

ANTARES Designer Version 3.x.x.x.

User Manual

User Manual - TRANSLATION

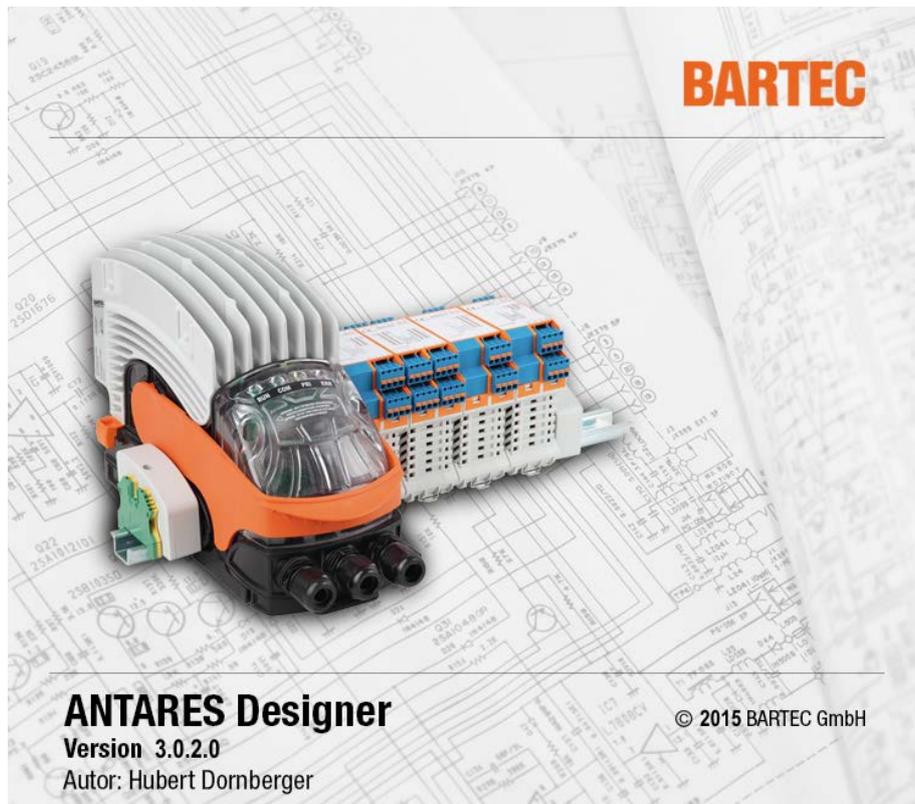
Configuration software ANTARES Designer Version 3.x.x.x

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ANTARES Designer Software

Version 3.x.x.x

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1 Basic safety information

1.1 Information about this User Manual



The User Manual is a fixed part of the product.

The User Manual contains important information and safety instructions that are necessary for the perfect functioning of the device during operation.

Damage to the equipment may be avoided through careful use and consistently following the instructions.

The figures in this User Manual are provided to illustrate the information and descriptions. It is not necessarily possible to transfer them completely unchanged, and they may differ slightly from the actual design of the device/software.

Safety information and warnings are specially highlighted in this User Manual and marked by symbols.

ATTENTION

ATTENTION describes a potentially damaging situation. If not avoided, the plant or objects in its vicinity may be damaged.



Important advice and information for effective, efficient & environmentally friendly use.

1.1.1 Languages

The original User Manual is written in German. All other available languages are translations of the original User Manual.

The User Manual is available in German and English. If further languages are required, these must be requested from BARTEC or stated when placing an order.

1.1.2 Changes to the document

BARTEC reserves the right to change the content of this document without notification. No guarantee is assumed for the accuracy of the information. In cases of doubt, the German safety instructions apply because it is not possible to rule out errors during translation or printing. In the case of legal disputes, the "General Terms and Conditions of Business" of the BARTEC Group also apply.

The current versions of the datasheets, operating instructions, certificates and EC declarations of conformity can be downloaded from www.bartec.de or may be requested directly from BARTEC GmbH.

2 Software installation

2.1 Prerequisites

2.1.1 Hardware (minimum)

- 30 MB free hard drive space
- Mouse
- Graphics card with resolution of at least 1,500 x1024 pixels, 16 bit colour depth
- USB interface to connect the ANTARES remote I/O system
- Printer (local or network)

2.1.2 Recommended system

- 50 MB free hard drive space
- Graphics card with resolution of 1,920 x 1,080 pixels, 32 bit colour depth
- Ethernet to connect the ANTARES remote I/O system

2.1.3 Software

- Microsoft Windows XP, Windows VISTA, Windows 7, Microsoft Windows 8/8.1 or Windows 10 operating system

2.1.4 Copyright

ATTENTION

This software is protected by copyright. On installation, you automatically accept the conditions of the licensing agreement.

2.1.5 Completing the registration card

This is currently not provided for

2.2 Installing the ANTARES Designer

A subdirectory in which all ANTARES Designer files are written is created during the installation process.

- (1) Make a back-up copy of an existing version of the ANTARES Designer before the installation.
- (2) Ensure that one of the following operating systems has been installed:
 - Microsoft Windows XP
 - Microsoft Windows Vista
 - Microsoft Windows 7
 - Microsoft Windows 8/8.1
 - Microsoft Windows 10
- (3) Ensure that you have the necessary rights to install the software.
- (4) Start the installation.
- (5) Follow the installation software instructions.
- (6) ANTARES Designer can be started using the start menu programs.

Further explanations about Windows can be found in the Windows documentation.

3 Software description

The ANTARES Designer program package fulfils several functions:

- Creates an ANTARES remote I/O system with generated parts list from the project data. The parts list can also be used to prepare an offer.
- Configures the ANTARES remote I/O system that has been created. The configuration data are transmitted to the ANTARES system.
- Configuration and diagnostics data can be read out from the ANTARES remote I/O system and displayed.

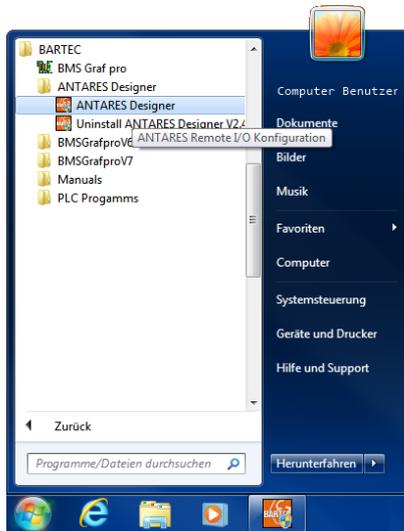


FW 1.X controllers can also be configured using the ANTARES Designer, although the full range of functions may not be available under some circumstances (online diagnostics via Ethernet).

The 8TC also cannot be addressed here.

4 First steps

4.1 Starting the program



Start the program using the

"ANTARES Designer"

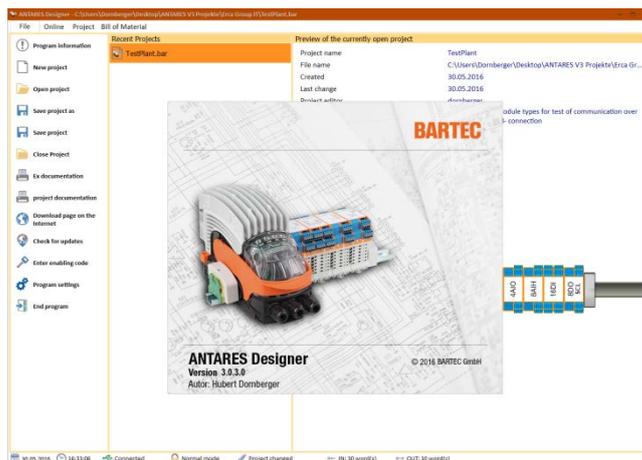
icon in the start menu.

- ▶ Programs
- ▶ BARTEC
- ▶ ANTARES Designer



In Microsoft Windows XP, Windows VISTA, Windows 7, Microsoft Windows 8/8.1 or Windows 10, it is necessary to run the software using administrator rights.

4.2 The start screen



After starting, the start screen of the "ANTARES Designer" appears.

The welcome window closes after a few seconds.

The status bar contains the following information:

- Current time
- Current date
- Connection status
- Program mode
- Project backlog
- Length of project input data
- Length of project output data



A screen resolution of 1,500 x 1024 pixels is required.

A higher resolution makes it substantially easier to operate the software.

The ANTARES system can then be seen completely and is easier to edit.

4.3 Menus

4.3.1 Menu with closed project



File Opens page with commands for loading, saving, printing, settings, recently opened projects.

Online Opens page for direct access to the ANTARES system

4.3.2 Menu with open project



File Opens page with commands for loading, saving, printing, settings, recently opened projects.

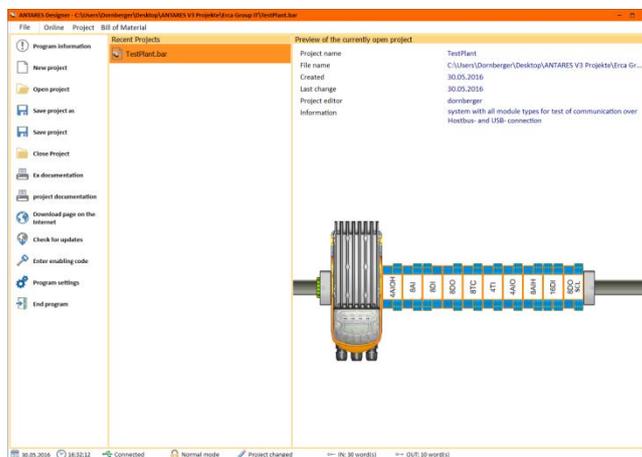
Online Opens page for direct access to the ANTARES system

Project Opens page for editing the ANTARES system

Parts list Opens page with the parts list for the project being edited

4.4 Pages

4.4.1 "File" page



Presentation of :

Menu for program operations

Recently opened projects

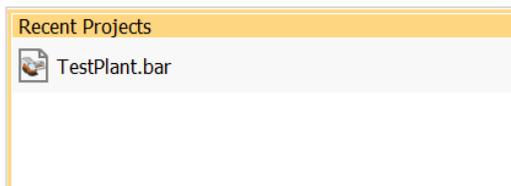
Project preview

Print preview

4.4.1.1 "Menu" area

 Program information	 Program information	Information dialog
 New project	 New project	Starts the "Constructor" for a new project
 Open project	 Open project	Open existing project
 Save project as	 Save project as	Saves the project under new names
 Save project	 Save project	Saves the project on media
 Close Project	 Close Project	Closes an open project
 Ex documentation	 Ex documentation	Creates EX documentation
 project documentation	 project documentation	Creates project documentation
 Download page on the Internet	 Download page on the Internet	Opens the download page using the internet browser
 Check for updates	 Check for updates	Searches for updates
 Enter enabling code	 Enter enabling code	Activate extended program functions
 Program settings	 Program settings	E.g. select language Available languages: German, English, French, Italian, Portuguese (Brazilian), Spanish and Russian
 End program	 End program	End program

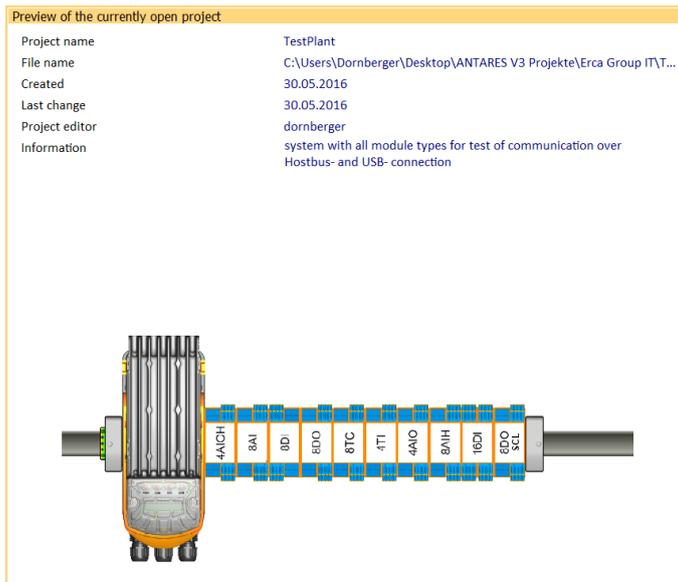
4.4.1.2 "Recently opened projects" area



The most recently edited projects are displayed in a list.

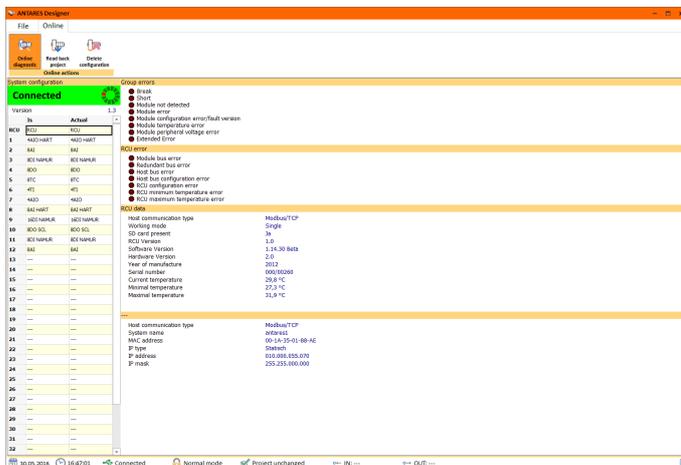
This can be opened quickly by double-clicking without the need to go through the 'Open' dialog.

4.4.1.3 "Preview currently open project" area



The currently open project is shown with details in the preview .

4.4.2 "Online" page



The online function can be used to read out the software status of both the RCU and the module.

This also applies to the address and the configuration.

During servicing, the configuration of the ANTARES station can be read out and the I/O status checked. This is an important servicing tool.

Program functions:

- Online view of the configuration, status, input and output data of the ANTARES system
- Reading back the configuration on the ANTARES system into a newly created project
- Deleting the module configuration in the ANTARES system

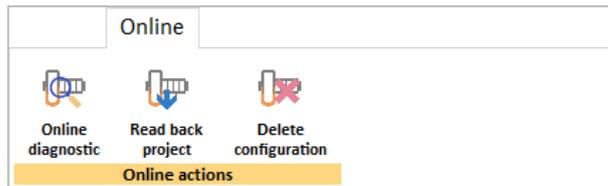


No connection exists between the online view and the project (i.e. it is not necessary for any project to be open).

There must be a connection between the ANTARES system and the PC via USB cable or network, in the case of Ethernet via RCU.

It is not possible to modify data.

4.4.2.1 Toolbar



Online
diagnostic

Activates/deactivates the online diagnostics connection to the ANTARES system

Details on:

[Status data](#)

[Configuration data](#)

[Input data](#)

[Output data](#)

[Further information](#)



Read back
project

Starts reading out the configuration from the connected ANTARES system and generates a new project with the data that have been read out.



Delete
configuration

Deletes the module configuration in the connected ANTARES system.

The settings in the head module (RCU), such as name or IP address, are not reset.

4.4.2.2 "System configuration" area

System configuration		
Disconnected		
Version -----		
	Is	Actual
RCU		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		

System configuration		
Connected		
Version 1.3		
	Is	Actual
RCU	RCU	RCU
1	4AIO HART	4AIO HART
2	8AI	8AI
3	8DI NAMUR	8DI NAMUR
4	8DO	8DO
5	8TC	8TC
6	4TI	4TI
7	4AIO	4AIO
8	8AI HART	8AI HART
9	16DI NAMUR	16DI NAMUR
10	8DO SCL	8DO SCL
11	---	---
12	---	---
13	---	---
14	---	---
15	---	---
16	---	---
17	---	---
18	---	---
19	---	---
20	---	---
21	---	---
22	---	---
23	---	---
24	---	---
25	---	---
26	---	---
27	---	---
28	---	---
29	---	---
30	---	---
31	---	---
32	---	---

Display of the connection

A red box means no connection.

A green box means a connection has been established.

Protocol version

Version of the communication protocol

Configuration overview

Actual configuration and the target configuration of the modules used.

It can be seen in this display whether an incorrect module type and/or incorrect module slot has been used.

The specific module data are displayed by clicking on a row.

4.4.2.3 "Group error" area

Group errors	
● Break	
● Short	
● Module not detected	
● Module error	
● Module configuration error/fault version	
● Module temperature error	
● Module peripheral voltage error	
● Extended Error	

An important area in online diagnostics.

