

# BA63

Customer Display

Product Manual



Edition March 2003

Pentium™ is a registered trademark of the Intel Corporation  
MS-DOS™, Windows 95™, Windows 98™, Windows NT™ and Windows CE™ are  
registered trademarks of the Microsoft Corporation  
BEETLE™ is a registered trademark of Wincor Nixdorf International GmbH

---

Copyright© Wincor Nixdorf International GmbH, 2003

The reproduction, transmission or use of this document or its contents is not  
permitted without express authority.

Offenders will be liable for damages.

All rights, including rights created by patent grant or registration of a utility model or  
design, are reserved.

Delivery subject to availability; technical modifications possible.

## Contents

<b>Manufacturer's Declaration and Approval .....</b>	<b>1</b>
FCC-Class A Declaration .....	1
Notes on Care .....	2
Warranty .....	2
Recycling the BA63 .....	3
 <b>General Notes .....</b>	 <b>4</b>
 <b>Installation of the Connector .....</b>	 <b>6</b>
Tube-based .....	6
Base/ Rotating Plate.....	8
 <b>Customer Display Control .....</b>	 <b>11</b>
 <b>Control Sequences .....</b>	 <b>12</b>
Backspace (without deleting) .....	12
Line feed.....	12
Carriage return .....	13
Delete display .....	13
Position cursor.....	13
Delete to end of line .....	14
Set country code .....	14
Call display identification .....	16
 <b>System Connection .....</b>	 <b>17</b>
 <b>Cable Connection .....</b>	 <b>19</b>
 <b>Test Functions .....</b>	 <b>20</b>
Starting the test by entering a code.....	20
 <b>Technical Data .....</b>	 <b>21</b>

## FCC-CLASS A DECLARATION

# Manufacturer's Declaration and Approval



This device fulfills the requirements of the EEC directives 89/336/EEC "Electromagnetic Compatibility" and 73/23/EEC "Low Voltage Directive".

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

## FCC-Class A Declaration

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Le présent appareil numérique n' émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la "Classe A" prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Wincor Nixdorf International GmbH (WN) accepts no responsibility for radio and television reception interference resulting from unauthorized modifications to the equipment. Furthermore, neither cables nor devices which have not been approved for use by WN may be connected. The user shall be held responsible for interference caused in this manner.



Device repairs must be carried out by authorized personnel. All guarantee and liability claims are automatically excluded if repairs have been carried out by unauthorized personnel.

## NOTES ON CARE

### Notes on Care

Wipe the customer display with a damp cloth as required. Solvents must not be used under any circumstances as they may damage the plastic.

### Warranty

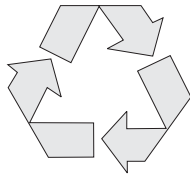
Wincor Nixdorf guarantees a limited warranty engagement for 12 months beginning with the date of delivery. This warranty engagement covers all those damages which occur despite a normal use of the product.

Damages because of

- Improper or insufficient maintenance,
- Improper use of the product or unauthorized modifications of the product,
- Inadequate location or surroundings

will not be covered by the warranty.

## Recycling the BA63



Environmental protection does not begin when it comes time to dispose of the BA63; it begins with the manufacturer. This product was designed according to our internal norm "Environmental conscious product design and development".

The BA63 is manufactured without the use of CFCs und CCHS 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.

Please do not stick labels onto plastic case parts. This would help us to re-use components and material.

At this time, there are still some parts that are not reusable. Wincor Nixdorf 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 BA63 on the scrap heap when it has served its time, but take advantage of the environmentally smart, up-to-date recycling methods!

Please contact your competent branch office for information on how to return and re-use devices and disposable materials.

## GENERAL NOTES

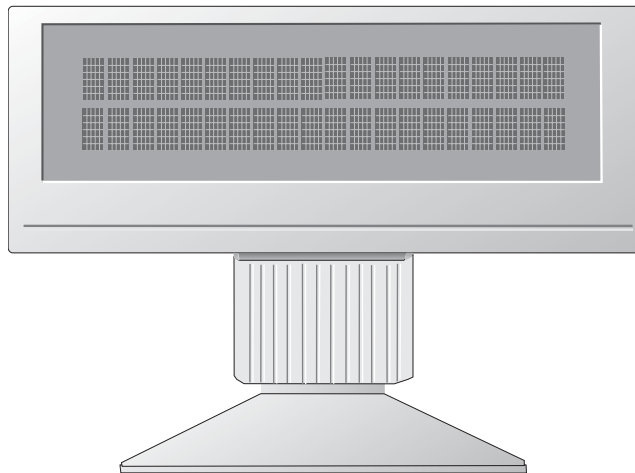
### General Notes

The BA63 customer display is mainly used in POS installations which are designed in modular form. It is either securely screwed to the POS keyboard or installed near it so that it is ideally positioned in the cashier's field of vision.

