

# UEI-710/ÜEI-710

Change-over and/or monitoring module  
for applications in medical locations

Optionally with insulation fault detection system IFS



Product Information



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## 1 Fundamentals on change-over and/or monitoring modules UEI-710, ÜEI-710

### 1.1 IT system distribution

In all medical locations where operations or intensive care are performed, an initial fault (e.g. insulation fault, short contact through body contact or accidental earth), or fault in the general power supply must not interrupt the power supply and cause medical devices and modules to fail.

Therefore, only the following IT system is used:

- IT system separating transformer
- Load and temperature monitoring of IT system separating transformer
- Insulation monitoring of IT system
- Insulation fault detection system (optional)

The IT system distribution is to be powered by a reliable, redundant power supply consisting of:

- Change-over module with voltage monitoring
- Control voltage supply and change-over

The IT system distribution supplies power to the following areas (user group 2) and offers “Signalling through insulation monitoring in IT system” as a safety feature as well as a reliable, redundant power supply.

DIN VDE 0100-710 (VDE 0100 Part 710):2002-11, IEC 60364 7-710:2002-11 and ÖVE/ÖNORM E 8007 date of issue: 2007-12-01 stipulates that the IT systems must be powered through two independent lines in the low-voltage distribution board or from the main distribution board of the building:

- Preferred feeder = line 1
- Second feeder (feeder being in reserve) = line 2.

In accordance with DIN VDE 0100-710 (VDE 0100 Part 710):2002-11, power distributions in group 2 medical locations (including the IT system separating transformer and any required cable and line connectors) must be situated in the same storey and fire compartment as the devices receiving power in the group 2 medical location. They can also be situated in rooms directly above or below but which belong to the same fire compartment or to their own directly adjacent fire compartment.

**NOTE:** Local standards and regulations may differ and must be complied with.

### 1.2 Change-over and monitoring modules in IT system distributions

Change-over and monitoring modules of type UEI-710 fulfil the following requirements:

- DIN VDE 0100-710 (VDE 0100 Part 710):2002-11, Sec. 710.537.6
- IEC 60364-7-710:2002-11
- ÖVE/ÖNORM E 8007 date of issue: 2007-12-01

for fast and reliable changeover of power supplies from the failed preferred feed (line 1) to the second feed (line 2, feeder being in reserve). Monitoring modules of type ÜEI-710 fulfil the requirements of the specified standard for monitoring the IT system.

Two electrically locked and mechanically latched contactors are used as switchgear in type UEI-710.

The multifunctional change-over and monitoring device UEI-710-V.5 used in all types provides insulation fault monitoring for the IT system, load current and temperature monitoring for the IT system separating transformer, control voltage supply and change-overs as well as voltage monitoring and change-over control. The insulation monitoring, load current monitoring and change-over control can be tested on site using the UEI-710-V.5.

All states of the UEI-710-V.5 (operating and fault messages) can be transmitted via the communication interface (CAN bus) to any suitable operating and annunciator terminals such as the BMTI 5 or annunciator and control panel series FolioTec where they can be displayed. These devices can also be used to initiate a test function (ISO test).

## 2 Application

The change-over and monitoring modules UEI-710-../2 and UEI-710-../2-IFS are used for monitoring and power change-overs on two separate feeds and thus for supplying power to IT systems in medical locations. They are also used to monitor the connected IT system.

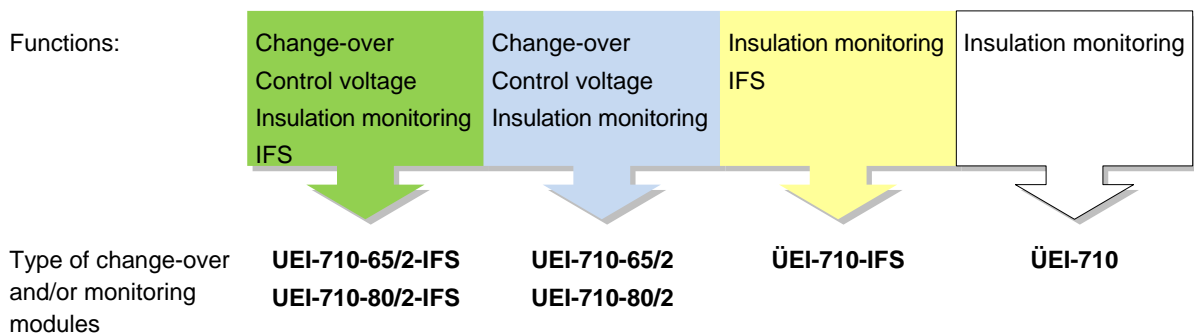
The monitoring modules ÜEI-710-IFS and ÜEI-710 are used exclusively for monitoring the IT system. The modules are used in IT system distributions (see chapter 1.1 on page 5).

The various types of the change-over and/or monitoring modules are used to monitor and/or change-over power on single-phase AC 230 V systems.

### 2.1 Functions of the various types – overview

The multifunctional change-over and monitoring device UEI-710-V.5 is installed in all types. This provides the following functions for the various different versions of the change-over and/or monitoring modules:

<b>Device functions:</b>	<b>Short designation:</b>
Change-over control 1/N AC 230 V	→ Change-over
Control voltage supply with integrated change-over for control voltage	→ Control voltage
Insulation, load and temperature monitoring in a single-phase AC 230 V IT system	→ Insulation monitoring
Test signal generator (with IFS-710-W6 complete insulation fault detection system – IFS)	→ IFS

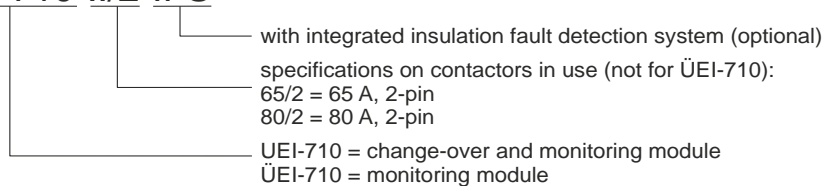


	UEI-710-../2-IFS	UEI-710-../2	ÜEI-710-IFS	ÜEI-710
Monitoring of voltage on “preferred feeder”	x	x	–	–
Monitoring of voltage on redundant “second feeder”	x	x	–	–
2-pin change-over with electrically locked and mechanically latched contactors	x	x	–	–
Monitoring of voltage on “outgoing feeder”	x	x	–	–
Insulation monitoring (IT system)	x	x	x	x
Insulation fault detection system (IT system)	x	–	x	–
Control voltage supply and change-over	x	x	–	–
Monitoring of load current of the IT system separating transformer	x	x	x	x
Temperature monitoring of the IT system separating transformer	x	x	x	x
Internal functional test with testing of various switching times	x	x	Only functional test	Only functional test
Communication with external peripheral devices via standard field bus CAN	x	x	x	x
Components (Figure 2 on page 8):	A, B and C	A and B	UEI-710-V.5, B and C	UEI-710-V.5 and B

