

CW12832 Datasheet

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by Cwlinux Limited

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Chapter 1. Introduction

1.1. Overview

The CW12832 is a small size, single piece, graphical (128x32 or 21x4) LCD module with on board keypad integrated. It can be fit into a 3.5" floppy drive bay and is an ideal interactive display for slim size appliance.

1.2. Features

- LCD Graphical module
- Standard PC 3.5" floppy drive bay bracket (optional)
- Serial or USB
- 5V Power Supply
- 21 x 4 text or 128 x 32 dots graphic display
- Communicate over RS-232 or USB interface
- Baud rate speed selection between 9600 and 19200 bps
- Programmable backlight on/off
- Autoscroll
- Autowrap
- Horizontal and vertical bar charts
- Built-in characters plus 16 user defined characters
- 32 bytes non-volatile memory for user settings
- Programmable brightness
- Non volatile memory space for 16 user defined characters
- 4 General Purpose I/O (GPIO)
- 6 buttons keypad input
- Programmable startup screen
- Multi-lingual support
- Sample LCD control software

1.3. Order Information

Order Number	Description	Bracket	Connection
CW12832W-GKS	128x32 Graphical LCD	No	Serial
CW12832W-GKU	128x32 Graphical LCD	No	USB
CW12832W-GKS-B	128x32 Graphical LCD	Yes	Serial
CW12832W-GKU-B	128x32 Graphical LCD	Yes	USB

Chapter 2. Specifications

2.1. Physical Specification

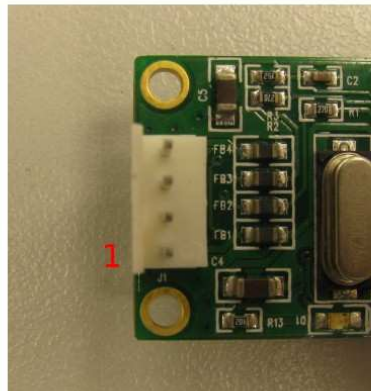
Resolution (WxH)	128x32 Dots
Color	White on Blue (Inverse Type)
Backlight	White
Visual Area	49mm × 20mm
Outline Dimension	97mm x 23.5mm
Dot Size(W×H)	0.30mm × 0.25mm
Dot Pitch(W×H)	0.33mm × 0.28mm
Viewing direction	6 o'clock
LCD type, Duty, Bias	STN , 1/33, 1/6
Operating Temperature	0°C to +50°C (Note 2,4) -20°C +70°C (Note 4,5)
Storage Temperature	-10°C to +60°C (Note 3,5) -30°C +80°C (Note 4,6)
Humidity	Ta ≤ 50°C: 80% RH max Ta ≤ 70°C: 75% RH max

- Note 2: Ta ≤ 50°C: 80% RH max
Ta > 50°C: Absolute humidity must be lower than the humidity of 85%RH at 50°C
- Note 3: Ta at -20°C will be <48hrs at 70°C will be <120hrs when humidity is higher than 75%.
- Note 4: Background color changes slightly depending on ambient temperature. This phenomenon is reversible.
- Note 5: Ta ≤ 70°C: 75RH max
Ta > 70°C: absolute humidity must be lower than the humidity of 75%RH at 70°C
- Note 6: Ta at -20°C will be <48hrs, at 80 °C will be <120hrs when humidity is higher than 75%.

2.2. Electrical Specification

Power Supply	5V ±10%
Minimum Current	100mA
General Input Pin	5V ±10%

2.3. Pin Description



2.3.1. UART

PIN	Signal
1	5V
2	TXD
3	RXD
4	Ground

2.3.2. USB

PIN	Signal
1	5V
2	D-
3	D+
4	Ground

2.3.3. GPIO, Relay Pin Assignments



Drawing 1 GPIO pin assignments.

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Name	GPO0	VCC	GPO1	RST	GPO2	GPI0	GPO3	GPI1	NC	INT0	NC	GND

User can control or read status of other external I/O devices through the GPIO. Detail description of the GPIO and the on board relay can refer to sessions 5.5.1 to 5.5.5. RST is the reset pin of the CW12832. Connect it to +5V will reset the CW12832. INT0 is reserved for future purpose. It is recommended to leave it unconnected.

