VACON NX
AC DRIVES

OPTCJ

BACNET OPTION BOARD

USER MANUAL

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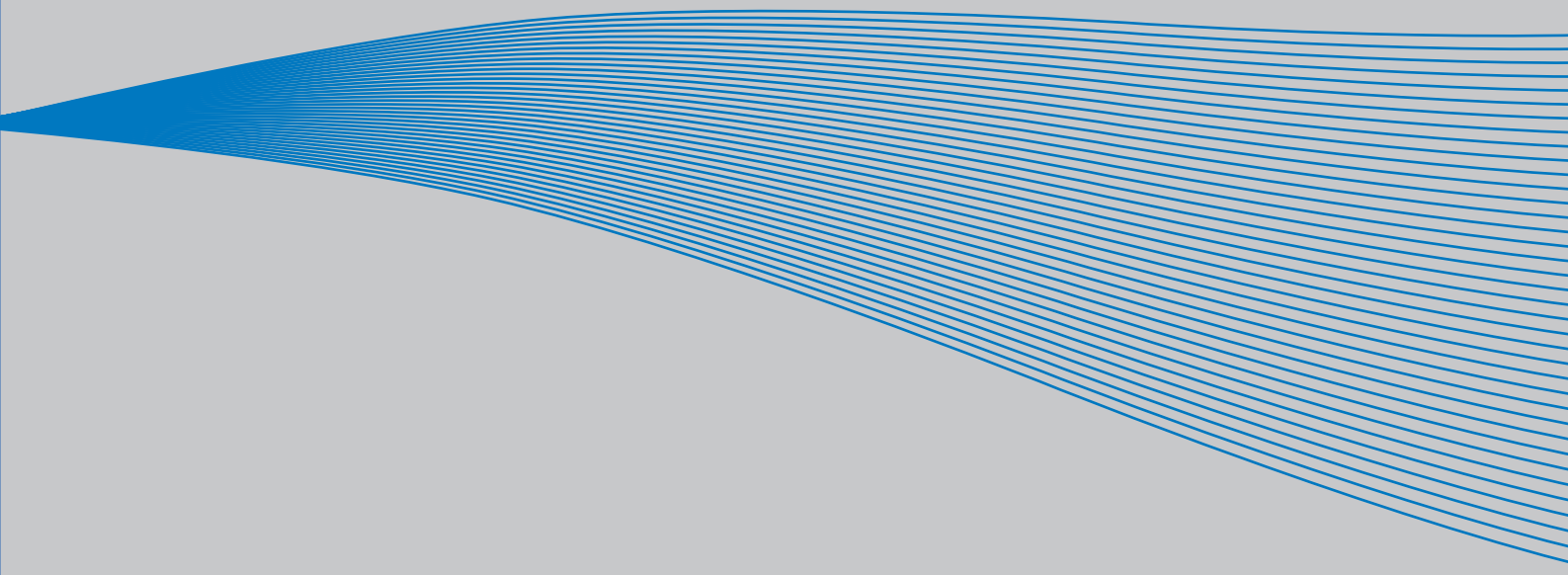

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INDEX

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1. General info ... 3

2. BACnet Option Board Technical data ... 4

2.1 System Software versions ... 5

3. BACnet FIELDBUS BOARD LAYOUT AND CONNECTIONS ... 6

4. Grounding cable shield ... 7

4.1 Grounding by clamping the cable to the converter frame (recommended) ... 7
4.2 Grounding only one point on the net ... 8
4.3 Bus terminal resistors ... 9
4.4 Bus Biasing ... 10

5. LED indications ... 11

6. INSTALLATION OF VACON NX BACnet BOARD ... 12

7. COMMISSIONING ... 14

7.1 Fieldbus board parameters ... 14
7.2 Expander board menu (M7) ... 14
7.3 BACnet parameters ... 14
7.3.1 MS/TP MAC address (P7.x.1.1) ... 15
7.3.2 Baud rate (P7.x.1.2) ... 15
7.3.3 Instance number (P7.x.1.3) ... 15
7.3.4 Communication status (V7.x.2.1) ... 16
7.3.5 Baud Rate (V7.x.2.2) ... 16
7.3.6 Fault (V7.x.2.3) ... 16
7.3.7 Index Nr. (V7.x.2.4) ... 16
7.4 ANNEX - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE) ... 17
7.5 Object Map ... 19
7.5.1 Binary Value Object ... 20
7.5.2 Analog Value Object ... 21

8. FAULT TRACKING ... 23

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1. GENERAL INFO

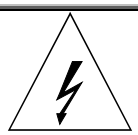
Instead of sending and receiving information to and from frequency converters through I/O, you can connect them to a fieldbus.

Vacon NX frequency converters can be connected to the RS-485 bus using a fieldbus board. The converter can then be controlled, monitored and programmed from the host system.

BACnet is also known by names Direct Digital Control Systems and Building Management Systems. BACnet technology is used mostly in building automation, lightning control, air conditioning and in heating automation. The protocol is an upper level net protocol suitable for large building automation projects.

BACnet stands for **B**uilding **A**utomation and **C**ontrol **Net**work. BACnet is a true non-propriatery open protocol communication standard conceived by a consortium of building management, system users and manufacturers.

If you purchase your BACnet option board separately, please note that it shall be installed in **slot E** on the control board of the frequency converter.



WARNING!

Internal components and circuit boards are at high potential when the frequency converter is connected to the power source. This voltage is extremely dangerous and may cause death or severe injury if you come into contact with it.

NOTE! You can download the English and French product manuals with applicable safety, warning and caution information from www.vacon.com/downloads.

REMARQUE Vous pouvez télécharger les versions anglaise et française des manuels produit contenant l'ensemble des informations de sécurité, avertissements et mises en garde applicables sur le site www.vacon.com/downloads.

