FLUKE®

Process Instruments

Reflow Tracker®

The Profiling Solution for the Electronics Assembly Industry

Robust

Versatile

Intuitive

Datapaq® Reflow Tracker® System

LOWEST COST OF USE

- Available in 6 and 12 channel configurations, with logger height as low as 11.7 mm (0.46 in) and as narrow as 57 mm (2.24 in) — choose the unit to fit your process.
- Packaged in an aluminum case and with conformally coated electronics the Datapaq DP5 is designed to survive harsh environments.
- Communication with PC is via standard USB A to mini B cable — no more expensive custom communication cables.
- Rechargeable from flat in 90 minutes, from any USB outlet or even a power bank.
- Slow charge from PC maximizes battery charge — ensures system is always ready for use.
- Up to 50,000 readings per channel and multi-profile capability before download — multiple ovens can be profiled back to back, with no PC download needed for each profile.
- Bluetooth communication provides instant cable free download of the results — saves time and reduces complexity.

The robust, versatile and intuitive solution ... saving you time and money

The first Datapaq profilers were supplied in 1984, always designed to provide the complete solution in the harshest of environments. Datapaq systems have become the temperature profiler of choice in all industries from food cooking through coating curing, electronics assembly to metal heat treatment and ceramics firing. Now part of Fluke Process Instruments the latest generation profiler, the Datapaq DP5, continues the tradition whilst at the same time making use of the latest technology to improve ease of use and reduce the cost of ownership.

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Datapaq DP5 Data Loggers

The most advanced and versatile family of Datapaq loggers from Fluke Process Instruments

Whether you need low height, an incredibly narrow footprint, or up to 12 channels with rapid sampling, a Datapaq DP5 logger is your best choice. Housed in a machined aluminum case and fully conformally coated, the Datapaq DP5 loggers will provide years of reliable profiling.

- Ultra-fast USB connection
- Small footprint: less than 57 mm (2.5 in) wide, 11.7 mm (0.5 in) high
- Rapid charging

The user replaceable high temperature NiMH battery charges from flat to usable in just five minutes. A full charge takes only 90 minutes and can provide 20 profile runs. That eliminates daily recharging and the need to store batteries. And with 'hot data' protection, data cannot be accidentally erased before downloading.

Datapaq DP5 data loggers

Thermal Barrier Range

Widest choice of sizes for the electronics industry

30 years of design experience in processes of up to 1,100 °C has resulted in the class leading thermal protection for the electronics industry.

The widest range of thermal barriers in the industry means there is a system to match your process and oven.

The most effective insulation available is combined with a stainless steel case and dual latch locks, ensuring maximum thermal protection in a robust lightweight package.

Open-flat design enables rapid cooling and fastest possible reuse.

Thermal barriers

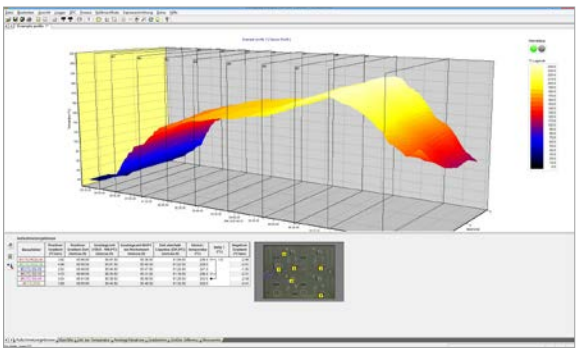
Insight Software

Flexibility with ease of use

All of the variants of the Reflow Insight software benefit from an intuitive user interface, with wizards to guide the infrequent user if needed.

A single screen presents the full results for the reflow or wave profile with alarms to indicate any out of limits results — so no time is wasted when analysing the data.

Included in Reflow Insight is the Easy Oven Set up (EOS) recipe calculation tool. EOS automatically calculates and informs the user of the optimum oven settings for a given product — saving time at every new product introduction.



Insight software

The Reflow Insight Professional software includes the EOS tool and adds process profiling capability with the addition of the Surveyor functionality. Adding the Surveyor adjustable frame and sensors* will provide an easy to use process monitoring tool that measures oven stability at the product level. This enables unskilled operators to obtain consistent data quickly, easily and repeatably, the basis for all statistical analysis.

* *An extra cost optional feature*

The Reflow Tracker system can be used to monitor the full range of soldering processes including:

Wave soldering – with the CS5006 and CS5012 wave pallets, offering up to 9 contact sensors and 3 preheat sensors, the Reflow Tracker system offers a low cost process monitoring solution for all wave soldering applications. The software transforms the raw temperature readings into actionable data including contact times and parallelism.

Selective soldering – used to measure either product temperature via thermocouples or process stability using the unique PA2200 selective soldering sensor the reflow tracker is small enough to fit in many selective soldering processes.

Vacuum soldering – increasingly used to reduce voids in the joints. The small size and low thermal mass of the thermal barriers means the Reflow Tracker system can be used in most vacuum soldering ovens. With radio telemetry, real time data from within the sealed chamber, can be processed and analyzed.

Vapour phase soldering – a range of sealed and lighter weight thermal barriers enable users to profile this process with minimal process disturbance.

Rework stations – the ability to monitor at high speed in real time, either via the USB cable or Bluetooth connection, ensures the Datapaq DP5 is the ideal solution for monitoring rework stations of any type.

Radio telemetry provides reliable real time data

The Datapaq DP5 data logger can be specified with the optional TM21 radio telemetry system. This system has been designed specifically for use in high temperature conditions and providing the temperature readings in real time has proven its value in application from food cooking to steel slab reheating.

Datapaq DP5 data logger in thermal barrier

The Fluke Process Instruments Guarantee

Each Fluke Process Instruments system is supported with a full one year warranty. Service contracts available: Complementing the warranty, we offer a yearly service and recalibration contract, which includes free software updates and loan equipment for guaranteed peace of mind.

