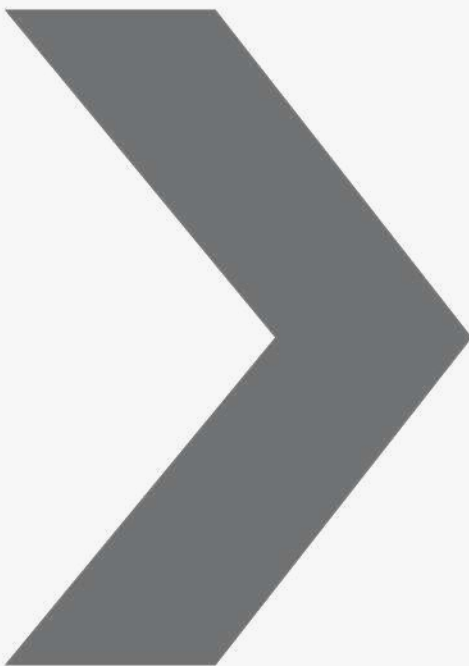




Wireless Power Module WPM

Operating Instructions



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1 General information

In these operating instructions you will find:

- information on installation, adjustment, maintenance and disposal of the WPM system
- safety information
- assistance in case of malfunctions

Read these operating instructions carefully before you start using the WPM system. Pay special attention to the safety instructions, as the failure to comply with them might result in severest injuries, environmental damage or damage to the assembly and to machines.

1.1 Key words and warning symbols used



Danger

Indicates an imminent danger for life and health of persons.



Warning

Indicates a possibly dangerous situation. Disregarding this warning may result in death or serious injury. This advice additionally warns of risks for machine, material and environment.



Attention

Indicates possible minor personal injury due to neglect.



Warning of electromagnetic field

Indicates potentially hazardous situation for the life and health of persons with active implants, such as pacemakers or implanted defibrillators.



Caution

Indicates possible material damage when disregarding these instructions or gives an important advice for the function.



Note

Identifies general information on the handling or the product.

2 Brief description

2.1 WPM system

The features of the system at a glance:

mechanics:	<ul style="list-style-type: none">• transmitter with power supply unit is attached to the car• for each shaft door one receiver is required in the pit• no mechanical actuation, therefore wear-free and silent• innovative solution for modernizations and new installations
electronics:	<ul style="list-style-type: none">• simple and efficient control for motorized door interlocks CL(F)MO and DL(F)1MO by wireless power transfer between the lift car and the pit in the stop• the transmitter is controlled like a retiring cam, no change of control necessary• control voltage between 20 to 250 V AC or DC possible• only a two-pole cable is required between the receiver and the motorized door interlock

3 Intended use

The WPM system:

- may only be used for wireless energy transmission by an alternating magnetic field to control motorized door interlocks of Hans & Jos. Kronenberg GmbH in lift installations
- may only be used within the electrical specifications of the assembly (see chapter 9.2)
- may only be used in a dry environment outside of explosion protection areas
- is only to be used with the mounting set supplied

Any other use is considered **improper** and may result in personal injury, environmental damage and / or property damage. In particular, the following are not permitted:

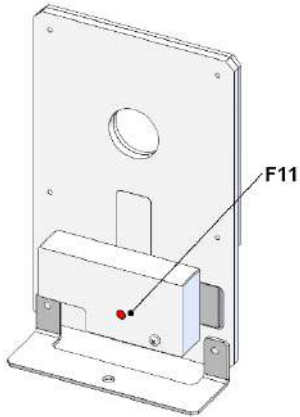
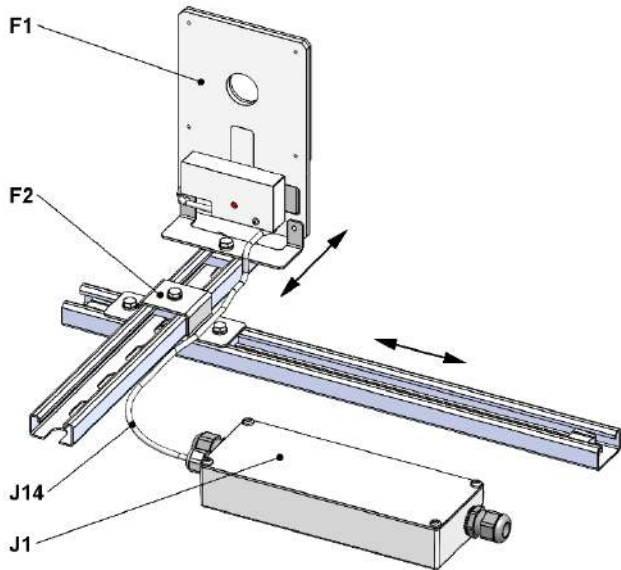
- use for other energy transmission
- use in environments that require special protection against alternating magnetic fields
- repair, adjustment or modification of the WPM system
- use for safety-relevant functions

Hans & Jos. Kronenberg GmbH do not assume any liability for damages caused by:

- improper or incorrect use
- use of non-approved spare or accessory parts
- non-observance of this manual

4 Overview WPM system

4.1 WPM-S-SET (transmitter)



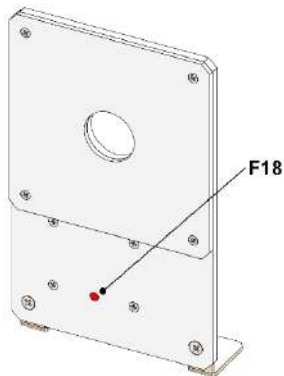
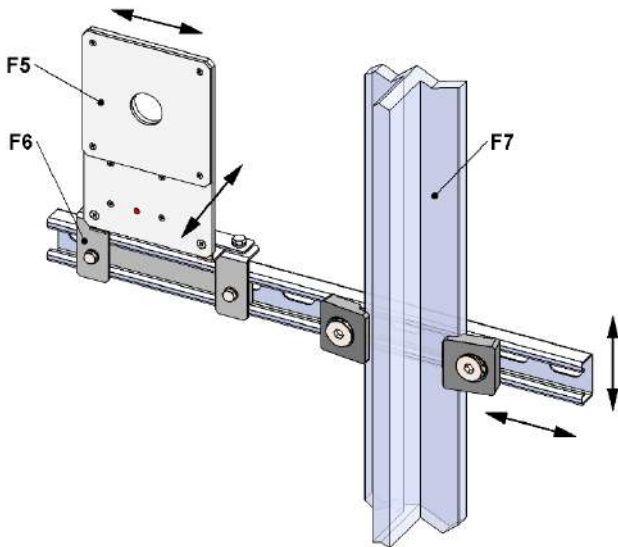
components:

- F1: transmitter
- F2: mounting set for transmitter
- F11: status LED
 - red for transmitter activated
 - green for transmitter deactivated
- J1: power supply unit
- J14: connecting cable pluggable

WPM-S-SET transmitter

* Dimensioning and technical data can be found in chapter 9.

4.2 WPM-E-SET (receiver)



components:

- F5: receiver
- F6: mounting set for receiver
- F18: status LED red for applied voltage, visible on both sides
- F7: guide rail (pit)

WPM-E-SET receiver

* Dimensioning and technical data can be found in chapter 9.

5 Functioning WPM system

5.1 General description




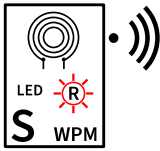
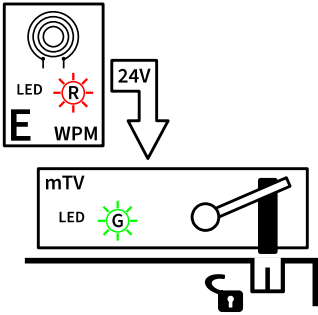
The WPM system is used for wireless energy transmission by an alternating magnetic field at motorized door interlocks in the stopping position of the car. It consists of a matched combination of transmitter and receiver.

In this system the car is the mounting location where the transmitter is installed. In the stop a receiver supplies a motorized door interlock with energy. If several motorized door interlocks are to be supplied with energy in a stop, additional transmitters and receivers are required.

An energy transmission is only made in the stopping position at the predetermined position of the transmitter and receiver. The receiver converts the energy into a voltage of 24V with a maximum current of 1 A and supplies the motorized door interlock. As a result, the latch bolt tightens and the shaft door unlocks. Terminating or interrupting the power supply immediately locks the shaft door.

5.2 Functioning WPM system by means of a lift ride

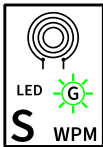
The following table describes the functioning of the WPM system.

legend of the LED-display	The LED lights up:  red  green	
	The LED is off: 	
car is in the stopping position area	transmitter (S): car	receiver (E): stop
	<ul style="list-style-type: none"> • signal of the control “locking” is inactive • transmitter is switched on • transmitter-LED: lights up red 	<ul style="list-style-type: none"> • output voltage = 24 V • motor. door interlock (mTV) is supplied with power • shaft door is unlocked • receiver-LED: lights up red • motor. door interlock (mTV) -LED: lights up green
		

car is in the stopping position area and the next ride is initiated

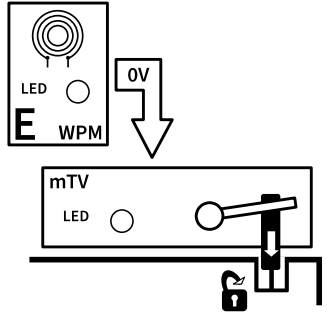
transmitter (S): car

- signal of the control “locking” is active
- transmitter is switched off
- transmitter-LED: lights up / illuminates green



receiver (E): stop

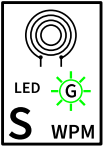
- output voltage = 0 V
- motor. door interlock (mTV) is de-energized
- shaft door is locked
- receiver-LED: off
- motor. door interlock (mTV) -LED: off



car in motion

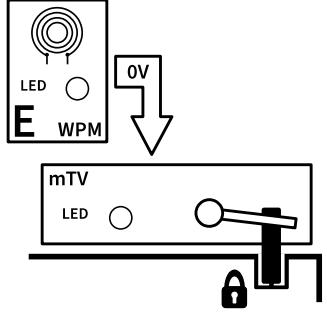
transmitter (S): car

- signal of the control “locking” is active
- transmitter is switched off
- transmitter-LED: lights up green



receiver (E): stop

- output voltage = 0 V
- motor. door interlock (mTV) is de-energized
- shaft door is locked
- receiver-LED: off
- motor. door interlock (mTV) -LED: off



5.3 Specifications for the energy transmission



Caution

The specifications must be observed so that the **pull-in current** for the motorized door interlocks DL(F)1MO and CL(F)1MO is available!

The following table describes the tolerances in the stopping position area between transmitter and receiver for a sufficient energy transmission.

distance between transmitter and receiver	10 mm ± 5 mm
stopping position area	maximum vertical offset between transmitter and receiver of ± 20 mm permitted
re-levelling range	maximum vertical offset between transmitter and receiver of ± 40 mm permitted



Note

For an error-free energy transmission also observe the specifications for installation in chapter 6.

5.4 Information on the motorized door interlocks DL(F)1MO and CL(F)1MO



Note

In the initial phase of the motorized door interlock the voltage level and voltage waveform are monitored. If an error occurs, the red LED lights up. The green LED lights up if the initial phase is error-free.

You will need this information for error diagnostics in chapter 7.2

6 Installation

6.1 Mounting



Caution

An error-free energy transmission can only be ensured if you observe the following specifications during installation.

Observe these specifications when mounting the WPM system.

mounting point and procedure

We recommend using the supplied mounting set for mounting the transmitter at the car and for mounting the receiver at the guide rail in the stops.

Recommended procedure:

- **completely** mount and align* the transmitter and the receiver in the stopping position area of any stop
- mount and align* the receiver in the stopping position area of the remaining stops



Caution

When choosing the mounting points, keep a minimum distance to adjacent metal surfaces and electronic devices.

