OPERATING MANUAL
SOFTSTART UNIT SAG-90

FUNCTIONS
START-UP INSTRUCTIONS

KW Aufzugstechnik GmbH Softstart Unit SAG-90
VERSION V106-E vom 24.02.2022

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Inhalt

1. System Description

1.1 GUARANTEE

All work on this soft starter may only be carried out by qualified personnel (electricians or persons trained in electrical engineering). Please observe the safety instructions in this manual.
These operating instructions are therefore intended for the elevator technician who installs and commissions the control system and for the control system manufacturer who installs the soft starter in the control cabinet and carries out the necessary wiring.
We guarantee the faultlessness of the product in the sense of the product information issued by us and this operating manual. No guarantee, legal responsibility, nor any liability is granted for the economic efficiency or faultless function for any purpose other than that defined in chapter 1.3.

Warranty condition
A warranty of 12 months is granted on the function of the device in accordance with these operating instructions. Prerequisite for the free repair is the proven observance of the operating instructions during storage, transport, installation, commissioning and operation. The general terms and conditions of KW Aufzugstechnik GmbH apply.

1.2 SAFETY CONDITIONS

Operation of the SAG-90 soft starters with the housing and terminal covers removed is not permitted, as live, bare surfaces are present inside the device. Failure to comply with this regulation may result in serious personal injury and property damage. All work on a soft starter may only be carried out by qualified personnel. The following safety regulations must be observed:
DIN VDE0100, DIN VDE 0110, IEC 364, IEC 664.
Persons who are familiar with the installation and commissioning of the SAG-90 soft starters, in compliance with the national accident prevention regulations, and who can demonstrate appropriate professional qualifications, are qualified specialist personnel in the sense of these operating instructions.

1.3 USE OF THE SAG-90, TRANSPORT AND SERVICE

The SAG-90 soft starters are control devices intended for use in elevator systems.
Other applications must be agreed with KW Aufzugstechnik GmbH. The following legal agreements must be observed during installation and operation:
- EC Directive 89/392/EEC (Machinery Directive) .
- EN 60204.
- Low voltage directive 73/23/EWG
- EMC Directive (89/336/EEC)
- EN 50178/DIN VDE 0160.
- EN 60439-1/DIN VDE 0660 part 500
- EN 60146/DIN VDE 0558.

Transport and Mounting

The SAG-90 soft starter must be protected against impermissible stress during transport and handling. Contact with electronic components and contacts must be avoided.
The SAG- 90 soft starter contains electrostatically sensitive components which can easily be damaged by improper handling. Electrical components must not be mechanically damaged or destroyed. Clamping operations on the terminal strips may only be carried out when the unit is de-energized.
All conductive connections still carry voltage after the mains voltage has been switched off until the capacitors have discharged (approx. 5 minutes).
The SAG-90 soft starter has IP20 protection as standard and may therefore only be installed in closed electrical operating areas.
IP20 essentially indicates protection against contact and protection against medium-sized foreign bodies, no "water protection". The installation site must be selected in such a way that clean and dry cooling air is provided for cooling the soft starter.
Large amounts of dust, high concentrations of chemically active pollutants, the risk of mold growth or the penetration of pests endanger the safe operation of the complete system.

Service

Basicly only Spareparts from KW Aufzugstechnik GmbH are allowed to use in SAG-90. If there is a great dirt on the isolated ways and the cooler, it must be put away in every service-time. The cleaning is only allowed with halogenfree cleaners.

1.4 TRAVEL- AND MOUNTING CONDITIONS

ELECTRICAL TERMINALS

Attention!
Work on soft starters which are live is not permitted! As these devices contain capacitors, a minimum period of 5 minutes must be observed after switching off. There must be no voltage before work is carried out on the terminals. The national accident prevention regulations (Germany: VBG 4) must be strictly observed!

The electrical installation must be carried out by qualified personnel, in compliance with the applicable regulations: VDE regulations on cable cross-sections, fuses, protective conductor connection.
Only proper installation of shielding, grounding, arrangement of filters and routing of cables will ensure compliance with EMC legislation. Compliance with the limit values is the responsibility of the manufacturer of the system or machine.
Furthermore, the correct dimensioning of the protective conductor according to DIN VDE 0160 must be observed. With regard to the mains voltage and fuse protection on site at the elevator system, it must be checked whether the technical data of the soft starter unit according to the type plate correspond to this. The cable cross-section of the supply line and the dimensioning of the back-up fuse should also be checked.

Mains requirements
The soft starters of the SAG-90 series do not require a neutral conductor and are therefore suitable for 4-wire operation. A TT network or TT network with grounded neutral conductor is required as the network type.

Operation
Elevator systems equipped with soft starters of the SAG-90 series must, if necessary, be equipped with additional monitoring and protective devices in accordance with the legal regulations (EN81,...).
The SAG-90 soft starter may only be operated with the housing cover closed. All external components of the soft starter must be correctly fastened mechanically.
After disconnecting the soft starter from the supply voltage, live parts of the device and power connections must not be touched immediately because of charged capacitors.
The minimum dwell time is 5 minutes. The information signs on the housing cover of the frequency inverter must be observed.

The SAG-90 concept ensures that in the event of faults in the soft starter, the energization of relays 1 and 2 is interrupted immediately, even if the elevator has not stopped. This ensures that the mechanical valves can close even in the event of malfunctions.

In the event of control malfunctions or loss of the direction signal, the power supply output stages are immediately de-energized. Irrespective of this, it is ensured that the power supply to the power section is switched off no later than 0.5 s after the READY relay drops out, so that the motor windings are deenergized.

The ambient temperature should be lower than 45 oC. If higher temperatures are reached in the control cabinet, air conditioning of the control cabinet must be provided.

The soft starter of the SAG-90 series is designed for horizontal mounting in the control cabinet. Unobstructed cooling air supply and outlet must be ensured. For this purpose, at least 100 mm free space must be provided above and below the device.

1.5 EG-Konformitätserklärung
EC-Declaration of Conformity

CE

Anwendungsbereich field of application	EG-Richtlinie 89/336 EWG Elektromagnetische Verträglichkeit EC-Guidelines 89/336 EWG Electromagnetic compatible
Hersteller Produzent	KW Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel
Produktart product category	Sanftanlaufgerät Softstart Unit
Modell	SAG 90

Prüfgrundlagen
basis of type examination

DIN EN 50081 Teil 1 Elektromagnetische Verträglichkeit Fachgrundnorm Störaussendung im Wohnbereich, Geschäfts und Gewerbebereich

DIN EN 50081 Part1 Electromagnetic compatible Branch base standard disturbance transmitter in to residential district, Premises and Commercial district

DIN EN 55011 Störungen im hochfrequenten Bereich, Klasse B Wohnräume

DIN EN 55011 Disturbance in to High frequency area, class B residential district

DIN EN 50082 Teil 1 und 2 Elektromagnetische Verträglichkeit Fachgrundnorm Störfestigkeit im Industriebereich

DIN EN 50082 Part 1 and 2 Electromagnetic compatible Branch base standard disturbance transmitter in to industrial area

IEC 801-2 entspricht VDE 0843 Elektrostatische Entladung ESD

IEC 801-2 conform to VDE 0843 Electrostatical unload ESD

IEC 804-1 entspricht prEN 55024 Teil 4 Burst Test an Signal und Steuerleitung

IEC 804-1 conform to prEN 55024 part 4 Burst check by signal and controlwire

IEC 804-1 entspricht prEN 55024 Teil 4 Burst Test an Wechselstrom Versorgungsleitungen

IEC 804-1 conform to prEN 55024 part 4 Burst test by alternating current supply line

Dipl. Ing. Hans-Werner Walbert

Oberursel, den 18.01.2010

1.6 UKCA-Declaration of Conformity

We,

RESPONSIBLE PARTY: Manufacturer
Manufacturer, assembler, importer, or retailer

Company Name: KW Aufzugstechnik GmbH

Address: Zimmersmühlenweg 69
61440 Oberursel
GERMANY

Phone: +49 06171/98950

declare under our sole responsibility that the product(s):

TRADE NAME: SAG-90

Object of Declaration: Softstart Unit

and all variations to which this declaration relates conform to the UK Statutory Instrument (including all applicable amendments):

and are designed and manufactured with application of the harmonized standard(s):

Subject:
BS EN IEC 61000-4-2:2009 - Electrostatic discharge immunity test
BS EN IEC 61000-4-3:2008 - Radiated, radio-frequency, electromagnetic field immunity test
BS EN IEC 61000-4-4:2005 - Electrical fast transient/burst immunity test
BS EN IEC 61000-4-5:2007 - Surge immunity test
BS EN IEC 61000-4-6:2008 - Immunity to conducted disturbances, induced by radio-frequency fields
BS EN IEC 55011:2007 - Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement.

