



BACnet Modbus Gateway

Description of the BACnet export



Application

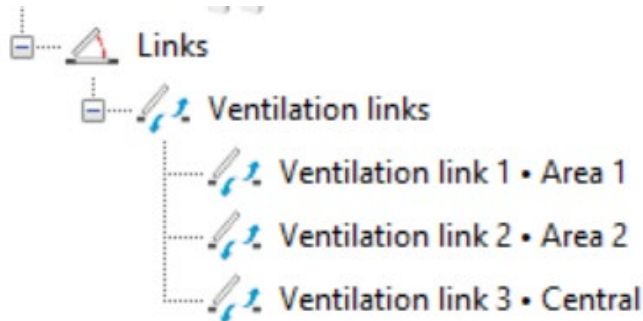
In this application example, there are two ventilation links that are to be controlled with position accuracy via BACnet.

The actual positions of the drives in the zones and the respective open and close messages are to be returned to BACnet as feedback.

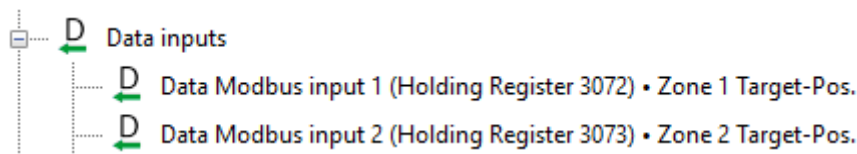
Two digital Modbus inputs are to be used to send a central open and a central close signal from BACnet.

Links

There is one ventilation link per zone. A higher-level ventilation link is responsible for the central commands.



Modbus Inputs and outputs



1. Designation

Data Modbus input 1 (Holding Register 3072) • Zone 1 Target-Pos.

2. Settings

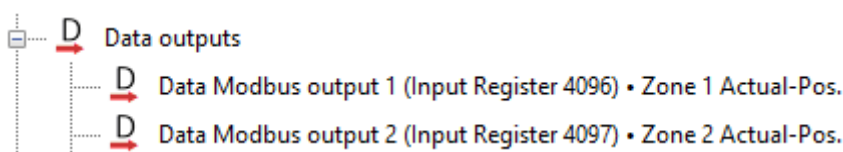
Designation: (max. 20 characters)

Functionality selection:

3. Links to which the data Modbus input is allocated

Ventilation link 1 • Zone 1

For the feedback of the actual position, data Modbus outputs are used per zone.



These are also assigned to the ventilation links and the "Actual position" functionality is selected.

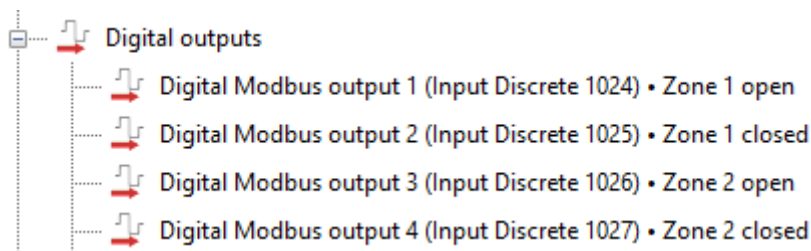
1. Designation
Data Modbus output 1 (Input Register 4096) • Zone 1 Actual-Pos.

2. Settings
Designation: (max. 20 characters)
Functionality selection:

3. Links to which the data Modbus output is allocated

Ventilation link 1 • Zone 1

The open and close messages are passed on to BACnet via digital Modbus outputs.



These are also assigned to the respective ventilation links. "Open message" or "Close message" is selected as the functionality.

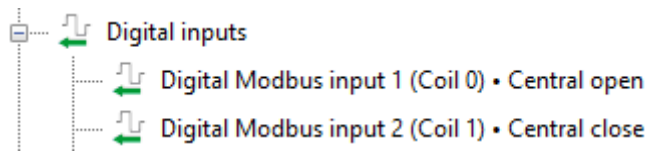
1. Designation
Digital Modbus output 1 (Input Discrete 1024) • Zone 1 open

2. Settings
Name: (Max. 20 characters)
Functionality selection:
Timer function selection: 0 h 0 min 0 s

3. Links to which the digital Modbus output is allocated

Ventilation link 1 • Zone 1

The central open and central close control is realized via two digital Modbus inputs.



