

Manual

System PM100

Automatic Pay Station
APS 100 COMPACT

Ticket / CHIPMASTER

Version 1.20

DESIGNA

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Overview of versions

| | | | |
|-------------|-------------|--------|-----------------------------|
| Version 1.0 | 03.06.1998 | JB, Eh | Compilation of the document |
| Version 1.1 | 10.03.1999. | Ba | Revision, new housing |
| Version 1.2 | 30.10.1999- | Ba | Revision, new printer |

1 Structure of the pay station

1.1 Overview

The automatic pay station APS 0100 COMPACT is available for two different systems: for ticket systems for processing parking tickets with magnetic strips, and for the Chipmaster system, which uses parking chips. The systems differ only in the way the tickets or chips are processed. For this reason, the manual refers to tickets and parking chips.

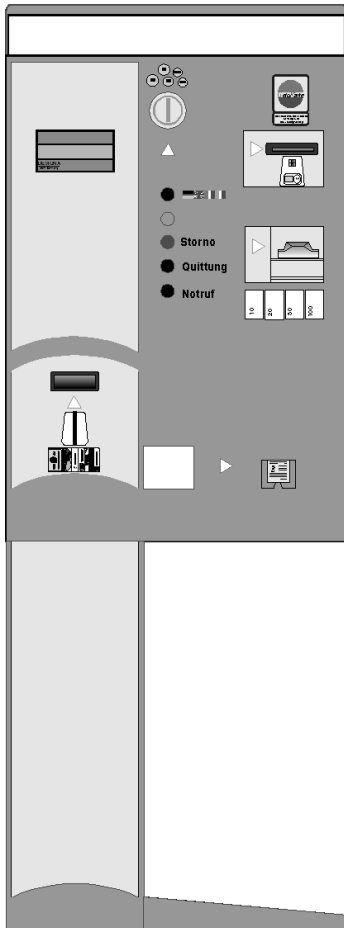


Illustration 1: Complete overview of the COMPACT pay station

1.2 Housing

The housing is made from elo-galvanised sheet steel, the door consists of stainless steel. The standard version of the unit is powder coated in Pantone 320C (turquoise blue). Other coatings are possible as options. The components required to operate the unit are mounted on a frame.

In the basic version, the pay station is supplied without stand and without lighting unit. A mounting kit is required for wall mounting. If required by the customer, a stand and/or a lighting unit over the pay station can also be fitted.

The front door is double locked with a bar lock. The bar lock is secured by means of a security cylinder lock.

1.3 Control elements at the door

1.3.1 Buttons

The control elements are mounted in the middle of the pay station housing. The buttons have the following function:

- **Cancellation button**
The cancellation button interrupts the current pay station procedure. The pay station pays back any paid money, or codes a credit note on the ticket/card/chip and returns the ticket/card/chip.
- **Information button**
The information button forms a link to the intercom centre and makes a call tone be heard in the main intercom centre.
- **Receipt button**
By pressing the receipt button, the customer can obtain a receipt of the paid parking fee after completing payment.
A receipt is produced automatically for payment by credit card or when a paid ticket is inserted into the magnetic card reader a second time.

Optional:

- **Language switch**
This button can be used to change the language used in the display. The possible languages are indicated by the flags next to the button. The language texts are downloaded from the BFR by pressing the button, and are then shown in the display. The system can manage up to 4 languages.

Optional for ticket systems:

- **Lost ticket**
With this button, the customer can request a replacement ticket at a special rate (normally the daily rate). This button can be blocked or released from the data control centre to rule out any risk of misuse, for example this button can be released for individual customers after checking the situation by means of the intercom.

1.3.2 Display

A liquid crystal display (LCD) 2 x 20 characters is integrated in the pay station. The characters are 10 mm high. The display is illuminated from behind by LEDs. All instructions necessary for operation (user guide, money amounts, fault messages) are shown in plain text.

As an option, a display with space for 4 x 20 characters is available, which indicates the sums of money in the local currency and Euro.

Illuminated arrows help the car park customer through all transactions at the automatic pay station.

1.4 Inner structure of the pay station

The inner structure of the pay station is arranged in three areas. On the left, depending on the system, there is the magnetic card reader or parking chip reader. The control electronic (-> TCC) is fastened on a mounting plate together with the power supply and the connection terminals. In the middle is the coin processing unit and right on the right the receipt printer, together with the options note processing and money card reader.

The individual components of the pay station are described below.

1.4.1 Main switch

The main switch is located in the rear left-hand section of the pay station. This switch is used to switch the pay station on and off. In the lower position, the switch disconnects the pay station from the power mains for all poles. When this switch is switched on, the pay station is supplied with electricity and the TCC loads its program.

CAUTION:

The mains filter, terminal strip and optional illumination unit are not disconnected from the mains!

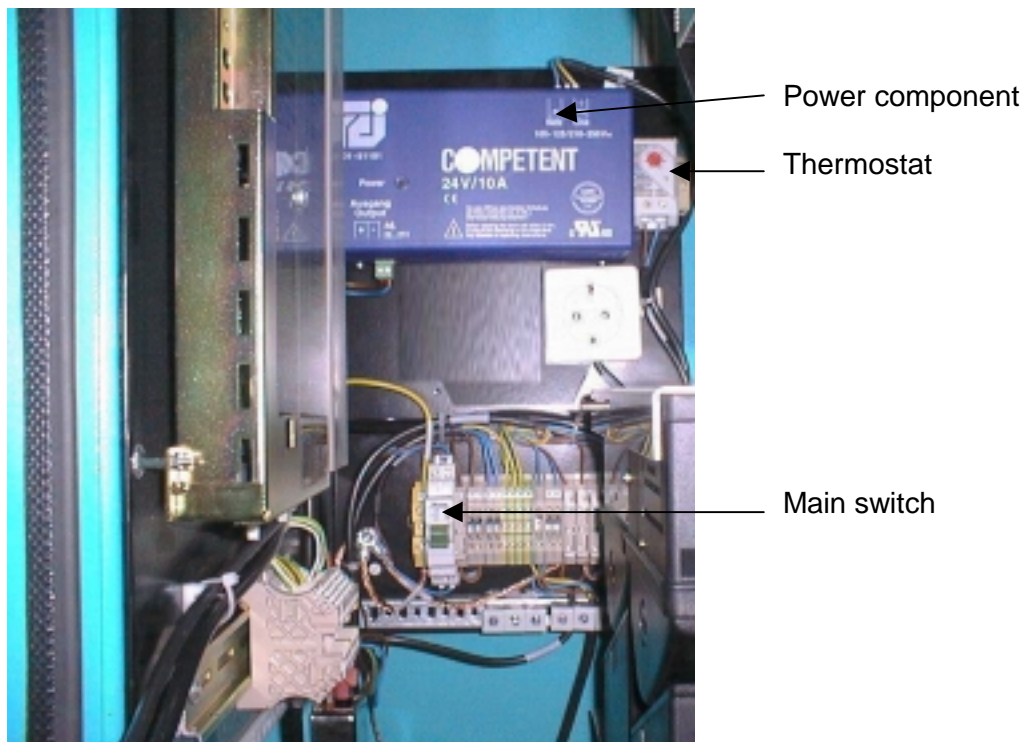


Illustration 2: Main switch and terminal strip

1.4.2 Power component 24 V

The power component is located towards the back, over the main switch. It provides the function modules of the pay station with 24 V DC power supply. An illuminated display (power) indicates that the power component is working.

The DC power supply is distributed to the modules via the terminal strip positioned under the power component.

Depending on the version, a magnetic card reader or parking chip reader is installed in the pay station.

1.4.3 Multicon

The magnetic card read is used together with the ticket slide or with the options ticket printer and/or transport component, and is called Multicon.

Depending on the scope of functions, the magnetic card reader can be equipped optionally with additional reading heads for the side track as per ISO and for the special track for discounting.

