DATA SHEET

NRE I4.0

Version 1.5

Notice:

No liability or warranty can be accepted for any errors.
We reserve the right to make technical changes at any time.

Date Sheet

NRE I4.0

1 Contents

2 General Description

In cold rooms with temperatures below -10°C and a floor area above 10m³, an emergency call device independent of the general power supply network must be provided. Emergency call devices are life-saving equipment and require careful installation, commissioning and maintenance.

Designs according to VDE0100, 0800 etc. are subject to the respective national standards and may only be carried out by qualified electricians.

The emergency call central unit contains a power supply unit that supplies the electronics with extra-low voltage and keeps the built-in rechargeable battery constantly charged. In the event of a power failure, the built-in rechargeable battery provides a visual and audible alarm lasting several hours. Make sure that the polarity of the battery is correct when inserting it.

3 Assembly

When mounting, make sure that the controller is mounted on non-conductive surfaces or on grounded conductive surfaces. Unless the mounting surface cannot be touched.

The emergency control panel should be placed outside the rooms to be monitored in locations that are permanently occupied by people (work rooms, telephone exchanges, porters' rooms, etc.). The installation location should be chosen in such a way that the acoustic and visual alarm signals can be perceived by people at all times.

The emergency call buttons for alarm triggering should be mounted in the immediate area of the exit and must be accessible while lying down. Each exit must be equipped with an emergency call button, and the triggering point must be easily accessible. An emergency call button can be connected to the emergency call center.

When connecting the flashing light or siren, attention must be paid to the polarity, otherwise no alarm will be triggered and displayed.

All lines should be kept as short as possible and must not be laid together with power lines. Avoid the vicinity of motors, switch cabinets, etc. If this is not possible, shielded lines must be laid.

