solderstar

Maximize your soldering quality with precision profiling and process control

Reflow ✦ Wave ✦ Selective ✦ Vapor Phase

Featuring the

smartlink
connection system

solderstar.com

OUR UNIQUE APPROACH

At the heart of our profiling systems is the versatile Solderstar SLX data-logger; a unique instrument that provides unprecedented flexibility, measurement performance and durability in what is the industry's smallest footprint. Small, light and robust, this reliable harsh-environment data-logger allows accurate data capture from any soldering process.

Packed with advanced features, the Solderstar SLX provides power, communications and memory to a range of process specific devices via the innovative SmartLink connector system.

This interface allows docking to a range of heat-shields and process specific accessories to form a versatile and scalable solution.

Solderstar's one logger, multi-process concept maximises your investment and offers real world savings through reduced training and on-going service or calibration costs

UNRIVALLED ACCURACY FOR MULTIPLE SOLDERING PROCESSES

With the emergence of lead free soldering within the electronic manufacturing industries, one company had the vision, experience, industry knowledge and technical ability to create the new generation of advanced, instrumentation capable of providing the standard of process monitoring technology required across all soldering processes. Solderstar has continued to develop newer, even more innovative solutions and today the Solderstar SLX provides the ultimate in versatility.

It is the only device you need, providing easy-to-use, fully affordable thermal quality-control for Reflow, Wave, Selective and Vapour phase processes.

The NEW SLX Profiling Datalogger

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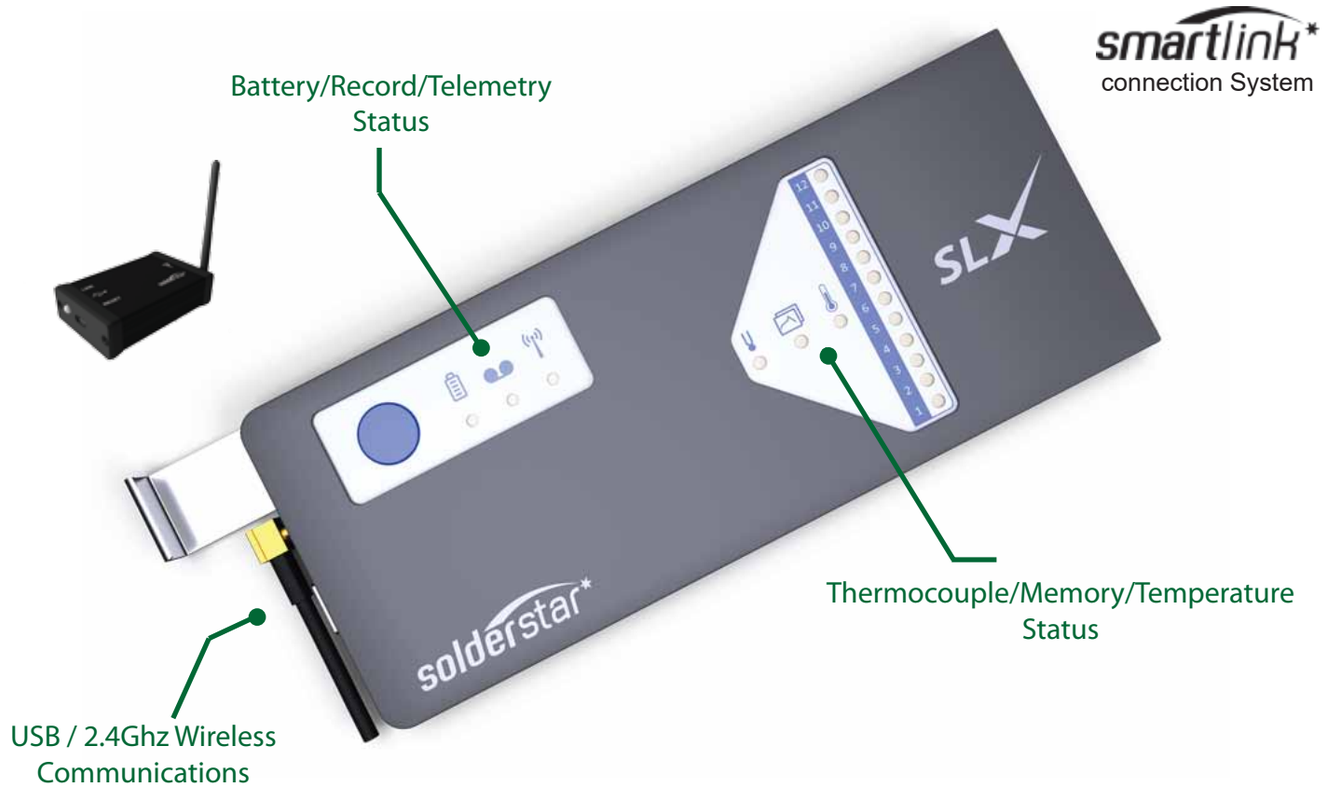


Zero Setup, Multi-memory smart thermal profiler

The new Solderstar SLX is an accurate, robust, ultra-compact, battery powered datalogger used for measuring and recording process parameters from any soldering process.

Requiring minimal user setup the SLX unit can be docked onto any SMARTLink reflow heatshield or other process accessory and the system will auto-configure itself for data capture.

The logger, sensor and memory status are displayed conveniently for the user via status indicators and a multi-bar graph display.

