available object name, state text and default value depends on Control Type (BV75) value and Pipe Number (MV52) upon device discovery.

BV75 Value	MV52 Index	MV26 Object Name	Function MV26 State Text Index	Default Value
On/Off	1 (2 pipe)	Unused Output	N/A	N/A
	2 (4 pipe)	Output 2	1 Closed – 2 Open	Closed
Floating	1 (2 pipe)	Unused Output	N/A	N/A
	2 (4 pipe)	Output 2	1 Stopped - 2 Opening - 3 Closing	Stopped

Note 8 : Enumeration sets for MV27 depends on Control Type (BV75) value and Pipe Number (MV52) value upon device discovery. If required enumeration is not present, set BV75 and MV52 to desired value and rediscover MV27 object. Available enumeration will now reflect required configuration.

Note 9 : Available object name, state text and default value depends on Control Type (BV75) value and Pipe Number (MV52) upon device discovery.

BV75 Value	MV52 Index	MV26 Object Name	Function MV26 State Text Index	Default Value
On/Off	1 (2 pipe)	Heat/Cool Valve Status	1 Closed – 2 Open	Closed
	2 (4 pipe)	Output 1	1 Closed – 2 Open	Closed
Floating	1 (2 pipe)	Heat/Cool Valve Status	1 Stopped - 2 Opening - 3 Closing	Stopped
	2 (4 pipe)	Output 1	1 Stopped - 2 Opening - 3 Closing	Stopped

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Object Name	Object ID	BACnet Index	Text	Default value
BI1 Configuration	MV 46	1	None	None
		2	Rem NSB	
		3	Motion NO	
		4	Motion NC	
		5	Window	
BI2 Configuration	MV 47	1	None	None
		2	Door Dry	
		3	Override	
		4	Filter	
		5	Service	
UI3 Configuration	MV 48	1	None	None
		2	COC/NH	
		3	COC/NC	
		4	COS	
		5	SS	
Pipe number	MV 67	1	2 Pipe	4 Pipes
		2	4 Pipe	
Out#1 Cfg	MV 53	1	2	4
		2	4	
AUX Configuration	MV 54	1	Not used	Not used
		2	NO with Occ	
		3	NC with Occ	
		4	NO with Occ & Fan	
		5	NC with Occ & Fan	
		6	Network controlled	
Fan Mode Sequence	MV 57	1	Low-Med-High	On-Auto
		2	Low-High	
		3	Low-Med-High-Auto	
		4	Low-High-Auto	
		5	On-Auto	

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Object Name	Object ID	BACnet Index	Text	Default value
Temporary Occupancy Time	MV 62	1	0 hour	2 Hours
		2	1 hour	
		3	2 hours	
		4	3 hours	
		5	4 hours	
		6	5 hours	
		7	6 hours	
		8	7 hours	
		9	8 hours	
		10	9 hours	
		11	10 hours	
		12	11 hours	
		13	12 hours	
		14	13 hours	
		15	14 hours	
		16	15 hours	
		17	16 hours	
		18	17 hours	
		19	18 hours	
		20	19 hours	
		21	20 hours	
		22	21 hours	
		23	22 hours	
		24	23 hours	
		25	24 hours	
Proportional Band	MV 65	1	3 3 F 1.2 C	3
		2	4 4 F 1.7 C	
		3	5 5 F 2.2 C	
		4	6 6 F 2.8 C	
		5	7 7 F 3.3 C	
		6	8 8 F 3.9 C	
		7	9 9 F 5.0 C	
		8	10 10 F 5.6 C	

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Object Name	Object ID	BACnet Index	Text	Default value
Floating motor timing	MV 76	1	0.5 minute	1.5 minutes
		2	1 minute	
		3	1.5 minutes	
		4	2 minutes	
		5	2.5 minutes	
		6	3 minutes	
		7	3.5 minutes	
		8	4 minutes	
		9	4.5 minutes	
		10	5 minutes	
		11	5.5 minutes	
		12	6 minutes	
		13	6.5 minutes	
		14	7 minutes	
		15	7.5 minutes	
		16	8 minutes	
		17	8.5 minutes	
		18	9 minutes	
On-Off control CPH	MV 77	1	3 CPH	4 CPH
		2	4 CPH	
		3	5 CPH	
		4	6 CPH	
		5	7 CPH	
		6	8 CPH	
RUI 1 Configuration	MV 82	0	None	None
		1	Filter	
		2	Service	
		3	COC/NH	
		4	COC/NC	
		5	COS	
RBI 2 Configuration	MV 83	0	None	None
		1	Filter	
			Service	

