

CW1602 Datasheet

CW1602 Datasheet

by Cwlinux Limited

Published August 14, 2013

Copyright 2013 Cwlinux Limited, All rights reserved.

Cwlinux Limited reserves the right to make changes without further notice to any products herein. Cwlinux Limited makes no representations, warranties or guarantees with respect to the contents or use of this manual, and specifically disclaims any express or implied warranties of merchantability of fitness for any particular purpose.

Permission is granted to copy and distribute modified versions of this documentation under the conditions for verbatim copying, provided also that the entire resulting derived work is distributed under the terms of a permission notice identical to this one.

Permission is granted to copy and distribute translations of this documentation into another language, under the above conditions for modified versions.

All trademarks, registered trademarks, and service marks are the property of their respective owners.

Cwlinux Limited
Unit 138, 13/F, Weswick Commercial Building,
147-151 Queen's Road East,
Wan Chai, Hong Kong.
P: (852)2863 9490
F: (852)2863 9599
W: www.cwlinux.com

Table of Content

Chapter 1.Introduction.....	4
1.1. Overview.....	4
1.2. Features.....	4
1.3.Order Information.....	4
Chapter 2.Specifications.....	5
2.1.Physical Specification.....	5
2.2.Electrical Specification.....	5
2.3.Pin Description.....	5
2.3.1.UART.....	6
2.3.2.USB.....	6
2.3.3.GPIO, Relay Pin Assignments.....	6
Chapter 3.Command Summary.....	7
3.1.Text Command Summary.....	7
3.2.Bar Charts and Graphic Command Summary.....	8
3.3.Miscellaneous Command Summary.....	9
Chapter 4.Physical Layout.....	11
4.1.Dimension.....	11
Chapter 5.Revision History.....	12

Illustration Index

Illustration 1: CW1602 Dimension.....	11
---------------------------------------	----

Chapter 1. Introduction

1.1. Overview

The CW1602 character USB LCD module provides user an easy way to develop their own LCD platform. The CW1602 is a perfect LCD for any hardware which requires status reporting, data entry without the need of keyboard and monitor and compact size with 16 columns by 2 rows characters displayed in a single 5¼" PC drive bay.

1.2. Features

- LCD Character module
- Standard PC 5.25" drive bay bracket (optional)
- Serial or USB
- 5V Power Supply
- 16 x 2 text
- 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 8 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
- Sample LCD control software

1.3. Order Information

<i>Order Number</i>	<i>Description</i>	<i>Bracket/Keyboard</i>	<i>Connection</i>
CW1602Y-GS	16x2 Character LCD	No	Serial
CW1602Y-GU	16x2 Character LCD	No	USB
CW1602Y-GKS-B	16x2 Character LCD	Yes	Serial
CW1602Y-GKU-B	16x2 Character LCD	Yes	USB

Chapter 2. Specifications

2.1. Physical Specification

Number of characters (Characters x lines)	16x2 dots
Character matrix (W×H)	5x8 dots
Character size (W×H)	2.95mm × 4.35mm (0.116" × 0.171")
Color	Black on yellowish green
Backlight	Yellowish green LED
Visual Area	64.5mm × 13.8mm (2.54" × 0.54")
Outline Dimension	80mm × 36 × 11MAX (3.15" × 1.42" × 0.43"MAX)
Dot Size(W×H)	0.55mm × 0.50mm (0.022" × 0.020")
Dot Pitch(W×H)	0.60mm × 0.55mm (0.024" × 0.022")
Viewing direction	6 o'clock
LCD type, Duty, Bias	STN / 1/16 / 1/5
Operating Temperature	0°C to +50°C
Storage Temperature	-10°C to +60°C
Humidity	Ta ≤ 50°C: 90% RH max

2.2. Electrical Specification

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

2.3. Pin Description

2.3.1. UART

DB9 connector

2.3.2. USB

USB Type B connector

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 it
	254 'C' 253		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 original
	254 'D' 253		line if it reaches the end of a line.
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 location
	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		
Blinking Block cursor on	FE 59 [col] [row] FD	off	Turns on the blinking block cursor and sets it at
	254 89 [col] [row] 253		Location [col] and [row].
	254 'Y' [col] [row] 253		
Blinking Block cursor off	FE 5A FD	off	Turn off the blinking block cursor.
	254 90 253		
	254 'Z' 253		
Cursor left	FE 4C FD	N/A	Moves the underline cursor to left. It will move to the
	254 76 253		end of the same line if it reaches the beginning of a
	254 'L' 253		line.
Cursor right	FE 4D FD	N/A	Moves the underline cursor to right. It will move to the
	254 77 253		beginning of the same line if it reaches the end of a
	254 'M' 253		line.

3.2. Bar Charts and Graphic Command Summary

Command	Syntax	Default	Description
Initial thick vertical bar graph	FE 76 FD	off	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] [8 bytes] FD	N/A	Defines custom character. [cc] goes from
	254 104 [cc] [8 bytes] 253		[0x01] to 0x08]. The other 8 bytes are
	254 'N' [cc] [8 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 [0x10].
Erase vertical bar graph	FE 2D [col] FD	N/A	Erases vertical bar at position [col].
	254 45 [col] 253		
	254 '-' [col] 253		
Initialize horizontal bar	FE 68 FD	off	Initialize horizontal bar graph.
graph	254 104 253		
	254 'h' 253		
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].

