B7 commissioning

automatic door systems – this is record!

record.group

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S

Simplified Start-Up
Chapter number changed from 5.7 to 6.0..... 23

1 General

1.1 Book 7 / Document identification

Name:	IRA_B7_EN_2V1_REC_102-020401136
Version:	V2.1
Serial No.:	102-020401136

1.2 Structure of the documentation

The documentation is divided into different manuals in order to reduce file size and to simplify the handling.

The structure of the document is as follows (B1 = Book 1):	
B1	General
B2	Assembly STA
B3	Assembly TSA
B4	Assembly TOS
B5	Options
B6	Control
B7	Commissioning
B8 B8A	Parameter explanations Status display, error numbers, remedial action
B9	Assembly and start-up FTA/FBO
B10	Thermcord
B11	Special designs
B12	Safecord
B13	Under-floor sliding door operator

1.3 Storage of the manual

After the installation of the system, the instructions should be stored in an accessible and dry place.

2 Principles of commissioning

2.1 Requirements of the technician

The technician must know the functions and the operation of service and flash-programmer FPC and control unit BDE-D exactly.

2.2 Mechanical final test

Manually check the following points:

- Manually opening the of door over the whole sliding length
- No abnormal sounds are audible
- All screws are tightened
- Locking device control:
  - Bolt engages correctly with straps
  - Is there enough clearance available
- Casing is properly positioned

2.3 Wiring control

- All terminal blocks are tightened
- All cables are properly fastened, so that they are not damaged by the carriages or the toothed belt

2.4 Battery / Rechargeable battery test (if available)

2.4.1 System under power

- 5 light impulses via the multifunctional key
  - RED system: performs redundancy test (incl. rechargeable battery test)
  - Standard system: performs rechargeable battery test
- Error message from the BDE-D, if capacity is too low or the rechargeable battery is defective

2.4.2 When power supply is disconnected

- This status must be displayed on the BDE-D (warning signal)
- When using a lead-acid rechargeable batteries (function differently depending on the configuration):
  - Door can still perform several opening / closing cycles
  - Parameters can be adjusted to the desired requirements (i.e. emergency reaction or battery operated)
  - If the rechargeable battery voltage is too low, it will be displayed on the BDE-D and an emergency reaction will be performed automatically

IMPORTANT

Battery operation remains intact for 13 seconds as protection against "small" power interruptions
Battery operation is not possible with **RED systems**. In case of an error or power failure, the door opens and remains open.

3 Security inspection according EN 16005

Like the German standard DIN 18650, the EN 16005 describes the requirements and the test methods for the safe use of power-operated pedestrian doors. The EN 16361 describes the requirements for the production process and documentation / classification of the doors.
The EN 16005 is valid for automatic sliding, folding, swing and revolving doors. It does not apply to high speed doors (Speedcord).
We recommend that you organize and use your country-specific version of the EN 16005.

3.1 Checking safety devices

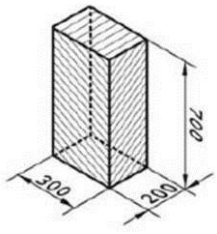
New installations must comply with standard EN 16005 to its full extent. The commissioning of a door must occur together with the operator of the door, and the latter must approve all the functions of the door.
Currently existing installations must be inspected carefully during the official service, and the customer should be encouraged to bring their door into line with standard EN 16005 with regard to safety by means of a risk assessment if necessary.

- Countries where standard DIN 18650 is still valid:
  „Risk assessment according to machinery directives in reference to DIN 18650 STA“ – Check all the points listed in that document and make the customer sign it. A copy is handed over to the customer.

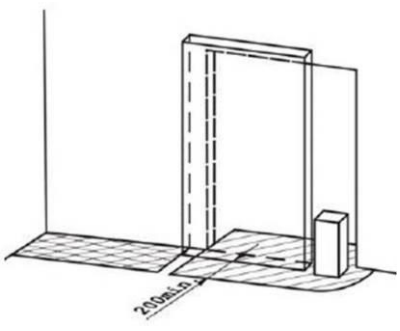
  Moreover, the following functions - if applicable and not already covered by the hazard analysis mentioned above - have to be checked:
- Automatic reverse - in both directions (closing and opening)
- Trouble-free operating of manual unlocking device (if available)
- Emergency opening switch (if available) - Door must open - automatic reverse is enabled. However, door stays closed during operating mode "Locked"

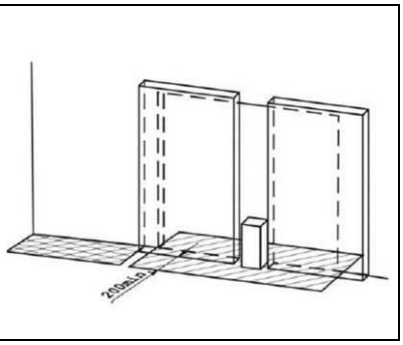
3.2 Protection during closing cycle

EN 16005 stipulates that a person must be detected from both sides of the door, on the whole travel area of the doorset.
The reference body (700x300x200 mm) must be detected at any point of an area as wide as the doorway and extending over a distance of 200 mm on both sides of the door axle.



Reference body





Solution:

One combined sensor RIC 290 (oder AIR 290) on each side of the door is sufficient to cover the whole travel area of the doorset.

NOTICE

On escape routes and emergency exits, a combined sensor RIC 290 (Performance Level „d“) must be installed on the inner side. The combined sensor AIR 290 (Performance Level „c“) is not authorised.
The photo cells ELS and the ZLP-ELS are no longer required.

3.3 Protection during opening cycle

EN 16005 covers also personal safety during the opening cycle.
Depending on the situation, the danger point can be safeguarded as follows while opening:

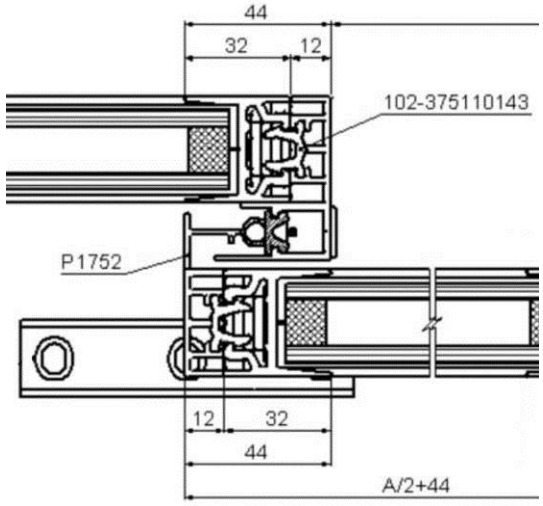
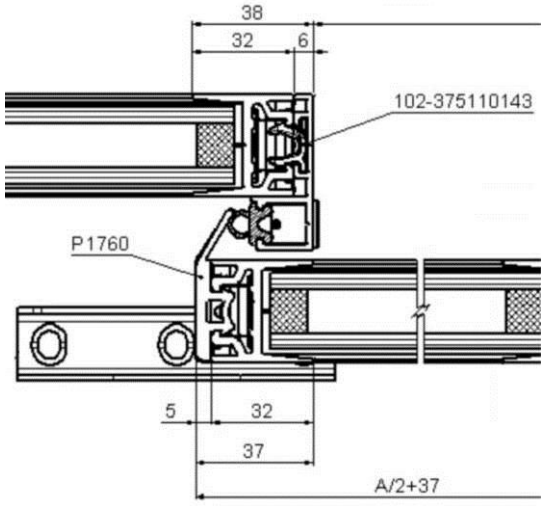
1. by finishing profiles and safety distances
2. by protective screens
3. by presence sensing device
4. by limitation of leaf force

3.3.1 DIN aluminium finishing profiles

Solution:

- DIN aluminium finishing profiles + safety distances
- DIN aluminium finishing profiles

See Book B1 „General Information“ Chapter „General Plans“

Example D-STA 32 mm with side screen and cladding	
	
Version DIN aluminium finishing profiles (P1752)	Version rubber finishing profiles (P1760)

NOTICE

The version with rubber finishing profiles is not EN 16005 compliant with respect to the 8 mm distance.