**Table 1:** Functions of change-over and/or monitoring modules

## 2.2 Type code – name

### UEI-710-../2-IFS

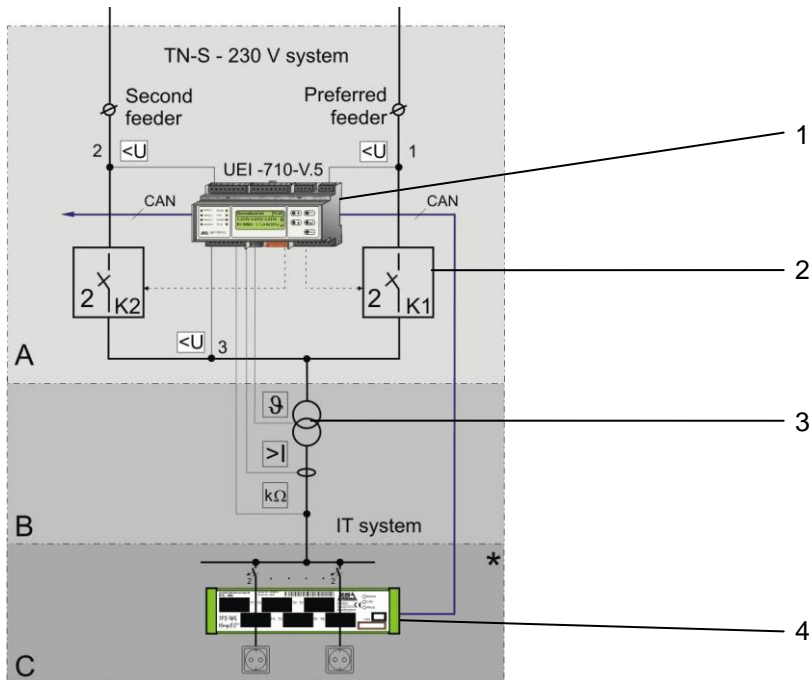


**Figure 1:** Type code

### 3 Functions

In the following, the modules and devices in the change-over and/or monitoring modules of types UEI-710 and ÜEI-710 are described together with their functionality.

**NOTE:** In accordance to ÖVE/ÖNORM E 8007 (date of issue: 2007-12-01) the line 1 corresponds to “preferred feeder” and the line 2 to “feeder being in reserve”.



\* Maximum 96 channels (16 x IFS-710-W6) on UEI-710-V.5

**Figure 2:** Basic diagram of change-over and/or monitoring modules

- |   |  |
|---|--|
| 1 Multifunctional change-over and monitoring device UEI-710-V.5   | 3 IT system separating transformer (not included in the delivery of the various change-over and/or monitoring modules) |
| 2 Electrically locked and mechanically latched contactors (2-pin) | 4 Insulation fault detection device IFS-710-W6   |

#### 3.1 Components of the change-over and/or monitoring modules

##### 3.1.1 Multifunctional change-over and monitoring device UEI-710-V.5

The UEI-710-V.5 is a multifunctional change-over and monitoring device. It is used in change-over and monitoring modules (type UEI-710) in accordance with

- DIN VDE 0100-710 (VDE 0100 Part 710):2002-11, Sec. 710.537.6
- IEC 60364-7-710:2002-11
- ÖVE/ÖNORM E 8007 date of issue: 2007-12-01

as a control and monitoring device for change-overs between the “preferred feeder” (line 1) and the “second feeder” (line 2) as well as a monitoring device for the IT systems connected to the modules (SPR and ILT modes).



For monitoring modules (type ÜEI-710), the UEI-710-V.5 serves as a monitoring device for the IT systems (ILT mode) connected to the modules.

Together with insulation fault detection devices (optional), the UEI-710-V.5 is a comprehensive solution for insulation fault detection. In addition to insulation monitoring, this allows detection of faulty outgoing circuits. In this case, the UEI-710-V.5 can display the insulation resistance and the (safety) designation of the faulty outgoing circuit.

The UEI-710-V.5 provides increased withstand voltages for the contact circuits of the monitoring modules used in “medical locations”.

All additional requirements stipulated in DIN VDE 0100-710 (VDE 0100 Part 710):2002-11 with respect to insulation monitoring (section 710.531.3.1) are thus fulfilled.

The UEI-710-V.5 is mainly used for the following functions:

#### **SPR mode:**

- Voltage monitoring of 3 lines in single-phase systems with up to 290 V AC:
 

preferred feeder	= line 1
second feeder (feeder being in reserve)	= line 2
outgoing feeder	= line 3
- Change-over controller between line 1 and line 2
- Activation of load switch devices (contactors) with open-circuit monitoring in control lines
- Reliable provision power for itself and consumers connected to the device (such as contactors in control circuits)

#### **ILT mode:**

- Monitoring of insulation resistance in a single-phase 230 V AC IT system
- Monitoring of load current in IT system separating transformer using a current transformer
- Temperature monitoring of the IT system separating transformer
- Controlling of insulation fault detection (with integrated test signal generator) with fault messages for outgoing feeder together with insulation fault detection devices of type IFS-710-W6 (optional)
- Monitoring of all relevant data lines in accordance with DIN VDE 0100-710 (VDE 0100 Part 710):2002-11 (section 710.531.3.1)

All operating and fault messages are shown with LED indicators and screens. The menu can be used to configure the UEI-710-V.5. All settings, messages and commands are stored in non-volatile memory. The integrated, buffered real-time clock (RTC) adds a time stamp to the messages.

**NOTE:** The detailed descriptions of all device functions of the UEI-710-V.5 are listed in the enclosed operating manual and must be observed.

### **3.1.2 Electrically locked and mechanically latched contactors**

Two mechanically latched contactors with reciprocal (electrical) interlocking are used as switchgear (see Figure 2 on page 8). The change-over control and the behaviour of the contactors are described in chapter 3.2 on page 12.

