

# BA63

Customer Display

Product Manual



Edition September 2006

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# 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 generally a warranty engagement for 12 months beginning with the date of delivery. This warranty engagement covers all 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

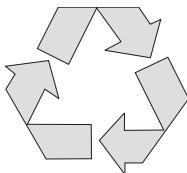
will not be covered by the warranty.

For further information of the stipulation look at your contract.

All parts of the product which are subject to wear and tear are not included in the warranty engagement.

Please order spare parts at the Wincor Nixdorf customer service.

## Recycling the BA63



Environmental protection does not begin when the time has come 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 and 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.

You can protect our environment by only switching on your equipment when it is actually needed. If possible, even avoid the stand-by-mode as this wastes energy, too. Also switch your equipment off when you take a longer break or finish your work.

At this time, there are still some parts that are not reusable. Wincor Nixdorf International GmbH guarantees the environmentally safe disposal of these parts in a Recycling Center, which is certified pursuant to ISO 9001 and ISO 14001.

So don't discard your display on the garbage when it has served its time, but take advantage of the environmentally smart, up-to-date recycling methods!

Please contact your competent branch or the Recycling Center Paderborn (for European countries) for information on how to return and re-use devices and disposable materials under the following mail address:

Email: [info@wincor-nixdorf.com](mailto:info@wincor-nixdorf.com)  
or on the internet.

We look forward to your mail.

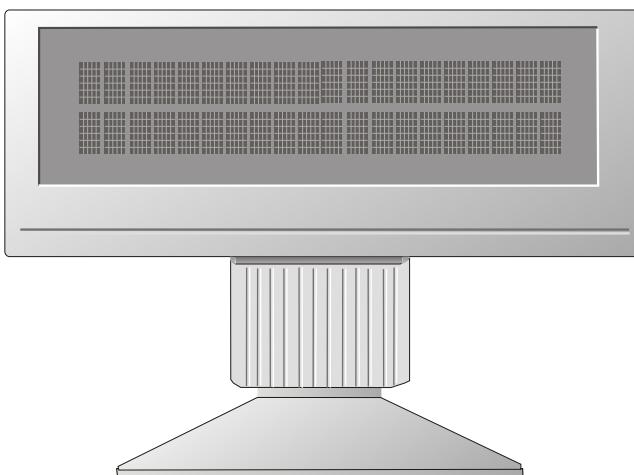
## General Notes

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.

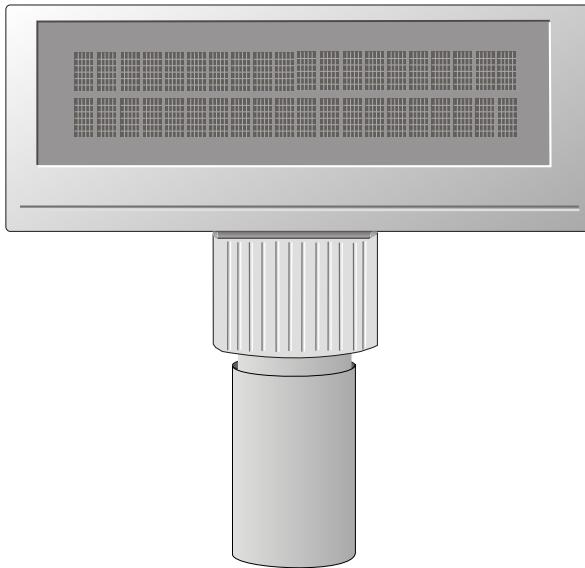
The display is a vacuum fluorescent display (VFD) with two lines, each with 20 alphanumeric characters. The standard character set and corresponding country code are implemented. Implementation of VFD technology ensures that the customer display is ergonomically designed to achieve a high degree of readability,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



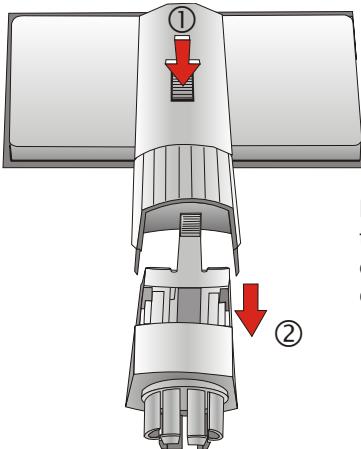
BA63 customer display with base/rotating table



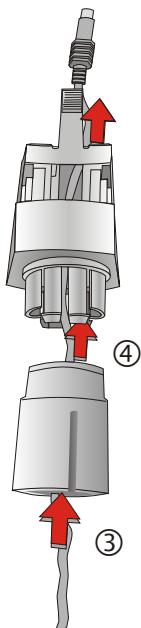
Customer display with adaptor for tube-based installation

# Installation of the Connector

## Tube-based



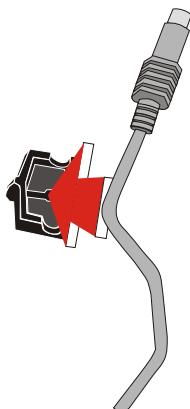
Press the release knob marked with the arrow in the drawing (1) and disconnect the hinge from the customer display (2).



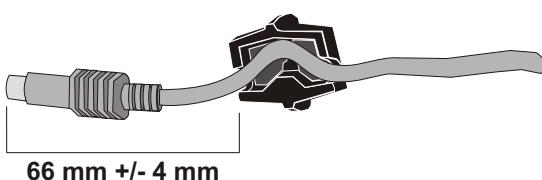
Thread the cable through the adapter (3) and then through the hinge (4).