3.3.2 Safety distances

Safety distances must be observed during the opening cycle.
A safety distance Y between secondary closing edge (rear edge of door leaf) and the adjacent parts of the surroundings must be respected, depending on the distance X between the front part of the door leaf and the fixed side screen (see Figure a).
In that case, the impact hazard and the hazard concerning crushing of the body are considered to be not relevant and no more safeguard is required.
For telescopic doorsets, the reference leaf for the measurement is considered to be the one nearest to the adjacent part of the surroundings.

- If **X ≤ 100 mm** then **Y ≥ 200 mm**
- If **100 mm < X ≤ 150 mm** then **Y ≥ 500 mm**
- If **X > 150 mm** then **the door leaf opening movement must be safeguarded.**

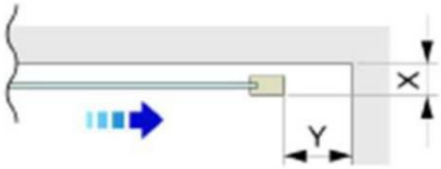


Figure a) Crushing protection

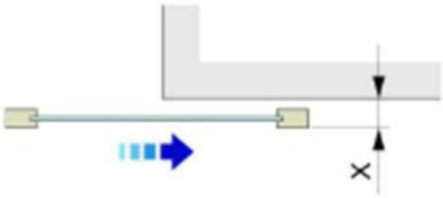
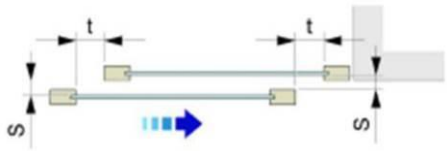


Figure c) Distance from surface of doorset leaf

Safeguards concerning shearing and drawing-in hazards shall be deemed to have been provided at the danger points during the opening cycle if safety distances shown in Figure b) and Figure d) are met.



If S ≤ 8 mm then t ≤ 0 mm

If S > 8 mm then t ≥ 25 mm

Figure b) Shearing and drawing-in protection

S ≤ 8 mm → Y ≤ 0 mm

S > 8 mm → Y ≥ 25 mm

Figure d) Finger protection (drawing-in)

3.3.3 Protective screen

See Book B5 „Options“ Chapter „Protective screen“.
This is the safest solution for protection, especially as EN 16005 recommends solutions that avoid any contact of the doorset with the user, provided that a large proportion of the users are elderly, disabled persons and young children.
When using a protective screen:

- The DIN aluminium finishing profiles are not required and rubber sealing profiles can also be used.
- The safety distances for the door leaf must not be observed.

3.3.4 Presence sensing device

The presence sensing device AIS 290 monitors the secondary closing edge of the door and detects persons in the opening area of the door leaves.
However, this solution is the least user-friendly. If a person is detected within the travel area of the doorset leaves, the door does not open or only with reduced speed, when somebody wants to go through the doorway.

Alternatives to AIS 290

IMPORTANT

Only products authorised according to EN 13849-1:2006, Performance Level „c“ may be used!

Examples:

- IRIS ON (BEA)
- OA-AXIS T (OPTEX)
- PrimeScan (Bircher-Reglomat)

The wiring takes place on the programmable inputs of the STM or on the FEM 0 with parameterisation of the SIO function.
Book B7 „Commissioning“ Chapter „STM 20, STM 20 DUO, STM 21, STM 22 DUO with combi-sensors produced by third-party“ includes a table detailing the connections and settings.

3.4 General and additional requirements

3.4.1 Detection zone for sensor activation

Attention shall be paid to the provision and positioning of sufficient automatic activation devices (sensors) for different types of doorset.
In the case of power-operated doorsets on escape routes without break-out function, the detection zone in the escape direction shall be not less than 1500 mm measured from the centre of the opening width of the doorset - and if possible 1000 mm for all other doors. The detection zone shall cover at least the entire opening width of the doorset.

Solution:

Sensors must be set correctly during commissioning.
On escape routes and emergency exits, a combined sensor RAD 290 must be installed on the inner side.

⚠ CAUTION

A combined sensor AIR 290 does not meet the 1500 mm requirement and is consequently not allowed.

3.4.2 Additional requirements for doorsets in escape routes and emergency exits

When an operating mode selector is used, the mode of operation shall be clearly identified and marked on the operating mode selector.
If a "locked" mode of operation is available, the mode of operation shall be protected, e.g. by an access code or a key, so that changes can only be made by authorised personnel.

Solution:

The system 20 RED with additional control unit BDE-V (night locking device with key-operated switch).

3.4.3 Signage

Transparent leaves or leaf surfaces shall be clearly recognizable, e.g. by permanent marking, suitable labels or by using colored materials.

Solution:

Affix adhesive strip or mark.

3.4.4 Guards

Protective measures such as enclosures, covers, enclosing guards or fixed protection leaves shall be designed so that:

1. Persons cannot reach any danger point up to a height of 2,5 m above floor level;
2. They can only be removed or opened with the aid of a tool.

Solution:

This requirement can be met by using the option "lockable casing".

3.4.5 Commissioning and information for use

The operator shall be instructed during commissioning.
Moreover, he shall be provided with a user handbook including instructions for routine maintenance.
The recommended frequency for checking the correct operation of safety function and devices is, at least, once a year and is to be carried out by professionals.
Furthermore, maintenance operations are required to be recorded in a log book, which is delivered to the operator.

Solution:

Inform the operator about the necessity of maintaining and checking the safety function and emphasise the advantages of having a maintenance contract.
Deliver a log book, or place it in the drive.

4 Operating controls

4.1 BDE-D operating unit with display

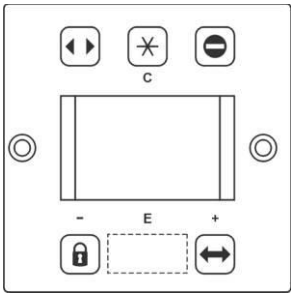
The electronic operating unit BDE-D is a convenient input and output unit for operating and programming the control units in our door drives.
Logically organized buttons allow for an intuitive door operation and navigation through the drive-specific menu structure. The LCD display with backlighting provides data and information reference the doors position by using symbols and plain text.
There are several languages to choose from, which increases user friendliness and also facilitates service interventions.
The connection to the control devices is made via the CAN-Bus.

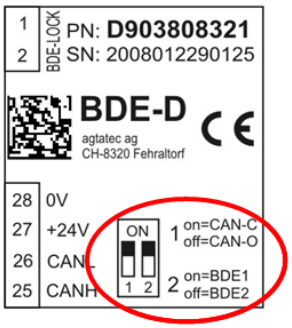
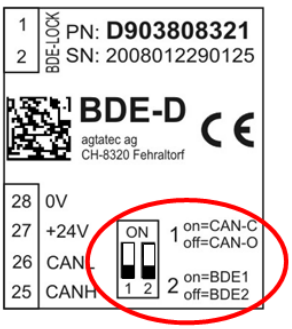
IMPORTANT

- The functions mentioned below can only be tested after performing a door learning cycle, and a CAN sensor learning cycle
- At the same time, the correct addressing of CAN sensors is controlled

4.1.1 Addressing of the Operating unit

Addressing of the Operating unit BDE-D



Installation with 1 BDE-D	Installation with 2 BDE-D
	
BDE 1 with bus terminator (rear face)	**BDE 2 without bus terminator** (rear face)

4.1.2 BDE position (automatic)

- Door is not locked in closed position
- AKI / AKA and SSK open the door
- Control detection field of sensors / if necessary adjust it
- Door closes after hold open time has expired

4.1.3 BDE position (Permanently open)

- Door must open and remain open
- Check running behaviour
- Door in open position cannot be operated by hand

IMPORTANT

On a RED installation, the functions mentioned below (manual mode and locking) cannot be selected by the BDE-D!