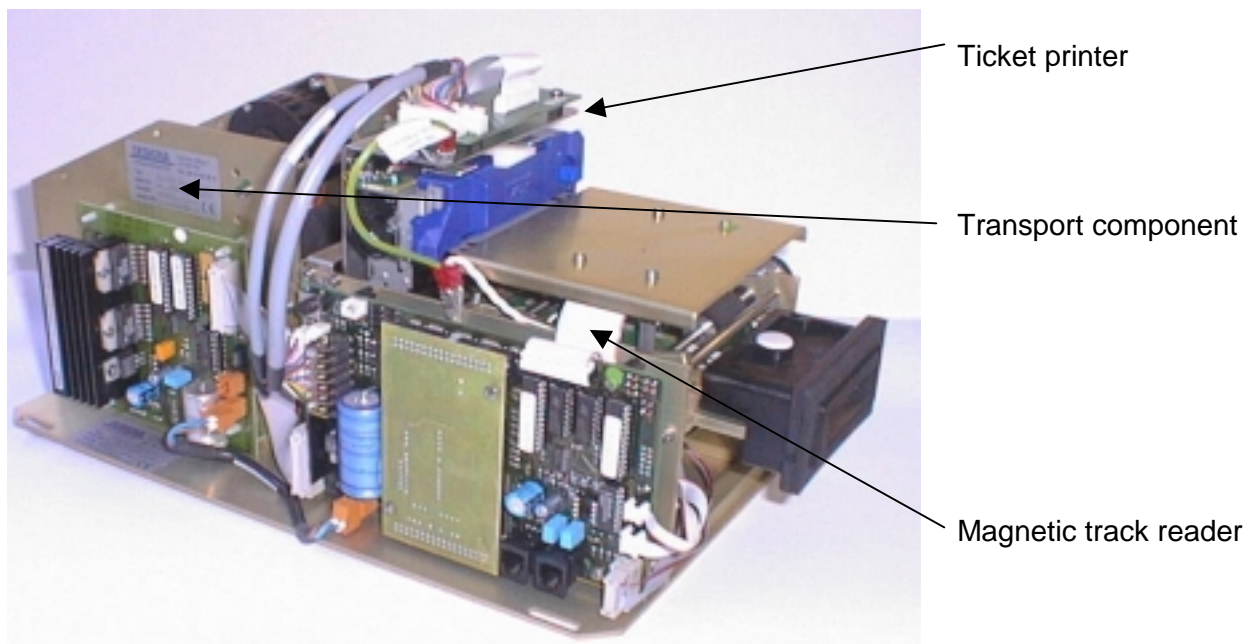


Illustration 3: magnetic track reader

1.4.3.1 Magnetic card reader

The magnetic card reader pulls the tickets and cards in, reads the data, writes (codes) the data back on the ticket or card in changed form and then returns the card if required.

Depending on the design of the Multicon, paper tickets can be processed together with plastic cards with middle track and optionally also side track (credit cards, bank and ec cards).

The magnetic card reader is equipped with a printed circuit board (flat component UMSL) for serial communication with the TCC (interface X10 or X11) and which is responsible for controlling the functions of the magnetic card reader, the pin printer and the transport component.

The connections of the printed circuit board are indicated in the following drawing.

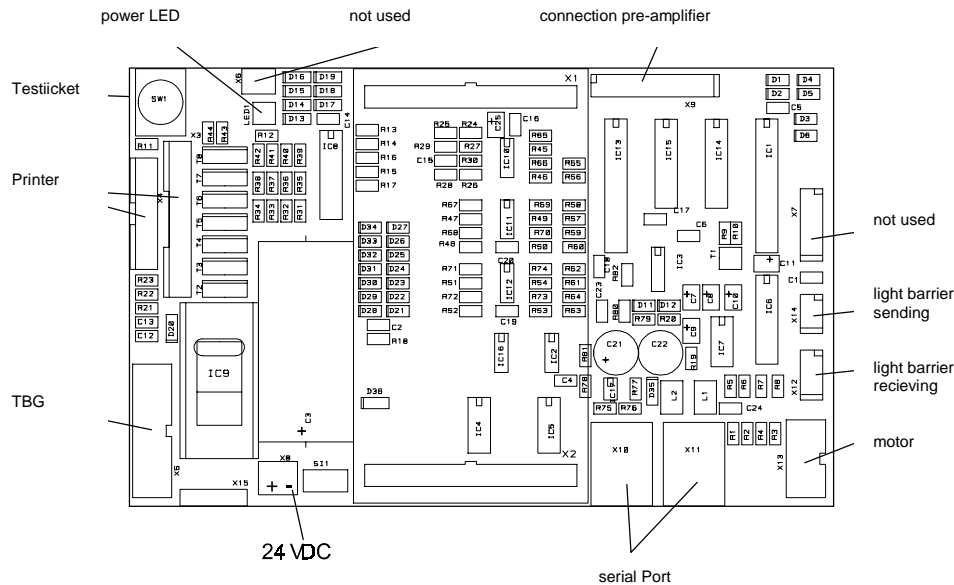


Illustration 4: Flat component magnetic card reader (UMSL)

1.4.3.2 Ticket printer

The paper tickets (cardboard) are printed in plain text with figures 0 – 9 and capital letters. The pin printer can only be used in combination with a magnetic card reader, as this controls the transport of the ticket into the correct printing position.

1.4.3.3 Transport component (TBG) (optional)

Three different transport components can be used optionally:

- Transport component TBG I offers the possibility of ticket supply, it is present when the pay station has the option "lost ticket". TBG 1 does not allow for processing of credit cards or value cheques.
- TBG II supports the processing of credit cards, value and time cheques. It has an integrated ticket filter so that the tickets can either be transported into a ticket store or, by changing the filter over, collected in a collector (e.g. value and time cheques). If the ticket is "parked" in the ticket store, then the magnetic reader is free to process a credit card or ec card.
- TBG III has the same features as TBG II but also allows for the additional production of tickets from a belt (lost ticket). However, the processing of value and time checks and the option "lost ticket" are mutually exclusive.

The connections of the printed circuit board in TBG III are shown in the following illustration:

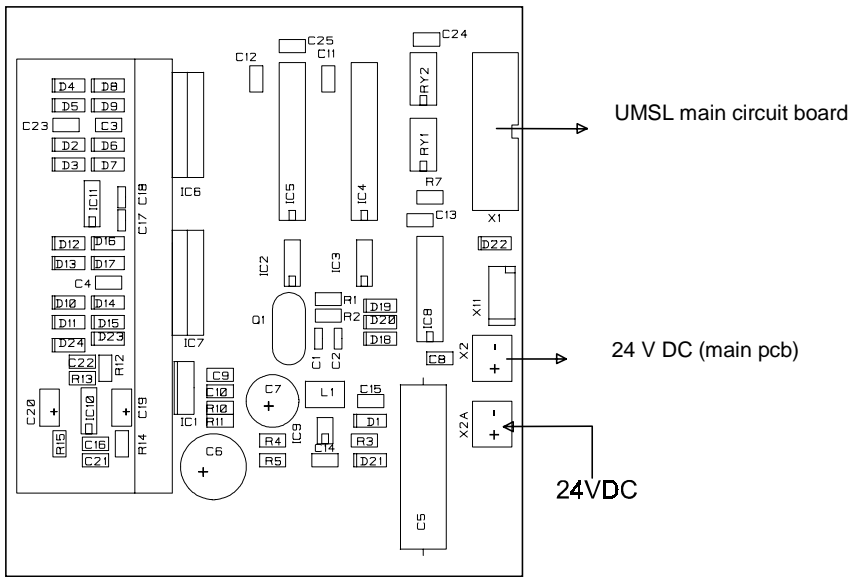


Illustration 5: flat component UTBG 2 (assembling side)

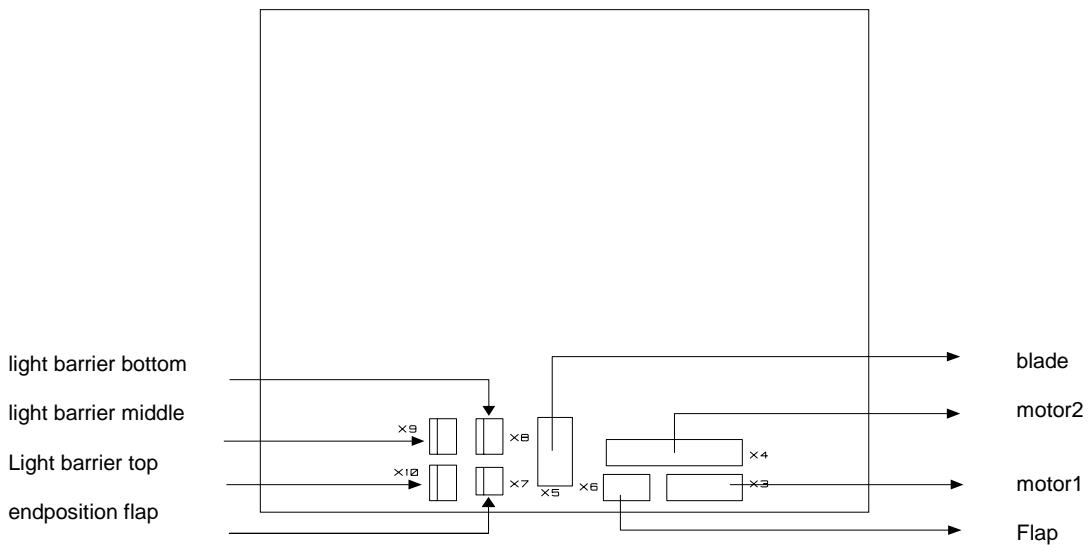


Illustration 6: flat component UTBG 2 (soldering side)

1.4.4 The Chipmaster unit (CME)

The CME is mounted as a module on a mounting plate. The module also comprises the front plate with the intake slot and the return device together with the electronic control components. The unit has a rotor driven by an actuator which moves the parking chips in the VME and fixes them in front of the programming device.

