



FW MURPHY®
PRODUCTION CONTROLS



Official FW Murphy Distributor
PT. ATAMORA TEHNIK MAKMUR

SPL Series Temperature Gauges



The 4-1/2 in. (114 mm) size dial gauge is a mechanical gauge for temperature indication. It is a combination indicating gauge and critical temperature limit switch. High and low temperature limit contacts are visible.

- Combination indicating gauge and critical temperature limit switches
- High and low temperature limit contacts are visible and adjustable
- Panel and wall mount versions available
- Typical Applications: Gas compressors, heaters and coolers, water pump temperature, engine coolant temperature and process temperature

Overview

The SPL Series includes adjustable, electrical contacts that can be used for start and stop, to trip alarms and to shut down equipment. Panel and wall-mount versions are available as well as latching control relay versions. Ranges are available from 15° to 250° F (9° to 121° C) through 130° to 350° F (54° to 177° C).

Basic Models

SPLC Series gauge: Surface-mount version of the gauge. For this model, the gauge pointer makes with two adjustable contacts to complete a pilot-duty circuit.

SPLFC Series gauge: Panel-mounting (round case) version of the SPLC

FW Murphy offers square case configurations altered to fit round panel openings, see Dimensions.

Basic Operation

This vapor-actuated gauge features a sealed capillary tube and sensing bulb. When subjected to heat, the liquid in the sensing bulb expands to vapor creating pressure against a bourdon tube mechanism. The bourdon tube translates this vapor pressure into a mechanical gauge reading.

For models SPLC and SPLFC, the gauge pointer acts as a pressure indicator and as one switch pole, which completes a circuit when it touches the adjustable limit contacts. Contacts have self-cleaning motion to ensure electrical continuity. A toggle switch is provided on SPLC models to override the low contact for equipment start-up.

Specifications

- Dial: White on black, dual scale, ° F and ° C standard, 4-1/2 in. (114 mm) diameter
- Case: Die-cast aluminum, surface or panel mount
- Capillary: PVC-armored copper tube, 5 ft. long (1.5 m) standard – (5, 10, 15, 20, 25 or 30 ft. long options)
- Sensing Bulb:
 - Copper bulb: 1/2 in. (13 mm) OD
 - Length: 7 in. (178 mm)
 - Minimum bulb insertion – see corresponding chart in sales bulletin
 - Pressure Rating: 600 psi (4.1 MPa) [41 bar]. Connection: 1/2 NPT compression fitting
- Overrange: Do not exceed 10% above full range
- Limit Contacts (SPLC and SPLFC): 1-SPDT, center off; pilot-duty; 2 A @ 30 V / 0.1 A @ 125 VAC. Contacts are gold-plated silver.

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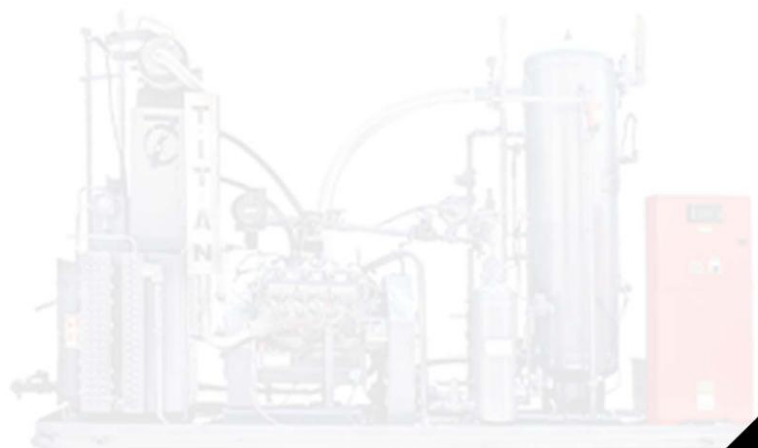
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SPL Series Temperature Gauges

- Dry Relay Contact (BP Models): 10 A @ 28 VDC or 10 A @ 120 VAC
- Wire Connections:
 - Surface-mount models: 1/2 NPT conduit and terminal block
 - Panel mount models: Wire leads, 18 AWG (1.0 mm²) x 9 in. (229 mm) long
 - OS models: 1/2 NPT conduit and wire leads, 18 AWG (1.0 mm²) x 9 in. (229 mm) long
- Approximate Item Weight:
 - 8 lb. (3.6 kg)
 - Explosion-proof models: 22 lb. (10 kg)
- Item Dimensions:
 - 16 x 11 x 5-1/2 in. (406 x 279 x 140 mm)
 - Explosion-proof models: 12 x 12 x 9 in. (305 x 305 x 229 mm)



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4.5" (114 mm) Dial Temperature Gauge SPL Series

The 4-1/2" (114 mm) size dial gauge is a mechanical gauge for temperature indication. It is a combination indicating gauge and critical temperature limit switches. High and low temperature limit contacts are visible.

