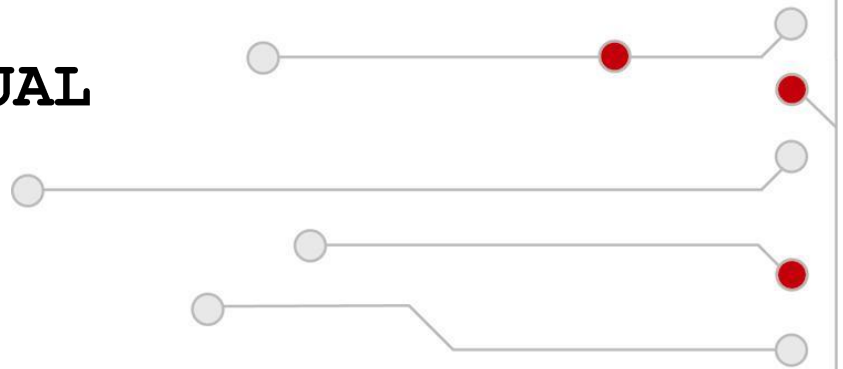


TECHNICAL MANUAL



CUSTOMER DISPLAY

CHD6800



Computer Hardware Design

**Notice**

Computer Hardware Design reserves all rights to make changes to specifications without notification.

This publication, or parts thereof, may not be reproduced in any form without prior written permission of Computer Hardware Design. Unauthorized use or distribution of this publication is prohibited.

Computer Hardware Design

Dzelzavas 120i

Riga, LV1021

Phone: +371 7802812

Fax: +371 7802822

chd@chd.lv

www.chd.lv

TABLE OF CONTENTS

1	Settings	4
1.1	Serial Port.....	4
1.2	Serial port settings	4
2	Command	5
2.1	Epson mode command list.....	5
2.2	US (B Transfer display ID (v4.0.0)	6
2.3	US (F Display bit image (v4.0.0)	6
2.4	US (F; fn = 10 Display bit image (RLE type) (v4.0.0)	6
3	I-Button Control.....	7

1 SETTINGS

1.1 SERIAL PORT

On 6800 from Android the customer display is accessible on `"/dev/ttymx2"`, which is RS-232 serial port without HW flow control.

On 6800W from windows the customer display is accessible on `"COM3"`, which is RS-232 serial port without HW flow control.

1.2 SERIAL PORT SETTINGS

Display operates with following settings:

- Baud rate: 9600 bit/s
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none



2 COMMAND

2.1 EPSON MODE COMMAND LIST

Code description (Hex)	Function description
0x1B 0x74 <n>	Set code table
	0 - CP 437 (USA, Standard Europe)
	1 - JISX0201 (Katakana)
	6 - JISX0208
	7 - Shift JIS
	16 - CP 1252 (Latin I)
	24 - CP 1253 (Greek)
	26 - CP 1257 (Baltic)
	28 - CP 1251 (Cyrillic)
	33 - CP 1255 (Hebrew)
	40 - CP 1256 (Arabic) (v5.4.0)
	42 - CP 1250 (Central European (Windows))
	43 - GB2312 (Simplified Chinese) (v2.2.0)
	44 - BIG 5

Code description (Hex)	Function description
0x08	Move cursor to the left. (v5.3.0)
0x09	Move cursor to the right. (v5.3.0)
0x0A	Move cursor down. (v5.3.0)
0x0B	Move cursor to home position – 1 st row, 1 st char. (v5.3.0)
0x0C	Clear display and move cursor to 1 st row, 1 st char.
0x0D	Move cursor to left-most position of current line. (v5.3.0)

Code description (Hex)	Function description
0x1F 0x01	Set overwrite mode (default). (v5.3.0)
0x1F 0x02	Set vertical scroll mode. (v5.3.0)
0x1F 0x03	Set horizontal scroll mode. (v5.3.0)
0x1F 0x0A	Move cursor up. (v5.3.0)
0x1F 0x0D	Move cursor to the right-most position of current line. (v5.3.0)
0x1F 0x24 <n> <m>	Move cursor to position n row, m column. 1 ≤ n ≤ 20, m = 1, 2.

0x1F 0x42

Move cursor to the end (right-most position of the second line). (v5.3.0)

2.2 US (B TRANSFER DISPLAY ID (V4.0.0)

[FORMAT] <1F>H<28>H<42>H xL xH <n>

[RANGE] (xL+xH x256) = 1

n = 1, 31H: Display model ID - 0x10H

Following responses are sent as NULL terminated string, e.g. last char is 00H.

n = 41H: Firmware version

n = 42H: Manufacturer ("CHD")

n = 43H: Display name ("WGM24048A")

n = 44H: Product ID (serial number)

n = 45H: List of supported multi-character fonts, for example "JIS,BIG5" or "JIS,GB2312"

2.3 US (F DISPLAY BIT IMAGE (V4.0.0)

[FORMAT] <1F>H<28>H<46>H xL xH fn d1 ... dk

[DESCRIPTION] xL, xH number of bytes (xL+xH x256) after xH.

fn – function name (or number)

k = (xL+xH x256) – 1; (-1 for fn)

d1 ... dk – function specific data

[FUNCTION] Defines and displays bitmap image.

fn	Function name
10	Display bit image (RLE format)

2.4 US (F; FN = 10 DISPLAY BIT IMAGE (RLE TYPE) (V4.0.0)

[FORMAT] <1F>H<28>H<46>H xL xH fn pxL pxH pyL pyH sxL sxH syL syH d1 dk

[RANGE] (xL+xH x256) ≤ 65535

fn – 0AH

0 ≤ (pxL+pxH x256) < 232, can be multiples of 8; Start X coordinate

0 ≤ (pyL+pyH x256) < 32, can be multiples of 8; Start Y coordinate

0 ≤ (sxL+sxH x256) < 232, can be multiples of 8; Horizontal size in pixels

0 ≤ (syL+syH x256) < 32, can be multiples of 8; Vertical size in pixels

0 ≤ d ≤ FFH

0 ≤ k ≤ FFFFH

[DESCRIPTION] Defines rectangular bitmap in specified position (pxL pxH pyL pyH) with specified size (sxL sxH syL syH). For best performance start coordinates and image size should match byte boundaries.

Data d1...dk is in convenient line format and should be RLE (Run Length Encoding) compressed.

RLE is lossless compression. In this case RLE works on byte basis. For compressed data if 2 equal bytes follow, then 3rd is number of sequential equal bytes. For example, if beginning of horizontal pixel line consists of following data "00 00 00 00 00 00 A5 A5 01 A5 02 02 02...", then after applying RLE it will look "00 00 06 A5 A5 02 01 A5 02 02 03...".

- [CAUTION]
- * Display size is 240 pixels horizontally and 48 pixels vertically.
 - * One bit contains 1 pixel. 1 byte contains 8 pixels.
 - * If specified rectangle does not fit in display area, whole data is ignored.

3 I-BUTTON CONTROL

I-Button key function is the same as magnetic reader.

When the key is placed on the base, unique address would be echoed to on RS-232 serial port of Display control board.

9 bytes data echo including 6 bytes address ID and one CRC data.

Echo data (hex)

1	2	3	4	5	6	7	8	9
0x27	CRC	ID byte 6	ID byte 5	ID byte 4	ID byte 3	ID byte 2	ID byte 1	0x01
fixed								fixed

On key removal the echo data is fixed to "0x27 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00".