



BACnet Protocol Implementation Conformance Statement

Date: April 23, 2024

Vendor Name: ABB, Vendor ID 127

Product Name: HVAC Drive

Product Model Number: ACH580

Applications Software Version: Drive FW: 2.20.x.x BACnet Appl: 2060

Firmware Revision: 19.01

BACnet Protocol Revision: 19

Product Description:

The ACH580 is a high-performance variable speed drive (VSD) designed for HVAC and refrigeration applications. This product natively supports BACnet MS/TP. The ACH580 supports baud rates up to 115.2 kbps as well as both manager and subordinate mode functionalities. The ACH580 can be fully controlled and/or monitored over BACnet. In addition, all standard I/O is available over BACnet.

BACnet Standardized Device Profile (Annex L):

- BACnet Operator Workstation (B-OWS)
- BACnet Advanced Operator Workstation (B-AWS)
- BACnet Operator Display (B-OD)
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)

List all BACnet Interoperability Building Blocks Supported (Annex K):

DS-RP-B	Data Sharing-ReadProperty
DS-RPM-B	Data Sharing-ReadProperty Multiple
DS-WP-B	Data Sharing-WriteProperty
DS-WPM-B	Data Sharing-WriteProperty Multiple
DS-COV-B	Data Sharing-Change of Value
DM-DDB-B	Device Management-DynamicDeviceBinding
DM-DOB-B	Device Management-DynamicObjectBinding
DM-DCC-B	Device Management-DeviceCommunicationControl
DM-RD-B	Device Management-ReinitializeDevice
DM-TS-B	Device Management-Time Synchronization

Segmentation Capability:

- Able to transmit segmented messages Window Size: -
- Able to receive segmented messages Window Size: -

Standard Object Types Supported:

Object instantiation is static, i.e. objects cannot be created or deleted.
Refer to tables at end of this document for object details.



Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s) _____
- MS/TP manager (Clause 9), baud rate(s): 9.6k, 19.2k, 38.4k, 76.8k, 115.2k
- MS/TP subordinate (Clause 9), baud rate(s): 9.6k, 19.2k, 38.4k, 76.8k, 115.2k
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): _____
- Point-To-Point, modem, (Clause 10), baud rate(s): _____
- LonTalk, (Clause 11), medium: _____
- BACnet/ZigBee (ANNEX O)
- Other: _____

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP subordinates and certain other devices.) Yes No

Networking Options:

- Router, Clause 6
 - BACnet/IP to MS/TP
 - BACnet/ ISO 8802-3, Ethernet to MS/TP
 - BACnet/IP to BACnet/ ISO 8802-3, Ethernet
 - BACnet/IP to BACnet/ ISO 8802-3, Ethernet to MS/TP
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
 - Does the BBMD support registrations by Foreign Devices? Yes No
 - Max BDT (Broadcast Distribution Table)-Entries: -
 - Does the BBMD support network address translation? Yes No

Network Security Options:

- Non-secure Device – is capable of operating without BACnet Network Security
- Secure Device – is capable of using BACnet Network Security (NS-SD BIBB)
 - Multiple Application-Specific Keys:
 - Supports encryption (NS-ED BIBB)
 - Key Server (NS-KS BIBB)

Character Sets Supported:

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ISO 10646 (UTF-8)
- IBM™/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2)
- ISO 10646 (UCS-4)
- JIS X 0208

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:



Object/Property Support Matrix

The following table summarizes properties and their respective object types.

