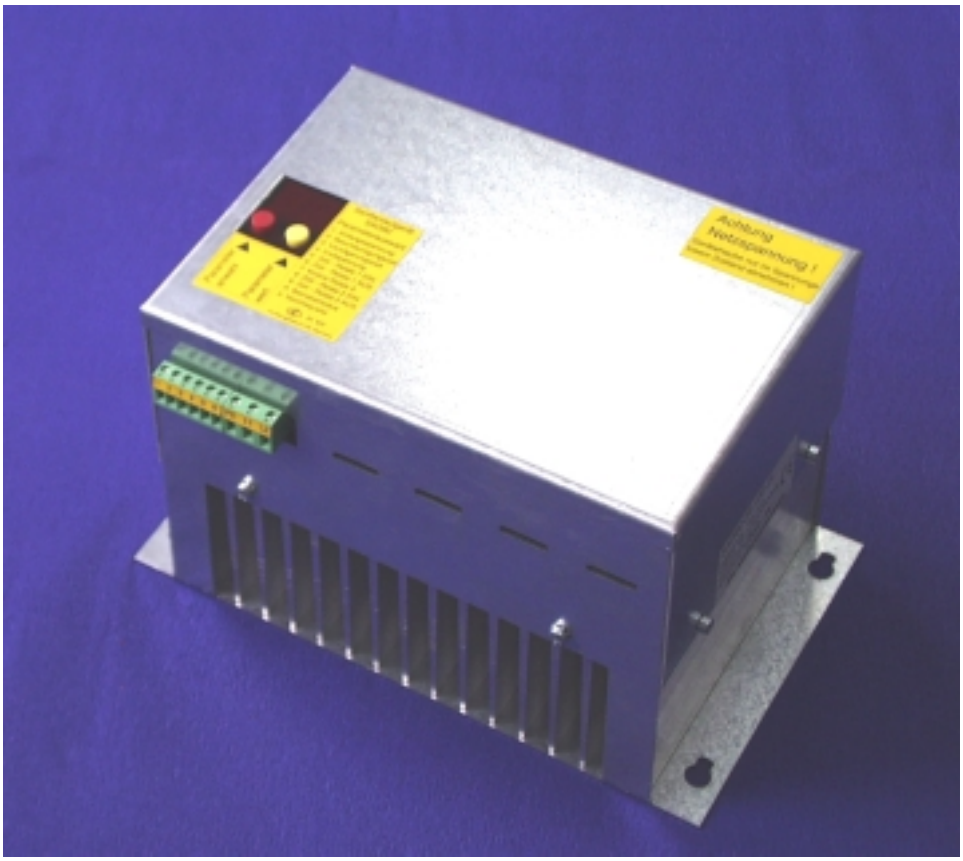
SOFTSTART-UNIT SAG 60



TECHNICAL MANUAL

CONTENTS

3. TECHNICAL DATA

3.1 TYPE DATA AND POWER CLASSES

The softstart-unit SAG 60 can be driven with these types of motor:

Asynchronous motors and Standard motors

Main voltage: 400VAC +10% / -15%

If you need other main voltages, please connect us.

