

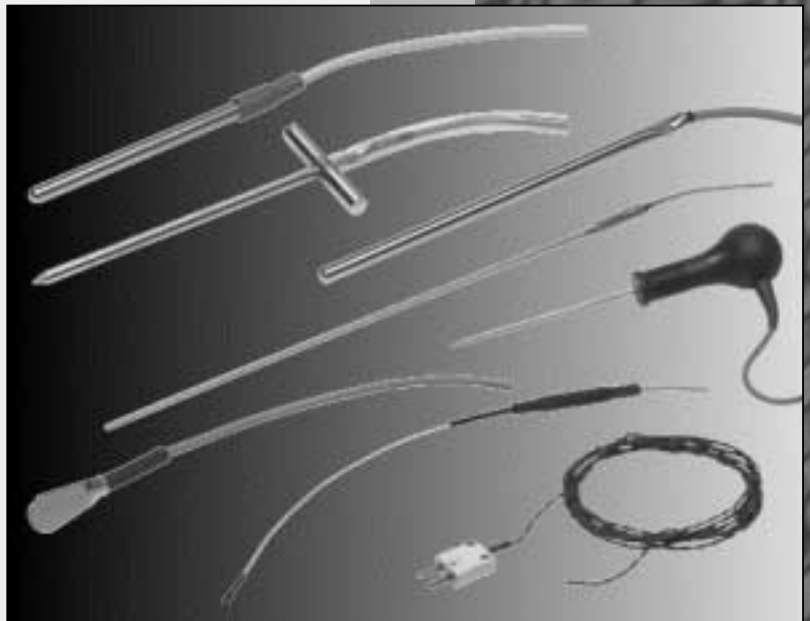
# Temperature and humidity probes

**Grant**  
DATA LOGGING

*Grant temperature probes are available in a variety of physical styles each having a range of sensor, cable and connector options*

*For easy selection each probe is illustrated together with a combination table showing suitable sensor, cable and connector types*

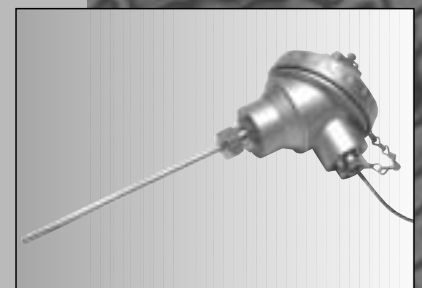
*Talk to Grant for  
all your data  
logging solutions*



*Probes are available to customer specifications, please ask for guidance*

*Grant probes can be calibrated to traceable standards (NAMAS certified if desired)*

*Grant temperature probes are guaranteed for three years against faulty materials and workmanship*



[www.grant.co.uk](http://www.grant.co.uk)

# TEMPERATURE PROBES

*available in a wide choice of physical types using thermistor/thermocouple/platinum resistance sensors*

## SENSOR TYPES

### Thermistors

Thermistors are metal oxide sensors which provide a larger electrical signal for a given temperature change than any other temperature sensor and, combined with fast response time, are the preferred sensor over operating range -50 to 150°C. The high resistance of thermistor sensors minimises the effect of cable resistance, allowing long cable lengths to be used without causing significant errors. Small size thermistors (code S and SU) are available which are suitable for use in miniature, catheter, and hypodermic needle probes.

CODE	MAX TEMP(°C)	RESISTANCE(@ 25°C)	ACCURACY (@ 0°C to 70°C)
U	150	2K Ohms	±0.2°C
UU	150	2K Ohms	±0.1°C
S	120	20K Ohms	±0.2°C
SU	120	2K Ohms	±0.2°C

### Thermocouples

Thermocouple sensors are suitable for range spans of 100°C or more, and for temperatures down to -25°C and up to 1100°C. Thermocouples have a quick response time and are suitable for a wide range of applications, from small and delicate, to heavy industrial.

