



Electrical test equipment for the manufacturing and hire industries



World Leading Electrical Test Solutions

For over 70 years, manufacturers of electrical products have relied on Clare test equipment to ensure that their electrical products comply with the required performance and safety standards.

Now manufactured under the Seaward brand, the Clare range is used on production lines and in test laboratories all over the world to safely and effectively verify the safety and performance of millions of electrical products every day. Seaward products are backed up with a reputation for reliability and expertise.

Serving a long list of organisations across the globe, Seaward promises excellent customer service; providing a full solution to hire/rental and production line testing including EN50191 compliance, and offering advice on which test equipment will meet your business and compliance needs.

Seaward manufacturing and hire/rental products meet international approvals testing to the following standards:

BSI, BEAB, ASTA, BABT, VDE, UL, CSA, The Lighting Association, HAE, EN60598, EN60335, EN60950, EN61010, EN60745 and many more.

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The Seaward Group produces product ranges for six individual sectors, enhancing electrical safety testing across an array of markets:

- Portable appliance & installation test equipment
- Ohmmeters, resistance standards & decades
- Manufacturing & hire/rental sector testers
- High & low voltage test equipment
- Renewables industry test equipment
- Biomedical industry test equipment



Lincat use the HAL to run pre-programmed testing to guarantee product quality performance and reliability, ensuring compliance with BS EN 60335.

"The HAL is an excellent instrument which works very well, providing fast, accurate and reliable testing. It offers peace of mind because it produces standard test results and traceability is an added benefit which contributes to improve after-sales support and customer service."

HAL Series

Versatile range of production line testers



Key Features:

barcode scanner

line testing

■ Fully configurable automatic test sequences

■ Compatibility with label printer and

■ Ideal for mid to high volume production

AC Dielectric Strength

DC Dielectric Strength

nsulation Resistance

Earth Leakage

Fouch Leakage

ARC Detection

Results Storage

Software Compatible

Label Printer / Barcode Scanner Compatible

The HAL comprehensive safety testers offer outstanding levels of flexibility and functionality to dramatically improve the quality and productivity of production line safety testing.

With a range of different tests and functionality, the HAL series provides a solution for any production line testing requirement from low volume manual testing through to high volume automated test programmes. The large display and simple push-button operation makes the process of testing straightforward and fast, ensuring your production line continues to efficiently meet the demands of any number of quality and safety standards.

A choice of automatic, manual or direct PC modes offers maximum flexibility for use and control of the HAL series.

Automatic mode provides a structured, repeatable route to testing through storing complete test sequences in the internal memory of the instrument, making it ideal for the production line environment.

For environments where flexibility of test parameters and diagnostic checks are required, a manual mode enables individual tests to be performed easily.

For those wanting a fully automated approach, simple command protocols can be used in order for the HAL series tester to be controlled via a PC or other device.

The HAL 104 can communicate with a PLC (programmable logic controller) to aid automated test processes, including remote start / stop and pass / fail outputs.

UK and international variants available.

► HAL 104

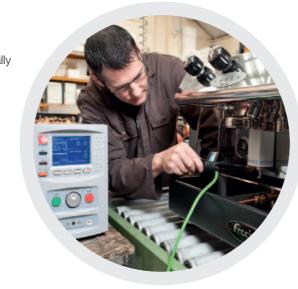
The flagship product in the HAL series, the HAL 104 is designed to dramatically improve the efficiency and productivity of production line testing and features:

Advanced integration options

- Analogue inputs allow testing to be recorded on the HAL from external devices e.g. recording the speed of a motor whilst in operation
- Digital outputs enable control of external devices using relay control e.a. switching matrices
- Compatibility with PowerSmart and SwitchSmart for advanced automation

Full complement of electrical safety tests

■ Power/leakage measurement for operational, safety and quality checks.





► HAL LED

The HAL LED has been designed with a reduced power measurement range with greater resolution than the HAL 104, making it ideal for the testing of low power electronics such as LED lighting.

► HAL 103

The HAL 103 is a comprehensive tester capable of performing dielectric strength, earth/ground bond and DCIR tests.

► HAL 102

The HAL 102 is a dielectric strength and DCIR tester with 5 channel scanner, enabling up to 5 tests to be performed in sequence on either the same product or a group of products, without any need for human intervention.

