



Overview

The variable area flow meter is an instrument for measuring the flow of liquids or gases in pipelines. It includes a vertical tube through which the fluid flows whose diameter increases from the bottom to the top and a float which can move vertically in the tube.

As the flow increases this float moves to a higher position until its resistance to the fluid flow is balanced of the float is a measure of the flow rate. The flow rate values can be read on a scale.

Features

- Mechanical display and LCD display
- Robust and universal
- The short-stroke design allows the measurement of high flow rate using a relative short metering tube
- Special application is for hazardous, dangerous or aggressive fluid, for high temperature and high pressure rates
- All stainless steel design provides a safe measurement of a variety of liquids, gases and steam- The measuring section can be equipped with a heating jacket
- Standard rotameter is mounted in a vertical pipeline with flow direction upwards

Technical Specifications

Measured Media: Liquids, gases, steam

Measuring Range (standard conditions):

* Water (20°C): 10–300,000 L/h (customizable)

* Air (0.1013 MPa, 20°C): 0.7–3000 Nm³/h (customizable)

Turndown Ratio: 10:1

Accuracy:

* Mechanical pointer: Class 1.0 / 1.5 / 2.0 / 2.5

* LCD display: Class 1.0 / 1.5 / 2.0 / 2.5

* Remote (combined): Class 1.0 / 1.5 / 2.0 / 2.5

Medium Temperature:

* Mechanical: -80°C to +300°C (PTFE: 0–80°C), up to 400°C (high-temp)

* LCD: -40°C to +120°C (PTFE: 0–80°C), up to 400°C

* Remote: same range

Ambient Temperature:

* Mechanical: -40°C to +120°C

* LCD: -20°C to +60°C

Medium Viscosity:

(KMTF type excluded from standard viscosity limits — consult manufacturer)

Nominal Pressure:

* DN15–DN50: up to 4.0 MPa (higher depending on size)

* DN65–DN250: up to 1.6 MPa (optional higher ratings available)

Process Connections:

* Flange: DIN 2501 / ANSI / JIS (DIN recommended)

* Optional: sanitary clamp, threaded

Electrical Connections:

M20×1.5, 1/2"G, 1/2"NPT, 3/4"G, 3/4"NPT

Installation Options:

Vertical, horizontal, top-down, bottom-side, side-side

Straight Pipe Requirements:

* Inlet: ≥ 5D

* Outlet: ≥ 250 mm

Protection Rating: IP67

Explosion Protection:

* Intrinsically safe: Ex ia II CT5

* Flameproof: Ex d II CT6



Technical Parameter Table

Measuring medium	Liquid, gas, steam		
Measurement range (consection to standard medium, 100% value)	Water: 20°C	(10-300000) L/h, special according to user requirements	
	Air: 0.1013MPa, 20°C	(0.7-3000)Nm ³ /h, special according to user requirements	
measuring range ratio	10:1		
Accuracy level	On-site type	Mechanical pointer indication	1.0, 1.5, 2.0, 2.5
		Digital display (battery-powered, 1 year of service life)	1.0, 1.5, 2.0, 2.5
	Remote transmission type: can be pointed and digitally displayed at the same time		1.0, 1.5, 2.0, 2.5
Medium temperature	On-site type	Mechanical pointer indication	-80°C ~ +300°C (PTFE:0~80°C), high temperature type 400°C
		Digital display (battery-powered, 1 year of service life)	-40°C ~ +120°C (PTFE:0~80°C), high temperature type 400°C
	Remote transmission type: can be pointed and digitally displayed at the same time		-40°C ~ +120°C (PTFE:0~80°C), high temperature type 400°C
Ambient temperature	On-site type	Mechanical pointer indication	-40°C ~ +120°C
		Digital display (battery-powered, 1 year of service life)	-20°C ~ +60°C
	Remote transmission type: can be pointed and digitally displayed at the same time		-20°C ~ +60°C
Medium viscosity (excluding F56SP)	DN15: F15.00~F15.03 η <1 mPa.s, F15.04~15.30 η <5 mPa.s; DN25: η <20 mPa.s; DN50~250: η <30 mPa.s		
Nominal pressure	DN15 to DN50	4.0MPa (DN15: 42MPa, DN25: 42MPa, DN50: 32MPa)	
	DN65 to DN250	1.6MPa (DN65/DN80: 10MPa, DN100: 6.4MPa, DN125: 4.0MPa, DN150: 4.0MPa, DN200: 2.5MPa, DN250: 2.5MPa)	
Process connection	Flange connection, standard: DIN2501, ANSI, JIS		
	Choose sanitary clamps and threaded connections when ordering		
Electrical connection	M20×1.5 1/2"G 1/2"NPT 3/4"G 3/4"NPT		
Installation method	Vertical (down and up out), horizontal (horizontal pipeline; left in and right out, right in and left out), up and down (used in vertical pipelines), bottom in and side out, side in and side out		
Entrance straight pipe section	≥5D		
Exit direct pipe section	≥250mm		
Shell protection level	IP67 (other orders need to be explained separately)		
Explosion-proof sign	EExia II CT5 (intrinsic safety type); EExd II CT6 (explosion-proof type)		
Benan type parameters	Ui=28V Ii=93mA Pi= 0.65W Ci≤ 5nF Li =0mH		
Safety gate parameters	Uo≤ 28V Io≤ 93mA Po≤ 0.65W Co≥ Ci+Cc Lo≥ Li+Lc		
Explosion-proof qualification certificate number	CE101138		

