Global Sales Network

(America)
Biosflow Instrument Technology Co., Ltd
State of New Jersey Newark 1231 Liberty Ave, Hillside

(China)
Biosflow(Zhengzhou) Electronic Technology Co., Ltd
No. 186, Zidong Road, Guancheng District, Zhengzhou City

Biowsflow International Instruments is a global service provider in the field of fluid measurement and control, focusing on the development and production of thermal gas mass flow meters and controllers with small flow rates. Since its establishment, with its advanced fluid measurement and control technology, it has served nearly at housand technology companies in the fields of chemical industry, biopharmaceuticals, photovoltaics, LED, thin films, optical fiber and semiconductor manufacturing.

Biosflow

MASS FLOW METER&CONTROLLER

Biosflow(Zhengzhou) Electronic Technology Co., Ltd

INTRODUCTION

Product Introduction and Principle

Gas mass flow controllers (MFC) and mass flow meters (MFM) are used to control and measure the mass flow of gases precisely. The measurement and control of gas mass flow are not affected by temperature or pressure, and automatic mass flow control can be achieved.

Gas mass flow controllers (MFC) and mass flow meters (MFM) have important applications in scientific research and production in various fields such as semiconductor and integrated circuit technology, special materials disciplines, chemical industry, petroleum industry, medicine, environmental protection, and vacuum. Its typical applications include coating equipment, microelectronic process equipment, such as diffusion furnaces, oxidation furnaces, epitaxial furnaces, CVD, plasma etching machines, sputtering tables, ion implanters, etc.; optical fiber melting, micro-reactors, gas mixing Gas distribution systems, biological fermentation systems, petrochemical equipment, gas chromatographs, and other analytical instruments.

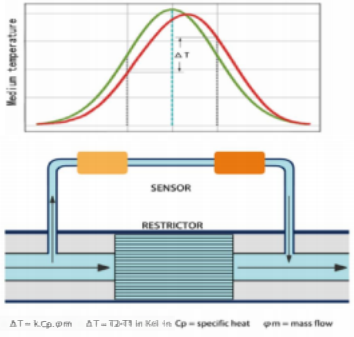


Figure 1 Sensor schematic diagram

Thermal gas mass flow meter principle

The core sensor of the thermal mass flow meter (MFM) is the capillary thermal temperature difference principle, composed of a stainless steel capillary tube with a thermal sensor and a heating element. A part of the gas flows through the bypass sensor and is heated by the heating element. The gas flow causes an asymmetric temperature distribution so that the temperature difference between the thermal elements can be measured. This temperature difference is proportional to the mass flow rate through the sensor. The main flow channel is perfectly diverted by the laminar flow element so that the output of the sensor is linearly related to the total mass flow rate.

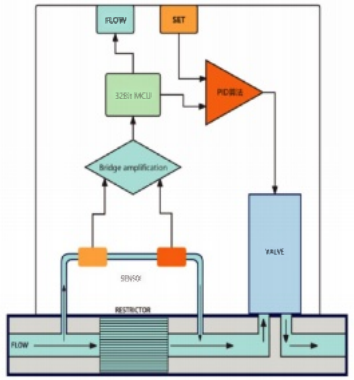


Figure 2 MFC structural diagram

Thermal gas mass flow controller principle

The thermal mass flow controller (MFC) amplifies the output signal of the sensor compares it with the user-set signal, and uses the PID algorithm to control the opening of the solenoid valve, adjust the flow rate, and achieve closed-loop control of the mass flow rate.

FAC-Series

INTRODUCTION

The FAC series uses a capillary thermal temperature difference sensor. The measurement accuracy is not affected by temperature and pressure. The base body is made of 316L stainless steel, which is suitable for toxic and corrosive gases. The maximum working pressure can reach 750 Psi. Analog measurement control circuit, output signal 0~5V/4~20mA, electrical interface part adopts surge suppression and overvoltage and overcurrent protection circuit to ensure stable and reliable operation of the system.The FAC series has passed CE and Rohs certification and is the best solution for low-cost applications.

APPLICATIONAREA

Food processing, atmosphere furnace, pharmaceutical manufacturing, bioengineering, surface treatment, vacuum coating equipment, and other fields.

