

## ILT-710-V.5

Insulation, load and temperature monitoring device with integrated test signal generator for insulation fault detection equipment in medical IT systems.

**HospEC**<sup>®</sup>  
Hospital Energy Control

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 **ESA GRIMMA**  
ESA ELEKTROSCHALTANLAGEN GRIMMA GmbH

### Comfortable monitoring in medical IT system

Group 2 medical locations must be provided with a protective separation (IT system) with insulation monitoring. The installation of an insulation fault detecting system for a quick localization of occurring insulation faults is advantageous. ESA-Grimma has developed the appropriate devices for these tasks:

The insulation, load and temperature monitoring device with integrated test signal generator *ILT-710-V.5* is responsible for the load and temperature monitoring of the IT system isolating transformer. It permanently measures the insulation resistance in the IT system. Occurring insulation faults are detected and displayed. The IT system, however, will continue to operate. A quick localization and elimination of the insulation fault is now required. The *ILT-710-V.5* and the insulation fault detecting systems *IFS-710-W.6*, which are connected via CAN Bus, provide a comfortable fault detection system.

Without the need to switch off the system or to separate loads, the localization and reporting of the affected outgoing circuit can be carried out using the insulation fault detection system. The maintenance and repair effort is kept at a minimum. The detection of insulation faults is carried out without involvement of the technical department or medical staff. The fault is reported and the fuse indication or the location of the faulty circuit as well as the insulation resistance are displayed as plain text. A time-consuming manual troubleshooting is thus no longer necessary.

Operating and annunciator terminal types *BMTI 1* and *BMTI S 4*, for example, are used as display and operating devices. The *BMTI 1* is primarily used as a „small“ display for on-site display in the patient's room.

The use of a *BMTI S 4* is always mandatory if an insulation fault detecting system is being installed. It is installed in patient rooms and for logical reasons at the nurse's desk and is used for plain text display of values and faults from the IT system.



### Certified hospital quality

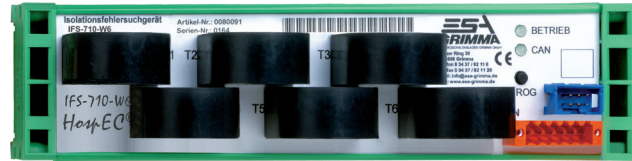
Our products and system solutions:

- comply with the latest standards and regulations, particularly IEC 60364-7-710 and DIN VDE 0100-710
- are tested and certified by independent test laboratories

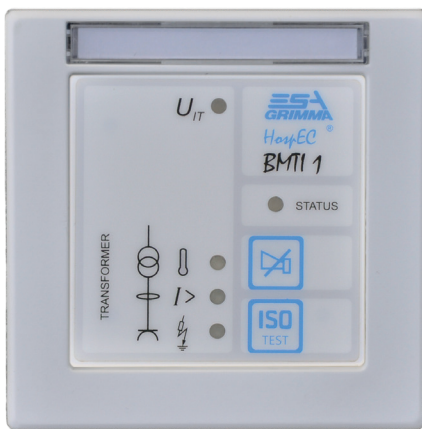




Insulation, load and temperature monitoring device with integrated test signal generator **ILT-710-V.5**



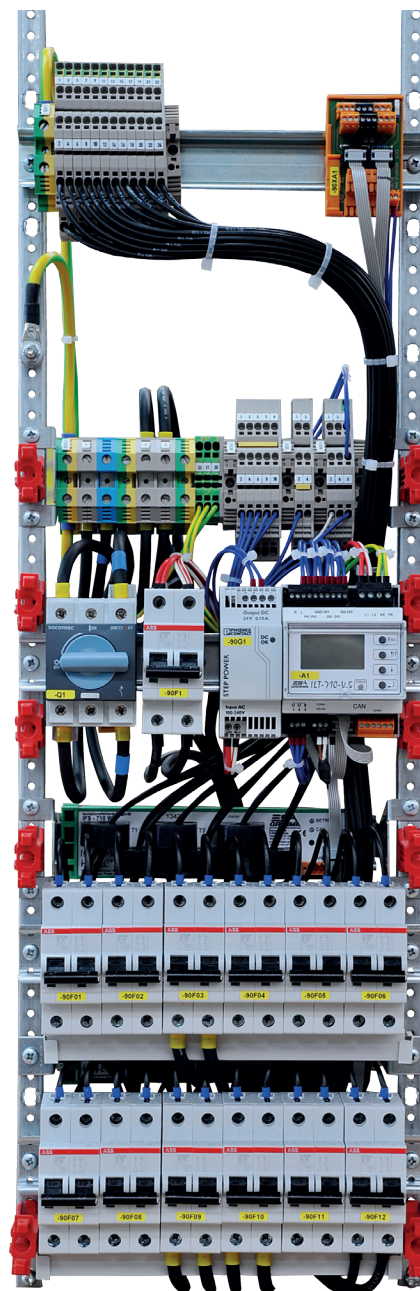
Insulation fault detecting device **IFS-710-W6**