Dipl. Ing. Hans-Werner Walbert
Name

Signature

Managing Director
Function

Oberursel, 08.12.2021
Place & date of issue

EMV Prüfbericht

SERVICEFORCE.COM
SERVICES FOR COMMUNICATIONS AND AUTOMATION ENGINEERING

Service Center
ServiceForce.Com GmbH
Kleyerstr. 92
60326 Frankfurt am Main

Prüfbericht-Nr.: **044_11E**
Datum: **02.03.2011**
Projekt-Nr.: **505000300**

Auftraggeber:	KW Aufzugstechnik GmbH		
Ansprechpartner:	Stefan Müller	**Telefon:**	+49(0)6021-62048-4
Adresse:	Zimmermühlenweg 69	**Fax:**	+49(0)6021-62048-5
	61440 Oberursel	**E-Mail:**	mueller@kw-aufzugstechnik.de
Prüflabor:	ServiceForce.Com GmbH		
Ansprechpartner:	Ulrich Pohle	**Telefon:**	+49 (0)69-365090-3282
Adresse:	Kleyerstr. 92	**Fax:**	+49 (0)69-365090-5511
	60326 Frankfurt am Main	**E-Mail:**	Ulrich.Pohle@serviceforce-com.de
Prüfort: (falls nicht mit der Adresse des Labors identisch)			

Prüfling:	Sanftanlaufsteuerung SAG 90
Seriennummer:	2011-
Beschreibung:	Bei dem Prüfling handelt es sich um eine Sanftanlaufsteuerung für Aufzüge.

Aufgabenstellung:	Durchführung der Prüfung nach EN12015:2005 und EN12016:2008
Ergebnis:	Der o. g. Prüfling hat die durchgeführten Tests bestanden.

Bearbeiter: Wolfgang Hilber
Datum: 13.04.2011
Unterschrift

Freigabe: Ulrich Pohle
Datum: 13.04.2011
Unterschrift

EMV Prüfbericht

SERVICEFORCE.COM
SERVICES FOR COMMUNICATIONS AND AUTOMATION ENGINEERING

Service Center
ServiceForce.Com GmbH
Kleyerstr. 92
60326 Frankfurt am Main

Prüfbericht-Nr.: 044_11E
Datum: 02.03.2011
Projekt-Nr.: 505000300

	Norm		Ausgabe
☐	EN	61000-3-2	2006-10
☐	EN	61000-3-3	2009-06
☐	EN	61000-3-12	2005-09
☒	EN	61000-4-2	2009-12
☒	EN	61000-4-3	2008-06
☒	EN	61000-4-4	2005-07
☒	EN	61000-4-5	2007-06
☒	EN	61000-4-6	2008-04
☐	EN	61000-4-8	
☐	EN	61000-4-11	2005-02
☐	EN	61000-4-14	
☐	EN	61000-6-1	
☐	EN	61000-6-2	
☐	EN	61000-6-3	
☐	EN	61000-6-4	
☐	EN	61010-1	
☐	EN	61326-1	2006-10
☐	EN	61800-3	
☐	EN	61800-5-1:	
☐	EN	60730-1	
☒	EN	55011	2007-11
☐	EN	55014-1	
☐	EN	55016-1-2	
☐	EN	55022	
☐	EN	55024	
☐	EN	55025	
☐	EN	50155	
☐	ISO	7637-2	
☐	ISO	7637-3	
☐	ISO	11452-4	
☐	ISO	10605	
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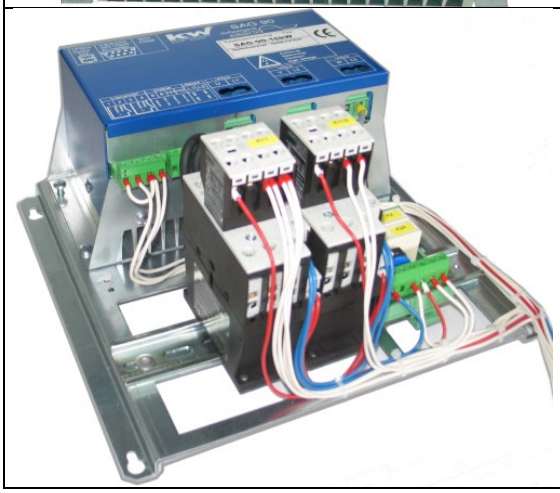
1.7 Softstart Unit SAG-90 – Single And Contactor Versions

SAG-90

The softstart unit SAG-90 based on thyristor technologie and is designed for hydraulic elevators. The power classes are from **5,0 kW** to **60 kW.** The very compact casing allows a mounting in every lift-controller casing.
Fully metal-cased central processing unit and a compensation switching in accordance with class B of the law concerning electromagnetic compatibility (EMVG).

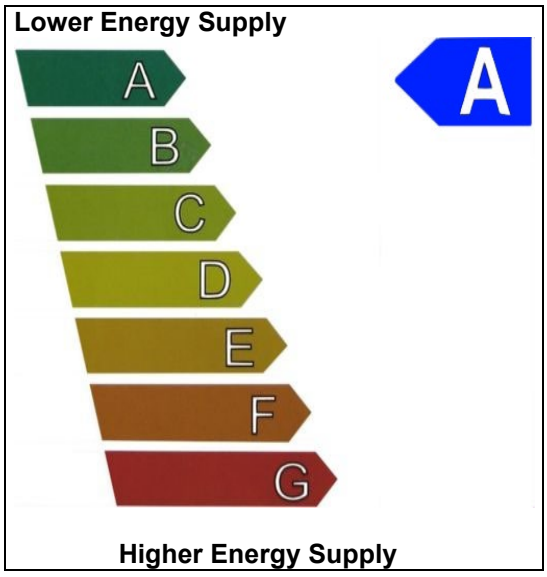


SAG-90 Contactor Versions

The SAG-90 soft starter is available complete on a system carrier with the main contactors, motor terminals and wiring.

1.8 ENERGY SAVE MODE STANDBY-FUNCTION

ENERGY CLASS A



STEPPING OF THE ENERGY-MANGEMENT

STAGE 1: STAND-BY-POWER 12 W
AFTER TRAVEL

STAGE 2: STAND-BY-POWER 11 W
SLEEP-MODE TIME INTERRUPTED

STAGE 3: STAND-BY-POWER 0 W
SLEEP-MODE TIME INTERRUPTED

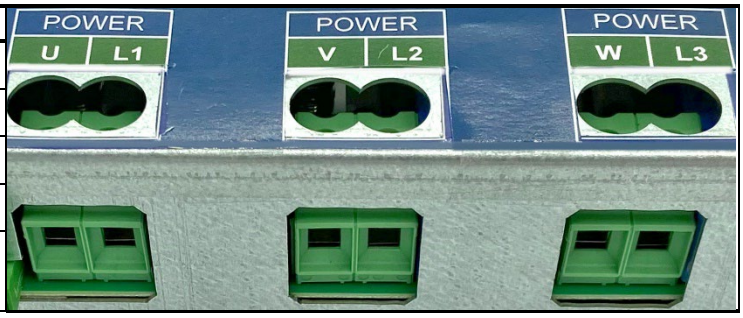
Only in travel-mode there are three Phases of the 400V-supply voltage for the softstart unit. The electrical loss-power **in the ready-mode** (SAG-90 not switched off) is only **12 Watt**.
In the **Menu B3 Functions it is possible, to activate the standby-mode with a time interrupt or with a input function**. On this way the electrical loss-power **in the standby-mode is only 5 Watt.**
If you can use a modern lift controller, it is possible to switch off the economy connection of the frequency inverter after a certain time (There are no car- and landing calls). At this moment, there is no electrical loss-power **(0 Watt**).

2. DETAILS ABOUT THE INTERFACES

2.1 MAINS AND MOTOR CONNECTIONS

The standart version of the SAG-90 needs an maim voltage of 400V AC (Tolerance +10% / -15%). If you need other main voltages, please connect us. The electronic part of the converter needs a permanent control voltage, in order to avoid time delays at the start operation. Two main conductors are on the line side, which supply the power part of the softstart unit.

Unit	Nominalcurrent Standard / W3
SAG-90-12	25A / 42A
SAG-90-16	45A / 70A
SAG-90-22	62A / 105A
SAG-90-32	100A / 160A
SAG-90-42	140A / 210A



2.2 MOTOR PTC

The inputs for the Motor-PTC are terminals 151 and 152. The activating of the motor-PTC Monitoring function is in the **menu 3.4 C Monitoring**.

Terminal	Input	Function	Description
151	PTC	Free program. Output	Motortemperature Monitoring
152	PTC	Free program. Output	Motortemperature Monitoring

2.3 RELAYOUTPUTS RELAY-1 TO RELAY-2

There are two relays with a potentialfree opener-contact, which are free programmable. The nominal voltage is between 24 V DC to 250 V AC at output power of 1000 mA (no inductive load!). There is a pool of 8 outputfunctions. The setting of the outputfunctions is controlled in the **Menu 3.3 B Grundeinstellungen.** There is 4-pole terminal.

Terminal	Input	Function	Description
1 – 2	Relay-1	Free program. Output	Valve
3 – 4	Relay-2	Free program. Output	Maincontactor Up

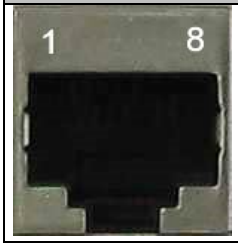
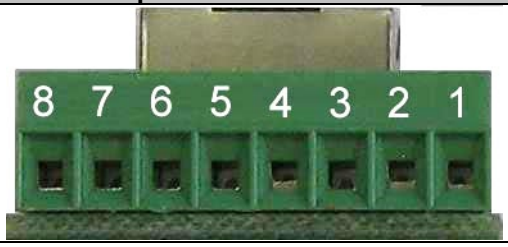
2.4 DIGITAL INPUT E1

The channel is potentialfree about optocouplers and designed for +24V DC. The Input is free programmable. The Setting of the Input-functions is controlled in the **Menu 3.3 B3-Function Input**.

