

SGD 24-M (2.4" Programmable TFT Panel Meter)



S - Normally Stock
L - Limited Stock
O - Ex Order



PANEL PILOT ACE

SGD 28-M (2.8" Programmable TFT Panel Meter)



S - Normally Stock
L - Limited Stock
O - Ex Order

PANEL METERS

SGD 35-M (3.5" Programmable TFT Panel Meter)



S - Normally Stock
L - Limited Stock
O - Ex Order

The SGD series are programmable panel meters featuring dual analogue inputs, alarm outputs and 2.4";2.8" or 3.5" TFT colour touchscreen display options. Configured using the free PanelPilot M Software, choose from an ever-increasing number of configurations including bar-graph, tank level, analogue style and trend graphs. Then customise colours, text labels, units and input scaling before uploading to a display via USB.

- Display: 2.4", 2.8" or 3.5" colour TFT screen
- Resolution: 320x240 pixels (QVGA)
- Operating Voltage: 4 - 30V d.c.
- Measurement Range: 0 - 40V d.c.



SGD 24-M420
SGD 28-M420
(2.4";2.8" Programmable TFT 4-20mA Meter)



SGD 24-M-IP
(2.4" Waterproof Programmable TFT Panel Meter)
SGD 24-M-IP420
(2.4" Waterproof Programmable TFT 4-20mA Panel Meter)



SGD 35-M420
(3.5" Programmable TFT 4-20mA Loop Meter)

SGD 43-A (4.3" Display with Analogue, Digital, PWM and Serial Interfaces)



S - Normally Stock
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SGD 70-A (7" Display with Analogue, Digital, PWM and Serial Interfaces)



S - Normally Stock
L - Limited Stock
O - Ex Order

SGD 70-A is a 7" AND SGD 43-A is a 4.3" are capacitive touch displays designed for use with PanelPilotACE Design Studio, a free drag-and-drop style software package for rapid development of advanced user interfaces and panel meters. This off the shelf display features a wealth of hardware interfaces, including four 16-bit bipolar analogue inputs (to a maximum of ±40V d.c.), eight digital input/output pins, two alarm outputs, four 8-bit PWM outputs, serial RS232 and RS485 and an additional add on board to measure temperature.

SGD 43-A

- Display: 4.3" TFT with 262k colours
- Touchscreen: Capacitive touch screen
- Resolution: 480 x 272px
- Processor: Freescale i.MX283 (454MHz, 32bit, ARM 9)
- Analogue Inputs: Four 16-bit to ±40V d.c.
- Supply: 5 to 30V d.c. (300mA typical at 5V d.c.)
- Outside Dimensions: 119.3mm (4.7") x 79.8mm (3.1") x 20.0mm (0.8")

SGD 70-A

- Display: 7" TFT with 16.7M colours
- Touchscreen: Capacitive touch screen
- Resolution: 1024 x 600 pixel
- Processor: Freescale i.MX 6SoloX (ARM Cortex A9 & M4)
- Analogue Inputs: Four 16-bit to ±40V d.c.
- Supply: 5 to 30V d.c. (300mA typical at 5V d.c.)
- Outside Dimensions: 186mm (7.3") x 122mm (4.3") x 21mm (0.8")

Can also be used for data logging

SGD 43-ATP

- 4.3" panel mounted display module with capacitive touch screen
- 4 channel thermistor temperature board
- 4 x temp probes
- -40°C to +125°C

SGD 70-ATP

- 7" panel mounted display module with capacitive touch screen
- 4 channel thermistor temperature board
- 4 x temp probes
- -40°C to +125°C



SGD 43-A



SGD 70-A



SGD 43-ATP
4 channel Temp data logger



SGD 70-ATP
4 channel Temp data logger

EL-SGD 43-ATP

Four-Channel Temperature Data Logger with 4.3" Capacitive Touch Display



EL-SGD 43-ATP is a four-channel temperature data logger with real-time readings, trend graphing and data analysis tools.

The EL-SGD 43-ATP is a four-channel temperature data logger based on Lascar's PanelPilotACE platform. The product includes a 4.3" panel mounted display module with capacitive touch screen, a four-channel thermistor temperature board and compatible temperature probes. The user interface comprises an advanced logging application which shows real-time readings for up to four temperature channels, live trend graphs and access to a suite of real-time data analysis information.

