

## BACnet Application Map for Symmetra (Single Phase) UPS v6.5.6 and higher

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### Introduction

This document details the BACnet objects and properties supported by the Network Management Card 2 firmware v6.5.6 and higher (v6.5.6+) for Symmetra (Single Phase) UPS devices, available on the [APC website](#).

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### Additional Information

- Information on the BACnet protocol specification can found at [www.bacnet.org](http://www.bacnet.org).
- APC recommends [EcoStruxure Building Operation](#) software (formerly known as StruxureWare Building Operation/SBO) for integrated monitoring, control and management of BACnet-enabled devices.
- See the Network Management Card 2 User Guide available on the [APC website](#) for more information on configuring the NMC 2 for BACnet.
- The Network Management Card 2 firmware v6.5.6+ for Symmetra (Single Phase) supports BACnet/IP only.
- BACnet/IP is supported with v6.5.6 “sy” firmware application and higher for Symmetra (Single Phase) UPS devices.

## Index of BACnet Objects

Use the table index numbers to find a BACnet object name and type. The table index values refer to the unique index number of each object property - see Analog Value Objects, Binary Value Objects, Character String Value Objects, and Multi-State Value Objects.

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BACnet Name	BACnet Object Type	Table Offset
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Controlled Early Shutdown Runtime Remaining	Analog Value	43
Controlled Early Shutdown Runtime Remaining Enable	Binary Value	4
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BACnet Name	BACnet Object Type	Table Offset
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Controlled Early Shutdown Time On Battery	Analog Value	42
Controlled Early Shutdown Time On Battery Enable	Binary Value	3
DefaultNotifier		0
ExtendedRunFrameInoperable	Binary Value	84
FrameNotIdentified	Binary Value	91
GracefulShutdownInProgress	Binary Value	57
I2CInoperable	Binary Value	80
InBypassBypassSwitch	Binary Value	55
InBypassFrontPanelSoftware	Binary Value	54

BACnet Name	BACnet Object Type	Table Offset
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LoadAlarm	Binary Value	68
LossOfRedundancy	Binary Value	69
LostUPSComm	Binary Value	44
LostUPSCommOnBat	Binary Value	60
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BACnet Name	BACnet Object Type	Table Offset
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Number of battery packs with bad batteries	Analog Value	41
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Ouput load current 2	Analog Value	22
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Output VA phase 1 n+0	Analog Value	15
Output VA phase 1 n+1	Analog Value	18
Output VA phase 2 n+0	Analog Value	16
Output VA phase 2 n+1	Analog Value	19

BACnet Name	BACnet Object Type	Table Offset
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Output VA phase 3 n+1	Analog Value	20
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Output voltage 2	Analog Value	13
Output voltage 3	Analog Value	14
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Output watts phase 1 n+1	Analog Value	27
Output watts phase 2 n+0	Analog Value	25
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BACnet Name	BACnet Object Type	Table Offset
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PhaseSyncCondition	Binary Value	62
PowerModuleInoperable	Binary Value	64
PowerModuleTurnOffInoperable	Binary Value	90
RIMControlEvent	Binary Value	79
Rated Output voltage setting	Multi-State Value	1
RedundancyBelowThreshold	Binary Value	70
RedundantIntelligenceModuleInoperable	Binary Value	66
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Run UPS runtime calibration	Binary Value	2
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RunTimeAlarm	Binary Value	83

BACnet Name	BACnet Object Type	Table Offset
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ShutdownWaitingForPowerReturn	Binary Value	51
SiteWiringFault	Binary Value	86
Sleep time	Analog Value	31
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StuckOnline	Binary Value	73
SystemFanInoperable 2	Binary Value	78
SystemInoperableHardwareCondition	Binary Value	88
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BACnet Name	BACnet Object Type	Table Offset
UIO probe 1 contact 1 severity	Binary Value	22
UIO probe 1 contact 1 enable	Binary Value	16
UIO probe 1 contact 2 enable	Binary Value	17
UIO probe 1 contact 2 location	Character String	14
UIO probe 1 contact 2 name	Character String	12
UIO probe 1 contact 2 severity	Binary Value	23
UIO probe 1 contact status	Multi-State Value	6
UIO probe 1 humidity	Analog Value	47
UIO probe 1 humidity high	Analog Value	54
UIO probe 1 humidity high enable	Binary Value	13
UIO probe 1 humidity hysteresis	Analog Value	57
UIO probe 1 humidity low	Analog Value	55

BACnet Name	BACnet Object Type	Table Offset
UIO probe 1 humidity low enable	Binary Value	14
UIO probe 1 humidity maximum	Analog Value	53
UIO probe 1 humidity maximum enable	Binary Value	12
UIO probe 1 humidity minimum	Analog Value	56
UIO probe 1 humidity minimum enable	Binary Value	15
UIO probe 1 input contact 1 normal state	Binary Value	20
UIO probe 1 input contact 1 state	Binary Value	18
UIO probe 1 input contact 2	Binary Value	19
UIO probe 1 input contact 2 normal state	Binary Value	21
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UIO probe 1 output relay 1 hold	Analog Value	59
UIO probe 1 output relay 1 location	Character String	16

BACnet Name	BACnet Object Type	Table Offset
UIO probe 1 output relay 1 name	Character String	15
UIO probe 1 output relay 1 normal state	Binary Value	25
UIO probe 1 output relay 1 state	Binary Value	24
UIO probe 1 temperature	Analog Value	46
UIO probe 1 temperature and humidity location	Character String	10
UIO probe 1 temperature and humidity name	Character String	9
UIO probe 1 temperature and humidity status	Multi-State Value	5
UIO probe 1 temperature high	Analog Value	49
UIO probe 1 temperature high enable	Binary Value	9
UIO probe 1 temperature hysteresis	Analog Value	52

BACnet Name	BACnet Object Type	Table Offset
UIO probe 1 temperature low	Analog Value	50
UIO probe 1 temperature low enable	Binary Value	10
UIO probe 1 temperature maximum	Analog Value	48
UIO probe 1 temperature maximum enable	Binary Value	8
UIO probe 1 temperature minimum	Analog Value	51
UIO probe 1 temperature minimum enable	Binary Value	11
UIO probe 2 contact 1 location	Character String	21
UIO probe 2 contact 1 name	Character String	19
UIO probe 2 contact 1 severity	Binary Value	40
UIO probe 2 contact 1 enable	Binary Value	34

