LASCAR

PANEL PILOT SERIES

The Panel Pilot Series is a range of color TFT graphics meters that users can program to display a variety of meter styles previously provided by a traditional panel meter. Available in 2.4" and 2.8" sizes, the meters are programmable via USB interface with free Windows-based configuration software provided with the unit. Users can select the type of meter style they want (choices include 3.5 digit, bar graph and analog style options) and personalize the display by selecting preferences in color, text and voltage input scaling. Once programming is complete, the user can save all selections to the meter and computer, detach the unit and mount in their panel as they would any standard display. The unit is supplied with 6 programmable meter styles. Users can select more by visiting Lascar's website at **www.panelpilot.com**

- ● **Large 2.4" and 2.8" Color TFT Screen options**
- ● **Programmable via USB Interface**
- ● **User selectable meter style selection**
- ● **Simple panel mounting**
- ● **Free Windows-based Configuration Software supplied with meter**
- ● **Operating Voltage of 4V – 30Vd.c.**
- ● **Adjustable 0 to 40 Vd.c. input**
- ● **Screw terminal connections**

SGD 24-M (shown actual size)

Configure your meter via the USB connector

Choose meter style (3.5 digit, bar, analog) via software
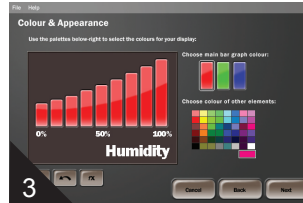
Choose color and appearance via software

Save settings to meter and mount display

Stock No	Mfr's Type	Module Function	Module Size (In.)	Connection	Supply Voltage.	Measurement Range	User Interface	Price Each
	SGD 24-M	Multi-function 2.4" Color TFT Display with 3.5 digit, bargraph and analog style meter styles choices	3 x 1.9 x 0.75	Screw Terminal	4-30Vdc	0-40Vdc	USB	
	SGD 28-M	Multi-function 2.8" Color TFT Display with 3.5 digit, bargraph and analog style meter styles choices	3.3 x 2.1 x 0.75	Screw Terminal	4-30Vdc	0-40Vdc	USB	

SGD 24-M

PanelPilot Compatible Smart Graphics Display

FEATURES

- 2.4" colour TFT screen
- Use PanelPilot software, to setup and customise the display. Compatible with Windows XP, 2000, Vista and Windows 7
- Six voltmeter configurations included free
- Option to download other types of meter from the PanelPilot subscription service
- Programmable via the USB interface
- Simple panel mounting solution
- Wide operating voltage of 4V – 30V d.c.
- Measures voltage from 0 – 40V d.c.

The SGD 24-M is a PanelPilot Compatible graphics display with a 320 x 240 pixel (QVGA) colour display and USB programming interface.

Using the PanelPilot software (available for Windows XP, 2000, Vista and Windows 7), users are able to choose from an ever-increasing number of configurations (six voltmeters at launch) which can then be customised to their needs. The additional voltmeter types and other functions are available using an annual subscription based service through www.PanelPilot.com.

Colours, text labels, splash screen and input voltage scaling can all be customised by the user through the software and then uploaded to the SGD 24-M through the USB connection.

Panel or enclosure installation of the display is simple, using a panel fixing clip to mount the display, and 4 screw terminals to connect the inputs.

SPECIFICATIONS

	Minimum	Typical	Maximum	Unit
Accuracy		0.05	0.1	%
Linearity			±1*	Count
Sample rate		3		Samples / second
Operating temperature range	0 (+32)		+40 (+104)	°C (°F)
Supply voltage	4		30	V d.c.
Measurement voltage (single ended only)**	0		40	V d.c.
Supply current ***	35		190	mA

*   Depending on user calibration settings
**   The SGD 24-M uses a programmable gain amplifier. There are 8 different voltage ranges, to optimise the resolution. See page 2 for details.
*** Voltage dependent. See graph on Page 2.

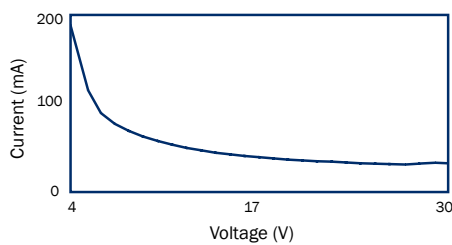# SGD 24-M
PanelPilot Compatible Smart Graphics Display

HARDWARE

Screw Terminal Functions

1 IN2 Analogue voltage input 2 (maximum of 40V d.c.)
2 IN1 Analogue voltage input 1 (maximum of 40V d.c.)
3 0V 0V power supply input
4 V+ Positive power supply input (4V – 30V d.c.)

