

# MAGFLO<sup>®</sup>

ELECTROMAGNETIC FLOWMETERS





The change to the 21st century is not just a millennial change, it also brings us to a new era. The industrial era is superseded by the information era, the biggest challenge for the manufacturing industry since electricity was introduced at the beginning of this century.

Fuji Electric has taken up the challenge. The Research and Development Department has therefore focused on communication. Communication between instruments and between man and machinery.

The latest result of this focus are the new MAGFLO® flowmeters. They are not just meant to measure flow but also built to communicate in individual languages as well as to machinery by means of different application dependent protocols. Individual plug-in modules with different communication protocols can be mounted without the use of tools.

It has never been simpler to measure flow.

## MEETING INDUSTRIES TOUGHEST CHALLENGE

### MAGFLO® ELECTROMAGNETIC FLOWMETERS

Plug-in modules available with Hart® & Profibus® communication protocols. Other Field Bus protocols under development.

Consult Fuji Electric for latest status



The product range for the water treatment industry is a perfect illustration of our philosophy. The MAG 3100 W, is easy to install and commission, but still able to meet the heavy demands of the industry for reliability, dynamic range and environment requirements. Special demands for flowmeters in the water industry can only be met through dedicated products. Reliability is a keyword in installations meant to last for decades and often left without daily surveillance. A large dynamic range is an absolute must when measuring night consumption and high protection against corrosion of exposed or buried sensors is of vital importance to secure long term stability in harsh surroundings.



*Withstands temporary flooding before, during, or after installation, thanks to special gaskets and cables protecting sensor and coils.*

*Withstands constant flooding. Simple upgrade to IP 68 is possible on site.*

*Forget all about pit-corrosion common for aluminium enclosed meters. The sensor body is made of fully welded steel.*

*No more earthing rings or flanges. The meter has built-in earthing electrodes.*

*No need to modify the pipe connection. The sensor has same length as mechanical meters.*

# WATER TREATMENT

## MAGFLO® FLOWMETERS FOR WATER TREATMENT PLANTS

*Water, basis for life on planet Earth. Supply, consumption and recycling must be monitored thoroughly. Simplicity guarantees reliability. Environment is on our mind.*

**Food large scale manufacturing of food and beverage increasingly demands strict cleaning facilities.**

*We provide technology combined with experience. Hygiene is on our mind.*



# FOOD INDUSTRY

## MAGFLO® FLOWMETERS FOR THE FOOD INDUSTRY

### **More hygienic than a polished pipe\***

For many years Fuji Electric has supplied flowmeters and components to the food industry.

A close co-operation with users has established the specific needs for food industry applications.

The results from this co-operation have been that Fuji Electric can supply stainless steel enclosed flowmeters, which are in accordance with the EHEDG hygiene test.

MAG 1100 Food is our dedicated flowmeter for the food industry.

*\* Result of the EHEDG test.*

**No glass.**  
*There is direct access to watertight keypad and display.*



**Delivered with your standard connection.**

**Cleaning as good as a polished stainless steel pipe.**

**Easily cleaned.**  
*Enclosure is AISI 316 stainless steel and rated at least IP 67.*

**Hygienic seal construction.**  
*All EHEDG guidelines are observed.*



Install and forget.  
Even in industries with high demands to Ex, EMC and chemical resistance, it is possible to make flowmetering simple, safe and reliable.

Co-operation with major chemical companies has created a new generation of flowmeters that specifically cover the demands of the industry.

The flowmeters MAG 3100 and MAG 1100 with Ex-d electronics match these requirements.

*Converter replacement in less than 5 minutes, without consulting the manual.*



*Maintenance free material. Stainless Steel enclosure, no risk of corrosion as with painted steel or aluminium, which results in violation of the hazardous area certification.*

*Built-in SENSORPROM™ technology. Sensor's data independent of converter.*

*Full protection, full functionality. Current, frequency/pulse and relay outputs are EEx ia. Keypad and display are EEx ib. Electronics enclosure is EEx d.*



*Display is always readable, as it can be rotated*



## CHEMICALS

**MAGFLO®  
FLOWMETERS FOR THE  
CHEMICAL INDUSTRY**



*Chemicals, fundamentals of industry. Carefully handled by skilled personnel using advanced equipment. Risks cannot be taken. Safety is on our mind.*

## SPECIFICATIONS



SENSOR	MAG 1100	MAG 1100 FOOD	MAG 3100	MAG 3100 W (3)
Size [mm]	DN 6-100	DN 10-100	DN 15-2000	DN 25-1200
Process Connection	Flangeless (Sandwich design)	Weld-in adaptor, clamp adaptor, thread adaptor	Flange	Flange
Pressure [bar] (1)	Max. 40	Max. 40	Max. 100	Max. 40
Temperature [°C] (2)	-20 to 200	-30 to 150	-40 to 180	-10 to 95
Liner	Ceramics (Al <sub>2</sub> O <sub>3</sub> )	Ceramics (Al <sub>2</sub> O <sub>3</sub> ) PFA	Neoprene, EPDM, Teflon (PTFE) Polyurethane, Ebonite, Linatex®	Neoprene, EPDM
Electrodes	Platinum	Platinum Hastelloy	AISI 316 Ti, Hastelloy C, Platinum/Iridium Monel, Titanium, Tantalum	AISI 316 Ti Earthing electrode 316 Ti
Enclosure	IP 67	IP 67	IP 67/68	IP 67/68
Ex-version	EEx [ia/ib] IIB T4-T6		EEx [ia/ib] IIB T4-T6 EEx [ia/e] IIC T3-T6	

1/ Max operating pressure according to sensor size and selected flange rating.

2/ Min and Max operating temperatures according to selected liner.

3/ Accuracy of MAG 3000 W is always 0,5% regardless selected Signal Converter.



