

# ROBUST HIGH QUALITY FLOW MONITORS

High accuracy DP Flow Meter  
Multiple functions for  
gases and liquids



## Flow Meter for Liquids & Gases, Delta P



The well-documented differential pressure measuring principle with exchangeable orifice-plates is the base for this construction. In combination with two independent absolute piezoresistive pressure sensors it gives you a compact Flow Meter which also can be used for three different modes. Through the Eletta software Flow Center you can easily change function to:

- Gas flow measurement
- Liquid flow measurement
- Differential Pressure

The M-series is one of the smallest gas flow meters on the market to measure most gases with an automatic compensation for changes in pressure and temperature.

As Flow meter for liquids as oil and water it is an accurate meter that can be used with different pipe sections in most sizes. M3-series comes in three pressure classes: 10, 25 and 50 bar.

- Temperature & pressure compensated in gas flow measurement
- Three instruments in one – Gas, Liquid and Differential Pressure
- Configurable through a laptop computer
- Two-wire power supply
- 4 – 20 mA output linear to flow
- Temperature reading through Flow Center
- Option with Display showing; flow rate, flow total and value of 4-20 mA output

### The M-Series Flow Meter

The Eletta M-series Flow Meter is a unique product that can be used in three different modes: gas and liquid flow and differential pressure measurement. The product is the result of the work of engineers with many years of experience in designing flow monitors, flow switches and flow meters at Eletta Flow, Sweden.

The M-series has an intelligent pressure assembly that uses two independent, absolute piezoresistive pressure sensors and calculates the differential pressure from their output. The sensor signal is measured up to 500 times per second with a highly precise 16-bit A/D converter.

After each measurement, the exact pressure value is calculated (elimination of the linearity- and temperature errors). The analog output signal is updated via the D/A converter.

There is also a temperature sensor in the sensor assembly. One of the pressure sensors measures the static pressure in the process pipe and, together with the temperature, the M-series intelligent electronics corrects for variation in volume due to temperature or pressure changes in gas flow measurements.

The display (option) is a Loop Powered Display of OLED 128\*32 pxls to show flow rate, flow total and 4-20 mA analog output value. Chose between multiple Units of Measurement like LPM, CMH, LPS, CFM, CFH and Flow%. Other units may be available on request.

It has push buttons to reset the totalized value, rotate the display, change flow range and unit of measurement when changing the orifice plate.

The well-proven and acknowledged principle of measuring flow with an orifice plate, creating a differential pressure that corresponds to the flow of liquids and gases, is hereby combined with a new smart pressure sensor arrangement in a compact and versatile flow meter with three possible modes of operation. As an OEM product, it will be difficult to match the performance-price ratio that the lightweight three-mode M-series Flow Meter can offer.

### Modular design

All the Eletta Flow Monitors can be fitted to any of the various Eletta Flow Monitor Pipe Sections to suit your application. The Instrument consists of two parts mainly, i.e. the Pipe Section and the Control Unit. The Pipe Section is the part that is to be mounted in the process pipe and the Control Unit is mounted directly (standard) or remote onto the Pipe Section.

As the Control Unit is pre-calibrated before leaving our production facilities, you can change pipe sections in the field to fit other dimensions and materials than originally ordered without recalibration.

## Eletta Specials

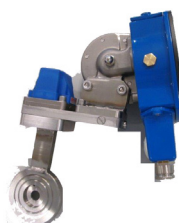


### Separate Version

Eletta can also provide several specials, like separate pipe section and Control unit, for example to avoid vibrations.



### Stainless steel cover for Marine certified.



### Add a 4...20mA Signal

With our parallel plate it is simple to combine the M series with an existing Flow Monitor of our V, S or D-series.

### Welcome to Eletta Flow

Eletta started business in the late 1980s and since then the name has been synonymous with flow monitoring in many industries worldwide. [Read more »](#)

### Web Configurator

Visit our website and configure your own Eletta Flow Monitor. [www.eletta.com](http://www.eletta.com)



4 variation of process connection, 2 solid materials: universal Stainless Steel 316L or classic Brass



### M3-G..BR Series

Housing of PA 12 Grilamid and pipe section constructed of copper alloy and fitted with BSP/NPT threads from 15-25 mm (1/2" – 1").



### M3-G..SS Series

Housing of PA 12 Grilamid and pipe-section constructed of 316L stainless steel and fitted with BSP/NPT threads from 15-25 mm (1/2" – 1").



### M3-GL Series

Housing of PA 12 Grilamid and threaded brass pipe connection. Available in BSP/ NPT threads from 15-40 mm (1/2" – 1 1/2").



