Swing door drive unit

FD 10 (pilot series)

Mounting and operating instructions
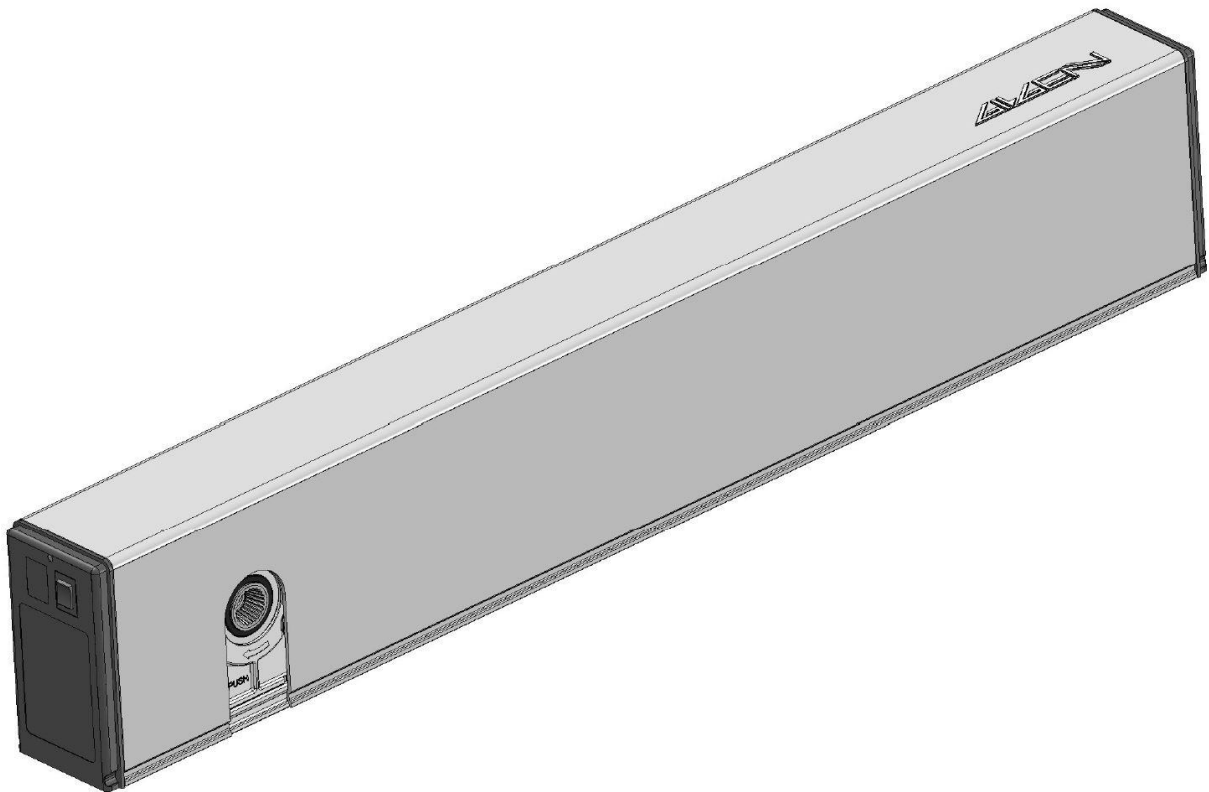
Com. no. ....   Pos. ....   Year of construction ....

Operator   ....

Operating place ....

Inhalt

1 Technical data FD 10

Drive mechanism	Standard
Power transmission	Normal rods Sliding rods
Dimensions of drive mechanism	Height 70 mm Width 730 mm Depth 125 mm
Weight of drive mechanism	8,2 kg
Ambient temperature	between -15...+50 °C
Use	may only be used in dry rooms max. relative humidity 85 %
Protection type	IP 40
Operating voltage	230 VAC (+10/-15 %), 50 Hz, 10/13 A
Power consumption of drive mechanism	max. 400 W
Motor power rating	100 W
Power supply external consumer	24 VDC (±10 %), 1,1 A
Permanent torque output shaft	56 Nm
Short-term torque output shaft	165 Nm
Distance door hinge – Output shaft	Lintel mounting 100mm (160mm GSD)
Lintel depth	Normal rods max. 250mm Sliding rods pl -50/+150 mm (pulling) ps -50/+150 mm (pushing)
Door opening angle	max. 105°
Door leaf weight	max. 150 kg
Door leaf width	EN 2...4 (751...1'100 mm)
Opening speed	2,4...20 s adjustable (max. 40°/s)
Closing speed	2,4...20 s adjustable (max. 40°/s)
Range of accelerating function (forceful closing) (without mains power)	approx. 10-15° (not adjustable)
Motor damping (without mains power)	within the range of the accelerating function (forceful closing) stepless adjustable (potentiometer)
Hold-open time	0...60 s
Hold-open time Night	0...180 s

2 Drawings

2.1 Normal rods RS pushing function / lintel mounting

Chassis profile

Opening for cable inlet

Lower edge door frame

Lintel depth

0...250
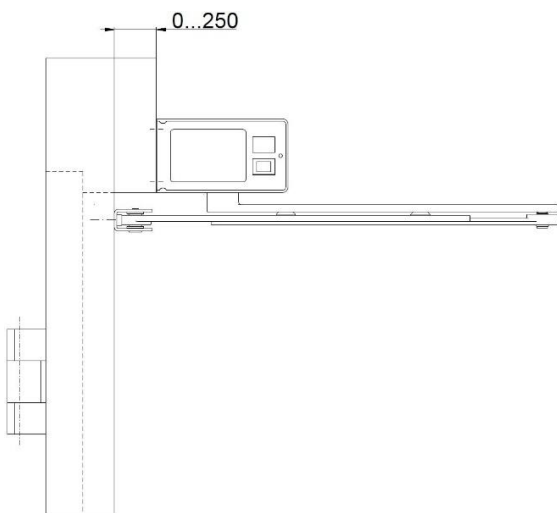
DIN right = as shown
DIN left = mirror-inverted

Option	Axle extension	*	**
Standard	none	10...18	36
0548-190	+10	10...28	46
0548-191	+20	10...38	56
0548-192	+30	10...48	66
0548-193	+40	10...58	76
0548-194	+50	10...68	86
=> adjust dimensions accordingly			

2.2 Sliding rods RG pulling function / lintel mounting
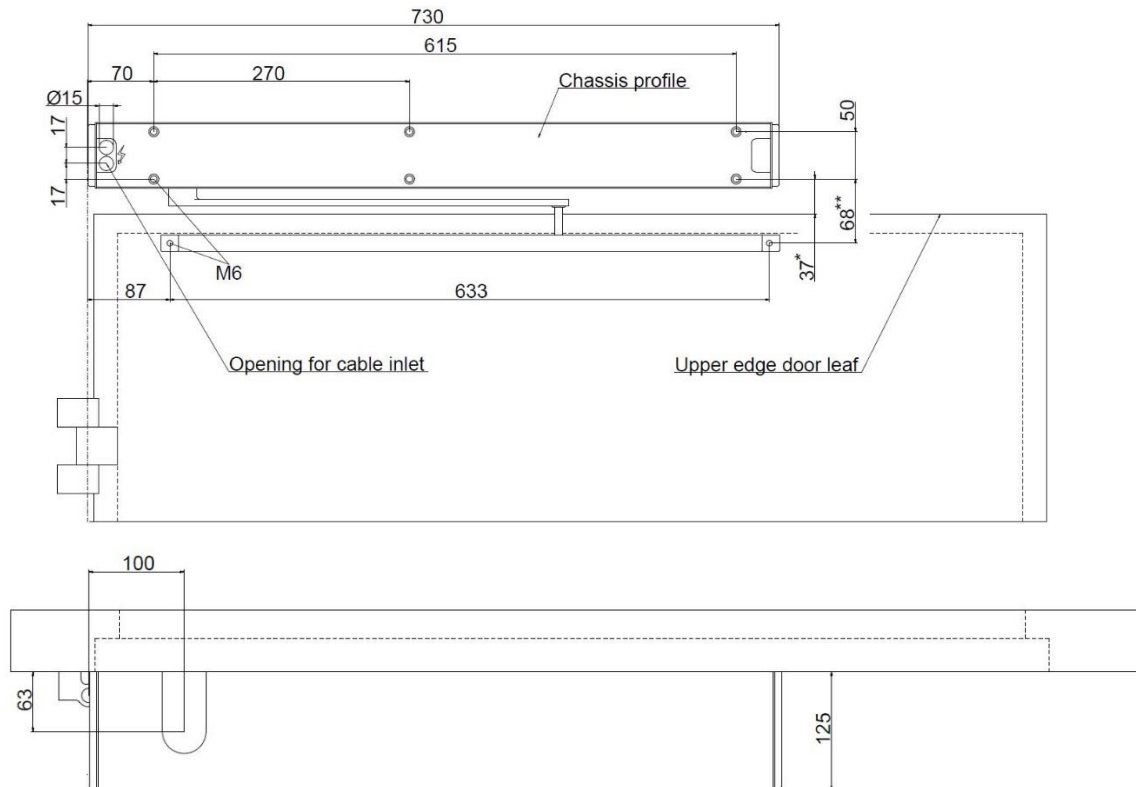
Lintel depth
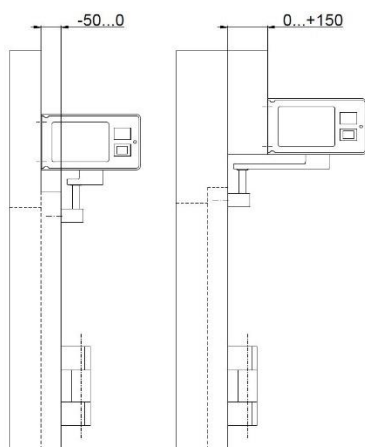
DIN left = as shown
DIN right = mirror-inverted

Note:
This illustration presents the sliding bolt 46mm. If necessary, the latter can be replaced by a sliding bolt 18mm, with the consequence that some measures will change (-28mm) and thus need to be adapted accordingly.

