

# Comark Instruments

Measuring and monitoring temperature  
within the food industry



The Professionals' Choice

# Why Comark?

## Comark's range of thermometers lead the industry

**Designed for today's busy restaurant kitchens, food processing facilities and storage areas, Comark's range of thermometers and related temperature and humidity instruments lead the industry.**

Whether it's a waterproof C22 thermometer, PDT300 pocket digital thermometer, or a FoodPro Plus infrared with probe, Comark has a solution to fit your budget.

Prevent the outbreak and spread of foodborne illness. Our range of monitoring and recording instruments – HACCP Touch, Diligence and EVt logger ranges, and the RF500 wireless system – offer accurate and tamper-proof recording of key parameters to augment your HACCP and food safety programme.

Designed especially for the food industry Comark instruments meet a number of key international standards:

- IP ratings tell the user immediately how effectively the electrical instrument case protects against the ingress of dust and water.
- The CE mark certifies that the product meets European health and safety regulations.

- All of our key products are NSF certified so you can trust that they meet their published accuracy and specifications.

Selected Comark thermometers, probes and data loggers have BioCote® silver technology incorporated into instrument cases and probe handles at the time of manufacture. The antimicrobial finish inhibits the growth of foodborne bacteria, therefore reducing the risk of cross-contamination within the environment.

BioCote® has been officially recognised for its benefits the food industry with HACCP International Certification. International Certification supports organisations that demonstrate food safety excellence in non-food products that are designed or are commonly used in, the food industry. BioCote® is the first antimicrobial solution to be awarded HACCP International Certification.

With our wide range of products, knowledgeable staff and commitment to your satisfaction, you can count on Comark for answers to all your temperature measurement needs.



## Contents

	Page
Premium Thermometers	4
Premium Thermometer Kits	7
Pocket Digital Thermometers	9
Infrared Thermometers	12
Timers and Alarms	13
Dial Thermometers for Hot Drinks	14
Dial Thermometers for Refrigerators and Freezers	15
Dial Thermometers for Ovens and Cooking Meat	17
Candy Thermometers and Humidity	18
HACCP Devices	19
Diligence EV Data Loggers	21
RF500 Wireless Monitoring	23
Diligence WiFi and Comark Cloud	25
Calibration Equipment	28
Temperature Probes	31

For temperature measurement applications when only the best will do.

These premium thermometers provide excellent accuracy and incorporate a range of advanced features designed to answer the quality control and HACCP requirements of the professional user.

These include a permanent clock and countdown timer within the display – with selectable alarms – to allow probe insertion times and cooking and cooling times to be monitored.





# Premium Thermometers

## N9094

### Ultimate Food Thermometer

(3060179)



Triple sensor – Thermistor, Type T or Type K thermocouple. Extra tough waterproof case for food processing environments. Scales: °C, °F.

- Range (Type T probe): -200° to 400°C
- System accuracy (with Type T probe) at +23°C: ±0.5°C 0°C to +70°C\*
- IP68
- Clock, countdown timer and data hold
- Up to 10 year battery life
- 2 year warranty
- Probes purchased separately
- BioCote® Antimicrobial Protection

\*When used with a Comark probe

## C22C

### Professional Kitchen Thermometer

(3613889)



Dual Sensor – Type T thermocouple or thermistor. The C22 comes in a robust waterproof and rugged case and also includes the clock, countdown timer, data hold and auto switch off features. Scales: °C, °F.

- System Accuracy (Thermistor probe): ± 0.3°C 0°C to +70°C\*
- Range (Thermistor probe): -50°C to +150°C
- IP65 or IP67
- Meets Quick Frozen Food Regulations BS EN 13485
- C20WB and PX37L probe shown available separately
- BioCote® Antimicrobial Protection

## C21C

### Elite Kitchen Thermometer

(3613823)



Thermometer with thermistor sensor, Lumberg probe connector and timer. The C21 has a permanent clock within the display and a countdown timer with audible bleep for monitoring probe insertion times or cooking/cooling times. Scales: °C, °F.

- System Accuracy (Thermistor probe): ± 0.3°C 0°C to +70°C
- Range (Thermistor probe): -50°C to +150°C
- IP67
- Countdown timer
- Data hold function
- Scales: °C, °F
- Permanent clock
- BioCote® Antimicrobial Protection

# Premium Thermometers

**C20**  
Professional Food  
Thermometer  
(3613682)



A simple, well-designed and economically priced thermometer. Use for checking safe cooking temperatures in catering and food service environments. It has a simple, single button operation for ease of use.

- Range: -40°C to +125°C
- Accuracy at +23°C: ±0.5°C -20°C to +70°C\*
- Thermistor sensor for accurate readings
- Long-life battery lasts up to 5 years
- Large LCD easy to read display
- Automatic switch-off
- BioCote® Antimicrobial Protection

\*When used with a Comark probe

**Catercheck3**  
Catering Thermometer  
(3614051)



The Catercheck 3 Food Thermometer is an economically priced food thermometer with a permanently connected food penetration probe. Use in a catering or home setting to check food safe temperatures.

- Range: -40°C to +125°C
- Accuracy at +23°C: ±0.5°C -20°C to +70°C\*
- Fixed fast response probe for convenience
- Simple single button operation
- Automatic switch-off
- Replaceable Battery
- Battery life is >1000 Hours
- BioCote® Antimicrobial Protection

**C12**  
HACCP Food Thermometer  
(4312585)



The C12 HACCP Food Thermometer comes supplied with labels to enable you to select one of five HACCP colour options, ideal for catering, food service and other food uses where colour-coding could reduce the risks from cross-contamination.

- Range: -40°C to +125°C
- Accuracy at +23°C: ±0.5°C -20°C to +70°C\*
- Automatic switch-off
- Supplied with air probe, penetration probe and HACCP labels
- Labels supplied in blue, red, green, yellow and orange
- BioCote® Antimicrobial Protection

**KM221**  
**Economical Thermometer**  
 (4365055)



The KM221 Economical Food Thermometer has been specially designed for caterers who need to combine accuracy and reliability in temperature measurement with value for money. The KM221 has a simple single button operation and is supplied with a penetration probe ready for instant use.

- Range: -30°C to +110°C
- Accuracy at +23°C:  
±0.5°C 0°C to +70°C
- Simple, single button operation
- Supplied with a penetration probe



As an extra level of defence against cross-contamination, selected Comark instruments are manufactured with BioCote® antimicrobial technology impregnated into the instrument surfaces, keypads and probe handles.

The technology utilizes silver, a natural antimicrobial that helps prevent the growth of bacteria, mould & fungi and lasts for the life of the instrument. When micro-organisms come into contact with the silver, their ability to reproduce is inhibited and they die.

Comark products have been in trials against a similar untreated product.

Trial results showed a **massive 92.73% reduction** in microbe levels !

# Premium Thermometer Kits

## N9094 EHO Kit (3614562)



Designed originally for Environmental Health Officers, the kit contains an N9094 thermometer plus probes to measure air, penetration and surface temperatures. A handy pack of probe wipes keeps the instrument and probe clean in between readings.

