Signet Temperature Instruments

	9950	9900
Description	Multi-Channel (2 Channel), Multi-Parameter Controller	Single-Channel, Multi-Parameter Transmitter
Modular Components	Yes	
Number of Flow Totalizers	2 Permanent 2 Resettable	1 Permanent 1 Resettable
Max. Sensor Inputs	2 frequency or (S³L) inputs	1
Mounting Options	Panel	Panel, Wall, Pipe, Tank
Display	LCD, Dot matrix	LCD with digital bar graph
Analog Output Types	(2) Passive 4 to 20 mA outputs, standard up to 6 via optional modules (optional relay module)	(2) Passive 4 to 20 mA (1) standard, (1) optional with 4 to 20 mA output module HART optional with H COMM module
Max. Relays / O.C.	4 dry contact relays or 2 mechanical and 2 solid state relays (optional relay module)	1 open collector (standard) 2 relays (optional relay module)
Derived Measurements	6 Derived Measurements Sum, Delta (Difference), Ratio, % Passage% Reject, % Recovery	N/A
Languages	English, French, German, Spanish and Simplified Chinese	English
Ambient Temperature (°C) Storage Temperature (°F)	DC -10 °C to 70 °C (14 °F to 158 °F) AC -10 °C to 60 °C (14 °F to 140 °F) -15 °C to 70 °C (5 °F to 158 °F)	-10 °C to 70 °C (14 °F to 158 °F) -15 °C to 70 °C (5 °F to 158 °F)
Relative Humidity	0 to 95%, non-condensing	
Power Requirements	DC - 24 VDC nominal (12 to 32 VDC, ±10% regulated) AC - 100 to 240 VAC, 50 to 60 Hz, 24 VA	24 VDC input range: 10.8 to 35.2 VDC regulated
Standards and Approvals	CE, FCC, UL, CUL, RoHS compliant, China RoHS, NEMA TYPE 4X/IP65 (front face only on panel mount)	CE, FCC, UL, CUL, RoHS compliant, Lloyd's Register, China RoHS, NEMA TYPE 4X/IP65 (front face only on panel mount); field mount is 100% NEMA TYPE 4X/IP65

Specification Matrix

	8900
Description	Multi-Channel, Multi-Parameter Controller
Modular Components	Yes
Number of Flow Totalizers	6 Permanent 6 Resettable
Max. Sensor Inputs	up to 2 frequency and 4 (S³L) or 6 (S³L) 6 total sensor inputs
Mounting Options	Panel
Display	LCD
Analog Output Types	(4) Passive/Active 4 to 20 mA or (2) 0 to 5/10 VDC
Max. Relays / O.C.	Up to 8 relays (via 8059)
Derived Measurements	Sum, Difference, % Recovery, % Reject, % Passage, Ratio, Power (BTU)
Languages	English, French, German, Spanish, Italian, and Portuguese
Ambient Temperature (°C) Storage Temperature (°F)	-10 °C to 55 °C (14 °F to 131 °F) -15 °C to 80 °C (5 °F to 176 °F)
Relative Humidity	0 to 95%, non-condensing
Power Requirements	12 to 24 VDC ±10%, regulated or 100 to 240 VAC ±10%, regulated, 50/60 Hz
Standards and Approvals	CE, FCC, UL, CUL, RoHS compliant, China RoHS NEMA 4X/IP65 (front face only)

Signet Temperature Integral System with 9900 Transmitter

Member of the SmartPro® Family of Instruments

Signet has combined the 9900 SmartPro® Transmitter with the 2350 Temperature sensors to create integral systems that are easy to order and simple to install. Also available in conductivity, flow, level, and pressure configurations, each integral system features a 9900 Transmitter which provides a local and easy to read LCD display. The push button keypad makes it easy to navigate through the transmitter's menu.
The DC-powered 9900 features a scalable 4 to 20 mA output and open collector for process control.

The integral system is offered with a Signet 2350 Temperature sensor and is available in a range of -10 °C to 100 °C (14 °F to 212 °F). Sensor installation is achieved into standard pipes via the ¾ in. sensor threaded NPT process connection. The sensor is available with PVDF wetted materials.

