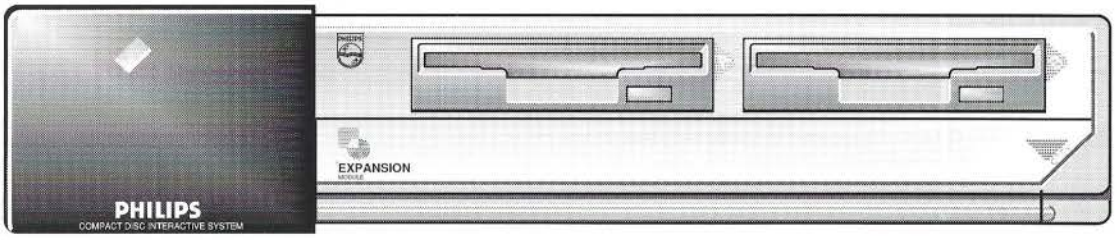
Interactive
Media
Systems

CD-I

CD-I System



COMPACT disc interactive

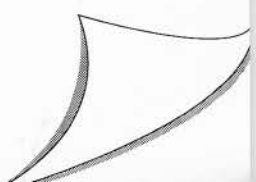
CDI 182

INSTALLATION AND OPERATION MANUAL

PHILIPS

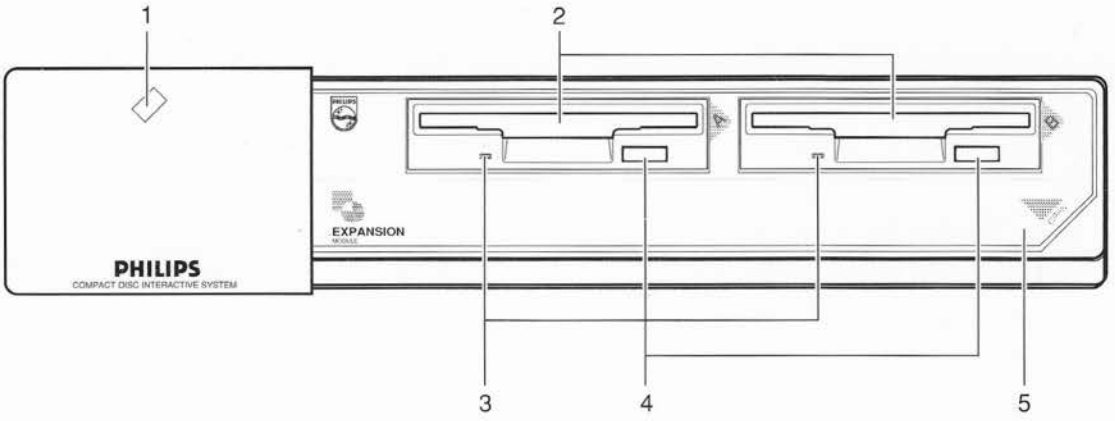
PHILIPS

Open this flap to read
important instructions

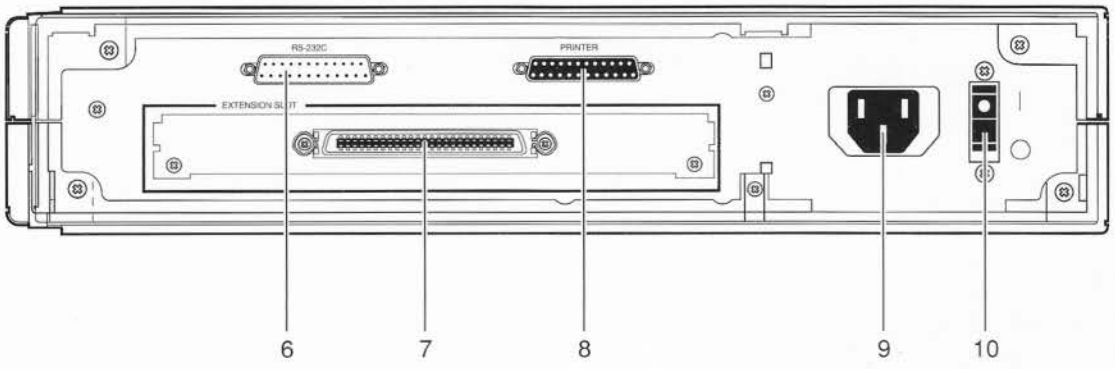


CDI 182 (EXPANSION MODULE)