Terminal	Input	Function	Description
6	E1	Free program. Input channel	Commando
5	GND	0V GND	

2.5 LIFTBUS INTERFACE

The interface of the Liftbus is a RJ-45 Terminal. The Liftbusinterface is basing physically on the RS485-Topology. The Protocol for the KW-Liftbus and also the DCP-3 are choosable with the software parameters. For the Interface is a RJ-45 Adaptcard available.

RJ-45Anschluß-G90	Pin	Description	RJ-45 Adapter KW-No. 1000730
	Pin 1	RS-485 Channel B	
	Pin 2	RS-485 Channel A	
	Pin 3	GND – 0V DC	
	Pin 4	N.C	
	Pin 5		
	Pin 6		
	Pin 7		
	Pin 8		

2.6 SERIAL INTERFACE RS232

With serial interface (RS 232, Sub-D-terminal) you can change the parameters and look at the actual values of the motor. You can use the serial interface to connect the **hand-program-device HPG60 or PC**. This device has a keyboard and four rows LCD display and allows you to change all parameters. It shows the actual valuas of the motor and has a fault memory .

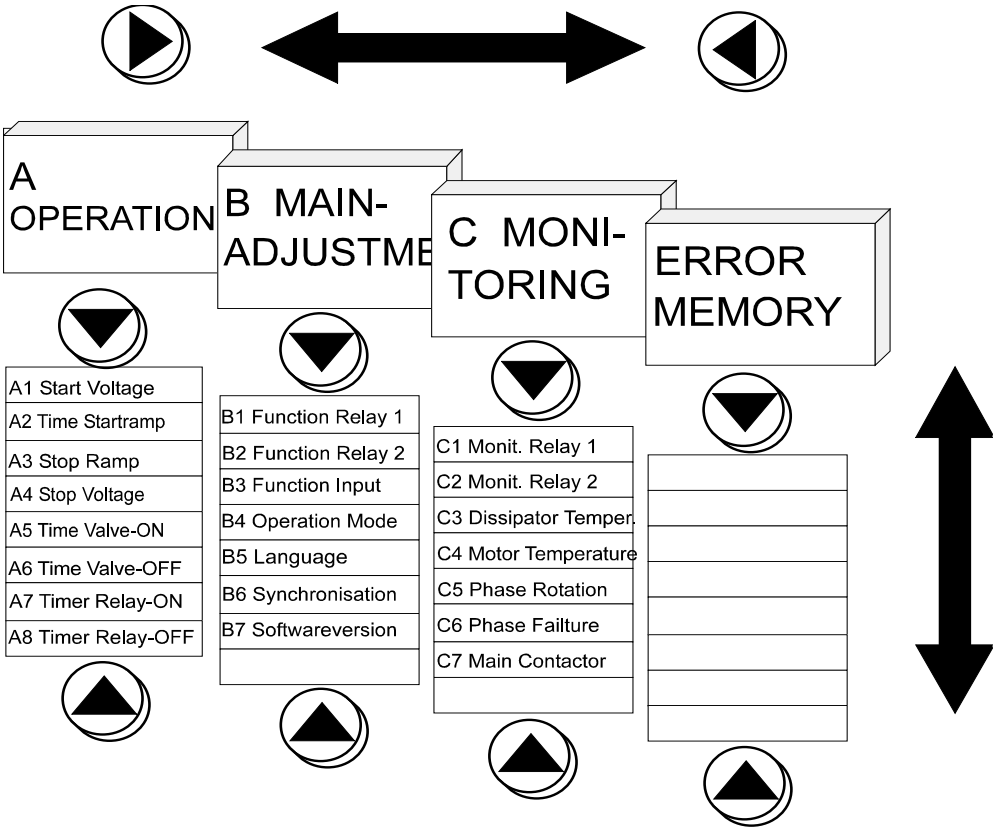
3.1 BASIC MENU OPERATION / HAND-HELD-UNIT HPG-60

General:
HPG-60 handheld programmer have 6 keys, four-line LCD display, red light-emitting diode.

Communication:
The supplied serial cable is to be plugged into the 9-pin interface socket on the HPG-60 and also into the 9-pin interface socket on the SAG-90.

Navigation:
The six keys are divided into two groups. On the one hand, the four red keys form a dual-axis control, i.e. the left and right keys can be used to step through the individual menu items.

There are four main menus, between which you can scroll with the right keys or left keys A one to D and back again. The individual parameters can be selected in the menu with the DOWN arrow key or UP arrow key. The value of the parameter appears to the right.
If the value of the parameter is to be changed, the two yellow keys go into action. The upper yellow key increases the value, the lower one decreases it.



Main menupoint

Pulldown menupoint

Running of the SAG-90

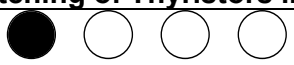
State of Relay / Input / Thyristors

Relay-1 OFF / ON

Relay-2 OFF / ON

INPUT E0 Active / Passive

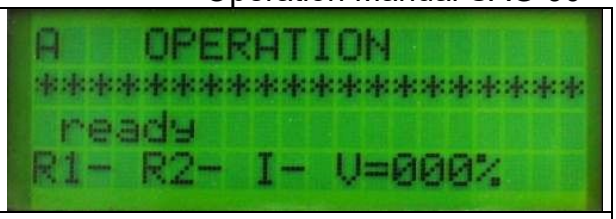
Switching of Thyristors in %



LED-Signalisation at the unit:

RED Relay-1 Relay-2 Switching of the Thyristors

3.2 Menu A OPERATION



A1 START VOLTAGE

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 to 30% of the 400V power voltage**.

A2 TIME STARTRAMP

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 to 10 seconds, with steps of 0,1 seconds.**

A3 STOP RAMP

The parameter **STOP RAMP** is in action, if you have choose the parameter **B4 Operation Mode** the value "**Start By Command**". After you have switch off the start signal, the motor is running down to the final-voltage.
Adjustable is a value of the decceleration time between **0 to 10 seconds in 0,1 steps.**

A4 STOP VOLTAGE

The parameter **STOP VOLTAGE** is in action, if you have choose the parameter **B4 Operation Mode** the value "**Start By Command**".
After you have switch off the start signal, the motor is running down to the final-voltage.
Adjustable is a value of the Stop Voltage between **0 to 90% of the 400V power voltage.**

A5 TIME VALVE-ON

The function contents of the switching on of the Up-Valve. After the motor is running up and has reached the full power voltage, the **parameter A5 Time – Valve ON** is in action. After ending of the adjusttime, the relay is switching ON.
Adjustable is a value of the Time valve-ON between **0 to 10 seconds in 0,1 steps.**

A6 TIME VALVE-OFF

The function contents of the switching on of the Up-Valve. After switching off the drive command, the **parameter A6 Time – Valve OFF** is in action. After ending of the adjusttime, the relay is switching OFF.
Adjustable is a value of the Time valve-OFF between **0 to 10 seconds in 0,1 steps.**

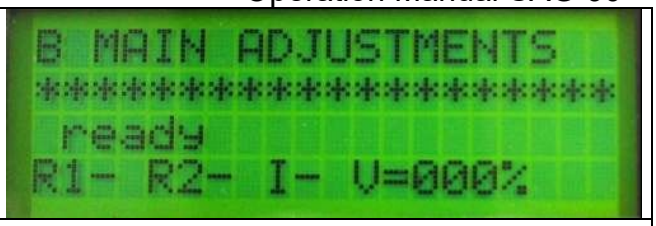
A7 TIMER RELAY-ON

The relay will be adjust in his function by the **parameter B1 Function Relay 1 or B2 Function Relay 2**. If the parameter has the value "Timer Relay“, then the parameter parameter A7 is active.
After the motor is running up and has reached the full power voltage, the **parameter A7 Timer – relay-ON** is in action. After ending of the adjusttime, the relay is switching ON.
Adjustable is a value of the Timer Relay-ON between **0 to 10 seconds in 0,1 steps.**

A8 TIMER RELAY-OFF

The relay will be adjust in his function by the **parameter B1 Function Relay 1 or B2 Function Relay 2**. If the parameter has the value "Timer Relay“, then the parameter parameter A7 is active After switching off the drive command, the **parameter A8 Timer – Relay OFF** is in action. After ending of the adjusttime, the relay is switching OFF.
Adjustable is a value of the Timer Relay-OFF between **0 to 10 seconds in 0,1 steps.**

3.3 Menu B MAIN ADJUSTMENTS



B1 FUNCTION RELAY - 1

The **Parameter Function Relay 1** has six Modes for the setting of the relay 1:

1)-Is the **Setting „No Function“**, so relay 1 is always switched off.

