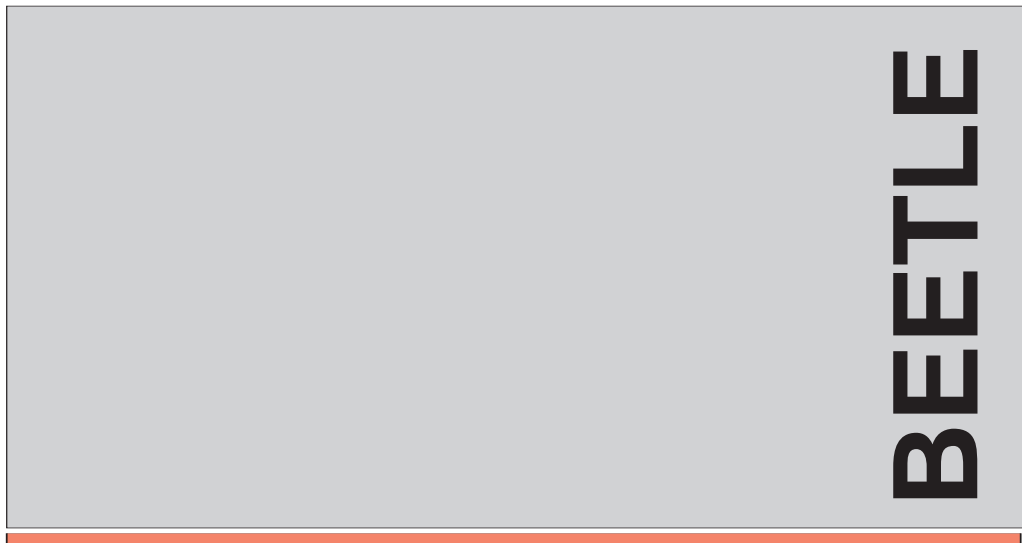


WINCOR
NIXDORF



BEETLE /L

Modular POS System

User Guide

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BEETLE /L

User Guide

Edition August 2000

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Manufacturer's Certification



The device complies with the requirements of the EEC directive 89/336/EEC with regard to "Electromagnetic compatibility" and 73/23/ECC "Low Voltage Directive."

Therefore, you will find the CE mark on the device or packaging.

Tested Safety

TÜV
Product
Service



The POS system has been provided with the symbol for "Tested Safety". In addition, the POS system has received the cUL symbol, the UL/CSA symbol and the CE symbol.



In addition, the BEETLE has received the UL symbol and cUL symbol.

Important notes

The modular POS system BEETLE /L conforms to the current safety standards for data processing equipment.

- If this device is taken from a cold environment into the operating room, moisture condensation may form. The device must be absolutely dry before being put into service; an acclimatization period of at least two hours must therefore be observed.
- This device is equipped with a safety-tested power cable and may be connected only to a prescribed grounded-contact power socket.
- When setting up the device, ensure that the power socket on the device and the grounded-contact utility power socket are easily accessible.
- To disconnect the device from the supply voltage completely, switch off the device and disconnect the power plug.
- Ensure that no foreign objects (e.g. office clips) find their way into the device, as this may lead to electric shocks or short-circuits.
- In order to ensure that the device is well ventilated and to prevent overheating, do not obstruct the ventilation slots on your device.
- Never plug in or unplug data communication lines during thunderstorms.
- Protect devices from vibrations, dust, moisture and heat.
- Always dispose of used parts, such as batteries, in an *environmentally safe manner*.
- There is a *lithium battery* on the system assembly. This battery must be replaced by authorized personnel only. Incorrect replacement may lead to the *danger of explosion*.
- The lithium battery must be disposed of in accordance with local regulations for special waste.

Important notes

- In emergencies (e.g. damaged housing or power cable, penetration by liquids or foreign bodies), the device must be switched off immediately, the power plug disconnected and the Customer Service of the Wincor Nixdorf GmbH & Co. KG must be notified.



The device may only be repaired by authorized qualified personnel. Unauthorized opening of the device and inexpertly carried-out repairs may not only seriously jeopardize the safety of the user, but also cancel all warranty and liability agreements.

Introduction

The BEETLE /L is a powerful and economical basis for a POS system that requires very little space.

The BEETLE /L conforms to the PC/AT industry standard. This means that you can add any extensions you desire.

A variety of optional devices are also available, such as a scanner for reading bar codes, a swipecard reader for check, credit and customer cards, a monitor, various keyboards, cash drawers and, of course, a fast and robust printer.

With the exception of the mass storage, all of the peripherals are connected to the modular POS system externally. This provides you with a considerable degree of flexibility when arranging the layout of your POS system. The BEETLE can also be connected to a network once an appropriate network card has been installed.

In the event of a mains voltage failure, the version with battery and corresponding software enable you to save the data by means of a controlled program shutdown.

The BEETLE /L is available with or without a hard disk.

The modular BEETLE POS system allows you to use the BEETLE card (memory card). This storage medium requires very little space, is mechanically robust and provides a high rate of data security. Some possible application areas for a BEETLE card would be program loading and data storage.

The BEETLE /L can also be equipped with a disk drive for 3.5" disks which can be used as a further storage medium.

About this manual

This manual describes the modular POS system BEETLE /L, versions BEETLE4c/L (processor model 84086SLC), BEETLE 4/L (processor model 80486DX/2) and BEETLE 5/L (Pentium).

This documentation is intended to help you work with the POS system and to serve as a reference work. The detailed table of contents and the index help you find the desired information quickly and easily.

The first section describes

- everything you need to do before switching on the POS terminal and
- how to connect peripherals to the BEETLE /L.

The second section contains

- a brief overview of the components of your BEETLE POS system. Here, you will also find a detailed description of recurring actions, for example, how to use the BEETLE card or disks.

The third section provides

- a brief overview of the software implemented in the modular system BEETLE /L.

The fourth section explains

- the procedure for system starting and setup. This section requires technical knowledge.

About this manual

The Appendix

- contains the most important technical data, a list of possible error messages, a glossary and a list of abbreviations.



Notes in the manual are marked by this symbol.



This symbol is used for cautionary notes.

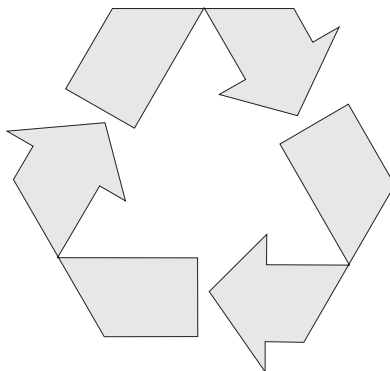
The type and scope of application programs depend on the customer's own selection; therefore, with the exception of the Setup program and a brief description of the most important Wincor Nixdorf programs, software will not be discussed further in this manual.

Separate manuals are included in the scope of the connectable peripherals. For this reason, a more detailed description of these devices will not be provided here. For more information, see the relevant manuals.

Care of the BEETLE /L

Clean your BEETLE /L at regular intervals with a suitable plastic-surface cleaner. Make sure that the power plug is disconnected and that no liquid finds its way into the device.

Recycling the BEETLE /L



Environmental protection does not begin when it comes time to dispose of the computer; it begins with the manufacturer.

The modular BEETLE /L POS system is manufactured without the use of CFCs and is produced mainly from reusable components and materials.

The processed plastics can, for the most part, be recycled. Even the precious metals can be recovered, thus saving energy and costly raw materials.

At this time, there are still some parts that are not reusable. Wincor Nixdorf GmbH & Co. KG guarantees the environmentally safe disposal of these parts in a Recycling Center, which is certified pursuant to ISO 9001.

So don't simply throw your BEETLE POS system on the scrap heap when it has served its time, but take advantage of the environmentally smart, up-to-date recycling methods!

Wincor Nixdorf is always ready to answer any questions you may have about Wincor Nixdorf's environmental protection policies.

Tel +49 (0) 5251 8-18010
Fax +49 (0) 5251 8-18015

Recycling

BEETLE /L - the individual POS system

Overview

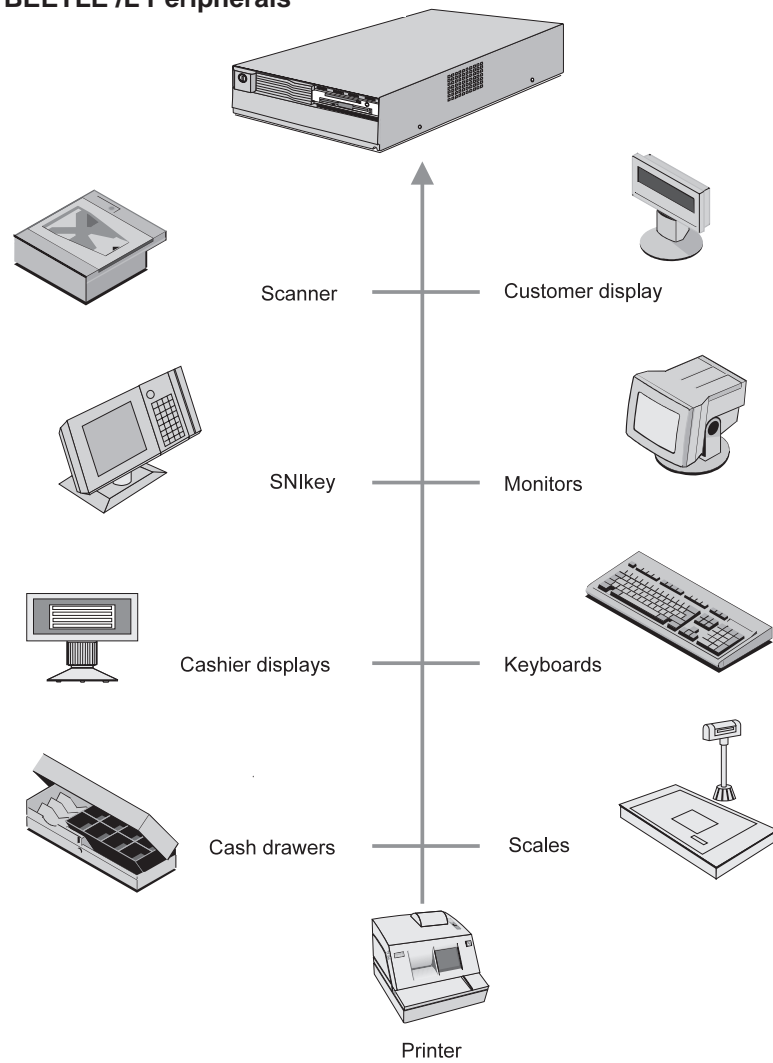
You can connect a variety of peripherals to your modular POS system BEETLE /L and thus implement a wide range of expansion stages. You can

- connect a two or four-digit alphanumeric customer display and a four-digit cashier display,
- use various types of scanners such as distance, touch or stationary scanners,
- use scales and scanner scales (please take into account the official certification regulations)
- connect various printers,
- use POS keyboards with or without a swipecard reader,
- use different types of cash drawer,
- connect a monitor and different keyboards,
- install the POS workplace SNIkey,
- integrate the BEETLE /L in a network after installing a LAN board and
- upgrade the BEETLE /L, since it can accommodate two full-length AT-expansion boards.