FRONT VIEW



REAR VIEW



WARNING

This equipment generates, uses and radiates radio frequency energy and if not installed and used in accordance with this instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing devices pursuant to subpart J of part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

IMPORTANT

This product was FCC verified under test conditions that included use of shielded cables and connectors between system components. It is important that you use shielded cables to reduce the possibility of causing interference to radios, television sets and other electronic devices. If you have any problems contact your dealer.

THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRÉSENT APPAREIL NUMÉRIQUE N'ÉMET PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMÉRIQUES DE CLASSE A PRESCITES DANS LE RÈGLEMENT SUR LE BROUILLAGE RADIOÉLECTRIQUE EDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA.

CONTENTS

1 INTRODUCTION

The Expansion module is a versatile addition to your CD-I system incorporating two floppy disc drives to store or read data conforming to CD-RTOS disc format.

For connection of additional peripheral equipment your expansion module provides a parallel output interface and an RS-232C serial interface.

To further extend your system, two slots for extension boards are provided. These slots are connected to the CPU bus signals from the main 68070 microprocessor in the MMC module. All extension boards can be connected to either slot.

One Expansion module can be connected to the CD-I Basic Configuration, to be placed directly under the MMC module.

This manual must be used to install your Expansion module safely and quickly, and will give you the basic information on the operation of the system.

Unpacking

The following accessories are supplied with this CDI 182 Expansion module:

- Mains (AC) interconnection cable.
- CPU bus connector block.
- System RAM extension board (mounted).
- SCSI interface board (mounted).
- CD-I system floppy disc.

A technical manual can be supplied separately.

Safety Instructions

- Check that your mains (AC) supply voltage is the same as that given on the type plate on the rear of the Expansion module. If your mains (AC) supply is different consult your CD-I dealer
- Always stand horizontally on a flat, firm base.
- Make sure that air can ciculate freely through the ventilation openings of the Expansion module.
- Do not place the Expansion module near a heat source (e.g. a heating system radiator), or in direct sunlight.
- Do not use liquids near the Expansion module; if a liquid is accidently spilled into the system, switch it off and consult your dealer.
- Never attempt to repair the Expansion module yourself. Always consult a qualified service technician.

  Note: There are dangerous voltages inside the expansion module.

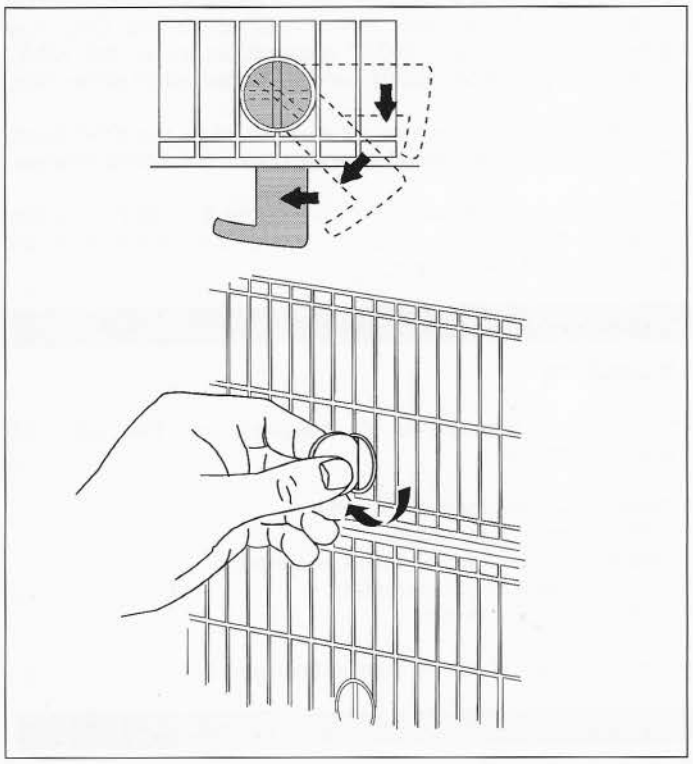
- When the unit is to be transported or stored, handle it carefully to avoid giving it severe shocks.
- Do not bend or drop boards.
- Store boards in a dry place.
- Do not touch the connectors.