The logger can store up to 100,000 readings per channel at sample rates from 5 seconds up to 12 hours. Data can be downloaded via USB using Lascar's free Device Utility software, which is available from www.lascarelectronics.com/software/panelpilotace.

For advanced users, the interface can be extensively customised using Lascar's free drag-and-drop PanelPilotACE Design Studio software.

Each EL-SGD 43-ATP includes:

- 4.3" PanelPilotACE display with mounting kit (SGD 43-A)
- Four-channel thermistor add-on board (S43-TP)
- 4 x 1m thermistor probe with 3.5mm plug (EL-PROBE2-1.0M-TP)
- Mini USB cable (CABLE USB A-MF)

Specifications

| | |
|----------------------------------|---|
| Supplied probe measurement range | -40°C to +125°C (-40°F to +257°F) |
| Internal Resolution | 0.01°C (0.01°F) |
| Temperature Accuracy | ±1.0°C (±1.8°F)* |
| Number of Readings (per channel) | 100,000 |
| Logging Rate | 5 seconds to 12 hours |
| Number of Channels | Up to 4 |
| Outside Dimensions | 119.3 x 79.8 x 31.3 mm (4.7 x 3.1 x 1.2 in) |
| Communications Protocols | USB |

* Between -5°C and 40°C without offset calibration. Between -40°C and +125°C with offset calibration applied.



EL-SGD 43-ATP

Four-Channel Temperature Data Logger with 4.3" Capacitive Touch Display



Operating Modes

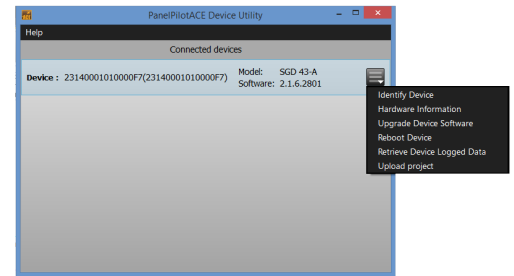
The EL-SGD 43-ATP can be configured for one, two, three or four channel temperature data logging in either celsius or fahrenheit.

| Function | 3.5mm SKT | Configuration |
|-----------|-----------|--------------------------------|
| Channel 1 | NTC1 | 1, 2, 3 or 4 channel operation |
| Channel 2 | NTC2 | 2, 3 or 4 channel operation |
| Channel 3 | NTC3 | 3 or 4 channel operation |
| Channel 4 | NTC4 | 4 channel operation only |

Software

Device Utility

Data download, device updates and programming of the module is completed using the free Device Utility software available from www.lascarelectronics.com/software/panelpilotace. Data is downloaded in comma separated variable format which can be imported into spreadsheet packages for graphing and further analysis.

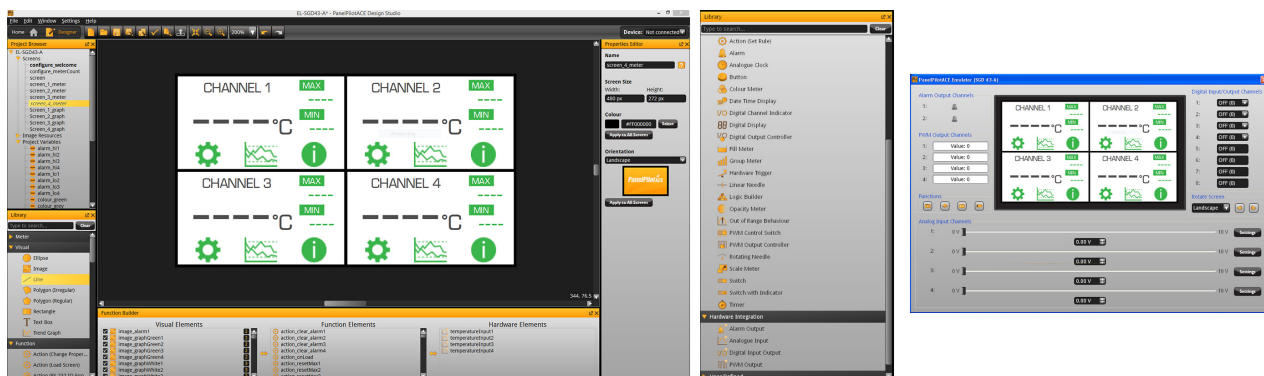


Retrieving Logged Data

The EL-SGD 43-ATP is configured as a USB slave. To retrieve logged data, connect a PC or laptop to the USB connector on the rear of the unit and use the Device Utility software to select and extract logs as .txt files.

