



TSA 160 NT

Valid for variants:

TSA 160 NT F

TSA 160NT F-IS

TSA 160NT Invers

TSA 160 NT Z

TSA 160 NT Z-Invers

EN Wiring diagram

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Symbols and illustrations

Warning notices








Warning notices are used in these instructions to warn you of property damage and personal injury.

- ▶ Always read and observe these warning notices.
- ▶ Observe all the measures that are marked with the warning symbol and warning word.

Warning symbol	Warning word	Meaning
	DANGER	Danger for individuals. Non-compliance will result in death or serious injuries.
	WARNING	Danger for individuals. Non-compliance can result in death or serious injuries.
	CAUTION	Danger for individuals. Non-compliance may lead to minor injuries.

Further symbols and means of representation

Important information and technical notes are highlighted to explain correct operation.

Symbol	Meaning
	means "important information" ; Information on avoiding material damage, understanding a concept or optimising workflows
	means "additional Information"
	Symbol for an action: This means you have to do something. ▶ If there are several actions to be taken, keep to the given order.
	Conforms to DIN 18650 / EN 16005 Symbol in a table or in information concerning safety sensors.
	Does not conform to DIN 18650 / EN 16005 Symbol in a table or in information on sensors that do not correspond to DIN 18650 / EN 16005.
	Fire protection door Symbol for fire protection door
	Not permissible for fire protection door Symbol "Not permissible for fire protection door"

Validity

Valid for units with
Hardware: DCU500 Rev. D
Software: DCU5 V3.1

Product liability

In accordance with the manufacturer's liability for their products as defined in the German "Produkthaftungsgesetz" (Product Liability Act), the information contained in this brochure (product information and proper use, misuse, product performance, product maintenance, obligations to provide information and instructions) is to be noted and followed. Failure to comply releases the manufacturer from his statutory liability.

1 Notes

1.1 Important safety instructions

To ensure personal safety, it is important to follow these safety instructions.

- ▶ Keep these instructions.
- Only specialists who are authorised by GEZE are permitted to carry out installation, commissioning and maintenance.
- If unauthorised changes made to the system, GEZE cannot be made liable in any way whatsoever for any resulting damages.
- GEZE does not accept any warranty for combinations with third-party products. In addition, only original GEZE parts may be used for repair and maintenance work.
- Connection to the mains voltage must be carried out by a qualified electrician. Perform the power connection and equipment earth conductor test in accordance with VDE 0100 Part 610.
- ▶ Use an on-site automatic cut-out as the line-side disconnecting device, the dimensioning of which is matched to the type, cross-section, type of routing and ambient conditions of the on-site feeder. The automatic cut-out must have at least 6 A and max. 16 A.
- Attach safety stickers to glass door leaves, mat. no. 081476.
- ▶ In accordance with Machinery Directive 2006/42/EC, a safety analysis is to be performed and the door system marked in compliance with CE Marking Directive 93/68/EEC before the door system is commissioned.
- Observe the latest versions of directives, standards and country-specific regulations, in particular:
 - ASR A1.7 "Directives for doors and gates"
 - EN 16005 "Power operated pedestrian doorsets – Safety in use – Requirements and test methods"
 - DIN 18650, Part 1 and Part 2 "Automatic door systems"
 - "Guidelines for hold-open systems"
 - DIN VDE 100-600 "Installation of low-voltage systems - Part 6 Tests"
 - DIN EN 60335-2-103 "Household and similar electrical appliances - Safety; Particular requirements for drives for gates, doors and windows"
 - Accident Prevention Regulations, in particular BGV A1 (VBG1) "General Regulations" and BGV A3 (VBG4) "Electrical Installations and Resources"

Swing door drive as a hold-open device in accordance with DIN 18263-4

- The hold-open function of the swing door drive must be cancelled in the event of a fire alarm, fault or manual triggering, the lock latch release (electric strike according to fail-secure principle) must be disabled and all the signal transmitters for opening the door leaves must be switched ineffective.
- The swing door drives may only be used on single-leaf and double-leaf doors if the door frame or, as the case may be, the passive leaf of the double-leaf doors is equipped with an electric strike that releases the lock latch and/or unlocks a safety catch with a spring-loaded latch.

1.2 Installation information

- The drive is designed exclusively for use in dry rooms.
- ▶ Use only the cables specified on the cable plan provided. Cables must be shielded in compliance with the wiring diagram.
- ▶ Always use insulated wire-end ferrules for wire cores.
- ▶ Insulate wires that are not used.
- ▶ Secure loose, internal drive cables with cable ties.
- ▶ Observe the maximum permitted overall current drain required to supply the periphery.

1.3 Safety-conscious working

- ▶ Secure the workplace against unauthorised entry.
- ▶ Watch the swivelling range of long system parts.
- ▶ Secure the cover/drive/roller guide rail or link arm against falling.
- ▶ Before carrying out work on the electrical system, cut the voltage supply (mains and rechargeable battery) and check that no voltage is present. When an Uninterruptible Power Supply (UPS) is used, the system will still be under voltage even when disconnected from the mains.
- Risk of injury by moving parts (drawing in of hair, clothing, ...) when a drive is opened.
- Danger of injury caused by unsecured crushing, impact, drawing-in or shearing spots.
- Danger of injury due to sharp edges in the drive.
- Risk of injury due to glass breakage.
- Danger of injury through link arm or lever arm snapping back.
- Danger of injury when working at a great height.

1.4 Inspection of installed system

- ▶ Measures for checking safety and prevention of crushing, impact, shearing or drawing-in spots.
- ▶ Check the function of the presence sensors and movement detectors.
- ▶ Check the protective earth connection to all metal parts that can be touched.

1.5 Commissioning and service

- ▶ The values of parameter setting are only saved when the Service menu is closed.

1.6 Disposal of the door system

- The door system is made up of materials that should be sent for recycling.
For this purpose, the individual components should be sorted corresponding to material type:
 - Aluminium (profiles, cover, ...)
 - Iron (lever arm, link arm, screws, ...)
 - Plastic
 - Electronic components (electric strike, motor, control, transformer, sensors, ...)
 - Cables
- The parts can be disposed of at the local recycling depot or by a scrap recycling company.

2 Abbreviations

Wire colours

BN	brown	GN	green	OG	orange	TQ	turquoise
BK	black	GY	grey	PK	pink	VT	violet
BU	blue	YE	yellow	RD	red	WH	white

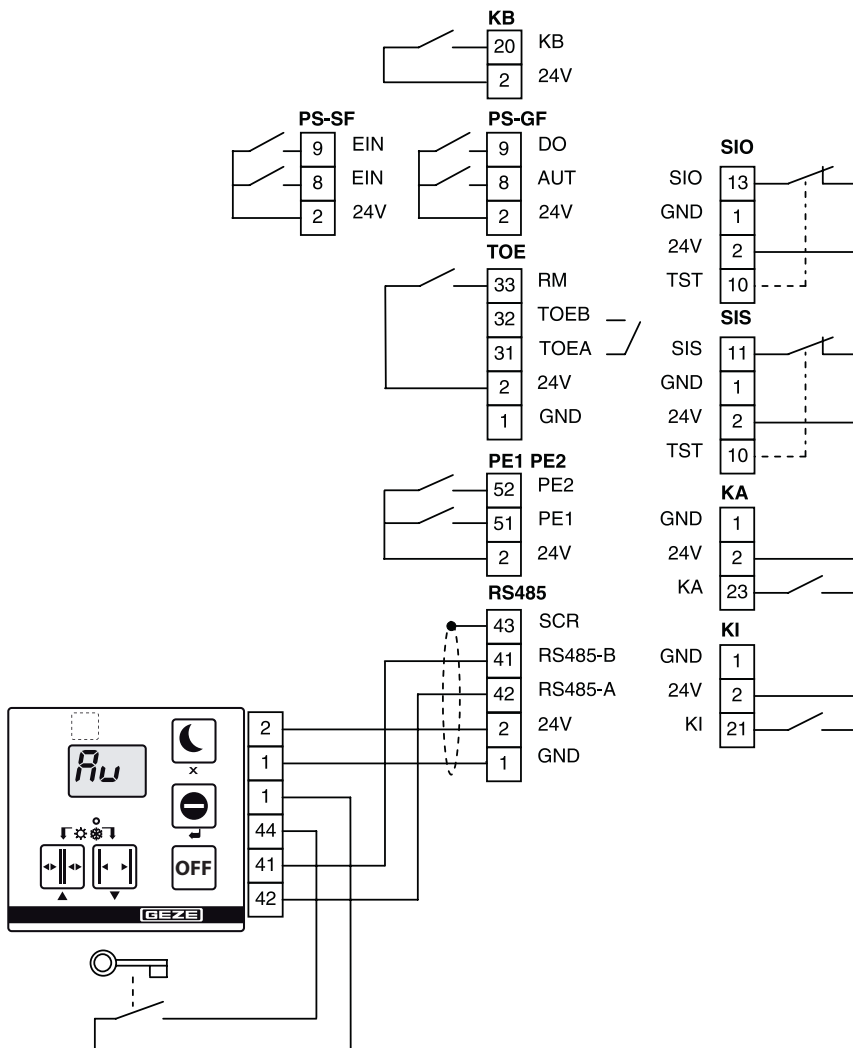
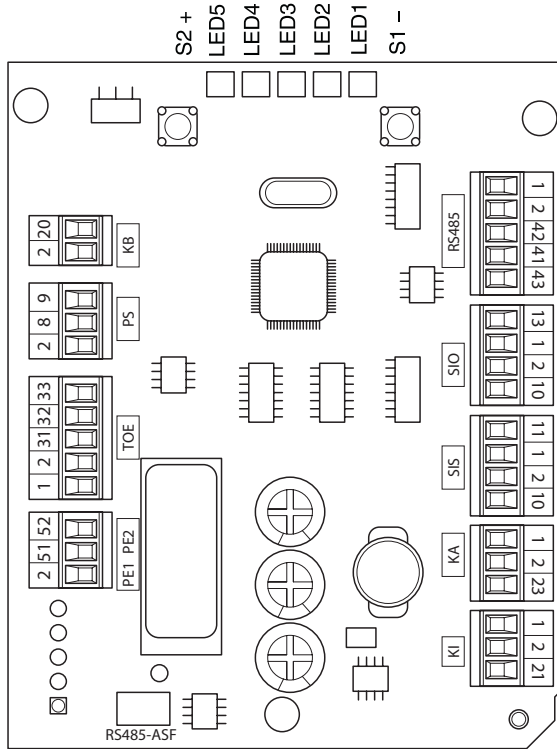
Connections, terminals and plugs

AU	Automatic	OL	Limit switch, open position
ASF	Activation, passive leaf	PEX	Programmable input (x = 1 or 2)
BS	Hinge side	PS	Programme switch
BGS	Opposite hinge side	RS485	Communication signal to DPS, TPS and second drive
DO	Hold open	SF	Passive leaf
DPS	Display programme switch	RES	Reset switch
ES	Limit switch and internal programme switch	RM	Bar message
GF	Active leaf	RSZ	Smoke switch control unit
GND	Ground	SCR	Screen
KA	Contact sensor outside	SO	Safety sensor, open
KB	Mechanical contact	SIS	Safety sensor, close
KI	Contact sensor inside	SL	Limit switch, closing position
LK	Luster terminal	STOP	Stop
LS	Shop closing	TOE	Electric strike
MPS	Mechanical programme switch	TPS	Key programme switch
MPS-D	Mechanical programme switch	TST	Test signal for safety sensors
MVT	Solenoid valve	WAB	Limit switch, wall blanking
NA	Night mode	24V	Supply voltage for external devices, max. 1.2 A
NTZ	Mains		
OFF	Off		

3 Electrical data

Mains voltage	230 V AC -15 %, +10 %
Frequency	50 Hz
Protection rating	I
Capacity rating	300 W
Mains connection	Fixed connection (installation cable)
Primary fuse	1.6 A (1-leaf drive) T4A (2-leaf drive)
Control voltage for external components	24 V DC \pm 10%
Output current control voltage 24 V	1200 mA permanently, 1400 mA briefly (5 s, duty rating 30 %)
Fuse protection	24 V short-circuit proof, switch-off at 1.6 A
Temperature range	-15...+50 °C
IP rating	IP20

4 Control



5 Safety sensor open and close

- ▶ In the case of 2-leaf systems connect the safety sensors of the active leaf with the active leaf control and those of the passive leaf with the passive leaf control.
- ▶ Install the sensor for monitoring closing on the door leaf, opposite hinge side.

The sensor for monitoring closing can also be used as a contact sensor outside or inside.

- ▶ Setting the parameters:
 - DPS: Set *F1* to *02* ("SIS and KI") or *03* ("SIS and KA").
 - ST220: Set "Signals", "Input signals", "SI1 – terminal SIS", "SI1 function" to "SIS and KA" or to "SIS and KI".
 - S1, S2: Set parameter 8 to 02 ("SIS and KI") or 03 ("SIS and KA").

If the SIS is activated during closing, the door reverses and opens again.

- TSA 160 NT:
 - If a closing position limit switch is connected, the SIS is blanked as soon as the closing position is reached (see chapter 11, "Configurable inputs", "Closing position limit switch").
 - Without closing position limit switch the SIS is only blanked 10 s after the closing process starts. If the SIS is activated within this time, the door opens.
- TSA 160 NT Invers:
 - The SIS is blanked directly after the closing position has been reached.
- ▶ Install the sensor for monitoring opening on the door leaf, hinge side.
- If the SIO is activated during opening, the door stops.
- At detection the sensor output is open (0 V applied to SIS or SIO input).
- 2-leaf doors:
 - Both door leaves stop when one of the two SIO sensors is activated, if the function "SIO Stop SF GF" is set in the configuration for the safety sensor open (SIO).
- ▶ Check function and correct setting of the sensors during commissioning and service.

To operate the display programme switch DPS see chapter 24.1, "Display programme switch (DPS)".

To operate the service terminal ST220 see chapter 23.2, "Operation of ST220".

5.1 Safety sensor GC 338



DIN 18650
EN 16005

-
- ▶ Follow installation instructions GC 338.
 - Accessories:
 - Spot finder(mat. no. 112321)

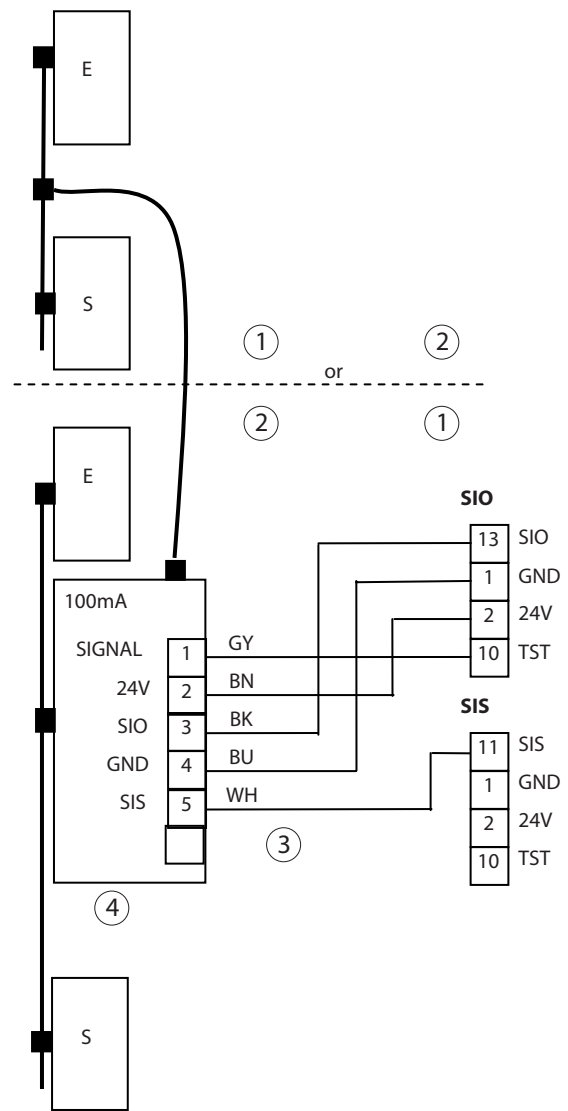


The connector plug of the GC 338 has 6 poles. Terminal 6 is not occupied.

-
- ▶ Set DIP switch 3 (TST/SBY) on the GC 338 interface module to ON (factory setting).
 - ▶ Setting the testing parameter:
 - DPS: Set *tE* to *01* (testing with 24 V).
 - ST220: Set "Output signals", "Testing SI" to "Testing with 24 V".
 - S1, S2: Set parameter 11 to 01 "Testing with 24 V".

5.1.1 Monitoring closing and opening

- ▶ Setting the parameter contact type:
 - DPS: Set *51* and *53* to *02* ("normally closed contact") (factory setting).
 - ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 contact type" to "normally closed contact" and "SI3 – terminal SIO", "SI3 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 7 and 9 to 02 "normally closed contact".
- ▶ Setting the function parameter:
 - DPS: Set *F1* to the desired function and *F3* to *05* (SIO stop) or *06* SIO stop SF GF).
 - ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 function" to the desired function and "SI3 – terminal SIO", "SI3 function" to "SIO stop" or "SIO stop SF GF".
 - S1, S1: Set parameter 8 to the desired function. Set parameter 10 to 05 "SIO Stop" or 06 "SIO stop GF".

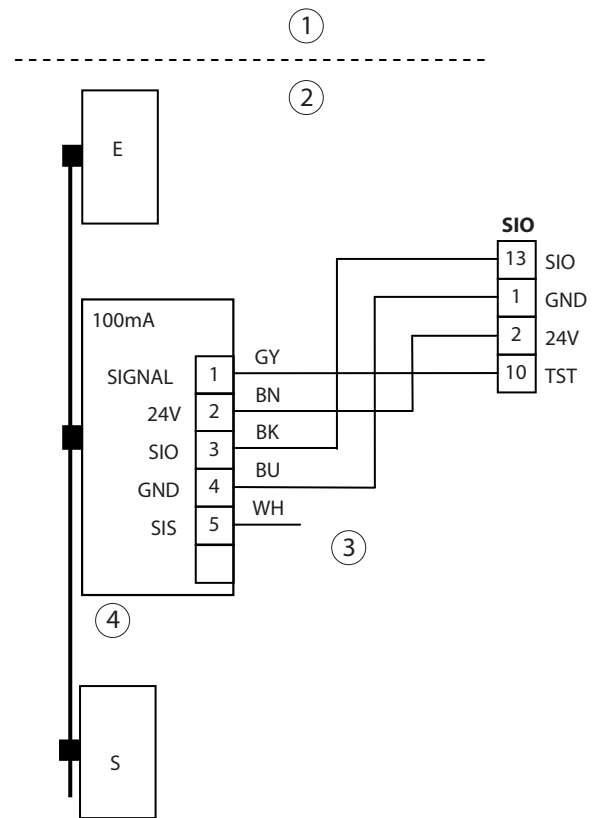


- 1 Opposite hinge side
- 2 Hinge side
- 3 Door transmission cable
- 4 GC 338 interface module

5.1.2 Monitoring opening

- ▶ **Setting the contact type parameter:**
 - **DPS:** Set **53** to **02** ("normally closed contact") (factory setting).
 - **ST220:** Set the "Input signals", "SI3 – terminal SIO", "SI3 contact type" to "normally closed contact" (factory setting)
 - **S1, S2:** Set parameter 9 to 02 "normally closed contact".
- ▶ **Setting the function parameter:**
 - **DPS:** Set **F3** to **05** (SIO stop) or to **06** SIO stop SF GF).
 - **ST220:** Set the "Input signals", "SI3 – terminal SIO", "SI3 function" to "SIO stop" or "SIO stop SF GF".
 - **S1, S1:** Set parameter 10 to 05 "SIO Stop" or 06 "SIO stop SF GF".