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Object Name	Object ID	BACnet Index	Text	Default value
Heat CPH	MV 84	3	3 CPH	4 CPH
		4	4 CPH	
		5	5 CPH	
		6	6CPH	
		7	7CPH	
		8	8 CPH	
Cool CPH	MV 85	3	3 CPH	4 CPH
		4	4 CPH	
		5	5 CPH	
		6	6CPH	
		7	7CPH	
		8	8 CPH	
Pulsed Heat	MV 90	0	Off	Off
		1	On	
		2	Occupancy Output	
Fan Control	MV 95	0	None	On
		1	Filter	
		2	Service	

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INTEGRATION – GLOBAL COMMANDS

The following figure shows which objects from the controller can be monitored and commanded from the BAS front-end.

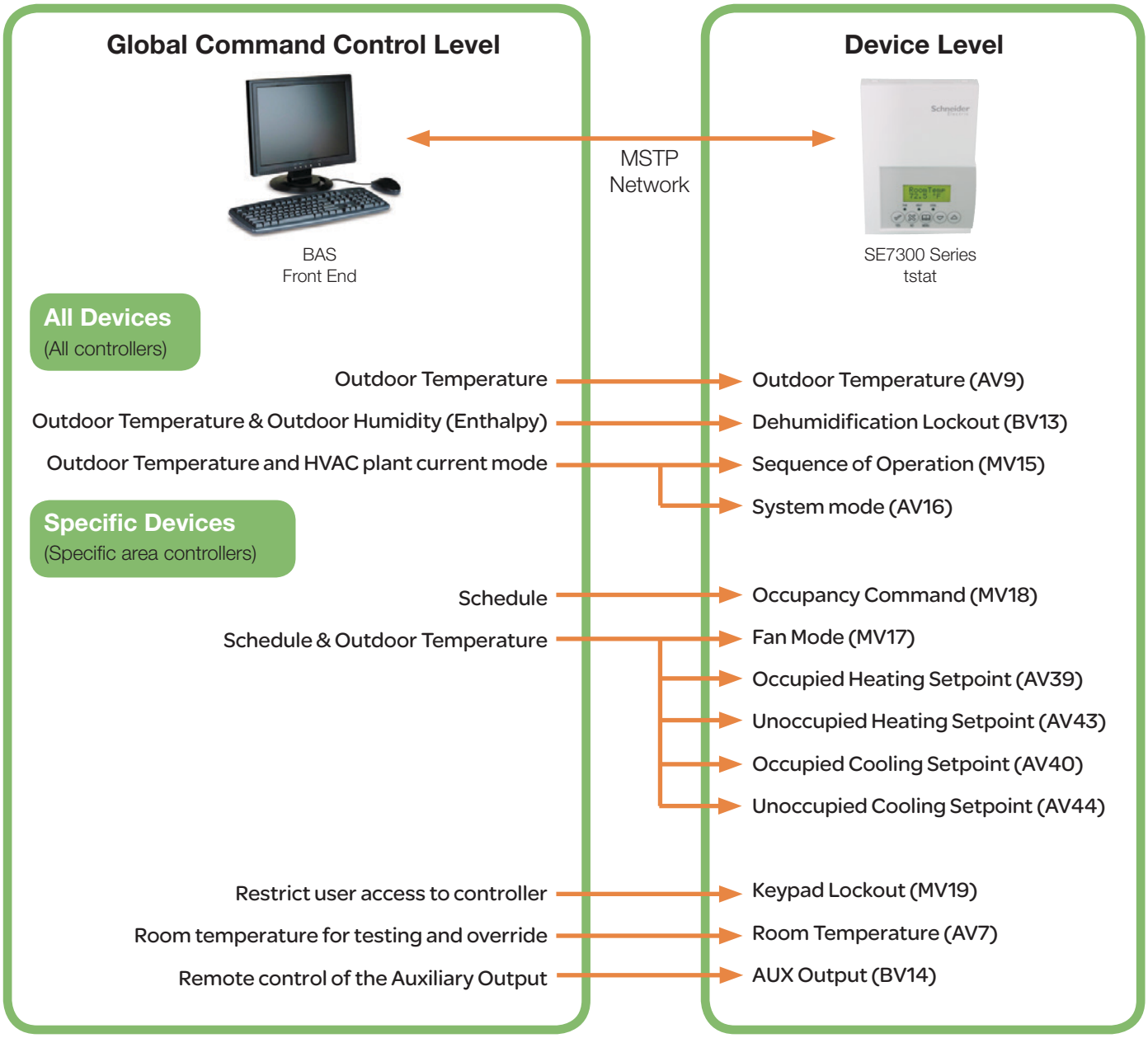

Figure 1 : Global commands from a BAS front-end to a typical SE73xx series controller

