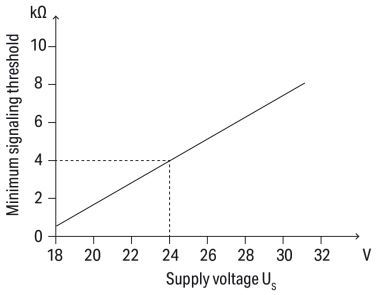
Data Sheet | Item Number: 789-665

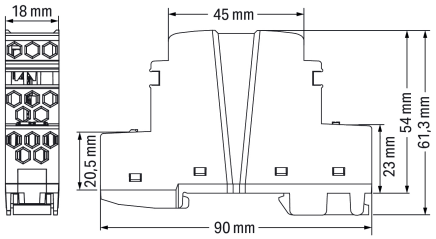
Ground resistance signaling module; Ground fault alarm via digital output; Supply voltage: 24 VDC; Module width: 18 mm

https://www.wago.com/789-665



Signaling threshold

X1.1	Iso OK		⏚	X2.1
X1.2				
X1.3	+24 V	U$_S$+	0 V	X2.2



Short description:

WAGO's module signals a value falling below a non-adjustable, asymmetric isolation resistance between +24 V or 0 V of the supply voltage and ground with a potential-free (Iso OK) contact and status LED. The Iso OK contact can be evaluated via a PLC.

This status is maintained until the next measurement interval.

Operation with Grounded Control Circuit (Functional Potential Equalization):

The module establishes an internal connection between the 0 V (X2.2) and ground (X2.1) connections via a semiconductor switch.

At 10 s intervals, this connection between 0 V and ground is interrupted for 0.5 s, and the isolation resistance between +24 V (X1.3) or 0 V (X2.2) of the supply voltage and earth (X2.1) is determined.

The grounding connection on the module does not meet the requirements of a protective earth terminal (PE). It serves as a functional ground. The measurement method does not involve the module establishing any permanent connection between 0 V and ground.

Operation with Ungrounded Control Circuit

In this operating mode, the semiconductor switch to establish a connection between 0 V (X2.2) and ground (X2.1) is deactivated. At 1 s intervals, the isolation resistance offset is determined for 0.5 s.

The module does not meet the requirements of an isolation monitoring device per EN 61557-8.

"Iso OK" Contact:

- The potential-free contact serves the purpose of supporting evaluation (e.g., via a PLC) of looming isolation faults.
- This contact must not be used to switch safety-related products that could cause the circuit to switch off.

Power Supply

Nominal supply voltage U_S	24 VDC (SELV)
Supply voltage range (DC)	18 … 31.2 VDC
Current consumption at nominal supply voltage	≤ 40 mA
Power loss P_l	≤ 1.7 W
Current at ground fault (24 VDC) max.	56 mA

Signaling

Operation status indicator	1 x LED status OK (green)
Signaling	1 x Iso alarm LED (red) 1 x Iso-Alarm LED 24 V – Ground (yellow) 1 x Iso-Alarm LED 0 V – Ground (yellow) 1 x Iso-OK signal output

Iso OK contact

Switching voltage (max.)	48 VDC (SELV)
Continuous current (max.)	500 mA (for general use)
Number of Iso OK contacts connected in series (max.)	25 (Limit value type: 1); 32 (Limit value type: 2 and 3) (per IEC 61131)
Function	1 make contact (NO); closed with applied power supply and insulation resistance > limit value

Circuit Protection

Pre-fuse (required)	The fuse must be placed in the output circuit of the power supply. The fuse must be adapted to the power supply used and must trip safely in case of a short circuit. The module is designed for use with a 10 A (max.) fuse or with a 10 ADC (max.) circuit breaker (characteristic B or C).

Safety and protection

Pollution degree	2
Overvoltage category	II
Protection type	IP20
Test voltage (supply/Iso OK contact)	1.5 kVAC; 50 … 60 Hz; 1 min
MTBF	> 600,000 h (per MIL-HDBK-217F2)

Mode: Ungrounded circuit

Response value for alarm at nominal voltage	4 kΩ (at U_S = 24 V; for other U_S values see diagram for signaling threshold)
Response time	1 s
Hysteresis (typ.)	1 kΩ

Mode: Grounded circuit

Response value for alarm at nominal voltage	4 kΩ (at U_S = 24 V; for other U_S values see diagram for signaling threshold)
Response time	10 s
Hysteresis (typ.)	1 kΩ

Connection Data

Connection 1

Connection type	X1.x
Connection technology	Push-in CAGE CLAMP®
WAGO connector	*picoMAX*® eCOM
Solid conductor	0.25 … 1.5 mm² / 24 … 14 AWG
Fine-stranded conductor	0.25 … 1.5 mm² / 24 … 14 AWG

Connection 1

Fine-stranded conductor; with insulated ferrule	0.25 … 0.75 mm²
Fine-stranded conductor; with uninsulated ferrule	0.25 … 1.5 mm²
Strip length	8 … 9 mm / 0.31 … 0.35 inches

