ISOMETER® iso685…CN

AC/DC

BENDER
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绝缘监视仪

这本快速入门指南适用于下列型号：iso685-D-CN, W-D-CN, -S-CN, W-S-CN, D-B-CN, S-B-CN, W-S-B-CN, -D-P-CN, W-D-P-CN, -S-P-CN, W-S-P-CN。

设备带有 -S 后缀的没有显示，因此需要一个外部显示设备。应用操作类似于其它自带显示功能的 iso685 产品。

这本快速入门手册不能替代操作手册。你可以在我们的主页 www.bender.de/manuals 上找到操作手册。

Insulation monitoring device

This quick-start guide applies to the following devices: iso685-D-CN, W-D-CN, -S-CN, W-S-CN, D-B-CN, S-B-CN, W-S-B-CN, -D-P-CN, W-D-P-CN, -S-P-CN, W-S-P-CN.

Devices with the suffix -S do not have a display and therefore need an external display. The operation is similar to the corresponding iso685 variants with display.

This quick-start guide does not replace the operating manual, which can be found on our homepage under www.bender.de/manuals.

iso685x-D–B

iso685x–S–B

使用目的

ISOMETER® 监视不接地交直流主回路（IT 系统）的绝缘电阻，主回路电压 AC，AC/DC 0…690 V 或 DC 0…1000 V。

出现在 AC/DC 系统中的直流组件不会影响操作特性。独立的电源电压允许断开被监视系统。最大允许的系统泄露电容是 1000 µF，这取决于应用特定的配置。

Intended use

The ISOMETER® monitors the insulation resistance of unearthed AC/DC main circuits (IT systems) with mains voltages of AC, AC/DC 0…690 V or DC 0…1000 V.

DC components existing in AC/DC systems do not influence the operating characteristics. A separate supply voltage allows de-energised systems to be monitored. The maximum permissible system leakage capacitance is 1000 µF and is dependent on the application-specific profile.

安全介绍

⚠️ **危险**

电击危险！
端子携带高电压并且直接接触端子可能会导致触电。如果设备的端子直接连接到通电的 IT 系统，端子 E 和 KE 不必从 PE 线断开。

Safety instructions

⚠️ **DANGER**

High risk of electric shock!
The terminals carry high voltage and direct contact with these terminals will likely result in electrocution. If the terminals L1/+, L2, L3/- of the device are connected to a live IT system, the terminals E and KE must not be disconnected from the protective conductor (PE).

⚠️ 警告	**由于安装不正确而导致损坏的风险！** 连接多个绝缘监视仪可能会导致安装损坏。此外，如果连接超过一台绝缘监视仪，设备将不起作用，并不会发出绝缘故障警报。

⚠️ CAUTION	**Damage to property due to incorrect installation!** There should only be one insulation monitoring device per conductively connected installation. Damage to the installation may result if several insulation monitoring devices are connected. In addition, the device will not function and will not report an insulation fault if more than one insulation monitoring device is connected.

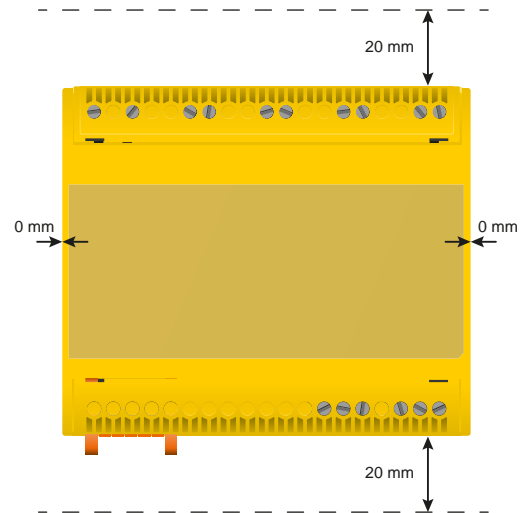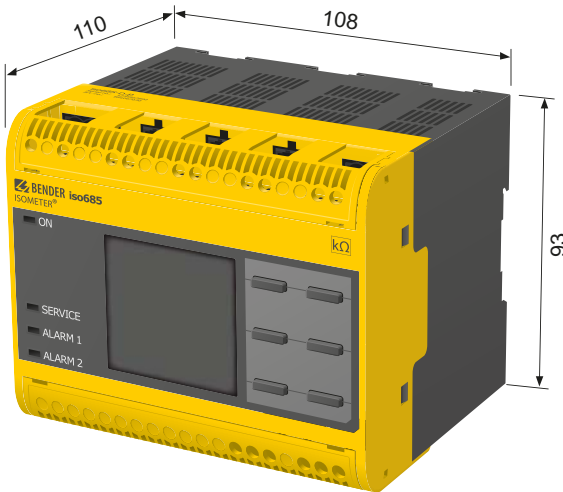| ⚠️ 警告	**与 IT 系统断开！** 在装置进行绝缘或者电压测试之前，绝缘监视仪必须与 IT 系统断开，并且保证测试持续时间。否则，设备可能会损坏。