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SE7200X INTEGRATION – GRAPHICAL USER INTERFACE (GUI) OBJECTS

Objects that should typically be used in a GUI:

- Room Temperature (AV7)
- Occupied and Unoccupied Heat Setpoints (AV 39 and AV43)
- Occupied and Unoccupied Cool Setpoints (AV 40 and AV34)
- Outdoor Temperature (AV 9)
- Supply Temperature (AI12) (If available)
- Occupancy Command (MV18)
- System Mode (MV16)
- Output 2 (MV26)
- Output 1 (MV28)
- PI Heating Demand (AV21)
- PI Cooling Demand (AV22)
- Window Alarm (BI 35)
- Filter Alarm (BI 36)
- Service Alarm (BI 37)

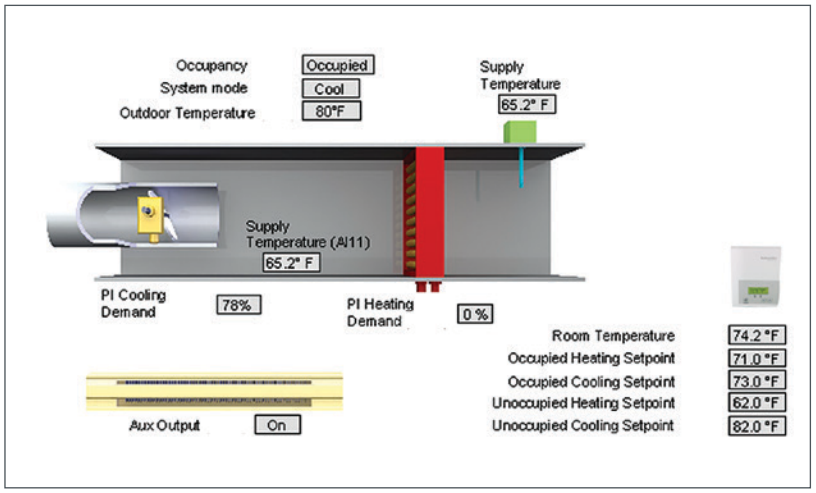

Figure-1 GUI Example - SE7200X

SE73xxX INTEGRATION – GRAPHICAL USER INTERFACE (GUI) OBJECTS

The following objects should be typically used in a GUI::

- Room Temperature (AV7)
- Occupied and Unoccupied Heat Setpoints (AV 39 and AV43)
- Occupied and Unoccupied Cool Setpoints (AV 40 and AV34)
- Room Humidity (AV10) (If available)
- Room Humidity Setpoint (AV 71) (If available)
- Outdoor Temperature (AV 9)
- Supply Temperature (AI12) (If available)
- Occupancy Command (MV18)
- System Mode (MV16)
- Fan Mode (MV17)
- Fan Status (MV28)
- Output 2 (MV26)
- Output 1 (MV28)
- PI Heating Demand (AV21)
- PI Cooling Demand (AV22)
- Window Alarm (BI 35)
- Filter Alarm (BI 36)
- Service Alarm (BI 37)

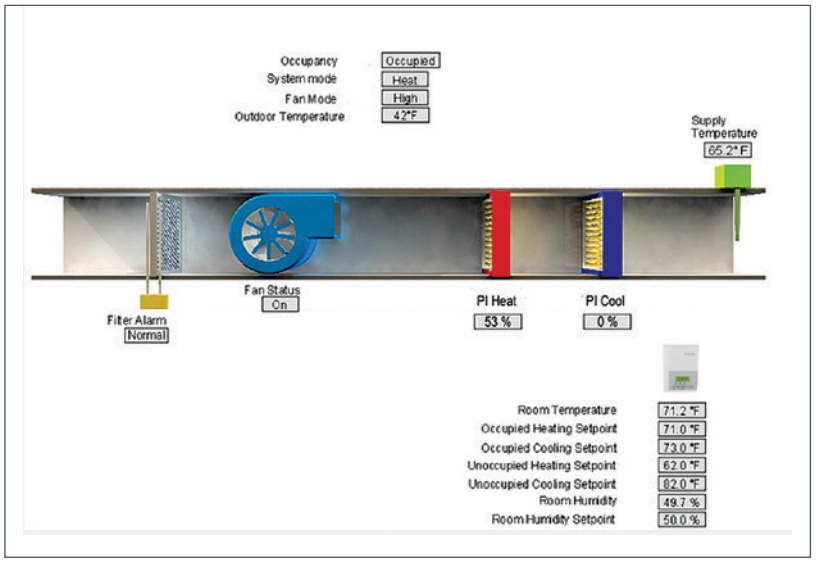

Figure-1 GUI Example - SE7300X

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CONFIGURATION OBJECTS

The following objects and group objects should be typically used for configuration purposes:

- General Options 1 Group GRP 45 and its complete list of objects;
- General Options 2 Group GRP 55 and its complete list of objects;
- Humidity Models Config Options Group GRP 69 and its complete list of objects;
- Output Configuration Options Group GRP 74 and its complete list of objects.

