HAL Series

A versatile range of hipot testers ideal for manufacturing and production lines

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 offer maximum flexibility for use 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.

Key Features

> Fully configurable automatic test sequences

> Compatibility with label printer and barcode scanner

> Unlock advanced automation features features with safety e-Base software

> Ideal for mid to high volume production line testing

DESIGNED & BUILT IN **GREAT BRITAIN**

KEEPING PEOPLE SAFE FOR OVER **35** YEARS

To see the **HAL** Series for yourself, request your live online demonstration today at **seaward.com/hal-series**

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Comercialización·Sistemas·Calibraciones

TESTED, TRUSTED... WORLDWIDE.

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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.

System Integration - Total solutions for increased efficiency
Whatever your system integration needs, Seaward has the answer. With a number of smart modules designed to improve the functionality of your HAL tester as well as a host of accessories and consumables to improve the productivity and traceability of your production line testing regime.

Seaward provides its customers with a total solution approach to electrical safety testing, and also supplies a range of accessories to help you meet EN50191, the European standard governing the safe erection and operation of electrical test installations; including enclosures, beacons and hand switches, contact us or visit our website to find out more.

Safety e-Base - Production line productivity software
Safety e-Base 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.

Electrical Test Functions

> Earth Bond Test

> AC Dielectric Strength Test

> DC Dielectric Strength Test

> Insulation Resistance

> Earth Leakage

> Power Test
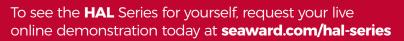
> Power Factor Test

> ARC Detection

HAL Series Users

Designed for greater productivity, the HAL Series is best suited for mid to high volume manufacturing and production lines.

> Production and Manufacturing Engineers/Managers

> Quality Managers

> Safety Engineers

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The **HAL 104** is the flagship product in the HAL Series and 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.g. switching matrices
> Compatibility with PowerSmart and Switch Smart for advanced automation

Full complement of electrical safety tests

> Power/leakage measurement for operational, safety and quality checks

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.

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

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

Comparison Chart:

Features	101	103	104	LED
Ground Bond Test		●	●	●
AC/Hipot Test	●	●	●	●
DC/Hipot Test	●	●	●	●
DC Insulation Resistance Test	●	●	●	●
ARC Detection	●	●	●	●
Leakage Test			●	●
Load Power Test			●	
Load Power (200mVA resolution) Test				●
Power Factor			●	●
Results Memory	●	●	●	●
Automation Option	●	●	●	●
Barcode Scanner/printer Option	●	●	●	●

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Technical Specification:
HAL 104/LED/103/101

Earth/Ground Bond Tests - 104, LED,103, 100
Test Voltage:	Nominal 6V AC
Frequency:	50 or 60 HZ (Independent of supply)
Display Range and Accuracy:	0-1500mΩ ±2% ±5 Counts
Display Resolution:	1mΩ
Compliance Test Ranges:	
Current/Time*	4A - 110 secs
	25A - 60 secs
	40A - 30 secs

Test Duration limited Pro-Rata between 4A and 40A

Settable Output Current Range:	0.1A-40.0A
Selectable Range of	
Pass/Fail Levels:	0-1500mΩ

Insulation Resistance Test - 104, LED,103, 101
DC Output Voltage:	0.10kV-6.00k
	(10V/Step when manually adjusted)
	(50V/Step in test sequence program)
Display Range:	0.01MΩ -500MΩ
Display Range/Accuracy:	0.03MΩ - 350MΩ ± 5% ± 5 Counts
	350MΩ - 500MΩ Indication Only
Display Resolution:	0.01MΩ
Pass/Fail Level:	0.00MΩ-500.0MΩ

AC Dielectric Strength Test - 104, LED, 103, 101
Programmable Voltage Range:	0.10kV - 5.00kV
	(10V/Step when manually adjusted)
	(50V/Step in test sequence program)
Frequency Independent of Supply:	50 or 60HZ
Voltage Display Range and Accuracy:	0.10kV-5.00kV ± 1% ±5 Counts
Voltage Display Resolution:	0.01kV
Current Display Range and Accuracy:	0.01mA - 20.00mA ± 1% ±5 Counts
Current Display Resolution:	0.01mA
Selectable Range of Pass/Fail Levels:	0.01mA-20.00mA
Maximum Current Output:	20.00mA @5kV
Optional Arc Detection:	9 Levels

DC Dielectric Strength Test - 104, LED, 103, 101
Programmable Voltage Range:	0.10kV - 6.00kV
	(10V/Step when manually adjusted)
	(50V/Step in test sequence program)
Voltage Display Range and Accuracy:	0.10kV - 6.00kV ± 1% ±5 Counts
Voltage Display Resolution:	0.01kV
Current Display Range and Accuracy:	0.01mA - 10.00mA ± 1% ±5 Counts
Current Display Resolution:	0.01mA
Selectable Range of Pass/Fail Levels:	0.01mA - 10.00mA
Maximum Current Output:	10.00mA

Power and Leakage Test - 104 and LED

Power Output Rating
Test Voltage:	110V - 230V AC
	20A nominal (VIn-Vout)
Maximum Power Output:	Up to 5.0kVA (dependent on mains supply rating)

Output Power Measurement - 104
Single Phase Power Measurement
Display Range and Accuracy:	0.02kVA - 5.00kVA ± 2% ±0.02kVA
Selectable Range of	
Pass/Fail Levels:	0.001kVA - 5.000kVA

Output Power Measurement - LED
Single Phase Power Measurement
Display Range and Accuracy:	000.0VA to 99.9VA ± 5% ±5 digits
	100.0VA to 999.9VA ± 5% ±2 digits
Selectable Range of	
Pass/Fail Levels:	000.2 - 999.9VA

Single Phase Power Factor Measurement - LED
Display Range:	0.000 - 1.000*
Selectable Range	
Pass/Fail Levels::	0.000 - 1.000

*Displayed value for indication only

Leakage Current Measurment
Display Range and Accuracy:	0.10mA - 20.00mA ± 1% ±5 Counts
Display Resolution:	0.01mA
Selectable Range of	
Pass/Fail Levels:	0.01mA - 20mA

Touch Current Measurement
Display Range and Accuracy:	0.02mA - 5.00mA ± 1% ±5 Counts
Display Resolution:	0.01mA
Selectable Range of	
Pass/Fail Levels:	0.02mA - 5.00mA
Measuring Device:	IEC/EN 60990 Fig 4

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Case Dimensions and Weight
Case Dimensions: 200W x 300H x 370D mm
Weight: 15kg approx
Operating Voltage Range: Selectable 115V - 230V AC RMS, 50/60Hz
EN50191: Compliant when used with the appropriate accessories

Standard Accessories
Instruction Manual
Power Cord
Guard Plug
Comms Cable
Test probes and clips - dependent on model - contact us for more details.

Optional Accessories
A range of optional accessories are available to compliment the HAL, contact us for details.

Services
1 year warranty subject to product registration with Seaward, visit
www.seaward.com/register-product

Service and calibration by Callibration House.

Part Number:
Varies dependent on model - contact us for details.

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