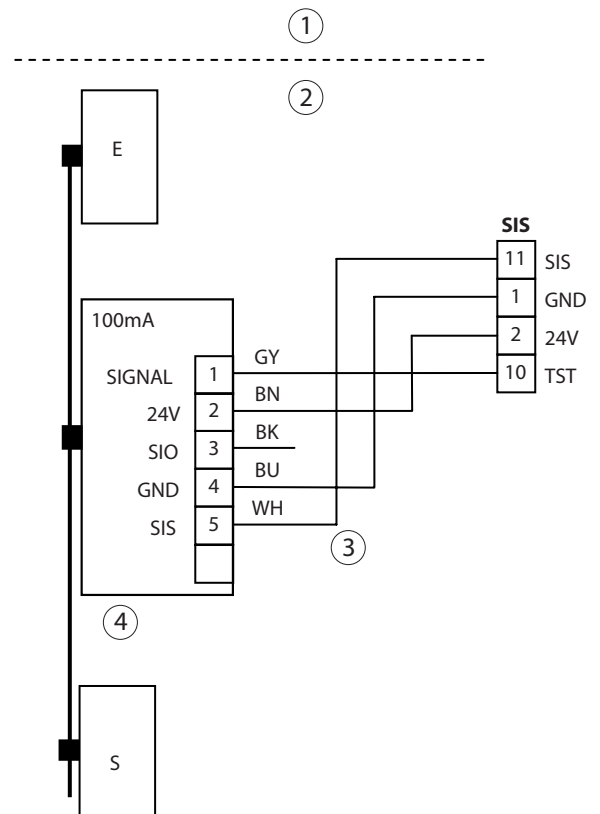
- 1 Opposite hinge side
- 2 Hinge side
- 3 Door transmission cable
- 4 GC 338 interface module



5.1.3 Monitoring closing

- ▶ **Setting the contact type parameter:**
 - **DPS:** Set **51** to **02** ("normally closed contact") (factory setting).
 - **ST220:** Set the "Input signals", "SI1 – terminal SIS", "SI1 contact type" to "normally closed contact" (factory setting).
 - **S1, S1:** Set parameter 7 to 02 "normally closed contact".
- ▶ **Setting the function parameter:**
 - **DPS:** Set **F1** to the desired function.
 - **ST220:** Set the "Input signals", "SI1 – terminal SIS", "SI1 function" to the desired function.
 - **S1, S1:** Set parameter 8 to the desired function.

- 1 Hinge side
- 2 Opposite hinge side
- 3 Door transmission cable
- 4 GC 338 interface module



5.2 Safety sensor GC 342



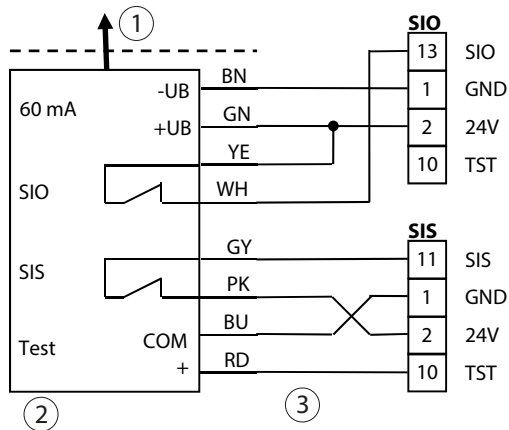
DIN 18650
EN 16005

- Safety sensor GC 342
- Follow installation instructions GC 342
- Accessories (optional):
 - Remote control, mat. no. 100061
 - For further accessories see installation instructions GC 342

Sensor position

- ▶ Install safety sensors on the door leaf as specified in the GC 342 installation instructions.
- ▶ Setting the testing parameter.
 - DPS: Set $\underline{4E}$ to $\underline{02}$ (testing with GND).
 - ST220: Set "Output signals", "Testing S1" to "Testing with GND".
 - S1, S2: Set parameter 11 to 02 "Testing with GND".

5.2.1 Monitoring closing and opening



- 1 GC 342 hinge side
- 2 GC 342 opposite hinge side
- 3 Door transmission cable

Settings GC 342

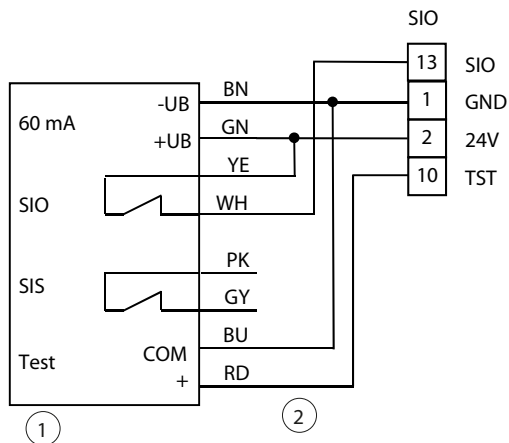


- See installation instructions GC 342.
- GEZE recommends using the optional remote control to change the sensor parameters.

Settings DCU5

- ▶ Setting the contact type parameter:
 - DPS: Set $\underline{51}$ and $\underline{53}$ to $\underline{02}$ (normally closed contact) (factory setting).
 - ST220: Set the "Input signals", "S11 – terminal SIS", "S11 contact type" to "normally closed contact" and "S13 – terminal SIO", "S13 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 7 and 9 to 02 "normally closed contact".
- ▶ Setting the function parameter:
 - DPS: Set $\underline{F1}$ to the desired function and $\underline{F3}$ to $\underline{05}$ (SIO stop) or $\underline{06}$ (SIO stop SF GF).
 - ST220: Set the "Input signals", "S11 – terminal SIS", "S11 function" to the desired function and "S13 – terminal SIO", "S13 function" to "SIO stop" or "SIO stop SF GF".
 - S1, S2: Set parameter 8 to the desired function.
Set parameter 10 to 05 "SIO Stop" or 06 (SIO stop SF GF).

5.2.2 Monitoring opening



- 1 GC 342 hinge side
- 2 Door transmission cable

Settings DCU5

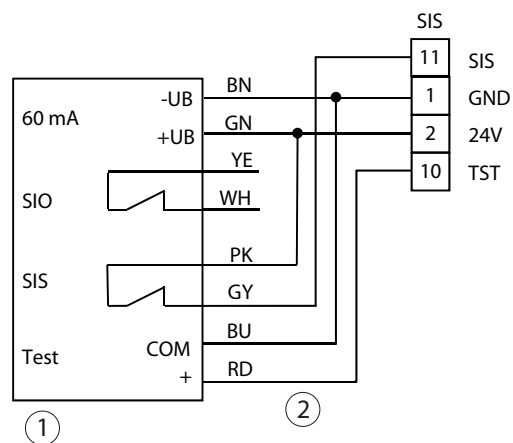
▶ Setting the contact type parameter:

- DPS: Set **53** to **02** (normally closed contact) (factory setting).
- ST220: Set the "Input signals", "SI3 – terminal SIO", "SI3 contact type" to "normally closed contact" (factory setting).
- S1, S2: Set parameter 9 to 02 "normally closed contact".

▶ Setting the function parameter:

- DPS: Set **F3** to **05** (SIO stop) or **06** (SIO stop SF GF).
- ST220: Set the "Input signals", "SI3 – terminal SIO", "SI3 function" to "SIO stop" or "SIO stop SF GF".
- S1, S2: Set parameter 10 to 05 "SIO Stop" or 06 (SIO stop SF GF).

5.2.3 Monitoring closing



- 1 GC 342 opposite hinge side
- 2 Door transmission cable

Settings DCU5

▶ Setting the contact type parameter:

- DPS: Set **51** to **02** (normally closed contact) (factory setting).
- ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 contact type" to "normally closed contact" (factory setting).
- S1, S2: Set parameter 7 to 02 "normally closed contact".

▶ Setting the function parameter:

- DPS: Set **F1** to the desired function.
- ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 function" to the desired function.
- S1, S2: Set parameter 8 to the desired function.

5.3 Safety sensor GC 334

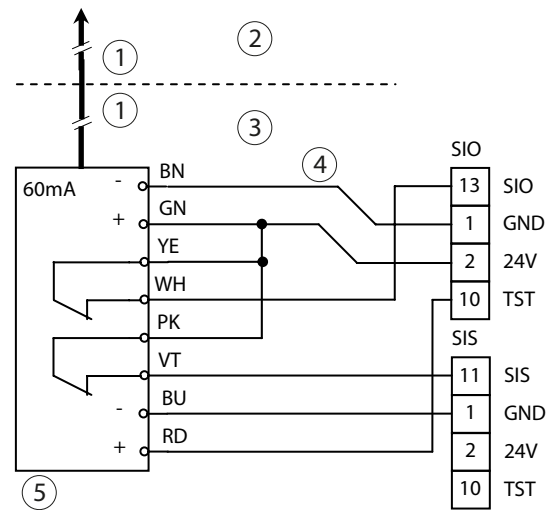


DIN 18650
EN 16005

- GC 334 module, mat. no. 126410
- ▶ Follow the installation instructions.
- ▶ Set testing:
 - DPS: Set \underline{EE} to $\underline{02}$ (testing with GND).
 - ST220: Set "Output signals", "Testing SI" to "Testing with GND".
 - S1, S2: Set parameter 11 to 02 "Testing with GND".
- Max. 6 modules in series

5.3.1 Monitoring closing and opening

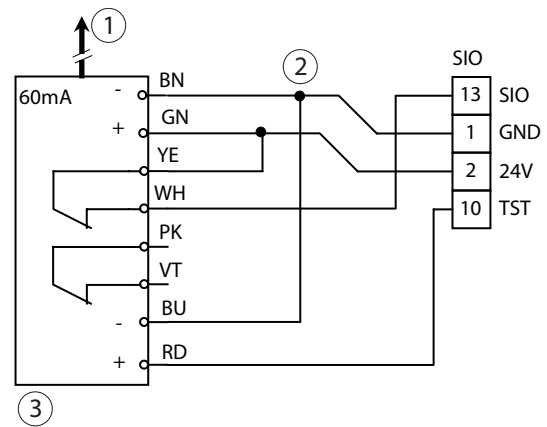
- ▶ Setting the contact type parameter:
 - DPS: Set $\underline{51}$ to $\underline{02}$ ("normally closed contact") and $\underline{53}$ to $\underline{02}$ ("normally closed contact") (factory setting).
 - ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 contact type" to "normally closed contact" and "SI3 – terminal SIO", "SI3 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 7 and 9 to 02 "NC".
- ▶ Setting the function parameter:
 - DPS: Set $\underline{F1}$ to the desired function and $\underline{F3}$ to $\underline{05}$ ("SIO stop") or $\underline{06}$ ("SIO stop SF GF").
 - ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 function" to the desired function and "SI3 – terminal SIO", "SI3 function" to "SIO stop" or "SIO stop GF SF".
 - S1, S2: Set parameter 8 to the desired function. Set parameter 10 to 05 "SIO Stop" or 06 (SIO stop SF GF).
- Configuration of the GC 334 modules on the
 - Hinge side: DIP1 = ON
 - Opposite hinge side: DIP1 = OFF



- 1 GC 334 module
- 2 Opposite hinge side
- 3 Hinge side
- 4 Door transmission cable
- 5 GC 334 opposite hinge side

5.3.2 Monitoring opening

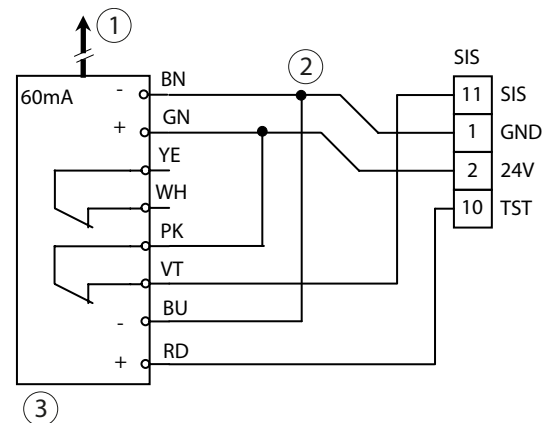
- ▶ Setting the contact type parameter:
 - DPS: Set 53 to 02 ("normally closed contact") (factory setting).
 - ST220: Set the "Input signals", "SI3 – terminal SIO" and "SI3 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 9 to 02 "normally closed contact".
- ▶ Setting the function parameter:
 - DPS: Set $F3$ to 05 (SIO stop) or 06 (SIO stop SF GF).
 - ST220: Set the "Input signals", "SI3 – terminal SIO" and "SI3 function" to "SIO stop" or "SIO stop SF GF".
 - S1, S2: Set parameter 10 to 05 "SIO Stop" or 06 "SIO stop SF GF".
- GC 334 module configuration: DIP1 = ON



- 1 GC 334 module
- 2 Door transmission cable
- 3 GC 334 hinge side

5.3.3 Monitoring closing

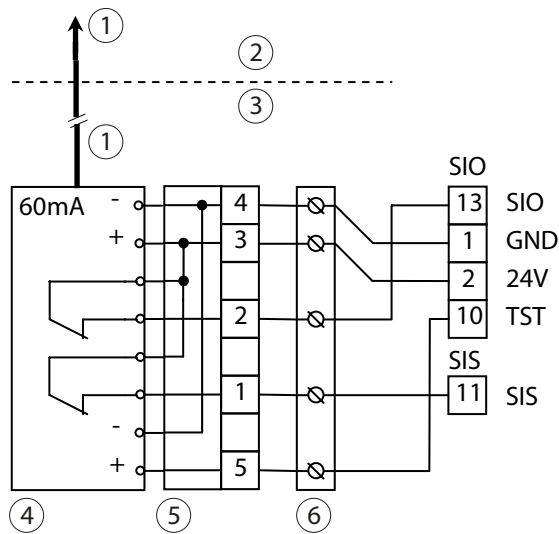
- ▶ Setting the contact type parameter:
 - DPS: Set 51 to 02 ("normally closed contact") (factory setting).
 - ST220: Set the "Input signals", "SI1 – terminal SIS" and "SI1 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 7 to 02 "normally closed contact".
- ▶ Setting the function parameter:
 - DPS: Set $F1$ to the desired function.
 - ST220: Set the "Input signals", "SI1 – terminal SIS" and "SI1 function" to the desired function.
 - S1, S2: Set parameter 8 to the desired function.
- GC 334 module configuration: DIP1 = OFF



- 1 GC 334 module
- 2 Door transmission cable
- 3 GC 334 opposite hinge side

5.3.4 GC 334 connection over interface GC 334

The GC 334 interface is used to connect a customer's existing cable transition.



- 1 GC 334 module
- 2 Opposite hinge side
- 3 Hinge side
- 4 GC 334 hinge side
- 5 Interface GC 334
- 6 Door transmission cable

5.4 Safety sensor GC 335

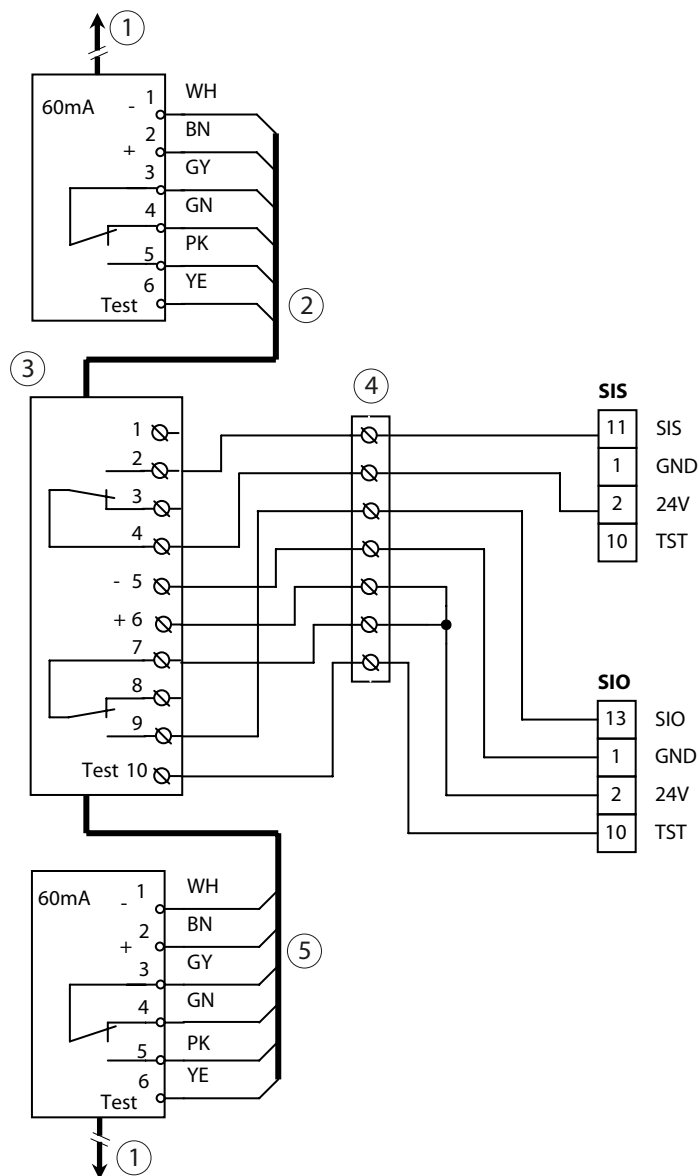


DIN 18650
EN 16005

- ▶ Follow the installation instructions.
- ▶ Use the reference body, mat no. 120190, to set the detection area.
- ▶ Always install the master module near the hinge, connection with drive control takes place at the master module.
- ▶ Connect max. 7 slave modules to one master module.
- ▶ Open the configuration bridge at the last slave module or at the master module (if no slave modules connected).
- ▶ Setting the "Testing" parameter.
 - DPS: Set \underline{tE} to $\underline{01}$ (testing with 24 V).
 - ST220: Set "Output signals", "Testing SI" to "Testing with 24V".
 - S1, S2: Set parameter 11 to 01 "Testing with 24 V".

5.4.1 Monitoring closing and opening

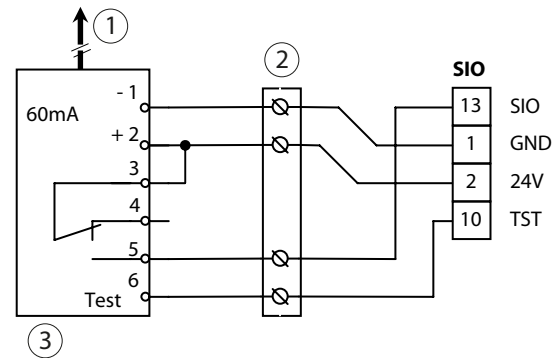
- ▶ Setting the contact type parameter:
 - DPS: Set *S1* to 02 ("normally closed contact") and *S3* to 02 ("normally closed contact") (factory setting).
 - ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 contact type" to "normally closed contact" and "SI3 – terminal SIO", "SI3 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 7 and 9 to 02 "NC".
- ▶ Setting the function parameter:
 - DPS: Set *F1* to the desired function and *F3* to 05 ("SIO stop") or 06 ("SIO stop SF GF").
 - ST220: Set the "Input signals", "SI1 – terminal SIS", "SI1 function" to the desired function and "SI3 – terminal SIO", "SI3 function" to "SIO stop" or "SIO stop SF GF".
 - S1, S2: Set parameter 8 to the desired function.
Set parameter 10 to 05 "SIO Stop" or 06 "SIO stop SF GF".