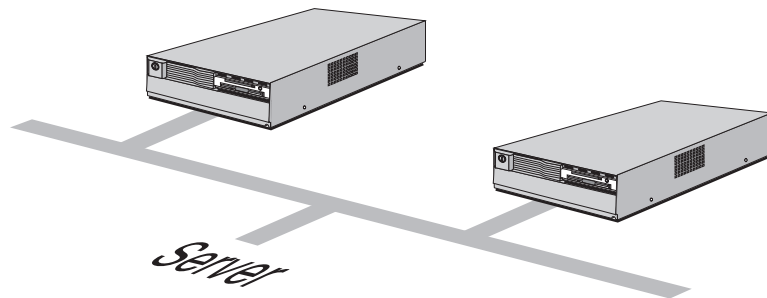
This means that the BEETLE /L can meet your requirements at all times, without you having to exchange the complete system for a new one, thus saving you time and money.

The illustrations below show you how your modular POS system can grow - from a scanner to integration in a network.

BEETLE /L Peripherals



BEEBLE /L in a network



Before switching on the system

Unpacking and verifying the scope of supply

Unpack the parts and check to see whether the delivery matches the information on the delivery note.

The carton contains the basic unit and a country-specific accessories kit. The basic unit can also be equipped with a network board, floppy drive, hard disk or a VGA board, or a combination of these components.

If damage has occurred during shipping or if the package contents do not match the delivery note, promptly inform your Wincor Nixdorf sales outlet.



Transport the device only in its original packaging (to protect it against impact and shock).

Setting up the device

Set up the BEETLE /L POS system where it will not be exposed to extreme environmental conditions. Protect the device from vibrations, dust, moisture, heat and strong magnetic fields.

Make sure that the side ventilation slots on the BEETLE /L POS system are not obstructed in order to ensure that the device has sufficient ventilation.

The following must be observed if the system is to be mounted vertically and horizontally:

- A closed area made of non flammable material (e.g. concrete or metal) must be located under the vertically mounted BEETLE /M.

- Mount the device in such a way that the ventilator faces upwards.
- The following minimum clearances must be provided in free convection to ensure sufficient ventilation:

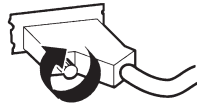
downwards left: 60 mm
upwards right: 100 mm

Cabling of the BEETLE /L

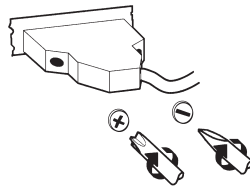
Follow the steps below in the order given when installing devices:

- Make sure that the power switch on the front of the housing is set to OFF, i.e. that it visibly protrudes. You may have to open the slide in order to do this (see figure on Page GB - 16).
- The cable cover must be removed, if present.
- Plug one end of the power cable into the power cord receptacle on the BEETLE /L.
- Plug the other end of the power cable into a socket.
- Plug in and secure the data cable.

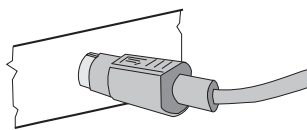
Securing the data cable



Secure interface connectors with knurled screws using your fingers.



Secure interface connectors with standard screws using a screw-driver.



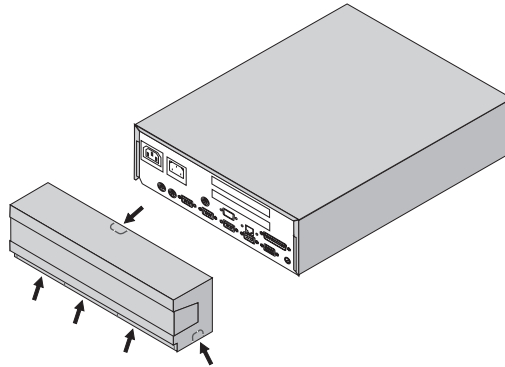
Mini-DIN plugs lock in when you insert them.

Replace the cable cover after the cables have been mounted (see next page).

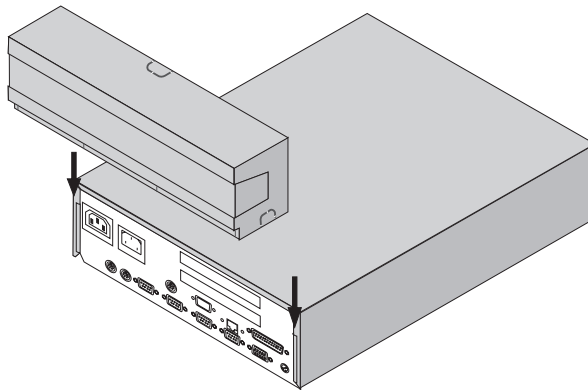
Mounting the cable cover

The scope of supply of your BEETLE /L includes a cable cover. Before mounting the device, you should first remove the cable openings where necessary. This depends on the cables which you wish to lay.

Tools are not required as the plastic parts can be removed by hand.



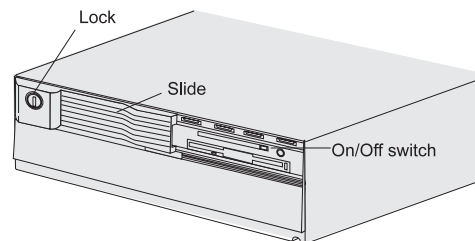
In order to mount the cable cover, insert it in the guides marked with arrows in the figure below. In doing so, ensure that the cable cover does not fit askew.



Connecting to the mains power supply

All devices belonging to the modular BEETLE /L POS system that have a separate power cable must be connected to the same electric circuit.

- Ensure that the power switch on the POS terminal housing is switched off.
- Make sure that all data cables on the system unit and peripherals are connected correctly.
- Plug all power cables belonging to the BEETLE and the peripherals into the grounded-contact utility power sockets.



You can now switch on the BEETLE /L by means of the switch on the front of the housing. You may have to unlock the slide and move it to the left.

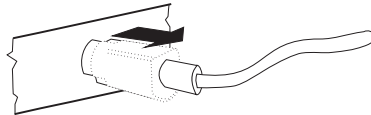


The power pack can be connected to all standard power supply networks. The unit adjusts automatically to the respective voltage. A fan provides the required ventilation. The maximum output of the power pack is 135 W.

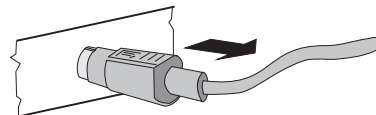
Disconnecting cables

Never unplug a cable by pulling on the cable itself; always take hold of the actual plug. Follow the procedure below when disconnecting cables:

- Turn off all power and equipment switches.
- Remove the cable cover.
- Unplug all data communication cables from the sockets of the data networks.
- Unplug all power plugs from the grounded-contact utility power sockets.
- Unplug all cables from the devices.



With MINI-DIN plugs, the plug remains inserted until released.



Pull the plastic covering from the connecting socket with your thumb. The lock is released. The metal of the plug is visible.

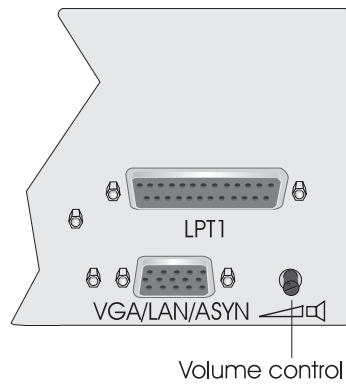
Now remove the cable from the connecting socket.

Basic settings

Ex works, the BEETLE /L is configured to your order. Your configuration must be subsequently adapted to support supplementary devices such as scanners. For more information, contact the Wincor Nixdorf branch office responsible for your area.

Adjusting the loudspeaker

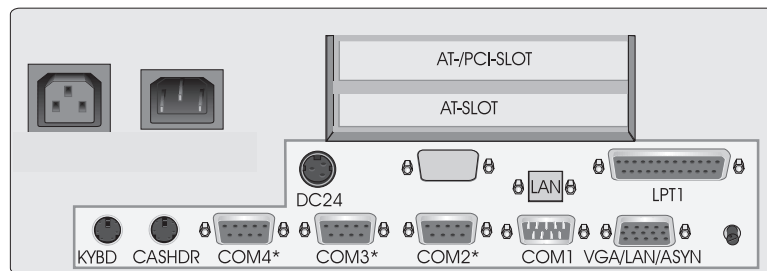
You can set the volume as desired by means of the volume control on the back of the POS terminal housing.



Connecting peripherals

The peripherals mentioned here are available as options and are not part of the basic configuration. A separate manual is provided for each of the connectable components. For more detailed information, consult the relevant documentation.

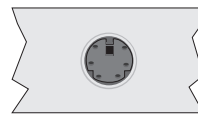
The figure shows the back panel of the BEETLE /L with the locations of the connecting sockets and connecting plugs. If you wish to connect a monitor, however, you must also have a video board. You can connect the system to a network via an expansion board.



Rear panel of the BEETLE /L

Keyboard (KYBD)

The BEETLE /L has a 6-pin mini-DIN jack for connecting a keyboard. Make sure that the connector is plugged firmly into the socket to prevent malfunctioning. Power is supplied to the keyboard via this socket. If you wish to connect a standard PC keyboard, you must use a special adapter cable, obtainable from the Wincor Nixdorf branch office responsible for your area.



When removing cables with locks, please grip the cable at the connector housing.

Cash drawer (CASHDRW)

The BEETLE /L has a second 6-pin mini-DIN jack for connecting a cash drawer. Make sure that the connector is plugged firmly into the socket to prevent malfunctioning. Power is supplied to the cash drawer via this socket.



When removing cables with locks, please grip the cable at the connector housing.

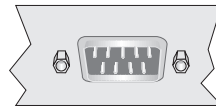
Scanners and scales (COM1 - COM4*)

Depending on how the system is configured, scanners and scales without an independent power supply are connected to the COM2*, COM3* or COM4* serial interface (standard setting COM3). Connect scales with their own power supply to the COM1 interface. COM1 is designed as a 9-pin D-sub plug, whereas COM2* - COM4* are 9-pin D-sub jacks.

Make sure that the scanner connector is plugged securely into the socket to prevent possible malfunctioning.



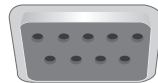
If scales which are not supplied by Wincor Nixdorf are connected to the BEETLE /L, you must obtain an licence for the driver software.



If COM2 is equipped with a connector, the interface does not carry a current.

Customer display (COM2* or COM4*)

With the BEETLE /L, and depending on how the system is configured, the customer display is connected to either the COM2* or COM4* serial interface. The interface connection is a 9-pin D-sub jack. Make sure that the connector for the customer display is screwed firmly to the socket to prevent possible malfunctioning. Power is supplied via this jack.

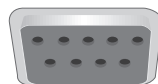


If COM2 is equipped with a connector, this interface does not carry a current.

Cashier display (COM3)

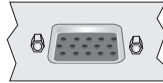
Connect the cashier display to the serial interface COM3. This port is a 9-pin D-sub jack.