- 1 x N9094 Thermometer
- 1 x ST23L surface probe
- 1 x AT22L air probe
- 1 x PT24L/C penetration probe
- 1 x PW70T probe wipes
- 1 x Carry Case

## C22 EHO Kit (3613926)

Kit for Environmental Health Officers and other food industry professionals for taking air, penetration and surface temperatures. Comes with carry case.

(Contents as N9094 EHO Kit but contains the C22 Thermometer.)

- 1 x C22 Thermometer
- 1 x ST23L surface probe
- 1 x AT22L air probe
- 1 x PT24L/C penetration probe
- 1 x PW70T probe wipes
- 1 x Carry Case

## C22 Professional Caterer's Kit (3613980)



Convenient kit for the professional caterer housed in a handy carry case. Contains a C22 thermometer together with a penetration probe for core temperature readings and an air probe, handy for checking storage temperatures.

- 1 x C22 thermometer
- 1 x PX22L penetration probe
- 1 x AX24L air probe
- 1 x Carry case



## C22 Food Kit (3613932)



The C22 Food kit contains a thermometer and penetration probe, all you need to get up and running to take temperatures within your food business.

- 1 x C22 thermometer
- 1 x PX22L penetration probe

## C20 Professional Caterer's Kit (3613786)



Kit for the professional caterer looking for a simple, single button operation thermometer. Probes for taking core product and air temperature checks are included.

- 1 x C20 thermometer
- 1 x PX22L penetration probe
- 1 x AX24L air probe
- 1 x Carry case

## C20 Food Kit (3613758)



Entry level food kit with the C20 simple, single button thermometer and a probe for taking core product temperatures.

- 1 x C20 thermometer
- 1 x PX22L penetration probe

# Pocket Digital Thermometers

**300 (3058293)  
and 300B (3058333)  
Digital Temperature Probe**



The 300 Digital Temperature Probe has a 1.5mm thin tip for fast response. With large digits it is an easy-to-read and easy-to-use thermometer for quick checks when cooking a range of foods.

- Range: -40°C to +150°C
- Accuracy:  $\pm 1^\circ\text{C}$
- Data hold to freeze a reading
- 1.5mm Thin Tip Probe
- Scales:  $^\circ\text{C}$ ,  $^\circ\text{F}$
- Water Resistant
- Field Calibratable
- BioCote® Antimicrobial Protection

Note: 300B shown, 300 comes without the protective rubber boot.

**KM14  
Dishwasher Thermometer  
(3851824)**



The KM14 Commercial Dishwasher Thermometer incorporates a stainless steel penetration probe and can be placed inside a commercial dishwasher to check cycle temperatures are correct by using the maximum hold feature.

- Range: -20°C to +200°C
- Accuracy:  $\pm 1^\circ\text{C}$
- Waterproof and dishwasher safe
- Scales:  $^\circ\text{C}$ ,  $^\circ\text{F}$
- Field Calibratable
- Auto power off
- Data hold to freeze a reading
- BioCote® Antimicrobial Protection

**DT400  
Pocket Thermometer with  
Thin Tip  
(3305019)**



The DT400 Pocket Thermometer with thin tip probe has a large digit display visible from the top of the instrument. By using the maximum hold button, you can switch between the maximum reading and the current temperature reading.

- Range: -20°C to +200°C
- Accuracy:  $\pm 0.5^\circ\text{C}$
- Data hold to freeze a reading
- 1.5mm Thin Tip Probe
- Scales:  $^\circ\text{C}$ ,  $^\circ\text{F}$
- Maximum temperature hold
- Field Calibratable
- BioCote® Antimicrobial Protection

**PDQ400**  
**Waterproof Pocket**  
**Digital Thermometer**  
 (3807774)



Compact and slim thermometer has a 1.5mm thin probe tip for fast response. ideal for checking thin foods like burgers. It is waterproof so ideal for use in busy, steamy kitchens and can be used to check commercial dishwasher cycles.

- Range -20°C to +200°C
- Accuracy  $\pm 0.5^{\circ}\text{C}$
- 1.5mm Thin Tip Probe
- Scales:  $^{\circ}\text{C}$ ,  $^{\circ}\text{F}$
- Auto power off
- Maximum temperature hold
- Data hold to freeze a reading
- Field Calibratable
- 5 year warranty
- BioCote® Antimicrobial Protection

**KM400AP**  
**Allergen Thermometer**  
 (4622257)



The pen-style KM400AP allergen thermometer is purple, the colour agreed in the food service industry for kitchens to identify allergen-free food items. It has a 1.5mm thin tip for a fast response.

- Range -50°C to +200°C
- Accuracy  $\pm 1^{\circ}\text{C}$  -20°C to +80°C
- Purple colour is for allergens
- 1.5mm Thin Tip Probe
- Scales:  $^{\circ}\text{C}$ ,  $^{\circ}\text{F}$
- Response in under 6 seconds
- Auto power off
- Maximum temperature hold
- Data hold to freeze a reading
- Field Calibratable
- BioCote® Antimicrobial Protection

**PDT300**  
**Pocket Digital**  
**Thermometer**  
 (3060281)



Top-selling thermometer that has all the features of a full size thermometer. It has a thin 1.5mm tip and hold feature that temporarily freezes a reading on screen while it is noted down. Protective case for the probe that can be clipped on a pocket.

- Range -50°C to +150°C
- Accuracy  $\pm 1^{\circ}\text{C}$
- 1.5mm Thin Tip Probe
- Scales:  $^{\circ}\text{C}$ ,  $^{\circ}\text{F}$
- Response in under 6 seconds
- Auto power off
- Data hold to freeze a reading
- Easy-to-read LCD readout
- Field Calibratable
- BioCote® Antimicrobial Protection

Pocket digital thermometers are a good entry-level instruments for smaller food operations.

Accurate measurement can mean the difference between safe and unsafe food, between freshness and spoilage of your products. Pocket digital thermometers can be relied on to measure the temperatures of most food service operational activities, particularly the temperature components that make up the HACCP program.

### P125 Pocketherm Folding Thermometer

Pocketherm is fast and accurate. Designed for ease of use in the kitchen with self select probe angles for taking different temperatures. Audible alarm plus flashing LEDs instantly indicate critical HACCP zones.

Switches on when probe swings out!

**NEAT:** Probe angles to fit the measurement

**FAST:** Thin tip probe for quick response

**COMPACT:** Fits easily in pockets or cases

- Range:  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Resolution:  $0.1^{\circ}$
- Accuracy:  $\pm 0.5^{\circ}\text{C}$  from  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- Battery: 9V
- Auto Off: Preserves battery life

Flashing LEDs plus buzzer for Instant Temperature Indication:

- **Yellow** for Frozen
- **Green** for Chilled
- **Red** for Cooked

The following colour-coded products are available so you can tailor to your HACCP and due diligence procedures.

- Blue Label – P125B (3613421)  
For use with fish
- Yellow Label – P125Y (4312560)  
For use with cooked meats
- Green Label – P125G (4312551)  
For use with salads
- Red Label – P125R (4312549)  
For use with raw meat
- Orange Label – P125O (4312572)  
For use with cooked vegetables



# Infrared Thermometers

## FoodPro Plus and Food Pro Infrared Thermometers

FPP (3615208)

FP (3615173)



The FPP Food Pro Plus has a countdown timer and a flip-down thin-tip penetration probe for checking core temperatures in addition to the infrared surface reading. It comes with a carry pouch. The Food Pro is a simple one button operation infrared thermometer for surface temperature readings only. Scales: °C, °F.

