Sistemas de Controlo e Medida

Modex Electronics

DATASHEET

JUNHO 2013

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Isolator terminal IP 30, 2-pole

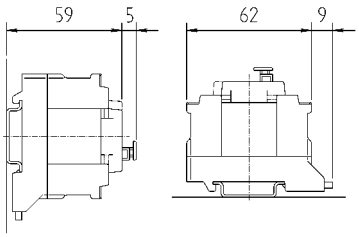
BARTEC

Isolator terminal

Features

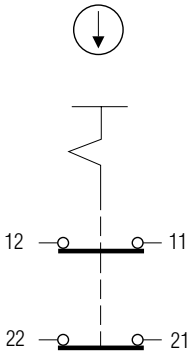
- IP 30 terminal cover
- Positive opening contact, 2-pole
- Safety isolation of Ex e power circuits
- Replaced system shutdown or fire-work-permission

Dimensions/mounting positions



Module width: 15 mm

Wiring diagram (I-position)/ terminal assignment (I-position)



Description

The MODEX series offers an isolator terminal which can be used both for service and test jobs as well as for conventional, manual switching functions. Thanks to the visibly clear distinction between switching positions and extremely small enclosure with 4 integrated terminals, the isolator terminal is very easy to install. The labelling options are the same as for rail-mounted terminals. The MODEX isolator terminal is installed directly in an Ex e enclosure and installed like a rail-mounted terminal.

Being a terminal with positive opening operation, it offers additional safety. All conducting parts are protected against accidental contact which allows you to open the Ex e enclosure and to operate the switch by hand when voltage is applied and within the Ex area. Any actuators or sensors are isolated by the double poles and can thus be replaced under hazardous conditions providing local regulations allow this.

Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 98 ATEX 1020 U
IECEx PTB 11.0087U
CSA 2011-2484303U
INMETRO TÜV 13.1678U

Technical data

Enclosure material
High-quality thermoplastic and duroplastic

Protection class

Module	IP 54
Terminals	IP 20
Terminals with cover	IP 30

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-40 °C to +70 °C

Storage temperature
-40 °C to +70 °C

Weight
0.245 kg

Electrical data

Switching elements
2-pole positive opening contact

Service life
electrical/mechanical 0.6 $\geq 10^4$ switching cycles

Contact material
pure silver, gold-plated

Contact version
positive opening contact

Contact type
2-pole NC contact

Rated isolation voltage
400 V

Short-circuit protection
fuse-links
characteristic - quick-acting: 10 A

Mechanical life
1 x 10^6 switching cycles

Electrical life
1 x 10^4 switching cycles

Conventional thermal current
7 A at $T_a \leq +40$ °C

Utilization categories
AC-15 for 400 V/2 A
DC-13 for 250 V/0.15 A

Switching capacity according to EN 61058-1
see table

Rated operating current		
Alternating current 40 - 80 Hz		
Load U	Ohmic load I/AC-12 A	Inductive load I/AC-15 A
125 V	5 A	
250 V	4 A	4.0 A
400 V	2 A	2.0 A

Direct current		
	Ohmic load	Inductive load
30 V	7 A	approx. 5 A
250 V	0,6 A	0.15 A

Guidelines
Directive 94/9/EC

Notes

- Adhere to VBG 4 § 6 par. 2 when working on the unit
- Provide IP 30 covers on terminals 11 and 21 (enclosed)
- Only terminals 12 and 22 can be worked with
- Protect against unintentional reclosing/seal isolator terminal
- Ensure isolation from supply (pay attention to valves and fittings with energy storage mechanism)
- Cover neighboring, conducting parts

Fuse

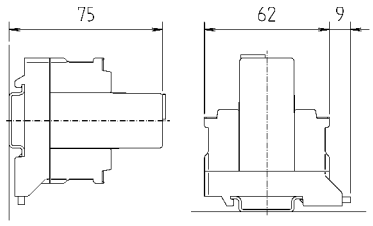
Description

Fused modules are required to protect equipment and power circuits in areas in which an explosion hazard exists.

The increasing automation of functions and processes make it necessary to install the standard protective devices on-site.

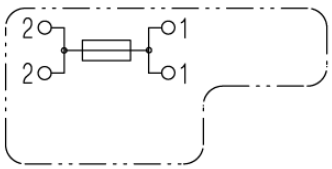
An advantage of MODEX fuses is that they are fitted in explosion-protected enclosures with integrated double terminals. This allows the input and output voltage to be used further by the MODEX component.

Dimensions/mounting positions



Module width: 15 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type

(Ex) II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification

PTB 98 ATEX 1010 U
IECEx PTB 11.0086U
CSA 2011-2484303U
INMETRO IEE 12.0204U

Technical data

Enclosure material

High quality thermoplastic

Protection class

Module	IP 66/IEC 60529
Terminals	IP 20/IEC 60529

Terminals

2.5 mm², fine stranded

Mounting rail

TH 35 x 7.5 (15) EN 60715

Terminal designation

written marking labels

Ambient temperature

-40 °C to +40 °C

Storage temperature

-40 °C to +70 °C

Weight

0.055 kg

Electrical data

Fuse

quick acting 0.1 A

Nominal voltage

250 V

Switching capability

at 250 V, 50 Hz, cos φ = 1
35 A for (F) 0.1 A

Guidelines

Directive 94/9/EC

Fuse

Description

Fused modules are required to protect equipment and power circuits in areas in which an explosion hazard exists.

The increasing automation of functions and processes make it necessary to install the standard protective devices on-site. An advantage of MODEX fuses is that they are fitted in explosion-protected enclosures with integrated double terminals.

This allows the input and output voltage to be used further by the MODEX component. Please indicate the desired current value with your order (see selection chart).

Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 98 ATEX 1010 U
IECEx PTB 11.0086U
CSA 2011-2484303U
INMETRO IEE 12.0204U

Technical data

Enclosure material
High quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-40 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.055 kg

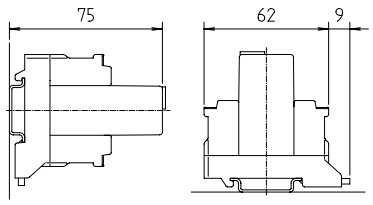
Electrical data see selection chart

Nominal voltage
250 V

Switching capability
at 250 V, 50 Hz, cos φ = 1
35 A for (T) 0.032 A to 1.25 A

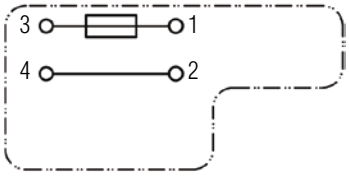
Guidelines
Directive 94/9/EC

Dimensions/mounting positions



Module width: 15 mm

Wiring diagram/terminal assignment



Fuse

Description

Fused modules are required to protect equipment and power circuits in areas in which an explosion hazard exists. The increasing automation of functions and processes make it necessary to install the standard protective devices on-site. An advantage of MODEX fuses is that they are fitted in explosion-protected enclosures with integrated double terminals. This allows the input and output voltage to be used further by the MODEX componentt.

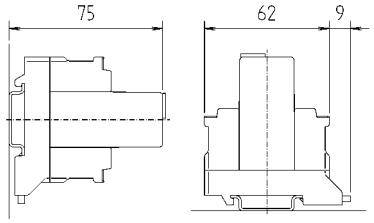
Please indicate the desired current value with your order (see selection chart).

Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

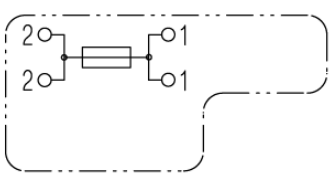
Certification
PTB 98 ATEX 1010 U
IECEx PTB 11.0086U
CSA 2011-2484303U
INMETRO IEE 12.0204U

Dimensions/mounting positions



Module width: 15 mm

Wiring diagram/terminal assignment



Technical data

Enclosure material
High quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-40 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.055 kg

Electrical data see selection chart

Nominal voltage
250 V

Switching capability
at 250 V, 50 Hz, cos φ = 1
80 A for (M) 0.1 A to 1.25 A
35 A for (T) 0.1 A to 1.25 A

Guidelines
Directive 94/9/EC

Fuse

Description

Fused modules are required to protect equipment and power circuits in areas in which an explosion hazard exists. The increasing automation of functions and processes make it necessary to install the standard protective devices on-site.

