

Quick Reference Guide

Running a temperature profile

1 Connect the receiver to its power supply and (via USB) to the PC. Ensure that a terminator is attached to the receiver's lower-right socket.

For full details of the use and specifications of the radio-telemetry hardware, see the TM21 system's **User Manual**.

2 Open **Insight**, and, if you have not previously set up the system's receiver (or if you have reattached it), open the **Radio Receivers dialog** and click 'Detect'. The receiver, and the logger's transmitter, should already be set to the same frequency, but, if you need to change this, click 'Radio Frequency Wizard' in the same dialog.

3 If... *EITHER* you are making the first profile run with a new Q18 logger, *OR* you want to change the reset conditions (sample interval or start trigger), connect the logger to the PC while you **reset the logger with Insight**.

Select **sample interval**.

Check **battery status**.

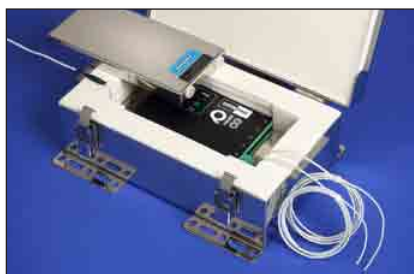
GREEN: OK
YELLOW: Caution
RED: Recharge battery

Using **temperature as the trigger**, data-recording starts when the temperature of any probe rises to the specified value.

Select **Radio Telemetry**.

Click, and set **Number of Transmissions** to 3 (see TM21 User Manual and Help).

4 Attach **thermocouples** and **transmitting antenna** to the logger, and **place logger and heatsink** in thermal barrier.

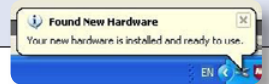


5 

Press **start** button to begin data-recording. The **green LED** flashes continuously to confirm that data is being recorded.

Installing the Insight™ software

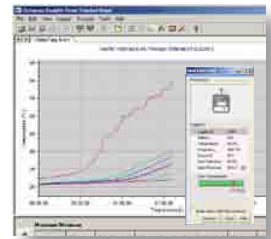
1. Ensure you are logged into Windows in Administrator mode.
2. Place the Insight DVD in the drive and follow the on-screen instructions. You will need your license number.
3. Remove the DVD, and use the communications lead to connect the logger to a USB port on the PC; the red LED on the logger should flash five times. Drivers will then install automatically.



6 Bolt the **thermal barrier** to the **rotomold** and start your process.



7 Watch the data reaching Insight in real time. Use the **Real Time Tool** to check the quality of data transmissions, battery level and logger temperature.



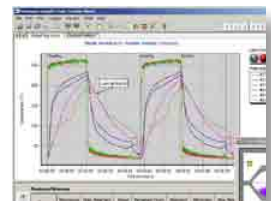
8 **CAUTION** Wear **heat-resistant gloves**.

When the process is completed, unbolt thermal barrier from the mold, **remove logger** from thermal barrier, and **press stop** button.

9 View the whole temperature profile and **save the data** as a 'paqfile'.



Print a report.



10 To ensure highest-quality data, you may **connect communications lead** and **download to PC**. Then disconnect communications lead to conserve logger battery.



Key functions of Insight Oven Tracker® Basic software

Oven zone markers - Markers on the graph indicating different oven zones.

Paqfile tabs - Open multiple profiles, and switch between them.

Probe toolbar - Click probes to remove them from the display and from the analysis.

Alarms - A 'fail' indicates out-of-tolerance analysis data (see p. 3) or problems during the run.

Mouse-operated zooming - Drag out an area to zoom into. The data grid and analysis then apply to that section of the data alone.

Movable splitter bar - Choose how much of the screen to devote to the graph or to the data.

Probe Window - Display a picture of your product, showing probe positions: select Process > Process Details.

Memos - Add comments: select Edit > Memos.

Analysis Options - Specify parameters for the current analysis mode.

Edit probe names - Edit the names of the probes.

Analysis Window - Use the tabs to select analysis modes (see p. 3). Data in red cells is out of tolerance.

Alarms Legend:
● ● Pass
● ● Fail

Maximum/Minimum Table:

Probe	Measurement (°C)	Max. Standard (minutes @)	Mean (°C)	Deviation From S.P.C.	Standard Deviation	Minimum (°C)	Min. Time (minutes)
01 °C	200.0	18:42:00	198.3	-200.0	112.7	16.0	41
02 °C	386.0	18:53:00	126.3	-246.0	111.7	18.0	41
03 °C	227.0	20:51:00	126.3	-227.0	86.6	22.0	41
04 °C	233.0	20:24:00	124.2	-233.0	74.6	21.0	41

See Insight's Help system for full details of these and many other functions.

