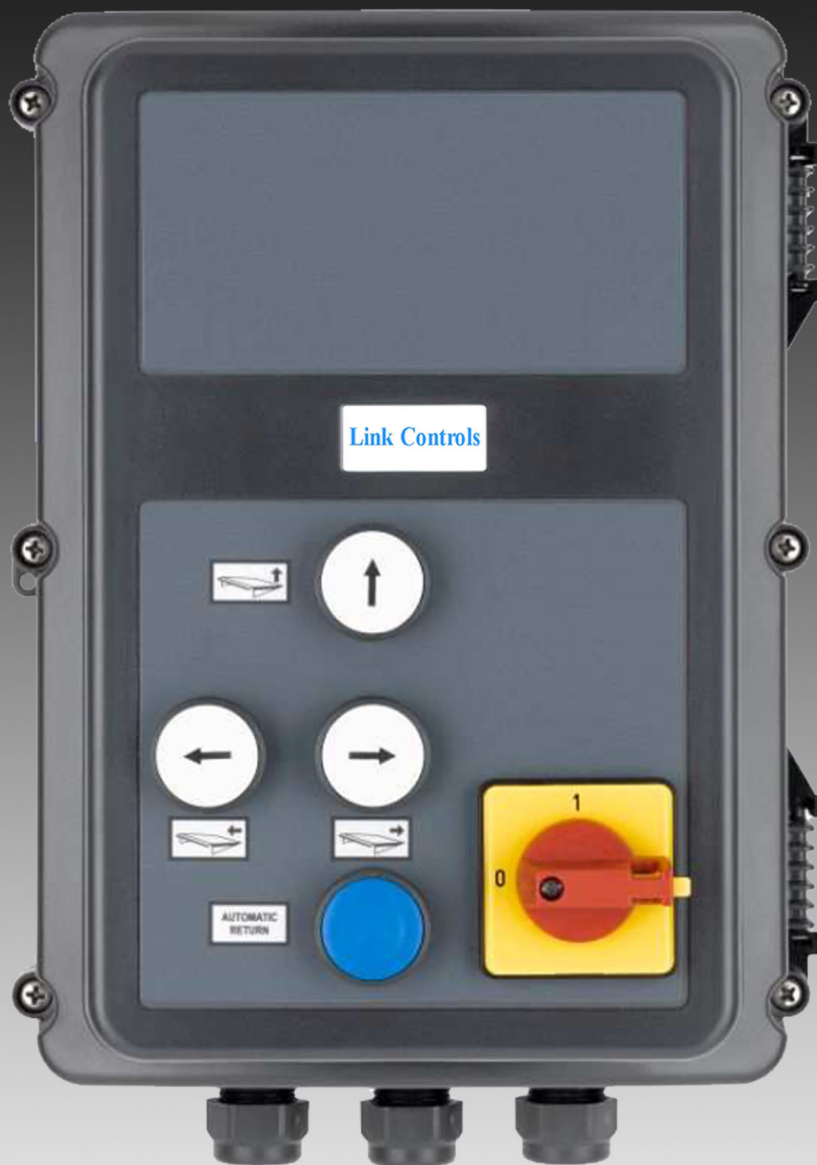


Operating Instructions for Control Panel

RS 300V



Warning : Please read these instructions fully before installation

GB 1 Contents

1	Contents	
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2 Key to symbols



Danger of personal injury!

The safety instructions must be observed!



Warning! Danger to property!

The safety instructions must be observed!



Information

Special information

OR Reference to other sources of information!

3 General safety instructions

Guarantee

The function and safety of the equipment is only guaranteed if the warning and safety instructions included in these operating instructions are adhered to. MFZ Antriebe GmbH & Co. KG is not liable for any personal injury or damage to property that occurs as a result of the warning and safety instructions being disregarded.

Using the equipment for its intended purpose

The RS300V controls are designed only for dock levellers with telescopic lip.

Target group

Only qualified and trained electricians may connect, program and service the controls.

Qualified and trained electricians meet the following requirements:

- knowledge of the general and specific safety and accident prevention regulations,
- knowledge of the relevant electrical regulations,
- trained in the use and care of appropriate safety equipment,
- capable of recognizing the dangers associated with electricity.

Instructions for installation and connection

- The controls must be disconnected from the electricity supply before carrying out electrical works. It must be ensured that the electricity supply remains disconnected during the works.
- Local protective regulations must be complied with.

Regulations and bases for testing

For connecting, programming and servicing, the following regulations must be observed (the list is not exhaustive).