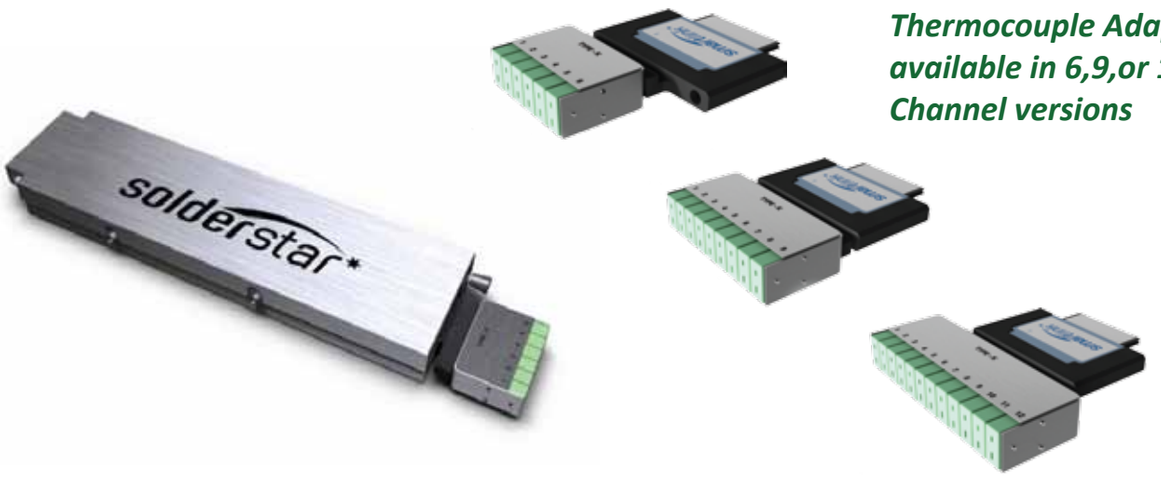
The new unit features many improvements and real performance, with USB download speeds 10 times faster than previous models, 2.4Ghz telemetry options along with increased measurement range all while still maintaining +/- 0.5 C accuracy.

The SLX can be ready to profile from as little as a ten minute charge from your PC, and has an impressive 15 hours profiling time from a two hour USB charge. The new internal high temperature battery system is user replaceable and can be changed if required in seconds.

New Features

- Zero user setup for error free data capture
- Ultrafast USB downloading + 2.4Ghz Wireless Telemetry option
- User replaceable high temperature battery
- Multiple memories for profile storage
- Automatic thermocouple and temperature status checking
- +/- 0.5°C accuracy from -200 to 1372 °C

Reflow Product Profiling

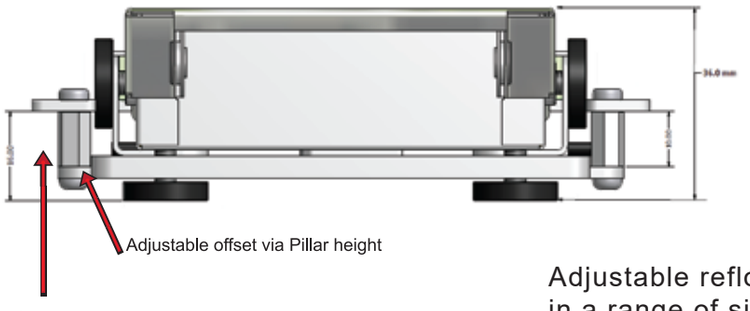


Thermocouple Adapters available in 6,9,or 12 Channel versions

Solderstar's range of low-height heatshields, provide maximum thermal protection for the Solderstar SLX datalogger while passing through the reflow oven to capture PCB thermal profiles.

Manufactured from stainless steel, and utlising high performance micro-porous lightweight insulation results in high thermal protection and rapid cool-down cycles.

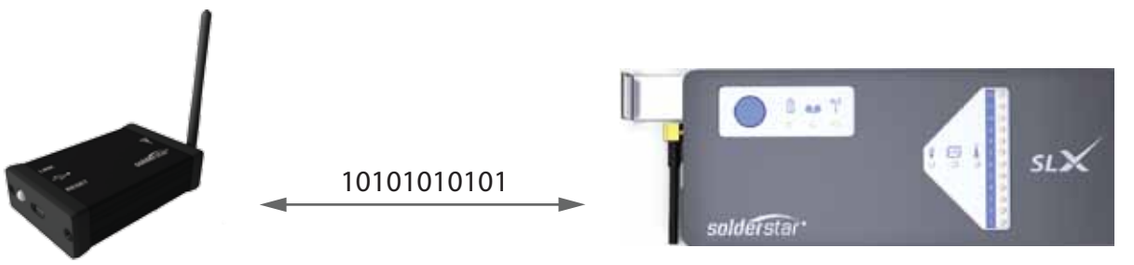
A range of innovative Smartlink based thermocouple adapters, allow you system to be extended for measurement upto 12 Type-K channels.



Adjustable reflow transporters are available in a range of sizes to carry your profiling system thorugh your oven with ease.

Two way Wireless Telemetry

The Solderstar SLX dataloggers can be supplied with an optional wireless telemetry system. Live profile information can be received to the PC software while the datalogger is passing through the soldering process. This special system uses a 2-way protocol, resulting in error free data transmission. The transmission channel can be adjusted to allow multiple dataloggers to operate within the same area. The system operates with the 2.4Ghz band and is approved for use all around the world.



Production Reflow Oven Verification

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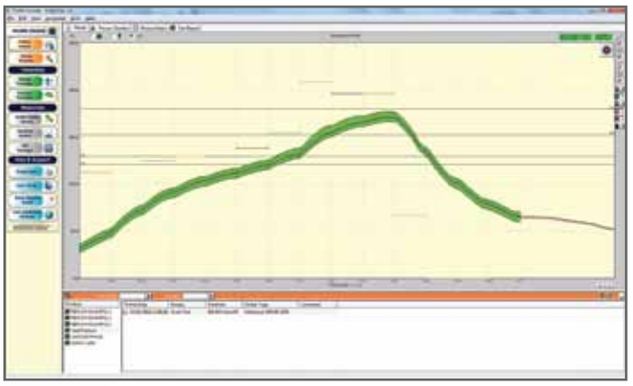


PC Analysis Software with
Tolerance Band Functions

Precise verification and SPC for reflow soldering

The Solderstar DeltaProbe removes the need to use fragile test boards for periodic temperature profiling required for ongoing control of the reflow process while production is running thorugh the reflow oven.

With fixed temperature sensors and no test card or long trailing wires, the DeltaProbe is a robust and convenient platform for generating highly repeatable oven measurements.

Although process setup requires a temperature profile captured from a real test PCB, ongoing process monitoring can be achieved by measuring the difference from an established process baseline.