Control-unit voltage: 24VDC +10% / -10%

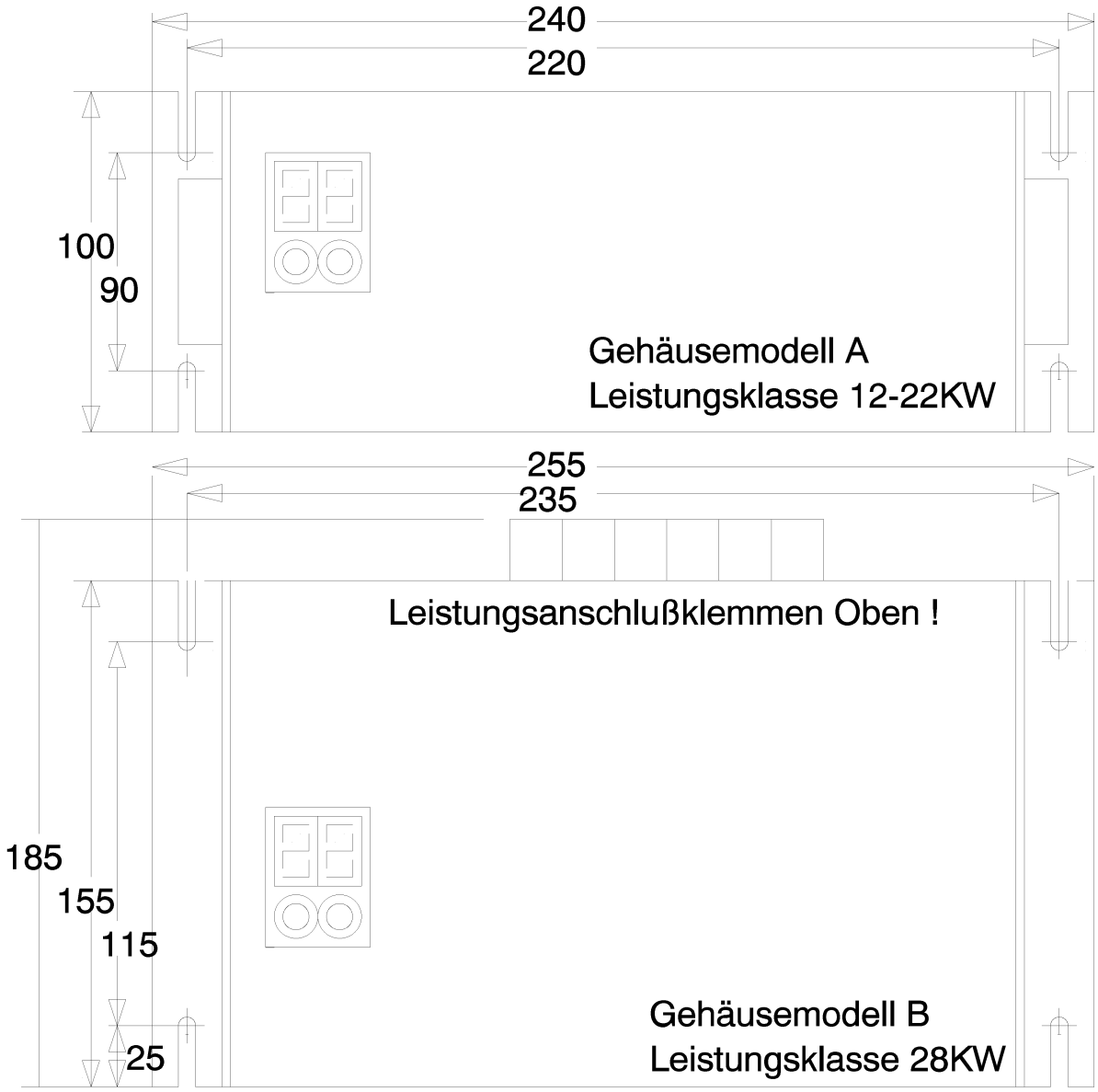
If you need other control-unit voltages, please connect us.

For Your Order You need several main data's:

- Nominal Supply Voltage
- Nominal Motor Current
- Voltage of the Control-Unit

Type Softstart-unit	Nominal Current (A) Standard	Nominal Power (kW) Standard	Nominal Current (A) W3-switch.	Nominal Power (kW) W3-switch
SAG60-12-400-24	To 25	12	To 42	16
SAG60-16-400-24	To 45	16	To 70	24
SAG60-22-400-24	To 70	24	To 120	42
SAG60-28-400-24	To 85	30	To 145	50