The display is a vacuum florescent display (VFD) with two lines, each with 20 alphanumeric characters. The standard character set and corresponding country code are implemented. Implementation of VFD technology ensures that the customer display is ergonomically designed to achieve a high degree of readability, irrespective of the cashier's angle of vision.

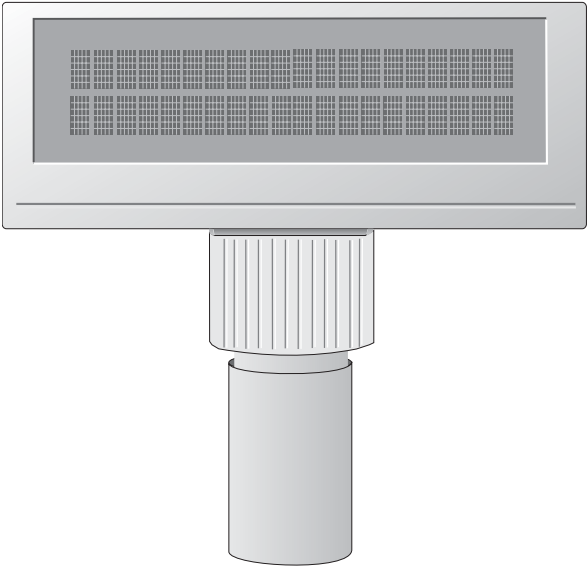
The display is connection to the point of sale system via a RS232C interface. The voltage (12 V DC) is also supplied via this interface.

The following two BA63 customer displays are available to meet individual installation requirements:



BA63 customer display with base/rotating table

GENERAL NOTES



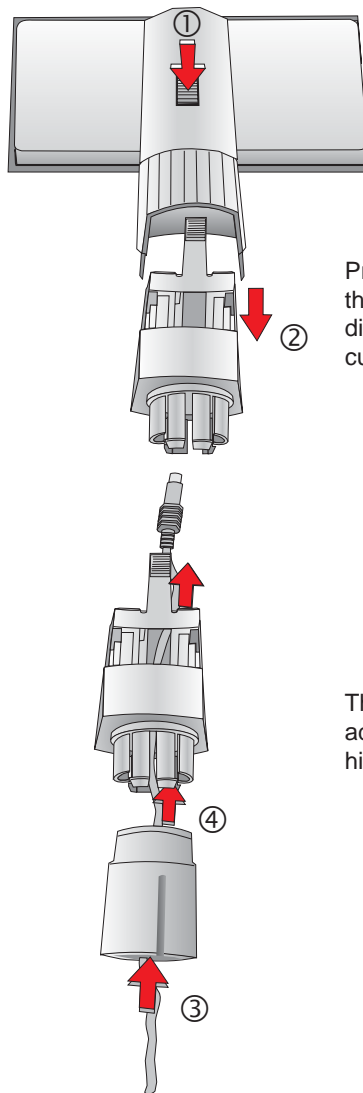
Customer display with adaptor for tube-based installation



## TUBE-BASED

# Installation of the Connector

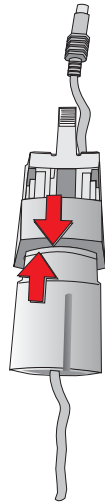
## Tube-based



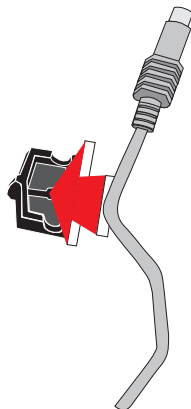
Press the release knob marked with the arrow in the drawing (1) and disconnect the hinge from the customer display (2).

Thread the cable through the adapter (3) and then through the hinge (4).

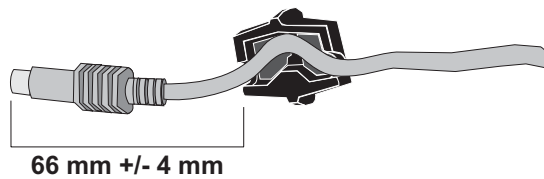
## TUBE-BASED



Connect the hinge and adapter.

