

# PROVING UNITS

## Instruction Manual

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### PD440SX PD690SX



**MARTINDALE**  
● ● ● ELECTRIC

# ALWAYS READ THESE INSTRUCTIONS BEFORE PROCEEDING

Thank you for buying one of our products. For safety and full understanding of its benefits please read this manual before use. Technical support is available from 01923 441717 and support@martindale-electric.co.uk.

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## 1 SAFETY INFORMATION



### **REMEMBER: SAFETY IS NO ACCIDENT**

These instructions contain both information and warnings that are necessary for the safe operation and maintenance of this product. It is recommended that you read the instructions carefully and ensure that the contents are fully understood. Failure to understand and to comply with the warnings and instructions can result in serious injury, damage or even death.

Particular attention should be paid to the Warnings, Precautions and Technical Specifications.

Please keep these instructions for future reference.

Updated instructions and product information are available at:  
[www.martindale-electric.co.uk](http://www.martindale-electric.co.uk)

### 1.1 Meaning of Symbols and Markings



**Caution - risk of danger & refer to instructions**



**Caution - risk of electric shock**



**Equipment protected by double or reinforced insulation (Class II)**



**Equipment complies with relevant EU Directives**



**End of life disposal of this equipment should be in accordance with relevant EU Directives**

## 1.2 Precautions

This product has been designed with your safety in mind, but please pay attention to the following warnings and cautions before use.

### Warnings

In order to avoid the danger of electrical shock, it is important that proper safety measures are taken when working with voltages exceeding 30V AC rms, 42V AC peak or 60V DC.

Before use check the unit for cracks or any other damage. Make sure the unit is free from dust, grease and moisture. Also check any associated accessories for damage. **Do not use** if damaged.

**Do not use** if the battery cover is not fitted.

### Cautions

Avoid severe mechanical shock or vibration and extreme temperature.

To avoid corrosion from leaking batteries, remove the batteries when the unit is not in use for an extended period.

Do not short the output terminals.

## 2. INTRODUCTION

### 2.1 Inspection

Examine the shipping carton for any sign of damage. Inspect the unit and any accessories for damage. If there is any damage then consult your distributor immediately.

### 2.2 Description

#### PD440SX

The PD440SX is a portable battery powered proving unit for the testing of contact type voltage detectors up to 440V.

#### PD690SX

The PD690SX is a portable battery powered proving unit for the testing of contact type voltage detectors up to 690V.

Both the PD440SX and the PD690SX ramp output voltage down in a sequence lasting for a duration of 10s, before reducing output voltage to zero.

Model	Voltage	Output Frequency	High Voltage LEDs	Low Battery LED
PD440SX	440V ramping to 50V	50Hz	✓	✓
PD690SX	690V ramping to 50V	50Hz	✓	✓

### 2.3 Accessories

All units come with the following accessories:

- ◆ 6 x 1.5V AA alkaline batteries
- ◆ Instructions
- ◆ MG3 magnetic hanger \*

\* excluding kits where a PD carry case is included

### 2.4 Battery Installation

Refer to Section 4.1 (Battery Replacement) for the battery installation instructions for all units.

### 3. OPERATION

#### **Caution**

Always make sure the precautions and limitations of the unit being tested are observed. If necessary refer to the specification of the unit being tested.

Also refer to the graph of typical output voltage under various load conditions at the rear of these instructions.

#### 3.1 Proving Unit LED indications

LED	Proving unit model No.	LED illumination indicates
High Voltage	All models	High voltage output at proving unit terminals
Low Battery	All models	Proving unit batteries are low Replace batteries

#### 3.2 Proving a Test Lamp, Voltage Tester/Indicator, DMM etc.

Place one probe of the unit under test into the left hand socket of the proving unit until it makes contact with the terminal. Place the other probe into the right hand terminal of the proving unit and gently press down.

Observe that the required indicators on the unit under test illuminate, then withdraw the probe from the right hand terminal first, and then the left.

