

## Operating Instructions



### **Designa CONNECT**

### **LANE 600 FULL OUT - Exit Control Terminal**

Internal technical name: OUT\_01,OUT\_01; OUT\_01 TwinDeck

Series: CONNECT

Version: 1.50

Identity no.: DOCEN01019

# Original Operating Instructions

## **Designa Verkehrsleittechnik GmbH**

Faluner Weg 3

24109 Kiel

Germany

+49 (0)431 5336 0

info@designa.com

designa.com

### **COPYRIGHT**

© 2026 Designa Verkehrsleittechnik GmbH  
All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of Designa Verkehrsleittechnik GmbH.

### **COPYRIGHT**

© 2026 Designa Verkehrsleittechnik GmbH  
Urheberrechtlich geschützt. Jede Verwertung außerhalb der engen Grenzen des Urheberrechtsgesetzes ist ohne Zustimmung der Designa Verkehrsleittechnik GmbH unzulässig. Dies gilt insbesondere für Vervielfältigungen, Übersetzungen, Mikroverfilmungen und die Einspeicherung und Verarbeitung in elektronischen Systemen.

<b>1</b>	<b>GENERAL</b> .....	<b>7</b>
1.1	Information regarding the operating instructions.....	7
1.2	Explanation of signal words and symbols.....	9
1.3	Consumables, spare parts and accessories.....	10
1.4	Customer service & service.....	10
<b>2</b>	<b>SAFETY</b> .....	<b>11</b>
2.1	Intended use.....	11
2.2	Non-intended use.....	11
2.3	Safety on site.....	12
2.4	Specialists and operating personnel.....	13
2.5	Personal protective equipment.....	13
2.6	Occupational safety and special dangers.....	13
2.6.1	Product safety labels on the device.....	14
2.6.2	Safety messages and operation safety.....	15
2.7	Declaration of Conformity.....	19
<b>3</b>	<b>IDENTIFICATION</b> .....	<b>23</b>
3.1	Type plate.....	23
<b>4</b>	<b>TECHNICAL DATA</b> .....	<b>24</b>
<b>5</b>	<b>DEVICE DESCRIPTION</b> .....	<b>27</b>
5.1	General design.....	27
5.2	Components on the casing door and their functions.....	28
5.2.1	Intercom.....	29
5.2.2	Full touch display.....	29
5.2.3	SBC (Single Board Computer).....	31
5.2.4	Credit card reader/PINPad/NFC (optional).....	32
5.2.5	Reading device insertion slot.....	32
5.2.6	Illuminated ring.....	32
5.2.7	Receipt printer (optional).....	32
5.2.8	RFID (Option).....	32
5.2.9	Camera (optional).....	32
5.2.10	2D Barcode Scanner (optional).....	32
5.2.11	Hearing induction loop (optional).....	33
5.2.12	Key switch (optional).....	33
5.2.13	Mechanical intercom button (optional).....	33
5.2.14	MP3 module (optional).....	33
5.3	Components inside the device and their functions.....	34
5.3.1	Fan.....	37
5.3.2	Multicon.....	37
5.3.3	I/O interface (optional).....	37
5.3.4	Locking system.....	37
5.3.5	Terminal block -X2: Intercom system, barrier and Ethernet connection.....	38
5.3.6	Socket with residual current device (RCD) (optional).....	40
5.3.7	Power supply unit.....	41
5.3.8	Terminal block -X0: Voltage connection/ ON/OFF switch.....	42
5.3.9	Heater (optional).....	43
5.3.10	Ticket bag (optional).....	44
5.3.11	Mains filter.....	44
5.3.12	UPS (Uninterruptible Power Supply) (optional).....	44
5.3.13	Humidity sensor.....	47

5.3.14	Relay (optional) .....	47
5.3.15	Induction loop detector (optional) .....	47
5.3.16	Network components (optional).....	47
5.3.17	Door switch (optional).....	48
5.3.18	TFT colour display (optional).....	48
<b>6</b>	<b>TRANSPORT AND STORAGE .....</b>	<b>49</b>
6.1	Safety.....	49
6.2	Transport inspection .....	50
6.3	Transport .....	50
6.4	Storage .....	50
<b>7</b>	<b>INSTALLATION .....</b>	<b>51</b>
7.1	Safety.....	51
7.2	Installation preparation .....	53
7.3	Different mounting possibilities .....	54
7.3.1	Preparation with DESIGNA foundation frame .....	54
7.3.2	Preparation with DESIGNA mounting kit.....	55
7.4	Unpacking the device .....	56
7.5	Installation of the device .....	57
7.6	Installation of ram protection .....	58
<b>8</b>	<b>CONNECTION .....</b>	<b>61</b>
8.1	Safety.....	61
8.2	Installing electrical protective devices .....	62
8.3	Connection power supply (terminal block -X0) .....	63
8.4	Ethernet Connection (terminal block -X2 or additional mounting rail) .....	66
8.5	Connection intercom device (terminal block -X2 or VoIP).....	68
8.6	Connection barrier (terminal block -X2) .....	69
<b>9</b>	<b>TESTING IN ACCORDANCE WITH ACCIDENT PREVENTION REGULATIONS .....</b>	<b>72</b>
9.1	Initial device testing.....	72
9.2	Measuring points for the protective earth conductor test.....	73
9.3	Measuring points for the fault loop impedance measurement .....	73
<b>10</b>	<b>COMMISSIONING .....</b>	<b>74</b>
<b>11</b>	<b>FUNCTION CHECK .....</b>	<b>75</b>
11.1	Safety.....	75
11.2	Check condition of device.....	75
11.3	Induce general function and check.....	77
11.4	Check other device components.....	78
<b>12</b>	<b>OPERATION .....</b>	<b>79</b>
12.1	Exit with short term parker tickets .....	80
12.2	Exit with season parker cards .....	81
12.3	Exit with value cards.....	82
12.4	Exit with prebooking (optional) .....	82
12.5	Receipt .....	83
12.6	Requesting card parameters .....	84

12.7	Trigger functions with function cards .....	86
12.8	Open barrier with key switch (optional) .....	86
12.9	Recognise error status.....	86
<b>13</b>	<b>FILLING AND EMPTYING .....</b>	<b>87</b>
13.1	Safety .....	87
13.2	Tickets and reels.....	87
	13.2.1 Empty the ticket receptacle.....	87
	13.2.2 Replacing the receipt reel .....	87
<b>14</b>	<b>MAINTENANCE.....</b>	<b>88</b>
14.1	Safety .....	88
14.2	Cleaning items .....	90
14.3	Maintenance Schedule .....	90
	14.3.1 General maintenance.....	91
	14.3.2 Maintenance of modules.....	94
14.4	Checking safety labels .....	96
14.5	Cleaning the casing .....	96
	14.5.1 Cleaning casing outside .....	96
	14.5.2 Cleaning the Plexiglas® front panel.....	97
	14.5.3 Cleaning inside the device .....	97
	14.5.4 Checking the door switch .....	97
14.6	Cleaning the display .....	97
14.7	Checking the intercom device.....	98
14.8	Checking the residual current circuit breaker (RCD) or residual current operated circuit-breaker with overcurrent protection (RCBO) .....	98
14.9	Checking and adjusting heating .....	98
14.10	Checking and adjusting humidity sensor .....	98
14.11	Checking and adjusting fan.....	99
14.12	Cleaning the 2D Barcode Scanner.....	99
14.13	Cleaning the PIN pad.....	99
	14.13.1 Cleaning the chip contacts using cleaning ticket and slider.....	99
	14.13.2 Cleaning the chip and magnetic track reader using a cleaning ticket.....	99
<b>15</b>	<b>SBC (SINGLE BOARD COMPUTER) MODULE.....</b>	<b>100</b>
15.1	Function.....	100
15.2	Design and operation .....	100
15.3	Assignment of contacts .....	102
	15.3.1 SBC Mainboard IN/OUT: Digital Inputs.....	103
	15.3.2 SBC Mainboard IN/OUT: Digital Outputs and Relays.....	103
<b>16</b>	<b>MODULE I/O INTERFACE MIDI-P-USI (12 I/O) (OPTIONAL) .....</b>	<b>105</b>
16.1	Functioning .....	105
16.2	Design and operation .....	105
16.3	Assignment of contacts .....	107
	16.3.1 MIDI-P-USI: Digital Inputs.....	107
	16.3.2 MIDI-P-USI: Digital Outputs .....	107
<b>17</b>	<b>MODULE MULTICON MC 120.....</b>	<b>108</b>
17.1	Functioning .....	108
17.2	Design and operation .....	108

<b>17.3</b>	<b>Filling and emptying Multicon MC 120</b> .....	<b>112</b>
17.3.1	Safety .....	112
17.3.2	Insert new ticket belt.....	112
<b>17.4</b>	<b>Carrying out maintenance work at Multicon MC 120</b> .....	<b>113</b>
17.4.1	Safety .....	113
17.4.2	Cleaning the ticket transport routes and the write(/read) unit using DESIGNA cleaning ticket.....	115
17.4.3	Cleaning the ticket transport routes, write(/read) unit, cutters, ticket printer.....	115
17.4.4	Checking the ticket imprint .....	116
17.4.5	Checking the ticket cutting position and, if necessary, readjusting it.....	117
17.4.6	Checking that connecting cables are inserted correctly.....	118
17.4.7	Checking and aligning the Multicon insertion slot position.....	118
<b>17.5</b>	<b>Error analysis</b> .....	<b>119</b>
<b>17.6</b>	<b>Troubleshooting</b> .....	<b>120</b>
<b>18</b>	<b>MULTICON MC BARCODE MODULE</b> .....	<b>121</b>
<b>18.1</b>	<b>Functioning</b> .....	<b>121</b>
<b>18.2</b>	<b>Design and operation</b> .....	<b>121</b>
<b>18.3</b>	<b>Filling and emptying Multicon MC Barcode</b> .....	<b>123</b>
18.3.1	Safety .....	123
18.3.2	Insert new ticket belt.....	124
<b>18.4</b>	<b>Carrying out maintenance work at Multicon MC Barcode</b> .....	<b>125</b>
18.4.1	Safety .....	125
18.4.2	Cleaning the ticket transport routes, barcode card reader, ticket printer incl. cutter .....	127
18.4.3	Checking that connecting cables are inserted correctly.....	127
18.4.4	Checking and aligning the Multicon insertion slot position.....	127
<b>18.5</b>	<b>Error analysis</b> .....	<b>128</b>
<b>19</b>	<b>MODULE RECEIPT PRINTER</b> .....	<b>129</b>
<b>19.1</b>	<b>Functioning</b> .....	<b>129</b>
<b>19.2</b>	<b>Design and operation</b> .....	<b>129</b>
<b>19.3</b>	<b>Optional receipt printer</b> .....	<b>131</b>
<b>19.4</b>	<b>Filling and emptying the receipt printer</b> .....	<b>131</b>
19.4.1	Safety .....	131
19.4.2	Insert new paper reel.....	132
19.4.3	Issue test printout .....	133
<b>19.5</b>	<b>Carrying out maintenance work at the receipt printer</b> .....	<b>133</b>
19.5.1	Safety .....	133
19.5.2	Cleaning the receipt printer with compressed air .....	135
19.5.3	Cleaning the receipt printer using cleaning strips .....	135
<b>20</b>	<b>RFID (HANDS-FREE IDENTIFICATION) (OPTIONAL)</b> .....	<b>136</b>
<b>20.1</b>	<b>Short range RFID systems: Legic/ Mifare/ ISO 15693 Proximity Systems</b> .....	<b>137</b>
20.1.1	RFID cards .....	137
20.1.2	System-specific antennas .....	137
20.1.3	System-specific card reading devices .....	137
<b>20.2</b>	<b>Long Range RFID Systems</b> .....	<b>138</b>
20.2.1	Long Range RFID Systems with UHF Technology .....	138
	Fixing a passive windscreen transponder .....	139
<b>20.3</b>	<b>Instructions for RFID cards</b> .....	<b>140</b>

21 DECOMMISSIONING, DISASSEMBLY AND DISPOSAL .....141  
21.1 Safety .....141  
21.2 Decommissioning and disassembly .....142  
21.3 Disposal .....142  
22 GLOSSARY .....143  
23 INDEX .....156  
24 VERSION OVERVIEW .....159



# 1 General

## 1.1 Information regarding the operating instructions

In these operating instructions, instead of the name LANE 600 FULL OUT - Exit Control Terminal, the internal technical name OUT\_01 is used.

These operating instructions are intended for operators of the DESIGNA parking management system and provide crucial information on handling of device OUT\_01.

These operating instructions describe measures *see main chapter 14 Maintenance on page 88 and the sections of the individual modules* which have to be carried out at regular intervals to ensure reliable and trouble-free operation of the device OUT\_01. The required work should only be carried out by Designa trained operating personnel, who are familiar with the operating instructions and safety information.

For all other tasks, we recommend special Designa training courses or separate specialist instruction manuals for trained personnel are available (e.g. special maintenance works).

Certain tasks have to be carried out by specialized staff or specially trained Designa electrical technicians or electrical technicians of Designa trained and authorized partners. These tasks are marked accordingly.

- ⇒ Read the operating instructions carefully before starting any work.
- ⇒ Pay careful attention to the safety instructions.
- ⇒ Use the table of contents to find the sections which are important for your work routines.
- ⇒ Keep the operating instructions for later use, well accessible to the personnel at all times.
- ⇒ When passing the device on to third parties, the operating instructions must also be handed over.

### Digital operating instructions

The original operating instructions are available in digital form. It contains the necessary information for the installation, commissioning, operation, maintenance, servicing and disposal of the device described in these instructions.

The operating instructions can be downloaded via a QR code located inside the device. The operating instructions are also available in the DESIGNA eCademy at <https://designa-ecademy.openolat.com/>.

All relevant information from the operating instructions must be available to the relevant personnel for each life cycle. The operator is responsible for providing this information.



- Save the instructions separately and print them out to ensure that they are available in case of data loss.
-

## DESIGNA eCademy



Discover information about courses, further documents, and all the latest news in the DESIGNA eCademy.

After registering you can download the operating instructions and further documents in the electronic read-only media format.

## Printed operating instructions

Please contact Designa for the printed operating instructions.

For the address, see invoice, delivery note or imprint.


## 1.2 Explanation of signal words and symbols


### Safety messages

Following signal words are used to identify the safety messages and property damage messages:

Pay careful attention to the safety messages in order to prevent accidents as well as bodily injuries and property damage.


 <b>DANGER</b>
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

 <b>WARNING</b>
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 <b>CAUTION</b>
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

<b>NOTICE</b>
Indicates a potentially harmful situation which, if not avoided, could lead to property damage.

### Hints and recommendations

 ... highlights useful hints and recommendations as well as information for an efficient and trouble-free operation.

 ... highlights valid information for the barcode technology.

### Functional symbols and designations

The following symbols and designations are used in the instructions:

–	Instructions specified in warnings
■	List
1.	Step-by-step instructions
⇒	Instructions without fixed sequence
➤	Result of the action
<b>bold</b>	Terms in bold are explained in the glossary
<i>italic</i>	Italic text refers to a component in a figure or a different chapter of these instructions or related instructions.

## 1.3 Consumables, spare parts and accessories

Designa offers comprehensive consumables, spare parts and accessories for the device OUT\_01.



These operating instructions mention some consumables. Please refer to your spare parts catalogue and consumables catalogue for further consumables, accessories and spare parts.

---

## 1.4 Customer service & service

Your Designa Service is available to you for technical information. For the address, see invoice, delivery note or imprint.



In order to enable fast handling note the data of the type plate such as device type, order number, identity number, serial number, etc. before calling.

---

## 2 Safety

### 2.1 Intended use

The device OUT\_01 is part of the ABACUS parking management system. ABACUS is an integrated system that controls the entrance/exit, time and cost of parking in protected areas such as car parks, airports or similar places. The automated parking system ABACUS is designed to give a service (parking) in exchange for money.

As part of the ABACUS system the OUT\_01, together with a barrier, marks the boundary of an area in which a fee has to be paid for parking a vehicle.

In combination with a car park barrier the device OUT\_01 should only be used to control the entrance/exit of vehicles. There is a risk of injury for cyclists, pedestrians, etc.

Other or complementary safety facilities must be provided for motorcycles and road vehicles that cannot be detected by induction loops.

- ⇒ Ask your DESIGNA Service for more information about restrictions and special installations/settings and mark the barrier's danger zone accordingly.
- ⇒ *Refer to the barrier instructions.*

The device OUT\_01 is qualified for either indoor, protected or outdoor locations.

Only original DESIGNA spare parts and consumables should be used. The ABACUS system can be equipped with magnetic strip or barcode technology.



Some functions have limited application for barcode technology (e.g. **types of item**) or are not always capable of functioning **offline**. These limitations are described in more detail in the respective sections.

### 2.2 Non-intended use

#### Non-intended use

#### **WARNING**

##### **Risk of injury from non-intended use!**

Every non-intended use can cause severe or lethal injuries.

- Only use the device OUT\_01 as intended.
- Read the operating instructions carefully and pay careful attention to the safety instructions.

In combination with a car park barrier the device OUT\_01 is not approved for persons, bicycles or animals.

The device OUT\_01 must not be used in explosive environments.

Use of non-approved spare parts and accessories is prohibited.

Modifications or changes to the device are prohibited.

Use as a storage area is not permitted.

Use of unsuitable media (consumer goods, cleaning agents) is not permitted.

Deployment of non-trained personnel is prohibited.

All uses not described as intended use are prohibited and are non-intended use.

The manufacturer shall refuse to accept liability and withdraw warranty if the instructions are not followed and if the device is used incorrectly or for a purpose for which it was not intended.

### 2.3 Safety on site

The operator has to pay attention to the following measures in order to guarantee safety in the car park area:

- ⇒ Always keep children away from system devices.
- ⇒ Select easily recognizable warning colours and signs used in the car park area.
- ⇒ Provide separate footpaths next to entrances and exits and mark pedestrian areas (see figures below) to ensure that pedestrians do not have to walk near entrances and exits and on the roads.
- ⇒ Make sure that there are sufficient fully visible signs around the car park site. Keep signs clean and position them so that they can be read easily.
- ⇒ Use additional safety barriers (e.g. safety cones) to close off entrances and exits when carrying out work there and wear safety clothing in easily recognizable warning colours.
- ⇒ Make sure that the danger area of the devices cannot be accessed by any unauthorized persons, and in particular not by children, under any circumstances.



Fig. 1: Safety marking on the road

If barriers are installed in your ABACUS system the operator should pay attention to the following measures:

- ⇒ Provide all footpaths with a sufficient distance to the lanes and the car park barriers. Observe national regulations.
- ⇒ Observe the safety instructions in the barrier's operating instructions.

## 2.4 Specialists and operating personnel

### WARNING

#### **Risk of injury in case of inadequate qualification!**

Improper handling can lead to considerable bodily injuries and property damage.

- Have any activities only carried out by the individuals designated for that purpose.

The operating instructions specify the following qualification requirements for the different fields of activity:

#### **Operating personnel**

Operating personnel have been trained and authorized by DESIGNA to carry out certain cleaning and fitting tasks at the device OUT\_01. It is essential that operating personnel are also completely familiar with the operating manual and relevant safety instructions.

#### **Specialized staff**

Specialized staff is due to its technical training, knowledge and experience as well as due to its knowledge of the pertinent regulations able to carry out the work assigned to it and to independently recognize potential hazards.

#### **Electrical technicians according to DIN VDE 1000-10**

Electrical technicians are able, due to their technical training, knowledge and experiences as well as knowledge of the relevant standards and regulations, to execute tasks on electrical systems and to independently recognize possible hazards.

In Germany, the electrical technicians must fulfil the provisions of the accident prevention regulation DGUV-V3 (e.g. master electrician). Appropriate regulations apply in other countries. The regulations valid there must be observed.

#### **Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners**

Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners comply with the requirements of the electrical technicians named here. Additionally, these electrical technicians are trained and authorized by Designa to perform installation, connection and servicing at the device OUT\_01.

## 2.5 Personal protective equipment

It is necessary to wear personal protective equipment when dealing with the device so as to minimize health hazards.

Before carrying out any work, properly dress in the necessary protective equipment such as work clothes, protective gloves, safety shoes, helmet, etc. and wear them during work.

## 2.6 Occupational safety and special dangers

The remaining risks resulting from the risk analysis are specified in the following section.

Observe the safety notes listed here and the warning notes mentioned in the other chapters of these instructions to reduce health hazards and to avoid dangerous situations.

2.6.1 Product safety labels on the device

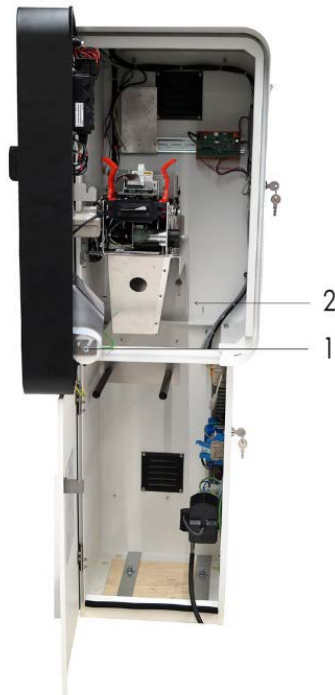


Fig. 2: Product safety labels

- 1 Ground wire, internal
- 2 Type plate

Not shown:

- 3 Safety sign Hot surface at the optional heater
- 4 Safety sign Laser radiation on the Multicon (only barcode technology)
- 5 Safety sign Electric voltage at the UPS (optional)

- ⇒ Check that all product safety labels are in place and display the information specified below.
- ⇒ Contact your DESIGNA Service if any labels are missing or damaged.

**Ground wire, internal**

Ground wire, internal (see chapter 8.3 Connection power supply (terminal block -X0) on page 63).



**Type plate**

See chapter 3.1 Type plate on page 23.

**Safety sign Hot surface at the optional heater**

The following safety sign denotes the presence of a hot surface. Non-observance of the safety sign can lead to minor injuries (see chapter 5.3.9 Heater (optional) on page 43).



**Safety sign Laser radiation on the Multicon (only barcode technology)**

Barcode scanner: class 2 laser product. Non-observance of the warning sign may result in eye damage (see chapter 18 Multicon MC Barcode Module on page 121).



### Safety sign Electric voltage at the UPS

The following safety sign denotes life threatening situations caused by electric voltage. Non-observance of the safety sign causes severe injuries or death (see chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44).



### 2.6.2 Safety messages and operation safety

Observe the safety messages listed here to reduce health hazards and to avoid dangerous situations.

## Electric voltage

 **DANGER****Danger of death due to electric shock!**

Contact with live components may result in death.

- Installation has to be carried out by electrical technicians or Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Connection and commissioning have to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Filling and emptying inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- Certain maintenance work may be carried out by Designa trained operating personnel familiar with the user manual and the safety instructions. All other maintenance work may only be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Check that the power supply line and electrical safety measures are in accordance with valid national and local regulations and standards and make sure they correspond with the specifications in the chapter 4 *Technical Data on page 24*.
- National regulations for accident prevention at electrical installations and equipment must always be followed.<sup>1</sup>  
Recommended: Locally provide - e.g. at the fuse box - an all-pole disconnection main switch for the device which can be locked in the OFF position (prevents accidental reconnection, e.g. when carrying out installation work).
- Switch off power supply and secure against re-activation before performing any work. Test for absence of voltage.
- Switch off the power supply immediately in case of damage to the insulation and arrange repair.
- Never bypass or deactivate overcurrent protection devices.
- When replacing overcurrent protection devices observe the correct amperage specification.
- Keep moisture and dust away from live parts. Moisture or dust may cause a short circuit. If the electrical connection is established at precipitation, e.g. rain or snow, penetration of moisture must be prevented by suitable measures, such as a protective cover.
- Ensure that the device is always locked correctly in order to avoid endangering third parties.

<sup>1</sup> e.g. in Germany: BGFE accident prevention regulation for electrical installations and equipment DGUV-V3

**Electric voltage:  
Missing protective facilities** **DANGER****Danger of death due to electric shock!**

The safety installations that are required according to regional and local regulations must be provided by the customer. Usually these are:

- Overcurrent protection devices
- Lockable 2-pole main switch acc. to EN 60947-3
- Residual current device (RCD)

**Thunderstorm, lightning,  
electric voltage** **DANGER****Danger of death from lightning and electrical voltage!**

If lightning strikes the device, contact to the device components and direct proximity to the device includes mortal danger.

- Never install the device during thunderstorms.
- Protect yourself in buildings or vehicles.

**Improper operation** **WARNING****Danger from improper operation of the device!**

Improper operation of the device can cause severe or lethal injuries

- Only additions to the device that are permitted by the manufacturer may be installed.

**Improper transport** **WARNING****Danger from improper transport of the device!**

The weight of the device can severely injure a person.

- Have them transported by specialized staff only.
- Check fasteners (packaging straps) for damage or tears.
- Use lifting gear or forklift with a suitable pallet.
- Use suitable lifting gear (loops, etc.) for lifting the device. The lifting gear must be designed for the respective weights.
- Never attempt to lift the device on your own.
- Always wear safety shoes.

**Heavy weight** **WARNING****Risk of injury when lifting heavy objects alone!**

The weight of heavy objects can severely injure a person.

- Never attempt to lift the device on your own.
- Always wear safety shoes.

### Falling components

#### **WARNING**

##### **Risk of injury from falling components!**

Falling components can cause severe injury.

- Secure the device OUT\_01 against tilting before assembly.
- Install the device correctly.

### Insufficient fixing

#### **WARNING**

##### **Risk of injury at insufficient fixing!**

Insufficient fixing of individual components such and additions permitted by the manufacturer can cause severe injury.

- Only Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners are allowed to assemble the device and the appropriate components.
- Check the foundation anchors fit tightly before starting the commissioning.
- Check the firm fixing of all screws according to maintenance schedule.

### Illegible signage


#### **WARNING**

##### **Risk of injury by illegible symbols!**

Labels and signs can become dirty or unrecognizable in the course of time.

- Always keep safety, warning and operating notes in a well readable condition.
- Immediately renew damaged or unrecognizable signs or labels.

## 2.7 Declaration of Conformity



**EU DECLARATION OF CONFORMITY**  
 according to the directive 2006/42/EC, annex II A  
**EU-KONFORMITÄTSERKLÄRUNG**  
 gemäß Maschinenrichtlinie 2006/42/EG, Anhang II A

**Manufacturer/ Hersteller**  
**Designa Verkehrsleittechnik GmbH**  
 Faluner Weg 3  
 24109 Kiel  
 Germany  
 Tel. +49 (0) 431 5336 0  
 Fax +49 (0) 431 5336 260  
 www.designa.com

**Person authorised to compile the technical documentation:**  
*Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen:*  
 Rana Ghose, Designa Verkehrsleittechnik GmbH, Faluner Weg 3, 24109 Kiel, Germany


**Product/ Produkt**

Designation/ Bezeichnung:	<b>OUT</b>
Type/ Typ:	<b>OUT_01</b>
Series/ Serie:	<b>CONNECT</b>
Function/ Funktion:	<b>Exit Control Terminal/ Ausfahrt-Kontrollgerät</b>
From serial no./ ab Seriennummer:	COA100000

We declare that the object of the declaration described above is in conformity with all requirements of the **machinery directive 2006/42/EC**.  
*Hiermit erklären wir, dass das oben genannte Produkt allen einschlägigen Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.*

The product described above meets further applicable directives:  
*Das oben genannte Produkt erfüllt die Anforderungen der folgenden einschlägigen Richtlinien:*  
**Directive 2014/30/EU** (EMC Directive)  
*Richtlinie 2014/30/EU (EMV-Richtlinie)*

Signed for and on behalf of/ *Unterzeichnet für und im Namen von*  
 Designa Verkehrsleittechnik GmbH

Place and date of issue/ <i>Ort und Datum der Ausstellung</i>	Name, function, signature/ <i>Name, Funktion, Unterschrift</i>
Kiel, 05/10/2020	 _____ Dr. Joachim Kopp Director R&D/ <i>Director R&amp;D</i>

CE\_OUT\_(OUT\_01)\_ENG

Fig. 3: EU Declaration of conformity



**UKCA DECLARATION OF CONFORMITY**  
 according to the Supply of Machinery (Safety) Regulations 2008  
 (SI 2008 No. 1597)

Manufacturer

**Designa Verkehrsleittechnik GmbH**  
 Faluner Weg 3  
 24109 Kiel  
 Germany  
 Tel. +49 (0) 431 5336 0  
 Fax +49 (0) 431 5336 260  
 www.designa.com

Person authorised to compile the technical documentation:

Rana Ghose, Designa Verkehrsleittechnik GmbH, Faluner Weg 3, 24109 Kiel, Germany

Product

Designation:	<b>OUT</b>
Type:	<b>OUT_01</b>
Series:	<b>CONNECT</b>
Function:	<b>Exit Control Terminal</b>
From serial no.:	<b>COA100000</b>

We declare that the object of the declaration described above is in conformity with all requirements of the **Supply of Machinery (Safety) Regulations 2008**.

The product described above meets further applicable directives:

**Electromagnetic Compatibility Regulations 2016**

The protection targets of the **Electrical Equipment (Safety) Regulation 2016** have been met according to the Supply of Machinery (Safety) Regulations 2008, Schedule 2, Part 1 (1.5.1)

Signed for and on behalf of

Designa Verkehrsleittechnik GmbH

Place and date of issue

Name, function, signature

Kiel, 22/01/2025

  
 Dr. Joachim Kopp  
 Director R&D

UKCA\_OUT\_(OUT\_01)\_ENG.docx

Fig. 4: UKCA Declaration of conformity



**EU DECLARATION OF CONFORMITY**

according to the directive 2006/42/EC, annex II A

**EU-KONFORMITÄTSERKLÄRUNG**

gemäß Maschinenrichtlinie 2006/42/EG, Anhang II A

Manufacturer/ Hersteller

**Designa Verkehrsleittechnik GmbH**  
 Faluner Weg 3  
 24109 Kiel  
 Germany  
 Tel. +49 (0) 431 5336 0  
 Fax +49 (0) 431 5336 260  
 www.designa.com

Person authorised to compile the technical documentation:

*Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen:*

Rana Ghose, Designa Verkehrsleittechnik GmbH, Faluner Weg 3, 24109 Kiel, Germany

Product/ Produkt

Designation/ Bezeichnung: **OUT TwinDeck**  
 Type/ Typ: **OUT\_01 TwinDeck**  
 Series/ Serie: **CONNECT**  
 Function/ Funktion: **Exit Control Terminal/ Ausfahrt-Kontrollgerät**  
 From serial no./ ab Seriennummer: COA100000

We declare that the object of the declaration described above is in conformity with all requirements of the **machinery directive 2006/42/EC**.

*Hiermit erklären wir, dass das oben genannte Produkt allen einschlägigen Bestimmungen der **Maschinenrichtlinie 2006/42/EG** entspricht.*

The product described above meets further applicable directives:

*Das oben genannte Produkt erfüllt die Anforderungen der folgenden einschlägigen Richtlinien:*

**Directive 2014/30/EU** (EMC Directive)  
**Richtlinie 2014/30/EU** (EMV-Richtlinie)

Signed for and on behalf of/ *Unterzeichnet für und im Namen von*

Designa Verkehrsleittechnik GmbH

Place and date of issue/ *Ort und Datum der Ausstellung*

Name, function, signature/ *Name, Funktion, Unterschrift*

Kiel, 28/09/2021

  
 Dr. Joachim Kopp  
 Director R&D/ *Director R&D*

CE\_OUT\_(OUT\_01)TwinDeck\_ENG.docx

Fig. 5: EU Declaration of conformity



**UKCA DECLARATION OF CONFORMITY**  
 according to the Supply of Machinery (Safety) Regulations 2008  
 (SI 2008 No. 1597)

**Manufacturer**

**Designa Verkehrsleittechnik GmbH**  
 Faluner Weg 3  
 24109 Kiel  
 Germany  
 Tel. +49 (0) 431 5336 0  
 Fax +49 (0) 431 5336 260  
 www.designa.com

**Person authorised to compile the technical documentation:**

Rana Ghose, Designa Verkehrsleittechnik GmbH, Faluner Weg 3, 24109 Kiel, Germany

**Product**

Designation: **OUT TwinDeck**  
 Type: **OUT\_01 TwinDeck**  
 Series: **CONNECT**  
 Function: **Exit Control Terminal**  
 From serial no./ ab Seriennummer: COA100000

We declare that the object of the declaration described above is in conformity with all requirements of the **Supply of Machinery (Safety) Regulations 2008**.

The product described above meets further applicable directives:  
**Electromagnetic Compatibility Regulations 2016**

The protection targets of the **Electrical Equipment (Safety) Regulation 2016** have been met according to the Supply of Machinery (Safety) Regulations 2008, Schedule 2, Part 1 (1.5.1)

Signed for and on behalf of

Designa Verkehrsleittechnik GmbH

Place and date of issue

Name, function, signature

Kiel, 28/022/01/2025

  
 Dr. Joachim Kopp  
 Director R&D

UKCA\_OUT\_(OUT\_01) TwinDeck\_ENG.docx

Fig. 6: UKCA Declaration of conformity

## 3 Identification

### 3.1 Type plate

The device type plate is located on the casing.

