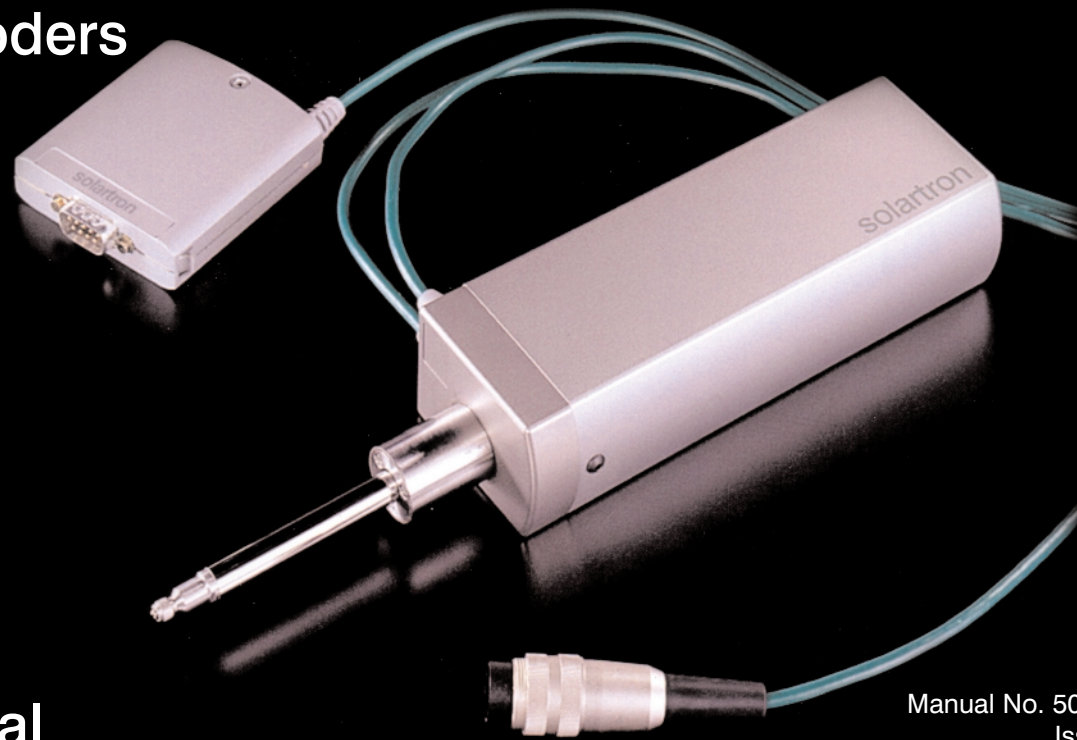


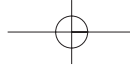
solartron

linear encoders
(motorised)



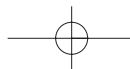
CE
user manual

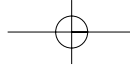
Manual No. 502416
Issue 3



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1.0: Introduction

1.1 Introduction

The LE/50 and LE/100 Linear Encoder motorised versions have an internal motor, which controls the movement of the probe tip.

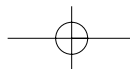
Model no. LE/50/M
LE/100/M

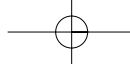
Controlled from the DR600 unit, the operator can adjust the unit tip force and retraction speed via the menu options on the unit.

1.2 This Manual

Describes the Linear Encoder types LE/50 and LE/100 motor versions with digital Orbit output.

This manual details the handling, installation and operation of the encoder and describes the electrical interfaces.





2.0: Safety Summary

2.1 Terms in this Manual

WARNING statements identify conditions or practices that could result in personal injury or loss of life.

CAUTION statements identify conditions or practices that could result in damage to the equipment or other property.

2.2 Symbols in this manual



This symbol indicates where applicable cautionary or other information is to be found.

WARNINGS:

Do not operate in an explosive atmosphere

This equipment is not approved for use in an explosive atmosphere.