Operating and annunciator terminal **BMTI 1**



Operating and annunciator terminal **BMTI S4**



Switch rack with complete IT system monitoring using **ILT-710-V.5** and insulation fault detection system, 12 outgoing circuits

### Application example

The presented application example shows the *ILT-710-V.5* as a monitoring device in one IT system as an extension to an insulation fault detection system with *IFS-710-W6* devices. A maximum of 16 insulation fault detection systems *IFS-710-W6* type can be used for one *ILT-710-V.5*. Thus, 96 outgoing circuits can be integrated in the insulation fault detection system.

### Principle sequence of an insulation fault detection

The insulation monitoring device *ILT-710-V.5* constantly identifies and monitors the insulation resistance in the IT system. If the insulation resistance drops below a specified value, then the search process is started by the test signal generator (integrated in the *ILT-710-V.5*).

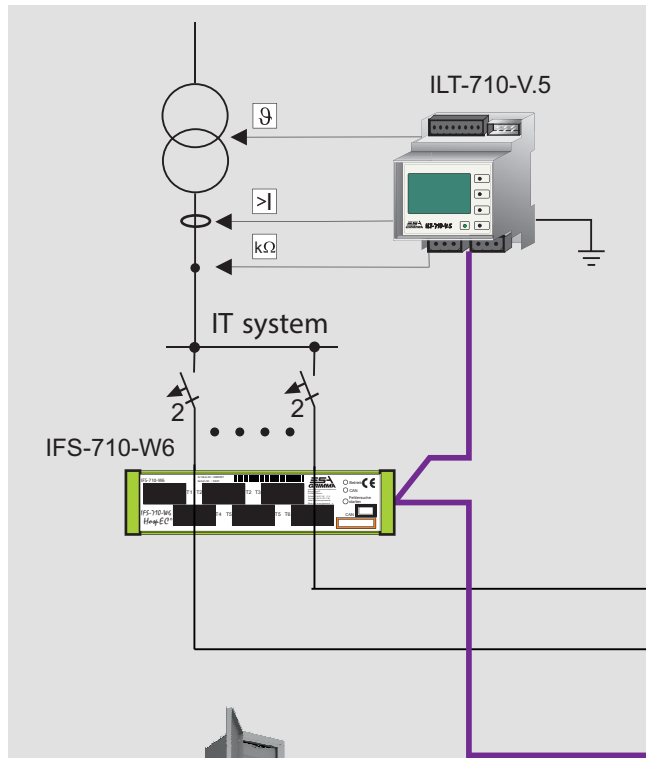
It feeds a test signal (limited to 1mA) into the IT system. The test signal is detected by the insulation fault detection device *IFS-710-W6* by its integrated converters (per outgoing feeder circuit) – the faulty circuit is thus detected. The test signal generator evaluates the fault detection and transfers the evaluation to the field bus (CAN).

Corresponding messages are now generated by the insulation monitoring device and peripheral display devices. The plain text of the faulty outgoing circuit is displayed on the *ILT-710-V.5* and *BMTI 5.4*. The operator receives detailed information about the faulty power circuit; messages can be saved for future evaluations.

Communication between all devices is carried out via the standard field bus (CAN).

