

Emergency Lighting

INSTALLATION INSTRUCTION

Central Power Supply System

Low Power Supply System

Mains Replacement System

Date: 05.02.2019



English



Table of contents

	Page:
Information of the installation instruction.....	2
Symbol explanation, manufacturer, further documents.....	2
Type codes	3
Preface	4
General installation notes	4
Installation step 1 – unpacking and check of the equipment.....	5
Installation step 2 – assembly and erection of the equipment.....	5
Installation step 3 – connection of mains and battery supply to the switchboard.....	6
Installation step 4 – connection of the critical circuit to the monitoring module DS3-IM.....	11
Installation step 5 – connection of the battery middle tapping to the main control frame.....	14
Installation step 6 – connection of the device supply voltages.....	17
Installation step 7 – connection of the switch inputs.....	20
Installation step 8 – connection of the control contact "blower".....	21
Installation step 9 – connection of the measure contact "temperature sensor".....	23
Installation step 10 – connection of the message contact "insulation fault".....	24
Installation step 11 – connection of the message contact "mains failure".....	24
Installation step 12 – connection of the message contact "operational condition".....	25
Installation step 13 – connection of the message contact "collective fault".....	26
Installation step 14 – connection of the message contact "battery operation".....	27
Installation step 15 – connection of the station buses to the main control frame.....	28
Installation step 16 – connection of the I2C bus to the main control frame.....	32
Installation step 17 – connection of the LSSA-K switch inputs.....	32
Installation step 18 – connection of the output circuits to the control frames.....	33
Installation step 19 – retorquing and check of electrical connections.....	41
Equipment layout, equipment descriptions	41
CBS (NZB) – main control frame GZ5030D / GZ5030D-RAL9018.....	42
CBS (NZB) – main control frame GZ5030D2 / GZ5030D2-RAL9018.....	44
CBS (NZB) – main control frame GZ5030D3 / GZ5030D3-RAL9018.....	46
CBS (NZB) – extension control frame GZ5030E / GZ5030E-RAL9018.....	48
CBS (NZB) – charger control frame GZ5030H / GZ5030H-RAL9018.....	50
GBS (NGB) – main control frame GZ5030A / GZ5030A-RAL9018.....	52
GBS (NGB) – main control frame GZ5030A2 / GZ5030A2-RAL9018.....	54
GBS (NGB) – extension control frame GZ5030B / GZ5030B-RAL9018.....	56
GBS (NGB**K) – main control frame in compact version GZ5032A.....	58
GBS (NGB**K) – main control frame in compact version GZ5032A2.....	60
MRS (NEA) – main control frame GZ5030A-NEA / GZ5030A-NEA-RAL9018.....	62
MRS (NEA) – main control frame GZ5030A2-NEA / GZ5030A2-NEA-RAL9018.....	64
MRS (NEA) – main control frame GZ5030D3-NEA / GZ5030D3-NEA-RAL9018.....	66
MRS (NEA) – extension control frame GZ5030E-NEA / GZ5030E-NEA-RAL9018.....	68
Display unit G32640C.....	70
Display unit G32200.....	71
Display unit G32213.....	72
CPU card G32645D.....	73
CPU card B232440001.....	74
CBS (NZB) – HIO card G32636C.....	75
CBS (NZB) – HIO card G32636C-US.....	76
GBS/MRS (NGB/NEA) – HIO card G32563C.....	77
CBS (NZB) – DC/DC converter card WDL G32637B.....	78
GBS/MRS (NGB/NEA) – Support card G32628.....	79
Shielding card G32048.....	80
Output circuit cards AK1x32SÜ G32797S-P / G32103-P.....	81
Output circuit cards AK1x32EÜ G32754-SL-P / G32100-P.....	82
Output circuit cards AK2x32SÜ G32815S-P / G32104-P.....	83
Output circuit cards AK2x32EÜ G32818-SL-P / G32101-P.....	84
Output circuit cards AK4x32SÜ G32820S-P / G32105-P.....	85
Output circuit cards AK4x32EÜ G32824-SL-P / G32102-P.....	86
Output circuit cards AK1x32SÜ G32797S-P-NEA / G32103-P-NEA.....	87
Output circuit cards AK1x32EÜ G32754-SL-P-NEA / G32100-P-NEA.....	88
Output circuit cards AK2x32SÜ G32815S-P-NEA / G32104-P-NEA.....	89
Output circuit cards AK2x32EÜ G32818-SL-P-NEA / G32101-P-NEA.....	90
Output circuit cards AK4x32SÜ G32820S-P-NEA / G32105-P-NEA.....	91
Output circuit cards AK4x32EÜ G32824-SL-P-NEA / G32102-P-NEA.....	92
CBS (NZB) – charger cards LT220/2A G32893-SL / G32893-AL.....	93
CBS (NZB) – charger card LT220/3A G32893.....	94
GBS (NGB) – charger card LT24/6A G32547.....	94
GBS (NGB**K) – charger card LT G32541.....	95
GBS/GBS (NGB/NGB**K) – transformer card WLG400 G32812.....	96
GBS (NGB) – transformer card combination WLG750 G32811.....	97
MRS (NEA) – battery card G32071.....	98
Monitoring module DS3-UV G31026.....	99
Notes	100

Information of the installation instruction

Important instructions

According to EN 50110-1:2004-11 any work on the installation has to be executed by qualified electricians only.

Other activities described in this operation instruction have to be executed only by persons who:

- have been instructed by qualified persons
- have fully understood their tasks and the functions of the installation
- are under observation and being checked regularly by qualified persons

Please observe the local rules and regulations.

Symbol explanation, manufacturer, further documents

The following symbols must be observed.



Attention:

Indicates hazards that may be the cause for damage to human, plant or environment as well as very important instructions.



Note:

Provides information and advice for navigating within the described plant, components or functions.



SLEB LOGICA

Entries with this hint are only related to SLEB software for central and group battery systems as well as for mains replacement systems.



AUTO LOGICA

Entries with this hint are only related to ALOG software for central and group battery systems as well as for mains replacement systems.

Manufacturer:

Beghelli PRÄZISA GmbH

Internet: www.beghelli.de
E-mail: kontakt@beghelli.de

Further documents:

Catalogues

Low Power Supply Systems NGB, Central Battery Systems NZB, Mains Replacement Systems NEA

The catalogue contents are also available over the internet – www.beghelli.de.

CD-ROM

Catalogue CD

Type codes

German:

NGB	Notlicht Gruppen Batterie Versorgungsgerät
NZB	Notlicht Zentral Batterie Versorgungsgerät
NEA	Netz Ersatz Anlage

English:

GBS	Group Battery System resp. LPS-System	Low Power Supply System
CBS	Central Battery System resp. CPS-System	Central Power Supply System
MRS	Mains Replacement System	

Designation:	Station type:	Mains monitoring:	Mains supply:	Battery supply:	Mains output voltage:	Battery output voltage:
NZB	main station	3~	400 V AC 50/60 Hz 3~	216 V DC	230 V AC 50/60 Hz 1~	216 V DC
NZB	sub station	1~	230 V AC 50/60 Hz 1~	216 V DC from main station	230 V AC 50/60 Hz 1~	216 V DC
NZB	sub station	3~	400 V AC 50/60 Hz 3~	216 V DC from main station	230 V AC 50/60 Hz 1~	216 V DC
NGB	main station	3~	230 V AC 50/60 Hz 1~	24 V DC	230 V AC 50/60 Hz 1~	230 V DC
NEA	main station	3~	400 V AC 50/60 Hz 3~	no	230 V AC 50/60 Hz 1~	230 V AC 50/60 Hz 1~



Attention:

The specified mains and battery output voltages are only valid if output circuit cards of the types AK 1/2/4x12/32 EÜ/SÜ are used.

The specified mains and battery output voltages are only valid if the operating mode "9=CCSD" in menu item 4-3 "Line Operating Modes" is not used.

Mains output voltage:

- > The mains output voltage designates the voltage with which the output circuits of an emergency light station can be operated if no supply failure is present.
- > The mains output voltage designates the voltage with which the output circuits of an emergency light station are operated if a partial supply failure is present.

Battery output voltage:

- > The battery output voltage designates the voltage with which the output circuits of an emergency light station are operated if a general supply failure is present.
- > The battery output voltage designates the voltage with which the output circuits of an emergency light station are operated if a function test, a duration test or a read-in is executed.

Preface

This installation instruction covers all standard switchboard configurations. Device properties and device connections are documented. The information provided conforms to the latest scope of delivery regarding all standard switchboards in their respective minimal configuration. All configurations deviating from this are documented only partially. The information of this document which is different to the minimal configurations can be supplemented by the use of the documentations regarding the single equipment. Additional information can be requested from the above mentioned address.

The technical content of this installation instruction is correct at time of print.
Subject to change without prior notification.



Attention:

This installation instruction should be used for general engineering purposes only before the ready manufactured product is delivered. After the delivery the individual documentation of the product must be used to reach the most exact relation.

General installation notes

Switchboards with devices are custom manufactured products which are every time adapted to the respective technical requirements of the object and the customer of Beghelli PRÄZISA. This leads to individual switchboard configurations. The connection of a switchboard can basically be divided in the following installation steps. Additional steps regarding the connection should be planned and performed concerning the respective technical requirements and the installed equipment of the ready manufactured switchboard. With the aid of the individual documentation of the product it is possible to get an overview of its properties. The documentation can be used to plan and perform additional installation steps.

According to DIN VDE 0100-600, clause 6.4.3.3, the check of the installation regarding the insulation resistance of an output circuit can be done after the removal of all fuses of the output circuit.



Note:

If contact designations are not described in detail in the installation steps respective information can be found in the individual documentation.

Installation step 1 – unpacking and check of the equipment

During the unpacking a check of all equipment should be done regarding the delivered quantities in correspondence with the respective order numbers. Viewing the individual documentation of the product can help to assign the delivered equipment better. In case of deviations to the ordered equipment please contact Beghelli PRÄZISA.



Attention:

During this and all following installation steps special attention must be paid to all equipment which is signed with safety signs. This installation instruction as well as all additional supplied documentations of other manufacturers (first and foremost material safety datasheets) must be read before the beginning of any activities.

Installation step 2 – assembly and erection of the equipment

The assembly and erection of all equipment should be done concerning the general cabling topology of all emergency light stations. The following installation steps as well as the individual documentation of the product are providing information how to install respective cables und external equipment.



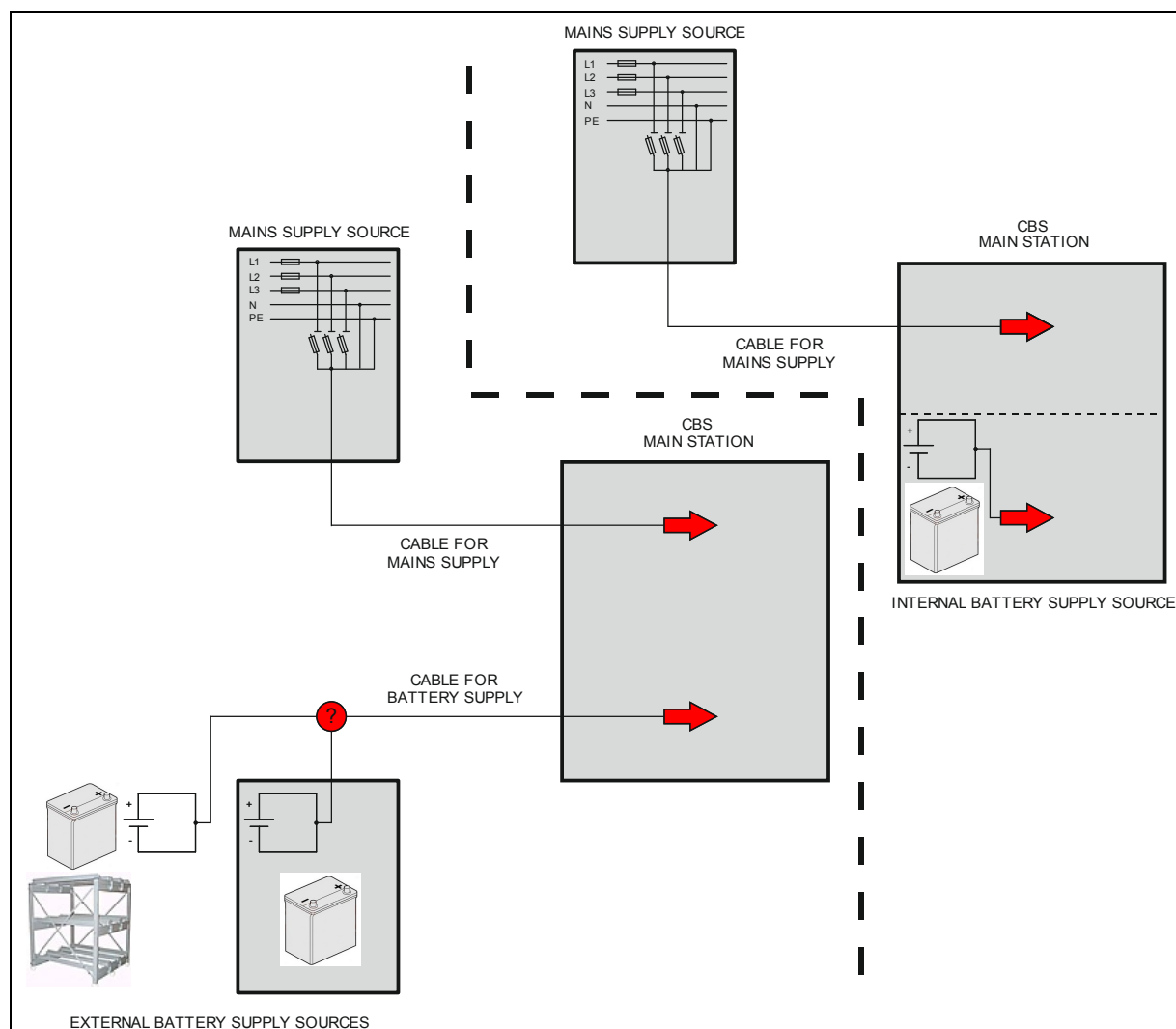
Attention:

During this and all following installation steps all activities must be done without voltage on the equipment. This includes all kinds of mains supply voltages, battery supply voltages and every other kind of voltage independently of their usage.

Installation step 3 – connection of mains and battery supply to the switchboard

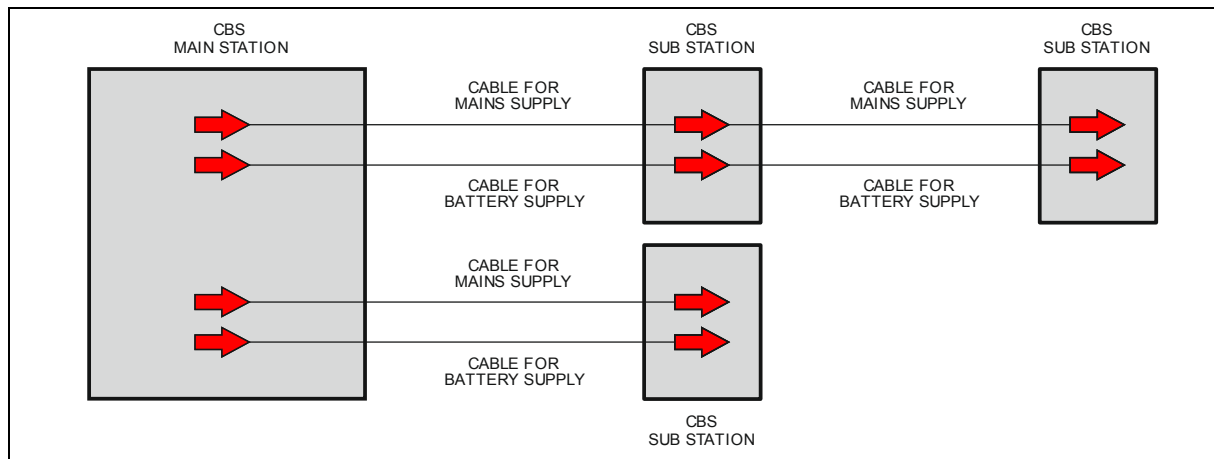
CBS (NZB) – main station:

- > Every NZB system consists at least of one main station.
- > Every main station must be supplied with a mains and a battery supply.
- > Depending on the configuration the battery supply source can be placed inside the main station switchboard or external.



CBS (NZB) – sub station:

- > Every sub station must be supplied with the mains and battery supply from the associated main station.
- > Depending on the configuration the mains and battery supply for the sub stations can be wired in a row or starred.
- > A main station can have up to 30 connected sub stations.



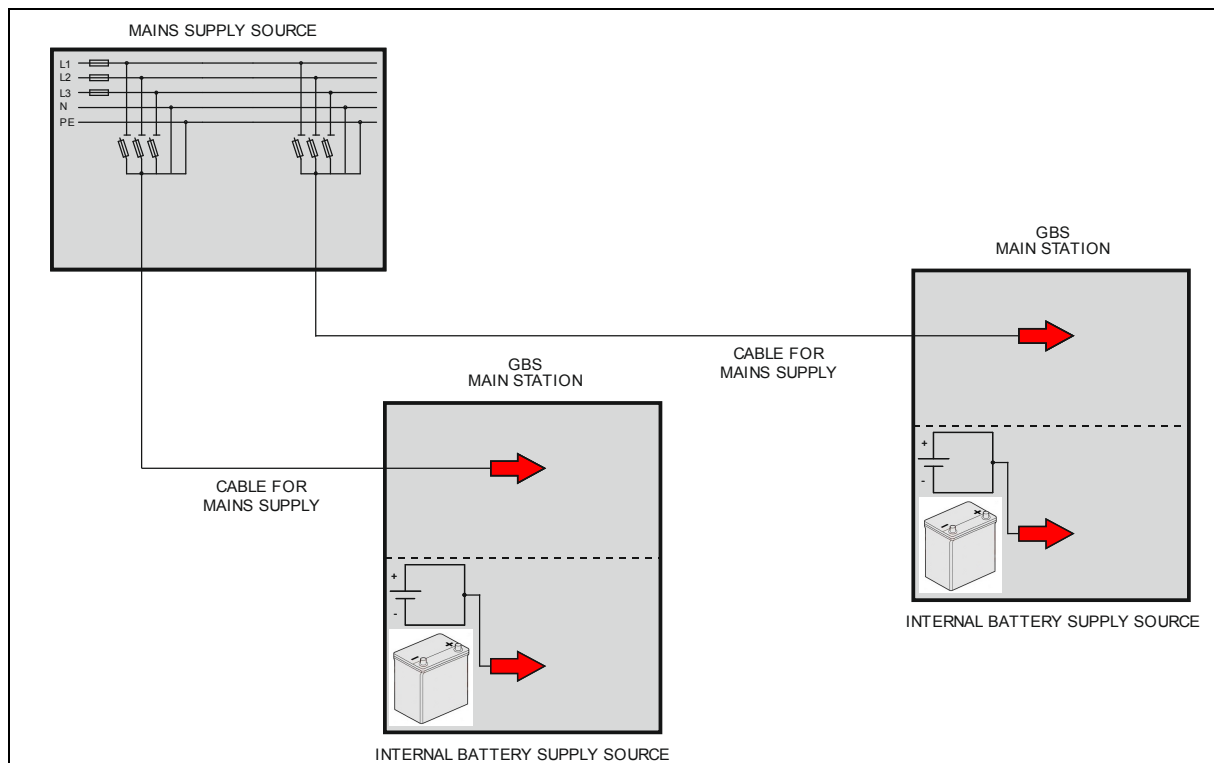
GBS (NGB) – main station:

- > Every NGB system consists at least of one main station.
- > Every main station must be supplied with its own mains and battery supply.
- > The battery supply source is placed inside the main station switchboard.
- > A main station can have no connected sub stations.



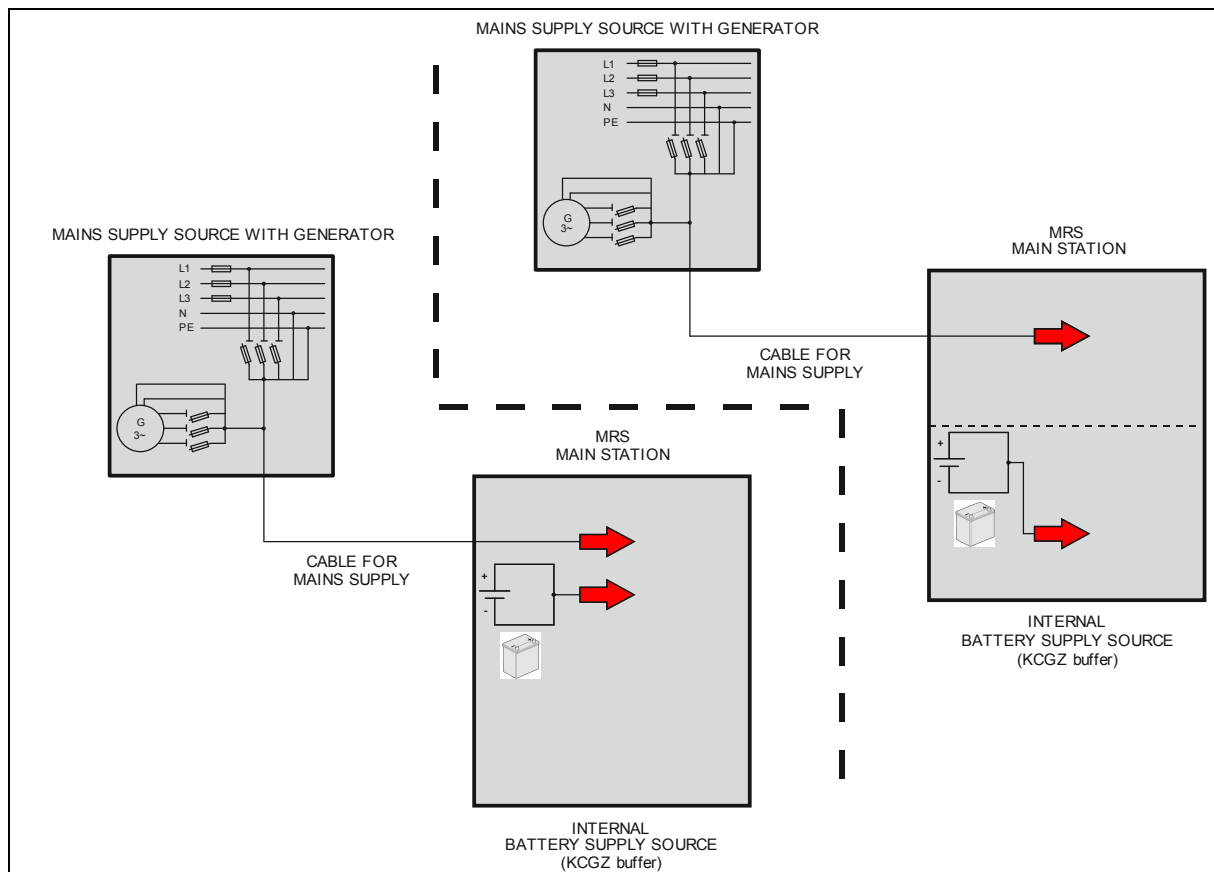
Attention:

It is **not** allowed to use the software programming of a NGB system to configure a main station as a sub station in combination with a cabling of a sub station bus. Within a NGB system **all** emergency light stations must be configured as main stations. A main station must be an autonomous working unit regarding the required basic functionality.



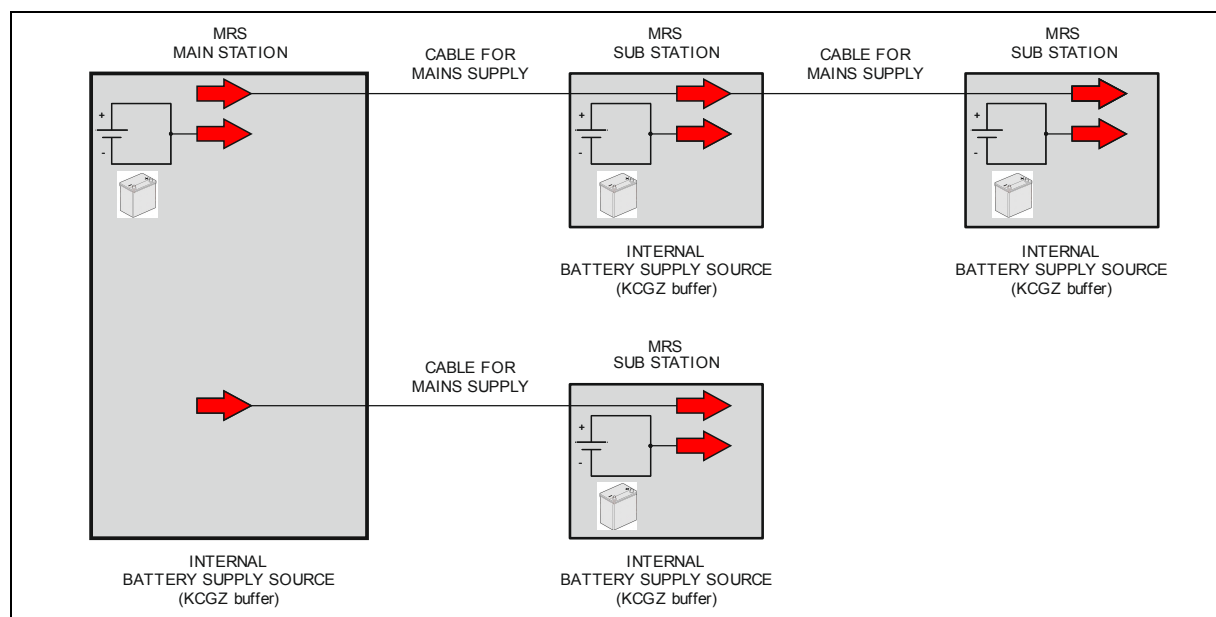
MRS (NEA) – main station:

- > Every NEA system consists at least of one main station.
- > Every main station must be supplied with a mains and a battery supply.
- > The mains supply source must be operated together with a generator.
- > The battery supply source is placed within the main station switchboard and is only used for buffering of the control and monitoring system KCGZ.



MRS (NEA) – sub station:

- > Every sub station must be supplied with a mains and a battery supply.
- > Every sub station must be supplied with the mains supply from the associated main station.
- > The mains supply source must be operated together with a generator.
- > Depending on the configuration the mains supply for the sub stations can be wired in a row or starred.
- > The battery supply source is placed within the sub station switchboard and is only used for buffering of the control and monitoring system KCGZ.
- > A main station can have up to 30 connected sub stations.



Installation step 4 – connection of the critical circuit to the monitoring module DS3-IM

Properties of the internal monitoring module DS3-IM:

- > The handoff point to connect the critical circuit to the emergency light station is located at the internal monitoring module DS3-IM. The measuring contact is designated with "DS3-UV".
- > The internal monitoring module DS3-IM is equipped on its measuring contact with a loop supervision which works together with an end resistor (10 kΩ).
- > The end resistor (10 kΩ) mounted on the measuring contact "DS3-UV" at delivery condition must be connected together with the last external monitoring module (NGB/NZB system) resp. switch contact on the generator (NEA system).
- > The internal monitoring module DS3-IM interrupts the contacts 107/108 (for the critical circuit) at the main control frame if a mains failure resp. a generator operation is present.

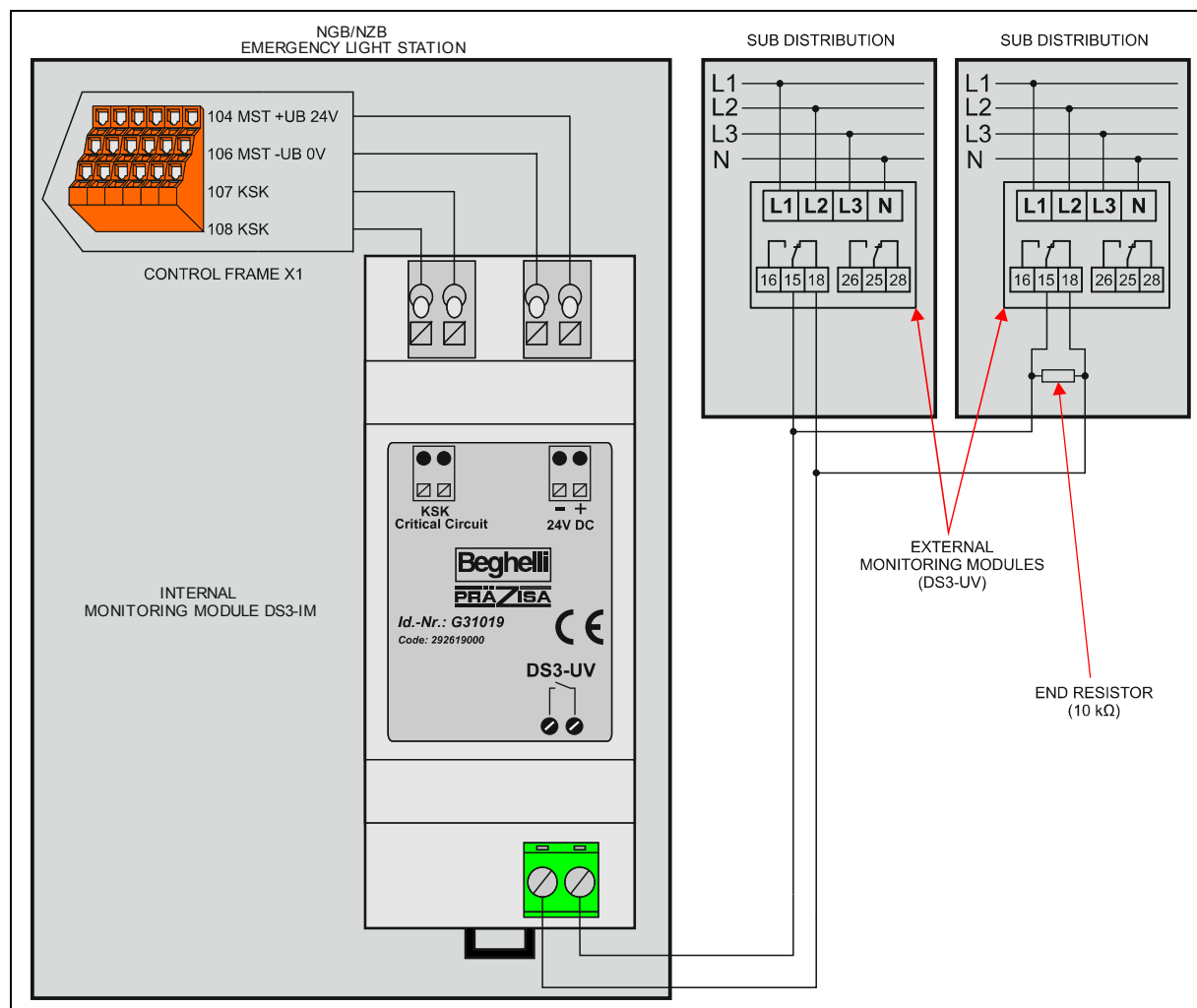


Attention:

When the critical circuit of an emergency light station is interrupted, then only the output circuits resp. lamps can be set in an emergency operation, which are connected to the affected emergency light station. The setting of output circuits resp. lamps in an emergency operation which are connected to another emergency light station within a NGB/NZB system is not possible with the critical circuit.

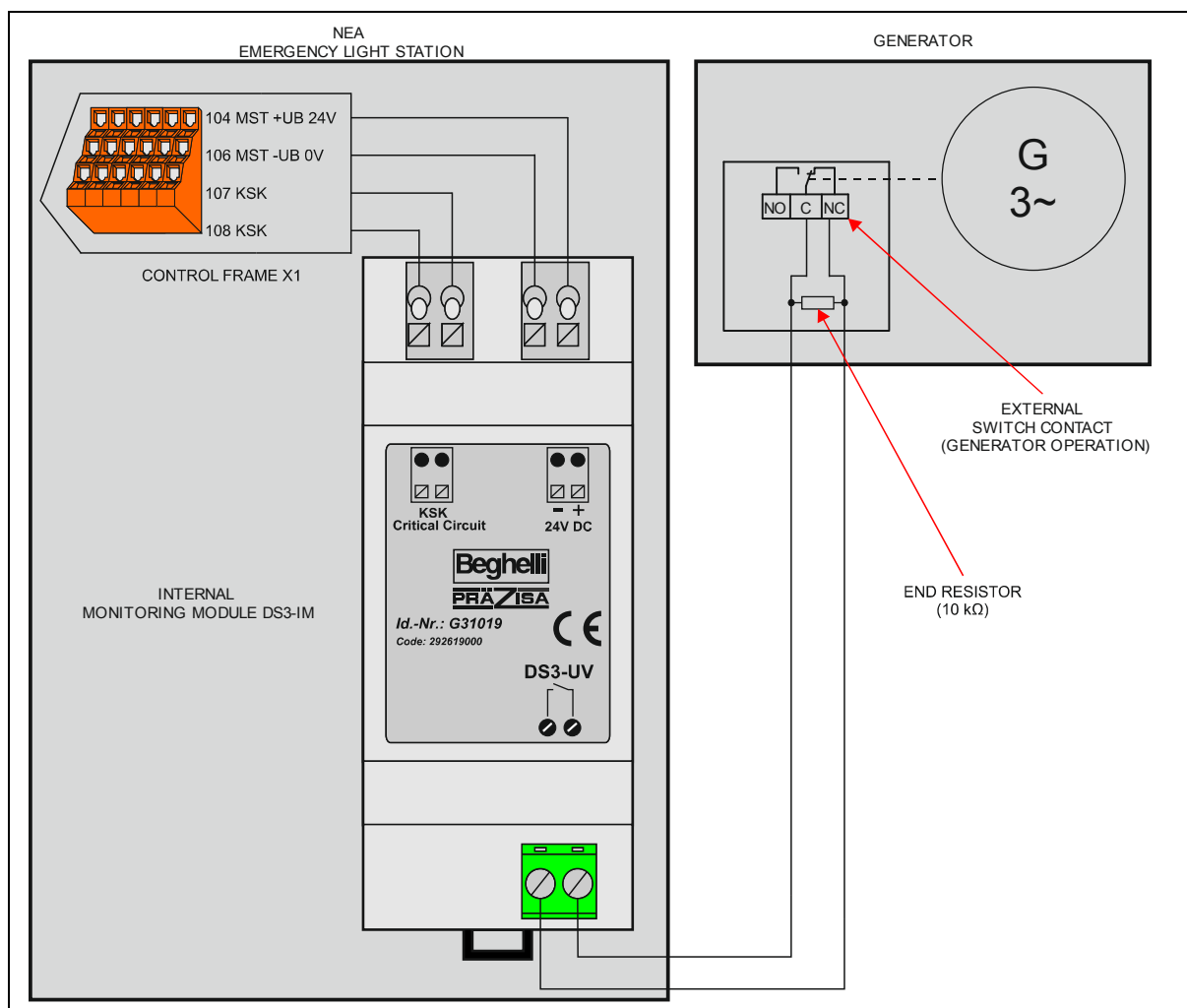
Properties of external monitoring modules (NGB/NZB system):

- > The critical circuit is used for sub distribution monitoring of the general lighting. In the course of this external monitoring modules (standardly DS3-UV) are installed inside every sub distribution.
- > Each external monitoring module monitors presence and value of the mains voltage.
- > The last external monitoring module must be connected together with the end resistor (10 kΩ).
- > An external monitoring module must open the critical circuit to enable the measuring of the end resistor (10 kΩ) by the internal monitoring module DS3-IM when no mains failure is present.
- > An external monitoring module must close the critical circuit low-ohmic to enable the measuring of a short circuit by the internal monitoring module DS3-IM when a mains failure is present.