Option	Axle extension	*	**
Standard	none	33...59	68
0548-190	+10	33...69	78
0548-191	+20	33...79	88
0548-192	+30	33...89	98
0548-193	+40	33...99	108
0548-194	+50	33...109	118
	=> adjust dimensions accordingly		

Lintel depth [mm]	Max. door opening angle. [°]
0...50	105
51....100	100
100...150	95

2.3   Sliding rods RG pushing function / lintel mounting
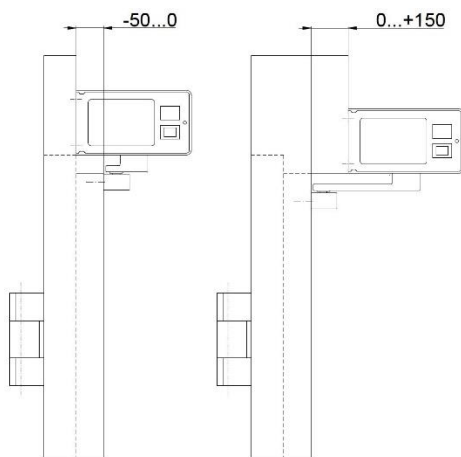
Lintel depth

DIN right = as shown
DIN left = mirror-inverted

Note:

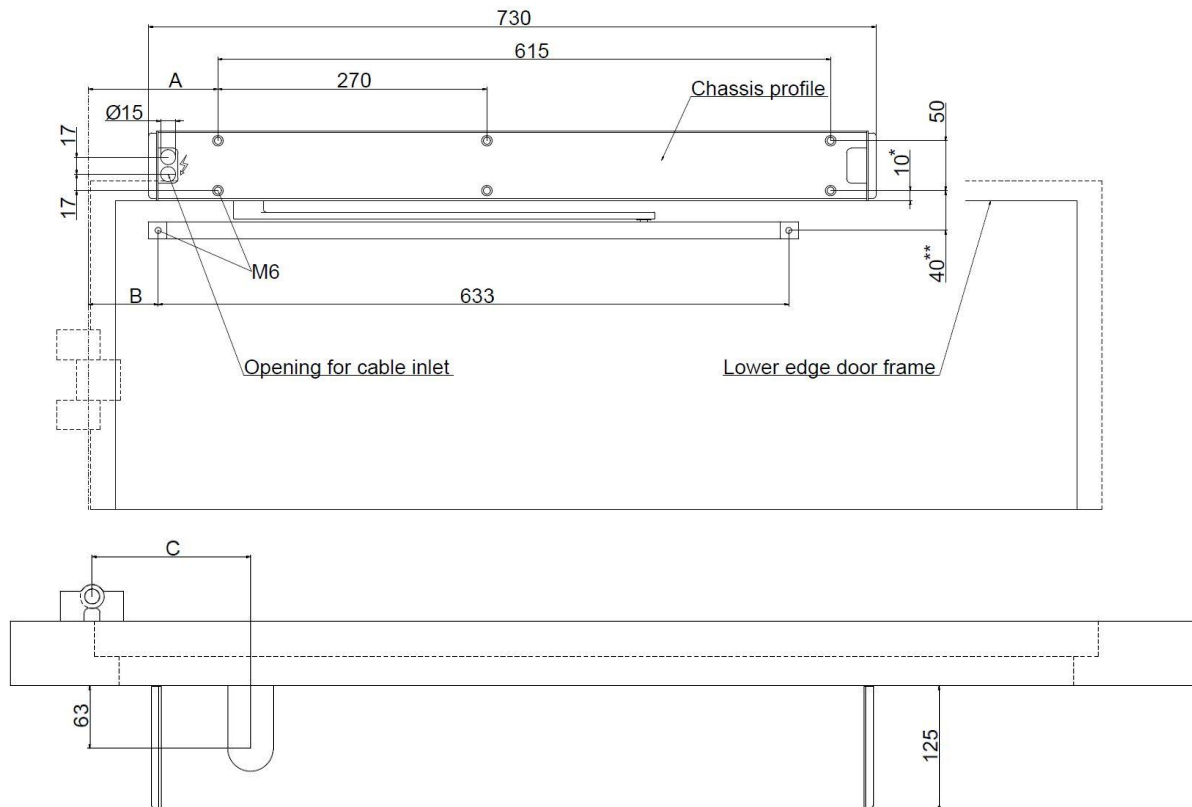This illustration presents the sliding bolt 18mm. If necessary, the latter can be replaced by a sliding bolt 46mm, with the consequence that some measures will change (+28mm) and thus need to be adapted accordingly.

Option	Axle extension	*	**
Standard	none	10...18	40
0548-190	+10	10...28	50
0548-191	+20	10...38	60
0548-192	+30	10...48	70
0548-193	+40	10...58	80
0548-194	+50	10.68	90
=> adjust dimensions accordingly			

Lintel depth [mm]	A [mm]	B [mm]	C [mm]	Max. door opening angle [°]
-50...30	130	70	160	105
31...50	130	60	160	105
51...80	140	50	170	105
81...100	150	50	180	105
101...120	150	40	180	100
120...150	160	30	190	95

3   Mounting

1. Mark and drill the fixing holes onto lintel and door leaf according to the respective drawing. The chassis can be used as a drilling template.
    Caution: Please pay attention to the orientation of the chassis profile! The fixing holes of the drive module must always be on the side facing the door hinge!

2. Fasten the chassis by means of six screws M6 to lintel.

Fixing holes drive module
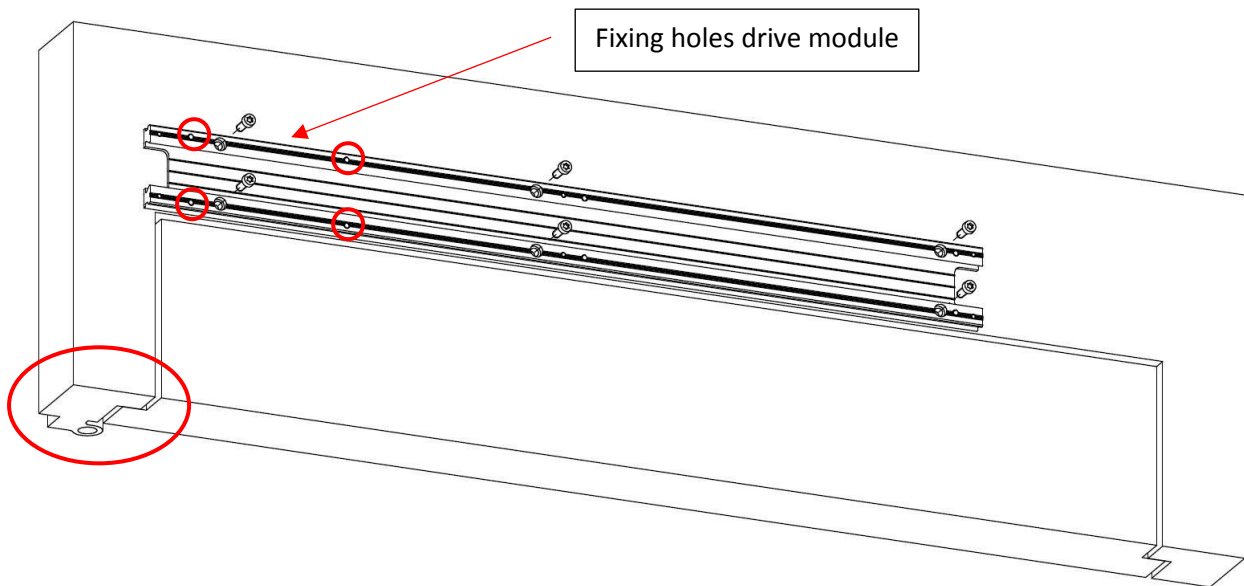
3. Fasten the drive module by means of four screws M5 to the chassis.
    Important: Please pay attention to the drive unit's sense of rotation!
    a. For normal rods and sliding rods with pushing function, the arrow with description ''PUSH'' points to the chassis.