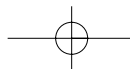
NOTES:

This equipment contains no user serviceable parts

This equipment must be returned to Solartron for all servicing and repair (see section 10.0).

Low Voltage

This equipment operates at below the SELV and is therefore outside the scope of the Low Voltage Directive.



3.0: Designation of Parts

3.1 Items Supplied

Linear Encoder Probe in packaging case.

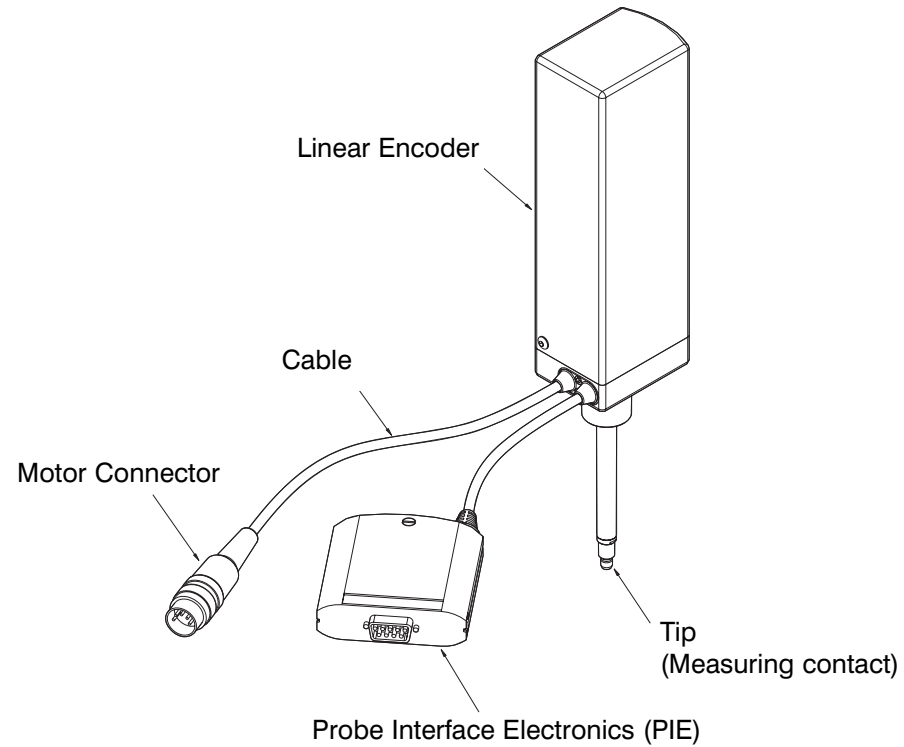
Standard tip (measuring contact) fitted.

Locking tool.

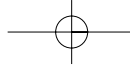
User Manual.

Calibration chart.

Plus other accessories as ordered.



3.0: Designation of Parts



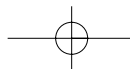
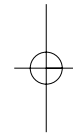
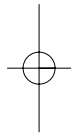
4.0: Handling & Maintenance

4.1 General Handling

The Solartron range of Motorised Linear Encoders are precision instruments and should be handled with care. Where possible the Motorised Linear Encoder should be stored in its protective box when not being used.

4.2 Maintenance

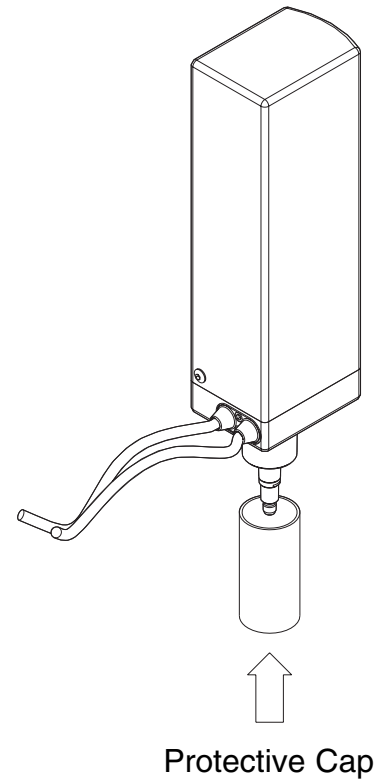
Motorised Linear Encoders are designed to be maintenance free. No oiling of the shaft is necessary. Contacts with solvents should be avoided. Any attempt to dismantle the Motorised Linear Encoder will invalidate the warranty.