Design Studio Software

The PanelPilotACE Design Studio software provides tools for advanced users who wish to fully customise the data logging functionality of the module. Visit www.lascarelectronics.com/software/panelpilotace or www.youtube.com/panelpilot for further information including learning materials on getting started with this powerful drag-and-drop software suite.



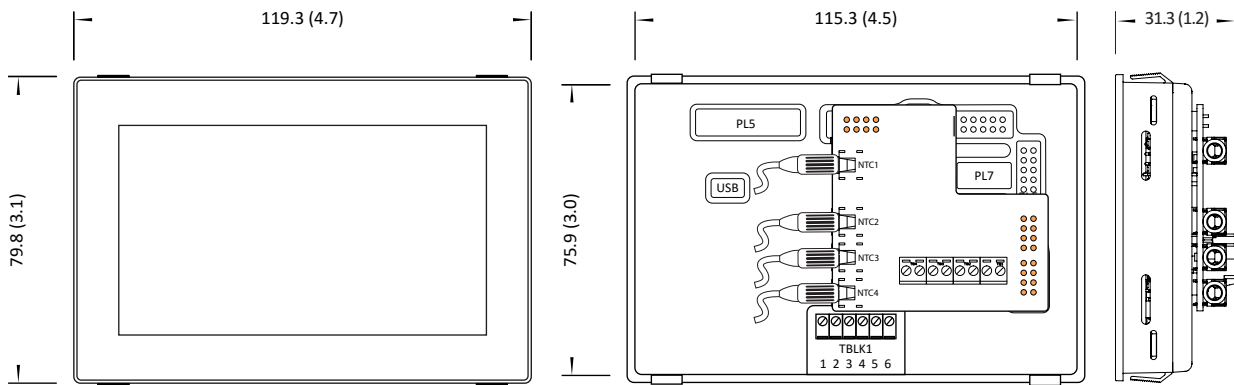
EL-SGD 43-ATP

Four-Channel Temperature Data Logger with 4.3" Capacitive Touch Display



Dimensions and Mounting

All dimensions are in mm (in)



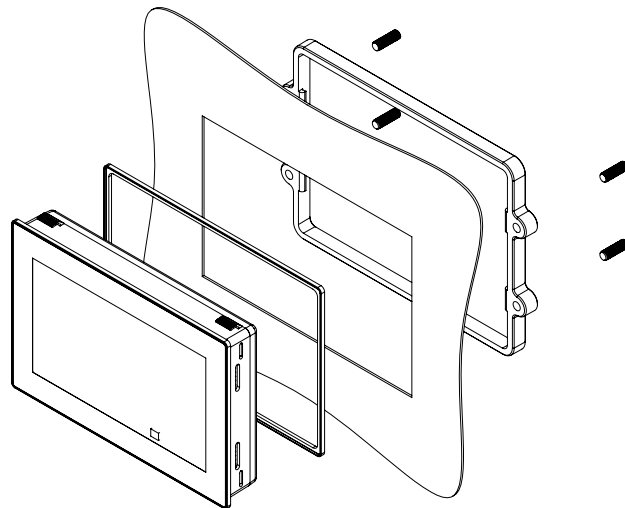
The orange colour pins on the rear elevation (above-middle) show the correct location for the S43-TP temperature board.

Panel Cut-Out and Fitting

The panel cut-out is 117.0 x 78.0mm (4.6" x 3.07"). There are two mounting methods:

The first uses clips that protrude from the plastic assembly and is suitable for panels between 1 and 3mm (0.04" and 0.12") in thickness.

The second method uses a rear mounting plastic bracket featuring grub screws for a more secure and adaptable fit. This second mounting method is suitable for panels between 0.5 and 4.0mm (0.01" and 0.15") in thickness.



