
PAC3760 DL

Operating Instructions



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Limited Warranty & Limitation of Liability

SEAWARD Electronic Limited guarantees this product to be free from defects in material and workmanship under normal use and service for a period of 1 year. The period of warranty will be effective from the day of delivery.

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DECLARATION OF CONFORMITY

As the manufacturer of the apparatus listed, declare under our sole responsibility that the product:

PAC3760 DL

To which this declaration relates are in conformity with the relevant clauses of the following standard:

EN 61010-1:2010

Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements.

EN 61010-2-030:2010

Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for testing and measuring circuits

IEC 61326:2013

Electrical equipment for measurement, control and laboratory use-EMC Requirements

Performance: The instrument operates within specification when used under the conditions in the above standards EMC and Safety Standards.

The product identified above conforms to the requirements of Council Directive 2004/108/EC and 2006/95/EC.

Seaward Electronic Ltd is registered under BS EN ISO9001:2000 Certificate No: Q05356.

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1 Important Information

These operating instructions are intended for the use of adequately trained personnel.

The following symbols are used in these operating instructions and on the PAC3760 DL.



Caution, risk of electric shock.

Indicates instructions must be followed to avoid danger to persons.



Caution, risk of danger.

The operating instructions must be adhered to in order to avoid danger.

Before use, ensure unit is clean and dry; visually inspect all leads, connectors, and case. Any damage or wear must be rectified prior to use.



If the PAC3760 DL is used in a manner not specified by these operating instructions then the protection provided may be impaired.



Always ensure that the circuit or appliance under test is electrically isolated.



The PAC3760 DL and all associated cables and leads must be checked for signs of damage before equipment is operated. Do not use if there are signs of damage. Only use the correct leads supplied with the PAC3760 DL.



Do not touch test probes beyond the hand barrier on the test probe.



The PAC3760 DL may apply high voltage or mains power to the appliance under test. Do not touch conductive parts of the appliance while tests are active.



Do not operate the PAC3760 DL in an explosive gas or dust environment.



The PAC3760 DL has been designed to make measurements in a dry environment.



Do not open the PAC3760 DL, no user serviceable parts.

Note: *Data may be lost or altered in virtually any electronic memory under certain circumstances. Therefore Seaward Electronic assumes no responsibility for financial losses or claims due to data lost or otherwise rendered unusable whether as a result of abuse, improper use, defects, disregard of operating instructions or procedures, or any allied causes.*

Standard Accessories

	Part Number
Seaward PAC3760 DL unit	403A912
Carry Case	71G082
Black Test Lead 1m	161A024
IEC mains cord 0.5m	325A005

Optional Accessories

	Part Number
Leakage test 3-Phase Adaptor	372A950

2 Introduction

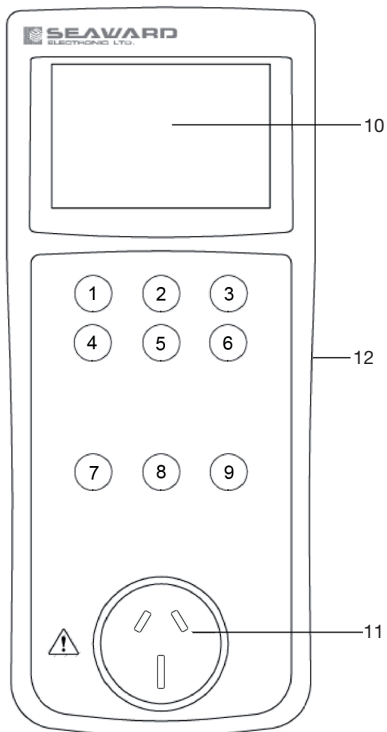


Figure 1. PAC3760 DL Front View

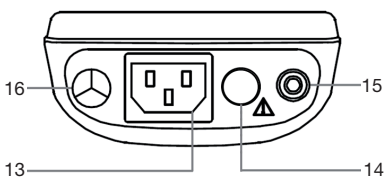


Figure 2. PAC3760 DL End View

The PAC3760 DL is a hand held battery powered unit suitable for carrying out electrical safety checks on:

- Class I appliances
- Class II appliances
- IEC mains leads
- Extension leads
- 10mA Installation and portable RCDs
- 30mA Installation and portable RCDs
- 3-Phase appliances when used with the 3-Phase adaptor.

Overview

With reference to Figures 1 and 2.

1. Save / Recall Button
2. Set Retest Period Button
3. Print Button
4. CLI / Cord Sequence Button
5. CLII Test Sequence Button
6. Leakage Test Start Button
7. 10mA RCD Test Button
8. 30mA RCD Test Button
9. 3-Phase Test Sequence Button
10. LCD
11. Test/Mains outlet socket
12. USB Interface
13. IEC Test Connection
14. Mini DIN Printer Interface
15. Earth Continuity Test Terminal
16. Mains inlet socket

User Interface

The LCD display shows test progress, results for individual tests and the overall test result for an appliance or mains cord.