HACCP temperature danger zones indicated with clear safe/unsafe LED warnings:

**Green** Temperatures are within safety guidelines and outside danger zone

**Red** Warning – temperatures are inside the HACCP danger zone and potentially unsafe – HACCP danger zone set at +4°C to +60°C

- Infrared Range: -35°C to +275°C (FPP) / -30°C to +200°C (FP)
- Probe Range: -40°C to +200°C (FPP only)
- Accuracy: ±1°C 0°C to +65°C
- Emissivity: Pre-set for food
- Instant, non-contact readings can reduce product wastage, chance of cross contamination and staff time carrying out checks
- 7 second display hold with auto switch off
- Target illumination shows measurement area so user can move closer for more accurate readings
- Traceable Certificate included with these products

KM814FS

(3305019)



The KM814FS Infrared Food Thermometer with Laser Sighting is a pocket-sized infrared thermometer for fast and safe measurements with temperature range and accuracy ideally suited to food industry HACCP requirements.

- Range: -30°C to +200°C
- Accuracy: ±1°C 0°C to +65°C
- Scales: °C, °F
- Laser sighting to pinpoint target area
- Backlit LCD display
- Emissivity: Pre-set for food
- Hold function freezes displayed reading



# Timers and Alarms



## UTL884

### Mechanical timer

(3061077)

This easy-to-use 60 minute timer has a long-ring bell alarm.



## UTL264

### Count up and count down timer

(3061077)

Extra large digits make the UTL264 easy to read. The audible buzzer clearly announces when countdown has been reached. Timing capacity of 99 minutes 59 seconds and repeatable memory make this timer a value-added tool. Features easel stand and magnetic clip back. Uses an AAA battery.

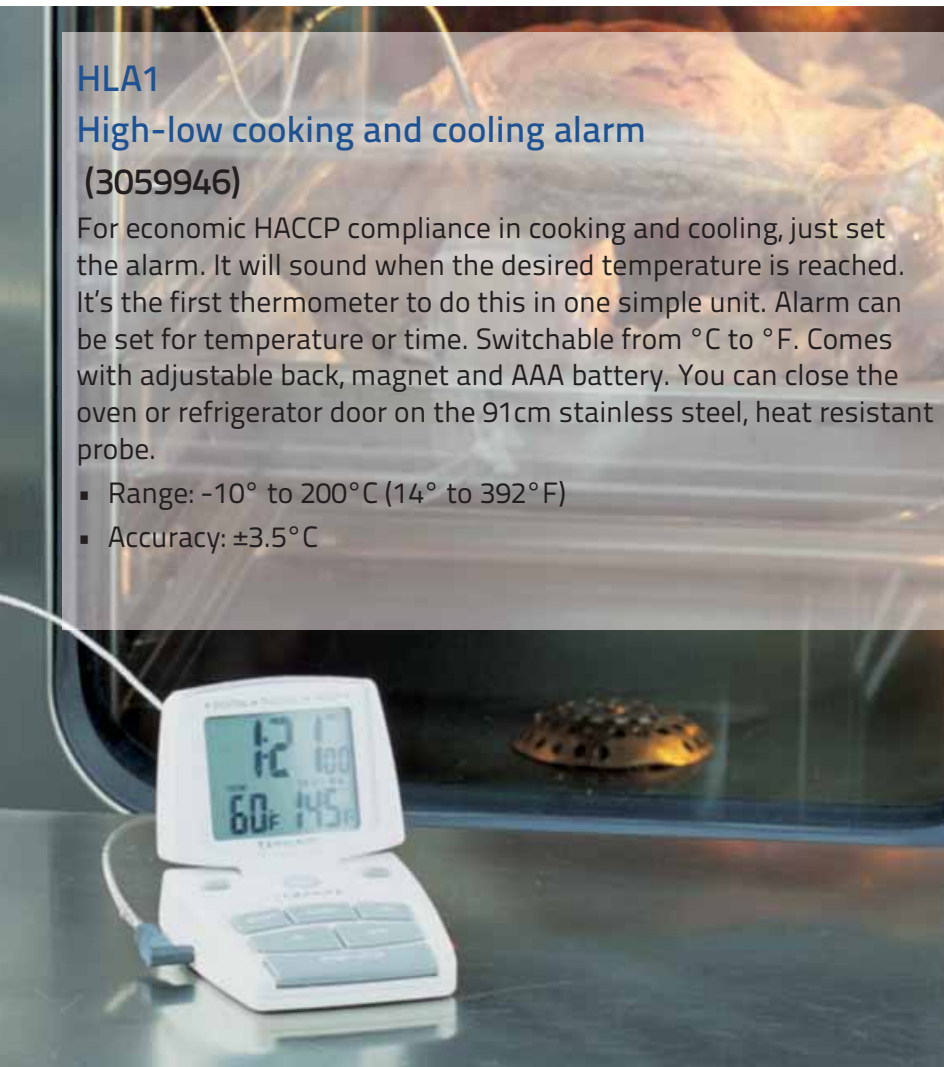
## HLA1

### High-low cooking and cooling alarm

(3059946)

For economic HACCP compliance in cooking and cooling, just set the alarm. It will sound when the desired temperature is reached. It's the first thermometer to do this in one simple unit. Alarm can be set for temperature or time. Switchable from °C to °F. Comes with adjustable back, magnet and AAA battery. You can close the oven or refrigerator door on the 91cm stainless steel, heat resistant probe.

- Range: -10° to 200°C (14° to 392°F)
- Accuracy: ±3.5°C



# Dial Thermometers

## for hot drinks

Tough, durable and accurate  
Comark's dial thermometers  
can't be beaten.

All models feature stainless steel construction and a plastic watertight lens.

- Magnifying dial cover
- Recalibration nut
- 1 Year Warranty



With Comark's patented calibration nut, you can easily calibrate your bi-metal thermometer in seconds with only a twist of your fingers. Once it is set, the nut stays tight and firmly in place. See [www.comarkinstruments.com](http://www.comarkinstruments.com) for further instructions.

**T220/38A**  
Hot Drink Thermometer  
(3060875)



The T220/38A Espresso and Steam Table Thermometer is perfect for checking steam table temperatures when making espresso, latte and hot chocolate.

- 20cm stem
- Sturdy clip attaches to cups or jugs
- Range: 0°F to 220°F
- Large face with bold numbers
- Accuracy:  $\pm 1$  division

**T200LC**  
Latte Thermometer  
(3614335)



Check milk temperatures in lattes, espresso drinks and hot cocoa. The sturdy clip attaches securely to cups or pitchers.

- Dial shows colour indication over frothing range
- Range: 0° to +100°C
- Accuracy:  $\pm 1$  division



# Dial Thermometers

## Refrigrator and Freezer



**ERF1K**  
Economy Fridge/Freezer  
Thermometer  
(3062966)

This dual-scale economy thermometer hangs or stands and has easy-to-read bold numbers. Made of stainless steel.