These are assigned to the higher-level ventilation link and set to the "LT-Open" or "LT-Closed" functionality.

1. Designation

Digital Modbus input 1 (Coil 0) • Central open

2. Settings

Name: (Max. 20 characters)

Functionality selection:

Timer function selection: h min s

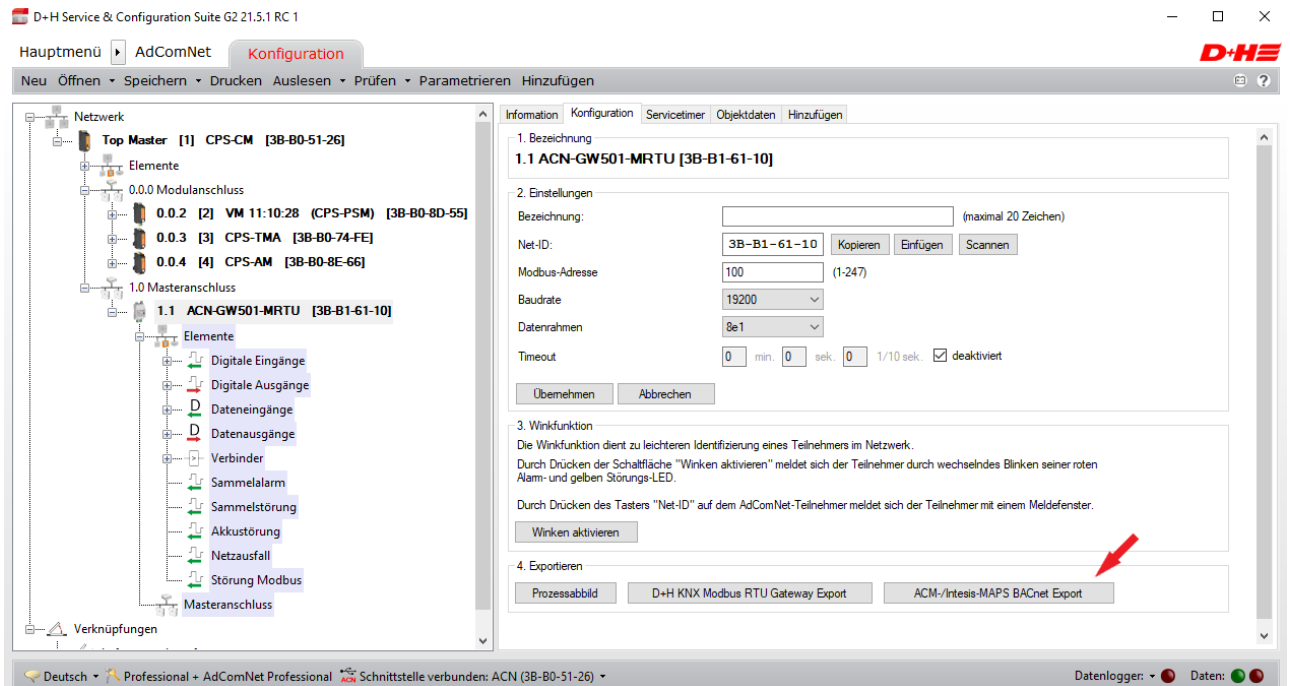
3. Links to which the digital Modbus input is allocated