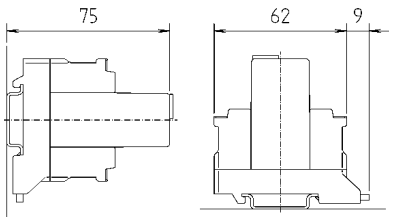
An advantage of MODEX fuses is that they are fitted in explosion-protected enclosures with integrated double terminals.

Explosion protection

Ex protection type
- Ⓔx II 2 G / I M2
- Ex d e IIC Gb
- Ex d e I Mb
- Class I Zone 1 IIC
- A/Ex d e IIC Gb

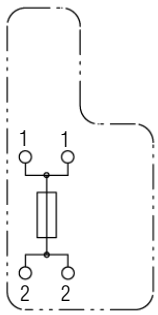
Certification
- PTB 97 ATEX 1068 U
- IECEx PTB 11.0083U
- CSA 2011-2484303U
- INMETRO IEE 12.0200U

Dimensions/mounting positions



Module width: 30 mm

Wiring diagram/terminal assignment



Technical data

Enclosure material
High quality thermoplastic

Protection class

Module	IP 66/IEC 60529
Terminals	IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-20 °C to +70 °C

Weight
0.120 kg

Electrical data see selection chart

Nominal voltage
250 V

Switching capability
at 250 V, 50 Hz, cos φ = 1

1000 A for (M)	1.6 A to 2.5 A
35 A for (T)	1.6 A to 2.5 A

Guidelines
Directive 94/9/EC

Fuse

Description

Fused modules are required to protect equipment and circuits in hazardous areas. With the increas-ing automation of functions and processes requires the installation of the standard protective devices on-site.

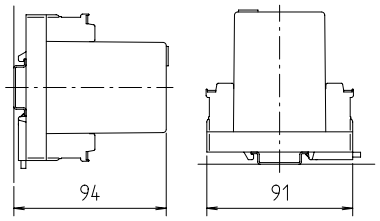
An advantage of MODEX fuses is that they are fitted in flameproof enclosures with integrated double terminals. This allows the input and output voltage to be used by other MODEX component too.

Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

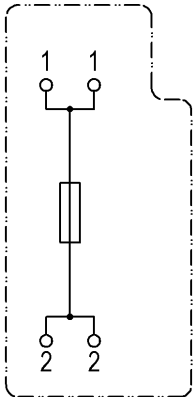
Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Dimensions/mounting positions



Module width: 30 mm

Wiring diagram/terminal assignment



Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.250 kg

Electrical data
see selection chart

Nominal voltage
250 V

Switching capacity
at 250 V, 50 Hz, cos φ = 1
1000 A for (M) 3.15 A to 6.3 A
35 A for (T) to 3.15 A
40 A for (T) 4 A
50 A for (T) 5 A
63 A for (T) 6.3 A

Guidelines
Directive 94/9/EC

Fuse

Description

With the increase in automated functions and processes, it is necessary to install common protective systems on site. Fuse elements are required to protect equipment and circuits also in hazardous areas.

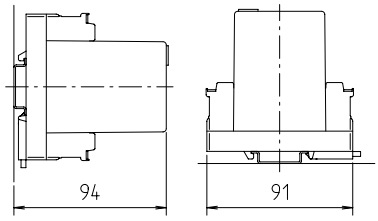
MODEX fuse elements are advantageous as they are in explosion-proof encapsulation and installed in an enclosure with integrated double terminals.

Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

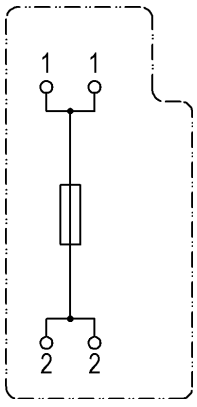
Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Dimensions/mounting positions



Module width: 30 mm

Wiring diagram/terminal assignment



Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.250 kg

Electrical data
see selection chart

Rated voltage
250 V

Switching capacity
at 250 V, 50 Hz, cos φ = 1
35 A for to 3.15 A
40 A for 4 A
63 A for 6.3 A

Guidelines
Directive 94/9/EC

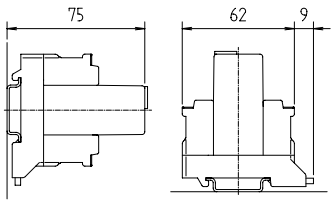
Freewheeling diode

Description

A freewheeling diode acting as a sppressor, this module can be installed in series or in parallel to an electrical circuit just like any modular terminal.

There are two connection points on either side to facilitate wiring to other MODEX modules or direct connection.

Dimensions/mounting position



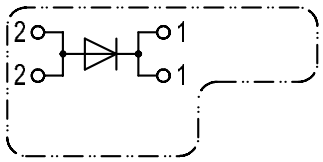
Module width: 15 mm

Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

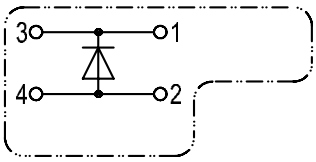
Certification
PTB 98 ATEX 1010 U
IECEx PTB 11.0086U
CSA 2011-2484303U
INMETRO IEE 12.0204U

Wiring diagram 1/terminal assignment 1



Variant 1

Wiring diagram 2/terminal assignment 2



Variant 2

Technical data

Enclosure material
High quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.050 kg

Electrical data

Rated voltage
400 V

Reverse voltage
1000 V

Current
0.7 A

Type 1 N 4007
other types on request

Guidelines
Directive 94/9/EC

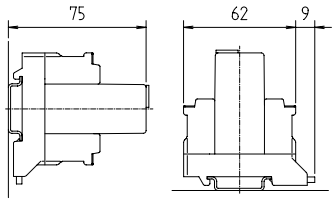
Freewheeling diode

Description

Suppressors for electrical and electronic control systems.

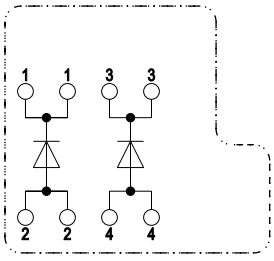
Spark suppressors for the prevention of overvoltage in inductive loads such as solenoids, DC relays etc.

Dimensions/mounting position



Module width: 30 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
- Ex II 2 G / I M2
- Ex d e IIC Gb
- Ex d e I Mb
- Class I Zone 1 IIC
- A/Ex d e IIC Gb

Certification
- PTB 97 ATEX 1068 U
- IECEx PTB 11.0083U
- CSA 2011-2484303U
- INMETRO IEE 12.0200U

Technical data

Enclosure material
high-quality thermoplastic

Protection class

Module	IP 66/IEC 60529
Terminals	IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.250 kg

Electrical data

Rated voltage
400 V

Reverse voltage
1000 V

Current
Type 1N4007 max. 0.6 A
Other types on request

Guidelines
Directive 94/9/EC

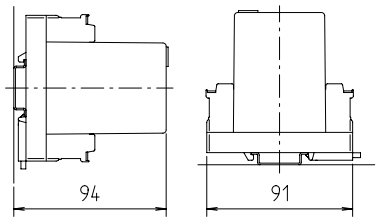
Lamp test diode module

Description

This module combines a given number of diodes on a single printed board. The diodes are connected to terminals.

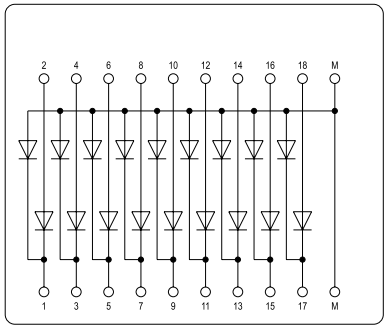
Typical applications:
Signal isolation in lamp testing. The diodes are connected in pairs and can be supplied with either a common cathode or anode.

Dimensions/mounting positions



Module width: 75 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
Ex II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Technical data

Enclosure material
High quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.400 kg

Electrical data

Reverse voltage
max. DC 300 V

Reverse voltage
1 000 V

Diode current
0.3 A max per lamp
Type 1 N 4007

Guidelines
Directive 94/9/EC

Resistor

Description

For general use throughout the field of measuring and control engineering for hazardous areas (e. g. monitoring switching contacts, open circuit monitoring).

Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 98 ATEX 1010 U
IECEx PTB 11.0086U
CSA 2011-2484303U
INMETRO IEE 12.0204U

Technical data

Enclosure material
High quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

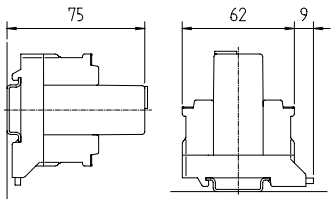
Storage temperature
-40 °C to +70 °C

Weight
0.050 kg

Electrical data see selection chart

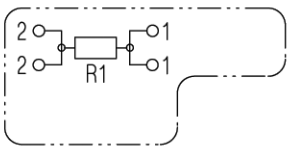
Guidelines
Directive 94/9/EC

Dimensions/mounting position

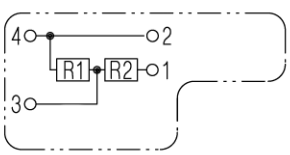


Module width: 15 mm

Wiring diagram 1/terminal assignment 1



Wiring diagram 2/terminal assignment 2



Selection chart

Rating	Spacing	Wiring diagram terminal assigment	Code no.
R1 10 kΩ ± 1 % $I_{max.}$ = 6 mA R2 1 kΩ ± 1 % $I_{max.}$ = 6 mA	without	2	
R1 3.3 kΩ ± 1 % $I_{max.}$ = 8 mA R2 1.8 kΩ ± 1 % $I_{max.}$ = 8 mA	without	2	
R1 4.7 kΩ ± 5 % $I_{max.}$ = 12 mA	without	1	
R1 120 Ω ± 1 % $I_{max.}$ = 60 mA	without	1	
R1 1 kΩ ± 1 % $I_{max.}$ = 25 mA	without	1	
R1 250 Ω ± 0,1 % $I_{max.}$ = 50 mA	without	1	
R1 2 kΩ ± 1 % R2 1 kΩ ± 1 % $I_{max.}$ = 6 mA	without	2	
R1 249 Ω ± 1 % R2 100 Ω ± 1 % $I_{max.}$ = 50 mA	without	2	
R1 10 kΩ ± 1 % R2 2 kΩ ± 1 % $I_{max.}$ = 6 mA	without	2	
R1 8.2 kΩ ± 1 % $I_{max.}$ = 8 mA R2 1.5 kΩ ± 1 % $I_{max.}$ = 19 mA	without	2	

(Precision) Resistors

Description

For general use throughout the field of measuring and control engineering for hazardous areas (e. g. monitoring switching contacts, open circuit monitoring).

Explosion protection

Ex protection type

Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification

PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Technical data

Enclosure material

High-quality thermoplastic

Protection class

Module	IP 66/IEC 60529
Terminals	IP 20/IEC 60529

Terminals

2.5 mm², fine stranded

Mounting rail

TS 35 x 7.5 (15) EN 60715

Terminal designation

written marking labels

Ambient temperature

-20 °C to +40 °C

Storage temperature

-40 °C to +70 °C

Weight

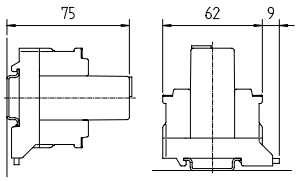
0.110 kg

Electrical data see selection chart

Guidelines

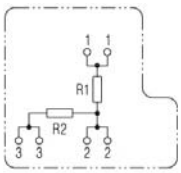
Directive 94/9/EC

Dimensions/mounting positions

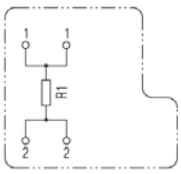


Module width: 30 mm

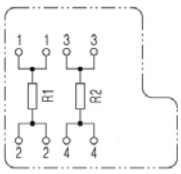
Wiring diagram 1/terminal assignment 1



Wiring diagram 2/terminal assignment 2



Wiring diagram 3/terminal assignment 3



Selection chart

Rating	Code no.	Spacing	Wiring diagram terminal assignment
R1 4.7 kΩ ± 10 % $I_{max.}$ = 5 mA R2 10 kΩ ± 10 % $I_{max.}$ = 5 mA		without	**1**
R1 100 Ω ± 1 % $I_{max.}$ = 50 mA R2 100 Ω ± 1 % $I_{max.}$ = 50 mA		without	**3**
R1 2.2 kΩ ± 1 % $I_{max.}$ = 15 mA R2 680 Ω ± 5 % $I_{max.}$ = 35 mA		8 mm	**3**
R1 680 Ω ± 5 % $I_{max.}$ = 35 mA		without	**2**
R1 1 kΩ ± 1 % $I_{max.}$ = 20 mA R2 10 kΩ ± 1 % $I_{max.}$ = 5 mA		without	**3**
R1 820 Ω ± 5 % $I_{max.}$ = 35 mA		without	**2**
R1 3.3 kΩ ± 5 % $I_{max.}$ = 17 mA		without	**2**
R1 2.7 kΩ ± 5 % $I_{max.}$ = 19 mA		without	**2**
R1 3 kΩ ± 1 % $I_{max.}$ = 10 mA R2 4.3 kΩ ± 1 % $I_{max.}$ = 9 mA		without	**3**
R1 82 Ω ± 1 % $I_{max.}$ = 70 mA R2 100 Ω ± 1 % $I_{max.}$ = 60 mA		without	**3**
R1 120 Ω ± 1 % $I_{max.}$ = 60 mA R2 150 Ω ± 1 % $I_{max.}$ = 50 mA		without	**3**
R1 6.8 kΩ ± 1 % $I_{max.}$ = 3.5 mA R2 820 Ω ± 1 % $I_{max.}$ = 29 mA		without	**3**
R1 680 Ω ± 2 % $I_{max.}$ = 25 mA R2 3.3 kΩ ± 2 % $I_{max.}$ = 10 mA		without	**1**
R1 2.2 kΩ ± 1 % $I_{max.}$ = 15 mA R2 3.3 kΩ ± 1 % $I_{max.}$ = 10 mA		without	**1**
R1 6.8 kΩ ± 1 % $I_{max.}$ = 9 mA R2 6.8 kΩ ± 1 % $I_{max.}$ = 9 mA		8 mm	**3**
R1 3 kΩ ± 1 % $I_{max.}$ = 10 mA R2 3 kΩ ± 1 % $I_{max.}$ = 10 mA		without	**1**
R1 22 kΩ ± 1 % $I_{max.}$ = 5 mA		without	**2**
R1 15 kΩ ± 1 % $I_{max.}$ = 5 mA R2 15 kΩ ± 1 % $I_{max.}$ = 5 mA		without	**3**
R1 1.8 kΩ ± 1 % $I_{max.}$ = 2 mA R2 4.7 kΩ ± 1 % $I_{max.}$ = 10 mA		without	**3**
R1 1.5 kΩ ± 1 % $I_{max.}$ = 19 mA R2 2.2 kΩ ± 1 % $I_{max.}$ = 16 mA		without	**1**
R1 8.2 kΩ ± 1 % $I_{max.}$ = 12 mA R2 1.5 kΩ ± 1 % $I_{max.}$ = 28 mA		without	**3**
R1 51.1 kΩ ± 1 % $I_{max.}$ = 3 mA R2 51.1 kΩ ± 1 % $I_{max.}$ = 3 mA		without	**3**

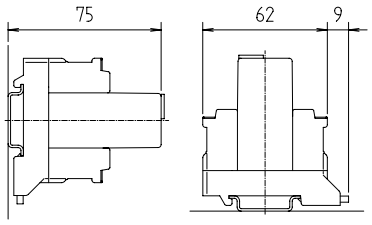
Miniature switching relay

Description

The relay modules of the MODEX series offer most up-to-date switching configurations. A suppressor diode on the coil protects the power circuit from peak voltages. High shock and vibration resistance is just as important as the IP 66 protection of the contacts.

