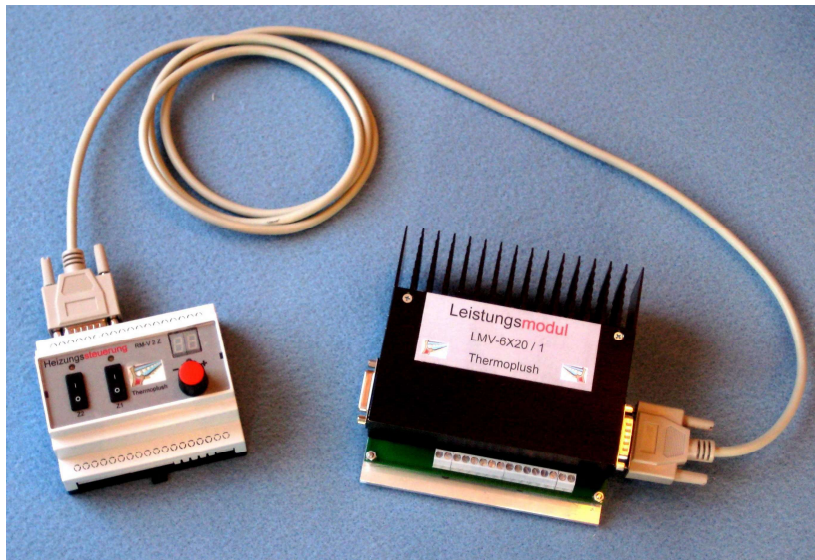


# Regulation of heating Thermoplush RLMV 3x40 Installation of distributor board



Example illustration

## Manufacturer's address

---

P.R. Havener GmbH  
Industriegebiet Ost Fraulautern  
Torschlag 1  
D-66740 Saarlouis  
Tel.: +49 (0) 6831 - 85239  
Fax: +49 (0) 6831 86526  
Email: [info@kirchenbankpolster.de](mailto:info@kirchenbankpolster.de)

## Details about operating instructions document

---

Document number:	GGKRLMV3X40_DOK
Version:	10.10
Date created:	25/10/2010
Copyright N,	2010

Reproduction, also extracts thereof, are only allowed subject to authorisation from the above-mentioned firm.

## Instructions for assembly and operation

Keep in a safe place for future reference



## Contents

<b>1. Safety precautions and disclaimer of liability</b>	<b>3</b>
1.1. About these instructions	3
1.2. Explanation of symbols	3
1.3. Intended use	3
1.4. General notes on safety	3
1.5. Disclaimer of liability	3
<b>2. Installation</b>	<b>4</b>
2.1. Place of assembly	4
2.2. Assembly	4
2.3. Connecting the modules	4
2.4. Description of unit	4
2.4.1. Description of control module RMV-1..4Z	4
2.4.2. Description of terminals for control module RMV-1..4Z	5
2.4.3. Description of power module LMV-3x40K	6
2.4.4. Description of terminals for power module LMV-3x40K	7
<b>3. Initial start-up</b>	<b>7</b>
<b>4. Operating the controller</b>	<b>7</b>
4.1. Switching on	7
4.2. Operating menu	8
4.2.1. Warm-up phase	8
4.2.2. Maximum operating time	8
4.3. Heating operation	8
4.3.1. Options for switching on	8
4.3.2. Options for switching off	8
4.3.3. Adjusting the heating temperature	9
<b>5. Faults</b>	<b>10</b>
<b>6. Guarantee</b>	<b>11</b>
<b>7. Technical specifications</b>	<b>11</b>
7.1. Control element RMV 1..4Z	11
7.2. Power element LMV 3x40K	11
<b>8. Wiring diagram</b>	<b>12</b>



## 1. Safety precautions and disclaimer of liability

### 1.1. About these instructions

This document describes the function and assembly of the Thermoplush control unit RMV 1..4Z in conjunction with LMV 3x40 power modules and provides important advice about handling the Thermoplush heating control unit in accordance with safety regulations. They serve to adjust Thermoplus heated cushions or Thermoplush heated carpets with a nominal voltage of 230V/50Hz.

Do not start assembly until you are sure that you have understood the directions from the technical aspect and only carry out the work in the order stipulated in these directions!

### 1.2. Explanation of symbols



This symbol is found in any advice regarding on-the-job safety in these operating instructions, where there is a risk of harm to individuals' life and limb. Apart from the notes in these operating instructions, the general regulations for safety and accident prevention should be observed.

### 1.3. Intended use

The Thermoplush RLMV 3x40 heating control unit consists of a control device with operating panel and one or more power elements that can be mounted separately from the control element. They serve to control Thermoplus cushion heating with an operating voltage of 230V/50Hz. Any use other than that described above is not permitted and may cause the devices to be destroyed.

### 1.4. General safety precautions



It is essential that the following is observed in assembly:

Any work must be carried out in conformance with national requirements governing electrical equipment and the appropriate local regulations.



It is essential that the following is observed when carrying out electrical work on the control unit:

The control unit was designed for controlling heating elements with a nominal voltage of 230V / 50Hz. It is forbidden to operate it at different rated values than those given.

Also observe the permissible rated current (refer to technical specifications).

A residual current circuit-breaker with a tripping current of 30mA is mandatory for additional personal safety (see attached circuit diagram).



No work can be performed while the controller or power element is open unless the mains supply has been disconnected. All safety regulations for working with mains supply are to be observed. Connection and/or any work requiring opening of the controller may only be carried out by qualified electricians.

### 1.5. Disclaimer of liability

If installation is not carried out correctly this may cause damage to property and may pose a danger to people as a result. The manufacturer assumes no responsibility or liability for loss or damage, which result from faulty installation, improper operation and incorrect use and maintenance or are connected to this in any way.

Similarly we undertake no responsibility for violations of patents or violations of other rights of third parties, which ensue from use of this controller.

The manufacturer reserves the right to make changes with regard to the product, technical specifications or the instructions for assembly and for operation without prior notice.

**Note: operation that is not according to the intended use will lead to voiding of the guarantee.**



## 2. Installation

### 2.1. Place of assembly

The RMV-1...4Z control module and the LMV-3x40 power modules have been designed for assembly in electrical distribution boards. Assembly is only permissible in areas where the type of protection for the controller is sufficient (refer to technical specifications). Build-up of condensation must be avoided. In order to ensure sufficient cooling of the power elements, a minimum spacing of 30mm should be observed. The temperature at the place of assembly may on no occasion exceed or drop below the maximum permissible ambient temperature (see technical specifications).

