



Mounting and Connection Instructions

Door module, 12V DC, RS485

Door module, 230V AC, RS485

Item no. 026593.10 / 026594.10



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**Software-Version
ZTMOD.01.0V02.xx**

Subject to change
without notice

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The following general symbols will be used in the documentation:



Warning sign

Designates risks for man and/or machine. Non-compliance will create risks to man and/or machine.

The level of risk is indicated by the word of warning:

Caution!

Risk of material and environmental damage.

Warning!

Potential risk which may result in light to medium body injury or in substantial material damage.

Danger!

Potential danger which may result in serious body injury or even in death.



Important information on a topic or a procedure and other important information.



Important information on installation and/or assembly.



Information on installation/programming according to VdS guidelines.

Safety instructions

- * Please read through these instructions carefully and thoroughly, before installing and operating the device. These instructions contain important information about installing, programming and operating.
- * The device has been built to correspond to the latest level of technology. Please use it only:
 - in accordance with regulations and
 - in technically perfect and orderly installed condition
 - according to the technical information.
- * The manufacturer is not liable for damage caused by improper use.
- * The accompanying documents and specific system documentation are to be deposited and kept in a safe place.
- * Installation, programming as well as maintenance and repair work may only be carried out by authorised skilled personnel.
- * Soldering work may only be carried out with a thermostatic soldering iron disconnected from the mains.
- * Please observe VDE safety regulations as well as the regulations of the local Electricity Board.
- * When connecting devices to the public telephone network, the regulations of the telecommunication network provider have to be observed.
- * Water and fluids - Keep the device away from water and other fluids.

Danger:

The device should never be used in areas where there is a danger of explosion or where metal- or plastic-corrosive vapours are emitted..



Soldering- and connecting work within the entire system is only to be carried out when the system is switched off. The insertion and removal of module cards and other electronic components should also only be carried out when the system is inactive and switched off.

1. General information

Access control systems are required if, access to rooms or buildings is restricted to a certain group of persons only.

Software

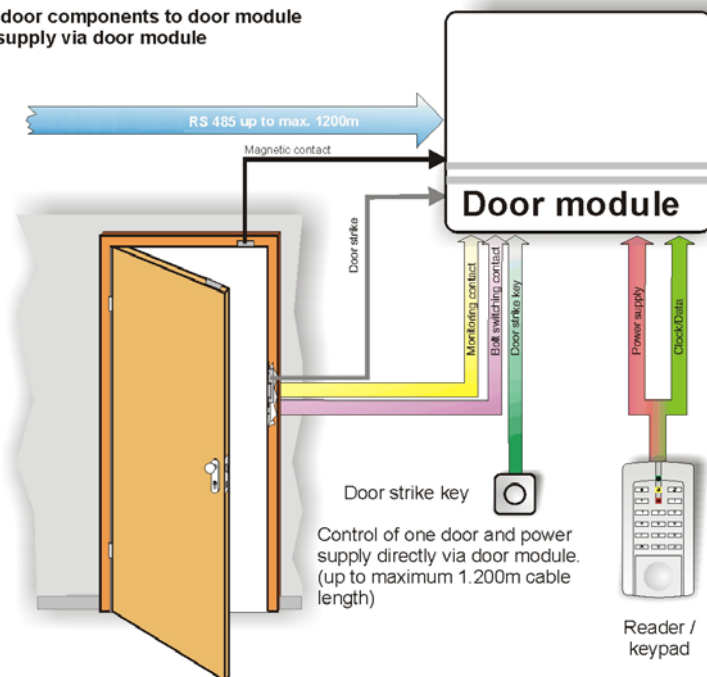
IQ MultiAccess for Windows is the parent user software which offers a powerful and practice-oriented access control system. The definition of the access rights for persons, actions, time orders and the transmission of the data to the hardware are carried out by means of this software.

Hardware

All hardware devices (e.g. readers, access control controllers etc.) and the organisation of the system are set up with the software **IQ NetEdit***. The ACS-8 is used as access control controller. After receiving the data from MultiAccess for Windows, the controllers are ready for stand-alone operation. This means that the access control operates normally even if MultiAccess for Windows is not running. When the software is restarted, stored events are downloaded automatically. The door module is used to control one door or two doors (only with IQ MultiAccess beginning with V3). All peripheral door devices are connected to the door module. The door module uses the module bus and communicates with the ACS-8 via the integrated RS 485 interface. The ACS-8 contains the access authorizations and transfers the result to the door module.

*Part of software IQ MultiAccess

Connection of the door components to door module
with direct power supply via door module



1.1 Performance features


The following components can be connected to the door module:



All Novar proximity readers with a clock data interface can be connected.

- two same or two different readers with following kind of reading:
 - Clock/Data readers
 - Wiegand readers (26 Bit and 34 Bit Wiegand data format e.g. HID)
 - Wiegand keypads (4 Bit and 8 Bit Wiegand data format e.g. HID)
- one tamper switch (for external readers)
- Inputs: 4 detector lines (useable e.g. for magnetic contact, bolt switching contact)
2 digital inputs (useable e.g. for door strike key)

- Outputs: 2 Relays Contact rating: 3 A/24 V DC (e.g. door relay, alarm relay, tamper relay)
1 semiconductor output (active 0 V, max. 15 V DC, 12 mA)

 The number of the applicable inputs/outputs decreases if two doors are operated via the door module, (See chapter 10. Connections).

1.2 Configuration

The door module in conjunction with the ACS-8 controls the access to a room. The use of an additional interior reader makes it possible to control also the exit of a room. The readers must function according to the same reading technology (magnetic card reader, contactless reader or chip card reader). The door module recognizes by means of the door monitoring contact in the door strike whether the door was open too long or the door was opened by force.

