

## Member of the SmartPro™ Family of Instruments



The Signet 9900-1BC Batch Controller system provides control capability and process fine-tuning in a familiar package. The programming interface uses a four-button keypad and an intuitive menu for adjusting a batching system to the best performance possible. Choose between simple or advanced modes. In simple mode, relay outputs can be used for batching, external counter, missing signal alarm and 4 to 20 mA output can be used to indicate batch status. In advanced mode relays can also be used for end of batch pulse, two-stage shutdown, overrun alarm, high flow detection, total volume or source volume alarm.

New to Generation IV, Automatic Overrun Compensation feature. The 9900-1BC can measure excess flow after a batch stops and use it to reduce flow to the next batch by de-energizing the batch relay early, thus closing the flow control valve, and eliminating batch overrun.

Designed for a variety of batch applications, the 9900-1BC can save up to 10 batch sizes for batching or blending a variety of liquid volumes. Customize batch names for easy distinction between batches. One K-Factor can be used for all batches, or use a different K-Factor for each batch for when different liquids are batched. User can choose to be prompted prior to starting a batch with a Yes/No or with a password to prevent inadvertently starting a batch.

The 9900-1BC operates on 10.8 to 35.2 VDC, regulated. Connect a remote start or stop switch for remote batch control. Use the end-of-batch pulse to trigger the next step in the process.

## Features

- Store up to 10 batch sizes for batching or blending a variety of liquid volumes
- Customize 10 batch names for easy distinction between batches
- **Modular Design** - Can be purchased as a complete system or add a Batch Module and Relay Module to an existing 9900 Transmitter (Generation II or later)
- **New! Automatic Overrun Compensation** can eliminate excess flow by automatically reducing the next batch size by the overrun value of previous batch.
- Remote control wiring with start, stop & resume terminals for remote batch control
- 3 programmable relays, one open collector, two dry-contact relays
- Two-stage control to prevent overflowing or to minimize water hammer
- Confirmation START/RESUME - Can prompt user prior to starting each batch with a Yes/No or password to prevent inadvertently starting a batch
- Enter 10 different K-Factors - one per batch for when different liquids are batched



## Applications

- Batch Process
- Filter Backwash Initiation
- Chemical Addition
- Canning and Bottling
- Tank Filling
- Bulk Storage Transfer
- Chemical Processing
- Food and Beverage
- Life Sciences
- Water Treatment

U.S. Patent No.: D662,844 S  
Taiwan Patent No.: D147,150

# Specifications

General		
Input Channels	One	
Accuracy	±0.2%	
Terminal Blocks	Pluggable screw type	16 AWG max wire gauge
Enclosure and Display		
Case Material	PBT	
Window	Shatter-Resistant Glass	
Keypad	4 buttons, injection-molded silicone rubber seal	
Display	Backlit, 7- and 14-segment	
Indicators	Dial-type digital bar graph	
Update Rate	1 s	
LCD Contrast	5 settings	
Enclosure size and color	¼ DIN	
Mounting	Panel	¼ DIN, ribbed on four sides for use with mounting bracket for panel mount installations
	Wall	Large enclosure (sold as an accessory) that encases the panel mount transmitter
Environmental Requirements		
Ambient Operating Temperature		
Backlit LCD	-10 °C to 70 °C	14 °F to 158 °F
Storage Temperature	-15 °C to 70 °C	5 °F to 158 °F
Operating Temperature	-10 °C to 70 °C	14 °F to 158 °F
Relative Humidity	0 to 100% condensing for field and panel mount (front only); 0 to 95% non-condensing for panel mount back side	
Maximum Altitude	4,000 m (13,123 ft)	
Enclosure Rating	Designed to meet NEMA 4X/IP65 (front face only)	
Input Power		
DC	24 VDC input; range: 10.8 to 35.2 VDC regulated	
Overvoltage Protection	48 Volt transient protection device	
Current limiting for circuit protection		
Reverse-Voltage Protection		
Input Specifications		
Digital (S <sup>3</sup> L)	Serial ASCII, TTL level, 9600 bps	
Accuracy	Determined by sensor	
Frequency	Sensitivity	80 mV @ 5 Hz, mV threshold gradually increasing with frequency
	Range	0.5 Hz to 1500 Hz @ TTL level input for open collector
	Accuracy	± 0.5% of reading max error @ 25 °C
	Repeatability	± 0.2% of reading
	Resolution	1 µs
	Update Rate	150 ms nominal
Power to Sensors		
	Voltage	+4.9 to 5.5 VDC @ 25 °C, regulated
	Current	20 mA max.
	Short Circuit	Protected
Power Supply		
	Reverse Polarity	Protected

## Specifications continued

### Output Specifications

#### Relay Specifications

		Dry-Contact Relays (2)	Open Collector (1)
	Type	SPDT	NPN
	Form	C	N/A
	Max. Voltage Rating	30 VDC or 250 VAC	30 VDC
	Max. Current Rating	5 A	50 mA
Hysteresis	Adjustable (absolute in Engineering Units)		
Latch	Reset in test screen or view mode		
Delay	9999.9 seconds (maximum)		
Test Mode	Set On or Off		
Maximum Pulse Rate	400 pulses/minute		
Volumetric Pulse Width	0.1 s to 3200 s		