Property	Object type								
	Binary Input	Binary Output	Binary Value	Analog Input	Analog Output	Analog Value	Multistate Value	Loop	Network Port
Object Identifier	R	R	R	R	R	R	R	R	R
Object Name	W, P	W, P	R	W, P	W, P	R ⁽¹⁾	R	W,P	R
Object Type	R	R	R	R	R	R	R	R	R
Present Value	R	C	C	R	C	C	R	R	
Status Flags	R	R	R	R	R	R	R	R	R
Event State	R	R	R	R	R	R	R	R	
Out-of-Service	W	W	W	W	W	W	W	W	R
Polarity	W, P	W, P							
Active Text	R	R	R						
Inactive Text	R	R	R						
Units				R	R	R			
Min Present Value				R	R	R			
Max Present Value				R	R	R			
Priority Array		R	R		R	R			
Relinquish Default		W, P	W,P		W, P	W, P			
Current Command Priority		R	R		R	R			
COV Increment				W,P	W,P	W,P			
Number Of States							R		
State Text							R		
Property List	R	R	R	R	R	R	R	R	R
Reliability									R
Network Type									R
Protocol Level									R
Network Number									R
Network Number Quality									R
Changes Pending									R
MAC Address									W, P
APDU Length									R
Link Speed									R
Max Manager									W, P
Max Info Frames									W, P
	R=Read Only, W=Writable, C=Commandable, P=Persist								



	<p>(1) AV16, AV17, AV21, AV22, AV40- AV44, AV55, AV56, AV59 , AV120-129 have W, P. On ULH drives AV118, AV119 also have W.</p> <p>– Max length of writable Object Names is 25 characters</p>	
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Device Object Instance Summary

The following table summarizes the Device Object:

Device Object			
Property	Flag	Type	Default value
Object Identifier	W, P	OID	4194303
Object Name	W, P	CharString, max length 25	AC Drive 4194303
Object Type	R	Enum	device (8)
System Status	R	Enum	
Vendor Name	R	CharString	ABB
Vendor Identifier	R	Unsigned	127
Model Name	R	CharString	ACH580
Firmware Revision	R	CharString	19.01
Application Software Revision	R	CharString	Drive FW: 2.20.x.x BACnet Appl: 2060
Description	W, P	CharString, max length 100	“ACH580 is a high-performance variable speed drive designed for HVAC and refrigeration applications.”
Location	W, P	CharString, max length 50	“(not set)”
Protocol Version	R	Unsigned	1
Protocol Revision	R	Unsigned	19
Protocol Services Supported	R	BitString	
Protocol Object Types Supported	R	BitString	
Object List	R	Array of OID	
Max APDU Length Accepted	R	Unsigned	480
Segmentation Supported	R	Enum	No segmentation (3)
Local Time	R	BACnetTime	
Local Date	R	BACnetDate	
APDU Timeout	W, P	Unsigned	10000 ms
Number of APDU Retries	W, P	Unsigned	3
Max Manager	W, P	Unsigned	127
Max Info Frames	W, P	Unsigned	1
Device Address Binding	R	List of Struct	
Database Revision	R, P	Unsigned	
Active COV Subscriptions	R	Array of BACnetCOVSubscription	
Serial Number	R	CharString	
Property List	R	Array of Unsigned	
Flags: R=Read Only, W=Writable, C=Commandable, P=Persist			



Binary Input Object Instance Summary

The following table summarizes the Binary Input Objects supported:

Object ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BI0	RO1-Monitor	Status of Relay Output 1	On / Off	R
BI1	RO2-Monitor	Status of Relay Output 2	On / Off	R
BI2	RO3-Monitor	Status of Relay Output 3	On / Off	R
BI3	RO4-Monitor	Status of Relay Output 4	On / Off	R
BI4	RO5-Monitor	Status of Relay Output 5	On / Off	R
BI5	DO1-Monitor	Status of Digital Output 1	On / Off	R
BI6	DI1-Monitor	Status of Digital Input 1	On / Off	R
BI7	DI2-Monitor	Status of Digital Input 2	On / Off	R
BI8	DI3-Monitor	Status of Digital Input 3	On / Off	R
BI9	DI4-Monitor	Status of Digital Input 4	On / Off	R
BI10	DI5-Monitor	Status of Digital Input 5	On / Off	R
BI11	DI6-Monitor	Status of Digital Input 6	On / Off	R

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.

Binary Output Object Instance Summary

The following table summarizes the Binary Output Objects supported:

Object ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BO0	RO1-Command	Output state of Relay 1	On / Off	C
BO1	RO2-Command	Output state of Relay 2	On / Off	C
BO2	RO3-Command	Output state of Relay 3	On / Off	C
BO3	RO4-Command	Output state of Relay 4	On / Off	C
BO4	RO5-Command	Output state of Relay 5	On / Off	C
BO5	DO1-Command	Output state of Digital Output 1	On / Off	C

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.



