



ISOMETER® iso415R

Insulation monitoring device for unearthed 3(N)AC, AC and DC systems (IT systems)



ISOMETER® iso415R



Device features

- Monitoring of the insulation resistance for unearthed 3(N)AC, AC and DC systems with galvanically connected rectifiers
- Automatic adaptation to the system leakage capacitance up to 25 μF
- Response time \leq 6 s at $C_e = 1\mu F$ and $R_f = R_{an/2}$
- Automatic device self test with connection monitoring
- Two separately adjustable response value ranges from 5 k Ω ...1000 k Ω
- Alarms are output via LEDs (AL1, AL2) and an alarm relay
- Selectable N/C or N/O relay operation 1
- Selectable start-up delay, response delay and delay on release 1
- · Fault memory 1
- RS-485 interface with Modbus RTU protocol
- NFC interface
- ¹ Only adjustable via Modbus RTU or Bender App

Standards

Devices of the iso415R series have been developed according to the following standards:

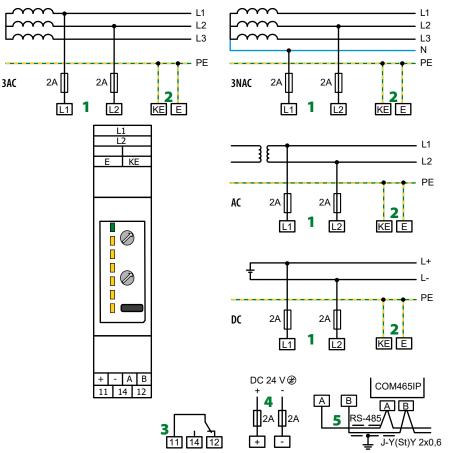
• IEC 61557-8

Approvals



UL in preparation

Wiring diagram



1 - L1, L2 Connection to the system to be monitored. (U_n) iso415R-2: Supply voltage $U_s = U_n$ (AC/DC 100...240 V)

2 - E, KE Earth, Control earth
3 - 11,14,12 Alarm relay K1

4 - +, - iso415R-24: floating supply voltage $U_s = DC$ 24 V

5 - A, B RS-485 interface

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Caution! Select correct supply voltage!

Applying an excessive supply voltage U_s can destroy the device. Correct values are:

iso415R-24: $U_s = DC 24 V$ (floating!) iso415R-2: $U_s = U_n = AC/DC 100...240 V$





Technical data

Insulation coordination acc. to IEC 60664-1/IEC 60664-3		RS-485 interface
Definitions:		Protocol
Measuring circuit (IC1)	L1, L2	Baud rate 1)
Control circuit (IC2)	E, KE, +, -, A, B	Parity 1)
Output circuit (IC3)	11, 14, 12	Stop bits 1)
Rated voltage	400 V	Cable length (9.6 kbits/s)
Overvoltage category		Cable: twisted pair 2)
Operating altitude	2000 m AMSL	Terminating resistor (external)
Rated impulse voltage:	CIM	Device address, Modbus RTU 5)
IC1/(IC2-3) IC2/IC3	6 kV 4 kV	Switching elements
Rated insulation voltage:	4 KV	Switching elements
IC1/(IC2-3)	400 V	Operating principle 1)
102/103	250 V	Electrical endurance, number of cycles
Pollution degree	2	Contact data acc. to IEC 60947-5-1:
Protective separation between:		Utilisation category
IC1/(IC2-3)	Overvoltage category III, 600 V	Rated operational voltage
IC2/(IC3)	Overvoltage category III, 300 V	Rated operational current
Voltage tests (routine test) acc. to IEC 61010-1		Minimum contact rating 3)
IC3/(IC1-2)	AC 2.2 kV	Connection
Supply voltage		
,		Connection type
iso415R-24: Only via galvanically separated power supply (+/-		Nominal current
Supply voltage U _s	DC 24 V	Connection properties rigid
Tolerance of $U_{\rm S}$	-20+25 %	rigid flexible
Power consumption	≤2W	with ferrule with plastic sleeve
Inrush current (< 5 ms)	< 10 A	with ferrule with plastic sleeve 4)
iso415R-2: Only via the system to be monitored $U_s = U_n (L1/L2)$		
Monitored IT system iso415R-24		Environment/EMC
Nominal system voltage $U_{\rm n}$	3(N)AC, AC 0415 V/DC 0400 V	EMC
Tolerance of <i>U</i> _n	AC +15 %, DC +25 %	Ambient temperatures
Frequency range of U_n	DC 42460 Hz	Operation
Monitored IT system iso415R-2		Transport Storage
Nominal system voltage $U_{\rm n} = U_{\rm s}$		
3NAC [terminal L1 to N and terminal L2 to L(x)]	100415 V	Classification of climatic conditions acc. to IEC (except condensation and formation of ice)
3AC, AC	100240 V	Stationary use (IEC 60721-3-3)
DC	100240 V	Transport (IEC 60721-3-2)
Tolerance of U _n	-30 %+15 %	Long-term storage (IEC 60721-3-1)
Frequency range of $U_{\rm n}$	DC 42460 Hz	Classification of mechanical conditions acc. to
Power consumption (at 50 Hz)	\leq 2 W / \leq 3.5 VA	Stationary use (IEC 60721-3-3)
Inrush current (< 2 ms)	< 1.8 A	Transport (IEC 60721-3-2)
Measuring circuit		Long-term storage (IEC 60721-3-1)
	±16 V	
Measuring voltage U _m		Other
Measuring voltage $I_{\rm m}$ at $R_{\rm f}$, $Z_{\rm f}=0$ Ω Internal resistance $R_{\rm i}$, $Z_{\rm i}$	≤ 90 μA ≥ 180 kΩ	Operating mode
Permissible system leakage capacitance C _e	≥ 100 kΩ2 ≤ 25 μF	Mounting
Permissible extraneous DC voltage U_{fq}	≤ 500 V	Degree of protection, internal components (DIN EN
· · ·		Degree of protection, terminals (DIN EN 60529)
Response values		Enclosure material
Response value R _{an1}	101000 kΩ (40 kΩ)*	DIN rail mounting acc. to
Response value R _{an2}	5700 kΩ (10 kΩ)*	Flammability class
Relative uncertainty R _{an}	±15 % ±2 kΩ	Documentation number
Hysteresis R _{an}	25 %, minimum 1 kΩ	Weight
Time response		()* Factory setting
Response time t_{an} at $R_F = 0.5$ x R_{an} and $C_e = 1$ μ F		1) Configurable via App and Modbus
acc. to IEC 61557-8	≤ 6 s	2) When supplied by or when monitoring systems v
Start-up delay t 1)	01800 s (0 s)*	\geq 200 Hz, the cable must be laid in a shockproof
Response delay t_{on} 1)	01800 s (0 s)*	3) Refers to relays that have not been operated with
Delay on release t _{off} 1)	01800 s (0 s)*	4) Use crimping pliers similar to CRIMPFOX 6 / Weid
Recovery time	< 0.4 s	5) Factory setting: 100 + last two digits of serial nu
Displays, memory		
Display	status LED incl. LED bar graph (7 LEDs)	6) Resolution/step size 1 k Ω
Display range insulation resistance ($R_{\rm F}$)	11000 kΩ	
Measuring range insulation resistance $(R_{\rm F})$	110000 kΩ ⁶	
Operating uncertainty	$\pm 15\% \pm 2 \text{ k}\Omega$	
Fault memory alarm messages	on/off (off)*	

