ISTEC
Flow Measurement & Control

NEW PRODUCT

Electronic Positive Displacement Fuel oil meters

Applications

- Flow measurement of mineral oils such as heating or propellant fuels
- In burners, on board ships, land vehicles and fixed installations
- Marine and metrological type approvals (optional)

Features

- The complete range of products offering the best solutions for the measurement of oil consumption
- State-of-the-art design with electronic counter, flow indication, analogue and digital output signals and limiting value switch
- Mounting on the pressure or suction side of a pump, with no straight inlets or outlets required
- Independent of viscosity and temperature
- High vibration resistance
- Classical version with mechanical display still available

Your benefits

- The solution to your flow monitoring application with a complete product offering
- Reliable monitoring and flexible control of the system. Simplifies burner settings and optimising consumption
- Highly flexible mounting with very small space requirements
- Accurate measurements
- Maximum safety in the shipbuilding and automobile industries
- Cost-effective metering point

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The right product for every application

NEW PRODUCT

VZF (9218, 9222, 9228, 9242) with multifunctional dispay and outputs
Note: This unit replaces the LCD units.

Electronic display of
- totaliser, total and resettable volume
- actual flow rate
- other flow parameters

Output signals for
- volume pulses
- actual flow rate
- limiting values (Q_{min} , Q_{max})

Simple to operate
Interactive parameter input
External power supply

Housing with threaded or flanged connections

Main characteristic data:
- flow range 4 … 8000 g/h
- temperature ranges 266 and 370° F
- nominal pressure 232 and 362 psi (580 on request)

Still Available (9204, 9205, 9208, 9209, 9215, 9216, 9220, 9221, 9225, 9226, 9240, 9241, 9250 and 9252) total volume display and Pulse option.

Total volume display on roller counter

Option: Reed pulser RE or RV for remote totalisation

Option: Inductive IN pulser for control purposes

Housing with threaded or flanged connections

Main characteristic data:
- flow range 0.25 … 8.000 g/h
- temperature ranges 266 and 370° F
- nominal pressure 232 and 362 psi (580 on request)

Special applications such as:
- differential measurement
- certification/official verification for commercial transactions
- engine test benches

Istec's VZF type 9200 series meter in 1/2" through 2" sizes Positive Displacement Oil Meter with Electronic multifunction display and selectable outputs

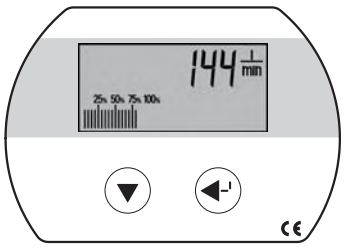
Technical data

- display of total, resettable total, and flow rate in m, litres or US gallons
- user-friendly, interactive parameter input
- fuel oil meter with threaded or flanged connections
- for mounting in horizontal or vertical positions

Versions available on request:
- different flange drillings, such as ANSI, JIS

Type		**9218**	**9223**	**9228**	**9242**	**9252**
Nominal diameter	**Inch(s)**	**1/2**	**3/4**	**1**	**1 1/2**	**2**
Installation length	inchs	6.5	6.5	7.5	11.8	13.8
Nominal pressure with threaded ends	psia	232	232	232	232	232
with flanges	psia	362	362	362	362	362
Maximum temperature	(F)	266	266	266	266	266
Minimum flow rate Q_{min}	g/h	4	8	20	60	200
Nominal flow rate Q_n	g/h	105	265	530	1600	5300
Maximum flow rate Q_{max}	g/h	160	400	800	2400	8000
Approximate starting flow rate	g/h	1	3	8	23	74
Maximum permissible flow rate	+/- 1% of actual flow					
Repeatability	+/- 0.2%					
Safety filter mesh size	mm	0.400	0.400	0.400	0.800	0.800
Dirt filter mesh size	mm	0.250	0.400	0.400	0.600	0.600
Volume of measuring chamber	approx. cm	12	36	100	330	1200
Housing finish	enamelled red RAL 3013					
Weight with thread ends (w/o couplings)	approx. lb	4.8	5.5	9.2	28.1	-
with flanges	approx. lb	8.3	9.9	16.5	44.7	90
Smallest readable amount						
Total volume	1	No decimal places				
Resettable volume	1	1 decimal places				
Digital flow rate display	g/h	1 decimal places				
Electronic display capacity	g	100000000				
Time at Qn unitl rollover to zero	h	128000	100000	50000	16667	5000
Outputs	2 freely selectable independent of each other					
Pulse value for totalizer	Vol./Pulse	pulse vlaues and width				
Analog for Flowrate	Current	4mA = Min g/h, 20mA=Max g/h				
Limiting Switch	Q_{min} Q_{max}	Minimum, maximum and hysteresis				