BACnet Name	BACnet Object Type	Table Offset
UIO probe 2 contact 2 enable	Binary Value	35
UIO probe 2 contact 2 location	Character String	22
UIO probe 2 contact 2 name	Character String	20
UIO probe 2 contact 2 severity	Binary Value	41
UIO probe 2 contact status	Multi-State Value	8
UIO probe 2 humidity	Analog Value	61
UIO probe 2 humidity high	Analog Value	68
UIO probe 2 humidity high enable	Binary Value	31
UIO probe 2 humidity hysteresis	Analog Value	71
UIO probe 2 humidity low	Analog Value	69
UIO probe 2 humidity low enable	Binary Value	32
UIO probe 2 humidity maximum	Analog Value	67

BACnet Name	BACnet Object Type	Table Offset
UIO probe 2 humidity maximum enable	Binary Value	30
UIO probe 2 humidity minimum	Analog Value	70
UIO probe 2 humidity minimum enable	Binary Value	33
UIO probe 2 input contact 1 normal state	Binary Value	38
UIO probe 2 input contact 1 state	Binary Value	36
UIO probe 2 input contact 2 normal state	Binary Value	39
UIO probe 2 input contact 2 state	Binary Value	37
UIO probe 2 output relay 1 delay	Analog Value	72
UIO probe 2 output relay 1 hold	Analog Value	73
UIO probe 2 output relay 1 location	Character String	24
UIO probe 2 output relay 1 name	Character String	23
UIO probe 2 output relay 1 normal state	Binary Value	43

BACnet Name	BACnet Object Type	Table Offset
UIO probe 2 output relay 1 state	Binary Value	42
UIO probe 2 temperature	Analog Value	60
UIO probe 2 temperature and humidity location	Character String	18
UIO probe 2 temperature and humidity name	Character String	17
UIO probe 2 temperature and humidity status	Multi-State Value	7
UIO probe 2 temperature high	Analog Value	63
UIO probe 2 temperature high enable	Binary Value	27
UIO probe 2 temperature hysteresis	Analog Value	66
UIO probe 2 temperature low	Analog Value	64

BACnet Name	BACnet Object Type	Table Offset
UIO probe 2 temperature low enable	Binary Value	28
UIO probe 2 temperature maximum	Analog Value	62
UIO probe 2 temperature maximum enable	Binary Value	26
UIO probe 2 temperature minimum	Analog Value	65
UIO probe 2 temperature minimum enable	Binary Value	29
UPS Control	Multi-State Value	4
UPS Firmware Revision	Character String	3
UPS kVA rating	Analog Value	1
UPS kVA rating maximum	Analog Value	2
UPS manufacture date	Character String	2
UPS model	Character String	0
UPS name	Character String	6
UPS serial number	Character String	1

BACnet Name	BACnet Object Type	Table Offset
UPS state	Multi-State Value	3
UioCriticalFault	Binary Value	114
UioHumidHighThresholdViolation1	Binary Value	108
UioHumidHighThresholdViolation2	Binary Value	109
UioHumidLowThresholdViolation1	Binary Value	106
UioHumidLowThresholdViolation2	Binary Value	107
UioHumidMaxThresholdViolation1	Binary Value	110
UioHumidMaxThresholdViolation2	Binary Value	111
UioHumidMinThresholdViolation1	Binary Value	104
UioHumidMinThresholdViolation2	Binary Value	105
UioInputContact1Critical1	Binary Value	92
UioInputContact1Critical2	Binary Value	93

BACnet Name	BACnet Object Type	Table Offset
UioInputContact1Warning1	Binary Value	117
UioInputContact1Warning2	Binary Value	118
UioInputContact2Critical1	Binary Value	94
UioInputContact2Critical2	Binary Value	95
UioInputContact2Warning1	Binary Value	119
UioInputContact2Warning2	Binary Value	120
UioLostComm1	Binary Value	112
UioLostComm2	Binary Value	113
UioOutputRelayAbnormalState1	Binary Value	115
UioOutputRelayAbnormalState2	Binary Value	116
UioTempHighThresholdViolation1	Binary Value	100
UioTempHighThresholdViolation2	Binary Value	101

BACnet Name	BACnet Object Type	Table Offset
UioTempLowThresholdViolation1	Binary Value	98
UioTempLowThresholdViolation2	Binary Value	99
UioTempMaxThresholdViolation1	Binary Value	102
UioTempMaxThresholdViolation2	Binary Value	103

BACnet Name	BACnet Object Type	Table Offset
UioTempMinThresholdViolation1	Binary Value	96
UioTempMinThresholdViolation2	Binary Value	97
User-specified battery replacement date	Character String	4
Utility Input frequency	Analog Value	10
Utility current 1	Analog Value	7

BACnet Name	BACnet Object Type	Table Offset
Utility current 2	Analog Value	8
Utility current 3	Analog Value	9
Utility voltage 1	Analog Value	4
Utility voltage 2	Analog Value	5
Utility voltage 3	Analog Value	6
runtime remaining	Analog Value	0



## Analog Value Objects

Analog value objects provide information on UPS data properties made available via the BACnet protocol:

- The BACnet ID is formed using the BACnet object type number (analog value is 2), and the index number.
- BACnet Units – the format of the analog (numeric) values returned. The unit format complies with the BACnet standard, and includes the enumerated code defined in the standard, which is used to represent it.
- COV Increment – the degree (in decimal places) by which a property value can vary before a Change of Value is reported to BACnet clients subscribed to COV notifications.
- Access values – **RO** is Read Only, **RW** is Read/Write.

