

BK150FUEH

014634 GB

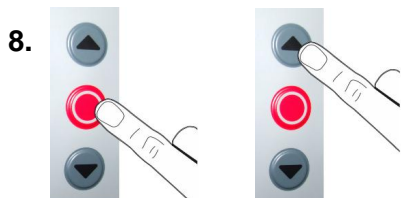
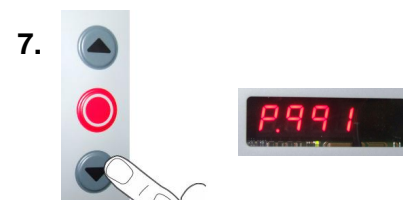
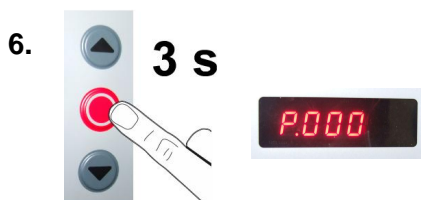
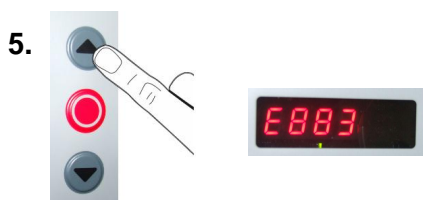
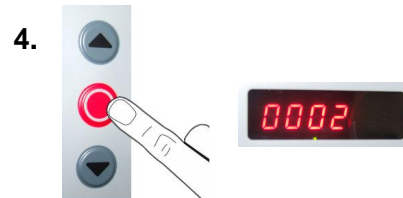
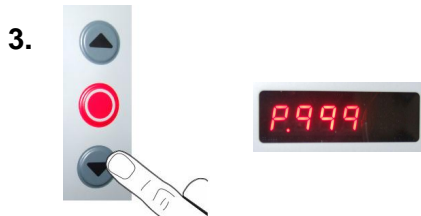
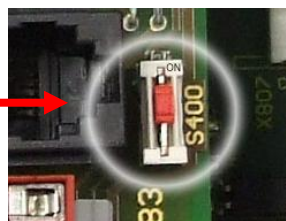
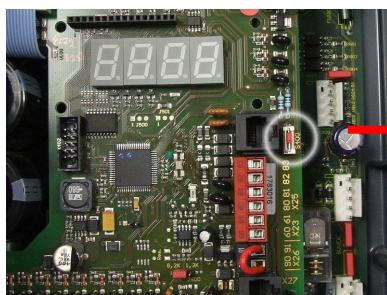
24.08.2009



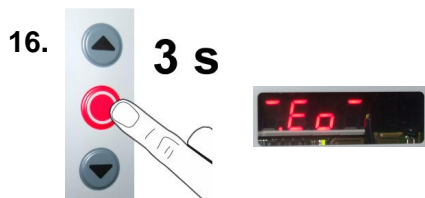
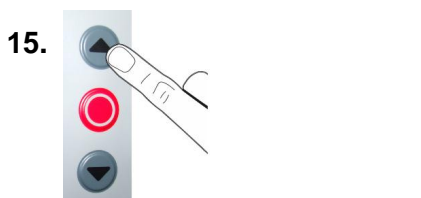
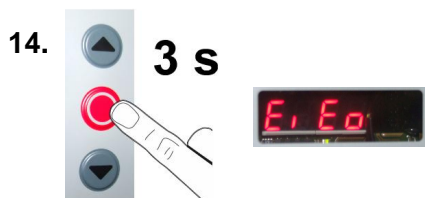
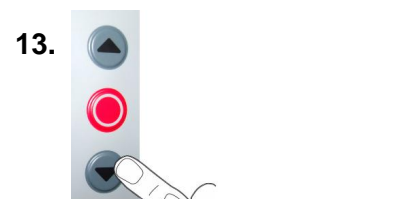
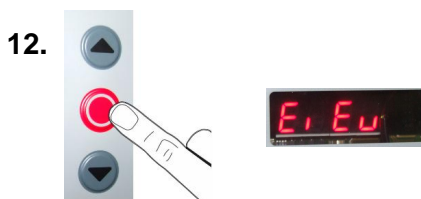
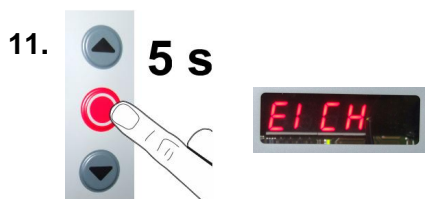
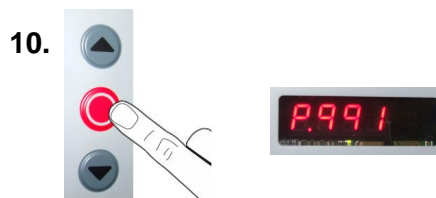
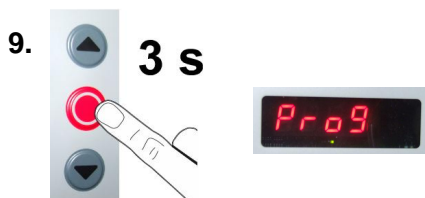
Hörmann KG Verkaufsgesellschaft
D-33803 Steinhagen



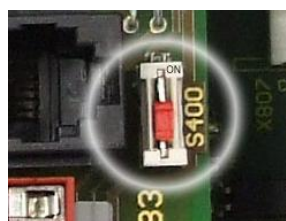
1. S400 -> „ON“



	P991		P991
LIDL / V2012	0	V3515Iso	5
V5015SE/ V5030SE / V6030SE	1	H3530	6
V2715SER	2	V6020TR	7
V3009	3	Turboflex V4530	8
V2515FoodL	4		



17. S400 -> „OFF“



•Commissioning Of Mainboards With Integrated Frequency Inverter And DES

Commissioning The Door

- Are all components connected with correct polarity?
- Then the 7 segment display will blink **E . I . C . H** after switching on the panel.
- Door end positions can be set by foil key pad now.
- If **E . I . C . H** . blinks the programming procedure starts briefly pressing STOP.

Enter Programmig mode!

- **E . I . E . u** . blinks fast to set the fully close position in dead man mode. To save press and hold stop until the display changes to a slower blinking
- **E . I . E . a** . . Now set the fully open position. Also in dead man mode. Saving is also done by continuously pressing the STOP-push button.
- The display now changes to **-E a-**. The door can already be used in automatic mode within the set limits.

E . I . C . H . won't blink?

- No problem! Switch off panel with mains switch. Wait until display goes off, open control panel and set the single DIL-switch in the right part of the mainboard to the „ON“ position. Now push the emergency stop button and switch on the panel again.
- The display now shows **P 0 0 0** and is in the programming mode. Choose parameter **P 4 4 4** with the arrow keys on the foil key pad. Briefly press STOP and change the displayed value from 1 to 2, press STOP until the dot stops blinking. The display changes back to **P 0 0 0** again.
- Choose parameter **P 2 1 0** , briefly press stop and increase the displayed value from 0 to 3.
- Press STOP and hold until the dots stop blinking.
- Pull out the emergency stop button and continue as said before.

Corrections necessary?

- Press the emergency stop button. The display shows **P 0 0 0** in the programming mode.
- To correct the end limit open position choose parameter **P 2 3 1** , for crection of the end limit close choose **P 2 2 1** .
- Briefly press STOP and set correction values. Don't forget to save by continuously pressing STOP until the dots stop blinking!

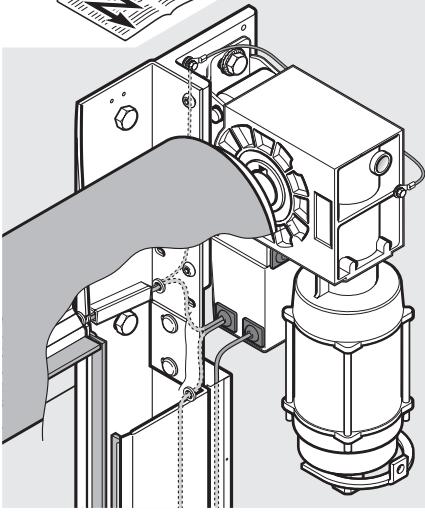
Test Correction Values Now!

- Pull out the emergency stop button and test the end limit positions.
- If the end limits still are not ok correct again.
- Corrections ok and programming done? Switch off the control panel and wait for the display going off, set DIL-switch back to the „OFF“ position, switch on again and ...

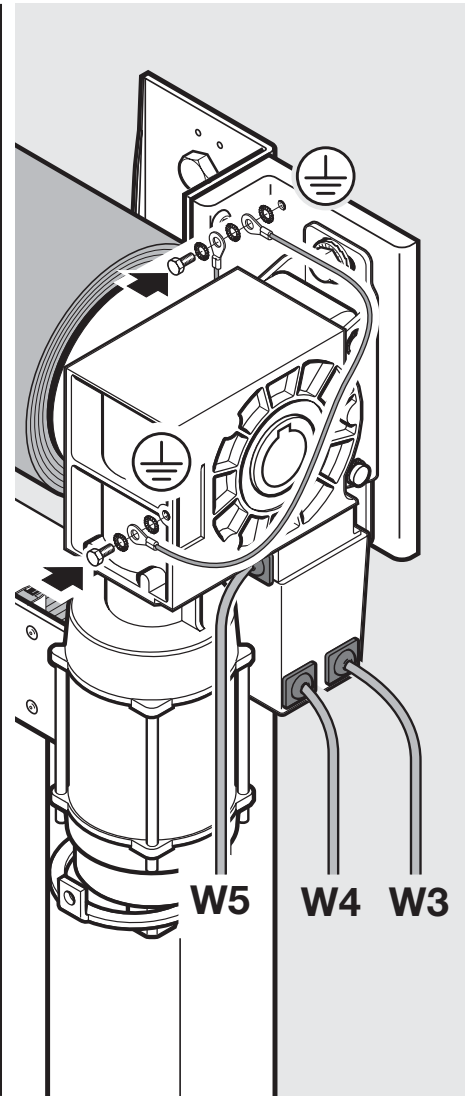
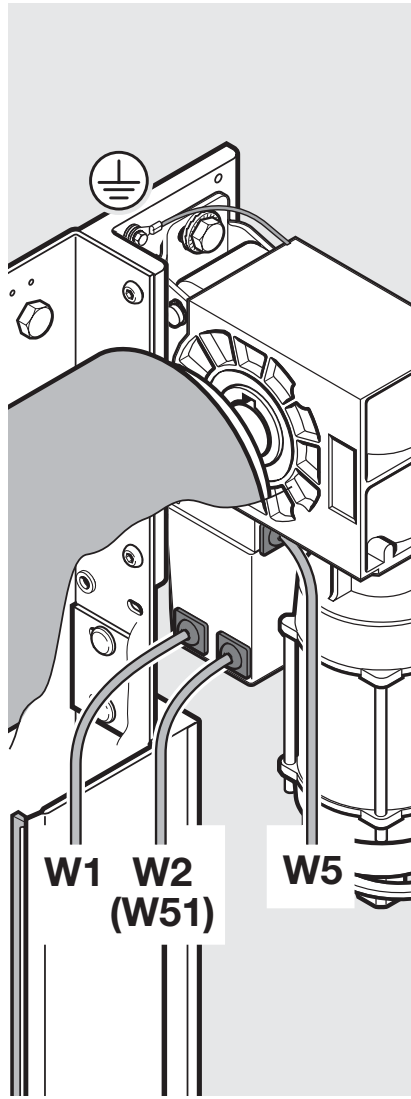
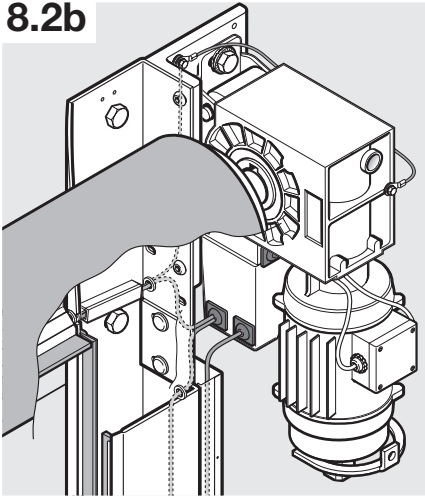
It Functions!!

- As it is ment to do.
- If still problems occure that you cannot fix with the documentation give us a call.
- P.S.: ... Up to here all items will be found in the operation manual that is part of the wiring diagram...

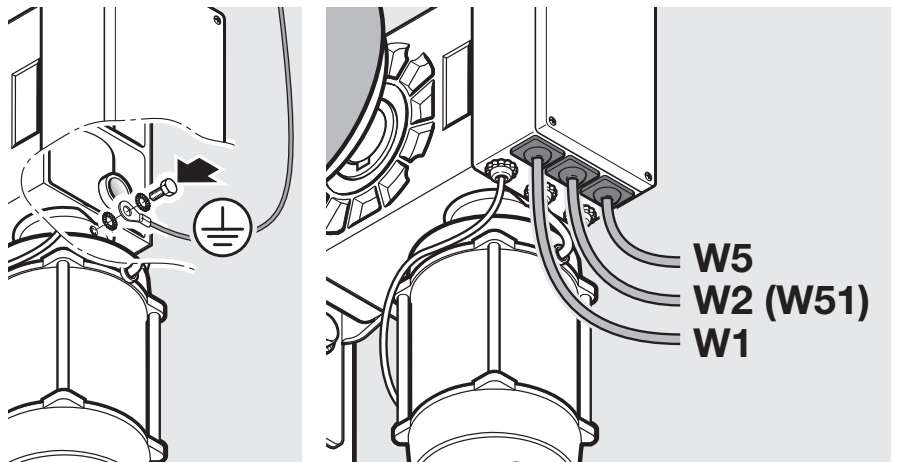
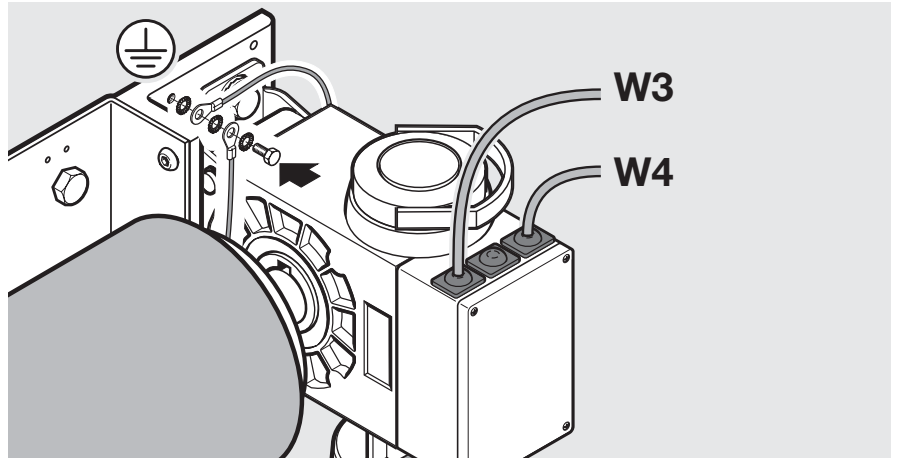
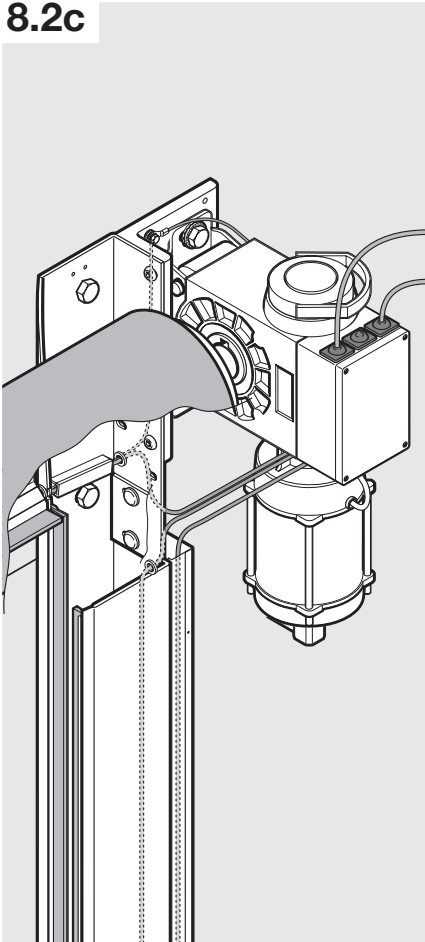
8.2a



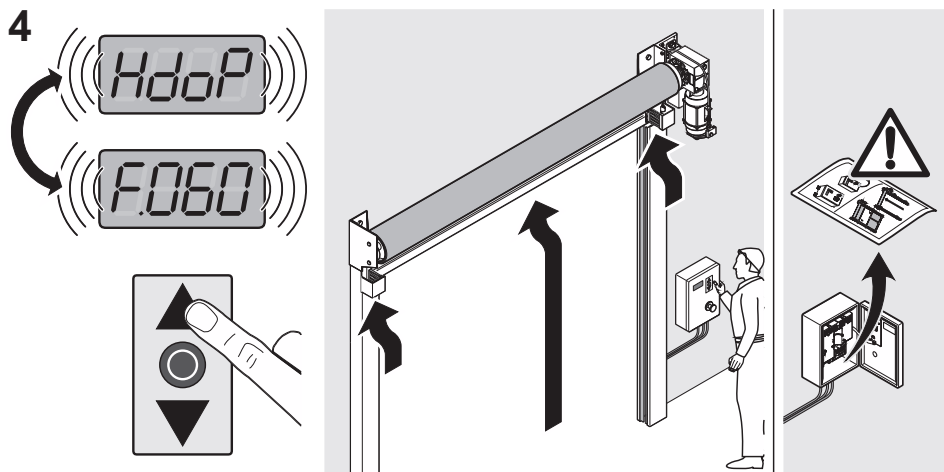
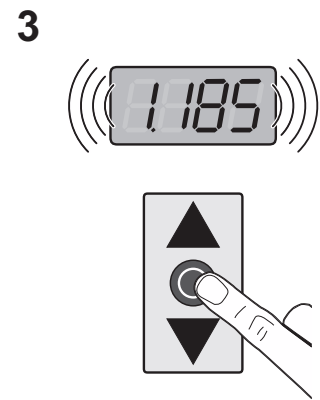
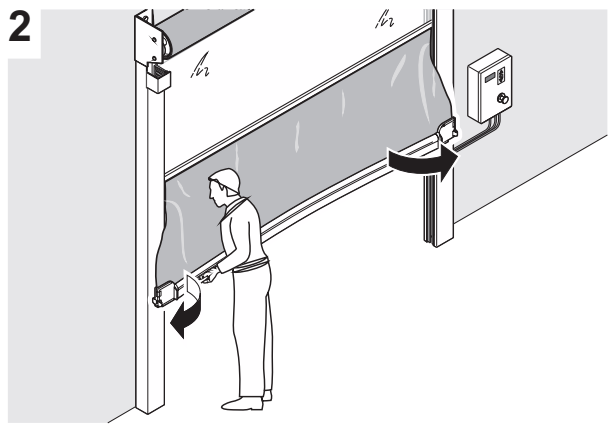
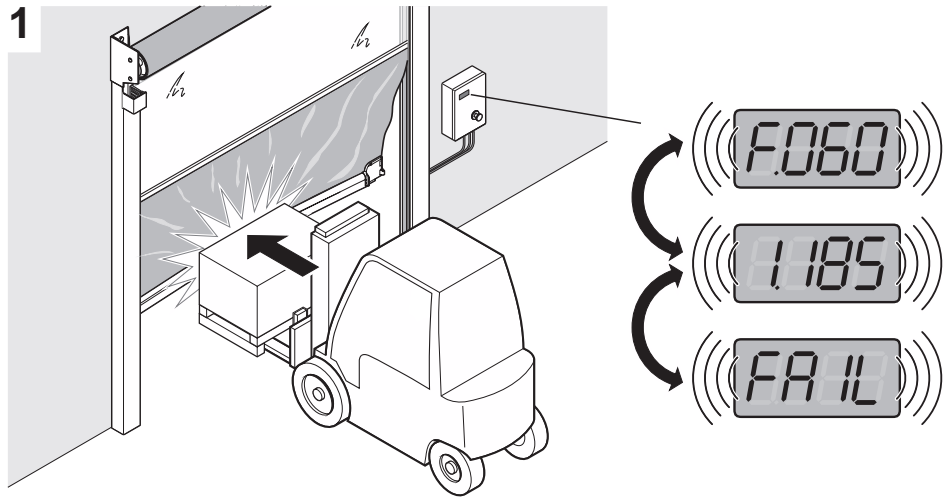
8.2b