### M3-FA Series

Housing of PA 12 Grilamid and flanged pipe connection in painted steel. Available in DIN/ANSI from 15-400 mm (1/2" – 16").



### M3-FSS Series

Housing of PA12 Grilamid and flanged (wafer) pipe section of 316L stainless steel. Available from 15-500 mm (1/2" – 20").



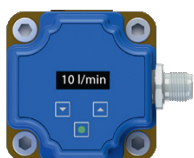
### M3-MSS-GSS Series

Housing and pipe section of 316L stainless steel. Available from 15-500 mm (1/2" – 20").

<b>Flow range</b>	0,2–25 000 l min (liquid), to choose the right range, please refer to the table of Measuring ranges
<b>Flow turndown</b>	1:10
<b>Cover</b>	PA 12 Grilamid with conductive layer inside
<b>Wetted Material</b>	Copper alloy, painted steel, stainless steel, 316L
<b>Rubber Parts</b>	Nitrile (HNBR), EPDM and Fluorinated rubber (FPM)
<b>Min pressure*</b>	- M310: 1 bar(g) (14,5 PSI) - M325: 1,75 bar(g) (25,4 PSI) - M350: 3 bar(g) (43,5 PSI) * Minimum pressure to get a proper reading, provided there is a flow in the system.
<b>Max pressure</b>	- M310: 10 bar(g) (145 PSI) - M325: 25 bar(g) only for threaded pipes G15-25BR/SS and GL40. FA/ FSS pipes 16 bar(g). - M350: 50 bar(g) only for threaded pipes G15-25BR/SS and GL40. FA/ FSS pipes 16 bar(g).
<b>Temp. Control unit</b>	-10°C to 100°C. (Sensors compensated from -10°C to 80°C.)
<b>Ambient Temp - With display</b>	-10°C to 70°C
<b>Max. temp. Pipe section</b>	G..BR, -GL, -FA 120°C G..SS, F..SS 250°C
<b>Enclosure:</b>	IP67
<b>Process connections:</b>	DN 15-40, BSP/NPT thread DN15-500 DIN/ANSI flange (wafer)
<b>Accuracy</b>	+/- 1% FS of the default differential pressure (M310: 500 mbar, M325: 1250 mbar, M350: 2500 mbar) at reference conditions.
<b>Display (option)</b>	Loop powered Display of OLED 128*32 pixels.

For complete specification of various models please refer to the manual.

