BACnet
Protocol Implementation Conformance Statement for Modicon M171/M172 Performance Controllers

EIO0000003031_00

10/17

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Applicable to following references

TM172P*****	Firmware msk: 596.05 or greater
TM171PFE03**	Firmware msk: 489.18 or greater
TM171PDM27* (with communication module)	Firmware msk: 423.25 or greater
TM171PBM27R (with communication module)	Firmware msk: 477.25 or greater

Modicon M171/M172 devices equipped with BACnet have been designed to strictly comply with the ASHRAE BACnet standard 135-2010.

BACnet enables integration between Devices designed for a wide variety of applications.

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Safety Information

Notice

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear in this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

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Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Product Related Information

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines[1] .
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury or equipment damage.

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[1] For additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems" or their equivalent governing your particular location.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software approved by Schneider Electric for use with this equipment.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can cause death, serious injury or equipment damage.

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Product Implementation Conformance Statement

General

Date: 22nd Sep 2017

Product name: Modicon M171/M172
Product model number: TM171P●●●●● & TM172P●●●●●

Vendor name: Schneider Electric

Application software version: Application dependent
Firmware revision:

TM172P*****	Firmware msk: 596.05 or greater
TM171PFE03**	Firmware msk: 489.18 or greater
TM171PDM27* (with communication module)	Firmware msk: 423.25 or greater
TM171PBM27R (with communication module)	Firmware msk: 477.25 or greater

Base ASHRAE standard: 135-2010
BACnet Protocol version: 1
BACnet Protocol revision: 12   NOTE: Highest supported for all claimed objects and services

Product description

Modicon M171/M172 are programmable controllers, which can behave as a BACnet Advanced Application Controller (B-AAC), layers on BACnet/IP or MS/TP networks.
Modicon M171/M172 controllers are targeted for HVAC applications, and are programmable with the Software SoMachine HVAC. Through the SoMachine HVAC, appropriate BACnet services and Objects can be configured in the controller application.

Device Profile Support

Controller Profile:

BACnet Building Controller (B-BC)	
BACnet Advanced Application Controller (B-AAC)	X
BACnet Application Specific Controller (B-ASC)	
BACnet Smart Actuator (B-SA)	
BACnet Smart Sensor (B-SS)	

Operator Profile:

BACnet Advanced Operator Workstation (B-AWS)	
BACnet Operator Workstation (B-OWS)	
BACnet Operator Display (B-OD)	

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Segmentation Capability

Segmentation	Supported	Window Size
Able to transmit segmented messages	X	1476 byte/seg
Able to receive segmented messages		

Data Link Layer and Routing Options

Data Link	Supported	Data Rates	Router for Data Link
BACnet/IP	X	100 MBPS	
Ethernet - ISO 8802_3			
MS/TP master	X	9600, 19200, 38400, 76800 bps	
MS/TP slave			
Zigbee			
ARCnet - ANSI/ATA 878.1			
RS-485 – ANSI/ATA 878.1			
LonTalk TP/FT-10			
LonTalk/IP			
Point-to-Point – EIA 232			
Point-to-Point – modem			

Other Networking Options

Networking Option	Supported
Static Device Binding Supported	
Annex H, BACnet Tunneling Router over IP	
BACnet Broadcast Management Device (BBMD)	
BBMD supports registration by foreign device	
Device support registration as a foreign device	X

Character Sets Supported

Character Sets	Supported
ANSI X3.4	X
ISO 8859-1	X
ISO 10646 (USC-2)	
ISO 10646 (UCS-4)	
IBM / Microsoft DBCS	
JIS C 6626	

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Data Sharing:

BIBBS	description	BACnet Standard								TM172P Device
		B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	
DS-RP-A	ReadProperty-A	X	X	X	X					
DS-RP-B	ReadProperty-B	X	X	X	X	X	X	X	X	X
DS-RPM-A	ReadPropertyMultiple-A	X	X		X					
DS-RPM-B	ReadPropertyMultiple-B				X	X				X
DS-RPC-A	ReadPropertyConditional-A									
DS-RPC-B	ReadPropertyConditional-B									
DS-WP-A	WriteProperty-A	X	X	X	X					
DS-WP-B	WriteProperty-B				X	X	X	X		X
DS-WPM-A	WritePropertyMultiple-A	X	X							
DS-WPM-B	WritePropertyMultiple-B				X	X				X
DS-COV-A	COV-A									
DS-COV-B	COV-B									X
DS-COVP-A	COVP-A									
DS-COVP-B	COVP-B									
DS-COVU-A	COV-Unsolicited-A				X					
DS-COVU-B	COV-Unsolicited-B				X					
DS-V-A	View-A		X	X						
DS-M-A	Modify-A		X	X						
DS-AV-A	Advanced View-A	X								
DS-AM-A	Advanced Modify-A	X								

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BACnet Interoperability Building Blocks (BIBBS) Support

Alarms and Events:

BIBBS	description	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	TM172P Device
AE-N-A	Notification-A	X	X							
AE-N-I-B	Notification Internal				X	X				X
AE-N-E-B	Notification External-B									
AE-ACK-A	ACK-A	X	X							
AE-ACK-B	ACK-B				X	X				X
AE-ASUM-A	Summary-A									
AE-ASUM-B	Alarm Summary-B									X
AE-ESUM-A	Enrollment Summary-A									
AE-ESUM-B	Enrollment Summary-B				X					
AE-INFO-A	Information-A									
AE-INFO-B	Information-B				X	X				X
AE-LS-A	LifeSafety-A									
AE-LS-B	LifeSafety-B									
AE-AS-A	Alarm Summary-A									
AE-VN-A	View Notification-A	X		X						
AE-VM-A	View Modify-A	X								
AE-AVM-A	Advanced View Modify-A		X							
AE-AVN-A	Advanced View Notifications-A		X							
AE-ELVM-A		1								

1 Not required for devices conformance to a Protocol Revision less than 7

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BACnet Interoperability Building Blocks (BIBBS) Support

Schedules:

BIBBS	description	BACnet Standard								TM172P Device
		B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	
SCHED-A	Scheduling - A									
SCHED-B										
SCHED-I-B	Scheduling - Internal-B					X				X
SCHED-E-B	Scheduling - External-B				X					
SCH-VM-A	Scheduling - View Modify		X							
SCH-AVM-A	Scheduling - Advanced View Modify	X								
SCH-WS-A	Scheduling - Weekly Schedule-A									
SCH-WS-I-B	Scheduling - Weekly Schedule Internal-B									
SCH-R-B	Scheduling - Readable-B									

Trends:

BIBBS	description	BACnet Standard								TM172P Device
		B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	
T-VMT-A	Viewing and Modifying Trends-A									
T-VMT-I-B	Viewing and Modifying Trends Internal-B				X					
T-VMT-E-B	Viewing and Modifying Trends External-B									
T-ATR-A	Automated Trend Retrieval-A									
T-ATR-B	Automated Trend Retrieval-B				X					
T-V-A	View-A		X							
T-A-A	Archiving-A									
T-AVM-A		X								

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BACnet Interoperability Building Blocks (BIBBS) Support

Device Management:

BIBBS	description	BACnet Standard								TM172P Device
		B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	
DM-DDB-A	Dynamic Device Binding - A	X	X	X	X	X				X
DM-DDB-B	Dynamic Device Binding - B	X	X	X	X	X	X	2	2	X
DM-DOB-A	Dynamic Object Binding - A				X					
DM-DOB-B	Dynamic Object Binding - B	X	X	X	X	X	X	2	2	X
DM-DCC-A	DeviceCommunicationControl-A	X								
DM-DCC-B	DeviceCommunicationControl-B									X
DM-PT-A	Private Transfer-A									
DM-PT-B	Private Transfer-B									
DM-TM-A	Text Message-A									
DM-TM-B	Text Message-B									
DM-TS-A	TimeSynchronization-A									
DM-TS-B(*)	TimeSynchronization-B				X	X				X
DM-UTC-A	UTCTimeSynchronization-A									
DM-UTC-B(*)	UTCTimeSynchronization-B				X	X				X
DM-RD-A	ReinitializeDevice-A	X								
DM-RD-B	ReinitializeDevice-B				X	X				X
DM-BR-A	Backup and Restore-A	X								
DM-BR-B	Backup and Restore-B				X					
DM-R-A	Restart-A									
DM-R-B	Restart-B									
DM-LM-A	List Manipulation-A									
DM-LM-B	List Manipulation-B									
DM-OCD-A	Object Creation and Deletion-A	X	X							
DM-OCD-B	Object Creation and Deletion-B									
DM-VT-A	Virtual Terminal-A									
DM-VT-B	Virtual Terminal-B									
DM-ANM-A		X								
DM-ADM-A		X								
DM-MTS-A		X	X							