### 2.2. Assembly

The RMV-1...4Z control module is based on a DIN rail housing (TH35) and can be clipped straight onto the profile rail. If the connected heating is switched on and off directly from the control element (no remote start), consider positioning the unit at a suitable height for the future operator.



The LMV-3x40 power modules must stay behind the distributor board covers and should only be accessible for an electrician.

Connections from control and power modules – refer to item 2.5 and the attached wiring diagram.

### 2.3. Connecting the modules

The control module and the power modules are described under item 2.5 and in the attached wiring diagram. As there are different options and alternatives for integrating the control for the heating in a system, the attached wiring diagram should only be viewed as a suggestion, which is, however, adequate in most cases. Technical support from the manufacturer is available.

If needed in order to increase output, further LMV 3x40 power elements can be connected.

Special arrangements are possible and can be produced upon agreement with the manufacturer.

### 2.4. Description of unit

#### 2.4.1. Description of control module RMV 1...4Z

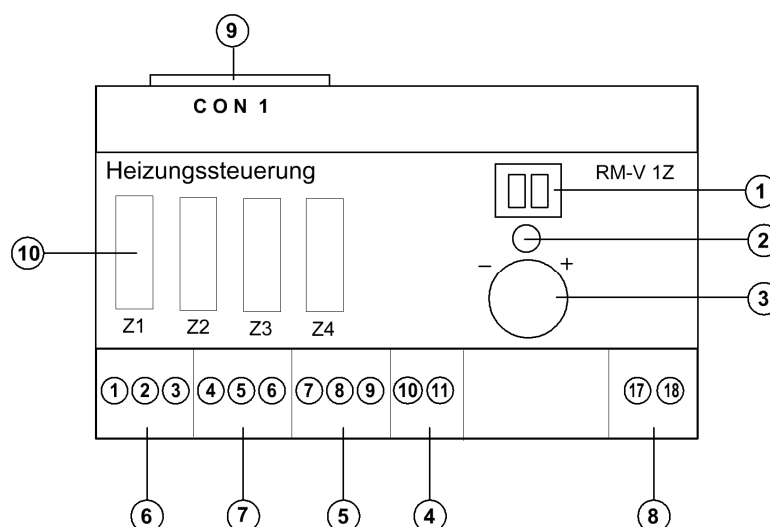


Fig. 1



## Description of control module RMV 1...4Z

<b>Display</b>	Shows selected power level while in operation	
	Shows selected warm-up phase in the operator menu	
	In the event of a fault: shows fault (error codes)	
<b>Control LED (3 colours)</b>	Yellow for warm-up phase or for setting warm-up phase	
	Green for operation at reduced power	
	Red for fault or setting maximum operating time	
<b>Operating button</b>	Push to switch the heating on and off	
	Turn to change the selected power	
	To set the warm-up phase and the operating time	
<b>Supply lead</b>	Supplies control element with 230V/50Hz	
	Neutral conductor terminals: 10	Phase: 11
<b>Control Main contactor</b>	The main contactor K1 is controlled via this dry connection.	
	The main contactor serves to disconnect the heating from the mains.	
<b>Control lamp - operation</b>	The control lamp La1 indicates heating operation externally if needed	
<b>Control lamp - faults</b>	The control lamp La2 indicates faults in the heating externally if required	
<b>Remote start</b>	An external switch and/or an external timer can be connected via the "remote start" terminals. This can be used to switch the heating on and off separately away from the control element. The maximum distance is 100m.	
<b>Control power element</b>	The control element controls the power element that is connected via the lead included in the supply.	
<b>Zone switch (if required)</b>	If there are different zones, these switches can be used to switch on single zones or turn them off.	

### 2.4.2. Description of terminals for RMV-1..4Z control module:

<b>1-3</b>	Dry contact for external operating display (optional) 1=base / 2= make contact / 3= break contact / maximum 230V/6A
<b>4-6</b>	Dry contact for external display in case of faults (optional) 4= base / 5= make contact / 6= break contact / maximum 230V/6A
<b>7-9</b>	Dry contact for the main contactor K1 / 7= base / 8= make contact / 9= break contact / maximum 230V/6A
<b>10</b>	Feed for control element – neutral conductor
<b>11</b>	Feed for control element – phase 230V/50H
<b>17-18</b>	Remote start possible via external switch or external timer (optional) / recommended lead: YSLCY 2x1.5 mm <sup>2</sup> (PVC control line, shielded). Maximum length: 100m
<b>CON 1</b>	Connection for controlling the power element / connection lead included in supply



### 2.4.3. Description of power module LMV-3x40K

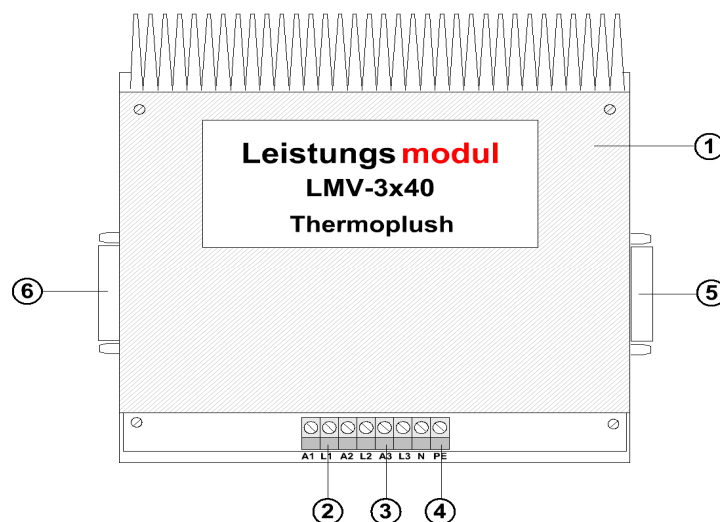
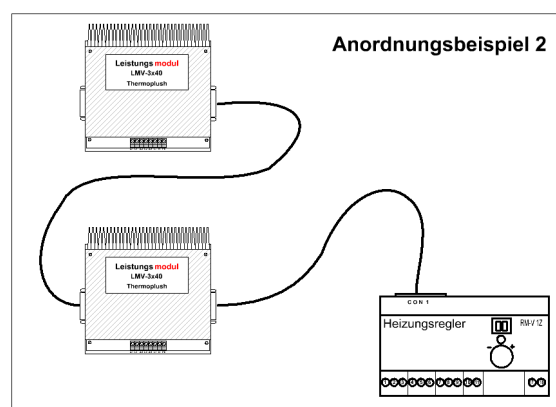
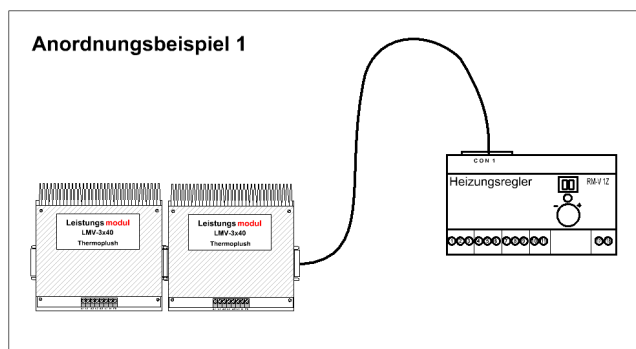


