

1 Introduction

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1.1.1 About this Manual

First time users can obtain the most essential information for quick installation and set-up in these chapters:

- Introduction
- How to Install
- How to Configure the System

For more detailed information including the full range of set-up options and diagnosis tools please refer to the chapters:

- How to Control the Frequency Converter
- Parameters
- Troubleshooting

1.1.2 Technical Overview

BACnet (Building Automation and Control Network) is an open data communications protocol, American National Standard (ANSI/ASHRAE 135-1995). BACnet provides a means by which computer-based control equipment from different manufacturers can work together. BACnet is designed to handle many types of building controls, including HVAC, lighting, security, fire, access control, maintenance and waste management. BACnet permits flexibility for expansion and different equipment combinations.

Conformance Classes, Function Groups and the PICS: Evaluating the capabilities of a BACnet device is potentially a formidable task, given the great choice of Objects, Properties and Services, which can be implemented, as well as the fact that it is not necessary for every BACnet device to have a full BACnet implementation in order to carry out its task. ASHRAE's BACnet Committee recognized this problem and responded with aids to evaluation in the form of "Conformance Classes," "Function Groups" and the "Protocol Implementation Conformance Statement" (PICS).

The BACnet protocol defines six levels of Conformance Classes, each of which specifies the minimum subset of Services implemented on the device. The lowest level, Conformance Class 1, requires only that the BACnet device contain a Device Object and that it be able to execute (respond to) a ReadProperty Service request. Each successive Conformance Class level adds Service Requests that must be executable by the device, as well as the Service Requests it must be able to initiate. Conformance Class 6 requires 21 types of Service Requests (of the 32 overall) to be implemented, of which 20 must be initiatable and 17 executable. Conformance Class thus provides a measure of the device's ability to communicate.

Function Groups specify a combination of Objects and Services necessary to carry out certain building automation functions. They are specified independently of Conformance Class, though the implementation of some of the Function Groups automatically confers some Conformance Class higher than 1.

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Background information

Protocol name:	BACnet
Technology developer:	ASHRAE
Year introduced:	1995
Governing standards:	ANSI/ASHRAE Standard 135-2004 version 4, ISO 16484-5
Openness:	Open specification

Physical characteristics

Network topology:	Bus
Physical media:	Shielded twisted pair
Max. Distance at low speed:	1200 meters

Transport mechanism

Communication methods:	Master/slave
Baud Rates Supported:	9600, 19200, 38400, 76800
Termination:	120 ohm

1.1.3 Assumptions

This manual assumes you are using a BACnet Option Card in conjunction with a series FC102 series frequency converter. It is also assumed that your system is equipped with a serial communication card supporting the BACnet communication services required by your application and that all requirements stipulated in the BACnet standard, as well as those pertaining to the VLT Variable Speed Drive are strictly observed as well as all limitations therein fully respected.

1.1.4 Background Knowledge

The Danfoss BACnet Option Card is designed to communicate with any system complying with the BACnet MS/TP standard. Familiarity with the PC, BMS or PLC used as a master in the system is assumed. Issues regarding hardware or software produced by other manufacturers are beyond the scope of this manual and are not the responsibility of Danfoss Drives.

If you have questions regarding set-up of master-to-master communication or communication to a non-Danfoss slave, please consult the appropriate manuals.