

Battery Powered Strain Gauge Load Cell Indicator

Features

- Powered by internal battery.
- Handheld and portable.
- Environmentally sealed to IP65.
- 4½ digit LCD display, with battery low warning indication.
- Flush mounted push buttons
- Microprocessor based, allowing single pass calibration facility.
- Wide range of options available, including; Intelligent Input, Serial Output, Analogue Outputs, Trips and Data Logging

Typical Applications

- Multi-channel load cell systems
- Fleet hire load cells
- Portable force measurement

Description

The TR200 indicator is a completely portable, 4½ digit precision instrument that is ideally suited for use in the harshest of environments or in the laboratory. It is designed to accept the signal from any strain gauge based sensor, with an output sensitivity of up to $\pm 60\text{mV/V}$.

The menu structure facilitates Auto Calibration, Decimal Point Position setting, Fixed Zero (count-by) setting and Digital Filtering rate. Auto-Zero and Peak/Valley Hold functions are available on the front panel, with single key press operation.

The menu options offer the engineer the ability to tailor the instrument to any application. Once set, all the menu keys can be disabled to provide the user with the simplest of indicators ideally matched to their requirements. The TR200 is able to store the parameters for up to 10 sensors, making it ideal for multi-sensor monitoring; allowing switching from one sensor to another, without the need of any calibration adjustment.

System expansions are available to enhance the TR200 capabilities. These include; RS232 output for printing or data log downloading; Intelligent sensor recognition, allowing automatic recall of a sensors parameters when it is plugged in to the TR200, Dual Trip outputs, Voltage and Current outputs and Data Logging.

The TR200 is supplied complete with a universal 110/230vac battery charger and carry case.



Specification

Performance

Input type:	Strain Gauge Full Bridge Sensors
Input range:	$\pm 0.6\text{mV/V}$ to $\pm 7.5\text{mV/V}$ for full scale (± 19999)
Accuracy:	± 2 digits ($\pm 0.01\%$ full scale)
Thermal drift:	< 100 ppm/ $^{\circ}\text{C}$
Excitation Voltage:	5Vdc ($\pm 1\%$), 59mA maximum
Minimum bridge resistance:	85 Ω (4off 350 Ω sensors in parallel)
Internal battery:	6V rechargeable sealed battery
Battery life:	40 hours, with 350 Ω sensor
Update rate:	200mS Peak/Valley Hold capture rate is the same as the display

Indication

Display Type:	4½ digit LCD display, 10mm high digits
Display Resolution :	± 1 digit
Annunciators:	Lo Battery warning within LCD display : annunciation for Peak Hold indication
Identification:	Electronic serial number, stored for customer support purposes

Control variables

Front panel user keys	Flush Mounting Keys for:-
	ON Switches TR200 power on OFF Switches TR200 power off ZERO Zero's display ($\pm 100\%$ range) CALIBRATE Shunts 100k Ω resistor across bridge (for cal check) MENU, SELECT, INCREMENT & ACCEPT keys are used to initially set up the TR200 and can be locked to prevent tampering. Least Significant Digit (count by 1, 5 or 10)
Settable parameters	Digital Filtering (updates 0.2, 0.8, 1.6 & 3.6 sec) Zero Tracking Enable (active, tracks ± 3 LSD) Decimal Point Position Front Panel Key Locking

Mechanical

Electrical connection	5 pin Binder socket (mating plug supplied)
Weight:	600 grams
Legends:	Self adhesive labels for engineering unit identification.

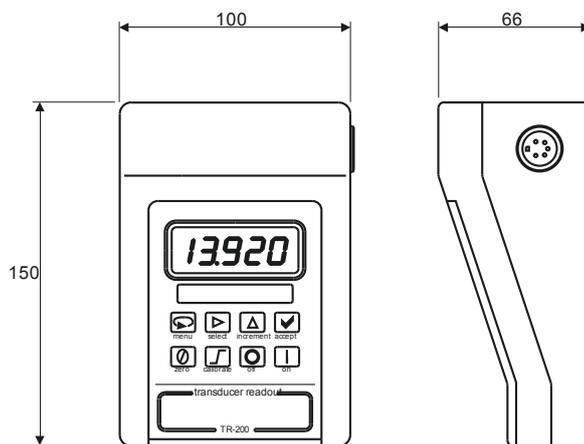
Environmental

Operating Temperature:	-10°C to $+50^{\circ}\text{C}$
Environmental Rating:	IP65 (when mating half connected)
Enclosure Type:	ABS, robust yellow case, supplied in separate transit carry case