It includes adjustable, electrical contacts that can be used for start and stop, to trip alarms and to shut down equipment.

Panel and wall-mount versions are available as well as latching control relay versions.

Ranges are available from 15° to 250° F (9° to 121° C) through 130° to 350° F (54° to 177° C).

Typical applications include:

- Gas compressors
- Engine coolant temperature
- Heaters and coolers
- Process temperature
- Water pump temperature

Basic Models

SPLC Series gauge: Surface-mount version of the gauge. For these models the gauge pointer makes with two adjustable contacts to complete a pilot-duty circuit.

SPLFC Series gauge: Panel-mounting (round case) version of the SPLC.

FW Murphy offers square case configurations altered to fit round panel openings, see Dimensions.

Specifications

Dial: White on black, dual scale, ° F and ° C standard, 4-1/2 in. (114 mm) diameter

Case: Die-cast aluminum, surface or panel mount

Capillary: PVC-armored copper tube, 5 ft. long (1.5 m) standard – see options

Sensing Bulb: Copper bulb: 1/2 in. (13 mm) OD
Length: 7 in. (178 mm)

Minimum bulb insertion – see corresponding chart

Pressure Rating: 600 psi (4.1 MPa) [41 bar]. Connection: 1/2 NPT compression fitting

Overrange: Do not exceed 10% above full range

Limit Contacts (SPLC & SPLFC): 1-SPDT, Center off; pilot-duty; 2 A @ 30 V / 0.1 A @ 125 VAC. Contacts are gold-plated silver.

Dry Relay Contact (BP Models):

10 A @ 28 VDC or 10 A @ 120 VAC

Wire Connections:

Surface-mount models: 1/2 NPT conduit and terminal block

Panel mount models: Wire leads, 18 AWG (1.0 mm²) x 9 in. (229 mm) long

OS models: 1/2 NPT conduit and wire leads,
18 AWG (1.0 mm²) x 9 in. (229 mm) long



1 Products covered by this bulletin comply with EMC Council directive 89/336/EEC regarding electromagnetic compatibility except as noted.

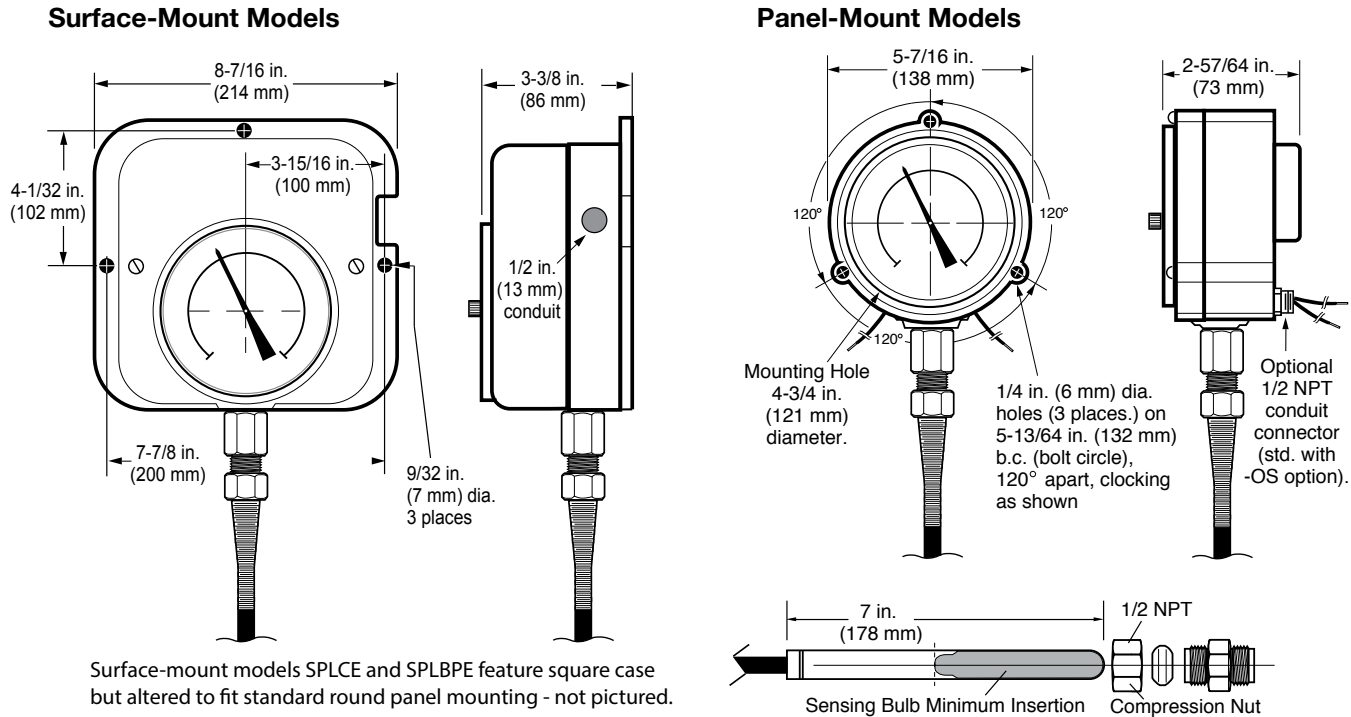
2 Selected configurations are third-party listed. Call FW Murphy for details.