Periodically the DeltaProbe is passed through the process to allow oven verification and SPC data to be captured. Process change, due to variations in convection levels, conveyor speed or zone setpoints, are instantly and accurately detected and the operator is notified visually.

Integrated SPC tools allow the operator to produce process control charts for ongoing process control measurement, evaluation and corrective action.

A ‘golden profile’ for each process is established in 3 easy steps:

1 The optimum oven settings are first established by product profile capture and simulation

2 The DeltaProbe is then passed through the reflow oven to capture a ‘golden process profile’

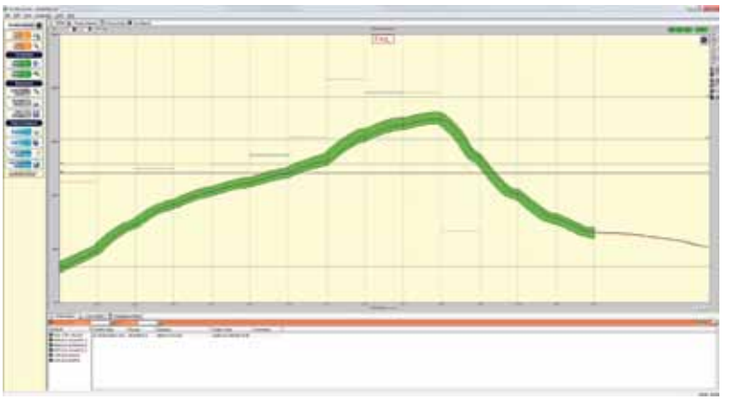
3 Tolerance limits can now be set around temperature traces and process parameters

Reflow software and optimisation

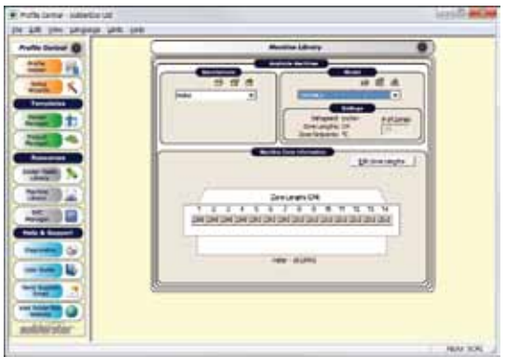
Solderstar's class leading, industry focussed software tools provide a comprehensive, easy to use analysis and process documentation solution for all manufacturers of electronic assemblies.

Built on intelligent database technology, these tools simplify the process of managing, storing, searching and saving product information, recipes and profiles. Data centralisation also eases multi access, transfer, relocation and back up of process data on local or remote network drives.

Detailed Profile Analysis



Pre-defined Information Libraries



Professional Test Reports

Download
Demo Software at
www.solderstar.com

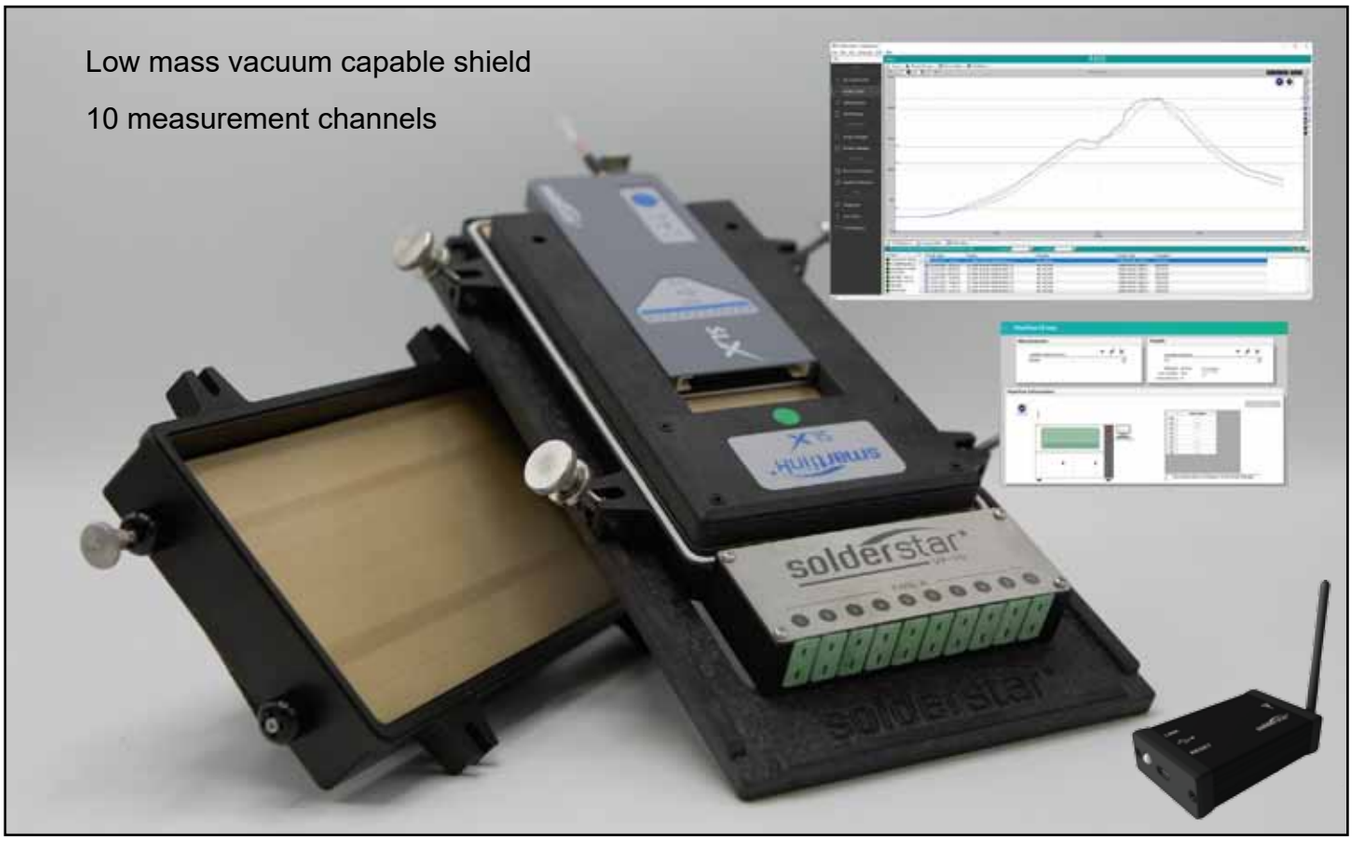
Automatic Reflow Profile Optimisation

- Find more optimal profiles
- Search for faster throughput
- Evaluate lower energy solutions

Scan QR to see Autoseeker video

See AutoSeeker in action at :- https://youtu.be/403RFnmL2hk

Vapour Phase



2.4Ghz Telemetry available providing datalink within vacuum stage machine

Vapour Phase Profiling for batch and inline machines

The Solderstar SLX - VP system allows users of batch and in-line vapour phase soldering machines to fully profile their products in the same way as a conventional reflow oven.

