MR 627

Insulation Monitoring Device

MR 627/EN M/A11
(AFSV.12.05692)

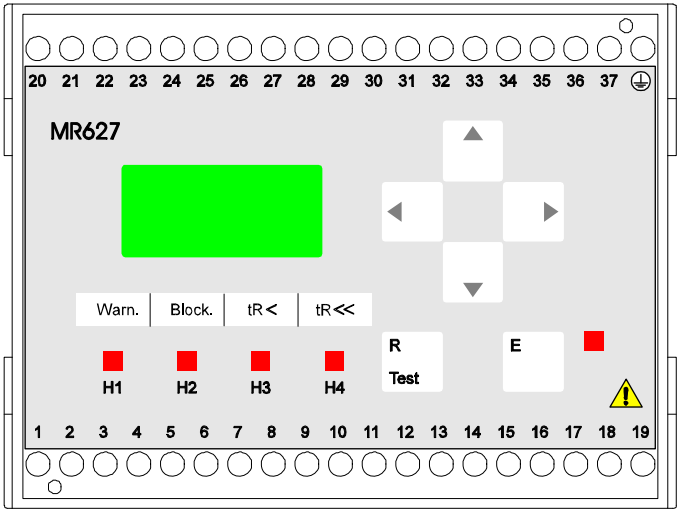
Version MR 627 -300/320 -401 -601/620

Technical Manual

Schneider Electric

Insulation Monitoring Device MR 627

Version – 300/320 - 401 – 601/620



Insulation Monitoring Device for Ungrounded DC and AC Systems with Voltages up to 690 V DC / AC

Operating Manual

Safety Notice

Warning

When electrical equipment is in operation, dangerous voltage will be present in certain parts of the equipment. Failure to observe warning notices, incorrect use or improper use may endanger personnel and equipment and cause personal injury or physical damage.

Before working in the terminal strip area, the device must be isolated. Where stranded conductors are used as connecting leads, wire end ferrules must be employed.

Proper and safe operation of this device depends on appropriate shipping and handling, proper storage, installation and commissioning, and on careful operation, maintenance and servicing.

For this reason only qualified personnel may work on or operate this device.

Safety Notice

Qualified Personnel

are individuals who

- ☐ are familiar with the installation, commissioning and operation of the device and of the system to which it is being connected,
- ☐ are fully qualified electricians,
- ☐ are trained in the care and use of safety apparatus in accordance with safety engineering standards,
- ☐ are trained in emergency procedures (first aid).

Note

The operating manual for this device gives instructions for its installation, commissioning and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics. In the event of questions or specific problems, do not take any action without proper authorization. Contact the appropriate Schneider Electric technical sales office and request the necessary information.

Notice

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Modifications After Going to Press

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1 Application and Scope

The microprocessor-controlled insulation monitoring device MR 627 is designed for application in ungrounded DC and AC systems (IT distribution systems) up to 690 V DC / AC (EN 61557-8). The device is equally suitable for pure DC or AC systems and for extensive, electrically connected AC-DC systems. Either way, monitoring by the device is quantitatively correct. This kind of monitoring is required for floating systems with mandatory ground fault monitoring per EN 60204 Part 1. Thereby, any deterioration of the insulation is detected well before harmful levels are reached and thus injuries and damage to property are avoided as far as possible.

Typical applications for insulation monitoring devices are found, for example, in the chemical industry, in mining, furnaces, foundries, driving gear technology and railway systems.

The wide measurement range together with the low measuring current allow, moreover, the monitoring of systems equipped with additional equipotential bonding (per VDE 0100 Part 410 or DIN 57100 Part 410).

Insulation monitoring devices operate using a measuring quantity that is superimposed - versus ground or protective conductor - onto the monitored power system. It is essential therefore to connect one insulation monitoring device only within a given electrically connected power system. Where it is possible, for example, to couple two monitored systems, one of the insulation monitoring devices must be switched off when coupling takes place.

1 Application and Scope
(continued)

The insulation monitoring device MR 627 is distinguished by the following features:

- Insulation monitoring of ungrounded systems (IT-DC or IT-AC distribution systems) up to 690 V DC or 690 V AC (f_{nom}: 40 to 400 Hz).
- Extended nominal voltage range up to 1500 V DC / 1500 V AC (for systems without rectifiers) / 1300 V AC (for systems with rectifiers) with Adapter Device MZ 611
- 3 measuring procedures for selection by way of a setting
- High-speed signaling may be set for unbalanced faults on the DC side.
- Automatic adaptation to the system leakage capacitance up to 30 µF (150 µF)
- 2 separately adjustable timer stages with time-delay setting for the operate value
- Adjustable operate value of 10 to 990 kΩ (50 to 990 kΩ for the increased resistance/impedance version)
- Integrated local control panel with plain text display
- 4 LED indicators, 2 of which allow freely configurable function assignment
- Integrated test and canceling key (reset key)

1 Application and Scope
(continued)

- ☐ Connection monitoring
- ☐ Operating Data Measurement
- ☐ Comprehensive self-monitoring
- ☐ External test and canceling key may be connected.
- ☐ Current output (1mA) for remote display of the insulation resistance
- ☐ 2 signaling relays with one change-over contact each
- ☐ Signal latching of the signaling relays may be set if desired.
- ☐ Normally-energized arrangement (“closed-circuit principle“) of the signaling relays may be set if desired.
- ☐ Serial interface RS 485
- ☐ Power supply with a nominal auxiliary voltage of 100 to 230 V AC and a nominal frequency of 50 or 60 Hz, or with 60 to 250 V DC

The case can be mounted onto a 35 mm width top-hat rail (per EN 50022) by means of a snap-on foot or can be wall-mounted directly, without visible bolts.

2 Technical Data

2.1 Conformity Statement

Applicable to the MR 627
Version - 300 - 401 - 601
and
Version - 320 - 401 - 620
(increased resistance/impedance, approx. 1MΩ)
(Article 10 of EC Directive 73/23/EC)

The product designated as 'MR 627 insulation monitoring device' has been developed and manufactured in conformity with the international standard EN 61557-8 § and in accordance with the provisions of the EMC Directive and the Low Voltage Directive issued by the European Community.

2.2 General Data

Design
Suitable for rapid mounting on top-hat rail according to EN 50022§ or direct wall-mounting without visible bolts

Installation position
Vertical ± 30°

Degree of device protection
According to DIN VDE 0470 and EN 60529 or IEC 529, resp.
Case: IP 40
Terminals: IP 20

Weight
Approx. 500 g

Dimensions and Connections
See dimensional drawing and terminal connection diagram

Serial Interface
2 wire connections according to RS 485. For DC-decoupling, an interface converter is required (see 'Accessories').

Connections
Threaded terminal ends M3, self-centering with wire protection for conductor cross-sections up to 4 mm² single-core or up to 2.5 mm² finely stranded

2 Technical Data
(continued)

Creepage Distances and Clearances
Per EN 61010-1 § or IEC 664-1
Pollution degree 3,
working voltage 690 V
overvoltage category III,
impulse test voltage 6 kV

2.3 Tests

2.3.1 Type Test

All tests according to EN 61557-8, DIN 57 435 Part 303 and EN 60255-6 §

EMC

Interference suppression
According to EN 55022 and DIN VDE 0878 Part 3, level B

1 MHz burst disturbance test
According to IEC 255 Part 22-1 §, class III
Common mode test voltage: 2.5 kV
Differential test voltage: 1.0 kV
Test duration: > 2 s
Source impedance: 200 Ω

Immunity to electrostatic discharge
According to EN 60801 Part 2 §, severity level 3
Air discharge
Single discharges: > 10
Holding time: > 5 s
Test voltage: 8 kV
Test generator: 50 to 100 MΩ, 150 pF/330 Ω

Immunity to radiated electromagnetic energy
According to ENV 50140, level 3
Antenna distance to tested device: > 1 m on all sides
Test field strength, frequency band 80 to 1000 MHz: 10 V/m
Test using AM: 1 kHz / 80 %
Single test at 900 MHz:
AM 200 Hz / 100 %

2 Technical Data
(continued)

Electrical fast transient / burst requirements
According to IEC 801-4,
test severity level 3
Rise time of one pulse: 5 ns
Impulse duration (50% value): 50 ns
Amplitude: 2 kV / 1 kV
Burst duration: 15 ms
Burst period: 300 ms
Source impedance: 50 Ω

Surge immunity test
According to IEC 1000-4-5,
test level 3
Testing of power supply circuits, asymmetrically / symmetrically operated lines
Open-circuit voltage front time / / time to half-value: 1.2 / 50 µs
Short-circuit current front time / / time to half-value: 8 / 20 µs
Amplitude: 1 / 2 kV
Pulse frequency: > 5 / min
Source impedance: 12 / 42 Ω

Immunity to conducted disturbances induced by radio frequency fields
According to IEC 65A/77B
(Sec) 145/110, test level 2
Disturbing test voltage: 3 V

Power frequency magnetic field immunity
According to EN 61000-4-8 §,
level 4
Frequency: 50 Hz
Test field strength: 30 A/m

Insulation

Voltage test
According to IEC 255-5,
Contact circuit and supply circuit to measuring circuit, contact circuit to supply circuit, between contact circuits.
3 kV AC, 60 s

The analog data output and the inputs for the external test and canceling keys must not be subjected to the voltage test!

Impulse voltage withstand test
According to IEC 255-5
Front time: 1.2 µs
Time to half-value: 50 µs
Peak value: 6 kV
Source impedance: 500 Ω

2 Technical Data
(continued)

Mechanical Robustness

Vibration test
According to IEC 255-21-1 §,
test severity class 1
Frequency range, in operation:
10 to 60 Hz, 0.035 mm,
60 to 150 Hz, 0.5 g
Frequency range, during transport:
10 to 150 Hz, 1 g

Shock response and withstand test, bump test
According to IEC 255-21-2 §,
test severity class 1
Acceleration: 5 g/15 g
Pulse duration: 11 ms

Seismic test
According to EN 60255-21-3 §,
test procedure A, class 1
5 to 8 Hz, 3.5/1.5 mm
8 to 35 Hz, 10/5 m/s^2
3 × 1 cycle

2.3.2 Routine Test

All tests according to
EN 61557-8 §,
DIN 57 435 Part 303
and EN 60255-6 §

2.4 Environmental Conditions

Allowable ambient temperatures
Operating temp.:
- 5 °C to + 50 °C
Storage temp.:
- 25 °C to + 55 °C
Shipping temp.:
- 25 °C to + 70 °C

Ambient humidity range
Relative humidity to preclude any condensation;
45 to 75 % (annual mean)

2 Technical Data
(continued)

2.5 Inputs and Outputs

Measuring Input

Monitored system
Nominal voltage V_{nom} : 690 V DC or 690 V AC
Operating range: 0 to 1.15 V_{nom}
Nominal frequency for AC voltage supply f_{nom} : 40 to 400 Hz

Control Inputs

Fitted components: 2 control inputs, both freely configurable

Function assignment and connections: See Address List and Terminal Connection Diagram

Relay Outputs

Fitted components: 2 output relays with one change-over contact each, both freely configurable

Contact load rating
Rated voltage: 250 V DC, 250 V AC
Continuous current: 5 A
Short-time current: 30 A for 0.5 s
Making capacity:
1000 W (VA) at L/R = 40 ms
Breaking capacity:
0.2 A at 220 V DC, L/R = 40 ms,
4 A at 220 V AC, cos φ =0.4

Analog Data Output

Current output I_{out}: 0 to 1 mA
Max. load R_{out}: 5 kΩ

2 Technical Data
(continued)

2.6 Interfaces

Local control panel:
Data input / data output:
Via six keys and two eight-digit displays:
4 LED indicators,
2 permanently assigned,
2 freely configurable
Function assignment: See Address List.

Serial interface:
2 wire connections according to RS 485,
distance to be bridged:
max. 1200 m.
Baud rate: 1200 or 9600 baud, depending on the setting
PC: Operation mode
For star operation, a maximum of 32 MR 627 devices may be connected in parallel.
For connection to a PC, an interface converter MI 611 (see 'Accessories') is required.

2.7 Information Output

Counters, measured data and signals: See Address List

Self-monitoring:
A maximum of 30 different monitoring signals may be stored.

