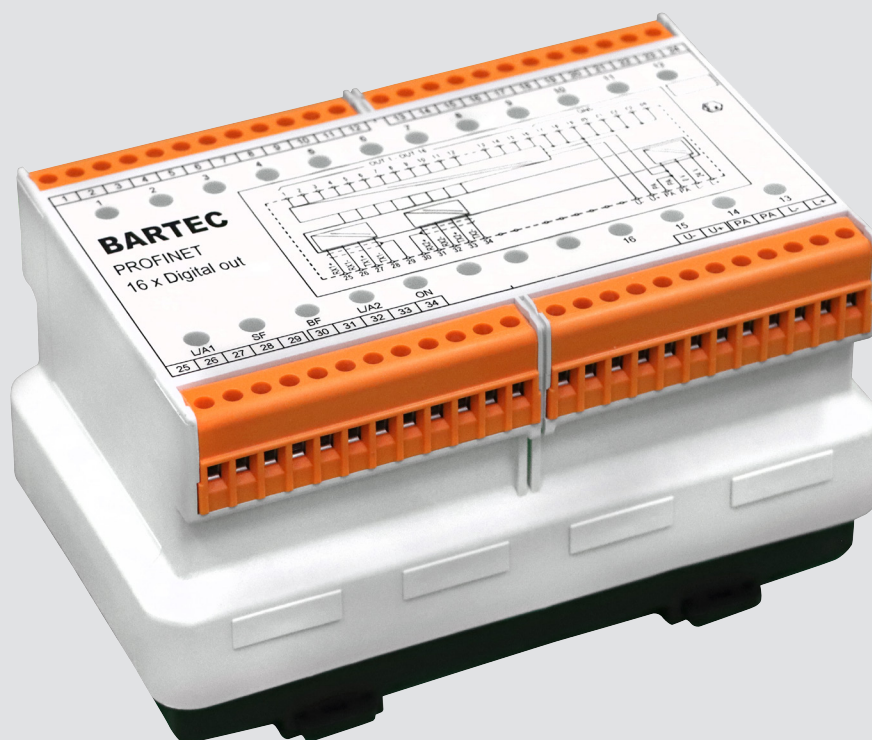


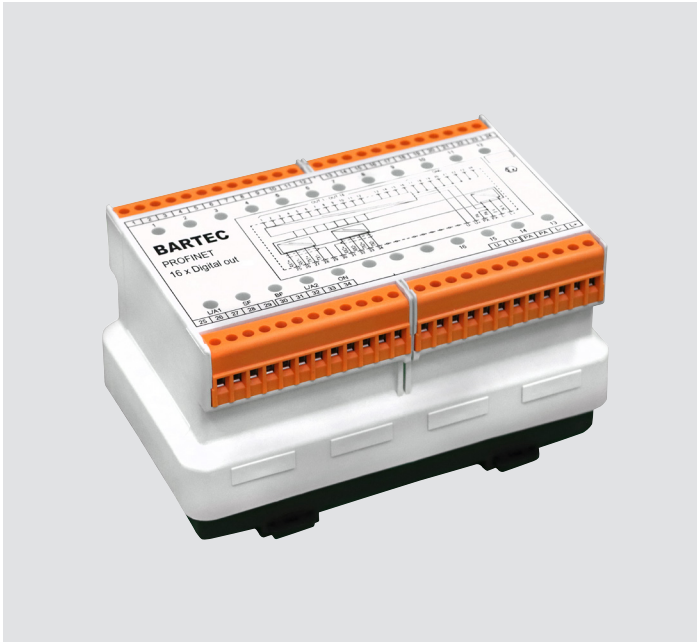
MODEX Ethernet Remote I/O Module

for zone 1 / 21



MODEX Ethernet Remote I/O Module

for zone 1 / 21



Definition

The MODEX Remote I/O Modules are suitable for zone 1 and 21 and are available with PROFINET and MODBUS TCP. MODEX modules include up to 16 analog and digital IO channels on smallest space. By using MODEX Remote I/O modules, signals can be safely and easily integrated into the existing control system in the hazardous area.

The MODEX PROFINET & MODBUS TCP modules

are available: Exe Outputs:

- 16 digital out Ex e
- 16 digital in Ex e
- 8 analog in/out Ex e

Ex e for measuring circuits and signals with increased safety.

