



Technical Manual  
**APPLICATION DETAILS FOR THE RL  
RANGE OF LOAD CELLS**

**Doc. Ref CD1060C**



BS EN ISO 9001  
Certificate No. FM13141

**USA & Canada  
RDP Electrosense Inc.**

2216 Pottstown Pike  
Pottstown, PA 19465  
U.S.A.

Tel (610) 469-0850  
Fax (610) 469-0852  
E-mail [info@rdpe.com](mailto:info@rdpe.com)  
[www.rdpe.com](http://www.rdpe.com)

**All other countries  
RDP Electronics Ltd**

Grove Street, Heath Town,  
Wolverhampton, WV10 0PY  
United Kingdom

Tel: +44 (0) 1902 457512  
Fax: +44 (0) 1902 452000  
E-mail: [sales@rdpe.com](mailto:sales@rdpe.com)  
[www.rdpe.com](http://www.rdpe.com)

## APPLICATION DETAILS FOR THE RL RANGE OF LOAD CELLS

For general handling and installation application notes refer to customer document CD1039.

The RL range comprises flat ‘pancake’ (compression and universal) load cells, and beam load cells for weighing and force measurement applications.

### 1. Summary of models in the RL range

| Model | Type                  | Ranges (kg)   | Material        | Sealing | Nominal Bridge Resistance (ohms) |
|-------|-----------------------|---------------|-----------------|---------|----------------------------------|
| RLC   | Compression           | 100 to 50,000 | Tool steel      | IP65    | 350/700                          |
| RLT   | Tension               | 5 to 2,500    | Tool steel      | IP65    | 350                              |
| RLW   | Weighing              | 10 to 1,500   | Tool steel      | IP67    | 350                              |
| RLS   | Single point weighing | 10 to 100     | Aluminium Alloy | IP65    | 350                              |
| RLU   | Tension/compression   | 100 to 10,000 | Tool steel      | IP65    | 350/700                          |

- The materials used in the construction of the load cells are shown in the table above. As an option it is possible to replace the tool steel with stainless steel.
- The nominal bridge resistances given (see table above) are for the output (green-white cable cores). The tolerance is less than  $\pm 10$  ohm. The input resistance is slightly higher – typically  $385 \pm 30$  ohms for nominal 350 ohm bridges and  $750 \pm 30$  ohms for nominal 700 ohm bridge.
- The sensitivity (all models) is 2 mV/V FS  $\pm 10\%$  eg at 10 volts excitation the full load output will be 20 mV  $\pm 10\%$ .
- The safe overload capacity is 150% FS (all models) and the ultimate overload capacity is 200% FS.
- Insulation resistance:  $\geq 1000\text{M}\Omega$  at 50VDC (all models).
- Performance:

| Parameter               | Percentage of full range |              |
|-------------------------|--------------------------|--------------|
|                         | Models U, C, T, W        | Model S      |
| Non-linearity (max)     | $\pm 0.03\%$             | $\pm 0.02\%$ |
| Hysteresis (max)        | $\pm 0.03\%$             | $\pm 0.02\%$ |
| Non-repeatability (max) | $\pm 0.03\%$             | $\pm 0.02\%$ |

8. Environmental (all models):

Operating temperature range: -20 to +60°C  
 Compensated temperature range: -10 to +40°C

| Temperature Coefficients | Models      |             |             |
|--------------------------|-------------|-------------|-------------|
|                          | U,C         | S           | T, W        |
|                          | % FS per °C | % FS per °C | % FS per °C |
| Zero (max)               | ±0.002      | ±0.0025     | ±0.003      |
| Span (max)               | ±0.002      | ±0.0025     | ±0.003      |

9. Electrical connection:

Each load cell is fitted with an integral 3 metre long four core screened cable. The screen is not connected to the load cell body. The load cell body will normally be grounded via the mounting metalwork. The cable screen should be connected to the instrument.

The cable cores are:

Core Colour

Red                      excitation positive  
 Black                    excitation negative  
 Green                    output positive  
 White                    output negative

Connection diagrams showing RL connections to various RDP instruments are:

| <u>Diagram</u> | <u>Instrument</u> | <u>Diagram</u> | <u>Instrument</u> |
|----------------|-------------------|----------------|-------------------|
| D17031         | E308              | D17036         | TR150             |
| D17033         | S7DC              | D17035         | 611               |
| D17034         | S7MZ              | D17037         | E725-DC1          |
| D17889         | DR7DC             |                |                   |

10. Outline Drawings:

| <u>Drawing</u> | <u>Load cell model</u> |
|----------------|------------------------|
| D16999         | RLC                    |
| D17000         | RLT                    |
| D17002         | RLW                    |
| D17003         | RLS                    |
| D16846         | RLU                    |

11. Calibration

Each load cell is individually calibrated with equipment traceable to national standards, and an individual sensitivity figure is given.

RDP offers a calibration service when a load cell and instrument are purchased together. The instrument set-up to read the load/force in units specified by the customer.

## **WARRANTY AND SERVICE**

### WARRANTY.

R.D.P. Electronics products are warranted against defects in materials or workmanship. This warranty applies for one year from the date of delivery. We will repair or replace products that prove to be defective during the warranty period provided they are returned to R.D.P. Electronics.

This warranty is in lieu of all other warranties, expressed or implied, including the implied warranty of fitness for a particular purpose to the original purchaser or to any other person. R.D.P. Electronics shall not be liable for consequential damages of any kind.

If the instrument is to be returned to R.D.P. Electronics for repair under warranty, it is essential that the type and serial number be quoted, together with full details of any fault.

### SERVICE.

We maintain comprehensive after-sales facilities and the instrument can, if necessary be returned to our factory for servicing.

Equipment returned to us for servicing, other than under warranty, must be accompanied by an official order as all repairs and investigations are subject to at least the minimum charge prevailing at the date of return.

The type and serial number of the instrument should always be quoted, together with full details of any fault and services required.

### IMPORTANT NOTES.

1. No service work should be undertaken by the customer while the unit is under warranty except with the authorisation of RDP Electronics.
2. If the instrument is to be returned to R.D.P. Electronics for repair, (including repair under warranty) it is essential that it is suitably packed and that carriage is insured and prepaid. R.D.P. Electronics can accept no liability whatsoever for damage sustained during transit.
3. It is regretted that the above warranty only covers repairs carried out at our factory. Should the instrument have been incorporated into other equipment that requires our engineers to perform the repair on site, a charge will be made for the engineer's time to and from the site, plus any expenses incurred.

The aforementioned provisions do not extend the original warranty period of any product that has been either repaired or replaced by R.D.P. Electronics.

**THIS WARRANTY MAY BE NULL AND VOID SHOULD  
THE CUSTOMER FAIL TO MEET OUR TERMS OF PAYMENT.**