2 Not required if the device is a BACnet MS/TP Slave

(*) for B-AAC only one is required

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BACnet Interoperability Building Blocks (BIBBS) Support

Network Management:

BIBBS	description	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	TM172P Device
		BACnet Standard								
NM-CE-A	Connection Establishment- A	X			X					
NM-CE-B	Connection Establishment-B									
NM-RC-A	Router Configuration-A									
NM-RC-B	Router Configuration-B									

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Supported BACnet Object Types (Summary)

ID	description	Introduced	Updated	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	Supported	Createable	Deletable
												TM172P Device		
23	**Accumulator**	4		X										
0	**Analog Input**	0		X								X		
1	**Analog Output**	0		X								X		
2	**Analog Value**	0	1	X								X		
18	**Averaging**	1		X										
3	**Binary Input**	0	1	X										
4	**Binary Output**	0		X										
5	**Binary Value**	1		X								X		
6	**Calendar**	0		X	X							X		
7	**Command**	0		X										
8	**Device**	0	1	X	X	X	X	X	X	X	X	X		
9	**Event Enrollment**	0	4	X	X		X							
10	**File**	0	1, 9	X										
11	**Group**	0		X										
21	**Life Safety Point**	2	4, 5	X										
22	**Life Safety Zone**	2	4, 5	X										
12	**Loop**	0	7	X										
13	**Multi-state Input**	0	1	X								X		
14	**Multi-state Output**	0		X										
19	**Multi-state Value**	1	1	X								X		
15	**Notification Class**	0	1, 4	X	X		X	X				X		
16	**Program**	0		X										
24	**Pulse Converter**	4		X										
17	**Schedule**	0	1, 4	X	X		X	X				X		
20	**Trend Log**	1	7	X	X		X							
30	**Access Door**	6		X										
25	**Event Log**	7		X										
28	**Load Control**	6		X										
29	**Structured View**	5		X										
27	**Trend Log Multiple**	7		X										
	Lighting Output	9i												
32	**Access Credential**	9		X										
33	**Access Point**	9		X										
34	**Access Rights**	9		X										
35	**Access User**	9		X										
36	**Access Zone**	**9**		X										

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Supported BACnet Object Types (Summary - Continued)

ID	description	Protocol Revisions		BACnet Standard								TM172P Device		
		Introduced	Updated	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS	Supported	Createable	Deletable
37	**Credential Data Input**	**9**		X										
38	Network-Security	11												
39	Bitstring Value	10												
40	Characterstring Value	10												
41	Date Pattern Value	10												
42	Date Value	10												
43	Datetime pattern Value	10												
44	Datetime Value	10												
45	Integer Value	10												
46	Large Analog Value	10												
47	Octetstring Value	10												
48	Positive Integer Value	10												
49	Time Pattern Value	10												
50	Time Value	10												

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Controller Data Types

Data Type	Corresponding Controller Data Type	Precision	Maximum Range	Minimum Range
Signed 16	INT	0	32767	-32768
		1	3276.7	-3276.8
		2	327.67	-327.68
		3	32.767	-32.768
Unsigned16	UINT	0	65535	0
		1	6553.5	0
		2	655.35	0
		3	65.535	0
Signed 32	DINT	0	2147483647	-2147483648
		1	214748364.7	-214748364.8
		2	21474836.47	-21474836.48
		3	2147483.647	-2147483.648
Unsigned32	DWORD UDINT	0	4294967295	0
		1	429496729.5	0
		2	42949672.95	0
		3	4294967.295	0
Signed 8	SINT	0	127	-128
		1	12.7	-12.8
		2	1.27	-1.28
		3	0.127	-0.128
Unsigned 8	BYTE USINT	0	255	0
		1	25.5	0
		2	2.55	0
		3	0.255	0