Industrial Requirements of Zone 1

The modules are approved as “Ex d flameproof enclosures” with connecting terminals in “Ex e increased safety ex e”. Since the open connecting terminals are Ex e, the modules are given a partial certificate with the “U” marking.

Special note concerning the “U” marking

The modules must be installed in an enclosure that meets the requirements of a recognised type of protection in accordance EN/IEC 60079-0, min. protection type IP54. When installing in an enclosure with “increased safety ‘e’”, the clearance and creep age distances in Tables 1+2 in IEC/EN 60079-7 must be complied with.

Intrinsically safe installed components

If installed components with intrinsically safe circuits are produced as associated apparatus, they undergo their own type examination by a notified body. These are marked with an “X” after the test number.

The “X” indicates that special conditions apply to this device in the test certificate. These conditions can be read in the test certification.

Use in local control stations

Local control stations may generally be opened for testing and adjustment work.

Work may be carried out on intrinsically safe circuits if all non-intrinsically safe circuits have an internal cover which, when the enclosure is open, corresponds to at least the following protection class IP 30 when the enclosure is open.

EU Conformity

RoHS Directive	2011/65/EU
Standards in accordance with EMC Directive 2014/30/EU	EN 61000-6-2:2005 EN 61000-6-4:2007 + A1:2011 EN 55011:2009 + A1:2010
Product labelling	0044
Product labelling installation	CE0044

With applicable documents

- Declaration of EU conformity
- Test certificates

These documents must be retained!

Explosion protection Exe Version

Marking ATEX	⊕ II 2G Ex db eb IIC T4 Gb ⊕ Ex I M2 Ex db eb I Mb
Certification	EPS 23 ATEX 1 208 X
Marking IECEx	Ex db eb IIC T4 Gb Ex db I Mb
Certification	IECEx EPS 23.0049X

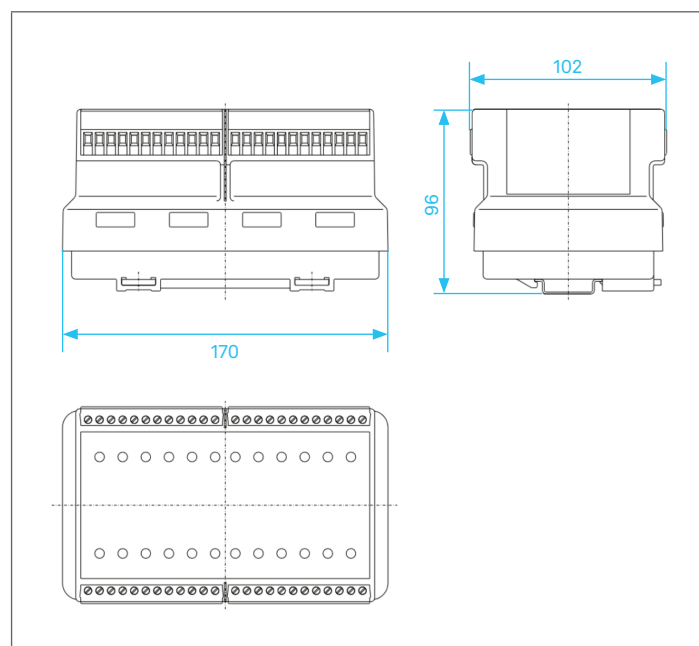
Technical data

Construction	Flameproof, clip-on enclosure for TH 35 rail
Enclosure material	High-quality thermoplastics
Protection class	Electronic assembly IP 66 EN/IEC 60529 Terminals IP 20 EN/IEC 60529 Terminals with cover IP 30 EN/IEC 60529
Terminals	up to 2.5 mm ² , fine stranded
Device designation	Front plate for labelling
Storage temperature	-40 °C to +60 °C
Ambient temperature	-40 °C to +60 °C at T4
Weight	2,1 kg

