



## **Translation of Original Operating Instructions**

# **Variable Message Sign**

## **VarioSign**

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# 1 General information

## 1.1 Information about these operating instructions

These operating instructions provide important information on handling the equipment. All technical data in these instructions have been developed or compiled with the greatest of care. Errors cannot however be excluded. We therefore feel obliged to point out that neither guarantee nor any legal responsibility nor any sort of liability can be accepted for consequences as a result of incorrect data. We are always glad to be informed of any errors. Adherence to the specified safety instructions and handling instructions is a precondition for safe work. In addition, it is mandatory to observe the local accident prevention regulations and general safety requirements applicable at the location where the equipment is used.

**Carefully read through the operating instructions before beginning any work!**

It is a constituent component of the product and must be kept carefully available in the immediate vicinity of the equipment at all times for the personnel. If you sell or subcontract this product, it is essential to hand over these instructions as well. The figures in this manual are not necessarily true to scale in order to show details better and can vary slightly from the actual configuration.

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## 1.2 Explanation of symbols

### 1.2.1 Symbols used in these operating instructions

#### Warning instructions

Warning instructions are identified by symbols. They are also prefaced with signal words that indicate the extent of the hazard.

- It is essential to follow all instructions!
- Always act cautiously during all work in order to avoid accidents, injury to personnel and material damage!

#### WARNING!



... indicates a possible dangerous situation that can lead to death or serious injury if it is not avoided.

#### CAUTION!



... indicates a possible dangerous situation that can lead to minor or slight injury if it is not avoided.

#### ATTENTION!



... indicates a possible dangerous situation that can lead to material damage if it is not avoided.

#### Tips and recommendations

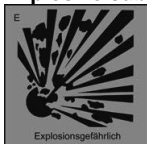
#### NOTE!



... highlights useful tips and recommendations as well as information for more efficient and troublefree operation.

### 1.2.2 Symbols on the equipment

#### Explosive substances



... indicates containers that hold substances at risk of explosion.

Keep away from all sources of ignition (e.g. naked flames, sources of heat, electrical equipment that is not explosion-proof)

Do not smoke!

Do not carry out any activities that generate sparks such as welding, cutting, or grinding!

#### Fire, naked light and smoking forbidden



... indicates areas with high risk of burns and explosions.

Keep all sources of ignition away from these areas (e.g. naked flames, sources of heat, electrical equipment that is not explosion-proof)!

Do not smoke!

Do not carry out any activities that generate sparks such as welding, cutting, or grinding!

## 1.3 Limitation of liability

All data and instructions in this manual were compiled in accordance with the applicable standards and regulations, the state-of-the-art and our many years of know-how and experience.

The manufacturer accepts no liability for damages due to:

- non-compliance with the manual
- non-designated use
- deployment of untrained personnel
- unauthorized alterations
- technical modifications
- use of non-approved spare parts

The actual scope of delivery can vary from the explanations and illustrations described here for special versions, the purchase of additional order options, or due to latest technical changes. In addition, the obligations agreed in the procurement contract, the General Terms & Conditions and the delivery conditions of the manufacturer and the legal regulations in force at the time of the contract conclusion apply.

### Warranty

The manufacturer guarantees the functionality of the applied technology and the declared performance parameters. The warranty period begins from the point in time of the free-of-defects acceptance.

### Wearing parts

Wearing parts are all components that come into immediate contact with the material to be worked on or processed. These components are excluded from the guarantee and claims for defects if this involves damage due to wear.

## 1.4 Warranty conditions

The warranty conditions are included in the separate sales documents.

**Generally valid:** Alterations and technical modifications which have not been certified by Adolf Nissen Elektrobau void all warranty claims

## 1.5 Spare parts

### WARNING!

#### Risk of injury due to incorrect spare parts!



Incorrect or defective spare parts can lead to damage, malfunction or complete failure and can greatly compromise safety. For this reason:

- Only use original spare parts!
- Original spare parts can be purchased directly from the manufacturer (for the address, see last page).

## 1.6 Customer Service

For technical information, please contact our Customer Service. Instructions on the regionally responsible contact partner can be obtained at any time per telephone, fax, e-mail or via the Internet (for the address, see last page). In addition, our employees are constantly interested in any new information and experience that result from the application and that may be valuable for improving our products.

## 1.7 Copyright protection

This manual is only intended for personnel who are engaged with the equipment. The manual must not be handed over to third parties without the written approval of the manufacturer.

### NOTE!



*The contents, data, texts, drawings, photographs and other illustrations are copyright-protected and are subject to industrial property protection. Any improper use will be liable to prosecution. Reproduction in of any shape or form - in whole or in part - and the utilisation and/or disclosure of its contents are not allowed without a written declaration of consent from the manufacturer. Violation will lead to claims for damages. All other rights are reserved.*

## 2 Safety

This section provides an overview of all important safety aspects for optimum protection of personnel and for safe and troublefree operation. Non-compliance with the handling instructions and safety instructions listed in this manual can lead to significant danger.

### 2.1 Responsibility of the operator

#### ATTENTION!



The country-specific guidelines and regulations for safety and health at work must be observed!

The equipment is designed for use in the industrial sector. Consequently, the operator of the equipment is liable for the legal obligations of safety at work.

Apart from the safety at work instructions in these operating instructions, the safety, accident prevention and environmental protection regulations in force for the field of application of the equipment must be observed.

In particular, the operator must:

- inform himself of the applicable industrial safety regulations.
- carry out a risk assessment to determine any additional dangers that result from the special working conditions at the place of use of the equipment.
- convert the necessary conduct requirements for operation of the equipment at the place of use into operating instructions.
- regularly check that the operating instructions created by him are up to date with the current state of the regulations during the entire period of use of the equipment.
- update the operating instructions - as necessary - to new regulations, standards and operating conditions.
- clearly delegate the responsibilities for installation, operation, maintenance and cleaning of the equipment.
- ensure that all employees who are involved on or with the equipment have read and understood the operating instructions. In addition, he must train the personnel at regular intervals in how to deal with the equipment and inform them of the possible dangers.
- provide the prescribed and recommended protective gear to the personnel charged with carrying out the work.

The operator is also responsible for ensuring that the equipment

- is always in a technically perfect condition.
- is maintained according to the specified maintenance intervals.
- and that all safety installations are checked regularly for completeness and functionality.

### 2.2 Personnel requirements

#### 2.2.1 Qualifications

##### WARNING!

##### Risk of injury due to insufficient qualification!



Improper handling can lead to considerable injury to personnel and damage to material.

For this reason:

- Only allow activities to be carried out by suitably qualified personnel.

The following qualifications for different fields of activity are named in the operating instructions:

##### Instructed personnel

- have been instructed by the operator on the tasks assigned to them and on the potential dangers of improper conduct.

##### Specialist personnel

- are in a position to carry out the work assigned to them as a result of their technical training, know-how and experience as well as knowledge of the current regulations and are able to independently recognise and avoid possible dangers.

##### Electricians

- are in a position to carry out the work on electrical systems as a result of their technical training, know-how and experience as well as knowledge of the current standards and regulations and to independently recognise and avoid possible dangers. Electricians are trained for the specific place of use in which they are active, are trained and are familiar with the relevant standards and regulations.

Only persons who can be expected to reliably carry out their work are sanctioned as personnel. Personnel whose ability to react is affected, for example, by drugs, alcohol or medications will not be tolerated.

- When selecting personnel, observe the regulations regarding age and vocation-specific regulations applicable at the place of use.

## 2.2.2 Unauthorized persons

### WARNING!

#### Danger to unauthorized persons!



Unauthorized persons who do not fulfil the requirements described here are not aware of the dangers in the working area.

For this reason:

- Keep unauthorized persons away from the working area.
- In case of doubt, speak to these persons and expel them from the working area.
- Interrupt the work as long as unauthorized persons are present in the working area.

## 2.3 Personal protective gear

When dealing with the variable message sign especially in public road traffic, personal protective gear must be worn in order to minimise health hazards.



For this reason:

- Before all work, properly put on the respective protective gear as described and wear it during the work.
- It is also essential to follow all signs affixed in the working area regarding personal protective gear.

### Recommended protective gear

In addition to the prescribed personal protective gear, it is recommended to wear the following protective gear:

### Reflective warning vest



or wear reflective warning clothing in order to be more clearly visible for others. In particular, wear reflective warning clothing:

- while working in the vicinity of railway tracks,
- during maintenance and when securing vehicles on public roads,
- during roadwork: all personnel who are in the vicinity of public road traffic,
- when marshalling construction traffic. Dispose the reflective warning clothing after use or have it professionally cleaned to maintain visibility.

## 2.4 Designated use

The equipment is designed and constructed exclusively for the intended purpose described here. The variable message sign is intended for the protection of persons and material and for displaying advance direction signs and hazard warnings ahead of approved construction sites in public road traffic.

### WARNING!

#### Danger through non-designated use!



Any use that goes beyond the designated use and/or different use of the equipment can lead to dangerous situations.

For this reason:

- Only use the equipment as intended
  - Strictly observe all data in these operating instructions.
- In particular, refrain from the following uses. They are considered as non-designated use:
- Unauthorized placing of the variable message sign without approval.
  - Placing and moving without adequate protection of the variable message sign and construction site.
  - Displaying of not applicable traffic signs or hazard warnings.
  - Alteration, conversion or changes to the construction or individual accessory parts with the aim of changing the application or use of the equipment.

Claims of any type as a result of damage from non-designated use are excluded.  
All damage from non-designated use is the sole liability of the operator.



## 2.5 Special risks

Residual risks that were determined based on a risk analysis are listed in the following section. It is essential to follow the instructions listed here and the safety instructions in the further chapters of these instructions for use in order to reduce possible health hazards and to avoid dangerous situations.

### Rechargeable batteries

#### WARNING!

##### Risk of injury due to incorrect handling of batteries!



- If improperly handled, installed batteries can release hazardous substances or explode. For this reason:
- Do not throw batteries into the fire or expose them to high temperatures. There is a risk of explosion.
  - Do not touch any escaping liquid. If this liquid comes into contact with the skin, immediately rinse copiously with water.
  - If liquid gets into the eyes, immediately rinse the eyes with water for at least 10 min and immediately contact a doctor.
  - Carefully remove any escaping liquid with a suitable absorbent cloth and dispose of it in an environmentally compatible way. Wear protective gloves!

#### Signs

#### WARNING!

##### Risk of injury through unreadable symbols!



- Stickers and signs can become soiled or unrecognizable as time passes. For this reason:
- Always keep safety, warning and operating instructions in a clearly legible condition.
  - Immediately renew any signs or stickers that are damaged or unrecognisable.

## 2.6 Securing against being switched on again

#### DANGER!

##### Risk of injury through unauthorised switch-on!



- While working on the equipment, there is a danger from unauthorised switch-on of the power supply. This presents a significant risk of injury for the persons in the danger zone. For this reason:
- As a basic principle, disconnect the battery before all cleaning, servicing and maintenance work.

## 2.7 Environmental protection

#### CAUTION!

##### Danger to the environment through incorrect handling!



- Improper handling or improper disposal of environmentally hazardous substances can result in significant damages to the environment. For this reason:
- Attention must be paid to the following instructions:
  - If hazardous substances permeate into the environment, immediately initiate suitable countermeasures.
  - Immediately inform local environmental and/or local authorities.

The following environmentally hazardous substances are used:

#### Batteries or rechargeable batteries

Batteries and rechargeable batteries contain toxic heavy metals. They are subject to treatment as hazardous waste and must be handed over to communal collection points or disposed of by a specialist company.

## 2.8 Conduct in case of danger and accidents

When using the variable message sign always observe the regulations applicable to public road traffic. When using the variable message sign always adhere to the general and specific regulations applicable to construction sites as well as local regulations for construction site protection, accident prevention and the performance of rescue measures.

#### In addition, the following apply as a basic principle:

##### Preventive measures

- Always be prepared for accidents or fire.
- Keep first aid equipment (first-aid kit, blankets, etc.) and fire extinguishers freely accessible at all times.
- Make personnel familiar with accident notification, first aid and rescue facilities.
- Keep access routes free for rescue vehicles.