The system includes the Solderstar SLX data-logger combined with a sealed light-weight heat shield capable of operating in the pre-heat, vapour reflow and vacuum stages of the machine.

Data can be passed to a nearby PC via wireless telemetry allowing the profile to be viewed in real-time by the user.

Once data capture is complete the heat shield can be opened and the datalogger removed, allowing rapid cool down cycles and minimising the risk of overheating the profiling unit.

System Advantages

- Standard data logger and heat shield solution maximised datalogger protection
- Extendable for control of wave / selective or reflow soldering
- Unique SmartLink connection system provides quick datalogger connection to a range of products and accessories
- Low mass thermal shield provides minimal impact to process
- Error free Wireless Telemetry with automatic offload and catchup ensure no gaps in data transmission
- Extendable Wireless range > 100 Metres from machine

Vacuum Reflow Carrier

Reflow ovens are now common with an integrated vacuum stage following the peak reflow zones.

These stages allow the electronic assembly to be subjected to a vacuum while the solder joint is still liquid, with the purpose to remove the amount of voiding within the finished joint.

The Solderstar SLX profiler unit and the PCB under test need to be transported together through the heated stage and into the vacuum chamber while the vacuum is introduced.

This innovative carrier streamlines the process of capturing profiles from this type of reflow oven.

Process Measurements

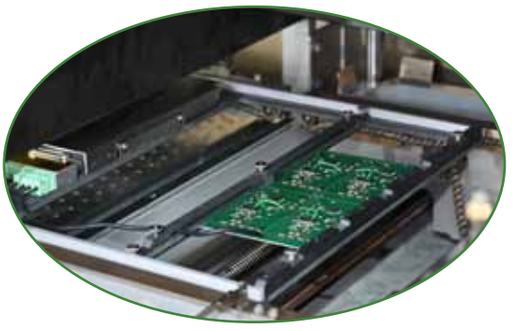
- ✓ ***Temperature Profile Setup***
- ✓ ***Vacuum Measurement***
- ✓ ***Measure hold time, pull down and release rates***
- ✓ ***Measure vacuums down to 10 mbar***
- ✓ ***Units for mbar or Torr***

Temperature Profile Measurement

The Solderstar Vacuum Reflow Shuttle is a specially designed fixture with an adjustable area to hold the PCB and thermocouple sensors. Cable management clamps ensure profiling is error free.

A 9 channel thermal profiling shield is incorporated to allow quick connections to your SLX datalogger.

An atmospheric pressure sensor is also incorporated to measure vacuum profiles down to 10mbar.

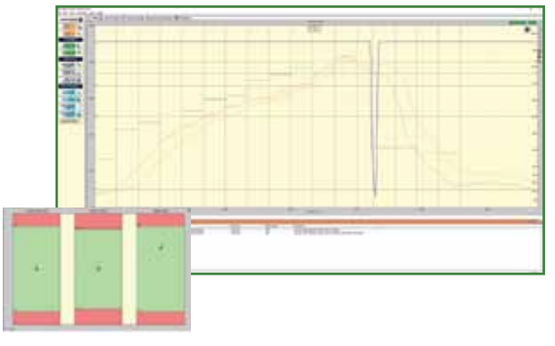


Process Vacuum Measurement

The Vacuum profile is captured and displayed as an overlay with the PCB temperature profile.

Vacuum parameter calculation of hold time below the desired vacuum level ,the vacuum pull down and release rates are calculated - essential for ensuring thatcomponent shift does not occurs.

Additional setting are available to define vacuum stage position in process to allow correct alignement of all profile information.



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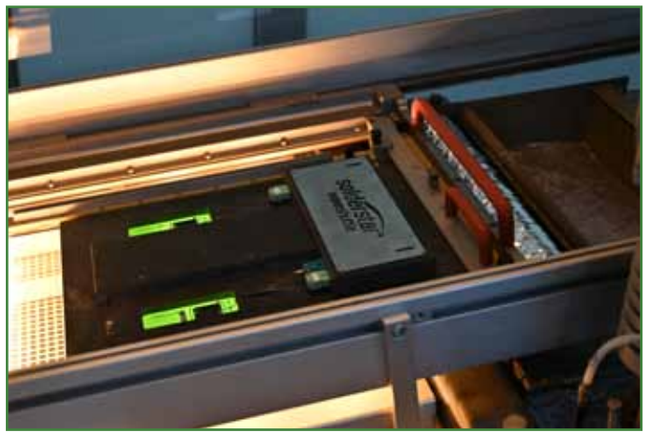
SLX Profiling Systems

Process Measurement Shuttles



Process measurement shuttles provide the platform for advanced process measurements along with highly repeatable measurements.

Solutions are available for reflow, conventional wave solder and selective soldering applications. Each shuttle has a Smartlink connector to quickly connect your SLX datalogger.

Process specific instrumentation is available on each shuttle to measure all key parameters tailored to each soldering application. Advanced process parameters such as conveyor vibration, reflow vacuum stage level and oxygen PPM can now be measured alongside standard temperature profiles.

The systems are robust, repeatable and automatically configure each measurement, without the need for computer set-up, making them an ideal tool for setup and daily checking of the process in the production environment.