2. BACNET OPTION BOARD TECHNICAL DATA

Connections	Interface	**OPT-CJ**: Pluggable connector (5.08mm)
	Data transfer method	RS-485 MS/TP, half-duplex
	Transfer cable	Twisted pair (1 pair and shield)
	Electrical isolation	500 VDC
Communications	BACnet MS/TP	As described in ANSI/ASHRAE Standards 135-2004
	Baud rate	9600, 19200, 38400 and 76800 baud (supports autobaud detection)
	MAC Addresses	1 to 127
Environment	Ambient operating temperature	–10°C...55°C
	Storing temperature	–40°C...60°C
	Humidity	<95%, no condensation allowed
	Altitude	Max. 1000 m
	Vibration	0.5 G at 9...200 Hz
Safety		Fulfils EN50178 standard

Table 2-1. BACnet technical data

2.1 System Software versions

OPT-CJ BACnet option board is supported from system software versions:

- NXL NXL00005V149.VCN
- NXS NXS00001V161.VCN
- NXP NXP00002V160.VCN

Autobaud detection and BACnet specific fault codes (readable from panel) are added from system software versions:

- NXL NXL00005V248.VCN
- NXS NXS00001V163.VCN
- NXP NXP00002V162.VCN

Communication timeout is available from system SW versions. When not supported, the default is 10 seconds.

- NXL NXL00005V254.VCN
- NXS NXS00001V167.VCN
- NXP NXP00002V168.VCN

OPT-CJ software version OPTCJ_10522V009 and newer:
New baud rate 76800 from software versions:

- NXL: NXL00005V257.VCN
- NXS: NXS00001V170.VCN
- NXP: NXP00002V171.VCN

3. BACNET FIELDBUS BOARD LAYOUT AND CONNECTIONS

Vacon BACnet option board is connected to the fieldbus through a 5-pin pluggable bus connector. The communication with the control board of the frequency converter takes place through the standard Vacon Interface Board Connector.

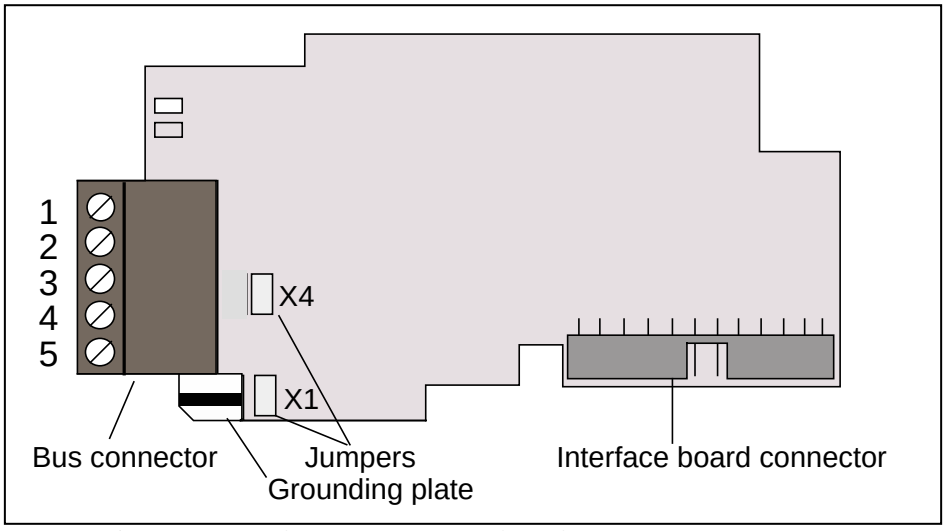


Figure 3-1. Vacon BACnet option board OPT-CJ

Signal	Connector	Description
NC*	1*	No connection
VP	2	Supply voltage – plus (5V)
RxD/TxD –N	3	Receive/Transmit data – A
RxD/TxD –P	4	Receive/Transmit data – B
DGND	5	Data ground (reference potential for VP)
*You can use this pin (1) to bypass the cable shield to the next slave		

Table 3-1. OPT-CJ bus connector signals

4. GROUNDING CABLE SHIELD

4.1 Grounding by clamping the cable to the converter frame (recommended)

This manner of grounding is the most effective and especially recommended when the distances between the devices are relatively short or if the device is the last device on the net.

Note: Normally, the option board has already been installed in slot D or slot E of the control board. It is not necessary to detach the whole board for the grounding of the bus cable shield. Just detach the terminal block.

1. Strip about 5 cm of the cable and cut off the grey cable shield.
   Remember to do this for both bus cables (except for the last device). See pictures below.

2. Leave no more than 1 cm of the cable outside the terminal block and strip the data cables at about 0.5 cm to fit in the terminals. See pictures below.
   Note: Do this for both bus cables.

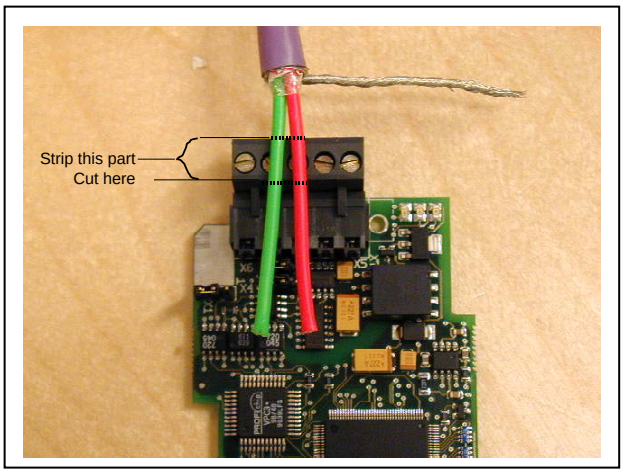
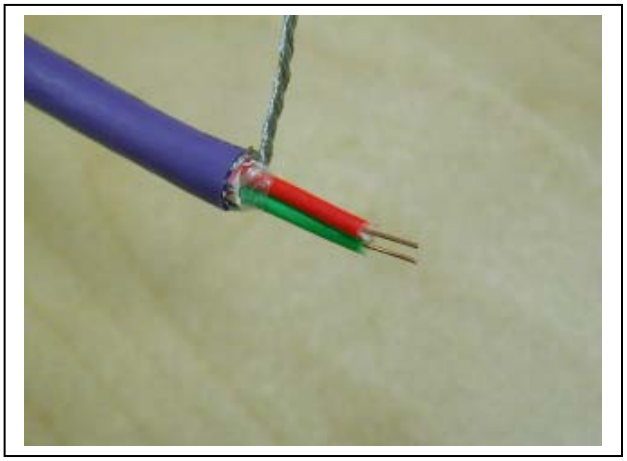


