

- For Ungrounded AC-, 3AC- and DC systems (isolated power) from AC 0 to 690 V/ DC 0 to 500 V
- Nominal voltage range can be extended by coupling units to 6000V
- Automatic adaption to the system leakage capacitance up to 500 $\mu$ F
- AMP-measuring principle (patent pending)
- Two adjustable set-point ranges from 10k $\Omega$ ...990k $\Omega$
- LCD display
- RS485 Interface
- Connection monitoring
- Automatic self-test capability
- Meets IEC801-4, Class III EMC requirements

### Product Description

The A-ISOMETER model IRDH265 monitors the insulation resistance level of ungrounded single and three-phase AC, DC and AC/DC systems. The AC systems may include extensive DC supplied loads (e.g. rectifiers, thyristor controlled DC drives) The device automatically matches to the system leakage capacitance.

Coupling devices are available to extend the voltage range up to 6000V AC/DC.

The IRDH265 is fitted into a standard ABS plastic casing and is suitable for quick assembly on support rail according to DIN EN 50 022 and for screw mounting.

### Operational Information

The A-ISOMETER IRDH265 is connected between the ungrounded system and the equipment grounding conductor.

Via the buttons on the faceplate of the unit, setting of the set-point values and other parameters can be carried out. The parameters are displayed on the LCD-display and are stored in a non-volatile memory (EEPROM) after setting.

A pulsating AC measuring voltage is superimposed on the system. The measuring pulse consists of positive and negative pulses of the same amplitude. The period depends on the respective leakage capacitance and insulation resistances of the system being monitored. An insulation fault between system and ground closes the measuring circuit. An electronic evaluation circuit calculates the insulation resistance which is displayed on a LCD-display or external meter.

The response time depends on the system leakage capacitance, the insulation resistance and the system related interference disturbances. System leakage capacitances do not influence the measuring accuracy.

If the reading is below the selected response value ALARM1 / ALARM2, the appropriate alarm relay is activated, the alarm LEDs "ALARM 1/2" illuminate and the measuring value is indicated on the LCD display (for DC insulation faults - the faulty supply line is indicated). If the terminals LT are bridged, the faulty indication will be stored.

By pushing the [TEST/RESET] button, the function of the IRDH265 can be tested. After pushing the test button (> 2 sec), the display indicates "TEST". If no fault occurs during the integration period, the LCD display will indicate "TEST OK R < 1K ( $\Omega$ )", the alarm relays are activated and both alarm LEDs illuminate after the time delay. If a system fault occurs, the LCD display indicates "TEST ALARM". By pushing the [TEST/RESET] button (< 1 sec), the fault indication can be reset.

If the insulation resistance exceeds 20M $\Omega$  and/or every 24 hours, the IRDH265 automatically carries out a self-test provided a output relay has been selected to be a system fault alarm. The connections to the ungrounded system and ground are continuously monitored. If a connection is open or not connected, the LCD display indicates "ALARM E-KE" or "ALARM L1-L3"

## Technical Data, IRDH265-...

### Insulation

Rated insulation voltage	AC 630 V
Rated impulse voltage / disturbance grade	6 kV / 3
Operating mode	continuous

### Monitored System

System nominal voltage $U_{N(AC)}$	3AC 0...690 V
Operating range	0...1.15 $U_N$
Frequency (for f<50Hz see manual)	50...400 Hz
System nominal voltage $U_{N(DC)}$	DC 0...500 V
Operating range	0...1.3 $U_N$

### Supply Voltage

Supply voltage $U_s$	See Ordering Guide for complete list 120V AC, 50..60Hz (standard)
Operating range	0.8...1.15 $U_s$
Maximum self-consumption	5.8 VA

### Alarm Response Values

Response value ALARM1	10 ... 990 k $\Omega$
Response value ALARM2	10 ... 990 k $\Omega$
Hysteresis	approx. 25%
Measuring time ( $C_E=1\mu F$ / Mode=AMP)	approx. 5 sec.
Time delay (DC and UG/AMP mode only)	1 ... 10s
Response value, UG/AMP mode	0.1 ... 5mA
Measuring time ( $C_E=1\mu F$ / Mode=UG/AMP)	< 1sec.
System leakage capacitance	max. 500 $\mu F$

### Measuring Circuit

Measuring voltage $U_M$ (PEAK VALUE)	27 V
Measuring current $I_M$	max. 225 $\mu A$
Internal DC resistance	120k $\Omega$
Impedance (60Hz)	> 250 k $\Omega$

### Outputs

Measuring instrument SKMP	120 k $\Omega$
Current output (max. load)	400 $\mu A$ (12.5 k $\Omega$ )
Terminal [AK] for high-voltage coupling device	Yes
Serial Communication Interface	EIA RS485