CODE	MAX. TEMP(°C)	MATERIAL POSITIVE/NEGATIVE	ACCURACY
J	750	Iron/Constantan (Fe/Cu-Ni)	±1.5°C Class 1
K	1100	Cromel/Alumel (Ni-Cu/Ni-Al)	±1.5°C Class 1
T	400	Copper/Constantan (Cu/Cu-Ni)	±0.5°C Class 1

## CABLES

*The probe selected, sensor type and your operating conditions will determine the type of suitable cable required*

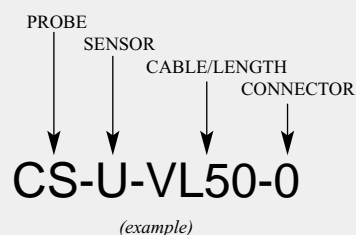
CODE	DESCRIPTION	OPERATING RANGE (°C)	MAX DIA. (MM)	MAX LENGTH (M)
VL	PVC large coaxial, general purpose water resistant, flexible	10 to 105	3.1	500 <sup>(3)</sup>
VS	PVC small coaxial, lightweight, water resistant, flexible	-10 to 105	2.0	5 <sup>(2)</sup>
F	PTFE coaxial, good mechanical strength & flexibility, resistant to oils, acids, adverse agents, fluids	-50 to 250 <sup>(1)</sup>	2.4	500 <sup>(3)</sup>
A	Polyethylene twin core, low temperature, heavy duty, waterproof	-20 to 80	4.0	300 <sup>(3)</sup>
C	PVC four core insulated, general purpose, water resistant, flexible	-10 to 105	3.5	100
D	PTFE four core insulated good mechanical strength & flexibility, resistant to oils, acids, adverse agents, fluids	-50 to 250	3.8	100
W	PVC flat two core, general purpose, water resistant, flexible	-20 to 80	4.0	100
N	PTFE flat two core, good mechanical strength & flexibility, resistant to oils, acids, adverse agents, fluids	-50 to 250	2.1	50
M	PTFE two core (twisted) good mechanical strength & flexibility, resistant to oils, acids, adverse agents, fluids	-50 to 250	2.0	15
Q	PTFE two core (round) good mechanical strength & flexibility, resistant to oils, acids, adverse agents, fluids	-50 to 250	2.25	50
FG	High temperature fibreglass, flat pair	max 400°C	3.0	---

<sup>(1)</sup> Limited to 150°C at sensor end.

<sup>(2)</sup> Cable length up to 20m can be supplied with thermistor sensors, but we recommend a 5m limit because of the fine lightweight nature of this cable.

<sup>(3)</sup> For platinum resistance types P2, P6 max length is 15m.

*Ordering made simple - select code for*



### Platinum resistance

Platinum resistance sensors are based on Pt100 or Pt1000 sensors to 1/3 DIN standard. They are available in 2 wire, and 4 wire where compensation for cable resistance is required. Platinum resistance sensors are suitable for use between -50°C to 400°C, with good long-term stability and accuracy.

CODE	MAX. TEMP(°C)	DESCRIPTION	ACCURACY
P2	400	2 wire Pt100	±0.3°C
P4	400	4 wire Pt100 <sup>(1)</sup>	±0.3°C
P6	400	2 wire Pt1000	±0.3°C
P8	400	4 wire Pt1000 <sup>(1)</sup>	±0.3°C

<sup>(1)</sup> for applications where compensation for cable resistance is required

## CONNECTORS

*Check which connector option is compatible with your data logger*

**CODE 0**  
No plug (bare wire tails)



**CODE 1**  
Jack plug (max dia. 3.2mm)



**CODE 2**  
Lemo plug



**CODE 3**  
Thermocouple plug (colour coded)



*Grant supply sensors and probes not listed, if you have a special requirement, please talk to us...*