► HAL 101

The HAL 101 is a simple dielectric strength and DCIR tester, enabling one test point or product to be tested at any one time.



	HAL 101	HAL 102	HAL 103	HAL 104	HAL LED
Earth/ground bond			✓	✓	✓
AC dielectric strength	✓	✓	✓	✓	✓
DC dielectric strength	✓	✓	✓	✓	✓
DC insulation resistance	✓	✓	✓	✓	✓
ARC detection	✓	✓	✓	✓	✓
Leakage				✓	✓
Load power				✓	
Load power (200mVA resolution)					✓
Results memory	✓	✓	✓	✓	✓
Automation option	✓	✓	✓	✓	✓
Barcode scanner/printer option	✓	✓	✓	✓	✓
Internal scanner (multiple test points)		✓			

Technical Specification

Earth/Ground Bond Test - 104, LED, 103

Test Voltage 6V AC Nominal

Frequency 50Hz or 60Hz (Independent of supply)
Output Current Range 0.1A – 40.0A

Display Range $0 - 1500 \text{m}\Omega$

Insulation Resistance Test - 104, LED, 103, 102, 101

0.10kV - 6.00kV

(10V/step manual) (50V/step auto)

Display Range $0.03M\Omega - 350M\Omega$

350MΩ - 500MΩ (Indication Only)

AC Dielectric Strength Test - 104, LED, 103, 102, 101

Programmable Voltage 0.10kV – 5.00kV

Range (10V/step manual) (50V/step auto)

50Hz or 60Hz

Frequency Independent of Supply

DC Output Voltage

Display Range (Current) 0.01mA – 20.00mA

Optional Arc Detection 9 Levels

DC Dielectric Strength Test - 104, LED, 103, 102, 101

Programmable Voltage 0.10kV - 6.00kV

Range (10V/step manual) (50V/step auto)

Display Range 0.01mA - 10.00mA

Optional Arc Detection 9 Levels



Power and Leakage Test - 104 & LED

Power Output Rating

Test Voltage 110V – 230V AC (Mains Supply)

80V – 300V (Via Auxillary Input) 20A nominal (Vin-Vout)

SEAWARD

Output Power Measurement - 104

Single Phase Power 0.02kVA – 5.000kVA

Measurement Display Range

Output Power Measurement - LED

Single Phase Power 000.0 – 999.9VA

Measurement Display Range

Single Phase Power Factor Measurement

Display Range Ratio 0.000 – 1.000*

Leakage Current Measurement

Display Range 0.10mA – 20.00mA

Touch Current Measurement

Display Range 0.02mA - 5.00mA

Measuring Device IEC/EN 60990 Fig 4

(IEC/EN 60990 Fig 3 or Fig 5

Upon Request)

Power Requirement

Operating Voltage Selectable 115V or

230V AC RMS 50Hz / 60Hz

Mechanical Specification

Dimensions (HxWxL) Weight

(HxWxL) 300 x 200 x 370mm 15kg Approx

3 1-1- -

*For indication only



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Sentinel Series

Cost effective dielectric strength testers



The Sentinel series of test instruments has been designed to provide a cost effective, yet powerful solution to dielectric strength testing, whether on a production line or in a laboratory environment for compliance testing purposes.

With the ability to perform either 5kV AC or 6kV DC dielectric strength tests, and up to 500VA AC power output the Sentinel series can aid type testing to many international safety standards. With many features the Sentinel series ensures testing is performed accurately, efficiently and overall safely.

UK and international variants available.

	Sentinel 200	Sentinel 500	Sentinel 501
Earth/ground bond			✓
AC dielectric strength	✓	✓	✓
DC dielectric strength	✓	✓	✓
DC insulation resistance			✓
500VA		✓	✓
ARC detection	✓	1	✓

Key Features:

- Flexible and high resolution test parameters
- 100mA Trip current capability
- Ideal for production line and laboratory testing



Earth Bond



AC Dielectric Strength



DC Dielectric Strength



Insulation Resistance



ARC Detection

SEAWARD

▶ Technical Specification

Earth/Ground Bond Test - Sentinel 501 Only

Test Voltage 6V AC Max

Frequency 50Hz or 60Hz (Independent of supply)