- EN 50014-1 (radio disturbance, household appliances)
- EN 61000-3-2 (disturbances in supply system – harmonic currents)
- EN 61000-3-3 (disturbances in supply system – voltage fluctuations)
- EN 61000-6-2 (electromagnetic compatibility (EMC) – Part 6-2: Generic standards - immunity for industrial environments)
- EN 61000-6-3 (electromagnetic compatibility (EMC) – Part 6-2: Generic standards - emission standard for residential, commercial and light-industrial environments)

Machinery guidelines

- EN 1398 Dock levers – safety requirements
- EN 60204-1 (safety of machinery, electrical equipment of machines, part 1: general requirements)
- EN 12100-1 (safety of machinery, basic concepts, general principles for design. Basic terminology, methodology)

Low voltage

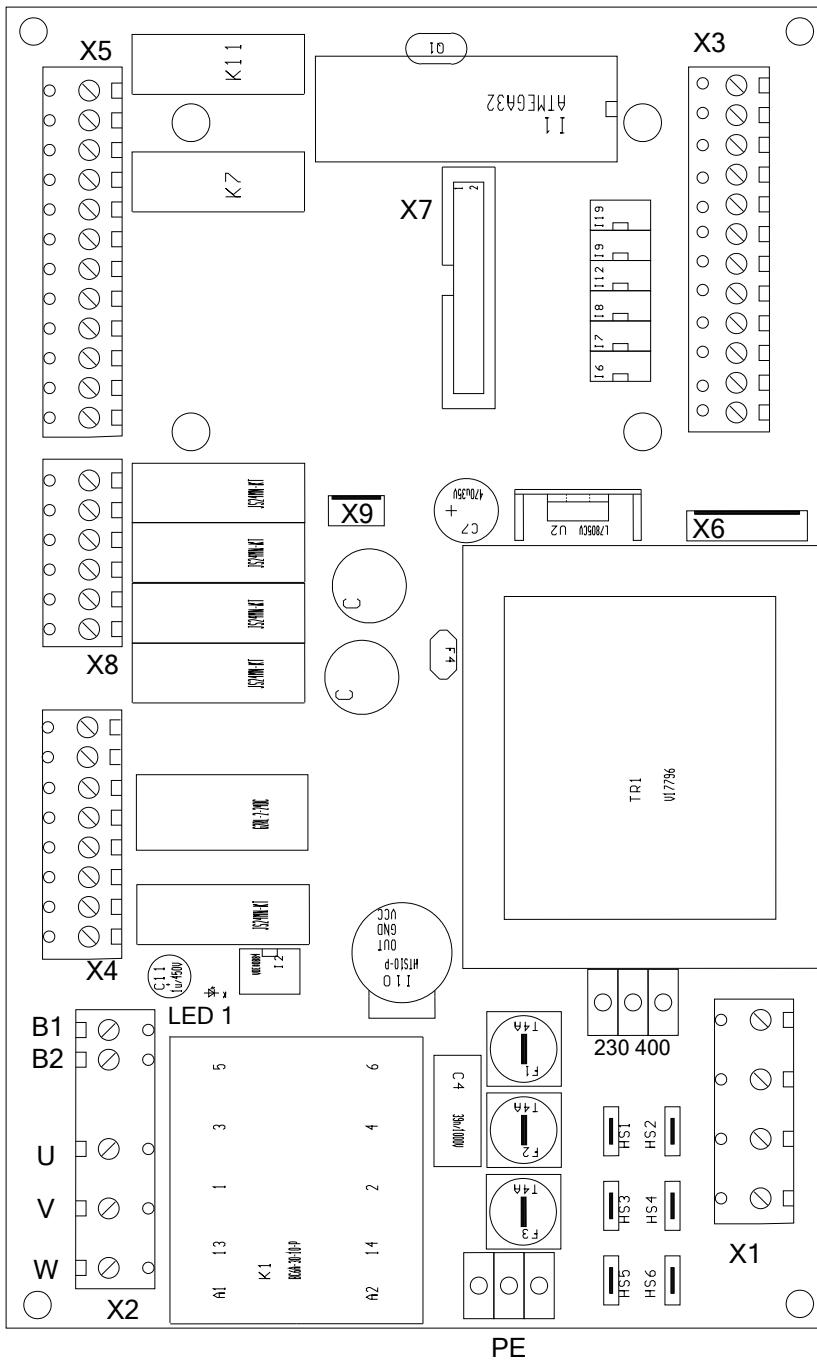
- EN 60335-1 (household and similar electrical appliances - safety)

GB 4 Housing



Key

- Push button leveller up
- Push button lip out
- Push button lip in
- Push button auto-automatic return
- Mains switch



Key:

- X1: terminal block mains connection
- 230/400: terminal block adjustment of mains voltage
- PE: terminal block PE
- HS1...HS6: connection mains switch
- X2: terminal block hydraulic unit
- X3: terminal block command devices
- X4: terminal block shelter and signal devices
- X5: terminal block valves and door
- X6: socket for internal push buttons
- X7: terminal block LC display
- X8: terminal block traffic lights
- X9: socket rs485 LC display

- K1: Contactor
- F1, F2, F3: overload protection hydraulic unit
- F4: Resettable PTC 24VDC

- J1: Jumper phase rotation

GB 5 Initial Operation – general instructions



Warning!