## GENERAL PURPOSE

Robust, fast response, stainless steel, rounded end probes.  
*Typical applications include air, vapours, liquids, powders, fridges, freezers, food...*

PROBE CODE

### CS

length 125mm, dia. 4.8mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VL, F, A	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q, FG	0, 1, 3
Pt100	P2	VL, F, A	0, 1
	P4	C, D	0
Pt1000	P6	VL, F, A	0, 1
	P8	C, D	0

PROBE CODE

### CM

length 50mm, dia. 3.2mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VS, F	0, 1, 2
Thermocouple	J, K, T	N, M, Q	0, 1, 3
Pt100	P2	VS, F	0, 1
Pt1000	P6	VS, F	0, 1

PROBE CODE

### CH

length 50mm, dia. 3.2mm

(fitted with nylon handle - length 50mm, dia. 8mm)

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VS, F	0, 1, 2
Thermocouple	J, K, T	N, M, Q	0, 1, 3
Pt100	P2	VS, F	0, 1
Pt1000	P6	VS, F	0, 1

PROBE CODE

### CT

length 50mm, dia. 4.8mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VL, F, A	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q, FG	0, 1, 3
Pt100	P2	VL, F, A	0, 1
	P4	C, D	0
Pt1000	P6	VL, F, A	0, 1
	P8	C, D	0

## Exposed junction thermocouples

Thermocouple sensor at end of cable  
 (conductors are exposed and welded at tip).  
*Fast response, low cost*

PROBE CODE	THERMOCOUPLE	CABLE CODE	CONNECTOR
TH-J	CODE J	M, W, N	0, 3
TH-K	CODE K	M, W, N	0, 3
TH-T	CODE T	M, W, N	0, 3

See cable information for temperature and length details

## SURFACE TEMPERATURE

Sensor mounted on either copper or stainless steel base.  
*Typical applications include radiators, pipes, pumps, motors...*

PROBE CODE

### EU

copper base

### EUS

st.st. base

length 18mm, max width 8.5mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VS, VL, F	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q	0, 1, 3
Pt100	P2	VS, VL, F	0, 1

## SPECIALISED MINIATURE

Size of handle varies according to cable selected.  
*Typical applications include zoological, entomology, veterinary, botanical, micro-climate research...*

PROBE CODE

### DS

hypodermic dia. 1.0mm, length 40mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	S, SU	VS, VL, F	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q	0, 1, 3

PROBE CODE

### FM

sensor at end of flexible nylon tubing

max temp 120°C at tip, length 50mm, dia. 0.6mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	S, SU	VS, VL, F	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q	0, 1, 3

PROBE CODE

### DM

hypodermic dia. 0.75mm, length 35mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	S, SU	VS, VL, F	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q	0, 1, 3

## Catheter probes

Sensor at end of flexible nylon tubing.  
*Typical applications include incubation, crystallisation...*

CODE

### FF

max temp 120°C at tip, length 100mm, dia. 2.0mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VS, VL, F, A	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q	0, 1, 3

Please note: Grant probes have not been tested for compliance with the medical devices directive for patient connection

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 data logging solutions*

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**www.grant.co.uk**

## ROOM TEMPERATURE

Sensor assembly mounted on aluminium bracket. Removeable black plastic globe to allow for the effect of radiant heat.  
*Typical applications include radiant temperature and air temperature measurements.*

PROBE CODE

### AG

Globe dia. 36mm

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VS, VL, F	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q	0, 1, 3

## HIGH TEMPERATURE

Stainless steel sheath with welded rounded end, fitted with PVC cable (2m) and bare wire tails. Can be used in conjunction with a thermopocket if required. *Wide range of medium temperature light industrial applications including the plastics industry...*



PROBE CODE	THERMOCOUPLE CODE	LENGTH (MM)	DIA. (MM)	MAX TEMP (°C AT TIP)
L1-J-W2-0	J	150	6.0	750
L1-K-W2-0	K	150	6.0	1100

Rugged, semi-flexible, mineral insulated, high temperature industrial probes. Stainless steel sheath with insulated type K thermocouple measuring junction, fitted with PVC cable (2m) and bare wire tails. *Wide range of high temperature applications...*