CHARACTERISTIC

- ◆Precise measurement and control
- ◆Fast response, high repeatability
- ◆Unaffected by temperature and pressure
- ◆Analog communication 0~5V/4~20mA
- ◆Can be used in corrosive gases
- ◆low cost application

SPECIFICATIONS

Control range and working pressure

Model	Maximum full scale (N2 standard)	Minimum full scale (N2 standard)	Maximum working pressure
FAC-320/1	30 SLM	10 SCCM	750 PSi/50 Bar

Note: SCCM (standard milliliters per minute) SLM (standard milliliters per minute) standard conditions (0℃, 101.3Kpa)

Performance

Flow Accuracy	±%1 F.S;
Repeatability	±0.2% F.S
Control Range	2%~100% F.S
Response Time	<2s
Temperature Coefficient	Zero: <0.05% of F.S/℃. Span: <0.1% of S.P / ℃
Pressure Coefficient	0.2% of S.P/ Bar
Operating Temperature	0~50 ℃
Leak Rate	1x10-9 atm. cc/sec He
Preheat Time	5 min accuracy to ±2% F.S (30 min to achieve the best accuracy)

Electrical parameters

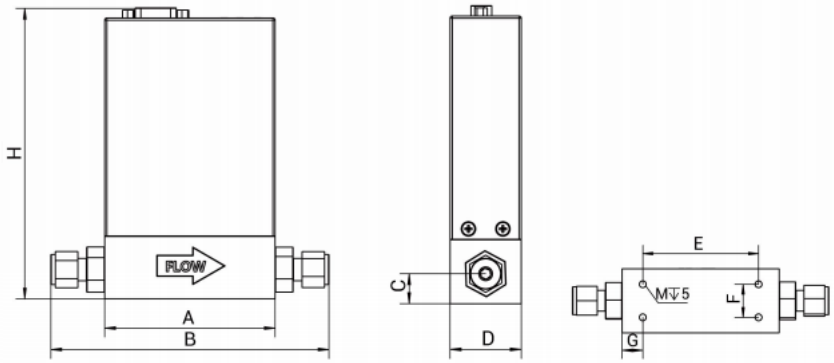
Power Supply	+15~24 V dc
Maximum Power Consumption	10W (MFC) ; 3W (MFM)
Digital Communication	0~5 V / 4~20mA
Analog Communication	9-pin D-connector (male)

Mechanical parameters

Valve Type	Normally closed (MFM meaningless)
Substrate Material	316L stainless steel
Sealing Material	Fluorine rubber, EPDM rubber, nitrile rubber
Fittings	1/8、1/4、3/8、Φ3、φ6、φ9card sleeve or VCR

SIZE(mm)&WEIGHT (kg)

Model	A	B	C	D	H				M	Weight
FAC-320/1	76	124	13	31	125	56	17	10	M4	0.6



Selection table

SIZE&WEIGHT

FAC - 3N N

Product Series	Full scale range	Product type
Economical Analog Series	Select according to the range table	0 Controller 1 Flow meter

FDC-300 Series

INTRODUCTION

DC-300 series adopts a capillary thermal temperature difference sensor. The measurement accuracy is not affected by temperature and pressure. The base body is made of 316L stainless steel, which is suitable for toxic and corrosive gases. The maximum working pressure can reach 1500 Psi. The digital measurement control circuit has a stronger anti-interference ability. Digital communication is compatible with analog signals 0 ~5V/4~20mA. The electrical interface part adopts surge suppression and overvoltage and overcurrent protection circuits to ensure stable and reliable operation of the system. The FDC series has passed CE and Rohs certification and is the best solution for economical digital applications.

APPLICATION AREA

Bioengineering, vacuum coating, material preparation, petrochemical industry, surface treatment and other fields.

CHARACTERISTIC

- ◆ Precise measurement and control
- ◆ Fast response, high repeatability
- ◆ High pressure difference adaptability
- ◆ Maximum working pressure up to 1500 Psi
- ◆ Digital communication, compatible with analog communication
- ◆ Optional LCD screen for local operation and display
- ◆ Economical digital applications

SPECIFICATIONS

Control range and working pressure

Model	Maximum full scale (N2 standard	Minimum full scale (N2 standard)	Maximum working pressure
FDC-320/1/5/6	30 SLM	10 SCCM	1500 Psi/100 Bar
FDC-330/1/5/6	100 SLM	30 SLM	1500 Psi/100 Bar
FDC-340/1/5/6	200 SLM	100 SLM	500 Psi/30 Bar
FDC-350/1/5/6	400 SLM	200 SLM	500 Psi/30 Bar
FDC-360/1/5/6	1000 SLM	400 SLM	500 Psi/30 Bar