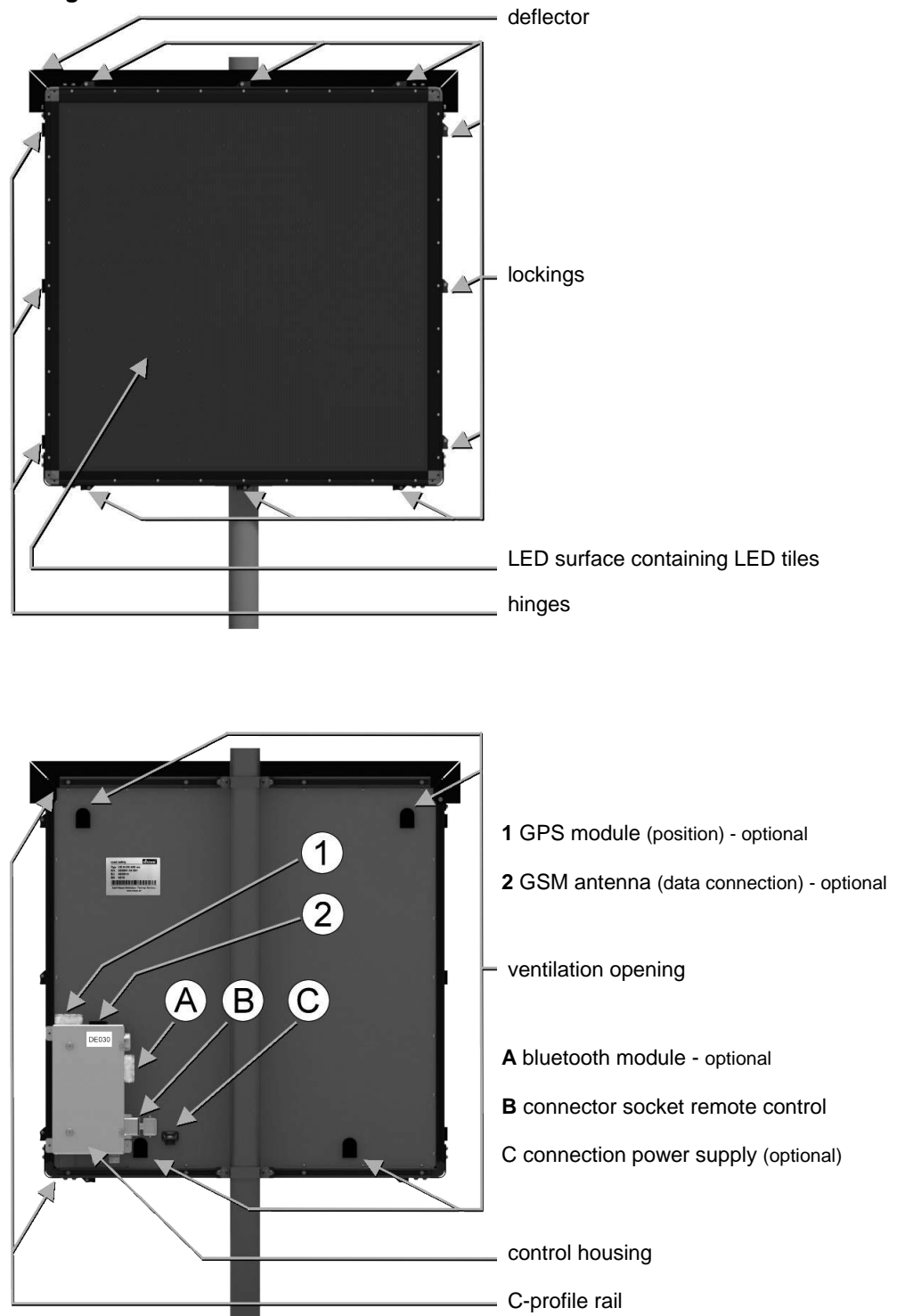
##### If worst comes to worst: take appropriate action

- Cordon off the accident site.
- Commence first-aid measures.
- Rescue persons from the danger zone.
- Inform those responsible at the place of use.
- Alarm doctor and/or fire brigade.
- Keep access routes free for rescue vehicles.

### 3 Construction and function

#### 3.1 Overview

Overview LED sign:



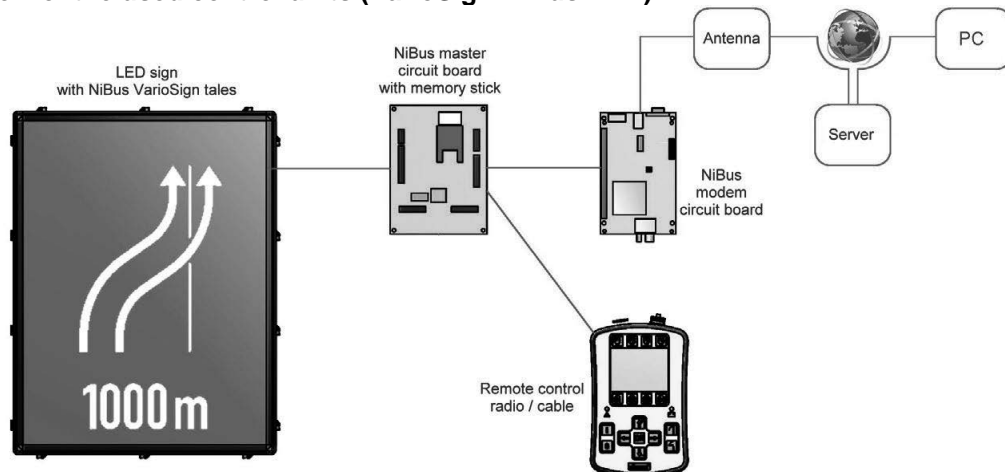
### 3.2 Short description

#### Basis design:

- Alu-profile housing
- Remote control Standard-Remote II (optional Pro-Remote II)
- Excellent daytime visibility due to anti-reflection pane

VarioSign LED can display different texts and symbols.

#### Overview of the used control units (VarioSign-NiBus XML):

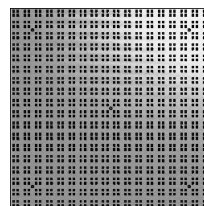


The variable message sign VarioSign is operated with the included remote control in standard cases. The variable message sign VarioSign can optionally be controlled via NiCo-system directly from your PC. The corresponding circuit boards are located in the control unit on the rear side of the LED-sign. The master circuit board is equipped with a memory slot for the memory stick. This memory stick contains all image information including the preview images for the remote control. The master circuit board manages all connected components.

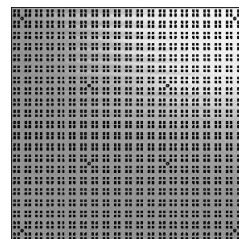
### 3.3 Versions

Two different sizes of LED tiles and a different number and arrangement of the tiles lead to 64 variations of variable message sign VarioSign.

VarioSign circuit board 360

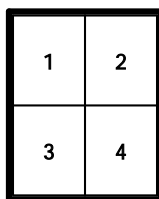


VarioSign circuit board 420



All variations differ only in their dimensions resp. size, arrangement, number and type of used LED tiles.

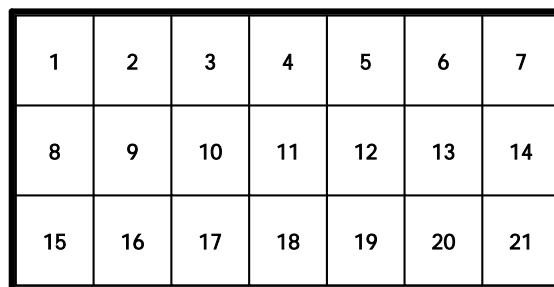
Schematic tile arrangement of two LED signs VarioSign:



2x2

VarioSign 420  
with frame

Dimensions: 970 x 970 x 82



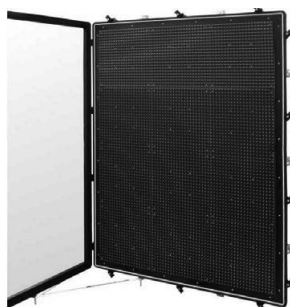
7x3

VarioSign 420  
with frame

Dimensions: 3050 x 1390 x 82

## 3.4 Component group description

### 3.4.1 LED signs



#### Mechanical structure

The housing of the LED signs consist of black-coated aluminium profiles. The front profile frame with included viewing window can be opened to the left. A securing rod is used to secure the opened profile frame. Are the LED signs more wide than high, they can be folded upwards. (Exceeding a certain size gas springs are used for support). All LED signs are equipped with a deflector which is mounted over the sign. The single VarioSign LED-tiles are fastened in the rear part of the profile frame on a support plate. The control electronics are located in an external housing on the rear side of the LED signs.

#### Electric function

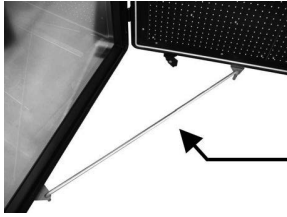
An LED matrix sign always requires a corresponding number (depending on the model) of VarioSign LED circuit boards, bus distributors and NiBus master circuit boards for controlling them. A NiBus master circuit board can control several VarioSign LED tiles with the bus distributor. The NiBus master circuit boards are adjusted with dip switches in accordance with their position in the sign. The communication with the remote control, the memory stick and other signs is always processed by NiBus master circuit board 1. The image files are stored on a memory stick; this stick can be plugged directly onto the NiBus master circuit board. The NiBus master circuit boards are located in external control housings on the rear of the LED signs.

### 3.4.2 Locking



The foldable profile frame with viewing window must always be kept closed during operation and transportation ⇒ chapter "Maintenance" section "Opening of VarioSign LED" for opening the LED sign.

### 3.4.3 Arresting bars



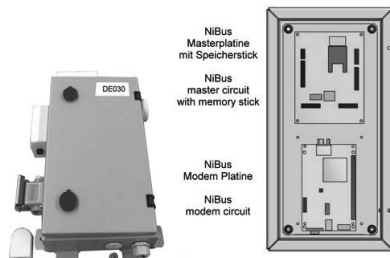
When opening the pivoting parts the variable message sign must be secured in order to prevent lashing out due to e. g. wind gusts.

**NOTE!**



*Opening the LED signs must only take place in a secured position.*

### 3.4.4 Control housing



The control housing is located at the rear of the LED sign. The control housing of the lower LED sign contains the master circuit board and lowering and if existing the NiBus-modem circuit board.

### 3.4.5 Memory stick



The memory stick is located on the master circuit board in the control housing of the LED signs. All image information including previews for the remote control are contained in the memory sticks. If a new image is needed for a LED sign, only the respective memory stick must be replaced or overwritten with a new project. All other components remain unchanged.

Before replacing memory sticks the message sign must always be switched off with the main switch! Open the housing. The locking screws must be loosened and the memory stick must be removed. Then insert a new memory stick and tighten the locking screws again. Close the housing. The sign can be activated again (switch on the main switch). Own texts and symbols can be created using a special software (extra accessories) and stored on the memory stick. The connection to the PC is established via the USB interface and a special USB adapter.

**NOTE!**



*Is a memory stick changed or reprogrammed take care that the memory stick contains the right project! There are different sign sizes with different projects. Up to max.250 different symbols are contained in up to one memory stick.*

**ATTENTION**



Before replacing memory sticks the message sign must always be switched off with the main switch!

### 3.4.6 NiCo-system (optional) / SIM card

#### NiCo system

A NiBus modem can be connected directly to the master circuit board of the first sign. The modem must be preset and the authorised bases must be unlocked. In this manner the system can be controlled and monitored remotely using a PC. The operation of the system is indicated by a LED on the circuit board.

#### SIM card

In order to establish a connection to a NiCo system a valid SIM card must be inserted into the respective slot! The SIM card slot is located on the NiBus modem circuit board in the control housing. To access the slot for the SIM card the control housing must be opened.