PROBE CODE	THERMOCOUPLE CODE	LENGTH (MM)	DIA. (MM)	MAX TEMP (°C AT TIP)
M1-K-W2-0	K	150	1.5	1100
M2-K-W2-0	K	250	1.5	1100
M3-K-W2-0	K	500	1.5	1100
M4-K-W2-0	K	150	3.0	1100
M5-K-W2-0	K	250	3.0	1100
M6-K-W2-0	K	500	3.0	1100
M7-K-W2-0	K	250	6.0	1100
M8-K-W2-0	K	500	6.0	1100

## INDUSTRIAL PROCESS

Mineral insulated thermocouple probe in stainless steel sheath terminating in a diecast aluminium terminal head (cable not included). *Designed for use in process lines and can be used in conjunction with a thermopocket if required.*



PROBE CODE	THERMOCOUPLE	LENGTH (MM)	DIA. (MM)	MAX TEMP (°C AT TIP)
IP-K	type K	200	6.0	1100
IP-P	Pt100 (P4)	200	6.0	450

*It is important the correct thermocouple cable is used when wiring to the terminal head*

## Thermopocket housing

Housing for industrial process probes. Rounded end 316 grade stainless steel with half inch BSP bush. Designed for probes to slide inside the permanently installed pocket in the plant/process/equipment being monitored. *Facilitates the rapid replacement of probes without the need for process shutdown.*



PROBE CODE	LENGTH (MM)	DIA. (MM)	MAX TEMP (°C AT TIP)
TP	to suit probe	12.0	500/600

## INSERTION PROBES

Stainless steel sheath with pointed end and choice of handle for easy insertion and withdrawal into solid material. *Typical applications include frozen food, soil and ice...*



### CODE HR

length 155mm, dia. 3.3mm (fitted with moulded handle)

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VL, F	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q	0, 1, 3
Pt100	P2	VL, F, A	0, 1
	P4	C, D	0
Pt1000	P6	VL, F, A	0, 1
	P8	C, D	0

### CODE HS

length 125mm, dia. 4.8mm (fitted with stainless steel crossbar handle)

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VL, F, A	0, 1, 2
Thermocouple	J, K, T	W, N, M, Q, FG	0, 1, 3
Pt100	P2	VL, F, A	0, 1
	P4	C, D	0
Pt1000	P6	VL, F, A	0, 1
	P8	C, D	0

### CODE CMP

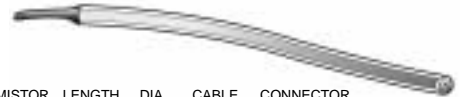
length 50mm, dia. 3.2mm (no handle)

SENSOR	CODE	CABLE CODE	CONNECTOR
Thermistor	U, UU	VS, F	0, 1, 2
Thermocouple	J, K, T	N, M, Q	0, 1, 3
Pt100	P2	VS, F	0, 1
Pt1000	P6	VS, F	0, 1

## Soft insertion probe

Sensor sealed into smooth round ended flexible translucent PVC tubing which is smoothly fused onto cable.

*For delicate applications requiring flexible soft insertion*



max temp 80°C

CODE	THERMISTOR CODE	LENGTH (MM)	DIA. (MM)	CABLE CODE	CONNECTOR
REC	U, UU	100	5.0	VL	0, 1, 2
REC (small)	U, UU	50	3.0	VS	0, 1, 2
OES	U, UU	394	5.0	VL	0, 1, 2

*Please note: Grant probes have not been tested for compliance with the medical devices directive for patient connection.*

■ VELCRO STRAP SENSOR PROBE ■ WASHER SENSOR PROBE ■ TANK SENSOR PROBE ■

MAGNETIC SENSOR PROBE ■ PATCH SENSOR PROBE ■ BUILDING SERVICES SENSORS ■ OVEN

SENSORS ■ ADJUSTABLE HOSE CLIP SENSOR PROBE ■ TRANSPORT SENSORS...