To guarantee that the equipment functions properly, the following points must be ensured:

- the dock leveller is installed and operational
- the command and safety devices are installed and ready for operation
- the control housing with the RS300V is installed
- all motor connections are correct and on the motor side screwed tight



Information:

For the installation of the dock leveller, the hydraulic unit and the command and safety devices, the relevant manufacturer's instructions are to be adhered to.

Mains connection



Danger!

To guarantee that the controls function properly, the following points must be ensured:

- the mains voltage must correspond to the voltage stated on the type plate
- for a three-phase current, a clockwise rotating field is required
- for a three-phase connection, only 3-way automatic circuit breakers (6A) may be used



Warning!

After completion of the wiring and prior to switching on for the first time, the control should be checked that all motor connections are correct and screwed tight.

6 Initial Operation

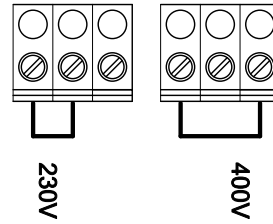
GB

Mains voltage adjustment

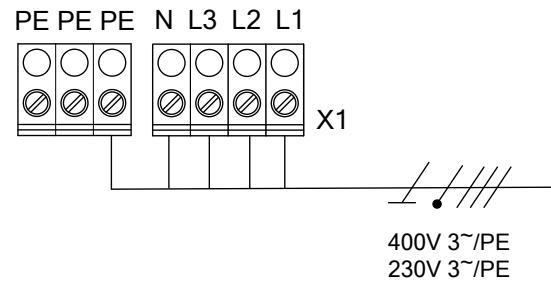


A wrong adjustment of the mains voltage can destroy the control.

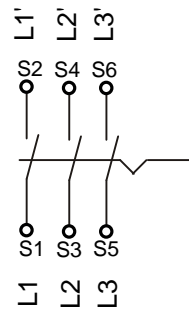
Factory setting 400V



Mains supply X1



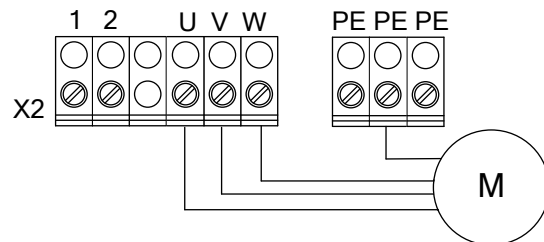
Mains switch



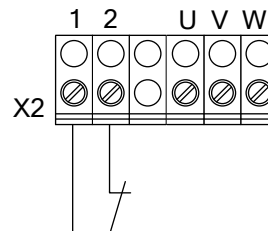
X2 Hydraulic unit



For a three-phase current, a clockwise rotating field is required.

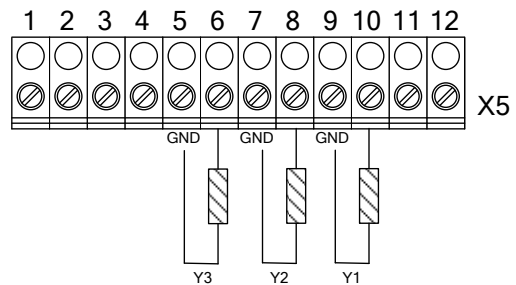


Emergency stop



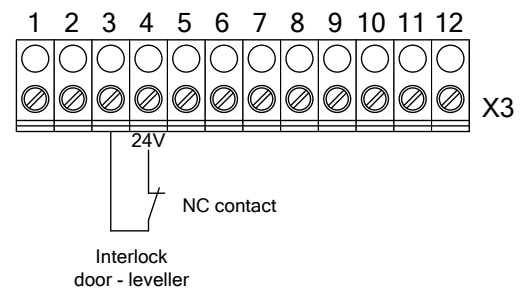
Valves:

The control of the valves is determined by the parameter valve version.



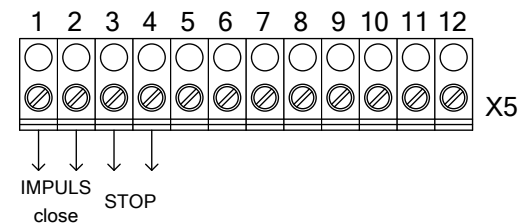
Connection to the door control

IMPULS CLOSE: The output „impulse close“ can be applied in case of automatic closing door units. The contact is opened while the leveller is operated; the contact is first closed when the dock is in its home position.

