DESIGNA

Operating Instructions

Designa CONNECT
VALIDATOR 500 OFFLINE MAG

Magnetic Strip Systems
Serie: CONNECT
Version: 1.00

Identity no.: DOCEN04180

designa.com

Original Operating Instructions

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1 General

1.1 Information regarding the operating instructions

These operating instructions are intended for operators of the DESIGNA parking management system and provide crucial information on handling of device VALIDATOR 500 OFFLINE MAG.

These operating instructions describe measures *see main chapter 10 Maintenance on page 31 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 VALIDATOR 500 OFFLINE MAG. 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 outside 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.

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.

⚠ DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a potentially harmful situation which, if not avoided, could lead to property damage.

Hints and recommendations

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

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
bold	Terms in bold are explained in the glossary
italic	Italic text refers to a component in a figure or a different chapter of these instructions or related instructions.

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1.3 Consumables, spare parts and accessories

Designa offers comprehensive consumables, spare parts and accessories for the device VALIDATOR 500 OFFLINE MAG.

> 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 VALIDATOR 500 OFFLINE MAG 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.

The device VALIDATOR 500 OFFLINE MAG is a stand-alone discount unit:

In **offline** mode, **short term parker tickets** with a magnet side or central strip can be allocated magnetically coded discount information (e.g. manual pay station, automatic pay station or also exit control terminal with payment function: **drive&pay**).

Only tickets with wide side or optionally with wide central strips can be processed (12 mm).

Evaluation of the discount information at the pay stations can only occur if they are equipped with a Multicon MC 120 and discount evaluation function.

The System server is also required.

The device VALIDATOR 500 OFFLINE MAG is intended for interior use only.

Only original DESIGNA spare parts and consumables should be used.

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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 VALIDATOR 500 OFFLINE MAG as intended.
- Read the operating instructions carefully and pay careful attention to the safety instructions.

The device VALIDATOR 500 OFFLINE MAG must not be used in outdoor locations.

The device VALIDATOR 500 OFFLINE MAG 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.

All uses not described as intended use are prohibited.

Operation is not permitted if the permissible technical limits are exceeded.

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

Deployment of non-trained personnel is prohibited.

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.

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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 VALIDATOR 500 OFFLINE MAG. 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 VALIDATOR 500 OFFLINE MAG.

2.5 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.

2.5.1 Product safety labels on the device

Fig. 2: Product safety labels

1 Type plate

Not shown:

2 Safety information on the power supply unit

3 Device number on the rear of the casing

⇨ 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.

Device number Unique device number *(see chapter 9 Operation on page 25)*.

Type plate *See chapter 3 Identification on page 14*.

Safety information on the power supply unit *See chapter 4.2 Technical data power supply unit on page 16.*

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2.5.2 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.

- Use VALIDATOR 500 OFFLINE MAG only with appropriate external power supply unit with adequate output and input voltages.
- Power supply unit is intended for interior use only. Protect against condensed humidity or water.
- 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.

Device intended for interior use only

NOTICE

Humidity, dirt and heat may damaged the device.

- Device intended for interior use only.
- Protect the device against condensed humidity or water, dirt and heat.

2.6 Declaration of Conformity

DESIGNA

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*

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

Product/ *Produkt*

Designation/ *Bezeichnung:*	**VALIDATOR 500 OFFLINE MAG**
Series/ *Serie:*	**CONNECT**
Function/ *Funktion:*	**Discount Unit/ *Rabattiergerät***
From serial no./ *ab Seriennummer:*	AAR170000

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)*

The protection targets of the **Low voltage directive 2014/35/EU** have been met according to the directive 2006/42/EC, annex I A no. 1.5.1.
*Die Schutzziele der **Niederspannungsrichtlinie 2014/35/EU** werden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie eingehalten.*

Directive 2011/65/EU (RoHS
***Richtlinie 2011/65/EU** (RoHS)*

Delegated directive (EU) 2015/863 (RoHS)
***Deligierte Richtlinie (EU) 2015/863** (RoHS)*

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*

Kiel, 19/02/2026

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

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

CE_VALIDATOR 500 OFFLINE MAG_ENG.docx

Fig. 3: EU Declaration of conformity

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DESIGNA

UKCA DECLARATION OF CONFORMITY

according to the Supply of Machinery (Safety) Regulations 2008
(SI 2008 No. 1597)