Functionality

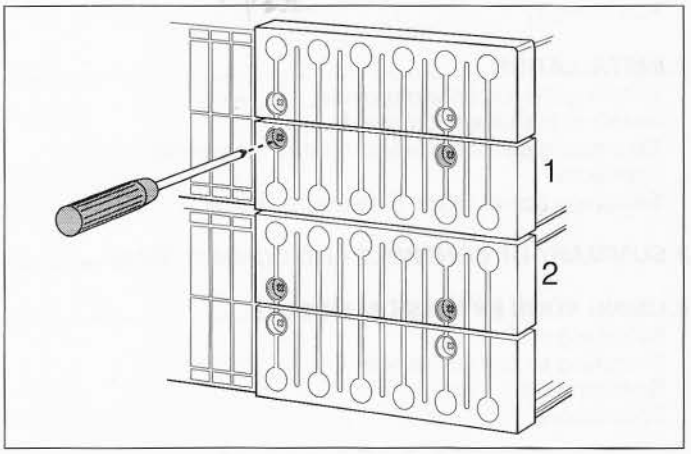
The functionality of the Expansion module depends on the application software of the CD-I discs with extended functions or floppy discs.
(Refer to the manual of the application software for more information).

Installing the Expansion module

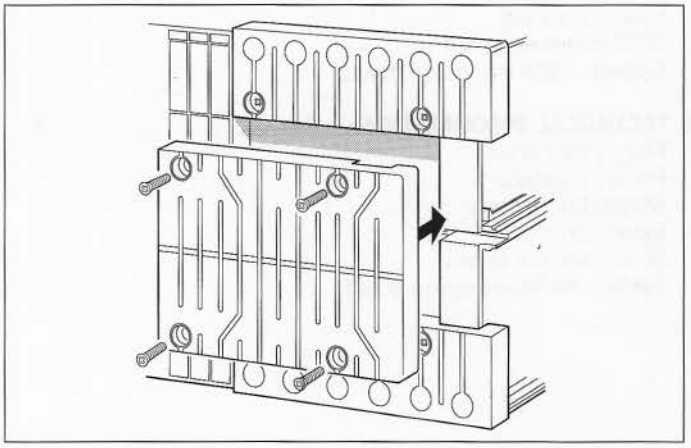
- Place the Expansion module under the MMC module and fix the two units together by turning the two slots located on the sides of the MMC module with a coin, this engages the hooks in the Expansion module.



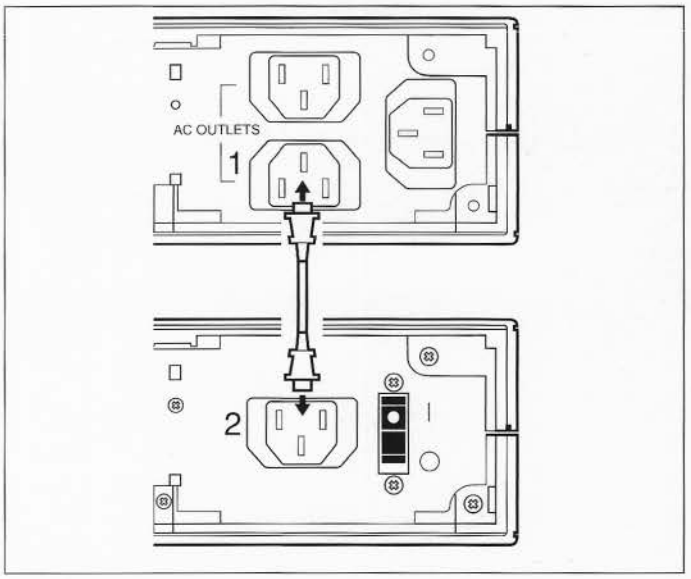
- Remove the lower endcap (1) of the MMC module and the upper endcap (2) of the Expansion module (by unscrewing them). Keep the screws for later use.