If your BAS allows you to remove objects, Schneider Electric recommends removing all configuration objects once your setup is complete. This will prevent unnecessary network polling and traffic.

WIRING GUIDE

Overview

Schneider Electric uses EIA-485 as the physical layer between their devices and supervisory controllers.

For clarity we will use the term “Device” to represent any product with an active EIA-485 network connection, including Schneider Electric and non-Schneider Electric controllers.

A summary of network specifications are listed below.

Summary Specifications

Parameter	Details
Media	Twisted pair 22 AWG–24 AWG, shielded recommended
Characteristic Impedance	100-130 ohms
Distributed capacitance	Less than 100 pF per meter (30 pF per foot)
Maximum length per segment	1200 meters (4000 feet) Note: AWG 18 cable
Polarity	Polarity sensitive
Multi-drop	Daisy-chain (no T connections)
Terminations	1. Schneider Electric devices are installed at both ends of the MS/TPMS-TP network: 120 Ohms resistor should be installed at each end. 2. A Schneider Electric device is installed at one end of the MS/TPMS-TP network and a third-party device is installed at the other end: Install an End-Of-Line resistor value that matches the third-party device instruction regarding the End-Of-Line resistors. 3. Third-party devices are installed at both ends of the MS/TPMS-TP network: Follow the third-party device instructions regarding the End-Of-Line resistors.
Network Bias Resistors	510 ohms per wire (max. of two sets per segment)
Maximum number of nodes per segment	64 (Schneider Electric devices only)
Maximum number of nodes per network	128
Baud rate	9600, 19200, 38400, 76800 (Auto detect)

Table 1 : Summary of Specifications for a Schneider Electric EIA-485 Network

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WIRING GUIDE (CONT.)

Cable Type

Schneider Electric recommends the use of balanced 22-24 AWG twisted pair with a characteristic impedance of 100-130 ohms, capacitance of 30 pF/ft. or lower. A braided shield is also recommended.

Impedance

A value based on the inherent conductance, resistance, capacitance and inductance that represent the impedance of an infinitely long cable. The nominal impedance of the cable should be between 100Ω and 120Ω. However using 120Ω will result in a lighter load on the network.

Capacitance (pF/ft)

The amount of equivalent capacitive load of the cable, typically listed in a per foot basis. One of the factors limiting total cable length is the capacitive load. Systems with long lengths benefit from using low capacitance cable (i.e., 17pF/ft or lower).

NETWORK CONFIGURATION

EIA-485 networks use a daisy chain configuration. A daisy chain means that there is only one main cable and every network device is connected directly along its path.

Figure 3 illustrates two improper network configurations and the proper daisy chain configuration.

Other methods of wiring an EIA-485 network may give unreliable and unpredictable results. There are no troubleshooting methods for these types of networks. Therefore, a great deal of site experimentation may have to be done, making this a difficult task with no guarantee of success. Schneider Electric will only support daisy chain configurations.