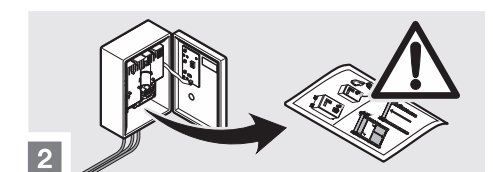
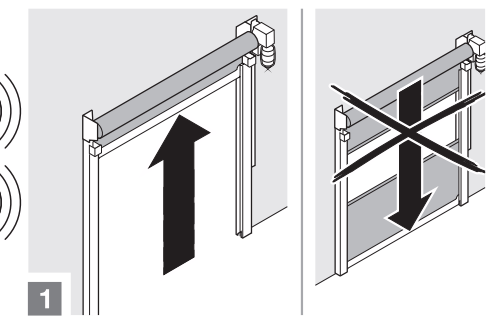
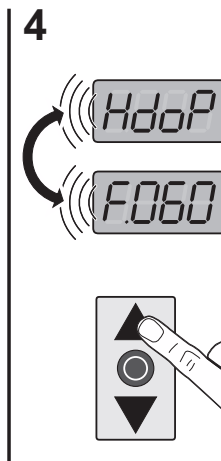
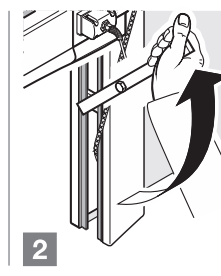
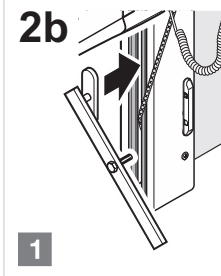
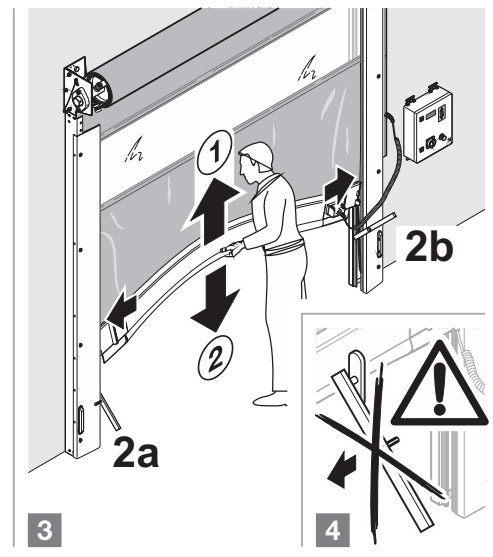
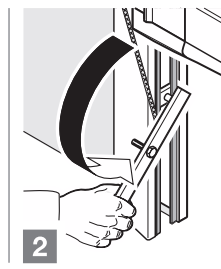
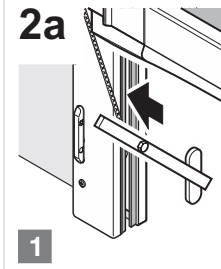
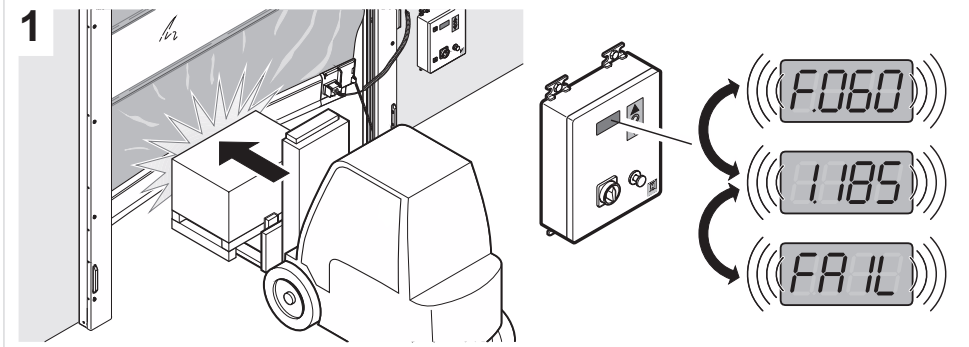
8.2c



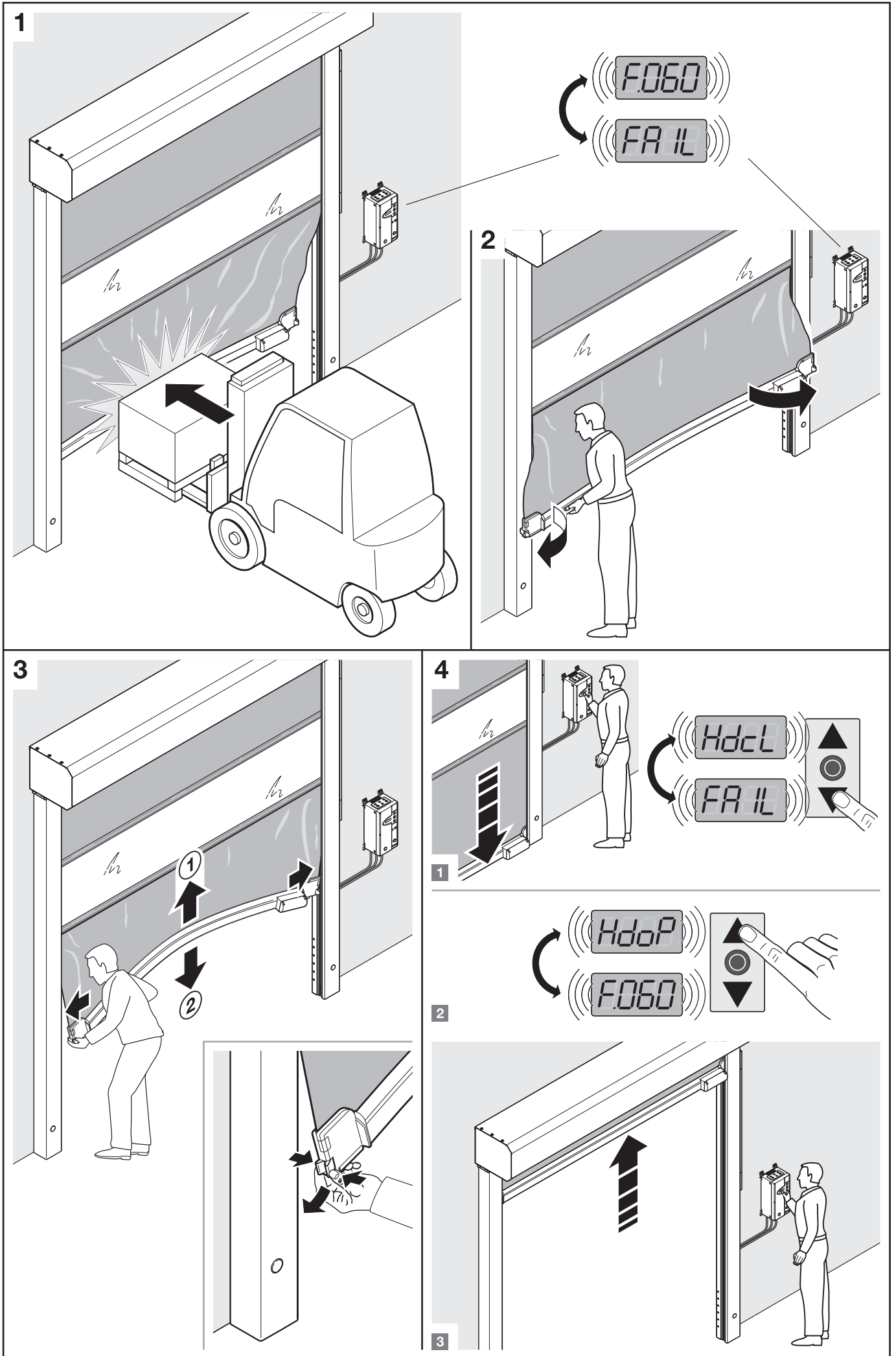
V 5015 SE / V 5030 SE



V 6030 SE



V 2715 SE R



BK 150 FUE H (HS) / BS 150 FUE H (VA)

SoftEdge

H28-283

wiring diagramme
adjustment instructions


GB

main supply	230V / 50Hz
connecting lead	min. 3x2,5mm ²
control voltage	24V DC
year of manufacture	2008ff



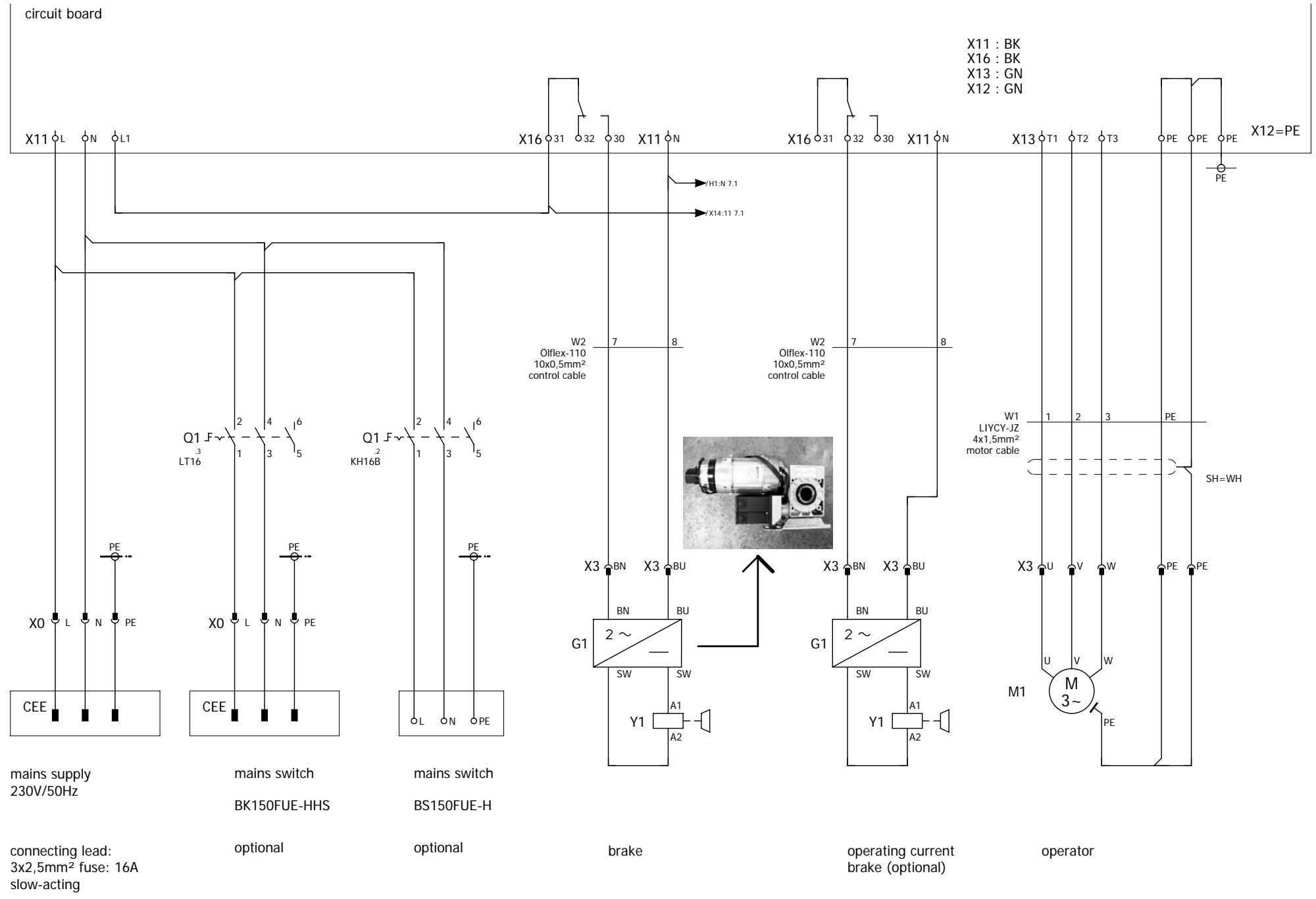
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Verkaufsgesellschaft
D-33803 Steinhagen

Subject to technical changes!

			Datum				Hörmann KG Verkaufsgesellschaft D-33803 Steinhagen	title page		=	+
			Bearb.	Lie						Gesamt	Blatt
			Gepr.	24.08.2009					H28-283		22
Anderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.				

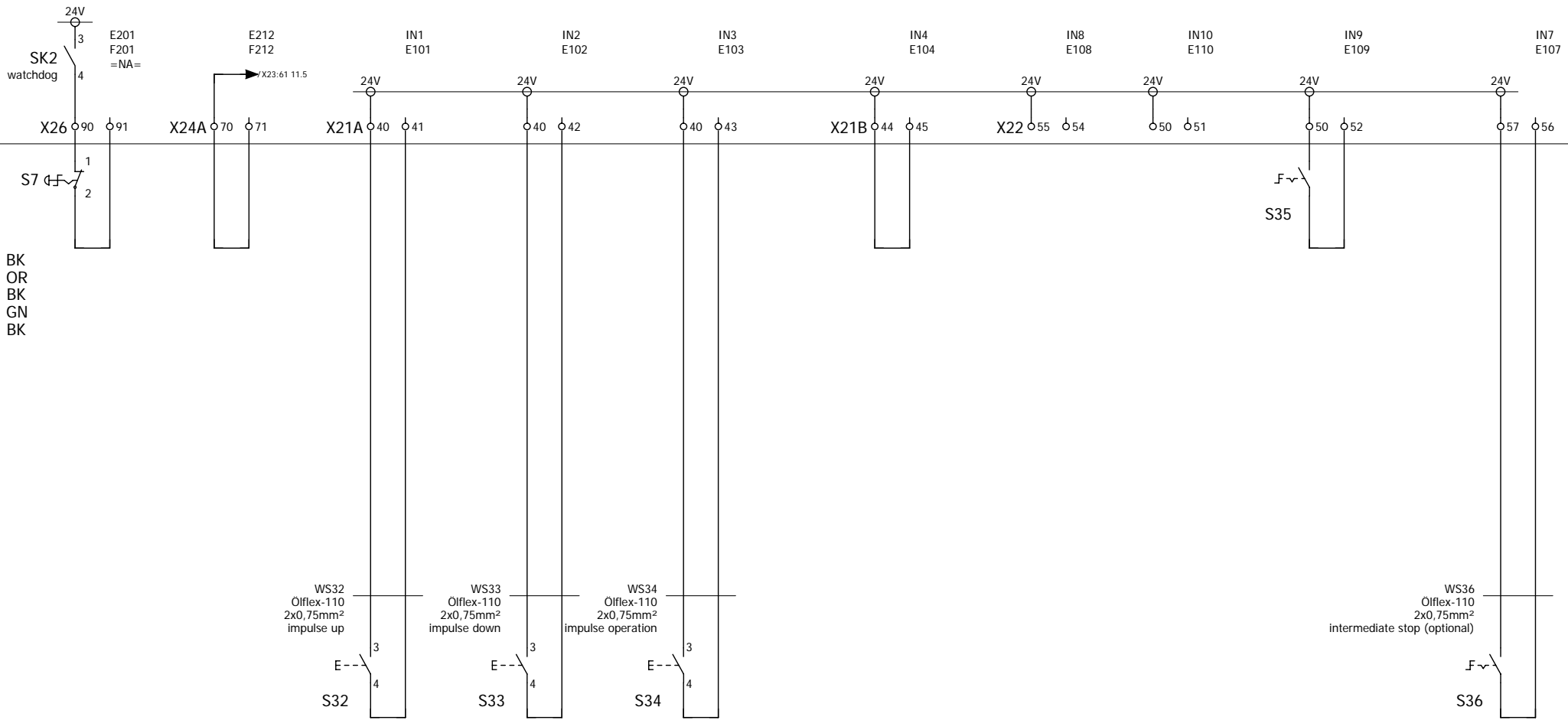
Technical connection requirements, including those from the local energy supplier, and national electrotechnical regulations must be observed

The connection must be made by licenced personnel!



