Product Description

Definition

The ANTARES RCU consists of the ANTARES Head Module and the ANTARES Connection Module. The ANTARES Head Module contains a CPU, communication interface and power pack. In the Ethernet variants, the MAC address is located on the side of the head module.

The ANTARES connection module accommodates – with the exception of the terminals for the external circuits and for the internal wiring - a passive USB port and an SD memory card slot.

The ANTARES RCU may be set up inside explosion hazardous areas in Zones 1 and 2 (see system description).

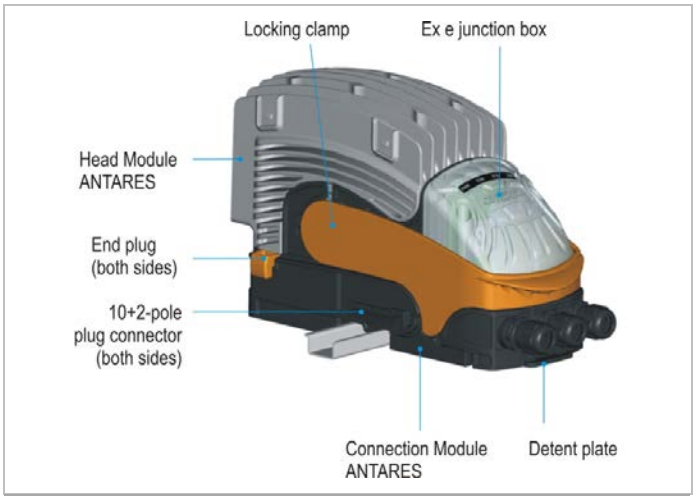


Figure 1: RCU ANTARES

Use in Accordance with the Intended Purpose

The ANTARES RCU in single or redundancy operation (exclusively for the PROFIBUS-DP variant of the RCU ANTARES) serves to supply power to various separately certified Remote I/O Modules ANTARES type 17-6143-1xxx/00xx.

The device has been constructed in accordance with the latest developments in technology and recognised safety regulations. Nevertheless, negative impacts on the device and other items of property are still possible.

The device has been developed for use in hazardous areas in Zone 1 and Zone 2 and is intended for connection to the fixed installation.

The device may be used and serviced only by people who are familiar with the basic safety and accident prevention rules. Utilisation to the intended purpose also requires the observation of the Operating Instructions.

Any other use is not in accordance with the intended purpose and can cause damage and accidents. The user alone is responsible for the risk. The manufacturer will not be liable for any use beyond that of its exclusive intended purpose.

Explosion Protection

ATEX Ex Protection	Ⓔx II 2G Ex d e [ib] IIC T4 Gb	
Certification	PTB 11 ATEX 2009 X	
IECEx Ex Protection	Ex d e [ib] IIC T4 Gb	
Certification	IECEx PTB 11.0051X	
CE marking	CE 0044	
Ambient temperature range	-20 °C to +60 °C	
Standards		
to Directive 94/9/EC	EN 60079-0:2009	EN 60079-7:2007
	EN 60079-1:2007	EN 60079-11:2007
	IEC 60079-0:2007-10	IEC 60079-7:2006-07
	IEC 60079-1:2007-04	IEC 60079-11:2006
in conformance to Directive 2004/108/EC (EMC)	EN 61000-6-2:2005	EN 61000-6-4:2007
	EN 55011:2009	

Safety Instructions

Only the responsible qualified personnel may install and connect the product and its components.

Any subsequent modification of the product is strictly prohibited and will exempt BARTEC from liability for defects or any further liability.

The ANTARES RCU may be operated only if it is clean and free of damage.

The generally applicable statutory rules and other binding directives on workplace safety, accident prevention and environmental protection must be adhered to.

Danger, Warning and Note Symbols

Particularly important points in these instructions are marked with a symbol:

Danger!	Non-observance leads to death or serious physical injury. The necessary safety measures must be implemented.
Caution!	Warning of damage to property and financial and penal disadvantages (e.g. loss of guarantee rights, liability etc.).
Attention!	Important instructions and information on preventing disadvantageous behaviour.
Note	Important instructions and information on effective, economical and environmentally compatible handling.

