

## SERIES HFR, HFS, HFDS, and HFT – FLOW RATE MONITORS



### Benefits and Features

- Direct Reading Flow Rate Indication
- Optional Switch(es)
- Optional (field selectable) transmitter outputs of: 4-20mA, 0 to 5 VDC, or 1 to 5VDC, square wave pulse
- Pressures up to 6000 PSIG (413 Bar)
- Maximum Temperatures to 600°F (315°C)
- Not effected by viscosity changes up to 500 SSU/100 Centipoise
- Versatile mounts in any orientation No Straight Pipe Runs Required
- Easy to read with Dark or Opaque Fluids
- Flow Ranges:  
Liquids: 0.5 to 175 GPM  
Air & Gases: 2 to 1300 SCFM
- Connections Sizes Available: 1/4 through 2 Inch NPT, SAE, BSP, and Flanges

### General Description

Sure Flow Products variable area flow rate indicators are designed for tough industrial applications. This flow indicator is mechanical with a spring-loaded float and magnetic follower. This allows for mounting in any orientation and is ideal for use with dark or opaque fluids. The sharp edge orifice provides excellent measurement stability. These unique flow devices are not affected by changes in viscosities up to 500 SSU. For viscosities greater than 500 SSU and for air or gas applications, each flow indicator is individually calibrated for customer operating conditions.



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## Specifications

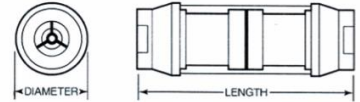
### Technical Data:

Measuring Accuracy:	±2.5% of full scale on center 1/3 of measuring range ±1% of full scale over the entire scale range	Power Requirements:	12-35 VDC
Repeatability:	±1% of full scale	Load Driving Capacity:	4-20: Load resistance is dependent on power supply voltage. Use the following equation to calculate the maximum load resistance: Max. loop load (Ω) = 50 (power supply volts-12). 0-5 VDC: Minimum load resistance 1000~. 1-5 VDC: Minimum load resistance 25K~. Square wave pulse: Min. load resistance 1000~.
Flow Measuring Range:	0.05-150 GPM	Over-Current Protection:	Self-limiting at 35mA
Max. Operating Pressure:	Aluminum or brass monitor: 3500 PSIG (240 Bar) Stainless steel monitor: 6000 PSIG (410 Bar)	Resolution:	10 bit (0.1%)
Max. Operating Temp:	Media: 240°F (110°C) Ambient: 180°F (82°C)	Isolation:	Inherently isolated from the process
Max. Pressure Drop:	Consult Sure Flow Products	Response Time:	<100 milliseconds
Standard Calibration:	Oil monitors: DTE 25° @ 110°F (43°C), 0.873 sg Water monitors: Tap water @ 70°F (21°C), 1.0 sg Air monitors: Air @ 70°F (21°C), 1.0 sg & 100 PSIG (6.8 Bar)		
Enclosure:	NEMA type 4X (UL approved)		
Alarm Switch:	4% of full scale		
Alarm Switch Contacts:	SPDT (dry contact): UL/CSA rating at 10 amps and 1/4 hp, 125 or 250 VAC, 1/2 amp, 125 VDOC, 1/4 amp, 250 VDC (3 amps, 125 VAC lamp load)		

### Materials of Construction

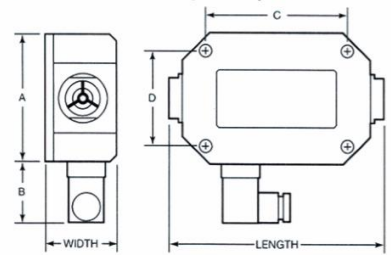
WETTED COMPONENTS			
CASING	Aluminum	Brass	Stainless Steel
END PORTS			
TAPERED SHAFT			
SEALS	Buna-N (Std), EPR, Viton®, Kalrez®		Viton® w/ Teflon® (Std), Buna-N, EPR, Kalrez®
TRANSFER MAGNET	Teflon® Coated Alnico		
FLOATING ORIFICE DISK	Stainless Steel		
ALL OTHER INTERNAL PARTS	Stainless Steel		
NON-WETTED COMPONENTS			
ENCLOSURE & COVER	Aluminum		
SEALS	Buna-N		
WINDOW	Pyrex		
DIN CONNECTOR	Polyamide		

