

Temperature and Humidity Probes

Grant manufactures a comprehensive range of robust, high quality temperature probes with a choice of sensor and in a variety of physical styles for use with Squirrel data loggers.

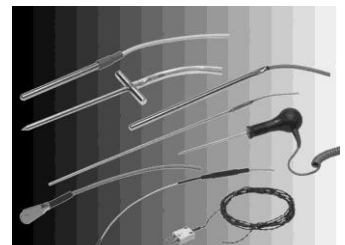
In addition to the standard range of temperature probes Grant is able to customise probes for special applications.

Grant is able to supply humidity probes and current transducers and to provide guidance on suitable sensors for measuring a wide variety of other physical parameters.

Grant temperature probes

Key features

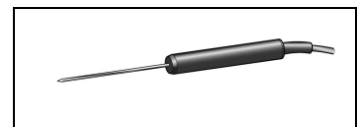
- Choice of thermistors, thermocouple and platinum resistance sensors
- Wide range of physical styles
- High quality robust construction for long life
- Test and calibration traceable to UK national standards
- Optional UKAS certification
- Choice of cables and connectors for different applications
- Standard Grant Probes are guaranteed for three years against faulty materials and workmanship.



Sensor Types

❖ Thermistors

- Larger electrical signal for a given temperature change than other sensors
- Fast response time
- High accuracy (U type $\pm 0.2^{\circ}\text{C}$, UU type $\pm 0.1^{\circ}\text{C}$)
- Preferred sensor over the operating range -50 to $+150^{\circ}\text{C}$
- Long cable lengths possible without significant errors
- Mini thermistors available for miniature/needle probes



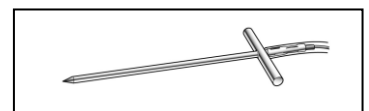
❖ Thermocouples

- Suitable for temperatures from -25°C up to $+250^{\circ}\text{C}$
- Fast response time
- Moderate accuracy ($\pm 0.5^{\circ}\text{C}$)
- Suitable for a wide range of applications from delicate to heavy industrial



❖ Platinum resistance

- Suitable for temperatures from -50°C up to $+250^{\circ}\text{C}$
- Good accuracy ($\pm 0.3^{\circ}\text{C}$)
- Good long term stability
- Choice of Pt100 and Pt1000 sensors
- Choice of 2 and 4 wire where compensation of cable resistance required



120°C max

Grant temperature probes: summary of specification			Thermistors			Thermocouples		Platinum Resistance			
Typical application	Probe	Probe ref.	standard (U)	high precision (UU)	mini (SU)	type K	type T	Pt100 2-wire (P2)	Pt100 4-wire (P4)	Pt1000 2-wire (P6)	Pt1000 4-wire (P8)
General purpose: Robust, stainless steel with rounded end, fast response											
Monitoring temperature of air, vapours, liquids, powders, fridges, freezers, food, etc.	125 mm ∅4.8 mm	CS	VL, F, A	VL, F, A		N, M, X	N, M, X	VL, F, A	C, D	VL, F, A	C, D
	50 mm ∅4.8 mm	CT	VL, F, A	VL, F, A		N, M, X	N, M, X	VL, F, A	C, D	VL, F, A	C, D
	50 mm ∅3.2 mm	CM	VS, F	VS, F		N, M	N, M	VS, F		VS, F	
Delrin handle	50 mm ∅3.2 mm	CH	VS, F	VS, F		N, M	N, M	VS, F		VS, F	
General purpose: Exposed junction thermocouples (conductors exposed and welded at tip), fast response, low cost											
Air, vapours, liquids, powders, fridges, freezers, food, etc.		TH				N, M	N, M				
Surface temperature: Sensor mounted on either copper (EU) or stainless steel base (EUS)											
Monitoring temperature of radiators, pipes, pumps, motors, etc.	back length 18 mm, max. width 8.5mm mm front	EU	VS, VL, F	VS, VL, F		N, M	N, M	VS, VL, F			
		EUS	VS, VL, F	VS, VL, F		N, M	N, M	VS, VL, F			
Room temperature: Sensor assembly mounted on aluminium bracket. Removable plastic globe to allow for the effect of radiant heat											
Monitoring radiant temperature and air temperature	∅36 mm (globe)	AG	VS, VL, F	VS, VL, F		N, M	N, M				
Specialised miniature - hypodermic and catheter probes											
Hypodermic probe with handle - used in zoological, veterinary, botanical, entomology, micro-climate research	40 mm ∅1.0 mm	DS			VS, VL, F	N, M	N, M				
	35 mm ∅0.75 mm	DM			VS, VL, F	N, M	N, M				
Catheter probe (sensor at end of flexible nylon tubing) - used in incubation, crystallisation etc.	100 mm ∅2.0 mm	FF	VS, VL, F, A	VS, VL, F, A		N, M	N, M				
Insertion (solid): Stainless steel sheath with pointed end for easy insertion into/withdrawal from solid material											
For soil, frozen food, ice, etc.	125 mm ∅4.8 mm	HS	VL, F, A	VL, F, A		N, M, X	N, M, X	VL, F, A	C, D	VL, F, A	C, D
	50 mm ∅3.2 mm	CMP	VS, F	VS, F		N, M	N, M	VS, F		VS, F	
Insertion (soft): Sensor sealed into smooth, flexible, translucent PVC tubing smoothly fused onto cable											
Delicate applications requiring flexible soft insertion	100 mm ∅5.0 mm	REC	VL	VL							
	50 mm ∅3.0 mm	REC-small	VS	VS							
For ear	23 mm ∅16 mm max	EAR	VS	VS							
Accuracy			±0.2°C	±0.1°C	±0.2°C	±1.5°C	±0.5°C	±0.3°C	±0.3°C	±0.3°C	±0.3°C
Operating range			-50 to +150°C	-50 to +150°C	-50 to +120°C	-25 to +250°C	-25 to +250°C	-50 to +250°C	-50 to +250°C	-50 to +250°C	-50 to +250°C