- 1 GC 335 slaves
- 2 GC 335 master opposite hinge side
- 3 GC 335 adapter
- 4 Door transmission cable
- 5 GC 335 master hinge side

5.4.2 Monitoring opening

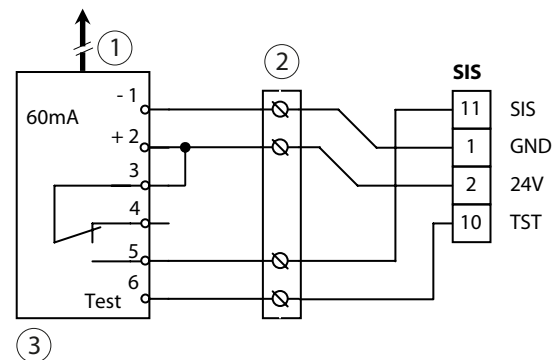
- ▶ Setting the contact type parameter:
 - DPS: Set 53 to 02 ("normally closed contact") (factory setting).
 - ST220: Set the "Input signals", "SI3 – terminal SIO" and "SI3 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 9 to 02 "normally closed contact".
- ▶ Setting the function parameter:
 - DPS: Set $F3$ to 05 (SIO stop) or 06 SIO stop SF GF).
 - ST220: Set the "Input signals", "SI3 – terminal SIO", "SI3 function" to "SIO stop" or "SIO stop SF GF".
 - S1, S2: Set parameter 10 to 05 "SIO Stop" or 06 (SIO stop SF GF).



- 1 GC 335 slaves
- 2 Door transmission cable
- 3 GC 335 master hinge side

5.4.3 Monitoring closing

- ▶ Setting the contact type parameter:
 - DPS: Set 51 to 02 ("normally closed contact") (factory setting).
 - ST220: Set the "Input signals", "SI1 – terminal SIS" and "SI1 contact type" to "normally closed contact" (factory setting).
 - S1, S2: Set parameter 7 to 02 "normally closed contact".
- ▶ Setting the function parameter:
 - DPS: Set $F1$ to the desired function.
 - ST220: Set the "Input signals", "SI1 – terminal SIS" and "SI1 function" to the desired function.
 - S1, S2: Set parameter 8 to the desired function.



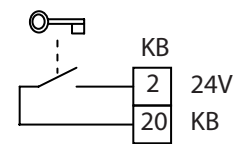
- 1 GC 335 slaves
- 2 Door transmission cable
- 3 GC 335 master opposite hinge side

6 Mechanical contact

- The input KB is active in the operating modes AU, LS and NA.
- In the case of 2-leaf systems the mechanical contact can be connected to the active leaf control or to the passive leaf control.
- On selection the active leaf opens and, if switched on, the passive leaf.
- Upon activation, the output of the mechanical contact is closed (24 V applied at the KB input).
- Setting the contact type parameter:
 - DPS: Set $6b$ to 01 for "normally opened contact" or to 02 for "normally closed contact".
 - ST220: Set the "Signals", "Input signals", "KB", "KB contact type" to "normally opened contact" or "normally closed contact".
 - S1, S2: Set parameter 12 to 01 for "normally opened contact" or 02 for "normally closed contact".
- A general activation delay (dL , "Opening delay") can be set for the input. The connection of a closing position limit switch is necessary for this (see chapter "Closing position monitoring, closing position blanking SIS, Push And Go").
Setting:
 - DPS: Set dL to the desired delay time (0 s ... 20 s).
 - ST220: Use the buttons ▲ or ▼ to set the "Door parameters", "Opening delay" to the desired activation delay (0 s ... 20 s) and press ↵.
 - S1, S2: Set parameter 22 to the desired opening delay (0 s ... 20 s).

6.1 Key switch

- Setting the contact type parameter:
 - DPS: Set \underline{Lb} to $\underline{01}$ (factory setting).
 - ST220: Set the "Signals", "Input signals", "KB", "KB contact type" to "normally opened contact" (factory setting).
 - S1, S2: Set parameter 12 to 01 "normally opened contact".
- Key switch SCT, single-pole, flush-mounted, AS500 without euro profile half cylinder, mat. no. 117996
- Accessories:
 - Euro profile half cylinder, mat. no. 090176
 - Additional contact, mat. no. 024467

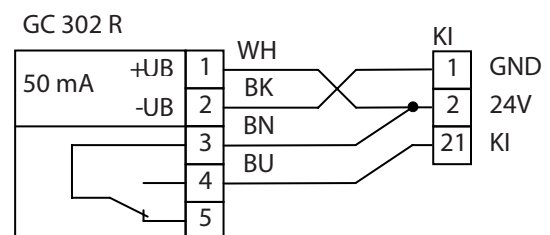


7 Contact sensor inside

- The KI input is active in the operating modes AU and LS.
 - In the case of 2-leaf systems the contact sensor inside can be connected to the active leaf control or to the passive leaf control.
 - On activation the active leaf opens and, if switched on, the passive leaf.
 - The sensor for monitoring closing can also be used as a contact sensor inside.
 - Setting the parameters:
 - DPS: Set $\underline{F1}$ to $\underline{02}$.
 - ST220: Set the "Signals", "Input signals", "S11 – terminal SIS", "S11 function" to "SIS and KI".
 - S1, S2: Set parameter 8 to 02 "SIS and KI".
 - For input KI an activation delay ($\underline{R1}$, "KI delay") can be set if a closing position switch is installed (see chapter "Closing position monitoring, closing position blanking SIS, Push And Go"). This time is added to the general activation delay time (\underline{dL} , "Opening delay").
- Setting the parameters:
- DPS: Set $\underline{R1}$ to the desired delay time (0 s ... 10 s).
 - ST220: Use the buttons \blacktriangle or \blacktriangledown to set "Signals" "Input signals", "KI", "KI delay" to the desired delay time (0 s ... 10 s) and press \leftarrow .
 - S1, S2: Set parameter 14 to the desired activation delay (00 s ... 10 s).

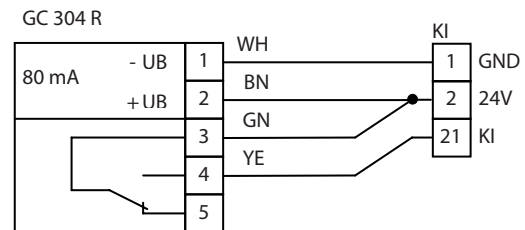
7.1 Radar movement detector GC 302 R

- Upon activation, the output of the GC 302 R is closed (24V applied to the KI input).
- Setting the contact type parameter:
 - DPS: Set \underline{LL} to $\underline{01}$ (factory setting).
 - ST220: Set the "Signals", "Input signals", "KI" and "KI contact type" to "normally opened contact" (factory setting).
 - S1, S2: Set parameter 13 to 01 "normally opened contact" (factory setting).
- GC 302 R black, mat. no. 124087
- GC 302 R according to RAL, mat. no. 124088 (remote control does not work with detector cover mounted, LED not visible).
- The GC 302 R is a directionally sensitive radar movement detector.
- Follow the installation instructions.



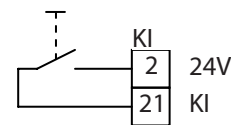
7.2 Radar movement detector GC 304 R

- The GC 304 R is a direction-sensitive radar movement detector.
- Upon activation, the output of the GC 304 R is closed (24V applied to the KI input).
- ▶ Follow the installation instructions.
- ▶ Setting the contact type parameter:
 - DPS: Set \underline{L} to \underline{I} (factory setting).
 - ST220: Set "Signals", "Input signals", "KI" and "KI contact type" to "normally opened contact" (factory setting).
 - S1, S2: Set parameter 13 to 01 "normally opened contact" (factory setting).



7.3 Push button (potential-free normally opened contact)

- Setting the contact type parameter:
 - DPS: Set \underline{L} to \underline{I} ("normally opened contact" (factory setting).
 - ST220: Set "Signals", "Input signals", "Contact sensor inside" and "Contact sensor inside, contact type" to "normally opened contact" (factory setting).
 - S1, S2: Set parameter 13 to 01 "normally opened contact" (factory setting).

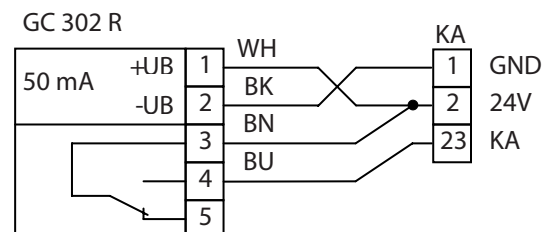


8 Contact sensor outside

- The input contact sensor outside is only active in the AU operating mode.
- In the case of 2-leaf systems the contact sensor outside can be connected to the active leaf control or to the passive leaf control.
- On selection the active leaf opens and, if switched on, the passive leaf.
- For the input KA an activation delay (\overline{RR} , "KA delay") can be set. The connection of a closing position limit switch is necessary for this (see chapter "Closing position monitoring, closing position blanking SIS, Push And Go"). This time is added to the general activation delay time (\underline{dL} , "Opening delay").
- Setting the parameters:
 - DPS: Set \overline{RR} to the desired delay time (0 s ... 10 s).
 - ST220: Use the buttons \blacktriangle or \blacktriangledown to set "Signals", "Input signals", "KA", "KA delay" to the desired delay time (0 s ... 10 s) and press \leftarrow .
 - S1, S2: Set parameter 16 to the desired activation delay (00 s ... 10 s).

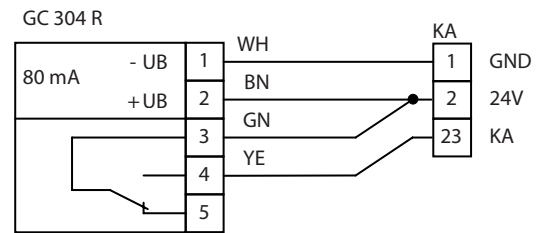
8.1 Radar movement detector GC 302 R

- For information see GC 302 R (KI).
- Upon activation, the output of the GC 302 R is closed (24V applied to the KA input).
- Setting the contact type parameter:
 - DPS: Set \underline{L} to \underline{I} (factory setting).
 - ST220: Set "Signals", "Input signals", "Contact sensor outside", "Contact sensor outside, type of contact" to "normally opened contact" (factory setting).
 - S1, S2: Set parameter 15 to 01 "normally opened contact" (factory setting).



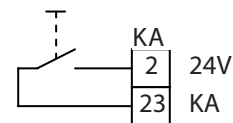
8.2 Radar movement detector GC 304 R

- The GC 304 R is a direction-sensitive radar movement detector.
- Upon activation, the output of the GC 304 R is closed (24V applied to the KI input).
- ▶ Follow the installation instructions.
- ▶ Setting the contact type parameter:
 - DPS: Set \bar{L} to \bar{I} (factory setting).
 - ST220: Set "Signals", "Input signals", "KA" and "KA contact type" to "normally opened contact" (factory setting).
 - S1, S2: Set parameter 15 to 01 "normally opened contact" (factory setting).



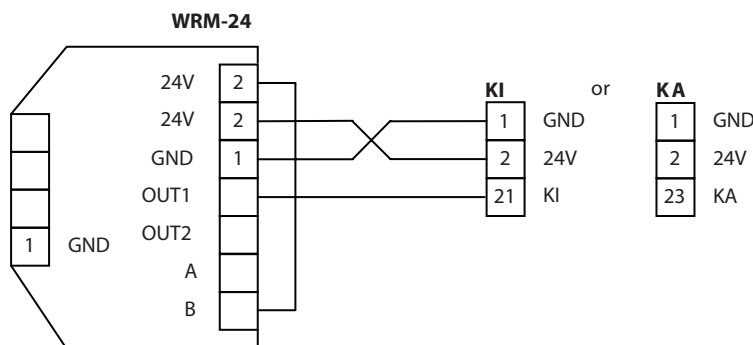
8.3 Push button (potential-free normally opened contact)

- Setting the contact type parameter:
 - DPS: Set \bar{L} to \bar{I} (factory setting).
 - ST220: Set "Signals", "Input signals", "Contact sensor outside" and "Contact sensor outside, contact type" to "normally opened contact" (factory setting).
 - S1, S2: Set parameter 15 to 01 "normally opened contact" (factory setting).

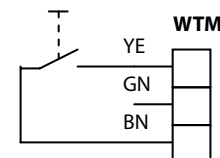


9 Radio activation

- Follow the assembly and operating instructions.
- Setting the contact type parameter:
 - DPS: Set \bar{L} or \bar{L} to \bar{I} ("normally opened contact") (factory setting).
 - ST220: Set the "Signals", "Input signals", "KI", "KI contact type" or "KA", "KA contact type" to "normally opened contact".
 - S1, S2: Set parameter 13 or 15 to 01 "normally opened contact".



- The receiving module WRM-24 can be activated with the transmitter module WTM and the remote control WTH.
- Transmitting module WTM, mat. no. 131212, for clipping into a plastic elbow switch.
- Remote control 1-channel, WTH-1, mat. no. 131209.
- Remote control 2-channel, WTH-2, mat. no. 131210.
- Remote control 4-channel, WTH-4, mat. no. 131211.
- Plastic elbow switch,
 - white, mat. no. 114078,
 - stainless steel, mat. no. 114077.
- Accessories:
 - Back panel for plastic elbow switch,
 - white, mat. no. 131219,
 - stainless steel, mat. no. 131220.



10 Push And Go



WARNING

Danger of injury due to crushing and shearing!

► During an activated Push And Go function door handles can form crushing and shearing points.

- The Push And Go function allows activation of the drive without contact sensors being used.
- When the Push And Go function is set, the drive opens the door automatically as soon as the door leaf is moved manually out of the closing position.



TSA 160 NT Invers:

- The closing position limit switch (blue cam, see chapter 17.1, "Open position") triggers the Push And Go function at the same time. Connection of an additional closing position limit switch is not necessary.

TSA 160 NT:

- The Push And Go function is only possible with closing position limit switch (see chapter 11.10, "Closing position monitoring, closing position blanking SIS, Push And Go").

▫ Setting the parameters:

- DPS: Set P_{ν} to value 00 for Off, 01 for On.
- ST220: Set "Movement parameters", "Push and Go" to the desired function on/off.
- S1, S2: Set parameter 31 to value 00 for Off, 01 for On.

For TSA 160 NT Invers set parameter 30 (r_{U}) "Solenoid valve" to 00 "no" in addition.

11 Configurable inputs

- Various special functions are assigned to the configurable inputs PE1 and PE2 (see chapter 23, "Service menu"). The contact type required for the desired function is specified in the service menu DPS or service menu ST220 section.
- The configurable input PE1 is only suitable for connection of normally opened or normally closed contacts.
- The configurable input PE2 is suitable for connection of normally opened or normally closed contacts as well as for connection of the monitored analogue signals emergency locking and stop.
- Setting the parameters:
 - DPS: Set $E1$ or $E2$ to the desired function.
 - ST220: Set "PE1", "PE1 function" or "PE2", "PE2 function" to the desired function.
 - S1, S2: Set parameter 17 or 18 to the desired function.

11.1 MPS

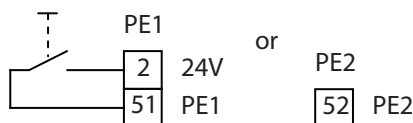
See chapter 13.2, "Mechanical programme switch (MPS, external programme switch)"



An MPS can only be connected to PE2.

11.2 Opening 2-leaf and 1-leaf

- The configurable inputs of the active leaf control can be used to change between the operating modes 2-leaf opening or 1-leaf opening as required (depending on the parameter setting). This can, for example, be advisable if the type of opening is switched by a timer via the available programme switching inputs (AU, DO).
- It is only possible to change the type of opening when the internal programme switch of the passive leaf drive is set to the OFF position ("0").
- If the analogue programme switch MPS is connected, the type of opening cannot be changed through the configurable inputs since the MPS specifies "2-leaf opening" or "1-leaf opening" as fixed.
- Setting the parameters:
 - DPS: Set $E1$ or $E2$ to 03 ("selector switch summer") or 04 ("selector switch winter").
 - ST220: Set the "PE1 function" or "PE2 function" to "selector switch summer" or "selector switch winter".
 - S1, S2: Set parameter 17 or 18 to value 03 for "selector switch summer" or value 4 for "selector switch winter".



11.3 Emergency lock



WARNING

Danger of injury due to crushing and shearing!

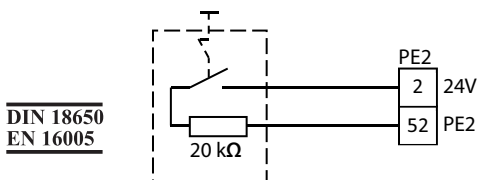
The safety sensors and obstruction are not evaluated. The door closes with the set force.

- ▶ If the door closes unexpected, move out of the danger zone.



The emergency lock is not permitted with lipped doors and on emergency exits.

- The configurable input PE2 can be used to connect an emergency lock switch.
- When the emergency lock switch is activated, the contact is closed and 24 V is applied to the input PE2. The door closes and locks. The contact sensors KI, KA and KB as well as the safety sensors are blanked. Mode of operation hold open is aborted.
- The function requires a 20 kOhm terminating resistor for proper function.
- The door remains closed as long as the emergency lock signal is applied to the input.
- Setting the parameters:
 - DPS: Set $E2$ to 07 ("emergency lock 20kOhm normally opened contact").
 - ST220: Set "PE2 function" to "emergency lock 20kOhm NO".
 - S1, S2: Set parameter 18 to 07 ("emergency lock 20kOhm NO").



11.4 Additional contact sensors (P-KI, P-KA)

- The configurable inputs can be used to connect additional closer contacts as contact sensors inside or contact sensors outside.
- Setting the parameters:
 - DPS: Set $E1$ or $E2$ to 08 for inside contact sensor or to 09 for contact sensor outside.
 - ST220: Set "PE1 function" or "PE2 function" to "P-KI activation NO" or "P-KA activation NO".
 - S1, S2: Set parameter 17 or 18 to value 08 for contact sensor inside or to the value 09 for contact sensor outside.
- Information see contact sensor inside (KI) or contact sensor outside (KA)

11.5 Switch functions

General points

- Upon activation, the output of the push button is closed (24 V applied to the PE1 or PE2 input).
- In the case of 2-leaf systems the push button can be connected to the active leaf control or to the passive leaf control.
 - ▶ Set the hold-open time at the active leaf control.
- If the push button is connected to the passive leaf control, both door leaves open when the switch function is activated, even if the "1-leaf" mode of operation is set if the passive leaf drive is switched on (internal programme switch in position "I" or "II").

11.5.1 Switch function

Setting the parameters:

- DPS: Set $E1$ or $E2$ to 10 for:
 - 1st switch contact = open door / 2nd switch contact = close door
 - If no second switch contact takes place, the door remains open until the mode of operation is changed.
 - In the case of a 2-leaf drive, 2-leaf opening takes place if the push button is connected to the passive leaf drive.
- ST220: Set "PE1", "PE1 function or PE2 function" to "Push button NO" for:
 - 1st switch contact = open door / 2nd switch contact = close door
- S1, S2: Set parameter 17 or 18 to value 10 (Push button NO) for:
 - 1st switch contact = open door / 2nd switch contact = close door
 - If there is no second switch contact, the door remains open until the mode of operation is changed.

11.5.2 Switch function hold-open time (OHZ)



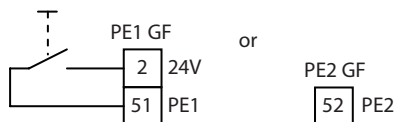
In the case of 2-leaf drives, the settings on the active leaf control determine the hold-open time.