Typical Supply Current

Voltage Input

The SGD 24-M features 2 voltage inputs, which use a Programmable Gain Amplifier (PGA) to make the best use of available resolution (the smallest voltage range offers the highest resolution). Each channel can be programmed independently, with the option of eight different input voltage ranges:

Voltage Range (V)	Resolution (mV)
0 - 1.25	0.3
0 - 2.5	0.6
0 - 4	1.0
0 - 5	1.2
0 - 8	2.0
0 - 10	2.4
0 - 20	4.9
0 - 40	9.8

The input voltage range is decided using the two voltages that the user enters in the scaling section of the Panel Pilot software. The software uses the smallest range available, which can accommodate both of the voltages entered by the user. The absolute maximum voltage input is 40V d.c.

For example:

Entering a voltage scale of 0 – 30V in the software will use the 0 – 40V range.
Entering a voltage scale of 0 – 3V in the software will use the 0 – 4V range.
Entering a voltage scale of 5 – 15V in the software will use the 0 – 20V range.

Note: V+, IN1 and IN2 share a common ground (i.e. not floating or isolated from each other).

USB connection

A 'Type A to Mini-B' USB cable is required to program and customise the SGD 24-M. It typically takes 10 seconds to send a configuration, with an additional 5 seconds needed for the hardware to reset.

The SGD 24-M can be powered directly from USB and is compatible with both USB 1.1 and USB 2.0. The screw terminals and advanced connector can remain connected whilst using USB, but it is not necessary for V+ to be powered.

SGD 24-M
## PanelPilot Compatible Smart Graphics Display

Display

The display is a 2.4" TFT panel, with a resolution of 320 x 240 pixels and a 16-bit color depth. Any graphics that are uploaded to the meter are automatically converted to this specification. A resistive touchscreen is fitted, for use with supporting applications. Clean the screen with a damp, soft, lint free cloth.

Panel Mounting

The SGD 24-M can be fitted into panels of up to 3mm deep. A silicone seal is included to improve fitting on thin panels, however the maximum panel thickness is reduced to 2mm when fitted. Panel cut-out is 74 x 46mm.

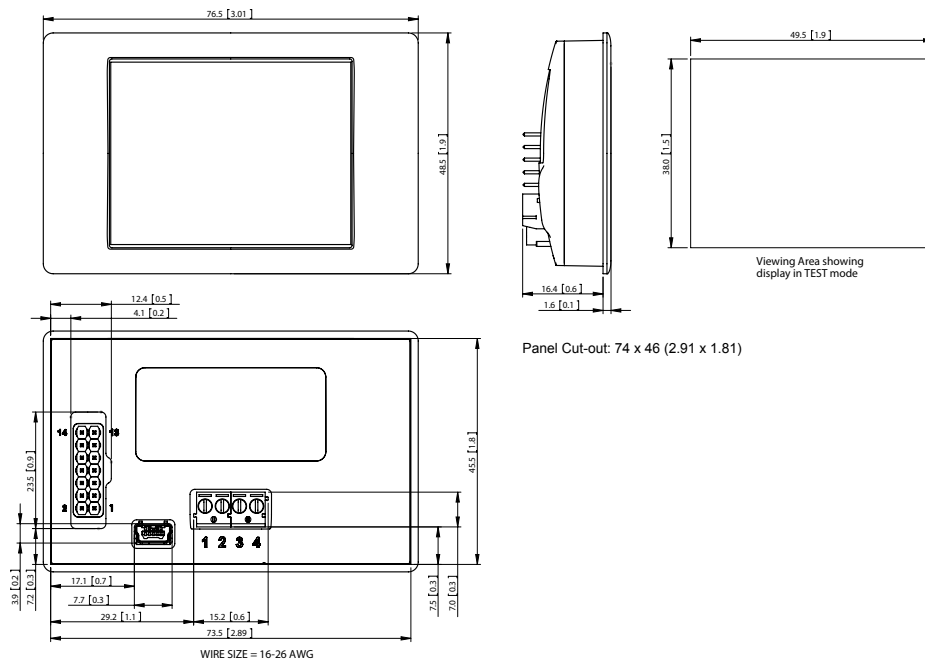NOTE: The display is NOT protected against moisture or dust.
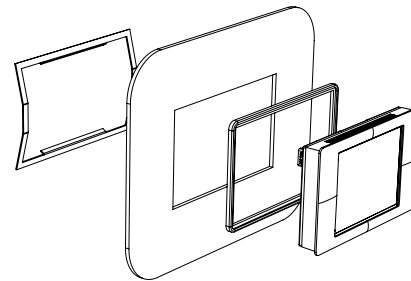
Advanced Connector

The DIL IDC socket provides an alternative connection method to the screw-teminals (V+, 0V, IN1 and IN2 are duplicated). It also includes provision for future expansion using data buses (SPI and I2C) and alarm ouputs. Some expansion options may require an additional interface board - Visit www.panelpilot.com for information on which features are currently supported.