- Durch nochmaliges Pressing again key  (1 time or about. 2 sec.) allows the door to be closed by hand (BDE-D display: manual mode)
- Pressing then key  causes the door to close and lock (BDE-D display: manual mode)

4.1.4 BDE position (one-way)

- AKI and SSK open the door
- AKA should not activate when the door is locked

4.1.5 BDE position (reduced opening)

- AKI / AKA and SSK open the door
- Check reduced opening width / adjust if necessary
- Pressing key  : causes the door to open with reduced opening width

4.1.6 BDE position (locked)

- Door must close.
- Check running behaviour.
- Check locking device (if available) – Error message on BDE-D in case of faulty behaviour.
- Pressing again key  triggers an SSK actuating. Door unlocks, opens and closes again.

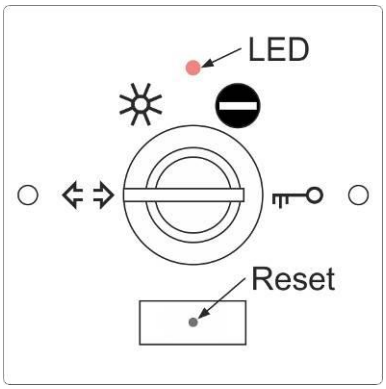
IMPORTANT

Locking a RED installation is only possible with the BDE-V (key-operated switch with two contacts)!

4.2 BDE-M mechanical control unit

4.2.1 Selection of operating modes (BDE-M)

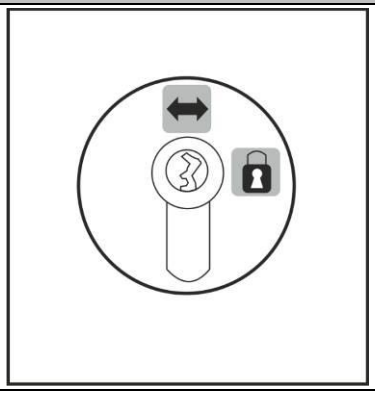
The mechanical operating unit BDE-M is equipped with a key switch. Different operating modes can be set with this key switch. The operating switch can be pulled off in any position.



Key	Operating mode	Function
☼	Automatic mode with total opening width	This operating mode is the standard operating mode. Through triggering of a e.g. Radar, the door opens. After the preset door time delay, the door closes.
⇦⇨	Continuously open and manual mode	Door opens and stays in open position. The door can be moved manually.
⊖	One-Way	The door opens only through a triggering of an e.g. radar which is on the inside of the door, or through a optional key operated contact (SSK).
⚷	Locking	The door will be locked after a completed closing. The door can only be opened with the last pre-set opening width through a key operated contact (SSK). **Caution:** During a **Power loss** the opening of a locked door might be only possible with an optional battery pack or a manual locking device!

4.3 BDE-V Control unit with lock

The operating mode "Locked" can only be activated by an authorised person using the mentioned BDE-V.

Control unit BDE-V (night locking)


- The door may only be locked by an authorised person (responsible for the key), after this one has made sure that nobody else is left in the building.

NOTICE

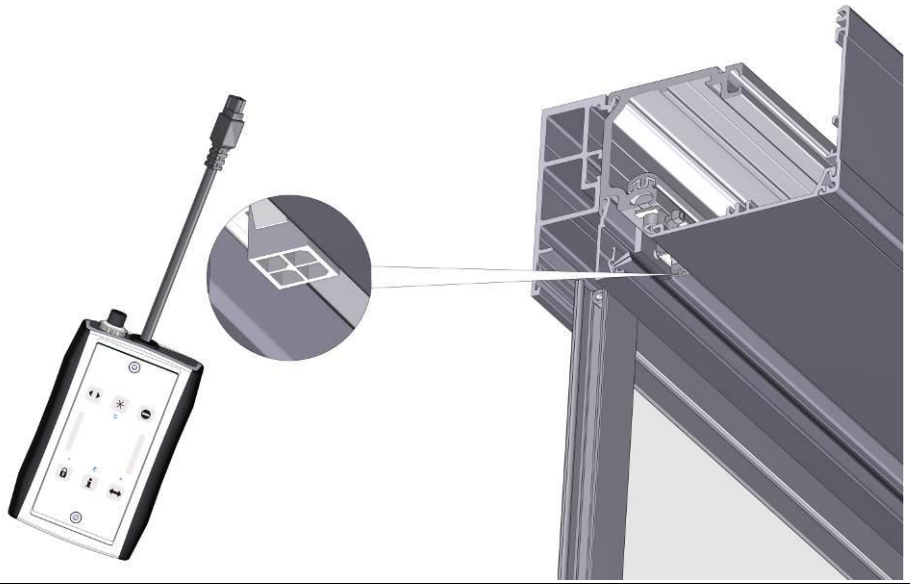
Locking via external clock timer or control system is not allowed.

4.4 Operating instructions Easy-Programmer EPC 903

Easy-Programmer EPC 903	102-903809037

NOTICE

The Easy-Programmer EPC 903 is only intended for use on system 20 doors by agtatec ag with only one BDE-D!

Connection of EPC 903


User Manual	
Language ○ DEUTSCH ○ FRANCAIS ◉ ENGLISH	Choose your desired language
STA21 V1.24 Basic operator	▪ Press the black push-button and this key together ▪ Let only the black button loose and wait until the message on the left appears Now you can press the button
Parameter Display state Configure system Learning system	Choose "Learning system" and confirm with the button E
No Running parameter? Yes Cancel Please wait until the door is open	Confirm with the button E (yes) or C (no)
Cancel Please close the door completely Closed Cancel Please wait until the door is open	Hold the button pressed until the door is closed
Cancel Please close the door completely Closed	Hold the button pressed until the door is closed
Learning running param. completed Continue	Confirm with the button E
No Learning sensors? Yes Cancel Please wait until the door is open	Confirm with the button E (yes) or C (no)
Cancel Please close the door completely Closed	Hold the button pressed until the door is closed

Learning sensor completed Completed	Confirm with the button E
Parameter Display state Configure system Learning system	Press the button C, to exit the menu
No Quit menu? Yes	Confirm with the button E (yes) or C (no)

4.5 User instructions, Service of the flash programmer FPC 902

The FPC 902 is primarily a tool for programming and configuring of record automatic entrance and door systems.
In the ON-LINE- or OFF-LINE mode parameters and configurations can be adapted, parameter sets can be downloaded from the drive and copied onto other drives or replaced control units (upload). Parameters may be edited irrespective of the control unit.
Control units can be also protected from access by other service and maintenance organisations.
Another feature is the possibility for the software of the control unit to be updated with Flash-Technology.
The link with the control units always takes place via the CAN bus.