### **3.1.3 IT system separating transformer**

Single-phase IT system separating transformers are used exclusively. These are permanently monitored by the UEI-710-V.5 for overloading and excessive temperatures. The IT system separating transformer is supplied via line 3. It creates an electrically isolated power supply with a ratio of 1:1.

In particular, the descriptions given in section 710.512.1.6.2 of DIN VDE 0100-710 (VDE 0100 Part 710):2002-11 (Transformers for IT systems) apply to the selected device and its capacity.

### 3.1.4 Insulation fault detection device IFS-710-W6 (optional)

Together with the multifunctional change-over and monitoring device UEI-710-V.5 and the integrated test signal generator, the insulation fault detection device IFS-710-W6 serves as a functional module for detecting insulation faults.

The main functions of the IFS-710-W6 are:

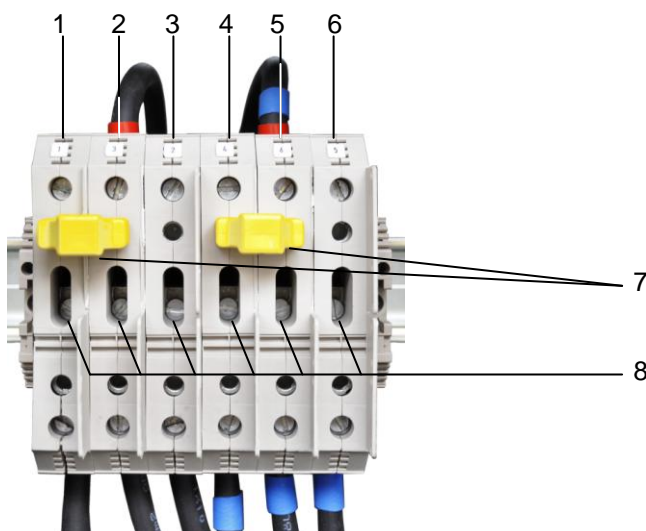
- Test current detection with integrated current transformers
- Six measuring channels
- Parallel data capture and processing (no multiplexing)
- Internal self-monitoring of device
- Communication via standard field bus (CAN)
- Configuration with UEI-710-V.5 possible
- Use of maximum 16 devices (96 channels) together with UEI-710-V.5

### 3.1.5 Circuit breakers (optional)

The circuit breakers (in lines 1 and 2 upstream from contactors K1 and K2) allow to manually switching off line 1 and/or line 2. This option can be used to test the functionality of voltage monitoring, change-over regulation, monitoring and change-over of control voltages and while performing repair and maintenance work.

### 3.1.6 Disconnect terminals (optional)

Using the disconnect terminals and jumpers (see 7 in Figure 3), line 1 or 2 can be connected to line 3 for servicing. This bypasses all monitoring and change-over functionality.

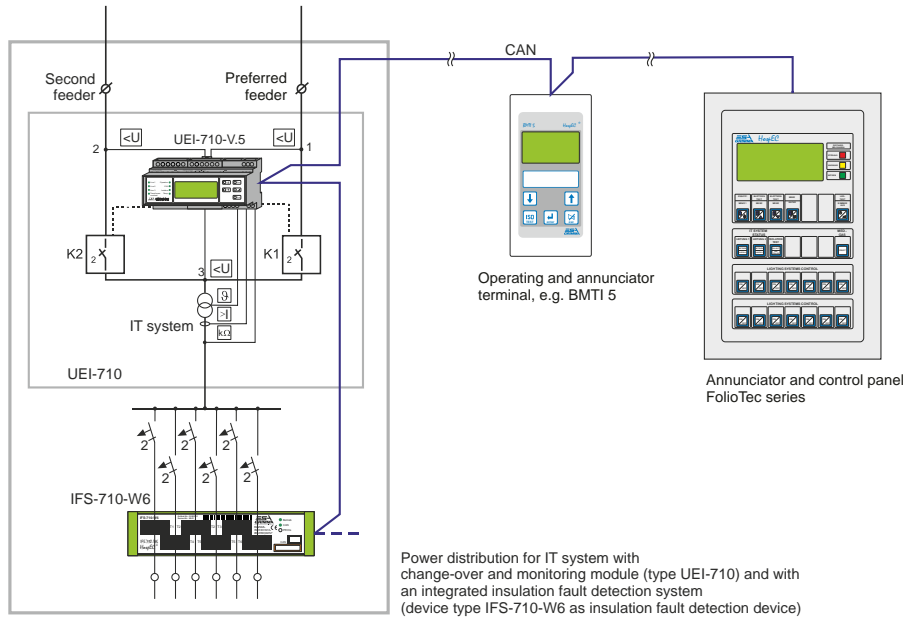


**Figure 3:** Disconnect terminal with bypassed change-over control

- |                                |  |
|--------------------------------|--|
| 1 Preferred feeder (line 1, L) | 5 Outgoing feeder (line 3, N)            |
| 2 Outgoing feeder (line 3, L)  | 6 Second feeder (line 2, N)              |
| 3 Second feeder (line 2, L)    | 7 Jumper from line 1 to line 3 (L and N) |
| 4 Preferred feeder (line 1, N) | 8 Opened disconnect terminals            |

### 3.1.7 Peripheral devices for expanded functionality (optional)

Standard field bus (CAN) can be used to connect various peripheral devices to the change-over and/or monitoring equipment. The following diagram shows one possible application with peripheral devices.



**Figure 4:** Application example with external peripheral device

Peripheral devices include the following, for example:

- Operating and annunciator terminal BMTI 5
- ANZ 05 as on-site display and configuration device
- Annunciator and control panels from the series FolioTec

Example: Operating and annunciator terminal BMTI 5

- Display of operating, warning and fault messages on multicolour RGB display (e.g. states of change-over modules / monitored IT systems)
- Logging and storage of all messages
- Additional plain text messages
- 1000 individual messages
- Triggering of manual test functions via CAN bus (ISO test)
- Large multifunctional buttons
- Communication interfaces: 2 x CAN, 1 x USB
- Communication via standard field bus (CAN)

Building services control system (BSCS):

Operating, warning and fault messages can also be transmitted to the BSCS. The available options include standard field bus (CAN) with protocol converters (e.g. Modbus<sup>®</sup>), digital I/O devices (MPM series) that can be connected to CAN bus or potential-free (signal) contacts on devices from ESA Elektroschaltanlagen Grimma GmbH.

