

BECK-O-TRONIC 6

Version: 40.685 MHz

en

Assembly and Operating Instructions

Door control unit

Important information for:

- Fitters / • Electricians / • Users

Please forward accordingly!

These instructions must be kept safe for future reference.

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General

This control unit is a high-quality product with many features and advantages:

- Simple, convenient connection
- Easy to handle and highly flexible
- Automatic limit position detection
- Defined buttons for OPEN, STOP and CLOSE, also on the hand-held transmitter
- Design with clear display of operating status and error messages
- Optical safety edge or electric safety edge and additional light barrier can be connected

Please observe these Assembly and Operating Instructions when installing and setting up the equipment.

Explanation of pictograms

	CAUTION	CAUTION indicates a hazardous situation which, if not avoided, could result in injury.
	ATTENTION	ATTENTION indicates measures that must be taken to avoid damage to property.
		Denotes user tips and other useful information.

Warranty

Structural modifications and incorrect installation which are not in accordance with these and our other instructions can result in serious injuries, e.g., crushing of limbs. Therefore, structural modifications may only be carried out with our prior approval and strictly in accordance with our instructions, particularly the information contained in these Assembly and Operating Instructions.

Any further processing of the products which does not comply with their intended use is not permitted.

The end product manufacturer and fitter have to ensure that all the relevant current statutory, official and, in particular, EMC regulations are adhered to during utilisation of our products, especially with regard to end product manufacture, installation and customer advice.

Safety instructions

The following safety instructions and warnings are intended to avert hazards and to prevent property damage and personal injury.

Please keep the instruction manual safe!



Caution

- **Work on the electrical equipment may only be carried out by a qualified electrician.**
- **The relevant safety and accident prevention regulations for the specific application must be observed when carrying out assembly, installation, commissioning, testing and maintenance of the control unit. The following regulations in particular must be observed (not an exhaustive list):**
 - **Machinery Directive 2006/42/EC**
 - **EN 12453 (safety in use of power-operated doors, requirements)**
 - **EN 12445 (safety in use of power-operated doors, testing methods)**
 - **EN 12978 (safety devices for power-operated doors, requirements and testing methods)**
 - **EN 60335 (safety of electrical devices for household or similar purposes)**
 - **Fire prevention regulations**
 - **Accident prevention regulations ASR A1.7 (power-operated windows, doors and gates)**
- **The engineer responsible for fitting the system must ensure proper installation, instruction of the operator in its use and issue of the CE mark.**
- **The operator must ensure that the system is only operated in perfect condition and that the safety devices are checked regularly by an expert to ensure they are in full working order.**
- **A damaged mains connecting cable must be replaced immediately by a qualified electrician.**
- **If there is no fixed stop, e.g., when using roller doors, the customer must ensure that the roller shutter curtain is protected and cannot cause any dangerous situations, e.g., by overrunning a limit position.**
- **The control unit is designed to have a service life of 100,000 operating cycles.**

- **Drives with a H05VV-F connecting cable may only be used indoors. If the cable is installed outdoors, it must be placed in a protective conduit.**
- **The person who installs, connects, commissions and maintains this control unit must have read, understood and observed these Assembly and Operating Instructions. The manufacturer will not accept liability for damage, consequential damage or malfunctions resulting from non-compliance with these Assembly and Operating Instructions.**
- **Before working on the control unit, it must be disconnected from the power supply and measures must be taken to ensure it cannot be inadvertently switched back on.**
- **Following installation and commissioning, all users must receive instruction in the functions and operation of the system. All users must be briefed on the dangers posed by the system, as well as the risks and their testing obligations as users. Documentation of these points is recommended.**
- **Operating personnel who have not received instruction or children must not operate the door control unit.**
- **Persons, animals or objects must not be within the movement range of the door when opening or closing it.**
- **As the setting options are many and varied, it is also possible to make settings for the specific system being operated that are obviously illogical, impermissible or even dangerous. This is not due to a fault or defect at the control unit. In light of this, the installer / person responsible for the system must carefully check the settings made and modify them as necessary.**

Intended use

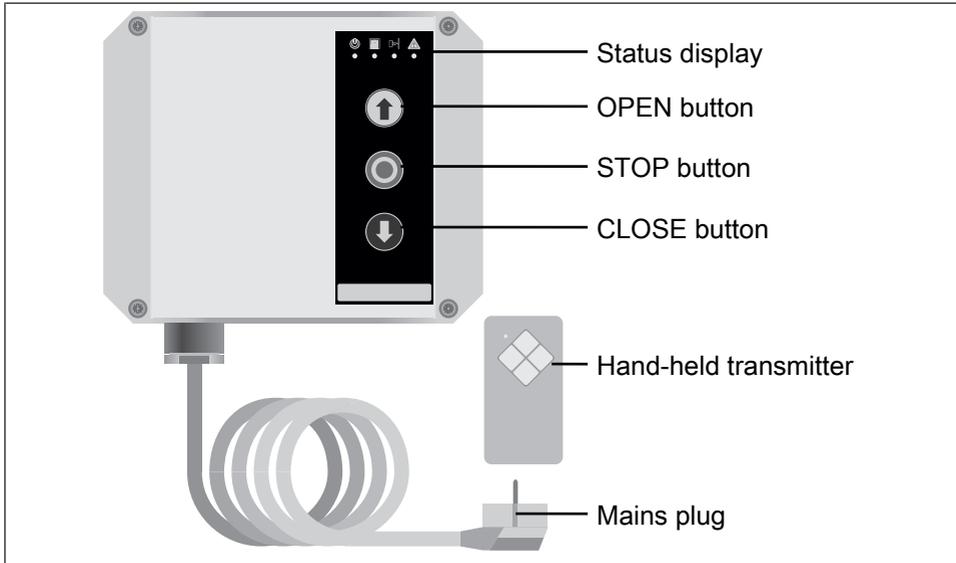
The type of control unit described in these instructions may only be used for the operation of tubular drives in roller doors which have fixed stops at the limit positions or a cover on the barrel (EN 12453). For travel in the DOWN direction in maintained operation, a closing edge safety device is necessary.

This type of control unit must not be used in potentially explosive areas.

Other applications, uses and modifications are not permitted in order to protect the safety of the users and others, since these actions can impair the system's safety and carry the risk of personal injury and property damage. The manufacturer does not accept liability for damage or injury arising from such actions.

Always observe the information in these instructions when operating or repairing the system. The manufacturer does not accept liability for damage or injury resulting from improper use.