Measurements displayed next to the **R_{PE}** icon indicate the resistance of the protective earth conductor.

Measurements displayed next to the **R_{ISO}** icon indicate the resistance measured by the insulation test.

Measurements displayed next to the **I_{LEAK}** icon indicate the leakage current measured while the unit is powered from a mains supply.

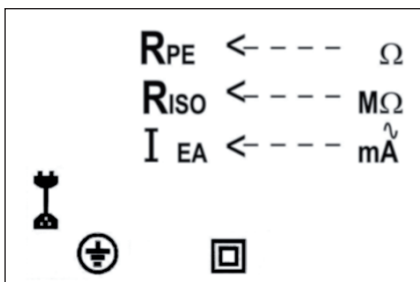
Tests are initiated using the six push buttons.

Power ON/OFF = press and hold the Class I and Class II test buttons simultaneously, PAC3760 DL will power on/off when buttons are released.

Note: *The unit will automatically switch OFF after approximately 3 minutes if no keys are pressed.*

3 Performing Tests

Press CLI and CLII keys simultaneously to switch on the PAC3760 DL. When the unit is ready the display will be as shown below.



3.1 Testing a Class I Appliance

Visually inspect the appliance as per requirements of AS/NZS 3760:2010. If the appliance passes a visual inspection proceed with the electrical tests.

Plug the earth test lead into the Earth Continuity test terminal on the PAC3760 DL end panel.

Plug the appliance into the PAC3760 DL front panel test socket.

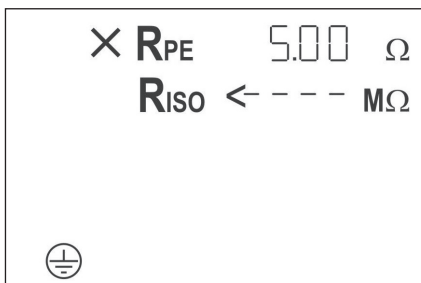
Connect the earth test lead to an exposed metal part on the appliance.

If the Appliance under test has an ON/OFF switch, make sure it is in the ON position.

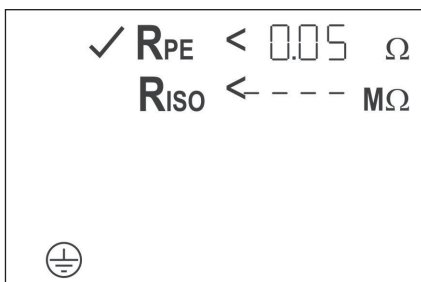
Press the Class I test button to start a Class I test sequence.

The PAC3760 DL will now test the continuity of the protective earth.

If the measured value is greater than the 1 ohm pass/fail threshold, the measured value is displayed and the unit indicates a fail result as shown below.



If the measured value is less than or equal to the 1 ohm pass/fail threshold, the measured value is displayed and the unit indicates a pass result, as shown below.



If the Earth Continuity test has passed then the unit will proceed with an Insulation test.

Note: The power switch on the appliance under test must be in the ON position to perform an insulation test. If no appliance is detected the PAC3760 DL will display LO LOAD.

If the **LO LOAD** enunciator is displayed, the load presented by the appliance may be too small for the PAC3760 DL to detect. In this case, press the Class I test button to continue.

If the Insulation test measures below the 1Mohm pass/fail threshold, the measured value is displayed and the unit indicates a fail.

If the measured value is greater than or equal to the 1 Mohm pass/fail threshold, the measured value is displayed and the unit indicates a pass result.

3.2 Testing a Class I Appliance with Leakage

Visually inspect the appliance as per requirements of AS/NZS 3760:2010. If the appliance passes a visual inspection proceed with the electrical tests.

Plug the mains lead into the PAC3760 DL and a mains supply socket.



When plugging the mains lead into the PAC3760 DL ensure that the polarity orientation of the connector is correct. DO NOT FORCE THE PLUG INTO THE CONNECTOR, doing so may damage the PAC3760 DL.

Plug the earth test lead into the Earth Continuity test terminal on the PAC3760 DL end panel.

Plug the appliance into the PAC3760 DL front panel test socket.

Connect the earth test probe to an exposed metal part on the appliance.

If the Appliance under test has an ON/OFF switch, make sure it is in the ON position.

Press and hold the Leakage button and then the Class I test button.

The PAC3760 DL will now test the continuity of the protective earth.