5 The CAN bus

5.1 The bus topology

IMPORTANT

- Every bus component has two plug connections, which must both be plugged for correct wiring
- The bus must basically be terminated at both ends with a terminal resistance (120 Ω)

IMPORTANT

Make sure that no CAN sockets are left unplugged
Either all sockets are used, or they will be plugged with a terminal resistance

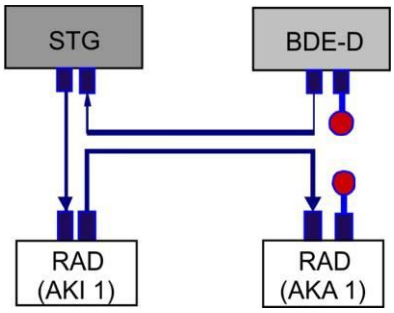
NOTICE

- The BDE-D is always delivered with a terminal resistance connected to it
- The second terminal resistance is located on the STM (jumper J8)

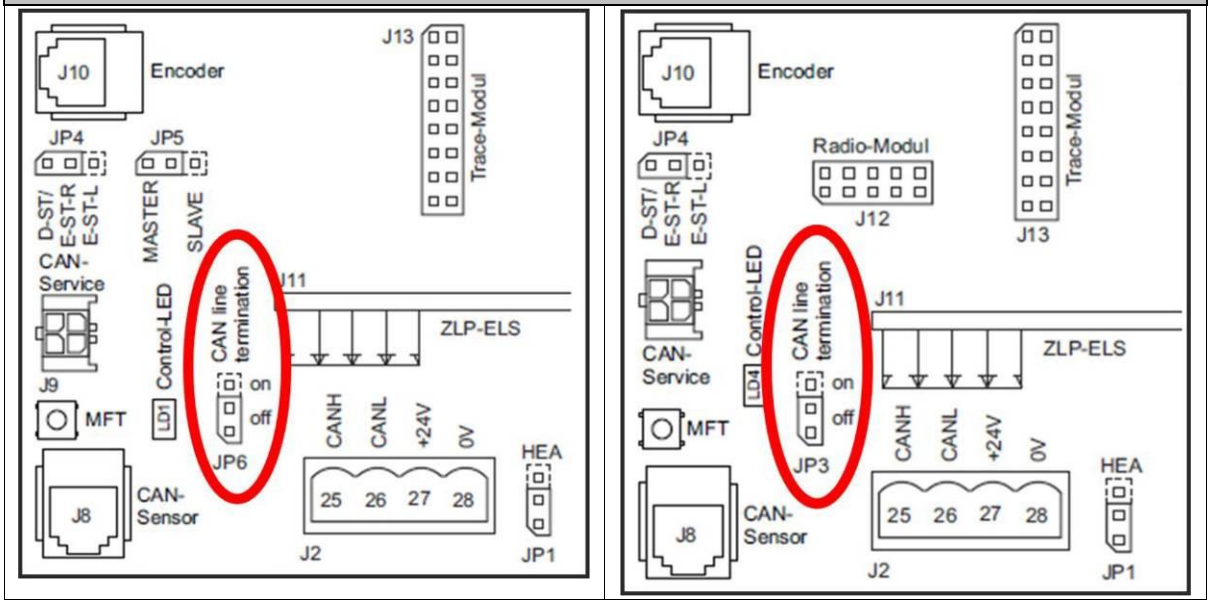
NOTICE

If no BDE-D is connected to the STM, the terminal resistance located on the STM must be activated by means of a jumper.

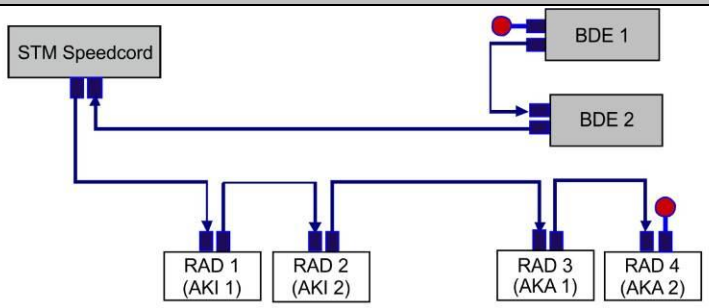
Installation with 2 sensors and one BDE-D



Terminal resistance activation



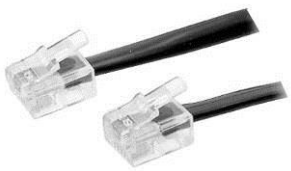
Installation with 4 sensors and 2 BDE-D



5.2 The correct cable

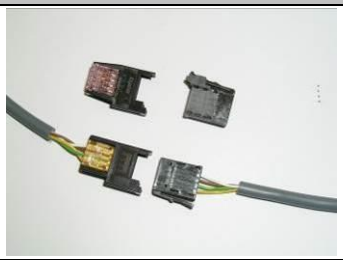
IMPORTANT

Selecting the correct connection cable is important for a trouble-free operation.
Use only the cables delivered by agtatec!

Cable selection	
RJ10 2x4P crossed plug connections (ready-made)	
Art. 102-020808481: CAN cable 1000 mm (delivered with FEM-0) Art. 102-020808718: CAN cable 1500 mm (stock type recommended) Art. 102-020808406: CAN cable 2500 mm (delivered with CAN compatible sensors)	

5.3 The CAN connector

A drill hole of min. Ø 13 mm is necessary for feeding the connection cables. Should this not be possible, the cables can be disconnected and connected again with the CAN connector mentioned below (drilling of min. Ø 10 mm required).

CAN connector	
CAN connector	
Art. 102-015302 + 102-015303 These connecting elements guarantee flawless and trouble-free communication.	

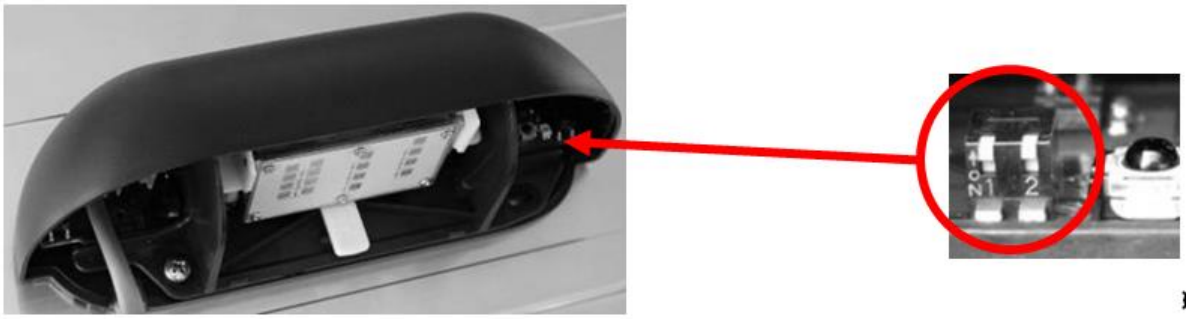
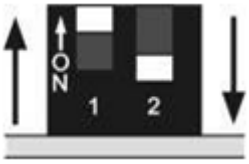
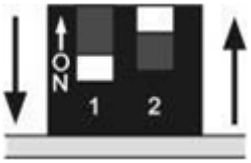
NOTICE

Connections which are carried out incorrectly cause failures of the bus. In such case, trouble-free operating of single bus components cannot be guaranteed.

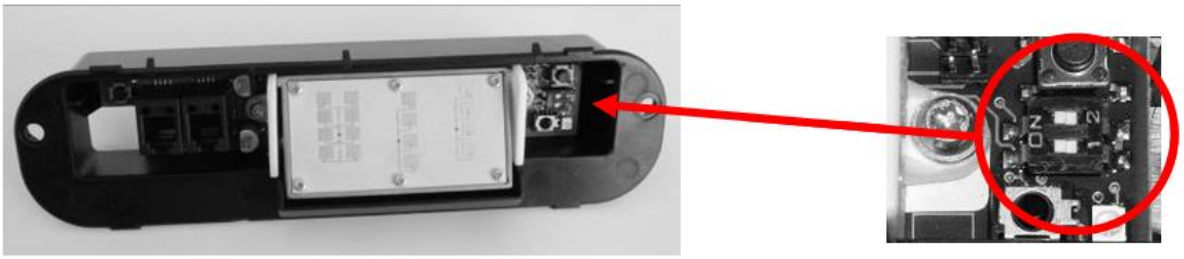
5.4 Addressing bus components

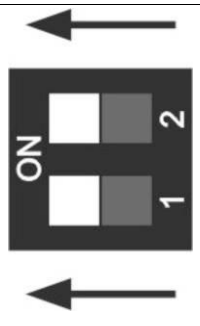
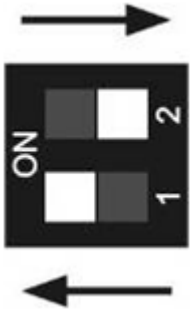
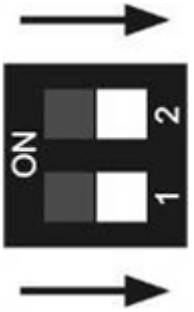
IMPORTANT

- Addressing CAN sensors (correct positioning of DIP switches) must be carried out **BEFORE connecting them to the CAN bus**
- **DO NOT** assign multiple addresses

Addressing sensors 290 – Position of DIP switches			
Surface-mounted version AC			
			
AKI 1 (inside)	AKI 2 (inside)	AKA 1 (outside)	AKA 2 (outside)
			

Addressing sensors 290 – Position of DIP switches
Built-in version GC



AKI 1 (inside)	AKI 2 (inside)	AKA 1 (outside)	AKA 2 (outside)
			

5.5 Changing addresses

The address must be changed if a wrong position has been assigned by mistake to a sensor while the system has already been activated. The correct procedure is explained in the following example:

Example of wrong addressing:

Inside-RAD 290 → **correct** addressed **as AKI 1**

Outside-RAD 290 → **wrong** addressed **as AKI 2**

Consequently the operating mode "One-Way" does not work. Addressing must be modified.