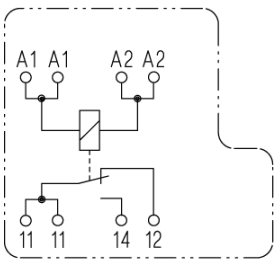
The MODEX relay switches circuits up to 5 A and is used as an isolator between low-current control circuits and high-current switching circuits.

Dimensions/mounting positions



Module width: 30 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TS 35 x 7.5 (15) EN 60715

Labelling
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.250 kg

Electrical data

Coil data
AC/DC 11.2 V to 16 V/0.53 VA/0.37 W
AC/DC 21.5 V to 28 V/0.43 VA/0.33 W
AC/DC 42 V to 60.5 V/0.53 VA/0.4 W
AC/DC 54 V to 72 V/0.41 VA/0.3 W
AC 96 V to 144 V; 50/60 Hz/0.85 VA
AC 176 V to 264 V; 50 Hz/1.5 VA

Contact material
AgCdO

Max. switching voltage
AC 250 V/DC 300 V

Max. switching capacity
(ohmic load)
1 250 VA (50 W)

Test voltage
Coil-contact 4 kV

Mechanical life
min. 3 x 10^6 switching cycles

Electrical life
> 1 x 10^5 switching cycles/
AC 220 V, 5 A ohmic load

Operating frequency
7 200 switching cycles/h

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

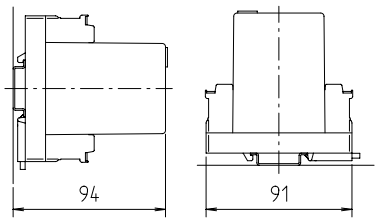
Relay

Description

The relay modules of the MODEX series offer most up-to-date switching configurations. A suppressor diode on the coil protects the power circuit from peak voltages.

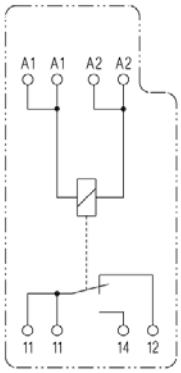
The MODEX relay serves for the switching of power circuits up to 6 A. Thanks to its low power consumption it can be controlled by means of electronic circuits, optorelays from BARTEC or standard power circuits.

Dimensions/mounting positions

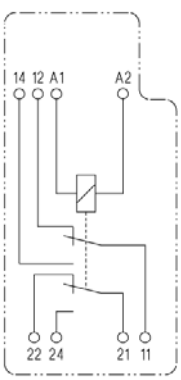


Module width: 30 mm

Wiring diagram 1/terminal assignment 1



Wiring diagram 2/terminal assignment 1



Explosion protection

Ex protection type
- Ⓔx II 2 G / I M 2
- Ex d e IIC Gb
- Ex d e I Mb
- Class I Zone 1 IIC
- A/Ex d e IIC Gb

Certification
- PTB 97 ATEX 1068 U
- IECEx PTB 11.0083U
- CSA 2011-2484303U

Technical data

Enclosure material
- High-quality thermoplastic

Protection class
- Module IP 66/IEC 60529
- Terminals IP 20/IEC 60529

Terminals
- 2.5 mm², fine stranded

Mounting rail
- TH 35 x 7.5 (15) DIN EN 60715

Labelling
- written marking labels

Storage temperature
- -40 °C to +70 °C

Ambient temperature
- -20 °C to +40 °C

Weight
- 0.250 kg

Electrical data

Coil

AC/DC 12 V ± 10 %	AC/DC 24 V ± 10 %
0.45 W 0.6 VA	0.46 W 0.56 VA
AC 110 V +10 %	**AC 120 V +10 %/60 Hz**
1.2 VA	1.0 VA
	AC 230/240 V + 10 %
	1.2 VA

Contact data Contact material AgCdO

U_A	$I_{max.}$	$P_{max.}$	(1 changeover contact)
AC 400 V	2.0 A	700 VA	cos φ = 1
AC 250 V	6.0 A	1400 VA	
DC 125 V	0.6 A	75 W	ohmic load
DC 50 V	3.0 A	150 W	

U_A	$I_{max.}$	$P_{max.}$	(2 changeover contacts)
AC 400 V	1.0 A	350 VA	cos φ = 1
AC 250 V	3.0 A	700 VA	
DC 125 V	0.25 A	30 W	ohmic load
DC 50 V	1.5 A	75 W	

Making current (16 ms)
- 20 A (1 changeover contact)
- 10 A (2 changeover contacts)

Test voltage
- Coil-contact 4 kV

Mechanical life
- > 20 x 10^6 switching cycles

Electrical life
- > 1 x 10^5 switching cycles/AC 230 V
- 6 A ohmic load (1 changeover contact)
- > 1 x 10^5 switching cycles/AC 230 V
- 3 A ohmic load (2 changeover contacts)

Operating frequency
- 1 800 switching cycles/h

Guidelines
- Directive 2004/108/EC
- Directive 94/9/EC

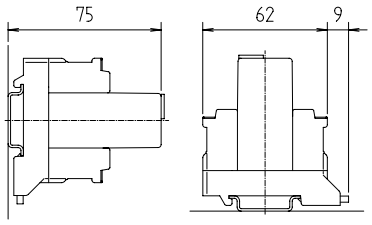
Miniature switching relay

Description

The relay modules of the MODEX series offer most up-to-date switching configurations. A suppressor diode on the coil protects the power circuit from peak voltages. High shock and vibration resistance is just as important as the IP 66 protection of the contacts.

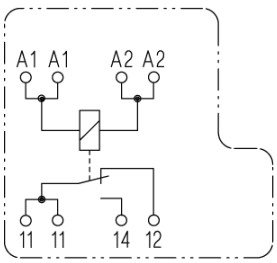
The MODEX relay switches circuits up to 5 A and is used as an isolator between low-current control circuits and high-current switching circuits.

Dimensions/mounting positions



Module width: 30 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TS 35 x 7.5 (15) EN 60715

Labelling
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.250 kg

Electrical data

Coil data
AC/DC 11.2 V to 16 V/0.53 VA/0.37 W
AC/DC 21.5 V to 28 V/0.43 VA/0.33 W
AC/DC 42 V to 60.5 V/0.53 VA/0.4 W
AC/DC 54 V to 72 V/0.41 VA/0.3 W
AC 96 V to 144 V; 50/60 Hz/0.85 VA
AC 176 V to 264 V; 50 Hz/1.5 VA

Contact material
AgCdO

Max. switching voltage
AC 250 V/DC 300 V

Max. switching capacity
(ohmic load)
1 250 VA (50 W)

Test voltage
Coil-contact 4 kV

Mechanical life
min. 3 x 10^6 switching cycles

Electrical life
> 1 x 10^5 switching cycles/
AC 220 V, 5 A ohmic load

Operating frequency
7 200 switching cycles/h

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

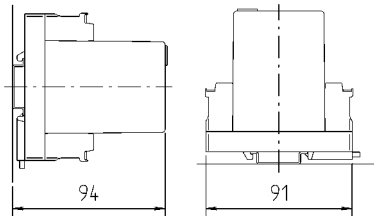
Optocoupler

Description

This optocoupler provides for a safe galvanic isolation between a non-intrinsically safe incoming circuit (transmitter) and the output connected to an intrinsically safe circuit (receiver), which is clearly identified by means of light blue terminals.

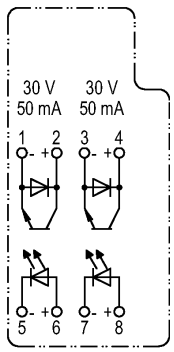
The two channels are also safely galvanically isolated among each other.

Dimensions/mounting positions



Module width: 30 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
Ⓔx II 2 (1) G / I M2
Ex d e [ia Ga] IIC Gb
Ex d e [ia Ma] I Mb
Class I Zone 1 IIC
A/Ex d e [ia] IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
TÜV 01 ATEX 1715
IECEx TUN 11.0029X
CSA 2011-2484303U
INMETRO IEE 12.0200U

Fitting
Type 17-9135-4.../....
Ⓔx II (1) G / II (1) D
[Ex ia Ga] IIC
[Ex ia Da] IIIC

For further data see verification certificates.

Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.250 kg

Electrical data

Total power dissipation
$P_{max.}$ = 0.8 W

No capacities and inductances

Input data

Input voltage
DC 20 to 28 V (non-interchangeable)

Input current
5.5 mA to 9.2 mA

Output data

Voltage
DC 4 V to max. 30 V

Saturation voltage
0.9 V

Current
max. 50 mA (only for connecting to certified intrinsically safe circuits.
Ci and Li negligible).

Transmission data

Switching frequency
max. 5 kHz (with U_A = 10 V)

Switching times measured at

U_E = 20 V_{SS}; U_A = 10 V_{SS}; I_A = 50 mA

Rise time	approx. 15 µs
Drop-out time	approx. 13 µs
Switch-on time	approx. 18 µs
Switch-off time	approx. 19 µs

Galvanic isolation transmitter/receiver
max. 375 V (peak value)

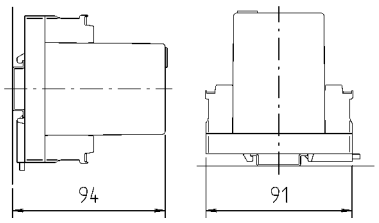
Guidelines
Directive 2004/108/EC
Directive 94/9/EC

Power relay

Description

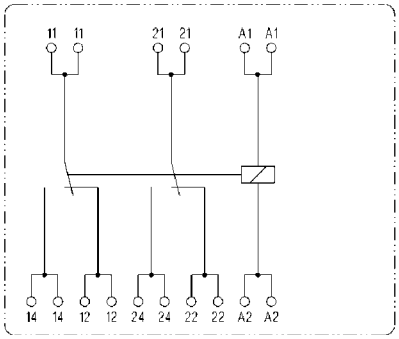
Relay modules in the MODEX system offer modern switch features in explosive areas.
The MODEX power relay is used to switch load-current circuits to 12 A, e. g. heating circuits or smaller motors.

Dimensions/mounting positions



Module width: 75 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Technical data

Enclosure material
High quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
Mounted in sequence on TH
at ≥ 16 mm spacing
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.500 kg

Electrical data

Coil data
DC 24 V ± 10 %
AC 230 V ± 10 %

Nominal power
DC 24 V approx. 1.25 W
AC 230 V approx. 1.9 VA

Contact data
Contact material AgCdO

Max. switching voltage
AC 400 V

Max. switching current (ohmic load)
12 A

Max. switching capacity (ohmic load)
4 560 VA

Test voltage
Coil contact 2.5 kV effective
15/10 ms

Mechanical life
20 x 10^6 switching cycles

Switching frequency
6 000 switching cycles/h without load
1 000 switching cycles/h at nominal load

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

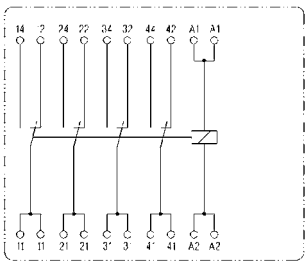
Cradle relay

Description

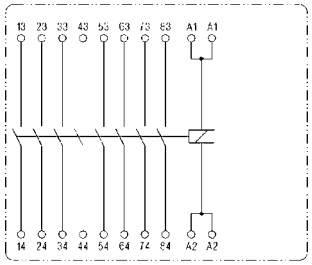
Cradle relay for direct and alternating voltages, neutral, monostable. High-quality cradle relays for different AC and DC voltage ranges are encapsulated flameproof and installed in the MODEX enclosure. Protection class IP 66 guarantees that the contacts are protected against aggressive atmospheres.

Applications:
Switching of measuring and control circuits in industrial plants.

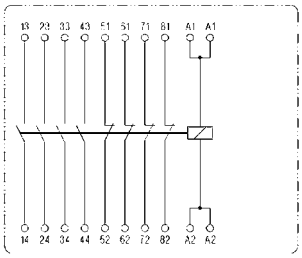
Wiring diagrams/terminal assignments



4 changeovers

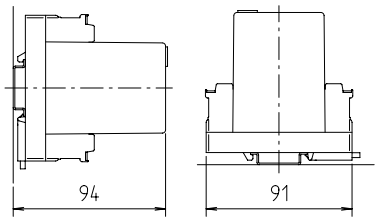


8 NO



4 NO/4 NC

Dimensions/mounting positions



Module width: 75 mm

Note

- For use with inductive loads the relays can be connected with an effective suppressor in order to protect the contacts.

Explosion protection

Ex protection type
II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Technical data

Enclosure material
High-quality thermoplastics

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.500 kg

Electrical data

Operating data (coil circuit)

U_N	I_N (8 contact decks)
DC 15 V	60 mA
DC 24 V	27 mA
DC 48 V	17 mA
AC 110 V	25 mA
AC 120 V/50 Hz	28 mA
AC 120 V/60 Hz	25 mA
AC 220 V	13 mA
AC 230/240 V	13 mA

Contact data
Switching voltage: $U_{A\ max.}$ = AC/DC 125 V
Switching current: $I_{max.}$ = 1 A (per contact)

Switching capacity
$P_{max.}$ = 40 W/50 VA

Contact material
silver, gold-flashed

Contact arrangement
4 changeovers; 8 NO;
4 NO; 4 NC

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

Other data		AC types	DC types
Max. switching frequency	(switching cycles /sec.)	20	50
Mech. service life	(switching cycles)	approx.10^7	approx.10^8
Test voltage:	coil/contact (V~ $_{rms}$)	500 at $U_N \leq 60$ V 2 000 at $U_N > 60$ V	500
	contact/contact (V~ $_{rms}$)	500	500

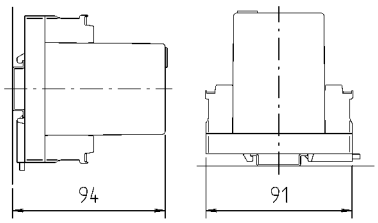
Transformer

Description

The control transformer steps down mains voltage to low voltage. Input and output are electrically isolated.

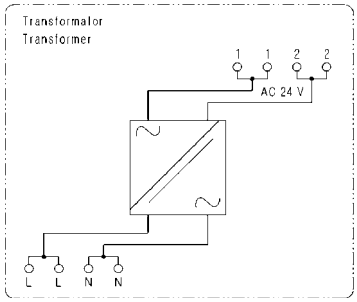
Especially suitable for supplying low power AC devices in zone 1 hazardous areas.

Dimensions/mounting positions



Module width: 75 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
- Ⓔx II 2 G / I M2
- Ex d e IIC Gb
- Ex d e I Mb
- Class I Zone 1 IIC
- A/Ex d e IIC Gb

Certification
- PTB 97 ATEX 1068 U
- IECEx PTB 11.0083U
- CSA 2011-2484303U
- INMETRO IEE 12.0200U

Technical data

Enclosure material
- High-quality thermoplastic

Protection class
- Module IP 66/IEC 60529
- Terminals IP 20/IEC 60529

Terminals
- 2.5 mm², fine stranded

Mounting rail
- TH 35 x 7.5 (15) EN 60715

Terminal designation
- written marking labels

Ambient temperature
- -20 °C to +60 °C
- Temperature class T5

Storage temperature
- -40 °C to +60 °C

Weight
- 0.900 kg

Electrical data

Input voltage
- AC 230 V ± 10 %, 50 Hz

Output voltage
- AC 24 V ± 10 %

Output current
- max. 500 mA

Power
- 12 VA

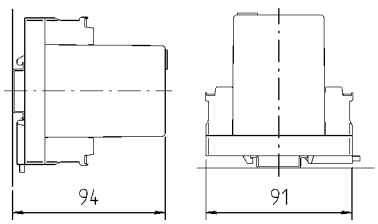
Guidelines
- Directive 2004/108/EC
- Directive 94/9/EC

Converter

Description

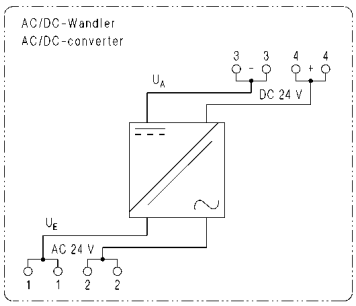
The power supply module is ideal for instrumentation and process control engineering PLCs as well as for Ex de loads with DC connection. The power supply unit has a stabilzed output and offers short-circuit protection.