- Connect the MMC module and Expansion module using the CPU bus connector. Push the connector firmly into position and fix the CPU bus connector block with the already removed screws.



- Connect the mains (AC) interconnector cable between the power AC OUTLET (1) of the MMC module and the AC INLET (2) of the Expansion module.



Note: If the system has to be transported, the units must be disconnected. The hooks are not for transportation. For protection of the connectors, replace the endcaps.

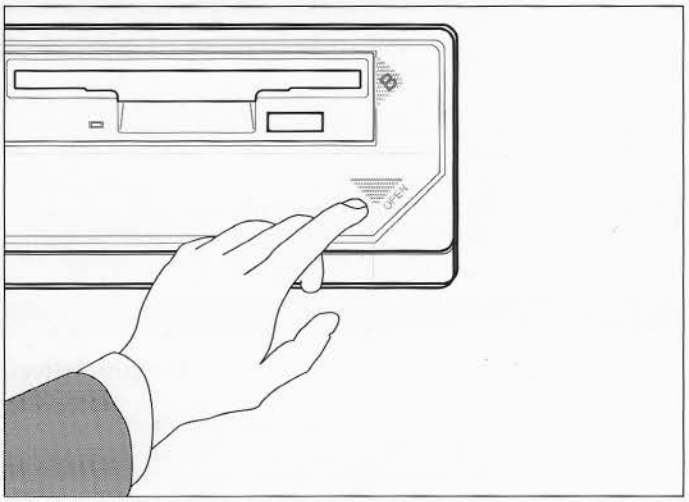
Installing the Extension boards

Extension boards may be factory installed, for installing other extension boards follow the procedure below.

WARNING: For installation of the extension boards the whole CD-I system must be disconnected from the mains (AC).

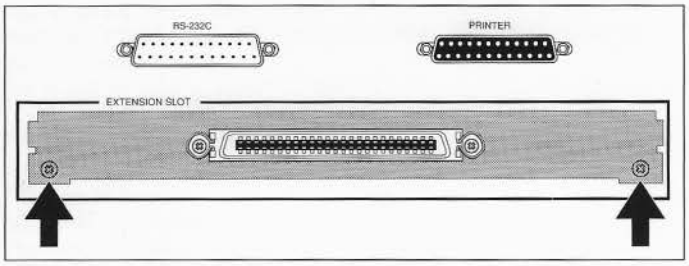
When using the front slot:

- Push lightly on the front extension slot door to open it.
- Unscrew and remove the metal cover plate that covers the extension slot.
- Slide in the extension board with the components facing **UP**.
- Fix the metal cover plate that comes with the extension board with screws.



When using the back slot:

- Unscrew and remove the metal cover plate that covers the extension slot.
- Slide in the extension board with the components facing **DOWN.**
- Fix the metal cover plate that comes with the extension board with screws.



Connecting peripheral equipment to the parallel or serial interfaces

- Ensure power is switched off to the CD-I system.
- Connect the equipment (e.g modem) to the serial interface (RS-232C port).
- Or, connect the equipment to the parallel interface.
- Always secure the connection cables with the screws.
- Follow the instructions that come with the peripherals and the software application package to ensure correct functioning.

Switching power to the Expansion module

Set the POWER switch on the rear of the Expansion module to "I" (=ON). Leave the switch in this position to make full use of the power-on/standby system facilities of the Multi Media Controller module.

3 SUMMARY OF CONTROLS AND CONNECTIONS

See flap (front view)

1. **Power indicator**
   Lights "green" when power is applied (normally via the MMC module).

2. **Floppy disc drives (A and B)**
   Two high density (HD), 2 Mbyte floppy disc drives are built in.