Procedure:

Disconnect Outside-RAD 290 from bus

Address Inside-RAD 290 as AKA 1

Connect sensor to bus again

Deactivate no longer existing sensor AKI 2 with FPC in menu SERVICE STG / PARAMETER / CAN-BUS

Newly addressed sensor AKA 1 is automatically detected and activated.

5.6 Deactivating / reactivating bus components (replacing faulty sensors)

In the event of a sensor being faulty and must be replaced, the defective unit must only be deactivated if a replacement is not immediately available.

Otherwise, the replacement must be addressed in the same way and then be connected to the bus. Subsequently, a learning cycle must be performed for this sensor.

Procedure for deactivating:

- Disconnect defective or superfluous sensor from bus.
- Select this sensor with FPC in menu SERVICE STG / PARAMETER / CAN-BUS and deactivate it.

6 Simplified Start-Up

6.1 Learning running parameters and sensors

IMPORTANT

The simplified start-up is only possible as of software version 1.24!

Learning running parameters

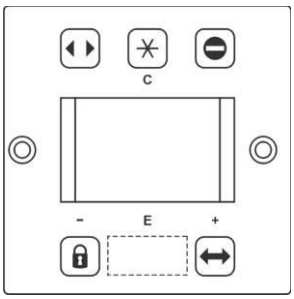
Learning sensors

After the first installation of the BDE-D, the following appears on the display:

Navigation through the menu with button + and button -

Select language and confirm with button E

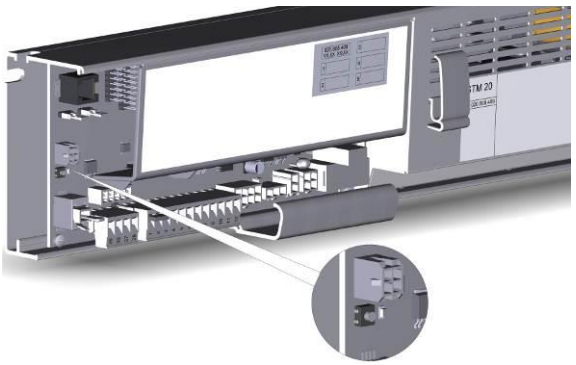
Exit menu with button C



Press the multifunctional key until the diode emits 4 light pulses

Following menu appears:

- Show status (show current status)
- Configure system (setting important system parameters)
- System learning (learning running parameters and sensors)
- Param STG (access for experts, all parameters for STG)
- Param Sensor (access for experts, all parameters for sensors)



IMPORTANT

After the 4 light pulses have been given, it is important to close the casing. Only this way it can be assured that the sensors are set up correctly.

NOTICE

During the start-up procedure, it is important that no objects or persons are within the passage

1. **Running parameter learning**

On the display appears the pre-selection:

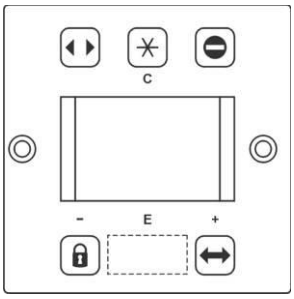
Parameter
Display state
Configure system
Learning system

Confirm with button E

On the display appears the pre-selection:

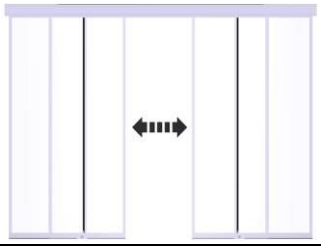
No
Running parameter?
Yes

Confirm with button E



On the display appears:

Cancel
Please wait until the door is open



NOTICE

If the door doesn't move, check the error message on the display. If there are errors which prevent the door from moving, they need to be solved first.

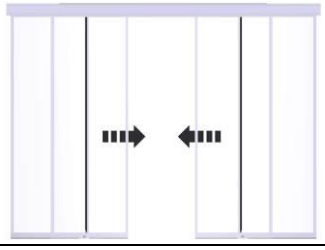
With button C c go back to „Show status“ to solve the error(s).

Check the error message in the maintenance and troubleshooting manual.

On the display appears:

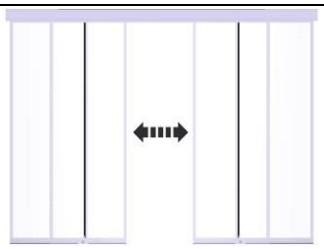
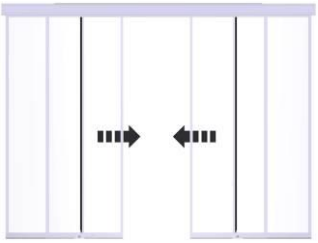
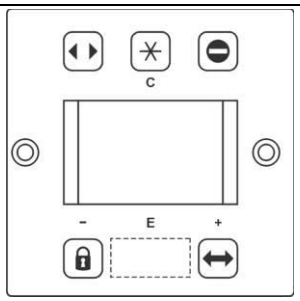
Cancel
Please close the door completely
Closed

Press but until the door is closed



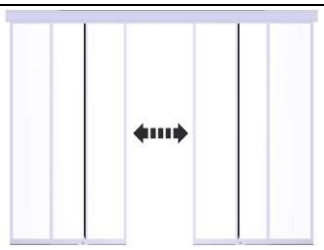
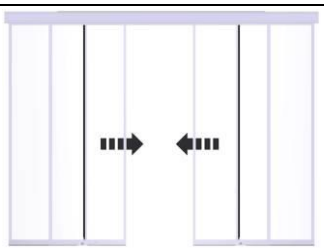
NOTICE

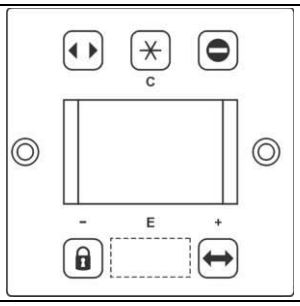
If a person walks through the gangway during the closing function, release button –. The door opens - repeat the closing procedure.

On the display appears: Cancel Please wait until the door is open	
On the display appears: Cancel Please close the door completely Closed Press but until the door is closed	
On the display appears: Learning running param. completed Continue	Confirm with button E to **continue** **Or** with button C, to exit the menu
2. Sensor learning On the display appears: No Learning sensors? Yes Confirm with button E	

NOTICE

The sensors will only be learnt correctly if during the closing procedure there won't be any objects or persons within the sensor scanning field.