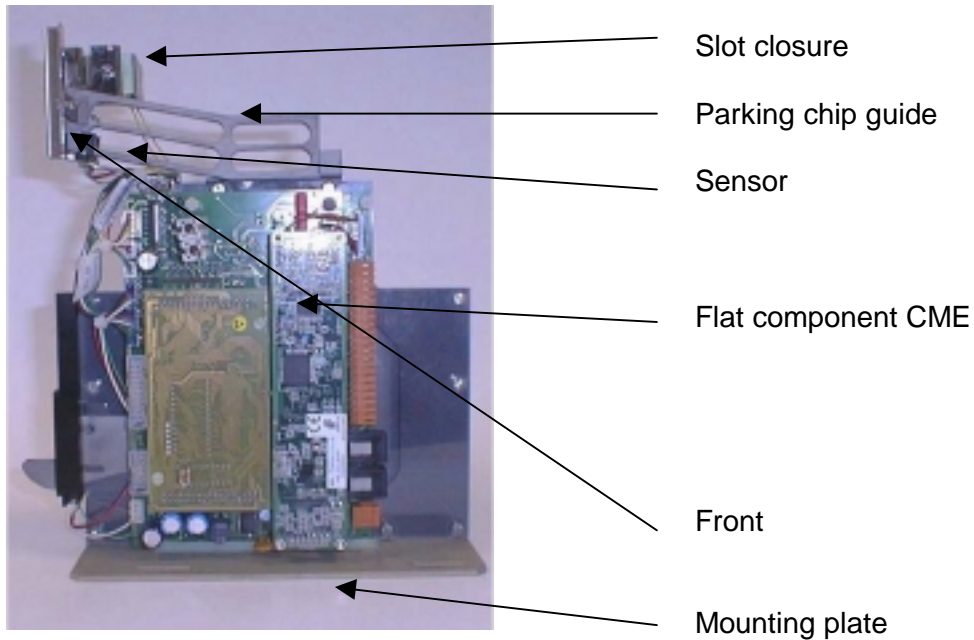


Illustration 7: Chipmaster unit (flat component side)

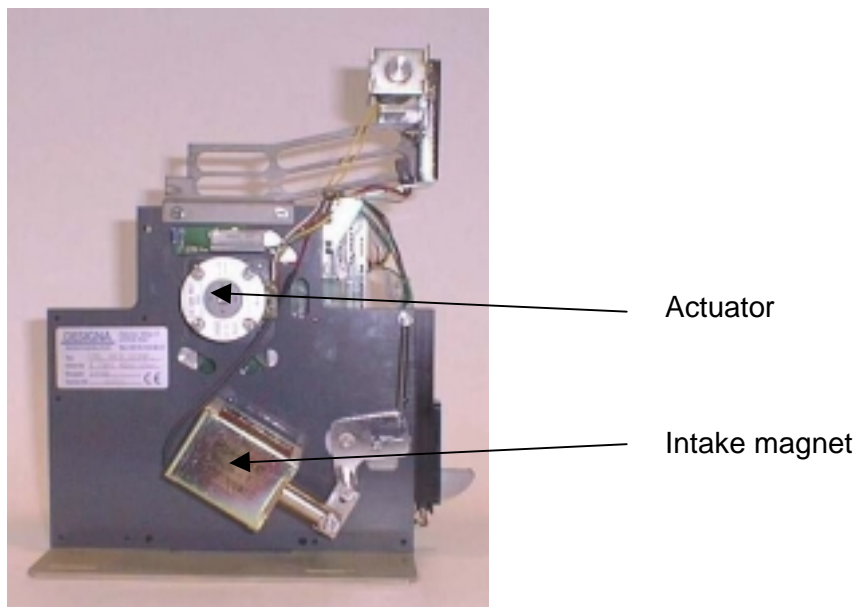


Illustration 8: Chipmaster unit (actuator side)

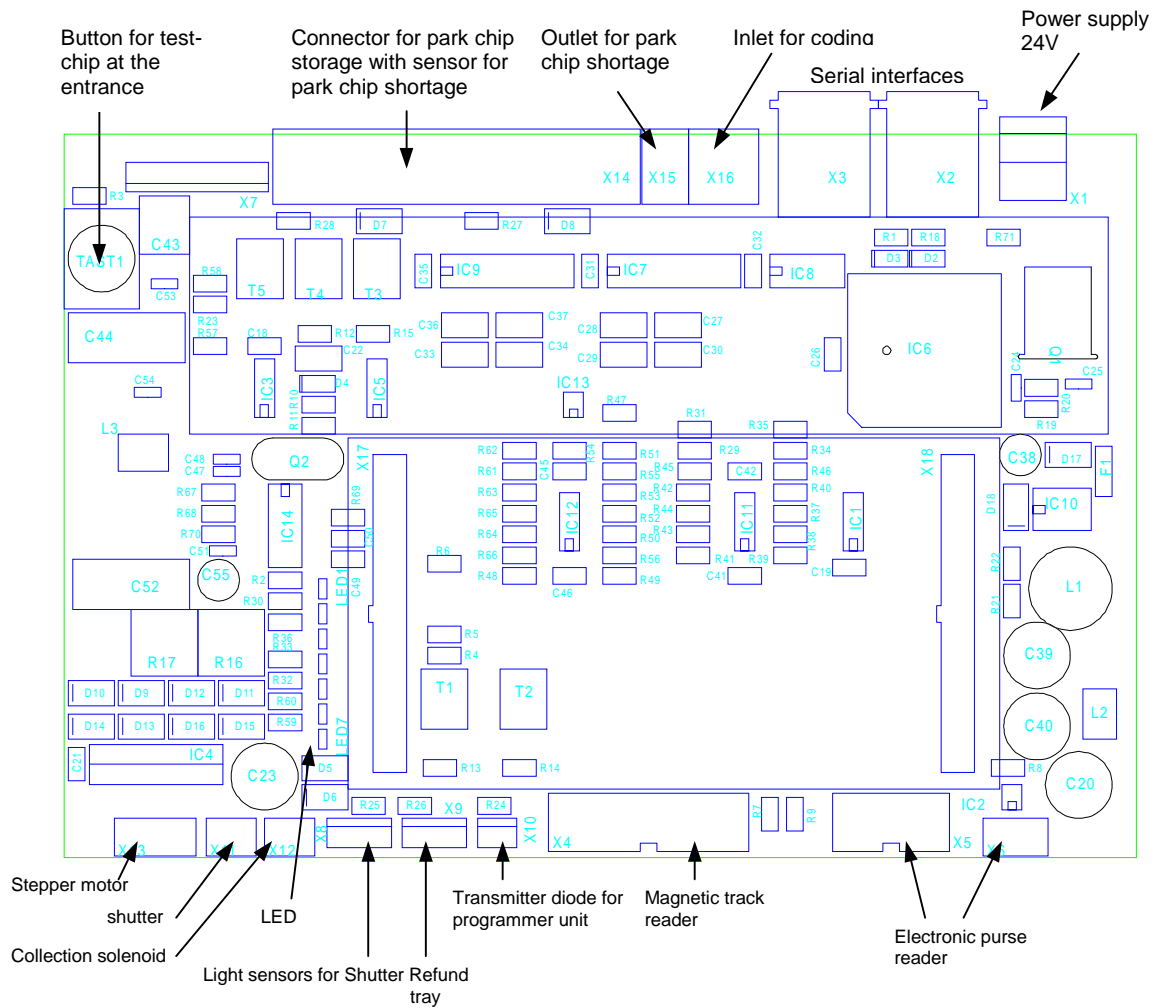


Illustration 9: Flat component Chipmaster unit (CME)

All connectors to the function components and optional card readers are to be found on the flat component.

