



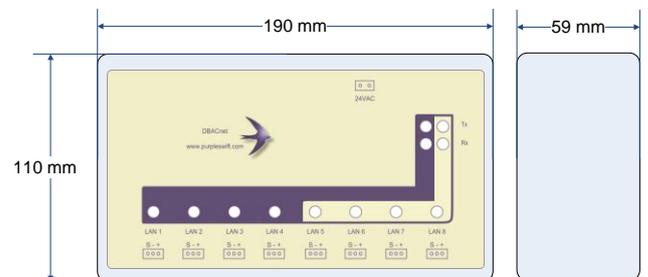
The DBACnet controller makes Siemens APOGEE floor level controls available to BACnet via the BACnet /IP protocol. The DBACnet controller communicates with any attached APOGEE floor level controls (such as the TEC) and makes the controls available to any BACnet system. The BACnet system can both read and write (command) the APOGEE device settings (sub-points).

Features

- Auto detection of attached devices
- Auto configuration of attached devices
- Multiple DBACnet controllers per BACnet installation
- 8 LAN connections supporting up to 256 devices *
- DHCP or Static IP address
- Power-on re-commanding of values
- Local caching of monitored points for fast response

* When used with devices with extended addressing then up to 400 may be connected per DBACnet controller.

Dimensions

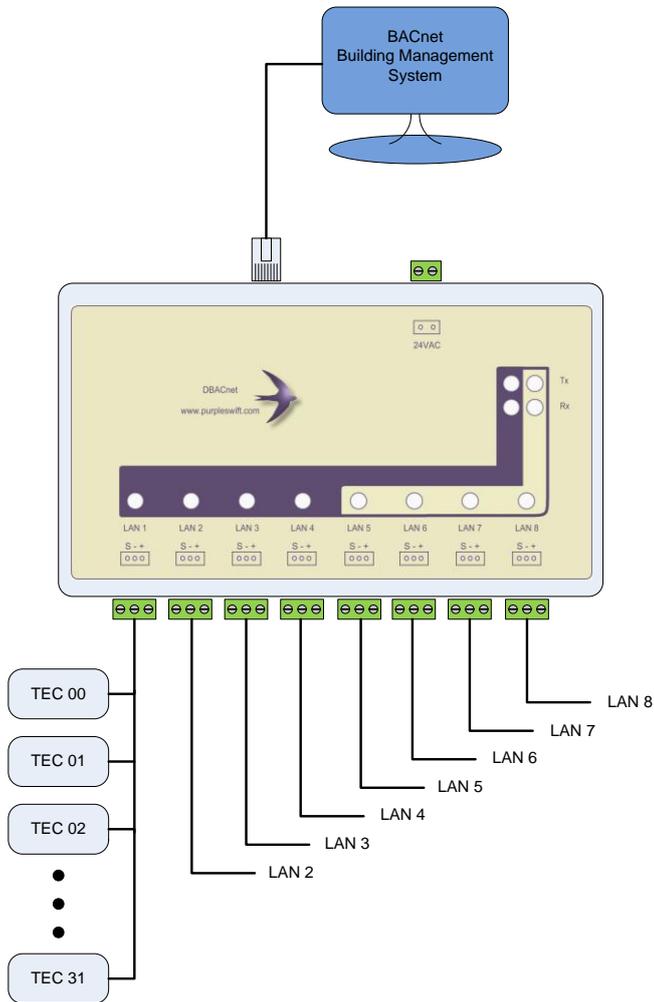


Technical Data
Operating voltage 24 VAC, 3 VA
10 / 100 Ethernet connection for BACnet /IP
Maximum 50 devices per LAN
LAN BAUD rate 4800
Maximum LAN cable length 1500 metres (per LAN)
BACnet Conformance Class 3

Connections

The DBACnet communicates with the host BACnet system via BACnet /IP which uses the Ethernet CAT5 connection.

The floor level devices are connected to the 8 LAN ports.