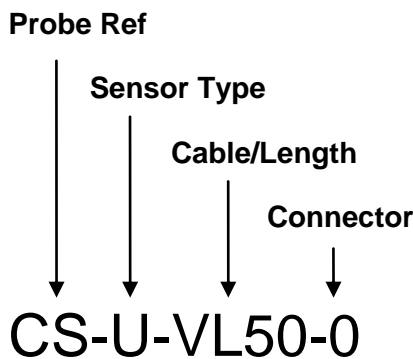
VL, F, A, N, M, etc = suitable cable types (see separate key below)

Cables for Grant temperature probes	Cable operating range (°C)	Max. Ø (mm)	Max length (m)	Connector supplied	
				bare-ended	thermocouple plug
Cable for thermistors and 2-wire Pt100 and 2-wire Pt1000					
VL PVC large coaxial, general purpose, water resistant, flexible	+10 to +105	3.1	500	✓	x
VS PVC small coaxial, lightweight, waterproof, flexible	-10 to +105	2.0	5	✓	x
F PTFE coaxial, good mechanical strength & flexibility, resistant to oils, acids, etc	-50 to +200	2.4	500	✓	x
A Polyethylene 2-core, low temperature, heavy duty waterproof	-20 to +80	4.0	300	✓	x
Cable for 4-wire Pt100 and 4-wire Pt1000					
C PVC 4-core insulated, general purpose, water resistant, flexible	-10 to +105	3.5	100	✓	x
D PTFE 4-core insulated, good mechanical strength & flexibility, resistant to oils, acids etc	-50 to +250	3.8	100	✓	x
Cable for thermocouples					
N PTFE flat 2-core, good mechanical strength & flexibility, resistant to oils, acids, etc.	-50 to +250	2.1	50	✓	optional
M PTFE twisted 2-core, good mechanical strength & flexibility, resistant to oils, acids, etc	-50 to +250	2.0	15	✓	optional
X High temperature	to +400°C max	3.0	-	✓	optional

Connector Options		Code
No Plug (bare wire tails)		0
Thermocouple Plugs (colour coded)		3

Ordering Codes

Ordering Grant probes is a simple selection process, from the above charts decide the Probe Ref, the sensor type, the cable and length and if a connector is required or not (see example below)



Thermocouple Adaptors

The adaptors allow a K or T type thermocouple connection to be made to the SQ20xx series data logger via a standard miniature thermocouple plug. These are available for either differential (2 way) or single ended (4 way) thermocouple inputs.

- SQ20A425 4 way, K-Type adaptor
- SQ20A426 4 way, T-Type adaptor
- SQ20A427 2 way, K-Type adaptor
- SQ20A428 2 way, T-Type adaptor

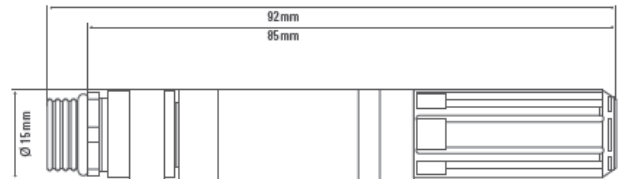


Capacitive humidity and temperature probes

Grant provides the following combined temperature/humidity probe for use with Squirrel data loggers, these can be supplied with the following cable length: 2, 5 or 10 meters.

Rotronic HYGROMER™ with Pt100 sensor

- sensors protected against dust and pollution inside a robust polycarbonate housing
- Measurement range -40 to +100°C (0 to 1V); 0 to 100% r.h. (0 to 1V)
- fast response time: <0.7s (start-up 3s)
- accuracy (at +23°C): humidity $\pm 0.8\%$ r.h., temperature $\pm 0.1^\circ\text{C}$
- Operating environment -50 to 100°C and 0 to 100%rh
- good long term stability: <1% r.h, 0.1°C./year
- One year guarantee
- Dew Point Optional



Order codes

- | | |
|-------------|----------------------------------|
| RHT-G-Z2-0 | complete with 2 meters of cable |
| RHT-G-Z5-0 | complete with 5 meters of cable |
| RHT-G-Z10-0 | complete with 10 meters of cable |

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Grant data loggers and specialist technical support is available world-wide. Please visit www.grant.co.uk to locate our regional offices and to download technical support materials. You will also find your locally appointed distributor and support centre.

Grant data logging systems bear a CE mark and meet relevant European directives.

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