Settable Output 3A – 32A

Current Range

Selectable Range of $10m\Omega - 650m\Omega$

Pass/Fail Levels

Insulation Resistance Test - Sentinel 501 Only

DC Output Voltage 50V - 1000VDisplay Range $0.001G\Omega - 50.00G\Omega$

AC Dielectric Strength Test Sentinel 200, 500, 501

Programmable Voltage 0.100kV - 5.000kV Range (2V/Step Resolution)

Frequency Independent 50Hz or 60Hz

of Supply

Display Range 0.001mA – 40.0mA (Sentinel 200)

0.001mA - 100.0mA

(Sentinel 500, 501)

Optional Arc Detection Yes

DC Dielectric Strength Test - Sentinel 200, 500, 501

Programmable Voltage 0.10kV - 6.00kV

nge (2V/Step Resolution)

Display Range 0.001mA – 10.0mA (Sentinel 200)

0.001mA - 20.0mA (Sentinel 500, 501)

Optional Arc Detection Yes

Power Requirement

Operating Voltage 100V / 120V / 220V / 230V

±10% AC RMS 50Hz / 60Hz

Mechanical Specification

Dimensions (HxWxL) Sentinel 200:

Approx. 148 x 330 x 452mm

Sentinel 500:

Approx. 148 x 330 x 482mm

Sentinel 501

Approx. 148 x 330 x 587mm

Weight 27kg Max

CAUTION SONAC MAX
A

The ideal solution to pre-compliance testing



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Bench-mounted manual

production line safety tester

A versatile bench mounted safety tester, ideal for simple manual testing or with varying degrees of automatic test sequencing.

The option to use the tester with a barcode scanner and the Desk Test n Tag label printer further speeds up the testing process and enables test tags, labels and test reports to be quickly produced.

Technical Specification

Earth/Ground Bond Test

Test Voltage 6V AC Nominal Frequency As Supply (50Hz or 60Hz) 25A / 10A / 4A / 100mA Output Current Range $0.04\Omega - 20\Omega$ Display Range

AC Dielectric Strength Test

Voltage Range 1.5kV (Class 1) / 3kV (Class 2) 0.1mA - 10.00mA Display Range

DC Insulation Resistance Test

250V. 500V DC Voltage Range 100kΩ - 99.99ΜΩ Display Range

Earth/Ground Leakage (Load Leakage)

Output Voltage Mains Supply Display Range 0.1mA - 20.0mA

Substitute Leakage (Short to Case Test)

Test Voltage 40V AC nominal at 230V / 110V supply Display Range 0.1mA - 20.0mA

Power/Run/Load Test

Display Range 0 - 4.2kVA

IEC Power Cord Test

40V AC Test Voltage

Test Performed Earth/Ground, Live & Neutral continuity

& polarity

Power Requirement

Operating Voltage 103V - 126V. 207V - 253V.

45Hz - 65Hz

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Mechanical Specification

Dimensions (HxWxL) 155 x 450 x 410 mm

9kg



A versatile solution to production line testing



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With earth/ground bond, insulation resistance, dielectric strength, leakage, short-to-case and run/load tests, the STM/L meets the needs of manufacturers who require a range of fundamental safety tests to be carried out on a variety of electrical and electronic products.

It is easy to operate with a full QWERTY keypad and on screen instructions whilst a built in memory for 6,000 test results ensure traceability.

UK and international variants available.

Key Features:

safety testing

line testing

barcode scanner

Earth Bond

■ Simple manual and semi-automatic

■ Compatibility with label printer and

■ Ideal for low-mid volume production

AC Dielectric Strength

Insulation Resistance

Earth Leakage

Touch Leakage

Results Storage

Software Compatible

Label Printer/Barcode Scanner Compatible

B433R

Analogue earth/ground bond tester



Mechanical Specification

Dimensions (HxWxL)

Weight

230 x 335 x

255mm

The B433R is a simple to use earth/ground bond tester with a 25A test current suited to manufacturing or laboratory environments.

This earth/ground bond tester can deliver a test current of 25A through a resistance/impedance of 0.1Ω from a low voltage AC source. It meets the general requirements of the majority of international test standards that relate to earth/ground bonding measurement.

UK and international variants available.

