

SITRANS F M MAGFLO®

Electromagnetic flowmeters

*Transmitter type MAG 6000 Industry & MAG 6000 Industry (Ex d)
sensor type MAG 1100/MAG 1100 FOOD/MAG 1100 Ex &
MAG 5100 W/MAG 3100/MAG 3100 Ex*



Technical Documentation (handbooks, instructions, manuals etc.) on the complete product range SITRANS F can be found on the internet/intranet on the following links:

English: <http://www4.ad.siemens.de/WW/view/en/10806951/133300>

Order no.: FDK-521H1191

SFIDK.PS.026.E5.02




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1. Introduction

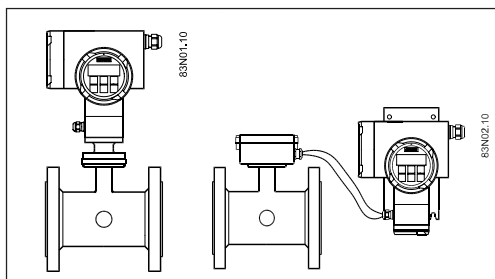


For safety reasons it is important that the following points, especially the points marked with a warning sign, are read and understood before the system is being installed:

- Installation, connection, commissioning and service must be carried out by personnel who are qualified and authorized to do so.
- It is very important that the same people have read and understand the instructions and directions provided in this manual and that they follow the instructions and directions before taking the equipment into use!
- People who are authorized and trained by the owner of the equipment may operate the equipment.
- The installation must ensure that the measuring system is correctly connected and is in accordance with the connection diagram.
- In applications with working pressures/media that can be dangerous to people, surroundings, equipment or others in case of pipe fracture, we recommend that special precautions such as special placement, shielding or installation of a security guard or a security valve should be made when the sensor is being installed.
- Siemens Flow Instruments want to assist by estimating the chemical resistance of the sensor parts that are in connection with the media, but it is at any time the customer's responsibility, which materials are chosen and Siemens Flow Instruments takes no responsibility if the sensor corrodes!
- Equipment used in hazardous areas must be Ex-approved and marked  for Europe and UL for USA.
It is required that the special directions provided in the manual and in the Ex certificate must be followed!
- Installation of the equipment must comply with national regulations.
Example EN 60079-14 for Denmark.
- Repair and service must be done by approved Siemens Flow Instruments personnel only.

2. Installation

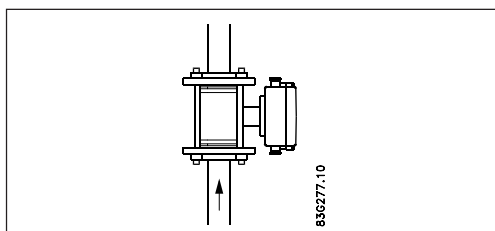
2.1 Installation of transmitter



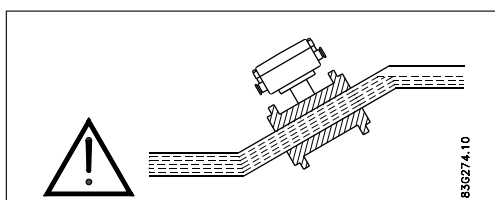
Installation of transmitter can be remote or compact mounted.

2.2 Installation of sensor

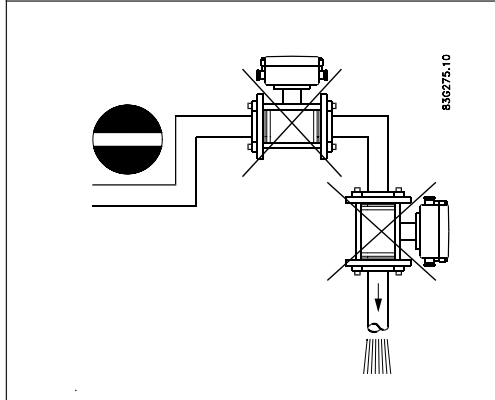
 **Hazardous area**

**Category 2 equipment**

In addition to the sensor, the MAG 6000 I as remote or compact mounted may be installed in Ex zone 1 and zone 2.

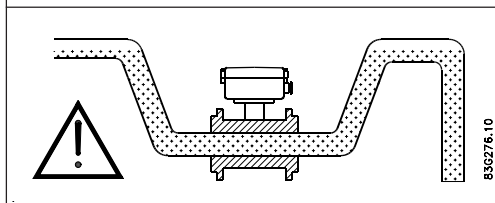


The sensor must always be completely full with liquid.