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10/2018 Reflow_Tracker_BR_Rev A-EN

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Technical Data

Datapaq® DP5

First of a new generation of profiling solutions from Fluke Process Instruments

The Datapaq DP5 range of loggers is intended for use in short and medium duration thermal processes; the design is optimized for low height and fast reading capabilities.

The Datapaq DP5 has been designed to ensure minimum cost of use and achieves this by making use of 'off the shelf' charging and communication leads.

In addition all of the Datapaq DP5 loggers feature a rechargeable and user replaceable NiMH battery pack, combining ease of use with lowest running costs. The user replaceable battery charges from flat to usable in just five minutes. A full charge takes only 90 minutes and can provide 20 profile runs.

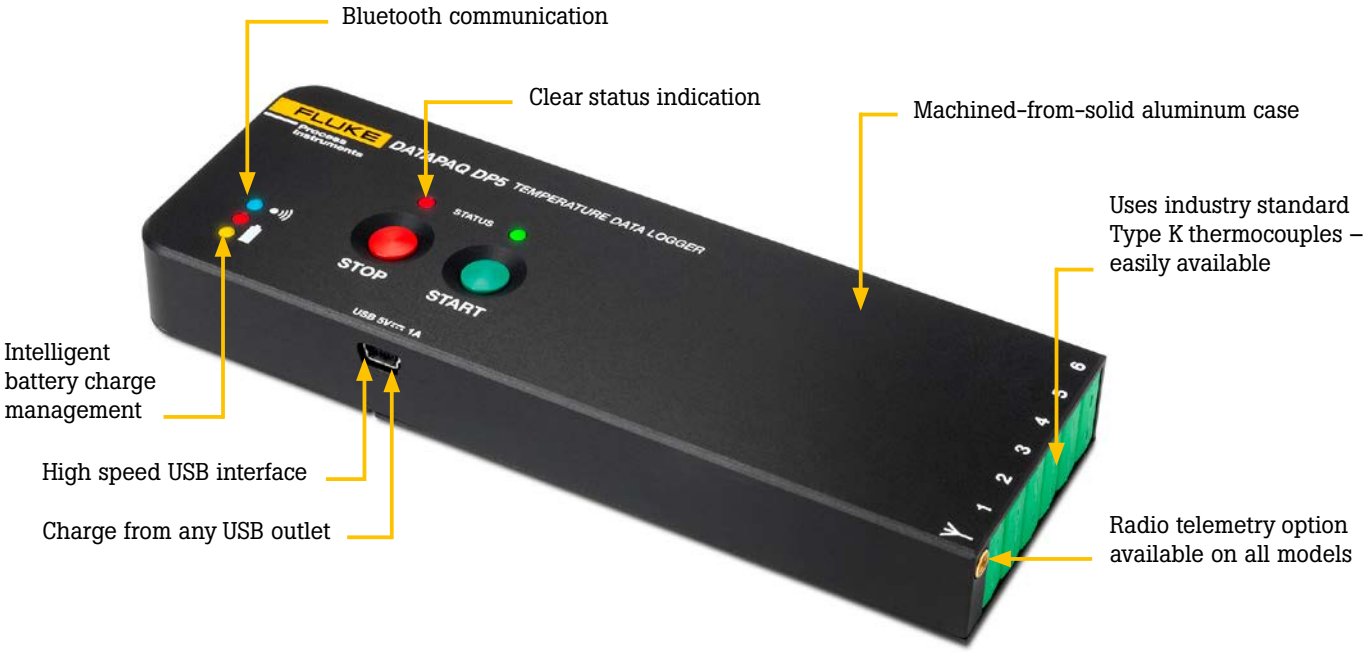
Available in 6 and 12 channel configurations, with logger height as low as 11.7 mm (0.46 in) and as narrow as 57 mm (2.24 in) — choose the unit to fit your process.

- Communication with the Insight software is via USB or Bluetooth
- Compatible with the TM21 radio telemetry system enabling real time data collection from the harshest of environments.*

The Datapaq DP5 is available in a number of formats ensuring the best match of profiler to process restrictions.

** Contact Fluke Process Instruments for availability of telemetry/Bluetooth in your country.*

Data Logger Datapaq DP5



Rugged
The Datapaq DP5 is housed in a 'machined from solid' aluminum case ensuring maximum protection for the electronics when used in an industrial environment.

Easy to use
The simple color coded two button interface ensures the system is easy to use.

Ready for use
The ability to recharge from any USB outlet results in a logger that is always ready for use. The USB charging combined with a logging time in excess of 24 hrs, on a single charge, ensures Datapaq DP5 is ready when needed.

Time saving – multiple profile capability
The logger can store up to 10 profile runs before being returned to the PC for download and detailed analysis. This enables rapid verification of a number of ovens with no wasted time

Immediate results – from within the process
The powerful built–in & harsh–environment radio transmitter provides real time data from within the process opening a 'window' into the process, speeding up fault finding and process optimizations.

DP5660
The most frequently specified version of the Datapaq DP5, the DP5660, is used in short duration low height processes in electronics and coating curing applications.

DP5661
The DP5661 is used where height and width are both severely limited.

DP5662
The DP5662 is used where width is limited.

DP5612
The DP5612 offers 12 channel capability in an easy to use and rugged package using standard thermocouple connectors.

DP5622
The DP5622 a 12 channel logger for use where width is limited.