Options Description

The TR200 portable battery powered indicator is a versatile product, which can be expanded to include a number of standard options. This datasheet describes in further detail, some of the options which are available.

LCM Systems have also produced a number of special design configurations for applications which cannot be satisfied by the standard product and options. We are pleased to discuss any special requirements that you may have. Please contact our technical department to discuss your requirements further.



Mechanical Dimensions

All dimensions in millimeters

Options

The options detailed below are standard options, which are readily available. They are internally fitted to the TR200. The options can either be fitted singularly or combined to expand the TR200 further. LCM Systems have produced a large number of variants of the TR200 and welcome enquiries for the more unusual or specialist applications.

Logic Input – Order code L

This option is a logic input, which allows intelligent recognition of a sensor. The option introduces an extra 12-pin Binder style connector. By linking 5 pins in the correct sequence (details are provided in the manual) on each sensor connected, the TR200 will automatically recognise which sensor is connected. The TR200 has the capability of storing the calibration data for up to 10 sensors. When connected, the TR200 will automatically recall all the parameters set for that sensor, including; span and zero settings (the display scaling information), filter settings, decimal point position and if any output options are included, it will recall their parameters. This option can be further enhanced with an external switching box. This also allows you to connect all the sensors into the switching box, and simply select the sensor that you want to monitor. The setting of these parameters can be locked out after setting up, to prevent tampering.

Serial input – Order code R

This option provides an RS232 output. By default the output continuously flows when the TR200 is powered on. There is also an option, which needs to be specified at the time of ordering, which enables the data output to be stopped and started manually through the front panel controls. The data stream is 2400 baud, 8 data bits, no parity, 1 stop bit. The data output is the display value, with decimal point positioning. The string terminator is CHR\$(13). A simple software program is available, for customer support purposes and is available on request. The output is provided via a 12-pin Binder style connector.

Voltage output – Order code V

The voltage output option gives an analogue output range of ± 5 volts for display readings of ± 5000 , ± 10000 , ± 15000 or ± 20000 . These ranges are easily scaled using the front panel keys, via the simple menu structure. The setting of these parameters can be locked out after setting up, to prevent tampering. The integrity of the output is protected by the TR200 battery management system, which ensures that the battery supply voltage does not drop to a level that affects the voltage output. The output is provided via an 8-pin Binder style connector.

Current output – Order code I

The current output option gives an analogue output range of 4-20mA (driving into a maximum of 250 Ω) for display readings of ± 10000 , ± 20000 , 0-10000 or 0-20000. These ranges are easily scaled using the front panel keys, via the simple menu structure. The setting of these parameters can be locked out after setting up, to prevent tampering. The integrity of the output is protected by the TR200 battery management system, which ensures that the battery supply voltage does not drop to a level that affects the current output. The output is provided via an 8-pin Binder style connector.

Dual trip output – Order code T

This option allows the setting of two independent trip levels. The trip values are entered using the front panel keys of the TR200, using the display to enter the trip value in real display units. The trip energises when the displayed value exceeds the set trip level value. The two relay outputs supply SPCO contacts rated at 1amp at 240vac. The output is provided via a 8-pin Binder style connector.

Data logging – Order code DL

The data logging option allows for up to 4063 single samples to be stored or, depending on the sample interval selected (which can be between 0.2 seconds and 52 seconds, 0.2 second steps), over 115 hours of data can be collected and stored. The instrument can be configured to continually log data according to the interval selected, or log upon demand (using front panel key press). Each sample stores a user definable test number, the interval between samples, the selected channel number and the displayed reading. All this data can be downloaded via an RS232 serial port, which is supplied with this option.

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