Properties of the external switch contact on the generator (NEA system):

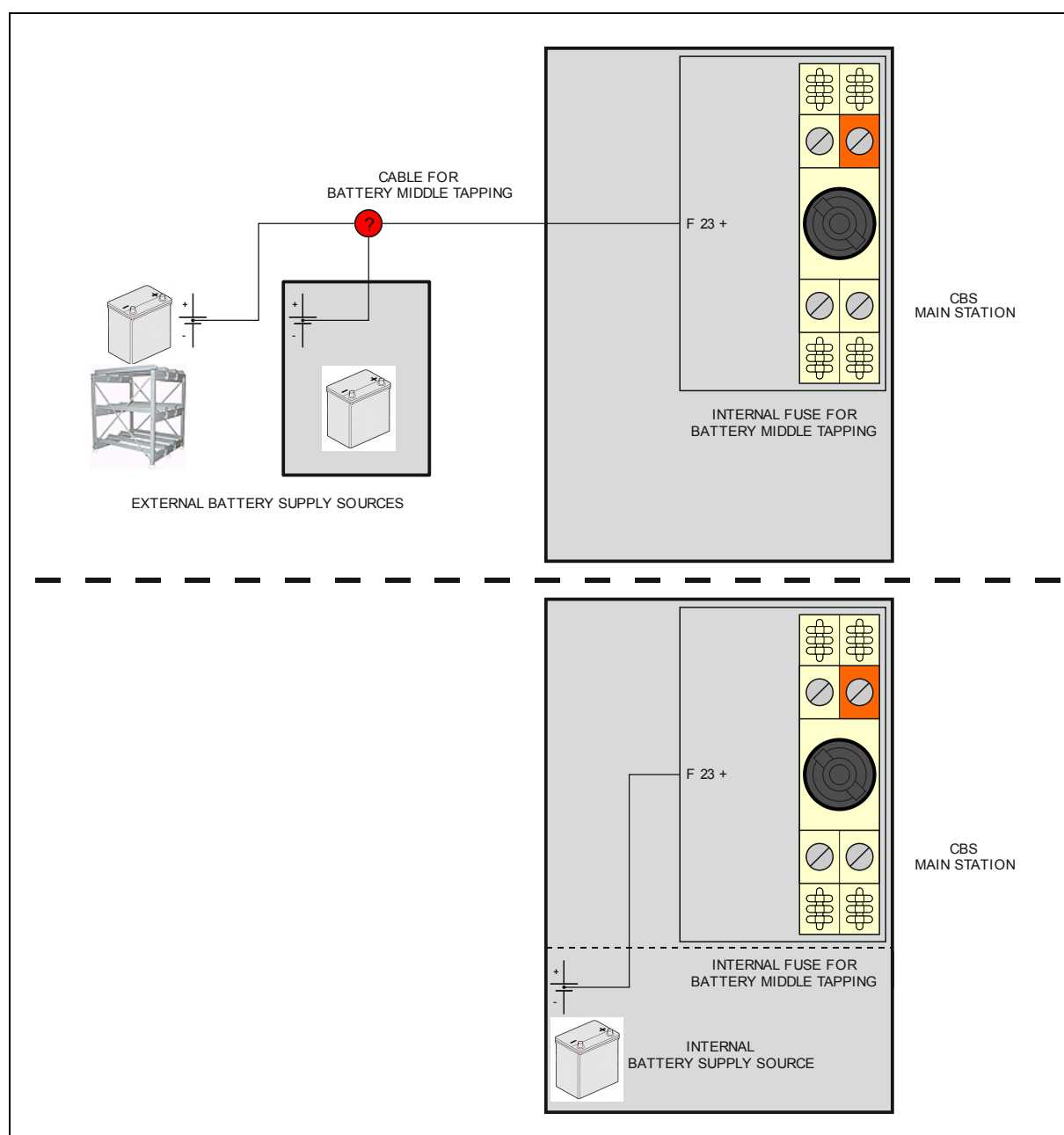
- > The critical circuit is used for operation monitoring of the generator. In the course of this an external switch contact is installed on the generator.
- > The generator monitors presence and value of the mains voltage and is switching on in case of a failure (generator operation).
- > The external switch contact must be connected together with the end resistor (10 kΩ).
- > The external switch contact must open the critical circuit to enable the measuring of the end resistor (10 kΩ) by the internal monitoring module DS3-IM when no failure is present (generator is switched off).
- > The external switch contact must close the critical circuit low-ohmic to enable the measuring of a short circuit by the internal monitoring module DS3-IM when a failure is present (generator is switched on).



Installation step 5 – connection of the battery middle tapping to the main control frame

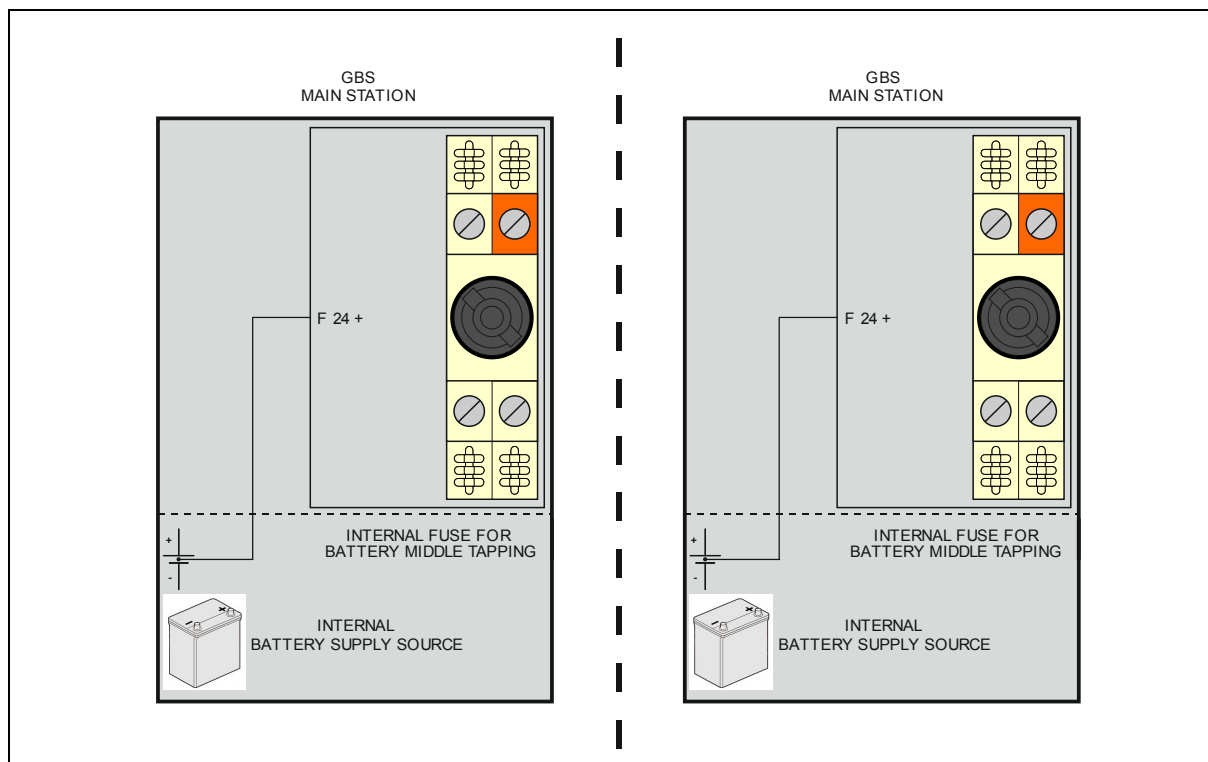
CBS (NZB) – main station:

- > Every main station must be connected to a battery middle tapping.
- > Depending on the configuration the battery middle tapping can be placed inside the main station switchboard or external.
- > The handoff point to connect the battery middle tapping to the emergency light station is located at the internal fuse F 23 (standardly, without parallel connected batteries). The measuring contact is designated with "+". When parallel connected batteries are used each battery unit must be connected to its own battery middle tapping (F 24, F 25, F 26...). Additional measuring contacts are designated with "+".



GBS (NGB) – main station:

- > Every main station must be connected to a battery middle tapping.
- > The battery middle tapping is placed inside the main station switchboard.
- > The handoff point to connect the battery middle tapping to the emergency light station is located at the internal fuse F 24. The measuring contact is designated with "+".

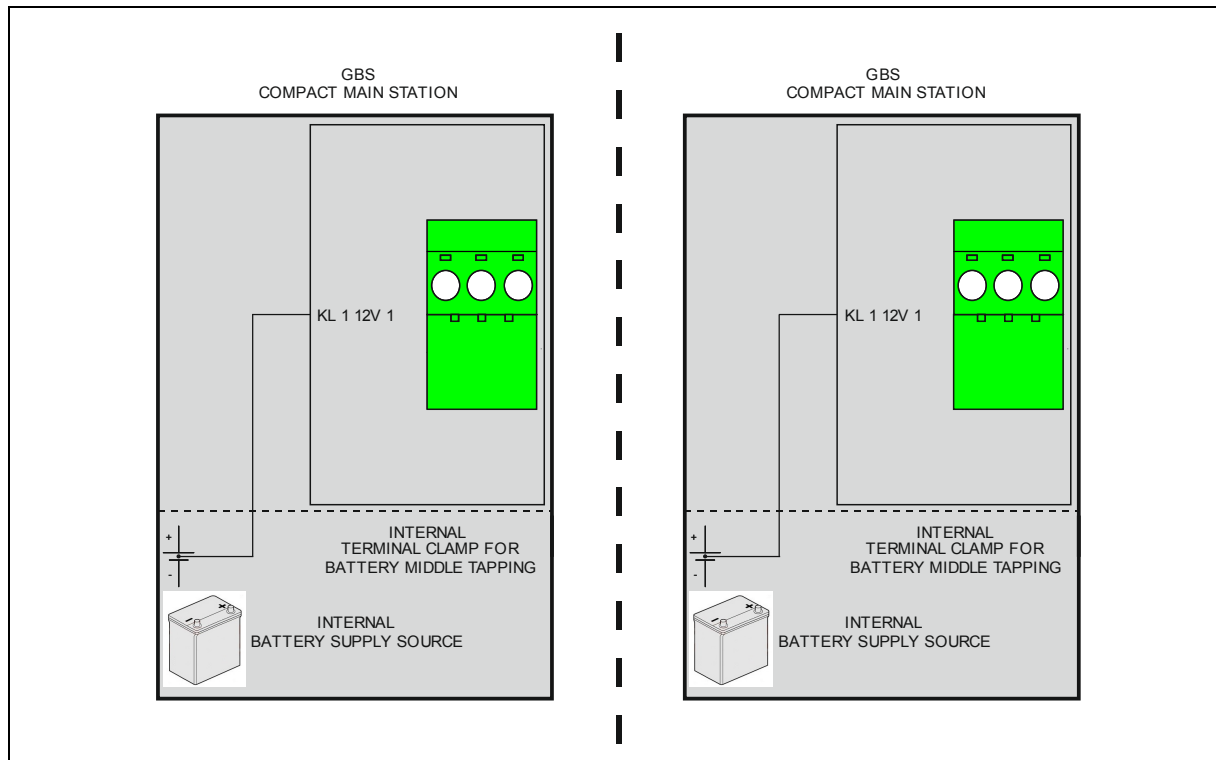


Note:

The handoff point to connect the battery middle tapping to the emergency light station is pre-wired if the batteries are placed inside the switchboard at delivery condition. In this case the respective contacts are not intended as a connection for the customer at standard switchboard configurations.

GBS (NGB**-K) – compact main station:

- > Every compact main station must be connected to a battery middle tapping.
- > The battery middle tapping is placed inside the compact main station switchboard.
- > The handoff point to connect the battery middle tapping to the compact emergency light station is located at the internal terminal clamps of the main control frame. The measuring contact is designated with "12V 1".



Note:

The handoff point to connect the battery middle tapping to the emergency light station is pre-wired if the batteries are placed inside the switchboard at delivery condition. In this case the respective contacts are not intended as a connection for the customer at standard switchboard configurations.

MRS (NEA) – main station:

- > The NEA system is operated without a battery middle tapping.

Installation step 6 – connection of the device supply voltages

Main control frames –
GZ5030D, GZ5030D-RAL9018,
GZ5030D2, GZ5030D2-RAL9018,
GZ5030A, GZ5030A-RAL9018,
GZ5030A2, GZ5030A2-RAL9018,
GZ5032A,
GZ5030A-NEA, GZ5030A-NEA-RAL9018,
GZ5030A2-NEA GZ5030A2-NEA-RAL9018:

- > The main control frames are equipped with two voltage sources.
- > Both voltage sources ("U24" and "MST") supply the voltage levels 15 V DC and 24 V DC.

Voltage source "U24":

- > The contacts are designated with "101" (24 V), "102" (15 V) and "103" (0 V).



Attention:

The voltage source "U24" is only used for service purposes and special applications. The contacts "101", "102" and "103" are not intended as a connection for the customer at standard switchboard configurations.

Voltage source "MST":

- > The contacts are designated with "104" (24 V), "105" (15 V) and "106" (0 V).



Attention:

The contact "105" of the voltage source "MST" is only used for service purposes and special applications. This contact is not intended as a connection for the customer at standard switchboard configurations.

- > The voltage source "MST" can be used for additional devices which can be placed internal or external related to the switchboard.



Note:

If additional internal devices are included in the switchboard configuration a respective pre-wiring is existent at delivery condition.

- > Depending on the configuration the handoff point to connect a device to the voltage source "MST" can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Main control frames –
GZ5030D3, GZ5030D3-RAL9018,
GZ5030D3-NEA, GZ5030D3-NEA-RAL9018:

- > The main control frames are equipped with three voltage sources.
- > All three voltage sources ("U24", "MST" and "MST-U24") supply the voltage level 24 V DC.

Voltage source "U24":

- > The contacts are designated with "101" (24 V) and "103" (0 V).



Attention:

The voltage source "U24" is only used for service purposes and special applications. The contacts "101", "102" and "103" are not intended as a connection for the customer at standard switchboard configurations.

Voltage source "MST":

- > The contacts are designated with "104" (24 V) and "106" (0 V).
- > The voltage source "MST" can be used for additional devices which can be placed internal or external related to the switchboard.



Note:

If additional internal devices are included in the switchboard configuration a respective pre-wiring is existent at delivery condition.

- > Depending on the configuration the handoff point to connect a device to the voltage source "MST" can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Voltage source "MST-U24":

- > The contacts are designated with "105" (24 V) and "102" (0 V).
- > The voltage source "MST-U24" can be used for additional devices which can be placed internal or external related to the switchboard.



Note:

If additional internal devices are included in the switchboard configuration a respective pre-wiring is existent at delivery condition.

- > Depending on the configuration the handoff point to connect a device to the voltage source "MST-U24" can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Main control frame –
GZ5032A2:

- > The main control frame is equipped with two voltage sources.
- > Both voltage sources ("U24" and "MST") supply the voltage level 24 V DC.

Voltage source "U24":

- > The contacts are designated with "102" (24 V) / "105" (0 V) and "103" (24 V) / "106" (0 V).
- > The contacts "102" and "103" are bridged internally.
- > The contacts "105" and "106" are bridged internally.
- > The voltage source "U24" can be used for additional devices which can be placed internal or external related to the switchboard.



Note:

If additional internal devices are included in the switchboard configuration a respective pre-wiring is existent at delivery condition.

- > Depending on the configuration the handoff point to connect a device to the voltage source "U24" can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Voltage source "MST":

- > The contacts are designated with "101" (24 V) and "104" (0 V).
- > The voltage source "MST" can be used for additional devices which can be placed internal or external related to the switchboard.



Note:

If additional internal devices are included in the switchboard configuration a respective pre-wiring is existent at delivery condition.

- > Depending on the configuration the handoff point to connect a device to the voltage source "MST" can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Installation step 7 – connection of the switch inputs

- > Every main control frame of a NGB/NZB/NEA system is equipped with three switch inputs.
- > The switch contacts are carried out as circuits with a switch voltage of 24 V DC.
- > The command uptake for all switch inputs is binary and done by a low-ohmic contact closing (short circuit).
- > The command initiation for each switch input is software controlled but can not be influenced by a programming.
- > Switch input operational condition off: the contacts are designated with "110" and "111".
- > Switch input permanent setting off: the contacts are designated with "113" and "114".
- > Switch input standby reset: the contacts are designated with "116" and "117".
- > The switch inputs can be used for control purposes together with additional devices which can be placed internal or external related to the switchboard.
- > Depending on the configuration the handoff point to connect a device to the switch inputs can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.



Attention:

The switch inputs are only free available if no optional signalling and switching module (MSM) is included in the switchboard configuration. Depending on the type of the signalling and switching module (MSM) the switch inputs are partly or completely used.

Installation step 8 – connection of the control contact "blower"

CBS (NZB) – main station:

- > Every main control frame of a NZB system is equipped with a control contact for blowers.
- > The control contact is carried out as a potential-free changeover and software controlled.
- > The contacts are designated with "Arbeitsk.", "Lüfteranschluß" and "Ruhek."
- > The rating of the contacts amounts to 1 A at 230 V AC resp. 0,5 A at 24 V DC.
- > The control contact can be used to control a blower with auxiliary voltage to dissipate a possible explosive atmosphere and heat from the installed batteries.
- > The handoff point to connect a blower to the emergency light station is located at the terminal clamps of the main control frame.



Attention:

It should be noted that a normal auxiliary voltage is not present during a general power failure. Therefore a connected blower can not work during this circumstance.

Software command blower OFF:

The control relay is energized and the contacts "Lüfteranschluß" and "Ruhek." are closed.

Software command blower ON:

The control relay is not energized and the contacts "Lüfteranschluß" and "Arbeitsk." are closed.

CBS (NZB) – sub station:

- > The sub station is operated without a blower.

GBS (NGB) – main station:

- > The main control frame GZ5030A2 / GZ5030A2-RAL9018 of a NGB system is equipped with a control contact for blowers.
- > The control contact is carried out as an output with a voltage of 24 V DC and software controlled.
- > The contacts are designated with "Lüfter + 24 V" and "Lüfter 0 V".
- > The rating of the output amounts to 0,5 A at 24 V DC.
- > The control contact is used to control the pre-installed blower for cooling the transformer cards (WLG).
- > The handoff point to connect the blower to the emergency light station is pre-wired and located at the terminal clamps of the main control frame. The contacts "Lüfter + 24 V" and "Lüfter 0 V" are not intended as a connection for the customer at standard switchboard configurations.

GBS (NGB**-K) – compact main station:

- > The main control frame GZ5032A2 of a compact NGB system is equipped with a control contact for blowers.
- > The control contact is carried out as an output with a voltage of 24 V DC and software controlled.
- > The contacts are designated with "Lüfter + 24 V" and "Lüfter 0 V".
- > The rating of the output amounts to 0,5 A at 24 V DC.
- > The control contact is used to control the pre-installed blower for cooling the transformer card (WLG).
- > The handoff point to connect the blower to the emergency light station is pre-wired and located at the terminal clamps of the main control frame. The contacts "Lüfter + 24 V" and "Lüfter 0 V" are not intended as a connection for the customer at standard switchboard configurations.

MRS (NEA) – main station:

- > The main station is operated without a blower.

MRS (NEA) – sub station:

- > The sub station is operated without a blower.

Installation step 9 – connection of the measure contact "temperature sensor"

GBS (NGB) – main station:

- > Every main control frame of a NGB system is equipped with a measure contact for a temperature sensor.
- > The measure contact is carried out as a circuit with a measure voltage of 3 V DC and software monitored.
- > The contacts are designated with "Temperaturfühler 1 -" and "Temperaturfühler 3 +".
- > The measure contact is used for monitoring purposes together with a pre-installed temperature sensor which is located in the battery chamber of the switchboard.



Note:

The handoff point to connect the temperature sensor to the measure contact is pre-wired and located at the terminal clamps of the main control frame. The contacts "Temperaturfühler 1 -" and "Temperaturfühler 3 +" are not intended as a connection for the customer at standard switchboard configurations.

The contact "12 V 2" is standardly not occupied and only intended as a connection for service purposes and special applications.

GBS (NGB**-K) – compact main station:

- > Every main control frame of a compact NGB system is equipped with a measure contact for a temperature sensor.
- > The measure contact is carried out as a circuit with a measure voltage of 3 V DC and software monitored.
- > The contacts are designated with "Temperaturfühler 2 -" and "Temperaturfühler 3 +".
- > The measure contact is used for monitoring purposes together with a pre-installed temperature sensor which is located in the battery chamber of the switchboard.



Note:

The handoff point to connect the temperature sensor to the measure contact is pre-wired and located at the terminal clamps of the main control frame. The contacts "Temperaturfühler 2 -" and "Temperaturfühler 3 +" are not intended as a connection for the customer at standard switchboard configurations.

MRS (NEA) – main station:

- > The NEA system is operated without a temperature sensor.

Installation step 10 – connection of the message contact "insulation fault"

- > Every main control frame of a NZB system is equipped with a message contact for the state "insulation fault".
- > The control contact is carried out as a potential-free changeover and software controlled.
- > The contacts are designated with "Ruhek.", "ISO-Relais" and "Arbeitsk.".
- > The rating of the contacts amounts to 0,5 A at 230 V AC resp. 0,5 A at 24 V DC.
- > The handoff point to connect a device to the message contact is located at the terminal clamps of the main control frame.

Software command "insulation fault" PRESENT:

The message relay is not energized and the contacts "ISO-Relais" and "Arbeitsk." are closed.

Software command "insulation fault" NOT PRESENT:

The message relay is energized and the contacts "ISO-Relais" and "Ruhek." are closed.

Installation step 11 – connection of the message contact "mains failure"

- > Every main control frame of a NGB/NZB/NEA system is equipped with a message contact for the state "mains failure".
- > The control contact is carried out as a potential-free changeover and software controlled.
- > The contacts are designated with "201", "202" and "203".
- > The rating of the contacts amounts to 0,5 A at 230 V AC resp. 0,5 A at 24 V DC.
- > The message contact can be used for control or monitoring purposes together with additional devices which can be placed internal or external related to the switchboard.
- > Depending on the configuration the handoff point to connect a device to the message contact can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Software command "mains failure" PRESENT:

The message relay is not energized and the contacts "201" and "202" are closed.

Software command "mains failure" NOT PRESENT:

The message relay is energized and the contacts "201" and "203" are closed.

Installation step 12 – connection of the message contact "operational condition"

- > Every main control frame of a NGB/NZB/NEA system is equipped with a message contact for the state "operational condition".
- > The control contact is carried out as a potential-free changeover and software controlled.
- > The contacts are designated with "204", "205" and "206".
- > The rating of the contacts amounts to 0,5 A at 230 V AC resp. 0,5 A at 24 V DC.
- > The message contact can be used for control or monitoring purposes together with additional devices which can be placed internal or external related to the switchboard.
- > Depending on the configuration the handoff point to connect a device to the message contact can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Software command "operational condition" PRESENT:

The message relay is energized and the contacts "204" and "206" are closed.

Software command "operational condition" NOT PRESENT:

The message relay is not energized and the contacts "204" and "205" are closed.



Attention:

The message contact "operational condition" is only free available if no optional signalling and switching module (MSM) is included in the switchboard configuration.

Installation step 13 – connection of the message contact "collective fault"
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- > Every main control frame of a NGB/NZB/NEA system is equipped with a message contact for the state "collective fault".
- > The control contact is carried out as a potential-free changeover and software controlled.
- > The contacts are designated with "207", "208" and "209".
- > The rating of the contacts amounts to 0,5 A at 230 V AC resp. 0,5 A at 24 V DC.
- > The message contact can be used for control or monitoring purposes together with additional devices which can be placed internal or external related to the switchboard.
- > Depending on the configuration the handoff point to connect a device to the message contact can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Software command "collective fault" PRESENT:

The message relay is not energized and the contacts "207" and "208" are closed.

Software command "collective fault" NOT PRESENT:

The message relay is energized and the contacts "207" and "209" are closed.



Attention:

The message contact "collective fault" is only free available if no optional signalling and switching module (MSM) is included in the switchboard configuration.

Installation step 14 – connection of the message contact "battery operation"

- > Every main control frame of a NGB/NZB/NEA system is equipped with a message contact for the state "battery operation".
- > At NEA systems the message contact for the state "battery operation" is not used.
- > The control contact is carried out as a potential-free changeover and software controlled.
- > The contacts are designated with "210", "211" and "212".
- > The rating of the contacts amounts to 0,5 A at 230 V AC resp. 0,5 A at 24 V DC.
- > The message contact can be used for control or monitoring purposes together with additional devices which can be placed internal or external related to the switchboard.
- > Depending on the configuration the handoff point to connect a device to the message contact can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.

Software command "battery operation" PRESENT:

The message relay is energized and the contacts "210" and "212" are closed.

Software command "battery operation" NOT PRESENT:

The message relay is not energized and the contacts "210" and "211" are closed.



Attention:

The message contact "battery operation" is only free available if no optional signalling and switching module (MSM) is included in the switchboard configuration.

The message contact "battery operation" is not free available at NGB systems with the main control frames GZ5030A / GZ5030A-RAL9018 resp. GZ5032A, because this contact is standardly used to control the pre-installed blower for cooling the transformer cards (WLG). NGB systems with the main control frames GZ5030A2 / GZ5030A2-RAL9018 resp. GZ5032A2 are equipped with a control contact for blowers.

Installation step 15 – connection of the station buses to the main control frame

GBS/CBS/MRS (NGB/NZB/NEA) – main station:

- > Every NGB/NZB/NEA system consists at least of one main station.
- > Single main stations can be wired together on the main station bus for combined control and monitoring purposes. The main station bus can be furthermore used to connect different converter units for adaption purposes to computers resp. to a building management system (BMS).
- > Every NGB/NZB/NEA system can have up to 30 connected main stations on the main station bus.



Note:

Single main stations in a NGB/NZB/NEA system are autonomous working units regarding the required basic functionality. It is not mandatory to wire single main stations together on the main station bus or to connect a converter unit.



Attention:

It is not allowed to use the software programming of a NGB system to configure a main station as a sub station in combination with a cabling of a sub station bus. Within a NGB system all emergency light stations must be configured as main stations. A main station must be an autonomous working unit regarding the required basic functionality.

CBS/MRS (NZB/NEA) – sub station:

- > Every sub station must be wired to the associated main station on the sub station bus to provide the required system functionality.
- > A main station can have up to 30 connected sub stations.



Attention:

Single sub stations in a NZB/NEA system are not autonomous working units regarding the required basic functionality. It is mandatory to wire sub stations together on the sub station bus of the associated main station.

GBS/CBS/MRS (NGB/NZB/NEA) – general wiring:

- > The main station bus as well as the sub station bus must be wired in a row. A starred wiring is not allowed.
- > To wire the main station bus as well as the sub station bus a shielded cable with twisted-pair wires must be used. On the first main station a functional earthing for the cable must be installed.
- > An additional converter unit for the main station bus can be placed internal or external related to the switchboard.



Attention:

At NGB/NZB/NEA systems a maximum of one converter unit can be connected on the main station bus. The simultaneous operation of several converter units is not possible.



Note:

If additional internal devices are included in the switchboard configuration a respective pre-wiring is existent at delivery condition.

GBS/CBS/MRS (NGB/NZB/NEA) – properties of the main station bus and sub station bus:

- > Every main control frame of a NGB/NZB/NEA system is equipped with station buses.
- > The station buses are carried out as RS485 interfaces. There is a division in a main station bus and a sub station bus.
- > Main station bus: to create an over-ordinated connection at the main control frame of a main station the contacts which are designated with "307", "308" and "309" must be used.
- > Sub station bus: to create a sub-ordinated connection at the main control frame of a main station the contacts which are designated with "301", "302" and "303" must be used. To create a sub-ordinated connection at the main control frame of a sub station the contacts which are designated with "307", "308" and "309" must be used.



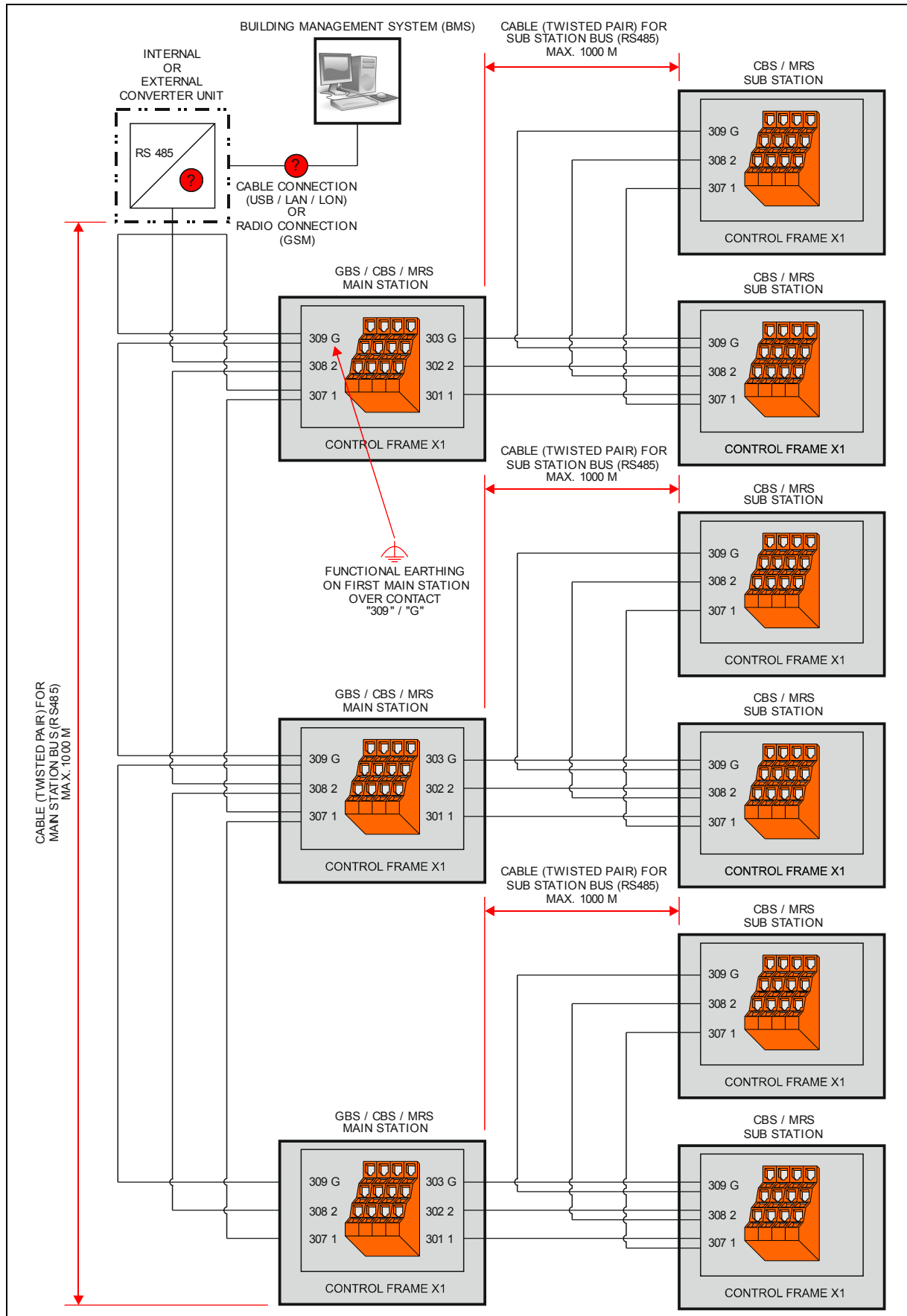
Attention:

CBS/MRS (NZB/NEA): at the main control frame of a sub station the contacts which are designated with "301", "302" and "303" have no function and must not be used.

GBS (NGB): at the main control frame of a main station the contacts which are designated with "301", "302" and "303" must not be used. It is not allowed to cable a sub station bus at NGB systems.

A combination of the main station buses of NGB, NZB and NEA systems is possible. Other combinations are not possible.