### Contact Configuration

Type	2 voltage-free SPDT contacts
Rated contact voltage	AC 250 V / DC 300 V
Rated current	UC 5 A
Break capacity AC 230 V, p.f. = 0.4	AC 2 A
DC 220 V, L/R = 0.04s	DC 0.2 A
Operating mode	Normally Energized / De-energized

### Testing

Dielectric test: Test voltage	3 kV
Impulse voltage test acc. to IEC255-5	class III
Elec. disturbance test acc. to IEC255-5	class III
Elec. fast transient burst acc. to IEC801-4	severity degree 2
Shock resistance acc. to IEC68-2-27	15g / 11sec
Vibration strength acc. to IEC68-2-6	10...15kHz / 0.15mm - 2g
Bumping acc. to IEC 68-2-29	40g / 11msec

### Environmental conditions

Operating temperature	-10°C ... +55°C
Storage temperature	-40°C ... +70°C
Climatic class acc. to DIN 40040	F

### General Data

Type of connection	screw terminals
Wire size, solid	14 AWG
Wire size, stranded with end sleeve	16 AWG
Mounting	DIN rail or screw (#990 056)
Weight	2 lbs

Please Note:

### Please check for correct supply voltage.

Only one insulation monitoring device may be used in each interconnected (galvanically isolated) system.

The terminals E and KE have to be connected separately to the equipment grounding conductor (GND) with one lead each. If the device is connected with terminals L1, L2, L3, L/+ or L/- or an external coupling device to the system under operation, the connection between the terminals E and KE and the equipment grounding conductor (GND) may not be removed or open.

In order to check the proper connection of the device, it is recommended to carry out a functional test using a genuine ground fault, e.g. via a suitable resistance before starting operation.

When insulation and voltage tests are to be carried out, the device must be isolated from the system for the test period.

The IRDH265-4... are delivered with the following basic settings:

Alarm 1 / Alarm 2	= 180k $\Omega$ / 40k $\Omega$
Operating mode	= Normally De-energized (MENU: 11-12 14 / 21-22 24)
Time delay	= OFF (not necessary in AMP mode)
Measuring mode	= AMP

Insulation faults in DC-circuits which are directly connected to the AC system are only monitored correctly when the rectifiers carry a load current > 5...10mA.

### Ordering Guide

Model	Supply Voltage $U_s$	Ordering #
IRDH265-4	AC 230 V	91068001
IRDH265-413	AC 90 ... 132 V	91068004
IRDH265-421	DC 10.5...80 V	91068002
IRDH265-431	AC/DC 93...132 V	91068003
IRDH265-432	AC/DC 187..264 V	91068005