SIGNAL CONVERTER	MAG 5000	MAG 6000	MAG 3000 Ex-d
Outputs	1 current output 1 digital output 1 relay output	1 current output 1 digital output 1 relay output	1 current output 1 frequency/pulse output 1 relay output
Flow direction	Uni/bidirectional	Uni/bidirectional	Uni/bidirectional
Display	3 lines 20 characters (optional without display)	3 lines 20 characters (optional without display)	2 lines 16 characters
Meter uncertainty	± 0.5% o.r.	± 0.25% o.r.	± 0.25% o.r.
Enclosure	IP 67, IP 20	IP 67, IP 20	IP 65, IP 67
Custody transfer approval		PTB OIML R75 OIML R117	
Ex-version	[EEx ia/ib] IIB [EEx ia] IIC	[EEx ia/ib] IIB [EEx ia] IIC	EEx de [ia/ib] IIB T6
Power supply	12-24 V a.c./d.c. 115-230 V a.c.	12-24 V a.c./d.c. 115-230 V a.c.	24 V a.c./d.c.

## SIZING

(Dimensions in mm)

### Signal converters



### Sensors

DN (mm)	Q Max (m <sup>3</sup> /h)	MAG 3100 & 3100 W			MAG 1100		MAG 1100 Food	
		PN w. flange DIN 2501 (bar)	L w. flange DIN 2501 (mm)	A [mm]	L incl. EPDM gaskets (mm)	A [mm]	L Weld in length (mm)	A [mm]
6	1.0				64	156		
10	2.8				64	156	146	156
15	6.4	40	200	187	65	156	146	156
25	17	40	200	187	80	164	161	164
40	45	40	200	197	95	176	176	176
50	70	40	200	205	105	184	186	184
65	120	16	200	212	130	194	223	194
80	180	16	200	222	155	200	258	200
100	280	16	250	242	185	213	288	213
125	440	16	275	255				
150	630	16	300	276				
200	1100	10/16	350	304				
250	1700	10/16	450	332				
300	2500	10/16	500	357				
350	3400	10/16	500	362				
400	4500	10/16	500	387				
450	5700	10/16	560	418				
500	7000	10/16	625	443				
600	10000	10/16	750	494				
700	13000	10	875	586				
800	18000	10	1000	637				
900	22000	10	1125	687				
1000	28000	10	1250	738				
1200	40000	6	1500	839				
1400	55000	6	1750	925				
1600	70000	6	2000	1025				
1800	91000	6	2250	1123				



Length of MAG 3100 & 3100W is without earthing rings or flanges and gaskets. Consult Fuji Electric for dimensions of these optional accessories. When compact mounted (Electronics on top of sensor)  $A1 = A + 180$  mm.

## ACCURACY

### MAG 5000

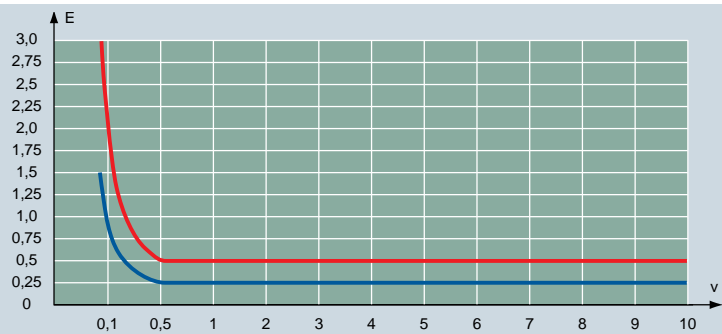
$v \geq 0.5$  m/s. E:  $\pm 0.5\%$  of actual flow

$v < 0.5$  m/s. E:  $\pm \frac{0.25}{v[\text{m/s}]} [\%]$  of actual flow

### MAG 6000 & 3000Ex-d

$v \geq 0.5$  m/s. E:  $\pm 0.25\%$  of actual flow

$v < 0.5$  m/s. E:  $\pm \frac{0.125}{v[\text{m/s}]} [\%]$  of actual flow



v : Actual flow velocity [m/s]

E : Meter uncertainty as a percentage of actual flow



All our Magnetic Flowmeters are tested and calibrated in flow laboratories accredited to the European standard Norm EN 45001. This means that you can be absolutely certain that every flowmeter we make will provide the levels of accuracy and repeatability we claim for it and that this claim is traceable back to international standards.

EN 45001 means that you can trust the calibration performed on our flowmeters as the equipment used is constantly calibrated against authorised references, and in addition to the equipment also our methods of testing are continuously monitored and reviewed by impartial institutes.



## FUJI ELECTRIC MAGNETIC FLOWMETERS WORLDWIDE

ALL METERS FROM ACCREDITED LABS



Fuji Electric can accept no responsibility for possible errors in catalogues, brochures and other printed material. Fuji Electric reserves the right to alter its products without notice. This also applies to products already on order, provided that such alterations are made without substantial changes in specifications already agreed. All trademarks in this material are property of the respective companies. All rights reserved.

**FUJI**  
**ELECTRIC**

**Fuji Electric France S.A.**

46, rue Georges Besse - ZI du Brézet  
F 63039 Clermont-Fd Cedex 2 - FRANCE  
Tel. (33) 4 73 98 26 98 - Fax. (33) 4 73 98 26 99  
E-mail : [fujielectric.france@wanadoo.fr](mailto:fujielectric.france@wanadoo.fr)

**Fuji Electric Instruments Co.,Ltd**  
**Sales Div. International Sales Dept.**

No. 1, Fuji-machi, Hino-city, Tokyo, 191-8502 Japan  
Tel. (81) 42 585 6201 - Fax. (81) 42 585 6187  
<http://www.fujielectric.co.jp>