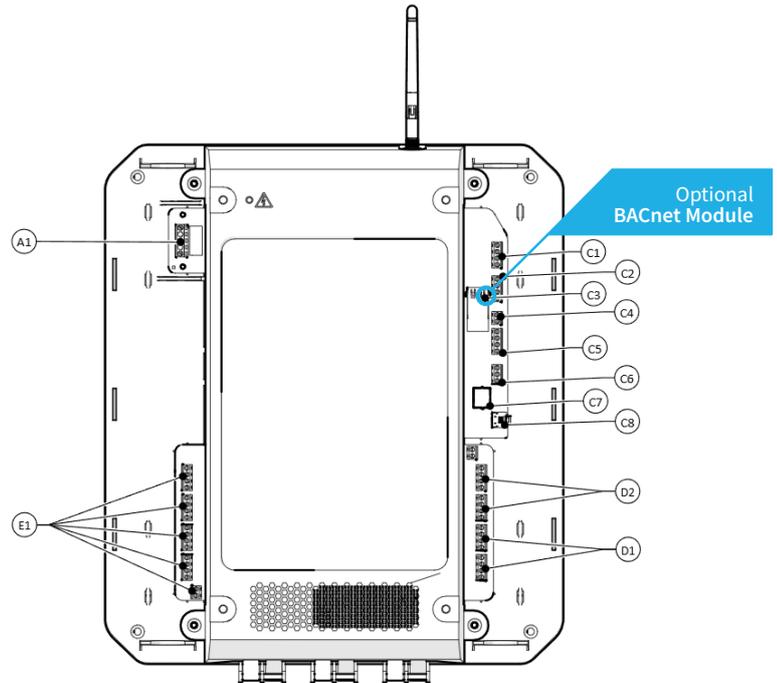


Acuity Optional BACnet Module

Central Control System for Range Zero products

Product Specification Sheet



 **POWER TO BE ISOLATED BEFORE REMOVING LEFT HAND COVER**

Product Description

Acuity is Monodraught's central connectivity system that links seamlessly and securely with the HVR Zero systems. This class leading control system has been developed from the ground up and integrates Internet of Things (IoT) connectivity. Utilising automated continuous monitoring software, the control system remotely monitors and diagnoses potential issues before they occur.

The BACnet module allows Acuity to be installed on to a BACnet/IP network and make visible a number of system variables. This provide's visibility to each room's temperature, CO₂ level, operating mode and any faults present. In addition, the Acuity status can also be monitored.

Technical Details

The BACnet module for Acuity is a Cimetrics EasyBAC module based on a Lantronix XPort device. This module plugs into the Main Interface Board located at the top under the right-hand side cover and provides BACnet visibility of the Acuity and rooms containing HVR systems.

Each Acuity has its own unique IP address on the BACnet/IP network, and collates all the information from the rooms containing HVR units connected to it via the proprietary MonoComms interface.

The BACnet module requires an RJ45 Ethernet connection (by others) from the BACnet/IP network to the Acuity.

For more information on this product visit, contact:

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Analog Values

Instance N°	Object Name	Units	Description	R/W
Acuity Status				
1	Year	Years	Year	R
2	Month	Months	Month	R
3	Day	Days	Day	R
4	Hour	Hours	Hour	R
5	Minute	Minutes	Minute	R
6	External Temperature	°C	External Temperature	R
Room Status (x10/x25/x55)				
10 + (N x 10)	Room<N> Fault	N/A (See %)	Code indicating any faults that are present	R

Analog Inputs

Instance N°	Object Name	Units	Description	R/W
Room Status (x10/x25/x55)				
10 + (N * 10)	Room<N> Temp	°C	Temperature of the room	R
11 + (N * 10)	Room<N> CO ₂	ppm	CO ₂ level in the room	R

Multistate Values

Instance N°	Object Name	Units	Description	R/W
Acuity Status				
1	Status	N/A (See #)	Overall status of Acuity	R
Room Status (x10/x25/x55)				
10 + (N * 10)	Room<N> Mode	N/A (See @)	Operating mode	R

Please Note:

- Where N is from 0 to (Max Number of Rooms - 1), so the first Room (N=0) would update Analog Inputs 10 to 15, the 2nd room (N=1) would update Analog Inputs 20-25 etc.
- The maximum number of rooms is dependent upon the Model of acuity (i.e. HVR-INV-AC-10 = 10 Rooms, HVR-INV-AC-25 = 25 Rooms, and HVR-INV-AC-55 = 55 Rooms)

Binary Values

Instance N°	Object Name	Description	R/W
1	Global Enable	Setting this to Inactive puts all Rooms into “Off” mode	W
2	Heating Required	If active, at least 1 room requires heating/hot water supply	R

Binary Inputs

Instance N°	Object Name	Description	R/W
1	Fire Interlock	State of Fire Interlock Input	R
2	Rain Sensor	State of Rain Sensor Input	R