Make sure that the connector for the cashier display is screwed firmly to the socket to prevent possible malfunctioning. Power is supplied via this jack.



Monitor

If a VGA board is installed, you can connect a monitor to the BEETLE /L via the 15-pin D-sub jack on the VGA board. Power is supplied to the monitor via the rubber connector on the BEETLE /L, located on the back of the housing.

**Connecting standard PC peripherals (COM1)**

You can connect supplementary standard peripherals to the BEETLE /L via the COM1 serial interface.

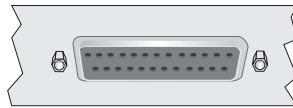
Make sure that all supplementary devices have been tested for RFI suppression pursuant to the legal requirements of your country.

**Network**

If a network board is installed, the system can be connected to a network (LAN) from the POS terminal back panel. If a LAN board is not installed, this location on the back panel is closed by a dummy cover (see also Configuration variants).

Printers (LPT1 / 24V, 2A)

The standard parallel interface LPT1 is intended for connecting a printer.



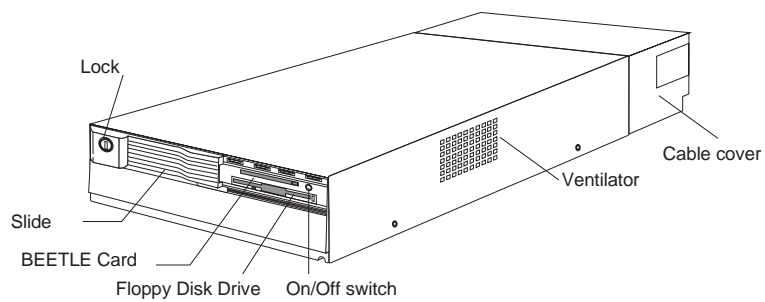
Appropriate POS printers can also be connected via the low-voltage jack 24V, max. 2A.



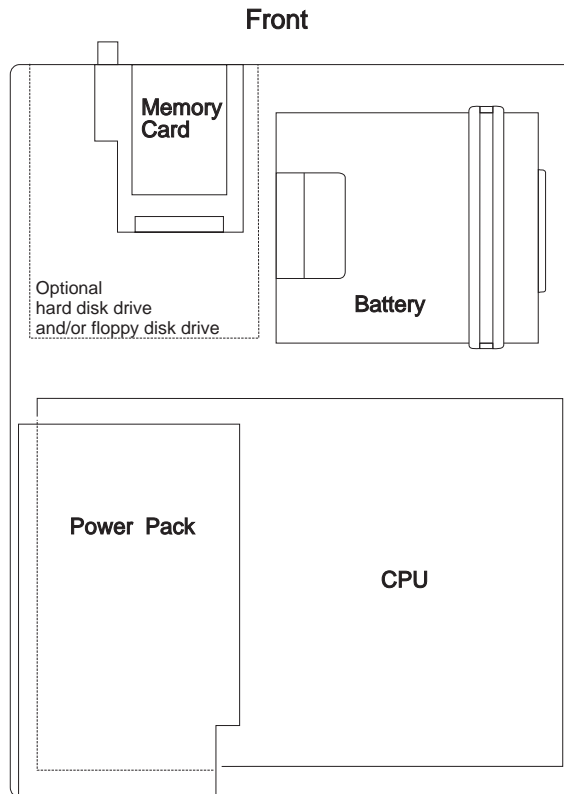
BEETLE /L - the components

Overview

The following figure shows the outside of the BEETLE /L.



The figure below shows the inside of the BEETLE /L.



The BEETLE card

The BEETLE card, which is a credit-card-sized memory card, provides the BEETLE /L with a storage medium characterized by a number of advantages, including:

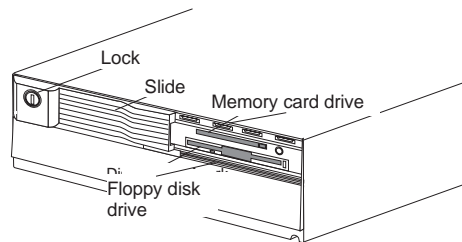
- High storage capacity
- Small size, thus taking up less space
- Mechanical robustness
- High data security (not magnetically sensitive)
- Relative insensitivity to moisture and heat
- Rapid data access, since it has no mechanically moving parts

BEETLE cards can be used for a variety of applications, such as:

- Loading programs
- Saving data (e.g. daily sales figures)
- Access control ("electronic key")

There is an internationally valid standard for memory cards (PCMCIA/JEIDA). This means that you can use cards of the same type made by different manufacturers.

The BEETLE /L allows you to use memory cards with a storage capacity of up to 64 MB.



The lockable slide can be used to prevent access to the memory card drive and - if present - the floppy disk drive.

The various card types

You can use the following memory cards as standard BEETLE cards:

SRAM card	Readable and writable
OTPROM card	Readable
MASK ROM card	Readable
FLASH EPROM card	Readable (from BEELTE 4/L: writable, erasable and readable)

The following briefly describes the characteristics of the usable cards.

SRAM Card

This card type can be read and written to by the system any number of times. You can write protect the SRAM card to prevent accidental overwriting of the stored data.

An integrated battery is used for the retention of data. The length of time data is retained depends on the life of the battery, which in turn depends on the storage capacity of the card used.

MASK ROM Card

The data contents of this card are determined by the manufacturer of its memory chips and cannot be subsequently modified.

OTPROM Card

Data can be written to this card once and can then no longer be modified. The card is written to in special memory card drives only.

FLASH EPROM Card

Data can be electrically written to and erased from these cards. Consequently, they are ideal for data subject to frequent modification. The cards can be written to in special memory card drives only (from the BEETLE 4/L). FLASH EPROM cards do not require batteries for data retention.



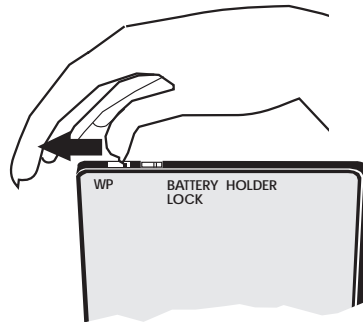
If you have any further questions about BEETLE cards, contact the Wincor Nixdorf branch office responsible for your area.

Inserting the BEETLE Card

Hold the BEETLE card so that the arrow symbol is at the top of the card and the arrow points toward the slot. Now insert the card, connector-end first, in the slot for the BEETLE card. The card has been correctly inserted if the black ejection button next to the slot has popped out.

Removing the BEETLE card

If necessary, first unlock the cover. Then press the black ejection button next to the slot. You can now remove the card.

Write protection for the BEETLE cards

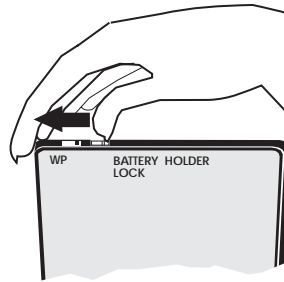
To write protect the BEETLE card, slide the lock shown in the illustration to the WP (write protection) position. This applies to SRAM and FLASH EPROM cards only.

Changing the battery for SRAM BEETLE cards

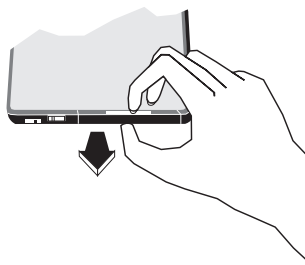
The illustrations below show you how to change the battery for this type of BEETLE card.



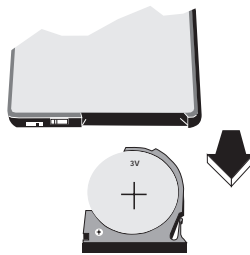
Changing the battery without losing the stored data is possible only in the case of memory cards made by certain manufacturers. For more information, contact the Wincor Nixdorf branch office responsible for your area.



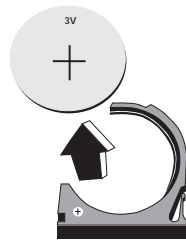
Unlatch the battery lock.



Remove the battery holder and battery from the BEETLE card.



Battery in the holder.
The battery's positive
terminal is face up.



Lift the battery up and
out. Hold the battery at
the sides and ensure
that the two poles are
not touched
simultaneously.

To insert the new battery, follow the steps above in reverse order.



Dispose of used batteries in an environmentally safe
manner.

Floppy disk drive

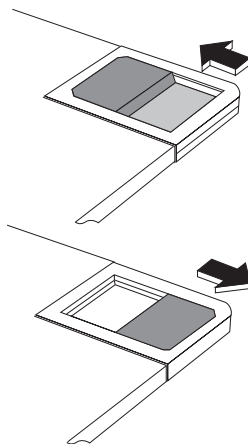
General

The BEETLE /L can also be supplied with a floppy disk drive for 3.5" disks, if desired. The LED lights up whenever the system accesses the drive.

The disks can be used for a variety of applications, such as:

- Loading programs
- Saving data (e.g. daily sales figures)
- Access control ("electronic key")

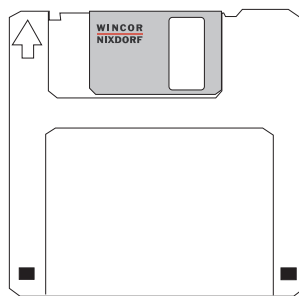
The disk can be write protected to protect your data from accidentally being overwritten. The slide is located at the bottom left of the diskette.



Writing to the disk is possible.

Writing to the disk is not possible.

Inserting a disk



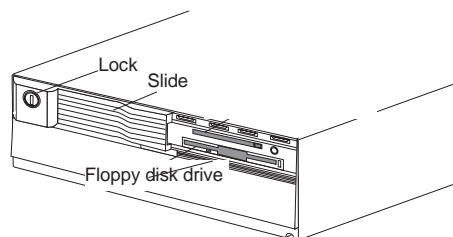
Hold the disk so that the arrow symbol is at the top and points away from you. Now insert the disk in the drive slot provided. The disk has been correctly inserted if the gray ejection button has popped out.

Removing a disk

Press the gray ejection button next to the drive slot. You can now remove the disk.



Never remove the disk while the drive is being accessed, i.e. when the LED indicator for the drive is illuminated. Otherwise, you could damage the drive and the disk.



The lockable cover can be used to prevent access to the disk drive.

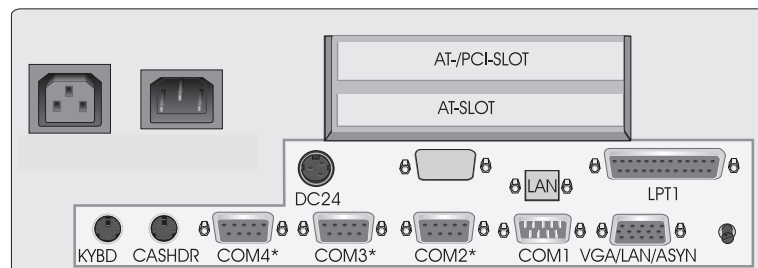
CPU

General

The modular POS system BEETLE /L is supplied with a CPU of the type 80486SLC (BEETLE 4c/L), 80486DX/2 (BEETLE 4/L) or Pentium-class (BEETLE 5/L).

