

MW/MCW “Whisper” Series

Low Pressure Drop Mass Flow Measurement and Control



alicat.com/whisper

Series Overview

Alicat Scientific “Whisper”-Series digital mass flow meters and controllers accurately and rapidly measure or control the mass flow rate, volumetric flow rate and pressure of process gases with minimal effect on the process itself. The Whisper Series features extraordinarily low pressure drops, as low as 3.6 mbar (0.052 psi) at full scale, or 0.018 mbar when fully turned down (200:1 turndown). Low pressure drop means minimal system impact, resulting in faster mass flow measurement (<10 ms) and control (<100 ms).

At the heart of Alicat’s Whisper-Series mass flow meters and controllers is a patented, internally compensated, laminar differential pressure measurement technology that yields linear results over a very wide flow range. This produces volumetric and mass flow data that is fully compensated for changes in pressure and temperature and corrected for the user’s STP. All mass flow instruments come with NIST-traceable calibration sheets. Alicat backs every mass flow instrument with generous customer support, including free technical phone support, prompt recalibration service and a lifetime warranty.

Alicat Whisper-Series mass flow meters and controllers feature large integrated displays with touchpad-accessible gas selection, setpoint control and PID valve tuning. The Whisper Series comes standard with analog and RS-232 digital communications. Extensive customizations are available, including Class 1, Div 2 ATEX/CSA ratings for use in hazardous environments and battery operation for meters (MWB Series).



Applications

Alicat Scientific Whisper-Series digital mass flow meters and controllers are best used wherever minimal system pressure is available to be lost by mass flow instrumentation. Applications include atmospheric testing and environmental air sampling, where little inlet pressure is available. Whisper mass flow controllers make rapid leak testing a reality, even at low flow rates. Multiple gas calibrations and a low 200:1 turndown ratio allow a single Whisper-Series meter or controller to serve many applications.

The Whisper Series is available in full-scale mass flow rates from 0-0.5 sccm to 0-500 slpm.

Standard Specifications (Contact Alicat for available options.)

Performance	Whisper Mass Flow Meter
Accuracy at calibration conditions after tare	± (0.8% of Reading + 0.2% of Full Scale)
High Accuracy at calibration conditions after tare	± (0.4% of Reading + 0.2% of Full Scale) High Accuracy option not available for units ranged under 5 sccm or over 500 slpm.
Accuracy for Bidirectional Meters at calibration conditions after tare	± (0.8% of reading + 0.2% of total span from positive full scale to negative full scale)
Repeatability	± 0.2% Full Scale
Zero Shift and Span Shift	0.02% Full Scale / °Celsius / Atm
Operating Range / Turndown Ratio	0.5% to 100% Full Scale / 200:1 Turndown
Maximum Measurable Flow Rate	128% Full Scale
Typical Response Time	10 ms (Adjustable)
Warm-up Time	< 1 Second

Operating Conditions	Whisper Mass Flow Meter
Mass Reference Conditions (STP)	25°C & 14.696 psia (standard — others available on request)
Operating Temperature	–10 to +50 °Celsius
Humidity Range (Non-Condensing)	0 to 100%
Maximum Pressure	50 psig ¹ Higher line pressures available, please contact Alicat.
Mounting Attitude Sensitivity	None
Ingress Protection	IP40
Wetted Materials	303 & 302 Stainless Steel, Viton®, Silicone RTV (Rubber), Glass Reinforced Nylon, Aluminum If your application demands a different material, please contact Alicat.

1. Do Not subject a WHISPER Differential Pressure sensor to upstream-downstream pressure differentials exceeding 15 PSID.

Communications / Power	Whisper Mass Flow Meter
Monochrome LCD or Color TFT Display with integrated touchpad	Simultaneously displays Mass Flow, Volumetric Flow, Pressure and Temperature
Digital Output Signal ¹ Options	RS-232 Serial / RS-485 Serial / PROFIBUS ³
Analog Output Signal ² Options	0-5 Vdc / 1-5 Vdc / 0-10 Vdc / 4-20 mA
Optional Secondary Analog Output Signal ²	0-5 Vdc / 1-5 Vdc / 0-10 Vdc / 4-20 mA
Electrical Connection Options	8 Pin Mini-DIN / 9-pin D-sub (DB9) / 15-pin D-sub (DB15) / 6 pin locking
Supply Voltage	7 to 30 Vdc (15-30 Vdc for 4-20 mA outputs)
Supply Current	0.040 Amp (+ output current on 4-20 mA)

1. The **Digital Output Signal** communicates Mass Flow, Volumetric Flow, Pressure and Temperature
2. The **Analog Output Signal** and **Optional Secondary Analog Output Signal** communicate your choice of Mass Flow, Volumetric Flow, Pressure or Temperature
3. If selecting **PROFIBUS**, no analog signal is available. PROFIBUS units do not have the display. See PROFIBUS specifications for PROFIBUS supply voltages and currents. (www.alicat.com/profibus)

Features	Whisper Mass Flow Meter
30 Gas Select™ 30 On-Board User Selectable Gas Calibrations	Programmed Gases: Acetylene, Air, Argon, Butane, Carbon Dioxide, Carbon Monoxide, Ethane, Ethylene (Ethene), Helium, Hydrogen, Iso-Butane, Krypton, Methane, Neon, Nitrogen, Nitrous Oxide, Oxygen, Propane, Sulfur Hexafluoride, Xenon, A-25, A-75, A1025, C-2, C-8, C-10, C-25, C-75, P-5, Star29 If your application calls for a gas not on this list, please let us know. We can also calibrate to a wide variety of complex gas mixtures involving up to eight gas constituents.

Range Specific Specifications

Full Scale Flow Mass Meter	Pressure Drop at FS Flow (psid) venting to atmosphere	Mechanical Dimensions	Process Connections ¹
0.5 sccm to 2 sccm	0.06	3.9"H x 2.4"W x 1.1"D	M-5 (10-32) Female Thread (Shipped with M-5 (10-32) Male Buna-N O-ring face seal to 1/8" Female NPT fittings.)
5 sccm to 20 sccm	0.07		
50 sccm	0.07	4.1"H x 2.4"W x 1.1"D	1/8" NPT Female
100 sccm to 200 sccm	0.06		
500 sccm	0.07		
1 slpm to 5 slpm	0.07		
10 slpm	0.08	4.3"H x 2.7"W x 1.1"D	1/4" NPT Female
20 slpm	0.25	4.4"H x 4.0"W x 1.6"D	
40 slpm	0.12	5.0"H x 4.0"W x 1.6"D	1/2" NPT Female
50 slpm	0.14	5.0"H x 4.0"W x 1.6"D	3/4" NPT Female
100 slpm	0.24		
250 slpm	0.60		
500 slpm	0.39	5.3"H x 5.2"W x 2.9"D	3/4" NPT Female

1. Compatible with Beswick®, Swagelok® tube, Parker®, face seal, push connect and compression adapter fittings. VCR and SAE connections upon request.