## CAPACITIVE HUMIDITY & TEMPERATURE

For applications requiring both temperature and humidity environment monitoring for example – *museums, art galleries, weather stations, electronic enclosures, computer rooms, incubators, provers, cold stores...*



CONSTRUCTION	Robust ABS housing fitted with Vaisala HUMICAP™ sensor and Grant U type thermistor temperature sensor protected from dust and pollution
OPERATING RANGE	0 to 100% RH, 0 to 1V, -40 to 60°C, thermistor 2K at 25°C
ACCURACY @20°C	±1% RH against factory reference ±2% RH against field references (0 to 90% rh) ±3% RH against field references (90 to 100% rh)
RESPONSE TIME	15s with membrane filter. Start-up <1s
STABILITY	negligible hysteresis and excellent long-term stability, even in very high humidity applications
DIMENSIONS	overall length 240mm dia. 18.5mm (handle dia. 24mm) supplied with 3m of lead (can be used with extension lead up to 100m)
PROBE CODE	SUITABLE SQUIRREL DATA LOGGER

**VH-G-Z3-0** 1600 and 1000 Series  
 Note: Used with Squirrel model 1001, 1021 this probe connects directly into the voltage and thermistor inputs to monitor humidity and temperatures.  
 Used with Squirrel model 1003, 1007, 1023, 1027 this probe connects into the voltage input to monitor humidity only

**VH-E-Z1-0** 1200/1250 Series  
 Note: Used with Squirrel model 1258, 1259 this probe connects directly into the DIN socket to monitor humidity and temperature



CONSTRUCTION	Polycarbonate housing fitted with Rotronic HYGROMER™ humidity and temperature (Pt100 1/3 DIN) sensor, protected from dust and pollution
OPERATING RANGE	humidity 0 to 100% RH                      0 to 1V temperature -40 to +85°C                      -0.4 to +0.85V
ACCURACY AT +23°C	humidity: ±1.5%RH temperature: ±0.3°C
RESPONSE TIME	<0.7s (start-up 3s)
STABILITY	long term stability < 1% RH/year
DIMENSIONS	overall length 165mm, dia. 15mm supplied with 3m of lead. requires amplifier for leads longer than 5m (max. 100m)
PROBE CODE	SUITABLE SQUIRREL DATA LOGGER

**RH-G-Z3-0** 1600 Series and 1000 Series  
 Note: Used with Squirrel 1000 Series with voltage inputs, this probe takes up two channels. Temperature input requires computer set-up display for °C or °F

### Quality statement

Grant Instruments operates a Quality management System complying with BS EN ISO 9002: 1994:

It is our policy to supply our customers with products which are fit for their purpose, safe in use, perform reliably to published specification and are backed by a fast and efficient customer support service.

### Test and calibration

All probes manufactured by Grant are checked for accuracy before shipment. The input values are provided by equipment with calibrations traceable to National standards.

### Calibration certification

Grant can carry out an even more stringent test, whereby each probe is calibrated to a number of customer specified points, and issue a calibration certificate at extra cost.

Grant can also quote for full NAMAS certification. This is similar to the Grant certification procedure but is carried out by an independent calibration laboratory certified by the British National Measurement Accreditation Service (NAMAS).

### After sales service

In the United Kingdom, repairs are normally carried out within five working days of arrival at our factory or receipt of authorisation to repair. Most distributors of Grant equipment operate a similarly prompt repair service.

### Guarantee

Standard Grant temperature probes are guaranteed for three years against faulty materials and workmanship.

Humidity Probes are not covered by the Grant three year guarantee. Their manufacturers guarantees apply.