

ORIFICE FLOW METERS

Integral Orifice (One-Piece DP Flow Meter)

Integral Orifice

MODEL : DHIO-FM / DHIO-BN / DHIO-BY



DHIO-FM

DHIO-BN

DHIO-BY

The integral orifice is a one-piece (One-Piece) differential-pressure flow meter. Although it is an orifice-based flow meter, its different design greatly simplifies installation and commissioning.

The integral orifice is a self-contained orifice flow meter with all of the following:
 an integral 3-valve manifold · integral connection between the carrier taps and the manifold · a DP transmitter factory-mounted on the manifold and pre-configured for the application · fully leak-tested and configured.

Features: combines the primary element and DP transmitter into a single flow meter assembly. As a one-piece flow meter pressure-tested as an assembly, there are no leak points to trace or repair, improving reliability. With an integral multivariable transmitter and RTD, mass flow (liquids, steam) and corrected volumetric flow (gases) are measured integrally in a single unit. The integral impulse connection eliminates impulse piping and provides a repeatable DP connection regardless of installation position. Installation cost is reduced because there is only one component to install and no separate manifold to supply and connect. The entire flow meter is specified with a single ordering code, and with only two orifice ratios (Ratio), specification is simple.

DHIO-FM: the integral orifice is a flow element that can be close-coupled (Close-coupled) with a DP transmitter to form a complete flow meter, allowing easy installation and low-cost measurement of the low flows frequently encountered in plant metering and research work. It can be ordered with internal NPT threads or with flanged piping (meter run) welded upstream and downstream of the flow restriction, and the orifice assembly can be mounted directly on the transmitter or remotely with the optional adapter kit (155S711).

DHIO-BN / DHIO-BY: the integral orifice block type is a compact flow meter providing integral measurement of liquids and steam in mass units, and gas flow in corrected volumetric units.

15A ~ 200A (1/2" ~ 8") ASME B16.5 150 ~ 1500# Process temperature -40 ~ 121 °C

Integral 3-valve manifold

Types · model configuration

Item	DHIO-FM Flange & Meter run included	DHIO-BN Block type · without meter run	DHIO-BY Block type · with meter run
Features	Transmitter · meter run integral (All-in-one)	Transmitter · block integral (All-in-one)	Transmitter · meter run integral (All-in-one)
Turndown	4:1	4:1	4:1
Materials	Plate: STS304, STS316, Inconel, Monel, Hastelloy · Flange & Meter Run: C.S, STS304, STS316, Inconel, Monel, Hastelloy, A182 F11, F22, F51	STS304, STS316, Inconel, Monel, Hastelloy	Plate: STS304, STS316, Inconel, Monel, Hastelloy · Flange & Meter Run: C.S, STS304, STS316, Inconel, Monel, Hastelloy, A182 F11, F22, F51
Connection	Flange 150#, 300#	Flange 150#, 300#, 600#, 900#, 1500#	Flange 150#, 300#, 600#, 900#, 1500#
Applicable piping	1/2B ~ 2-1/2B (15A ~ 65A) Pipe	1/2B ~ 8B (15A ~ 200A) Pipe	1/2B ~ 8B (15A ~ 200A) Pipe

Item	DHIO-FM Flange & Meter run included	DHIO-BN Block type · without meter run	DHIO-BY Block type · with meter run
Standards	ISO5167-2	ISO5167-2	ISO5167-2
Accuracy	±1.5%	±1.5%	±1.5%

Technical Specifications

Item	Value
Accuracy	±1.5%
Turndown (Turndown Range)	4:1
Applicable standards (Regulations)	ISO5167-2
Fluids	Liquids, gases and saturated steam
Line size	15A, 25A, 40A, 50A, 80A, 100A, 150A, 200A (1/2", 1", 1-1/2", 2", 3", 4", 6", 8")
Process connection	Wafer body — installed between ASME B16.5 (ANSI) Class 150, 300, 600, 900, 1500# flange drilling
Material (orifice assembly · stem · manifold)	316L
Material (orifice body)	304 SS, 304L SS, 316 SS, 316L SS
Process temperature	−40 ~ 121 °C (−4 ~ 250 °F)
Ambient temperature	−40 ~ 70 °C (−4 ~ 158 °F)
Components	Integral 3-valve manifold · integral carrier tap–manifold connection · factory-mounted and pre-configured DP transmitter · leak-tested
Measurement output (Indicator)	Volumetric / Mass
Output signal	4 ~ 20mA / 1 ~ 5V
Transmitter mounting	Direct mounting or remote mounting with the optional adapter kit (155S711) (DHIO-FM)
DHIO-FM piping connection	Internal NPT threads or flanged meter run welded upstream and downstream of the flow restriction
Orifice ratio (Ratio)	Two (Only two orifice ratios)

Standards · ISO 5167-2 · ASME B16.5

Installation requirements

- The wafer body is installed between ASME B16.5 Class 150 ~ 1500# flanges. The DHIO-FM / DHIO-BY are supplied with upstream and downstream meter runs and are connected to the piping by flanges at both ends.
- No impulse piping or separate manifold is required; the transmitter is mounted on the manifold and configured at the factory before shipment.
- Used within a process temperature of −40 ~ 121 °C and an ambient temperature of −40 ~ 70 °C. For conditions outside these ranges, consider the separate transmitter arrangement (DHIO-FM remote mounting) or similar.

Ordering information (How to Order)

1 Model	
DHIO-FM	Flange & Meter Run Included
DHIO-BN	Block Type, Meter Run Excluded
DHIO-BY	Block Type, Meter Run Included

2 Nominal Pipe Size	
(size)	Pipe size in inch or mm

3 Material : Plate or Block / Meter Run	
CS	Carbon Steel
4S	304SS
4L	304L SS
6S	316SS
6L	316L SS
OP	Option

4 Mounting Connection	
015	ASME(ANSI) Class 150 LB
030	ASME(ANSI) Class 300 LB
060	ASME(ANSI) Class 600 LB
090	ASME(ANSI) Class 900 LB
150	ASME(ANSI) Class 1500 LB
000	Option

5 Indicator	
V	Volumetric
M	Mass

6 Output	
A	4 ~ 20mA
V	1 ~ 5V