If the measured value is greater than the 1 ohm pass/fail threshold, the measured value is displayed and the unit indicates a fail.

If the measured value is less than or equal to the 1 ohm pass/fail threshold, the measured value is displayed and the unit indicates a pass result.

The unit will proceed with a Leakage test.

Note: The power switch on the appliance under test must be in the ON position to perform a leakage test. If no appliance is detected the PAC3760 plus will display LO LOAD.

The I_{LEAK} icon will flash, press the Leakage button to start a Leakage test.

The mains supply status is checked and the status is indicated using the LN, LE and NE enunciators of the LCD.

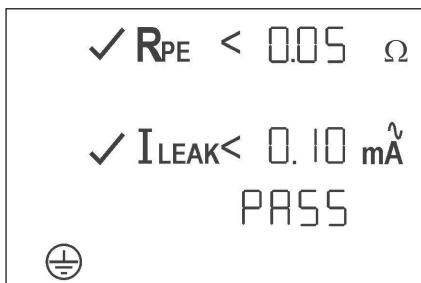
LN	LE	NE	Mains status
ON	ON	OFF	Correct
Flash	Flash	OFF	No mains
OFF	Flash	Flash	Earth fault
OFF	Flash	Flash	Live/neutral reversed

If the **LO LOAD** enunciator is displayed, the load presented by the appliance may be too small for the PAC3760 DL to detect. In this case, press the Leakage button to continue.

Note: If the High Load enunciator is displayed, the load presented by the appliance may be too great for the PAC3760 DL and users should carry out an insulation test.

If the Leakage current is greater than 5mA a cross is placed next to the I_{LEAK} enunciator. The **FAIL** enunciator is illuminated.

If the Leakage current is less than or equal to 5mA a tick is placed next to the I_{LEAK} enunciator. The **PASS** enunciator is illuminated.



3.3 Testing a Class II Appliance

Visually inspect the appliance as per requirements of AS/NZS 3760:2010. If the appliance passes a visual inspection proceed with the electrical tests.

Plug the black continuity test lead into the Earth Continuity test terminal on the PAC3760 DL end panel. Plug the appliance into the PAC3760 DL front panel test socket.

Connect the black continuity test lead to an exposed metal part on the appliance.

If the Appliance under test has an ON/OFF switch, make sure it is in the ON position.

Press the Class II test button to start a Class II test sequence.

Note: The power switch on the appliance under test must be in the ON position to perform an insulation test. If no appliance is detected the PAC3760 DL will display LO LOAD.

If the **LO LOAD** enunciator remains on the display, the load presented by the appliance may be too small for the PAC3760 DL to detect. In this case, press the Class II test button to continue.



The unit will now perform an Insulation test.

If the Insulation Resistance is less than 1Mohm a cross is placed next to the **R_{iso}** enunciator. The **FAIL** enunciator is illuminated.

If the Insulation Resistance is greater than or equal to 1Mohm a tick is placed next to the **R_{iso}** enunciator. The **PASS** enunciator is illuminated.

3.4 Testing a Class II Appliance with Leakage

Visually inspect the appliance as per requirements of AS/NZS 3760:2010. If the appliance passes a visual inspection proceed with the electrical tests. Plug the mains lead into the PAC3760 DL and a mains supply socket.



When plugging the mains lead into the PAC3760 DL ensure that the polarity orientation of the connector is correct. DO NOT FORCE THE PLUG INTO THE CONNECTOR, doing so may damage the PAC3760 DL.

Plug the black continuity test lead into the Earth Continuity test terminal on the PAC3760 DL end panel. Plug the appliance into the PAC3760 DL front panel test socket.

Connect the black continuity test lead to an exposed metal part on the appliance.

If the Appliance under test has an ON/OFF switch, make sure it is in the ON position.

Press and hold the Leakage button and then the Class II test button to perform the Class II test sequence including a Leakage test.

Note: The power switch on the appliance under test must be in the ON position to perform a leakage test. If no appliance is detected the PAC3760 DL will display LO LOAD.

The **I_{LEAK}** icon will flash, press the Leakage button to start a Leakage test.

The mains supply status is checked and the status is indicated using the LN, LE and NE enunciators of the LCD.

LN	LE	NE	Mains status
ON	ON	OFF	Correct
Flash	Flash	OFF	No mains
OFF	Flash	Flash	Earth fault
OFF	Flash	Flash	Live/neutral reversed

If the **LO LOAD** enunciator is displayed, the load presented by the appliance may be too small for the PAC3760 DL to detect. In this case, press the Leakage button to continue.

Note: If the High Load enunciator is displayed, the load presented by the appliance may be too great for the PAC3760 plus and the user should carry out an Insulation test.

If the Leakage current is greater than 1mA a cross is placed next to the **I_{LEAK}** enunciator.

