DATA LOGGERS

Datapaq TP3 Logger
Supremely powerful, accurate and flexible tool for in-depth data-collection, ideal for all applications. Can be combined with a built-in transmitter to see temperature profiles developing in real time (see below, and ‘Radio Telemetry’ section).
- Two model sizes to suit different applications:
  Narrow 20.5 x 97 x 198 mm/0.8 x 3.8 x 7.8 in.
  Wide 20.5 x 124 x 177 mm/0.8 x 4.9 x 7.0 in.
- Huge memory capacity for detailed process analysis: a total of over 3.6 million data-points.
- Ten or 20 thermocouple channels (depending on model size; see below) for maximum data collection on each run.
- Can be specified for use with various thermocouple types (B, J, K, N, R, S, T) and with analog inputs (current and/or voltage) – or with a mixture of thermocouple types and/or analog inputs.
- Powered by standard alkaline AA batteries or by user-replaceable rechargeable NiMH batteries; for high-temperature applications involving logger operating temperatures (i.e. inside the thermal barrier) of up to 110°C/230°F, can also be powered by non-rechargeable lithium batteries. Any logger can use any battery-type interchangeably if appropriate battery housings are used (available separately; see below).
- USB and Bluetooth communication.

For full specification, contact Datapaq.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Channel Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP3000</td>
<td>Narrow, 10 channels.</td>
<td></td>
</tr>
<tr>
<td>TP3300</td>
<td>Narrow, 20 channels.</td>
<td></td>
</tr>
<tr>
<td>TP3400</td>
<td>Wide, 20 channels (wide models are 20-channel only).</td>
<td></td>
</tr>
</tbody>
</table>

XDL12 Logger
The XDL12 operates outside the high-temperature environment, gathering data from thermocouples within by hardwired telemetry. In conjunction with Datapaq Insight software, temperature profiles can then be watched developing – and be analyzed – in real time. The XDL12 is particularly suitable for use with Insight Furnace Surveying software, for assessing a furnace’s accuracy and uniformity of heating and its compliance with AMS 2750 or other standards. Insight will support up to three XDL12 loggers, thus gathering data from 36 channels.

The logger’s key features are:
- Twelve thermocouple channels for maximum data collection on each run.
- Can be specified for use with various thermocouple types (J, K, N, R, S, T) or with a mixture of up to three thermocouple types.
- Powered by rechargeable NiMH batteries.
- High accuracy for compliance to tight specifications (AMS 2750, NADCAP):
  ±0.3°C/0.5°F, for type K, J and T thermocouples
  ±0.4°C/0.7°F, for type N thermocouples
- USB communication.
- Lightweight and portable: 6.5 kg/14.3 lb.
- Dimensions 80 x 330 x 340 mm/3.1 x 13.0 x 13.4 in.

XDL0012 Specify thermocouple types, e.g. XD0012/10K/2S.
LOGGER CABLES, CHARGER AND BLUETOOTH

CI1150  USB Communications Lead for TP3 Logger
Connects logger to PC to enable logger reset, data download or display of real-time data-collection.

CI3029  70°C Communications Lead for Q18 and Tpaq21 Loggers
CI1103  USB Communications Lead for High-temperature Tpaq21 Logger
For use only with high-ambient-temperature loggers with lithium batteries. No power socket.

CH0070  Charger/Power-supply Unit
For TP3, XDL12, Q18 and Tpaq21 loggers, and TM21 primary receiver.

CI1034  Bluetooth Classic USB Adapter
Suitable for use with a PC or laptop which does not have Bluetooth built-in, in order to permit Bluetooth communication with TP3 logger.

LOGGER BATTERIES

Any TP3 logger can use any of the three battery-types interchangeably if appropriate battery housings are used. Battery housings are user-replaceable.

NiMH Rechargeable Batteries, for TP3 Logger: Battery Housing and Battery-pack
NiMH battery-packs are user-replaceable.
BP3000  Battery housing plus battery-pack (as in photo).
BP3010  Battery housing (does not include batteries).
BP3001  Battery-pack (does not include housing).