Fig. 2

<b>Power element LMV 3x40</b>	The power modules control the connected heating together with the RMV 1...4Z control modules
	Each module has one built-in zone (3-phase)
	The total connected output per module amounts to max. 9 kW at 400/230V/50Hz
<b>Supply lead</b>	Power for the module is supplied via the terminals L1, L2, L3 N and PE.
<b>Feed for zone 1</b>	Distribution to the individual cushion heating is via the terminals B1, B2 and B3.
<b>Protective conductor connection</b>	The power element must be earthed via these terminals. <u>Remark:</u> The cushion heating has protection class II and may not be earthed.
<b>Control - power element</b>	The power element is connected with the control element via this plug with the supplied control cable
<b>Control – further power elements</b>	If output is to be increased, additional power modules can be connected to this plug.
	The expansion module can either be connected directly to the existing power module or, if mounted separately, by using the supplied control cable.



#### 2.4.4. Description of terminals for LMV-3x40K power modules

<b>L1</b>	L1- feed zone 1 acc. to attached wiring dia. (item 8)
<b>L2</b>	L2- feed zone 1 acc. to attached wiring dia. (item 8)
<b>L3</b>	L3- feed zone 1 acc. to attached wiring dia. (item 8)
<b>A1</b>	feed L1 to cushion heating zone 1
<b>A2</b>	feed L2 to cushion heating zone 1
<b>A3</b>	feed L3 to cushion heating zone 1
<b>N</b>	neutral conductor connection
<b>PE</b>	protective conductor connection
<b>CON 1</b>	connection to RMV 1...4Z control element / connecting lead included in supply

### 3. Initial start-up

Once installation has been completed the mains supply can be switched on.

The control module then goes into standby mode.

If there is a fault in the wiring for the control or power element or if the fuses are off, the red LED will come on and a number will appear in the display (e.g. "87"). In this case it will not be possible to start the control.

Check the installation and fuses and try again. Possible faults are described under item 5.

In order to make a quick check to see whether installation has been carried out correctly, the warm-up phase and operating time can be changed or shortened in the operating menu as needed.

An introduction to the operating menu is given in item 4.2

### 4. Operating the controller

#### 4.1. Switching on

Once it has been connected to the electricity supply the control unit is ready to operate.

The heating is turned on by pressing the operating button (3). The main contactor K1 is activated and the connected heating is supplied with maximum power - the LED control lamp is yellow. The numbers indicate the power level as a percentage, reduced after the warm-up phase.

After the preset warm-up phase (adjustable from 1-30 minutes) the control goes over to operation at reduced power - the LED is green. The power level indicated in percent in the display is accepted.

The reduced power level can be adjusted by turning the knob. In order to avoid errors in operation (too cold or too hot) the range for adjustment is restricted (min. 10% and max. 75%).

The heating can be switched off manually at any time after starting it by pressing the knob again.

In order to avoid continuous heating, once the selected maximum temperature has been reached the heating switches off automatically.



## 4.2. Operating menu

The preset values in this menu are standard values that have been provided by the manufacturer on the basis of typical operating figures.  
However it is possible to change these values if required.

The following values can be set:

### 4.2.1. Warm-up time

The warm-up phase serves to heat up the cushions or carpets rapidly and is set in the factory at 15 minutes.

Next level menu for warm-up time:

Press the button (3) for about 5 seconds until the yellow LED comes on. The current warm-up time is shown as minutes in the display. Turn the knob to adjust the figure between 1 and 30. Press the push button (3) to save the changed setting, and the control unit switches off.

### 4.2.2. Maximum length of operation

Automatic switch-off once the maximum operating time has been reached prevents the heating from running continuously if it has not been switched off manually. However it can be turned off if required.

Next level menu for operating time:

Press the button (3) for about 10 seconds until the red LED comes on. The current maximum operating time is shown in the display. Turn the knob to adjust the figure between 0 and 60. The number shown in the display indicates the time in intervals of 10 minutes, e.g. 15 in the display = 150 minutes for maximum operating time. In this case the heating will switch off automatically 2.5 hours after it was switched on. If it is set to "00", automatic switch off will be deactivated, i.e. the heating will not switch off automatically. Press the knob (3) to save the changed setting, and the control unit switches off.

## 4.3. Heating operation

### 4.3.1. Options for switching on

There are the following options for switching the heating on:

- press the button on the control element
- use an external button separate from the control element (optional)
- automatic turn-on pulse via an external timer (optional)

With the built-in warm-up phase it is enough to switch on the heating about 15-20 minutes before church services start. During this time the heating is supplied with 100% power automatically.

### 4.3.2. Options for switching off

There are the following options for switching the heating off:

- press the button on the control element during operation
- use an external button separate from the control element (optional)
- automatic turn-off pulse via an external timer (optional)
- turn-off via control element with preset operating time





### 4.3.3. Adjusting the temperature for the cushion heating

Setting the right temperature depends on the following factors:

- Ambient temperature
  - The lower the ambient or room temperature is, the higher the power needs to be. Churches are subject to hardly any fluctuations in temperature. Therefore it is usually only necessary to make adjustments once in autumn and in spring.
- Sitting times
  - As soon as visitors stand up or kneel (seat is not occupied), the surface of the cushion will cool down slightly, but it will warm up fast as soon as the person sits down again (refer to table 1).
  - On the other hand, if there is a church concert, visitors will remain seated all the time and they will therefore provide their own body heat to the cushion without interruption. Therefore in these cases, 10% heat output is sufficient as a rule (refer to table 2).

By coordinating the warm-up phase and the heat output, it is possible to adjust the cushion heating to suit your particular requirements.