Dimensions/mounting positions



Module width: 75 mm

Wiring diagramm/terminal assignment



Explosion protection

Ex protection type
Ⓔx II 2 G / I M2
Ex d e IIC Gb
Ex d e I Mb
Class I Zone 1 IIC
A/Ex d e IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
CSA 2011-2484303U
INMETRO IEE 12.0200U

Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminal IP 20/IEC 60529

Mounting rail
TH 35 x 7.5 (15) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +40 °C

Storage temperature
-40 °C to +70 °C

Weight
0.400 kg

Electrical data

Input voltage
AC 24 V + 15 % - 5 %, 50/60 Hz

Output voltage
DC 24 V ± 5 %

Output current
450 mA

Power dissipation
≤ 2.5 W

Residual ripple
≤ 20 mV_{SS}

Power consumption
max. 13 W

Guidelines
Directive 2004/108/EC
in connection with a transformer
Type 07-7311-97S3/H3N0

Directive 94/9/EC

Power supply unit DC 24 V/2 A

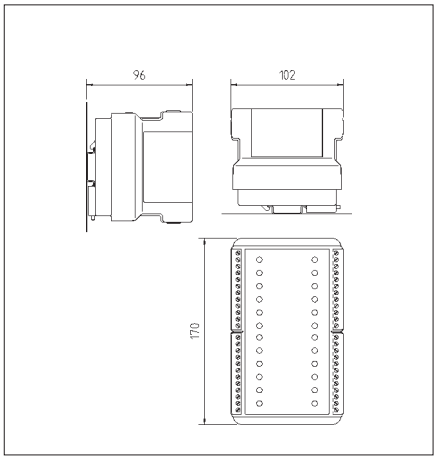
BARTEC

Power supply unit

Dimensions/mounting positions

Features

- Wide input range AC 94 V to 264 V
- High efficiency
- Interference immunity in according with DIN EN 61000-4-2: 2001, DIN EN 61000-4-3: 2008, DIN EN 61000-4-4: 2003, DIN EN 61000-4-6: 2007



Description

This power supply unit is universally applicable and offers a wide input range.
The DC output voltage is stabilized, galvanically isolated and permanently protected against short-circuits.

Explosion protection

Ex protection type
Ⓔx II 2G Ex de IIC
Ⓔx I M2 Ex de I

Certification
PTB 97 ATEX 1066 U

Technical data

Construction
Flameproof, clip-on enclosure for TH 35 rail

Enclosure material
High-quality thermoplastic

Protection class

Module	IP 66
Terminals	IP 20
Terminals with cover	IP 30

Terminals
2.5 mm², fine stranded

Terminal designation
written marking labels

Display
LEDs on front panel

Storage temperature
-25 °C to +60 °C

Ambient temperature
-20 °C to +60 °C

Weight
2.1 kg

Electrical data

Supply voltage
AC 110 to 250 V, 47 to 63 Hz

Input voltage range
AC 94 to 265 V

Nominal input current
0.6 A at AC 230 V/1.1 A at AC 120 V

Power consumption
P = 66 W (max.)

Power dissipation
$P_{V\,tot.}$ = 7.3 W

Galvanic isolation
Input//Output

Display

Operation	LED green
Overload > 3 A resp. short-circuit	LED green flashing

Output data

Output voltage
DC 24 V +/-3 %

Output current
2 A at T_u < +50 °C

Power derating
2.5 %/K > +50 °C

Nominal output power
P_a = 48 W

Residual ripple
< 50 mV at T_u = -10 °C to +60 °C

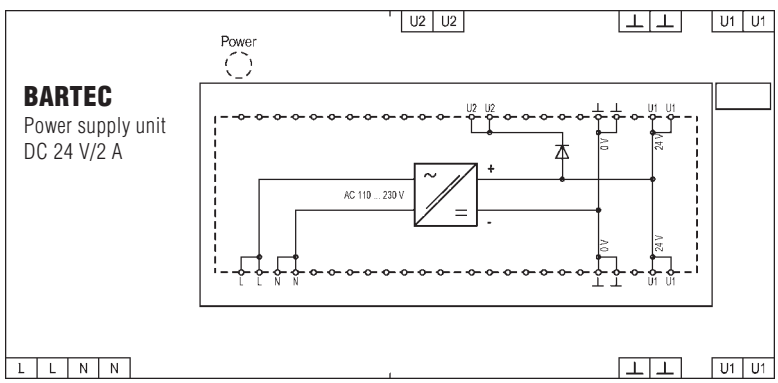
Protection and monitoring
Permanent short-circuit protection
Overload proof

Guidelines/norms/certifications
Directive 2004/108/EC
Directive 94/9/EC

Note

- A clearance of 40 mm must be ensured around the power supply unit.

Wiring diagram/terminal assignment



Technical data subject to change without notice.

Power supply unit AC/DC 110 to 250 V

BARTEC

Power supply unit

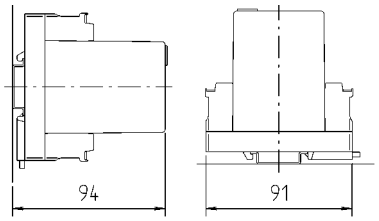
Description

This power supply can be universally used with either AC or DC voltage on the input side.

The output voltage is stabilized and conditionally short-circuit and overload-protected.

An additional output circuit protection is recommended.

Dimensions/mounting positions



Module width: 75 mm

Explosion protection

Ex protection type
- Ⓔx II 2 G / I M2
- Ex d e IIC Gb
- Ex d e I Mb
- Class I Zone 1 IIC
- A/Ex d e IIC Gb

Certification
- PTB 97 ATEX 1068 U
- IECEx PTB 11.0083U
- CSA 2011-2484303U
- INMETRO IEE 12.0200U

Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
max. 2.5 mm², fine stranded

Mounting rail
TH 35 x 15 (7.5) EN 60715

Terminal designation
written marking labels

Ambient temperature
mounted on rail with 8 mm spacing
-20 °C to +40 °C

Storage temperature
-20 °C to +65 °C

Weight
0.600 kg

Electrical data see selection chart

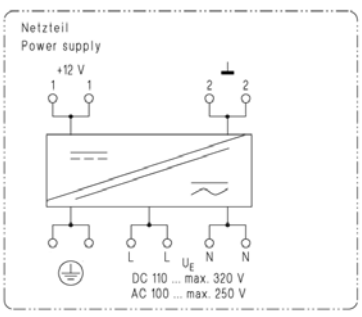
Input voltage
DC 110 V to max. 320 V
AC 100 V to max. 250 V 50/60 Hz

Residual ripple
max. 150 mV_{SS}

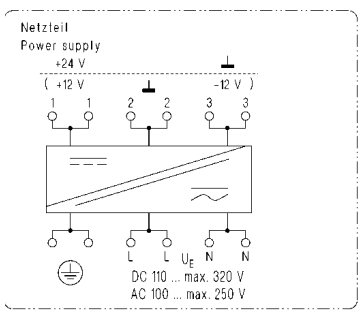
Power dissipation
max. 3 W

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

Wiring diagram 1/terminal assignment 1



Wiring diagram 2/terminal assignment 2



Technical data subject to change without notice.

Isolator amplifier

Features

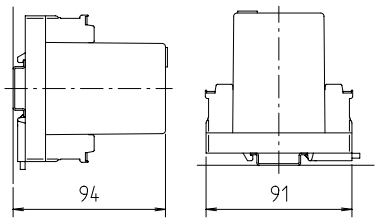
- 4-channel
- For NAMUR sensors EN 60947-5-6
- For mechanical contacts
- Galvanic isolation EN 60079-11
- LED displays
- Ex ia/ib
- Active transistor outputs
- Additional group fault signal output
- Standard or inverted

Description

4 NAMUR sensors, optocouplers, mechanical contacts or other operating elements can be connected to the isolator amplifier in an intrinsically safe way.