Product overview

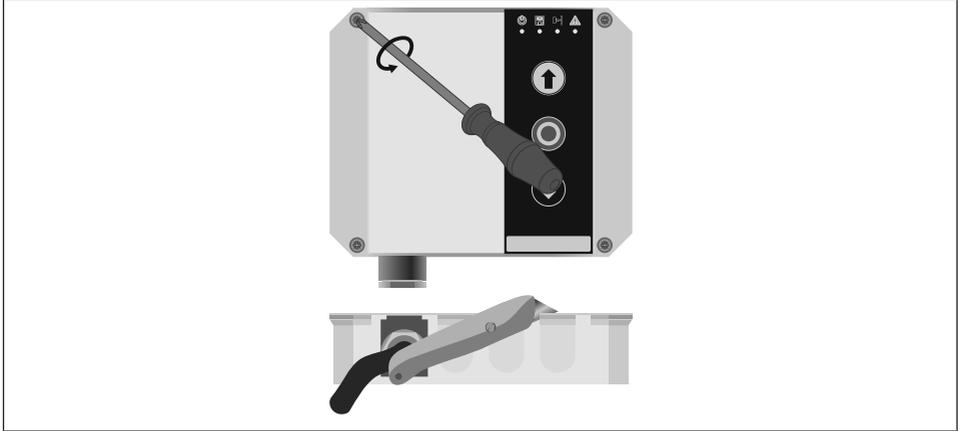


Caution

Work on the electrical equipment may only be carried out by a qualified electrician.

Assembly

Check that the transmitter and receiver are functioning perfectly prior to installation in the desired location. Do not choose an installation location that is exposed to electro-magnetic fields, e.g., in the immediate vicinity of contactors (power relays), mains transformers, ignition transformers, fluorescent tubes, etc., or their connecting cables. Protect the control unit against direct solar radiation and driving rain.



Open the cover of the control unit. Pull the cable from the cover off and carefully place the cover to one side. Remove the required cut-outs in the bottom part of the housing.



Cut in at the edges to make the cut-outs easier to remove.

Install the control unit at a suitable operating height (at least 1500 mm from the ground). Mount the housing with 4 screws (max. diameter of screw head 7.5 mm) inserted through the holes provided in the corners.

Plug the cable from the cover back on and adjust the parameters. You can now close the control unit.

Wiring

Connect the individual pieces of equipment as shown in the connecting diagram.



Caution

Electrical work may only be carried out by qualified electricians or trained personnel. Always disconnect the safety mains plug before connecting the equipment. The connection to the building wiring system must be established in accordance with the Machinery Directive using an adequately sized mains disconnection device. This can be done by using a plug connection or lockable main switch. The control unit is protected by a 5 AT, 5 x 20 mm fuse located below the shock-hazard protection cover. Switch the operating voltage off before replacement!



First, pull the insert sleeves over the connecting cable and then push the insert sleeves into the bottom part of the housing once all of the wires have been connected. The control and drive lines (e.g., pulse, open, stop, close...) must not exceed a max. length of 30 m! This does not apply to the power line. Always route the power line, drive and control lines in separate cables at a distance from one another. Non-compliance with the above can lead to malfunctions!

Operator controls & functions/displays

Explanation of abbreviations

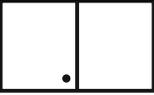
Abbreviation	Description
USA	Bottom rail sensor; sensor of main closing edge safety device. Detects obstructions when the door is lowering
LS	Light barrier; for use in buildings as monitoring device for door system and to control the automatic reclosing operation.
AWZ	Automatic reclosing; the door lowers automatically after the set reclosing time.
M	Drive

Abbreviation	Description
[Ta.+]	"+" on the PCB
[Ta.-]	"-" on the PCB
[Ta.F]	"Radio" button on the PCB
[Ta.M]	"Menu" button on the PCB
SE1	Safety input 1
SE2	Safety input 2
[KI.1]..[KI.25]	Reference to connecting terminals
[M.A0].. [M.C9]	Menu table "Setting a function", menu items "A0" to "C9"
[Er.01].. [Er.25]	Error message, shown in the display
[F1]..[F2]	Radio module function, shown in the display

Function of buttons

[Ta.+]	+ value	Change menu item and OPEN / STOP in OPEN direction
[Ta.-]	- value	Change menu item and CLOSE / STOP in CLOSE direction
[Ta.F]	Radio button	For programming / deleting radio settings
[Ta.M]	Menu button	Menu selection / display of input status

Display on left "Door status"

Display on left	Segment status	Door status
	Lit	In the CLOSE limit position
	Lit	Permanently in the CLOSE limit position Holiday function: Inputs / radio disabled
	Lit	Between limit positions
	Lit	In the OPEN limit position
	Flashes	Permanently in the OPEN limit position Automatic reclosing off, external inputs and radio deactivated
	Bars running up	Running up
	Bars running down	Running down
	A bar is at a standstill + flashes with 50% on and 50% off	Advance warning time running
	Lit	Automatic reclosing Stay-open time running
	Flashes	Stay-open time after exiting light barrier running

Display on right "Status of inputs"

Display on right	Segment status	Input
	Flashes	EMERGENCY STOP actuated
	Flashes	SE1 (LS / SE /OSE) actuated
	Flashes	SE2 (LS / SE /OSE) actuated
	Flashes	OPEN actuated
	Flashes	CLOSE actuated
	Flashes	Pulse actuated
	Flashes	Pre-limit switch actuated
	Item on right lights up	Control unit sends status via transmit module

Membrane keypad

Labelling	Function	Function: short press	Function: press > 5 s
	OPEN	OPEN command	Permanently open: Automatic reclosing, external inputs and radio disabled.
	STOP	Drive operation in progress: STOP If the drive is at a standstill: Light on/off, if light function is set with overrun time	Steady light: Light permanently on
	CLOSE	CLOSE command	Permanently closed: Holiday function, external inputs and radio disabled.

i While the "STOP" button is pressed or a safety device in the emergency stop circuit has triggered, door travel is not possible.

Status indications

The status indicator shows the current status of the control unit. You can find this above the OPEN button.

				
Program radio 1-channel operation	Flashes	-	-	-
Fault in USA circuit	On	Flashes	-	Flashes
Internal fault (no redundancy)	On	Flashes	Flashes	Flashes
Control unit defective (replacement necessary)	-	On	On	On
Error, negative testing (pre-limit switch possibly too high)	On	Flashes	-	-

				
Error Running time exceeded	On	-	-	Flashes
AWZ cancelled, LS actuated and USA actuated	On	On	On	On
AWZ cancelled, USA actuated	On	On	-	On
AWZ cancelled, LS actuated	On	-	On	On
AWZ cancelled	On	-	-	On
No error, USA actuated	On	On	-	-
No error, LS actuated	On	-	On	-
No error, ready	On	-	-	-



Caution

If an internal error occurs (no redundancy), the system changes over to dead-man mode for safety reasons. The door can only be lowered via the CLOSE button at the control unit.

Testing

Pneumatic safety edges are tested for safety-related reasons during every downward movement. This process is called testing.

Self-test

The control unit performs a self-test cyclically. CH = Check appears once in the display and the relays are audibly actuated.