Operation

The DBACnet controller takes approximately 15 seconds to initialize after power-on. After power-on the DBACnet enters a fast scanning mode where all attached LAN devices are rapidly detected and initialized.

The device initialization consists of establishing communications, re-commanding output point values as required and then alerting input points for change of value (COV) monitoring. Each device type has a unique application number and on first encountering an application the full application point list is saved in the DBACnet non-volatile memory. This process can take as long as 60 seconds per application but is only done once.

Once the fast scan is complete then normal operation is resumed where all detected devices are sequentially polled for any change of value(s). All unused addresses are sequentially tested (about 1 every 3 seconds) in order to locate any additional devices.

Should a device fail to respond it is then removed from the online device list and added to the offline device list. The DBACnet will continuously try to reconnect with these offline devices (about 1 every 6 seconds).

Any change of value(s) reported by the online devices are stored by the DBACnet for fast response to any BACnet read property commands.

The DBACnet controls the LAN ports in 2 independent groups. The LAN ports 1 to 4 are polled sequentially as are the LAN ports 5 to 8. For optimal system response (speed) it is better to balance the number of devices in each of these port groups. For example if 100 devices are placed on LAN ports 1 to 4 then the maximum delay between a point value changing and the DBACnet having the new value will be around 10 seconds. If 50 devices were placed on LAN ports 1 to 4 and another 50 on LAN ports 5 to 8 the resulting delay would be halved to a maximum of 5 seconds.

BACnet

Configuration Tool

The DBACnet configuration tool is used for setting-up DBACnet. It includes a DBACnet browser which provides a useful commissioning tool.

Device Instance

The default instance of the DBACnet is 9800 plus the value set on the DBACnet DIP switch. This number can be overridden in software using the DBACnet configuration tool.

IP Address

The IP address can be dynamically allocated by a DHCP server or a static IP address can be used. The DBACnet configuration tool is used to make this selection.

Broadcast Address

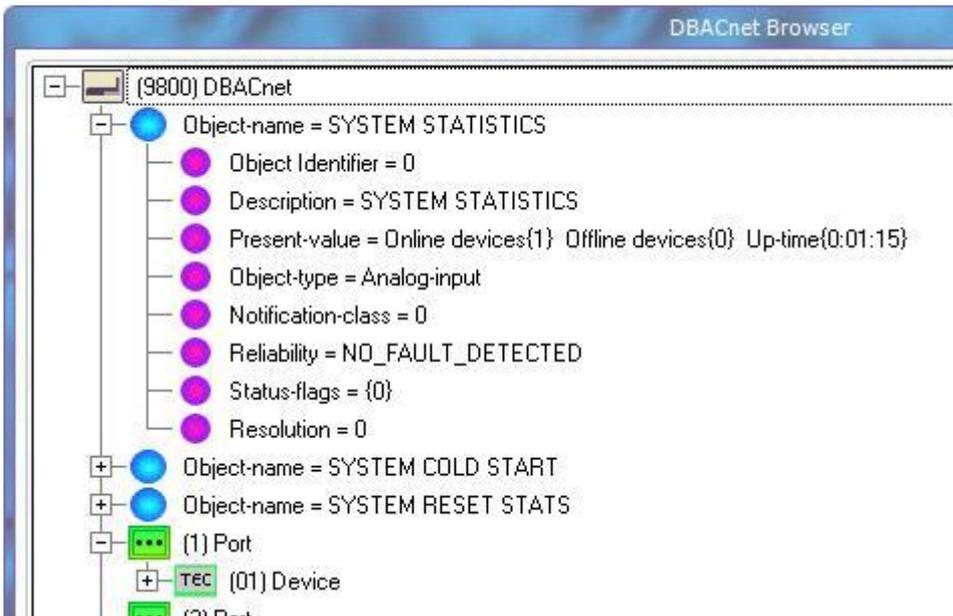
The Broadcast Address (used by the Who-Is / I-Am service) can be set using the DBACnet configuration tool.