4.0: Handling & Maintenance (continued)

4.3 Care during transportation

To prevent damage caused by extension or retraction of the shaft, it is recommended that the protective flexible cap is fitted over the ball tip and mounting spigot prior to transporting the encoder.



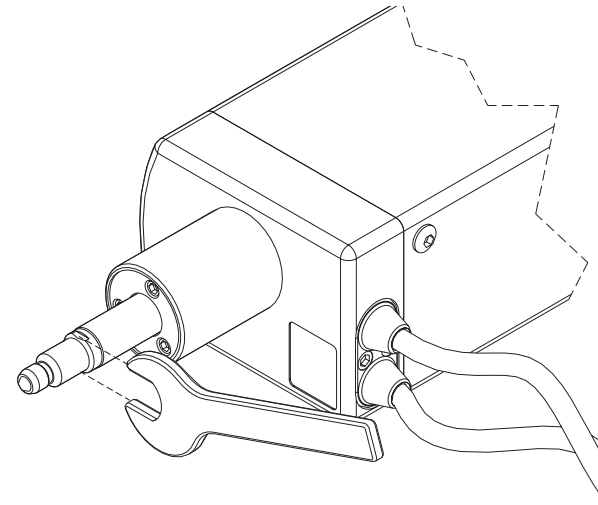
4.0: Handling & Maintenance (continued)

4.4 Replacing the probe tip

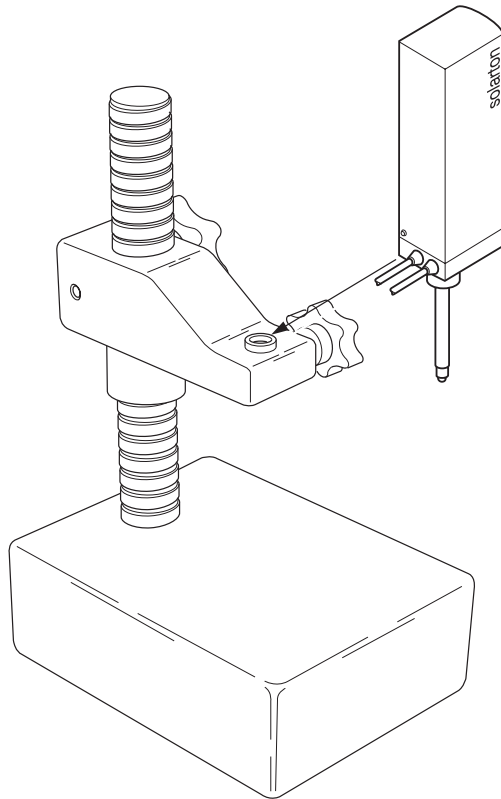
N.B. The function of the spanner is to stop the shaft from rotating while removing the tip. Failure to follow the following procedure is likely to result in damage to the encoder.

1. Place the linear encoder on a flat surface, with the Solartron logo facing down.
2. Move the probe tip fully in. It is permissible to manually move the tip with gentle force. (Unplug the motor connector)
3. Place the spanner across the "tip changing flats". Refer to the diagram.
4. Use a pair of soft jaw (for example Needle/Snipe Nose) pliers, to grip the knurled area of the linear encoder tip.
5. While holding the spanner, rotate the tip anti-clockwise. (The spanner provides a counteracting force from the turning force of the pliers).