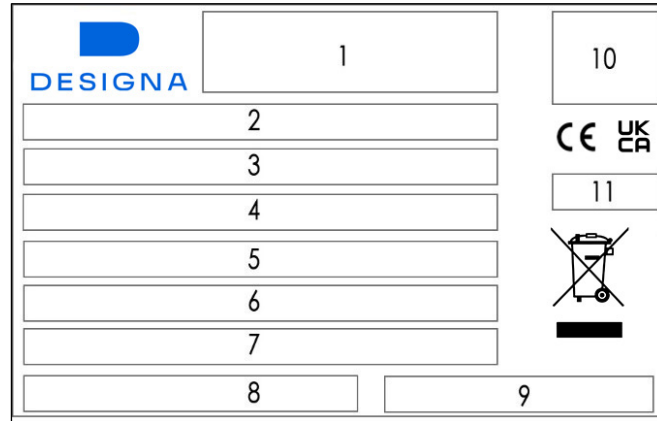


Fig. 7: Type plate

- 1 Manufacturer's name and address
- 2 Series (system)
- 3 Production code
- 4 Model
- 5 Article no.
- 6 Serial no.
- 7 Input: Power supply and current consumption
- 8 YOM: Year and month of manufacture
- 9 Manufacturing country
- 10 QR Code
- 11 Ingress protection rating

Some modules are also equipped with a type plate. The type plate is then located directly on the module.

## 4 Technical Data

### Dimensions and weight IN/OUT



Fig. 8: IN/OUT, dimensions in mm

IN/OUT TwinDeck

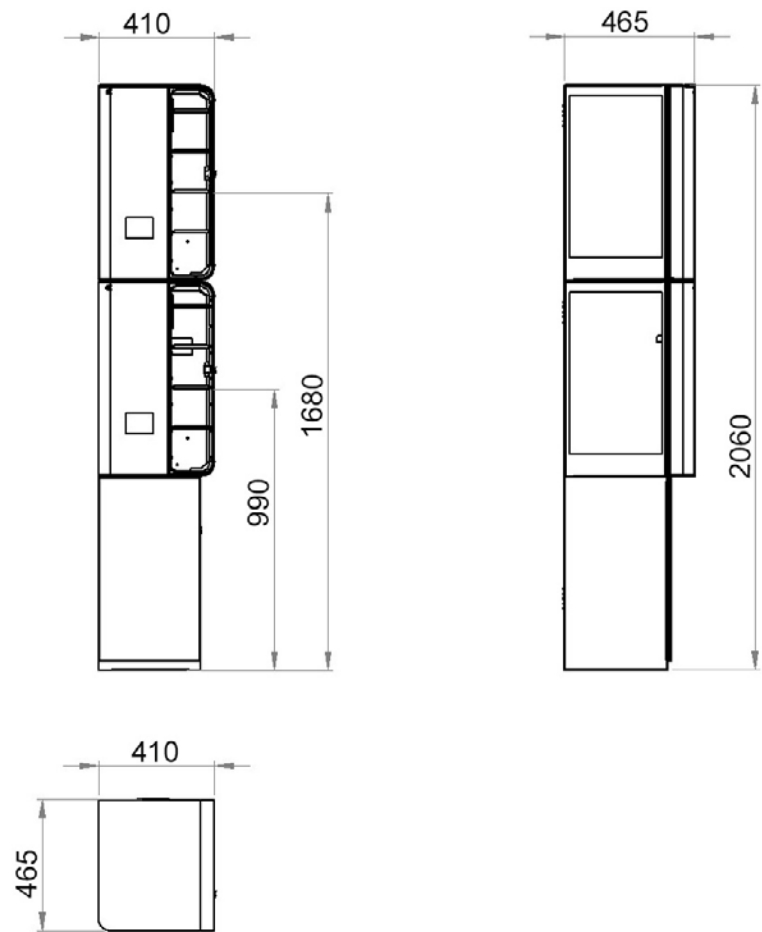


Fig. 9: IN/OUT TwinDeck, dimensions in mm

Description	IN/OUT	IN/OUT TwinDeck
Weight	approx. 50 kg	approx. 75 kg

## Electrical connection

Description	IN/OUT	IN/OUT TwinDeck
Power supply	230 V AC, 50 Hz	
Current consumption device	0.21 A	0.30 A
– operation	0.15 A	0.22 A
– standby mode	0.45 A	0.67 A
– max.		
Current consumption heater (optional)	1.8 A	3.6 A
Power consumption device		
– operation	48 W	69 W
– standby mode	35 W	51 W
– max.	100 W	154 W
Power consumption heater (optional)	400 W	400 W
Network system	TN-S system	
Pre-fuse	max. 16 A	
Terminal cross-section	max. 2.5 mm <sup>2</sup>	
Connection type	tension spring connection	
Protection class	I	
Control voltage	24 V DC	

## Operating conditions

Description	
Operating temperature	without optional heater: +10 to +50 °C with optional heater: -20 to +50 °C (fan optional)
Storage temperature	-25 to +70 °C
Relative humidity	max. 95 %, non-condensing
Noise development	< 70 dB(A)
Ingress protection rating	IP 54
Laser class barcode scanner (Multicon MC 120)	laser class 2

## 5 Device Description

Firstly there is an overview of the design and functions of a standard device. Some components which can be perceived as units are described as independent Modules at the end of these instructions.

### 5.1 General design

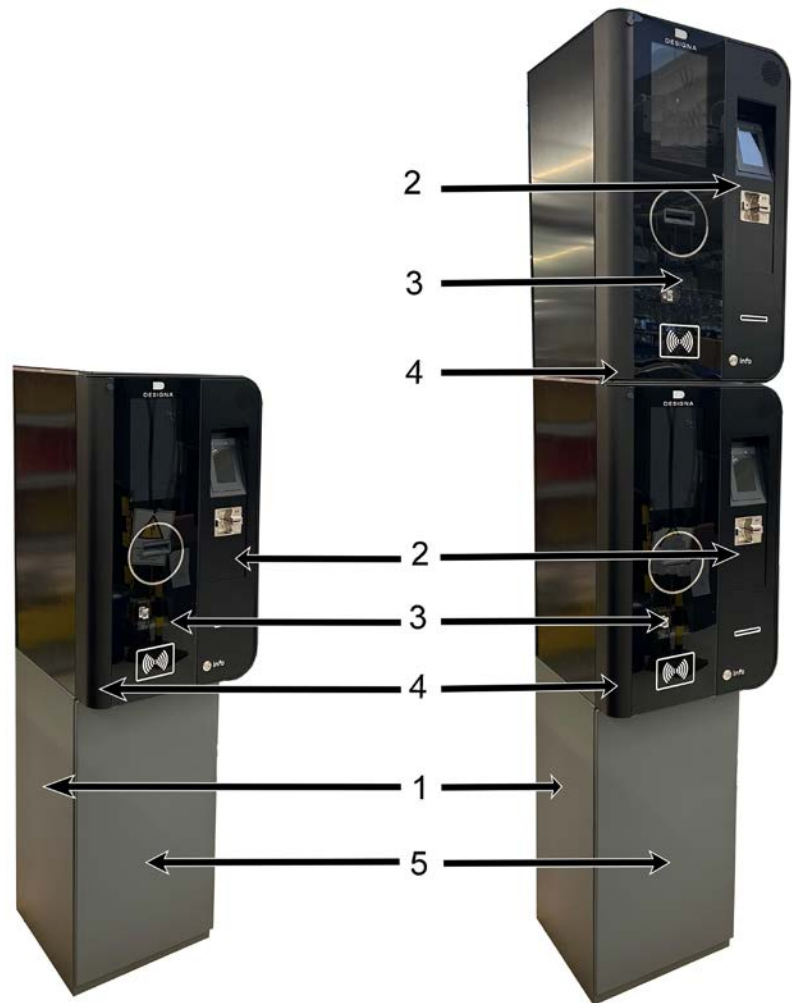


Abb. 10: General Design, IN/OUT (left), IN/OUT TwinDeck (right)

- 1 Casing body
- 2 Module front panel
- 3 Front panel
- 4 Casing door
- 5 Socket door

- Design**
- Casing body and socket door are made of stainless steel 1.4301 (V2A), outer and inner surface with durable, weather resistant powder coating, fine structure, deep matt colour<sup>2</sup>
  - Module front panel is made of aluminium, weather resistant powder coated
  - Casing door is made of plastic (ASA), wet paint coated
  - Front panel is made of Plexiglas® XT

- Colour**
- Casing body, socket door: RAL 7012 (basalt grey)
  - Casing door and module front panel: RAL 9017 (traffic black)

**IN/OUT TwinDeck**

The TwinDeck version combines two devices into one unit enabling drivers of heavy goods or similar vehicles to use the upper device and thus enjoy the same ease of use as car drivers. The two devices of the TwinDeck version have the same functions as the OUT\_01. Differences with regard to design and construction will be indicated separately.

## 5.2 Components on the casing door and their functions



Fig. 11: Components on the casing door (figure with options)

- 1 Intercom device
  - 1a) Microphone
  - 1b) Loudspeaker (DESIGNA VoIP)
- 2 Full Touch display
- 3 SBC (Single Board Computer) IN/OUT
- 4 Credit card reader/PINPad/NFC (optional)
- 5 Reading device insertion slot
- 6 Illuminated ring
- 7 Receipt printer
- 8 RFID (hands-free identification) (optional)

Not shown:

<sup>2</sup> Other colours and surfaces are optionally available.

- 9 Camera (optional)
- 10 2D Barcode Scanner (optional)
- 11 Hearing induction loop (optional)
- 12 Mechanical button Info (optional)
- 13 MP3 Module (optional)
- 14 Key switch (optional)

### 5.2.1 Intercom

By selecting the phone symbol on the Full touch display or optionally by pressing the mechanical button Info, the intercom establishes a voice connection to the parking lot call centre. From here, the customer can be offered assistance.

Depending on the type of connection, a distinction is made between the integrated VoIP *intercom DESIGNA VoIP*, which does not require a separate connection when installed, and intercoms from other manufacturers, which are connected to the *terminal block -X2* or an additional *Ethernet connection*.

#### DESIGNA VoIP (Voice over IP)

The intercom *DESIGNA VoIP* is connected to the call centre via **Ethernet**. A duplex intercom connection is enabled.

#### Intercom devices of other manufacturers

The intercom devices of other manufacturers require a connection via a 2 or 4-wire intercom circuit or via an additional Ethernet connection. Depending on the equipment, a simplex or duplex speech connection is enabled.<sup>3</sup> Optionally, a function can be triggered at the device from the central switchboard for intercommunication (default: Barrier open).



Various intercom devices are available:  
Please refer to the spare parts catalogue to identify the intercom device installed in your device.

#### Equipment examples

Type	Speech connection	Connection	Function triggering
Schneider ET 808	Duplex	2-wire at terminal block -X2 + potential-free contact (function triggering)	+
Schneider ET 908	Duplex	Additional Ethernet connection + potential-free contact (function triggering)	+

### 5.2.2 Full touch display

The DESIGNA full-touch display offers all standard functions for ticket processing at the entry, pay station and exit as well as the corresponding functionalities for ticketless payment via licence plate recognition. The processes are guided by graphical operating instructions.

According to the licences and requirements for the parking system, the touch display is configured for the respective parking solution and device type.

The full-touch display (10.1“) at the device OUT\_01 offers the following functionalities:

<sup>3</sup> Simplex speech connection: The installed *loudspeaker is equipped with and integrated microphone*. This provides an alternate one-way system, i.e. if the central switchboard for intercommunication is speaking the customer can only listen and vice-versa.  
Duplex speech connection: In addition to the *loudspeaker* a separate microphone and a controller are installed: A two-way intercom connection (simultaneous listening and speaking) is possible

### Language



- ⇒ Tap the symbol with the globe to switch the display texts to another language.
- Each tap switches to the next language set up in the system.

### Help



- ⇒ Tap the icon with the telephone to speak directly to the operating personnel via the intercom.

### Lost Ticket



- ⇒ Tap the icon with the ticket in case of ticket loss.
- The price in the amount of the daily rate is displayed. After payment, the ticket can be used for exit.

### Receipt



- ⇒ Tap the receipt icon to print a receipt as a payment confirmation after payment has been made.

### Cancel



- ⇒ Tap the symbol with the cross to cancel the execution of a function.

### Keyboard

The keyboard layout is QWERTY/QWERTZ.

- ⇒ Tap the globe symbol on the keyboard to switch between the German and English (USA) keyboard layouts (QWERTZ/QWERTY).
- ⇒ Tap the umlaut function to select language-dependent special characters.

*More information on how the touch display functions and operates can be found in the separate operating instructions Full Touch Display.*

### 5.2.3 SBC (Single Board Computer)

In the ABACUS system the **SBC** (Single Board Computer) controls the operation and functions of the individual device components with the required program.

The SBC is centrally controlled by the System server and identified and addressed via IP addresses.<sup>4</sup>

Various components are connected to the SBC and are fully or partially controlled from there.

*For further details see chapter 15.1 Function on page 100.*

---

<sup>4</sup> The IP addresses and the associated SBC **addresses** are set up in the *system configuration* for your system before delivery or by your DESIGNA service.

### 5.2.4 Credit card reader/PINPad/NFC (optional)

The OUT\_01 can be equipped with country-specific credit card reader, PINPad terminal and NFC for credit card and debit card processing. Some countries require certified card reading devices and PIN systems for standardized credit card processing.

Function and processing depend on the model in use. Please ask your DESIGNA service for availability and more details.

### 5.2.5 Reading device insertion slot

The *reading device insertion slot* is accessible via the opening in the front panel:

Customers' **short term parker tickets** or other **types of item (season parker cards, value cards)** or optional debit and credit cards<sup>5</sup> are inserted here for processing. (The option of paying with a credit card is related to the corresponding hard and software equipment).

### 5.2.6 Illuminated ring

The illuminated ring lights up after occupying the loop V (presence loop) and extinguishes 15 seconds after exiting the loop.



Contact your DESIGNA Service if you desire a longer/shorter light-up period for the illuminated ring.

---

### 5.2.7 Receipt printer (optional)

If the function **drive&pay** is installed a payment process can take place at the OUT\_01 (e.g. with credit card). In order to provide customers with a receipt of this process a receipt printer can be inserted as an optional extra. The system can be configured to automatically issue a receipt each time a payment is made, e.g. by credit card.

*For further details see chapter Module Receipt Printer on page 129.*

### 5.2.8 RFID (Option)

Procedures using hands-free **RFID** cards can only be carried out if a respective antenna has been fitted to the device.

Various hands-free systems/antennas are available in the ABACUS system.

*For further details see chapter 20 RFID (Hands-free Identification) (optional) on page 136.*

### 5.2.9 Camera (optional)

A camera can be installed at the device OUT\_01 to ensure network-based video surveillance.

Please contact your DESIGNA Service for further details.

### 5.2.10 2D Barcode Scanner (optional)

---

<sup>5</sup> Only for barcode technology when the **Multicon** is equipped with respective hybrid technology and has additional magnetic reading heads (see chapter Module Multicon).

A *2D Barcode Scanner* can be installed at the device OUT\_01 in order to process barcode ID media for optional prebookings, for the optional discount processing or for the optional processing of the barcode printed on a receipt.

*For further details see chapter 12 Operation on page 79.*

### 5.2.11 Hearing induction loop (optional)



Fig. 12: Example of pictogram for hearing induction loops

A hearing induction loop can be connected to the intercom system of the device. The hearing induction loop enables hearing aid users to hear more clearly in areas of high ambient noise.

- ⇒ Affix a hearing induction loop pictogram to the device to indicate this hearing assistance system to hearing aid wearers.

### 5.2.12 Key switch (optional)

The device can be equipped with a *key switch* as an optional extra.

*For further details see chapter 12.8 Open barrier with key switch (optional) on page 86.*

### 5.2.13 Mechanical intercom button (optional)

The device OUT\_01 can also be equipped with a mechanical intercom button that functions parallel to the full-touch display.

### 5.2.14 MP3 module (optional)

The device OUT\_01 can be optionally equipped with an MP3 module for interactive speech output to enhance user guidance.

### 5.3 Components inside the device and their functions

#### Electric voltage

#### DANGER

##### **Danger of death due to electric voltage!**

When the device is switched on, the power supply (230V) connected to the following components Terminal block -X0, mains filter, power supply unit and, if necessary, to further optional components (see *chapter Device Description on page 27*).

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- Switch off the device (see *chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*) unless the work step requires a voltage supply.
- Be aware that the following components remain energized (230V) even when the ON/OFF switch is switched off:
  - ON/OFF switch, primary side
  - Power supply terminal

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds (see *chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44*).

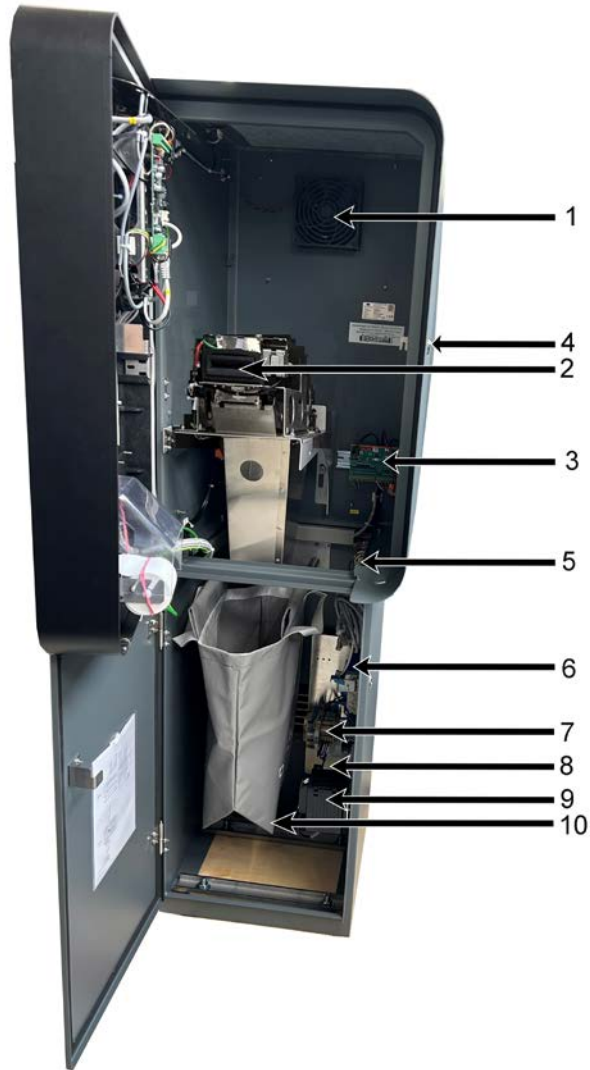


Fig. 13: Components inside the device OUT\_01 (figure with options)

- 1 Fan
- 2 Multicon
- 3 I/O Interface (optional, here: Midi-P-USI)
- 4 Locking system
- 5 Terminal block -X2: Intercom system, barrier and Ethernet connection
- 6 Power supply unit
- 7 Terminal block -X0: Voltage connection / ON/OFF switch
- 8 Socket with residual current circuit breaker (RCD) (optional)
- 9 Heater (optional)
- 10 Ticket bag

Not shown:

- 11 Mains filter
- 12 UPS (Uninterruptible Power Supply) (optional)
- 13 Humidity sensor
- 14 Relay (optional)
- 15 Induction loop detector (optional)
- 16 Network components (optional, e. g. DSL modem, Switch and/or other)
- 17 Door switch (optional)
- 18 TFT colour display (optional)

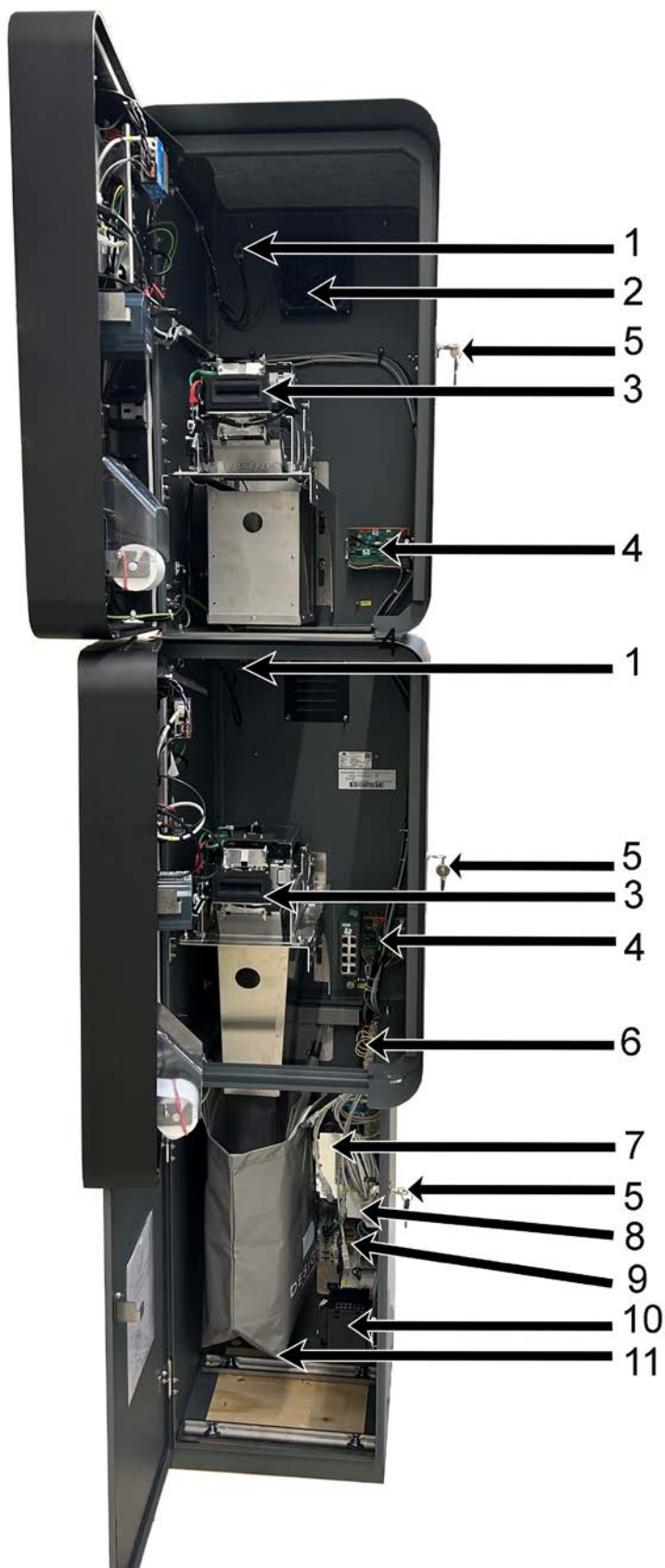


Fig. 14: Components inside the device OUT\_01 TwinDeck (figure with options)

- 1 Humidity sensor
- 2 Fan
- 3 Multicon

- 4 I/O-Interface (optional, here: Midi-P-USI)
- 5 Locking system
- 6 Terminal block -X2: Intercom system, barrier gate and Ethernet connection
- 7 Power supply unit
- 8 Socket with residual current circuit breaker (RCD) (optional)
- 9 Terminal block -X0: Voltage connection/ ON/OFF switch
- 10 Heater (optional)
- 11 Ticket bag

Not shown:

- 12 Mains filter
- 13 UPS (Uninterruptible Power Supply) (optional)
- 14 Relais (Option)
- 15 Induction loop detector (optional)
- 16 Network components (optional, e. g. DSL modem)
- 17 Door switch (optional)
- 18 TFT colour display (optional)

### 5.3.1 Fan



Fig. 15: Fan (similar to figure)

The device is equipped with powerful fans.

The switching threshold that causes the fans to switch on is stored in the system. It is controlled by a sensor to maintain a pre-set value.

### 5.3.2 Multicon

The (read-)write device is called the *Multicon*.

*For further details see chapter 17 Module Multicon MC 120 on page 108 and 18 Multicon MC Barcode Module on page 121.*

### 5.3.3 I/O interface (optional)

Optionally, the module *I/O interface "Midi-P-USI"* (12 I/O = 12 Inputs/ 12 Outputs) is used at the OUT\_01.

*For further details see chapter 16 Module I/O Interface Midi-P-USI (12 I/O) (optional) on page 105.*

### 5.3.4 Locking system

#### Risk of crushing fingers

#### CAUTION

#### **Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

#### Unlocking the casing door

- ⇒ Unlock the *lock* with the key (clockwise).

### Unlocking the socket door

⇒ Unlock the *lock* with the key (clockwise).

The lower socket door can be unlocked and opened independently of the upper casing door.

### 5.3.5 Terminal block -X2: Intercom system, barrier and Ethernet connection



Connection has to be carried out by DESIGNA electrical technicians or electrical technicians of DESIGNA trained and authorized partners.

*For further details see chapter 8.5 Connection intercom device (terminal block -X2 or VoIP) on page 68, 8.6*

*Connection barrier (terminal block -X2) on page 69 and 8.4*

*Ethernet Connection (terminal block -X2 or additional mounting rail) on page 66.*

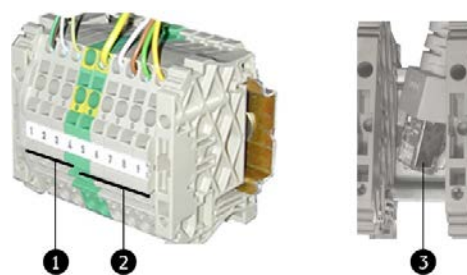


Fig. 16: Terminal block -X2 (similar to figure)

- 1 Serial barrier connection
- 2 Connection intercom system
- 3 Internal connector for Ethernet connection

Not shown:

- 4 Parallel connector barrier (optional)
- 5 Connection key switch (optional)

#### Serial barrier connection

The *serial barrier connection* is provided at the terminal block -X2 as a standard. For older barrier models and complex barrier applications the optional *parallel connector barrier* is required (see below).

The barrier control signals are sent from the **TCC/SBC** to the *serial connector barrier*. The data line between OUT\_01 and barrier control unit is connected here (see chapter 8.6 *Connection barrier (terminal block -X2) on page 69*).

#### Connection intercom device (optional)

If the intercom device requires a 2 or 4-wire connection, the cable of the intercom circuit is connected to terminal block -X2.

#### Internal connector for Ethernet connection



Fig. 17: Ethernet connection

The *internal connector for Ethernet connection* is connected to the additionally delivered *Ethernet connection*, after this has been wired on-site with the existent **Ethernet (LAN)** and mounted to the mounting rail of the terminal block -X2 or to an additional mounting rail.

More than one *Ethernet connection* can be necessary depending on the device equipment.

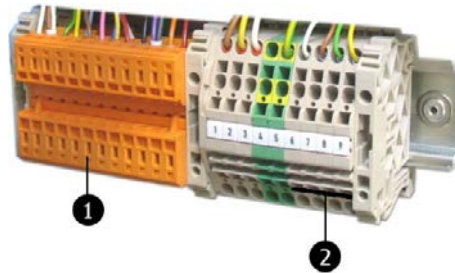
**Ethernet surge arrester  
(optional)**



Fig. 18: Option surge arrester for the Ethernet

A *surge arrester* for the Ethernet can optionally be used at the internal wiring between the *Ethernet connection* and the *Ethernet interface* of the **TCC/SBC**. This protects the module TCC/SBC against overvoltage.

**Parallel connector barrier  
(optional parallel connection)**



- 1 Parallel barrier connection (optional)
- 2 Connection intercom system (optional)

Fig. 19: Terminal block -X2 with parallel connector barrier (similar to figure)

If a parallel connection of the barrier is intended at the OUT\_01 (e.g. older barrier models and complex barrier applications), the *parallel barrier connection* is provided at terminal block -X2.

The barrier control signals are transferred from the **TCC/SBC** via the *I/O Interface* module to the *parallel connector barrier*: Here the 12 pole pin-and-socket connector of the data line between OUT\_01 and barrier control unit is connected.

Assignment of contacts: See *chapter 8.6 Connection barrier (terminal block -X2) on page 69 and 16.3 Assignment of contacts on page 107.*

**Connection key switch  
(optional)**

Furthermore, a connection to the barrier is connected here for the optional *key switch* in order to relay the signal of the key switch to the barrier controller.

*For further details see chapter 12.8 Open barrier with key switch (optional) on page 86.*

### 5.3.6 Socket with residual current device (RCD) (optional)

#### Electric voltage

#### ⚠ DANGER

##### **Danger of death due to electric shock!**

Mains voltage (230V) is supplied to the socket and the residual current device (RCD).

Contact with live components may result in death.

- The device internal circuit of the socket must be equipped with a residual current device.
- Use the test button at regular intervals to check the residual current device is functioning correctly. This tasks should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- All other tasks at the socket and the residual current device have to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Before carrying out work on the socket make sure it is switched off (see chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42).
- Test for absence of voltage.

#### Socket

Additional devices can be supplied with mains voltage via the *socket* for servicing or cleaning purposes (1200 W max. load).

#### Residual current circuit breaker

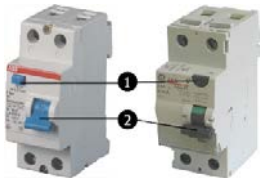


Fig. 20: RCCB type I and type II (similar to figure)

The device internal electric circuit of the optional socket is always equipped with a *residual current circuit breaker (RCCB)*<sup>6</sup>: If a residual current occurs in the electric circuit of the socket, it is immediately de-energized by the residual current circuit breaker.

The *switch* ② is set to OFF (downward position) when the supply is cut off.



Regularly use the *test button* ① to check correct functioning. Please refer to the chapter 14.8 *Checking the residual current circuit breaker (RCD) or residual current operated circuit-breaker with overcurrent protection (RCBO) on page 98.*

<sup>6</sup> Residual current circuit breaker (RCCB) protects against impermissible touch currents, thus preventing electrical hazards.

### 5.3.7 Power supply unit

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

The power supply unit is supplied with mains voltage (230 V).

Contact with live components may result in death.

- All works on the power supply unit has to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Before carrying out work on the power supply unit make sure it is switched off (see *chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*).
- Test for absence of voltage.

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds (see *chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44*).




Fig. 21: Power supply unit (similar to figure)

The *power supply unit* supplies electric power to the device components. The alternating input voltage is converted to 24V direct voltage. Correct operation of the power supply unit is displayed via a LED, which emits a green light during normal operation.

For some options different power supplies can be used.

### 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch


Electric voltage

 **DANGER**

**Danger of death due to electric shock!**  
 The terminal block -X0 is supplied with mains voltage (230 V).  
 Contact with live components may result in death.

- Only DESIGNA trained operating personnel who are familiar with the operating instructions and safety information are permitted to operate the ON/OFF switch on the terminal block -X0.
- All other tasks at the terminal block -X0 have to be carried out by Designa electrical technicians or by electrical technicians of Designa trained and authorized dealers and partners.
- Switch off the device **externally** and make sure that it cannot be switched on again before carrying out work on the terminal block -X0 components.
- Test for absence of voltage.

Electric voltage

 **DANGER**

**Danger of death due to electric shock!**  
 After switching off the ON/OFF switch (position OFF) the respective connected components are de-energized.

- Be aware that the following components remain energized (230 V) even when the ON/OFF switch is switched off:
  - On/Off switch, primary side
  - Connecting terminal voltage
- Switch off the device externally and make sure that it cannot be switched on again before carrying out work on these components.  
 Test for absence of voltage.

**All-pole ON/OFF switch (optional)**

The device OUT\_01 can be optionally fitted with an *ON/OFF switch*. This *ON/OFF switch* provides all-pole disconnection of the device from the 230V mains supply.

Position OFF/ON



1 Position OFF (downwards)

Fig. 22: ON/OFF switch

Switch off device

⇒ Flick the ON/OFF switch down (*position OFF*) to switch **off** the device.

Switch on device

⇒ Flick the ON/OFF switch up to switch **on** the device.

**Surge arrester (optional)**

Fig. 23: Surge arrester

An optional *surge arrester* can be used at the device OUT\_01 to protect the device against voltage spikes.

**Power supply terminal****Electric voltage**

**⚠ DANGER**

**Danger of death due to electric shock!**

Contact with live components may result in death.

- Electrical connection has to be made by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- *Please refer to the chapter 8.3 Connection power supply (terminal block -X0) on page 63.*

**Electric voltage**

**⚠ DANGER**

**Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds (*see chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44*).

The voltage supply cable at the place of installation is connected to the *power supply terminal* at terminal block -X1.

**5.3.9 Heater (optional)****Electric voltage**

**⚠ DANGER**

**Danger of death due to electric shock!**

The heater and the heating relay are supplied with mains voltage (230 V).