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 CW12232
	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	on	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 hold 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 5.1.3
	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 8.
	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 8.
	254 'P' [cc] 253		
Save user settings	FE 53 [ud] [4 bytes] [4 dummy bytes] FD	N/A	Save user settings. User is required to save 4 bytes at a
	254 83 [ud] [4 bytes] [4 dummy bytes] 253		[ud] ranges from 1 to 8.

Save user settings	FE 53 [ud] [4 bytes] [4 dummy bytes] FD	N/A	Save user settings. User is required to save 4 bytes at a time.
	254 'S' [ud] [4 bytes] [4 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		
Save custom startup screen	FE 40 [bb] [8bytes] FD	N/A	Save custom startup characters.
	254 64 [bb] [8 bytes] 253		
	254 '@' [bb] [8 bytes] 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		
	254 'e' [gpi#] 253		

Chapter 4. Physical Layout

4.1. Dimension

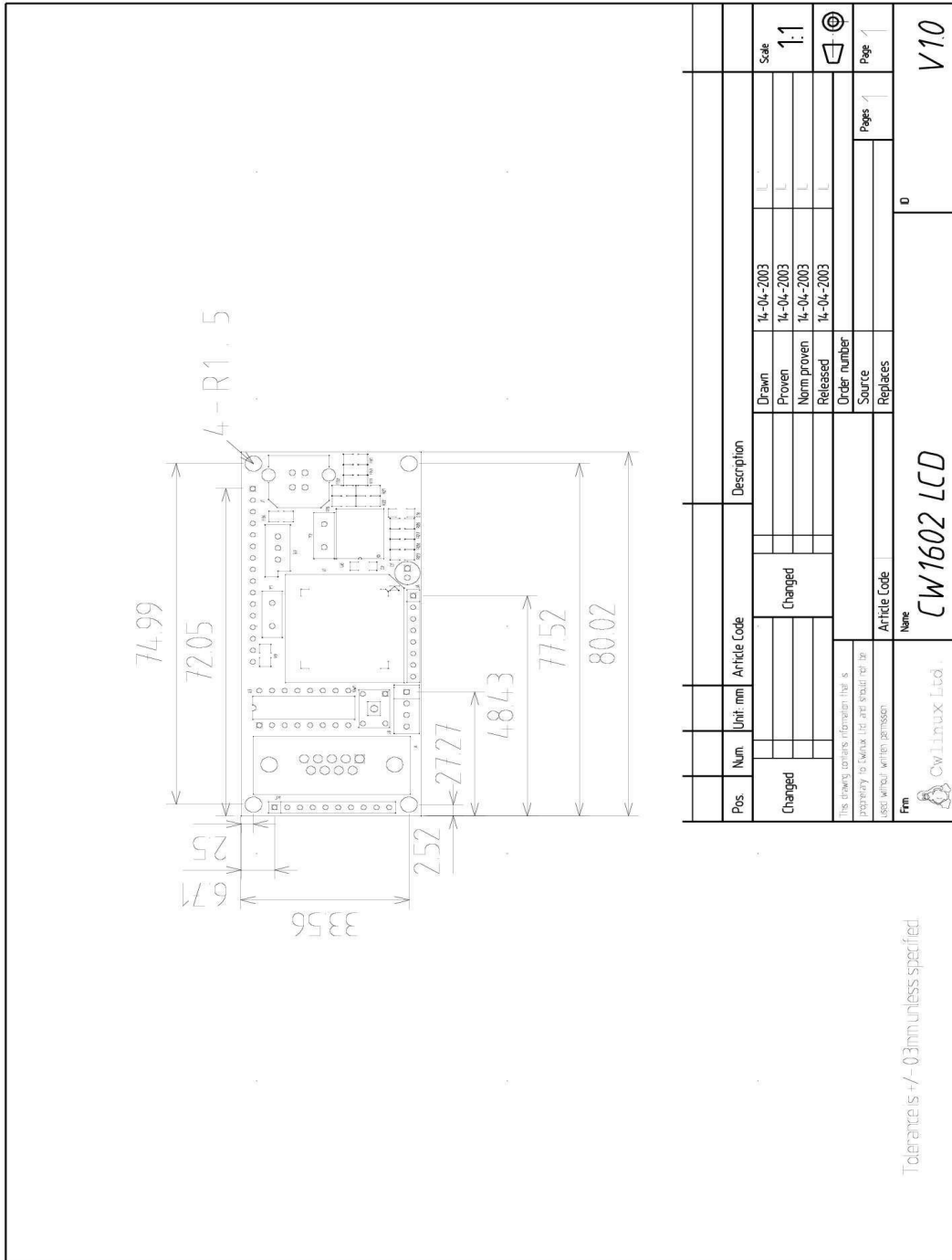


Illustration 1: CW1602 Dimension

Chapter 5. Revision History

<i>Date</i>	<i>Revision</i>	<i>Changes</i>	<i>Page</i>
2013-08-14	1		