6. While holding the spanner across the "tip changing flats", attach the New tip by screwing, clockwise, into the Linear Encoder. To secure the tip, apply a torque of 18 to 22cNm.



5.0: Mechanical Installation



CAUTIONS:

Ensure the probe is not subjected to side loading at the tip, or hard driving against the end stops.

Notes:

Ensure the probe is perpendicular to measuring table to avoid introducing measurement (cosine) errors.

Avoid using excessive torque when tightening gauge stand knobs. (Refer to 5.1.)

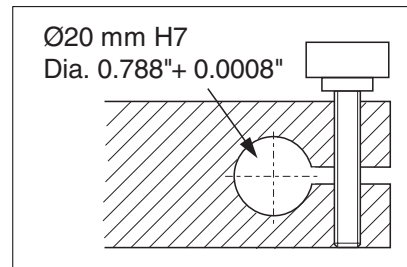
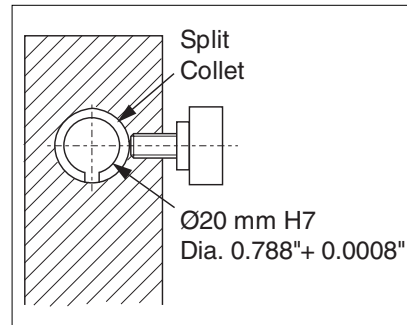
Keep cables away from moving parts.

Protect against shock loading or impact.

5.0: Mechanical Installation (continued)

5.1 Clamping Configurations

When mounting Linear Encoder do not over tighten clamp screws.



Recommended maximum tightening torque:-

Bolt (ISO)	Torque (cNm)
M4 x 0.70	75
M5 x 0.08	90
M6 x 1.00	110
M8 x 1.25	145

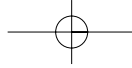
Mounting collet available as an accessory:

Part No. 207251

or

Mounting bracket kit available as an accessory:

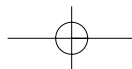
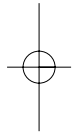
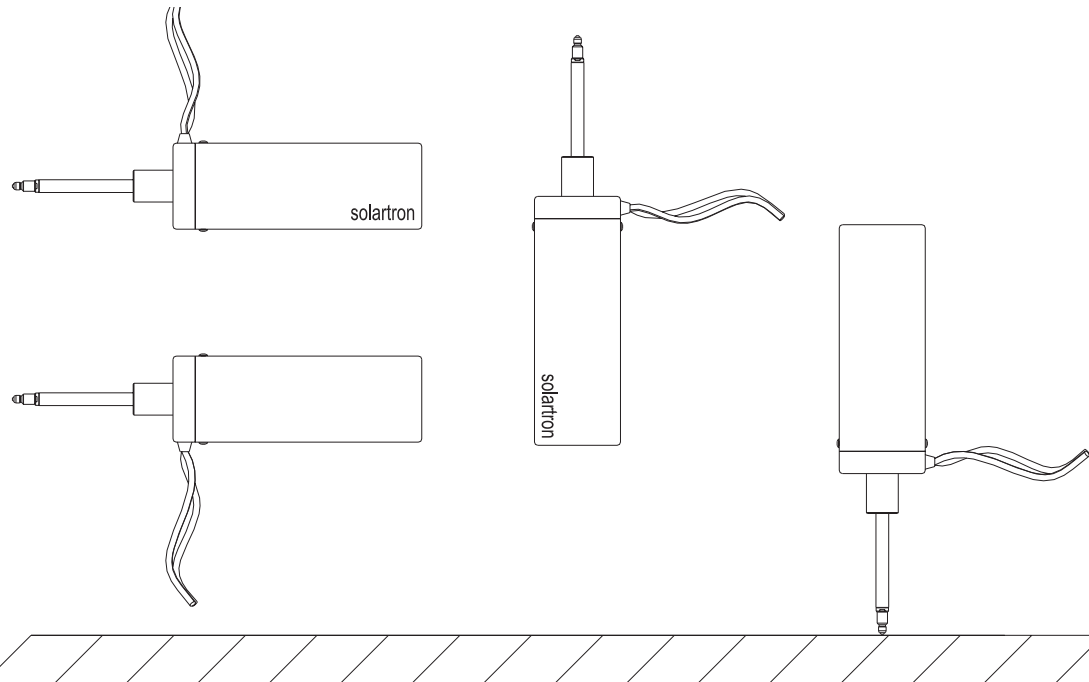
Part No. 960030