Reflow Shuttle - O_2

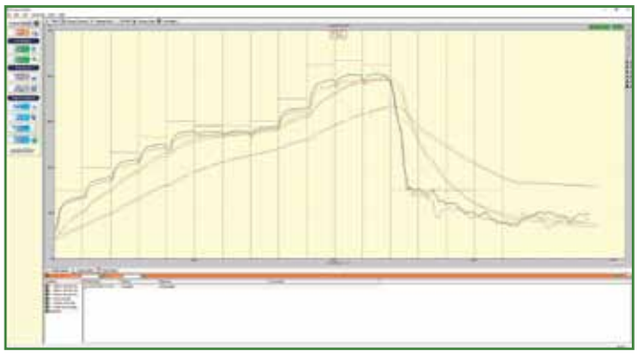
- *Top and bottom temperature profile*
- *Zone heater uniformity*
- *Oxygen PPM Level for Nitrogen Reflow*
- *Process Vibration X/Y/Z axis*
- *Line speed*
- *Vacuum Measurement*

Temperature Profile Performance

The shuttle is fitted with an array of sensors for independent measurement of advanced process parameters required for modern reflow soldering application.

Temperature profile verification is achieved with an array of type-K sensors arranged to measure top and bottom side heater performance.

At the front of the shuttle are matched temperature sensors which provide information regarding uniformity of heating across the width of the heated zone.



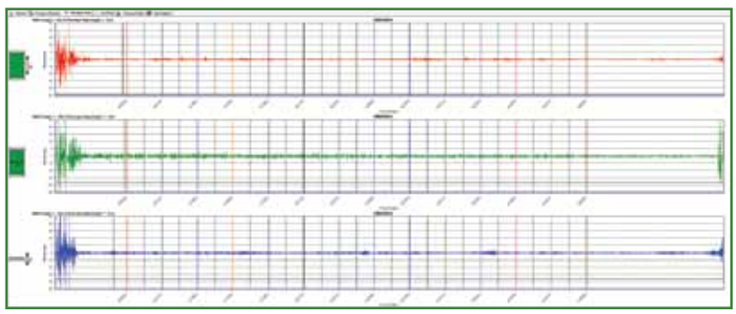
- *ZONE UNIFORMITY ERRORS*
- *TOP/BOTTOM HEATER ISSUES*
- *PROCESS SPEED FAULTS*
- *FAN FAILURES*
- *CONVECTION PROBLEMS*

Process Vibration Measurement

Process vibration measurement is a requirement for many manufacturers, to establish a baseline of acceptable levels an all 3-axis within the machine.

Data captured can allow the engineer to see the effect of fan speed settings on vibration/harmonics in the process, along with detect of changes in vibration levels due to issues with the machine conveyor or extraction system.

- *TRANSITION CONVEYOR ISSUES*
- *BENCHMARK ACCEPTABLE LEVELS*
- *COMPONENT SHIFT DIAGNOSIS*
- *FANS / CONVEYOR INFLUENCE*



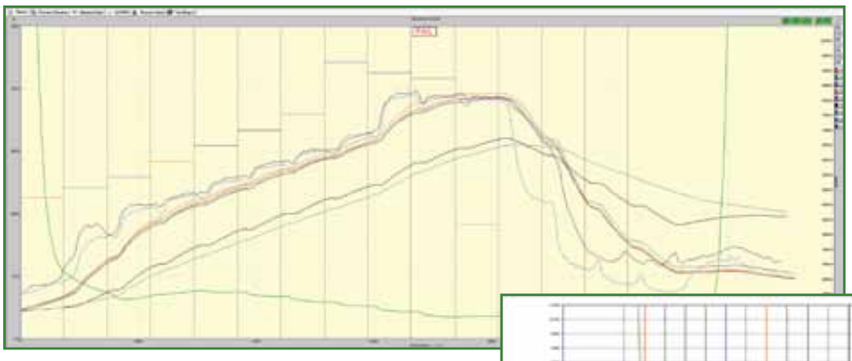
Reflow Shuttle - O_2

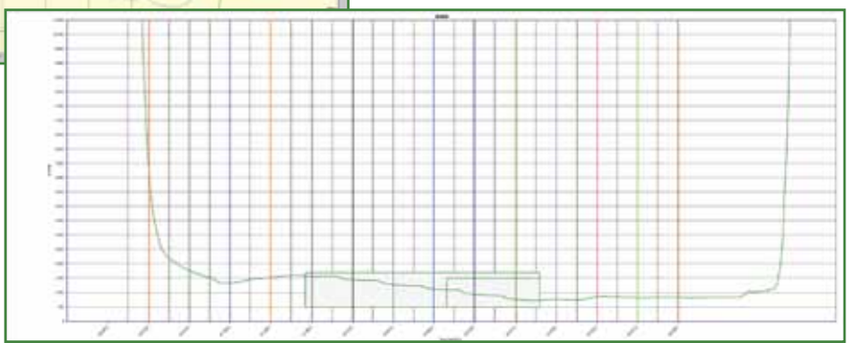
O_2 Measurement Module - Option

Issues with nitrogen leakage throughout the oven are pin-pointed as the device captures and displays the oxygen PPM level alongside the oven zone diagram and temperature profile.

The Reflow Shuttle provides zone by zone analysis of oxygen levels thoughout the reflow process.

- ***ANALYSIS OF OXYGEN PPM PER ZONE***
- ***DETECT ISSUES WITH NITROGEN LEAKS***
- ***OPTIMIZE NITROGEN CONSUMPTION***
- ***FLUX BUILD UP/EXTRACTION ISSUES***





Exact checking of PPM levels in critical zones

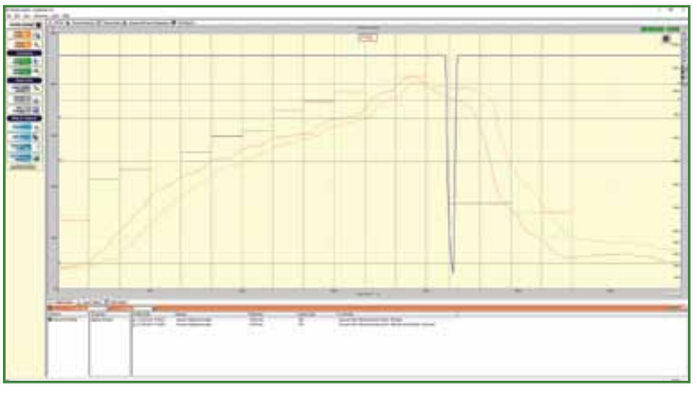
Process Vacuum Measurement - Option

Where a vacuum stage is used on the reflow process, an option measurement module can be fitted to the shuttle to allow verification of the vacuum levels down to 10 mbar.