Basic Operation

This vapor-actuated gauge features a sealed capillary tube and sensing bulb. When subjected to heat, the liquid in the sensing bulb expands to vapor creating pressure against a bourdon tube mechanism. The bourdon tube translates this vapor pressure into a mechanical gauge reading.

For models SPLC and SPLFC, the gauge pointer acts as a pressure indicator and as one switch pole, which completes a circuit when it touches the adjustable limit contacts. Contacts have self-cleaning motion to ensure electrical continuity. A toggle switch is provided on SPLC models to override the low contact for equipment start-up.

Dimensions

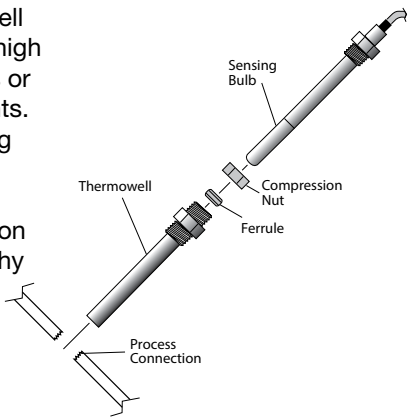


Ranges and Accuracy – Sensing Bulb Insertion

Temperature Ranges Available (dual scale dials)		Accuracy (SPL Models)			Minimum Sensing Bulb Insertion into Process
Fahrenheit	Celsius	First 1/3	Middle 1/3	Upper 1/3	
15° to 250°	9° to 121°	±8°F/±4°C	±2°F/±1°C	±2°F/±1°C	5 in. (127 mm)
130° to 350°	54° to 177°	±8°F/±4°C	±2°F/±1°C	±3°F/±1.5°C	2-1/2 in. (64 mm)

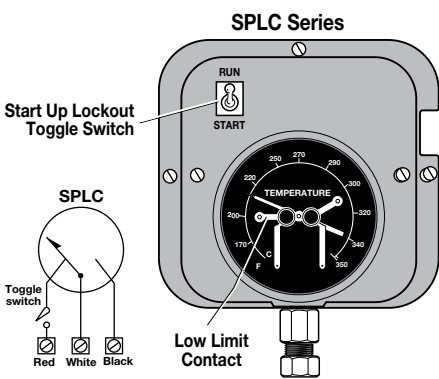
Using a Thermowell

Installing a thermowell is recommended for high pressure applications or corrosive environments. It also allows sensing bulbs to be changed or adjusted without opening the connection to process. FW Murphy offers thermowells, see How to Order.



Start-Up Lockout

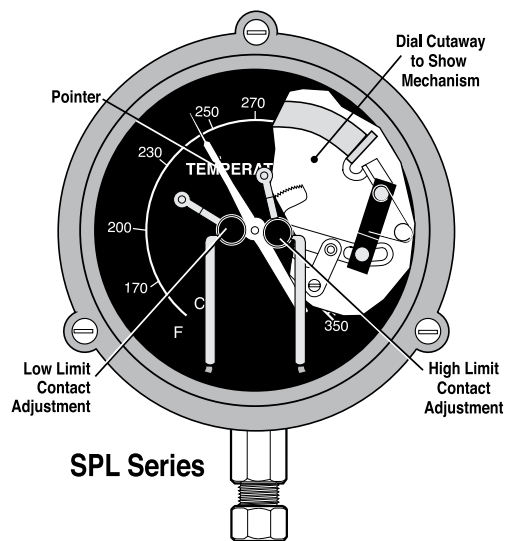
The SPLC gauge low limit contact can be bypassed for equipment start up. A toggle switch is provided for this purpose. The toggle switch must be manually reset when temperature rises above the low limit.



