



# TECHNICAL MANUAL PRESSURE TRANSDUCER TYPE MLP

**Doc. Ref CD1001Q**



BS EN ISO 9001  
Certificate No. FM13141



Affirmed by Declaration  
of Conformity

## **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)

## Index

1	INTRODUCTION .....	2
1.1	Important Note .....	2
2	ELECTRICAL & CONNECTION INFORMATION .....	3
2.1	Electrical Connections.....	3
2.2	Signal Polarity .....	3
2.3	Electrical Loading of Output .....	3
2.4	Electrical Output Noise.....	3
2.5	External components required to convert to 0 to 10V output (If required).....	3
3.	DYNAMIC RESPONSE .....	5
4.	INSTRUMENTATION .....	5
5.	TECHNICAL SPECIFICATION .....	6
6	WARRANTY & SERVICE .....	8

### Table of Figures

Fig. 1a	Current design of MLP .....	4
Fig. 1b.	Old design of MLP, Contact RDP for electrical connection details.....	4

## 1 INTRODUCTION

See important note below.

The miniature differential low-pressure transducer range has six models for pressure ranges of 5 mbar to 250 mbar.

This differential pressure transducer is a WET-DRY type. Ensure the DRY port only has dry air/gas connected to it.

The MLP requires a 15v supply. The output signal is referred to an internal supply centre-tap at approximately 7.5v and appears at Pin 3 - "O/P ref".

The output signal at Pin 1 - "O/P", at zero pressure (i.e. WET = DRY) is nominally 2.5v above the ref. value (i.e. 10v with respect to supply 0v). The full-scale signal varies by  $\pm 1.5v$  around this 10v level, i.e. with respect to 0v, the -F.S. to +F.S. voltage will change from 8.5 to 11.5v.

Note that the transducer body is electrically connected to Pin 2 (0v) and this can be grounded or floating.

### 1.1 Important Note

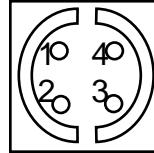
A previous design of MLP had a different mechanical configuration and may have had different electrical connections. Please refer to Fig 1a and 1b to establish the vintage of your MLP sensor and if you find it to be the old design, do not use the electrical connection information in this manual, instead contact RDP for connection information.

## 2 ELECTRICAL & CONNECTION INFORMATION

### 2.1 Electrical Connections

See 1.1 'Important Note'

The transducer is fitted with a 4-pin connector.



Pin	Connect to:
4	Positive Supply (+15V)
2	Negative Supply (0V)
3	Output Reference
1	Output

**WARNING:** Do not ground Output Reference if 0 volts is grounded.

The miniature connector is a BINDER 719 type. The maximum cable diameter is 3.6mm. The plug has an alignment tab that locates in the wider slot. Ensure correct positioning of the tab for the plug to lock into position.

### 2.2 Signal Polarity

The output voltage is positive when pressure on the dry port is greater than the pressure on the wet port.

### 2.3 Electrical Loading of Output

The output voltage (terminals 2 to 1) should be measured with a high impedance load. A load of up to 10K ohms connected between output (terminal 1) and 0 volts (terminal 2) can be driven.

### 2.4 Electrical Output Noise

A triangular waveform appears at the output and ref. pins with respect to 0v. The amplitude and frequency may vary according to applied pressure between 100 and 250mV and 15 to 40kHz.

If a differential input monitor is used then this noise will be cancelled. Alternatively the noise may be reduced by connecting a capacitor (e.g. 4.7 $\mu$ F/16v) between output and ref. (terminals 1 and 3).