Figure 4-1.



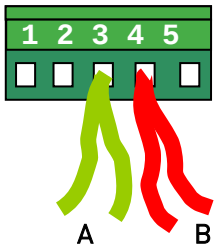


Figure 4-2.

3 Insert the data cables **of both cables** into terminals #3 (Line B) and #4 (Line A).

4 Strip the cable at such a distance from the terminal that you can fix it to the frame with the grounding clamp. See pictures below:

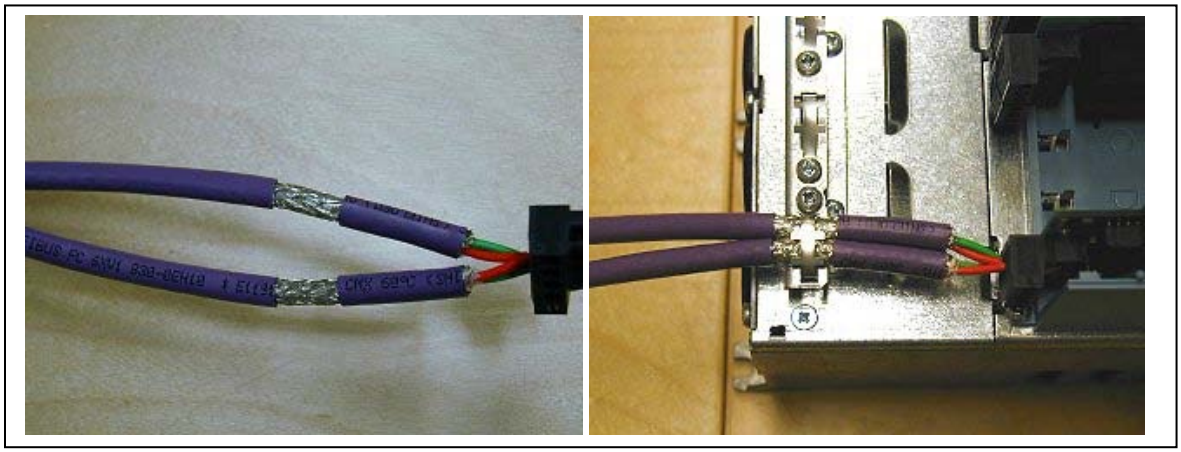


Figure 4-3.

4.2 Grounding only one point on the net

In this manner of grounding, the shield is connected to ground only at the last device on the net in the same way as described in chapter 4.1. Other devices of the net just pass the shield.
We recommend you to use an Abico connector to fit the shields into the terminal.

1. Strip about 5 cm of the cable and cut off the grey cable shield. Remember to do this for both bus cables (except for the last device).

2. Leave no more than 1 cm of the cable outside the terminal block and strip the data cable at about 0.5 cm to fit in the terminals. See Figure 4-4.

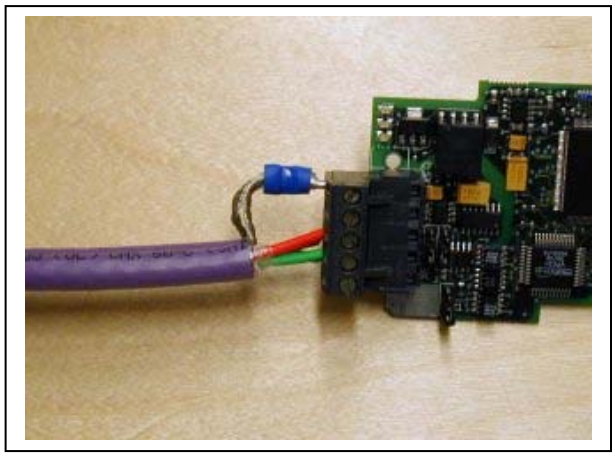
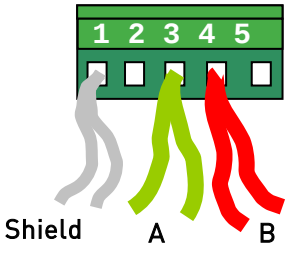


Figure 4-5.



Note! Do this for both cables.

3. Fix both the cables on the frame with the clamp. See Figure 4-5.

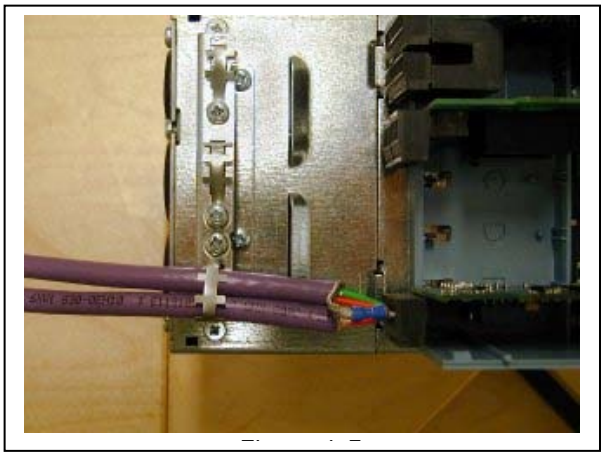


Figure 4-6.