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Person authorised to compile the technical documentation:

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

Product

Designation:	**VALIDATOR 500 OFFLINE MAG**
Series:	**CONNECT**
Function:	**Discount unit**
From serial no.:	AAR170000

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)

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (SI 2012 No. 3032, as amended)

Signed for and on behalf of
Designa Verkehrsleittechnik GmbH

Place and date of issue	Name, function, signature
Kiel, 19/02/2026	Dr. Joachim Kopp Director R&D

UKCA_VALIDATOR 500 OFFLINE MAG_ENG.docx

Fig. 4: UKCA Declaration of conformity

3 Identification

3.1 Type plate

The device type plate is located on the casing.

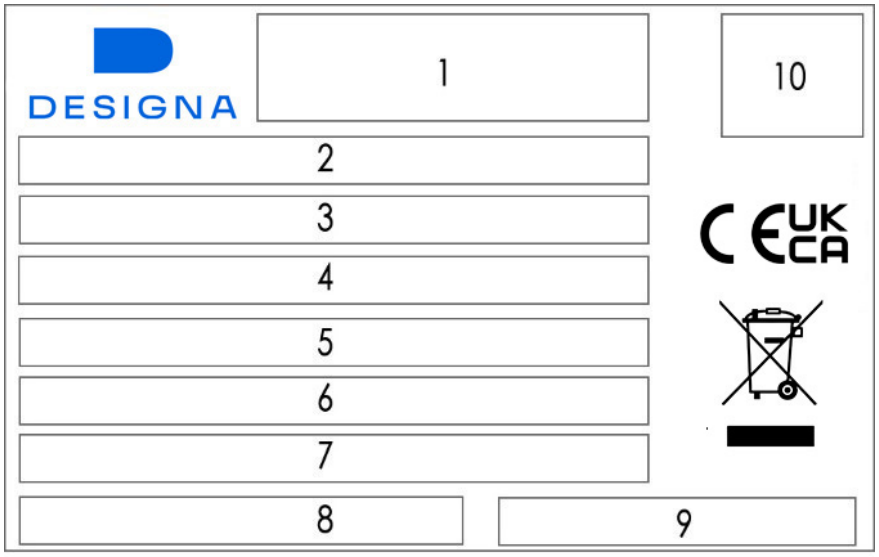

Fig. 5: Type plate

1 Manufacturer’s name and address
2 Series (system)
3 Production code
4 Device type / Designation (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 2D-Barcode

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

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4 Technical Data

4.1 Technical data VALIDATOR 500 OFFLINE MAG

Dimensions and weight

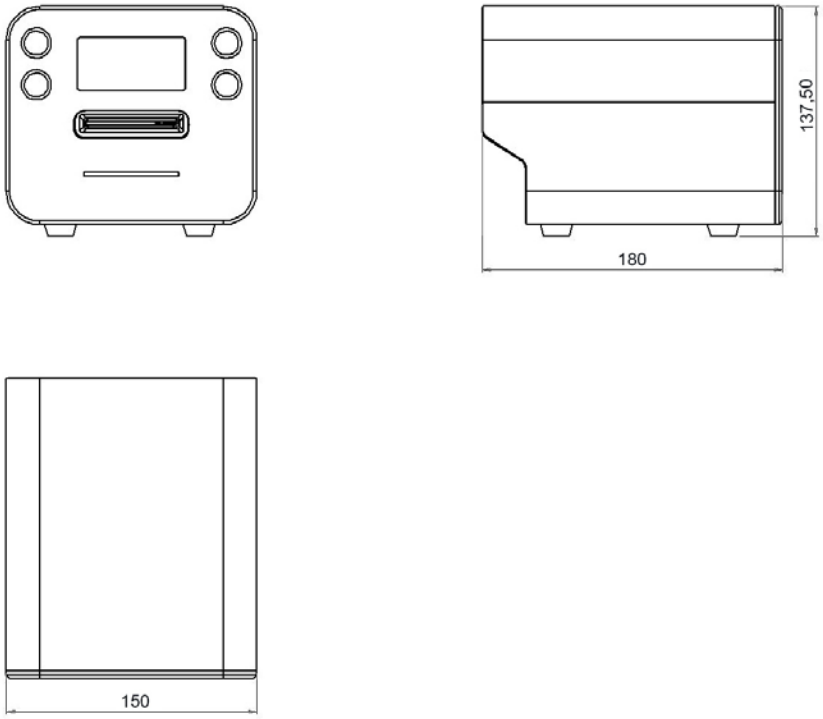

Fig. 6: Dimensions in mm

Description	
Weight	approx. 1.9 kg

Electrical connection

Description	
Power supply	24 V DC (via external power supply unit)
Power consumption	standby mode 6 W max. 30 W