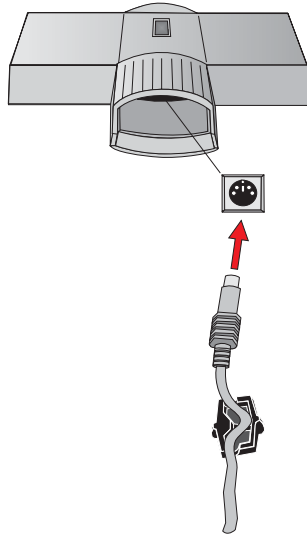


Secure the connector cable in the strain relief.



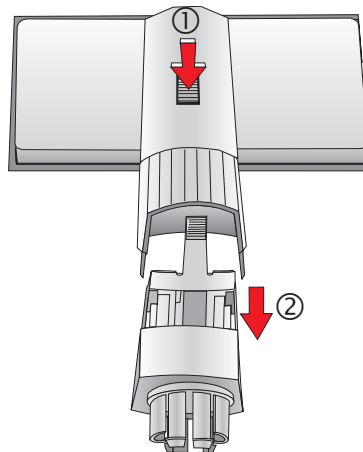
The distance between the strain relief and the tip of the connector must be 66 mm ( $\pm$  4 mm).

## BASE/ ROTATING PLATE



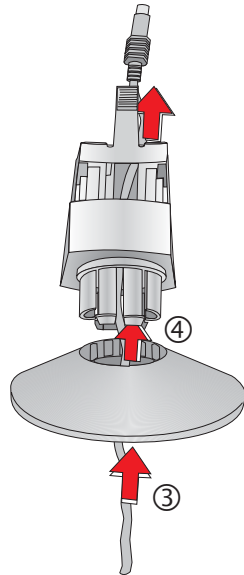
Plug the cable connector into the appropriate socket of the customer display and plug the adapter/hinge into the customer display again until it locks into place.

## Base/ Rotating Plate

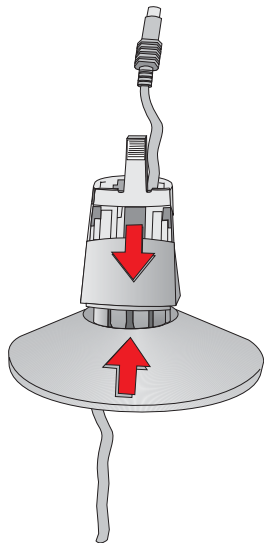


Press the release knob marked with the arrow in the drawing (1) and disconnect the hinge from the customer display (2).

## BASE/ ROTATING PLATE

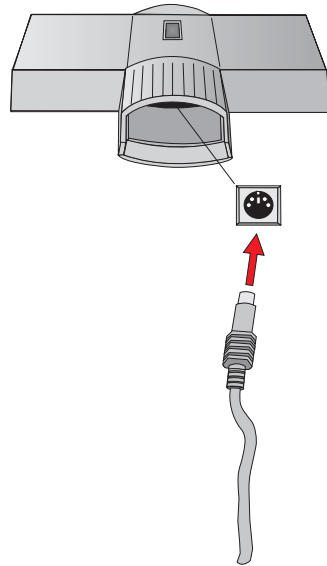


Thread the cable through the base (3) and then through the hinge (4).

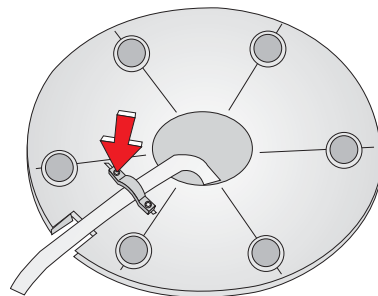


Connect the base and the hinge.

## BASE/ ROTATING PLATE



Plug the cable connector into the appropriate socket of the customer display and plug the base/hinge into the customer display again until it locks into place.



A metal bracket of the strain relief is situated on the bottom side of the base table. Loosen one of the screws (see arrow), push the bracket aside and guide the connector cable from inward to outward under the bracket through the recess. Tighten the screw.

## Customer Display Control

The customer display is controlled via software. The commands are entered with the appropriate ESC sequences. The following functions are available:

- The cursor can be moved to the desired position;
- The customer display can be deleted;
- The characters from the cursor to the end of the line can be deleted;
- An identification code can be requested;
- Country-specific character sets can be selected;
- A self-test can be performed.

