

DATASHEET D-6390-AND-D-6490

MASS-STREAM D-6390 & D-6490 MFM

가스용 다이렉트 열식 질량 유량계, IP65



Compact IP65 Mass Flow Meters for high flow rates of gases

Bronkhorst® model D-6390 and D-6490 Mass Flow Meters (MFMs) are suited for precise measurement of flow ranges between 40...2000 l_n/min and 100...10000 l_n/min at operating pressures between vacuum and 20 bar (g). The MFM consists of a proven inline thermal (CTA) mass flow sensor and a microprocessor based pc-board with signal and fieldbus conversion and a PID controller for optional mass flow control by means of a separately mounted control valve. 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.

기술 정보

Measurement / control system

Flow range (intermediate ranges available)	min. 40...2000 l _n /min max. 100...10000 l _n /min (based on N ₂)
정확도 (선형도) (실제 검교정 기반)	± 1,0 % RD plus ± 0.5% FS (at calibration conditions)
Repeatability	< 0,2 % FS
Turndown ratio	up to 1:100
Response time (sensor)	approx. 0,9 sec.
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)
Leak integrity, outboard	tested < 2 x 10 ⁻⁸ mbar l/s He
Attitude sensitivity	at 90° deviation from horizontal max. error 0,2 % at 1 bar typical N ₂
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	D-63xx : Aluminium AL 50ST/51ST (anodised) or stainless steel SS 316 / D-64xx : Aluminium EN AW-6082-T6 (non-anodised) or stainless steel SS 316
Sieves and rings	Stainless steel SS 316
Pressure rating (PN)	10 bar g for instrument body in aluminium, 20 bar g for instrument body in stainless steel SS 316
Process connections	G2" (D-63xx : RP-type cavity / D-64xx : ISO1179-1 cavity)
Seals	standard: FKM/Viton®; options: EPDM, FFKM/Kalrez®, FDA and USP Class VI approved compounds
Weight	Aluminium: 5,5 kg Stainless steel: 12,2 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	115 mA	80 mA	30 mA
	24 V	85 mA	50 mA	20 mA
아날로그 출력	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

아날로그/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.

도면 및 배선연결 정보 제품 페이지 우리의 웹사이트

Recommended accessories



PIPS SERIES

전원 공급 액세서리

연구실용 / 산업용 제품
메인 연결을 위한 교환
가능한 플러그 (유럽, 영
국, 미국, 호주, 국제 전
기 표준)

Related products



MASS-STREAM D-6380 & D-6480 MFM

최소 유량 범위 10...500
ln/min
최대 유량 범위 50...
5000 ln/min
압력 범위 최대 20 bar
견고한 센서 및 하우징
(IP65)
일체형 TFT 디스플레이
옵션



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

최소 유량 범위 17...500
ln/min
최대 유량 범위 167...
5000 ln/min
압력 범위 최대 16 bar
견고한 센서 및 하우징
(IP54)
일체형 TFT 디스플레이
옵션