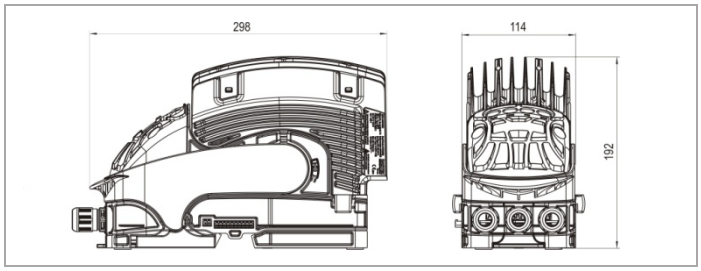
Technical Data

Note — More approvals and data can be found at www.bartec-group.com

General Data

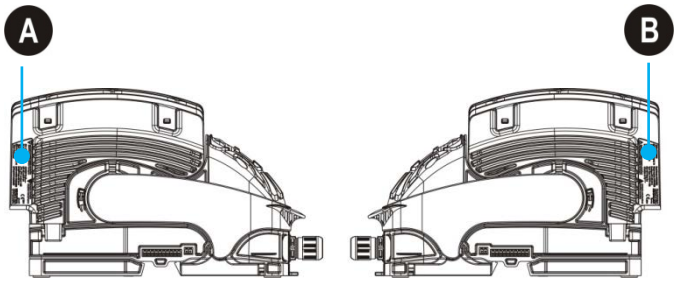
Enclosure material	
ANTARES connection module	Polyamide
ANTARES head module	Aluminium die casting, polyamide
Protection class (EN 60529)	
RCU ANTARES	IP54, with the exception of the internal system bus
10+2 pole connector	IP30 if joined to separately certified Remote I/O Module ANTARES, a second ANTARES RCU or associated bus…or rail… module
Fastening	
ANTARES connection module	onto TH 35-15 mounting rail DIN EN 60715 (metal, galvanized steel)
Screws in the junction box cover	Torque 1 Nm
Head Module ANTARES	to the ANTARES connection module by means of plug-in and interlocking technology
Supply line and data line	Spring clamps
Interface (system bus)	10+2-pole connector - internal bus communication for separately certified Remote I/O Module ANTARES type 17-6143-1xxx/00xx
Rated voltage	DC 24 V -15 %, +25 %
Type 17-5164-9xx0	ANTARES connection module
Type 17-5174-1x0x	ANTARES Head Module
Power consumption	max. 100 W
Overvoltage category	II
Degree of contamination	2

EN_11-5174-7D0001-Revision 1 / Status: December, 6th 2013 / AUT - 292746



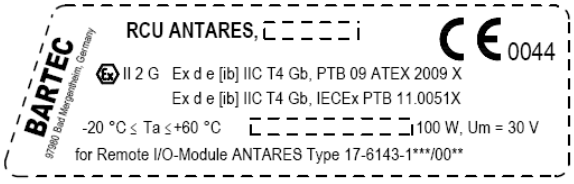
Dimensions ANTARES RCU (W x H x D)	114 mm x 192 mm x 298 mm
Operating position	vertical, glands downwards
Weight incl. plastic glands	approx. 5 kg
Storage and transport temperature	-25 °C to +70 °C
Relative air humidity	5 to 95 %, non-condensing
Vibration (EN 60068-2-6)	2 g/7 mm; 5 Hz - 200 Hz in all 3 axes
Shock (EN 60068-2-27)	15 g, 11 ms in all 3 axes ±3 shocks/direction
Communication interface (Type - see order numbers)	Process connection
PROFIBUS-DP	PROFIBUS-DP up to 1.5 Mbit/s
Ethernet 100BaseT with integrated switch	PROFINET, Modbus/TCP, Ethernet/IP
Configuration	
Interface	USB-Port
Software	ANTARES Designer

Product labelling

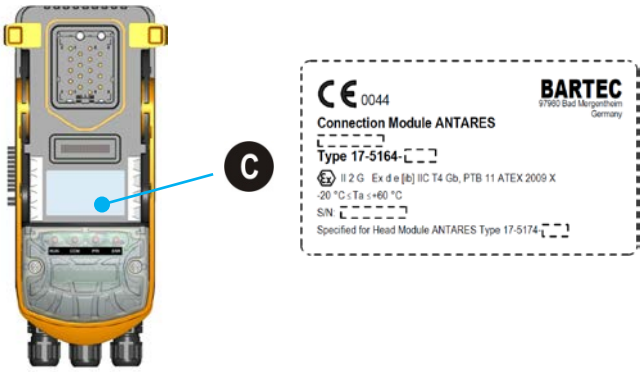


A Labelling on ANTARES Head Module

B Labelling on ANTARES RCU



C Labelling on ANTARES connection module



Installation

Any work on the device may be done only by authorised personnel. Use original parts from BARTEC GmbH always.