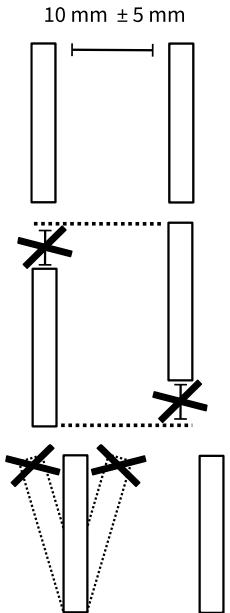
The minimum distance is for:

- the transmitter 30 mm
- the receiver 50 mm

If the distance is inferior to the above-mentioned values, interference may occur in the energy transmission or in the functions of external devices.

***alignment of the transmitter and the receiver in the stopping position area**

- distance
- misalignment
- parallelism

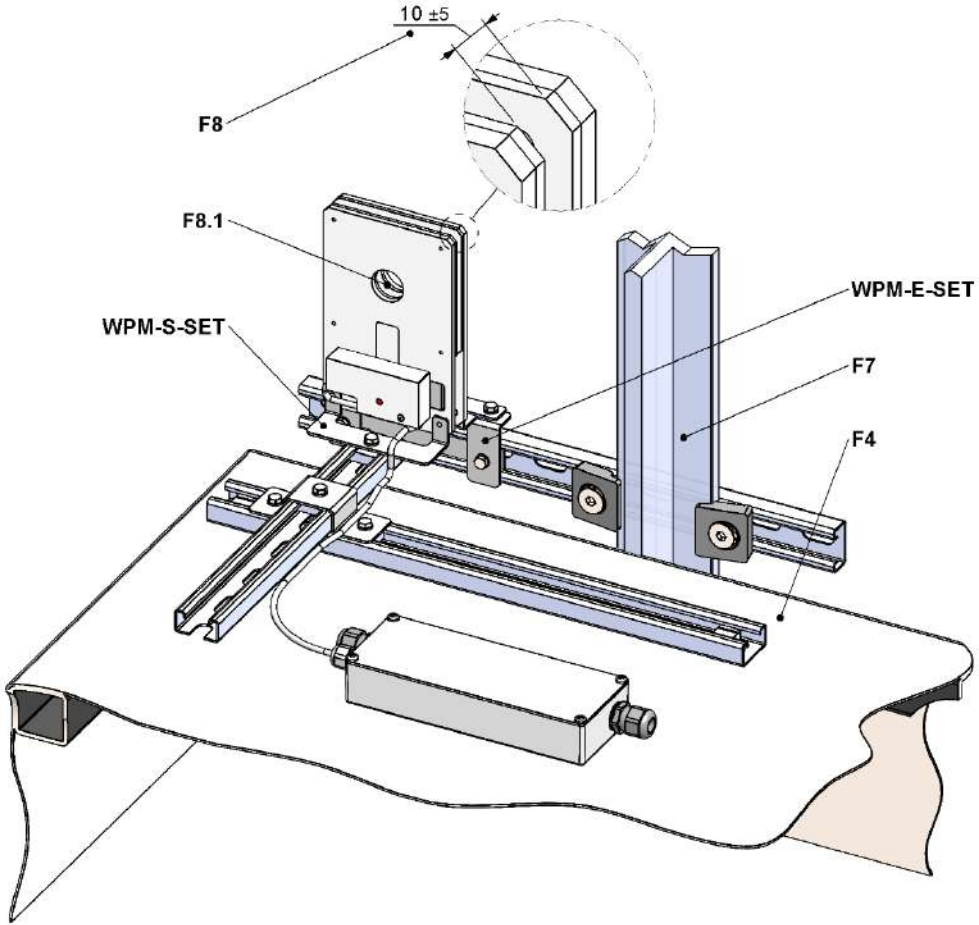


At the installation make sure that the transmitter and receiver maintain a **distance** of 10 mm ± 5 mm to each other.

Mount transmitter and receiver **WITHOUT misalignment** to each other.

At installation make sure that transmitter and receiver are **parallel** to each other.

6.1.1 Installation example in the pit



components:

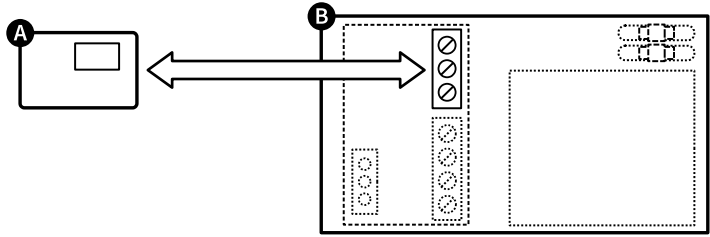
- F4: car roof
- F7: guide rail (pit)
- F8: distance between transmitter and receiver
- F8.1: alignment of the receiver in the stopping position using the housing edges or the center hole

6.2 Electrical connection

6.2.1 Connection control signal, transmitter and receiver

The following table describes the electrical connection specifications.

**connection
control →
power supply unit**

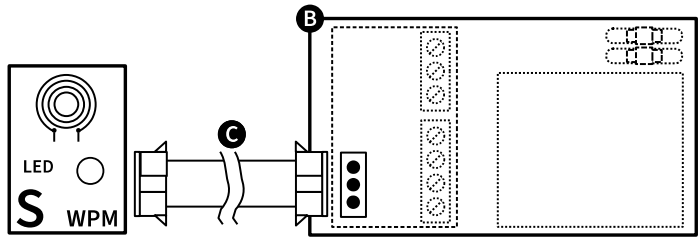


Connect the output „locking“ of the control (A) to the connection on the printed circuit board in the power supply unit (B).
For more information on the power supply unit (B) see chapter 9.1.1.