1.2.1 Example MultiAccess for Windows

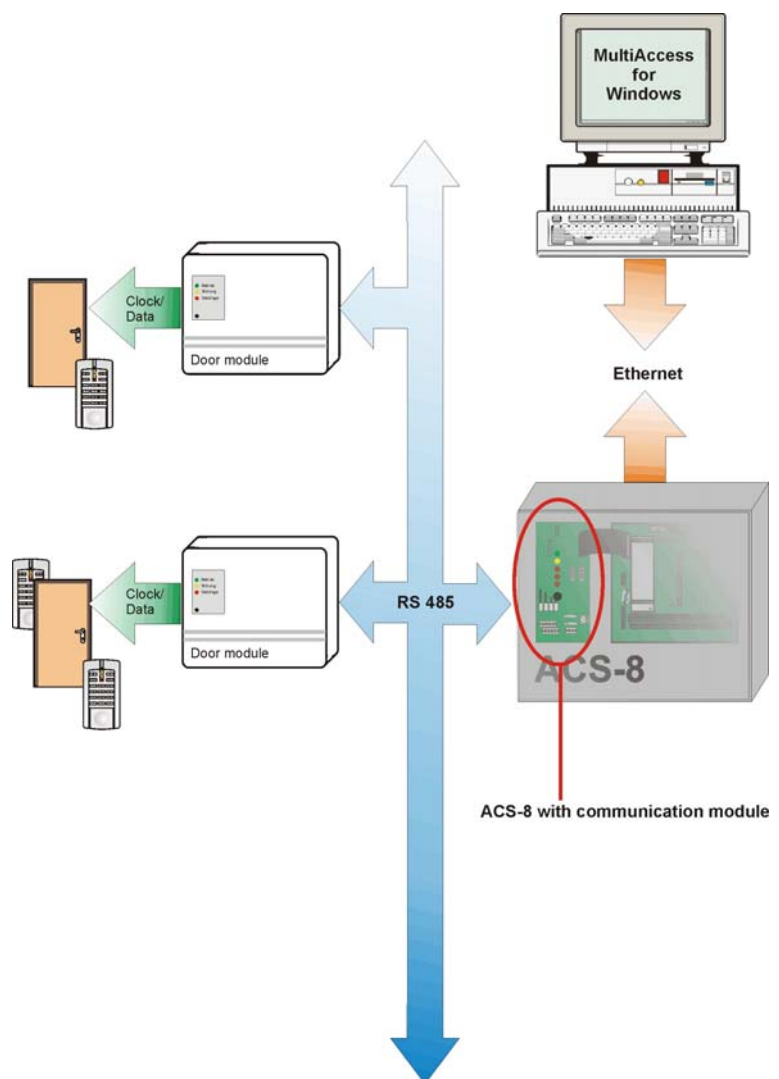
With **MultiAccess for Windows** the door module can administrate **one** door.

Configuration example 1:

Just the access to a room is controlled via one reader. It is possible to exit the room without identification. A door release push-button in the secured zone makes it possible to release the door lock manually.

Configuration example 2:

Room access and exit are controlled by two readers. The "antipassback" option can be activated. Thus, the present location of each person can be identified.



1.2.2 Example IQ MultiAccess

With **IQ MultiAccess** the door module can administrate **two** doors.

Configuration example 1:

Just the access to a room is controlled via one reader. It is possible to exit the room without identification.

A door release push-button in the secured zone makes it possible to release the door lock manually.

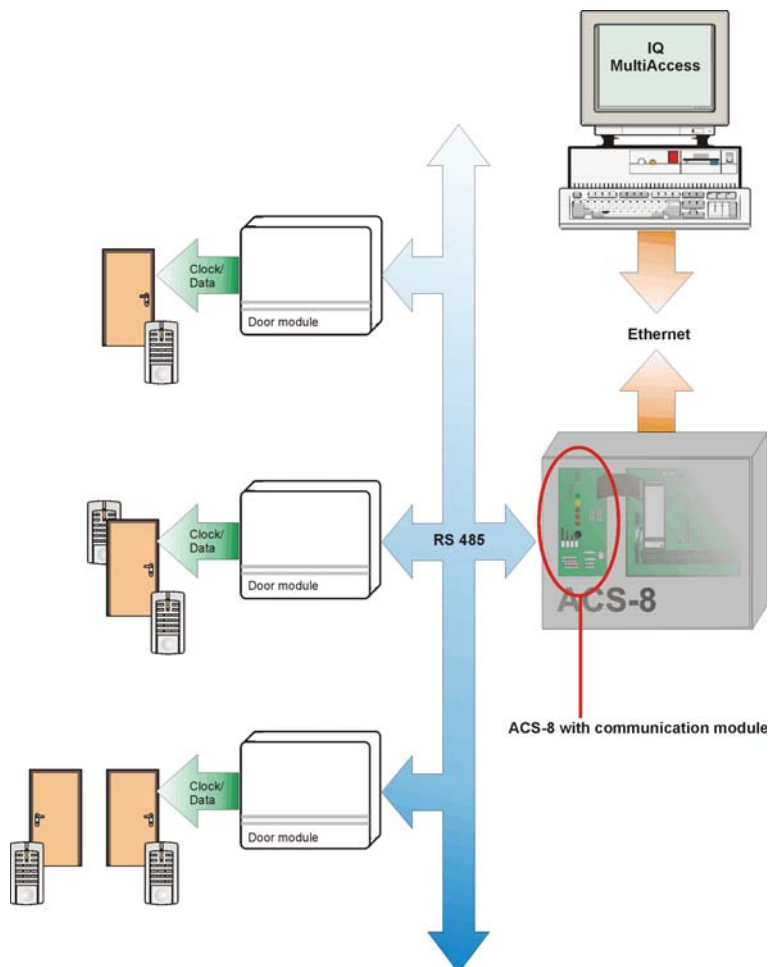
Configuration example 2:

Room access and exit are controlled by two readers. The "antipassback" option can be activated. Thus, the present location of each person can be identified.

Configuration example 3:

a) Just the access to two rooms is controlled via a reader each. It is possible to exit the room without identification.

b) A room with tow doors:
 The access to the room is only possible via door no. 1. The exit is only possible via door no. 2.
 Thus, the exit is also controlled.



2. Important installation instructions

2.1 Protective measures during installation



Attention:

Switch the mains supply off before opening the device.

The VDE regulations and the regulations of the electricity supplier must be observed during installation. Carry out the connections between the control unit and the external devices according to the connection diagrams.

A separator (circuit breaker) must be integrated in the installation of the building.

Use only shielded cable (see chapter "Cable lengths/types").

The max. cable length between the control unit and the card reader, keypad or door strike must not exceed 20m up to 200m (according to the used reader!). All cable shields in the control unit must be connected to the central ground terminal. The ground terminal must be connected to a ground potential.

When using a d.c. door strike, special attention is to be paid to correct polarity. Use only d.c. door strikes equipped with a protective diode.

2.2 Grounding/shielding

Use shielded cable and a suitable shielding connection for protection against electromagnetic interference couplings occurring, for example, when switching electric appliances on and off.

Make sure that the cable shields in the distribution boxes are connected so that there are no links to other potentials. In the door module, all shields should be connected to one point using the shortest possible route.

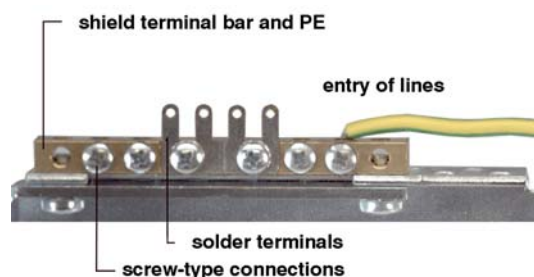
The shield soldering bar serves as support for the connection of the ground conductors and line shields.

(See below).

The following shielding connection is possible:

Connect the shield soldering bar to the ground conductor

The door module represents a capacitive coupling between the ground conductor and the system operating voltage. This connection generally offers the best protection against conducted interferences and interferences caused by cable shield discharges. PE and N must be connected separately (modern grounding) and it must be guaranteed that the ground conductor does not carry any low- or high-frequency signals.



Observe:

VDE 0800 Part 2 July edition 1980.

VDE 0800 Part 2 AI Draft, November 1982.