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
0	8388608	runtime remaining	How long the UPS can use battery power to support its present load.	seconds (73)	60	RO
1	8388609	UPS kVA rating	The power rating of the UPS in kVA	kilovolt-amperes (9)	0.0	RO
2	8388610	UPS kVA rating maximum	The maximum power rating of the UPS in kVA	kilovolt-amperes (9)	0.0	RO
3	8388611	Battery Temperature	Temperature as reported by the sensor in the battery compartment, in Degrees C.	degrees-Celsius (62)	1.0	RO
4	8388612	Utility voltage 1	The AC voltage (VAC) being received by the UPS.	volts (5)	1.0	RO
5	8388613	Utility voltage 2	The AC voltage (VAC) being received by the UPS.	volts (5)	1.0	RO
6	8388614	Utility voltage 3	The AC voltage (VAC) being received by the UPS.	volts (5)	1.0	RO
7	8388615	Utility current 1	The current, in Amps, being received by the UPS.	volts (5)	1.0	RO
8	8388616	Utility current 2	The current, in Amps, being received by the UPS.	volts (5)	1.0	RO
9	8388617	Utility current 3	The current, in Amps, being received by the UPS.	volts (5)	1.0	RO
10	8388618	Utility Input frequency	The frequency in Hertz (Hz) of the voltage being received by the UPS.	hertz (27)	0.5	RO

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
11	8388619	Output frequency	The frequency in Hertz (Hz) of the output voltage.	hertz (27)	0.5	RO
12	8388620	Output voltage 1	The AC voltage (VAC) that the UPS is supplying to its load.	volts (5)	1.0	RO
13	8388621	Output voltage 2	The AC voltage (VAC) that the UPS is supplying to its load.	volts (5)	1.0	RO
14	8388622	Output voltage 3	The AC voltage (VAC) that the UPS is supplying to its load.	volts (5)	1.0	RO
15	8388623	Output VA phase 1 n+0	The UPS load as a percentage of available VA n + 0 redundancy.	percent (98)	0	RO
16	8388624	Output VA phase 2 n+0	The UPS load as a percentage of available VA n + 0 redundancy.	percent (98)	0	RO
17	8388625	Output VA phase 3 n+0	The UPS load as a percentage of available VA n + 0 redundancy.	percent (98)	0	RO
18	8388626	Output VA phase 1 n+1	The UPS load as a percentage of available VA n + 1 redundancy.	percent (98)	5	RO
19	8388627	Output VA phase 2 n+1	The UPS load as a percentage of available VA n + 1 redundancy.	percent (98)	5	RO
20	8388628	Output VA phase 3 n+1	The UPS load as a percentage of available VA n + 1 redundancy.	percent (98)	5	RO
21	8388629	Ouput load current 1	The current, in Amps, supplied to the load.	amperes (3)	1.0	RO
22	8388630	Ouput load current 2	The current, in Amps, supplied to the load.	amperes (3)	1.0	RO
23	8388631	Ouput load current 3	The current, in Amps, supplied to the load.	amperes (3)	1.0	RO
24	8388632	Output watts phase 1 n+0	The UPS load as a percentage of available Watts n+0 redundancy.	percent (98)	5	RO
25	8388633	Output watts phase 2 n+0	The UPS load as a percentage of available Watts n+0 redundancy.	percent (98)	5	RO
26	8388634	Output watts phase 3 n+0	The UPS load as a percentage of available Watts n+0 redundancy.	percent (98)	5	RO
27	8388635	Output watts phase 1 n+1	The UPS load as a percentage of available Watts n+1 redundancy.	percent (98)	5	RO
28	8388636	Output watts phase 2 n+1	The UPS load as a percentage of available Watts n+1 redundancy.	percent (98)	5	RO
29	8388637	Output watts phase 3 n+1	The UPS load as a percentage of available Watts n+1 redundancy.	percent (98)	5	RO

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
30	8388638	Low Battery duration	For a UPS on battery, this defines a runtime remaining threshold, below which a low battery condition is triggered on the UPS. For example, if the Low Battery Duration is set to ten minutes and the UPS predicted runtime remaining reaches ten minutes or below, a low battery condition is triggered. If input power is not restored to the UPS, it will turn off when the battery has exhausted.	seconds (73)	0	RW
31	8388639	Sleep time	Defines how long the UPS keeps its output power turned off when you issue a UPS/Outlet Group Sleep command. When the UPS/Outlet Group turns off, it will turn back on following the Sleep Time defined here, plus the Return Time or Power On Delay for Outlet Groups. If utility power has not been restored at this point, the UPS will wait until it is restored to turn back on.	seconds (73)	0	RW
32	8388640	Shutdown Delay	During a UPS shutdown this is the time the UPS waits before shutting off the output.	seconds (73)	0	RW
33	8388641	Minimum return capacity	Minimum percentage battery capacity before the UPS will repower the load after a shutdown.	percent (98)	0	RW
34	8388642	Return Delay	After a UPS shutdown, this is the time the UPS waits before turning power back on to the load.	seconds (73)	0	RW
35	8388643	Maximum required delay	Maximum required delay required for shutdown of the loads. This is parameter used for older model UPSs (those without outlet groups) to ensure that the load power is not turned off before the load has sufficient time to shutdown gracefully.	minutes (72)	0	RO

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
36	8388644	Nominal battery voltage	The rated voltage capacity of the UPS batteries; the DC voltage that the batteries are rated to supply when the UPS uses its battery for output power.	volts (5)	0.0	RO
37	8388645	Battery voltage	The DC voltage of the batteries.	volts (5)	1.0	RO
38	8388646	Battery state of charge	The percentage of the UPS battery capacity that is available to support the attached equipment.	percent (98)	1.0	RO
39	8388647	Battery current	The current being output from the battery.	amperes (3)	1.0	RO
40	8388648	Number of battery packs	The number of battery packs in the UPS	no-units (95)	0	RW
41	8388649	Number of battery packs with bad batteries	The number of battery packs in the UPS that require replacement.	no-units (95)	0	RO
42	8388650	Controlled Early Shutdown Time On Battery	Controlled early shutdown for when on battery lasts longer than the specified time.	no-units (95)	0	RW
43	8388651	Controlled Early Shutdown Runtime Remaining	Controlled early shutdown for when runtime remaining is less than the specified time.	no-units (95)	0	RW
44	8388652	Controlled Early Shutdown Battery Capacity	Controlled early shutdown for when the battery capacity is less than the specified value.	no-units (95)	0	RW
45	8388653	Controlled Early Shutdown Load Percentage	Controlled early shutdown for when the load percentage is less than the specified value.	no-units (95)	0	RW
46	8388654	UIO probe 1 temperature **	The temperature sensor value.	degrees-Celsius (62)	1.0	RO
47	8388655	UIO probe 1 humidity **	The humidity sensor value.	percent (98)	1	RO