4 Technical Specifications

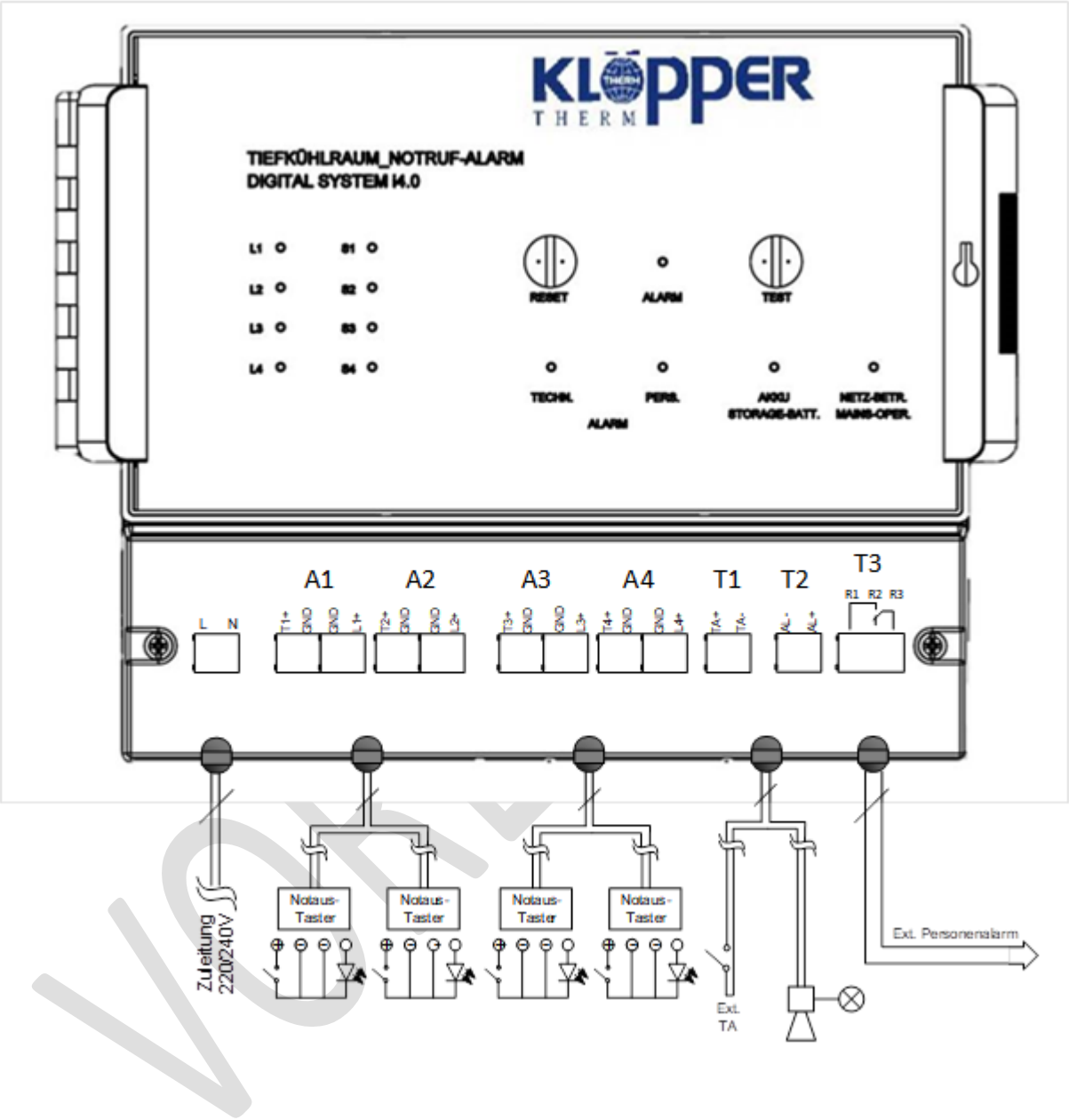
Case	IP 65, 213 x 180 x 100mm (WxHxL)
Operating mode	Operating regulation and control unit
Pollution level	2 (normal)
Mode of operation	Typ 1C
Overvoltage category	III
Rated current	1A, $\cos\varphi$1,0
Power supply	230V, 50Hz, +5%/-10%
Battery	Two 3.6V Li-Ion, with 2500mAh with built-in deep discharge and overcharge protection.
Input	Terminals T1+, TA- technical alarm
	Terminal T1 to T4+, terminal GND normally closed (emergency stop, personal alarm)
Output	Terminal AL+, AL- Siren/flashlight, max. 35mA
	Terminal L1 to L4+, terminal GND Emergency stop lighting (emergency call button), max. 15mA
	Alarm relay (R1,R2,R3) changeover contact, max. load 1A at 24V cos φ = 1.0
Terminals	0,75 - 1,5mm²
Fuse	Micro fuse 5 x 20mm, 0.1AT according to IEC 127, rated breaking capacity 0.1A/ 250V AC, 50-60Hz
Storage temperature	0°C to 55°C
Operating temperature	0°C to 55°C
Li-Ion battery working temperature:	0°C to 40°C (optimal)

Please note the following information:

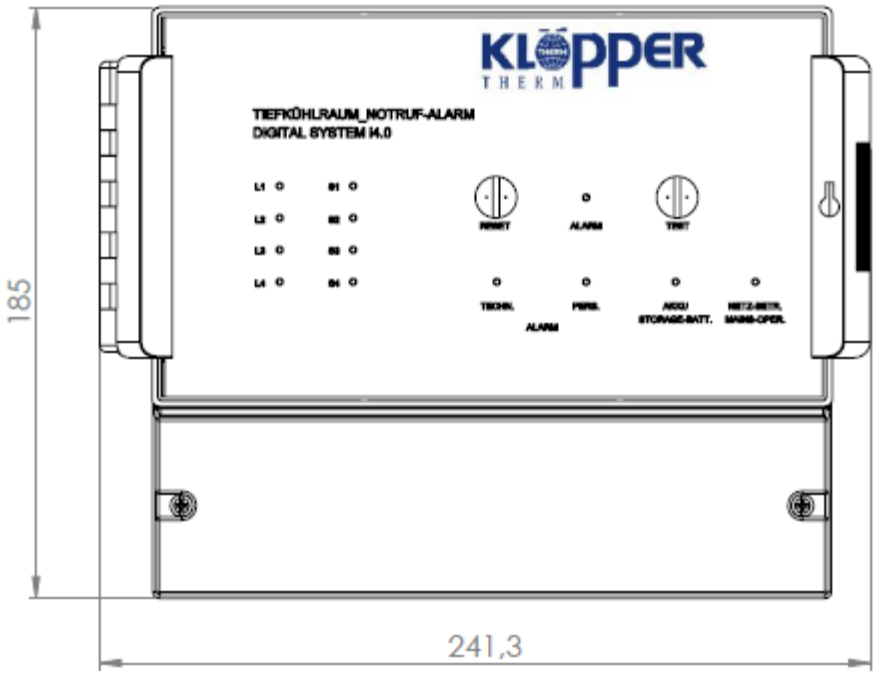
The internal resistance of a lithium-ion battery also increases in cold conditions, which reduces the available power. In addition, the electrolytes used can possibly freeze at temperatures around -25 °C. The optimum operating range is generally specified as 0-40 °C. Below 10 °C, the performance can drop so much due to the increased internal resistance.