The CPU comprises a specially developed PC board. In addition to the PC-specific modules and interfaces, this board accommodates a non-volatile memory (NV-RAM) and an optional VGA controller for connecting a monitor.

The connecting plate of the board has the sockets for the external peripherals. The illustration below shows the connector assignments for the CPUs.



Interfaces

The COM1 interface of the BEETLE /L is designed for connecting standard peripherals that have a separate power supply. The COM2*, COM3* and COM4* are provided for connecting special POS peripherals that do not have a separate power supply, for example a scanner or a display. The BEETLE /L is also equipped with a parallel interface and a DC24 /2A power supply interface for connecting POS printers as well as two mini DIN jacks for connecting the keyboard and cash drawer.



Connect only devices approved by Wincor Nixdorf to your BEETLE /L. If you have any questions, contact the Wincor Nixdorf branch office responsible for your area.

Loudspeaker

A loudspeaker is connected to the CPU. The volume of the loudspeaker can be set using the rotary knob on the rear panel of the modular POS system. The loudspeaker is located on the left-hand side of the rear panel (see Page GB - 18).

Nonvolatile RAM (NV-RAM)

This memory chip can be used to store important data - such as sales totals or diagnostic entries - by means of the appropriate software and independently of the power supply. The data is retained for more than five years.

Dynamic RAM

The operating system and the application require this memory while they are running. The following types are available:

BEETLE 4c/L

2 MB = 2*1 MB SIMM
 4 MB = 4*1 MB SIMM
 8 MB = 2*4 MB SIMM
 16 MB = 4*4 MB SIMM

BEETLE 4/L (= as of availability of 16 or 32 MB PS2 SIMM)**

4 =	1*4 MB	32 =	2*16 MB or 1*32 MB**
8 =	2*4 MB or 1*8 MB	36 =	1*32 MB + 1*4 MB**
12 =	1*4 MB + 1*8 MB	40 =	1*32 MB + 1*8 MB**
16 =	2*8 MB or 1*16 MB**	48 =	1*32 MB + 1*16 MB**
20 =	1*16 MB + 1*4 MB**	64 =	2*32 MB**
24 =	1*16 MB + 1*8 MB**		

Pentium class CPU (with PS2 SIMM)

8 = 2*4 MB (Default)	16 = 2*8 MB
32 = 2*16 MB	64 = 2*32 MB

Connection options

The CPU is designed so that expansions are possible at any time, as desired.

Connecting a hard disk

Up to two hard disks can be connected to the CPU. These are used to store the operating system and POS-specific software. They can also be used for the long-term storage of the electronic journal. 3.5" hard disks can be used for this purpose. These disks have a 16-bit IDE (integrated drive electronics) AT-bus system interface and an integrated controller. For the default settings and technical data for the hard disks, see the configuration label.

Free AT slots

The system is fitted with two AT-compatible slots. The BEETLE /L with a Pentium class CPU offers at the top space for a PCI- or AT-expansion card and at the bottom place for a full length AT-card.

Additional slot on the CPU

The CPU is equipped with an additional slot which can be used to connect one of the available controllers (VGA, LAN, VGA/LAN, ASYNC), if required.

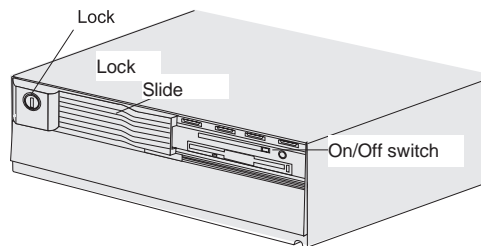
Power pack without battery

The power pack can be connected to all conventional power supply networks. It automatically adjusts itself to the particular voltage and is fan-cooled. The power output of the power pack is maximum 135 W.



The power pack must be removed or replaced by authorized qualified personnel only.

The power cord receptacle and the power output socket for the monitor are located on the back of the BEETLE /L. The power switch is located on the front of the device.



The power switch can be protected from unauthorized access using the lockable slide.

Power pack with battery

The power pack can be connected to all conventional power supply networks and features a charging circuit for the battery. It automatically adjusts itself to the particular voltage and is fan-cooled. The power output of the power pack is maximum 135 W.



The power pack must be removed or replaced by authorized qualified personnel only.

The power cord receptacle and the power output socket for the monitor are located on the back of the BEETLE /L. The power switch is located on the front of the device (see previous page).

The battery bridges any power failures and allows a controlled shutdown of the POS program by means of the appropriate software (see Security in the event of a power failure)



Battery charging time is approx. 8 hours after initial startup. The battery is charged only while the system is switched on.

The table below provides an overview of how long the BEETLE /L is supplied with battery power in the event of a power failure (with the battery fully charged).

Duration of power supply	Power output	Operation
0, 51 minutes	Full load (max. 135 W)	with supply of external peripherals (e.g. 24V printer)
1, 5 minutes	Medium load (approx. 80 W)	e. g. printer running
10 minutes	Low load	e. g. device switched on



Peripherals connected to the power output socket of the POS terminal are not powered during a power failure.

Changing the battery

All batteries have a limited service life. In order to prevent any loss of data, we recommend that you charge the battery at least every five years.



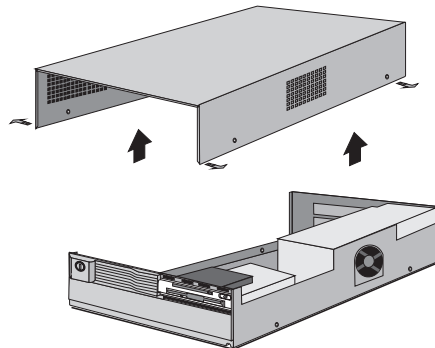
Use only batteries approved by Wincor Nixdorf.

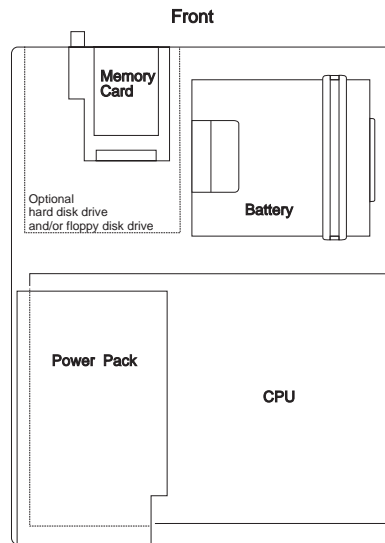
To change the battery, proceed as follows:



Make sure that the device is switched off and the power plug is disconnected.

To access the battery, lift up the box housing. First loosen the four fastening screws on the sides of the BEETLE /L and lift up the cover as shown in the figure.





The battery is located in the front of the POS housing and is held in place by a holder that is stretched over it. Release this holder and remove the battery from the housing.

Disconnect the cable between the power pack and the battery. The battery is now fully disconnected from the system.

Now remove the battery. Normally, it is not possible to avoid pulling out the protective foil between the battery and bottom pan.

When installing the battery, follow the steps above in reverse order. Pay special attention to the following:

- The protective foil must be inserted again before the battery is installed.
- The cable with the plug connection must point to the left and must be connected securely to the plug connection of the system.
- After the cable has been installed, place it under the metal clip provided.
- Mount the lid on the housing again and tighten the four screws securely.



Always dispose of batteries in an environmentally safe manner.

Security against power failure

If the battery is used, the BEETLE /L system has another important feature.

When the power fails, the system remains fully functional for a short period of time. The power needed for further operation is supplied by the battery.

This means that a system power failure is bridged for a short time.

Because operation is maintained with the aid of the battery, the application program can be terminated correctly.

The power failure is reported to the application program by means of the retail device interface (see chapter Software). The application program then terminates the program correctly by, for example, closing open files and writing important information to the non-volatile memory.

The termination of these actions is reported by means of the retail device interface. This causes the system to be disconnected, which also prevents the battery from being discharged unnecessarily.



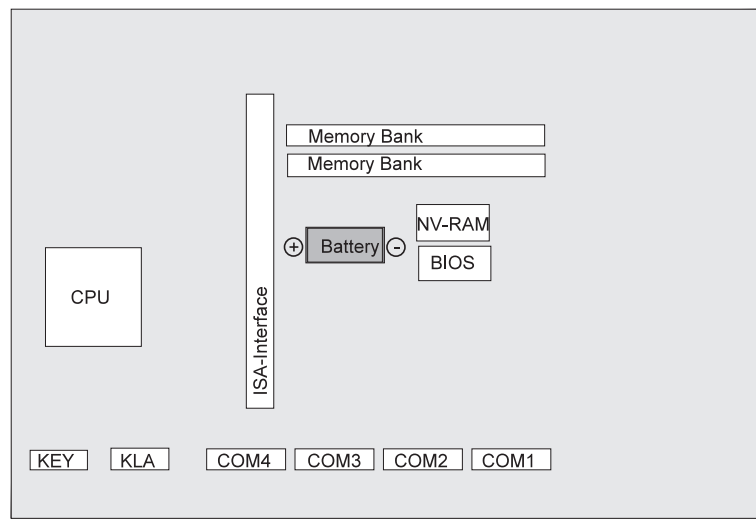
Peripherals connected to the power output jack (220 V) of the POS terminal are not powered during a power failure.

Changing the BEETLE /L battery

The BEETLE /L is equipped on the CPU board with a lithium battery to ensure the data retention of data, the time and the setup parameters. The battery should be changed approximately every five years.

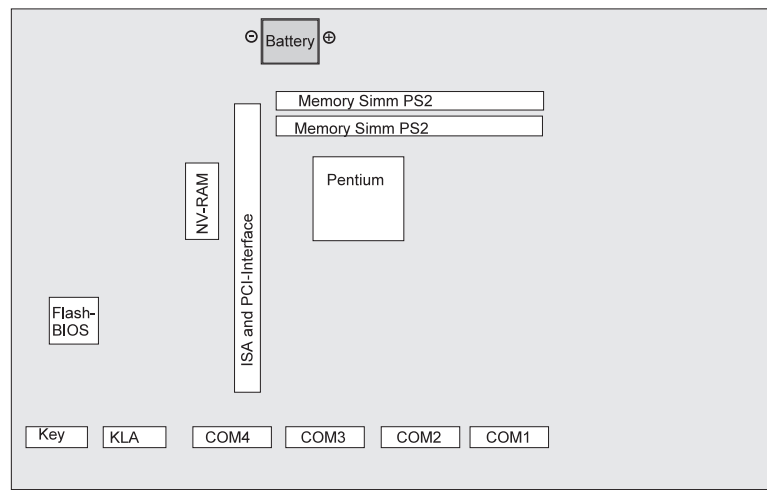


The battery must be replaced by authorized personnel only. Incorrect replacement may lead to the danger of explosion.



486xx - board

The battery is located in a socket in the CPU. To gain access to the battery, proceed as described in the chapter entitled "Changing the battery" until the housing has been removed.



Pentium class - board

Now remove the battery-holding clips and then the battery itself.