2.3 Shielding and ground potential

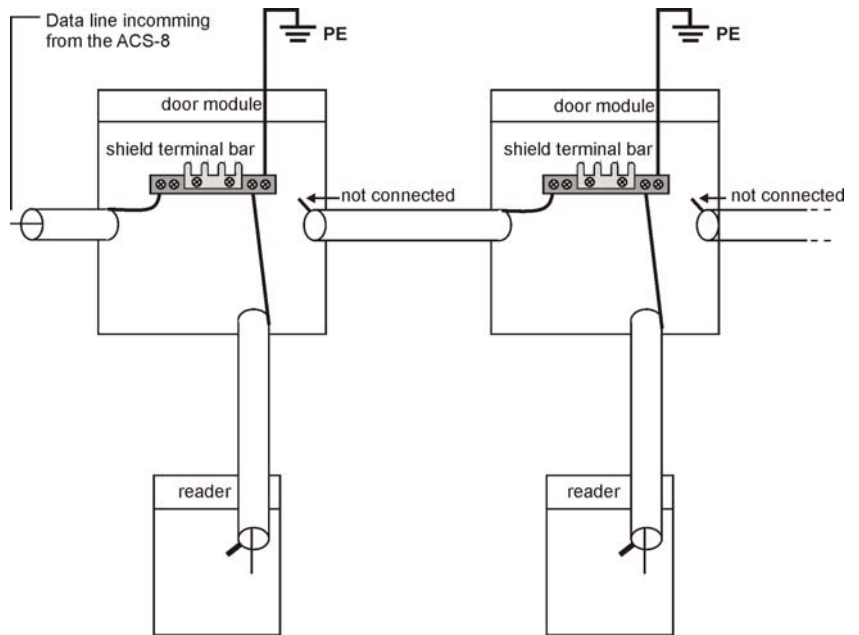
- The door module devices are daisy chained via a **shielded twisted pair cable**.



Please use Cat 5 or better cable for installation.

- The shielding of the incoming RS-485 cable is to be connected to the shield terminal bar of the door module. The shielding of the outgoing RS-485 cable is not connected.
- The shield terminal bar in each door module must be connected to a separate PE.

- The shielding of the reader line is connected on one side to the shield terminal bar in the door module.



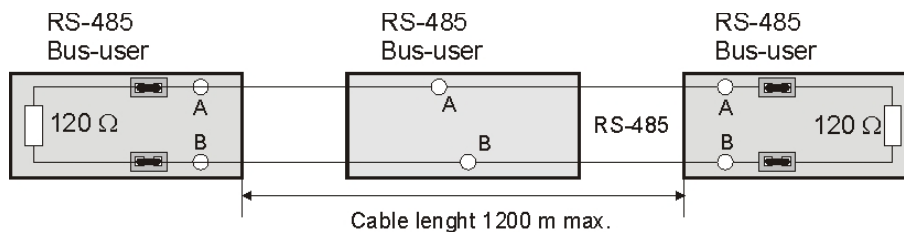
2.4 Interface technology, RS-485 bus systems

The RS 485 interface used is a bidirectional interface with bus capability. Up to 32 devices can be connected which can be transmitters as well as receivers. The max. cable length of the RS-485 bus data line can be up to 1200m.



The door module has no electrically isolated RS485 interface. If problems with data transmission to the ACS-8 should occur, a potential separation module (Item No. 026595.10) should be used (see chapter 10.), note the additional installation instructions in the ACS-8 Installation instructions.

General information: The **line ends of the bus data line** must be set with a **120 Ohm** terminating resistor. The terminating resistors can be set on the last bus-user of the bus data line by means of jumpers at the interface.



The RS-485 bus system corresponds to a multipoint connection. Multipoint connection means that several controllers are communicating with each other. A star-shaped cabling of the door modules is not allowed.

2.5 Use in conjunction with a potential isolation module RS-485

The door module RS485 is not floating. If potential isolation is required, up to 4 of these modules can be connected to the RS-485 bus of the ACS-8 with the potential isolation module RS-485 (Item no. 026595.10), see connection diagram in chapter 9. The max. distance between each door module and the potential isolation module RS-485 is 10 m.



Note the additional installation instructions on floating in the ACS-8 Installation instructions.

In practical it use has been shown, that the use of a potential isolation module RS-485 is only required:

- when the max. specified cable lengths are achieved in the installation object,
- on installation over several parts of a building or building complexes,
- with decentralized power supply using several external power supply units with different earth potentials distributed on the system.

2.6 Cable lengths/types

● External readers	20 - 200 m	J-Y(St)Y 4x2x0,8∅
● Connection tamper reader (TC)	40 m	J-Y(St)Y 2x2x0,8∅
● Door strike with monitoring contact	40 m	J-Y(St)Y 2x2x0,8∅
● Door strike key	40 m	J-Y(St)Y 2x0,6∅ or YV(St)Y 2x0,5∅
● Interface circuits: RS-485 3 wire	bis 40 m bis 1200 m	J-Y(St)Y Cat-5e or better
● Power supply	230V AC	NYM-J 3 x 1,5 mm ²

3. Power supply

3.1 Power supply unit

The Door module RS485 Item no. 026594.10 is delivered with the power supply and charging unit.

The Door module RS485 Item no. 026593.10 is delivered without a power supply. Here you are use decentralized power supply by one or more external power supply units distributed throughout the system.



If you use a 12V DC power supply, please observe that the output voltage must be free of ground potential.

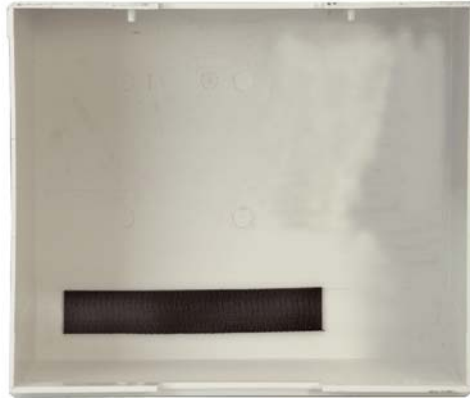
3.2 Directives for the power supply

- A separator (circuit breaker) must be integrated in the installation of the building.
- Only use approved batteries (directives VDE 0833 - 1) for the power supply. Only use batteries of the same age and originating from the same production series.

3.3 Battery

Space for a battery in the cover of the housing: 1 x Item no. 018 002 battery 12V 2,0Ah

Fix the battery 12 V/2,0A (Item no. 018002) by means of a flexible "Dual Lock" Velcro fastening tape in the cover:



Cover with "Dual Lock" Velcro fastening tape



Cover with installed battery

Stick one "Dual Lock" tape (Item no. 055 280) to the inside of the door module cover (see illustration) and one "Dual Lock" tape to the battery.



Make sure that the surface is dry and free of grease.