- > The main station bus is used for control or monitoring purposes together with additional devices resp. main stations (subscribers).
- > The sub station bus is only used for control or monitoring purposes together with sub stations (subscribers).
- > The main station bus provides no communication exchange between the connected main stations. A bidirectional communication exchange is only possible between other connected devices (converter units) and the main stations (as single subscribers).
- > The sub station bus provides a bidirectional communication exchange between a main station and connected sub stations.
- > Depending on the configuration the handoff point to connect a device resp. subscriber to the main station bus or sub station bus can be located at the terminal clamps of the main control frame or be wired to further terminal clamps inside the switchboard.



Installation step 16 – connection of the I2C bus to the main control frame

- > Every main control frame of a NGB/NZB/NEA system is equipped with an I2C bus.
- > The bus is carried out as an I2C interface.
- > The contacts are designated with "304", "305" and "306".



Attention:

The I2C bus is only used for service purposes and special applications. The contacts "304", "305" and "306" are not intended as a connection for the customer at standard switchboard configurations.

Installation step 17 – connection of the LSSA-K switch inputs

- > Every main control frame of a compact NGB system is equipped with eight LSSA-K switch inputs.
- > The LSSA-K switch contacts for the channels 1 to 4 are carried out as circuits for a switch voltage of 230 V AC/DC.
- > The LSSA-K switch contacts for the channels 5 to 8 are carried out as circuits with a switch voltage of 24 V DC.
- > The contacts are designated with:
 - "911 L" and "912 N" for LSSA-K switch input channel 1.
 - "921 L" and "922 N" for LSSA-K switch input channel 2.
 - "931 L" and "932 N" for LSSA-K switch input channel 3.
 - "941 L" and "942 N" for LSSA-K switch input channel 4.
 - "951 +" and "952 -" for LSSA-K switch input channel 5.
 - "961 +" and "962 -" for LSSA-K switch input channel 6.
 - "971 +" and "972 -" for LSSA-K switch input channel 7.
 - "981 +" and "982 -" for LSSA-K switch input channel 8.
- > The LSSA-K switch inputs can be used for control purposes together with additional devices which can be placed internal or external related to the switchboard.
- > The handoff point to connect a device to the LSSA-K switch inputs is located at the internal terminal clamps of the main control frame.

Properties of the channels 1 to 4:

- > The command uptake for the channels 1 to 4 is binary and done by a connection of a voltage of 230 V AC/DC.
- > The command initiation for the channels 1 to 4 is software controlled and can be influenced by a respective programming.

Properties of the channels 5 to 8:

- > The command uptake for the channels 5 to 8 is binary and done by a low-ohmic contact closing (short circuit).
- > The command initiation for the channels 5 to 8 is software controlled and can be influenced by a respective programming.

Installation step 18 – connection of the output circuits to the control frames

- > The output circuit contacts of every NGB/NZB system are carried out as circuits with supply voltages of 230 V AC resp. 216 V DC depending on the type and switching state of the connected output circuit card.
- > The output circuit contacts of every NEA system are carried out as circuits with supply voltages of 230 V AC depending on the type and switching state of the connected output circuit card.
- > The output circuits are primary used to supply the connected lamps with operating voltages.
- > The output circuits can be secondary used for control and monitoring purposes of the connected lamps together with connected output circuit cards of the type EÜ and additional lamp modules of the types SLEB or ALOG.
- > Connected output circuit cards of the type EÜ provide a single monitoring of lamps with lamp modules by communication over the cable of the output circuit.
- > Connected output circuit cards of the type SÜ provide a circuit monitoring of lamps without communication over the cable of the output circuit.
- > The use of older lamp modules of the types KCE and MEB is also possible under respective technical conditions.
- > The common use of lamp modules of the types SLEB and ALOG together in one emergency light system is not possible.
- > Depending on the configuration the handoff point to connect an output circuit to the control frame can be located at the terminal clamps of the control frame or be wired to further terminal clamps inside the switchboard.



Attention:

Depending on the type of the connected output circuit card the respective output circuits of a NGB/NZB system can provide direct voltages. All connected equipment on these output circuits must be fully suitable for direct voltages regarding emergency light applications.

Depending on the type of the connected output circuit card it can be that the respective terminal clamps are partly not used. Only output circuit cards with four output circuits are using the respective terminal clamps completely. All equipment must be connected according to this.

The slide-in slots on all control frames of a NGB/NZB/NEA system have no mechanical coding against wrong installed cards. All cards must be installed into the respective slide-in slots.

Properties of CBS (NZB) – main control frame:

> Every main control frame of a NZB system is equipped with six slide-in slots for output circuit cards. Every slide-in slot for an output circuit card is equipped with terminal clamps for four output circuits.

> The contacts are designated with:

"111 L+", "112 N-" and "113 PE" for output circuit card 1 (slide-in slot 1) / output circuit 1.
"121 L+", "122 N-" and "123 PE" for output circuit card 1 (slide-in slot 1) / output circuit 2.
"131 L+", "132 N-" and "133 PE" for output circuit card 1 (slide-in slot 1) / output circuit 3.
"141 L+", "142 N-" and "143 PE" for output circuit card 1 (slide-in slot 1) / output circuit 4.

"211 L+", "212 N-" and "213 PE" for output circuit card 2 (slide-in slot 2) / output circuit 1.
"221 L+", "222 N-" and "223 PE" for output circuit card 2 (slide-in slot 2) / output circuit 2.
"231 L+", "232 N-" and "233 PE" for output circuit card 2 (slide-in slot 2) / output circuit 3.
"241 L+", "242 N-" and "243 PE" for output circuit card 2 (slide-in slot 2) / output circuit 4.

"311 L+", "312 N-" and "313 PE" for output circuit card 3 (slide-in slot 3) / output circuit 1.
"321 L+", "322 N-" and "323 PE" for output circuit card 3 (slide-in slot 3) / output circuit 2.
"331 L+", "332 N-" and "333 PE" for output circuit card 3 (slide-in slot 3) / output circuit 3.
"341 L+", "342 N-" and "343 PE" for output circuit card 3 (slide-in slot 3) / output circuit 4.

"411 L+", "412 N-" and "413 PE" for output circuit card 4 (slide-in slot 4) / output circuit 1.
"421 L+", "422 N-" and "423 PE" for output circuit card 4 (slide-in slot 4) / output circuit 2.
"431 L+", "432 N-" and "433 PE" for output circuit card 4 (slide-in slot 4) / output circuit 3.
"441 L+", "442 N-" and "443 PE" for output circuit card 4 (slide-in slot 4) / output circuit 4.

"511 L+", "512 N-" and "513 PE" for output circuit card 5 (slide-in slot 5) / output circuit 1.
"521 L+", "522 N-" and "523 PE" for output circuit card 5 (slide-in slot 5) / output circuit 2.
"531 L+", "532 N-" and "533 PE" for output circuit card 5 (slide-in slot 5) / output circuit 3.
"541 L+", "542 N-" and "543 PE" for output circuit card 5 (slide-in slot 5) / output circuit 4.

"611 L+", "612 N-" and "613 PE" for output circuit card 6 (slide-in slot 6) / output circuit 1.
"621 L+", "622 N-" and "623 PE" for output circuit card 6 (slide-in slot 6) / output circuit 2.
"631 L+", "632 N-" and "633 PE" for output circuit card 6 (slide-in slot 6) / output circuit 3.
"641 L+", "642 N-" and "643 PE" for output circuit card 6 (slide-in slot 6) / output circuit 4.

> Depending on the configuration a maximum of three extension control frames can be connected to a main control frame of a NZB system.

> The main control frame of the NZB system can be maximally operated with an electrical power of 4500 W. The configuration of the used output circuit cards may not lead to an exceedance of this maximum value.

Properties of CBS (NZB) – extension control frames:

> Every extension control frame of a NZB system is equipped with eight slide-in slots for output circuit cards. Every slide-in slot for an output circuit card is equipped with terminal clamps for four output circuits.

> The contacts are designated with:

"111 L+", "112 N-" and "113 PE" for output circuit card 1 (slide-in slot 1) / output circuit 1.
"121 L+", "122 N-" and "123 PE" for output circuit card 1 (slide-in slot 1) / output circuit 2.
"131 L+", "132 N-" and "133 PE" for output circuit card 1 (slide-in slot 1) / output circuit 3.
"141 L+", "142 N-" and "143 PE" for output circuit card 1 (slide-in slot 1) / output circuit 4.

"211 L+", "212 N-" and "213 PE" for output circuit card 2 (slide-in slot 2) / output circuit 1.
"221 L+", "222 N-" and "223 PE" for output circuit card 2 (slide-in slot 2) / output circuit 2.
"231 L+", "232 N-" and "233 PE" for output circuit card 2 (slide-in slot 2) / output circuit 3.
"241 L+", "242 N-" and "243 PE" for output circuit card 2 (slide-in slot 2) / output circuit 4.

"311 L+", "312 N-" and "313 PE" for output circuit card 3 (slide-in slot 3) / output circuit 1.
"321 L+", "322 N-" and "323 PE" for output circuit card 3 (slide-in slot 3) / output circuit 2.
"331 L+", "332 N-" and "333 PE" for output circuit card 3 (slide-in slot 3) / output circuit 3.
"341 L+", "342 N-" and "343 PE" for output circuit card 3 (slide-in slot 3) / output circuit 4.

"411 L+", "412 N-" and "413 PE" for output circuit card 4 (slide-in slot 4) / output circuit 1.
"421 L+", "422 N-" and "423 PE" for output circuit card 4 (slide-in slot 4) / output circuit 2.
"431 L+", "432 N-" and "433 PE" for output circuit card 4 (slide-in slot 4) / output circuit 3.
"441 L+", "442 N-" and "443 PE" for output circuit card 4 (slide-in slot 4) / output circuit 4.

"511 L+", "512 N-" and "513 PE" for output circuit card 5 (slide-in slot 5) / output circuit 1.
"521 L+", "522 N-" and "523 PE" for output circuit card 5 (slide-in slot 5) / output circuit 2.
"531 L+", "532 N-" and "533 PE" for output circuit card 5 (slide-in slot 5) / output circuit 3.
"541 L+", "542 N-" and "543 PE" for output circuit card 5 (slide-in slot 5) / output circuit 4.

"611 L+", "612 N-" and "613 PE" for output circuit card 6 (slide-in slot 6) / output circuit 1.
"621 L+", "622 N-" and "623 PE" for output circuit card 6 (slide-in slot 6) / output circuit 2.
"631 L+", "632 N-" and "633 PE" for output circuit card 6 (slide-in slot 6) / output circuit 3.
"641 L+", "642 N-" and "643 PE" for output circuit card 6 (slide-in slot 6) / output circuit 4.

"711 L+", "712 N-" and "713 PE" for output circuit card 7 (slide-in slot 7) / output circuit 1.
"721 L+", "722 N-" and "723 PE" for output circuit card 7 (slide-in slot 7) / output circuit 2.
"731 L+", "732 N-" and "733 PE" for output circuit card 7 (slide-in slot 7) / output circuit 3.
"741 L+", "742 N-" and "743 PE" for output circuit card 7 (slide-in slot 7) / output circuit 4.

"811 L+", "812 N-" and "813 PE" for output circuit card 8 (slide-in slot 8) / output circuit 1.
"821 L+", "822 N-" and "823 PE" for output circuit card 8 (slide-in slot 8) / output circuit 2.
"831 L+", "832 N-" and "833 PE" for output circuit card 8 (slide-in slot 8) / output circuit 3.
"841 L+", "842 N-" and "843 PE" for output circuit card 8 (slide-in slot 8) / output circuit 4.

> The extension control frame of the NZB system can be maximally operated with an electrical power of 4500 W. The configuration of the used output circuit cards may not lead to an exceedance of this maximum value.

Properties of GBS (NGB) – main control frame:

> Every main control frame of a NGB system is equipped with three slide-in slots for output circuit cards. Every slide-in slot for an output circuit card is equipped with terminal clamps for four output circuits.

> The contacts are designated with:

"311 L+", "312 N-" and "313 PE" for output circuit card 1 (slide-in slot 3) / output circuit 1.
"321 L+", "322 N-" and "323 PE" for output circuit card 1 (slide-in slot 3) / output circuit 2.
"331 L+", "332 N-" and "333 PE" for output circuit card 1 (slide-in slot 3) / output circuit 3.
"341 L+", "342 N-" and "343 PE" for output circuit card 1 (slide-in slot 3) / output circuit 4.

"411 L+", "412 N-" and "413 PE" for output circuit card 2 (slide-in slot 4) / output circuit 1.
"421 L+", "422 N-" and "423 PE" for output circuit card 2 (slide-in slot 4) / output circuit 2.
"431 L+", "432 N-" and "433 PE" for output circuit card 2 (slide-in slot 4) / output circuit 3.
"441 L+", "442 N-" and "443 PE" for output circuit card 2 (slide-in slot 4) / output circuit 4.

"511 L+", "512 N-" and "513 PE" for output circuit card 3 (slide-in slot 5) / output circuit 1.
"521 L+", "522 N-" and "523 PE" for output circuit card 3 (slide-in slot 5) / output circuit 2.
"531 L+", "532 N-" and "533 PE" for output circuit card 3 (slide-in slot 5) / output circuit 3.
"541 L+", "542 N-" and "543 PE" for output circuit card 3 (slide-in slot 5) / output circuit 4.

> Depending on the configuration a maximum of one extension control frame can be connected to a main control frame of a NGB system.

> Configuration WLG 400: the main control frame of the NGB system can be maximally operated with an electrical power of 350 W by the use of one transformer card (WLG). The configuration of the used output circuit cards may not lead to an exceedance of this maximum value. The transformer card (WLG) in slide-in slot 1 supplies the output circuit cards of the slide-in slots 3 to 5.

> Configuration WLG 750: the main control frame of the NGB system can be maximally operated with an electrical power of 750 W by the use of two transformer cards (WLG). The configuration of the used output circuit cards may not lead to an exceedance of this maximum value. The transformer cards (WLG) in the slide-in slots 1 and 2 are supplying the output circuit cards of the slide-in slots 3 to 5.



Attention:

Allowed loads for group battery systems according to EN 50171:

- Maximally 1500 W at 1 hour emergency duration.
- Maximally 500 W at 3 hours emergency duration.

The slide-in slots 1 and 2 are reserved for the use of transformer cards (WLG) at every main control frame of a NGB system.

The slide-in slot 6 is reserved for the use of charger cards (LT) at every main control frame of a NGB system.

Properties of GBS (NGB) – extension control frames:

> Every extension control frame of a NGB system is equipped with six slide-in slots for output circuit cards. Every slide-in slot for an output circuit card is equipped with terminal clamps for four output circuits.

> The contacts are designated with:

"211 L+", "212 N-" and "213 PE" for output circuit card 1 (slide-in slot 2) / output circuit 1.
"221 L+", "222 N-" and "223 PE" for output circuit card 1 (slide-in slot 2) / output circuit 2.
"231 L+", "232 N-" and "233 PE" for output circuit card 1 (slide-in slot 2) / output circuit 3.
"241 L+", "242 N-" and "243 PE" for output circuit card 1 (slide-in slot 2) / output circuit 4.

"311 L+", "312 N-" and "313 PE" for output circuit card 2 (slide-in slot 3) / output circuit 1.
"321 L+", "322 N-" and "323 PE" for output circuit card 2 (slide-in slot 3) / output circuit 2.
"331 L+", "332 N-" and "333 PE" for output circuit card 2 (slide-in slot 3) / output circuit 3.
"341 L+", "342 N-" and "343 PE" for output circuit card 2 (slide-in slot 3) / output circuit 4.

"411 L+", "412 N-" and "413 PE" for output circuit card 3 (slide-in slot 4) / output circuit 1.
"421 L+", "422 N-" and "423 PE" for output circuit card 3 (slide-in slot 4) / output circuit 2.
"431 L+", "432 N-" and "433 PE" for output circuit card 3 (slide-in slot 4) / output circuit 3.
"441 L+", "442 N-" and "443 PE" for output circuit card 3 (slide-in slot 4) / output circuit 4.

"611 L+", "612 N-" and "613 PE" for output circuit card 4 (slide-in slot 6) / output circuit 1.
"621 L+", "622 N-" and "623 PE" for output circuit card 4 (slide-in slot 6) / output circuit 2.
"631 L+", "632 N-" and "633 PE" for output circuit card 4 (slide-in slot 6) / output circuit 3.
"641 L+", "642 N-" and "643 PE" for output circuit card 4 (slide-in slot 6) / output circuit 4.

"711 L+", "712 N-" and "713 PE" for output circuit card 5 (slide-in slot 7) / output circuit 1.
"721 L+", "722 N-" and "723 PE" for output circuit card 5 (slide-in slot 7) / output circuit 2.
"731 L+", "732 N-" and "733 PE" for output circuit card 5 (slide-in slot 7) / output circuit 3.
"741 L+", "742 N-" and "743 PE" for output circuit card 5 (slide-in slot 7) / output circuit 4.

"811 L+", "812 N-" and "813 PE" for output circuit card 6 (slide-in slot 8) / output circuit 1.
"821 L+", "822 N-" and "823 PE" for output circuit card 6 (slide-in slot 8) / output circuit 2.
"831 L+", "832 N-" and "833 PE" for output circuit card 6 (slide-in slot 8) / output circuit 3.
"841 L+", "842 N-" and "843 PE" for output circuit card 6 (slide-in slot 8) / output circuit 4.

> Configuration WLG 400: the extension control frame of the NGB system can be maximally operated with an electrical power of 350 W by the use of one transformer card (WLG). The configuration of the used output circuit cards may not lead to an exceedance of this maximum value. The transformer card (WLG) in slide-in slot 1 supplies the output circuit cards of the slide-in slots 2 to 4.

> Configuration 2x WLG 400: the extension control frame of the NGB system can be maximally operated with an electrical power of 700 W by the use of two transformer cards (WLG). The configuration of the used output circuit cards may not lead to an exceedance of this maximum value. The transformer card (WLG) in slide-in slot 1 supplies the output circuit cards of the slide-in slots 2 to 4. The transformer card (WLG) in slide-in slot 5 supplies the output circuit cards of the slide-in slots 6 to 8.



Attention:

Allowed loads for group battery systems according to EN 50171:

- Maximally 1500 W at 1 hour emergency duration.
- Maximally 500 W at 3 hours emergency duration.

The slide-in slots 1 and 5 are reserved for the use of transformer cards (WLG) at every extension control frame of a NGB system.

Properties of GBS (NGB**-K) – main control frame in compact version:

- > Every main control frame of a compact NGB system is equipped with two slide-in slots for output circuit cards. Every slide-in slot for an output circuit card is equipped with terminal clamps for four output circuits.
- > The contacts are designated with:
 - "111 L+", "112 N-" and "113 PE" for output circuit card 1 (slide-in slot 1) / output circuit 1.
 - "121 L+", "122 N-" and "123 PE" for output circuit card 1 (slide-in slot 1) / output circuit 2.
 - "131 L+", "132 N-" and "133 PE" for output circuit card 1 (slide-in slot 1) / output circuit 3.
 - "141 L+", "142 N-" and "143 PE" for output circuit card 1 (slide-in slot 1) / output circuit 4.
 - "211 L+", "212 N-" and "213 PE" for output circuit card 2 (slide-in slot 2) / output circuit 1.
 - "221 L+", "222 N-" and "223 PE" for output circuit card 2 (slide-in slot 2) / output circuit 2.
 - "231 L+", "232 N-" and "233 PE" for output circuit card 2 (slide-in slot 2) / output circuit 3.
 - "241 L+", "242 N-" and "243 PE" for output circuit card 2 (slide-in slot 2) / output circuit 4.
- > No extension control frames can be connected to a main control frame of a compact NGB system.
- > Configuration WLG 400: the extension control frame of the compact NGB system can be maximally operated with an electrical power of 350 W by the use of one transformer card (WLG). The configuration of the used output circuit cards may not lead to an exceedance of this maximum value. The transformer card (WLG) in slide-in slot 3 supplies the output circuit cards of the slide-in slots 1 to 2.



Attention:

Allowed loads for group battery systems according to EN 50171:

- Maximally 1500 W at 1 hour emergency duration.
- Maximally 500 W at 3 hours emergency duration.

The slide-in slot 3 is reserved for the use of transformer cards (WLG) at every main control frame of a compact NGB system.

The slide-in slot 4 which is located behind the display unit is reserved for the use of charger cards (LT) at every main control frame of a compact NGB system.

Properties of MRS (NEA) – main control frame:

> Every main control frame of a NEA system is equipped with three slide-in slots for output circuit cards. Every slide-in slot for an output circuit card is equipped with terminal clamps for four output circuits.

> The contacts are designated with:

"311 L", "312 N" and "313 PE" for output circuit card 1 (slide-in slot 3) / output circuit 1.
"321 L", "322 N" and "323 PE" for output circuit card 1 (slide-in slot 3) / output circuit 2.
"331 L", "332 N" and "333 PE" for output circuit card 1 (slide-in slot 3) / output circuit 3.
"341 L", "342 N" and "343 PE" for output circuit card 1 (slide-in slot 3) / output circuit 4.

"411 L", "412 N" and "413 PE" for output circuit card 2 (slide-in slot 4) / output circuit 1.
"421 L", "422 N" and "423 PE" for output circuit card 2 (slide-in slot 4) / output circuit 2.
"431 L", "432 N" and "433 PE" for output circuit card 2 (slide-in slot 4) / output circuit 3.
"441 L", "442 N" and "443 PE" for output circuit card 2 (slide-in slot 4) / output circuit 4.

"511 L", "512 N" and "513 PE" for output circuit card 3 (slide-in slot 5) / output circuit 1.
"521 L", "522 N" and "523 PE" for output circuit card 3 (slide-in slot 5) / output circuit 2.
"531 L", "532 N" and "533 PE" for output circuit card 3 (slide-in slot 5) / output circuit 3.
"541 L", "542 N" and "543 PE" for output circuit card 3 (slide-in slot 5) / output circuit 4.

> Depending on the configuration a maximum of three extension control frames can be connected to a main control frame of a NEA system.

> The main control frame of the NEA system can be maximally operated with an electrical power of 4500 W. The configuration of the used output circuit cards may not lead to an exceedance of this maximum value.



Attention:

The slide-in slots 1 and 2 are reserved for the use of battery cards (BK) at every main control frame of a NEA system. For this the control frame port of the slide-in slot 1 is occupied and the control frame port of the slide-in slot 2 is not occupied.

The slide-in slot 6 is reserved for the use of charger cards (LT) at every main control frame of a NEA system.

Properties of MRS (NEA) – extension control frames:

> Every extension control frame of a NEA system is equipped with eight slide-in slots for output circuit cards. Every slide-in slot for an output circuit card is equipped with terminal clamps for four output circuits.

> The contacts are designated with:

"111 L", "112 N" and "113 PE" for output circuit card 1 (slide-in slot 1) / output circuit 1.
"121 L", "122 N" and "123 PE" for output circuit card 1 (slide-in slot 1) / output circuit 2.
"131 L", "132 N" and "133 PE" for output circuit card 1 (slide-in slot 1) / output circuit 3.
"141 L", "142 N" and "143 PE" for output circuit card 1 (slide-in slot 1) / output circuit 4.

"211 L", "212 N" and "213 PE" for output circuit card 2 (slide-in slot 2) / output circuit 1.
"221 L", "222 N" and "223 PE" for output circuit card 2 (slide-in slot 2) / output circuit 2.
"231 L", "232 N" and "233 PE" for output circuit card 2 (slide-in slot 2) / output circuit 3.
"241 L", "242 N" and "243 PE" for output circuit card 2 (slide-in slot 2) / output circuit 4.

"311 L", "312 N" and "313 PE" for output circuit card 3 (slide-in slot 3) / output circuit 1.
"321 L", "322 N" and "323 PE" for output circuit card 3 (slide-in slot 3) / output circuit 2.
"331 L", "332 N" and "333 PE" for output circuit card 3 (slide-in slot 3) / output circuit 3.
"341 L", "342 N" and "343 PE" for output circuit card 3 (slide-in slot 3) / output circuit 4.

"411 L", "412 N" and "413 PE" for output circuit card 4 (slide-in slot 4) / output circuit 1.
"421 L", "422 N" and "423 PE" for output circuit card 4 (slide-in slot 4) / output circuit 2.
"431 L", "432 N" and "433 PE" for output circuit card 4 (slide-in slot 4) / output circuit 3.
"441 L", "442 N" and "443 PE" for output circuit card 4 (slide-in slot 4) / output circuit 4.

"511 L", "512 N" and "513 PE" for output circuit card 5 (slide-in slot 5) / output circuit 1.
"521 L", "522 N" and "523 PE" for output circuit card 5 (slide-in slot 5) / output circuit 2.
"531 L", "532 N" and "533 PE" for output circuit card 5 (slide-in slot 5) / output circuit 3.
"541 L", "542 N" and "543 PE" for output circuit card 5 (slide-in slot 5) / output circuit 4.

"611 L", "612 N" and "613 PE" for output circuit card 6 (slide-in slot 6) / output circuit 1.
"621 L", "622 N" and "623 PE" for output circuit card 6 (slide-in slot 6) / output circuit 2.
"631 L", "632 N" and "633 PE" for output circuit card 6 (slide-in slot 6) / output circuit 3.
"641 L", "642 N" and "643 PE" for output circuit card 6 (slide-in slot 6) / output circuit 4.

"711 L", "712 N" and "713 PE" for output circuit card 7 (slide-in slot 7) / output circuit 1.
"721 L", "722 N" and "723 PE" for output circuit card 7 (slide-in slot 7) / output circuit 2.
"731 L", "732 N" and "733 PE" for output circuit card 7 (slide-in slot 7) / output circuit 3.
"741 L", "742 N" and "743 PE" for output circuit card 7 (slide-in slot 7) / output circuit 4.

"811 L", "812 N" and "813 PE" for output circuit card 8 (slide-in slot 8) / output circuit 1.
"821 L", "822 N" and "823 PE" for output circuit card 8 (slide-in slot 8) / output circuit 2.
"831 L", "832 N" and "833 PE" for output circuit card 8 (slide-in slot 8) / output circuit 3.
"841 L", "842 N" and "843 PE" for output circuit card 8 (slide-in slot 8) / output circuit 4.

> The extension control frame of the NEA system can be maximally operated with an electrical power of 4500 W. The configuration of the used output circuit cards may not lead to an exceedance of this maximum value.

Installation step 19 – retorquing and check of electrical connections

After all electrical connections are finished a retorquing of all screwable connections must be done. Thereupon all electrical connections must be check for proper execution.

Equipment layout, equipment descriptions

Equipment layout:

There are standardly two colour layouts available regarding equipment with an outer housing and equipment with parts of an outer housing.

SLEB layout:



> The standard colours of a NGB/NZB/NEA system with SLEB software are:

Light grey RAL 7035 for the switchboards.

Black/red for the devices.

ALOG layout:



> The standard colours of a NGB/NZB/NEA system with ALOG software are:

Brilliant blue RAL 5007 for the switchboards.

White/blue for the devices.



Attention:

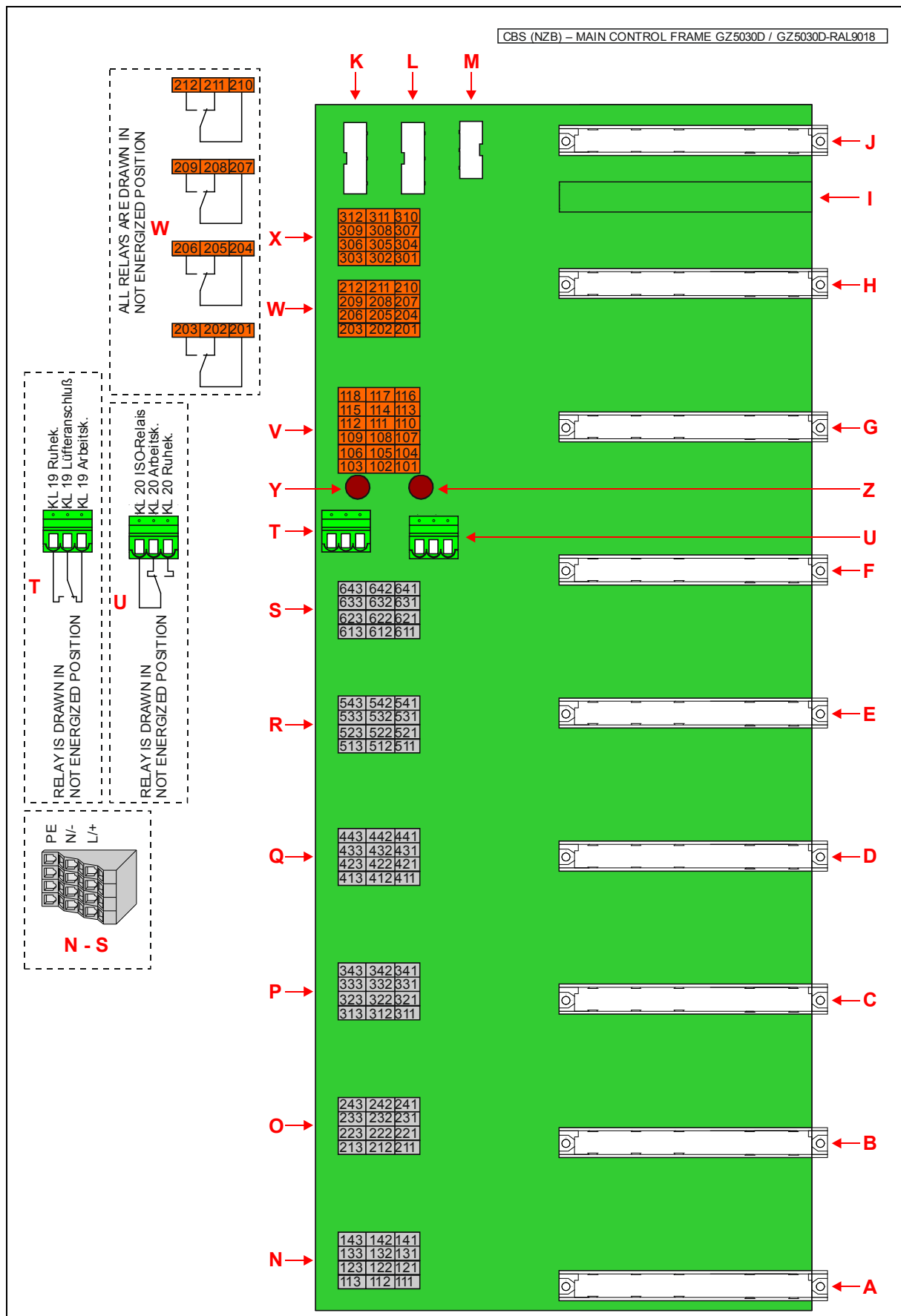
The above mentioned coherences regarding the colour layouts and the used software types are only related to standard switchboard configurations. Upon request switchboards and devices with SLEB layout are available with ALOG software and switchboards and devices with ALOG layout are available with SLEB software. Because of this the layout of the equipment is no indication for the used software type. The software type as well as the software version can be identified on the display unit during operation of the NGB/NZB/NEA system.

Equipment descriptions:

The following descriptions are referring to the basic functionalities and properties of the equipment. All pictured device drawings of equipment are reduced in the degree of detail. A unique assignment is possible over the mentioned order number.