## 3.2 Change-over control

### 3.2.1 Basic information

In general, statutory requirements and generally accepted engineering practice – including standards on high voltage systems used in hospitals and other medical locations – apply to the set-up and operation of electrical systems. Furthermore, the local regulations also have to be complied. This includes basic safety instructions and regulations as well as accident prevention guidelines.

The connecting lines to the power distribution of the IT system have to comply with the minimum cross-sections given in DIN VDE 0100 Part 430.

A properly dimensioned back-up fuse will protect the IT system separating transformer and maintain the required functionality of the downstream overcurrent protection devices for the IT system, see also chapter 4.1.4 on page 15.

### 3.2.2 Fault-free operation

During fault-free operation, the consumers are fed from line 1. Contactor K1 is energized and mechanically latched. The mechanical latching of the contactors prevents power from being lost due to a defect in the contactor coil or breakage in the controller line. Line 2 is currently ready. The states of the two feeders and outgoing feeder (line 3) are permanently monitored via the integrated voltage monitoring in the UEI-710-V.5. Any faults that are detected are immediately transmitted as messages.

The UEI-710-V.5 device automatically monitors the functionality of the external and internal sensors and connectors and therefore ensures a highly reliable power supply.

### 3.2.3 Fault in the “preferred feeder” (line 1)

If the voltage deviates from the configured limit values (settings for UEI-710-V.5) on line 1, the system changes over to line 2 automatically.

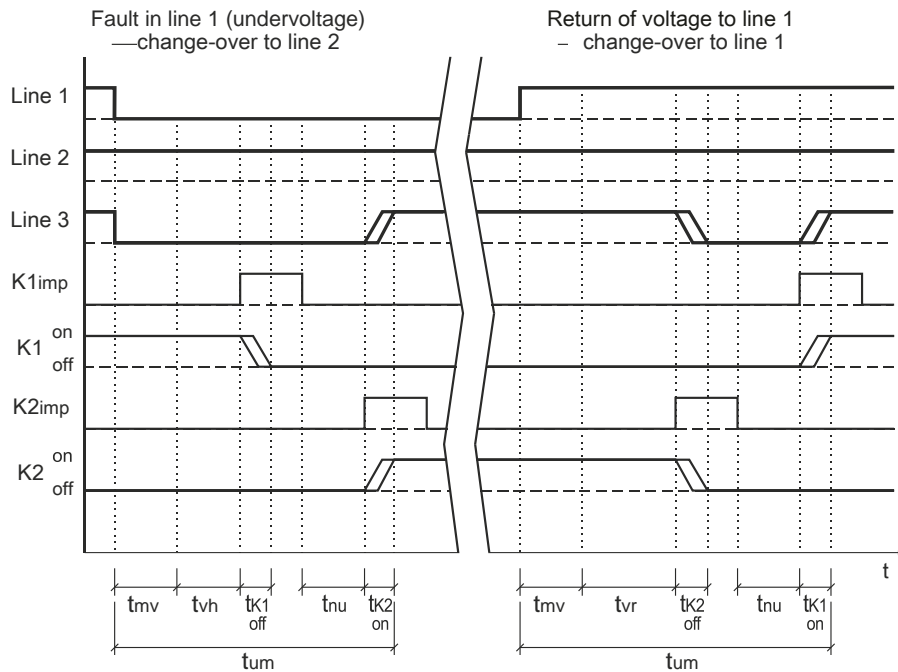
Contactors K1 de-energizes after the switching delay time ( $t_{vh}$ ) elapses, i.e. the mechanical latch is released. Next, contactor K2 is energized for line 2 after a delay time (no-load switching time  $t_{nu}$ ) and becomes mechanically latched. This process is initiated directly from the UEI-710-V.5. The switching delay times can be set individually in the menu of the device.

After the voltage is reapplied to line 1, the contactor switches back to line 1 from line 2 after the reverse switching delay time ( $t_{vr}$ ) elapses. During this period, the voltage on line 1 must remain stable.

When the reverse switching delay time elapses, contactor K2 de-energizes and then contactor K1 is energized after a delay time (no-load switching time  $t_{nu}$ ) and becomes mechanically latched.

The UEI-710-V.5 continuously measures and monitors the voltages on lines 1, 2 and 3. Basically, the decision to change-over from the voltage status of line 3 (outgoing feeder) depends on other factors.

The software performs a plausibility check to determine whether the currently active contactor is functioning properly. In this way, it is possible to determine the failure of a latching component and thus prevent a change-over by continuously actuating the contactor. Messages will be transmitted.



**Figure 5:** Change-over sequence – change-over and delay times

K1	Contactors in line 1
K1imp	Control signal for K1 (on/off)
K2	Contactors in line 2
K2imp	Control signal for K2 (on/off)
Ltg.1	Line 1 (preferred feeder)
Ltg.2	Line 2 (second feeder)
Ltg.3	Line 3 (outgoing feeder)
tK1 off	Break time of contactor 1
tK1 on	Make time of contactor 1
tK2 off	Break time of contactor 2
tK2 on	Make time of contactor 2
t <sub>mv</sub>	Measurement evaluation delay time (fixed at approx. 100 ms)
t <sub>um</sub>	Total resulting change-over time in each case
t <sub>nu</sub>	No-load switching time (pause time), configurable (has to be large enough to allow dissipation of residual energy in system (line 3) before voltage is re-applied)
t <sub>vh</sub>	Switching delay time, configurable (time for measurement evaluation until contactor is activated)
t <sub>vr</sub>	Reverse switching delay time, configurable (time for measurement evaluation until contactor is activated)

### 3.2.4 Fault in “second feeder” (line 2)

A fault in line 2 will not affect the power supplied to the IT system as long as the power in line 1 remains stable.

Messages will be transmitted. No change-over is performed.

### **3.3 Control voltage supply with integrated change-over for control voltage**

The voltages in both independent sources of power (line 1 and line 2) are constantly monitored by the UEI-710-V.5. The secure voltage supply for connected consumers is normally from line 2. If the voltage on line 2 falls below the configured limit value, the device changes over to line 1 and provides power to the control circuit from this line.