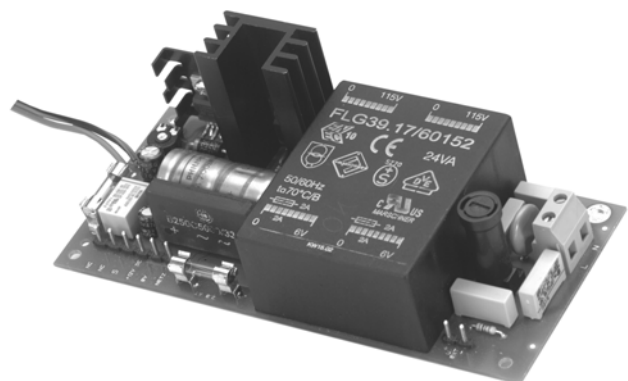
Then press the battery on the Velcro fastening tape.

Use the red (+) and black/red (-) cable of the pcb for connecting the battery to the pcb.

The end-of-charging voltage of the battery charging unit is set in the factory for Sonnenschein batteries of the A500 series. If it is necessary to change the setting, proceed as described in the chapter "Adjusting the end-of-charging voltage".

3.4 Integriertes Netzteil

- Fully electronic power supply/charging unit
- Voltage regulated
- Current limited
- Redundancy standby operation with battery monitoring
- Total discharge protection
- Charge monitoring
- Battery failure detection
- Up to 2Ah battery capacity



Mounting



Warning! Danger for man and / or device
Please note safety instructions!

Disconnect the unit from the power supply when installing the power supply.

When installing the power supply unit in the central housing, ensure that the **isolating shield is placed between the bottom of the housing and the lower side of the board**. Also ensure that the device is firmly screwed to the bottom of the housing.

The ground conductor connected to the supply circuit must be connected close to the connecting terminals of the supply voltage.

When connecting the power line (**NYM 3 x 1,5 mm²**) make sure that the minimum **air gaps (4mm)** and **creep distances (5mm)** between the electronic components or the peripheral devices and the power line are observed. If the neutral conductor cannot be clearly identified, a second fuse protection must be provided in the supply circuit enabling a 2-pole separation from the supply circuit. After installation, fit the covers supplied to prevent inadvertent manual contact with the connecting terminals.

3.4.1 Funktional description

Two independent control loops are mounted on the mother board.

First control loop: It supplies the central unit and the connected readers.
Protected with 2,0 AF (including external consumers).

Second control loop: This is used to charge the batteries. The charging current is limited to 120 mA.
The battery charging current is monitored and tracked depending on the temperature by means of an NTC resistor.

The **end-of-charging voltage** of the battery charging unit is correctly set in the factory for **Sonnenschein batteries of the A500 series**. If it is necessary to change the setting, proceed as described in the chapter "Adjusting the end-of-charging voltage".

Not stabilized power supply U_{ext} . A not stabilized direct current voltage is available for external consumers (e.g. door strike).

The supply voltage for the central unit and the external consumers need not be adjusted.

Switching the power supply off: If, during battery operation, the battery voltage **falls below 9.5V**, the power supply to the central unit and the external consumers is switched off (cutoff relay). Thus, unpredictable reactions in case of undervoltage are avoided and the battery is protected against total discharge.

Faults: The messages are issued via the outputs

Fault (ST1/3), HIGH active

The following **fault causes** are possible:

Power (mains) / ext. consumers / charging controller defective /
Battery defective or missing

Power supply (ST1/6), output, HIGH-aktiv.

This output is active when the power is on.

3.4.2 Adjusting the end-of-charging voltage

1. The power supply must have reached the operating temperature. This requires the power supply to be switched on for at least two hours with rated load and closed housing.
2. Connect the **charged** battery. An incompletely charged battery causes an **incorrect adjustment!**

- Adjust the voltage at the battery terminals by means of the RV2 potentiometer under consideration of the ambient temperature according to the table below.

Note the battery type!



Warning! Destruction of device possible!

The end-of-charging voltage must only be modified:

- after having exactly measured the temperature
- if the battery voltage deviates by >200mV from the nominal value according to the table below

Sonnenschein accumulators of the A500 series (configuration on delivery)		Other accumulators	
T (°C)	U _L (V)	T (°C)	U _L (V)
0	14.50	0	14.10
+5	14.30	+5	13.95
+10	14.10	+10	13.75
+15	13.95	+15	13.60
+20	13.80	+20	13.50
+25	13.65	+25	13.45
+30	13.50	+30	13.40
+35	13.40	+35	13.35
+40	13.30	+40	13.30
+45	13.25	+45	13.25
+50	13.20	+50	13.20

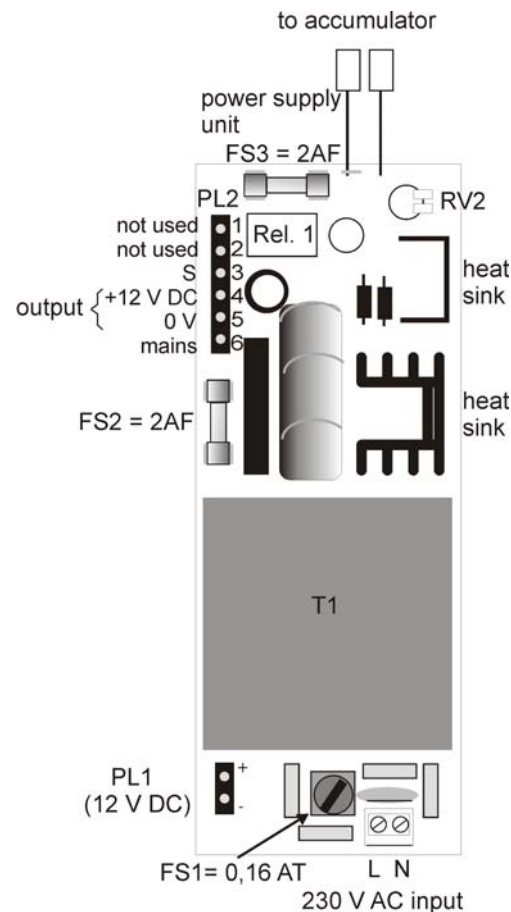
3.4.3 Connection/component mounting diagram

Current drain output
 $I_{12V} = \text{max. } 400\text{mA}$

Current drain PL1 (U_{ext})
 $U_{\text{ext}} = 9 - 17,5 \text{ V DC}$
 $I_{\text{ext}} = \text{max. } 900\text{mA}$

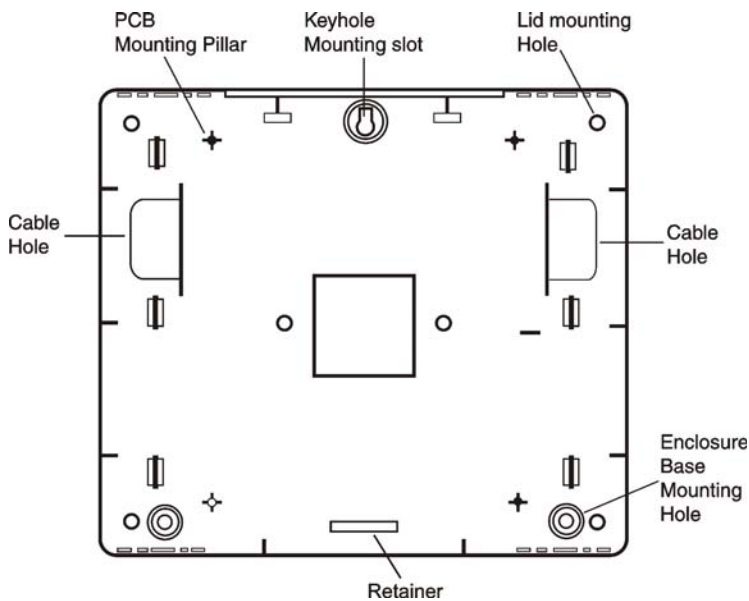


$I_{12V} + I_{\text{ext}} = < 900\text{mA}$



4. Mounting

4.1 Mounting of Door module RS485 (026593.10)



The door module 026593.10 is delivered with a plastic housing.