Parametrisation

The operator control is structured in two levels

Level 1 (highest level) = selection of menu item or function

Level 2 (lowest level) = selection of menu values / setting values

Parameter editing			Display
1.	Control unit in door status display	Display of current door position and statuses	
2. [Ta.M]	Press menu button > 3 s	Displays the last menu item called up	A0
3. [Ta.+] or [Ta.-]	Briefly press + or - value	Selection of required menu item according to select menu table	A1 or A0
4. [Ta.M]	Briefly press menu button	Current menu value	00..99
5. [Ta.+] or [Ta.-]	Briefly press + or - value	Selection of required menu value	
6. [Ta.M]	Briefly press menu button	Save the menu value and display menu item	A0
7. [Ta.M]	Press menu button > 3 s	Exit the menu	
	no operation for > 15 s	Control unit in door status display	

i **If no changes in the menu values are possible, the entire control panel is protected against readjustment. Enable via item "Disable/enable parametrisation". The drive cannot operate during the adjustment.**

Menu table

Basic values = factory setting

Menu item	Menu value	Function / value	Basic values	Setting
A0		RUNNING TIME LIMITATION		
	00..90	Maximum drive running time 1...90 s, in 1 s increments	60	
	91..99	Maximum drive running time 1...9 min, in 1 min increments		
A1		LIMIT POSITION DETECTION		
	00	Running time without drive current monitoring (observe "Type of limit position detection via running time or limit switch" without fail!)		
	01	Running time and drive current monitoring	01	
A2		SAFETY INPUT SE1: Type		
	00	No SE safety edge connected		
	01	LS (without external testing)		
	02	LS (with external testing)		
	03	1K2		
	04	8K2	04	
	05	OSE		
	06	OSE (special: 400 Hz / 12 V)		



Menu item	Menu value	Function / value		Basic values	Setting
A3		SAFETY INPUT SE1: FUNCTION			
		Travel in CLOSE direction:	Travel in OPEN direction:		
	00	No effect	No effect		
	01	Stop	No effect		
	02	Reverse travel	No effect		
	03	Reopening	No effect		
	04	No effect	Stop		
	05	Stop	Stop		
	06	Reverse travel	Stop	06	
	07	Reopening	Stop		
	08	No effect	Reverse travel		
	09	Stop	Reverse travel		
	10	Reverse travel	Reverse travel		
	11	Reopening	Reverse travel		
	12	No effect	Reclosing		
	13	Stop	Reclosing		
14	Reverse travel	Reclosing			
15	Reopening	Reclosing			
A4		SAFETY INPUT SE2: Type			
	00	No SE safety edge connected			
	01	LS (without external testing)		01	
	02	LS (with external testing)			
	03	1K2			
	04	8K2			
	05	OSE			
	06	OSE (special: 400 Hz / 12 V)			

Menu item	Menu value	Function / value		Basic values	Setting
A5		SAFETY INPUT SE2: FUNCTION			
		Travel in CLOSE direction:	Travel in OPEN direction:		
	00	No effect	No effect		
	01	Stop	No effect		
	02	Reverse travel	No effect		
	03	Reopening	No effect	03	
	04	No effect	Stop		
	05	Stop	Stop		
	06	Reverse travel	Stop		
	07	Reopening	Stop		
	08	No effect	Reverse travel		
	09	Stop	Reverse travel		
	10	Reverse travel	Reverse travel		
	11	Reopening	Reverse travel		
	12	No effect	Reclosing		
	13	Stop	Reclosing		
14	Reverse travel	Reclosing			
15	Reopening	Reclosing			
A6		AUTOMATIC RECLOSING			
	00	Off		00	
	01..10	Stay-open time 5...50 s, in 5 s increments, excl. advance warning time			
	11..40	Stay-open time 11=1 min, 12=2 min, ... 40=30 min excl. advance warning time			
A7		STAY-OPEN TIME AFTER EXITING THE LIGHT BARRIER (SE2)			
	00	Function switched off		00	
	01..20	Stay-open time 1...20 s, in 1 s increments			



Menu item	Menu value	Function / value	Basic values	Setting
A8		LIGHT / WARNING LIGHT		
	00	Only during advance warning time and drive operation		
	01..60	Light time 10...600 s, in 10 s increments	12	
	61	Display: On, if the door is in the OPEN limit position		
	62	Display: On, if the door is in the CLOSE limit position		
	63	Display: On, if the door is not in the OPEN limit position (e.g., red traffic light)		
	64	Display: On, if the door is not in the CLOSE limit position (e.g., red traffic light) Off, 5 s after CLOSE limit position		
	65	Only during advance warning time and motor operation, 1 Hz flashing		
A9		ADVANCE WARNING TIME PRIOR TO TRAVEL IN THE OPEN DIRECTION		
	00	Off	00	
	01..15	Advance warning time 1...15 s, in 1 s increments		
b0		ADVANCE WARNING TIME PRIOR TO TRAVEL IN THE CLOSE DIRECTION		
	00	Off	00	
	01..15	Advance warning time 1...15 s, in 1 s increments		
b1		REVERSE TRAVEL TIME		
	00..19	Reverse travel time 0.25...5.00 s, in 0.25 s increments	11	
b2		AUTOMATIC RECLOSING following EMERGENCY STOP		
	00	Automatic reclosing following EMERGENCY STOP disabled	00	
	01	Rerun of automatic reclosing following EMERGENCY STOP release		

Menu item	Menu value	Function / value	Basic values	Setting
b3		OPEN INPUT & MEMBRANE-TYPE KEY		
	00	Travel in the OPEN direction with panic function	00	
	01	Travel in the OPEN direction without panic function		
	02	Dead-man function		
b4		CLOSE INPUT & MEMBRANE-TYPE KEY		
	00	Travel in CLOSE direction with panic function	00	
	01	Travel in CLOSE direction without panic function		
	02	Dead-man function		
b5		PRE-LIMIT SWITCH		
	00	Operation without pre-limit switch	00	
	01	Operation with pre-limit switch		
b6		SLAT ADJUSTMENT		
	00	Operation without slat adjustment	00	
	01	<p>Operation with slat adjustment</p> <ul style="list-style-type: none"> • A short command (< 1 s) via pulse, OPEN, CLOSE or radio effects a slat adjustment • A long command (> 1 s) via pulse, OPEN, CLOSE or radio leads to travel to the relevant limit position <p>The slat adjustment is only effective if the OPEN and CLOSE inputs are also operated in combination with the "with panic function" setting. To do this, [M.b3] = 00 or [M.b4] = 00 must be set.</p>		
b7	00			
b8		DEAD TIME when reversing/switching the running direction		
	00..39	0.025...1.000 s, in 0.025 s increments	09	
b9		STANDBY for 12 V output (terminal 12)		
	00	12 V permanently on	00	
	01	12 V off in standby mode		
C0	00			
C1	00			



Menu item	Menu value	Function / value	Basic values	Setting
C2	00			
C3	00			
C4	00			
C5		MAINTENANCE INTERVAL		
	00	No maintenance interval	00	
	01..99	Maintenance interval 100...9,900 door movements, in increments of 100		
C6		No function	00	
C7		Disable/enable parametrisation		
	00	Menu items adjustable	00	
	01	Menu items not adjustable Changeover: Press EMERGENCY STOP, [Ta.+] and [Ta.-] simultaneously, Toggle between 00 and 01 with [Ta.M]		
C8		Version number (only readable)		
		Display of 8-digit version number by running a sequence of digits. Example: Rest - 00 - 01 - 05 - 12 - Rest, etc. corresponds to version number 00.010512		
C9		Clock counter (only readable)		
		6-digit display of movements in the OPEN direction by running a sequence of digits. Example: Rest - 00 - 35 - 17 - Rest, etc. corresponds to 3,517 movements in the OPEN direction		