Reset the logger
 Before a profile run, set the data-collection parameters: **sample interval**, telemetry and trigger mode (see p. 1).

Download data
 After a profile run, transfer collected temperature data from the logger to the PC (see p. 1).

Wizards
 Select a wizard to guide you, step by step, through various operations.

- Open a **paqfile**.
- **Reset** the logger.
- **Download** data.

Save the results
 For future use, save the results of your profile run as a **paqfile**.

Email the results
 Send the profile results as an email. In case the email recipient does not have Insight, the email contains a link to download free **Paqfile Viewer** software with which to view the temperature profile.

Print report
 Print a comprehensive report of the data and its analysis. To customize the report, select File > Print Options.

Mouse right-click
 Right-click on the graph to show a menu of commonly used options, including:

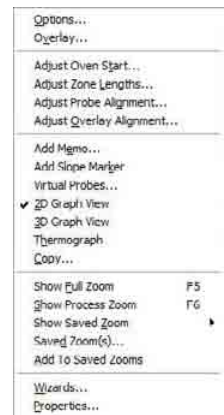
Overlay - Overlay different temperature profiles and/or tolerance curves on the same graph for direct comparison.

Adjust Oven Start - Reposition the markers for oven start and process end in a paqfile.

Copy - Exports a paqfile's data to the Windows clipboard – as text or as spreadsheet data.

Zoom - Zoom into different parts of the temperature profile.

Help
 In any dialog, press the **Help** button for information specific to the operation you are performing.



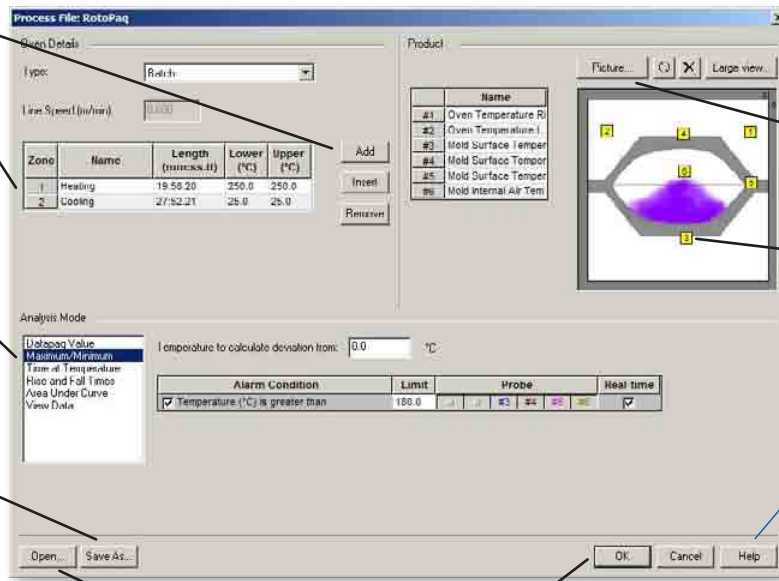
Specify the details of your process

Add and remove zones to match your oven.

Enter the oven's settings so that these can be shown on the graph to aid interpretation. Each zone can be given a name.

Select each analysis mode one at a time to change the analysis parameters (see below, and the Help system).

Save the details as a process file which can then be applied quickly to the data for any profile run. Choose the whole of the process details, or just those relating to the oven, the analysis or the product.



Click...



...to open the dialog

Insert a picture of the product for information.

Drag the yellow probe markers on the diagram.

Anywhere in Insight, fully-detailed context-sensitive help is always just a click away.

Select **Open** to browse to an existing process file.

Click **OK** to **apply** all the details shown in the dialog to the data from the profile run.

Observing the incoming data in real time

Some options available while viewing real-time data...

- After resetting the logger (p. 1) you are prompted to apply a **process file** (see above) to the data as it is received. This aids interpretation of the profile.
- Use the **Real Time Tool** to view quality of incoming data (see p. 1).
- Add **memos** to the graph as events occur (right-click the graph).

- Change your **view of the profile**: zoom, axes, items displayed (View menu > Graph Options).
- Use the View Data analysis mode (see below) to view **live numerical temperature data**, and trigger **automatic alerts** when key temperature thresholds are reached.
- To pause data-collection between rotomold runs, **stop Insight from gathering data**

(Logger menu > Stop Real Time Mode) then **re-start it** (Logger Listen Mode).