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Technical Specifications

Data Logger Datapaq DP5

Model	DP5660	DP5661
Height	11.7 mm (0.46 in)	11.7 mm (0.46 in)
Width	106 mm (4.10 in)	60 mm (2.30 in)
Length	150 mm (5.90 in)	301 mm (11.8 in)
Weight	0.3 kg (0.66 lbs)	0.3 kg (0.66 lbs)
		

Model	DP5662	DP5612	DP5622
Height	20 mm (0.70 in)	20 mm (0.70 in)	20 mm (0.70 in)
Width	57 mm (2.20 in)	106 mm (4.10 in)	60 mm (2.3 in)
Length	165 mm (6.40 in)	165 mm (6.40 in)	237 mm (9.3 in)
Weight	0.3 kg (0.66 lbs)	0.3 kg (0.66 lbs)	0.3 kg (0.66 lbs)
			

Number of channels	6 or 12
Thermocouple types	Type K using industry standard miniature sockets (N and T versions are available to order)
Temperature measurement range	-100 °C to 1,370 °C (-148 °F to 2,498 °F)
Accuracy	+/- 0.5 °C (+/-0.9 °F) (for sampling interval > 0.4 seconds)
Resolution	0.1 °C (+/- 0.18 °F)
Sampling speed	50 ms to 10 minutes
Maximum operating temperature	85 °C (185 °F) *NOTE: to preserve the accuracy of the readings the logger will switch off at this temperature and warn the operator.*
Start triggers	Manual, rising temperature and time triggers can be used to start the logger
Stop triggers	Manual and falling temperature to stop the logger
Memory size	50,000 readings per channel (fixed)
Battery life	Up to 25 hours continuous measurements at 1 second sampling or 20 profile runs at 0.5 second with download to PC
Battery charge time	1.5 hours from flat using USB power outlet, 14 hours from PC
Multiple run capability	Up to 10 profile runs before returning to PC
Communication	USB A to USB mini B connection cable
Bluetooth	Up to 5 m (16 ft) range can be used for reset/download and real time data collection

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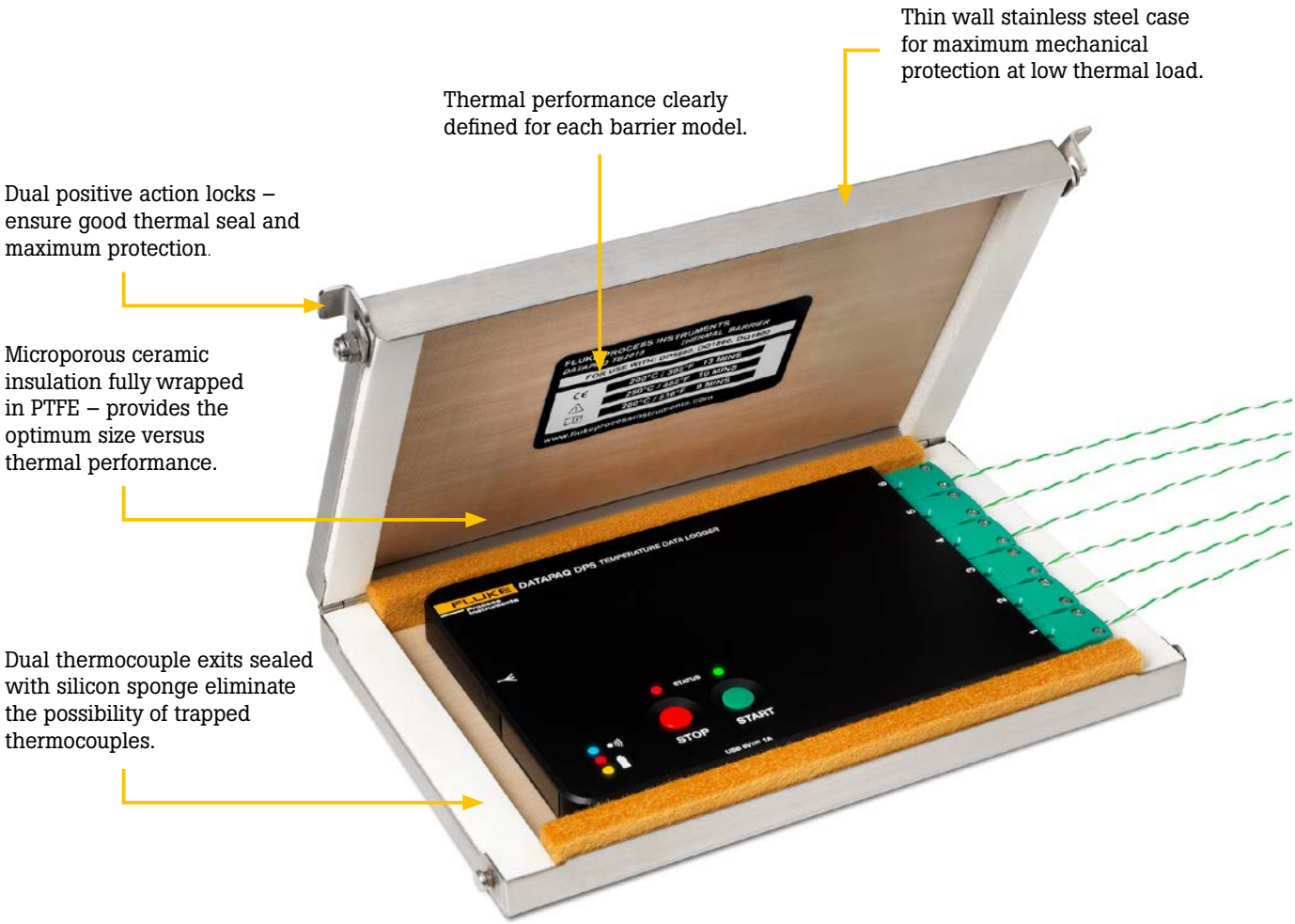
Technical Data

Thermal Barriers

for Datapaq DP5 6 & 12 channel

Our rugged stainless steel thermal barriers are incredibly lightweight and constructed using microporous ceramic insulation that ensures maximum protection and service life. Our most popular barrier weighs only 0.7 kg (1.6 lb) and can survive temperatures of 300 °C (572 °F) for over eight minutes.

These thermal barriers routinely withstand the harshest industrial environments. They are made of the same insulation used in an airplane's 'black box' and are proven to protect your data logger run after run, day after day.