2.8 Power Supply

Voltage
Nominal voltage $V_{A,nom}$:
60 to 250 V DC or
100 to 230 V AC
Operating range:
0.8 to 1.2 $V_{A,nom}$ for DC supply
0.85 to 1.1 $V_{A,nom}$ for AC supply
Nominal consumption:
6 W (VA) at $V_{A,nom}$
Start-up peak current for a duration of 0.25 ms: 13 A

Frequency
Nominal frequency:
$f_{A,nom}$: 50 and 60 Hz
Operating range: 0.95 to 1.05 f_{nom}

2 Technical Data
(continued)

2.9 Settings

Settings and value ranges: See Address List

2.10 Typical Characteristics

Type of power system:
DC and AC voltage systems and electrically coupled AC/DC systems
Operate time t_{op} at 10 kΩ, C_g = 1 µF and for an insulation change from ∞ to 0: approx. 5 s
Internal impedance:
$Z_i \geq$ 180 kΩ (approx. 1MΩ <1>)
Internal DC resistance:
$R_i \geq$ 180 kΩ (approx. 1MΩ <1>)
Measuring voltage V_{meas}: ± 30 V
Measuring current
I_{meas}: 0.170 mA
(max. 0.035 mA <1>)
Max. system leakage capacitance C_g : 150 µF
Limiting continuous extraneous DC voltage $V_{ext,dc}$: 690 V DC

Operate value deviation:
max. + 25% of the set operate value R_{op}
Resetting ratio: 25 %

2.11 Deviations

According to EN 61557-8 [§],

Key:

<1> For version - 320 - 401 - 620

[§] The DIN EN or DIN IEC editions, respectively, of the standards were used in these tests.

3 Operation

The insulation monitoring device MR 627 is designed for DC and AC power systems and is equally suitable for electrically coupled AC-DC systems. Insulation faults located behind directly connected rectifiers likewise are detected quantitatively.

The MR 627 consists of printed-circuit boards carrying the measuring circuit and the power supply unit as well as two printed board relays.

Setting of the operate values and other function parameters is via keys on the local control panel. All settings are stored in a non-volatile memory (EEPROM).

Once the auxiliary voltage for the power supply has been connected, the device startup proceeds. During startup, a bar builds up in the second line of the display.

With the **'pulse' measurement principle**, a square-wave AC voltage is superimposed with a certain frequency onto the DC and/or AC power system to be monitored. The frequency of the square-wave AC voltage is automatically adapted by the MR 627 to suit the power system conditions or capacity. The coupling circuit and the insulation resistance of the power system together form a circuit whereby the insulation resistance participates in controlling the amplitude of the measured current. Any deterioration of the insulation leads to an increase in measured current. From the measured current value, the microprocessor calculates the insulation resistance.

With the **'DC' measurement principle** (<1>), a DC measuring voltage is superimposed onto the AC power system to be

monitored. The measuring circuit is completed by the insulation resistance of the power system. The insulation resistance determines the amplitude of the measured current. This measuring principle is to be set for pure AC power systems only. Compared with the pulse measuring principle, the DC measuring principle has the advantage of providing a considerably more rapid measurement of the insulation resistance (operating time approximately 1.5 s).

For AC systems with rectifiers, insulation faults on the DC side are detected as a trend only. The '+' or '-' sign in the display indicates an insulation fault at the corresponding DC-side pole.

The **'UDC/pulse' measuring principle** (<1>) essentially uses the pulse measuring principle. Additionally, unbalanced faults on the DC side can be signaled at high speed depending on the set operate value (INSUL:I>).

If the insulation value falls below the set operate values R< and/or R<<, then the signaling relays and the red LED indicators will be activated and the timer stages tR< and/or tR<< will be started.

<1> Not supported in version - 320 - 401 - 620

3 Operation
(continued)

Timer stage ‘tR< elap’ may be used as a warning stage that issues a signal before a critical insulation value is reached. Timer stage ‘tR<< elap’ may then be used as a signaling stage that signals a critical insulation value.

Please note :
When the signal ‘tR<<elap’ occurs, the system must be checked without delay by a qualified electrician.

The device function can be tested using the reset key (R). On pressing this key (> 2 s), an insulation defect is simulated by way of a resistor. The signaling relays are also started by this procedure. If the signaling relays are not to be started, they may be blocked via the function ‘OUTP: BlOutp.L’ ‘Yes’.

Furthermore, for a briefer pressing of the key (< 1 s), latching of the LED indicators is terminated. If the function ‘OUTP: Rset key’ is set to ‘Yes’, then for a brief pressing of the key (< 1 s), any latching of the LEDs and signaling relays is terminated.

If desired, the display continuously indicates the insulation resistance of the power system and the operate values configured. (The ‘Panels’ are displayed, see Chapter ‘Control’.)

An instrument can be connected to the current output of the MR 627 for the remote display of insulation resistance.

3 Operation
(continued)

The table below gives values for the output current as a function of the insulation resistance.

R_{INS}	R_{ISO} (<1>)	I_{out}
0 kΩ	0 kΩ	0 mA
20 kΩ	100 kΩ	0.10 mA
50 kΩ	250 kΩ	0.21 mA
100 kΩ	500 kΩ	0.34 mA
250 kΩ	1250 kΩ	0.57 mA
500 kΩ	2500 kΩ	0.72 mA
1000 kΩ	5000 kΩ	0.84 mA
∞	∞	1.0 mA

<1> For version - 320 - 401 - 620

3 Operation
(continued)

The MR 627 offers a serial interface (RS 485). For communication between the PC and the MR 627, an interface converter MI 611 needs to be connected to the MR 627. From the interface converter MI 611, a direct PC link may then be set up. Via the local control panel, two different operation modes can be set for the serial interface. In the as-delivered condition, operation mode (‘Op. mode’) ‘Single’ is set. The transmission rate is 9600 baud. ASCII character strings are offered by the MR 627 in this operation mode. If a commercial program allowing operation between two interfaces is installed in the PC (for example, the Norton Commander, terminal function, setting: 8 data bits, 1 stop bit, even parity, ANSI), then information such as the following is displayed on the PC.

3 Operation
(continued)

ASCII string	Meaning
MR 627	Device type
FA/BA=1	Substation address, e.g. 1
GA/DA=150	Device address, e.g. 150
R=1000kΩ	Measured value for the insulation resistance, e.g. 1000 kΩ
I=0.5mA	Measured value for the DC current, e.g. 0.5 mA
R<=1	Operate value R< exceeded, 1=Yes, 0=No
R<<=0	Operate value R<< exceeded, 1=Yes, 0=No
tR<=1	Timer stage tR< elapsed, 1=Yes, 0=No
tR<<=0	Timer stage tR<< elapsed, 1=Yes, 0=No
I>=1	Operate value I> exceeded, 1=Yes, 0=No
tI>=0	Timer stage I> elapsed, 1=Yes, 0=No

In this operation mode, the MR 627 may be configured with the help of the FPCC parameter setting program.

3 Operation
(continued)

In the operation mode (‘Op. mode’) ‘Bus’, a number of insulation monitoring devices may be configured individually via their device address with the help of the parameter setting program FPCC, provided that the data links are star-connected. For this configuration, the functions ‘PC: Addr. CU’ and ‘PC: Addr. PU’ need to be assigned identical values. The transmission rate is 1200 baud.

For connection to system voltages > 690 V, the MZ 611 adapter device can be supplied. If the MR 627 is connected via the adapter device MZ 611, then the function ‘INSUL: VinAdapt’ needs to be set to ‘Yes’.

4 Installation

The MR 627 is packaged in a carton and shipped inside outer packaging. Use special care when opening the cartons and unpacking the device, and do not use force. Please ensure that the manuals supplied with each individual device are removed from the inside carton.

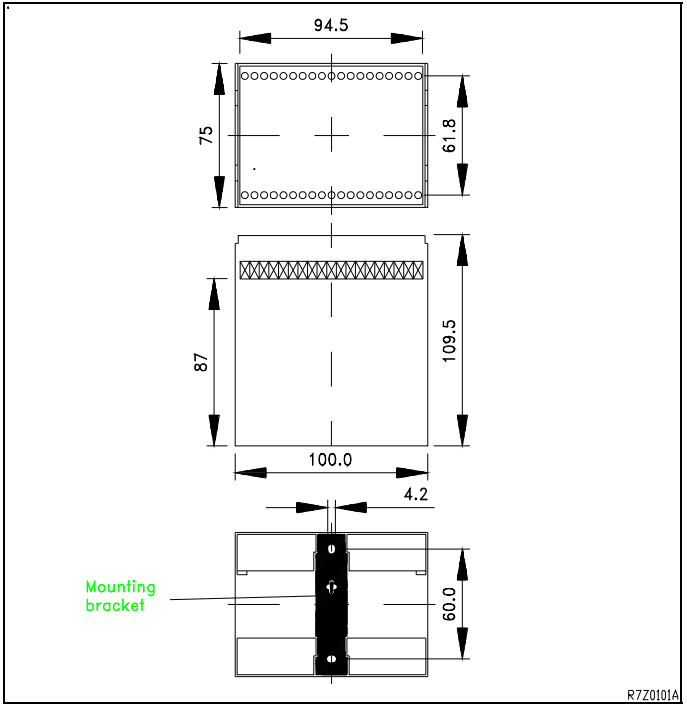
After unpacking the device, inspect it visually to make sure it is in proper mechanical condition.

If the MR 627 is to be shipped, both inner and outer packaging must be used. If the original packaging is no longer available, make sure that packaging conforms to DIN ISO 2248 specifications for a drop height $\leq$ 0.8 m.

The MR 627 nominal data and design type can be determined by consulting the type identification label. The type identification label is found on the upper face of the device.

The MR 627 has been designed to conform to the standard EN 61557-8. Accordingly, the installation site must be chosen to provide the operating conditions specified above under the heading ‘Technical Data’.

4 Installation
(continued)



1 Dimensional drawing

4 Installation
(continued)

Electromagnetic Conditions

Appropriate measures taken in substations must correspond to the state of the art (see, for example, the VDEW ring binder entitled "Schutztechnik" [Protective Systems], Section 8: "Recommendations for Measures to Reduce Transient Overvoltage in Secondary Lines in High Voltage Substations," June 1992 edition).

The case can be mounted onto a top-hat rail (per EN 50022) by means of a snap-on foot or can be wall-mounted directly, without visible bolts.

For wall-mounting of the MR 627, the mounting bracket (see 'Dimensional drawing') needs to be removed from the case by pushing the shipping brace upwards. The mounting bracket is bolted to the wall using two M4 bolts. Subsequently, the case is inserted into the mounting bracket.

Insulation monitoring devices must be installed and connected by qualified electricians. The relevant safety regulations must be observed.

5 Connection

For connecting the insulation monitoring device MR 627, please adhere to the terminal connection diagram.

In each conductively connected system, one insulation monitoring device only may be connected. If, for example, two monitored systems are coupled, then one MR 627 must be switched off on coupling.

Connection to the system to be monitored is three-pole to three-phase systems and two-pole to single-phase and DC systems. Additionally, ground, check-back ground (used in automatic checking for completeness of the measuring circuit) and protective conductor are connected.

For insulation resistance monitoring, single-pole connection is also possible. In this case, the measuring circuit is connected between the jumpered terminals 5/9 and the ground connection. In version - 300 - 401 - 601, the nominal voltage between terminals 5/9 and the ground connection must not exceed 690 V/$\sqrt{3}$. For the increased impedance/resistance version, the nominal voltage of 690 V is permissible.

For the signaling and measuring circuits and for the power supply input of the MR 627, copper conductors with a cross-section of 1.5 mm^2 will usually be adequate.