2)- Is the **Setting „Valve- UP“**, the relay 1 is working as an output channel for the Up-Valves. After the motor is running up and has reached the full power voltage, the **parameter A5 Time – Valve ON** is in action. After ending of the adjusttime, the relay is switching ON.
3)- Is the **Setting „Timer Relay“**, the relay 1 is working as an output channel for the time relay. After the motor is running up and has reached the full power voltage, the **parameter A7 Timer – relay-ON** is in action. After ending of the adjusttime, the relay is switching ON.
4)- Is the **Setting „Error Message“**, the relay 1 is working as an error message output channel. If there is an error the relay is switching off.
5)- Is the **Setting „Main Contactor“**, the relay 1 is working as an output channel for the main contactors. After you have switch off the start signal, the main contactors are switching ON and the power part of the softstart unit has the full voltage. Then the thyristors will be switched on.
6)- Is the **Setting „Valvel- DOWN (Liftbus)“**, the relay 1 is working as an output channel for the Down-Valves. You need the Liftbus connction, to use this function.

B2 FUNCTION RELAY - 2

The **Parameter Function Relay 2** has six Modes for the setting of the relay 2:

1)-Is the **Setting „No Function“**, so relay 2 is always switched off.

2)- Is the **Setting „Valve- UP“**, the relay 2 is working as an output channel for the Up-Valves. After the motor is running up and has reached the full power voltage, the **parameter A5 Time – Valve ON** is in action. After ending of the adjusttime, the relay is switching ON.
3)- Is the **Setting „Timer Relay“**, the relay 2 is working as an output channel for the time relay. After the motor is running up and has reached the full power voltage, the **parameter A7 Timer – relay-ON** is in action. After ending of the adjusttime, the relay is switching ON.
4)- Is the **Setting „Error Message“**, the relay 2 is working as an error message output channel. If there is an error the relay is switching off.
5)- Is the **Setting „Main Contactor“**, the relay 2 is working as an output channel for the main contactors. After you have switch off the start signal, the main contactors are switching ON and the power part of the softstart unit has the full voltage. Then the thyristors will be switched on.
6)- Is the **Setting „Valvel- DOWN (Liftbus)“**, the relay 2 is working as an output channel for the Down-Valves. You need the Liftbus connction, to use this function.

B3 FUNCTION INPUT

The **Parameter Function Input** has four modes for the setting of the Function of the input:

1)- Is the **Setting „No Function“**, so the input is always passive.

2)- Is the **Setting „Start Command“**, so the start begins with a +24V DC signal at the terminal number 6. Be careful, you must need GND at the terminal 5!
3)- Is the **Setting „Standby“**, so the standby mode (sleep mode) begins with a +24V DC signal at the terminal number 6. Be careful, you must need GND at the terminal 5! With this function, you can save energy.
4)- Is the **Setting „Monitor Main Contactor“**, so the input channel is connected with the opener contacts of the up- and down contactors. With this function the softstart SAG-90 is confirm to the EN81-2 Monitor Main Contactor.

B4 OPERATION MODE	
	The **Parameter Operation Mode** has four modes for the setting of the Function of the running up the softstart unit: 1)- Is the **Setting „Automatic Start“**, so the start or the softstart-unit begins, if you switch the 400V AC power voltage on. The input at terminal 6 is always passive. 2)- Is the **Setting „Start By Command“**, so the start begins with a +24V DC signal at the terminal number 6. Be careful, you must need GND at the terminal 5! 3)- Is the **Setting „Liftbus KW-Bus“**, so the lift-controller regulate the softstart unit by serial link. All controller commans and softstart messages communicate between softstart unit and lift-controller only by a liftbus-wire. The parameter setting can be make over the lift-controller. 4)- Is the **Setting „Liftbus DCP-3 “**, so the lift-controller regulate the softstart unit by serial link. All controller commans and softstart messages communicate between softstart unit and lift-controller only by a liftbus-wire. The parameter setting can be make over the lift-controller.
B5 LANGUAGE	
	You can choose between the several language versions for the menu display. (**German** and **English** and **French**).
B6 SYNCHRONISATION	
	With the **Parameter B6 Synchronisation** you can adapt your softstart unit to the nominal power supply frequency. The following settings are choosable: 1)-**Automatic** 2)-**50H Hz Frequency** 3)-**60H Hz Frequency**
B7 SOFTWARE VERSION	
	Display the version number of the software and the controller types.

3.4 Menu C MONITORING

C1 MONITORING RELAY - 1

By the use of safety Relay, you can control about the second contact set of the relay the movement between closing and opening.
The monitoring can be switched ON / OFF.

C2 MONITORING RELAY - 2

By the use of safety Relay, you can control about the second contact set of the relay the movement between closing and opening.
The monitoring can be switched ON / OFF.

C3 MONITORING DISSIPATOR TEMPERATURE

In this parameter you can activate the dissipator temperature monitoring. You can avoid the damage of the softstart unit by overloading.
The monitoring can be switched ON / OFF.

C4 MONITORING MOTOR TEMPERATURE

In this parameter you can activate the Motor PTC monitoring. The PTC of the Hydraulicpump motor can directly conected with the softstart unit.
The monitoring can be switched ON / OFF.

C5 MONITORING PHASE ROTATION

The softstart unit SAG-90 has the possibility, to contol the 400V power supply if there is the right phase sequence and rotationen field.
The monitoring can be switched ON / OFF.

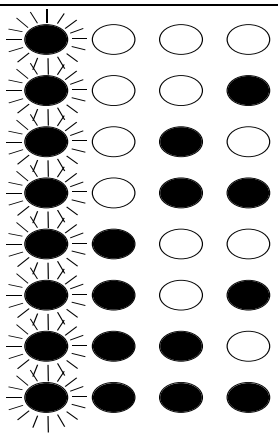
C6 MONITORING PHASE FAILURE

The softstart unit SAG-90 has the possibility, to contol the 400V power supply if there is one or two phases missing.
The monitoring can be switched ON / OFF.

C7 MONITORING MAIN CONTACTOR

In the parameter main contact monitoring you look after the right switching-behaviour of the both main contactors and the brake contactor. After the activation you should program the inputs with the right input-functions (B3 Menu).
The monitoring can be switched ON / OFF.

3.5 ERROR MEMORY AND ERROR SIGNALISATION

LED 1 LED 2 LED 3 LED 4	**As soon the LED 1 is blinking, there is an error** ! (**Look over the top**)
	**ERROR** !
	ERROR 1: Mains Frequency – The synchronisation is missing!
	ERROR 2: Phase Failure at the power supply input !
	ERROR 3: Phase Sequence Wrong – There is no L1- L2 – L3 !
	ERROR 4: Phase Rotation – There is no right rotation field !
	ERROR 5: Dissipator Temperature is too high !
	ERROR 6: Motor Temperature – Pumpmotor and oil too hot !
	ERROR 7: Relay-1 Contact – Contact is not open !

SOLUTIONS:

ERROR 01	**Mains Frequency**: - The softstart unit can not synchronizice with the power supply ! - Wrong Power frequency? -> Has the power supply a frequency of 50 Herz ? - If there is a power supply with 60 Hz Netz – Please chang the parameter B6 to 60 Hz !
ERROR 02	**Phase Failure:** - There are not all three phases at the power input ! - One phase is missing ! -> Please check voltage and current !
ERROR 03	**Phase Sequence:** - The phase sequence at the power input is wrong ! - Right: L1 – L2 – L3 Wrong: L2 – L3 – L1 or..L3 – L1 – L2
ERROR 04	**Phase Rotation**: - The phase rotation at the power input is no right-rotation-field! - Right: L1 – L2 – L3 Wrong: L2 – L1 – L3 or.. -> Please check it and make a right rotation field !
ERROR 05	**Dissipator Temperature too High**: - The softstart is overloaded, is the power class of the unit ok? - The Temperature sensor deliever the wrong value: Please check the connection! - The Temperature sensor is out of order. Please contact our Hotline.
ERROR 06	**Motor Temperature - Motor and oil too hot:** - The temperature of the area is too high ! - The motor is overloaded ! - The number of travels is too high ? -> Do you need an oil-cooling?
ERROR 07	**Relay-1 Contactor:** - Internal Relay-1 is out of order or the open-contact is clewing -> The switching load is too big (Inductive)! Please use a contactor to switch big loads, like the valve-magnet!
ERROR 08	**Relay-2 Contactor:** - Internal Relay-2 is out of order or the open-contact is clewing -> The switching load is too big (Inductive)! Please use a contactor to switch big loads, like the valve-magnet!
ERROR 09	**Main Contactor Monitoring:** - One of the main contactor can not be switched ON -> Please control the contactors! - Please check the opener-contacts, clean it or change it! - Are the opener-contacts for 24V DC ? -> Please look at the data sheet!
ERROR 10	**Liftbus Communication is interrupted:** - Wrong Liftbus parameter ! - Wrong Liftbuscable or the shield not connected!

4. FIRST ACTIVATION OF THE ELEVATOR INSTALLATION

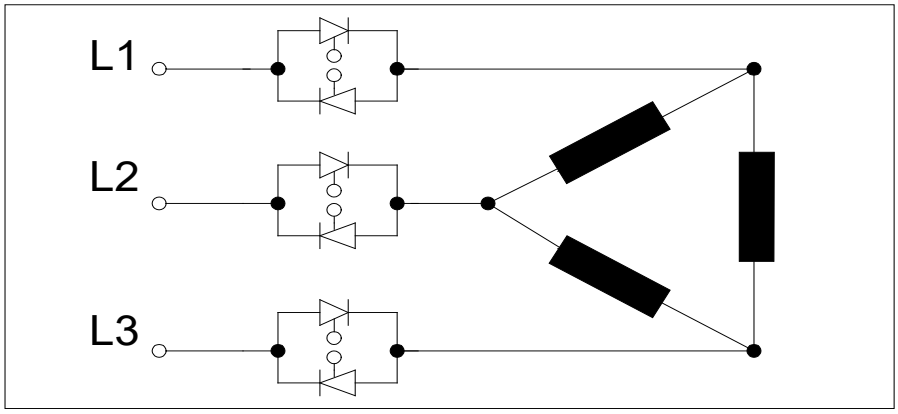
4.1 CONNECTION OF THE POWERSUPPLY Wire (TRAVEL with FI-FUSE-Switch)

The standart version of the SAG-90 softstart-unit needs an maim voltage of 400V AC (Tolerance +10% / -15%) with PE-Earth. The electronic part of the converter needs a permanent control voltage, in order to avoid time delays at the start operation. Two main conductors are on the line side, which supply the power part of the softstart unit.