Displays errors in the system (closer consideration of the modules point to the origin of the error)

NB: This is only visible when RCU has been selected

4.4.2.4 "RCU errors" area

RCU error	
● Module bus error	
● Redundant bus error	
● Host bus error	
● Host bus configuration error	
● RCU configuration error	
● RCU minimum temperature error	
● RCU maximum temperature error	

Overview of

RCU errors

4.4.2.5 "RCU data" area

RCU data	
Host communication type	Modbus/TCP
Working mode	Single
SD card present	Ja
RCU Version	1.0
Software Version	1.14.30 Beta
Hardware Version	2.0
Year of manufacture	2012
Serial number	000/00260
Current temperature	31,7 °C
Minimal temperature	27,9 °C
Maximal temperature	31,9 °C

Overview of

RCU data

Example: Modbus/TCP RCU data

4.4.2.6 "Ethernet/PROFIBUS DP host parameters" area

Hostparameter Ethernet	
Host communication type	Modbus/TCP
System name	antares1
MAC address	00-1A-35-01-88-AE
IP type	Statisch
IP address	010.000.055.070
IP mask	255.255.000.000

Overview of

RCU parameters

Displayed readings correspond to the RC host communication

Example: Modbus/TCP RCU data

4.4.2.7 "Module error" area

Module error	
<input type="checkbox"/>	Break
<input type="checkbox"/>	Short
<input type="checkbox"/>	Module not detected
<input type="checkbox"/>	Module error
<input type="checkbox"/>	Module configuration error/fault version
<input type="checkbox"/>	Module temperature error
<input type="checkbox"/>	Module peripheral voltage error
<input type="checkbox"/>	Extended Error

Overview of errors in the selected module

Errors due to channel: additional display of the individual areas of each module

4.4.2.8 "Target module" area

Module data set	
Module type	4AIO HART
Position	1

Type of module that is configured in the selected slot.

4.4.2.9 "Actual module" area

Module data is	
Module type	4AIO HART
Position	1
Serial number	64/3
Year of manufacture	2005
Software Version	1.0.8 Final
Hardware Version	1.0
Current temperature	39,0 °C
Minimum temperature	36,5 °C
Maximum temperature	39,0 °C

Status data for the existing module are displayed

Uniform display of the remote I/O modules (header data)

4.4.2.10 "Specific module" area

Legend	
	-< >- : Break
	==== : Short
	: Reset outputs if there is a loss of communication
	: Input / as input
	: Output
	: Internal temperature compensation (8TC)

The compressed display uses symbols
 Example: Overview/meaning of the symbols

8DI module

Channel	Settings	State	Input
1			
2			
3			
4			
5			
6			
7 (C2)			
8 (C1)			

counter active
 Clear counter
 Counter Enable
 Overflow Reset

16DI module

Channel	Settings	State	Input
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

8DO module

Channel	Settings	State	Output
1			
2			
3			
4			
5			
6			
7			
8			

8DO SCL module

Channel	Settings	State	Output
1			
2			
3			
4			
5			
6			
7			
8			

8AI module

Channel	Settings	State	Input
1			
2			
3			
4			
5			
6			
7			
8			

Filter 1 4 16 64

8AIH module

Channel	Settings	State	Input
1			
2			
3			
4			
5			
6			
7			
8			

Filter 1 4 16 64 HART

4AIO module

Channel	Settings	State	Input/Output
1			
2			
3			
4			

4-20 mA Filter 1 4 16 64

4AIOH module

Channel	Settings	State	Input/Output
1			
2			
3			
4			

4-20 mA Filter 1 4 16 64 HART

8TC module

Channel	Settings	State	Input
1			
2			
3			
4			
5			
6			
7			
8			

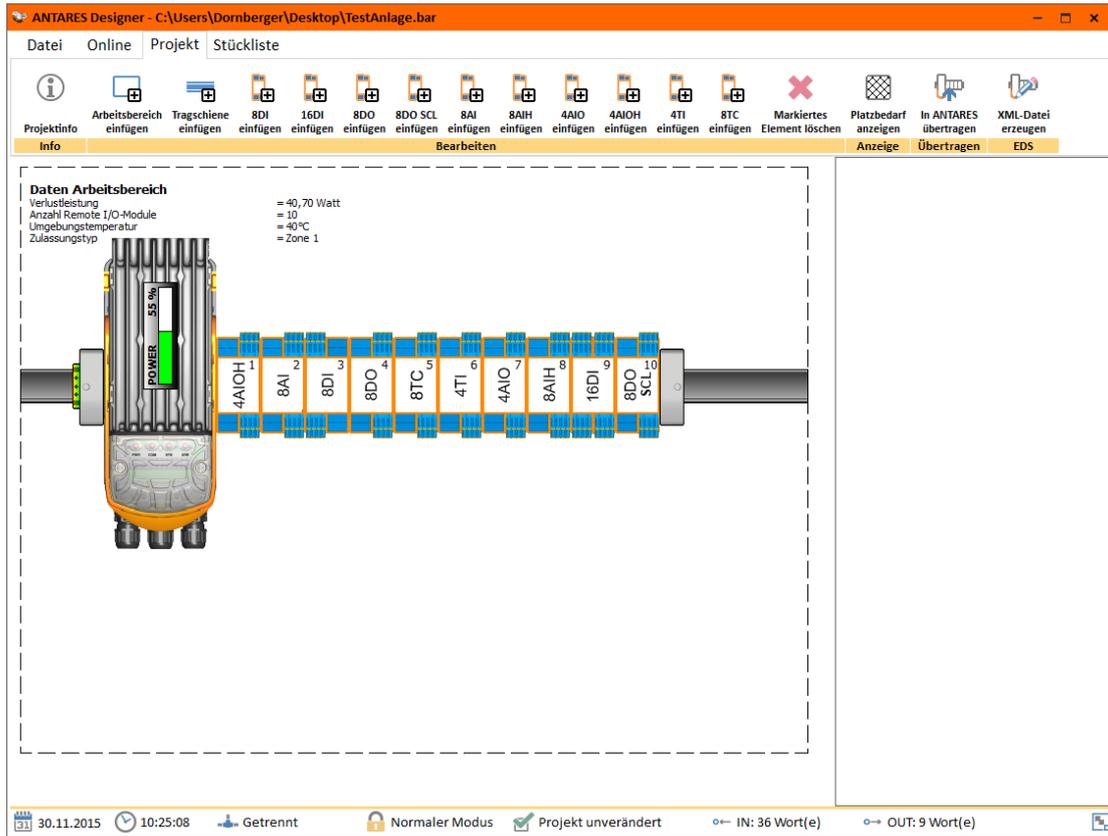
Sensor type A B C E J K N R S T XX mV

4TI module

Channel	Settings	State	Input
1			
2			
3			
4			

Connector 2 3 4 PT100 PT1000 Pot

4.4.3 "Project" page

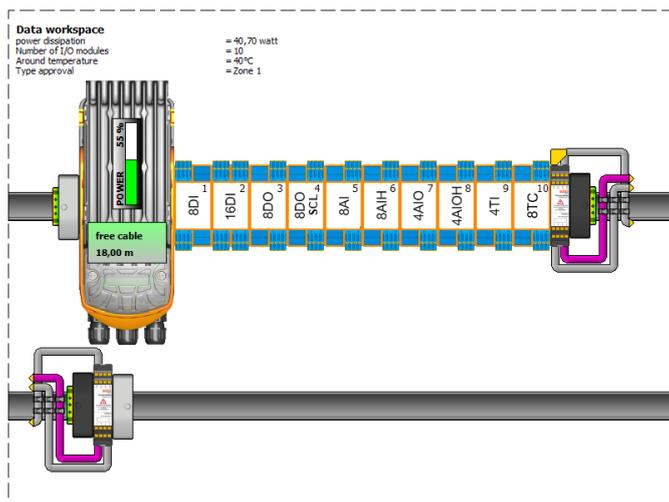


- Program functions:
- System overview
 - Set the host communication
 - Insert/remove/change remote I/O modules
 - Position remote I/O modules
 - Adapt remote I/O modules



This page is only displayed when a project is open.

4.4.3.1 Project editor

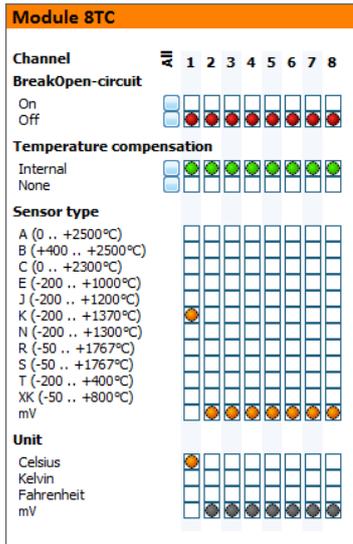


- Creation of a system across one or more work areas and mounting rails
- Free positioning of the I/O modules on the created mounting rails
- Display of the capacity utilisation of the system
- Selection of system components for parameter assignment

4.4.3.2 Toolbar

Project			
	Project information		Insert new workspace
	Insert new rail		Insert 8DI
	Insert 16DI		Insert 8DO
	Insert 8DO SCL		Insert 8AI
	Insert 8AIH		Insert 4AIO
	Insert 4AIOH		Insert 4TI
	Insert 8TC		Delete selected item
	View space requirements		Transfer to ANTARES
	create XML-file		
Information		Edit	
Display		Transfer	
EDS			
	Project information		Change project header data
	Insert new workspace		Insert mounting rail
	Insert 8DI		16 Digital In NAMUR Insert 16-channel NAMUR digital input module in marked mounting rail
	Insert 8DO		8 Digital Out SCL Insert 8-channel SCL digital output module with single channel current limitation in marked mounting rail
	Insert 8AI		8 Analog In HART Insert 8-channel HART 4 to 20 mA analog input module in marked mounting rail
	Insert 4AIO		4 Analog In/Out HART Insert 4-channel HART analog input/output module 0 to 20 mA and/or 4 to 20 mA in marked mounting rail
	Insert 4TI		8 Temperature In Insert 8-channel temperature input module for Pt100, Pt1000, potentiometer in marked mounting rail
	Delete selected item		View space requirements
	Transfer to ANTARES		create XML-file
			Fade required space in/out
			Generates an import file for Ethernet/IP based systems.

4.4.3.3 Parameter frame

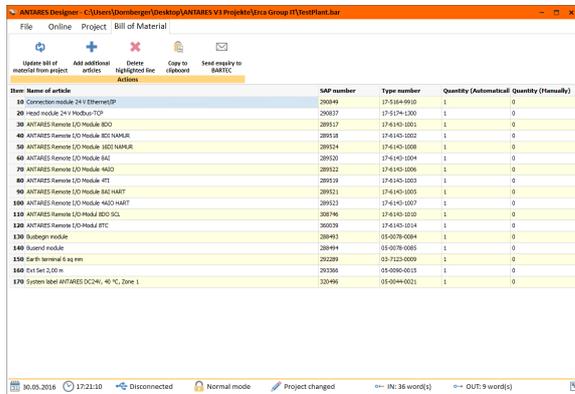


The relevant settings frame appears for the type of system components

Possible frames are as follows:

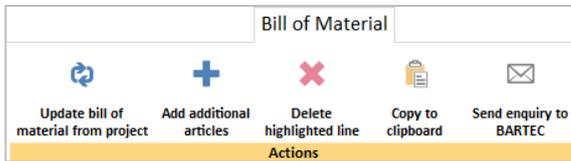
- | | |
|---|---------------------------|
| Work area | Module 8DI |
| Mounting rail | Module 16DI |
| Termination modules | Module 8DO |
| Mounting rail connection module (cable) | Module 8DO SCL |
| | Module 8AI |
| | Module 8AIH |
| | Module 4AIO |
| | Module 4AIOH |
| | Module 4TI |
| | Module 8TC (example left) |

4.4.4 "Parts list" page



- List of all components
- Insert additional accessories
- Request offer by email

4.4.4.1 Toolbar




Update bill of material from project

If necessary, update the parts list after changing in the system configuration.


Add additional articles

Using this option, additional articles that are not automatically generated by project planning may be added to the parts list.


Delete highlighted line

Remove articles that have not been automatically generated.


Copy to clipboard

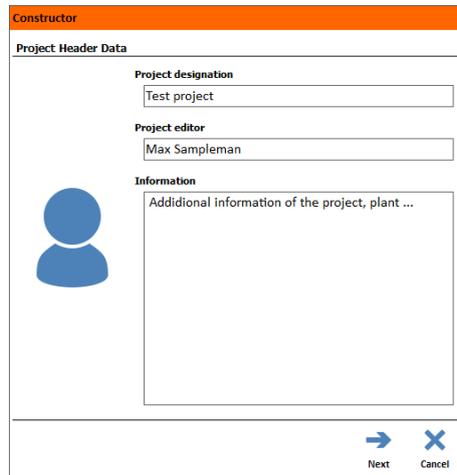
Copy parts list to the Windows clipboard to make it available for use in other programs such as Microsoft Excel.


Send enquiry to BARTEC

When Microsoft Outlook has been installed, generate an enquiry to BARTEC and pass over to Outlook to send. Not sent automatically – a few details still need to be added to the email by the sender.

5 Project

5.1 Create new ANTARES remote I/O system using constructor



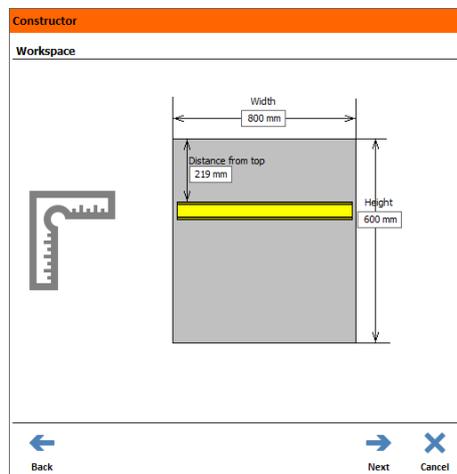
Project header data (Page 1)

Selection box to store general information and basic details about the system.

Project name

Project editor

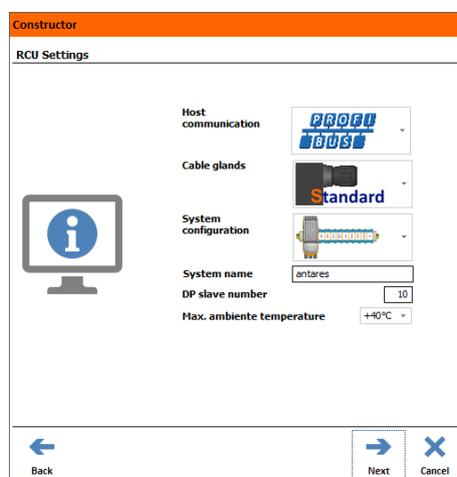
Information about the project



Work area (Page 2)

Define the first work area. The mounting rail with the RCU is positioned on this work area. After generating the system, further work areas and mounting rails may be inserted (a maximum of 3 mounting rail transitions are possible).

Dimensions: specify the width and height of the work area and distance of the mounting rail from the top



RCU settings (Page 3)

The host communication of the ANTARES remote I/O system may take place using the following process connections:

EtherNet/IP, Modbus TCP, PROFINET and PROFIBUS

Selection of cable glands

The ANTARES system architecture is possible with single or redundant operation. Maximum ambient temperature (inside the protective cover!) Settings based on the selected type of host connection

Module assignment (Page 4)

Constructor			
Module Assignment (optional)			
	Current	Number	Reserve
Digital			
IN Namur		<input type="text" value="0"/>	<input type="text" value="0 %"/>
OUT		<input type="text" value="0"/>	<input type="text" value="0 %"/>
OUT (>20 mA)	<input type="text" value="30 mA"/>	<input type="text" value="0"/>	<input type="text" value="0 %"/>
Analog			
IN active		<input type="text" value="0"/>	<input type="text" value="0 %"/>
IN passive		<input type="text" value="0"/>	<input type="text" value="0 %"/>
OUT		<input type="text" value="0"/>	<input type="text" value="0 %"/>
Analog HART			
IN active HART		<input type="text" value="0"/>	<input type="text" value="0 %"/>
IN passive HART		<input type="text" value="0"/>	<input type="text" value="0 %"/>
OUT HART		<input type="text" value="0"/>	<input type="text" value="0 %"/>
Miscellaneous			
Counter		<input type="text" value="0"/>	<input type="text" value="0 %"/>
Potentiometer		<input type="text" value="0"/>	<input type="text" value="0 %"/>
Temperature		<input type="text" value="0"/>	<input type="text" value="0 %"/>
Temperatur TC		<input type="text" value="0"/>	<input type="text" value="0 %"/>

As an option, it is possible to enter the various parameters for the input and output channels required in the system.

The "constructor" creates a system based on the required number of channel types plus reserve amount.

Module selection: digital or analog inputs/outputs, other modules

If the operating parameters are complied with, the constructor builds the ANTARES system independently.



Changes can be made at any time when the system is built by the constructor.

If the number of channels exceeds the maximum for a system, it is not possible to generate a system architecture.

See following pages for detailed information.

5.2 Function of the address switch



5.2.1 General information about the switches

The decimal switches are assigned as follows from left to right:

Hundreds: left-hand switch
Tens: middle switch
Ones: right-hand switch

Example:

The address 30 needs to be set, therefore the switches are set to 0-3-0.

The basic rule is that a valid address on the switches is adopted by the ANTARES system after the power has been switched on.

A default address on the switches always takes priority.

The address 000 should be entered if the address is to be preset by the ANTARES Designer or from the engineering system (e.g. Siemens TIA portal).