Binary Value Object Instance Summary

The following table summarizes the Binary Value Objects supported:

Object ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BV0	RUN-STOP-Monitor	Drive's run status	Run / Stop	R
BV1	Direction-Monitor	Rotational direction of the motor	Reverse / Forward	R
BV2	OK-FAULT-Monitor	Actual fault status of drive	Fault / OK	R
BV3	EXT1-EXT2-Monitor	Actual control source	Ext2 / Ext1	R
BV4	HAND-AUTO-Monitor	Actual operating mode.	Hand / Auto	R
BV5	Warning-Monitor	Actual warning status	Warning / OK	R
BV7	Ready-Monitor	Actual ready status	Ready / Not-Ready	R
BV8	At-Setpoint-Monitor	Actual at setpoint status	Yes / No	R
BV9	Enabled-Monitor	Actual run enabled status	Enable / Disable	R
BV10	RUN-STOP-Command	Command to start drive	Run / Stop	C
BV11	Direction-Command	Command to rotational direction	Reverse / Forward	C
BV12	Run-Permissive-Command	Command to Run Permissive command	Enable / Disable	C
BV13	EXT1-EXT2-Command	Commanded to External 1 or External 2 selection	Ext2 / Ext1	C
BV14	Fault-Reset-Command	Commanded to fault reset	Reset / No	W
BV15-BV16	<Reserved>			
BV17	Lock-Parameters	Actual status of parameter lock.	Lock / Unlock	R
BV18	Control-Override-Command	Command the drive into BACnet Control Override. In this mode, BACnet acquires drive control from its normal source. Note that HAND mode of the panel has priority over BACnet Control Override.	On / Off	C
BV19	Control-Override-Monitor	Indicates if drive has been placed in BACnet Control Override by commanding BV18. In this mode, BACnet acquires drive control from its normal source. Note that HAND mode of the panel has priority over BACnet Control Override.	On / Off	R



Object ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BV20	Start-Interlock-1-Command	Command to Start Enable 1	Enable / Disable	C
BV21	Start-Interlock-2-Command	Command to Start Enable 2	Enable / Disable	C
BV24	Started-Monitor	Actual start status	Started / Not-Started	R
BV25	Safe-Torque-Off-Monitor	Actual status of Safe Torque Off	Active / OK	R
BV26	Underload-Monitor	Indicates if ULC signal is lower than the Underload curve	Underload / OK	R
BV27	Overload-Monitor	Indicates if ULC signal is higher than the Overload curve	Overload / OK	R
BV28	Motor-Heating-Command	Command to Motor Heating mode	On / Off	W
BV29	Motor-Heating-Monitor	Actual status of Motor Heating mode	On / Off	R
BV30	User0-Monitor	Actual status of "User bit0" in drive status word	On / Off	R
BV31	User1-Monitor	Actual status of "User bit1" in drive status word	On / Off	R
BV32	User2-Monitor	Actual status of "User bit2" in drive status word	On / Off	R
BV33	User3-Monitor	Actual status of "User bit3" in drive status word	On / Off	R
BV34	User0-Command	Commands "User bit0" in drive status word	On / Off	C
BV35	User1-Command	Commands "User bit1" in drive status word	On / Off	C
BV36	User2-Command	Commands "User bit2" in drive status word	On / Off	C
BV37	User3-Command	Commands "User bit3" in drive status word	On / Off	C
BV38	<Reserved>			
BV39	Parameter-Save-Command	Command to save drive parameters and BACnet property data (properties marked as 'P=Persist')	Save / No	W
BV40	PID-Set-Select	Command to Process PID Set1 or Process PID Set2 selection	Set2 / Set1	W

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.

Analog Input Object Instance Summary

The following table summarizes the Analog Input Objects supported:



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AI0	AI1-Monitor	Indicates the input level of Analog Input 1.	0...100	Percent (%)	R
AI1	AI2-Monitor	Indicates the input level of Analog Input 2.	0...100	Percent (%)	R

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.