Connections & functions

Mains connection

[KI.1]..[KI.2]	Protective conductor / PE
[KI.3]	L-conduction
[KI.4]	N-conductor

Light / warning light

[KI.1]..[KI.2]	Protective conductor / PE
[KI.5]	L-conductor (enabled)
[KI.6]	N-conductor (enabled)

- 230 V / AC output, max. 250 VA, all-pole disconnection
- The light function is set via [M.A8]
- With [M.A8] = 00, the light is actuated for the set advance warning time [M.A9] or [M.b0] and the drive operation time.
- With [M.A8] = 01 to 60, the light is actuated throughout the entire drive operation **and** following a drive operation for the selected time. With the setting 04 to 60, the light goes out briefly once 10 s before the time expires and signals the pending time rundown.
- With [M.A8] = 61 to 64, a red/green traffic light or door status indicator can be implemented; in this case the light output is actuated according to the door position (OPEN or CLOSE limit position).
- With [M.A8] = 65 the output flashes with 1 Hz during the advance warning time and drive operation.

Drive / tubular drive

[KI.1]..[KI.2]	Protective conductor / PE
[KI.7]	CLOSE direction, 230 V / AC output
[KI.8]	OPEN direction, 230 V / AC output
[KI.9]	N-conductor (enabled)

- 230 V / AC output, max. 500 VA, all-pole disconnection
- The drive must travel in the OPEN direction following "Operating voltage / mains voltage on" and the **first** pulse command. If the drive travels in the CLOSE direction even though the bars in the display are moving up, the connecting wires [KI.7]+[KI.8] must be swapped round.



EMERGENCY STOP (safety input)	
[KI.10]	EMERGENCY STOP input
[KI.11]	EMERGENCY STOP
<ul style="list-style-type: none"> • Safety input category 1 to EN ISO 13849-1/2008 (directly switches the relay for direction of travel off) 	
<ul style="list-style-type: none"> • Input for EMERGENCY STOP control sensor 	
<ul style="list-style-type: none"> • NC contact, floating 	
<ul style="list-style-type: none"> • Several control sensors can be connected in series. 	
<ul style="list-style-type: none"> • Connect the supplied 8k2 resistor to the EMERGENCY STOP control sensor in series with the floating normally closed contact. 	
<ul style="list-style-type: none"> • Connect the supply line for the EMERGENCY STOP control sensor to terminal [KI.10] (EMERGENCY STOP input) and terminal [KI.11] (EMERGENCY STOP). 	
<ul style="list-style-type: none"> • If an EMERGENCY STOP input is not used it must be jumpered with an 8k2 resistor. The 8k2 resistor must be removed when it is in use. 	
<ul style="list-style-type: none"> • The automatic reclosing function after an EMERGENCY STOP is adjusted in [M.b2] 	
<ul style="list-style-type: none"> • The EMERGENCY STOP input switches the drive and light relay off directly and is therefore still effective when the electronics fail! 	
<ul style="list-style-type: none"> • After an EMERGENCY STOP command when the drive is in operation, the door travels in the opposite direction (away from the source of danger) the next time a pulse command is given. 	
<ul style="list-style-type: none"> • After an EMERGENCY STOP command when the door is at a standstill, travel in the OPEN direction generally occurs the next time a pulse command is given. 	

12V DC output (stabilised)	
[KI.12]	<ul style="list-style-type: none"> • +12V DC (stabilised), $I_{max} < 300mA$ • +12V DC testing of light barriers and/or switching off of LS and OSE at standstill • [M.b9] = 00, +12V permanently on, although briefly off during self-test • [M.b9] = 01, +12V off in standby mode and briefly off during self-test
[KI.18]	0V / Earth
[KI.20]	0V / Earth
Connection for external consumer, e.g., OSE, light barrier, etc.	
<p>Attention! The maximum current specified in the "Technical data" must not be exceeded! Non-compliance can lead to malfunctions, failure, destruction and material damage.</p>	

Safety input	
[KI.12]	+12 V (with testing)
[KI.13]	SE1 signal input
[KI.14]	Common
[KI.15]	SE2 signal input
[KI.18] or [KI.20]	0V / Earth
<ul style="list-style-type: none"> • Safety input category 2 / Performance Level C to EN ISO 13849-1/2008 	
<ul style="list-style-type: none"> • The type of the input is set in [M.A2] for SE1 and [M.A4] for SE2. • Input for safety contact strips (1k2 or 8k2 or OSE) for closing edge safety device • Input for light barriers (LS) 	
<ul style="list-style-type: none"> • The function of the input is set in [M.A3] for SE1 and [M.A5] for SE2. • Setting the function of the safety input for travel in the OPEN direction and travel in the CLOSE direction • Stop: Drive remains at standstill • Reverse travel: When approaching an obstruction, the door is actuated in the opposite direction for the set reverse travel time [M.b1]. • Reopening/reclosing: If a safety device is actuated when the drive is in operation (e. g., detects obstruction in the active direction of travel) the door then travels in the opposite direction up to the limit position. 	
<ul style="list-style-type: none"> • When the SE input is actuated the drive can only be started if the SE setting is not effective in the corresponding direction of travel. If effective, travel will not be possible in the direction of travel. 	
<ul style="list-style-type: none"> • When the drive is in operation a command at the SE input effects the following: stop, reverse travel, reopening, reclosing or no effect, depending on the direction of travel and setting. 	
<ul style="list-style-type: none"> • When the automatic reclosing is active and the SE input is actuated, the stay-open time is reset until the input is once again enabled. 	
<ul style="list-style-type: none"> • The input has a safety function and is monitored by self-testing of the electronics. If an error is detected in the SE input, door travel is not possible. SE1: Display {Er.08} / {Er.10} SE2: Display {Er.09} / {Er.11} 	
<ul style="list-style-type: none"> • If control sensors (1k2 / 8k2 / OSE / LS) at safety inputs SE1 / SE2 are defective, the control unit can be manually operated in dead-man mode in the OPEN or CLOSE direction. • Actuate the control sensor briefly twice in the required travel direction then hold actuated. The door now travels in dead-man mode. 	

Safety input

- If a pneumatic pressure-wave safety edge (**DW edge**) is used, its function must be tested. An external pre-limit switch is needed for this. The pre-limit switch is only effective in combination with the safety input SE1 and is activated with ([M.b5] = 1). Depending on the type of edge, the safety input SE1 must either be set as 1k2 ([M.A2] = 3) or as 8k2 ([M.A2] = 4).

Attention

[KI.14] = Common. Must not be connected to 0 V = [KI.18] or [KI.20] as otherwise the SE input is defective or is not functioning!

External safety devices must be approved for protection against personal injury.

The pre-limit switch is only effective in combination with the safety input SE1!

Light barriers with an OC (open collector output, PNP / NPN semi-conductor output) cannot be used (malfunction!)

