

# TCG2000

## DIGITAL TANK CONTENTS GAUGE



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- DISPLAYS TANK CONTENTS IN TONNES
- 5 DIGIT LCD BACKLIT DISPLAY
- ZERO AND SPAN ADJUSTMENT ON-SITE
- CREVICE-FREE PRESSURE PORT SUITABLE FOR VISCOUS MATERIALS
- 3/4" ASA 150LB STAINLESS STEEL FLANGE
- IMPACT RESISTANT GLASS REINFORCED POLYESTER ENCLOSURE
- WEATHERPROOF TO IP67
- SERIAL INTERFACE OPTIONS AVAILABLE
- EXCELLENT LONG-TERM STABILITY

The TCG2000 digital tank contents gauge has been designed to meet the specific application requirements of bulk liquid mass measurement on storage tanks, for stock control and local contents readout. The TCG2000 is a highly accurate digital gauge, which when mounted near the base of a storage tank will calculate and display the product contents in tonnes. Basically the design consists of state of the art silicon-on-sapphire pressure sensor, a digital processor unit and a 5 digit LCD local readout display. With this unique design the pressure generated by the liquid contents is sensed and by digital processing a measurement for the contents mass is then calculated.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a Titanium alloy sub-diaphragm. This enables the sensor to endure higher over- pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate protects the strain gauge circuit from electromagnetic pulse radiation and allows the sensor to operate over a very wide temperature range without loss of performance.

A 3/4" ASA 150lb stainless steel flange with 14mm diameter inlet bore provides the process connection. The large inlet bore and special crevice free design of the process connection enables even viscous liquids to free flow to the sensing diaphragm, this enhances measurement accuracy and assists with maintenance and cleaning. To assist commissioning and allow re-calibration on-site the zero and span can simply be readjusted with the push button controls on the local display panel located inside the weatherproof enclosure.



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# TCG2000

## DIGITAL TANK CONTENTS GAUGE

### SPECIFICATION

#### TANK CAPACITY:

Any tank capacity can be accommodated within the display scale limits of 0 to 99990 and the operating pressure specification.

#### OPERATING PRESSURE RANGE:

0-250mbar through to 3000mbar  
Pressure at process inlet.

#### OVERPRESSURE:

4000mbar maximum without damage

#### LOCAL READOUT DISPLAY:

LCD with back light, 10 mm height

#### DISPLAY RESOLUTION:

5 digit display, up to 1 in 65000 resolution.

#### CALIBRATION:

Readout is calibrated in SI units of tonnes, or decimal fraction of tonnes to best suit tank capacity.

#### COMBINED NON-LINEARITY AND

#### HYSTERESIS:

± 0.25 % FS Best fit straight line definition.

#### REPEATABILITY:

± 0.1 % FS Defined as maximum error between 3 consecutive pressure cycles.

#### LONG TERM STABILITY:

± 0.2 % FS/year non-cumulative

#### ZERO OFFSET AND SPAN SETTING:

Fully adjustable from display panel buttons (with calibration count / tamper detection)

#### POWER SUPPLY:

13-30Vdc

#### POWER CONSUMPTION:

40mA maximum

#### HUMIDITY:

95% RH maximum at 40°C,  
non condensing

#### PRESSURE MEDIA:

All fluids compatible with 316 stainless steel, Titanium and Nitrile seal. Pressure sensor is all Titanium construction.

#### OPERATING TEMPERATURE RANGE:

Operating : -20°C to +50°C

Storage : 5°C to +40°C

#### TEMPERATURE EFFECTS:

±0.75%FS total error band for -10°C to 30°C  
Typical thermal zero and span coefficients ±0.02%FS/°C

#### ELECTROMAGNETIC-COMPATIBILITY:

Emissions EN50081-1

Immunity EN50082-2

Certification CE marked

#### SERIAL OUTPUT INTERFACE:

RS232C or RS485 connection options available

#### SERIAL OUTPUT FORMAT:

1 start bit, 8 data bits, 1 or more stop bits. ASCII data terminated with a carriage return

#### BAUD RATE:

Selectable 1200, 2400, 4800 or 9600

#### PRESSURE CONNECTION:

3/4" ASA 150lb flange in 316 stainless steel

#### ENCLOSURE MATERIAL:

Glass reinforced polyester, polycarbonate window - with door lock screws.

#### ENCLOSURE RATING:

Weatherproof to IP67.

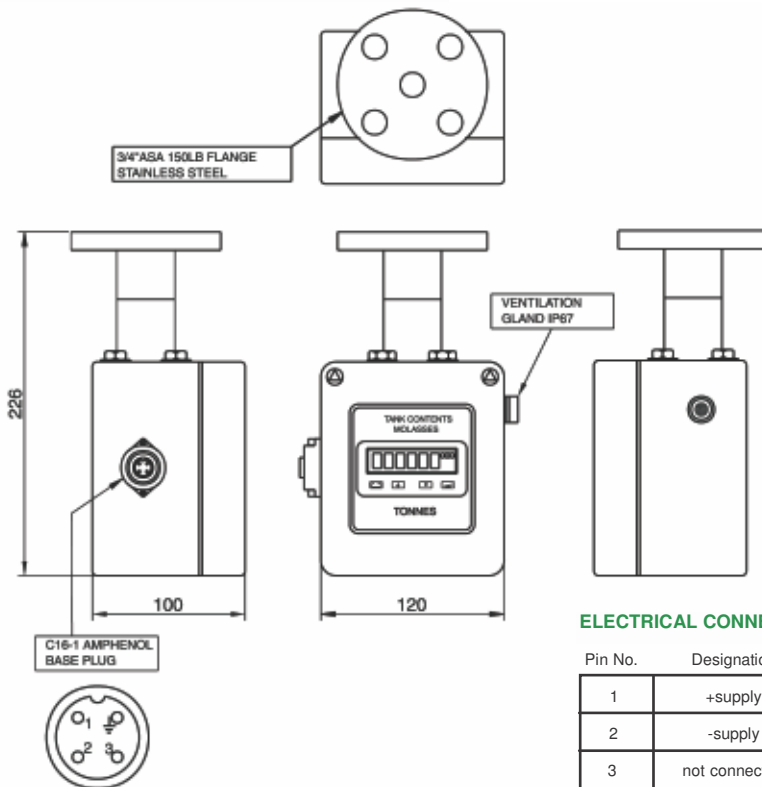
#### ELECTRICAL CONNECTION:

Mates with Amphenol C16-1 series cable connector socket.

#### WEIGHT:

2.5Kilograms

### DIMENSIONS (in mm)



#### ELECTRICAL CONNECTION

Pin No.	Designation
1	+supply
2	-supply
3	not connected
⊥	earth

#### ORDER DETAILS

State model number and the following calibration data:

Tank capacity in tonnes (or SG of product),  
Tank dimensions: diameter x height in metres,  
Gauge zero setting in tonnes

e.g.:

TCG2000, Capacity 10,000 tonnes,  
12.512m Dia x 11.6m height, GZ 120 tonnes

Model No.	DESCRIPTION
TCG2000	TANK CONTENTS GAUGE WITH LCD DISPLAY

#### CALIBRATION

All products manufactured by Ellison Sensors are calibrated using precision calibration equipment with traceability to international standards.

Ellison Sensors operates a policy of continuous product development. We reserve the right to change specification without prior notice.

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