Certificates



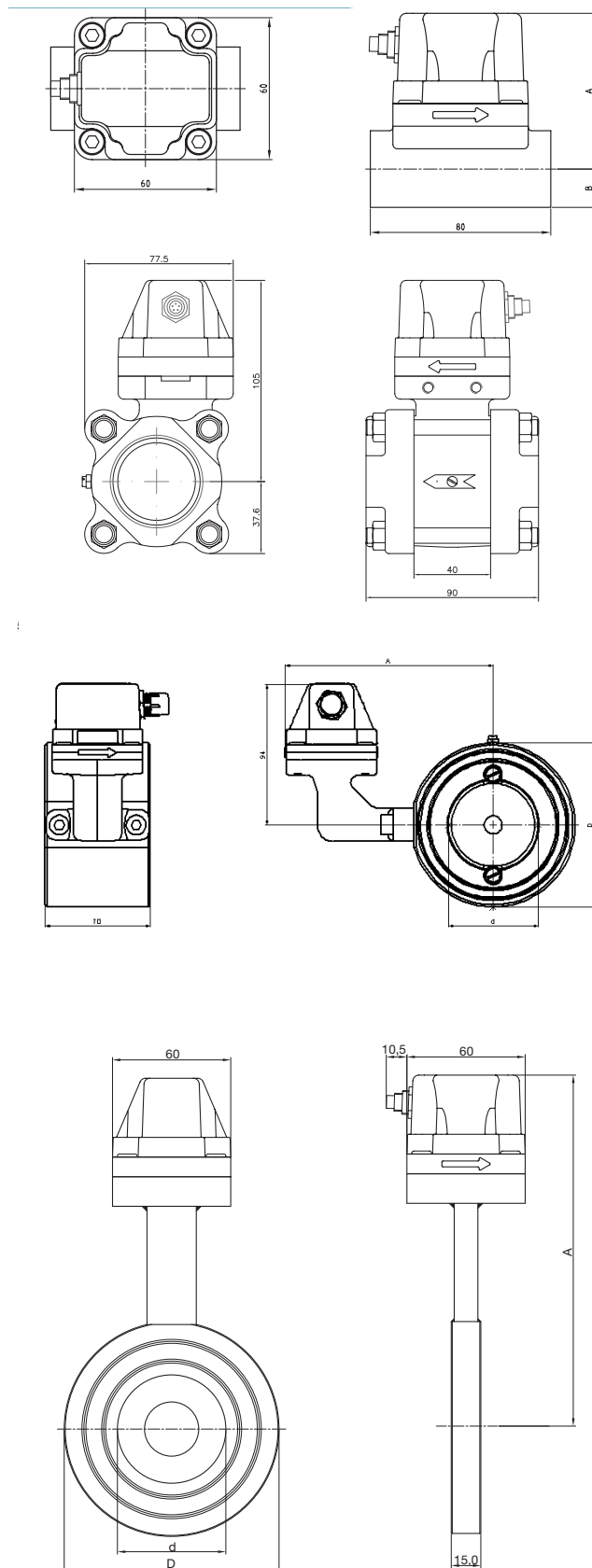
### Option – with display

Visualization of the flow rate and flow total values for direct reading.

# Weight and Dimensions



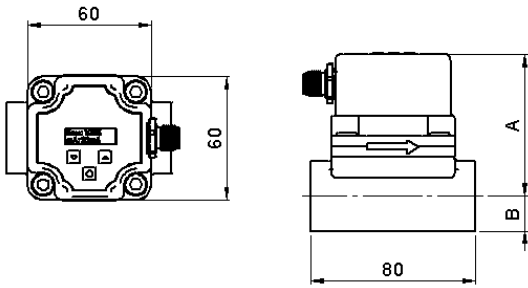
G, thread				
Type	d	A (mm)	B (mm)	Weight kg*
-G15	1/2"	66	14	0,8
-G20	3/4"	69	17	0,9
-G25	1"	73	21	3,5
GL, tread				
Type	d	A (mm)	B (mm)	Weight kg*
-GL40	1 1/2"	105	38	2,3
FA, flange DIN-PN16				
Type	d	D (mm)	A (mm)	Weight kg*
-FA15 (1/2")	16	53	108	2,6
-FA20 (3/4")	22	63	112	3,0
-FA25 (1")	30	73	118	3,2
-FA32 (1 1/4")	39	84	124	3,7
-FA40 (1 1/2")	43	94	129	4,4
-FA50 (2")	55	109	137	4,5
-FA65 (2 1/2")	70	129	147	5,6
-FA80 (3")	82	144	155	6,4
-FA100 (4")	107	164	165	6,8
-FA125 (5")	132	194	181	8,9
-FA150 (6")	160	219	193	9,8
-FA200 (8")	207	274	220	13,7
-FA250 (10")	260	330	248	17,3
-FA300 (12")	310	385	277	20,0
-FA350 (14")	340	445	307	30,6
-FA400 (16")	390	498	333	39,5
F..SS, flange DIN-PN16				
Type	d	D (mm)	A (mm)	Weight kg*
-F15SS (1/2")	17	53	143	1,6
-F20SS (3/4")	22	63	149	1,7
-F25SS (1")	29	73	154	1,8
-F32SS (1 1/4")	39	84	160	1,9
-F40SS (1 1/2")	43	94	165	2,0
-F50SS (2")	55	109	173	2,2
-F65SS (2 1/2")	70	129	183	2,5
-F80SS (3")	82	144	191	2,6
-F100SS (4")	107	164	201	3,0
-F125SS (5")	132	194	216	3,6
-F150SS (6")	160	219	239	4,1
-F200SS (8")	207	274	266	5,5
-F250SS (10")	260	330	295	7,5



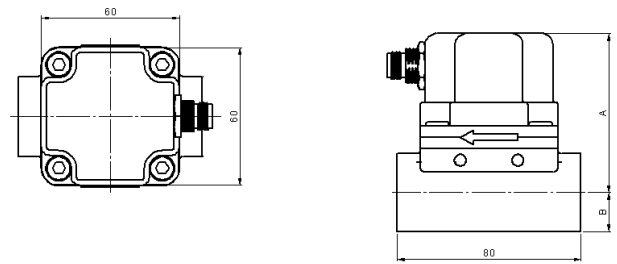
\*Approximate weight  
M with stainless steel cover extra 0,2 kg.

For F..SS are other standards of pressure available as option.