Electrical data

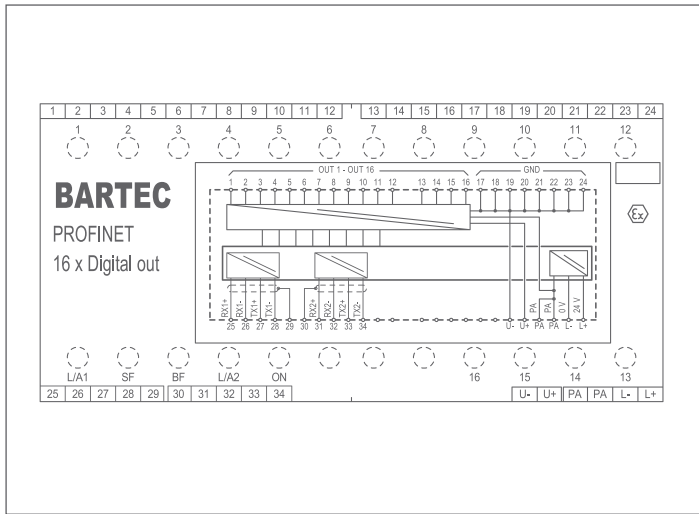
Supply voltage electronics (L +, L-)	DC 24 V (20 to 30 V)
Power consumption (L +, L-)	1,5W
Reverse polarity protection (L+, L-)	yes
Interface Connection	2x Ethernet 100BaseT with integrated switch PROFINET Modbus/ TCP
Displays	ON, L/A1, L/A2, BF, SF Input / Outputs: LED per channel
GSDML file	http://automation.bartec.com

Dimensions in mm



16 x digital out Ex e

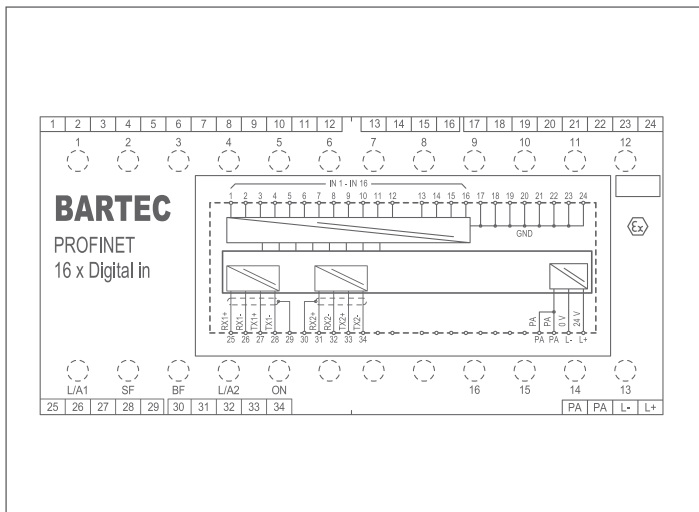
Wiring diagram/terminal assignment



Supply voltage Outputs (U +, U-) suitable for emergency stop	DC 24 V (20 to 30 V)
Output voltage	U -0.3 V
Output current	400 mA per channel
Power dissipation	max. 6,5 W (Module)
Power output (U+, U-)	190 W (max.)
Short-circuit protection	Electrical-thermal switch-off
Inrush current (at T=25 °C)	1,2 A
Reverse polarity protection	yes
Circuit monitoring	thermal protection of output drivers

16 x digital in Ex e

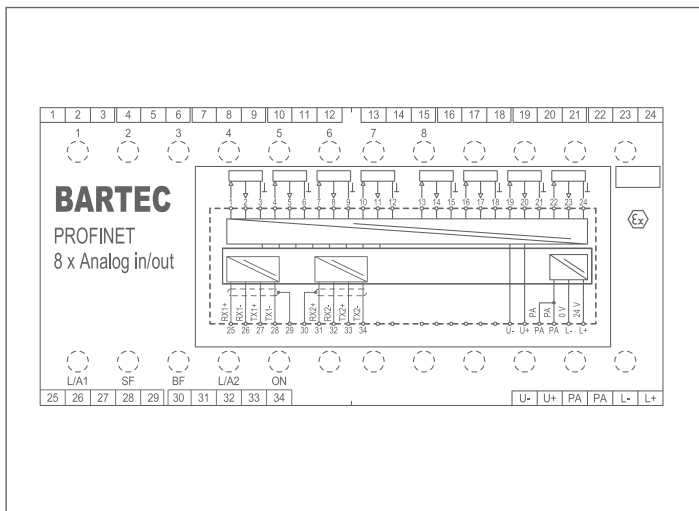
Wiring diagram/terminal assignment



Input current	typ. 6 mA at 10...30 V
Power consumption	max. 2,9 W (at 16 active inputs)
Switching threshold	0 - Signal 0 V to +5 V 1 - Signal +10 V to +30 V
Reverse polarity protection	Yes
Power dissipation	max. 4,4 W (Module)

8 x Analog in/out Ex e (16 Bit)