PUSH
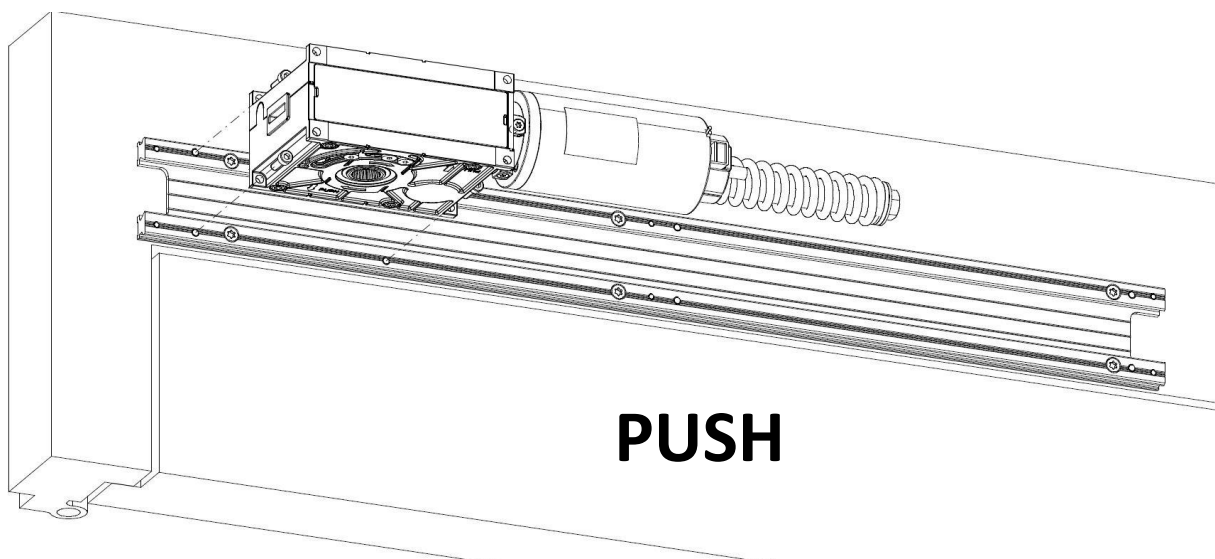
b. For sliding rods with pulling function, the arrow with description ''PULL'' points to the chassis.

PULL
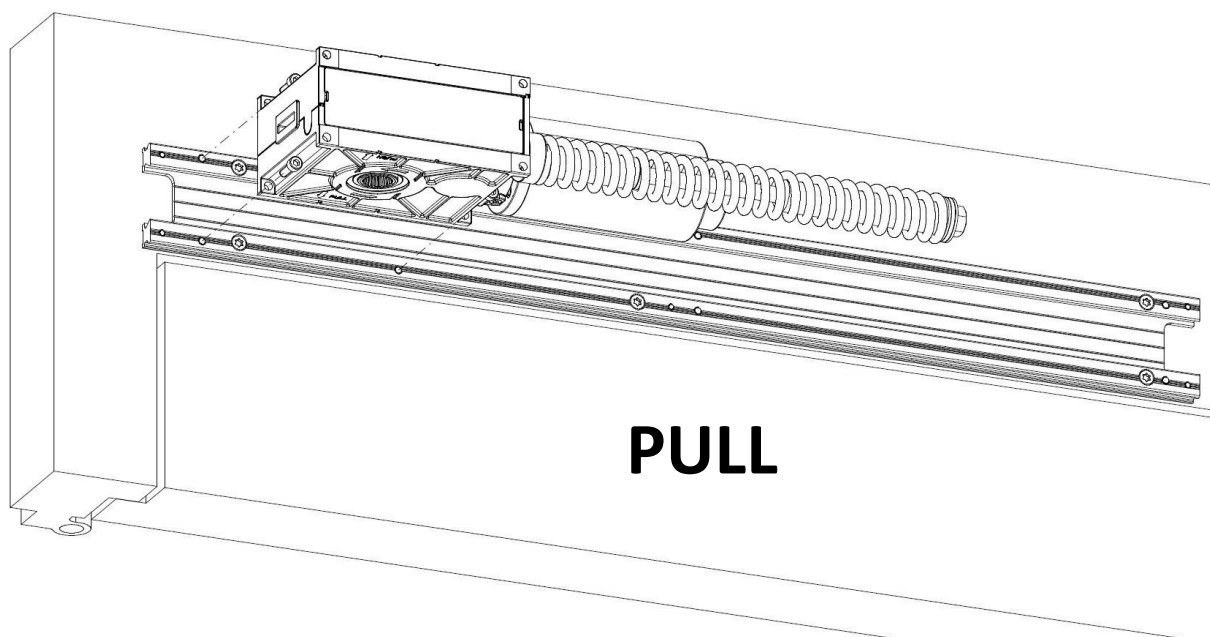
4. Route the reference switch cable, the mains cable and program switch cable (on the side cover) below the drive module.

5. Screw earth cable to chassis.

Serrated lock washer
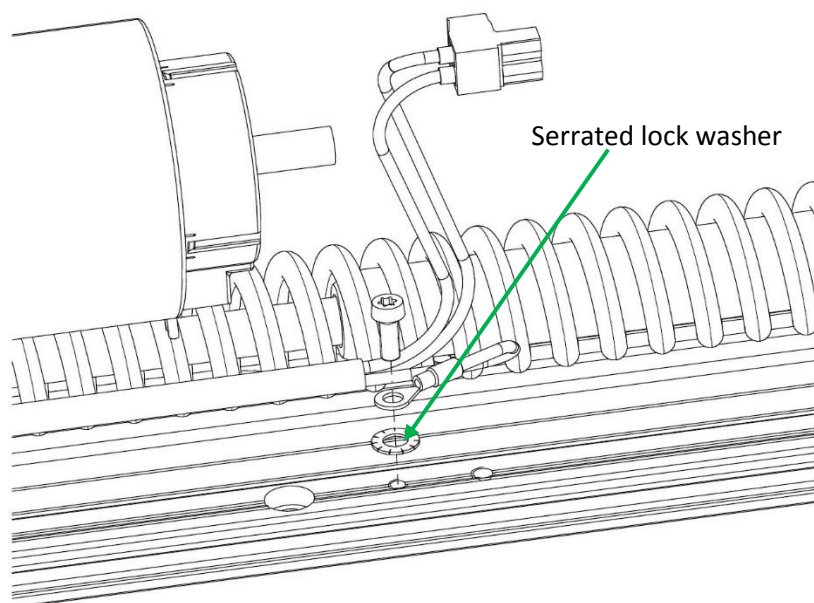
6. Screw the control unit on the chassis and connect it.
   a. Remove the front terminals to expose the mounting hole.
   b. Insert the Encoder cable, the reference switch cable and program switch cable into the control unit

Program switch cable
Encoder cable
Reference switch cable
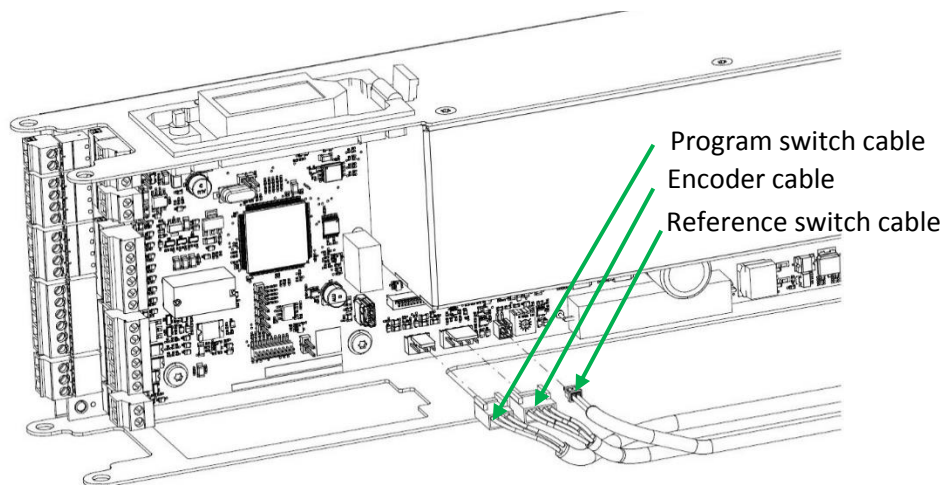
   c. Fasten the control unit by means of three screws M5 to the chassis.
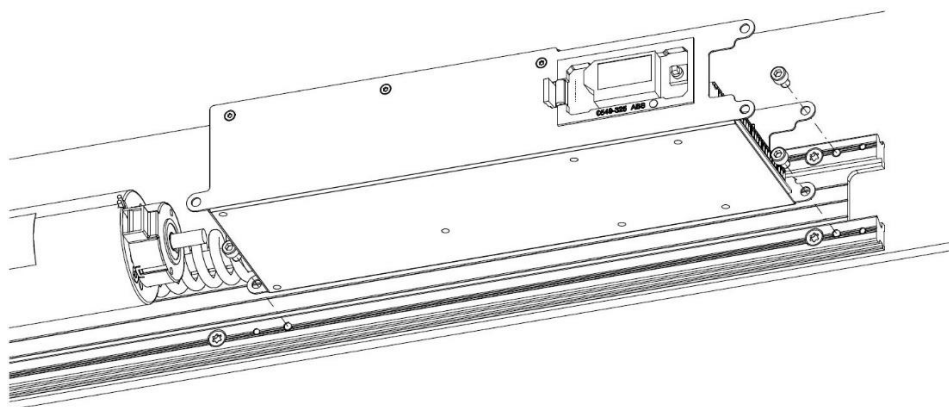
   d. For sliding rods with pulling function, first release the operating PCB of the control unit and slide it into the opposite cut-out
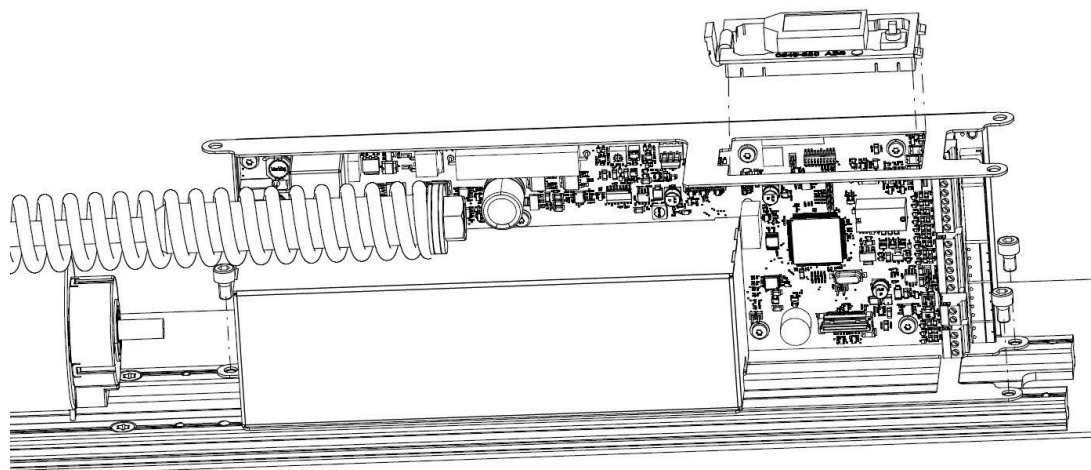
e. Connect motor and mains plug on the face side of the control unit.