Note: SCCM (standard milliliters per minute) SLM (standard milliliters per minute) standard conditions (0℃, 101.3Kpa)

Performance

Flow Accuracy	±%1 F.S; ±1.5% F.S(>100 slm)
Repeatability	±0.2% F.S
Control Range	2%~100% F.S
Response Time	<2s
Temperature Coefficient	Zero: <0.05% of F.S/ ℃. Span: <0.1% of S.P /℃
Pressure Coefficient	0.2% of S.P/ Bar
Operating Temperature	0~50°C
Leak Rate	1x10-9 atm. cc/sec He
Preheat Time	5 min accuracy to ±2% F.S (30 min to achieve the best accuracy)

Electrical parameters

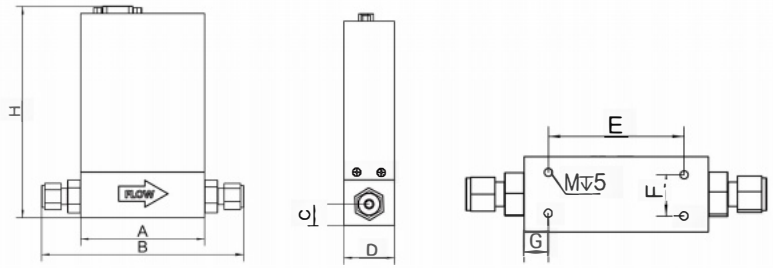
Power Supply	+15~24 V dc
Maximum Power Consumption	10W (MFC) ;3W (MFM)
Digital Communication	RS-485 (modbus Rtu protocol)
Analog Communication	0~5 V / 4~20mA
Fittings	9-pin D-connector (male)

Mechanical parameters

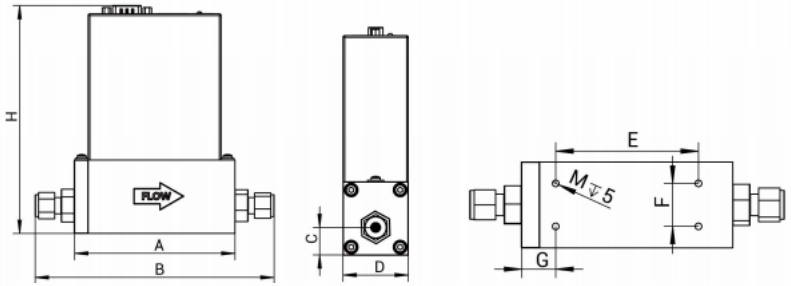
Valve Type	Normally closed (MFM meaningless)
Substrate Material	316L stainless steel
Sealing Material	Fluorine rubber, EPDM rubber, nitrile rubber
Fittings	1/8、1/4、3/8、Φ3、φ6、φ9card sleeve or VCR

SIZE(mm)&WEIGHT(kg)