## CONTROL SEQUENCES

### Control Sequences

The customer display operates in VT100 mode, i.e. it emulates a subset of the VT100 ESC sequences and control bytes. These are illustrated in the following:

Backspace (without deleting)	BS
Line feed	LF
Carriage return	CR
Delete display	ESC [2J
Position cursor	ESC [Py;PxH
Delete to end of line	ESC [0K
Set country code	ESC Rn
Call display identification	ESC [0c

#### Backspace (without deleting)

The **BS** command (hexadecimal 08) moves the cursor one space to the left. If there is a character in the position to which the cursor moves, it is not deleted. This command is ignored if the cursor is already at the very start of the line.

#### Line feed

The **LF** command (hexadecimal 0A) moves the invisible cursor down a line if it is positioned in one of the first three lines of the display. The column position remains unchanged.

The position of the cursor remains unchanged if it is already in the last line. The contents of the last line are copied to the first line and the last line is deleted.

## Carriage return

The cursor is moved to the start of the line in which it is currently positioned when the **CR** command (hexadecimal 0D) is entered. The command is ignored if the cursor is already at the start of the line.

## Delete display

The display can be deleted with this ESC sequence. The cursor position remains unchanged. The ESC sequence is as follows:

Code	Hexadezimal
ESC '[' '2' 'J'	1B 5B 32 4A

## Position cursor

The cursor position can be defined with this ESC sequence. The cursor is not visible on the display whilst this is being carried out. The following ESC sequence (for example) can be implemented:

Code	Hexadezimal
ESC '[' 'Py' ; 'Px' 'H'	1B 5B 31 3B 31 48

The parameters are transferred as ASCII characters and have the following meaning:

Parameter	Meaning
Py	This parameter defines the line.
Px	This parameter defines the column.

### Example

The parameters are to be replaced with the following values if you wish to position the cursor at the very start of the first line:



## CONTROL SEQUENCES

ESC '[' '1'; '1' 'H'
----------------------

If you select 0 for the parameter value, this is interpreted as 1 by the display. If, on the other hand, you select a value which is greater than the maximum line and column value, the display will interpret this value as the maximum value permissible.

The cursor is positioned in the first column of the first line if no parameter values are entered.

## Delete to end of line

This command deletes the characters from the cursor, cursor position included, to the end of the line. The position of the cursor remains unchanged.

The ESC sequence is as follows:

Code	Hexadezimal
ESC '[' '0' 'K'	1B 5B 30 4B

## Set country code

The following ESC sequence is implemented in order to select a country-specific character set:

Code	Hexadezimal
ESC 'R' 'n'	1B 52 02

The hexadecimal value n corresponds to the country code and defines the country-specific character set. The German character set corresponds to the default setting.

## CONTROL SEQUENCES

Country code	Character set
00	USA
01	France
02	Germany
03	Great Britain
04	Denmark 1
05	Sweden
06	Italy
07	Spain 1
08	Japan
09	Norway
0A	Denmark 2
0B	Spain 2
0C	Latin-America

Furthermore PC code pages which contain additional country-specific display codes can be selected by ESC R n with the following codes:

Country code	Code page	Character set	Country
30	437	Standard	Latin-America
31	850	Latin 1	International, Scandinavia, Latin-America
32	852	Latin 2	Hungary, Poland, Czechia, Slovakia

## CONTROL SEQUENCES

33	857	Latin 5/Turkey	Turkey
35 and 29	866	Latin/Cyrillic	Russia
37	862	Latin/Hebrew	Israel
36	737	Latin/Greek 2	Greece
38	IBM813	Latin/Greek 2	Greece
63	Katakana	Katakana	Japan

In the appendix there are shown all character set tables for BA63 in 5 x 7 matrix display.

## Call display identification

The identification is called with the following ESC sequence:

ESC '[' '1'; '1' 'H'
----------------------

The following is displayed on the screen when the sequence is entered:

Code	Hexadezimal
ESC '[' 'Py' ; 'Px' 'H'	1B 5B 31 3B 31 48

Pn1	Type of display	=	2	=	VFD display
Pn2	PROM version	=	currently 00		(depends on approved PROM version)
Pn3	Character set	=	2	=	modif. IBM character set
Pn4	Number of lines	=	4		
Pn5	Column/line	=	20		

i.e. ESC[?2;00;2;4;20c is transmitted.

## System Connection

The system is connected via the RS232C (V.24) interface with a voltage supply of +12V DC.