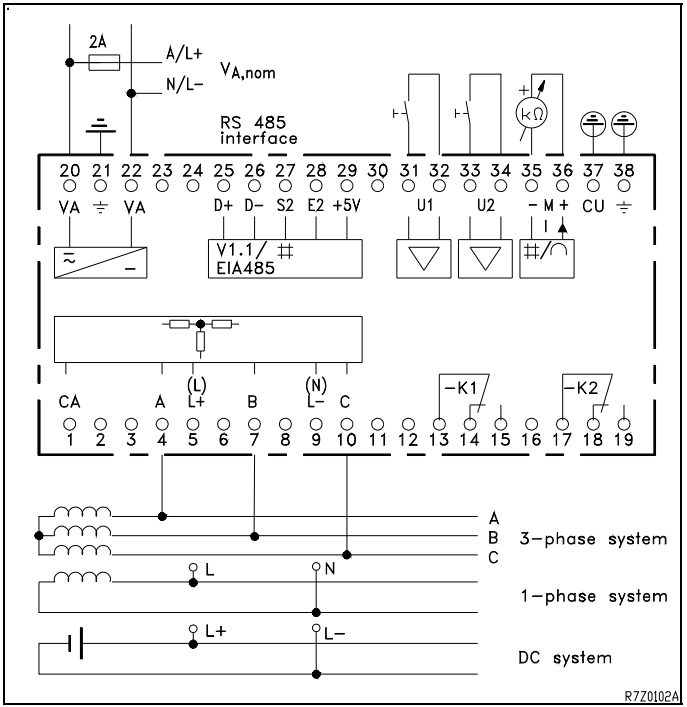
When connecting the auxiliary voltage $V_{A,nom}$, the user must first check to determine whether the nominal value of the auxiliary device voltage agrees with the nominal value of the auxiliary system voltage.

5 Connection
(continued)

On delivery, the signaling relays are configured in the energize-on-signal arrangement (“open-circuit function“). Selection of the normally-energized arrangement (“closed-circuit function“) is possible by the appropriate configuration.

It is possible to emulate an external test and canceling key via appropriate parameter setting.

5 Connection
(continued)



2 Terminal connection diagram for MR 627, diagram 89627.401

5 Connection
(continued)

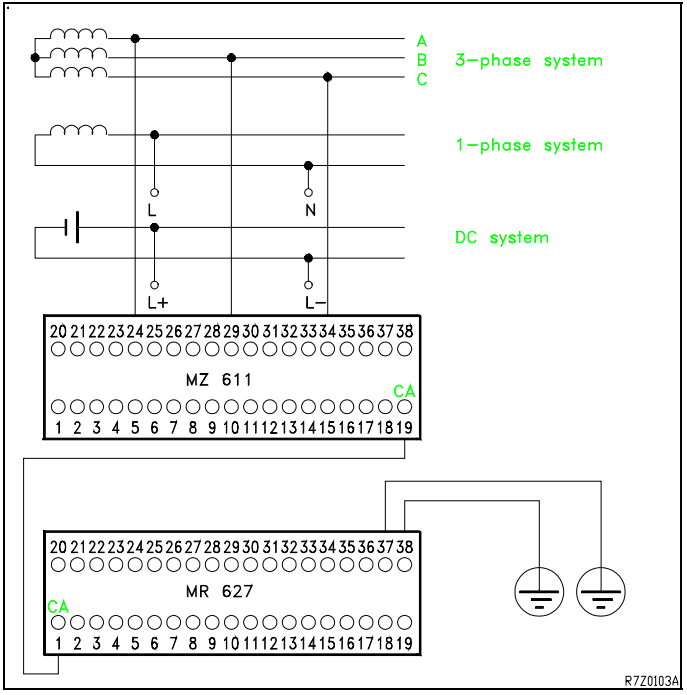
An instrument (range 1mA) can be connected to the current output of the MR 627 for the remote display of insulation resistance.

IT systems with elevated voltages (up to 1500 V DC / 1500 V AC (for systems without rectifiers) / 1300 V AC (for systems with rectifiers) can also be monitored using the MR 627. Adapter device MZ 611 needs to be connected in the measuring circuit in this case (see Figure 3) and an additional connection from terminal 19 of the MZ 611 to terminal 1 of the MR 627 needs to be wired.

Please check that the adapter device appropriate for the employed version of the MR 627 is used (see Accessories and Spare Parts).

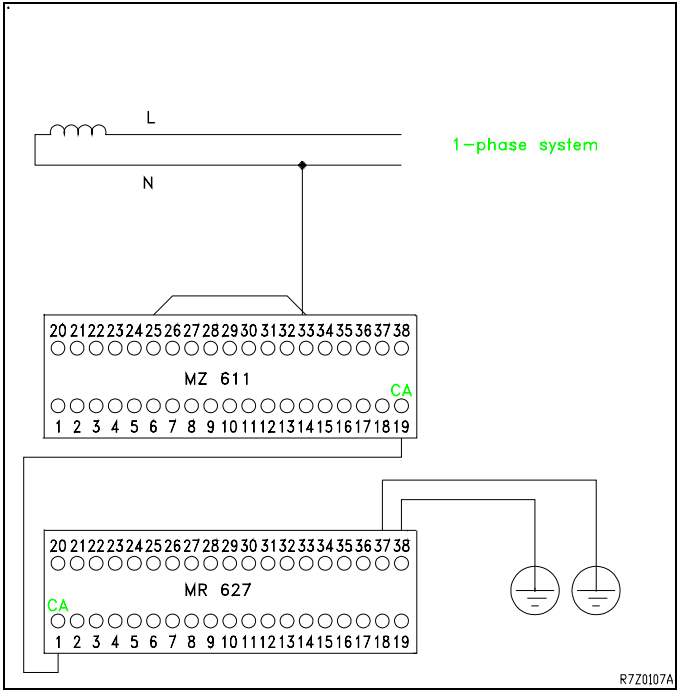
For insulation resistance monitoring with single-pole connection of the MR 627 via an adapter device, the measuring circuit is connected to the adapter device between the jumpered terminals 25/33 of the adapter device (see Figure 4). In version - 300 - 401 - 601, the nominal voltage between terminals 25/33 and the ground connection must not exceed 1500 V/√3. For the increased impedance/resistance version, the nominal voltage of 1500 V is permissible.

5 Connection
(continued)



3 Connection of the MR 627 to the power system via adapter device MZ 611

5 Connection
(continued)



4 Example for single-pole connection of the MR 627 via the MZ 611 adapter device

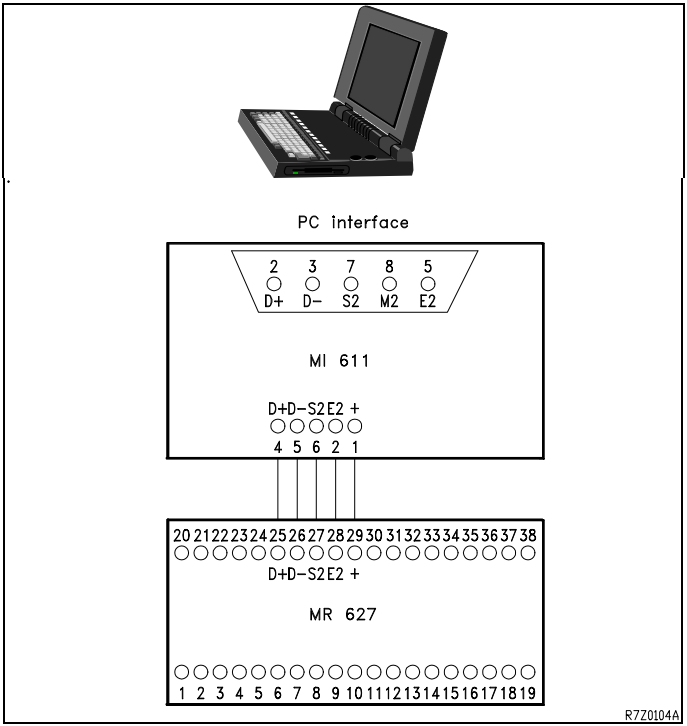
5 Connection
(continued)

The MR 627 provides a serial interface (RS 485) for linking to a PC. For communication between the PC and the MR 627, an interface converter MI 611 for DC-decoupling needs to be connected between the PC and the device (see Figure 5). The connection leads between the MI 611 and the MR 627 should be kept short (< 0.1 m). For longer connection leads, a screened cable needs to be used and between terminals 25 and 26 of the MR 627, a matching resistor of 220 Ω must be connected.

Connection of the interface converter MI 611 to a PC is via a 9-pin PC cable (D-Sub, connection 1:1).

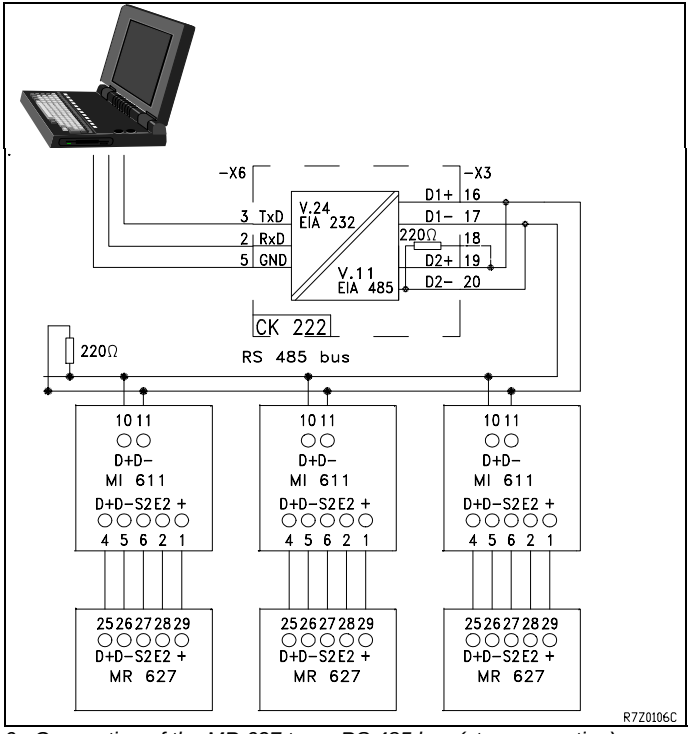
In operation mode ('Op. mode') 'Bus', a number of insulation monitoring devices and/or protection devices may be configured individually via their device address or may be connected to a central substation control system (see Figure 6). For the star connections, a 2-pole cable (screened/twisted) is to be used.

In connecting the RS 485 interface, the guidelines presented in the operating manual 'Bus Technology in ILS Systems' (ILS: Integrated Protection and Control System for Substations)' must be followed.



5 Linking the MR 627 to a PC via interface converter MI 611

5 Connection
(continued)



6 Connection of the MR 627 to an RS 485 bus (star connection)

6 Control

All data required for operation of the protection device are entered from the local control panel, and the data important for system management are read out there as well. Via the local control panel, using the cursor keys, the user can move around a menu tree divided into two branches (see Figure 7). In the parameter branch, the following is possible via the local control panel:

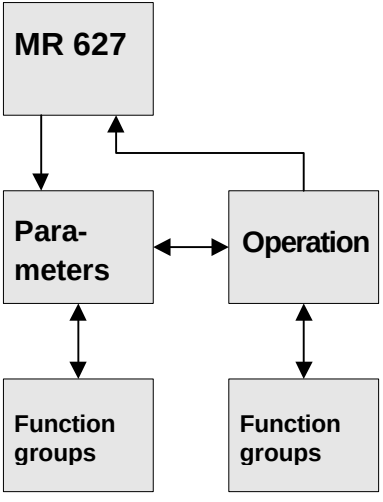
- Readout and modification of settings
- Configuration of the binary inputs, outputs and LED indicators

In the operation branch, the following is possible via the local control panel:

- Readout of updated measured operating data and state signals as well as stored monitoring signals
- Readout and resetting of counters
- Resetting of the displays (LEDs) and other control functions for testing and startup

Control is also possible from a PC using the FPCF operating program, provided that an additional interface converter (see 'Accessories and Spare Parts') is connected. If operate values and function parameters only are to be set via a PC, then the parameter setting program FPCC may be used instead.

6 Control
(continued)

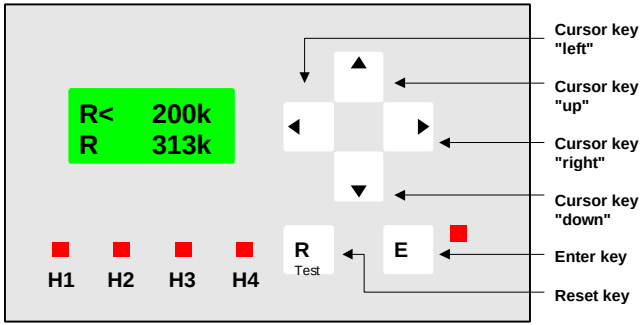


7 Menu tree MR 627

6 Control
(continued)

6.1 Display and Keyboard

The local control panel consists of an alphanumeric LCD display with 2 x 8 digits, six function keys and 4 LED indicators.



