

DATASHEET D-6371A-003AI-AND-D-6471A-003AI

MASS-STREAM D-6371A/003AI & D-6471A/003AI MFC

ガス用直接サーマルマスフローコントローラ、保護等級
IP65



IP65 Mass Flow Controllers for higher flow rates of gases

Bronkhorst® model D-6371A/003AI and D-6471A/003AI Mass Flow Controllers (MFCs) are suited for precise measurement of flow ranges between 4...200 l_n/min and 40...2000 l_n/min at operating pressures between vacuum and 20 bar. The MFC consists of a proven inline thermal (CTA) mass flow sensor, a precise pilot-operated control valve and a microprocessor based pc-board with signal and fieldbus conversion. As a function of a setpoint value, the flow controller swiftly adjusts the desired flow rate. The instrument is IP65 compliant and can optionally be equipped with a modern, multi-functional and multi-colour display, with operator buttons on the instrument.

The digital MASS-STREAM™ series is characterized by a high degree of signal integrity and, as an option, up to 8 calibration curves of different gases and process conditions can be memorized in the instrument. In addition to the standard RS232 output the instruments also offer analog I/O. As an option, an on-board interface can be mounted to provide CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS protocols.

Technical specifications

Measurement / control system

Flow range (intermediate ranges available)	min. 4...200 l _n /min max. 40...2000 l _n /min (based on N ₂)
Accuracy (incl. linearity) (based on actual calibration)	± 1 % RD plus ± 0.5% FS (at calibration conditions)
Repeatability	< 0,2 % FS
Turndown ratio	1:50
Type of gases	almost all gases, compatible with chosen materials
Response time (sensor)	approx. 0,9 sec.
Settling time (in control, typical)	< 5 sec.
Control stability	< 0,2 % FS typical
Operating temperature	0 ... 50 °C
Storage / Transport conditions	with display : 0 ... 50 °C, max. 95% RH (non-condensing); without display : -20 ... +80 °C, max. 95% RH (non-condensing)
Temperature sensitivity	D-63xx : ±0,2% Rd/°C (Air) D-64xx : ±0,1% Rd/°C (Air)
Pressure sensitivity	±0,3% Rd/bar typical (Air)
Max. Kv-value	0,15 ... 1,5
Leak integrity, outboard	tested < 2 x 10 ⁻⁸ mbar l/s He

Measurement / control system

Attitude sensitivity at 90° deviation from horizontal max. error 0,2 % at 1 bar typical N₂

Warm-up time 30 min. for optimum accuracy,
within 30 seconds for accuracy ±4% FS

Mechanical parts

Sensor Stainless steel SS 316 (AISI 316L)

Instrument body Stainless steel SS 316

Sieves and rings Stainless steel SS 316

Pressure rating (PN) 20 bar g

Max. ΔP up to 20 bar d

Process connections G1/2" (D-63xx : RP-type cavity / D-64xx : ISO1179-1 cavity) /
compression type or face seal (VCR/VCO) couplings

Seals standard: FKM/Viton®;
options: EPDM, FFKM/Kalrez®, FDA and USP Class VI approved compounds

Weight 6,5 kg

Ingress protection IP65

Electrical properties

Power supply +15 ... 24 Vdc ±10%

Max. power consumption	Supply	Basic model	Add. for fieldbus	Add. for display
	15 V	300 mA	80 mA	30 mA
	24 V	200 mA	50 mA	20 mA

Analog output 0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)

Digital communication standard: RS232
options: CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP,
EtherNet/IP, POWERLINK or FLOW-BUS

Electrical connection

Analog/RS232 8 DIN (male);

PROFIBUS DP bus: 5-pin M12 (female);
power: 8 DIN (male)

CANopen® / DeviceNet™ 5-pin M12 (male)

Modbus RTU / FLOW-BUS 5-pin M12 (male)

Modbus TCP / EtherNet/IP /
POWERLINK bus: 2 x 5-pin M12 (female) (in/out);
power: 8 DIN (male);

EtherCAT® / PROFINET bus: 2 x 5-pin M12 (female) (in/out);
power: 8 DIN (male)

Control valve options

External actuator options to be connected to the controller

Ex-proof specifications

Approvals / certificates

Technical specifications subject to change without notice.

For dimensional drawings and hook-up diagrams please visit the [product page](#) on our [website](#)

Recommended accessories



PIPS SERIES

プラグイン電源 PiPS

ラボ用および一般工業用
交換可能な主電源用プラグ
(欧州、英国、米国(日本向け)、豪州、IEC)

Related products



MASS-STREAM D-6361/002BI & D-6461/002BI MFC

流量レンジ最小 0.4...20
ln/min
最大 4...200 ln/min
定格圧力 2.0 MPaまで
堅牢なセンサとハウジング
(IP65)
オプションの内蔵型TFTディスプレイ



MASS-STREAM D-6383/BJ-1 & D-6483/BJ-1 MFC

流量レンジ最小 17...500
ln/min
最大 167...5000 ln/min
定格圧力 1.6 MPaまで
堅牢なセンサとハウジング
(IP54)
オプションの内蔵型TFTディスプレイ



MASS-STREAM D-6370 & D-6470 MFM

流量レンジ最小 2...100
ln/min
最大 10...1000 ln/min
定格圧力 2 MPaまで
堅牢なセンサとハウジング
(IP65)
オプションの内蔵型TFTディスプレイ