Continued on next page

Connection 2

Connection type	X2.x
Connection technology	Push-in CAGE CLAMP®
WAGO connector	*picoMAX*® eCOM
Solid conductor	0.2 … 2.5 mm² / 24 … 12 AWG
Fine-stranded conductor	0.2 … 2.5 mm² / 24 … 14 AWG
Fine-stranded conductor; with insulated ferrule	0.25 … 1.5 mm²
Fine-stranded conductor; with uninsulated ferrule	0.25 … 2.5 mm²
Strip length	9 … 10 mm / 0.35 … 0.39 inches

Physical data

Width	18 mm / 0.71 inches
Height	90 mm / 3.54 inches
Depth from upper-edge of DIN-rail	51 mm / 2.01 inches

Mechanical data

Mounting type	DIN-35 rail

Material data

Fire load	0 MJ
Weight	47 g

Environmental requirements

Ambient temperature (operation)	-40 … +70 °C
Ambient temperature (storage)	-40 … +85 °C
Temperature range of connection cable	≥ ($T_{ambient}$ + 10 K)
Relative humidity	5 … 95 % (non-condensing)
Operating altitude (max.)	3000 m

Standards and Specifications

Conformity marking	CE
EMC immunity to interference	EN 61000-6-2
EMC emission of interference	EN 61000-6-3; EN 61000-6-4
Standards/specifications	UL 61010-2-201

Commercial data

PU (SPU)	1 pcs
Packaging type	Box
Country of origin	CN
GTIN	4066966120820
Customs tariff number	85365005000

Continued on next page

Product Classification

UNSPSC	39122221
ETIM 9.0	EC003596
ETIM 10.0	EC003596
ECCN	NO US CLASSIFICATION

Environmental Product Compliance

CAS-No.	12060-00-3 1303-86-2 1317-36-8 540-97-6 541-02-6 556-67-2 7439-92-1 80-05-7
REACH Candidate List Substance	4,4'-isopropylidenediphenol Decamethylcyclopentasiloxane [D5] Diboron trioxide Dodecamethylcyclohexasiloxane [D6] Lead Lead monoxide Lead titanium oxide (PbTiO3) Octamethylcyclotetrasiloxane [D4]
RoHS Compliance Status	Compliant,With Exemption
RoHS Exemption	6(c) 7(a) 7(c)-I 7(c)-II
SCIP notification number (Austria)	7e2beec6-e444-4533-91ed-ca9c06e08018
SCIP notification number (Belgium)	3d57bc60-34df-4908-9ee3-46195d31d01a
SCIP notification number (Bulgaria)	5e35ef1c-882c-48b4-8b73-1d7ec4268ba3
SCIP notification number (Czech Republic)	b6cda593-ddd9-42ff-b4e7-d8fcd1e40d5c
SCIP notification number (Denmark)	a3c41961-0b22-4291-9060-47097b5f95ce
SCIP notification number (Finland)	91651202-849e-4dc4-bc7a-b390c932d8de
SCIP notification number (France)	d9de80e6-426d-467f-b505-f4cca3e47f38
SCIP notification number (Germany)	70fe8401-9bb3-4bf6-9b1e-907872456ab1
SCIP notification number (Hungary)	8e69327f-46d3-4d3e-937a-cc4734bd95c3
SCIP notification number (Italy)	d4d1cefc-62b0-4092-9838-e72a05cfb2df
SCIP notification number (Netherlands)	2f63a4bb-7d52-4087-9cdb-85d03b2defa7
SCIP notification number (Poland)	403f29a9-bab2-4cc7-a1fa-13daa7af1f17
SCIP notification number (Romania)	bdb7e5dd-9b1d-4ca5-b22f-3b058c47d4f7
SCIP notification number (Sweden)	97170ea2-76b4-4ba8-9f9a-a9e56636c480

Approvals / Certificates

General approvals

Approval	Standard	Certificate Name
EAC GZO Almaty Standart	TP TC 020/2011	EAC CoC 03083
UL Underwriters Laboratories Inc. (ORDINARY LOCATIONS)	UL 61010-2-201	E175199

Declarations of conformity and manufacturer's declarations

Approval	Standard	Certificate Name
EU-Declaration of Conformity WAGO GmbH & Co. KG	-	-

 Continued on next page

Approvals for hazardous areas

Approval	Standard	Certificate Name
UL Underwriters Laboratories Inc. (HAZARDOUS LOCA-TIONS)	UL 121201	E198726

Downloads

Environmental Product Compliance

Compliance Search

Environmental Product Compliance 789-665

Documentation

Bid Text

789-665	xml 10.14 KB	
789-665	docx 28.75 KB	

Instruction Leaflet

Erdwiderstand-Signalisierungsmodul	V 1.0.0 17.11.2020	pdf 2624.60 KB	

CAD/CAE-Data

CAD data

2D/3D Models 789-665

CAE data

EPLAN Data Portal 789-665

ZUKEN Portal 789-665

1 Compatible Products

1.1 Optional Accessories

1.1.1 Marking

1.1.1.1 Marker carrier

Item No.: 2009-198
Adaptor; gray

1.1.1.2 Marking strip

Item No.: 2009-110
Marking strips; for Smart Printer; on reel; not stretchable; plain; snap-on type; white

1.1.2 Tool

1.1.2.1 Operating tool

Item No.: 210-719
Operating tool; Blade: 2.5 x 0.4 mm; with a partially insulated shaft