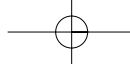


5.0: Mechanical Installation (continued)

5.2 Probe Orientation

Recommended orientations for mounting linear encoder.





6.0: Operation

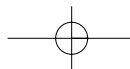
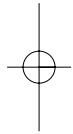
6.1 Motorised Operation

It is intended that the probe is connected to a DR600/M for remote motorised operation.

Once connected the DRO will allow a selection of three tip forces, in each orientation. (Tip Up, Horizontal and Down)

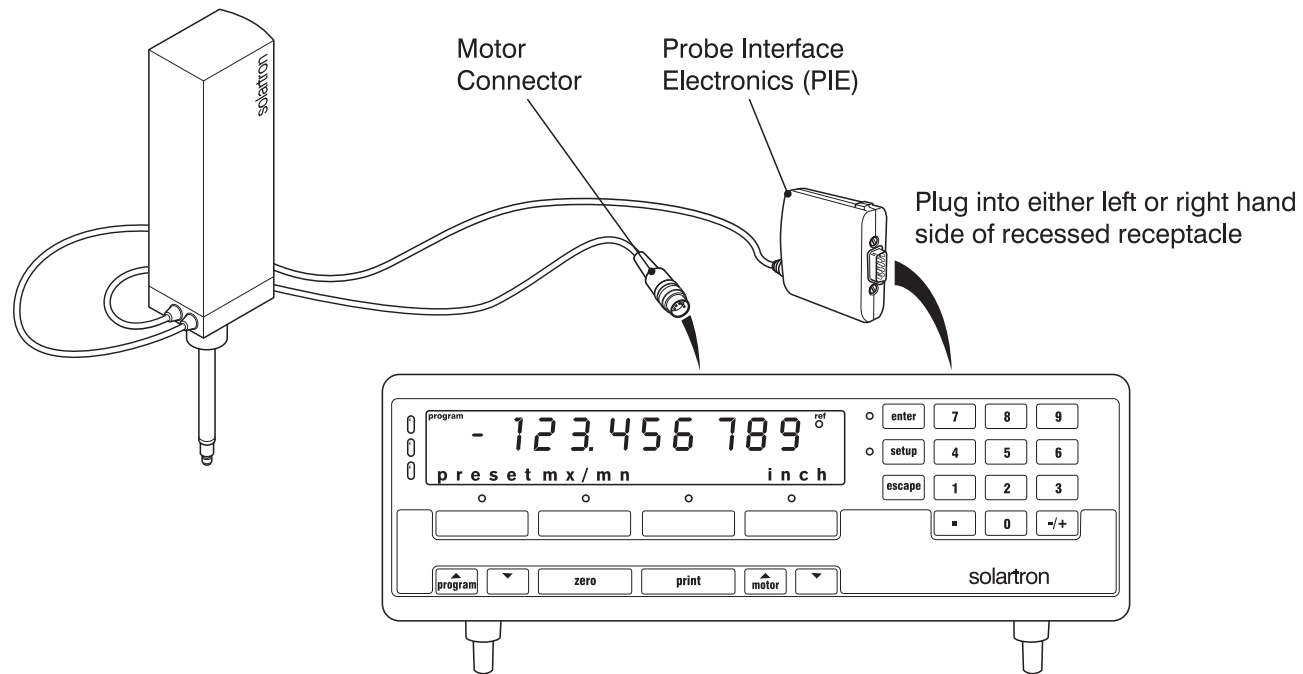
Note:

It is permissible to gently move the tip by hand. This must be with the motor connector unplugged and no greater than operational speed.