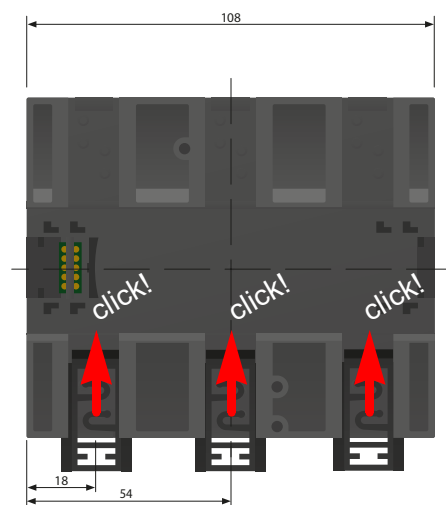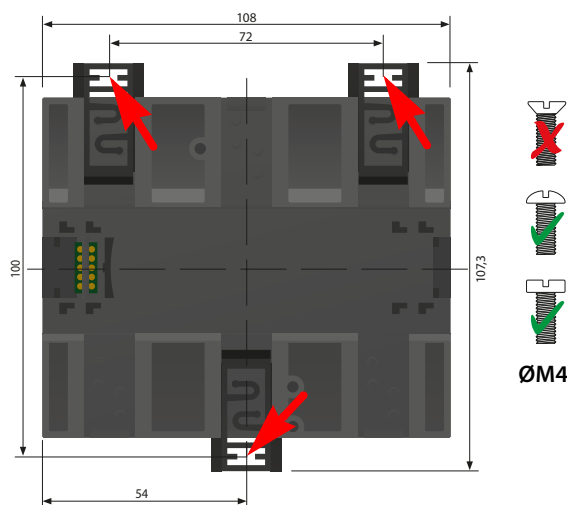| ⚠️ CAUTION	**Disconnect from the IT system!** The insulation monitoring device must be disconnected from the IT system before insulation or voltage tests at the installation and must remain so for the duration of the test. Otherwise the device may be damaged.

安装   Installation

螺丝安装 /Screw mounting

ØM4

导轨安装 /DIN rail mounting

click! click! click!

连接

根据设备的接线图对设备进行布线，请参考技术参数。连接装置后，安装上、下端子盖板！

Connection

Wire up the device according to the wiring diagram taking account of the technical data. After connecting the device, install the enclosed upper and lower terminal cover!

⚠️ 危险	***电击危险！*** *额定电压上升至 1000V 的电压可能瞬间出现在端子L1/+…L3/–上。直接接触可能会引起触电。在使用设备之前，确保已经正确安装端子盖板。*

| ⚠️ DANGER	***High risk of electric shock!*** *A nominal voltage of up to 1300 V may be present at the terminals L1/+…L3/–. Direct contact with these will likely result in electrocution. Make sure the terminal covers are properly mounted and clicked in before putting the device into operation.*

⚠️ 提醒	***由于短路造成的伤害、火灾和设备损坏！*** *当耦合端子 L1/+, L2, L3/– 连接到≤ 690 V 的被监视 IT 系统时，设备防止短路就必须符合标准 IEC 60364-4-43:2008，如果采用这样的接线方式，可以把短路风险降到最低。推荐采用短路检验和接地故障检验的接线方式。*