Permanently FI-FUSE-Switch	All SAG-90 Inverters can permanently work with a Fi-FUSe-Switch with an active current of 300mA. If there is a demand of an active current of 30mA, you should use a Fi-FUSE-Switch with „All Sensitive Charistic“.

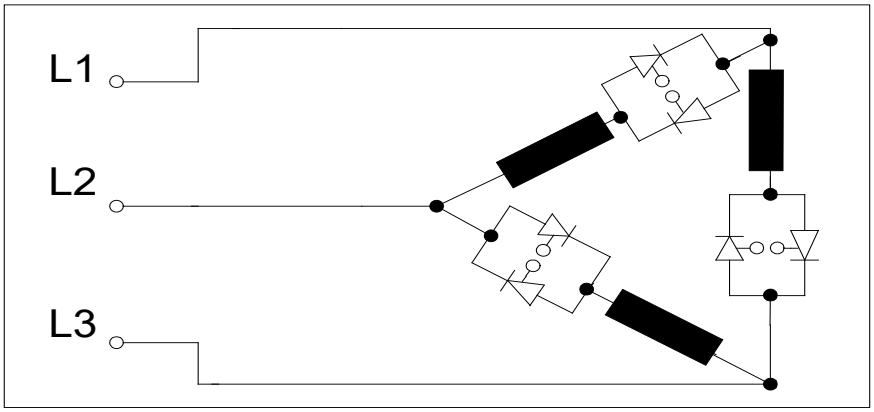
4.2 TRAVEL IN STANDART-SWITCH

At the standart-switch, the softstart unit will be connected between net-contactor and motor.
(Please look at the following picture).

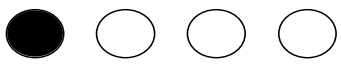


4.3 TRAVEL IN W3-SWITCH

At the W3-switch, the motor must be connected with two motorcables (6-poles!). The current divide on both motorwires, so the current decrease in one of the motorwires on a value of 0,707 % of the complete current.
(Please look at the following picture).

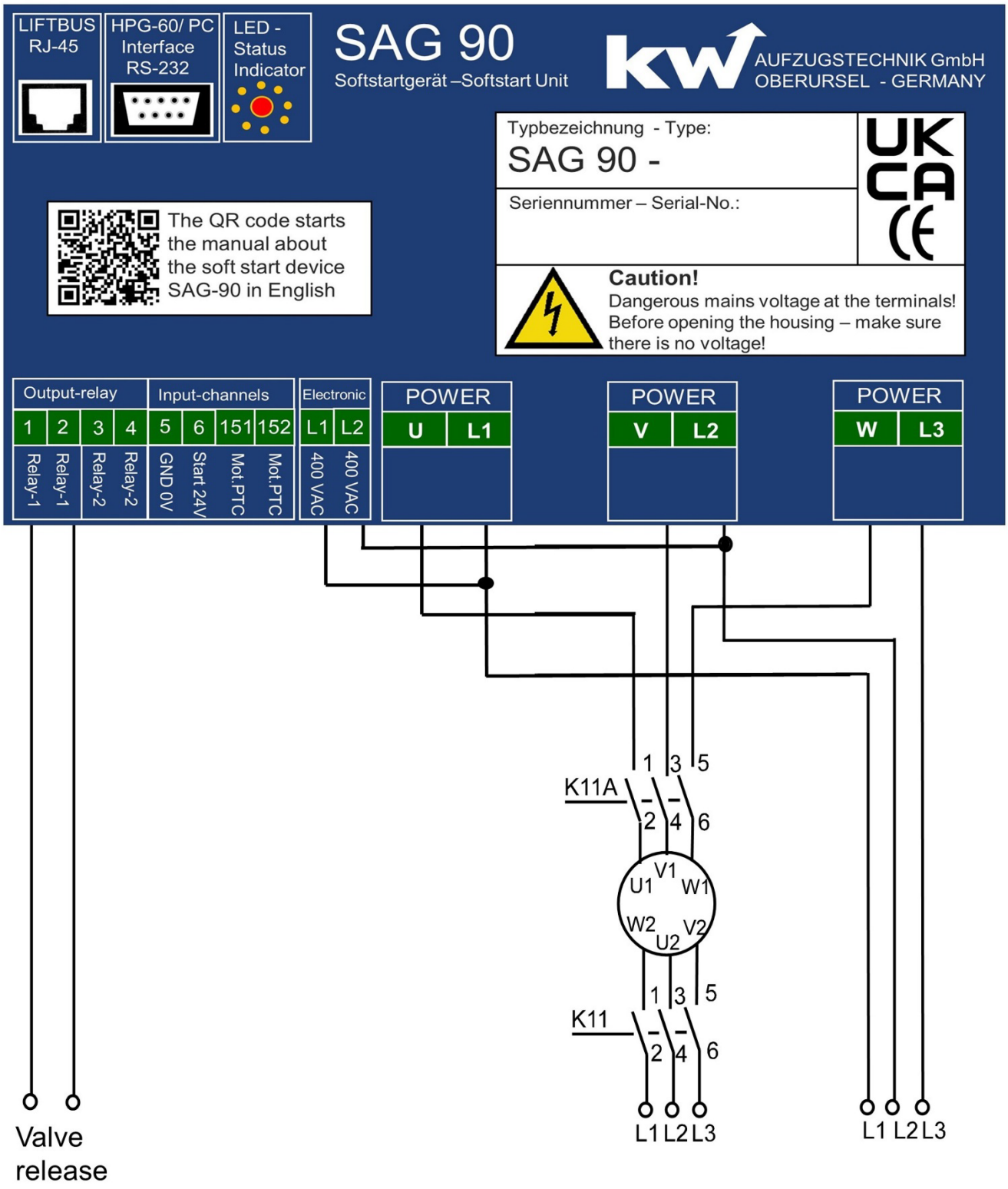


4.4 LED STATE-SIGNALISATION

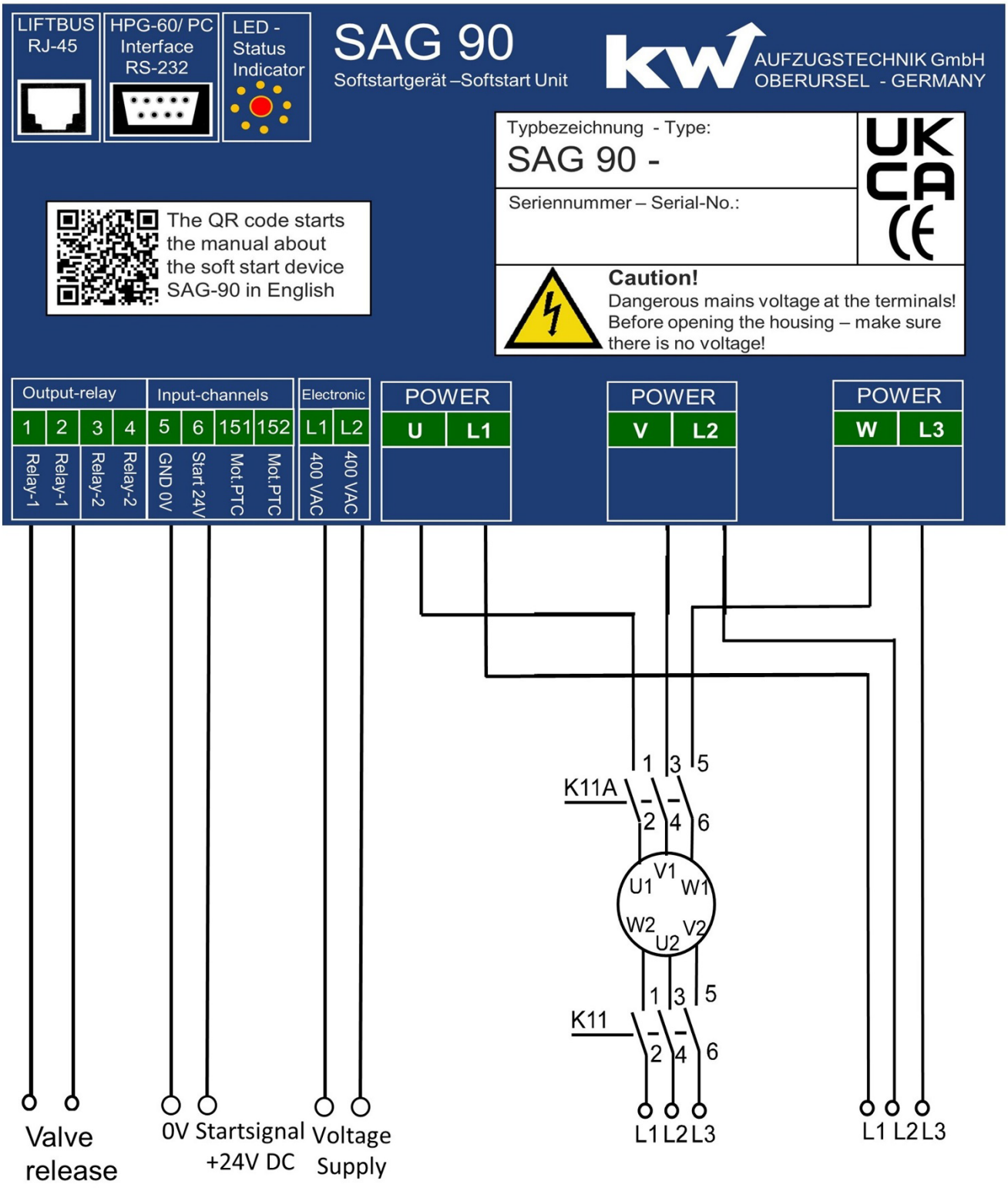
 **RED Relay-1 Relay-2 switching the Thyristors**	The softstart unit SAG-90 has a state signalisation. Have a look at the top of the casing, you reacognizefou LEDs. The state of the left one is important. If there is a permantly lighting, there is every thing OK! But is there a blinking, then there is an error! The next two LEDs shows the switching state of the relays: **Red LED -> active Relay!** The last LED shows the switching of the Thyristor-modules: **OFF-> 0%** **Full Light -> 100%**