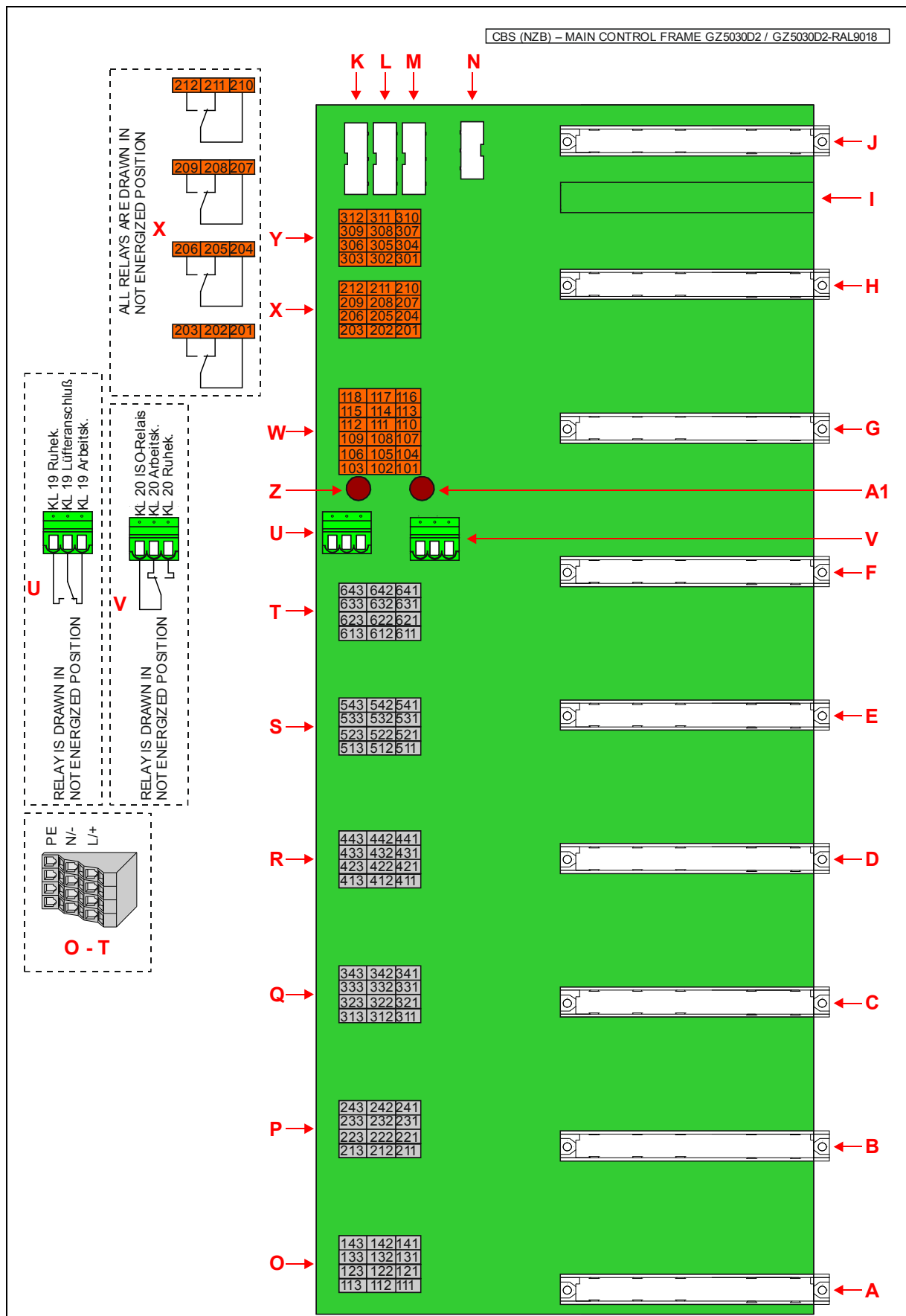
CBS (NZB) – main control frame GZ5030D / GZ5030D-RAL9018

"A":	slide-in slot 1 for output circuit card 1
"B":	slide-in slot 2 for output circuit card 2
"C":	slide-in slot 3 for output circuit card 3
"D":	slide-in slot 4 for output circuit card 4
"E":	slide-in slot 5 for output circuit card 5
"F":	slide-in slot 6 for output circuit card 6
"G":	slide-in slot 7 for DC/DC converter card WDL
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	extension frame port "AKs"
"L":	LSSA port "LSSA"
"M":	service port "externer Bus"
"N":	terminal clamps for output circuit card 1 (slide-in slot 1)
"O":	terminal clamps for output circuit card 2 (slide-in slot 2)
"P":	terminal clamps for output circuit card 3 (slide-in slot 3)
"Q":	terminal clamps for output circuit card 4 (slide-in slot 4)
"R":	terminal clamps for output circuit card 5 (slide-in slot 5)
"S":	terminal clamps for output circuit card 6 (slide-in slot 6)
"T":	terminal clamp for control contact "blower"
"U":	terminal clamp for message contact "insulation fault"
"V":	terminal clamps for device supply voltages, critical circuit and switch inputs
"W":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
"X":	terminal clamps for station buses and I2C bus
"Y":	fuse for device supply voltage – voltage source: "MST", voltage level: 15 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)
"Z":	fuse for device supply voltage – voltage source: "MST", voltage level: 24 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)



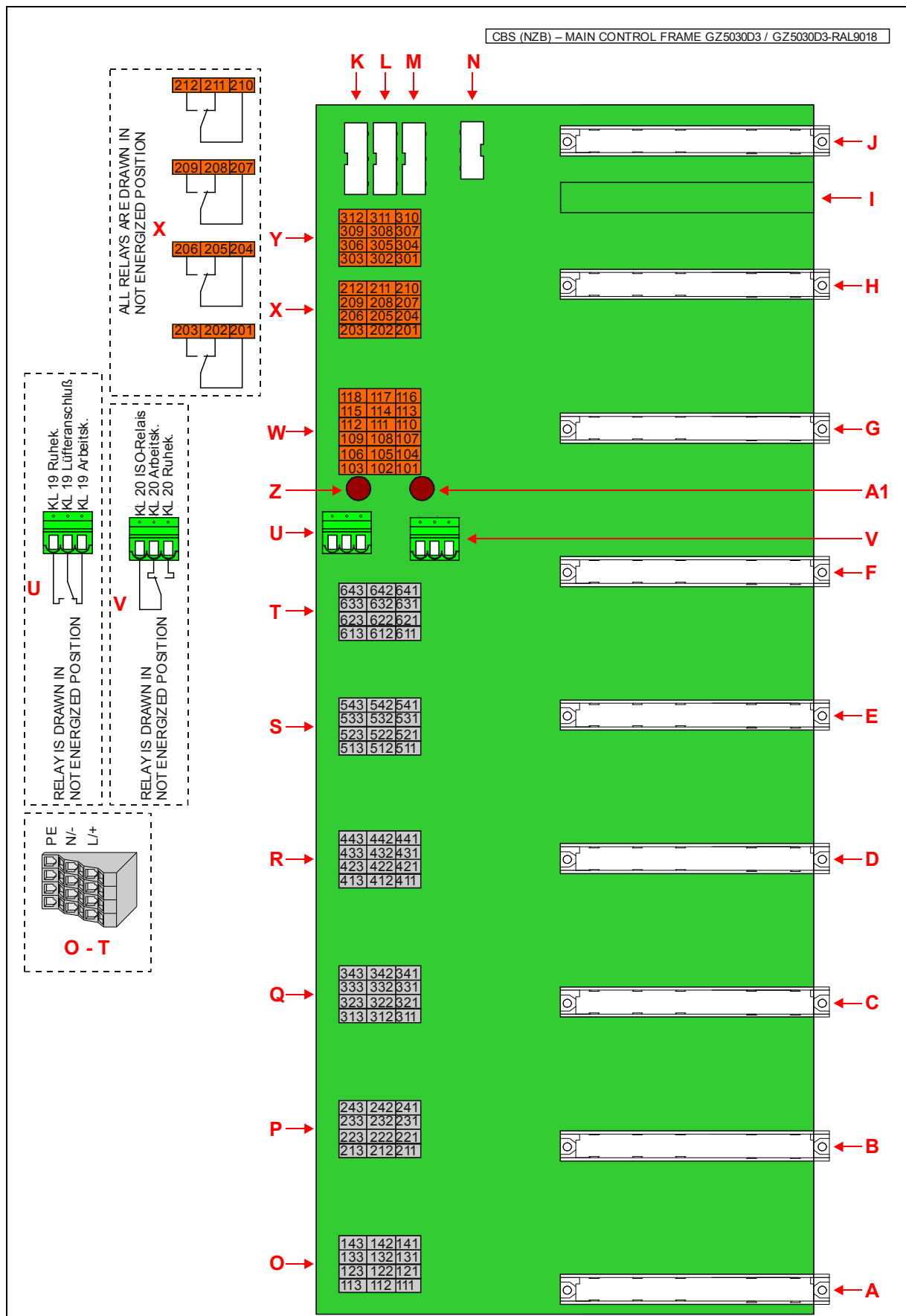
CBS (NZB) – main control frame GZ5030D2 / GZ5030D2-RAL9018

"A":	slide-in slot 1 for output circuit card 1
"B":	slide-in slot 2 for output circuit card 2
"C":	slide-in slot 3 for output circuit card 3
"D":	slide-in slot 4 for output circuit card 4
"E":	slide-in slot 5 for output circuit card 5
"F":	slide-in slot 6 for output circuit card 6
"G":	slide-in slot 7 for DC/DC converter card WDL
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	charger frame port "LT"
"L":	extension frame port "AKs"
"M":	LSSA port "LSSA"
"N":	service port "externer Bus"
"O":	terminal clamps for output circuit card 1 (slide-in slot 1)
"P":	terminal clamps for output circuit card 2 (slide-in slot 2)
"Q":	terminal clamps for output circuit card 3 (slide-in slot 3)
"R":	terminal clamps for output circuit card 4 (slide-in slot 4)
"S":	terminal clamps for output circuit card 5 (slide-in slot 5)
"T":	terminal clamps for output circuit card 6 (slide-in slot 6)
"U":	terminal clamp for control contact "blower"
"V":	terminal clamp for message contact "insulation fault"
"W":	terminal clamps for device supply voltages, critical circuit and switch inputs
"X":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
"Y":	terminal clamps for station buses and I2C bus
"Z":	fuse for device supply voltage – voltage source: "MST", voltage level: 15 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)
"A1":	fuse for device supply voltage – voltage source: "MST", voltage level: 24 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)



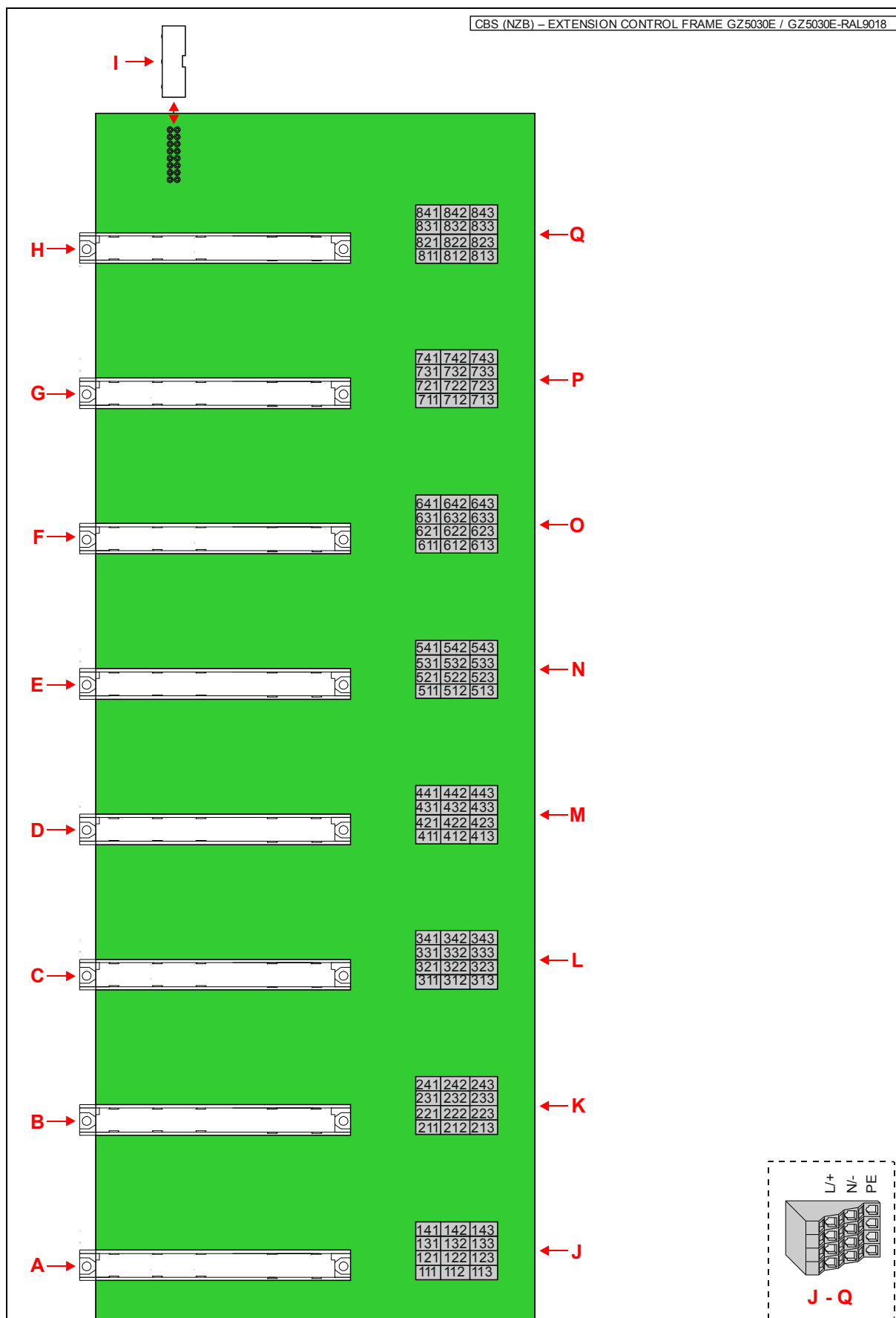
CBS (NZB) – main control frame GZ5030D3 / GZ5030D3-RAL9018

"A":	slide-in slot 1 for output circuit card 1
"B":	slide-in slot 2 for output circuit card 2
"C":	slide-in slot 3 for output circuit card 3
"D":	slide-in slot 4 for output circuit card 4
"E":	slide-in slot 5 for output circuit card 5
"F":	slide-in slot 6 for output circuit card 6
"G":	slide-in slot 7 for DC/DC converter card WDL
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	charger frame port "LT"
"L":	extension frame port "AKs"
"M":	LSSA port "LSSA"
"N":	service port "externer Bus"
"O":	terminal clamps for output circuit card 1 (slide-in slot 1)
"P":	terminal clamps for output circuit card 2 (slide-in slot 2)
"Q":	terminal clamps for output circuit card 3 (slide-in slot 3)
"R":	terminal clamps for output circuit card 4 (slide-in slot 4)
"S":	terminal clamps for output circuit card 5 (slide-in slot 5)
"T":	terminal clamps for output circuit card 6 (slide-in slot 6)
"U":	terminal clamp for control contact "blower"
"V":	terminal clamp for message contact "insulation fault"
"W":	terminal clamps for device supply voltages, critical circuit and switch inputs
"X":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
"Y":	terminal clamps for station buses and I2C bus
"Z":	fuse for device supply voltage – voltage source: "MST-U24", voltage level: 24 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)
"A1":	fuse for device supply voltage – voltage sources: "U24" and "MST", voltage level: 24 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)



CBS (NZB) – extension control frame GZ5030E / GZ5030E-RAL9018
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"A": slide-in slot 1 for output circuit card 1
"B": slide-in slot 2 for output circuit card 2
"C": slide-in slot 3 for output circuit card 3
"D": slide-in slot 4 for output circuit card 4
"E": slide-in slot 5 for output circuit card 5
"F": slide-in slot 6 for output circuit card 6
"G": slide-in slot 7 for output circuit card 7
"H": slide-in slot 8 for output circuit card 8
"I": extension frame port "AKs" (backside)
"J": terminal clamps for output circuit card 1 (slide-in slot 1)
"K": terminal clamps for output circuit card 2 (slide-in slot 2)
"L": terminal clamps for output circuit card 3 (slide-in slot 3)
"M": terminal clamps for output circuit card 4 (slide-in slot 4)
"N": terminal clamps for output circuit card 5 (slide-in slot 5)
"O": terminal clamps for output circuit card 6 (slide-in slot 6)
"P": terminal clamps for output circuit card 7 (slide-in slot 7)
"Q": terminal clamps for output circuit card 8 (slide-in slot 8)

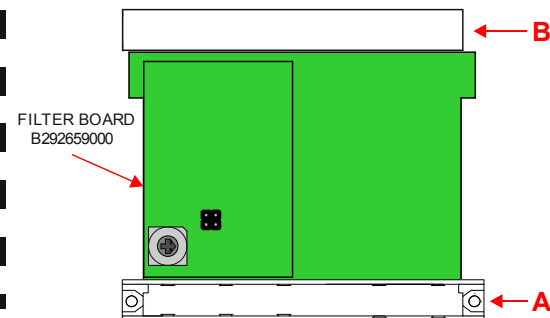
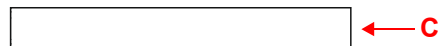
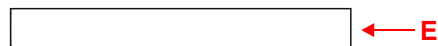
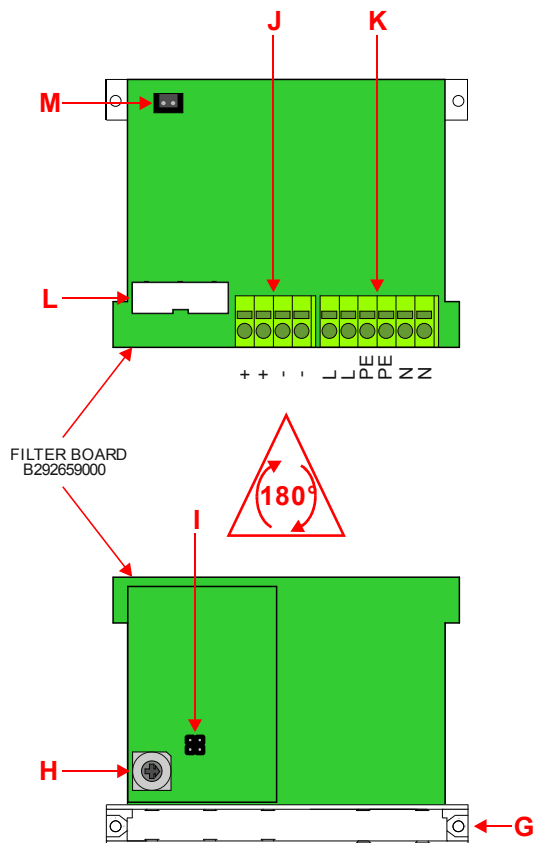
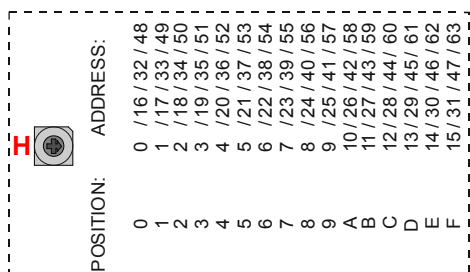
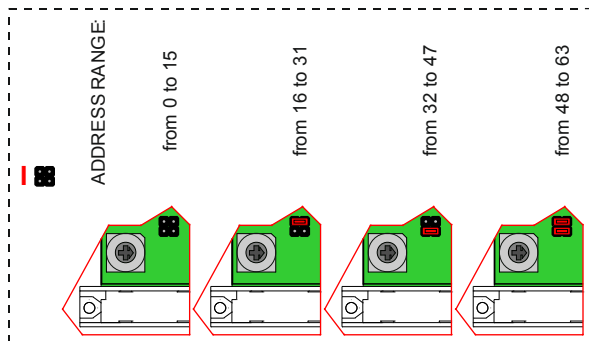


CBS (NZB) – charger control frame GZ5030H / GZ5030H-RAL9018
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"A": slide-in slot 1 for charger card 1
"B": slide-in slot 2 for charger card 2
"C": slide-in slot 3 for charger card 3
"D": slide-in slot 4 for charger card 4
"E": slide-in slot 5 for charger card 5
"F": slide-in slot 6 for charger card 6
"G": control frame port
"H": rotary switch for charger card address
"I": jumpers for address ranges
"J": terminal clamp for battery supply
"K": terminal clamp for mains supply
"L": charger frame port "LT"
"M": terminal socket for temperature sensor

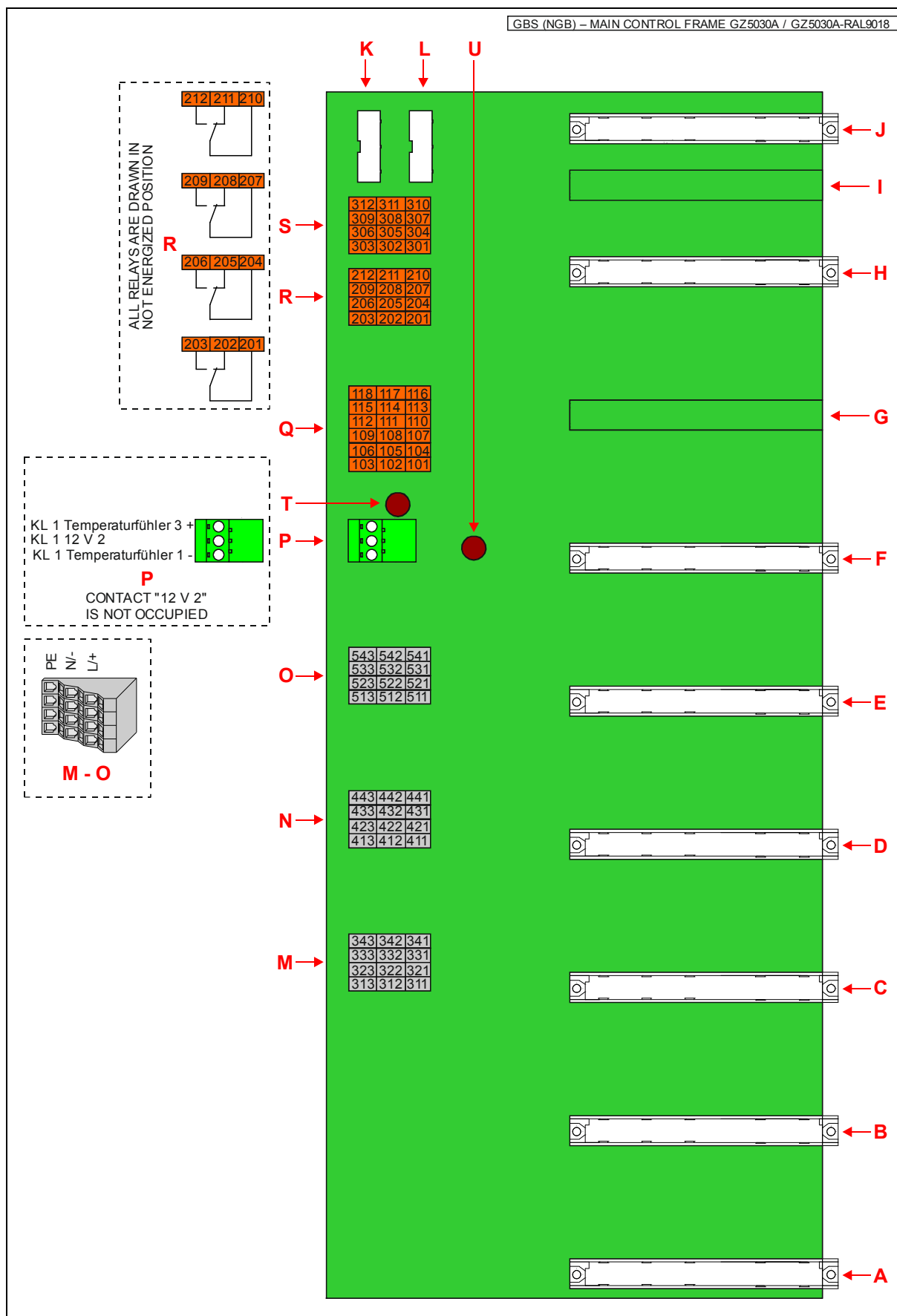
CBS (NZB) – CHARGER CONTROL FRAME GZ5030H / GZ5030H-RAL9018

Filter board: B292659000
Installed quantity: 1 filter board
Maximum quantity: 6 filter boards



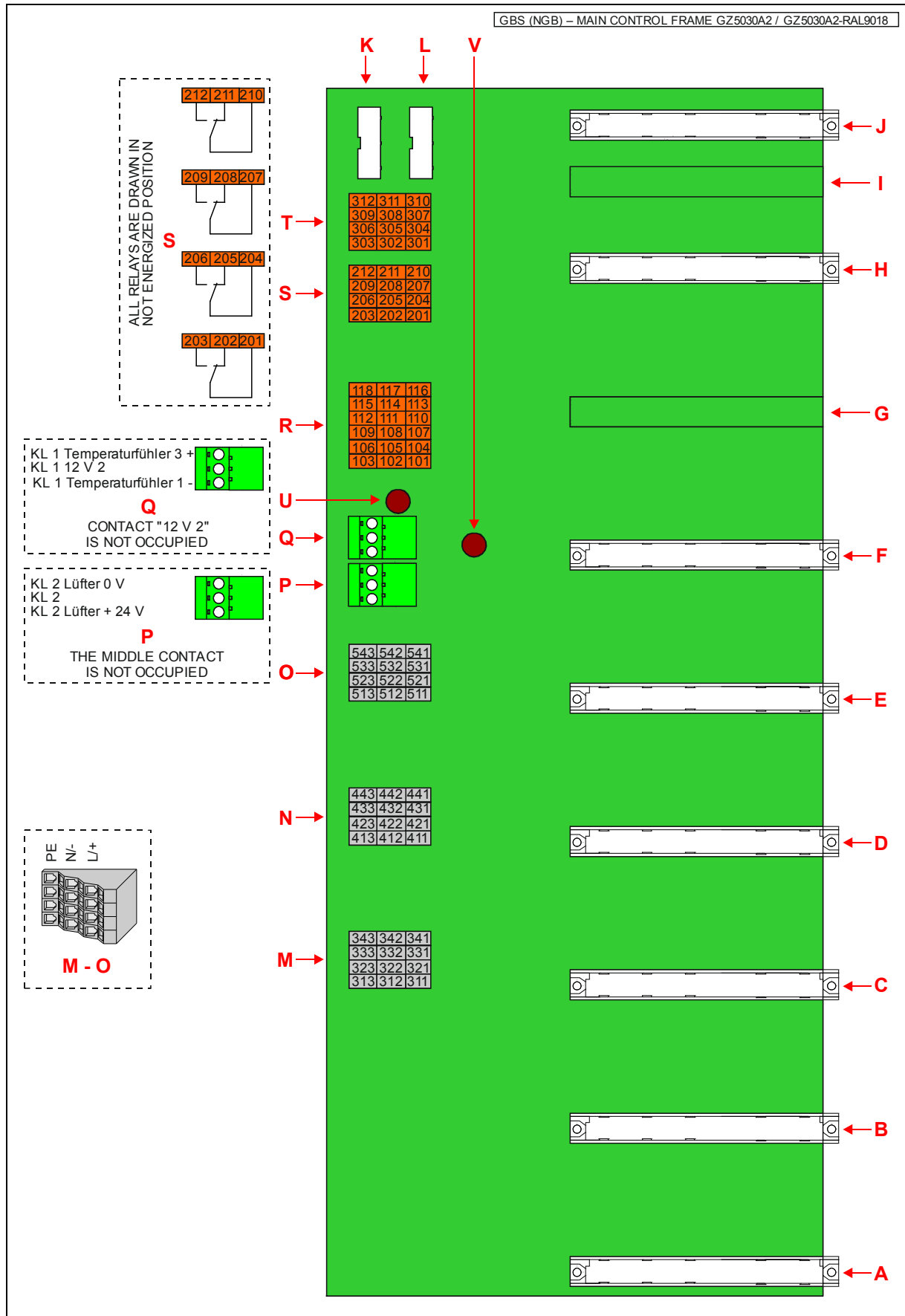
GBS (NGB) – main control frame GZ5030A / GZ5030A-RAL9018

"A":	slide-in slot 1 for transformer cards WLG
"B":	slide-in slot 2 for transformer cards WLG
"C":	slide-in slot 3 for output circuit card 1
"D":	slide-in slot 4 for output circuit card 2
"E":	slide-in slot 5 for output circuit card 3
"F":	slide-in slot 6 for charger cards LT
"G":	slide-in slot 7 for support card
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	extension frame port "AKs"
"L":	LSSA port "LSSA"
"M":	terminal clamps for output circuit card 1 (slide-in slot 3)
"N":	terminal clamps for output circuit card 2 (slide-in slot 4)
"O":	terminal clamps for output circuit card 3 (slide-in slot 5)
"P":	terminal clamp for measure contact "temperature sensor"
"Q":	terminal clamps for device supply voltages, critical circuit and switch inputs
"R":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
"S":	terminal clamps for station buses and I2C bus
"T":	fuse for device supply voltage – voltage source: "MST", voltage level: 24 V DC, fuse values: 250 V / 1000 mA / time lag (T 1A 250V)
"U":	fuse for extension purposes (not used) fuse values: 250 V / 1000 mA / time lag (T 1A 250V)



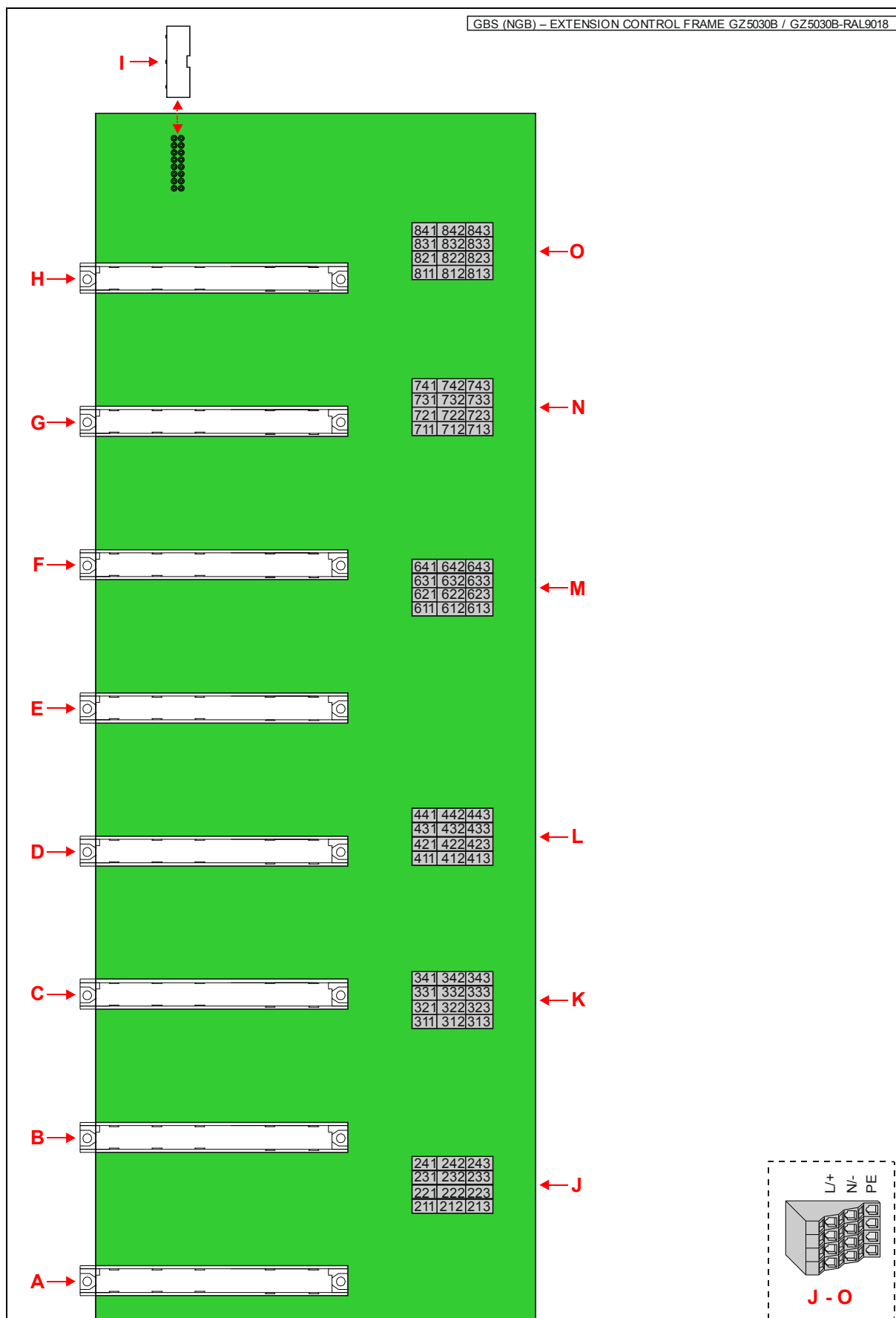
GBS (NGB) – main control frame GZ5030A2 / GZ5030A2-RAL9018

"A":	slide-in slot 1 for transformer cards WLG
"B":	slide-in slot 2 for transformer cards WLG
"C":	slide-in slot 3 for output circuit card 1
"D":	slide-in slot 4 for output circuit card 2
"E":	slide-in slot 5 for output circuit card 3
"F":	slide-in slot 6 for charger cards LT
"G":	slide-in slot 7 for support card
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	extension frame port "AKs"
"L":	LSSA port "LSSA"
"M":	terminal clamps for output circuit card 1 (slide-in slot 3)
"N":	terminal clamps for output circuit card 2 (slide-in slot 4)
"O":	terminal clamps for output circuit card 3 (slide-in slot 5)
"P":	terminal clamp for control contact "blower"
"Q":	terminal clamp for measure contact "temperature sensor"
"R":	terminal clamps for device supply voltages, critical circuit and switch inputs
"S":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
"T":	terminal clamps for station buses and I2C bus
"U":	fuse for device supply voltage – voltage source: "MST", voltage level: 24 V DC, fuse values: 250 V / 1000 mA / time lag (T 1A 250V)
"V":	fuse for control contact "blower", fuse values: 250 V / 1000 mA / time lag (T 1A 250V)