Chapter 3. Command Summary

3.1. Text Command Summary

Command	Syntax	Default	Description
Auto line wrap on	FE 43 FD	off	Enables line wrapping.
	254 67 253		Character will wrap to first position of next line if
	254 'C' 253		it reaches the end of a line.
Auto line wrap off	FE 44 FD	off	Disables line wrapping.
	254 68 253		Character will go to the first position of the
	254 'D' 253		original line if it reaches the end of a line.
Auto scroll on	FE 51 FD	off	Enables line scrolling.
	254 81 253		Shift entire screen up by 1 line to make room for
	254 'Q' 253		the last row.
Auto scroll off	FE 52 FD	off	Disables line scrolling
	254 82 253		
	254 'R' 253		
Set text insertion point	FE 47 [col] [row] FD	N/A	Sets the text insertion point to [col] and [row].
	254 71 253		
	254 'G' 253		
Set text insertion point home	FE 48 FD	N/A	Sets the text insertion point to [0] and [0].
	254 72 253		
	254 'H' 253		
Underline cursor on	FE 4A [col] [row] FD	off	Turns on the underline cursor and sets it at
	254 74 [col] [row] 253		[col] and [row].
	254 'J' [col] [row] 253		
Underline cursor off	FE 4B FD	off	Turns off the underline cursor.
	254 75 253		
	254 'K' 253		
Cursor left	FE 4C FD	N/A	Moves the underline cursor to left. It will move to
	254 76 253		the end of the same line if it reaches the
	254 'L' 253		beginning of a line.
Cursor right	FE 4D FD	N/A	Moves the underline cursor to right. It will move
	254 77 253		to the beginning of the same line if it reaches the
	254 'M' 253		end of a line.
Inverse text on	FE 66 FD	off	Text inverse on.
	254 102 253		
	254 'f' 253		
Inverse text off	FE 67 FD	off	Text inverse off.
	254 103 253		
	254 'q' 253		

Table 1 Summary for text commands

3.2. Bar Charts and Graphic Command Summary

Command	Syntax	Default	Description
Initial thick vertical bar graph	FE 76 FD	on	Initializes 5 pixels width as the vertical bar.
	254 118 253		
	254 'v' 253		
Initial thin vertical bar graph	FE 73 FD	off	Initializes 2 pixels width as the vertical bar.
	254 115 253		
	254 's' 253		
Define custom character	FE 4E [cc] [6 bytes] FD	N/A	Defines custom character. [cc] goes from [
	254 104 [cc] [6 bytes] 253		[0x01] to 0x10]. The other 6 bytes are
	254 'N' [cc] [6 bytes] 253		described in section 4.2.7
Draw vertical bar graph	FE 3D [col] [height] FD	N/A	Draws vertical bar at position [col] of the last
	254 61 [col] [height] 253		row with height [height]. [height] ranges from
	254 '=' [col] [height] 253		[0x00] to [0x20].
Erase vertical bar graph	FE 2D [col] [height] FD	N/A	Erases vertical bar at position [col] of the last row with
	254 45 [col] [height] 253		height [height]. [height] ranges from [0x00] to
	254 '-' [col] [height] 253		[0x20].
Draw horizontal bar graph	FE 7C [col] [row] [len] FD	N/A	Draws horizontal bar at position [col] and [row]
	254 124 [col] [row] [len] 253		With length [length]. [length] ranges from
	254 ' ' [col] [row] [len] 253		[[0x00] to 0x7A].
Erase horizontal bar graph	FE 2B [col] [row] [len] FD	N/A	Erases horizontal bar at position [col] and [row] with
	254 43 [col] [row] [len] 253		length [length]. [length] ranges from [0x00] to
	254 '+' [col] [row] [len] 253		[0x7A].
Put pixel	FE 70 [x] [y] FD	N/A	Draws a pixel at location (x,y). x ranges from 0
	254 112 [x] [y] 253		to 121 and y ranges from 0 to 31.
	254 'p' [x] [y] 253		
Clear pixel	FE 71 [x] [y] FD	N/A	Clears a pixel at location (x, y). x ranges from
	254 113 [x] [y] 253		0 to 121 and y ranges from 0 to 31.
	254 'q' [x] [y] 253		
Draw byte	FE 3E [x] [row] [byte] [4 dummy bytes] FD	N/A	Draws a byte at location (x, row). x ranges
	254 62 [x] [row] [byte] [4 dummy bytes] 253		from 0 to 121 and row ranges from 0 to 3.
	254 '>' [x] [row] [byte] [4 dummy bytes] 253		

