

ISOMAG ™

The friendly magmeter

ML 51



VERY COMPACT CONVERTER POWERED BY 4/20 MA (TWO WIRE) WITH DIGITAL OUTPUT FOR PULSES AND ALARM

FLOAB

FLÖDEPRODUKTER AB

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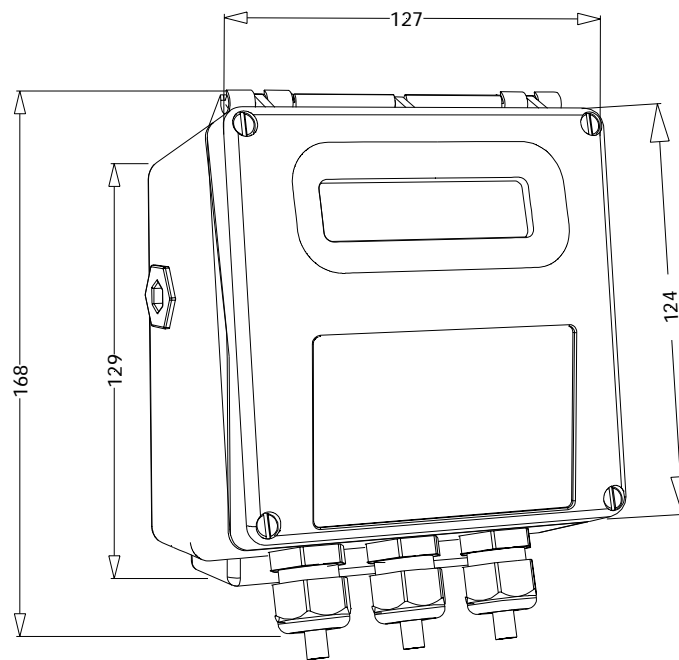
CONVERTER 4/20 mA LOOP POWERED

TECHNICAL DATA

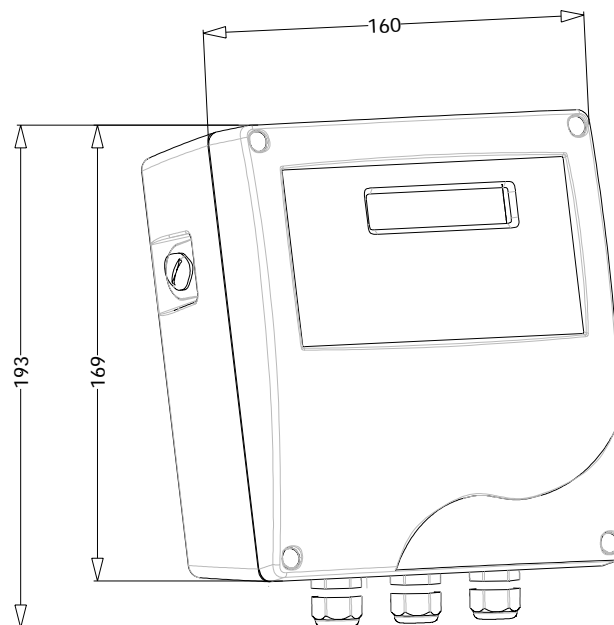
Suitable for	<input type="checkbox"/> All the ISOMAG sensors up to DN 1000 (Ex excluded)
Minimum conductivity	<input type="checkbox"/> 5 μ S/cm
Housing materials	<input type="checkbox"/> Nylon PA6 with fibre glass -/ (opt. Aluminium)
Dimensions	<input type="checkbox"/> See Drawing
Protection rate	<input type="checkbox"/> IP 65 (Nylon) / Opt. IP67 / Aluminium
Cable gland	<input type="checkbox"/> standard PG 11
Ambient temperature	<input type="checkbox"/> -20...+60°C
LCD Display	<input type="checkbox"/> Alphanumerical display:2 lines x 16 characters NO back light (opt.)
Keyboard	<input type="checkbox"/> 3 internal keys (opt.)
Pulses Output	<input type="checkbox"/> N°1 ,50 Hz, 10mA, 40 VDC
Bi-directional	<input type="checkbox"/> Yes
Full Scale value	<input type="checkbox"/> 0,4...10 m/s
Diagnostic functions	<input type="checkbox"/> Yes
Empty Pipe Detection	<input type="checkbox"/> Yes
Galvanic isolation	<input type="checkbox"/> All Inputs/Outputs are galvanically insulated from Power Supply
Data storage	<input type="checkbox"/> Eeprom values storing system in case of power failure
Programming plug in	<input type="checkbox"/> Protected plug in for connection to PC (IF2x)
CE certification	<input type="checkbox"/> Yes
Accuracy	<input type="checkbox"/> See table below
Power Supply	<input type="checkbox"/> 4/20 mA current loop (19 – 33 Vdc)/12 V-13 mA (4/20 disable)