GBS (NGB) – extension control frame GZ5030B / GZ5030B-RAL9018
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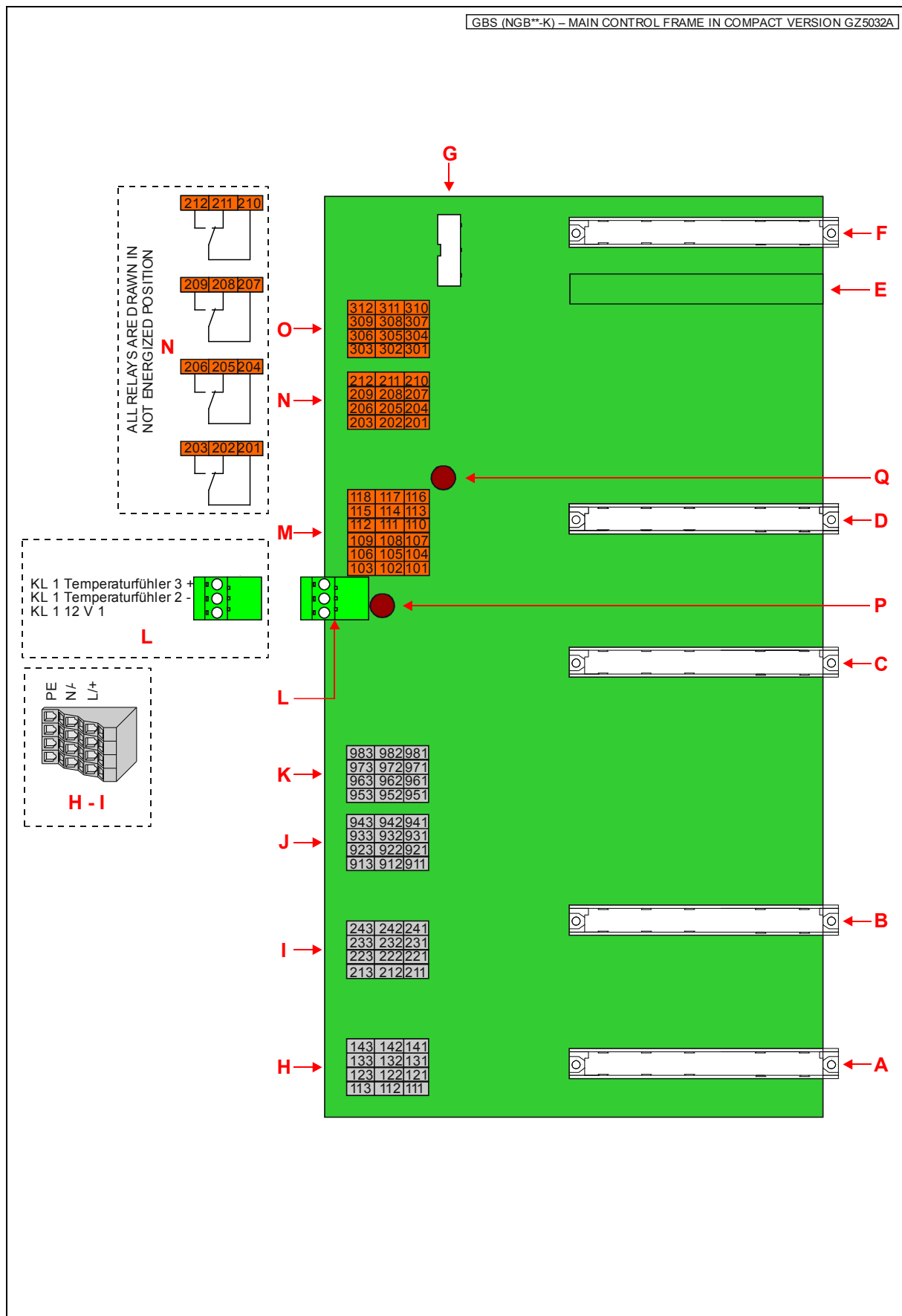
"A": slide-in slot 1 for transformer cards WLG
"B": slide-in slot 2 for output circuit card 1
"C": slide-in slot 3 for output circuit card 2
"D": slide-in slot 4 for output circuit card 3
"E": slide-in slot 5 for transformer cards WLG
"F": slide-in slot 6 for output circuit card 4
"G": slide-in slot 7 for output circuit card 5
"H": slide-in slot 8 for output circuit card 6
"I": extension frame port "AKs" (backside)
"J": terminal clamps for output circuit card 1 (slide-in slot 2)
"K": terminal clamps for output circuit card 2 (slide-in slot 3)
"L": terminal clamps for output circuit card 3 (slide-in slot 4)
"M": terminal clamps for output circuit card 4 (slide-in slot 6)
"N": terminal clamps for output circuit card 5 (slide-in slot 7)
"O": terminal clamps for output circuit card 6 (slide-in slot 8)



GBS (NGB**-K) – main control frame in compact version GZ5032A
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"A":	slide-in slot 1 for output circuit card 1
"B":	slide-in slot 2 for output circuit card 2
"C":	slide-in slot 3 for transformer cards WLG
"D":	slide-in slot 4 for charger cards LT
"E":	slide-in slot 5 for shielding card
"F":	slide-in slot 6 for CPU card
"G":	LSSA port "LSSA"
"H":	terminal clamps for output circuit card 1 (slide-in slot 1)
"I":	terminal clamps for output circuit card 2 (slide-in slot 2)
"J":	terminal clamps for LSSA-K switch inputs – channels 1 to 4 (230 V AC/DC)
"K":	terminal clamps for LSSA-K switch inputs – channels 5 to 8 (24 V DC)
"L":	terminal clamps for measure contact "temperature sensor" and battery middle tapping
"M":	terminal clamps for device supply voltages, critical circuit and switch inputs
"N":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
"O":	terminal clamps for station buses and I2C bus
"P":	fuse for battery middle tapping, fuse values: 250 V / 200 mA / time lag (T 0,2A 250V)
"Q":	fuse for device supply voltage – voltage source: "MST", voltage level: 24 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)

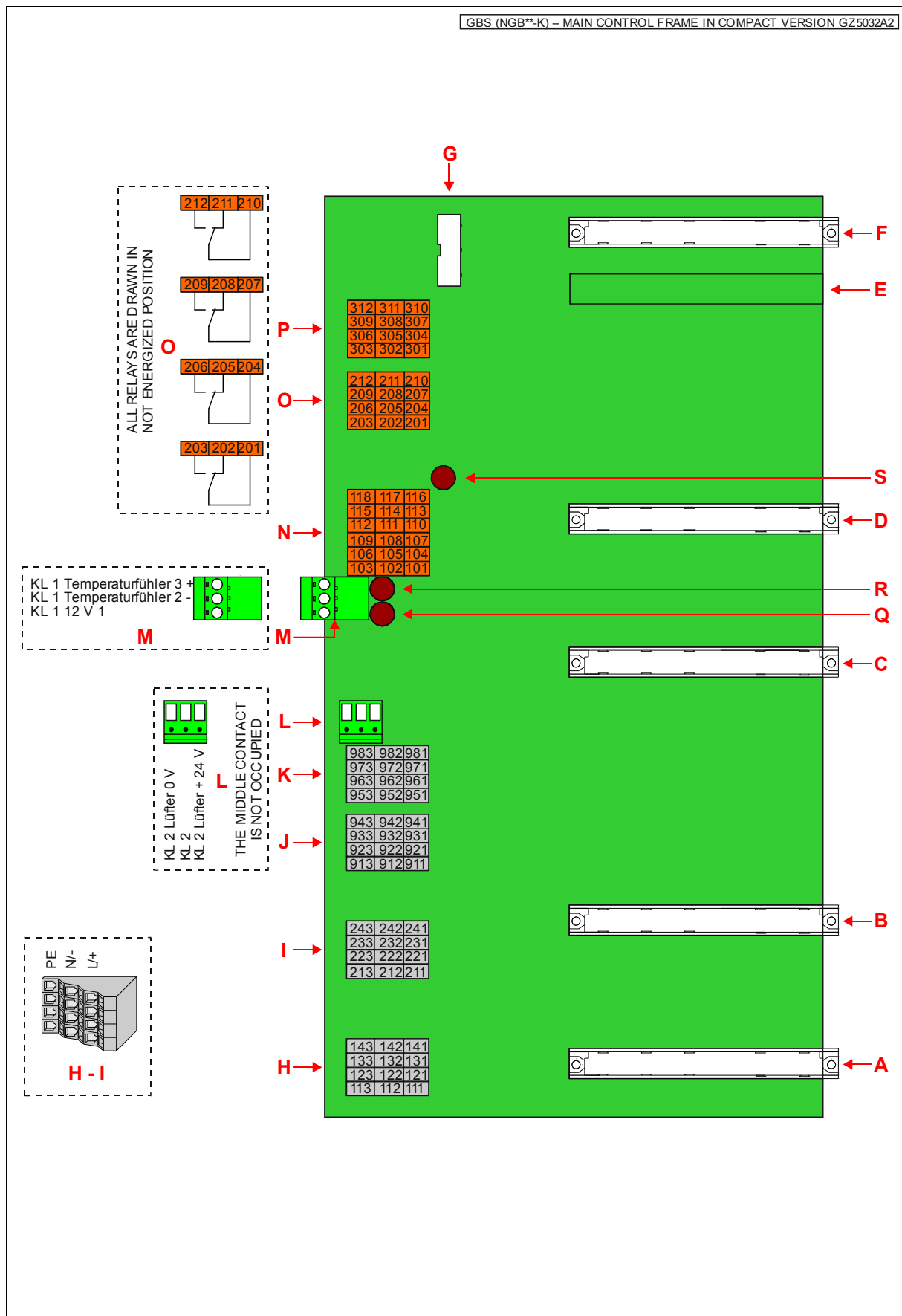
GBS (NGB**K) – MAIN CONTROL FRAME IN COMPACT VERSION GZ5032A



GBS (NGB**-K) – main control frame in compact version GZ5032A2

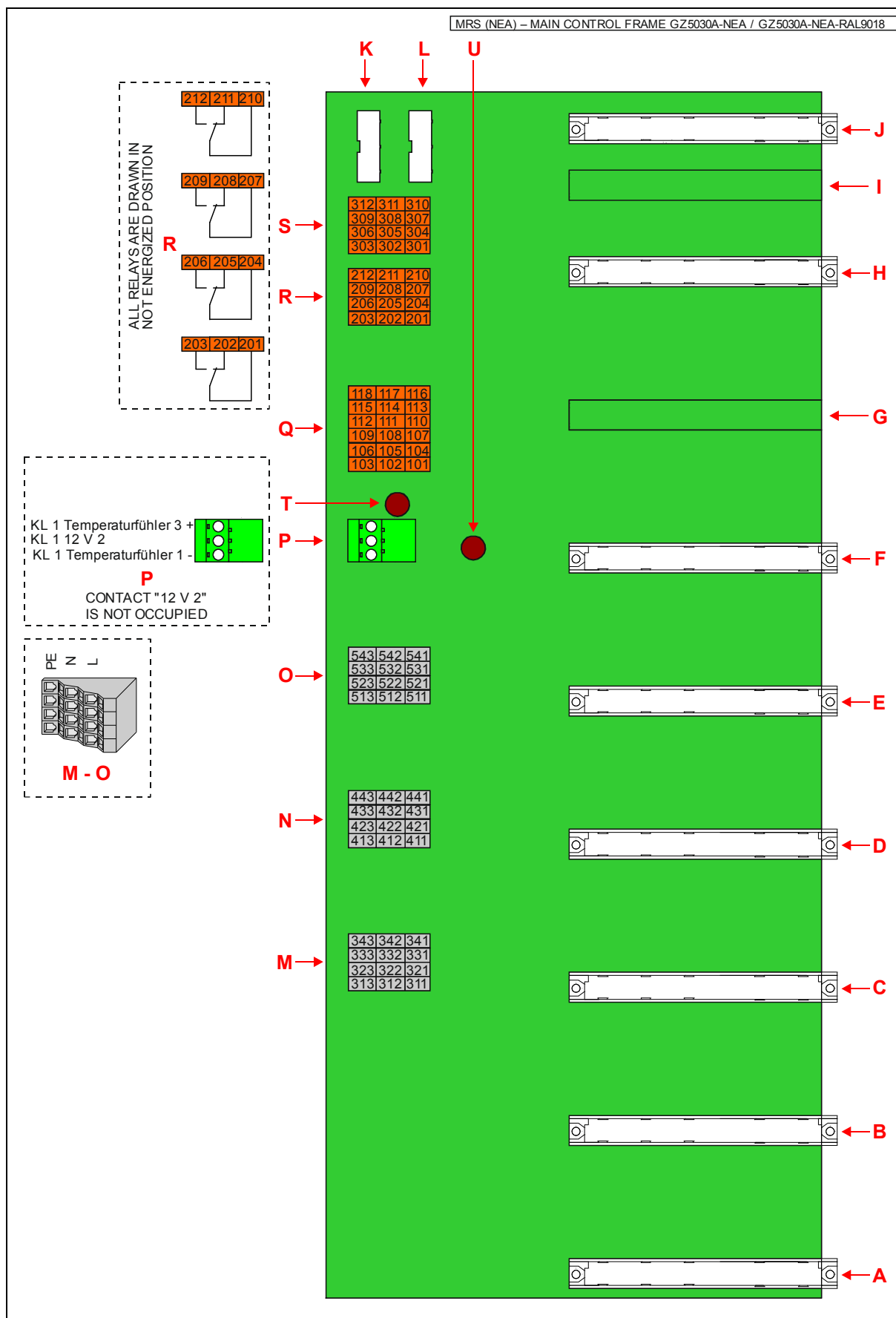
- "A": slide-in slot 1 for output circuit card 1
- "B": slide-in slot 2 for output circuit card 2
- "C": slide-in slot 3 for transformer cards WLG
- "D": slide-in slot 4 for charger cards LT
- "E": slide-in slot 5 for shielding card
- "F": slide-in slot 6 for CPU card
- "G": LSSA port "LSSA"
- "H": terminal clamps for output circuit card 1 (slide-in slot 1)
- "I": terminal clamps for output circuit card 2 (slide-in slot 2)
- "J": terminal clamps for LSSA-K switch inputs – channels 1 to 4 (230 V AC/DC)
- "K": terminal clamps for LSSA-K switch inputs – channels 5 to 8 (24 V DC)
- "L": terminal clamp for control contact "blower"
- "M": terminal clamps for measure contact "temperature sensor" and battery middle tapping
- "N": terminal clamps for device supply voltages, critical circuit and switch inputs
- "O": terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
- "P": terminal clamps for station buses and I2C bus
- "Q": fuse for battery middle tapping,
fuse values: 250 V / 125 mA / time lag (T 0,125A 250V)
- "R": fuse for device supply voltage – voltage source: "MST",
voltage level: 24 V DC, fuse values: 250 V / 200 mA / time lag (T 0,2A 250V)
- "S": fuse for device supply voltage and control contact "blower" –
voltage source: "U24", voltage level: 24 V DC,
fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)

GBS (NGB**K) – MAIN CONTROL FRAME IN COMPACT VERSION GZ5032A2



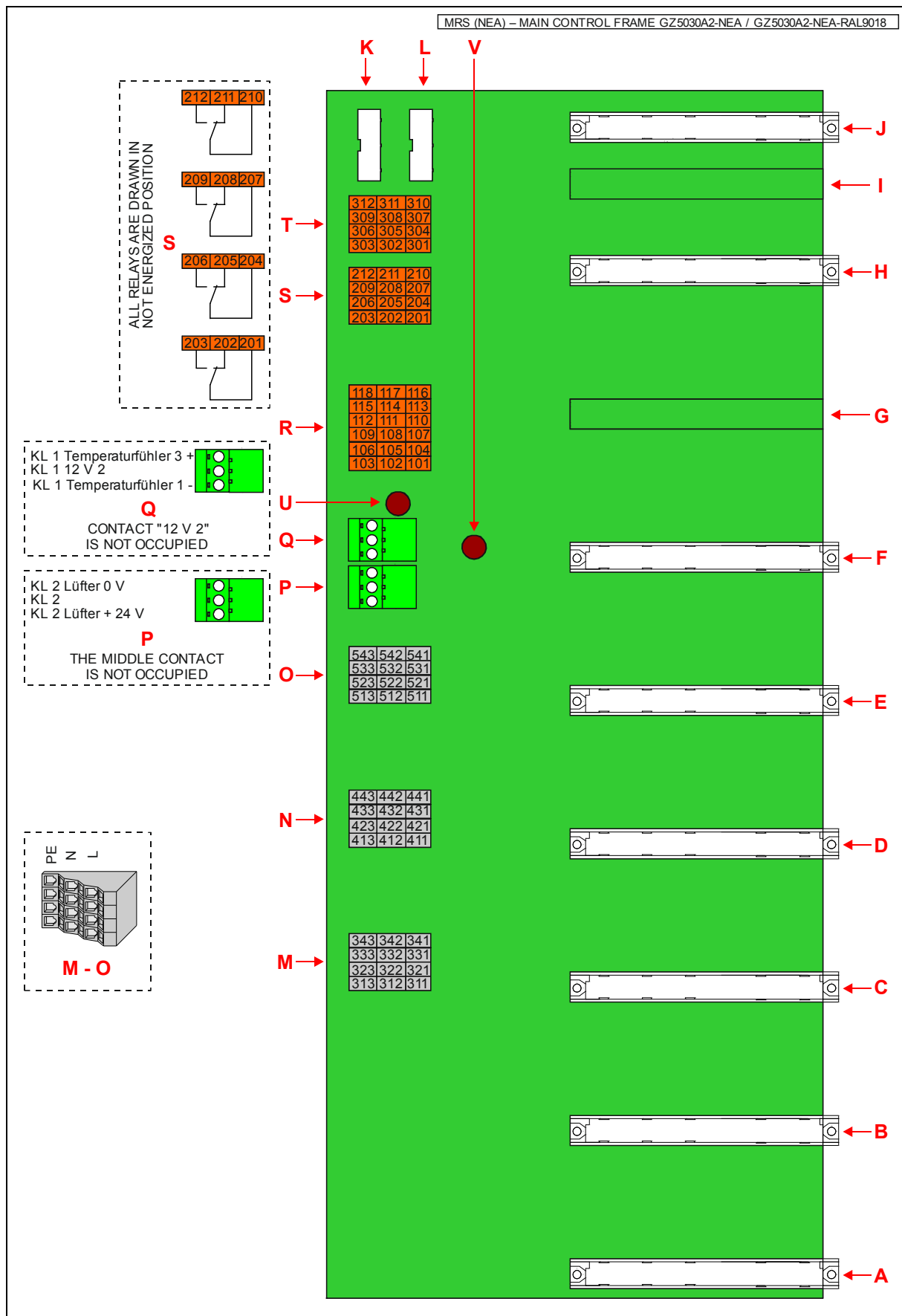
MRS (NEA) – main control frame GZ5030A-NEA / GZ5030A-NEA-RAL9018

"A":	slide-in slot 1 for battery cards BK
"B":	slide-in slot 2 for battery cards BK
"C":	slide-in slot 3 for output circuit card 1
"D":	slide-in slot 4 for output circuit card 2
"E":	slide-in slot 5 for output circuit card 3
"F":	slide-in slot 6 for charger cards LT
"G":	slide-in slot 7 for support card
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	extension frame port "AKs"
"L":	LSSA port "LSSA"
"M":	terminal clamps for output circuit card 1 (slide-in slot 3)
"N":	terminal clamps for output circuit card 2 (slide-in slot 4)
"O":	terminal clamps for output circuit card 3 (slide-in slot 5)
"P":	terminal clamp for measure contact "temperature sensor" (not used)
"Q":	terminal clamps for device supply voltages, critical circuit and switch inputs
"R":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation" (not used)
"S":	terminal clamps for station buses and I2C bus
"T":	fuse for device supply voltage – voltage source: "MST", voltage level: 24 V DC, fuse values: 250 V / 1000 mA / time lag (T 1A 250V)
"U":	fuse for extension purposes (not used), fuse values: 250 V / 1000 mA / time lag (T 1A 250V)



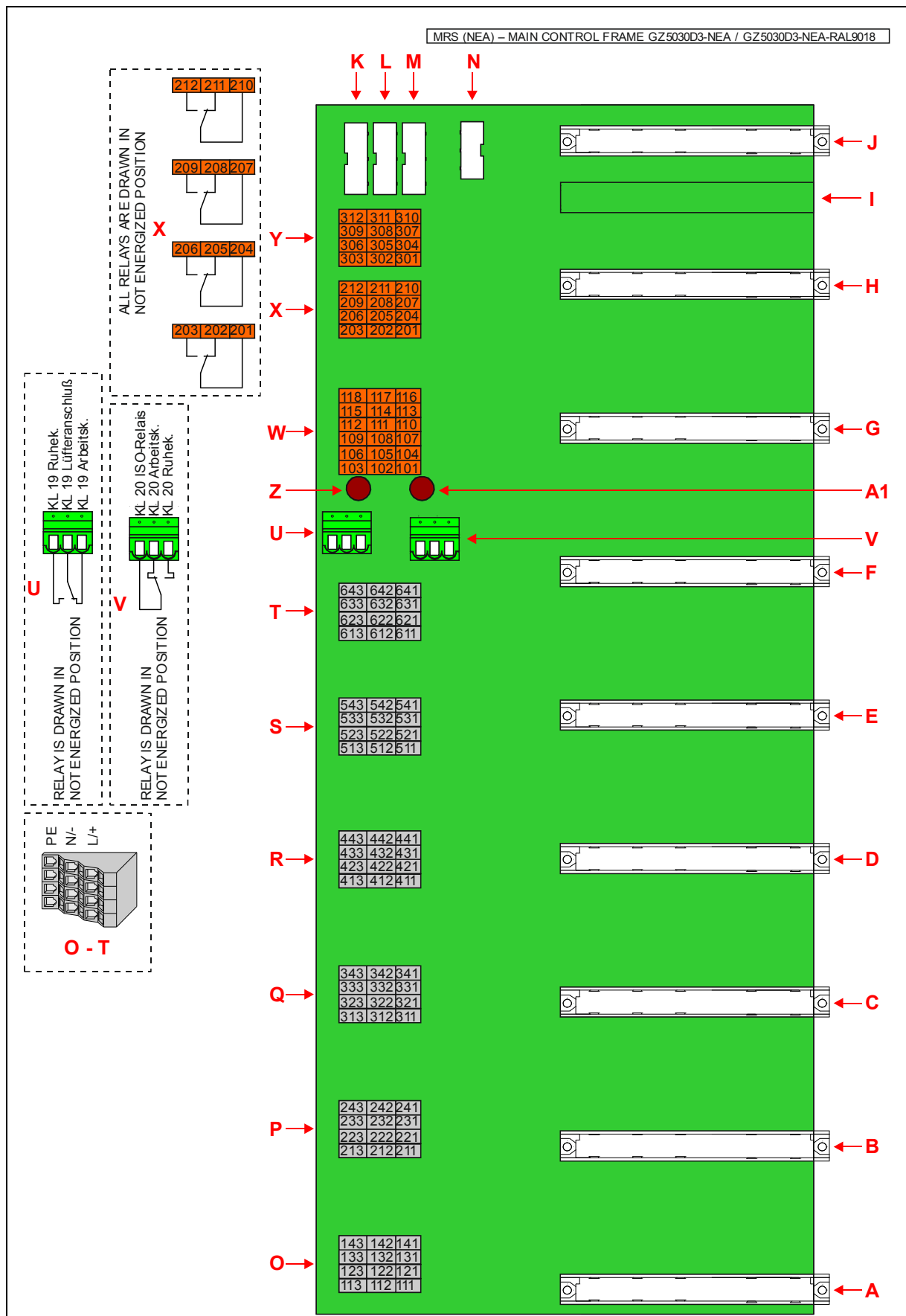
MRS (NEA) – main control frame GZ5030A2-NEA / GZ5030A2-NEA-RAL9018

"A":	slide-in slot 1 for battery cards BK
"B":	slide-in slot 2 for battery cards BK
"C":	slide-in slot 3 for output circuit card 1
"D":	slide-in slot 4 for output circuit card 2
"E":	slide-in slot 5 for output circuit card 3
"F":	slide-in slot 6 for charger cards LT
"G":	slide-in slot 7 for support card
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	extension frame port "AKs"
"L":	LSSA port "LSSA"
"M":	terminal clamps for output circuit card 1 (slide-in slot 3)
"N":	terminal clamps for output circuit card 2 (slide-in slot 4)
"O":	terminal clamps for output circuit card 3 (slide-in slot 5)
"P":	terminal clamp for control contact "blower" (not used)
"Q":	terminal clamp for measure contact "temperature sensor" (not used)
"R":	terminal clamps for device supply voltages, critical circuit and switch inputs
"S":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation" (not used)
"T":	terminal clamps for station buses and I2C bus
"U":	fuse for device supply voltage – voltage source: "MST", voltage level: 24 V DC, fuse values: 250 V / 1000 mA / time lag (T 1A 250V)
"V":	fuse for control contact "blower", fuse values: 250 V / 1000 mA / time lag (T 1A 250V)



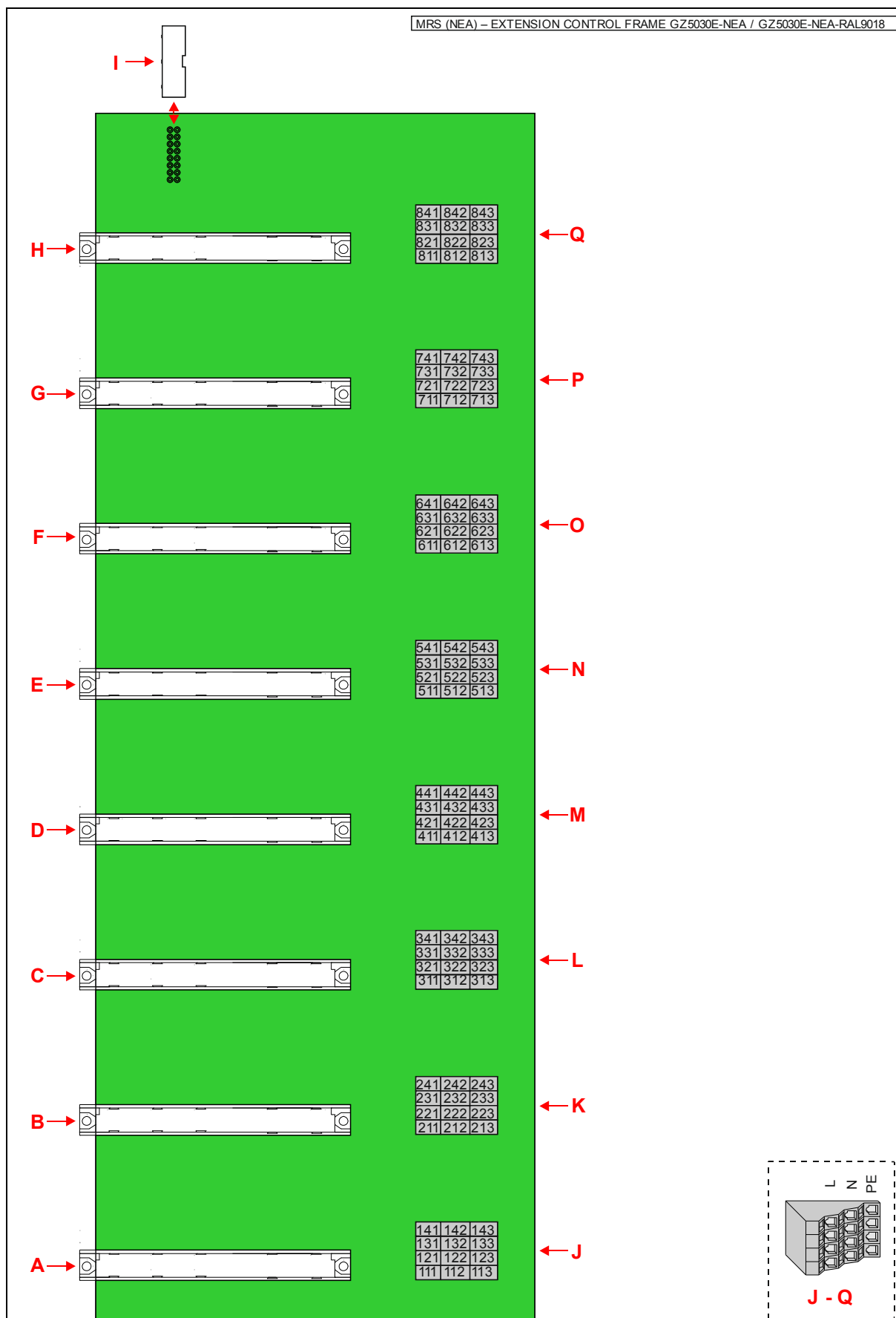
MRS (NEA) – main control frame GZ5030D3-NEA / GZ5030D3-NEA-RAL9018

"A":	slide-in slot 1 for output circuit card 1
"B":	slide-in slot 2 for output circuit card 2
"C":	slide-in slot 3 for output circuit card 3
"D":	slide-in slot 4 for output circuit card 4
"E":	slide-in slot 5 for output circuit card 5
"F":	slide-in slot 6 for output circuit card 6
"G":	slide-in slot 7 for support card
"H":	slide-in slot 8 for HIO card
"I":	slide-in slot 9 for shielding card
"J":	slide-in slot 10 for CPU card
"K":	charger frame port "LT"
"L":	extension frame port "AKs"
"M":	LSSA port "LSSA"
"N":	service port "externer Bus"
"O":	terminal clamps for output circuit card 1 (slide-in slot 1)
"P":	terminal clamps for output circuit card 2 (slide-in slot 2)
"Q":	terminal clamps for output circuit card 3 (slide-in slot 3)
"R":	terminal clamps for output circuit card 4 (slide-in slot 4)
"S":	terminal clamps for output circuit card 5 (slide-in slot 5)
"T":	terminal clamps for output circuit card 6 (slide-in slot 6)
"U":	terminal clamp for control contact "blower"
"V":	terminal clamp for message contact "insulation fault"
"W":	terminal clamps for device supply voltages, critical circuit and switch inputs
"X":	terminal clamps for message contacts "mains failure", "operational condition", "collective fault" and "battery operation"
"Y":	terminal clamps for station buses and I2C bus
"Z":	fuse for device supply voltage – voltage source: "MST-U24", voltage level: 24 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)
"A1":	fuse for device supply voltage – voltage sources: "U24" and "MST", voltage level: 24 V DC, fuse values: 250 V / 400 mA / time lag (T 0,4A 250V)



MRS (NEA) – extension control frame GZ5030E-NEA / GZ5030E-NEA-RAL9018
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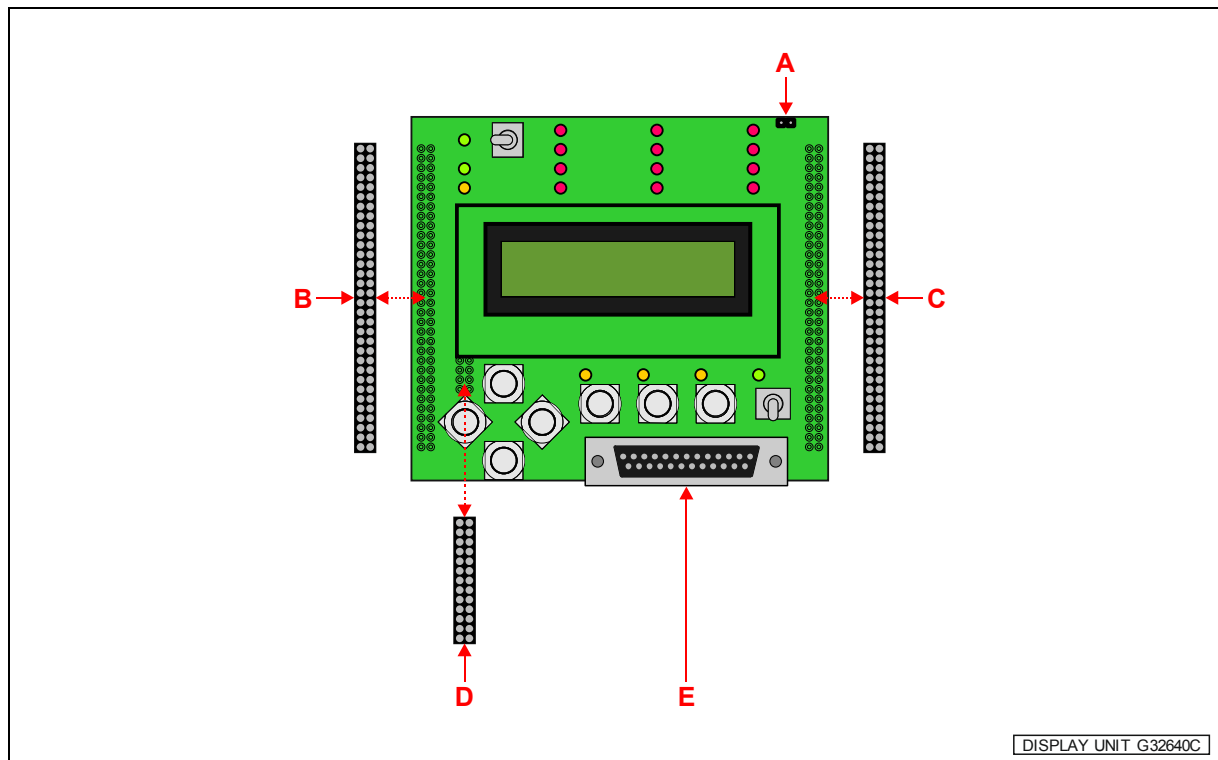
"A": slide-in slot 1 for output circuit card 1
"B": slide-in slot 2 for output circuit card 2
"C": slide-in slot 3 for output circuit card 3
"D": slide-in slot 4 for output circuit card 4
"E": slide-in slot 5 for output circuit card 5
"F": slide-in slot 6 for output circuit card 6
"G": slide-in slot 7 for output circuit card 7
"H": slide-in slot 8 for output circuit card 8
"I": extension frame port "AKs" (backside)
"J": terminal clamps for output circuit card 1 (slide-in slot 1)
"K": terminal clamps for output circuit card 2 (slide-in slot 2)
"L": terminal clamps for output circuit card 3 (slide-in slot 3)
"M": terminal clamps for output circuit card 4 (slide-in slot 4)
"N": terminal clamps for output circuit card 5 (slide-in slot 5)
"O": terminal clamps for output circuit card 6 (slide-in slot 6)
"P": terminal clamps for output circuit card 7 (slide-in slot 7)
"Q": terminal clamps for output circuit card 8 (slide-in slot 8)



Display unit G32640C

Display unit for control and monitoring purposes of NGB/NZB/NEA systems.