Contact with live components may result in death.

- Any servicing has to be made by Designa electrical technicians or by electrical technicians of Designa trained and authorized dealers and partners.
- Before carrying out any works on the heater and the heating relay make sure they are switched off (*see chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*).
- Test for absence of voltage.

### Hot surface



Fig. 24: Heater (similar to figure)

### CAUTION

#### Danger of burns!

The surface of the heater may become hot during operation.

Contact with the heater may result in burns.

- Do not touch the surface of the heater.
- Always ensure that the heater has cooled down sufficiently before carrying out tasks in the vicinity of the heater.

The heater protects the device against low temperatures, prevents the formation of condensation water and allows operation at ambient temperatures of  $-20^{\circ}\text{C}$ .

The temperature inside the device is controlled by a sensor located on the mainboard of the SBC.



The switching thresholds for switching the heater are stored in the system. Recommended temp.:  $20^{\circ}\text{C}$ .

### 5.3.10 Ticket bag (optional)



Fig. 25: Ticket bag

Tickets which are withdrawn at the entry are sent to the *ticket bag*. The *ticket bag* is inserted into a rail underneath the Multicon pull out unit and can be extracted for emptying.

### 5.3.11 Mains filter

#### Electric voltage

### DANGER

#### Danger of death due to electric shock!

The mains filter is supplied with mains voltage (230 V).

Contact with live components may result in death.

- Any servicing on the mains filter has to be made by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Before carrying out work on the mains filter make sure it is switched off (*see chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*).
- Test for absence of voltage.

The *mains filter* is filtering out interfering frequencies of the mains current.

### 5.3.12 UPS (Uninterruptible Power Supply) (optional)

## Electric voltage

**⚠ DANGER****Danger of death due to electric shock!**

The UPS (uninterruptible power supply) is supplied with mains voltage (230V).

Contact with live components may result in death.

- Any servicing on the UPS has to be made by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Before carrying out work on the UPS make sure it is switched off (see chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42).
- Be aware that the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.
- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds.
- Test for absence of voltage.
- Also see the separate instructions for the UPS.

## Occupational safety and environmental protection

**⚠ WARNING****Risk of harm to humans and the environment as a result of improper disposal of rechargeable batteries and batteries.**

Improper disposal of rechargeable batteries and batteries can be harmful to human health and the environment.

- Remove batteries and rechargeable batteries from all the components.
- Dispose of the batteries and rechargeable batteries according to valid country-specific environmental regulations.



1 ON/OFF button

Fig. 26: UPS (Uninterruptible Power Supply)

The UPS comes with self-charging batteries.

During a power failure, the device OUT\_01 is supplied with energy via the (self-charging) batteries of the UPS. If the batteries become low, the UPS sends a respective signal (*battery low*) to the **SBC**.

If the device OUT\_01 is processing a ticket when this occurs, the process can be completed with the remaining battery capacity. The device is then

put out of operation (unless the mains supply is reconnected before the process is completed).

If ticket processing is **not** taking place, the device OUT\_01 is put out of operation immediately when the UPS signal “battery low” occurs.

### 5.3.13 Humidity sensor

Measurement and control of the relative humidity inside the device is done by a humidity sensor.

**i** The optimum setting to a lower humidity (recommended: 70%) is done in the system and has to be carried out by specially trained DESIGNA Electrical Technicians.

### 5.3.14 Relay (optional)

Electric voltage

#### **⚠ DANGER**

##### **Danger of death due to electric shock!**

With certain options the relay is supplied with mains voltage (230 V). Contact with live components may result in death.

- Any servicing on the relay has to be made by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Before carrying out work on the relay make sure it is switched off (see chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42).
- Test for absence of voltage.

The device OUT\_01 can be optionally equipped with one or several *relays*.

Various options (e.g. traffic lights or sign) or special functions (e.g. alarms) can be controlled via the relay(s).

### 5.3.15 Induction loop detector (optional)



Fig. 27: Induction loop detector

Optionally, an *induction loop detector* can be used to be triggered by an additional loop (e.g. used for **LPR** systems).<sup>7</sup>

### 5.3.16 Network components (optional)

Customer specific network components, such as e.g. DSL modem, switch etc., can be installed.

For example, an optional DSL modem can be used in the OUT\_01, if the **LAN** is a two-core cable network.

Custom DSL modems may be used. The function depends on the model used. Please refer to the manual which is delivered separately with the DSL modem or ask your DESIGNA service for more details.

<sup>7</sup> The *presence* and *closing loop* of a standard installation are connected to the internal detectors of the *barrier control unit* of the car park barrier. See separate instruction of the car park barrier.

### 5.3.17 Door switch (optional)

The *door switch* checks the position of the door. If the door is opened, the door switch sends a signal to the **SBC** which subsequently sends a corresponding **alarm message** to the **System server**.

The door switch is extracted in order to carry out service and maintenance work and to put the device into “normal mode“ even if the door is open: This simulates a closed door and the device functions can be tested.

### 5.3.18 TFT colour display (optional)

TFT colour display (24") for displaying digital contents, such as dynamic price developments, occupancy data, directions or advertising<sup>8</sup>.

---

<sup>8</sup> Not available in all countries

## 6 Transport and Storage

### 6.1 Safety

#### Improper transport

#### **WARNING**

##### **Danger from improper transport of the device!**

The weight of the device can severely injure a person.

- Have them transported by specialized staff only.
- Check fasteners (packaging straps) for damage or tears.
- Use lifting gear or forklift with a suitable pallet.
- Use suitable lifting gear (loops, etc.) for lifting the device. The lifting gear must be designed for the respective weights.
- Never attempt to lift the device on your own.
- Always wear safety shoes.

#### Improper transport

#### **NOTICE**

##### **The device can be damaged by improper transport.**

Substantial material damages can result from improper transport.

- Have them transported by specialists only.
- When unloading the packages and during in-plant transportation always proceed with greatest care and caution.
- Observe the symbols on the packaging.
- Observe the dimensions of the device.
- Loading, unloading as well as moving the device must take place with greatest care.
- Only remove packaging directly before assembly.

#### Personal protective equipment

The following must be worn during all work:

- Work clothes
- Protective gloves
- Safety shoes

### 6.2 Transport inspection

1. Immediately check the delivery after receipt for completeness and transport damages.
2. Proceed as follows in the case of outwardly recognizable transport damage:
  - ⇒ Do not accept the delivery or only under reserve.
  - ⇒ Note the extent of damage on the transport documents or on the delivery note of the forwarder.
  - ⇒ Lodge complaint.

---

**i** Lodge a complaint for each defect, as soon as it is recognized. Compensation claims can only be submitted within the valid complaint periods.

---

### 6.3 Transport

The lifting gear must be designed for the weight of the device.

For transport barrier modules refer to the safety notes.

#### For future transports

1. Secure loose cables.
2. Secure the device against vibrations.
3. Securely fasten the device prior to transport (e.g. screw it onto a pallet).
4. Transport and put down the device with a forklift and lift with suitable lifting gear.

### 6.4 Storage

Store the device or packages under the following conditions:

- Do not store outdoors.
- Store dry and dust free.
- Do not expose to aggressive media.
- Protect against solar irradiation.
- Avoid mechanical vibrations.
- Storage temperature: -25 to +70 °C
- Relative humidity: max. 95 %, non-condensing
- Check the general condition of all components and packaging regularly, if they are stored for longer periods than 3 months.

## 7 Installation

### 7.1 Safety

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

Contact with live components may result in death.

- Installation has to be carried out by electrical technicians or Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Make sure that the power supply is **externally** disconnected and that it cannot be switched on.
- Test for absence of voltage.

#### Inappropriate installation

#### WARNING

##### **Danger by inappropriate installation!**

Inappropriate installation can cause severe injuries.

- Installation has to be carried out by electrical technicians or Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Prior to work, ensure that there is sufficient assembly space.
- Pay attention to tidiness and cleanness at the assembly site! Loosely stacked or lying around components and tools are accident sources.
- Comply with specifications for foundations and reinforcement.
- Ensure correct arrangement and fit on all assemblies and components.
- Install the indicated fastening elements correctly.

#### Heavy weight

#### WARNING

##### **Risk of injury when lifting heavy objects alone!**

The weight of heavy objects can severely injure a person.

- Never attempt to lift the device on your own.
- Always wear safety shoes.

#### Risk of crushing fingers

#### CAUTION

##### **Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

### Inappropriate cleaning with air pistols

#### **CAUTION**

##### **Risk of injury due to inappropriate cleaning with air pistols!**

Inappropriate cleaning with air pistols may result in minor injuries or damage to eyes due to flying particles.

- Always wear safety goggles.
- Prevent air penetrating the body through skin injuries.
- Do not aim air pistols at people.
- Only use air pistols with a maximum pressure of 3.5 bar.
- Only use air pistols with a reduced noise level (multi-hole nozzles).

#### **NOTICE**

**Dirt, dust and building implements can endanger the sensitive electronics and mechanism of the device and impair safe operation.**

- The shell of the car park building should be completed before installing devices.

### Personal protective equipment

The following must be worn during all work:

- Work clothes
- Protective gloves
- Safety shoes

#### **NOTICE**

Operation of this unit may cause radio interference in residential areas.

## 7.2 Installation preparation

### Location requirements

- The device is qualified for either indoor, protected or outdoor locations.
- ⇒ Please see the chapter 4 *Technical Data on page 24* for the area required for installation.
  - ⇒ Choose a location which offers enough additional operating space (for opening the door etc.).
  - ⇒ Make sure that there are sufficient, fully visible signs around the car park site. Keep signs clean and position them so that they can be read easily.
  - ⇒ Use signs to clearly display areas (e.g. entrance and exit).
  - ⇒ Provide separate footpaths next to entrances and exits and mark pedestrian areas, to ensure that pedestrians do not have to walk near entrances and exits or on the roads.
  - ⇒ It is essential to observe the safety information in the barrier operating instructions and the following notes if barriers are installed in your system.

### Foundation requirements

The device has to be installed on a concrete foundation.

---

**i** The concrete foundation must be sufficiently rigid as to withstand the weight of the unit fully loaded: it needs to have a strength of 25 N/mm<sup>2</sup>.  
The foundation needs to have a frost-depth of approx. 800 mm and must be non-flammable!  
The foundation has to have a smooth concrete finish.

---

1. Pour the foundation according to manufacturer specifications.
  2. Lead the ductworks into the middle of the foundation from the foundation cast. Ensure that the cables are led through the middle of the pedestal opening.
  3. Leave at least 1 m of the supply cables for a simple connection.
  4. Embed (if available) the DESIGNA foundation frame into the concrete during the building stage and level the foundation frame with a spirit level.
- 

**i** Observe the information on the foundation frame.  
The correct position towards the road is marked.

---

OUT\_01: The longer side of the foundation frame faces the road.

5. Provide the foundation with a smooth concrete finishing.  
If a foundation frame is embedded, make sure its surface is flush with the smooth concrete finishing after embedding.
6. Ensure that the surface is a non-flammable surface and sufficiently rigid as to withstand the weight of the unit fully loaded (25 N/mm<sup>2</sup>) and that in outdoor locations a frost-depth of approx. 800 mm is ensured.
7. Ensure that the poured foundation material has completely hardened before installing the device onto the *foundation frame* or before preparing the mounting with the *DESIGNA mounting kit*.

## 7.3 Different mounting possibilities

### Mounting possibilities

There are the following possibilities for mounting the device:

- with a Designa foundation frame
- with a Designa mounting kit.

Additionally, you may install a ram protection to protect the device (see *chapter 7.6 Installation of ram protection on page 58*).

### 7.3.1 Preparation with DESIGNA foundation frame

#### Scope of delivery

DESIGNA foundation frame (DESIGNA Ident. no. 2 713 644 135): Hot galvanized frame with prepared holes and dowels for simple mounting.

Delivered with the foundation frame: bolts and washers, 2 mounting bars (fixing the device onto the transport aid).

#### Dimensions

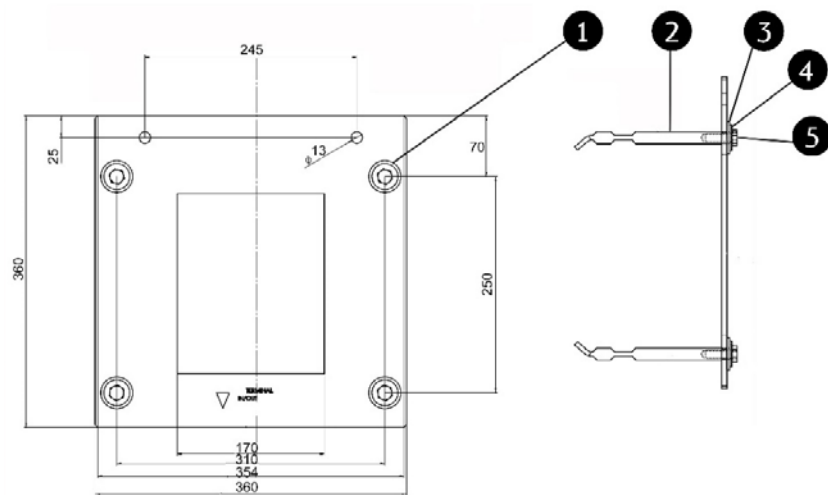


Fig.28: DESIGNA foundation frame: Dimensions in inch and (mm)

- 1 Bore hole with thread (M10) (4 x)
- 2 Foundation anchor, welded (4 x)
- 3 Washer (A13; DIN 9021; ISO7093) (4 x)
- 4 Washer (A10.5; DIN 125; ISO 4093) (4 x)
- 5 Hexagon bolt (M10 x 30; DIN 933; ISO 4017) (4 x)

Not shown (contained in scope of delivery):

- 6 Mounting bar (2 x)

1. Check completeness of the fastenings.
2. Embed the Designa foundation frame into the concrete during the construction stage (see *chapter 7.2 Installation preparation on page 53*).
3. Keep in place the mounting accessories for final mounting of the device.

### 7.3.2 Preparation with DESIGNA mounting kit

The devices are fastened with the Designa mounting kit, if no Designa foundation frame is provided (e.g. not embedded into the concrete during construction or not available for the device).

The following is required for mounting:

#### Designa mounting kit

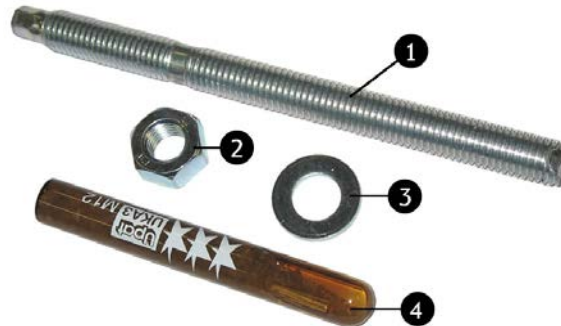


Fig. 29: DESIGNA mounting kit

- 1 Galvanized threaded rod (M12x160) (4x)
- 2 Stainless steel hexagon nuts (M12; ISO 4032, DIN 934) (4x)
- 3 Stainless steel washers (A13; DIN 125) (4x)
- 4 Mortar cartridge (M12) (4x)

Not shown:

- 5 If included in the scope of delivery: 2x mounting bars)

#### Skin and eye irritation

#### **⚠ CAUTION**

#### **Skin and eye irritation from improper application of the mortar cartridges!**

Improper application of the mortar cartridges may cause skin and eye irritations.

- Use the mortar cartridges only if undamaged.
- Avoid eye and skin contact.
- See also the instructions for the mortar cartridges.

#### Setting the anchor bolts

Prerequisite: The concrete foundation must be fully cured.

1. Check completeness and quality of the fastenings.
2. Use the drilling pattern of the foundation frame (*see chapter 7.3.1 Preparation with DESIGNA foundation frame on page 54*) to mark the bore holes or position the device and mark the holes using the bore holes in the casing base.
3. Drill holes in the concrete foundation with a diameter of 14 mm and a depth of 110 mm.
4. Clean the holes with compressed air.
5. Fully insert the mortar cartridges into the clean holes.
6. Use a hammer drill or percussion drill to insert the threaded rods into the bore hole and mortar cartridges. Please pay careful attention to the mortar cartridges instructions.
7. Observe the hardening times mentioned below:

**Typical hardening times**

Hole temperature	Waiting time valid for dry material	Waiting time valid for wet material
> 20 °C	20 min	40 min
10 - 20 °C	30 min	1 h
0 - 10 °C	1 h	2 h
-5 - 0 °C	5 h	10 h

8. Have the mounting accessories ready for final mounting.

## 7.4 Unpacking the device

The individual packages have been packed according to the expected transport conditions.

The packaging must protect the individual components against transport damage, corrosion, etc. prior to assembly. Therefore, do not damage the packaging and only remove it immediately before assembly work.

1. Transport the device to its place of installation and then unpack it.
2. Loosen the screwed connections with which the device is mounted to its transport aid (e.g. wooden pallet).
3. Have the mounting profiles ready for final mounting.
4. Separate the packaging according to type and size, and either reuse it or recycle it.

## 7.5 Installation of the device

### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

Contact with live components may result in death.

- Installation has to be carried out by electrical technicians or Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Make sure that the power supply is **externally** disconnected and that it cannot be switched on.
- Test for absence of voltage.

### DESIGNA foundation frame

### DESIGNA mounting kit

1. Lift the device onto the foundation frame and align the bore holes in the casing base with the holes drilled in the foundation frame.  
Lift the device with the bore holes<sup>9</sup> in the casing base onto the anchor bolts.
2. Hold the device in a position that the cable can be fed through the opening in the base and into the casing.
3. Use mounting profiles, hexagon screws/ nuts and washers to attach the device to the foundation frame or anchor bolts. At first, only hand-tighten the hexagon nuts/ screws.
4. Align the device with a spirit level (clearance is guaranteed due to the clamp fixture). Ensure that the casing is not buckled due to unevenness of the floor.
5. Now tighten the hexagon nuts (45 N m).
6. Check that the device is fixed and standing securely.
7. Remove the transport safety devices of the device components, if available.
8. Seal the gap between the device and foundation with silicone.
9. Check the alignment of the assemblies with respect to the input and output slots of the door and, if necessary, adjust (*see chapter 17.4.7 Checking and aligning the Multicon insertion slot position on page 118*). The slots must be flush with or slightly protrude from the front plate (approx. 1 mm).

<sup>9</sup> ENT/EXT 120 und In/Out 1307: with the outer bore holes in the casing base

## 7.6 Installation of ram protection

Ram protection can also be installed at the device to prevent it being damaged by vehicles. A ram protection rail, a 950 mm ram protection post and a 425 mm ram protection post are available.

Ram protection is installed using the *Designa mounting kit* <sup>10</sup>.

### Scope of delivery

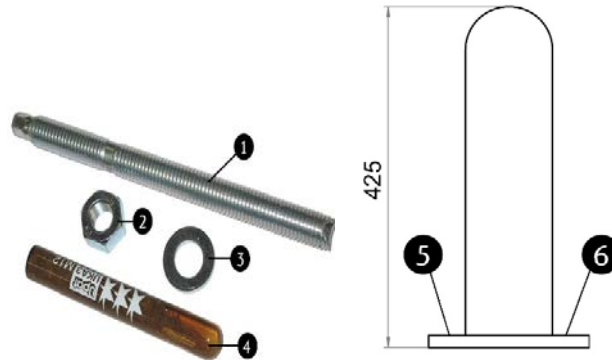


Fig. 30: Ram protection

- 1 Stainless steel threaded rod (M12x160) (6 x)
- 2 Stainless steel hexagon nuts (M12; ISO 4032, DIN 934) (6 x)
- 3 Stainless steel washers (A13; DIN 125) (6 x)
- 4 Mortar cartridge (M12) (6 x)
- 5 Ram protection
- 6 Flange cover (2 x)

Not shown:

- 7 Countersunk screws (M3x10; DIN 963) (8 x)

<sup>10</sup> A robust dowel set (M 10) for concrete mounting can be used alternatively.

## Dimensions

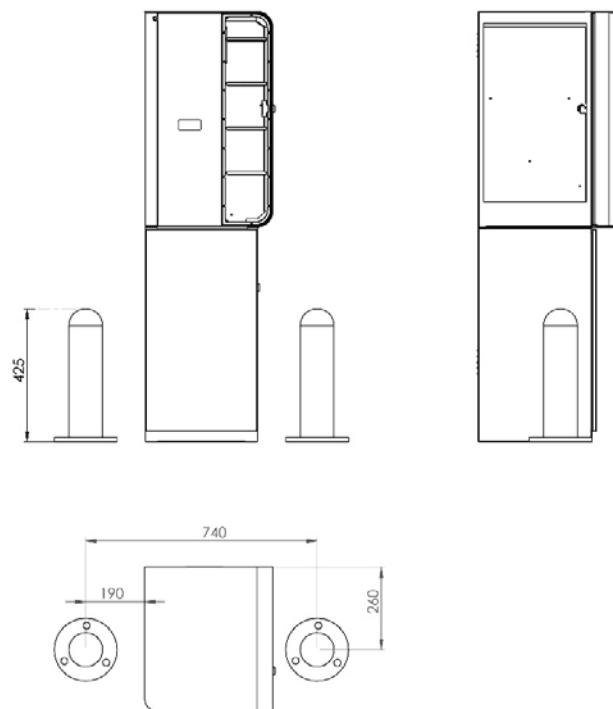


Fig. 31: Ram protection: Dimensions in mm

## Skin and eye irritation

### ⚠ CAUTION

#### **Skin and eye irritation from improper application of the mortar cartridges!**

Improper application of the mortar cartridges may cause skin and eye irritations.

- Use the mortar cartridges only if undamaged.
- Avoid eye and skin contact.
- See also the instructions for the mortar cartridges.

## Setting the anchor bolts

Prerequisite: The concrete foundation must be fully cured.

1. Check completeness and quality of the fastenings.
2. Mark the holes using the bore holes in the ram protection base.
3. Drill holes in the concrete foundation with a diameter of 0.55 in 14 mm and a depth of 4.33 in 110 mm.
4. Clean the holes with compressed air.
5. Fully insert the mortar cartridges into the clean holes.
6. Use a hammer drill or percussion drill to insert the threaded rods into the bore hole and mortar cartridges. Please pay careful attention to the mortar cartridges instructions.
7. Observe the hardening times mentioned below:

**Typical hardening times**

Hole temperature	Waiting time valid for dry material	Waiting time valid for wet material
> 20 °C	20 min	40 min
10 - 20 °C	30 min	1 h
0 - 10 °C	1 h	2 h
-5 - 0 °C	5 h	10 h

**Installing the ram protection**

1. Lift the ram protection with the bore holes in the ram protection base onto the anchor bolts.
2. Attach the ram protection to the anchor bolts using the washers and the hexagon bolts.
3. Tighten the hexagon nuts (45 N m).
4. Check that the ram protection is fixed and standing securely.
5. Attach the flange cover using the countersunk bolts at the flanges.
6. Seal the gap between the ram protection post and the flange cover with silicone.

## 8 Connection

### 8.1 Safety

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

Contact with live components may result in death.

Damage to the insulation or to individual components may result in death.

- Connection has to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Make sure that the power supply is **externally** disconnected and that it cannot be switched on. Test for absence of voltage.
- Switch off the power supply immediately in case of damage to the insulation and arrange repair.
- Never bypass or deactivate overcurrent protection devices.
- When replacing overcurrent protection devices observe the correct amperage specification.
- Keep moisture and dust away from live parts. Moisture or dust may cause a short circuit. If the electrical connection is established at precipitation, e.g. rain or snow, penetration of moisture must be prevented by suitable measures, such as a protective cover.
- Ensure that the device is always locked correctly in order to avoid endangering third parties.

#### Inappropriate connection

#### WARNING

##### **Danger by inappropriate connection!**

Inappropriate connection can cause severe or lethal injuries.

- Connection has to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Pay attention to tidiness and cleanliness at the assembly site. Loosely stacked or lying around components and tools are accident sources.
- Tighten all screws correctly.

#### Hot surface

#### CAUTION

##### **Danger of burns!**

The surface of the heater may become hot during operation.

Contact with the heater may result in burns.

- Do not touch the surface of the heater.
- Always ensure that the heater has cooled down sufficiently before carrying out tasks in the vicinity of the heater.

### Personal protective equipment

The following must be worn during all work:

- Work clothes
- Protective gloves
- Safety shoes

## 8.2 Installing electrical protective devices

The safety installations that are required according to regional and local regulations must be provided by the customer. Usually these are:

- Overcurrent protection devices
- Lockable 2-pole main switch acc. to EN 60947-3
- Residual current device (RCD)

### 8.3 Connection power supply (terminal block -X0)

#### Electric voltage

#### DANGER

##### Danger of death due to electric shock!

If the power cable is not connected to the terminal clamps correctly, loosens from the connection clamps and touches the casing or door, there is a direct danger to life from electric shock.

- Connection has to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Check that the power supply line and electrical safety measures are in accordance with valid national and local regulations and standards and make sure they correspond with the specifications in chapter 4 *Technical Data* on page 24.
- Make sure that the power supply is **externally** disconnected and that it cannot be switched on. Test for absence of voltage.
- Connect power supply according to the following description.
- Please observe the connection diagrams supplied with the device for options and special versions.

#### Terminal block -X0

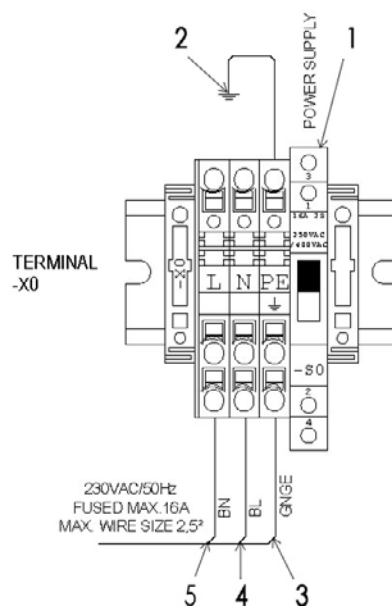


Fig. 32: Terminal block -X0

- 1 ON/OFF switch
- 2 Ground wire, internal/ factory wired
- 3 Ground lead, external, green or green/yellow cable
- 4 Neutral lead, blue cable
- 5 Conducting lead, black or brown cable

**Power supply cable**

The power supply cable at the place of installation has to be laid separately from the sub-distribution to the terminal block -X0.

**Removing the insulation**

1. Make sure that the power supply is externally disconnected and that it cannot be reconnected. Ensure no voltage is applied.
2. If necessary, shorten the supply cable to the required connection length.
3. Insulate the feeder and the individual wires according to the following illustration. Do not damage the insulation of the individual wires when stripping the cable.

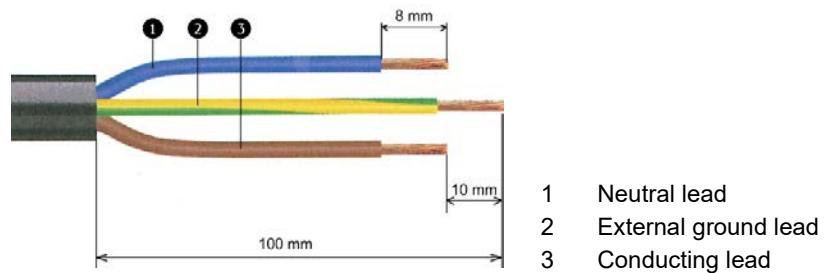


Fig. 33: Removing the insulation

**Connecting the supply cable**

4. Connect the *external ground lead* (green/yellow) to position *PE* of the terminal block.
5. Connect the *neutral lead* (blue) to position *N* of the terminal block.
6. Connect the *conducting lead* (brown or black) to position *L1* of the terminal block.
7. Check whether all connections are fitted correctly and securely.
8. Check whether the factory-wired *internal ground wire* is correctly connected to the device casing.

**Checking the internal ground wire****ON/OFF switch**

The applied device voltage is switched on and off via the ON/OFF switch. (see chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42).

The ON/OFF switch can, after switching on the power supply at the place of installation, be switched on for testing purposes (position ON, upwards), but they should stay switched off (position OFF, downwards) until final connection.

**Power supply terminal -X0  
with surge arrester (option)**

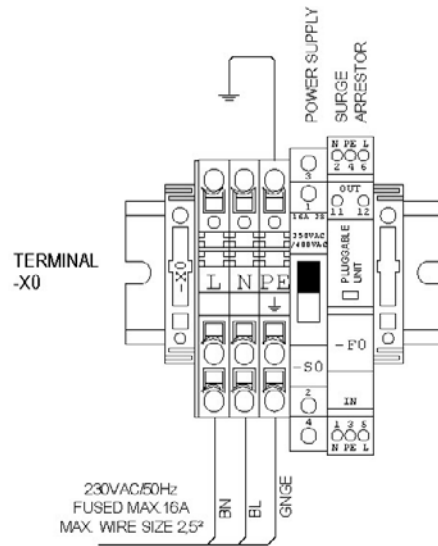


Fig. 34: Power supply terminal -X0 with surge arrester (option)

## 8.4 Ethernet Connection (terminal block -X2 or additional mounting rail)

Defective data transmission

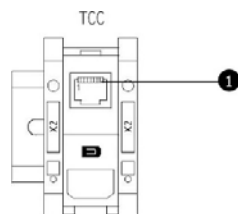
### NOTICE

#### Inappropriate connection can cause defective data transmission.

- Connection has to be carried out by DESIGNA electrical technicians or electrical technicians of DESIGNA trained and authorized partners.
- Check the already used assignments of the **Ethernet** connections in your system. These can be conducted according the standards *EIA/TIA-T568A* or *EIA/TIA-T568B*.
- Observe the chosen assignment for all Ethernet connections in your system.
- Clamp the Ethernet connection **tightly** (top and bottom) onto the mounting rail. This creates the required earthing and ensures trouble-free operation of the data line.
- Please pay attention to the enclosed instructions for preparation, wiring and mounting of the *Ethernet connection* as well as to the following description.
- Do not damage the insulation of the individual wires when stripping off the sheath.

The **Ethernet (LAN)** line is connected to the *Ethernet connection*.

The component *Ethernet connection* is part of the scope of delivery and is wired and mounted on site to a free location of the mounting rail



1 Ethernet connection -> TCC/SBC <sup>11</sup>

Fig. 35: Terminal block -X2; Ethernet connection

More than one *Ethernet connection* can be necessary depending on the device equipment (e.g. VoIP intercom device).

### Connecting Ethernet

1. If necessary, shorten the wires of the Ethernet data line to the required length.
2. Strip off the sheath of the Ethernet data line in order to wire up the wires individually.
3. Carry out wiring and installation as described in the instructions supplied with the *Ethernet connection*.
4. Attach tightly the present connection cable of *terminal block -X2* to the *Ethernet connection*-> TCC/SBC <sup>11</sup>.

<sup>11</sup> or another controller board (e.g. at the DCT 120)

**Assignment according to EIA/TIA-T568A**

If **no** assignment has already been used or if the standard *EIA/TIA-T568A* is already assigned, conduct the wiring according to *EIA/TIA-T568A*:

**i** The wiring according to standard *EIA/TIA-T568A* is described in the instructions enclosed to the *Ethernet connection*.

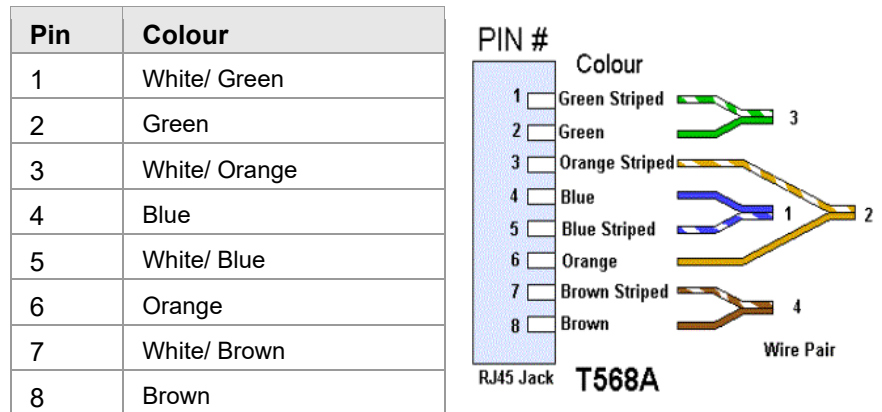


Fig. 36: Assignment of the Ethernet connection, EIA/TIA-T568A

**Assignment according to EIA/TIA-T568B**

Observe the assignment if it has already been used according the standard *EIA/TIA-T568B*.