The **FAIL** enunciator is illuminated.

If the Leakage current is less than or equal to 1mA a tick is placed next to the **I_{LEAK}** enunciator.

The **PASS** enunciator is illuminated.

3.5 Testing a mains cord

Visually inspect the appliance as per requirements of AS/NZS 3760:2010. If the cord passes a visual inspection proceed with the electrical tests.

Plug the mains cord under test into the IEC socket and the front panel mains socket on the PAC3760 DL. Press the Class I test sequence button.

The PAC3760 DL will first test the continuity of the protective earth.

If the measured value is greater than 1 ohm a cross is placed next to the R_{PE} enunciator, a **FAIL** is indicated. If the measured value is less than or equal to 1 ohm a tick is placed next the R_{PE} enunciator.

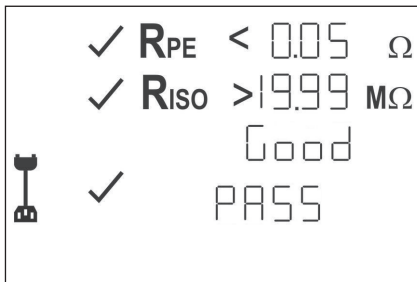
The unit will proceed with the Insulation test.

If the Insulation Resistance is less than 1 Mohm a cross is placed next to the R_{ISO} enunciator.

If the Insulation Resistance is greater than or equal to 1 Mohm a tick is placed next to the R_{ISO} enunciator.

The unit will proceed with the wiring test, checking the live and neutral conductors for short or open circuits or reversed connections.

If the wiring is correct a tick is placed next to the cord enunciator, the **GOOD** enunciator is illuminated and a **PASS** is indicated for the sequence.



Note: If the tested cord has a wiring fault, one of the following enunciators will be illuminated in place of **GOOD**

OPEN indicates that either the live or neutral conductor is broken (open circuit) or the plug top fuse has blown

Shrt indicates that the live and neutral conductors are shorted together

CrOS indicates that the live and neutral connections are crossed (live and neutral conductors reversed)

3.6 Testing an extension lead

Visually inspect the appliance as per requirements of AS/NZS 3760:2010. If the cord passes a visual inspection proceed with the electrical tests.

Plug the supplied 0.5m IEC lead into the IEC socket and into a mains outlet on the extension lead. Plug the mains plug of the extension lead into the front panel mains socket on the PAC3760 DL.

The extension lead can now be tested in the same manner as an IEC as described above.

3.7a Test an EPOD (Powerboard)

Visually inspect the appliance as per requirements of AS/NZS 3760. If the cord passes a visual inspection proceed with the electrical tests. AS/NZS 3760 requires an earth resistance test to be performed to each outlet.

Operators have the choice of carrying out two test sequences for EPODs:

Procedure A: a complete test sequence is carried out for every socket (earth, insulation and polarity)

Procedure B: a complete test sequence is carried out on the very last socket. Only an earth resistance test is carried out on the remaining sockets.

Procedure A:

1. Plug powerboard lead into mains outlet socket on the PAC3760 DL.
2. Plug IEC Lead into the IEC socket on the top of the PAC3760 DL.
3. Plug the IEC Lead plug into the first socket of the EPOD.
4. Press Class I test button to perform a complete test sequence covering earth, insulation and polarity to test the socket.
5. Repeat sequence on every socket.

Procedure B:

1. Plug powerboard lead into mains outlet socket on the PAC3760 DL.
2. Plug IEC Lead into the IEC socket on the top of the PAC3760 DL.
3. Plug the IEC Lead plug into the first socket of the EPOD.

Note: First socket is defined as the closest socket to the power lead.

4. Press the Class I and LKGE buttons simultaneously. The PAC3760 DL performs an earth test.
5. The PAC3760 DL will give warning beeps. Repeat step 4 on every socket until the last socket – press buttons for 2 secs.
6. At the last socket, press the Class I button to do a complete test.

Note: Last socket is defined as the socket furthest from the power lead.

3.7b Test an EPOD/Extension Lead with MOV and/or RCDs

Visually inspect the appliance as per requirements of AS/NZS 3760. If the cord passes a visual inspection proceed with the electrical tests. AS/NZS 3760 requires an earth resistance test to be performed to each outlet.

This test sequence uses a leakage test to replace an insulation test at 500V DC to avoid triggering the MOV (surge protector) or to apply power to the RCD to allow circuit connections.

Operators have the choice of carrying out two test sequences for EPODs with MOV and/or RCD:

Procedure A: a complete test sequence is carried out for every socket (earth, leakage and polarity)

Procedure B: a complete test sequence is carried out on the very last socket. Only an earth test is carried out on the remaining sockets.