If necessary, the pcb can be removed for easier mounting of the housing. To do so push the retainer with notch slightly downwards and remove the pcb from the mounting pillars.

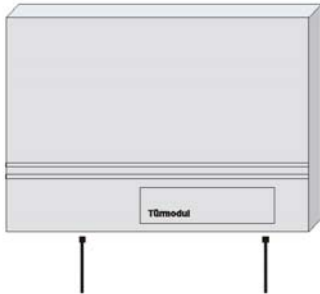
To attach the plastic housing on a wall there are three mounting screws required.

After mounting the plastic housing set up the pcb in the mounting pillars and snap it into the retainer. Now the peripheral devices can be connected. Observe the connection diagrams and the terminal assignments!

Then attach the housing cover and close it with the housing screws.

4.2 Mounting of Door module RS485 (026594.10)

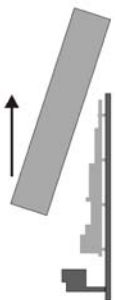
1. Remove housing screws



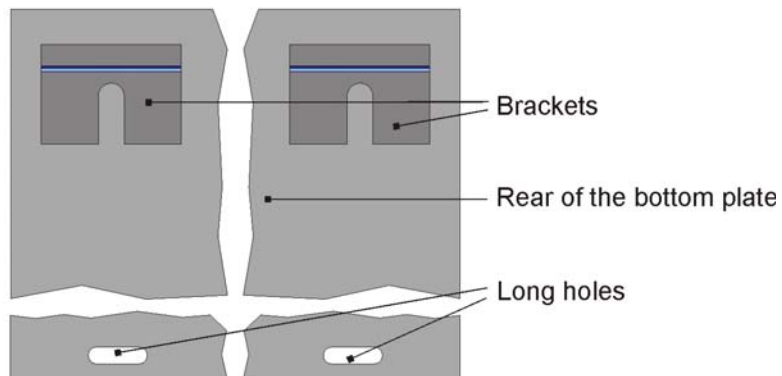
2. Tilt the housing cover to the front as shown in the illustration.



3. Remove the housing cover carefully.



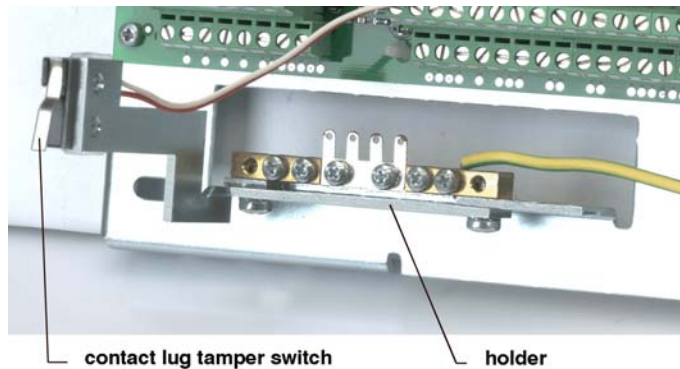
4. Locate the screws by observing the distance of the brackets and attach the bottom plate. Secure the bottom plate by means of two additional screws and the long holes.



5. Now the peripheral devices can be connected. Observe the connection diagrams and the terminal assignments!
Then mount the housing cover, close it with the housing screws and seal it.



To assure safe and easy working, we recommend removing the holder with integrated tamper switch during the installation of the peripheral devices.



5. Technical data

5.1 Technical data 026593.10, Door module 12V DC, RS485

Rated operating voltage	12V DC
Operating voltage range	9V DC to 15V DC
Current consumption in no-load operation without ext. consumers	15 mA
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Environmental class according to VdS	II
Color of the plastic housing	grey-white (similar to RAL 9002)
Dimensions (W x H x D)	163 x 152 x 40 mm

5.2 Technical data 026594.10, Door module 230V AC, RS485

The performance features are the same as for Item no. 026593.10

Battery support:	1 x 018002 (2,0 Ah)
In addition:	Power supply unit with battery charging connection
Rated operating voltage	230 V AC
Operating voltage range	230 V AC - 15% to + 10%
Current consumption in no-load operation without ext. consumers	65 mA
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Environmental class according to VdS	II
Color of the plastic housing	grey-white (similar to RAL 9002)
Bottom of the housing	2 mm steel sheet
Dimensions (W x H x D)	250 x 210 x 100 mm