Various sensors are represented by a series of LEDs:

- LED 1 = not in use
- LED 2 = filling lever right-hand hopper (LED on = level too low)
- LED 3 = filling lever left-hand hopper
- LED 4 = light barrier at the return tray (LED on = return tray free)
- LED 5 = light barrier at the insert slot (LED on = insert slot free)
- LED 6 = light barrier for rotor position (LED on = rotor in idle position)
- LED 7 = light barrier for writing/reading position of parking chip (LED on = parking chip in writing/reading position).

1.4.5 TCC (Terminal Control Computer)

The TCC controls all actions inside and outside the Parkmaster 100 units and monitors all functions.

1.4.5.1 Technical Design

The TCC is installed in a sheet steel housing and contains all connectors for the peripheral equipment.

The technical data for the TCC (type KCC) are as follows:

| | |
|--------------------|---|
| Power supply | 24V DC |
| Processor | Motorola 68EN302, 20MHz |
| Memory | 2 MB RAM (1 MB Flash RAM for program, 1 MB S-RAM for data) |
| Data security | Integrated Goldcap capacitor for 2-3 days data preservation Optional lithium battery for approx. 1 year data preservation |
| Serial interfaces | 9x RS 232 (including 2 optoelectronic couplers) 1x RS 232 for DEBUG 1x RS 485 for the car park network DESINET with integrated, connectable final resistance |
| Parallel interface | 12 inputs and 12 outputs for direct 24V control. The inputs and outputs are 0V active, i.e. in activated state 0V are present or must be triggered with 0V. The outputs can be loaded with max. 0.5 A. |
| Dimensions | approx. 250 x 150 x 30 mm |
| Weight | approx. 1000g |
| Temperature | Operation 0 to 50 °C Storage -20 to 70 °C |

1.4.5.2 Layout of the TCC

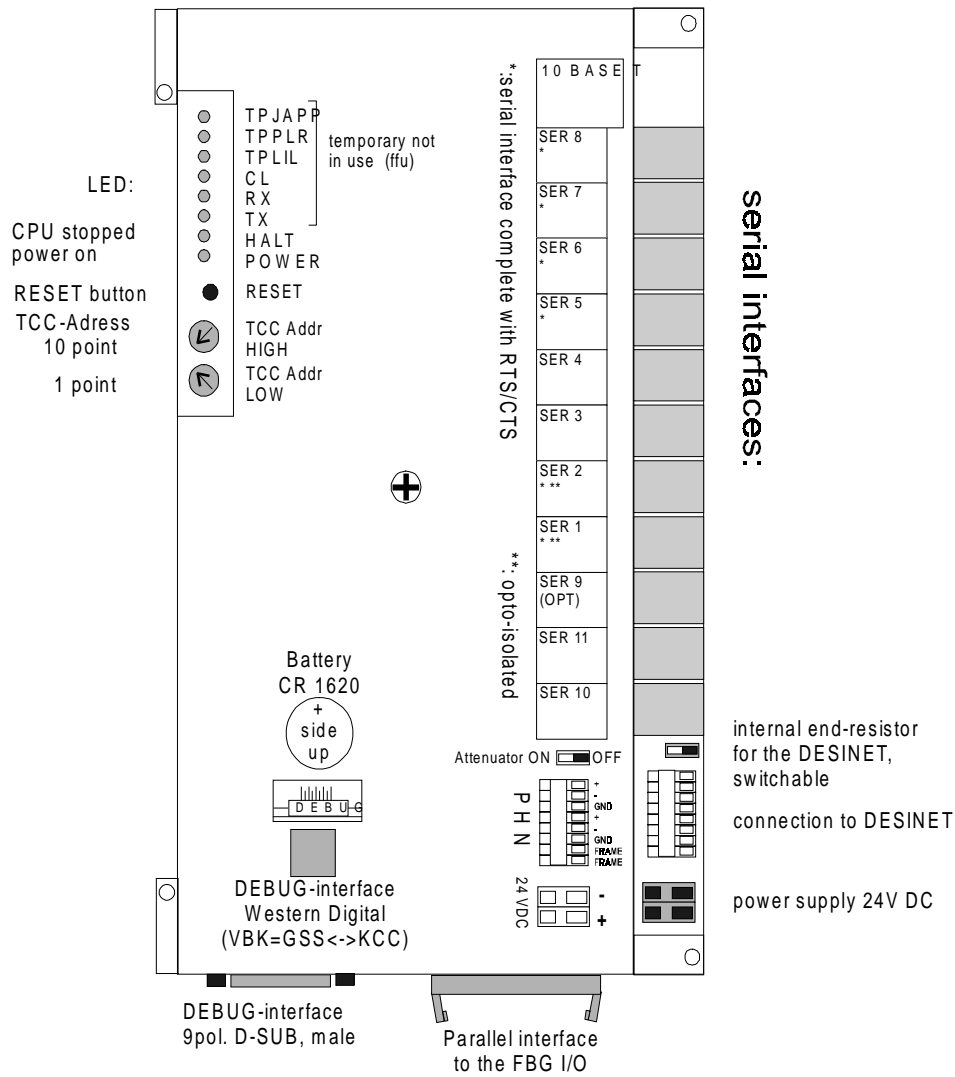


Illustration 10: layout of the TCC

1.4.6 Coin processing unit MVE

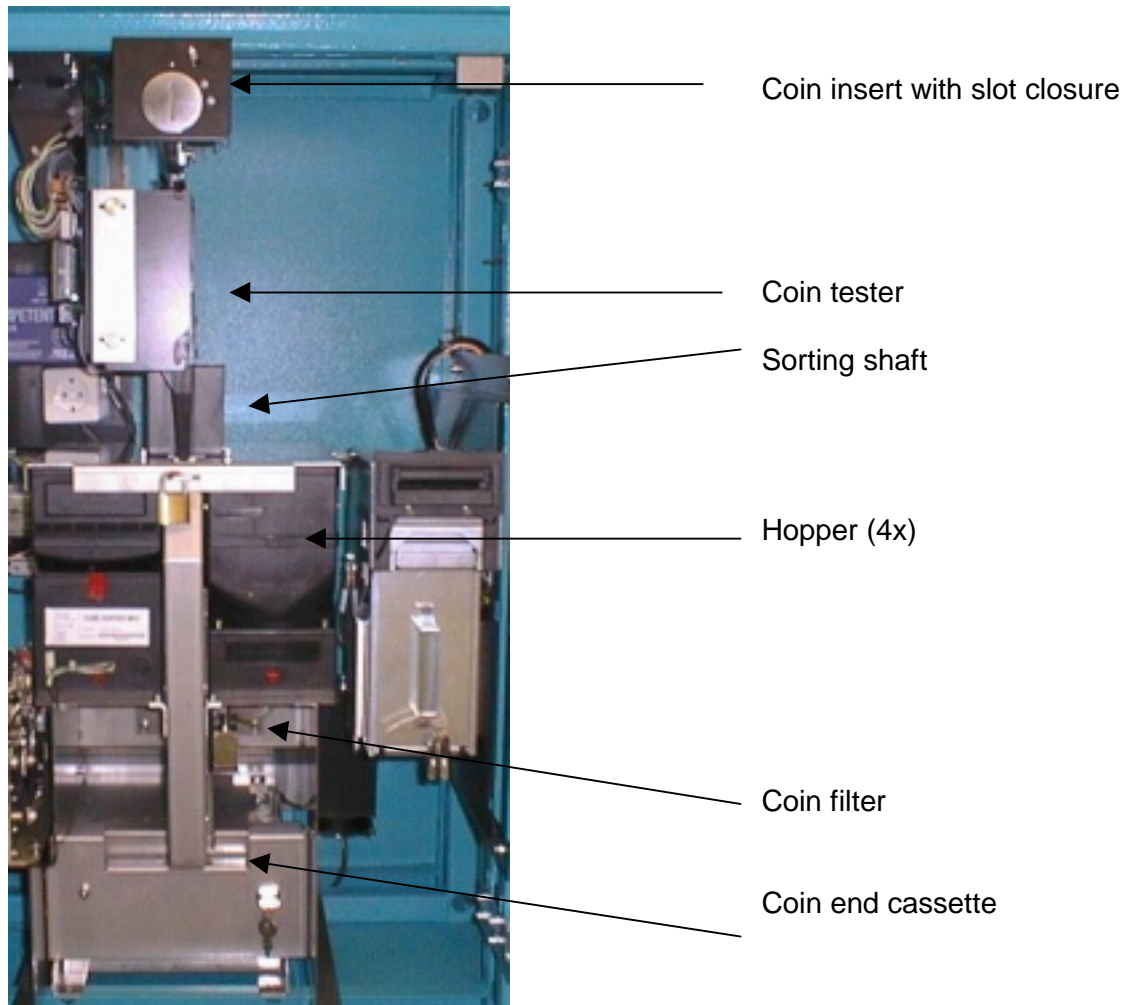


Illustration 11: coin processing

The MVE is equipped with a coin tester to test all inserted coins or tokens. The accepted coins are then sorted into the corresponding hoppers or into the end cassette, and the change is paid out from the intermediate store of the pay station.