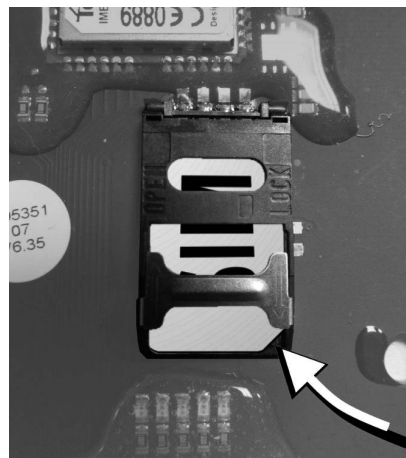
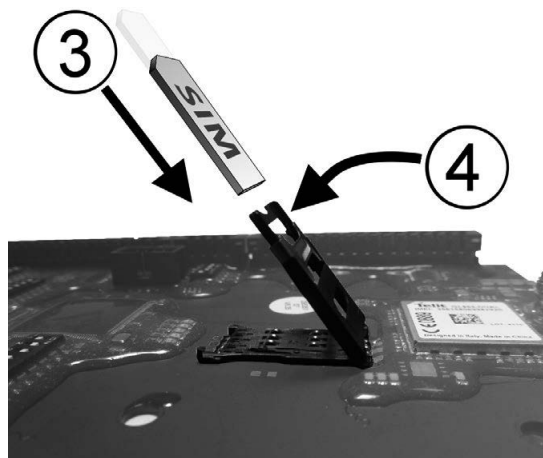
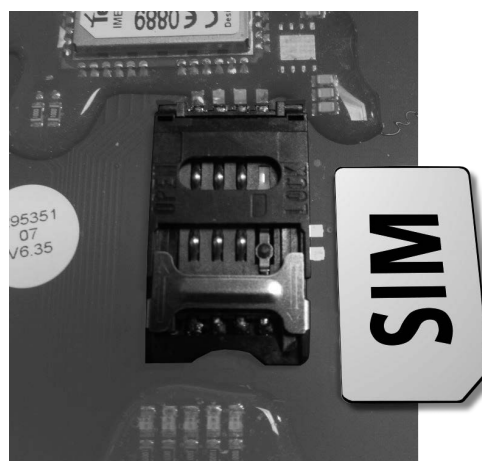
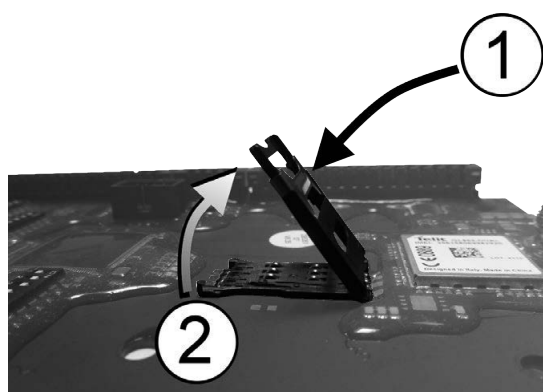
#### NOTE!



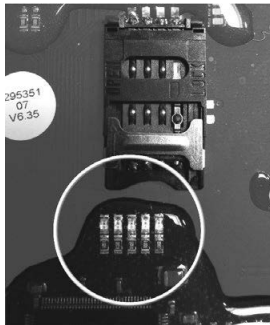
*The SIM card needed for the modem must be provided by the client! The exact information regarding the SIM card (access provider etc.) must be known to the manufacturer before delivery as special presets must be applied for the particular card! The SIM card is inserted into the respective slot (see arrow). It must lock in exactly in order to establish a secure contact!*

#### Insert SIM card as follows:

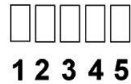
1. Unlock card slot
2. Fold card slot up
3. Insert SIM card into the slot
4. Fold card slot with SIM card down and lock it again.



### 3.4.7 LED status display



#### Status-LEDs



5 LEDs on NiBus modem circuit board display different states.

#### LED 1 - General status display

##### Display status

Steady OFF  
Slow blinking  
Fast blinking  
Fast flashing  
Steady ON

##### Status

- not active (no voltage supplied / undervoltage)
- establishing connection
- error SIM card
- communication
- active without communication

In normal operation the status changes continuously between 'steady ON' and 'fast flashing'. Under normal conditions the modem should not remain for a longer time in status 'establishing a connection'. If the status does not change for several minutes it indicates an issue.

#### LED 2 - Error master

##### Display status

Steady OFF  
Steady ON

##### Status

- no error
- error communication master

#### LED 3 - Communication master

The LED shortly flashes during communication.

#### LED 4 - Error GPS

##### Display status

Steady OFF  
Blinking  
Steady ON

##### Status

- no error
- no valid GPS fix
- error communication GPS

#### LED 5 - Communication GPS

The LED shortly flashes during communication.

### 3.4.8 Connection for remote control



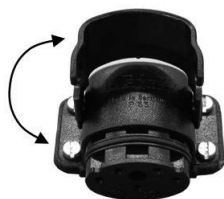
Rear connection for remote control (Standard-/ Pro-Remote II). The connection must be closed when not in use to avoid a penetration of moisture!

### 3.4.9 Remote control Standard-/ Pro-Remote II



Using the remote control the functions and display of the message sign are controlled. It can be supplied as a cable remote control or optionally as cable/radio remote control.

### 3.4.10 Rear connection



Rear connection for power supply of the LED-sign. To guarantee a secure position of the plug the locking clip must be closed.

### 3.4.11 GSM / GPS antenna / Bluetooth module (optional)



The GSM / GPS antenna and the Bluetooth module are located on the top and the side of the control unit of the LED sign. The GSM signal can be used to control the LED sign remotely from another location, the site headquarters, for instance or a traffic management centre. The internal control of the message sign gives a return message about the incoming external control signal to the sender before carrying out a command. With the pulse generator of the Bluetooth module the message sign can be operated with the remote control "Pro-Remote II".



### 3.4.12 Type plate



Each VarioSign LED has a type plate on the rear side which contains information about type designation, article number, year of manufacture and serial number.



If a NiCo system is installed additionally an individual NiCo identification is mounted on the control unit.

### 3.4.13 Power supply



To start VarioSign LED connect the pole terminals of the supply line to a battery. Take care of the right voltage (12V/ 24V) and assignment of the battery poles.

Always switch off VarioSign LED by using the remote control. Avoid switching off by disconnecting the battery.

#### WARNING!



To avoid short circuits make sure that always the minus pole is loosened and taken off firstly from the battery, then the plus pole. Return the pole terminals in revers! First the plus pole then the minus pole!

#### DANGER!

##### Danger from electric current!



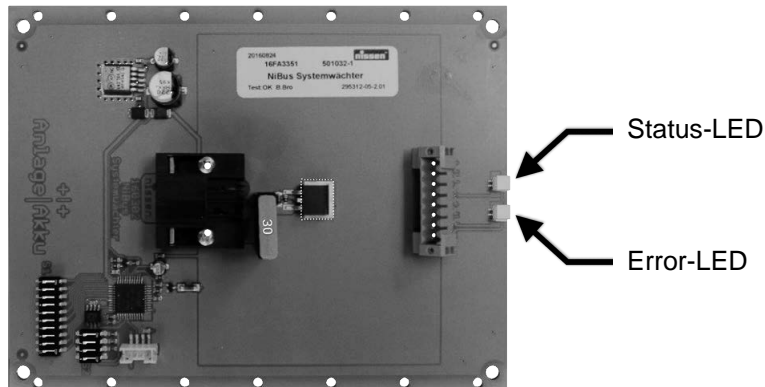
Before changing the fuse the system must be separated from the power supply and secured against be switched of again! Take care of the right strength of the fuses! Electrical work may only by carried out by specialist personnel, see chapter "Safety", the "personnel requirements".

#### NOTE!



When connecting to the vehicle power supply or other electrical systems secure VarioSign LED against short circuit! For operation with batteries an interposition of a battery guard is recommended! When VarioSign LED is connected to a battery a previously set symbol can be displayed. To avoid incorrect information always control which symbol is indicated.

### 3.4.14 System guard (optional)



The system guard is used for following protection functions:

- protection against deep discharge of the battery
- protection against overvoltage of the system
- switch-on delay

#### LED status indicator:

When the battery voltage is applied both LED flash once.

LED error (red) off :	No error.
LED error (red) flashes every second:	Overvoltage, system has been switched off due to overvoltage
LED error (red) flashes every 10 seconds:	Undervoltage, system has been switched off due to undervoltage.
LED status (yellow) off:	System is switched off.
LED status (yellow) on:	System is switched on.
LED status (yellow) flashes:	Power on delay.

#### Description of the different functions:

The system guard is used to protect the battery against deep discharge and the control electronics against overvoltage. In the case of overvoltage the system is switched off immediately.

The system guard applies the adjusted switching limits of compatible downstream systems (e.g. NiBus Master circuit from version 6.10) in the case of over-/ undervoltage automatically. At undervoltage the system continuous running for 90 minutes. If the undervoltage limit is exceeded more than 0,5V the system guard switches off after a short delay.

Non compatible downstream systems run without automatic detection. At undervoltage the system guard switches off after a short delay.

If a modem is connected the system guard can reset the system via radio connection.

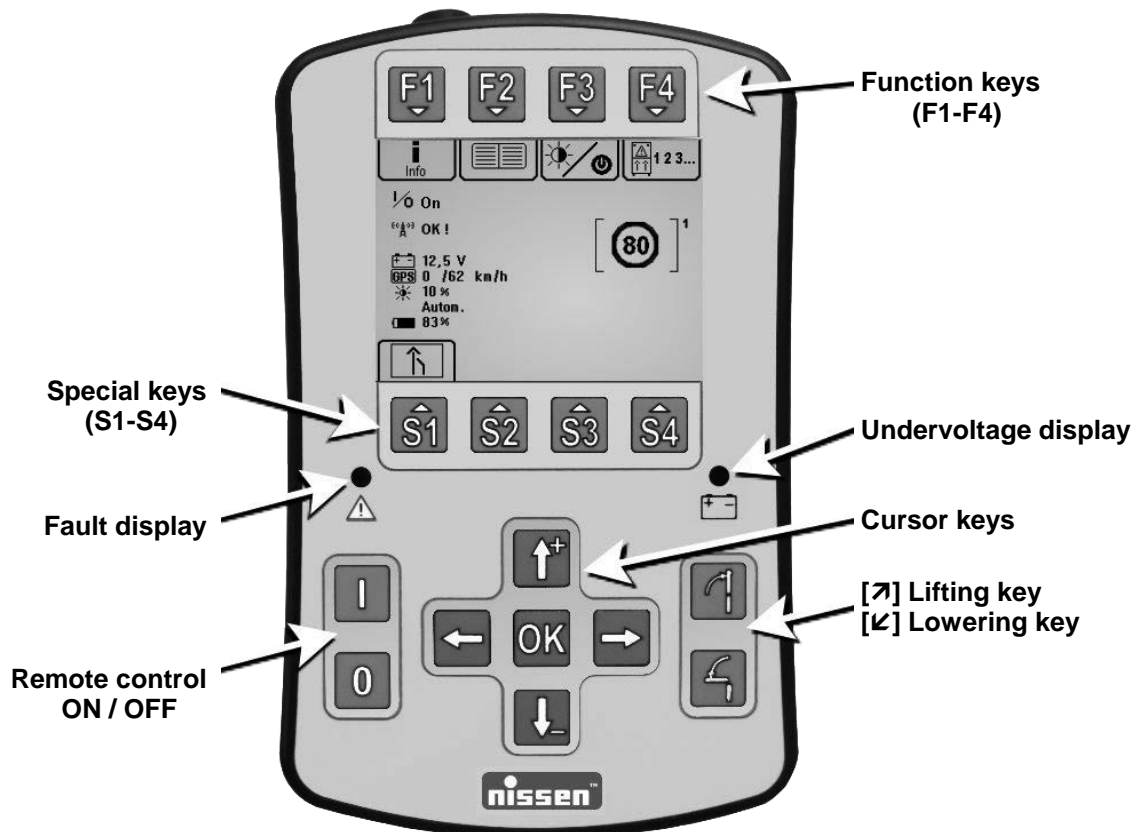
Furthermore the system guard features a switch-on delay. When the system has been switched off it cannot be switched on again before 30 seconds are over. In this manner the control always starts without problems.

### 3.5 Remote control Standard-/Pro-Remote II (optional)

The remote control is equipped with an illuminated touchscreen display and illuminated membrane keyboard. The remote control is optionally available with radio link/cable connection (Pro-Remote II).

The current status of the variable message sign is indicated on the right side of the display. Information indicated on the left show the status of the battery voltage, brightness, data connection and whether the device is switched on or off.