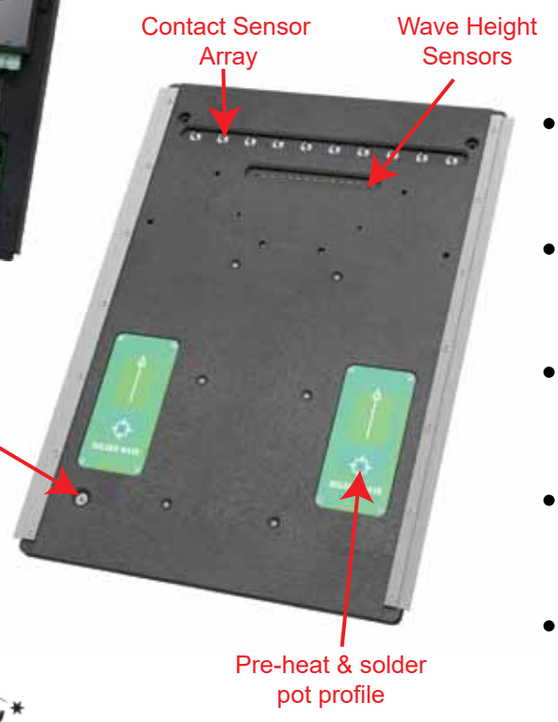
Automatic calculation of hold time below desired vacuum level. Additionally, the pull down and release rates are calculated, essential for ensuring no component shift occurs.

- ***VACUUM HOLD TIME VERIFICATION***
- ***PULL DOWN / RELEASE RATE***
- ***OVERLAY AGAINST TEMPERATURE PROFILE***

Define Pass/Fail Limits



Wave Solder Shuttle



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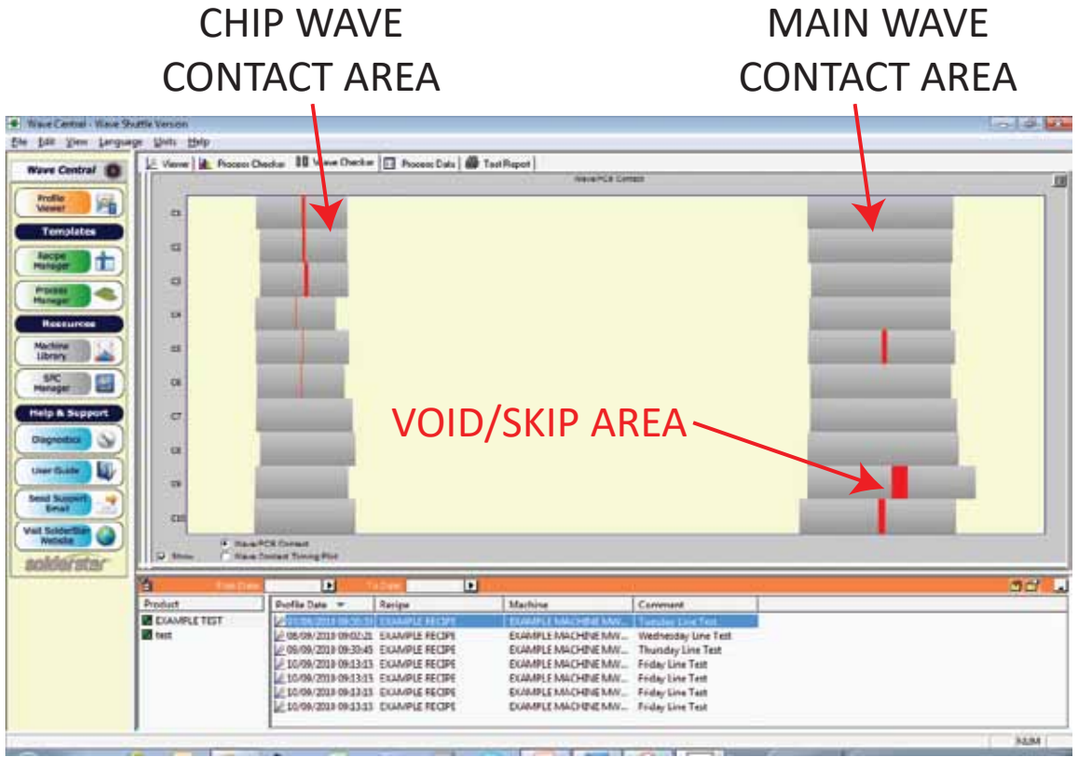
System Advantages