OVERALL DIMENSIONS

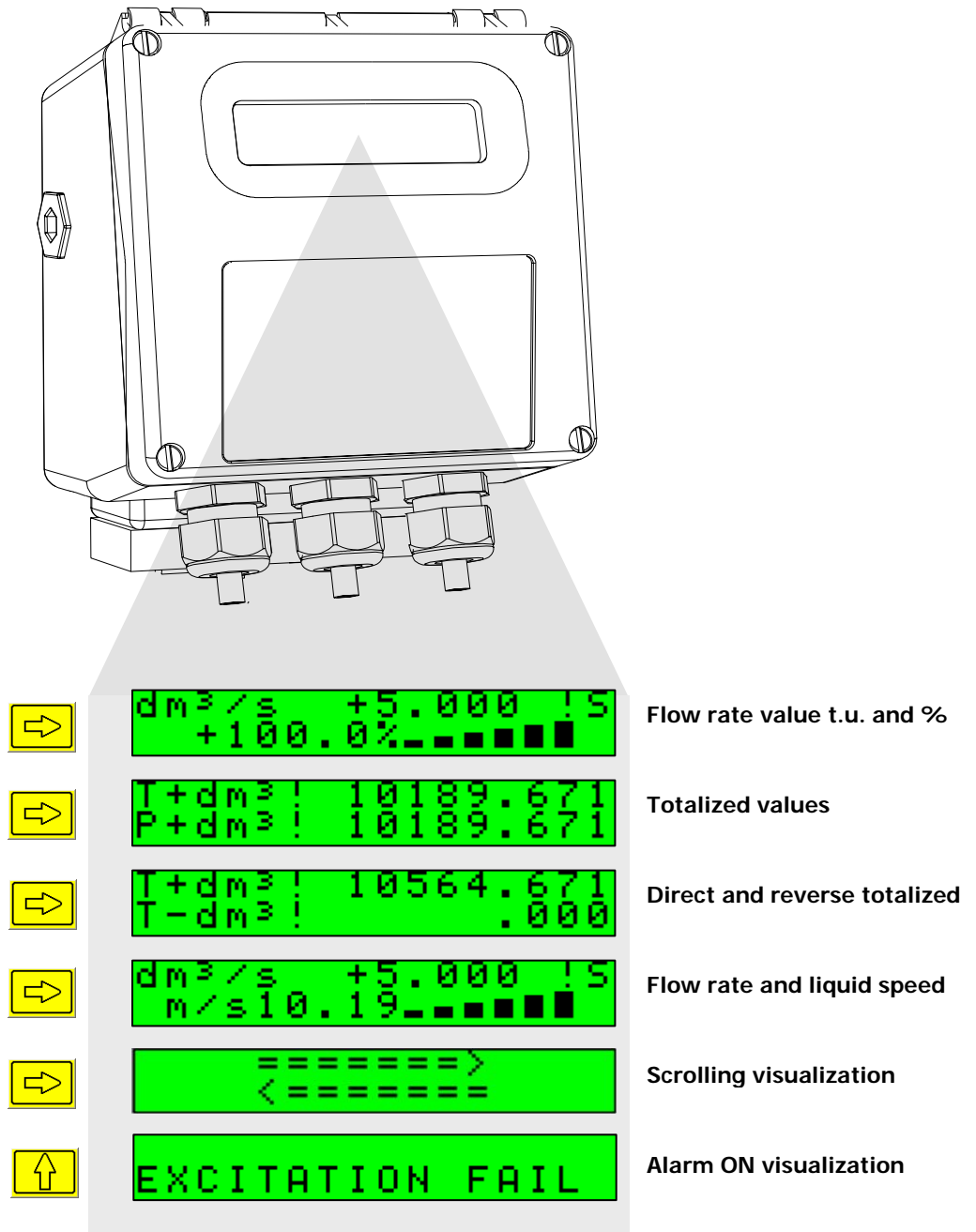
PA6 (NYLON) HOUSING



ALUMINIUM HOUSING



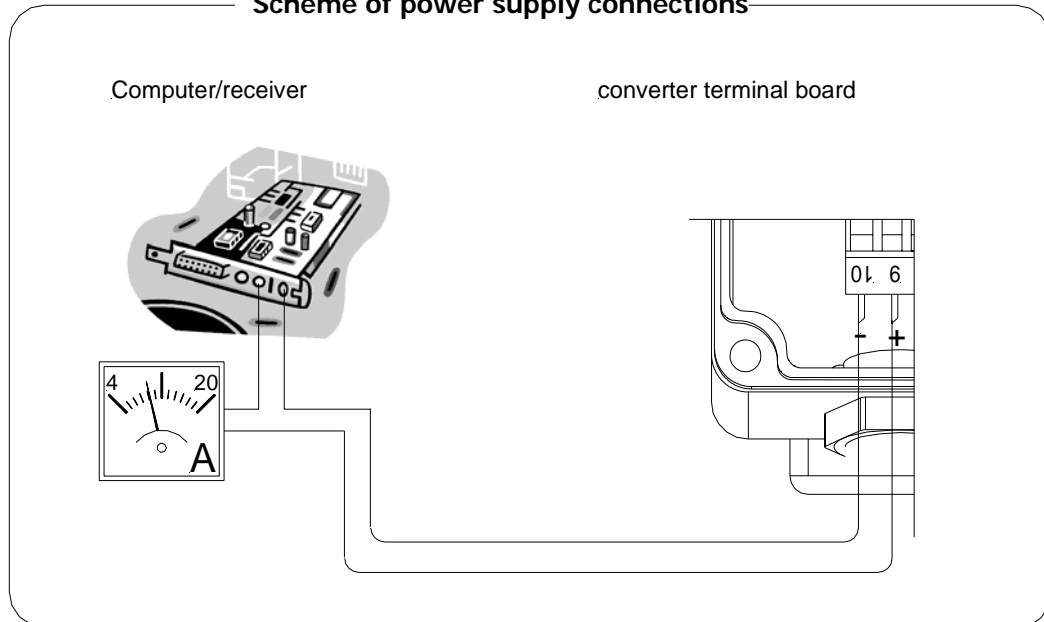
VISUALIZATION PAGES (ONLY WITH DISPLAY OPTION)



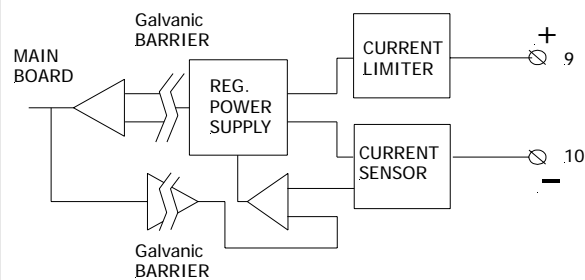
Different visualization possibilities with a simple press of a key