3. **"Busy" indicators**
   Lights red when data is being written to, or read from the floppy disc.

4. **Eject buttons**
   Used to eject a floppy disc from the appropriate floppy disc drive.

5. **Front extension slot door**
   Open this door for access to the front extension slot. The Expansion module has already installed a system RAM extension board in this slot.

See flap (rear view)

6. **RS-232C interface**
   Can be used to connect a modem or as a port to another data processing system.

7. **Extension slot**
   This slot provides CPU bus signals from the main processor located in the MMC module. The Expansion module has already installed an SCSI interface board in this slot.

8. **PRINTER connector**
   This parallel output interface can be used to connect a printer. This interface is suitable for the Centronics compatible parallel interface.

9. **AC inlet**
   Connects the Expansion module to the lower AC power outlet of the MMC module.

10. **POWER switch**
    Switches power on or off to the Expansion module; "I" is on, "O" is off, (When installed as described in the manual, the power supply is under control of the MMC power switch).

Note: The operation of the expansion module and its elements is determined by the application on the CD-I discs or on floppy disc.

Switching on

Switch on all the peripherals connected to the CD-I system.
- Either, press the POWER switch on the front of the MMC module. Check whether the green power indicator lights.
- Or, if the red standby indicator is on press the SYSTEM STANDBY switch on the MMC module. Check that the green power indicator lights.

The display on your monitor or TV shows the main menu.

Switching to system standby

(if system is in power on mode)
- Press the SYSTEM STANDBY switch on the MMC module or the SYSTEM STANDBY switch on the remote control unit. You can now control switch-on from the remote control. The red standby indicator lights on the MMC module. (The power supply to peripherals is not controlled by the system standby switch.)

Switching off

To switch power off completely,
- Press the POWER switch on the front of the MMC module to OFF. The green power indicator on all modules will go out, or, if in system standby mode, the red standby indicator will go out.

Applications

For further instructions on how to use the Expansion module, or the use of the Extension boards, or the use of extended CD-I applications or floppy discs, refer to the manuals that came along with the application. Or, consult the technical manual, which can be made available via your supplier, or address below.

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Interactive Media Systems
PO Box 218
5600 MD Eindhoven
The Netherlands

Expansion module

A number of options are available in your Expansion module. The use of the features are completely dependent of the application on your CD-I disc. Your Expansion module has been designed to work with the following options.

- Floppy disc drives
- Printer interface
- RS-232C interface
- Extension slots
- SCSI interface board
- System RAM extension board

Floppy disc drives

- The Expansion module is equipped with high density drives, this provides an unformatted storage capacity of 2 Mbytes.

- Use 3.5 inch high density (HD) discs. Double density (DD)discs can be used also, but provide a capacity of 1 Mbyte.

Note: New discs have to be 'formatted' before they can be used.

Consult an OS-9 User Manual for available disc utilities.

- To take a floppy disc out, press the EJECT button. Do not exchange the discs during an application unless the application asks you to do so.

Note: Never change a disc when the red 'busy' indicator is on.

Printer interface

This interface allows the attachment of printers or other external devices that accept 8 bit parallel data at standard TTL levels. This interface is suitable for the Centronics compatible parallel printer interface.

RS-232C interface

This serial input/output interface is compatible with RS-232C standard. It allows serial communication with data terminals or modems (hardware handshake).

Extension slots

Two extension slots provide access to a limited CPU bus coming from the MMC module.

For the two extension slots, identical connectors are provided which accept a board edge connector.

SCSI interface board

The 22ER9130 SCSI interface board is installed in the extension slot of your Expansion module.

The SCSI interface board allows the connection of a variety of SCSI-based peripheral devices external to the CD-I system, e.g. hard discs, WORM drive, magnetic tape drives, etc.

Features.