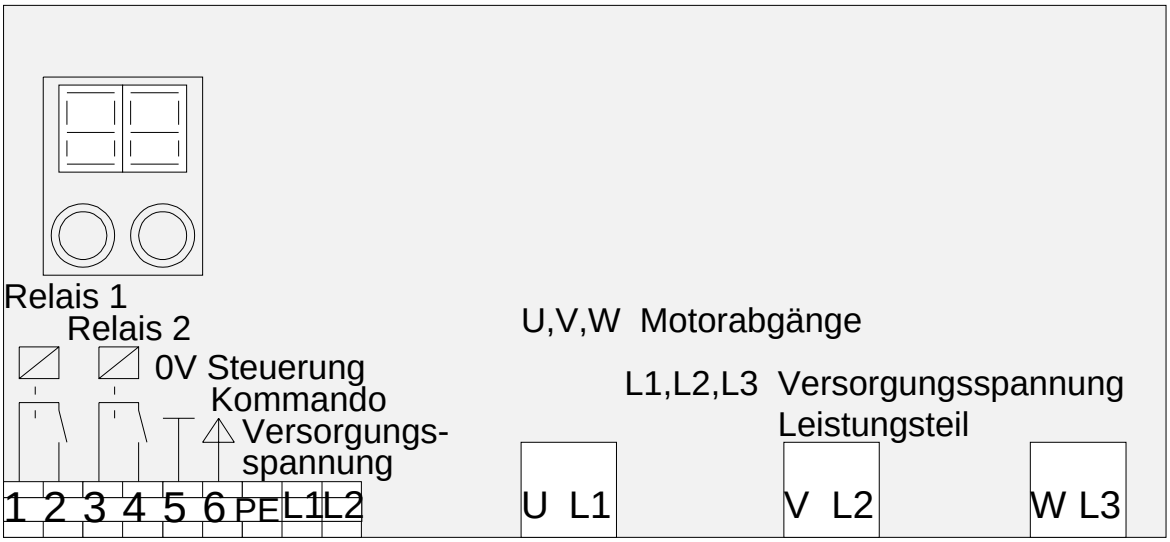
3.2 MECHANICAL DESIGN



Maßbild für alle Geräte der Baureihe SAG60. Alle Angaben in mm. Befestigungsbohrung mit Durchmesser 6mm.

2. INTERFACES

2.1 GENERAL PICTURE OF THE INTERFACES



Top-view with open cover:

TERMINAL	FUNCTION
1	Relays-Switch 1 hydraulic-outlet
2	Switch-Switch 1 hydraulic-outlet
3	Switch-Switch 2 programmable functions
4	Switch-Switch 2 programmable functions
5	GND of the control-unit
6	Input for the start-signal
PE	Earth
L1	Power supply of the control-part of the softstart-unit (Phase L1)
L2	Power supply of the control-part of the softstart-unit (Phase L2)
U	Power-wire to the motor (Wicklung U)
L1	Power supply of the power-part of the softstart-unit (Phase L1)
V	Power-wire to the motor (Wicklung V)
L2	Power supply of the power-part of the softstart-unit (Phase L2)
W	Power-wire to the motor (Wicklung W)
L3	Power supply of the power-part of the softstart-unit (Phase L3)

2.2 POWERSUPPLY AND MOTOR-INTERFACE

The terminals for 1,5mm^2 L1 and L2 are the power supply for the electronic-part of the softstart-unit.
The other terminals **L1**, **L2** and **L3** are for wires with 10mm^2 or greater. They supply the power-part of the softstart-unit (thyristor-modules).
The terminals **U**, **V** and **W** are the outputs for the motor.

2.3 INPUTS OF THE SOFTSTART-UNIT

The **terminal number 6** is the input channel for the +24V DC start signal to running up the motor
The **terminal number 5** is the ground-connection to the control unit.

2.4 RELAYS OUTPUTS OF THE SOFTSTART-UNIT

The softstart-unit has two relays with normally open outputs.
The **terminals 1 and 2** are the outputs of **relays 1**. This relays has the function of the hydraulic-outlet.
Relays 2 is free programmable and the **terminals 3 and 4** are the outputs of relays 2.

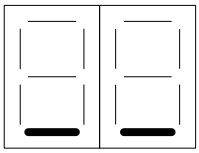
3. DISPLAYS AND PARAMETER

3.1 DISPLAY AND BUTTONS

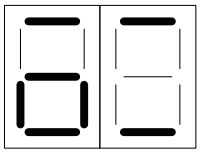
The display has two seven-segment-units und two buttons (red and yellow).
With the **left button (red),** You can choose the parameter. The left seven-segment-unit shows you the number of the parameter.
On the right seven-segment-unit, you will see the value of the parameters.
With the **right button (yellow),** You can change the parameters.