The coin tester sends the coins directly to the hoppers via the sorting shaft so that only four different types of coin can be stored in the hoppers. It is not possible to allocate one type of coin to two hoppers.

The coin processing unit consists of the following components:

1.4.6.1 Coin insert slot with slot closure

The coin insert is locked by a magnetic closure. The coin slot does not open until the pay station is ready to accept the coins, i.e. after inserting a ticket for payment. The slot closes again after every coin so that the coins can be singled out to avoid congestion in the coin tester.

1.4.6.2 Printed circuit board coin processing

The printed circuit board controls all functions of the coin processing unit and is connected to the TCC by means of a serial data line.

1.4.6.3 Coin tester

The coin tester is programmed to accept the correct coins and to reject foreign coins and counterfeits. Up to 12 different coins (including different currencies) and tokens can be accepted. Counterfeits and foreign currencies which cannot be accepted are ejected directly into the return tray.

Over the coin tester there is a sorting shaft with 6 channels. These channels convey the coins into the hoppers, the intermediate store or as rejected coin into the return tray.

1.4.6.4 Hopper

The hoppers are responsible for providing the change. The pay station is equipped with hoppers for a capacity of 200 to 500 coins (depending on coin size). The hoppers are made of plastic with an intake opening at the top and a lateral output channel with optical monitoring. The coins are supplied by means of a rotor disk controlled by the printed circuit board of the MVE.

Various rotor disks and inserts are available for the hoppers depending on the various coin sizes.

A description of the hoppers is contained in the appendix.

1.4.6.5 Coin filter

Every inserted and accepted coin is sorted either into the hopper or into the coin filter. Once the required amount has been paid or exceeded, then the money is sent from the coin filter into the end cassette. Any change is paid out by the hoppers, stored in the coin filter and then conveyed to the return tray.

In the event of a cancellation, the sum which has already been sorted into the hoppers is paid by the hoppers into the coin filter and from the coin filter into the return tray.

1.4.6.6 Coin end cassette

The coin end cassette has a capacity of approx. 4.5 litres (approx. 2000 coins). It is pushed into the pay station in closed state and engaged in its correct position: in doing so, the intake opening for the coins is opened and a switching contact reports that the coin end cassette has been pushed into position.

In order to empty the coin end cassette, firstly the front cover plate has to be removed, then the cassette can be pulled out. When the coin end cassette is removed, the coin intake opening closes: this prompts the printing of a pay station report on the receipt printer, and the coin counter for the cassette is reset to zero.

The closed cassette can now be pulled out. The cassette can be opened outside of the pay station by means of a key.

After being removed from the automatic pay station, the cassette cannot be pushed back in again immediately, but must be emptied first (i.e. opened and sealed again). Then it is possible to push the cassette back in again

All individual elements of the coin processing unit can be easily replaced. In addition, the lead cables of all elements are equipped with connectors which facilitate a quick change.

1.4.7 Note processing

Note processing is installed as an option in the right-hand section of the automatic pay station.

The note reader is mounted on a mounting plate. Various readers can be used as required.

1.4.7.1 Note reader BNA

The note reader BNA is available in various versions

BNA 50-X is available with a free-fall storage device for approx. 500 notes, in which the bank notes are collected without being stacked. The "X" stands for a figure which indicates how many types of notes the reader will take. 2 stands for 4 notes, 3 for 6 notes and 4 for 13 notes. The standard version only accepts one bank note per payment, as it is not possible to return a note once it has been paid into the end cassette. If several notes are to be accepted, this is possible by means of a "software intermediate store" (software licence); here the notes are taken immediately into the end cassette. In the case of cancellation of the payment transaction, the value already booked off the ticket is recoded as credit note and subtracted from the parking fee at the next payment transaction. It is also possible to limit acceptance of individual bank notes from a certain sum, e.g. a DM 50.00 note can only be used for payment when the fee is DM 30.00 or more.

BNA 51-X is available in the versions of BNA50-X, but in this type the notes are collected in a stacking cassette.

BNA 52-X has a stacking cassette and an intermediate storage cassette which can store up to 15 notes per payment transaction: in the case of a cancellation, exactly these same notes are then returned to the customer.

The stacking end cassette of the note reader has a capacity for approx. 1000 notes.

1.4.7.2 Note reader WBA-SS

Note tester WBS-AA can recognise up to 4 notes. The standard version can process one note per payment transaction. It can also be equipped with a software intermediate storage for acceptance of several bank notes. The standard WBA reader has a locking safety stacking end cassette for approx. 400 notes.

1.4.8 Receipt printer

The thermal printer is used for producing receipts of payment transactions with credit cards or electronic purses (money card, quick card, etc.) or on request.

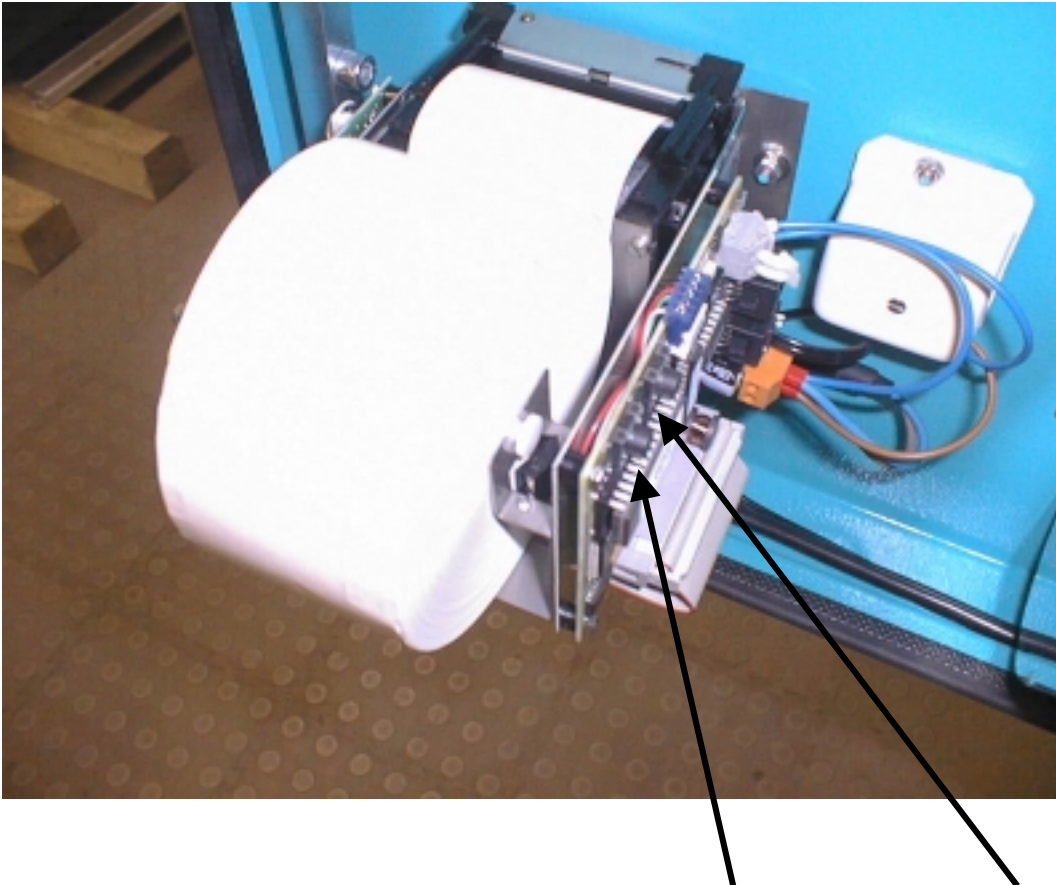


Illustration 12: receipt printer

Cutter

Threading-in button

The thermal printer has a sensor which detects when there is no more paper, producing a message to the data control centre. The paper has DESIGNA Ident. number 7 232 120 550.

Changing the receipt paper for the thermal printer.

- Open the pay station door.
- Remove the old paper roll, place a new roll on the shaft and set it back in the holder.
- Cut the paper off smoothly and at right angles to the rolling direction.
- Thread the paper into the intake slot until you feel a slight counterpressure.
- Press the thread-in button and the paper is pulled into the printer. Hold this button until the paper is pushed out of the output slot (in the pay station door).