5. DRAWINGS

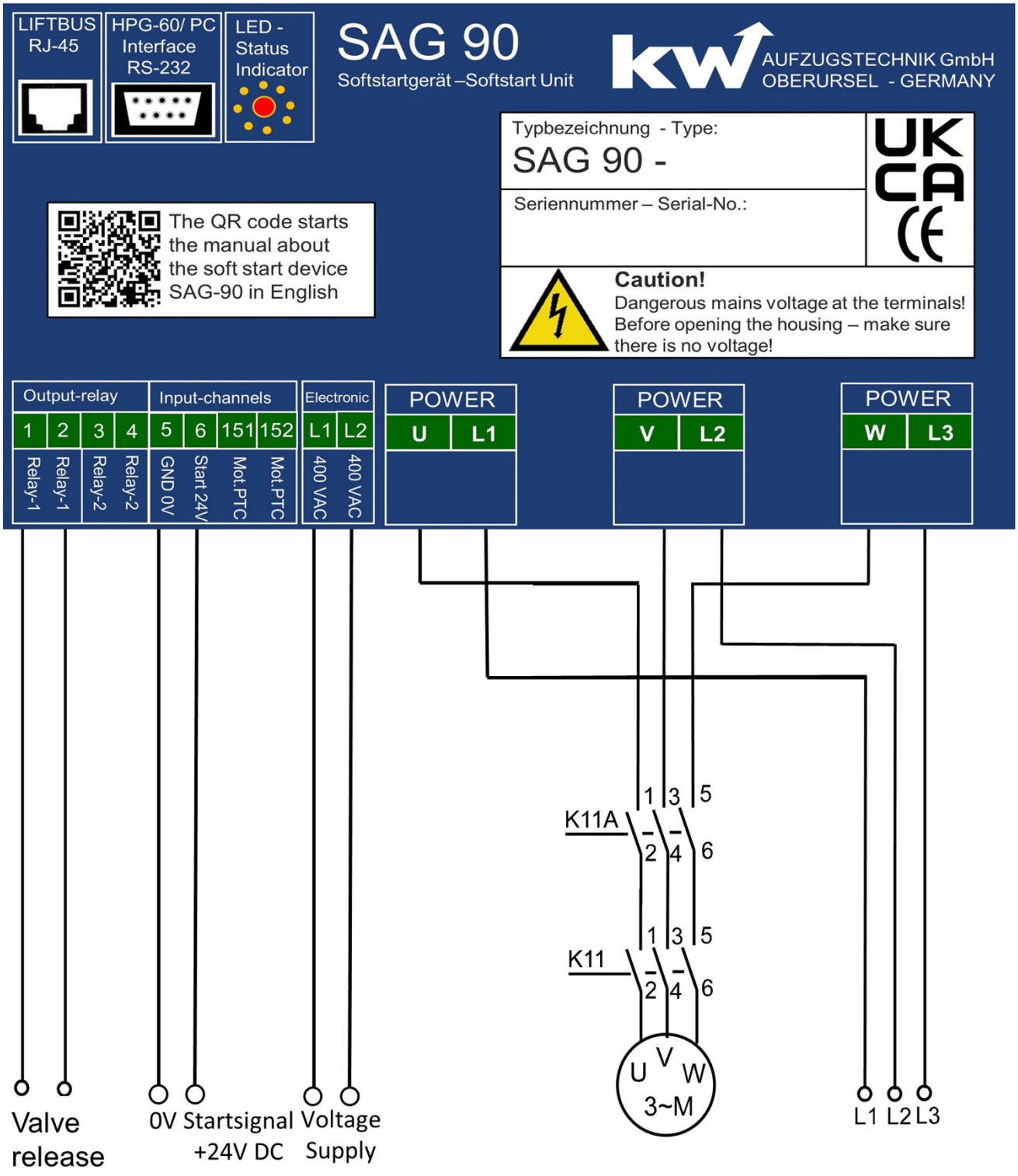
5.1 DRAWING SAG-90 without Start-Commando, W3-Switch



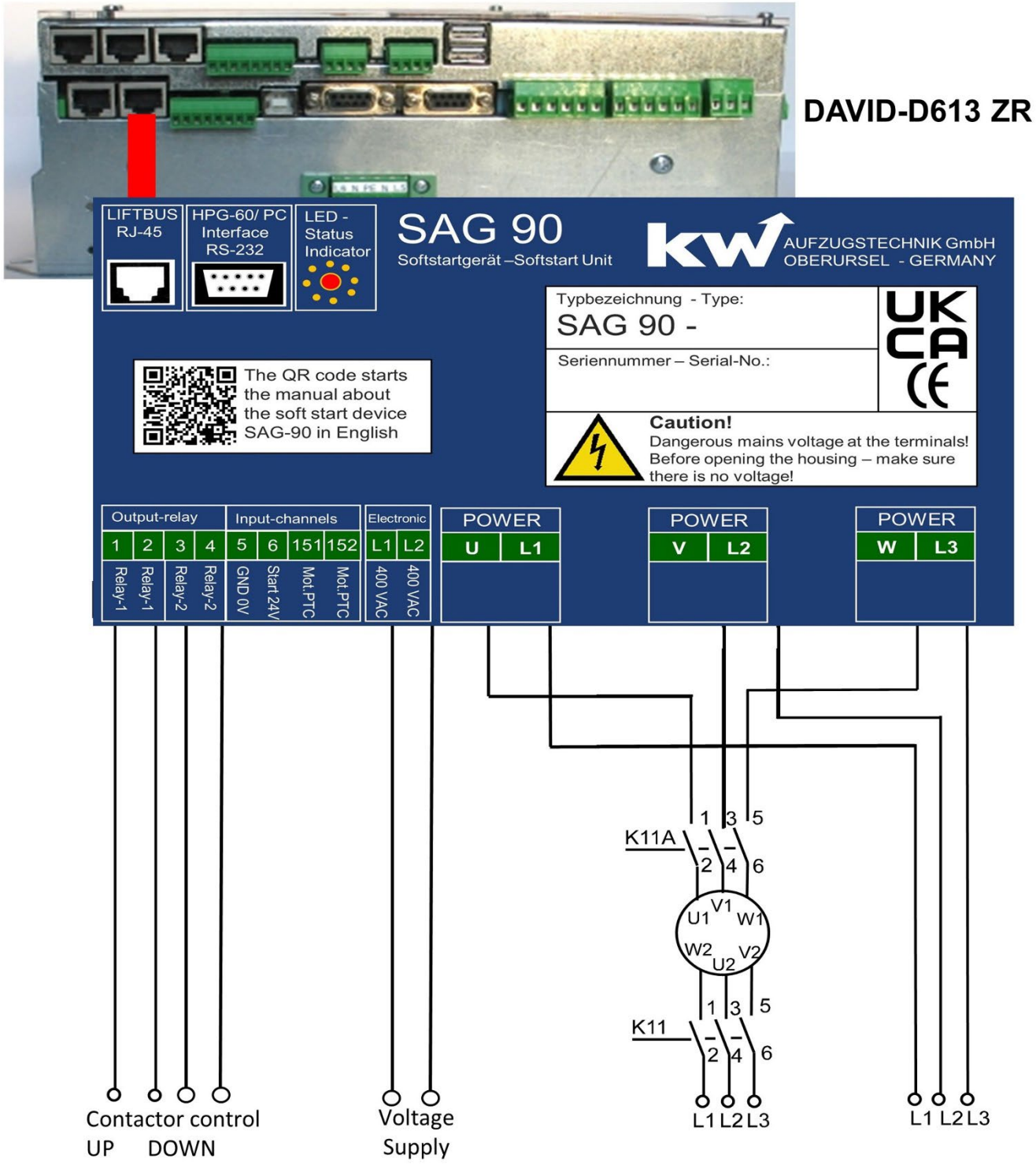
5.2 DRAWING SAG-90 with Commando-Start, W3-Switch