3.1.1 GROUND MENUE

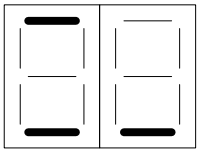
The ground menu shows you the running condition and the relays condition of the softstart unit. At the first switching-on of the softstart-unit, the ground menu is active. Later you choose the ground menu if you push the left button several times.



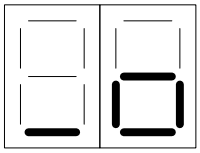
Gerät wartet auf Start-signal,
Relais1 und 2 deaktiv



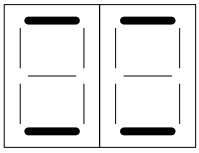
Gerät hat Hochlaufkurve beendet, Relais1 (Ventil-freigabe) aktiv, R2 deaktiv



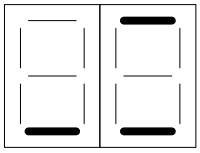
Gerät wurde gestartet (Spannung od. Signal),
Relais1 und 2 deaktiv



Gerät wartet auf Start-signal, Relais 2 aktiv,
Relais1 deaktiv



Gerät hat Hochlaufkurve beendet,
Relais1 und 2 deaktiv



Gerät fährt eine Ablauf-kurve herunter,
Relais1 und 2 deaktiv

3.1.2 HOW TO CHANGE THE PARAMETER

If you want to change several parameters, you must make a special button-combination:

1.) You must choose the ground menu
2.) You must push the right button (yellow) three times

After that you can choose with the left button the parameter. With the right button, you can change the Value.
After you have changed the parameters, you should switch off the power voltage. In this way the input function is cancelled and nobody can change your parameters, after you leave the elevator.

3.2 DESCRIPTION OF THE PARAMETERS

3.2.1 PARAMETER 1 STARTVOLTAGE

In this parameter you have the possibility to choose the start voltage of the motor. Adjustable is a value of the start-voltage between 0 and 9. This corresponds to 0% to 30% of the power supply voltage.

3.2.2 PARAMETER 2 ACCELERATION TIME

In this parameter you have the possibility to choose the time, which the motor needs to reach the final voltage. Adjustable is a value of the acceleration time between 0 and 9 seconds.

3.2.3 PARAMETER 3 DECELATION TIME

The parameter 3 **deceleration time** is in action, if you have chosen the parameter a **functionsmodus** with the value 1.
After you have switch off the start signal, the motor is running down to the final-voltage.
Adjustable is a value of the acceleration time between 0 and 9 seconds.

3.2.4 PARAMETER 4 FINAL-VOLTAGE

The parameter 4 **final-voltage** is in action, if you have chosen the parameter a **functionsmodus** with the value 1.
If you have switch off the start signal, the motor is running down until the motor reach the value of the parameter **final-voltage**. Adjustable is a value of the final-voltage between 0 and 9. This corresponds to 0% to 60% of the power supply voltage.

3.2.5 PARAMETER 5 SWITCHING ON-TIME - RELAYS 1

The Relays 1 has a default-function for the outlet of the hydraulic-unit. After the motor is running up and has reached the full power voltage, the switching on-time of the relays 1 begin to start. If it reaches the end value, the outlet will activate. Adjustable is a value of the switching on-time between 0 and 9 in 0.5 steps of seconds.

3.2.6 PARAMETER 6 SWITCHING OFF-TIME - RELAYS 1

The parameter 6 **switching off-time – relays 1** is in action, if you have choose the parameter a **functionmodus** with the value 1.
The time begins to run, after the motor is switched off. Adjustable is the value of the switching off-time time between 0 and 9 seconds.

3.2.7 PARAMETER 7 FUNCTION OF RELAYS 2

In **Parameter 7 function relays 2,** you have three possibilities for functions of relays 2:

a) If you have chosen **VALUE 1,** the relays 2 has the function of ready-relays. This means that the softstart-unit is ok, the relays 2 is switching on.

b) If you have chosen **VALUE 2**, the relays 2 have the function to switch on/off the main conductor.

c) If you have chosen **VALUE 3**, the relays 2 have the function of a "Second Switching level ". If you have chosen this function, parameter 8 and 9 are in action.