Features

• **Local display for sensor mounted instruments**

• **Provides 4 to 20 mA output**

• **"At a glance" visibility**

• **"Dial-type" digital bar graph**

• **NEMA 4X/IP65**

Applications

• **Cooling Tower Control**
• **Filtration Systems**
• **Chemical Production**
• **Semiconductor Water Production**
• **Aquariums**
• **Aquatic Monitoring**
• **Heat Exchangers**
• **Galvanic Plating**

System Overview

Integral Installation

Signet Model 9900 Transmitter
with 3-8052 Integral Adapter Kit
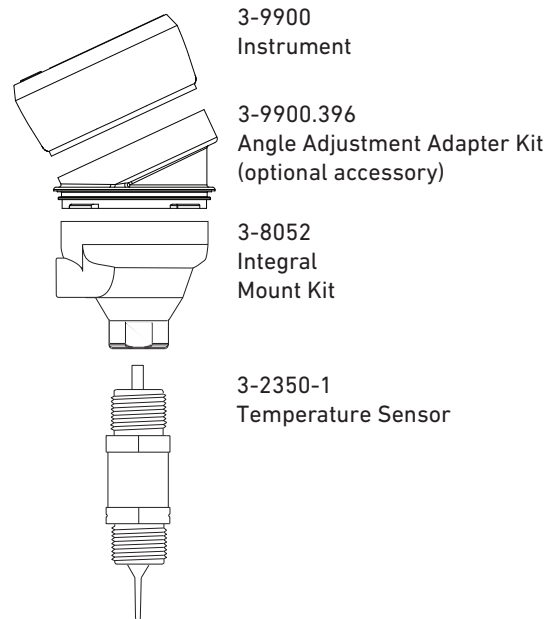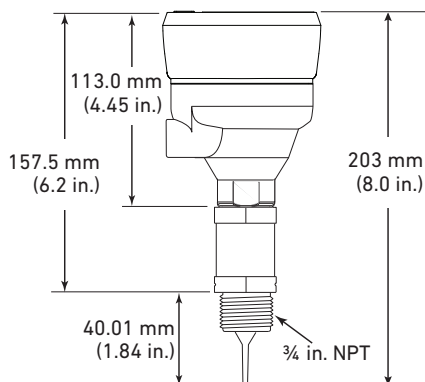
+

Signet 2350 Temperature Sensor

Customer supplied standard ¾ in. fittings

Specifications

See individual transmitter and sensor product pages for more information.

Dimensions

113.0 mm (4.45 in.)

157.5 mm (6.2 in.)

203 mm (8.0 in.)

40.01 mm (1.84 in.)

¾ in. NPT

3-9900
Instrument

3-9900.396
Angle Adjustment Adapter Kit
(optional accessory)

3-8052
Integral
Mount Kit

3-2350-1
Temperature Sensor

Ordering Notes

The Integral Mount is available with all parts conveniently assembled (instrument, sensor, and mounting kit). Alternatively, all three parts can be purchased separately. See individual transmitter and sensor pages for more information.

Only available in Europe.

Ordering Information
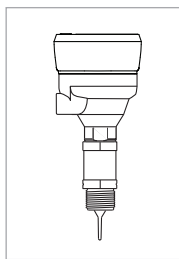
Mfr. Part No. /Code	Instrument + Sensor	Description
159 001 745	3-9900-1 + 3-2350-1	4 to 20 mA and one open collector + digital (S³L) temperature sensor

Accessories

Mfr. Part No.	Code	Description
3-9900.396	**159 001 701**	Angle Adjustment Adapter Kit

Please refer to Wiring, Installation, and Accessories sections for more information.

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Flow

pH/ORP

Conductivity/ Resistivity

Level

Temperature

Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/ Pressure Graphs

Signet 2450 Pressure Sensor

1/2 in. union mount

Blind transmitter or digital (S³L) sensor

The 2450 Pressure Sensor has a one-piece injection molded PVDF body and ceramic diaphragm for superior compatibility in corrosive liquids. Three pressure versions allow for optimal resolution matched to your sensing needs. Solid state circuitry eliminates drift (no internal potentiometers).

These sensors are available with a proprietary digital (S³L) output, or field-scaleable 4 to 20 mA output. Dual-threaded ends allow submersion in process vessels or in-line installation with conduit connection, Integral adapters (sold separately) may be used to create a compact assembly with a field mount style of the Signet 9900 Transmitter.