SGD 24-M-IP

Waterproof PanelPilot-Compatible Smart Graphics Display



Features

- 2.4" colour TFT screen
- IP-67 and NEMA 6 rated
- Rugged and scratch resistant Corning® Gorilla® Glass window
- Supplied with free Windows design software, to setup and customise the display. Compatible with Windows 7, 8.1 and 10.
- Download meter applications from the ever expanding online library
- Programmable with the USB interface
- Simple and easy panel mounting solution
- IP-67 12-way connection
- Wide operating voltage of 4V – 30V d.c.
- 0 – 40V d.c. measurement range
- 2 analogue inputs & 2 alarm outputs
- SPI and I²C
- 4-20mA version available (SGD 24-M-IP420)

The SGD 24-M-IP is a PanelPilot Compatible IP-67 graphics display with a 320 x 240 pixel (QVGA) colour display and USB programming interface.

Using the PanelPilot software (available for Windows 7, 8.1 and 10), users are able to choose from an ever-increasing number of configurations which can then be customised to their needs. The additional voltmeter types and other functions are available 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-IP through the USB connection. When setup is complete, the settings can be saved and then uploaded to the meter using the supplied USB cable. Panel or enclosure installation of the finished module is simple, using the 32mm nut and the IP67 connector supplied with the unit.

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. |
| Measurement current (4-20mA version) | 4 | | 20 | mA |
| Supply current *** | 35 | | 190 | mA |

* Depending on user calibration settings

** The SGD 24-M-IP 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.

Ordering Information

| | |
|--|------------------------|
| Standard Display (Panel meter, fixing kit, IP-67 connector, quick start guide) | SGD 24-M-IP |
| Current Loop Display (Panel meter, fixing kit, IP-67 connector, quick start guide) | SGD 24-M-IP420 |
| USB Cable (Type A to mini-B) | CABLE USB A-MF |
| 2m Rightangle cable with IP-67 connector | CABLE IP-12W-RA |



DATASHEET FOR:

SGD 24-M-IP

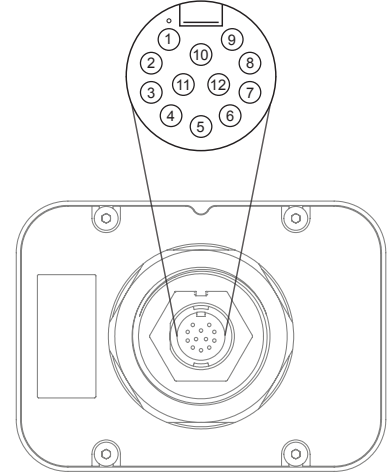
Waterproof PanelPilot-Compatible
Smart Graphics Display



IP67 Connection

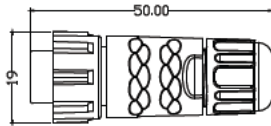
Connector Pin Functions

- | | | |
|----|-----------|---|
| 1 | ESPI-CS2 | - SPI chip select |
| 2 | ESPI-MISO | - SPI master input, slave output |
| 3 | ESPI-CLK | - SPI serial clock |
| 4 | ESPI-MOSI | - SPI master output, slave input |
| 5 | SDA | - Serial data |
| 6 | SCL | - Serial clock |
| 7 | ALM2 | - Alarm output 2 |
| 8 | ALM1 | - Alarm output 1 |
| 9 | IN1 | - Analogue voltage input 1 (maximum of 40V d.c. w.r.t 0v) |
| 10 | IN2 | - Analogue voltage input 2 (maximum of 40V d.c. w.r.t 0v) |
| 11 | 0V | - 0V power supply input |
| 12 | V+ | - Positive power supply input (4V – 30V d.c.) |