- Single ended (cable length: maximum 6 m)
- Asynchronous data transfer (maximum transfer rate: 1.5 Mbyte/sec.)
- Initiator role
- Built-in DMA controller (DMA transfer from SCSI to memory)
- Programmable interrupt handling for SCSI to CPU68070-hardware bus arbitration
- Disconnect/reconnect
- On-board free ROM socket for dedicated application
- Sample hard disc driver provided on floppy disc as well as run-time module for Rodime 80 Mbyte hard disc

System RAM extension board

The 22ER9110 System RAM extension board is installed to the extension slot of your Expansion module.

The System RAM extension board provides two memory banks, each 512Kbytes, to be used as additional system memory. The system architecture does not allow the decoding of video data when stored in the RAM extension board.

Floppy disc/disc drives

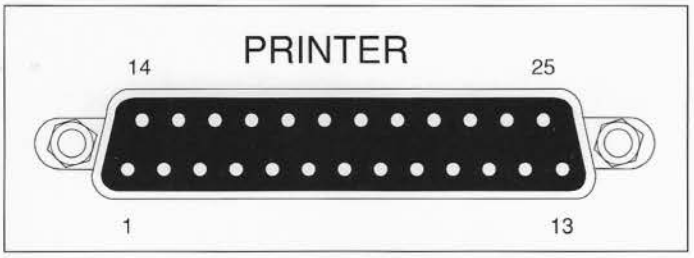
- Disc
  - Disc size: 3.5 inch
  - Surface: Double sided
  - Disc quality needed: 2DD.....2HD
- Recording capacity
  - Unformatted (Mbyte): 1.....2
- Data transfer rate (kbits/sec): 250.....500
- Density
  - Recording density (bpi): 8717.....17434
  - Track density (tpi): 135.....135
- Number of tracks: 160.....160

Printer interface

- Connector
  Type D-sub 25 pin connector: female type

- Pin assignment

No.	Name	I/O	No.	Name	I/O
1	STB -	O	14	-	-
2	PD0	O	15	ERROR -	I
3	PD1	O	16	-	-
4	PD2	O	17	-	-
5	PD3	O	18	GND	-
6	PD4	O	19	GND	-
7	PD5	O	20	GND	-
8	PD6	O	21	GND	-
9	PD7	O	22	GND	-
10	ACK -	I	23	GND	-
11	BUSY	I	24	GND	-
12	PE	I	25	GND	-
13	SELECT	I			

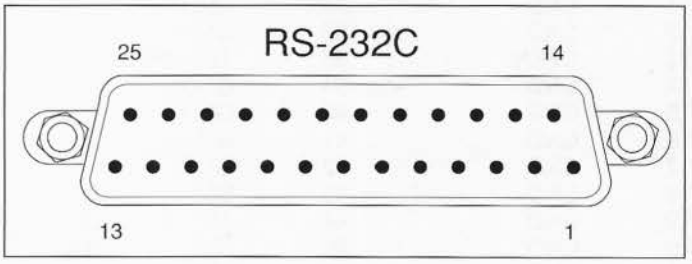


RS-232C interface

- Connector
  Type D-sub 25 pin connector: male type

- Pin assignment

No.	Name	I/O	No.	Name	I/O
1	FGND	-	14	-	-
2	TXD-	O	15	-	-
3	RXD-	I	16	-	-
4	RTS	O	17	-	-
5	CTS	I	18	-	-
6	DSR	I	19	-	-
7	SGND	-	20	DTR	O
8	DCD	I	21	-	-
9	-	-	22	RI	I
10	-	-	23	-	-
11	-	-	24	-	-
12	-	-	25	-	-
13	-	-			



Extension slots

- Connector
  Type 100 pin edge connector

For detailed technical information refer to the technical manual for the CDI 180/CDI 181/CDI 182.

Note: Access to and use of the extension slots require a technical skill. You should not attempt to use these for purposes other than connection of the dedicated extension boards.

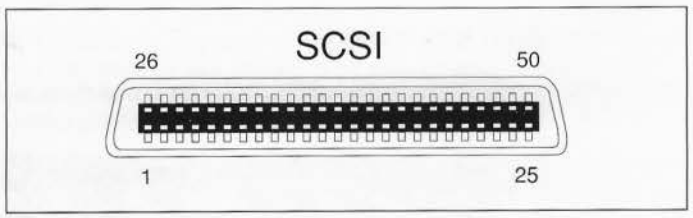
SCSI interface board

- Connector of SCSI interface.
  Type shielded 50 pin (2.54 mm pitch) amphenol connector: female type.