The voltage LEDs will illuminate according to the output voltage. This will start at the maximum voltage for about 4s and then ramp down to 50V over about 4s. The voltage will be held at 50V for about 2s after which the output voltage will fall to zero and a low resistance will appear across the terminals verifying the continuity function on two pole testers.

During the sequence, the LEDs will indicate the actual output voltage level as affected by load, not the no load output. Refer to the graph of typical output voltage under various load conditions at the rear of these instructions.

If none of the proving unit LED's illuminate when performing the above tests check the condition of the proving unit batteries and replace them if required (see section 4.1).

### **3.3 Test Lamp, Voltage Tester/Indicator Cables**

During the above tests, emphasis should also be placed upon the flexing of the UUT cable along its length, and particularly at the entry points to the hand held elements, to confirm that the cable has not fractured.

It may be necessary to perform this test a number of times as the proving unit times cut out after 10s.

### **3.4 CALCHECK**

The CALCHECK feature may be used to check that a multifunction tester, insulation tester or continuity tester is maintaining ongoing accuracy between calibrations. There are two insulation test resistance values,  $0.5M\Omega$  and  $1M\Omega$ . There are also two continuity test resistance values,  $0.5\Omega$  and  $1\Omega$ .

One probe of the tester being checked should be placed on the desired resistance value and the other probe should be placed on the COM terminal, following the instruction manual for the tester being used.

The CALCHECK feature is not designed to be used to check loop testers, where the high test current will damage the proving device.

The CALCHECK feature can be used as a regular check that instruments are not drifting between calibrations. Records can be kept using the CALCHECK Verification Measurement sheet at the back of this manual. An initial measurement can be taken soon after calibration and the results recorded. Further checks can be made periodically, e.g. every month, and the results also recorded on the sheet. Further copies of the sheet can be downloaded from the Martindale Electric Co Ltd website.



## **4. MAINTENANCE**

### **4.1 Battery Replacement**

Remove the rear battery cover by turning the quarter turn screw 90° anti-clockwise and then lifting the cover. Observing correct polarity fit 6 new 1.5V, AA alkaline batteries (IEC LR6, NEDA 15A). Replace the battery cover by positioning the top onto the rear casing slots, lowering the cover and then locking by turning the quarter turn screw 90° clockwise.

**Note:** Do not mix old and new batteries.

### **4.2 Cleaning**

If contamination is found, clean with a damp soft cloth and if necessary a mild detergent or alcohol. Do not use abrasives, abrasive solvents, or detergents which can cause damage to the unit. If a mild detergent is used, the unit should subsequently be thoroughly cleaned with a water dampened soft cloth. After cleaning, dry and allow to remain in a dry environment for 2 hours before use.

### **4.3 Repair and Service**

There are no user serviceable parts in this unit other than those that may be described in section 4. Return to Martindale Electric if faulty. Our service department will quote promptly to repair any fault that occurs outside the guarantee period.

Before the unit is returned, please ensure that you have checked the unit and batteries.

### **4.4 Storage Conditions**

The instrument should be kept in cool, dry conditions and not subjected to shock, scratching or other damage, prolonged direct

harsh sunlight, extremes of temperature and in such a manner as to preserve the working life of the unit. It is strongly advised that the unit is not kept in a tool box where other tools may damage it.

## 5. WARRANTY AND LIMITATION OF LIABILITY

This Martindale product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is 2 years and begins on the date of receipt by the end user. This warranty extends only to the original buyer or end-user customer, and does not apply to fuses, disposable batteries, test leads or to any product which, in Martindale's opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation, handling or storage.

Martindale authorised resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Martindale.

Martindale's warranty obligation is limited, at Martindale's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to Martindale within the warranty period.

This warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. Martindale shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, arising from any cause or theory.

Since some jurisdictions do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any part of any provision of this warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision or other part of that provision.

Nothing in this statement reduces your statutory rights.