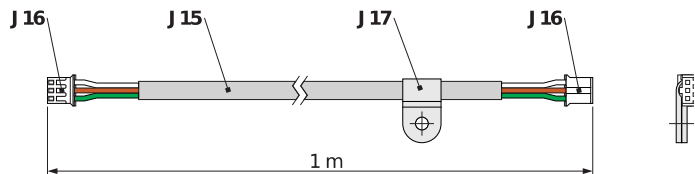
V AC/DC		
60-250	20-60	0

control signal „locking“:
60-250: 60 - 250 V AC / DC input
20-60: 20 - 60 V AC / DC input
0: reference potential

**connection
transmitter →
power supply unit**

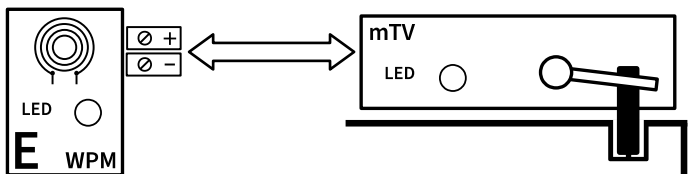


Connect the transmitter (S) to the connection on the printed circuit board in the power supply unit (B). The plugable connecting cable (C) is included in the scope of delivery.



- Legend:
- J15 connecting cable 3-pole
 - J16 PH plug connector 3-pole
 - J17 strain relief

**connection
receiver →
motorized door interlock**



Connect receiver (E) to the motorized door interlock (mTV).

6.2.2 Connection supply voltage



Caution - people trapped

A self-liberation from the car is only possible if the WPM system is still supplied with energy in the event of a power failure.

The motorized door interlock cannot unlock the landing door without power supply!

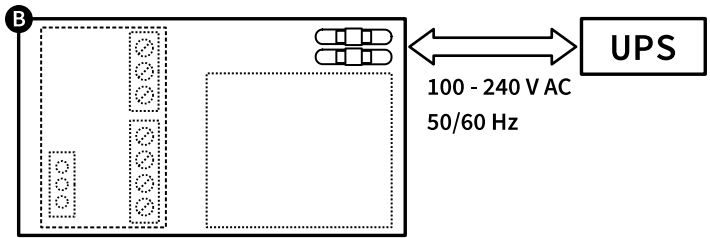
For securing the power supply 2 options are available:

- Option 1: You supply the power supply unit of the WPM system via a UPS* (e.g. the UPS of the control).
- Option 2: You supply the power supply unit of the WPM system via the mains voltage **and** additionally ensure the supply via the emergency light. In this option, please note that the emergency light supply must additionally provide 24 V DC and min. 1.5 A.

* UPS: uninterruptured power supply

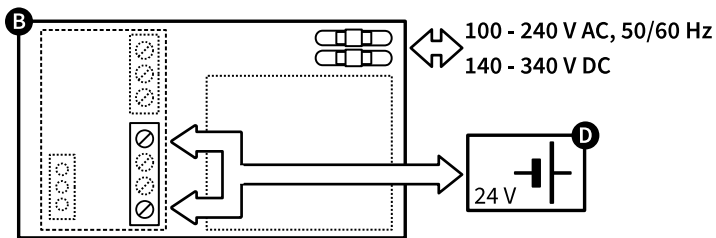
The following table describes both options.

connection
UPS →
WPM – power supply unit
 (option 1)

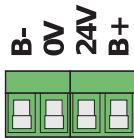


Connect power supply unit (B) with the output voltage of the UPS (control).

connection
mains voltage and
emergency light supply →
WPM – power supply unit
 (option 2)



Connect power supply unit (B) with the mains voltage.
 Connect power supply unit (B) with the emergency light supply (D).



supply voltages:

- B-: emergency light supply (0 V DC)
- 0V: internal WPM – power supply unit
- 24V: internal WPM – power supply unit
- B+: emergency light supply (24 V DC)

7 Initial operation

7.1 Functional test



Warning of electromagnetic field

During the functional test persons with active implants must keep a minimum distance of 30 cm from the WPM transmitter!

The following table describes the tolerances in the stopping position area between transmitter and receiver for a sufficient energy transmission.

mounting position and alignment	Check the specifications from chapter 6.1 in each stopping position area.
LED display(s) at WPM system and at the motorized door interlocks	Check the specifications from chapter 5 in each stopping position area and during the ride.
advice for error diagnostics	For detailed advice on error diagnostics see chapter 7.2 . Information on the internal process during the initial phase of the door interlocks DL(F)1MO and CL(F)1MO can be found in chapter 5.4.

7.2 Error diagnostics








Warning of electromagnetic field

During error diagnostics persons with active implants must keep a minimum distance of 30 cm from the WPM transmitter!

We recommend starting the error diagnostics with the reactions of the motorized door interlocks, distinguishing between the following error descriptions:


- The door interlock is without recognizable reaction.
- The latch bolt or the motor of the door interlocks moves, but does not pull.
- The latch bolt of the door interlock is not tightened or not completely tightened.

The LED displays at the WPM system and at the motorized door interlock form the basis in the error diagnostics.



legend of the LED displays	The LED lights up:	 red	 green
	The LED flashes:	 red	 green
	The LED is off:	 ○	

7.2.1 Error case: The door interlock is without recognizable reaction.

The following table describes the status combinations of the LED displays of the WPM system and the motorized door interlock in the event of an error.

status WPM system	<u>possible cause(s):</u>
→ transmitter ○	• no power supply
→ receiver ○	
status mot. door interlock	<u>measure(s):</u>
→ red LED ○	• check the connection of the power supply unit to the mains voltage and check the connection of power supply unit to transmitter
→ green LED ○	
status WPM system	<u>possible cause(s):</u>
→ transmitter 	• signal "locking" is present, as a result transmitter is switched off
→ receiver ○	
status mot. door interlock	<u>measure(s):</u>
→ red LED ○	• make sure that the control signal "locking" is correct
→ green LED ○	



status WPM system

- transmitter 
- receiver 

possible cause(s):

- no energy transmission to receiver
- energy transmission disrupted by metal surfaces
- receiver shorted or overloaded



status mot. door interlock

- red LED 
- green LED 

measure(s):