THERMAL BARRIERS SUITABLE FOR 6 CHANNEL DATA LOGGER – DP5660

TB2064 – Low height thermal barrier
A low height barrier for profiling ovens with very tight clearances. If rapid re-use is required or a longer than standard process is to be profiled, then consider TB2015 or TB2065.

Weight	0.6 kg (1.3 lb)		
Dimensions (H × W × L)	20 × 133 × 210 mm (0.8 × 5.2 × 8.3 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	9	8	6

TB2015 – Standard thermal barrier
The standard workhouse barrier used in thousands of facilities worldwide. If height is limited, consider the TB2064. If very frequent, heavy use is planned, consider the TB2065.

Weight	0.68 kg (1.5 lb)		
Dimensions (H × W × L)	25 × 133 × 210 mm (1.0 × 5.2 × 8.3 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	13	10	9

TB2065 – Long duration thermal barrier
Designed for longer duration and higher temperature processes. The choice when frequent profiling is needed and cool down time is limited.

Weight	0.68 kg (1.5 lb)		
Dimensions (H × W × L)	29 × 133 × 210 mm (1.1 × 5.2 × 8.3 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	13	11	10

THERMAL BARRIERS SUITABLE FOR 6 CHANNEL NARROW DATA LOGGER – DP5662

TB2020 – Low height narrow thermal barrier.
For profiling small products where oven width and height are limited.

Weight	0.5 kg (1.1 lb)		
Dimensions (H × W × L)	28 × 84 × 223 mm (1.1 × 3.3 × 8.8 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	10	8	7

TB2021 – Narrow thermal barrier
Narrow for limited width with enough insulation for rapid re-use. If height is limited, then consider the TB2020.

Weight	0.65 kg (1.4 lb)		
Dimensions (H × W × L)	35 × 84 × 223 mm (1.3 × 3.3 × 8.8 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	13	11	10

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THERMAL BARRIERS SUITABLE FOR 6 CHANNEL SUPER SLIM DATA LOGGER – DP5661

TB2066 – Low height, slim thermal barrier

Created to profile very narrow and low height assemblies.

Weight	0.65 kg (1.4 lb)		
Dimensions (H × W × L)	20 × 87 × 328 mm (0.8 × 3.4 × 12.9 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	8	6	6

TB2067 – Standard slim thermal barrier

Standard height, yet slim for frequent profiling of narrow processes. If height is limited, consider the TB2066. If very heavy use is planned, consider the TB2068.

Weight	0.75 kg (1.7 lb)		
Dimensions (H × W × L)	25 × 87 × 328 mm (1.0 × 3.4 × 12.9 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	11	10	8

TB2068 – Long duration slim thermal barrier

For longer duration and higher temperature processes, or when frequent profiling is needed and cool down time is limited.

Weight	0.8 kg (1.8 lb)		
Dimensions (H × W × L)	29 × 87 × 328 mm (1.1 × 3.4 × 12.9 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	13	11	10

THERMAL BARRIERS SUITABLE FOR 12 CHANNEL DATA LOGGER – DP5612

TB2100 – Low height 12 channel thermal barrier

Designed primarily for use in convection or IR reflow soldering processes, where the process height is restricted and 12 thermocouple channels are required.

Weight	0.7 kg (1.5 lb)		
Dimensions (H × W × L)	28 × 134 × 225 mm (1.1 × 5.3 × 8.9 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	10	8	7

TB2101 – Standard 12 channel thermal barrier

Designed primarily for use in convection or IR reflow soldering processes.

Weight	0.8 kg (1.8 lb)		
Dimensions (H × W × L)	35 × 134 × 225 mm (1.3 × 5.3 × 8.9 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	13	11	10

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THERMAL BARRIERS SUITABLE FOR 12 CHANNEL DATA LOGGER – DP5622

TB2081 – Low height 12 channel thermal barrier

Designed primarily for use in convection or IR reflow soldering processes, where the process height is restricted and 12 thermocouple channels are required.

Weight	0.6 kg (1.3 lb)		
Dimensions (H × W × L)	28 × 88 × 288 mm (1.1 × 3.4 × 11.3 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	10	8	7

TB2082 – Standard 12 channel thermal barrier

Designed primarily for use in convection or IR reflow soldering processes.

Weight	0.7 kg (1.4 lb)		
Dimensions (H × W × L)	35 × 88 × 288 mm (1.3 × 3.4 × 11.3 in)		
Thermal Duration			
Temperature	200 °C (392 °F)	250 °C (482 °F)	280 °C (536 °F)
Duration (mins)	13	11	10

The Fluke Process Instruments Guarantee

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Service contracts available: Complementing the warranty, we offer a yearly service and recalibration contract, which includes free software updates and loan equipment for guaranteed peace of mind.

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12/2019 DS_Thermal_barriers_EN_Rev B

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Technical Data

Thermocouples

for use in electronics assembly industry

PA0210 – Fast responsive exposed junction

This is the standard thermocouple used throughout the reflow industry and is constructed from type K thermocouple wire. Each conductor is PTFE insulated and then twisted together to prevent tangling in use. The wire diameter is 0.2 mm (.007 in), providing a good compromise between size and strength. The thermocouple tip is pre-tinned to ease soldering to the PCB. We recommend the use of an activated flux and high temperature solder to attach this thermocouple to the PCB assembly.

Thermocouple material	Type K special limits of accuracy
Accuracy	±1.1 °C or 0.4 % of the reading (whichever is greater)
Length	800 mm (31.4 in)
Conductor diameter	0.2 mm (.007 in)
Temperature	265 °C (509 °F) maximum

PA1683 – Fine wire

This thermocouple has been developed specifically for use with BGA and ultra fine pitch surface mount components. The type K thermocouple conductors are 0.1 mm (.003 in) in diameter, each insulated with PTFE. The two conductors are then over-wrapped with a single outer PTFE sheath to prevent tangling in use. The recommended attachment method is activated flux and high temperature solder. For BGA, the accepted practice is to drill through the PCB and insert the tip until it touches a ball, and then bond the thermocouple wire in place.