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			Bearb.	Lie							Gesamt	Blatt
			Gepr.	24.08.2009								
Anderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.			H28-283		22

circuit board



- X21A : BK
- X21B : OR
- X22 : BK
- X24A : GN
- X26 : BK

external emergency-OFF 2

impulse down

no photocell 2 for jumper

USV optional

intermediate stop (optional)

emergency-OFF

impulse up

impulse operation

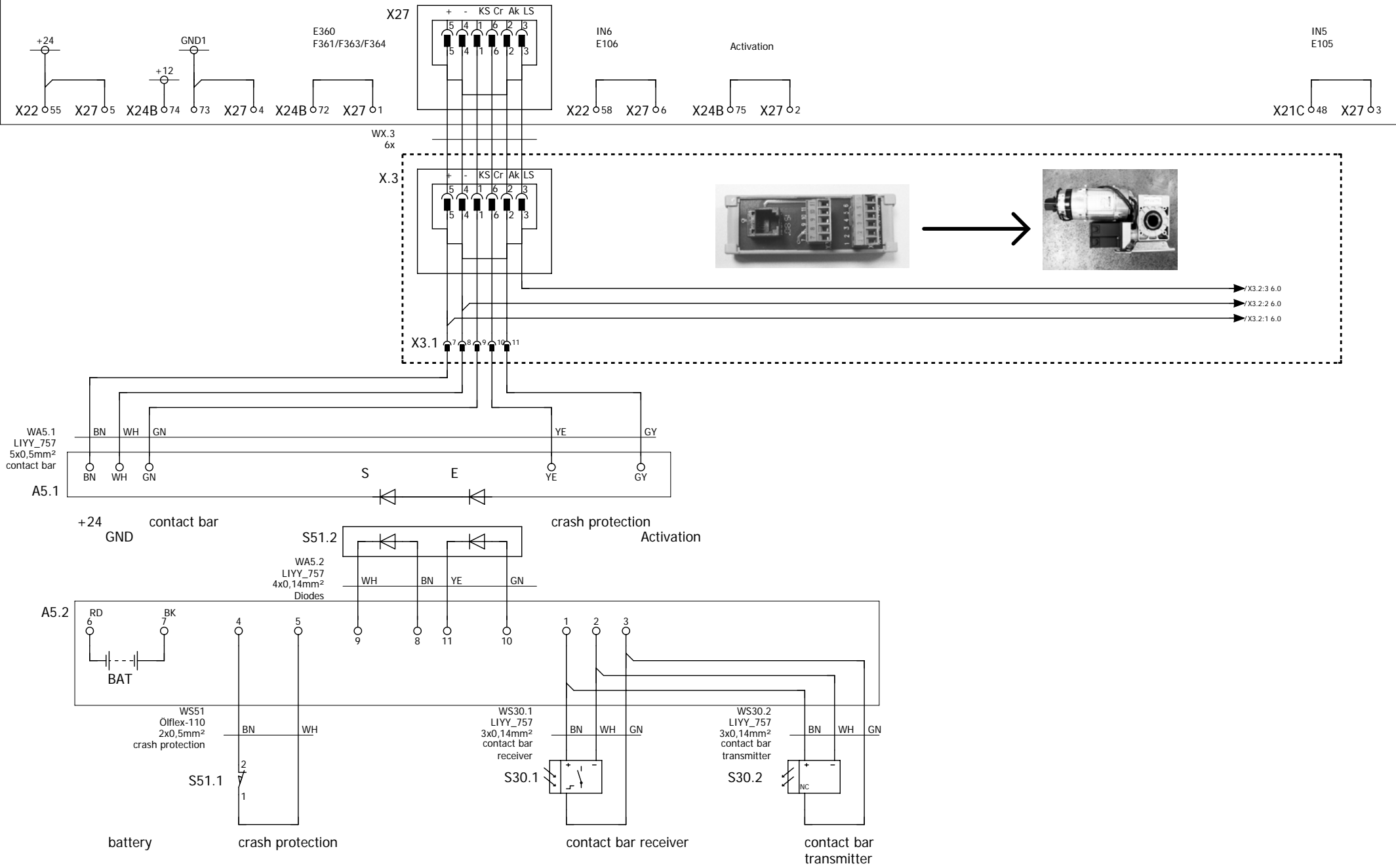
reserve

sluice on/off interlock ON/OFF

option

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Anderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.				

circuit board



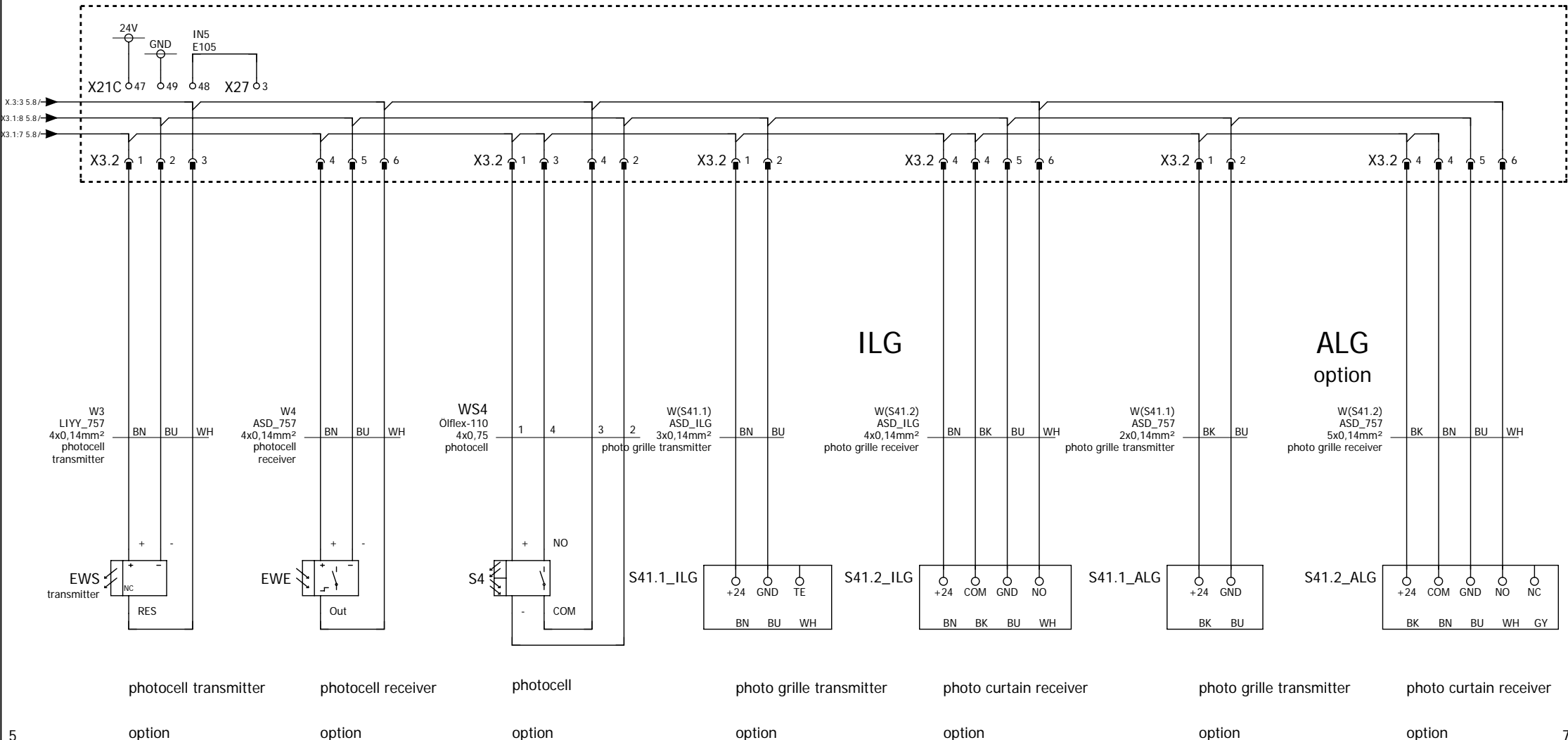
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				Bearb. Lie		Verkaufsgesellschaft				=	
				Gepr. 24.08.2009		D-33803 Steinhagen				Gesamt	
Änderung				Datum		Urspr.		Ers.f.		Ers.d.	
										H28-283	
										22	
										Blatt	
										5	

X3.2 : 1 - BN
 X3.2 : 2 - BU
 X3.2 : 3 - WH
 X3.2 : 4 - BN
 X3.2 : 5 - BU
 X3.2 : 6 - WH

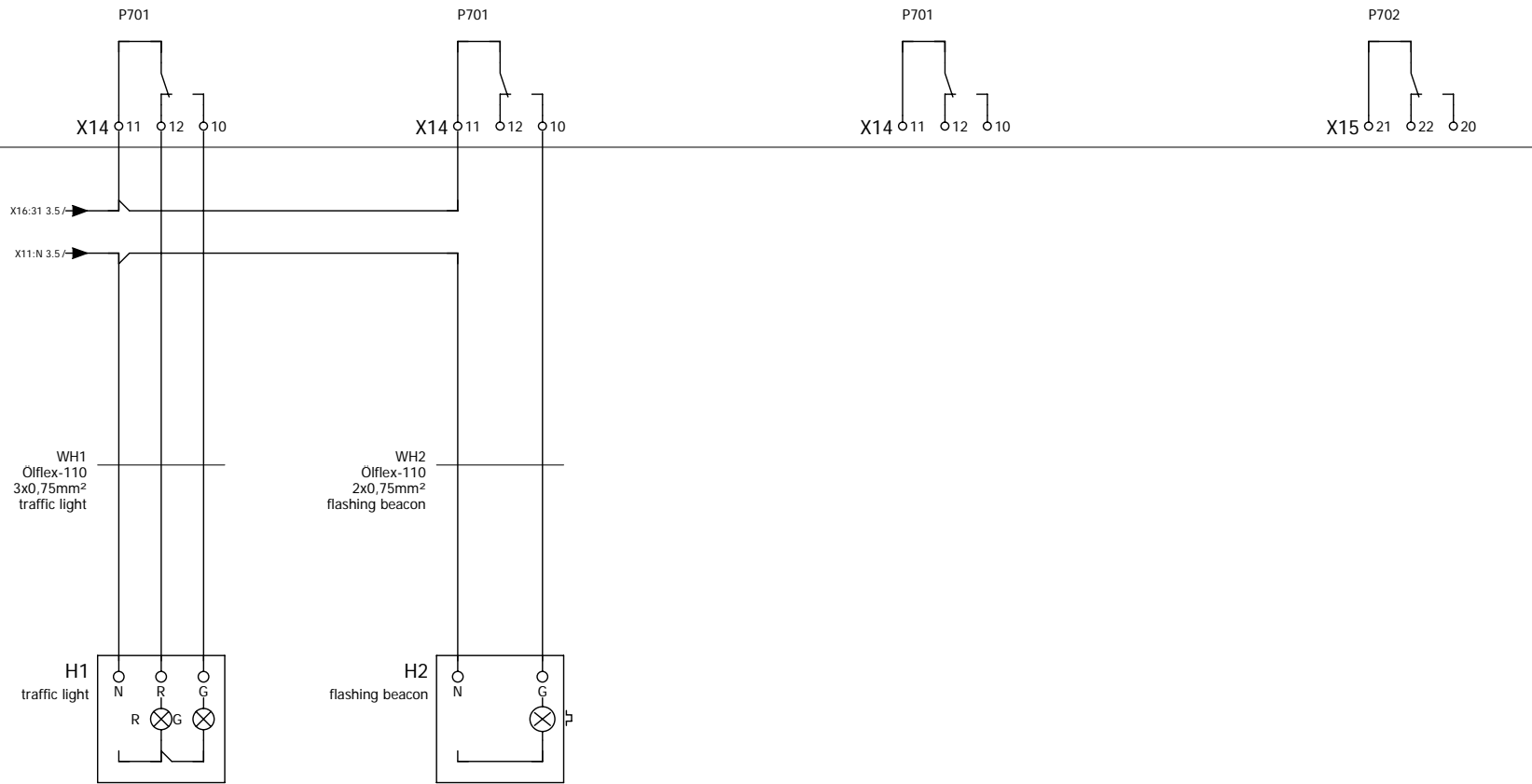
X3.2 : 1 - #1
 X3.2 : 2 - #2
 X3.2 : 3 - #4
 X3.2 : 4 - #3

X3.2 : 1 - BN
 X3.2 : 2 - BU
 X3.2 : 4 - BN + BK
 X3.2 : 5 - BU
 X3.2 : 6 - WH

X3.2 : 1 - BK
 X3.2 : 2 - BU
 X3.2 : 4 - BK + BN
 X3.2 : 5 - BU
 X3.2 : 6 - WH



5				option				option				option				option				option				7																											
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Gepr.	24.08.2009																																																		
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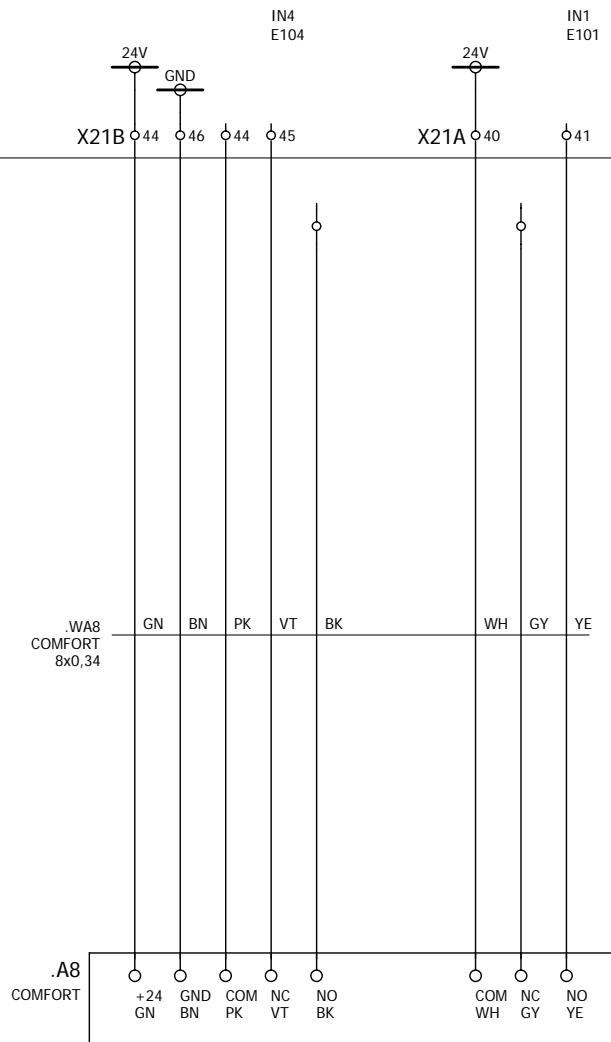
traffic light
option

flashing beacon
option

door open signal

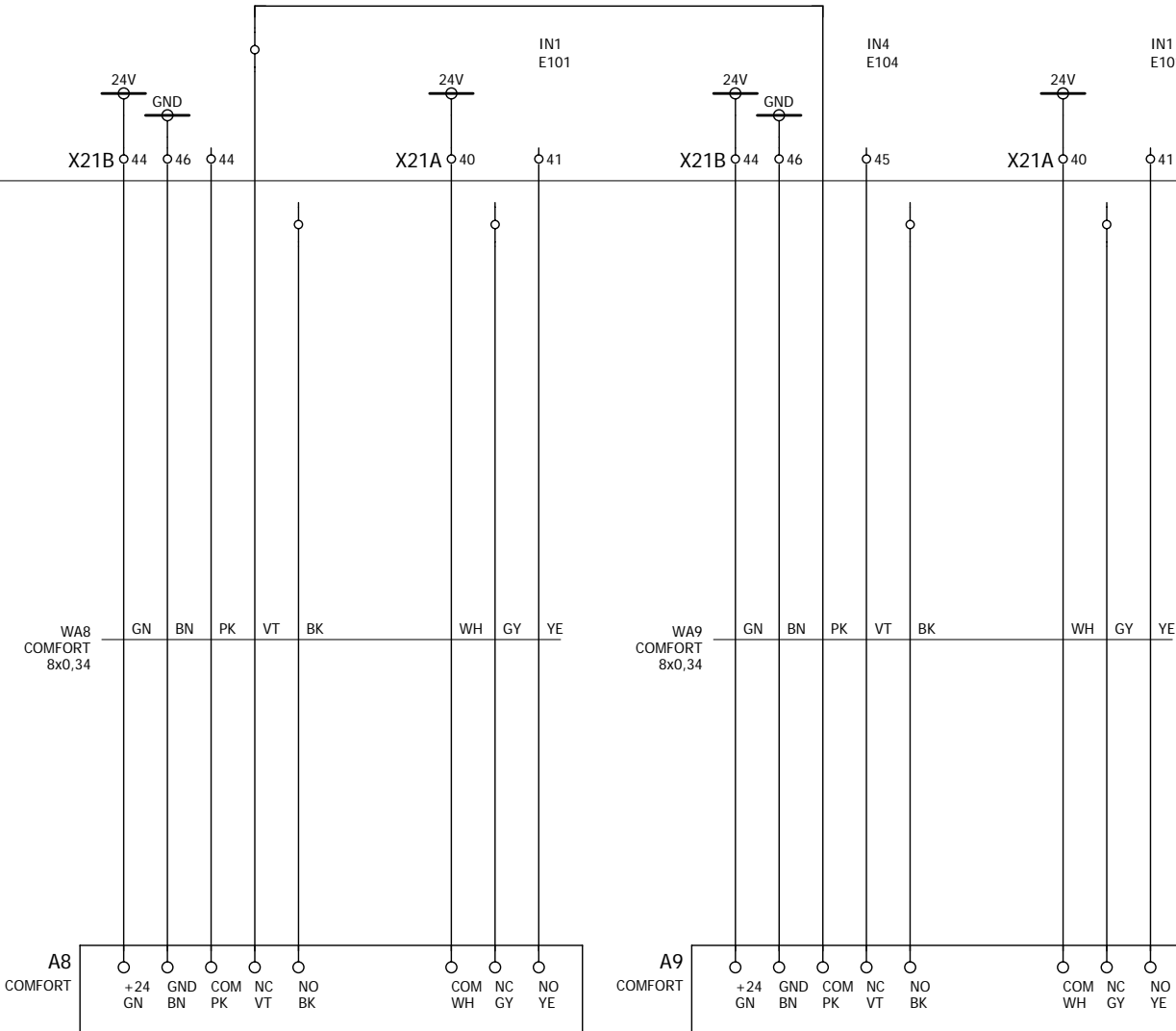
door closed signal

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			Gepr.	24.08.2009					H28-283	22	7
Anderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.				



radar (optional)

1 x COMFORT

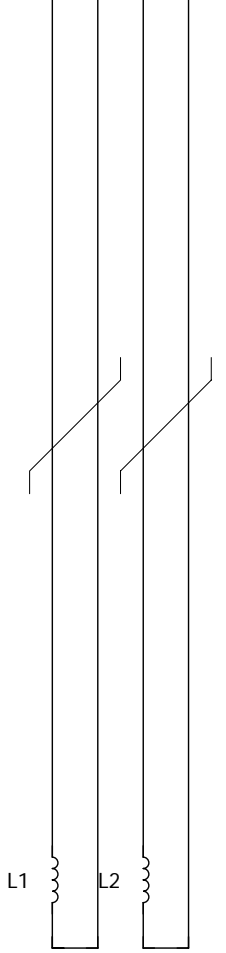
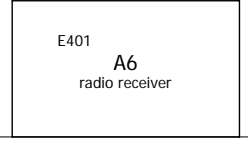
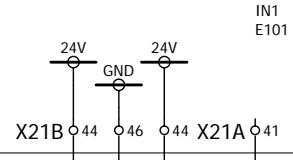
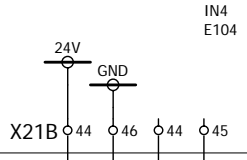
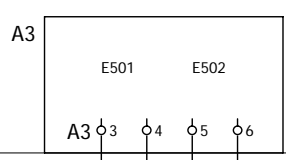


radar (optional)

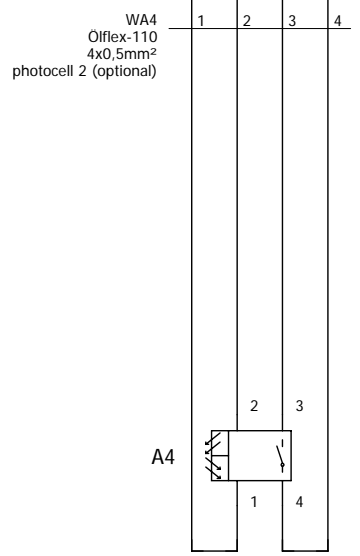
radar (optional)

2 x COMFORT

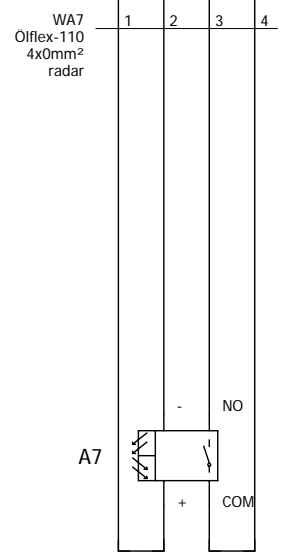
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			Gepr.	24.08.2009		D-33803 Steinhagen				
Anderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.			



induction loops (optional)



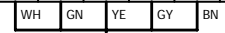
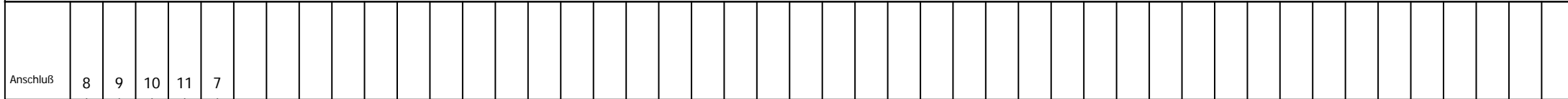
photocell 2 (optional)



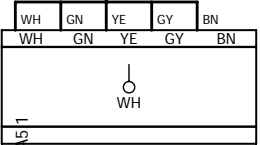
radar (optional)

			Datum				Hörmann KG Verkaufsgesellschaft D-33803 Steinhagen	option		=	+
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			Gepr.	24.08.2009					H28-283		22
Änderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.				

