BACnet Protocol Implementation Conformance Statement

Product Information



H300 is a high-performance AC drive specifically designed for use in Building Automation / Commercial HVAC/R applications. The H300 drive can be used as a standalone motor controller or integrated into a building automation system using Analog and Digital I/O or serial communications. The base drive incorporates an EIA-485 serial communications port that is selectable between Modbus RTU and BACnet MSTP.
Nidec Control Techniques' HVAC Drive H300 variable frequency AC drive (VFD) is the result of extensive research and builds on our vast experience of the HVAC market. The HVAC Drive H300, part of the newly introduced Specialist series of industry-specific drive technologies, builds on our company's five decades of drives expertise, delivering precise, dependable flow control.

Date			14th November 2023		
Vendor Name			Nidec Control Techniques Ltd.		
Vendor ID			220		
Product Name			H300 VSD		
Product Model Number			H300 (All models)		
Applications Software Version	n/a	**Firmware Revision**	V01.05.01.10, V01.05.02.02, V02.00.02.02	**BACnet Protocol Revision**	15
BACnet Standardized Device Profile (Annex L)	■ BACnet Application Specific Controller (B_ASC)				
Supported BACnet Interoperability Building Blocks (Annex K)	■ DS-RP-B Data Sharing – Read Property ■ DS-WP-B Data Sharing – Write Property ■ DM-DDB-B Device Management – Dynamic Device Binding ■ DM-DOB-B Device Management – Dynamic Object Binding ■ DM-DCC-B Device Management – Device Communication Control ■ DM-RD-B Device Management – Reinitialize Device ■ DM-TS-B Device Management – Time Synchronization				
Segmentation Capability	■ None				
Standard Object Types Supported	■ Analog Input ■ Analog Output ■ Analog Value ■ Binary Input ■ Binary Output ■ Binary value ■ Device				
Data Link Layer Options	■ MS/TP master (Clause 9), baud rates – 9600, 19200, 38400				
Device Address Binding Supported	☐ Yes ■ No				

Networking Options	■ None
Character Sets Supported	■ ANSI X3.4

Object/Property Support Matrix

The following table summarizes the Object Types / Properties supported:

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

* These properties are for commandable objects only.
** Not all the AV objects have this property.
*** Polarities are changed by the drive parameters. For BACnet they are read-only.

Detailed BACnet Objects

Analog Input Objects

Instance ID	Object Name	Description	Units	Access R=Read, W=Read/Write, C=Commandable
1	#AI_01 Drive Analog IP1	Analog Input 1 on Drive	Percent	R
2	#AI_02 Drive Analog IP2	Analog Input 2 on Drive	Percent	R

Analog Output Objects

Instance ID	Object Name	Description	Units	Access R=Read, W=Read/Write, C=Commandable
1	#AO_01 Drive Analog OP1	Analog Output 1 on Drive	Percent	C
2	#AO_02 Drive Analog OP2	Analog Output 2 on Drive	Percent	C

Analog Value Objects

Instance ID	Object Name	Description	Units	Access R=Read, W=Read/Write, C=Commandable
4	#AV_04 Speed Ref	The required output frequency/speed reference	Hertz	C
5	#AV_05 Max Speed Ref	The maximum reference clamp value	Hertz	W
6	#AV_06 Output Current	Motor output current magnitude	Amperes	R
7	#AV_07 Output Torque	Motor output torque as a percent of full load	Percent	R
8	#AV_08 Output Frequency	Drive output frequency	Hertz	R
9	#AV_09 Output Speed	Motor Speed	RPM	R
10	#AV_10 Output Power	Drive Output Power	kW	R
11	#AV_11 Drive Status Wd	Drive Status Word	No Units	R
12	#AV_12 User Trip Param	User trip	No Units	W
13	#AV_13 Last Trip	Last Drive Trip	No Units	R
14	#AV_14 Filtr Change(dt)	Time between filter changes	Hours	W
15	#AV_15 Nxt Filtr ChTime	Time before filter change due	Hours	R
16	#AV_16 Enrgy Meter(MWh)	Energy meter (MWh)	MWh	R
17	#AV_17 Enrgy Meter(kWh)	Energy meter (kWh)	kWh	R
18	#AV_18 PID1 Dig Ref	Digital reference for PID 1	Percent	C
19	#AV_19 PID1 Dig Fback	Digital feedback for PID 1	Percent	C
20	#AV_20 PID1 Ref	Sum of all reference inputs to PID 1	Percent	R
21	#AV_21 PID1 Fback	Sum of all feedback inputs to PID 1	Percent	R
22	#AV_22 PID1 Output	The output from PID 1	Percent	R