Operating conditions

Description	
Operating temperature	+15°C to +40°C
Storage temperature	-25°C to +70°C
Relative humidity	max. 95 %, non-condensing
Noise development	< 70 dB(A)
Ingress protection rating	IP 5X

4.2 Technical data power supply unit

DESIGNA Identity no.: 7 235 010 145

Dimensions and weight

Description	
Dimensions	101x51x34 mm
Weight	approx. 0.16 kg

Electrical connection

Description	
Input voltage	100-240 V AC, 50-60 Hz
Power consumption	max. 30 W
Output voltage	24 V DC
Output current	1.5 A
Protection class	II
Protection	Overload, overvoltage, short circuit
Safety	CE, TÜV/GS, CB, UL, c-UL

Operating conditions

Description	
Operating temperature	0 to +40°C
Storage temperature	-20 to +85°C
Relative humidity	max. 90%, non-condensing

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5 Device Description

In this chapter there is an overview of the design and functions of standard and optional device equipment.

5.1 General design

1 Front panel
2 Casing

Fig. 7: General design

Scope of delivery

- VALIDATOR 500 OFFLINE MAG
- External power supply unit

Design

- Casing made of plastic
- Front panel made of Plexiglas®

Colour

- Casing: RAL 9016 (traffic white)
- Front panel: High-gloss black

5.2 Components on the casing front and their functions

Fig. 8: Components on the casing front

1 Red/green/blue display
2 Display
3 Button with touch function
4 Magnetic card reader

5.2.1 Red/Green/Blue display

The device VALIDATOR 500 OFFLINE MAG-1 is equipped with a *red/green/blue display*.
The *red/green/blue display* displays the following statuses:

Readiness for operation	The red/green/blue display illuminates green in a dimmed state.
Successful allocation of discount	The red/green/blue display illuminates bright green for a brief period; after removing the ticket, it illuminates green in a dimmed state
Allocation of discount error	The red/green/blue display illuminates bright red in combination with an acoustic device signal; after removing the ticket, it flashes red for a brief period.
Ticket is being described	The indicator lights up blue when writing to the magnetic strip. When the indicator lights up dark blue, HiCo data is being written to a ticket. A light blue light indicates that LoCo data is being written.
Standby mode	Standby mode is indicated by a blue flashing light on the indicator.

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5.2.2 Display

The device VALIDATOR 500 OFFLINE MAG is equipped with an OLED display with self-illuminating pixels (resolution 128x64).

The display shows the necessary information for operating the device (user guidance, error messages).

5.2.3 Buttons

1 Button 1
2 Button 2
3 Button 3
4 Button 4

Fig. 9: Buttons with touch function

The device VALIDATOR 500 OFFLINE MAG is equipped with three *buttons* for allocation of three different discount rates.

Button 1 Allocation of discount rate 1

Button 2 Allocation of discount rate 2

Button 3 Allocation of discount rate 3

Button 4 Ticket is reissued without discount information being assigned

Button 1-4 Entering number combinations for additional functions

Info Button When the device is in acceptance mode, *button 1* can be used to display device information, e.g. *device number*, *number of discounts assigned*. *For further details see chapter 8.3 Induce general function and check on page 24.*

5.2.4 Magnetic card reader

Hazardous optical radiation

⚠ WARNING

Risk of injury due to optical radiation!

The magnetic card reader 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 electrical technicians or electrical technicians of Designa trained and authorized dealers and partners.

Fig. 10: Inserting ticket (here side strip)

The discount information is written onto the **short term parker ticket** by the *magnetic card reader*.

Depending on the design, tickets with a wide magnetic side strip or centre strip can be processed.