X3.1 contact bar



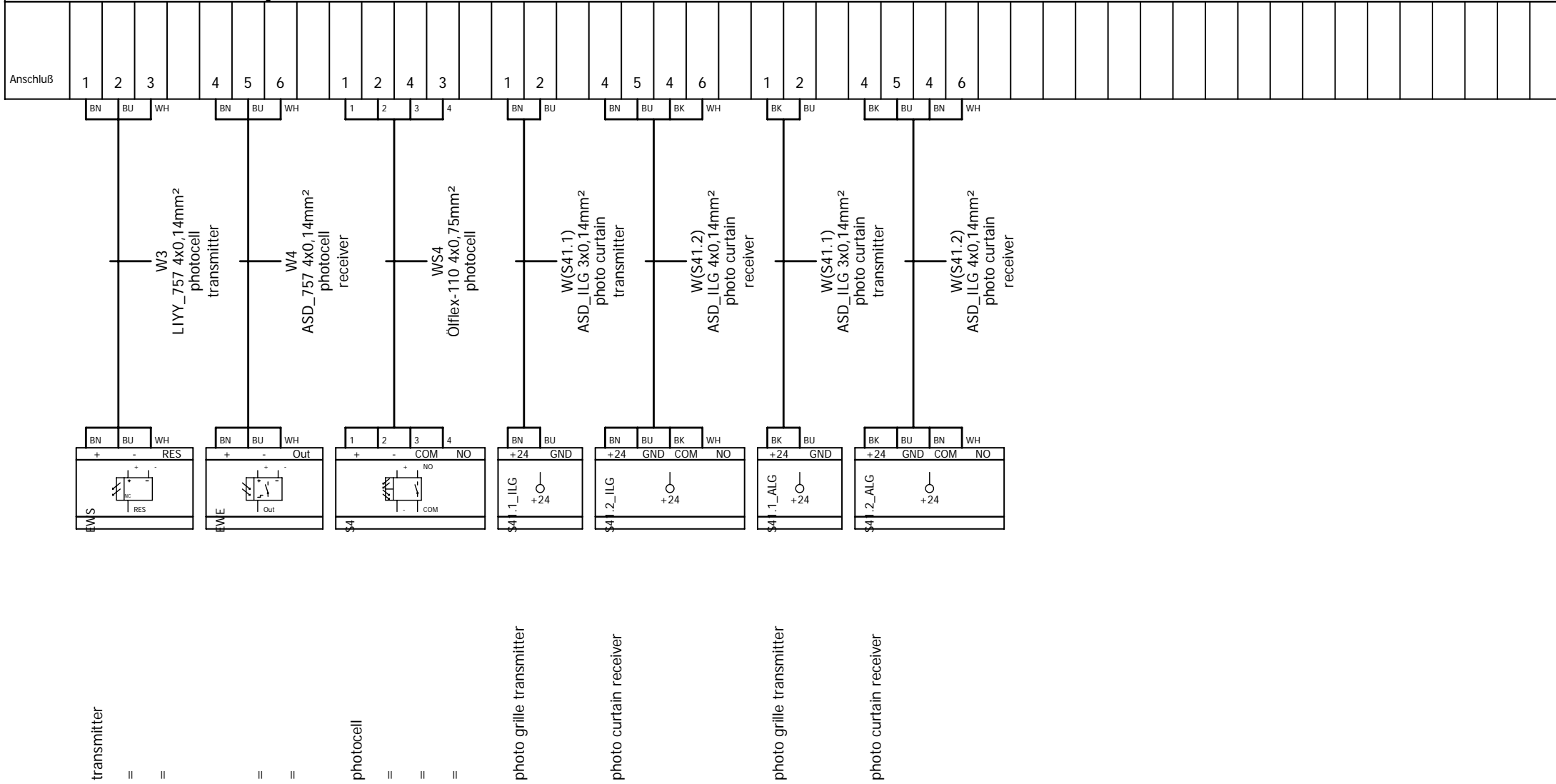
WAS.1
LIYY_757 5x0,5mm²



contact bar
crash protection
Activation

			Datum				Hörmann KG Verkaufsgesellschaft D-33803 Steinhagen	 connection diagramme X3.1		=	+
			Bearb.	Lie						Gesamt	Blatt
			Gepr.	24.08.2009						H28-283	22
Anderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.				

X3.2 photocell



transmitter
 ||
 ||
 ||
 ||
 photocell
 ||
 ||
 ||
 photo grille transmitter
 photo curtain receiver
 photo grille transmitter
 photo curtain receiver

			Datum			Hörmann KG Verkaufsgesellschaft D-33803 Steinhagen	connection diagramme X3.2		=	+
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			Gepr.	24.08.2009						
Änderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.		22	19

cable overview

								Spannung v		Page
W1	X3	X13	LIYCY-JZ	4	4	1,5			motor cable	
W2	X3	X16;X11;X25;X23	Ölflex-110	10	10	0,5			control cable	
W3	X3.2	EWS	LIYY_757	4	3	0,14			photocell transmitter	
W4	X3.2	EWE	ASD_757	4	3	0,14			photocell receiver	
W6	A1.1-.X4	A2.1-.X4		6	6					
W(S41.1)	X3.2	S41.1_ILG;S41.1_ALG	ASD_ILG	3	4	0,14			photo grille transmitter	
W(S41.2)	X3.2	S41.2_ILG;S41.2_ALG	ASD_ILG	4	8	0,14			photo grille receiver	
WA4	X21B	A4	Ölflex-110	4	4	0,5			photocell 2 (optional)	
WA5.1	X3.1	A5.1	LIYY_757	5	5	0,5			contact bar	
WA5.2	A5.2	S51.2-S;S51.2-E	LIYY_757	4	4	0,14			Diodes	
WA7	X21B;X21A	A7	Ölflex-110	4	4	0			radar	
WS30.1	A5.2	S30.1	LIYY_757	3	3	0,14			contact bar receiver	
WS30.2	A5.2	S30.2	LIYY_757	3	3	0,14			contact bar transmitter	
WS33	X21A	S33	Ölflex-110	2	2	0,75			impulse down	
WS34	X21A	S34	Ölflex-110	2	2	0,75			impulse operation	
WS36	X22	S36	Ölflex-110	2	2	0,75			intermediate stop (optional)	
WS51	A5.2	S51.1	Ölflex-110	2	2	0,5			crash protection	
WA8	X21B;X21A	A8	COMFORT	8	8	0,34				
WA9	X21B;X21A	A9	COMFORT	8	8	0,34				
.WA8	X21B;X21A	.A8	COMFORT	8	8	0,34				
WH1	H1	H2;X14	Ölflex-110	3	3	0,75			traffic light	
WH2	X14	H2	Ölflex-110	2	1	0,75			flashing beacon	
WS4	X3.2	S4	Ölflex-110	4	4	0,75			photocell	
WS32	X21A	S32	Ölflex-110	2	2	0,75			impulse up	
WSF	X400	SF			4			0	membrane keypad	
WX.3	X.3	X27		6	6					

			Datum		Hörmann KG Verkaufsgesellschaft D-33803 Steinhagen				cable overview		=	+
			Bearb.	Lie								
			Gepr.	24.08.2009							Gesamt	Blatt
Anderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.			H28-283	22	20

parts list

SEU001D.F01 / LIE / 12.07.2007

NAME WIRING DIAGRAMME LOCATION	MENGE ME	DESIGNATION	MODEL NUMBER	MANUFACTURER	ARTICLE NUMBER	POS.
	1	Schaltschrank BS 150 FUE H 400x300x150mm		Sarel GmbH Sarel GmbH	014715	BS150FUEH
	1	Schaltschrank BS 150 FUE H VA 400x300x150		Sarel GmbH Sarel GmbH	014716	BS150FUEH-V2A
A1 3.1	1	Steuerung BK 150 FUE H	TST-FUH CX-SE 013768		013768	
A1 3.1	1	Steuerung BK 150 FUE H HS			014466	BK150FUEH-HS
A1.1 10.2	1	Platine E FU H Erweiterungsplatine	RFUx-COM		013772	
A3 9.1	1	Induktionsschleifendetektor 1-Kanal	TST SUVEK1	Feig Electronic GmbH	800256	
A3 9.1	1	Induktionsschleifendetektor 2-Kanal	TST SUVEK2	Feig Electronic GmbH	800257	
A4 9.4	1	Lichtschranke mit Reflektor		Deutsche Telemecanique	800232	
A5.1 5.0	1	Gehäuse Kabellose Impulsübertragung	OPT-CF 1163 10004300	FRABA AG FRABA AG	013551	
A5.2 5.0	1	Platine Kabellose Impulsübertragung		FRABA AG FRABA AG	013550	
A5.2 5.0	1	Batteriehalter 2XUM2 Softedge	Halter 2xUM2-DK	Reichelt Elektronik	013561	
A5.2 5.0	2	Batterie für kabellose Impulsübertragung	MN 1400, 9800mAh	Carl Scobel GmbH	013562	
A6 9.8	1	Platine Funkempfänger 868,3MHz 1K		Deltron GmbH Deltron GmbH	011948	
A7 9.6	1	Radar-Bewegungsmelder	MWD BF1-A	Feig Electronic GmbH Feig Electronic GmbH	800187	
A7 9.6	1	Radar-Bewegungsmelder	MWD BP	Feig Electronic GmbH Feig Electronic GmbH	800187.1	
A8 8.4	1	Radar & Präsenzmelder COMFORT	COMFORT		014862	
A9 8.7	1	Radar & Präsenzmelder COMFORT	COMFORT		014862	
DES 11.4	1	Digitaler Endschalter	DES	Gesellschaft für Antriebstechnik Gesellschaft für Antriebstechnik	010681	
EWS 6.0	1	Lichtschranke Einweg o. Kabel	EWS/EWE	Witt Sensorik Witt Sensorik	010073	
G1 3.4	1	Bremsgleichrichter EGR2	EGR2 EGR2	Gesellschaft für Antriebstechnik Gesellschaft für Antriebstechnik	013341	
H1 7.1	1	Ampelgehäuse Rot/Grün Nr. 0671/s-2-E			800252	

			Datum			Hörmann KG Verkaufsgesellschaft D-33803 Steinhagen	parts list		=	+
			Bearb. Lie						Gesamt	Blatt
			Gepr. 24.08.2009					H28-283	22	21
Änderung	Datum	Name	Norm	Urspr.	Ers.f.	Ers.d.				

parts list

SEU0001D.F01 / LIE / 12.07.2007

NAME WIRING DIAGRAMME LOCATION	MENGE ME	DESIGNATION	MODEL NUMBER	MANUFACTURER	ARTICLE NUMBER	POS.
H2 7.2	1	Blitzleuchte orange			800261	
H2 7.2	1	Blitzleuchte rot			800255	
Q1 3.2	1	Hauptschalter abschließbar BK150FUE H HS	WAH814/LT16/3VZM/Z20/X83/FR		014351	BK150FUEH-HS
Q1 3.3	1	Lasttrennschalter 16A	KH16B	Kraus & Naimer Kraus & Naimer	370041.1	BS150FUEH
S4 6.3	1	Lichtschranke mit Reflektor		Deutsche Telemecanique	800232	
S7 4.0	1	Not-Aus Taster	XB7ES542P	Deutsche Telemecanique Schneider Electric	011440	
S7 4.0	1	Not-Aus Schild		Deutsche Telemecanique Schneider Electric	011442	
S30.1 5.4	1	Opto Empfäng.kabell. Datenübertr. Antr.s.		FRABA AG FRABA AG	013725	
S30.2 5.5	1	Opto Sender kabell. Datenübertr. Lagers.		FRABA AG FRABA AG	013724	
S41.1_ALG 6.7	1	Lichtgitter ALG Bauhöhe 510mm		Strack Lift Automation Strack Lift Automation	800265	
S41.1_ALG 6.7	1	Lichtgitter ALG 70	683-ALG+70K5BR-K14	Strack Lift Automation Strack Lift Automation	011167	
S41.1_ILG 6.4	1	Lichtgitter ILG Bauhöhe 1590mm	685-ILG-24/06-L-K1-10	Strack Lift Automation Strack Lift Automation	800464	
S41.1_ILG 6.4	1	Lichtgitter ILG Bauhöhe 510mm	685-ILG-06/06-L-K1-10	Strack Lift Automation Strack Lift Automation	800465	
S51.1 5.1	1	Feder m.Schalter 7000mm		Felsch Spritzguß GmbH Felsch Spritzguß GmbH	011864	
S51.2 5.2	1	Federschalter m. Diode Antr.seite rechts	78-004-006	Felsch Spritzguß GmbH	013563	
S51.2 5.2	1	Federschalter m. Diode Antr.seite links	78-004-007	Felsch Spritzguß GmbH	013564	
SF 11.8	1	Folientastatur 155,3x119,6mm mit Fenster	805349		014142	
SF 11.8	1	Drucktaster Auf-Halt-Zu für V2A-Schrank		Joetec Joetec	011874	BS150FUEH-V2A
SF 11.8	1	Folientastatur klein 100x60mm		Kundisch GmbH Kundisch GmbH	370079	BS150FUEH
SF 11.8	1	Tastaturverlängerung 250mm		Lück Elektrosysteme GmbH Lück Elektrosysteme GmbH	010566	BS150FUEH-(V2A)
X3.1 5.4	1	Platine Getriebe		MAB Electronic MAB Electronic	014468	

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			Datum				Hörmann KG Verkaufsgesellschaft D-33803 Steinhagen		parts list		=	+
			Bearb.	Lie							Gesamt	Blatt
			Gepr.	24.08.2009								
Änderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.			H28-283	22	22

BK150FUEH

Important:

These instructions must be read before connecting the control and before initial operation of the door system!



**Hörmann KG Verkaufsgesellschaft
D-33803 Steinhagen**



Notes

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This manual has been composed especially for those people fitting the door control TST FUH from Hörmann KG Verkaufsgesellschaft. Initial operation of the control may only be carried out by electrical specialists with accredited training familiar with the safety standards for electrical operator and automation systems. The completeness of the initial operation manual is the sole responsibility of the person carrying out initial operation of control TST FUH.

This manual shows only a small selection of control functions. For additional functions and descriptions of individual door functions, more exact control specifications and warnings, see the additional information.

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The installation recommendations in this document assume favourable general conditions. Hörmann KG Verkaufsgesellschaft does not guarantee faultless operation in non-system environments.

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The product descriptions, the products' use, options and performance data are not valid as warranted characteristics and are subject to technical modifications.

General information on this document

In this functional description, the following symbols are used to alert the reader to various danger points and helpful hints.

⚠ WARNING Indicates potential danger to persons if the procedure is not carried out as described.

IMPORTANT Indicates information which is important for door control or door function.

⚠ CAUTION Indicates danger to the control.

📖 Indicates information which is useful, but not absolutely necessary, for using door control TST FUH.

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1 Safety instructions

Strictly observe the following important safety instructions, as well as the fitting and connection instructions, during initial operation and operation of the control:

- All installation, initial operation and maintenance work must be carried out exclusively by qualified personnel. The following regulations must be observed with special care: VDE0100, EN 50110 (VDE0105), EN 60204 (VDE0113), EN 50178 (VDE0160), EN 60335 (VDE0700), fire prevention regulations, accident prevention regulations, as well as the relevant applicable regulations for industrial doors (ZH1/494, EN12453, EN12978)
- The control may only be opened if the supply is disconnected at all poles.
- If the voltage-free contacts of the relay outputs or other contact points are externally fed, e.g. operated with a dangerous voltage that may still be present after switching off the control or pulling the mains plug, a respective warning label must be clearly visible on the control housing. ("Attention! Switch off all mains current circuits before accessing the connecting terminals.")
- Do not operate the control if it is open.
- Operating the control with a dismantled CEE plug is only permitted if the mains supply can be disconnected from the control at all poles via a suitable switch. The mains plug or the replacement switch used must be easily accessible.
- To avoid danger, the connecting cable of the unit, if damaged, must be replaced by the manufacturer, his after-sales service or a similarly qualified person.
- Even after the supply has been switched off, dangerous voltages are present in the intermediate circuit capacitors for up to five minutes. The discharge time for voltages under 60 V DC is at most 5 minutes. Touching internal control parts during this discharge time is dangerous.
- A defective power supply unit may considerably increase the discharge time of the intermediate circuit capacitors to a voltage value under 60 V DC. Discharge times of up to 10 minutes may result.
- If the 24 V control voltage is short-circuited or extremely overloaded, the power supply unit will not switch on even though the intermediate circuit capacitors are charged. Display and LEDs remain dark. The power supply unit can only be switched on after the short-circuit or extreme overload has been remedied.
- The power supply unit is fed by the intermediate circuit capacitors for several seconds after the supply has been switched off and continues its supply function for a period of time, depending on the power supply unit load. In this case, the V 805 glow lamp lights up until the voltage has decreased.
- Sections of the processor circuits are directly linked galvanically to the power supply. This must be considered when carrying out any possible control measurements (when carrying out measurements in this area of the process circuit, do not use measurement instruments with PE reference of the measuring circuit).
- Do not operate the control without a connected protective earth conductor. If the protective earth conductor is not connected, dangerously high voltages occur on the control housing, due to leakage capacities. The protective earth conductor must be connected according to EN 50178, paragraph 5.2.11.1 for increased leakage currents >3.5 mA.
- If the control is covered in condensation, do not switch it on or operate it. This can destroy the control.
- If controls are used outside the specified temperature range, a regulated, monitored heating system must be provided to ensure that the specified operating temperature is maintained when switching on and operating the control.
- Do not operate a control with damaged keypad or vision panel. Damaged keypads and windows must be replaced. To prevent damage to the keypad, do not operate it with sharp objects. The keypad is designed for finger operation.
- Before switching on the control supply for the first time, ensure that the evaluator cards (plug-in modules) are plugged in the correct position. The control may be damaged if the cards are not plugged correctly or are twisted, or if non-approved cards from other manufacturers are used.
- When operating the door in dead-man mode, ensure that the door area is visible to the person operating the door, as safety devices such as the safety strip and photocell do not activate in this mode.
- Check the parameter settings and the function of the safety devices. Parameters, bridges and other command units may only be set by instructed personnel.

⚠ WARNING Non-compliance with this safety information may endanger personal health and safety, and may also damage the control.

These safety instructions do not claim to be complete. Please contact your supplier if you have any questions about the product.

The manufacturer has carefully checked the unit hardware and software, as well as the product documentation, but can not guarantee that it is free of errors.

The user must label the unit (type plate with name and address of manufacturer, serial number, type designation, supply voltage and temperature range).