Note: For extension leads with RCDs, follow **3.7b Procedure A** and carry out a single socket test.

Procedure A:

1. Plug the mains lead into the PAC3760 DL and a mains supply socket.
2. Plug powerboard lead into mains outlet socket on the PAC3760 DL.
3. Plug IEC Lead into the IEC socket on the top of the PAC3760 DL.
4. Plug the IEC Lead plug into the first socket of the EPOD.
5. Press the Class 1 and LKGE buttons simultaneously. The PAC3760 DL will perform an earth test.

6. The PAC3760 DL will give warning beeps. The user should press the LKGE button for 2 secs to carry out a leakage test on the socket.
7. Repeat sequence on every socket.

Procedure B:

1. Plug the mains lead into the PAC3760 DL and a mains supply socket.
2. Plug powerboard lead into mains outlet socket on the PAC3760 DL.
3. Plug IEC Lead into the IEC socket on the top of the PAC3760 DL.
4. Plug the IEC Lead plug into the first socket of the EPOD.

Note: First socket is defined as the closest socket to the power lead.

5. Press the Class I and LKGE buttons simultaneously. The PAC3760 DL performs an earth test.
6. The PAC3760 DL will give warning beeps.
7. Repeat steps 5 and 6 on every socket until the last socket – press buttons for 2 secs.
8. At the last socket, press the Class I and LKGE buttons simultaneously for 2 secs. The PAC3760 DL performs an earth test.
9. The PAC3760 DL will give warning beeps. Press the LKGE button to carry out a leakage test on the last socket. This completes the sequence for the powerboard test.

Note: Construction site EPODs usually have 2 banks of outlet sockets. A complete test sequence must be carried out on at least one socket outlet on each bank.

Note: Powerboards with RCDs may cause the polarity test to fail. An RCD trip time test will confirm correct.

3.8 Testing 3-Phase equipment

The PAC3760 DL is capable of performing electrical tests on 3-Phase equipment.

In order to perform tests refer to the documentation supplied with the adaptor.

If the 3-Phase button is pressed while no adaptor is connected to the PAC 3760 DL then a warning message PLUG IN 3 PH ADPTR will be displayed.

3.9 Testing Installation RCD Operating Time



When performing an RCD test ensure that the Continuity Test probe is disconnected from the PAC3760 DL

The PAC 3760 DL can be used to measure the operating time of installation RCDs.

Plug the supplied 0.5m IEC lead into the IEC socket on the end of the PAC3760 DL and into the mains outlet which is protected by the installation RCD under test.

To test the RCD operating time, first identify the rated residual operating current of the RCD under test and press the appropriate button (10mA or 30mA) to begin the test.

The mains supply status is checked and the status is indicated using the LN, LE and NE enunciators of the LCD.

LN	LE	NE	Mains status
ON	ON	OFF	Correct
Flash	Flash	OFF	No mains
OFF	Flash	Flash	Earth fault
OFF	Flash	Flash	Live/neutral reversed

If the mains supply is incorrect, testing is inhibited. If the mains supply status is correct then the 0° test will be performed, when the RCD is reset then the 180° test will be performed. Ensure that both tests are performed for each RCD.

The operating time for each RCD test will be shown on the PAC3760 DL display.

For 10mA RCD tests the PAC3760 DL will indicate a pass for $\leq 40\text{ms}$.

For 30mA RCD tests the PAC3760 DL will indicate a pass for $\leq 300\text{ms}$.

3.10 Testing Portable RCD Operating Time



When performing an RCD test ensure that the Continuity Test probe is disconnected from the PAC3760 DL

The PAC 3760 DL can be used to measure the operating time of portable RCDs.

Plug the supplied 0.5m IEC lead into the IEC socket on the end of the PAC3760 DL and into the mains outlet on the portable RCD. Plug the portable RCD in to the front panel test socket.

Plug the mains lead into the PAC3760 DL and a mains supply socket.



When plugging the mains lead into the PAC3760 DL ensure that the polarity orientation of the connector is correct. DO NOT FORCE THE PLUG INTO THE CONNECTOR, doing so may damage the PAC3760 DL.

To test the RCD operating time, first identify the rated residual operating current of the RCD under test and press the appropriate button (10mA or 30mA) to begin the test.

The mains supply status is checked and the status is indicated using the LN, LE and NE enunciators of the LCD.

LN	LE	NE	Mains status
ON	ON	OFF	Correct
Flash	Flash	OFF	No mains
OFF	Flash	Flash	Earth fault
OFF	Flash	Flash	Live/neutral reversed

If the mains supply is incorrect, testing is inhibited. If the mains supply status is correct then the 0° test will be performed, when the RCD is reset then the 180° test will be performed. Ensure that both tests are performed for each RCD.