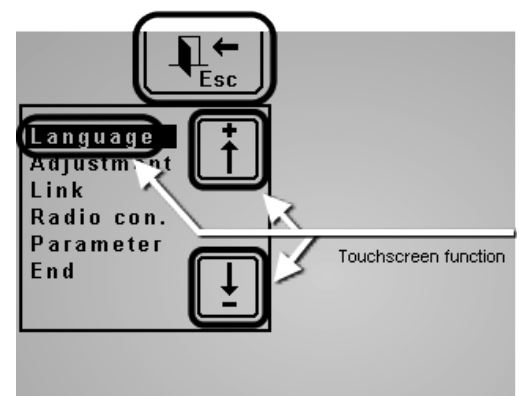
Key functions:



#### Touchscreen display:

The touchscreen display enables many inputs to be made directly on the display in parallel to the membrane keypad. The functions of the membrane keypad are not affected!






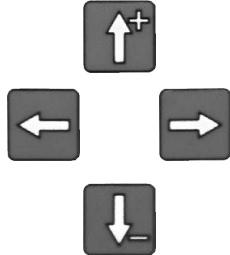

Example of touchscreen area (varies according to the graphic displayed):



**CAUTION!**



Never operate the touchscreen display with hard, sharp or pointed objects!

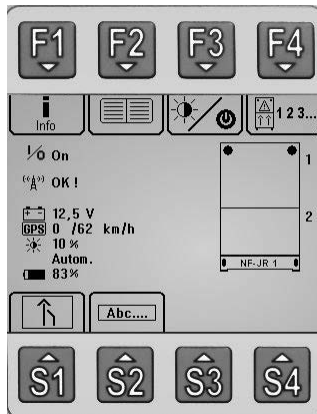
	<p><b>Function keys</b> The function of these keys can change depending on the type of operation and is indicated by a symbol on the display under each of the keys.</p>
	<p><b>Special keys</b> The main function of these keys is to select the system to be displayed. Other functions of the keys are indicated by a symbol on the display above each of the keys.</p>
	<p><b>On key</b> Pressing this key switches the <b>remote control</b> on.</p>
	<p><b>Off key</b> Pressing this key (approx. 2 seconds) switches the <b>remote control</b> off. <b>Keeping the key pressed for longer = Reset.</b></p>
	<p><b>Lifting/Lowering keys</b> These keys are only used for lifting or lowering the warning board.</p>
	<p><b>Control keys</b> for selecting different functions.</p>
	<p><b>Input key</b> This key is used to complete and confirm the input.</p>





**NOTE!**

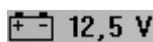


The remote control has a storage temperature of -25° to +85°C and an operating temperature of -20° to +65°C. The loading temperature of remote control Pro-Remote II is 0° to +45°C

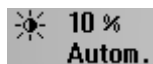
### 3.5.1 Main menu



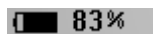
 **OK!** or  **???** indicates the status of the data connection between the remote control and the system. If **OK!** is displayed, the data connection has been established. If **???** is displayed, the data connection is faulty. In the case of radio remote controls, the  symbol is replaced by .



Indicates the battery voltage of the system.



Indicates the brightness of the variable message sign in %. In systems with a manual dimmer, reference is also made to the status of the light-sensitive switch (automatic or manual).



Battery symbol for remote controls with radio (Pro-Remote II). This symbol indicates the status of the battery integrated in the remote control, each line that appears on the symbol represents approx. 20% battery capacity. This value is also displayed directly behind the symbol. An incremental symbol indicates that the battery is charging. If the battery is indicated as a full symbol with 100% level, the charging process is complete.



The **[F1]** key can be used to display information, e.g. program and version number of the remote control and variable message sign. In the case of faults, information on the type of fault is displayed here. In this case, the symbol flashes (see also "Fault display").



The **[F2]** key is used to go to the **"Settings menu"** where the contrast, language, etc. can be set (see also "Settings menu").



The **[F3]** key is used to switch the following functions on or off: Dimmer function automatically/ manually, variable message sign on/off, advance warning lamps on/off (optional), switching function (optional).



The **[F4]** key is used to switch the variable message signs on/ off (Standard-Remote II) or to allocate the individual variable message signs (Pro-Remote II).



**"Cancel function"**. This key can be used to cancel a selected function at any time without any changes being made.

The right side of the image contains a schematic illustration of a variable message sign, for example, and indicates the chosen symbol. The figures beside the scheme refer to the special keys which can be selected. These are used for selecting e.g. warning signs, arrow position, lane regulation or additional texts.



Special key **[S1]** leads to the submenu in which the requested symbol can be selected. Special keys **[S2]** - **[S4]** are not occupied in this example.

The indication fields show the actual function of the corresponding special key below. After pressing the requested special key the first eight preview images are indicated in the subsequent submenu. The symbol/ text which is needed can be selected via corresponding function key or special key.

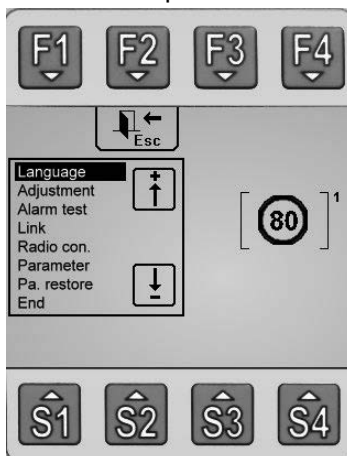
#### NOTE!



*The symbols that are displayed vary according to the type of device and equipment!*

### 3.5.2 Setting menu

Pressing the **[F2]** function key in the main menu opens the **setting menu**.



Select the setting to be changed with the arrow keys **[↑]** , **[↓]** and activate it by pressing **[OK]**.

#### Language User language

The following languages are available for selection: German, English, French, Italian, Danish, Dutch, Czech, Swedish, Spanish, Polish and Russian. Select the language with the arrow keys and confirm with **[OK]**.

#### Settings Display and key settings

Selection options for:

- **Contrast**
- **BL display** (brightness of display lighting)
- **BL keys** (brightness and switch off-function)
- **Touch** (adjustment of display)
- **Touch I/O**
- **Selection** (Pro-Remote II only)
- **Automatic switch-off**
- **Escape**

Adjust the brightness or contrast with **[↑]** , **[↓]** and confirm by pressing **[OK]**. Use the **[OK]** key to adopt the changed values. Then complete the setting and leave the menu item with **"Esc"**.

#### "BL display"

Select the brightness of the display lighting with the arrow keys and confirm with **[OK]**.

#### Setting of switch off function of display lighting:

- |                        |  |
|------------------------|--|
| <b>[S1]</b> = active   | • lighting switches off after 1 minute, when no key is pressed |
| <b>[S1]</b> = inactive | • lighting stays switched on permanently                       |

#### "BL keys"

Select the brightness of the display lighting with the arrow keys and confirm with **[OK]**.

#### Setting of switch off function of key lighting:

- |                        |   |
|------------------------|---|
| <b>[S1]</b> = active   | • lighting switches off after 1 minute, when no key is pressed  |
| <b>[S1]</b> = inactive | • lighting stays switched on permanently  |
| <b>[S2]</b> = active   | • lighting switches off when controller measures a brightness of 100%, under 100% switches lighting automatically on. |
| <b>[S2]</b> = inactive | • lighting is not affected by the measured brightness of the controller   |

In the **"Touch"** setting press all four corners of the touchscreen consecutively after the other in order to readjust the touchscreen display. Usually this is only necessary the first time it is put into service! The yellow low voltage indicator lamp flashes briefly to indicate that the individual corners have been correctly pressed. Then press the **[OK]** key to confirm.



In the **"Touch I/O"** setting the function of the touchscreen can be switched on/off. The selected function is displayed in the info menu **[F1]**.

In the **"Selection"** setting the function of key **[F4]** can be blocked so that only one system can be operated with the remote control.

**Multiple:** Several systems can be operated with one remote control. Selection with key **[F4]**

**Single:** Only **one** system can be operated with the remote control. Key **[F4]** is blocked.

**"Automatic switch-off"** of the remote control means that the remote control is switched off to save energy as soon as the light arrow has been folded down, for example, the battery in the radio remote control does not charge, or no key has been pressed.

The **"Autom. off"** function and the **[←]**, **[→]** keys can be used to select a runtime of between 15 and 240 minutes (the factory setting is 120 minutes).

#### Combinations Display combinations with LED variable message sign

In systems with several LED panels, combinations of symbols (traffic lane regulation + warning sign + additional text) can be created under this (optional) item. This is useful if, for example, a certain combination is frequently required.

The combination always starts from the traffic guidance panel (traffic lane regulation). The symbols to be combined must be loaded in advance. The preview images of the loaded symbols appear on the right of the display. The combination can then be generated under "Create".

If the traffic guidance panel symbol is selected again, the link is indicated in the symbol preview by a "+" at the left in front of the preview graphic.

If a combined symbol is selected and confirmed with **[OK]** all preview graphics related to the combination are automatically loaded and displayed. Pressing **[F1]** transfers all images of the combination to the LED panels, pressing **[S1]** transfers only the individual image to the traffic guidance panel.

An existing combination can be deleted again under the "Delete" item.

A maximum of 50 combinations is possible.

#### Sensors

##### Activation/Deactivation

Setting the system for example to external traffic sensors (→ "Sensor system").

#### Radio link

In this setting a search is made for a Bluetooth connection that is then selected (Pro-Remote II only).

#### Parameters

##### Matching the remote control and system to be operated

These parameters are preset in the factory. The setting menu can only be accessed by authorised service personnel who enter a PIN.

#### Restore parameter

##### Restore parameter (from Standard-Remote version 7.50)

Reset all parameters of the system to factory settings. Only select this point when the parameters of the system have been changed by mistake.

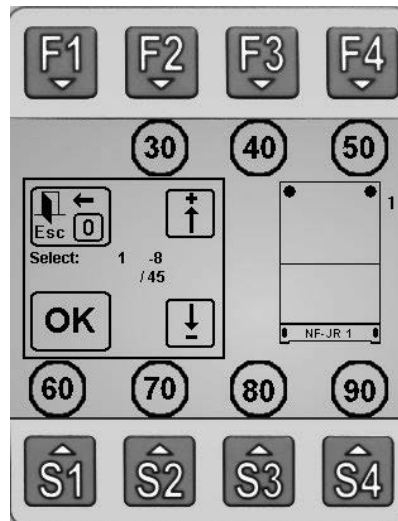
Choose the setting point and confirm with **[OK]**. Enter the **PIN 1111** with the keys **[S1]** - **[S4]** and confirm with **[OK]**. The factory set parameters are now reloaded and transferred to the system and the remote control. If this process has been successful the display shows "successful" if not the message "error" appears. A possible error could be that the version (V 5.10) used in the control does not support this function or the factory setting has not been made.

#### End

##### Ending the setting menu

The setting menu must always be left via this menu item. **[F2]** must only be used for cancelling the setting process.

### 3.5.3 Selection of the symbol



(Sample display, symbols may vary)


In the middle of the left side the numbers of the symbols shown in the next submenu are indicated, as well as the complete number of available symbols. For example, 1 - 8/45 means symbols 1 to 8 of totally 45 symbols.

By pressing an **[F]** or **[S]** key the corresponding symbol in the middle of the display is indicated enlarged.

This symbol can be transferred to e.g. the system by pressing **[OK]**.

The arrow keys **[↑]**, **[↓]** are used to scroll in the submenus. Arrow key **[←]** is used for jumping to the beginning, arrow key **[→]** is used for jumping forward by 40 symbols.

When a symbol is selected and confirmed by **[OK]** it appears immediately e.g. on the system. The remote control returns to the main menu.

By pressing **[0]** or  the symbol selection can be cancelled without making any changes.

A "+" is indicated in the preview image when a link is established. It is possible to select whether the complete link or only the indicated single symbol shall be loaded.



### 3.5.4 Light sensitive switch and switching menu F3

Pressing the **[F3]** function key in the main menu opens a new menu:  
Select between

- light-sensitive switch
- light arrow
- warning lamps

Special switching functions can be selected in addition.  
Function keys **[F1]** - **[F3]** and **[S1]** - **[S4]** have now new functions.

The symbols (**special keys**) always display the "actual state".