The lithium battery must be replaced only by identical batteries or types recommended by the manufacturer. The lithium battery must be disposed of in accordance with local regulations for special waste.

When inserting the new battery, make sure the polarity is correct. This is visibly marked on the socket.



The setup parameters must be reset each time the battery is changed (see chapter Setup).

Configuration variants

Plug-in cards for the CPU

Various controllers can be plugged in on the CPU. The following is a brief description of the available options:

ASYNC controller

This RS232 interface card can be used as an additional, live serial interface for connecting various peripherals.



When connecting an ASYNC controller, ensure that the total current consumption of all of the live serial interfaces does not exceed 900 mA.

VGA controller

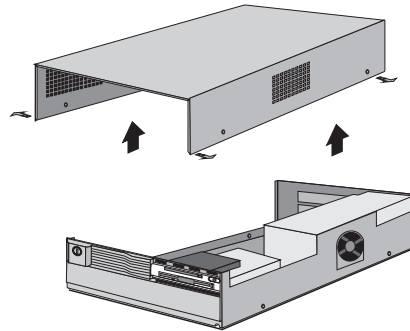
The VGA controller can be used to connect a monitor.

LAN controller

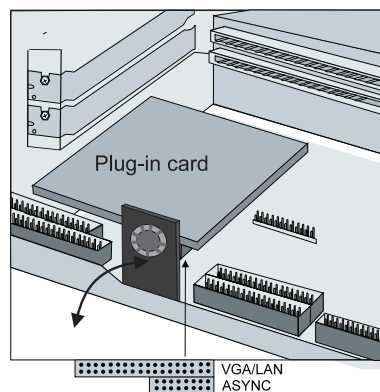
This controller can be used to incorporate the BEETLE /L in a network, the combined VGA/LAN controller allows you to connect a monitor and to integrate your BEETLE /L into a network at the same time.

Installing the plug-in cards

First ensure that the **device is switched off** and that the **power connector** is disconnected. Then loosen the four screws on the housing and lift it upwards. When doing so, ensure that the housing is not askew. Disconnect the cable between the power pack and the battery



At a BEETLE Pentium class fold down the ventilator before fixing the card like shown in the drawing. The cards must be inserted at the positions shown in the drawing. Then secure the card to the box using the screws provided.



The ventilator only exists in a pentium class BEETLE /L

AT plug-in cards

All standard AT-compatible plug-in cards can be used in the BEETLE /L. In the Pentium class BEETLE you can also use a PCI-card.

BEETLE inhouse controller

The BEETLE Inhouse Controller (BIC) is a plug-in card for BEETLE POS systems. The board ensures that BEETLE systems can be integrated in existing installations in inhouse networks.

The card is installed in a free AT slot in the POS housing.

If you would like further details on this expansion card, please contact your local Wincor Nixdorf branch.

PCMCIA controller

Using an appropriate PCMCIA controller, you can use various storage media, such as FLASH and I/O magnetic cards, magnetic cards of Type 1 EXT, Type II EXT and Type III, and ATA removable disks.

If you want to know more about PCMCIA controllers, contact your Wincor Nixdorf branch.

SNIkey controller

The SNIkey is a new input/output device used with BEETLE POS systems.

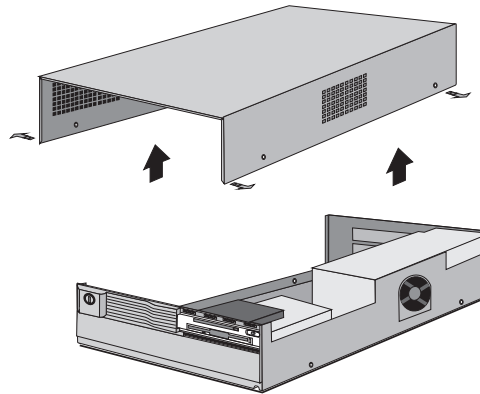
Once you have installed an SNIkey controller, you can connect an SNIkey to the BEETLE /L.

If you want to know more about the SNIkey, contact one of our branches.

Installing an expansion card

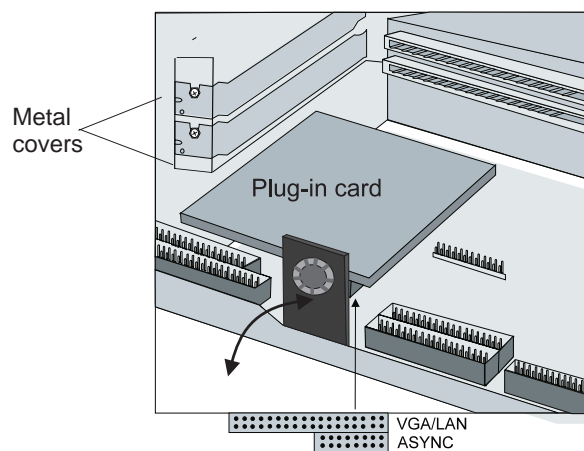
First ensure that the **device is switched off** and that the **power connector** is disconnected.

In order to access the slots, remove the four screws on the POS housing and lift off the housing.



Disconnect the cable between the power pack and the battery.

In order to install a card, first remove the metal cover on the free slot by loosening the screw.



The ventilator only exists in a pentium class BEETLE /L

First check whether the jumpers (if present) of the card are set correctly. The correct setting for the jumpers can be found in the documentation for the plug-in card. In a Pentium class BEETLE: fold the ventilator like shown in the drawing. Then slide the expansion card into the slot provided. Ensure that the card establishes contact with the terminal strip.

Secure the card by tightening the screw which was removed previously.

In a BEETLE /L with a Pentium class CPU the upper slot is reserved for a PCI- or a full length AT- card, the other slot is reserved for a full length AT-card.



For best cooling the Pentium class processor you should use the upper slot for installing a plug-in card first.

Following this, mount the POS housing again and secure it with the four screws which were removed previously. The mains connector can now be reconnected and the device switched on.



Expansion cards with electrostatically sensitive devices (ESD) can be marked with this sticker.

When you handle boards fitted with ESDs (electronical components), you must observe the following points under all circumstances:

- You must always discharge yourself (e. g. by touching a grounded object) before working with boards containing ESDs.
- The equipment and tools you use must be free of static charges.
- Pull out the power plug before inserting or pulling out boards containing ESDs.
- Always hold boards with ESDs by their edges.
- Never touch pins or conductors on boards fitted with ESDs.

Software

This chapter provides a brief overview of the operating system and a series of programs developed by Wincor Nixdorf GmbH & Co. KG to enable your BEETLE /L to operate efficiently. More detailed information can be found in the BEETLE System Manual and in the individual documents for these programs.

Operating system

The BEETLE /L runs under the MS-DOS operating system that was specially expanded for POS applications.

This makes it possible, for example, to display all system messages on the cashier display. These messages are appropriately adapted to the format of the cashier display.

Retail device interface

The retail device interface (RDI) is a uniform C programming interface for the BEETLE /L.

This interface provides the application programmer with a simple means of programming retail-specific applications and devices.

Application programs

Application programs are available for the BEETLE /L that meet retail-specific requirements. For more information, contact the Wincor Nixdorf GmbH & Co. KG branch office responsible for your area.

Retail presentation manager

The retail presentation manager (RPM) is provided as a uniform tool (MS-DOS and UNIX) for input and output format specification. The RPM significantly reduces the development outlay for POS applications.

Retail transaction manager

The retail transaction manager (RTM) forms the link between the POS application and the operating system. The RTM allows the accessing of shared data, including price lookup and the maintenance of transaction files.

High frequency table

The price look ups (PLU) in the retail area are performed using the High Frequency Table (HFT). The HFT provides functional libraries with uniform interfaces for this purpose.

Hash file access method

Similar to the HFT, the Hash File Access Method (HSF) is primarily used for price look ups. The extensive article data on the mass storage can be managed with HSF. To this effect, the article file is specially structured when it is created. This structure, in conjunction with the access method for "hash" files, provides particularly short search times.

Software

Starting up the system

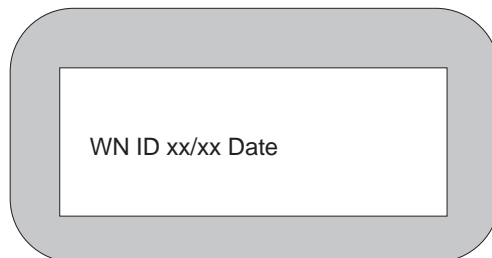
The configuration label shows you the equipment included in your modular BEETLE /L POS system. A sample is contained in the Appendix. The label is located on the underside of the BEETLE /L. The data specified there are required for entering the setup parameters (see Setup).

Start and runup behaviour

After installing the BEETLE /L, switch on the POS system using the power switch on the front panel.

The system first performs an automatic self-test to test its basic functions.

For example, you may see the following message (irrespective of processor type) on the four-line cashier display or on the monitor:



xx/xx is the place holder of the version number

The system then determines the medium from which the operating system and POS application are to be booted. Each medium is assigned a logical drive according to the configuration of your BEETLE /L.

The following media can be assigned a drive:

- Disk
- BEETLE card
- Network
- Hard disk

The logical drives are designated A:, B:, C: and D:.

If the system is to be booted from the BEETLE card or from a disk, this medium must always be assigned drive A:. It is also possible, however, to assign B: to the BEETLE card or disk if you wish to use the card as a pure storage medium. The network is always assigned to the C: drive during the runup procedure. The hard disk can be assigned to the C: or D: drive. The system can only be started from the hard disk if the disk has been configured as the C: drive.

The modular BEETLE /L POS system can be booted from two drives. However, please note the following restrictions:

- The system can be booted from drives A: and C: only.
- The storage medium must be system-boot-capable.

The following priorities apply:

BEETLE card or floppy disk (A:)	High priority
Network (C:)	Medium priority
Hard disk (C:)	Low priority

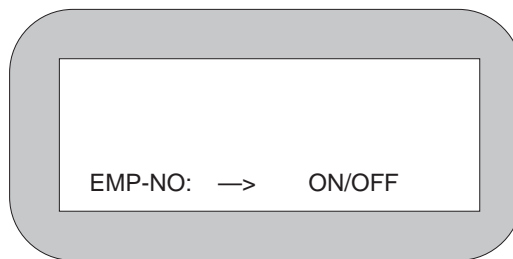
The POS system always attempts to boot from the BEETLE card or disk first if they are inserted in the respective drive.

If the POS system does not find a BEETLE card or disk in drive A:, it automatically continues the loading process from drive C:.



If drive A: contains a BEETLE card or disk on which the operating system is not stored, the POS system cannot be booted. In this case, either replace the card or disk with one that is system-boot-capable or remove the card or disk altogether.

The operating system responds with additional messages on the cashier display or monitor, as shown in the illustration below.

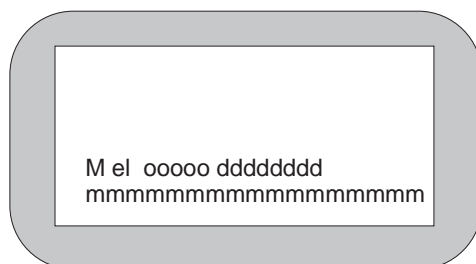


If the operating system has started up without error, the POS application software is automatically booted if necessary.