The operating time for each RCD test will be shown on the PAC3760 DL display.

For 10mA RCD tests the PAC3760 DL will indicate a pass for ≤ 40 ms.

For 30mA RCD tests the PAC3760 DL will indicate a pass for ≤ 300 ms.

4 Memory & Print Functions

The PAC3760 DL can store the results for a maximum of 999 appliances.

4.1 Setting the Retest Period

The Retest Period can be changed by pressing the REATEST PERIOD key. Each time you press the REATEST PERIOD key the Retest Period will increase. The options are 1, 3, 6, 12, 24 and 60 months. Pressing any other key will store the displayed setting. This setting will then be stored with all subsequent results until it is changed. REATEST PERIOD will determine the Retest Date indicated on the test label and results.

4.2 Saving Test Results

In order to store a test result press the STORE / RECALL button when the test sequence has been completed. The STORE icon will be displayed and the results displayed on the LCD will be recorded in memory.

4.3 Viewing Test Results

When the PAC3760 DL is waiting to start a new test sequence press and hold the STORE / RECALL button, this will display the last recorded results. Other results can be displayed by scrolling through the memory. To scroll through the memory use the STORE / RECALL button and the REATEST PERIOD button. Press any other Key or wait for 10 seconds will return the PAC3760 DL into test mode.

4.4 Deleting Test Results

To delete all of the results in memory press and hold the STORE / RECALL and REATEST PERIOD buttons together while displaying the recalled results until the counter reaches zero.

4.5 Transferring Test Results

Test data can be transferred to a PC using the Datalogger program on the provided PAC3760 DL Support CD. Insert the CD into your disc drive and then view the InstallationInstructions.txt file for information on how to install.

Once the USB drivers and Datalogger are installed you can open the Datalogger program from your desktop. Connect your device to the PC using a USB connector. (The very first time you do this, your PC will automatically install a COM port driver). You can check which COM port is being used by looking in the Device manager.

E.g.: Silicon Labs CP210x USB to UART Bridge(COM14)

Select the correct COM port.

Click on Download. A progress bar will appear.

On the PAC3760 DL in order to transfer the entire test storage area to PC press and hold the STORE/RECALL for 5 seconds until the screen displays the last recorded result. Now, press and hold RETEST PERIOD key while in this review results mode to start downloading. The data will now be transmitted using the USB interface to the Datalogger program.

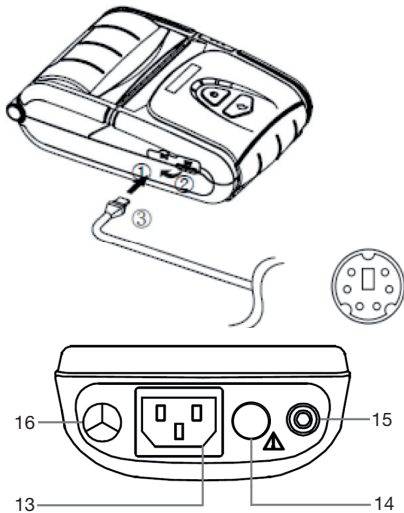
When all data has been captured and stored the progress bar will disappear and you will be asked where to save the data on your PC.

Once the file is saved you may click the "Open" button to open the document with default application.

For example, if you saved the file in .csv format (the default) then it may open using a spreadsheet application.

4.6 Printing Test Results

Tester will automatically SAVE the test result when user press PRINT after a test sequence is completed. In order to print a test label press the PRINT Key when the test sequence has been completed or when the test result is being reviewed. The printer must be attached before the PRINT Key is pressed. The test label will print the current test date and its retest date based on the tester settings. Refer to 4.1 and 4.7 to set retest period and current date/time.



Connect the PAC 3760 DL to the printer with the Printer Interface Cable supplied. Plug the mini DIN connector end into the tester's mini DIN interface socket (14) as shown on the picture above and the other end to the PAC-OPT printer.

NOTE: Pay attention to the pins on the mini-DIN interface cable and ensure the plug header goes in the right way as there is risk of damaging one of the pins if excessive force is used.

4.7 Setting the Real Time Clock

Setting time and date:

Ensure that the PAC3760 DL is powered off. Press and hold the RETEST PERIOD key and then press simultaneously the class I and class II keys to power on the tester.

The date format and time format is shown as follows:

MM.DD = month (1-12). Day (1-31)

YYYY = year

HH.mm = hours (0-23).minutes (0-59)

SS = seconds (0-59)

Press the class I key to select a date field and time field.

A flashing digit shows that this field can be set.

The STORE/RECALL key and RETEST PERIOD key are used to increase or decrease the value respectively in each field, the second field is set to zero.