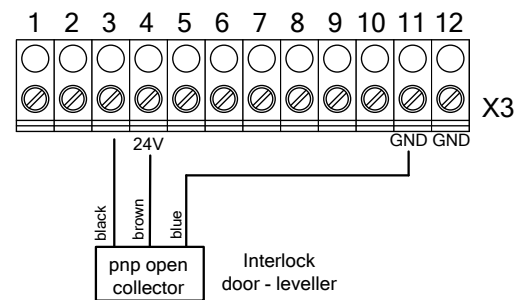


Stop door (Stop): The output „interlock door“ can be integrated in the stop circuit of the door control. The contact is open in case of:

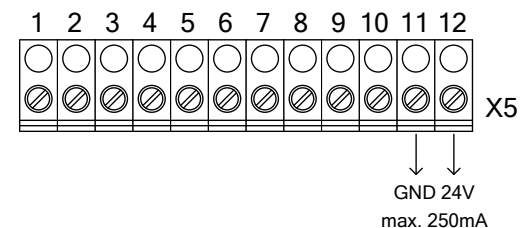
- leveller is not in home position
- Power failure of leveller
- Emergency shutdown



Interlock door - leveller: The leveller control is blocked through a potential free break contact or a pnp open collector sensor of the door control unit. The polarity could be programmed with the display. The leveller can be operated first when a door control release is available. If door release is took up while the dock is operated so the leveller is no more able to be operated till release of door is given again.



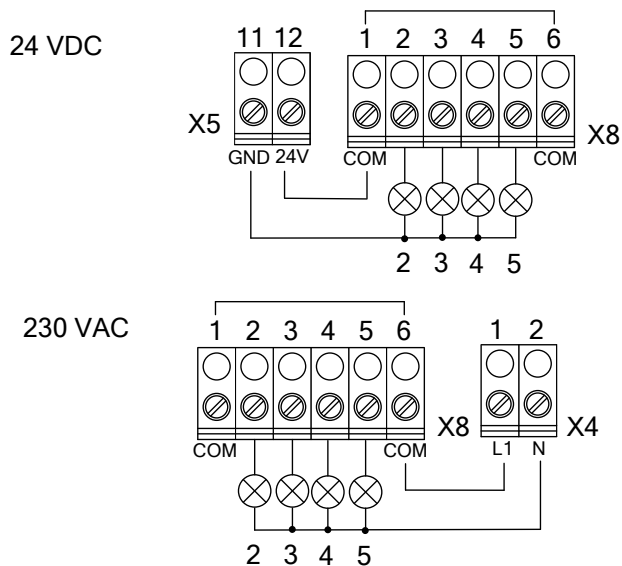
24 VDC for external units
max. 250 mA



Traffic lights

- Inside light green (terminal 2)
- Inside light red (terminal 3)
- Outside light green (terminal 4)
- Outside light red (terminal 5)

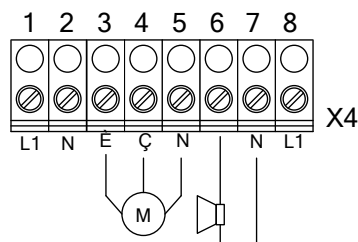
Traffic lights:
 24VDC max. 100mA
 230 VAC max. 40 W



Shelter Tubular drive / 230 V Output

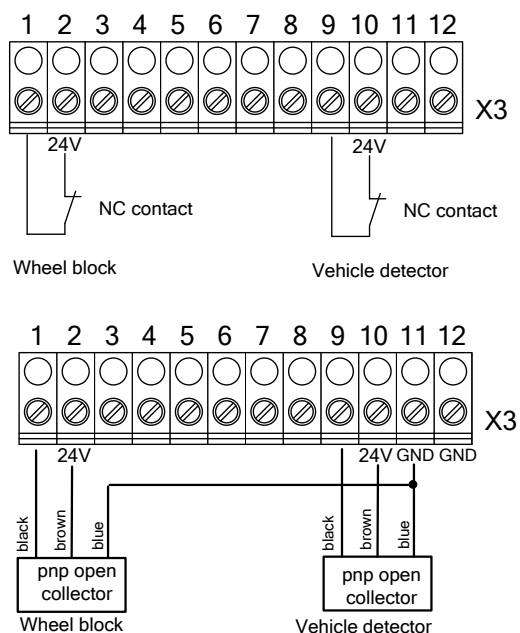
The functions of the 230 VAC output have to be programmed via the display.

- MOD 1: Horn (standard)
- MOD 2: Shelter fan
- MOD 3: Loading lamp automatic
- MOD 4: Loading lamp manual



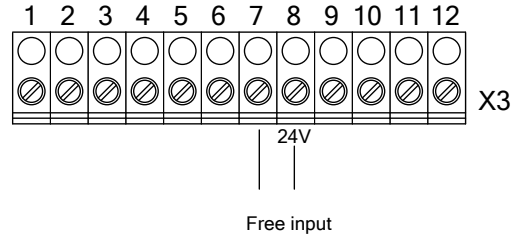
Vehicle detector: If a van is activating the vehicle detector a warning signal (horn) is given and the outside traffic light switches to red. Its function must be activated via the input function on.