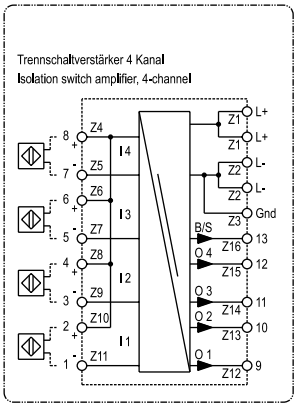
The intrinsically safe inputs are safely galvanically isolated from the supply voltage and the outputs in accordance with EN 60079-11. Open- and short-circuits of the sensor lines are detected and signaled via an additional transistor output as group fault signal. LEDs display the output states.

Dimensions/mounting positions



Module width: 75 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type

Ⓔx II 2 (1) G / I M2
Ex d e [ia Ga] IIC Gb
Ex d e [ia Ma] I Mb
Class I Zone 1 IIC
A/Ex d e [ia] IIC Gb

Certification

PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
TÜV 97 ATEX 1211 X
IECEx TUN 11.0027X
CSA 2011-2484303U
INMETRO IEE 12.0200U

Fitting

Type 17-5521-4.../....
Ⓔx II (1) G / II (1) D
[Ex ia Ga] IIC
[Ex ia Da] IIIC
U_m = 253 V
I_0 = 30 mA
U_0 = 11.55 V
P_0 = 86.4 mW

For further data see verification certificates.

Technical data

Construction
Clip-on enclosure for TH 35 rail

Enclosure material
High-quality thermoplastics

Protection class

Module	IP 66/IEC 60529
Terminals	IP 20/IEC 60529
Terminals with cover	IP 30/IEC 60529

Terminals
max. 2.5 mm², fine stranded

Mounting rail
TH 35 x 15 (7.5) EN 60715

Terminal designation
written marking labels

Ambient temperature
-20 °C to +50 °C

Storage temperature
-40 °C to +60 °C

Weight
0.640 kg

Electrical data

Supply voltage
DC 20 V to DC 30 V

Power consumption
max. 580 mA

Power dissipation
P_V = max. 2.4 W

Galvanic isolation
Inputs//power supply, outputs

Input data

Voltage
U_a = 8.2 V

Switching thresholds

open circuit	< 0.26 mA
damped	< 1.2 mA
undamped	> 2.1 mA
short circuit	> 7.4 mA

Output data

Transistor outputs

output current	channel max. 100 mA
signal level	1 - signal = Ub - 1 V 0 - signal = 0.9 V
switching frequency	1.5 kHz

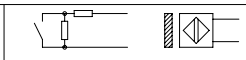
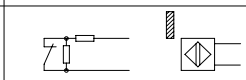
Displays
LED's for all outputs

Line monitoring
always active, separate fault signal output

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

Notes

- Observe the terminal assignment
- Transistor output is not short-circuit proof
- For open/short-circuit monitoring with contact call-up, use 1 kΩ/10 kΩ resistive coupling link; Type 17-9282-0002

Input		B/S	Out	B/S	Out	B/S	Out
damped		0	1	0	0	1	1
un-damped		0	0	0	1	1	0
open circuit		1	1	1	0	0	1
short circuit		1	0	1	1	0	0

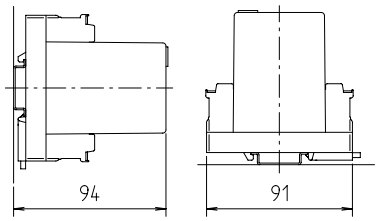
Measuring transducer

Description

The MODEX series includes a temperature measuring transducer mounted on-site in the same way as a modular terminal. The module transforms the signal received from the Pt100 temperature sensor into a proportional, load-in-dependent 4 to 20 mA output signal. The sensor circuit is intrinsically safe according to Ex protection type Ex ia.

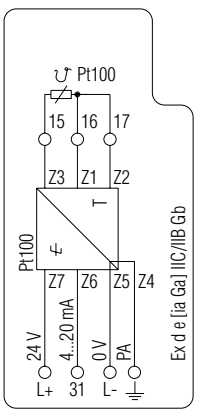
An output current exceeding the 4 to 20 mA range signals a senor fault (open/short circuit). The Pt100 temperature sensor can be operate in 2- or 3-wire circuits within Zone 0 or 1.

Dimensions/mounting positions



Module width: 30 mm

Wiring diagram/terminal assignment



Features

- For Pt100
- Analog output 4 to 20 mA
- Fault detector
- Ex ia/ib
- Two-, three-wire senors
- EMV according to DIN EN 61000-6-3: 2005; DIN EN 61000-6-4: 2002; DIN EN 61000-6-1: 2002; DIN EN 61000-6-2: 2006

Explosion protection

Ex protection type
Ⓔx II 2 (1) G / I M2
Ex d e [ia Ga] IIC/IIB Gb
Ex d e [ia Ma] I Mb
Class I Zone 1 IIC
A/Ex d e [ia] IIC Gb

Certification
PTB 97 ATEX 1068 U
IECEx PTB 11.0083U
TÜV 97 ATEX 1204 X
IECEx TUN 11.0030X
CSA 2011-2484303U

Fitting
Pt100 measuring transducer
Type 17-6582-1.../....
Ⓔx II (1) G [Ex ia Ga] IIC/IIB
II (1) D [Ex ia Da] IIIC/IIIB
For further data see verification certificates.

Safety data
U_m = 253 V
I_0 = 63.1 mA
U_0 = 21 V
P = 331 mW

Ex ia	IIC	IIB
L_0 (mH) ≤	9	35
C_0 (nF) ≤	170	1250

Technical data

Enclosure material
High-quality thermoplastic

Protection class
Module IP 66/IEC 60529
Terminals IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 15 (7.5) EN 60715

Terminal designation
written marking labels

Stockage temperature
-40 °C to +60 °C

Ambient temperature
-25 °C to +60 °C

Weight
0.250 kg

Electrical data

Operating voltage
DC 24 V + 10 %, - 15 %

Power consumption
0.6 W

Sensor
Pt100 temperature sensor
2- or 3-wire circuits

Output
Load independent current: 4 to 20 mA
Max. load: ≤ 400 Ω

Temperature range
-50 °C to +100 °C
0 °C to +200 °C
0 °C to +400 °C

Accuracy
± 1 % of upper value

Function test
Connect 100 Ω resistance to terminal 15-16 and bridge terminals 16 and 17. Apply current between L- and terminal 31.

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

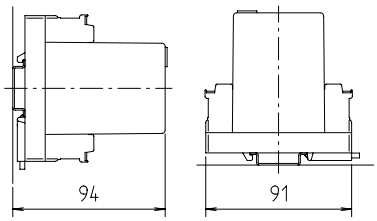
Note: Observe terminal assignment.

Two-position controller

Description

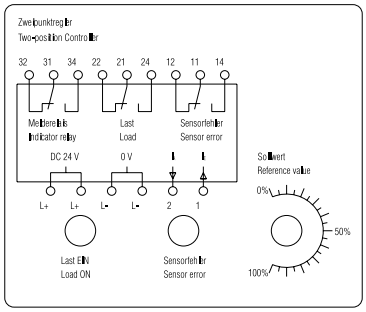
MODEX controller module for more switching configurations in the Ex area. The standard two-position controller monitors limit values (limit monitor). The analog input signal is compared with the potentiometer setpoint.
A floating relay changeover contact is provided as output. The two-point controller is available with overcurrent/undercurrent detection, current output and signalling relay. The current output allows you to loop in (input current balancing) further devices up to a total load of 400 Ω into power circuit (4 to 20 mA).