When the SCSI interface board is shipped from the factory, all switches are set to the correct addresses or settings.

Pin assignment

No.	Name	I/O	No.	Name	I/O
1	GND	-	26	DB0-	I/O
2	GND	-	27	DB1-	I/O
3	GND	-	28	DB2-	I/O
4	GND	-	29	DB3-	I/O
5	GND	-	30	DB4-	I/O
6	GND	-	31	DB5-	I/O
7	GND	-	32	DB6-	I/O
8	GND	-	33	DB7-	I/O
9	GND	-	34	DBP-	I/O
10	GND	-	35	GND	-
11	GND	-	36	GND	-
12	GND	-	37	GND	-
13	OPEN	-	38	TERMPWR	-
14	GND	-	39	GND	-
15	GND	-	40	GND	-
16	GND	-	41	ATN-	O
17	GND	-	42	GND	-
18	GND	-	43	BSY-	I/O
19	GND	-	44	ACK -	O
20	GND	-	45	RST-	I/O
21	GND	-	46	MSG-	I
22	GND	-	47	SEL-	I/O
23	GND	-	48	C/D-	I
24	GND	-	49	REQ-	I
25	GND	-	50	I/O-	I



For detailed technical information refer to the technical manual for the CDI 180/CDI 181/CDI 182.

System RAM extension board

When the RAM extension board is shipped from the factory, all switches are set to the correct start addresses.

DIP SW 1 : start address of RAM bank 1
DIP SW 2 : start address of RAM bank 2

For detailed technical information refer to the technical manual for the CDI 180/CDI 181/CDI 182.

GB	**IDENTITY CARD**	This card, together with the terms of guarantee (to be provided by your dealer), forms the full certificate of guarantee for this appliance.
D	**GERÄTE-KENNKARTE**	Diese Darte ist, zusammen mit den Garantiebestimmungen, die Ihr Händler Ihnen aushändigt, Ihr Garantieschein für dieses Gerät.
F	**CARTE D'INDENTIFI-CATION**	Associée aux conditions de garantie (qui vous sont remises par le revendeur), cette carte constitue le certificat de garantie de cet appareil.
NL	**IDENTIFI-CATIEKAART**	Deze kaart vormt, samen met de garantievoorwaarden (welke door uw dealer verstrekt worden), het garantiebewijs voor dit apparaat.
I	**CARTE D'IDENTI-FICAZIONE**	Questa cartolina rappresenta insieme alle condizioni di garanzia (da consegnare dal vostro rivenditore) il documento di garanzia per questo apparecchio.
E	**TARJETA DE IN-DENTIFICACION**	La garantia de este aparato se compone de esta tarjeta y de las condiciones de garantia que le entregará su concesionario
P	**CARTAO DE IN-DENTIFICAÇAO**	Este cartao, em conjunto com as condiçoes de garantia em vigor (explicadas pelo seu vendedor) constituem o certificado de garantia do seu aparelho.
DK	**I.D.KORT**	Dette kort, udfyldt af Deres forhandler, er tilstrækkelig garantidokumentation for dette apparat.
N	**IDENTIFIKA-SJOSKORT**	Dette kort, sammen med garantibetingelsene (som De får av forhandleren) utgjor garantibeviset for dette apparat.
S	**IDENTIFIERINGS-KORT**	Dette kort tillsammans med garantivillkoren, som Du får av radiohandlaren, utgor ett fullstandigt garantiebevis for denna produkt
SF	**TUNNISTUS-KORTTI**	Tämän laitteen takuutodistus muodostuu tasta kortista ja takuuehdoista (jalleenmyyja antaa mukaan)

PHILIPS

For further information contact your dealer or the National Philips Organisation.

For the USA this is:
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IB5903-1