4.3 Bus terminal resistors

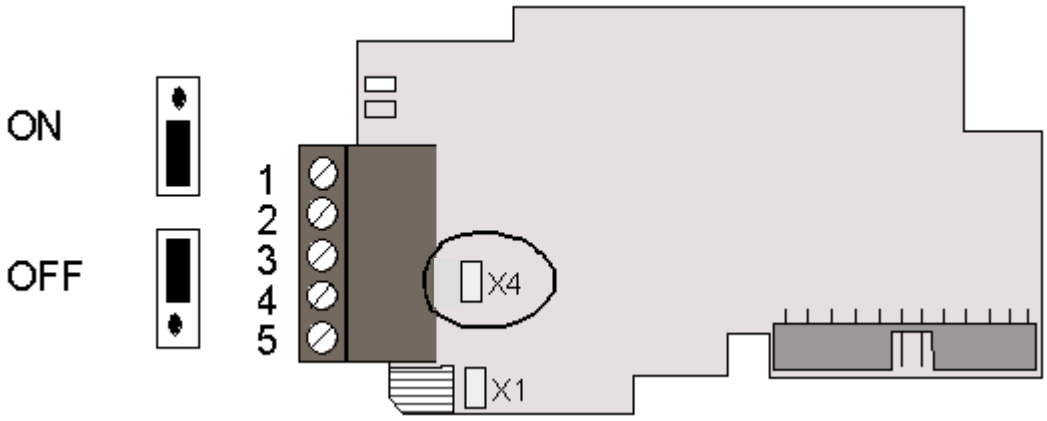


Figure 4-8. Using jumper X4 to set the bus termination.

If Vacon is the last device of the fieldbus line the bus termination must be set. Use jumper X4 (ON position). See Figure 4-7.

Note: Jumper X1 is only used when D9 type connector is assembled (Not used with BACnet protocol)

4.4 Bus Biasing

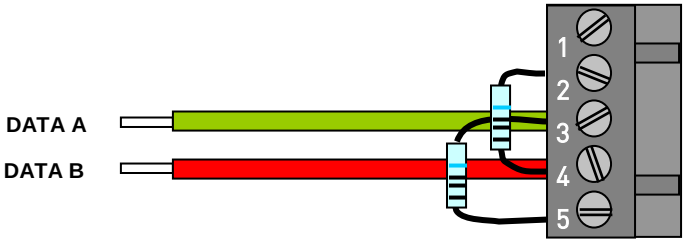
Bus biasing is required to ensure faultless communication between devices at RS-485 bus. Bus biasing makes sure that the bus state is at proper potential when no device is transmitting. Without biasing, faulty messages can be detected when the bus is in idle state. RS-485 bus state should be neather +0,200..+7V or –0,200..-7V. Illegal bus state is <200mV..-200mV.

Number of nodes	Bias resistance
2-5	1.8 kohm
5-10	2.7 kohm
11-20	12 kohm
21-30	18 kohm
31-40	27 kohm

Table 4-1. Bias resistor size vs number of node

Fail safe *biasing in OPT-CJ option board*

Connect resistor biasing resistors between pins #2 and #4 as well as pins #3 and #5 as shown in picture.



Matters related to this are discussed in the application note *Failsafe Biasing of Differential Buses* (an-847.pdf) published by National Semiconductor (www.national.com).

5. LED INDICATIONS

The two LED indications next to the connector show the present statuses of the BACnet board (yellow) and the Fieldbus Module (green).