Generally the following applies:

up to a maximum of 35°C seat surface temperature is sufficient and perceived as pleasant

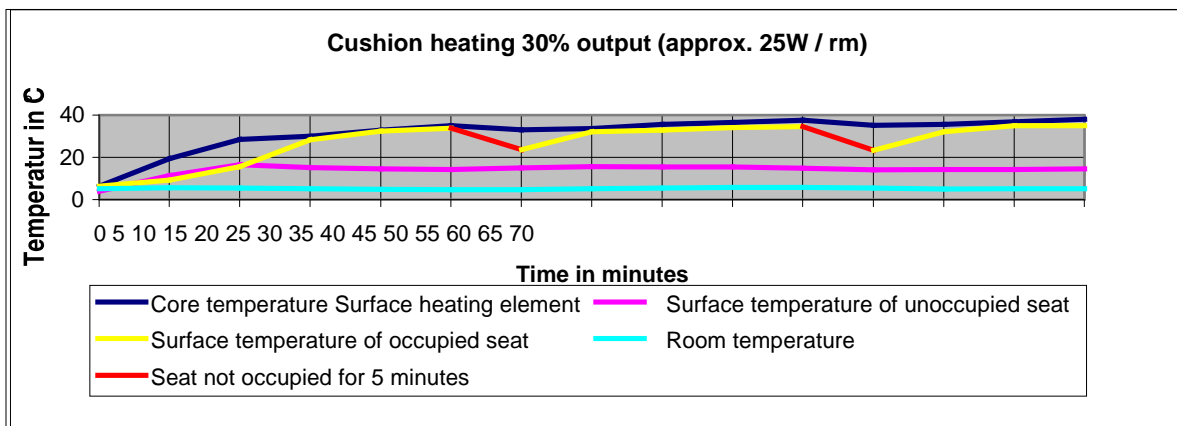


Table 1: setting: 10 minutes warm-up phase / 30% heating operation at 5°C room temperature

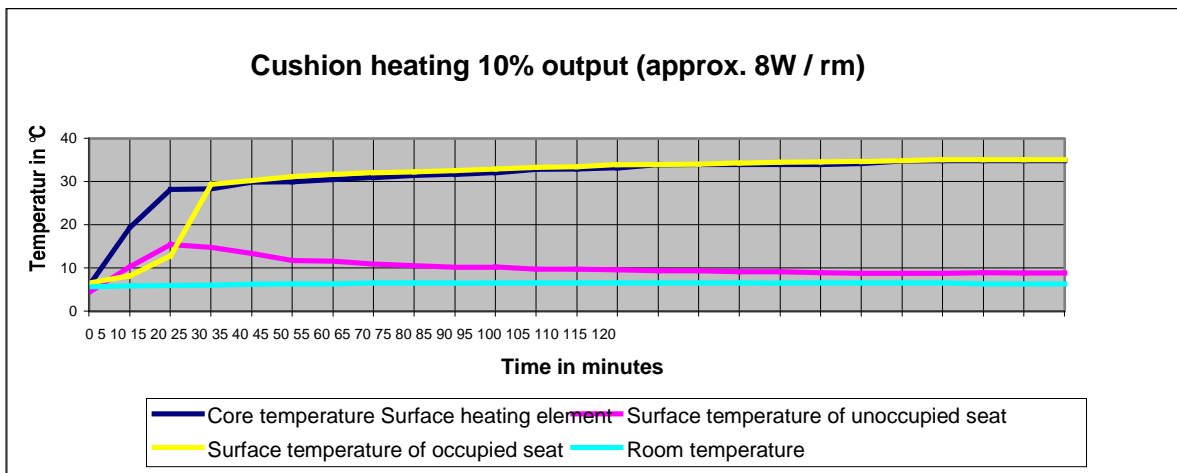


Table 2: setting: 10 minutes warm-up phase / 10% heating operation at 5°C room temperature (e.g. concert)



## 5. Faults

The heating control has been designed to provide many years of continuous use. Nonetheless problems may of course occur. The following description should help the technician and the operator to find the cause of any problem:

The controller does not appear to be working

Error:	Possible cause:
Nothing shown in display	No power supply, check fuse and power lead
	Automatic switch-off has turned off the unit – press the operating button to turn on again

Display lamp (2) is red

Error:	Possible cause:
Red LED is on and there are numbers shown in the display	part of power supply has failed – check fuse and power lead
	There is a fault in the electronics – call service department giving details of the error code shown in the display.
	The controller has not been connected properly – check the connections according to terminal diagram.

The heating temperature is not right

Error:	Possible cause:
The heating is too cold	The automatic switch-off has switched the heating off too soon – check the switch-off time in the operating menu
	Output is set too low – in the case of very cold temperatures the output may be set too low, e.g. at 10%, and is hardly noticeable Check the output setting in the control unit.
The heating is too hot	The heating can be adjusted between 10% and 75% – if cushions are too warm, reduce the output.
The heating warms up too slowly	The built-in warm-up phase is set too short (standard = 15 minutes) – change in the operating menu
The heating goes into normal operation immediately after switching on (green LED)	In order to prevent “overheating”, the controls block warm-up phases for 20 minutes after the heating had been in normal operation. In order to stop this, you need to flip off the control fuse briefly.



## 6. Guarantee

The manufacturer accepts the following obligations under the guarantee towards end customers:

The manufacturer will rectify all manufacturing and material faults, which occur with the controller during the guarantee period and which impair the working order of the unit. The guarantee shall not apply if the fault can be attributed to the end customer or a third party after conclusion of the purchase contract with the end customer, in particular as a result of improper assembly or incorrect initial start-up, improper or negligent handling, excess load, inappropriate equipment, faulty construction, an unsuitable foundation or improper operation or use. The guarantee shall only be satisfied if your dealer is notified of the fault immediately after it is discovered. The notice of fault should be sent by the dealer to the manufacturer.

Please submit a copy of your purchase receipt.

It is essential that an exact description of the fault is provided in order to process the complaint.

Validity of the guarantee expires 24 months after conclusion of the purchase contract with the end customer, unless the manufacturer agrees to an extension of the term explicitly in writing. The dealer's guarantee based on the purchase contract with the end customer is not affected by obligations under this present guarantee. The guarantee shall be satisfied at the manufacturer's discretion as repair or replacement.

This does not include any costs that are incurred for replacement, shipping or new installation. If it is not possible to repair or replace the goods or if this does not occur within a reasonable time despite the customer's written notification of a period of grace, the decrease in value caused by the fault shall be reimbursed or, insofar as this is not adequate in view of the end customer's interests, the contract shall be changed.