### **3.4 Insulation, load current and temperature monitoring**

#### **3.4.1 Insulation monitoring 230 V**

The momentary insulation resistance of the IT system (230 V AC) is continuously displayed on the display of the UEI-710-V.5. If the insulation resistance of the IT system falls below the trigger value set on the UEI-710-V.5, the LED "Isolation" is orange on the device. This makes it possible to detect gradual deterioration to the insulation. Messages will be transmitted and the signal relay will be set (optional).

#### **3.4.2 Load current monitoring**

The load current is monitored in single-phase IT system separating transformers using a special external current transformer of type ILT-W that is directly connected to the UEI-710-V.5. The connections of the transformer are monitored continuously. The momentary load value is continuously displayed as a percent or absolute value on the display. The trigger values for load current monitoring can be set in the menu. If the upper limit for the current is exceeded, the LED "Transformer overload" is orange. Messages will be transmitted and the signal relay will be set (optional).

#### **3.4.3 Temperature monitoring**

The temperature is monitored using the PTC thermistors or break contacts integrated in the transformer winding. Multiple PTC thermistors / break contacts can be connected in series to the device. If the temperature of the IT system separating transformer exceeds the limit value (120°C), the resistance will increase in the sensor or the contacts will open. This change in resistance is captured and evaluated by the UEI-710-V.5.

Messages will be transmitted and the signal relay will be set (optional).

### **3.5 Insulation fault detection system (optional)**

The UEI-710-V.5 detects and permanently monitors the insulation resistance in the IT system. If the insulation resistance falls below a specified value, the integrated test signal generator will start a fault detection process.

This feeds a test signal (limited to 1 mA) into the IT system. The insulation fault detection devices (IFS-710-W6, see chapter 3.1.4 on page 10) detect the test signal by their integrated current transformers (one in each outgoing circuit). The UEI-710-V.5 evaluates the fault detection data and transfers the evaluation via standard field bus (CAN). All devices communicate with each other using the standard field bus (CAN).

Corresponding messages are shown on the UEI-710-V.5 and peripheral display devices. The messages contain detailed information about the faulty circuit. They are saved for future evaluations.

## 4 Assembly and connection

### 4.1 Assembly

#### 4.1.1 Protection class II for power distribution of IT system

The protective class II is not required for the power distribution, if the IT system separating transformer was constructed with protective insulation.

#### 4.1.2 Temperature sensor

The temperature sensor / NC contact integrated in the IT system separating transformer has to be connected to the correct point of the strip terminal.

#### 4.1.3 IT system separating transformer

It can be used to provide “protection by special installation” (insulated installation of IT system separating transformer, i.e. IT system separating transformer is not connected to the protective earth or a protectively insulated isolating transformer has to be used.

Furthermore, the IT system separating transformer has to be installed behind a cover that cannot be opened without tools.

The incoming and outgoing feeders of the IT system separating transformer have to be installed in such a manner as to protect against short circuits and shorts to ground. Other equipment must be used to protect against short circuits because the isolating transformers are not intrinsically protected against overloading.

Furthermore, the outgoing feeders to the power distribution of the IT system must comply with the minimum cross-sections in accordance with DIN VDE 0100 Part 430.

The relevant terminal strip is designed for wire cross-sections from 1 mm<sup>2</sup> to 35 mm<sup>2</sup>. Shield windings provided by the customer may be connected to the PE terminal.

#### 4.1.4 Back-up fuses

Observe the requirements stipulated in DIN VDE 0100-710 (VDE 0100 Part 710):2002-11 pertaining to the types of fuses to use in the incoming and outgoing feeders of the change-over module. The following sections are covered by this standard.

In particular, the explanations of the following sections are relevant to the selection and dimensioning of the protective equipment:

- 710.512.1.6.2 Transformers for IT system
- 710.53.2 Protection of wiring system in medical locations of group 2
- 710.537.6 Automatic change-over modules
- 710.537.6.2, Section I Automatic change-over modules in main distributor and distributors for medical locations of group 2

### Selection of fuses for one consumer (IT system separating transformer):

The change-over module provides only one consumer: "IT system separating transformer". According to the stipulations given in section 710.537.6 (automatic change-over modules) and the manufacturer information for contactors, the maximum possible value  $I_V$  for the back-up fuses F1 and F2 of the contactor can be calculated as follows:

$$I_V = \text{"manufacturer information for max. back-up fuse of contactor"} \text{ (in A for AC-3)} \times 0.45$$

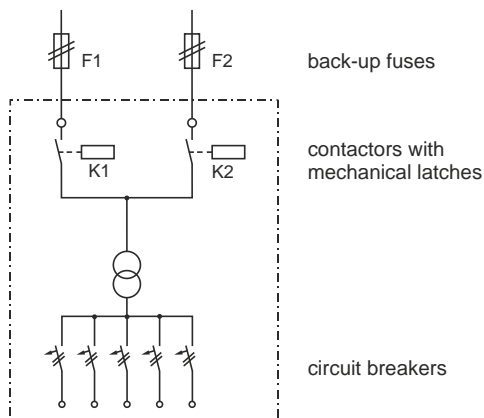
The rated operational current  $I_e$  for the change-over module can be calculated as:

$$I_e = \text{"manufacturer information rated operational current for contactors"} \text{ (in A for AC-3)} \times 0.45.$$

The rated operational current  $I_e$  calculated in this manner has to be larger than the rated operating current of the IT system separating transformer.

The back-up fuses upstream of the change-over module have to be dimensioned in such a manner as to prevent short circuits in the IT system separating transformer and also to maintain the required functionality of the downstream protection devices.

Appropriate values for the types to be used are given in the following table.



**Figure 6:** Back-up fuses in a consumer

	UEI-710-65/2*	UEI-710-80/2*
Max. rated operational current of contactors (AC-3)	65 A	95 A
Max. rated operational current of change-over module $I_e$ in acc. with DIN VDE 0100-710	29 A	42 A
Back-up fuse max.	80 A gL/gG	100 A gL/gG

\* applies equally for types ...-IFS

**Table 2:** Values of change-over and monitoring modules

UEI-710/65 / UEI-710/65-IFS: Designed for IT system separating transformers (TRAK series) up to 6.3 kVA

UEI-710/80 / UEI-710/80-IFS: Designed for IT system separating transformers (TRAK series) up to 10.0 kVA (10.0 kVA abroad)



The following table specifies the maximum ratings of back-up fuses when used with TRAK IT system separating transformers from ESA Elektroschaltanlagen Grimma GmbH.