⚠️ WARNING	***Injury, fire and damage to property due to a short circuit!*** *When coupling the terminals L1/+, L2, L3/- to the IT system ≤690 V to be monitored, devices for protection against a short-circuit can be omitted according to IEC 60364-4-43:2008 or DIN VDE 0100430 (German version) if the wiring is carried out in such a way as to reduce the risk of a short-circuit to a minimum. The use of short-circuit proof and earth-fault proof wiring is recommended.*

Anschlussplan

Wiring diagram
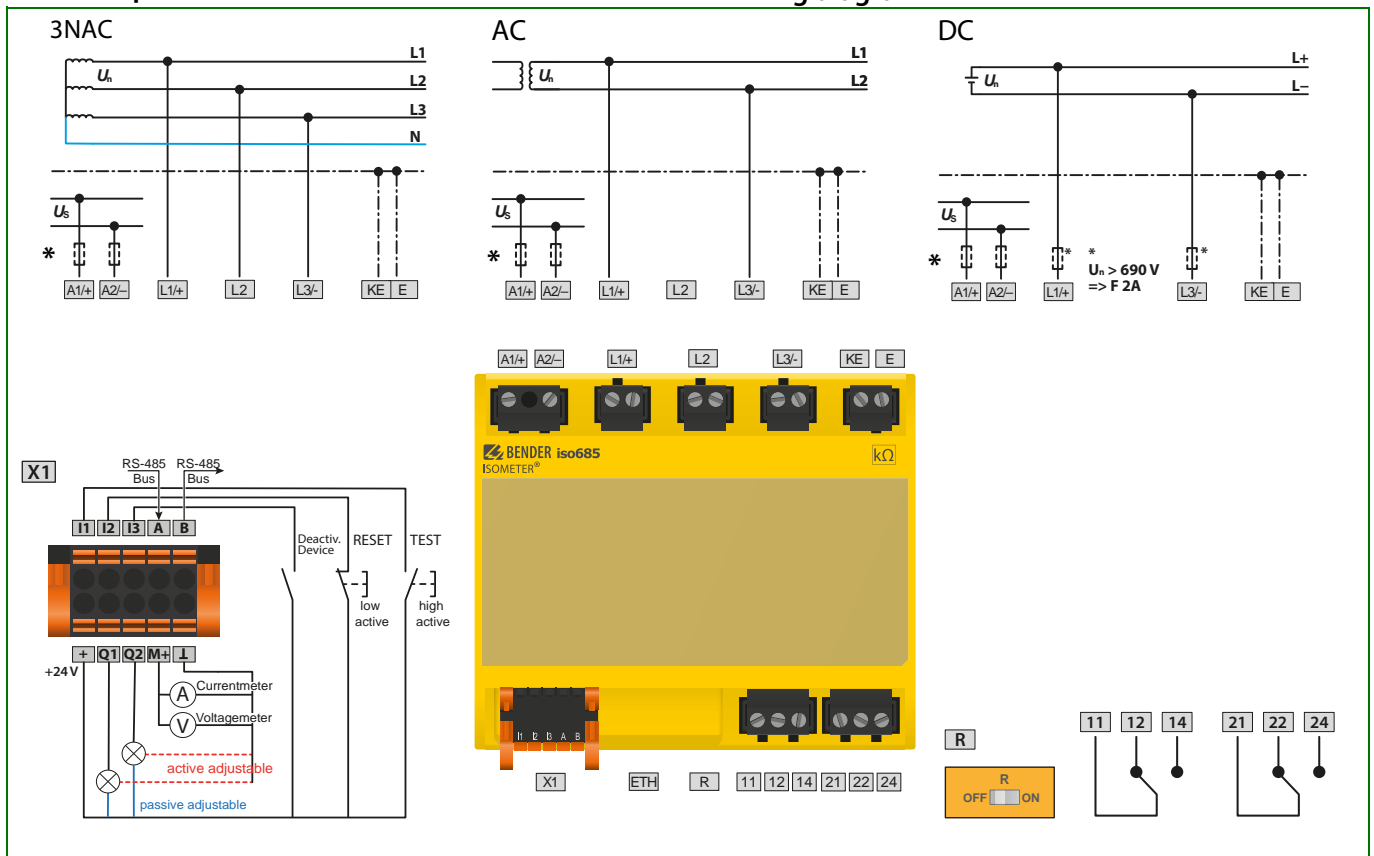
ℹ️	***** 应用线路保护！*** *符合标准 DIN VDE 0100-430，线路保护将用于电源电压。*