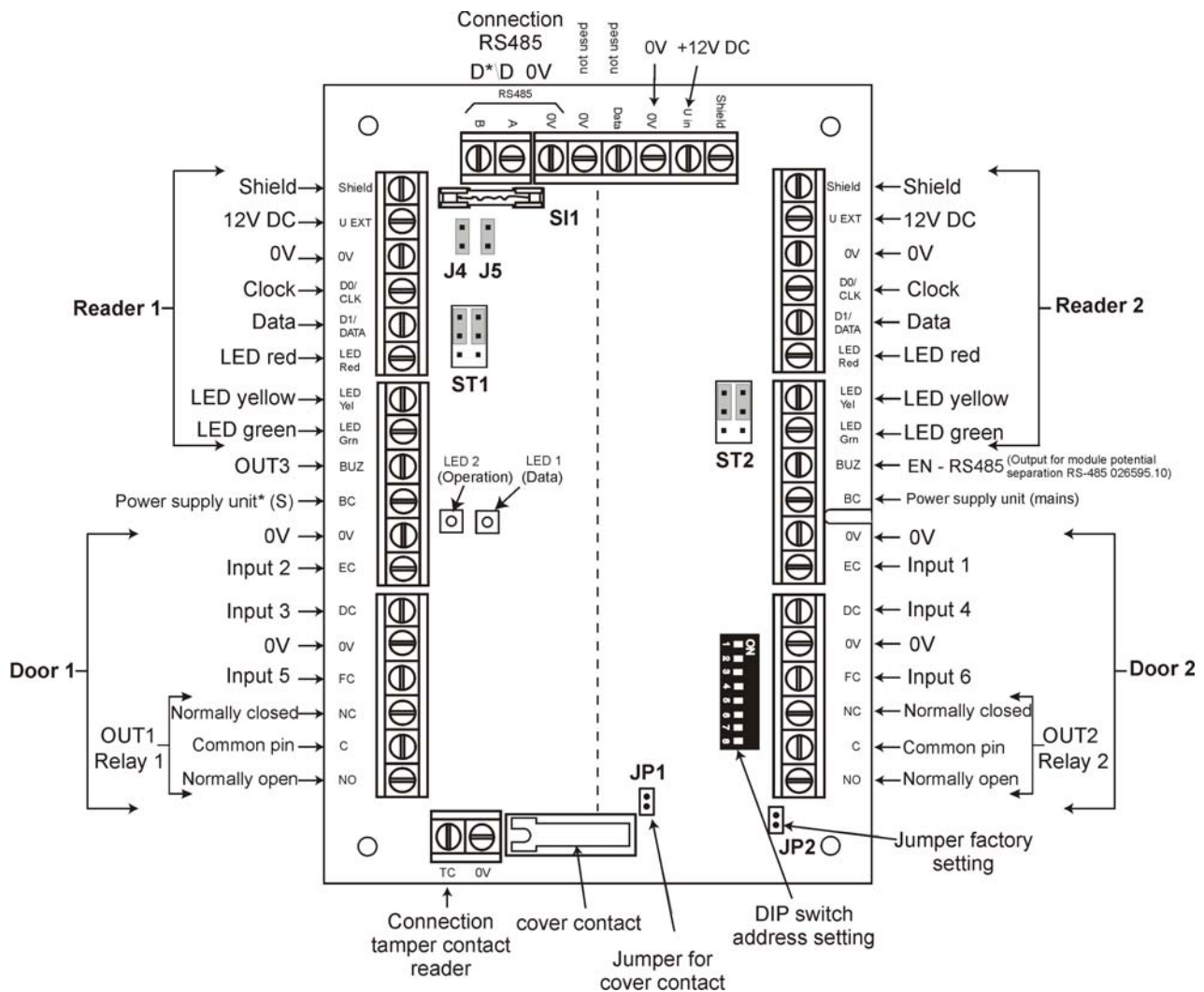
Caution!

Malfunction possible - when current overload!

The maximum current drain is 900 mA!

This value must not be exceeded when connecting external components (readers, door strikes etc.). In this case only one reader can be connected (as reader 1), or several external participants must be supported by a separate power supply unit.

6. General connection diagram



*with Item no. 026593.10 bridge the connection terminal (S) to 0V, otherwise failure message - power supply unit.

If only one reader is used, this reader is to be connected as "Reader 1".

If install **one** door with exterior reader **and** interior reader, the exterior reader is to be connected to terminal "Reader 1" and the interior reader is to be connected to terminal "Reader 2".

OUT3: open Collector (Transistor to 0V, max. 15V DC, current limiting max. 12mA).

Connections: Clock - Wiegand 0 (D0) / Data - Wiegand 1 (D1).

6.1 Description of fuse, jumpers and LEDs

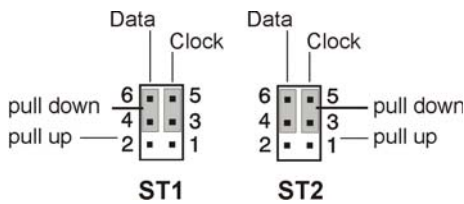
6.1.1 Fuse SI1

Fuse (250 mA) for reader voltage supply.

6.1.2 Jumpers for level definition



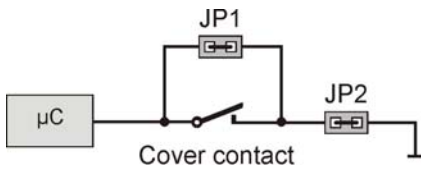
According to the used reader set up the level definition “pull down” or “pull up”. Information on the level definition can be found in the “Mounting and Connection Instructions” of the used reader. Using Wiegand readers normally the level definition is to be set to “pull up”.



ST1: Level definition Clock/Data for reader 1

ST2: Level definition Clock/Data for reader 2

6.1.3 Jumpers for Cover contact / tear-off contact



Jumper J1:

Setting of JP1 will switch off (bypass) the cover contact. With door module Item no. 026594.10, the cover contact of the housing is located to this terminal.

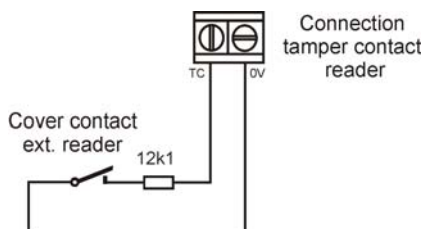
Jumper J2:

JumperJ2 factory setting.

6.1.4 Jumper for RS-485 interface

Jumper J4 and J5 set the RS-485 terminating resistors. They are to be set only when door module is installed as last bus-user of the bus data line.

6.1.5 Connection tamper contact reader (TC)



Cover contact connection for external reader or other devices. The input is monitored for $12k1 \pm 40\%$. The input must be terminated with 12k1 (end-of-line resistor), even if it is not used.

6.1.6 LEDs

LED 1 Data: LED flashes – Communication with ACS-8 active.
LED blinks permanently – no communication to ACS-8.

LED 2 Operation: LED on if operating voltage exists.

6.1.7 DIP switch addresses

Set up the BUS address according to the following selection table.



A reset or a “power-on reset” must be carried out for any changes in the switch settings to be effective. We recommend to set up the DIP switch before system commissioning.

Selection table 1: DIP switch S1 - S5 Address

1	2	3	4	5	Address
1	0	0	0	0	Address 1
0	1	0	0	0	Address 2
1	1	0	0	0	Address 3
0	0	1	0	0	Address 4
1	0	1	0	0	Address 5
0	1	1	0	0	Address 6
1	1	1	0	0	Address 7
0	0	0	1	0	Address 8
1	0	0	1	0	Address 9
0	1	0	1	0	Address 10
1	1	0	1	0	Address 11
0	0	1	1	0	Address 12
1	0	1	1	0	Address 13
0	1	1	1	0	Address 14
1	1	1	1	0	Address 15
0	0	0	0	1	Address 16
1	0	0	0	1	Address 17
0	1	0	0	1	Address 18
1	1	0	0	1	Address 19
0	0	1	0	1	Address 20
1	0	1	0	1	Address 21
0	1	1	0	1	Address 22
1	1	1	0	1	Address 23
0	0	0	1	1	Address 24
1	0	0	1	1	Address 25
0	1	0	1	1	Address 26
1	1	0	1	1	Address 27
0	0	1	1	1	Address 28
1	0	1	1	1	Address 29
0	1	1	1	1	Address 30
1	1	1	1	1	Address 31
0	0	0	0	0	Address 32

0 = OFF

1 = ON



DIP switch S6 - S8 don't change factory setting "OFF"!