Wiring diagram/terminal assignment








Analog in	
Resolution	16 Bit
Signal range	4...20 mA
Short/break detection	yes
Internal resistance	15 Ω
Analog Out	
Output voltage	min. 15 V at 20 mA
Output current	0...25 mA
Short-circuit protection	yes
Power dissipation	max. 4,4 W (Module)
Supply voltage Outputs (U +, U-) suitable for emergency stop	DC 24 V (20 to 30 V)

Safety Instructions


The MODEX module may only be used within the specified temperature range. Unprotected, incorrect installation may result in malfunctions or loss of explosion protection. The connection and installation/disassembly of MODEX module must be carried out by qualified personnel who are authorized and trained to install lighting fixtures in potentially explosive atmospheres. Use in any areas other than those specified or modification of the product by anyone other than the manufacturer releases BARTEC from liability for defects and further liability. When setting up explosion-protected modules, the relevant installation and operating regulations must be observed. The generally applicable legal rules and other binding guidelines on occupational safety, accident prevention and environmental protection must be observed. The MODEX module may only be operated in a clean, undamaged condition. Any modifications and alterations are not permitted.

Marking

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

-  **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
-  **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
-  **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
-  **NOTICE** is used to address practices not related to personal injury.
-  **NOTE** Important instructions and information on effective, economical and environmentally compatible handling.


Transport and storage



NOTICE
Damages due to improper storage!

- Observe storage and transport temperatures.
- Condensation can arise on components in a cold environment.
- Use the original packaging for transport/storage.

Installation




NOTICE
Damage due to improper handling!

- Assembly, disassembly, installation and commissioning may only be performed by qualified personnel who are authorized and trained to assemble electrical components in hazardous areas.

Plugs:

- The plugs are difficult to pull off! Due to the high fitting accuracy of plug and socket, a vacuum is created during removal, which requires higher removal forces. For this reason, the plugs must be pulled off carefully to avoid damaging the plugs and connectors.




DANGER
Improper use, incorrect assembly and operation can operation endanger the explosion protection and can lead to and can lead to serious personal injury or damage to property.

The following special conditions must be heeded!

1. Do not install and commission components that have been stored in a cold environment. Take condensation into consideration!
2. The enclosure has been sealed in the factory. The enclosure must not be opened!
3. Before installation, check whether the components are in perfect condition.
4. No conversions or changes to the module may be made.
5. Only work on the module when it is voltage-free.
6. All screws and terminals must be tightened using a torque wrench, taking account of the recommended connection torque for screws and terminals of 0.4 Nm to 0.7 Nm. Suitable measures must be taken to ensure this.
7. Units must be mounted at a distance of 8 mm from the to the nearest unit.
8. Ensure the unit is dead (be aware of consumers with stored energy)
9. Cover any live neighbouring components.
10. The PA connection part must be connected with low impedance to the equipotential bonding conductor of the hazardous area. Since the intrinsically safe circuits are galvanically connected to ground potential, equipotential bonding of the intrinsically safe circuits must be maintained throughout the service life of the system.
11. Decommission the device in the event of a fault.


Installation and commissioning

Installation and commissioning may only be carried out by qualified personnel who are authorized and trained to install electrical components in potentially explosive atmospheres.



DANGER
Exposed live parts. Danger to life due to electric shock!!

- Only work on the module when it is de-energised state.



CAUTION
Infrared light! Danger to eyesight!

- Do not look into the laser beam of the transmitter
- In the event of a malfunction, put the device out of operation!

Check before commissioning:

1. Has the module been installed correctly?
2. Is the enclosure undamaged?
3. Has the connection been carried out correctly?
4. Have you checked that the wiring is correct?
5. Does the module function correctly?
6. PA properly connected to equipotential bonding conductor.

Operation

After the final inspection has been carried out, the device can be put into operation.

DANGER

There is a danger to life if the device is not used as intended!

- Observe the special conditions for explosion protection.
- Operate only within the permitted temperature range.
- Connect PA properly to equipotential bonding conductor.
- In the event of bus failure (communication error), the outputs go into fail-safe mode (go to 0 and are switched off!).

Troubleshooting

Please check the following points if problems arise when setting up a connection:

1. Have you paid attention to the LED messages?
2. Check wiring and connections.
3. Is the connection between the controller and terminal device correct?
4. Have all screw terminals been correctly tightened?
5. Has the correct baud rate been set?
6. Is the transmission path too long for the selected baud rate?
7. Have all addresses been set correctly?
8. Has the system been restarted since last changing the bus addresses? The devices are initialised after each restart.
9. Has the bus been correctly set (last module) and the jumper set correctly?
10. Heed the guidelines for individual assemblies in the software.

