

INDIAN INSTITUTE OF TECHNOLOGY KANPUR
Department of Chemical Engineering

Enquiry No. IITK/ChE/NV/2016-2017/2 Date 1/06/16 (extended)

Sub: Quotations invited for Bronkhorst made Mass flow controllers

TECHNICAL SPECIFICATIONS

Sr. No	(1)	(2)	(3)	(4)
Gas	Nitrogen (N2)	Hydrogen (H2)	Air	Argon (Ar)
Op. Temp.	0-50 deg C	0-50 deg C	0-50 deg C	0-50 deg C
Op. Pressure	10 Bar(g)	10 Bar(g)	10 Bar(g)	10 Bar(g)
Inlet Pressure	2 -10 atm	2 -10 atm	2 -10 atm	2 -10 atm
Outlet Pressure	1 atm	1 atm	1 atm	1 atm
Flow	10 - 500 mls/min	10 - 500 mls/min	10 - 500 mls/min	10 - 500 mls/min
Turndown Ratio	1:50	1:50	1:50	1:50
MOC	SS 316 L	SS 316 L	SS 316 L	SS 316 L
Seals	Viton	Viton	Viton	Viton
Accuracy	+/- 1 % FS	+/- 1 % FS	+/- 1 % FS	+/- 1 % FS
Repeatability	< 0.2 % Rd	< 0.2 % Rd	< 0.2 % Rd	< 0.2 % Rd
Settling Time	Approx. 1 sec	Approx. 1 sec	Approx. 1 sec	Approx. 1 sec
Temperature Sensitivity	ZERO:<0.1%FS/degC SPAN:<0.2%RD/degC	ZERO:<0.1%FS/degC SPAN:<0.2%RD/degC	ZERO:<0.1%FS/degC SPAN:<0.2%RD/degC	ZERO:<0.1%FS/degC SPAN:<0.2%RD/degC
Control Stability	< +/- 0.1 % FS	< +/- 0.1 % FS	< +/- 0.1 % FS	< +/- 0.1 % FS
Leak integrity, :	tested < 2 x 10 ⁻⁹ mbar l/s He	tested < 2 x 10 ⁻⁹ mbar l/s He	tested < 2 x 10 ⁻⁹ mbar l/s He	tested < 2 x 10 ⁻⁹ mbar l/s He
Supply Voltage	+15..24 VDC @ 350 mA	+15..24 VDC @ 350 mA	+15..24 VDC @ 350 mA	+15..24 VDC @ 350 mA
Output	4 – 20 mA Analog	4 – 20 mA Analog	4 – 20 mA Analog	4 – 20 mA Analog
End Connection	¼" OD Compression Fittings	¼" OD Compression Fittings	¼" OD Compression Fittings	¼" OD Compression Fittings
Ingress Protection	IP-40	IP-40	IP-40	IP-40
Make	Bronkhorst	Bronkhorst	Bronkhorst	Bronkhorst

Techno-commercial quotations are required for the supply of 5 nos Bronkhorst made mass controllers complete with power supply/flow indicator/controller as per the following specifications indicated in the table. The requirements for Nitrogen are two and one each for the other three gases.

Vendors should have at least 10 successful supply of such MFCs. Please provide contact addresses. The sealed quotations (separately for technical and price bidding) should be addressed to Prof. Nishith Verma, ChE and sent to the following address latest by June 15, 2016; now revised to June 27, 2016

Prof. Nishith Verma

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