Safety input SE1 (LS / 1k2 / 8K2 / OSE)

1k2 / 8k2 connection

[M.A2]	03: 1k2
[M.A2]	04: 8k2
[KI.13]	Electric safety edge
[KI.14]	Electric safety edge

OSE connection

[M.A2]	05: Standard OSE
[M.A2]	06: 400 Hz
[KI.12]	+12 V (brown)
[KI.18] or [KI.20]	Earth (white)
[KI.13]	Signal (green)

Safety input SE1 (LS / 1k2 / 8K2 / OSE)	
LS connection without external testing	
[M.A2]	01
[KI.12]	LS: +12 V
[KI.18] or [KI.20]	Earth
[KI.13] and [KI.14]	Relay output LS
LS connection with external testing	
[M.A2]	02
[KI.12]	LS transmitter: +12 V
[KI.18] or [KI.20]	Earth
[KI.12]	LS receiver: +12 V
[KI.13] and [KI.14]	Relay output LS
During the self-test of the control unit, the +12 V = [KI.12] to the LS transmitter is briefly interrupted. The LS receiver must detect this and switch the relay output [KI.13] and [KI.14].	

Safety input SE2 (LS / 1k2 / 8K2 / OSE)	
1k2 / 8k2 connection	
[M.A4]	03: 1k2
[M.A4]	04: 8k2
[KI.15]	Electric safety edge
[KI.14]	Electric safety edge
OSE connection	
[M.A4]	05: Standard OSE
[M.A4]	06: 400 Hz
[KI.12]	+12 V (brown)
[KI.18] or [KI.20]	Earth (white)
[KI.15]	Signal (green)



Safety input SE2 (LS / 1k2 / 8K2 / OSE)	
LS connection without external testing	
[M.A4]	01
[KI.12]	LS: +12 V
[KI.18] or [KI.20]	Earth
[KI.14] and [KI.15]	Relay output LS
LS connection with external testing	
[M.A4]	02
[KI.12]	LS transmitter: +12 V
[KI.18] or [KI.20]	Earth
[KI.12]	LS receiver: +12 V
[KI.14] and [KI.15]	Relay output LS
During the self-test of the control unit, the +12 V = [KI.12] to the LS transmitter is briefly interrupted. The LS receiver must detect this and switch the relay output [KI.14] and [KI.15].	

Light barrier (LS)
<ul style="list-style-type: none"> Light barriers can be connected to the safety inputs SE1 and SE2.
<ul style="list-style-type: none"> Light barriers with a semi-conductor / open collector output cannot be used.
<ul style="list-style-type: none"> The connection is established according to item Safety input SE1 (LS / 1k2 / 8K2 / OSE) or Safety input SE2 (LS / 1k2 / 8K2 / OSE).
<ul style="list-style-type: none"> When the automatic reclosing is active and the LS input is actuated, the stay-open time is reset until the input is once again enabled.
<ul style="list-style-type: none"> The function " Stay-open time after exiting the light barrier" is set in [M.A7] and only applies for the light barrier at SE2! If the light barrier is exited when the door is open, the door closes after the set stay-open time [M.A7]. During this time the item in the left-hand display flashes. An LS command (e.g., a car driving through) while the door is still travelling in the OPEN direction is saved (only with setting [M.A3] = 00 to 03). As soon as the door is in the OPEN limit position, the set stay-open time [M.A7] runs down and automatic travel in the CLOSE direction starts.

OPEN input	
[KI.16]	OPEN input
[KI.18]	0V / Earth
<ul style="list-style-type: none"> • Input for push-button, key-operated push-button, external radio, etc. 	
<ul style="list-style-type: none"> • NO contact, floating 	
<ul style="list-style-type: none"> • Several control sensors can be connected in parallel. 	
<ul style="list-style-type: none"> • With [M.b3] = "dead-man function", radio operation for the corresponding direction of travel is disabled. 	
<ul style="list-style-type: none"> • The door stops when the OPEN and CLOSE inputs are simultaneously actuated. Further running direction commands (radio, pulse, membrane keypad) are not executed. 	
<ul style="list-style-type: none"> • When the advance warning time is set [M.A9], the door start is delayed. 	

CLOSE input	
[KI.17]	CLOSE input
[KI.18]	0V / Earth
<ul style="list-style-type: none"> • Input for push-button, key-operated push-button, external radio, etc. 	
<ul style="list-style-type: none"> • NO contact, floating 	
<ul style="list-style-type: none"> • Several control sensors can be connected in parallel. 	
<ul style="list-style-type: none"> • The function of the input is set in [M.b4] 	
<ul style="list-style-type: none"> • With [M.b4] = "dead-man function", radio operation for the corresponding direction of travel is disabled. 	
<ul style="list-style-type: none"> • The door stops when the OPEN and CLOSE inputs are simultaneously actuated. Further running direction commands (radio, pulse, membrane keypad) are not executed. 	
<ul style="list-style-type: none"> • When the advance warning time is set [M.b0], the door start is delayed. 	

Pulse input	
[KI.19]	Pulse input
[KI.20]	0V / Earth
<ul style="list-style-type: none"> • Input for push-button, key-operated push-button, external radio, etc. 	
<ul style="list-style-type: none"> • NO contact, floating 	
<ul style="list-style-type: none"> • Several control sensors can be connected in parallel. 	
<ul style="list-style-type: none"> • If the door is in the OPEN limit position, only the stay-open time is reset via a pulse or OPEN command. The stay-open time remains reset for as long as a pulse or OPEN command is applied. The stay-open time only starts to run down when an OPEN/pulse command is no longer applied. 	
<ul style="list-style-type: none"> • When the automatic reclosing is active ($[M.A6] > 0$ or $[M.A7] > 0$), a pulse command always effects travel in the OPEN direction. The same applies if the door is already travelling in the CLOSE direction. The stay-open time restarts. 	
<ul style="list-style-type: none"> • Commands for specific OPEN / CLOSE are also effective when the automatic reclosing is active. 	

Pre-limit switch	
[KI.21]	Pre-limit switch signal input
[KI.20]	0V / Earth
<p>When the safety input (SE1) is actuated < 2 s after actuation of the pre-limit switch, travel in the CLOSE direction continues up to the limit position. Deactivation is effected via the internal limit switch in the tubular drive $[M.A1] = 01$ or via running time $[M.A1] = 00$. If the safety input (SE1) is not actuated (active testing e.g., for pneumatic safety edge) < 2 s after actuation of the pre-limit switch, reverse travel or re-opening occurs depending on the setting in the menu $[M.A3]$.</p>	
<p>i The pre-limit switch is only effective in combination with safety input SE1! No effect in combination with SE2.</p>	

Reset / factory setting

The factory setting of the control unit can be restored if required (basic values in accordance with menu table). Press and hold the buttons $[Ta.+]$ and $[Ta.-]$ for approx. 5 s until the display changes from "r E" to "CH". The entire control unit must be subsequently readjusted!

Programmed hand-held transmitters are not deleted during this process.

Functional description

Type of limit switch detection via running time or limit switch

During commissioning, the type of limit position detection must be set in [M.A1].

