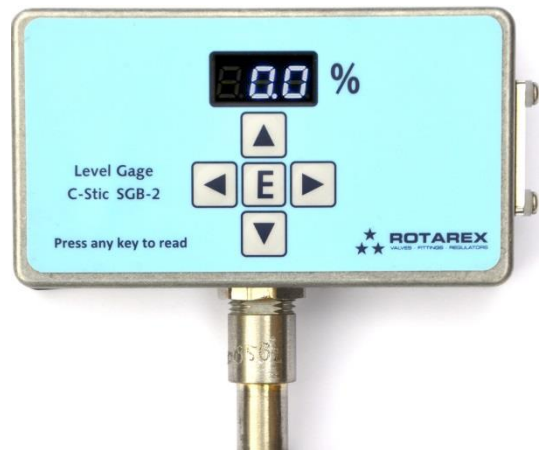
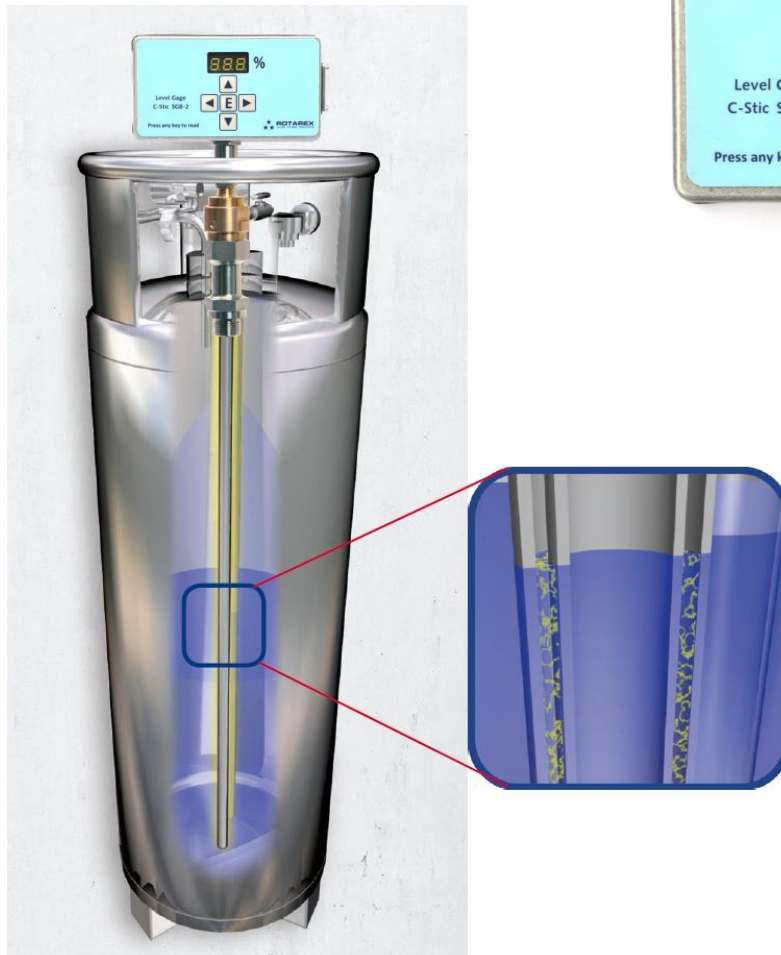


Cryo Level Gauge C-Stic SGB

... to the next level ...



Capacitive Measuring Technology

C-Stic SGB Standard Gauge



The C-Stic SGB is a very robust Level Gauge suited for cold stored liquefied gases like nitrogen, oxygen, argon, carbon dioxide and nitrous oxide. It provides an easy to mount, accurate and reliable digital liquid level indicator. The capacitance of the full stainless steel sensor increases ratiometrically with the liquid coverage and is converted into an easy to read, accurate digital read out with 0.1% resolution. Additionally it has standardly two analogue output options to be used for control, remote or telemetry purposes. As the unit is battery powered there's basically no need for any additional power or cabling. By using one of the analogue outputs the battery is just needed to power the digital read-out when required.

In order to get a continuous reading you may power the unit externally. In case of just battery operation, you activate the device by pressing one of the front keys. The unit measures and shows the actual level during 20s and switches off automatically afterwards. To change and justify the factory set pre-adjustments, you must first enter the security code. There are no potentiometers at all; the adjustment is fully electronically and related reference data are stored in a semi-permanent memory. Removing the cover is just needed to replace batteries.