- Overlay **tolerance curves** or other reference profiles on the incoming data (View menu > Overlay).

For detailed guidance, see 'Running a Temperature Profile' in the **online Help** system.

The analysis options

Max / Min Analyse the **maximum and minimum temperatures** achieved by each probe.

Time at Temperature Calculate the time at which a specified temperature is reached, and the time for which the product was at, or above, that temperature.

Rise / Fall Slopes Calculates and analyses the **rates of heating and cooling** for each probe.

Area Under Curve Calculates the area which lies **below the temperature profile curve** but above a threshold temperature, to ensure uniformity between product cycles.



For each analysis mode, click the **Analysis Options** button (see p. 2) to **select parameters** for that analysis – or set parameters using the Process Details dialog (above).

For **detailed guidance** on analysis and alarms, see 'Data Analysis' in the **online Help** system.

Peak Difference Data for the **two probes which recorded temperatures with the biggest difference** at any single point in the profile.

View Data View the **raw temperature data for any point** in the profile.

Alarms Details of **alarms** which are triggered: out-of-tolerance analysis results, logger going over temperature, low battery or invalid measurements.

Using the Q18 logger

For full details of the use and specifications of the Q18, see the logger's **User Manual**.

Charging the logger

1. Plug the charger into the electricity supply.
2. Plug the communications lead into the logger (the lead can also be plugged into the PC or not).
3. Connect the charger lead to the charger connector on the communications lead.

A full charge is delivered in about 2 hours. Battery/charging status is shown by colored LEDs on the logger.

Battery status LEDs

Yellow	Red	Meaning
Off	Off	Battery has at least 20% of full charge (charger not connected).
Flashing every 5 seconds	Off	Battery low (charger not connected).
On	On	Battery charging.
On	Off	Charging complete (charger connected). <i>Also shows immediately on connecting charger if battery has a problem.</i>

For other LED combinations, see the logger's *User Manual*.



Battery status LEDs

Yellow and red

Logger status LEDs

Red and green

Battery life

Battery life is affected by operating temperature, use of radio telemetry and sample interval; see the *User Manual*. Because of the great potential variability in operating conditions, values given here for use with radio telemetry are no more than an indication of the battery life that can be expected. The best predictions can be obtained only by experience under the actual working conditions.

Sample interval	Logger temperature	Battery life
1 second	25°C/77°F	10 hrs
1 second	75°C/167°F	10 hrs
5 seconds	25°C/77°F	25 hrs
5 seconds	75°C/167°F	20 hrs

Saving battery life

The logger will power itself down (all LEDs off) five minutes after the **stop** button has been pressed if the data is not downloaded.

To **power down** the logger manually, press the **stop** and **start** buttons simultaneously and hold them for 3 seconds.

To **power up** the logger, either plug in the communications lead or (to start a profile run) press the **start** button. If the logger has data in memory that has not yet been downloaded, pressing the **start** button will not start a new run or delete data but will simply power the logger up; the **red** LED will then flash every 5 seconds to indicate that data needs to be downloaded.

Logger status LEDs

Red	Green	Meaning
Red and green LEDs each give 5 flashes, alternating with each other		Logger successfully reset.
Red and green LEDs flash continuously, alternating with each other, at sample interval*		Logger awaiting trigger (either Start button or temperature).
On	Flashing at sample interval*	Logger awaiting trigger, but one or more thermocouples is open circuit.
Red and green LEDs flash together, at sample interval*		All probes are above trigger temperature, and thus data-recording cannot be triggered by rising temperature. Reset temperature trigger (see p. 1).
Off	Flashing at sample interval*	Logger acquiring data.
Flashes 5 times (once per second)	Off	Connection between communications lead and logger has been made.
Flashing every second	Off	Serious internal error. Contact Datapaq.
Flashing every 5 seconds	Off	Logger has data in memory which has not been downloaded. Download to PC, or perform a PC reset to delete data.
2 quick flashes every second	Off	Logger too hot to start logging (after pressing Start button).

* Flashing interval will actually fall in range 0.5–5 seconds.

Thermal barrier TB5012-RP performance

Maximum safe durations for various continuous process temperatures.

100°C 212°F	150°C 302°F	200°C 392°F
11.5 hrs	6.5 hrs	4.5 hrs
250°C 482°F	300°C 572°F	
3.5 hrs	3 hrs	

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