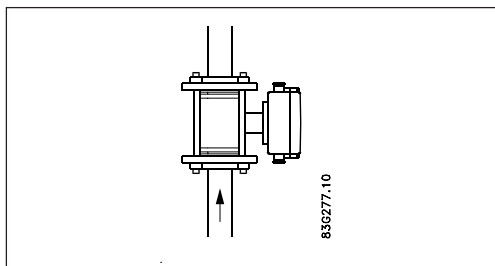


Therefore avoid:

- Installation at the highest point in the pipe system
- Installation in vertical pipes with free outlet

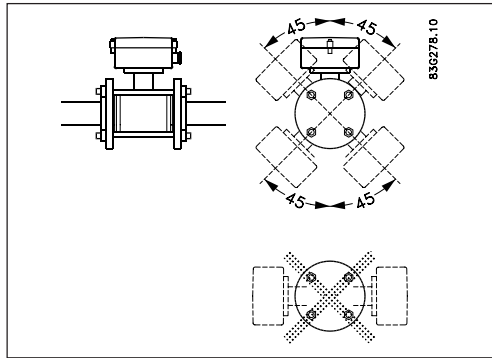


For partially filled pipes or pipes with downward flow and free outlet the flowmeter should be located in a U-tube.

**Installation in vertical pipes**

Recommended flow direction: upwards. This minimizes the effect on the measurement of any gas/air bubbles in the liquid.

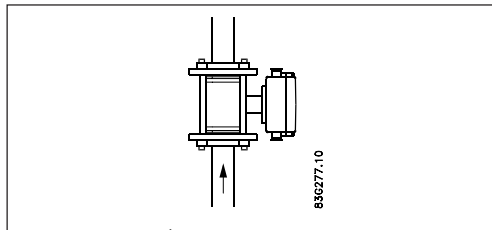
2.2 Installation of sensor (continued)



Installation in horizontal pipes

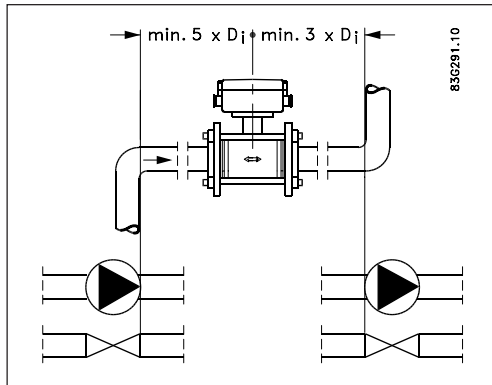
The sensor must be mounted as shown in the upper figure. Do not mount the sensor as shown in the lower figure. This will position the electrodes at the top where there is possibility for air bubbles and at the bottom where there is possibility for mud, sludge, sand etc.

If using empty pipe detection the sensor can be tilted 45°, as shown in the upper figure.



Measuring abrasive liquids and liquids containing particles

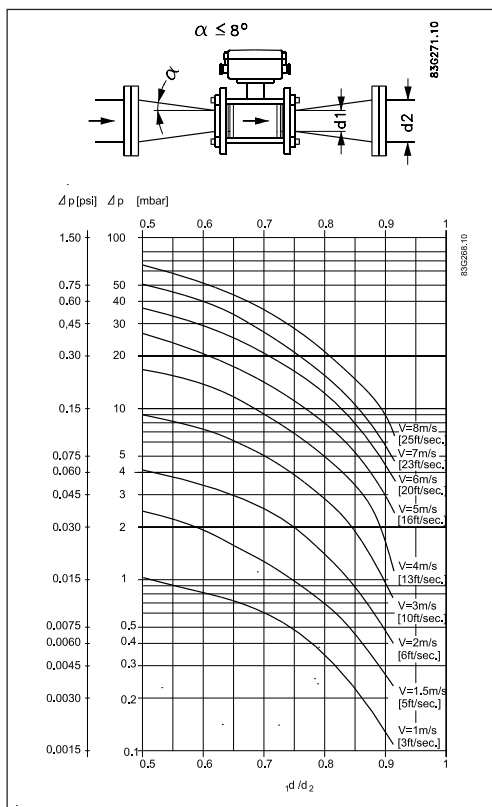
Recommended installation is in a vertical/inclined pipe to minimize the wear and deposits in the sensor.