6.1.8 Reader type and card coding

Input type: CLOCK/DATA or Wiegand-interface

Output type: RS-485

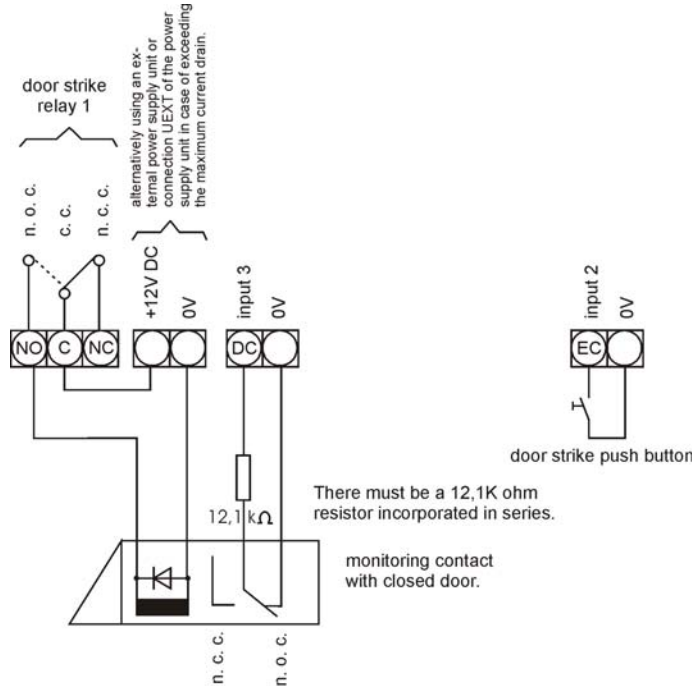
Reader type	Remarks
Novar contactless	<p>Output RS-485</p> <p>Settings for card coding in the corresponding Novar access control software.</p>
HID-Wiegand	<p>Output RS-485</p> <p>Settings for card coding in the corresponding Novar access control software:</p> <p><u>Wiegand esser var. DIN (Wiegand 26 Bit card)</u> System no.: Start: 1, Digits: 4 ID no.: Start: 5, Digits: 5 Version no.: Start: 10, Digits: 1</p> <p><u>Wiegand esser var. DIN (Wiegand 34 Bit card)</u> System no.: Start: 1, Digits: 5 ID no.: Start: 6, Digits: 5 Version no.: Start: 11, Digits: 2</p> <p><u>Wiegand var. DIN</u> System no.: Start: 0, Digits: 0 ID no.: Start: 5, Digits: 16 Version no.: Start: 0, Digits: 0</p> <p><u>Wiegand esser</u> System no.: Start: optional, Digits: optional ID no.: Start: optional, Digits: optional Version no.: Start: optional, Digits: optional</p>

7. Connecting a door strike

7.1 Connecting a door strike with load current function



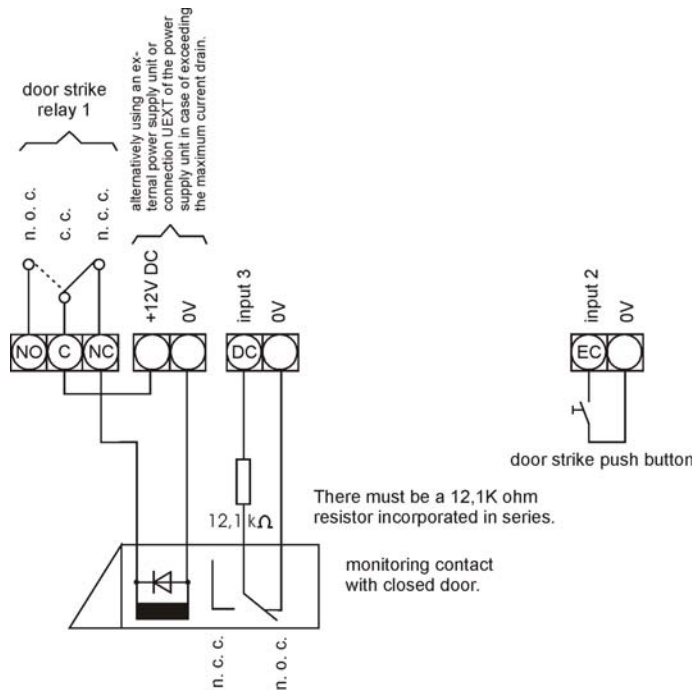
Strike with load current function: the door is released if the coil is energized.



7.2 Connecting a no-load current door strike



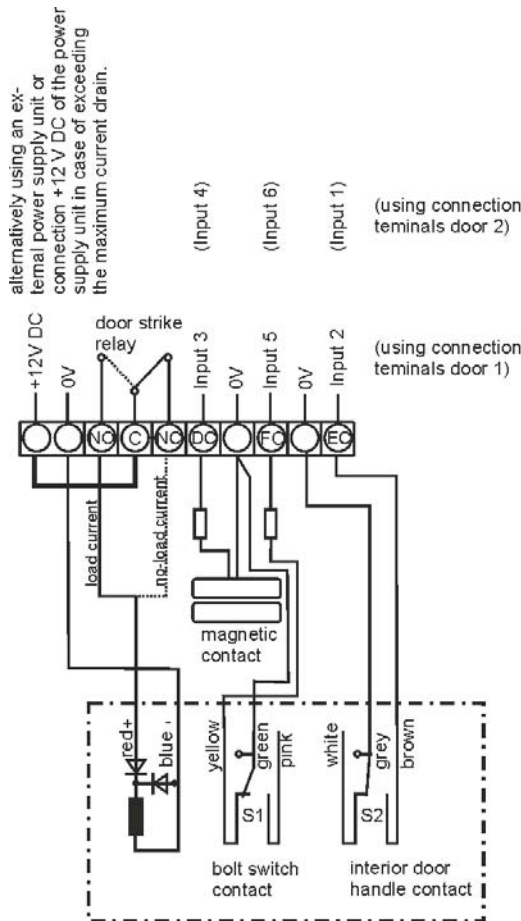
No-load current door strike: the door is blocked if the coil is energized.