(Sample display, symbols may vary)


#### Key functions:

- [F1]** Switches the light-sensitive switch into automatic mode.
- [F2]** Switches the light-sensitive switch into manual mode. The desired brightness is selected with the arrow keys **[↑]** and **[↓]** and confirmed with **[OK]** or **[F3]**.
- [F3]** Ends the menu and confirms the chosen brightness of the manual dimmer. **[OK]** can be used optionally.
- [S1]** Switches the complete variable message signs on/off.
- [S2]** Switches the warning lamps on/off (optional), if available.
- [S3]** Switches the working headlights on/off (optional), if available.
- [S4]** Switches the revolving beacon on/off (optional), if available.


### 3.5.5 Switching between cable and radio operation (Pro-Remote II)

To switch the remote control from cable to radio operation:

1. Connect the variable message sign to the battery.
2. Switch the remote control on.
3. Remove the cable connection.

Radio operation is indicated on the display by the radio symbol .

To switch over from radio to cable operation, only the cable between the remote control and control of the system needs to be connected.

Cable operation is indicated on the display by the cable symbol .

### 3.5.6 Sensor system

#### Connection of sensors

Up to two different sensors (e.g. traffic tailback warning, ice warning) can be connected directly to the master board of the system. A voltage between 5 and 30V can be applied to the inputs. Power consumption at an input voltage of 24V is approx. 4 mA. The function of the sensor input and the image selection is programmed by the remote control

#### Sensor activation

The symbols to be displayed with active sensor must first be loaded. Afterwards, select the **"Link"** menu item in the settings menu ([F2] function key) with the arrow keys [↑], [↓] on the remote control and confirm with [OK]. Then select the sensor (1...4) to be programmed under the "Sensors" menu item. After the sensor selection, select the "Active" menu item and confirm with [OK]. Now the sensor is activated.

#### Sensor deactivation



"Time min."	Delay time after switch off in minutes (0-60). 0 = no delay, sensor switches off immediately.
"Create"	Current image sequence for switching off the sensor is taken over. Delay time is active.
"All off"	All images switch off after sensor deactivation and expiration of the delay time.
"Previous"	Old images from the period before sensor activation and after expiration of the delay time are reloaded.

An active sensor can be recognised from the switch symbol



(special keys [S1] and [S2]).

It is not possible to load other symbols in this case.

### 3.5.7 Fault displays

#### Low voltage battery



The yellow LED on the right above the battery symbol signals that the batteries of the system are 80% depleted. When using new GEL batteries with 210 Ah operating times\* up to 2 hours can be reached after signalisation. The LED also lights when the battery integrated in the radio remote control Pro-Remote is depleted. The remaining time can be significantly reduced for used and not properly maintained batteries.

\* operating time at 20°C

#### Fault on the device



In the case of all other malfunctions not related with a low voltage supply, the red LED on the left above the Attention sign lights.

#### Calling up fault information

Information on all faults can be called up with the [F1] function key. The first display after pressing [F1] indicates the component on which the fault has occurred (e.g. "Remote control" or "Sign 1"). Further detailed information on the type of fault can be requested by selecting with [↑], [↓] and confirming with [OK].

### 3.5.8 Pro-Remote II control radio/cable with Bluetooth module

The Pro-Remote II remote control can be operated either by radio or via cable. In both operating modes there are no functional restrictions or changes compared to purely cable remote controls. To switch over from radio to cable operation, only the cable to the remote control and the control of the system need to be connected.

#### CAUTION!





When the cable is removed, the connector on the metal sleeve must be disconnected. Do not pull or twist the cable! Danger of short-circuit!

Radio operation is indicated on the display by the  symbol, cable operation is indicated by . If a cable remote control is connected, it always has priority.

The Pro-Remote II remote control and the variable message sign/ light arrow are equipped for radio operation with a Bluetooth module and can only establish a connection when they are assigned to one another. It is not possible to change the radio remote control to other systems, hence any number of systems can be operated side by side, without them affecting one another.

The Bluetooth modules in the control of the variable message sign/light arrow, for example, and the remote control are automatically connected with one another after being switched on. If this radio link is interrupted by external influences (e.g. range), the modules independently establish a connection as soon as they make contact with one another again.

A correct connection can be recognised from the  OK symbol; the establishment of a connection or an interruption of the radio link is indicated by  ??? If two remote controls are configured on the same system, only the one that was switched on first can establish the connection. The second remote control goes into standby position and is connected the moment the first remote control is switched off.

The Bluetooth number of the variable message sign/light arrow, for example, connected with a remote control or to which it establishes a connection can be requested via info key **[F1]**.

A remote control can be assigned to the required variable message sign/light arrow, for example, at any time by means of the Bluetooth number next to the control housing. To do so, open the settings menu with **[F2]** and select the "Conn. rad" (Connect radio) item with **[OK]**. Then select the "Scan Blto." (Scan Bluetooth modules) item with **[OK]**. To prevent the module search from being carried out inadvertently, it can only be reached by entering a PIN.

Type in the PIN (1 1 1 1) with the **[S1]** - **[S4]** and confirm with **[OK]**.

The text "Please wait, searching for Bluetooth modules" appears on the display of the remote control. The remote control now searches for possible modules, this process can take several minutes. A maximum of four Bluetooth modules are displayed. After ending the search, the text "Please select module with S1-S4 key" appears on the display and the Bluetooth numbers of the possible variable message signs/light arrows, for example, are listed. The requisite module can now be selected with **[S1]** - **[S4]**. The associated Bluetooth number is permanently stored in the remote control, and the connection to the system is established.

If no Bluetooth module is found, the text "ATTENTION! No module found" appears on the display. If the required variable message sign/light arrow, for example, is not found, a check must first be made that the module with which the remote control is to be connected is switched on and also matches in construction and software version to the remote control. If more than four possible modules are within range and the module required is not one of them, some of the displayed variable message signs/light arrows must be switched off and the search repeated.

During the search, modules that are actively connected with a radio remote control are not displayed!

## Access to several variable message signs/lighting arrows (Pro-Remote II)

Up to 8 systems can be operated with the same remote control. These can be assigned one after the other and given names.

### NOTE!



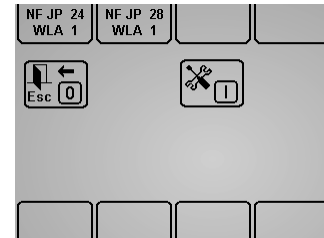
*The control of a number of variable message signs/lighting arrows is only possible from Version 3.0 onwards!*

The system to be operated can be selected with the **[F4]**.


8 memory locations are available.

**[F1] - [F4]** and **[S1] - [S4]**

The allocated memory locations are identified!



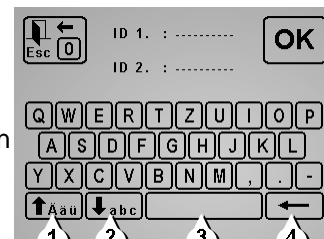
## New installation of a variable message sign/lighting arrow:

- Press the **[F4]**.
- Press on the symbol  in the touchscreen field or the key **[I]**.  
(Display switches to selection)
  - **[S1]** = new
  - **[S2]** = change
  - **[S3]** = delete
- Select **[S1]** (new).
- Select free memory location (**[F1] - [F4]** and **[S1] - [S4]**) (possible selection is displayed).

- Type of system to be controlled with the cursor keys.  
Select **[↑]** or **[↓]** and confirm with **[OK]**.




- Enter designations ID1 and ID2 on the touchscreen keyboard.  
(The **[←]** and **[→]** keys can also be used for cursor control.)
1. Switching the keyboard to upper case or special characters.
  2. Switching the keyboard to lower case, numerals or punctuation characters.
  3. Spaces.
  4. Delete one character backwards.



### NOTE!



*The designation for ID1 and ID2 can be freely selected with up to 8 characters each.  
The designation should be a meaningful ID of the lighting arrow (e.g. number plate).  
The designation in ID1 also appears on the lighting arrow symbol.*

- Confirm the ID entry with **[OK]** or the  touch field.
- The remote control now searches for possible connections.  
(This process can take some time.)
- The possible connections are listed:
  - [S1]** = ... Bluetooth number
  - [S2]** = ... Bluetooth number
  - etc.
- Compare Bluetooth numbers with variable message sign/lighting arrow and select by pressing the relevant **[S1] - [S4]** key.



- The remote control automatically connects to the selected system.  
If the remote control parameters differ from the selected system, the message **"NEW????"** appears).- In most cases, select **"Remote control"** here and confirm with **[OK]**. "Master board" is only selected in a special case if a board has been replaced.)




- The parameters are exchanged between the control of the system and the remote control.
- The new installation is thus complete.


A connection to the variable message sign/lighting arrow can be established at any time with the **[F4]** selection key.

### Changing inputs:

- Press **[F4]**.
- Press on the  symbol in the touchscreen field or the **[ I ]** key
- Select **[S2]** (change).
- Select variable message sign/lighting arrow (**[F1]** - **[F4]** and **[S1]** - **[S4]** - possible selection is displayed).
- Select the type of system to be controlled again using cursor keys **[↑]** or **[↓]** and confirm with **[OK]**.
- Change designations ID1 and ID2 using the touchscreen keyboard.
- Confirm the ID entry with **[OK]** or the  touch field.

### Deleting entries:

- Press the **[F4]**.
- Press on the  symbol in the touchscreen field or the **[ I ]** key
- Select **[S3]** (delete).
- Select variable message sign/lighting arrow (**[F1]** - **[F4]** and **[S1]** - **[S4]** - possible selection is displayed).
- The selected variable message sign/lighting arrow is deleted and the memory location is released again.  
(The memory location currently in use cannot be deleted).

Each step can be left again with the  symbol in the touchscreen field or with the **[ 0 ]** key.

During radio operation, the operating time with the integrated LiFePO<sub>4</sub> battery is approx. 12 hours. As soon as the remote control is placed on the charging station, it is charged by an automatic charger. The charge status is indicated by an incremental battery symbol on the display. If the symbol is static at 100%, the battery is fully charged.

Depending on the condition of the battery, the charging time is a maximum of 6 hours.

To increase the operating time of the radio remote control, the display lighting switches to idle state after approx. 20 seconds, it only switches on again when a key is pressed.

Cable operation is mainly intended for ensuring the function of the remote control if the battery is empty or there is a malfunction of the radio link. The internal battery of the remote control is charged during cable operation. If the cable connection is not used, the plug connector and socket must be protected by the caps provided.

Bluetooth number next to the control housing (example):

@0007692cc6fc

Each system is assigned a unique Bluetooth number!

### Information to the NISSEN radio remote control (Pro-Remote II)

The NISSEN radio remote control is equipped with a bi-directional communication to ensure that instructions run only with **one** proper related and undisturbed remote control. Malfunction in radio communication does not lead to a wrong selection of the system. The quality and the range of all radio communications is highly depending on outside influences. Blinding, heat protection glazing in modern vehicles and cabins can reduce the range considerably. The following aspects can cause malfunctions in the radio communication or influence the range: airports with radio / radar systems near by

- microwave radio relay distances
- mobile phone masts or transmitters
- radio equipment on or in the vehicle
- special climatic conditions (fog, rain, etc.)
- big constructions between system and remote control
- electric or electronic systems (like winter road maintenance vehicles)

Due to the fact that radio interferences highly depend on outside influences all NISSEN radio remote control units are equipped with an additional cable to alter the function of the remote control from radio into cable.

### 3.5.9 Operating hours counter (optional)



Press key **[F1]** and choose "Info. Counter".

The following data is under "Info" - "Info. Counter" available:

#### Indication operating hours

Timer 1: System connected to battery is switched off.  
 Timer 2: System connected to battery is switched on  
 Timer 3: System activated (lifted and lowered, not in standby mode).  
 Timer 4: not assigned  
 Timer 5: not assigned

#### Indication switching cycles

Counter 1: System connected to battery is switched on.  
 Counter 2: not assigned  
 Counter 3: not assigned  
 Counter 4: not assigned  
 Counter 5: not assigned

#### NOTE!



*The parameter "Operating hours counter" is only displayed on the remote control with integrated battery or system guard and must be activated using a code!*


### 3.5.10 Error messages

Occurring errors are transmitted directly to the remote control and displayed there on the LCD display.