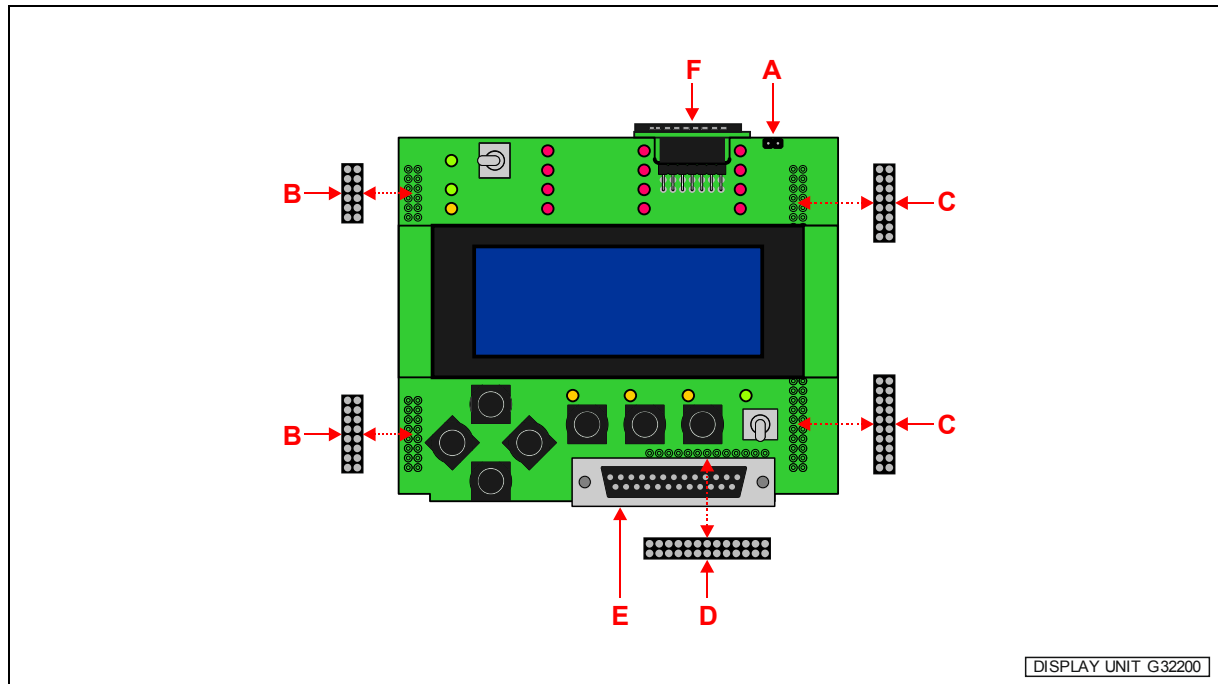
- "A": jumper J 7 for software reset
"B": card port left (backside)
"C": card port right (backside)
"D": printer port for internal printer (backside)
"E": printer port for external printer



Display unit G32200

Display unit for control and monitoring purposes of NGB/NZB/NEA systems.

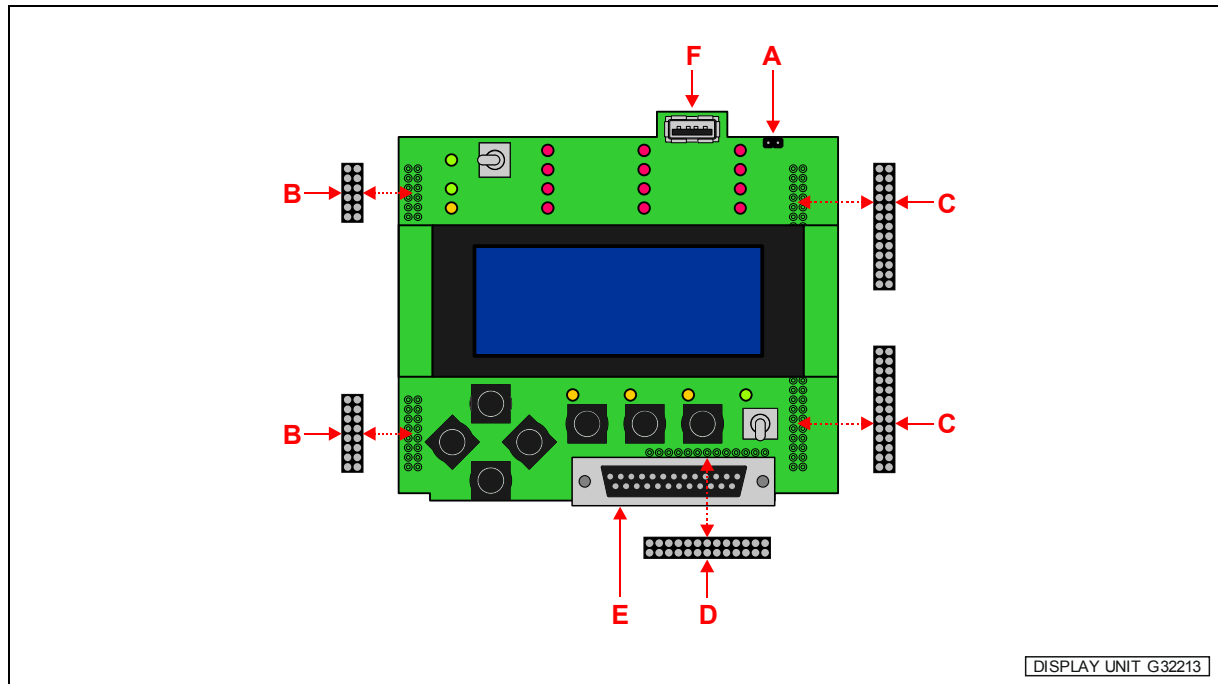
- "A": jumper J 7 for software reset
- "B": card port left (backside)
- "C": card port right (backside)
- "D": printer port for internal printer (backside)
- "E": printer port for external printer
- "F": MMC card slot



Display unit G32213

Display unit for control and monitoring purposes of NGB/NZB/NEA systems.

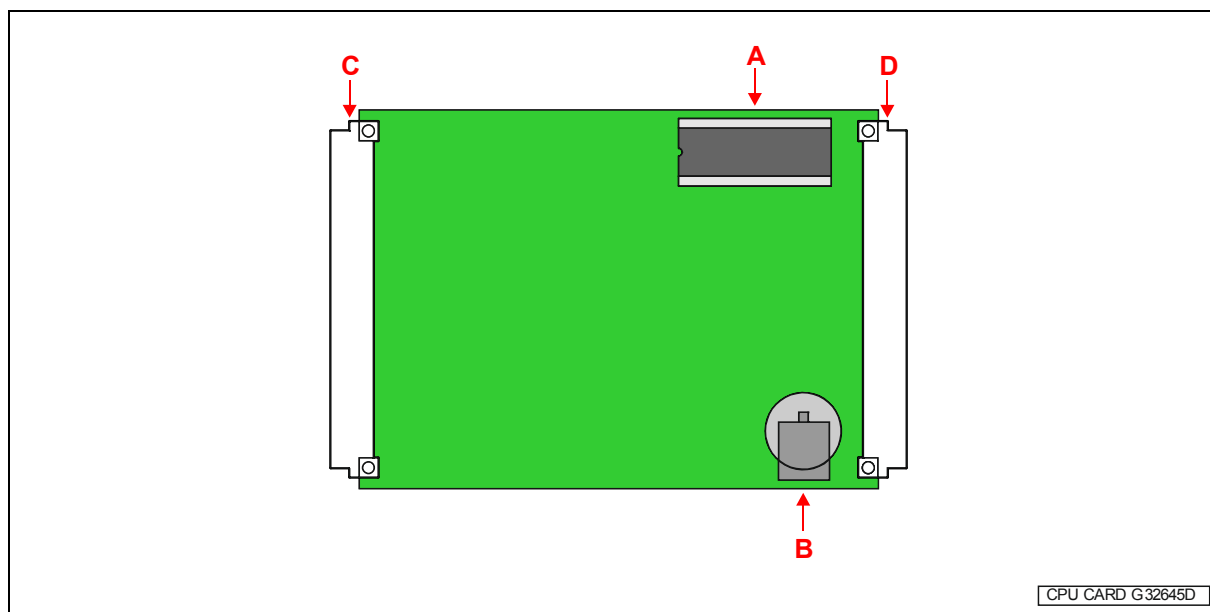
- "A": jumper J 7 for software reset
- "B": card port left (backside)
- "C": card port right (backside)
- "D": printer port for internal printer (backside)
- "E": printer port for external printer
- "F": USB port (type: A)



CPU card G32645D

CPU card for execution of operating systems of NGB/NZB/NEA systems.

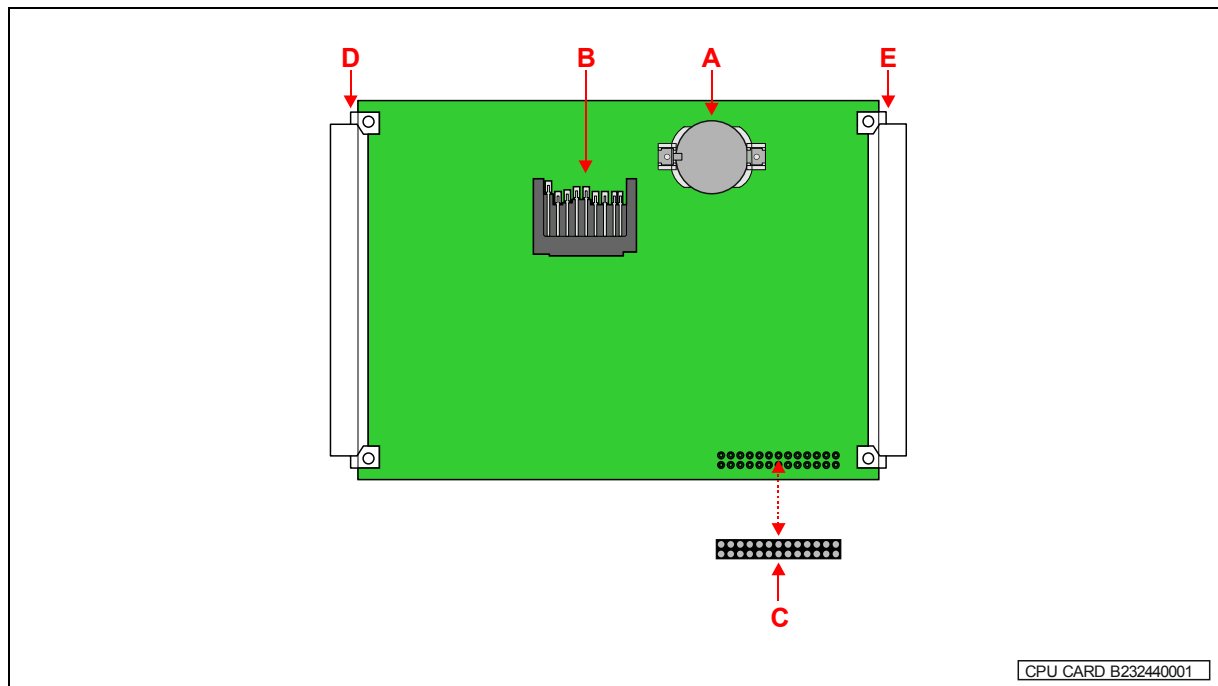
- "A": chip for operating software
"B": memory battery
"C": control frame port
"D": display unit port



CPU card B232440001

CPU card for execution of operating systems of NGB/NZB systems.

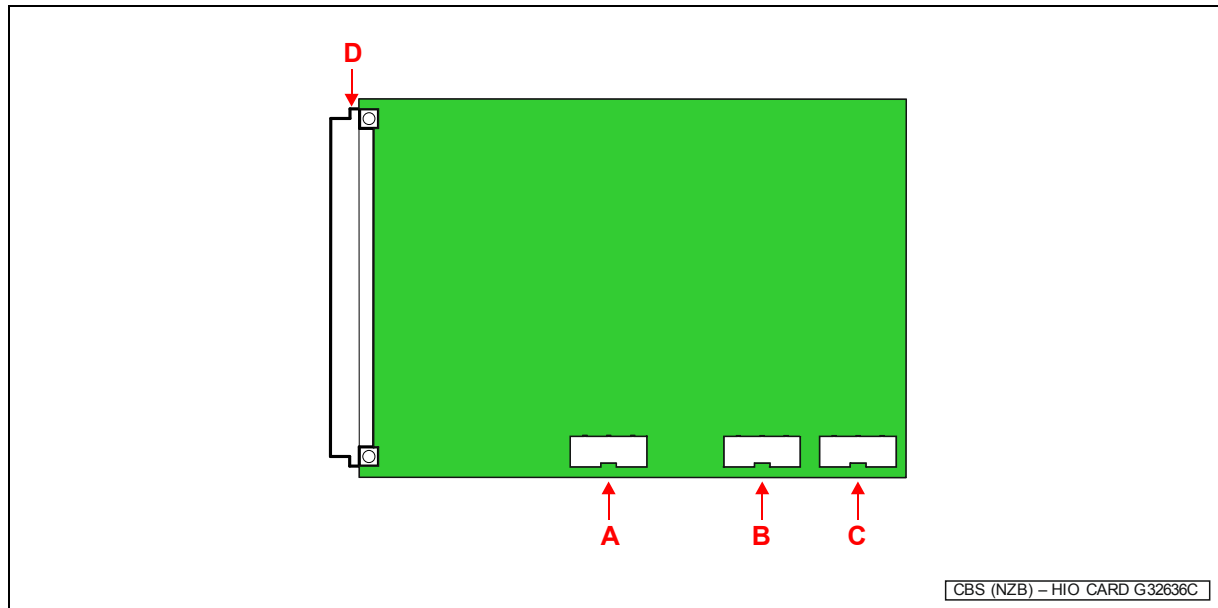
- "A": memory battery
"B": MMC card slot
"C": port for internal printer (backside)
"D": control frame port
"E": display unit port



CBS (NZB) – HIO card G32636C

HIO card for input and output of signals as well as for measuring purposes of NZB systems. The HIO card is only suitable for the assembly in main stations.

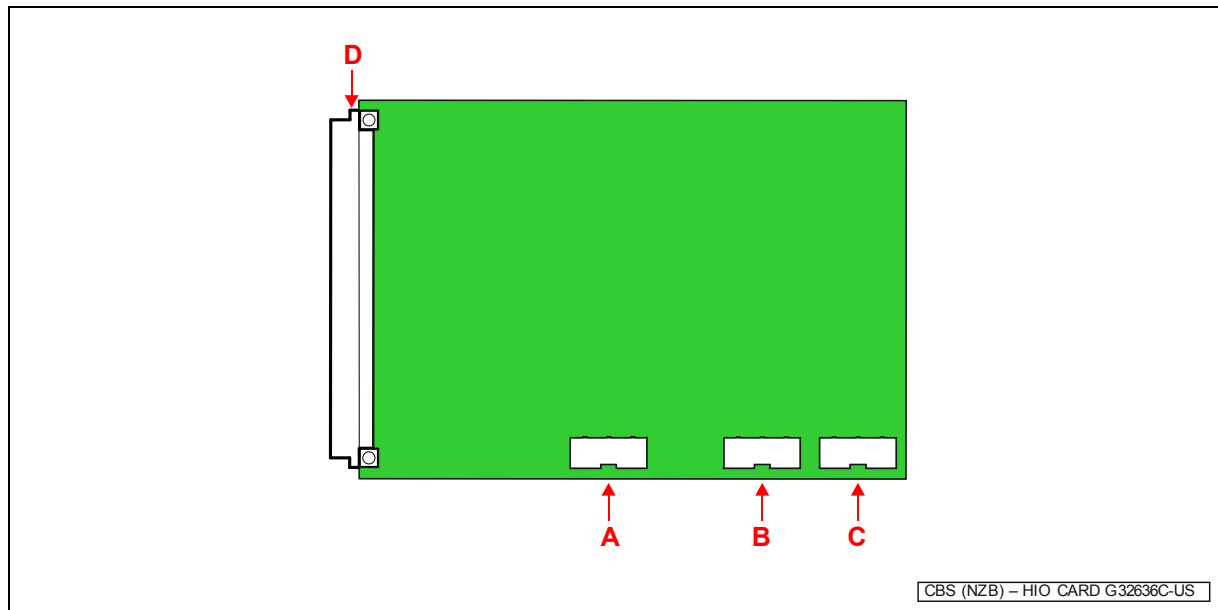
- "A": service port
- "B": port for internal switch input module (8-way)
- "C": port for internal message contact module (8-way)
- "D": control frame port



CBS (NZB) – HIO card G32636C-US

HIO card for input and output of signals as well as for measuring purposes of NZB systems. The HIO card is only suitable for the assembly in sub stations.

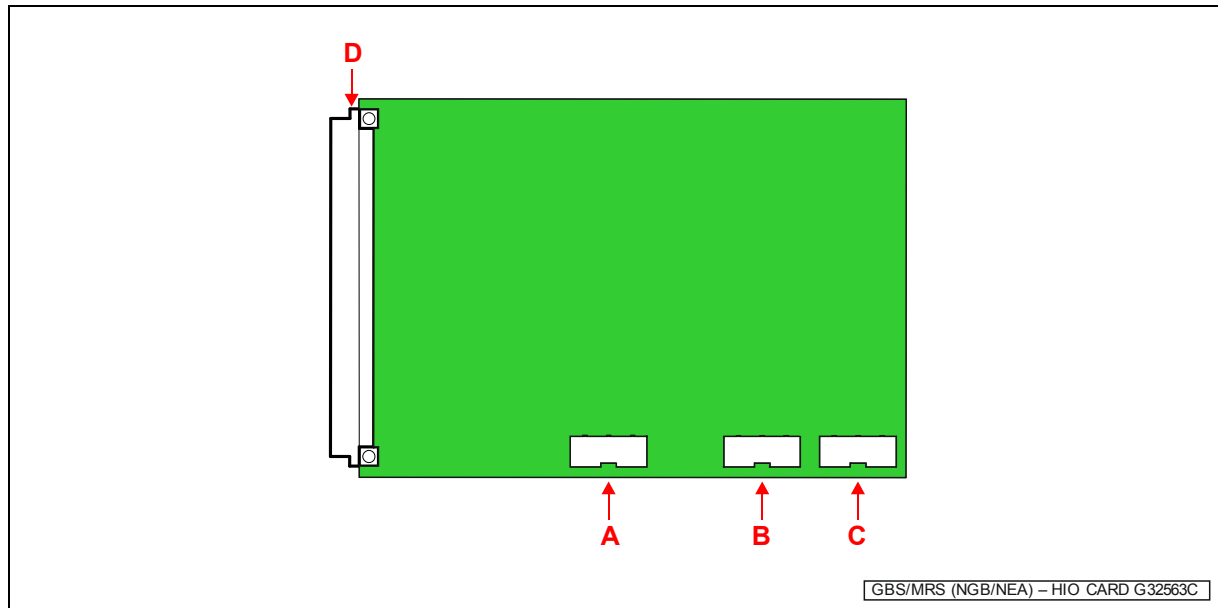
- "A": service port
"B": port for internal switch input module (8-way)
"C": port for internal message contact module (8-way)
"D": control frame port



GBS/MRS (NGB/NEA) – HIO card G32563C

HIO card for input and output of signals as well as for measuring purposes of NGB/NEA systems. The HIO card is only suitable for the assembly in main stations.

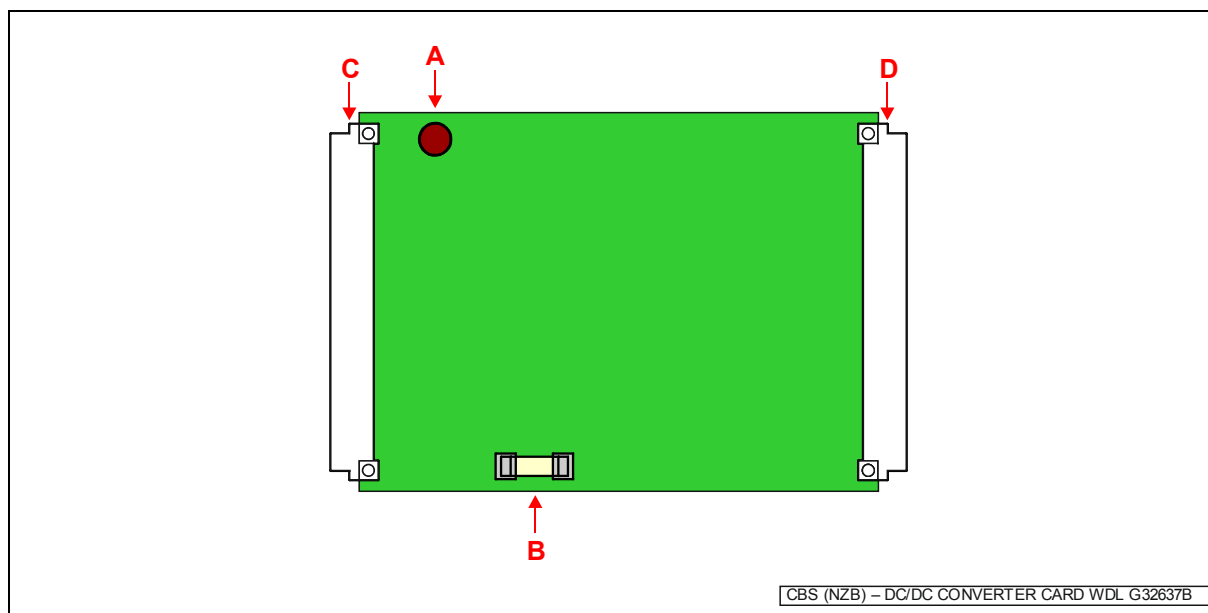
- "A": service port
- "B": port for internal switch input module (8-way)
- "C": port for internal message contact module (8-way)
- "D": control frame port



CBS (NZB) – DC/DC converter card WDL G32637B

DC/DC converter card for generation of the general supply voltage (24 V DC) for internal devices of NZB systems. The nominal voltage of the NZB system (216 V DC) is converted to the general supply voltage of 24 V DC.

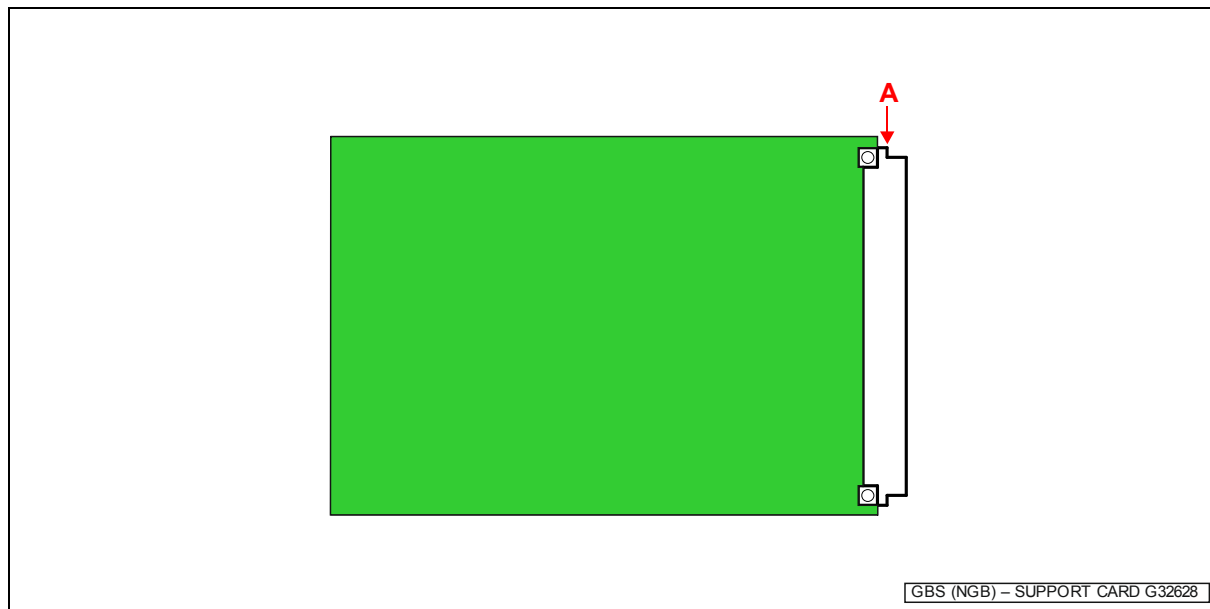
- "A": fuse for input voltage of 216 V DC
(nominal voltage of NZB system),
fuse values: 250 V / 1000 mA / time lag (T 1A 250V)
- "B": fuse for output voltage of 24 V DC
(general supply voltage for internal devices),
fuse values: 250 V / 6300 mA / medium time lag (M 6,3A 250V)
- "C": control frame port
- "D": display unit port



GBS/MRS (NGB/NEA) – Support card G32628

Support card for mechanical installation of the display unit (card port left) of NGB/NEA systems (except of NGB**-K systems).

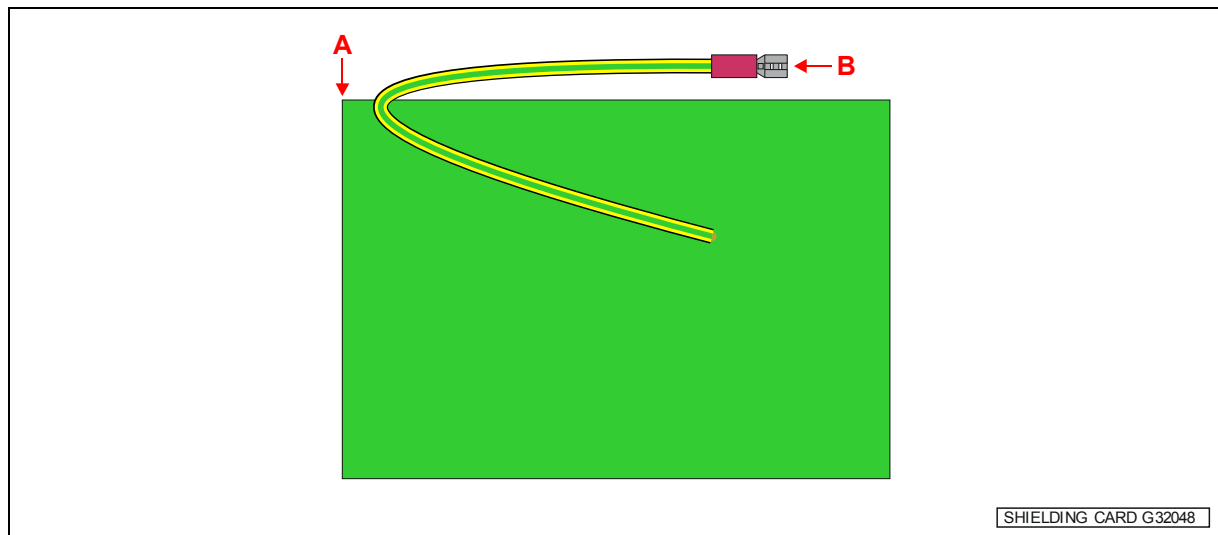
"A": display unit port



Shielding card G32048

Shielding card for electrical shielding of the CPU card of NGB/NZB/NEA systems.

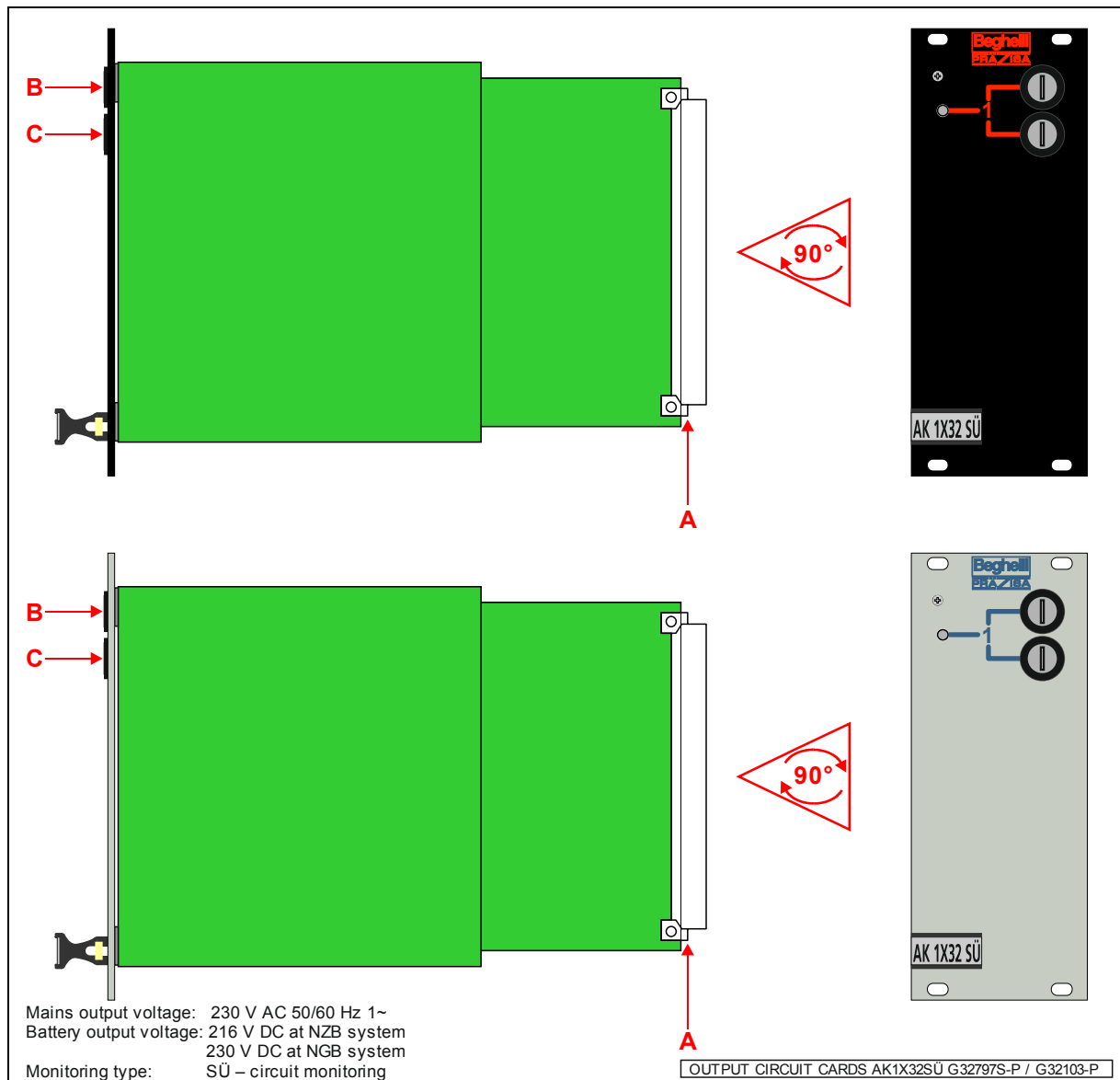
"A": control frame side
"B": terminal plug for earth connection



Output circuit cards AK1x32SÜ G32797S-P / G32103-P

Output circuit cards with circuit monitoring (SÜ) for supply of the output circuits of NGB, NGB**-K and NZB systems.

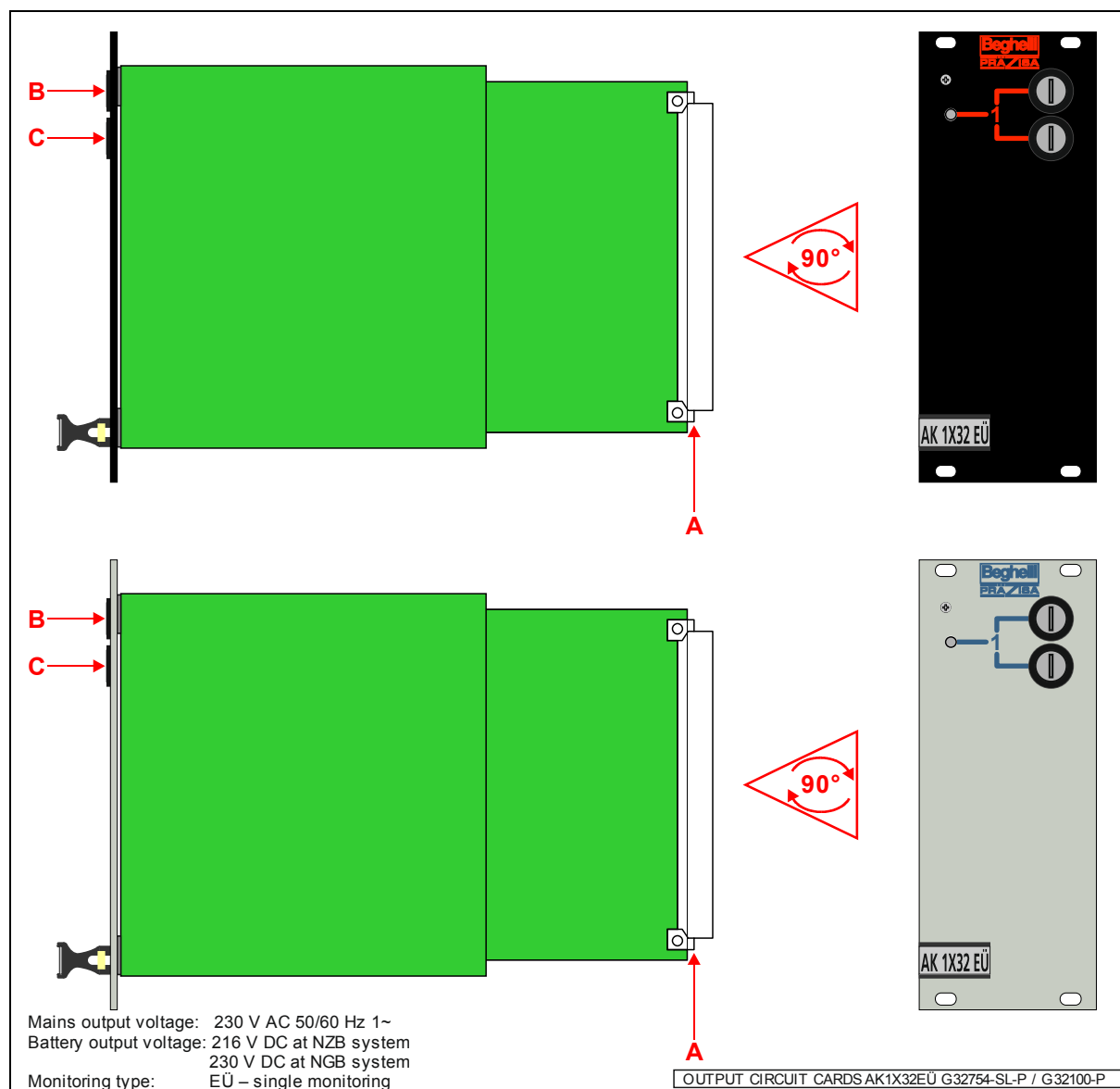
- "A": control frame port
 "B": fuse (L+) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)
 "C": fuse (N-) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)



Output circuit cards AK1x32EÜ G32754-SL-P / G32100-P

Output circuit cards with single monitoring (EÜ) for supply of the output circuits of NGB, NGB**-K and NZB systems.