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
48	8388656	UIO probe 1 temperature maximum**	If this sensor threshold for the maximum temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW
49	8388657	UIO probe 1 temperature high**	If this sensor threshold for the high temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW
50	8388658	UIO probe 1 temperature low**	If this sensor threshold for the low temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW
51	8388659	UIO probe 1 temperature minimum**	If this sensor threshold for the minimum temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW
52	8388660	UIO probe 1 temperature hysteresis**	This value specifies how far above or below a threshold the temperature must return to clear a threshold violation.  For Maximum and High threshold violations, the clearing point is the threshold minus the hysteresis.  For Minimum and Low threshold violations, the clearing point is the threshold plus the hysteresis.	degrees-Celsius (62)	0	RW
53	8388661	UIO probe 1 humidity maximum**	If this sensor threshold for the maximum humidity is exceeded, an alarm occurs.	percent (98)	0	RW
54	8388662	UIO probe 1 humidity high**	If this sensor threshold for the high humidity is exceeded, an alarm occurs.	percent (98)	0	RW
55	8388663	UIO probe 1 humidity low**	If this sensor threshold for the low humidity is exceeded, an alarm occurs.	percent (98)	0	RW
56	8388664	UIO probe 1 humidity minimum**	If this sensor threshold for the minimum humidity is exceeded, an alarm occurs.	percent (98)	0	RW
57	8388665	UIO probe 1 humidity hysteresis**	This value specifies how far above or below a threshold the humidity must return to clear a threshold violation.	percent (98)	0	RW

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
			For Maximum and High threshold violations, the clearing point is the threshold minus the hysteresis.  For Minimum and Low threshold violations, the clearing point is the threshold plus the hysteresis.			
58	8388666	UIO probe 1 output relay 1 delay **	The number of seconds a selected alarm condition must exist before the output relay is activated. Use this setting to avoid activating an alarm for brief transient conditions.  Note: Even if additional mapped alarms occur after the delay begins, the delay does not restart but continues until the output relay is activated.	seconds (73)	0	RW
59	8388667	UIO probe 1 output relay 1 hold **	The minimum number of seconds the output relay remains activated after the alarm occurs. Even if the activating alarm condition is corrected, the output relay remains activated until this time period expires.	seconds (73)	0	RW
60	8388668	UIO probe 2 temperature †	The temperature sensor value.	degrees-Celsius (62)	1.0	RO
61	8388669	UIO probe 2 humidity †	The humidity sensor value.	percent (98)	1	RO
62	8388670	UIO probe 2 temperature maximum †	If this sensor threshold for the maximum temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW
63	8388671	UIO probe 2 temperature high †	If this sensor threshold for the high temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW
64	8388672	UIO probe 2 temperature low †	If this sensor threshold for the low temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW
65	8388673	UIO probe 2 temperature minimum †	If this sensor threshold for the minimum temperature is exceeded, an alarm occurs.	degrees-Celsius (62)	0	RW

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
66	8388674	UIO probe 2 temperature hysteresis <sup>‡</sup>	<p>This value specifies how far above or below a threshold the temperature must return to clear a threshold violation.</p> <p>For Maximum and High threshold violations, the clearing point is the threshold minus the hysteresis.</p> <p>For Minimum and Low threshold violations, the clearing point is the threshold plus the hysteresis.</p>	degrees-Celsius (62)	0	RW
67	8388675	UIO probe 2 humidity maximum <sup>‡</sup>	If this sensor threshold for the maximum humidity is exceeded, an alarm occurs.	percent (98)	0	RW
68	8388676	UIO probe 2 humidity high <sup>‡</sup>	If this sensor threshold for the high humidity is exceeded, an alarm occurs.	percent (98)	0	RW
69	8388677	UIO probe 2 humidity low <sup>‡</sup>	If this sensor threshold for the low humidity is exceeded, an alarm occurs.	percent (98)	0	RW
70	8388678	UIO probe 2 humidity minimum <sup>‡</sup>	If this sensor threshold for the minimum humidity is exceeded, an alarm occurs.	percent (98)	0	RW
71	8388679	UIO probe 2 humidity hysteresis <sup>‡</sup>	<p>This value specifies how far above or below a threshold the humidity must return to clear a threshold violation.</p> <p>For Maximum and High threshold violations, the clearing point is the threshold minus the hysteresis.</p> <p>For Minimum and Low threshold violations, the clearing point is the threshold plus the hysteresis.</p>	percent (98)	0	RW
72	8388680	UIO probe 2 output relay 1 delay <sup>‡</sup>	The number of seconds a selected alarm condition must exist before the output relay is activated. Use this setting to avoid activating an alarm for brief transient conditions.	seconds (73)	0	RW

Index	BACnet ID	BACnet Name	Description	BACnet Units	COV Increment (default)	Access
			Note: Even if additional mapped alarms occur after the delay begins, the delay does not restart but continues until the output relay is activated.			
73	8388681	UIO probe 2 output relay 1 hold <sup>‡</sup>	The minimum number of seconds the output relay remains activated after the alarm occurs. Even if the activating alarm condition is corrected, the output relay remains activated until this time period expires.	seconds (73)	0	RW

\*\* This property is available only for UPS devices with an **AP9631** or **AP9635** Network Management Card inserted in the SmartSlot of the UPS (1 Universal Input/Output port available).

‡ This property is available only for UPS devices with an **AP9631** Network Management Card inserted in the SmartSlot of the UPS (2 Universal Input/Output ports available)



## Binary Value Objects

Binary value objects provide information on UPS events (alarms) and binary data properties made available via the BACnet protocol:

- The BACnet ID is formed using the BACnet object type number (binary value is 5), and the index number.
- Alarm:
  - **Yes** indicates that the binary value property is a UPS event alarm, for which a notification will be sent to the recipients in the notification class defined in the Notification Class Object. UPS events are model-specific, and only events supported by the UPS are accessible via the Building Management System used.
  - **No** indicates a UPS data point property that has a binary value, e.g. a state.
- Access values - **RO** is Read Only, **RW** is Read/Write.