2 Technical data

Dimensions of housing (W x H x D):	200 x 400 x 175 mm (without wall holder)	
Fitting:	Via wall holder on floor of housing, standing vertically	
Supply voltage via L, N, PE:	230 V _{AC} ±10%, 50..60 Hz permissible range: 110..240 V ± 10%/50..60 Hz Fuse: 16 A K Characteristics	
Own consumption of control: external supply 1 (230 V):	max. 30 W when fully equipped 230 VAC ±10%, 50..60 Hz (fused on the printed board: F202/1 AT)	
Control voltage/external supply 2:	24 V _{DC} regulated (±5% at nominal voltage 230 V) max. 500 mA to 40 °C, max. 250 mA to 50 °C incl. optional plug-in modules Fused via self-resetting semiconductor fuse, short-circuit proof via central circuit regulator	
Control voltage/External supply 3:	For electronic limit switch and safety strip Nominal value 11.5 V/max. 130 mA	
Control inputs:	24 VDC/type 15 mA, max. 26 VDC/20 mA all inputs must be connected potential-free or: < 5 V: inactive → logical 0 > 7 V: active → logical 1 Min. signal length for input control commands: > 100 ms Galvanic separation via optoelectronic coupler on printed board	
Inputs INK 1 and INK 2:	For two 24 V active impulse inputs offset by 90°, with max. load of 20 mA < 5 V: inactive → logical 0 > 16 V active → logical 1	
RS485 A and B:	Only for electronic limit switches RS485 Level, terminated by 100 Ω	
Safety chain/Emergency-off	All inputs must be connected voltage-free Contact loading capacity: ≤ 26 VDC/≤ 120 mA If the safety chain is interrupted, no operator movement is possible, not even in dead-man mode	
Safety strip input:	For electrical safety strips with 8.2 kΩ terminating resistor and for dynamic optical systems	
Alarm signal	24 VDC/min. 10 mA/max. 100 mA Only Ohmic loads!	
Relay outputs	If inductive loads (e.g. additional relays or brakes) are connected, these must be equipped with corresponding interference suppression (recovery diode, varistors, RC modules).	
USB	HOST	For USB Memory Sticks (PC compatible) Plug connector: Type A Max. power consumption: 100 mA Max. cable length 2 m
	Alternatively Device	For PC communication with Feig protocol Plug connector: Type B Max. cable length 2 m
Communication module	Only suitable for TST RFLUXCom	
	Relay K3: Standard braking relay:	Changeover contact for releasing electromechanical brakes with upstream brake rectifier 230 VAC/3 A If EMERGENCY-OFF is activated, the brake relay will be released.
	Relays K1 and K2: "Malfunction/door position signals/traffic light functions"	Volt-free change-over contact min. 10 mA max. 230 VAC/3 A
Operator output:	For operators up to 1.5 KW at 230 V Motor constant current at 100% on-time and 40°C ambient temperature: 10 A Motor constant current at 60% on-time and 50°C ambient temperature: 8 A May be briefly overloaded up to 20 A for 0.5 s Max. length of motor cable: 15 m	
Brake resistance load (optional):	Max. 1.5 KW for max. 0.5 seconds. Repeat rate min. every 20 seconds.	
Temperature range (TST FUH- CXP)	Operation: Storage:	For printed boards, observe the own heat in the housing! -20 ... + 70 °C -25 ... + 70 °C
Temperature range (TST FUH- CX)	Operation: Storage:	Installed in the housing -20...+50 °C -25...+70 °C
Humidity	Up to 80% non-condensing	
Vibration	Low-vibration fitting, e.g. on a masonry wall	
Protection category	IP 54	
Weight	Approx. 5 kg	

Directive	Standards:	
EMC Directive: 2004/1/08/EC	EN 61000-6-3: EN 61000-6-2: EN 61000-6-4:	Emitted interference, residential environments Interference resistance, industrial environments Emitted interference, industrial environments
Low-voltage directive: 2006/9/5/EC	EN 60335-1/02.2007:	Safety of electrical equipment for domestic use and similar purposes/Part 1
Type-tested according to:	EN12453/02.(2001): EN12445/02.2001: EN 61508:	Doors and Gates – Safety in Use of Power-Driven Doors - Requirements Safety in use of power operated doors – Test methods Functional safety of electrical/electronic/programmable electronic safety-related systems
Applied national technical specifications regarding the directives above	EN12978/09.2003:	Doors – Safety devices – Requirements and test methods

3 Fitting the control

⚠ WARNING

The system must be switched voltage-free while fitting the control.

⚠ CAUTION

- Before fitting, check the control for shipping damage or other damage. In some cases, damage inside the control may cause considerable consequential damage to the control and even endanger the health and safety of the user.
- Touching the electronic components, especially those of the processor circuit, is prohibited. Electronic components may be damaged or destroyed by electrostatic discharge.
- Before opening the housing cover, make sure that no borings lying on the cover can fall into the housing.
- Ensure that the control is fitted free of torsion.
- Unused cable entries must be closed by suitable measures to maintain the housing's IP54 protection category.
- Do not subject the cable entry points to any loads, particularly tensile loads.

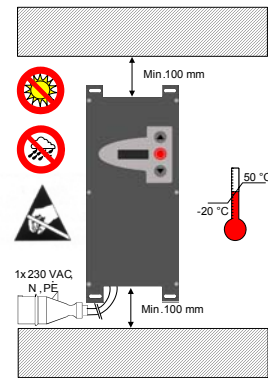


Figure 1: Fitting the control

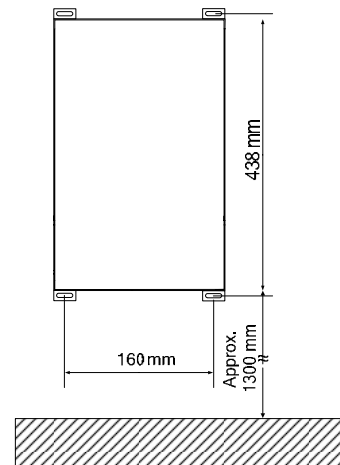


Figure 2: Drilling diagram

4 Electrical connection

⚠ WARNING

- Connection, testing and maintenance of the open control may only be carried out in a voltage-free state. Closely observe the points listed in the safety instructions section.
- After the control is switched off, dangerous voltage is still present for up to 5 minutes.
- Due to residual voltages, touching the electronic components is dangerous.
- Never operate the control when the housing cover is open.

⚠ CAUTION

- After completing the wiring and before switching on the control for the first time, check whether all motor connections on the control side and on the motor side are tightened and the motor is correctly connected in star or triangle. Loose motor connection usually cause damage to the converter.
- All voltage inputs are galvanically separated from the supply by a basic isolator. All components attached to the control must have at least one additional isolation with a rated voltage of > 230 V (according to EN 60335-1).
- For compliance with EMV directives, only shielded, separate motor cables may be used.

- The shield must be connected on both sides (motor and control) and no additional connections may be led in the cable. Maximum cable length: 15 m.
- Very high electrostatic charges may accumulate, especially with high-speed plastic curtain doors. When this charge discharges, the control may be damaged. Therefore, suitable countermeasures must be implemented to prevent electrostatic charging.
- Max. cross section for connections to printed board terminals:

	Single wire (rigid)	Finely stranded (with/without wire end ferrule)
Terminal screws	2.5	1.5
Plug-in terminals	1.5	1.0
Motor terminals	2.5	2.5
Mains voltage	2.5	1.5

4.1 Connecting the supply voltage

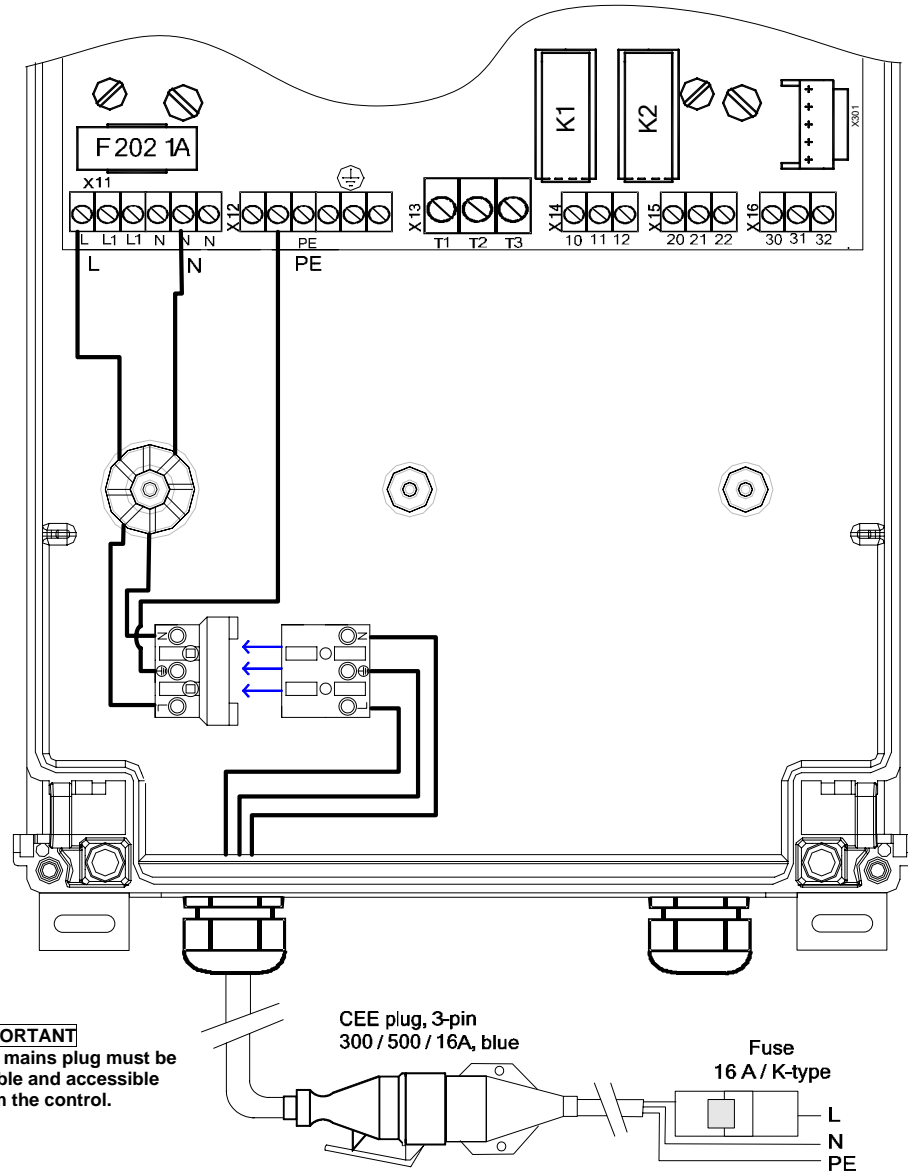


Figure 3: Supply main connection

4.2 Motor connection

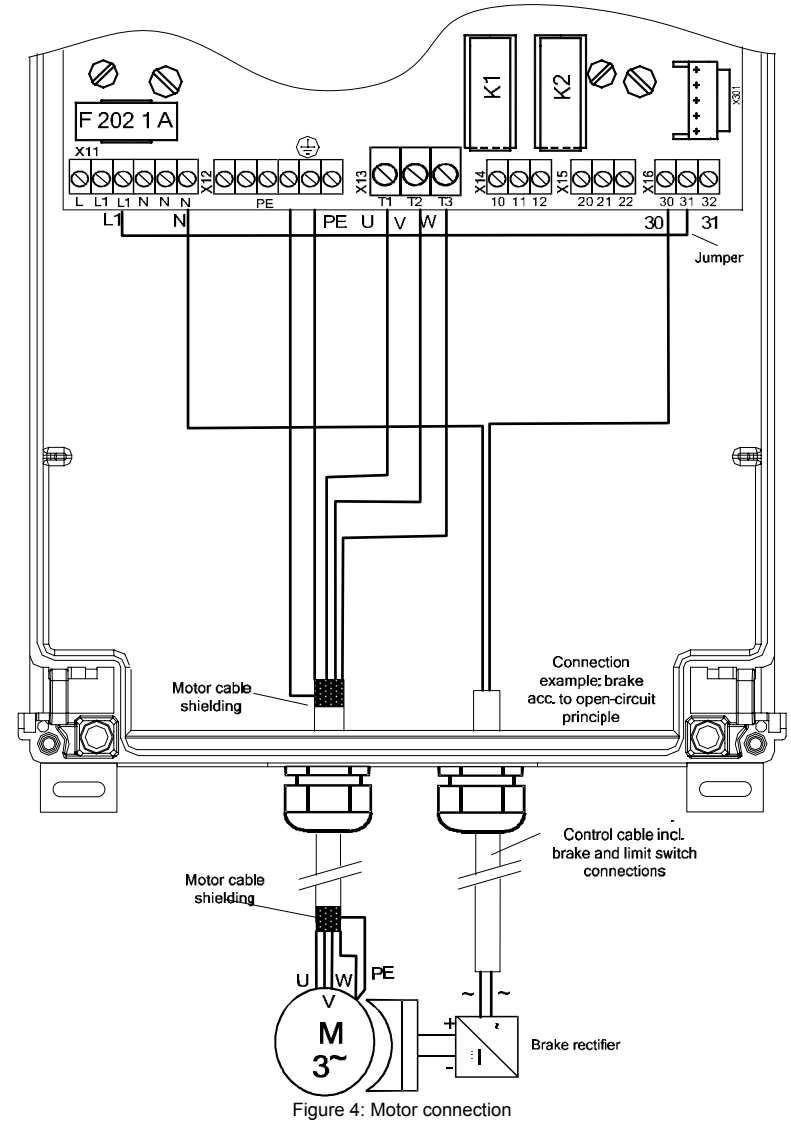


Figure 4: Motor connection

4.3 Connecting the safety strip

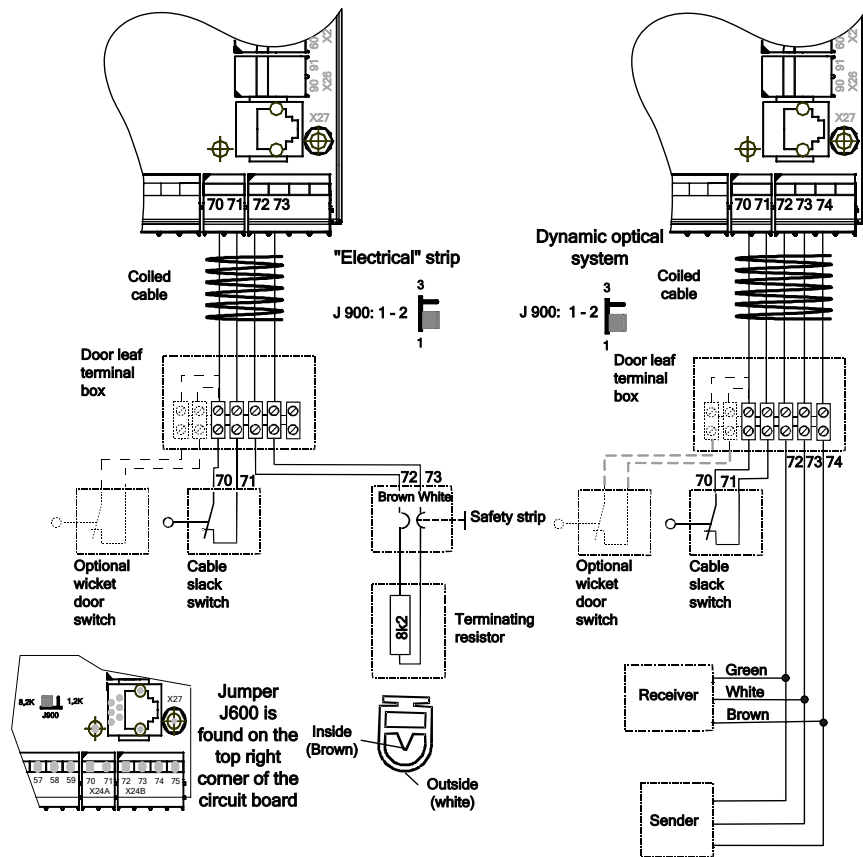


Figure 5: Safety strip connection

Different types of safety strips may be connected, e.g.:

- Electrical safety strip with 8.2 kΩ terminating resistance.
- Dynamic optical systems.

If one of these types of safety strips is connected when door control TST FUH is switched on, it will be recognised automatically.

IMPORTANT If no safety strip is connected, no automatic access is possible.

4.4 Connecting the limit switch

Different types of limit switch systems may be used with door control TST FUH.

An absolute encoder is used as a limit switch in the standard setting. Furthermore, mechanical cam limit switches can be used.

4.4.1 Absolute encoder

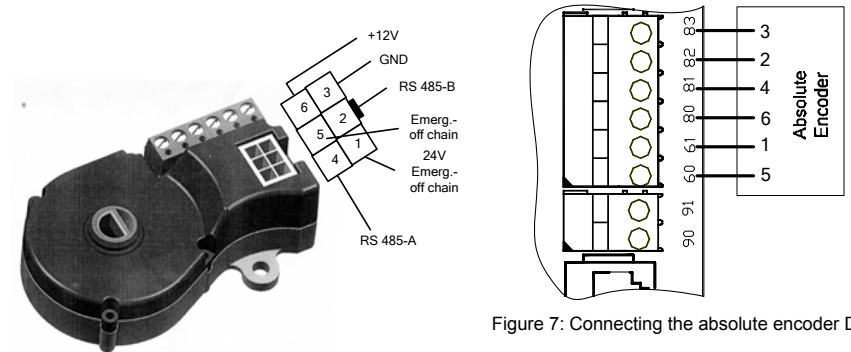


Figure 6: Absolute encoder DES

Figure 7: Connecting the absolute encoder DES

4.4.2 Mechanical limit switches

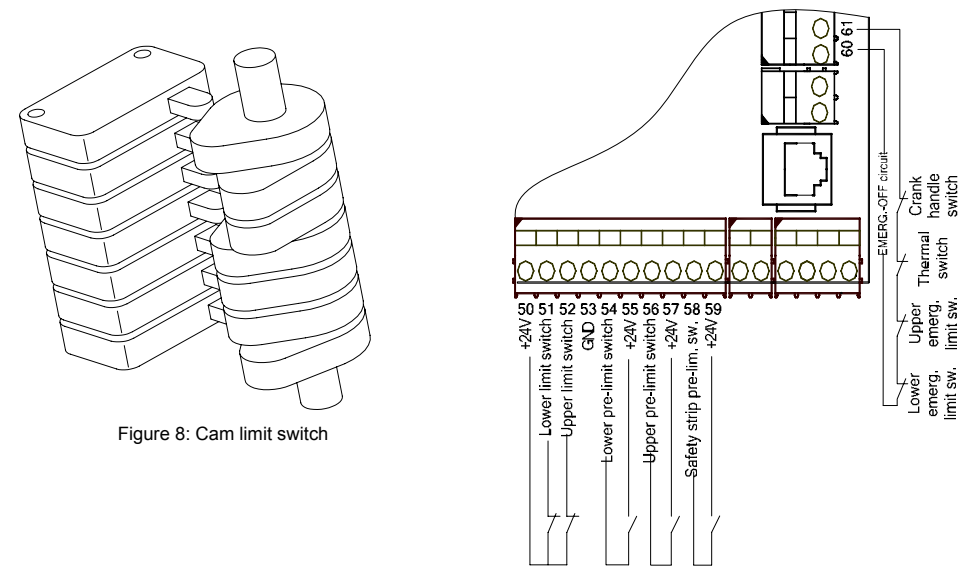







Figure 8: Cam limit switch

Figure 9: Connecting the cam limit switch



Alternatively, the pre-limit switches may also be connected as NC contacts.