	Protocol	Default ANTARES Designer	Valid range	Special function	Reserved range
	PROFIBUS-DP	000	1 to 126	999	127 to 998
Ethernet variations	000	1 to 255	999	256 to 998	

5.2.2 For the PROFIBUS-DP version

Valid address range: Address 1 to 126

Invalid range would therefore be 0 and anything greater than 126, with the exception of 999 (also see 5.2.4)

5.2.3 For Ethernet versions

The basic rule is that as soon as a valid address is set on the switches, the ANTARES system automatically sets the following address:

IP address: 192.168.0.XXX

Sub netmask: 255.255.255.0

If a different sub netmask or IP address from that specified is used, this should be provided via the ANTARES Designer.

The exception is Profinet; here the header is set to DCP, the address is preset by the engineering system (e.g. Siemens TIA portal).

Valid address range for an IP address:

Address 1 to 255

Example:

The IP address 192.168.0.030 needs to be set. 030 should then be set on the switches.

The set address would then be as follows:

IP address: 192.168.0.030

Sub netmask: 255.255.255.0

The invalid range would therefore be 0 and anything greater than 255, with the exception of 999 (also see 5.2.4).

5.2.4 Other functions

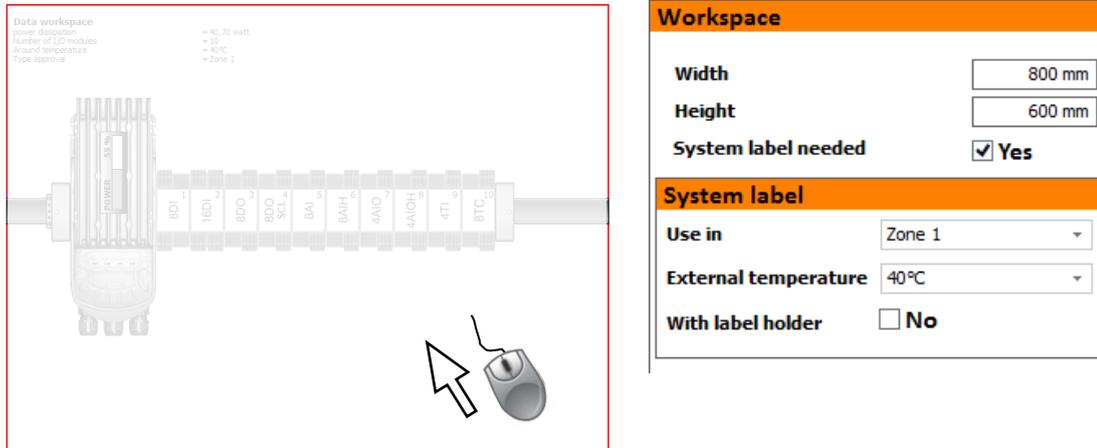
The ANTARES header can be reset to factory settings using the address switches. To do this, all switches are set to "9", i.e. 999. This can also be done when the system is running.

After switching the power off and back on, the header is reset. If the online module is then started with the help of the ANTARES Designer, it is possible to see that all remote I/O modules have been deleted.

Finally the switch should be set to "000" again.

5.3 Edit ANTARES remote I/O system

5.3.1 Work area



“Work area” selection window

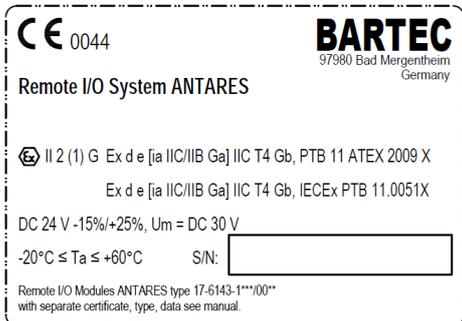
The marked work area is indicated by a red frame and shows the space available. It is possible to create several work areas (up to four) and to divide the ANTARES remote I/O system.

<p>Insert work area</p>  <p>Insert new workspace</p>	<p>Select the "Insert work area" symbol from the toolbar</p>
<p>Delete marked work area</p>  <p>Delete selected item</p>	<p>Select the "Delete marked element" symbol from the toolbar</p>
<p>Define the size of the work area</p> 	<p>Select a work area by left clicking on this work area. Define the width and height in the "Work area" selection window.</p>



Every ANTARES remote I/O system requires a system label and a suitable label holder and can be assigned to the respective work area.

Take note of the ANTARES system description!

<p>Example of system label:</p>  <p>The label contains the following information:</p> <ul style="list-style-type: none"> CE 0044 BARTEC 97980 Bad Mergentheim Germany Remote I/O System ANTARES II 2 (1) G Ex d e [Ia IIC/II B Ga] IIC T4 Gb, PTB 11 ATEX 2009 X Ex d e [Ia IIC/II B Ga] IIC T4 Gb, IECEx PTB 11.0051X DC 24 V -15%/+25%, Um = DC 30 V -20°C ≤ Ta ≤ +60°C S/N: [] Remote I/O Modules ANTARES type 17-6143-1***00** with separate certificate, type, data see manual. 	<p>Required information:</p> <ul style="list-style-type: none"> Ex zone, max. outside temperature (outside the protective cover) <p>The label holder must meet specific requirements in the Ex area. Order label holders at the same time. The customised details generate the accessory part for the parts list.</p>
--	---

5.3.2 Mounting rail

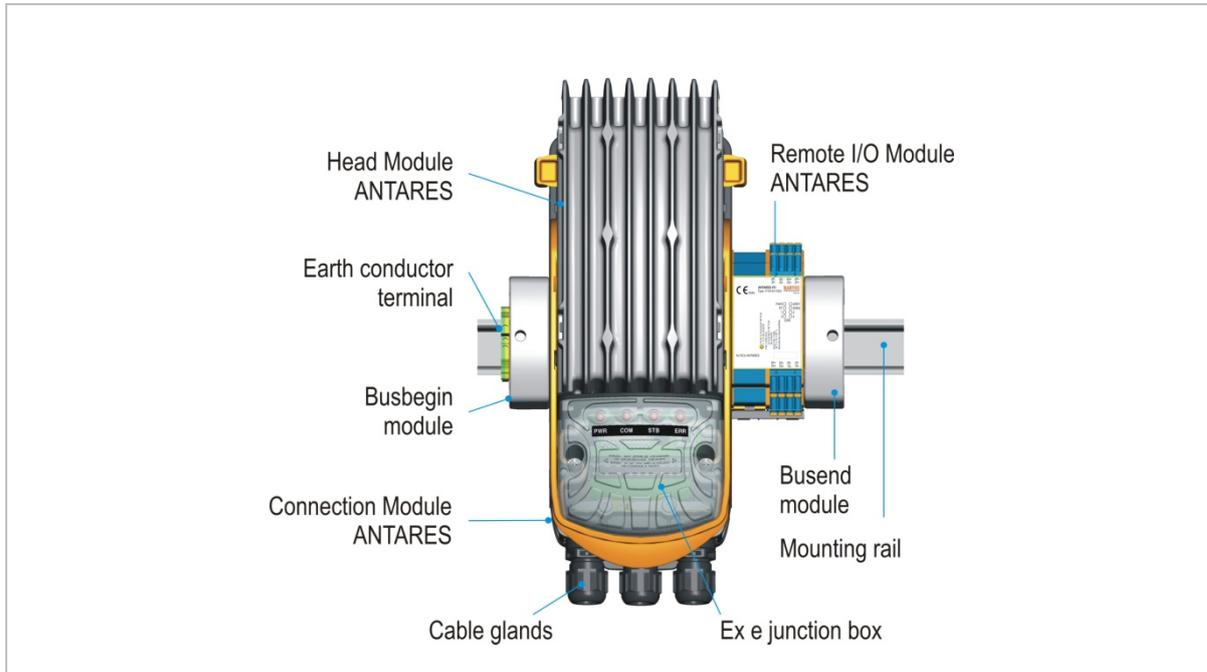
<p>Move mounting rail</p>		<p>Place mouse on the mounting rail and left click to move the mounting rail up/down.</p> <p>Take the space required by the modules into consideration!</p>
<p>Insert mounting rail</p>	<p>Insert new rail</p>	<p>Mark work area and select the "Insert mounting rail" symbol from the toolbar</p>
<p>Insert mounting rail transition</p>		<p>The ExtSet is automatically inserted when a new mounting rail is selected.</p> <p>Specify the length of the cable (total length 20 m!)</p> <p>2.00 m Rail connection cable</p> <p>10.00 m Cable length 2,00 m</p> <p>20.00 m</p>
<p>Delete mounting rail</p>	<p>Delete selected item</p>	<p>Mark mounting rail and select the symbol to "Delete marked element" from the toolbar</p>



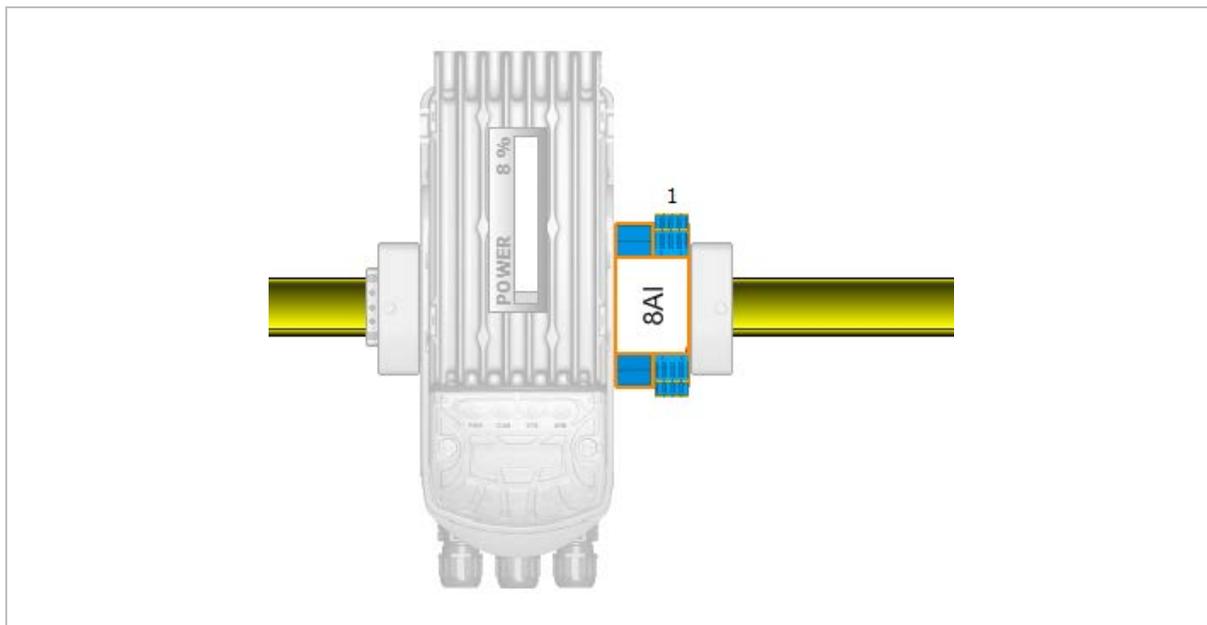
Mounting rails can only be deleted from the work area if no modules have been added.

5.3.3 Position remote I/O modules on the mounting rail

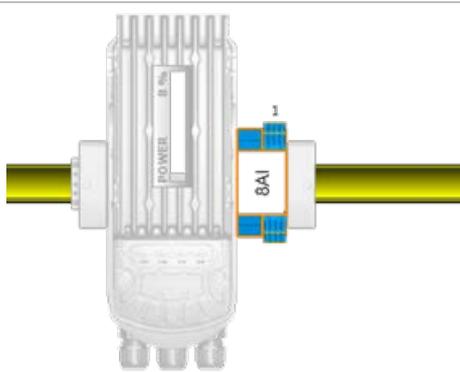
The figure showing the work area illustrates the system architecture of the remote I/O system.



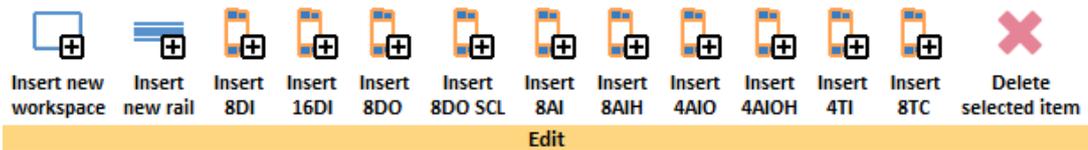
In the ANTARES Designer, the earthing terminals, modules at the start of the bus, RCU and modules at the end of the bus are fixed components of the system architecture. Up to 32 remote I/O modules can be inserted to the right of the RCU on the mounting rail. There are currently 9 different remote I/O modules.



The ANTARES Designer checks the various parameters such as ambient temperature, power dissipation, cable lengths between the mounting rails, maximum current and the necessary current consumption when inserting a remote I/O module. The maximum data lengths that are specified for the various bus protocols are similarly checked. A notification is given if one of the parameters is exceeded.



Module toolbar



Insert remote I/O module

Mark the mounting rail and click the selected remote I/O module on the module toolbar

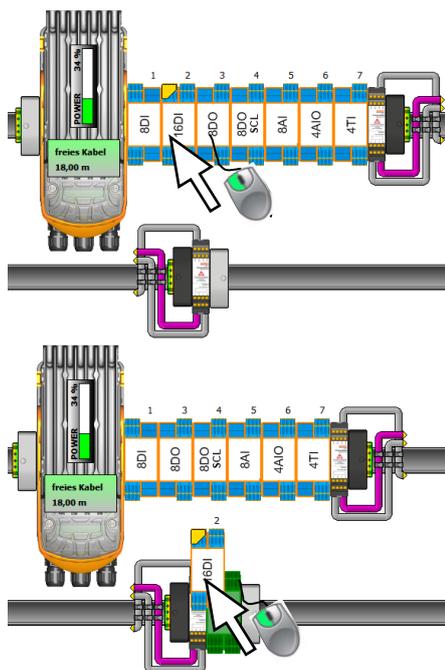
Move remote I/O module

Mark the remote I/O module by left clicking and keeping the mouse button pressed.

Move the module to the desired place (on/after all mounting rails possible)

Target position = green area

Release the mouse button on reaching the target position.



Moving the modules also changes the position of the input and output data to the controller!

5.4 Parameter assignment of RCU and remote I/O modules

5.4.1 RCU ANTARES (Rail Control Unit)



Host communication

The ANTARES remote I/O system has the following process connections:

- EtherNet/IP
- Modbus TCP
- PROFINET
- PROFIBUS

Selection of the cable glands

- For non-armoured cables
- For armoured cables

Host communication with PROFIBUS-DP



RCU settings	
Host communication	PROFIBUS
Cable glands	Standard
System configuration	
System name	antares
DP slave number	10
Max. ambiente temperature	+40°C

System name

XXX

System architecture

Redundancy

DP slave number

Of the PROFIBUS

Max. ambient temperature

+40°C, +50°C or +60°C

Host communication with EtherNet/IP and Modbus TCP



RCU settings	
Host communication	EtherNet/IP
Cable glands	Standard
System name	antares
Address type	Static
IP address	192.168.0.10
Network mask	255.255.255.0
Gateway	0.0.0.0
Max. ambiente temperature	+40°C

System name

XXX

Address type

Static, DHCP

IP address

IP network mask

IP gateway

Max. ambient temperature

+40°C, +50°C or +60°C

Host communication with PROFINET



RCU settings	
Host communication	PROFINET
Cable glands	Standard
System name	antares
Max. ambiente temperature	+40°C

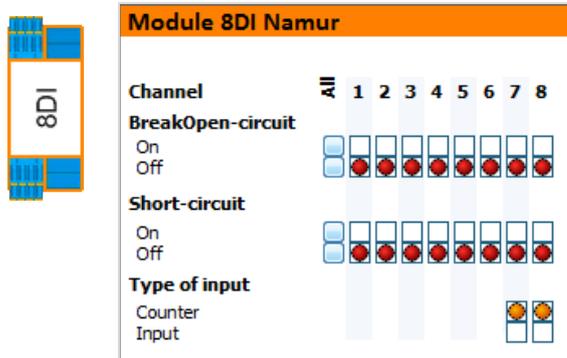
System name

XXX

Max. ambient temperature

+40°C, +50°C or +60°C

5.4.2 ANTARES 8DI remote I/O module



Break detection	Entry for channel-related activation
Short circuit detection	
Input type	Channel as input or counter



If channel 8 is set as counter, the data bit for channel 8 is always a "0".
 "Counter 1" is shown, however, in the transmission range. Channel 7 can only be activated as counter if channel 8 is already a counter. In the transmission range, channel 7 corresponds to "Counter 2".
 See Chapter 4.