ℹ️	*****Provide line protection!*** *According to DIN VDE 0100-430, a line protection shall be provided for the supply voltage.*

连接到端子图

端子	连接
A1/+ A2/-	电源 U_s = 24…240V（50…400 Hz）
L1/+ **L2** **L3/-**	与要监视的系统的连接 AC，0…690 V；3AC，0…690 V； DC，0…1000 V
KE E	接地
I1…I3 (X1)	可配置的数字输入（例如：测试、重置）。
A, B (X1)	串行接口 RS-485， 通过 DIP 开关 R（OFF，ON）操作。
+ (X1)	输入和输出 I，Q 和 M 的电源电压。 电气过负载保护。在短路和瞬变（可重置）的情况下自动关闭。 **不要把设备同时通过 X1 、A1/+、 A2/- 连接到不同电源电压。**
Q1, Q2 (X1)	可配置数字输入
M+ (X1)	可配置的模拟输出（例如：测量仪器）
⏚ (X1)	参考的电位接地
RJ45 (ETH)	以太网连接 webserver, modbus, IP
R	可调终端电阻器
11 12 14	继电器 1
21 22 24	继电器 2

Legend to terminal diagram

Terminal	Connections
A1/+ A2/-	Power supply, U_s = 24…240V (50…400 Hz)
L1/+ **L2** **L3/-**	Connections to the system to be monitored AC, 0…690 V; 3AC, 0…690 V; DC, 0…1000 V
KE E	Connection to ground
I1…I3 (X1)	Configurable digital inputs (e.g. Test, Reset,…)
A, B (X1)	Serial interface RS-485 (BS bus) termination by means of a DIP switch **R**
+ (X1)	Supply voltage of the inputs and outputs I, Q and M. Electrical overload protection. Automatic shutdown in the event of a short circuit and transient (resettable). **If the supply is via an external 24 V source, then A1/+, A2/- must not be connected.**
Q1, Q2 (X1)	Configurable digital output
M+ (X1)	Configurable analogue output (e.g. measuring instrument)
⏚ (X1)	Reference potential ground
RJ45 (ETH)	Ethernet connection, webserver, modbus, IP
R	Termination for the BS bus
11 12 14	Relay1
21 22 24	Relay 2

启动

ⓘ *该配置文件"电源电路"适用于大部分 IT 系统．更加详细的配置，请参考操作手册。*

一般调试流程

ⓘ *直到启动过程完成后，继电器断电。*

1. 检查 ISOMETER® 是否正确的连接到被监视系统上。
2. 绝缘监视仪 ISOMETER® 连接电源电压。
3. 连接主电压。
4. 当 ISOMETER® 在闭合主电压后进行首次操作，会有启动向导指导您如何一步步的进行启动。关于重启，可以通过设备菜单手动打开启动向导。执行启动向导并且完成所要求的设置。

5. 设备在 4 个步骤内完成自检。当然，在这个测试过程中不会检查报警继电器。完成自检后，测量的绝缘阻值会显示在液晶屏上。如果值超过液晶屏底部显示的响应值，会显示"OK"。如果在自检过程中有故障，在液晶屏上会显示故障信息。

使用绝缘故障来检查这项功能。检查被监视系统的 ISOMETER® ，例如使用合适的对地电阻。

Commissioning of the device

ⓘ *The profile "power circuits" is suitable for most IT systems. For a description of the profiles refer to the manual.*

General commissioning process

ⓘ *The relays are de-energised until the process of commissioning is finished.*

1. Check that the ISOMETER® is properly connected to the system to be monitored.
2. Connect the supply voltage to the ISOMETER®.
3. Connect the mains voltage.
4. When the ISOMETER® is operated for the first time after switching on the mains voltage, a commissioning wizard appears on the display that guides you through the commissioning process step by step. For recommissioning, the commissioning wizard can be opened manually via the device menu.
   Execute the commissioning wizard and carry out the required settings.
5. The device carries out a self test in four steps. However, the alarm relays are not checked during this test. After completion of the test, the measured insulation resistance is shown on the display. If the value exceeds the response values indicated in the lowest line of the display, the message "OK" will additionally be displayed. If a fault is detected during the self test, a fault message will appear on the display.