Table 2 Summary for graphic commands

3.3. Miscellaneous Command Summary

Command	Syntax	Default	Description
Read Model Number	FE 30 FD	N/A	Reads 2 bytes back from LCD
	254 48 253		
	254 '0' 253		
Read Firmware Version	FE 31 FD	N/A	Reads 2 bytes back from LCD
	254 49 253		
	254 '1" 253		
Soft Reset	FE 56 FD	N/A	Resets CW12832
	254 86 253		
	254 'V' 253		
Clear display	FE 58 FD	off	Clears screen of LCD and places the text
	254 88 253		insertion point to top left.
	254 'X' 253		
Backlight on	FE 42 FD	on	Turns on the backlight.
	254 66 253		
	254 'B' 253		
Backlight off	FE 46 FD	off	Turns off the backlight.
	254 70 253		
	254 'F' 253		
Backlight brightness	FE 41 [brightness] FD	N/A	Adjust LED brightness. [brightness] ranges from
	254 64 [brightness] 253		1 to 7.
	254 'A' [brightness] 253		
Auto key hole on	FE 32 FD	off	Auto key hold on.
	254 50 253		
	254 '2' 253		
Auto key hold off	FE 33 FD	off	Auto key hold off.
	254 51 253		
	254 '3' 253		
Set RS232 port speed	FE 39 [speed] FD	19200	Sets RS232 port speed. Refer to section 5.1.6
	254 57 [speed] 253		for details.
	254 '9' [speed] 253		
Save user defined characters	FE 4F [cc] FD	N/A	Save user defined characters. [cc] ranges from
	254 79 [cc] 253		1 to 16.
	254 'O' [cc] 253		
Load user defined characters	FE 50 [cc] FD	N/A	Load user defined characters. [cc] ranges from
	254 80 [cc] 253		1 to 16.
	254 'P' [cc] 253		

Save user settings	FE 53 [ud] [4 bytes] [2 dummy bytes] FD	N/A	Save user settings. User is required to save 4 bytes at a time.
	254 83 [ud] [4 bytes] [2 dummy bytes] 253		[ud] ranges from 1 to 8.
	254 'S' [ud] [4 bytes] [2 dummy bytes] 253		
Read user settings	FE 54 [ud] FD	N/A	Read user settings. 4 bytes are returned at
	254 84 [ud] 253		each time.
	254 'T' [ud] 253		
Relay On	FE 61 [timeout] FD	off	Turn on relay. Relay will always on if [timeout] =
	254 97 [timeout] 253		0. However, it will on for [timeout] seconds if
	254 'a' [timeout] 253		[timeout] > 0. [timeout] = {1..10}
Relay off	FE 62 FD	off	Turn off the relay.
	254 98 253		
	254 'b' 253		
GPO on	FE 63 [gpo#] FD	off	Turn on GPO. [gpo#] must be either 0 or 1.
	254 99 [gpo#] 253		
	254 'c' [gpo#] 253		
GPO off	FE 64 [gpo#] FD	off	Turn off GPO. [gpo#] must be either 0 or 1.
	254 100 [gpo#] 253		
	254 'd' [gpo#] 253		
Read GPI	FE 65 [gpi#] FD	N/A	Read status of GPI. [gpi#] must be either 0 or 1.
	254 101 [gpi#] 253		
Set Contrast	FE 68 [contrast] FD	N/A	Set display contrast, range 0x00 - 0x1C
	254 104 253		
	254 'h' 253		
Save boot-up logo	FE 6A FD	N/A	Save current screen as boot-up logo
	254 105 253		
	254 'i' 253		
Display boot-up logo	FE 69 FD	N/A	Draw the boot-up logo on display
	254 106 253		
	254 'j' 253		
Restore factory default logo	FE 6B FD	N/A	Restore factory default boot-up logo.
	254 107 253		
	254 'k' 253		