Ventilation link 3 • Central

Export

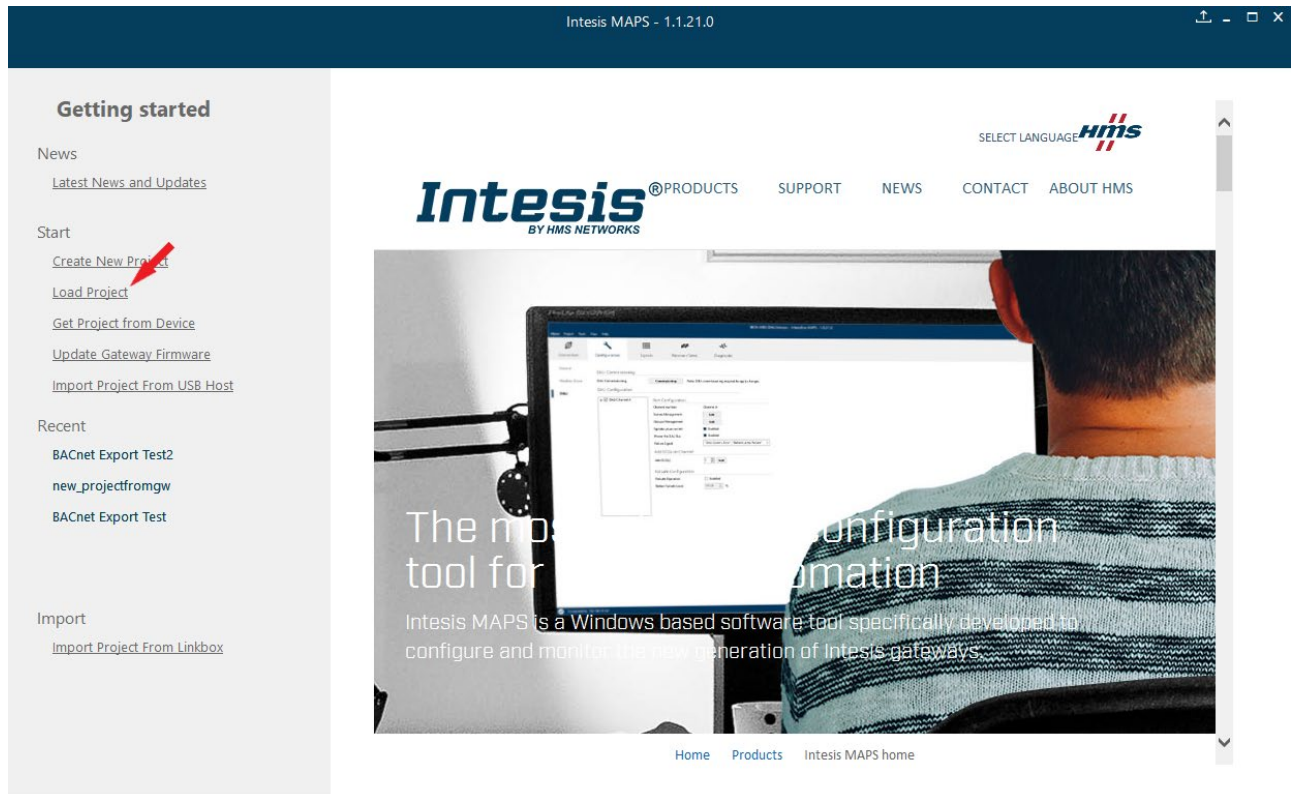
In order to be able to connect the BACnet gateway as easily as possible, an export of the data points can be carried out with the SCS.

To do this, the configuration tab of the Modbus gateway is called up. There, the button "ACM/Intesis-MAPS BACnet Export" can be used to create two files that can be imported into the Intesis configuration software. A configuration file (.ibmaps) and a data point file (.xlsx) must be created for the respective manufacturer (Intesis/Anybus).



BACnet configuration software Intesis MAPS

In order to use the BACnet Modbus gateway, it must be configured with the Intesis MAPS software (with ACM MAPS for Anybus). For this purpose, the created project file (.ibmaps file) is loaded via the "Load Project" button.



Connection with the Intesis Gateway

Under the "Connection" tab, the interface and the connection must be selected. After that, the connection is established with the "Connect" button. In this case the connection was established via USB.

The screenshot shows the Intesis MAPS software interface. The title bar reads "BacNet Musterkonfiguration:ibmaps - Intesis MAPS - 1.1.21.0". The main menu includes "Home", "Project", "Tools", "View", and "Help". The navigation bar has icons for "Connection", "Configuration", "Signals", "Receive / Send", and "Diagnostic". The "Connection" tab is active.

Connection Parameters

Connection Type: IP USB Port

Discovered Gateways:

Description	Value
Gateway Name	ANYBUS-BAC-MBM
Serial Number	000K45255
Application Name	IBOX-BAC-MBM
License	100
License Comments	-
Version	1.1.3.0
Config file name	BacNet-Musterkonfiguration
Last Configuration Date	16/06/2021 09:30:07
MAC Address	CG:3F:1D:02:9E:EC
IP Address	192.168.2.55
Netmask	255.255.255.0
Gateway	0.0.0.0
DHCP	OFF
Current Date Time	16/06/2021 09:44:24
Gateway Operating Time	0000d 00:13:47

Gateway COM Port:

A red arrow points to the "Connect" button.