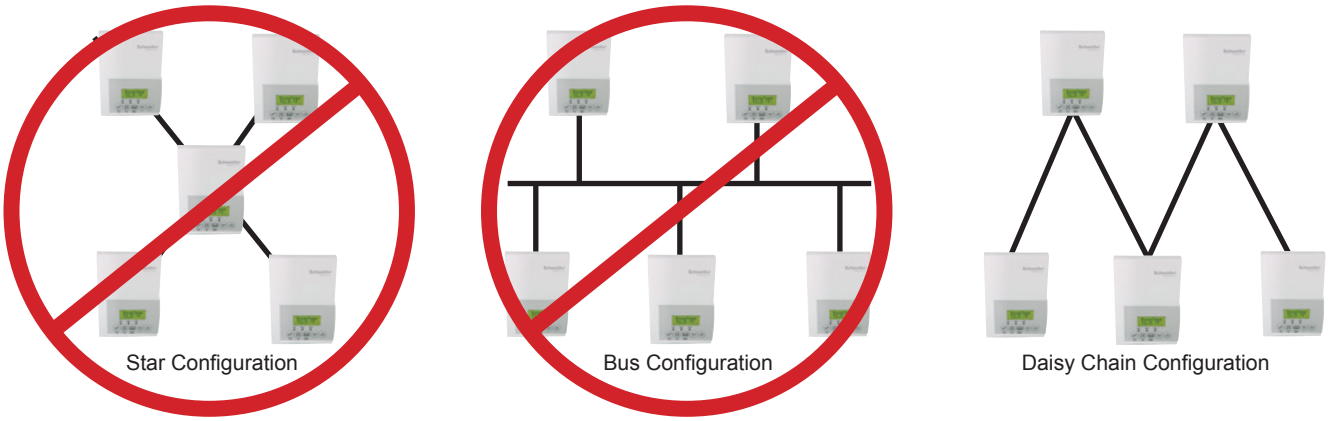

Figure 3 : Three different network configurations: star, bus, and daisy chain. Only the daisy chain configuration is correct for an EIA-485 network

Maximum Number of Devices

A maximum of 64 nodes are allowed on a single daisy-chain segment. A node is defined as any device (Panel, Zone, Repeater, etc.) connected to the RS485 network. Terminators do not count as a node.

To determine the number of nodes on a network, add the following:

- One node for each device, including main panels
- One node for each repeater on the chain

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For the example, in Figure 4 there is one node for the main SC panel, plus 4 for the controllers; for a total of 5 nodes.

If there are more than 64 devices, install repeaters to extend the network.

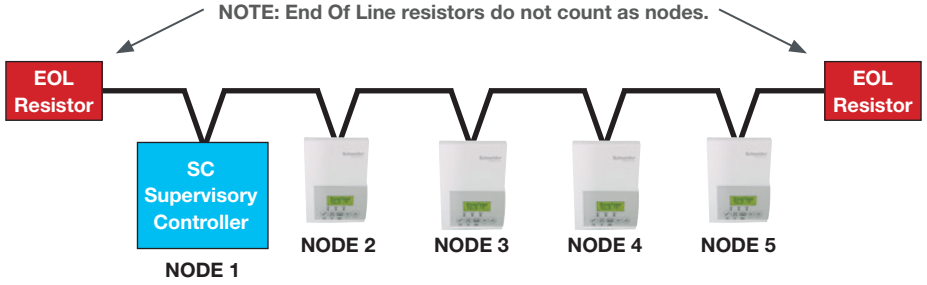

Figure 4 : Example Network - 5 Nodes

Maximum Cable Length

The maximum length of a chain is related to its transmission speed. The longer the chain, the slower the speed. Using proper cable, the maximum length of an EIA-485 daisy chain is 4000-ft (1200 m). This will only work reliably for data rates up to 100,000 bps. Schneider Electric's' maximum data rate is 76,800 bps.

If you require a maximum network length of more than 4000 feet, then repeaters are required to extend the network.

EIA-485 Repeaters

If you have more than 64 devices, or require a maximum network length of more than 4000 feet, then repeaters are required to extend the network. The best configuration is to daisy chain the repeaters to the main panel. From each of these repeaters, a separate daisy chain will branch off. Figure 5 demonstrates a valid use of repeaters in an EIA-485 network.

EIA-485 Repeaters (cont.)