Technical Specification

Earth/Ground Bond Test

25A AC through 0.1Ω Output Current 10A AC through 0.5Ω

Test Voltage

Display Range 0 – 1Ω Analogue

Display

Power Requirement

Operating Voltage 230V, 50Hz

Key Features:

- Simple analogue earth/ground bond tester
- Easy to use manual test operation
- Ideal for low volume safety testing



Earth Bond



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Test Enclosures





Seaward test enclosures provide a safe environment for products to be tested and also maximise the productivity of the test process. They help meet the EN50191 standard for the Erection & Operation of Electrical Test Equipment.

Using a test enclosure can effectively simplify the test process. Seaward enclosures are designed using high quality aluminium extruded parts; impact resistant clear plastic panels and door safety interlock switches.

The test enclosures are compatible with any test instrument in the Seaward manufacturing/hire range, and are built to order, please contact us for details.

UK and international variants available.

Key Features:

- Improves safety on the production line
- Can be incorporated into test systems
- High quality aluminium extruded parts



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SwitchSmart

Eight-channel switching matrix

Used in conjunction with the HAL 104 or HAL LED tester, the SwitchSmart provides the capability for automatic electrical safety testing between multiple test points or multiple products simultaneously. Allowing for unrivalled

speed and efficiency coupled with a high level of safety that the modern production

line demands.

This modular eight channel switching matrix can be programmed for each switch port to perform all of the test functions of the HAL 104 or HAL LED. The SwitchSmart offers a simple vet high-specification testing system. The unit can be used with the HAL 104/LED alone or integrated into larger automation projects.

Used with the Safety e-Base software program, even greater flexibility is possible with the ability to allocate bespoke test sequences to specific product / part numbers.

UK only (international variants unavailable).



Key Features:

- Increase safety, efficiency and productivity
- 16 switching ports providing 8 channels
- Up to 256 sequential tests on a single product ■ Electrical testing of up to 4 products
- simultaneously

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PowerSmart

Industrial leakage test module





Compatible with the HAL 104, the PowerSmart modules allow full load and leakage testing on products rated greater than 16A. With two modules available, single and three phase, full testing can be performed on industrial electrical equipment, quickly, efficiently and with the full traceability offered with the HAL series.

UK only (international variants unavailable).

Technical Specification

0 - 12.5kVA AC/DC Dielectric Strength* 0 - 3750V AC Load Measurement (as displayed on 0 - 5000V DC the HAL104) Test Voltage Capability* Load Test Voltage Range 0 - 300V AC Leakage Measurement 0 - 10mA (50Hz / 60 Hz)

0 - 50A (50A

MAX Rating)

*Test voltages supplied from the HAL104

Load Current

Key Features:

- Single and three phase configuration
- Up to 50A per phase testing
- Load measurement to 12.5kVA



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Technical Specification

Test Terminal Voltage

0 - 5000V AC Range 50Hz - 60Hz

0 - 6000V DC

Test Terminal Load Current

Range 0 – 16A per connection

Duration Unlimited

10

Power Requirement

110V - 230V Operating Voltage

> 50Hz - 60Hz 3A Maximum

Mechanical Specification

Dimensions (HxWxL) 300 x 200 x 370mm

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Bench-mounted automatic safety tester



The SafeCheck 8 offers a slick and easy way for electrical safety tests to be carried out on Class I and Class II tools and equipment as well as IEC extension power cords within the hire and rental sectors.

This bench-mounted tester incorporates automatic test sequences and can be used with a barcode scanner for further productivity improvements.

Test results are clearly displayed on the large LCD screen whilst the internal memory ensures up to 5000 results are stored for traceability. If used in conjunction with the Desk Test n Tag printer, pass and fail labels can be printed with ease.

UK and international variants available.

Key Features:

- Class I, Class II and IEC power cord tests
- Bench mounted and easy to use
- lacksquare Ideal for the hire and rental sectors



Earth Bond



AC Dielectric Strength



Insulation Resistance



Earth Leakage



Touch Leakage
Results Storage



Software Compatible



Label Printer/Barcode Scanner Compatible

SEAWARD

▶ Technical Specification

Earth/Ground Bond Test

Test Voltage 6V AC Nominal
Frequency As Supply (50Hz or 60Hz)
Output Current Range 25A / 10A / 4A / 100mA

Display Range $0.04\Omega - 20\Omega$

Dielectric Strength Test

Voltage Range 1.25kV (Class 1) / 2.5kV (Class 2)