POWER SUPPLY

Scheme of power supply connections



Power supply/Out 4÷20mA : electrical details



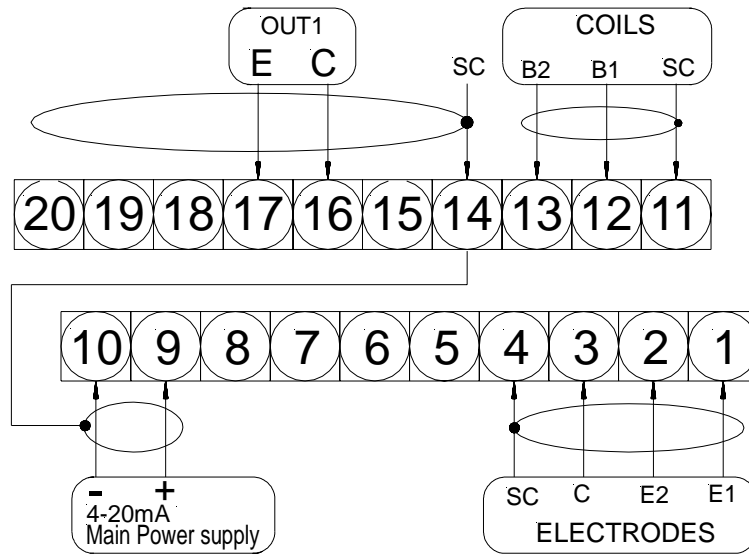
Working voltage : 18 ÷ 36 Vdc

MAX LOAD TABLE	
Power Supply	R_MAX (ohm)
21.6 (24V-10%)	300
24	400
26.4 (24V+10%)	500
30	680
36	950

