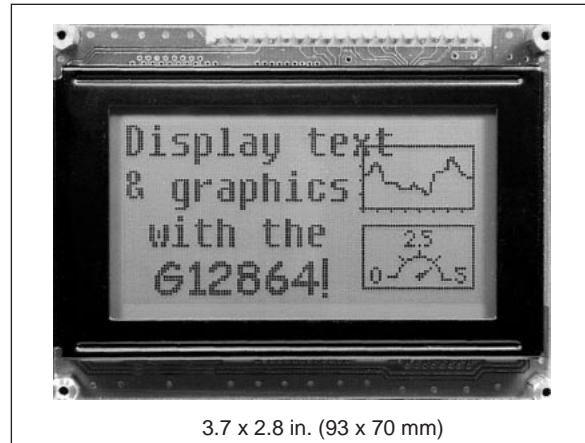


# Serial LCD Module with 128x64-pixel Graphics plus Two Text Fonts

*The G12864 makes it easy to display text and graphics on a 128-by-64-pixel LCD. It interfaces with a computer through a 2400 or 9600-baud RS-232 serial hookup.*



3.7 x 2.8 in. (93 x 70 mm)

## Serial Terminal with Dual Fonts

The G12864 works like a simple serial-receive terminal. It displays text in two software-selectable fonts—8x16 pixels (4 lines of 16 characters, the default) or 6x8 pixels (8 lines of 20 characters). Both fonts may be edited to include custom characters, or may be entirely redesigned to support foreign languages, symbols, or icons.

The display understands common control characters like carriage returns, linefeeds, tabs, backspace, etc. Special characters allow cursor positioning and backlight control. Most text commands are the same as those for our advanced (BPP- and ILM-) text displays.

## Graphics, Plus Versatile Layering

Plotting points, drawing lines, and displaying full-screen pictures are easy with the G12864's graphics instructions. Its 16kB flash memory, which retains data with power off, stores the text font plus 14 screen images (or 2 fonts/13 screens). You can create or edit fonts and graphics on your PC, then download them to the G12864 using the included utility program.

Text and graphics are stored in separate memory layers and can be selectively turned on or off, individually cleared, or overlaid in various ways.

## Convenience Features Mean a Quick Start on Your Project

A voltage regulator and standard DB9 serial-port connector are built in. Connect the display to the (included) AC adapter; plug the (included) serial cable into your PC or other computer, and you're ready to go. If that's *too* convenient, you can provide your own 5-volt supply and/or connect serial input to the 5-pin header, which matches the layout of the connector on our other serial LCDs. Current draw ranges from 15mA (typical, backlight off) to 100mA (max, LED backlight on). A new option allows brighter backlighting at 150mA.

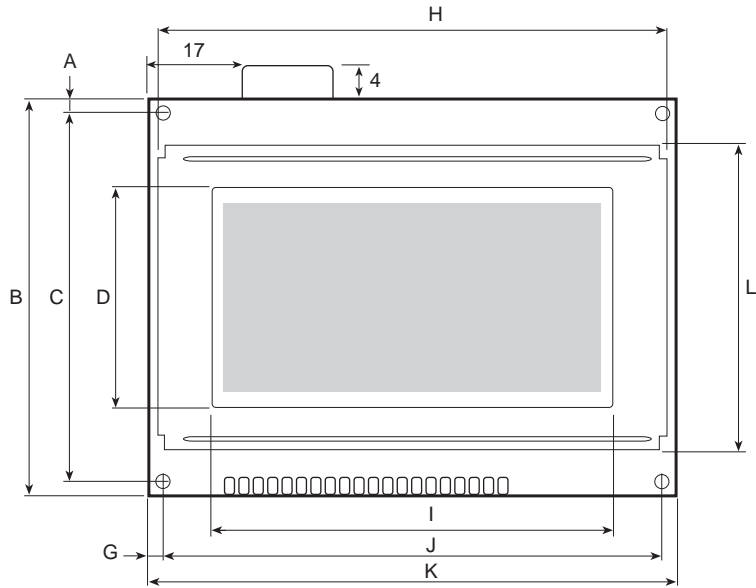
## Ordering Information

G12864 Serial Graphics LCD with AC adapter, serial cable, disk, manual (BGX-128L-I).....	199.00
G12864 Serial Graphics LCD, no accessories (BGX-128L-N).....	179.00