Index	BACnet ID	BACnet Name	Description	Alarm	Access
0	20971520	Run UPS self test	Use this option to run a UPS self-test.	No	RW
1	20971521	Run UPS alarm test	Confirm that the audible alarm activates. When you initiate an audible alarm test, the UPS beeps for four seconds and the LEDs illuminate. This can be used to identify which UPS is which in a rack of multiple UPSs.	No	RW
2	20971522	Run UPS runtime calibration	<p>A runtime calibration causes the UPS to recalculate its available runtime capacity based on its current load and how good the battery is as batteries degrade with time and usage.</p> <p>This ensures that the runtime reported is more accurate. Because a calibration temporarily depletes the UPS batteries, you can perform a calibration only if battery capacity is at 100%. The load on your UPS must be at least 15% without fluctuating to guarantee that a calibration will be accepted.</p>	No	RW
3	20971523	Controlled Early Shutdown Time On Battery Enable	Enable/Disable controlled early shutdown for when on battery lasts longer than the specified time.	No	RW
4	20971524	Controlled Early Shutdown Runtime Remaining Enable	Enable/Disable controlled early shutdown for when runtime remaining is less than the specified time.	No	RW

Index	BACnet ID	BACnet Name	Description	Alarm	Access
5	20971525	Controlled Early Shutdown Battery Capacity Enable	Enable/Disable controlled early shutdown for when the battery capacity is less than the specified value.	No	RW
6	20971526	Controlled Early Shutdown Load Percentage Enable	Enable/Disable controlled early shutdown for when the load percentage is less than the specified value.	No	RW
7	20971527	Controlled Early Shutdown Stay Off After Power Return Enable	Enable/Disable controlled early shutdown stay off after power returns.	No	RW
8	20971528	UIO probe 1 temperature maximum enable**	Enable or disable the maximum temperature threshold for this sensor.	No	RW
9	20971529	UIO probe 1 temperature high enable**	Enable or disable the high temperature threshold for this sensor.	No	RW
10	20971530	UIO probe 1 temperature low enable**	Enable or disable the low temperature threshold for this sensor.	No	RW
11	20971531	UIO probe 1 temperature minimum enable**	Enable or disable the minimum temperature threshold for this sensor.	No	RW
12	20971532	UIO probe 1 humidity maximum enable**	Enable or disable the maximum humidity threshold for this sensor.	No	RW
13	20971533	UIO probe 1 humidity high enable**	Enable or disable the high humidity threshold for this sensor.	No	RW
14	20971534	UIO probe 1 humidity low enable**	Enable or disable the low humidity threshold for this sensor.	No	RW
15	20971535	UIO probe 1 humidity minimum enable**	Enable or disable the minimum humidity threshold for this sensor.	No	RW
16	20971536	UIO probe 1 contact 1 enable**	Enable or disable this input contact. When disabled, the contact will generate no alarm even when it is in the abnormal position.	No	RW
17	20971537	UIO probe 1 contact 2 enable**	Enable or disable this input contact. When disabled, the contact will generate no alarm even when it is in the abnormal position.	No	RW
18	20971538	UIO probe 1 input contact 1 state**	Closed or Open, indicating the current state of this input contact.	No	RO
19	20971539	UIO probe 1 input contact 2**	Closed or Open, indicating the current state of this input contact.	No	RO

Index	BACnet ID	BACnet Name	Description	Alarm	Access
20	20971540	UIO probe 1 input contact 1 normal state**	Closed or Open, indicating the normal (non-alarm) state of this input contact.	No	RW
21	20971541	UIO probe 1 input contact 2 normal state**	Closed or Open, indicating the normal (non-alarm) state of this input contact.	No	RW
22	20971542	UIO probe 1 contact 1 severity**	Configure the severity of the alarm that the abnormal state of this input contact will generate, either Warning or Critical.	No	RW
23	20971543	UIO probe 1 contact 2 severity**	Configure the severity of the alarm that the abnormal state of this input contact will generate, either Warning or Critical.	No	RW
24	20971544	UIO probe 1 output relay 1 state**	Closed or Open, indicating the current state of this output relay.	No	RO
25	20971545	UIO probe 1 output relay 1 normal state**	Closed or Open, indicating the normal state of this output relay.	No	RW
26	20971546	UIO probe 2 temperature maximum enable‡	Enable or disable the maximum temperature threshold for this sensor.	No	RW
27	20971547	UIO probe 2 temperature high enable‡	Enable or disable the high temperature threshold for this sensor.	No	RW
28	20971548	UIO probe 2 temperature low enable‡	Enable or disable the low temperature threshold for this sensor.	No	RW
29	20971549	UIO probe 2 temperature minimum enable‡	Enable or disable the minimum temperature threshold for this sensor.	No	RW
30	20971550	UIO probe 2 humidity maximum enable‡	Enable or disable the maximum humidity threshold for this sensor.	No	RW
31	20971551	UIO probe 2 humidity high enable‡	Enable or disable the high humidity threshold for this sensor.	No	RW
32	20971552	UIO probe 2 humidity low enable‡	Enable or disable the low humidity threshold for this sensor.	No	RW
33	20971553	UIO probe 2 humidity minimum enable‡	Enable or disable the minimum humidity threshold for this sensor.	No	RW
34	20971554	UIO probe 2 contact 1 enable‡	Enable or disable this input contact. When disabled, the contact will generate no alarm even when it is in the abnormal position.	No	RW