Check the function using a genuine insulation fault. Check the ISOMETER® in the system being monitored, e.g. using a suitable resistance against earth.
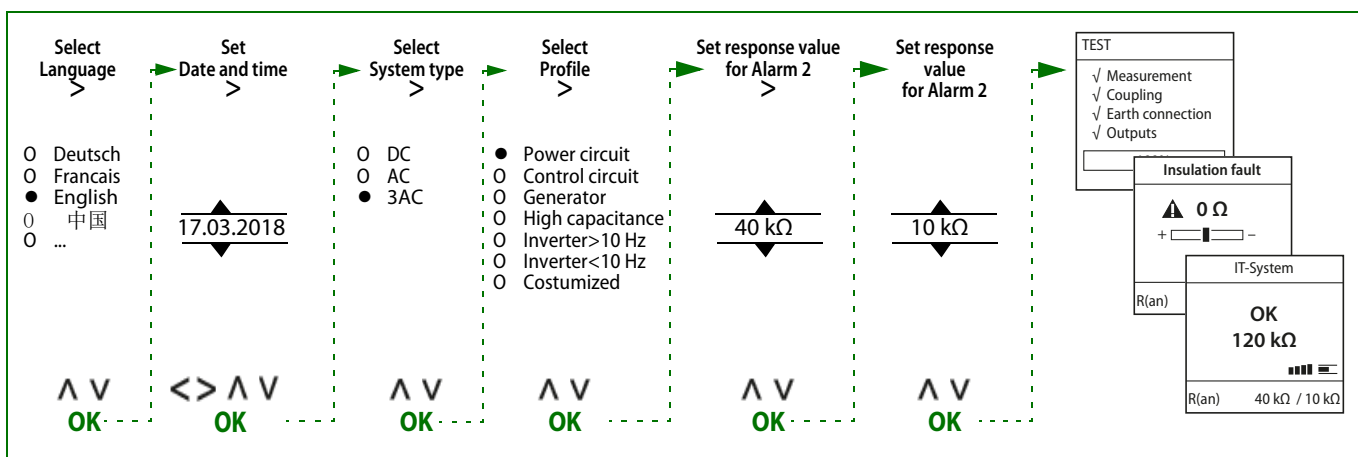
启动带绝缘监视仪的 ISOMETER®s iso685…-P-CN (EDS)

6. 把 ISOMETER® 置入之前描述的操作中。

7. 把 EDS 置入其文件描述的操作中。
   为 ISOMETER® 和每个 EDS 设置不同的总线地址。

8. 停用所有 EDS 的测量通道，保证没有电流互感器连接。

9. 根据向导，在菜单和参数设置中使用下面所示的按钮。

MENU ESC OK	启动菜单 1x 退出操作步骤，返回 >1x 停止启动向导 确认回车
∧ ∨	UP 按钮：在菜单中向上移动，增加值。 DOWN 按钮：在菜单中向下移动，减少值。
< >	向左箭头按钮：返回上一级菜单，选择一个部分。 向右箭头按钮：往下一级菜单，选择一个部分。

报警和它的影响
报警的原因
- 绝缘故障
  绝缘电阻低于响应值时，LED 灯 ALARM1 和 ALARM2 闪烁。
- 设备故障 LED SERVICE 闪烁。
- 激活绝缘故障定位
  LED PGH ON 在故障电流通道闪烁。

设备信号报警或设备故障
- 显示指示的错误以及应用的测量值。

- 在发生 "ALARM 1" 或 "ALARM 2" 的情况下，相关 LED 灯闪烁。
- 如果出现报警，会间隔发出报警哔哔声。
- 报警触发继电器开启。
- 报警开启数字输出。

重置报警信息（重置）
要求：不再存在报警的原因。绝缘电阻必须至少高于响应值 25 %。
选择："RESET" > "RESET" > "OK".

Commissioning of the ISOMETER®s iso685…-P-CN with an insulation monitoring device (EDS)

6. Put the ISOMETER® into operation as described before.

7. Put the EDS into operation as described in the respective documentation.

8. Set different bus addresses for the ISOMETER® and each EDS.

9. Deactivate all measuring channels of the EDS to which no transformer is connected.

To navigate within the menu and for parameter setting use the buttons illustrated below.