Dimensions/mounting positions



Module width: 75 mm

Wiring diagram/terminal assignment



Explosion protection

Ex protection type
- ⟨Ex⟩ II 2 G / I M2
- Ex d e IIC Gb
- Ex d e I Mb
- Class I Zone 1 IIC
- A/Ex d e IIC Gb

Certification
- PTB 97 ATEX 1068 U
- IECEx PTB 11.0083U
- CSA 2011-2484303U
- INMETRO IEE 12.0200U

Technical data

Enclosure material
High-quality thermoplastic

Protection class

Module	IP 66/IEC 60529
Terminals	IP 20/IEC 60529

Terminals
2.5 mm², fine stranded

Mounting rail
TH 35 x 15 (7.5) EN 60715

Terminal designation
written marking labels

Ambient temperature
mounted on rail
with spacing ≥ 16 mm:
-20 °C to +40 °C

Storage temperature
-40 °C to +60 °C

Weight
0.500 kg

Electrical data

Supply voltage
DC 24 V + 15 %

Nominal power
max. 2.5 W

Input signal
0 to 35 mA
≤ 3.5 mA - undercurrent
≥ 25 mA - overcurrent
4 to 20 mA ≙ 0 to 100 %
Load: 200 Ω

Hysteresis
2 mA

Repeat accuracy
± 0.5 % of under range limit (20 mA)

Ambient temperature
Influence: ≤ 0.008 %/K

Outputs
Relay output:
Load: AC 250 V, 3 A, 750 VA

Optional
Signal relay: AC 250 V, 1 A, 250 VA
Sensor fault relay: AC 250 V, 1 A, 250 VA
Current output: 4 to 20 mA
Load: 400 Ω

Guidelines
Directive 2004/108/EC
Directive 94/9/EC

03-0330-0105/D-10/2012-BAT-124646

1 kΩ/10 kΩ resistive coupling element

BARTEC

Resistive coupling element

Description

The 1 kΩ/10 kΩ resistive coupling element is used to monitor open and short circuits in isolator amplifier circuits controlled by mechanical contacts.

The coupling element is installed directly to the control contact or inside its terminal box.

Function

Numerous isolator amplifiers can monitor the connected sensor line for open or short circuit conditions thanks to the employment of electronic proximity switches to which current can be applied in both damped and undamped status (DIN EN 60947-5-6). Current values outside the specified range are identified as open or short circuits.

If simple mechanical contacts are used, it is not possible to identify a short circuit. Neither can be distinguished between open circuit and open contact.

This problem can be solved by installing a resistor combination at the end of the sensor line immediately before the switch.

This combination provides a closed-circuit current even when the contacts is open.

At closed contact it restricts the current to a value which lies clearly below the response threhold for short circuit.

Four states can be detected:

- open circuit (broken cable)
- open switch
- closed switch
- short circuit

Technical data

Resistance
1 kΩ/0.6 W
10 kΩ/0.6 W

Terminals
1.5 mm²

Connection cable
0.75 mm²

Supply voltage
max. DC 20 V

Ambient temperature
-40 °C to +60 °C

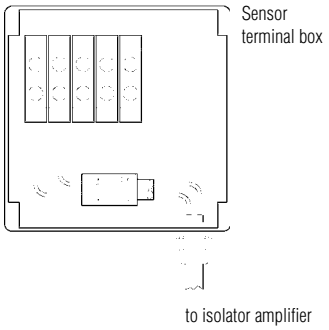
Storage temperature
-40 °C to +70 °C

The resistive coupling element can be used with all isolator amplifiers featuring open and short circuit monitoring, e. g.

BARTEC, CEAG, Hartmann & Braun, Pepperl + Fuchs

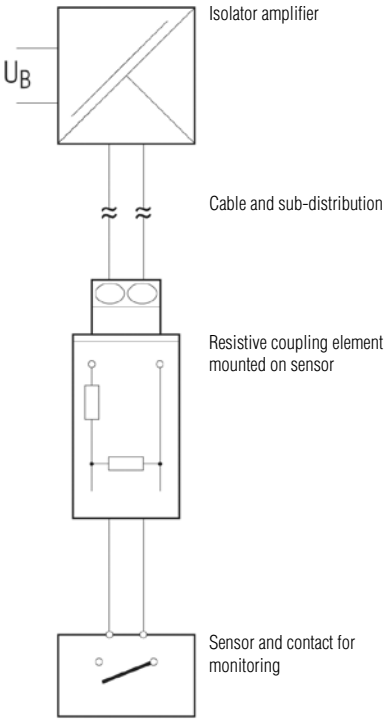
Installation

for example, in the sensor terminal box

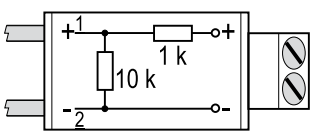


Application

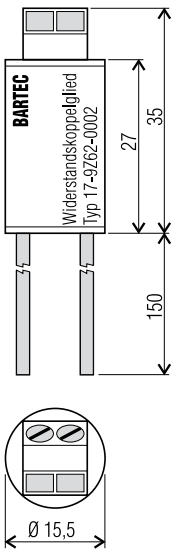
Open/short circuit monitoring for isolator amplifiers with contact control.



Wiring diagram



Dimensions



Technical data subject to change without notice.

1 kΩ/10 kΩ resistive coupling element

Description

The 1 kΩ/10 kΩ resistive coupling element is used to monitor open and short circuits in isolator amplifier circuits controlled by mechanical contacts. The coupling element is installed directly to the control contact or inside its terminal box.

Function

Numerous isolator amplifiers can monitor the connected sensor line for open or short circuit conditions thanks to the employment of electronic proximity switches to which current can be applied in both damped and undamped status DIN EN 60947-5-6. Current values outside the specified range are identified as open or short circuits.

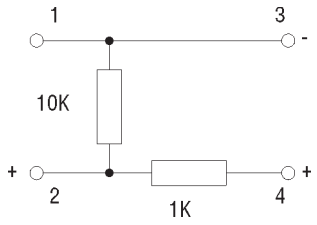
If simple mechanical contacts are used, it is not possible to identify a short circuit. Neither can be distinguished between open circuit and open contact. This problem can be solved by installing a resistor combination at the end of the sensor line immediately before the switch.

This combination provides a closed-circuit current even when the contacts is open. At closed contact it restricts the current to a value which lies clearly below the response threhold for short circuit.

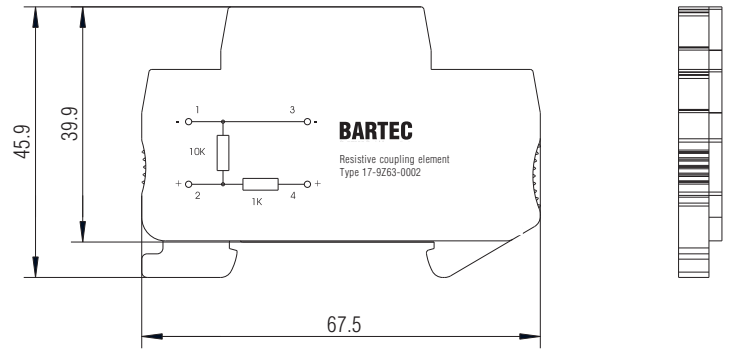
Four states can be detected:

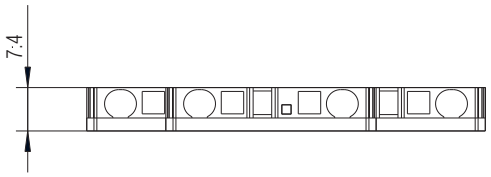
- open circuit (broken cable)
- open switch
- closed switch
- short circuit

Wiring diagram/terminal assigment



Dimensions





Technical data

Resistance
1 kΩ/0.6 W
10 kΩ/0.6 W

Terminals
2.5 mm²

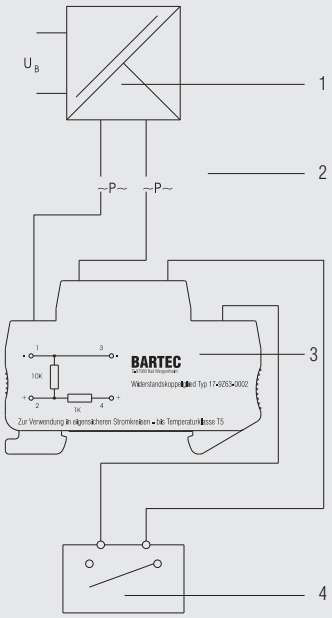
Mounting rail
TH 35

Supply voltage
max. DC 20 V

Ambient temperature
-40 °C to +60 °C

To the use in intrinsically safe electric circuits to temperature class T5.

Application
Open/short circuit monitoring for isolator amplifiers with contact control.



1 Isolator amplifier
2 Cable and sub-distribution
3 Resistive coupling element mounted on sensor
4 Sensor and contact for monitoring

The resistive coupling element can be used with all isolator amplifiers featuring open and short circuit monitoring.

Technical data subject to change without notice!

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