Analog Output Object Instance Summary

The following table summarizes the Analog Output Objects supported:

Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AO0	AO1-Command	Controls Analog Output 1 (drive must be configured for BACnet control).	0...100	Percent	C
AO1	AO2-Command	Controls Analog Output 2 (drive must be configured for BACnet control).	0...100	Percent	C

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.

Analog Value Object Instance Summary

The following table summarizes the Analog Value Objects supported:

Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AV0	Output-RPM	Motor speed	0, nominal speed	rpm	R
AV1	Output-Freq	Output frequency	-500, 500	Hz	R
AV2	DC-Voltage	DC bus voltage	0, 2000	V	R
AV3	Output-Voltage	AC output voltage	0, 2000	V	R
AV4	Output-Current	Output current of drive	0, nominal current	A	R
AV5	Output-Torque	Output torque of motor as a percentage of nominal torque	-1600, 1600	%	R



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AV6	Output-Power	Output power in kW	nominal power (+/-)	kW	R
AV7	Operating-Temp-Range	Heatsink temperature	-40, 160	%	R
AV8	Kilowatt-Hour-Meter-R	Drive's cumulative energy usage. This value is resettable.	0,65535	kWh	W
AV9	Kilowatt-Hour-Meter-NR	Drive's cumulative energy usage. This value is not resettable.	0, 65535999999	kWh	R
AV10	Process-PID-Feedback	This object is the Process PID feedback signal.	0, 100	%	R
AV11	Process-PID-Deviation	This object is the Process PID output signal's deviation from its setpoint.	0, 100	%	R
AV12	External-PID-Feedback	This object is the External PID feedback signal.	0, 100	%	R
AV13	External-PID-Deviation	This object is the External PID output signal's deviation from its setpoint.	0, 100	%	R
AV14	Running-Hours	Drive's resettable run time (reset by writing 0).	0, 3.40282347e38	hours	R
AV15	Motor-Temp-Degrees-C	Motor temperature	-10, 200	°C	R
AV16	Input-Reference-1	Speed setpoint 1	-150, 150	%	C
AV17	Input-Reference-2	Speed setpoint 2.	-150, 150	%	C
AV18	Active-Fault	Displays most recent fault currently active.			R
AV19	Previous-Fault-1	Displays most recent stored (non-active) fault			R
AV20	Previous-Fault-2	Displays the second most			R



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
		recent stored (non-active) fault			
AV21	AO1-Monitor	Output level of Analog Output 1	0, * 100	% *	R
AV22	AO2-Monitor	Output level of Analog Output 2	0, * 100	% *	R
AV23	Accel-1-Seconds	Ramp1 acceleration time	0, 1800	s	W
AV24	Decel-1-Seconds	Ramp 1 deceleration time	0, 1800	s	W
AV25	Mbox-Param	Parameter number to be used by the mailbox function. The parameter index is encoded as a 5-digit real number where the group is specified by the first two digits and the index by the next three. For example, to configure parameter 1.03 write 01003 to this parameter. Another example is parameter 95.200, to configure this parameter write 95200.		No Units	W
AV26	Mbox-Data	Used to read or write the parameter configured in AV25. This object responds to both read and write requests to its present value property.		No Units	W
AV27-AV28	<Reserved>				
AV29	Min-Speed	Defines the allowed minimum output frequency	-500, 500	Hz	W
AV30	Max-Speed	Defines the allowed maximum output frequency	-500, 500	Hz	W