- Range: -30° to 30°C
- Accuracy: ±1 division



**RFT2AK**  
Fridge/Freezer  
Thermometer  
(3060602)

This thermometer hangs or stands with easy-to-read bold numbers. Blue and green zones indicate safe temperatures while red indicates possible spoilage.

- Range: -30° to 30°C
- Accuracy: ±1 division



**UTL140**  
Indoor/Outdoor  
Stick-On Thermometer  
(3063781)

Includes both adhesive and magnetic mount.

- Range: -40° to 50°C



**UTL80**  
Refrigerated Drawer Stick-On Thermometer  
(3061038)

The UTL80 Refrigerator/Freezer Thermometer with coloured-temperature zones for quick reading and double stick tape for securing inside a refrigerator, freezer or cooler.

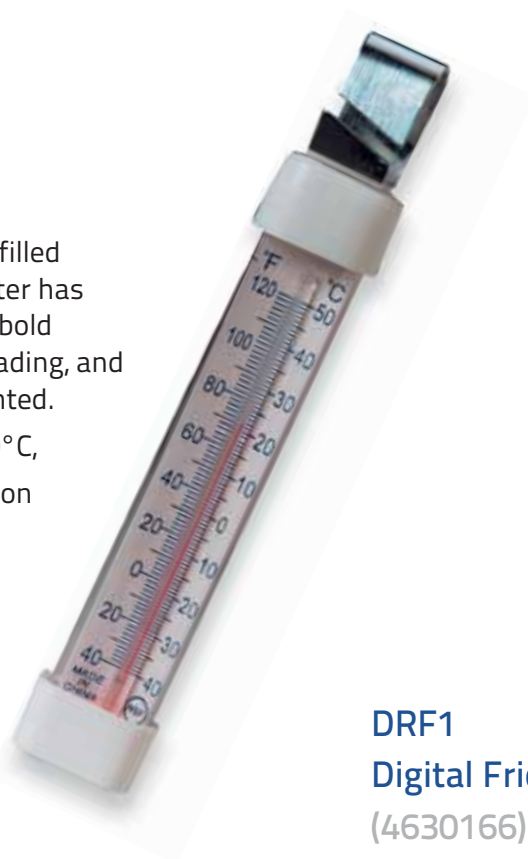
- Range: -30° to 25°C
- Accuracy: ±1°C
- Mount: Hangs or sticks on



**EFG120C****Economy wall thermometer****(3062948)**

This non-toxic spirit filled economy thermometer has protective end caps, bold numbers for easy reading, and can hang or be mounted.

- Range:  $-40^{\circ}$  to  $50^{\circ}\text{C}$ ,
- Accuracy:  $\pm 1$  division

**DRF1****Digital Fridge/Freezer thermometer****(4630166)**

Bold digital display which can hang in fridge or freezer.

- Dual scale:  $^{\circ}\text{C}/^{\circ}\text{F}$
- Range:  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$
- Accuracy:  $\pm 1.0^{\circ}\text{C}$
- Resolution:  $0.1^{\circ}\text{C}$

**WT4****Wall Thermometer****(3061077)**

Spirit filled, 23cm length, plastic construction.

- Range:  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$

**FK80AK****Refrigerated Drawer Stick-On Thermometer****(3059946)**

The FK80AK Refrigerator/Freezer Thermometer is a non-toxic, spirit filled refrigerator or freezer thermometer that hangs or stands.

- Temperature Range:  $-40^{\circ}\text{C}$  to  $+27^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $+80^{\circ}\text{F}$ )
- Scales:  $^{\circ}\text{C}$  and  $^{\circ}\text{F}$
- Accuracy:  $\pm 1$  Division



# Dial Thermometers

## for ovens and cooking meat



**MT200K**  
**Meat Thermometer**  
(3059946)

This thermometer has an adjustable temperature indicator and dual range readings.

- Range: +60°C to +85°C
- Accuracy: ±1 division



**DHH**  
**Dial Hot Holding Thermometer**  
(3614364)

Quickly see if hot food is staying hot! HACCP zone at 60°C.

- Range: +40°C to +80°C



**DOT2AK**  
**Oven Thermometer**  
(3063781)

Easy-to-read bold numbers are displayed in coloured zones for quick reference. Hangs or stands.

- Range: +100°C to +280°C
- Accuracy: ±1 division



**EOT1K**  
**Economy Oven Thermometer**  
(3062966)

This economy stainless steel thermometer measures in dual scale. It hangs or stands and bold numbers for easy reading.

- Range: +50°C to +300°C
- Accuracy: ±1 division



**EMT2K**  
**Economy Meat Thermometer**  
(3062953)

Stainless steel body, bold numbers for easy reading and dual scale measurement.

- Range: +60°C to +87°C
- Accuracy: ±1 division



# Candy Thermometers and Humidity



**CD400K**  
Candy thermometer  
(4630166)

Dishwasher safe, stainless steel construction, adjustable temperature indicator, 2 1/4" dial face, 4 1/2" stem, and dual scale reading.

- Range: +40°C to +200°C
- Accuracy: ±1 division



**CF400K**  
Candy thermometer  
(4630166)

This spirit glass thermometer, constructed of stainless steel, has dual range and a clip on the back.

- Range: +40°C to +200°C
- Accuracy: ±1 division

**DTH880**  
Compact temperature and humidity tester  
(3062948)

This unit can be wall mounted or used with a handy built-in tilt stand. It measures humidity from 25 to 95% relative humidity and temperature from 0° to 50°C. Features include comfort zone indication and min/max readings. Uses an AAA battery and comes with a 1 Year Limited Warranty.

- Accuracy: ±1°C, 0° to +50°C
- Humidity: ±5% RH, 40% to 80%, ±7% below 40% or over 80%



# HACCP DEVICES

manage your plan and  
reduce the paperwork



## N5001USB HACCP Auditor (3927763)

The N5001USB HACCP Auditor is used in HACCP, due diligence and health and safety systems to log, monitor and manage data. Adjustable recording and reporting throughout the supply chain.

The N5001USB HACCP Auditor can be fully programmed using Auditor software. It can be used for many tasks and safety checks, including temperature monitoring, anywhere from manufacture and processing to delivery, especially in the food and pharmaceutical industries.

- Provides effective due diligence records
- Ability to program most critical control checks to suit your HACCP or due diligence plan
- Easy and efficient data analysis
- Issues can be identified quickly
- Minimizes risk of human error
- Elimination of paper records provides effective due diligence records
- Full security with controlled authorised user access
- Food safe ABS case, dust and waterproof to IP67 standards
- Wide range of type K and T thermocouple temperature probes
- Low running costs with over 500 hours use from one set of batteries

## HT100 HACCP Touch

(4380240)

The HACCP Touch is a cost-effective way of electronically collecting, recording and storing all of your temperature measurements, as well as managing other HACCP related checklists. It features an easy-to-read colour touch screen and a hard-wearing rubber boot to help protect it.

The HACCP Touch can be used in-conjunction with a wide range of Comark probes to provide flexibility and the reassurance of knowing you have the right probe for the job.