MENU ESC OK	Start the menu 1x Escape from the operating step, back >1x Stop commissioning wizard Confirm entry
∧ ∨	UP button: to move up , increase value. DOWN button: to move down, decrease value
< >	Left arrow button: back in the menu, select section. Right arrow button: next menu, select section

Alarm and its effect
Cause of the alarm
- Insulation fault
  The insulation resistance is below both response values LEDs ALARM 1 and ALARM 2 flash.
- Device error   LED SERVICE flashes.
- Active insulation fault location
  LED PGH ON blinks accordingg to the loc. current.

Device signals alarm or device error
- Display indicates error and, where applicable, the measured value.
- In the event of "ALARM 1" or "ALARM 2", the associated LEDs flash.
- A warning sound beeps at intervals, if assigned.
- Assigned alarm relays will switch.
- Assigned digital outputs will switch.

Reset alarm messages (Reset)
Requirement: The cause of the alarm is no longer present. The insulation resistance must be at least 25 % higher than the response value.
Select: "RESET" > "RESET" > "OK".

快速操作手册适用于： / This quick-start guide is valid for:

型号 / Type	iso685-D-CN	iso685W-D-CN	iso685-S-CN	iso685W-S-CN	iso685-D-B-CN	iso685W-D-B-CN
订货号 /Art. No.	B91067011CN	B91067011WCN	B91067111CN	B91067111WCN	B91067021CN	B91067021WCN
显示 / Display	X	X	-	-	X	X
手册 / Document	D00022	D00022	D00022	D00022	D00177	D00177

型号 / Type	iso685-S-B-CN	iso685W-S-B-CN	iso685-D-P-CN	iso685W-D-P-CN	iso685-S-P-CN	iso685W-S-P-CN
订货号 /Art. No.	B91067121CN	B91067121WCN	B91067031CN	B91067031WCN	B91067131CN	B91067131WCN
显示 / Display	-	-	X	X	-	-
手册 / Document	D00177	D00177	D00170	D00170	D00170	D00170

技术数据

( )* = 出厂设置

绝缘协调性 (IEC 60664-1/IEC 60664-3)
额定电压 .... 1000 V
过电压分类 (OVC) III
额定脉冲电压 (IEC 60664-1) .... 8 kV
额定绝缘电压 (IEC 60664-1) .... 1000 V
污染等级 (U_n < 690 V) 3
污染等级 (U_n < 1000 V) 2
保护隔离介于 (≤ 2000 m NN) 和 ....(L1/+,L2,L3/-) 之间 –
.... (A1,A2) – (11,12,14) – (21,22,24) – (E, KE), (X1, ETH, X3, X4)
电压测试、常规测试 (IEC 61010-1) .... AC 2.2 kV

电源电压
电源通过 A1/+, A2/-:
电源电压范围 U_s .... AC/DC 24…240 V
U_s 的频率范围 .... DC, 50…400 Hz
功耗，典型地 50 Hz (400 Hz) .... ≤12 W/21 VA (≤12 W/45 VA)
电源通过 X1:
电源电压 Us .... DC 24 V

被监视的 IT 系统
标称系统电压范围 U_n .... AC 0…690 V, DC 0…1000 V
.... AC/DC 0…600 V（用于 UL 应用）
U_n 的公差 .... AC/DC +15 %
U_n 的频率范围 .... DC, 1…460 Hz

响应值
响应值 R_{an1} (Alarm 1) .... 1 kΩ…10 MΩ (40 kΩ)*
响应值 R_{an2} (Alarm 2) .... 1 kΩ…10 MΩ (10 kΩ)*
操作的不确定性（符合 IEC 61557-8）..相关的配置，±15 %, min. ±1 kΩ

测量回路
测量电压 U_m .... 相关的配置，±10 V, ±50 V
测量电流 I_m .... ≤ 403 µA
内部电阻 R_i, Z_i .... ≥ 124 kΩ
允许外部直流电压 U_{fg} .... ≤ 1200 V
允许系统泄露电容 C_e .... 取决于相关配置, 0…1000 µF