Ordering Information

For Liquid Applications:

Provide:

- * Medium
- * Operating temperature & pressure
- * Density
- * Normal flow rate
- * Flow range
- * Pipe size & pressure rating
- * Flange standard
- * Flow direction
- * Connection type
- * Required functions
- * Required functions

For Gas Applications:

Provide:

- * Medium
- * Operating temperature & pressure
- * Density (standard or operating)
- * Normal flow rate
- * Flow range
- * Pipe size & pressure rating
- * Flange standard
- * Flow direction
- * Connection type

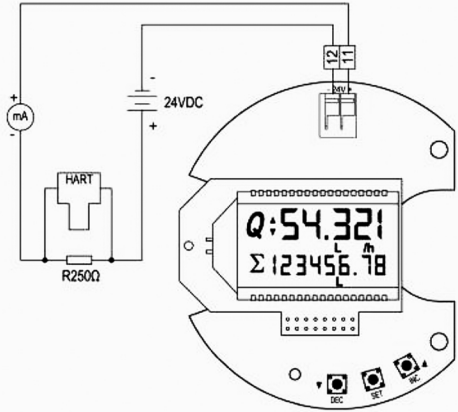
LCD Display



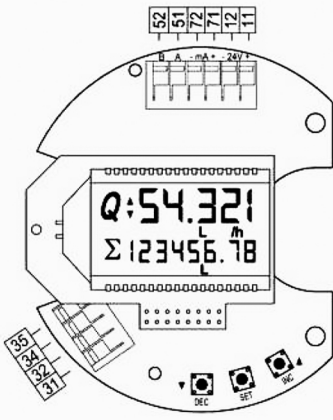
A: The interior uses an aluminum dial with a long mechanical indicator.

B: Low power consumption, full viewing angle, double-line backlight, LCD digital display with unit, can display instantaneous flow and cumulative flow and corresponding units at the same time, scrolling to display instantaneous flow, flow rate, current, percentage. With two-wire backlight, battery power and alarm indication functions.

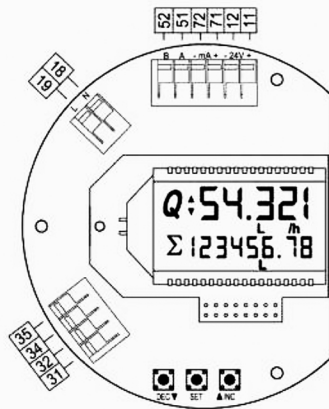
Wire Terminal Description



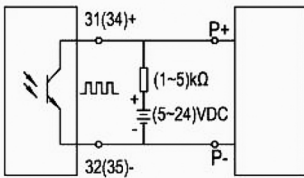
Two-wire 4~20mA output



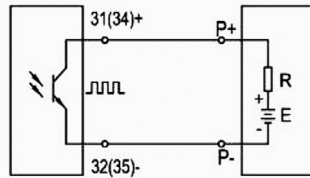
M5 M6 terminal diagram



M7 M8 terminal diagram



Pulse output
(passive input device)



Pulse output
(active input device)

11	DC power supply	24VDC+
12		24VDC-
18	220V AC	L
19		N
31	Upper limit alarm/pulse output/	+
32		-
34	Lower limit alarm/pulse/	+
35		-
51	Modbus	A
52		B
71	Multi-wire current output	+
72		-

Parameters that need to be confirmed when ordering

1. When the measured medium is liquid: the measured medium, operating temperature, operating pressure, operating density, normal flow, flow range, caliber and nominal pressure, flange standard, fluid direction, connection method, function.

Example: water, normal temperature, normal pressure, 1000kg/m³, 100l/h, 15~150 l/h, DN15 PN16, KMTF-2009 RF, up and down, flange connection, on-site display +4~20 mA output

2. When the measured medium is gas: the measured medium, operating temperature, operating pressure, standard/standard correction/operating density, normal flow, flow range, caliber and nominal pressure, flange standard, fluid direction, connection method, function.

Example: air, normal temperature, normal pressure, 1.29 Nkg/m³, 10 Nm³/h, 1.5~15 Nm³/h, DN15 PN16, KMTF-2009 RF, up and down, flange connection, on-site display +4~20 mA output + Hart Agreement

Suggestion: The normal flow rate should be 30~70% of the flow rate range. The accuracy of this section is relatively high and the instrument performance is stable. The operating temperature and pressure provided by the gas must be accurate, because the temperature and pressure of the gas affect the density, and the change of density will cause the instrument to fail to use normally or affect the accuracy. It is recommended that the instrument material be consistent with the craft pipe material.

Remarks: Only when you provide detailed and accurate data can we provide stable products. Thank you for your attention!!!