Setting the parameters:

- **DPS:** Set $E1$ or $E2$ to 11 (switch function OHZ NO) for:
 - 1st switch contact = open door / 2nd switch contact = close door
 - If the SIO is triggered before the hold-open time or the 2nd switch contact is activated, the hold-open time runs out and is not cancelled by the 2nd switch contact.
 - The door closes at the latest after the hold-open time has expired:
 - oH for 2-leaf drive and 2-leaf mode of operation, if the push button on the passive leaf drive is connected.
 - oR for 1-leaf drive or 2-leaf drive and "1-leaf" mode of operation if the push button is connected to the GF drive.
- **ST220:** Set "PE1" or "PE2 function" to "Switch function OHZ NO" for:
 - 1st switch contact = open door / 2nd switch contact = close door
 - The door closes at the latest after the hold-open time has expired.
- **S1, S2:** Set parameter 17 or 18 to value 11 for:
 - 1st switch contact = open door / 2nd switch contact = close door
 - The door closes at the latest after the hold-open time has expired.

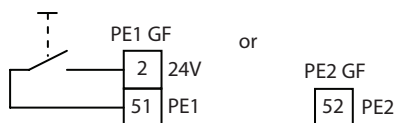
11.6 Control reset

- The control can be reinitialised via the configurable inputs. After the push button has been activated, the drive behaves like after the mains voltage has been switched on.
- Set the parameters with:
 - **DPS:** Set $E1$ or $E2$ to 13 (reset switch).
 - **ST220:** Set "PE1 function" or "PE2 function" to "Reset switch NO".



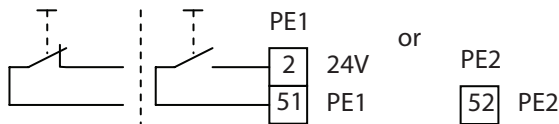
11.7 Double push button (1-leaf / 2-leaf door opening)

- In the case of 2-leaf drives the door can open via the configurable inputs of the active leaf control in 1-leaf or 2-leaf mode as desired by pressing a button if the "1-leaf opening" operating mode setting is active. If the push button is pressed once, only the active leaf opens and closes after the 1-leaf hold-open time has expired. With two successive push button activations within 1.5 s open active leaf and passive leaf and close after the hold-open time 2-leaf has expired.
- Set the parameters with:
 - **DPS:** Set $E1$ or $E2$ to 14 (double push button).
 - **ST220:** Set "PE1 function" or "PE2 function" to "Double push button".



11.8 Operating mode switchover Off

- The configurable inputs can be used to change between the operating mode Off as required (depending on the parameter setting). This can, for example, be advisable if the mode of operation is switched by a timer via the available programme switching inputs (AU, DO).
- The operating mode change is not possible if the analogue programme switch MPS is connected since this specifies the operating modes Off in a fixed form.
- Setting the parameters:
 - DPS: Set $E1$ or $E2$ to 02 (Off, normally opened contact NO) or 26 (OFF, normally closed contact NC).
 - ST220: Set "PE1 function" or "PE2 function" to "Off normally opened contact NO" or "OFF normally closed contact NC".
 - S1, S2: Set parameter 17 or 18 to value 02 (Off normally opened contact NO) or 26 (OFF normally closed contact NC).



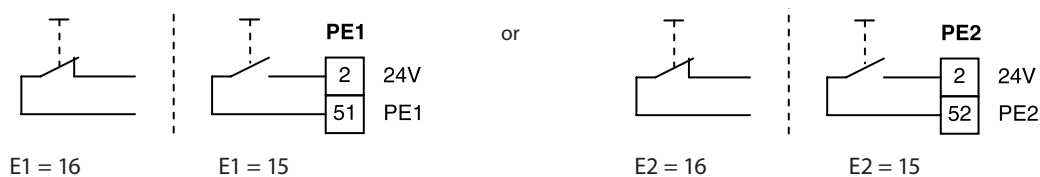
11.9 STOP

The configurable inputs PE1 and PE2 can be used for connection of a stop push button or sensor strip. Input PE2 is also suitable for analogue evaluation.

- On activation, the door leaf stops (in case of 2-leaf systems both leaves) and remains at a standstill as long as the input is active.
- In the case of 2-leaf systems the stop push button can be connected to the active leaf control or to the passive leaf control.

For PE1, PE2:

- Set the parameter contact type with:
 - DPS: Set $E1$ or $E2$ to 15 (Stop normally opened contact) or 16 (Stop normally closed contact).
 - ST220: Set "Signals", "Input signals", "PE1 function", "PE2 function" to "Stop normally opened contact NO" or "Stop normally closed contact NC".
 - S1, S2: Set parameter 17 or 18 to the value 15 (Stop normally opened contact) or 16 (Stop normally closed contact).

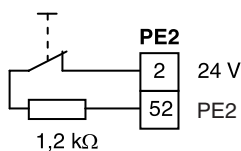


~~DIN 18650
EN 16005~~

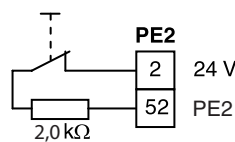
DIN 18650
EN 16005

For PE2:

- In order to ensure protection of persons as specified in DIN 18650 / EN 16005, a terminating resistor 1.2 k Ω or 2.0 k Ω must be connected to monitor the input. The terminating resistor must be connected directly to the switch contact.
- Set the parameter "Contact type" with:
 - DPS: $E2$ to 12 (Stop 1.2k) or 20 (Stop 2.0k)
 - ST220: Set "Signals", "Input signals", "PE2", "PE2 function" to "Stop 1.2 kOhm" or "Stop 2.0 kOhm".
 - S1, S2: Set parameter 18 to 12 (Stop 1.2 kOhm) or 20 (Stop 2.0 kOhm).



Value 12, terminating with 1.2 k Ω

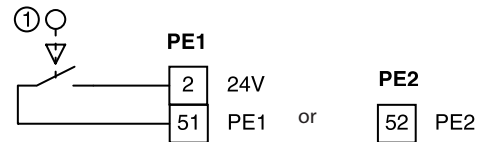


Value 20, terminating with 2.0 k Ω

11.10 Closing position monitoring, closing position blanking SIS, Push And Go

A closing position limit switch has to be used for closing position monitoring, for blanking the safety sensor close (SIS), for the Push And Go function as well as for the opening delay function. The closing position limit switch can be a supplementary cam switch that is mounted in the drive or a Reed switch that is mounted at the door.

- For notes and settings for the Push And Go function see chapter 10, "Push And Go".
- When the door leaf is closed, the contact is closed, 24 V is applied to the input.
- Additional cam-operated switch, mat. no. 71154



1 Additional cam-operated switch closing position

Set the parameters (closing position monitoring or closing position blanking SIS)

- For 1-leaf drive:
 - DPS: Set $E1$ or $E2$ to 05 (closing position GF NO).
 - ST220: Set "Signals", "Input signals", "PE1" or "PE2" to "Closing position GF NO".
 - S1, S2: Set parameter 17 or 18 to value 06 (closing position GF NO).
- For 2-leaf drive
 - Connect GF closing position limit switch to PE1 or PE2 of the active leaf control.
 - Connect SF closing position limit switch to PE1 or PE2 of the passive leaf control.

Parameter setting at GF control and SF control

- DPS: Set $E1$ or $E2$ to 05 (closing position GF NO).
- ST220: Set "Signals", "Input signals", "PE1" or "PE2" to "Closing position GF NO".
- S1, S2: Set parameter 17 or 18 to value 06 (closing position GF NO).

11.11 WC control

! Only use the fail-safe electric strikes.



- In the event of a power failure the door is freely passable.
- The "OCCUPIED" changeover switch switches between the AUTOMATIC and NIGHT modes of operation.
- When the switch is set to "OCCUPIED", the NIGHT mode of operation is set and activation via KI or KA is not possible. The "OCCUPIED" signal lamps are switched on.
- The door can only be opened from the outside using the mechanical contact KB.
- Operation without display programme switch or keypad programme switch.

Put the internal programme switch for the drive out of operation:

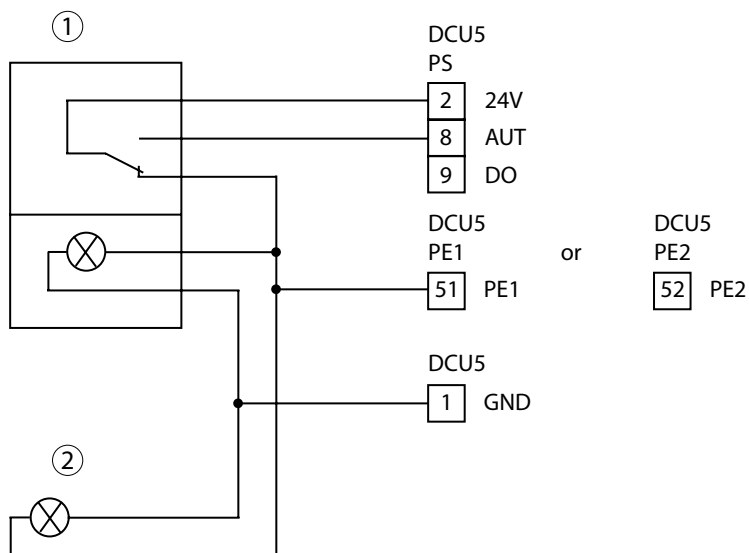
- ▶ Remove the tab connector of the red wire (24V) from the internal programme switch and insulate it.

Parameter settings:

- ▶ Set *E1* or *E2* to 17 (PS-Night).

Accessories:

- AS500 switch unit with illuminated display for disabled WC, mat. no. 47953
- SLE, signal lamp, flush-mounted, AS500, AW, pre-mounted, mat. no. 115942



- 1 AS500 switch unit "OCCUPIED" INSIDE
- 2 SLE signal lamp "OCCUPIED" OUTSIDE

12 Electric strike

- ▶ Connect the electric strike of the active leaf to the active leaf control and the electric strike of the passive leaf to the passive leaf control.
- Floating relay contact, switching voltage/current max. 24 V AC/DC, 1 A.
- Activation of the electric strike is limited to 5 s plus the activation delay time by parameters dL .
- ▶ In case of an TSA 160 NT Invers use only emergency exit electric strikes, holding magnet or GEZE motor lock GEZE IQ Lock EL.
- Set the parameter electric strike type with:
 - DPS: Set $z\alpha$ to the desired electric strike type (see Service menu DPS).
 - ST220: Set the "Door parameters", "Electric strike type" to the required type (see chapter 24.3, "DPS service menu and service buttons S1/S2 with LEDs").
 - S1, S2: Set parameter 20 to the desired electric strike type.
- Holding magnet MA 500 with counter plate, mat. no. 024740, for the magnetic locking of emergency exit doors.
- Motor lock with panic function GEZE IQ Lock EL for 1-leaf doors.
The GEZE IQ Lock EL is a self-locking anti-panic motor lock with external control.
See wiring diagram for motor lock IQ Lock EL.

IQ Lock SecuLogic set

(Motor lock PZ-bored, complete, incl. flat face plate and strike plate, motor lock control, power supply cable for control, reed switch contact as well as open drip loop)

Designation	Distance	Backset	Mat. no.
IQ Lock EL 9235	92	35	103601
IQ Lock EL 9240	92	40	115013
IQ Lock EL 9245	92	45	103699
IQ Lock EL 7255	72	55	103700
IQ Lock EL 7265	72	65	103701
IQ Lock EL 7280	72	80	106571
IQ Lock EL 7210	72	100	106572

- When a motor lock without feedback is used, a closing position limit switch is necessary (see chapter 11.10, "Closing position monitoring, closing position blanking SIS, Push And Go"). An activation delay must be set using parameter dL ("Opening delay") which gives the motor lock time to unlock.
- Set the parameter dL ("Opening delay") with:
 - DPS: Set dL to the necessary time (00 ... 20 s).
 - ST220: Set the "Door parameters", "Opening delay" to the required time.
 - S1, S2: Set parameter 22 to the required time (00 ... 20).

12.1 24V DC electric strike supplied on drive side

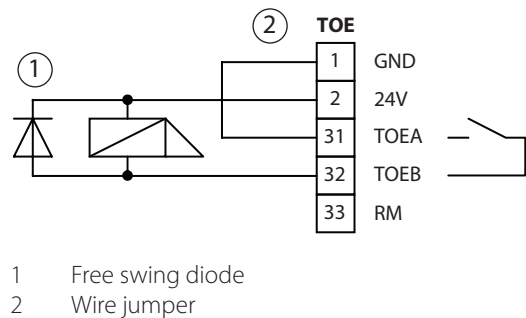
GEZE electric strikes for standard applications, doors with access control

GEZE electric strike type	Mat. no.	Current consumption	Voltage	Functions
A5000--B	144590	200 mA (at 12 V) 100 mA (at 24 V)	Continuous operation: 12 or 24 V DC $\pm 15\%$ Momentary operation: 12–48 V AC/DC	Fail-secure electric strike, standard applications, doors with access control
A5000-FB with lock latch guide	144632	200 mA (at 12 V) 100 mA (at 24 V)	Continuous operation: 12 or 24 V DC $\pm 15\%$ Momentary operation: 12–48 V AC/DC	Fail-secure electric strike, standard applications, doors with access control
A5300--B	144631	200 mA (at 12 V) 100 mA (at 24 V)	Continuous operation: 12 or 24 V DC $\pm 15\%$	Fail-safe electric strike, standard applications
A5000--E	145182	200 mA (with 8–11 V) 50 mA (with 12–24 V)	Continuous operation: 8–28 V DC Momentary operation: 8–28 V AC/DC	Fail-secure electric strike, standard applications, opening under sideload with direct voltage
A5001--B with switch contact	145183	200 mA (at 12 V) 100 mA (at 24 V)	Continuous operation: 12 or 24 V DC $\pm 15\%$ Momentary operation: 12–48 V AC/DC	Fail-secure electric strike, standard applications, doors with access control

GEZE electric strike for fire protection doors

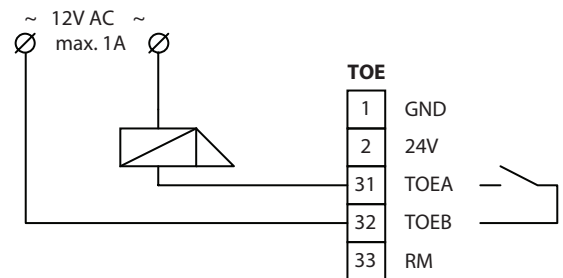
GEZE electric strike type	Mat. no.	Current consumption	Voltage	Functions
FT500--B	144634	200 mA (at 12 V) 100 mA (at 24 V)	Continuous operation: 12 or 24 V DC ±15 % Momentary operation: 12–48 V AC/DC	Fail-secure electric strike, fire protection doors
FT501--E with switch contact	144647	200 mA (with 8–11 V) 50 mA (with 12–24 V)	Continuous operation: 8–28 V DC Momentary operation: 8–28 V AC/DC	Fail-secure electric strike, fire protection doors, opening under sideload with direct voltage

- Max. current consumption of 1000 mA, but pay attention to the total current consumption of all the components, especially for fail-safe electric strikes.
- Fail-secure electric strikes for TSA 160 NT:
 - IQ eStrike A5000--E, mat. no. 145182
 - Fail-safe electric strikes for TSA 160 NT:
 - IQ eStrike A5300--B, mat. no. 144631
- ▶ Mount a free-wheeling diode 1N4007 (1), mat. no. 115293 (no free swing diode is required for GEZE electric strike).



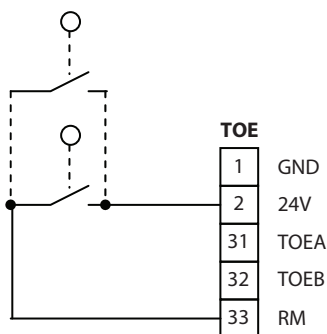
12.2 Customer-supplied 12 V AC electric strike

Contact load output TOE with 12 V AC: max. 1 A

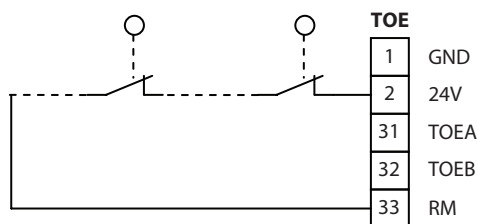


12.3 Bar message

- Input RM blocks the activation of the drive when the door is locked. If the Input RM becomes active while the door is open, the door reverses and remains open.
- If a further electric strike is connected with
 - Normally opened contact: Circuit the contacts in parallel.
 - Normally closed contact: Switch the contacts in series.
- Setting the parameters:
 - DPS: Set r_r to $\bar{0} / 1$ (normally opened contact) or $\bar{0} / 2$ (normally closed contact).
 - ST220: Set the "Signals", "Input signals", "Bolt contact type", "Bolt contact type" to "normally opened contact" or "normally closed contact".
 - S1, S2: Set parameter 21 to value 01 (normally opened contact) or 02 (normally closed contact).



Normally opened contact



Normally closed contact

13 Mode of operation

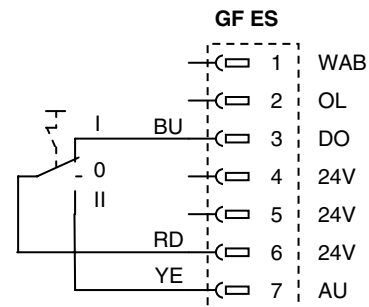
- To operate the display programme switch DPS see chapter 24.1, "Display programme switch (DPS)".
- To operate the service terminal ST220 see chapter 23.2, "Operation of ST220".

13.1 Internal programme switch

- Internal programme switch, 300 mm, mat. no. 105186
- Internal programme switch, 640 mm, mat. no. 105187

Active leaf control

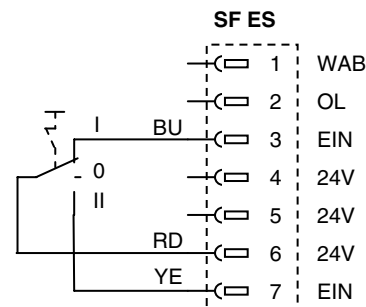
- The internal programme switch has the switch positions:
 - NA (0)
 - AU (II)
 - DO (I).
- The mode is set with the AU and DO inputs. The drive switches to AU or DO mode if 24 V is applied to the corresponding input. In NA mode there is no signal at these inputs.



- ▶ Set the parameters (internal or external binary programme switch):
 - DPS: Set *P5* automatic contact type to value *01* for "normally opened contact".
 - ST220: Set "Signals", "Input signals", "AU" to value "normally opened contact". Set "Signals", "Input signals", "DO" to value "normally opened contact".
 - S1, S2: Set parameter 19 to value 01 for "normally opened contact".
- The change of the operating mode with TPS or DPS is only possible if the internal programme switch has been set to the position NA (0).

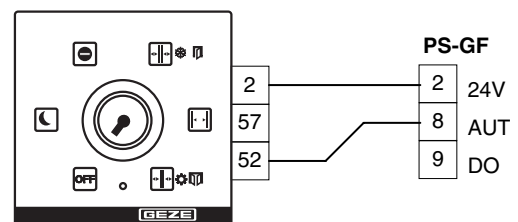
Passive leaf control

- The inputs AU (II) and DO (I) are used to switch the drive of the passive leaf on and off. The passive leaf runs synchronously with the active leaf (in compliance with the closing sequence), if 24 V is applied at one of the two inputs.



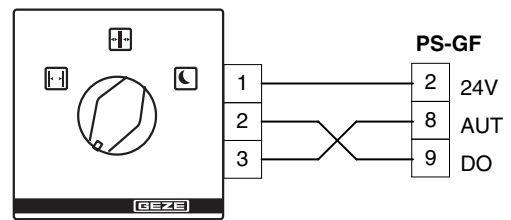
13.2 Mechanical programme switch (MPS, external programme switch)

- MPS, AS500, mat. no.113226
- MPS-ST, with key, AS500, mat. no. 113227
- Operating modes: OFF, NA, LS, AU 1-leaf, DO, AU 2-leaf
- ▶ Follow the installation instructions.
- At 2-leaf systems connect to the active leaf.
- The malfunction indication (LED) is not operable.
- Accessories:
 - Surface-mounted cap, single, AS500, mat. no. 120503
- ▶ Set the parameters (for MPS):
 - DPS: Set *P5*, automatic contact type to value *03* for "Analogue MPS".
 - ST220: Set "Signals", "Input signals", "AU" to value "Analogue MPS".
 - S1, S2: Set parameter 19 to value 03 for "Analogue MPS".
- ▶ Disconnect internal programme switch (disconnect red wire and insulate).