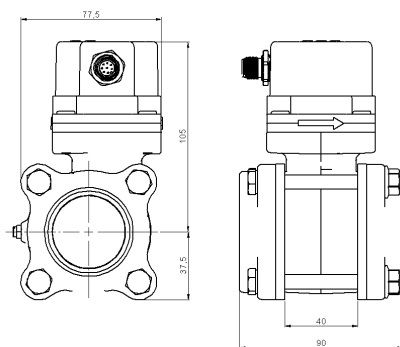
### M-display with GxxBR



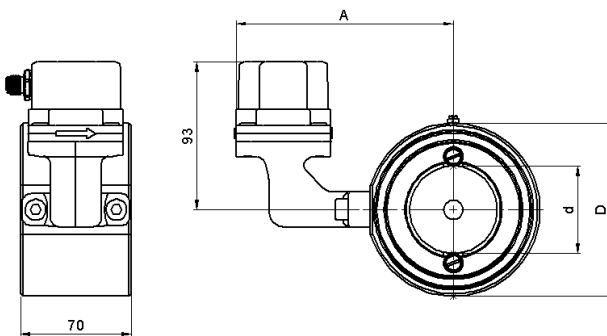
### M-Stainless with GxxSS



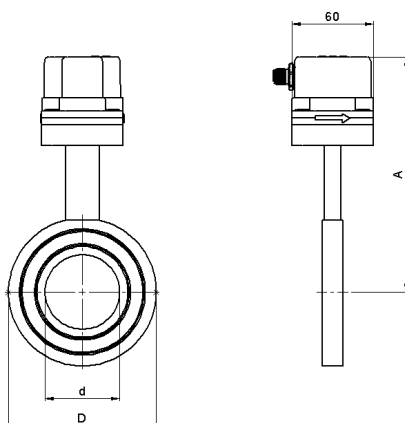
### M-display with GL



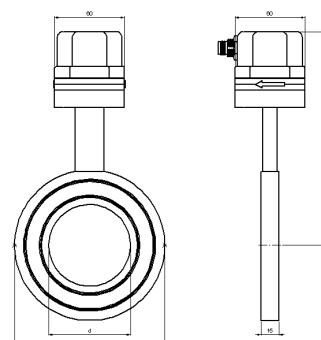
### M-display with FA



### M-display with FxxSS



### M-Stainless with FxxSS



# Standard Measuring Ranges For M310 and M325



M310 (M10) dp-range: 0 - 500 mbar			
Dim.		Pipe	Measuring range l/min
Thread	DN15 1/2"	G15 (GL15)	0,2 - 2
			0,5 - 5
			1 - 10
			2,5 - 25
			5 - 50
Thread	DN20 3/4"	G20 (GL20)	1 - 10
			2,5 - 25
			5 - 50
			8 - 80
Thread	DN25 1"	G25 (GL25)	1 - 10
			2,5 - 25
			5 - 50
			12 - 120
Thread	DN40 1 1/2"	GL40	5 - 50
			10 - 100
			30 - 300
Flange	DN15 1/2"	FA15 F15SS	0,2 - 2
			0,5 - 5
			1 - 10
			5 - 50
			5 - 50
Flange	DN20 3/4"	FA20 F20SS	1 - 10
			5 - 50
			8 - 80
			8 - 80
Flange	DN25 1"	FA25 F25SS	1 - 10
			5 - 50
			17,5 - 175*
Flange	DN32 1 1/4"	FA32 F32SS	5 - 50
			10 - 100
			30 - 300**
Flange	DN40 1 1/2"	FA40 F40SS	5 - 50
			10 - 100
			30 - 300
Flange	DN50 2"	FA50 F50SS	10 - 100
			25 - 250
			50 - 500
Flange	DN65 2 1/2"	FA65 F65SS	25 - 250
			50 - 500
			80 - 800***
Flange	DN80 3"	FA80 F80SS	25 - 250
			50 - 500
			100 - 1000
Flange	DN100 4"	FA100 F100SS	50 - 500
			100 - 1000
			200 - 2000
Flange	DN125 5"	FA125 F125SS	100 - 1000
			200 - 2000
			300 - 3000
Flange	DN150 6"	FA150 F150SS	100 - 1000
			200 - 2000
			400 - 4000
Flange	DN200 8"	FA200 F200SS	200 - 2000
			500 - 5000
			700 - 7000
Flange	DN250 10"	FA250 F250SS	200 - 2000
			500 - 5000
			1200 - 12000