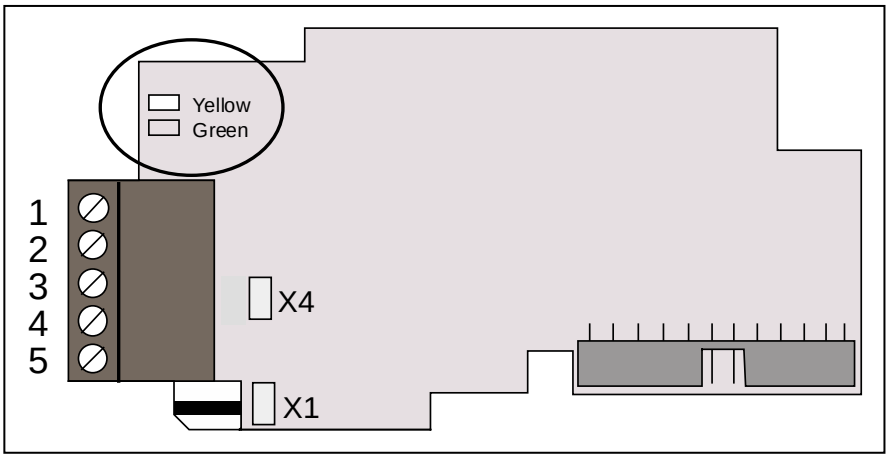


Figure 5-1. LED indications on the BACnet board

BACnet board status LED (BS) YELLOW

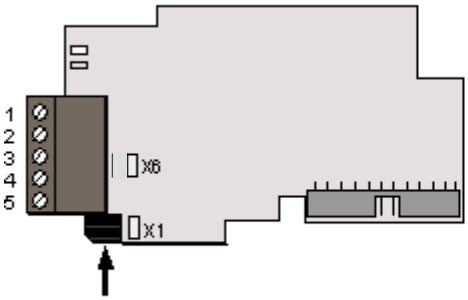
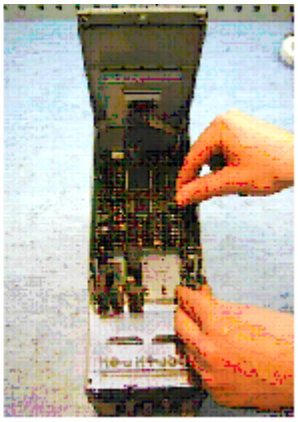
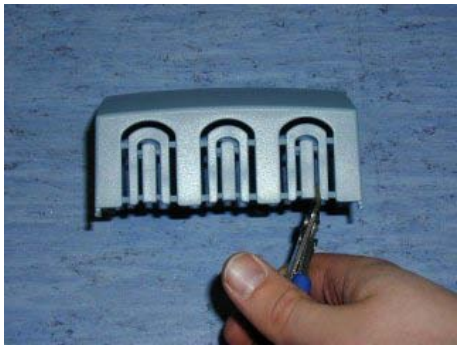
LED is:	Meaning:
OFF	Option board not activated
ON	Option board in initialisation state waiting for activation command from the frequency converter
Blinking fast (once/sec)	Option board is activated and in RUN state • Option board is ready for external communication
Blinking slow (once/5 secs)	Option board is activated and in FAULT state • Internal fault of option board

Fieldbus status LED (FS) GREEN

LED is:	Meaning:
OFF	Fieldbus module is waiting for parameters from the frequency converter • No external communication
ON	Fieldbus module is activated • Parameters received and module activated • Module is waiting for messages from the bus
Blinking fast (once/sec)	Module is activated and receiving messages from the bus
Blinking slow (once/5 secs)	Module is in FAULT state • No messages from Master within the watchdog time • Bus broken, cable loose or Master off line

6. INSTALLATION OF VACON NX BACNET BOARD

A	Vacon NX frequency converter	
B	Remove the cable cover.	
C	Open the cover of the control unit.	

D	Install BACnet option board in slot E on the control board of the frequency converter. Make sure that the grounding plate (see below) fits tightly in the clamp.  
E	Make a sufficiently wide opening for your cable by cutting the grid as wide as necessary. 
F	Close the cover of the control unit and the cable cover.

7. COMMISSIONING

READ FIRST CHAPTER 8 'COMMISSIONING' IN VACON NX USER'S MANUAL (Document nr. ud00701, please visit http://www.vacon.com/Default.aspx?id=450403&FileView=462792).

Note! You must select Fieldbus as the active control place, if you wish to control the frequency converter through fieldbus. See Vacon NX User's Manual, Chapter 7.3.3.1.

7.1 Fieldbus board parameters

The Vacon BACnet board is commissioned with the control keypad by giving values to appropriate parameters in menu **M7** (for locating the expander board menu see Vacon NX User's Manual, Chapter 7).

7.2 Expander board menu (M7)

The *Expander board menu* makes it possible for the user 1) to see what expander boards are connected to the control board and 2) to reach and edit the parameters associated with the expander board.

Enter the following menu level **(G#)** with the *Menu button right*. At this level, you can browse through slots A to E with the *Browser buttons* to see what expander boards are connected. On the lowermost line of the display you also see the number of parameter groups associated with the board.

If you still press the *Menu button right* once you will reach the parameter group level where there are two groups: Editable parameters and Monitored values. A further press on the *Menu button right* takes you to either of these groups.

7.3 BACnet parameters

To commission the RS-485 board, enter the level P7.5.1.# from the *Parameters* group (G7.5.1). Give desired values to all RS-485 parameters (see Figure 7-1 and Table 7-1).

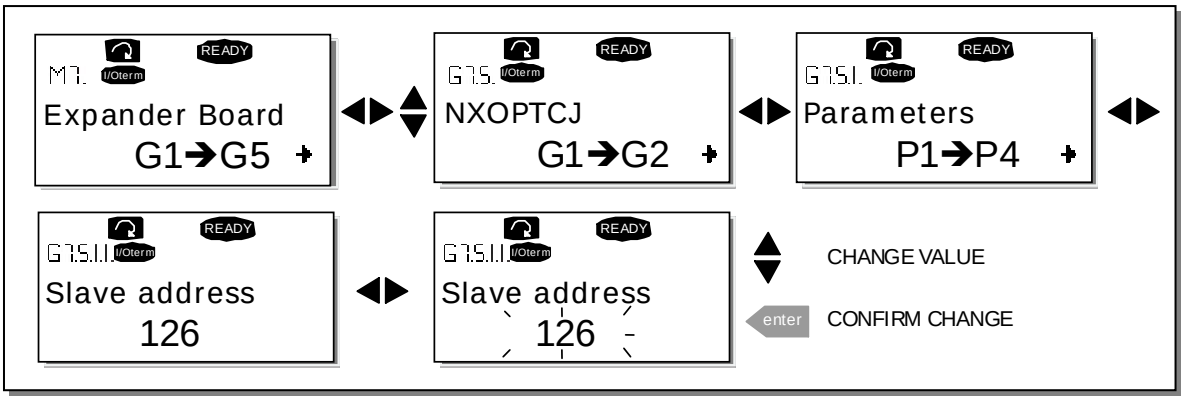


Figure 7-1. Changing the BACnet board commissioning parameter values

#	Name	Default	Range	Description
1	MAC ADDRESS	1	1...127	
2	BAUD RATE	1	0 - Auto 1 – 9600 baud 2 – 19200 baud 3 – 38400 baud 4 – 76800 baud	Communication speed
3	INDEX NR.	Counting number	0-65535	Instance Number. Zero means that unique default device object instance number is used.
4	Comm. time-out	10 s	0 = OFF 10 – 60 s	Communication time-out 0 = Not in use

Table 7-1. BACnet option board parameters

7.3.1 MS/TP MAC address (P7.x.1.1)

The parameters of every device must be set before connecting to the bus. Especially the parameters *MAC Address* and *Baud Rate* must be the same as in the master configuration. The first parameter, MAC (Medium Access Control) address, must be unique on the network to which it is connected. The same MAC address may be used on a device on another network within the internetwork.
Addresses 128-254 are reserved for slaves. Addresses 1-127 are valid for both masters and slaves. The portion of the address space that is actually used for masters in a particular installation is determined by the value of the Max_Master property of the Device object.
It is recommended that MAC address 0 be reserved for use by the MS/TP router and 255 is reserved for broadcasts.