IT system separating transformer	Back-up fuse
TRAK 3.15 kVA	gL 35 A
TRAK 4.00 kVA	gL 35 A
TRAK 5.00 kVA	gL 50 A
TRAK 6.3 kVA	gL 63 A
TRAK 8.00 kVA	gL 63 A
TRAK 10.00 kVA (only abroad)	gL 100 A

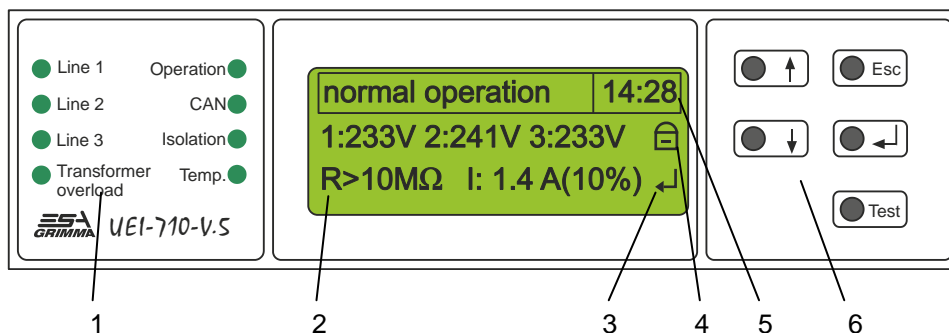
**Table 3:** Back-up fuses for TRAK IT system separating transformers

## 4.2 Bus architecture and connection of optional devices

**NOTE:** For a detailed description of the bus system, refer to the assembly instruction for the standard field bus (CAN) from ESA Elektroschaltanlagen Grimma GmbH.

## 5 Buttons and display

### 5.1 Meaning of LED indicators and plain text messages



**Figure 7:** Front view of UEI-710-V.5 in normal operation (no errors / faults are present)

- |                             |  |
|-----------------------------|--|
| 1 Status LED indicators     | 4 Menu permissions (🔒 = protected, 🗑️ = enabled) |
| 2 Status messages           | 5 Time   |
| 3 Display of active buttons | 6 Buttons  |

If the device is currently operating in normal mode, i.e. no errors or faults are present (see Figure 7), the basic screen will be shown. The following is displayed:

- First line: Operating status and time,
- Second line: Voltages from lines 1, 2 and 3,
- Third line: Insulation resistance of the monitored 230 V IT system, utilisation of the IT system separating transformer in percent (%) and the load current of this transformer in ampere (A).

Errors or faults are shown as plain text messages in the first line. If multiple messages occur simultaneously, these alternate automatically on the screen. Once the fault(s) has/have been eliminated, the basic screen appears again.

An exception is made for some messages relevant to the change-over function (e.g. control circuits); once the fault or error has been remedied, the device must be reset whereby the messages in the display are also deleted.

All messages are stored in the history together with the date and time stamp.

The operating manual of the UEI-710-V.5 contains an extensive description of operation, messages and possible causes of faults.

## **5.2 Buttons and display symbols**

An extensive description of the buttons and display symbols can be found in the operating manual of the UEI-710-V.5.

## **6 Messages / communication interface**

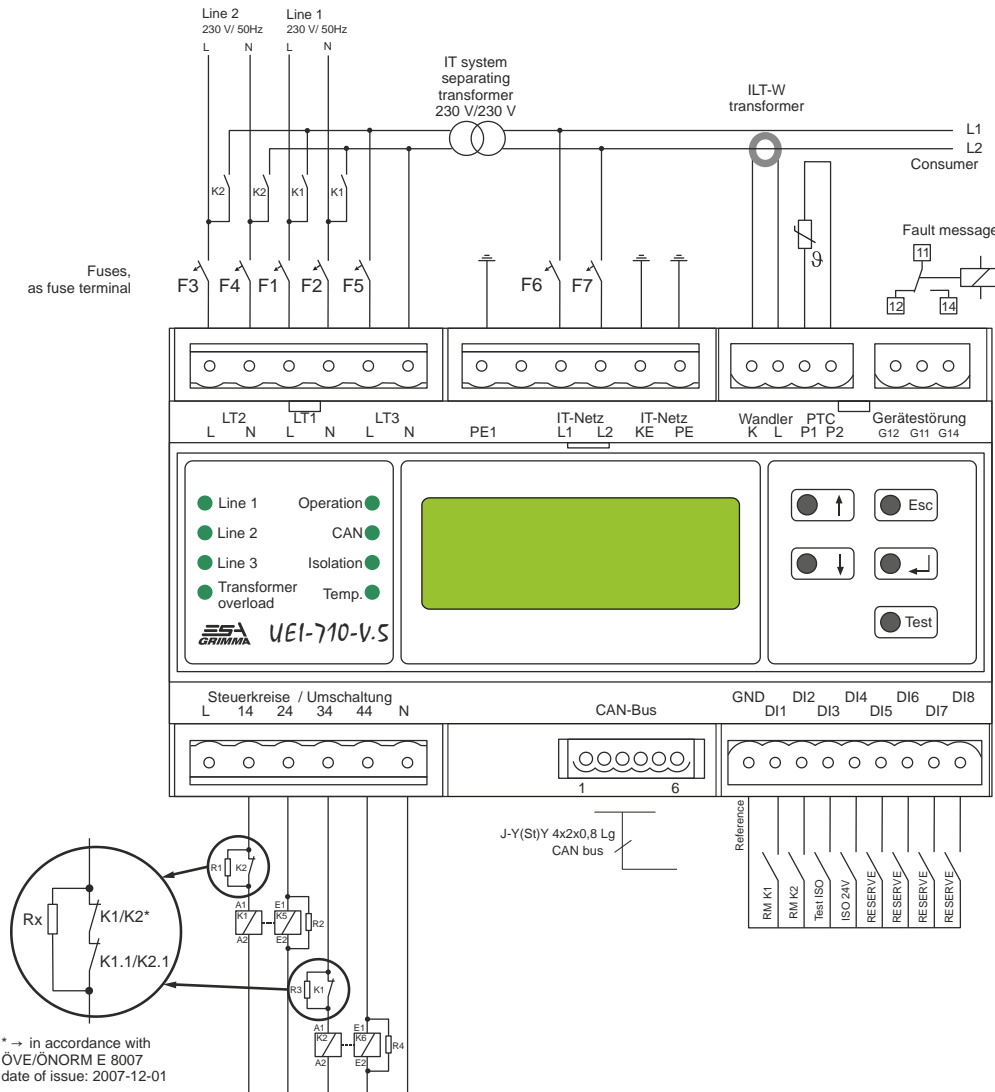
Operating and fault messages are given by the LED indicators and shown on the display of the UEI-710-V.5. They can also be transmitted via the potential-free exchanger of the integrated signal relay.