Index	BACnet ID	BACnet Name	Description	Alarm	Access
35	20971555	UIO probe 2 contact 2 enable <sup>‡</sup>	Enable or disable this input contact. When disabled, the contact will generate no alarm even when it is in the abnormal position.	No	RW
36	20971556	UIO probe 2 input contact 1 state <sup>‡</sup>	Closed or Open, indicating the current state of this input contact.	No	RO
37	20971557	UIO probe 2 input contact 2 state <sup>‡</sup>	Closed or Open, indicating the current state of this input contact.	No	RO
38	20971558	UIO probe 2 input contact 1 normal state <sup>‡</sup>	Closed or Open, indicating the normal (non-alarm) state of this input contact.	No	RW
39	20971559	UIO probe 2 input contact 2 normal state <sup>‡</sup>	Closed or Open, indicating the normal (non-alarm) state of this input contact.	No	RW
40	20971560	UIO probe 2 contact 1 severity <sup>‡</sup>	Configure the severity of the alarm that the abnormal state of this input contact will generate, either Warning or Critical.	No	RW
41	20971561	UIO probe 2 contact 2 severity <sup>‡</sup>	Configure the severity of the alarm that the abnormal state of this input contact will generate, either Warning or Critical.	No	RW
42	20971562	UIO probe 2 output relay 1 state <sup>‡</sup>	Closed or Open, indicating the current state of this output relay.	No	RO
43	20971563	UIO probe 2 output relay 1 normal state <sup>‡</sup>	Closed or Open, indicating the normal state of this output relay.	No	RW
44	20971564	LostUPSComm	Lost the local network management interface-to-UPS communication.	Yes	RO
45	20971565	Overload	The load exceeds 100% of rated capacity.	Yes	RO
46	20971566	SelfTestFailed	Self-Test Failed	Yes	RO
47	20971567	LowBattery	The battery power is too low to support the load; if there is a power outage, the UPS will be shut down immediately.	Yes	RO
48	20971568	OnBattery	On battery power in response to an input power problem.	Yes	RO
49	20971569	LowBattery2	The battery power is too low to continue to support the load; the UPS will shut down if input power does not return to normal soon.	Yes	RO
50	20971570	OutputOff	The output power is turned off.	Yes	RO

Index	BACnet ID	BACnet Name	Description	Alarm	Access
51	20971571	ShutdownWaitingForPowerReturn	Turned off for a defined period of time in response to a software command, or off while waiting for input power to return to normal.	Yes	RO
52	20971572	BadBattery	At least one battery is inoperable.	Yes	RO
53	20971573	InBypassInternalHardwareCondition	In bypass in response to an internal hardware condition.	Yes	RO
54	20971574	InBypassFrontPanelSoftware	In bypass in response to the UPS front-panel or a user-initiated software command, typically for maintenance.	Yes	RO
55	20971575	InBypassBypassSwitch	In bypass in response to the bypass switch at the UPS, typically for maintenance.	Yes	RO
56	20971576	RuntimeCalStarted	Runtime Calibration started.	Yes	RO
57	20971577	GracefulShutdownInProgress	Graceful shutdown in progress.	Yes	RO
58	20971578	BatteryChargerInoperable	A battery charger is inoperable.	Yes	RO
59	20971579	InternalBattTempHigh	The internal battery temperature exceeds the critical threshold.	Yes	RO
60	20971580	LostUPSCommOnBat	Lost the management interface-to-UPS communication while the UPS was on battery.	Yes	RO
61	20971581	NonSpecificCondition	A nonspecific condition has occurred.	Yes	RO
62	20971582	PhaseSyncCondition	A phase synchronization condition exists.	Yes	RO
63	20971583	BatteryNotInstalledProperly	The battery is not installed properly.	Yes	RO
64	20971584	PowerModuleInoperable	A power module is inoperable.	Yes	RO
65	20971585	IntelligenceModuleInoperable	An intelligence module inoperable.	Yes	RO
66	20971586	RedundantIntelligenceModuleInoperable	A redundant intelligence module inoperable.	Yes	RO
67	20971587	BatteryInoperable	A battery is inoperable.	Yes	RO
68	20971588	LoadAlarm	A load alarm has occurred.	Yes	RO
69	20971589	LossOfRedundancy	System has experienced a loss of redundancy.	Yes	RO

Index	BACnet ID	BACnet Name	Description	Alarm	Access
70	20971590	RedundancyBelowThreshold	System redundancy is below the set threshold.	Yes	RO
71	20971591	BypassNotInRange	Bypass is not in range.	Yes	RO
72	20971592	StuckInBypass	System is stuck in bypass.	Yes	RO
73	20971593	StuckOnline	System is stuck on line.	Yes	RO
74	20971594	BypassInoperable	Bypass inoperable.	Yes	RO
75	20971595	BypassOverload	A bypass overload has occurred.	Yes	RO
76	20971596	BypassMaintenance	System is in maintenance bypass.	Yes	RO
77	20971597	InputCktBreakerOpen	The input circuit breaker is open.	Yes	RO
78	20971598	SystemFanInoperable2	A system level fan is inoperable.	Yes	RO
79	20971599	RIMControlEvent	A RIM control event has occurred.	Yes	RO
80	20971600	I2CInoperable	I2c inoperable.	Yes	RO
81	20971601	NoPowerModulesDetected	No power modules detected.	Yes	RO
82	20971602	InputVoltageFreqIssueWhileInBypass	While in bypass an input voltage or frequency issue has occurred.	Yes	RO
83	20971603	RunTimeAlarm	Run time alarm.	Yes	RO
84	20971604	ExtendedRunFrameInoperable	An extended run frame is not operating correctly.	Yes	RO
85	20971605	OutputVoltageOutsideLimits	The output voltage is outside its defined limits.	Yes	RO
86	20971606	SiteWiringFault	Site wiring fault.	Yes	RO
87	20971607	OnBatDueToHardwareCondition	On battery due to hardware condition.	Yes	RO
88	20971608	SystemInoperableHardwareCondition	A system inoperable due to hardware condition.	Yes	RO
89	20971609	BypassSystemInoperable	Bypass system inoperable.	Yes	RO