- Activate the cutting head to cut off the paper.
- Close the cassette door.

General instructions:

Please use only the specified thermal paper in the interests of a long service life and first-class printing results.

Poorer quality paper can produce poorer prints because of inadequate sensitivity, wear on the printer head and paper congestion.

Never start the printer without paper in the machine.

Never touch the printer head with a sharp object.

Never touch the printer head or motor. Risk of burning from high temperatures!

Technical data:

| Feature | Data |
|-----------------------|--|
| Printing method | Thermal printing |
| Resolution | 4 dots per mm |
| Dots per line | 192 |
| Printing width | 48 mm |
| Paper empty indicator | light barrier |
| Speed | 200 dot lines per sec. (55 mm per sec.) |
| Paper Feed | 0.25 mm |
| Power supply | 24V |
| Temperature range | 0° to + 60 °C |
| Service life | 300,000 cuts 50 million pulses 30 km paper |
| Paper width | 58 (+0 –1) mm |
| Paper thickness | 50 g |
| Weight | approx. 330 g |
| Recommended paper | FH65BX (65 µm) by Honshi Paper Co. TF50KS-E2C (65 µm) by Nippon Paper Ind. AF50KS-E (65 µm) by Nippon Paper Ind. AF50KS-E3 (65 µm) by Nippon Paper Ind. |

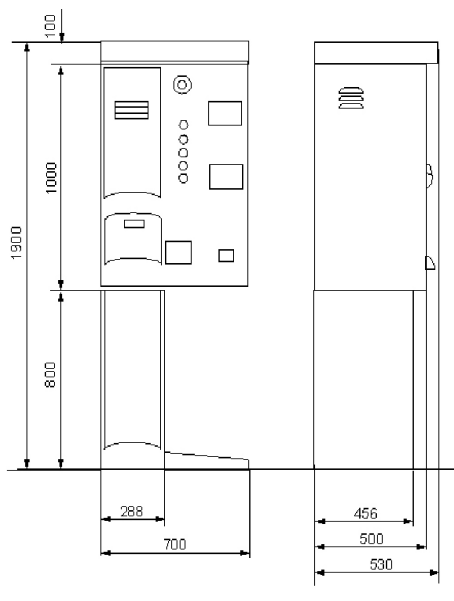
1.4.9 Unit heating

The integrated heating with thermostat guarantees troublefree operation of the pay station, even at temperatures under +10°C. The position of the thermostat is indicated in illustration 2.

A second heating or ventilator can be used for extreme climatic conditions

2 Technical data

| | |
|-------------------------|--|
| Power supply: | 110/230V AC at 60/50Hz |
| Power consumption: | |
| Electronic | 300VA |
| Anti-freeze heating | 250W |
| Lighting | 36W |
| Temperature: | |
| Storage | -25 to +80 °C |
| Operation | -20 to +50 °C |
| | (optional: ventilation or second heating) |
| Noise level | < 70 dB (A) |
| Weight: | approx. 150 Kg (depending on version) |
| Dimensions: | Height: 1900 mm Width: 700 mm Depth: 500 mm (without illumination unit) 530 mm (with illumination unit) |
| Control voltage: | 24V DC 1 A max. |
| Control inputs/outputs: | 0V active 0.5A max. |



3 Functioning of the pay station

The customer inserts his ticket/parking chip in the pay station. The reader reads the data on the ticket/parking chip and calculates the parking fee to be paid. The sum is shown in the display.

If there is not enough change in the pay station, the message appears "please pay the correct amount". In this case, no change is produced when the customer pays too much.

The coin slot opens to accept coins and tokens.

The amount in the display decreases with every inserted coin (token, note, etc.). Once the payment is completed, the display shows a message, e.g. "Thank You"

If the parking fee is paid by credit card, a receipt is automatically printed and the credit card returned to the customer.

For pay stations with ticket system, the ticket is printed with the current time and date; at the same time the authorisation to drive out of the car park within the courtesy period (period between payment and inserting the ticket at the exit) is magnetically coded on the ticket. The ticket is then returned. For pay stations with Chipmaster system, the same procedure takes place but without the printing stage.

Any change to be paid out is provided in the return tray.

The payment procedure can be interrupted at any time by pressing the "cancellation" button. The coins inserted up to now are ejected into the return tray.

Inserted and booked notes are only returned during cancellation in pay stations equipped with note readers and intermediate storage cassette. If the pay station is configured with a software intermediate cassette, then the value of the inserted notes is coded on the ticket or parking chip and taken into account in the next payment transaction.

A receipt can be requested by pressing the button "receipt", as long as the ticket or parking chip is in the automatic pay station. The receipt is automatically produced if the ticket or parking chip is inserted in the pay station again within the paid period.

4 Erection of the pay station

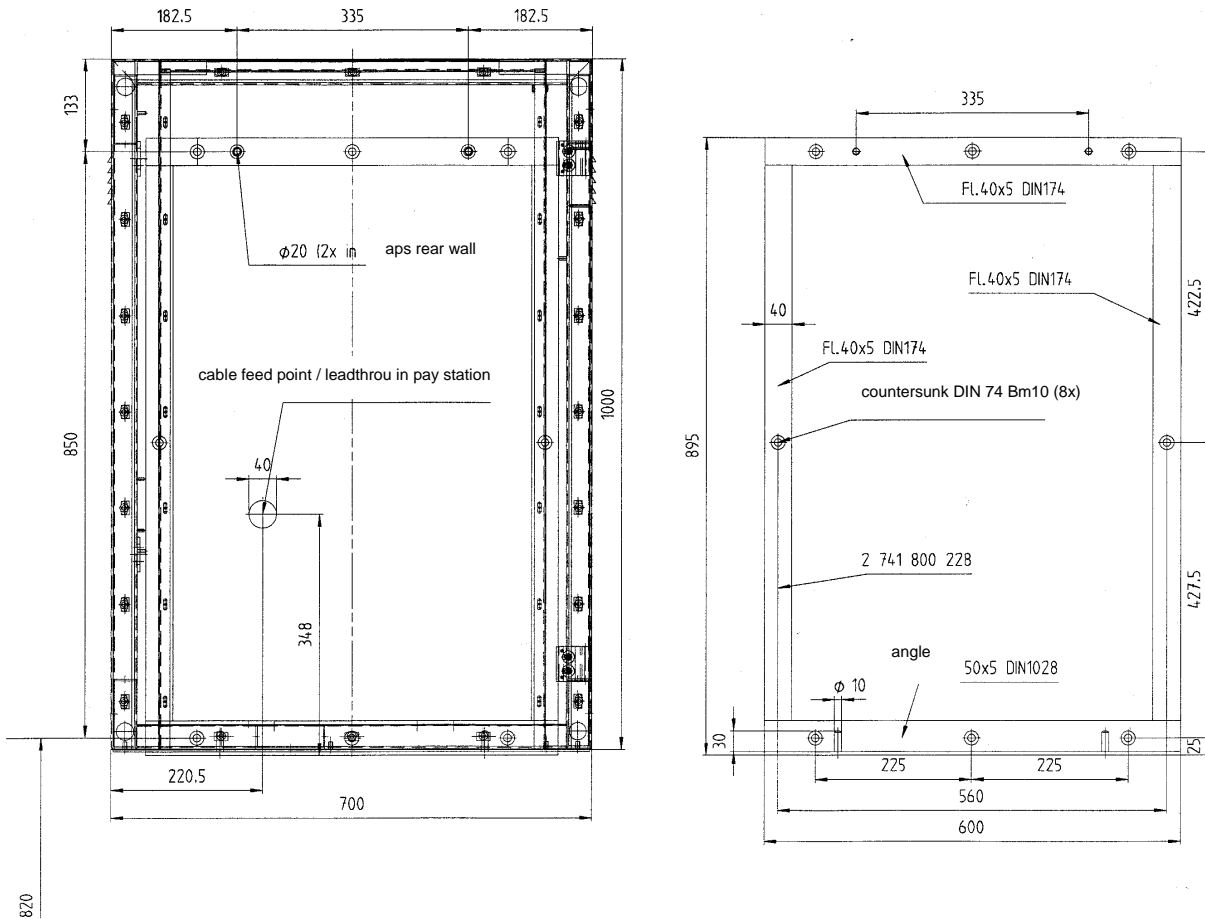
Before the units in the Parkmaster 100 system are installed, the building itself should be completed. Dirt, dust and construction machinery can endanger the sensitive electronic and mechanical components, and impair reliable operation!

Before installation, check that the wiring is correct and that the foundation plate has been set.

The pay station is available in various versions. It can be mounted to a wall, erected on a stand or base.