8 View of the local control panel

The settings, signals and measured values are displayed in plain text. It is possible, however, to switch to address display instead. This is achieved by pressing the ‘reset’ key and the’left’ or ‘right’ key simultaneously. In the address display mode, the settings, signals and measured values are numerically coded. The value of the information or parameter just selected is displayed. To switch back to plain text display, press the ‘reset’ key and the ‘left’ or ‘right’ key simultaneously.

6 Control
(continued)

Display

In the two-line display, the ‘Panels’, as far as activated, are displayed. In the Panels, the set operate value is displayed in the first line, the measured value in the second line. If more than one Panel is activated then the display switches every 5 seconds to the next Panel. Up to 3 Panels can be activated.
A ‘+’ or ‘-’ sign, respectively, indicates an insulation fault on the corresponding DC-side pole.

9 Example for the display of the three Panels

6 Control
(continued)

If the insulation monitoring function is disabled (‘MAIN: Insul on’, ‘No’) then there is no display of an updated measured value; instead the following is displayed:

10 Example for a Panel display when the insulation monitoring function is disabled

Under certain power system conditions, it may be impossible to acquire an updated measured value straight away. This is indicated in the display by ‘s’ for ‘search’. Until acquiring a newly updated measured value, the preceeding value persists in the display.

11 Example for a Panel display during the search procedure

If a key is pressed then the Panel display is terminated. The root of the menu tree is displayed.

6 Control
(continued)

Enter Key

To enter the input mode, press enter key (E). Press a second time to leave the input mode. Activation of the input mode is signaled by the red LED indicator on the enter key (E).

Reset Key / Test Key

The LED indicators can be reset by pressing the reset key (R). The records in the monitoring signal memory are not affected. Other functions of the reset key include deactivation of the input mode (without any further consequences), LED checking and, if pressed for longer than 2s, the triggering of a functional test. This test implies initiating an internal functional test with simulation of an insulation fault. Furthermore, the reset key, if configured appropriately, can be used to reset latching of the binary outputs (canceling key function).

6 Control
(continued)

Cursor Keys

Functions can be selected, parameter values changed and measured values read out by pressing the cursor keys.

Selecting Functions:

With the help of the cursor keys, the user moves around a menu tree. The menu tree consists of several menu planes. Starting from the menu root, the user moves to the next plane downwards and, within a plane, from left to right or vice versa. Changing between menu planes is via the cursor keys ‘down’ or ‘up’. Changing to a higher menu plane is possible from any menu point of the lower menu plane. Changing to the lower menu plane is always to the pre-determined prefered menu of the lower plane.

Changing Values:

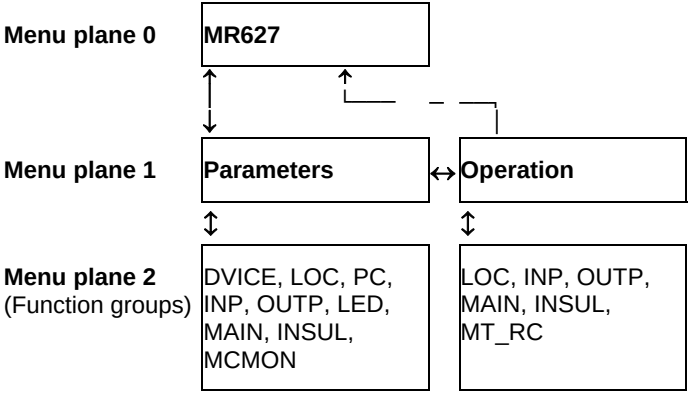
Values can only be changed in the input mode, which is signaled by the red LED indicator on the enter key (E). In the input mode, the “up” and “down” cursor keys are used to run through the value range, which is defined for each function together with the incrementation (see “Address List” in the appendix).

Exception: In the configuration of the binary inputs, outputs and LED indicators, the cursor keys ‘left’ or ‘right’ are used to run through the corresponding value range.

6 Control
(continued)

6.2 Menu Tree

The following figure illustrates navigation through the menu tree.



The menu tree is structured such that all elements for parameter setting are located in the 'Parameters' branch. There is a one-to-one assignment of all set parameters to the individual function groups and vice versa. For example, all set parameters belonging to the insulation monitoring function, are grouped together in the 'INSUL' function group.

6 Control
(continued)

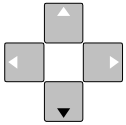
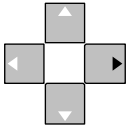
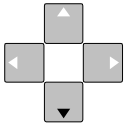
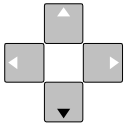
In the menu tree branch ‘Operation’, all elements relating to the operation of the device are located. These elements are the measured operating data, the counters, control and testing parameters, entry-into-memory parameters and the state signals. They are assigned to the individual function groups and are listed in the above sequence.

The following presentation of the individual control steps shows which display can be changed in each case by pressing the cursor keys. A small dot to the right of the enter key indicates that the red LED indicator is lit up.

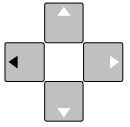
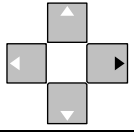
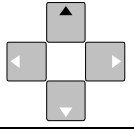
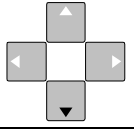
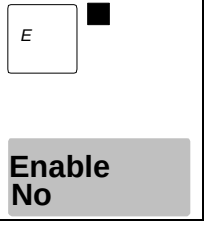
6.3 Global Change-Enabling Function for All Setting Values

Ithough it is possible to select any address and read the associated value by pressing the “up” and “down” keys, it is not possible to switch directly to the input mode. This safeguard prevents unwanted changes in the device setting. If the device setting is to be changed, the change-enabling function must first be activated. This is possible only after a special access barrier preventing accidental activation has been overcome. This special barrier, the ‘password’ consists of a pre-determined key combination sequence pressed within a certain time.

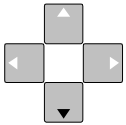
6 Control
(continued)

Control Step or Description	Action	Display
0 The set operate value and the updated measured value are displayed provided that the Panels are activated.		**R< 200k** **R 313k**
1 Press cursor key 'down'. The first menu point of the first menu plane is displayed.		**Para-** **meters**
2 Press cursor key 'right'. The next menu point in the same menu plane is displayed.		**Opera-** **tion**
3 Press cursor key 'down'. The next menu plane is displayed (function groups).		**LOC**
4 Press cursor key 'down'. The first element of the function group is displayed.		**Enable** **No**
5 Press the enter key. The password enter prompt is displayed.		**Password**

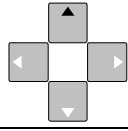
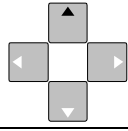
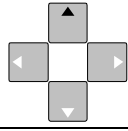
6 Control
(continued)

6 Press cursor key 'left'. Cursor key 'left' has the value 1. A star is displayed in position 1.		**Password** *****
7 Press cursor key 'right'. Cursor key 'right' has the value 2. A star is displayed in position 2.		**Password** *****
8 Press cursor key 'up'. Cursor key 'up' has the value 3. A star is displayed in position 3.		**Password** *****
9 Press cursor key 'down'. Cursor key 'down' has the value 4. A star is displayed in position 4.		**Password** *****
10 Press the enter key. The red LED to the right of the enter key will light up and the function group element, now alterable, is displayed.		

6 Control
(continued)

11 Press cursor key 'down'. The value of the function is changed.		**Enable** **Yes**
12 Press the enter key. The red LED to the right of the enter key will go out.	*E* ■	*E* □
13 Change is enabled for all settings after these steps. It is now possible to change to further setting functions where a change of setting is desired. If no further settings are made, the user can return to the uppermost menu plane via control steps 14 to 16. If no further action is taken, a switch to the Panel display - or for deactivated Panel to the uppermost menu plane (display 'MR627') - will proceed automatically after 200 s.		

6 Control
(continued)

14 Press cursor key 'up'. The upper menu plane is displayed (function group plane).		**LOC**
15 Press cursor key 'up'. The upper menu plane is displayed.		**Opera- tion**
16 Press cursor key 'up'. The uppermost menu plane is displayed.		**MR627**
17 If no further action is taken within 5 s, the display will switch to Panel display.		**R< 200k R 313k**

6 Control
(continued)

To prevent the change-enabling function from accidentally remaining active after a protective setting has been changed, the enabling function is automatically canceled 200 sec after the last key has been pressed. The display immediately jumps from any point of the menu tree to the Panel display provided that the Panels are activated. Should the Panels be deactivated then a switch to the uppermost menu plane proceeds after 200 s (display ‘MR627’). The return time is restarted when any of the six control keys is pressed.

6 Control
(continued)

Even when the change-enabling function is activated, not all functions can be changed. For some functions it is also necessary to deactivate the monitoring function ('MAIN: Insul on' = 'No'). Such settings include, particularly, the configuration parameters by means of which the device interfaces can be adapted to the system.
The following entries in the "Change" column of the address list (see Appendix) indicate whether values can be changed or not:

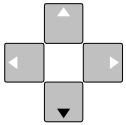
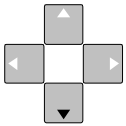
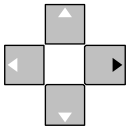
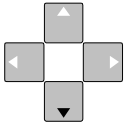
- **"on":** The value can be changed even when the monitoring function is enabled.
- **"off":** The value can be changed provided that the monitoring function is disabled.
- **"-":** The value can be read out but cannot be changed.

When the change-enabling function is activated, the monitoring function can be deactivated via function 'MAIN: Insul on' by setting the value to 'No'. The device is factory-set so that the monitoring function is deactivated.

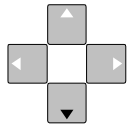
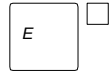
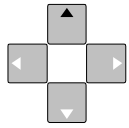
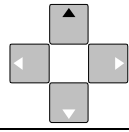
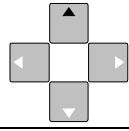
6 Control
(continued)

6.4 Changing Settings

If all the conditions given above for change enabling are satisfied, the desired setting can be entered.

Control Step or Description	Action	Display
0 The set operate value and the updated measured value are displayed.		**R< 200k** **R 313k**
1 Press cursor key 'down'. The first menu point of the first menu plane is displayed. (Control mode)		**Para-** **meters**
2 Press cursor key 'down'. The first function group of the next menu plane is displayed.		**DVICE**
3 Press cursor key 'right' 7 times. The function groups of the same menu plane are displayed sequentially.		**INSUL**
4 Press cursor key 'down'. The first set parameter of the 'INSUL' function group is displayed.		**R<** **200k**

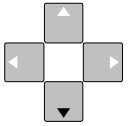
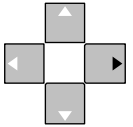
6 Control
(continued)

5 Press the enter key. The red LED to the right of the enter key will light up.		
6 Press cursor key 'down' until the desired setting value is reached. The desired value is displayed.		**R<** **150k**
7 Press the enter key. The red LED to the right of the enter key will go out and the device will now operate with the new set value.		
8 Press cursor key 'up'. The upper menu plane is displayed (function group plane).		**INSUL**
9 Press cursor key 'up'. The upper menu plane is displayed.		**Para-meters**
10 Press cursor key 'up'. The uppermost menu plane is displayed.		**MR627**

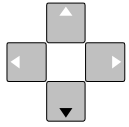
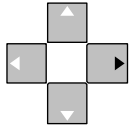
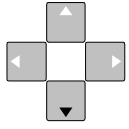
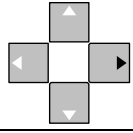
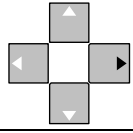
11 If no further action is taken within 5 s, the display will switch to Panel display.		**R< 150k** **R 313k**

6.5 Readout of the Monitoring Signal Memory

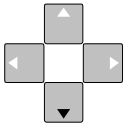
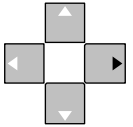
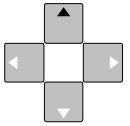
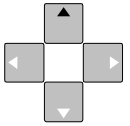
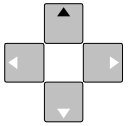
The monitoring signal memory may be read out via the corresponding function. There is no need to activate change-enabling for this action.