Features

The device is basically powered by two very common AAA-cell alkaline batteries. Pressing any key activates the gauge to get reading for about 20 seconds on the bright white LED display. Alternatively you can get continuous reading by applying external power to the multi pin connector at the side. On this connector you also have access to one of the two analogue outputs, i.e. 2-wire 4/20mA-loop or 3-wire ratiometrical voltage. You simply choose by connecting the appropriate one.

Summarized features:

- > Aluminium enclosure
- > 3-digit white LED display
- > Code protected adjustment
- > Two types of analogue output
- > Continuous reading (ext. powered)
- > 3-4 yrs. battery life
- > Single 9-pin connector for external use

Installation



To attach and mount the gauge on a tank you can choose the applicable fitting from a range of most commonly used standard compression fitting types. The probe assembly with its tube diameter of 12mm is simply tightened at the appropriate height while the gauge box is put into the most convenient viewing direction.

The eventually needed external connections are available at the 9-pin sub-D connector located at the side of the gauge box enclosure. A rubber seal ensures water tightness.

Next to the basic battery operated indicator mode, you can choose one of the other externally powered operation modes simply by connection.

Externally powered operation modes:

- > Continuous level reading. Requires a power supply of 9-30Vdc (typ. 12Vdc)
- > 4/20mA Loop. A 2-wire analogue current loop, requiring a loop supply voltage of typ. 24Vdc (min. 8Vat SGB).
- > 3-wire ratiometrical voltage output (0-100% = 10-90%Vdd). Requires an input voltage of typ. 5Vdc.

Note that just one of the above options may be chosen. Simultaneous operation is NOT allowed.

Adjusting



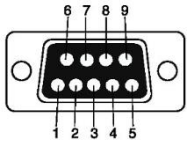
The Level Gauge generally needs to be adjusted to full while in its final position after first filling. After activation by pressing any key you enable adjusting by entering the access code and confirm to full <Hi> while the actual level is 100%. If for some reason required you can repeat the empty <Lo> and full <Hi> adjustments any time afterwards.

Note: to disable the adjusting facility you need a PC-operated interface.

The basic procedure:

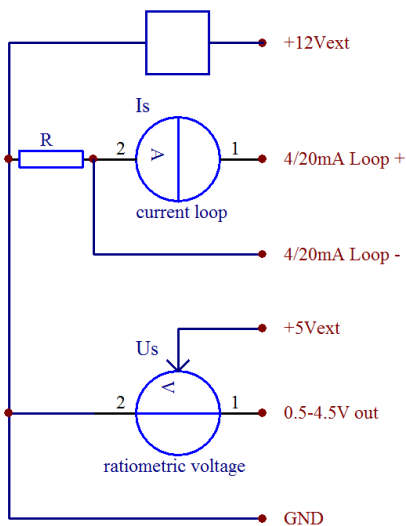
- > Activate by pressing a key
- > Press <E> to start
- > Enter access code by the Left/Right and Up/Down keys.
- > Select <Hi> or <Lo> by Up/Down keys
- > Confirm by <E>

Connections

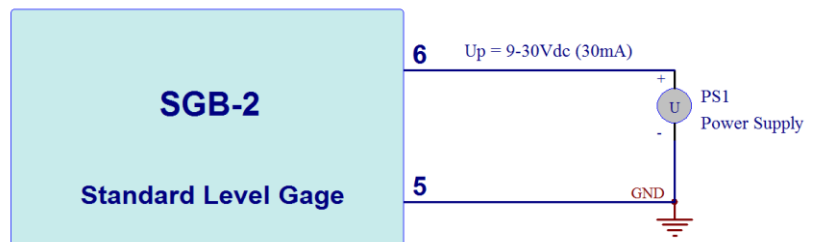


Pin (Sub-D)	VGB	remark
1	Not connected	-
2	n.a. (RxD)	to PC-Interface
3	n.a. (TxD)	to PC-Interface
4	Negative/minus (-) 4/20mA Loop	Loop may NOT simultaneously be operated with voltage output
5	Common / Gnd	shared with external power and ratiometric output
6	External power input	typ. 12Vdc (9-30Vdc)
7	Ratiometric voltage output 10-90% V_{dd}	Level 0-100% = 0.5-4.5V @ $V_{dd}=5.0V$
8	$V_{dd} = 5V/5\text{ mA}$ input	Typ. 5Vdc (+10%/-20%)
9	Positive/plus (+) 4/20mA Loop	$V_{4-9} = \text{min. } 8Vdc$