M325 (M25) dp-range: 0 - 1250 mbar			
Dim.		Pipe	Measuring range l/min
Thread	DN15 1/2"	G15 (GL15)	0,5 - 5
			1 - 10
			2,5 - 25
			5 - 50
			7,5 - 75
			7,5 - 75
Thread	DN20 3/4"	G20 (GL20)	1 - 10
			2,5 - 25
			5 - 50
			12 - 120
Thread	DN25 1"	G25 (GL25)	5 - 50
			10 - 100
			20 - 200
Thread	DN40 1 1/2"	GL40	10 - 100
			20 - 200
			40 - 400
Flange	DN15 1/2"	FA15 F15SS	0,5 - 5
			1 - 10
			5 - 50
			7,5 - 75
Flange	DN20 3/4"	FA20 F20SS	1 - 10
			5 - 50
			12 - 120
Flange	DN25 1"	FA25 F25SS	5 - 50
			10 - 100
			25 - 250*
Flange	DN32 1 1/4"	FA32 F32SS	10 - 100
			20 - 200
			40 - 400**
Flange	DN40 1 1/2"	FA40 F40SS	10 - 100
			25 - 250
			50 - 500
Flange	DN50 2"	FA50 F50SS	20 - 200
			50 - 500
			80 - 800
Flange	DN65 2 1/2"	FA65 F65SS	30 - 300
			60 - 600
			120 - 1200***
Flange	DN80 3"	FA80 F80SS	50 - 500
			100 - 1000
			200 - 2000
Flange	DN100 4"	FA100 F100SS	50 - 500
			100 - 1000
			300 - 3000
Flange	DN125 5"	FA125 F125SS	100 - 1000
			300 - 3000
			500 - 5000
Flange	DN150 6"	FA150 F150SS	100 - 1000
			300 - 3000
			700 - 7000
Flange	DN200 8"	FA200 F200SS	200 - 2000
			500 - 5000
			110 - 11000
Flange	DN250 10"	FA250 F250SS	200 - 2000
			500 - 5000
			1700 - 17000

\*For ANSI: Max.: 0-120 \*\*For ANSI: Max.: 0-200  
\*\*\*For ANSI: Max.: 0-700

\*For ANSI: Max.: 0-120 \*\*For ANSI: Max.: 0-200  
\*\*\*For ANSI: Max.: 0-700

- Measuring ranges are for liquids
- dp-range are customer settable in the field using Flow Center

# Flow Center



Eletta has developed the Flow Center software, which enables the user of the M-series to read flow, temperature and pressure parameters simultaneously. It can also be used to reconfigure the M-series electronics in the field. Flow Center can be downloaded from Eletta web page. To communicate with the software you will need a special USB communication cable for the M-series. Flow Center makes it possible for the user to make zero adjustments, span settings, analog output settings, etc. The communication cable may be ordered as an option to the M-series.



*This picture shows the software's interface. The Overview tab gives a clear overview of all parameters in real time.*



Connect up to 128 units in a network and collect data digitally over the RS-485, a proven interface for industrial usage able to send Modbus several hundred meters.

Beside the flow, are the additionally received values the pressure and temperature from the two sensors in a 16-bit data format.

# Ordering code



Serie		
M3		
Pressure range		
10	10 bar	
25	25 bar	
50	50 bar	
Cover		
-	Standard	
Dis.	With display	
M-SS	Marine certified, stainless steel	
Pipe section		
G-BR	Thread, brass	
G-SS	Thread stainless steel	
GL40	Thread, brass	
FA	Flange, painted steel	
F-SS	Flange, stainless steel	
Dimension		
15	1/2"	Thread G-BR or Flange FA, F-SS
20	3/4"	Thread G-BR or Flange FA, F-SS
25	1"	Thread G-BR or Flange FA, F-SS
32	1" 1/4	Thread GL or Flange FA, F-SS
40	1" 1/2	Thread GL40 or Flange FA, F-SS
50	2"	Flange FA, F-SS
65	2" 1/2	Flange FA, F-SS
80	3"	Flange FA, F-SS
100	4"	Flange FA, F-SS
125	5"	Flange FA, F-SS
150	6"	Flange FA, F-SS
200	8"	Flange FA, F-SS
250	10"	Flange FA, F-SS Larger dimensions on request
Media		
Water		
Oil		
Gas	Please specify: Pressure, working temperature and type of gas	
Other	Please specify: Media, pressure, density, viscosity, pressure and working temperature	
Installation alternative A/R on all units		
Measuring range		
See separate table		
Options		
	Rubber parts in other material	Parallell connection M with GL
	Separate Mounting Kit	Parallell connection M with FA
	Manifold with shut-off valve	Parallell connection M with F-SS
	Pipe section with NPT connections	Parallell connection M with TIVG-F
	Pipe section with ANSI connections	

## Example of Code

**M310-G15BR, Water, 1-10 l/min**

All combinations are not possible so please check upon ordering.