Wheel block: The wheel block is used to secure the vehicle during the loading process. Its function must be activated via the input function on.



Free input

The function of this input can be programmed over the input function.



Traffic light acknowledgement (2):

(NO contact) The external green traffic light scolded only on green if the dock leveller is initial position, the wheel block has been removed and the acknowledgement push button has been actuated.

Safety fence (3): (NC contact)

If the fence is closed, the dock leveller is locked.

Selector switch shelter (4)

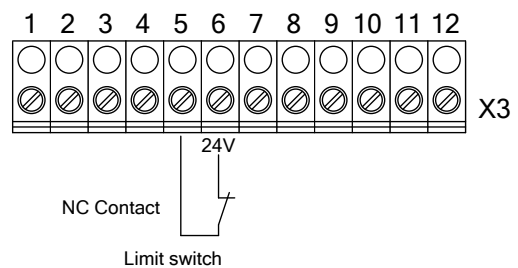
Selector switch for the manual operation of the shelter.

Floating position sensor (5)

(NO contact). The ramp is only in the floating position when the switch is closed.

Limit switch lip in

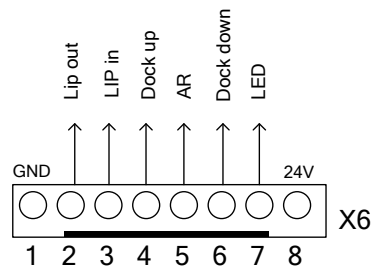
The limit switch indicates that the telescopic lip is in the position home



Push buttons

All push buttons are to be attached as NO contact.

The cover LED (option) has the same function as the inner green light.



7 Functional description

7.1 Operation

By means of the push button leveller up the dock leveller is raised in dead man operation mode. The leveller must be raised at least for the time ,1stes Heben'. After reaching the optimal position the button can be released, the loading bridge remains for 5 seconds in the position adjustment. During this time the lip should be positioned. If no key is pressed, the loading bridge lowers itself again into the initial position. The lip can be positioned with the buttons lip out in the dead man operation mode.

The lip must be driven out at least for time lip out min. If the time ,time lip out max' is reached, the lip stops automatically. After releasing the button, the dock leveller drops automatically to the docking edge of docked transporting vehicle (floating position).

If the position of the lip is to be corrected during the loading procedure, first the leveller has to be raised, afterwards the position of the lip can be adjusted.

7.2 Automatic Return (AR)

Return of dock leveller to the initial position occurs over the AUTORETURN button, wherein return occurs automatically

AR – Version 1: (Parameter AUTORETURN MOD 2)

- The dock leveller is raised for the time ,AR-Raise 1'.
- The lip is retracted for the time , Lip out min'
- The dock leveller is raised for the time ,AR-Raise 2'.
- The lip is retracted completely.
- The dock leveller drops automatically to the initial position.

AR – Version 2: (Parameter AUTORETURN MOD 4)

- The dock leveller is raised for the time ,AR-Raise 2'.
- The lip is retracted completely.
- The dock leveller drops automatically to the initial position.

GB 8 Further functions

8.1 Protection against uncontrolled movements

The control RS300 possesses an integrated protection circuit against uncontrolled movements. It is activated if during normal operation an emergency stop signal is given to the dock leveller or if voltage supply is interrupted. After release of the emergency stop or power up, the dock leveller the valve stay closed, until the push button leveller up button is activated.

8.2 Detection of the phase rotation

The control RS300 possesses an integrated circuit for the detection of the phase rotation. Right-hand phase rotation is required to prevent malfunction. If there is no right hand phase rotation, the contactor is not able to be switched on. Further the circuit is secured against phase failure. Both errors are signaled by the LCD.



The Detection of the phase rotation is possible only with the 400V mains supply. If the mains voltage 230 V 3Phasen should used, then the Detection of the phase rotation must be deactivated with the Jumper 1.

8.3 Current control

The control RS300 possesses an integrated current measurement for the hydraulic aggregate. This measured value makes the recognition of the final positions for the telescopic lip possible.

