

### Statement

This statement is part of this Standard and is required for its use.

<b>BACnet Protocol Implementation Conformance Statement</b>	
<b>Date:</b>	November 1, 2006
<b>Vendor Name:</b>	ABB, Inc.
<b>Product Name:</b>	Low Voltage AC Motor Drive
<b>Product Model Number:</b>	ACH550
<b>Applications Software Version:</b>	0506
<b>Firmware Revision:</b>	310D
<b>BACnet Protocol Revision:</b>	4
<b>Product Description:</b>	The ACH550 is a high-performance adjustable frequency drive specifically designed for commercial automation applications. This product supports native BACnet, connecting directly to the MS/TP LAN. All standard MS/TP baud rates are supported, as well as master mode functionality. Over BACnet, the drive can be fully controlled as a standard adjustable frequency drive. In addition, up to 16 configurable I/O ports are available over BACnet for user applications.
<b>BACnet Standardized Device Profile (Annex L):</b>	<input type="checkbox"/> BACnet Operator Workstation (B-OWS) <input type="checkbox"/> BACnet Building Controller (B-BC) <input type="checkbox"/> BACnet Advanced Application Controller (B-AAC) <input checked="" type="checkbox"/> BACnet Application Specific Controller (B-ASC) <input type="checkbox"/> BACnet Smart Sensor (B-SS) <input type="checkbox"/> BACnet Smart Actuator (B-SA)
<b>List all BACnet Interoperability Building Blocks Supported (Annex K):</b>	DS-RP-B, DS-WP-B, DM-DDB-B, DM-DOB-B, DM-DCC-B, DM-RD-B.
<b>Segmentation Capability:</b>	<input type="checkbox"/> Segmented requests supported. Window Size ____ <input type="checkbox"/> Segmented responses supported. Window Size ____
<b>Standard Object Types Supported:</b> An object type is supported if it may be present in the device. For each standard Object Type supported provide the following data: <ol style="list-style-type: none"> <li>1) Whether objects of this type are dynamically creatable using the CreateObject service</li> <li>2) Whether objects of this type are dynamically detectable using the DeleteObject service</li> <li>3) List of the optional properties supported</li> <li>4) List of all properties that are writable where not otherwise required by this standard</li> <li>5) List of proprietary properties and for each its property identifier, data type, and meaning</li> <li>6) List of any property range restrictions</li> </ol>	See table at "Object/Property Support Matrix" on page 23.

<b>BACnet Protocol Implementation Conformance Statement</b>	
<b>Data Link Layer Options:</b>	<input type="checkbox"/> BACnet IP, (Annex J) <input type="checkbox"/> BACnet IP, (Annex J), Foreign Device <input type="checkbox"/> ISO 8802-3, Ethernet (Clause 7) <input type="checkbox"/> ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8) <input type="checkbox"/> ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s) ____ <input checked="" type="checkbox"/> MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 76800 <input type="checkbox"/> MS/TP slave (Clause 9), baud rate(s): ____ <input type="checkbox"/> Point-To-Point, EIA 232 (Clause 10), baud rate(s): ____ <input type="checkbox"/> Point-To-Point, modem, (Clause 10), baud rate(s): ____ <input type="checkbox"/> LonTalk, (Clause 11), medium: _____ <input type="checkbox"/> Other: _____
<b>Device Address Binding:</b> Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Networking Options:</b>	<input type="checkbox"/> Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc. <input type="checkbox"/> Annex H, BACnet Tunneling Router over IP <input type="checkbox"/> BACnet/IP Broadcast Management Device (BBMD)
<b>Does the BBMD support registrations by Foreign Devices?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Character Sets Supported:</b> Indicating support for multiple character sets does not imply that they can all be supported simultaneously.	<input checked="" type="checkbox"/> ANSI X3.4 <input type="checkbox"/> IBM™/Microsoft™ DBCS <input type="checkbox"/> ISO 8859-1 <input type="checkbox"/> ISO 10646 (UCS-2) <input type="checkbox"/> ISO 10646 (UCS-4) <input type="checkbox"/> JIS C 6226
<b>If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:</b>	