Connect the hinge and adapter.

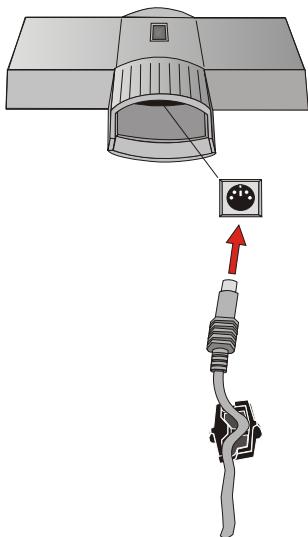


Secure the connector cable in the strain relief.



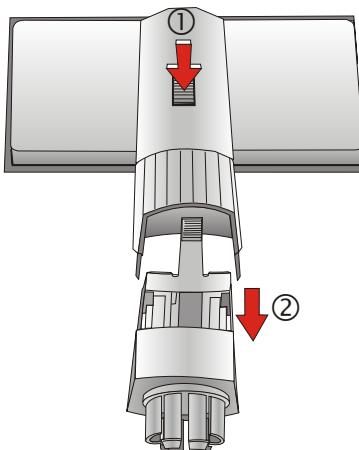
The distance between the strain relief and the tip of the connector must be 66 mm ( 4 mm).

## BASE/ ROTATING PLATE



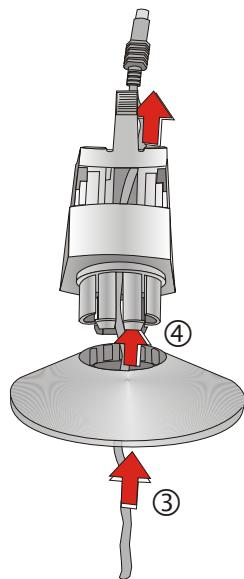
Plug the cable connector into the appropriate socket of the customer display and plug the adapter/hinge into the customer display again until it locks into place.

## Base/ Rotating Plate

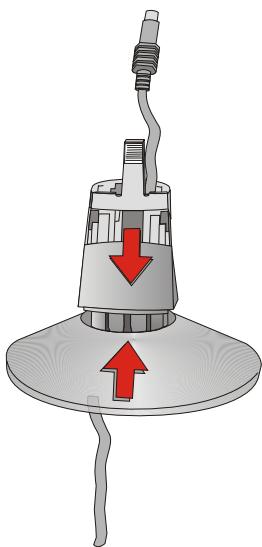


Press the release knob marked with the arrow in the drawing (1) and disconnect the hinge from the customer display (2).

## BASE/ ROTATING PLATE

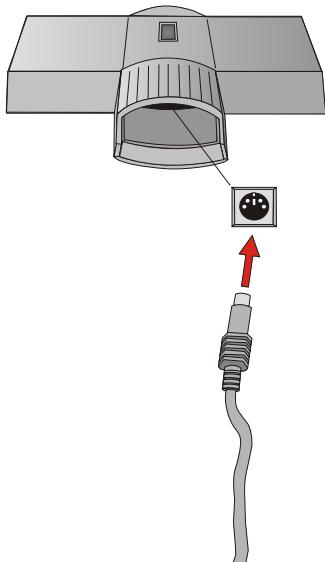


Thread the cable through the base (3) and then through the hinge (4).

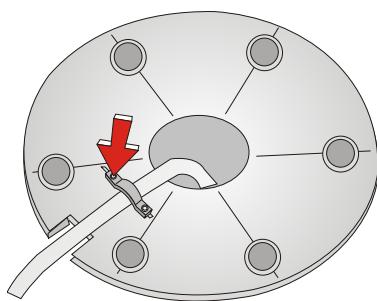


Connect the base and the hinge.

## 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

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.

<b>Country code</b>	<b>Character set</b>
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:

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

## CONTROL SEQUENCES

Country code	Code page	Character set	Country
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:

Code	Hexadecimal
ESC'["0"c'	1B 5B 30 63

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

Code
ESC'["?"Pn1';'Pn2';'Pn3';'Pn4';'Pn5c"

Hexadezimal
1B 5B 3F 32 3B 30 30 3B 32 3B 34 3B 32 30 63

## CONTROL SEQUENCES

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

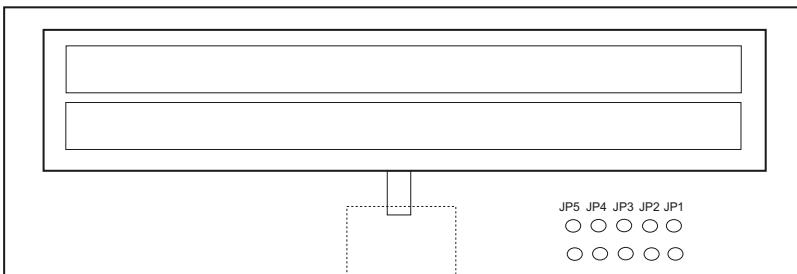
Parameters other than these standard values can also be selected. Wire jumpers must be soldered onto the display circuitry in order to do so.

Wire jumper	IN/OUT	Parameter
JP1 JP2	OUT OUT	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	OUT IN	<b>Parity on</b> Parity off
JP4	OUT IN	<b>Parity odd</b> Parity even
JP5	IN OUT	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:

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

# 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

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