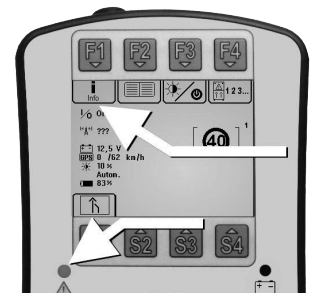
#### WARNING!



An error in the variable message sign VarioSign can substantially affect public road safety and must therefore be remedied immediately!"

A current error is indicated by the red LED of the error display and the flashing information symbol .

In order to receive more detailed information regarding the respective error the key **[F1]** must be pressed.



The display now indicates, where exactly the error has occurred. By pressing the key **[OK]** further information regarding error diagnosis is displayed. Using the key **[F2]** the menu can be left at any moment.



In this example the display indicates that the error is to be found in the LED matrix. By pressing the key **[OK]** once more it is possible to curtail the error step by step in order to receive the most precise possible information regarding the error.



As one can see in the example on the right-hand side, tile number 3 has an error in the data connection (CAN).


The crosses on the respective positions mean the following:

- No** = Tile recognised
- Va** = LED voltage red/ yellow
- Vb** = LED voltage white
- Aa** = Reconciliation LED voltage red/ yellow
- Ab** = Reconciliation LED voltage white
- CAN** = No connection to undermaster

No.	Va	Vb	Aa	Ab	CAN
5					X
9					X

This very precise identification of the mistake enables rapid remedy of the error by the customer service department (address see last page).

#### Error Message Undervoltage:

When the voltage falls below 11,8 / 23,6 V the error indicator (red LED) lights in addition to the undervoltage warning (yellow LED). Also the information symbol  flashes on the display. When key **[F1]** is pushed the error "undervoltage" is displayed. When the voltage falls below 11,5 / 23 V the system is deactivated to avoid switching errors.

### 3.5.11 Maintenance

The battery of the remote control must be charged at regular intervals (see the battery symbol on the display). The operating time during radio operation with the integrated battery is 12 hours. As soon as the remote control is placed on the charging station, it is charged by an automatic battery charger. If there is a cable connection, the remote control is charged via the cable connection. The charge status is indicated by an incremental battery symbol on the display. If the symbol is static at 100%, the battery is fully charged.

### 3.5.12 Declaration of conformity

The remote control Pro-Remote II fulfills all essential requirements of the European Guidelines 1999/5/EG, 2004/108/EG and 2006/95/EG provided that it is used for the intended purpose and in accordance with the operating instructions of the manufacturer.

A declaration of conformity according to directive 1995/5/EG is available and can be requested at:

Adolf Nissen Elektrobau GmbH + Co.KG  
Friedrichstädter Chaussee 4  
25832 Tönning

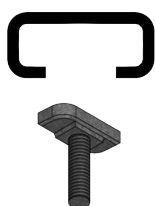
Tel: +49 (0)4861 612-0

## 4 Mounting and installation

### 4.1 Mounting



The rear side of the variable message sign is equipped with 2 C-profile rails (HM 38/17) where it can be mounted with the enclosed HALFEN™ screws (see chapter "construction and function").



#### NOTE!



*Variable message signs must be mounted as flat as possible on the frame without distortion! All bolted connections must be secured against loosening!*

### 4.2 Installation

The installation and mounting of the variable message sign VarioSign has to be carried out by the customer (qualified personnel) according to locally applicable regulations and in compliance with statutory requirements. The mounting must only be done on sustainable and approved fastening systems.



## 5 Transport and Storage

### 5.1 Transfer/Delivery

Upon arrival immediately check the delivery for completeness and transport damages. If you register visible transport damages, proceed as described below:

- Do not accept delivery or only accept it with reservation.
- Record the scope of damages on the transport documents or on the carrier's note of delivery.
- Initiate a complaint.

**NOTE!**



*Make a claim for every defect as soon as it is recognised. Claims of damages can only be made within the applicable warranty period.*

### 5.2 Storage

When not in use store the variable message sign under the following conditions:

- Protect against permanent humidity and condensate.
- Store dirt and dust free.
- Do not expose to aggressive media.
- Protect against intense sun radiation.
- Avoid long lasting mechanical vibrations.
- For storage longer than 3 months:
  - Check the general condition of all parts regularly.
  - If necessary apply, refresh or renew suitable preservation.
  - Regularly charge or remove batteries.
  - Max. humidity 60%.

## 6 Maintenance

### 6.1 Safety

**Basics:**

**WARNING!**

**Risk of injury through improperly carried out maintenance work**



Improper maintenance can lead to severe injury to personnel or material damage. For this reason:

- Before beginning work, make sure there is sufficient space for installation.
- Ensure orderliness and cleanliness at the installation location! Loose components and tools that are lying on top of one another or scattered about are sources of accidents.
- If components were removed, make sure the new components are correctly installed, install all attachment elements again and follow the tightening torque specification for screws.

**Personnel:**

- Unless otherwise specified, maintenance work can be carried out by the operator.
- As a basic principle, work on the electrical system must only be carried out by electricians.

### Personal protective gear:

For maintenance work at the place of use, the following protective gear is also recommended:

- Reflective warning vest

### DANGER!

**Mortal danger due to electric current**



Contact with live components results in mortal danger. Activated electric components can carry out uncontrolled movements and cause serious injuries. For this reason:

- Switch off the electricity supply before beginning work and secure against being switched on again.



**Mortal danger due to unauthorised switch-on!**

During maintenance work there persists danger due to unauthorised switch-on of the power supply. For this reason:

- Switch off the main switch before starting work.

### Environmental Protection:

Observe the following regarding environmental protection during maintenance work:

### Batteries:

Batteries contain toxic heavy metals. They are subject to treatment as hazardous waste and must be handed over to communal collection points or disposed of by a specialist company.

## 6.2 Maintenance plan

In the following sections the maintenance work which is necessary for optimal and faultless operation is described. If increased wear is detected on particular components or assemblies during the regular inspections, the operator must shorten the required maintenance periods in accordance with the actual wear.

**Take immediately appropriate measures for any defects or changes.**

For questions regarding maintenance work and intervals: Contact the manufacturer (service address → see last page).

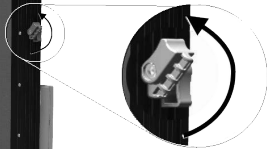
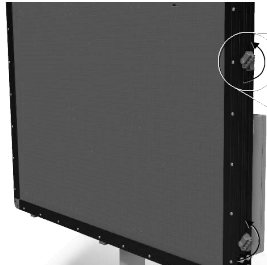
Interval	Maintenance work	To be carried out by
Regularly (depending on use)	Clean only the outer surface of the system.	Operator
Monthly	Visual inspection for moisture or damages in the housing. (Take appropriate measures if necessary).	Operator
Every 6 months	Check all functions between the remote control and the LED sign	Operator

## 6.3 Maintenance work

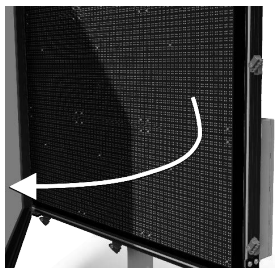
### NOTE!



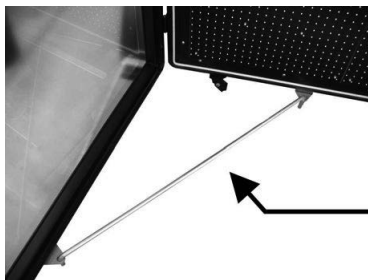
*Before opening the foldable profile frame dismount the respective deflector! Take care of the exact position of the seal and the lockings when re-closing the profile frame! The first locking must be positioned 150 mm from the corner, the remaining lockings are evenly distributed! The profile housings must only be opened by professionals who are authorised by Adolf Nissen Elektrobau!*



Loosen the Allen screws (with 6mm Allen key) to open the variable message sign and turn the locks sideways.



Open the viewing window.  
Depending on the arrangement resp. number of LEDs the viewing window is folded sideways or upwards.



Secure the opened foldable profile frame with an arresting bar to prevent lashing out due to e. g. wind gusts.  
Opening the LED sign must only take place in secured position.

### Cleaning:

Check the equipment for soiling daily. If there is any soiling on the surface:

1. Switch off the equipment and secure against being switched on again.
2. Properly remove any soiling. While doing so, pay attention to the following:
  - Do not use aggressive cleaning agents or additives. Only sponge down the equipment with clear water.
  - Do not use hard sponges, scouring cloths or brushes. Only wipe the equipment with soft cloths.
  - Dispose of cleaning cloths and processing residues in an environmentally compatible manner and in compliance with applicable local regulations.
  - After cleaning work, check that all previously opened covers and safety installations have been properly closed again and are functioning.

### NOTE!



#### **Danger of damage to components!**

*Rough or careless work methods can lead to damage to components and even complete breakdown of the device.*

*For this reason:*

- Be careful when cleaning the device.
- Do not touch with sharp tools or blow with hard compressed air jet.
- Do not touch with electric and electronic components.

## Maintenance of the batteries:

### NOTE!



The batteries supplied by Nissen together with the standard equipment are maintenance-free. When using other batteries it may be necessary to measure the acid level in regular periods and refill water. In this case observe the instructions supplied by the battery manufacturer!

### WARNING! Battery acid!



When charging and handling rechargeable batteries, there is a danger of severe chemical burns! For this reason:

- Do not touch any escaping liquid. If it comes into contact with the skin, immediately rinse with much water.
- If liquid gets into the eyes, immediately rinse the eyes with water for at least 10 min and immediately contact a doctor.
- Carefully remove any escaping liquid with a suitable absorbent cloth and dispose of it in an environmentally compatible way.
- Wear personal protective gear (safety goggles, gloves).

### WARNING! Hydrogen gas!



When loading and handling rechargeable batteries, there is a danger of escaping hydrogen gas! For this reason:

- Keep all sources of ignition away (e.g. naked flames, sources of heat, electrical equipment that is not explosion-proof)!
- Do not smoke!
- Do not carry out any welding, cutting and grinding work!

The battery pole and battery terminals must be regularly cleaned so that the thin oxide layer cannot form any contact resistances that can lead to voltage losses.

## 7 Troubleshooting

General	
Trouble	Remedy
Error message "data memory"	Memory stick defect ⇒ change memory stick.
	Memory stick is missing or not inserted correctly ⇒ insert memory stick correctly.
Undervoltage	Check battery.
GSM modem -no connection	Reset.
No connection to remote control (Bluetooth)	Use cable connection of remote control.
	Reconnect remote control with key <b>[F2]</b> then <b>"Radio connect."</b>
	Wrong remote control ⇒ use right remote control for the corresponding sign.

## 8 Technical data

<b>Weight</b>	: (depending on the size of the VarioSign resp. number of LED tiles)
<b>Operating voltage</b>	: 12 / 24 V (DC)
<b>Power consumption</b>	: 5 A (depending on the displayed symbol and environment brightness)

## 9 Disassembly and disposal

### 9.1 Safety

#### Basics:

#### WARNING!

##### Risk of injury through improper disassembly!



Stored residual energies, components with sharp edges, points and corners of individual components or on the required tools can cause serious injury.

For this reason:

- Before beginning the work, make sure there is sufficient space for installation.
- Be careful with open, sharp-edged components.
- Ensure orderliness and cleanliness at the installation location! Loose components and tools that are lying on top of one another or scattered about are sources of accidents.
- Professionally disassemble components in compliance with applicable local regulations.
- Always secure components in such a way that they cannot fall down or fall over.
- If you are uncertain, please contact the manufacturer.

#### Personnel:

- Disassembly must only be carried out thoroughly trained and experienced specialists.
- Work on the electrical system must only be carried out by electricians.

#### Electrical systems:

#### DANGER!

##### Danger to life from electric current!



Contact with live components results in danger to life.

Switched-on electrical drives can cause components to go into uncontrolled motion and cause very serious injuries.

For this reason:

- Before beginning disassembly, switch off the electrical power supply.
- Disconnect all connections from the mains.

### 9.2 Disassembly

#### Before beginning the disassembly

- Switch off the system and secure against being switched on again.
- Physically disconnect the entire power supply from the equipment and discharge stored residual energy.

Then professionally clean modules and components and disassemble in accordance with accepted local safety at work and environment protection regulations.