Control Step or Description	Action	Display
0 The set operate value and the updated measured value are displayed.		**R< 200k** **R 313k**
1 Press cursor key 'down'. The first menu point of the first menu plane is displayed.		**Para-meters**
2 Press cursor key 'right'. The next menu in the same menu plane is displayed.		**Opera-tion**

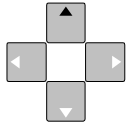
6 Control
(continued)

3 Press cursor key 'down'. The next menu plane is displayed (function groups).		**LOC**
4 Press cursor key 'right' 5 times. The function groups of the same menu plane are displayed sequentially.		**MT RC**
5 Press cursor key 'down'. The first element of the 'MT_RC' function group is displayed and the presence of 2 entries in the monitoring signal memory is indicated.		**No. warn** **2**
6 Press cursor key 'right'. The next element of the function group is displayed.		**Reset** **DoNotExe**
7 Press cursor key 'right'. The next element of the function group is displayed.		**Records** ↓

6 Control
(continued)

8 Press cursor key 'down'. The first entry in the monitoring memory is displayed. If there are no entries in the monitoring memory then this memory cannot be accessed.		**SFMON** **ClRstCS**
9 Press cursor key 'right'. The second entry in the monitoring memory is displayed.		**SFMON** **ParamCSE**
10 Press cursor key 'up'. The upper menu plane is displayed.		**Records** ↓
11 Press cursor key 'up'. The upper menu plane is displayed (function groups).		**MT RC**
12 Press cursor key 'up'. The upper menu plane is displayed.		**Opera-** **tion**

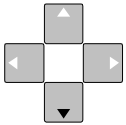
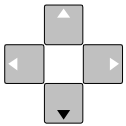
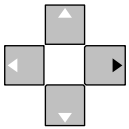
6 Control
(continued)

13 Press cursor key 'up'. The uppermost menu plane is displayed.		**MR627**
14 If no further action is taken within 5 s, the display will switch to Panel display.		**R< 200k** **R 313k**

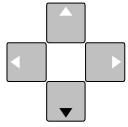
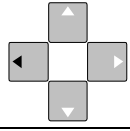
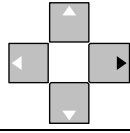
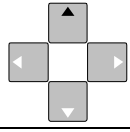
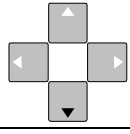
6 Control
(continued)

6.6 Local Change-Enabling for Individual Values or Trigger Functions

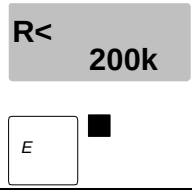
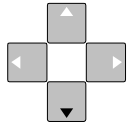
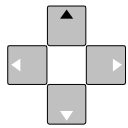
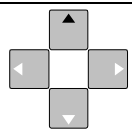
Individual functions or trigger functions can be directly changed or initiated by entering the password. The following example shows the password-protected changing of the set value R<.

Control Step or Description	Action	Display
0 The set operate value and the updated measured value are displayed.		**R< 200k** **R 313k**
1 Press cursor key 'down'. The first menu point in the first menu plane is displayed.		**Para-** **meters**
2 Press cursor key 'down'. The first function group of the next menu plane is displayed.		**DVICE**
3 Press cursor key 'right' 7 times. The function groups of the same menu plane are displayed sequentially.		**INSUL**

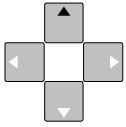
6 Control
(continued)

4 Press cursor key 'down'. The first set parameter of the 'INSUL' function group is displayed.		**R<** **200k**
5 Press the enter key. The password enter prompt is displayed. In the following example, the factory-set password (1234') is used.		**Passw. ?** ********
6 Press cursor key 'left'. Cursor key 'left' has the value 1. A star is displayed in position 1.		**Passw. ?** *****
7 Press cursor key 'right'. Cursor key 'right' has the value 2. A star is displayed in position 2.		**Passw. ?** *****
8 Press cursor key 'up'. Cursor key 'up' has the value 3. A star is displayed in position 3.		**Passw. ?** *****
9 Press cursor key 'down'. Cursor key 'down' has the value 4. A star is displayed in position 4.		**Passw. ?** *****

6 Control
(continued)

10 Press the enter key. The red LED to the right of the enter key will light up and the set value, now alterable, will be displayed.		
11 Press cursor key 'down' until the desired set value is displayed.		
12 Press the enter key. The red LED to the right of the enter key will go out and the device will now operate with the new set value.		
13 Press cursor key 'up'. The upper menu plane is displayed (function group plane).		
14 Press cursor key 'up'. The upper menu plane is displayed.		

6 Control
(continued)

15 Press cursor key 'up'. The uppermost menu plane is displayed.		**MR627**
16 If no further action is taken within 5 s, the display will switch to Panel display.		**R< 150k** **R 313k**

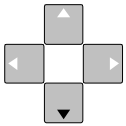
6 Control
(continued)

6.7 Change of Password

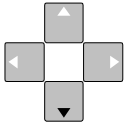
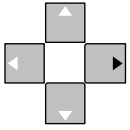
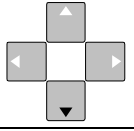
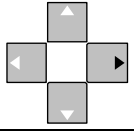
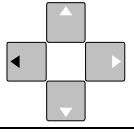
The password consists of a sequence of up to 4 cursor keys and can be changed at any time. Certain values are assigned to the cursor keys.

- Value ‘1’ is assigned to cursor key ‘left’.
- Value ‘2’ is assigned to cursor key ‘right’.
- Value ‘3’ is assigned to cursor key ‘up’.
- Value ‘4’ is assigned to cursor key ‘down’.

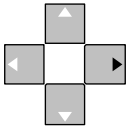
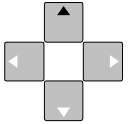
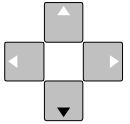
The following example shows how to change the factory-set password (‘1234’).

Control Step or Description	Action	Display
0 The set operate value and the updated measured value are displayed.		**R< 200k** **R 313k**
1 Press cursor key ‘down’. The first menu plane is displayed.		**Para-** **meters**

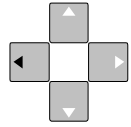
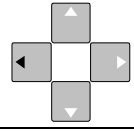
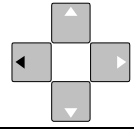
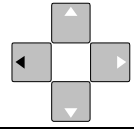
6 Control
(continued)

3 Press cursor key 'down'. The next menu plane is displayed (Function group plane).		**DVICE**
4 Press cursor key 'right'. The next function group in the same menu plane is displayed.		**LOC**
5 Press cursor key 'down'. The first set parameter in the 'LOC' function group is displayed.		**Language** **English**
6 Press cursor key 'right'. The next set parameter in the 'LOC' function group is displayed.		**Password** ********
7 Press the enter key. The updated password enter prompt is displayed.		**Passw. ?** ********
8 Press cursor key 'left'. Cursor key 'left' has the value 1. A star is displayed in position 1.		**Passw. ?** *****

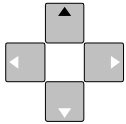
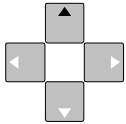
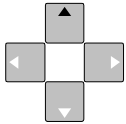
6 Control
(continued)

9 Press cursor key 'right'. Cursor key 'right' has the value 2. A star is displayed in position 2.		**Passw. ?** *****
10 Press cursor key 'up'. Cursor key 'up' has the value 3. A star is displayed in position 3.		**Passw. ?** *****
11 Press cursor key 'down'. Cursor key 'down' has the value 4. A star is displayed in position 4.		**Passw. ?** *****
12 Press the enter key. The red LED to the right of the enter key will light up and the new password can be entered. In the following example, password '1111' is entered.		**Password** _ 

6 Control
(continued)

13 Press cursor key 'left'. Cursor key 'left' has the value 1. A star is displayed in position 1. If the enter key is pressed again at this stage, the password will be inactivated and all changes are possible after change enabling.		**Password** *
14 Press cursor key 'left'. A star in position 2 is added to the display.		**Password** **
15 Press cursor key 'left'. A star in position 3 is added to the display.		**Password** ***
16 Press cursor key 'left'. A star in position 4 is added to the display.		**Password** ****
17 Press the enter key. The display is cleared and the user needs to confirm the new password.		**Confirm** _

6 Control
(continued)

18 Steps 13 to 16 need to be repeated now to confirm the new password.		
19 Press the enter key. The red LED to the right of the enter key goes out and the new password (here, for example, 1111) is now confirmed. Should a different password have been entered, the user is automatically returned to step 17. If the reset key is pressed at this stage, then the new password is rejected.		**Password** ********
20 Press cursor key ‘up’. The upper menu plane is displayed.		**LOC**
21 Press cursor key ‘up’. The upper menu plane is displayed.		**Para-meters**
22 Press cursor key ‘up’. The uppermost menu plane is displayed.		**MR627**

6 Control
(continued)

23 If no further action is taken within 5 s, the display will switch to Panel display.		**R< 200k** **R 313k**

If the 4 cursor keys are pressed simultaneously while switching on the auxiliary voltage, the password will be displayed after a brief moment.

7 Settings

The MR 627 insulation monitoring device must be adjusted to the power system by means of appropriate settings. This chapter gives instructions for determining the proper settings. The address list in the Appendix lists all parameters with their setting ranges and incrementation or selection tables (see Section 'Parameters').

The units are supplied with a factory-set configuration of settings that in most cases correspond to the default setting (underlined value in the address list). For the following functions, however, the factory-set configuration differs from the default settings:

Function	**Function assignment (configuration on delivery)**
INP: U1	INSUL: Test X
INP: U2	MAIN: Reset X
OUTP: K1	INSUL: tR< elap
OUTP: K2	INSUL: tR<<elap
LED: H3	INSUL: tR< elap
LED: H4	INSUL: tR<<elap
MAIN: Insul on	Yes
OUTP: BlOutp.L	No

Although the factory-set configuration of settings will suit most applications, please check that it meets the requirements of your individual system.

The default settings given in the address list are activated after a cold restart. The signaling relays of the MR 627 are blocked and

the monitoring function is disabled in this case. All settings must be re-entered after a cold restart.

000 000	**DVICE: Dev.type**
	The type designation is displayed. The display cannot be altered.
000 050	**DVICE: Aux.volt**
	Setting of the auxiliary voltage employed.
000 051	**DVICE: Nom.volt**
	Nominal voltage setting of the IT power system.
002 000	**DVICE: Dat.mod.**
	The value displayed provides information about the data model that must be installed in the PC so that the FPC(F)(C) program can be used with the MR 627. The display cannot be altered.
002 020	**DVICE: SW vers.**
	The software version installed in the hardware is displayed. The display cannot be altered.
003 020	**LOC: Language**
	The language for the display is selected with this setting.
003 035	**LOC: Password**
	This setting is used to change the password.

7 Settings
(continued)

048 022	**LOC: Disp.R<**
	This setting determines whether the operate value R< and the updated measured value shall be read out in the display mode (as 'Panel').
048 023	**LOC: Disp.R<<**
	This setting determines whether the operate value R<< and the updated measured value shall be read out in the display mode (as 'Panel').
048 024	**LOC: Disp.I>**
	This setting determines whether the operate value I> and the updated measured value shall be read out in the display mode (as 'Panel').
003 068	**PC: Bay add.**
003 069	**PC: Dev.add.**
	The device address is used for device identification when communication is being carried out through the serial interface for the operation mode setting 'bus'. The bay address of the communication unit and the device address of the process unit must have the identical setting.

7 Settings
(continued)

048 010	**PC: Op. mode**
	This setting determines whether communication via the serial interface is in 'single' operation (9600 baud) or 'bus' mode (1200 baud).
054 001	**INP: U1**
054 004	**INP: U2**
LED	Assignment of functions to the inputs. Where a function has been assigned, it is activated by bridging or opening the input (depending on the setting at addresses 054 002, 054 005) using a jumper or external pushbutton key. <u>Configurable Functions</u> w/o fct. — without function INSUL: Test X — Initiation of the test mode OUTP: BlOutp.X — Blocking of the signaling relays OUTP: Reset X — Resetting of the signaling relays LED: Reset X — Resetting of the LED'S MAIN: Reset X — Resetting of the LED's and latching of the signaling relays

054 002	**INP: Op. U1**
054 005	**INP: Op. U2**
	Selection of operation mode for the two inputs. Selection as to whether the activation of a configured function is by short-circuiting the input (op. mode 'high') or by opening the input (op. mode 'low').
021 014	**OUTP: BlOutp.L**
	Selection for the signaling relays as to whether blocking shall take place.