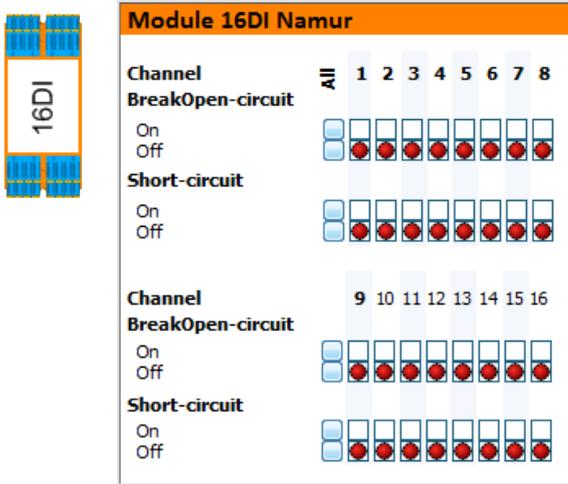
Input process data

Byte	Data type	No counter	One counter	Two counters	Description/values
1	Byte	Bit 0 = Channel 1 Bit 7 = Channel 8	Bit 0 = Channel 1 Bit 7 = always 0	Bit 0 = Channel 1 Bit 5 = Channel 6 Bit 6 = Always 0 Bit 7 = Always 0	Digital input value
2-5	Int32		31-bit + overrun (bit 31) of counter 1 (8)	31-bit + reset overrun (bit 31) of counter 1 (8)	Digital input value
6-9	Int32			31-bit + reset overrun (bit 31) of counter 2 (7)	Digital input value

Output process data

Byte	Data type	No counter	One counter	Two counters	Description/values
1	Byte		Bit 0 = Reset counter 1 Bit 1 = Start/stop Bit 2 = Overrun Bit 3 = Reserved Bit 4 = Reserved Bit 5 = Reserved Bit 6 = Reserved Bit 7 = Reserved	Bit 0 = Reset counter 1 Bit 1 = Start/stop Bit 2 = Reset overrun Bit 3 = Reset counter 2 Bit 4 = Start/stop Bit 5 = Reset overrun Bit 6 = Reserved Bit 7 = Reserved	Digital input value

5.4.3 ANTARES 16DI remote I/O module



Break detection	Entry for channel-related activation
Short circuit detection	

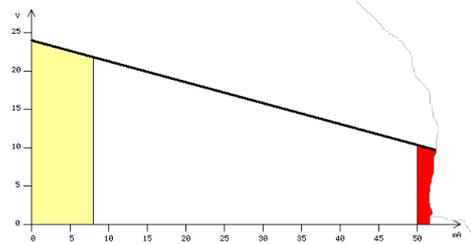
Input process data

Byte	Data type	Inputs	Description/values
1-2	Word16	Bit 0 = Channel 1 Bit 1 = Channel 2 Bit 14 = Channel 15 Bit 15 = Channel 16	Digital input value



When using a Siemens host (PROFIBUS-DP or ProfiNet), transmission of the process map for the 16DI takes place in the Motorola S1 format, i.e. the high bytes and low bytes are switched.

5.4.4 ANTARES 8DO remote I/O module



Break detection:
 In the range 0 to approx. 8 mA

Short circuit detection:
 Above approx. 50 mA

Break detection	Entry for channel-related activation
Short circuit detection	
Reset outputs if communication is lost	Conduct of outputs if communication is lost
Optional setting of the output load ...	Optional calculation of output load



Each of the outputs can carry load of up to approx. 40 mA. The possible aggregate current is limited to 160 mA (which incorporates calculation of the output load). If load is placed on a channel, a certain aggregate current results and the output voltage on this channel varies. The software calculates the output voltage generated on the basis of the characteristics of the installed barrier.

The software also uses the aggregate current to calculate the necessary total current for the system. No information is transmitted to the ANTARES remote I/O system. If other output values are used in the system, the ANTARES system can still operate correctly as long as no limit values (aggregate current and max. total current) are exceeded.

Output process data

Byte	Data type	Inputs	Description/values
1	Byte	Bit 0 = Channel 1 Bit 1 = Channel 2 ... Bit 7 = Channel 8	Digital output value

5.4.5 ANTARES 8DO SCL remote I/O module



Module 8DO SCL

Channel: All 1 2 3 4 5 6 7 8

Open-circuit detection

On:

Off:

Short-circuit detection

On:

Off:

Reset outputs if there is a loss of communication

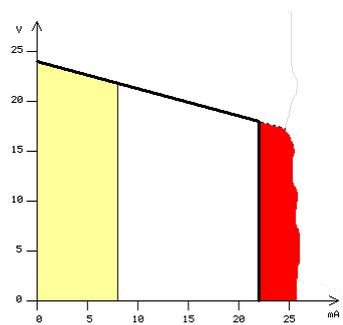
On:

Off:

Optional settings of the output load to determine the power requirements of the system

!! NO channel settings !!

	Output current	Voltage
Channel 1	20 mA	18,6V
Channel 2	20 mA	18,6V
Channel 3	20 mA	18,6V
Channel 4	20 mA	18,6V
Channel 5	20 mA	18,6V
Channel 6	20 mA	18,6V
Channel 7	20 mA	18,6V
Channel 8	20 mA	18,6V



Break detection:
 In the range 0 to approx. 8 mA

Short circuit detection:
 Above approx. 22 mA

Break detection	Entry for channel-related activation
Short circuit detection	
Reset outputs if communication is lost	Conduct of outputs if communication is lost
Optional setting of the output load ...	Optional calculation of output load



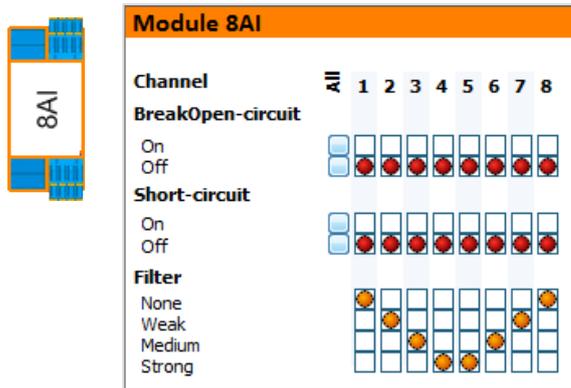
Every output is limited to 20 mA (which incorporates calculation of the output load). If load is placed on a channel, this produces output voltage on the channel. The software calculates the output voltage generated on the basis of the characteristics of the installed barrier.

The software only uses this information for display purposes. No information is transmitted to the ANTARES remote I/O system.

Output process data

Byte	Data type	Inputs	Description/values
1	Byte	Bit 0 = Channel 1 Bit 1 = Channel 2 Bit 7 = Channel 8	Digital output value

5.4.6 ANTARES 8AI remote I/O module



Break detection	Entry for channel-related activation
Short circuit detection	
Filter	Mean value from 1, 4, 16 or 64 values



The ANTARES 8AI remote I/O module is exclusively for passive sensors. It permits no switching over from 0-20 mA or 4-20 mA, because 4-20 mA are always needed. The maximum current possible on the 8AI is 21.8 mA. This must be taken into consideration when designing the system with the corresponding sensors.

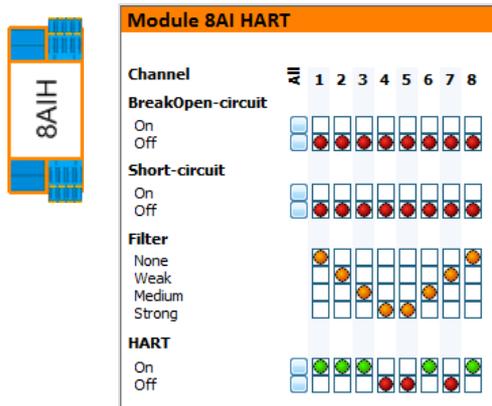
Input process data

Byte	Data type	Description/values
1-2	Int 16	Analog In 1 Analog input value 15 bit + VZ (see value range table)
3-4	Int 16	Analog In 2 Analog input value 15 bit + VZ (see value range table)
5-6	Int 16	Analog In 3 Analog input value 15 bit + VZ (see value range table)
7-8	Int 16	Analog In 4 Analog input value 15 bit + VZ (see value range table)
9-10	Int 16	Analog In 5 Analog input value 15 bit + VZ (see value range table)
11-12	Int 16	Analog In 6 Analog input value 15 bit + VZ (see value range table)
13-14	Int 16	Analog In 7 Analog input value 15 bit + VZ (see value range table)
15-16	Int 16	Analog In 8 Analog input value 15 bit + VZ (see value range table)

Value range for analog values

Current	Range 0...20 mA		Range 4...20 mA		Value in the case of short circuit: 7FFF _{Hex}
21.8 mA	75B9 _{Hex}	30137	7827 _{Hex}	30759	
20 mA	6C00 _{Hex}	27648	6C00 _{Hex}	27648	Value in the case of wire break: 8000 _{Hex}
4 mA			0000 _{Hex}	0	
0 mA	0000 _{Hex}	0	E500 _{Hex}	-6912	

5.4.7 ANTARES 8AI HART remote I/O module



Break detection	Entry for channel-related activation
Short circuit detection	
Filter	Mean value from 1, 4, 16 or 64 values
HART	Activation of the HART function

The ANTARES 8AI HART remote I/O module is exclusively for passive sensors. It permits no switching over from 0-20 mA or 4-20 mA, because 4-20 mA are always needed.



When the HART function is activated, a HART sensor/actuator can be addressed. The ANTARES remote I/O system assumes the function of a HART gateway.

The maximum current possible on the 8AI is 21.8 mA. This must be taken into consideration when designing the system with the corresponding sensors.

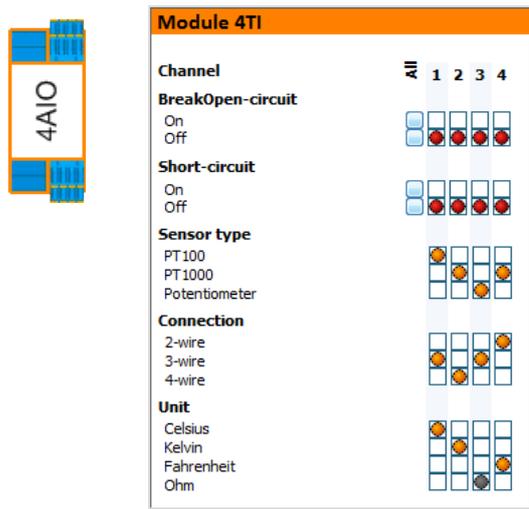
Input process data

Byte	Data type	Description/values
1-2	Int 16	Analog In 1 Analog input value 15 bit + VZ (see value range table)
3-4	Int 16	Analog In 2 Analog input value 15 bit + VZ (see value range table)
5-6	Int 16	Analog In 3 Analog input value 15 bit + VZ (see value range table)
7-8	Int 16	Analog In 4 Analog input value 15 bit + VZ (see value range table)
9-10	Int 16	Analog In 5 Analog input value 15 bit + VZ (see value range table)
11-12	Int 16	Analog In 6 Analog input value 15 bit + VZ (see value range table)
13-14	Int 16	Analog In 7 Analog input value 15 bit + VZ (see value range table)
15-16	Int 16	Analog In 8 Analog input value 15 bit + VZ (see value range table)

Value ranges for analog values

Current	Range 0...20 mA		Range 4...20 mA		Value in the case of short circuit: 7FFF _{Hex}
21.8 mA	75B9 _{Hex}	30137	7827 _{Hex}	30759	
20 mA	6C00 _{Hex}	27648	6C00 _{Hex}	27648	Value in the case of wire break: 8000 _{Hex}
4 mA			0000 _{Hex}	0	
0 mA	0000 _{Hex}	0	E500 _{Hex}	-6912	

5.4.8 ANTARES 4AIO remote I/O module



Module 4TI

Channel

BreakOpen-circuit
 On Off

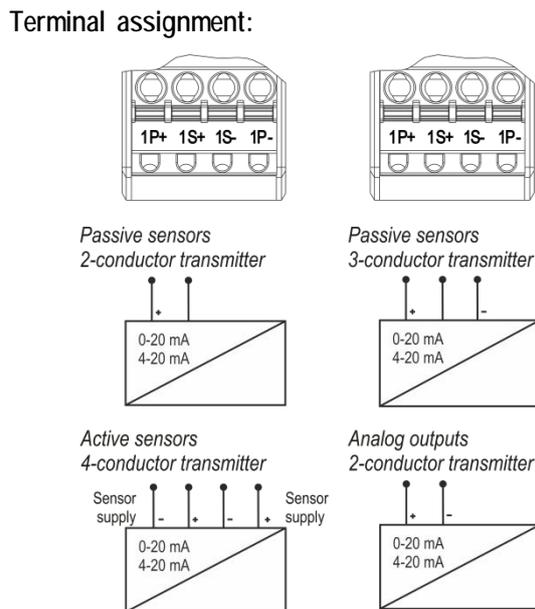
Short-circuit
 On Off

Sensor type
 PT100
 PT1000
 Potentiometer

Connection
 2-wire
 3-wire
 4-wire

Unit
 Celsius
 Kelvin
 Fahrenheit
 Ohm

Terminal assignment:



Passive sensors
 2-conductor transmitter

Passive sensors
 3-conductor transmitter

Active sensors
 4-conductor transmitter

Analog outputs
 2-conductor transmitter

Break detection	Entry for channel-related activation
Short circuit detection	
Type of channel	Input/output
Signal level	0-20 mA or 4-20 mA
Filter	0, 4, 16 or 64 values
Reset outputs if communication is lost	Conduct of outputs if communication is lost



The ANTARES 4AIO remote I/O module is for passive and active sensors.

It is possible to switch the signal level over.

The 0-20 mA signal is not possible during break monitoring.

The maximum current possible on the 4AIO is 22.5 mA. This must be taken into consideration when designing the system with the corresponding sensors.

Input/output process data

Byte	Data type	4 x output No input		3 x output 1 x input		2 x output 2 x input		1 x output 3 x input		No output 4 x input	
		In	Out	In	Out	In	Out	In	Out	In	Out
1-2	Int16		X	X	X	X	X	X	X	X	
3-4	Int16		X		X	X	X	X		X	
5-6	Int16		X		X			X		X	
7-8	Int16		X							X	

Value range for analog values

Current	Range 0...20 mA		Range 4...20 mA		Value in the case of short circuit: 7FFF _{Hex}
21.8 mA	75B9 _{Hex}	30137	7827 _{Hex}	30759	
20 mA	6C00 _{Hex}	27648	6C00 _{Hex}	27648	
4 mA			0000 _{Hex}	0	
0 mA	0000 _{Hex}	0	E500 _{Hex}	-6912	

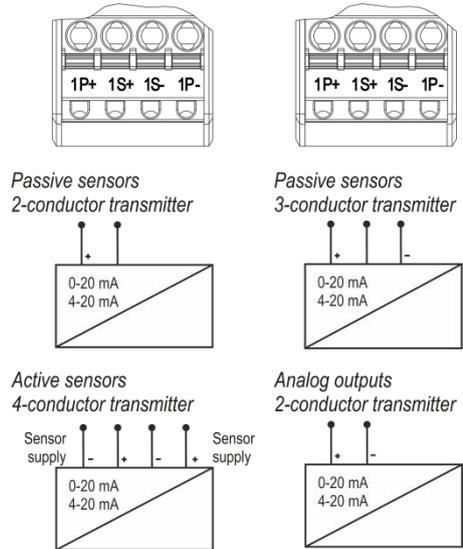
Value in the case of wire break:
8000_{Hex}

5.4.9 ANTARES 4AIO HART remote I/O module

Module 4AIO HART

Channel	All	1	2	3	4
BreakOpen-circuit					
On	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Off	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Short-circuit					
On	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Off	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Type of channel					
Input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Output	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Signal level					
4-20 mA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0-20 mA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Filter					
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weak	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Medium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strong	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HART					
On	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Off	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reset outputs if there is a loss of communication					
On	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Off	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Terminal assignment:



Break detection	Entry for channel-related activation
Short circuit detection	
Type of channel	Input or output
Signal level	0-20 mA or 4-20 mA
Filter	0, 4, 16 or 64 values
HART	Activation of the HART function
Reset outputs if communication is lost	Conduct of outputs if communication is lost



The ANTARES 4AIO remote I/O module is for passive and active sensors. It is possible to switch the signal level over. The 0-20 mA signal is not possible during break monitoring. When the HART function is activated, a HART sensor/actuator can be addressed. The ANTARES remote I/O system assumes the function of a HART gateway.

The maximum current possible on the 4AIO is 22.5 mA. This must be taken into consideration when designing the system with the corresponding sensors.

Input/output process data

Byte	Data type	4 x output No input		3 x output 1 x input		2 x output 2 x input		1 x output 3 x input		No output 4 x input	
		in	out	in	out	in	out	in	out	in	out
1-2	Int16		X	X	X	X	X	X	X	X	
3-4	Int16		X		X	X	X	X		X	
5-6	Int16		X		X			X		X	
7-8	Int16		X							X	

Value range for analog values

Current	Range 0...20 mA		Range 4...20 mA		Value in the case of short circuit: 7FFF _{Hex}
21.8 mA	75B9 _{Hex}	30137	7827 _{Hex}	30759	
20 mA	6C00 _{Hex}	27648	6C00 _{Hex}	27648	
4 mA			0000 _{Hex}	0	
0 mA	0000 _{Hex}	0	E500 _{Hex}	-6912	
					Value in the case of wire break 8000 _{Hex}

5.4.10 ANTARES 4TI remote I/O module

It must be noted with the 4TI that sensors are only detected after their connection once the ANTARES system has been rebooted. If this does not occur, it is possible to see in the online view that the value or values are not stable.