On the display appears: Cancel Please wait until the door is open	
On the display appears: Cancel Please close the door completely Closed Press but until the door is closed	

On the display appears: Learning sensor completed Completed Confirm with button E	
On the display appears: No Quit menu? Yes	Confirm with button E for **YES** Confirm with button C for **NO** **Running parameters and sensors have now been learned!**

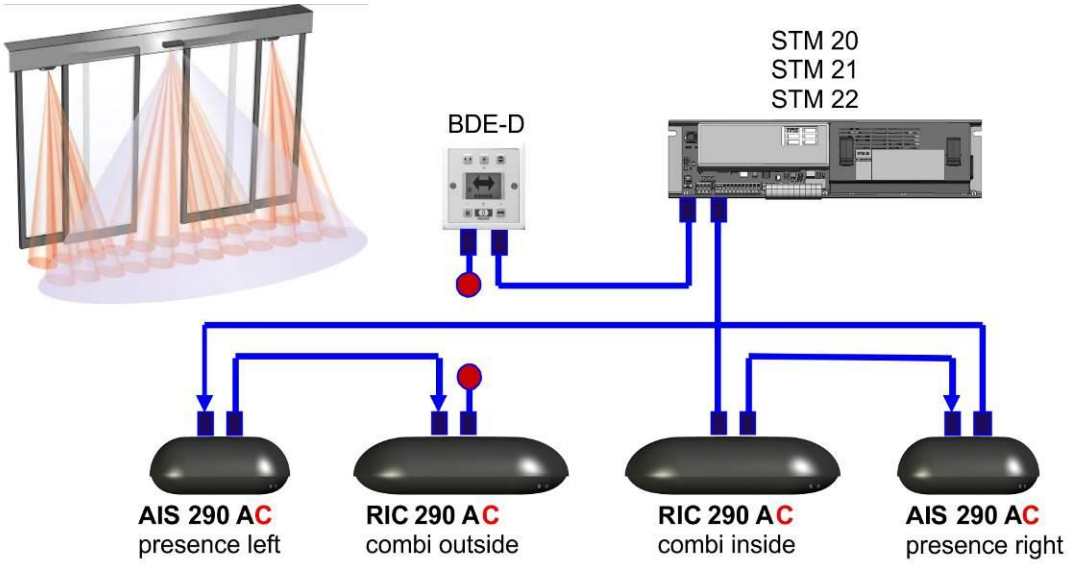
IMPORTANT

Please read chapter "Security inspection according EN 16005".

7 Comissioning of systems

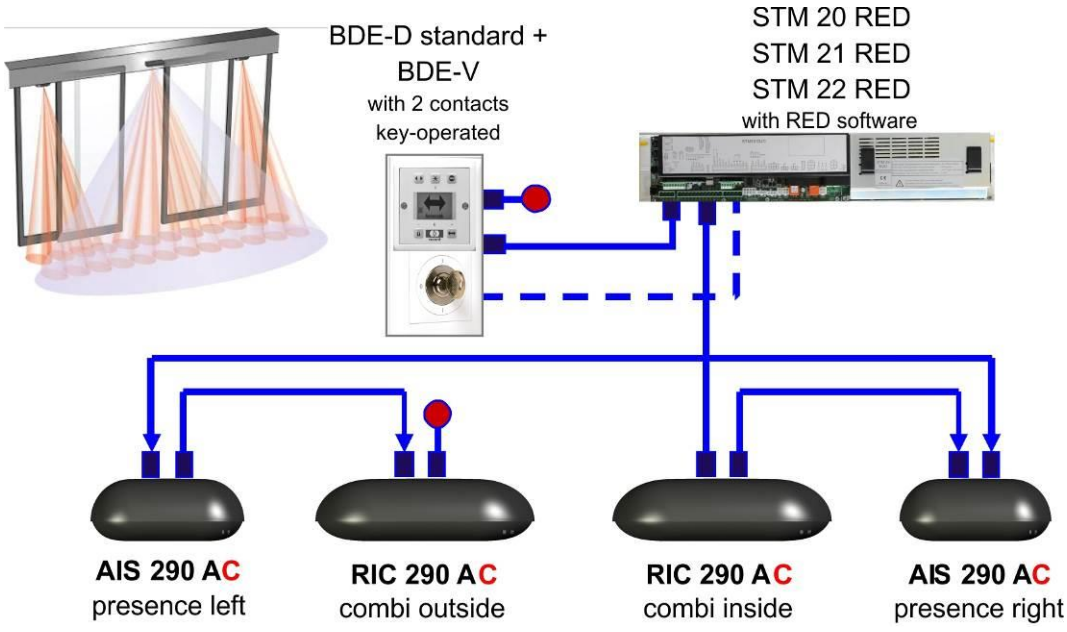
7.1 STM 20, STM 20 DUO, STM 21, STM 22 DUO with CAN combi-sensors

7.1.1 Bus topology



7.2 STM 20 RED, STM 21 RED, STM 22 RED with CAN combi-sensors

7.2.1 Bus topology



7.2.2 System description

System 20 RED denotes a sliding door, which is authorized for an application on escape and rescue routes. Safety requirements for operating the system can be summarized as follows:

- The door is in a normal automatic operating mode. Leaving the building is possible by activating the AKI sensors (with appropriate authorization according to EN 13849-1:2006, category 3, Performance Level "d").
- In case of an error:
  - The door opens and remains open until the error is eliminated
  - The door remains in the open position if it was already in this position at the time when the error occurred
- Locking the door (night closing time) by BDE-V:
  The door can only be locked by an authorized person (responsible for the key) after it has been checked that nobody is left in the building. Locking by BDE-D as well as by timer or management system is not allowed.
- Locking the door in case of error:
  In case of an error, the door can anyway be locked manually by an authorized person who is in charge of the key, after it has been checked that nobody is left in the building (e.g. at shop closing time).
- System 20 RED carries out a redundancy test automatically in the situations listed below:
  - On changing the operation mode from:
    Continuously open → to another mode
    Locked → to another mode
    One-way → to another mode
  - After starting or restarting
  - At least once in 24h (except in operating mode "Locked")
  - With RED after restart by reset or emergency open

NOTICE

Control module STM 20/22 DUO **with RED software** has been tested according to EN 13849-1:2006, category 3, Performance Level "d".

IMPORTANT

To ensure safe operating of every RED installation, see check list below. We recommend to work meticulously through that list while commissioning the installation.

NOTICE

On a redundant door, the manual operating mode is generally disabled and cannot be selected in the BDE-D.
If manual actuation is required for maintenance reasons, this function can be selected via FPC and is automatically deactivated after the FPC has logged off.

7.3 STM 20/22 RED/DUO

Installation and commissioning can be carried out according to the data in the following paragraphs:

- STM 20, STM 20 DUO, STM 21, STM 22 DUO with CAN combined sensors
- STM 20, STM 20 DUO, STM 21, STM 22 DUO with third-party combined sensors

IMPORTANT

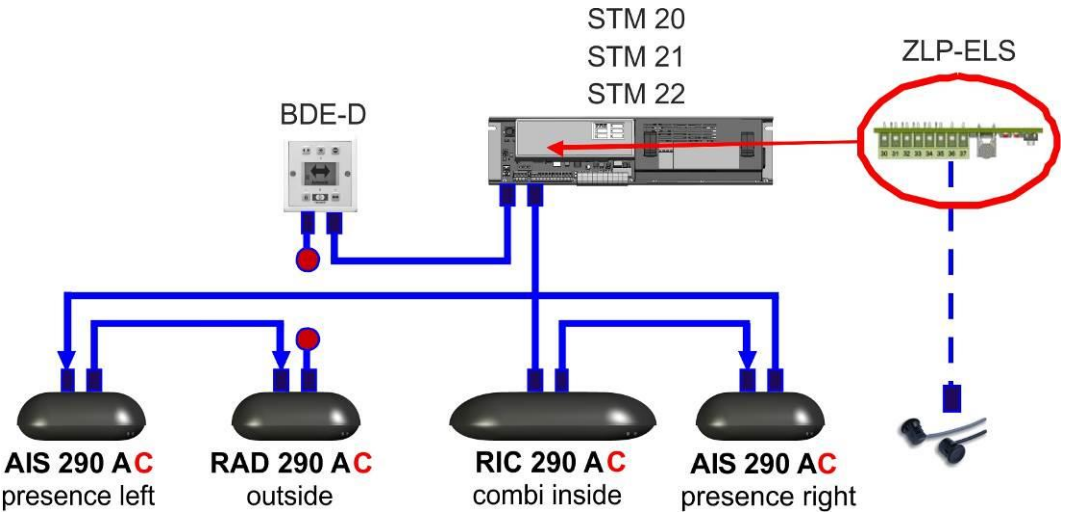
- Control module STM 20/22 DUO can also be used with RED redundant operators thanks to a special software.
- Make sure that, while commissioning a **DUO installation,** the appropriate **DUO software is loaded onto CPU 1 and 2!**
  Procedure (FPC required):
  - Select Flash-programmer
  - Manual updating
  - Select software STA20DUO1 and confirm/load
  - Select software STA20DUO2 and confirm/load
    ! After the software has been loaded, exit the flash-programmer!
- A DUO installation cannot be operated with control module STM 21!
- Restart with DUO = reset or emergency stop