> Insert tickets with the magnetic side strip at the bottom and facing your right side or with the magnetic central strip at the top or bottom.

5.3 Components on the casing back and their functions

Fig. 11: Components on the casing back

1 Serial interface RJ 45
2 Connection for power supply unit

5.3.1 Connection for power supply unit

An external power supply unit is plugged into the connection for power supply unit. The power supply unit provides the device VALIDATOR 500 OFFLINE MAG with an operating voltage of 24 V DC.

5.3.2 Serial interface RJ 12

Device configuration is carried out via the *serial interface RJ 12*.

> The configuration of the device is carried out by your DESIGNA Service.

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6 Transport and Storage

6.1 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.

6.2 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 and relative humidity: *See chapter 4 Technical Data on page 15*
- Check the general condition of all components and packaging regularly, if they are stored for longer periods than 3 months.

7 Positioning and Connection

7.1 Safety

Electric voltage

⚠ DANGER

Danger of death due to electric shock!

Contact with live components may result in death.

– Use VALIDATOR 500 OFFLINE MAG only with appropriate external power supply unit with adequate output and input voltages.

– Power supply unit is intended for interior use only. Protect against condensed humidity or water.

Device intended for interior use only

NOTICE

Humidity, dirt and heat may damaged the device.

– Device intended for interior use only.

– Protect the device against condensed humidity or water, dirt and heat.

7.2 Installation preparation

Location requirements

⇨ Ensure that a large enough installation area is provided, thus allowing the device to be operated easily.

⇨ Provide sufficient aeration. The device VALIDATOR 500 OFFLINE MAG should be free standing.

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7.3 Connection power supply

Check power supply unit

1. Check if the power supply unit has adequate input and output voltages, *see chapter 4 Technical Data on page 15*.
2. If the input and output voltages are not in accordance with those stated, do not put the VALIDATOR 500 OFFLINE MAG into operation and contact your DESIGNA customer service.

Connection power supply unit

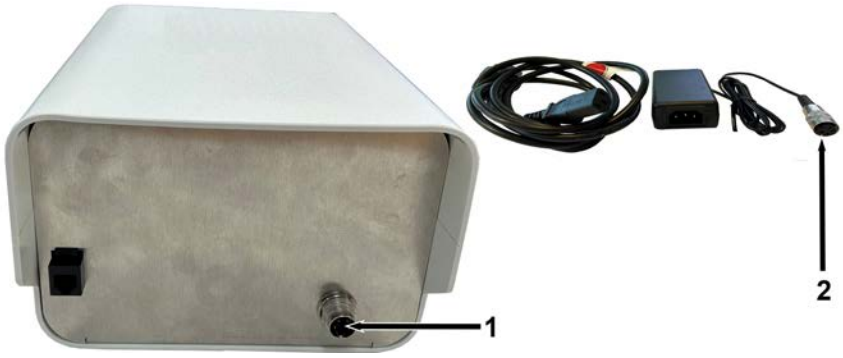

Fig. 12: Anschluss Tischnetzteil

1 Connection power supply unit
2 Power supply unit connector

1. Connect the *power supply unit connector* to the *connection for power supply unit* and screw tight.
2. Plug the power supply unit into a socket.

➤ The VALIDATOR 500 OFFLINE MAG is now in operation.

The device does not have an ON/OFF switch and is turned on and off by connecting and disconnecting it to and from the power supply.

8 Commissioning and Function check

8.1 Commissioning

> The configuration of the device VALIDATOR 500 OFFLINE MAG is carried out by your Designa Service.

8.2 Check condition of device

1. Check completeness of the safety labels *(see chapter 2.5.1 Product safety labels on the device on page 10)*. 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.

8.3 Induce general function and check

⇨ Plug the power supply unit into a socket.

➤ The VALIDATOR 500 OFFLINE MAG is now in operation.

Device version, device number, Number of allocated discounts

When the VALIDATOR 500 OFFLINE MAG is connected to the mains voltage the display version, device number, device version and the number of allocated discounts appear briefly.

Example: Device number and version

Beispiel: number of allocated discounts

Readiness for operation

When ready for operation, this message is shown on the display

Standby mode

If the device is not used for a longer period of time, the display gradually dims and goes into standby mode. Standby mode is indicated by the indicator light flashing blue. The device returns to operational readiness when a touch button is pressed or a ticket is inserted.