The screenshot shows the 'Module 4TI' configuration window with a grid for channels 1-4. The 'BreakOpen-circuit' and 'Short-circuit' settings are set to 'Off'. The 'Sensor type' is set to 'PT100' for channels 1-3 and 'Potentiometer' for channel 4. The 'Connection' is set to '2-wire' for channels 1-3 and '4-wire' for channel 4. The 'Unit' is set to 'Celsius' for channels 1-3 and 'Ohm' for channel 4. To the right, 'Terminal assignment' diagrams show two terminal blocks with terminals 1P+, 1S+, 1S-, and 1P-. Below these are four wiring diagrams: 2-wire Pt100/Pt1000, 4-wire Pt100/Pt1000, 3-wire Pt100/Pt1000, and 3-wire Potentiometer.

Break detection	Entry for channel-related activation
Short circuit detection	
Sensor type	Pt100, Pt1000 or potentiometer
Connection	2, 3 or 4 cable
Unit	Measurement value in Celsius, kelvin, Fahrenheit or ohm

For 3-wire and 4-wire connection of the sensor, the resistance of the cable is automatically compensated for up to 50 Ω.

i With the potentiometer, the unit is always automatically ohms.
 The system must be restarted after connecting new sensors. These sensors will otherwise not be detected.
 The value is always transmitted as INT in tenths of the measurement value.
 Example: 21.5°C is transmitted as 215 INT

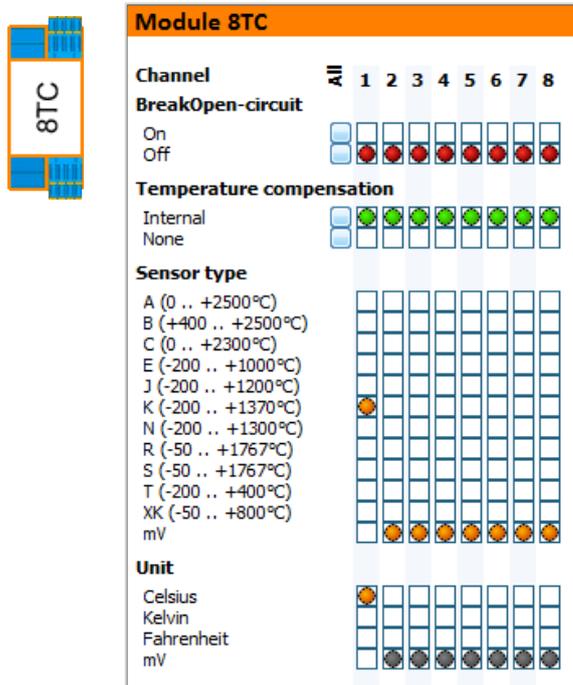
Input process data

Byte	Data type	Description/values
1-2	Int16	Temperature 1 measurement unit x factor 10 as 16 bit value from Channel 1
3-4	Int16	Temperature 2 measurement unit x factor 10 as 16 bit value from Channel 2
5-6	Int16	Temperature 3 measurement unit x factor 10 as 16 bit value from Channel 3
7-8	Int16	Temperature 4 measurement unit x factor 10 as 16 bit value from Channel 4
Value in the case of short circuit:		8000 _{Hex}
Value in the case of wire break:		7FFF _{Hex}

In the case of ohms = measurement unit x 1

5.4.11 ANTARES 8TC remote I/O module

It must be noted with the 8TC that sensors are only detected after their connection once the ANTARES system has been rebooted. If this does not occur, it is possible to see in the online view that the value or values are not stable.



Break detection	Entry for channel-related activation
Short circuit detection	
Temperature compensation	Internal or none
Sensor type	A, B, C, E, J, K, N, R, S, T, XK or in mV
Connection	2, 3 or 4 cable
Unit	Measurement value in Celsius, kelvin, Fahrenheit or mV



With the potentiometer, the unit is ohms. The value is always transmitted as INT in tenths of the measurement value. Example: 21.5°C is transmitted as 215 INT

Input process data

Byte	Data type	Description/values
1-2	Int16	Temperature 1 measurement unit x factor 10 as 16 bit value from Channel 1
3-4	Int16	Temperature 2 measurement unit x factor 10 as 16 bit value from Channel 2
5-6	Int16	Temperature 3 measurement unit x factor 10 as 16 bit value from Channel 3
7-8	Int16	Temperature 4 measurement unit x factor 10 as 16 bit value from Channel 4
9-10	Int16	Temperature 5 measurement unit x factor 10 as 16 bit value from Channel 5
11-12	Int16	Temperature 6 measurement unit x factor 10 as 16 bit value from Channel 6
13-14	Int16	Temperature 7 measurement unit x factor 10 as 16 bit value from Channel 7
15-16	Int16	Temperature 8 measurement unit x factor 10 as 16 bit value from Channel 8
Value in the case of short circuit:		8000 _{Hex}
Value in the case of wire break:		7FFF _{Hex}

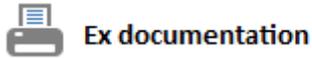
In the case of mV = measurement unit x 1

6 Generate documentation

There are two ways of documenting data on the "File" page of the ANTARES Designer:

- Ex documentation
- Project documentation

6.1 Ex documentation



Ex documentation

Generates EX documentation setting out all EX related components.

Prerequisite:

- Open project
- Connection to the ANTARES system
- System and project configuration must be identical

In the print preview:



Print

Starts printing

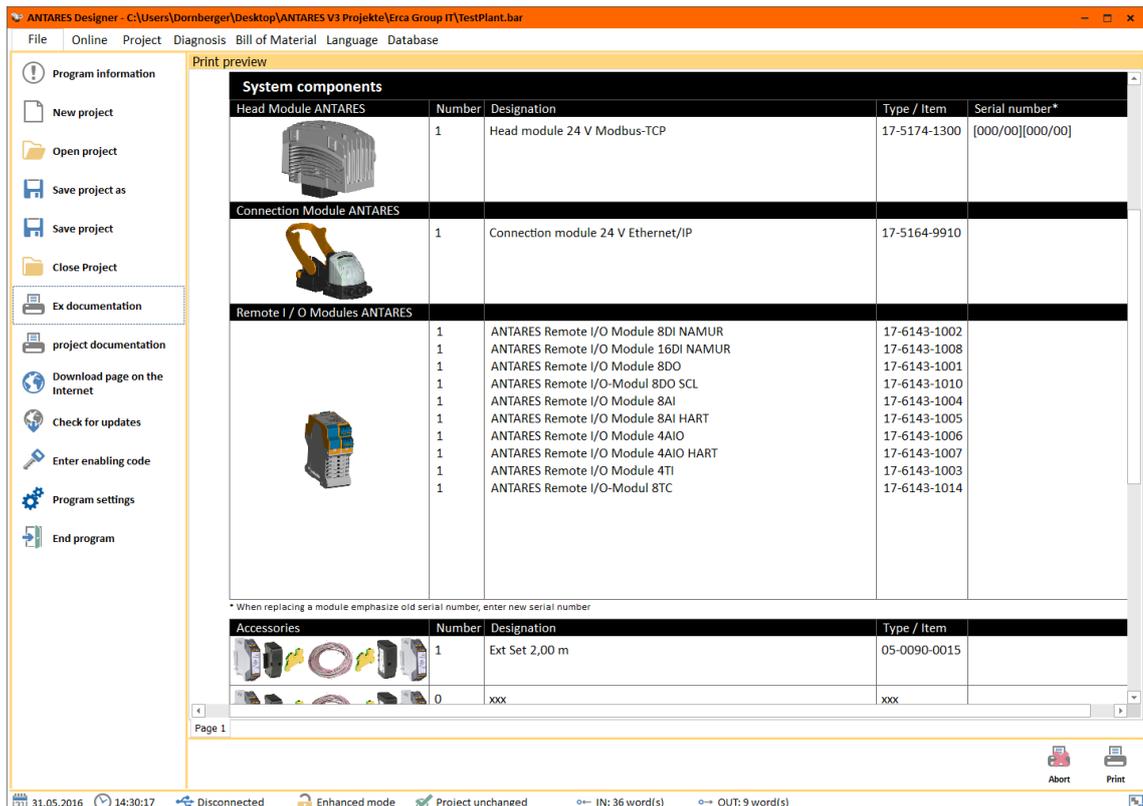


Abort

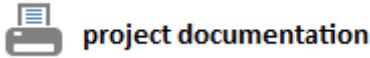
Closes preview

Procedure:

- Check that a project is open
- Check connection to the ANTARES system
- Read back the configuration from the ANTARES system
- Compare the two configurations
- Read out the serial numbers from the ANTARES system
- Generate the print preview
- Display the print preview on the "File" page



6.2 Project documentation



project documentation

Prerequisite:

Open project

Generates detailed documentation of the project with all settings and the data arising from this.

Contains:

Project information block

Parts list

Work areas with information about dimensions, power dissipation and component parts list for the parts used here

RCU configuration

Overview of the module I/O addresses

Configuration for each I/O module, specifying the I/O address for each channel

In the print preview:



Print

Starts printing



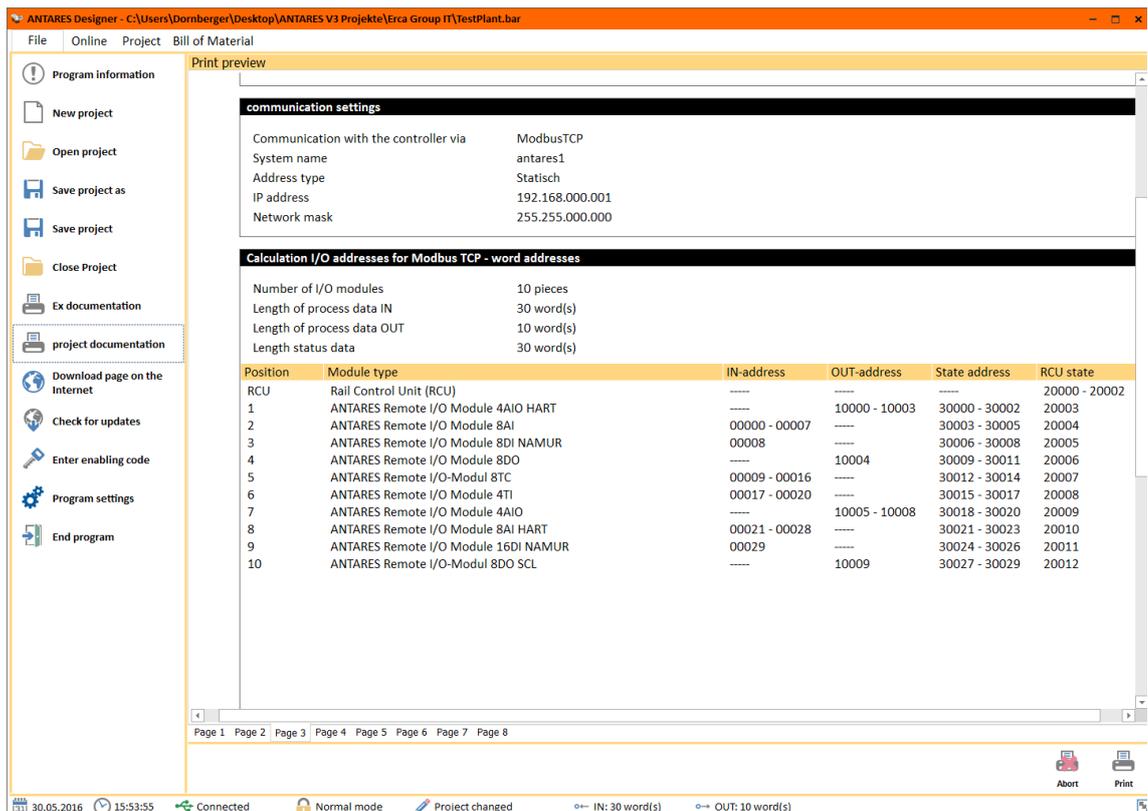
Abort

Closes preview

Procedure:

Generate the print preview

Display the print preview on the "File" page



7 Transfer project

7.1 Types of connection

The ANTARES Designer can communicate with the ANTARES system in different ways.

USB interface

The ANTARES remote I/O system has a USB interface. When connecting to the PC, a virtual COM interface is generated on the PC.

A USB-B type of USB cable is required for transfer (not included with delivery).

It may be necessary to install the USB driver for the virtual COM.

In the directory:

C:\Programme(x86)\BARTEC\ANTARES_Designer\USB"

or alternatively at:

<http://automation.bartec.de>

The following types of RCU support the USB type of connection:

- PROFIBUS DP
- ProfiNet
- EtherNet/IP
- ModbusTCP

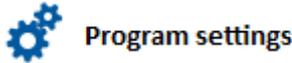
Ethernet interface

All Ethernet-based ANTARES remote I/O systems can set up a connection to the PC via the network (Ethernet). For this, the IP address of the ANTARES system must be entered in the settings of the ANTARES Designer. If a connection is to be realised via a company network, care must be taken that the Ethernet port 49425 is not blocked via UTP protocol. No additional drivers are needed.

The following types of RCU support the Ethernet type of connection:

- ProfiNet
- EtherNet/IP
- ModbusTCP

7.2 Program settings



Program settings

Settings

Interface to the RCU

USB (virtual COM)
 Ethernet

COM1

Timeout [ms]
 20000

Language
 English

Automatic update
 Automatically check for updates

Cancel Accept

Settings

Interface to the RCU

USB (virtual COM)
 Ethernet

IP-address
 192.168.0.1

IP-port
 49425

Timeout [ms]
 20000

Language
 English

Automatic update
 Automatically check for updates

Cancel Accept

Starts the dialog for program settings from the “File” page.

Interface to the RCU

USB:

Virtual COM interface in the PC. Only interfaces that have been marked by the operating system as “Approved” can be selected.

Ethernet:

Enter the IP address of the ANTARES system. The value for the IP port cannot be changed.

Waiting time

Settings for the maximum waiting time for a response protocol during communication with the ANTARES remote I/O system. Changes in the case of systems with a large number of remote I/O modules may be possible.

Language

Setting the language for the ANTARES Designer (project planning user interface).

Available languages:

German, English, French, Italian, Portuguese, Spanish, Russian

Automatic updates

If this option has been checked, each time the program starts the ANTARES Designer checks whether a new online update is available to download.

7.3 Transfer the project to the ANTARES system



Transfer to ANTARES

RCU password

RCU password
 bartec

No reset of RCU after transmit

no SD card present
 Write configuration backup to SD card

Cancel Accept

The password on delivery is “bartec”.

Starts transferring the project to the ANTARES system from the “Project” page.

When the project transfer is started, the ANTARES Designer searches for the ANTARES system on the set interface.

When the ANTARES system has been found, the dialog appears and asks for the RCU password.

The ANTARES system automatically reboots to implement the new settings (selectable).

If there is an SD card in the ANTARES system, the configuration can also be written on this.

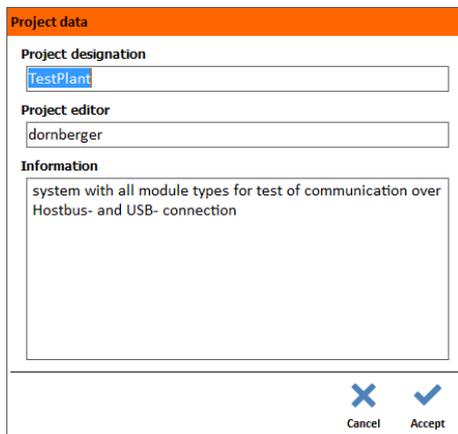
Accept starts the transfer

The successful or faulty transfer is indicated by a dialog.

The parameters of the controller must be assigned according to the protocol selected.

Refer to the “Connection to controller” chapter

7.4 Read out the project from the ANTARES system



Project data

Project designation
TestPlant

Project editor
dornberger

Information
system with all module types for test of communication over
Hostbus- and USB- connection

Cancel Accept

Starts reading out the configuration from the "Online" page and generates an ANTARES Designer project

If a project transfer has been started, the ANTARES Designer searches for the ANTARES system on the set USB or Ethernet interface.

Once the ANTARES system has been found, the project data dialog opens. As this is not present in the data that have been read out, there is an opportunity to assign a name to it.

The transfer takes place using the corresponding button. If the dialog is interrupted, the project is generated from the configuration without project data.

The following data cannot be read out from the ANTARES system:

- Project data (description, author...)
- Work areas (a standard area is created)
- Mounting rails (all modules are created on one mounting rail)

These data must be entered again manually. When this has been completed, the project must be saved.

8 Connection to controller

8.1 PROFIBUS-DP

8.1.1 Difference between the individual GSD files

There are a total of three device description files (GSD) for the PROFIBUS DP on the ANTARES system.