RS-485 interface					
Protocol				Мо	dbus RTU
Baud rate 1)		max. 115.2 kbits/s (19.2 kbits/s)*			
Parity 1)			ev	en, no, od	d (even)³
Stop bits 1)				1/ 2/ aut	o (auto)
Cable length (9.6 kbits/s)					≤ 1200 n
Cable: twisted pair 2)				min. J-Y(S	,
Terminating resistor (external)		120 Ω (0.25 W)			
Device address, Modbus RTU 5)			1	247 (10	00 + SN) ⁺
Switching elements					
Switching elements			1	changeove	er contac
Operating principle 1)	NC	NC operation/NO operation (NO operation)*			
Electrical endurance, number of cycles					10000
Contact data acc. to IEC 60947-5-1:					
Utilisation category	AC-12	AC-14	DC-12	DC-12	DC-12
Rated operational voltage	230 V	230 V	24 V	110 V	220 \
Rated operational current	5 A	3 A	1 A	0.2 A	0.1
Minimum contact rating 3)			1	mA at AC/[)C ≥ 10 \
Connection					
Connection type					Push-ir
Nominal current					≤ 10 <i>l</i>
Connection properties				_	
rigid).21.5 r		
flexible		().21.5 r		
with ferrule with plastic sleeve		0.250.75 mm ²			
with ferrule without plastic sleeve 4)				0.75	.1.5 mm
Environment/EMC					
EMC				IEC 6	1326-2-4
Ambient temperatures					
Operation					+55°(
Transport					+85°
Storage				-40.	+70°
Classification of climatic conditions acc. to	IEC 60721				
(except condensation and formation of ice)					
Stationary use (IEC 60721-3-3)					3K2
Transport (IEC 60721-3-2)					2K1
Long-term storage (IEC 60721-3-1)					1K22
Classification of mechanical conditions acc	. to IEC 6072	21			
Stationary use (IEC 60721-3-3)					3M1
Tuesday (IEC (0721 2 2)					211

Operating mode	continuous operation
Mounting	cooling slots must be ventilated vertically
Degree of protection, internal components (DIN EN 60529)	IP30
Degree of protection, terminals (DIN EN 60529)	IP20
Enclosure material	polycarbonate
DIN rail mounting acc. to	IEC 60715
Flammability class	UL94 V-0
Documentation number	D00401
Weight	≤ 100 g

- with a frequency of manner.
- ith high contact currents
- eidmüller PZ6/PZ6/5 only.
- number

2M4 1M12

Ordering information

Supply voltage <i>U</i> ₅		Nominal syste	Nominal system voltage <i>U</i> n		Art. No.	
AC/DC	DC	AC	DC	Туре	AI t. No.	
-	24 V	0415 V	0400 V	iso415R-24	B71602000	
100240 V	-	100240 V [(3)AC] 100415 V [3NAC]	100240 V	iso415R-2	B71603000	

Dimension diagram

All dimensions in mm