Display Range 0.1mA – 10.00mA

DC Insulation Resistance Test

Test Voltage 500V / 250VDisplay Range $0.1M\Omega - 99.99M\Omega$

Substitute Leakage (Short to Case Test)

Test Voltage 40V AC nominal at 230V / 110V supply

Display Range 0.1mA – 20.0mA AC

Earth/Ground Leakage

Output Voltage Mains Supply
Display Range 0.1mA - 20.0mA AC

Power / Run / Load Tests

Measured Load 0 – 4.2kVA

IEC Power Cord Test

Test Voltage 40V AC

Test performed Earth/Ground, Live & Neutral continuity

& polarity

Power Requirement

Operating Voltage 103V - 126V, 207V - 253V,

45Hz – 65Hz

Mechanical Specification

Dimensions (HxWxL) 155 x 450 x 410mm





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B255

Bench-mounted analogue safety tester



The B255 is a simple to use manual electrical safety tester. Providing all the tests required to check Class I and Class II tools and equipment, the B255 is ideal for those looking for a simple solution to electrical safety testing where handwritten test records and labels are preferred.

UK only (international variants unavailable).

► Technical Specification

Earth Bond Test

Test Voltage 8V Nominal 0utput Current 25A, into 0.1Ω Display Range $0-1\Omega$ analogue display

Dielectric Strength Test

Test Voltage 500V, 1250V AC 3000V, 3750V AC

Display Range 5mA / 10mA indication lamps

Load/Run Test

Display Range 230V, 0 – 15A – Analogue Display

> 110V, 0 – 25A (Via external supply) – Analogue display

■ Ivia io

0 – 5mA analogue

display

■ Class I and Class II tests

Key Features:

■ Manual and analogue safety tester

■ Ideal for low volume testing

Earth Bond



AC Dielectric Strength



Earth Leakage

Touch Leakage

Power Requirement

Protective Conductor/Touch

Current Tests

Display Range

Operating Voltage 230V, 16A, 50Hz

Mechanical Specification

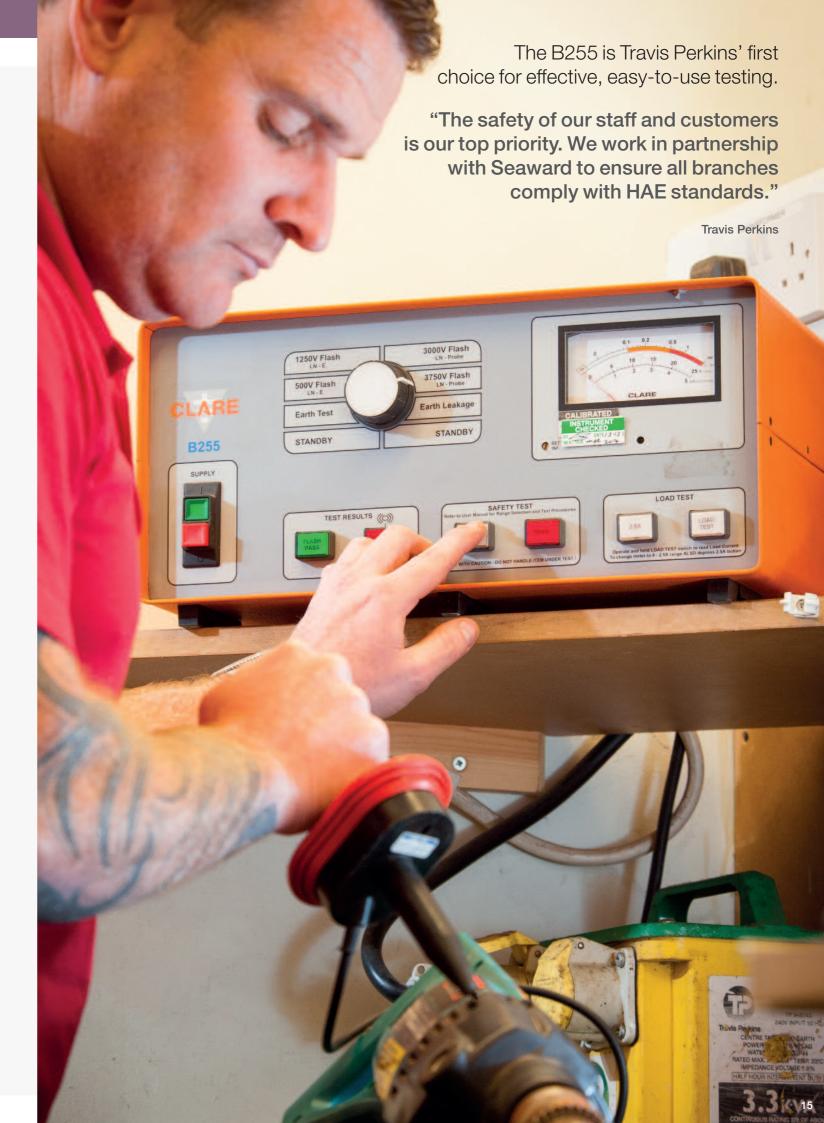
Dimensions (HxWxL) 180 x 400 x 250mm

Weight 10

Tuli spec

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Software Accessories

SAFETY 8-BASE

Safety e-Base

Production line productivity software

Safety e-Base Pro has been designed to ensure production line testing is not only fast and simple, but also reliable and fully customisable to meet the unique needs of any given production environment.

Used in conjunction with a HAL series safety tester, Safety e-Base Pro delivers supreme productivity, enabling totally customisable test sequences to be set up and operated via a PC from any safe, convenient location, even away from the production line if required.

Intuitive user-interface is taken a step further with the ability to provide user prompts in text or picture format - operators can be guided step-by-step on what to do next, saving time and reducing the risk of human error.

Total traceability of results is made possible through virtually unlimited storage, with results being stored on a PC or network drive.

UK and international variants available.



PATGuard 3 Elite

Record management software

PATGuard 3 Elite is an easy-to-use software program which enables you to record, store and report on a range of health and safety requirements including electrical safety test results, risk assessments and other work place test and inspections.

Tag records with images as visual evidence, schedule retest periods and produce professional reports and certificates for total traceability.

PATGuard 3 Elite is compatible with a wide range of Seaward electrical safety test equipment.

UK only (international variants unavailable).

Free trial available at www.seaward.co.uk/PG3trial



Our range of accessories help you comply with the EN50191 standard for safe erection and operation of electrical test equipment.

Beacons: Compatible with the HAL series, STM/L, SafeCheck 8 and B255 testers to provide clear indication that the test area is currently active.

Rubber matting and barriers: To ensure a prohibition zone can be achieved and adhered to.

Hand held guard switches: Ensure that the operator must press and hold a switch during testing in order that the test instrument will engage and produce an output.



Productivity Accessories

A range of accessories designed to help you increase the efficiency of safety testing.

Desk Test n Tag printer: For use with many of the Seaward manufacturing and hire/rental testers, this rugged printer uses a thermal transfer process to ensure highly durable and tear resistant labels.

Desk Test n Tag labels: A variety of virtually indestructible colour labels are available for use with the Desk Test n Tag printer.

Barcode scanner: Use this barcode scanner with the HAL series, STM/L and SafeCheck 8 tester to improve speed of testing and reduce human error by automatically loading test sequences and product ID from a barcode label.

Output Box: Provides a means of quick connection to a standard mains plug for testing with the HAL 101 or 102.



Verification Accessories

A range of accessories is available to help verify that your Seaward test equipment is working within specification in between calibration intervals.

Fault Simulators: Use a fault simulator daily to verify that your test equipment is operating within specification. Fault conditions ensure that the trip circuits are working as designed.

PAT Checkbox: This verification unit enables the user to verify that their tester is working within expected performance levels in between formal calibration intervals.



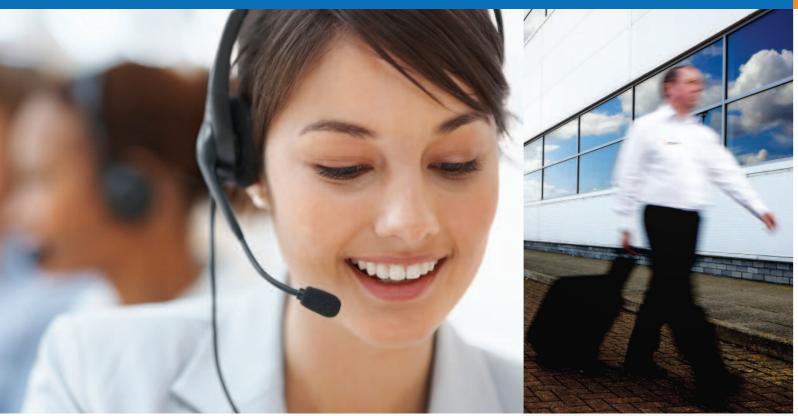
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Training, Commissioning, Service and Calibration Full product, software and accessory matrix showing compatibility and part numbers