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9 Operation

9.1 General device functioning

The device VALIDATOR 500 OFFLINE MAG is an offline discount device: **Short term parker tickets** with a magnet side or central strip can be allocated **offline** magnetically coded discount information.

Only one validation mark is allocated per ticket: If a **short term parker ticket** is inserted into the device more than once, it triggers the following reaction depending on the device settings:

- The discount is always written and counted
- A detected discount is only overwritten and counted if a change occurs
- A detected discount is not overwritten and not counted

The following discount variants are available:

- Tariff Change Unit (TCU)
- Multi Day Change (MCU)

You can display which variant is available on your device by tapping the Info button. *See chapter 5.2.3 Buttons on page 19*.

9.1.1 Discount Variant: Tariff Change Unit (TCU)

The device VALIDATOR 500 OFFLINE MAG assigns discount information to **short term parker tickets**, resulting in a tariff change at the pay stations (e.g. manual pay station, automatic pay station or also exit control terminal with payment function: **drive&pay**).

When the discounted ticket is used at the pay stations[1], a normal tariff is calculated and immediately changed to a more favourable tariff *(also see the separate operator manual WinTariff for the various **payment types (GID)**)*.

Once payment has been completed, the price difference is saved in the **System server** and allocated to the tariff change unit via a device number. Up to 40 devices can be specified via their device number per system.

> The device number is created in the system server as a customer.

The **WebReport** operating report shows income from discounted tickets (with a changed tariff) together with the **short term parker** income. The separate discount report displays the number and sum of lost income due to allocated discounts for each discount unit.

9.1.2 Discount Variant: Multi Day Change Unit (MCU) (Option)

The device VALIDATOR 500 OFFLINE MAG encodes a selectable number of days on **short term parker tickets**.

When using the short term parker ticket at the automatic pay station, manual pay station or exit control terminal, the short term parker ticket is recoded as a multi-day ticket with the number of days (multi-day) without additional payment. The validity period of this ticket starts with this

[1] Evaluation of the tariff change at the pay stations can only occur if they are equipped with a Multicon MC Barcode or Multicon MC 120 and the discount evaluation function.

recoding and corresponds to the assigned “Multi-Day” data (up to 21 days). The ticket can then enter and exit the car park as often as desired during this period of validity.

The recodings at an automatic pay station, manual pay station or exit control terminal can be evaluated in the *Park cheque report* of the **WebReport**: The “Multi-Day” recodings are dealt in the system like a used park cheque. To enable a reporting per VALIDATOR 500 OFFLINE MAG the device no. is additionally entered as customer in the **WinOperate** and thus in the system (device no. = customer no.).

Each device VALIDATOR 500 OFFLINE MAG is assigned to this unique device no. via programming.

9.2 Allocation of discount

Discount information can be allocated to **short term parker tickets** if the device displays operational readiness *(see chapter 8.3 Induce general function and check on page 24)*.

> Insert tickets with the magnetic side strip at the bottom and facing your right side or with the magnetic central strip at the top or bottom *(see chapter 5.2.4 Magnetic card reader on page 19)*.

9.2.1 Discount variant: Tarif Change Unit (TCU)

One discount level

1. Insert the short term parker ticket.

Automatic

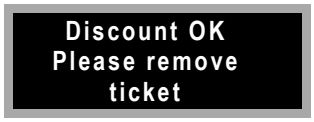
> - For a device with only one discount level, an automatic discount can be set up (without tapping a button).
> - If the **short term parker ticket** has been inserted into the magnetic card reader, discount allocation can ***no*** longer be cancelled.

➤ This message appears briefly after inserting the ticket.

➤ If an error occurs, there is an audible warning signal and, e.g., this message appears.

Discount allocation errors result, e.g., from incorrect ticket insertion, i.e. magnetic side strip facing the wrong direction.

2. If an error occurs, simply repeat the process and make sure the ticket is inserted correctly.



3. Remove the ticket.

If no automatic discount is set up for the device, the discount is applied using the buttons as described below.

One discount level

1. Insert the short term parker ticket.

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> **i** If the **short term parker ticket** has been inserted into the magnetic card reader, discount allocation can ***no*** longer be cancelled.