Turn off the device to save the setting.

5 Troubleshooting

Q I have attached an IEC lead but the unit does not detect it and performs a Class I test.

A The IEC lead has an open earth path, the lead should be labelled as fail.

Q The PAC3760 DL shows a 'NO LOAD' warning.

A The appliance under test is either not switched on or PAC3760 DL cannot detect that the appliance is connected. Ensure that the appliance is connected correctly and is switched on. Press the Class I button to proceed with a Class I sequence, the Class II button to proceed with a Class II sequence or the Leakage button to proceed with a Leakage test.

Q The PAC3760 DL shows a 'HIGH LOAD' warning.

A The appliance under test is greater than 10A, proceeding with the Leakage test may blow the fuse in the PAC3760 DL. It is suggested that the sequence is aborted and a sequence which include an Insulation test be performed.

Q I have started a test sequence but the IEC icon is flashing.

A The PAC3760 DL has detected an IEC lead. To test the IEC lead press the Class I button.

Q I have started an RCD test but the Mains enunciators and IEC lead icon are flashing.

A The PAC3760 DL has been connected to the Mains supply by the mains lead and the IEC lead.

Q At the beginning, or during an RCD test the PAC3760 DL displays 'reSet'

A The RCD under test needs resetting or the test configuration is not connected correctly.

Q I have pressed the 3 Phase button but the PAC 3760 DL indicates 'PLUG IN 3 PH ADPTR'.

A The PAC3760 DL requires an additional adaptor in order to test 3 phase appliances.

6 Specification

Earth Continuity

Display Range	0.01ohms to 19.99ohms
Measuring Range	0.05ohms to 19.99ohms
Accuracy	± (5% + 2 digits)
Test current	200mA minimum
Test voltage	6V nominal

Insulation resistance

Display Range	0.01Mohms to 19.99Mohms
Measuring Range	0.10Mohms to 19.99Mohms
Accuracy	± (5% + 2 digits)
Test voltage	500V +20% -10% at 1MΩ
Test current	<2mA into 2k

Class I Leakage Current

Display Range	0.15mA to 9.99mA
Measuring Range	0.25mA to 9.99mA
Accuracy	± (5% + 2 digits)
Test voltage	mains voltage, 50Hz AC

Class II Leakage Current

Display Range	0.10mA to 5.00mA
Measuring Range	0.10mA to 5.00mA
Accuracy	± (5% + 2 digits)
Test voltage	mains voltage, 50Hz AC

3-Phase Leakage Current

Display Range	0.10mA to 9.99mA
Measuring Range	0.25mA to 9.99mA
Accuracy	± (5% + 2 digits)
Test voltage	mains voltage, 50Hz AC

Cord Test

Earth continuity, insulation resistance as above.
Check for Live and Neutral open circuit, short circuit or reversed polarity.

RCD Test

Display Range	0ms to 500ms
Test Current	±5%
Current Accuracy	±2ms

Factory Set Pass/Fail limits

	Class I	Class II
Earth Continuity	1.0 ohms	N/A
Insulation Resistance	1.0Mohm	1.0Mohm
Insulation	5.00mA	1.00mA

	10mA RCD	30mA RCD
Test Time	40ms	300ms

Environmental rating

IP Rating IP40

Operating temperature range 0°C to 40°C, without moisture condensation.

Storage temperature range -25° to 65°.

Note: Batteries should be removed prior to storage.

Overvoltage category 300V CAT II

7 Maintenance


Clean only with a dry cloth; do not use solvents. Before use, ensure unit is clean and dry; visually inspect all leads, connectors, and case. Any damage or wear must be rectified to preserve user safety.


Check the battery contacts and compartment are free of electrolytic contamination.

Any contamination of the battery contacts or compartment should be cleaned with a dry cloth.

Note: The PAC3760 DL contains no user serviceable parts. If an **Error** warning should appear on the display please contact Emona Instruments or Electrottest Ltd for advice.

8 Battery Check

The PAC3760 DL is powered from a 6 AA cells which are checked before a test is performed. When the battery voltage is low the  enunciator is illuminated. The unit will continue to perform within specification for a limited number of tests, dependent upon the type of the batteries fitted.

When the battery voltage reaches a level where the performance is affected the  enunciator will flash and all test keys are disabled. The batteries must be replaced.

8.1 Battery Replacement



Before opening the PAC3760 DL ensure that all test leads are disconnected.

Switch off the unit by pressing and holding the CLI and CLII keys.

Disconnect all leads from the PAC3760 DL.

Place the PAC3760 DL face down and release the captive screw in the battery compartment cover.

Remove the battery compartment cover and remove the discharged batteries.