# Specification

## PD440SX PD690SX

### Proving Units

#### Electrical

**PD440SX** Output voltage: initial nominal 440V, ramping down to 0V  
Output frequency: 50Hz nominal

**PD690SX** Output voltage: initial nominal 690V, ramping down to 0V  
Output frequency: 50Hz nominal

#### All Units

Output loading: See typical output voltage vs. loading graph

#### CalCheck

Insulation test resistance nominal values:

0.5M $\Omega$  (max test voltage 1kV)

1.0M $\Omega$  (max test voltage 1kV)

Continuity test resistance nominal values:

0.5 $\Omega$  (max test current 200mA)

1.0 $\Omega$  (max test current 200mA)

#### Environmental

Operating temperature: -10°C to 40°C at max. 70% R.H.

Altitude: up to 2000m

Pollution degree: 2

#### General

Power: Internal batteries

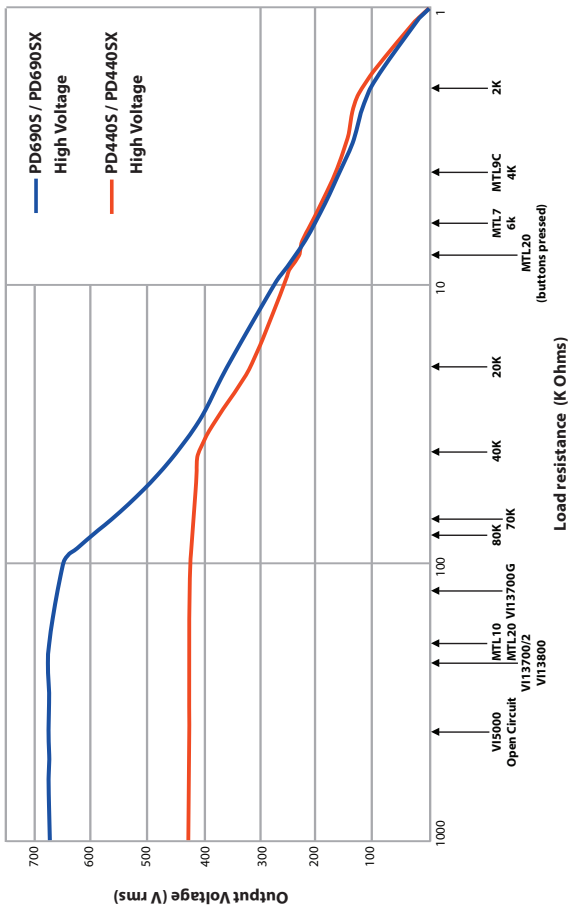
Internal batteries: 6 x 1.5V, AA alkaline batteries (IEC LR6, NEDA 15A)

Dimensions: 150 x 80 x 35mm.

Weight packed: 410g approx. with batteries

Includes: 6 x 1.5V AA alkaline batteries, instructions

# Typical Output Voltage vs. Loading



Check out what else you can get from Martindale:

- 18th Edition Testers
- Accessories
- Calibration Equipment
- Continuity Testers
- Electricians' Kits
- Environmental Products
- Full Calibration & Repair Service
- Fuse Finders
- Digital Clamp Meters
- Digital Multimeters
- Labels
- Microwave Leakage Detectors
- Motor Maintenance Equipment
- Multifunction Testers
- Non-trip Loop Testers
- Pat Testers & Accessories
- Phase Rotation Testers
- Proving Units
- Socket Testers
- Thermometers & Probes
- Test Leads
- Voltage Indicators
- Specialist Metrohm Testers (4 & 5kV)
- Specialist Drummond Testers



Martindale Electric Company Limited  
Metrohm House, 12 Imperial Park, Imperial Way, Watford, WD24 4PP, UK  
Tel: +44(0)1923 441717 Fax: +44 (0)1923 446900  
E-mail: [sales@martindale-electric.co.uk](mailto:sales@martindale-electric.co.uk)  
Website: [www.martindale-electric.co.uk](http://www.martindale-electric.co.uk)

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