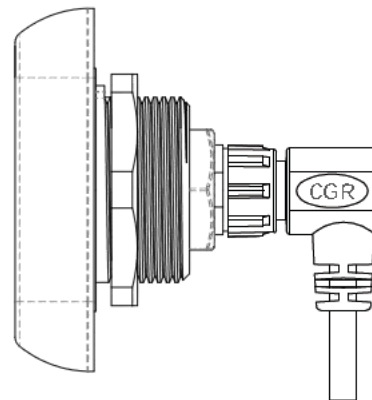
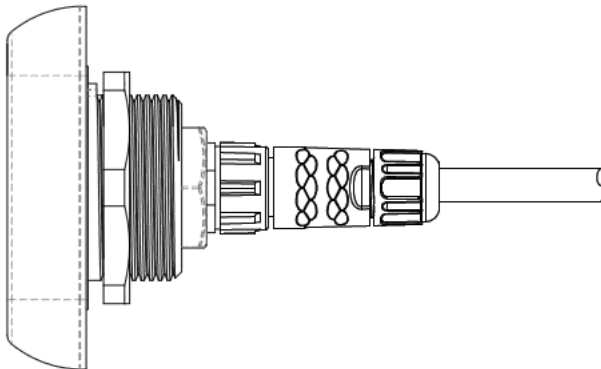
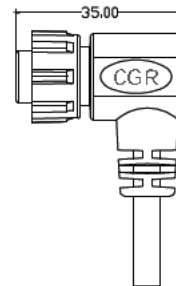


Connector plug options

Twist lock, field installable connector with solder bucket pins.
Seals for Cable OD=4.5mm~7.0mm



Twist lock connector with right angle overmoulded strain relief.
Cable length 2m.



DATASHEET FOR:

SGD 24-M-IP

Waterproof PanelPilot-Compatible
Smart Graphics Display

Voltage Input

The SGD 24-M-IP 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 (4-20mA) |
| 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.

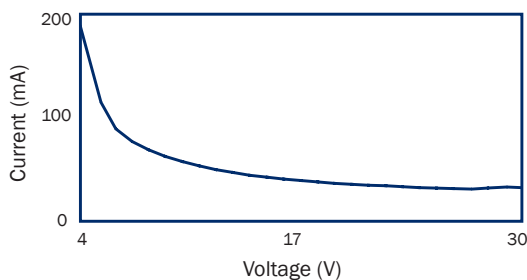
Entering a voltage scale of 0 – 3V in the software will use the 0 – 4V range.

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).

*For the 4-20mA model, the 0-2.5 range is used.

Typical Supply Current



USB Connection

A 'Type A to Mini-B' USB cable is required to program and customise the SGD 24-M-IP by unscrewing the 4xM3 screws and removing the back cover. The packing tray supplied can be used as a jig to hold the module and to avoid disconnecting the 12 way connector from the PCB inside.

The device will be powered for programming via USB.

It typically takes between 10 and 30 seconds to send a configuration, with an additional 5 seconds needed for the hardware to reset.

Display

The display is a 2.4" TFT panel, with a resolution of 320 x 240 pixels and a 16-bit colour depth. Any graphics that are uploaded to the meter are automatically converted to this specification.



DATASHEET FOR:

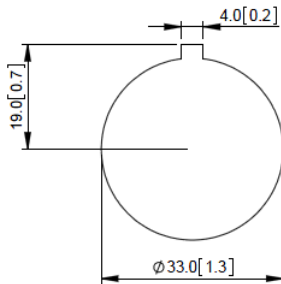
SGD 24-M-IP

Waterproof PanelPilot-Compatible
Smart Graphics Display

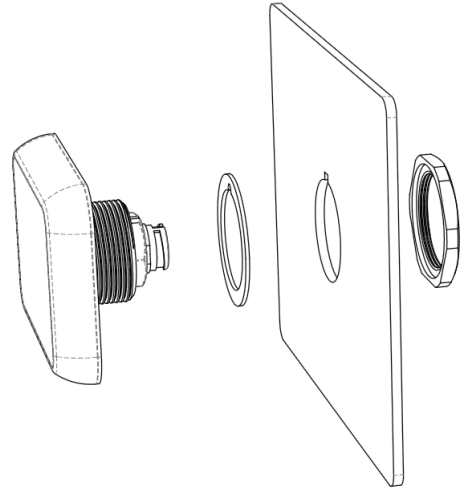


Panel Mounting

The SGD 24-M-IP can be fitted into panels of up to 10.5mm deep. A rubber seal is included to seal the mounting hole when the 32mm nut is fully tightened. Panel mounting hole cut-out is DIA 33mm.