Thermocouple material	Type K to British Standard Class 1
Accuracy	±1.5 °C or 0.4 % of the reading (whichever is greater)
Length	500 mm (19.6 in)
Conductor diameter	0.1 mm (.003 in)
Temperature	265 °C (509 °F) maximum

PA1571 – Ultra fine diameter, mineral insulated

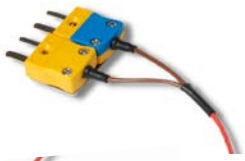
The PA1571 is intended for use in high temperature applications. It is a Type K mineral insulated thermocouple with an Inconel outer sheath. The overall diameter is 0.5 mm (.01 in). It can operate to 1000 °C (1832 °F). Attachment method will depend on the application, but can include ceramic cement or mechanical fixtures.

Thermocouple material	Type K to British Standard Class 1
Accuracy	±1.5 °C or 0.4 % of the reading (whichever is greater)
Length	600 mm (23.6 in)
Conductor diameter	NA (outer sheath is 0.5 mm / .01 in)
Temperature	1,000 °C (1832 °F) maximum

PA0215 – Fiber insulated probe
Exposed junction type K thermocouple constructed from 0.2 mm (.007 in) wire with glass fiber insulation. This probe is designed for continuous use up to 355 °C (671 °F) and is therefore ideally suited to high temperature soldering applications. For best results, we recommend that the probe is attached using an activated flux and high temperature solder.

Thermocouple material	Type K special limits of accuracy
Accuracy	±1.1 °C or 0.4 % of the reading (whichever is greater)
Length	800 mm (31.4 in)
Conductor diameter	0.2 mm (.007 in)
Temperature	355 °C (671 °F) continuous 400 °C (752 °F) intermittent

PA0885 Surveyor sensor (horizontal plugs) long for use with DP5660 and Surveyor PA0883
Surveyor sensor using type K thermocouples to ANSI MC96.1 special limits of error.
Dual horizontal thermocouple plugs fitted to mounting plate.



PA0886 Surveyor sensor (dual vertical plug) for use with DP5662 and DP5612 and Surveyor PA0884
Surveyor sensor using type K thermocouples to ANSI MC96.1 special limits of error.
Fitted with dual vertical plug.

PA1321 Wave solder contact sensor 420 mm long to be used on CS5006, CS5012 wave soldering pallets.

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7/2019 DS_Reflow_Thermocouples_EN_Rev B

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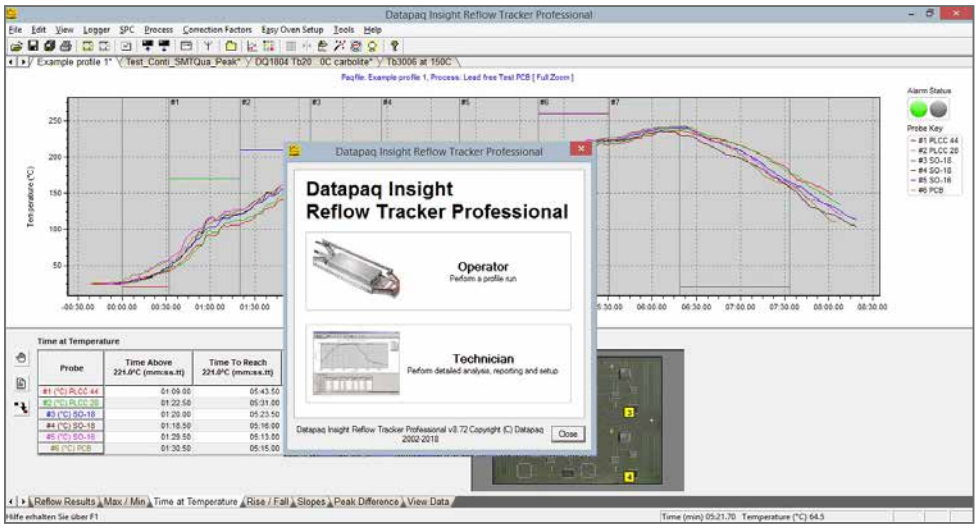
Technical Data

Software Options for Reflow Tracker Systems



Datapaq Insight Reflow Tracker is available in three performance options ... choose the price/performance that best meets your needs.

The three Insight software products are designed to convert your raw data into meaningful information that can be acted on. All options provide a clear user interface, context sensitive help screens and wizards to assist infrequent users. The ability to change the language and email results directly at the touch of a button enables you to share information across the factory and across the world.

Datapaq Insight Reflow Tracker Basic

The cost effective solution for general profile checking of both wave and reflow soldering processes. The basic software displays the full profile results on one easy to read screen while enabling a deep dive into the data via further analysis functions when needed. The quick-to-set-up single screen process file enables the oven zones and set points to be overlaid on the profile, ensureing rapid trouble shooting.

Datapaq Insight Reflow Tracker

The popular Insight Reflow Tracker software builds on Insight basic by adding both profile prediction and recipe calculation functionality, making light work of product changeover and process optimization. Combined with the built in Statistical Process Control and multiple profile overlay features the Insight Reflow Tracker software provides every tool required to set up, optimize and trouble shoot all soldering processes.

Datapaq Insight Reflow Tracker Professional

The Insight Reflow Tracker Professional software adds to Reflow Insight with the ability to monitor process stability using the Surveyor – an easy to use tool with simple wizard driven user interface that enables operators to profile frequently without the problems associated with the use of golden boards.