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Analog Input

	BACnet Standard – Analog Input				TM172P Device – BACnet Analog Input		
ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
85	*present-value*	R[1]			Present Value	R	W
28	*description*			O	Description	R	
31	*device type*			O			
111	*status-flags*	R			Status Flags	R	
36	*event-state*	R			Event state	R	
103	*reliability*			O	Reliability	R	
81	*out-of-service*	R			Out of service	R	W
118	*update-interval*			O			
117	*units*	R			Units	R	W
69	*min-pres-value*			O			
65	*max-pres-value*			O			
106	*resolution*			O			
22	*cov-increment*			O[2]	COV increment	R	W
113	*Time-delay*			O[3]	Time delay	R	W
17	*notification-class*			O[3]	Notification Class	R	W
45	*High-limit*			O[3]	High limit	R	W
59	*low-limit*			O[3]	Low limit	R	W
25	*deadband*			O[3]	Deadband	R	W
52	*Limit-enable*			O[3]	Limit Enable	R	W
35	*event-enable*			O[3]	Event Enable	R	W
0	*acked-transitions*			O[3]	Acked transitions	R	
72	*notify-type*			O[3]	Notify Type	R	W
130	*event-time-stamps*			O[3]	Event Time Stamps	R	
168	*profile-name*			O			

1 If present-value is commandable, then it is required to be writable. This property is required to be writable when out-of- service is TRUE

2 This property is required if the object supports COV reporting.

3 These properties are required if the object supports intrinsic reporting.

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.
- If the precision of the value written to present_value is greater than the precision of the variable in the application, the controller will truncate the value to the controller precision, refer the Controller DataTypes Table for range of values.

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Analog Output

	BACnet Standard – Analog Output				TM172P Device – BACnet Analog Output		
ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
85	*present-value*	R⁴	W		Present Value	R	W
28	*description*			O	Description	R	
31	*device type*			O			
111	*status-flags*	R			Status Flags	R	
36	*event-state*	R			Event State	R	
103	*reliability*			O	Reliability	R	
81	*out-of-service*	R			Out of service	R	W
117	*units*	R			Units	R	W
69	*min-pres-value*			O			
65	*max-pres-value*			O			
106	*resolution*			O			
87	*priority-array*			O¹	Priority Array	R	
104	*relinquish-default*			O¹	Relinquish Default	R	W
22	*cov-increment*			O²	COV increment	R	W
113	*Time-delay*			O³	Time Delay	R	W
17	*notification-class*			O³	Notification Class	R	W
45	*High-limit*			O³	High limit	R	W
59	*low-limit*			O³	Low limit	R	W
25	*deadband*			O³	Deadband	R	W
52	*Limit-enable*			O³	Limit Enable	R	W
35	*event-enable*			O³	Event Enable	R	W
0	*acked-transitions*			O³	Acked transitions	R	
72	*notify-type*			O³	Notify Type	R	W
130	*event-time-stamps*			O³	Event Time Stamps	R	
168	*profile-name*			O			

1 If present-value is commandable, then both of these properties shall be present. 2 This property is required if the object supports COV reporting.
3 These properties are required if the object supports intrinsic reporting.
4 If present-value is commandable, then it is required to be writable. This property is required to be writable when out-of- service is TRUE