BACnet Services Supported

BACnet Service	Initiate	Execute
Who Is	Yes	Yes
I Am	Yes	Yes
Read Property	-	Yes
Write Property	-	Yes
Read Property Multiple	-	Yes
Write Property Multiple	-	Yes
Who Has	-	Yes
I Have	-	Yes

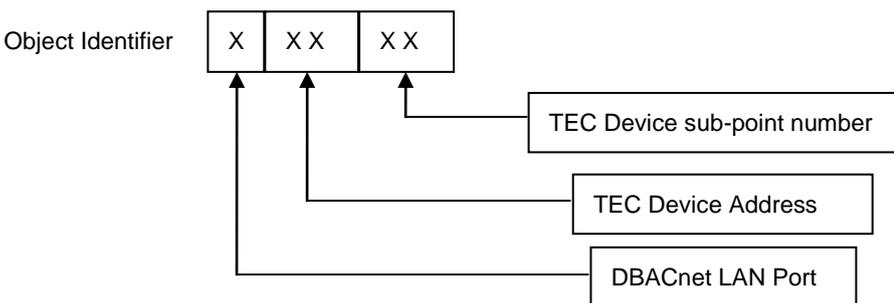
BACnet System Objects

Object Identifier	Object Name	Object Type	Notes
0	SYSTEM STATISTICS	Analog Input	See image of DBACnet browser below.
1	SYSTEM COLD START	Analog Input	Write the Notification-Class property to 1 and the DBACnet will erase all system data and restart. The system data includes all output priority data.
2	SYSTEM RESET STATS	Analog Input	Write the Notification-Class property to 1 and the DBACnet will reset all stats counters.



TEC Device Object Mapping

In order to provide BACnet with access to the TEC type device sub-points each sub-point must be mapped to a BACnet Object. Each BACnet object has a unique identifier property (Object Identifier) which is used to access the object properties. The mapping from TEC device sub-point to Object identifier is made as follows:

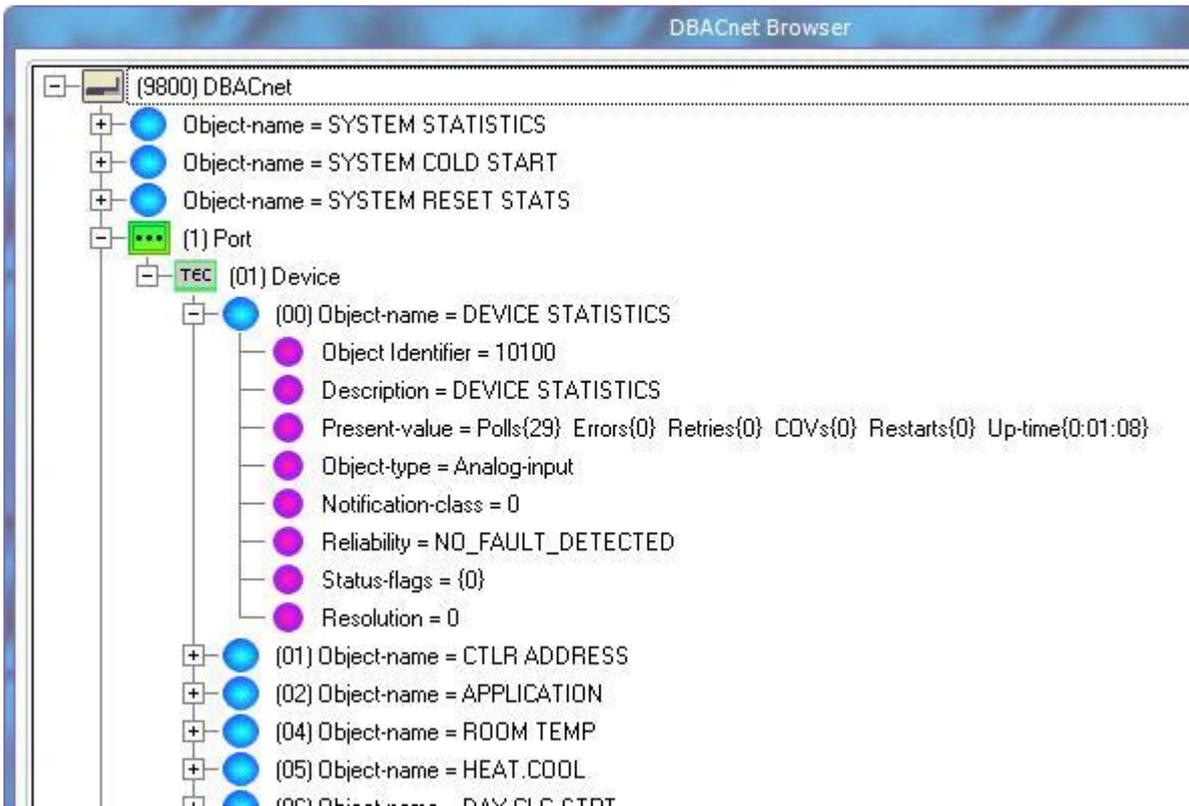


For example. Sub-point (29) on TEC device addressed (18) connected to DBACnet port (3) will have an Object Identifier (31829).

TEC Device Stats

The DBACnet adds a “virtual” sub-point (00) to each TEC device. This Object named DEVICE STATISTICS of type analog-input provides stats for the TEC type device.

For example. Sub-point (00) on TEC device addressed (01) connected to DBACnet port (1) will have an Object Identifier (10100).



TEC Device Sub-point Unbundling

In order to respond quickly to any BACnet “read property” requests it is essential to have the current property values stored in the DBACnet memory. The reason for this is that the TEC device sub-points are accessed via a relatively slower communications medium. The method that the Apogee system uses to achieve this is called sub-point unbundling and it alerts the TEC device as to which sub-points we are monitoring. The TEC device then sends all change of value (COV) of the unbundled sub-points to the DBACnet.

In order to implement sub-point unbundling write the Notification-class property to 1. The DBACnet will then unbundle this sub-point. This setting will be stored in the DBACnet and will remain active until it is either removed by setting the Notification-class property back to 0 or by executing a DBACnet “cold start” in which all system settings are erased.

The DBACnet will automatically unbundle any sub-points that the BACnet reads however the initial read will be delayed while the current value is fetched from the TEC device. If this initial delay is acceptable then it is not necessary to write the Notification-class property as described above. These automatically unbundled points are NOT stored on the DBACnet and so will be lost after every power-off.

TEC Device Sub-point Outputs

TEC type devices only have one value for each output. The BACnet system calls for 16 possible values for each output associated with the 16 levels of priority. The DBACnet maintains the BACnet output priority array for each output. This data is lost when a DBACnet “cold start” is executed.

BACnet Object Types Supported

Object Type	Property	Writable
Analog Input	Object-name	-
	Description	-
	Object-type	-
	Present-value	-
	Reliability	-
	Status-flags	-
	Notification-class	Yes
	Resolution	-
	Units	-
Analog Output	Object-name	-
	Description	-
	Object-type	-
	Present-value	Yes
	Reliability	-
	Status-flags	-
	Notification-class	Yes
	Resolution	-
	Units	-
	Relinquish-default	Yes
Binary Input	Object-name	-
	Description	-
	Object-type	-
	Present-value	-
	Reliability	-
	Status-flags	-
	Notification-class	Yes
	Active-text	-
	Inactive-text	-
Binary Output	Object-name	-
	Description	-
	Object-type	-
	Present-value	-
	Reliability	-
	Status-flags	-
	Notification-class	Yes
	Active-text	-
	Inactive-text	-
	Relinquish-default	Yes