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 touchpadaccessible 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.

Technical Data for Alicat WHISPER Mass Flow Controllers 0 - 0.5 sccm Full Scale through 0 - 500 slpm Full Scale



Standard Specifications (Contact Alicat for available options.)

Performance	Whisper MCW & MCRW Mass Flow Controller	
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.	
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 Controllable Flow Rate	102.4% Full Scale	
Typical Response Time	100 ms (Adjustable)	
Warm-up Time	< 1 Second	

Operating Conditions	Whisper MCW & MCRW Mass Flow Controller		
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 Higher line pressures available, please contact Alicat.		
Mounting Attitude Sensitivity	MCW: None MCRW: Mount with valve cylinder vertical &		
Valve Type	Normally Closed		
Ingress Protection	IP40		
Wetted Materials	MCW: 303 & 302 Stainless Steel, Viton®, Silicone RTV (Rubber), Glass Reinforced Nylon, Aluminum, Brass, 430FR Stainless Steel, Silicon, Glass. MCRW: 303 & 302 Stainless Steel, Viton®, Silicone RTV (Rubber), Glass Reinforced Nylon, Aluminum, 416 Stainless Steel, Nickel, Silicon, Glass. If your application demands a different material, please contact Alicat.		

Communications / Power	Whisper MCW & MCRW Mass Flow Controller		
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	MCW: 12 to 30 Vdc (15-30 Vdc for 4-20 mA outputs)	MCRW: 24 to 30 Vdc	
Supply Current	MCW : 0.250 Amp	MCRW: 0.750 Amp	

- The Digital Output Signal communicates Mass Flow, Volumetric Flow, Pressure and Temperature
 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 MCW & MCRW Mass Flow Controller	
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 Controller	Pressure Drop at FS Flow (psid) venting to atmosphere	Mechanical Dimensions	Process Connections ¹	
MCW 0.5 sccm to 2 sccm	0.06		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.)	
MCW 5 sccm to 10 sccm	0.08	3.9"H x 3.4"W x 1.1"D		
MCW 20 sccm	0.07			
MCW 50 sccm to 200 sccm	0.07		1/8" NPT Female	
MCW 500 sccm	0.08	4.1"H x 3.6"W x 1.1"D		
MCW 1 slpm	0.10	4.1 H X 3.0 W X 1.1 D		
MCW 2 slpm	0.18			
MCRW 5 slpm	0.10		1/4" NPT Female	
MCRW 10 slpm	0.12	5.5"H x 7.7"W x 2.3"D		
MCRW 20 slpm	0.26			
MCRW 40 slpm	0.14	5.5"H x 7.7"W x 2.3"D	1/2" NPT Female	
MCRW 50 slpm	0.17			
MCRW 100 slpm	0.30	5.5"H x 7.3"W x 2.3"D	3/4" NPT Female	
MCRW 250 slpm	0.69			
MCRW 500 slpm	0.69	5.5"H x 8.1"W x 2.7"D	3/4" NPT Female	
ompatible with Beswick®, Swagelok® tube, Parker®, face seal, push connect and compression adapter fittings. VCR and SAE connections upon request.				