Files:	RCU firmware:	ANTARES Designer	Host configurable
BARM0C12.GSD	1.14.X	2.X.X	No
BAR10F74.GSD	2.X.X	3.X.X	No
BAR20F74.GSD	2.X.X	3.X.X	Yes

All three device description files can be installed at the same time.

The three different GSDs have the following function:

BARM0C12.GSD functions with ANTARES PROFIBUS-DP RCUs with the FW1.14.X and the ANTARES Designer 2.X.X.

This ANTARES system is called ANTARES in the hardware catalogue.

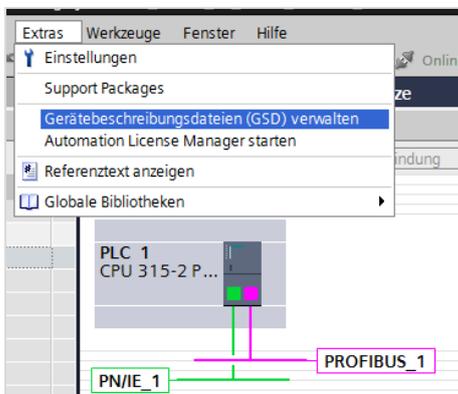
BAR10F74.GSD functions with ANTARES PROFIBUS-DP RCUs with the FW2.X.X and the ANTARES Designer 3.X.X. The 8TC remote I/O module is also included here. This file should be used if the configuration is set up and transferred in ANTARES Designer 3.X.X. The configuration in the engineering system must then be set up identically to the ANTARES Designer, with the specified version in the hardware configuration.

This ANTARES system is called ANTARES_AD in the hardware catalogue.

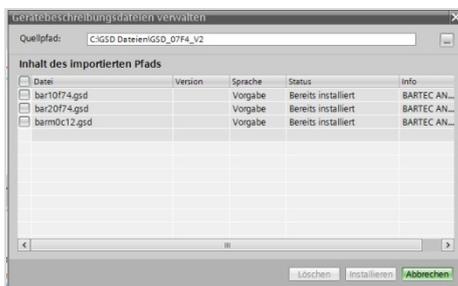
BAR20F74.GSD functions with ANTARES PROFIBUS-DP RCUs with the FW2.X.X. Here the ANTARES Designer is no longer necessary. The 8TC remote I/O module is also included here. The configuration only takes place in the engineering system. The identical configurations for the individual remote I/O modules and the RCU can be performed as with the ANTARES Designer.

This ANTARES system is called ANTARES_PRM in the hardware catalogue.

Siemens S7 - Installing the ANTARES GSD file



Insert GSD file in Step 7

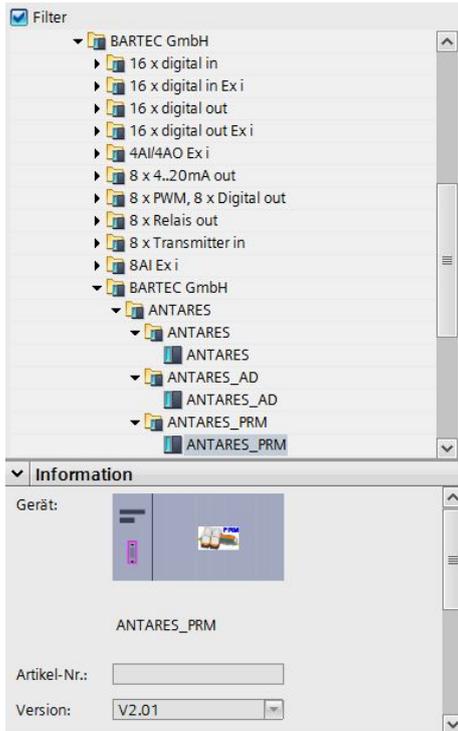


Select BAR10F74.GSD

Select BAR20F74.GSD

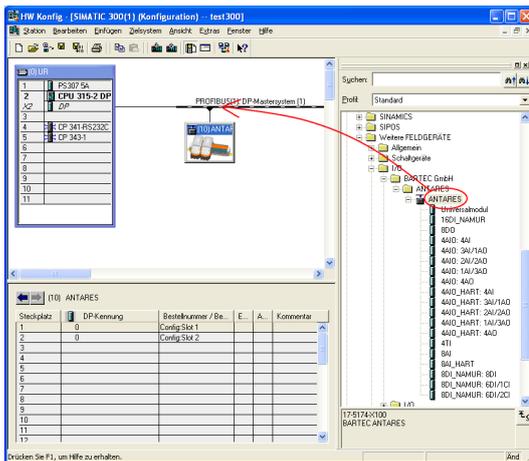
Select BARM0C12.GSD

Press the "Install" button

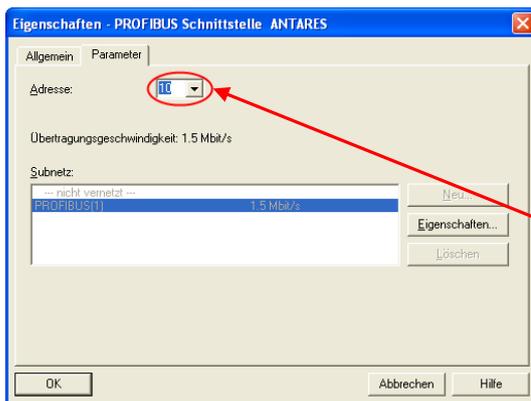


Hardware catalogue after installing the GSDs

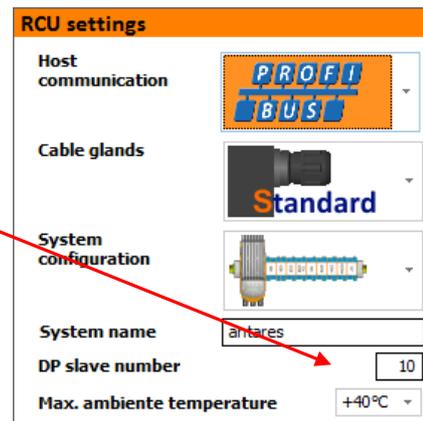
Inserting the ANTARES system in the S7 project



Insert ANTARES RCU in the PROFIBUS-DP



Enter PROFIBUS-DP slave address



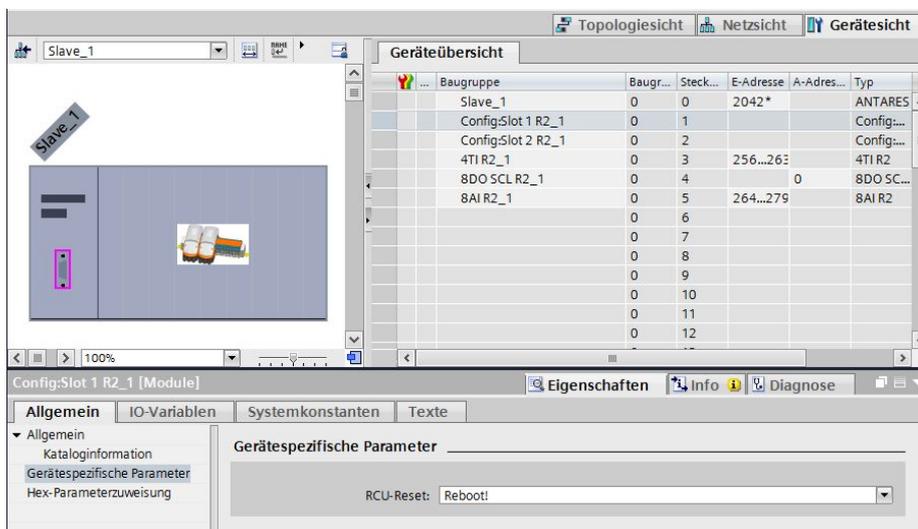
Remote I/O area of the ANTARES system in Step 7

Steckplatz	DP-Kennung	Bestellnummer / Be...	E...	A...	Kommentar
1	0	Config:Slot 1			
2	0	Config:Slot 2			
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Slot 1 and 2 must be manually assigned as Config.Slot 1 and 2.

Other slots are provided for the remote I/O modules

8.1.2 Configuring ANTARES to accept the hardware configuration



If ANTARES is to accept the values entered in the hardware configuration, then "Reboot!" should be selected in 'RCU reset' under 'Specific device parameters'. The ANTARES station then boots with the newly entered configuration once the hardware configuration has been transferred to the PLC.

If this parameter is not selected, the rebooting can also be generated by switching the power supply off and back on.

8.1.3 Insert remote I/O modules (configuration in the ANTARES Designer)
 Example: System architecture

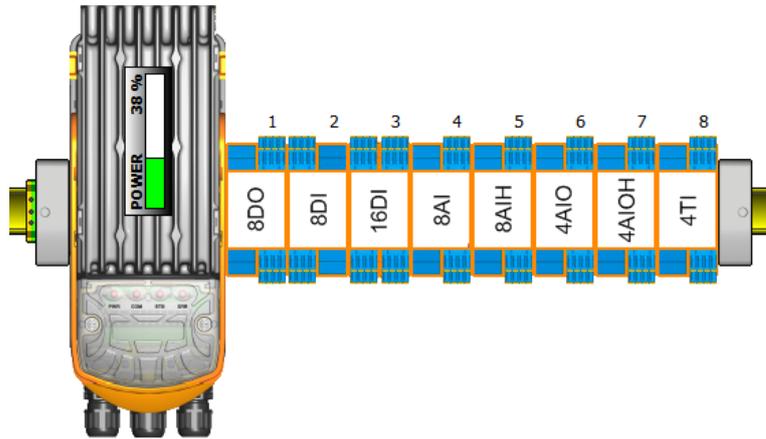
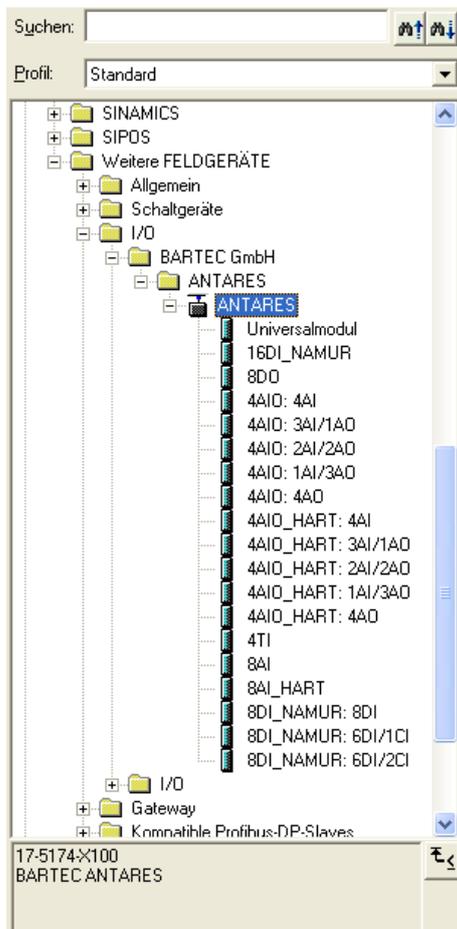


Figure in Step 7

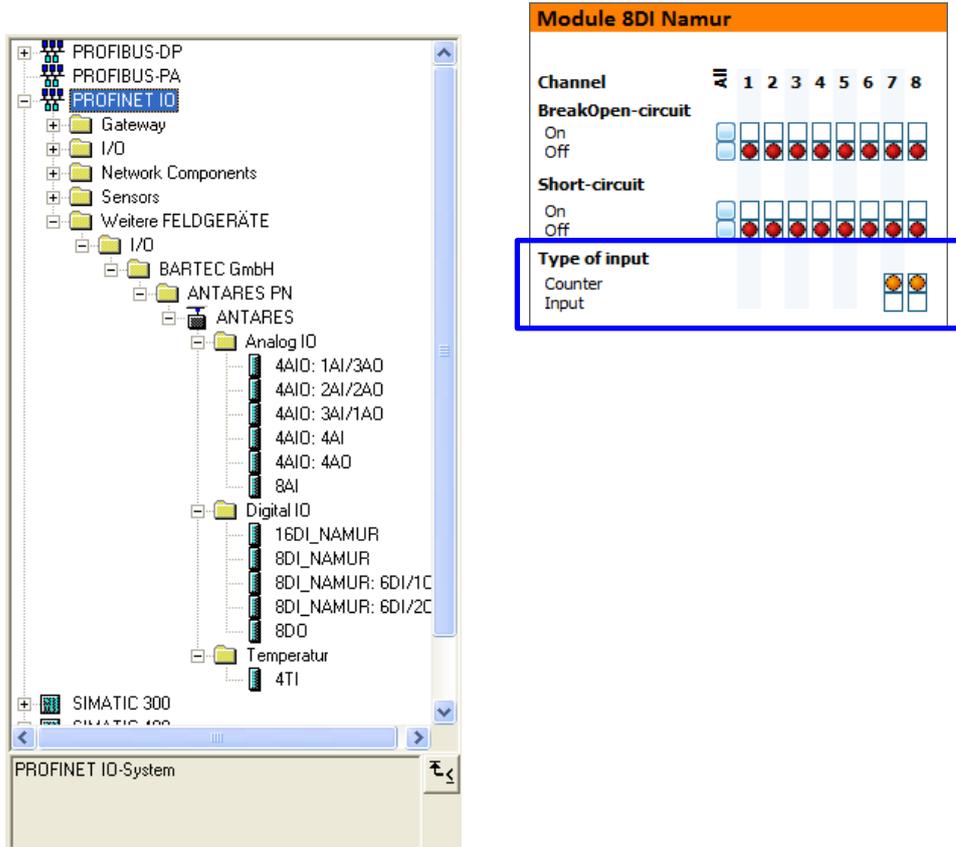
Configured system with remote I/O modules (see the configuration example for the order of the inserted modules)



Steckplatz	DP-Kennung	Bestellnummer / Be...	E-...	A...	Kommentar
1	0	Config:Slot 1			
2	0	Config:Slot 2			
3	132	8DO		0	
4	68	8DI_NAMUR: 8DI	0		
5	68	16DI_NAMUR	1...2		
6	68	8AI	256...2		
7	68	8AI_HART	272...2		
8	68	4AIO: 4AI	320...3		
9	68	4AIO_HART: 4AI	328...3		
10	68	4TI	336...3		
11					
12					

8.1.4 Features of the 8DI NAMUR remote I/O modules

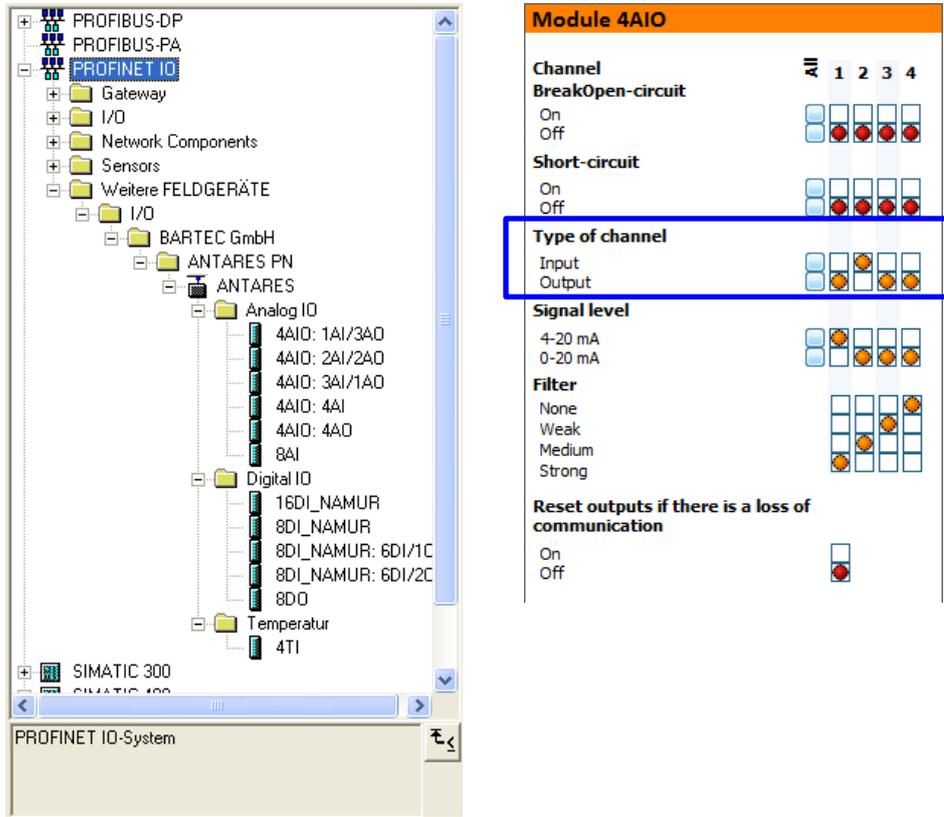
Select variations from the "Step7 library".



8DI_NAMUR Channel 1-8: Inputs	8DI_NAMUR 7DI/1CI Channel 1-7: Inputs Channel 8: Counter	8DI_NAMUR 6DI/2CI Channel 1-6: Inputs Channel 7-8: Counter

8.1.5 Features of the 4AIO remote I/O module and 4AIOH remote I/O module

Select variations from the "Step7 library". The channel selection is the same for the 4AIO remote I/O module and the 4AIOH remote I/O module.