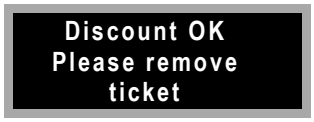
➤ This message appears briefly after inserting the ticket.

➤ If an error occurs, there is an audible warning signal and, e.g., this message appears.

Discount allocation errors result, e.g., from incorrect ticket insertion, i.e. magnetic side strip facing the wrong direction.

2. If an error occurs, simply repeat the process and make sure the ticket is inserted correctly.

3. Select the desired discount level by tapping keys 1, 2 or 3 *(see chapter 5.2.3 Buttons on page 19)*.



4. Remove the ticket.

9.2.2 Discount Variant: Multi Day Change Unit (MCU)

Multi Day data can be allocated to **short term parker tickets** if the device is in operation *(see chapter 8.3 Induce general function and check on page 24)*.

> **i** Insert tickets with the magnetic side strip at the bottom and facing your right side or with the magnetic central strip at the top or bottom *(see chapter 5.2.4 Magnetic card reader on page 19)*.

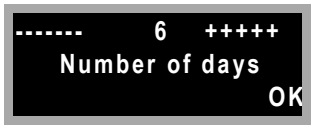
1. Insert the short term parker ticket.

> **i** If the **short term parker ticket** has been inserted into the magnetic card reader, "Multi-Day" data allocation can ***no*** longer be cancelled.

➤ If an error occurs, there is an audible warning signal and this message appears.

“Multi-Day” data allocation errors result, e.g., from incorrect ticket insertion, i.e. magnetic side strip facing the wrong direction.

2. If an error occurs, simply repeat the process and make sure the ticket is inserted correctly.



➤ The display shows this message[2].

3. With the buttons, select the desired number of days, which is to be allocated to the short term parker ticket:
For this, tap the right upper button (+) for upward counting and the left upper button (-) for downward counting until the desired number of days is displayed[3] *(see chapter 5.2.3 Buttons on page 19)*.

[2] The last selected number of days is saved and displayed.

[3] 1 up to 21 days are possible.
The allocation can be limited depending on the configuration, e.g. only 5 up to a maximum of 14 days.

➤ This message appears after tapping the *OK* button.

4. Remove the ticket.

9.3 Displaying counter readings

The number of allocated discounts is recorded by an internal counter.

⇨ Tap on *button 1*.

The device number and device version appear first on the display.

The number of all discounts allocated on the device is then displayed.

For a device with multiple discount levels, the respective discounts can be displayed individually using number combinations. *See chapter 9.4 Using number combinations for additional functions on page 28*.

9.4 Using number combinations for additional functions

By entering number combinations, you can perform additional functions on the device:

The number combination is entered by tapping the corresponding button (1 to 4). *(see chapter 5.2 Components on the casing front and their functions on page 18)*.

Enter number combination

1. Tap the button for the number you want to enter (e.g. *button 2* for the number 2) until the device beeps three times and the indicator light changes to purple.
2. Release the button.

➤ The selected number is shown on the display (e.g. 2).

3. Repeat *step 1* until you have entered all the numbers.

➤ The function number associated with the number combination entered is displayed (e.g. 45. To display the discounts for discount level 1).

➤ The function is executed, e.g. display of discount level 1 and the total of discounts awarded ‘25’.

Cancel input (manually)

⇨ Tap a button until the device beeps four times.

➤ All numbers entered so far will be deleted.

Cancel input (automatically)

If no further input is made, the input will be cancelled automatically.

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Additional functions

Display of the serial number

2222	Each device has an individual serial number in the chip that is not identical to the serial number of the device. This chip serial number is required to activate special functions.

Changing the discount variant

2244	Temporary switching between different discount options, e.g. from tariff switching to multi-day ticket. After a reset (briefly disconnecting the device from the power supply), the preset discount option is active again.

Display allocated discounts per discount level

2341	Display total discounts for discount 1
2342	Display total discounts for discount 2
2343	Display total discounts for discount 3

Switching the signal transmitter on and off

3311	If the signal tones are disruptive, they can be switched off and on again using the number combination. After a reset (briefly disconnecting the device from the power supply), the signal transmitter is switched on again.