When using electrical systems, the relevant installation and operation regulations must be observed, such as e.g. Directive 1999/92/EC, Directive 94/9/EC, BetrSichV [German Ordinance on Industrial Safety and Health], EN 60079-14, The DIN VDE 0100 series or other applicable national standards or ordinances. The owner/managing operator of an electrical system in a hazardous environment must keep the operating equipment in good condition, operate it quickly, monitor it and do the required maintenance and repairs.

Attention!

The ANTARES connection module and ANTARES Head Module in the ANTARES RCU must agree with respect to the bus interface - see type label.

Danger!

- The ANTARES RCU must be set up with the cable glands in the ANTARES connection module pointing downwards (e.g. on the wall, not on the floor) and installed with mechanical protection. The natural convection must not be obstructed.
- Use only in connection with the Remote I/O Systems ANTARES.
- Connect the ANTARES RCU to the local equipotential bonding conductors.
- The ANTARES RCU and redundant ANTARES RCU must always share a common metal mounting rail.
- Do not open the Ex e junction box during operation if there is any possibility of an explosive gas atmosphere.
- If there is any possibility of an explosive gas atmosphere, always disconnect the voltage supply before either joining or separating the 10+2-pole connectors. (This applies also to the 10-pole connector for the bus beginning module and bus end module).
- The grounding plate in the ANTARES connection module type 17-5164-9x20 (with metal glands) must be included in the local equipotential bonding.
- It is essential to wait 15 seconds after swinging the locking clamp open before removing the RCU's ANTARES Head Module from the ANTARES connection module (when hot swapping).

Note

See the System Description (User Manual) for information on the configuration of the Remote I/O Systems ANTARES.

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The following components at least are needed for installing an ANTARES RCU:

- TH 35-15 DIN mounting rail (DIN EN 60715), steel galvanised
- separately certified grounding terminal (equipotential terminal of ANTARES RCU for connecting an equipotential bonding conductor)
- Bus beginning module
- ANTARES RCU, consisting of ANTARES connection module and head module
- Bus end module

The ANTARES RCU has 10+2-pole connectors (for supplying power to the Remote I/O Modules ANTARES and for transmitting data) and these must be installed in a fixed and direct connection to each other and to the 10-pole connectors on the bus beginning module and bus end module in order to produce an enclosure unit that satisfies protection class IP30.

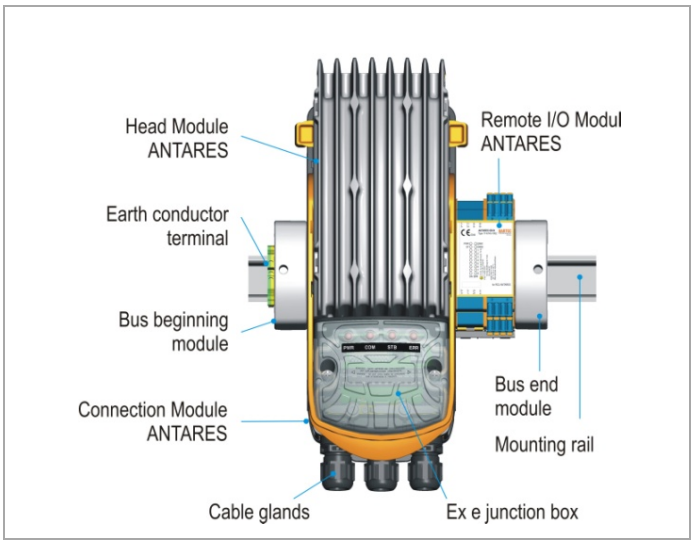


Figure 2: ANTARES RCU with accessories

ATTENTION – HOT SURFACE

Note

The ANTARES RCU and equipotential terminal are connected electrically conductively to each other by means of the metal mounting rail and twin-clip contact (on the underside of the ANTARES connection module).