4AIO: 4AO No input 4 x output	4AIO: 1AI/3AO 1 x input 3 x output	4AIO: 2AI/2AO 2 x input 2 x output	4AIO: 3AI/1AO 3 x input 1 x output	4AIO: 4AI 4 x input No output

8.2 ProfiNet

8.2.1 Siemens S7

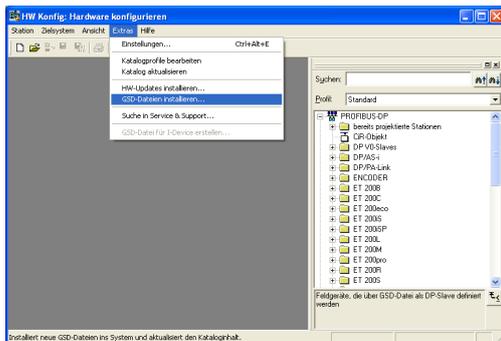
Installing the ANTARES-GSDML file



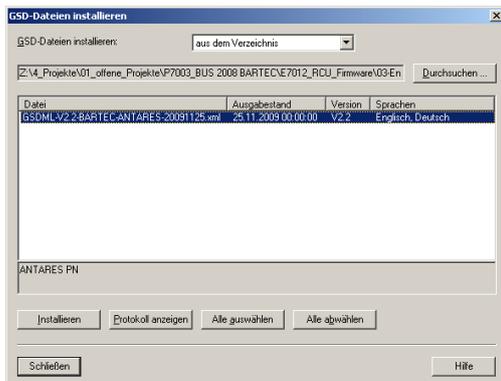
It is possible to integrate the ANTARES system as from Version 5.4 SP5 of Step7.

A free update can be found on the website:

<http://support.automation.siemens.com/WW/llisapi.dll?func=cslib.csinfo&lang=de&objid=36476146&caller=view>

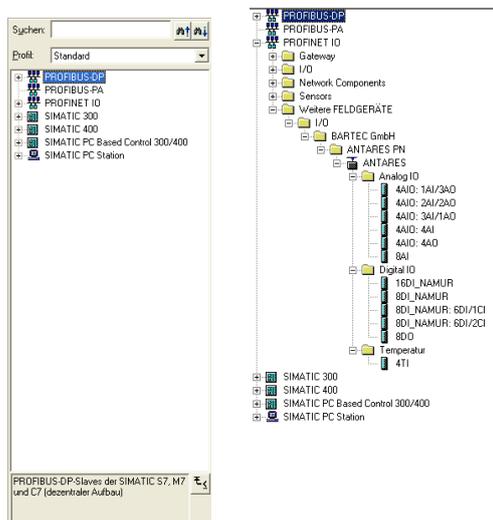


Insert the GSDML file into Step7



Select GSDML-V2.3-BARTEC-ANTARES-20091125.XML

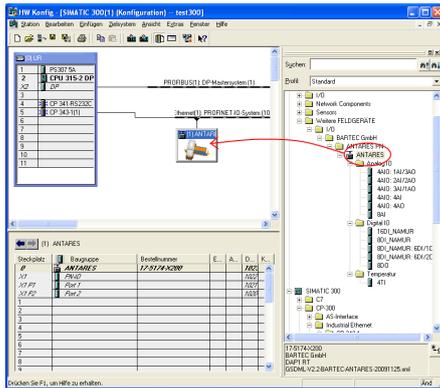
Press the "Install" button



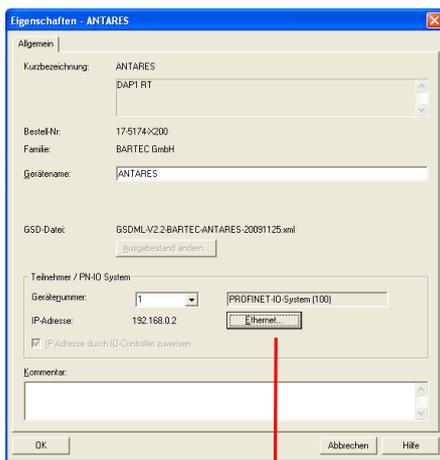
Folder after installing the ANTARES system:

Device library

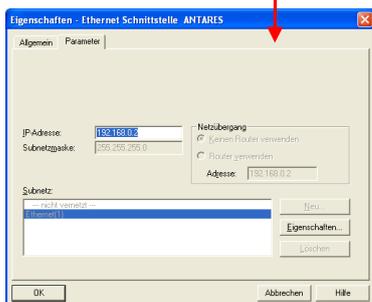
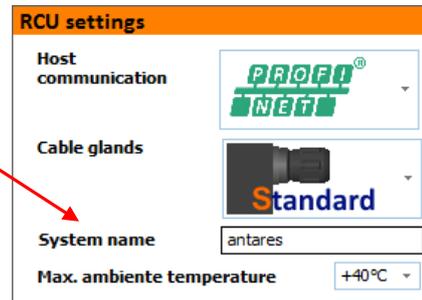
Inserting the ANTARES system in the S7 project



Insert ANTARES RCU in the ProfiNet



The system name must be identical in the ANTARES system and in the controller



Set the ANTARES IP address

Remote I/O area of the ANTARES system in Step7

Steckplatz	Baugruppe	Bestellnummer	E...	A...	D...	Kommentar
0	ANTARES	17-5174-X200			1020	
X1	PN-IO				1021	
X1 P1	Port 1				1021	
X1 P2	Port 2				1020	
1						
2						
3						
4						
5						
6						
7						
8						
9						

The other slots are intended for the remote I/O modules.

8.2.2 Insert remote I/O modules (configuration in the ANTARES Designer)

Example: System architecture

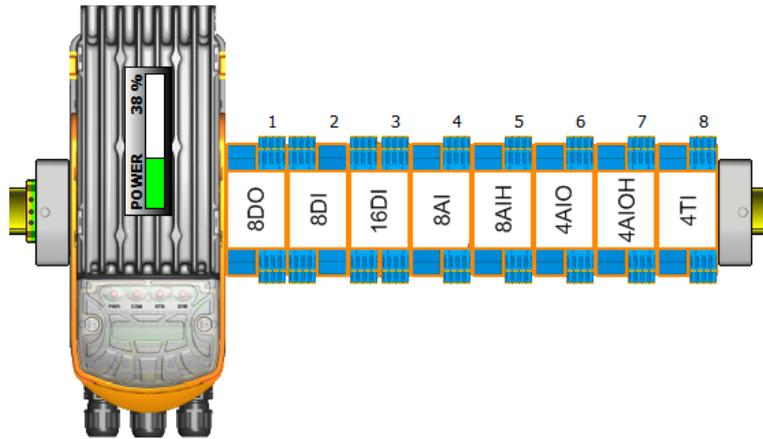
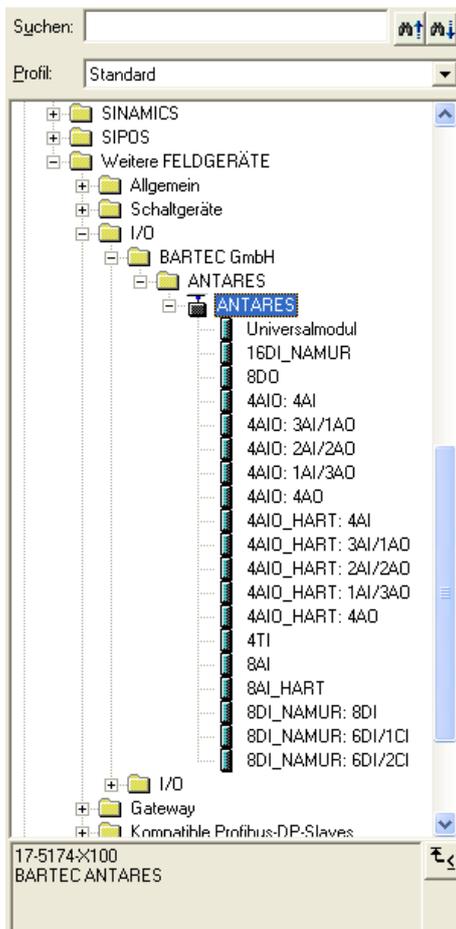


Figure in Step7

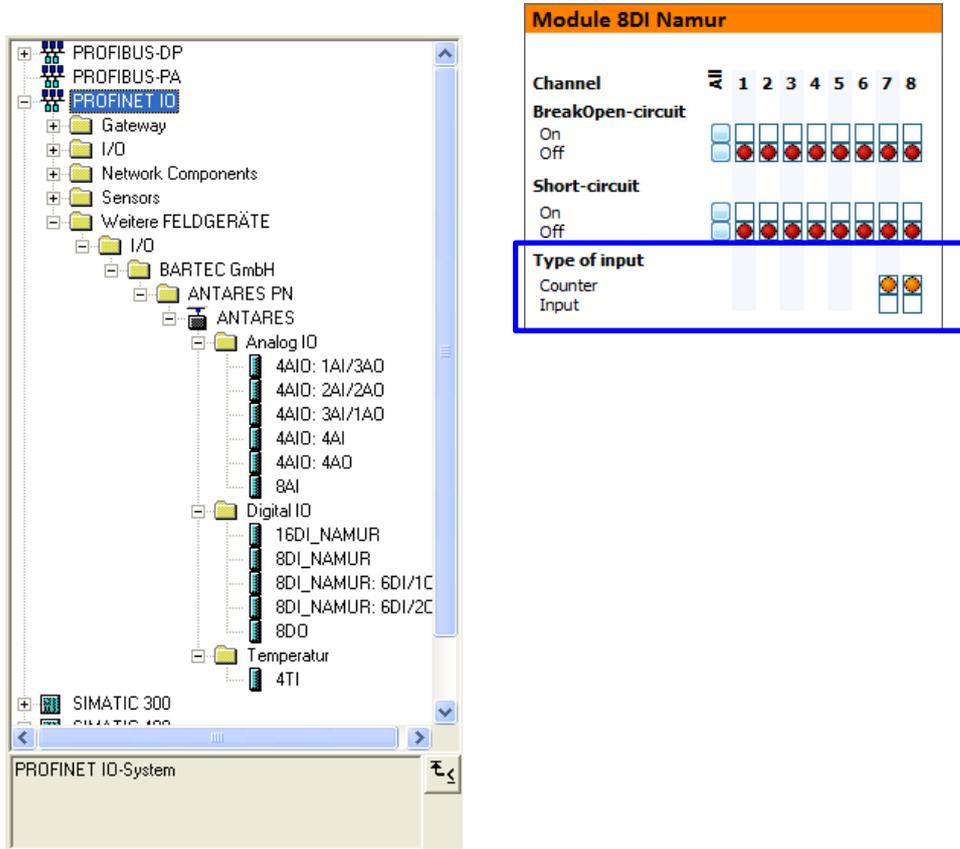
Configured system with remote I/O modules (see the configuration example for the order of the inserted modules)



Steckplatz	DP-Kennung	Bestellnummer / Be...	E-...	A...	Kommentar
1	0	Config:Slot 1			
2	0	Config:Slot 2			
3	132	8DD		0	
4	68	8DI_NAMUR: 8DI	0		
5	68	16DI_NAMUR	1...2		
6	68	8AI	256...2		
7	68	8AI_HART	272...2		
8	68	4AIO: 4AI	320...3		
9	68	4AIO_HART: 4AI	328...3		
10	68	4TI	336...3		
11					
12					

8.2.3 Features of the 8DI NAMUR remote I/O modules

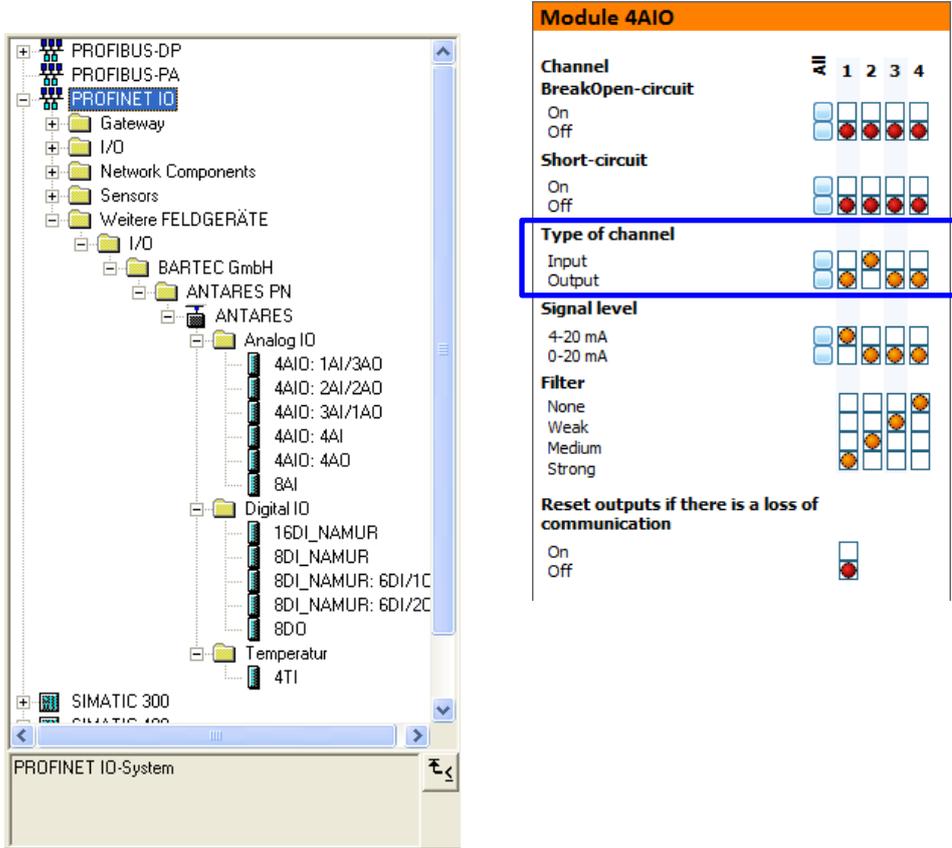
Select variations from the "Step7 library."



8DI_NAMUR Channel 1-8: Inputs	8DI_NAMUR 7DI/1CI Channel 1-7: Inputs Channel 8: Counter	8DI_NAMUR 6DI/2CI Channel 1-6: Inputs Channel 7-8: Counter

8.2.4 Features of the 4AIO remote I/O module and 4AIOH remote I/O module

Select variations from the "Step7 library". The channel selection is the same for the 4AIO remote I/O module and the 4AIOH remote I/O module.



4AIO: 4AO No input 4 x output	4AIO: 1AI/3AO 1 x input 3 x output	4AIO: 2AI/2AO 2 x input 2 x output	4AIO: 3AI/1AO 3 x input 1 x output	4AIO: 4AI 4 x input No output

8.3 Ethernet/IP

With Ethernet/IP there are two ways of integrating the system in principle. Both are possible.

8.3.1 Example using the export function in the ANTARES Designer

Also refer to the XML4ant quick guide in the manual.

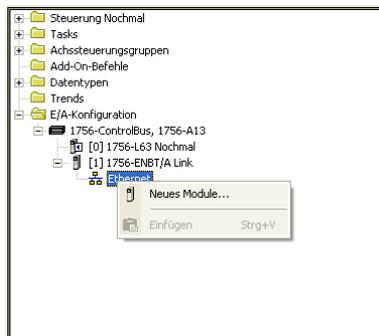


The exporting of the Rockwell tags should be initiated using the "Generate XML file" button. The location for saving the file must then be entered in the window that opens.