### Accessories

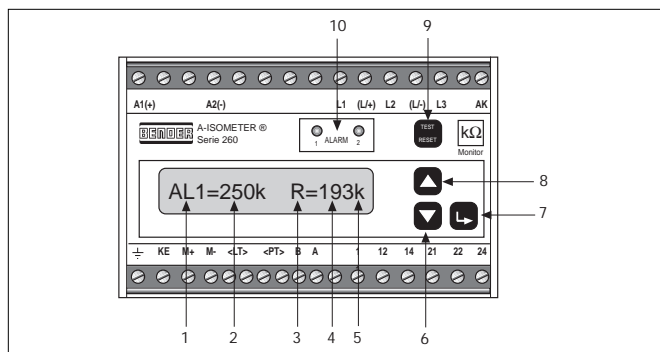
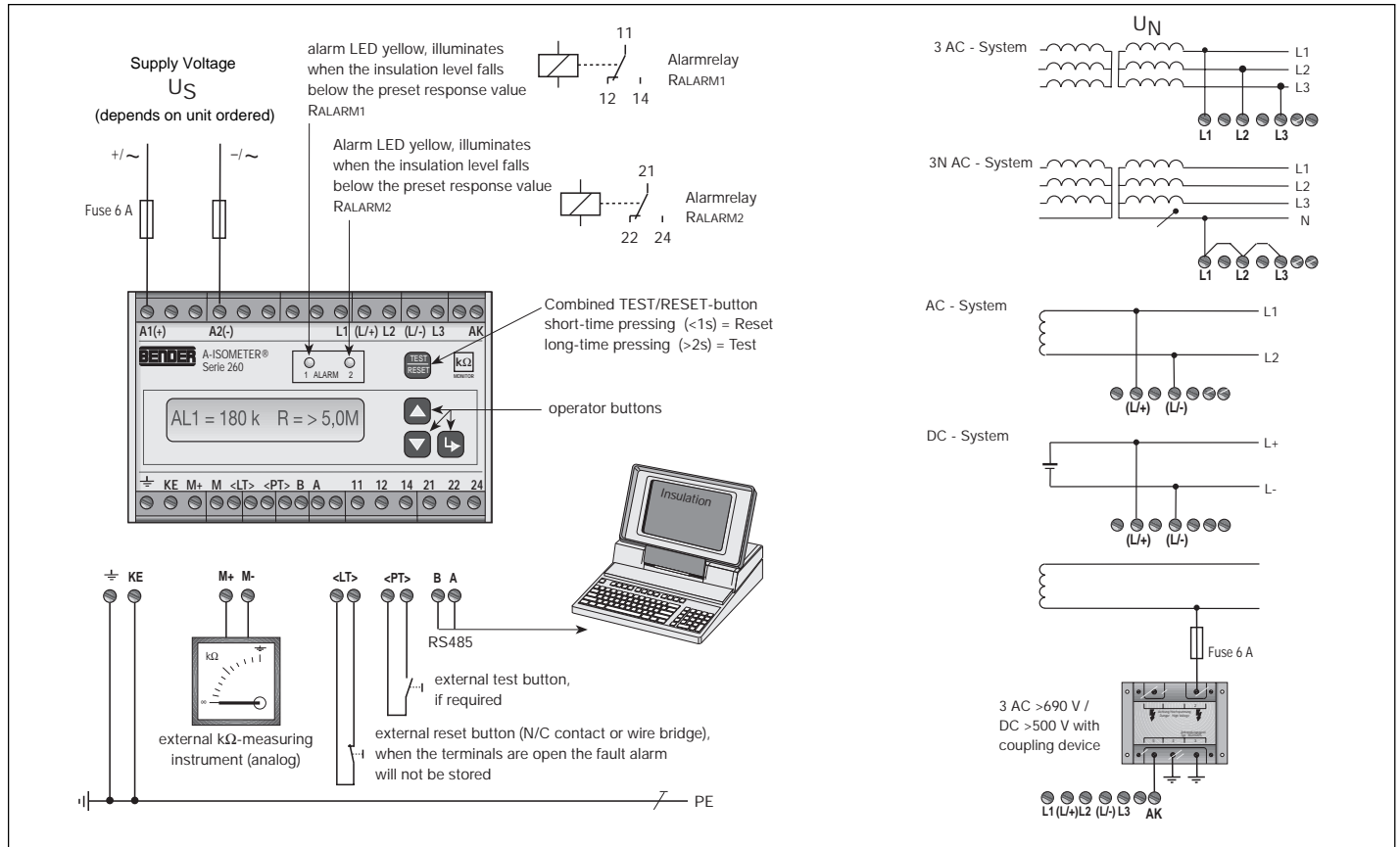
#### High-voltage Coupling Devices

Model	System voltage	Ordering #
AGH204S	AC 0...1500V	914013
AGH520S	AC 0...6000V	913033
AGH150W	DC 0 ... 1000V	915576

#### External Panel-mount Meters

Model	Dimensions	Ordering #
7204S-1421	72x72mm	986804
9604S-1421	96x96mm	986774

## Wiring Diagram

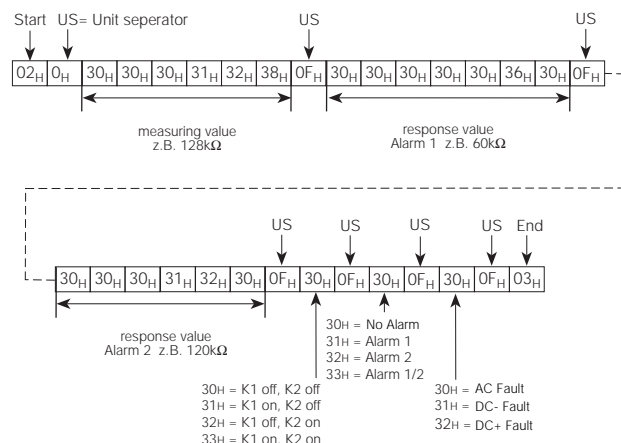


- 1 AL1 = Alarm 1, AL2 = Alarm 2
- 2 set response value (kΩ)
- 3 fault location  
" + " = insulation fault at L+  
" - " = insulation fault at L-  
" s " = new measuring value is being calculated
- 4 measuring value
- 5 unit measuring value (k = kΩ)
- 6, 7, 8 operator buttons
- 9 TEST/RESET-button
- 10 alarm LEDs Alarm1/Alarm 2