Insert the replacement batteries into the battery compartment ensuring that the battery polarity matches the marking on the inside of the battery compartment.

Relocate the battery cover over the battery compartment and fasten in position with the battery cover captive screw.

9 Fuse Replacement



Before opening the PAC3760 DL ensure that all test leads are disconnected.

Switch off the unit by pressing and holding the CLI and CLII keys.

Disconnect all leads from the PAC3760 DL.

Place the PAC3760 DL face down and release the captive screw in the battery compartment cover.

Remove the battery compartment cover and remove the discharged batteries.

Ensure that the replacement fuse is a 20mm 10A 250V F Ceramic. Fitting the incorrect fuse type may lead hazard.

Insert the replacement fuse into the fuse compartment ensuring that the fuse snaps into place.

Relocate the battery cover over the battery compartment and fasten in position with the battery cover captive screw.

10 Service and Calibration

To maintain the specified accuracy of the measurement results, the instrument must be recalibrated at regular intervals by either the manufacturer, **Emona Instruments** or by **Electrotest Ltd.** We recommend a recalibration period of one year.

For help or advice on Service and Calibration contact:

AUSTRALIA

Service Department:

Emona Instruments
78 Parramatta Rd
Camperdown NSW 2050

PO Box 15
Camperdown NSW 2050

Tel: 1 800 632 953
Fax: 02 9550 1378
Email: service@emona.com.au

Sales Offices:

VIC:
1206 Toorak Rd, Camberwell VIC 3124,
Tel: 03 9889 0427

QLD:
Unit 1, 1644 Ipswich Rd, Rocklea QLD 4106,
Tel: 07 3275 2183

SA & TAS:
3/26 The Parade West, Kent Town SA 5067,
Tel: 08 8363 5733

WA:
63 Shepparton Rd, Victoria Park WA 6100,
Tel: 08 9361 4200

NEW ZEALAND

Service Department:

Electrotest Ltd
12A Te Kea Place
Albany
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PO Box 300-475
Albany Auckland 0752

Tel: +64 (09) 4482600
Fax: +64 (09) 448 2611
Email: info@electrotest.co.nz

LOAD MESSAGES

Message	Reason	Solution
Lo Load	Appliance switch is not engaged (switch in off position)	Engage the switch (turn it on)
Lo Load	Appliance switch is engaged but requires power to latch	Insulation test ineffective. Consider doing a leakage test.
Hi Load	Appliance may draw more than 10 amps	Appliance under test is greater than 10A, consider doing Insulation test.


ERROR CODES

Error Code	Meaning	Action
err 10	Internal relay failure	Return for Service.
err 12	No Insulation Volts	Return for Service.
err 20 – 51	Internal relay failure	Return for Service.
err 70 – 71	Internal relay failure	Return for Service.
err 110 – 111	Internal relay failure	Return for Service.
err 120 – 121	Internal relay failure	Return for Service.
err 130 – 131	Internal relay failure	Return for Service.
err 150 – 151	Internal relay failure	Return for Service.

TEST SEQUENCE

Test Setting	Description	Earth Continuity	Insulation Test	Leakage Test	Polarity Test
CLI	Class I Earthed Appliance	±200mA	500V		
CLII	Class II Double Insulated Appliance		500V		
CLI-Lead Power Board	LEAD-IEC or Extension	±200mA	500V		Yes
CLI-Leakage	Class I Power-up Test	±200mA		240VAC	
CLII-Leakage	Class II Power-up Test			240VAC	
Powerboard-RCD/MOV	Powerboard Earth and Power-up Test	±200mA		240VAC	No

TEST SEQUENCE

Test Type	Press Button(s)	Attachment Required	Examples & Comments
CLI		Appliance lead (black) connected to exposed metal parts.	3 pin – Most kitchen appliances (toaster, microwave..)
CLII		Appliance lead (black) connected to exposed metal parts.	Most hand held tools (2 or 3 pin socket)
Lead or Power Board Class I		IEC Lead Adaptor (red)	For power tools every socket must be checked.
Class I Leakage		Appliance lead (black) connected to exposed metal parts.	Beware moving parts. Appliance is active.
Class II Leakage		Appliance lead (black) connected to exposed metal parts.	Beware moving parts. Appliance is active.
Powerboard-RCD/MOV	 LKGE x no of sockets LKGE	IEC Lead Adaptor (red). Mains power lead.	Beware exposed parts.
Fixed RCD 10mA/30mA	10mA 30mA	IEC Lead Adaptor (red).	Connect IEC Lead to mains voltage.
Portable RCD 10mA/30mA	10mA 30mA	IEC Lead Adaptor (red). Mains power lead.	Loop portable RCD. Use power lead to connect mains voltage.