### Your advantages

- Quick, automatic location of faulty power circuit during operation
- No user intervention necessary
- No time-consuming manual troubleshooting
- Optimization of maintenance
- Reporting and storage of faults
- Integrated component of the *HotEC®* system
- Communication via CAN bus with all devices of the *HotEC®* system
- Connection options to central building control systems

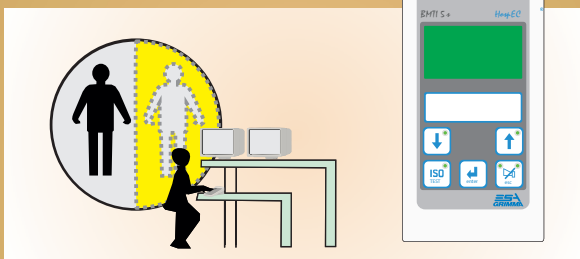


- **Operating and annunciator terminal BMTI 5<sub>s</sub>**, installed at nurses' desk:
- Plain text display of any operational and fault message of the monitored IT system
- Triggering of the test function of the connected **ILT-710-V-S**
- Multi-color backlit text display for detailed information and menu presentation
- Operation via buttons on the device
- Acoustic signaling
- Integrated null-voltage safe message memory for 500 messages
- Closed, multi-layered and permanently stable foil surface resistant against cleaning and disinfectant agents, UV-proof

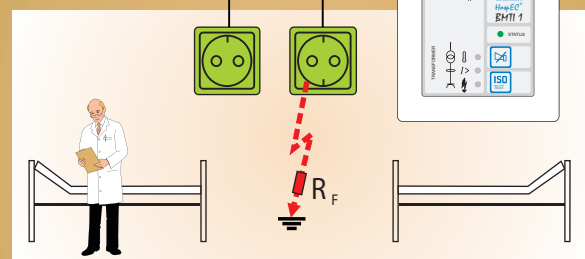
- **Operating and annunciator terminal BMTI 1**, installed in patient rooms:
- Display of conditions and faults using LED of the monitored IT system
- Acoustic signaling
- Triggering of the test function of the connected
- Closed, multi-layered and permanently stable foil surface resistant against cleaning and disinfectant agents, UV-proof
- Mounting in standard flush-mounted box
- Neutral white cover frame with labeling field inconspicuously fits in the existing switch range