Any further claims against the manufacturer on the basis of the obligations under this guarantee, in particular claims for damages on account of lost income, compensation for loss of use and consequential damage are excluded, unless prescribed by law.

## 7. Technical specifications

### 7.1. Control element RMV-1Z

Operational voltage	230V/50 Hz
Control voltage	12V-DC
Current carrying capacity for dry contacts	6A/230V/50Hz
Type of protection	IP 30
Permissible ambient temperature	-10°C to +25°C
Assembly	Installation of distributor board Top hat rail TS-35
Weight	370g
Housing	recyclable plastic housing
Dimensions	L x W x H 105 x 87 x 75 mm

### 7.2. Power element LMV-3x40K

Operational voltage	3x230V/400V / 50 Hz
Output, total per module	9kW at 230V 50 Hz
Current carrying capacity, total per module	39A (resistive load)
Current carrying capacity per output	13A (total capacity of the power module may not be exceeded)
Type of protection	IP 10
Permissible ambient temperature	-10°C to +25°C
Assembly	installation of distributor board behind cover
Weight per module	865 g
Dimensions of each module	L x W x H 160 x 140 x 65 mm

## 8. Wiring diagram



# Elektroplan

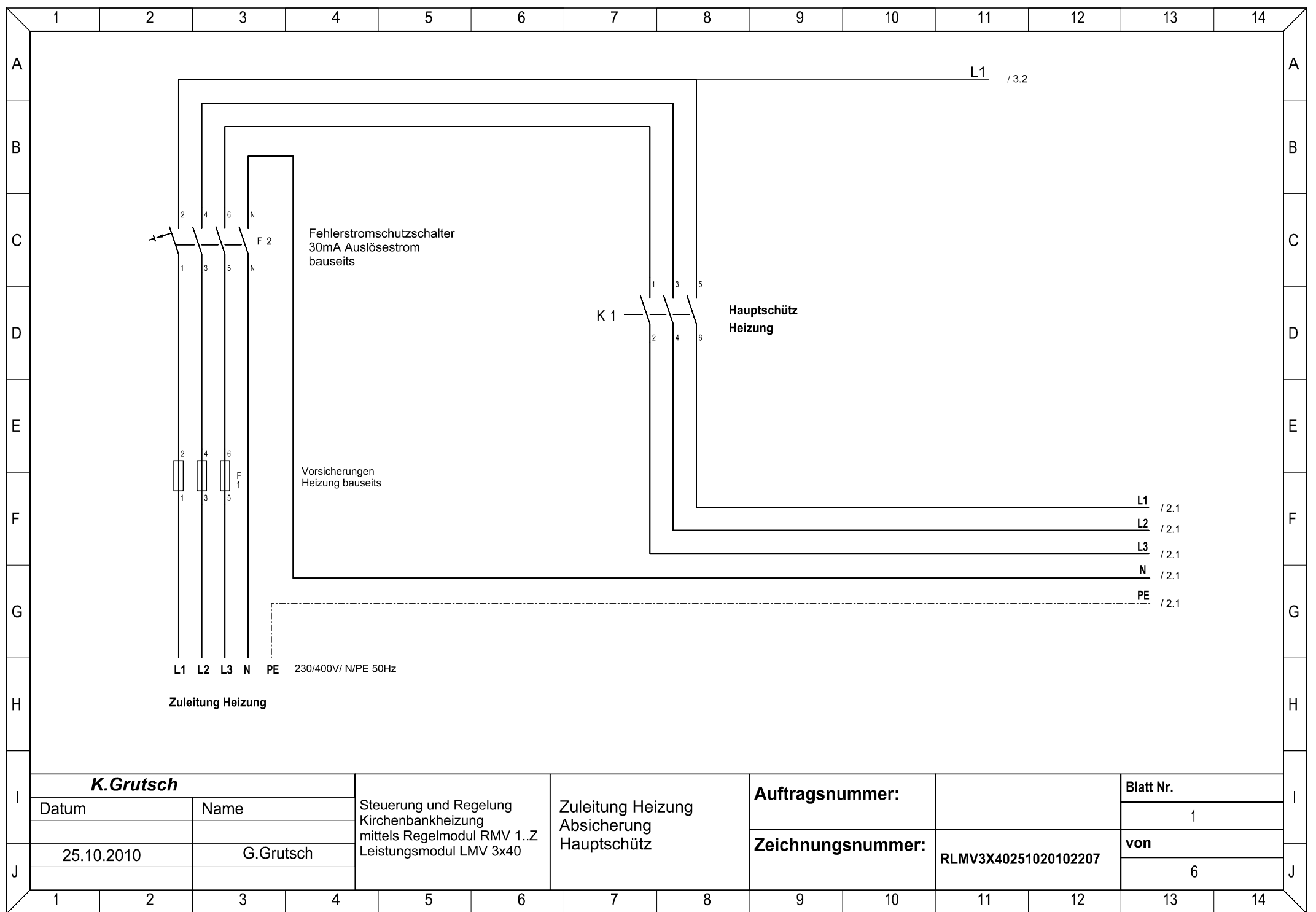
**Steuerteil:** RLM 1...4Z

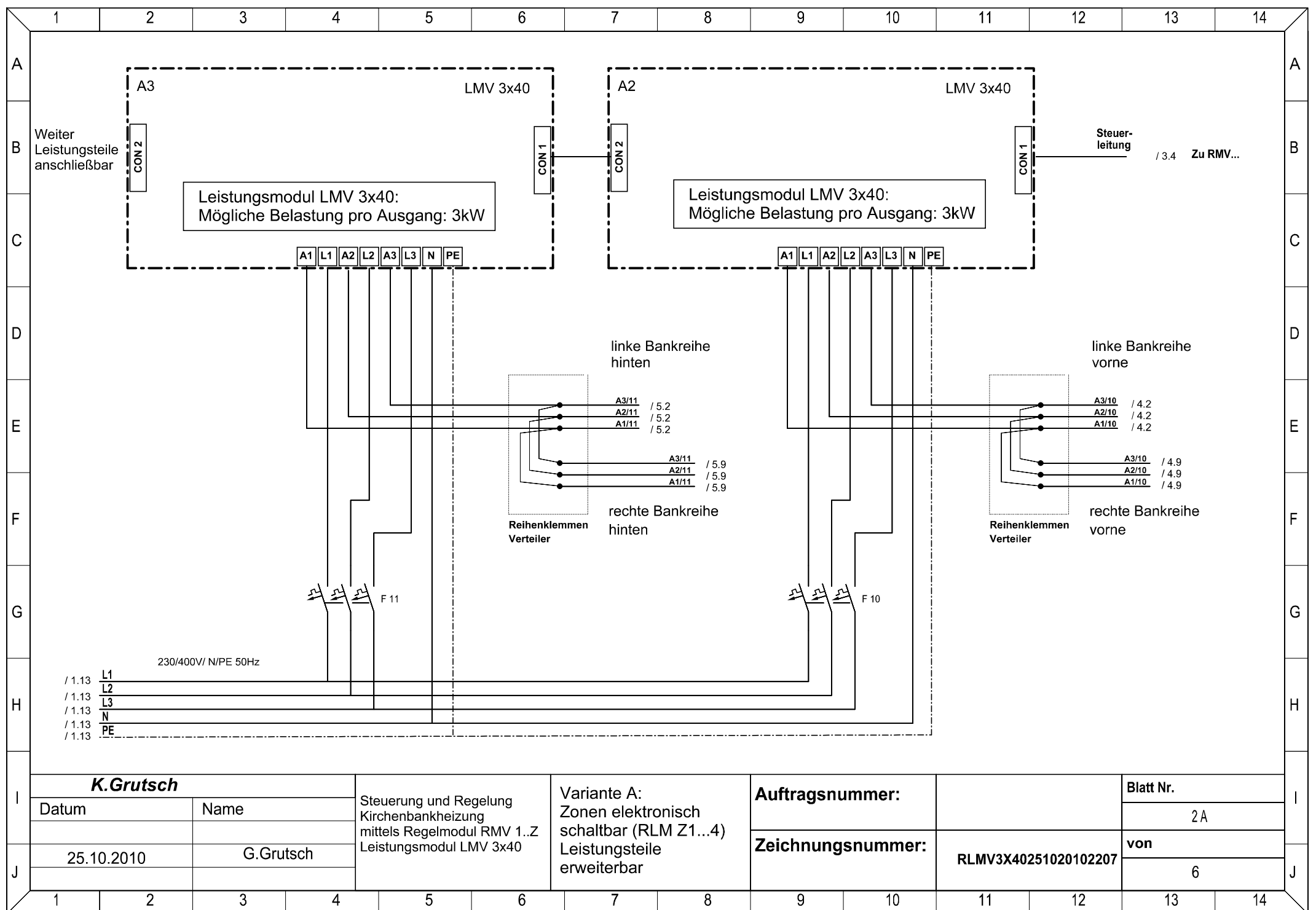
**Leistungsteile:** LMV 3x40

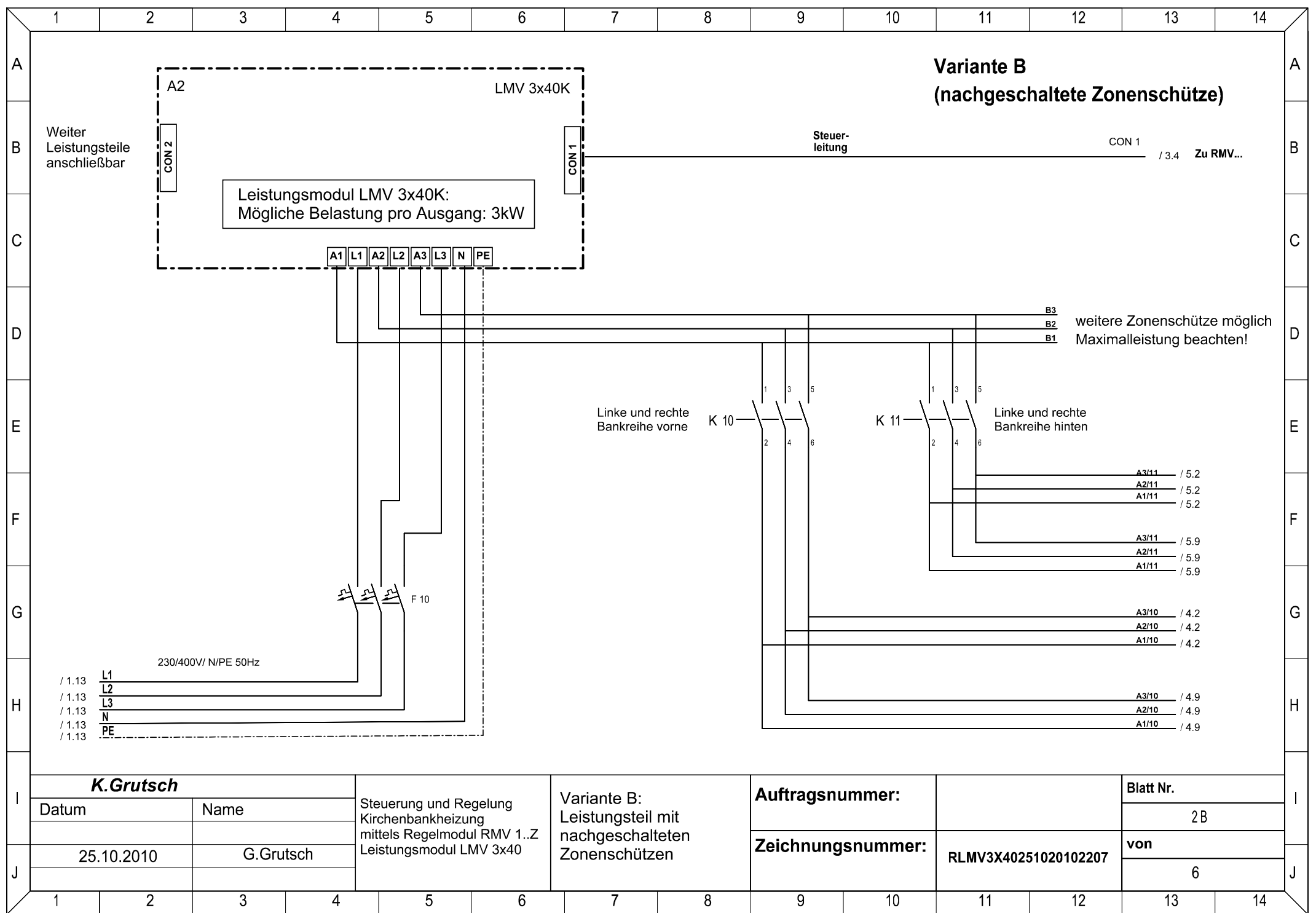
**zur Steuerung von  
Thermoplush Sitzpolsterheizung  
73W/lfm / 230V / 50Hz  
Leistung pro Modul: 9kW**