23	#AV_23 PID2 Dig Ref	Digital reference for PID 2	Percent	C
24	#AV_24 PID2 Dig Fback	Digital feedback for PID 2	Percent	C
25	#AV_25 PID2 Ref	Sum of all reference inputs to PID 2	Percent	R
26	#AV_26 PID2 Fback	Sum of all feedback inputs to PID 2	Percent	R
27	#AV_27 PID2 Output	The output from PID 2	Percent	R
28	#AV_28 User Sel 29.010	User selectable parameter 1	No Units	R/W
29	#AV_29 User Sel 29.011	User selectable parameter 2	No Units	R/W
30	#AV_30 User Sel 29.012	User selectable parameter 3	No Units	R/W
31	#AV_31 User Sel 29.013	User selectable parameter 4	No Units	R/W
32	#AV_32 User Sel 29.014	User selectable parameter 5	No Units	R/W
33	#AV_33 User Sel 29.015	User selectable parameter 6	No Units	R/W
34	#AV_34 User Sel 29.016	User selectable parameter 7	No Units	R/W
35	#AV_35 User Sel 29.017	User selectable parameter 8	No Units	R/W
36	#AV_36 User Sel 29.018	User selectable parameter 9	No Units	R/W
37	#AV_37 User Sel 29.019	User selectable parameter 10	No Units	R/W

Note – Analog Value 28 to 37 are the objects where any drive parameter can be mapped and controlled using BACnet communication. The Access control for that object will be as per the drive parameters access.

Binary Input Objects

Instance ID	**Object Name**	**Description**	**Access** R=Read, W=Read/Write C=Commandable
1	#BI_01 Drive Binary IP1	Digital Input 1 on Drive (bi-directional)	R
2	#BI_02 Drive Binary IP2	Digital Input 2 on Drive (bi-directional)	R
3	#BI_03 Drive Binary IP3	Digital Input 3 on Drive (bi-directional)	R
4	#BI_04 Drive Binary IP4	Digital Input 4 on Drive	R
5	#BI_05 Drive Binary IP5	Digital Input 5 on Drive	R
6	#BI_06 Drive Binary IP6	Digital Input 6 on Drive	R
7	#BI_07 Drive Binary IP7	Drive enable input	R

Binary Output Objects

Instance ID	Object Name	Description	Access R=Read, W=Read/Write C=Commandable
1	#BO_01 Drive Binary OP1	Digital Output 1 on Drive (bi-directional)	C
2	#BO_02 Drive Binary OP2	Digital Output 2 on Drive (bi-directional)	C
3	#BO_03 Drive Binary OP3	Digital Output 2 on Drive (bi-directional)	C
4	#BO_04 Drive Binary OP4	24V Output	C
5	#BO_05 Drive Binary Rl1	Drive Relay 1	C
6	#BO_06 Drive Binary Rl2	Drive Relay 2	C

Note – Binary Input and Output objects 1 to 3 are bi-directional points – They can be either Input or Output at a time.

Binary Value Objects

Instance ID	Object Name	Description	Access R=Read, W=Read/Write C=Commandable
1	#BV_01 Reset Enrgy Metr	Digital Output 1 on Drive (bi-directional)	W
2	#BV_02 Filtr Change Rqd	Digital Output 2 on Drive (bi-directional)	W*
3	#BV_03 Drive Run Fwrd	Digital Output 2 on Drive (bi-directional)	C
4	#BV_04 Drive Healthy	24V Output	R
5	#BV_05 Drive Warning	Drive Relay 1	R
6	#BV_06 Drive Reset	Drive Relay 2	W**

* Can only be set to INACTIVE.
** Can only be set to ACTIVE from INACTIVE.

Note: The object instantiation in H300 drive is STATIC. i.e. No object can be created or deleted at runtime.