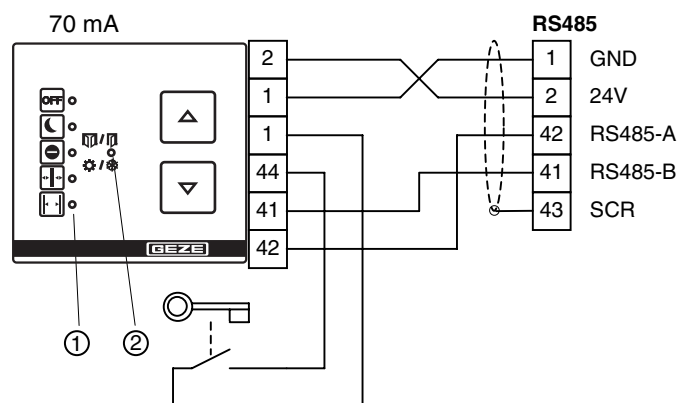
13.3 Mechanical programme switch (MPS-D, external programme switch)

- MPS-D, AS500, mat. no. 118417
- MPS-D-ST, with key, AS500, mat. no. 118418
- Operating modes: NA, AU, DO
- Accessories:
 - Surface-mounted cap, single, AS500, mat. no. 120503
- ▶ Set the parameters (internal or external binary programme switch):
 - DPS: Set $P5$ automatic contact type to value 1 for "normally opened contact" (factory setting).
 - ST220: Set "Signals", "Input signals", "AU" to value "normally opened contact" (factory setting). Set "Signals", "Input signals", "DO" to value "normally opened contact" (factory setting).
 - S1, S2: Set parameter 19 to value 01 for "normally opened contact" (factory setting).
- ▶ Disconnect internal programme switch (disconnect red wire and insulate).
- ▶ At 2-leaf systems connect to the active leaf.



13.4 Keypad programme switch (TPS)

- TPS, AS500, flush-mounted, mat. no. 113231
- TPS SCT, AS500, flush-mounted, with key switch, without euro profile half cylinder, mat. no. 113232
- Operating modes: OFF, NA, LS, AU, DO, Summer/Winter
- ▶ Follow the installation instructions.
- Accessories:
 - Euro profile half cylinder, mat. no. 090176
 - Additional contact, mat. no. 024467
- Surface-mounted cap, single, AS500, mat. no. 120503
- Surface-mounted cap, double, AS500, mat. no. 128609
- Operation of the TPS is only possible,
 - 1 if no active signal is applied to Terminals 8 (AU) and 9 (DO),
 - 2 if terminals 1–44 are jumpered or the key push switch is triggered,
 - by unlocking by password if a password has been configured in the Service menu.
- Switching over between 1-leaf and 2-leaf operation:
 - ▶ Press the push buttons ▲ ▼ simultaneously.

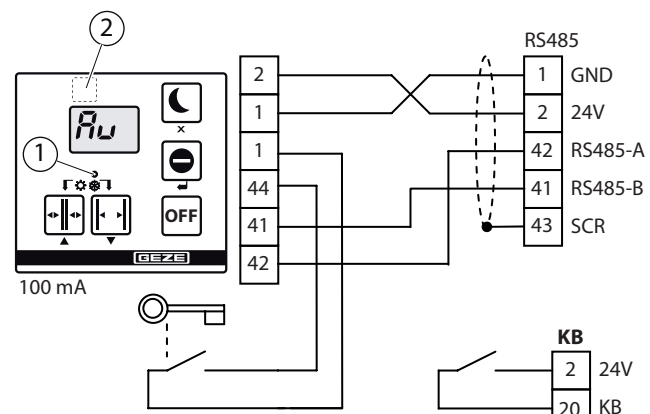


1 LEDs for operating mode display. When a fault occurs, the LEDs display a fault code (see chapter 25.3, "Fault messages keypad programme switch").

2 Display 1-leaf/2-leaf operation (LED lights up at 1-leaf operation, LED flashes when maintenance is due)

13.5 Display programme switch (DPS) with OFF

- AS500, DPS with OFF, UP, alpine white, mat. no. 151524
- Operating modes: OFF, NA, LS, AU, DO, 1-leaf/2-leaf opening
- ▶ Follow the installation instructions.
- If the PE2 function is set to "MPS", only the mode of operation set using the MPS is displayed on the DPS. A change in the mode of operation is not possible with the DPS.
- The change in the mode of operation with the DPS is only possible if 24 V are not applied to terminal 8 (AU), terminal 9 (DO) nor PE1 or PE2 if PE1 or PE2 is configured to OFF, 2-leaf opening or 1-leaf opening.
- A change in the mode of operation is only possible when the key switch is activated or by unlocking with a password, if a password has been configured in the service menu.



- 1 Display 1-leaf/2-leaf operation (LED lights up for 1-leaf operation)
- 2 Hidden service push button

- Switching over between 1-leaf and 2-leaf operation:
- ▶ Press the ▲ ▼ push buttons simultaneously.



- Keypad programme switch and display programme switch can be connected to the control at the same time.
- Operation at the TPS or DPS is not possible during the self-test, e.g. after changing the operating mode.

The control can be configured using the display programme switch.

Accessing the service menu

- ▶ Press the hidden service push button and ↵ simultaneously.

Accessories:

- AS500, DPS with OFF and SCT, without euro profile half cylinder, flush-mounted, alpine white, mat. no. 155810
- Key switch SCT, single-pole, flush-mounted, AS500 without euro profile half cylinder, mat. no. 117996
- Euro profile half cylinder, mat. no. 090176
 - Surface-mounted cap, single, AS500, mat. no. 120503
 - Surface-mounted cap, double, AS500, mat. no. 128609

13.6 Display programme switch (DPS) without OFF

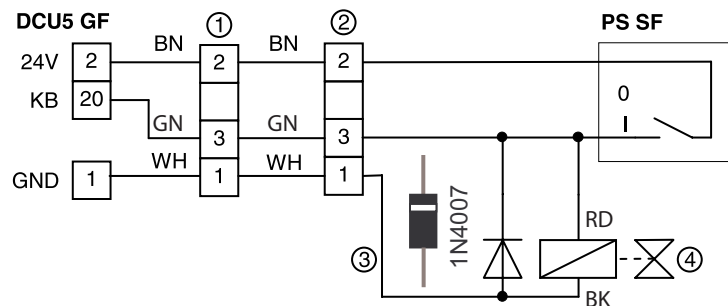
- AS500, DPS without OFF, UP, alpine white, mat. no. 155809
- Operating modes: NA, LS, AU, DO, 1-leaf/2-leaf opening
- ▶ Follow the installation instructions.
- Connection and other information, see 13.5, "Display programme switch (DPS) with OFF".

14 2-leaf drives

14.1 TSA 160 NT IS-TS: Active leaf automated, passive leaf with TS 160

- Programme switch, mat. no. 72526
- ▶ Setting the parameters:
 - DPS: Set *EF* to *00* for 1-leaf drive
 $\alpha 5$ (hold-open time KB) in such a way that the passive leaf only closes when the active leaf is in closing position.
 - ST220: Set "Door parameters", "Number of leaves" to "1-leaf drive".
 Set "Movement parameters", "Hold-open times", "Mechanical contact" in such a way that the active leaf does not close until the passive leaf is in the closing position.
 - S1, S2: Set parameter 1 to 00 for 1-leaf drive, parameter 3 (hold-open time KB) in such a way that the active leaf does not close until the passive leaf is in the closing position.
- Diode 1N4007, mat. no. 115293

- 1 Terminal strip intermediate cover
- 2 Terminal strip SF
- 3 Free swing diode
- 4 Solenoid valve 24 V/160 mA

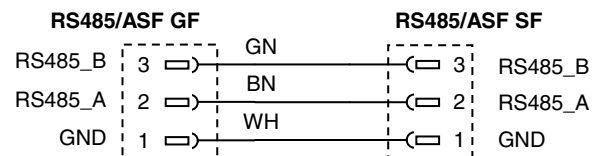


14.2 Two automated door leaves

- ▶ Setting the parameters:
 - DPS: Set *EF* to *01* for active leaf drive or to *02* for passive leaf drive.
 - ST220: Set "Door parameters", "Number of leaves" to "2-leaf active" or "2-leaf passive".
 - S1, S2: Parameter 1 to 01 for active leaf drive or to 02 for passive leaf drive.

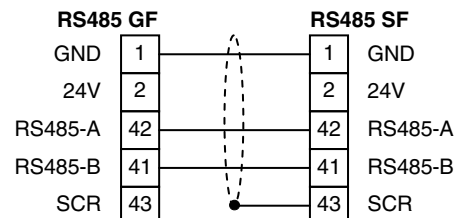
14.2.1 Connection via system cable RS485

- RS485 connection cable, mat. no. 120048



14.2.2 Connection via standard cable RS485

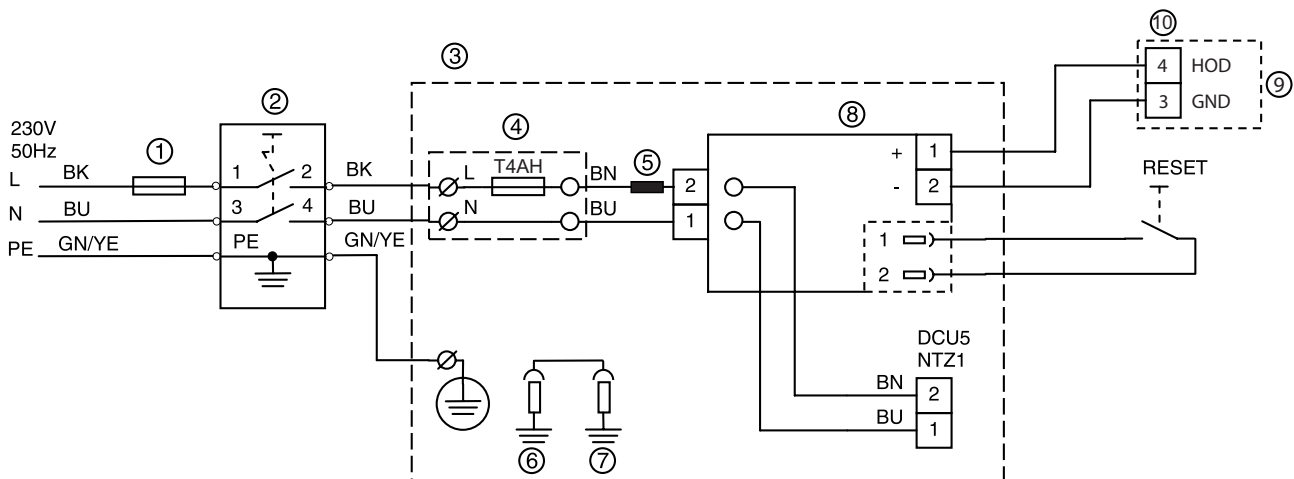
⚠ Do not connect terminal 2.



15 Smoke switch control unit



- For 2-leaf drives the mains cut-off printed circuit board from the TSA 160-F accessories is installed in the passive leaf drive.
- ▶ Please note the installation and operating instructions of the smoke switch control unit.
- ▶ Setting the parameters:
 - DPS: Set parameter Rt to value 03 .
 - ST220: Set "Door parameters", "Drive type" to the corresponding value.
 - S1, S2: Set parameter 29 to value 03.
- In the event of a fire alarm, the mains voltage supply to the drive is interrupted by the mains cut-off printed circuit board.
- TSA 160 NT F closes through spring force. With 2-leaf doors, both leaves close.
- The smoke switch control unit is connected to the mains cut-off printed circuit board.
- The power disconnection circuit board places a load of approx. 35 mA on the smoke switch control unit.
- ▶ A manual trigger switch marked "Close door" must be installed directly at the door.
- Circuit breaker, AS500, mat. no. 116266
- ▶ The reset switch from the TSA 160-F accessories is connected to the mains cut-off printed circuit board.
- ▶ Following a fire alarm or restoration of power supply, the reset switch must be pressed to put the equipment back into operation.
- ▶ Check the reset function during commissioning and servicing.



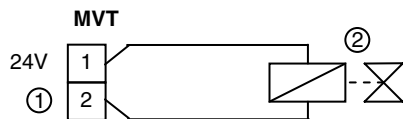
- | | | | |
|---|--|----|-------------------------------------|
| 1 | Mains fuse, on site *) | 5 | Ferrite sleeve |
| 2 | Main switch, on site**) | 6 | Earthing base plate |
| 3 | Door drive (1-leaf or 2-leaf) | 7 | Earthing drive hood |
| | TSA 160 NT F (with VDS approval for fire protection doors) | 8 | Mains cut-off printed circuit board |
| | TSA 160 NT ZR (without VDS approval) | 9 | External holding open |
| 4 | Fuse terminal strip, fuse 5x20 mm, T4AH/250 V AC | 10 | GC 151, GC 161 |

*) The customer must use an on-site automatic cut-out as the line-side disconnecting device, the dimensioning of which is matched to the type, cross-section, type of routing and ambient conditions of the on-site feeder (at least 6 A, maximum 16 A).

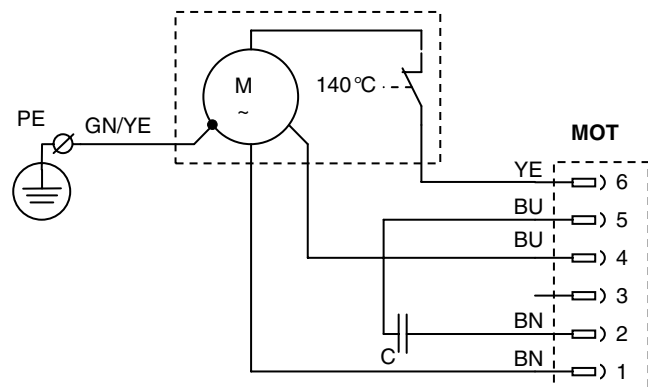
**) Necessary in accordance with EN 60335-1, section 22.2.

16 Motor, solenoid valve

- TSA 160 NT EN3-6
 - Hydraulic unit, mat. no. 019603
 - Motor capacitor, mat. no. 058821
 - 1~ motor, 220-230 V, 1.10 A, 50 Hz
cos phi 0.98, 0.125 kW, S2-6 Min.,
WSK 140 °C, C 8 µF, 400 V DB, IP44, EN60034



- 1 Solenoid valve
- 2 Solenoid valve 24 V/160 mA



17 Limit switch

17.1 Open position

TSA 160 NT

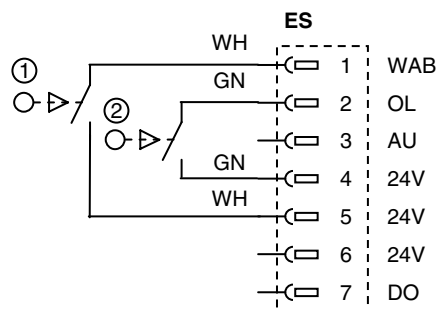
- ▶ Set the blue cam so that the limit switch is operated in the open position of the door.

TSA 160 NT Invers

- ▶ Set the blue cam so that the limit switch is operated in the closing position of the door.



To take the strain off the lock latch, a motor run-on time HL (0 s ... 5 s) can be set, during which the motor presses the door leaf further into the closing position.



- 1 Yellow cam:
Wall blanking SIO
- 2 Blue cam:
TSA 160 NT Open position
TSA 160 NT Invers closing position

Setting the parameters:

- DPS: Set *HL* to the required motor run-on time.
- ST220: Set "Movement parameters", "Motor run-on time" to the required run-on time.
- S1, S2: Set parameter 23 (HL) to the required motor run-on time.

17.2 Wall blanking SIO

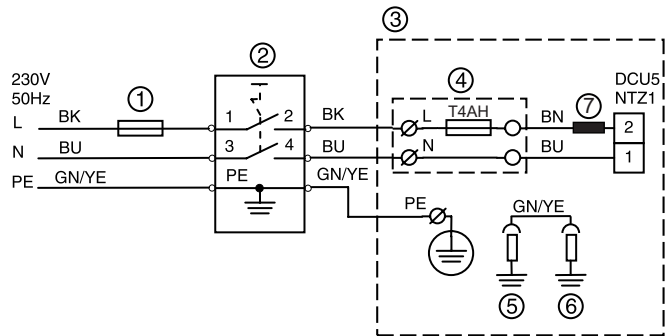
- ▶ If the door moves towards a wall when opened, set the yellow cam so that the SIO is blanked (skipped) before the wall is detected.
- The yellow cam can be used for monitoring the closing position if the wall blanking function is not required.

18 Mains connection

18.1 TSA 160 NT 1-leaf

- Drive nominal power 300 W

- 1 Mains fuse (on site) *)
- 2 Main switch (provided by customer **)
- 3 Door drive unit
- 4 Fuse terminal strip, fuse 5x20 mm, T4AH/250 V AC
- 5 Earthing base plate
- 6 Earthing drive hood
- 7 Ferrite sleeve

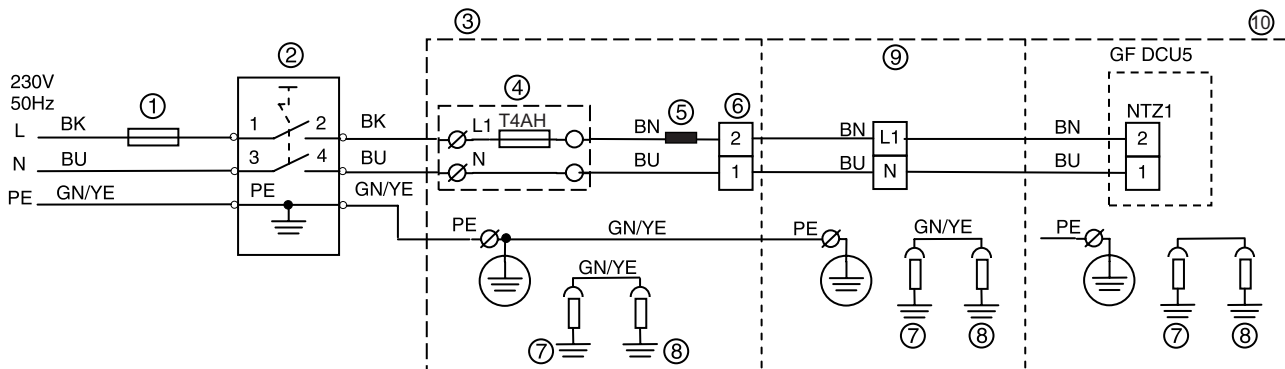


*) The customer must use an on-site automatic cut-out as the line-side disconnecting device, the dimensioning of which is matched to the type, cross-section, type of routing and ambient conditions of the on-site feeder (at least 6 A, maximum 16 A).