High-voltage terminal block

Motor plug
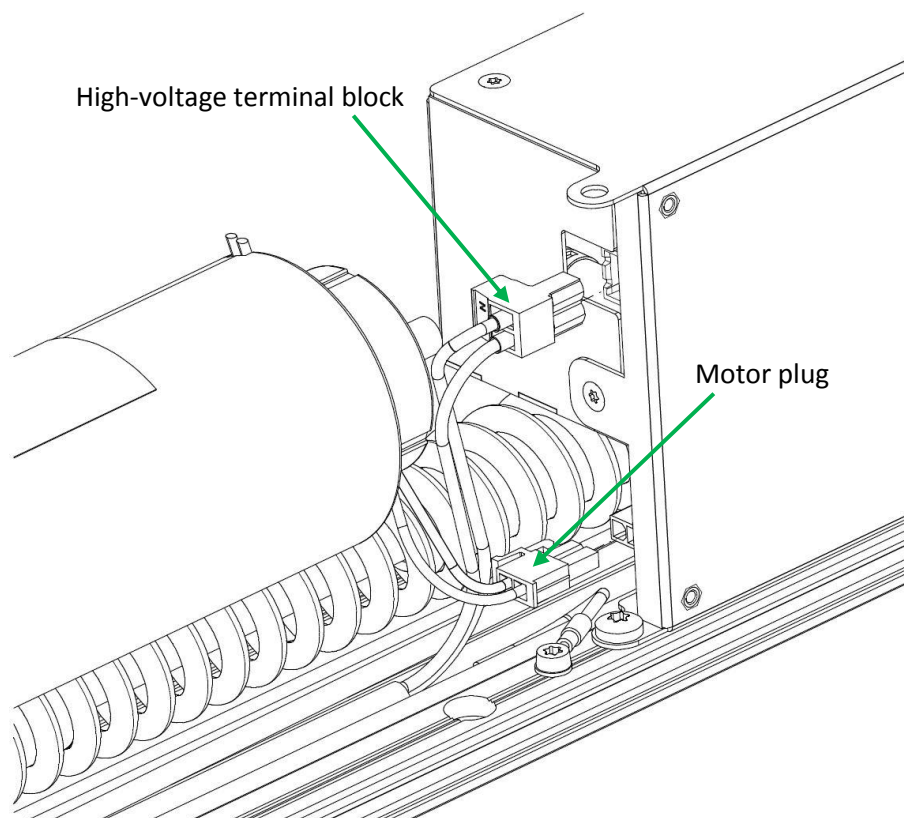
7. If required, route the cable for sensors, motor lock, button etc. below the drive module and the control unit and connect them.