#### 4 to 20 mA

#### Current Loop Output

	ANSI-ISA 50.00.01 Class H (passive: external power required)		
	Output	1	
	Span	3.8 to 21 mA	
	Zero	4.0 mA factory set; user programmable from 3.8 to 4.2 mA	
	Full Scale	20.00 mA factory set; user programmable 19.0 to 21.0 mA	
	Accuracy	± 32 µA max. error @ 25 °C @ 24 VDC	
	Resolution	6 µA or better	
	Temperature Drift	± 1 µA per °C	
	Power Supply Rejection	± 1 µA per V	
	Isolation	Low voltage (< 48 VAC/DC)	
	Voltage	10.8 to 35.2 VDC	
	Max. Impedance	250 Ω @ 12 VDC	500 Ω @ 18 VDC 750 Ω @ 24 VDC
	Update Rate	150 ms nominal	
	Short circuit and reverse polarity protected		
	Adjustable span	Reversible	
	Error Condition	Selectable error condition 3.6 or 22 mA or NONE	
	Actual update rate determined by sensor type		
	Test Mode	Increment to desired current (range 3.6 to 21.00 mA)	

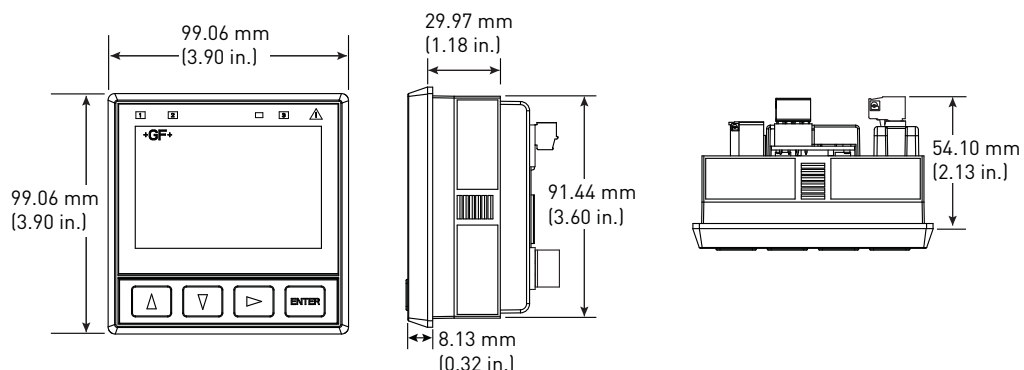
#### Shipping Weights

Base Unit	0.63 kg	1.38 lb
Batch Module	0.16 kg	0.35 lb
Relay Module	0.19 kg	0.41 lb

#### Standards and Approvals



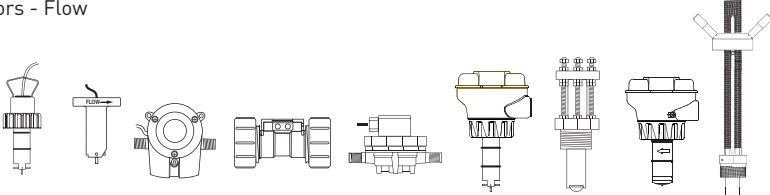
CE, UL, CUL, FCC
RoHS compliant, China RoHS
Manufactured under ISO 9001 for Quality, ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety

## Dimensions

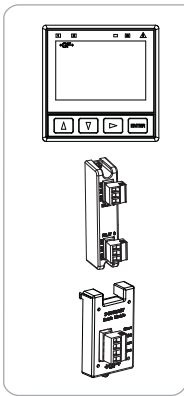


# System Overview

**Panel Mount - Tank, Wall**

<p><b>Signet Model 9900-1BC Batch Controller System</b> (Includes mounting bracket and panel gasket)</p> 	<p><b>Signet Model 9900-1BC Batch Controller System with Wall Mount Accessory</b></p>  <p style="text-align: right;">3-9900.392 (power supply sold separately)</p>
<p>Signet Sensors - Flow</p>  <p style="text-align: center;">515    525    2000    2100    2507    2537    2540    2551    2552</p>	
<p>Signet Fittings - See individual sensor data sheets <span style="float: right;">All sold separately</span></p>	

## Ordering Information



Mfr. Part No.	Code	Description
3-9900-1BC	<b>159 001 770</b>	Batch Controller System
3-9900-1P	<b>159 001 695</b>	9900 Panel Mount Transmitter
3-9900.393	<b>159 001 698</b>	Relay Module - 2 DCR (dry-contact relays)
3-9900.397	<b>159 310 163</b>	Batch Module

## Accessories and Replacement Parts

Mfr. Part No	Code	Description
6682-1102	<b>159 001 710</b>	DC Power Plug, 2 Pos, Right Angle
6682-1103	<b>159 001 711</b>	Relay Module Plug, 3 Pos, Right Angle
6682-1104	<b>159 001 712</b>	Loop Power Plug, 4 Pos, Right Angle
6682-3004	<b>159 001 725</b>	Freq/S <sup>3</sup> L Plug, 4 Pos, In-Line
6682-3104	<b>159 001 713</b>	Freq/S <sup>3</sup> L Plug, 4 Pos, Right Angle
7310-1024	<b>159 873 004</b>	24 VDC Power Supply, 10W, 0.42 A
7310-2024	<b>159 873 005</b>	24 VDC Power Supply, 24W, 1.0 A
7310-4024	<b>159 873 006</b>	24 VDC Power Supply, 40W, 1.7 A
7310-6024	<b>159 873 007</b>	24 VDC Power Supply, 60W, 2.5 A
7310-7024	<b>159 873 008</b>	24 VDC Power Supply, 96W, 4.0 A
3-9900.390	<b>159 001 714</b>	Standard Connector Kit, Right Angle
3-9900.391	<b>159 001 715</b>	Connector Kit, In-Line
3-9900.392	<b>159 001 700</b>	Wall Mount Accessory
3-9000.392-1	<b>159 000 839</b>	Liquid Tight Connector Kit, NPT (1 pc.)

**3-9900-1BC.099 Rev C (07/14)**

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