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AV31	Output-Speed	Synchronous motor speed	-200, 200	%	R
AV32	Output-Current-Range	Actual motor current	0, 200	%	R
AV33	Max-Current	Max motor current	0, nominal current	A	W
AV34	DC-Ripple	DC bus ripple voltage	0, 200	V	R
AV35-AV39	<Reserved>				
AV40	LOOP-Feedback-Monitor	Loop controller feedback value after source selection, mathematical function and filtering (read-only)	0, 100	%	R
AV41	LOOP-Setpoint-Monitor	Loop controller setpoint value after source selection, mathematical function limitation and ramping (read-only)	0,100	%	R
AV42	LOOP-Setpoint	Command to store loop controller setpoint value used as input for the process	0,100	%	C
AV43	LOOP-Feedback	Stores the feedback value for Loop controller	0, 100	%	W
AV44	LOOP-Output	Loop controller output	0, 100	%	R
AV45	LOOP- Gain	Loop controller gain	0.1, 100	No Units	W
AV46	LOOP-Integration-Time	Loop controller integration time	0, 3600	s	W
AV47-AV48	<Reserved>				
AV49	LOOP-Deviation-Monitor	Loop controller deviation	0, 100	%	R
AV50-AV52	<Reserved>				
AV53	LOOP-1-Gain	Loop controller gain (Set 2)	0.1, 100	No Units	W
AV54	LOOP-1-Integration-Time	Loop controller integration time (Set 2)	0, 3600	s	W



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AV55	LOOP-2-Feedback-Monitor	External loop controller feedback value after source selection, mathematical function and filtering (read-only)	0, 100	%	R
AV56	LOOP-2-Setpoint-Monitor	External loop controller setpoint value after source selection, mathematical function limitation and ramping (read-only)	0,100	%	R
AV57-AV58	<Reserved>				
AV59	LOOP-2-Output	External loop controller output	0, 100	%	R
AV60	LOOP-2-Gain	External loop controller gain	0.1, 100	No Units	W
AV61	LOOP-2-Integration-Time	External loop controller integration time	0, 3600	s	W
AV62-AV63	<Reserved>				
AV64	LOOP-2-Deviation-Monitor	External loop controller deviation	0, 100	%	R
AV65-98	<Reserved>			No Units	W
AV99	Line-Current	Line current from a line side unit. Only available on ultra-low harmonic drives	0, 30000	A	R, ULH
AV100-108	<Reserved>				
AV109	Active-Current	Active current from a line side unit. Only available on ultra-low harmonic drives	0, 30000	A	R, ULH
AV110	Reactive-Current	Reactive current from a line side unit. Only available on ultra-low harmonic drives.	0, 30000	A	R, ULH



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AV111	Grid-Frequency	Grid frequency from a line side unit. Only available on ultra-low harmonic drives	0, 100	Hz	R,ULH
AV112	Grid-Voltage	Grid voltage from a line side unit. Only available on ultra-low harmonic drives	0, 2000	KVA	R,ULH
AV113	Grid-Apparent-Power	Grid apparent power from a line side unit. Only available on ultra-low harmonic drives	-30000, 30000	KVA	R,ULH
AV114	Grid-Power	Grid power from a line side unit. Only available on ultra-low harmonic drives	-30000, 30000	KW	R, ULH
AV115	Grid-Reactive-Power	Grid reactive power from a line side unit. Only available on ultra-low harmonic drives	-30000, 30000	KVAR	R, ULH
AV116	LSU-cos-phi	Line side unit cos phi. Only available on ultra-low harmonic drives	-1, 1	No Units	R, ULH
AV117	Line-Converter-Temperature	Line converter temperature from a line side unit. Only available on ultra-low harmonic drives	-40, 160	%	R, ULH
AV118	User-DC-Voltage-Reference	User DC voltage reference. Only available on ultra-low harmonic drives	0, 2000	V	W, ULH
AV119	User-Reactive-Power-Reference	User reactive power reference. Only available on ultra-low harmonic drives	-3276.8, 3276.7	KVAR	W, ULH



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AV120	Data-IO-1	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.101		No Units	W
AV121	Data-IO-2	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.102		No Units	W
AV122	Data-IO-3	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.103		No Units	W
AV123	Data-IO-4	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.104		No Units	W
AV124	Data-IO-5	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.105 (Read-Only)		No Units	R
AV125	Data-IO-6	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.106 (Read-Only)		No Units	R
AV126	Data-IO-7	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.107 (Read-Only)		No Units	R
AV127	Data-IO-8	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.108 (Read-Only)		No Units	R
AV128	Data-IO-9	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.109 (Read-Only)		No Units	R



