



Solid State Temperature Probe Easy Clean Sanitary Style BD1-S6F-EZ



Description

The BD1-S6F-EZ is a unique, easily cleanable 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. It features a 1.5" Tri-Clamp sanitary fitting, a watertight M12 male connector, and an integrated sealing cap. When removed from service and the M12 connector is sealed by hand tightening the cap, the entire assembly becomes waterproof to IP68 standards. The sensor is then dishwasher safe and is resistant to caustic cleaners and acid sanitizers.

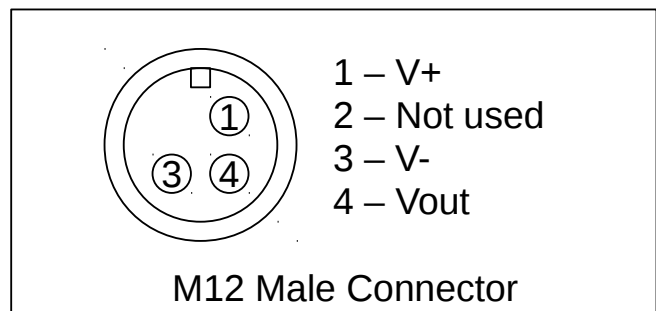
Key Benefits

- Easy to wire, wire nuts can be used to splice to M12 cable.
- Easy to interface, can be connected directly to an ADC without special signal conditioning.
- Easy to clean, integrated sealing cap with lanyard makes the sensor dishwasher safe and resistant to caustics and acids.
- Designed for industrial environments; ESD protected and compensated to drive long cables or capacitive loads.

Key Specifications

- -40°C to +125°C (-40°F to 257°F) sensing range
- $\pm 0.5^\circ\text{C}$ accuracy (-20°C to 105°C)
- 0.251V to 1.315V output voltage
- Single 2.7V to 5.5V input voltage
- Stainless steel and PTFE construction
- IP67 / IP68 / IP69K ingress protection
- 3 pin male M12 connector
- 1.5" Tri-Clamp sanitary mount

Probe Connections



Output to Temperature Conversions

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

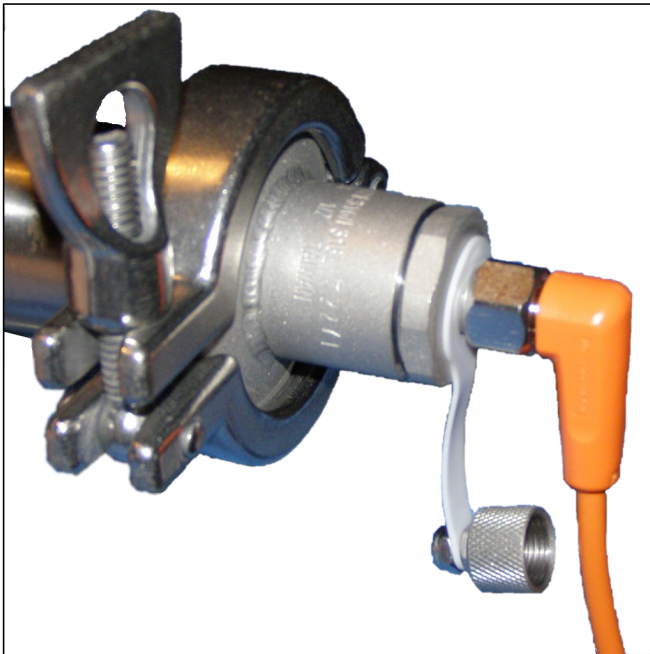
$$F = \frac{V_{out} - 0.3943}{0.003583} = (279.07 \times V_{out}) - 110.0465$$

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

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

Mounting

These probes are mounted using a 1.5" trade size sanitary Tri-Clamp fitting. The cable is attached using an M12 female connector with 3 or 4 pins. Brew Data also makes straight and thermowell mounted probes with connection heads.



Easy clean probe in service

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 105°C, unless otherwise noted)

Parameter	Condition	Min	Typ	Max	Units
Temperature Range		-40		105	°C
		-40		221	°F
Thermometer Error	-20°C to 100°C			±0.5	°C
	-40°C to 105°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			
	connector and hardware	Passivated 300 Series Stainless Steel Locking nut contains high temperature nylon			
	lanyard	PTFE			
Ingress Rating	when connected or capped	IP67 / IP68 / IP69K			
Overall dimensions		8" long x 2" diameter			
Country of Origin		USA			