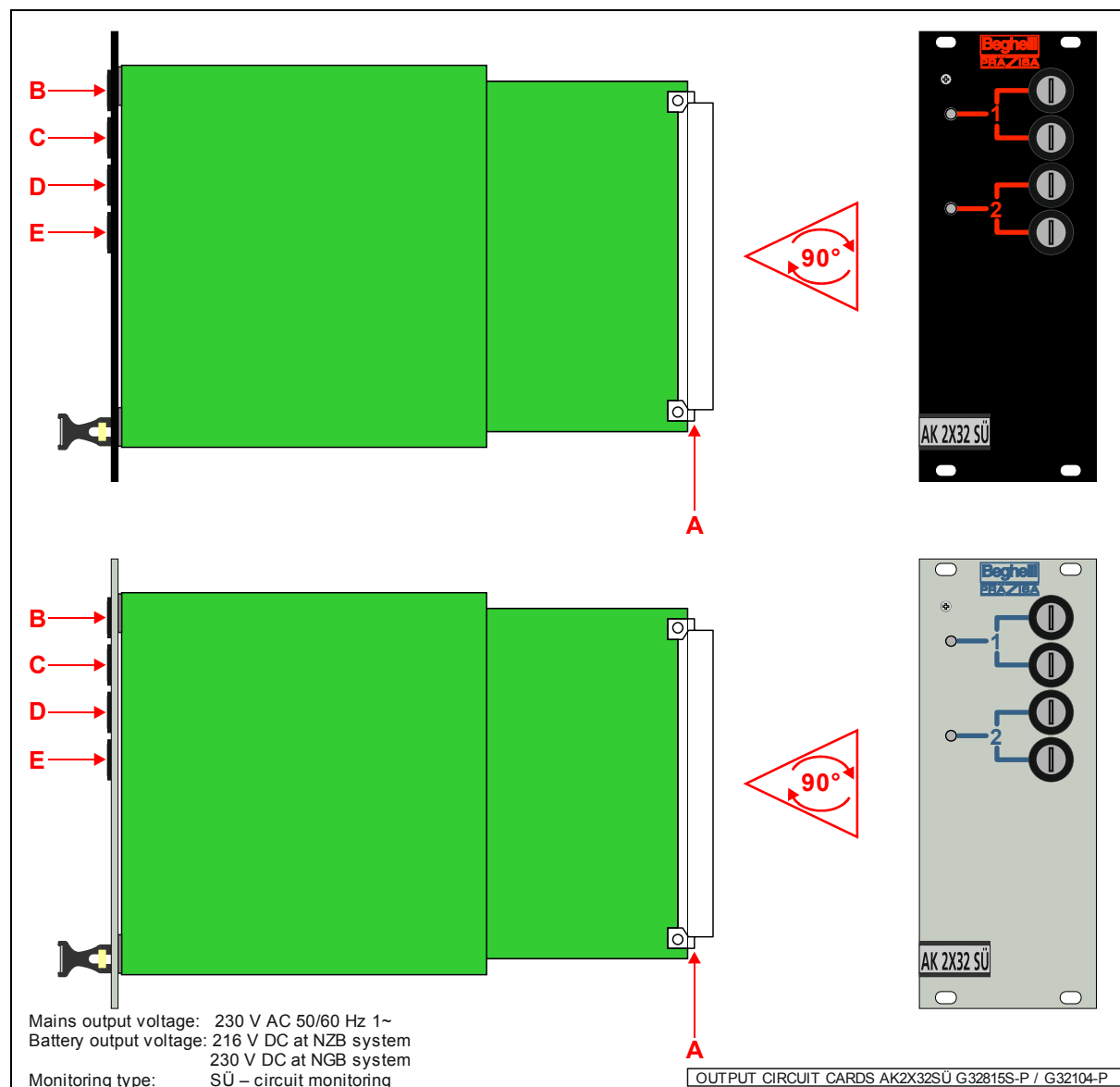
- "A": control frame port
 "B": fuse (L+) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)
 "C": fuse (N-) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)



Output circuit cards AK2x32SÜ G32815S-P / G32104-P

Output circuit cards with circuit monitoring (SÜ) for supply of the output circuits of NGB, NGB**-K and NZB systems.

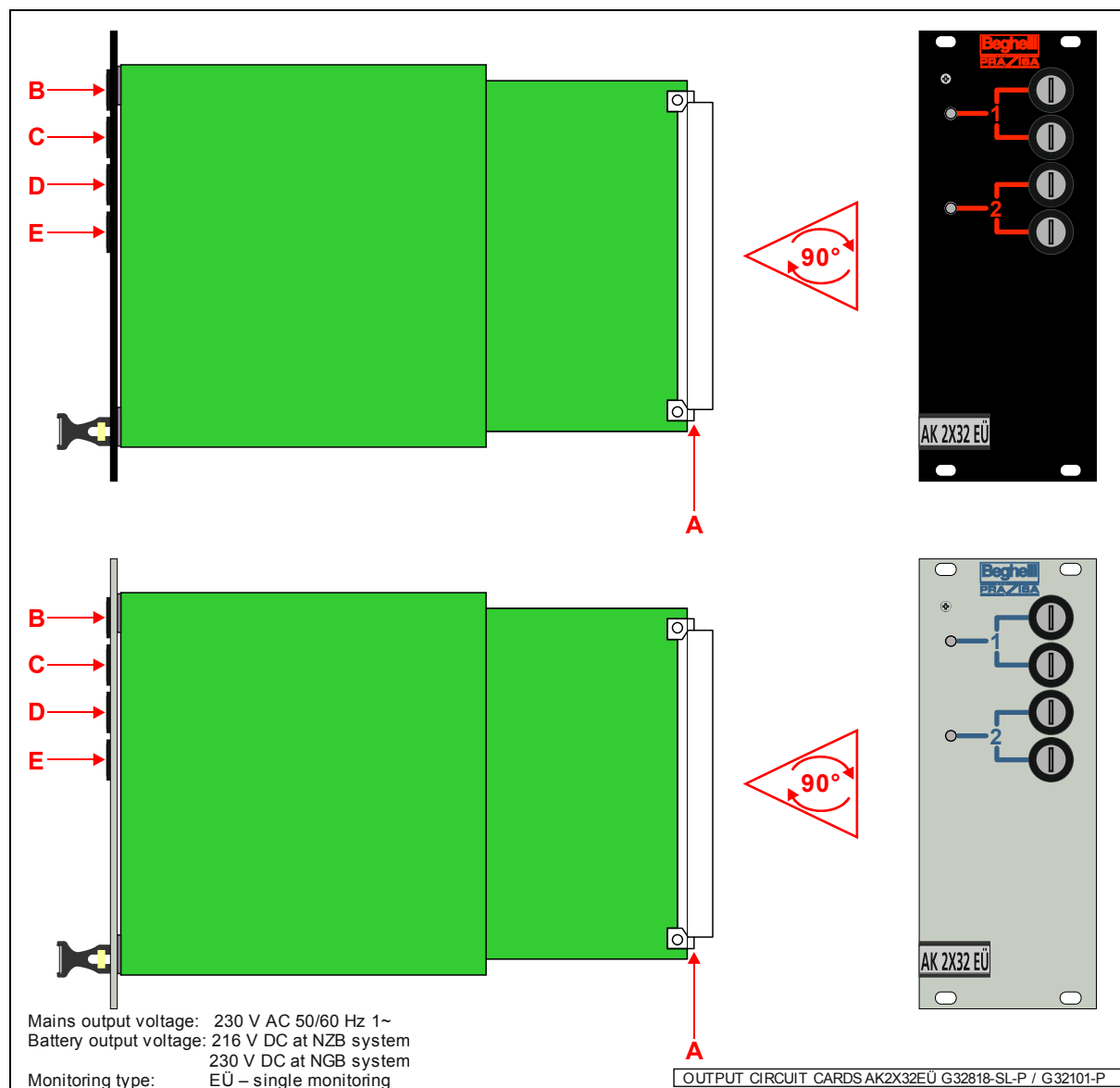
- "A": control frame port
- "B": fuse (L+) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "C": fuse (N-) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "D": fuse (L+) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "E": fuse (N-) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)



Output circuit cards AK2x32EÜ G32818-SL-P / G32101-P

Output circuit cards with single monitoring (EÜ) for supply of the output circuits of NGB, NGB**-K and NZB systems.

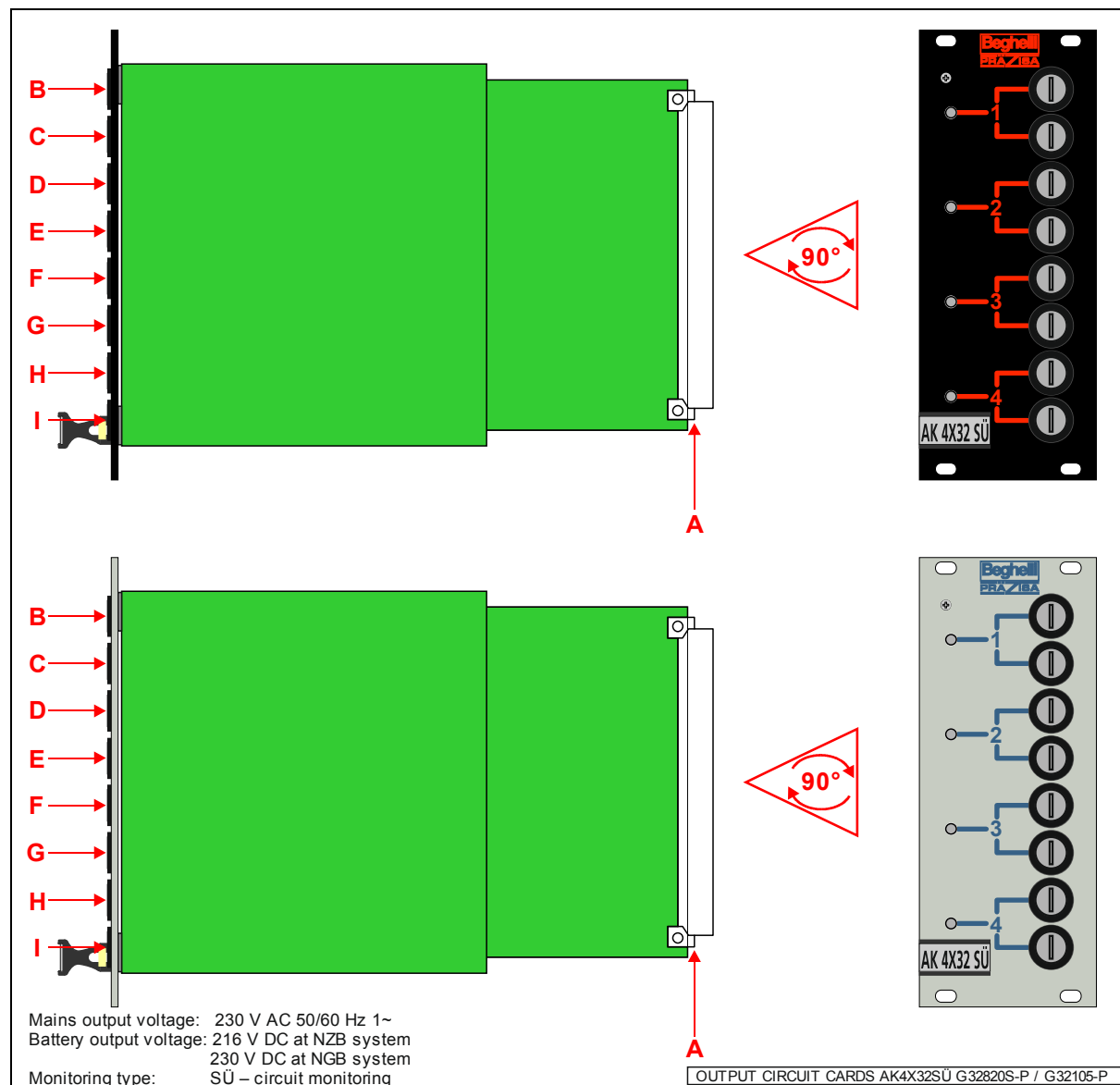
- "A": control frame port
- "B": fuse (L+) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "C": fuse (N-) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "D": fuse (L+) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "E": fuse (N-) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)



Output circuit cards AK4x32SÜ G32820S-P / G32105-P

Output circuit cards with circuit monitoring (SÜ) for supply of the output circuits of NGB, NGB**-K and NZB systems.

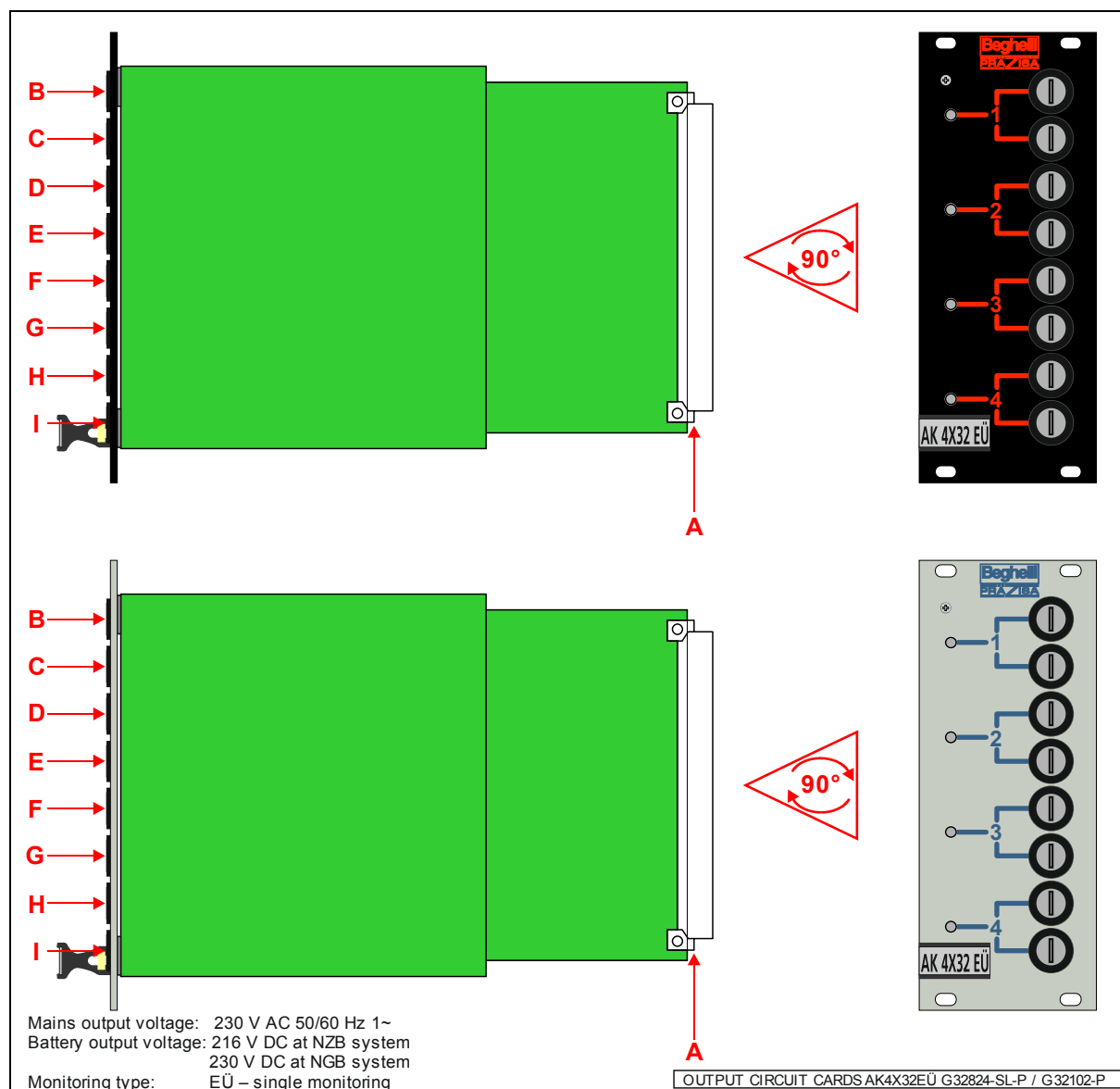
- "A": control frame port
- "B": fuse (L+) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "C": fuse (N-) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "D": fuse (L+) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "E": fuse (N-) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "F": fuse (L+) for output circuit 3 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "G": fuse (N-) for output circuit 3 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "H": fuse (L+) for output circuit 4 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "I": fuse (N-) for output circuit 4 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)



Output circuit cards AK4x32EÜ G32824-SL-P / G32102-P

Output circuit cards with single monitoring (EÜ) for supply of the output circuits of NGB, NGB**-K and NZB systems.

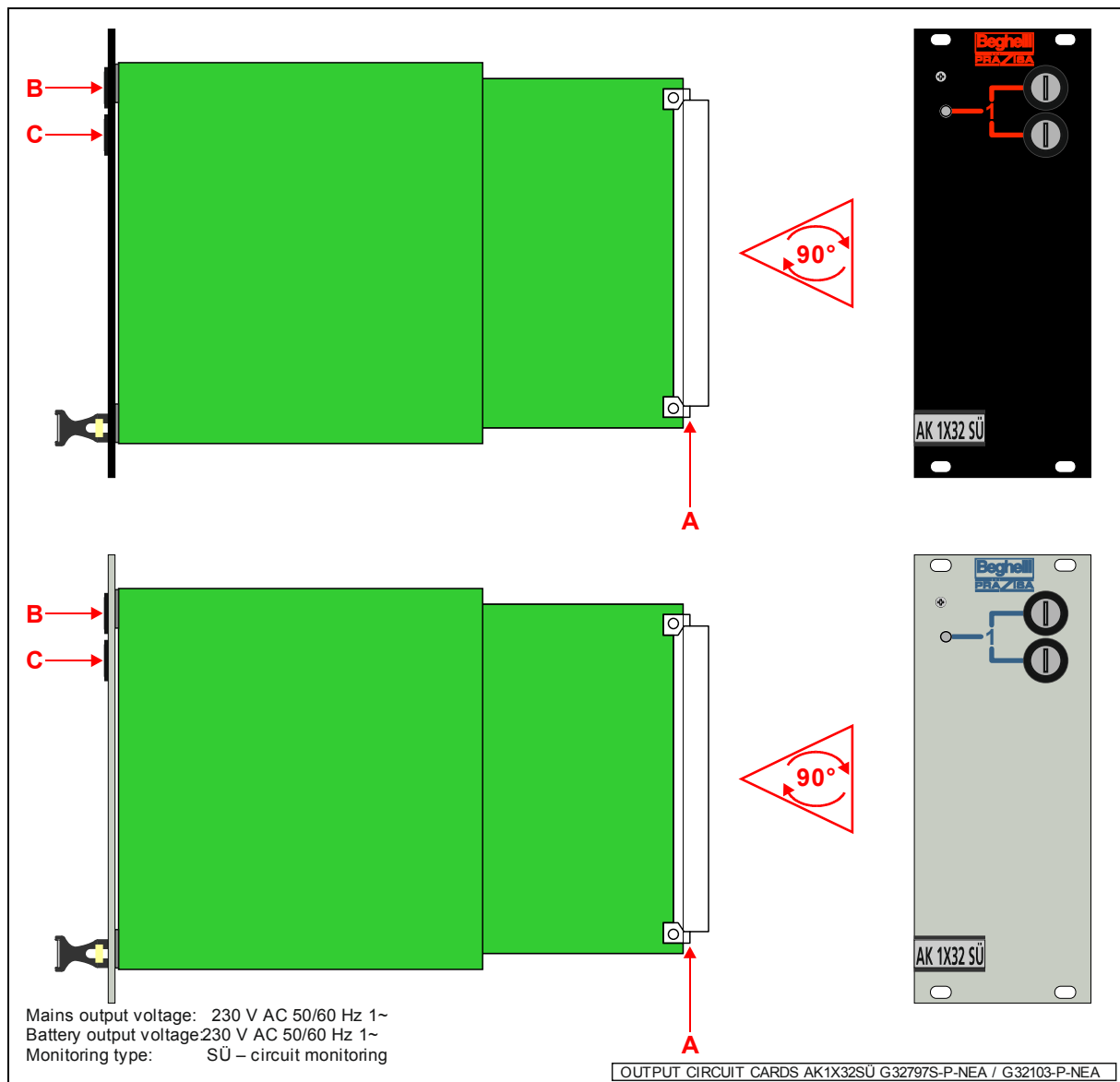
- "A": control frame port
- "B": fuse (L+) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "C": fuse (N-) for output circuit 1 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "D": fuse (L+) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "E": fuse (N-) for output circuit 2 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "F": fuse (L+) for output circuit 3 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "G": fuse (N-) for output circuit 3 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "H": fuse (L+) for output circuit 4 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "I": fuse (N-) for output circuit 4 (230 V AC / 230 V DC / 216 V DC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)



Output circuit cards AK1x32SÜ G32797S-P-NEA / G32103-P-NEA

Output circuit cards with circuit monitoring (SÜ) for supply of the output circuits of NEA systems.

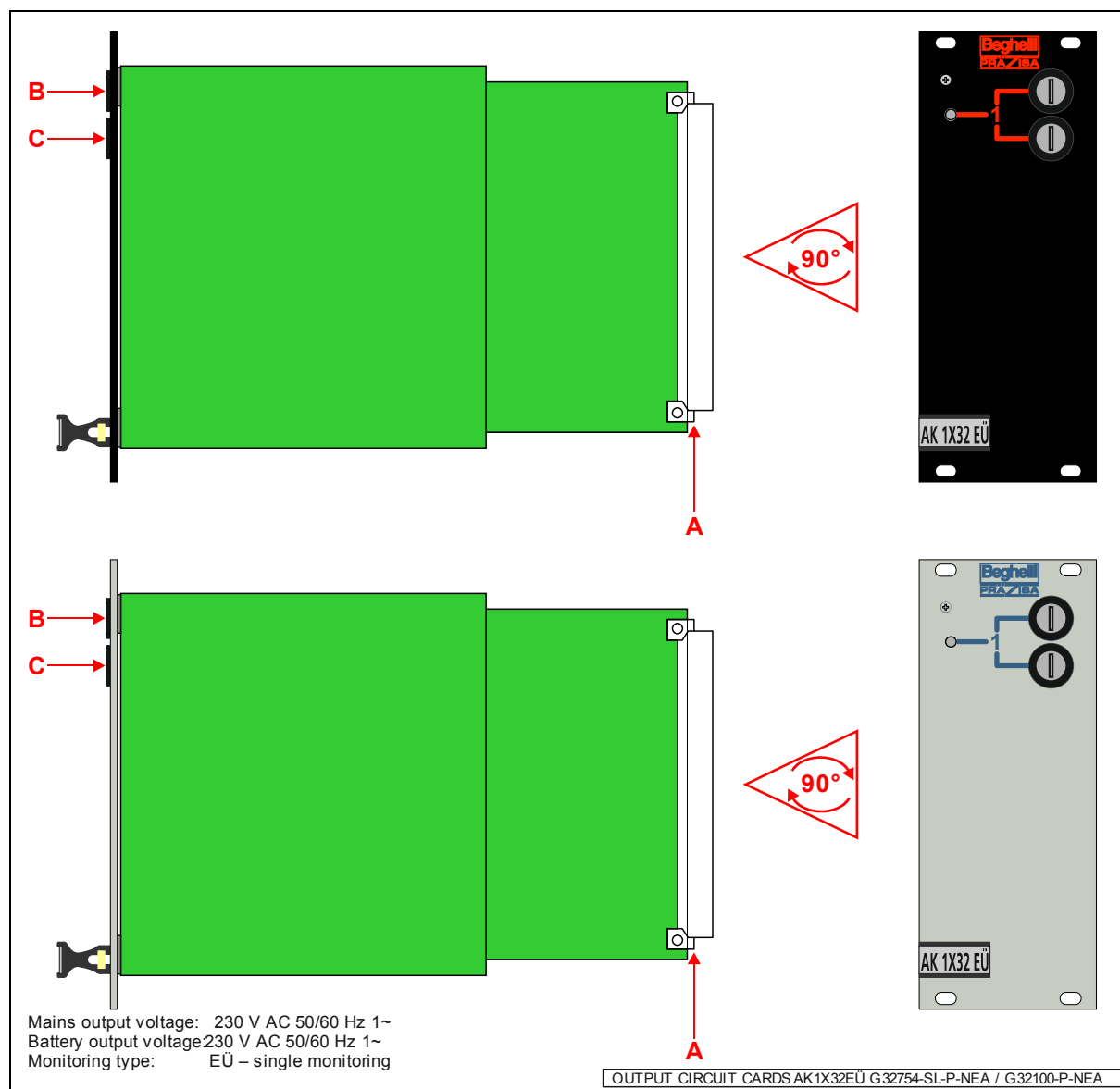
- "A": control frame port
 "B": fuse (L) for output circuit 1 (230 V AC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)
 "C": fuse (N) for output circuit 1 (230 V AC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)



Output circuit cards AK1x32EÜ G32754-SL-P-NEA / G32100-P-NEA

Output circuit cards with single monitoring (EÜ) for supply of the output circuits of NEA systems.

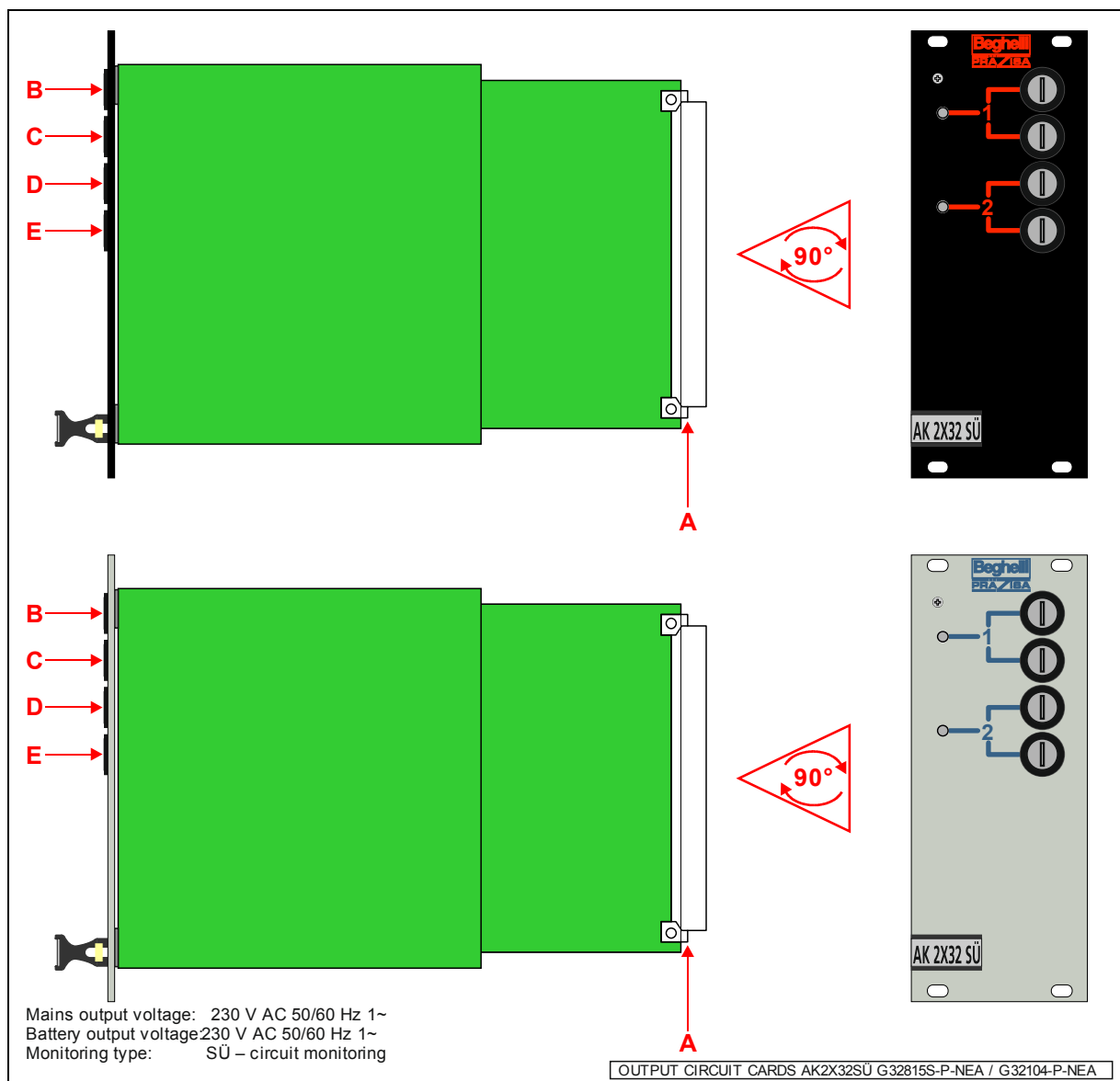
- "A": control frame port
 "B": fuse (L) for output circuit 1 (230 V AC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)
 "C": fuse (N) for output circuit 1 (230 V AC)
 – fuse values: 500 V / 10 A / time lag (T 10A 500V)



Output circuit cards AK2x32SÜ G32815S-P-NEA / G32104-P-NEA

Output circuit cards with circuit monitoring (SÜ) for supply of the output circuits of NEA systems.

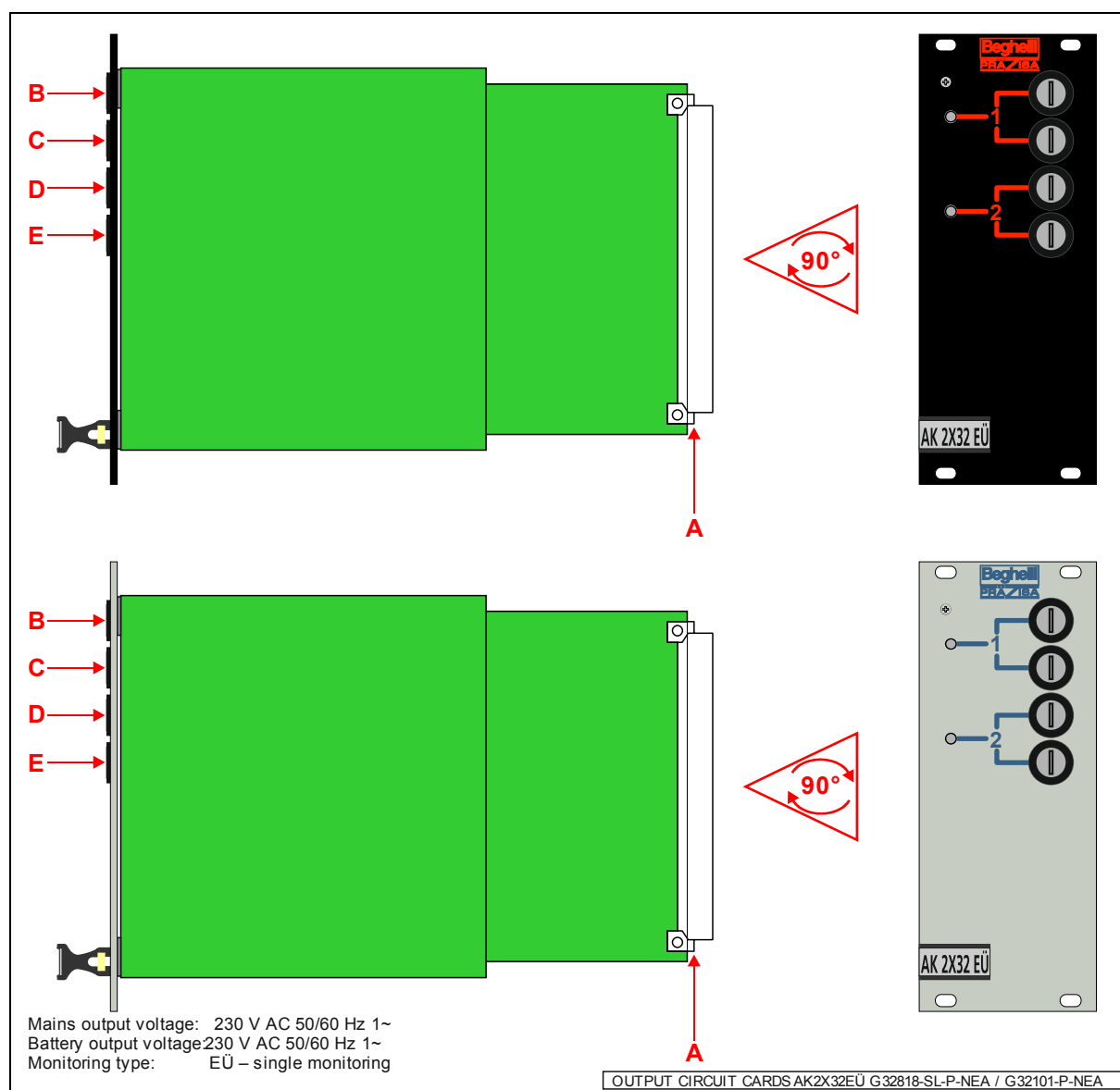
- "A": control frame port
- "B": fuse (L) for output circuit 1 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "C": fuse (N) for output circuit 1 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "D": fuse (L) for output circuit 2 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "E": fuse (N) for output circuit 2 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)



Output circuit cards AK2x32EÜ G32818-SL-P-NEA / G32101-P-NEA

Output circuit cards with single monitoring (EÜ) for supply of the output circuits of NEA systems.