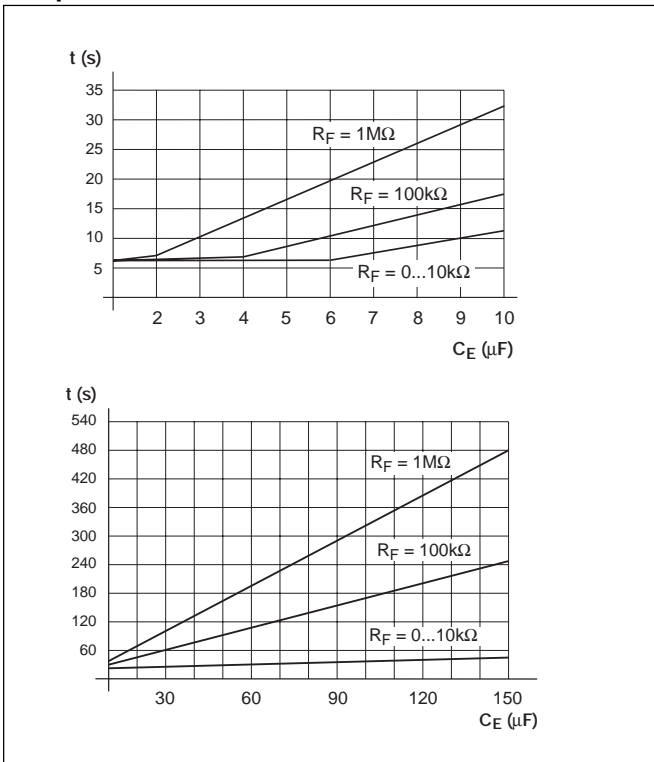
## Serial Interface

Serial interface (RS485) without electrical isolation (= EIA RS-485)  
Max. wiring distance 1200m.  
Transmission protocol 9600 Baud - 1 Start bit - 1 Stop bit - 8 Data bits

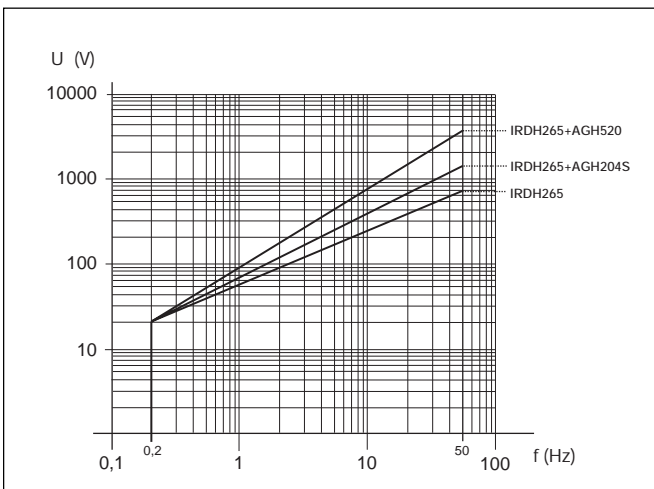
After each measurement update the following data block will be sent.  
The data transmission is carried out continuously and cannot be interrupted or influenced in some other way by any other bus member.



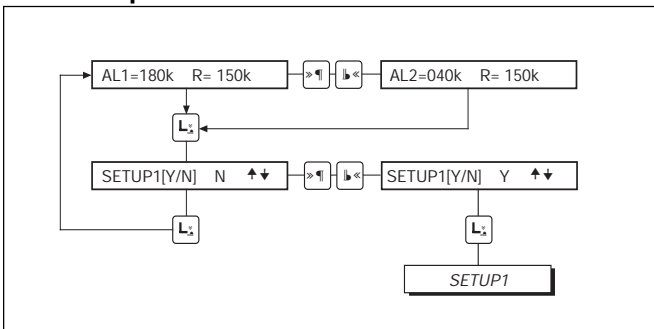
## Response Time



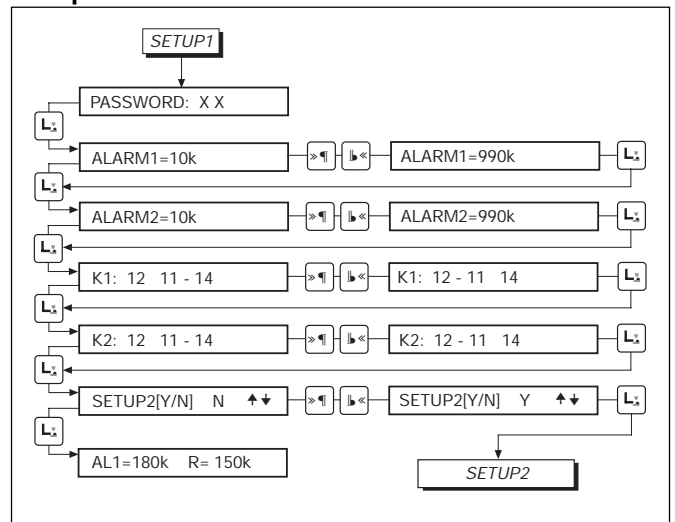
## Max. AC voltage between system and ground for frequencies < 50 Hz



## Main Setup Menu



## Setup 1



## Setup 2