- **Running time switch off [M.A1] = 00**
 - This operating mode may only be used with systems where there is no risk involved in doing so, or where this risk is safeguarded by another means. The drive cut-off is not monitored during the self-test!
 - The maximum running time can be set in [M.A0] to increments of 1 - 90 s and 91 - 99 min.
 - With limit position detection based on running time [M.A0] = 00, an error message is not displayed if the set running time is exceeded; instead, the drive is stopped and this is interpreted as the limit position.
 - The door position is not determined, i.e.: every run continues until the total running time has elapsed. This is also the case if the door was at an "intermediate position" and therefore reaches the limit position before the running time has elapsed. This operating mode can be used for hydraulic drives with mechanical limit stop, for example.
- **Internal limit switch [M.A1] = 01**
 - If the door travels to the internal limit switch (tubular drive), this is detected as the limit position and the drive is switched off. To do this, the running time limit [M.A0] set must be longer (normally +5 s) than the actual running time.

Dead time during reversal

- The minimum dead time for which every drive must be at a standstill before the opposite direction can be actuated is set in [M.b8].
- This function is particularly important when changing the running direction in combination with reverse travel/reopening via SE1 / SE2.

Attention

Drives exist that do not run in the opposite direction and continue running in the original direction instead if the dead time is too short (especially drives with low self-blocking capability). With these drives, the time must be increased until start-up in the opposite direction can be ensured during reversal.

If necessary, check that the force values have been observed once the dead time has been increased!



Drive / tubular drive operation

- The control unit is ideally designed for tubular drives with internal limit switches that switch off the corresponding direction of travel directly. The control unit evaluates the drive current and can thus identify the limit positions.
- Operation with external limit switches is possible. External limit switches must be approved for 230 V and be able to switch the drive current. The connection is established in the corresponding drive cable. The installation must be 230 V capable. When operated with tubular drives, the internal limit switches must be set so that they do not trigger a deactivation at any point on the required travel distance! To do this, the switch-off point can be set approx. 3 revolutions before the starting point and after the end of the travel distance.

Attention

When operating with external limit switches, special attention must be paid to the safety regulations!

Panic function

- When the "panic function" is active and the door is in motion, the door travel stops the first time the input is actuated. The second time the input is actuated, the door starts moving in the actuated direction.
- If actuation occurs when the door is running in the opposite direction and a "panic function" is not set, the door stops and immediately starts moving in the opposite direction. If actuation occurs in the same direction (current travel direction), this has no effect.

Automatic reclosing

- If the door is not in the CLOSE limit position, the automatic reclosing operation takes effect after the stay-open time expires [M.A6]. The warning light output is active for the set advance warning time [M.b0] before the door travels to the CLOSE limit position.
- If the door is in the OPEN limit position, only the stay-open time is reset via a pulse or OPEN command. The stay-open time remains reset for as long as a pulse or OPEN command is applied. The stay-open time only starts to run down when an OPEN/pulse command is no longer applied.
- When the automatic reclosing is active, a pulse command always effects travel in the OPEN direction. The same applies if the door is already travelling in the CLOSE direction. The stay-open time restarts.
- Commands for specific OPEN / CLOSE are also effective when the automatic reclosing is active.
- If switch-off via SE1 / SE2 occurs three times in succession during travel in the CLOSE direction, the automatic reclosing is blocked after the third unsuccessful attempt to travel in the CLOSE direction until the next pulse, OPEN, CLOSE or radio command. However, this only applies for setting type = 1k2 / 8k2 or OSE.
- If [M.b2] = 00, following actuation of the EMERGENCY STOP the automatic reclosing is blocked until the next pulse, OPEN, CLOSE or radio command. If the drive is at a standstill, only the stay-open time is reset when SE1 or SE2 is actuated (no switch-off). The stay-open time only starts running down once the inputs have no longer been actuated. When the automatic reclosing is active, it is always effective if the door is not in the CLOSE limit position. While SE1 or SE2 is actuated, travel in the CLOSE direction does not occur.

- A continuous signal at the OPEN input blocks/interrupts the automatic reclosing. Once the OPEN signal is removed, the stay-open time runs down, then the door closes. The potential-free contact of a timer allows the automatic reclosing operation to be controlled.

Standby power / standby operation

- In order to save the standby power, the control unit enters standby mode 15 s after the last function (door travel or light off). All internal consumers (display, etc.), apart from the radio module, are switched off or their power reduced.
- External control sensors (LS, OSE, etc.) can also optionally be switched off [M.b9] via the 12 V output [KI.12]. However, following standby mode it takes around another +0.5 s to restart the drive.

Holiday function / door permanently open / door permanently closed / steady light

- Functions only possible in combination with membrane keypad
- Door permanently open (all control inputs and the automatic reclosing are disabled). Press OPEN at membrane keypad for longer than 5 s.
- Door permanently closed (holiday function, all control inputs are disabled). Press CLOSE at membrane keypad for longer than 5 s.
- Light permanently on. Press Stop at membrane keypad for longer than 5 s.
- Switching off: Press OPEN, STOP or CLOSE at the membrane keypad
- The permanently OPEN and permanently CLOSE functions are also retained when the operating voltage fails.

Emergency operation - dead-man

- If control sensors (1k2 / 8k2 / OSE / LS) at safety inputs SE1 / SE2 are defective, the control unit can be manually operated in dead-man mode in the OPEN or CLOSE direction.
- Emergency operation can be controlled via the OPEN and CLOSE inputs, [Ta.+] / [Ta.-], and also the membrane keypad.
- Actuate the control sensor briefly twice in the required travel direction then hold actuated. The door now travels in dead-man mode.

Disable/enable parametrisation

- All menu items can be disabled in [M.C7] to prevent readjustment. (recommended)
- [M.C7] = 00 menu items can be modified (as-delivered condition)
- [M.C7] = 01 no changes possible
- Disable/enable parametrisation
 - Continuously actuate EMERGENCY STOP
 - Select menu [M.C7] and access menu item with [Ta.M]
 - Press and hold buttons [Ta.+] and [Ta.-]
 - You can now toggle between the values 00 and 01 with [Ta.M]



Clock counter

- The number of previous door movements can be read out as 6 digits in [M.C9].
- Every start in the OPEN direction is counted.
- After [M.C9] is selected, a sequence of digits runs down 6 times in the display. This sequence of digits shows the number of OPEN movements, starting after the rest. Example: Rest - 00 - 35 - 17 - Rest, etc. corresponds to 3,517 movements in the OPEN direction.
- The travel counter cannot be reset or modified (read-only memory).