**) Necessary in accordance with EN 60335-1, section 22.2.

18.2 TSA 160 NT IS-TS: Active leaf automated, passive leaf with TS 160

- Drive nominal power 300 W
- Cable harness intermediate cover kit , L = 2120, mat. no. 130132
- 230 V fuse terminal strip, mat. no. 120522



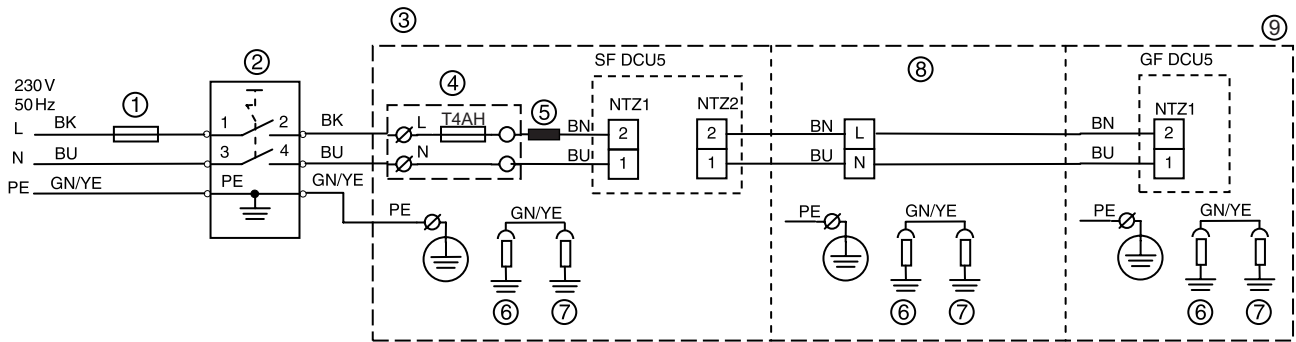
- | | |
|--|---------------------------------------|
| 1 Mains fuse, provided by customer *) | 6 Mains plug door closer passive leaf |
| 2 Main switch, on site**) | 7 Base plate |
| 3 Door closer, passive leaf | 8 Drive hood |
| 4 Fuse terminal strip, fuse 5x20 mm, T4AH/250 V AC | 9 Intermediate hood kit |
| 5 Ferrite sleeve | 10 Active leaf drive |

*) The customer must use an on-site automatic cut-out as the line-side disconnecting device, the dimensioning of which is matched to the type, cross-section, type of routing and ambient conditions of the on-site feeder (at least 6 A, maximum 16 A).

**) Necessary in accordance with EN 60335-1, section 22.2.

18.3 Two automated door leaves TSA 160 NT

- Drive nominal power 2 x 300 W



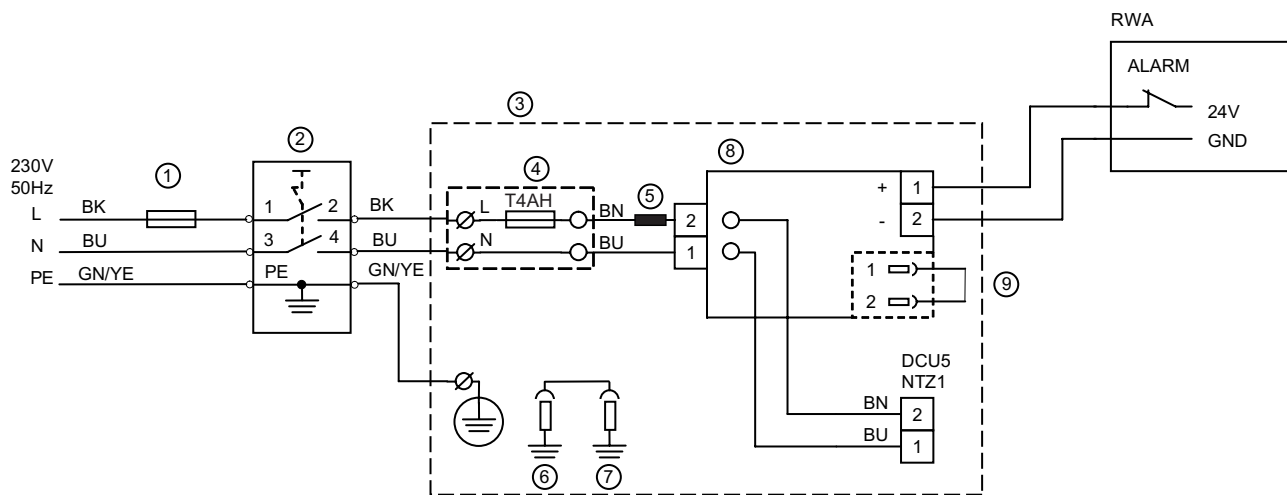
- | | | | |
|---|--|---|------------------------|
| 1 | Mains fuse (on site) *) | 5 | Ferrite sleeve |
| 2 | Main switch (provided by customer **) | 6 | Earthing base plate |
| 3 | passive leaf drive | 7 | Earthing drive hood |
| 4 | Fuse terminal strip, fuse 5x20 mm, T4AH/250 V AC | 8 | Intermediate cover kit |
| | | 9 | Active leaf drive |

*) The customer must use an on-site automatic cut-out as the line-side disconnecting device, the dimensioning of which is matched to the type, cross-section, type of routing and ambient conditions of the on-site feeder (at least 6 A, maximum 16 A).

**) Necessary in accordance with EN 60335-1, section 22.2.

19 TSA 160 NT Invers at RWA-control panel

- Accessory ZR-Invers, mat. no. 090769
- With 2-leaf drives the power disconnection circuit board from the accessory ZR-Invers is mounted in the passive leaf drive.
- ▶ Follow the mounting and operating instructions of the SHEV control panel.
- ▶ Setting the parameters:
 - DPS: Set parameter Rt to value $05 \dots 05$.
 - ST220: Set "Door parameters", "Drive type" to value "TSA 160 NT Invers" or "TSA 160 NT Z-Invers".
 - S1, S2: Set parameter 28 to value 05 or 06.
- ▶ Set drive type to 05 or 06 for TSA 160 NT Invers.
- When the smoke-heat extractor is activated by the SHEV control panel the mains voltage supply to the drive is interrupted by the mains cut-off printed circuit board.
- TSA 160 NT Invers opens by means of spring force. With 2-leaf doors, both leaves open.
- ▶ The 24 V alarm output of an RWA control panel is connected to the power disconnection circuit board.
- The power disconnection circuit board places a load of approx. 35 mA on the RWA control panel.



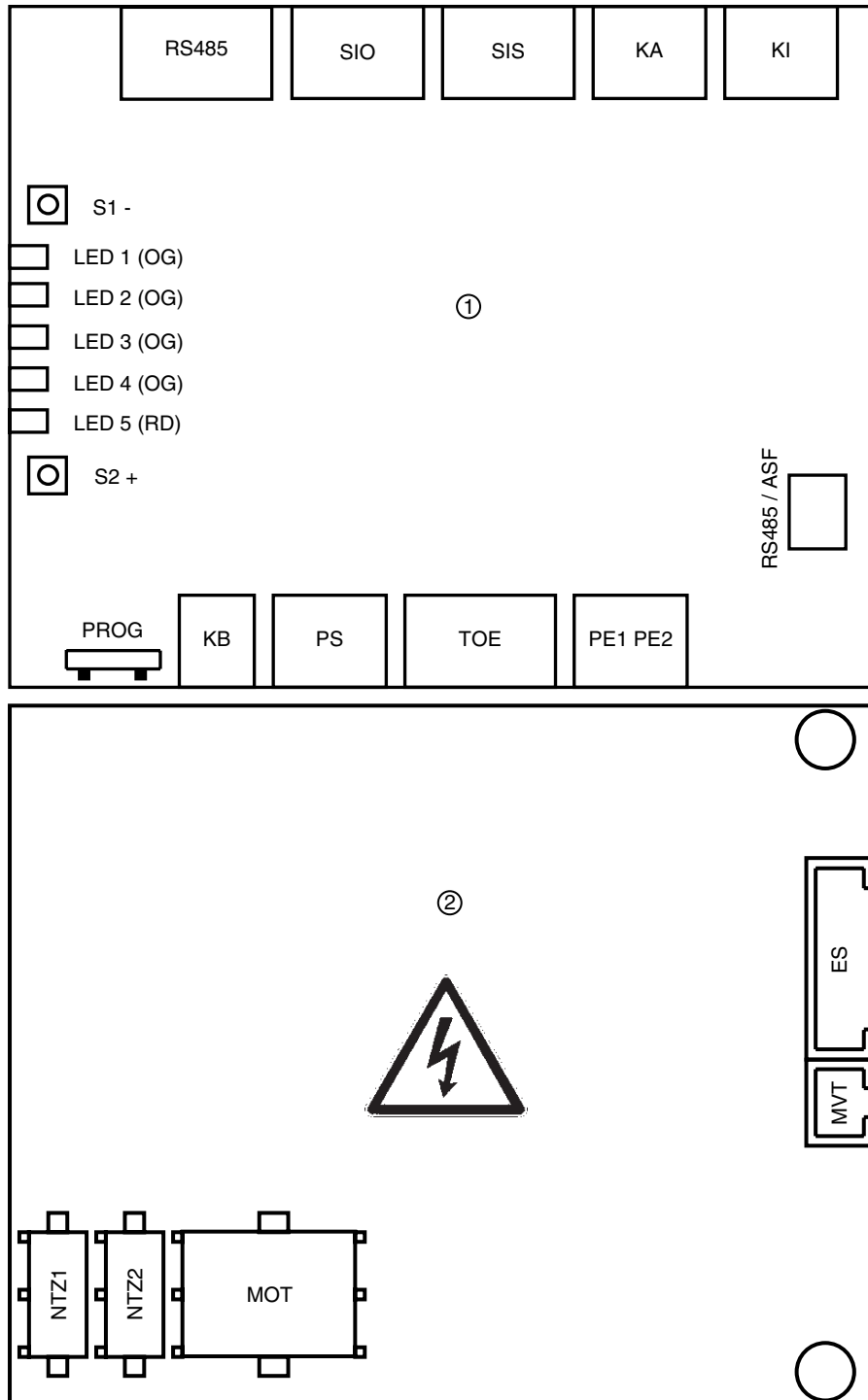
- | | | | |
|---|---|---|---|
| 1 | Mains fuse, provided by customer *) | 5 | Ferrite sleeve |
| 2 | Main switch, on site**) | 6 | Earthing base plate |
| 3 | Door drive
TSA 160 NT Invers (1-leaf or 2-leaf) | 7 | Earthing drive hood |
| 4 | Fuse terminal strip, fuse 5x20 mm,
T4AH/250 V AC | 8 | Mains cut-off printed circuit board |
| | | 9 | Jumper connector from the accessory ZR-Invers |

*) The customer must use an on-site automatic cut-out as the line-side disconnecting device, the dimensioning of which is matched to the type, cross-section, type of routing and ambient conditions of the on site feeder (at least 6 A, maximum 16 A).

**) Necessary in accordance with EN 60335-1, section 22.2.

20 Control

- DCU5 control, mat. no. 118444
- Terminal bag, mat. no. 124448
- S1, S2: Button for configuring/setting parameters
- LED1 through LED5: LEDs to display the operation mode, faults, parameters and parameter values



- 1 DCU5 control unit
 2 DCU5 power unit

21 Commissioning and service

Commissioning and service can be carried out with the display programme switch DPS, the service terminal ST220 or using the push buttons S1 and S2.

- Parameter setting using the buttons S1 and S2 of the control see chapter 24.2, "Service buttons S1 and S2".
- In case of parameter setting of the control using the push buttons S1 and S2, the RS485 connection between the active leaf and passive leaf control can remain.
- In case of parameter setting using the ST220 the active leaf and passive leaf configurations have to be carried out separately. Then the drives can be configured with an existing bus connection.
- In case of parameter setting of the control with DPS, the RS485 connection between the active leaf and passive leaf control has to be disconnected.

21.1 Pre-conditions

- Assembly is complete (see assembly and service instructions for the drive).
- Electrical installation is complete.
- Sensors are correctly configured and aligned.
- Internal programme switch at the active and passive leaf drive set to 0 (NIGHT/OFF).
- If available, external programme switch MPS or MPS-D set to NIGHT operating mode.

21.2 Carrying out commissioning

21.2.1 Preparation



For the ST220 push button functions, see chapter 23.2, "Operation of ST220".
For DPS and S1, S2 push button functions, see 24, "Display programme switch DPS and Service push buttons S1, S2".

- ▶ Switch off the mains power supply of the drive.
- ▶ Disconnect the RS485 connection to the active and passive leaf control (connector RS458/ASF or connector RS485).
- ▶ If necessary remove TPS and connect DPS to the active leaf control.
- ▶ Switch on the mains power supply of the drive.

21.2.2 Commissioning with ST220

Configuring a brand-new 1-leaf drive

In the menu "Door parameters":

- In the submenu "Number of leaves": "1-leaf drive".
- In the menu "Type of installation": "Electric strike type"
- In the menu "Signals", submenu "Input signals":
 - "SI1 – terminal SIS", "SI1 contact type"
 - "SI1 – terminal SIS", "SI1 function"
 - "SI3 – terminal SIO", "SI3 contact type"
 - "SI3 – terminal SIO", "SI3 function"
- In the menu "Signals", submenu "Output signals": "Testing SI"
- ▶ Set further parameters if appropriate (see chapter 23.5, "Service menu ST220"), in particular "Drive type", "Type of installation" Type of bolt contact".

Configuring a brand-new 2-leaf drive

- ▶ Switch the mains supply voltage off.
- ▶ Set the internal programme switch at the active leaf drive to "II AUT" or, if available, the MPS-D to "Automatic".
- ▶ Disconnect the RS485 connection active leaf control – passive leaf control.
- ▶ Connect the service terminal ST220 to the active leaf control.
- ▶ Switch on the 230 V mains supply voltage.
- ▶ With TSA 160 NT F press the reset switch.
 - In the menu "Door parameters", submenu "Number of leaves": "2-leaf active" for active leaf control.
- ▶ Exit the service menu.
"DCU500 GF" appears on the display.
- ▶ Set the internal programme switch on the passive leaf drive to "II AUT".
- ▶ Connect the service terminal ST220 to the passive leaf control.
 - In the menu "Door parameters", submenu "Number of leaves": "2-leaf passive" for passive leaf control.
- ▶ Exit the service menu.
"DCU500 SF" appears on the display.

- ▶ Switch the mains supply voltage off.
- ▶ Re-establish the RS485 connection active leaf control – passive leaf control.
- ▶ Switch the mains supply voltage on again.
- ▶ With TSA 160NT F: Press the reset switch.

Separate parameter setting for the controls is no longer necessary.

The drive for which parameter setting is to take place (GF or SF) can be selected via the service terminal.

- ▶ Set further parameters, in particular:
 - "Door parameters": "Number of leaves", "Drive type", "Type of installation", "Type of electric strike"
 - "Input signals": "SI1 contact type", "SI1 function", "SI3 contact type", "SI3 function", "Bolt contact type", "AU contact type"
 - "Output signals": "Testing SI"



If all contact of the door leaf with persons is to be avoided, safety sensors for monitoring opening and closing have to be mounted in accordance with DIN 18650 and be tested by the control.

- ▶ Check the running behaviour of the door and adjust other parameters if necessary.

Clear the fault memory of the controls:

- ▶ Select the control via "Active leaf Para" or "Passive Leaf Para" respectively:
- ▶ Use "Diagnosis", "Fault memory", "Clear current faults", "Yes" and "Clear old faults" – "Yes" to clear the fault memory of the selected control.
- ▶ Unplug ST220.

The installation is complete (see installation instructions of the corresponding swing door drive).

Sensors are correctly configured and aligned.

- ▶ Clear the detection area of the sensors.

Electrical installation is complete.

21.2.3 Commissioning with DPS

Configuring a brand-new 2-leaf drive

- ▶ Switch the mains supply voltage off.
- ▶ Set the internal programme switch to "II AUT".
- ▶ Disconnect the RS485 connection active leaf control – passive leaf control.
- ▶ Connect DPS with the active leaf control.
- ▶ Switch the mains voltage supply on.
- ▶ With TSA 160 NT F press the reset switch.
- ▶ Open the Service menu by pressing the hidden service push button and the ENTER push button (exit only) at the same time.
- ▶ Change parameter *EF* from "00" (1-leaf drive) to 01 (2-leaf active).
- ▶ Set further parameters on the active leaf control, in particular:
 - Set *EF* (Number of leaves), *RE* (Drive type), *HT* (Type of installation), *EO* (Type of electric strike), *SI* (SI1 contact type), *FI* (SI1 function), *S3* (SI3 contact type), *F3* (SI3 function), *rr* (Bolt contact type), *P5* (AU contact type), *EE* (Testing SI)
- ▶ Exit the service menu.
- ▶ Set the internal programme switch on the passive leaf drive to "II AUT".
- ▶ Connect DPS with the passive leaf control and open the Service menu via DPS.
- ▶ Change parameter *EF* from 00 (1-leaf drive) to 02 (2-leaf passive)
- ▶ Set further parameters on the passive leaf control, in particular:
 - Set *EF* (Number of leaves), *RE* (Drive type), *HT* (Type of installation), *EO* (Type of electric strike), *SI* (SI1 contact type), *FI* (SI1 function), *S3* (SI3 contact type), *F3* (SI3 function), *rr* (Bolt contact type), *P5* (AU contact type), *EE* (Testing SI)
- ▶ Exit the Service menu by pressing the hidden Service push button and the push button x (night mode) at the same time.
- ▶ Switch off the mains power supply of the drive.
- ▶ Disconnect DPS from the control again.
- ▶ Set up RS485 connection active leaf/passive leaf control again (connector RS485/ASF or connector RS485).
- ▶ Switch on the mains voltage.
- ▶ For TSA 160 NT F: Press the reset switch.



If all contact of the door leaf with persons is to be avoided, safety sensors for monitoring opening and closing have to be mounted in accordance with DIN 18650 and be tested by the control.

21.2.4 Commissioning via service push buttons S1 and S2.

Configuring a brand-new drive

For 2-leaf drives, the RS485 connection can be maintained between active leaf and passive leaf control. The parameters are set directly at the respective control via the Service push buttons.

Active leaf drive:

- ▶ 1-leaf drive: Set parameter "01" (Number of leaves) to "00" (1-leaf drive) (factory setting).
- ▶ 2-leaf drive: Change parameter "01" (Number of leaves) from "00" (1-leaf drive) to "01" (2-leaf active).
- ▶ Set further parameters on the active leaf control, in particular:
 - "29" (Drive type), "27" (Type of installation), "20" (Type of electric strike), "07" (SI1 contact type), "08" (SI1 function), "09" (SI3 contact type), "10" (SI3 function), "21" (Bolt contact type), "11" (Testing SI)

Passive leaf drive:

- ▶ Change parameter "01" (Number of leaves) from "00" (1-leaf drive) to "02" (2-leaf passive).
- ▶ Set further parameters on the passive leaf control, in particular:
 - "29" (Drive type), "27" (Type of installation), "20" (Type of electric strike), "07" (SI1 contact type), "08" (SI1 function), "09" (SI3 contact type), "10" (SI3 function), "21" (Bolt contact type), "11" (Testing SI)

21.3 Finish commissioning

- ▶ Switch off the mains power supply of the drive.
- ▶ Reverse the hold-open of the active leaf in the open position.
- ▶ Switch on the mains power supply of the drive.
- ▶ With TSA 160 NT F press the reset switch.
- ▶ Check function and detection areas of all contact sensors.
- ▶ Check the function and detection areas of the safety sensors for monitoring closing and opening.

At sensor strips:

- ▶ Check each individual sensor module.
- ▶ Check the angle of the hiding of the safety sensor open and if necessary correct the setting of the limit switch wall blanking.
- ▶ If necessary correct the settings of the limit switch (open position/close position).