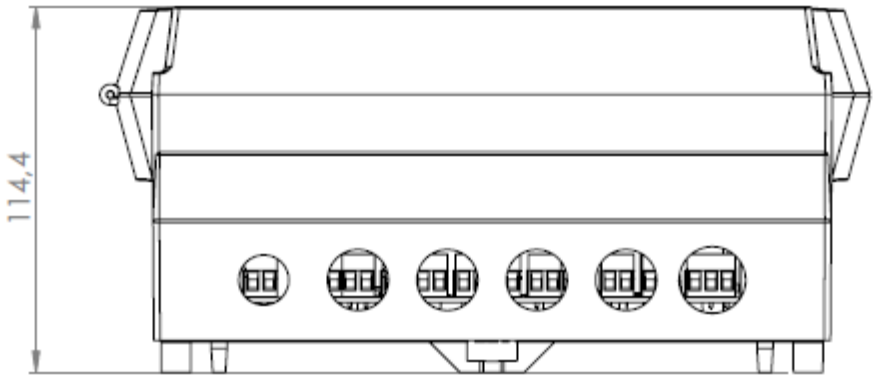
(The potential-free alarm relay contacts are not suitable for mains voltage 230VAC).

5 Connection Diagram



6 Dimensions





7 Installation

Connect the emergency stop switch to terminals T1+ to T4+, GND and the pushbutton illumination to L1+to L4+ and GND (see chapter 5 connection diagram).

Attention:

The NRE-i4.0 is equipped with automatic connection detection of emergency call buttons as well as for TA (technical alarm). If no emergency call button is connected, this is signaled by a repeating alarm tone. If a button is subsequently connected, this must be acknowledged via the RESET button. At least one pushbutton (T1+ and GND) must be connected.
If the button configuration is to be changed subsequently, the following procedure can be followed:

1. **Emergency call button**: Connect the button, disconnect the emergency call central device from the mains (230V) and remove the battery briefly, then switch the device back on (insert the battery and switch on the mains voltage).

2. **Technical alarm**: Connect technical alarm (NC contact) to terminals TA+ andTA- (see chapter 5 Wiring diagram).

3. Connect the mains supply line (230V) to the **L** and **N** terminals. Do not switch on the supply voltage yet!

4. Before applying the power supply, remove the case cover and insert the battery into the case. For safety, the battery can be fixed with a cable tie via the two slots next to the battery..

5. When inserting the battery, the correct polarity must be observed, otherwise the battery and the electronics can be damaged.

6. After inserting the batteries, screw the device covers tightly. Connect the 230 V mains voltage to the **L** and **N** terminals (switch on the 230 V power supply).

7. The Li-Ion battery of the emergency alarm device is only fully operational after approx. 120 hours of operation (reduced to approx. 1 hour if charged Li-Ion batteries are used), as the Li-Ion battery requires a certain charging time to reach its full charge capacity..

8 Functional Check

Normal Operation

After switching on the supply voltage (and inserted battery), the alarm relay and the personal alarm are switched off.

Normal Operation

1. Only the green LED for system operation must be lit..

Personal Alarm

1. Press one - or all emergency call buttons. Alarm function (alarm relay and personal alarm (flashing lamp / and or audible alarm) are switched on - 2 seconds interval) and the corresponding LEDs on the front panel are lit. Check the alarm function. After removing the pushbutton signal (unlocking the pushbutton) and acknowledging it with the RESET button, the alarm is terminated.

Technical Alarm

1. **TA-Alarm Input**:
   Activate the TA input. Alarm function (alarm relay and personal alarm (flashing lamp / and or acoustic alarm) are switched on - interval sound). Check the alarm function. After the TA signal is removed and acknowledged by the RESET key, the alarm is terminated.