7 Settings
(continued)

051 001	**OUTP: K1**	
051 003	**OUTP: K2**	
	Assignment of functions to the signaling relays. Configurable Functions	
	w/o fct.	without function
	MAIN: Bl./Flt.	Blocked and faulty
	SFMON: Warning	Warning entries present
	INSUL: Start.R<	Insulation resistance fallen below level R<
	INSUL: StartR<<	Insulation resistance below level R<<
	INSUL: tR< elap	Operate delay tR< elapsed
	INSUL: tR<<elap	Operate delay tR<< elapsed
	INSUL: tR</<<	Operate delay tR< or tR<< elapsed
<1>	INSUL: Start.I>	Operate value exceeded for I>
<1>	INSUL: tI> elap	Operate delay tI> elapsed
	OUTP: Reset X	External resetting of the signaling relays
	LED: Reset X	External resetting of the LED's
	MCMON: ConM.trg	Connection monitoring triggered
	INSUL: Test mod	Internal function test running

<1> Not supported in version - 320 - 401 - 620

050 000	**OUTP: Op. K1**
050 001	**OUTP: Op. K2**
	Selection for the signaling relays: *Updated (1)* Updating mode *Man.rset (2)* Latching mode; resetting via reset key or via an external control input with the functions *'OUTP: Reset X'* or *'MAIN: Reset X'*. *Flt.res. (4)* Latching mode; reset in the event of a repeated starting. */updated (4)* Updating mode in the normally-energized arrangement (closed-circuit principle). */man.rst (5)* As for setting 2, but in the normally-energized mode.
048 011	**OUTP: Flash.K1**
048 012	**OUTP: Flash.K2**
	Selection of clocked mode for the corresponding signaling relay.
034 061	**OUTP: Rset key**
	Selection as to whether the signaling relays shall be reset when the reset key is pressed. For the setting 'No', pressing of the reset key results in resetting of the LED's only.

057 001	**LED: H1**	
057 007	**LED: H2**	
057 007	**LED: H3**	
057 007	**LED: H4**	
	Assignment of functions to LED's H3 and H4. The function assignment to LED's H1 and H2 cannot be altered.	
	Configurable Functions	
	w/o fct.	without function
	INSUL: Start.R<	Insulation resistance fallen below level R<
	INSUL: StartR<<	Insulation resistance below level R<<
	INSUL: tR< elap	Operate delay tR< elapsed
	INSUL: tR<<elap	Operate delay tR<< elapsed
	INSUL: tR</<<	Operate delay tR< or tR<< elapsed
<1>	INSUL: Start.I>	Operate value exceeded for I>
<1>	INSUL: tI> elap	Operate delay tI> elapsed
	OUTP: BlOutp.X	External blocking of the signaling relays
	OUTP: Reset X	External resetting of the signaling relays
	MCMON: ConM.trg	Connection monitoring triggered
	INSUL: Test mod	Internal function test running

<1> Not supported in version - 320 - 401 - 620

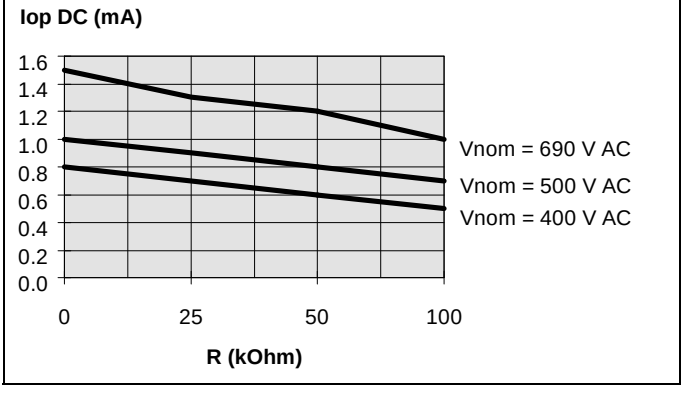
7 Settings
(continued)

058 001	**LED: Op. H3**	
058 003	**LED: Op. H4**	
	Selection for the LED's:	
	Updated (1)	Updating mode
	Man.rset (2)	Latching mode; resetting via reset key or via an external control input with the functions *'LED: Reset X'* or *'MAIN: Reset X'*.
	Flt.res. (4)	Latching mode; reset in the event of a repeated starting.
	/updated (4)	Updating mode in the normally-energized arrangement (closed-circuit principle).
	/man.rst (5)	As for setting 2, but in the normally-energized mode.
048 013	**LED: Flash.H3**	
048 014	**LED: Flash.H4**	
	Selection of flashing mode for the corresponding LED.	

003 030	**MAIN: Insul on**
	Enabling or disabling of the insulation monitoring function. Functions marked *'off'* in the address list may be changed with disabled insulation monitoring function only.
048 000	**INSUL: R<**
	Setting for the operate value of the first stage.
048 001	**INSUL: R<<**
	Setting for the operate value of the second stage.
048 002	**INSUL: tR<**
	Setting for the operate delay of the first stage.
048 003	**INSUL: tR<<**
	Setting for the operate delay of the second stage.

7 Settings
(continued)

048 004	INSUL: I>
<1>	Setting the operate value of the current stage for DC current high-speed tripping (see Figure11). The operate value to be set is the DC current I_{op}-DC flowing for an insulation fault with a resistance at the acceptance limit (depending on the application).
048 016	**INSUL: tI>**
<1>	Setting for the operate delay of the current stage.



12 Tripping current characteristic for DC high-speed tripping <1>

<1> Not supported in version - 320 - 401 - 620

7 Settings
(continued)

034 060	**INSUL: VinAdapt**	
	If using the adapter device MZ 611 (for elevated input voltages), the setting should be *'Yes'* here.	
048 015	**INSUL: CGmax**	
	Setting for the maximum power system capacitance.	
048 005	**INSUL: Meas.pr.**	
	Selection of measurement principle.	
	Pulse (1)	This measurement principle is suitable for IT power systems with electrically connected DC and AC power systems.
<1>	*DC* (*2)*	This measurement principle is suitable for pure AC systems only.
<1>	*VDCpulse* (3)	This measurement principle is suitable for IT power systems with electrically connected DC or AC power systems. Additionally, unbalanced faults on the DC side can be signaled at high speed depending on the set operate value *(INSUL:I>).*

<1> Not supported in version - 320 - 401 - 620

048 006	**INSUL: tR< enab**
048 007	**INSUL: tR<<enab**

Selection as to whether insulation faults should be signaled in AC and/or DC power systems in the appropriate stage. One of the stages must be set to *'AC/DC'*.
The following combinations make sense:

	Measurement principle	INSUL: tR< enab	INSUL: tR<<enab
	Pulse	AC/DC	AC/DC
	Pulse	AC/DC	AC only
	Pulse	AC/DC	DC only
	Pulse	AC/DC	DC+ only
	Pulse	AC/DC	DC- only
<1>	DC	AC/DC	AC/DC
<1>	VDCpulse	AC/DC	AC/DC
<1>	VDCpulse	AC/DC	DC only
<1>	VDCpulse	AC/DC	DC+ only
<1>	VDCpulse	AC/DC	DC- only

<1> Not supported in version - 320 - 401 - 620

048 008	MCMON: W.ConMon
	Enabling or disabling connection monitoring of the phase side. If enabled is selected here, the connections are monitored continuously. Should the leads be interrupted or disconnected, a warning entry is written into the monitoring signal memory. The connection leads need to be tested without delay in this case, as the insulation resistance cannot be measured. Connection monitoring is operational for the measuring principles 'pulse' and 'VDC/pulse' only.

8 Information and Control Functions

The MR 627 generates a large number of signals, processes binary input signals and acquires measured data during fault-free operation. This information can be read out from the local control panel and a number of control functions can be carried out for the purposes of setting, testing and resetting. The address list in the Appendix lists all parameters (in the Section 'Operation').

003 010	**LOC: Enable** This setting allows enabling for value changing from the local control panel.
054 000	**INP: State U1**
054 003	**INP: State U2** The updated state of the inputs is displayed as follows: ☐ Display 'Low': The input is not short-circuited. ☐ Display 'High': The input is short-circuited.
021 009	**OUTP: Reset L** The signaling relays are reset.

8 Information and Control Functions
(continued)

021 015	**OUTP: Outp. bl.**
	The updated state - regarding signaling relay blocking - is displayed.
051 000	**OUTP: State K1**
051 002	**OUTP: State K2**
	The updated state of the signaling relays is displayed as follows: ☐ Display 'inactive': Signaling relay not activated. ☐ Display 'active': Signaling relay activated.
040 015	**OUTP: Reset X**
	The updated state as to whether resetting via an input has taken place is displayed.
040 088	**OUTP: Reset**
	The updated state as to whether resetting via the local control panel or the reset key has taken place is displayed.
000 085	**MAIN: Cold rst**
	A cold restart is executed.
003 039	**MAIN: Warm rst**
	In a warm restart, the device functions as it does when the auxiliary voltage supply is turned on.

8 Information and Control Functions
(continued)

017 063	**MAIN: AdjustAD**
	Oiffset adjustment for the A/D converter. Required after exchanging the EEPROM's.
004 065	**MAIN: Bl./Flt.**
	The updated state as to whether a blocking or fault is present is displayed.
005 030	**INSUL: R**
	The updated insulation resistance is displayed.
005 031	**INSUL: I**
<1>	The updated DC fault current for unbalanced faults is displayed.
048 021	**INSUL: Test L**
	With this setting, testing of the device or the insulation monitoring function can be carried out by simulating an insulation fault.

<1> Not supported in version - 320 - 401 - 620

9 Commissioning

After the MR 627 has been installed and connected in accordance with the Chapters ‘Installation’ and ‘Connection’, the commissioning procedure can begin.

Before turning on the power supply voltage, the following items must be checked again:

- ☐ Is the MR 627 connected to the ground, check-back ground and protective conductor at the specified location?
- ☐ Does the nominal value of the auxiliary device voltage $V_{A,nom}$ agree with the nominal value of the auxiliary system voltage?
- ☐ Does the nominal voltage V_{nom} agree with the nominal value of the system voltage?
- ☐ Are the connections and phase sequence correct?

After completion of the wiring work, compliance with the conditions given in VDE 0100 must be ensured.

9 Commissioning
(continued)

Once all checks have been made, the power supply voltage may be turned on. After voltage has been applied, the device starts up. During startup, various startup tests are carried out. After approximately 10 s the MR 627 is ready for operation. This is indicated by a change of the display from the test mode to the Panel display provided that the Panels are activated. Otherwise, the uppermost menu plane is displayed (display ‘MR627’).

9 Commissioning
(continued)

On delivery, the following values are set:

Measuring principle	Pulse	
R<	50 kΩ	(100 kΩ <1>)
tR<	0 s	
R<<	200 kΩ	(400 kΩ <1>)
tR<<	0 s	
K1	tR< elap, energize-on-signal arrangement (open-circuit principle)	
K2	tR<<elap, energize-on-signal arrangement (open-circuit principle)	
C_{Gmax}	30 μF	

<1> For version - 320 - 401 - 620

A function test can be carried out with a simulated insulation fault, for example, with the help of a suitable resistor.

10 Troubleshooting

Listed below are several conceivable problems, their causes, and possible methods for eliminating them. This section is intended as a general orientation only, and in cases of doubt it is better to return the MR 627 to the manufacturer. In such cases the packaging instructions in Chapter 'Installation' must be followed.

Malfunctioning after connection to the system:

- ☐ The LCD display does not light up.
  - ■ Check to see whether there is supply voltage at the device connection points.
  - ■ Check to see whether the magnitude of the auxiliary voltage is correct. The MR 627 is protected against damage resulting from polarity reversal.
- ☐ The MR 627 signals "Warning" (LED H1).

The user can check the number of warning entries and access the monitoring signal memory.

004 019	MT_RC: No. warn
	The number of warnings in the monitoring signal memory is displayed.

