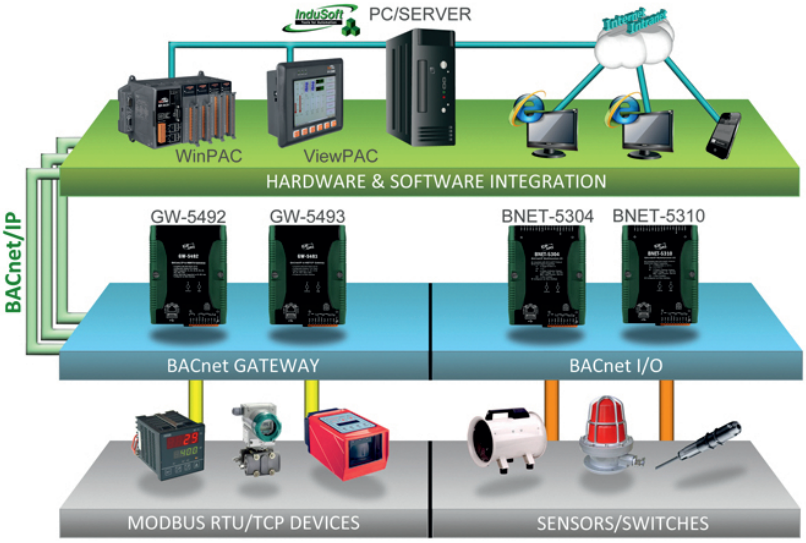
3.6 BACnet / IP Products

BACnet, a data communication protocol for building automation and control networks, is developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). It is an American national standard, a European standard, an national standard in more than 30 countries, and an ISO global standard. This protocol is comprehensive applied in vastly different applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems. The BACnet protocol also provides mechanisms for computerized building automation devices to exchange information, regardless of the particular building service they perform.



Features

- Designed specifically for building automation control
- Conformance to ANSI/ASHRAE standard 135-2008 or ISO 16484-5
- A completely non-proprietary open communication software standard
- Support several different physical and link layers (BACnet/IP, Ethernet, ARCNET, MS/TP, PTP and LonTalk)
- All data in a BACnet system is represented in terms of "objects", "properties" and "services"

BACnet Stack Layers

BACnet Defined

<table>
<tr><td colspan="6">BACnet Application Layer</td></tr>
<tr><td colspan="6">BACnet Network Layer</td></tr>
<tr><td colspan="2" rowspan="2">ISO 8802-2 (IEEE 8802.3) Type 1</td><td rowspan="2">MS/TP</td><td rowspan="2">PTP</td><td rowspan="3">LonTalk</td><td>BVLL</td></tr>
<tr><td>UDP/IP</td></tr>
<tr><td>ISO 8802-3 Ethernet</td><td>ARCNET</td><td>EIA 485</td><td>EIA 232</td><td>IP Supporting Data link</td></tr>
</table>

OSI Layer

Application (7)	Handles the actual interface with the user's application program
Network (3)	Establishes logical circuits and routing between two machines
Data-Link (2)	Controls orderly access to the physical medium
Physical (1)	Transmits and receives individual bits on the physical medium

Object_Name	SAMPLE OBJECT
Object_Type	ANALOG INPUT
Present_Valus	72.3
Status_Flags	Out-of Service
High_Limit	78.0
Low_Limit	68.0

Selection Guide

Model Name		Description
BACnet / IP I/O Modules	BNET-5304	BACnet/IP I/O Module with 6-Ch AI, 1-Ch AO, 4-Ch DI, 4-Ch DO Art.-Nr. 130807
	BNET-5310	BACnet/IP I/O Module with 4-Ch AI, 2-Ch AO, 3-Ch DI, 3-Ch DO Art.-Nr. 130808

BACnet/IP I/O Modules

Model Name		BNET-5304	BNET-5310
Pictures		Multi-function BACnet/IP Module 	Multi-function BACnet/IP Module 
System			
COM1		Reserved	
Ethernet		10/100 Base-TX	
Security		ID and Password	
Built-in Watchdog		Yes	
LED Indicator		Power and Status	
Protocol			
BACnet		BACnet/IP	
BACnet Objects		1 Device, 6 AI, 1 AO, 4 BI, 4 BO	1 Device, 4 AI, 2 AO, 3 BI, 3 BO
BIBB		DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B, DS-COV-B, DM-DDB-B, DM-DOB-B, DM-DCC-B, DM-TS-B, DM-UTC-B, DM-RD-B	
Analog Input			
Channel		6	4
Wiring		Single-Ended	Differential
Range		+/- 5 V, 0 ~ +5 V	+/- 10 V
Resolution		12-bit	
Sampling Rate		4 KHz	
Input Impedance		1 MΩ	
Overvoltage Protection		+/- 30 VDC	
Isolation		Non-isolated	
Analog Output			
Channel		1	2
Range		+/- 5 V	+/- 10 V
Resolution		12-bit	
Output Capacity		20 mA	
Isolation		Non-isolated	
Digital Input			
Channels		4	3
Contact		Dry	
Dry Contact	On Voltage Level	Close to GND	
	Off Voltage Level	Open	
Overvoltage Protection		30 VDC	
Digital Output			
Channels		4	3
Type		Open Collector	
Sink/Source (NPN/PNP)		Sink	
Load Voltage		+10 VDC ~ 40 VDC	
Max. Load Current		200 mA/channel at 25°C	
Overload Protection		1.4 A	
Environmental			
Dimensions (W x L x H)		91 mm x 132 mm x 52 mm	
Operating Temp		-25 ~ +75°C	
Storage Temp.		-30 ~ +85°C	
Humidity		5 ~ 90% PH, non-condesing	
Power Input Range		+10 V to +30 +10 V to +30 VDC	
Power Consumption		4.8 W (0.2 A @ 24 VDC)	