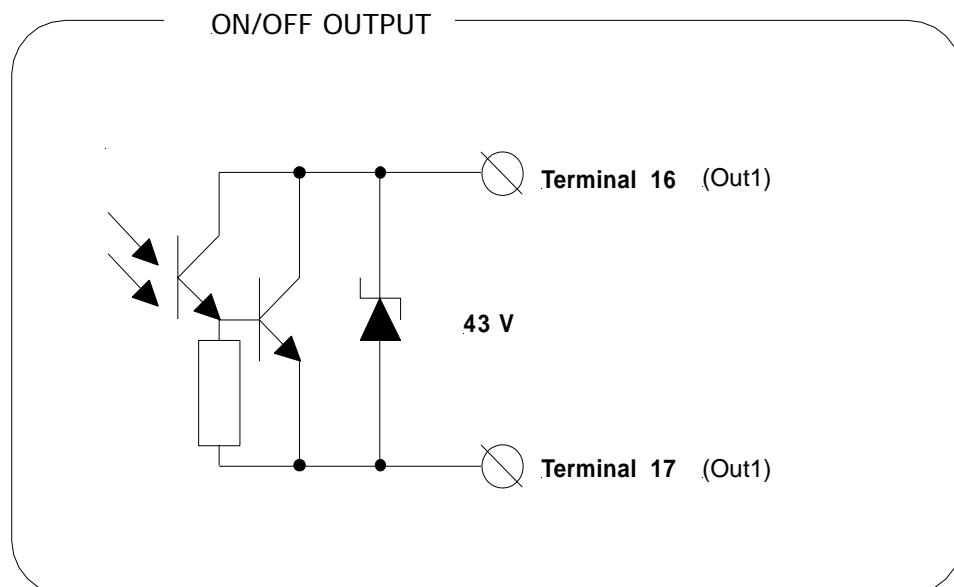
This system allows to use the converter as a transmitter with " 2 wire" method : the measure 4/20 is used also to supply the converter . The MINIMUM value of output current, at "0" FLOW RATE is 4 mA .

ELECTRICAL CONNECTIONS

TERMINAL BLOCK



STANDARD ON/OFF OUTPUT



FUNCTIONS

MAIN MENU 1-Sensor

```

1-SENSOR
ND=mm      00025
KA=        +01.0000
Sens.type= 00
Ins.position= 0
KL=[0]    +00.0000
KL=[0]    +00.0000
E.P.detect= OFF
E.P.calibr.
Autozero cal.
Autozero res.

```

- 1.1 Insert ND of sensor (0-1000)
- 1.2 Calibration data of sensor visualized on sensor's label
- 1.3 Type of sensor: Enter the first two characters of the serial number of the sensor
- 1.4 Position for insertion sensors: 0=1/8DN, 1=1/2DN, 2=7/8DN
- 1.5 Factory parameter
- 1.6 Enables the empty pipe detection feature
- 1.7* Enables the automatic calibration procedure of the empty pipe detection
- 1.8* Enables the automatic zero calibration system
- 1.9 Reset the preceding function

MAIN MENU 2-Scales

```

2-SCALES
Fs1=dm³/s 05.000
Fs2=dm³/s 05.000
Tot.MU=dm³ 1.000
Pls =dm³ 01.0000
TPls =ms 0050.00

```

- 2.1* Full scale 1 value
- 2.2* Full scale 2 value
- 2.3* Unit of measure and number of decimal totalizes
- 2.4* Pulse value
- 2.5* Duration of the pulse

MAIN MENU 3-Measure

```

3-MEASURE
Tconst=s 0002.0
Skip thr=% 025
Peak thr=% 125
Cut-off=% 07.0
Autocal.= OFF
Autorange= OFF

```

- 3.1* Time constant
- 3.2* Acceleration threshold
- 3.3* Anomalous signal pick cut off threshold
- 3.4 Low flow zero threshold: 0-25% of full scale value
- 3.5 Enable every hour an internal cycle of calibration. The measure it's stopped for 8-15 sec.
- 3.6 Automatic change of scale

MAIN MENU 4-Alarms

```

4-ALARMS
Max thr+=% 000
Max thr-=% 000
Min thr+=% 000
Min thr-=% 000
Hyst.=% 03
E.P.thr.= 075
mA v.fault=% 113