Features

- **Test certificate included**

- **4 to 20 mA or digital (S³L) output**

- **½ in. male union process connection**

- **One-piece injection molded PVDF body**

- **Flush ceramic diaphragm**

- **Easy installation**

- **Choice of three pressure ranges**

- **Pressure or level measurement**

- **NEMA 4X/IP65 rated when using the 3-8052-1**

Applications

- **Level or Depth Sensing**
- **HVAC**
- **Scrubber Systems**
- **Pump Protection**
- **Water Management**
- **Irrigation Systems**
- **Wastewater**
- **Chemical Processing**
- **Pressure Regulation/Monitoring**

Specifications

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Flow

pH/ORP

Conductivity/ Resistivity

Level

Temperature

Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/ Pressure Graphs

General	
Output	Digital (S³L) or 4 to 20 mA
Accuracy	
For all pressure ranges	±1% of full scale @ 25 °C
Response Time	< 100 ms
Sensing End Connection	½ in. union male thread (requires end connector and union nut)
	(See installation section for end connector and nut recommendation)
Cable End Connection	¾ in. NPT male thread

Wetted Materials	
Sensor Housing	PVDF
Diaphragm	Ceramic
Diaphragm Seal and Union O-ring	FKM

Electrical		
Power Requirements		
Digital (S³L)	5 to 6.5 VDC < 1.5 mA	
4 to 20 mA	12 to 24 VDC ±10%, regulated	
Cable Length	4.6 m	15 ft
Cable Type	3 cond. + shield, 22 AWG, PVC jacketed, Blk/Red/White/Shld	
Digital (S³L) Output	Serial ASCII, TTL level 9600 bps.	
	Reverse polarity and short circuit protected.	

4 to 20 mA Output	
Accuracy	±32 µA
Resolution	< 5 µA
Span	4 to 20 mA factory calibrated to operating ranges shown below
Maximum Loop Impedance	100 Ω @ 12 V
	325 Ω @ 18 V
	600 Ω @ 24 V

Maximum Temperature/Pressure Rating		
Operating Temperature	–15 ˚C to 85 ˚C	5 ˚F to 185 ˚F
Storage Temperature	–20 ˚C to 100 ˚C	–4 ˚F to 212 ˚F
Operating Pressure		
-XU	0 to 0.7 bar	0 to 10 psig
-XL	0 to 3.4 bar	0 to 50 psig
-XH	0 to 17 bar	0 to 250 psig
Vacuum Range		
-XU	–0.1 to 0.7 bar	–1.5 to 10 psi
-XL	–0.41 to 3.4 bar	–6 to 50 psi
-XH	–0.96 to 17.2 bar	–14.6 to 250 psi
Proof Pressure		
-XU:	1.4 bar	20 psig
-XL	5.2 bar	75 psig
-XH	20.7 bar	300 psig

Shipping Weight		
	0.150 kg	0.33 lb

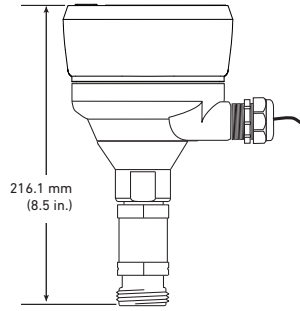| Standards and Approvals	
	CE, FCC
	RoHS compliant, China RoHS
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety

See Temperature and Pressure graphs for more information.

Dimensions
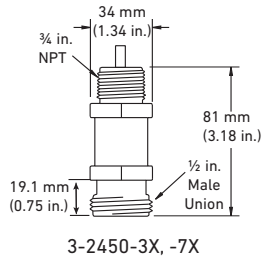
Pressure Instrument
Sold separately

3-8052
Integral
Mount Kit
Sold separately

3-2450-XX
Pressure
Sensor

34 mm
(1.34 in.)

¾ in.
NPT

81 mm
(3.18 in.)

19.1 mm
(0.75 in.)

½ in.
Male
Union

3-2450-3X, -7X

216.1 mm
(8.5 in.)

With 3-9900-1

System Overview

Panel Mount	Pipe, Tank, Wall Mount	Field (Integral) Mount	4 to 20 mA Output	Automation System
Signet Instruments - 8900 - 9900 - 9950	Signet Instruments* - 9900-1P with Rear Enclosure - 9900-1 with 3-8050 Universal Mount Kit*	Signet Instruments 9900 with 3-8052 Integral Mount Kit	- Customer Supplied Chart Recorder Programmable Logic Controller or - Programmable Automation Controller	- 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or - Programmable Automation Controller

Signet 2450 Pressure Sensor*

In-Line Installation - Fittings customer supplied

All sold separately

* The capillary tube located at the rear of the sensor must be exposed to the atmosphere.
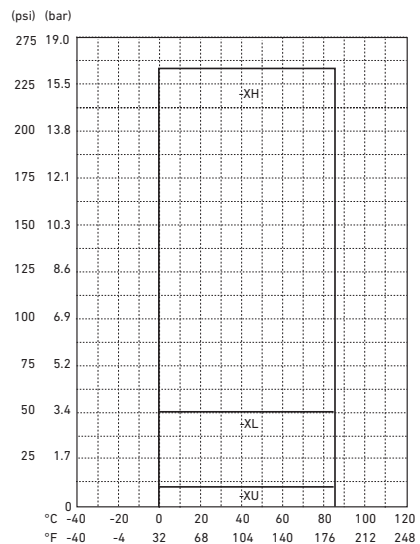
Application Tips

- These sensors can also be used for tank level measurements.
- Place a ball valve between tank and 2450 sensor for maintenance ease.
- Back end of sensor must be exposed to atmospheric pressure.
- To extend the cable, use a 3-conductor shielded cable & junction box.
- For submersible sensor mounting, always use the 3-2250 Submersible Hydrostatic Pressure Sensor.
- EPDM available contact special order.