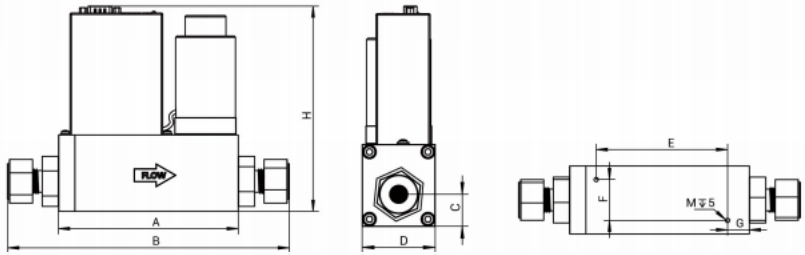
FDC-32x



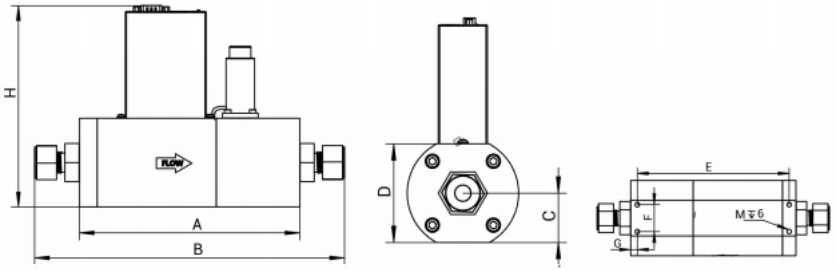
FDC-33-34x



FDC-35x



FDC-36x



Model		B	C		H	E	F			Weight
FDC-320/1/5/6	76	124	13	31	125	56	17	10	M4	0.6
FDC-330/1/5/6	98.5	147	17	40	135	66.5	20	16	M4	0.8
FDC-340/1/5/6	98.5	147	17	40	135	66.5	20	16	M4	1.0
FDC-350/1/5/6	132	208	22	50	150	96.5	30	16	M4	1.5
FDC-360/1/5/6	185	260	37	85	170	170	30	7.5	M6	2.5

Selection table SIZE&WEIGHT

FDC – 3N N

Product Series
Economical Analog Series

Full scale range
Select according to the range table

Product type
0 Controller
1 Flow meter

EDC-300 Series

INTRODUCTION

The EDC-300 series is a newly designed new generation MFC/MFM. It adopts many of the world's cutting-edge fluid measurement and control technologies. Based on the capillary thermal temperature difference sensor, it introduces advanced " temperature difference automatic balance technology" to ensure the extraordinary stability of the sensor, linearity, and dynamic response characteristics. The base body is made of 316L stainless steel, which is suitable for toxic and corrosive gases. The maximum working pressure can reach 1500 Psi and the maximum flow can reach 1000 SLM. Newly designed digital measurement control circuit, digital I0 multiple communication protocols are optional, compatible with analog communication, optional LCD version, convenient on-site operation display. The outstanding performance of the EDC series is the best partner for high-quality applications.

APPLICATIONAREA

Semiconductor manufacturing, photovoltaic equipment, vacuum equipment, material preparation, petrochemical industry, analytical instruments, metal smelting, surface treatment and other fields.

CHARACTERISTIC

- Precise measurement and control
- Fast response, high repeatability
- Unaffected by temperature and pressure
- High pressure difference adaptability
- Maximum working pressure up to 1500 Psi
- Digital communication, compatible with analog communication
- Optional LCD screen for local operation and display
- High-quality digital applications

SPECIFICATIONS

Control range and working pressure

Model	Maximum full scale (N2 standard	Minimum full scale (N2 standard)	Maximum working pressure
EDC-310/1/5/6	10 SLM	3 SCCM	1500 Psi / 100 Bar
EDC-320/1/5/6	30 SLM	10 SCCM	1500 Psi / 100 Bar
EDC-330/1/5/6	100 SLM	30 SLM	1500 Psi / 100 Bar
EDC-340/1/5/6	200 SLM	100 SLM	500 Psi / 30 Bar
EDC-350/1/5/6	400 SLM	200 SLM	500 Psi / 30 Bar
EDC-360/1/5/6	1000 SLM	400 SLM	500 Psi / 30 Bar

Note: SCCM (standard milliliters per minute) SLM (standard milliliters per minute) standard conditions (0℃, 101.3Kpa)

Performance

Flow Accuracy	±0.8%R.DAND±0.2%F.S;±1%R.DAND±0.5% F.S(Above 100 SLM)
Repeatability	±0.2% F.S
Control Range	1~100% F.S
Response Time	<1S
Temperature Coefficient	ZERO: <0.05% OF F.S/℃. SPAN: <0.1% OF S.P /'C
Pressure Coefficient	0.2% OF S.P/ BAR
Operating Temperature	0~50℃
Leak Rate	1X10-9 ATM. CC/SEC HE
Preheat Time	5 min accuracy to ±2% F.S (30 min to achieve the best accuracy)

Electrical parameters

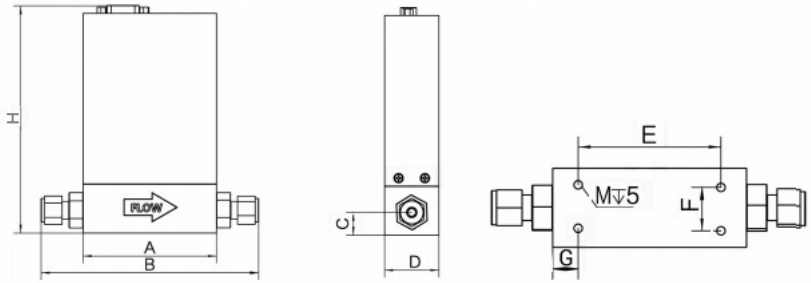
Power Supply	+15~24 V dc
Maximum Power Consumption	10W (MFC) ;3W (MFM)
Digital Communication	RS-485 (modbus Rtu protocol)
Analog Communication	0~5 V / 4~20mA
Fittings	9-pin D-connector (male)