Maintenance interval

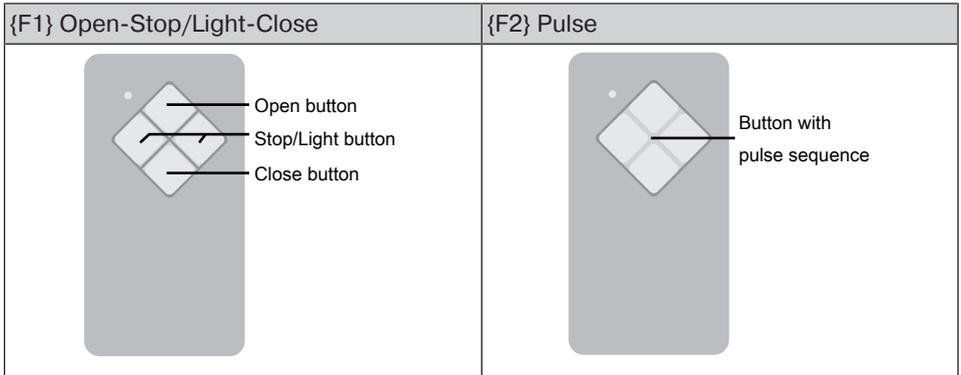
- The number of door movements (movements in OPEN direction) that elapse before the next maintenance message is displayed; set in [M.C5].
- The light output flashes when the drive is in operation to indicate that maintenance is due.
- To switch off the maintenance message, [M.C5] must be changed. (i.e. if the maintenance interval is to remain the same, the menu item must be changed once and reset to the old value). When [M.C5] is changed, the maintenance counter is set to the value that is currently set.
- [M.C5] only shows the set maintenance interval. The counter itself cannot be read out.
- A maintenance message is also retained when the operating voltage fails.
- The maintenance interval is independent of the clock counter [M.C9] and cannot be reset.

Remote control

The function of the radio remote control is determined when programming the transmitter. Up to 27 codings (27 transmitters) with different functions can be programmed. Operation via a transmitter is not possible with dead-man. The door must be visible when operated via a transmitter.

Value	Function
{F1}	Quadruple push-button, Open-Stop/Light-Close
{F2}	Pulse (Open-Stop-Close-..)

Transmitter:



Programming a transmitter:

1. Press [Ta.F] < 1 s until {F1} flashes in the display
2. Select the required function with [Ta.+] or [Ta.-]
3. Now press and hold the operating button on the transmitter until the selected function {F1}, {F2} is permanently displayed (no longer flashes). The transmitter has now been programmed.
4. If a transmitter is not programmed, learning mode is automatically exited after 3 minutes.

Deleting all transmitters

1. Press and hold the button [Ta.F] until {FL} flashes in the display after which the {FL} display goes off.
2. All codings have now been deleted.

Antenna connection

1. An antenna wire must be connected to [Kl.23].
2. When using a stick antenna, the shielding of the coaxial cable and inner conductor must be connected to [Kl.22] and [Kl.23] respectively. The cable can be fed into the housing via a free cable bushing.

i You can maximise the range by routing the antenna wire or coaxial cable as far as possible from mains, control and drive cables. Routing in cable ducts alongside other cables will reduce the range and possibly lead to malfunctions!

If the dead-man function has been set via [M.b3] / [M.b4], the corresponding direction of travel cannot be radio controlled!

If a programmed radio signal is received, the programmed function {F1}, {F2} appears in the display.

Radio communication is blocked while a button on the control unit or membrane keypad is actuated.

Disposal



The crossed-out bin symbol on the product indicates that the device is subject to mandatory disposal separate from household waste. This product must be handed over to a collection point for electrical and electronic equipment at the end of its service life. The packaging material must be disposed of properly.

Maintenance

This control unit is maintenance-free.

Cleaning

Only clean the outside of the housing with a suitable cloth. Do not use cleaning agents, as these may damage the plastic.

Error messages

"Er" (Error) and the relevant error number flash alternately in the display to signal an error.

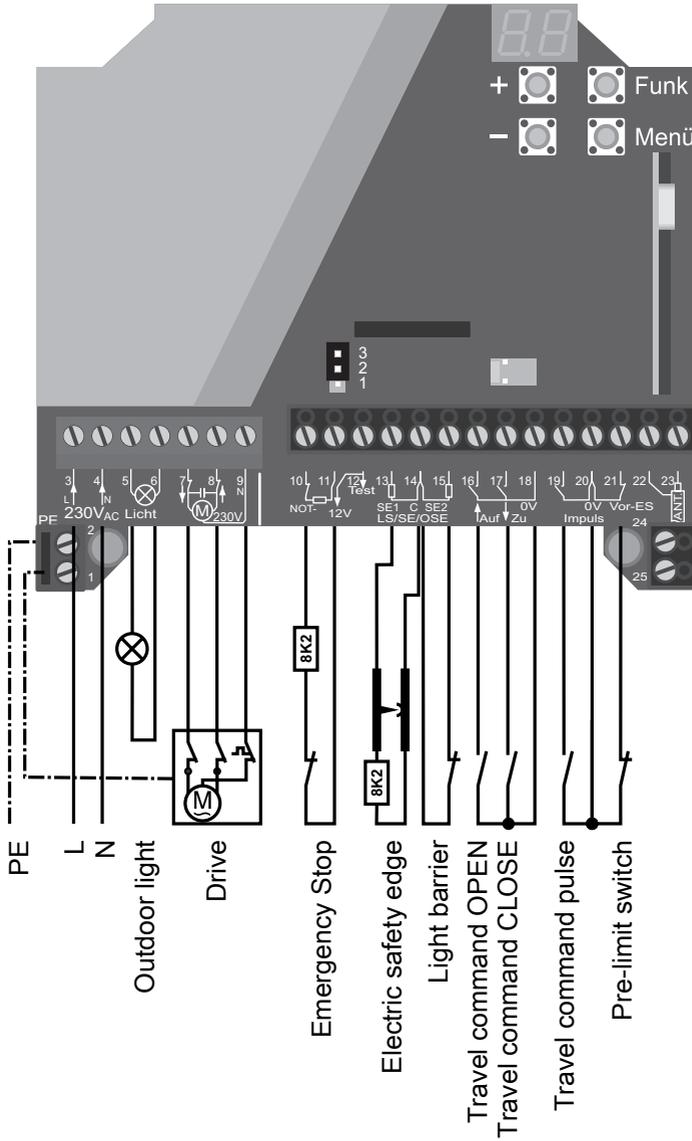
Error no.	Description of error	Comment / measure
01	EEprom data	Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists, the saved menu parameters are no longer correct. The control unit must be reset (item Reset / factory setting) and readjusted.
02	Motor current detection	Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists, the motor current detection is faulty. The control unit must be replaced.
03	N-relay cutoff	Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists, a short-circuit has occurred in the N-relay. The control unit must be replaced.
04	OPEN/CLOSE relay	Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists, a short-circuit has occurred in the OPEN or CLOSE relay. The control unit must be replaced.
05	Watchdog test	Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists, there is an error in the control unit hardware. The control unit must be replaced.
06	ROM test	Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists, there is an error in the controller hardware. The control unit must be replaced.
07	RAM test	Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists, there is an error in the controller hardware. The control unit must be replaced.