**i** The wiring in this case is conducted **against** the instructions enclosed to the *Ethernet connection*.

⇒ Connect the conductors *green* and *white/green* to the positions 3 and 6 of the conductors *orange* and *white/orange* of the instructions and vice versa:

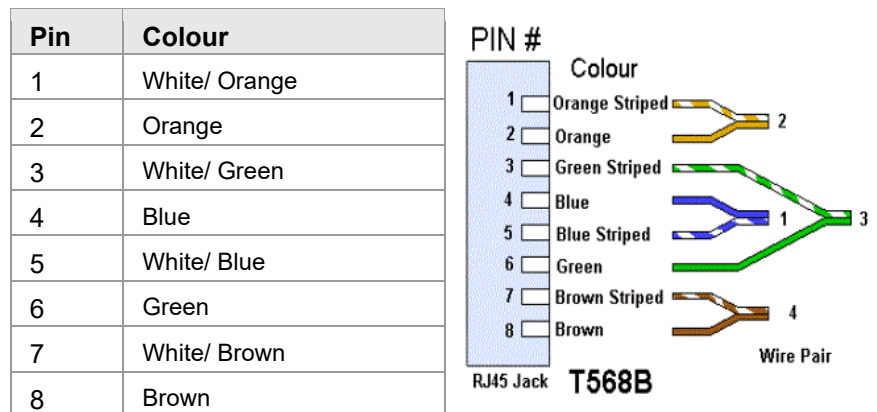


Fig. 37: Assignment of the Ethernet connection, EIA/TIA-T568B

## 8.5 Connection intercom device (terminal block -X2 or VoIP)

### Defective data transmission

#### NOTICE

##### Inappropriate stripping can cause defective data transmission.

- Connection has to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Do not damage the insulation of the individual wires when stripping off the sheath.

### Connection intercom device (terminal block -X2)

If the intercom device requires a 2 or 4-wire connection (see chapter 5.2.1 *Intercom on page 29*), the cable of the intercom circuit is connected to terminal block -X2.

The wiring of the intercom system is carried out star-shaped, i.e. a line is laid from each device OUT\_01 to the central switchboard for intercommunication.

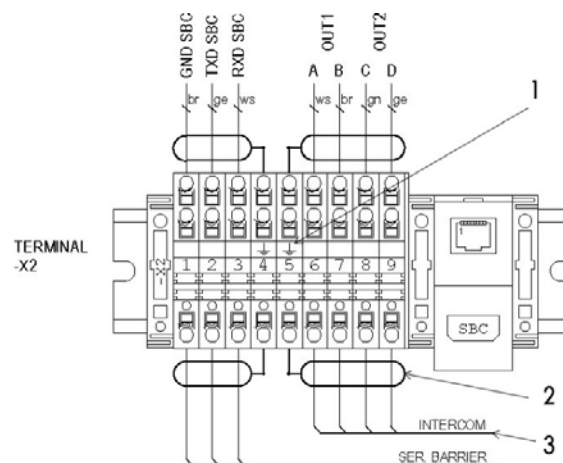


Fig. 38: Terminal block -X2, Connection intercom system, with 4-wire connection

- 1 Protective ground
  - 2 Intercom cable screen
  - 3 Intercom cable
1. If necessary, shorten the wires of the *intercom cable* to the required length.
  2. Strip off the sheath of the *intercom cable* in order to wire up the wires individually.  
Use the wire-braiding as *intercom cable screen*.
  3. Remove approx. 8 mm of the insulation at the ends of the wires.
  4. Clamp the wires to the terminal block.  
2 wires (standard intercom device): terminal positions 6+7  
4 wires (optional two-way intercom device): terminal positions 6-9
  5. Connect the *intercom cable screen* to the terminal *protective ground*, terminal position 5.

### Connection intercom system (VoIP)

#### DESIGNA VoIP

The integrated VoIP intercom device *DESIGNA VoIP* does not require a separate connection during installation.

Other VoIP intercom devices

An (additional) *Ethernet connection* is used if other optional VoIP intercom devices are installed.

Connection: See chapter 8.4 *Ethernet Connection (terminal block -X2 or additional mounting rail)* on page 66.

## 8.6 Connection barrier (terminal block -X2)

Defective data transmission

NOTICE

**Inappropriate stripping can cause defective data transmission.**

- Connection has to be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Do not damage the insulation of the individual wires when stripping off the sheath.

Serial barrier connection

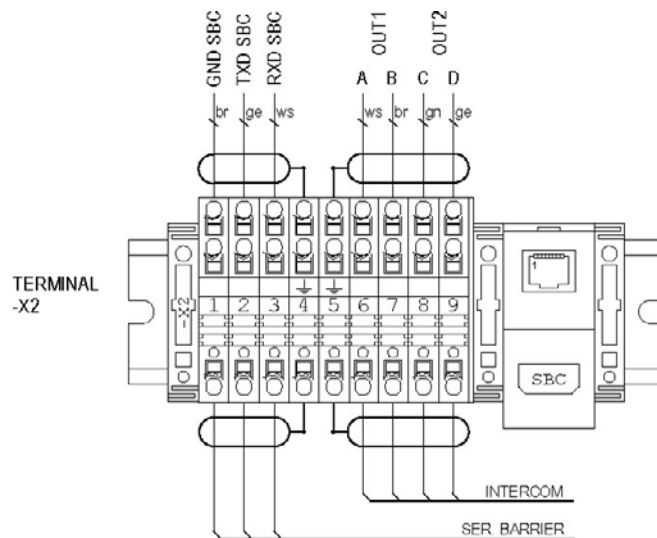


Fig. 39: Terminal block -X2, Serial barrier connection

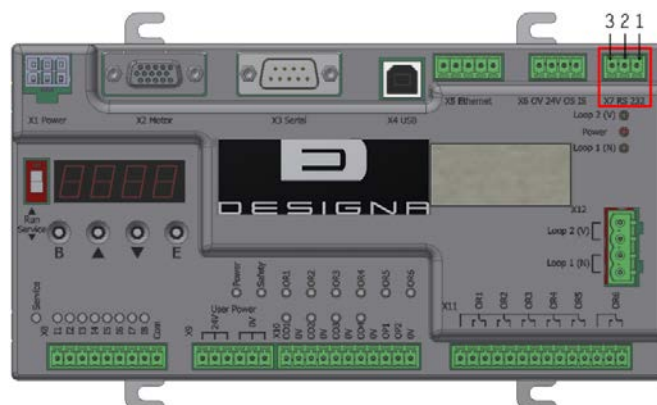


Fig. 40: Serial barrier connection

- 1 GND
- 2 RX (RxD - Received Data)
- 3 TX (TxD - Transmitted Data)

The data line (installation cable, screened, e. g. Li2YCY (TP)) between the OUT\_01 and the barrier control unit, *RS-232 interface* is connected to the serial barrier connection.

1. Prepare the ends of the data line such as for the connection intercom system.
2. Pay attention to the marking of the wires at the *barrier control unit, RS-232 interface* and connect the data line accordingly to the *serial barrier connection*.

Barrier control unit, RS-232 interface (assignment from bottom to top)		Serial barrier connection (pin assignment)	
1	GND	1	Signal GND SBC
2	RX (RxD - Received Data)	2	TX SBC (TxD - Transmitted Data)
3	TX (TxD - Transmitted Data)	3	RX SBC (RxD - Received Data)

**Parallel barrier connection**

Optionally, the data line between the control device and the barrier control unit is connected via a *12-pole pin-and-socket connector* to the *parallel connector barrier* (see chapter 16.3 Assignment of contacts on page 107).

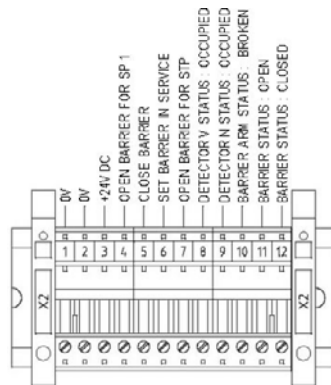


Fig. 41: Parallel connector barrier

The *12 pole pin-and-socket connectors* of the data line are to be prepared as follows:

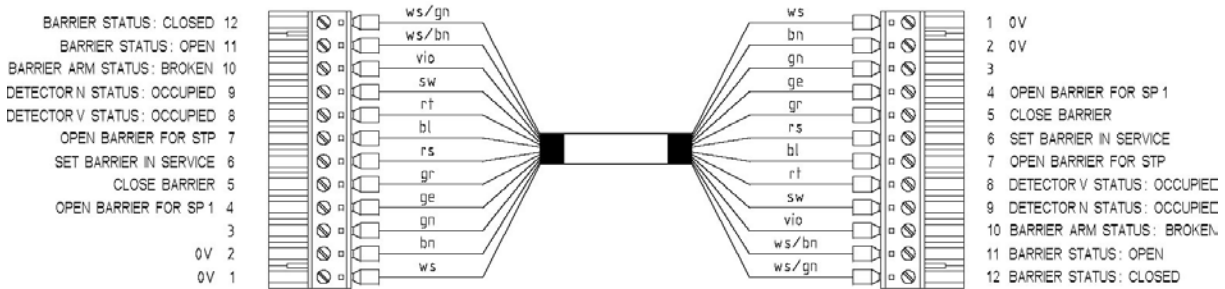


Fig. 42: Connectors control device ↔ barrier

1. Remove approx. 8 mm of the insulation of the individual wires.
2. Clamp the wires to the connectors as shown in the figure above.

The following assignment is pre-wired from the I/O interface to the parallel connector barrier (see chapter 5.3.5 Terminal block -X2: Intercom system, barrier and Ethernet connection on page 38):

Barrier inputs and outputs (0V switching)		
Connector	I/O Interface	Signal ABACUS (to OUT_01)
1	GND	0V
2	GND	0V
3	+24V	+24 V
4	A7	Open barrier for season parkers 1 (SP 1)
5	A6	Close barrier
6	A3	Set barrier in service
7	A1	Open barrier for short term parkers (STP)
8	E7	Detector V (presence loop) status: occupied
9	E5	Detector N status: occupied
10	E4	Barrier arm status: broken
11	E3	Barrier status: open
12	E1	Barrier status: closed

**Connection 2 control devices to 1 barrier (optional)**

If one barrier is used for two control devices the printed circuit board PCB 2 terminals at 1 barrier is additionally used:

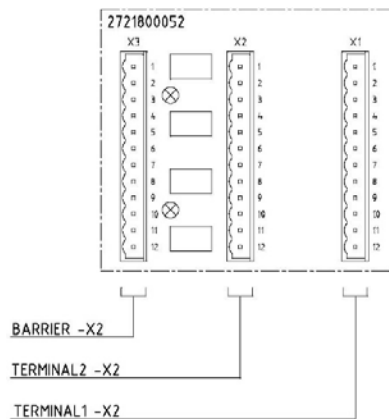


Fig. 43: PCB 2 terminals at 1 barrier

## 9 Testing in accordance with accident prevention regulations

### Electric voltage

#### **DANGER**

##### **Danger of death due to electric shock!**

Direct contact with live electrical equipment is potentially lethal.

- According to the accident prevent regulations testing should only be carried out by fully trained and qualified electricians.

The efficient working order of electrical systems and equipment must always be checked prior to initial start-up, after any changes or repairs and at regular intervals.

In Germany, testing must satisfy the requirements specified by the accident prevention regulations (DGUV-V3). Appropriate regulations apply in other countries. Always comply with the relevant regulations.

### 9.1 Initial device testing

The device OUT\_01 has been tested ex-works in accordance with the accident prevention regulations (DGUV-V3). Testing was carried out in line with recognized standards of good engineering practice<sup>12</sup>.

The following tests were executed.

#### Visual inspection

A visual inspection of the insulation, earthing, strain relief, etc.

#### Protective earth conductor test: Measuring the continuity of the protective earth conductor

This test involved measuring the continuity of the protective earth conductor. Relevant measurements are carried out between the protective earth conductor/main device connection and specified measuring points (*see chapter 9.2 Measuring points for the protective earth conductor test on page 73*).

#### Measuring the fault loop impedance

This test involved measuring the resistances of the entire outward and return path of an electric circuit. The measurements were carried out between the line conductor and protective conductor and the line conductor and neutral conductor using an installation tester (*see chapter 9.3 Measuring points for the fault loop impedance measurement on page 73*).

#### Measuring the insulation resistance

The initial insulation resistance test was carried out with a leakage current probe using differential current or as a direct measurement (500 V test voltage).

#### Optional residual current device (RCD) or residual current operated circuit-breaker with overcurrent protection (RCBO)

With the optional residual current device (RCD) (type A) or the residual current operated circuit-breaker with overcurrent protection (RCBO), the switch-off time, switch-off current and touch voltage were measured and the function checked.

#### Documenting the tests

All the tests have been documented in a report on initial device testing.

<sup>12</sup> In Germany, e.g., DIN VDE 100 Part 600

## 9.2 Measuring points for the protective earth conductor test

The following measuring points have been specified for measuring the continuity of the protective earth conductor. The measuring points are indicated by yellow labels. If an earthing rod is specified as a measuring point, the measurement is carried out at the top of the earthing rod (not at the protective earth conductor cable).

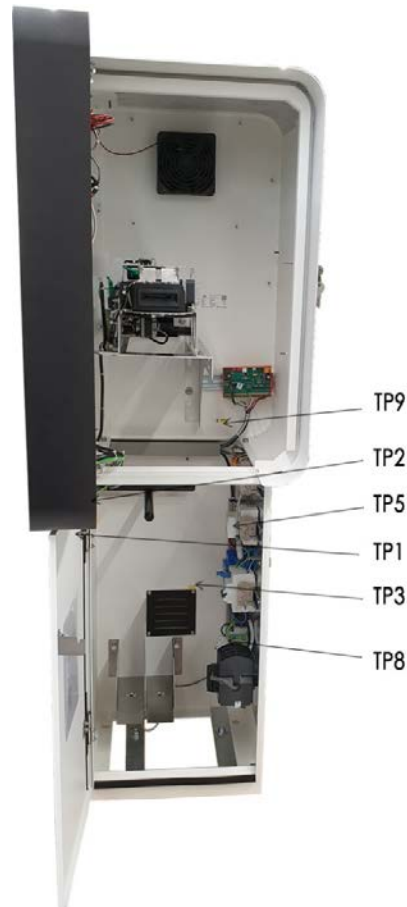


Fig. 44: Measuring points IN/OUT

Measuring point TP1: Earthing rod at socket door

Measuring point TP2: Earthing rod at module front panel

Measuring point TP3: Earthing rod at rear casing, bottom

Measuring point TP5: Socket (PE contact) (optional)

Measuring point TP8: Earthing rod at mounting plate

Measuring point TP9: Earthing rod at rear casing, top

## 9.3 Measuring points for the fault loop impedance measurement

The following measuring points have been specified for measuring the fault loop impedance.

- Transfer point on the terminal block -X0

# 10 Commissioning

## Electric voltage

 **DANGER****Danger of death due to electric shock!**

Contact with live components may result in death.

- Commissioning has to be carried out by DESIGNA electrical technicians or electrical technicians of DESIGNA trained and authorized partners.

Commissioning is carried out on-site according to the respective requirements of your system and is therefore not described in these operating instructions.

# 11 Function check

## 11.1 Safety

### Electric voltage

#### DANGER

##### **Danger of death due to electric voltage!**

When the device is switched on, the power supply (230V) connected to the following components Terminal block -X0, mains filter, power supply unit and, if necessary, to further optional components (see *chapter Device Description*).

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- Switch off the device (see *chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*) unless the work step requires a voltage supply.
- Be aware that the following components remain energized (230V) even when the ON/OFF switch is switched off:
  - ON/OFF switch, primary side
  - Power supply terminal

### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds (see *chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44*).

### Risk of crushing fingers

#### CAUTION

##### **Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

## 11.2 Check condition of device

1. Check completeness of the safety labels (see *chapter 2.6.1 Product safety labels on the device on page 14*). Consult your Designa service if any are missing or the quality is below standard.
2. Check the quality of the device components. Consult your Designa service if any damages are visible.

3. Make sure the device components are fitted correctly.  
Tighten any loose screw connections.
4. Check that the plug and clamping connections are connected correctly.

### 11.3 Induce general function and check

1. Switch on the OUT\_01: *See chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42.*
    - The OUT\_01 “boots (starts and sets the device components ready for functional operation) and is subsequently ready for operation.<sup>13</sup>  
A connection to the **System server** is achieved via the **Ethernet**: If no **device configuration** is yet assigned to the **TCC/SBC**, the TCC/SBC is registered with a request in the system. The assignment is then carried out with the function *Search new TCC/SBC* at the **WinOperate** (see separate manual *Main Menu Settings*). The device is now **online**.  
  
The device specific program and further necessary data (e.g. tariff information) for operation are transferred to the **TCC/SBC** (if problems occur, “Reset 8” can be sent from WinOperate to the device (please note duration))  
  
The OUT\_01 carries out a self-test: The standby of the device components is checked.
  2. Check at the WinOperate whether **alarm messages** occur for the newly installed device and its device components.
  3. Insert the **function card No. 2 (TCC/SBC in operation)**.
    - The device is now in its normal operating mode. Please contact your DESIGNA service if problems arise during the function check.
1. Occupy the loop V (presence loop), e.g., with a vehicle and insert a ticket.
  2. Pay attention to the correct functioning of the display elements.

#### Simulate an exit


<sup>13</sup> The first booting can take up to 7 minutes.

## 11.4 Check other device components

### Check intercom device

1. Together with a colleague at the central switchboard for inter-communication, make sure that speech contact is established with the intercom device of the OUT\_01, and check the function and quality of this connection.

### Check heater (optional)

 **CAUTION**

**Hot surface!**  
 The surface of the heater may become hot during operation.  
 Contact with the heater may result in burns.  
 – Do not touch the surface of the heater.

---

**i** The switching thresholds for switching the heater are stored in the system. The setting and adjustment of the values (recommended temp.: 20°C) is carried out exclusively by DESIGNA electrical technicians or by electrical technicians of DESIGNA trained and authorized dealers and partners.

### Check fan

The switching thresholds for switching the fan are stored in the system.

---

**i** Any settings and adjustments have to be made by DESIGNA electrical technicians or by electrical technicians of DESIGNA trained and authorized dealers and partners.

### Check humidity sensor

The humidity inside the device is controlled by a humidity sensor.

---

**i** Any settings and adjustments have to be made by DESIGNA electrical technicians or by electrical technicians of DESIGNA trained and authorized dealers and partners.  
 Recommended humidity: 70%.

## 12 Operation

As part of the ABACUS system the OUT\_01, together with a barrier, marks the exit of an area in which a fee has to be paid for parking a vehicle.

If a vehicle occupies the loop V (presence loop) it is registered as an input signal at the OUT\_01 and triggers the standby for card acceptance at the device (e.g. **short term parker tickets**, **season parker cards** or **debit cards**).

Different processes are handled by the OUT\_01:

- Exit with short term parker tickets
- Exit with season parker cards
- Exit with value cards
- Exit with prebooking (optional)
- Issue receipt
- Requesting card parameters
- Trigger functions with function cards
- Open the barrier with key switch (optional)

These processes as well as possible error status recognition at the OUT\_01 are described below:

- Recognize error status

---

### **i**

All the information for processing is contained on magnetic strip tickets: Thus, processes with magnetic strip tickets are **offline compatible**.

However, the information for processing is only partially available on barcode tickets: Therefore, some processes are only partially **offline compatible** with barcode tickets. These restrictions are, if applicable, described below or in the operator manual *WinOperate*.

For credit card (or similar) and **RFID** processes the information about processing is in the **System server**.

Actions with these media are therefore based on an **online** connection.

---

## 12.1 Exit with short term parker tickets

	<p>The short term parker ticket is inserted into the OUT_01 to exit a car park.</p> <p><b>Exit entitlement</b> is checked due to the ticket's payment information, i.e. exit information.</p> <p>A valid exit entitlement also exists if a <i>free passing time</i> is set in the <b>system times</b> and the short term parker ticket <i>moves</i> within this time.</p>
<p><b>Magnetic strip ticket as short term parker ticket</b></p>	<p>After occupying the loop V, the <b>short term parkers</b> insert their short term parker tickets in the Multicon: The Multicon checks coded <b>exit entitlement (TCC/SBC address, car park no., payment-time and date)</b>.</p> <p>If no exit entitlement exists, a corresponding message appears on the display: Customers have to pay their incurred parking fees at the pay station or directly at the exit (if payment is optionally possible at the OUT_01: <b>drive&amp;pay</b>).</p> <p>With valid exit entitlement the ticket, according to the <b>device configuration</b>, is now either withdrawn or marked as deleted and returned (e.g. as an advertising medium). The barrier will open (if necessary, after the returned ticket has been removed).</p>
<p><b>Barcode ticket as short term parker ticket</b></p>	<p>After occupying the loop V, the <b>short term parkers</b> insert their short term parker tickets in the Multicon: The Multicon checks the second barcode printed during payment. This contains the <b>exit entitlement (TCC/SBC address, car park no., payment-time and date)</b>. Exiting with barcode short term parker tickets is thus basically <b>offline compatible</b>.</p> <p>Additionally, the short term parker ticket is sent to the <b>System server</b> with it's serial no. and exiting information.</p> <p>If no exit entitlement exists, a corresponding message appears on the display: Customers have to pay their incurred parking fees at the pay station or directly at the exit (if payment is optionally possible at the OUT_01: <b>drive&amp;pay</b>).</p> <p>With valid exit entitlement the ticket, according to the <b>device configuration</b>, is now either withdrawn or marked as deleted and returned (e.g. as an advertising medium). The barrier will open (if necessary, after the returned ticket has been removed).</p>
<p><b>Credit card or debit card as short term parker ticket (optional)</b></p>	<p>Optionally, credit cards or debit cards can be used as short term parker tickets.</p> <p>The short term parker uses a credit card or debit card as a means of identification after occupying loop V. The magnetic strip, chip or NFC chip is read.</p> <p>At the exit, the corresponding data record is searched for, the fee calculated and displayed. After paying with a debit card, a receipt of the payment transaction will be issued upon request.</p> <p>The barrier subsequently opens.</p>
<p><b>Licence plate as short term parker ticket (optional)</b></p>	<p>At the entrance, LPR cameras register the licence plate together with the entry data.</p> <p>The licence plate then serves as a means of identification for payment at the automatic pay station, at the exit or digitally via web or app.</p> <p>At the exit, the licence plate is read by LPR cameras and the <b>exit authorisation</b> is checked. An exit authorisation also exists if a <b>free</b></p>

**passaging time** is provided for in the system and the short term parker ticket still "moves" within this period.

*For more information, see separate instructions Ticketless and WinOperate.*

## 12.2 Exit with season parker cards

**Season parkers** are customers who wish to use the car park over a longer period and usually pay the incurred fees as lump sums in advance. In exchange, season parkers receive a season parker card as an entry medium, e.g. a plastic card with magnetic strip or pre-printed barcode, an **RFID** card or their licence plate is listed as a season parker card in the system.

### Plastic magnetic strip cards as season parker cards

After occupying the loop V, the season parkers insert their magnetic strip cards into the Multicon: The information on the card is read and the **exit entitlement** is checked (**group** information, set parameters).

If the card is a valid season parker card for the car park and for the current time and parking duration, the current information is coded onto the magnetic strip of the card and the card is reissued. The barrier does not open until the customer has removed the season parker card.

### Plastic barcode cards as season parker cards



Some item details can only be checked **online** in barcode systems (e.g. validity). Therefore, barcode season parker cards are refused **offline**, unless the barcode system configuration allows season parker cards to enter and exit the car park **offline**. This means certain item details are not checked offline (e.g. **validity, group time**).

After occupying the loop V, the season parkers insert their plastic barcode cards into the Multicon: The information on the card is read and the **exit entitlement** is checked (**group** information, set parameters).

If the card is a valid season parker card for the car park and for the current time and parking duration, the current information is send to the **System server** and the card is reissued. The barrier does not open until the customer has removed the season parker card.

### RFID cards as season parker cards (optional)

After occupying the loop V, the season parkers bring their **RFID** cards closer towards the **RFID** antenna (at different reading distances according to the type of **RFID** cards and antennas). The respective number is read, the corresponding number with the respective data record requested at the **System server** and the **exit entitlement** checked.

If the card is a valid season parker card for the car park and for the current time and parking duration, the current information is sent to the **System server** and filed there. The barrier opens.

### Licence plate as season parker cards (optional)

At the entrance/exit, the licence plate is read by LPR cameras

The licence plate is requested at the system server and the access authorisation is checked.

If the licence plate is valid for the car park, the current information and the registered card number are sent to and filed at the **System server**. The barrier opens.

*For more information, see separate instructions Ticketless and WinOperate.*

## 12.3 Exit with value cards

**Value cards** are coded with a certain value (amount of money) and subsequently sold to the customers for a set price. The incurred parking fee is deducted from the value card when exiting. This has the advantage that the customer does not have to pay at the automatic pay station. The residual value of the card is shown on the display when entering and exiting.

The customer receives a pre-coded value card. For example, in the magnetic strip system plastic magnetic strip cards or EasyMove cards can be used as value cards.

### Plastic magnetic strip cards as value cards

After occupying the loop V, the customers insert their plastic magnetic strip card into the Multicon and the information on the card is read.

Due to the entrance information (**TCC/SBC address**, car park no., as well as the entrance time and date) the parking fee is calculated, displayed and deducted from the value card. The current information is coded onto the magnetic strip of the card and the card is reissued. The barrier does not open until the customer has removed the value card.

### Plastic barcode cards as value cards



Some item details can only be checked **online** in barcode systems (e.g. *validity*). Therefore, barcode value cards are refused **offline**.

After occupying the loop V, the customers insert their plastic card with pre-printed barcode into the Multicon. The information on the card is read and requested at the **System server** as well as checked for the set parameters.

Due to the entrance information (**TCC/SBC address**, car park no., as well as the entrance time and date) the parking fee is calculated, displayed and deducted **online** from the value card at the System server. The current information is filed at the System server and the card is reissued. The barrier does not open until the customer has removed the value card.

### RFID cards as value cards (optional)

After occupying the loop V, the customers bring their **RFID** card closer towards the **RFID** antenna (at different reading distances according to the type of **RFID** cards and antennas). The respective number is read and requested at the **System server**.

Due to the entrance information (**TCC/SBC address**, car park no., as well as the entrance time and date), the parking fee is calculated, displayed and deducted from the value card at the **System server**. The barrier opens.

## 12.4 Exit with prebooking (optional)

If the prebooking option is available in the ABACUS system, car park customers can carry out prebookings: a planned stay in a car park can be booked and paid for in advance via a web application, e.g. at the car park operator's website, or via a smartphone park app.

Various ID media can be used at the entrance and exit: paper ticket, printed barcode, print@home ticket with QR Code, smartphone with QR Code, credit card; licence plate recognition, number code, etc.

Car park customers can exit the car park either without a ticket, e.g. with a barcode (QR Code) or a credit card, or with a paper ticket issued to the car park customer directly at the entrance during a media change.

**Exit without a ticket**

Car park customers are identified at the exit via their ID medium, e.g. a barcode (QR code) or a credit card. The information is read, requested at the **system server** and checked for validity. The barrier opens if **exit entitlement** is confirmed.

If no exit entitlement exists, a corresponding message appears on the display: Customers have to pay their incurred parking fees at the pay station or directly at the exit (if payment is optionally possible at the OUT\_01: **drive&pay**).

**Exit with paper ticket**

After occupying the loop V, the car park customer inserts the paper ticket issued during the **media change** into the Multicon: The Multicon checks coded **exit entitlement**.

If **exit entitlement** is confirmed, the paper ticket is drawn in and the barrier opens.

If no exit entitlement exists, a corresponding message appears on the display: Customers have to pay their incurred parking fees at the pay station or directly at the exit (if payment is optionally possible at the OUT\_01: **drive&pay**).

## 12.5 Receipt

**Receipt printout upon request**

After the payment process, tapping the *Receipt* button triggers a receipt printout. The receipt can be printed until the button disappears (approx. 30 seconds).

**Subsequent receipt printout**

The last ten unrequested receipts are stored in the ring buffer of the **SBC/TCC**.

If the car park customer did not request a receipt during the payment process, this function provides the customer with the opportunity to print out the receipt at a later date. If the ticket is re-inserted into the device after payment, the receipt is printed out automatically. This process can only be executed once. It is only possible if the requested receipt is one of the last ten unrequested receipts stored in the ring buffer.

**Automatic receipt printout**

In the configuration, you can specify whether a receipt is issued by default in your system when paying with girocards and credit cards. It is also possible to suppress automatic receipt printout for individual debit and credit cards in the credit card configuration.

**Digital receipt**

The digital receipt can be set as default in the configuration for the entire parking system.<sup>14</sup> After payment, a QR code is automatically displayed on the full-touch display, which can be scanned with the camera app to read the receipt. The receipt is downloaded as a PDF file via a link.

<sup>14</sup> from ABACUS system version X25.4



Fig. 45: Full touch display Digital Receipt

1. Scan the QR code with the camera app.
2. Open the link.
  - The receipt is displayed as a PDF file and can be saved separately and printed out.
  - ⇒ Tap *Wait* to extend the display period for the QR code.
  - ⇒ Tap *Close* if you do not want to digitally call up the receipt..

See also the chapter 'Display receipt details and print copy' in the separate *WinOperate* user manual.

## 12.6 Requesting card parameters

### Blacklist check

In the ABACUS system the **blacklist** serves to register undesired tickets and cards at the devices. Tickets can either be put on the blacklist automatically by the system (**card not entered**) or manually (*see the separate operator manual WinOperate*).

The **blacklist check** can be switched on or off for each device at the operating interface of the **WinOperate**. If the blacklist check for the device is switched on, the entered ticket is checked to see whether it is on the blacklist or not. Listed tickets are either rejected or withdrawn.

If the blacklist check is switched off, the device also accepts cards on the blacklist.

### I/O-check

The **I/O-check** (Inside/Outside-check) checks the **I/O-identification** of the ticket: For the I/O-identification of a ticket, the last used device (**TCC/SBC number**) is coded as magnetic information onto the ticket or (barcode, credit cards, **RFID** etc.) defined as information in the **System server**. Tickets with incorrect I/O-identification are rejected and marked as deleted or withdrawn.

If the ticket was last used at an Entrance or Pay Station, it is "inside" and next use, if the I/O-check is switched on, has to occur at an Exit (or Pay

Station). If the ticket was last used at an Exit next use has to occur at an Entrance or Pay Station.

The I/O-check can thus stop several vehicles being taken out of the car park with one card (e.g. if two exits, one after the other, are attempted with the same card without an entrance having been used in the meantime) because, after using the card *once* at an exit, next use has to be at an entrance.



For **credited season** parkers the I/O-check always has to be switched on otherwise no tariff calculation occurs (see *separate operator manual WinOperate*).



If the barcode system configuration allows season parker cards to enter and exit the car park **offline**, there is no offline I/O-check.

---

## 12.7 Trigger functions with function cards

Besides normal operation it is possible to trigger certain functions at the OUT\_01 with **function cards**. For this, the loop V has to be unoccupied.

If the OUT\_01 has to be temporarily taken out of service due to an error status, it can be done using the function card 01 *TCC/SBC out of service*: No further functions are carried out and the display shows the message *Out of service*.

The reading device remains active, so that the device can be put back into operation using the function card 02 *TCC/SBC in service*. This function can also occur via the command *Device in service* at the **WinOperate**.

*See the separate operator manual Function cards for further functions and the handling of the function cards.*

## 12.8 Open barrier with key switch (optional)

In addition to opening the barrier with the function card *open barrier*, it is also possible to optionally open the barrier connected to the OUT\_01 with a key switch.

By turning the key to the *open* position a contact switch is triggered: The barrier opens and stays open until the key is turned to the *closed* position. The barrier also stays open if the key is turned to the central starting position and removed.

By turning the key to the *closed* position a single action is triggered by the contact switch: The barrier closes and returns to the normal operating mode.

## 12.9 Recognise error status

If errors or shortages occur at the device components, they are registered as a signal at the **TCC/SBC**. The TCC/SBC generates corresponding **alarm messages** and these are sent to the **System server**.

The **WinOperate** displays an occurred device alarm message, detailed information can be requested via the *alarm message overview* of the device (*see the separate operator manual WinOperate*).

# 13 Filling and Emptying

## 13.1 Safety

### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

Filling and emptying are carried out with the device switched on.

When the device is switched on, the power supply (230V) is connected to the following components: Terminal block-X0, mains filter, power supply unit, and to the optional socket, heater and, if necessary, to further optional components. See *chapter 5 Device Description on page 27*.

Contact with live components may result in death.

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.

### Risk of crushing fingers

#### CAUTION

##### **Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

## 13.2 Tickets and reels

### 13.2.1 Empty the ticket receptacle

1. Empty the ticket receptacle.

### 13.2.2 Replacing the receipt reel

1. Check the supply of paper on the receipt reel.
2. If necessary, replace the receipt reel or have a paper reel ready, if an imminent exchange is expected (see *chapter 19.4 Filling and emptying the receipt printer on page 131*).

# 14 Maintenance

## 14.1 Safety

### Electric voltage

#### **DANGER**

##### **Danger of death due to electric shock!**

Contact with live components may result in death.