Electronic display



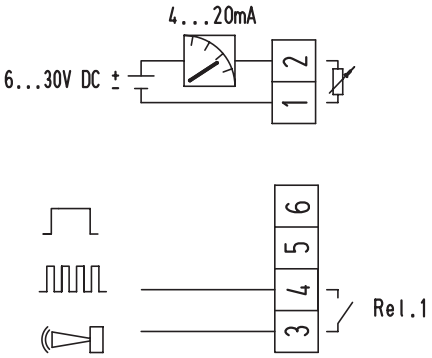
Display values:	• total volume, resettable volume, flow rate • In the information menu, hours of operation and other information can be obtained
Display:	• 8-character LCD with identification of the parameter, height of numbers: 8 mm, flow rate (meter load) using bar indicator
Temparature:	• ambient temperature -13 … +158° F, storage temperature -13 … +185° F
Safety:	• CE, vibration and shock test to DIN IEC 68
Power supply:	• 24 V DC (6...30 V DC)
Data preservation:	• by non-volatile memory (EEPROM)
Protection class:	• IP66 (IEC 60529) against water jets and dust

Outputs

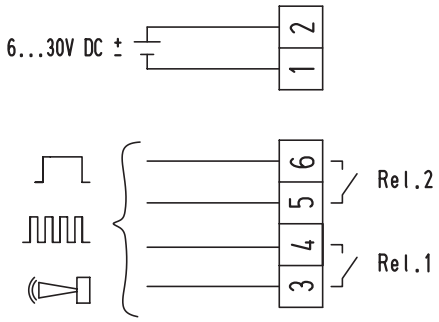
Four output functions are available:
- Pulser for volume pulses with programmable pulse value (for external totaliser)
- Analogue current output 4...20 mA corresponding to flow rate
- Frequency output 0...100 Hz corresponding to flow rate
- Switching function (limiting value switch) specified by programmable upper and lower flow rates

Except for the analogue output function, any two of the remaining three functions can always be used simultaneously. This results in two types of connection:

- 1 potential-free digital output (Rel. 1), programmable to one of the three functions described below.
- 1 passive analogue 4...20 mA output also used for powering the meter.



- 2 potenial-free digital outputs (Rel. 1 + Rel. 2), each programmable to one of the three functions described below.
- The analogue output is not available in this case. The power is supplied over these terminals



Specification of the outputs

Passive analogue output (1-2)

- Voltage range U: 6...30V DC
- Maximum load R_L: (U-5) V / 0.0215A [Ω]
- Resolution: 16 Bit
- Max. error: ± 0.2 mA
- Update interval: < 1s

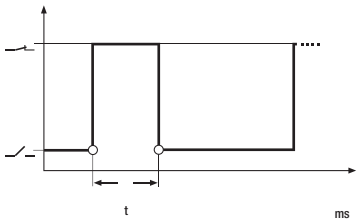
Digital outputs (3-4, 5-6)

- Max. voltage U_{max} : 48V AC/DC
- Max. current I_{max} : 50 mA
- Max. output frequency f_{max} : 100 Hz
- Update interval: < 1s
- ON-resistance R_0 : ≤ 100Ω
- OFF-resistance R∞: ≥ 10MΩ
- Insulation voltage: > 100V AC/DC

Adjustable functions:

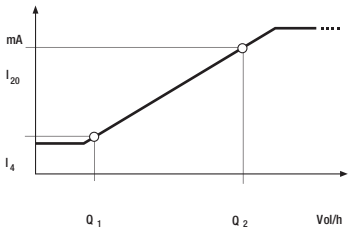
Volume pulses

Pulse width t: 5, 50, 250, 500 ms
Pulse value: 10, 1, 0.1, 0.01, 0.001 pulses/gallon



