BACnet Points List for YORK eco² Packaged Rooftop Units

Table 1 - Standard BACnet Objects

Item #	BACnet Object Name	Parameter Displayed	BACnet Eng. Unit #	BACnet OID[1]	Property #	Read Write Send
1.	Device / Local Date	yymmdomdow		8/1000	56	R/W
2.	Device / Local Time	hh: mm : sshh		8/1000	57	R/W
3.	Unit Mode	0 = Occupied Cooling		2/1109	85	R
		1 = Occupied Heating				
		2 = Unoccupied Standby				
		3 = Unoccupied Cooling				
		4 = Unoccupied Heating				
		5 = Manual Override				
		6 = Warm-up				
		7 = Sys. Start Delay				
		8 = Preoccupancy Purge				
		9 = Smoke Purge				
		10 = Emergency Shut Down				
		11 = Fault Shutdown				
		12 = Occupied Standby				
4.	Control Method	0 = Thermostat		2/1110	85	R
		1 = Space Sensor				
		2 = Stand Alone Control				
5.	Supply Fan Binary	0, 1 (0=Off, 1=On)		5/1207	85	R
6.	Supply Fan VFD AV	XXX %	98	2/1107	85	R
7.	Exhaust Fan Binary	0, 1 (0=Off, 1=On)		5/1208	85	R
8.	Exhaust Damper AV	XXX %	98	2/1108	85	R
9.	Dirty Filter Input	0, 1 (0=Normal, 1=Replace)		5/1209	85	R
10.	OA Temperature AV	XXX °F	64	2/1111	85	R
11.	OA Rel Humid AV	XXX %	98	2/1112	85	R
12.	OA Enthalpy	XX btu/lb	24	2/1122	85	R
13.	RA Temperature AV	XXX °F	64	2/1113	85	R
14.	RA Rel Humid AV	XXX %	98	2/1114	85	R
15.	RA Enthalpy	XX btu/lb	24	2/1123	85	R
16.	SAT AV	XXX °F	64	2/1115	85	R
17.	Supply Air Temp Stpt	XXX °F	64	2/ 1121	85	R
18.	Duct Static Pres AV	X.XX inwg	58	2/1116	85	R
19.	Duct Static Setpt AV	X.XX inwg	58	2/1118	85	R/W
20.	Building Static Pres AV	+/-X.XX inwg	58	2/1117	85	R
21.	Building Static Setpt AV	+/-X.XX inwg	58	2/1119	85	R/W
22.	UnOccupied Heating Setpoint	XX °F	64	2/1100	85	R/W
23.	UnOccupied Cooling Setpoint	XX °F	64	2/1101	85	R/W
24.	Occupied Heating Setpoint	XX °F	64	2/1102	85	R/W
25.	Occupied Cooling Setpoint	XX °F	64	2/1103	85	R/W
26.	VAV Cool High Temp Setpoint	XX °F	64	2/1104	85	R/
27.	VAV Cool Low Temp Setpoint	XX °F	64	2/1105	85	R/W
28.	VAV SP for SAT Reset Setpoint	XX °F	64	2/1106	85	R/W
29.	Occupied	0, 1 (0=Unocc, 1=Occ)		5/1203	85	R/W
30.	Shutdown	0, 1 (0=Normal, 1=Shutdown)		5/1205	85	R/W
31.	Smoke Purge	0, 1 (0=Normal, 1=Purge)		5/1204	85	R/W
32.	VAV Heat Relay BV	0, 1 (0=No Heat, 1=Heat)		5/1206	85	R/W
33.	Smoke Purge Mode	0=No Action		2/1120	85	R/W
		1=Shutdown				
		2= Pressurization				
		3=Exhaust				
		4=Purge				
		5=Purge w/Duct Pres.				
34.	Int Time Clock Sched	0, 1 (0=Disabled, 1=Enabled)		5/1211	85	R/W
35.	Scheduled Occupancy	0, 1 (0=Unocc, 1=Occ)		5/1201	85	R/W
36.	Pre-occupancy Purge	0, 1 (0=Disabled, 1=Enabled)		5/1212	85	R/W
37.	Sched Preocc Purge	0, 1 (0=Disabled, 1=Enabled)		5/1202	85	R/W
38.	Warmup Request	0, 1 (0=Disabled, 1=Enabled)		5/1210	85	R/W
39.	Alarm Notification Object	Ydcu_XXXXXXXXX Programing Alarm Notification		15/4194000	102	R/W

