WISE AIR 4.0®
MEASURE TO MANAGE



2026 · PRODUCT BROCHURE

Flow Sensors

WAFS-104

Thermal Mass Flow Sensor

THERMAL MASS · INSERTION TYPE

True mass flow from leakage to full load — fitted and removed without a shutdown.

Flow | Velocity | Consumption | Temperature

0.1–250
Nm/s velocity range

±1 %
of reading + 0.3 % FS

0–50 bar
operating pressure

DN20–300
pipe sizes

OVERVIEW

True mass flow, from the smallest leak to full load.

The WAFS-104 measures compressed air and gas flow by the thermal mass principle. A heated sensor at the tip of the probe loses heat to the passing gas, and the electronics turn that into standard flow — directly, with no separate pressure or temperature compensation. One probe covers 0.1 to 250 Nm/s, so the same sensor shows night-time leakage and peak demand. Insert it through a ½" ball valve while the line stays under pressure, read flow, consumption and temperature on its colour touch display, and send the values to your PLC or to WiseAir's WASM-604 monitoring platform.



MEASURES

- Flow
- Velocity
- Consumption
- Temperature

True mass flow

Measures mass flow directly, independent of pressure and temperature changes, with integrated gas temperature measurement.

1:2500 turndown

0.1 to 250 Nm/s in one sensor — from leakage flow at night to full-load demand.

Hot-tap installation

Fit and remove through a ½" ball valve without shutting down or depressurising the line.

No moving parts

Negligible pressure drop, no wear and a stable long-term signal — unlike orifice or vortex meters.

Colour touch display

1.5" wide-angle colour LCD with capacitive touch for live values, units and settings.

Ready to connect

RS485 Modbus RTU, isolated 4–20 mA and pulse output as standard, with full electrical isolation.

APPLICATIONS

- Compressor output and plant consumption
- Consumption by line, department or machine
- Leak detection and leakage-rate measurement
- Peak and average demand profiling
- Nitrogen generator output
- Nitrogen, oxygen, CO_2 and other process gases

FLOW REFERENCE

Readings are standard (normalised) flow at 20 °C and 1 bar(a) to ISO 1217 — or set your own reference temperature and pressure.

PRODUCT ANATOMY

Inside the WAFS-104

1.5" colour touch display
Flow, consumption, velocity and temperature on three swipe pages.

Isolated digital electronics
Fully digital signal processing in an aluminium housing for a stable signal.

Flow-direction arrows
Align them with the flow; the sensor is not bidirectional.



REAR CONNECTIONS

1. **Flow arrows** Point them in the direction of flow
2. **M12 A** Power 18–30 VDC + RS485 Modbus RTU
3. **M12 B** Isolated 4–20 mA + pulse output

250, 400 or 600 mm shaft
Stainless shaft with depth scale for DN20 to DN300 and large ducts.

Gland nut and G ½" fitting
Fit and remove under pressure through a ½" ball valve.

Thermal sensor tip
Heated and reference RTDs measure true mass flow and gas temperature.

TECHNICAL DATA

Specifications

MEASUREMENT

Principle	Thermal mass, insertion type
Velocity range	0.1 … 250 Nm/s (turndown 1:2500)
Measured values	Standard flow, velocity, consumption, gas temperature
Accuracy	±(1 % of reading + 0.3 % FS)
Reference	20 °C, 1 bar(a), ISO 1217; programmable

MEDIA

Gases	Air, N_2, O_2, CO_2, Ar, He, H_2, N_2O, natural gas; others on request
Condition	Clean, dry, non-corrosive; install after the first separator

OUTPUTS AND INTERFACE

Digital	RS485, Modbus RTU
Analogue	4–20 mA, isolated, scalable
Pulse	Consumption pulse output
Connection	2 × M12, 5-pin

DISPLAY

Display	1.5" colour LCD, capacitive touch
Flow units	Nm^3/h, Sm^3/h, NL/min, kg/h, scfm and more

PROCESS CONDITIONS

Medium temperature	−40 … +150 °C
Operating pressure	0 … 50 bar; retaining device above 16 bar
Pipe sizes	DN20 … DN300 (-A, -B); larger with -C

POWER AND ENVIRONMENT

Supply	18 … 30 VDC
Consumption	5 W
Ambient	−30 … +70 °C, indoor
EMC	IEC 61326-1

MECHANICAL

Shaft length	250 mm (-A), 400 mm (-B), 600 mm (-C)
Process connection	G ½" (ISO 228-1)
Mounting bore	≥ 13 mm through valve and pipe wall
Housing	Aluminium
Calibration interval	Every 2 years

FLOW
±1 %
of reading + 0.3 % FS

TURNDOWN
1:2500
0.1 … 250 Nm/s

PRESSURE
0–50 bar
retaining device above 16 bar

Calibration Every sensor is calibrated before dispatch and ships with a calibration certificate. Recalibrate every 2 years — the probe comes out under pressure, so production keeps running.