### 2.5 External components required to convert to 0 to 10V output (If required)

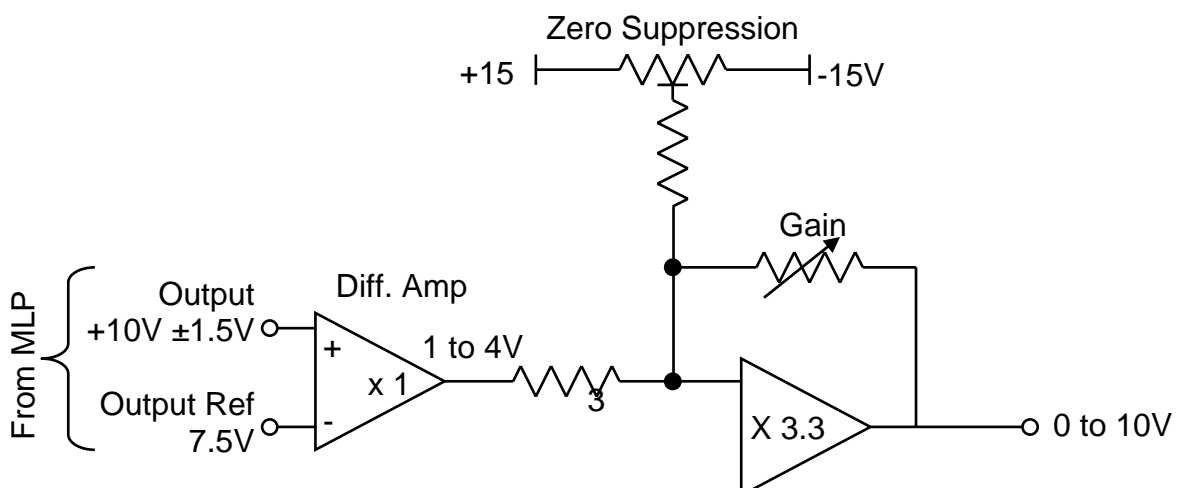


Fig. 1a Current design of MLP

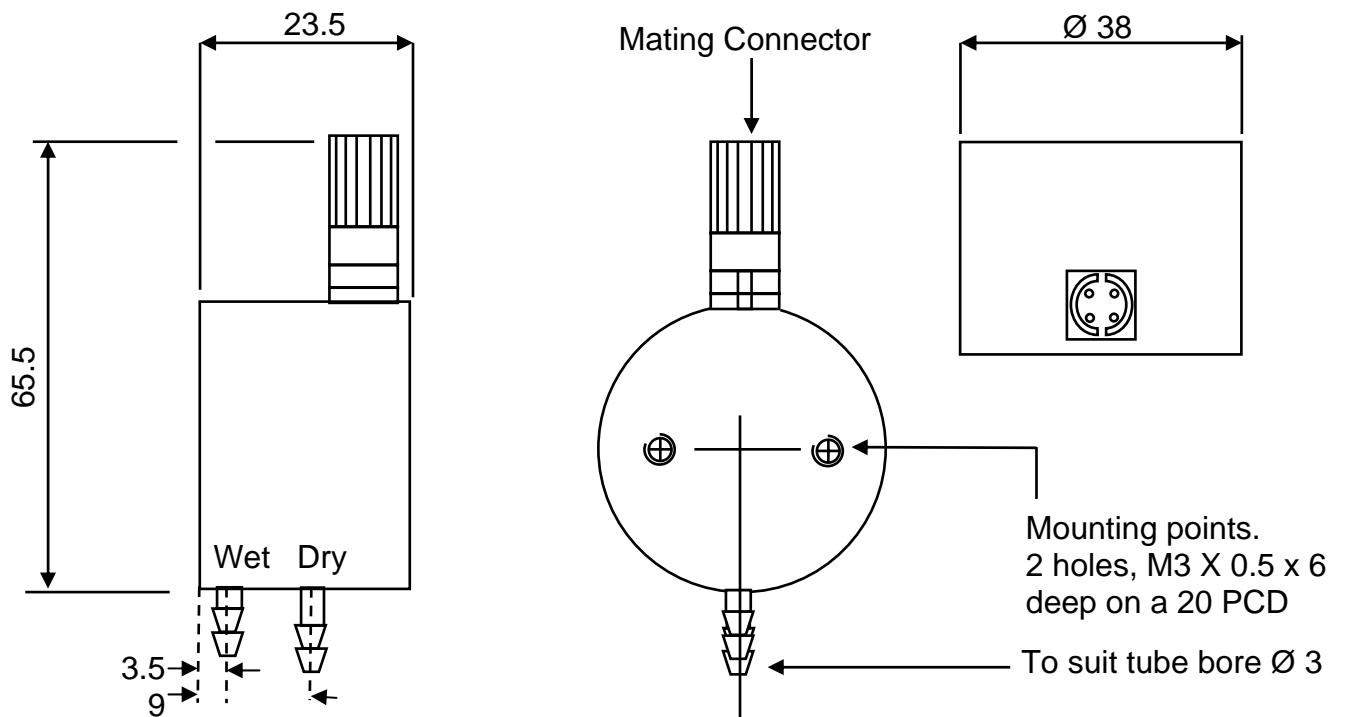
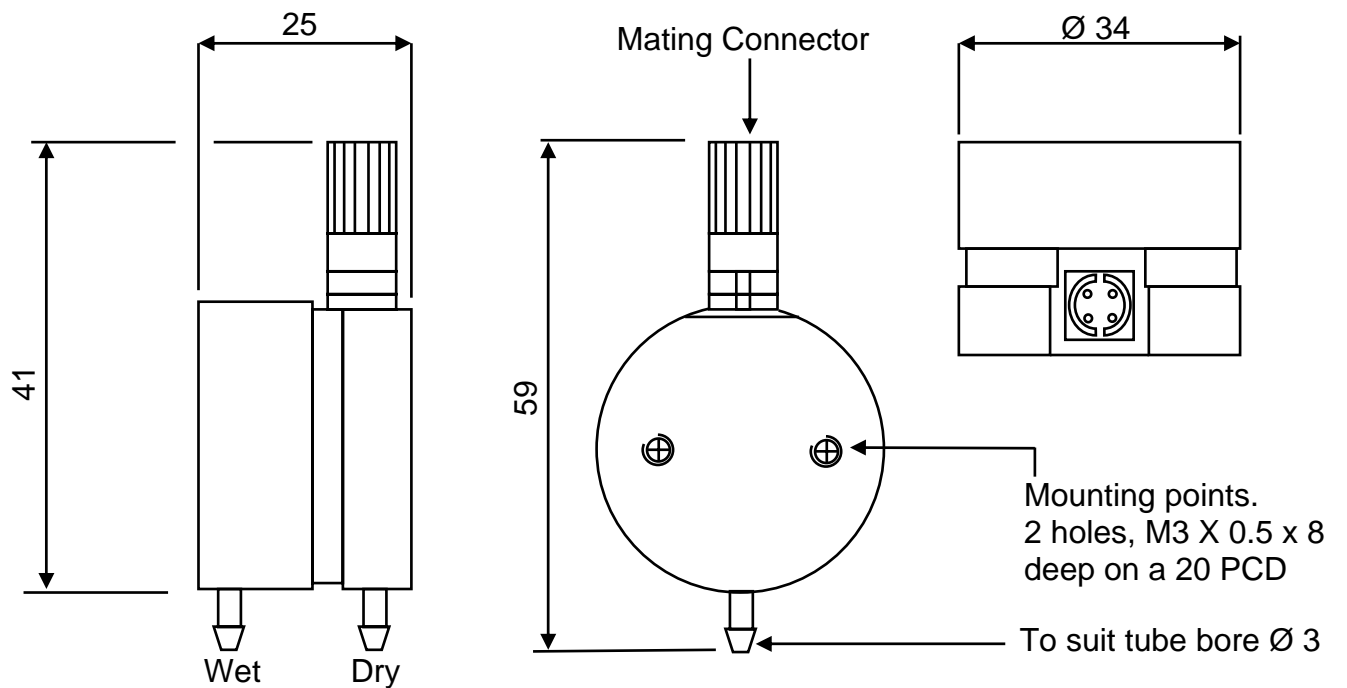