- check alignment and distance from transmitter to receiver
- remove metal parts nearby or choose a different mounting position
- test for short circuit or overload: for this purpose disconnect a connecting cable from the receiver

status WPM system

- transmitter 
- receiver 



possible cause(s):

- door interlock without voltage or polarity reversed



measure(s):

- check wiring between receiver and door interlock
- measure the voltage at the connecting terminals

status mot. door interlock

- red LED 
- green LED 

status WPM system

- transmitter 
- receiver 



possible cause(s):

- voltage too low due to insufficient energy transmission
- energy transmission disrupted by metal surfaces



measure(s):

- check alignment and distance from transmitter to receiver
- remove metal parts nearby or choose a different mounting position

status mot. door interlock

- red LED 
- green LED 

status WPM system

- transmitter 
- receiver 



possible cause(s):

- voltage incorrect or too low
- energy transmission disrupted by metal surfaces



measure(s):

- check alignment and distance from transmitter to receiver
- remove metal parts nearby or choose a different mounting position

status mot. door interlock

- red LED 
- green LED 

status WPM system

- transmitter 
- receiver 



possible cause(s):

- due to insufficient energy transmission the voltage collapses when the motor is started
- energy transmission disrupted by metal surfaces

measure(s):









- check alignment and distance from transmitter to receiver
- remove metal parts nearby or choose a different mounting position

status mot. door interlock

- red LED 
- green LED 





7.2.2 Error case: The latch bolt or the motor of the door interlocks moves, but does not pull.

The following table describes the status combinations of the LED displays of the WPM system and the motorized door interlock in the event of an error.

status WPM system		<u>possible cause(s):</u>
→ transmitter		<ul style="list-style-type: none"> • due to insufficient energy transmission the voltage collapses when the motor is started • energy transmission disrupted by metal surfaces
→ receiver		
status mot. door interlock		<u>measure(s):</u>
→ red LED		<ul style="list-style-type: none"> • check alignment and distance from transmitter to receiver • remove metal parts nearby or choose a different mounting position
→ green LED		
status WPM system		<u>possible cause(s):</u>
→ transmitter		<ul style="list-style-type: none"> • latch bolt mechanically blocked
→ receiver		
status mot. door interlock		<u>measure(s):</u>
→ red LED		<ul style="list-style-type: none"> • remove blockade, make adjustment of door interlock and latch plate
→ green LED		

7.2.3 Error case: The latch bolt of the door interlock is not tightened or not completely tightened.

The following table describes the status combinations of the LED displays of the WPM system and the motorized door interlock in the event of an error.

status WPM system		<u>possible cause(s):</u>
→ transmitter		<ul style="list-style-type: none"> • latch bolt mechanically blocked, after 30s pull-in time the motor was stopped
→ receiver		
status mot. door interlock		<u>measure(s):</u>
→ red LED		<ul style="list-style-type: none"> • remove blockade, make adjustment of door interlock and latch plate
→ green LED		

8 Maintenance, storage, disassembly and disposal



Danger – risk of injury or death from electrical current!

Damaged and faulty assemblies must not be repaired.

They must be replaced by original components of the manufacturer.

8.1 Maintenance



Danger – danger of death by crushing!

During ride of the car do not lean over the car roof!

A check of the positioning of transmitter and receiver is **only** permitted at standstill of the car!

We recommend for every maintenance of the installation:

- To check in the stopping position area of the car:
 - Are transmitter and receiver with a distance of 10mm +/- 5mm parallel to each other?
 - Has it been ensured that there is no horizontal or vertical misalignment between transmitter and receiver?
- Check the attachment of transmitter and receiver for tightness and damage.
- If necessary, remove dust and dirt at the mounting points and at the assemblies.

8.2 Storage

Store the assembly in a clean and dry place. Do not put any loads on the assembly.

8.3 Disassembly and disposal



Danger – risk of injury or death from electrical current!

Only carry out the disassembly in de-energized state.

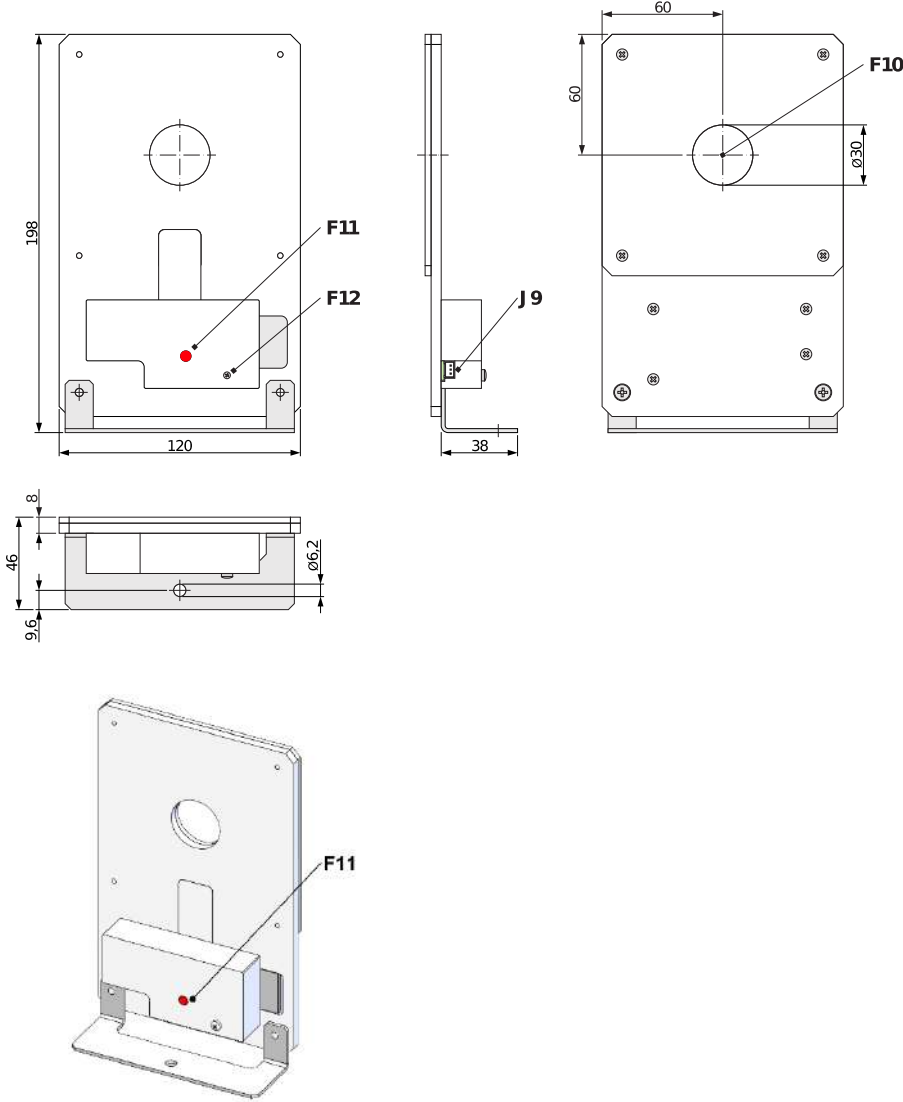
Dispose the components in accordance with the national regulations.