Alkaline AA Batteries, for TP3 Logger: Battery Housing and Battery-pack
BP3051  Battery housing plus battery-pack (as in photo).
BP3050  Battery housing (does not include batteries).
BP0011  Pack of four batteries (does not include housing).

Lithium Batteries, for TP3 Logger: Battery Housing and Battery-pack
Lithium batteries are non-rechargeable and are for high-temperature use. Battery life up to 250 hrs depending on sample interval, operating temperature and use of telemetry. Maximum operating temperature 110°C/230°F. Only lithium batteries supplied by Datapaq are suitable for use with Datapaq loggers. Lithium batteries are potentially dangerous: you must read the relevant section of your logger’s User Manual and the Safety Data Sheet supplied with the batteries.
BP3021  Battery housing plus battery-pack (as in photo).
BP3100  Battery housing (does not include batteries).
BP0021  Pack of four batteries. Also suitable for high-temperature versions of Tpaq21 logger. Maximum six packs per shipment.
CALIBRATION CERTIFICATES

CS2079  Thermocouple Certificate of Conformity
Certificate documenting conformance of thermocouple batch to either ANSI 96.1 (type K) or British Standard Class 1 (type T).

CS2080  Thermocouple Certificate of Conformity
Thermocouple calibration certificate of conformity to ISO 17025. 10 thermocouples, type K only. Covers 10 thermocouples and the following readings measured between start and end of the spool: 300°C/572°F, 500°C/932°F, 700°C/1,292°F, 950°C/1,742°F, 1,100°C/2,012°F, 1,250°C/2,282°F.

Thermocouple Certificate of Calibration
Individual thermocouple calibration (ISO 17025).

CS2081  One reading on one thermocouple.
CS2082  Two readings on one thermocouple.
CS2083  Three readings on one thermocouple.

CS2084  Thermocouple Certificate of Calibration, to Comply with AMS 2750
Thermocouple calibration (ISO 17025). 10 thermocouples, type N only. Covers 10 thermocouples and the following readings measured between the start and end of the spool: 130°C/266°F, 270°C/518°F, 410°C/770°F, 550°C/1,022°F, 690°C/1,274°F, 830°C/1,526°F, 970°C/1,778°F, 1,110°C/2,030°F, 1,250°C/2,282°F.

RC0001  Recalibration of TP3 or Tpaq21 Data Logger
Comprises:
- Electronic calibration and adjustment of logger.
- Issue of calibration certificate traceable to national standards.
- Full test of functionality including battery testing, 14-hr thermal-stress testing and temperature-stability testing.

Fixed Standard Recalibration/Service of TP3 or Tpaq21 Data Logger
As RC0001, plus minor repairs such as replacement of battery and electronic components.

RC0005  Standard
RC0006  Including issue of ISO 17025 accredited calibration certificate.
RC0007  Including issue of AMS 2750 certified calibration certificate.

SC0001  Service Contract, 12 months
Comprises:
- Use of loan equipment in case of any failure or damage.
- Electronic calibration and adjustment of logger.
- Issue of ISO 17025 accredited calibration certificate if applicable.
- Full test of functionality including battery testing, 14-hr thermal-stress testing and temperature-stability testing.
- Annual full service of equipment.
- Logger firmware and Insight software updates.
- Minor logger repairs.

SC0003  AMS 2750 Service Contract, 12 months
As SC0001, but:
- 1 x electronic calibration and adjustment of logger, and issue of AMS 2750 calibration certificate.
- 3 x calibration checks and issue of AMS 2750 certificates.

SC0004  AMS 2750 Service Contract for Indirect Territories, 12 months
As SC0003, but also use of loan logger for alternating 3-month periods while customer’s logger is being calibrated by Datapaq.
THERMAL BARRIERS

Thermal barriers to suit an extensive range of applications are available from stock or can be designed and built to order. Contact Datapaq directly for guidance on barriers appropriate to the specific needs of your process.