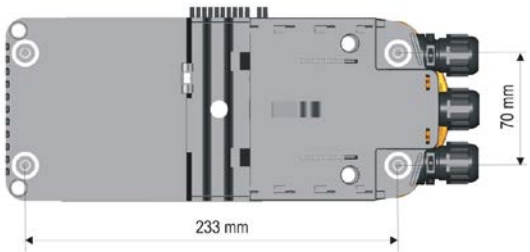
Attention!

Due to the mechanical strain exerted by the ANTARES Head Module, the ANTARES connection module must be fitted flush onto a mounting plate. This is ensured if the mounting rail is fastened directly onto the mounting plate. If there is a space between the mounting rail and the mounting surface, four spacers must also be fixed on the underside of the ANTARES connection module. Four M5 threads with a thread depth of 10 mm are provided for that purpose.

The applicable rule here is:
he space between the mounting rail and the mounting plate = height of the spacer

Attention!

The terminating module must be screwed to the mounting plate if it might be subject to shocks and/or vibrations.



Installation of the ANTARES RCU

(ANTARES connection module and ANTARES Head Module)

Attention!

ANTARES Head Module and ANTARES connection module (not including the transparent junction box cover) are factory-sealed and may not be opened!

Do not install the ANTARES RCU if there is condensation on it.

Only the enclosure of the ANTARES Head Module may be touched. Do not touch the contact pins! (ESD danger)

1. Swing the locking clamp on the ANTARES connection module upwards into the final position (clicks audibly into place), which releases the detent plate.
2. Latch the ANTARES connection module - cable glands downwards - onto the mounting rail (Fig. 3). Where it will be subject to shocks and/or vibration, insert four M5 screws into the threading on the underside of the ANTARES connection module.
3. Make sure that the two end plugs are inserted into the ANTARES connection module.

Figure 3

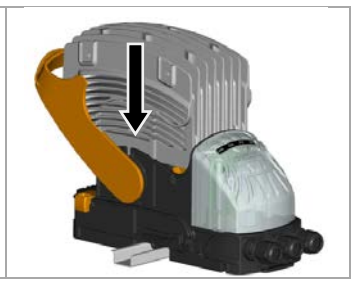


Figure 4

4. Insert the ANTARES Head Module securely into the ANTARES connection module (as far as it will go) (Fig. 4)
5. Swing the locking clamp downwards into the bottom final position (clicks audibly into place) (Fig. 5 and 6).

Figure 5

Figure 6

Installation of RCUs ANTARES and Redundant ANTARES RCU (only for the PROFIBUS DP Variant of the ANTARES RCU)

The possibility of setting up hardware redundancy with a maximum of two RCUs ANTARES is used exclusively for the PROFIBUS DP variant of the ANTARES RCU: the ANTARES connection module type 17-5164-9110 - non-armoured cable - or type 17-5164-9120 - armoured cable - and ANTARES Head Module type 17-5174-110x

Danger!

The ANTARES RCU and redundant ANTARES RCU must always share a common metal mounting rail.

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1. Swing the locking clamps of both ANTARES connection modules upwards into the final position, which releases the respective detent plate.
2. Remove the two end plugs on the sides of the ANTARES connection modules that are facing each other (Fig. 7). Space approx. 30 mm.
3. Latch the two ANTARES connection modules – glands facing downwards - onto the common mounting rail.
4. Swing the locking clamps on both ANTARES connection modules downwards into the bottom final position (clicks audibly into place).
5. Screw the 10+2-pole connectors on both ANTARES connection modules together directly and securely. If necessary, screw in four M5 screws on the underside of each ANTARES connection module.
6. Insert the plug bridge into the ANTARES connection modules female connector strips (Fig. 7) that are beside each other.
7. Insert each ANTARES Head Module securely into the ANTARES connection module.
8. Swing the locking clamps on both ANTARES connection modules downwards into the bottom final position.