Technical Specifications

Datapaq Insight Reflow Tracker	Basic SW5060B	Standard SW5060	Professional SW5060P
Surveyor	–	–	Yes
Customization of software screens	–	–	Yes
Easy Oven Set up recipe calculation	–	Yes	Yes
Reflow oven profile prediction	–	Yes	Yes
Support for process files	Yes (single page)	Yes	Yes
Data analysis functionality	Yes	Yes (not Surveyor)	Yes
Support for Wave solder profiling	Yes	Yes	Yes
One touch E-mail results files	Yes	Yes	Yes
Wizards to step novice users through processes	Yes	Yes	Yes
Hard wired telemetry for work station monitoring	–	Yes	Yes
Radio telemetry for immediate results	–	Yes	Yes
Statistical Process Control calculations	–	Yes	Yes
Analysis alarms instant go/no-go indications	–	Yes	Yes
Results file overlay rapid comparison of files	Limited to one	Yes	Yes
Copy data – share or export to other Windows software	Yes	Yes	Yes
Import data	–	Yes	Yes
Logger correction factors – automatic	–	–	Yes
One click language change	Yes	Yes	Yes
Format the printed report	Single page only	Yes	Yes
Overlay files while logging in real-time	–	Yes	Yes
Tolerance curves – graphical tolerance band check	–	Yes	Yes
Virtual probes – i.e., slopes at every point	–	Yes	Yes
Thermal Contour Plot	–	Yes	Yes
SPC Extrapolation	–	–	Yes
OPC – real time data sharing with enterprise software	Yes	Yes	Yes
Run alarms	–	Yes	Yes
Track thermocouple usage	–	Yes	Yes
Simplified process file	Yes	–	–
Overlays	1	10	10

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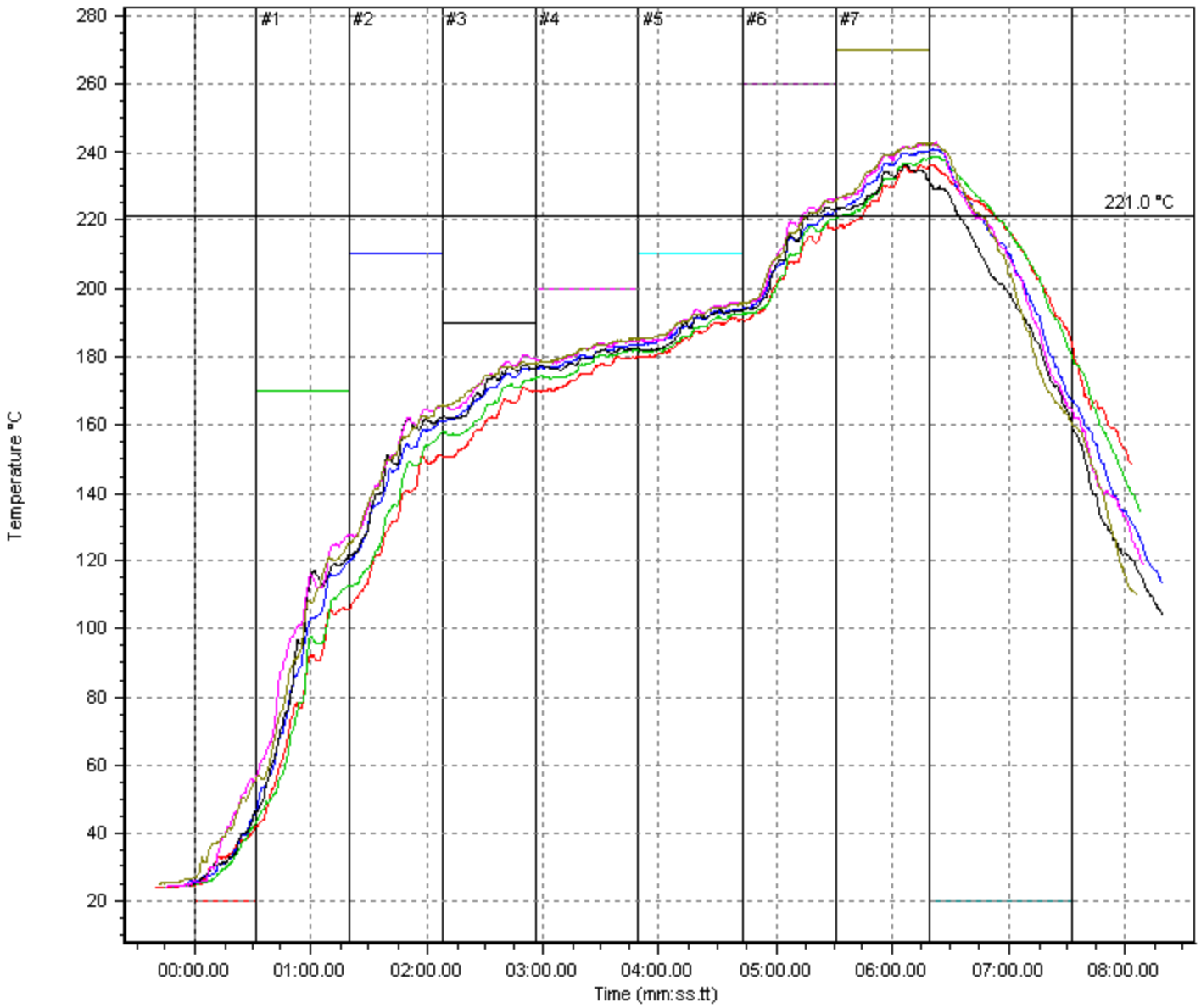
5/2018 DS_Reflow_Insight_software_options_EN_Rev A

File: Example profile 1.paq	Company: Datapaq	
Site: Cambridge	Process: Lead free Test PCB	Product: Simple test board



Line Speed:	Zone:		#1	#2	#3	#4	#5	#6	#7	
45.0 cm/min	Length (cm):	24.0	36.0	36.0	36.0	40.0	40.0	36.0	36.0	56.0
	Upper (°C):	20.0	170.0	210.0	190.0	200.0	210.0	260.0	270.0	20.0
	Lower (°C):	20.0	170.0	210.0	190.0	200.0	210.0	260.0	270.0	20.0