SIZING AND INSTALLATION

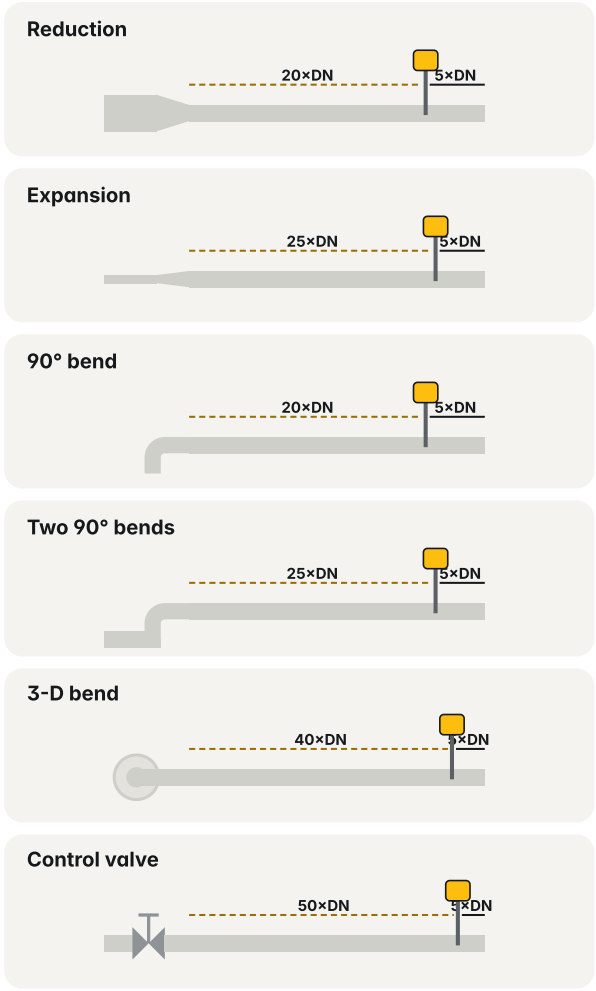
Choose the size. Fit it right.

Flow range by pipe size (Nm³/h, compressed air)

PIPE	DN	MIN	MAX 120 NM/S	MAX 250 NM/S
¾"	20	0.11	**136**	283
1"	25	0.18	**212**	442
1¼"	32	0.29	**347**	724
1½"	40	0.45	**543**	1,131
2"	50	0.71	**848**	1,767
2½"	65	1.2	**1,434**	2,986
3"	80	1.8	**2,171**	4,524
4"	100	2.8	**3,393**	7,069
5"	125	4.4	**5,301**	11,045
6"	150	6.4	**7,634**	15,904
8"	200	11	**13,572**	28,274
10"	250	18	**21,206**	44,179
12"	300	25	**30,536**	63,617

Minimum at 0.1 Nm/s; maxima at 120 and 250 Nm/s, from nominal pipe ID. 1 Nm³/h ≈ 0.589 cfm.

Minimum straight pipe runs



Inlet (before) and outlet (after) lengths in multiples of pipe diameter DN.

1

Choose the point

Horizontal pipe after the first filter or separator; sensor upright within ±15°.

2

Fit the valve

Weld a G ½" nipple, drill ≥ 13 mm and fit the ½" ball valve.

3

Insert to centre

Push the probe in to OD/2 + y on the depth scale so the tip sits at pipe centre.

4

Align and connect

Point the arrows with the flow, tighten the gland nut and plug in the M12 cable.

ORDERING INFORMATION

WAFS-104-A	Insertion thermal mass flow sensor, 250 mm shaft, 0.1 … 250 Nm/s, 1.5" colour touch display, Modbus RTU / 4–20 mA / pulse
WAFS-104-B	As WAFS-104-A, with 400 mm shaft for larger pipes
WAFS-104-C	As WAFS-104-A, with 600 mm shaft for large pipes and ducts

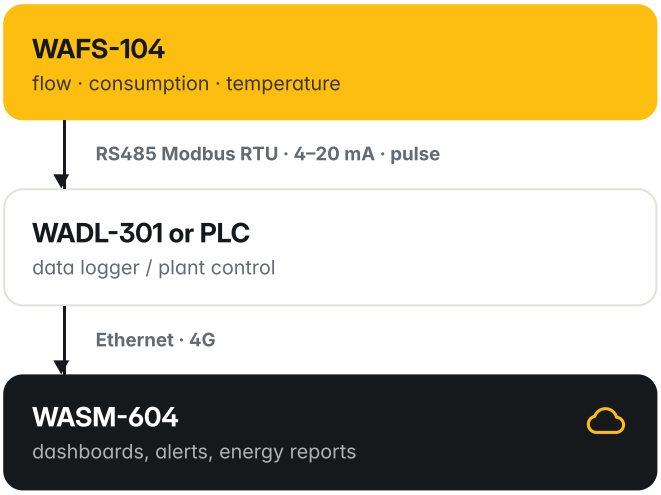
OPTIONS AND ACCESSORIES

Retaining device	For insertion and removal above 16 bar
Y-type M12 splitter	Several sensors on one RS485 bus
WADL-301 data logger	Collects data from several WiseAir sensors
WASM-604 Smart Monitoring	Online dashboards, analysis and reports

IN THE BOX

- WAFS-104 flow sensor
- Power adapter
- M12 connection cable, 2 m
- Stainless-steel nipple and ½" ball valve
- Connection spanner
- Calibration certificate and user manual

CONNECT TO WISEAIR 4.0



WISEAIR 4.0 MEASURE TO MANAGE

See every cubic metre — even the leaks.

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