- Certain maintenance work may be carried out by Designa trained operating personnel familiar with the user manual and the safety instructions. All other maintenance work may only be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners and is marked accordingly.
- Switch off the device unless the work step requires a voltage supply.
- Keep moisture and dust away from live parts. Moisture or dust may cause a short circuit. If the maintenance work is established at precipitation, e.g. rain or snow, penetration of moisture must be prevented by suitable measures, such as a protective cover.

### Electric voltage

#### **DANGER**

##### **Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds (see *chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44*).

### Inappropriate cleaning and basic services

#### **WARNING**

##### **Risk of injury from inappropriate cleaning and basic services!**

Inappropriate cleaning and basic services can cause severe or lethal injuries.

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- Make sure that cleaning fluids are neither swallowed nor come into contact with eyes.

**Risk of crushing fingers****⚠ CAUTION****Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

**Inappropriate cleaning with air pistols****⚠ CAUTION****Risk of injury due to inappropriate cleaning with air pistols!**

Inappropriate cleaning with air pistols may result in minor injuries or damage to eyes due to flying particles.

- Always wear safety goggles.
- Prevent air penetrating the body through skin injuries.
- Do not aim air pistols at people.
- Only use air pistols with a maximum pressure of 3.5 bar.
- Only use air pistols with a reduced noise level (multi-hole nozzles).

**Inappropriate cleaning****NOTICE****Inappropriate cleaning can result in damage to the device.**

There are sensitive electronic components inside the device.

Dust and moisture can have a negative effect on the accuracy and the service life of the individual components.

Aggressive cleaning agents and auxiliary materials can damage or destroy the components or surface coating of the casing.

- Always keep the inside of the device clean and ensure that no moisture enters into it.
- If necessary, completely wipe off any water from the casing or door before opening the device.
- Do not use aggressive cleaning agents, such as thinners or cleaning solvents, to clean the device.
- Do not use any steam cleaners or high-pressure cleaners.

**Personal protective equipment**

The following must be worn during all work:

- Work clothes
- Protective gloves
- Safety shoes

## 14.2 Cleaning items

The following cleaning items can be ordered from DESIGNA:

DESIGNA order no.	Description	Content
7232148932	Cleaning tickets for Multicon MC 120	10 tickets
7232148935	Cleaning tickets for receipt printer	15 tickets
7232148934	Cleaning tickets for banknote reader NBA	15 tickets
7232148939	Cleaning kit for PIN pad	2 cleaning tickets with moving slider 3 pre-soaked cleaning tickets
7232148940	Cleaning tickets for TCU	10 tickets
7232148941	Cleaning cloths soaked with plexiglass cleaner	10 cloths
7232148915	Cleaning fluid	100 ml
7232148909	Compressed air spray	400 ml
7232148929	Cleaning starter kit	1 microfiber cloth 1 small cleaning ticket for MC 100/120 1 large cleaning ticket for MC 120 1 compressed air spray 100 ml 2 disinfectant cloths

## 14.3 Maintenance Schedule

The following sections describe maintenance work that is necessary to guarantee reliable and trouble-free operation.

Certain maintenance work may be carried out by Designa trained operating personnel familiar with the user manual and the safety instructions. All other maintenance work may only be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners and is marked accordingly.

Maintenance intervals are given in months or cycles, depending on whichever comes first.

The maintenance intervals should be seen as approximate values and may differ depending on the ambient conditions and frequency of use.

If an increase in contamination is detected during routine inspections, the specified maintenance intervals must be shortened accordingly based on the actual level of contamination.

Perform maintenance work during periods of low traffic so as not to interrupt normal service.

Have replacements of the individual components at the ready so that they can be replaced as part of extensive maintenance work.

If you have any questions about maintenance work and intervals, contact your Designa Service.

**14.3.1 General maintenance**

	Required qualification		Maintenance intervals							
	Operating personnel	DESIGNA electrical technicians	Weekly	Monthly	Every 2 months	Every 3 months	Every 6 months	Every 12 months	Every 4 years	According to cycles
<b>Visual inspection of device and components</b>	x					x				
<b>Checking safety relevant user guidance stickers and images</b> <i>See Checking safety labels on page 96</i>	x			x						
<b>Casing</b> <i>See Cleaning the casing on page 96</i>										
Check door locks and bolts for ease of movement	x					x				
Clean casing exterior	x						x			
Clean front plate	x						x			
Clean device interior	x							x		
Adjust device door, grease hinges	x							x		
Check door switch	x							x		
Check the device interior and exterior as well as all the fastening materials for damage and corrosion and, if necessary, eliminate corrosion damage, touch up paintwork		x						x		
Make sure the casing and bolt connections are secured firmly		x						x		
<b>Display</b> <i>See Cleaning the display on page 97</i>										
Clean display and check it for damage	x					x				
<b>Checking intercom and speech connection</b> <i>See Checking the intercom device on page 98</i>	x						x			

	Required qualification		Maintenance intervals							
	Operating personnel	DESIGNA electrical technicians	Weekly	Monthly	Every 2 months	Every 3 months	Every 6 months	Every 12 months	Every 4 years	According to cycles
<b>Connection, cabling, voltage, grounding</b> <i>See Checking the residual current circuit breaker (RCD) or residual current operated circuit-breaker with overcurrent protection (RCBO) on page 98</i>										
Check installed residual current device (RCD) or residual circuit breaker with overcurrent protection (RCBO) using the test button	x			x						
Check electrical cables for damage		x						x		
Make sure cable connections (terminal blocks and plugs) are inserted correctly		x						x		
Visually inspect all the ground connections		x						x		
Measure voltages		x						x		
<b>Checking and adjusting heater (in the winter)</b> <i>See Checking and adjusting heating on page 98</i>		x						x		
<b>Checking and adjusting humidity sensor</b> <i>See Checking and adjusting humidity sensor on page 98</i>		x						x		
<b>Checking and adjusting fan (in the summer)</b> <i>See Checking and adjusting fan on page 99</i>		x						x		
<b>Cleaning and checking 2D Barcode Scanner</b> <i>See Cleaning the 2D Barcode Scanner on page 99</i>										
Check and clean 2D Barcode Scanner	x			x						
Check firmware version of the 2D Barcode Scanner and, if necessary, update it		x						x		
<b>Cleaning and checking surveillance camera (visual inspection)</b>	x			x						
<b>Cleaning and checking LPR camera (visual inspection)</b>	x			x						
<b>Cleaning PIN pad</b> <i>See Cleaning the PIN pad on page 99</i>										
Clean chip contacts using a slider ticket	x		x							

	Required qualification		Maintenance intervals							
	Operating personnel	DESIGNA electrical technicians	Weekly	Monthly	Every 2 months	Every 3 months	Every 6 months	Every 12 months	Every 4 years	According to cycles
Clean chip and magnetic track reader using a cleaning ticket	x				x					
Check correct functioning	x							x		
<b>RFID systems</b>										
Check correct functioning	x							x		
Check antenna for damage and, if necessary, make sure it is inserted correctly	x							x		
<b>Checking the UPS function, replacing the battery if necessary</b>	x							x		
<b>Checking the MP3 module function</b>	x							x		
<b>Checking correct functioning of key-operated switch/fire department switch</b>	x			x						
<b>Checking correct functioning of relay output</b>		x						x		
<b>Checking correct functioning of external switching options</b>		x						x		
<b>Checking correct functioning of network components (e. g. DSL modem)</b>		x						x		
<b>Checking correct functioning after completing maintenance work</b>		x						x		
<b>Testing to German accident prevention regulation (DGUV-V3)</b> <i>See Testing in accordance with accident prevention regulations on page 72</i>		x						x		

## 14.3.2 Maintenance of modules

	Required qualification		Maintenance intervals							
	Operating personnel	DESIGNA electrical technicians	Weekly	Monthly	Every 2 months	Every 3 months	Every 6 months	Every 12 months	Every 4 years	According to cycles
<b>Multicon MC 120</b> <i>See Carrying out maintenance work at Multicon MC 120 on page 113 and Filling and emptying Multicon MC 120 on page 112</i>										
Clean ticket transport routes and write(/read) unit using the DESIGNA cleaning ticket	x			x						30,000 tickets
Clean ticket transport routes, write(/read) unit and cutters using compressed air	x			x						30,000 tickets
Clean transport rollers using a microfiber cloth	x			x						30,000 tickets
Clean reading heads and/or barcode glass panel of the write(/read) unit using a microfiber cloth	x			x						30,000 tickets
Clean wire matrix printer head or thermal printer head using a microfiber cloth	x			x						30,000 tickets
Prepare test ticket, check the ticket imprint and, if necessary, change the ribbon cartridge	x			x						30,000 tickets
Prepare test ticket, check the ticket cutting position and, if necessary, readjust it	x			x						30,000 tickets
After completing maintenance work, check that connecting cables are inserted correctly	x			x						
After completing maintenance work, check and align the position of the Multicon insertion slot	x			x						
Check ticket transport routes, write(/read) unit, wire matrix printer or thermal printer and clean thoroughly		x						x		250,000 tickets
Check firmware version and, if necessary, update it		x						x		

	Required qualification		Maintenance intervals							According to cycles
	Operating personnel	DESIGNA electrical technicians	Weekly	Monthly	Every 2 months	Every 3 months	Every 6 months	Every 12 months	Every 4 years	
<b>Multicon MC Barcode</b> See <i>Carrying out maintenance work at Multicon MC Barcode on page 125 and Filling and emptying Multicon MC Barcode on page 123</i>										
Clean ticket transport routes, ticket printer with cutter and barcode ticket reader with compressed air	x			x						30,000 tickets
Clean thermal line using a microfiber cloth	x			x						30,000 tickets
Clean transport rollers using a microfiber cloth	x			x						30,000 tickets
Clean glass panel of the barcode card reader and the mirror using a microfiber cloth	x			x						30,000 tickets
After completing maintenance work, check that connecting cables are inserted correctly	x			x						
After completing maintenance work, check and align the position of the Multicon insertion slot	x			x						
Check firmware version and, if necessary, update it		x						x		

	Required qualification		Maintenance intervals							According to cycles
	Operating personnel	DESIGNA electrical technicians	Weekly	Monthly	Every 2 months	Every 3 months	Every 6 months	Every 12 months	Every 4 years	
<b>SBC</b> See <i>chapter Function on page 100</i>										
Check plug contacts		x						x		

	Required qualification		Maintenance intervals							
	Operating personnel	DESIGNA electrical technicians	Weekly	Monthly	Every 2 months	Every 3 months	Every 6 months	Every 12 months	Every 4 years	According to cycles
<b>Receipt printer</b> <i>See Carrying out maintenance work at the receipt printer on page 133 and Filling and emptying the receipt printer on page 131</i>										
Clean receipt printer using compressed air	x							x		
Clean receipt printer using cleaning strips	x			x						

## 14.4 Checking safety labels

### Check safety signs

1. Make sure that the safety signs near the device are visible and can always be easily read.

### Check safety labels

2. Make sure that the safety labels on the device are visible and can always be easily read.

### Check user prompting labels and diagrams

3. Pay attention to good perceptibility of the user prompting labels and diagrams.

## 14.5 Cleaning the casing

### 14.5.1 Cleaning casing outside

#### Clean the casing

1. Clean the casing regularly with a soft cloth and a mild cleanser. Clean the casing more often, if there is a high degree of soiling (e.g. dusty environment).

#### Clean the casing when using gritting salt in the winter

### NOTICE

Gritting salt can damage the paintwork of the casing and may result in corrosion.

Clean the outside of the casing monthly with a soft cloth and a mild cleaning agent if gritting occurs in the vicinity.

### 14.5.2 Cleaning the Plexiglas® front panel

1. Clean the front panel with a soft cloth and a plexiglass cleaning agent.

#### NOTICE

Do not dry clean the front panel, dry cleaning may cause electrostatic charges to build up.

Do not use any customary microfibre clothes, abrasive agents or aggressive agents like ethyl alcohol or Isopropanol.

Recommended cleanser: Designa cleaning clothes, washing-up liquid-water-solution or antistatic plexiglass cleaning agent.

### 14.5.3 Cleaning inside the device

1. Switch off the device.
- 2.

#### NOTICE

##### Device might become damaged.

- Pay attention to cleanliness inside the device and clean it more than once a month if there is a high degree of soiling (e.g. dusty environment).
- Do not use any aggressive agents like thinners or petroleum ether for cleaning the casing. Recommended cleanser: Washing-up liquid-water-solution.

Clean the inside of the device regularly with a soft cloth and a mild cleanser.

3. Carefully vacuum inside the device if it is very dirty beforehand
4. Carefully vacuum the mounting plates.
5. Switch on the device.

### 14.5.4 Checking the door switch

1. Open the device door and check that an alarm message has been sent to the system server.
2. Pull out the door switch and make sure a closed device door is simulated.

### 14.6 Cleaning the display

1. Clean the display with a soft cloth and a mild cleaning agent  
Recommended cleanser: antistatic plexiglass cleaning agent.
2. Check the display for damage.

## 14.7 Checking the intercom device

1. Together with a colleague at the central switchboard for inter-communication, make sure that speech contact is established with the intercom device of the device, and check the function and quality of this connection.

## 14.8 Checking the residual current circuit breaker (RCD) or residual current operated circuit-breaker with overcurrent protection (RCBO)

Device switched on.

1. Regularly use the RCD or RCBO test button to check correct functioning.
  - This simulates a fault and, if the RCD or RCBO is functioning correctly, the electric circuit of the device is disconnected: The RCD or RCBO switch is set to OFF (downwards).
2. Click the RCD or RCBO switch to ON (upwards) after a successful test. If the test was unsuccessful, inform your DESIGNA Service.



Recommended:  
Always record the functional test - principally for reasons of liability.

## 14.9 Checking and adjusting heating

### CAUTION

#### Hot surface!

The surface of the heater may become hot during operation.

Contact with the heater may result in burns.

- Do not touch the surface of the heater.



The switching thresholds for switching the heater are stored in the system. The setting and adjustment of the values (recommended temp.: 20°C) is carried out exclusively by DESIGNA electrical technicians or by electrical technicians of DESIGNA trained and authorized dealers and partners.

## 14.10 Checking and adjusting humidity sensor

Measurement and control of the relative humidity inside the device is done by a humidity sensor.



The optimum setting to a lower humidity (recommended: 70%) is made in the system and has to be carried out exclusively by DESIGNA electrical technicians or electrical technicians of DESIGNA trained and authorized partners.

## 14.11 Checking and adjusting fan



The switching thresholds for switching the fan are stored in the system. Any settings and adjustments have to be made by DESIGNA electrical technicians or by electrical technicians of DESIGNA trained and authorized dealers and partners.

## 14.12 Cleaning the 2D Barcode Scanner

- ⇒ Clean the plexiglass plate of the 2D Barcode Scanner with a soft cloth and a mild cleaning agent.  
Recommended cleanser: antistatic plexiglass cleaning agent.

## 14.13 Cleaning the PIN pad

### 14.13.1 Cleaning the chip contacts using cleaning ticket and slider

Switched on device.

1. Insert the cleaning ticket with the moving slider and the fleece facing up into the ticket reader.
2. Hold the cleaning ticket firmly with one hand and simultaneously move the slider back and forth several times with the other hand.
3. Mark the cleaning process on the field. When you have marked all 12 fields, dispose of the cleaning ticket.

### 14.13.2 Cleaning the chip and magnetic track reader using a cleaning ticket

Switched on device.

1. Insert the pre-soaked cleaning ticket into the card reader.
2. Repeat this process several times.

## 15 SBC (Single Board Computer) module

### NOTICE

**The SD card of the controller must not be removed.**

- The terminal OUT\_01 without an SD card.
- The SD card is connected to the terminal OUT\_01 during production and cannot be used in other terminals
- Inserting the SD card into an unconnected terminal modifies the data on the SD card. An SD card with modified data can no longer be used with the original terminal.

### 15.1 Function

In the system ABACUS, the **SBC** (Single Board Computer) controls the operation and functions of the individual device components with the required program.

The SBC is centrally controlled by the **system server** and identified and addressed via IP addresses.<sup>15</sup>

Various components are connected to the SBC and are fully or partially controlled from there.

### 15.2 Design and operation

### CAUTION

**Improper operation of the SBC may lead to the device malfunctioning.**

- If the SBC needs to be replaced, the entire module is replaced.
- Avoid unnecessary switching on and off at the device OUT\_01. An operating system is installed on the SBC, which needs some time to boot after switching on.



The device is delivered with user-specific default settings.

Adjustments to the setting values are made exclusively in WinOperate and are carried out by your DESIGNA service.

The components are delivered with user-specific default settings.

The threshold values for the heater and fan are stored in the system and are controlled via the SBC.

The setting values for the TFT colour display (24"), the Full touch display (10.1"), VoIP and RFID are already stored in the system and are controlled via the SBC.

<sup>15</sup> The IP addresses and the associated SBC addresses are set up in the *system configuration* for your system before delivery or by your DESIGNA service.

**SBC (Single Board Computer)**

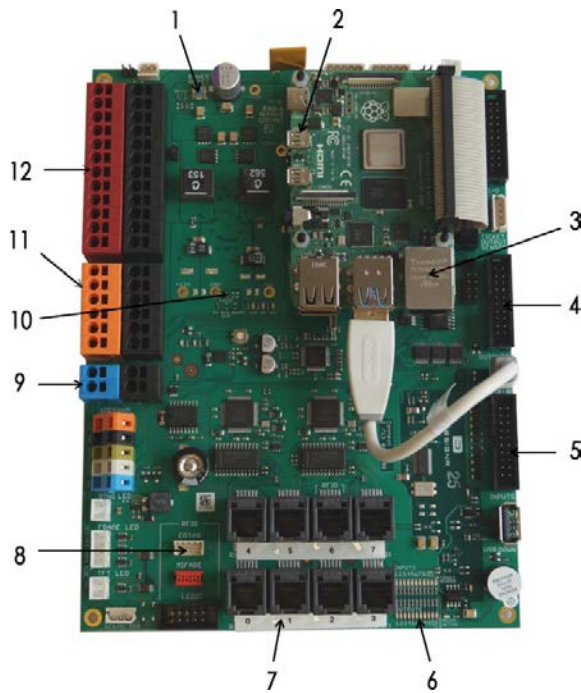


Fig. 46: SBC Mainboard IN/OUT V3

- |  |   |
|--|---|
| <p>1 Power/Reset</p> <p>2 HDMI port for display</p> <p>3 Ethernet interface, RJ45</p> <p>4 Outputs:</p> <ul style="list-style-type: none"> <li>- Optional relay output</li> <li>- Intercom request</li> <li>- Fan</li> <li>- Heater</li> <li>- 6 optional outputs</li> </ul> | <p>5 Inputs:</p> <ul style="list-style-type: none"> <li>- Ticket/Ticket shortage</li> <li>- Door switch</li> <li>- EMI 1 / EMI 2 / EMI 3</li> <li>- Ticket request</li> <li>- 4 optional outputs</li> </ul> <p>6 Activity LED, inputs/outputs</p> <p>7 Serial interfaces</p> <p>8 RFID port</p> <p>9 5V voltage supply</p> <p>10 Voltage supply LED</p> <p>11 12V voltage supply</p> <p>12 24V voltage supply</p> |
|--|---|

**Serial interfaces**

The device-internal communication takes place via serial data exchange (RS 232).<sup>16</sup>



- 0 = tty USB 0
- 1 = tty USB 1
- 2 = tty USB 2
- 3 = tty USB 3
- 4 = tty USB 4
- 5 = tty USB 5
- 6 = tty USB 6
- 7 = tty USB 7

Fig. 47: Serial interfaces

**Ethernet interface, RJ45**

The LAN (Local Area Network) is connected to the SBC at the *Ethernet interface*.

<sup>16</sup> A conversion for parallel device components (e.g. older barrier models and complex barrier applications) is performed via the *I/O interface module* (see separate module section).

<b>Activity LED</b>	The <i>Activity LED</i> indicates send and receive activity during data transmission ( <b>Ethernet</b> ).
<b>Voltage supply LED</b>	The <i>Voltage supply LED</i> indicates that supply voltage is applied.
<b>24V voltage supply</b>	The SBC is provided with 24V DC via the voltage supply.
<b>microSD slot</b>	Slot for a <i>microSD memory card</i> that contains the SBC's operating system.
<b>Power/Reset button</b>	Activating the <i>Power/Reset button</i> restarts the SBC. This process takes about 45 seconds. The SBC module can be switched off via the on/off switch.
<b>Heater</b>	The switching thresholds for switching the heater are stored in the system. Temperature settings in the system are carried out by your DESIGNA service.
<b>Fan</b>	The switching thresholds for switching the fan are stored in the system. Settings in the system are carried out by your DESIGNA service.
<b>Display</b>	The contrast for the TFT colour display (24") and the Full touch display (10.1") is set in the system by your DESIGNA service.
<b>DESIGNA VoIP</b>	The volume of the <i>DESIGNA VoIP speakers</i> is set in the system by your DESIGNA service. The sensitivity of the <i>DESIGNA VoIP microphone</i> is set in the system by your DESIGNA service. Noise suppression of the microphone amplifier is set in the system by your DESIGNA service.

### 15.3 Assignment of contacts

The inputs and outputs are assigned as follows depending on the function in the device:

### 15.3.1 SBC Mainboard IN/OUT: Digital Inputs

Input type: IN1 - IN10 Low active, Switching threshold  $\leq 2$  V DC  
 Maximum voltage: IN1 - IN10 26 V DC

PIN	Name	Input	Function
1	IN1	DIG IN1	Ticket request button
2	GND		
3	IN2	DIG IN2	Intercom call request button
4	GND		
5	IN3	DIG IN3	Free configurable
6	GND		
7	IN4	DIG IN4	Free configurable
8	GND		
9	IN5	DIG IN5	Free configurable
10	GND		
11	IN6	DIG IN6	Free configurable
12	GND		
13	IN7	DIG IN7	Ticket storage low
14	GND		
15	IN8	DIG IN8	Vehicle classifying (large vehicle/ small vehicle)
16	GND		
17	IN9	DIG IN9	Free configurable
18	GND		
19	IN10	DIG IN10	Free configurable
20	GND		

### 15.3.2 SBC Mainboard IN/OUT: Digital Outputs and Relays

Output type: REL1 - REL2 Potential free  
 OUT3 - OUT10 0 V switching (to GND)  
 Maximum voltage: REL1 - REL2 60 V DC  
 OUT3 - OUT10 40 V DC  
 Current carrying capacity: REL1 - REL2 max. 1 A, 24 V DC  
 OUT3 max. 1.4 A, short-circuit proof  
 OUT4 - OUT10 max. 285 mA per output, current-limited

PIN	Name	Output	Function
1	OUT1	REL1	Relay contact door opener
2	OUT1		
3	OUT2	REL2	Relay contact 3rd party intercom
4	OUT2		
5	OUT3	DIG OUT3	Housing fan
6	+24V		
7	OUT4	DIG OUT4	housing heater
8	+24V		
9	OUT5	DIG OUT5	activate speaker MP3/Intercom
10	+24V		
11	OUT6	DIG OUT6	PINPad Illumination
12	+24V		
13	OUT7	DIG OUT7	Enable RFID reader
14	+24V		
15	OUT8	DIG OUT8	Transparent 1
16	+24V		
17	OUT9	DIG OUT9	Transparent 2
18	+24V		
19	OUT10	DIG OUT10	Transparent 3
20	+24V		



From system version X25.4 onwards, outputs DIG OUT5 to DIG OUT10 are freely configurable.

# 16 Module I/O Interface Midi-P-USI (12 I/O) (optional)

## 16.1 Functioning

The module *I/O interface* is optionally used at the device OUT\_01. The *I/O Interface* is serially connected to the TCC/SBC and provides digital inputs and outputs for communication between the TCC/SBC and functional units in the device or a connected barrier (parallel connection).

## 16.2 Design and operation

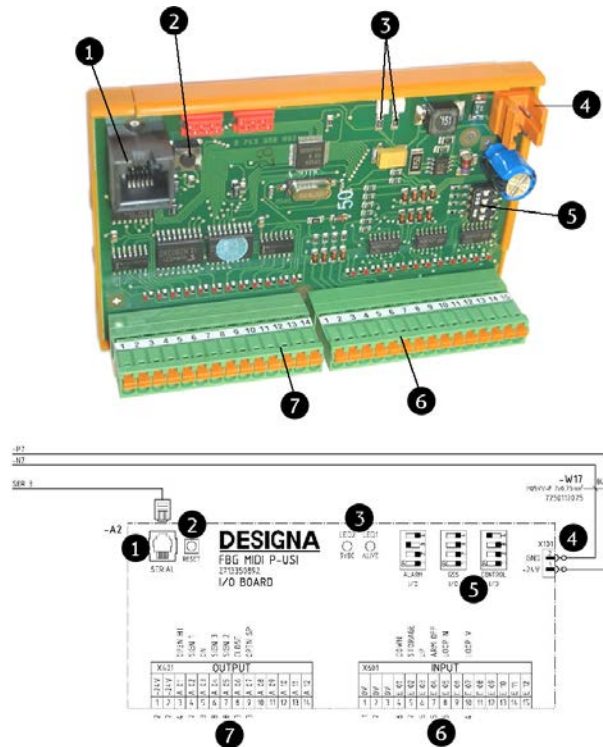


Fig. 48: I/O interface Midi-P-USI (here I/O interface assignment of an entrance control terminal)

- 1 Serial connection
- 2 Reset button
- 3 LED power supply
- 4 24V power supply
- 5 Function DIP switch
- 6 Inputs E1-E12
- 7 Outputs A1-A12

### Serial connection

The TCC/SBC is connected via the *serial connection*.

### Reset button

Use the *Reset button* to reset (restart) the program runs of the *I/O interface* Midi-P-USI).

### LED power supply

The two *LEDs power supply* display the correct power supply for the *I/O interface* Midi-P-USI.

Continuously lit LED 5V (on the left in figure): Logic power supply OK

Continuously lit LED 24V (on the right in figure): Operating power supply OK

**24V power supply**

The I/O interface Midi-P-USI is supplied with 24V DC via the *24V power supply*.

**Function DIP switch**

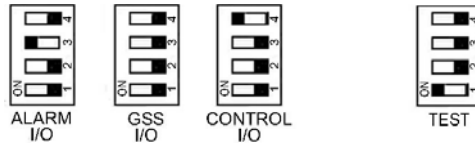


Fig. 49: DIP switch positions

The function with which the I/O interface Midi-P-USI is used at the device OUT\_01 is set at the *function DIP switch*:

**Control I/O**

Communication between the TCC/SBC and the functional units in the device

**Alarm I/O**

The same as *Control I/O*, but with a different configuration of contact E03 and A12.

**GSS I/O**

Communication between the display and buttons (for optional *TFT display*)

**Test mode**

The same as *I/O interface 16 I/O* (see *Technical Service Instructions I/O Interface 16 I/O*).

⇒ Press the *Reset button* to accept modified DIP switch positions.

**Inputs E1-E12**

The I/O interface Midi-P-USI has twelve *inputs E1-E12*.

The inputs switch low active.

(The plug of the inputs is equipped with 13 pins to ensure correct insertion.)

**Outputs A1-A12**

The I/O interface Midi-P-USI has twelve *outputs A1-A12*.

(Not short circuit-proof, up to max. 100mA per circuit, total circuit maximum for all outputs: 300mA).

## 16.3 Assignment of contacts

The inputs and outputs are assigned as follows depending on the function in the device:

### 16.3.1 MIDI-P-USI: Digital Inputs

Digital Inputs

Low active

PIN	Name	Barrier connected to Midi-P-USI	Midi-P-USI I/O Board
4	E01	Barrier status: closed	Free configurable
5	E02	Free configurable	Free configurable
6	E03	Barrier status: open	Free configurable
7	E04	Barrier arm status: broken	Free configurable
8	E05	Detector N status: occupied	Free configurable
9	E06	Free configurable	Free configurable
10	E07	Detector V status: occupied	Free configurable
11	E08	Free configurable	Free configurable
12	E09	Free configurable	Free configurable
13	E10	Free configurable	Free configurable
14	E11	Free configurable	Free configurable
15	E12	Free configurable	Free configurable

### 16.3.2 MIDI-P-USI: Digital Outputs

Digital Outputs

0 V switching

PIN	Name	Barrier connected to Midi-P-USI	Midi-P-USI I/O Board
3	A01	Open barrier for short term parker (STP)	Free configurable
4	A02	Free configurable	Free configurable
5	A03	Set barrier in service	Free configurable
6	A04	Free configurable	Free configurable
7	A05	Free configurable	Free configurable
8	A06	Close barrier	Free configurable
9	A07	Open barrier for season parkers 1 (SP 1)	Free configurable
10	A08	Free configurable	Free configurable
11	A09	Free configurable	Free configurable
12	A10	Free configurable	Free configurable
13	A11	Free configurable	Free configurable
14	A12	Free configurable	Free configurable

The necessary inputs and outputs for the operation of a barrier (underlain with grey) are available at the parallel connector barrier. (see *chapter 8.6 Connection barrier (terminal block -X2) on page 69*).

# 17 Module Multicon MC 120

**i** The description of the Multicon below as ABACUS system module includes its complete functions for all devices. Information about specific functions or variants which are only available for certain devices is referred to separately.

## 17.1 Functioning

The Multicon MC 120 is used to process tickets and cards and can be equipped with magnetic strip and/ or barcode technology. Depending on the device and the applied technology, various equipment levels are possible.

## 17.2 Design and operation

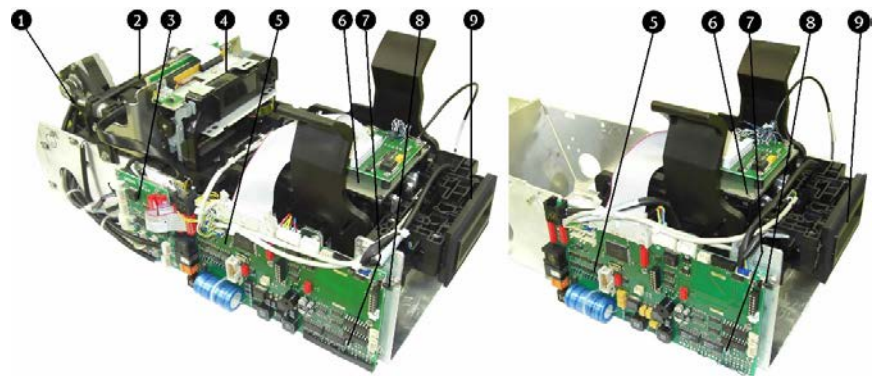


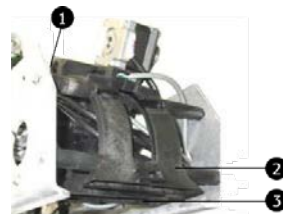
Fig. 50: Multicon with magnetic strip technology (example for equipment at ENT (left) and EXT (right))

- 1 Feeding unit and rear parking position
- 2 Self-sharpening cutter
- 3 PCB MC 120 paper feeder + cutter
- 4 Ticket printer (here: wire matrix printer in magnetic strip system)
- 5 PCB MC 120 mainboard
- 6 Write(/read) unit (here: in magnetic strip system)
- 7 Reset button
- 8 Test ticket button
- 9 Multicon insertion slot

Not shown:

- 10 Bottom ticket draw-in (paper tickets)

### Feeding unit and rear parking position



- 1 Rear parking position
- 2 Feeding channel I
- 3 Feeding channel II

Fig. 51: Feeding unit and rear parking position

Rear parking position  
(feeding channel I blocked)

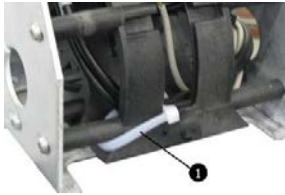


Fig. 52: Feeding channel I blocked

Feeding channel I and  
feeding channel II



Fig. 53: Feeding gap MPS

**Self-sharpening cutter**

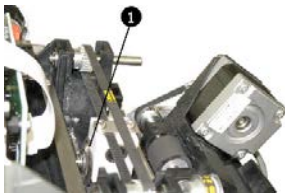


Fig. 54: Self-sharpening cutter

**FBG MC 120 Paper feeder +  
Cutter**

**Ticket printer**

Wire matrix printer (only  
magnetic strip technology)



Fig. 55: Wire matrix printer

Paper tickets or plastic cards are “parked” in the *rear parking position* ❶ while processing other types of cards, e.g. payment processes with debit or credit cards or when processing **value cheques**.

*Feeding channel I* ❷ cannot be used in case the parking position is used at the device, and is thus blocked.

**i**

If a *rear parking position* is desired (e.g. credit card or value cheque processing), do not remove the block ❶ at *feeding channel I* and refrain from using it.

The *feeding channels I+II* enable ticket feeding from a strip: Paper tickets are fed from one or two<sup>17</sup> ticket magazines to the *write(/read) unit*.