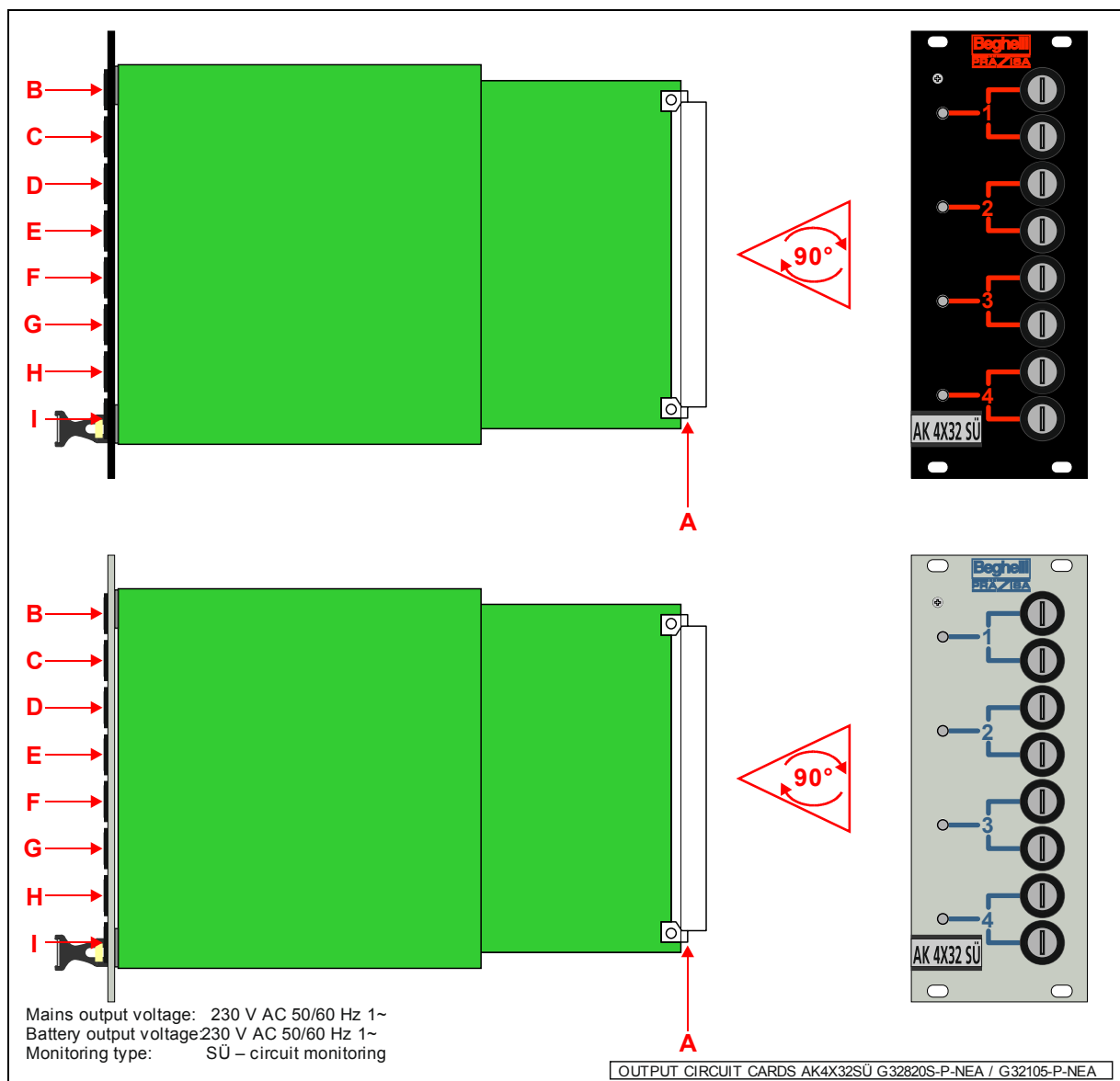
- "A": control frame port
- "B": fuse (L) for output circuit 1 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "C": fuse (N) for output circuit 1 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "D": fuse (L) for output circuit 2 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)
- "E": fuse (N) for output circuit 2 (230 V AC)
– fuse values: 500 V / 5 A / time lag (T 5A 500V)



Output circuit cards AK4x32SÜ G32820S-P-NEA / G32105-P-NEA

Output circuit cards with circuit monitoring (SÜ) for supply of the output circuits of NEA systems.

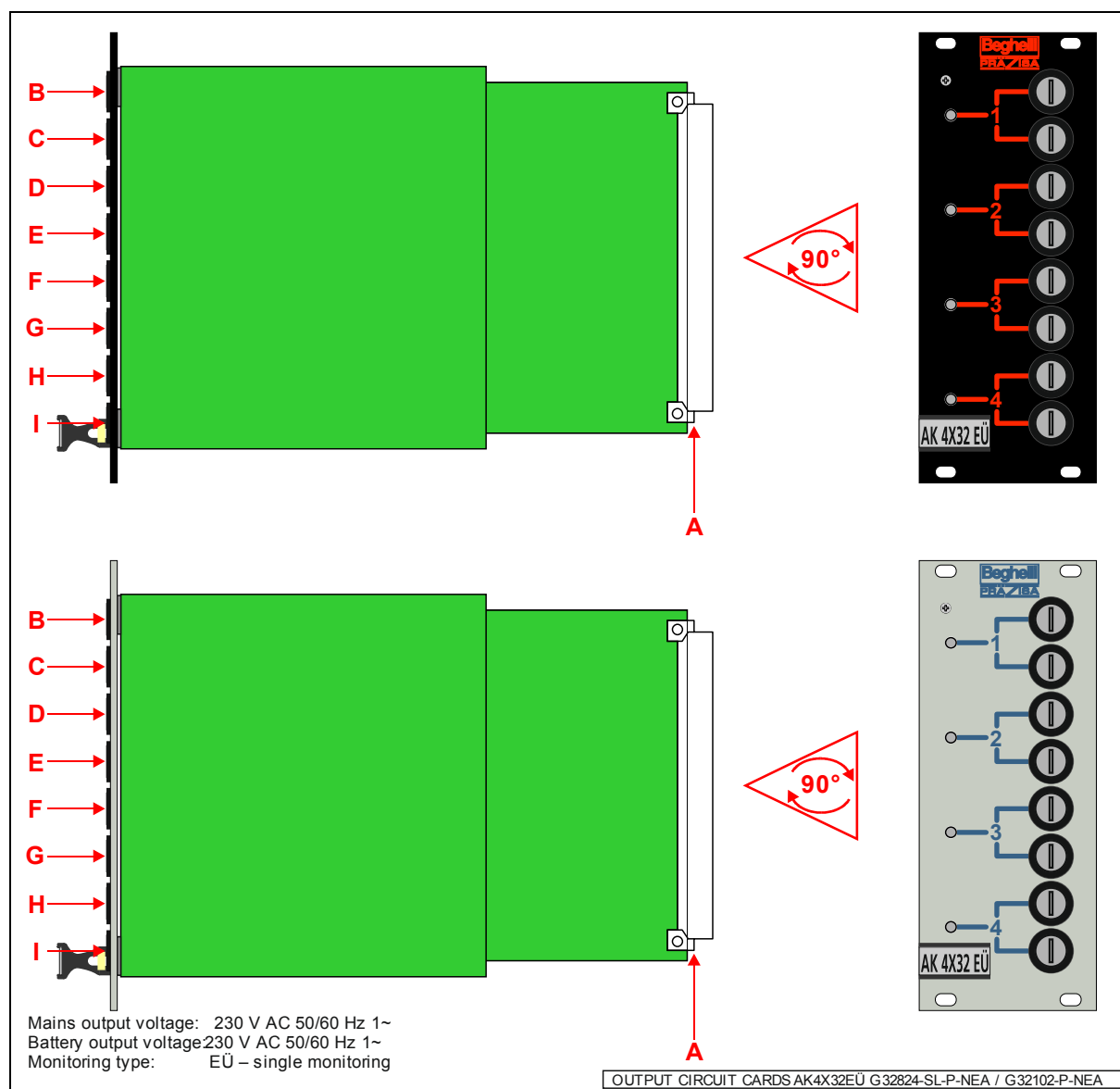
- "A": control frame port
- "B": fuse (L) for output circuit 1 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "C": fuse (N) for output circuit 1 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "D": fuse (L) for output circuit 2 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "E": fuse (N) for output circuit 2 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "F": fuse (L) for output circuit 3 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "G": fuse (N) for output circuit 3 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "H": fuse (L) for output circuit 4 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "I": fuse (N) for output circuit 4 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)



Output circuit cards AK4x32EÜ G32824-SL-P-NEA / G32102-P-NEA

Output circuit cards with single monitoring (EÜ) for supply of the output circuits of NEA systems.

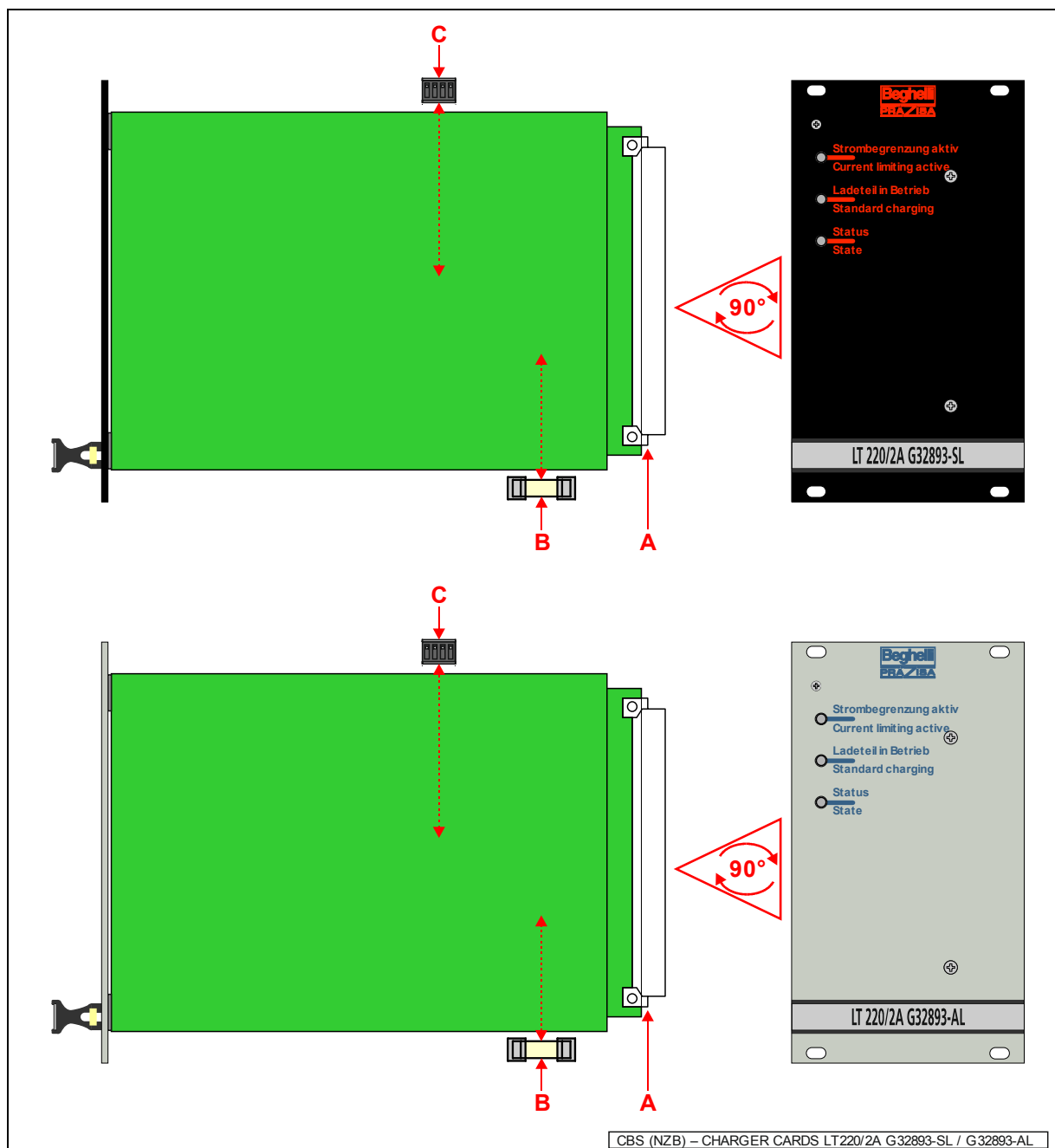
- "A": control frame port
- "B": fuse (L) for output circuit 1 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "C": fuse (N) for output circuit 1 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "D": fuse (L) for output circuit 2 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "E": fuse (N) for output circuit 2 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "F": fuse (L) for output circuit 3 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "G": fuse (N) for output circuit 3 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "H": fuse (L) for output circuit 4 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)
- "I": fuse (N) for output circuit 4 (230 V AC)
– fuse values: 500 V / 2,5 A / time lag (T 2,5A 500V)



CBS (NZB) – charger cards LT220/2A G32893-SL / G32893-AL

Charger cards for charging the batteries of NZB systems.

- "A": control frame port
 "B": fuse for input voltage of 230 V AC
 (mains voltage of NZB system),
 fuse values: 250 V / 5000 mA / fast (F 5A L 250V)
 "C": DIP switch row with 4 DIP switches for AK bus function 1 to 4,
 DIP switch "1" on: AK bus function 1 on / DIP switch "1" off: AK bus function 1 off,
 DIP switch "2" on: AK bus function 2 on / DIP switch "2" off: AK bus function 2 off,
 DIP switch "3" on: AK bus function 3 on / DIP switch "3" off: AK bus function 3 off,
 DIP switch "4" on: AK bus function 4 on / DIP switch "4" off: AK bus function 4 off

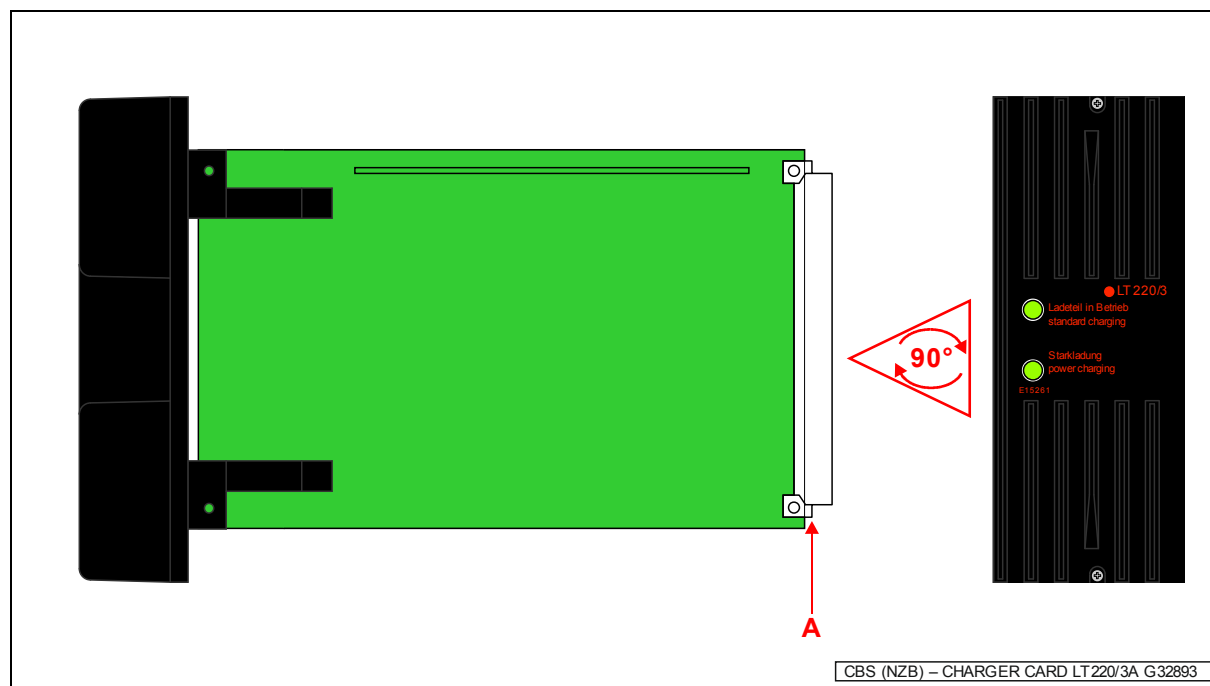


CBS (NZB) – CHARGER CARDS LT220/2A G32893-SL / G32893-AL

CBS (NZB) – charger card LT220/3A G32893

Charger card for charging the batteries of NZB systems.

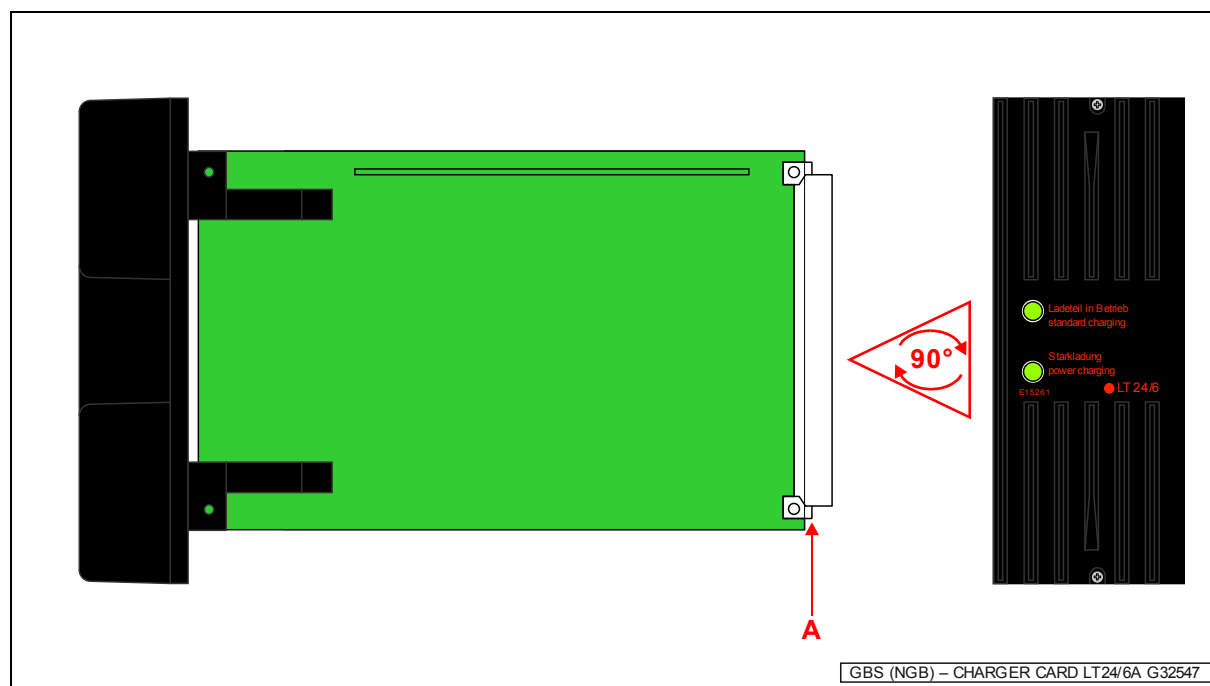
"A": control frame port



GBS (NGB) – charger card LT24/6A G32547

Charger card for charging the batteries of NGB systems.

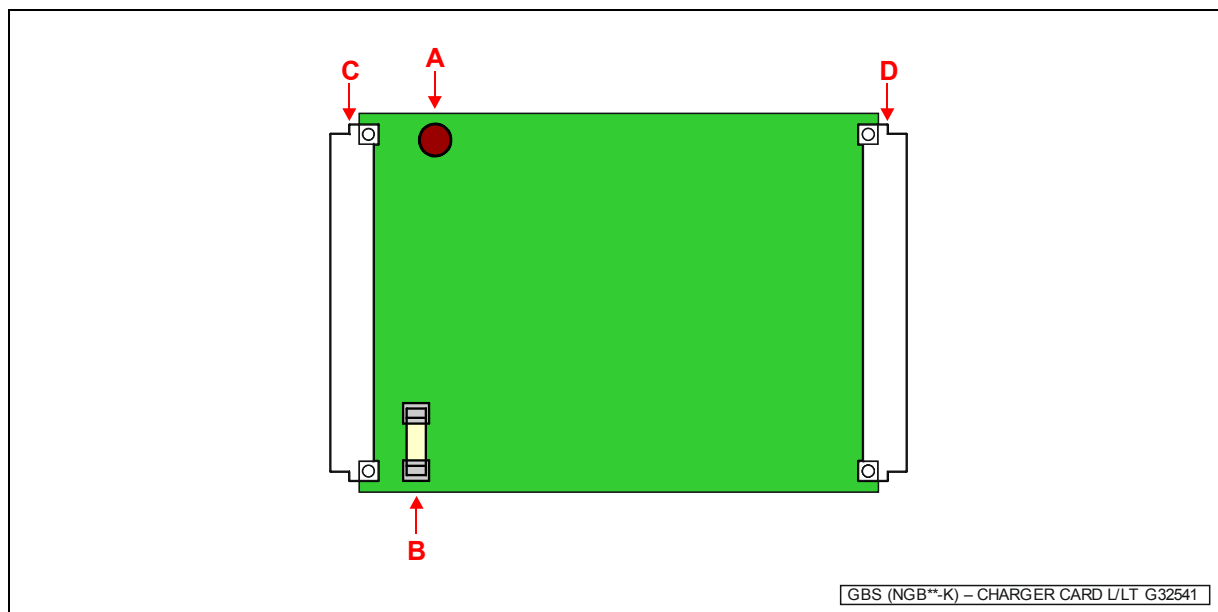
"A": control frame port



GBS (NGB**-K) – charger card LT G32541

Charger card for charging the batteries of NGB**-K systems.

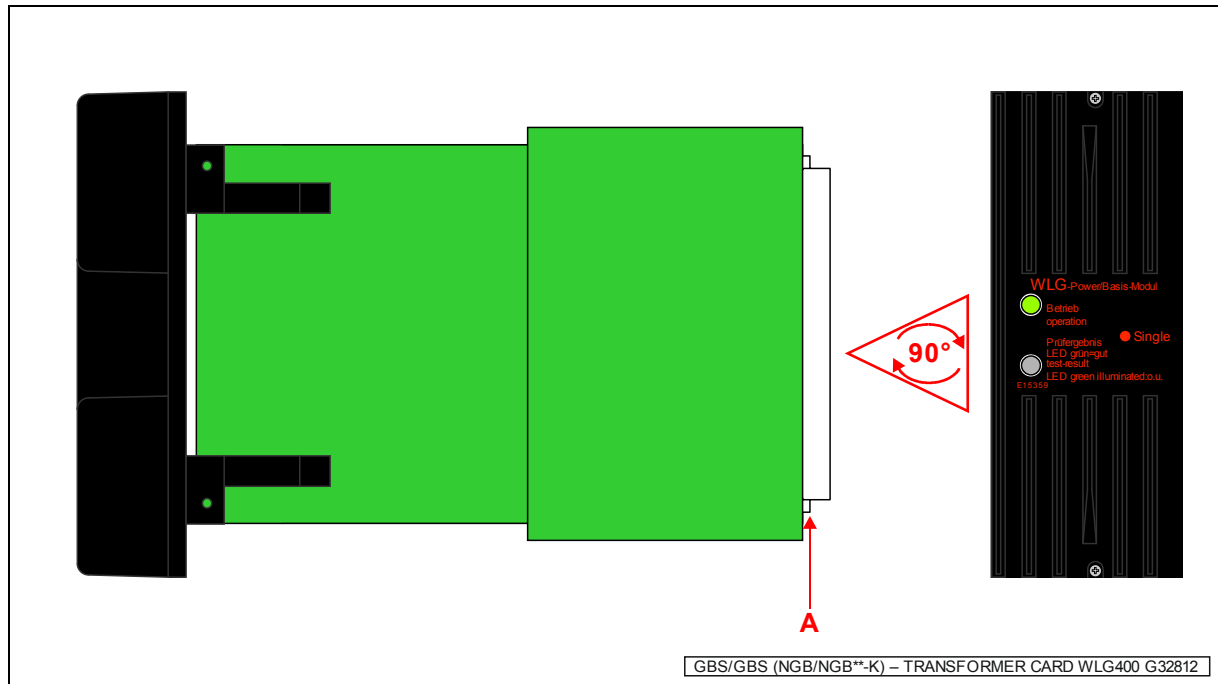
- "A": fuse for input voltage of 230 V AC
(mains voltage of NGB**-K system),
fuse values: 250 V / 1000 mA / time lag (T 1A 250V)
- "B": fuse for output voltage of 24 V DC
(battery charge voltage of NGB**-K system),
fuse values: 250 V / 6300 mA / medium time lag (M 6,3A 250V)
- "C": control frame port
- "D": display unit port



GBS/GBS (NGB/NGB**-K) – transformer card WLG400 G32812

Transformer card for transforming the battery supply voltage of NGB and NGB**-K systems.

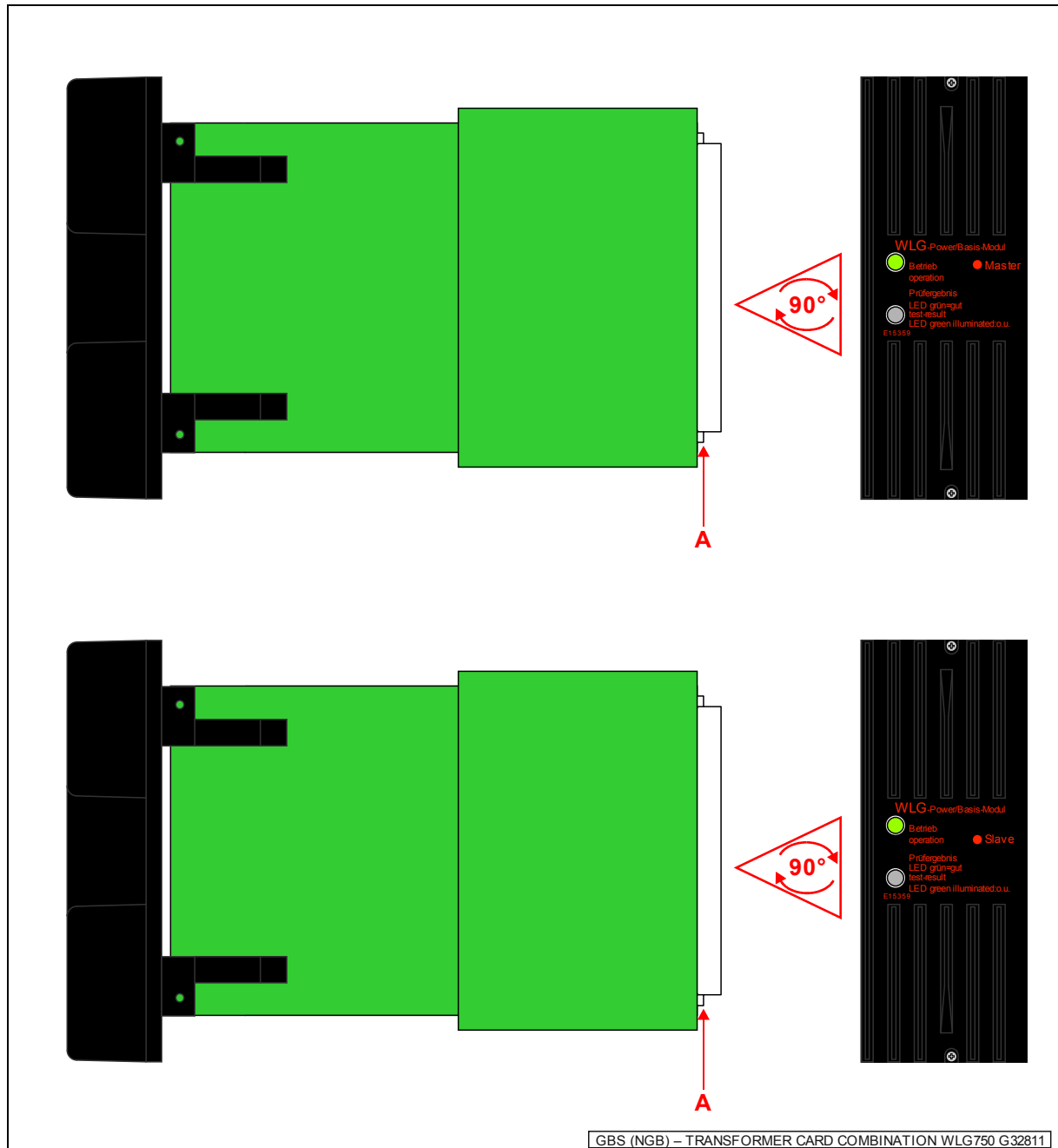
"A": control frame port



GBS (NGB) – transformer card combination WLG750 G32811

Transformer card combination for transforming the battery supply voltage of NGB systems.

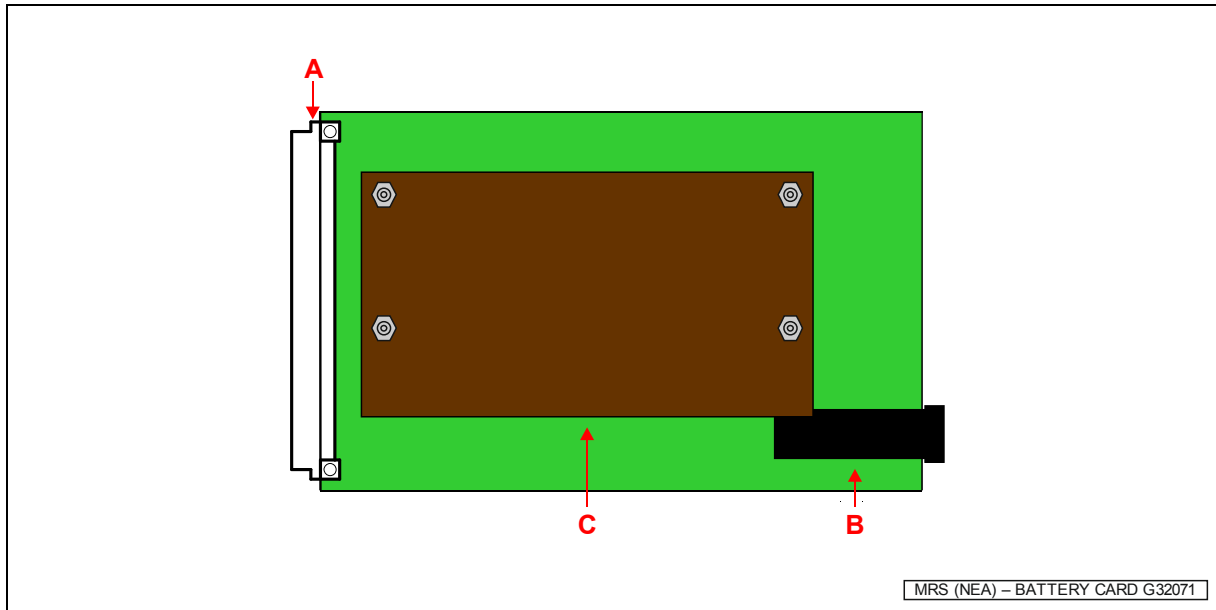
"A": control frame port



MRS (NEA) – battery card G32071

Battery card for buffering of the control and monitoring system KCGZ of NEA systems.

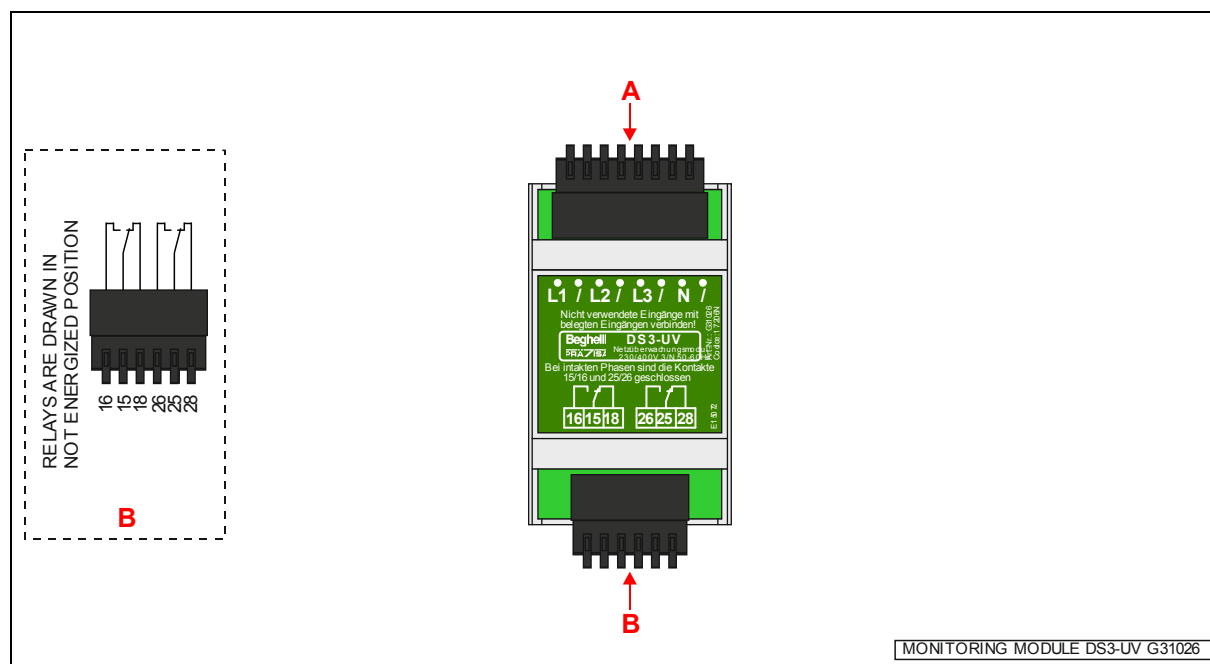
- "A": control frame port
"B": fuse for output voltage of 24 V DC (battery supply voltage),
fuse values: 440 V / 5000 mA / medium time lag (T 5A 440V)
"C": battery holder



Monitoring module DS3-UV G31026

Monitoring module for monitoring of one mains supply. The monitoring inputs are capable of an integrated sub-distribution monitoring (3-phase) for the general lighting, which can monitor presence and value of the mains voltage.

- "A": terminal clamp for mains monitoring (400 V AC)
 "B": terminal clamp for message contacts of the monitoring module (message contacts as potential-free changeovers)



Notes

NOTES:

[illegible]

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