The included software allows you to simply and quickly convert your existing HACCP Plans into an intuitive paperless format. Once uploaded, the software will guide you through your pre-programmed actions and tasks and prompt you for any corrective actions. It will reliably store all of your HACCP data throughout the day and a simple PC connection will allow you to quickly download your data for safe storage, review and reporting, providing you with the essential reassurance needed, when it comes to your food safety audit trail.

- Simple paperless HACCP recording
- Record tasks, temperatures and corrective actions
- Easy to program Windows™ software
- Critical control points are monitored with pre-programmed corrective actions
- Record HACCP temperatures and other check lists, with pre-programmed corrective actions
- Easy to navigate touchscreen interface
- Works with all your sub-min thermocouple probes
- Download reports as Excel or PDF
- Rugged rubber boot included

**Prepare your  
HACCP plan,  
measure, monitor,  
report and reduce  
the paperwork**



If you are responsible for the HACCP measures in your business and still rely on paper-based control and checklists to maintain the safety of your food items and the quality of your cleaning and equipment checks, then Comark's HACCP devices are for you.





Comark Diligence EV Data Loggers measure both humidity and temperature when monitoring food in storage, transit or processing as well as pharmaceutical and general industrial applications. Models with thermistor sensors offer highest accuracy. K or T-Type thermocouples provide a wide measurement range. With the addition of the N2000BOX, the N2012 can measure up to five separate channels with a single logger using four external probes and one internal sensor. With the N2000ADP/K, the N2014 can measure up to four channels using three external thermocouple probes and one internal sensor.



N2011  
(3060035)



N2012  
(3060047)



N2013  
(3060058)

Features:

- Tough, moulded cases, dust and waterproof to IP67 standards
- Large memory capacity of up to 16,000 readings
- Ability to log over multiple periods
- Windows™ based Evolution software for fast data download and analysis
- LED indication of active logging and temperature or humidity alarm conditions
- LCD displays on selected models for instant checks on current readings and alarms
- Additional beeper warning of temperature and humidity alarm conditions
- Single-button control of main functions
- Ability to scroll LCD display between readings from all sensors in use
- Wide range of Comark temperature probes available



N2014  
(3060064)



N2015  
(3060073)



32K Memory Specifications:

1 channel	16,000 samples
2 channels	8,000 samples
3 channels	5,300 samples
4 channels	4,000 samples
5 channels	3,200 samples
Communications	Via infrared interface
Download Time	3 minutes for 10,000 readings (typical)
Logging Frequency	Programmable between 1 second and 99 hours
Battery Life	Up to 5 years
LED Indication	Red = Alarm, Green = Logger active

# DILIGENCE EV

## Temperature and Humidity Monitoring



### Mapping Kit

(3617988)

Using Diligence EV Data Loggers, temperature mapping can be carried out in storage areas such as fridges, freezers and cold rooms.

- 10 x N2011 Data Loggers
- 10 x UKAS Certificates at -20°, 0°C and +8°C
- 1 x N2014 Data Logger
- 1 x N2000ADP/T Adaptor for multiple probes
- 3 x AT26M Air Probe
- 3 x UKAS Certificates at -40°C and -80°C (for FFP Freezers)
- 1 x N2000CRU USB Computer Interface
- 1 x Case

### Diligence EV Measurement Range

- **N2011**  
Temperature -40° to +70°C
- **N2012**  
Internal sensor -40° to 70°C  
External sensor -40° to 150°C
- **N2013**  
Temperature -20° to +60°C  
Humidity 0 to 97% RH, non-condensing
- **N2014**  
Type K -200° to +1372°C  
Type T -200° to +400°C
- **N2015**  
4 to 20mA

### EVt2

(3059559)

Multi-Use logger makes it easy to comply with HACCP requirements by monitoring the temperatures of meat, seafood and produce shipments 24/7.

- Review maximum, minimum and average trip temperatures plus total time in alarm, right on the screen
- Accept or reject a shipment in seconds
- Download data to a PC for permanent HACCP records
- Single button starts/stops logging
- Up to 3,000 readings with 1 sec to 99 hour intervals
- Special software for 21 CFR Part 11 compliance
- BioCote® antimicrobial protection
- Waterproof and rugged with IP67 case





# RF500 WIRELESS MONITORING

## RF500 Wireless Monitoring System

This system provides effortless 24/7 monitoring of temperature, humidity and door events. Low power RF technology with built-in mesh networking, and transmitters with bi-directional communications offer:

- Accurate, tamper-proof records
- Secure multi-user access to data via the internet at any time
- Alarm notification via email, phone or sms\* (\*SMS requires 3rd party provider)
- Transmitters that are waterproof and accurate with long battery life
- Compliance with legislative and regulatory requirements
- Plus, it's easy to install, use and maintain

### Manual checks on temperature and humidity are a thing of the past.

The RF500A employs a system of transmitters and probes to automatically collect and transmit data to a Gateway unit which manages the system and stores the data.

The RF500A Gateway requires no specialist PC software. It connects directly to the local area network permitting 24/7 single or multi-user access via the internet at any time. The system provides a full audit trail, electronic signatures and data protection to meet the requirements of 21CFR Part 11.

In the event of readings falling outside pre-set limits, alarm notification via screens, SMS, email or voice contact you immediately, so immediate corrective action can be taken.

### Advanced features include:

#### ADR – Automatic Data Retrieval.

In the event of a power failure, data is stored in the RF500A transmitter then automatically transmitted to the Gateway as soon as the network is restored, so no data is lost.

#### Mesh Network – established through powered transmitters.

This enables the system to automatically adjust to any changes in the environment, rerouting signals as required to ensure that the data is always returned to the Gateway.

Transmitters are fully waterproof and include an LCD for instant data display and an LED for local alarm indication. Low battery indicator on each unit is viewable via the web.

### Transmitters

- **RF512** has an integral temperature sensor plus connectors for two external thermistor probes and an external door sensor.
- **RF513** has integral temperature and humidity sensors and a connector for an external door sensor.
- **RF515** has inputs for current and voltage so can be connected to a control loop and programmed to measure an extensive range of parameters.
- **RF516** is a precision temperature transmitter with an internal temperature sensor plus connectors for one external PT100 probe and an external door sensor.





## RF542 Network logger (4177861)

- Connect via a port to LAN or WAN anywhere.
- Expand your monitoring system using your existing network.
- The RF500A Gateway hosts any combination of RF500 transmitters. This includes RF542 data logger wired to the network and RF wireless transmitters stationed within radio range of the Gateway.
- 24/7 Email and SMS alerts.
- Temperature Range:  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- System accuracy with external thermistor :  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$



1. Large LCD allows local view of temperature, RH (RF513), and door opening information plus alarms and RF status
2. LEDs for active/alarm indication
3. Antenna
4. Selectable scales  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$ , %RH or DP (RF513)
5. Compact, waterproof case with BioCote® antimicrobial surface protection
6. Door event sensor connector
7. AC/Mains power connector
8. Secure Lumberg connector for probes

## Features:

### RF500A Gateway

Channels	Up to 256
Transmitters	Up to 64
Storage capacity	Up to 10 years of storage
RF frequency	2.4 GHz using IEEE 802.15.4
Battery life	1 hour (rechargeable)
Power sources	110-240V adaptor, rechargeable Ni-Mh battery
Clock accuracy	4ppm (2 minutes per year)
Dimensions	L 259mm x W 189mm x H 92mm
Weight	1.3kg