HEATSINKS

TB1001  Stainless-steel ‘Slab’ Heatsink (Single)
Stainless-steel case filled with phase-change material. Phase change at 58°C/136°F. Weight 1.0 kg/2.2 lb.

Furnace Heatsink for Thermal Barriers TB4012, TB4912 and up
TB1066  For TP3 or Tpaq21 loggers.
TB1069  For Q18 logger DQ1860.
TB9102  For use with two TP3 loggers or two Tpaq21 loggers in one thermal barrier.
TB9100  For use with two Q18 DQ1860 loggers in one thermal barrier.

TB9840D  Special Heatsink for Vacuum and Gas-quench Applications
For TP3 or Tpaq21 logger, in high-vacuum applications at $10^{-3}$ to $10^{-7}$ Torr/
$2 \times 10^{-3}$ to $2 \times 10^{-9}$ psi and gas-quench applications at 2–20 bar/29–290 psi. Similar to TB1066 but for pressure environments. Supplied as standard with TB4500 series and TB4600 series barriers.

Special Heatsink for Pressure Applications (Gas Quench, Autoclave)
TB9902  For TP3 or Tpaq21 loggers. Similar to TB1001 but for pressure environments.
TB9901  For use with two TP3 loggers or two Tpaq21 loggers in one thermal barrier. Similar to TB9102 but for pressure environments.

THERMAL BARRIER ACCESSORIES

CS2018  Replaceable Mullite Wear-strip for TB4900 Thermal Barrier
Stitched cloth, sufficient to replace wear-strip in lid and base. 100 × 900 mm/3.9 × 35.4 in. (sufficient for top and base replacement).

Gas-quench Deflectors
Upper and lower deflectors for specific thermal barriers.
TB4526A30  For TB4526 thermal barrier.
TB4533A30  For TB4533 thermal barrier.
TB4538A30  For TB4538 thermal barrier.
Retaining Clip
Pack of 8 R-clips used to lock catches on gas-quench deflectors TB4526A30, TB4533A30, TB4538A30.

THERMOCOUPLES

Thermocouple, Mineral-insulated, Type K, 1.6 mm/0.06 in. Diameter, Nicrobell™ Sheath
Operating range 0–1,250°C/32–2,280°F. Fitted with miniature high-temperature plug for direct connection to data logger.

<table>
<thead>
<tr>
<th>Length/mm</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA0713</td>
<td>0.5 m/1.6 ft</td>
</tr>
<tr>
<td>PA0710</td>
<td>1 m/3.3 ft</td>
</tr>
<tr>
<td>PA0711</td>
<td>2 m/6.6 ft</td>
</tr>
<tr>
<td>PA0712</td>
<td>3 m/9.8 ft</td>
</tr>
<tr>
<td>PA0714</td>
<td>4 m/13.1 ft</td>
</tr>
<tr>
<td>PA0715</td>
<td>5 m/16.4 ft</td>
</tr>
<tr>
<td>PA0718</td>
<td>6 m/19.7 ft</td>
</tr>
<tr>
<td>PA0716</td>
<td>8 m/26.2 ft. Non-stock item.</td>
</tr>
<tr>
<td>PA0719</td>
<td>9 m/29.5 ft</td>
</tr>
<tr>
<td>PA0717</td>
<td>10 m/32.8 ft</td>
</tr>
</tbody>
</table>

Thermocouple, Mineral-insulated, Type K, 3 mm/0.12 in. Diameter, Nicrobell™ Sheath
For high temperature steel re-heat applications. Operating range 0–1,300°C/32–2,372°F. Terminated with flexible PTFE tail and high-temperature plastic plug.