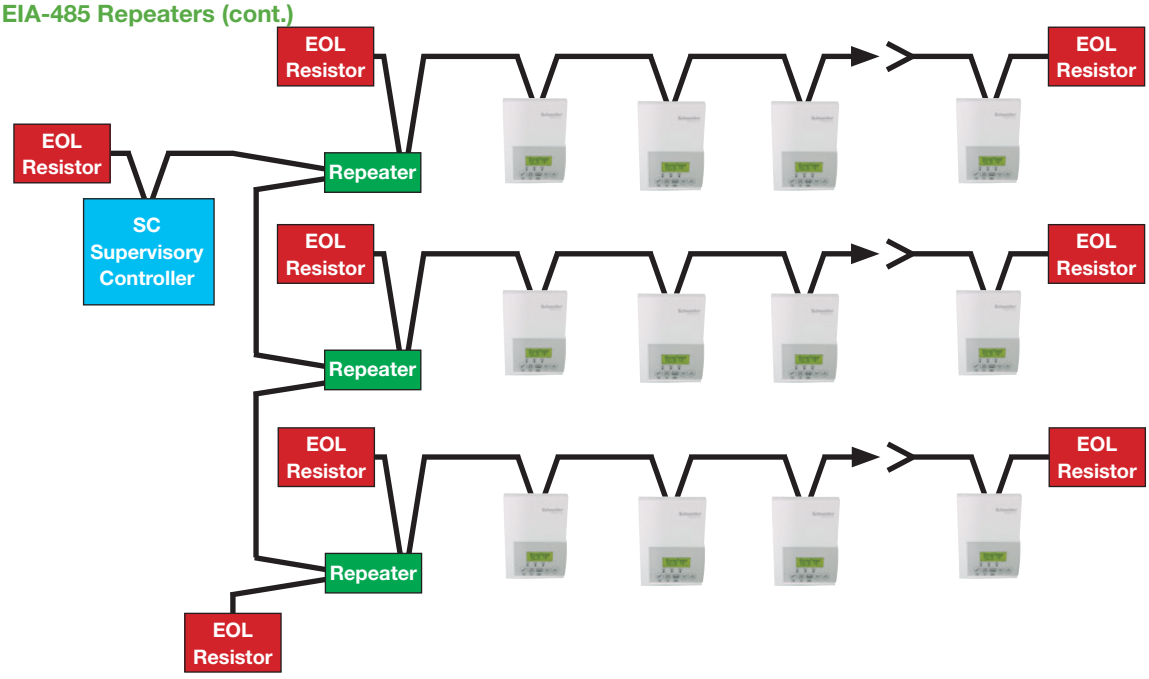

Figure-5 Correct Repeater Use in an EIA-485 Network

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Do not install repeaters in series, as this may result in network reliability problems. Incorrect use of a repeater in an EIA-485 network is illustrated below in Figure-6.

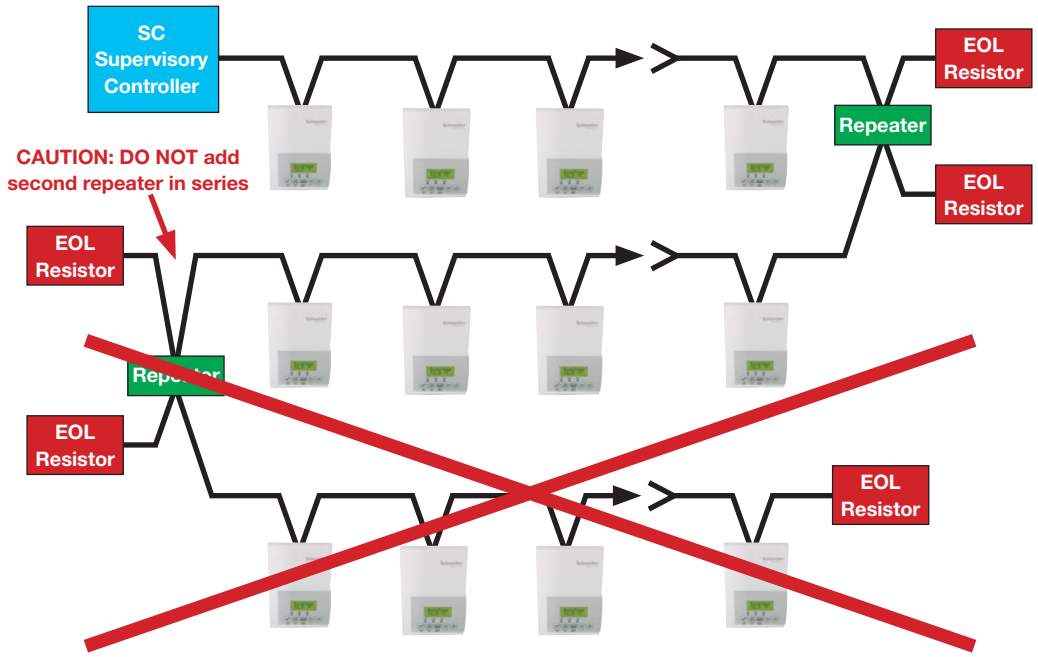

Figure-6 Incorrect Repeater Use in an EIA-485 Network

End Of Line (EOL) Resistors

MS/TP network must be properly terminated. For daisy chain configurations, you must install an EOL resistor at each end of the daisy chain. Depending on your MSTP network configuration, the resistance value of the EOL resistor may change:

- Schneider Electric's devices are installed at both ends of the MSTP network:120 Ohms resistor should be installed at each end.
- A Schneider Electric device is installed at one end of the MSTP network and a 3rd party device is installed at the other end:
  Install an End-Of-Line resistor value that matches the 3rd party devices instructions regarding its EOL resistor value;
- 3rd party devices are installed at both ends of the MSTP network:
  Follow the 3rd party devices instructions regarding its EOL resistor value.