8. Mount the selected rods according to drawing.

9. Adjust the open position stop piece
   a. Slightly loosen three screws (A) of the open position stop piece, but do not remove them. In case the stop piece (B) clamps, the latter can be loosened by giving a slight hit onto the screw heads.
   b. Open the door leaf to the desired maximum opening angle.
   c. Turn the stop piece till it stops and retighten the screws (6Nm).
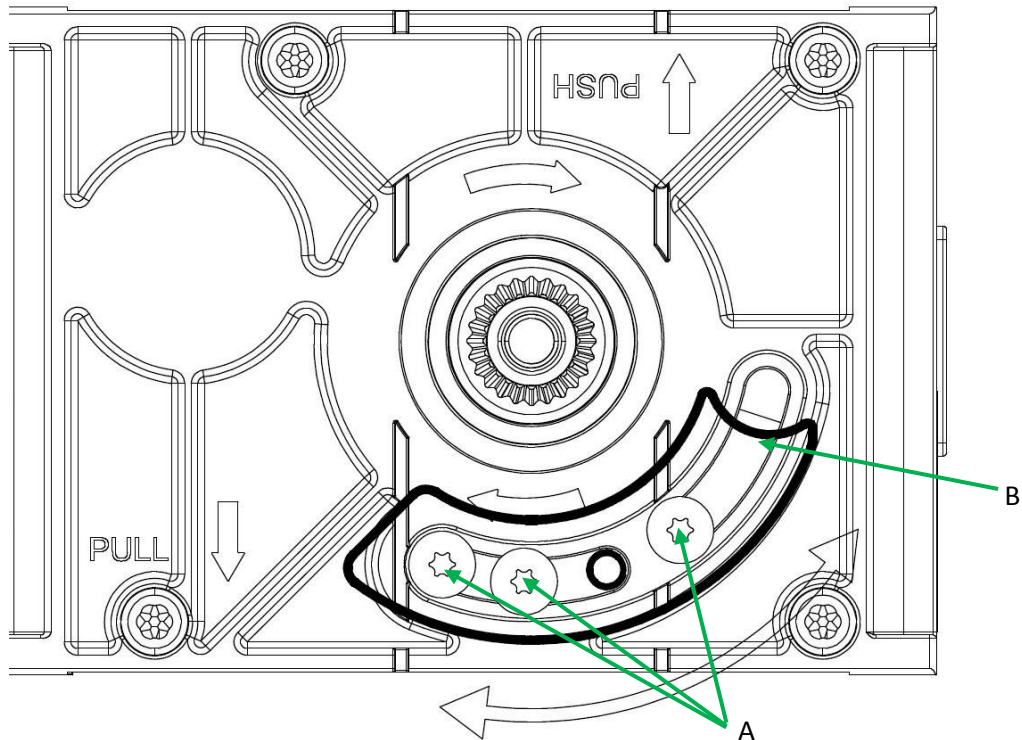
1. Open the door leaf and let it close by means of the drive. If required, adapt the spring prestressing, ideally by using a ratchet ring spanner SW17.
   Important: The motor damping must be active, respectively the motor cable must be inserted!
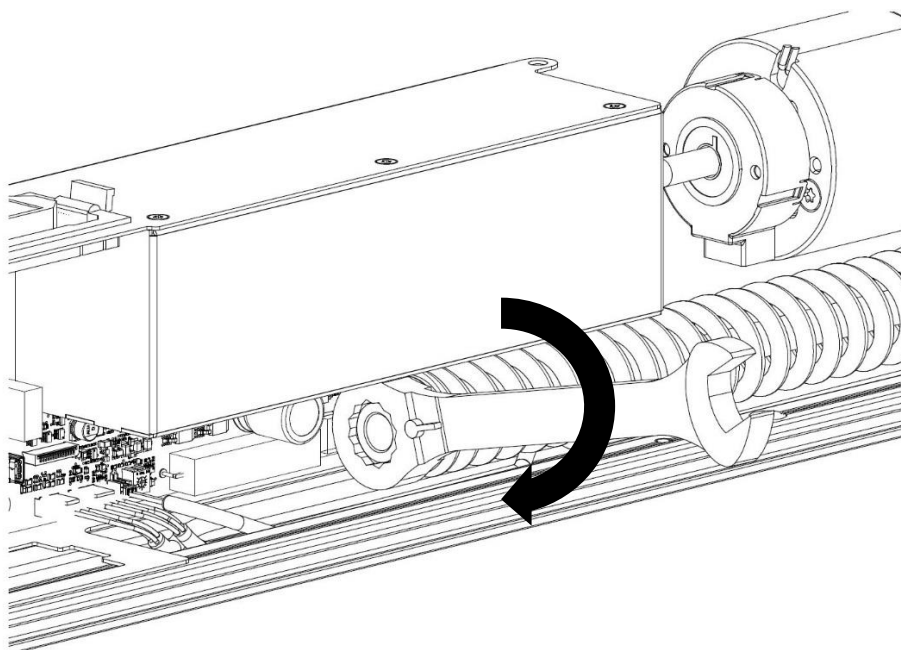
2. Connect the side covers
    a. Insert the power supply into the mains supply terminal
    b. Fasten the power supplies with the strain relief clip onto the side cover
    c. Insert mains cable into the mains supply terminal
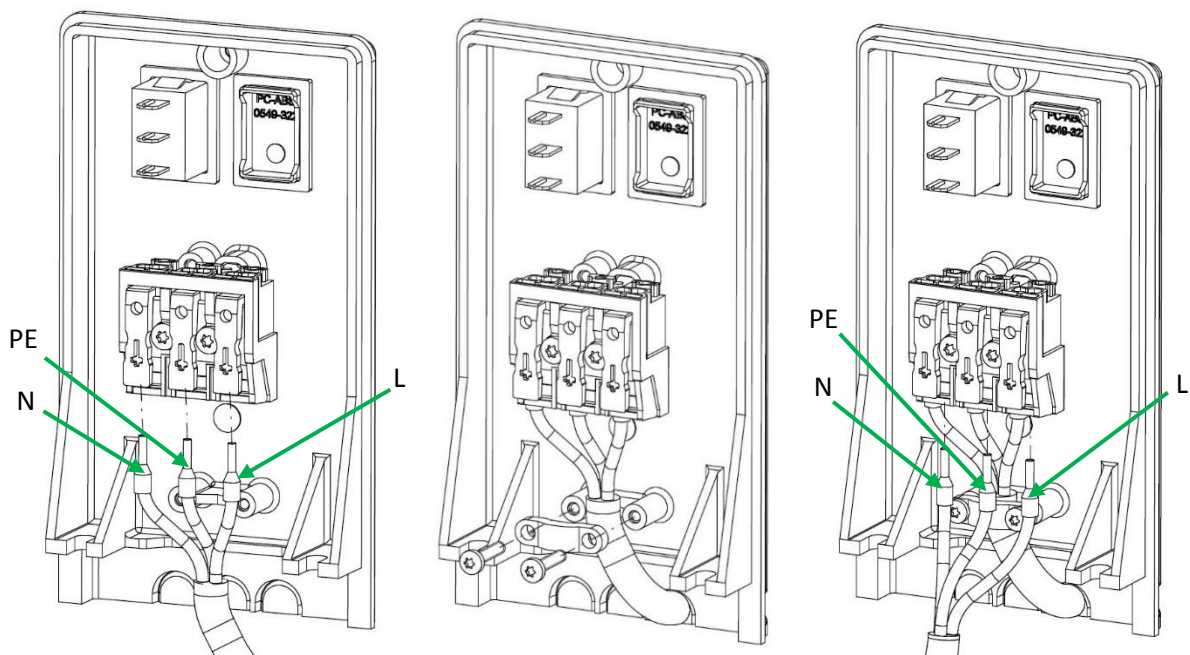
3. Fasten both side covers to the chassis.
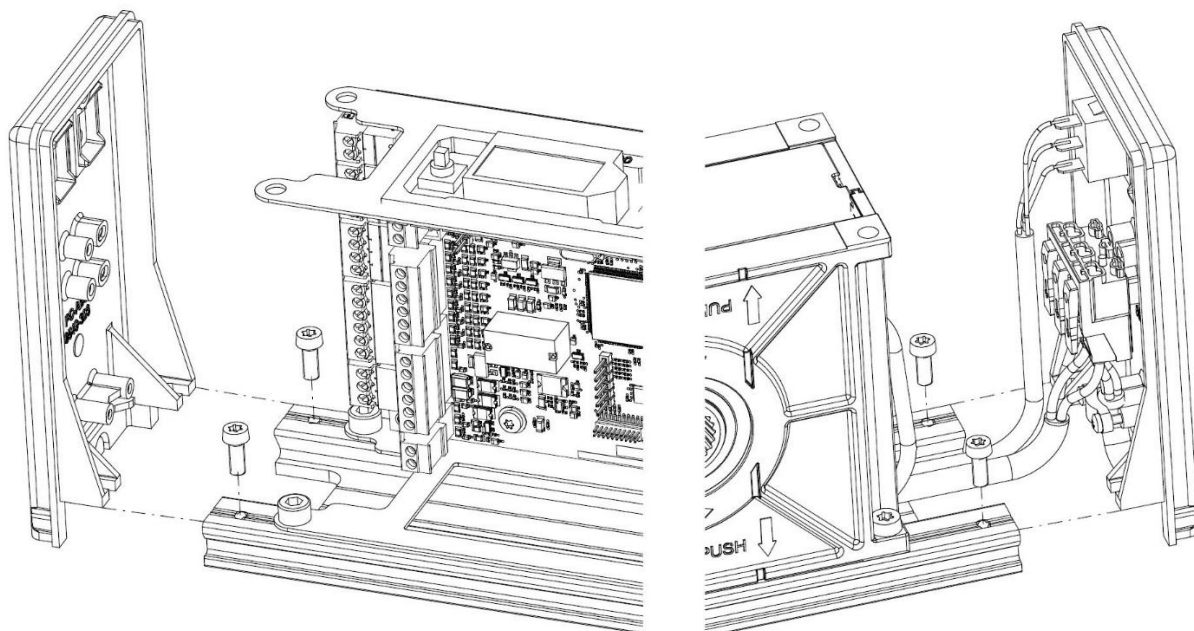
4. Take the drive unit into operation according to chapter 6.

5. Stick on the Gilgen-Logo and mount the covering (after commissioning)
   a. Degrease the glued surface on the covering
   b. Remove white sticker protective sheet (D).
   c. Affix the stencil (B) with the Logo (C) on the lower right corner of the covering and press on well.
   d. Remove transparent protective foil (A).
   e. Remove stencil (B).
   f. Mount the covering.
   g. Mount the covering completions.
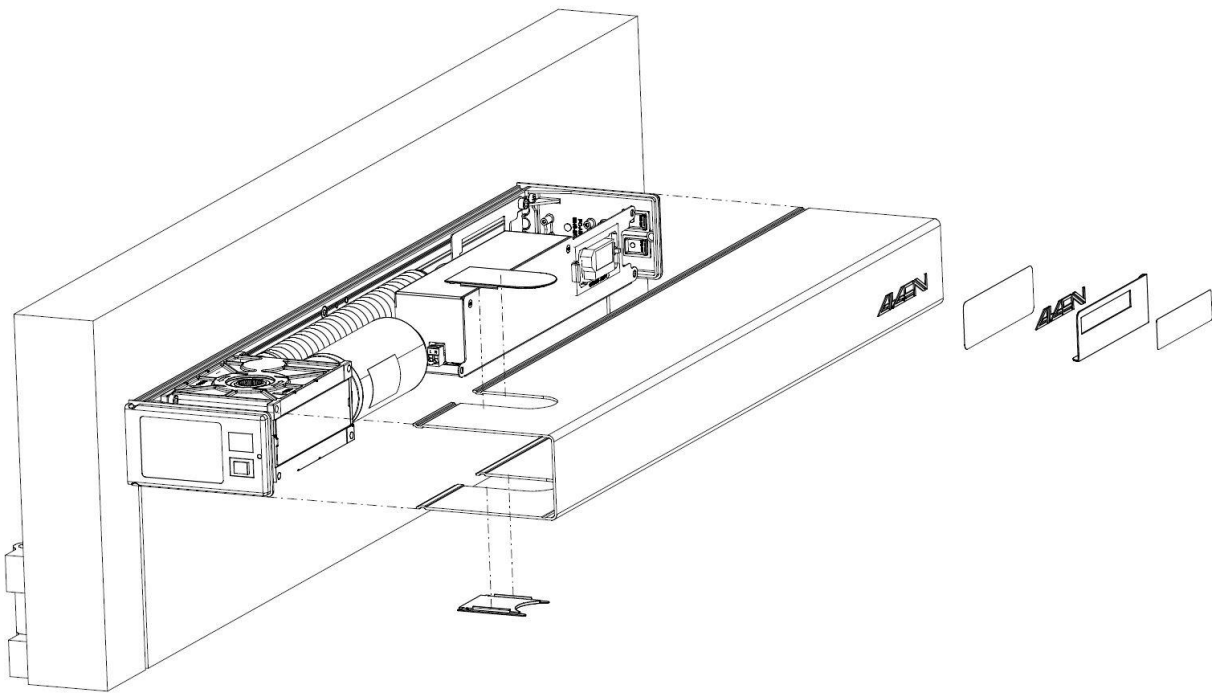
4 Automatic closing sequence control