<table>
<thead>
<tr>
<th>Length/mm</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA0760</td>
<td>Length 3–8 m/9.8–26.2 ft, specified by customer. Allow four weeks for manufacture.</td>
</tr>
<tr>
<td>PA0761</td>
<td>1 m/3.3 ft</td>
</tr>
<tr>
<td>PA0762</td>
<td>2 m/6.6 ft</td>
</tr>
<tr>
<td>PA0763</td>
<td>3 m/9.8 ft</td>
</tr>
<tr>
<td>PA0764</td>
<td>4 m/13.1 ft</td>
</tr>
<tr>
<td>PA0765</td>
<td>5 m/16.4 ft</td>
</tr>
<tr>
<td>PA0766</td>
<td>6 m/19.7 ft</td>
</tr>
<tr>
<td>PA0767</td>
<td>7 m/23.0 ft</td>
</tr>
<tr>
<td>PA0768</td>
<td>8 m/26.2 ft</td>
</tr>
<tr>
<td>PA0769</td>
<td>9 m/29.5 ft</td>
</tr>
</tbody>
</table>

Fast-response Exposed-junction Thermocouple
Type K fiberglass braid (high-temperature varnish), 0.2 mm/0.008 in. (32 AWG) single-strand wire. Accuracy ±0.4% or ±1.1°C/2.0°F. ANSI MC96.1 (special limits). Maximum intermittent temperature 700°C/1,292°F, maximum continuous temperature 600°C/1,112°F.

<table>
<thead>
<tr>
<th>Length/mm</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA0830</td>
<td>1 m/3.3 ft</td>
</tr>
<tr>
<td>PA0831</td>
<td>2 m/6.6 ft</td>
</tr>
<tr>
<td>PA0832</td>
<td>3 m/9.8 ft</td>
</tr>
</tbody>
</table>

Thermocouple, Mineral-insulated, Type K, 1.0 mm/0.04 in. Diameter, Inconel™ Sheath
Operating range 0–1,000°C/32–1,832°F. Terminated with miniature high-temperature plastic plug.

<table>
<thead>
<tr>
<th>Length/mm</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA0923</td>
<td>0.5 m/1.6 ft</td>
</tr>
<tr>
<td>PA0920</td>
<td>1 m/3.3 ft</td>
</tr>
<tr>
<td>PA0921</td>
<td>2 m/6.6 ft</td>
</tr>
<tr>
<td>PA0922</td>
<td>3 m/9.8 ft</td>
</tr>
</tbody>
</table>

Thermocouple, Mineral-insulated, Type K, 1.0 mm/0.04 in. Diameter, ‘Nextel’ Sheath
For plasma nitriding applications. Includes 10 ceramic inserts, for inserting into workpiece.

<table>
<thead>
<tr>
<th>Length/mm</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1563</td>
<td>0.5 m/1.6 ft</td>
</tr>
<tr>
<td>PA1560</td>
<td>1 m/3.3 ft</td>
</tr>
<tr>
<td>PA1561</td>
<td>2 m/6.6 ft</td>
</tr>
<tr>
<td>PA1562</td>
<td>3 m/9.8 ft</td>
</tr>
</tbody>
</table>

Thermocouple for Furnace Surveying Applications: Mineral-insulated, Type N, 2.0 mm/0.08 in. Diameter
Maximum operating temperature 1,250°C/2,280°F. Terminated in miniature high-temperature plug. Complies with AMS 2750 specification only (Table 1, TUS probes). To check compliance with any other specification, contact Datapaq.

<table>
<thead>
<tr>
<th>Length/mm</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1580</td>
<td>1 m/3.3 ft</td>
</tr>
<tr>
<td>PA1581</td>
<td>2 m/6.6 ft</td>
</tr>
<tr>
<td>PA1582</td>
<td>3 m/9.8 ft</td>
</tr>
</tbody>
</table>
RADIO TELEMETRY

TM0100  **TM21 Primary Receiver Kit**
Complete operating primary receiver. Comprises:
- Primary receiver, region-specific – Europe RX4200, USA RX4100, rest of world RX4000.
- Primary-receiver antenna RX1010.
- Terminator TM1060.
- Power supply CH0070.
Contact Datapaq for other country-specific part numbers.