CAN bus

Other rooms



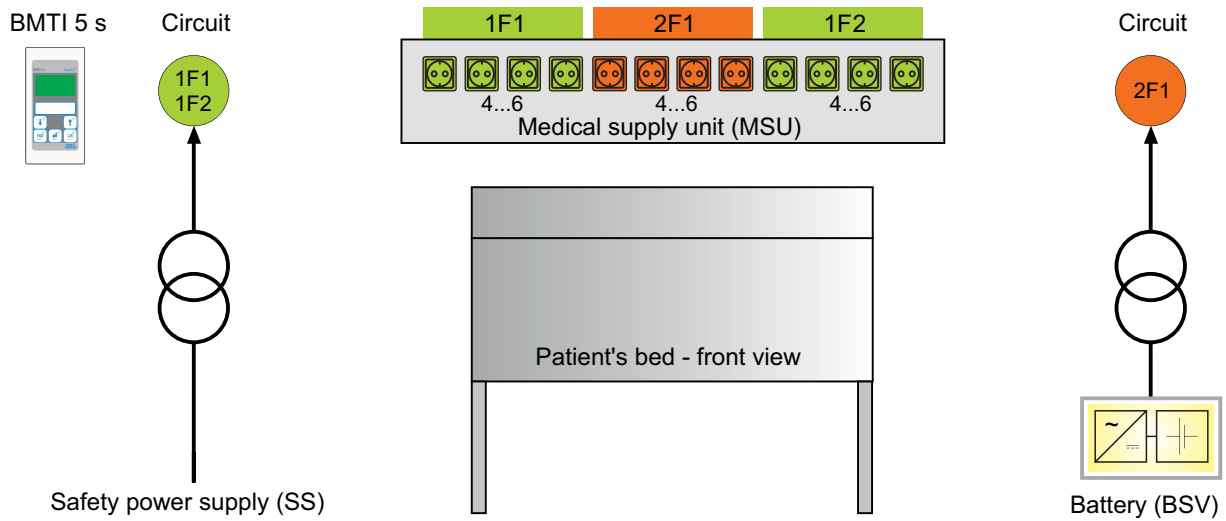
Nurse's desk



Intensive care

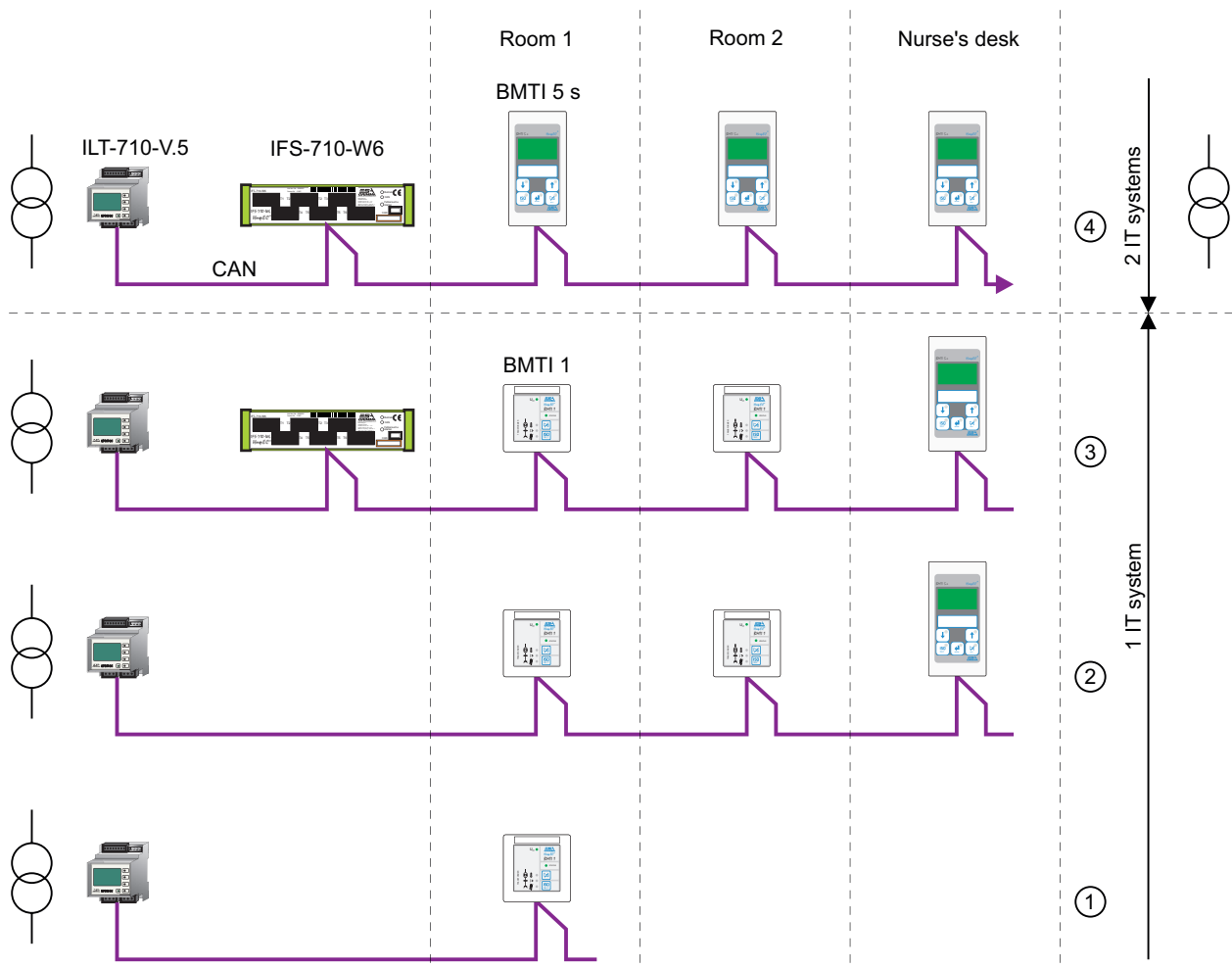


### Exemplary power supply of a patient's area



NOTE: Practice shows that at least 12 to 24 power outlets are required per patient area in a surgery room group or in an intensive care unit. In case of more than two circuits per patient area, the power supply has to comprise two IT systems (DIN VDE 0100-710 (VDE 0100 Part 710):2002-10, paragraph 710.55.3, see also 710.512.1.6)