003 008	**MT_RC: Reset**
	Trigger function for clearing the monitoring signal memory.
003 001	**MT_RC: Records**
	Entry into monitoring signal memory.

Identify the specific problem by reading out the monitoring signal memory (see Chapter 6, Section 'Monitoring Signal Memory Readout'). The following table lists the possible monitoring signal entries, the faulty area, the MR 627 response and the mode of the output relay configured for the warning.

090 003	**SFMON: Para.CSE**
	Checksum error in settings area. Response: cold restart Output relay: updating
090 014	**SFMON: MSM CSE**
	Checksum error in the area of the monitoring signal. Response: warm restart Output relay: updating

10 Troubleshooting
(continued)

090 021	**SFMON: OpWReset**
	Processor malfunction. (OpW: Operat. watchdog) Response: warm restart Output relay: latching
090 022	**SFMON: Pow.fail**
	Auxiliary voltage present but fallen below the minimum value. Response: blocking (lifted on voltage recovery) Output relay: updating
090 026	**SFMON: Sys.c.CS**
	Checksum error in the internal constants area. Response: warm restart / blocking Output relay: latching
090 027	**SFMON: TimerFlt**
	Processor timer defective. Response: warm restart Output relay: updating
090 028	**SFMON: ColdstCS**
	A cold restart was carried out. Response: warm restart Output relay: updating

10 Troubleshooting
(continued)

090 072	**SFMON: EPROM**
	Checksum error in the EPROM area. Response: warm restart Output relay: updating
090 073	**SFMON: EEPROM**
	Checksum error in the EEPROM area. Response: warm restart Output relay: updating
090 074	**SFMON: RAM int.**
	Write / read error in the processor RAM. Response: warm restart Output relay: updating
090 075	**SFMON: RAM ext.**
	Write / read error in the RAM. Response: warm restart Output relay: updating
090 076	**SFMON: Ex.reset**
	Processor malfunction. Response: warm restart / blocking Output relay: updating

090 077	**SFMON: Ex.n.int**
	Processor malfunction. Response: warm restart / blocking Output relay: updating
090 078	**MCMON: Con.PFlt**
	Connection monitoring has been triggered. A fault in the phases was detected. An entry into the monitoring signal memory is made only if connection monitoring is enabled *('MCMON: W.ConMon' 'Yes).* Response: none Output relay: updating
090 079	**MCMON: Con.GFlt**
	Connection monitoring has been triggered. A fault in the residual path was detected. Response: none Output relay: updating
090 080	**INSUL: Test err**
	Fault detected in the test function. Response: none Output relay: updating

10 Troubleshooting
(continued)

098 030	SFMON: No calib
	No offset calculation after offset adjustment for the A/D converter. Response: warm restart / blocking Output relay: updating

- ☐ The MR 627 signals 'Blocked / Faulty' LED H2.
  - Check whether a 'Warning' signal is present. If yes, identify as described above.
  - Check whether the monitoring function is disabled (check via address 03 30 *'MAIN: Insul on'*).
  - Check whether the signaling relays are blocked via the integrated local control panel (check via address 21 *25 'OUTP: Outp.Bl.'*).
  - Check whether the signaling relays are blocked via an input.

If none of the checks listed above are successful and the problem is not eliminated, send the unit to the manufacturer along with a detailed description of the problem.

11 Maintenance and Storage

11.1 Maintenance

The MR 627 is a low-maintenance device. The components used in the units are selected so that they meet exacting requirements. Recalibration is not necessary. The MR 627 incorporates in its system a very extensive self-monitoring function for hardware and software.

The MR 627 should be routinely checked for proper operation. It is recommended that the first functional test be carried out after about 6 to 12 months. Additional functional tests should be carried out at intervals of about 2 to 3 years – 4 years at the maximum.

11.2 Storage

The device must be stored in a dry and clean environment. A temperature range of -25 °C to +55 °C (see Chapter 'Technical Data') must be maintained. The relative humidity must not result in the formation of either condensed water or ice.

12 Accessories and Spare Parts

The MR 627 is supplied with standard labeling. User-specific labeling can be written onto self-adhesive blank strips.

Labeling can be applied to the label strips by one of the following methods:

- ☐ Overhead projector pen, waterproof type, for example, "Stabilo" brand pen, OH Pen 196 PS.
- ☐ Typewriter with a pure silk fabric ribbon, for example, “Pelikan“ brand, type 58 A 371.

For the remote display of the insulation resistance, an amperemeter calibrated in kΩ can be ordered. This should be mounted in a panel not exceeding 3 mm in thickness.

For the external jumpers and canceling keys, general-purpose types may be used.

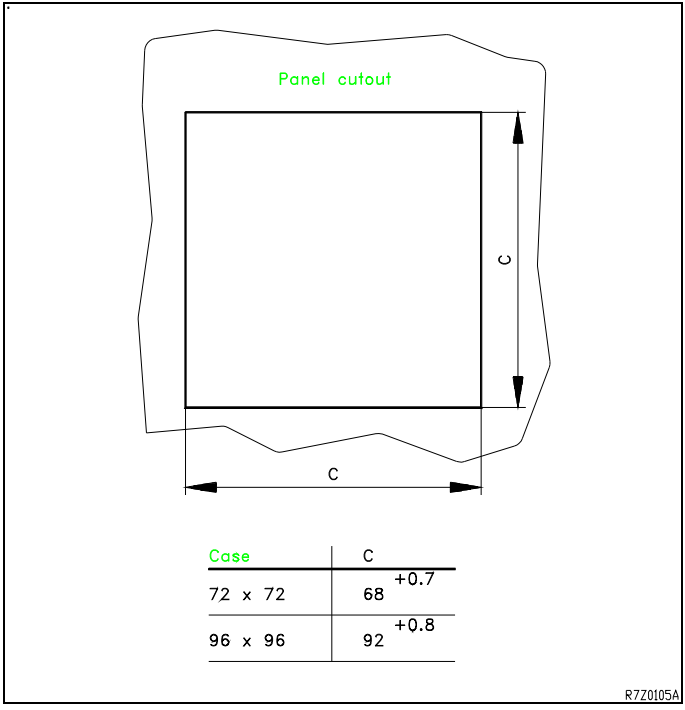
12 Accessories and Spare Parts
(continued)

Description		Order No.
Label strips (10 sets)		89512-4-0336820
Amperemeter 72 x 72 with narrow frame		on request
Amperemeter 96 x 96 with narrow frame		on request
Adapter device MZ 611 V_{nom} up to • 1.5 kV DC • 1.5 kV AC (for systems without rectifiers) • 1.3 kV AC (for systems with rectifiers)	<2> <1>	89611-4-0336938-300-422 89611-4-9650382-320-422
Interface converter MI 611		89611-4-0336745-431
FPCC parameter setting program		251 254 271
FPCF operating program		251 254 676

<2> For the MR 627 in version - 300 - 401 - 600

<1> For the MR 627 in version - 320 - 401 - 620

12 Accessories and Spare Parts
(continued)



13 Panel cutout for amperemeter

13 Ordering Information

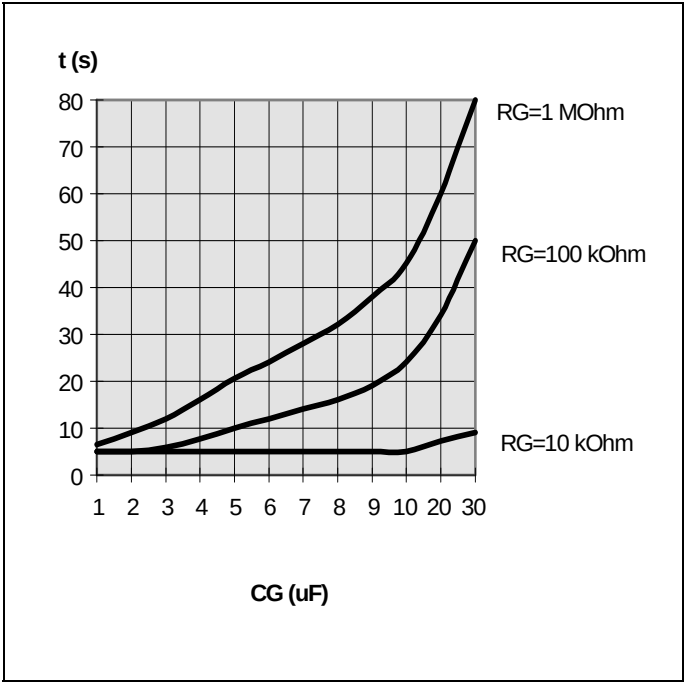
Design Versions	Order No.										
Insulation Monitoring Device											
MR 627	MR627-0-	2	3	3	3	4	0	0	-300	-401	□	-601
MR 627 with increased intern.	MR627-0-	2	3	3	3	5	0	0	-320	-401	□	-620
Standard case 100 mm width. For ungrounded systems with nominal voltage V_{nom} up to 690 V DC or 690 V AC and nom. frequency f_{nom} 40 to 400 Hz. Nom. auxiliary voltage $V_{H,nom}$ for power supply, 60 to 250 V DC or 100 to 230 V AC, 50/60 Hz. Setting range for the operate value R_{an} = 10 to 990 kΩ <2> R_{an} = 50 to 990 kΩ <1>												
Accept. test certificate B <3> per DIN 50049 - 3.1B												-599

<1> For the MR 627 in version - 320 - 401 - 620 (with 1MΩ internal resistance/impedance).

<2> For the MR 627 in version - 300 - 401 - 600.

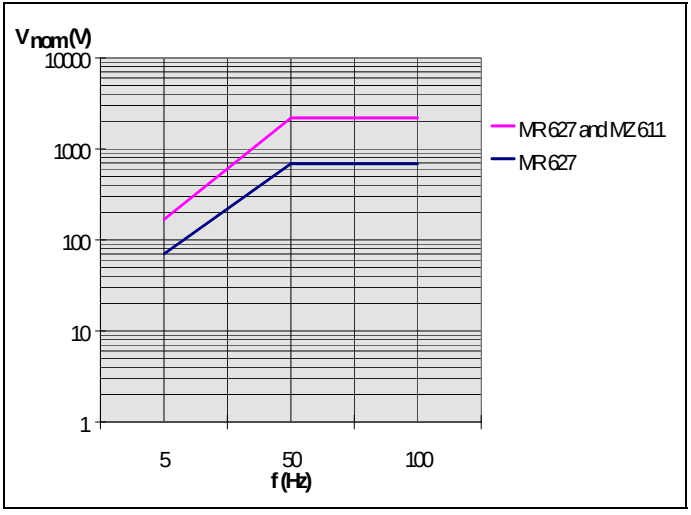
<3> Can only be ordered prior to manufacture of the device. This order extension number is not printed out on the type identification label on the device or packaging.

14 Characteristics



14 Measurement data acquisition time as a function of the system leakage capacitance

14 Characteristics
(continued)



15 Maximum nominal voltage in the frequency range below 50 Hz

A Anhang / Appendix
Adressenliste / Address List

Funktionsgruppen		Function Groups	
GERÄT:	Gerät	DVICE:	Device
VOB:	Vor-Ort-Bedienung	LOC:	Local control panel
PC:	PC-Kopplung	PC:	PC link
EING:	Eingang	INP:	Input
AUSG:	Binäre Ausgabe	OUTP:	Binary output
LED:	Leuchtanzeige (LED)	LED:	LED indicator
GRUND:	Grundfunktion	MAIN:	Main function
ISO:	Isolationsüberwachung	INSUL:	Insulation monitoring
MKÜ:	Meßkreisüberwachung	MCMON:	Measuring circuit monitoring
ÜW_AZ:	Überwachungsaufzeichnung	MT_RC:	Monitoring data recording
SELBÜ:	Selbstüberwachung	SFMON:	Self-monitoring

Adressenliste / Address List

(Fortsetzung / continued)

Werteänderung

on:
"on" bedeutet, daß der Wert auch bei eingeschalteter Isolationsüberwachungs-funktion geändert werden kann.

off:
"off" bedeutet, daß der Wert nur bei ausgeschalteter Isolationsüberwachungs-funktion geändert werden kann.

-:
"-" bedeutet, daß der Wert nicht durch Bedienung änderbar ist.

Changing Values

on:
"on" (on-line) means that the value can be changed even when the insulation monitoring function is enabled.

off:
"off" (off-line) means that the value can be changed provided that the insulation monitoring function is disabled.