3.2.8 PARAMETER 8 - SWITCHING ON-TIME - RELAYS 2

The parameter 8 **switching on-time – relays 2** is in action, if you have choose the parameter a **function of relays 2** with the value 3.
After the motor is running up and has reach the full power voltage, the switching on-time of the relays 2 begin to start. If it reach the end value, the relays 2 is switching on. Adjustable is a value of the switching on-time between 0 and 9 in 0.5 steps of seconds.

3.2.9 PARAMETER 9 - SWITCHING OFF-TIME - RELAYS 2

The parameter 8 **switching off-time – relays 2** is in action, if you have choose the parameter a **function of relays 2** with the value 3.
The time begins to run, after the motor is switched off. Adjustable is a value of the switching off-time time between 0 and 9 seconds.

3.2.10 PARAMETER A FUNCTIONMODUS

In the p**arameter a functionmodus** you have two possibilities to start the soft-start-unit:

a) If you have chosen **VALUE 1,** the start begins with a +24V DC signal at the terminal number 6. Be careful, you must need GND at the terminal 5.

b) If you have chosen **VALUE 2,** the start or the softstart-unit begins, if you switch the 400V AC power voltage on.

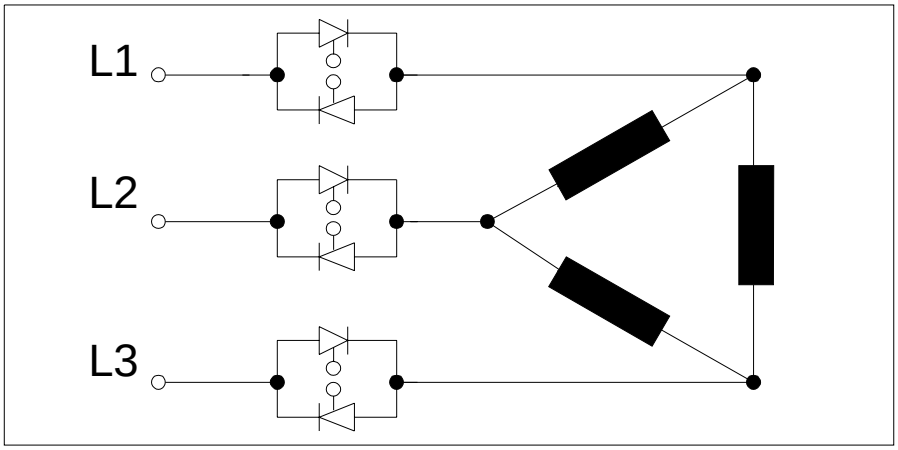
3.2.11 PARAMETER B POWER SUPPLY FREQUENCY

With **parameter b power supply frequency** you can adapt your softstart unit to the nominal power supply frequency.

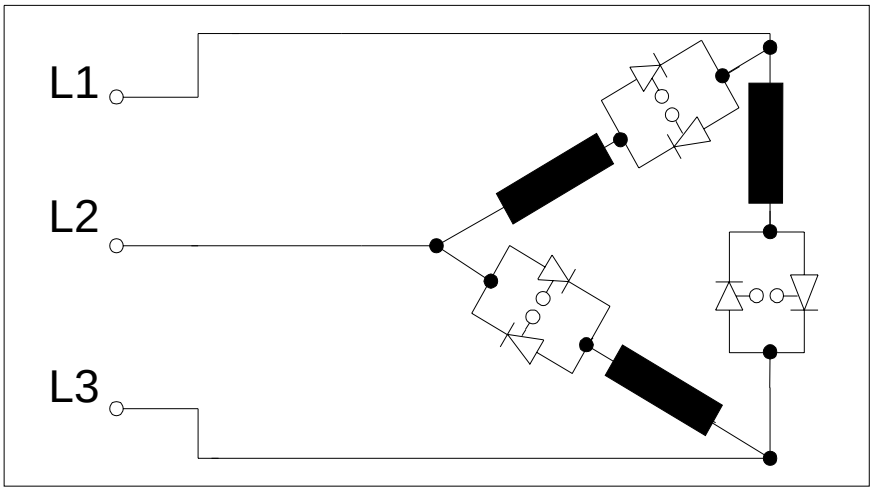
4. WIRING THE SOFTSTART-UNIT

There are two different possibilities to use the softstart-unit:

4.1 STANDARDSWITCH

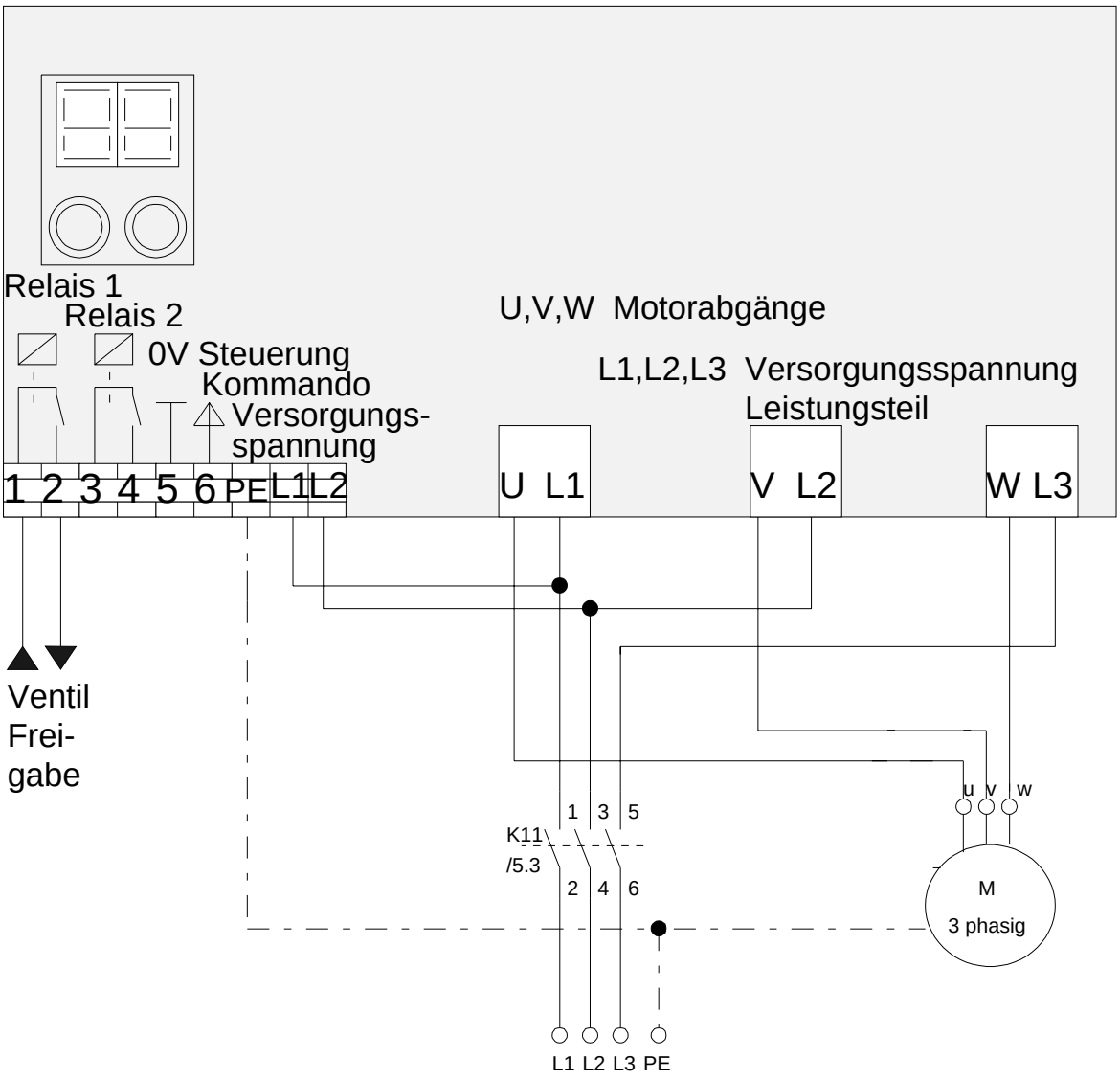


4.2 W3-SWITCH

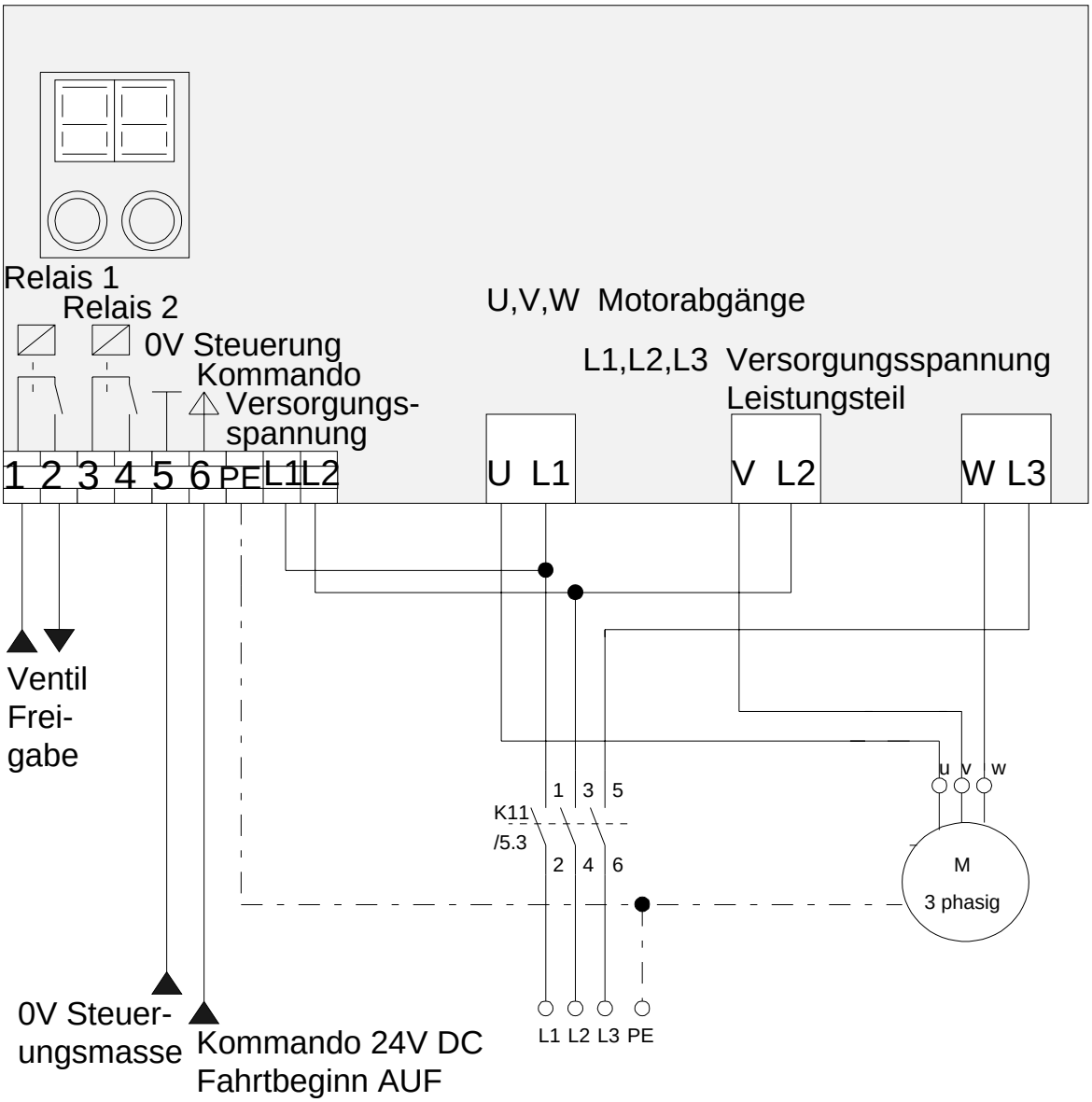


4.3 EXAMPLES FOR WIRING THE SOFTSTART-UNIT