1 – BACnet object types: 0/: Analog In, 2/: Analog Value, 3/: Binary In, 5/: Binary Value, 8/: Date and Time, 15/: Alarm Notification

Fault Notification

The BAS will be notified when a fault occurs through a Standard BACnet Alarm Notification Object (Object Type 15). The fault status is record in a Proprietary Object Type 172 (Multistate Alarm Object). When the BAS receives a BACnet message from the eco^2 Rooftop Unit controller indicating a fault, this message will provide the:

- Identification of the eco^2 Unit that sent the fault message (controller Device Name)
- The BACnet Object Identification (OID) of the Type 172 Object for the fault
- The date and time of the fault

Additional BACnet message information is also provided.

Table 2 - Fault Object List

Fault Object Name	BACnet OID	BACnet Object Type
Alarm Notification Object[1]	4194000	15
Circ1 Safety Trip	600	172
Circ1 Sfty Lockout 1	601	172
Circ1 Sfty Lockout 2	602	172
Circ2 Safety Trip	603	172
Circ2 Sfty Lockout 1	604	172
Circ2 Sfty Lockout 2	605	172
Circ3 Safety Trip	606	172
Circ3 Sfty Lockout 1	607	172
Circ3 Sfty Lockout 2	608	172
Supply Fan Fault	609	172
Heating SAT Fault	610	172
Cooling SAT Fault	611	172
SAT Sensor Fault	612	172
RAT Sensor Fault	613	172
OAT Sensor Fault	614	172
RAH Sensor Fault	615	172
OAH Sensor Fault	616	172
Space Sensor Fault	617	172
Space Control Fault	618	172
IAQ Sensor Fault	619	172
COR Status Fault	620	172
Duct Sensor Fault	621	172
Bldg Pressure Fault	622	172
Dirty Filter Fault	623	172
Excess Duct Pressure	624	172
HW Freeze Fault	625	172
UNT Comm Fault	626	172
Bad OAF Transducer	627	172
OA Flow Sensor Fault	628	172
Evap Freeze Fault	629	172
Suction Press Fault	630	172
DischargePress Fault	631	172
Air Switch Fault	632	172
Thermostat Conflict	633	172
Excess Cooling Fault	634	172
Excess Heating Fault	635	172
High Press Unload 1	636	172
High Press Unload 2	637	172
High Press Unload 3	638	172
SensConsist Fault 1	639	172
SensConsist Fault 2	640	172

1 – The Alarm Notification Object is a standard BACnet Object as listed in Table 1. It is repeated here to indicate that the status of all of the Fault Objects is reported to the BAS through the Alarm Notification Object.

The following are comments on the requirements for implementing the fault notification in a BAS BACnet workstation and some issues concerning the notification process.

1. For Alarms to be reported to a BACnet Workstation, the Alarm Notification Object (1 object for all alarms) must be set up properly - Some of the required parameters are IP Address, Days of Week, Time of Day, Notification Class, Type of Transitions...etc.. In addition to this the BACnet Workstation must be recognized by the controller as a BACnet device following the BACnet standard (Who Is , Read Property).

2. Fault notification is provided by associating a multistate alarm object with each control application fault type. For example, when the “Thermostat Conflict” fault occurs, a flag is set in the associated multistate alarm object indicating that this fault is active. The implementation of the multistate alarm object in the controller results in a BACnet message being sent to the BAS network when the fault occurs.

3. The name of the object reporting the Alarm is not included in the message (just the object type and instance number). The BACnet workstation may wish to do a read property of the object name for this object type and instance number to determine the descriptor.