Network Adapter

The polarity of the connection to the cable is important. From one module to the other it is important that the same colored wire be connected to “plus” or “+” and the other colored wire be connected to the “minus” or ”-“. Figures 7 shows the proper MS/TP connections and the location of the Status LED. This Status LED may help to troubleshoot network problems.

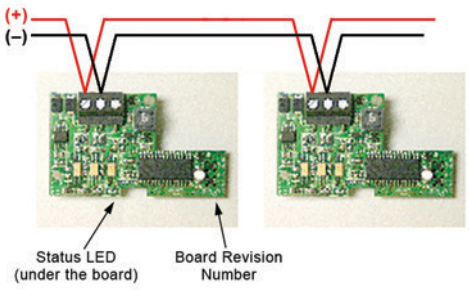

Figure-7 BACnet® Network Module Details

IMPORTANT NOTE: The Ref terminal should NEVER be used to wire shields. The 2 shields from each feed of the network connection to a controller should be wired together in the back of the controller and properly protected to prevent any accidental connection to the ground.

The joined shield connection should then be grounded at a SINGLE point on the whole segment. More than one ground connection to a shielded wire may induce ground loop noises and affect communication.

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Table 2 shows the different possibilities with the Status LED behaviour for a BACnet® module.

Table 2: Status LED condition and possible solutions

Status LED Action	Possible Cause	Solution
Inactive	BACnet® communication NOT active at default MAC address = 254	Change MAC address to another value from 0 to 127
1 short blink	A SE7600 BACnet® module has been installed on a SE7300 controller	Install a SE7300 BACnet® module on the controller
	A SE7300 BACnet® module has been installed on a SE7600 controller	Install the BACnet® module on a SE7300 controller model
2 short blinks (no wires connected to the module)	The right module has been installed on the right controller model	N/A
2 short blinks (wires connected to the module)	Module is not at the same baud rate as the network	Power off and on the controller
2 short blinks and a longer blink (wires connected to the module)	The module has detected the presence of a network	N/A
Right after power is applied: 2 long blinks and then no blinking	Polarity has been reversed at the module	Reverse polarity at the module

DEFAULT DEVICE NAME AND ID

Default **Device Name** is set to: Model number – MAC:

- Where MAC is the current MAC address of the device.
- Where Model number is Schneider Electric part number.

The device name will be upgraded as soon as there is a change to the device MAC address.

The Device Name and Device ID properties are writable. Both properties can be renamed from any BACnet® network management tool as long as the tool itself can write to these properties.

SE7200x Models

Default **Device ID** is set to: 72000 + MAC

- Where MAC is the current MAC address of the device.

The device ID will also be upgraded as soon as there is a change to the device's MAC.

For example, when a SE7200F5045B controller with a MAC address of 41 is connected to a network, its default Device Name will be SE7200F5x45B-41 and its default Device ID will be 72041.

The device ID will also be upgraded as soon as there is a change to the device's MAC.

Device Name and Device ID properties are writable in Schneider Electric's device object. Both properties can be renamed from any BACnet® network management tool as long as the tool itself can write to these properties.

SE73xxX Models

Default Device ID is set to: 73000 + MAC

- Where MAC is the current MAC address of the device.

The device ID will also be upgraded as soon as there is a change to the device's MAC.

For example, when a SE7300C5045B controller with a MAC address of 63 is connected to a network, its default Device Name will be SE7300C5x45B-63 and its default Device ID will be 73063.

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INTEGRATING SCHNEIDER ELECTRIC DEVICES ON AN MS/TPMS-TP NETWORK

Before doing any BACnet® integration, make sure to obtain a Schneider Electric PICS document (Protocol Implementation Conformance Statement).

This PICS document lists all the BACnet® Services and Object types supported by a device and can be found at www.Schneider-Electric.com.

Schneider Electric devices do not support the COV service. COV reporting allows an object to send out notices when its Present-Value property is incremented by a pre-defined value. Since this is not supported at Schneider Electric, special attention should be given to the polling time settings at the Supervisory Controller and Workstation level when using a graphic interface or an application program to read or write to a Schneider Electric object.

Graphical Interfaces

For example, some graphic interface might poll all data linked to the graphic page on a COV basis. If the third-party device does not support COV, the graphical interface then relies on a pre-configured polling interval, which is usually in hundredths of milliseconds. Any device containing a monitored object could be subject to network traffic congestion if such a polling interval is used. Schneider Electric strongly recommends a polling interval of 5 seconds minimum for any graphical interface. This becomes even more critical in graphics where a single representation might poll many devices. If the proper poll rate is not respected, devices may be reported offline by certain front-ends by saturating the traffic handling capacity of BACnet® MS/TPMS-TP without COV subscription.