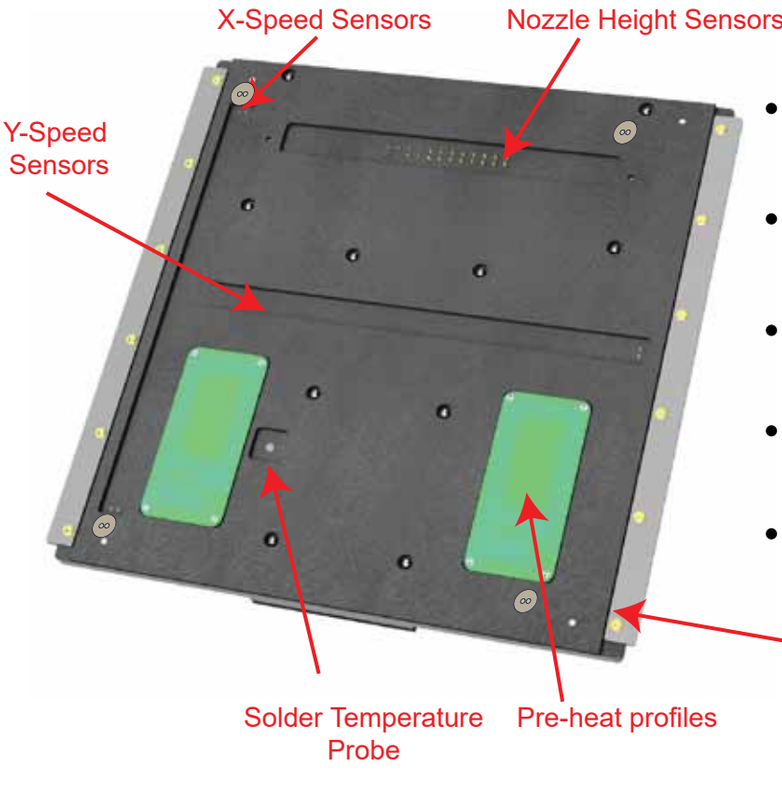
- High quality 10mm fixture provides a robust platform for initial process set up, plus periodic checking and comparison
- Underside titanium contact sensors give highest measurement accuracy on Wave Height, Main and Chip wave parameters
- Custom widths and sensor positions available for fixed width production lines or special applications
- Connectivity via standard USB cables or 2.4Ghz Wireless Telemetry
- Dedicated Wave Central PC analysis software with integrated SPC charting package

Measure all key wave solder parameters in a single pass

The WaveShuttle SLX is an intelligent fixture that measures all key parameters from a single pass through the wave soldering machine. Thermocouples are combined with titanium contact sensors, allowing manufacturers to gain a true performance measurement of the wave soldering process.



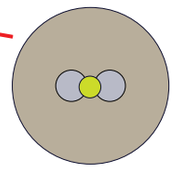
Mini-wave Selective Shuttle



System Features

- High quality 10mm fixture provides a robust platform for initial process set up, periodic checking and comparison
- Titanium contact sensors give highest measurement accuracy Solder Nozzle performance
- Fully enclosed and protected measurement system ideal for hotter lead-free processes
- Connectivity via standard USB cables or 2.4Ghz Wireless Telemetry
- Dedicated Wave Central PC analysis software with integrated SPC charting package

Flux Sensing Option



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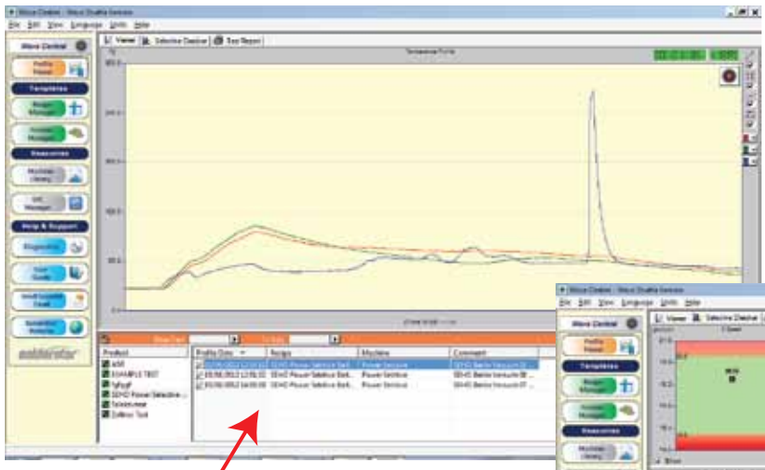
Precise measurement and control for Mini-Wave

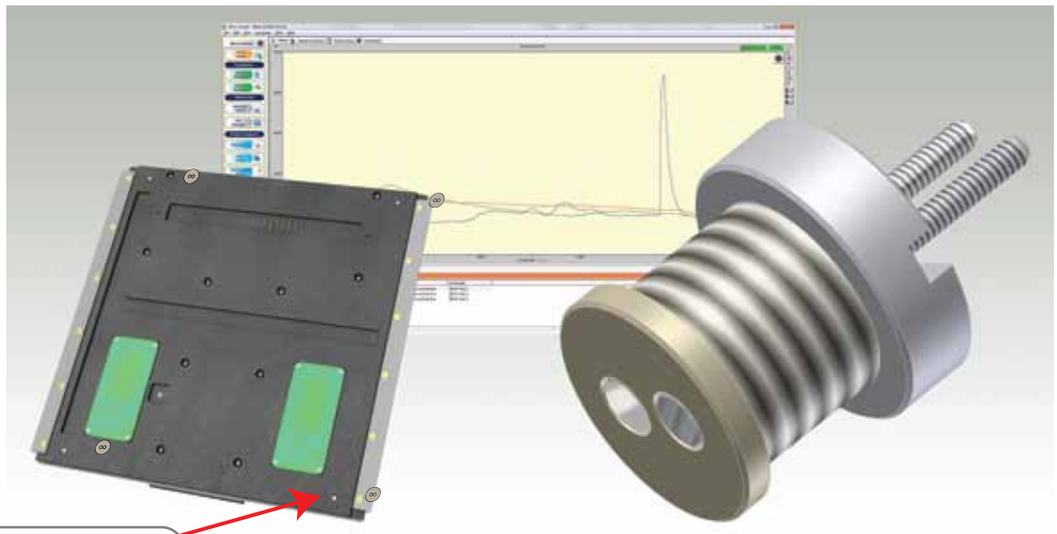
The Solderstar Wave-Selective provides detailed analysis of all key parameters from the selective soldering process.Pre-heat temperature profiles, solder pot and solder nozzle measurement sensors are combined in one easy to use measurement fixture, this unique tool allows manufacturers to quickly perform setup and verification profiles of their selective soldering machines

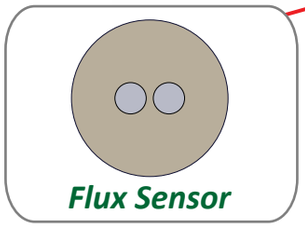


PROFILE GRAPH AND DATA MANAGEMENT TOOLS

SELECTIVE PROCESS CHECKER CHARTS FOR RAPID GOOD/BAD ANALYSIS

Flux Sensing Option





- Allows testing of fluxer as part of the daily selective machine test
- Detect typical flux spots of 2 - 3mm
- Programmable to detect different flux types reliably
- Detect mis-sprays due to nozzle clogs
- Detect X/Y positioning errors