2. **LED-Break Alarm:**
   Disconnect the LED+ input and GND. Alarm function (alarm relay and techn. alarm (flashing lamp / and or audible alarm) are on - interval sound). Check the alarm function. After the LED+ input is closed again and acknowledged by the RESET key, the alarm is terminated..

3. **Power Failure Alarm:**
   Switch off the supply voltage (230 V) - battery must be inserted. Alarm function (alarm relay and personal alarm (flashing lamp / and or acoustic alarm) are switched on - interval sound). Check the alarm function. After switching on the mink voltage (230 V) again and acknowledgement by the RESET key, the alarm is terminated
   .

4. **Web Browser:**

   (Is optionally available only with a W-LAN module)

   Initially, a default address is stored in the central emergency call device **(http://192.168.4.1/nre.html, SSID "NRE_I4_0", password: "12345678")**.

   Entering this IP address in a web browser calls up a graphic image of the device

9 Functional Description

The emergency call central unit contains a power supply unit that supplies the electronics with extra-low voltage and keeps the built-in rechargeable battery constantly charged. The built-in battery enables a visual and acoustic alarm for several hours in case of power failure.

Power operation (green LED)	lights up during mains power operation
Battery operation (red LED)	lights up in case of power failure
Personal Alarm	lights up when the emergency call buttons are pressed or when the power to the button line is interrupted
Technical Alarm	lights up at: a.) Power failure b.) Defect of one of the LEDs in the pushbutton or power interruption. c.) Bridging of terminals TA+ and TA-, e.g. by an externally connected open contact
Test button	Alarm triggering on the emergency call central device
Reset button	for alarm acknowledgement, whereby the emergency call button must first be unlocked. In the event of a technical alarm, the siren/flashlight can be switched off, while the optical alarm message remains until the fault has been rectified.
Relay output	potential-free relay changeover contact for relaying personal alarms

Audible Alarm Signal	for personal alarm:	**Continuous**
	for Technical Alarm:	**Interval** with approx. 3 seconds signal, approx. 3 seconds pause
Communication unit	The emergency call center device offers the possibility to monitor the system status via a web browser.	

10 Error Messages

Error Message	Possible causes/suggested solutions for troubleshooting
1. LED (green) Power operation is not on, LED (red) technical alarm is on and alarm lamp is on in intervals (approx. 2 sec. signal and 7 sec. pause)	**Technical alarm: Power failure** • Check power supply • Check microfuse in the emergency call central device • For new start-up after power supply voltage has been applied RESET • Press key
2. LED (red) technical alarm and alarm lamp lights with audible alarm in intervals (approx. 2 sec. signal approx. 7 sec. pause).	**Technical alarm** **Cause 1: External technical alarm** • The normally closed contact between the TA+ and TA- terminals has tripped. • The line to the normally closed contact must be checked. **Cause2: No battery inserted** • Open the casing and check whether the batteries have been inserted correctly. • Remove the batteries and measure the voltage. The voltage of the individual cells must be greater than 3V.
3. LED (red) technical alarm and alarm lamp lights up with acoustic alarm in intervals (approx. 2 sec. signal approx. 7 sec. pause). At least one of the LEDs L1, L2, L3 and L4 is on (red).	**Technical alarm: Emergency lighting damaged** • Check the LEDs in the trigger buttons. If the LED does not light up in a release point, replace the LED. • ATTENTION: When installing the LED, ensure correct polarity. • Only use original Klöpper LED • If the polarity of the LED is correct, a voltage of approx. 2V is applied to the LED. • If the polarity is wrong, the voltage is much higher, up to 15V. • In case of line interruption to terminals 11 and 12 check line. • Then press RESET key. Alarm and red LED must go out. Bridge terminals 3 and 4, e.g. by an external connected contact. This eliminates the error.

4. LED (red) personal alarm and alarm lamp lights up in intervals (approx. 2 sec. signal approx. 2 sec. pause).	**Personal alarm:** • Release points in the cold rooms are actuated. • Check the triggering points. The button at which the personal alarm was triggered must be reset, i.e. the trigger button must be pulled out. • This unlocks the trigger point and the personal alarm can be cancelled by pressing the RESET button on the emergency alarm device. • The alarm flashing lamp and LED must go out. • In case of line interruption of the pushbutton line (terminals A1 to A4)- check the line. • Then press RESET button. Alarm and red LED must go out. • The fault has now been eliminated.