7.0: Linear Encoder Interface

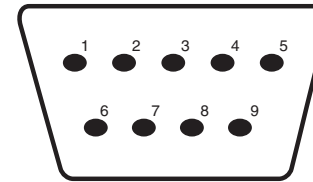
7.1: Connection to Digital Readout



7.0: Linear Encoder Interface (continued)

7.2 Probe Interface Electronics (PIE) Pin assignment

Pin	Function
1	(none)
2	RS485(A)
3	RS485(B)
4	0V
5	0V
6	+5V
7	+5V
8	+5V
9	0V



View from Pin Side

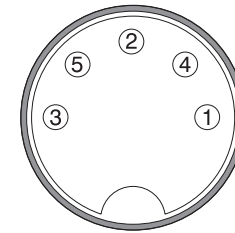
PIE can be fitted directly into the back of the Digital Readout or linked into the 'Orbit' Network using the stackable T-CON connectors.

7.0: Linear Encoder Interface (continued)

7.3 Motor Connector Pin assignment

Pin	Function
1	Motor +
2	Motor -
3	NC
4	NC
5	NC
Shell	Cable Screen

NC - Not connected



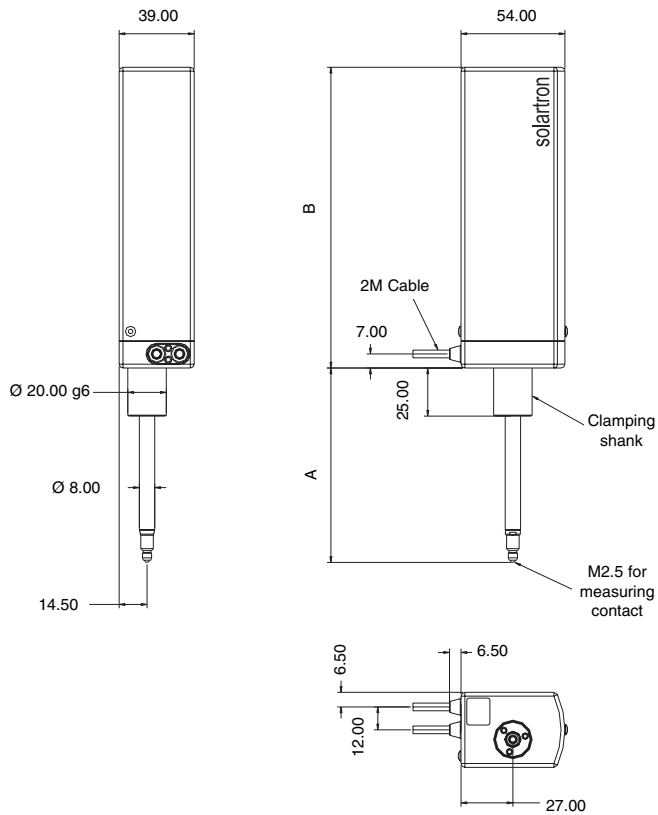
View from Pin Side

8.0: Specification

Model	LE50	LE100
Stroke (min.)	50.8mm (2.0")	101.6mm(4.0")
Resolution	0.05µm (2 millionths inch)	
Accuracy	± 1µm (40 millionths inch)	
Reference temp.	20°C (68°F)	
Slew rate	0.5 m/sec (1.5 ft/sec)	
Operating attitude	Vertically down Vertically up Horizontal	
Nominal weight (Excluding PIE)	0.8Kg	0.9Kg
Gauging forces: (typical at mid stroke)		
Downwards	0.5 N	to 0.9 N
Upwards	0.5 N	to 0.9 N
Horizontal	0.5 N	to 0.9 N
Max side load	100g (3.5oz)	
Cable lengths	2m	