21.4 Changing the parameters of a 2-leaf drive

Parameter S1, S2	DPS	ST220	Description
1	<i>EF</i>	Number of leaves	Active leaf/passive leaf
7	<i>S1</i>	Safety 1 contact type	
8	<i>F1</i>	Safety 1 function	
9	<i>S3</i>	Safety 3 contact type	
10	<i>F3</i>	Safety 3 function	
11	<i>tE</i>	Testing	Testing safety sensors
20	<i>tσ</i>	Electric strike type	Selection of the electric strike
21	<i>rr</i>	Bar message	Contact for bar message
19	<i>PS</i>	Automatic contact type	Selection of function Au input
29	<i>Rt</i>	Drive type	
27	<i>Ht</i>	Type of installation	Stop type

21.4.1 Configuring the active leaf control



- For parameter setting with the service terminal ST220, the control to be configured can be selected via the Service menu.
- For parameter setting with the service push buttons S1 and S2, parameter setting can take place directly at the control to be configured.
- For parameter setting with the DPS, selection of the control to be configured (active or passive leaf) is not possible.

Parameter setting with the DPS is carried out as follows:

- ▶ If connected, set the internal programme switch II (AUT) or MPS to AUT.
- ▶ Switch off the mains power supply of the drive.
- ▶ With 2-leaf drive, disconnect the RS485 connection active leaf/passive leaf control (connector RS485/ASF or connector RS485).
- ▶ Connect DPS to the active leaf control.
- ▶ Switch on the supply voltage of the drive.
- ▶ With TSA 160 NT F press the reset switch.
- ▶ Open the Service menu by pressing the hidden service push button and the ENTER push button (exit only) at the same time.
- ▶ Carry out the required parameter settings.
- ▶ Exit the Service menu by pressing the hidden Service push button and the push button x (night mode) at the same time.
- ▶ Switch off the mains power supply of the drive.
- ▶ Disconnect DPS from the control again.
- ▶ With 2-leaf drive, re-establish the RS485 connection active leaf/passive leaf control (connector RS485/ASF or connector RS485).
- ▶ Switch on the mains voltage.

For TSA 160 NT F:

- ▶ Press the reset switch.
- ▶ Check the changed functions and if necessary adjust.

21.4.2 Configuring the passive leaf control



- For parameter setting with the service terminal ST220, the control to be configured can be selected via the Service menu.
- For parameter setting with the service push buttons S1 and S2, parameter setting can take place directly at the control to be configured.
- For parameter setting with the DPS, selection of the control to be configured (active or passive leaf) is not possible.

Parameter setting with the DPS is carried out as follows:

- ▶ If connected, set the internal programme switch II (AUT) or MPS to AUT.
- ▶ Switch off the mains power supply of the drive.
- ▶ Disconnect the RS485 connection to the active leaf/passive leaf control (plug RS485/ASF or plug RS485).
- ▶ Connect the DPS to the passive leaf control.
- ▶ Switch on the supply voltage of the drive.
- ▶ With TSA 160 NT F press the reset switch.
- ▶ Open the Service menu by pressing the hidden service push button and the ENTER push button (exit only) at the same time.
- ▶ Carry out the required parameter settings.
- ▶ Exit the Service menu by pressing the hidden Service push button and the push button x (night mode) at the same time.
- ▶ Switch off the mains power supply of the drive.
- ▶ Disconnect DPS from the control again.
- ▶ Set up RS485 connection active leaf/passive leaf control again (connector RS485/ASF or connector RS485).
- ▶ Switch on the mains voltage.

For TSA 160 NT F:

- ▶ Press the reset switch.
- ▶ Check the changed functions and if necessary adjust.

22 Mode of operation

LED 1 to LED 4 are used to display the set operating mode.

5	4	3	2	1	Mode of operation
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	OFF
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Night mode
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Exit only
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Automatic 1-leaf (AU Winter)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Hold open
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Automatic 2-leaf (AU Summer)

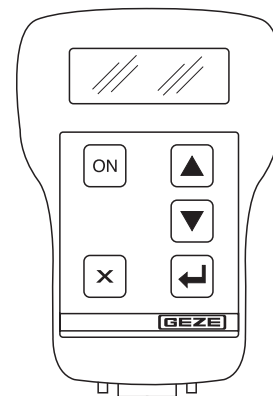
23 Service menu

23.1 Service terminal ST220

- Service terminal ST200, mat. no. 087261
- The drive can be commissioned with service terminal ST220, software version from v2.1.

23.2 Operation of ST220

Key	Function
	Cursor upwards Increase number value Scroll upward (if key is pressed longer than 2 s)
	Cursor downwards Decrease number value Scroll downward (if key is pressed longer than 2 s)
	Cancel input Any input can be cancelled by pressing the x key. The input position then changes to the first menu position or one menu level back.
	Select Update display Accept new value



Display directly after connection

GEZE Service terminal 2.1 XXXXXYWWJJZZZZZV

Software version ST220 V2.1
Serial number ST220

23.3 Service mode ST220

- The system changes to Service mode when the service terminal is connected to the DCU5.
- Service is possible in modes of operation LS, AU and DO.
- In Service mode, the door remains in operation in the current operating mode.

Display after connection establishment for door control

TSA160 NT 3.1 DO DCU500 xy Automatic closed
--

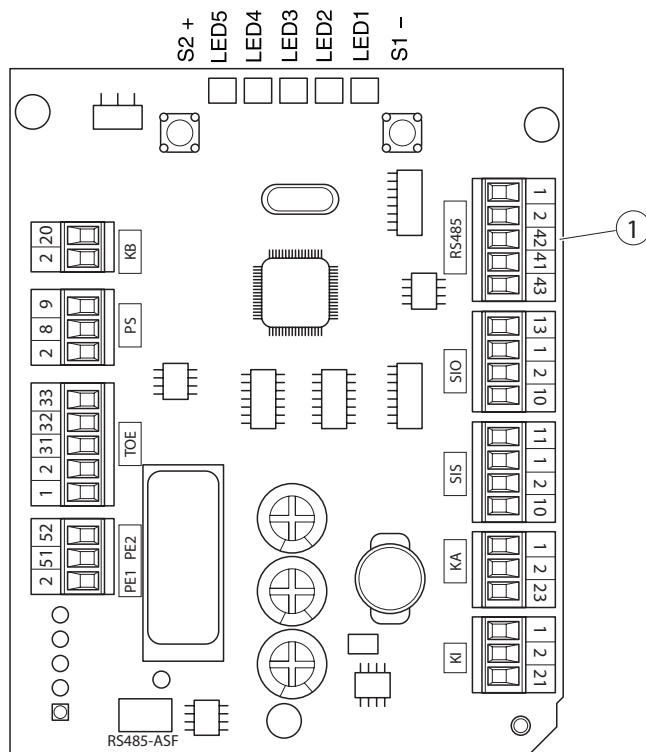
Drive type Software version 3.0 Hardware version E1
 "xy": "GF" for active leaf, "SF" for passive leaf
 Mode of operation
 Door mode



▶ Only exit the Service menu on the start screen, otherwise the parameter settings will not be saved.

23.4 Connecting service terminal ST220

The service terminal ST220 is connected to the control component of the DCU5 at connection RS484 (1).



23.5 Service menu ST220

23.5.1 Parameter setting 2-leaf drives

- ▶ Carry out parameter setting for the active leaf/passive leaf individually without RS485 connection.
 - DPS: Parameter "EF" to value 1 for "2-leaf active" or value 2 for "2-leaf passive"
 - ST220: "Door parameters", "Number of leaves" to "2-leaf active" or "2-leaf passive"
 - S1, S2: Set parameter 1 to value 01 for "2-leaf active" or value 02 for "2-leaf passive"
- ▶ Establish an RS485 connection.
- ▶ Press the "↵" button.

As the start for the configuration a selection window for parameter setting of the active leaf or passive leaf is displayed.

Selection of active leaf/passive leaf parameter setting	
Start GF or SF?	Selection of the parameter setting GF or SF
Active leaf Para*	Setting of active leaf parameter setting
Passive leaf Para	Setting of passive leaf parameter setting

If the active leaf is selected, an "*" is displayed as the selection symbol. For the passive leaf a "+".

23.5.2 Main menu

A 4-digit password must be entered before the main menu can be accessed:



- Password entry is only necessary if the menu is password-protected.


Password

0---









*

- ▶ Use ▲ and ▼ to select the PIN for the password consisting of digits and characters.
- ▶ Apply with ↵.

23.5.3 Mode of operation

Designation	Setting values	Explanation
Mode of operation	Off	Operating mode setting
	Night mode	
	Exit only	
	Automatic	
	Hold open	
Opening type	2-leaf Open	Open active and passive leaves at activation
	1-leaf Open	Only active leaf opens
Open door		Opening of the door via ST220 (press button  1x)

23.5.4 Door parameters

Designation	Setting values	Explanation	
Number of leaves	1-leaf drive		
	2-leaf active	Active leaf drive	
	2-leaf passive	passive leaf drive	
Drive type	Unknown		
	TSA 160 NT		
	TSA 160 NT Z	Z Pulling	
	TSA 160 NT F	F Fire protection	
	TSA 160 NT Invers		
	TSA 160 NT Z Invers		
Type of installation	Unknown	KM Transom installation	
	KM BS GLS	BS Hinge side	
	KM BG GST	BG Opposite hinge side	
		GLS Guide rail	
		GST Link arm	
Drive ser. no.	000000000000	Entry of the serial number: Change value with  and  , confirm with  , cancel with  .	
Maintenance	by operating time	0 ... 12 ... 99 months	Change value with  and  , confirm with  , cancel with  .
	by cycles	0 ... 500,000 ... 3,000,000 Cycles	
Electric strike type	No electric strike		
	Fail-secure		
	Fail-safe		
	Motor lock		
	Working close pressure	Only with TSA 160 NT Invers: The electric strike is relieved through close pressure of the door leaf before opening.	
	Closed-circuit current close pressure		
	close pressure		
Motor close pressure			
Opening delay	0...20 s	Period which the motor lock has to unlock before the drive opens the door.	
Solenoid valve		Only with TSA 160 NT Invers	
	No	Door is kept in closing position by electric strike. Solenoid valve de-energised.	
	Yes	Door is kept in closing position by solenoid valve.	

23.5.5 Movement parameters

Designation	Setting values	Explanation	
Hold-open times	2-leaf (summer)	0 .. 1 .. 10 .. 12 .. 20 .. 25 .. 50 60 s	
	1-leaf (winter)	0 .. 1 .. 10 .. 12 .. 20 .. 25 .. 50 60 s	
	Mechanical contact	0 .. 1 .. 10 .. 12 .. 20 .. 25 .. 50 60 s	With activation via KB
	Close delay GF	0 .. 1 .. 15 16 s	Time starts to expire as soon as the passive leaf starts to close. 16: Setting in accordance with DIN 18650/EN 16005. DIN 18650 EN 16005
	Dyn extension	Yes No	Time starts to expire as soon as the passive leaf has reached the closing position (closing position limit switch necessary). Automatic extension of the hold-open time at increased usage frequency
Delay SF		0 .. 1 .. 10 .. 12 .. 20 .. 25 .. 50 60 0.1 sec.	
Motor follow-up time		0 .. 1 .. 10 .. 20 .. 50 × 0.1 s	Can only be set for TSA 160 NT Invers. After the limit switch has been reached the motor is activated again for the duration of the run-on delay set.
Push and Go		No Yes	Only with closing position limit switch. (limit switch not necessary for TSA 160 NT Invers)

23.5.6 Signals

Input signals

Designation	Setting values	Explanation	
SI1 - terminal SIS	Current state	SI1 - terminal SIS1 Z-> inactive K->normally closed contact F-> SIS rev	Display
	SI1 contact type	Not used Normally closed contact	Input SIS without function
	SI1 function	SIS rev SIS and KI SIS and KA	Reverse when closing Reverse when closing, KI in closing position Reverse when closing, KA in closing position
SI3 - terminal SIO	Current state	SI3 - terminal SIO1 Z-> inactive K->normally closed contact F-> SIS rev	Display
	SI3 contact type	Not used Normally closed contact	Input SIO without function
	SI3 function	SIO stop SIO SF GF	Stop when opening Use stop function from GF or SF
Bolt contact type	Current state	Bolt contact type Z-> inactive K-> normally opened contact F-> lock contact	Display
	Bolt contact type	Normally opened contact Normally closed contact	

Designation	Setting values	Explanation		
KB	Current state	KB Z-> inactive K->normally closed contact		
	KB contact type	Not used Normally opened contact Normally closed contact		
KI	Current state	KI Z-> inactive K -> normally opened contact A -> 0 s		
	KI contact type	Not used Normally opened contact Normally closed contact		
	KI delay	0 .. 90 × 0.1 s		
KA	Current state	KA Z-> inactive K -> normally opened contact A -> 0 s		
	KA contact type	Not used Normally opened contact Normally closed contact		
	KA delay	0 .. 1 .. 90 × 0.1 s		
AU	Current state	AU Z-> inactive K -> normally opened contact		
	AU contact type	Not used Normally opened contact Normally closed contact analogue MPS		
DO	Current state	DO Z-> inactive K -> normally opened contact		
	DO contact type	Not used Normally opened contact Normally closed contact		
PE1	Current state	PE1 Z-> inactive K -> not used F -> not used		
	PE1 function	Not used	Input PE1 without function	
		OFF	NO	Switchover to OFF (normally opened contact)
		Switchover summer	NO	For the connection of a push button for the summer function. Only for switching from 1-leaf to 2-leaf opening, not for actually opening the door.
		Switchover winter	NO	For the connection of a push button for the winter function. Only for switching from 2-leaf to 1-leaf opening, not for actually opening the door.
		Sabotage	NC	Permanently switched. If the contact is interrupted KB is not evaluated in the night mode of operation. All other functions remain the same.
Closing position GF	NO	Closing position contact of the door leaf <ul style="list-style-type: none"> ▫ For 1-leaf Door ▫ For 1-leaf Door drive with manual passive leaf (door closer): Closing position contact of the active leaf ▫ For 2-leaf door: Active leaf contact to GF control, passive leaf contact to SF control 		

Designation	Setting values	Explanation
	P-KI activation	NO Additional contact sensor KI
	P-KA activation	NO Additional contact sensor KA
	Switch function	NO With 2-leaf assemblies the push button can be connected to the active leaf control or to the passive leaf control. When the push button is pressed once, the drive opens the door. When the push button is pressed again, the drive closes the door. If the push button is connected to the passive leaf control opening and closing when both door leaves are activated if the internal programme switch of the passive leaf control is set to AUT.
	Switch function hold-open time (OHZ)	NO With 2-leaf assemblies the push button can be connected to the active leaf control or to the passive leaf control. When the push button is pressed once, the drive opens the door and closes after the hold-open time has expired. When the push button is pressed again (within the hold-open time) the drive closes the door without waiting for the hold-open time to expire. If the push button is connected to the active leaf, the 1-leaf hold-open time is used for 1-leaf use and the 2-leaf hold-open time for 2-leaf use.
	Reset switch	NO For restarting the drive. Function as reset.
	Double push button	NO Press 1 x: GF opens; Press 2 x: SF also opens
	Stop normally opened contact	NO For connection of a stop push button
	Stop normally closed contact	NC
	PS-NA	NO Night mode programme
	PS-LS	NO Exit only programme
	Closed position SF	SF or door closer closed.
	WC control	NO with IO 420
	1-leaf opening	NO Only on the active leaf (2-leaf drive)
	OFF normally closed contact	NC Switchover to OFF
PE2	Current state	PE2 Z-> inactive K -> not used F -> not used Display
	PE2 function	Not used Input PE2 without function
	OFF	NO Switchover to OFF (normally opened contact)
	Switchover summer	NO For the connection of a push button for the summer function. Only for switching from 1-leaf to 2-leaf opening, not for actually opening the door
	Switchover winter	NO For the connection of a push button for the winter function. Only for switching from 2-leaf to 2-leaf opening, not for actually opening the door.
	Sabotage	NC Permanently switched. If the contact is interrupted KB is not evaluated in the night mode of operation. All other functions remain the same.

Designation	Setting values	Explanation
Closing position GF	NO	Closing position contact of the door leaf <ul style="list-style-type: none"> ▫ For 1-leaf Door ▫ For 1-leaf Door drive with manual passive leaf (door closer): Closing position contact of the active leaf ▫ For 2-leaf door: Active leaf contact to GF control, passive leaf contact to SF control
Emergency lock 20kOhm	NO	The input can be used to connect an emergency lock switch. When the emergency lock switch is activated, the contact is closed and 17.83 V is applied to the input. The door closes and locks. The contact sensors KI, KA and KB are blanked. The door remains closed as long as the emergency lock signal is applied to the input.
P-KI activation	NO	Additional contact sensor (P-KI, P-KA). For connection of additional closing contacts.
P-KA activation	NO	
Switch function	NO	With 2-leaf assemblies the push button can be connected to the active leaf control or to the passive leaf control. When the push button is pressed once, the drive opens the door. When the push button is pressed again, the drive closes the door. If the push button is connected to the passive leaf control opening and closing when both door leaves are activated if the internal programme switch of the passive leaf control is set to AUT.
Switch function hold-open time (OHZ)	NO	With 2-leaf assemblies the push button can be connected to the active leaf control or to the passive leaf control. When the push button is pressed once, the drive opens the door and closes after the hold-open time has expired. When the push button is pressed again (within the hold-open time) the drive closes the door without waiting for the hold-open time to expire. If the push button is connected to the active leaf, the 1-leaf hold-open time is used for 1-leaf use and the 2-leaf hold-open time for 2-leaf use.
Stop 1.2 kOhm		For the connection of a stop push button with 1.2 kOhm terminating resistor.
Reset switch	NO	For restarting the drive. Function as reset.
Double push button	NO	1 × press = 1-leaf Open 2 × press = 2-leaf Open
Stop normally opened contact	NO	For connection of a stop push button.
Stop normally closed contact	NC	
PS-NA	NO	Night mode programme
PS-LS	NO	Exit only programme
Closed position SF	NO	SF or door closer closed
Stop 2.0 kOhm	NO	For the connection of a stop push button with 2.0 kOhm terminating resistor. Protection in accordance with EN 16005/DIN 18650.
WC control	NO	with IO 420
1-leaf opening	NO	Only on the active leaf (2-leaf drive)
OFF normally closed contact	NC	Switchover to OFF (electric strike)

Output signals

Designation	Setting values	Explanation
Testing SI	Current state	Z-> inactive K-> not used F-> no testing
	Testing SI	No testing
		Testing with 24 V
		Testing with GND

Diagnosis

Designation	Setting values	Explanation		
Current values	Inputs	SI1, SI3	0 V / 24 V	
		RM	0 V / 24 V	
		KB, KI, KA	0 V / 24 V	
		AU	Voltage at the terminal in V	
		DO	0 V / 24 V	
		Wall elimi	0 V / 24 V	
		Motor swit	0 V / 24 V	
		S1, S2	0 V / 5 V	
		PE1	0 V / 24 V	
		PE2	Voltage at the terminal in V	
	Outputs	TOE	on	0 V / 24 V
		Test	off	0 V / 24 V
		MAG		0 V / 24 V Solenoid valve
	Internal values	current position	closed / open / open / close	
Voltages		24 V external	Voltage at the terminal in V	
Statistics	Cycles		Number of operating cycles since last maintenance	
	Hours		Number of operating hours since last maintenance	
	Hours Ser		Hours until next maintenance	
current conditions	Inputs	SI1, SI3	The logical state of the signal is displayed (on/off)	
		RM		
		KB, KI, KA		
		AU		
		DO		
		Wall elimi		
Outputs	TOE	The current state is displayed (on/off)		
	Test			
	MAG			
Fault memory	Current fault	Fault 1	Cause 1	
			Cause 2	
		Fault 2	Cause 1	
			Cause 2	
		Fault 3	Cause 1	
			Cause 2	
		Fault 4	Cause 1	
			Cause 2	
	Old faults	Fault 1	Cause 1	
			Cause 2	
		Fault 2	Cause 1	
			Cause 2	
	Fault 3	Cause 1		
		Cause 2		
	Fault 4	Cause 1		
		Cause 2		