4.1 Wall mounting

- Unpack the unit near the erection site to avoid any damage during transport.
- Mark the holes for the frame and drill the holes (see drawing).



Kabelzufuehrung/Ausbruch in der Kasse: cable feed point/leadthrough in the pay station

Senkung: countersunk

Winkel: angle

Illustration 13: Wall-mounting of APS 100 COMPACT

- Fasten the mounting frame with heavy-duty plugs and align exactly with a spirit level (horizontal and vertical).
- Open the unit door and pull the cables through the opening in the back wall.
- Lift the pay station onto the wall holder and secure.
- Remove the transport safeguards for the Multicon/parking chip reader and the receipt printer.
- Check the positions of the components to the intake and outlet slots in the door, and adjust if necessary.

4.2 Erection with stand

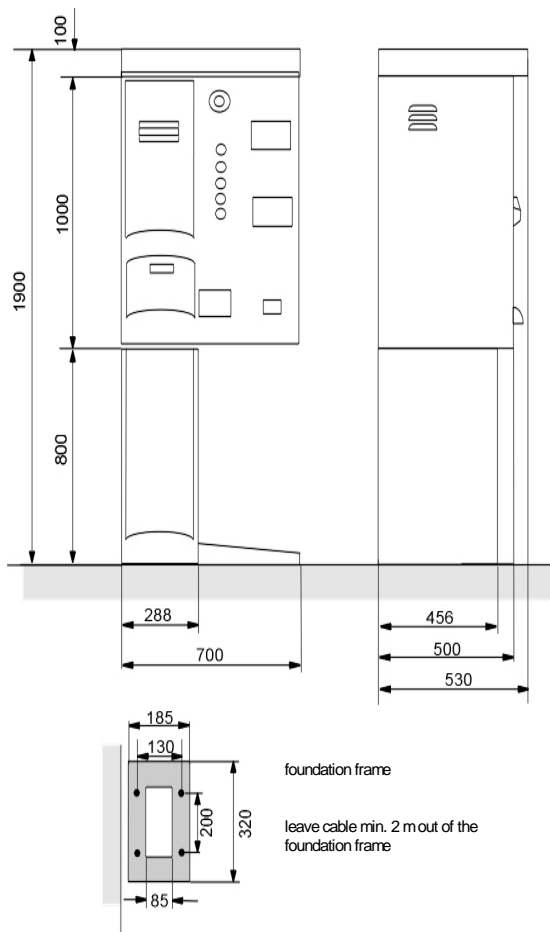


Illustration 14: Foundation drawing APS 100 COMPACT

Reaction plugs must be used for erection without foundation plate!

- Unpack the unit near to the erection site to avoid damage during transport.
- Unscrew the attachment bolts out of the foundation plate.

- Position and place the unit at its intended location.
- Open the cover plate and pull the cables through the bottom opening.
- Position the pay station and attach to the foundation plate by means of the supplied U-steel profiles (horizontal and vertical).
- Remove the transport safeguards for Multicon/parking chip reader and receipt printer.
- Check the positions of the components to the intake and output slots and adjust if necessary.
- Secure the cover plate with a screw to prevent it being removed.

If a foundation plate has not been set in the ground, then use shear connector anchors. Ensure that the unit has a proper stand, as it can tip over if not fastened properly.

4.3 Connections of the APS 100 COMPACT

All connecting work may only be carried out in disconnected state !

On the mounting plate of APS 100 COMPACT there is a terminal strip which takes all incoming lines.

4.3.1 Power supply

The power supply (230V/50Hz, single phase) is to be kept separate from the sub-distribution. It is safeguarded by means of 10/16A automatic fuses. The lead should consist of cable type NAM 3(5)x1.5mm² or a corresponding underground cable with a cross section of min. 1.5 mm². The wire cross section is to be adjusted to the valid standards for the routed cable length.

Three fused terminals are to be provided for the power supply. The fuses are divided into operating system, heating and illumination, with separate power supply if required. For example, in this case a short circuit in the illumination would not cause failure in the electronic components. If only one phase is provided in the power supply, then the fuse terminals are to be bridged in the connection side.

4.3.2 Connection up the intercom

The wiring of the intercom system is kept separate from the data network and is star-shaped. The data and intercom lines should be kept separate to prevent cross-talk on the NF line (intercom line) and to keep the line to the intercom system as short as possible. A standard cable 2x2x0.6 mm can be used as lead here.

4.3.3 DESINET connection

When connecting up the DESINET; please also observe the DESINET installation instructions !

The car park line is routed to the terminal strip. The screened line is to be routed directly to the connection plate.

The cable should be stripped as short as possible and placed as short as possible on the terminal "protective earth"; in addition the cable sheath can be screwed directly to the sheet metal of the mounting plate with a metal cable clip. If the line cable is not earthed in this unit but instead the sheath is ground through, then the connection between the lines must be carried out as carefully and solidly as possible. The line wires are to be routed as short as possible to the terminals.

The wires are twisted to the terminal and secured here with end splices (observe polarity!!).

The DESINET lines must be screened as described under all circumstances, as otherwise the statutory regulations containing electromagnetic compatibility cannot be fulfilled!



5 Initial commissioning

5.1 First check of the pay station

The installed TCC can have been supplied with a different unit address than that required at its actual location or adjusted at the data control centre.

In this case, the unit will not go ONLINE!!!!

- In this case, the unit address of the TCC must be adjusted. To do so, switch the pay station off and adjust the actuator for the TCC address on the TC (see illustration 10) with a small screwdriver (in normal decimal writing), then switch the pay station on again.

5.2 Function test

- Open the unit door and pull out the unit door switch (fastened to the pay station door) to close the door contact again, and the pay station is in normal operating mode.
- Switch unit on. It now proceeds with a self-test which checks the program memorised in the RAM. If the TCC has no program memorised or if the program is defect, the TCC will request a program download from the data control centre (the test is concluded after the cleaning movement of the Multicon/parking chip reader and the cutting phase of the receipt printer).
- Now insert the function card/chip no. 2 "TCC in service" .

- Insert function card/chip No. 5 "Fill tubes" and fill each hopper with 10 coins.
- Insert function card/chip No. 11 "Empty coin tubes and reset counter".
- Unlock coin cassette and remove.
- Recount the number of coins and check accounting print (all values = 0!).
- Replace cassette, lock and switch the unit off.
- Close unit door.

6 Maintenance

6.1 Daily care and checks

- Check that the ticket/parking chip intake is correctly positioned: the ticket inlet should be in line with the front plate.
- Insert a ticket/parking chip in the unit and watch the display. Press the cancellation button and remove the ticket/parking chip.
- Check that the heating functions. Turn the thermostat until the heating switches on. As soon as the heating produces warmth, reset the thermostat to its original position.
- If a second person is there, you can check the function of the intercom. Press the information button at the APS. A signal must sound in the data control centre. Then check the voice transfer.
- Check that the coin slot works easily.
- Check the roll of paper in the receipt printer. If you can see that it will soon need to be changed, then put a new roll at the ready.

For ticket systems:

- Check that the magnetic card reader is clean. If the unit is severely contaminated from paper dust, paper chips etc., then blow it clean carefully with compressed air. Ensure that no paper remains are blown into the ticket guides.
- Insert the cleaning card which is impregnated with isopropyl alcohol into the magnetic card reader to clean the transport path and magnetic heads. You can order the card from DESIGNA under article no. 7 232 148 800

6.2 Monthly maintenance

In addition to the daily care of the unit, the following tasks are to be carried out at monthly maintenance intervals:

- Check that all connectors are correctly and firmly in position.
- Check that the closure of the coin slot works easily, apply a little oil if necessary.
- Clean the coin tester on the inside with a little isopropyl alcohol or spirit. To do so, carefully open the coin tester and clean the path taken by the coins.
- Clean the coin filter with a soft, lint-free cloth and isopropyl-alcohol or spirit.
- Clean the unit on the inside and outside with a soft cloth and a mild cleaning agent. If necessary, vacuum clean the unit from the inside (vacuum clean the mounting plate carefully).
- Clean the display with a soft cloth and glass cleaner.

For ticket systems

- Clean the transport rollers of the magnetic card reader with isopropyl alcohol or spirit and a lint-free cloth.
- If present, apply a little resin-free oil to the blade and eccentric unit of the transport component (recommended: Ballistol Spray, DESIGNA Ident No. 8 815 057 000).
- If the system is equipped with a ticket printer, apply a little resin-free oil to the transport spindle.

