

# DATASHEET D-6373-BJ-1INCH-AND-D-6473-BJ-1INCH

## MASS-STREAM D-6373/BJ-1 & D-6473/BJ-1 MFC

Direct Thermal Mass Flow Controller for Gases, IP65 protected



### IP54 Mass Flow Controllers for high flow rates of gases

Bronkhorst® models D-6373/BJ-1" and D-6473/BJ-1" Mass Flow Controllers (MFCs) are suited for precise measurement of flow ranges between 2...100 l<sub>n</sub>/min and 20...1000 l<sub>n</sub>/min at operating pressures between vacuum and 16 bar (g). The MFC consists of a proven inline thermal (CTA) mass flow sensor, a precise 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 IP54 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. 2...100 l <sub>n</sub> /min<br>max. 20...1000 l <sub>n</sub> /min<br>(based on N <sub>2</sub> )                        |
| Accuracy (incl. linearity) (based on actual calibration) | ± 1 % RD plus ± 0.5% FS (at calibration conditions)   |
| Repeatability  | < 0,2 % FS  |
| Turndown ratio   | up to 1:30  |
| 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);<br>without display : -20 ... +80 °C, max. 95% RH (non-condensing) |
| Temperature sensitivity                                  | D-63xx : ±0,2% Rd/°C (Air)<br>D-64xx : ±0,1% Rd/°C (Air)  |
| Pressure sensitivity                                     | ±0,3% Rd/bar typical (Air)  |
| Max. Kv-value  | 2,8 / 4,4 (remain position)   |

## Measurement / control system

|                          |   |
|--------------------------|---|
| Leak integrity, outboard | tested < 2 x 10 <sup>-8</sup> mbar l/s He   |
| Attitude sensitivity     | at 90° deviation from horizontal max. error 0,2 % at 1 bar typical N <sub>2</sub> |
| Warm-up time             | 30 min. for optimum accuracy,<br>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 /<br>D-64xx : Aluminium EN AW-6082-T6 (non-anodised) or stainless steel SS 316;<br>Body of motor driven valve: Brass |
| Sieves and rings     | Stainless steel SS 316  |
| Pressure rating (PN) | 10 bar g for instrument body in aluminium,<br>16 bar g for instrument body in stainless steel SS 316  |
| Process connections  | G1" (D-63xx : RP-type cavity / D-64xx : ISO1179-1 cavity) /<br>compression type couplings   |
| Seals                | standard: Viton®; option: EPDM  |
| Weight               | Aluminium: 3,3 kg<br>Stainless steel: 4,4 kg  |
| Ingress protection   | IP65 (if applicable IP54 for motor driven valve)  |

## Electrical properties

|                        |  |                             |                            |                           |
|------------------------|--|-----------------------------|----------------------------|---------------------------|
| Power supply           | +24 Vdc ±10%   |                             |                            |                           |
| Max. power consumption | Supply<br>24 V   | Basic consumption<br>260 mA | Add. for fieldbus<br>50 mA | Add. for display<br>20 mA |
| Analog output          | 0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)  |                             |                            |                           |
| Digital communication  | standard: RS232<br>options: CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP,<br>EtherNet/IP, POWERLINK or FLOW-BUS |                             |                            |                           |

## Electrical connection

|   |   |
|---|---|
| Analog/RS232                            | 8 DIN (male);   |
| PROFIBUS DP                             | bus: 5-pin M12 (female);<br>power: 8 DIN (male)               |
| CANopen® / DeviceNet™                   | 5-pin M12 (male)  |
| Modbus RTU / FLOW-BUS                   | 5-pin M12 (male)  |
| Modbus TCP / EtherNet/IP /<br>POWERLINK | bus: 2 x 5-pin M12 (female) (in/out);<br>power: 8 DIN (male); |
| EtherCAT®/ PROFINET                     | bus: 2 x 5-pin M12 (female) (in/out);<br>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](#)

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## Recommended accessories



### PIPS SERIES

#### Plug-in Power Supply

For lab-style or  
industrial devices  
Interchangeable plugs  
(Euro, UK, USA,  
Australian, IEC) for  
mains connection

## Related products



### MASS-STREAM D-6373/002AI & D-6473/002AI MFC

Min. flow 2...100 l/min  
Max. flow 20...1000 l/min  
Pressure rating up to 20 bar  
Rugged sensor and housing (IP65)  
Optional integrated TFT display



### MASS-STREAM D-6370 & D-6470 MFM

Min. flow 2...100 l/min  
Max. flow 10...1000 l/min  
Pressure rating up to 20 bar  
Rugged sensor and housing (IP65)  
Optional integrated TFT display

### MASS-STREAM D-6373/BJ-1/2 & D-6473/BJ-1/2 MFC

Min. flow 2...100 l/min  
Max. flow 20...1000 l/min  
Pressure rating up to 16 bar  
Rugged sensor and housing (IP54)  
Optional integrated TFT display