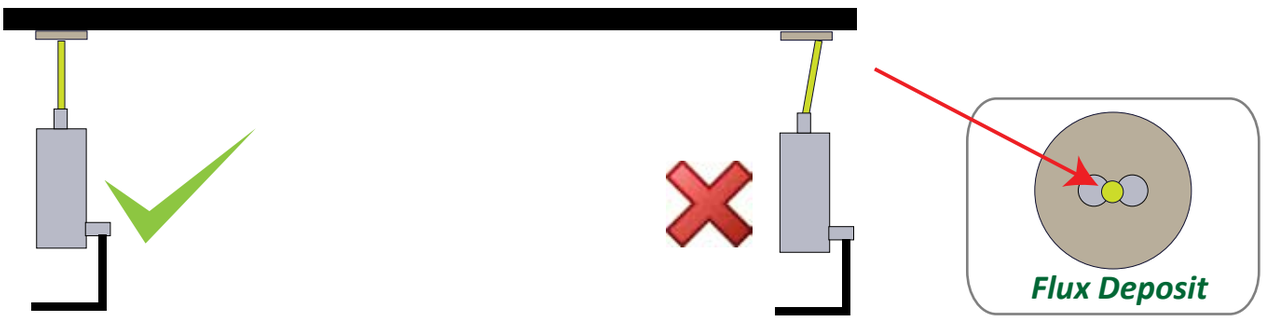
Measurement of your Mini-Wave fluxer and positioning mechanism

The main problems reported in fluxing within the selective process was X/Y positioning problems and crystallisation/nozzle clogging.These two issues often result in flux being deposited in the wrong areas on an electronic assembly, insufficient fluxing of necessary components will result in poor soldering quality, and potentially un-activated flux could seep under sensitive electronics, producing in-field issues.

The Flux Sensor option can be installed to the Solderstar Mini-Wave selective measurement pallet, expanding its standard measurement system to allow detection of the presence on flux.

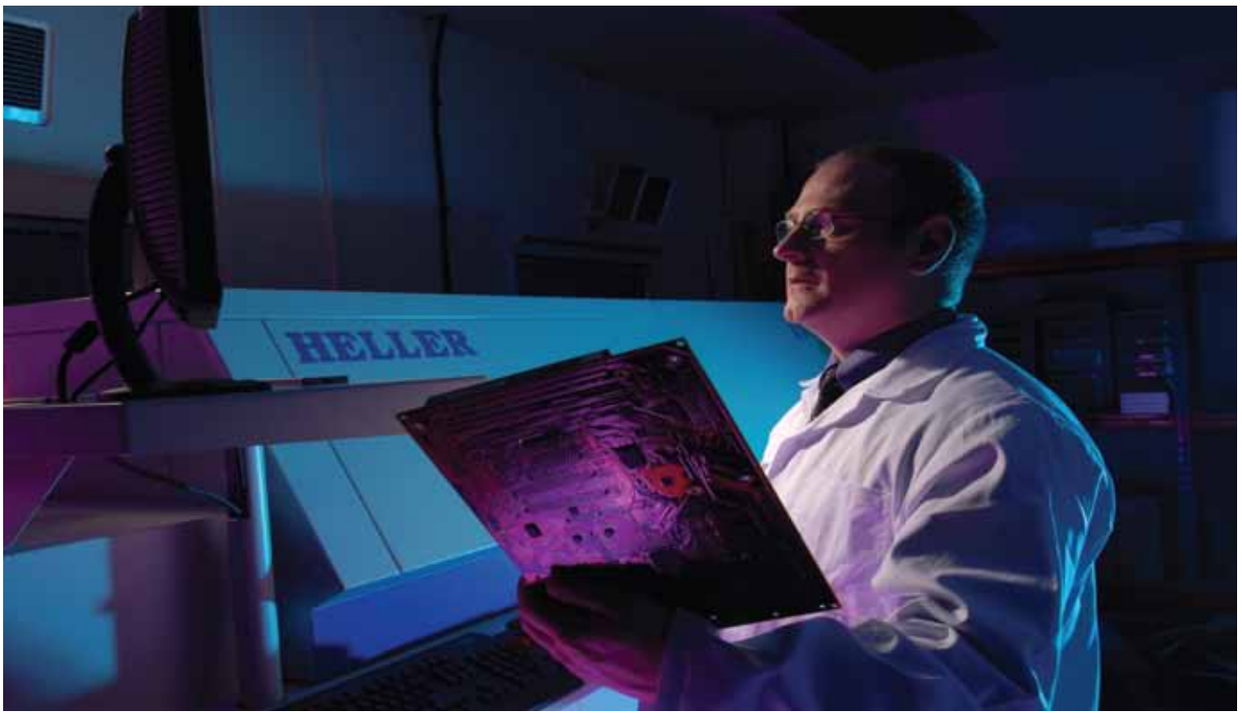
An array of four sensor heads are installed to the base pallet, plus an additional signal conditioning circuit to allow small surface resistance measurement to be performed by the measurement electronics.

The selective machine is programmed to deposit a small amount of flux at the centre of each sensor. The gap between the sensor points is 1mm,allowing a very small deposit of flux to be sprayed for detection.
This 4 point method given a good indication of both positioning accuracy and perpendicular spraying/jetting of the flux.



Support

Solderstar customers enjoy the benefit of knowing that you have invested in a professional solution which has already proved itself, in 1000s of facilities around the world, in being able to stand up to the rigours of daily use.



Our products are available in every major manufacturing market through our chain of experienced industry partners who provide localised sales support and training.

Calibration and service functions are available at most local distributors or via centralised support capabilities in the UK, Germany, Hong Kong and the USA.

Product support and response time to field problems is second to none.
If you have a problem, we will react promptly and with professionalism, all Solderstar software and hardware is developed in-house and problems will be quickly resolved by experienced engineering staff, with most problems fixed and implemented within the same day.

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