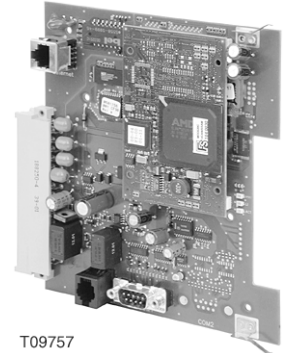


nova106: BACnet communication card

This communication card is used for the integration of Sauter's modular **nova106** automation station with the standardised 'BACnet based on Ethernet' communication protocol as per **ENV 13321-1**. As a BACnet server, it provides all the objects required for HVAC applications, plus the associated properties with the necessary services. Typical users (BACnet clients) of this information are open management systems, bus-wide operating units, and other automation stations which have BACnet capability etc.. In its function as a BACnet client, the communication card supports peer-to-peer transmission with 'present-value properties' for the objects stated below.



T09757

Type	Description	Weight [kg]
EYK 300 F001	BACnet communication card	0.230
Technical data		
Power supply	from AS rack	Permissible ambient temp.:- in operation 0...45 °C
Max. current	0.4 A	Storage and transport temp. -25...70 °C
Number of BACnet objects	max. 1000	Permissible humidity 10...90 %rh without condensation
Number of time programs	max. 100	Degree of protection IP 00 (EN 60529)
Number of calendars	max. 40	Environment class IEC 60721 3K3
Communication:		
COM interface	DB9 plug as per DTE	Connection diagram A09734
novaNet interface	RJ-11 socket (6/6)	Fitting instructions MV 505791
BACnet interface	RJ45-Ethernet	CE conformity
Transport protocol	BACnet/IP	as per (89/336/EWG) EN 50081-1/ EN 50081-2 EN 50082-1/ EN 50082-2

Accessories

386301 001	Connecting cable, COM DB9-DB9, 3 m
367842 002	Connecting cable, Ethernet RJ45-RJ45, 1.5 m
367842 003	Connecting cable, Ethernet RJ45-RJ45, 2.9 m
367842 004	Connecting cable, Ethernet RJ45-RJ45, 6 m
367862 004	Connecting cable, novaNet RJ11-RJ11, 0.21 m (supplied)
367862 005	Software module BACnet Server Configurator

Engineering and fitting notes

The BACnet communication card should be inserted at Slot A in the EYU 108 or EYU 109 rack. The connection to the automation station is integrated via **novaNet**. The supplied cable (367862 004) should be connected to the RJ11 socket.

The Ethernet link is via an RJ45 socket. Communication is effected via the BACnet/IP transport protocol.

The configuration of this IP address and other parameters such as time synchronisation, BACnet device address and PC address is effected via the Sauter software module 'BACnet Server Configurator', using the COM connecting cable and the DB9 connector.

The BACnet communication card EYK 300 F001 implements the 'BACnet Server/Client functionality' in Sauter DDC type **nova106**.

The MFAs (machine fine addresses) used in the automation station are converted – when the house address (data points) has been projected – into 'BACnet objects', whereby the management and updating of the relevant BACnet object list are done automatically. This means that there is no additional generating needed in order to integrate the BACnet functionality at DDC level.

Using the similarly implemented Scheduler (day and week calendar) and the associated 'Schedule and Calendar BACnet objects', it is possible to process local BACnet time programs and also, therefore, to control process variables of the connected AS in accordance with a time programme.

The DDC data points can be transmitted either by BACnet clients via cyclical polling or by the COV (Change Of Valve) subscription mechanism on the BACnet communication card.

Implemented BACnet PICS and BIBBs

PICS: Protocols Implementation Conformance Statement

BIBBs: BACnet Interoperability Building Blocks

- **Conformance Class: Class 1 to 4:**

- **Supported objects**

The following BACnet object types described in the ASHRAE Standard BACnet 135-1995 have been implemented:-

- Description of the main device features
 - Device object
- Portrayal of the process values:-
 - Analogue, multi-state and binary-input object
 - Analogue, multi-state and binary-output object
 - Analogue, multi-state and binary-value object
- Handling of weekly and exceptional programmes
 - Scheduler object
 - Calendar object
- Time- and recipient-dependent event and alarm distribution in the system
 - NotificationClass object

The editing capacity with regard to 'BACnet objects' per EYK 300 F001 is 1000 'objects', including Calendar and Schedule objects.

- **Supported services**

Event-controlled transmission of the actual value and other process variables is possible using the BACnet Services Change-Of-Value Reporting and Intrinsic-Reporting.

Supported services	Initiate	Execute
Acknowledge Alarm		X
Confirmed COV Notification	X	X
Confirmed Event Notification	X	
Get Alarm Summary		X
Subscribe COV	X	X
Unconfirmed COV Notification	X	X
Unconfirmed Event Notification	X	
Add List Element		X
Remove List Element		X
Read Property	X	X
Read Property Multiple		X
Write Property	X	X
Write Property Multiple		X
Device Communication Control		X
Time Synchronisation		X
Who-Has		X
I-Have	X	
Who-Is		X
I-Am	X	

Structure of a BACnet object

A BACnet object comprises a collection of parameters (properties), which are either obligatory, optional or author-specific. The following properties are obligatory and can be found in every BACnet object:-

- Object_Identifier
- Object_Name
- Object_Type

These properties must be unambiguous in a BACnet system.