Fig. 1b. Old design of MLP, Contact RDP for electrical connection details.



### 3. DYNAMIC RESPONSE

The maximum response possible varies with the amplitude of the pressure change. This is listed in the table below expressed as a percentage of the range of the particular model, e.g.

60% on an MLP/150 is a pressure variation of 90 mBar peak to peak.

Percentage of Range	Bandwidth (Hz)	Phase lag (degrees)
100	80	6
80	100	15
60	250	20
40	300	24
20	500	45
10	1000	90

Note that the response bandwidths quoted are for the transducer only and for fast dynamic work account must be taken of the interconnection pipe work. Bore and length are important factors which will affect the overall response.

### 4. INSTRUMENTATION

To connect the MLP to an electronic system, the following points may need addressing:

- (a) Supply voltage, 0 to 15v or  $\pm 7.5v$  dc 6mA.
- (b) Removal of 10 volt offset
- (c) Gain adjustment
- (d) Zero adjustment

We recommend using a differential input amplifier to measure the output. Typical examples of amplifier connection are shown in Section 2.5.

The following R.D.P. instruments are suitable for use with the MLP transducer:

- (a) S7CT, 611 and E725 DC1
- (b) E525 Cypher Transducer Monitor. The DCT input board is required with modification S.O.12.
- (c) E308 Transducer Indicator, PD1262.

## 5. TECHNICAL SPECIFICATION

Ranges	5, 10, 25, 50, 250 mBar, (Overrange 6 x F.S.)
Common Mode Pressure	6 bar (max.)
Accuracy	±0.5% (linearity, hysteresis & repeatability)
Relative Humidity	0 – 85% non-condensing (dry part only)
Zero Temp. Coefficient	±0.02%/deg.C
Gain Temp. Coefficient	±0.02%/deg.C
Supply Voltage	15V dc ±10% 6mA
Temperature Range	0 – 85 deg.C
Output	±1.5 volts (nom) F.S. (±1.0 volts on 5, 10 and 25 mBar models)
Frequency Response	Up to 1000Hz (see Section 3)
Wetted Parts	300 grade stainless steel
Weight	130 grams
Shock Tolerance	100g any direction
Chamber Volume	Wetted 0.1cc. Dry 0.1cc. Deflection 0.05cc
Orientation	No effect

## Notes

## 6 WARRANTY & 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.**