The following parameters are set as standard:

Transmission rate	9.600 Bit/s
Parity	on
Parity	odd

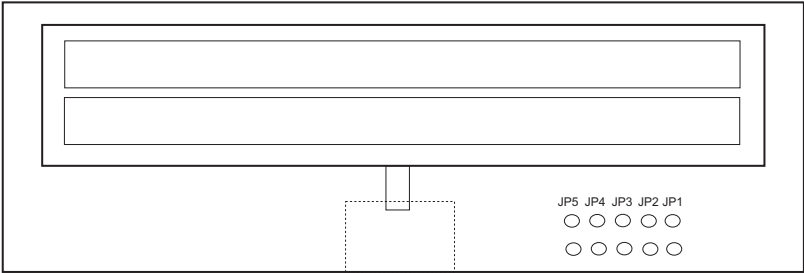
Parameters other than these standard values can also be selected. Wire jumpers must be soldered onto the display circuitry in order to do so.

Wire jumper	IN/OUT	Parameter
JP1 JP2	<b>OUT</b> <b>OUT</b>	9600 Bit/s
JP1 JP2	IN OUT	4800 Bit/s
JP1 JP2	OUT IN	2400 Bit/s
JP1 JP2	IN IN	1200 Bit/s
JP3	<b>OUT</b> IN	<b>Parity on</b> Parity off
JP4	<b>OUT</b> IN	<b>Parity odd</b> Parity even
JP5	IN <b>OUT</b>	Self-test <b>Normal operation</b>

The position of the wire jumpers on the display circuitry is illustrated in the following diagram. The front plate can be removed by pressing both of the

**SYSTEM CONNECTION**

exterior housing clips underneath the plate. The wire jumpers are then accessible.



Customer display circuitry

## Cable Connection

The customer display cable features a mini DIN connector at one end (which is connected to the customer display) and a 9-pin D sub connector at the other (which is connected to the COM interface of the point of sale system). Similarly, the voltage (12V) is also supplied to the display via the COM interface.

The pins of the 6-pin mini DIN socket and the 9-pin D sub socket are assigned as follows:

6-pin mini DIN Socket	Signal	9-pin D-Sub-Socket
1	RTS	7
2	CTS	8
3	GND	5
4	RXD	2
5	TXD	3
6	12V	1
		4
		9
		6

## TEST FUNCTIONS

# Test Functions

The internal RAM of the processor and the EPROM are tested during the start-up phase. All display elements light up for approx. 0.5 seconds if no errors are detected during the test. The display remains blank if an error is isolated.

## Starting the test by entering a code

The identification is called with the following ESC sequence:

```
ESC [0c
```

The display runs through the self-test program once when the code is transmitted to the display. Code:

```
ESC [?2;nn;2;2;20c
```

The current version number (00-99) will be indicated in place of nn.

The test software performs the following functions:

- The microprocessor and the RAM within the processor are tested. Errors detected are displayed.
- Formation and comparison of the PROM checksum. Errors detected are displayed.
- The display type and version number of the microprogram are displayed.
- The parameters of the serial interface are displayed. The baud rate and the parity parameters are output.
- Display is tested by generating a rough chess board pattern.
- Display is tested by generating a detailed chess board pattern.

## Technical Data

The technical data of the BA63 customer display is detailed in the following table:

<b>Display technology</b>	Vacuum Fluoreszenz Display (VFD)
<b>Character display</b>	2 lines each with 20 alphanumeric characters Matrix: 5 x 7 pixel Height: 9.5 mm Width: 6.2 mm Color: green
<b>Self-test function</b>	possible via software control using ESC sequences and JP5 wire jumper
<b>Interface</b>	RSC232C, asynchronous full duplex operation
<b>Transmission modes</b>	standard 9600 bit/s; parity: on; parity: odd even/uneven parity optional with 9.6/4.8/2.4/1.2 kbit/s - adjustable via wire jumpers
<b>Voltage supply</b>	12V 10% with max. 350mA make current: max. 600 mA
<b>System connection</b>	RS232C (V.24) with + 12V DC voltage supply
<b>Dimensions</b>	Height (with base): 165 mm Width: 206 mm Depth: 46 mm
<b>Weight</b>	0.5 kg



Herausgegeben von/ Published by Wincor Nixdorf International GmbH  
D-33094 Paderborn, D-13629 Berlin

Bestell-Nr./ Order No.: **0175 0000 179G**  
Printed in Singapore