For bi-parting installations, the closing sequence control determines the order in which the door leaves are opened and closed. For the opening procedure, the earlier leaf (Master leaf) is the first one to be opened, whereas for the closing procedure the delayed door leaf (Slave leaf) is the first one to be closed. This sequence ensures a correct overlapping of the door leaves.
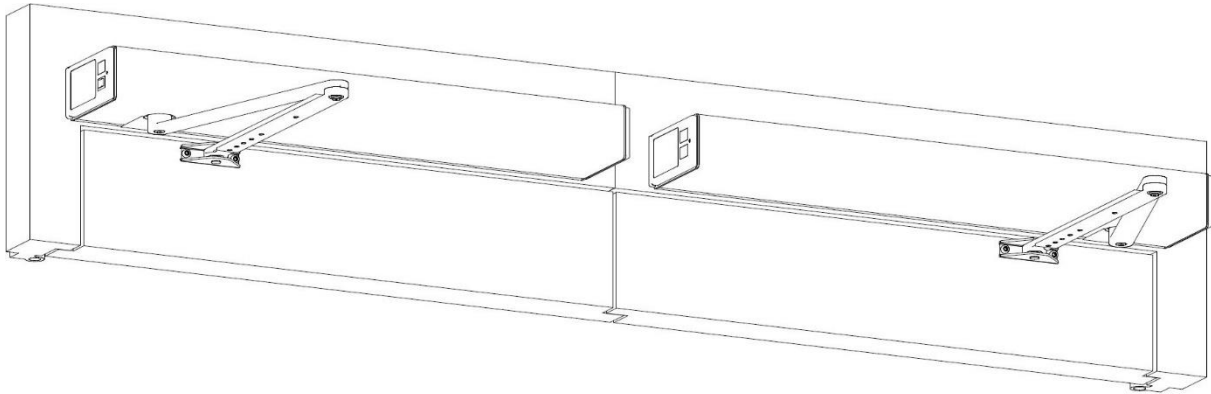
Connections:
Opening elements (KE, OEO and OEI) connected to Master only act upon the Master (single leaf operation). Opening elements connected to Slave act upon the Master as well as on the Slave (bi-parting operation).

The safety elements (SER and SES) are connected to the respective drive unit and are responsible for the respective door leaf.

An active EMCY element connected to the Master carries out the EMY-IN action configured on the Master (for both door leaves). An active EMCY element connected to the Slave switches the installation to operating mode MANUAL.

An electric lock, which locks the Master leaf, is connected to the Master. Accordingly, an electric lock, which locks the Slave leaf, is connected on the Slave.

Parameter:

See chapter 7

Procedure:

1.   Connect both control units by means of three-pole cable (terminal X109, CG/CL/CH)

> Note:
> The respective control and safety elements are connected to the corresponding drive unit.

2.   Take the Master drive unit into operation (see chapter commissioning).

3.   For the Master drive unit: Select the operating mode OPEN.

4.   Take the Slave drive unit into operation (see chapter commissioning).

5.   Configuration of the Master drive unit:
- DubleD = MastA
- AcSeq = desired time lag of the closing angle.

> Note:
> In cases where a mechanical closing sequence regulator is used, start with a AcSeq of 90°.

6.   Configuration of the Slave drive unit:
- DubleD = SlaveA
- AoSeq = desired time lag of the opening angle.

Control:

1.   Check the display of the Master control unit to see if a small black (m) is visible on the first level (connection existing). On the display of the Slave control unit, a small black (s) must be visible.

2.   Transmit a Key command to the Slave drive unit:
- The Master-drive unit is the first one to open, followed by the Slave drive unit
- The Slave drive unit is the first one to close, followed by the Master drive unit

5 Control

Programm flip switch

The drive unit is supplied with a built-in 3 stage flip switch in the side cover, which allows enabling the operating modes AUTOMATIC, MANUAL and OPEN.

Operating modes

The following operating modes can be enabled by means of the flip switch:

Program switch position :   1 = Automatic
                                   0 = Manual
                                   2 = Open

AUTOMATIC (position 1)

Automatic opening via the opening elements inside/outside + Key.
Automatic closing upon expiration of the adjustable hold-open time.

MANUAL (position 0)

The drive mechanism and the control elements are switched off.
The door leaf can be manually opened.
The door leaf is closed by spring power from any position.

OPEN (position 2)

The door leaf is automatically opened and remains in the OPEN position.

The following operating modes can be enabled only by means of terminals on the control unit (see wiring diagram):

EXIT

The door leaf can only be opened via the opening elements inside (OEI) and Key.

NIGHT

The door leaf can only be opened via the opening element Key (key-operated switch outside).

6 Commissioning

Warning:
During the setting-up procedure (which must only be carried out by experts), the safety devices (radar, sensors, ...) are switched off!
Before initiating the setting-up procedure, it is important to make sure that neither persons nor objects remain within the danger area of the moving door leaf, in order to avoid injuries or damages!

Procedure:

1. Switch on the drive unit (Power-up).

2. Using the joystick, adjust the display direction: Move the joystick downward once-> the display direction is switched to a readable position.

3. Programming the type of rods (Rod):
    Move the joystick to the left/to the right.
    Validate the correct type of rods by means of OK: In the rest position, shortly push in the joystick.

4. Adjust the distance dAxis (distance in cm between the rotation axis of the door hinges and the mounting level of the drive unit -> see illustration below).

    Note:
    dAxis is an approximate value. Depending on the installation situation, dAxis may have to be adapted.

5. Adjust the opening angle Ao and validate by means of OK.

    Attention:
    The steps 4 and 5 are influenced by the installation measures/ distance between the door hinges.
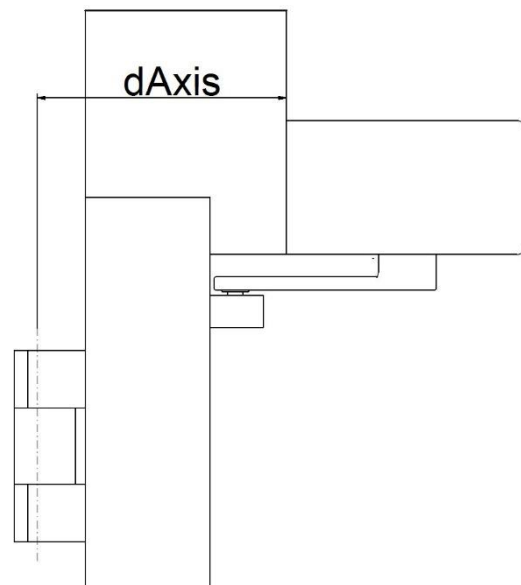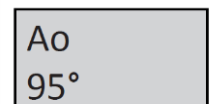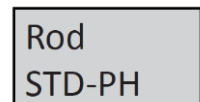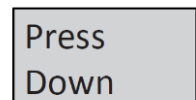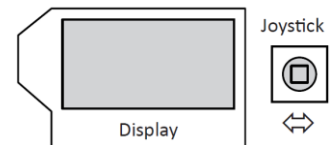
6.   Adjust the opening speed Vo and validate by means of OK.

| Vo |
| 6 |

7.   Adjust the closing speed Vc and validate by means of OK.

| Vc |
| 4 |

8.   Adjust the setting-up procedure (Teach) and validate by means of OK.

| Teach |

9.   Start the setting-up procedure (Teach): validate by means of OK.

| Teach |
| ok? |

10.   Upon expiry of 10 seconds the setting-up procedure (Teach) is automatically initiated (or by means of moving the joystick) During the setting-up procedure the drive unit gives an acoustic warning tone .

| Teach1 | |
| x | E10 |

            The following first learning run is carried out:

| Teach2 | |
| x | E10 |

            • Super-slow speed opening direction.
            • Super-slow speed closing direction.

11.   Upon completion of the first learning run the following message is displayed:

| Done ! | |
| x | E11 |

12.   The display should immediately supply the following information:

| >##< | |
| 🔑 | E11 |

13.   By means of an opening command, the second learning run is initiated

            The following second learning run is carried out:

            • Normal speed opening direction.
            • Normal speed closing direction.

☞   Note:
        The door leaf must not be obstructed!

      The display should now supply the following information:

| >##< |
| 🔑 |

The setting-up procedure (Teach) is now completed.

☞   Note:
        A renewed setting-up procedure (Teach) is required if:
        • the type of rods has been changed
        • the opening angle Ao has been changed
        • the Teach has been obstructed before reaching an opening angle of 20°
        • the distance between axles (dAxis) has been changed

7 Adjustments

The parameters can be changed on the control unit by means of the display and the joystick.
The movements of the joystick have the following effects:
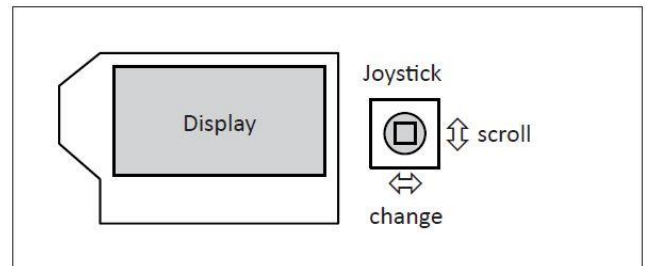
• Vertical joystick movement (upward/downward) -> Scroll through the displayed information.

• Horizontal joystick movement (to the left/to the right) -> Change the settings.

• Shortly press in the joystick in the rest position -> Validation OK.