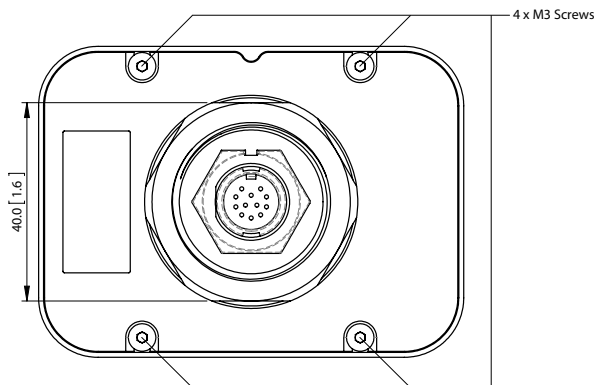
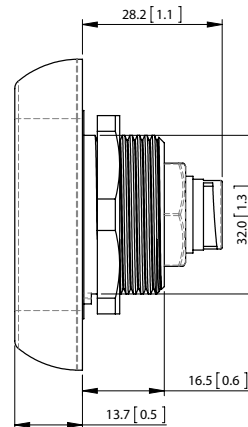
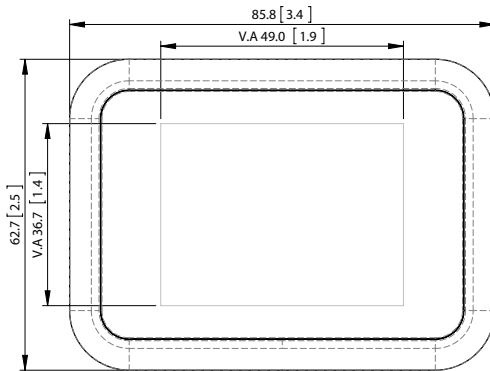


PANEL CUT OUT DIMENSIONS



Dimensions

All dimensions in mm (inches)

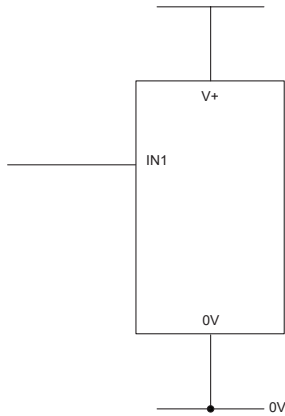


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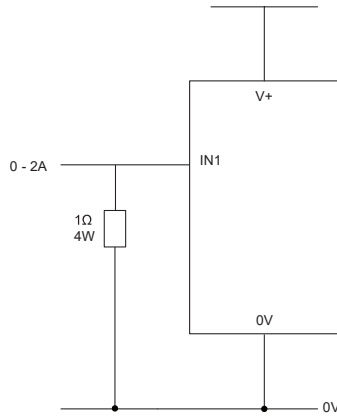
SGD 24-M-IP

Waterproof PanelPilot-Compatible
Smart Graphics Display

Various Operating Modes

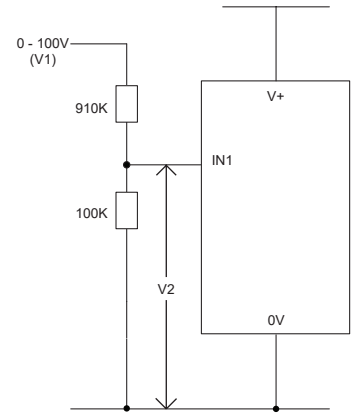


MEASURING A VOLTAGE SOURCE



MEASURING 0-2 AMPS CURRENT RANGE

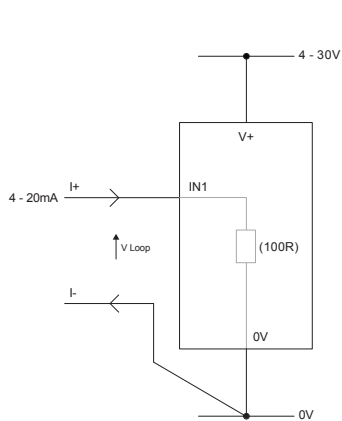
Use a 1Ω resistor, with a 4W rating.
Setup scaling in software: 0V = 0.00 and 2V = 2.00



MEASURING 0-100V (d.c. only)

