

CPA Vessel Weighing System

Application

Vessel/Boat Weighing

Features

- Stainless Steel Construction
- Environmentally sealed to IP67
- Supplied with loading cap for load centralisation (optimal accuracy)
- IP65 rated junction box for easy connection of the four load cells
- Supplied with mounting base for secure installation
- Free DSC 24 Channel Logging software for displaying loads on a PC/Laptop

Design Brief

We received an enquiry from the Royal National Lifeboat Institution for a boat weighing system. The RNLI have been using load cells and software supplied by LCM Systems for many years. The RNLI were building a new Shannon Class of

lifeboat at their new All-Weather Lifeboat Centre. As this is the first boat to be built in-house by the RNLI, there was a requirement to weigh it to ensure that the stability calculations are correct and the designed weight was achieved. A standard system of compression load cells and a wall mounted indicator was initially offered, however, after a follow-up with the Quality Technician, it was determined that a PC readout was required. After further discussions, the quote was finalised to include 4 x 25te stainless steel compression load cells (CPAs) with base plate connected to a junction box (DSJ4) containing 4 x DSC digital signal converters with RS485 output. This would allow the load from each load cell to be read individually as well as providing a total load. A small USB



digital signal conditioner was also included for data conversion in a format suitable for direct download to a laptop/PC for load data display.

The customer went ahead and placed the order, which was manufactured and delivered within 4 weeks. Testing of the first lifeboat took place shortly after. One load cell was placed under the forward centre keel, one under each bilge keel aft and one under the centre keel in line with the bilge keels. The individual and combined weights were recorded and displayed on a laptop using the free DSC 24 Channel Logging software.

Each new build will be weighed in the same way and re-weighed when the boat is surveyed following sea trials. This allows the RNLI to see if there are any discrepancies between the results and potentially identify any issues, such as excessive water ingress into the bilges, for example.

Main Criteria

- System needs to be capable of weighing loads up to 25 tonnes
- Results must be displayed on a PC/laptop
- Both individual load cell and combined loads required
- 4 week delivery schedule

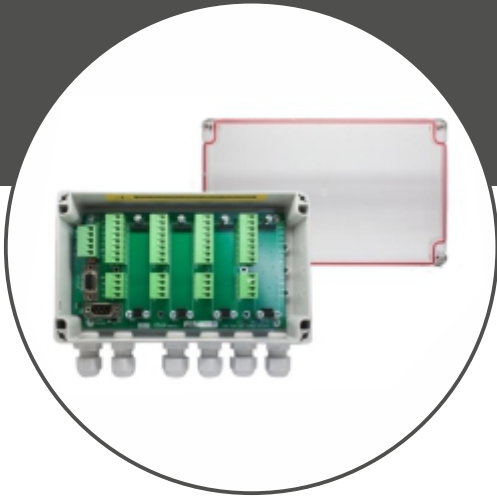


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APPLICATION NOTE

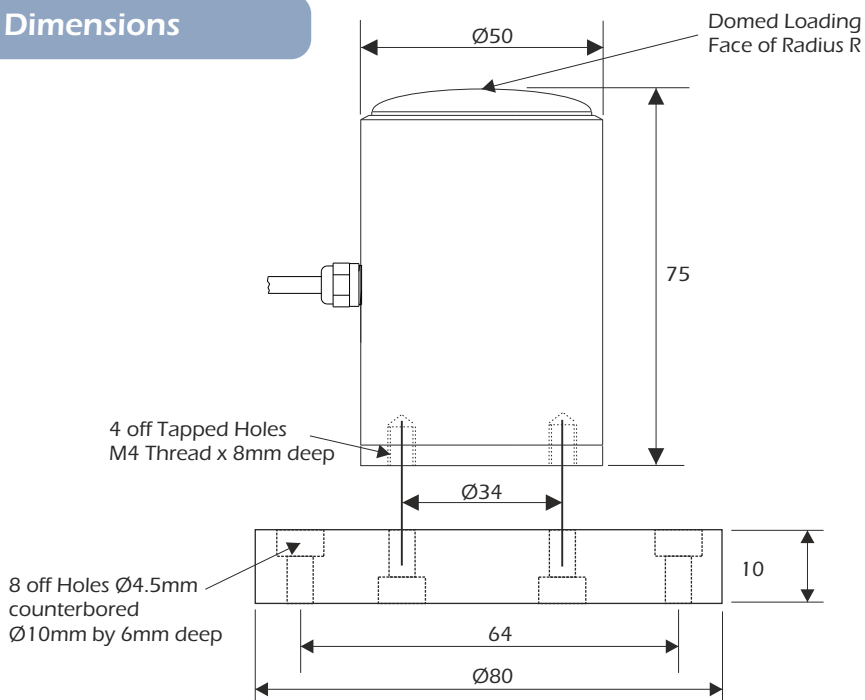
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Specification

Rated load (tonne)	25
Proof load	150% of rated load
Ultimate braking load	>300% of rated load
Output	1.5 mV/V at rated load (nominal)
Non-linearity	<±0.25% of rated load (typically)
Non-repeatability	<±0.05% of rated load
Excitation voltage	10vdc recommended, 15vdc maximum
Bridge resistance	700Ω (2 - 200 tonne), 1400Ω (300 - 1000 tonne)
Insulation resistance	>500MΩ @ 500vdc
Operating temperature range	-20 to +70°C
Compensated temperature range	-10 to +50°C
Zero temperature coefficient	<±0.01% of rated load/°C
Span temperature coefficient	<±0.01% of rated load/°C
Environmental protection level	IP67
Connection type	5 metres 4-core screened PUR cable
Wiring connections	+ve supply: Red -ve supply: Blue +ve signal: Green -ve signal: Yellow

Dimensions



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APPROVED

(unapproved if printed)