5 General operation information for parameterisation







Opening parameterisation mode

1.	 Disconnect door control	Disconnect supply at all poles (Observe safety information)	The 7-segment display will turn off after a delay of several seconds	
2.	 Switch the S400 switch to ON	Service mode is activated, close control box. (For position of S400 see Chapter 5.1)		
3.	 Connect door control	Connect control	If service mode is active, the first decimal point will flash Contents of display are dependent on control status	* . . .
4.	 STOP (permanent)	Activate STOP button and hold	Current messages will display, e.g.:	E. 2 0 1
5.	 OPEN (permanent)	Additionally activate OPEN button and hold	Wait approx. 2 seconds: In parameterisation mode	P. 0 0 0


Selecting parameters in open parameterisation mode

 OPEN or  CLOSE	Select desired parameter ATTENTION: Not all parameters are directly visible or modifiable, depending on the password and the positioning type setting	The parameter value can be viewed or modified (see below) Display varies with selection	P. . . .
---	--	--	----------


Parameter processing with selected parameter

1.	Control is in parameterisation mode	Name of desired parameter displays	P. 0 1 0
2.	 STOP (short)	Opening the parameter	The current parameter value is displayed: 5
3.	 OPEN	Use the OPEN button to increase the parameter value	If the currently valid parameter value is modified, the decimal points will flash 6*
or	 CLOSE	Use the CLOSE button to decrease the parameter value	4*
4.	 STOP (long)	Save set parameter value	The parameter is saved when all points have stopped flashing 6
or	 STOP (short)	Discard set parameter value	Abort, the original parameter value is displayed 4
5.	 STOP (short)	Change to display the parameter name	Display of parameter name P. 0 1 0

Exiting parameterisation mode

 STOP (long)	Parameterisation mode is exited immediately, door mode is active again	The last saved value is automatically kept
---	--	--	---------

Perform a reset of the control

 +  +  Press these simultaneously and hold approx. 3 seconds.




IMPORTANT

After approx. 1h, the service mode will automatically set back. To re-enter service mode, briefly switch off the control and then switch on again, or carry out a reset.

5.1 Modifying parameters

Modification of the basic data is not necessary; this was set at the factory.

To modify parameters, proceed as follows:

- Pull the mains plug.
- Switch the S400 DIP switch on.
- Plug in the mains plug.
- Simultaneously press the  STOP and the  OPEN buttons for approx. 3 s to enter the parameterisation mode of the door control.
- Modify the desired parameters.
- After completing the settings, push the  STOP button for approx. 3 s to exit parameterisation mode.

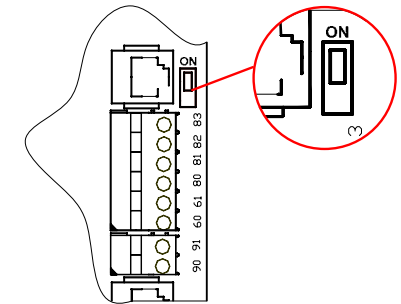





Figure 10: Position S400



6 Initial operation...

WARNING


Before initial operation of the control, check the electrical connection and the correct position of the plug-in cards. After initial start-up is complete, test the function of all safety devices. After initial operation is complete, test the function of all safety devices.

6.1 ... with absolute encoder

1. Open CALIBRATION mode by briefly pressing the  STOP button
2. Move door to door CLOSED position using  CLOSE on the membrane keypad and save by pressing the  STOP button for approx. 3 seconds.

Move door to door OPEN position using  OPEN on the membrane keypad and save by pressing the  STOP button for approx. 3 seconds.

6.2 ... with mechanical limit switches

1. Using the  CLOSE button, move the door to approx. 50 cm before closed position

IMPORTANT If the door does not move, the motor is lacking in power or, if necessary, check if the brake is released.

IMPORTANT The distance is very dependent on the door type and speed, for fast doors, increase the value.

With incorrect direction of door movement: incorrect motor rotating field, switch off the control and swap the 2 motor connections.

2. Set the lower pre-limit switch so that it just triggers

3. Using the ∇ CLOSED button, move the door to approx. 10 cm before closed position

IMPORTANT The distance is very dependent on the door type and speed. For fast doors, increase the value.

4. Set the lower limit switch so that it just triggers

IMPORTANT Do not overshoot limit switch in end positions!

5. Using the \wedge OPEN button, move the door to approx. 50 cm before open position

IMPORTANT The distance depends greatly on door type and speed. For fast doors, increase the value.

6. Set the upper pre-limit switch so that it just triggers.

7. Using the \cup OPEN button, move the door to approx. 10 cm before open position.

IMPORTANT The distance is very dependent on the door type and speed. For fast doors, increase the value.

8. Set the upper limit switch so that it just triggers

IMPORTANT Do not overshoot limit switch in end positions!

9. If necessary for the door type: Set EMERGENCY limit switch at top and bottom
Connect the NC contacts, e.g. in the safety circuit, in series with the thermal switch.

10. Press the \AA STOP and \wedge OPEN buttons to skip to parameterisation mode. Select parameter P.980 "Service mode", open it, and set the parameter value "2" to "0" (automatic mode)

11. If required, correct the door OPEN and door CLOSED limit switch positions by fine-tuning the end positions in automatic mode.

WARNING To prevent door from moving unintentionally, only adjust the limit switches if EMERGENCY OFF is activated or control is switched off !

12. Now, door may be moved in automatic mode.

6.3 Requesting new teach-in for limit stops

If electronic limit switches are used and the limit stop teach-in was done in advance, but the limit stops are not suited to the door, a new limit stop teach-in can be requested.

For this, the following parameters must be set:

P.210: 5 = New teach-in of all limit stops

7 Further connection options

7.1 Photocell

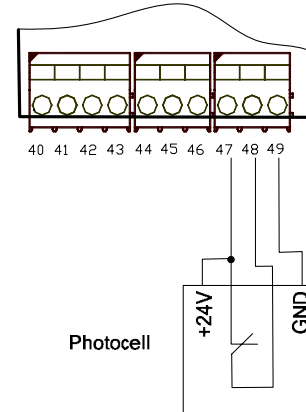


Figure 11: Photocell connection

7.2 External command controllers

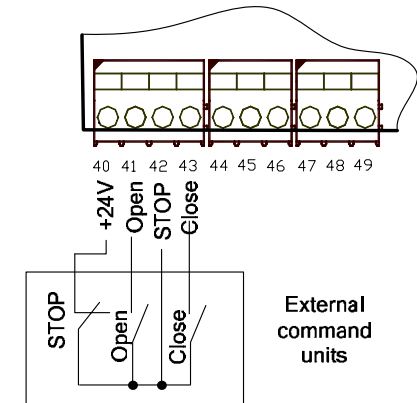
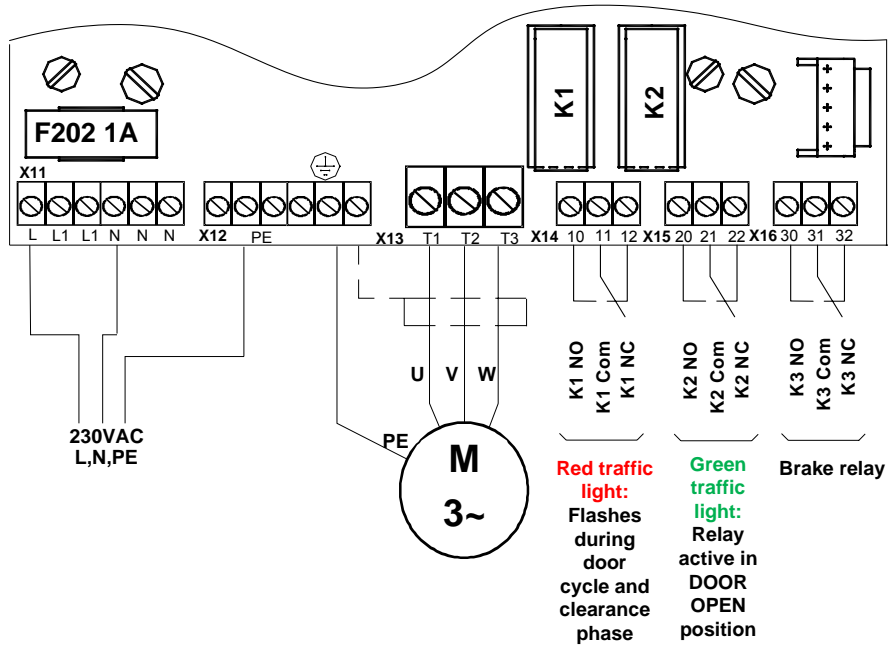
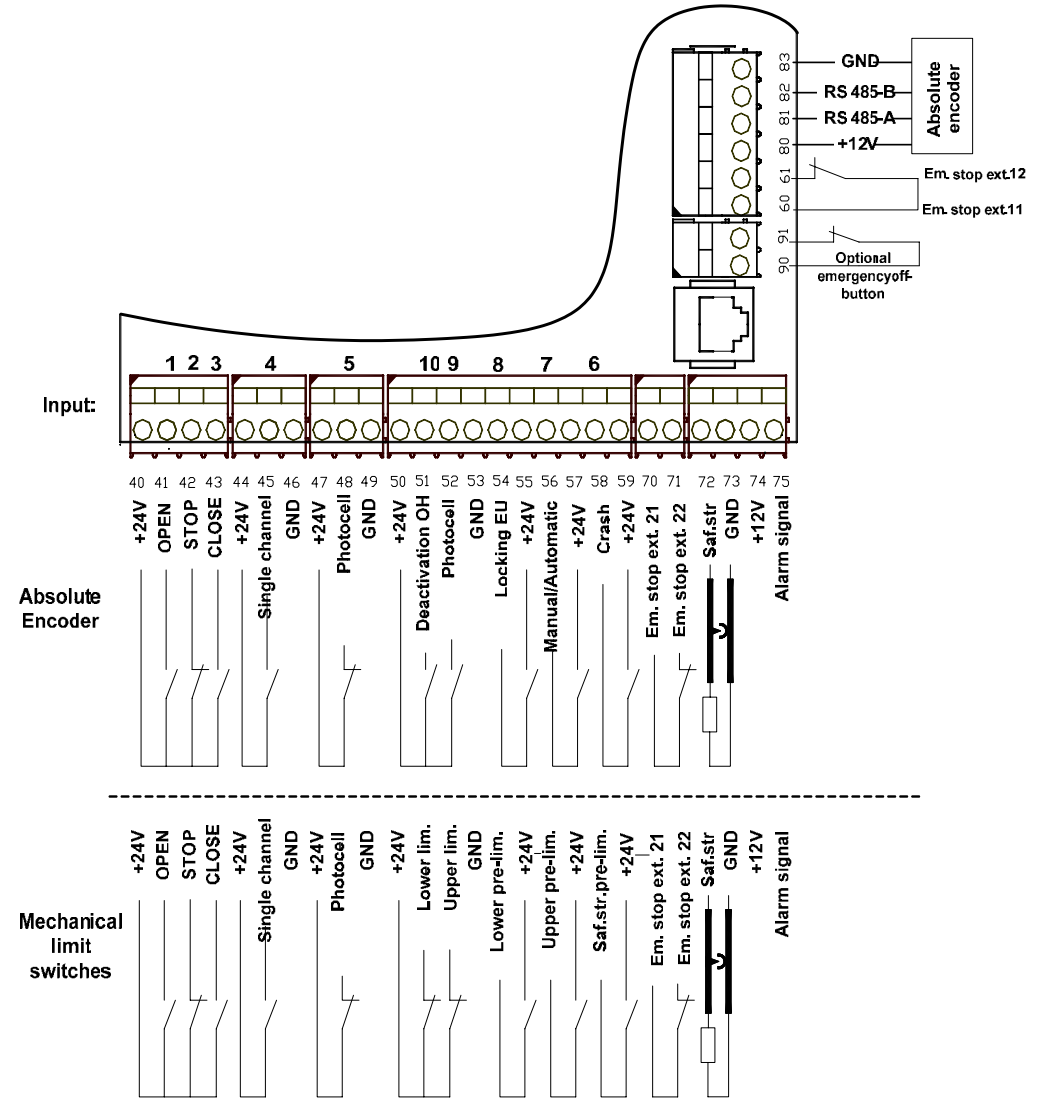


Figure 12: Connection for ext. command controllers

Overview of outputs



8 Overview of inputs



The valid allocation of the inputs can be obtained in the switching documents!

9 Functions

9.1 Software update

P.	[Unit] Adjustment range	Function	Description/Notes
P.989 -w	0 ... 1	Start software update	The update of the control software is started via the parameter. The update is started automatically when a USB stick is inserted and the file name <code>tst_fuh.bin</code> is found. A reset is carried out automatically after successful update. You can also exit the Bootloader by performing a hardware reset.

9.2 Door cycle counter

P.	[Unit] Adjustment range	Function	Description/Notes
P.000 rr	[cycles]	Cycle counter	Shows door cycle counter Illustration: 1234567 ⇒ 1234. ▽ actuate .567 Illustration: 67 ⇒ 67

9.3 Maintenance counter

P.	[Unit] Adjustment range	Function	Description/Notes
P.005 rr	[cycles]	Maintenance counter	The content of this parameter specifies the number of door cycles still to be run until the maintenance is due. ☞ <i>The setting -1 means that the maintenance counter has not been activated yet.</i>
P.973 -w	0 ... 1	Resetting the maintenance counter	The maintenance counter is acknowledged by setting this parameter to 1.

9.4 Hold-open phase

☞ *The hold-open phase that runs depends on the travel limit approached and the OPEN command used. Each OPEN command can be set separately using the parameter P.5x4 as to if and which hold-open phase elapses. (X = Number of the input used).*

P.	[Unit] Adjustment range	Function	Description/Notes
P.010 ww	[sec.] 0 ... 9999	Hold-open phase 1	The door is held in the travel limit door OPEN position for the set time. Then, the closing is carried out automatically. 0 = Automatic closing deactivated
P.011 ww	[sec.] 0 ... 9999	Hold-open phase 2	The door is held open in the travel limit intermediate stop/partial opening for the set time. Then, the closing is carried out automatically. 0 = Automatic closing deactivated

P.	[Unit] Adjustment range	Function	Description/Notes
P.015 ww	[sec.] 0 ... 200	Minimum hold-open phase	Deviating from the hold-open phase 1 or 2, the door is held open for the minimum period of the set time. Then, the closing is carried out automatically.

9.5 Warning phase before door cycle/clearing time

P.	[Unit] Adjustment range	Function	Description/Notes
P.025 -w	[sec.] 0 ... 20	Warning phase before access	The door access is delayed by the time specified by this parameter after the input of a CLOSE command or after the hold-open phase (forced closing) has elapsed. 0 = Warning phase deactivated

9.6 Limit stop correction

P.	[Unit] Adjustment range	Function	Description/Notes
P.210 -w	0 ... 5	New teach-in of the limit stops	The teach-in for limit stops is restarted using this parameter. The respective limit stops are moved to press-and-hold operation after activating the sequence and saved by keeping the stop button pressed. The following setting possibilities are available: <ul style="list-style-type: none"> 0: Cancel, no limit stops have been taught in. 1: Teach-in of the limit switch down, limit switch up and, when required, limit switch intermediate stop. 2: Teach-in of limit switch up and, when required, limit switch intermediate stop are performed 3: Teach-in of limit switch down and limit switch up is performed. 4: Teach-in of intermediate stop limit switch is performed. 5: Teach-in of all limit switches and the rotating direction is performed. ☞ <i>Teach-in of the limit switch intermediate stop depends on the setting in parameter P.244</i>

9.7 CLOSE movement

IMPORTANT

If the automatic adjustments of the pre-limit switches and limit switch bands are used (P.216 = 2), the parameters P.222 and P.223 are modified automatically. The parameters are also modified when the driving speed or the inclination of the ramp are changed, as this leads to the restart of the automatic limit switch correction. P.216 < 2 must be set if this ramp should be set manually.

9.7.1 Correct travel limit door CLOSE

P.	[Unit] Adjustment range	Function	Description/Notes
P.221 ww	[Increment] -125 ... 125	Correction value for door CLOSED	<p>With this parameter, the entire lower travel limit is moved and therefore, the travel limit is moved together with the corresponding pre-limit switch.</p> <p>The adjustment of the parameter value in the positive direction moves the travel limit upwards.</p> <p>The adjustment of the parameter value in the negative direction moves the travel limit downwards.</p>

9.7.2 Start of the CLOSE movement

P.	[Unit] Adjustment range	Function	Description/Notes
P.350 -w	[Hz] 6 ... 200	Operating frequency for fast CLOSE movement	<p>Frequency specification for fast closing (Operating frequency to lower pre-limit switch) → Adjust pre-limit switch, if necessary</p> <p>ATTENTION: Observe closing force at safety strip!</p>

9.8 OPEN movement

IMPORTANT

If the automatic adjustments of the pre-limit switches and limit switch bands are used (P.216 = 2), the parameters P.232 and P.233 are modified automatically.

The parameters are also modified when the driving speed or the inclination of the ramp are changed, as this leads to the restart of the automatic limit switch correction.

P.216 < 2 must be set if this ramp should be set manually.

9.8.1 Correct travel limit door OPEN

P.	[Unit] Adjustment range	Function	Description/Notes
P.231 ww	[Increment] -60 ... 60	Correction value for door OPEN	<p>With this parameter, the entire travel limit door OPEN is moved and therefore, the travel limit is moved together with the corresponding pre-limit switch.</p> <p>The adjustment of the parameter value in the positive direction moves the travel limit upwards.</p> <p>The adjustment of the parameter value in the negative direction moves the travel limit downwards.</p>

9.8.2 Start the opening

P.	[Unit] Adjustment range	Function	Description/Notes
P.310 -w	[Hz] 6 ... 200	Operating frequency for fast OPEN movement	<p>Frequency specification for fast opening (Operating frequency to upper pre-limit switch) → Adjust pre-limit switch, if necessary</p>

9.8.3 Diagnostic display on the screen

P.	[Unit] Adjustment range	Function	Description/Notes
P.910 -w	0 ... 22	Display mode selection	<p>Using this parameter, the measurement variables at the bottom can be viewed direct in the door control display. The following variables are displayed:</p> <ul style="list-style-type: none"> 0: The control sequence is displayed (Automatic) 1: [Hz] Present driving speed 2: [A] Present motor current 3: [V] Present motor voltage 4: [A] Present intermediate current 5: [V] Present intermediate voltage 6: [°C] Present output stage temperature in °Celsius 7: [°F] Present output stage temperature in °Fahrenheit 8: [s] Present operating time of motor during last door cycle 9: [Increment] Present position 10: [Increment] Position of the reference 11: [Dig] Value channel 1 of the absolute encoder 12: [Dig] Value channel 2 of the absolute encoder 13: [V] Present reference voltage

9.9 Error memory

P.	[Unit] Adjustment range	Function	Description/Notes
P.920 rw	1 ... 10	Error memory	<p>The control stores the last eight errors that have occurred in the error memory.</p> <p>After jumping to parameter P.920:</p> <ul style="list-style-type: none"> - Switch to the level using membrane key OPEN/CLOSE - Open the error memory using the STOP button - Close the error memory using the STOP button - Exit the parameter P.920 using Eb - <p>Eb1: Error message 1 (most recent error) Eb2: Error message 2 Eb3: Error message 3 Eb4: Error message 4 Eb5: Error message 5 Eb6: Error message 6 Eb7: Error message 7 Eb8: Error message 8 Ebcl: Delete the complete error memory Eb-: Exit, jump back to P.920</p> <p><i>The display Er- means that no error has been entered.</i></p>

9.10 Software version

P.	[Unit] Adjustment range	Function	Description/Notes
P.925 -r		Software version	The version of the current software used is displayed in this parameter.

9.11 Door operating time

P.	[Unit] Adjustment range	Function	Description/Notes
P.930 -r	[sec.]	Operating time of the motor	The time required for the final movement is stored in this parameter.

9.12 Input voltage measurement

P.	[Unit] Adjustment range	Function	Description/Notes
P.940 -r	[Volt]	Input voltage	The value of the present input voltage applied is displayed in this parameter.

