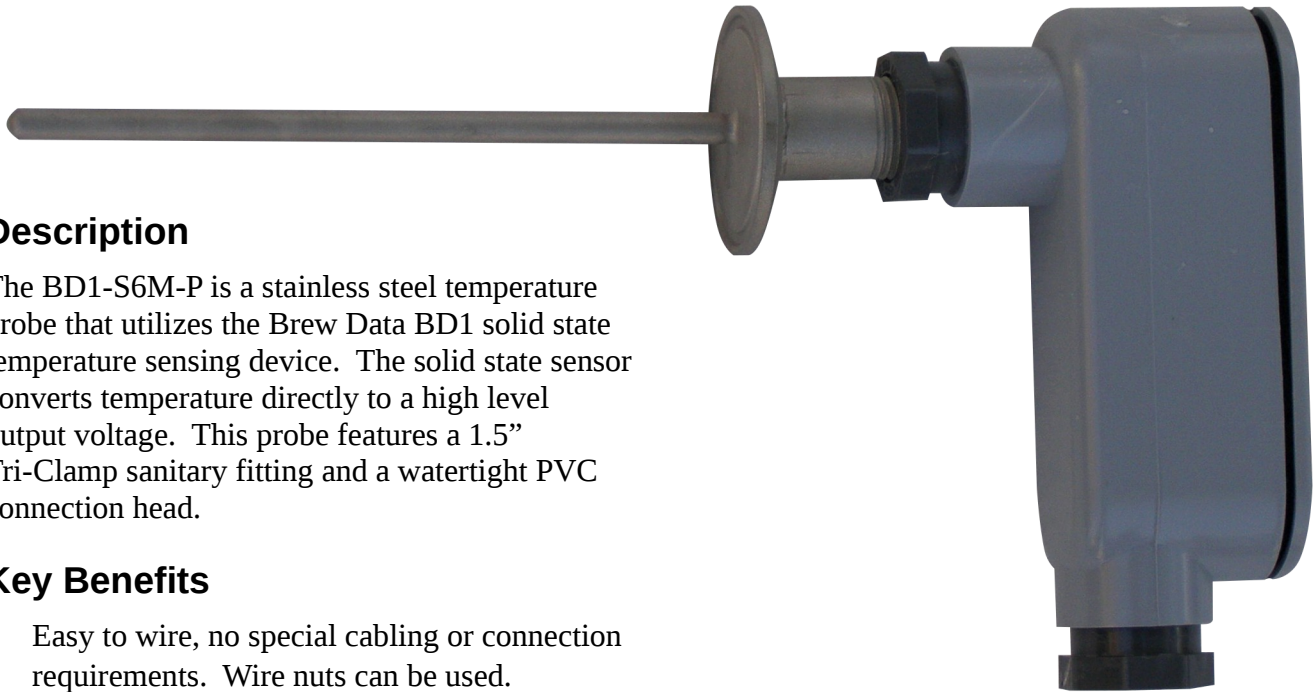




Solid State Temperature Probe with Sanitary Fitting and Connection Head BD1-S6M-P



Description

The BD1-S6M-P is a stainless steel temperature probe that utilizes the Brew Data BD1 solid state temperature sensing device. The solid state sensor converts temperature directly to a high level output voltage. This probe features a 1.5" Tri-Clamp sanitary fitting and a watertight PVC connection head.

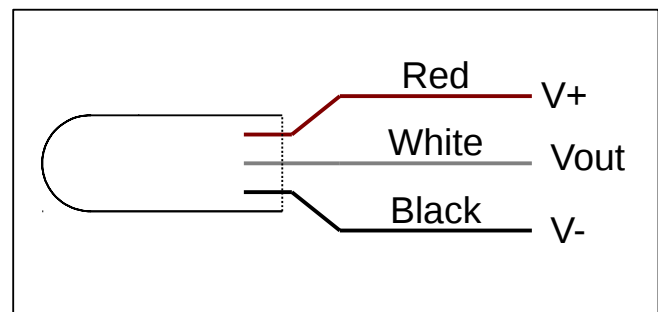
Key Benefits

- 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 sensing range
- $\pm 0.5^\circ\text{C}$ accuracy (-20°C to 100°C)
- 0.251V to 1.315V output voltage
- Single 2.7V to 5.5V input voltage
- 316 stainless steel 1/4" diameter probe body
- 1.5" Tri-Clamp sanitary mount with connection head

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 probes are mounted using a 1.5" trade size sanitary Tri-Clamp fitting. They are supplied with a watertight PVC connection head with 1/2" NPT output threads. Wire nuts for the 20AWG wire are included for connection within the head. Typically, a 1/2" NPT to flex adapter is used to connect to flexible conduit. Brew Data also makes straight, sanitary with M12, and thermowell mounted probes.

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, Sense temperature = -40°C to 125°C,
Protection head temperature = 20°C, unless otherwise noted)

| Parameter | Condition | Min | Typ | Max | Units |
|-----------------------|------------------|---|------|-------|-------|
| Temperature Range | probe | -40 | | 125 | °C |
| | | -40 | | 257 | °F |
| | protection head* | -20 | | 50 | °C |
| | | -4 | | 122 | °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 | Passivated 316 Stainless Steel, 6" long x 1/4" diameter probe, 1.5" trade size sanitary fitting | | | |
| | lead wires | PTFE or TFE, 20AWG | | | |
| | connection head | PVC, 1/2" NPT conduit connection | | | |
| Ingress Rating | when installed | IP67 / IP68 | | | |
| Country of Origin | | USA | | | |

*Note that the connection head may be used at temperatures below the specified range but as the temperature decreases the material will become brittle and lose impact strength.