7.3.2 Baud rate (P7.x.1.2)

Select the communication speed for the network. Default value is 9600 baud. 0 (– Auto) means that automatic baud rate detection is used. The used Baudrate is shown in monitor menu.

7.3.3 Instance number (P7.x.1.3)

The Device Object's Instance number must be unique across the entire BACnet internetwork because it is used to uniquely identify the BACnet devices. It may be used to conveniently identify the BACnet device from other devices during installation.
If 0 (default) is selected, the Device Instance number is read from Drive. This unique number is then shown in Monitor menu. If any other value than zero is selected, the value is used as Device Object's Instance number. The actual value is shown in monitor menu.

7.3.4 Communication time-out

BACnet board initiates a communication error if the communication is broken for as long as defined by the parameter Communication time-out. Communication time-out is disabled when the parameter is given the value 0. The step for setting the time-out time is 10 seconds.

7.3.5 Communication status (V7.x.2.1)

To see the present status of the RS-485 fieldbus, enter the *Comm.Status* page from *Monitor menu* (G7.5.2). See Table 7-2 and Table 7-2 below.

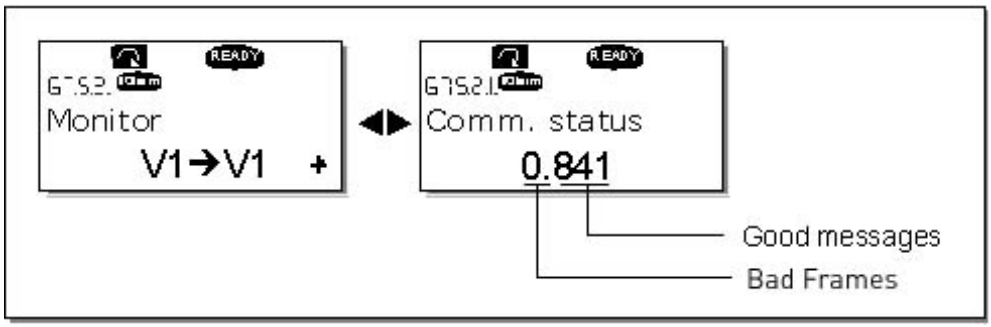


Figure 7-2. Communication status

Good messages	
0...999	Number of messages received without communication errors
Bad Frames	
0...64	Number of messages received with CRC or parity errors

Table 7-2. BACnet message indications

7.3.6 Baud Rate (V7.x.2.2)

Shows the actual baud rate.

7.3.7 Fault (V7.x.2.3)

Shows BACnet fault codes. See Table 8-3 from Chapter 8.

7.3.8 Index Nr. (V7.x.2.4)

Shows the Device Object's Instance number.

7.4 ANNEX - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE)

(This annex is part of this Standard and is required for its use.)

BACnet Protocol Implementation Conformance Statement

Date: May 31, 2005
Vendor Name: Vacon
Product Name: Vacon Drive – xxx (xxx = MAC ID)
Product Model Number: OPTCJ
Applications Software Version: 10522 **Firmware Revision:** 1 **BACnet Protocol Revision:** 4

Product Description:
BACnet Option board is designed for Vacon NX family devices.

BACnet Standardized Device Profile (Annex L):

BACnet Application Specific Controller (B-ASC)

List all BACnet Interoperability Building Blocks Supported (Annex K): DS-RP-B, DS-WP-B, DM-DDB-B, DM-DOB-B.

Segmentation Capability:

☐ Segmented requests supported Window Size _____
☐ Segmented responses supported Window Size _____

Standard Object Types Supported:

An object type is supported if it may be present in the device. For each standard Object Type supported provide the following data:
1) Whether objects of this type are dynamically creatable using the CreateObject service
2) Whether objects of this type are dynamically deletable using the DeleteObject service
3) List of the optional properties supported
4) List of all properties that are writable where not otherwise required by this standard
5) List of proprietary properties and for each its property identifier, datatype, and meaning
6) List of any property range restrictions

Data Link Layer Options:

MS/TP master (Clause 9), baud rate(s): 9600, 19200, 34800, 76800 (supports autobaud detection)

Device Address Binding:

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

Networking Options:

☐ Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
☐ Annex H, BACnet Tunneling Router over IP
☐ BACnet/IP Broadcast Management Device (BBMD)

Does the BBMD support registrations by Foreign Devices? ☐ Yes ☐ No

Character Sets Supported:

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

■ ANSI X3.4 ☐ IBM™/Microsoft™ DBCS ☐ ISO 8859-1
☐ ISO 10646 (UCS-2) ☐ ISO 10646 (UCS-4) ☐ JIS C 6226

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

7.5 Object Map

Object types and properties supported:

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

Figure 7-3. Object types and properties supported:

* Only with commandable values

7.5.1 Binary Value Object

Instance ID	Object Name	Description	Inactive / Active	Present Value Access Type
BV0	Ready State	Indicates whether the drive is ready or not	Not Ready / Ready	R
BV1	Run/Stop State	Indicates whether the drive is running or stopped	Stop / Run	R
BV2	Fwd/Rev State	Indicates the rotation direction of the motor	Fwd / Rev	R
BV3	Fault State	Indicates if a fault is active	OK / Fault	R
BV4	Warning State	Indicates if a warning is active	OK / Warning	R
BV5	At Setpoint	Ref. Frequency reached	False / True	R
BV6	At Zero Speed	Motor Running at zero speed	False / True	R
BV7	General 0	Application specific bit from drives General Status Word	0 / 1	R
BV8	General 1	Application specific bit from drives General Status Word	0 / 1	R
BV9	General 2	Application specific bit from drives General Status Word	0 / 1	R
BV10	General 3	Application specific bit from drives General Status Word	0 / 1	R
BV11	General 4	Application specific bit from drives General Status Word	0 / 1	R
BV12	General 5	Application specific bit from drives General Status Word	0 / 1	R
BV13	General 6	Application specific bit from drives General Status Word	0 / 1	R
BV14	General 7	Application specific bit from drives General Status Word	0 / 1	R
BV15	Run/Stop CMD	Command to start drive (FB control is active)	Stop / Run	C
BV16	Fwd/Rev CMD	Command to change rotational direction (FB control is active)	Fwd / Rev	C
BV17	Reset Fault	Command to reset Active Fault from dirve	0 / Reset	C
BV18	FBFixedControlWord Bit_3	Application Specific bit From the Fixed Control Word	0 / 1	C
BV19	FBFixedControlWord Bit_4	Application Specific bit From the Fixed Control Word	0 / 1	C
BV20	FBFixedControlWord Bit_5	Application Specific bit From the Fixed Control Word	0 / 1	C
BV21	FBFixedControlWord Bit_6	Application Specific bit From the Fixed Control Word	0 / 1	C

BV22	FBFixedControlWord Bit_7	Application Specific bit From the Fixed Control Word	0 / 1	C
BV23	FBFixedControlWord Bit_8	Application Specific bit From the Fixed Control Word	0 / 1	C
BV24	FBFixedControlWord Bit_9	Application Specific bit From the Fixed Control Word	0 / 1	C
BV25	FBFixedControlWord Bit_10	Application Specific bit From the Fixed Control Word	0 / 1	C
BV26	FBFixedControlWord Bit_11	Application Specific bit From the Fixed Control Word	0 / 1	C
BV27	FBFixedControlWord Bit_12	Application Specific bit From the Fixed Control Word	0 / 1	C
BV28	FBFixedControlWord Bit_13	Application Specific bit From the Fixed Control Word	0 / 1	C
BV29	FBFixedControlWord Bit_14	Application Specific bit From the Fixed Control Word	0 / 1	C
BV30	FBFixedControlWord Bit_15	Application Specific bit From the Fixed Control Word	0 / 1	C

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

7.5.2 Analog Value Object

Instance ID	Object Name	Description	Units	Present Value Access Type
AV0	Frequency Setpoint	Frequency Setpoint	Hz	R
AV1	Output Frequency	Output Frequency	Hz	R
AV2	Motor Speed	Motor Speed	Rpm	R
AV3	Load (power)	Motor Shaft Power	Percent	R
AV4	Kilowatt Hours total	Megawatt Hour Counter (Total)	kWh	R
AV5	Motor Current	Motor Current	Amps	R
AV6	DC link Voltage	DC link Voltage	Volts	R
AV7	Motor Voltage	Motor Voltage	Volts	R
AV8	Unit Temperature	Heatsink Temperature **NOT IN NXL -series**	° C	R
AV9	Motor Torque	In % of motor nominal Torque	Percent	R
AV10	Operating Days	Operating Days (resettable)	Day	R
AV11	Operating Hours	Operating Hours (resettable)	Hour	R
AV12	Kilowatt Hours	Kilowatt Hours (resettable)	kWh	R
AV13	Torque Reference	Torque Reference **NOT IN NXL -series**	Percent	R

AV14	Temperature Rise	Calculated motor temperature 100,0% = nominal temperature of motor NOT IN NXL -series	Percent	R
AV15	FBProcessDataOut1	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV16	FBProcessDataOut2	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV17	FBProcessDataOut3	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV18	FBProcessDataOut4	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV19	FBProcessDataOut5	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV20	FBProcessDataOut6	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV21	FBProcessDataOut7	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV22	FBProcessDataOut8	Application specific	-32768.0 to +32767.0 resolution 1.0	R
AV23	Active Fault Code	Active Fault Code	-	R
AV24	Speed Reference	Speed Reference, percentage of nominal speed	Percent	C
AV25	Current Limit	Current Limit	Amps	W
AV26	Min Frequency	Minimum Frequency	Hz	W
AV27	Maximum Frequency	Maximum Frequency	Hz	W
AV28	Accel Time	Acceleration Time	seconds	W
AV29	Decel Time	Deceleration Time	seconds	W
AV30	FBProcessDataIN 1	Application specific	-32768.0 to +32767.0 resolution 1.0	C
AV31	FBProcessDataIN 2	Application specific	-32768.0 to +32767.0 resolution 1.0	C
AV32	FBProcessDataIN 3	Application specific	-32768.0 to +32767.0 resolution 1.0	C
AV33	FBProcessDataIN 4	Application specific	-32768.0 to +32767.0 resolution 1.0	C
AV34	AnyParam ID	ID number that is used in AV35	0.0 to 65535.0 resolution 1.0	W
AV35	AnyParam Value	Value of ID defined by AV34	-32768.0 to +32767.0 resolution	W
AV36	FBFixedControlWord PDI 0	1) (see next page)		C
AV37	FBGeneralControlWord PDI 1	2) (see next page)		C
AV38	FBFixedStatusWord PDO 0	3) (see next page)		R
AV39	FBGeneralStatusWord PDO 1	4) (see next page)		R

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

Note: These Analog Value objects are introduced in BACnet SW version: OPTCJ_10522V009.vcn

1) FBFixedControlWord PDI 0, bit encoding (All-in-One Applications)