## Object Definitions

### Object/Property Support Matrix

The following table summarizes the Object Types/Properties Supported:

Property	Object Type						
	Device	Binary Input	Binary Output	Binary Value	Analog Input	Analog Output	Analog Value
Object Identifier	✓	✓	✓	✓	✓	✓	✓
Object Name	✓	✓	✓	✓	✓	✓	✓
Object Type	✓	✓	✓	✓	✓	✓	✓
Description	✓						
System Status	✓						
Vendor Name	✓						
Vendor Identifier	✓						
Model Name	✓						
Firmware Revision	✓						
Appl Software Revision	✓						
Protocol Version	✓						
Protocol Revision	✓						
Services Supported	✓						
Object Types Supported	✓						
Object List	✓						
Max APDU Length	✓						
Segmentation Support	✓						
APDU Timeout	✓						
Number APDU Retries	✓						
Max Master	✓						
Max Info Frames	✓						
Device Address Binding	✓						
Database Revision	✓						
Present Value		✓	✓	✓	✓	✓	✓
Status Flags		✓	✓	✓	✓	✓	✓
Event State		✓	✓	✓	✓	✓	✓
Out-of-Service		✓	✓	✓	✓	✓	✓
Units					✓	✓	✓
Priority Array			✓	✓*		✓	✓*
Relinquish Default			✓	✓*		✓	✓*
Polarity		✓	✓				
Active Text		✓	✓	✓			
Inactive Text		✓	✓	✓			

\* For commandable values only.

### Binary Input Object Instance Summary

The following table summarizes the Binary Input Objects supported:

Instance ID	Object Name	Description	Active/ Inactive Text	Present Value Access Type
BI0	RO 1 ACT	This object indicates the status of Relay Output 1.	ON/OFF	R
BI1	RO 2 ACT	This object indicates the status of Relay Output 2.	ON/OFF	R
BI2	RO 3 ACT	This object indicates the status of Relay Output 3.	ON/OFF	R
BI3	RO 4 ACT	This object indicates the status of Relay Output 4 (requires OREL-01 option).	ON/OFF	R
BI4	RO 5 ACT	This object indicates the status of Relay Output 5 (requires OREL-01 option)	ON/OFF	R
BI5	RO 6 ACT	This object indicates the status of Relay Output 6 (requires OREL-01 option)	ON/OFF	R
BI6	DI 1 ACT	This object indicates the status of Digital Input 1.	ON/OFF	R
BI7	DI 2 ACT	This object indicates the status of Digital Input 2.	ON/OFF	R
BI8	DI 3 ACT	This object indicates the status of Digital Input 3.	ON/OFF	R
BI9	DI 4 ACT	This object indicates the status of Digital Input 4.	ON/OFF	R
BI10	DI 5 ACT	This object indicates the status of Digital Input 5.	ON/OFF	R
BI11	DI 6 ACT	This object indicates the 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:

Instance ID	Object Name	Description	Active/ Inactive Text	Present Value Access Type
BO0	RO1 COMMAND	This object controls the output state of Relay 1. This control requires that parameter 1401 value = COMM.	ON/OFF	C
BO1	RO2 COMMAND	This object controls the output state of Relay 2. This control requires that parameter 1402 value = COMM.	ON/OFF	C
BO2	RO3 COMMAND	This object controls the output state of Relay 3. This control requires that parameter 1403 value = COMM.	ON/OFF	C

Instance ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BO3	RO4 COMMAND	This object controls the output state of Relay 4. This control requires that parameter 1410 value = COMM (also requires OREL-01 option).	ON/OFF	C
BO4	RO5 COMMAND	This object controls the output state of Relay 5. This control requires that parameter 1411 value = COMM (also requires OREL-01 option).	ON/OFF	C
BO5	RO6 COMMAND	This object controls the output state of Relay 6. This control requires that parameter 1412 value = COMM (also requires OREL-01 option).	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:

Instance ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BV0	RUN/STOP ACT	This object indicates the drive Run Status, regardless of the control source.	RUN/STOP	R
BV1	FWD/REV ACT	This object indicates the motor's rotation direction, regardless of the control source.	REV/FWD	R
BV2	FAULT ACT	this object indicates the drive's fault status.	FAULT/OK	R
BV3	EXT 1/2 ACT	This object indicates which control source is active: External 1 or External 2.	EXT2/EXT1	R
BV4	HAND/AUTO ACT	This object indicates whether the drive is under Hand or Auto control.	HAND/AUTO	R
BV5	ALARM ACT	This object indicates the drive's alarm status.	ALARM/OK	R
BV6	MAINT REQ	This object indicates the drive's maintenance status. Refer to Group 29 in the drive's parameter descriptions.	MAINT/OK	R
BV7	DRIVE READY	This object indicates whether the drive is ready to accept a run command.	READY/NOT READY	R
BV8	AT SETPOINT	This object indicates whether the drive is at the commanded setpoint.	YES/NO	R

Instance ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BV9	RUN ENA ACT	This object indicates the Run Enable command status, regardless of the control source.	ENABLE/DISABLE	R
BV10	RUN/STOP CMD	This object commands a drive start. Control requires either: <ul style="list-style-type: none"> <li>Parameter 1001 value = COMM for control by EXT1 or</li> <li>Parameter 1002 value = COMM for control by EXT2.</li> </ul>	RUN/STOP	C
BV11	FWD/REV CMD	This object commands a motor rotation direction change. Control requires 1003 = REQUEST and either: <ul style="list-style-type: none"> <li>Parameter 1001 value = COMM for control by EXT1 or</li> <li>Parameter 1002 value = COMM for control by EXT2.</li> </ul>	REV/FWD	C
BV12	RUN ENA CMD	This object commands Run Enable. Control requires parameter 1601 value = COMM.	ENABLE/DISABLE	C
BV13	EXT 1/2 CMD	This object selects ext1 or ext2 as the active control source. Control requires parameter 1102 value = COMM.	EXT2/EXT1	C
BV14	FAULT RESET	This object resets a faulted drive. The command is rising-edge triggered. Control requires parameter 1604 value = COMM.	RESET/NO	C
BV15	MBOX READ	This object reads a parameter (defined by AV25 MBOX PARAM) and returns it in AV26 MBOX DATA.	READ/RESET	W
BV16	MBOX WRITE	This object writes the data value specified by AV26, MBOX DATA, to a parameter (defined by AV25, MBOX PARAM).	WRITE/RESET	W
BV17	LOCK PANEL	This object locks the panel and prevents parameter changes. The corresponding drive parameter is 1602.	LOCK/UNLOCK	W
BV18	CTL OVERRIDE CMD	This object commands the drive into BACnet Control Override. In this mode, BACnet takes drive control from the normal source. However, the control panel's HAND mode has priority over BACnet Control Override.	ON/OFF	C

Instance ID	Object Name	Description	Active/Inactive Text	Present Value Access Type
BV19	CTL OVERRIDE ACT	This object indicates whether the drive is in BACnet Control Override. (See BV18.)	ON/OFF	R
BV20	START ENABLE 1	This object commands start enable1. Control requires parameter 1608 value=COMM.	ENABLE/DISABLE	C
BV21	START ENABLE 2	This object commands start enable1. Control requires parameter 1608 value=COMM.	ENABLE/DISABLE	C

**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:

Instance ID	Object Name	Description	Units	Present Value Access Type
AI0	ANALOG INPUT 1	This object indicates the value of Analog Input 1. The corresponding drive parameter is 0120.	Percent	R
AI1	ANALOG INPUT 2	This object indicates the value of Analog Input 2. The corresponding drive parameter is 0121.	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:

Instance ID	Object Name	Description	Units	Present Value Access Type
AO0	AO 1 COMMAND	This object controls Analog Output 1. The corresponding drive parameter is 0135, COMM VALUE 1. Control requires parameter 1501 value = 135.	Percent	C
AO1	AO 2 COMMAND	This object controls Analog Output 2. The corresponding drive parameter is 0136, COMM VALUE 2. Control requires parameter 1507 value = 136.	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:

Instance ID	Object Name	Description	Units	Present Value Access Type
AV0	OUTPUT SPEED	This object indicates the calculated motor speed in RPM. The corresponding drive parameter is 0102.	RPM	R
AV1	OUTPUT FREQ	This object indicates the output frequency applied to the motor in Hz. The corresponding drive parameter is 0103.	Hertz	R
AV2	DC BUS VOLT	This object indicates the drive's DC bus voltage level. The corresponding drive parameter is 0107.	Volts	R
AV3	OUTPUT VOLT	This object indicates the AC output voltage applied to the motor. The corresponding drive parameter is 0109.	Volts	R
AV4	CURRENT	This object indicates the measured output current. The corresponding drive parameter is 0104.	Amps	R
AV5	TORQUE	This object indicates the calculated motor output torque as a percentage of nominal torque. The corresponding drive parameter is 0105.	Percent	R
AV6	POWER	This object indicates the measured output power in kW. The corresponding drive parameter is 0106.	Kilowatts	R
AV7	DRIVE TEMP	This object indicates the measured heatsink temperature in °C. The corresponding drive parameter is 0110.	°C	R

Instance ID	Object Name	Description	Units	Present Value Access Type
AV8	KWH (R)	This object indicates, in kW hours, the drive's accumulated energy usage since the last reset. The value can be reset to zero. The corresponding drive parameter is 0115.	kWh	W
AV9	MWH (NR)	This object indicates the drive's accumulated energy usage inMW hours. The value cannot be reset.	MWh	R
AV10	PRC PID FBCK	This object is the Process PID feedback signal. The corresponding drive parameter is 0130.	Percent	R
AV11	PRC PID DEV	This object is the Process PID output signal's deviation from its setpoint. The corresponding drive parameter is 0132.	Percent	R
AV12	EXT PID FBCK	This object is the External PID feedback signal. The corresponding drive parameter is 0131.	Percent	R
AV13	EXT PID DEV	This object is the External PID output signal's deviation from its setpoint. The corresponding drive parameter is 0133.	Percent	R
AV14	RUN TIME (R)	This object indicates, in hours, the drive's accumulated run time since the last reset. The value can be reset to zero. The corresponding drive parameter is 0114.	Hours	R
AV15	MOTOR TEMP	This object indicates the drive's motor temperature, as set up in parameter Group 35. The corresponding drive parameter is 0145.	°C	R
AV16	INPUT REF 1	This object sets Input Reference 1. Control requires parameter 1103 value = COMM.	Percent	C
AV17	INPUT REF 2	This object sets either: <ul style="list-style-type: none"> <li>Input Reference 2. Control requires parameter 1106 value = COMM.</li> <li>Process PID setpoint. Control requires parameter 1106 value = PID1 OUT and parameter 4010 value = COMM.</li> </ul>	Percent	C
AV18	LAST FLT	This object indicates the most recent fault entered in the drive's fault log. The corresponding drive parameter is 0401.	None	R
AV19	PREV FLT 1	This object indicates the second most recent fault entered in the drive's fault log. The corresponding drive parameter is 0412.	None	R
AV20	PREV FLT 2	This object indicates the third most recent fault entered in the drive's fault log. The corresponding drive parameter is 0413.	None	R
AV21	AO 1 ACT	This object indicates Analog Output 1's level. The corresponding drive parameter is 0124.	Milliamps	R

Instance ID	Object Name	Description	Units	Present Value Access Type
AV22	AO 2 ACT	This object indicates Analog Output 2's level. The corresponding drive parameter is 0125.	Milliamps	R
AV23	ACCEL1 TIME	This object sets the Ramp1 acceleration time. The corresponding drive parameter is 2202.	Seconds	W
AV24	DECEL1 TIME	This object sets the Ramp1 deceleration time. The corresponding drive parameter is 2203.	Seconds	W
AV25	MBOX PARAM	This object defines the parameter to be read or written to by the mailbox function. See BV15 and BV16.	None	W
AV26	MBOX DATA	This object holds the mailbox function's parameter value – a value that was read, or is to be written. See BV15 and BV16.	None	W
AV27	EXT PID STPT	This object sets the External PID controller setpoint. The corresponding drive parameter is 4211. Control requires parameter 4210, PID SETPOINT SEL, value = 19 (INTERNAL).	Percent	C

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

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