Mechanical parameters

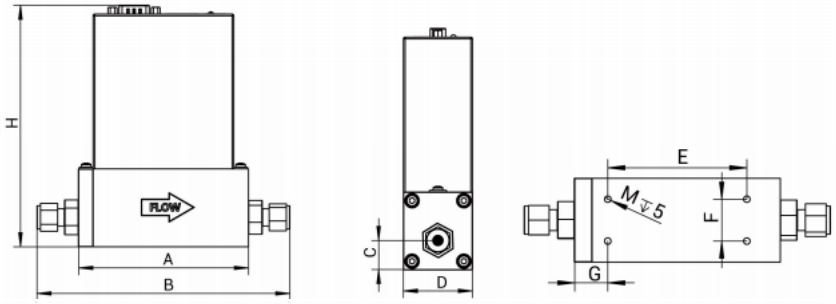
Valve Type	Normally closed (MFM meaningless)
Substrate Material	316L stainless steel
Sealing Material	Fluorine rubber, EPDM rubber, nitrile rubber
Fittings	1/8、1/4、3/8、Φ3、φ6、φ9card sleeve or VCR

SIZE(mm)&WEIGHT(kg)

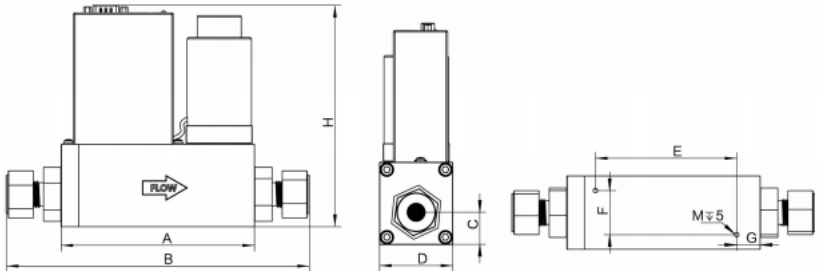
EDC-31x/32x



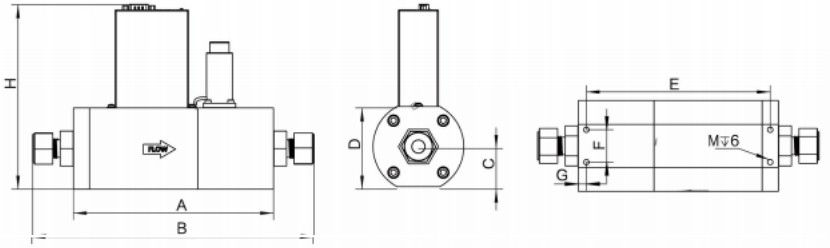
EDC-33x/34x



EDC-35x



EDC-36x



Model		B	C	D	H	E	F	G	M	Weight
EDC-310/1/5/6	76	124	13	31	125	56	17	10	M4	0.6
EDC-320/1/5/6	76	124	13	31	125	56	17	10	M3	0.6
EDC-330/1/5/6	98.5	147	17	40	135	66.5	20	16	M4	0.8
EDC-340/1/5/6	98.5	147	17	40	135	66.5	20	16	M4	1.0
EDC-350/1/5/6	132	208	22	50	150	96.5	30	16	M4	1.5
EDC-360/1/5/6	185	260	37	85	170	170	30	7.5	M6	2.5

Selection table
SIZE&WEIGHT

EDC – 3N N

Product Series
High quality digital series

Full scale range
Select according to the range table

Product type
0 Controller
1 Flow meter
5 with display controller
6 with display flow meters

EDC-500 Series

INTRODUCTION

In addition to continuing the advanced "temperature difference automatic balancing technology" sensor of the previous generation, the EDC-500 series also combines ultra-high stability and accuracy measurement sensors with fast, precise control valves and powerful electronic components. Together they achieve precise gas process control. High-integrity ultra-high-purity all-metal flow path and long-term effective sealing performance ensure the purity of the process. The EDC-500 series is very suitable for the semiconductor industry and high-purity gas applications.