9.13 Operating mode of the control

P.	[Unit] Adjustment range	Function	Description/Notes
P.980 -w	0 ... 5	Operating mode	<p>The operating mode of the control is set in this parameter.</p> <p>The following modes are possible:</p> <ul style="list-style-type: none"> 0: OPEN and CLOSE movement in press-and-release operation (Automatic) 1: OPEN movement in press-and-release operation, CLOSE movement in manual mode (Semi-automatic) 2: OPEN and CLOSE movement in manual mode (Dead-man mode) 3: Dead man-mode emergency run 4: Fatigue testing with safety devices automatic OPEN and CLOSE movement. Before each new movement, a new hold-open phase P.010. is performed. 5: Fatigue testing without safety devices <p><i>The adjustment of the fatigue testing is lost when the control is switched off. Then the control is switched to manual mode.</i></p>

9.14 Password

The passwords can be set on level 2

P.	[Unit] Adjustment range	Function	Description/Notes
P.999 -w	0 ... FFFF	Password	<p>The password enables the different parameter levels to be accessed.</p> <p>IMPORTANT The different password levels allow access to different numbers of parameters. The parameters are not allowed to be modified without knowing their function. To avoid errors and risks resulting from unauthorised access, passwords are only handed out to trained personnel.</p>

9.15 Memory time for opening commands

P.	[Unit] Adjustment range	Function	Description/Notes
P.017 -w	[sec.] 0 ... 60	Memory time for OPEN commands	<p>OPEN commands are saved for the time set here</p> <p><i>The adjustment 0 means that OPEN commands are not saved.</i></p>


10 Parameter overview

P.	Function	Ex factory	Modified by: on:	PAGE
P.000	Cycle counter	ND [cycles]		19
P.005	Maintenance counter	ND [cycles]		19
P.010	Hold-open phase 1	5 [sec.]		19
P.011	Hold-open phase 2	10 [sec.]		19
P.015	Minimum hold-open phase	3 [sec.]		20
P.017	Memory time for OPEN commands	60 [sec.]		24
P.025	Warning phase before access	0 [sec.]		20
P.210	New teach-in of the limit stops	5		20
P.221	Correction value for door CLOSED	0 [Increment]		21
P.231	Correction value for door OPEN	0 [Increment]		21
P.310	Operating frequency for fast OPEN movement	65 [Hz]		21
P.350	Operating frequency for fast CLOSE movement	30 [Hz]		21
P.910	Display mode selection	0		22
P.920	Error memory	0		22
P.925	Software version	ND		23
P.930	Operating time of the motor	ND [sec.]		23
P.940	Input voltage	ND [Volt]		23
P.980	Operating mode	0		23
P.989	Start software update	0		19
P.999	Password	0		24

11 Overview of messages

If errors do not reset themselves, they may be acknowledged.

⚠ WARNING Before the corresponding message is acknowledged, the cause of the error must be eliminated.

To do this, press the  STOP button and hold it down, then press the EMERGENCY-OFF button.

Alternatively, you can also press the  STOP button for approx. 5 seconds.

Incorrect travel limits

F.000	Door position outside top	<ul style="list-style-type: none"> Parameter value for top emergency limit switch is too small Upper limit switch range (limit switch band) is too small Mechanical brake is defective or incorrectly set
F.005	Door position outside bottom	<ul style="list-style-type: none"> Parameter value for bottom emergency limit switch is too small Lower limit switch range (limit switch band) is too small Mechanical brake is defective or incorrectly set

Implausible door operation

F.020	Operating time exceeded (during opening, closing or dead-man)	<ul style="list-style-type: none"> Current motor operation time has exceeded set maximum operation time; door may be sluggish or blocked. If mechanical limit switches are used, one of the limit switches did not engage
F.021	Testing of the emergency opening failed	<ul style="list-style-type: none"> The max. permissible runtime during the testing period has been exceeded. Call service department
F.030	Contouring error (change in position of door is less than expected)	<ul style="list-style-type: none"> Door or motor is blocked Power too low for starting torque Speed insufficient Mechanical limit switch was not passed or is defective Fixing to shaft of absolute encoder is not tightened Wrong positioning system selected (P.205)
F.031	Detected direction of rotation differs from the expected direction of rotation	<ul style="list-style-type: none"> When using increment encoders: Channel A and B have been swapped Motor's direction of rotation was switched compared to calibration Too much "sagging" when door starts to move, brake releases too soon, or torque is too low, boost may need to be adjusted.
F.043	Malfunction of photocell's pre-limit switch	<ul style="list-style-type: none"> The photocell's pre-limit switch remains engaged also at centre travel limit or upper travel limit.

Operator call crash system

F.060	The control cabinet has just been switched on or the rubber bottom part has been hit	Reset procedure, see: <ul style="list-style-type: none"> Fitting instructions Wiring diagram Control cabinet door outside
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Maintenance counter is exceeded

F.080	Malfunction: Maintenance is required	<ul style="list-style-type: none"> Service counter has run down
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Parameter is not set

F.090	Control is not parameterised	<ul style="list-style-type: none"> The basic parameters (P.205, P.100 to P.103) of control TST FUS have not been set.
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Safety chain malfunctions

F.201	Internal emergency-off "mushroom button" activated or watchdog (processor monitoring)	<ul style="list-style-type: none"> Emergency stop chain was interrupted at the "internal emergency-off" input, but parameterisation mode was not selected Internal parameter or EEPROM tests failed. Activate the STOP membrane key for more information on the cause
F.211	External emergency-off 1 activated	<ul style="list-style-type: none"> Emergency stop chain interrupted at emergency-off input 1
F.212	External emergency-off 2 activated	<ul style="list-style-type: none"> Emergency stop chain interrupted at emergency-off input 2

Malfunction of the safety contact strip

F.360	Short circuit detected at strip input	<ul style="list-style-type: none"> Line short detected in strips with NC contacts
F.361	Set limit for number of strip activations during closing has been reached	<ul style="list-style-type: none"> Parameterised, maximum number of safety strip triggerings during a door cycle has been exceeded
F.362	Redundancy error at short circuit	<ul style="list-style-type: none"> One of the evaluator channels for short circuit recognition does not respond identically to the second channel. → Control unit print defective Dynamic optical system connected but not set in parameter P.460.
F.363	Interruption at strip input	<ul style="list-style-type: none"> Connecting cable defective or not connected. Terminating resistor defective or missing. Jumper set incorrectly.
F.364	Safety strip – Testing failed.	<ul style="list-style-type: none"> Testing request did not activate safety strip as expected. The time period between testing request and testing is not adjusted.
F.365	Redundancy error at interruption	<ul style="list-style-type: none"> One of the evaluator channels for interruption recognition does not respond identically to the second channel. → Control unit print defective Dynamic optical system connected but not set in parameter P.460.
F.366	Impulse frequency too high for optical safety strip	<ul style="list-style-type: none"> Defective optical safety strip Defective input for internal safety strip.
F.369	Internal safety strip parameterised incorrectly	<ul style="list-style-type: none"> An internal safety strip is connected but deactivated.
F.385	Malfunction of safety strip's pre-limit switch	<ul style="list-style-type: none"> Pre-limit switch for safety switch deactivation, and/or reversal after safety switch activation, remains engaged also at upper travel limit.
F.3A1	Number of activations exceeded, safety A	<ul style="list-style-type: none"> Parameterised maximum number of activations of safety A during one door cycle has been exceeded
F.3B1	Number of activations exceeded, safety B	<ul style="list-style-type: none"> Parameterised maximum number of activations of safety B during one door cycle has been exceeded
F.3C1	Number of activations exceeded, safety C	<ul style="list-style-type: none"> Parameterised maximum number of activations of safety C during one door cycle has been exceeded

General hardware error		
F.400	Hardware reset of control recognised	<ul style="list-style-type: none"> Severe malfunctions in the supply voltage Internal watchdog has activated RAM error
F.401	Watchdog error	<ul style="list-style-type: none"> Internal watchdog has activated
F.40A	Software exception	<ul style="list-style-type: none"> Internal error recognized
F.410	Overload current (Motor current or intermediate circuit)	<ul style="list-style-type: none"> Incorrect nominal specifications set for motor (P100 – P103) Voltage increase/boost set not adjusted (P140 or P145) Motor incorrectly dimensioned for door used Door is sluggish
F.420	Overload in intermediate circuit Limit 1	<ul style="list-style-type: none"> Brake chopper malfunctioning/defective/not present Supply voltage much too high The motor feeds too much energy back during generation operation, the kinetic energy of the door can not be sufficiently reduced.
F.425	Mains overvoltage	<ul style="list-style-type: none"> The supply voltage of the control is too high
F.426	Mains undervoltage	<ul style="list-style-type: none"> The supply voltage of the control is too low
F.430	Heat sink temperature is outside operating range Limit 1	<ul style="list-style-type: none"> Load on output stage or brake chopper too high Ambient temperature too low for control operation. Output stage clock frequency too high (parameter P.160)
F.435	Malfunction: Temperature in housing rising above 75 °C	<ul style="list-style-type: none"> Load on frequency converter/switching too high Control box not sufficiently cooled
F.440	Overload current in intermediate circuit Limit 1	<ul style="list-style-type: none"> Set voltage increase ("boost") not adjusted Motor incorrectly dimensioned for door used Door is sluggish
F.510	Overload current in motor/intermediate circuit Limit 2	<ul style="list-style-type: none"> Incorrect nominal specifications set for motor (P100 – P103) Voltage increase/boost set not adjusted (P140 or P145) Motor incorrectly dimensioned for door Door is sluggish
F.515	Motor protection function has recognised overload current	<ul style="list-style-type: none"> Incorrect motor characteristic curve (motor nominal current) set (P101) Voltage increase/boost set too high (P140 or P145) Motor incorrectly dimensioned
F.519	IGBT driver module has recognised overload current.	<ul style="list-style-type: none"> Short circuit or earth contact at motor terminals Motor nominal frequency set extremely incorrectly (P100) Voltage increase/boost extremely excessive (P140 or P145) Motor incorrectly dimensioned Motor winding defective Brief interruption of emergency-off circuit.
F.520	Overload in intermediate circuit Limit 2	<ul style="list-style-type: none"> Brake chopper malfunctioning/defective/not present Input supply voltage too high The motor feeds too much energy back during generation operation, as it needs to reduce the kinetic energy of the door.
F.521	Undervoltage in intermediate circuit	<ul style="list-style-type: none"> Input supply voltage too low, usually with load Load too high/output stage or brake chopper

General hardware error		
		malfunction
F.524	External 24 V supply missing or too low	<ul style="list-style-type: none"> Overload, but no short circuit. If the 24 V short circuits, the control supply does not switch on and the V 306 glow lamp lights up.
F.525	Overvoltage at the power input	<ul style="list-style-type: none"> The supply voltage is too high The supply voltage has a high fluctuation
F.530	Heat sink temperature Operating range Limit 2	<ul style="list-style-type: none"> Load on output stage or brake chopper too high Clock frequency of output stage too high (P160) Ambient temperature of control too low
F.535	Malfunction: Temperature in housing rising above the critical 80 °C	<ul style="list-style-type: none"> Internal temperature too high
F.540	Overload current in intermediate circuit Limit 2	<ul style="list-style-type: none"> Set voltage increase ("boost") not adjusted Motor incorrectly dimensioned for door used Door is sluggish

Error in positioning system		
F.700	Position detection defective	<p>For mechanical limit switches:</p> <ul style="list-style-type: none"> At least one limit switch does not correspond to parameterised active status. An implausible combination of at least 2 active limit switches. <p>For electronic limit switches:</p> <ul style="list-style-type: none"> After factory parameter activation was called up (parameter P.990), the corresponding positioning system was not parameterised. Calibration is incomplete or defective and must be repeated. The intermediate travel limit, when activated, is implausible. Synchronisation not completed or reference switch defective
F.752	Timeout during log transfer	<ul style="list-style-type: none"> Interface line defective/interrupted Evaluation electronics of absolute encoder are defective Defective hardware or severely malfunctioning environment Shield connection cable Fit RC module (100 Ω + 100 nF) to brake
F.760	Position is outside range area	<ul style="list-style-type: none"> Position sensor operator defective Evaluation electronics of absolute encoder are defective Defective hardware or severely malfunctioning environment
F.762	Electronic limit switch positions are incorrect	<ul style="list-style-type: none"> Upper limit switch E0 or intermediate limit switch E1 has exceeded the valid limit range Control has not been initialised Position specifications incorrect during calibration, or values no longer plausible

11.1 Internal system-induced errors F.9xx

These errors are internal errors which cannot be eliminated by the person operating the control. If this type of error occurs, please contact customer service immediately.

11.2 Information messages

General messages

5ΓΠΡ	Stop/reset status, waiting for the next entered command
Eu	Lower limit switch Eu
≡E≡	Lower travel limit locked → No opening possible (e.g. air lock)
ZUFΠ	Active closing
~Eα~	Upper travel limit Eo
≡E≡	Upper travel limit locked → No closing possible (e.g. safety loop)
ΠΠPEΠ	Active opening
-E I-	Centre travel limit E1 (intermediate travel limit)
≡E≡	Centre travel limit locked → no closing possible (e.g. safety loop)
FRIL	Malfunction → Only dead-man operation possible, and possibly automatic opening
EICH	Calibration → Setting the travel limits in dead-man operation (With absolute encoder) → Begin process via STOP button
≡ΠR≡	Emergency-off → No door operation possible, hardware safety chain interrupted
ΠΠΓF	Emergency operation → Dead-man operation, ignores all safety devices, etc.
'Hd'	Manual → Dead-man operation
ΠΠRΠ	Parameterisation
54ΠC	Synchronisation (Incremental position sensor/limit switch → unknown position)
'Ru'	Automatic → Designates change of status from "Manual" to "Automatic"
'Hc'	Semi-automatic → Marks the change from "Manual mode" to "Automatic mode"
FUS	First display after switching on (power up and self-test)

Status messages during calibration

E . . E . u .	Request for calibration of lower travel limit (in dead-man operation)
E . . E . o .	Request for calibration of upper travel limit (in dead-man operation)
E . . E . I .	Calibration of intermediate travel limit E1 (in dead-man operation)

Status messages during dead-man operation:

Hd . cL	Dead-man closing (membrane key: CLOSE)
Hd . oP	Dead-man opening (membrane key: OPEN)
Hd . Eu	Lower travel limit has been reached, no further dead-man closing possible
Hd . Eo	Upper travel limit has been reached, no further dead-man opening possible
Hd . Ra	Outside the permitted Eo position (no dead-man opening possible)

Information message during automated operation:

I . 023	Emergency opening message released
I . 080	Maintenance will be necessary soon/service counter will run down soon
I . 100	Speed too high when upper travel limit is reached
I . 150	Speed too high when lower travel limit is reached
I . 160	Permanent OPEN still active
I . 161	Open command encoder priority active, close movement only with a command encoder that has the same priority (see p.5 x 4)
I . 170	Safety opening is being carried out
I . 180	Wait for the command of the membrane keypad
I . 185	Waiting for acknowledgement (service request), display flashing
I . 199	Door cycle counter implausible (re-initialise → parameter)
I . 200	Reference position corrected or recognised (after calibration)
I . 201	Reference position re-initialised
I . 202	Reference position missing
I . 203	Reference position incorrect
I . 205	Synchronisation
I . 210	Upper pre-limit switch implausible
I . 211	Lower pre-limit switch implausible
I . 310	OPEN command is transmitted to door 2
I . 360	Malfunction of the safety strip (opener) during the last closing, the message is deleted after the close position has been reached without malfunctions

I . 365	Malfunction of the safety strip (closer) during the last closing, the message is deleted after the close position has been reached without malfunctions
I . 500	Upper limit switch is being corrected
I . 501	Upper pre-limit switch is correct
I . 502	Upper limit switch band is correct
I . 505	Lower limit switch is being corrected
I . 506	Lower pre-limit switch correct
I . 507	Lower limit switch band correct
I . 510	Limit switch correction complete
I . 515	Control is preparing automatic teach-in of limit switches
I . 520	Max. speed during the automatic limit switch correction has not been reached.
I . 555	Limit switch correction is being carried out
I . 901	Waiting for USB stick
I . 902	The update file could not be found on the stick (the file with the name tst_fuh.bin should be in the root directory)
I . 903	File cannot be opened
I . 904	ROM will be deleted
I . 905	ROM is being programmed
I . 906	Update file has an incorrect format (not implemented yet)

Information messages during the parameterisation:

naEr	Error memory: no error stored
Er--	Error memory: error is found without a corresponding message
Prα9	Programming message during execution of original parameters or default set.

General inputs

E . 000	OPEN button on membrane keypad
E . 050	STOP button on membrane keypad
E . 090	CLOSE button on membrane keypad
E . 101	Input 1 : see wiring diagram
E . 102	Input 2 : see wiring diagram
E . 103	Input 3 : see wiring diagram
E . 104	Input 4 : see wiring diagram
E . 105	Input 5 : see wiring diagram
E . 106	Input 6 : see wiring diagram
E . 107	Input 7 : see wiring diagram
E . 108	Input 8 : see wiring diagram
E . 109	Input 9 : see wiring diagram
E . 110	Input 10 : see wiring diagram
E . 121	Input 21 : Reserve
E . 128	Input 28 : Reserve

Safety/emergency stop chain

E . 201	Internal emergency-off "mushroom button" activated
E . 211	External emergency-off 1 activated
E . 212	External emergency-off 2 activated

General safety strip

E . 360	Activation of internal safety strip
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Radio control plug-in module

E . 401	Radio control channel 1
E . 402	Radio control channel 2

Induction loop evaluator plug-in module

E . 501	Detector channel 1
E . 502	Detector channel 2

Internal inputs

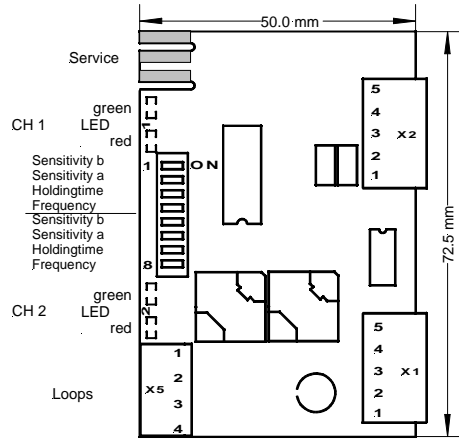
E . 900	Fault signal from drive module
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**Hörmann KG Verkaufsgesellschaft
D-33803 Steinhagen**

**Operating instructions
induction loop detector
plug-in card for control panels**

**TST SUVEK1 - 1-channel detector
TST SUVEK2 - 2-channel detector**



Please read the operating- and safety instructions thoroughly before putting the traffic detector into operation !

1 General

Characteristic features:

The induction loop detector TST SUVEK1/2 is a system for inductive detection of vehicles with the following characteristic features:

- evaluation of 1 (TST SUVEK1) or 2 (TST SUVEK2) loops
- galvanic separation between loop and detector electronics
- automatic system alignment immediately after activation
- continuous resetting of frequency drifts
- no mutual influence of loops 1 and 2 by multiplex processes on TST SUVEK2
- sensitivity is independent of loop inductivity
- occupied-message on LED-display
- open-collector outputs, galvanically separated by optocouplers
- additional, looped-through I/O, galvanically separated by optocouplers
- indication of loop frequency via LED
- diagnosis possibility in connection with diagnostic unit VEK FG2

2 Possibilities of adjustment

2.1 Sensitivity

By adjusting the sensitivity, you determine a change of inductivity for each channel, which a vehicle has to cause in order to set the appropriate output of the detector. Sensitivity adjustment is done separately for each channel with the help of 2 DIP-switches.