Object ID	Default Object Name	Description	Min / Max Present Value	Units	Present Value Access Type
AV129	Data-IO-10	Holds the value of drive parameter, which is mapped using Data I/O parameter 58.110 (Read-Only)		No Units	R
AV130	Kilowatt-Hour-This-Hour	Current hour energy consumption	0, 3.40282347e38	kWh	R
AV131	Kilowatt-Hour-Last-Hour	Last hour energy consumption	0, 3.40282347e38	kWh	R
AV132	Kilowatt-Hour-This-Day	Current day energy consumption	0, 3.40282347e38	kWh	R
AV133	Kilowatt-Hour-Last-Day	Last day energy consumption	0, 3.40282347e38	kWh	R

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.

* For analog values 21 and 22, the “units” property can be changed using ACH580 parameter 58.47, “AV21 & AV22 unit”. This parameter contains two options, one for a unit of “percent” and another for a unit of “AO unit”. When this parameter is set to “AO unit” analog values 21 and 22 use the analog output unit configured in group 13 for AO1 and AO2, respectively. Changing the “units” property of analog value 21 and 22 results in changes to these object’s “min/max present value” and “present value” properties as well. The table above shows the default configuration, which is when 58.47 is set to percent.

Multistate Value Object Instance Summary

The following table summarizes the Multistate Value Objects supported:

Object ID	Object Name	Description	State Text	Present Value Access Type
MSV0	HAND-AUTO-Reference	Indicates whether the drive is under Hand or Auto control, or if override mode is active.	Off, Hand, Auto, Override	R
MSV1	Active-Fault-1	Enumerated type of the most recent fault currently active	None, Comm-Error, Overcurrent, Overtemperature, Overspeed, Overvoltage, Undervoltage, Short-Circuit, Ground-Fault, Motor-Overload, Inverter-Overload, Motor-Underload,	R



Object ID	Object Name	Description	State Text	Present Value Access Type
			External-Fault, Operator-Interface-Error, Config-Error, Feedback-Failure, Output-Phase-Loss Motor-Stall, Power-Unit-Error, Input-Phase-Fault, Internal-Failure, STO-Active, Other	
MSV2	Active-Fault-2	Enumerated type of the 2nd most recent fault currently active	None, Comm-Error, Overcurrent, Overtemperature, Overspeed, Overvoltage, Undervoltage, Short-Circuit, Ground-Fault, Motor-Overload, Inverter-Overload, Motor-Underload, External-Fault, Operator-Interface-Error, Config-Error, Feedback-Failure, Output-Phase-Loss Motor-Stall, Power-Unit-Error, Input-Phase-Fault, Internal-Failure, STO-Active, Other	R
MSV3	Active-Fault-3	Enumerated type of the 3rd most recent fault currently active	None, Comm-Error, Overcurrent, Overtemperature, Overspeed, Overvoltage, Undervoltage, Short-Circuit, Ground-Fault, Motor-Overload, Inverter-Overload, Motor-Underload, External-Fault, Operator-Interface-Error, Config-Error, Feedback-Failure, Output-Phase-Loss Motor-Stall,	R



Object ID	Object Name	Description	State Text	Present Value Access Type
			Power-Unit-Error, Input-Phase-Fault, Internal-Failure, STO-Active, Other	
MSV4	Active-Warning-1	Enumerated type of the most recent warning currently active	None, Comm-Error, Current-Limit, Overtemperature, Start-Interlock-1, Start-Interlock-2, Start-Interlock-3, Start-Interlock-4, Run-Permissive, Internal-Warning, Start-Delay, Other	R
MSV5	Active-Warning-2	Enumerated type of the 2nd most recent warning currently active	None, Comm-Error, Current-Limit, Overtemperature, Start-Interlock-1, Start-Interlock-2, Start-Interlock-3, Start-Interlock-4, Run-Permissive, Internal-Warning, Start-Delay, Other	R
MSV6	Active-Warning-3	Enumerated type of the 3rd most recent warning currently active	None, Comm-Error, Current-Limit, Overtemperature, Start-Interlock-1, Start-Interlock-2, Start-Interlock-3, Start-Interlock-4, Run-Permissive, Internal-Warning, Start-Delay, Other	R

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.