接口
现场总线：接口 / 协议 .... web server/Modbus TCP/BCOM

开关元件
接触器数据符合 IEC 60947-5-1
适用类别 AC-13AC-14DC-12DC-12DC-12
额定操作电压 .... 230 V230 V 24 V 110 V 220 V
额定操作电流 .... 5 A3A 1 A 0,2 A 0,1 A
额定绝缘电压 ≤2000 m NN .... 250 V
额定绝缘电压 ≤3000 m NN .... 160 V
最小接触率 .... 1 mA 在 AC/DC ≥10 V

其他
EMC .... IEC 61326-2-4 [1]
保护等级，内置组件 (DIN EN 60529) IP40
保护等级，端子 (DIN EN 60529) IP20

选项 "W"
带有 "W" 后缀的产品
额定操作电流 开关元件 .... 最大 3 A (UL 应用)

[1] 这是一个 A 类产品。 在德国，这种产品可能会引起无线电干扰。在这种情况下，用户可能需要采取纠正措施。

ISOMETER® 设计符合如下标准：
DIN EN 61557-8 , DIN EN 61557-9 (iso685…-P-CN).

Technical data

( )* = factory setting

Insulation co-ordination (IEC 60664-1/IEC 60664-3)
Rated voltage .... 1000 V
Overvoltage category (OVC) III
Rated impulse voltage (IEC 60664-1) .... 8 kV
Rated insulation voltage (IEC 60664-1) .... 1000 V
Pollution degree (U_n < 690 V) 3
Pollution degree (U_n < 1000 V) 2
Protective separation (≤ 2000 m NN) between .... (L1/+,L2,L3/-) –
.... (A1,A2) – (11,12,14) – (21,22,24) – (E, KE), (X1, ETH, X3, X4)
Voltage test, routine test (IEC 61010-1) .... AC 2.2 kV

Supply voltage
Supply via A1/+,A2/-:
Supply voltage range U_s .... AC/DC 24…240 V
Frequency range of U_s .... DC, 50…400 Hz
Power consumption typically 50 Hz (400 Hz) .... ≤12 W/21 VA (≤12 W/45 VA)
Supply via X1:
Supply voltage Us .... DC 24 V

IT system being monitored
Nominal system voltage range U_n .... AC 0…690 V, DC 0…1000 V
.... AC/DC 0…600 V (for UL applications)
Tolerance of U_n .... AC/DC +15 %
Frequency range of U_n .... DC, 1…460 Hz

Response values
Response value R_{an1} (Alarm 1) .... 1 kΩ…10 MΩ (40 kΩ)*
Response value R_{an2} (Alarm 2) .... 1 kΩ…10 MΩ (10 kΩ)*
Operating uncertainty (acc. to IEC 61557-8) ...profile-dependent, ±15 %, min. ±1 kΩ

Measuring circuit
Measuring voltage U_m .... profile dependent, ±10 V, ±50 V
Measuring current I_m .... ≤ 403 µA
Internal resistance R_i, Z_i .... ≥ 124 kΩ
Permissible extraneous DC voltage U_{fg} .... ≤ 1200 V
Permissible system leakage capacitance C_e ..... dependent on the profile, 0…1000 µF

Interfaces
Field bus:Interface/protocol .... web server/Modbus TCP/BCOM

Switching elements
Contact data acc. to IEC 60947-5-1
Utilisation category AC-13AC-14DC-12DC-12DC-12
Rated operational voltage .... 230 V230 V 24 V 110 V 220 V
Rated operational current .... 5 A3A 1 A 0,2 A 0,1 A
Rated insulation voltage ≤2000 m NN .... 250 V
Rated insulation voltage ≤3000 m NN .... 160 V
Minimum contact rating .... 1 mA at AC/DC ≥10 V

Other
EMC .... IEC 61326-2-4 [1]
Degree of protection, built-in components (DIN EN 60529) IP40
Degree of protection, terminals (DIN EN 60529) IP20

Option "W"
Für devices with a „W" in the device name:
Rated operational current of the Switching elements .....max. 3 A (for UL applications)

[1] This is a class A product. In a domestic environment, this product may cause radio interference. In this case, the user may be required to take corrective actions.

The ISOMETER® has been developed in compliance with the following standards:
DIN EN 61557-8 , DIN EN 61557-9 (iso685…-P-CN).

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