### Application examples (communication wiring)



AC/DC

MED

## Technical data *ILT-710-V.S* (abstract)

Monitored IT system	1 AC 50/60 Hz 110...250 V
<b>Configurable values</b>	
Triggering value of the insulation monitoring 230V	50...250 kΩ
Triggering value of the load current monitoring	0...50 A with converter ILT-W
Temperature monitoring triggering value/return value	Fixed: 120 °C, 4 kΩ/1,5 kΩ
Admissible system discharge capacity	max. 4 μF
Max. number of insulation fault detection systems <i>IFS-710-W6</i>	16 (96 channels)
Test signal (test current)	Limited to 1 mA
Operation	4 buttons
Configuration	Via menu
Displays	Full-graphics display (back-lit) and LED (status)
Messages	Plain text display / LED / 2 OptoMOS relays / external via field bus (CAN), for example at <i>BMTI 5+</i> / acoustic signaling
Communication interface / protocol	CAN / CAN (2.0) as per ISO 11898 RS 485 / Modbus®-RTU
Supply voltage $U_s$	1 AC 50/60 Hz 110...250 V
Internal consumption	Approx. 8 W
Dimensions (h x w x d in mm) / assembly	90 x 71 x 73 (4 TE) / top-hat rail as per DIN EN 60715

## Technical data *IFS-710-W6* (abstract)

Number of measuring channels	6 (transformer integrated)
Number of measuring channels per IT system	Max. 132 (96 with <i>ILT-710-V.S</i> )
Measurement value logging	Parallel (no multiplexing)
Error location time	Approx. 3s
Triggering value of the test current	0.5mA
<b>Monitored system</b>	
Rated voltage	AC 20...265 V
Rated frequency	45...400 Hz
Displays	LED
Messages	LED / field bus (CAN)
Communication interface / protocol	CAN / CAN (2.0) as per ISO 11898
Supply voltage $U_s$	24 V DC (PELV) via CAN Bus
Internal consumption	Approx. 2,6 W
Dimensions (h x w x d in mm) / assembly	46 x 190 x 60 (11 TE) / top-hat rail as per DIN EN 60715



## Technical data *BMTI 1* (abstract)

Source of messages	Insulation monitoring with <i>ILT</i> type device
Displays	5 LED
Buttons	2
Acoustic signaling	Horn
Messages	- Overtemperature IT system transformer - Overcurrent (load) IT system transformer - Insulation fault in monitored IT system - Voltage in IT system/device type <i>ILT</i> fault
Test functions	For IT system monitoring devices "ISO-Test"
Configuration	At device using buttons (the <i>BMTI 1</i> is delivered in a pre-configured condition)
User interface	Closed, multi-layered and permanently stable foil surface resistant against cleaning and disinfectant agents, UV-proof
Communication interface / protocol	CAN / CAN (2.0) as per ISO 11898
Supply voltage $U_s$	24V DC (PELV) via CAN Bus
Internal consumption	Approx. 0.5W
Dimensions (h x w x d in mm) / assembly	55 x 55 x 37 / commercial flush-mounted or cavity wall box

## Technical data *BMTI S<sub>1</sub>* (abstract)

Source of messages	All devices of the <i>Hot-EC</i> ® system (with additional board also directly for third-party systems)
Number of different messages	Max. 1,000 individual lines of text
Display	Full-graphics display (multi-colored, back-lit)
Messages	Plain-text display / display of message priority by color change of the display / horn
Message texts	Standard texts (default) / individual texts
Message memory	500 integrated, with date / time
Operation	Foil keyboard
Test functions	For IT system monitoring devices "ISO-Test"
Configuration	by menu / PC configuration software via CAN bus / adoption of projects from MICRO-SD card
Additional inputs/outputs	16 with additional board, freely configurable as input/output (open collector)
Special feature	- several <i>BMTI S<sub>1</sub></i> can be combined to groups for common acknowledgments and mutually monitor their functions
Communication interface / protocol	1 x CAN / CAN (2.0) as per ISO 11898 RS485 / Modbus® RTU (with additional board) / Modbus® as gateway
User interface	Multi-layered foil surface, resistant against cleaning and disinfectant agents
Supply voltage $U_s$	24V DC (PELV) by standard via CAN bus
Internal consumption	Approx. 2.5W
Protection class as per DIN EN 60529	IP30 / IP20 (built-in components / terminals), IP54 (user interface)
Dimensions of front plate (h x w in mm) / mounting	171 x 86 (mounting 54mm) / cavity wall / flush-type / surface box

Revision 09-2016

ESA Elektroschaltanlagen Grimma GmbH reserves the right to make changes due to technical progress.

Image sources: ESA Elektroschaltanlagen Grimma GmbH, Fotolia

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