APPLICATIONAREA

Semiconductor manufacturing processes, thin film deposition systems, epitaxial process systems, precision surface coating systems, high vacuum equipment, analysis systems and other fields.

CHARACTERISTIC

- ◆ Long term zero point stability
- ◆ High-precision measurement and control
- ◆ Fast response, high repeatability
- ◆ All-metal sealed flow path
- ◆ Multi-media/multi-range adjustable function
- ◆ DeviceNet, RS-485 and analog interfaces

SPECIFICATIONS

Control range and working pressure

Model	Maximum full scale (N2 standard	Minimum full scale (N2 standard)	Maximum working pressure
EDC-510/1	1C SLM	3 SCCM	50C Fsi / 1C0 Bar
EDC-520/1	3C SLM	10 SCCM	500 Psi / 3C Bar

Note: SCCM (standard milliliters per minute) SLM (standard milliliters per minute) standard conditions (0℃, 101.3Kpa)

Performance

Flow Accuracy	±0.8% R.D and±0.2% F.S
Repeatability	±0.2% F.S
Control Range	1~100% F.S
Response Time	<1s
Temperature Coefficient	Zero: <0.05% of F.S/ 'C. Span: <0.1% of S.P /°C
Pressure Coefficient	0.2% ol S.P/ Bar
Operating Temperature	0~50°C
Leak Rate	1x10-9 atm. cc/sec He
Preheat Time	5 min accuracy to ±2% F.S (30 min to achieve the best accuracy)

Electrical parameters

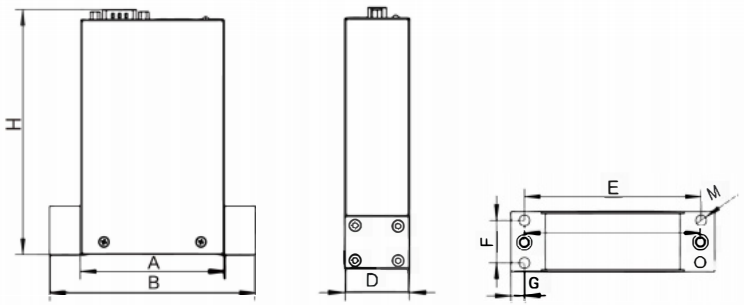
Power Supply	+15~24 V dc
Maximum Power Consumption	10W (MFC) ; 3W (MFM)
Digital Communication	RS-485 (modbus Rtu协议)
Analog Communication	0~5 V / 4~20mA
Fittings	9-pin D-Connector (male) / DeviceNet Connector

Mechanical parameters

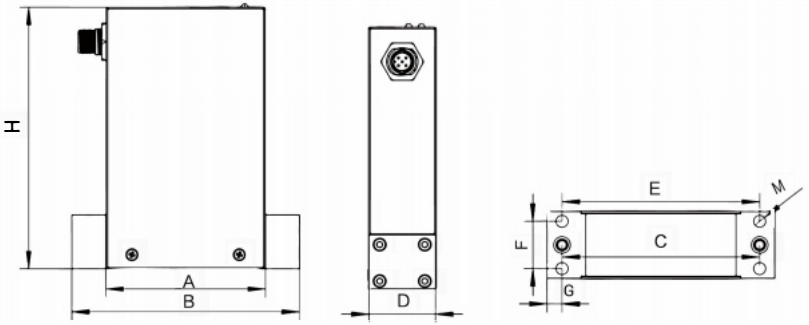
Valve Type	Normally closed (MFM meaningless)
Substrate Material	316L stainless steel
Sealing Material	Rubber seal/metal seal
Fittings	1/4" VCR / IGS

SIZE(mm)&WEIGHT(kg)

EDC 51xA/52xA



EDC-51xB/52xB



Model	A	B	C	D	H	E	F	G	M	Weight
EDC-510A/1A	74	106	92	31	125	92	22	7	5.8	0.6
EDC-520A/1A	74	106	92	31	125	92	22	7	5.8	0.6
EDC-510B/1B	74	106	92	31	120	92	22	7	5.8	0.6
EDC-520B/1B	74	106	92	31	120	92	22	7	5.8	0.6

Selection table SIZE& WEIGHT

EDC – 5N N

Product Series
High quality digital series

Full scale range
Select according to the range table

Product type
0 Controller
1 Flow meter
A DB9 connector
B DeviceNet connector