9 Data sheet

9.1 Device dimensions

9.1.1 WPM-S-SET

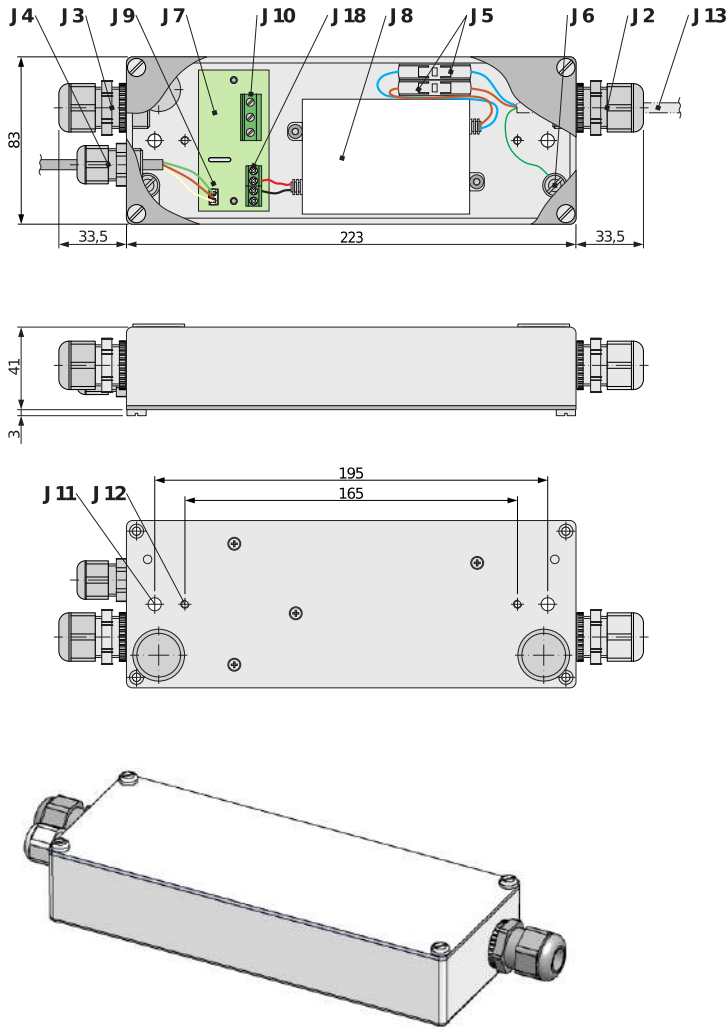
transmitter (inclusive)



Legend:

- F10: borehole in the center of the coil as centering aid
- F11: status LED
 - red for transmitter activated
 - green for transmitter deactivated
- F12: locking screw for strain relief
- J9: connector for connecting cable

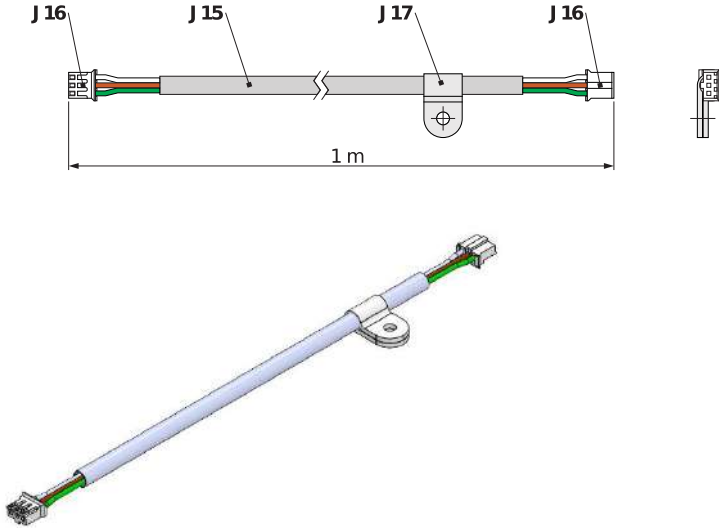
power supply unit (inclusive)



Legend:

- | | |
|---|--|
| J2: cable entry PG13.5 for mains voltage (UPS) | J7: printed circuit board |
| J3: cable entry PG13.5 for control signal "locking" | J8: power supply unit |
| J4: cable entry M16x1.5 for connecting cable to transmitter | J9: connector for connecting cable |
| J5: connecting terminals with lever for mains voltage (UPS) | J10: connecting terminal for control signal "locking" |
| J6: earth screw M5 | J11: boreholes \varnothing 6.5 for fastening |
| | J12: thread M4 for fastening |
| | J13: power cable on site |
| | J18: connecting terminal for 24 V permanent supply voltage |

connecting cable (inclusive)