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Analog Value

ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
85	*present-value*	R[4]			Present Value	R	W
28	*description*			O	Description	R	
111	*status-flags*	R			Status Flags	R	
36	*event-state*	R			Event State	R	
103	*reliability*			O	Reliability	R	
81	*out-of-service*	R			Out of Service	R	W
117	*units*	R			Units	R	W
87	*priority-array*			O[1]	Priority Array	R	
104	*relinquish-default*			O[1]	Relinquish default	R	W
22	*cov-increment*			O[2]	COV Increment	R	W
113	*Time-delay*			O[3]	Time Delay	R	W
17	*notification-class*			O[3]	Notification Class	R	W
45	*High-limit*			O[3]	High limit	R	W
59	*low-limit*			O[3]	Low limit	R	W
25	*deadband*			O[3]	Deadband	R	W
52	*Limit-enable*			O[3]	Limit enable	R	W
35	*event-enable*			O[3]	Event enable	R	W
0	*acked-transitions*			O[3]	Acked Transitions	R	
72	*notify-type*			O[3]	Notify type	R	W
130	*event-time-stamps*			O[3]	Event Time Stamps	R	
168	*profile-name*			O			

1 If present-value is commandable, then both of these properties shall be present. 2 This property is required if the object supports COV reporting.
3 These properties are required if the object supports intrinsic reporting.
4 If present-value is commandable, then it is required to be writable. This property is required to be writable when out-of- service is TRUE.

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.
- If the precision of the value written to present_value is greater than the precision of the variable in the application, the controller will truncate the value to the controller precision, refer the Controller DataTypes Table for range of values.

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Binary Value

BACnet Standard – Binary Value					TM172P Device - BACnet Binary Value		
ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
85	*present-value*	R[1]			Present Value	R	W
28	*description*			O	Description	R	
111	*status-flags*	R			Status Flags	R	
36	*event-state*	R			Event state	R	
103	*reliability*			O	Reliability	R	
81	*out-of-service*	R			Out of service	R	W
46	*inactive-text*			O[2]	Inactive Text	R	
4	*active-text*			O[2]	Active Text	R	
16	*change-of-state-time*			O[3]			
15	*change-of-state-count*			O[3]			
115	*time-of-state-count-reset*			O[3]			
33	*elapsed-active-time*			O[4]			
114	*time-of-active-time-reset*			O[4]			
66	*minimum-off-time*			O			
67	*minimum-on-time*			O			
87	*priority-array*			O[5]	Priority Array	R	
104	*relinquish-default*			O[5]	Relinquish default	R	W
113	*time-delay*			O[6]	Time delay	R	W
17	*notification-class*			O[6]	Notification Class	R	W
6	*alarm-value*			O[6]	Alarm Value	R	W
35	*event-enable*			O[6]	Event Enable	R	W
0	*acked-transitions*			O[6]	Acknowledged Transitions	R	
72	*notify-type*			O[6]	Notify type	R	W
130	*event-time-stamps*			O[6]	Event Time Stamps,	R	
168	*profile-name*			O			

1 If present-value is commandable, 1 If present-value is commandable, then it is required to be writable. This property is required to be writable when out-of-service isTRUE.
2 If one of the optional properties inactive-text or active-text is present, then both of these properties shall be present.
3 If one of the optional properties change-of-state-time, change-of-state-count, or time-of-state-count-reset is present, then all of these properties shall be present.
4 If one of the optional properties elapsed-active-time or time-of-active-time-reset is present, then both of these properties shall be present.
5 If present-value is commandable, then both of these properties shall be present.
6 These properties are required if the object supports intrinsic reporting.

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.

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Device

	BACnet Standard – Device				TM172P Device – BACnet device		
ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
75	*object-identifier*	R			Object Identifier	R	W
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
112	*system-status*	R			System Status	R	
121	*vendor-name*	R			Vendor Name	R	
120	*vendor-identifier*	R			Vendor Identifier	R	
70	*model-name*	R			Model Name	R	
44	*firmware-revision*	R			Firmware Revision	R	
12	*application-software-version*	R			Application Software version	R	
58	*location*			O			
28	*description*			O			
98	*protocol-version*	R			Protocol Version	R	
139	*protocol-revision*	R			Protocol Revision	R	
97	*protocol-services-supported*	R			Protocol Services Supported	R	
96	*protocol_object-types- supported*	R			Protocol Object Types Supported	R	
76	*object-list*	R			Object List	R	
209	*structured-object-list*			O			
62	*max-apdu-length-accepted*	R			Max APDU Length Accepted	R	
107	*segmentation-supported*	R			Segmentation Supported	R	
122	*vt-classes-supported*			O^2			
5	*active-vt-sessions*			O^2			
57	*local-time*			$O^{3,}_4$	Local Time	R	
56	*local-date*			$O^{3,}_4$	Local Date	R	
119	*utc-offset*			O^4	UTC Offset		
24	*daylight-savings-status*			O^4			
10	*apdu-segment-timeout*			O^1	APDU Segment Timeout	R	
11	*apdu-timeout*	R			APDU Timeout	R	
73	*number-of-apdu-retries*	R			Number of APDU Retries	R	
55	*list-of-session-keys*			O			