**TM21 Primary Receiver**
Basic unit without accessories.
RX4200  Europe
RX4100  USA
RX4000  Japan and rest of world
Contact Datapaq for other country-specific part numbers.

**TM21 Secondary Receiver Kit with Extension Cable**
Receiver kit using remote UGEF antenna to extend receiving range for short continuous furnaces. Comprises:
- 1 × TM21 secondary receiver kit TM0200 (see below).
- 1 × RS485 connecting cable.

| TM21-ARX-10 | With 10 m cable TM1042. |
| TM21-ARX-45 | With 45 m cable TM1045. |

**TM21 Secondary Receiver Kit**
Complete operating secondary receiver. Comprises:
- Secondary receiver, region-specific – Europe RX4201, USA RX4101, Japan and rest of world RX4001.
- UGEF antenna RX1023.
- Receiver antenna stand RX1020.
- UGEF antenna and receiver-box mounting kit RX2502.
Contact Datapaq for country-specific part numbers.

**TM21 Secondary Receiver**
Basic unit without accessories.
RX4201  Europe
RX4101  USA
RX4001  Japan and rest of world
Contact Datapaq for other country-specific part numbers.

**RS485 Cable to Link Primary and Secondary Receivers**
Supplied on reel.
- TM1042  10 m/32.8 ft
- TM1045  45 m/147.6 ft
- TM1046  100 m/328.1 ft

**TM1060  TM21 RS485 Terminator**
To be connected to last secondary receiver in a chain of receivers; or to primary receiver if it is the only one in the system.
UGEF Antenna, Europe and Japan
Unity-gain end-feed antenna for receiving signal outside the process. Frequency set to for 434.5 MHz for Europe, 429.5 MHz for Japan. Supplied with low-loss coaxial cable as follows.
RX1023 With 1-m/3.3-ft cable.
RX1036 With 10-m/32.8-ft cable.
RX1037 With 20-m/65.6-ft cable.
RX1038 With 40-m/131.2-ft cable.
RX1020 UGEF Antenna Stand
For use with antenna RX1023, RX1036, RX1037 or RX1038. Must be used with bracket RX2500.

RX2500 UGEF Antenna Mounting Bracket
For mounting UGEF antenna RX1023, etc., on UGEF antenna stand RX10120. Allows antenna to rotate about horizontal axis.

RX2501 TM21 Receiver-box Mounting Assembly
For mounting secondary receiver RX4201, etc., on UGEF antenna stand below antenna.

RX2502 UGEF Antenna and Receiver-box Mounting Kit
Used with antenna stand RX1020 to hold secondary receiver and UGEF antenna. Comprises:
- UGEF antenna mounting bracket RX2500.
- Receiver-box mounting assembly RX2501.

TX2040 Oven Transmitter Antenna, Length 410 mm/16.1 in.
For general applications with Tpaq21 logger.

TX2041 Furnace Transmitter Antenna, Length 820 mm/32.3 in.
For general furnace applications and in large-diameter special thermal barriers and slab-reheat systems.

TX2141 Furnace Transmitter Antenna, Length 820 mm/32.3 in.
For general applications and in large special thermal barriers and slab-reheat systems. Improved reception over TX2041.
Establishing Connection with Insight

If Insight has not previously been set up for use with radio-telemetry receivers, or if the setup has been changed, it is necessary to inform Insight of the receivers attached and to confirm correct connection as follows.

1. Ensure that the primary receiver and its power-supply unit, secondary receivers (if used), antennas and PC are connected as detailed above, and that the primary receiver’s power is switched on.
2. In Insight, open the communication due to strong power surges

| Primary receiver’s display should show 'PC OK' to indicate a valid connection (see p. 32 for details of the display). If this is not the case, check all connections and retry.