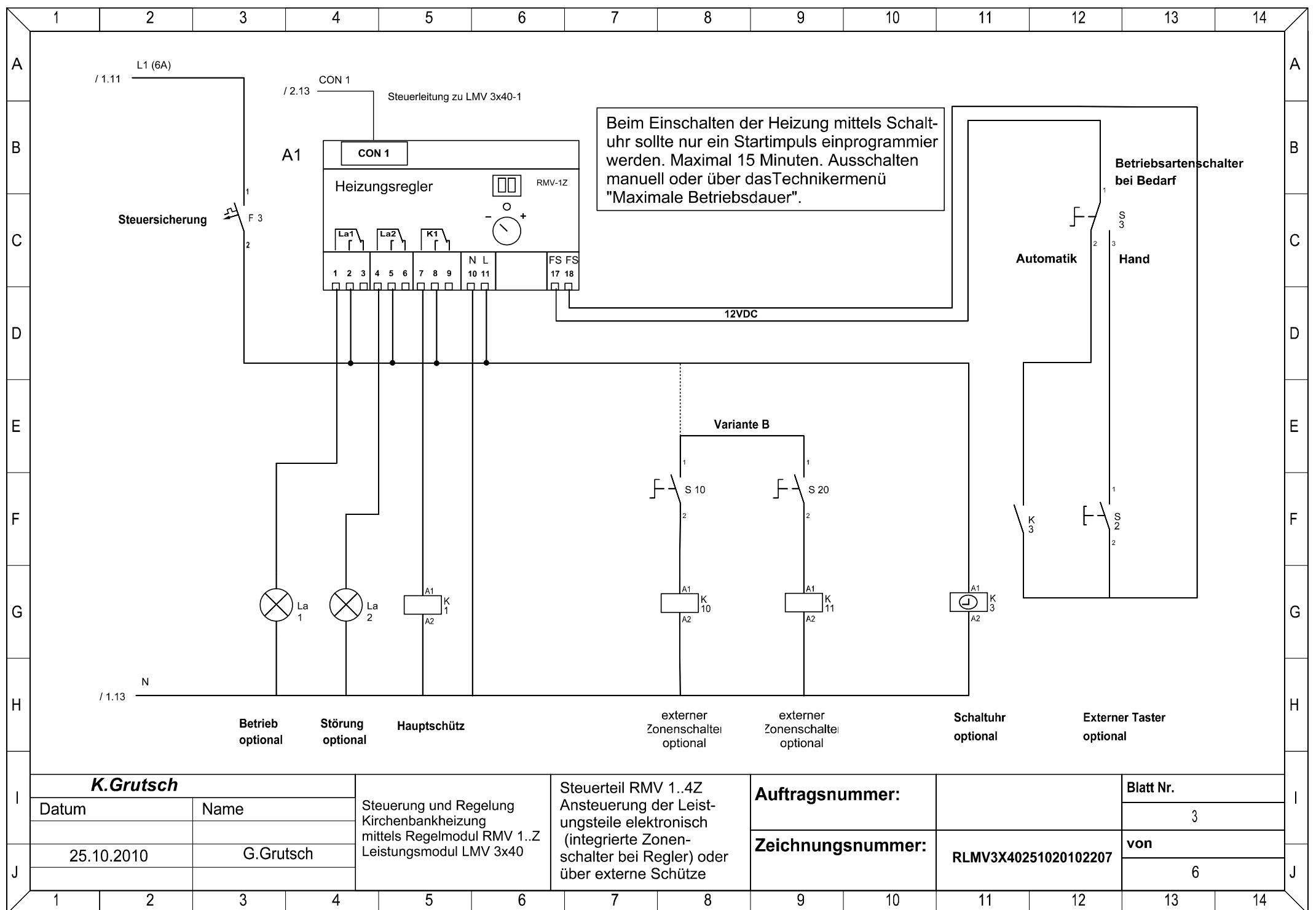
**Planbeispiele**

K.Grutsch  
Blockau 75  
A 6642 Stanzach  
Tel.: 0043-5632-550-0  
Fax: 0043-5632-550-60  
e-mail: [info@kirchenbankpolster.at](mailto:info@kirchenbankpolster.at)  
Internet: [www.kirchenbakpolster.at](http://www.kirchenbakpolster.at)