8. Electric safety lock



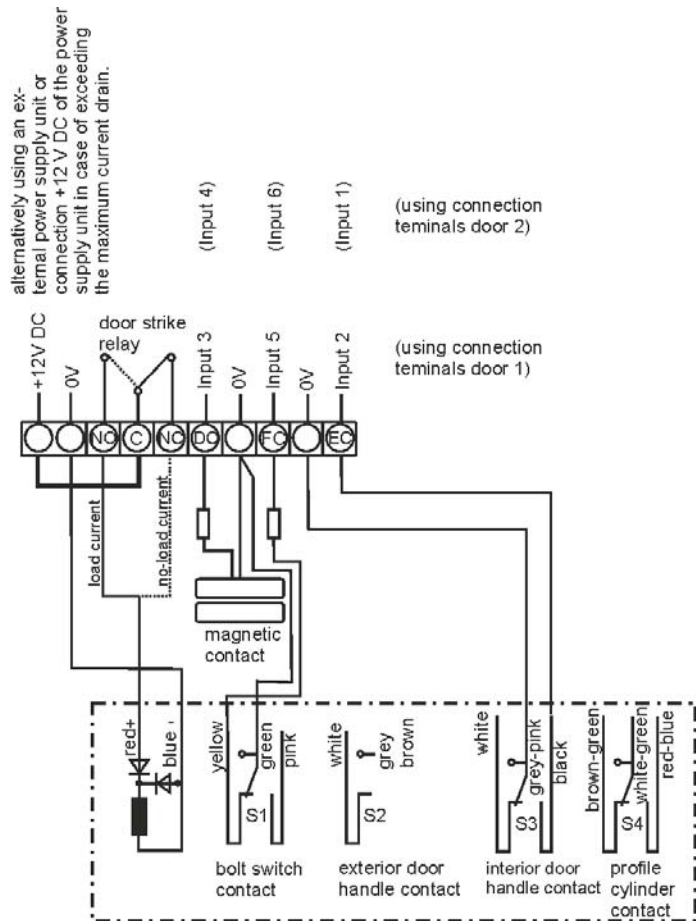
The electric safety lock requires certain settings to be made in the Software IQNetEdit. Observe the operating voltage range and current consumption of the electric safety lock! Use an external power supply or connection +12 V DC of the power supply unit.



Electric safety lock 809
Standard version with two monitoring contacts.

S1:
Shown position = bolt extended.

S2:
Shown position = idle position.
Switches when actuating the interior door handle and the coupled exterior door handle.



Electric safety lock 809
Expandable version with four monitoring contacts.

S1:
Shown position = bolt extended.

S2:
Shown position = idle position.
Switches when actuating the exterior door handle.

S3:
Switches when actuating the interior door handle.

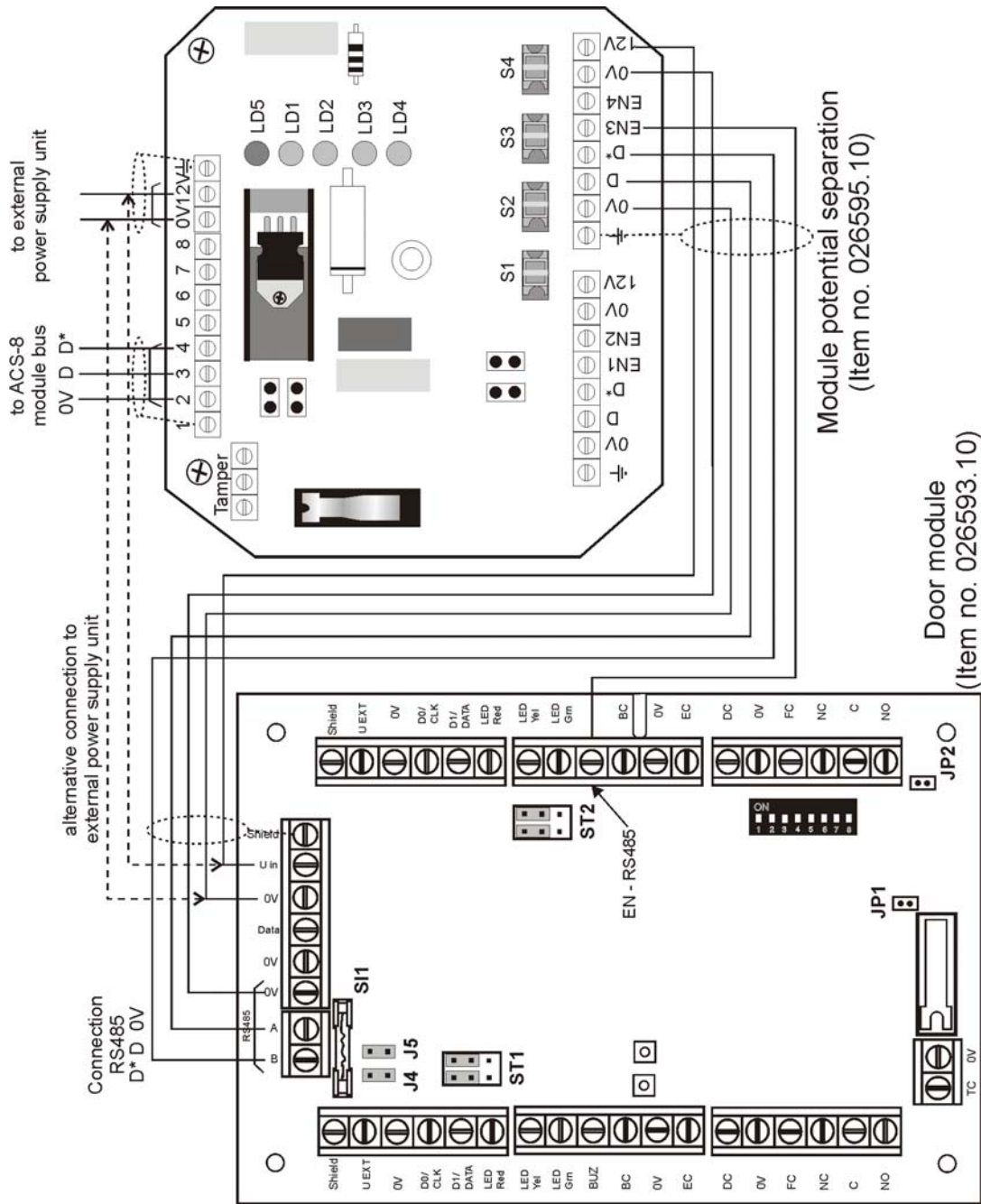
S4:
Switches when actuating the profile cylinder.

8.1 Door monitoring



The interior door handle contact effects a door release via the door module. The door can be passed without the error message "Unauthorized door release".

9. Connection diagram with Module potential separation



10. Connections

Terminal assignment to fill in the lines and colors of the cables.

Reader 1		Reader 2	
Shield		Shield	
12V DC (max. 100mA)		12V DC (max. 100mA)	
0V		0V	
Clock / D0*		Clock / D0*	
Data / D1*		Data / D1*	
LED red		LED red	
LED yellow		LED yellow	
LED green		LED green	
* D0 / D1 only Wiegand reader			
OUT 3		EN - RS-485	
Power supply (S)		power supply (mains)	
0V		0V	
Input 2 (Door strike key)		Input 1 (Door strike key)	
Input 3 (12k1 end-of-line resistor)		Input 4 (12k1 end-of-line resistor)	
0V		0V	
Input 5 (12k1 end-of-line resistor)		Input 6 (12k1 end-of-line resistor)	
Relay 1	normally closed contact	Relay 2	normally closed contact
	common contact		common contact
	normally open contact		normally open contact
Connection terminal RS-485		D*	
		D	
		0V	
Power supply		12V DC	
		0V	
Tamper contact		TC	
		0V	



Observe current consumption of external devices, see chapter 3.4.

Honeywell Security Group

Novar GmbH

Johannes-Mauthe-Straße 14

D-72458 Albstadt

www.honeywell.com/security/de

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