7.1 Motion parameters (PARAMETER)

| Parameter	Description	Setting range	Default
Vo	Opening speed (velocity open)	0..14 (5…50°/s)	6
Vc	Closing speed (velocity close)	0..14 (5…50°/s)	4
TOEx	Hold-open time opening element inside/outside (time hold opening element inside/outside)	0...60 s	3 s
TKey	Hold-open time Key (time hold opening element Key)	0...180 s	5 s
TDelay	Starting delay (time delay lock)	0,0...4,0 s	0,2 s
FDelay	Relieving force during unlocking (force delay), only effective if TDelay is > 0	0,0...7,0 A	OFF
TLock	Door rectification time (time press close)	0,0...4,0 s	0,5 s
FLock	Pressing force during locking (force lock), only effective if TLock is > 0	0,0...7,0 A	2,0 A
FSlam	Accelerating function (force slam)	0...10	OFF
FWind	Obstacle detection optimized for exterior doors (force wind)	OFF OPEN CLOSE BOTH	OFF
Fo	Opening force (force open)	0...9	4
Fc	Closing force (force close)	0...9	4
Foh	Hold-open force (force open hold)	0...9	0
Fch	Interlocking force (force close hold) ⮕ automatically programs FLock and FDelay if these are 0	0,0...3,5 A	0
Ao	Opening angle of the door (angle open) If the opening angle is changed during the operating mode OPEN, the operating mode MANUAL needs to be selected for closing the door.	20...(190°) Rod dep.	95°
Rod	Type of rods (Rod) 　　　Normal rods pushing function 　　　Sliding rods pulling function 　　　Sliding rods pushing function	 STD-PH SLI-PL SLI-PH	STD-PH
dAxis	Distance between rotation axis of the door hinges and the mounting level of the drive unit (distance Axis). dAxis is an approximate value. Depending on the installation situation, dAxis may have to be adapted.	-8...+25 cm Rod depending	0/+8 cm Rod dep.

7.2 Configuration (CONFIG)

Parameter	Description	Setting range	Default
APuGo	Triggering angle Push&Go (angle push&go)	OFF, 2...10°	OFF
ASES	1) Suppression point Safety Element stop. If Ao is changed, ASES is automatically set to Ao.	45°...Ao	95°
ASER	2) Suppression range of the safety element reversing	0...60°	0°
SeOpCo	Persistent opening After a Safety Element Stop during the opening procedure, the door shall continue its opening move, as soon as SES is activated.	OFF ON	OFF
SeOpTi	Waiting time till the drive unit closes even if SeOpCo = ON closes, in the event that a fixed object blocks the doors (only visible if SeOpCo = ON)	PERMAN 1...60 s	20 s
SESClo	Safety element Stop activated/deactivated during the closing motion	ACTIVE INACTI	INACTI
EMY-IN	Configuration of the Emergency terminal (break contact)	CL-SPR (spring) STOP OPEN CL-MOT (motor)	CL-SPR
OExStp	Step-by-step control function	OFF OEI OEO KEY RADIO	OFF
RC 0.1	Parametrizable relay output 1 on optional PCB 1 (only visible if relay PCB 0 is plugged in)	CLOSED OPENING	CLOSED
RC 0.2	Parametrizable relay output 2 on optional PCB 1 only visible if relay PCB 0 is plugged in)	OPEN CLOSING	OPEN
RC 0.3	Parametrizable relay output 3 on optional PCB 1 only visible if relay PCB 0 is plugged in)	ERROR PSAUTO	ERROR
RC 0.4	Parametrizable relay output 4 on optional PCB 1 only visible if relay PCB 0 is plugged in)	PSNIGHT PSEXIT	GONG
RC 1.1	Parametrizable relay output 1 on optional PCB 2 (only visible if relay PCB 1 is plugged in)	PSOPEN PSMANU	OPENING
RC 1.2	Parametrizable relay output 2 on optional PCB 2 only visible if relay PCB 1 is plugged in)	GONG LOCKED	CLOSING
RC 1.3	Parametrizable relay output 3 on optional PCB 2 only visible if relay PCB 1 is plugged in)	SIX30S EMY_AL	PSAUTO
RC 1.4	Parametrizable relay output 4 on optional PCB 2 only visible if relay PCB 1 is plugged in)		LOCKED
Unlock	Impulse/permanent unlocking	IMPULS PERMAN	IMPULS
EL-Fb	Return signal of the electric lock N.O. -> Contact open if in the unlocked state (-), .closed if in the locked state (+) N.C. -> Contact open in the locked state (+), closed in the unlocked state (-)	OFF N.O. N.C.	OFF
LockAU	Operating mode AUTOMATIC locked (only visible if Unlock = Perman)	UNLOCK LOCK	UNLOCK
LockEX	Operating mode EXIT locked (only visible if Unlock = Perman)	UNLOCK LOCK	LOCK
LockMA	Operating mode MANUAL locked (only visible if Unlock = Perman)	UNLOCK LOCK	UNLOCK
LcdDir	Orientation of the display	0...1	0
MovCon	Endurance test Open/Close	OFF ON-FLT ON-PRM	OFF
OExMAN	Acceptance of opening commands after a manual door opening (only if APuGo = OFF)	OFF ON	OFF

7.3   Installation with multiple door leaves (Double Door)

Parameter	Description	Setting range	Default
DubleD	Closing sequence role (Master/Slave) and interlock side (A/B)	OFF MastrA SlaveA MastrB SlaveB	OFF
AoSeq	Current delay angle for opening sequence control (Slave) (only visible if DubleD is active)	0..110°	20°
AcSeq	Current delay angle for closing sequence control (Master) (only visible if DubleD is active)	0..110°	20°

8   Menu navigation

On the **1st level**, the following information is shown on the display:

1st display line:

The door position is represented by means of the arrows (><). Alternatively, the motion-relevant opening and safety signals are displayed. The double hash signs (##) indicate that the door is locked. In the open position the hold-open time is shown in the form of a countdown.

Display of the door position:

<REF?>	Waits for reference switch
< ?? >	Unknown
><	Closed
>##<	Closed and locked
<< >>	Opening
< >	Open
>> <<	Closing
==	Stopping

Display of the door control:

OEO	Opening element outside
OEI	Opening element inside
KEY	Opening element NIGHT
SES	Safety element Stop
SER	Safety element Reversing
SEF	Safety element Force (obstacle detection)
EMY	Emergency element
PUGO	Push-and-Go

2nd display line:

• at the bottom, left-hand side, the presently enabled operating mode is displayed (a frame around the symbol indicates the overriding operating mode).
• (m) means closing sequence - Master
• (s) means closing sequence - Slave
• (w) means interlock
• at the bottom, right-hand side, the presently active errors are displayed.
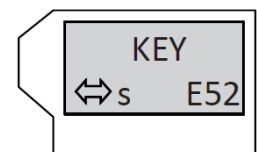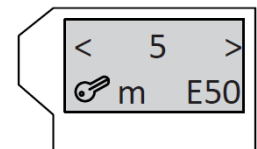
By means of OK you can switch over from the first to the second level.

For all the menus of the following list, exiting is possible by remaining on the OK key, or by means of the menu item ESC.

On the **2nd level**, the following menus are available:

8.1   PARAMETER

Setting the motional parameters
• A changed parameter value is shown by a flashing display.
Press OK in order to validate the change.

8.2   CONFIG

Setting the functionalities
• A changed parameter value is shown by a flashing display.
Press OK in order to validate the change.

8.3 DOUBLE DOOR

Setting the closing sequence and interlock function
• A changed parameter value is indicated by a flashing display.
Press OK in order to validate the change.

8.4 DIAGNOSTICS

Diagnostic tools
• K-I-O-R-S-E shows the inputs KEY (K), OEI (I), OEO (O), SER (R), SES (S), EMY (E).
  (+) stands for active, (-) for inactive.
• 5.1A 95° shows the motor current and the door opening angle.
• 37°C 25 65 indicates the presently measured temperature in the power electronics, completed
  by the minimum and the maximum values. OK causes a reset of the minimum and maximum values.
• Simulate Key: OK triggers a Key command.
• E-Lock: L- shows the status of Lock (L). FB- shows the input El-Fb. OK actuates the electric lock.
  L+ resp. FB+ means locked. L- resp. FB- means unlocked.
• HW-Version: Version of the Logic-PCB.
• SW-Version: Version of the Software.
• Cycles: Total number of openings (this value is memorized).

8.5 ERROR ACTIVE

Pending active errors
• The pending active errors are displayed in a list. This list is updated at the end and the latest
additions appear during the next passage.
A0 indicates the latest error that has occurred.
• Exit the list by pressing OK.

8.6 HISTOR ERROR

Formerly active errors
• H0 indicates the latest error that has occurred.

8.7 REINIT

Carry out a re-initialization
• PARAM Reset sets all the motional parameters back to the default values (inclusive opening
angle, rod assemblies, Invers and dAxis).
• CONFIG Reset sets all the configuration settings back to the default values.
• DOUBLE Reset sets all the closing sequence and interlock settings back to the default values.
• FACTOR Reset
The control unit is reset to the delivery configuration programmed by the manufacturer.
This means that all the motional parameters, configurations, closing sequence and interlock
settings are reinitialized with the default settings.
• Reset OK? is validated by means of OK and aborted by any other joystick movement.