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116	*time-synchronization-recipients*			O^5			
64	*max-master*			O^6		**R**	
63	*max-info-frames*			O^6		**R**	
30	*device-address-binding*	R			Device Address Binding	**R**	
155	*database-revision*	R			Database Revision	**R**	
154	*configuration-files*			O^7			
157	*last-restore-time*			O^7			
153	*backup-failure-timeout*			O^8			
152	*active-cov-subscriptions*			O^9		**R**	
167	*max-segments-accepted*			O^1		**R**	
172	*slave-proxy-enable*			O^{10}			
169	*auto-slave-discovery*			O^{11}			
171	*slave-address-binding*			O^{12}			
170	*Manual-slave-address-binding*			O^{10}			
168	*profile-name*			O		**R**	
196	*last-restart-session*			O			
203	*time-of-device-restart*			O^{13}			
202	*restart-notification-recipients*			O^{13}			
206	*utc-time-synchronization -recipients*			O^5			
204	*time-synchronization-interval*			O^{14}			
193	*align-intervals*			O^{14}			
195	*interval-offset*			O^{14}			

1 Required if segmentation is supported.
2 If one of the properties VT_Classes_Supported or Active_VT_Sessions is present, then both of these properties shall be present. Both properties are required if support for VT Services is indicated in the PICS.
3 If the device supports the execution of the TimeSynchronization service, then these properties shall be present.
4 If the device supports the execution of the UTCTimeSynchronization service, then these properties shall be present.
5 If this property is present, then Time_Synchronization_Interval, Align_Intervals and Interval_Offset shall be present. If present, this property shall be writable.
6 These properties are required if the device is an MS/TP master node.
7 These properties are required if the device supports the backup and restore procedures.
8 This property must be present and writable if the device supports the backup and restore procedures.
9 This property is required if the device supports execution of either the SubscribeCOV or SubscribeCOVProperty service.
10 This property shall be present and writable if the device is capable of being a Slave-Proxy device.
11 This property shall be present if the device is capable of being a Slave-Proxy device that implements automatic discovery of slaves.
12 This property shall be present if the device is capable of being a Slave-Proxy device.
13 These properties are required if the device supports the restart procedure as described in Clause 19.3.
14 If either Time_Synchronization_Recipients or UTC_Time_Synchronization_Recipients is present, then this property shall be present and writable.

- None of the writable values will be stored in non-volatile memory by default. (except DeviceInstance).
- Strings are restricted to 31 characters.
- *number-of-apdu-retries* is fixed at 3.
- *apdu-timeout* is fixed at 3000 ms.
- *apdu-segment-timeout* have 2000 ms as default value from reset. The maximum value is 65535 ms.
- *max-segments-accepted* have 127 as default value from reset (this value must not be exceeded).