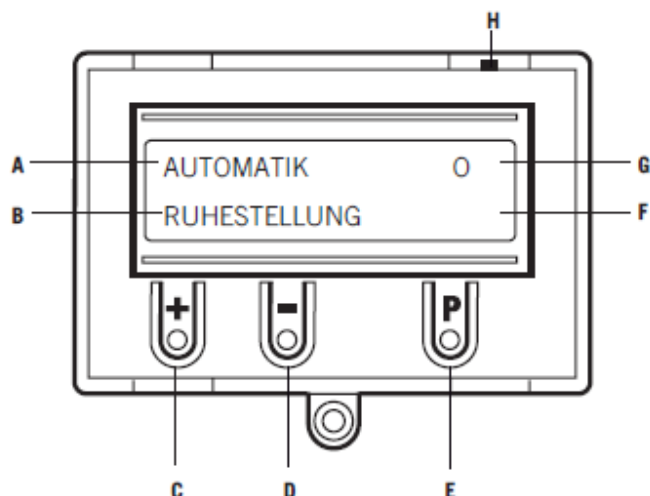
1. Maximum driving out position of the lip

With adjusting the lip the maximum driving out width is out recognized by the current recognition OR by the time lip out max.

2. Lip in initial position

When retracting the lip in the automatic return function, the initial position of the lip can be recognized by the current recognition OR the limit switch OR the time min lip out.

9 LCD screen



Key:

- A: mode of operation / Diagnostic info
- B: parameters / diagnostic info
- C: + button
- D: - button
- E: P button
- F: value / status
- G: value / status
- H: jumper

9.1 Operation mode of the LCD screen

With the LCD screen, the control is provided with 4 operation modes: AUTOMATIC, MAINTENANCE, INPUTS, DIAGNOSTICS

If the Jumper H is pulled out, the key buttons +, - and P are without function. The display notice still functions.

Operation mode 1: AUTOMATIC

The dock is operated in the operation mode AUTOMATIC.

Display: - Notice about the running function
- Notice about the possible errors

Operation mode 2: MAINTENANCE

The dock can be operated through the housing key button integrated in the operation mode MAINTENANCE. The operation mode MAINTENANCE is only related to the start-up. No floating position will follow.

Display: - Notice about the running functions.

Operation mode 3: INPUT

The values of the different parameters can be changed in the operation mode INPUT.

Display: - Notice about selected parameters
- Notice about the set values / status

Operation mode 4: DIAGNOSTIC

Controls specific to the leveller can be inquired in the operation mode DIAGNOSTIC.

Display: - Notice about controls
- Notice about the control status

9.2. Navigator

AUTOMATIC STANDBY

P- > 1 sec.

INPUT	+ and -> 2 sec.	INPUT	
		INPUT DEUTSCH	Scroll up through menu: + > 2 Sec
		INPUT VALVE VER.: 1	Scroll down through menu: - > 2 sec.
		EINGABE LOWER MOD1	Select value: P > 1 sec.
		INPUT 1.RAISE 1.0	Increase value: +
		INPUT AR RAISE 1 1.0	Decrease value: -
		INPUT AR RAISE 2 1.0	Save value: P
		INPUT AR DROP 2.0	Return to INPUT mode: + and - > 1 sec..
		EINGABE MIN.LIP OUT 1.0	
		EINGABE MAX.LIP OUT 15.0	
		INPUT TIME HYDR.: 120	
		INPUT TRALIGHT MOD. 1	
		INPUT HO/FAN/DL: 1	
		INPUT AUTORETURN: 3	
		INPUT WHEEL BLOCK: 1	
		INPUT VEHICLE SENSOR: 1	
		INPUT SHELTER: 1	
		INPUT SHELTER TIME: 1	
		INPUT RZ TIME: 0.0	
		INPUT INTERLOCK DOOR 1	
		INPUT DL RELEASE 1	
		INPUT FREE INPUT 1	
		INPUT CURRENT LEVEL 15%	
		INPUT DELAY TIME 0%	

P- > 1 sec.

DIAGNOSIS	.	STOP CHAIN	ON	Scroll up through menu: + > 2 sec. Scroll down through menu: - > 2 sec. Return to AUTOMATIC mode: P Only queries are possible
		WHELL BLOCK	OFF	
		INTERLOCK	ON	
		HOME LS	OFF	
		ACKNOWLEDGE	OFF	
		VEHICLE SENSOR	OFF	
		LIP FORWARD	OFF	
		LIP BACK	OFF	
		RAISE	OFF	
		HOME	OFF	
		DROP	ON	
		CYCLE	OFF	

P- > 1 sec

MAINTENNACE	.	MANUAL OPERATION OF THE DOCK
		LIFT
		LOWER (AR)
		FORWARD
		BACK

P- > 1 sec

GB 9.3 Operating mode Automatic

Display	Meaning
AUTOMATIC STANDBY	The dock leveller is in initial position.
AUTOMATIC FLOATING	The dock leveller is in working position.
AUTOMATIC EMERGENCY STOP	The dock leveller is in the EMERGENCY STOPS status. For setting the leveller back into the initial position first the button leveller up must be pressed and then the button automatic return.
AUTOMATIC ADJUSTMENT	The telescopic lip can be positioned in this mode.
AUTOMATIC 1. RAISE	The dock leveller is raised from the initial position.
AUTOMATIC RAISE	The dock leveller is raised.
AUTOMATIC LIP OUT	The telescopic lip is driven out.
AUTOMATIC LIP IN	The telescopic lip is retracted.
AUTOMATIC AUTORETURN xxx	Automatic return cycle is active.