NOTICE

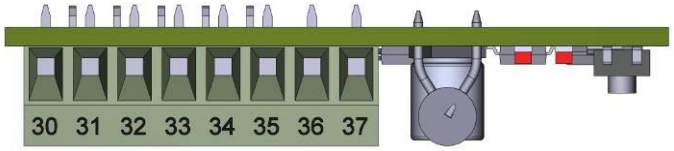
Specialities on DUO installations:
- Additional inputs instead of a BDE-V
- Motor 2 does not need an encoder cable

7.4 STM 20, STM 20 DUO, STM 21, STM 22 DUO with CAN sensors - combined with ELS and ZLP-ELS

7.4.1 Bus topology



7.4.2 Wiring

Extra printed circuit board ELS	Function / Connections
	
S1 – blue button	2 light pulses → calibrating ELS
LED 1 – red	Interruption ELS 1
LED 2 – red	Interruption ELS 2
Terminals 30 – 37	Connections ELS

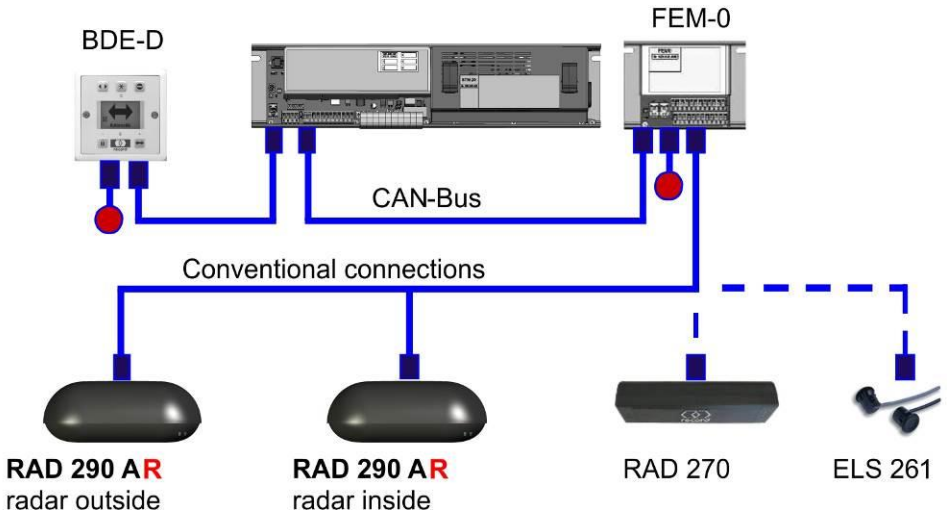
IMPORTANT

Plug printed circuit board carefully. Observe correct plug-in positions!
Article number MS ZLP-ELS: 102-020808563

- Wire ELS to terminals 30 – 37
- Connect BDE-D, SSK and emergency stop to the corresponding terminals on STM
- More inputs are not available on this version
- The ZLP ELS will be automatically detected. Calibration of ELS will be automatically!
- With 2 light pulses, the ELS will be calibrated, which is necessary for longer distances.

7.5 STM 20, STM 20 DUO, STM 21, STM 22 DUO with conventional sensors and ELS with FEM-0

7.5.1 Bus topology



NOTICE

Sensors with the **addition R** can be connected to control units of older generations over relay outputs

IMPORTANT

Do not forget bus terminating resistance on the FEM-0. The terminating resistance in the BDE-D is already planned at the factory

7.5.2 Wiring

- Connect AKA, AKI and the light barriers to FEM-0
- Connect BDE-D, SSK and emergency stop to the corresponding terminals on STM
- Connect other inputs and outputs - according to programming

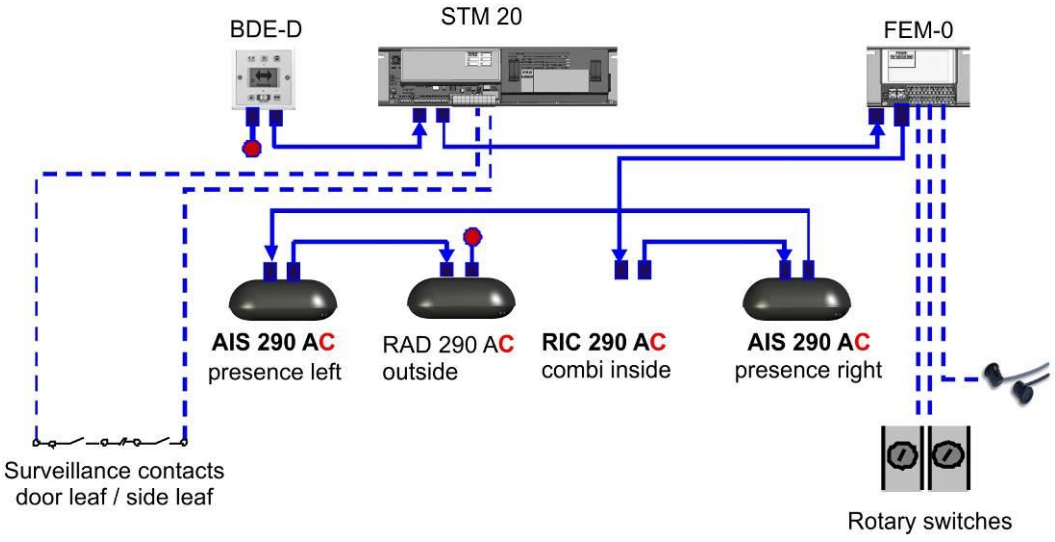
NOTICE

- In general, the FEM-0 must not be addressed
- Only ONE FEM-0 per door can be installed

7.6 TOS - Commissioning with FEM-0 and energy chain

7.6.1 Bus topology

The topology below presents a frequently used system. Depending on the application of the sensors, the wiring must be adapted accordingly.



7.6.2 Wiring

- Connect the light barriers to FEM-0
- Connect BDE-D, SSK and emergency stop to the corresponding terminals on STM 20
- Connect more inputs and outputs – according to programming

NOTICE

- In general, the FEM-0 must not be addressed
- Only ONE FEM-0 per door can be installed

7.7 STM 20, STM 21 - commissioning CO48

The electrical commissioning of a CO48 installation is basically identical to the one of a standard sliding door. However, the procedure differs depending on the sensors selected. The points mentioned below describe exclusively the special working procedures to be taken into account while installing a door fitted with a CO48 device.

IMPORTANT

- Programming on FPC: CO48 – sandow direct
- Set jumper on JP2

IMPORTANT

Simulate a rope break and check actively if the control system shows any reaction.

7.8 Background teach-in with BDE-D

With all sensors of the 290 range with presence monitoring, e.g. RIC 290 and AIR 290, a change of the background during the programmed teach-in time is learned automatically.
In the case of continuously changing or difficult conditions, the operator can manually re-teach the background to the door quickly and easily. For this, a BDE-D operating unit with software version ≥ 2.70 is required.