### Transmitters – RF512, RF513, RF516

#### Temperature measurement range

- Internal Thermistor Sensor  
RF512, RF516  $-30^{\circ}\text{C}$  to  $70^{\circ}\text{C}$
- Integral Thermistor Sensor  
RF513  $-30^{\circ}\text{C}$  to  $70^{\circ}\text{C}$
- External Thermistor Sensor  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- External Pt100 Sensor  $-200^{\circ}\text{C}$  to  $400^{\circ}\text{C}$

#### System accuracy with standard sensors:

##### Temperature

- External thermistor:  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$
- External thermistor: full range  $\pm 1^{\circ}\text{C}$
- Internal thermistor :  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$
- PT100: full range  $\pm 0.05^{\circ}\text{C}$  plus probe

##### Humidity

10 to 90% RH  $\pm 3\%$

##### Logging memory

32,000 records

##### Logging frequency

Programmable between 1 and 60 minutes

##### Monitoring frequency

1 minute

##### Battery type

Replaceable Lithium 'C' Cell

(Part No RFBATT)

##### Battery life

Up to 2 years (when used at  $23^{\circ}\text{C}/73^{\circ}\text{F}$  room temperature)

##### Dimensions

L 170mm x W 83mm x H 34mm

##### Weight

270g

See [www.comarkinstruments.com](http://www.comarkinstruments.com) for more on wireless temperature monitoring

# DILIGENCE WiFi

## Temperature and Humidity Monitoring with Comark Cloud

1 year  
**FREE**  
Cloud Trial



**RF311-T Temperature Data Logger**  
(3062966)

Measures the temperature of the environment in which it is situated.

- Range: -20 to +60°C



**RF314-TC Temperature Data Logger with Thermocouple Probe**  
(3062966)

Measures the temperature of anything, using either a J, K, N or T probe.

- -270 to +1300°C



**RF312-TP Temperature Data Logger with Thermistor Probe**  
(3062966)

Measures the temperature of anything using a thermistor probe.

- -40 to +125°C

**RF324 Alarm Module**  
(3062966)

A standalone Alarm Module for all the data loggers in the Diligence WiFi range. The Alarm will pick up alarm messages from any Diligence WiFi data logger within WiFi range. It displays Red LED lights (through a translucent rear moulding) and sounds a substantial alarm (SPL 100dBA @1m) when a sensor alarm has been triggered. There are nine standard sounds to choose from.



**RF313-RH Temperature and Humidity Data Logger**  
(3062966)

Measures the temperature and humidity of the environment in which it is situated.

- -20 to +60°C
- 0%RH to 100%RH

Use Diligence WiFi Loggers to monitor areas such as walk-in and reach-in refrigerators and freezers, cold storage areas, blast chillers, and hot holding cabinets.

- **RECHARGEABLE.** A full charge lasts 3-12 months
- Easy to self install out of the box
- Connects to existing WiFi networks, no hard wiring required
- Quick to mount in any location
- Use Diligence WiFi secure software to view data and report
- Reliable temperature data 24 hours a day, 7 days a week
- Built-in visual WiFi Signal Meter





## The easy route to HACCP compliance reporting and quality assurance

Food safety regulations apply to any operation where food is prepared, cooked, displayed or stored ensuring high quality, fresh food for your customers every time. Your food safety plan (HACCP) covers the storage of ingredients and finished product, cooking, temporary holding, transport and sanitisation. Managing this can be daunting and time-consuming.

Using Diligence WiFi data loggers with Comark Cloud makes that task of continuously monitoring food service environments easier by providing automated temperature and humidity monitoring, and alerts 24 hours a day, 7 days a week.

Together they can be used to monitor and report on one location or multi-site operations. No more missed records, no more time consuming paperwork!

Access your Comark Cloud account from wherever you are in the world using any internet enabled device. This could be a PC at the office or at home, an iPad, tablet or mobile phone with a web browser. The Comark Cloud supports IE7 and above, and

the latest Chrome, Firefox and Safari browsers.

All your food service areas can be monitored from freezers, chillers and refrigerators through to cooking and holding temperatures, safe in the knowledge that alerts will notify you if anything does go wrong.

You can receive alerts by email and SMS text\* (\*SMS requires 3rd party provider) which enable you take immediate action to prevent the loss of costly stock.



See [www.comarkinstruments.com](http://www.comarkinstruments.com) for more on the Diligence EV Range

Temperature and measurement instrument performance is vital in almost every application, especially in the food industry.

Performance can be affected by many factors including use and abuse and the age of the instrument. Regular, professional calibration checks are recommended, with certification as required, especially for companies with HACCP procedures and other quality systems. In the meantime, calibration can be monitored with Comark simulators, reference thermometers and validation equipment.

Phone us on  
0207 942 0712  
to find out more  
about our service  
facility and  
UKAS calibration  
laboratory



**KM820/VKIT**  
**Validator Calibration**  
**Check Kit**  
(3059878)

The Validator Calibration Check Kit is used to check the accuracy of infrared and contact thermometers. It features the KM820/V aluminium cup for checking the calibration of infrared and contact thermometers as well as a KM20REF high accuracy thermometer for checking calibration of all types of thermometer and probe combination. Kit contains:

- KM820/VAL Validation Calibration Check Unit
- KM20REF High Accuracy Reference Thermometer
- MC20 Carry Case



# Calibration Equipment

**KM820/VAL**  
Temperature Validation  
Cup  
(3613823)



Use this heavy duty aluminum cup (shown above) to check the calibration of infrared or contact thermometers.

**KM20REF**  
Reference Thermometer  
Kit  
(3059794)



Use this high-accuracy reference thermometer for checking the calibration of all types of thermometer and probe combinations.

- Displays temperature in centigrade
- Supplied with 5-point UKAS Calibration Certificate with points at  $-18^{\circ}\text{C}$ ,  $0^{\circ}\text{C}$ ,  $+8^{\circ}\text{C}$ ,  $+70^{\circ}\text{C}$ ,  $+100^{\circ}\text{C}$ .
- Auto switch-off feature
- Supplied with carrying case

The KM20REF High Accuracy Reference Thermometer can be used in-conjunction with the KM820/VAL Validation Calibration Check Unit to calibrate contact and infrared thermometers.

Thermometer Test Caps



Each cap simulates a specific temperature to check your thermistor thermometers. Each cap has a UKAS Certificate of Calibration.