Index	BACnet ID	BACnet Name	Description	Alarm	Access
90	20971610	PowerModuleTurnOffInoperable	A power module turn off is inoperable.	Yes	RO
91	20971611	FrameNotIdentified	Frame not identified.	Yes	RO
92	20971612	UioInputContact1Critical1	A critical level issue exists for Environmental Monitor for probe 1, input contact 1 {{name}} at {{location}}).	Yes	RO
93	20971613	UioInputContact1Critical2	A critical level issue exists for Environmental Monitor for probe 2, input contact 1 {{name}} at {{location}}).	Yes	RO
94	20971614	UioInputContact2Critical1	A critical level issue exists for Environmental Monitor for probe 1, input contact 2 {{name}} at {{location}}).	Yes	RO
95	20971615	UioInputContact2Critical2	A critical level issue exists for Environmental Monitor for probe 2, input contact 2 {{name}} at {{location}}).	Yes	RO
96	20971616	UioTempMinThresholdViolation1	A minimum temperature threshold violation exists for external Environmental Monitor sensor 1 {{name}} at {{location}} reporting under {{threshold}}.	Yes	RO
97	20971617	UioTempMinThresholdViolation2	A minimum temperature threshold violation exists for external Environmental Monitor sensor 2 {{name}} at {{location}} reporting under {{threshold}}.	Yes	RO
98	20971618	UioTempLowThresholdViolation1	A low temperature threshold violation exists for external Environmental Monitor sensor 1 {{name}} at {{location}} reporting under {{threshold}}.	Yes	RO
99	20971619	UioTempLowThresholdViolation2	A low temperature threshold violation exists for external Environmental Monitor sensor 2 {{name}} at {{location}} reporting under {{threshold}}.	Yes	RO
100	20971620	UioTempHighThresholdViolation1	A high temperature threshold violation exists for external Environmental Monitor sensor 1 {{name}} at {{location}} reporting over {{threshold}}.	Yes	RO
101	20971621	UioTempHighThresholdViolation2	A high temperature threshold violation exists for external Environmental Monitor sensor 2 {{name}} at {{location}} reporting over {{threshold}}.	Yes	RO

Index	BACnet ID	BACnet Name	Description	Alarm	Access
102	20971622	UioTempMaxThresholdViolation1	A maximum temperature threshold violation exists for external Environmental Monitor sensor 1 ({name} at {location}) reporting over {threshold}.	Yes	RO
103	20971623	UioTempMaxThresholdViolation2	A maximum temperature threshold violation exists for external Environmental Monitor sensor 2 ({name} at {location}) reporting over {threshold}.	Yes	RO
104	20971624	UioHumidMinThresholdViolation1	A minimum humidity threshold violation exists for external Environmental Monitor sensor 1 ({name} at {location}) reporting under {threshold}.	Yes	RO
105	20971625	UioHumidMinThresholdViolation2	A minimum humidity threshold violation exists for external Environmental Monitor sensor 2 ({name} at {location}) reporting under {threshold}.	Yes	RO
106	20971626	UioHumidLowThresholdViolation1	A low humidity threshold violation exists for external Environmental Monitor sensor 1 ({name} at {location}) reporting under {threshold}.	Yes	RO
107	20971627	UioHumidLowThresholdViolation2	A low humidity threshold violation exists for external Environmental Monitor sensor 2 ({name} at {location}) reporting under {threshold}.	Yes	RO
108	20971628	UioHumidHighThresholdViolation1	A high humidity threshold violation exists for external Environmental Monitor sensor 1 ({name} at {location}) reporting over {threshold}.	Yes	RO
109	20971629	UioHumidHighThresholdViolation2	A high humidity threshold violation exists for external Environmental Monitor sensor 2 ({name} at {location}) reporting over {threshold}.	Yes	RO
110	20971630	UioHumidMaxThresholdViolation1	A maximum humidity threshold violation exists for external Environmental Monitor sensor 1 ({name} at {location}) reporting over {threshold}.	Yes	RO
111	20971631	UioHumidMaxThresholdViolation2	A maximum humidity threshold violation exists for external Environmental Monitor sensor 2 ({name} at {location}) reporting over {threshold}.	Yes	RO
112	20971632	UioLostComm1	Lost the local network management interface-to-external Environmental Monitoring Card communication on port 1.	Yes	RO
113	20971633	UioLostComm2	Lost the local network management interface-to-external Environmental Monitoring Card communication on port 2.	Yes	RO



Index	BACnet ID	BACnet Name	Description	Alarm	Access
114	20971634	UioCriticalFault	A critical level issue exists for integrated Environmental Monitor input contact ({name}) at {location}).	Yes	RO
115	20971635	UioOutputRelayAbnormalState1	Transition to abnormal state for Integrated Environmental Monitor Output Relay ({name}) at probe 1).	Yes	RO
116	20971636	UioOutputRelayAbnormalState2	Transition to abnormal state for Integrated Environmental Monitor Output Relay ({name}) at probe 2).	Yes	RO
117	20971637	UioInputContact1Warning1	A warning level issue exists for Environmental Monitor probe 1, input contact 1 ({name}) at {location}).	Yes	RO
118	20971638	UioInputContact1Warning2	A warning level issue exists for Environmental Monitor for probe2, input contact 1 ({name}) at {location}).	Yes	RO
119	20971639	UioInputContact2Warning1	A warning level issue exists for Environmental Monitor for probe 1, input contact 2 ({name}) at {location}).	Yes	RO
120	20971640	UioInputContact2Warning2	A warning level issue exists for Environmental Monitor for probe 2, input contact 2 ({name}) at {location}).	Yes	RO

\*\* This property is available only for UPS devices with an **AP9631** or **AP9635** Network Management Card inserted in the SmartSlot of the UPS (1 Universal Input/Output port available).

‡ This property is available only for UPS devices with an **AP9631** Network Management Card inserted in the SmartSlot of the UPS (2 Universal Input/Output ports available)

## Character String Value Objects

Character string value objects provide information on UPS data properties that return character strings via the BACnet protocol:

- The BACnet ID is formed using the BACnet object type number (character string value is 40) and the index number.
- Access values - **RO** is Read Only, **RW** is Read/Write.
- Maximum Characters – the maximum number of characters that can be returned for a UPS property.