### Dimensions Series HFR



Dimension in Inches	SIZE 3	SIZE 4	SIZE 5	
Diameter	1-7/8	2-3/8	3-1/2	
Length	6-9/16	7-5/32	10-1/8	12-5/8
Port Size				
NPTF:	1/4, 3/8, 1/2	3/4, 1	1-1/4, 1-1/2	2
SAE#:	6, 8, 10	12, 16	20, 24	32
BSP:	3/8, 1/2	3/4, 1	1-1/4, 1-1/2	2

### Dimensions Series HFS, HFDS, HFT



Dimension in Inches	SIZE 3	SIZE 4	SIZE 5	
Length	6-9/16	7-5/32	10-1/8	12-5/8
Width	2-3/16	2-15/16	3-13/16	
A	4	4-1/2	5-5/16	
B	1-7/8	1-7/8	1-7/8	
C	4-7/8	5	6-3/4	
D	2-1/4	2-7/8	3-1/4	
Port Size				
NPTF:	1/4, 3/8, 1/2	3/4, 1	1-1/4, 1-1/2	2
SAE#:	6, 8, 10	12, 16	20, 24	32
BSP:	3/8, 1/2	3/4, 1	1-1/4, 1-1/2	2

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### Ordering Information

#### MODEL SELECTION:

**Example: HFS /4 - 20GPM - .750 - B - 2**

#### SERIES:

- HFR** = Flow Rate Indicator
- HFS** = Flow Rate Indicator w/Switch
- HFDS** = Flow Rate Indicator w/2 Switches
- HFT** = Flow Transmitter

#### AVAILABLE FLOW RANGES:

GPM	RANGES	
	LIQUID GPM	AIR & GAS SCFM
1	.1 to 1 or .05 to 1	1.5 to 12
2	.2 to 2	4 to 23
5	.5 to 5	6 to 60
10	1 to 10	10 to 100
15	1 to 15	15 to 150
20	2 to 20	20 to 215
25	2 to 25	20 to 250
30	3 to 30	30 to 330
40	4 to 40	30 to 400
50	5 to 50	30 to 470
75	8 to 75	30 to 750
100	10 to 100	150 to 900
150	20 to 150	150 to 1300

Other units of measure available, consult Sure Flow

#### SIZE/CONNECTIONS SIZES/TYPES:

3	= .250	= 1/4 inch NPT	6 SAE	= #6 SAE
3	= .250BSP	= 1/4 inch BSP	8 SAE	= #8 SAE
3	= .375	= 3/8 inch NPT	10 SAE	= #10 SAE
3	= .375BSP	= 3/8 inch BSP	10 SAE	= #10 SAE
3	= .500	= 1/2 inch NPT	10 SAE	= #12 SAE
3	= .500BSP	= 1/2 inch BSP	10 SAE	= #16 SAE
4	= .750	= 3/4 inch NPT	10 SAE	= #20 SAE
4	= .750BSP	= 3/4 inch BSP	10 SAE	= #24 SAE
4	= 1.00	= 1 inch NPT		
4	= 1.00BSP	= 1 inch BSP		
5	= 1.25	= 1-1/4 inch NPT		
5	= 1.25BSP	= 1-1/4 inch BSP		
5	= 1.5	= 1-1/2 inch NPT		
5	= 1.5BSP	= 1-1/2 inch BSP		
5	= 2.00	= 2 inch NPT		
5	= 2.00BSP	= 2 inch BSP		

For flanged connections, consult Sure Flow

#### BODY MATERIAL:

- A** = Aluminum
- B** = Brass
- SS** = Stainless Steel

#### SEAL MATERIAL:

- 1** = Viton
- 2** = Buna N
- 3** = Ethylene Propylene
- 4** = Teflon & Kalrez

#### OPTIONAL MOUNTING ORIENTATION/SPECIAL CALIBRATION:

- R** = Horizontal Mount - left to right flow
- L** = Horizontal [No Title] - right to left
- D** = Vertical Mount - flow down
- B** = Bidirectional

Note - Standard is vertical mount - flow up. However, meter can be mounted in any orientation. Options above include turning of the calibrated number for ease in reading.

#### High Temperature Option

(rate indicators only, consult Sure Flow Products)

- HT** = 400°F (requires Viton/Teflon seal)
- HT6** = 600°F (requires Teflon/Kalrez seal)

S\* - Calibrated for a viscosity greater than 500 SSU, or Specific Gravity greater than 1.0 (please specify both viscosity and specific gravity. Ex: S1000/.9 means calibrate for 1000 SSU and S.G. of .9