Name	Point	Order Code
TX21L	$-18^{\circ}\text{C}$	3060965
TX22L	$-5^{\circ}\text{C}$	3060976
TX23L	$0^{\circ}\text{C}$	3060983
TX24L	$+3^{\circ}\text{C}$	3060990
TX25L	$+63^{\circ}\text{C}$	3061006
TX26L	$+70^{\circ}\text{C}$	3061014

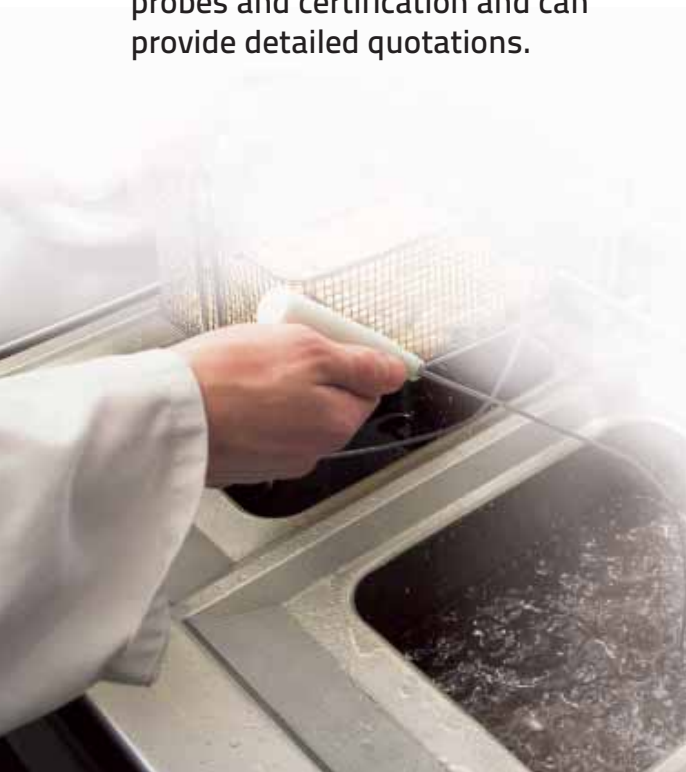


**Comark produces one of the largest available ranges of temperature probes, with a probe for almost every application.**

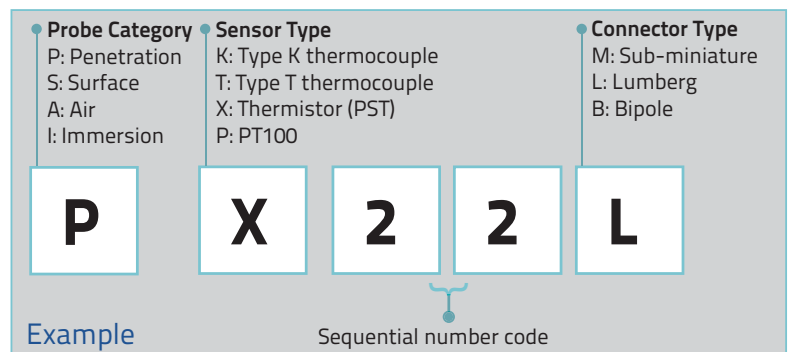
Comark can certify temperature probes, individually or, as recommended, with an instrument to record system accuracy.

Certificates of calibration are supplied through the Comark in-house UKAS accredited temperature calibration laboratory and the in-house NPL traceable laboratory.

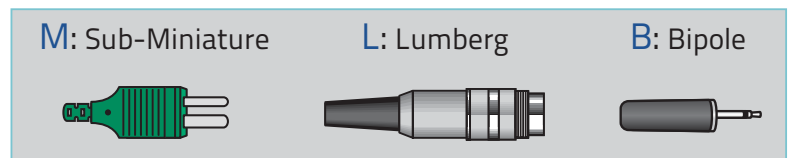
The Comark Service Team or your local distributor can offer advice on probes and certification and can provide detailed quotations.



## Comark Order Codes



## Connector Types



## Probe leads

Comark probe leads are matched to the intended applications for the probe. The materials used are:

**PVC** – PVC coiled leads provide ease of use in ambient temperatures of up to +70°C.


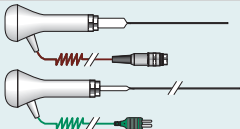
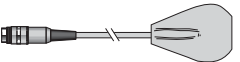
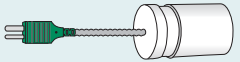


**FEP and PTFE** – These materials are especially suited to food probes and can be used in sub-zero temperatures. Steel braided PTFE leads provide greater strength.







**Fibreglass (FG)** – Fibreglass insulated leads are used for special application probes where the lead could be subjected to very high ambient temperatures of up to +400°C.


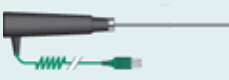
# Temperature Probes

	Sensor	Connector	Temp Range °C	Response Time (secs) †	Stem Length (mm)	Stem Dia (mm)	Lead Length (m)	Lead Material	Name	Order Number
<b>Penetration Probes</b>										
	PST	L	-40°C to +150°C	5.0	100	3.3	0.7	FEP	PX22L	3060542
	PST	L	-40°C to +150°C	5.0	100	3.3	0.7	FEP	PX23L	3616076
	PST	L	-40°C to +150°C	5.0	100	3.3	0.7	FEP	PX24L	3616119
	PST	L	-40°C to +150°C	5.0	100	3.3	0.7	FEP	PX25L	3616137
	T	L	-100°C to +250°C	2.0	100	3.3	0.7	PTFE	PT24L	3616119
For incorporating into your HACCP plan, these food penetration probes with coloured end caps minimise the risk of cross contamination. PX22L White, PX23L Red, PX24L Green, PX25L Blue. PT24L - Type T sensor food probe with steel braided lead. PX22L, PX23L, PX24L, PX25L, PT24L available with 1.0m PVC coiled lead, add /C to order code. PX23L PX24L PX25L eg PX22L/C.										
	PST	L	-40°C to +150°C	0.5	100	1.6	0.7	FEP	PX16L	3060539
	T	L	-100°C to +250°C	0.5	100	1.6	0.7	FEP	PT23L	3615718
PX16L - Fast response thermistor food probe. PT23L - Fast response Type T food probe with steel braided lead.										
	K	M	-50°C to +250°C	2.0	100	3.3	2.5	PTFE	PK23M	3060351
	T	L	-100°C to +250°C	2.0	100	3.3	2.5	PTFE	PT26L	3060471
Oven meat probe for checking meat and food temperatures during cooking.										
	T	L	-100°C to +250°C	2.0	100	2.4	-	-	PT25L	3615844
	PST	L	-40°C to +150°C	5.0	100	3.3	-	-	PX33L	3616210
Integral plug probe										
	PST	L	-40°C to +150°C	2.0	75	3.3	1.0	FEP	PX31L	3060574
	K	L	-100°C to +250°C	2.0	75	3.3	1.0	FEP	PK31L	3060415
Penetration probes for use with Diligence EV data loggers.										
	T	L	-100°C to +250°C	4.0	140	8.0	1.0	PVC	PT29L	3060498
	Corkscrew probe for frozen foods.									
	T	L	-100°C to +250°C	0.5	100	1.5	1.0	PVC	PT19L	3060432
	K	M	-50°C to +250°C	0.2	100	1.5	1.0	PVC	PK19M	3060324
	K	M	-50°C to +250°C	0.2	70	1.1	1.0	PVC	PK15M	3060308

†The time constant is the time taken for the probe to reach 63% of the value of the temperature change. Multiply x 3 for the time taken to achieve 95% and by 5 for 99%.

