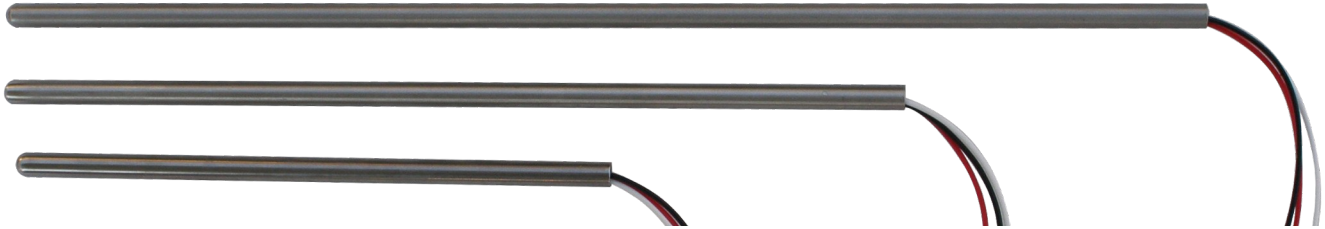




# Solid State Temperature Probe Straight Probe Style BD1-xx-N



## Description

The BD1-xx-N is a family of stainless steel temperature probes that utilize the Brew Data BD1 solid state temperature sensing device. The solid state sensor converts temperature directly to a high level output voltage. These are straight probes with no added mounting features.

## Key Benefits

- Easy to wire, no special cabling or connection requirements. Wire nuts can be used.
- Easy to interface, can be connected directly to an ADC without special signal conditioning.
- Designed for industrial environments; ESD protected and compensated to drive long cables or capacitive loads.

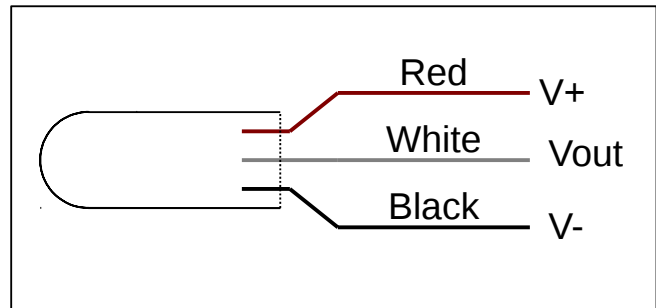
## Key Specifications

- -40°C to +125°C temperature range
- ±0.5°C accuracy (-20°C to 100°C)
- 0.251V to 1.315V output voltage
- Single 2.7V to 5.5V input voltage
- 316 stainless steel probe body, 1/4" diameter
- High temperature 20AWG lead wires

## Part Number Summary

Part Number	Length	Mount	Connection Head
BD1-6-N	6 in	none	none
BD1-9-N	9 in	none	none
BD1-12-N	12 in	none	none

## Probe Connections



## Output to Temperature Conversions

$$C = \frac{V_{out} - 0.509}{0.00645} = (155.0388 \times V_{out}) - 78.915$$

$$F = \frac{V_{out} - 0.3943}{0.003583} = (279.07 \times V_{out}) - 110.0465$$

$$V_{out} = (0.00645 \times C) + 0.509$$

$$V_{out} = (0.003583 \times F) + 0.3943$$

## Mounting

These are straight probes that can be mounted using 1/4" compression fittings. Brew Data also makes sanitary and thermowell mounted probes with connection heads.

## Application Information

Please see the Brew Data application note "Using the Brew Data Solid State Temperature Sensor". This application note includes important information about wiring and contains additional information such as thermal response and considerations when connecting to a measurement device.

## Additional Brew Data Probes

Part Number	Length	Mount	Connection Head
BD1-6-N	6"	none	none
BD1-9-N	9"	none	none
BD1-12-N	12"	none	none
BD1-6-TP	6"	thermowell	PVC
BD1-9-TP	9"	thermowell	PVC
BD1-12-TP	12"	thermowell	PVC
BD1-S6M-P	6"	1.5" sanitary	PVC
BD1-S6F-EZ	6"	1.5" sanitary	M12

## Characteristics

(V+ = 2.7V to 5.5V, V- = ground, Ta = -40°C to 125°C, unless otherwise noted)

Parameter	Condition	Min	Typ	Max	Units
Temperature Range		-40		125	°C
		-40		257	°F
Thermometer Error	-20°C to 100°C			±0.5	°C
	-40°C to 125°C			±0.75	°C
Nonlinearity				±0.2	°C
Supply Voltage	V+ to V-	2.7		5.5	V
Supply Current				145	µA
Output Gain			6.45		mV/°C
Output DC offset	0°C			509	mV
Output Impedance		990	1000	1110	Ω
Thermal Response Time	0°C to 100°C		40		sec
Construction	probe body	316 Stainless Steel, 1/4" diameter			
	lead wires	PTFE or TFE, 20AWG			
Country of Origin		USA			