When using options (e.g. *rear parking position* (see above)), the entire *feeding channel I* should not be used and is thus blocked.

MPS 120: If necessary, *feeding gap MPS* ❶ at *feeding channel I* is used if the option “Ticket feeding from strip” is desired and carried out at the back of the casing).

The *self-sharpening cutter* ❶ enables the cutting of paper tickets from a strip.

Due to its mechanical characteristics the cutter is self-sharpening and maintenance free.

The actions of the feeding unit and cutter are controlled via the *PCB MC 120 paper feeder + cutter*. The *PCB MC 120 paper feeder + cutter* is connected to the *PCB MC 120 mainboard* via a flat conductor cable and receives all the necessary control signals from here.

A wire matrix printer **or** a thermal printer can be used for magnetic strip technology; barcode technology only allows the application of a thermal printer.

The printed circuit board of the ticket printer (*PCB ticket printer*) is connected to the *PCB MC 120 mainboard* and receives all the necessary control signals from here.

The wire matrix printer prints the paper tickets in plain text with digits from 0-9 and capital letters on several lines.

The number of characters per line is limited to 28.

<sup>17</sup> Only ENT 120 and IN 1307: For information on *double ticket magazine* also see the section *Device Description/ Ticket magazine holder*.

## Thermal printer

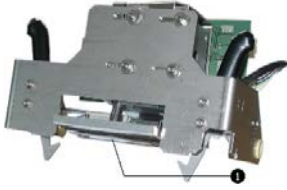



Fig. 56: Thermal printer

A thermal printer can also be used in magnetic strip systems to utilize additional options for ticket printing (e.g. graphical presentation).

In a barcode system, a thermal printer is always used at the Multicon of the ENT 120 and APS 120 to print barcodes for ticket processing (as well as additional ticket information, if required).

The thermal printer uses thermal printing technology to print paper tickets. The number of characters per line is limited to 28. Paper tickets with an "interleaved 2 of 5" barcode are printed.

### NOTICE

Always handle the thermal printer with care to prevent damages to the delicate *thermal print head* .

## PCB MC 120 mainboard

The Multicon is equipped with a printed circuit board (*PCB MC 120 mainboard*) which has serial communication with the **TCC/SBC** and takes control of the processes.

---

**i** The *PCB MC 120 mainboard* connection assignment is described in the separate instructions *PCB MC 120 mainboard*.

---

## Write(/read) unit

The *write(/read) unit* at the Multicon depends on the applied technology:

---

**i** Barcode and magnetic strip technology can be used simultaneously at a Multicon, e.g. to ensure credit card processing in a barcode system.

---

## Magnetic strip technology

The *write(/read) unit* is equipped for magnetic strip technology with side or middle write/ read heads. The data of the tickets and cards is read and, if necessary, written (coded).

The *write(/read) unit* draws in tickets and cards, or these are inserted from a ticket strip: Depending on the **configuration** and the device, the ticket is subsequently either issued or drawn into a collecting box.

As standard, paper tickets as well as plastic cards with a side strip and optionally also with a middle strip can be processed (depending on the installed read/ write heads). Furthermore, discount strips can be used in combination with middle or side strips; these are then wide magnetic strips (12 mm).

In order to prevent swindling (insertion of 2 tickets), new tickets are only written on from below (e.g. ticket issue at ENT 120 or **producing** of cards). Therefore, it is essential to pay attention to the position of the magnetic strip when loading a ticket strip at ticket issuing devices (see *chapter 17.3.2 Insert new ticket belt on page 112*).

**Barcode technology**

Fig. 57: Barcode card reader

The *write(/read) unit* is equipped with a *barcode card reader* ❶ for barcode technology. The ticket and card data is only read here.

Tickets and cards are inserted from the front or rear for processing. Depending on the **configuration** and the device, the tickets and cards are subsequently returned or drawn into a collecting box (see *bottom ticket draw-in*).

Paper tickets and plastic cards with barcodes (type “Interleaved 2 of 5”) can be read.

If magnetic strip processing is also desired (e.g. credit card processing), additional write/ read heads are used: This provides the same options as for pure magnetic strip technology.

**Clamp attachment**

Fig. 58: Clamp attachment

The *write(/read) unit* is equipped with a *clamp attachment* ❶ which can be easily removed and replaced, e.g. when cleaning (see *chapter 17.4.3 Cleaning the ticket transport routes, write(/read) unit, cutters, ticket printer on page 115*).

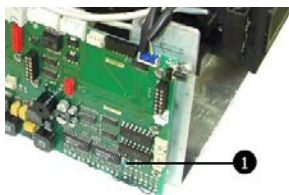
**Reset button**

Fig. 59: Reset button

The *reset button* ❶ at the *PCB MC 120 mainboard* triggers a reset at the Multicon: Tickets are moved through the Multicon and ejected at the *Multicon insertion slot*.

The *reset button* is also used to execute a program download if a laptop is connected and/ or to read the counter readings and version no. (see *separate instructions PCB MC 120 mainboard*).

**Test ticket button**

Fig. 60: Test ticket button

A “test ticket” is created at the Multicon via the *test ticket button* ❶. The test ticket allows the ticket imprint as well as the ticket cutting position to be checked).

The test ticket button is also used to adjust the ticket cutting position (see *chapter 17.4.4 Checking the ticket imprint on page 116*).

**Multicon insertion slot**

The tickets and cards are fed into the *write(/read) unit* or returned to the customers via the *Multicon insertion slot*.

**Bottom ticket draw-in (paper tickets)**

Paper tickets can be drawn into a collecting box from the *bottom ticket draw-in*, e.g. value cheques.

## 17.3 Filling and emptying Multicon MC 120

### 17.3.1 Safety

#### Electric voltage

**⚠ DANGER**

**Danger of death due to electric shock!**

Filling and emptying are carried out with the device switched on.

When the device is switched on, the power supply (230V) is connected to the following components: Terminal block-X0, mains filter, power supply unit, and to the optional socket, heater and, if necessary, to further optional components (*see chapter Device Description*).

Contact with live components may result in death.

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.

#### Risk of crushing fingers

**⚠ CAUTION**

**Risk of crushing fingers when closing the casing door and the base door!**




Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

### 17.3.2 Insert new ticket belt

Device switched on.

1. Make sure that the ticket magazine is placed with the magazine's underside recess on the roller scanner of the *ticket magazine holder*. This is the only way that the roller scanner can check the ticket storage and send a signal to the **TCC/SBC** if there is a shortage.<sup>18</sup>
2. Insert the ticket belt as follows:

Magnetic-side strip	Magnetic central strip	Barcode
		
Magnetic strip at the bottom left	Magnetic strip at the bottom	Unprinted, thermal coated ticket surface at the top
Fig. 61: Insert new ticket belt		

<sup>18</sup> Only entrance control terminal

3. Insert the first ticket from the rear into *feeding channel I* or *II*.<sup>19</sup>
  - The ticket is automatically positioned once it reaches the light barrier.
4. Press the *test ticket button*.
  - The first ticket is now fed through the Multicon and issued as a „test ticket“.
5. Check the cutting position and print image.

## 17.4 Carrying out maintenance work at Multicon MC 120

### 17.4.1 Safety

#### Electric voltage

#### DANGER

##### **Danger of death due to electric voltage!**

When the device is switched on, the power supply (230V) connected to the following components Terminal block -X0, mains filter, power supply unit and, if necessary, to further optional components (see *chapter Device Description*).

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- Switch off the device (see *chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*) unless the work step requires a voltage supply.
- Be aware that the following components remain energized (230V) even when the ON/OFF switch is switched off:
  - ON/OFF switch, primary side
  - Power supply terminal

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds (see *chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44*).

<sup>19</sup> Here: Insertion at *feeding channel I* (IN).

If a *rear parking position* is used (e.g. credit cards or value cheque processing at the PAY), *feeding channel I* is blocked: Do not remove the block and use *feeding channel II* instead.

## Hazardous laser radiation

 **WARNING**
**Risk of injury due to laser radiation!**

Laser radiation can cause permanent eye damage.

The (write/read) unit of the Multicon for barcode technology is equipped with a barcode scanner.

Class 2 laser product: The accessible laser radiation is not considered hazardous when used for a short period of exposure (up to 0.25 s).

- Do not stare into the laser beam.
- Work at the barcode scanner should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- If a power supply is required, the respective tasks at the barcode scanner should only be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.

## Hazardous optical radiation

 **WARNING**
**Risk of injury due to optical radiation!**

The Multicon is equipped with light barriers with optical radiation (infrared (IR-A)).

Optical radiation can cause permanent eye damage.

- Do not stare into the beam.
- Work at the light barriers should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- If a power supply is required, the respective tasks at the light barriers should only be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.

## Inappropriate cleaning with air pistols

 **CAUTION**
**Risk of injury due to inappropriate cleaning with air pistols!**

Inappropriate cleaning with air pistols may result in minor injuries or damage to eyes due to flying particles.

- Always wear safety goggles.
- Prevent air penetrating the body through skin injuries.
- Do not aim air pistols at people.
- Only use air pistols with a maximum pressure of 3.5 bar.
- Only use air pistols with a reduced noise level (multi-hole nozzles).

**Risk of crushing fingers****⚠ CAUTION****Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

**Inappropriate cleaning****NOTICE****Inappropriate cleaning can result in damage of the Multicon.**

- Always keep the Multicon MC 120 very clean. A clean Multicon is better protected against faults.
- When cleaning with compressed air, always make sure the jet of air from the nozzle is **not** aimed directly inside the device.
- Do not use thinners or any liquids when cleaning.
- Recommended cleaning agent:
  - DESIGNA cleaning ticket
  - Dry microfiber cloth
  - Special, dry microfiber cloth for cleaning delicate glass surfaces

**17.4.2 Cleaning the ticket transport routes and the write(/read) unit using DESIGNA cleaning ticket**

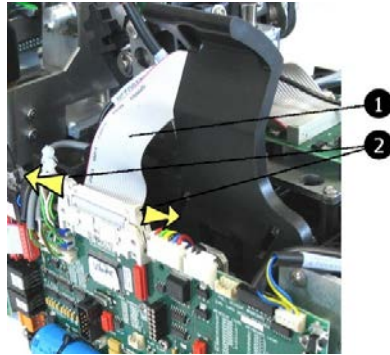
Device switched on.

1. At first, remove the ticket belts from the *feeding unit* at the rear of the Multicon.
2. Press the *test ticket* button and the *reset button* simultaneously.
3. Release the *reset button* and keep the *test ticket button* pressed until an acoustic signal sounds.
  - The Multicon is now in its cleaning mode:  
A permanent ticket transport is activated into the issuing direction (from the rear to the front). The light barriers are not active as no ticket positioning is needed.
4. Insert the cleaning ticket into the *feeding unit* at the rear and remove it from the *insertion slot* in the front after it has been transported through the Multicon. (Multicon without *feeding unit* (e.g. OUT): Insert the cleaning ticket directly into the write(/read) unit from the rear.
5. Repeat this several times using both sides of the cleaning ticket and both *feeding channels* (if two feeding channels are available). (The feeding channels are in an alternating acceptance mode. 1 sec. each.)
  - The cleaning function stops automatically after 1 minute or can be stopped by pressing the *reset button*.
  - The Multicon is now back in its normal operating mode.

**17.4.3 Cleaning the ticket transport routes, write(/read) unit, cutters, ticket printer**

1. Switch off the device.

2. If necessary, extract the pull-out with the Multicon.



- 1 Flat cable
- 2 Retainers

Fig. 62: Disconnecting the flat cable

3. Disconnect the flat cable and the earthing cable of the write(/read) unit.
4. Move the retainers to the side and disconnect the *flat cable* from the top.
5. The earthing cable is now accessible and should also be disconnected.
6. Now squeeze the prongs of the clamp attachment together and remove it from the top.
7. Fold the wire matrix printer or the thermal printer upwards.
8. At first, clean the ticket transport route and the components of the write(/read) unit (top and bottom) with compressed air.  
When cleaning with compressed air, always make sure the jet of air from the nozzle is not aimed directly inside the device.
9. Remove any ticket snippets and paper dust at the self-sharpening cutter using compressed air.
10. Clean the freely accessible transport rollers of the write(/read) unit (top and bottom) using a dry microfiber cloth.
11. Clean the reading heads of the write(/read) unit (top and bottom) and/or the barcode glass panel using a dry microfiber cloth.
12. Put the clamp attachment back on the write(/read) unit.
13. Re-connect the earthing cable and the flat cable.  
Allow the retainers to engage with the flat cable.
14. Clean the wire matrix printer head or the thermal printer head using a dry microfiber cloth.
15. Fold the wire matrix printer back to its original position or fold the thermal printer back, press the fixing clamps together and carefully place the thermal printer in its position.
16. Switch on the device.

#### 17.4.4 Checking the ticket imprint

Device switched on.

1. Press the test ticket button once:  
A test ticket is produced.
2. Make sure the ticket imprint is clear, not smudged and has a regular print image.

### Wire matrix printer

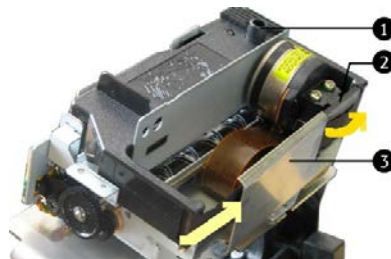
3. If you experience problems despite cleaning, change the ribbon cartridge of the wire matrix printer.

### Thermal printer

4. If the print image remains insufficient after cleaning, contact your DESIGNA Service. The thermal printer can be readjusted and set by your DESIGNA Service.

### Change ticket printer ribbon cartridge

1. Switch off the device.
2. Pull the ticket printer upwards.
3. Lift and remove the used ribbon cartridge
4. Insert the new ribbon cartridge.



- 1 Turning knob
- 2 Print head
- 3 Guiding plate

Fig. 63: Place the ribbon cartridge

5. Feed the ribbon in a way that it is guided between the print head and the guiding plate.  
The ribbon cartridge has to lock into its place in the ticket printer.
6. Tense the ribbon via the turning knob.
7. Put the ticket printer back to its original position.
8. Switch on the device.

## 17.4.5 Checking the ticket cutting position and, if necessary, readjusting it

Device switched on.

1. Press the test ticket button once:  
A test ticket is produced.
2. Check whether the connecting bars between the tickets are being cut in the middle.  
The cutting position should be exactly between the tickets in the middle of the two connecting bars. This reduces the amount of rest paper and the workload of the cutting blade.
3. Adjust the ticket cutting position if the tickets are not cut in the middle.

### Adjusting the ticket cutting position

Device switched on.

1. Press the test ticket button for approx. 4 sec. until a signal (1x short) sounds.
2. Subsequently release the button:
  - Four 4 test tickets from strip are created, cut and measured. The test tickets are purposely cut too long during the adjustment process.

Once the process has been completed a signal sounds (2x short):  
The new cutting position has been accepted.

3. Now press the test ticket button once and check the new cutting position. Repeat the process, if necessary.

#### **Resetting the ticket cutting position to factory setting**

1. Press the test ticket button for approx. 4 sec. until a signal (1x short) sounds.
2. Do not subsequently release the button, but keep it pressed for a further 4 sec.
- Once the process has been completed a signal sounds (irregular):  
The factory setting has been reset.

#### **17.4.6 Checking that connecting cables are inserted correctly**

1. Switch on the device.
2. Check that all connecting cables are inserted correctly.
3. Switch on the device.

#### **17.4.7 Checking and aligning the Multicon insertion slot position**

1. Check correct position of the *Multicon insertion slot*.  
This should be flush with the front panel or protrude only slightly (approx. 1mm), so that tickets and cards are only inserted into the insertion slot during operation.
2. Switch off the device.
3. If necessary, readjust the insertion slot:  
Unscrew the knurled screws which hold the Multicon in place on the mounting plate and displace it slightly.
4. Slightly retighten the knurled screws, close the door of the device and check whether the installation position is correct.
5. Retighten the knurled screws if the position is correct.
6. Switch on the device.

## 17.5 Error analysis

### Automatic routines

The following routines are automatically carried out when the Multicon is switched on (power supply) or if a reset is carried out with the *reset button*:

- The *Live LED* (see Fig. below) on the *PCB MC 120 Mainboard* flashes permanently (if there is no error)
  - Single initializing of the printer
  - The ticket channel is being emptied
  - An acoustic signal sounds, 2x short
- ⇒ Check these routines if incorrect operation occurs.

If an error occurs, an acoustic signal sounds (4x long), there is a subsequent pause and an error code is displayed via an acoustic signal:

1x acoustic signal

2x acoustic signal

3x acoustic signal

Cutter does not return to the idle position

Printer faulty

Ticket still in the device or jammed at the feeding unit

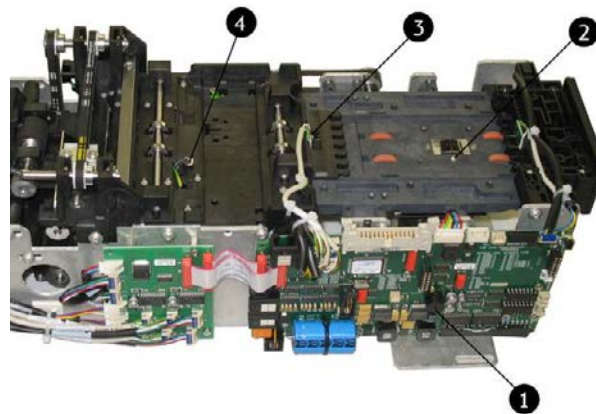


Fig. 64: Live LED and light barrier for error analysis

After 3x acoustic signal ("ticket jammed") a further error code then occurs with a different acoustic signal to define the error (version V56 and higher):

1x acoustic signal

2x acoustic signal

3x acoustic signal

4x acoustic signal

5x acoustic signal

*Light barrier Magnetic head* occupied or defective

*Light barrier Centre* occupied or defective

*Light barrier Printer* occupied or defective

Ticket feed: Ticket belt cannot be cut

Parked ticket issuing not possible

## 17.6 Troubleshooting

### Inappropriate troubleshooting

NOTICE
<p><b>Inappropriate troubleshooting can result in damage of the device.</b></p> <ul style="list-style-type: none"> <li>– Always observe the following simple troubleshooting measures.</li> <li>– Simple troubleshooting measures are listed below. Complex measures should only be carried out by trained specialized staff or by your DESIGNA service.</li> </ul>

Error	Possible causes	Possible measures
LED at the <i>PCB MC 120 mainboard</i> does not light up	Operating state has not been achieved	Check correct connection of the power supply to the Multicon and <i>PCB MC 120 mainboard</i>
	<i>PCB MC 120 mainboard</i> disturbed/ defective	Disconnect and reconnect power supply
MC 120 or <i>ticket printer</i> initialize outside the automatic routines	One or several components are blocked	Check smoothness and freedom of operation of the <i>ticket printer</i>
	Connection cable is not connected (correctly)	Check correct insertion of the connection cable and, if necessary, insert it correctly
	Trapped tickets?	Check transport route of the ticket
Cutter is running after switching on	<i>PCB MC 120 mainboard</i> or <i>PCB MC 120 paper feeder + cutter</i> disturbed/ defective	Disconnect and reconnect power supply <i>PCB MC 120 mainboard</i> or <i>PCB MC 120 paper feeder + cutter</i>
	Connection cable is not connected (correctly)	Check correct insertion of the connection cable and, if necessary, insert correctly
Message ticket incorrect at device display	Magnetic information on the ticket is incorrect	Check magnetic information on another Multicon Recode and reinsert ticket Test the previously used Multicon
	Transport not in the correct reading position	Check the ticket's transport route and, if necessary, clean it Check the cleanliness of the transport rollers and, if necessary, clean them
	Correct insertion direction observed (side strip)?	Observe the insertion direction
Trapped tickets	Foreign matter	Check <i>write(/read) unit</i> for foreign matter and, if necessary, clean it Check the ticket's transport route and, if necessary, clean it Check the cleanliness of the transport rollers and, if necessary, clean them
	Rough-running cutter	Check the cleanliness of the cutter and, if necessary, clean it
	Rough running MC 120 motor	Check the cleanliness of the transport belts and transport -wheels and, if necessary, clean them

## 18 Multicon MC Barcode Module

**i** The description of the Multicon MC Barcode below as ABACUS system module includes its complete functions for all devices.  
Information about specific functions or variants which are only available for certain devices is referred to separately.

### 18.1 Functioning

The Multicon MC Barcode is used to process barcode tickets and cards. Depending on the device and the desired functions, various equipment levels are possible.

### 18.2 Design and operation

Example for equipment at the entry control terminal

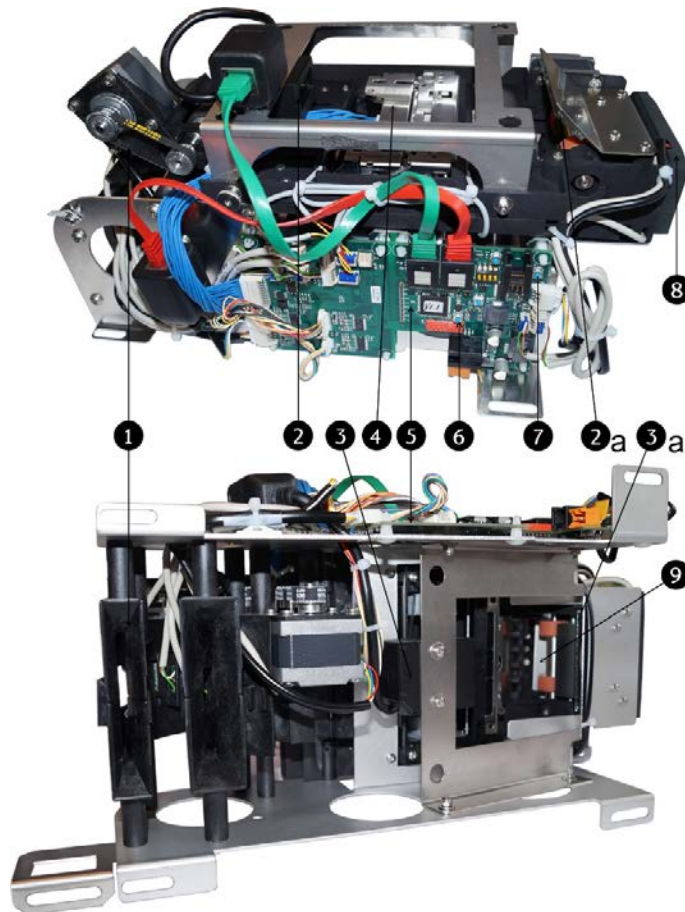


Fig. 65: Multicon MC Barcode, example for equipment at the entry control terminal

- 1 Feeding unit (here a feeding unit with two feeding channels, optional)
- 2 Barcode card reader with mirror (2a)
- 3 Barcode card reader with mirror (3a) (optional)
- 4 Ticket printer incl. cutter
- 5 PCB MC Barcode Mainboard
- 6 Reset button
- 7 Test ticket-button

- 8 Illuminated insertion slot
- 9 Bottom ticket draw-in (paper tickets, optional)

**Feeding unit**



Fig. 66: Double feeding unit (optional)

The Multicon MC Barcode can be equipped with either a single or a double feeding unit.

When using the single feeding unit, paper tickets are fed from a belt through a single feeding unit at the ticket printer.

The *feeding channels I 1+II 2* enable ticket feeding from a belt: Up to 2x 5,000 paper tickets are fed from two ticket magazines.

**Barcode card reader**



Fig. 67: Barcode card reader

The Multicon MC Barcode is fitted with a barcode card reader with CCD technology as standard. In this case, the barcode is read from the top.

To be able to read barcode tickets and cards from all four directions, the Multicon MC Barcode can be additionally equipped with a barcode card reader.

The ticket and card data is only read here (not written (coded)).

ABACUS paper tickets and plastic cards with barcodes can be read.

**Ticket printer incl. cutter**



Fig. 68: Ticket printer incl. cutter

The ticket printer prints the paper tickets with a barcode using a thermal printing process.

Paper tickets are only printed after being fed to the ticket printer either via the single feeding unit at the ticket printer or the double feeding unit. Paper tickets fed via the illuminated insertion slot are not printed.

The *cutter 2* ensures the paper tickets are cut from the belt.

**PCB MC Barcode Mainboard**

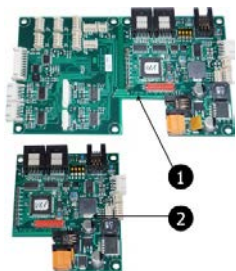


Fig. 69: PCB MC Barcode Mainboard

The Multicon MC Barcode is equipped with a printed circuit board (*PCB MC Barcode mainboard*) which has serial communication with the **TCC/SBC** and takes control of the processes.

Two versions of the PCB mainboard are available: PCB MC Barcode mainboard for devices with a ticket printer **1** and without a ticket printer **2**.



The *PCB MC Barcode mainboard* connection assignment is described in the separate instructions *PCB MC Barcode mainboard*.

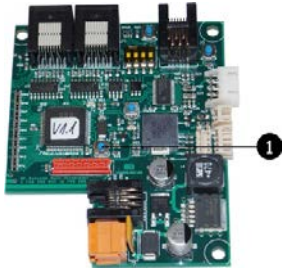
**Reset button**

Fig. 70: Reset button

The *reset button* ❶ at the *PCB MC Barcode mainboard* triggers a reset at the Multicon: Tickets are moved through the Multicon and ejected at the *illuminated insertion slot*.

The *reset button* is also used to execute a program download if a laptop is connected and/ or to read the counter readings and version no. (see *separate instructions PCB MC Barcode mainboard*).

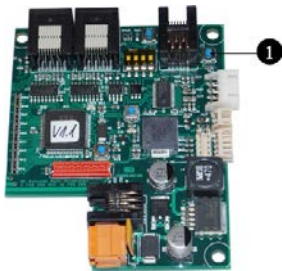
**Test ticket button**

Fig. 71: Test ticket button

A test ticket is created at the Multicon via the *test ticket button* ❶. The test ticket allows the ticket imprint to be checked (see *chapter 18.3.2 Insert new ticket belt on page 124*).

**Illuminated insertion slot**

The tickets and cards are fed into the *Multicon MC Barcode* or returned to the customers via the *illuminated insertion slot*.

**Bottom ticket draw-in  
(paper tickets, optional)**

Paper tickets can be drawn into a collecting box from the *bottom ticket draw-in*.

## 18.3 Filling and emptying Multicon MC Barcode

### 18.3.1 Safety

#### Electric voltage

**⚠ DANGER****Danger of death due to electric shock!**


Filling and emptying are carried out with the device switched on.

When the device is switched on, the power supply (230V) is connected to the following components: Terminal block-X0, mains filter, power supply unit, and to the optional socket, heater and, if necessary, to further optional components (see *chapter Device Description*).

Contact with live components may result in death.

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.

Risk of crushing fingers

 <b>CAUTION</b>
<p><b>Risk of crushing fingers when closing the casing door and the base door!</b></p> <p>Fingers may be crushed when closing the casing door and the base door.</p> <ul style="list-style-type: none"> <li>– Keep your fingers out of the danger zone.</li> </ul>

18.3.2 Insert new ticket belt

Entrance Control Terminal and Automatic Pay Station

Device switched on.

1. Make sure that the ticket magazine is placed with the magazine's underside recess on the roller scanner of the ticket magazine holder. This is the only way that the roller scanner can check the ticket storage and send a signal to the **TCC/SBC** if there is a shortage<sup>20</sup>.
2. Insert the ticket belt as follows:

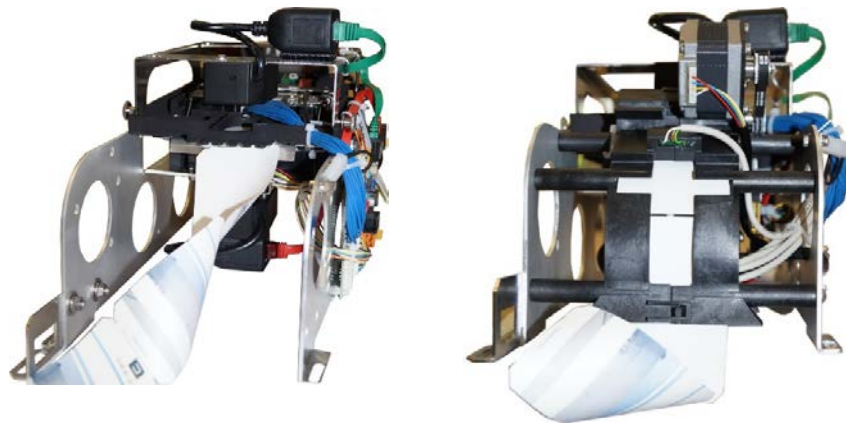


Fig. 72: Multicon MC Barcode: Without double feeding unit (left), with double feeding unit (right)

3. Feed the first ticket from the rear into the thermal printer or into the feeding channel I or II. The unprinted, thermal coated ticket surface must always face upwards.
  - The ticket is automatically positioned once it reaches the light barrier.
4. Press the test ticket button.
  - The first ticket is now fed through the Multicon MC Barcode and issued as a test ticket.
5. Check the print image.

Manual Pay Station

Device switched on.

1. Feed the first ticket to the Multicon from the rear through the opening for ticket feeding from a belt. The unprinted, thermal coated ticket surface must always face upwards.

<sup>20</sup> Only Entrance Control Terminal

- The ticket is automatically positioned once it reaches the light barrier.

## 18.4 Carrying out maintenance work at Multicon MC Barcode

### 18.4.1 Safety

#### Electric voltage

#### DANGER

##### **Danger of death due to electric voltage!**

When the device is switched on, the power supply (230V) connected to the following components Terminal block -X0, mains filter, power supply unit and, if necessary, to further optional components (see *chapter Device Description*).

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- Switch off the device (see *chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*) unless the work step requires a voltage supply.
- Be aware that the following components remain energized (230V) even when the ON/OFF switch is switched off:
  - ON/OFF switch, primary side
  - Power supply terminal

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds (see *chapter 5.3.12 UPS (Uninterruptible Power Supply) (optional) on page 44*).

#### Hazardous optical radiation

#### WARNING

##### **Risk of injury due to optical radiation!**

The Multicon is equipped with light barriers with optical radiation (infrared (IR-A)).

Optical radiation can cause permanent eye damage.

- Do not stare into the beam.
- Work at the light barriers should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- If a power supply is required, the respective tasks at the light barriers should only be carried out by Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.

## Risk of crushing fingers

 **CAUTION**
**Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

## Inappropriate cleaning with air pistols

 **CAUTION**
**Risk of injury due to inappropriate cleaning with air pistols!**

Inappropriate cleaning with air pistols may result in minor injuries or damage to eyes due to flying particles.

- Always wear safety goggles.
- Prevent air penetrating the body through skin injuries.
- Do not aim air pistols at people.
- Only use air pistols with a maximum pressure of 3.5 bar.
- Only use air pistols with a reduced noise level (multi-hole nozzles).

## Inappropriate cleaning

**NOTICE****Inappropriate cleaning can result in damage of the device.**

The barcode card reader and the thermal line are sensitive to dirt.

- Always keep the Multicon MC Barcode very clean. A clean Multicon MC Barcode is better protected against faults.
- When cleaning with compressed air, always make sure the jet of air from the nozzle is **not** aimed directly inside the device.
- Do not use thinners or any liquids when cleaning.
- Recommended cleaning agent:
  - Dry microfiber cloth
  - Special, dry microfiber cloth for cleaning delicate glass surfaces

### 18.4.2 Cleaning the ticket transport routes, barcode card reader, ticket printer incl. cutter

1. Switch off the device.
2. If necessary, extract the pull-out with the Multicon.

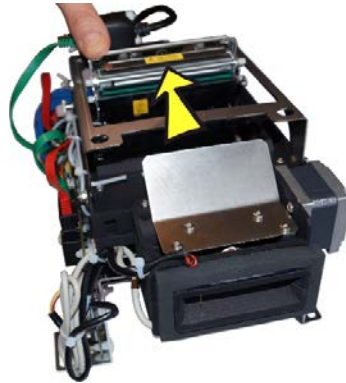


Fig. 73: Folding up the thermal line

3. Fold up the thermal line of the thermal printer.
4. Clean the ticket transport route, the ticket printer incl. cutter and the barcode card reader thoroughly with compressed air.  
When cleaning with compressed air, always make sure the jet of air from the nozzle is not aimed directly inside the device.
5. Use a dry microfiber cloth to clean the thermal line.
6. Return the thermal line to its initial position.
7. Use a dry microfiber cloth to clean the freely accessible transport rollers.
8. Use a special, dry microfiber cloth designed for cleaning delicate glass surfaces to clean the barcode glass panel and the mirror.
9. Switch on the device.