If a receiver is not detected initially, due to a connection or power problem, a warning is displayed on the icon for that receiver. If preferred, you may remove that receiver’s icon from the display: right-click on the icon and select 'Remove'.

Changing the System’s Frequency

The TM21 system is supplied with transmitter(s) and receiver(s) configured so that they operate on the same radio frequency and can thus communicate. The system’s operating frequency can however be changed, if thought necessary, by using the Insight software:

1. Ensure all (primary and secondary) receivers are connected, as detailed above.
2. In Insight, open the

| The dialog then shows: Where two or more secondary receivers are connected, their sequence in the dialog will not necessarily be the same as that in which they are connected. If you wish, you may correct this: click on the image of a receiver and drag it to

• The radio frequency currently in use.
• The serial number of each receiver connected.

If a receiver is not detected initially, due to a connection or power problem, a warning is displayed on the icon for that receiver. If preferred, you may remove that receiver’s icon from the display: right-click on the icon and select 'Remove'.

Close the dialog to proceed.

**MISCELLANEOUS**

**Digital Thermometer**

| CS1001 | Type K |
| CS1022 | Type R |
| CS1023 | Type S |
| CS1079 | Type N |

**CS2010 Insulation Set, 7.2 m/23.6 ft long**

Roll of alumina-fiber insulation blanket (thickness 25 mm/1.0 in., density 120 kg/m³/7.99 lb/ft³, 1250 grade). Not to be used in processes above 1,000°C/1,832°F. Additional shipping cost applies.

**CS2064 Roll of Alumina-fiber Blanket Insulation, 7.2 m/23.6 ft long**

Thickness 25 mm/1.0 in., density 120 kg/m³/7.49 lb/ft³ maximum operating temperature 1,600°C/2,912°F, thermal conductivity 0.27 W/m K. Additional shipping cost applies.

**CS2035 Fixing-tape Kit for Securing Thermocouples to Glass**

Comprises:
- 50 pieces high-temperature fixing tape, 75 × 200 × 2 mm/3.0 × 7.9 × 0.1 in., maximum working temperature 1,000°C/1,832°F.
- 200-g/0.44-lb container of ceramic paste, maximum working temperature 1,000°C/1,832°F.

**CS3085 Stainless-steel Wire, 250 m/820 ft**
PA0521  ‘Hot Bottle’ Thermocouple Holder
For product diameter 32–122 mm/1.26–4.80 in. Accepts thermocouples of diameter 1–1.5 mm/0.04–0.06 in.

INSIGHT SOFTWARE
Check www.datapaq.com for latest Insight™ version and features.

Insight Furnace Tracker
Comprehensive and feature-packed tool for obtaining and analyzing temperature profiles from your process: everything from routine quality checks to complex investigations. Wizards lead you step-by-step through all the major functions. Available in various languages.

SW5036  Chinese,       SW5030  English       SW5035  Japanese       SW5039  Slovak
SW5031  Simplified    SW5031  French        SW5038  Korean        SW5033  Spanish
SW50311 Chinese,     SW5032  German        SW5034  Portuguese     SW50314 Vietnamese
SW50311 Traditional

Insight Furnace Surveying
All the features of Insight Furnace Tracker, plus ability to conduct and analyze wizard-driven temperature uniformity surveys to assess the accuracy and uniformity of heating within a furnace – particularly for compliance with controlling specifications, e.g. AMS 2750.

SW5136  Chinese,       SW5130  English       SW5135  Japanese       SW5139  Slovak
SW5131  Simplified    SW5131  French        SW5138  Korean        SW5133  Spanish
SW51311 Chinese,     SW5132  German        SW5134  Portuguese     SW51314 Vietnamese
SW51311 Traditional

Insight CAB Surveyor
All the features of Insight Furnace Tracker, plus ability to monitor the performance of a furnace by running a standard instrumented survey jig through it using a wizard-driven interface. Temperature-profile results are then analyzed and compared with an existing baseline survey of the furnace to assess whether maintenance or adjustment of the furnace settings is required in order to maintain consistency.