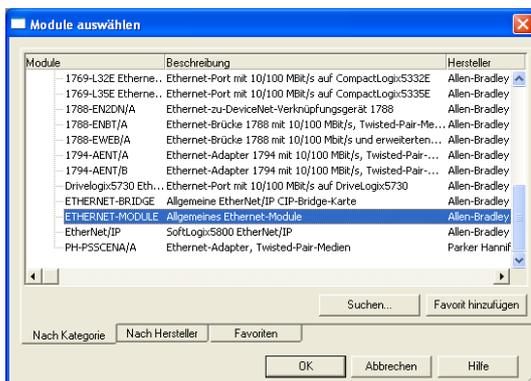
8.3.2 Example of Rockwell controller with generic Ethernet module



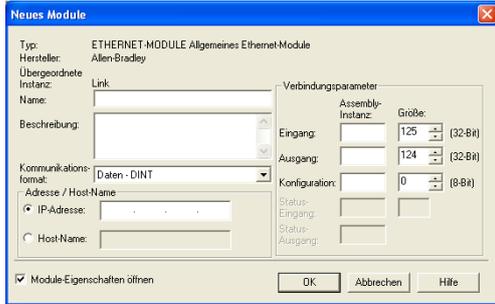
Connection to the Rockwell controller via Ethernet/IP with controller software RSLogix 5000 Version 17



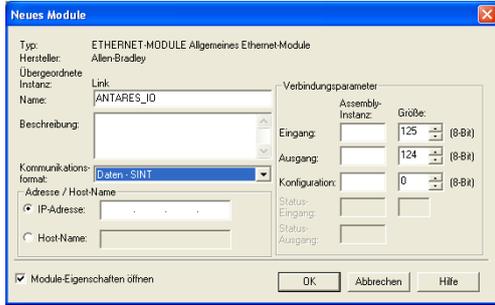
Insert new module



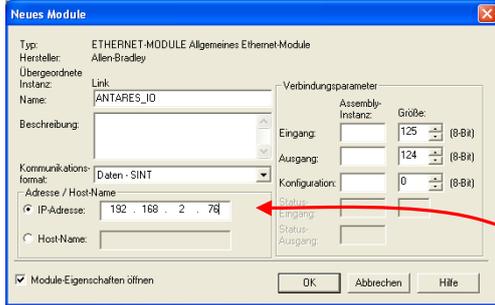
The selection is made using a dialog. The "GENERIC- ETHERNET-MODULE" should be selected



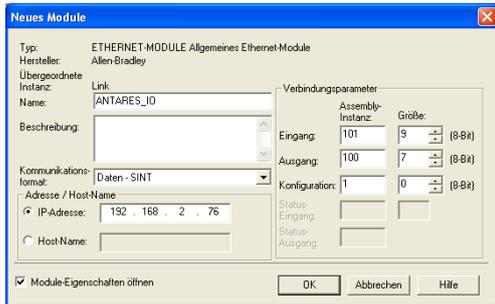
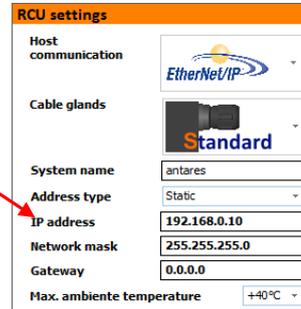
Enter the IP address of the ANTARES system (see RCU settings for the project in the ANTARES Designer)



Dialog window opens



Enter the IP address of the ANTARES system (see RCU settings for the project in the ANTARES Designer)



Enter the following in the "Assembly level" area:

- "101" for the input;
- "100" for the output; and
- "1" for the configuration.

Module	Input	Output
8DI (no counter)	4 byte	0 bytes
8DI (one counter)	8 byte	1 byte
8DI (two counters)	12 byte	1 byte
16DI	7 byte	0 bytes
8DO	3 bytes	1 byte
8AI / 8AIH	19 bytes	0 bytes
4AIO / 4AIOH (4 In, 0 Out)	11 bytes	0 bytes
4AIO / 4AIOH (3 In, 1 Out)	9 bytes	2 bytes
4AIO / 4AIOH (2 In, 2 Out)	7 bytes	4 bytes
4AIO / 4AIOH (1 In, 3 Out)	5 bytes	6 bytes
4AIO / 4AIOH (0 In, 4 Out)	3 bytes	8 bytes
4TI	11 bytes	0 bytes
8TC	19 bytes	0 bytes

The values for the variables must be determined using the table:

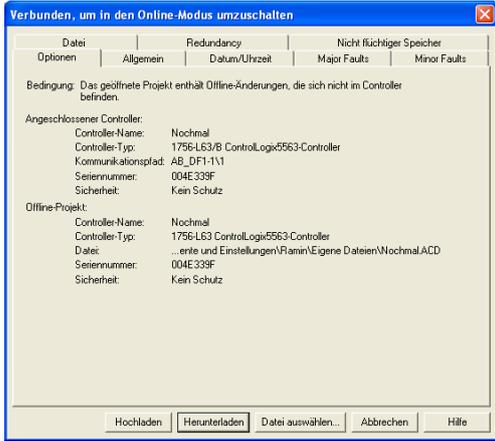
Input

4 + all input bytes of all modules

Output

4 + all output bytes of all modules

Always "0" for configuration



System architecture

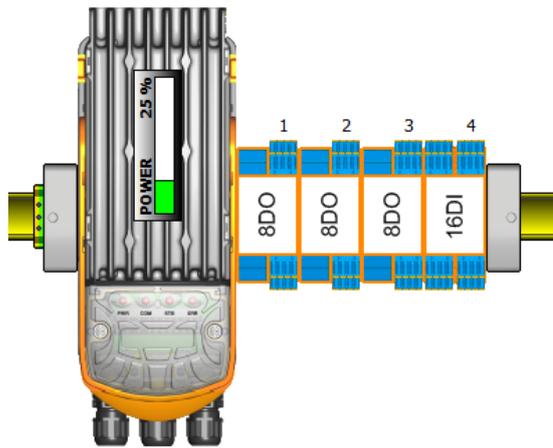
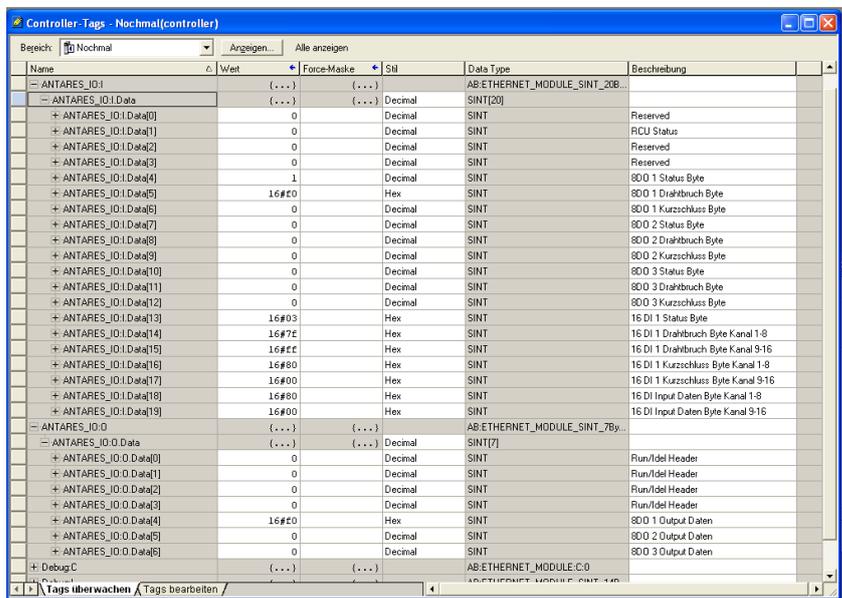


Figure in the Rockwell controller



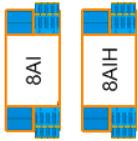
8.3.3 Detailed table of the I/O assignment of the individual modules

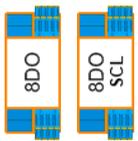
Each row corresponds to one byte

Module		Input	Output
	8DI No counter	Status	
		Wire break	
		Short circuit	
		Inputs	
	8DI One counter	Status	Counter control
		Wire break	
		Short circuit	
		Inputs	
		Counter 1, bit 1-8	
		Counter 1, bit 9-16	
		Counter 1, bit 17-24	
	Counter 1, bit 25-32		
	8DI Two counters	Status	Counter control
		Wire break	
		Short circuit	
Inputs			
Counter 1, bit 1-8			
Counter 1, bit 9-16			
Counter 1, bit, bit 17-24			
Counter 1, bit, bit 25-32			
Counter 2, bit, bit 1-8			
Counter 2, bit, bit 9-16			
Counter 2, bit, bit 17-24			
Counter 2, bit, bit 25-32			

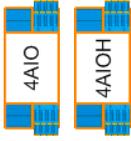
Module		Input	Output
	16DI	Status	
		Wire break, Channel 1-8	
		Wire break, Channel 9-16	
		Short circuit, Channel 1-8	
		Short circuit, Channel 9-16	
		Inputs, Channel 1-8	
		Inputs, Channel 9-16	

Module		Input	Output
	4TI	Status	
		Wire break	
		Short circuit	
		Channel 1, bit 0-7	
		Channel 1, bit 8-15	
		Channel 2, bit 0-7	
		Channel 2, bit 8-15	
		Channel 3, bit 0-7	
		Channel 3, bit 8-15	
		Channel 4, bit 0-7	
		Channel 4, bit 8-15	

Module		Input	Output
	8AI / 8AIH	Status	
		Wire break	
		Short circuit	
		Channel 1, bit 0-7	
		Channel 1, bit 8-15	
		Channel 2, bit 0-7	
		Channel 2, bit 8-15	
		Channel 3, bit 0-7	
		Channel 3, bit 8-15	
		Channel 4, bit 0-7	
		Channel 4, bit 8-15	
		Channel 5, bit 0-7	
		Channel 5, bit 8-15	
		Channel 6, bit 0-7	
		Channel 6, bit 8-15	
		Channel 7, bit 0-7	
Channel 7, bit 8-15			
Channel 8, bit 0-7			
Channel 8, bit 8-15			

Module		Input	Output
	8DO / 8DO SCL	Status	
		Wire break	
		Short circuit	
		Outputs	

Module		Input	Output
	8TC	Status	
		Wire break	
		Short circuit	
		Channel 1, bit 0-7	
		Channel 1, bit 8-15	
		Channel 2, bit 0-7	
		Channel 2, bit 8-15	
		Channel 3, bit 0-7	
		Channel 3, bit 8-15	
		Channel 4, bit 0-7	
		Channel 4, bit 8-15	
		Channel 5, bit 0-7	
		Channel 5, bit 8-15	
		Channel 6, bit 0-7	
		Channel 6, bit 8-15	
		Channel 7, bit 0-7	
Channel 7, bit 8-15			
Channel 8, bit 0-7			
Channel 8, bit 8-15			

Module		Input	Output	
	4AIO / 4AIOH 4 In	Status		
		Wire break		
		Short circuit		
		First input channel, bit 0-7		
		First input channel, bit 8-15		
		Second input channel, bit 0-7		
		Second input channel, bit 8-15		
		Third input channel, bit 0-7		
		Third input channel, bit 8-15		
		Fourth input channel, bit 0-7		
	Fourth input channel, bit 8-15			
	4AIO / 4AIOH 3 In, 1 Out	Status		First output channel, bit 0-7
		Wire break		First output channel, bit 8-15
		Short circuit		
		First input channel, bit 0-7		
		First input channel, bit 8-15		
		Second input channel, bit 0-7		
		Second input channel, bit 8-15		
		Third input channel, bit 0-7		
	Third input channel, bit 8-15			
4AIO / 4AIOH 2 In, 2 Out	Status		First output channel, bit 0-7	
	Wire break		First output channel, bit 8-15	
	Short circuit		Second output channel, bit 0-7	
	First input channel, bit 0-7		Second output channel, bit 8-15	
	First input channel, bit 8-15			
	Second input channel, bit 0-7			
Second input channel, bit 8-15				
4AIO / 4AIOH 1 In, 3 Out	Status		First output channel, bit 0-7	
	Wire break		First output channel, bit 8-15	
	Short circuit		Second output channel, bit 0-7	
	First input channel, bit 0-7		Second output channel, bit 8-15	
	First input channel, bit 8-15		Third output channel, bit 0-7	
			Third output channel, bit 8-15	
4AIO / 4AIOH 4 Out	Status		First output channel, bit 0-7	
	Wire break		First output channel, bit 8-15	
	Short circuit		Second output channel, bit 0-7	
			Second output channel, bit 8-15	
			Third output channel, bit 0-7	
			Third output channel, bit 8-15	
			Fourth output channel, bit 0-7	
			Fourth output channel, bit 8-15	

8.4 Modbus TCP

The "MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b" description from 28th December 2006 is the foundation for implementation.

A Modbus TCP server is implemented in the RCU. The TCP port 502 has a fixed setting.

Up to two simultaneous connections to the ANTARES RCU are possible via this TCP Port 502.

The IP address and netmask are preset using the ANTARES Designer or, if parameterised, assigned using a DHCP server.

Implemented Modbus function codes:

- 01 (0x01) Read Coils
- 02 (0x02) Read Discrete Inputs
- 03 (0x03) Read Holding Registers
- 04 (0x04) Read Input Registers
- 05 (0x05) Write Single Coil
- 06 (0x06) Write Single Register
- 15 (0x0F) Write Multiple Coils
- 16 (0x10) Write Multiple registers
- 23 (0x17) Read/Write Multiple registers

ALL other function codes are acknowledged with an error message according to the Modbus specification.

Access takes place via the function codes and is classified as follows:

Register addresses (decimal)	0XXXX	Input data
	1XXXX	Output data
	2XXXX	RCU status
	3XXXX	Module status
	4XXXX	Configuration

The following functions are treated differently to the Standard 1.1b:

Modbus functions 01 "Read Coils" and 02 "Read Discrete Inputs" behave in the same way

Modbus functions 03 "Read Holding Register" and 04 "Read Input Registers" behave in the same way

Modbus functions 23 "Read/Write Multiple Register" can also read input registers.

8.4.1 Defining the individual address ranges in detail:

Input data address range (0xxxx):

Depending on the configuration, the input data for the individual modules are linked together for reading out. Write access leads to an error and is acknowledged accordingly. If there is read access to an address range without any module input data, this generates an error.

Output data address range (1xxxx):

Depending on the configuration, the output data for the individual modules are linked together for writing and for reading. If there is access to a memory area outside the module data, this generates an error.

Address range RCU status (2xxxxx):

- Addr 20000: RCU error
- Addr 20001: Reserved
- Addr 20002: Number of modules
- Addr 20003→20034: 32 registers for module types.

One module per register (hi-byte = main type, lo-byte = subtype), see PROFIBUS/PROFINET.

The register value = 0x0000 means not used

Address range module status (3xxxxx)

- Status messages of the individual remote I/O modules (length = number of modules x 3 words)

Address range configuration (4xxxxx)

- Addr 40000: Timeout register in ms. Standard: 2000ms, Timeout= 0 means deactivated

The modules use different numbers of data words in the respective data field depending on the module type and setting using the ANTARES Designer.



Modbus address calculation is in the project documentation included
 See chapter 6.2 "Project documentation"

Overview

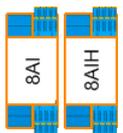
Module	Input	Output	Status
8DI (no counter)	1 word	-	3 words
8DI (one counter)	3 words	1 word	3 words
8DI (two counters)	5 words	1 word	3 words
16DI	1 word	-	3 words
8DO / 8DO SCL	-	1 word	3 words
8AI / 8AIH	8 words	-	3 words
4AIO / 4AIOH (4 In, 0 Out)	4 words	-	3 words
4AIO / 4AIOH (3 In, 1 Out)	3 words	1 word	3 words
4AIO / 4AIOH (2 In, 2 Out)	2 words	2 words	3 words
4AIO / 4AIOH (1 In, 3 Out)	1 word	3 words	3 words
4AIO / 4AIOH (0 In, 4 Out)	-	4 words	3 words
4TI	4 words	-	3 words
8TC	-	8 words	3 words

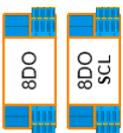
Each row corresponds to one word

Module	Input	Output	Status	
	8DI No counter	Inputs, Channel 1-8	Status	
			Wire break	
			Short circuit	
	8DI One counter	Inputs, Channel 1-7	Counter control	Status
		Counter 1, bit 16-31		Wire break
		Counter 1, bit 0-15		Short circuit
	8DI Two counters	Inputs, Channel 1-6	Counter control	Status
		Counter 1, bit 16-31		Wire break
		Counter 1, bit 0-15		Short circuit
	Counter 2, bit 16-31			
	Counter 2, bit 0-15			

Module		Input	Output	Status
	16DI	Inputs, Channel 1-16		Status
				Wire break
				Short circuit

Module		Input	Output	Status
	4TI	Channel 1		Status
		Channel 2		Wire break
		Channel 3		Short circuit
		Channel 4		

Module		Input	Output	Status
	8AI 8AIH	Channel 1		Status
		Channel 2		Wire break
		Channel 3		Short circuit
		Channel 4		
		Channel 5		
		Channel 6		
		Channel 7		
		Channel 8		

Module		Input	Output	Status
	8DO / 8DO SCL		Outputs, Channel 1-8	Status
				Wire break
				Short circuit

Module		Input	Output	Status
	8TC	Channel 1		Status
		Channel 2		Wire break
		Channel 3		Short circuit
		Channel 4		
		Channel 5		
		Channel 6		
		Channel 7		
		Channel 8		

Module		Input	Output	Status
	4AIO/4AIOH 4 In, 0 Out	First input channel		Status
		Second input channel		Wire break
		Third input channel		Short circuit
		Fourth input channel		
	4AIO/4AIOH 3 In, 1 Out	First input channel	First output channel	Status
		Second input channel		Wire break
		Third input channel		Short circuit
	4AIO/4AIOH 2 In, 2 Out	First input channel	First output channel	Status
		Second input channel	Second output channel	Wire break
	4AIO/4AIOH 1 In, 3 Out		First output channel	Status
			Second output channel	Wire break
			Third output channel	Short circuit
	4AIO/4AIOH 0 In, 4 Out		First output channel	Status
			Second output channel	Wire break
			Third output channel	Short circuit
			Fourth output channel	

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