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Multi-State Input

ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
85	*present-value*	R[1]			Present Value	R	W
28	*description*			O	Description	R	
31	*device type*			O			
111	*status-flags*	R			Status Flags	R	
36	*event-state*	R			Event State	R	
103	*reliability*			O[2]	Reliability	R	
81	*out-of-service*	R			Out of Service	R	W
74	*number-of-states*	R			Number of States	R	
110	*state-text*			O	State Text	R	
113	*time-delay*			O[3]	Time Delay	R	W
17	*notification-class*			O[3]	Notification Class	R	W
7	*alarm-values*			O[3]	Alarm Values	R	W
39	*fault-values*			O[3]	Fault Values	R	W
35	*event-enable*			O[3]	Event Enable	R	W
0	*acked-transitions*			O[3]	Acked Transations	R	
72	*notify-type*			O[3]	Notify Type	R	W
130	*event-time-stamps*			O[3]	Event Time Stamps	R	
168	*profile-name*			O			

1. If present-value is commandable, then it is required to also be writable. This property is required to be writable when out-of-service is TRUE.
2. This property shall be required if fault-values is present
3. These properties are required if the object supports intrinsic reporting

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.

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Multi-State Value

	BACnet Standard – Multi-State Value				TM172P Device – BACnet Multi-State Value		
ID	**BACnet property name**	**Required Readable**	**Required Writable**	**Optional**	**Internal Device property name**	**Readable**	**Writable**
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
85	*present-value*	R[1]			Present Value	R	W
28	*description*			O	Description	R	
111	*status-flags*	R			Status Flags	R	
36	*event-state*	R			Event State	R	
103	*reliability*			O[2]	Reliability	R	
81	*out-of-service*	R			Out of Service	R	W
74	*number-of-states*	R			Number of States	R	
110	*state-text*			O	State Text	R	
87	*priority-array*			O[3]	Priority Array	R	
104	*relinquish-default*			O[3]	Relinquish Default	R	W
113	*time-delay*			O[4]	Time Delay	R	W
17	*notification-class*			O[4]	Notification Class	R	W
7	*alarm-values*			O[4]	Alarm Values	R	W
39	*fault-values*			O[4]	Fault Values	R	W
35	*event-enable*			O[4]	Event Enable	R	W
0	*acked-transitions*			O[4]	Acked Transations	R	
72	*notify-type*			O[4]	Notify Type	R	W
130	*event-time-stamps*			O[4]	Event Time Stamps	R	
168	*profile-name*			O			

1. If present-value is commandable, then it is required to also be writable. This property is required to be writable when out-of-service is TRUE.
2. This property shall be required if fault-values is present.
3. If present-value is commandable, then both of these properties shall be present.
4. These properties are required if the object supports intrinsic reporting.

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.
- Number_Of_States is limited to 5.

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Notification Class

ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
	BACnet Standard – Notification Class				**TM172P Device – BACnet Notification Class**		
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
28	*description*			O	Description	R	
17	*notification-class*	R			Notification Class	R	
86	*priority*	R			Priority	R	W
1	*ack-required*	R			Ack Required	R	W
102	*recipient-list*	R			Recipient List	R	W
168	*profile-name*			O			

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.
- Recipient_List is limited to 4 recipients.

Calendar

ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
	BACnet Standard – Calendar				**TM172P Device – BACnet Calendar**		
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
28	*description*			O	Description	R	
85	*present-value*	R			Present Value	R	
23	*date-list*	R			Date List	R	W
168	*profile-name*			O			

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.
- Date-list is limited to 16 BACnetCalendarEntry

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Schedule

ID	BACnet property name	Required Readable	Required Writable	Optional	Internal Device property name	Readable	Writable
75	*object-identifier*	R			Object Identifier	R	
77	*object-name*	R			Object Name	R	
79	*object-type*	R			BACnet type	R	
85	*present-value*	R			Present Value	R	
28	*description*			O	Description	R	
32	*effective-period*	R			Effective Period	R	W
123	*weekly-schedule*			O[1]	Weekly Schedule	R	W
174	*schedule-default*			O[1]	Schedule Default	R	W
38	*exception-schedule*	R			Exception Schedule	R	W
54	*list-of-object-property-references*	R			List of Object Property References	R	W
88	*priority-for-writing*	R			Priority for Writing	R	W
111	*status-flags*	R			Status Flags	R	
103	*reliability*	R			Reliability	R	
81	*out-of-service*	R			Out of Service	R	W
168	*profile-name*			O			

1. At least one of these properties is required.

- None of the writable values will be stored in non-volatile memory by default.
- Strings are restricted to 31 characters.

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