5.3 Schaltplan SAG-90 mit Kommando-Start, Standard-Schaltung

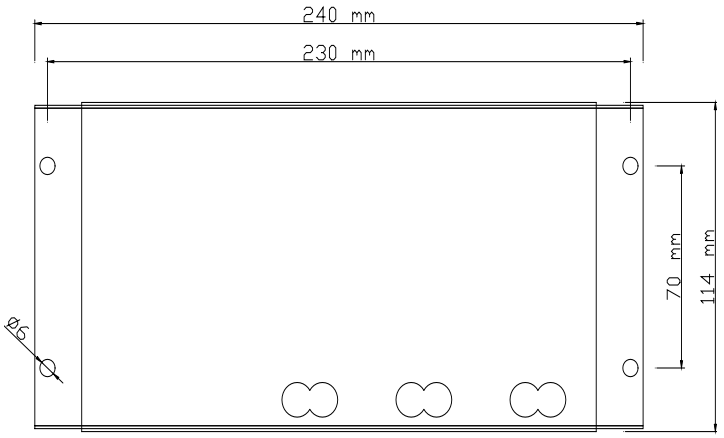


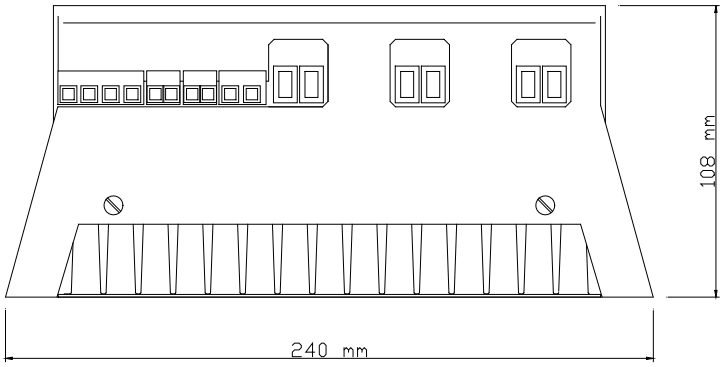
5.3 DRAWING SAG-90 with Commando-Start, Standart-Switch



6. TECHNICAL DATA

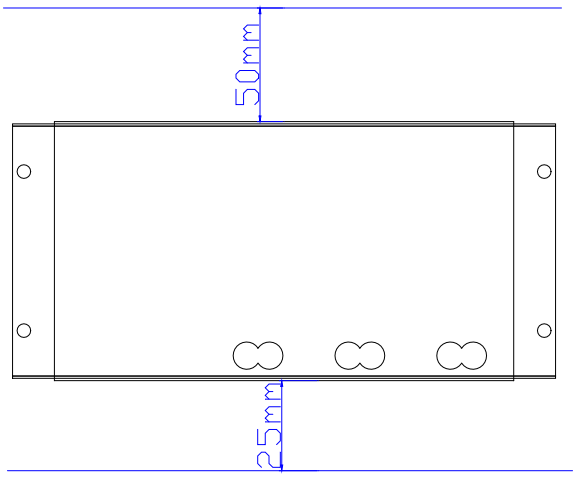
6.1 CONSTRUCTION PICTURE SAG-90- 12 to 16 KW Nominalpower



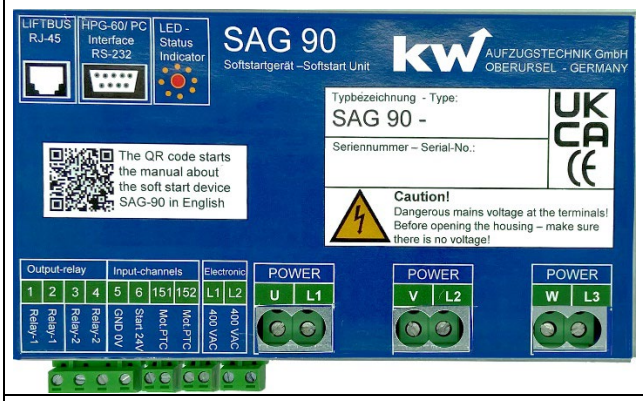


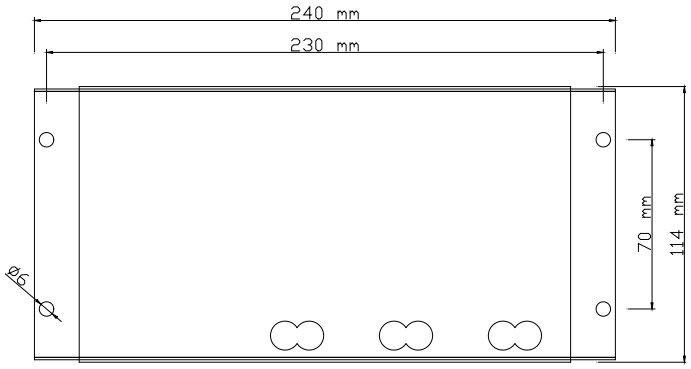
Controller Casing Mounting

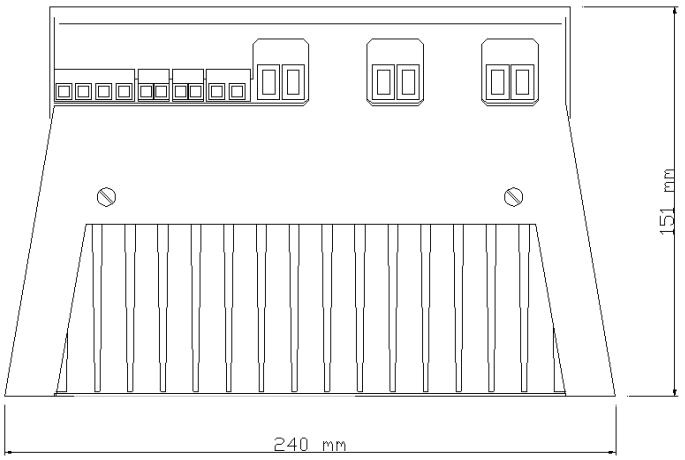
1- The fixing of the SAG-90 must be done with four M5 Screws.
2- The mounting of the SAG-90 must be in the controller casing, with the main terminals at the bottom.
3- The controller casing must have an air circulation. The minimal ways to other components is designd in the picture on the right side.
4- The law of concerning electromagnetic compatibility (EMVG) must be considered.



6.2 CONSTRUCTION PICTURE SAG-90- 22 KW Nominalpower

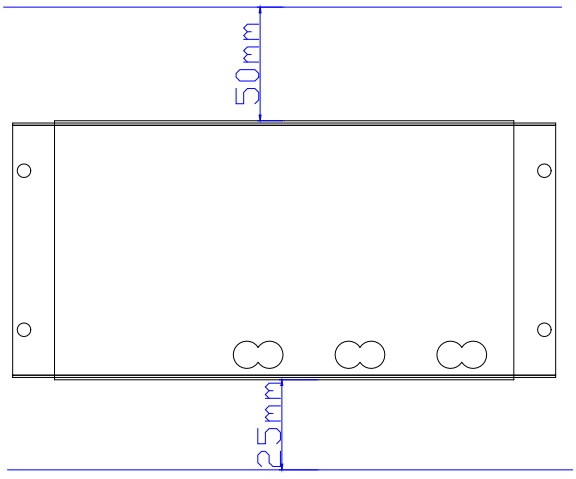




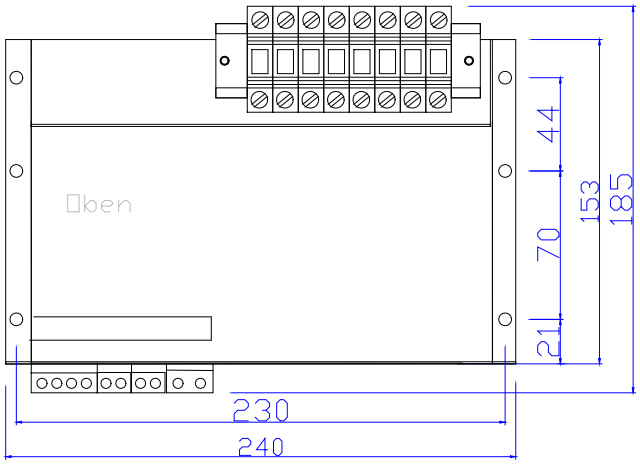


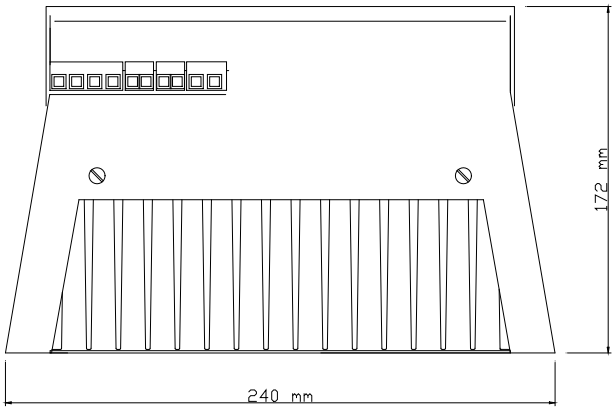
Controller Casing Mounting

1- The fixing of the SAG-90 must be done with four M5 Screws.
2- The mounting of the SAG-90 must be in the controller casing, with the main terminals at the bottom.
3- The controller casing must have an air circulation. The minimal ways to other components is designd in the picture on the right side.
4- The law of concerning electromagnetic compatibility (EMVG) must be considered.



