BACnet Protocol Implementation Conformance Statement

Product Information



The SI-BACnet IP option module is an add-on device designed specifically for Nidec Control Techniques drives. This module provides the capability to integrate a compatible drive seamlessly into a BACnet IP network.
By using the SI-BACnet IP module, users can extend the functionality of their Nidec Control Techniques drives, enabling them to communicate and interact with other devices and systems on a BACnet IP network. This integration facilitates improved control, monitoring, and automation of building management systems, enhancing the overall efficiency and performance of the networked environment.
Please note: As the SI-BACnet IP is a plug-and-play option module, it will only show the supported objects as per the compatible product.

Date			14th September 2024		
Vendor Name			Nidec Control Techniques		
Vendor ID			220		
Product Name			SI-BACnet IP		
Product Model Number			82400000022600		
Applications Software Version	01.00.02.06	**Firmware Revision**	01.00.02.06	**BACnet Protocol Revision**	19

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-RPM-B Data Sharing – Read Property Multiple ■ DS-WP-B Data Sharing – Write Property ■ DS-WPM-B Data Sharing-Write Property Multiple ■ DS-COV-B Change of value ■ 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	■ Device ■ Analog Input ■ Analog Output ■ Analog Value ■ Binary Input ■ Binary Output ■ Binary Value ■ Multi State Value ■ Network Port

Data Link Layer Options	■ BACnet IP, (Annex J) with Foreign Mode Support (non-BBMD)
Device Address Binding Supported	☐ Yes ■ No
Networking Options	■ None
Character Sets Supported	■ ISO 10646 (UTF-8)

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	Multi State Value	Network Port
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	✓								
Active COV Subscriptions	✓								
Device Address Binding	✓								
Database Revision	✓								
Present Value		✓	✓	✓	✓	✓	✓	✓	
Status Flags		✓	✓	✓	✓	✓	✓	✓	✓
Event State		✓	✓	✓	✓	✓	✓	✓	
Reliability		✓		✓**					✓
Out-of-Service		✓	✓	✓	✓	✓	✓	✓	✓
Units		✓	✓	✓					
Priority Array			✓*	✓*		✓*	✓**		
Relinquish Default			✓*	✓*		✓*	✓**		
COV Increment		✓	✓	✓					
Current Command Priority			✓*	✓*		✓*	✓**		
Polarity					✓***	✓***			
Number Of States								✓	
Network Type									✓
Protocol Level									✓
Network Number									✓
Network Number Quality									✓
Changes Pending									✓
Link Speed									✓
BACnet IP Mode									✓
BACnet IP UDP Port									✓

IP Address									✓
MAC Address									✓
IP Default Gateway									✓
IP DNS Server									✓
IP Subnet Mask									✓
FD BBMD Address									✓
FD Subscription Lifetime									✓

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

Detailed BACnet Objects

Device Object

Instance ID	Object Name	Description	Access R=Read-only, W=Read/Write C=Commandable
1	SI-BACnet IP	Represents the features of SI-BACnet IP option module	R*

*Note – Object Identifier and Object Name properties are writeable.

Analog Input Objects

Instance ID	Object Name	Description	Units	Access R=Read-only, 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*

*Note – Only CoV related properties are writeable.

Analog Output Objects

Instance ID	Object Name	Description	Units	Access R=Read-only, 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-only, W=Read/Write, C=Commandable
1	#AV_01 Speed Ref	The required output frequency/speed reference	Hertz	C
2	#AV_02 PID1 Dig Ref	Digital reference for PID 1	Percent	C
3	#AV_03 PID1 Dig Fback	Digital feedback for PID 1	Percent	C
4	#AV_04 PID2 Dig Ref	Sum of all reference inputs to PID 1	Percent	C
5	#AV_05 PID2 Dig Fback	Sum of all feedback inputs to PID 1	Percent	C
6	#AV_06 Max Speed Ref	The maximum reference clamp value	Hertz	W
7	#AV_07 User Trip Param	User trip	No Units	W
8	#AV_08 Filtr Change(dt)	Time between filter changes	Hours	W
9	#AV_09 Output Current	Motor output current magnitude	Amperes	R*
10	#AV_10 Output Frequency	Drive output frequency	Hertz	R*
11	#AV_11 Output Power	Drive Output Power	kW	R*
12	#AV_12 Output Torque	Motor output torque as a percent of full load	Percent	R*
13	#AV_13 Output Speed	Motor Speed	RPM	R*
14	#AV_14 Drive Status Wd	Drive Status Word	No Units	R*
15	#AV_15 Last Trip	Last Drive Trip	No Units	R*

16	#AV_16 Nxt Filtr ChTime	Time before filter change due	Hours	R*
17	#AV_17 Enrgy Meter(MWh)	Energy meter (MWh)	MWh	R*
18	#AV_18 Enrgy Meter(kWh)	Energy meter (kWh)	kWh	R*
19	#AV_19 PID1 Ref	Digital reference for PID 1	Percent	R*
20	#AV_20 PID1 Fback	Digital feedback for PID 1	Percent	R*
21	#AV_21 PID1 Output	The output from PID 1	Percent	R*
22	#AV_22 PID2 Ref	Sum of all reference inputs to PID 2	Percent	R*
23	#AV_23 PID2 Fback	Sum of all feedback inputs to PID 2	Percent	R*
24	#AV_24 PID2 Output	The output from PID 2	Percent	R*
25	#AV_25 User Configurable Param 1	User selectable parameter 1	No Units	R/W
26	#AV_26 User Configurable Param 2	User selectable parameter 2	No Units	R/W
27	#AV_27 User Configurable Param 3	User selectable parameter 3	No Units	R/W
28	#AV_28 User Configurable Param 4	User selectable parameter 4	No Units	R/W
29	#AV_29 User Configurable Param 5	User selectable parameter 5	No Units	R/W
30	#AV_30 User Configurable Param 6	User selectable parameter 6	No Units	R/W
31	#AV_31 User Configurable Param 7	User selectable parameter 7	No Units	R/W
32	#AV_32 User Configurable Param 8	User selectable parameter 8	No Units	R/W
33	#AV_33 User Configurable Param 9	User selectable parameter 9	No Units	R/W
34	#AV_34 User Configurable Param 10	User selectable parameter 10	No Units	R/W

*Note – Only CoV related properties are writeable.

Additional Note – Analog Value Objects 25 to 34 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-only, 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-only, 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 – meaning, they can be either be configured as Input or Output at a time, hence they are conditionally writeable.

Binary Value Objects

Instance ID	Object Name	Description	Access R=Read-only, W=Read/Write C=Commandable
1	#BV_01 Reset Enrgy Metr	To Reset Energy Meter	W
2	#BV_02 Filtr Change Rqd	Filter Change Indicator	W*
3	#BV_03 Drive Run Fwrd	To Run Forward	C
4	#BV_04 Drive Healthy	Drive Status	R
5	#BV_05 Drive Warning	Drive Warning	R
6	#BV_06 Drive Reset	To Reset the Drive	W**

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

Multi-State Value Object

Instance ID	Object Name	Description	Access R=Read-only, W=Read/Write C=Commandable
1	#MSV_01 Drive Status	Drive health and trip diagnostic information	R

Network Port Objects

Instance ID	Object Name	Description	Access R=Read-only, W=Read/Write C=Commandable
1	#NP_01	Indicate the status of Network port 1	R*
2	#NP_02	Indicate the status of Network port 2	R*

*Note – Only Foreign Mode configuration related properties are writeable.

The object instantiation in SI-BACnet IP Option Module is STATIC. i.e. No object can be created or deleted at runtime.