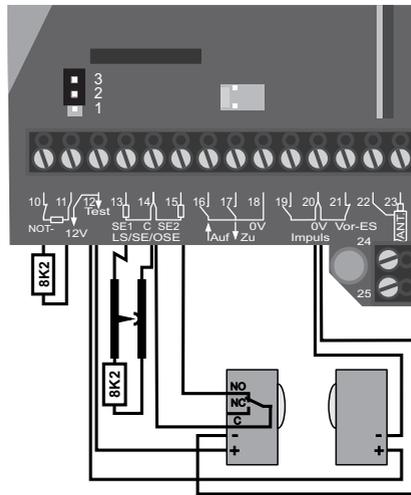
Error no.	Description of error	Comment / measure
08	LS / SE1 (internal testing)	<p>Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists:</p> <p>a) Check setting [M.A2] when the closing edge safety device is connected.</p> <p>b) Check connection of the closing edge safety device, especially earth connection at terminal [KI. 14].</p> <p>c) If a) and b) are correct, an error possibly exists in the control unit hardware. The control unit must be replaced.</p> <p>i The door can be operated in emergency mode.</p>
09	LS / SE2 (internal testing)	<p>Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists:</p> <p>a) Check setting [M.A4] with regard to connected closing edge safety device.</p> <p>b) Check connection of the closing edge safety device, especially earth connection at terminal [KI. 14].</p> <p>c) If a) and b) are correct, an error possibly exists in the control unit hardware. The control unit must be replaced.</p> <p>i The door can be operated in emergency mode.</p>
10	LS / SE1 (external testing)	<p>Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists:</p> <p>a) Check setting [M.A2] (external LS test) with regard to connected light barrier.</p> <p>b) Check connection of LS transmitter in accordance with item Safety input SE1 (LS / 1k2 / 8K2 / OSE).</p> <p>c) If a) and b) are correct, an error possibly exists in the control unit hardware. The control unit must be replaced.</p> <p>i The door can be operated in emergency mode.</p>

Error no.	Description of error	Comment / measure
11	LS / SE2 (external testing)	<p>Switch off operating voltage, wait 10 s, switch operating voltage back on. If the error message persists:</p> <p>a) Check setting [M.A4] (external LS test) with regard to connected light barrier.</p> <p>b) Check connection of LS transmitter in accordance with item Safety input SE2 (LS / 1k2 / 8K2 / OSE).</p> <p>c) If a) and b) are correct, an error possibly exists in the control unit hardware. The control unit must be replaced.</p> <p>i The door can be operated in emergency mode.</p>
20	SE1	The last door operation was stopped via an SE1 command.
21	SE2	The last door operation was stopped via an SE2 command.
22	EMERGENCY STOP	The last door operation was stopped via an EMERGENCY STOP command.
23	Pre-limit switch	The pre-limit switch was actuated without SE1 being actuated within 2 s.

Complete connecting diagram



Electric safety edge and light barrier connecting diagram, 12V

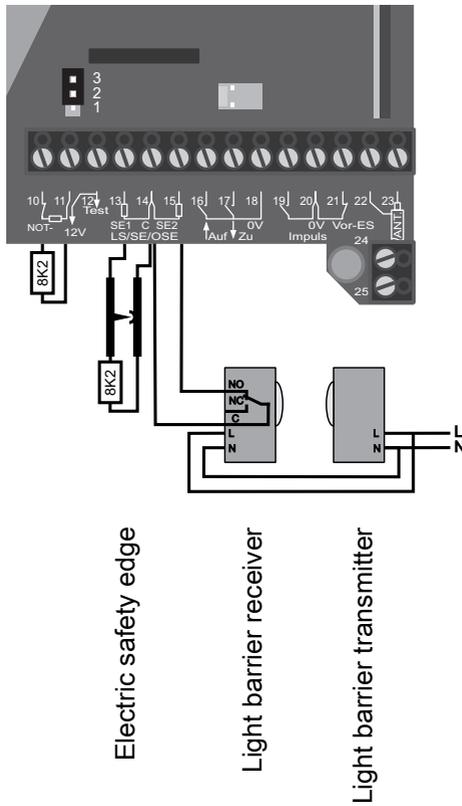


Electric safety edge

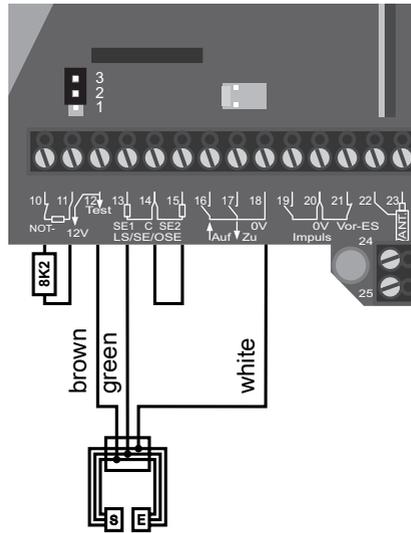
Light barrier receiver

Light barrier transmitter

Electric safety edge and light barrier connecting diagram, 230V



Safety edge OSE connecting diagram



Technical data

Dimensions of the housing (W x H x D)	155 x 130 x 50 mm
Housing material	PC
Degree of protection	IP54, only for installation indoors
Supply voltage	230 V / 50 Hz (connection type Y)
Input power	6 V A
Fuse	5 A slow-blow Si3, 5 x 20 mm
Drive switching capacity	1 drive 230 V / 50 Hz maximum 500 V A
Light switching capacity	230 V / 50 Hz maximum 250 V
Control voltage	12 V maximum 300 mA
Temperature range	-20°C.....+50°C
Radio frequency	40.685 MHz
Weight	approx. 0.5 kg (without connecting cable)

Declaration of conformity

BECKER-ANTRIEBE GMBH
Friedrich-Ebert-Str. 2 – 4
35764 Sinn, Germany



BECKER

- Original -

EU Declaration of Conformity

Document No.: **5100 310 413 0**

We hereby declare that the following product series

Product designation: **Control unit**
Type designation: **Beck-O-Tronic 6**
Version: **Centronic, 40.685 MHz, 40.685 MHz S1**
From serial number: **from 235000001**

complies with the applicable regulations of the following Directives:

Directive 2006/42/EC (MD) L157, 09.06.2006
Directive 2014/53/EU (RED) L153, 22.05.2014
Directive 2011/65/EU (RoHS) L174, 01.07.2011

Furthermore, the safety objectives of the **Low Voltage Directive 2014/35/EU** as per Appendix I No.1.5.1 of Directive 2006/42/EC have been met.

Applied standards:

DIN EN 60335-1:2020
DIN EN 12453:2022
DIN EN 12978:2009
DIN EN 13849-1:2016
EN 300 220-1 V3.1.1
EN 301 489-3 V2.3.2

Although the control unit ensures that the maximum permissible operating forces in accordance with EN 12453 and EN 12445 are observed, this must be checked depending on which drive is used!

type-examination certificate

Registered no. IN-AT-AS-MRL 22-00108
Certification body: TÜV AUSTRIA SERVICES GMBH
Notified Body 0408

Authorised party for the compilation of the technical documentation:
Becker-Antriebe GmbH, Friedrich-Ebert-Str. 2 – 4, 35764 Sinn, Germany

This declaration of conformity was issued:

Sinn, 08.12.2023
Place, Date



Maik Wiegelmann, Managing Director

This declaration certifies compliance with the Directives cited but does not represent any assurance of characteristics. The safety warnings in the supplied product documentation must be observed!

CE BOT 6 Funk_ 5100 310 413 0 _en



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