Portrayal of MFA to BACnet objects

An MFA of an AS is always portrayed to exactly one instance of the corresponding BACnet object type. The instance number of such a BACnet object is worked out from the AS novaNet address (0...4194) and the MFA number as follows:-

$$\text{Object instance} = \text{AS address} * 1000 + \text{MFA number}$$

The link to the EY3600 input/output modules is shown in the BACnet object-type table below.

BACnet Object-Type	Code	EY3600 input/output modules	Fonction
Analog Input	0	AI, CI, AI_Soft, CIF_Soft, CIV_Soft	Measure / counter
Analog Output	1	AO	Positioning
Analog Value	2	AI_Soft, AIA_Soft, CFB_Soft	Setpoint
Binary Input	3	BI, BI_Soft, DI, DI_Soft	Alarm / State / BFB 0-I
Binary Output	4	DO	Command 0-I
Binary Value	5	DI_Soft, DIA_Soft, CFB_Soft	Command 0-I
Multistate Input	13	DI, DI_Soft	BFB 0-I-II-...
Multistate Output	14	DO	Command 0-I-II-...
Multistate Value	19	DI_Soft, DIA_Soft, CFB_Soft	Command 0-I-II-...

Example of BACnet object parameter

BACnet properties	Property data type	Link to EY3600 parameter
Object_Identifier	BACnetObjectIdentifier	AS address *1000 + MFA number
Object_Name	CharacterString	House address (HA)
Object_Type	Code	0.1...20
Present_Value	REAL or flag	Output (Y, fC or cC)
Description	CharacterString	Address text (ATxt)
.	.	.
.	.	.
.	.	.

Putting into operation

Every **EYK 300 F001 BACnet communication card** must be configured once only.

The card's hardware platform supports the Windows CE operating system, Version 3.0.

The configuration is transmitted via the COM interface and stored there (protected against power failure) in a flash memory.

This is parameterised using the **Sauter software tool 'BACnet Server Configurator'**.

Configuration

- **Device number and name**
- **Number of 'Schedule objects' (time profile) and 'Calendar objects'**
- **Time synchronisation**

The system is not time-synchronised on starting. Synchronisation can be effected either by reading the time from a **nova106** or by performing the BACnet time synchronisation of a BACnet time master. Synchronisation via a BACnet time master has priority.

- **IP address**

For communication with other BACnet devices (BACnet clients), an Ethernet net-work interface is used. Communication is via the transport protocol BACnet IP.

The EYK 300 F001 needs an IP address.

- **EY3600 PC address:**

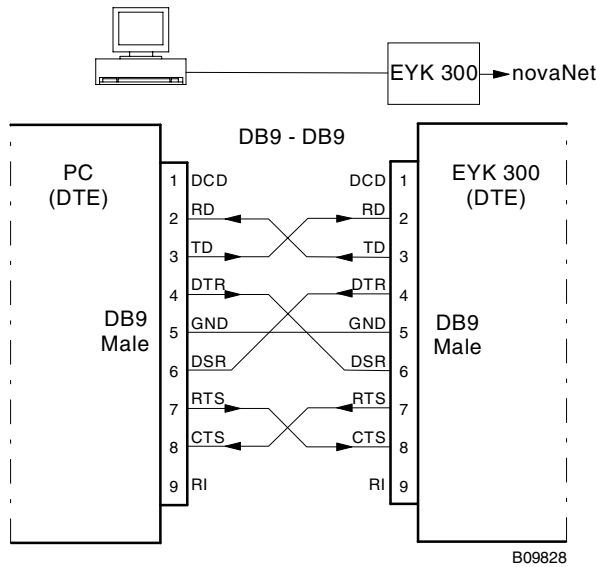
The link to the automation station is via the **novaNet**. For this, there is an EYS290-compatible interface integrated on the printed circuit board.

The EYK 300 F001 needs a novaNet address (31744...31999).

- **System number (0 ... 7)**
- **Integrate AS addresses**

Connection between PC and EYK 300 F001 for the above configuration

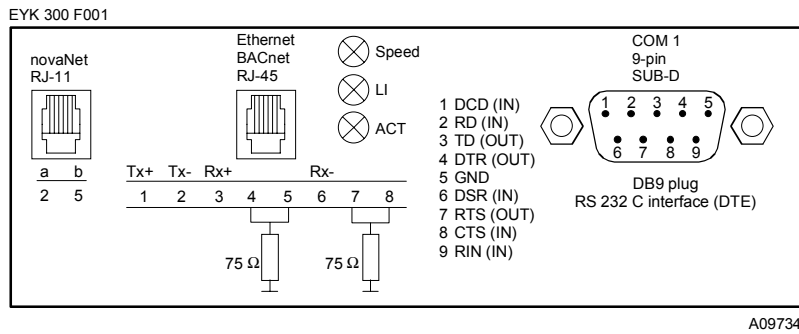
The cable used is identical to the **novaNet291** router cable (MZ. 368301.001).
 The communication parameters between the PC and the **BACnet communication card** must be set to the standard settings (9600 Bd, 8 bits, without parity, 1 stop bit, without handshake).



LED display for Ethernet interface

- Speed yellow Data transmission speed; is recognised automatically:-
 LED off: 10 Mbits / s
 LED on: 100 Mbits / s
- LI yellow Physical link established (Link)
- ACT yellow Transmission of BACnet protocol (Activity)

Wiring diagram



Connection details