	Sensor	Connector	Temp Range °C	Response Time (secs) †	Stem Length (mm)	Stem Dia (mm)	Lead Length (m)	Lead Material	Name	Order Number
<b>Surface Probes</b>										
	T	L	-100°C to +250°C	0.2	100	7.5	0.7	PTFE	ST21L	3060761
Ribbon type surface probe with steel braided leads for food applications.										
	K	M	-50°C to +250°C	4.0	250	8 X 2	1.0	PVC	SK38M	3616287
	T	L	-100°C to +250°C	4.0	250	8 X 2	1.0	PVC	ST38L	3130020
Heavy duty pallet probe.										
	T	L	-40°C to +70°C	5.0	-	-	1.0	PTFE	ST23L	3616316
	PST	L	-40°C to +70°C	15.0	-	-	1.0	FEP	SX23L	3060792
Between pack temperature probes. ST23L and ST24L with steel braided leads.										
	K	M	to +260°C	0.4	-	-	1.0	PTFE	SK40M	3060745
Griddle Probe.										
	K	M	-50°C to +250°C	0.2	100	7.5	1.0	PVC	SK21M	3060633
General purpose probe.										
	K	M	-50°C to +650°C	0.4	100	10.0	1.0	PVC	SK24M	3060678
General purpose probe.										

Air Probes											
	K	M	−100°C to +250°C	0.5	-	-	1.0	PTFE	AK28M	3058553	
	T	M	−100°C to +250°C	2.0	-	-	1.0	PTFE	AT26M	3058651	
	K	M	−100°C to +250°C	0.5	-	-	5.0	PTFE	AK29M	3058566	
	K	M	−100°C to +250°C	0.5	-	-	10.0	PTFE	AK31M	3058575	
	K	M	−100°C to +400°C	0.5	-	-	1.0	FG	AK33M	3058594	
	T	L	−100°C to +250°C	0.4	-	-	1.0	PTFE	AT26L	3058651	
Flexible thermocouple probes.											
	T	L	−100°C to +250°C	2.0	-	-	1.0	PTFE	AT22L	3058624	
Fast response flexible probe with steel braided lead											
	PST	L	−40°C to +70°C	10.0	-	-	1.0	FEP	AX24L	3058856	
Flexible termistor probe.											
	PST	L	−40°C to +70°C	100	-	-	2.0	FEP	DX31L	3062930	
Food simulant probe.											
	T	L	−100°C to +250°C	0.4	75	3.3	-	-	AT25L	3058636	
Integral plug probe.											
	K	M	−100°C to +1100°C	3.0	70	6.0	1.0	PVC	AK24M	3058509	
	K	M	−100°C to +1100°C	3.0	1000	6.0	1.0	PVC	AK25M	3058511	
Semi-flexible high temperature air probes											

	Sensor	Connector	Temp Range °C	Response Time (secs) †	Stem Length (mm)	Stem Dia (mm)	Lead Length (m)	Lead Material	Name	Order Number
<b>Immersion Probes</b>										
	T	L	–200°C to +400°C	1.0	500	3.0	0.7	PTFE	IT21L	3059727
Deep fat probe with flexible stem for food applications										
	K	M	–100°C to +850°C	0.4	100	1.5	1.0	PVC	IK21M	3059643
	K	M	–100°C to +850°C	0.4	300	1.5	1.0	PVC	IK23M	3059662
	K	M	–100°C to +1100°C	1.0	100	3.0	1.0	PVC	IK24M	3059670

Probes with type K and T thermocouple sensors also have mineral insulated, semi-flexible stems.

†The time constant is the time taken for the probe to reach 63% of the value of the temperature change. Multiply x 3 for the time taken to achieve 95% and by 5 for 99%.

## GLOSSARY OF TERMS

### Distance to Spot Size Ratio:

The measure of the increase in the target area diameter detected by an infrared thermometer, over the distance from instrument to target surface.

**Emissivity:** The natural level of infrared radiation from the surface of any material. Emissivity is measured on a scale from 0.1 to 1.0, where 1.0 represents the radiation from a black body.

**HACCP:** Hazard Analysis and Critical Control Point. The quality system used throughout the food industry to ensure safe food.

**HVAC:** Heating, Ventilating and Air Conditioning.

**IP Rating:** Set of standards for dust and waterproof protection.

**Lumberg Connector** with locking screw, used to provide strong, secure probe-to-instrument connections with better prevention of liquid ingress.

**NPL:** The National Physical Laboratory.

**Operating Range:** Temperature and humidity limits within which an

instrument will function correctly.

**Pt100:** Platinum resistance thermometer. High accuracy temperature sensor.

**"Quick" Calculations:** Pre-programmed calculations available in software, such as average or standard deviation.

**Resolution:** Indicates the smallest difference in measurements that can be detected and displayed by the instrument, e.g. 0.1° indicates that the instrument can detect differences of one tenth of a degree. In some cases there can be a difference between the detected measurement change and the displayed change.

**Sub-miniature:** Two-pin industry standard connector.

### System Accuracy:

Temperature accuracy level for the instrument and probe combined. Instrument accuracy excludes the probe.

**Thermistor:** Type of temperature sensor offering accuracy suitable for food applications.

**Thermocouple:** Type of temperature sensor using bi-metal electrical properties. Eight types of bi-metal combinations are available: – K, N, T, J, R, S, E and B – with different measurement ranges and characteristics to suit different applications.

**UKAS:** The United Kingdom Accreditation Service.

**Wraparound:** Ability to program a data logger to continue logging when its memory is full, by logging new readings over the oldest readings already in the memory.

## THERMOCOUPLE LIMITS

Type	Temperature Range	Type	Temperature Range
K	–200°C to +1372°C	R, S	–50°C to +1767°C
N	–200°C to +1300°C	E	–200°C to +1000°C
T	–200°C to +400°C	B	0°C to +1820°C
J	–200°C to +1200°C		



# Notes



## Contact Us

We understand there are times when our customers may need guidance on the best solution for their requirements. If you would like further information or to discuss your temperature monitoring application, please contact our customer service department who will be pleased to assist.

**We are here to help so  
please contact us on:**

**Telephone:**

**+44 (0) 207 942 0712**

**Email:**

**[sales@comarkinstruments.com](mailto:sales@comarkinstruments.com)**

**Website:**

**[www.comarkinstruments.com](http://www.comarkinstruments.com)**

All Comark instruments have a minimum one year warranty unless otherwise stated. The warranty for temperature probes is six months and all other probes are unwarranted because the conditions of use are beyond our control. The Comark Warranty covers manufacturing defects and component failure and applies worldwide. In line with our policy of continuous development, we reserve the right to alter any product specification without notice. Comark has an accredited UKAS (NIST equivalent) calibration laboratory for temperature and humidity measurement and offers full service and recalibration facilities.

Comark Instruments is committed to providing quality and affordable products to the food service industry. Our thermometers and humidity testers bring speed, accuracy and reliability to the transport, testing and storing of food under HACCP guidelines. A large variety of products, well-trained staff, and a commitment to customer satisfaction mean you can come to us for answers to all your temperature measurement needs!



### **Comark Instruments**

52 Hurricane Way  
Norwich, Norfolk, NR6 6JB  
United Kingdom  
Tel: +44 (0) 207 942 0712  
Fax: +44 (0) 207 942 0714  
Email: [sales@comarkinstruments.com](mailto:sales@comarkinstruments.com)

**The Professionals' Choice**