-:
"-" means that the value cannot be modified by control action.

Adressenliste / Address List

(Fortsetzung / continued)

LEGENDE	KEY
Die Anzeige "...." ist möglich und bedeutet, daß kein Wert eingemessen ist.	Indication "..." is possible and means that no value has been measured.
Die Anzeige "-..-" ist möglich und bedeutet, daß der Wertebereich überschritten ist.	Indication "-..-" is possible and means that the value is out of range.
Die Einstellung "∞" wird mit der Anzeige "0--0" dargestellt.	The setting "∞" is represented by the "0--0" display.
Die Grundeinstellungswerte sind in der Adressenliste unterstrichen dargestellt.	The default values are marked in the address list by underlining.

Adressenliste / Address List

(Fortsetzung / continued)

Parameter / Parameters

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
000 000	GERÄT: Ger.typ. DVICE: Dev.type	-	627	MR 627
000 050	GERÄT: Hilfsspg DVICE: Aux.volt	off	0 ... 999	V
000 051	GERÄT: Nennspg. DVICE: Nom.volt	off	0 ... 9999	V
002 000	GERÄT: Dat.mod. DVICE: Dat.mod.	-	100	Versionsnummer Version number
002 020	GERÄT: SW-Stand DVICE: SW vers.	-	1.0x	Versionsnummer Version number
002 060	GERÄT: Hilfsadr DVICE: Aux.add.			interne Verw. for internal use
003 035	VOB: Passwort LOC: Password	on	0...1234....4444	****

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
003 020	VOB: Sprache LOC: Language	off	1 2	deutsch German englisch English
048 022	VOB: Taf. R< LOC: Disp.R<	on	0 / 1	nein/ja no/yes
048 023	VOB: Taf. R<< LOC: Disp.R<<	on	0 / 1	nein/ja no/yes
048 024	VOB: Taf. I> LOC: Disp. I>	on	0 / 1	nein/ja no/yes
003 068	PC: Feldadr. PC: Bay add.	off	0 ..1. 254	| Müssen iden- | tisch einge-
003 069	PC: Gerätadr PC: Dev.add.	off	0 ..1. 255	| stellt sein. | Must be set | identically.
048 010	PC: Betr.art PC: Op. mode	off	1 2	Einzel Single Bus Bus

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
054 001	EING: U1 INP: U1	off	-	ohne Funktion without function
054 004	EING: U2 INP: U2	off	034 054 040 014 040 015 040 023 038 034	ISO: Test X INSUL: Test X AUSG: BlAusg.X OUTP: BlOutp.X AUSG: Rückst.X OUTP: Reset X LED: Rückst.X LED: Reset X GRUND: Rückst.X MAIN: Reset X
054 002	EING: Betr. U1 INP: Op. U1	off	0 / 1	Low/High
054 005	EING: Betr. U2 INP: Op. U2	off	0 / 1	Low/High
034 061	AUSG: Rückst.T	on	0 / 1	nein / ja

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
	OUTP: Rset key			no/yes
021 014	AUSG: BlAusg.B OUTP: BlOutp.L	on	0 / 1	nein/ja no/yes
051 001	Ausg: K1 OUTP: K1	off	-	ohne Funktion without function
051 003	Ausg: K2 OUTP: K1	off	004 065 036 070 034 050 <1> 034 051	GRUND: Bl./Stör MAIN: Bl./Flt. SELBÜ: Warnung SFMON: Warning ISO: Anr.I> INSUL: Start.I> MKÜ: ASÜ ang. MCMON: ConM.trg

<1> Bei Ausführung 320- 401- 620 nicht unterstützt
<1> Not supported in version 320- 401- 620

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
			034 052	ISO: Test Mod INSUL: Test mod
			034 053	ISO: tR</< INSUL: tR</<<
			034 055	ISO: Anr. R< INSUL: Start.R<
			034 056	ISO: Anr. R<< INSUL: StartR<<
			034 057	ISO: tR< ab. INSUL: tR< elap
			034 058	ISO: tR<< ab. INSUL: tR<<elap
			034 059 <1>	ISO: tI> ab. INSUL: tI> elap
			040 015	AUSG: Rückst.X OUTP: Reset X

<1> Bei Ausführung 320- 401- 620 nicht unterstützt
<1> Not supported in version 320- 401- 620

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
			040 023	LED: Rückst.X LED: Reset X
050 000	AUSG: Betr. K1 OUTP: Op. K1	off	1	aktuell Updated
050 001	AUSG: Betr. K2 OUTP: Op. K2	off	2	man.Rück. Man.rset
			3	St.Rück. Flt.res.
			4	/aktuell /updated
			5	/manRück /man.rst
048 011	AUSG: Blink.K1 OUTP: Flash.K1	off	0 / 1	nein/ja no/yes
048 012	AUSG: Blink.K2 OUTP: Flash.K2	off	0 / 1	nein/ja no/yes

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
057 001	LED: H1 LED: H1	-	036 070	SELBÜ: Warnung SFMON: Warning
057 003	LED: H2 LED: H2	-	004 065	GRUND: Bl./Stör MAIN: Bl./Flt.
057 005	LED: H3 LED: H3	off	-	ohne Funktion without function
057 007	LED: H4 LED: H4	off	034 050 <1>	ISO: Anr.I> INSUL: Start.I>
			034 051	MKÜ: ASÜ ang. MCMON: ConM.trg
			034 052	ISO: Test Mod INSUL: Test mod
			034 053	ISO: tR</< INSUL: tR</<<

<1> Bei Ausführung 320- 401- 620 nicht unterstützt
<1> Not supported in version 320- 401- 620

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
			034 055	ISO: Anr. R INSUL: Start.R<
			034 056	ISO: Anr. R<< INSUL: StartR<<
			034 057	ISO: tR< ab. INSUL: tR< elap
			034 058	ISO: tR<< ab. INSUL: tR<<elap
			034 059 <1>	ISO: tI> ab. INSUL: tI> elap
			040 014	AUSG: BlAusg.X OUTP: BlOutp.X
			040 015	AUSG: Rückst.X OUTP: Reset X

<1> Bei Ausführung 320- 401- 620 nicht unterstützt
<1> Not supported in version 320- 401- 620

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
058 001	LED: Betr. H3 LED: Op. H3	off	1	aktuell Updated
058 003	LED: Betr. H4 LED: Op. H4	off	2	man.Rück. Man.rset
			3	St.Rück. Flt.res.
			4	/aktuell /updated
			5	/manRück /man.rst
048 013	LED: Blink.H3 LED: Flash.H3	off	0 / 1	nein/ja no/yes
048 014	LED: Blink.H4 LED: Flash.H4	off		

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
003 030	GRUND: Iso.ein MAIN: Insul on	on	0 / 1	nein/ja no/yes
048 000	ISO: R INSUL: R<	on	10...200...990 50...400...990 /block.	kΩ <2> kΩ <1>
048 001	ISO: R< INSUL: R<<	on	10...200...990 50...400...990 /block.	kΩ <2> kΩ <1>
048 002	ISO: tR INSUL: tR<	on	0...99 /block.	s
048 003	ISO: tR< INSUL: tR<<	on	0...99 /block.	s

<2> für Ausführung / for version : 300- 401- 601
<1> für Ausführung / for version : 320- 401- 620

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
048 004	ISO: I> INSUL: I>	on	0.1...1.0...5.0 /block.	mA <1>
048 016	ISO: tI> INSUL: tI>	on	0...1.0...9.9 /block.	s <1>
048 015	ISO: CEmax INSUL: CGmax	off	1 2	30 µF 150 µF
048 005	ISO: Meßprin. INSUL: Meas.pr.	off	1 2 3	Puls Pulse DC <1> DC <1> UDC/Puls <1> VDCpulse <1>

<1> Bei Ausführung 320- 401- 620 nicht unterstützt

<1> Not supported in version 320- 401- 620

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
048 006	ISO: Fg. tR INSUL: tR< enab	off	1	AC/DC AC/DC
048 007	ISO: Fg. tR< INSUL: tR<<enab	off	2	nur AC AC only
			3	nur DC DC only
			4	nur DC+ DC+ only
			5	nur DC- DC- only
034 060	ISO: VSG INSUL: VinAdapt	off	0 / 1	nein / ja no/yes
048 008	MKÜ: ASÜ ein MCMON: W.ConMon	on	0 / 1	nein / ja no/yes

Adressenliste / Address List

(Fortsetzung / continued)

Betrieb / Operation

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
003 010	VOB: Freigabe LOC: Enable	on	0 / 1	nein/ja no/yes
054 000	EING: Zust. U1 INP: State U1	-	0 / 1	Low/High
054 003	EING: Zust. U2 INP: State U2	-	0 / 1	Low/High
021 015	AUSG: Ausg. bl OUTP: Outp. bl.	-	0 / 1	nein/ja
051 000	AUSG: Zust. K1 OUTP: State K1	-	0	inaktiv inactive
051 002	AUSG: Zust. K2 OUTP: State K1	-	1	aktiv active
040 015	AUSG: Rückst.X OUTP: Reset X	-	0 / 1	nein/ja no/yes

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
040 088	AUSG: Rückst. OUTP: Reset	-	0 / 1	nein/ja no/yes
000 085	GRUND: Kaltst. MAIN: Cold rst	off	0 1	n. ausf. DoNotExe ausführ Execute
003 039	GRUND: Warmst. MAIN: Warm rst	off	0 1	n. ausf. DoNotExe ausführ Execute
017 063	GRUND: Abgl. AD MAIN: AdjustAD	off		
004 065	GRUND: Bl./Stör MAIN: Bl./Flt.	-	0 / 1	nein/ja no/yes
005 030	ISO: R INSUL: R	-	0...5000 />5000	kΩ

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
005 031	ISO: I INSUL: I	-	0.0 ... 9.9/ .... _..._	mA
048 021	ISO: Test B INSUL: Test L	on	0	n. ausf. DoNotExe
			1	ausführ Execute
004 019	ÜW_AZ: Anz.Warn MT_RC: No. warn	-	0 ... 30	
003 008	ÜW_AZ: Rückst. MT_RC: Records	on	0	n. ausf. DoNotExe
			1	ausführ Execute
003 001	ÜW_AZ: Protokol MT_RC: Records	-	↓	Speichereinspr. Entry i. memory

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
	mögliche Einträge: Possible Entries			
090 003	SELBÜ: Para.CSF SFMON: Para.CSE	-		
090 014	SELBÜ: Ü.sp.CSF SFMON: MSM CSE	-		
090 021	SELBÜ: BW Reset SFMON: OpWReset	-		
090 022	SELBÜ: Pow.Fail SFMON: Pow.fail	-		
090 026	SELBÜ: SK CS SFMON: Sys.c.CS	-		
090 027	SELBÜ: St.Timer SFMON: TimerFlt	-		
090 028	SELBÜ: KaltstCS SFMON: ColdstCS	-		

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
090 072	SELBÜ: EPROM SFMON: EPROM	-		
090 073	SELBÜ: EEPROM SFMON: EEPROM	-		
090 074	SELBÜ: RAM int. SFMON: RAM int.	-		
090 075	SELBÜ: RAM ext. SFMON: RAM ext.	-		
009 076	SELBÜ: Ex.Reset SFMON: Ex.reset	-		
090 077	SELBÜ: Ex.k.Ini SFMON: Ex.n.int	-		
090 078	MKÜ: St.Ans.L MCMON: Con.PFlt	-		
090 079	MKÜ: St.Ans.E MCMON: Con.GFlt	-		
090 080	ISO: TestFehl INSUL: Test err	-		

Adressenliste / Address List

(Fortsetzung / continued)

Adresse x y Address x y	Bezeichnung Description	Ändern Change	Wertebereich Range of Values	Einheit oder Bedeutung Unit or Meaning
098 030	SELBÜ: k.Kalibr SFMON: No calib	-		
099 000	SELBÜ: Initial. SFMON: Initial.		0	RAM (intern) RAM (internal)
			1	RAM (extern) RAM (external)
			6	EPROM
			7	EEPROM
			12	Betr.sys. akt. Activ. op. sys.
			14	Power-Fail Power fail
			18	Kaltstart Cold restart

Customer Care Centre

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