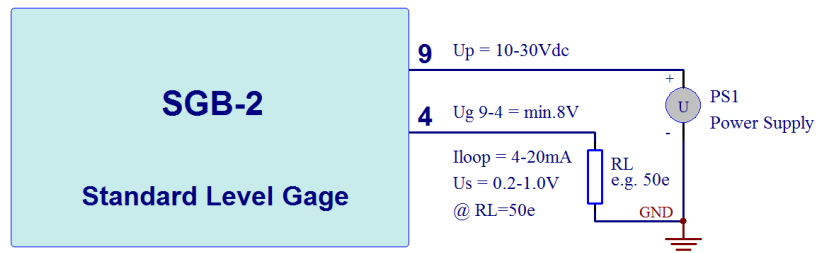
External wiring



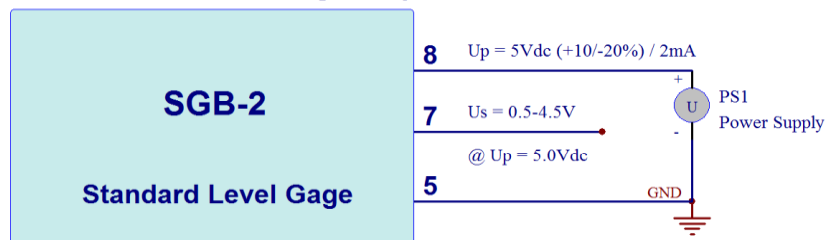
Externally powered for Continuous Reading



2-wire 4/20mA Loop



3-wire ratiometric Voltage Output



Gauge box to Smart Sensor



For those occasions in which the **C-Stic** sensor (type **SM12**) and the gauge box are separate devices, the main (electrical) features of the box are identical. But instead of being one integral device, the gauge box connects to the sensor by a (normal electrical) cable with an M12-type sensor connector. The gauge box can be mounted in any other suitable place, for example, on the wall next to the tank. The maximum cable length is 10m.

Features:

- > Gauge and sensor are independent
- > Sensor on tank, reading on location
- > Normal electrical cable, no coaxial
- > Digital communication with gauge box
- > Wall-mount bracket for gauge box available

Technical data



Item	SGB
Dimensions (enclosure)	115 x 64 x 32 mm
Operating temperature	-20°C < T _a < +60°C
Material (enclosure)	aluminium
Ingress protection	IP 65
Battery	2x AAA-cell IEC: LR03 / ANSI: 24A
External power	9-30Vdc (stab.) max. 20mA
Voltage output	10-90%V _{dd} (V _{dd} = 5V +10%/-20%)
Current Loop	4/20mA loop V _{cc} = 8-30Vdc
Sensor part	
Material (body & tube)	stainless steel 304 / 316
Diameter	12 mm
Length	according to tank dimensions
Temperature	-200°C < T _s < +100°C
Maximum pressure	35 bar / 500 psi
Tank fittings (pref.)	7/8 - 14 UNF 1/2 - BSP 3/4 - 16 UNF 1/2 - NPT

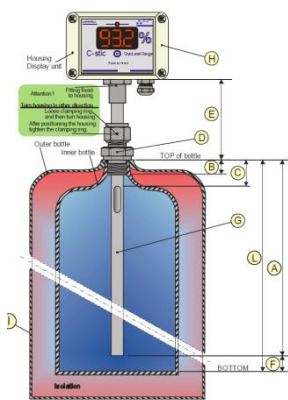
Part numbers

Part	P/N	Remark
C-Stic SGB ¹⁾	008.002.013	complete Level Gauge incl. fitting
External Connection cable	008.019.001	9p. cable Sub-D L=2.5m
External Connection cable	008.019.002	9p. cable Sub-D L=5m
SGB-2 Gauge box	008.007.013	incl. M12-sensor cable to connect to C-Stic SM12 Sensor
C-Stic SM12 Sensor ¹⁾	008.010.001	Level Sensor dia.12mm, incl. fitting
Mounting bracket	008.021.001	Aluminium wall mount bracket (SGB/VGB)

Notes:

¹⁾ please fill out form to confirm dimensions and select applicable fitting

Please refer to the most functional, self-monitoring type **C-Stic VGB** for additional features like continuous reading, autonomous alerts and programmable output contacts.



Contact

Manufacturer:

CMT Manufacturing BV

Hakselseweg 50

NL-6713 KW EDE

Netherlands

www.cmtbv.nl

e-mail: info@cmtbv.nl

tel: +31 318 619138

fax: +31 318 650036