Not Connected | BMS Protocol: BACnet Server | Device Protocol: Modbus Master | 11:17:02 2021/06/16

Import of the datapoints with Intesis MAPS

To import the data points, the "Import" button must be pressed under the "Signals" tab.

The screenshot shows the Intesis MAPS software interface. The title bar reads "BacNet Musterkonfiguration.libmaps - Intesis MAPS - 1.1.21.0". The main menu includes "Home", "Project", "Tools", "View", and "Help". The navigation bar has tabs for "Connection", "Configuration", "Signals", "Receive / Send", and "Diagnostic". The "Signals" tab is active, displaying a table with the following data:

#	Active	Description	BACnet Server				Modbus Master				
			Name	Type	Instance	Units	Device	# Slave	Base	Read Func	Write Func
1	<input checked="" type="checkbox"/>		100_BI_0_Dummy	3: BI	0	-	RTU // Port A // ACN-...	100	0-based	-	-

At the bottom of the interface, there is a toolbar with buttons for "Auto BACName", "Auto BACInst.", "Active signals: 1 / 100", "Hide Disabled signals", "Edit Columns", "Import", "Export", "AA", "1", "i", "+ (N)", "1", and "Check table". A red arrow points to the "Import" button.

At the very bottom, a status bar shows "Connected to: Serial Port COM15", "BMS Protocol: BACnet Server", "Device Protocol: Modbus Master", and "08:01:38 2021/06/16".

Now the data point file (.xlsx) must be selected. After another click on "Import" the data points are loaded into the configuration.

BacNet Musterkonfiguration.ibmaps - Intesis MAPS - 1.1.21.0

Home Project Tools View Help

Import

Excel Filename: C:\Users\Lukas.Ahrlrichs\Desktop\BacNet Export manual\BacNet Must Browse

#	Active	Description	Name	Type	Instance	Units	NC	Texts	# States	Rel. Def.	COV	#	Device	# Slave	Base	Reac
1	True	Digitaler Modbus-Eingang 1 (Coil 0)	Zentral Auf	5: BV	0	-1	-	-	2	-	-	1	RTU // Port A // ACN-GW501-MRTU	100	0-based	1: Re
2	True	Digitaler Modbus-Eingang 2 (Coil 1)	Zentral Zu	5: BV	1	-1	-	-	2	-	-	2	RTU // Port A // ACN-GW501-MRTU	100	0-based	1: Re
3	True	Digitaler Modbus-Ausgang 1 (Input Discrete 1024)	Zone 1 geöffnet	3: BI	2	-1	-	-	2	-	-	3	RTU // Port A // ACN-GW501-MRTU	100	0-based	2: Re
4	True	Digitaler Modbus-Ausgang 2 (Input Discrete 1025)	Zone 1 geschlossen	3: BI	3	-1	-	-	2	-	-	4	RTU // Port A // ACN-GW501-MRTU	100	0-based	2: Re
5	True	Digitaler Modbus-Ausgang 3 (Input Discrete 1026)	Zone 2 geöffnet	3: BI	4	-1	-	-	2	-	-	5	RTU // Port A // ACN-GW501-MRTU	100	0-based	2: Re
6	True	Digitaler Modbus-Ausgang 4 (Input Discrete 1027)	Zone 2 geschlossen	3: BI	5	-1	-	-	2	-	-	6	RTU // Port A // ACN-GW501-MRTU	100	0-based	2: Re
7	True	Daten Modbus-Eingang 1 (Holding Register 3072)	Zone 1 Soll-Position	2: AV	6	98	-	-	-	-	0	7	RTU // Port A // ACN-GW501-MRTU	100	0-based	3: Re
8	True	Daten Modbus-Eingang 2 (Holding Register 3073)	Zone 2 Soll-Position	2: AV	7	98	-	-	-	-	0	8	RTU // Port A // ACN-GW501-MRTU	100	0-based	3: Re
9	True	Daten Modbus-Ausgang 1 (Input Register 4096)	Zone 1 Ist-Position	0: AI	8	98	-	-	-	-	0	9	RTU // Port A // ACN-GW501-MRTU	100	0-based	4: Re
10	True	Daten Modbus-Ausgang 2 (Input Register 4097)	Zone 2 Ist-Position	0: AI	9	98	-	-	-	-	0	10	RTU // Port A // ACN-GW501-MRTU	100	0-based	4: Re

Replace signals
 Add signals

Auto BACName
 Auto BACInst.
 Active signals: 11 / 100
 Hide Disabled signals
 Edit Columns Import Export AA ↑ ↓ + (N) 1 - Check table

Connected to: Serial Port COM15
 BMS Protocol: BACnet Server | Device Protocol: Modbus Master | 08:13:12.2021/06/16

With the import, the General and the Modbus settings as well as the data points matching the AdComNet configuration are automatically taken over correctly.