Maintenance, Inspection, Repair

Only authorised and qualified personnel may do any work on the control and regulating component.

Maintenance

If operated correctly in accordance with the installation instructions and ambient conditions, it does not require maintenance.

Inspection

Under EN/IEC 60079-17 and EN/IEC 60079-19 the owner/ managing operator of electric installations in hazardous areas is obliged to have these installations checked by a qualified electrician to ensure that they are in a proper condition.

Repair

The component cannot be repaired. Please contact BARTEC GmbH if you have any questions.

Disposal

The regulating and control components contain metallic and plastic parts and electronic parts.

NOTE

Our devices involve electrical equipment which is only intended for commercial use (so-called B2B equipment in accordance with the WEEE Directive).

The regulating and control components must be disposed of in accordance with national regulations.

Our customers may return any products procured from us to our company for disposal. The sender must bear the costs for shipping/packing.

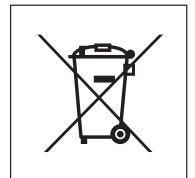
Amendments to the Document

BARTEC GmbH reserves the right to change the contents of this document without notification. We assume no guarantee for the correctness of the information. In cases of doubt the German safety instructions apply because it is not possible to rule out errors during printing and translation. The „General Terms and Conditions of Business“ of the BARTEC Group moreover apply in the event of legal disputes.

The current version of data sheets, operating instructions, certificates and EC declarations of conformity can be downloaded from bartec.com or directly requested from BARTEC GmbH.

Disposal

The components of the MODEX module contain metal, glass and plastic parts. Therefore, the legal requirements for the disposal of electronic waste must be observed (e.g. disposal by an approved disposal company).



Service Address

BARTEC GmbH
 Max-Eyth-Str. 16
 97980 Bad Mergentheim
 Germany

Phone: +49 7931 597 0
 info@bartec.com
 bartec.com

Ordering information

Version	Code number
16 x digital out Ex e	0 7 - 7 3 3 1 - 2 A 0 1 0 0 0 0
16 x digital in Ex e	0 7 - 7 3 3 1 - 2 A 0 2 0 0 0 0
8 x Analog in/out Ex e	0 7 - 7 3 3 1 - 2 A 0 A 0 0 0 0
A	
4	PROFINET
5	MODBUS TCP

EU Konformitätserklärung
 EU Declaration of Conformity
 Déclaration UE de conformité
 N° 01-7331-7C0029_B



Wir	We	Nous
BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany		
erklären in alleiniger Verantwortung, dass das Produkt Steuer- und Regel-Komponente	declare under our sole responsibility that the product Control Component	attestons sous notre seule responsabilité que le produit Composants de commande et de regulation

07-7331-**/******

auf das sich diese Erklärung bezieht den Anforderungen der folgenden Richtlinien (RL) entspricht ATEX-Richtlinie 2014/34/EU EMV-Richtlinie 2014/30/EU RoHS-Richtlinie 2011/65/EU und mit folgenden Normen oder normativen Dokumenten übereinstimmt	to which this declaration relates is in accordance with the provision of the following directives (D) ATEX-Directive 2014/34/EU EMC-Directive 2014/30/EU RoHS-Directive 2011/65/EU and is in conformity with the following standards or other normative documents	se référant à cette attestation correspond aux dispositions des directives (D) suivantes Directive ATEX 2014/34/UE Directive CEM 2014/30/UE Directive RoHS 2011/65/UE et est conforme aux normes ou documents normatifs ci-dessous
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EN 60079-0:2018
EN 60079-1:2014
EN 60079-7:2015
EN 60079-11 :2012

EN 61000-6-2:2005
EN 61000-6-4:2007 + A1:2011
EN 60529:1991+A1:2000+ A2:2013

Verfahren der EU-Baumusterprüfung / Benannte Stelle	Procedure of EU-Type Examination / Notified Body	Procédure d'examen UE de type / Organisme Notifié
------------------------------------------------------------	---------------------------------------------------------	----------------------------------------------------------

PTB 98 ATEX 1066 U

0102, PTB, Bundesallee 100, 38116 Braunschweig, DE

0044

Bad Mergentheim, 02.07.2021


 i.V. Reiner Englert

Product Manager Automation


 i.A. Kevin Rogers

Head of Global R&D ESS

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