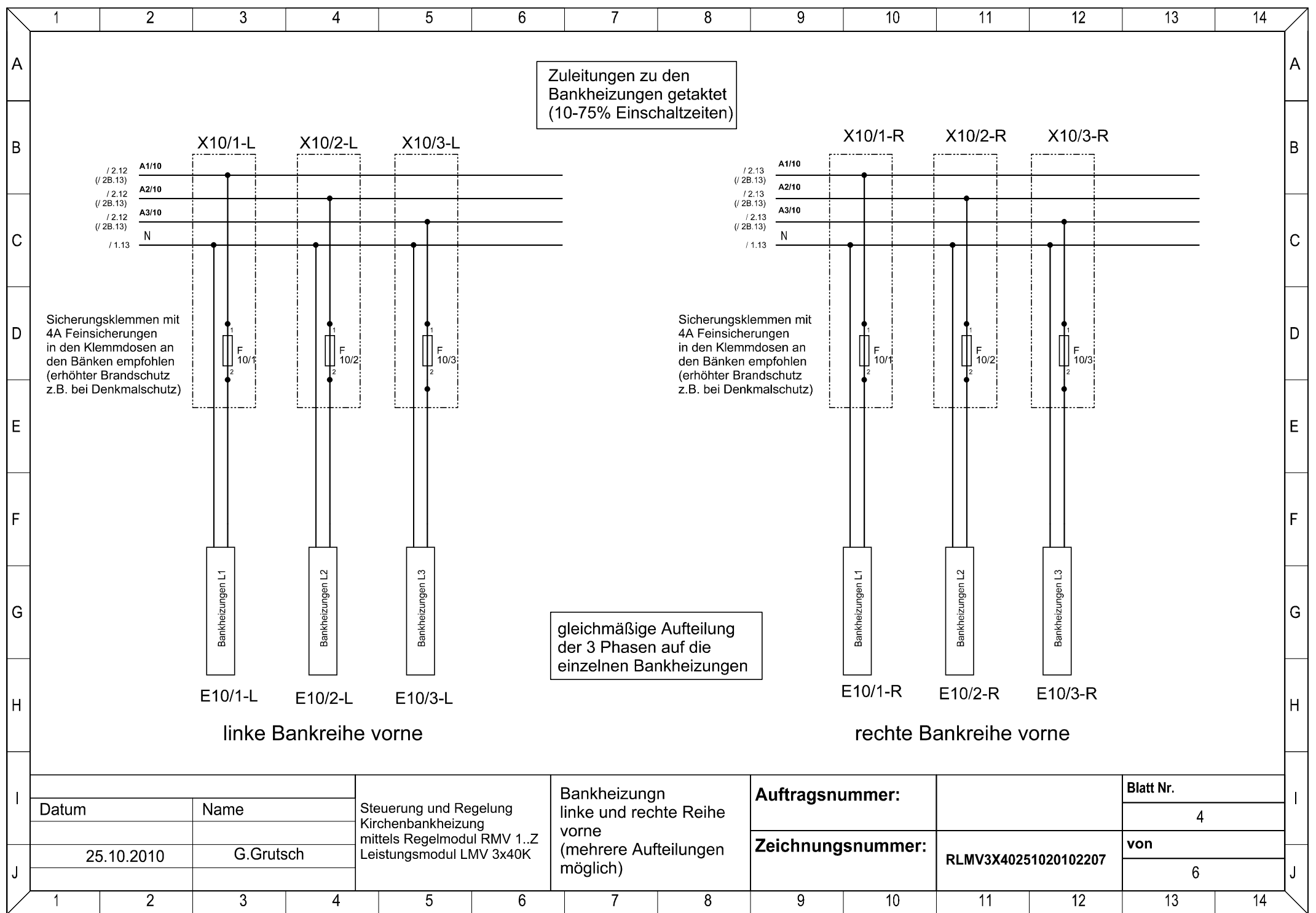


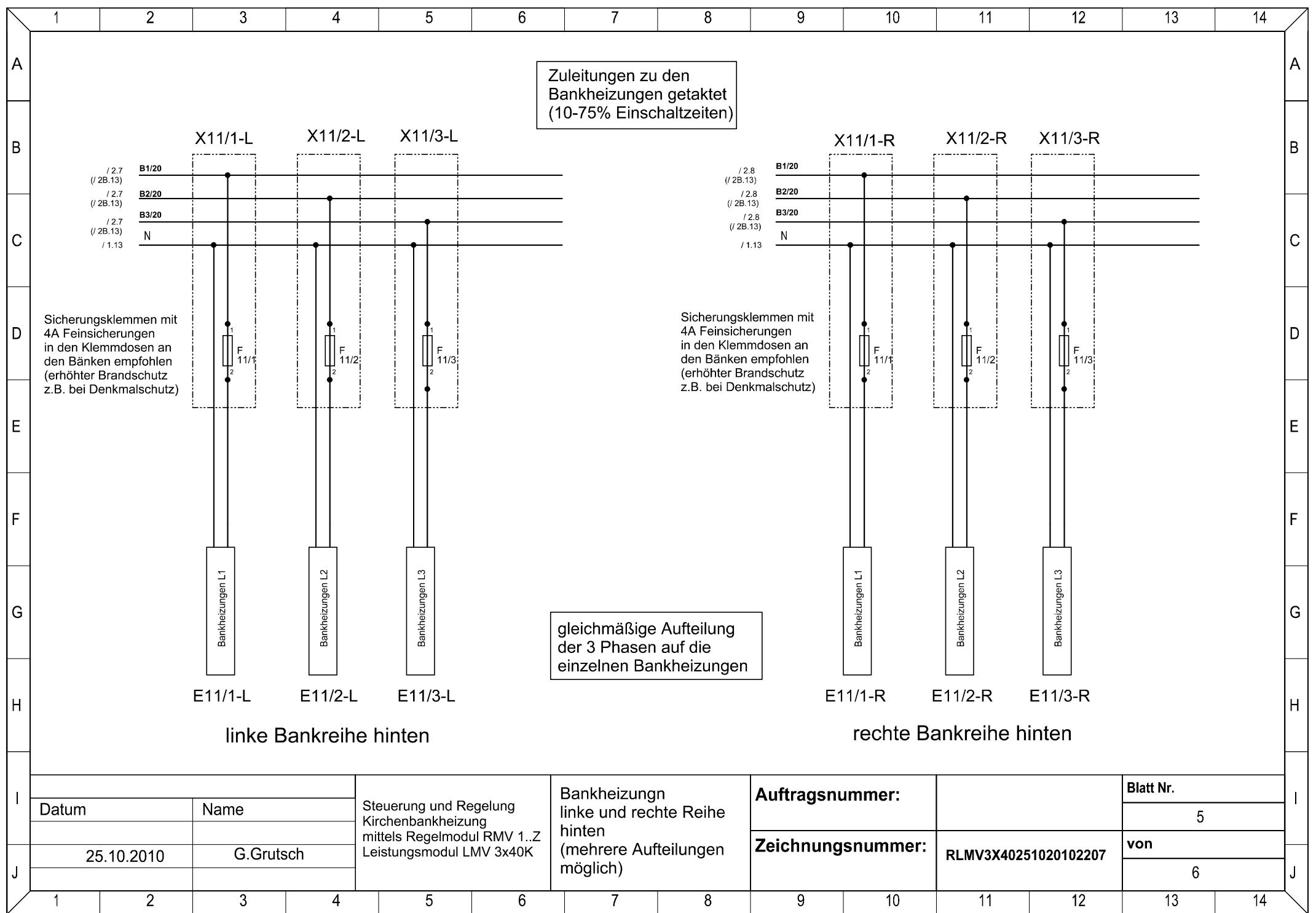












Legende

Ersatzteilliste / Bestellnummern

A1	Reglermodul RMV 1Z	G-RMV 1Z
A2	Leistungsteil LMV 3x40-1	G-LMV-3x40
A3	Leistungsteil LMV 3x40-2	G-LMV-3x40
E1, E2,.....	Thermoplush Sitzpolsterheizung	---
F1	Vorsicherung Heizungsverteiler	---
F2	Fehlerstromschutzschalter 30mA	---
F3	Steuersicherung B6A	---
F10, F11	Sicherungen Heizung 16A	---
K1	Hauptschütz	---
K3	Schaltuhr (optional)	---
La1	Kotrolleuchte "Heizung ein" (optional)	M-M22-LED230-G
La2	Kotrolleuchte "Störung" (optional)	M-M22-LED230-R
S2	Externer Ein/Aus-Taster (optional)	M-M22S-WRLK-R
S3	Betriebsartenschalter (optional)	---
X10, X11, .....	Klemmdosen bei den Bänken	