Designation	Setting values	Explanation
	Delete current faults	No Yes Clear currently active faults
	Clear old faults	No Yes Clear old faults
Default setting		No Yes Reset all the values to the factory settings
Delete maintenance		No Yes Clear the maintenance values
Password	Change PW S1	Password old 0000 Password new ----
	Changing PW DPS TPS	Password old 00 Password new --
		<p>Password PW S1: for access to the service menu with ST220.</p> <p>Password PW TPS/DPS: is used to enable the TPS or DPS instead of enabling via a key switch. Disabling reoccurs automatically after 1 minute without push button activation. The first digit specifies how often the key ▲ has to be activated and the second digit how often the key ▼ has to be activated to release operation of the TPS / DPS. Entry of the password with ST200: <ul style="list-style-type: none"> ▶ Change digit with ▲ or ▼. ▶ Confirm digit and change to next position with ←. ▫ Abort with x. ▫ Display of the current position by the asterisk under it. ▶ After completing entry, press ← to accept the password. After 1 minute without a button being pressed or when the service menu is accessed again, the password is required before changes to the operating mode setting or to the parameter settings can be carried out. The password has to be set separately for the active leaf and passive leaf drive. The active leaf drive and the passive leaf drive can have different passwords. Important information: <ul style="list-style-type: none"> ▫ When the password for ST220 is set, access to the service menu via DPS is no longer possible. ▫ If the password has been forgotten, a special flash file with which the password on the control can be reset to 00 has to be requested from GEZE. ▫ The password cannot be deleted by installing a new software version. </p>
Language		deutsch english francais svensk

24 Display programme switch DPS and Service push buttons S1, S2

24.1 Display programme switch (DPS)

The DPS can be used for commissioning and servicing, mat. no. 151524:

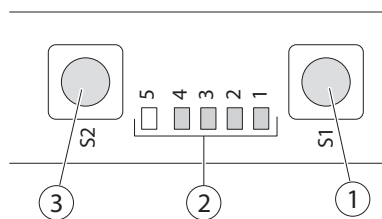
- for changing the drive parameters
- for teaching the drive
- for diagnosis

Mode of operation		Service mode	
<i>nR</i>	Night mode	×	Cancel and return to first menu level
<i>LS</i>	Exit only	↵	Confirm
<i>Ru</i>	Automatic	▲	Scroll up increase value
<i>do</i>	Hold open	▼	Scroll down Reduce value
<i>oF</i>	OFF	-	-
▲ + ▼ simultaneously	Change 2-leaf operation 1-leaf operation	-	-

Service button (1) Change operating mode / service mode + ↵ simultaneously	
---	--

24.2 Service buttons S1 and S2

- 1 Service button S1
- 2 Service-LEDs
- 3 Service button S2



The service push buttons S1 and S2 as well as the service LEDs have the following functions:

- Opening and changing drive parameters
- Querying diagnosis data (states, values, faults)

i During normal operation the LEDs indicate the current mode of operation. The mode of operation can be changed using keys S1 and S2.

Function	Input and reaction
Open/exit the parameter menu	▶ Simultaneously press buttons S1 and S2 longer than 2 s. LED5 flashes slowly, corresponding to the selected parameter level: Level 1: 1 pulse + 1 s pause Level 2: 2 pulses + 1 s pause LED1 through LED4 display the parameter.
Select the parameter	▶ Briefly press button S2 (+) or button S1 (-).
Switch to value setting	▶ Hold down push button S1 longer than 2 sec. In the value menu, LED5 is off and LED1 through LED4 display the value in accordance with the value table.
Change value	▶ Briefly press button S2 (+) or button S1 (-).
Confirm value	▶ Press button S1 longer than 2 s.
Value setting without exiting value change	▶ Press button S2 longer than 2 s.
Reset the values to the factory settings	▶ Set parameter 24 (factory settings) to 01.

System messages

- If one or more faults are pending, these are displayed consecutively alternatively with the current mode of operation in encoded form with service LEDs 1 to 4.
- The red LED5 flashes quickly (10 Hz) on the fault display.
- The mode of operation is displayed for 5 s, the respective error message for 2 s.

Service mode

- Individual parameters can be set for the control in service mode.
- Within the first 3 minutes of the mains voltage being switched on, the device can be changed to service mode using keys S1 and S2.
- There is a time limit to changing to service mode using keys S1 and S2 so that safety-related parameters are not changed unintentionally during operation.
- It is possible to change from any mode of operation to the service mode.
- The control automatically changes back to normal mode if no key is pressed in service mode for 3 minutes.
- In service mode, the control behaves in the same way as in the OFF mode of operation, the drive does not open and close automatically.
- The door can be opened and closed manually.

Changing to the parameter selection menu

- ▶ Simultaneously press keys S1 and S2 longer than 2 s.

The control changes to the parameter selection menu.

In this menu, the red LED5 flashes once (parameter level 1) or twice (parameter level 2) at 1 Hz.

The parameters are indicated in coded form by the other 4 LEDs.

The required parameters are selected using keys S1 (-) and S2 (+).

Changing to the value menu

- ▶ Press key S1 for longer than 2 s.

The control changes to the value menu.

- All 5 LEDs are used for coding the values.
- The required value is selected using keys S1 (-) and S2 (+).
- After key S1 has been kept pressed for more than 2 s the control takes over the value indicated.
- Input can always be aborted by pressing key S2 for more than 2 s; the control then changes back to the value menu or the parameter menu.
- Service mode is quit by pressing keys S1 and S2 simultaneously for more than 2 s.

Display values service LEDs

5	4	3	2	1	Value
○	○	○	○	○	0
○	○	○	○	●	1
○	○	○	●	○	2
○	○	○	●	●	3
○	○	●	○	○	4
○	○	●	○	●	5
○	○	●	●	○	6
○	○	●	●	●	7
○	●	○	○	○	8
○	●	○	○	●	9
○	●	○	●	○	10
○	●	○	●	●	12
○	●	●	○	○	14
○	●	●	○	●	16
○	●	●	●	○	18
○	●	●	●	●	20

5	4	3	2	1	Value
●	○	○	○	○	25
●	○	○	○	●	30
●	○	○	●	○	35
●	○	○	●	●	40
●	○	●	○	○	45
●	○	●	○	●	50
●	○	●	●	○	55
●	○	●	●	●	60
●	●	○	○	○	65
●	●	○	○	●	70
●	●	○	●	○	75
●	●	○	●	●	80
●	●	●	○	○	85
●	●	●	○	●	90
●	●	●	●	○	95
●	●	●	●	●	100

24.3 DPS service menu and service buttons S1/S2 with LEDs

- Changing to the Service mode is possible in the NA, LS, AU and DO operating modes.
- If no push button is pressed for 2 minutes in service mode, the control changes automatically to operating mode.
- In Service mode, the door remains in operation in the current operating mode.

no.	DPS	Service-LEDs					Parameter	Value ¹	ST220 display	Explanation
		5	4	3	2	1				
1	<i>EF</i>	*	○	○	○	●	Active leaf/passive leaf	00 01 02	1-leaf drive, 2-leaf active 2-leaf passive	
2	<i>oH</i>	*	○	○	●	○	<ul style="list-style-type: none"> ▫ Hold-open time for 1-leaf drives ▫ Hold-open time for 2-leaf opening (with 2-leaf drives) 	00	01 ... 10 12 ... 20 25 ... 50 60	s
3	<i>oR</i>	*	○	○	●	●	Hold-open time for 1-leaf opening (only for 2-leaf drives)	00	01 ... 10 12 ... 20 25 ... 50 60	s
4	<i>oS</i>	*	○	●	○	○	Hold-open time for activation with KB Only applicable for activation from the closing position of the door. For activation with SIS during closing, the hold-open time <i>oH</i> or <i>oR</i> applies. For activation with KB, after activation with KI, KA or SIS has already take place, hold-open time <i>oH</i> or <i>oR</i> applies.	00	01 ... 10 12 ... 20 25 ... 50 60	s
5	<i>od</i>	*	○	●	○	●	Dyn. hold open time extension	00 01	off on	
6	<i>SU</i>	*	○	●	●	○	Delayed closing action GF	00 ... 01 ...	15 s ²⁾	
									16	DIN 18650 EN 16005
7	<i>S1</i>	*	○	●	●	●	Safety 1 contact type (terminal SIS)	00 02	not used Normally closed contact	
8	<i>F1</i>	*	●	○	○	○	Safety 1 function (terminal SIS)	01 02 03	SIS SIS and KI SIS and KA	
9	<i>S3</i>	*	●	○	○	●	Safety 3 contact type (terminal SIO)	00 02	not used Normally closed contact	
10	<i>F3</i>	*	●	○	●	○	Safety 3 function (terminal SIO)	05 06	SIO stop SIO stop SF GF (SF and GF stop with an active SIO)	
11	<i>tE</i>	*	●	○	●	●	Testing S11 and S13 (safety sensors)	00 01 02	No testing Testing with 24 V Testing with GND	
12	<i>Eb</i>	*	●	●	○	○	Mechanical contact Contact type	00 01 02	not used Normally opened contact Normally closed contact	
13	<i>Ei</i>	*	●	●	○	●	Contact sensor inside contact type	00 01 02	not used Normally opened contact Normally closed contact	
14	<i>Ri</i>	*	●	●	●	○	Contact sensor inside Activation delay time	00 ... 01 ...	90 × 0,1 s	
15	<i>EO</i>	*	●	●	●	●	Contact sensor outside contact type	00 01 02	not used Normally opened contact Normally closed contact	
16	<i>RR</i>	**	○	○	○	●	Contact sensor outside Activation delay time	00 ... 01 ...	90 × 0,1 s	
17	<i>E1</i>	**	○	○	●	○	Configurable input 1	00	not used	

no.	DPS	Service-LEDs					Parameter	Value ¹	ST220 display	Explanation
		5	4	3	2	1				
							02	Off	NO	Switchover to OFF (normally opened contact)
							03	Switchover Summer	NO	
							04	Switchover Winter	NO	
							05	Sabotage	NO	
							06	Closing position GF	NO	
							08	P-KI activation	NO	
							09	P-KA activation	NO	
							10	Switch function	NO	
							11	Switch function OHZ	NO	
							12	Not used		
							13	Reset switch	NO	
							14	Double push button	NO	
							15	Stop normally opened contact	NO	not monitored
						<u>DIN 18650</u> <u>EN 16005</u>	16	Stop normally closed contact	NC	not monitored
							17	PS-NA	NO	
							18	PS-LS	NO	
							19	Closing position SF	NO	
							21	WC control	NO	with IO 420
							23	1-leaf opening	NO	only on the active leaf (with 2-leaf drive)
							26	Off	NC	Switchover to OFF (electric strike)
18	<i>E2</i>	**	○	○	●	●	Configurable input 2	00	Not used	
							02	Off	NO	Normally opened contact
							03	Switchover Summer	NO	
							04	Switchover Winter	NO	
							05	Sabotage	NC	
							06	Closing position GF	NO	
							07	Emergency locking 20kOhm	NO	
							08	P-KI activation	NO	
							09	P-KA activation	NO	
							10	Switch function	NO	
							11	Switch function OHZ	NO	
						<u>DIN 18650</u> <u>EN 16005</u>	12	Stop 1.2 kΩ	NC	
							13	Reset switch	NO	
							14	Double push button	NO	
						DIN 18650 EN 16005	15	Stop normally opened contact	NO	not monitored
							16	Stop normally closed contact	NC	not monitored
							17	PS-NA	NO	
							18	PS-LS	NO	
							19	Closing position SF	NO	
						<u>DIN 18650</u> <u>EN 16005</u>	20	Stop 2.0 kΩ	NC	monitored, DIN 18650/EN 16005
							21	WC control	NO	with IO 420
							23	1-leaf opening	NO	only on the active leaf (with 2-leaf drive)
							26	Off	NC	Switchover to OFF (electric strike)
19	<i>P5</i>	**	○	●	○	○	Automatic contact type	00	Not used	
								01	Normally opened contact	
								02	Normally closed contact	
								03	Analogue MPS	

no.	DPS	Service-LEDs					Parameter	Value ¹	ST220 display	Explanation
		5	4	3	2	1				
20	<i>to</i>	**	○	●	○	●	Electric strike type	00 01 02 03 04 05 06	No electric strike Fail-secure Fail-safe Motor lock Working close pressure Static close pressure Motor close pressure ²⁾	
21	<i>rr</i>	**	○	●	●	○	Bar message	01 02	Normally opened contact Normally closed contact	
22	<i>dl</i>	**	○	●	●	●	Opening delay	00 s ... 20 s		only with closing position limit switch
23	<i>HL</i>	**	●	○	○	●	Motor follow-up time	0 ... 1 ... 10 ... 20 ... 50 × 0.1 s		Can only be set for TSA 160 NT Invers. After the limit switch has been reached the motor is activated again for the duration of the run-on time set.
24	<i>SP</i>	**	●	○	○	○	Language	00 01 02 03	deutsch english francais svensk	
25	<i>St</i>	**	●	○	○	●	Control type	50	DCU	
26	<i>EP</i>	**	●	○	●	○	Display of the software version	e.g. 03 - 00 - 00 for V1.4		
27	<i>Ht</i>	**	●	○	●	●	Type of installation	0 1 2 3 4	Unknown KM BS GLS Not used Not used KM BG GST	
28	<i>FL</i>	**	●	●	○	○	Activation delay passive leaf	0.1 s ... 0.5 s ... 5.0 s	0.1 s	
29	<i>Rt</i>	**	●	●	○	●	Drive type	0 1 2 3 4 5 6	Unknown TSA 160 NT TSA 160 NT Z TSA 160 NT F Not used TSA 160 NT Invers TSA 160 NT Z Invers	
30	<i>ru</i>	**	●	●	●	○	Solenoid valve (TSA 160 NT Invers)	00 01	No Yes	
31	<i>Pu</i>	**	●	●	●	●	Push and Go	00 01	No Yes	Only with closing position limit switch
32	<i>CP</i>	***	●	○	○	○	Reset to factory settings	00 01	No Yes	
33	<i>Er</i>						currently queued fault		Display of the faults	
34	<i>oE</i>						Fault memory (the last 10 faults)		Display of the deleted faults (Fault History)	
35	<i>SR</i>						Statistics	Co Ho So	Number of cycles / 100 Operating hours / 4 Operating hours / 4 until next service	Display 6-digits each Page forwards with ▼
36	<i>ES</i>						Switch off service LED	cS	Displayed briefly for acknowledgement	

no.	DPS	Service-LEDs					Parameter	Value ¹	ST220 display	Explanation
		5	4	3	2	1				
37	Only available at ST220 and with GEZEconnects						Permanently open contact type	00 01 02	Not used Normally opened contact Normally closed contact	

- LED off
- LED on
- * 1 flashing pulse + 1 s pause
- ** 2 flashing pulses + 1 s pause
- *** 3 flashing pulses + 1 s pause
- 1 Text in bold means factory setting
- 2 The delayed closing action 0 ... 15 (not DIN 18650) is only possible without mechanical closing sequence control

24.4 Value table for service LEDs and display programme switch

DPS	Service-LEDs				
	5	4	3	2	1
00	○	○	○	○	○
01	○	○	○	○	●
02	○	○	○	●	○
03	○	○	○	●	●
04	○	○	●	○	○
05	○	○	●	○	●
06	○	○	●	●	○
07	○	○	●	●	●
08	○	●	○	○	○
09	○	●	○	○	●
10	○	●	○	●	○
12	○	●	○	●	●
14	○	●	●	○	○
16	○	●	●	○	●
18	○	●	●	●	○
20	○	●	●	●	●
25	●	○	○	○	○
30	●	○	○	○	●
35	●	○	○	●	○
40	●	○	○	●	●
45	●	○	●	○	○
50	●	○	●	○	●
55	●	○	●	●	○
60	●	○	●	●	●

25 Fault messages

25.1 Fault display

On the DPS

- Currently queued fault messages are displayed on the display programme switch in cycles (10 s). In addition, they are also entered in the E_r and oE fault memories.
- The mode of operation is displayed for 5 s, the respective error message for 2 s.
- Individual faults are indicated by the fault ID.
- In addition, the following state is indicated:
 - Maintenance: Winter LED flashes continuously (0.5 s on, 0.5 s off)

On the control unit ST220

- Faults are shown using the text form of the fault names.
Fault example: SIS SF

At the service LEDs

LED 5 flashes quickly (10 times per second). LEDs 1 to 4 display the fault number in binary form.

- Passive leaf faults are displayed on the active leaf as fault 11 (collective fault SF).

25.2 Fault messages service LEDs, DPS, ST220

Single drive or GF


DPS	Service-LEDs					Fault message ST220	Fault description
	5	4	3	2	1		
01	*	○	○	○	●	Motortriac	Motortriac defective
02	*	○	○	●	○	Motor relay	Motor relay defective
03	*	○	○	●	●	SIS defective	Testing SIS faulty or permanent activation
04	*	○	●	○	○	SIO defective	Testing SIO faulty or permanent activation
05	*	○	●	○	●	–	Not used
06	*	○	●	●	○	MPS	Fault mechanical programme switch MPS
07	*	○	●	●	●	Control RAM test EEPROM comparison Motor test CRC1 CRC2 24V fault surge voltage	internal control fault
08	*	●	○	○	○	Communication	incorrect communication active leaf - passive leaf
09	*	●	○	○	●	Wall blanking	Cam-operated switch of wall blanking is defective
10	*	●	○	●	○	Motor voltage	Fault during measurement of the motor voltage
11	*	●	○	●	●	Collective fault SF	Display at the LED interface of the active leaf that the passive leaf has a fault. (The fault is not displayed on the DPS. The fault is not written into the "oE" either).
22						GF faulty solenoid valve	
32						Sabotage	If contact is interrupted, KB is not evaluated in night mode of operation.
42						Emergency lock	Emergency lock has tripped (only on GF control)
						Activation active	Sub-fault of
						Push button defective	emergency lock

- LED off
- LED on
- * LED flashes rapidly (10 times per second)

Display of passive leaf faults on the active leaf (DPS, service LEDs, ST220/GEZEconnects)

DPS	Service-LEDs					Fault message ST220	Fault description
	5	4	3	2	1		
23						SF - Faulty solenoid valve	SF - Faulty solenoid valve
71	The faults are displayed at the active leaf as collective fault 11					SF - Motortriac	SF - Motortriac defective
72						SF - Motor relay	SF - Motor relay defective
73						SF - SIS defective	SF - Testing SIS faulty or permanent activation
74						SF - SIO defective	SF - Testing SIO faulty or permanent activation
75						-	SF - Not assigned
76						-	SF - Not assigned
77						SF - control DCU500 RAM test EEPROM comparison Motor test CRC1 CRC2 24V fault surge voltage	SF - Internal control fault
78						SF - Comm. SF-GF	SF - Faulty communication active leaf - passive leaf
79						SF - Wall blanking	SF - Cam switch wall blanking defective
80						SF - Motor voltage	SF - Fault while measuring the motor voltage

25.3 Fault messages keypad programme switch

TPS display	Designation	DPS display
		
○ ○ ● ● ○	SIS	03, 73
● ○ ● ○ ○	SIO	04, 74
● ○ ○ ○ ●	Alarm	32, 42
● ● ○ ○ ●	Control	01, 02, 06, 07, 08, 10 71, 72, 76, 77, 78, 80
○ ○ ● ○ ●	Wall blanking	09, 79
○ ○ ○ ○ ○	No operating voltage	

In addition, the following states are displayed:

- Fault Mode of operation is displayed for 5 s, the fault message for 2 s.
- Block active Current operating mode LED flashes once if a key is pressed.

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