6.3 Quarterly maintenance

Quarterly maintenance is recommended in addition to every third monthly maintenance. The following tasks are to be carried out in addition to the monthly maintenance and care:

For ticket systems:

- Check the belt tension of the drive belt of the magnetic card reader.

6.4 Replace the ribbon cassette of the ticket printer (ticket systems only)

Remove the printer from its holding rail and remove the ribbon cassette upwards; to do so, push the holder up and remove the cassette.

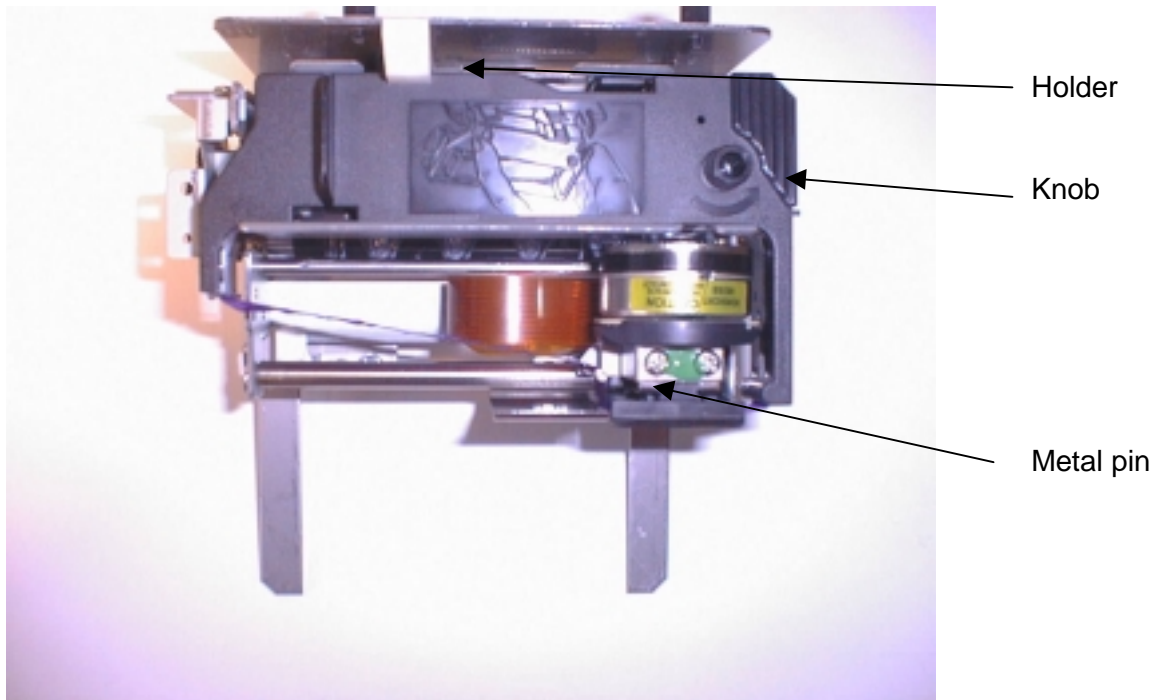


Illustration 15: ticket printer

Insert the new ribbon cassette, ensuring that the ribbon is guided between knob and sheet metal as shown, and runs around the metal pin. The ribbon cassette should engage firmly in position. Then tighten the ribbon with the knob.

Finally, replace the printer in its guide.

7 Appendix

7.1 Payment possibilities

7.1.1 Cash payment

Cash payments with coins, notes or tokens are possible in the PM 100 system. The automatic pay station APS 100 COMPACT accepts up to 12 different coins. The pay station returns up to 4 different types of coin as change. Note readers BNA 5SX or WBA-SS which can be used as optional features in the system process up to 13 different notes, depending on the machine type.

7.1.2 ec-/credit cards for payment (optional)

If a transport component is integrated in the system, then ec/credit cards can be used in ticket systems for payment of short term tickets and for belated payment of SP cards. An extra credit card reader is installed in parking chip pay stations.

Due parking fees are reported automatically by the pay station to the BFR, collected here and can then be accounted for at the end of the month, for example. The total amount is then automatically entered in the database of the BFR. PM100's software allows for accounting per list or by means of data carrier exchange with the bank (software licence).

7.1.3 Electronic purse (optional)

If a reader for the electronic purse is integrated at the automatic or manual pay station, then the customer can pay for his ticket with the money card.

7.1.4 Discounting (ticket punch, discounter) (optional)

Short term parking tickets can be discounted in various ways:

- by punching a discount marking using a punch (for magnetic tickets only)
- by applying magnetic, counterfeit-proof discount marks to the magnetic strip
 - or parking chip
 - using a discounting unit
 - using special keys at the manual pay station.

The discount marks are recognised by the writing/reading unit in the pay station on payment and taken into account on calculating the fee rate. The rate stipulates how the discount marks are to be evaluated.

Remarks on the ticket system:

In order to use discount marks on the magnetic track of the ticket, a special Multicon is required, together with special tickets with a broad (12 mm) magnetic strip. For discounting by means of a punch, a standard Multicon and standard tickets will suffice.

Optional payment of parking tickets with an ec/credit card cannot be combined with the option "discount marks on the magnetic track".

7.2 Special features

7.2.1 Voice synthesiser

It is possible to connect up a voice synthesiser. The voice synthesiser can be used to give the user special instructions by acoustic text messages, which would not be possible without language synthesiser.

When a certain action is carried out at the automatic pay station, the synthesiser receives a pulse and produces the specified text file.

7.3 Payment unit

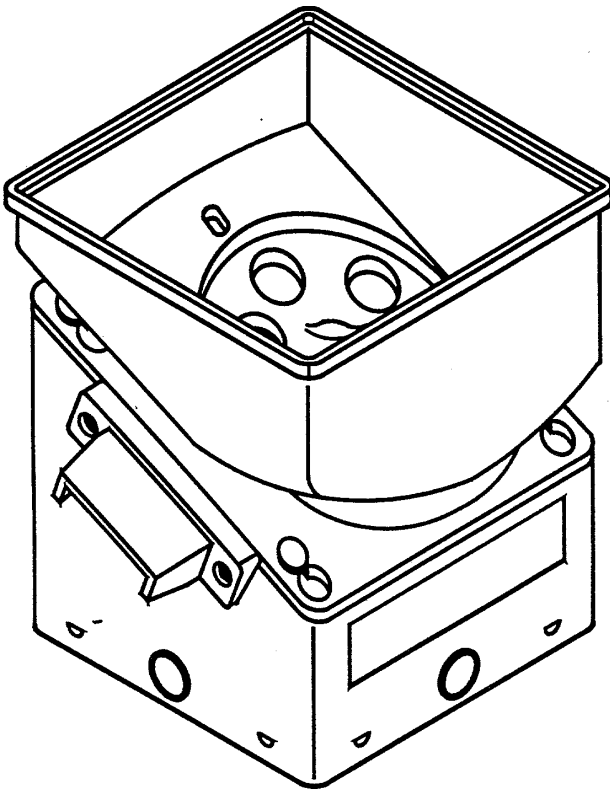


Illustration 16: Hopper of the COMPACT pay station

The compact payment unit is responsible for rapid output of coins in the smallest possible space. The capacity of the hopper is 200 to 500 coins, depending on the coin size.

The coins move from the storage container into a payment rotor and are paid out at a frequency of 7 coins per second.

The modular design of the hopper allows for quick change of the coin rotor when changing the coin type.

A light barrier sends a counting pulse for each coin to the MVE.

When the coins jam, the coin disk is automatically turned back and forwards until the congestion sorts itself out or the hopper switches off automatically.

The outstanding features of the hoppers include their easy adjustment to new coin types (introduction of the EURO as cash from January 1, 2002). The coin disk and insert which adjusts the coins to the coin output window can be replaced, resulting in ten different possible combinations for processing common coins.

Before replacing the coin disk, first the hopper should be emptied (e.g. with function card/chip "empty tubes" and then "jackpot").

To replace the rotor disks, first raise the coin channel. To do so, unscrew the knurled screw, raise the coin guide rail and screw tight again, then unhinge the coin tester. Now bring the red slider on the hopper to the DOWN position, push the coin tray up and remove. Take off the oil coin disk and position the new one, taking care that the black Teflon ring is in the middle recess. If the insert is also to be changed, then remove the cover over the coin outlet (pull off upwards) and replace the wedge-shaped insert.

The hoppers are mounted very close together, so that it is necessary to remove the coin trays from the adjacent hoppers in the case of the hopper at the front on the right and at the back on the left, to gain access to the DOWN slide.

Then reassemble the hopper, replace the coin tester and the coin channel. The hoppers can then be filled again, for example using the function card "fill tubes".