Temperature/Pressure Graphs

Note:

The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

| (psi)	(bar)												
275	19.0												
225	15.5					-XH-							
200	13.8												
175	12.1												
150	10.3												
125	8.6												
100	6.9												
75	5.2												
50	3.4					-XL-							
25	1.7												
0						-XU-							
°C	-40	-20	0	20	40	60	80	100	120
°F	-40	-4	32	68	104	140	176	212	248

Ordering Notes

Any sensor can be mounted with an instrument in an integral configuration by doing the following:

1. It is advised to protect the capillary tube located on the back of the sensor with the NEMA 4X/IP65 rated 3-8052-1.
2. Order Integral adapter kit PN 3-8052 or NEMA 4X/IP65 rated 3-8052-1 (sold separately) to connect the instrument (sold separately) directly on to the sensor.

3. Order an instrument (sold separately). The following instrument part numbers are compatible with the 2450 for integral mounting: 3-9900-1.
4. Union mount version installs into pipe with end connector and union nut. See Installation and Wiring section for more information on parts required.
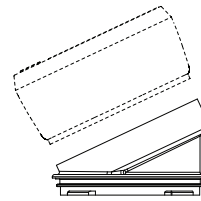
3-9900-396
Angle Adjustment
Adapter Kit
(optional accessory)

Ordering Information

Mfr. Part No.	Code	Output	Process Connection
Pressure Sensor with 4.6 m (15 ft) Cable			
Operating Pressure Range 0 to 10 psi			
3-2450-3U	**159 000 683**	Digital (S³L)	½ in. male union
3-2450-7U	**159 000 906**	Current (4 to 20 mA)	½ in. male union
Operating Pressure Range 0 to 50 psi			
3-2450-3L	**159 000 682**	Digital (S³L)	½ in. male union
3-2450-7L	**159 000 908**	Current (4 to 20 mA)	½ in. male union
Operating Pressure Range 0 to 250 psi			
3-2450-3H	**159 000 681**	Digital (S³L)	½ in. male union
3-2450-7H	**159 000 910**	Current (4 to 20 mA)	½ in. male union

Material	Code	Description
Union Matrix for Pressure Sensor 3-2450 ½ in. Union Connection		
End connector		
PVC	**721 500 106**	Union end metric socket
PVC	**721 602 006**	Union end IPS socket
PVC	**721 602 656**	Union end NPT thread
CPVC	**723 602 006**	Union end socket
PP-H	**727 508 506**	Union end butt
PP-H	**727 500 106**	Union end socket
PP-H	**157 203 603**	Union end threaded NPT
PP-N	**728 608 506**	Union end butt
PVDF	**735 608 606**	Union end butt
PVDF	**735 600 106**	Union end socket
PVDF	**198 203 611**	Union end threaded
Nuts		
PVC	**721 890 006**	PVC nut
CPVC	**723 690 006**	CPVC nut
PVDF	**735 690 406**	PVDF nut
PP	**727 890 406**	Poly Pro nut

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
5523-0322	**159 000 761**	Sensor Cable (per ft), 3 cond. plus shield, 22 AWG
3-8052	**159 000 188**	¾ in. Integral Mounting Kit
3-8052-1	**159 000 755**	¾ in. NPT Mount Junction Box with one liquid tight connector and cap with junction terminals (NEMA 4X/IP65 rated)
3-9000.392-1	**159 000 839**	Liquid Tight Connector Kit, NPT (1 connector)
3-9000.392-2	**159 000 841**	Liquid Tight Connector Kit, PG 13.5 (1 connector)
3-9900.396	**159 001 701**	Angle Adjustment Adapter Kit (for Field Mounting)
3-0252	**159 001 808**	Configuration Tool
Contact Specials	**Special Order**	½ in. union to a ¾ in. NPT adapter is available

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Flow

pH/ORP

Conductivity/ Resistivity

Level

Temperature

Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/ Pressure Graphs