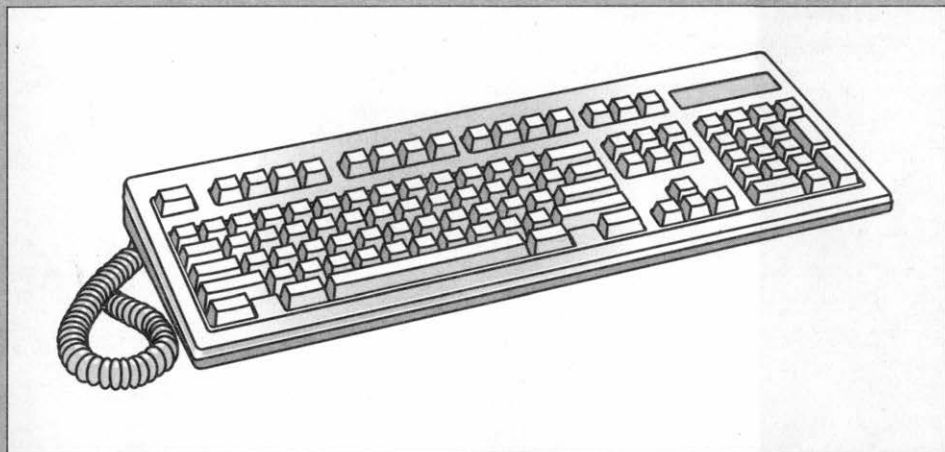


**Interactive  
Media  
Systems**

**CD-I**



**22ER 9041**



**CD-I KEYBOARD**



**PHILIPS**

# Keyboards for CDI 600 series system applications

- **ISO8859-1 Codes**
- **Standardized 8-pin mini-DIN connector**
- **Standard 101 or 102-key "AT" keyboard**
- **CD-I or extended operating mode (dipswitch selection)**
- **FIFO buffer**
- **Universal interface for all language versions**
- **Automatic device recognition**
- **22ER9040 Keyboard emulation**

For the large majority of CD-I applications, only simple pointing devices are needed. In some cases however it may be necessary to look into databases with random or unstructured requests for information. For such applications, a keyboard is likely to be the best solution. Other applications may require substantial volumes of text input, or feature keyboard skills as part of a training program. A keyboard is the essential. These "AT" configured keyboards are principally intended for such professional applications. All conform with the CD-I standard (Green Book), and in addition offer extended functionality with approximately 20 extra keys. All are both plug and interface compatible with other CD-I pointing devices.

These keyboards meet the functionality requirements of Green Book Appendix VII.2.5.2. In CD-I mode, they run through the CD-I keyboard driver. In extended mode, they run through a standard RS232-C interface. They will also emulate the 22ER9040 keyboard for applications running on the earlier CDI 180 series systems.

For 22ER 9040 keyboard emulation on the 180-series an additional powersupply and an adaptor cable is needed.

## **INTERFACE**

All 22ER9041 series keyboards use the same interface and general CD-I I/O port as the pointing devices defined in the CD-I Standard (Green Book), Appendix VII.2.5.1.1. The interface is specified so that, when a keyboard is called for by an application, the CD-I system can recognize the keyboard type and mode of operation.

## **CONNECTOR**

The 8-pin mini-DIN TCP 8500 series 8a male type connector fitted to 22ER9041 series keyboards is the same connector fitted as standard on most CD-I pointing devices. It mates with the TCS 7500 series or compatible socket fitted as standard on most CD-I systems.

## **RATINGS**

All signal levels and current ratings generally conform to the EIA RS232-C standard, but also provide for TTL.

## **DATA SIGNALS**

Communications use of the RS232-C interface.

Two signal lines carry data. The first is RTS, used for device identification, which is always output from the CD-I system. The second is RXD, which carries the data from the keyboard to the CD-I system.

## **DEVICE IDENTIFICATION**

Every 22ER9041 series keyboard transmits its identification (ID) byte on request\*. The CD-I system is thus enabled to identify the type or operation mode of the keyboard that is connected to it. This guarantees maximum flexibility and ease of use.

\* Not for 22ER9040 emulation.

## **OPERATIONAL MODE**

The keyboard can be set for "K" (CD-I) or "X" (Extended) operating mode, or for 22ER9040 emulation, by two dipswitches on the bottom of the unit.

In "X" mode, and in 22ER9040 mode, the keyboard interfaces with the system through the standard RS232-C interface.

In "K" mode, the keyboard interfaces with the system through the Keyboard Driver.

## **KEYBOARD CODING**

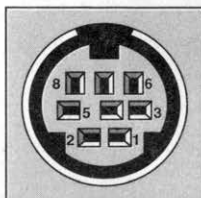
All 22ER9041 series keyboards send ISO8859-1 codes in six modes: Normal (Unshift), Shift, Supershift, Shift plus Supershift, Control and Supershift plus Control.

For each language, all the standard national characters are accessible in Normal, Shift and, in certain cases, Supershift mode. Every ISO8859-1 code is accessible under one or more of the six modes.

For 22ER9040 emulation, ASCII codes are sent in four modes: Normal, Shift, Control and Shift plus Control. The CAPS LOCK and NUM LOCK keys have associated LEDs.

The differences in key layout and keycodes between the five language versions lie almost entirely in the alphanumeric block. The only exception is three keys in the numeric block on the German keyboard.

## SPECIFICATIONS



### Mini Din 8a pinning

### Connector pinning

pin	Signal	Description	In/Out
1	N.C.	Not connected	
2	RXD	Received Data	Input
3	-	Reserved	
4	-	Reserved	
5	GND	Signal Ground	
6	-	Reserved	
7	RTS	Request to Send	Output
8	+5V	Power supply for the device	

**Input:** an input signal to the CD-I player.  
**Output:** an output signal from the CD-I player.

### Ratings

- +5V output from the CD-I player:
  - accuracy:  $+5V \pm 10\%$
  - supply current: 50mA max.
- RXD
  - logical 1:  $< +0.8V$
  - logical 0:  $> +2.4V$
- RTS
  - Off (Negated):  $< +0.8V$
  - On (Asserted):  $> +2.4V$

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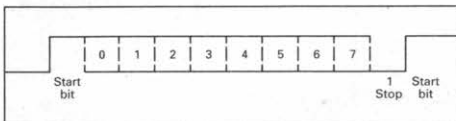
### Data signals: RS-232-C interface.

Signalling rate: 1200 bauds

Data format:

- 1 start bit (ST)
- 8 data bits LSB first
- 1 stop bit (SP)
- No parity

Buffer: 16 bytes.



### Data Format

### Keyboard ID codes:

Keyboard Type/Mode	d7	d6	d5	d4	d3	d2	d1	d0	ASCII
CD-I	1	1	0	0	1	0	1	1	'K'
Extended(AT)	1	1	0	1	1	0	0	0	'X'

### Environmental Conditions

Storage temperature	-40 to +70°C
Operating temperature	+5 to +40°C
Relative humidity range	5 - 95%
Vibration tested	5 - 55Hz
Shock tested	30g
Drop tested	90 cm
Electrostatic discharge proof	to 14 kV
MTBF	$>30 \times 10^6$ keystrokes



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