Digital Modbus inputs and outputs are bit variables and data Modbus inputs and outputs configured to setpoint or actual position are automatically created in BACnet with the matching "Unit" in percent. The conversion BACnet value 100% to Modbus value 1000 is also already set correctly.

Upload the configuration

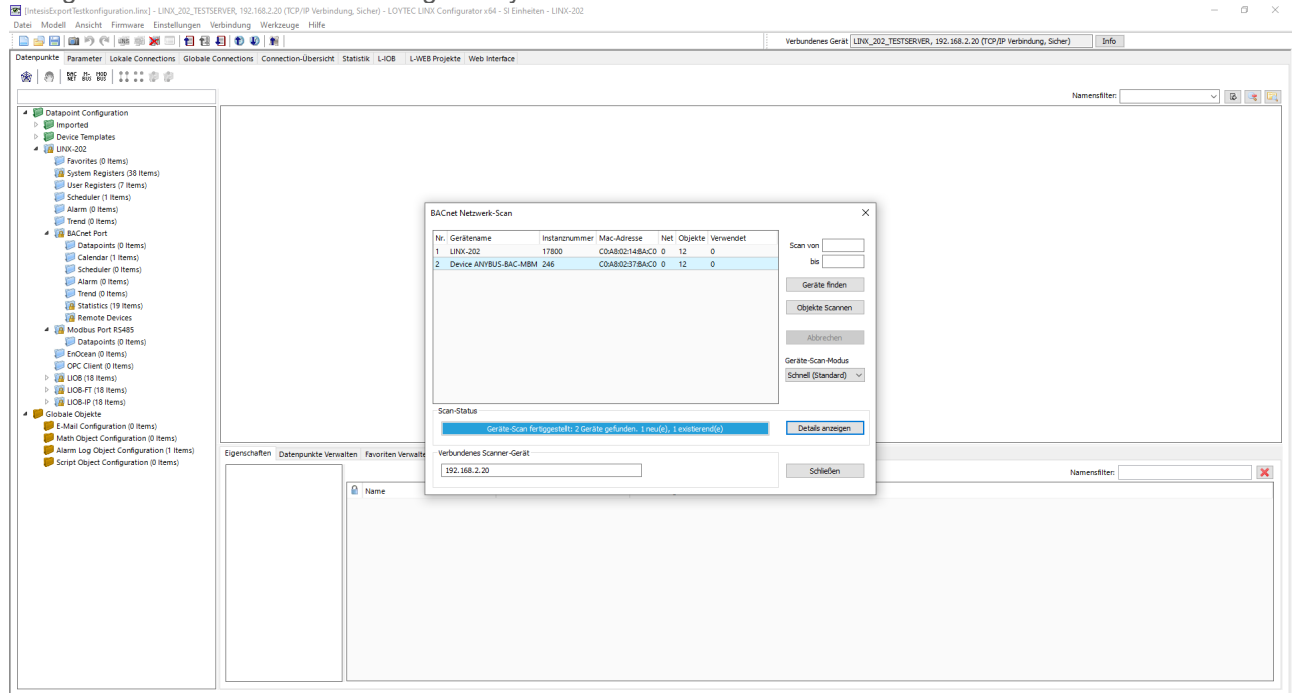
To upload the configuration to the gateway, the "Send" button must be pressed in the "Receive / Send" tab while the connection is active.

The screenshot shows the Intesis MAPS software interface. The title bar reads "BacNet Musterkonfiguration.ibmaps - Intesis MAPS - 1.1.21.0". The menu bar includes "Home", "Project", "Tools", "View", and "Help". The main toolbar contains icons for "Connection", "Configuration", "Signals *", "Receive / Send", and "Diagnostic". The "Receive / Send" tab is active, showing a "Send Configuration" section with a text input field. Below the input field, there is a "Send" button highlighted with a red arrow. The text below the input field reads: "Send the current configuration project on MAPS to your Gateway. Please, check that MAPS and the Gateway are connected before proceeding."