Data Collection Details:

Created By	Download
Number of Probes	6
Sample Interval	0:00.50 (mm:ss.t)
Data Loaded	20/11/2001 16:31:00
Collection Started	20/11/2001 15:16:16
Max. Internal Temp.	75.0 °C
Logger ID	#8307
Operator	
Process	Lead free Test PCB
Oven	Medium Oven
Recipe	Lead free solder
Product	Simple test board
Time Printed	29/06/2011 16:17:55

Notes:

Seven heated zones and 1 cooling zone consisting of fans in the exit chamber
Example recipe supplied with Insight.
Mixture of PLCC and SOIC on 1.6mm FR4

DATAPAQ®
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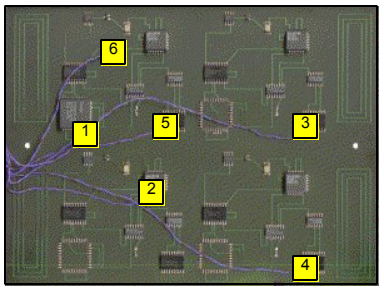
Approved By:

Probe Map:



20.2x15.2 cm

	x	y
#1	15.9	7.0
#2	12.4	10.2
#3	4.0	6.6
#4	4.0	14.3
#5	11.6	6.6
#6	14.4	2.6

Direction of travel through oven

File: Example profile 1.paq	Company: Datapaq	
Site: Cambridge	Process: Lead free Test PCB	Product: Simple test board

Probe	Reflow Results									Time at Temperature			
	Positive Slope (°C/sec)	Positive Slope Time (mm:ss.tt)	Rise Time (120.0 - 160.0°C) (mm:ss.tt)	Rise Time 50.0°C to Peak (mm:ss.tt)	Mean Slope to Peak (°C/sec)	Time Above Liquidus (221.0°C) (mm:ss.tt)	Peak Temperature (°C)	Delta T (°C)	Negative Slope (°C/sec)	Time Above 221.0°C (mm:ss.tt)	Time To Reach 221.0°C (mm:ss.tt)	Time Above 230.0°C (mm:ss.tt)	Time To Reach 230.0°C (mm:ss.tt)
#1 (°C) PLCC 44	3.62	00:57.00	00:57.00	05:36.50	0.53	01:09.00	236.0	7.0	-2.96	01:09.00	05:44.50	00:34.00	05:55.50
#2 (°C) PLCC 28	4.96	00:57.50	00:51.50	05:40.50	0.52	01:22.50	238.5		-2.01	01:22.50	05:32.00	00:45.00	05:54.50
#3 (°C) SO-18	2.83	00:49.00	00:44.00	05:47.00	0.50	01:20.00	241.0		-1.85	01:20.00	05:24.50	00:47.00	05:46.50
#4 (°C) SO-18	4.72	00:57.50	00:30.50	05:31.00	0.49	01:18.50	236.0		-2.31	01:18.50	05:17.00	00:27.50	05:54.00
#5 (°C) SO-16	4.54	00:42.50	00:39.50	05:58.50	0.49	01:29.50	243.0		-2.48	01:29.50	05:14.00	00:49.00	05:45.50
#6 (°C) PCB	3.88	00:56.00	00:40.50	05:46.50	0.51	01:30.50	242.5		-2.41	01:30.50	05:16.00	00:53.00	05:43.00

Probe	Peak Difference		
		Peak Difference (°C)	Time Reached (mm:ss.tt)
#1 (°C) PLCC 44	152.0		
#2 (°C) PLCC 28			
#3 (°C) SO-18		38.0	08:01.00
#4 (°C) SO-18			
#5 (°C) SO-16			
#6 (°C) PCB	114.0		

Alarms			
	Analysis	Probe	Alarm Description
1	Time at Temperature	#3	#2: Time above (mm:ss.tt) is greater than the maximum (00:47.00 > 00:45.00)
2	Time at Temperature	#5	#2: Time above (mm:ss.tt) is greater than the maximum (00:49.00 > 00:45.00)
3	Time at Temperature	#6	#2: Time above (mm:ss.tt) is greater than the maximum (00:53.00 > 00:45.00)

FLUKE®

Process Instruments

Technical Data

Datapaq® DP5 Radio Telemetry System

Real-time temperature data direct from your thermal process

The Datapaq® DP5 radio telemetry system utilizes radio-frequency technology to allow data transmission from the data logger in real time. As the system travels through the process, product and process temperature data can be viewed, analyzed and reported instantaneously. This technology can be applied to monitoring key thermal processes in most industrial heating applications.

System Features

- System can be tailored to meet your process requirements
  - Batch Process(es): Simple primary receiver kit
  - Conveyorized Processes: Primary receiver complemented with add-on secondary receivers
- Automatic frequency selection, minimizing interference and maximizing signal quality
- Intelligent listen-before-transmit technology enables the system to operate with multiple loggers
- Receivers connected with error free industrial RS485 communications bus, maximizing data reception
- Real time system diagnostics reporting signal status for each transmitting logger and receiver
- Transmission performance optimized for high-temperature operation with internal self-calibration
- In-logger data storage backs up transmitted data ensuring integrity of data

Secondary receiver kit

Primary receiver kit connected to a PC

Features and Benefits

Rapid QA – Know that your product has been thermally processed to specification before the system has even exited the process.

Improve the productivity of any batch process – Know when critical product temperature has been achieved and allow the process to be completed or moved on to the next phase. Optimize cycle times with confidence.

Rapid fault-finding – See immediately when process problems are being experienced without having to wait until the completion of the process. Allow corrective action earlier, saving time and reducing possible scrap.