11 Terminal Assignment

Inputs:

T1+ to T4+ and GND	Emergency switch connection (NC contact)
L1+ to L4+ and GND	Lighting pushbutton - max. 15 mA
TA+ and TA-	Technical alarm (NC contact)
Line voltage (N L)	230 V

Outputs:

AL+ and AL-	Siren connection 12V, max. 30mA
Ext. Alarm	Connection for external alarm (potential-free relay)

The protective ground conductor is not required!

The test for operational availability of min. 10h according to EN 378-1 was carried out using the following signal generators individually:

- **Siren** : FULLEON LTD: ROLP/SV/W/D,
- **Flashlight**: FULLEON LTD,SOLISTA MAXI, 811024FULL-0040
- **Optical and audible signal**: COMPRO, CH/100/AV/DW
- **Pushbutton LED**: AN-TAS-LED-151308 (max. 15 mA)

Operational time observed, only for the devices listed above.

If signal transmitters other than those specified above (be they optical or audible transmitters) are connected, they must be connected in accordance with the circuit diagram. The operator must ensure that these are operated within the specified operating limits (Technical data, page 5) of the NRE i4.0.

The test for operational availability of min. 10h according to EN 378-1 was carried out using the following signal generators:

Optical and Audible Signal Generator Manufacturer: Compro Product Description: CH/100/AV/DW	
Optical Signal Transmitter Manufacturer: FULLEON LTD Product Description: SOLISTA MAXI	
Audible Signal Transmitter Manufacturer: FULLEON LTD Product Number: ROLP/SV/W/D	

Operational time observed, only for the devices listed above.

12 Installation

Ensure a level surface before installing the device. The ambient conditions must correspond to those specified in chapter 4.

The NRE I4.0 may only be connected in accordance with the circuit diagram and operated only within the specified operating limits

Changes or modifications to the casing will invalidate the warranty and void the guarantee.

Changes or circuit modification of the connection (chapter 4 and chapter 5), incorrect connection or the connection of consumers with higher power requirements than the maximum power data specified in chapter 4, will void the warranty and the guarantee.

When installing the controller, make sure that it is installed on non-conductive surfaces or on grounded conductive surfaces.

The installation location should be chosen so that the control indicators are clearly visible.

The installation location must be chosen so that the maximum ambient temperatures, ambient humidity, vibrations or shocks are within the specified limits (chapter 4).

13 Repair

Unauthorized repairs or opening the casing (broken seal) on the NRE I4.0 module will immediately void any warranty or guarantee.

Defective devices should be sent to the manufacturer for repair after an inspection by the operator with a brief description of the fault.

Electrical equipment is relevant to safety and may only be installed or removed by qualified electricians.

14 Maintenance

A functional check of the entire emergency alarm system must be performed monthly as follows:

a) Switching off the mains voltage (checking the mains power supply monitoring (battery)).
b) Alarm triggering with subsequent acknowledgement of the installed emergency call triggering point (personal alarm).
c) Alarm triggering with the subsequent acknowledgement of the possibly connected TA triggering point (technical alarm).

A functional check of the entire emergency alarm system must be carried out as documented once every 6 months as specified.

d) Actuation of the test button
e) Acknowledgement after alarm signal by RESET button
f) Disconnection of the power supply (230V)
g) Alarm triggering with the following acknowledgement at all installed triggering points
h) Switching on the mains voltage (230V)

The display elements (power LED, ALARM LED, battery LED) must be visually inspected at regular intervals.

The button LEDs must be visually inspected at regular intervals.

Wichtig!

The usual life of the LI-ION battery is about 2 to 3 years, but due to the safety aspects, the battery must be replaced **at least every 2 years**.

Wichtig!

Only the protected Li-Ion batteries supplied by AnTeCoS and provided with a serial number may be used.

Unprotected Li-Ion batteries **must not be used!**

Otherwise there is a **risk of fire!**

If batteries other than those supplied by AnTeCoS with serial number are used, any warranty or guarantee for both the NRE i4.0 and the Li-Ion battery will be invalid!

The emergency alarm device may only be connected and operated in accordance with the circuit diagram in chapter 5.

Modifications to the housing, circuit modification compared to the wiring options specified in chapter 5, incorrect connection or modified devices (flash lamp, siren, button LED) will invalidate the warranty.