- Press the 'Logo' button until the 'Reset' dialog appears
- Press the 'No' button
- The 'AIR-learn' dialog appears (only if AIR is present)
- Start the background teach-in with the 'Yes' button

NOTICE

Movements within the detection field during background teach-in will disturb the measurement, and must be avoided. The procedure must be repeated if persons or objects move within the detection field during teach-in.

8 Electrical commissioning of the systems

Note for the commissioning with ZLP-ELS:

NOTICE

Open the door manually approx. 30%, before you follow the steps described below!
The CAN-sensors are not yet connected to the control module
Light barriers are connected to the ZLP-ELS

Action	Procedure/Result	Corrections Notes	Where applied
Connect STM to mains Run installation Sensors are NOT connected	Both green LEDs on STM must shine		STM20, STM21, RIC/AIS 290 3rd party combi equipment ZLP-ELS
	Green LED1 on FEM-0 must shine		STM20, STM21, RIC/AIS 290 FEM-0
STM 20 RED/DUO STM 21 RED STM 22 RED/DUO Connect to mains Start installation Redundancy test is carried out	Both green LEDs on STM must shine	Door opens if a wiring fault is present	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment
Check rotational direction: Default value: DST and EST-R	Door must close	By E-STA-L Change plugging of jumper JP4 Reset STM	STM 20, STM 21 RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0
		By EST-L (opening to the left): Connecting clamp is fixed to the upper belt part	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment

Connect CAN sensors	Observe bus topology Sensor learning Check with FPC if number of sensors displayed is correct Check if position/addressing of AKI/AKA is correct Check CAN ferrule resistors	See chapter “CAN-Bus” Adjust RIC	STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 ZLP-ELS
Connect sensors with relay output	Adjust sensors	According to separate sensor instruction sheet	STM 20, STM 21 RIC/AIS 290 FEM-0
Check software version	Check software version using FPC BDE-D must be > V2.0	If necessary, update software	STM 20, STM 21 RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0
	RED software must be loaded onto CPU 1 and 2		STM 20 RED/DUO STM 21 RED STM 22 RED/DUO 3rd party combi equipment
Program BDE-D	Select language	BDE-D is subsequently rest	STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0
Reset control module	Using BDE-D		STM 20, STM 21 RIC/AIS 290 ZLP-ELS, FEM-0

Program locking device	Via BDE-D or FPC Select appropriate locking type	Locking device is not automatically identified and must be programmed accordingly	STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0
Trigger calibration run Two cycles are required	By MFT – 1 light pulse Door should not be obstructed during calibration run	Display FPC / BDE-D „Calibration run“	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290
		With FPC or EPC calibration run without sensors	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO 3rd party combi equipment
Close cover! Calibration run is automatically activated Perform learn cycle of the door	If delivering STM ex works Load default values or factory settings	Display FPC / BDE-D „No running parameter“ System learning for door and sensors with FPC or EPC	STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290
	Via SSK (button on FPC) Carry out 2 cycles Door should not be obstructed during calibration run		STM 20, STM 21 RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0
Provoked activation	By MFT - 3 light pulses		STM 20 RED/DUO STM 21 RED STM 22 RED/DUO 3rd party combi equipment

Check after calibration run	Display “Calibration run” is not displayed on the BDE-D anymore		STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0
Calibrate sensitivity of ELS	Trigger learning cycle with ZLP-ELS (s1 – blue button) or FPC	No reply will be sent	STM 20, STM 21 RIC/AIS 290 ZLP-ELS, FEM-0
Opening width of escape route **Definition** The minimum width required of an escape route is set according to country-specific regulations The required opening width of an escape route MUST be respected while adjusting the door Up to a passage width of 2000 mm, the escape route opening width must be cleared to at least 80% within max. 3 seconds For larger door widths, times are proportionally calculated **Adjusting opening width of escape route** The escape route is defined according the "reduced opening" Adjustment is carried out via FPC according to the below-mentioned data Responsibility for a correct adjustment of the escape route opening width,rests upon the door installer			STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment
Adjusting escape route	Measure opening width of escape route in operating modes "Continuously open" and "Reduced opening" If necessary adjust with FPC	LRespect country specific regulations	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment
Testing escape route	Disconnect installation from mains Pulses by AKI 80 % opening width of escape route reached within max. 3 seconds	If time is exceeded: correct running parameters via FPC as described below	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment

Correction running parameters	Triggering opening pulse Check via FPC menu: status message Reached value (+) > 400 ms function OK Reached value (-) Opening-V too small, correct running parameters until value = (+) > 400 ms	Carry out control for TOTAL and REDUCED opening widths! Reduced opening width: Braking phase is taken into account in the measurement of time	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO
Electrical commissioning TOS The electrical commissioning of a TOS installation is basically identical to the one of a standard sliding door. However, the procedure differs depending on the sensors selected. The points mentioned below exclusively describe the special working procedures to be taken into account while installing a TOS door Installation fitted with MPV and energy chain			
Correct configuration of installation with FPC	FPC: Select locking device MPV 20		STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0
Set BDE-D on Automatic Swivel door leaves and side leaves (with surveillance)	Emergency stop function is activated Display on BDE-D „Emergency-Stop“	In case of fault: Check connections of surveillance switch	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0
Installation fitted with rotary switch and energy chain			
Correct configuration of the installation with FPC Check wiring of turn-lock fasteners	FPC: Select door type TOS Configure outputs AUX 02 + 03 with DV1 and DV2		STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0

Check TOS functions Set BDE-D to "Locked" With rotary switches lock manually swivelling device on the door	Release opening pulse via SSK Door carries out 1 opening cycle and locks again afterwards	In case of fault: Check configuration	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0
	Error message “TOS not locked” At least 1 rotary switch is unlocked	Check rotary switches Check wiring of turnlock fasteners and energy chain	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0
Set BDE-D on „Automatic“ With rotary switches lock manually swivelling device on the door	Error message “TOS not locked” Installation is set on “Manual mode” Manual opening of the door is guaranteed	Check rotary switches	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0
	Automatic door functions are guaranteed	Check wiring of turnlock fasteners and energy chain	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0
Swivel door leaves and side leaves (with surveillance)	Emergency stop function is activated Display on BDE-D		STM 20 RED/DUO STM 21 RED STM 22 RED/DUO FEM-0
Electrical commissioning of CO48			
Check tension of silicone hose	Max. 4 kg Observe formula for calculating whole length of silicone hose, see Book „Options“	Length of silicone hose might be incorrect Check calculating formula	STM 20, STM 21 CO48
Control surveillance switch on guide pulley of silicone hose	Normal door functions In case of faultily / erroneously connected contact: Door opens and remains open Alarm on BDE-D „Broken rubber cord“	Check wiring Check tension and length of cord	STM 20, STM 21 CO48

Check CAN sensors	In case of properly operating sensors, the installation works normally In case of faulty sensors, error message „AKI no connection“ Door remains open until fault is repaired	Replace faulty sensors according to chapter „The CAN-Bus“ In case of error, handle according separate sensor manual	STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment ZLP-ELS
Redundancy test	Activate redundancy test through following manipulations Change operating mode from Continuously open / from locked / from One-Way into another mode Start or reset installation	Door opens and carries out 2 cycles of 10 cm Redundancy test is automatically activated at least once per 24 h (except in „Locked“ mode)	STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment
Operating hour meter	Configure maintenance functions FPC required	According to separate instruction sheet Depending on arrangements stipulated in customised service contract Country specific use	STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0
Risk assessment – according to check-list	BDE-D functions Safety items etc.	See chapter „Principles of commissioning, Battery-/Accu test“ Make customer sign the document	STM 20, STM 21 STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equipment ZLP-ELS, FEM-0

Program more customer requests	Timer Speed Acceleration Driving cycle		STM 20, STM 21 RIC/AIS 290 3rd party combi equip-ment ZLP-ELS, FEM-0
	Observe that minimal width of escape routes MUST be respected!		STM 20 RED/DUO STM 21 RED STM 22 RED/DUO RIC/AIS 290 3rd party combi equip-ment

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