**Figure 1. Dimensional data**

A	y offset pcb edge to hole ctr	2.50
B	y pcb height	70.00
C	y hole spacing	65.00
D	y screen opening	38.80
E1	y character size* (8x16-pixel)	8.32
E2	y character size* (6x8-pixel)	4.16
F1	x character size* (8x16 pixel)	4.16
F2	x character size* (6x8 pixel)	3.12
G	x offset pcb edge to hole ctr	2.50
H	x screen frame	90.00
I	x screen opening	70.70
J	x hole spacing	88.00
K	x pcb width	93.00
L	y frame height	53.70

- All dimensions in mm.
- Worst-case tolerance for any dimension is ±0.50mm.
- Maximum depth (from front of screen frame to highest point on serial interface board) is 33mm.
- Mounting holes fitted with stainless-steel standoff posts, 2-56 female threaded for mounting screws
- NOTE: Dimensions subject to change. Critical applications should be based on *actual measurements*.



**Table 1. Basic specifications**

Backlight type	LED array, yellow-green
Power requirements (BL off)*	4.5 to 5.5 Vdc @ 25mA
Power requirements (BL on)*	4.5 to 5.5 Vdc @ 100mA
User connector	five 0.025" posts on 0.10" centers, or DB9 fem
Connector pinout (5-pin)	+5 GND SER GND +5
Serial input	RS-232, or inverted TTL/CMOS, 9600 or 2400, N81
Serial data rates	2400 or 9600 bps
Operating temperature	0° to 50°C (32° to 122°F)

\* NOTE: Unit includes a 2.1mm coax power jack for unregulated power, 9Vdc or 7Vdc.  
New Bright<sup>^</sup> jumper in version 2.0+ allows brighter backlighting at 150mA current draw.

**Table 2. Text control characters and graphics instructions by function**

Text Control Codes		
Function	Code	ASCII
Cursor home	ctrl-A	1
Begin inverse-video text	ctrl-B	2
End inverse-video text	ctrl-C	3
Hide cursor	ctrl-D	4
Show cursor	ctrl-E	5
Show cursor	ctrl-F	6
ignored	ctrl-G	7
Backspace	ctrl-H	8
Horizontal tab (go to next 4x column)	ctrl-I	9
Smart linefeed (go down one line)	ctrl-J	10
Vertical tab (go up one line)	ctrl-K	11
Formfeed (clear text screen)	ctrl-L	12
Carriage return	ctrl-M	13
Backlight on	ctrl-N	14
Backlight off	ctrl-O	15
Accept cursor-position entry	ctrl-P	16
ignored	ctrl-Q	17
Request buffer-depth response (">")	ctrl-R	18
Escape (begin graphics instruction)	ctrl-[	27

Graphics Escape Sequences		
Function		Escape Sequence
Set screen address for byte write		ESC A x y
Write byte value n to present screen address		ESC B n
Write byte value n to all screen addresses (n=0 to clear)		ESC C n
Download full-screen graphic (1024 bytes)		ESC D G
Display EEPROM screen n on graphics layer (n=0—15)		ESC E n
*Switch between default 8x16-pixel font and 6x8-pixel font		ESC F n
Set "ink" for points and lines to n; 1=black, 0=white		ESC I n
Plot a line from x1 y1 to x2 y2		ESC L x1 x2 y1 y2
Set graphics mode to n; 0=OR, 1=XOR		ESC M n
Set overlay of text/graphics layers to n; 0=OR, 1=XOR, 2=AND		ESC O n
Plot a point at x y		ESC P x y
Reverse layers by n; 0=neither, 1=graphics, 2=text, 3=both		ESC R n
Plot line from last line end to x y		ESC T x y
Disable layers by n; 0=neither, 1=graphics, 2=text, 3=both		ESC Y n
Transfer image from graphics layer to EEPROM screen n (0—15)		ESC X n
*Zap settings to defaults; 0=neither, 1=graphics, 2=text, 3=both		ESC Z n
<i>*New in version 2.0/firmware 060+</i>		
NOTE: At startup, the text and graphics layers are cleared, and all graphics settings are 0 except Ink, which is 1 (to plot dark pixels on a light background).		