Example for scanning the data points from BACnet

As a connection example, a Loytec LINX-202 was used as a BACnet controller and connected to the gateway. The following shows how the data points are "scanned" using the Loytec software.

Using the network scan the Intesis gateway is found.



BACnet Netzwerk-Scan

Nr.	Gerätename	Instanzznummer	Mac-Adresse	Net	Objekte	Verwendet
1	LINX-202	17800	C0:A8:02:14:BA:C0	0	12	0
2	Device ANYBUS-BAC-MBM	246	C0:A8:02:37:BA:C0	0	12	11

Scan von
bis

Geräte finden

Objekte Scannen

Abbrechen

Geräte-Scan-Modus
Schnell (Standard) ▼

Details anzeigen

Scan-Status
Objekt-Scan fertiggestellt: 12 Objekte gescannt, 0 Fehler, 0 Warnungen.

Verbundenes Scanner-Gerät

Schließen

Now the individual data points are displayed in the device.

Datenpunktname	Nr.	OPC	Param	Richtung	Beschreibung	Objektname	Typ	Instanz	Alloc	Client-Maps	benutzt	ID
Device ANYBUS-BAC-MBM	1	<input checked="" type="checkbox"/>		In			Device Object	246	CM	1	0	5877
100_Al_8_Zone 1 Ist-Position	2	<input checked="" type="checkbox"/>		In		100_Al_8_Zone 1 Ist.	Analog Input	8	CM	1	0	5883
100_Al_9_Zone 2 Ist-Position	3	<input checked="" type="checkbox"/>		In		100_Al_9_Zone 2 Ist.	Analog Input	9	CM	1	0	5899
100_Av_6_Zone 1 Soll-Position	4	<input checked="" type="checkbox"/>		Value		100_Av_6_Zone 1 S.	Analog Value	6	CM	1	0	58A8
100_Av_7_Zone 2 Soll-Position	5	<input checked="" type="checkbox"/>		Value		100_Av_7_Zone 2 S.	Analog Value	7	CM	1	0	58C5
100_Bi_0_Dummy	6	<input checked="" type="checkbox"/>		In		100_Bi_0_Dummy	Binary Input	0	CM	1	0	58D8
100_Bi_2_Zone 1 geöffnet	7	<input checked="" type="checkbox"/>		In		100_Bi_2_Zone 1 g.	Binary Input	2	CM	1	0	58F1
100_Bi_3_Zone 1 geschlossen	8	<input checked="" type="checkbox"/>		In		100_Bi_3_Zone 1 g.	Binary Input	3	CM	1	0	5907
100_Bi_4_Zone 2 geöffnet	9	<input checked="" type="checkbox"/>		In		100_Bi_4_Zone 2 g.	Binary Input	4	CM	1	0	591D
100_Bi_5_Zone 2 geschlossen	10	<input checked="" type="checkbox"/>		In		100_Bi_5_Zone 2 g.	Binary Input	5	CM	1	0	5933
100_Bv_0_Zentral Auf	11	<input checked="" type="checkbox"/>		Value		100_Bv_0_Zentral	Binary Value	0	CM	1	0	5945
100_Bv_1_Zentral Zu	12	<input checked="" type="checkbox"/>		Value		100_Bv_1_Zentral Zu	Binary Value	1	CM	1	0	595C

Name	Richt.	Typ	Status	Wert	Beschreibung
Device ANYBUS-BAC-MBM	input	analog	normal	0	
100_Al_8_Zone 1 Ist-Position	input	analog	normal	100%	
100_Al_9_Zone 2 Ist-Position	input	analog	normal	0%	
100_Av_6_Zone 1 Soll-Position	value	analog	normal	100%	
100_Bi_0_Dummy	input	binary	normal	0%	
100_Bi_2_Zone 1 geöffnet	input	binary	normal	inactive (0)	
100_Bi_3_Zone 1 geschlossen	input	binary	normal	active (1)	
100_Bi_4_Zone 2 geöffnet	input	binary	normal	inactive (0)	
100_Bi_5_Zone 2 geschlossen	input	binary	normal	inactive (0)	
100_Bv_0_Zentral Auf	value	binary	normal	inactive (0)	
100_Bv_1_Zentral Zu	value	binary	normal	inactive (0)	

Contact

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