STANNOL Thermologger 5000
5-channel Temperature Profiling Equipment

Easy control and evaluation of temperature profiles in an industrial soldering process become more and more important to ensure the quality of your products. This is true for reflow and wave soldering. It will become even more important with the smaller process windows we all have to cope with when switching to lead-free soldering processes. With lead-free soldering all process related materials (fluxes, pastes, PCBs, components) have to cope with much higher thermal stress and a smaller process window. Even on modern soldering equipment external temperature logger is required for a reliable control of the temperature profiles. As each PCB layout shows different thermal demands, it is normally necessary to align each set of parameters to each layout. This alignment and its control must be done on a regular base, as also the thermal situation in each oven may vary according to contamination and age of the soldering equipment.

Also the documentation of the soldering process is getting more and more important to fulfil the established quality management systems. Therefore it is important to use measurement equipment, which can be used for an easy and quick documentation and control of your soldering process.
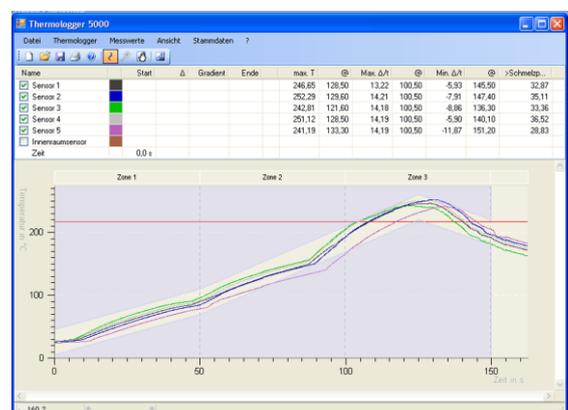
With the **STANNOL Thermologger 5000** we can offer a precise, 5-channel, easy-to-use, cheap but high reliable and robust temperature logger, which copes with today's demands in an electronic production. Hard- and software are intuitively to use. The Thermologger is ready for measurement with a few basic steps. The thermo couples need to be fixed on the PCB and connected with the Thermologger 5000. The recording of the temperature can start. Switch the Thermologger on and bring it together with the PCB into the reflow oven or into the wave soldering machine. With the separate Thermal Box, the Thermologger 5000 can also be used in vaporphase ovens.

Content of Complete Set

The **STANNOL Thermologger 5000** was developed to be used in a wave solder machine as well. When wave soldering, the changes in temperature are very dynamic, especially at the entry and exit of the waves. Standard temperature profilers normally have only one fixed sample rate for recording the data. This often results in very inaccurate recording and displaying of the described dynamic changes in a wave solder machine. The **STANNOL Thermologger 5000** works with a dynamic sampling rate, which is capable to increase the sampling rate dynamically. Therefore it will record the data at wave soldering very accurately with all important details for a proper data analysis.

After the measurement is finished, the Thermologger will be connected to a free USB-port of a common standard PC and the data will be transmitted into the Windows based software. The Thermologger is then ready for the next measurement.

User Interface

With the development of the **STANNOL Thermologger 5000** it was our intention, to create easy-to-use software with necessary functions for an outstanding

cost- performance ratio. The software contains the basic functions for analysing the collected data fast and without costly operator trainings.

To achieve an explicit allocation of the recorded measurement results, pictures can be imported into the software and the fixing points of the thermo couples can be labelled easily on the imported PCB pictures.
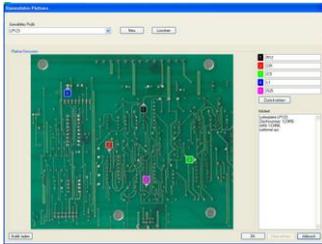
PCB with position of sensors

Each thermo couple can be labelled separately for allocation to the particular graph in the documentation.

For each data file upper and lower process limits can be defined. These limits can be separately saved and imported. If the measured results do not fit into the pre-defined user-limits, it gives the operator an easy identification where the process needs adjustment. Analysis and examination of the soldering process is therefore possible, without exact knowledge of the process.

The number of oven zones and their length can be defined in each data file and is available for displaying in the measured data. This gives the operator an easy indication, in which part of the oven process adjustment is necessary.

The graphical user interface of the software was designed to show the most important data and functions at the same time. The operator can identify the PCB and has all important data about the thermo couples available. The temperature profiles, including the pre-defined limits, are displayed. The maximum and minimum gradients can be determined with two clicks. The software includes an overlay function, which enables the operator to compare different sets of data. Single graphs can be removed or included for easy comparison.

Input of Test Conditions

New sets of recorded data can be imported into templates, where process limits, oven zones, PCB layouts and thermo couple positions are pre-defined. This reduces the time to collect all necessary data again and again.

If a printout is necessary, e.g. for customer documentation, the operator may choose which information shall be printed: Only the graph, the picture of the PCB including thermo couple position and labelling or all together.

Technical data:

Thermologger:

Measurement: 5 Channels for NiCr-Ni thermo couples (Type K)
Connection to PC: USB-Port 1.1 or higher
Operation: On/Off Switch
Power supply: 9V Battery
Temperature range: 0-380°C
Max. storing rate: from 10Hz , dynamically
Resolution: 0,1°C
Accuracy: +/- 0,5°C
Maximum measurement time: as long as the battery lasts

Maximum storage capacity: 2048 measurements for each channel with dynamical storage management for measurement up to 7 hours.
Operation display: multi-colour LED displays low voltage warning and general status of equipment
Dimensions Profiler (BxHxT) : 95x21x125mm
Dimensions Thermal Box: 152x24x207mm

Software:
PC requirements: IBM compatible PC
Pentium 2 or higher, 1 x free slot USB 1.1 or 2.0
Operating system: Win2000, WinXP

Included in delivery: Thermologger 5000, Thermal Box, 5 Thermocouples 0,5m, 9V Battery, USB-connection cable, CD with software and manual, high temperature solder, temperature resistant tape,