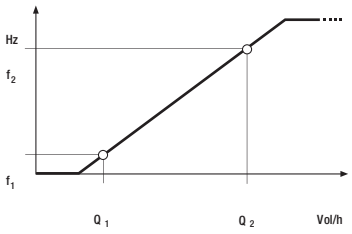
Current signal

- Flow rate at 4 mA Q_1 : > or = 0
- Flow rate 20 mA Q_2 : < or = Qmax
- Attenuation: Adjustable 1 - 10



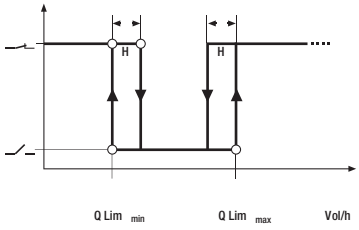
Frequency signal

Output frequency f_{max}: 100Hz
Pulse ratio: 1:1
Frequency / Flowrate f_1/Q_1: adjustable
Frequency / Flowrate f_2/Q_2: adjustable



Limiting value switch

Limit Q_{min}: > or = 0
Limit Q_{max}: < or = Qmax
Hysteresis H: 0 - 10% of QLim



How to obtain an optimal measurement

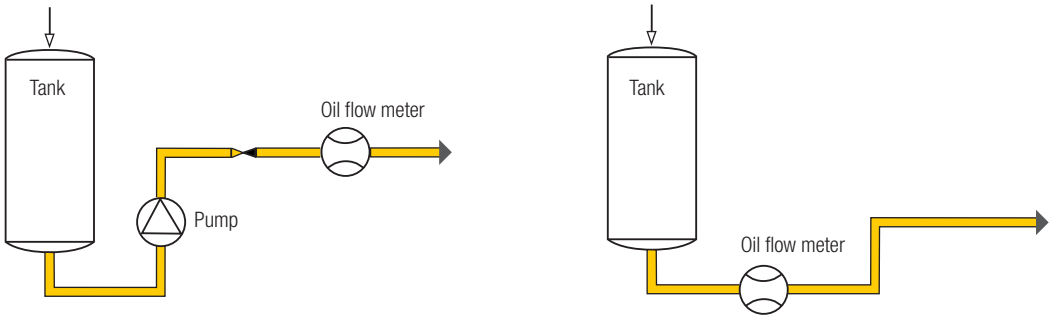
Planning

Flow meters are precision measuring instruments. They achieve optimal results if

- a few important rules are observed during plant design,
- mounting and commissioning are carried out with care,
- the meters are used for their defined purpose only.

Layout of Pipework

- The quantities consumed by all consumers must be registered by the meter.
- Rotary piston meters do not require flow conditioners or inlet runs (after bends, T-pieces or fittings). They may be mounted in horizontal, vertical or inclined position, except with the head pointing downwards.
- The layout of piping must ensure that the meter is at all times filled with liquid and that no inclusions of air or gas may occur. Do not install the instrument at the highest point of the installation.
- Meter and accessory equipment must be easily accessible.



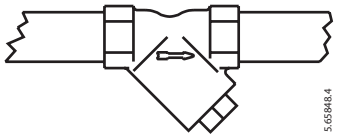
Selection of the Meter and Ancillaries

To be considered when selecting the meter:

- Operating temperature
- Viscosity of the medium
- Operating pressure
- Flow rate
- Resistance of the material against fuel to be metered and working conditions

The technical data are valid for the following reference conditions: EL heating fuel / diesel at 20° C. For higher viscosities or if the meter is mounted on the suction side of a pump, it is necessary to determine the pressure drop and the flow rate that can still be attained by using the pressure loss curves (page 25ff). If the pressure drop is more than 1 bar, it is advised to use the next larger meter size. Maximum permissible pressure drop = 3 bar.

Maximum mesh size of dirt filter for meter accuracy of:	1%	1%	1/2%
1/8″		0,080 mm	0.080 mm
1/4″		0.100 mm	0.100 mm
1/2″	0.250 mm	0.250 mm	0.100 mm
3/4″	0.400 mm	0.400 mm	0.100 mm
1″	0.400 mm	0.400 mm	0.250 mm
1 1/2″	0.600 mm	0.600 mm	0.250 mm
2″	0.600 mm	0.600 mm	0.250 mm



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