B0=RUN;	0=Stop, 1=Run
B1=DIRECTION;	0=Fwd, 1=Rev
B2=FaultRST;	Reset on rising edge
B3-15	Application Specific

2) FBGeneralControlWord PDI 1, bit encoding

Application Specific

3) FBFixedStatusWord (MCStatus) PDO 0, bit encoding

B0=Ready;	0=not ready, 1=ready
B1=Run;	0=stopped, 1=running
B2=Direction;	0=clockwise, 1=counterclockwise
B3=Fault;	1=the FC is faulted and stopped (?)
B4=Warning;	1=warning
B5=AtReference;	1=at reference speed
B6=ZeroSpeed;	1=at zero speed
B7=FluxReady;	1=flux ready

B8=TCSpeedLimitActive;
B9=DetectedEncoderDirection;
B10=UVFastStop;
B11=DC brake status 1=DC brake active
B12-15 Firmware Specific

* Not all the bits are supported in every application

4) FBGeneralStatusWord PDO 1, bit encoding

Application Specific

8. FAULT TRACKING

The table below presents the faults related to the BACnet option board. For more information, see also Vacon NX User's Manual, Chapter 9.
The **BACnet option board status LEDs** have been described in more detail in Chapter 5.

Fault code	Fault	Possible cause	Correcting measures
37	Device change	Option board changed.	Reset
38	Device added	Option board added.	Reset
39	Device removed	Option board removed.	Reset
40	Device unknown	Unknown option board.	
53	Fieldbus fault	-The board has lost all contact with other devices on the network. - Duplicate MAC ID (Bad Frames in "Comm. status" is incremented every time a frame is received from a device with the same MAC id on the same segment.)	Check the installation. If installation is correct contact the nearest Vacon distributor. Check that MAC ID is unique.
54	Slot fault	Defective option board or slot.	Check the board and slot. Contact the nearest Vacon distributor.

Table 8-1. RS-485 option board faults

You can define with parameters how the frequency converter shall react to certain faults:

Code	Parameter	Min	Max	Unit	Step	Default	ID	Note
P2.7.22	Response to fieldbus fault	0	3		1	0	733	0=No response 1=Warning 2=Fault,stop acc. to 2.4.7 3=Fault,stop by coasting
P2.7.23	Response to slot fault	0	3		1	0	734	0=No response 1=Warning 2=Fault,stop acc. to 2.4.7 3=Fault,stop by coasting

Table 8-2. Frequency converter responses to faults

These BACnet Specific fault codes can be read from panel V7.x.2.3 (x is the used, D=4, E=5).

Fault code	Fault	Possible cause	Correcting measures
0	None		
1	Sole Master	Only device on the network	Add devices
2	Duplicate MAC ID	Some other device has the same MAC ID	Check MAC Addresses
3	Baudrate fault	Option card notices traffic, but can't lock to the selected baudrate.	Check Baudrate

Table 8-3. BACnet specific faults

The MSTP- and BACnet-stack on the option board uses files from BACnetSim, a GPL'd project on SourceForge. The licence for BACnetSim is GPL with a special exception that allows linking without requiring the rest of the code to be GPL'd. The source code for the GPL'd parts can be downloaded from SourceForge.

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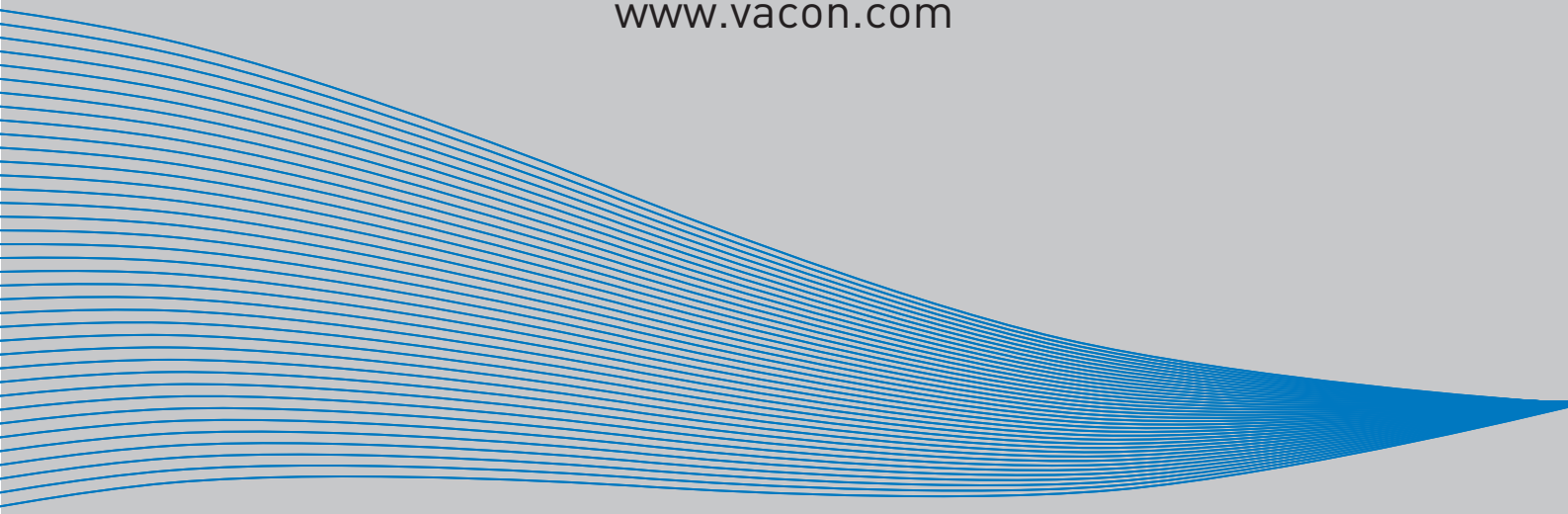

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