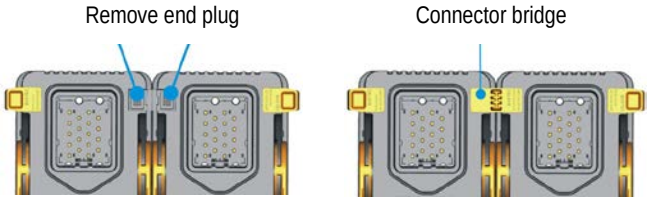


Figure 7

Connection Technology

Terminal range of the cable glands		
for non-armoured cable	∅ 6 - 13 mm	
for armoured cable	∅ 8.0 – 11.7 mm ∅ 11.5 - 16 mm	internal sheath external sheath
Rated connection capacity of the spring clamps		
single-wire	0.2 - 2.5 mm², AWG 24 - AWG 14	
fine-stranded	0.2 - 2.5 mm², AWG 24 - AWG 14	
with wire-end ferrule in conformance to DIN 46228, Part 1 or Part 4	max. 1.5 mm²	
with wire-end ferrule in conformance to DIN46228, Part 1 or Part 4, and PZ 6/5 crimping pliers, Weidmüller, or an equivalent type	max. 2.5 mm²	
Supply line (insulated power line)		
Rated cross-section of conductor 1.5 mm²	Length: maximum of 20 m	
Rated cross-section of conductor 2.5 mm²	Length: maximum of 30 m	
Data line		
Profibus-DP	Depending on the baud rate: max. total length 1200 m Standard Profibus cable, e.g. 1 x 2 x 0.64 mm², shielded	
Ethernet	Segment length: max. 100 m; standard LAN cable, e.g. CAT.5e/6e/7e or 2(4) x 2 x AWG 24 (0.2 mm²)…AWG 20 (0.5 mm²), shielded	

Note

Ethernet data-cable: 1 ferrite to reduce the radio interference voltage must be applied. The ferrite, No. 03-8388-0003, fit for cable diameters from 4.5 to 8 mm).

Wiring

Danger!

- Do not open the Ex e junction box during operation if there is any possibility of an explosive gas atmosphere.
- If there is any possibility of an explosive gas atmosphere, always disconnect the voltage supply before either joining or separating the 10+2-pole connectors. (This applies also to the 10-pole connector for the bus beginning module and bus end module).
- Disconnect from the voltage supply before joining the leads together.
- The cores in the leads must be arranged underneath the connection terminals and their conductors must be connected to the terminals! Free cores must be fixed on the shield bus.

1. Unscrew the fastening screws (2 pieces) on the junction box cover and remove the cover.
2. Push each lead through the cable gland opening into the Ex e junction box.
3. The conductors must be connected to the connection terminals in accordance with the terminal assignment.

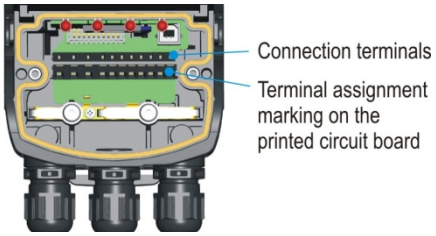


Figure 8: Ex e junction box

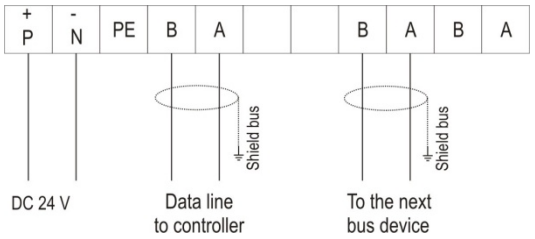
4. The cores that are not used must be bent in the direction of the cable gland and laid under the shield bus's clamping bracket (Fig. 9)

Figure 9: Ex e junction box with connected conductors

5. Only one end of the cable hast to be shielded. Therefore use the mounted shield bus inside of the RCU (Fig. 10 and 11).
6. Screw in the cable glands.
7. Use certified blanking plugs to close the cable glands that are not in use.
8. Put the cover onto the Ex e junction box. Tighten the fastening screws with 1 Nm.