### 18.4.3 Checking that connecting cables are inserted correctly

1. Switch on the device.
2. Check that all connecting cables are inserted correctly.
3. Switch on the device.

### 18.4.4 Checking and aligning the Multicon insertion slot position

1. Check correct position of the *Multicon insertion slot*.  
This should be flush with the front panel or protrude only slightly (approx. 1mm), so that tickets and cards are only inserted into the insertion slot during operation.
2. Switch off the device.
3. If necessary, readjust the insertion slot:  
Unscrew the knurled screws which hold the Multicon in place on the mounting plate and displace it slightly.
4. Slightly retighten the knurled screws, close the door of the device and check whether the installation position is correct.
5. Retighten the knurled screws if the position is correct.
6. Switch on the device.

## 18.5 Error analysis

### Automatic self test

When switching on (power supply) the Multicon MC Barcode and when using the *reset button*, the device performs a self test:

- The ticket channel is being emptied
- An acoustic signal sounds, 1x short
- If necessary, a subsequent short acoustic signal in a different pitch indicates that the device has not yet been initialised. This does not impact functioning.

If an error occurs, an acoustic signal sounds (4x long), there is a subsequent pause and an error code is displayed via an acoustic signal:

1x acoustic signal

Cutter does not return to the idle position

2x acoustic signal

Printer not working correctly, at least one thermal element is defective. All 432 thermal elements of the thermal line are tested.

3x acoustic signal

Ticket still in the device or jammed at the feeding unit

After 3x acoustic signal ("ticket jammed") a further error code then occurs with a different acoustic signal to define the error.

1x acoustic signal

Light barrier in front of the printer occupied or defective

### Example: Ticket jammed at front

- 4x acoustic signal (even tone)
- Pause
- 3x acoustic signal (even tone)
- Pause
- 1x acoustic signal (irregular tone)

# 19 Module Receipt Printer

## 19.1 Functioning

To be able to issue customers with a receipt of payment processes, a receipt printer is installed in ABACUS payment devices (automatic pay stations or at the exit with optional **drive&pay**).

Receipt printers at pay stations also issue receipts about the removal of the coin cassette or banknote cassette.

## 19.2 Design and operation

Basically, the receipt printers in all the ABACUS devices are designed as shown in the figure below. Even if the installation position or add-ons (e.g. weather protection) vary, functioning and operation of the elements stay the same.

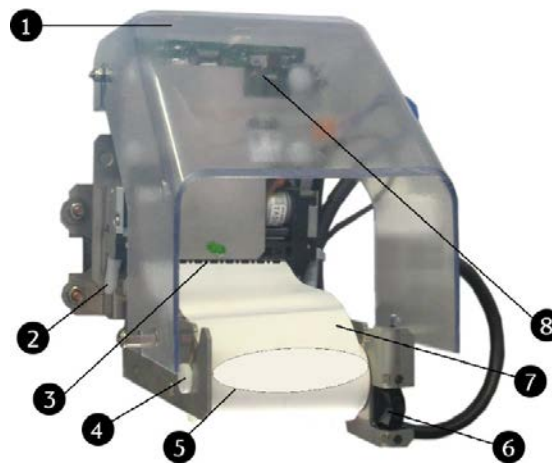


Fig. 74: Receipt printer

- 1 Weather protection
- 2 Opening lever (for draw-in device)
- 3 Draw-in device
- 4 Paper reel holder
- 5 Printable surface
- 6 Reflex light barrier
- 7 Paper reel
- 8 PCB receipt printer

### Weather protection

The *weather protection* protects the receipt printer if the device is open (not available at Pay 1104).

### Opening lever (for draw-in device)

It is possible to lift the print head of the thermal printer with the *opening lever* in order to, e.g., remove an old paper reel, to clean the paper guide with **compressed air** or to insert a new paper reel (see *chapter 19.4.2 Insert new paper reel on page 132*).

### Draw-in device

The paper reel is fed into the receipt printer via the *draw-in device* with the printable surface facing upwards.

### Paper reel holder

The paper reel is mounted onto the *paper reel holder*, which is loosely placed into the holding device.

**Printable surface**

The *printable surface* of thermal paper is easily recognizable as the paper changes colour due to heat generation (e.g. by scratching the surface).

**Reflex light barrier**



Fig. 75: Reflex light barrier

The *reflex light barrier* ❶ on the *paper reel holder* registers a shortage of paper.

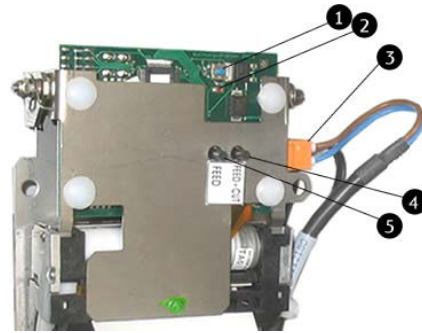
If the diameter of the inserted paper reel is below a certain size, a message is generated at the **TCC/SBC** and sent to the **System server**.

**Paper reel**

The following *paper reel* is suitable for the receipt printer and can be ordered:

	Automatic pay stations	Exit control terminals / APS 120 CASHLESS
DESIGNA Ident. no.	7 232 120 579	7 232 120 580
Paper width	57 mm	57 mm
Paper length	95 m	30 m
Paper strength	75 g/m <sup>2</sup>	75 g/m <sup>2</sup>

**PCB receipt printer**



- 1 Reset button
- 2 Operating LED
- 3 Power supply
- 4 FEED+CUT (Feed/ Cut-off button)
- 5 FEED (Feed button)
- Not shown:
- 6 Serial connection

Fig. 76: PCB receipt printer

**Reset button**

Use the *reset button* to trigger the following functions:

**Reset + FEED+CUT**

Three sections are printed as test printout separated by partial cuts.

**Reset + FEED**

The version no. of the receipt printer software, the recent settings of the DIP switches, the recent character set and a test pattern are printed and issued as test printout. The paper strip is cut.

**Operating LED**

The *operating LED* flashes when a 24V power supply is connected and the required program information has been loaded onto the controller of the *PCB receipt printer*.

**Power supply**

The receipt printer is supplied with 24V DC via the *power supply* ❸.

**FEED+CUT  
(Feed/ Cut-off button)**

The *FEED+CUT* button feeds approx. 6.5 cm of paper before cutting it off.

**FEED  
(Feed button)**

The *FEED button* feeds the paper by one feed step if the button is pressed once. If the button is kept pressed the paper feeding occurs until the button is released

**Serial connection**

The receipt printer is connected to the **TCC/SBC** via the *serial connection*.

### 19.3 Optional receipt printer

When using certain options (e.g. PINPad, fiscal printers), a receipt printer designed for wider paper reels can be installed at the device OUT\_01. This receipt printer can print up to 40 characters per line.

The design and operation of the optional receipt printer basically correspond to those of the default receipt printer and are, therefore, not described separately.

#### Paper reel

The following *paper reel* is suitable for the optional receipt printer and can be ordered:

DESIGNA Ident. no.	7 232 120 581
Paper width	80 mm
Paper length	60 m
Paper strength	75 g/m <sup>2</sup>

### 19.4 Filling and emptying the receipt printer

#### 19.4.1 Safety

##### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

Filling and emptying are carried out with the device switched on. When the device is switched on, the power supply (230V) is connected to the following components: Terminal block-X0, mains filter, power supply unit, and to the optional socket, heater and, if necessary, to further optional components (*see chapter Device Description*).

Contact with live components may result in death.

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.

##### Hot surface

#### CAUTION

##### **Danger of burns!**

The surface of the print head and motor may become hot during operation.

Contact with the surface may result in burns.

- Do not touch the print head or motor.

## Risk of crushing fingers

 **CAUTION**
**Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

## 19.4.2 Insert new paper reel

**NOTICE**

Only use the specified thermal paper to ensure a long service life and an excellent printout.

Suitable thermal paper can be ordered from DESIGNA. Lower quality paper can cause inferior printouts, abrasion of the print head and paper jams.

Device switched on.

1. Loosen the print head from the old paper reel by releasing the *opening lever*.
  - The old paper reel can now be removed.
2. Remove the *paper reel holder* and the old paper reel and place a new paper reel on the holder.
3. Reinsert the *paper reel holder*.
4. Feed the paper into the draw-in device as follows:

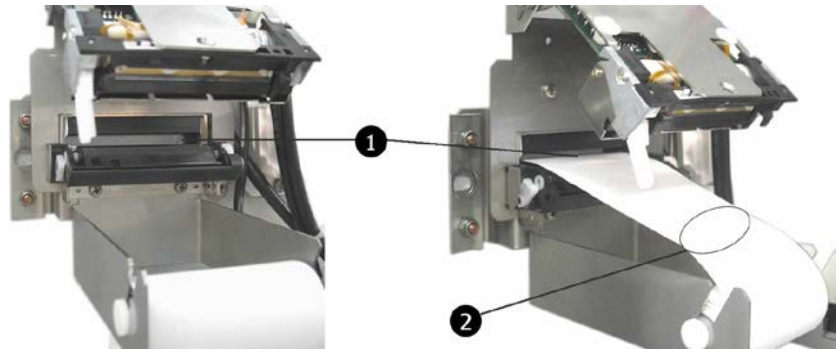


Fig. 77: Feeding paper into the draw-in device

The paper reel is fed into the *draw-in device* with the *printable surface* facing upwards.

5. If the paper reel has been inserted flush and correctly, clamp down again the print head onto the paper reel by carefully folding and pressing the printer unit back into its position until the opening lever locks.

**NOTICE**

Always carefully close the printer.

6. Press **FEED+CUT**:
  - The paper is fed approx. 65 mm and then cut off.

### 19.4.3 Issue test printout

Device switched on.

After inserting a new paper reel:

1. Use the test printout to check whether the paper has been inserted correctly (*printable surface* facing upwards) and whether the receipt printer produces a perfect printout.
2. Press *Reset + FEED* or *Reset + FEED+CUT*, depending on which test printout you desire.
  - The desired test printout is carried out.

## 19.5 Carrying out maintenance work at the receipt printer

### 19.5.1 Safety

#### Electric voltage

#### DANGER

##### **Danger of death due to electric voltage!**

When the device is switched on, the power supply (230V) connected to the following components Terminal block -X0, mains filter, power supply unit and, if necessary, to further optional components (see *chapter Device Description*).

- Work inside the device should only be carried out by DESIGNA trained operating personnel who are familiar with the operating instructions and safety information.
- Switch off the device (see *chapter 5.3.8 Terminal block -X0: Voltage connection/ ON/OFF switch on page 42*) unless the work step requires a voltage supply.
- Be aware that the following components remain energized (230V) even when the ON/OFF switch is switched off:
  - ON/OFF switch, primary side
  - Power supply terminal

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

With the optional uninterruptible power supply (UPS), the UPS (secondary side) and power supply unit (primary side) remain energized (230V) even when the ON/OFF switch is switched off.

- In addition, switch off the power supply with the ON/OFF button on the UPS. To do this, press and hold the ON/OFF button for approx. 5 seconds.

**Inappropriate cleaning with air pistols**
 **CAUTION**
**Risk of injury due to inappropriate cleaning with air pistols!**

Inappropriate cleaning with air pistols may result in minor injuries or damage to eyes due to flying particles.

- Always wear safety goggles.
- Prevent air penetrating the body through skin injuries.
- Do not aim air pistols at people.
- Only use air pistols with a maximum pressure of 3.5 bar.
- Only use air pistols with a reduced noise level (multi-hole nozzles).

**Hot surface**
 **CAUTION**
**Danger of burns!**

The surface of the print head and motor may become hot during operation.

Contact with the surface may result in burns.

- Do not touch the print head or motor.

**Risk of crushing fingers**
 **CAUTION**
**Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

**Inappropriate cleaning**
**NOTICE**
**Inappropriate cleaning can result in damage of the receipt printer.**

- Always print with inserted, suitable paper.
- Do not touch the print head with pointed or sharp objects.
- Do not use thinners to clean the transport rollers.  
Recommended cleanser: DESIGNA cleaning fluid.

### 19.5.2 Cleaning the receipt printer with compressed air

1. Switch off the device.



Fig. 78: Releasing the opening lever to loosen the print head from the paper reel

- 1 Opening lever
  - 2 Printer unit
  - 3 Print head
  - 4 Paper guide
2. Loosen the *printer unit* from the paper reel by releasing the *opening lever*.
  3. Check soiling of *printer unit*, *print head* and *paper guide* (e.g. snippets of paper or similar objects).  
If necessary, clean them with compressed air.
  4. Clamp the *print head* back onto the paper reel by carefully folding and pressing the *printer unit* back into its position until the *opening lever* locks.

#### NOTICE

Always carefully close the printer unit.

5. Switch on the device.

### 19.5.3 Cleaning the receipt printer using cleaning strips

Switched on device:

1. Remove the paper reel (*see chapter 19.4.2 Insert new paper reel on page 132*).
2. Guide the cleaning strip through the receipt printer using the FEED button.
3. Repeat this process several times.
4. Remove the cleaning strips and reinsert the paper reel.

## 20 RFID (Hands-free Identification) (optional)

A convenient entry check is enabled by using a hands-free identification system at the control devices. For the **additional payment** and **renewal** of **RFID** cards antennas can also be mounted to Automatic Pay Stations.

The transmitter-receiver antennas are installed either in the device's monitored area or directly on the device. When **RFID** cards are brought closer to the antennas (if necessary, after occupying loop V), a radio link is created and the antenna receives the relevant card data (min. card number). The antenna signal is processed via a controller in or on the device or directly at the antenna and then transmitted to the **TCC/SBC**. The data is requested at the **System server** and checked for certain parameters.

If the **RFID** card is a valid ABACUS **type of item** (e.g. **season parker card**) and valid for the car park, the barrier opens. A roller door or similar object can be controlled instead of a barrier.



With hands-free processes, information for processing is in the **System server**. For every process at the devices, information has to be requested via an intact data line.

---

The following hands-free systems, which allow various reading distances for hands-free operation, can be used in the ABACUS system:

- Short Range RFID system:  
Legic Proximity System, Mifare Proximity System, ISO 15693 Proximity System
- Long Range RFID systems:  
RFID systems with UHF technology

## 20.1 Short range RFID systems: Legic/ Mifare/ ISO 15693 Proximity Systems

As further ABACUS RFID systems, the following RFID systems can be used:

- Legic Proximity System (operating frequency: 13.56 MHz)
- Mifare Proximity System (operating frequency: 13.56 MHz)
- ISO 15693 Proximity System (operating frequency: 13.56 MHz)
- HID Proximity System (operating frequency: 125 kHz)
- HID Hybrid card reader (operating frequency: 125 kHz and 13,56 MHz)

The following are required (e.g. from your time recognition system):

- **RFID** cards
- system specific antennas
- system specific card reading devices (in order to allocate the card numbers as **types of tickets**)

### 20.1.1 RFID cards

The **RFID** cards of the *Legic Proximity System*, *Mifare Proximity System* and *ISO 15693 Proximity System* are based on flexible identification standards for hands-free applications.

The cards are equipped with a card number (usually a serial number) which can be read by the *system specific antennas* and *reading devices*.

These are passive cards which do not require batteries, the required transmission energy is provided by the antenna.

The cards usually come in a "credit card format" (ID-1 format): 85.60x 53.98 mm.



Fig. 79: Example Mifare card



Ask your DESIGNA service whether existing ABACUS system cards (e.g. from your time recognition system) can be used).

### 20.1.2 System-specific antennas



Fig. 80: Example: Antenna

Antennas in the ABACUS system are installed behind the reading field cover or directly in the reading device.

Antennas of the *Legic Proximity System*, *Mifare Proximity System*, *ISO 15693 Proximity System* and *HID Proximity Systems* are short reading-range antennas:

- |  |             |
|--|-------------|
| ■ <i>Legic</i> antenna range (passive card):               | approx. 4cm |
| ■ <i>Mifare</i> antenna range (passive card):              | approx. 5cm |
| ■ <i>ISO 15693</i> antenna range (passive card):           | approx. 4cm |
| ■ <i>HID ProxPoint Plus®</i> antenna range (passive card): | approx. 5cm |
| ■ <i>HID Hybrid card reader</i> range (card)               | approx. 5cm |

### 20.1.3 System-specific card reading devices

The *system specific card reading devices* are connected to the operating PC **WS 120**.

The devices read the **RFID** card number and relay it to the PC application **WinOperate** when **producing** the card: The card number is registered as a **season parker card** together with the necessary card information in the **System server** (see the separate operator manual *WinOperate*).

## 20.2 Long Range RFID Systems

As further ABACUS **RFID** systems, the following Long Range RFID systems can be used for value area recognition:

- Long Range RFID Systems with UHF technology

This requires appropriate reading devices, converters and transponders.

The reading devices are installed in the monitored area of the device OUT\_01, e.g. on a mast.

The serial interface converters for connecting the reading device to LCC/SCC are usually installed inside the device OUT\_01.

The transponders are equipped with a unique card number (usually a serial number) which can be read by reading devices.

### 20.2.1 Long Range RFID Systems with UHF Technology

#### Reader TSU 200



Fig. 81: Reader TSU 200

Long range reading device for hands-free entry check, also through a car window.

- Reading range with passive transponders of up to 4 m
- Dimensions: 200x175x60 mm (WxHxD)
- Operating frequency: 865 MHz to 868 MHz

#### Passive ISO card transponder



Fig. 82: Passive ISO card transponder

Passive ISO card transponder in credit card format.

- Range: up to 4 m
- Operating temperature: -20 to +50°C
- Dimensions: 85x54x0.84 mm (WxHxD)

#### Passive windscreen transponder



Fig. 83: Passive windscreen transponder

Passive windscreen transponder for fixing to the inside of a car windscreen.

- Range: up to 4 m
- Operating temperature: -20 to +70°C
- Dimensions: 85x54x1 mm (WxHxD)

Passive transponders do not require batteries, as they are provided with the necessary transmitting energy by the reading device.

## Fixing a passive windscreen transponder

### ⚠ WARNING

#### Risk of injury due to driver's field of vision being impeded.

If the driver's field of vision is impeded, it may result in serious, life-threatening injuries.

- The transponder must not impede the driver's field of vision.



To check correct positioning, briefly fix the transponder at the desired position (e.g. with an easy-to-remove adhesive tape) on the inside of the windscreen before fixing it permanently.

The transponders work best if they are fixed at the same position on the windscreen of all vehicles. The best position for the transponder in a typical passenger car is in the middle or slightly on the driver's side at the top of the windscreen; recommended position is at least 4 cm from the edge in the area cleaned by the windscreen wipers. In very high vehicles (e.g. SUVs or delivery vans), the transponder should be fixed at a lower position on the windscreen.

The best position depends on the type of windscreen. We differentiate between the following windscreen types:

#### Normal windscreen without a vacuum-metallized surface and heater lines



The transponder should be fixed in the middle or slightly on the driver's side at the top of the windscreen (e.g. behind the rear view mirror) in the area cleaned by the windscreen wipers.

Fig. 84: Normal windscreen

The transponder should not be fixed directly at the edge of the windscreen (recommended position is at least 4 cm from the edge).

#### Windscreen with a partial vacuum-metallized surface



- 1 Vacuum-metallized surface
- 2 Non vacuum-metallized surface
- 3 Transponder

Fig. 85: Windscreen with a partial vacuum-metallized surface

Windscreens with a partial vacuum-metallized surface usually display an area which is not vacuum-metallized ② (around the rear view mirror). This area is tinted and thus easily recognizable. If possible, the transponder ③ should be fixed in the middle of this area. The transponder will **not** function correctly behind the vacuum-metallized surface.

#### Windscreen with a full vacuum-metallized surface or combination of vacuum-metallized surface plus heater lines



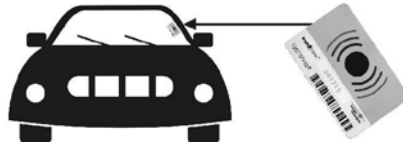
The transponder will **not** function correctly behind the vacuum-metallized surface.

Fig. 86: Windscreen with a full vacuum-metallized surface

The transponder cannot be fixed to windscreens with a full vacuum-metallized surface.

In this case, the transponder must be fixed vertically to the side window on the driver's side. This also applies to windscreens with a full vacuum-metallized surface and additional heater lines.

### Windscreen with heater lines



The transponder will work directly behind the heater lines, but with a limited range.

Fig. 87: Windscreen with heater lines

Check to see whether the transponder is working correctly at the best position (see *Normal windscreen without a vacuum-metallized surface and heater lines*), or fix the transponder in an area at the edge of the windscreen where there are no heater lines - as high as possible and in the middle between the edge of the windscreen and the heater lines.

## 20.3 Instructions for RFID cards

- ⇒ Protect RFID cards against extreme cold and heat as well as temperature fluctuations:  
Pay attention to the temperature ranges specified by the card manufacturer.
- ⇒ Make sure the cards are not bent or folded:  
Pay attention to the specifications of the card manufacturer.
- ⇒ Protect the cards against direct sunlight.  
(Sunlight will fade their colour over time, cause the cards to warp or bend and impair the RFID technology).
- ⇒ Protect cards with additional magnetic strips against magnetic fields, e.g. against magnetic print heads and certain electronic devices (such as radios or loudspeakers).
- ⇒ Do not allow the cards to come into contact (plastic becomes brittle) with aggressive solvents (e.g. petroleum ether, methylated spirits, etc.).
- ⇒ Do not keep the cards in soft PVC holders or wallets (risk due to PVC softeners or leather tanning agents).

## 21 Decommissioning, Disassembly and Disposal

### 21.1 Safety

#### Electric voltage

#### DANGER

##### **Danger of death due to electric shock!**

Contact with live components may result in death.

- Decommissioning and disassembly have to be carried out by electrical technicians or Designa electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.
- Make sure that the power supply is **externally** disconnected and that it cannot be switched on.
- Test for absence of voltage.

#### Heavy weight

#### WARNING

##### **Risk of injury when lifting heavy objects alone!**

The weight of heavy objects can severely injure a person.

- Never attempt to lift the device on your own.
- Always wear safety shoes.

#### Occupational safety and environmental protection

#### WARNING

##### **Risk of harm to humans and the environment as a result of improper disposal of the device OUT\_01 or components.**

Improper disposal of the device or components can be harmful to human health and the environment.

- Make sure disposal is always be carried out by fully qualified specialists.
- Pay attention to valid country-specific environmental regulations.

#### Occupational safety and environmental protection

#### WARNING

##### **Risk of harm to humans and the environment as a result of improper disposal of rechargeable batteries and batteries.**

Improper disposal of rechargeable batteries and batteries can be harmful to human health and the environment.

- Remove batteries and rechargeable batteries from all the components.
- Dispose of the batteries and rechargeable batteries according to valid country-specific environmental regulations.

### Risk of crushing fingers

 **CAUTION****Risk of crushing fingers when closing the casing door and the base door!**

Fingers may be crushed when closing the casing door and the base door.

- Keep your fingers out of the danger zone.

## 21.2 Decommissioning and disassembly

1. Disconnect the device from all sources of supply OUT\_01 (see *chapter 8 Connection on page 61*).
2. Disassemble the device OUT\_01 in reverse order to assembly (see *chapter 7.3.1 Preparation with DESIGNA on page 54*).
3. Disassemble the device into its individual parts.

## 21.3 Disposal

The device OUT\_01 consists of recyclable materials.

- ⇒ After correct disassembly, sort the materials back into specific material types and recycle them.

## 22 Glossary

### A

#### Additional payment

An **additional payment** can be charged for **season parker** or **value cards** or other **items** with special online application.

A **season parker card** is charged an additional payment if the season parker is still in the car park when the card validity runs out. In this case, the tariff is calculated from the end of validity until the time of payment. If not additionally paid for, the season parker card is withdrawn and marked as deleted at the exit. A season parker card also has to be additionally paid for if parking occurs outside the **group time**. On which tariff this additional payment is based in both cases depends on the configuration of the **season parker group**. A short term parker tariff is used if no special charge has been defined as additional payment.

A **value card** is charged an additional payment if the parking fee exceeds the residual value of the value card. The customer has to pay the difference at an automatic or manual payment system or (if possible) at an exit.

Other **items** with special online application are charged an additional payment if the **group time** is exceeded: When the selected parking duration is exceeded, additional payment is due according to the tariff ID for additional payment assigned in the Item details.

The payment device must be **online** to carry out an additional payment in a barcode system.

#### Advance payments, accepted

A payment which can only be partially paid (example: the customer has insufficient change) can result in this amount being credited to the ticket during cancellation. This part payment is listed as an **accepted advance payment** in the operating report.

The customer can pay the residual fee at a later date at the same or another automatic payment system. The previous accepted advance payment is then booked as an **offset advance payment**.

Crediting during cancellation at an automatic payment system instead of returning the inserted money depends on the device configuration.

#### Advance payment, offset

If a ticket which has been partially paid (**accepted advance payment**) is fully paid at a later date, the previous accepted advance payment is booked as an **offset advance payment**.

The previous incomplete payment from the accepted advance payment has now been completed. Therefore, offset advance payments are listed in the operating report the same as other payments, accepted advance payments are considered separately.

#### Alarm message

All the occurrences in the ABACUS system, e.g. *barrier broken, door to the pay station has been opened* etc., are displayed as **alarm messages**. Every possible alarm message is assigned an alarm number.

If something occurs at a device an alarm message is sent from the device to the **System server**, which not only logs the name and number of the alarm message but also the **TCC/SBC no.**, date and time. The alarm messages are registered in a database in the **System server** and can be displayed at the **WinOperate**.

#### Anonymous

In the ABACUS system, **season parker cards**, **value cards** and **congress tickets** can be issued as **anonymous** cards. This may be necessary due to data protection provisions, e.g. if the trips of employees should not be recorded.

All the event and receipt information of anonymous cards is recorded without card numbers. This ensures that the cards remain relevant for car park occupancy, turnover etc. However, the history of these cards – i.e. their trips and payments – is thus invisible in the corresponding **WinOperate** functions (e.g. *event details* and *ticket tracking*).

### B

#### Blacklist

Cards which are not desired in the facility can be detected at the devices with the ABACUS system's **blacklist**. Cards can be put on the blacklist automatically by the system (**card not entered**) or manually. Blacklist cards are, according to the device configuration, either refused, withdrawn and/or deleted.

### Blacklist check

The **blacklist check** can be switched on or off for each device. In principle, the blacklist-check should be switched on: the device takes the blacklist entries into account and rejects or withdraws listed cards. If the blacklist-check is switched off the device also accepts blacklisted cards.

## C

### Card not entered

The ABACUS system judges a ticket to be a **card not entered** if only a ticket is taken without an actual entry occurring. The taken ticket is registered immediately as a **card not entered** at the **System server** and this message is then transferred from the System server to all the devices; thus if an attempt is made to use the ticket it is rejected as "invalid".

### Charging

**Charging** is a **value card** function. The decision whether value cards should be charged or not is set during the setting of the **item** value card. The "chargeability" of value cards allows the customer to book a new cash amount onto the card when the original value has been used up. A **partial charging** is also possible: subject to a license

NOTE: The item which has been activated with the setting *Use at TCC/SBC* is used when charging cards at automatic pay stations.

The payment device must be **online** to charge barcode value cards.

### Compressed air

In order to clean sensitive operating elements in ABACUS system devices (Multicon or similar devices), it is recommended to use a **compressed air** spray can. By using the spray can, it is possible to remove dust particles, snippets of paper etc. from the device.

NOTICE: When cleaning with compressed air, always make sure that the nozzle of the compressed air equipment is **not** aimed inside the device and that snippets of paper do not enter the ticket guides.

Suitable cleaning material: see DESIGNA Consumables Catalogue

### Congress ticket

**Congress tickets** entitle repeated entrances and exits free of charge during a set time period. They can be purchased by an organizer before an event (conferences, trade fairs) at a set price and sent to the participants in advance.

Some item details can only be checked **online** in barcode systems (e.g. validity). Therefore, barcode congress tickets are rejected **offline**.

### Credited

**Credited** groups are groups whose incurred fees, after exceeding the **group time (additional payment)**, are stored at the **System server** and thus can be invoiced at a later date (see operator manual "WebReport"). A credited group does not have to pay an **additional payment** immediately.

A pre-condition for invoicing additional payments of credited items is that the group has the property *Credited*. Recommended: Furthermore, make sure to enter the correct customer data, e.g. address and bank details, for all customers assigned with items with a credited group to ensure later settlement.

### Customer related counting

By using **customer related counting** customers can be issued with several **season parker cards** but admission during one time period can be restricted to a specific number of cards (example: A customer wishes to have 4 car season parker cards but only rents 2 parking spaces).

## D

**DBS (also System server):** see **System server**

### Detector N/ Detector V

For a standard application with two loops, the loop N is located underneath the barrier arm as a closing loop and the loop V at the control device as a presence loop.

The signal from loop N is evaluated by the **detector N** and the signal from loop V by the **detector V** and relayed to the barrier control unit for processing.

### Device configuration

The device properties are set in the **device configuration** when setting up new devices or when changing existing settings. These are device-specific parameters which can vary

according to the installed operating elements and define how the device should "behave" in the ABACUS system. Device configuration is always carried out by your DESIGNA service.

#### **Drive&pay (also KK-EC as STP)**

The function **drive&pay** in the ABACUS system allows customers to enter and **exit** the car park with credit and other customer cards or with SmartCards. The entrance and exit times of the cards are recorded in the **System server** (card number) and subsequently invoiced or (with SmartCards) deducted when exiting. Furthermore, the payment of **short term parker tickets** is possible at an exit control terminal with the option Drive&pay.

NOTE: The function drive&pay does **not function offline**, i.e. for it to function there has to be communication with the System server.

**Drive-through and usage message (greylist):** see **Greylist** and **Usage message**

## **E**

### **EasyMove**

**EasyMove** is the name of the standard **RFID** system which is used for a hands-free entry check in the ABACUS system: combined with an EasyMove antenna the EasyMove cards allow a hands-free entry and exit at a distance of up to 1 meter (depending on the antenna used). EasyMove cards, as with **value cards** or **season parker cards**, are a very convenient way of entering or exiting a car park.

### **Ethernet**

**Ethernet** is a widespread and standardized communication infrastructure for local networks (**LAN**). All devices to be networked have their own IP (Internet Protocol) address, which is used for communication independent of the location. The consistent use of the Ethernet standard for all operating elements enables a diversity of access possibilities and networking types (e.g. fibre optics or wireless **LAN**).

### **Exit entitlement**

Certain data is used to write an **exit entitlement** onto tickets after valid payment (magnetic strip systems: magnetically coded, barcode systems: printed at the ticket printer), or the entitlement is registered in the **System server** (e.g. RFID or credit cards) and checked at an exit control terminal.

## **F**

### **Flexi cards**

In some systems **value cards** are issued as **flexi cards**. Flexi cards, just like value cards, allow customers to utilize ("park") an existing value without having to pay at an automatic pay station.

The flexi card allows to enter and exit as often as desired during a set time frame. The amount<sup>21</sup> is deducted from the flexi card during the first exit, every further parking process during the set time frame is free of charge.

The fee for using the flexi card depends on the set **payment type** (GID) in the tariff configuration.

### **Function cards**

**Function cards** initiate certain functions at ABACUS system devices. These are a set of cards which are obtained from DESIGNA with (pre-coded) functions for your system (see separate instructions "Function cards") or which can be created at a later date at the **WinOperate**.

## **G**

**GID:** see. **Payment type**

### **Greylist**

In the ABACUS system, the **greylist** registers conspicuous cards and reacts to their usage or drive through.

The cards can be allocated the message types **drive-through message** or **usage message**, thus triggering the corresponding **alarm messages** or other set reactions.

**Groups, Group details:** see **season parker groups** and **group time**

<sup>21</sup> The fee for using the flexi card depends on the set payment type (GID) in the tariff configuration.

## Group time

With the help of **groups** it is possible to divide **season parkers** or other **items** with special online application into different groups for which different conditions are valid. This also includes the setting of the **group time**: the length of stay (if necessary, recorded in a contract) for which the customer pays a lump sum.

Thus, a customer who only wishes to use the car park at night can be offered a more reasonable price than a customer who wishes to use the car park 24 hours a day. It is possible to determine whether customers - outside their group time - are either not allowed to enter or are allowed to enter, but then have to pay a fee for the parking times outside the group time (additional payment).

Barcode season parker cards are rejected **offline**, unless configuration of the barcode system allows season parker cards to enter and exit the car park offline. However, the group time will not be checked offline: This means the season parker group is not restricted offline by group times.

## H

### Hands-free identification

The ABACUS system supports various systems for the hands-free identification (also see **RFID**) of **season parkers** and **value card** users. The products range from proximity terminals with reading distances of several centimetres to hands-free applications with an operating range of 10 meters. All the systems are completely wear-free since they function without moving parts and electrical contacts.

### Hopper

The *change unit* allows change to be given at the automatic payment system. The change unit is equipped with change holders, which are called **hoppers**. The hoppers are "numbered" for **device configuration** (clockwise).

### Hotel (as hotel ticket registered cards)

A **hotel ticket** is issued by recoding a short term parker ticket at the manual pay station or at the application PAY manual touch station. After entering the guests' scheduled departure dates they can use the car park as often as desired until the set time.