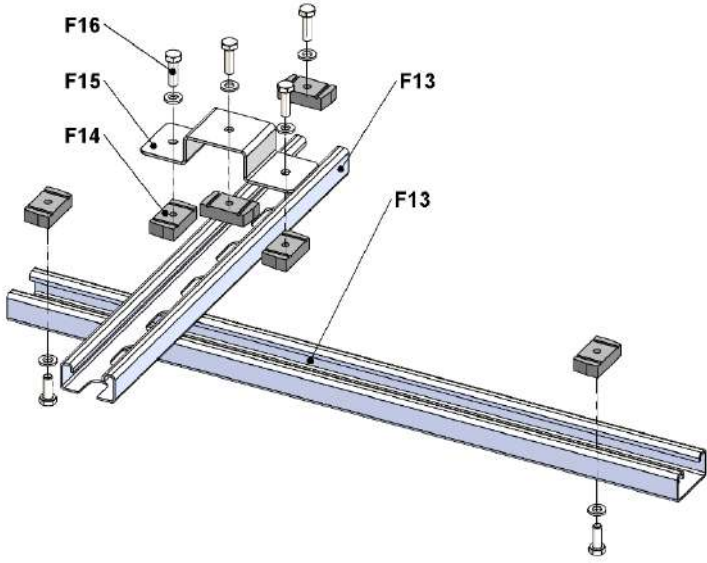
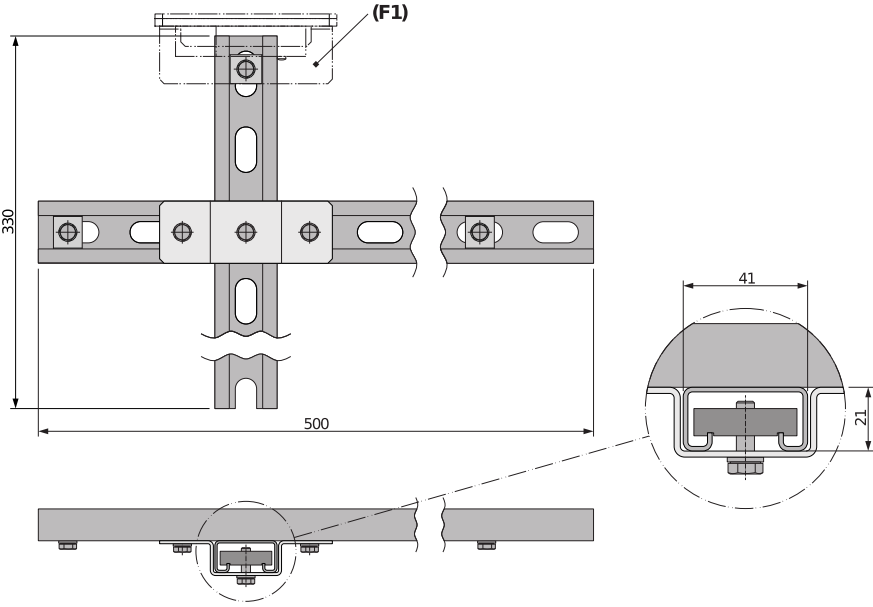


Legend:

J15: connecting cable 3-pole
J16: PH plug connector 3-pole

J17: strain relief

mounting set for transmitter

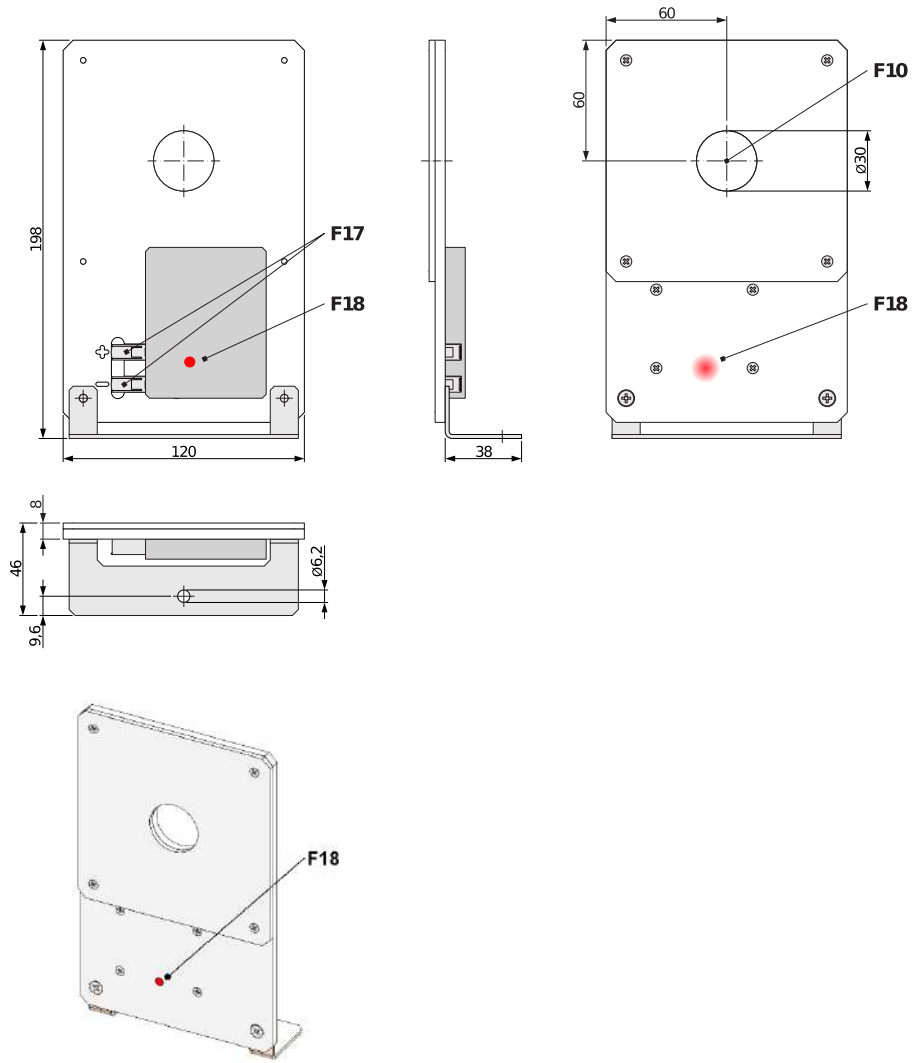


Legend:

- (F1): transmitter
- F13: mounting rail 41 x 21 mm
- F14: sliding nut with thread M6
- F15: connecting bridge
- F16: hexagon head screw M6x20 including washer

9.1.2 WPM-E-SET

receiver

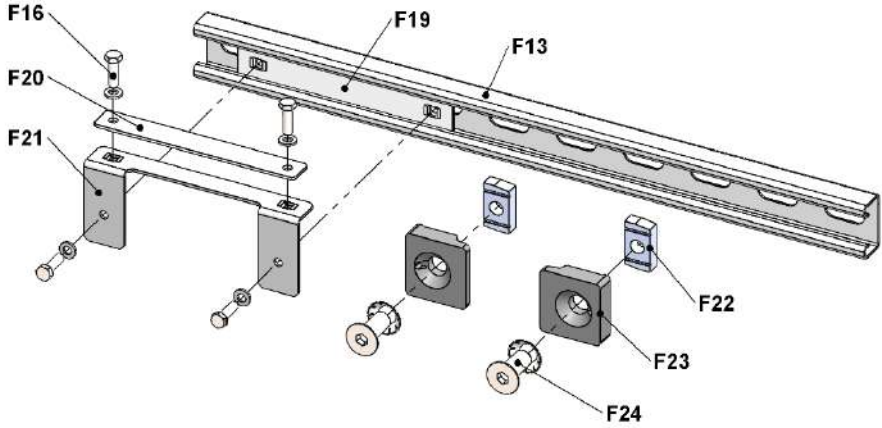
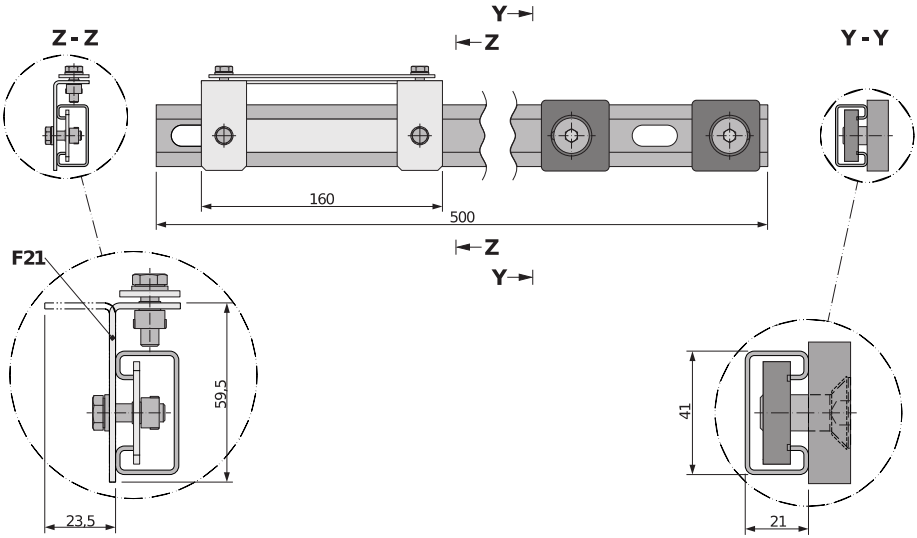


Legend:

- F10: borehole in the center of the coil as centering aid
- F17: connecting terminals with lever for output voltage 24 V DC

F18: status LED red for applied voltage, visible on both sides

mounting set for receiver



Legend:

- F13: mounting rail 41 x 21 mm
- F16: hexagon head screw M6x20 including washer
- F19: clamping sheet for holding angle
- F20: clamping bridge for receiver
- F21: holding angle, can be turned for changed distance
- F22: sliding nut with thread M12
- F23: clamping plate for guide rail
- F24: countersunk head screw M12x30 including toothed washer

9.2 Technical data

power connection:

mains voltage	100 - 240 V AC, 50 / 60 Hz 140 - 340 V DC
current consumption	max. 0.5 A / 230 V AC max. 0.75 A / 115 V AC
connection	connecting terminal, tool-free with lever, max. 4 mm ² earthing screw M5
level of protection	IP40
cable entry	cable gland PG13.5

connection emergency light supply:

input voltage	22 - 28 V DC
current consumption	max. 1.5 A
connection	screw terminal 2-pole, max. 2.5 mm ²

connection control signal „locking“:

input voltage	a) 20 - 60 V AC / DC or b) 60 - 250 V AC / DC
current consumption	max. 3.5 mA
connection	screw terminal 3-pole, max. 2.5 mm ²
cable entry	cable gland PG13.5

connection to transmitter:

output voltage	24 V DC
cable length	1 m
connection	plug connector on both sides, 3-pole
cable entry	cable gland M16x1.5

receiver:

output voltage	24 V DC, galvanically isolated
output current	1.0 A, max. 30 seconds (10 % duty cycle) 0.2 A, for an indefinite period
connection	connecting terminal, tool-free with lever, max. 4 mm ²

permissible distance and misalignment between transmitter and receiver in the stop:

distance	10 mm +/- 5 mm
stopping position area	max. +/- 25 mm (at 10 mm distance)
re-levelling range	max. +/- 40 mm (at 10 mm distance)

minimum distance from metal surfaces to the transmitter- and receiver coil *):

transmitter	> 30 mm
receiver	> 50 mm

*) Metal parts close to the transmitter and in particular to the receiver coil can significantly disrupt the energy transmission. Therefore place the receiver coil in such a way that the minimum distances to the metal surfaces are observed (see chapter 6).



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