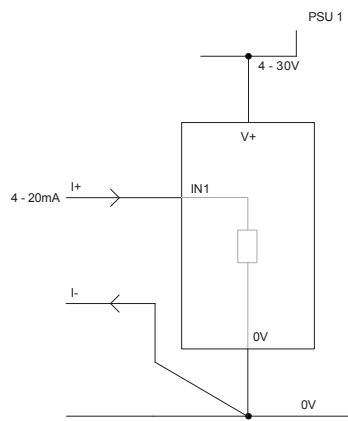
Input a known voltage of between 0 and 100V (V1)
Measure the voltage between IN1 and 0V (V2)
Setup scaling in software: 0V = 0.0
V2 = V1 (Enter with the same number of decimal points, i.e 50.0)

Various Operating Modes (4-20mA version)



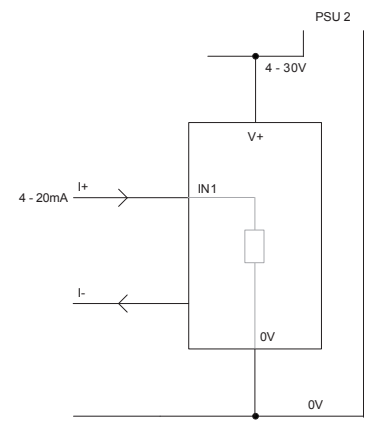
MEASURING 4-20mA

Power supply to meter must be fully floating
(isolated from the 4-20mA current loop)



USING TWO SGD DISPLAYS IN SAME INSTALLATION

Each SGD must be powered from a separate,
fully floating, power supply



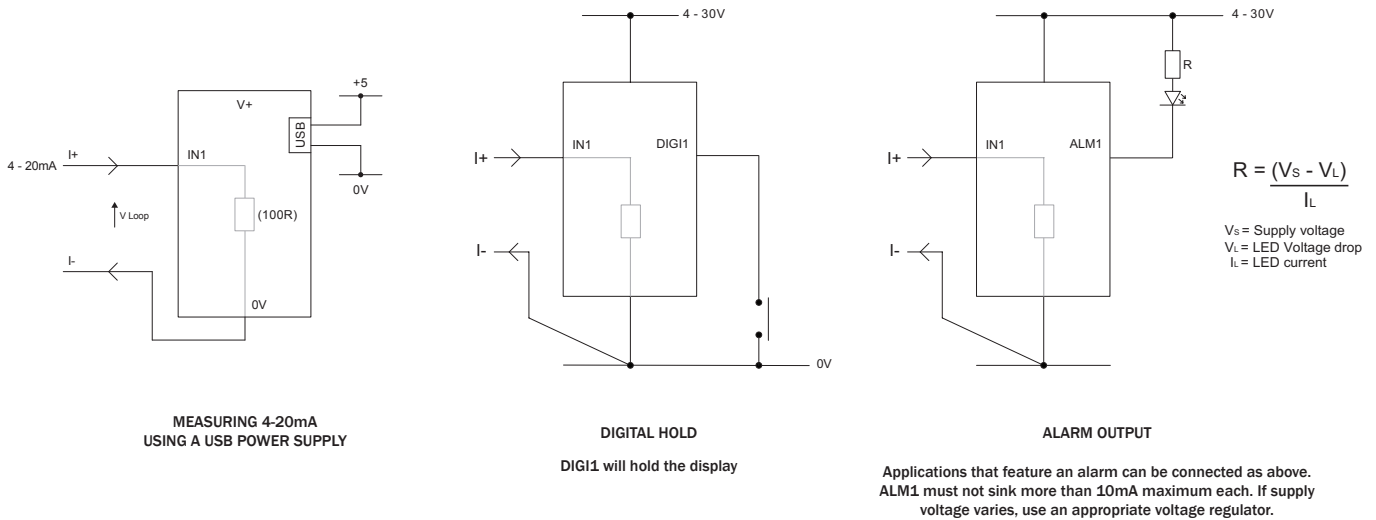
DATASHEET FOR:

SGD 24-M-IP

Waterproof PanelPilot-Compatible
Smart Graphics Display



Various Operating Modes (4-20mA version) continued



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 7, 8.1 and 10. The software is used to setup the appearance and operation of the meter and then upload these settings to the meter.

Multiple types of voltmeter are supplied with the software. See lascarelectronics.com 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)



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