8.8   BLOCK/UNBLOC

Lock/unlock the joystick
• BLOCK
Lock the joystick. For a temporary unlocking, press OK for more than 1 second.
60 seconds after the last joystick actuation, the joystick is automatically relocked.
• UNBLOC
Permanent unlocking of the joystick.

8.9   TEACH

• Teach OK? is validated by means of OK and aborted by any other joystick movement.
• The setting-up procedure can be canceled by means of the D-BEDIX (C-key).
Setting of the opening angle (Ao): During the first setting-up run, the drive unit moves to the open position (Ao) or up to the recommended open position stop piece, whichever event happens first, and the obtained result is memorized as opening angle. In the event of an excessively big difference between the actual opening angle and the displayed angle (in the diagnostic menu), this angle can be corrected (by means of dAxis).

9 Troubleshooting

STOP

Warning:
Electrocution hazard! Before working on any live elements, pull out the mains plug respectively switch off the main installation switch!
If a malfunction occurs which might be detrimental to the safety of the users, and which cannot be eliminated without delay, the operator must be informed and if required the installation shall be taken out of operation. The installation must be repaired as soon as possible.

☞ Note:
Every troubleshooting procedure which is carried out must be entered into the control booklet!

9.1 Drive mechanism

No.		Description	Cause	Elimination	Checking time	Reaction
E1	03	Encoder	Channels A+B lost	Check the encoder connection. Check the motor cable. The sense of rotation of the motor is not in compliance with the rod assembly. The door is blocked. Check if a jumper has been inserted on X106.	During run.	H
	04		Short-circuit A+B			
	05		Dysfunctions			
	06		Motor cable plugged in uncorrectly		Prior to start-up.	H
	07		No channel A			
	08		No channel B			
	09		No channel A+B			
	10		Short-circuit A+B			
E2	01	Motor current	Current too high	Check the motor cable. Check if a jumper has been inserted on X106.	Prior to star-up.	H
	02		Current too low Jumper missing			
E3	01	Cushioning	Test failed once	Switch the drive unit to the MANUAL operating mode and carefully check if the door closes in a cushioned manner. If not: replace the hardware. If yes: check/correct the friction of the door leaf and the prestressing of the closing spring.	Prior to the closing motion, after start-up, and subsequently every 24 h.	W
	02		Test failed twice. Damping defective.			F
E4	01	Reference switchr	Detected in the open position.	Check the connection and the switching point of the reference switch. The reference switch must be activated in the closed position (switching contact open).	Open position.	F
	02		Not detected in the closed position.		Prior to the first setting-up run.	A
	03		Not detected in open position.			
E5	00	Power limitation	Overload of the control. The maximum power is restricted.	Check/correct the friction of the door leaf and the pre-stressing of the closing spring.	Permanent.	A

9.2 Operating

No.		Description	Cause	Elimination	Checking time	Reaction
E10	01	Fullteach required	Parameter Ao, Rod, Invers or dAxis changed.	Carry out a teach.	Upon changing the drive unit configuration.	H
	02		Minimum opening angle has not been reached.	Check the locking/electric lock.	During Teach.	H
E11	01	Halfteach required (Opening)	Parameter Vo changed.	Carry out a complete and unhindered .opening cycle.	Upon changing the motional parameters.	W
	02	Halfteach required (Closing)	Parameter Vc or FSlam changed.	Carry out a complete and unhindered .closing cycle.		
E12	03	Excessively high current consumption during Teach in the open position (> 5 A)	Drive unit pushes against the open position stop piece or an obstacle. The spring tension is possibly too high.	Reduce the opening angle Ao. Reduce the spring tension.	Open position Teach 3 (E11).	F
E14	01	Locking/electric lock	The door leaf got caught in the locking/electric lock.	Check the function of the locking/ electric lock.	When opening from a closed position.	H
	02		The inverted operation has no locking, or the interlocking force Fch has not been programmed.	Program/increase the interlocking force Fch.	At the end of the teach-in procedure.	W
E15	01	Obstacle in opening direction	Too many successive obstacles have occured.	Examine the installation. Remove the obstacle. Move the door leaf to the target position.	Permanent.	H, A Restart after 60 s
	02	Number of obstacles within 60 seconds				

9.3 Safety elements

No.		Description	Cause	Elimination	Checking	Reaction
E20	01	SER Test	SER Test signal unsuccessful.	SER short-circuit to the earth. Check the cabling of the sensor or the jumper.	Prior to closing.	A
	02		SER too slow.	SER reacts too slowly. Check the cabling of the sensor. Check for polarity reversal/test signal.		
E21	01	SES Test	SES Test signal unsuccessful.	SES short-circuit to the earth. Check the cabling of the sensor or the jumper.	Prior to opening.	A
	02		SES too slow.	SES reacts too slowly. Check the cabling of the sensor. Check for polarity reversal/test signal.		
E22	01	EMY Test	EMY input on 24 V.	Check the jumper EMY. Check the cabling EMY.	Permanent	H

9.4 Feeding

No.		Description	Cause	Elimination	Checking time	Reaction
E30	01	30 V Error	30 V too low.	Mains failure, overload motor. Check the feed-in. Replace the hardware.	Permanent	A
	02		30 V too high.			
	03		Error upon switching-on.			
E31	01	24 V General	Error upon switching-on.	Overload, short-circuit 24 VDC onto terminals X101, X102 or X106 (Relay PCB).	Permanent	A Restart after 10s
	02		Over- resp. under-voltage.			
E32	01	24 V Safety	Over- resp. under-voltage.	Overload, short-circuit 24 VDC onto terminals X105 or X107.		
E33	01	24 V E-Lock	Error: Over- resp. under-voltage.	Overload, short-circuit 24 VDC onto terminal X108.		
	02		Premonition: Over- resp. under-voltage.			
E34	01	24 V CAN	Over- resp. under-voltage.	Overload, short-circuit external power supply CAN.		

9.5 System

No.		Description	Cause	Elimination	Checking time	Reaction
E50	01…99	System error	Unexpected hardware or software event.	Switch the drive unit off/on. Carry out a Factory Reset, carry out a Software Update, inform the manufacturer.	Permanent	W or H or F
E51	01…99					
E52	01…99					

9.6 Options

No.		Description	Cause	Elimination	Checking time	Reaction
E60	00	Relais PCB 0	Option PCB has been removed, its address changed or become defective.	Check if the option is provided. If defective: Replace or remove from the configuration.	Permanent	W
	10	Relais PCB 1				
	20	Radio PCB				

9.7 Closing sequence

No.		Description	Cause	Elimination	Checking time	Reaction
E70	xx	CAN bus setting	CAN address xx existing twice.	Correctly define the role of the closing sequence.	Permanent	W
E71	01	CAN connection	No CAN connection	Plug in, check or replace the CAN cable. Check if all the CAN participants are switched on.	Permanent	W

10 Malfunction without error-no.

In some cases, it will be technically impossible to display an "irregular functioning" of the installation by a definite error number. An alleged error may by all means also be due to "correct" causes.
For this reason the list shown hereafter has been established, which contains the probable or already encountered irregular functioning, their possible causes as well as the corrective action (error elimination) to be taken.

Malfunction	Analysis	Possible causes	Remedy
Drive unit fails to react: • No automatic opening. • No reaction on the control elements (side cover/D-Bedix).	• LED 5 V (green) on the control is not lighted.	Power supply voltage is missing.	• Measure the mains supply voltage, check its cabling and eliminate any detected deficiencies.
Drive unit fails to open.	• LED SE (safety element, yellow) is lit. • Determine the active safety element via the diagnostic level.	One or more safety elements are active or incorrectly cabled.	• Remove the obstacle. • Check the cabling between the safety element and the control unit, and eliminate any detected deficiencies. • Replace the safety element.
	• LED SE (safety element, yellow) is not lighted. • LED OE (opening command, blue) reacts to the opening element. • Determine the opening element via the diagnostic level.	Depending on the enabled operating mode, the opening commands (inside/ outside, etc.) are ignored.	• Change the operating mode. • Correct the cabling of the opening elements.
	• LED SE (safety element, yellow) is not lighted. • LED OE (opening command, blue) is not lighted despite the active opening element.	The opening command is not evaluated.	• Check the cabling between the opening element and the control unit and eliminate any detected deficiencies. • Replace the opening element.
Drive unit fails to close.	• LED SE (safety element, yellow) is lit.	One or more safety elements are active or incorrectly cabled.	• Remove the obstacle. • Check the cabling between the safety element and the control unit and eliminate any detected deficiencies. • Replace the safety element.
	• LED SE (safety element, yellow) is not lighted. • LED OE (opening command, blue) is lit.	An opening command is pending.	• Check the cabling between the opening element and the control unit and eliminate any detected deficiencies. • Replace the opening element.
	• Check the operating mode.	The operating mode OPEN is active.	• Change operating mode.
The operating mode cannot be changed.	• The program switch in the side cover fails to react.	Program switch cable is not plugged in.	• Check the cable and eliminate any detected deficiencies.
	• The operating mode symbol on the display is underlined.	The operating mode is overridden via connection terminal X110.	• Change the operating mode by means of the external program selector switch. • Correct the cabling of the external program selector switch.
Prior to commissioning: During manual opening, the door leaf encounters an important resistance and closes at high speed.		The motor connector plug is not connected.	• Plug the motor connector plug into the socket