Loop Object Instance Summary

The following table summarizes the Loop Objects supported:



Object ID	Object Name	Description	Manipulated Variable reference	Controlled variable reference	Setpoint Reference	Present Value Access Type
LOOP0	LOOP-Set1	Loop object for process PID set 1	AV44 Present Value	AV43 Present Value	AV42 Present Value	R
LOOP1	LOOP-Set2	Loop object for process PID set 2	AV44 Present Value	AV43 Present Value	AV42 Present Value	R

NOTE: For Present Value Access Types, R = Read-only, W = Writeable, C = Commandable. Commandable values support priority arrays & relinquish defaults.



Network Port Object Instance Summary

The following table summarizes the Network Port Object:

Network Port Object			
Property	Flag	Type	Default value
Object Identifier	R	OID	0
Object Name	R	Char String	Network Port
Object Type	R	Enum	network-port (56)
Status Flags	R	Bit String	
Reliability	R	Enum	
Out of Service	R	Boolean	
Network Type	R	Enum	MSTP (2)
Protocol Level	R	Enum	BACnet Application (2)
Network Number	R	Unsigned	0
Network Number Quality	R	Enum	Configured
Changes Pending	R	Boolean	
MAC Address	W, P	Octet String	254
APDU Length	R	Unsigned	480
Link Speed	R	Real	
Max Manager	W, P	Unsigned	127
Max Info Frames	W, P	Unsigned	1
Property List	R	Array of unsigned	
Flags: R=Read Only, W=Writable, C=Commandable, P=Persist (Please see appendix A for details)			



Appendix A: Persistent Storage

General Properties

This appendix introduces persistent storage operation in the ACH580. Persistent storage means that properties which are marked as persistent in this document maintain their values over a power cycle. On writing a property of a given BACnet object, the new value is updated only in volatile memory. This means that if the drive loses power or is intentionally power cycled, the values are lost. In most cases this isn't an issue, for example the output frequency of the drive needs to be updated once the drive is running again anyways. However, this is not true in every case. Some properties are used as configuration information and should be kept for the lifetime of the drive. These properties are items which one does not want to lose in a power loss situation. An example of such a property is an object's name. If this value is changed it should be kept forever rather than lost any time power is removed.

In general, all of the properties which are marked as persistent are copied from volatile memory into non-volatile memory in two scenarios. First, a 1-hour timeout elapses, this means that every hour persistent properties are backed up. Second, binary value 39 is written to 1. This object is meant to give a way for users to trigger a persistent memory write after configuring their drive. There are two exceptions to this rule.

Two properties trigger a backup sooner than the 1-hour timeout. The first is the "Object Name" property, this property is stored right after it is written. The second is the "COV Increment" property, this property sets a 3-minute timeout after which non-string properties are backed up. Note that this 3-minute timeout moves as COV increments are written. So, if one object's COV increment is changed a 3-minute timeout is set. If, however, another object's COV increment changes before the 3-minutes elapses, the timeout is reset for 3-minutes after this second write and so on. This prevents many persistent memory writes from occurring in a short amount of time while a user configures their change of value database. It is important that some time beyond the 3-minutes is allowed for the storage operation to complete. While commissioning it is recommended to allow for 5-minutes to pass from the write of a COV increment to ensure everything is saved. Alternatively, binary value 39 can be used to ensure all important data is backed up.

Network Port Properties

For any network port object, the BACnet standard requires the following –

“Property values which are required to maintain proper operation of the network shall be retained across a device reset.”

The ACH580 accomplishes this requirement via its parameter system. Notice that all properties which are required to maintain proper operation of the ACH580's network port are also drive parameters. The ACH580 saves its communications related parameters upon losing power. Upon regaining power, BACnet initializes to whatever drive parameters were stored before losing power.

This does mean that any pending changes written to a network port object are lost should they not be applied.



Appendix B : Additional COV Information

The ACH580 is capable of maintaining 5 COV subscriptions.