Index	BACnet ID	BACnet Name	Description	Access	Maximum Characters
0	167772160	UPS model	The UPS model name.	RO	24
1	167772161	UPS serial number	The UPS serial number.	RO	16
2	167772162	UPS manufacture date	The date your UPS was manufactured.	RO	16
3	167772163	UPS Firmware Revision	The revision numbers of the firmware modules currently installed on the UPS	RO	16
4	167772164	User-specified battery replacement date	The battery replacement date set by the user.	RO	16
5	167772165	Output frequency setting	The frequency in Hertz (Hz) of the output voltage.	RO	0
6	167772166	UPS name	A name to identify the UPS.	RW	24
7	167772167	Self test result	The result of the most recent UPS self-test (passed, failed, or unavailable) and the date of that test. A self-test cannot be started if a runtime calibration is in progress or the batteries are not sufficiently charged.	RO	100
8	167772168	Runtime calibration result	The result of the most recent Runtime Calibration. A runtime calibration recalculates your remaining runtime. The UPS requires the batteries to be fully charged and the UPS to be sufficiently loaded before it will start a runtime calibration.	RO	100
9	167772169	UIO probe 1 temperature and humidity name**	A name you specify for this sensor, usually describing its purpose. The maximum length is 20 characters.	RW	20
10	167772170	UIO probe 1 temperature and humidity location**	This sensor's physical location. The maximum length is 20 characters.	RW	20

Index	BACnet ID	BACnet Name	Description	Access	Maximum Characters
11	167772171	UIO probe 1 contact 1 name **	A name you specify for this input contact, usually describing its purpose. The maximum length is 20 characters.	RW	20
12	167772172	UIO probe 1 contact 2 name **	A name you specify for this input contact, usually describing its purpose. The maximum length is 20 characters.	RW	20
13	167772173	UIO probe 1 contact 1 location **	This input contact's physical location. The maximum length is 20 characters.	RW	20
14	167772174	UIO probe 1 contact 2 location **	This input contact's physical location. The maximum length is 20 characters.	RW	20
15	167772175	UIO probe 1 output relay 1 name **	A name you specify for this output relay, usually describing its purpose. The maximum length is 20 characters.	RW	20
16	167772176	UIO probe 1 output relay 1 location **	This physical location of the output relay. The maximum length is 20 characters.	RW	20
17	167772177	UIO probe 2 temperature and humidity name †	A name you specify for this sensor, usually describing its purpose. The maximum length is 20 characters.	RW	20
18	167772178	UIO probe 2 temperature and humidity location †	This sensor's physical location. The maximum length is 20 characters.	RW	20
19	167772179	UIO probe 2 contact 1 name †	A name you specify for this input contact, usually describing its purpose. The maximum length is 20 characters.	RW	20
20	167772180	UIO probe 2 contact 2 name †	A name you specify for this input contact, usually describing its purpose. The maximum length is 20 characters.	RW	20
21	167772181	UIO probe 2 contact 1 location †	This input contact's physical location. The maximum length is 20 characters.	RW	20
22	167772182	UIO probe 2 contact 2 location †	This input contact's physical location. The maximum length is 20 characters.	RW	20
23	167772183	UIO probe 2 output relay 1 name †	A name you specify for this output relay, usually describing its purpose. The maximum length is 20 characters.	RW	20
24	167772184	UIO probe 2 output relay 1 location †	This physical location of the output relay. The maximum length is 20 characters.	RW	20

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‡ This property is available only for UPS devices with an **AP9631** Network Management Card inserted in the SmartSlot of the UPS (2 Universal Input/Output ports available)

## Multi-State Value Objects

Multi-state value objects provide information on UPS data properties that return a list of options via the BACnet protocol:

- The BACnet ID is formed using the BACnet object type number (multi-state value is 19) and the index number.
- Options – all possible values that can be returned for a UPS multi-value property.
- Access values - **RO** is Read Only, **RW** is Read/Write.

Index	BACnet ID	BACnet Name	Description	Options	Access
0	79691776	Last battery transfer	The cause of the last switch to battery operation. Excludes Self-Test.	none, unknown, high input voltage, low input voltage, distorted input, rapid change input voltage, high input frequency, low input frequency, freq and/or phase difference, test, general error, power system error, battery system error, distorted inverter output, epo interface, graceful shutdown	RO
1	79691777	Rated Output voltage setting	The Rated Output Voltage is the AC voltage the UPS supplies to the load, while the UPS is on battery.	100, 120, 200, 208, 220, 230, 240, 380, 400, 415, 480, 110, 127, Auto_120, 120/208, 120/240, 100/200, 225, 115	RW
2	79691778	Self test schedule	Use this option to define when your UPS will initiate a self-test.	never, startup, startup and every 7, startup and every 14	RW
3	79691779	UPS state	The mode of operation of the UPS.	unknown, online, on battery, sleep, shutdown, fault, self test, calibration, bypass, low battery	RO
4	79691780	UPS Control	Control the UPS state, based on the options available.	do nothing, on immediately, off immediately, off delayed, bypass, return from bypass, reboot immediately, reboot delayed, sleep, sleep delayed	RW

Index	BACnet ID	BACnet Name	Description	Options	Access
5	79691781	UIO probe 1 temperature and humidity status **	The status of the sensor alarm. OK if this sensor is not reporting an alarm condition. Other options include alarm severity, or presence indicator.	not present, ok, warning, critical	RO
6	79691782	UIO probe 1 contact status **	The status of the contact. OK if this contact is not reporting an alarm condition. Other options include alarm severity, or presence indicator.	not present, ok, warning, critical	RO
7	79691783	UIO probe 2 temperature and humidity status ‡	The status of the sensor alarm. OK if this sensor is not reporting an alarm condition. Other options include alarm severity, or presence indicator.	not present, ok, warning, critical	RO
8	79691784	UIO probe 2 contact status ‡	The status of the contact. OK if this contact is not reporting an alarm condition. Other options include alarm severity, or presence indicator.	not present, ok, warning, critical	RO

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‡ This property is available only for UPS devices with an **AP9631** Network Management Card inserted in the SmartSlot of the UPS (2 Universal Input/Output ports available).

## Notification Class Object

When UPS event alarms specified in the Binary Value Objects table occur, a notification is sent to the recipients in the notification class defined in the Notification Class Object.

- The BACnet ID is formed using the BACnet object type number (notification class is 15) and the index number.

Index	BACnet ID	BACnet Name	Description	Access
0	62914560	DefaultNotifier	Default Notification Class	RW

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