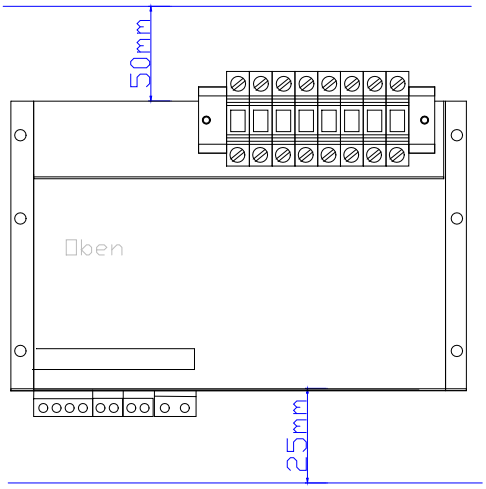
6.3 CONSTRUCTION PICTURE SAG-90- 32 KW Nominalpower



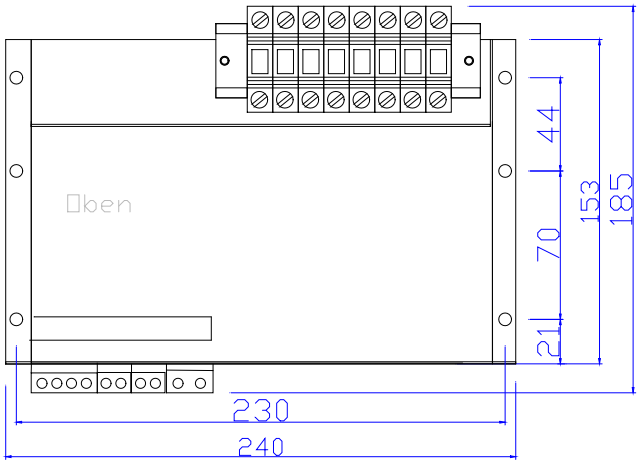


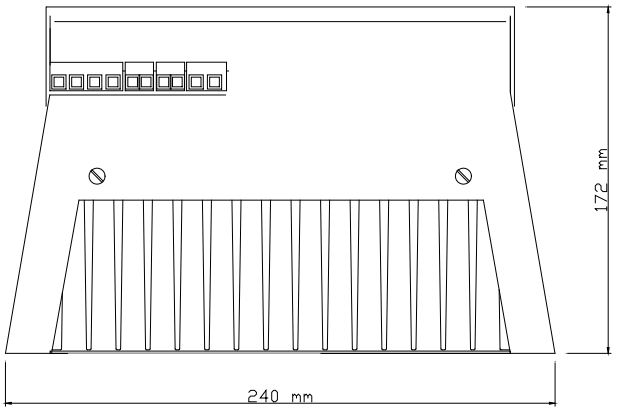
Controller Casing Mounting

1- The fixing of the SAG-90 must be done with four M5 Screws.
2- The mounting of the SAG-90 must be in the controller casing, with the main terminals at the bottom.
3- The controller casing must have an air circulation. The minimal ways to other components is designd in the picture on the right side.
4- The law of concerning electromagnetic compatibility (EMVG) must be considered.



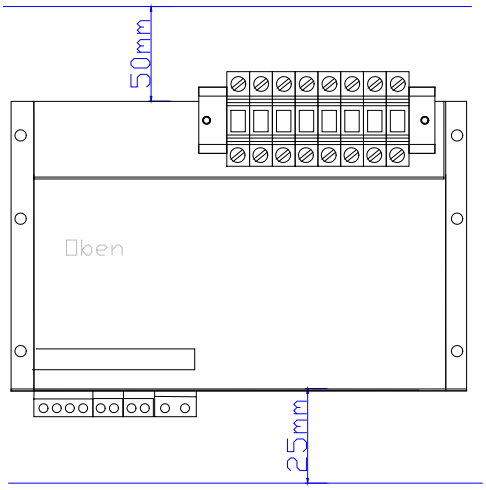
6.4 CONSTRUCTION PICTURE SAG-90- 42 KW Nominalpower



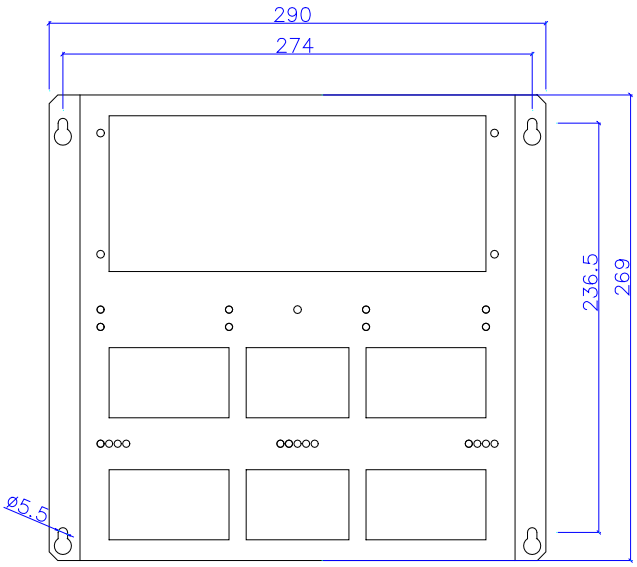


Controller Casing Mounting

1- The fixing of the SAG-90 must be done with four M5 Screws.
2- The mounting of the SAG-90 must be in the controller casing, with the main terminals at the bottom.
3- The controller casing must have an air circulation. The minimal ways to other components is designd in the picture on the right side.
4- The law of concerning electromagnetic compatibility (EMVG) must be considered.



6.5 CONSTRUCTION PICTURE SAG-90- CONTACTOR VERSION to 22 KW NOMINALPOWER



Controller Casing Mounting

1- The fixing of the SAG-90 must be done with three M5 Screws.
2- The mounting of the SAG-90 must be in the controller casing, with the main terminals at the bottom.
3- The controller casing must have an air circulation. The minimal ways to other components is designd in the picture on the right side.
4- The law of concerning electromagnetic compatibility (EMVG) must be considered.

6.6 TYPE DATA AND POWER CLASSES /ORDER NOTICE /ACCEESSORIES

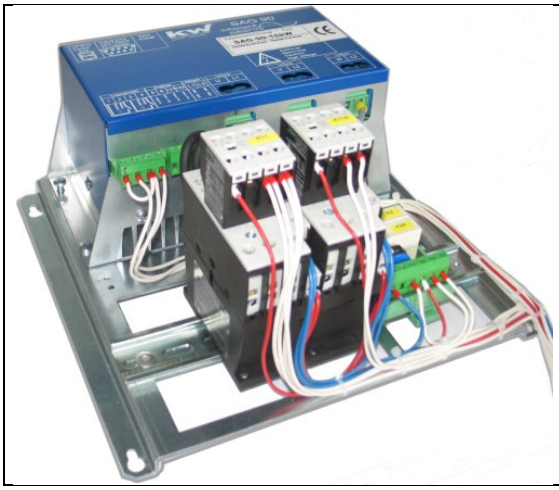
Softstart Unit Type **SAG-90** for Elevators:

Technical Short-Describition:

The softstart unit SAG-90 based on thyristor technologie and is designed for hydraulic elevators. The power classes are from **5,0 kW** to **60 kW.** The very compact casing allows a mounting in every lift-controller casing.
Fully metal-cased central processing unit and a compensation switching in accordance with class B of the law concerning electromagnetic compatibility (EMVG).

Nominal Power	Type Order-No.	Order-No.
12 KW	SAG-90-12-400 W3-Inenn = 42A	1000985
16 KW	SAG-90-16-400 W3-Inenn = 62A	1000986
22 KW	SAG-90-22-400 W3-Inenn = 110A	1000987
32 KW	SAG-90-32-400 W3-Inenn = 160A	1000988
42 KW	SAG-90-42-400 W3-Inenn = 210A	1000989

Softstart Unit Type **SAG-90 on Unitplattform** for Elevators:



Technical Short-Describition:

The softstart unit SAG-90 based on thyristor technologie and is designed for hydraulic elevators. The power classes are from **5,0 kW** to **60 kW.** The very compact casing allows a mounting in every lift-controller casing.
Fully metal-cased central processing unit and a compensation switching in accordance with class B of the law concerning electromagnetic compatibility (EMVG).

Aditional….

The softstart unit SAG-90 can be ordered as a complete system carrier with the main contactors, motor terminals and wireing.

Nominal Power	Type Order-No.	Order-No.
12 KW	SAG-90-12-400-GT W3-Inenn = 42A	Request
16 KW	SAG-90-16-400-GT W3-Inenn = 62A	Request
22 KW	SAG-90-22-400-GT W3-Inenn = 110A	Request

Handprogramming-unit **HPG-60** for GOLIATH-60 with 2 m Connecting-wire:

Type	Order-No.
Handprogrammiergerät HPG-60	1000697

INDEX