How the SPL Works

SPLC and SPLFC gauge temperature indicator gauges include two pilot-duty, pointer-type limit contacts (one for high and one for low) that can be used for alarm and/or shutdown. The SPLC and SPLFC models will complete a circuit when the gauge pointer and either limit contact meet. This provides an electrical signal to alert the operator of critical temperature conditions or when required, to shut down the equipment.

Both limit contacts (high and low) are field adjustable by simply turning the fingertip-type knob to the desired point on the scale dial. This graphic shows details of a typical SPLFC gauge model.



How to Order

Options listed below. All configurations may not be available. Call your sales representative or FW Murphy for more information.

SPLC - 350 - S 10 - EX						
Base Model	Temperature		Armor / Capillary / Bulb	Capillary Length	Options	
SPLC	Ranges		P = PVC / Copper / Copper	Specify in Feet	Verify Option Availability, Not All Options Can Be Provided For Every Model.	
SPLFC	250 = 15° - 250° F (9° - 121° C)		S = Stainless Steel / Stainless Steel	05 = 5 Feet	EX = Explosion-Proof; Gauge Enclosed Within Explosion-Proof Case; Class I, Division I, Groups C and D	
	350 = 130° - 350° F (54° - 177° C)			10 = 10 Feet	ES = Environmentally Sealed	
				15 = 15 Feet	OS = Liquid-Filled Case For Resistance Against Corrosion, Environment, Vibration and Electrical Arc	
				20 = 20 Feet		
				25 = 25 Feet		
				30 = 30 Feet		

Approximate Shipping Weight and Dimensions		
Model	Weight	Dimension
SPLC	8 lb. (3.6 kg)	16 x 11 x 5-1/2 in. (406 x 279 x 140 mm)
Explosion Proof	22 lb. (10 kg)	12 x 12 x 9 in. (305 x 305 x 229 mm)

Part Number	Model and Description	Notes
05000610	Tamper-proof Contact Accessory	<p>Limit Switch Knobs</p> <p>Knob Lock</p>

Continued on next page.

How to Order (continued)

Part Number	Model and Description	Notes
10000582	<p>Thermowell used with SPLC Rated 3000 psi @ 300° F (20.7 MPa @ 149° C) Material is 304 Stainless Steel Furnished with compression nut and ferrule</p> <p>A. 6.375 in. (162 mm) E. 0.660 in. (17 mm) B. 6.050 in. (154 mm) F. 1/2-14 NPT C. 4.536 in. (115 mm) G. 0.875 Hex D. 0.510 in. (13 mm) H. 11/16-20 UN-2A</p>	
10000583	<p>Thermowell used with SPLC Rated 3000 psi @ 300° F (20.7 MPa @ 149° C) Material is 304 Stainless Steel Furnished with compression nut and ferrule</p> <p>A. 5.000 in. (127 mm) E. 0.660 in. (17 mm) B. 4.680 in. (119 mm) F. 1/2-14 NPT C. 3.160 in. (80 mm) G. 0.875 Hex D. 0.510 in. (13 mm) H. 11/16-20 UN-2A</p>	
10000584	<p>Thermowell used with SPLC Rated 4000 psi @ 300° F (27.6 MPa @ 149° C) Material is 304 Stainless Steel Furnished with compression nut and ferrule</p> <p>A. 6.375 in. (162 mm) E. 0.810 in. (21 mm) B. 6.050 in. (154 mm) F. 3/4-14 NPT C. 4.524 in. (115 mm) G. 1.125 Hex D. 0.510 in. (13 mm) H. 11/16-20 UN-2A</p>	
10000585	<p>Thermowell used with SPLC Rated 4000 psi @ 300° F (27.6 MPa @ 149° C) Material is 304 Stainless Steel Furnished with compression nut and ferrule</p> <p>A. 5.000 in. (127 mm) E. 0.810 in. (21 mm) B. 4.680 in. (119 mm) F. 3/4-14 NPT C. 3.150 in. (80 mm) G. 1.125 Hex D. 0.510 in. (13 mm) H. 11/16-20 UN-2A</p>	
10000668	<p>Thermowell used with SPLC Rated 3000 psi @ 300° F (20.7 MPa @ 149° C) Material is 316 Stainless Steel Furnished with compression nut and ferrule</p> <p>A. 5.000 in. (127 mm) E. 0.660 in. (17 mm) B. 4.680 in. (119 mm) F. 1/2-14 NPT C. 3.160 in. (80 mm) G. 0.875 Hex D. 0.510 in. (13 mm) H. 11/16-20 UN-2A</p>	