The CAN interface can be used to transmit data as well as the current operational and fault status to external peripheral equipment (e.g. BMTI 5 / panels) and to connect the device to the building services control system.

Detailed fault messages are given in the operating manual of the UEI-710-V.5.

## 7 Connection diagram

### 7.1 Connection diagram of the UEI-710-V.5



**Figure 8:** Connection diagram of UEI-710-V.5 in a change-over and monitoring module (type UEI-710)

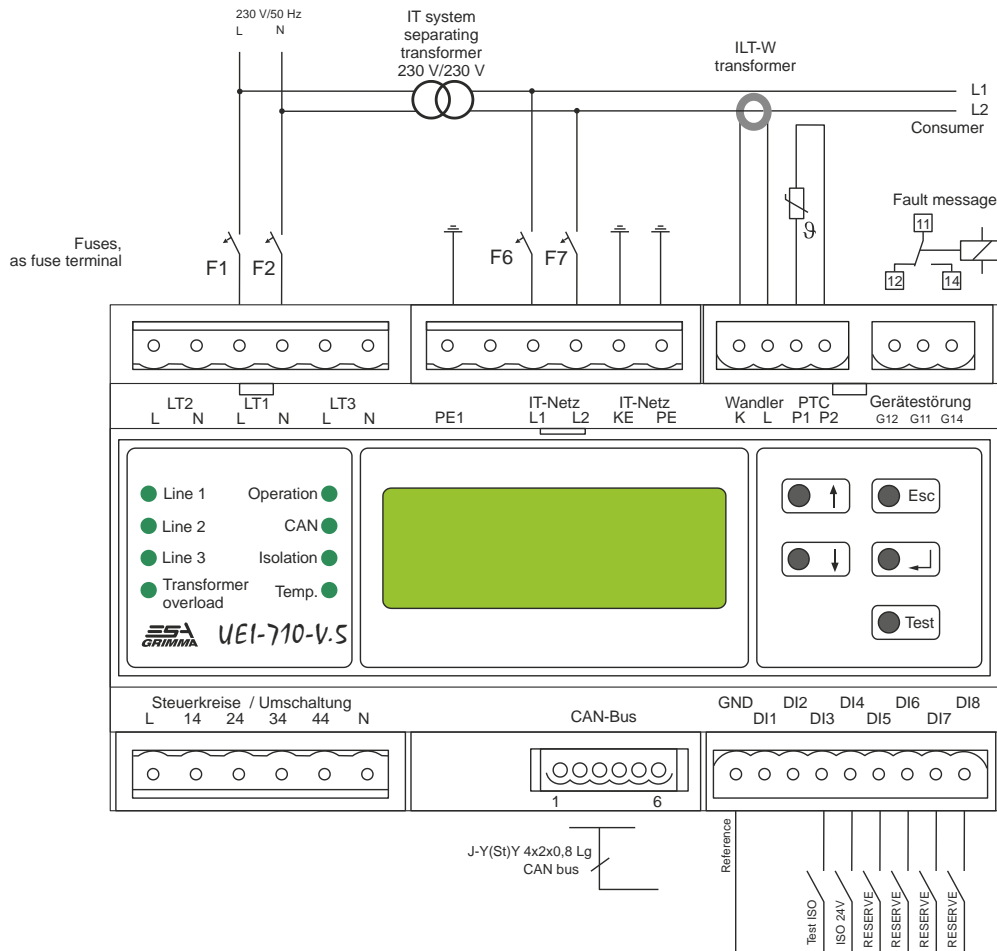
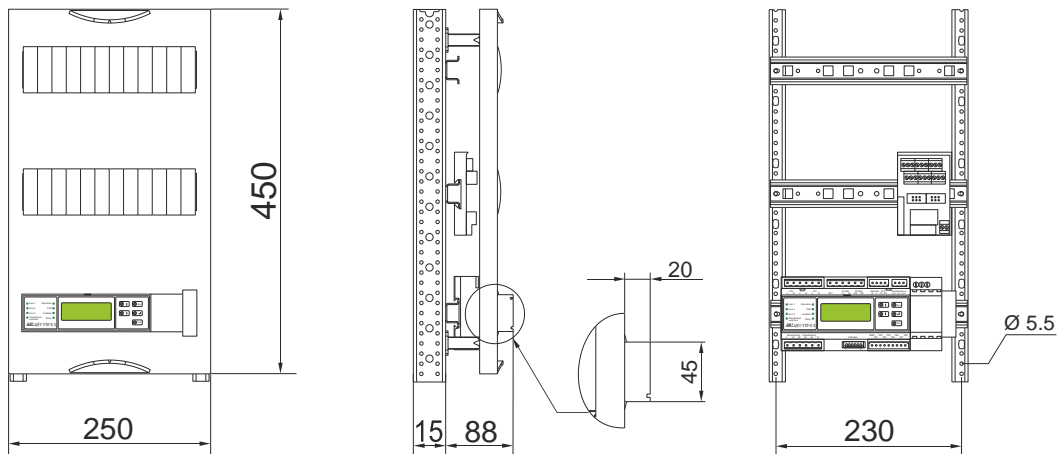


Figure 9: Connection diagram of UEI-710-V.5 in a monitoring module (type ÜEI-710)