Hotel tickets are not available for barcode systems.

## I

### ID medium

Various ID media can be used at the entrance and exit: paper ticket, RFID card, print@home ticket with QR Code (Quick Response Code), smartphone with QR Code, credit card; licence plate recognition, customer card or number code.

### I/O check

The **I/O check** (Inside/Outside-Check) checks the **I/O identification** of the ticket: On the basis of the **TCC/SBC no.** it is possible to see at which device last use occurred.

If the ticket was last used at an entrance or pay station it is "inside" and next use, if the I/O check is switched on, has to occur at an exit. If the ticket was last used at an exit next use has to occur at an entrance or pay station.

The I/O-check can thus stop, e.g., several vehicles being taken out of the car park with one **season parker card**, because after using the card at an exit next use has to occur at an entrance or pay station.

If configuration of the barcode system allows season parker cards to enter and exit the car park **offline**, there is no offline I/O check.

### I/O identification (wrong)

The last used device (**TCC/SBC no.**) is allocated to the ticket as the **I/O identification**.

If the **I/O check** is switched on the I/O identification is checked and tickets with **wrong I/O identification** are, depending on the **device configuration**, rejected and deleted or withdrawn. An I/O identification is wrong when the logical, alternating ticket pattern of "inside" and "outside" has not been observed (e.g. if two exits, one after the other, are attempted with the same ticket without an entrance having been used in the meantime).

## Item

**Items** are set in order to issue cards of a **type of item** with various properties. The properties depend on the respective type of item.

In order to issue cards in the system, items which can be used at the car park have to at first be defined. Items are allocated to a customer, thus **preparing** a card in the system.

## K

### Keypad

Optionally, a number code can be used as the **ID medium** for **pre-bookings**. This number code is entered at the entrance via a **keypad**.

**KK-EC as STP:** see **drive&pay**

## L

### LAN

A **LAN** (Local Area Network) is a locally limited network under control of the owner. In the ABACUS system, the **LAN** is the car park network achieved via **Ethernet**. This can include just the car park or also company units or networked partners (e.g. multi-facility centres).

### Login group

In order to provide **users** with various user rights for the **WinOperate**, the **system logins** are allocated to various **login groups**. The login group specifies which functions are available for the logged in user. The various login groups are *DESIGNA*, *Administrator*, *Service personnel*, *Accounting personnel*, *Operating personnel* and *Staff*.

The login group "DESIGNA" has been set solely for your DESIGNA Service for service and remote maintenance purposes.

### Lost ticket

A **lost ticket** can be issued to customers who claim to have lost their ticket. To avoid abuse of this function a price is usually charged which corresponds to the per diem rate.

Lost tickets can be issued with the function *Produce lost ticket* at the **WinOperate** or as a special function via a *Lost Ticket* push button at the automatic pay station. For this function an appropriate **Multicon** is necessary.

## LPR

**LPR** (Licence Plate Recognition) is an image-processing technology used to identify vehicles by their licence plates. This technology is used in various security and traffic applications, such as access-control systems.

While the vehicle approaches the barrier, the LPR unit automatically reads and registers the licence plate. In the ABACUS system this licence plate data is used as ticket and receipt reference (in some countries required by tax authorities), or can be used for access authorization. In this case the data is compared to predefined lists: The system denies entry if e.g. the Card/ Vehicle allocation does not match or the barrier can open automatically for predefined VIP cards.

## M

### MAC address

The **MAC address** (Media Access Control address) is the hardware address of each individual **TCC/SBC** that is used for permanent identification of the device in the system. The MAC address is permanently assigned to the device and displayed on a sticker affixed to the TCC/SBC (also referred to as the "Ethernet ID" or "physical address").

### Media change

A **media change** involves changing to a different **ID medium** at the entrance control terminal. The car park customer is identified, e.g. via a QR Code (Quick Response Code), and is issued a paper ticket directly at the terminal.

### Multicon

The devices' (write/)read unit is known as **Multicon**. According to the desired function range and used technology (magnetic strip or barcode), it is necessary to have different versions of the Multicon:

For example, in order to offer the function "**lost ticket**" at the automatic payment system a Multicon with ticket insertion from the rear is necessary, or for credit card payments a Multicon with a "parking position" is necessary.

## O

### Offline

If a device is **offline** there is no communication between the **System server** and **TCC/SBC**, i.e. ABACUS system's data transmission is interrupted and no data exchange can occur.

### Offline, capable of functioning offline

The ABACUS system is **capable of functioning offline** for standard functions: The devices carry on functioning in "stand-alone" operation in spite of the interrupted data line. All the accrued data at the device is accumulated in the TCC/SBC and transferred to the **System server** when online-standby is back on.

There is only a limited offline capability for barcode technology: Barcode tickets contain only partial information for processing.

Some of the other functions (RFID, credit card processing) are not capable of functioning offline: An intact data transmission between **TCC/SBC** and System server is needed<sup>22</sup>.

### One-use ticket

**One-use tickets** are issued at the MPS 120 and permit one exit: For example, a short term parker ticket used to enter the car park can be exchanged for a one-use ticket and the car park can be exited free of charge (also recommended: use of the function null ticket at MPS 120) or at a fixed price.

Some item details can only be checked **online** in barcode systems (e.g. validity). Therefore, barcode one-use tickets are rejected **offline**.

### Online

If a device is **online** there is communication between the **System server** and **TCC/SBC**, i.e. the ABACUS system's data transmission via **Ethernet** is intact and an exchange of data can take place.

### Overpayment

**Overpayment** occurs if the parking fee is smaller than the inserted sum of money and no change can be returned at the automatic payment system (e.g. parking fee= EUR 2.30/ inserted amount= EUR 4.00 with 2x EUR 2.- coins; no change available. Overpayment= EUR 1.70).

## P

### Park app

The term **park app** is the abbreviation for car park application. Application refers to an application program installed on a smartphone or a tablet computer. A **park app** can be used to carry out **pre-bookings**.

### Park cheque

**Park cheques** allocate parking entitlement with various temporal conditions. The parking entitlement information is coded onto a park cheque, which can then be used as an additional insert card with a **short term parker ticket** at the automatic or manual payment system (if necessary, also at the entrance control device when without a *recoding fee*). The short term parker ticket is recoded accordingly and, depending on the temporal conditions of the park cheque, allows the customer to enter and exit the car park.

Park cheques are not available for barcode systems.

### Parking swindler: s. Card not entered

### Partial charging

**Partial charging** is a function for **value cards**. The decision whether value cards should be partially charged or not is taken during the setting of **item** value card. The partial charging of value cards enables customers to book a new amount of money onto the card when the old value has run out (has been parked). This new amount can be fixed by the customer and can be less than the amount for a (full) **charging**. For this, the value is calculated with the price at a ratio of one to one. The possible issuing of discounts due to a favourable price/value ratio is not taken into consideration.

NOTE: The function partial charging is subject to a license.

The payment device must be **online** to carry out partial charging in a barcode system.

### Payment type (GID)

**Payment types** are for example the standard tariff which is incurred, certain **types of item** or any functions for which further alternative tariffs have to be accessed (e.g. additional payment of **season parker cards**).

<sup>22</sup> Credit card payments (up to 7) can be accepted if the device is offline (actions are saved in the TCC/SBC). Recommended: Only accept credit card actions if the device is online (standard).

All the **payment types** which are possible in the ABACUS are allocated a number (GID: Group Identification) and are set in the tariff configuration.

## PiP

A **PiP** is "a car park within a car park" in the ABACUS system: An additional marked off area (e.g. using SPT 120 and a barrier) where the entrance is controlled.

## Pre-booking

If the pre-booking option is available in the ABACUS system, car park customers can carry out **pre-bookings**: A planned stay in a car park can be booked and paid for in advance via a web application, e.g. at the car park operator's website, or via a smartphone **park app**. The **pre-booking** functions are subject to a licence and require customer-specific implementation.

## Prepaid ticket

A **prepaid ticket** is issued for a set price and is valid until a pre-set exit time on the day of ticket issue. The short term parker tariff can also be the basic rate for a prepayment with a prepaid ticket.

## Prepare cards

In order to issue cards in the system, **items** which you wish to offer in your car park have to at first be defined. Items are subsequently allocated to a customer, thus **preparing** a card in the system. To finally issue a prepared card to a customer, it has to be **produced**.

The cards are **prepared** in the function *Prepare cards* of the **WinOperate**, i.e. you allocate a previously defined **Item** to a customer.

## Produce cards

In order to issue cards in the system, **items** are at first defined and subsequently **prepared** in the system. To finally issue a prepared card to a customer, it has to be **produced**, if necessary at a later date.

The cards are **produced** in the function *Produce cards* of the **WinOperate**, i.e. the data record from **prepare cards** is written onto a paper ticket or allocated to a card at the **System server** (e.g. plastic barcode cards and RFID). From this moment onwards the card is available as a "real" card and can be issued to the customer.

## Promotional Codes

In the ABACUS system, promotional codes allow customers to use an **ID medium** (e.g. a barcode or a number code) more than once to enter the car park during a specified time period. Promotional codes can therefore be used for temporary special offers (e.g. specially priced parking due to a barcode published in a newspaper).

Promotional codes are defined with specific properties (e.g. valid period, car park and max. issue amount) and are stored in the system as **season parker cards**. The preparation of various **season parker groups** allows the assignment of numerous tariffs for a car park.

## R

### Renew

**Renewing** is a function for **season parker cards**. If a renewing is allowed *Before expiry*, *After expiry* or *Still allowed* for the item, the car park customers can renew their cards at the automatic pay station themselves during these times; before and after the validity of their cards expires.

The payment device must be **online** to carry out renewing in a barcode system.

### Replacement ticket/ Manual replacement ticket

A **replacement ticket** is issued as an identical copy of a ticket which is no longer readable (magnetic strip or barcode no longer readable by the **Multicon**). The replacement ticket is based on the data of the original **short term parker ticket**.

For this, the data of the original short term parker ticket is entered at the WinOperate or at the MPS in order to retrieve it from the **system server**: At the MPS this is done according to the ticket's **serial no.** At the WinOperate this is done according to the ticket's serial no., its LPR identification (only optional **LPR**) or according to its receipt no. This way a replacement is issued for the previously issued ticket. Usually, the replacement ticket has to be paid at a pay station before exiting (Exception: a replacement ticket is issued for a just paid short term parker ticket).

A **manual replacement ticket** can be issued at the WinOperate: For this, the **user** defines the desired data for producing a **replacement ticket**.

The data is created as for an entrance of a short term parker ticket (date, TCC/SBC and time). This way, a new, unpaid ticket is issued, whose entered entrance data will be valid for its subsequent payment. The manual replacement ticket has to be paid at a pay station before

exiting or it can be issued in a way that payment occurs immediately during **production** (at the pay station).

### Reservation, With (diverse types of item)

The ABACUS system provides **items with** and **without reservation**:

A certain number of parking spaces are reserved for items **with reservation** in order to guarantee a free parking space (e.g. specially marked spaces). Items **with reservation** are counted separately and can still enter the car park even if all the short term spaces are full and short term parkers and items **without reservation** are denied.

The **types of item season parker card, value card and congress ticket** can be assigned with reservation. This is done in *Manage items* of the **WinOperate**.

### Reservation, Without (diverse types of item)

The ABACUS system provides **items with** and **without reservation**:

**Items without reservation** are counted as **short term parkers** by the car park counters, i.e. in a car park occupied with short term parkers all subsequent cards without a reservation are refused entrance. The message "Car park occupied" appears on the display at the entrance.

## Reset

In principle, there is a differentiation made between the following types of **resets** which produce different effects at the devices and in the system communication. A reset is selected from 6 various types of **Reset**.

- **Reset 0**  
Reset 0 causes a type of "cancellation": A current payment at an automatic payment system can be cancelled from **WinOperate**.
- **Reset 1:**  
Reset 1 puts some TCC/SBC processes in a basic condition.  
NOTE: This can cause operating irregularities as device component processes are not put in a basic condition. For this reason Reset 1 is not used in normal operation.
- **Reset 2:**  
Reset 2 causes the respective device to be switched on and off like during a "manual" restart. Recommendable for clearing smaller operating faults.
- **Reset 3:**  
Reset 3 causes configuration data to be transferred from the **System server** to the TCC/SBC  
Part of this configuration data is, e.g., price or group data.
- **Reset 4:**  
Reset 4 transfers the executing program for the individual control of a device to the TCC/SBC.  
NOTE: A Reset 4 deletes all the existing alarm messages in the TCC/SBC which have not been transferred to the System server.  
Before carrying out a Reset 4 use Reset 2 to make sure that all the alarm messages have been transferred (approx. 2 min in advance).
- **Reset 8:**  
Reset 8 is only used for service purposes during the new configuration of a TCC/SBC.

## Resin-Free Oil

Only use **resin-free oil** to lubricate moving parts.

(Recommended: Ballistol oil spray, DESIGNA Ident. no. 8 815 057 000)

## RFID

Radio Frequency Identification (**RFID**) enables the hands-free data registration and customer identification. RFID enables rapid processing (also of various systems, e.g. time recognition and entrance) and is maintenance-free.

An RFID system always consists of data media (**RFID** cards with chip and antenna) and a reading device (antenna and decoder/controller).

Magnetic or electromagnetic fields are used for data transmission.

## S

### SBC

A **SBC** is used in the ABACUS system. The SBC manages and controls the device functions with the individual program of a device.

The SBC is centrally controlled by the **System server** and identified and addressed via IP addresses. Possible signal conversion for parallel device components (i.e. barriers) takes place via the optional module *I/O interface*.

### Season parker (also SP)

**Season parkers** are customers who wish to use the car park over a longer period and usually pay the incurred fee as a lump sum in advance. They are neither fixed to a certain number of parking processes nor to a set parking duration.

### Season parker cards

**Season parker cards** are issued with certain properties (price, validity, **group time**, with or without **reservation**) in order to offer the ABACUS system's **season parkers** different conditions.

This is defined by creating various types of items **season parker card** and various **season parker groups**. These are then written onto the season parker card when **producing** (or allocated to a card at the **System server**).

Some item details can only be checked **online** in barcode systems (e.g. validity). Therefore, barcode season parker cards are rejected **offline**, unless configuration of the barcode system allows season parker cards to enter and exit the car park offline. However, this results in certain item details not being checked offline (e.g. validity, **group time** or **I/O identification**).

### Season parker groups / Groups / Group details

Groups are usually set for **season parker cards** (**season parker groups**). Additionally, setting groups might also be necessary for other **types of item**, i.e. for their *special online application* (from version x15).

All the season parkers within the ABACUS system can be divided into different groups (**season parker groups**) for which different conditions are set. For example, a season parker group can be restricted to parking at night. A maximum of 14 season parker groups with different properties can be active for each car park.

The different properties are summarized as **group details** and the group number is allocated to the **season parker card** (or to the other **types of item** with *special online application*).

### Season parker with reservation/ without reservation: see reservation

### Serial no.

Each ticket and each card produced in the system is allocated a precise **serial no.**. The serial no. can be used as successive numbers or in 3 blocks.

For **short term parker tickets** the serial no. is made up of the system no., TCC/SBC no. and the ticket no. It is allocated and printed onto the ticket at the entrance. The serial no. is requested in several functions to locate data sets (e.g. issuing of **replacement tickets** at the MPS or ticket tracking and issuing of replacement tickets at the **WinOperate**). In magnetic strip systems the serial no. is printed in line 1 of the printed ticket information (standard printing line for the entrance information) or can, according to the (Multicon) **configuration**, be printed in line 8 (extended ticket imprint of the entrance) (also see document "MC 120 TICKETS" (specification of the tickets and their printed areas)). In barcode systems the ticket no. is not numbered consecutively and the serial no. needs to be set as printed in its own line in the Multicon configuration.

For **season parker cards**, **value cards** and **congress** tickets the serial no. is made up of the system no., TCC/SBC no. and the card no. which has been assigned when **preparing** the card. The serial no. of these **types of item** is only printed onto the tickets and cards if this is set accordingly at the WinOperate (*Manage items*) (**never** print onto plastic cards).

### Short term parker (also STP)

**Short term parkers** are customers who request a **short term parker ticket** at the entrance and enter the car park with this ticket. After paying the fee (at an automatic pay station or MPS as well as at an exit, see **drive&pay**) the customer can exit the car park. The fee depends on the parking duration and parking time.

### Short term parker ticket

The **short term parker ticket** is issued to the user upon request when entering the car park (express entrance: automatically). The parking fee is calculated on the basis of the ticket's entrance data. The fee has to be paid prior to (or while) exiting.

### Special income

**Special incomes** in the ABACUS system do not relate to parking fees but to other types of incomes, e.g. services such as car washing, car park security etc.

### System login

Before **WinOperate** can be opened, thus allowing access to the ABACUS system, the **user** has to provide identification. This occurs via the so-called **system login**, a combination of user name and password: A login window in which ID can be entered appears prior to the start. Menu items and functions can be switched off depending on the **login group**.

### System server

The **System server** is the PC or the server platform for controlling, monitoring and administrating the parking system ABACUS.

The operating interface **WinOperate** is installed at the DESIGNA operating work station **WS 120** and communicates via **Ethernet** with the System server. The application WinOperate is located on the actual System server (DBS COMPACT and COMPACT PLUS) for smaller car park systems.

### System times

In the ABACUS system it is possible to define times as **system times**. These times influence the tariff calculation for each facility: e.g. *grace time* (time period by which a tariff step can be exceeded before the next tariff step is calculated), *lag time* (maximum length of stay in the facility after payment) or *free passing time* (a customer's maximum length of stay in the facility before payment is due at an exit device).

## T

### TCC

A **TCC** of type SCC or LCC is used in the ABACUS system. The TCC with Linux operating system manages and controls the device functions with the individual program of a device.

All TCC are centrally controlled by the **System server** and identified and addressed via IP addresses. The internal device communication takes place via serial connections. Possible signal conversion for parallel device components (i.e. barriers) takes place via the optional module *I/O interface*.

### TCC/SBC address/ TCC/SBC no.

**TCC/SBC addresses** are used in the ABACUS system in order to enable a purposeful transfer of commands and programs and an identifiable data exchange between the device and the **System server**. These are configured according to the device features and are programmed at the **TCC** (the device and TCC/SBC **configuration** is usually carried out before delivery or by your DESIGNA Service).

The TCC/SBC address set at the TCC/SBC and configured in the System server corresponds to the **TCC/SBC no.** requested in many functions.

### Theatre tariff

The **theatre tariff** allows you to charge a separate price at automatic pay stations<sup>23</sup> for **short term parker tickets** which enter the car park during a certain period, if the payment also occurs in this time period. Customers pay according to a defined price calculation (payment type (GID)) up until the specified exit time.

This ensures that payment can be carried out in advance, e.g. to prevent queues at pay stations after events.

The short term parker tickets can exit the car park until a specified time in the future. If a customer exits the car park after this specified time, the short term parker tariff is charged as additional payment.

### Ticket medium

In the DESIGNA system, the **ticket medium** stands for the "carrier material" that transports unique data records. The unique data records (card ID) consist of a) the respective authorisation (e.g. event ticket, weekly ticket, staff card) and b) the user of this authorisation (e.g. customer, event, company, employee).

The ticket medium is linked to a unique ticket ID in the system.

Depending on the medium used by the car park customer for identification at the entrance, automatic pay station or exit, a corresponding system comparison is made to the authorisation assigned to the ticket medium. This can be, for example, the **serial number** of a ticket/card produced, the hash code of a credit card, the QR code content, the UIDs of RFID cards or the licence plate (for VIP or Ticketless).

<sup>23</sup> Depending on the device configuration, the theatre tariff can, e.g., be activated at just one pay station of a car park or by selecting it via the lost ticket button.

**Time cheque:** see **value and time cheque**

### Time slot

**Time slots** help to statistically analyse parking processes in the ABACUS system. They are used to divide and record the parked times into ranges. The parking durations can then be displayed with the *time slot statistic* of the **WebReport** application (e.g.: How many short term parkers use 2 or 4 hours as a parking duration?). Up to 50 time slots can be defined.

### Token

**Token** are coins to which a certain value is allocated. The coin validator recognizes certain features of a token the same as it does with coins. Tokens are valued and processed as coins at the automatic pay station (not intended as change).

Tokens can be configured as *value tokens* or as *free tokens (device configuration)*: A *value token* is allocated with a certain cash value. The value of a *free token* is set at the automatic pay station to the same amount as the incurred parking fee, thus allowing free parking.

### Traffic jam detection

For **traffic jam detection** at the exits, the system monitors how well the lag time can be observed. This is achieved by continuously determining the average time required by car park customers from the pay station to the exit. If this average time and the lag time converge at an exit, the **alarm message** "Traffic jam at the exit" is generated (when the difference between the average time of the last 10 car park customers and the set lag time is less than 60 seconds).

It is possible to react to this alarm message by increasing the lag time by 20% at the affected exit via **WinOperate** or it can also be increased automatically by the system: There is a reduced risk of paid tickets losing their **exit entitlement**, resulting in further payments due to the jam.

If the average time and the already increased lag time also converge, the alarm message is regenerated and the lag time can be increased by another 20% at the affected exit via **WinOperate** or automatically by the system.

The increased lag time remains active at this exit until it is reset to the original lag time at **WinOperate** or automatically by the system.

### Type of customer

**Types of customer** can be used in the ABACUS system to divide the master data in *Manage customers (WinOperate)* into categories. This ensures that functions can only be available with assigned types of customer for certain **users**.

### Type of item

The ABACUS system provides numerous **types of item** (e.g. **season parker cards, value cards and function cards**) in order to cope with the needs of the car park customers.

## U

### Usage message and drive-through message (greylist)

In the ABACUS system, the **greylist** registers conspicuous cards and reacts to their usage or drive through.

The cards can be allocated the message types **drive-through message** or **usage message**, thus triggering the corresponding **alarm messages** or other set reactions (*Manage cards/Comments tab, Blacklist & Greylist* in **WinOperate**).

Cards or licence plates (only optional **LPR**) entered in the system with the **usage message** trigger the alarm message no. 213 or set reactions when **used** at any device (card insertion at the device or an **RFID** card request).

Cards or licence plates (only optional **LPR**) entered in the system with the **drive-through message** trigger the alarm message no. 186 or set reactions when **driving through** an entrance or exit.

These alarm messages (no. 213 and no. 186) are also individually set to ensure that usage or drive through of the card (or e.g. the entrance of a licence plate) is displayed as desired (*Set alarm messages* in **WinOperate**).

### User

To ensure that only authorized personnel operate the system operating personnel have to register and deregister as a **user** prior to and after working at the **WinOperate**.

Users are registered as customers in *Manage customers* at the **WinOperate** and are allocated a **system login**. Menu items and functions can be switched off depending on the **login group**.

## V

## Valet Parking

Valet Parking refers to the parking of vehicles by an employee. The vehicle and the key are left with parking authorized staff (jockeys) at a central drop-off point. A jockey then parks the car on behalf of the owner and, when requested, returns it to the pick-up area. This parking service is offered, e.g., by hotels and airports.

## Value and time cheque

**Value cheques** are tickets which are used as means of payment in the ABACUS system. A certain money value is assigned to the ticket which can be used as payment at the pay stations and some exits (only **drive& pay**).

In contrast to value cheques, a time value instead of a money value is coded onto **time cheque**. They can also be used as means of payment by reducing the incurred parking duration at the pay station or at an exit.

Value/Time cheques can be allocated to, e.g., participating shops by the facility operator in order for these shops to offer their customers reduced parking costs in the interest of customer retention. There are two different ways of charging the participating shops (or similar) for the value/time cheques:

- The assigned money/ time value is charged 100% when issuing or
- only the actual amount of money/time used by the customer is charged (e.g. for **overpayment** with value/time cheques).

The **device configuration** specifies whether just **one** value/time cheque can be used as a payment medium at the device or any number of cheques.

Some item details can only be checked **online** in the barcode system (e.g. validity). Therefore, barcode value cheques are rejected **offline**.

## Value cards

**Value cards** are coded with a certain value (amount of money or time) and subsequently sold to the customers at a set price. The incurred parking fee or time is deducted from the value card when exiting. This has the advantage that the customer does not have to pay at the automatic pay station. The residual value of the card is shown on the display when entering and exiting. In addition to this, the value card can be used to offer the customer a concession by choosing a price which is less than the coded value.

Different properties can be issued for value cards: for example, the validity of the card can be set, a favourable value/price ratio issued or a later **charging** of the value card provided for if the value has run out.

Some item details can only be checked **online** in barcode systems (e.g. validity). Therefore, barcode value cards are rejected **offline**.

## W

## WebReport

**WebReport** enables professional statistical reporting of parking data in the ABACUS system. Statistical values are analyzed rapidly, precisely and clearly.

Reporting of:

Time slot statistics, throughput statistics, occupancy statistics, turnover statistics, alarm statistics, operating report, cash book, value card balance, tariff switch card report, value cheques/ time cheque settlement, park cheque report, card lists, customer lists

## WinOperate

The **WinOperate** is an easy-to-use graphical Windows® interface which allows the user to check, monitor and control processes in ABACUS as well as manage system data and present business figures.

The operating interface WinOperate is installed at a DESIGNA operating work station **WS 120**, which communicates via Ethernet with the **System server**. The application WinOperate is located on the System server DBS COMPACT and COMPACT PLUS for smaller car park systems.

## WS 120 (also work station, operating PC)

The **WS 120** is the operating work station of the ABACUS parking system which communicates with the **System server** via **Ethernet**. In connection with WinOperate the WS 120 provides extensive monitoring, controlling, administrating and reporting functions. Several WS 120s can be networked and access the data and control of one car park.

The application WinOperate is located on the actual System server (DBS COMPACT and COMPACT PLUS) for smaller car park systems, a separate PC WS 120 operating work station is then not required.

## 23 Index

<b>A</b>	
Accessories .....	10
Accident prevention regulations .....	72
Initial device testing .....	72
Measuring points fault loop impedance.....	73
Measuring points protective earth conductor test ...	73
Adjust the ticket cutting position.....	117
<b>B</b>	
Barcode scanner.....	32
Blacklist check .....	84
<b>C</b>	
Camera .....	32
Change ticket printer ribbon cartridge.....	117
Check and align the Multicon insertion slot.....	118, 127
Checking connecting cables .....	118, 127
Checking fan.....	99
Checking heating .....	98
Checking humidity sensor.....	98
Cleaning casing outside .....	96
Cleaning items .....	90
Cleaning the 2D Barcode Scanner .....	99
Commissioning .....	74
Components inside the device.....	34
Components on the casing door and their functions...	28
Connection barrier .....	69
Connection intercom device.....	68
Connection power supply.....	63
Consumables.....	10
Credit card reader.....	32
Customer service.....	10
<b>D</b>	
Declaration of Conformity .....	19
Decommissioning .....	141
DESIGNA electrical technicians.....	13
Detector .....	47
Disassembly .....	141
Disposal.....	141
Door switch .....	48
<b>E</b>	
Electrical protective devices.....	62
Electrical technicians .....	13
Ethernet Connection .....	66
<b>F</b>	
Fan .....	37
Filling and emptying.....	87
Full touch display.....	29
Function cards .....	86
Function check	
Check humidity sensor.....	78
Function check.....	75
Check condition of device .....	75
Check fan.....	78
Check heater.....	78
Check intercom device.....	78
Induce general function and check.....	77
Simulate an exit .....	77
<b>G</b>	
General design.....	27
<b>H</b>	
Hands-free Identification .....	136
Hearing induction loop .....	33
Heater .....	43
Humidity sensor .....	47
<b>I</b>	
I/O interface .....	37, 105
Assignment of contacts .....	107
I/O Interface	
Digital Eingänge.....	107
Digital Outputs .....	107
I/O-check.....	84
ID medium.....	82
Illuminated ring.....	32
Induction loop.....	47
Installation.....	51
Foundation requirements .....	53
Installation of ram protection .....	58
Installation of the device.....	57
Location requirements.....	53
Mounting possibilities .....	54
Unpacking the device.....	56
With mounting kit.....	55
Installation DESIGNA foundation frame .....	54
Intended use .....	11
Intercom .....	29
VoIP .....	29
Intercom device	
Intercom devices of other manufacture .....	29
<b>K</b>	
Key switch.....	33, 86
<b>L</b>	
Locking system .....	37
<b>M</b>	
Mains filter.....	44
Maintenance Schedule.....	90
Midi-P-USI.....	105
MP3 module.....	33
Multicon MC 120 .....	108
Automatic routines .....	119
Bottom ticket draw-in.....	111
Clamp attachment.....	111
Cutter .....	109
Feeding unit .....	108
Fill and empty.....	112

Insert new ticket belt.....	112	Receipt printer .....	32, 129
Insertion slot .....	111	Clean receipt printer using cleaning strips .....	135
Maintenance work .....	113	Cleaning the receipt printer with compressed air ..	135
PCB MC 120 mainboard.....	110	Fill and empty .....	131
Rear parking position.....	108	Insert new paper reel .....	132
Reset button .....	111	Issue test printout .....	133
Test ticket button .....	111	Maintenance work.....	133
Ticket printer.....	109	Optional receipt printer.....	131
Troubleshooting.....	120	Paper reel .....	130, 131
Write(/read) unit.....	110	Relay .....	47
<b>Multicon MC Barcode .....</b>	<b>121</b>	Reset the ticket cutting position to the factory setting	
Barcode card reader.....	122	.....	118
Bottom ticket draw-in .....	123	Residual current circuit breaker .....	40
Error analysis.....	128	Residual current device .....	40
FBG MC Barcode Mainboard .....	122	RFID .....	32, 136
Feeding unit.....	122	Fixing a passive windscreen transponder.....	139
Fill and empty .....	123	Long Range Systems.....	138
Insert new ticket belt.....	124	Short range systems.....	137
Insertion slot .....	123	UHF Technology.....	138
Maintenance work .....	125	<b>S</b>	
Reset button .....	123	Safety ....	11, 49, 51, 61, 75, 87, 88, 112, 113, 123, 125,
Self test.....	128	131, 133, 141	
Test ticket button .....	123	Safety messages9, 15, 49, 51, 61, 75, 87, 88, 112, 113,	
Ticket printer.....	122	123, 125, 131, 133, 141	
<b>N</b>		Safety on site .....	12
Network components.....	47	SBC .....	31
NFC .....	32	SBC module.....	100
Non-intended use .....	11	Assignment of contacts.....	102
<b>O</b>		DESIGNA VoIP.....	102
Occupational safety .....	13	Display.....	102
ON/OFF switch .....	42	Fan.....	102
Operating instructions.....	7	Heater .....	102
digital .....	7	Serial interfaces .....	101
Operating personnel .....	13	Season parker cards.....	81
Operation.....	79	Service.....	10
Exit with prebooking .....	82	Short term parker tickets.....	80
Exit with season parker cards.....	81	Socket.....	40
Exit with short term parker tickets.....	80	Spare parts .....	10
Exit with valuet cards.....	82	Specialists and operating personnel.....	13
Open barrier with key switch.....	86	Specialized staff.....	13
Recognise error status .....	86	Storage .....	50
Requesting card parameters .....	84	Surge arrester.....	43
Trigger functions with function cards .....	86	Switch off device.....	42
Operation safety .....	15	Switch on device.....	42
<b>P</b>		<b>T</b>	
Personal protective equipment.....	49, 52, 62, 89	Technical data .....	24
PINPad .....	32	Dimensions and weight.....	24
Power supply unit .....	41	Electrical connection.....	26
Prebooking .....	82	Operating conditions .....	26
Product safety labels .....	14	terminal block -X0 .....	42
Protective equipment.....	13	Terminal block -X0.....	63
<b>R</b>		Terminal block -X1	
RCD.....	40	Power supply terminal.....	43
Reading device insertion slot.....	32	Terminal block -X2.....	38
Receipt .....	83	Connection intercom device.....	38
automatic printout .....	83	Connection key switch .....	39
digital .....	83	Ethernet connection.....	38
printout upon request.....	83	Ethernet surge arrester .....	39
Subsequent printout .....	83	Parallel connector barrier.....	39
		Serial barrier connection.....	38

TFT colour display .....	48
Ticket bag .....	44
Transport .....	50
Transport inspection .....	50
Type plate .....	23

### U

Uninterruptible Power Supply.....	44
UPS.....	44

### V

Value cards .....	82
-------------------	----

## 24 Version overview

<b>Version 1.00, 02/2020 (KS)</b>	Creation of the document
<b>Version 1.20, 11/2021 (SU)</b>	Adaption of the German version
<b>Version 1.30, 10/2022 (KS/GN)</b>	Adaption of the German version
<b>Version 1.40, 08/2023 (GN)</b>	Adaption of the German version
<b>Version 1.50, 03/2026 (KS)</b>	Adaption of the German version

### **Subject to technical changes.**

The parking system ABACUS is continuously advanced and improved. Please contact your DESIGNA Service about changes and additions to these operating instructions.