```

- 4.1 Maximum value alarm set for direct flow rate
- 4.2 Maximum value alarm set for reverse flow rate
- 4.3 Minimum value alarm set for direct flow rate
- 4.4 Minimum value alarm set for reverse flow rate
- 4.5 Hysteresis threshold set for the minimum and maximum flow rate alarms
- 4.6 Empty pipe detection threshold. It's automatically set by the function 1.9
- 4.7* Current output value in case of failure

MAIN MENU 5-Inputs

```

5-INPUTS
T+ reset= OFF
P+ reset= OFF
T- reset= OFF
P- reset= OFF
Count lock= OFF
Calibration= OFF
Range change= ON

```

- 5.1* Total direct (positive) flow totalise reset enable
- 5.2* Partial direct (positive) flow totalise reset enable
- 5.3* Total reverse (negative) flow totalise reset enable
- 5.4* Partial reverse (negative) flow totalise reset enable
- 5.5 Totalise counting lock command (see page 12)
- 5.6* Autozero calibration external command
- 5.7 Range change external command (see function 3.4)

MAIN MENU
6-Outputs

```
6-OUTPUTS
Out1=      OFF
Out mA=    ON
Out mA=4_22
```

- 6.1* Output functions
- 6.2 Enable 4÷20 output
- 6.3* Field for 4/20 mA out

MAIN MENU
7-Communication

```
7-COMMUNICATION
IF2 Prot.= DPP
IF2 supply= OFF
```

- 6.1* Output functions
- 6.2 Enable 4÷20 output

MAIN MENU
8-Display

```
8-DISPLAY
Language=  EN
T+ reset
P+ reset
T- reset
P- reset
Quick start= OFF
Net total.= OFF
Currency=   ON
Curr.decim.= 2
EUR/dm=+ 01.0000
EUR/dm=- 01.0000
```

- 8.1 Choice of the language: En= English, It=italian, Fr= French, Sp= Spanish
- 8.2* Total direct (positive) flow totalise reset
- 8.3* Partial direct (positive) flow totalise reset
- 8.4* Total reverse (negative) flow totalise reset
- 8.5* Partial reverse (negative) flow totalise reset
- 8.6 Quick start menu visualization
- 8.7 Enable the page of net totalizer (difference between direct and reverse. see page 11)
- 8.8 Visualizes the values of the partial totalise in the unit of selected currency
- 8.9 Choice of the numbers of decimals for the visualization currency value: From 0 to 3
- 8.10* Value of conversion/currency for direct totalizer
- 8.11* Value of conversion/currency for reverse totalizer

MAIN MENU
10-Diagnostic

```
10-DIAGNOSTIC
Calibration
Self test
Simulation= OFF
```

- .10.1* Enable the calibration of the converter
- .10.2* Converter autotest
- .10.3* Flow rate simulation enabling