Chapter 4. Physical Layout

4.1. Dimension

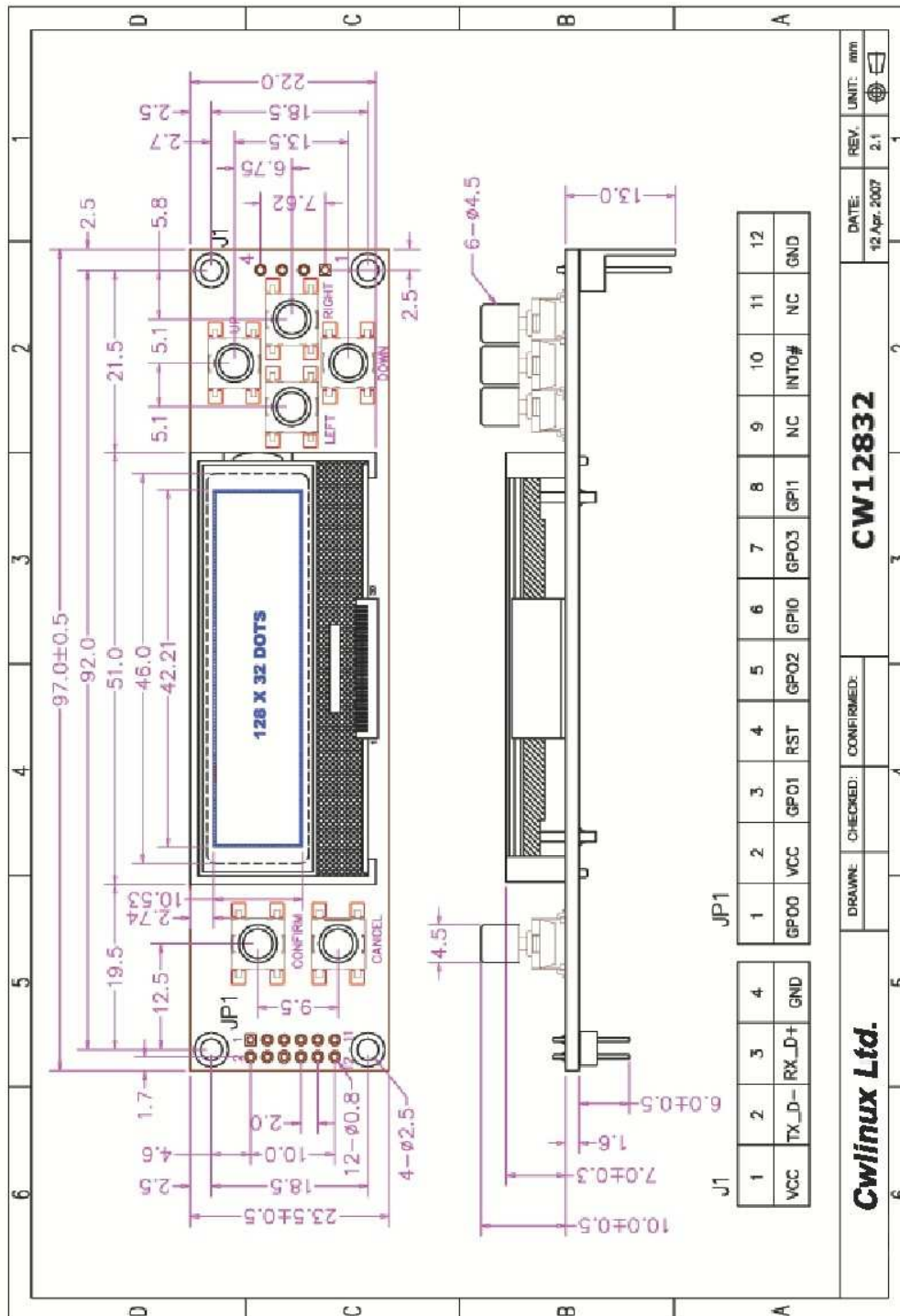


Illustration 1: CW12832 Dimension

Chapter 5. Revision History

<i>Date</i>	<i>Revision</i>	<i>Changes</i>	<i>Page</i>
2013-08-13	1		