### 9.3 Disposal

If no take back or disposal agreement was made, take disassembled component parts to the recycling depot:

- Dispose of metallic residual component parts as scrap metal.
- Take plastic parts to the recycling depot.
- Sort and dispose of other components according to the properties of the material.

#### CAUTION!

##### Damage to the environment from improper disposal!



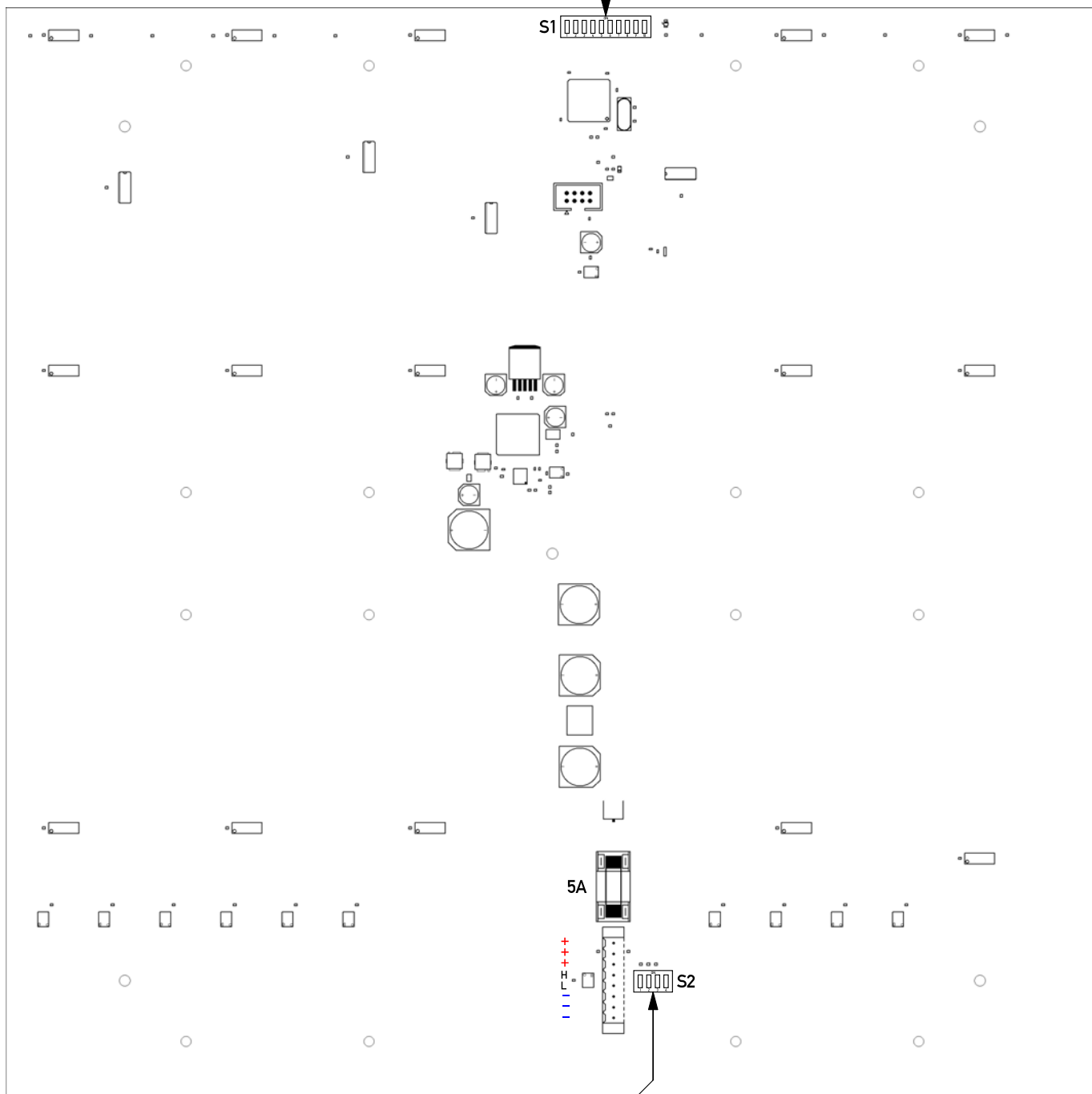
Electronic scrap, electronic components, lubricants and other auxiliary substances are liable to treatment as hazardous waste and must only be disposed by approved specialised companies!

Local authorities and specialist disposal companies can provide information on environmentally compatible disposal.

S1 Adress-Beispiele		S1 Address Examples	
Kachel Tile	Einstellung Settings	Kachel Tile	Einstellung Settings
1		8	
2		9	
3		10	
4		11	
5		12	
6		15	
7		16	

NiBus Variosign

DIP	OFF	ON	OFF	ON
1	-	Adresse +1	-	address +1
2	-	Adresse +2	-	address +2
3	-	Adresse +4	-	address +4
4	-	Adresse +8	-	address +8
5	-	Adresse +16	-	address +16
6	-	Adresse +32	-	address +32
7	-	Adresse +64	-	address +64
8	-	reserviert	-	reserved
9	-	reserviert	-	reserved
10	4F: blau aus	4F: Blau ein	4C: blue off	4C: blue on



DIP	OFF	ON	DIP	ON
1	-	240R	1+2	144R
2	-	360R	1+3	180R
3	-	750R	2+3	240R
4	NiBus 1M	NiBus 100k	1+2+3	120R

**Nur zur Information !**  
**Only for Information !**

**Diese Zeichnung unterliegt**  
**nicht dem Änderungswesen !**  
**The drawing will**  
**not be modified !**

Nr. no.	Änderung change	Datum date	Name name	© Adolf Nissen Elektrobau 2012 - Für diese Zeichnung behalten wir uns alle Rechte vor. Sie darf weder Dritten zugänglich gemacht, noch durch Empfänger oder Dritte missbräuchlich verwendet werden! © Adolf Nissen Elektrobau 2012 - All rights reserved. This drawing may not be made available to a third party not be used improper by the recipient or a third party.		
d				Datum/date	Name/name	Werkstoff/material
c			gezeichnet/drawn	07.02.14	Jens	
b			geprüft/verified	10.02.14	Ludzuweit	
a						
Ersatz für/durch replacement for/by				Zeichnungs-Nr./drawing no.		
Lager-Nr. material no.				Maßstab/scale		

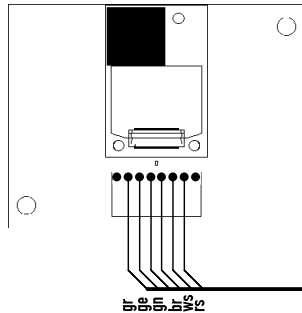


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**Variosign 360/420**

**110524**

Bluetooth Adapter  
320275-1



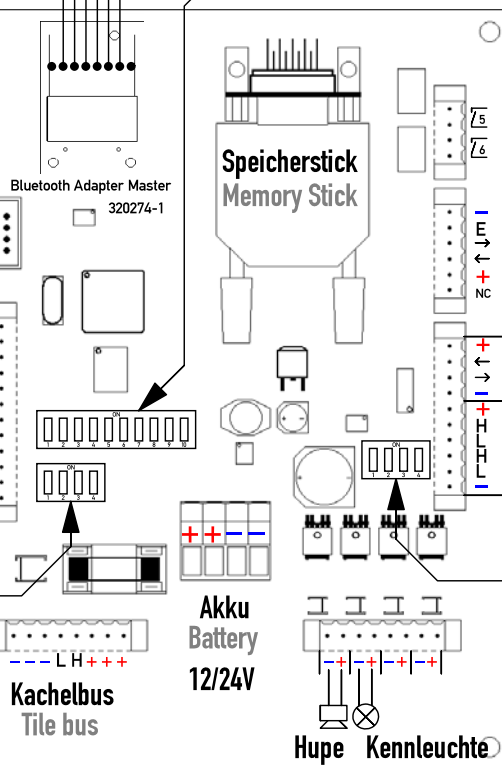
Master NiBus  
501000-1

DIP	OFF	ON
1	-	Address + 1
2	-	Address + 2
3	-	Address + 4
4	Variosign	LP8000
5	-	Bluetooth
6	Memory Stick	Internal flash
7	Memory on Master	Memory on memoryboard
8	-	Copy memory to int. flash
9	-	Error detection LED tiles on reserved
10	-	

DIP	OFF	ON
1	-	Adresse + 1
2	-	Adresse + 2
3	-	Adresse + 4
4	Variosign	LP8000
5	-	Bluetooth
6	Speicherstick	Interner Speicher
7	Speicher auf Master	Speicher auf Speicherplatine
8	-	Kopie Speicher auf int. Sp.
9	-	Fehlerüberwachung Kacheln reserviert
10	-	

Näherungsschalter  
Proximity Switches

(Sensor 2)  
(Sensor 1)



Potentialfreie  
Schaltausgänge  
Floating Outputs

Handsteuerung  
Remote Control

Ⓐ  
DORA (RS232)

Komponentenbus  
Component bus

DIP	OFF	ON
1	-	240R
2	-	360R
3	-	750R
4	NiBus 1M	NiBus 100k

DIP	OFF	ON
1	-	240R
2	-	360R
3	-	750R
4	NiBus 1M	NiBus 100k

**Diese Zeichnung unterliegt  
nicht dem Änderungswesen !  
The drawing will  
not be modified !**

**Nur zur Information !  
Only for Information !**

Signal	4x0.75mm <sup>2</sup>	5x0.25mm <sup>2</sup>	8x0.75mm <sup>2</sup>	2x0.25mm <sup>2</sup>
+	rt	ws	3xrt	-
H	sw	gn	ge	ws
L	gn	br	gn	br
-	bl	gr	3xbl	-

Code	Farbe	Color
rs	rosa	pink
ws	weiss	white
br	braun	brown
gn	grün	green
ge	gelb	yellow
gr	grau	grey
bl	blau	blue
rt	rot	red
sw	schwarz	black

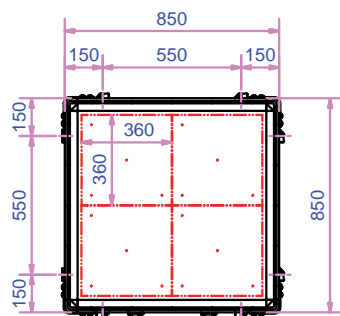
Nr. no.	Änderung change	Datum date	Name name	© Adolf Nissen Elektrobau 2012 - Für diese Zeichnung behalten wir uns alle Rechte vor. Sie darf weder Dritten zugänglich gemacht, noch durch Empfänger oder Dritte missbräuchlich verwendet werden! © Adolf Nissen Elektrobau 2012 - All rights reserved. This drawing may not be made available to a third party not be used improper by the recipient or a third party.		
d				Datum/date	Name/name	Werkstoff/material
c	Sensoren	22.10.13	Jens	gezeichnet/drawn	30.11.12	Jens
b	Revision	03.05.13	Jens	geprüft/verified	30.11.12	Peters
a	DORA	21.12.12	Jens			
Ersatz für/durch replacement for/by						
Lager-Nr. material no.						
501000-1						

**Master NiBus**

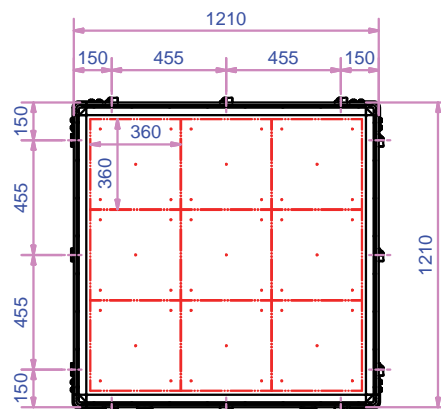


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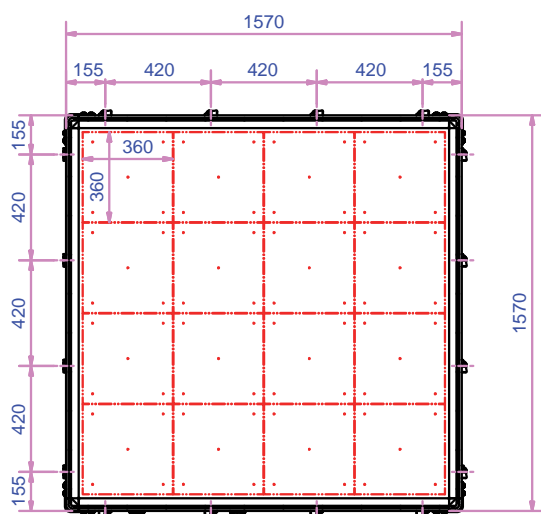
Zeichnungs-Nr./drawing no.	Maßstab/scale
101203c	