(#) Acuity Status Value Description

Number	Mode
1	Unknown
2	Off
3	Normal
4	Fire Interlock
5 - 10	Reserved

(@) Room Operating Mode Value Description

Number	HVR Zero Mode	Windcatcher Zero Mode	APX Mode
0	Off	Off	Off
1	Mix	UNUSED	Mix
2	Boost	Boost	Boost
3	Natural Ventilation	Natural Ventilation	Natural Ventilation
4	Manual Fan Speed	Manual Fan Speed	Manual Fan Speed
5	Reserved	Reserved	Reserved
6	Night Cooling	Night Cooling	Night Cooling
7	Science	UNUSED	Science
8	Heating	UNUSED	Heating
9	Heating + Ventilation	UNUSED	Heating + Ventilation
10	Acoustic Test	Acoustic Test	Acoustic Test
11	Self-test	Self-test	Self-test
12	Pre-heat	UNUSED	Pre-heat

Continues on the next page

13	Heat pump Cooling	UNUSED	Cooling
14	Purge	Purge	Purge
15	Inhibit	Inhibit	Inhibit
16	Reserved	Reserved	Reserved
17	Holiday	Holiday	Holiday
18	UNUSED	Heat Recovery	UNUSED
19	UNUSED	Cool Recovery	UNUSED
20	Fire	Fire	Fire
21	UNUSED	Idle	UNUSED
22	Heating Test	UNUSED	Heating Test
23	Frost Protect	Competition Switch Open	Frost Protect
24	Maintenance	Competition Switch Close	Maintenance
25	Reserved	Acuity Inhibit	Acuity Inhibit
26	Acuity Inhibit	UNUSED	UNUSED
27	Setback Mode	UNUSED	Free Cooling
28	BMS Heating	UNUSED	Min Temp Check
29	BMS Max Heating	UNUSED	Reserved
30	Cooling Test	UNUSED	Setback Mode
31	Valve Test	UNUSED	Air Test
32	UNUSED	UNUSED	Cooling Test
33	UNUSED	UNUSED	Valve Test

(%) Room Fault Code Value Description

The fault code is a numeric value that indicates any fault present on the system. Each fault has a unique code allocated to it (2(n-1) where n is the fault number) which are added together to form the fault code. So if there was a fault with the RTC, External Damper and Supply Fan, the fault code would be 1029 (1 + 4 + 1024). The actual fault code meaning will depend upon whether the room contains HVR Zero or Windcatcher Zero units.

Fault Number	Hex Code	Decimal Code	HVR Zero Fault	Windcatcher Zero Fault	APX Fault
1	0x00000001	1	RTC	RTC	RTC
2	0x00000002	2	FLASH	FLASH	FLASH
3	0x00000004	4	External Damper	UNUSED	External Damper
4	0x00000008	8	Exhaust Damper	UNUSED	Bypass Damper
5	0x00000010	16	Air Mixing Damper	UNUSED	Recirculation Damper
6	0x00000020	32	Grille Actuator	UNUSED	Grille Actuator

7	0x00000040	64	Intake Temperature Sensor	Intake Temperature Sensor	External Temperature Sensor
8	0x00000080	128	Recirculation Temperature Sensor	Extract Temperature Sensor	Extract Temperature Sensor
9	0x00000100	256	Supply Air Temperature Sensor	Supply Temperature Sensor	Recirc. Temperature Sensor
10	0x00000200	512	Heating Coil Temperature Sensor	Exhaust Temperature Sensor	Coil Temperature Sensor
11	0x00000400	1024	Supply Fan	Supply Fan	Supply Fan
12	0x00000800	2048	Extract Fan	Extract Fan	Extract Fan
13	0x00001000	4096	User Interface	User Interface	User Interface
14	0x00002000	8192	Heating	Heating	Heating
15	0x00004000	16384	Cooling	Cooling	Cooling
16	0x00008000	32768	Parent/Child Communications	Parent/Child Communications	Parent/Child Communications
The faults below can only be read from the 32-bit Room Fault code					
17	0x00010000	65536	Condensate Fault	Nat Vent Temp Sensor 1	Supply Airflow Sensor
18	0x00020000	131072	UNUSED	Nat Vent Temp Sensor 2	Extract Airflow Sensor
19	0x00040000	262144	UNUSED	Supply Damper	Internal CO2 Sensor
20	0x00080000	524288	UNUSED	Extract Damper	Four-in-one Sensor
21	0x00100000	1048576	UNUSED	Nat Vent Damper	I2C Fault
22	0x00200000	2097152	UNUSED	Active Louvre	Coil 2 Temperature Sensor
23	0x00400000	4194304	UNUSED	UNUSED	Heat Exchanger Temperature Sensor
24	0x00800000	8388608	UNUSED	UNUSED	Intake Temperature Sensor
25	0x01000000	16777216	UNUSED	UNUSED	Condensate Fault
26	0x02000000	33554432	UNUSED	UNUSED	UNUSED
27	0x04000000	67108864	UNUSED	UNUSED	UNUSED
28	0x08000000	134217728	UNUSED	UNUSED	UNUSED
29	0x10000000	268435456	UNUSED	UNUSED	UNUSED
30	0x20000000	536870912	UNUSED	UNUSED	UNUSED
31	0x40000000	1073741824	UNUSED	UNUSED	UNUSED
32	0x80000000	2147483648	UNUSED	UNUSED	UNUSED



Monodraught

We are pioneers in the design and manufacture of advanced sustainable ventilation, cooling, heating and lighting solutions for new and refurbished commercial and public buildings. We deliver outstanding temperature-control and indoor air quality whilst minimising the consumption of both electricity and refrigerants so as to reduce our carbon footprint. Monodraught have over 50 years' experience and our products have saved the equivalent of nearly 540,000 tonnes CO₂ over the last two decades.

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