Improve efficiency of process optimization – Use live data to view the effect of any process-parameter changes on the temperature profile instantly.

FLUKE®
Process Instruments

Technical Specifications

TM21 Transmitter (TX1401)

Transmitter fitted inside data logger

Datapaq DP5 logger range	6 and 12 Channel, Type K, 85 °C Operation
Frequency ranges*	Euro 434.065–434.740 MHz USA 463.525–463.975 MHz
Operating temperature range	0 °C to 85 °C
Transmission range	200 m (656 ft) "in open field conditions"
Max number of transmitters per system	6
Sampling interval range	1 sec to 10 min
Interleaving limits	10
Approvals*	EU–CEPT/ERC/70–03E USA–FCC CFR 47 Part 90

** Contact us for frequency ranges for other approved countries*

TM21 Primary Receiver (Euro RX4200, USA RX4100)

Primary Receiver with integral USB comms to PC. Powered by CH0070. Equipped with Type N RF connector.

Dimensions (H x W x L)	44 x 139 x 98 mm
Frequency	To match transmitter
Antenna	Desk Top 15 cm
Operating temperature	0 °C to 50 °C
Status display	2 line 16 character backlit LCD

TM21 Secondary Receiver (Euro RX4201, USA RX4101)

Secondary receiver connected in series to the TM21 primary receiver with RS485 communication cable (10 to 100 m / 32 to 328 ft).

Dimensions (H x W x L)	44 x 139 x 98 mm
Frequency	To match transmitter
Antenna	Unity gain end feed with type N connector
Operating temperature	0 °C to 50 °C
Status display	single power and status LED
Maximum quantity	Max 6 secondary connected to 1 primary receiver

Insight Software

- Automatic frequency selection and set-up
- Real time tool detailing quality of data transmission for each logger / receiver and system status information
- Real-time analysis of process data and review against process set-up (zones, temperature set-points, overlays)
- Event markers log events at the precise point they happen on the profile
- Automatic data-saving to PC to guarantee data

The Fluke Process Instruments Guarantee

Each Fluke Process Instruments system is supported with a full one year warranty.
Service contracts available: Complementing the warranty, we offer a yearly service and recalibration contract, which includes free software updates and loan equipment for guaranteed peace of mind.

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Fluke Process Instruments offers services, including repair and calibration. For more information, contact your local office.

www.flukeprocessinstruments.com

6/2018 DP5 Telemetry_DS_Rev A_EN

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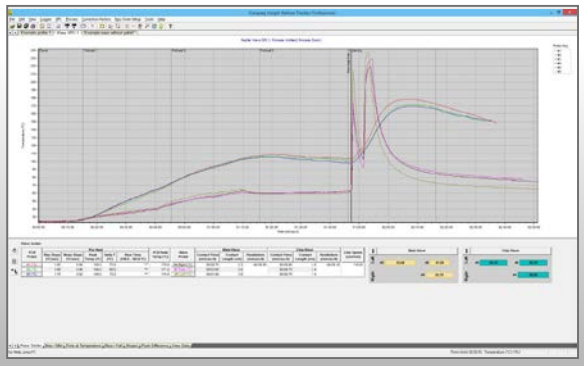
Technical Data

Wave Solder Analysis Kit

for use with a Datapaq® Reflow Tracker® System



Temperature profile with wave pallet

Insight™ software for Reflow Tracker® fully supports the specialized analysis needed to monitor wave soldering. The wave solder analysis kit allows you to adapt your Reflow Tracker temperature profiling system for monitoring the wave soldering process.

Insight software can then be used to analyze data from both the pre-heat and wave soldering phase of the process. Using one software for the complete process ensures compatibility of data throughout the factory and minimizes operator training needs.

You can view all the critical wave process parameters in one easy-to-read table. The wave, chip wave (if present) and pre-heat data will all be shown, together with the temperature profile graph.

The system uses a pallet to carry the data logger and thermal barrier through the process. The pallet incorporates fixed thermocouples ensuring accuracy and repeatability.

System Features

The wave solder analysis kit enables you to profile actual PCB/component temperatures, or alternatively, using the pallet with its integral PCB Coupon the process stability can be monitored. The results are clearly shown for the pre-heat and wave areas of the process.

Pre-heat analysis includes:

- Maximum slopes
- Rise times
- Maximum temperature in the pre-heat zone
- Delta at the wave
- Maximum temperature over the wave

Wave analysis includes:

- Contact time
- Contact length
- Parallelism
- Line speed

Wizards

Wizards are designed to guide you step-by-step through a particular process, while at each step giving you the opportunity to 'back up' to a previous step if you realize you have made a mistake.

Alarms if the Profile is out of Tolerance

The software can be configured so that if the results are out of limits in the wave or pre-heat areas, an alarm condition is shown.

Wave Solder Analysis Kit

Wave pallet

The wave solder analysis kit is designed for use with Insight Reflow Tracker software. It is compatible with the full range of Datapaq DP5 data loggers, with the exception of the DP5661.

Use Insight™ analysis software to monitor both reflow soldering and wave soldering processes. This reduces the needs for operator training on multiple systems and ensures consistency of data throughout the manufacturing area. The software is fully network compatible, enabling profile data to be shared within the same site.

Part Numbers

CS5012 **Wave solder pallet** fitted with 9 wave thermocouples and a 3 channel PCB test coupon

CS5006 **Wave solder pallet** fitted with 3 wave thermocouples and a 3 channel PCB Coupon
Dimensions (H × W × L):
40 mm × 300 mm × 350 mm
(1.5 in × 11.8 in × 13.7 in)

CS5000A10 **PCB coupon** fitted with 3 Type K thermocouples.
To be used with CS5006 and CS5012. Enables the Datapaq system to measure the top and bottom pre-heat temperatures in the wave process.

PA1320/1 **Wave thermocouples**
Thermocouples for use on CS5006 and CS5012 wave solder pallet

Wave pallet

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