9.4 Operating mode Diagnosis

DISPLAY	Meaning	Status
STOP CHAIN	Stop circuit, Emergency Stop	ON: circuit closed OFF: interrupted (fault)
WHELL BLOCK	WHELL BLOCK	ON: activated OFF: not activated
INTERLOCK	Interlock Door - leveller	ON: activated OFF: not activated
HOME LS	Limit switch dock leveller	OFF: activated ON: not activated
ACKNOWLEDGE	ACKNOWLEDGE Traffic lights	ON: activated OFF: not activated
VEHICLE	Vehicle Sensor	ON: activated OFF: not activated
LIP-FORWARD	Push button Lip forward	ON: activated OFF: not activated
LIP-BACK	Push button Lip back	ON: activated OFF: not activated
RAISE	Push button dock up	ON: activated OFF: not activated
AR	Push button automatic return (AR)	ON: activated OFF: not activated
DROP	Push button drop (Option)	ON: activated OFF: not activated
CYCLE	cycle counter	Displays number of leveller cycles

9. 5 Operating mode INPUT

Function	Description	Setting options	Factory setting																																																																																																																																																																																																																																																																																																																																																												
DEUTSCH	Select the menu language	DEUTSCH, ENGLISH, FRANCAIS, NEDER- LANDS	DEUTSCH																																																																																																																																																																																																																																																																																																																																																												
Valve version	<table border="1"> <thead> <tr> <th colspan="5">3 VALVE</th> </tr> <tr> <th>MODE 1</th> <th>Standard</th> <th>STOP</th> <th>LIP OUT</th> <th>LIP IN</th> </tr> </thead> <tbody> <tr> <td>FUNCTION</td> <td>CONTACTOR</td> <td>Y1</td> <td>Y2</td> <td>Y3</td> </tr> <tr> <td>RAISE</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>LOWER</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>LIP OUT</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>LIP IN</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>FLOATING MODE</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>EMERGENCY STOP</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="5">3 VALVE</th> </tr> <tr> <th>MODE 2</th> <th>SPECIAL</th> <th>RAISE</th> <th>LIP</th> <th>LOWER</th> </tr> </thead> <tbody> <tr> <td>FUNCTION</td> <td>CONTACTOR</td> <td>Y1</td> <td>Y2</td> <td>Y3</td> </tr> <tr> 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Function	Description	Setting options	Factory setting
LOWER	MOD1: automatic lowering MOD2: forced lowering with button dock down MOD 3: forced lowering with button lip in MOD4: forced lowering with button dock down and sensor floating position	MOD 1 ... MOD 4	MOD 1
1. RAISE	Minimum time for which the dock leveller has to raised our of the initial position.	0,5 ... 5 Sec.	1 Sec.
AR-RAISE 1	Initial time to raise the dock leveller during the AR function from the floating position	0,5 ... 5 Sec.	1 Sec.
AR-RAISE 2	Second time to raise the dock leveller during AR function.	0 ... 255 Sec.	2 Sec.
AR-DROP	Time to drop the dock leveller into initial position.	0 ... 255 Sec.	2 Sec.
LIP OUT MIN.	Minimal time to drive out the telescopic lip.	0 ... 5 Sec.	1 Sec.
LIP OUT MAX.	Maximum time to drive out the telescopic lip	0 ... 25,5 Sec.	15 Sec.
TIME HYDR	Maximum running time of the hydraulic aggregate. The watchdog timing of individual movement serves for the avoidance of overload due to defect push buttons or defective limit switches	0 ... 255 Sec.	50 Sec.
TRALIGHT MOD	Traffic lights are MOD1 : OFF MOD2: OFF in position home MOD3: ON in position home (after 5 min)	MOD 1 ... MOD 3	MOD 1
HO/FAN/DL	MOD1: HORN: produces a warning signal, if for example the wheel block is released during the loading procedure. MOD2: FAN: The fan is necessary for the shelter function as well as the tubular drive. If the mode: shelter is activated, MOD 2 (fan) is preselected and cannot be changed. MOD 3: Dock light (automatic) After reaching the loading position the light is switched on and remains on, as long as the dock leveller is again in its initial position. MOD4: Dock light manual. The dock light could be switched on and off via the drop button (option).	MOD1 ... MOD4	MOD 1