SW5336  Chinese,       SW5330  English       SW5335  Japanese       SW5339  Slovak
SW5331  Simplified    SW5331  French        SW5338  Korean        SW5333  Spanish
SW53311 Chinese,     SW5332  German        SW5334  Portuguese     SW53314 Vietnamese
SW53311 Traditional

Insight Lite
Use the less-powerful features of Insight Furnace Tracker to carry out the basic processes of data-gathering and analysis of your temperature profiles.

SW5226  Chinese,       SW5220  English       SW5225  Japanese       SW5229  Slovak
SW52211 Chinese,     SW5222  German        SW5224  Portuguese     SW52214 Vietnamese
SW52211 Traditional

Additional Insight Licenses
L5030  Additional single user license for Insight Furnace Tracker.
L5130  Additional single user license for Insight Furnace Surveying.

Insight Upgrades
Various upgrade/crossgrade options are available. Contact Datapaq for details.
USER DOCUMENTATION

Available in various languages; contact Datapaq for details. Part numbers below are for English versions.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA6020</td>
<td>Datapaq TP3 Data Logger User Manual</td>
</tr>
<tr>
<td>MA6030</td>
<td>Datapaq TP3 Quick Reference Guide</td>
</tr>
<tr>
<td>MA5800</td>
<td>XDL12 Data Logger User Manual</td>
</tr>
<tr>
<td>MA5740</td>
<td>Datapaq DP5 Data Logger User Manual</td>
</tr>
<tr>
<td>MA5110</td>
<td>Q4 and Q18 Data Loggers User Manual</td>
</tr>
<tr>
<td>MA5500</td>
<td>Tpaq21 Data Logger User Manual</td>
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<tr>
<td>MA5070</td>
<td>Furnace Tracker User Manual</td>
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<td>MA5280</td>
<td>Furnace Surveying User Manual</td>
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<tr>
<td>MA5100</td>
<td>CAB Surveyor User Guide</td>
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<tr>
<td>MA3220</td>
<td>Low-height Quench System User Manual</td>
</tr>
<tr>
<td>MA3160</td>
<td>Slab Reheat System User Manual</td>
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<tr>
<td>MA5660</td>
<td>Slab Re-Heat Instructions Using TB4272 Thermal Barrier</td>
</tr>
<tr>
<td>MA5960</td>
<td>TB4998 Thermal Barrier for CAB and Aluminium Brazing Processes User Guide</td>
</tr>
<tr>
<td>MA5850</td>
<td>Rotating Evaporative Thermal Barrier for Heat-treatment of Tubes User Guide</td>
</tr>
<tr>
<td>MA3240</td>
<td>Low-height Quench Barriers for Aluminium-solution Processes User Guide</td>
</tr>
<tr>
<td>MA5970</td>
<td>TB4626 and TB4633 High-temperature Thermal Barriers for Vacuum Furnaces User Guide</td>
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<tr>
<td>MA5450</td>
<td>Pressure Resistant Monitoring System for Autoclaves Quick Reference Guide</td>
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<tr>
<td>MA5460</td>
<td>Aluminium Brazing in Vacuum Furnaces Quick Reference Guide</td>
</tr>
<tr>
<td>MA5930</td>
<td>Compression Glands User Guide</td>
</tr>
<tr>
<td>MA5230</td>
<td>First Use of Special Thermal Barriers User Guide</td>
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</tbody>
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BAGS AND CASES

**Hard Carry-cases**
Robust cases for use with Furnace Tracker systems.

- **CC0037** For general Furnace Tracker systems.
- **CC0059** For Furnace Tracker systems with XDL12 logger.
- **CC0060** For specialist Furnace Tracker systems; incorporates lid organizer. Supplied in yellow.

- **CC0048** **Soft Carry-bag**
With shoulder strap, for general use.