A message is displayed as soon as the POS workstation is ready for operation. For more detailed information, see the description of your application program.

Output of MS-DOS system error messages

All system error messages are displayed on the cashier display or monitor. The messages are on two lines, as shown below:



The individual entries have the following meanings:

M	Reserved
e	MS-DOS error No. 0..C HEX
l	Indicates where error occurred
	0 Reserved sector (MS-DOS area)
	1 File Allocation Table (FAT)
	2 Directory
	3 Data area
00000	"Read" or "write" operation
ddddddd	Block device driver: Drive, e.g. "C: "
	Character device driver: Name, e.g. "COM1 "
mmm...mmm	Message text: e.g. "Write protect error" If such an error message appears, acknowledge it by pressing the C key on the POS keyboard. The operating system then repeats the previous message.

BIOS setup

BIOS setup can be used to restore or reset the configuration parameters of your BEETLE POS terminal system. The features of your POS terminal system are displayed on the configuration label, which is located on the bottom your BEETLE. A sample label is shown on Page GB - 76. SETUP contains important basic settings which are necessary to enable your POS system to operate correctly. These settings include, for example, the date and time, the assignment of a specific logical drive name (A: or B:) to the BEETLE card or the floppy disk as well as parameters for the hard disk.

You have several options for calling up SETUP:

- If you are using a standard PC keyboard, press **Ctrl, Alt and ESC** simultaneously during the runup phase.
- SETUP is called up if the keyswitch on the POS keyboard is set to position **4** during the runup phase.
- If the configuration is incorrect, you can decide whether to ignore the error or call the setup program.

The default output medium for the BEETLE POS system is the 4-line, 20-column cashier display. If a VGA monitor is connected, information is output to the monitor.

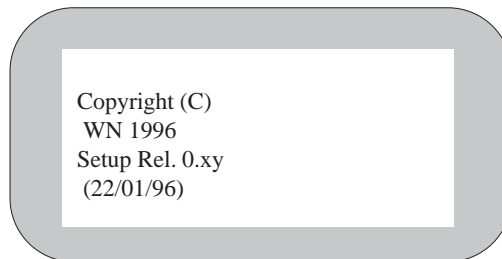
If no monitor is connected, the system messages are not displayed even if a VGA card is installed.

If there is no VGA card, the display entry must be set to "MONO" or "OPERATOR" (Processor 80486DX/66 or higher) so that the messages appear on the connected cashier display.

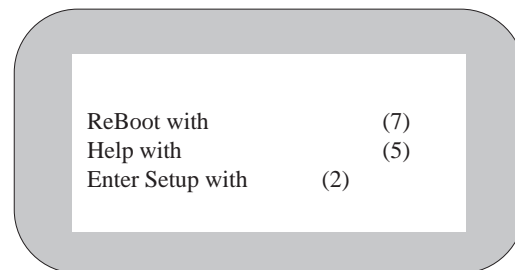
BIOS setup

The menu entries below are intended to serve as **examples**. If in doubt, refer to the configuration label.

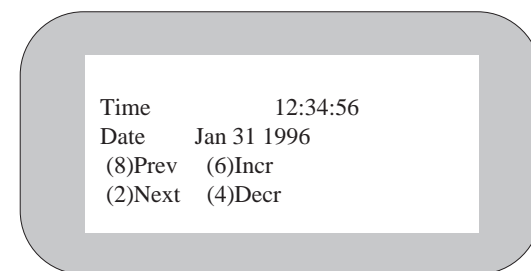
When SETUP is called, first the copyright message is output. For example:



The first menu is then displayed. Menus are controlled by pressing the numeric keys specified in parentheses.



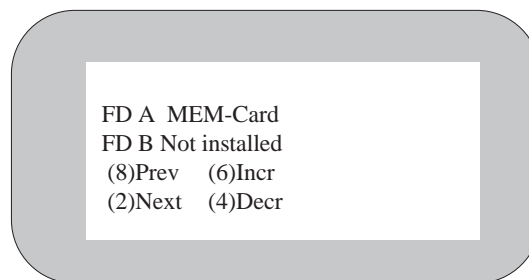
Pressing the number (2) allows you to set the date and time in a further menu. (7) reboots the system.



In this and subsequent examples, the numeric keys (8), (2), (6), (4), (5) and (7) have the following meanings:

(8) Prev (Previous)	The cursor is positioned in a previous field or menu
(2) Next	The cursor is positioned in the next field or jumps to the next menu
(6) Incr (Increment)	Increments a value in the field
(4) Decr (Decrement)	Decrements a value in the field
(5)	Calls the help function (key assignment)
(7)	Reboots the system

Following the menu for setting the time and date, the menu for the drive parameters appears.

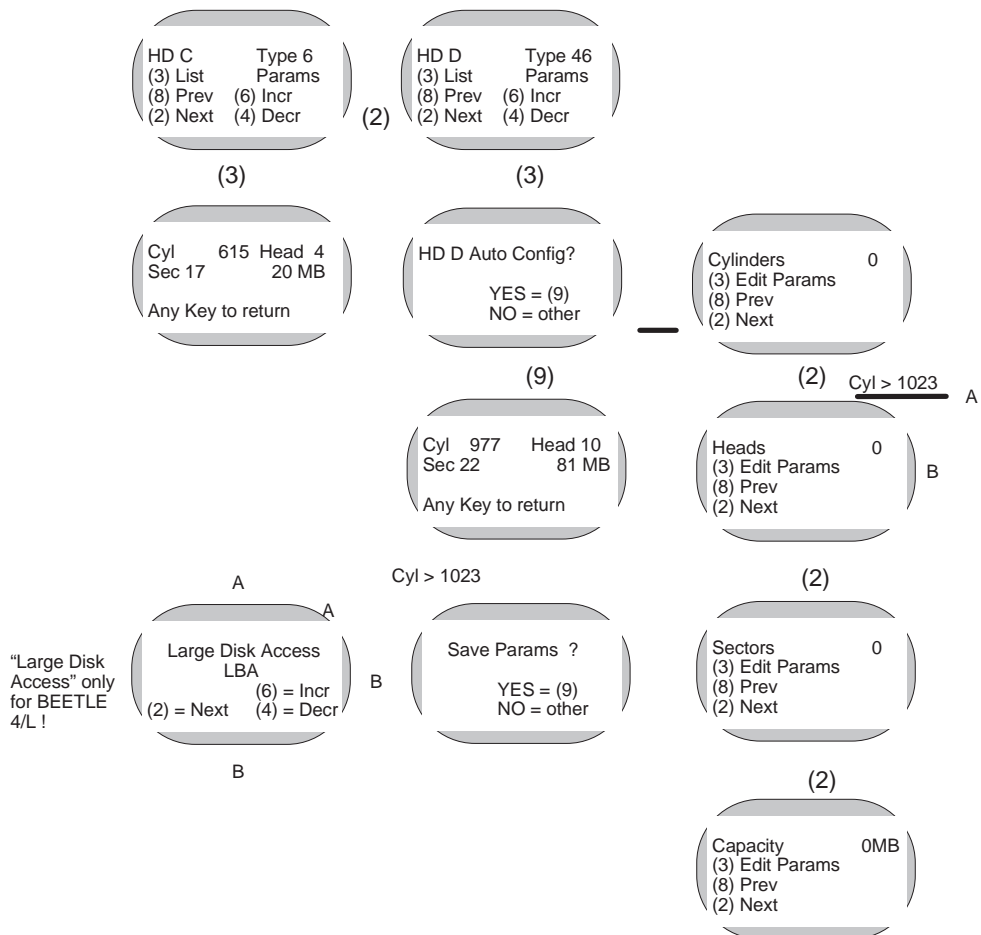


Enter settings for drives A: and B: (BEETLE card or floppy disk) here.

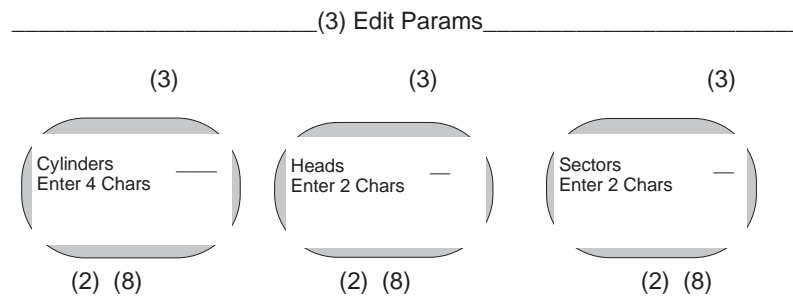
BIOS setup

The hard disks can be configured automatically in SETUP. The necessary parameters are read from the hard disk and stored in the CMOS RAM.

The following masks show examples of possible configurations, using hard disk D as an example:



With the BEETLE /L, there are the following types of hard disk: 1-39 and User Type. In the previous figure, the designation "Type 46" must be replaced with "User Type" accordingly.

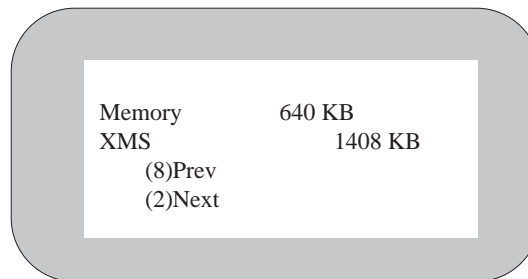


As the diagram shows, you can choose from among three basic settings:

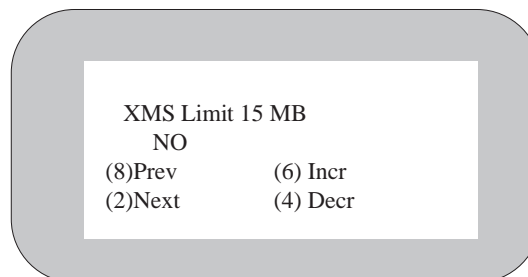
1. You can use the automatic configuration option in SETUP, which automatically reads and enters the parameters from the hard disk.
2. You can enter a configuration manually using the parameters specified in the documentation for IDE hard disks.
3. You can select a drive that matches one of the specified types (1 to 39).
4. In a BEETLE with a 80486DX2/66 or a Pentium CPU: Select "AUTO": The hard disk will be configured automatically during booting.