Free Programmed Object or Loops

As for the application program, you might want to read and write MS/TPMS-TP data on an “If Once” basis or a “Do Every Loop" basis instead of reading or writing to a third-party device’s object directly in the program. Otherwise, any read or write request will occur at the Supervisory Controller’s program scan rate, which might be in hundredths of milliseconds. This can easily bog down a network as single commands can be sent to **all** ASC devices down the MS/TPMS-TP trunks every hundredths of milliseconds

Programs writing to the devices should have a structure similar to the following:

```
If Once Schedule = On then
MV13 = Occupied
End If
If Once Schedule = Off Then
MV13 = Unoccupied
End If
```

OR

```
Do Every 5min
If Schedule = On Then
MV13= Occupied
Else
MV13 = Unoccupied
End If
End Do
```

Retries and Timeouts

Another thing to look for in BACnet® integration is the device object of the Supervisory Controller (and the Operator’s Workstation). This object contains the two following required properties:

1) Retry Timeout

2) Number of APDU Retries

1) The Retry Timeout property specifies the time between re-transmissions if the acknowledgement has not been received. When you are experiencing problems with controllers dropping off line, increasing this value may help.

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Retries and Timeouts (cont.)

2) The Number of APDU Retries property specifies the number of times unsuccessful transmissions will be repeated. If the receiving controller has not received the transmission successfully after this many attempts, no further attempts will be made.

For example, if one of the controllers does not reply to a Supervisory Controller (SC) request, and the SC's Retry Timeout is set to 2000 milliseconds and the Number of APDU Retries is set to 1 (still at the SC level), then the SC will send one other request 2 seconds later. If the MS/TPMS-TP device does not reply, it will be considered off line by the workstation.

Having a Retry Timeout value of 10450 milliseconds and a Number of APDU Retries property set to 3 at the SC level may prevent the device from dropping off line. These properties should also be changed at the workstation level since the workstation will likely issue requests to any MS/TPMS-TP devices when the graphics are used.

TIPS AND THINGS YOU NEED TO KNOW

- Each controller is delivered from the factory with the default MAC address set at 254. At this value, the BACnet® communication is **not** active and the device will not participate in the token pass either. The local LED status for the communication adapter at this point is one short flash only. To enable the BACnet® communication, set the local MAC address configuration property of the controller to any valid value from 0 to 127.
- After the initial configuration of your device and if your BAS allows you to remove objects, we suggest that you remove all the configuration objects to prevent unnecessary polling of unused objects and to help speed up the network.
- Please refer to the Technical Manual PIR Ready SE7200 "028-0356_R0", PIR Ready SE7300 "028-0357_R0" and PIR Ready SER7300 "F-2778" for details.
- In default mode of operation, the device will automatically match its baud rate to the baud rate of the network. Automatic baud rate detection will occur when the MS-TP communication port is initialized (on power up). If the network speed is changed, the device will keep listening at the previously detected speed for 10 minutes before resuming auto-baud. Re-powering the devices will force the auto-baud.
- If the device should go off line, the following binded controller parameters will be released:

  Room Temperature

  Outdoor Temperature

  Occupancy

- The BACnet® Data Link layer has two key parameters: the device object name and the device object ID. The device object name must be unique from any other BACnet® device object name on the BACnet® network (i.e. not just the MS-TP sub-network). The device object ID must be unique from any other BACnet® device object ID on the entire BACnet® network (i.e. not just the MS-TP sub-network).
- Time synchronization can be made through a network even if the controller does not support the full date. Therefore, the device cannot claim conformance to the DeviceManagement – TimeSynchronization - B (DM-TS-B) service. The device object does not have the Local_Time or Local_Date properties.
- Device Name and Device ID properties are writable in Schneider Electric device objects. Both properties can be renamed from any BACnet® network management tool as long as the tool itself gives access to write to these properties.

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TROUBLESHOOTING

Table-4 Troubleshooting

Error / Fault	Possible Cause	Solution
Controller does not come online	Two or more controllers have the same MAC address.	Modify each duplicate address to a unique number.
	The MS-TP network has too many devices.	Do not exceed the maximum number of devices and maximum length allowed by the EIA-485 specifications.
	Too many devices were installed without any repeaters.	Repeaters need to be installed as specified in this document.
	The MS-TP cable runs are broken	Locate the break and correct the wiring.
	MS-TP connections at the module are reversed	Respect polarity of the wires on a MS-TP network.
	The controller does not have power	Apply power to the controller

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