Terminal assignment of the PROFIBUS-DP variant of the RCU	
ANTARES connection module - non-armoured cable	Type 17-5164-9110
ANTARES connection module - armoured cable	Type 17-5164-9120
ANTARES head module	Type 17-5174-110x

- for several stations



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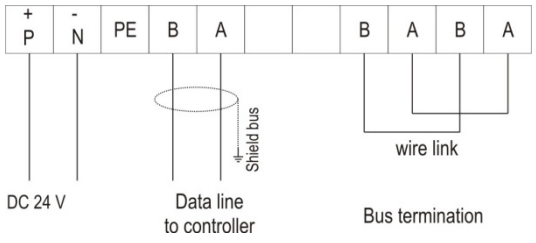
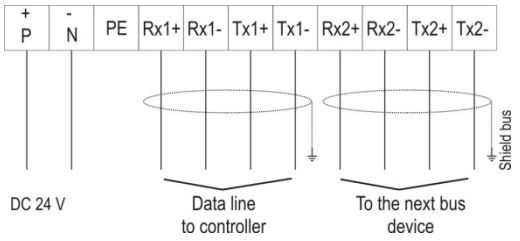
- for one or for the last station (terminating resistors inside)
  (The terminating resistors are located inside the head module)



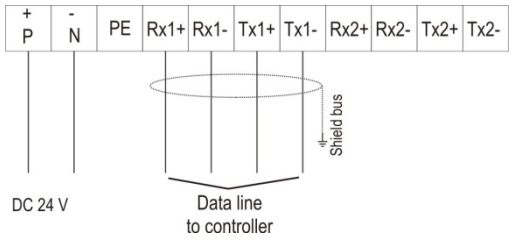
In hardware redundancy (exclusively for the PROFIBUS DP variant of the ANTARES RCU) the terminal assignment is identical for both ANTARES RCUs.

Terminal assignment of the ANTARES RCU - Ethernet variant	
ANTARES connection module - non-armoured cable	Type 17-5164-9910
ANTARES connection module - armoured cable	Type 17-5164-9920
ANTARES head module	Type 17-5174-1x0x

- for several stations (switch integrated in the head module)



- for one station



9. Connect one end of the shield to the shield bus (fig. 10 and 11) (example - see "Terminal assignment for the PROFIBUS DP variant of the ANTARES RCU ").

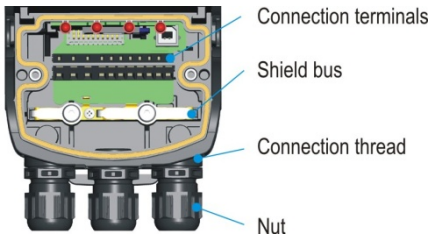


Figure 10: Shielding principle - ANTARES connection modules for non-armoured cables

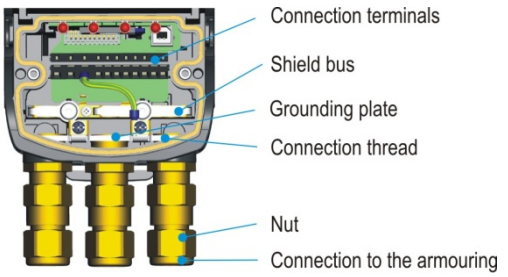


Figure 11: Shielding principle - ANTARES connection modules for armoured cables

Danger! The grounding plate on the ANTARES connection module type 17-5164-9x20 (with metal glands) must be incorporated into the local equipotential bonding.

For that purpose, the grounding plate is connected to the PE terminal in the junction box (see figure 11).

10. Tighten the cable glands.

Torque	Connection thread	Nut
- non-armoured cables	2.3 Nm	1.5 Nm
- armoured cables	8 Nm	5 Nm

11. Put the cover on the Ex e junction box. Tighten the fastening screws with 1 Nm.

Additional Interfaces in the Ex e Junction Box

Danger! Do not open the Ex e junction box during operation if there is any possibility of an explosive gas atmosphere!

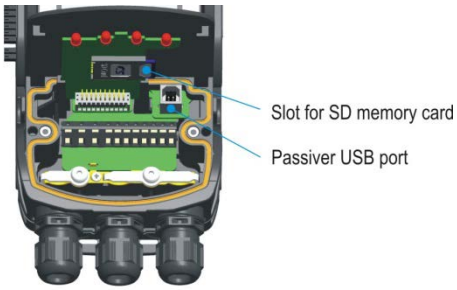


Figure 12: Additional interfaces

Slot for SD Memory Card

It is possible to use an SD memory card type 17-28BE-F006/000X (currently type 17-28BE-F006/0002) during operation (not included in the scope of supply).