Sensitivity level	Channel 1: DIP-switch 1, 2 Channel 2: DIP-switch 5, 6 *)
1 low (0,27% Δf/f)	OFF/OFF
2 (0,09% Δf/f)	ON/OFF
3 (0,03% Δf/f)	OFF/ON
4 high (0,01% Δf/f)	ON/ON

2.2 Holding time

The holding time can be adjusted with the help of DIP-switches 3 and 7. After the holding time has expired, a "loop free" signal is emitted, followed by an automatic rebalancing of the loops. The holding time starts as soon as the loop is seized.

Holding time	Channel 1: DIP-switch 3 Channel 2: DIP-switch 7 *)
5 minutes	OFF
infinite	ON

2.3 Frequency adjustment and rebalancing

The actual frequency of the detector can be adjusted in two levels with the help of DIP- switches 4 and 8.

Frequency	Channel 1: DIP-switch 4 Channel 2: DIP-switch 8 *)
low	OFF
high	ON

The admissible frequency range is 30kHz to 130kHz. The frequency depends on the loop geometry, number of turns, inductivity resulting from the loop supply line and the chosen frequency level.

A rebalancing can be manually triggered by changing the frequency adjustment of a channel.

As soon as switched on, the detector automatically carries out an adjustment of the loop frequency. In case of a short-term voltage loss of <0,1s no rebalancing will take place.

3 Connections

Connection	Type
X1 / 1	Supply GND
X1 / 2	Supply 24V DC
X1 / 3	Optocoupler GND
X1 / 4	Optocoupler-outp. Channel 2 *)
X1 / 5	Optocoupler-outp. Channel 1
X2 / 1	add. optocoupler output
X2 / 2	add. optocoupler input
X2 / 3	outp. 24V DC (connect. X1 / 2)
X2 / 4 - X2 / 5	---
X5 / 1 - X5 / 2	Loop channel 1
X5 / 3 - X5 / 4	Loop channel 2 *)

*) nur TST SUVEK2

Notice: GND-pin X1 / 1 has to be connected externally with PE !

4 Outputs and LED-display

4.1 Outputs

Signal indication is done via optocoupler-outputs pin 4 and 5 at plug X1. GND-reference is X1 pin 3.

Optocoupler-outp. 1/2	Detector conditions
high	Loop free / Reset / rebalancing
low	Loop occupied / loop fault

4.2 LED-display

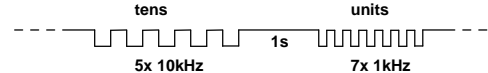
The green LED indicates that the detector is operable. The red LED indicates activation of the relay output in dependence on the seizure condition of the loop.

Green LED Loop control	Red LED Loop condition	Detector condition
off	off	No supply voltage
flashes	off	Alignment or frequency indication
on	off	Detector ready, loop free
on	on	Detector ready, signal indication
off	on	Loop fault

4.3 Indication of loop frequency

Approx. 1 s after the detector has been aligned, the loop frequency is indicated via flash signals of the green LED. First, the 10kHz-digit is indicated. In steps of a loop frequency of 10kHz, the green LED of the detector channel will flash one time. After a break of 1s, the 1kHz-digit is indicated in the same way. If the units digit has the significance of 0, 10 flash signals will be emitted. The 1kHz-flash signals will be a little shorter than those of the 10kHz-digit.

Example of a loop frequency of 57 kHz:



5 Technical data

Dimensions	72,5 x 50 x 18 mm (LxWxH without plug)
Protection class	IP 00
Current supply	24V DC ±20% max. 2,0W
Working temperature	-20 °C to +70 °C
Storage temperature	-20 °C to +70 °C
Air moisture	max. 95 % non-thawing
Loop inductivity	20-800 μH, recommended 75-400uH
Frequency range	30-130 kHz in 2 levels
Sensitivity	0,01 % to 0,27 % (Δf/f) in 4 levels 0,02 % to 0,54 % (ΔL/L)
Holding time	5 min. or infinite
Loop lead in	max. 100 m
Loop resistance	max. 20 Ohm (incl. supply line)
Optocoupler output	45V / 10mA / 100mW
Slow operation	50ms TST SUVEK1, 100ms TST SUVEK2
Signal duration	> 200 ms
Fall-delay time	25ms TST SUVEK1, 50ms TST SUVEK2
Connection	2x MOLEX-socket, series 3215, 5-pole 1x plug-in terminal, 4-pole, RM 3,81
CE- standards	EN 61000-6-2, March 2000 EN 50081-1, March 1993

Notice

The indications made in these operating instructions may be altered without previous notice. With the edition of these instructions, all previous editions become void. Composition of the information given in this manual has been done to the best of our knowledge. Hörmann KG Verkaufsgesellschaft does not guarantee the correctness of the details given in these instructions and may not be held liable for damages ensuing from incorrect installation. Since, despite all our efforts, errors may not be completely avoided we are always grateful for your useful tips. The installation instructions given in this manual are based on advantageous boundary conditions. Hörmann KG Verkaufsgesellschaft does not give any guarantee promise for the function of the traffic detector in cross surroundings.

6 Safety instructions

- The appliance may only be used for the purpose intended by the manufacturer.
- Please hand out the operating instructions to all users and keep them in an easily accessible place.
- Unacceptable changes as well as the use of spare parts and special features which are not sold or recommended by the manufacturer of the appliance, may cause fire, electric shocks or injuries. Therefore, such measures lead to nonliability of the manufacturer and a lapse of all warranty claims.
- The appliance is subject to the manufacturer's guarantee regulations in the version valid at the time of purchase. We cannot be held liable for improper or faulty manual or automatic adjustment of parameters resp. improper use of the appliance.
- Repair work may only be carried out by the manufacturer.
- Installation, initiation, maintenance, measuring and adjustment of the traffic detector should only be carried out by electricians with good knowledge of the rules for prevention of accidents.
- When handling appliances that come into contact with electricity, the valid VDE-regulations have to be observed. In particular, these are (list may be incomplete): VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711, VDE 0860, VDE 0105 as well as the rules for the prevention of accidents and fire, VBG4.
- All labour that is carried out on the appliance as well as its initiation, has to conform to the national as well as the local electrical regulations.
- The user has to make sure that the appliance is installed and operated according to the technical rules of the country of installation as well as other regional regulations. Cable dimension, protection, grounding, disconnection, insulation control and excess current protection should be especially considered.
- According to machine directive 89/392/EWG, appendix IV, as well as as directive ZH1/494 of the German employer's liability insurance association, the appliance must not be used as a safety component. Systems with a high danger potential need additional safety contrivances!



Technische Mitteilung TM-EL19

von : Michael Lienenkämper
Datum : 17.11.06
Verteiler : Gruppe A, B, C, D, E, F
über : Handsender HS-SEU
hier : Programmieranleitung

Wichtige Hinweise

Handsender gehören nicht in Kinderhände!

Handsender dürfen nun von Personen benutzt werden, die in die Funktionsweise der ferngesteuerten Toranlage eingewiesen sind! Die Benutzung der Fernsteuerung muss mit Sichtkontakt zum Tor erfolgen! Die Programmierung der Fernsteuerung ist immer in der Garage in Antriebsnähe vorzunehmen! Für die Inbetriebnahme der Steuerung sind ausschliesslich Originalteile zu verwenden!

- Die Geräte sind vor direkter Sonneneinstrahlung zu schützen!
- Die Handsender sind vor Feuchtigkeit und Staubbelastung zu schützen!

Bei Nichtbeachtung kann durch einen Feuchtigkeitseintritt die Funktion beeinträchtigt werden!

Zulässige Umgebungstemperatur : -20 C is +65 C

Die örtlichen Gegebenheiten können Einfluss auf die Reichweite der Fernsteuerung haben!

Erweitern der Fernsteuerung mit weiteren Handsendern HS-SEU1, HS-SEU2, HS-SEU4 oder HS-SEU6

Hinweis : Ist kein separater Zugang zur Garage vorhanden, so ist jede Änderung oder Erweiterung von Programmierungen innerhalb der Garage durchzuführen. Bei der Programmierung und Erweiterung der Fernsteuerung ist darauf zu achten, dass sich im Bewegungsbereich des Tores keine Personen und Gegenstände befinden.

1. Der Sender, der den Code „vererben“ soll (Vererbungssender) und den Sender, der den Code lernen soll (Lernsender), direkt nebeneinander halten.
2. Die gewünschte Taste des Vererbungssenders drücken und gedrückt halten. Die LED des Vererbungssenders leuchtet nun kontinuierlich.
3. **Sofort danach** die gewünschte zu lernende Taste des Lernsenders drücken und gedrückt halten – die LED des Lernsenders blinkt zuerst für 4 Sek. langsam und beginnt bei erfolgreichem Lernvorgang schneller zu blinken.
4. Die Tasten vom Vererbungssender und vom Lernsender loslassen.

Eine Funktionsprüfung durchführen! Bei einer Fehlfunktion die Schritte 1 – 4 wiederholen.

Achtung! Während des Lernvorganges kann bei Betätigung des Vererbungssenders eine Torfahrt ausgelöst werden, wenn sich ein darauf programmierter Empfänger in der Nähe befindet!

Hinweis : Wenn während des langsamen Blinkens die Taste des Lernsenders losgelassen wird, wird der Lernvorgang abgebrochen.



Technical Bulletin TM-EL19

Author : Michael Lienenkämper
Date : 17.11.06
Distribution : Gruppe A, B, C, D, E, F
about : Hand Transmitter HS-SEU
here : Programming Manual

Important

Keep hand transmitters out of reach of children at all times!

Hand transmitters should only be used by persons who know to operate the remote controlled door system. Only use the remote control when the door is in your line of vision! Always programme the remote control inside the garage near the door operator. When putting the remote control into operation, use original components only!

- Protect equipment from direct sunlight.
- Protect hand transmitters against dampness and dust.

If damp is allowed to penetrate through non-observance of the above, the function of the unit can be seriously impaired.

Temperature range : -20 C to +60 C

Local conditions may affect the range of the remote control.

Extending the remote control set by adding further hand transmitters HS-SEU1, HS-SEU2, HS-SEU4 or HS-SEU6

Note : If the garage does not have a separate entrance, you should carry out any programming alterations or expansion inside the garage. When programming or expanding the remote control set, ensure that no persons or objects are within the door's range of movement.

1. Hold the transmitter which is to „teach“ the code (teaching transmitter) and the transmitter which is to learn the code (learning transmitter) directly alongside each other.
2. Press and hold the desired button on the teaching transmitter – the LED on the teaching transmitter now glows continuously.
3. **Immediately after** having done this, press and hold the button which is to learn on the learning transmitter – the LED on the learning transmitter initially flashes slowly for about 4 seconds, but then starts flashing more rapidly once the learning procedure has been successfully completed.
4. Release the buttons on the teaching transmitter and learning transmitter.

Check that the transmitters are functioning correctly. If not, repeat steps 1 – 4.

CAUTION! Activation of the teaching transmitter during the learning procedure could set the door in motion if there is an appropriately programmed receiver near to where you are standing!

Note : The learning procedure will be aborted if you release the button on the learning transmitter during the slow-flashing period.



Technische Mitteilung TM-EL20

von : Michael Lienenkämper
Datum : 17.11.06
Verteiler : Gruppe A, B, C, D, E, F
über : Funkempfänger
hier : Steckplatine 868MHz, Programmieranleitung

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Hinweis : GSM900 Handys können bei gleichzeitiger Benutzung die Reichweite der Funkfernsteuerung beeinflussen.

1. Die rote Taste (Programmiertaster) am Empfänger kurz betätigen – die rote LED beginnt langsam zu blinken.
2. Die gewünschte zu programmierende Taste des Handsenders mindestens 1 Sek. drücken. Der Abstand zwischen dem Sender und dem Empfänger muss min. 1m betragen.
3. Bei erfolgter Programmierung beginnt die rote LED im Empfänger schneller zu blinken.
4. Die Taste des Handsenders loslassen.

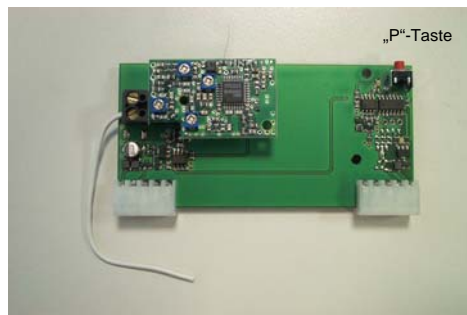
Nach Beendigung des Blinkens ist der Empfänger empfangsbereit.

Zur Überprüfung ist die programmierte Taste des Senders zu betätigen, die rote LED des Empfängers leuchtet auf.

Hinweis : Wenn 30Sek. nach Druck auf den Programmiertaster keine Programmierung erfolgt, erlischt die langsam blinkende rote LED im Empfänger wieder.

Abbrechen der Programmierung : Wenn der Programmiertaster 3-mal kurz innerhalb von 2 Sek. betätigt wird, erlischt die rote LED und der Programmiervorgang wird abgebrochen.

Empfang : Wenn der Empfänger die Sendecodes empfängt, wird der Signalausgang für 0,5 Sek. aktiv. Während dieser Zeit leuchtet die LED am Empfänger.



Technical Bulletin TM-EL20

Author : Michael Lienenkämper
Date : 17.11.06
Distribution : Gruppe A, B, C, D, E, F
about : Radio Remote Control
here : receiver on p.c.b. 868MHz, 1 channel

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Note : GSM 900 mobile phones used at the same time may influence the range of the radio remote control.

1. Briefly press red button „P“ (programming button) on the receiver – the red LED starts flashing slowly.
2. Press the button you wish to programme on the hand transmitter for at least 1 second. The distance between the transmitter and the receiver should be at least 1m.
3. When the programming has been completed, the red LED starts flashing more rapidly.
4. Release the button on the hand transmitter.

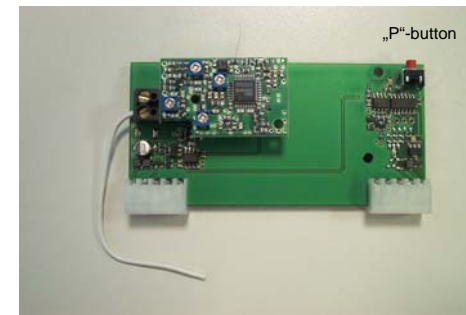
Once the flashing stops, the receiver is ready for operation.

To test the function, press the programmed button on the transmitter – the red LED lights up when the output is active.

Note : If no programming is carried out within 30 seconds of processing the „P“-button, the slow flashing red LED on the receiver goes out again.

Aborting the programming procedure : If after pressing the programming button this is pressed 3 times within 2 seconds, the red LED goes off and the programming procedure is aborted.

Reception : When the receiver receives the transmitting codes that were programmed the signal output is active for 0,5 seconds. During this time the LED on the receiver is on.



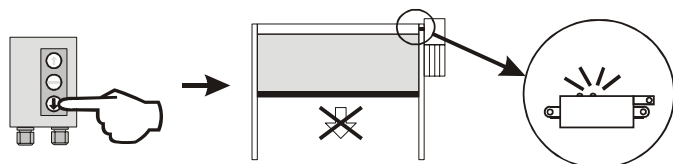
Wireless Impulse Transmission Technical Data



HOE_OPTOC_GB.DOC

1. Failure Diagnosis

1.1. OPT-CF 1163



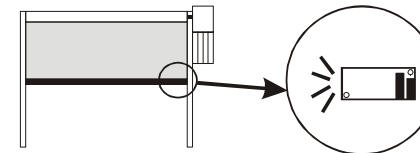
YELLOW	Condition	Test
	active	- wiring to control panel
	inactive	- wiring to control panel
	safety edge activated	- wiring of safety edge - mounting of safety edge
	crash or missing light transmission	- alignment (straight way of light) - optical axis interrupted - dirt - wiring Crash-Switch - batteries OPT-CM 1163
	no operating voltage	- wiring to control panel

RED	condition	Action
		- change OPT-CF 1163
		- none

Wireless Impulse Transmission Technical Data



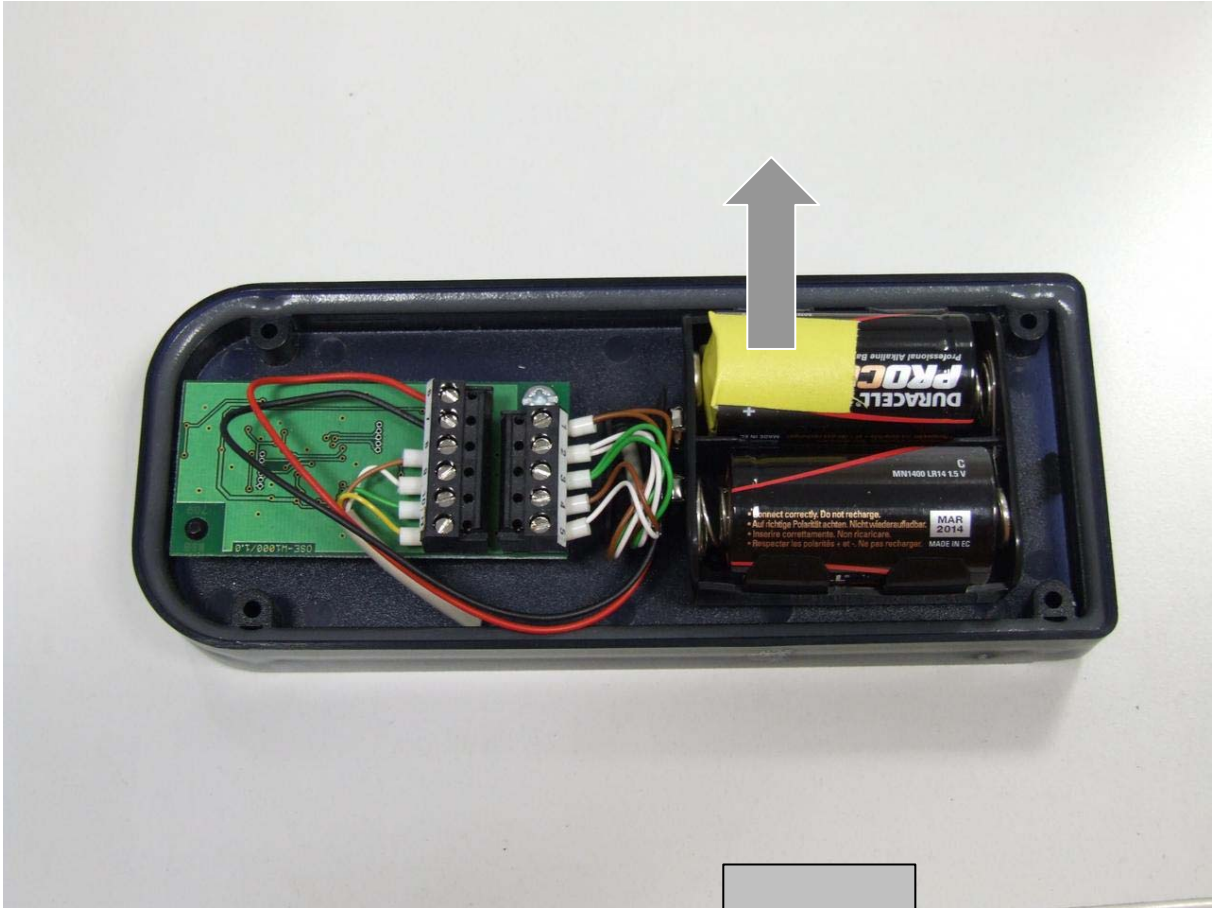
1.2. OPT-CM 1163, #013550



YELLOW	Condition	Action
		- change batteries
		- none

RED	condition	Action
		- change OPT-CM 1163
		- none

1.



2.