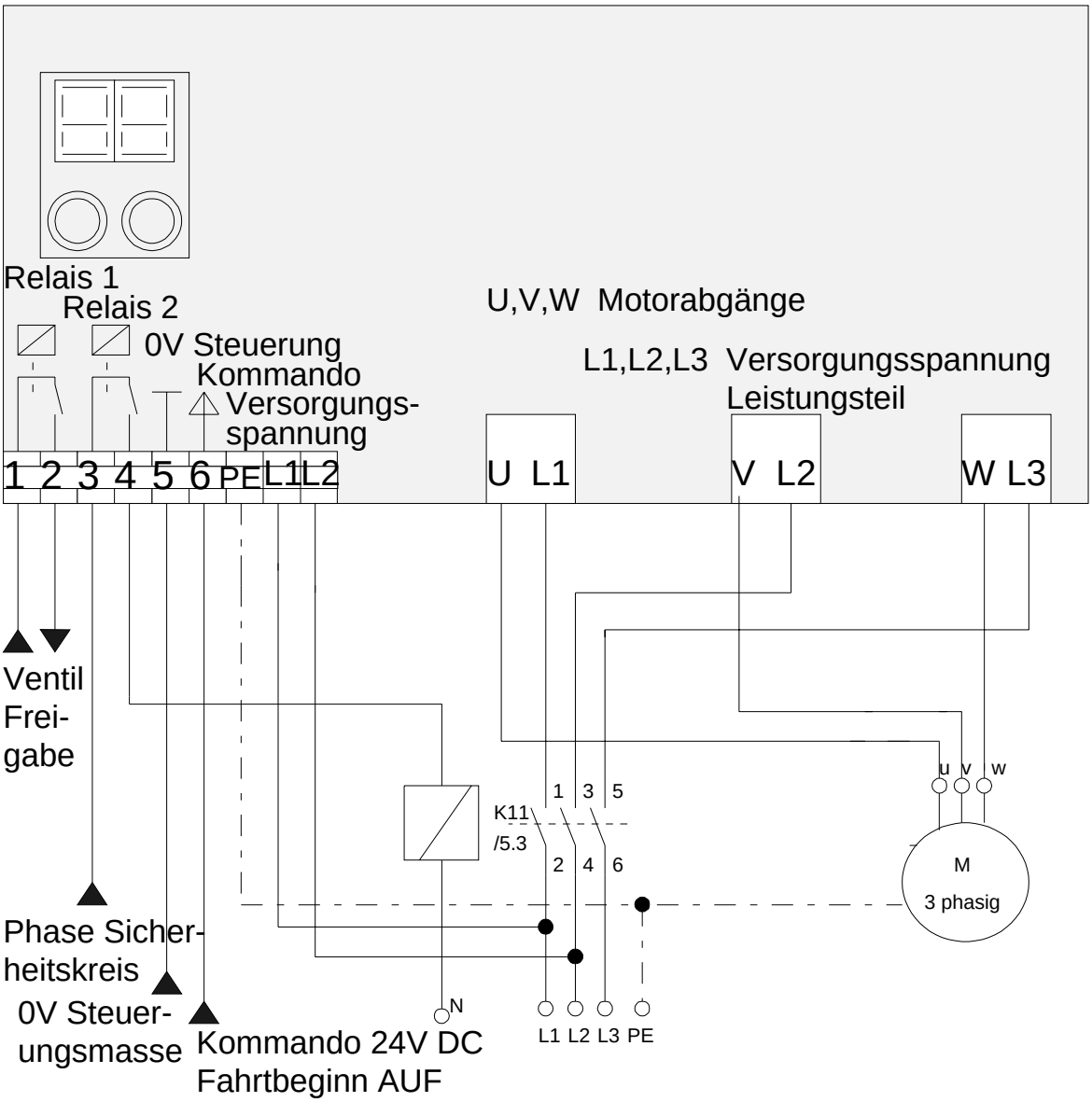
4.3.1 START THE UNIT WITH SWITCHING THE 400VAC POWER SUPPLY



4.3.2 START THE UNIT WITH STARTSIGNAL +24VDC



4.3.3 START THE UNIT WITH SWITCHING THE 400VAC POWER SUPPLY AND SWITCHING THE MAIN CONDUCTER



4.3.4 START THE UNIT WITH SWITCHING THE 400VAC POWER SUPPLY AND SWITCHING THE MAIN CONDUCTER (W3-SWITCH)