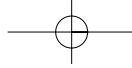
Temp range		
- Operating		0° to 50°C (32° to 122°F)
- Storage		-20° to +70°C (-4° to 158°F)
IP Rating	Probe	IP40
	Interface	
	Electronics	IP53
Mounting		20mm g6/H7
Tip thread size		M2.5x6 deep
Supply Voltage		5V ± 0.25VDC
Supply Current (max)		60mA
Serial Communications Baud Rate		9600 Baud or 187.5K Baud
Serial Communications Protocol		Orbit Network Protocol
Maximum Reading Rate		1000 readings/sec
EMC		EN50081-1 & EN50082-1

9.0: Outline Drawings



		LE/50/M (IP40)	LE/100/M (IP40)
A	Fully Out	104.5	151.0
	Fully In	52.5	48.0
B		156.5	207.5

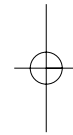
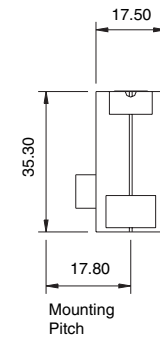
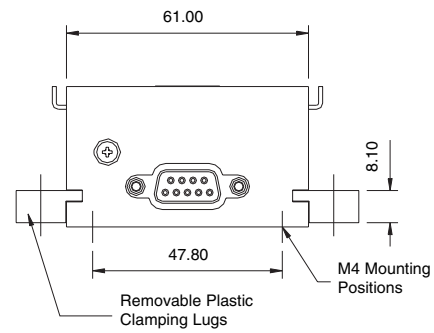
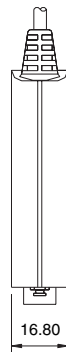
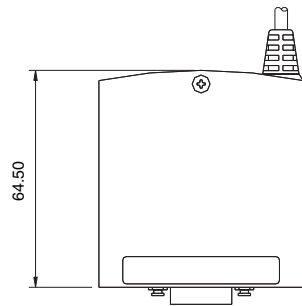
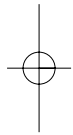
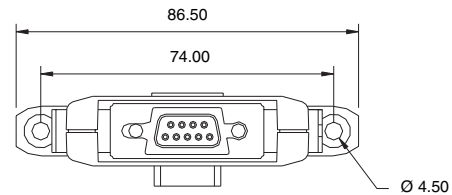
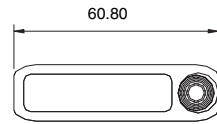
Note:
 All dimensions in mm
 All dimensions stated are nominal



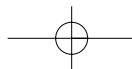
9.0: Outline Drawings (continued)

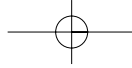
Interface
Electronics

'T-CON'
Connector



Note:
All dimensions in mm
All dimensions stated are nominal



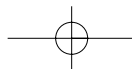


9.0: Outline Drawings (continued)

Motor
Connector



Note:
All dimensions in mm
All dimensions stated are nominal



10.0: Return of Goods

Devices returned for service/repair/calibration should be shipped prepaid to your distributor or, if purchased directly from Solartron Metrology, to the relevant Sales Office (see below).

The shipping container should be marked: "**For the Attention of the Returns Department**"

The following information should accompany the device(s):

1. Contact details of company/person returning device, including return shipping instructions.
2. A statement of service required and purchase order.
3. Description of the device fault and the circumstances of the failure, including application environment and length of time in service.
4. Original purchase order number and date of purchase, if known.

Please note: A standard assessment charge is applicable on all non-warranty devices returned for

repair. Customer damage and any device found, upon inspection, to have no fault will be considered non-warranty.

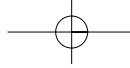
Please contact the Sales Office or Distributor for warranty terms, service options and standard charges.

Adherence to these procedures will expedite handling of the returned device and will prevent unnecessary additional charges for inspection and testing to determine the condition.

Solartron Metrology reserves the right to repair or replace goods returned under warranty.

All repairs are guaranteed for 3 months (unless otherwise stated).

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