4. Multiple parameters are used in the Confirmed Event Notification Message from the controller. Some of these parameters are Device Object Name (i.e. ydcu_00001700), object name, Property Reference name,(Object Type 172), Property Reference Value (Instance Number), reliability, States, Event Transition, Vendor Identifier, Time and Data stamp. The interpretation of the message information is a function of each vendor’s BACnet workstation.

YORK Proprietary BACnet Attributes

Table 3 lists eco^2 Rooftop Unit control application attributes accessible for read, and in some cases, write, through BACnet Proprietary Objects. The accessibility of the attributes listed is dependent on the functions provided by each vendor's BACnet workstation based on the information provided for these attributes.

Table 3 - Eco2 BACnet Proprietary Control Application Attributes

	Parameter Description	Parameter Displayed	BACnet OID	Attribute #	BACnet Object Type	Read Write Send	Tag #
1.	Refrig System 1; Status =	0, 1 (0=Normal, 1=Safety Trip)	16	63210	236	R	1
2.	Refrig System 1; Comps ON =	0=A	13	63362	236	R	4
		1=B					
		2=BOTH					
		3=NONE					
3.	Refrig System 2; Status =	0, 1 (0=Normal, 1=Safety Trip)	17	63210	236	R	1
4.	Refrig System 2; Comps ON =	0=A	13	63363	236	R	4
		1=B					
		2=BOTH					
		3=NONE					
5.	Refrig System 3; Status =	0, 1 (0=Normal, 1=Safety Trip)	18	63210	236	R	1
6.	Refrig System 3; Comps ON =	0=A	13	63364	236	R	4
		1=B					
		2=BOTH					
		3=NONE					
7.	Hydronic Heat System; Cntrl Output =	XXX %	304	85	1	R	
8.	Hydronic Heat System; Freezestat =	0, 1 (0=inactive, 1=active)	211	85	3	R	9
9.	Staged Heat System; Stages ON =	X, N/A	28	63277	236	R	4
10.	Staged Heat System; Stages Avail =	X, N/A	28	63250	236	R	4
11.	Economizer System; Type =	3=N/A	28	63406	236	R	4
		0=OA Dry Bulb					
		1=Single Enthalpy					
		2=Dual Enthalpy					
12.	Economizer System; Status =	1=Active	28	63409	236	R	4
		0=Inactive					
		2=N/A					
		3=Fault					
13.	Ventilation System; Type =	4=Full Airflow	28	63388	236	R	4
		0=None					
		1=Min Dampr Pos					
		2=Min Airflow					
		3=25/75 Airflow					
14.	Ventilation System; Status =	0, 1 (0=Off, 1=On)	28	63387	236	R	4
15.	Outside Air Damper; Position =	XXX %	300	85	1	R	
16.	Outside Air Damper; Min Pos =	XXX %	28	63270	236	R	
17.	Outside Air Damper; Total Flow =	XXXXX cfm	14	63278	236	R	
18.	Economizer 1st Stage; Setpoint =	XX °F	28	63048	236	R/W	4
19.	Economizer 2nd Stage; Setpoint =	XX °F	28	63049	236	R/W	4
20.	SAT Econo Load Heat; Setpoint =	XXX °F	28	63403	236	R/W	4
21.	Outside Air Enthalpy; Setpoint =	XX btu/lb	28	63758	236	R/W	4
22.	Cmfrt Vent High SAT; Setpoint =	XX °F	28	63027	236	R/W	4
23.	Cmfrt Vent Low SAT; Setpoint =	XX °F	28	63028	236	R/W	4
24.	Warm-Up RAT; Setpoint =	XX °F	28	63273	236	R/W	4
25.	Hydro Heat 1st Stage; Setpoint =	XXX °F	28	63255	236	R/W	4
26.	Hydro Heat 2nd Stage; Setpoint =	XXX °F	28	63256	236	R/W	4
27.	OA Damper Min Pos #1; Setpoint =	XXX %	28	63270	236	R/W	4
28.	OA Damper Min Pos #2; Setpoint =	XXX %	28	63271	236	R/W	4
29.	Demand Ventilation; Setpoint =	XXXX ppm	28	63045	236	R/W	4
30.	Min Outside Airflow; Setpoint =	XXXXX cfm	28	63661	236	R/W	4