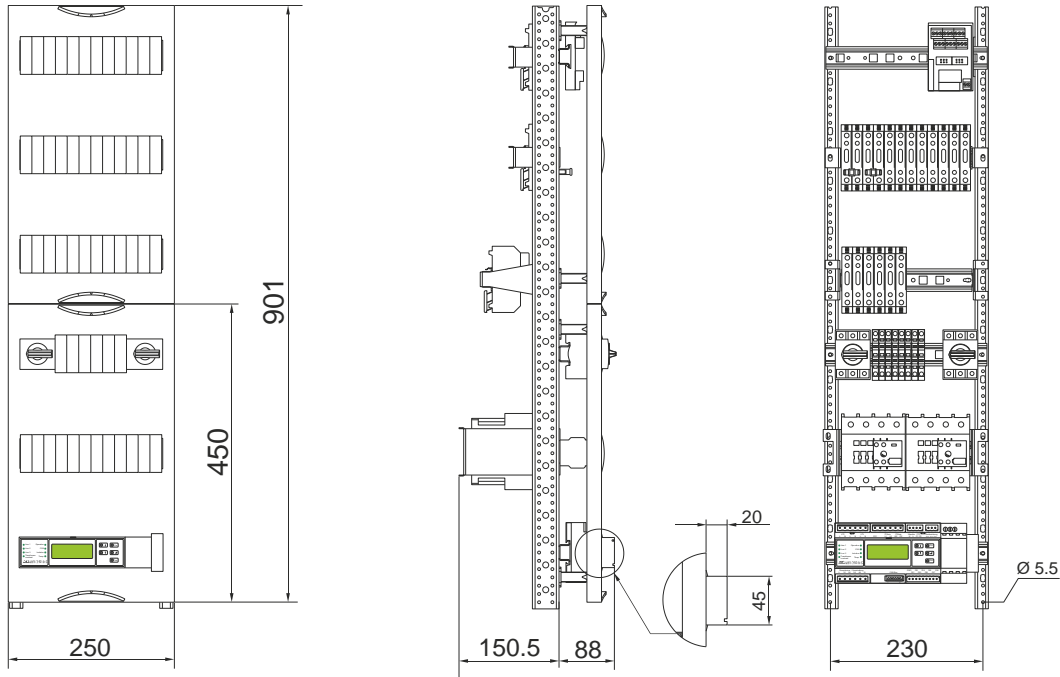
## 7.2 Assembly diagram

**NOTE:** The following figures show a possible setup; however, without the insulation fault detection system IFS.



All dimensions in mm

Figure 10: Possible setup of ÜEI-710



All dimensions in mm

**Figure 11:** Possible setup of UEI-710-../2

## 8 Specification sheets

The following specification sheets are available and have to be considered:

- Operating manual: Change-over and/or monitoring module for applications in medical locations UEI-710/ÜEI-710
- Operating manual: Multifunctional change-over and monitoring device UEI-710-V.5
- Operating manual: Insulation fault detection device IFS-710-W6 (optional)
- Circuit and connection diagram of change-over and/or monitoring module.

## 9 Technical specifications

<b>Types with UEI-710-V.5</b>	
UEI-710 .....	UEI-710-65/2, UEI-710-65/2-IFS, UEI-710-80/2, UEI-710-80/2-IFS
ÜEI-710 .....	ÜEI-710, ÜEI-710-IFS
<b>Operation</b>	
Rated operational current UEI-710-65 / UEI-710-80.....	65 / 80 A
Maximum series fuse .....	Table 3 on page 17
Operating voltage .....	AC 250 V, 50 ... 60 Hz
Control voltage .....	AC 250 V, 50 ... 60 Hz
Maximum isolating transformer capacity.....	8 kVA (10 kVA version for abroad)
<b>Voltage monitoring with change-over control</b>	
Voltage monitoring (line 1, 2 and 3)	
Monitored system .....	1/N AC 0 ... 290 V, 50 ... 60 Hz
Undervoltage range.....	AC 150 ... 230 V
Overvoltage range .....	AC 230 ... 260 V
<b>Change-over times</b>	
Switching delay time $t_{vh}$ .....	0 ... 20 s (configurable)
Reverse switching delay time $t_{vr}$ .....	0 ... 20 s (configurable)
No-load switching time (pause time) $t_{nu}$ .....	0 ... 20 s (configurable)
<b>Insulation monitoring 230 V</b>	
Monitored system .....	AC 120 ... 265 V, 50 ... 60 Hz
Triggering value / hysteresis .....	configurable 50 ... 250 k $\Omega$ / fixed 25 %
<b>Load current monitoring with ILT-W transformer</b>	
Triggering value / hysteresis .....	configurable 5 ... 50 A / fixed 4 %
<b>Temperature monitoring</b>	
Using NC contact or PTC thermistor .....	120°C
<b>Communication interface / protocol</b>	
Interface / protocol.....	CAN / CAN (2.0) acc. to ISO 11898
<b>Electromagnetic compatibility (EMC)</b>	
Immunity acc. to EN 61000-6-2: March 2000, (EMC) Generic standards – Immunity for industrial environments	
Emissions acc. to EN 50081-1	
Emissions acc. to EN 55011/CISPR11 .....	Limit class B
.....suitability for use in industrial and household applications)	
<b>Environmental conditions</b>	
Ambient temperature (operation) acc. to EN 61557-8: 1997 .....	-5 ... +45°C
Ambient temperature (storage) acc. to EN 61557-8: 1997 .....	-25 ... +70°C
Climatic conditions class acc. to IEC 721 .....	3K5, no condensation or icing

<b>Integrated test signal generator and insulation fault detection system (IFS-710-W6), optional</b>	
Measuring channels .....	Maximum 96 channels
Test signal .....	Limited to max. 1 mA
<b>Display and messages</b>	
Message outputs .....	1 exchanger (potential-free)
Display .....	Operating and fault messages in plain text and LED on UEI-710-V.5 via standard field bus (CAN) on peripheral display devices
<b>Installation specifications</b>	
Degree of protection acc. to EN 60259 .....	IP00
Safety class .....	I or II
Flammability class .....	UL94V-0
Weight .....	depends on type
Device dimensions in mm (H x W x D) .....	depends on type
<b>Order information</b>	
Change-over and monitoring module for IT system separating transformer up to 6.3 kVA:	
UEI-710-65/2 (without circuit breaker) .....	Item no.: 0070150
UEI-710-65/2-IFS .....	Item no.: on request by type*
Change-over and monitoring module for IT system separating transformer up to 8 kVA (10 kVA abroad):	
UEI-710-80/2 (without circuit breaker) .....	Item no.: 0070151
UEI-710-80/2-IFS .....	Item no.: on request by type *
Monitoring module for single-phase IT systems:	
ÜEI-710 .....	Item no.: 0070083.07
ÜEI-710-IFS .....	Item no.: on request by type *

\* The item numbers vary for the various different models of change-over and/or monitoring modules with IFS.

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**UEI-710/ÜEI-710**

Change-over and/or monitoring module  
for applications in medical locations,  
optionally with insulation fault detection  
system IFS

Product information (PI)

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