The memory card fulfils the function of an automatic backup of the CPU configuration data. When the ANTARES Head Module is replaced, the configuration data is uploaded into the new ANTARES Head Module. (See the software manual and "Replacement of the Head Modules ANTARES" for further details)

Passive USB Port

Service interface for loading the configuration data into the CPU (See software manual for more details).

Danger! Attention do not activate if there is a possibility of an explosive gas atmosphere

Repairs

Under EN 60 079-17 only personnel with the relevant qualifications and with extensive expertise in handling explosion-protected equipment may do any of the installation, commissioning, maintenance, repair and conversion work. Only original spare parts may be used. Please consult BARTEC GmbH if you have any questions.

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Replacement of the ANTARES Head Module

Note: Can be replaced in an explosive atmosphere without shut down of voltage (hot swap).

Danger! It is essential to wait 15 seconds after swivelling the locking clamp open before removing the RCU's ANTARES Head Module from the ANTARES connection module (when hot swapping).

1. Swing the locking clamp on the ANTARES connection module upwards as far as it will go.
2. After swinging the locking clamp, wait 15 seconds before the ANTARES Head Module may be removed from the ANTARES connection module (hot swap).
3. The ANTARES Head Module is removed from the ANTARES connection module by pulling it off.
4. Attach another ANTARES Head Module (observe specifications!) securely onto the ANTARES connection module - see "Installation of the ANTARES RCU (Connection Module and Head Module)".
5. Swing the locking clamp downwards as far as it will.

Replacement of the ANTARES connection module

Danger! Shut down the voltage supply from the device first before carrying out the replacement.

1. See 1. to 3. "Replacement of the Head Module".
2. Unscrew the fastening screws (2 pieces) on the junction box cover and take off the cover.
3. Unscrew the cable glands. Loosen the leads to the connection terminals and the shield bus.
4. Loosen and remove the equipotential terminal from the mounting rail (see fig. 2).
5. Loosen the fastening screw on the bus beginning module and remove the bus beginning module from the mounting rail. If necessary, unscrew and remove the four M5 screws from the fixing nuts.
6. Push the ANTARES connection module on the mounting rail to the left, whereby the 10+2-pole connector of the ANTARES connection module is separated either from the connector on the separately certified Remote I/O Module ANTARES Type 17-6143-1xxx/00xx or on the second ANTARES RCU (in hardware redundancy with the PROFIBUS DP variant of the ANTARES RCU).
7. Loosen the ANTARES connection module from the mounting rail: this is done by applying the screwdriver blade from the front into the groove in the detent plate (fig. 1, underneath the cable glands) and by moving the screwdriver handle towards the device, while pressing the locking clamp upwards with the other hand.
8. Fasten another ANTARES connection module (with due consideration to specificatons!) on the mounting rail - see "Installation".
9. Wire the ANTARES connection module - see "Wiring".

Maintenance

No particular maintenance is required if operated appropriately and if the installation instructions and ambient conditions are observed.

Waste Disposal

The device contains metal, plastic parts and electronic components.

Note: The statutory requirements for the disposal of electronic scrap (e.g. disposal by an approved disposal company must be observed.

Dispatch and Packaging Instructions

Important information regarding transport and dispatch:

! Sensitive devices !
Take the device's maximum weight into consideration when selecting packaging and mode of transport.

Order Numbers

ANTARES Head Module

Interface	Code no.
PROFIBUS-DP	1
PROFINET	2
Modbus/TCP	3
Ethernet/IP	4

➡ Type 17-51-74-1☐00

ANTARES connection module

Interface	Code no.	Cable gland	Code no.
PROFIBUS-DP	1	no armoured	1
Ethernet	9	armoured	2

➡ Type 17-5164-9☐☐0

Accessories

End plug
➡ Order no. 05-0078-0067

Connector bridge
➡ Order no. 05-0078-0086

Earth conductor terminal
➡ Order no. 03-0076-0084

Bus beginning module
➡ Order no. 05-0078-0084

Bus end module
➡ Order no. 05-0078-0085

SD card
➡ Type 17-28BE-F006/0002

Split ferrite bead, suitable for cable diameters of 4.5 to 8 mm
➡ Order no. 03-8388-0003

Service address

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