HiCo/LoCo switching

3322	Switch to the HiCo or LoCo ticket procedure depending on the ticket material used.

9.5 Troubleshooting

The following describes possible causes of faults and measures to remedy them.

Fault	Troubleshooting
Ticket stuck	If the ticket is not issued correctly because it is stuck, the ticket feed can be reactivated by tapping and holding a button (three seconds).
No display on the screen	If nothing appears on the display, the device is in standby mode. Tap a button or insert a ticket to switch the device to operating mode.
Display jumps	If the device is not used for a long period of time, the display slowly dims. To protect the display, the display is always slightly shifted. By tapping a button or inserting a ticket, the device switches to operating mode.
Ticket not written	If the error message 'Ticket not written' appears, this refers to a ticket that does not contain any encoded data for entry and therefore cannot be assigned a discount. Alternatively, it may be a side strip ticket that was not fed into the device correctly.
Write error	Turn the ticket over and feed it into the device again. If the error occurs frequently on only one side, the print head may need to be replaced. If the problem occurs on both sides, the ticket material may not be compatible with the printing method (HiCo/LoCo). In this case, use the manual HiCo/LoCo switchover via the number combination 3322 *(see chapter 9.4 Using number combinations for additional functions on page 28)*.
Wrong ticket	The ticket is not eligible for a discount, e.g. congress ticket. Select a short term parker ticket.
Device beeps after reset	A short double beep indicates that the process has been completed correctly. Four long beeps are error messages, which are displayed with an error code.
Display is frozen	In case of general errors, e.g. if the display freezes, perform a reset: Disconnect the device from the power supply by unplugging the mains plug. Wait at least **10 seconds** and then plug the mains plug back in.

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10 Maintenance

10.1 Safety

Inappropriate maintenance

⚠ WARNING

Risk of injury from inappropriate maintenance!

Inappropriate maintenance can cause severe or lethal injuries.

- 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.
- Make sure that cleaning fluids are neither swallowed nor come into contact with eyes.

Inappropriate cleaning

NOTICE

Inappropriate cleaning can result in damage to the device.

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

- 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.

10.2 Cleaning items

The following cleaning items can be ordered from DESIGNA:

DESIGNA order no.	Description	Content
7232148941	Cleaning cloths soaked with plexiglass cleaner	10 cloths

10.3 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.

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10.3.1 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
Visually inspecting the device and power supply unit	x					x				
Checking the safety relevant user guidance stickers and images *See Checking safety labels on page 33*	x						x			
Casing *See Cleaning the casing on page 34*										
Clean casing exterior	x						x			
Clean front plate	x						x			
Connection, cabling, voltage										
Make sure cable connections are inserted correctly		x						x		
Measure the voltage at the power supply unit		x						x		
Software										
Check firmware version of the device and, if necessary, update it		x						x		
Checking correct function after completing maintenance work		x						x		
Testing to German accident prevention regulation (DGUV-V3)										
Check the power supply unit		x						x		

10.4 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.

10.5 Cleaning the casing

10.5.1 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).

NOTICE

Do not use any aggressive agents like thinners or petroleum ether for cleaning the casing. Recommended cleanser: Washing-up liquid-water-solution.

10.5.2 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.

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11 Disposal

Occupational safety and environmental protection

⚠ WARNING

Risk of harm to humans and the environment as a result of improper disposal of the device or components.

Improper disposal of the device or components can be harmful to human health and the environment.

– Pay attention to valid country-specific environmental regulations.

12 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.

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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[4] is deducted form 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**

[4] The fee for using the flexi card depends on the set payment type (GID) in the tariff configuration.

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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.

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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[5].

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**).

[5] 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 it's 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

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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).

Shift manager (also called route man)

The operator is allowed to conduct maintenance, cleaning and filling work with an instructed and basic training skilled **shift manager**. These works are indicated and described in the main chapter *Cleaning and Maintenance* as well as in the cleaning and maintenance sections of the individual modules.

Shift managers conducting maintenance, cleaning and filling work ***inside*** the device need to be specially instructed and trained on power supply disconnecting features and on the working steps to be carried out in the device interior.

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.

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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[6] 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

[6] 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.

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).

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**).

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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.

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Version 1.00, 02/2026 (KS)	Adaption to 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.

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