0V	● ●	DAC1
SPI-MOSI	● ●	SPI-SLCK
SPI-CS2	● ●	SPI-MISO
I²C-SDA	● ●	I²C-SCL
ALM2	● ●	ALM1
V+	● ●	0V
IN2	● ●	IN1

DIMENSIONS
All dimensions in mm (inches)

76.5 [3.01]
48.5 [1.9]

49.5 [1.9]
38.0 [1.5]

Viewing Area showing display in TEST mode

16.4 [0.6]
1.6 [0.1]

Panel Cut-out: 74 x 46 (2.91 x 1.81)

12.4 [0.5]
4.1 [0.2]
23.5 [0.9]
45.5 [1.8]
3.9 [0.2]
7.2 [0.3]
17.1 [0.7]
7.7 [0.3]
29.2 [1.1]
15.2 [0.6]
73.5 [2.89]
7.5 [0.3]
7.0 [0.3]

WIRE SIZE = 16-26 AWG

SGD 24-M
PanelPilot Compatible Smart Graphics Display

PANELPILOT SOFTWARE

Lascar's PanelPilot software is available for download free of charge from www.PanelPilot.com. Easy to install and use, the control software runs under Windows 2000, XP (Home and Professional Editions), Vista and Windows 7. The software is used to setup the appearance and operation of the meter and then upload these settings to the meter.

6 types of voltmeter are supplied with the software. Additional voltmeters and functions will be made available using an annual subscription based service through www.PanelPilot.com. See the website for details of available meters.

The software allows the following parameters to be configured:

- Meter type
- Text labels (including units and graph labels)
- Background, graph segment and text colors
- Input scaling / calibration (at two points)
- Decimal points (entered during scaling)
- Splashscreen image selection (to display a user image, such as a logo, when the meter is powered up)
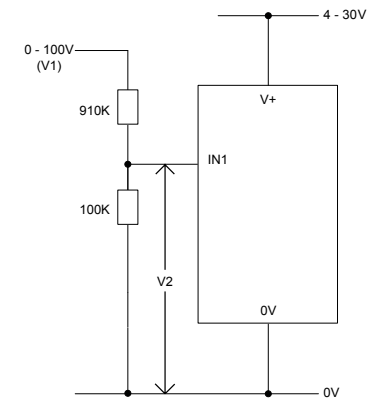
VARIOUS OPERATING MODES
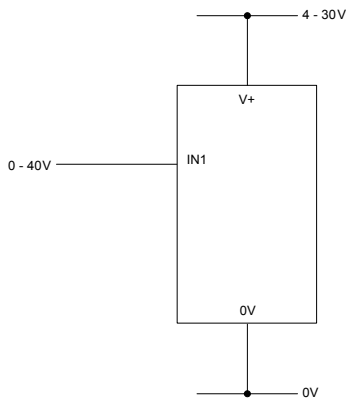
Measuring a voltage source
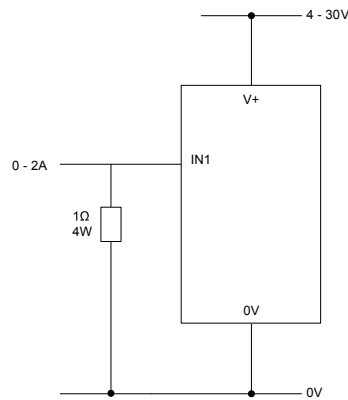
Measuring 0 - 2 amps current range.
Use a 1 Ω resistor, with a 4W rating.
Setup scaling in software: 0V = 0.00 and 2V = 2.00

Measuring 0 - 100V (d.c. only).
Input a known voltage of between 0 and 100V (V1)
Measure the voltage between IN1 and 0V (V2)
Setup scaling in software: 0V = 0.0
V2 = V1 (Enter with the same number of decimal points, i.e 50.0)

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