Training and Commissioning

Our experienced engineers are available to commission test equipment and train customers on how to get the most from their testers and software.

Courses are available at all levels and can be tailored to meet customer requirements.

Service and Calibration

Calibrationhouse®, part of Seaward Group, can provide all of your service needs from calibration and repair, to the supply of spare parts for many types of test equipment.

With its UKAS accreditation, Calibrationhouse® offers a number of calibration services including an on-site service which enables your test equipment to be calibrated at your premises, reducing the cost and hassle of downtime and shipping.

A range of service packages are available for Seaward customers including extended warranties, calibration and on-site repairs.

For more information please go to www.calibrationhouse.com

Our website is full of useful and free resources, including:

Forums

www.seaward.co.uk/forum

Guides & poster downloads

www.seaward.co.uk/resources

Videos

www.seaward.co.uk/videos

Datasheets

www.seaward.co.uk/datasheets

Software trial

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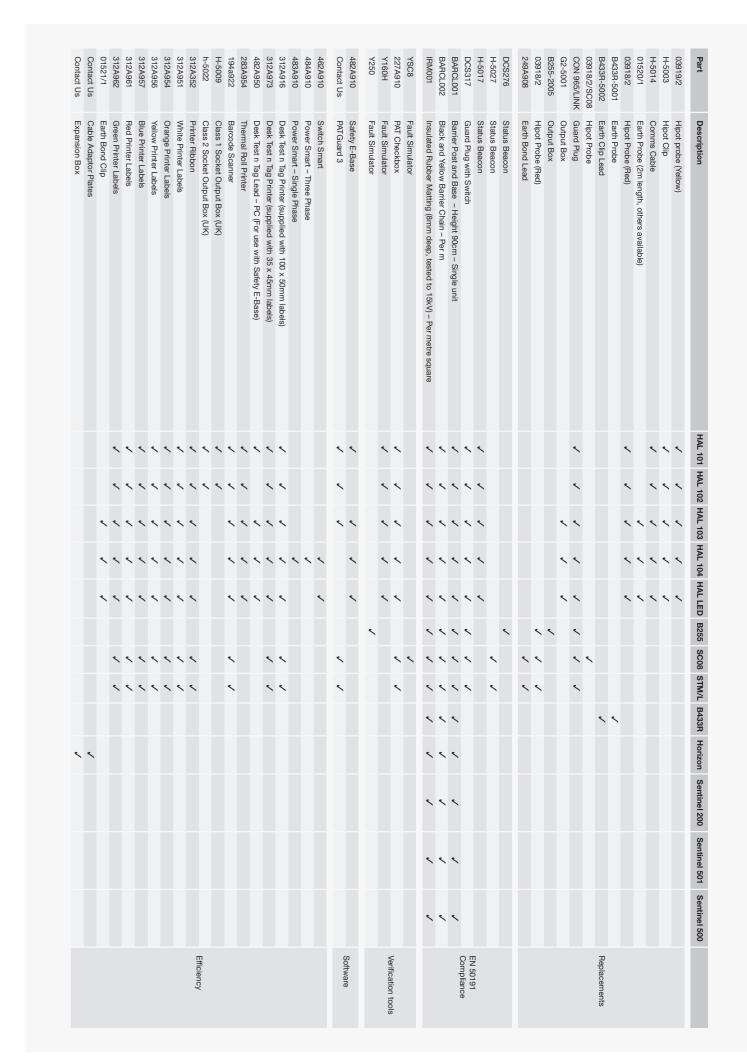
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Desk Test n Tag printer





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Seaward, 15-18 Bracken Hill, South West Industrial Estate, Peterlee, County Durham, SR8 2SW United Kingdom

Email: sales@seaward.co.uk Web: www.seaward.co.uk