BIOS setup

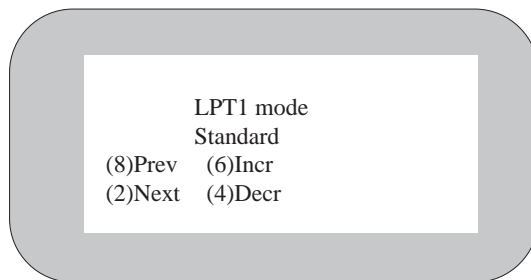
A further menu shows you, for example, the memory configuration shown in the following mask:



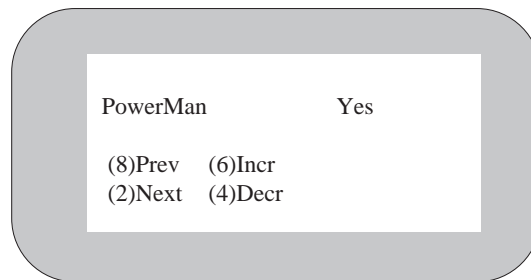
XMS stands for extended memory specification (above a memory capacity of 1 Mb). The following mask you see only at a BEETLE /L with 80486DX2/66 processor:



You can use the parallel interface in standard mode (from BEETLE 4/L), and in the modes ECP, EEP v1.7 and EEP v1.9. If you are using printers from Wincor Nixdorf you choose the standard mode. Take your choice in the following mask:



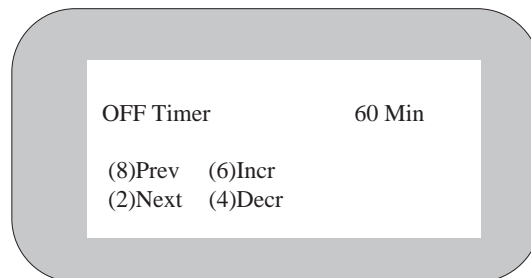
The BEETLE /L knows various operating mode settings (power management). With setting "NO", the CPU is in normal mode, i.e. the system works at full power. With setting "YES", the power management is activated.



BIOS setup

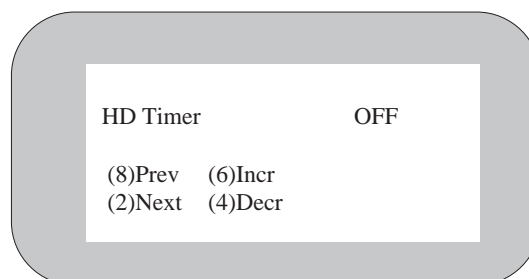
“OFF Timer” switches the CPU to sleep mode (5 - 15 - 60 minutes) after a specified interval of being idle. There must be no screen savers active at this time! In the process, the microprocessor is periodically stopped so that it can then be further clocked at full speed, thus reducing power consumption.

In addition, the backlighting of the cashier display is deactivated and a connected monitor is blanked.



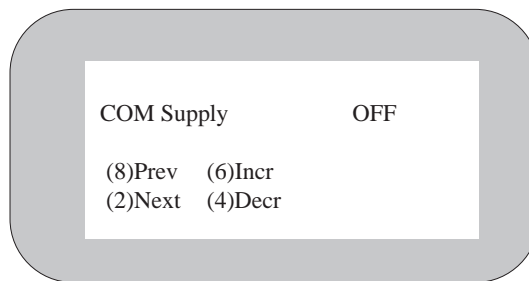
The time interval for deactivating the hard disk can be set separately (OFF and 60 minutes).

If HD Timer is set to “60 Min”, the hard disk is deactivated after 60 minutes in standby mode.



In BIOS setup, you can also define whether the power supply to the serial interfaces COM2* to COM4* is to be disabled in sleep mode (COM Supply ON).

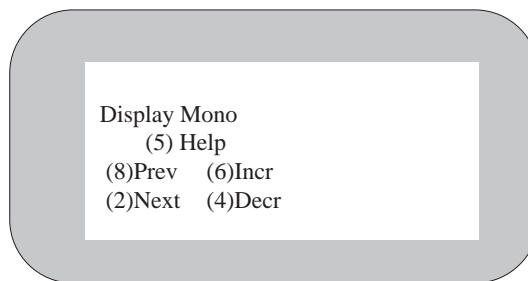
The CPU switches from sleep mode to standard mode when one of the following interrupts is actuated: IRQ1 (keyboard), IRQ3 (COM2), IRQ4 (COM1), or IRQ8 (RTC).



X All interrupts are processed in sleep mode; none are lost.

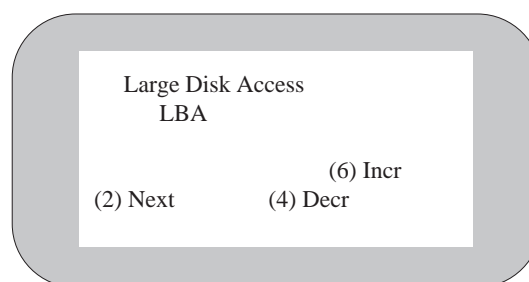
The next mask can be used to enter video cards (MONO for the cashier display or VGA for the monitor).

- ✘ If no VGA card is installed, the display entry must be set to Mono in order for outputs to appear on the cashier display.



Press (7) to terminate the setting procedure with a system reboot.

You will see the following mask only in the Setup menu of the BEETLE /L if the hard disk used has more than 1023 cylinders. Above this size, the data of the hard disk of BIOS and of the operating system MS-DOS must be treated with slight modification.



The setup offers the following configurations:

- Standard

In this configuration, the operating system MS-DOS can be started only from a partition smaller than or equal to 504 MB. The rest can only be used from another operating system (e.g. Windows NT or OS/2).

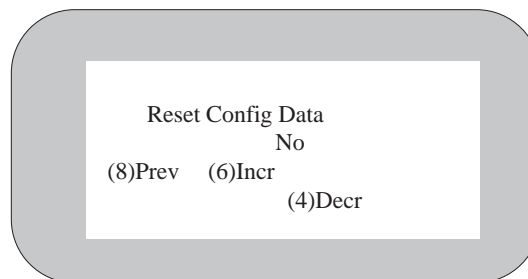
- LBA

In this configuration, MS-DOS can be started from a partition up to 7.8 gigabytes (GB).

- Non DOS

Select this configuration if you want to install another operating system than MS-DOS on your BEETLE.

If your BEETLE /L works with a Pentium CPU (with a "plug and play"- and PCI feature) then you finally see this mask:



Select "Yes" when a new "plug and play"-capable card has been installed or an old one removed. The reset will be carried out automatically.

Appendix

Technical data for the BEETLE /L

Footprint	
Width	280 mm
Depth (without cable cover)	387 mm
Total height	98.5 mm
Weight	9 kg
Climatic category	IEC 721-3-3 Class 3K3
Operating temperature	5 - 40°C
Input voltage	110 - 120 VAC 200 - 240 VAD
Power consumption	4 / 2 A
Frequency of system voltage	50 / 60 Hz
Noise generation	53 dB

CPU

Microprocessor	80486DX2, 80486SLC, Pentium class
Architecture	AT-compatible board with expansion options for POS-specific functional units
Main memory	80486SLC: 2-MB, expandable to 16 MB 80486DX2: 4-MB expandable to 16 MB Pentium: 8 MB expandable to 64 MB
BIOS	128 KB (80486SLC: 64 KB)
Keyboard	AT-compatible, WIN-compatible
Loudspeaker	Adjustable volume
Hard disk connection	IDE interface
Floppy disk connection	Standard interface
Submodule (optional)	An VGA or LAN controller or VGA/LAN controller or an ASYNC connection
Nonvolatile (NV RAM)	32 KB, 128 KB, 512 KB data retention 5 years
BEETLE card connection	Standard interface (PCMCIA), max. 64 MB
Cash drawer interface	MINI DIN jack, 6-pole
Serial interfaces	Standard: COM1 (9-pole D-SUB connector) Live ⁽¹⁾ : COM2 ⁽²⁾ , COM3, COM4 (9-pole D-SUB jack, 12 V (+5%, -10%) or 5 V (+/- 5%)) (max 600 mA)
Parallel interfaces	LPT1 (25-pole D-ASUB jack) interface
Additional printer interface	24 V/max. 2 A, power supplied

(1) = The total current consumption of all of the live serial interfaces must not exceed 900 mA (maximum 600 mA at 12 V per COM* interface; maximum 300 mA at 5 V total).

(2) = If a D-SUB connector is mounted at COM2, the interface does not have a separate power supply.

ASYNC controller

I/O base address range	02E8H - 02EFH
Interrupt	IRQ12
Connection	9-pole D-SUB jack

VGA controller

Resolution	maximum 800*600*16
Colours displayed	maximum 256
Refresh rate	72 Hz
VGA BIOS ROM	32 KB, 8 bit
Monitor connection	15-pole HD-SUB jack

LAN controller

DP8 RAM	8KB, default CC00h - CDFFh (only in shared memory mode)
I/O address range	32 Byte, default 240h - 25Fh
Interrupt	IRQ5
BOOT PROM	16 KB, default C8000h - CBFFFh
Connection	8-pole telephone jack RJ45 10BaseT (max. 100 m cable length) (only inhouse)

VGA/LAN controller

With the exception that the RAM of the LAN controller offers 16 KB, all the parameters are the same as for the VGA and the LAN controller separately.

What to do if...

Often when your modular BEETLE /L POS system is not functioning correctly, it is unnecessary to call the Service Department.

If your POS system does not boot correctly after you switch it on or if individual devices do not operate correctly,

always begin by checking the plug-in connections - especially to the power supply - to see that they are securely seated on the back of the POS housing and in the grounded power socket.

If the system's Setup menu is automatically called,

check the position of the key in the central lock on the keyboard.

If no image is visible on a connected VGA monitor,

adjust the brightness and contrast controls.

If the system cannot access the BEETLE card,

check to see whether the card has been correctly inserted and locked into place or whether the battery needs to be changed.

If your POS terminal is connected to a network and does not boot correctly after it is switched on,

make sure that the server is also switched on.

If these measures do not correct the problem, contact the Wincor Nixdorf branch office responsible for your area.

The configuration label

The label is located on the bottom of the POS housing.

Master-HD:	MASTER BD 3. _____ (DOS)						
	86580.____.3.80/ _____ <input type="checkbox"/> DOS <input type="checkbox"/> SINIX						
ZE-Serial-No.:	_____						
CPU:	<input type="checkbox"/> 386SX	<input type="checkbox"/> 486SLC	<input type="checkbox"/> 486DX/2	<input type="checkbox"/> _____			
COM3/4:	<input type="checkbox"/> IRQ disabled		<input type="checkbox"/> IRQ 10/11	<input type="checkbox"/> IRQ 10 both			
RAM/CMOS:	<input type="checkbox"/> 2MB	<input type="checkbox"/> 4MB	<input type="checkbox"/> ____MB/	<input type="checkbox"/> 32KB CMOS	<input type="checkbox"/> ____KB CMOS		
HD	Size	Cylinder	Heads	Sectors			
3,5''	270/____MB	944/____	14/____	40/____			
2,5''	127/	677/	9/	41/			
<input type="checkbox"/> VGA	<input type="checkbox"/> ASYNC: IRQ 12		<input type="checkbox"/> disabled	I/O:2E8/____			
<input type="checkbox"/> BIC	IRQ	I/O	DMA Ch	SCC-Int	Sby	2/4 wire	NEN
	15	220	R/W 0/1	M1	yes	2	yes
changed:	____	____	____	____	____	____	____
LAN:	<input type="checkbox"/> submodule (16K RAM)						
	<input type="checkbox"/> ATC (32K RAM)		<input type="checkbox"/> _____ (____ K RAM)				
BOOT-ROM:	<input type="checkbox"/> TCP/IP (16K)			<input type="checkbox"/> _____ (____ K)			
	IRQ	I/O	RAM base	ROM base	ROM size		
Default:	5	240	CC000	C8000	0k		
changed:	____	____	____	____	____k		

Power On Self Test (POST)

As standard the Phoenix POST is used, which monitors the functioning of the standard PC AT components of the master board. The Phoenix POST has been expanded by some function tests so that POS-specific functions can also be tested.