AUTORETURN	<p>MOD 1: Autoreturn not active</p> <p>MOD 2: long autoreturn cycle</p> <p>MOD 3: Autoreturn via button lip in (If the lip is in home position and the button lip is hold for > 2sec, the automatic return cycle starts)</p> <p>MOD 4: Short autoreturn cycle</p>	MOD1 ... MOD 4	MOD3
WHEEL BLOCK	<p>MOD1: Wheel block not active</p> <p>MOD2: Wheel block active, with actuation during loading procedure the red traffic lights are switched on and the horn signalizes this.</p> <p>MOD3: Wheel block active, with actuation during loading procedure, all buttons are blocked.</p>	MOD1 ... MOD 3	MOD1
VEHICLE SENSOR	<p>MOD 1: vehicle sensor not active</p> <p>MOD2: Optical and acoustic vehicle detection.</p> <p>When a vehicle drives in front of the door and activates the vehicle sensor, this is signaled by red traffic lights and the horn. The dock leveller is released for operation.</p> <p>MOD3: Optical and acoustic vehicle detection. When a vehicle drives in front of the door and activates the vehicle sensor, this is signaled by red traffic lights and the horn. The door (stop contact) is released for operation.</p>	MOD1 ... MOD3	MOD1
SHELTER	<p>MOD1: not active</p> <p>MOD2: Controlled via the program.</p> <p>MOD3: Controlled via the selector switch. (see free input)</p>	MOD1 ... MOD3	MOD 1
SHELTER TIME	The time defines the delay for the release of the door before the start of the loading procedure as well as for the release of the green traffic light outside after the loading procedure.	0 ... 255 Sec.	5 Sec.
RZ Time	Is this time is activated, the lip is automatically drawn back for this time after releasing the LIP OUT button.	0 ... 5 Sec.	0 Sek
INTERLOCK POLARITY	<p>MOD 1: NC contact</p> <p>MOD 2: NO contact</p>	MOD 1, MOD2	MOD1
INTERLOCK DOOR	<p>MOD1: active, if the door interlock is interrupted during the loading procedure, the leveller remains in floating position, both traffic lights switch to red, the buttons are locked and hydraulic aggregate is switched off.</p> <p>MOD2: active, if the door interlock is interrupted during the loading procedure, the leveller remains in floating position, both traffic lights switch to red.</p>	MOD1, MOD2	MOD1

FREE INPUT	MOD 1: not active MOD 2: Traffic light acknowledge MOD 3: safety fence MOD 4: Selector switch shelter MOD 5: Sensor floating position	MOD1 ... MOD 5	MOD1
Current control threshold	The value of the current control represents the increased height of the current of the hydraulic aggregate with the impact into an end position. This parameter must be adapted to the respective aggregate and is valid only during activated current control. 0=deactivated.	0% ... 35 % in percent	15%
Time Base	With this parameter different speeds of the telescopic lip can be adapted when drawing in and driving out. A negative value must be selected, if the lip is faster drawn in than driven out.	- 50 % ... 50%	0%

10. Error messages and rectification

Error messages	Cause	Rectification
System does not respond	No mains power	Check mains power to control box
Leveller is not raising when the UP button is operated.	interlock door – leveller is activated	Check interlock contact
Leveller is not raising when the UP button is operated, although motor is running, the red LED is out	Connection of the hydraulic unit is wrong	Swap two phase wires of the hydraulic unit
Red LED ON	Fuse defectively or phase is missing or to rotary field of the mains supply is wrong	Check hydraulic unit, cabling and fuses

Error message Display / Option	Cause	Rectification
ERROR HY ZEIT	The programmed running time been exceeded	Check buttons and cabling. Re-programme the running time
ERROR ROT:FIELD	An incorrect rotating field is connected to terminal X1	Ensure that a clockwise rotating field is connected
EMERGENCY STOP	Emergency stop circle opened or voltage failure during undefined position	- check emergency stop circuit - use the button up and AR to bring the leveller into the initial position.
INTERLOCK	interlock door – leveller is activated	Check interlock contact

11 Technical Data

Mains supply	3~ 400VAC, 50 Hz, +/- 10% 3~ 230VAC, 50 Hz, +/- 10%
Fuse supply voltage F1-F3	3 x 4A T at 400VAC 3 x 5A T at 230 VAC
Mains fuses	10A K- characteristic
Control voltage	24 VDC max. 0,9 A
Fuse control voltage (F4)	Resettable fuse 1,6 A
Maximal loads Hydraulic unit	Max 2,2 KW 6 A
Valves	24 VDC +/- 10%, 0,8 A / 100%
Mounting	Vertical on the wall , min. height 100 cm
Housing dimensions	215 mm x 275 m x 190 mm
Ambient temperature	-15° C ... +50°C
Storage temperature	-20°C ... +85°C
Isolation class	IP 65
Weight	5 Kg