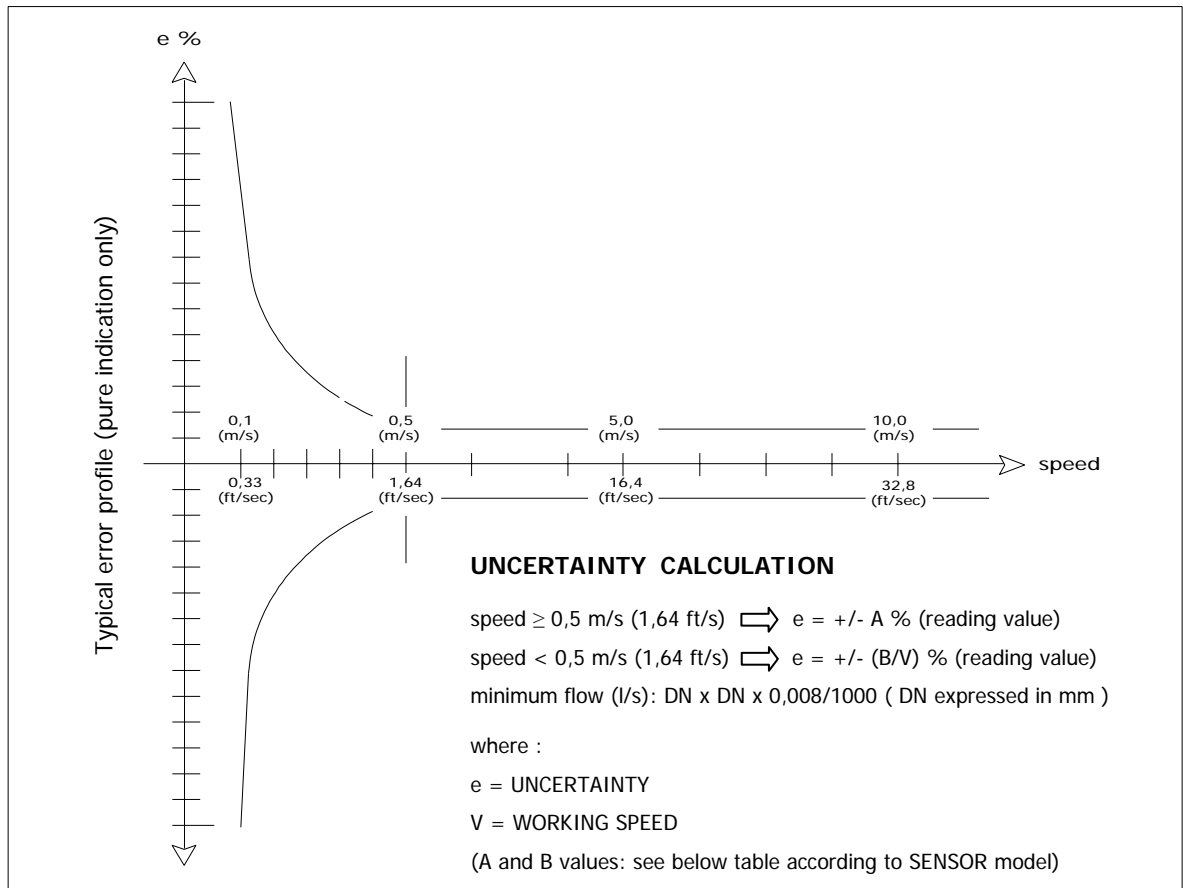
MENU PRINCIPALE
11-Dati interni

```
11-INTERNAL DATA
L2 keycode=00000
Load fact.pres.
Load user pres.
Save user pres.
Hours=      000031
KS=        +1.0000
```

- .11.1 Level 2 access code enter
- .11.2 Load factory data pre-set
- .11.3 Load user data saved
- .11.4 Save user data
- .11.5 Visualisation of the total operation hours of the converter (function not editable)
- .11.7 Ks Coefficient

Note : all page number references are to the operating manual .

ACCURACY TABLE



FULL BORE SENSORS

MS501/MS1000/MS2500			MS5000		
A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)
0,5	0,25	0,82	2,0	1,0	3,28

INSERTION SENSORS

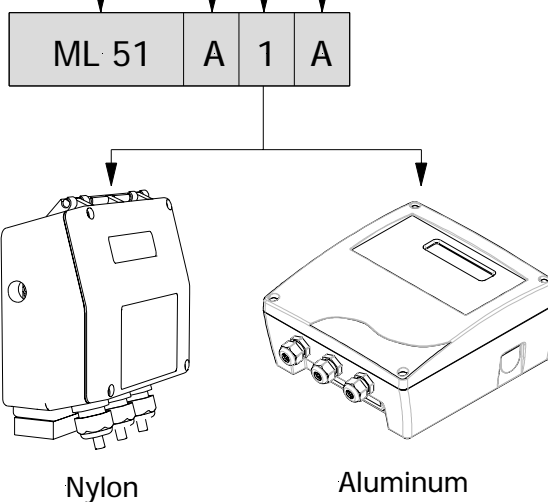
MS3770			MS3800		
A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)
2,0	1,0	3,28	2,0	1,0	3,28

Reference conditions :

- Constant flow rate during the test
- Pressure: >30 Kpa
- Flow condition : fully developed flow profile
- Zero stability +/- 0,005 %

HOW TO ORDER

ML 51	Display
A	Blind version without display and keyboard
B	Complete with 2 line display (2x16 characters)+3 programming keys ATTENTION :OPTION AVAILABLE ONLY FOR CONVERTER COUPLED WITH FULL BORE SENSORS
Housing material - Protection rate	
1	Nylon PA6 with fiber of glass / IP 65
2	Painted aluminum die casting, protection rate IP67
Version	
A	Compact version with sensor MS.... (liquid maximum temperature 100 °C)



The manufacturer reserves the right to make design improvements without notice.

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