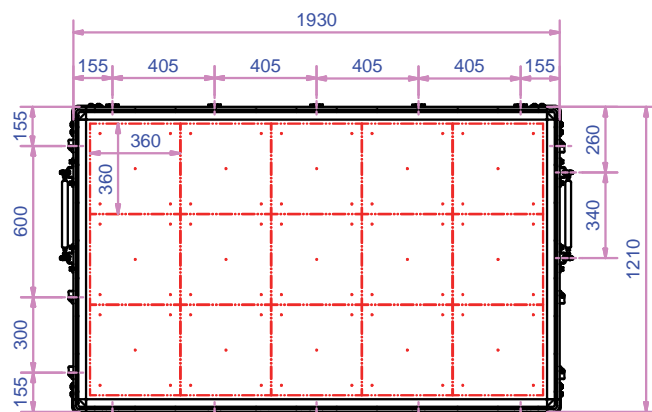
2x2 Variosign-360 (229290-22-XXX)



3x3 Variosign-360 (229290-33-XXX)

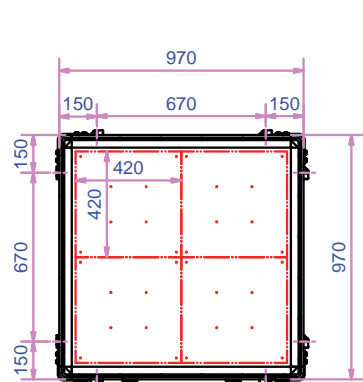


4x4 Variosign-360 (229290-44-XXX)

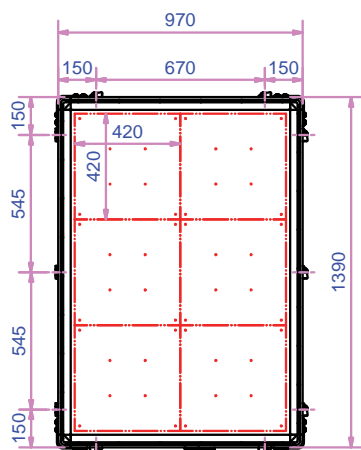


5x3 Variosign-360 (229290-53-XXX)

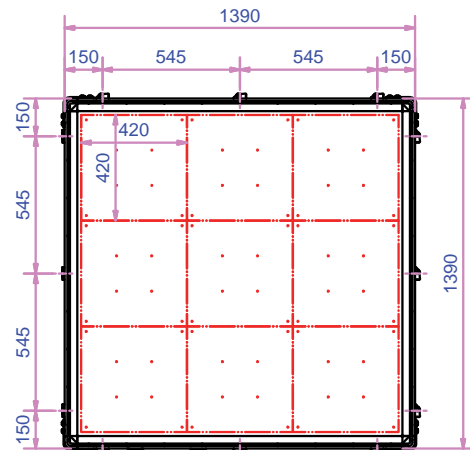




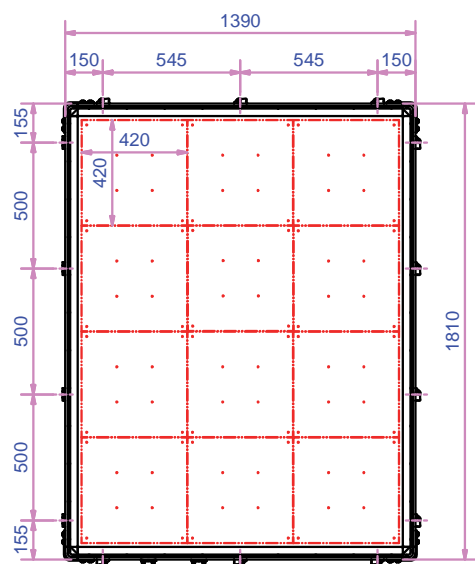
2x2 Variosign-420 (229291-22-XXX)



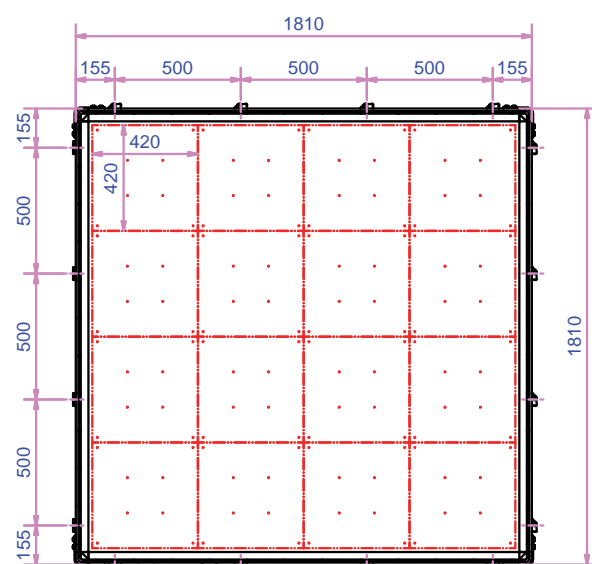
2x3 Variosign-420 (229291-23-XXX)



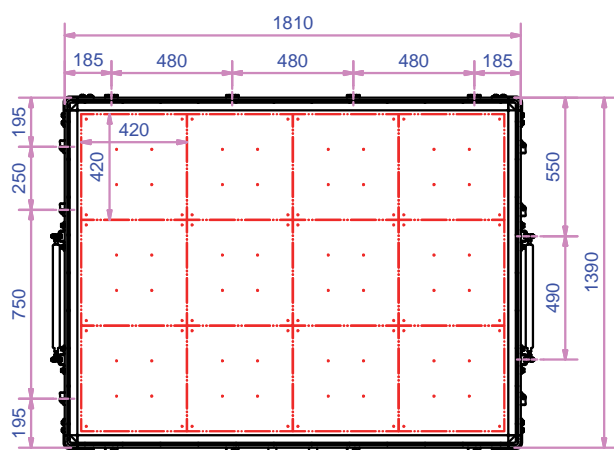
3x3 Variosign-420 (229291-33-XXX)



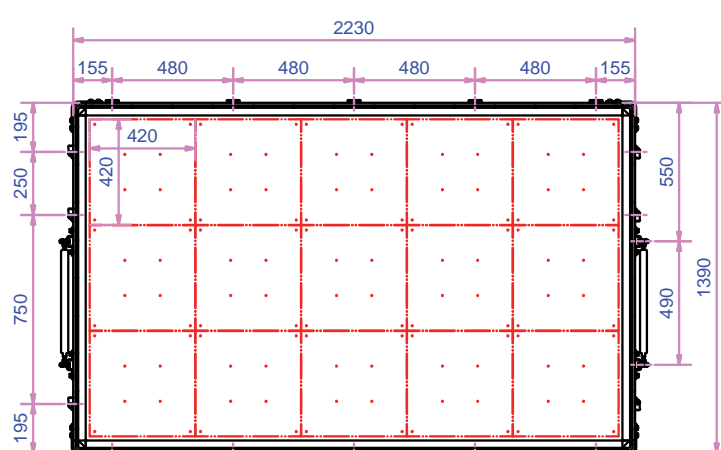
3x4 Variosign-420 (229291-34-XXX)



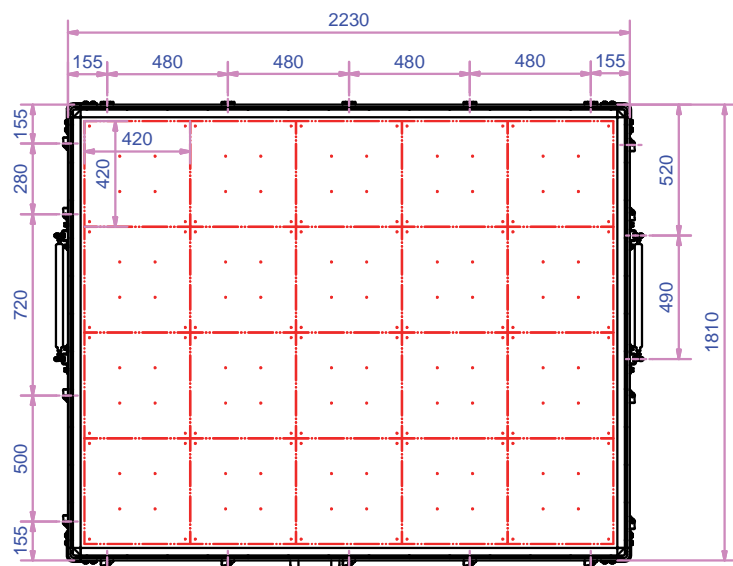
4x4 Variosign-420 (229291-44-XXX)



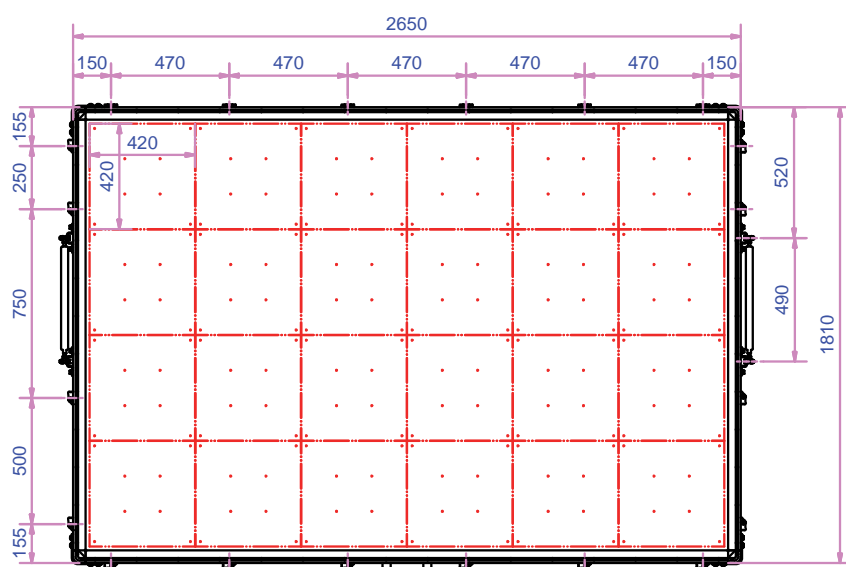
4x3 Variosign-420 (229291-43-XXX)



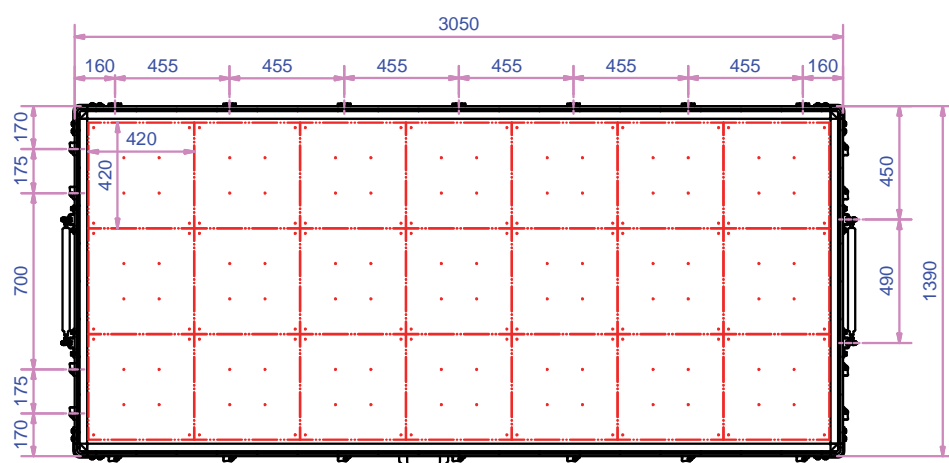
5x3 Variosign-420 (229291-53-XXX)



5x4 Variosign-420 (229291-54-XXX)



6x4 Variosign-420 (229291-64-XXX)



7x3 Variosign-420 (229291-73-XXX)





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