The error messages are displayed on the user display, the external user display or the VGA monitor. The user display and the monitor have high priority; with the VGA card inserted the messages are always displayed on the monitor. Error messages are displayed on the external user display only if there is no monitor and no user display.

Display of the error messages on the user display has the following format:

TEST POS TEST TYPE ERROR NUMBER

Error text

In the test, the error messages are displayed in English. The following is an example of the display of an error message at the user display:

TEST POS MC 02
BATTERY EMPTY
ANY KEY TO RETRY

Static errors are accurately localized with the POST, though sporadic errors can be determined only to a limited extent.

If POST signals an error, please contact your appropriate technician or Customer Service. Below is a list of MS-DOS critical errors and the POST error messages.

There is more information on MS-DOS system error messages on Page GB - 58.

MS-DOS Critical Errors**Error Code Meaning**

0	Attempt to write on write-protected disk
1	Unknown unit
2	Drive not ready
3	Unknown command
4	CRC data error
5	Invalid call structure
6	SEEK error with disks
7	Unknown data medium
8	Sector not found
9	Printer paper end
A	Write error
B	Read error
C	General error

POST error messages

Test type	Test	Message	Error no.
Cashier display	1	DATE ERROR	1
		ADDRESS ERROR	2
Customer display	2	TEST POS LCD	not applicable
Memory card	3	CARD IN FALSE POS	1
		BATTERY EMPTY	2
		CHANGE BATTERY	3
		UNKNOWN SIZE	4
		DATA ERROR	5
		CHANGE MC ERROR	6
NV-RAM	5	ADDRESS ERROR	1
		DATA ERROR (5555)	2
		DATA ERROR (ABAB)	3
		DATA ERROR (0000)	4
Printer controller	6	UNKNOWN PRINTER	1
		RESET ERROR	2
		UNKNOWN STATUS	3
		CPU ERROR	4
		CPU RAM ERROR	5
		TIMEOUT	6
		LPT ERROR	7
		ASIC ID ERROR	8
		ASIC REGISTER ERROR	9
		ASIC TIME ERROR	10
		ASIC RAM ERROR	11
		Z-RAM ERROR	12
		ROM CHECKSUM ERROR	13
Cash drawer	7	CASHDRAW CLOSED	not applicable
		CASHDRAW OPEN	not applicable

Test type	Test	Message	Error no.
MF-Module	8	TIMEOUT	1
		RESET ERROR	2
		UNKNOWN STATUS	3
		CPU INSTERROR	4
		CMOS MEMORY ERROR	5
		EPROM ERROR	6
		EM RTC BATTERY	7
		MF MEM NOT CONNECTED	8
		BYTE NOT BURNED	9
		TKD OVERRUN	10
		MEMORY DEFECT	11
		MEMORY CHECKSUM	12
		MEMORY FULL	13
		POINTER ERROR	14
		SNR BL COMPARE ERR	15
		HARDWARE DATA ERROR	16
		PRINTER TIMEOUT	17
		PRINTER POWERUP ERR	18
		CMOS CHECKSUM ERROR	19
		PRINTER ERROR	20
		EM PRINT TIMEOUT	21
		PRINTER ERRORLINE	22
		NO OPERATOR DISPLAY	23
		NO INT CUST DISPLAY	24
		NO EXT CUST DISPLAY	25
		WRONG CMD ORDER	26
		INST BUFFEROVERRUN	27
		NO MFC1	28
		NO MFC2	29
		TH WRONG FORMAT	30
		DATE WRONG FORMAT	31
		NO HARDWARE DATA	32
		MEM NOT FORMATTED	33
		UNKNOWN_COMMAND	34
		DATE NOT ALLOWED	35
		WRONG TEXT	36
		TOTAL OVERFLOW	37
		BON SUM WRONG	38
		PROGRAM ERROR	39
		BLOCKADE BY	40

Phoenix BIOS POST and Start Messages

Message	Pausible Cause	Remedy
Diskette drive fail	Diskette adapter failure	Check adapter
Diskette drive B: failure	Drive B: defective or not installed	Check drive B:
Diskette drive A: failure	Drive A: defective or not installed	Check drive A:
Diskette read failure strike 7 to retry boot	Disk not formatted or defective	Replace diskette and reboot
Display adapter failed;	* Primary videoadapter failure	* Check videoadapter
Gate A20 failure	Protected mode cannot be activated	Check CPU
Fixed disk configuration error	The specified configuration is not supported	Correct the hard drive configuration
HD controller fail	Controller failure	Replace hard disk controller
Fixed disk failure 0 1	Defective hard disk 0 = C: 1 = D:	Try to reboot. If not possible, replace hard disk
Hard disk read failure - strike 7 to retry boot	Defective harddisk	Try to reboot. If not possible, replace hard disk
Invalid config info	* Memory size not correct * Display adapter not correctly configured * Incorrect number of diskette drives	Start SETUP

Message	Paussible cause	Remedy
Keyboard clock line failure Keyboard data line failure	Keyboard or keyboard cable connection defective	Check that keyboard and cable are properly connected
Keyboard controller failure	Failure of firmware of the keyboard controller	Check keyboard controller
Keyboard stuck key failure	One or several keys stuck	Try again to press the keys
Memory address line failure at <i>hex-value</i> , read <i>hex-value</i> , expecting <i>hex-value</i>	Failure of memory chips connected to circuit	Check circuit arrangement
Memory data line failure at <i>hex-value</i> , read <i>hex-value</i> , expecting <i>hex-value</i>	Failure of one of memory chips or one of circuits	Replace memory chips
Memory high address line failure at <i>hex-value</i> , read <i>hex-value</i> , expecting <i>hex-value</i> <	Failure of memory chips connected to circuit	Check circuit arrangement
Memory double word logic failure at <i>hex-value</i> , read <i>hex-value</i> , expecting <i>hex-value</i>	Memory chip circuit failure	Replace memory chip
Memory odd/even logic failure at <i>hex-value</i> , read <i>hex-value</i> , expecting <i>hex-value</i>	Failure of memory chips connected to circuit	Check circuit
Memory parity failure at <i>hex-value</i> , read <i>hex-value</i> , expecting <i>hex-value</i>	Failure of one of parity memory chips	Replace memory chip
Memory write/read failure at <i>hex-value</i> , read <i>hex-value</i> , expecting <i>hex-value</i>	Failure of one of memory chips	Replace memory chip

Message	Paussible cause	Remedy
No boot device available - strike 7 to retry boot	Drive A:, hard drive or diskette defective	Reboot. If still not possible, replace faulty component
No boot sector on hard disk - strike 7 to reboot	Drive C: is not formatted or system start not possible	Format drive
Not a boot diskette - strike 7 to retry boot	Diskette in drive A: not formatted or start not possible	Replace diskette and reboot
No timer tick interrupt	Timer chip failure	Check timer chip on CPU
Hex-value optional ROM bad checksum = hex - value	Peripheral card has defective ROM	Replace card
Shutdown failure	Failure of keyboard controller or connecting logic circuit	Check keyboard controller
Time-of-day not set - Please run SETUP program	Clock not set	Start SETUP
Timer chip counter 2 failed	Chip failure	Check timer chip
Unexpected interrupt in protected mode	Non-maskable interrupt (NMI) cannot be switched off	Check CPU, especially the logic circuit of interrupt
Unexpected type 02 I/O card parity or memory parity interrupt at xxxx:yyyy Type (S)hut off NMI, (R)eboot; other keys to continue	Error in writing to system memory or in use of I/O registers	Replace memory chip
Internal cache test failed	Error in 486SLC-CPU	Replace 486SLC-CPU

Additional messages

Decreasing available memory	This message immediately follows a memory error message. The memory chips are faulty.
Strike the 7 key to continue	An error has occurred during the POST; press number key 7 to reboot system.
Base Memory size = 64K	Specifies size of main memory for functions.
Extended Memory size = 00000K	Specifies size of extended memory for functions.

If any of the above-stated malfunctions occurs, please contact your appropriate technician or Customer Service.

Glossary

Bit

A bit is a binary digit (0 or 1). It is the smallest unit used in data processing.

Controller

Serves to control data input and output in a data processing system or between a computer and the connected peripherals.

CPU

Abbreviation of central processing unit. It includes the main components of a data processing system. The CPU monitors all operations and provides data and programs. It comprises the control unit for input and output, the computer and the main memory, divided into ROM and immediate access storage.

Interface

Designates the transition point between different hardware units and software units or between hardware and software units of computers or their peripherals.

JEIDA

Abbreviation of Japan Electronic Industry Development Association. Industry standard for memory cards.

Operating system

Refers to all programs that are a component of a computer and are required for operating the system and executing application programs.

PCMCIA

Abbreviation for Personal Computer Memory Card International Association. Industry standard for memory cards.

Plug and PLayer

PnP means the automatic recognition of hardware components by the system. Thus in installation, integration and configuration of new components is made substantially easier.

Peripheral

A device serving as an input/output device or storage for a computer. This includes, for example, document readers, keyboards, printers and disk storage.

Server

This is a computer connected to a local network and whose services are available to all of the network subscribers, e.g. a print server for printing the data from all of the network subscribers on the printer connected to the server.

VGA

Stands for Video Graphics Adapter and is the interface for connecting color monitors.

Abbreviations

AT	Advanced Technology
ATA	AT-Attachment
BIOS	Basic Input Output System
COM	Communication Port
CPU	Central Processing Unit
cUL	canada Underwriters Laboratories
ECP	Extended Capability Port
EPP	Enhanced Parallel Port
EPROM	Erasable Programmable Read Only Memory
FD	Floppy Disk
GS	Geprüfte Sicherheit
HDD	Hard Disk Drive
HFT	High Frequency Table
HSF	Hash File Access Method
IDE	Integrated Drive Electronic
ISA	Industrial Standard Architecture
ISO	International Standardization Organization
JEIDA	Japan Electronic Industry Development Association
LAN	Local Area Network

Abbreviations

LBA	Logical Block Addressing
LED	Light Emitting Diode (Leuchtdiode)
LPT	Line Printer
MD	Mini Disk
MO	Magneto Optical
PCI	Peripheral Component Interconnect
PCMCIA	Personal Computer Memory Card International Association
PnP	Plug and Play
RAM	Random Access Memory
RDI	Retail Device Interface
RMH	Retail Message Handler
ROM	Read Only Memory
RPM	Retail Presentation Manager
RTM	Retail Transaction Manager
SCSI	Small Computer Systems Interface
SIMM	Single-In-Line-Memory-Modul
SRAM	Static Random Access Memory
UL	Underwriters Laboratories
VGA	Video Graphics Array
XMS	Extended Memory Specification