Inlet and outlet conditions

To achieve accurate flow measurement it is essential to have straight lengths of inlet and outlet pipes and a certain distance between pumps and valves.

It is also important to centre the flowmeter in relation to pipe flanges and gaskets.



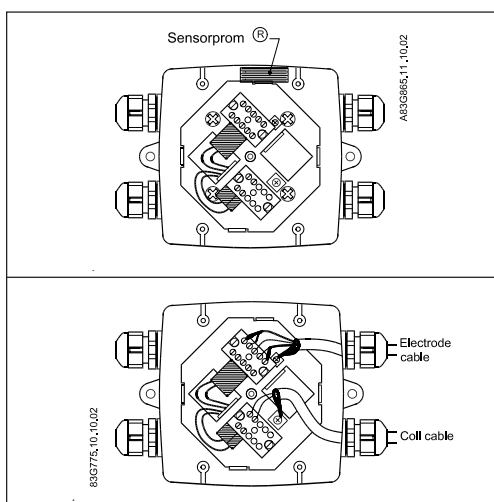
Installation in large pipes

The flowmeter can be installed between two reducers (e.g. DIN 28545). Assuming that at 8° the following pressure drop curve applies. The curves are applicable to water.

Example:

A flow velocity of 3 m/s (V) in a sensor with a diameter reduction from DN 100 to DN 80 ($d_1/d_2 = 0.8$) gives a pressure drop of 2.9 mbar.

2.3.1 Remote installation - At the sensor



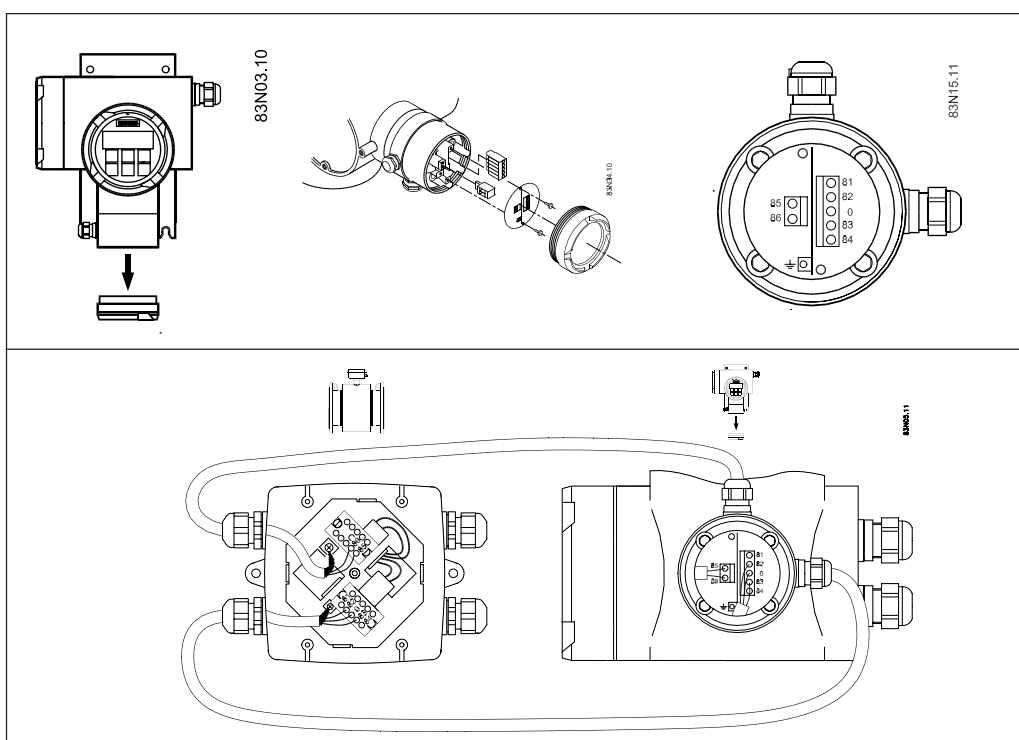
Remove the SENSORPROM® unit from the sensor and mount it in the terminal block in the transmitter.

Fit and connect the electrode and coil cables as shown in "Electrical connections". The unscreened cable ends must be kept as short as possible. The electrode cable and the coil cable must be kept separate to prevent interference. Tighten the cable glands well to obtain optimum sealing.

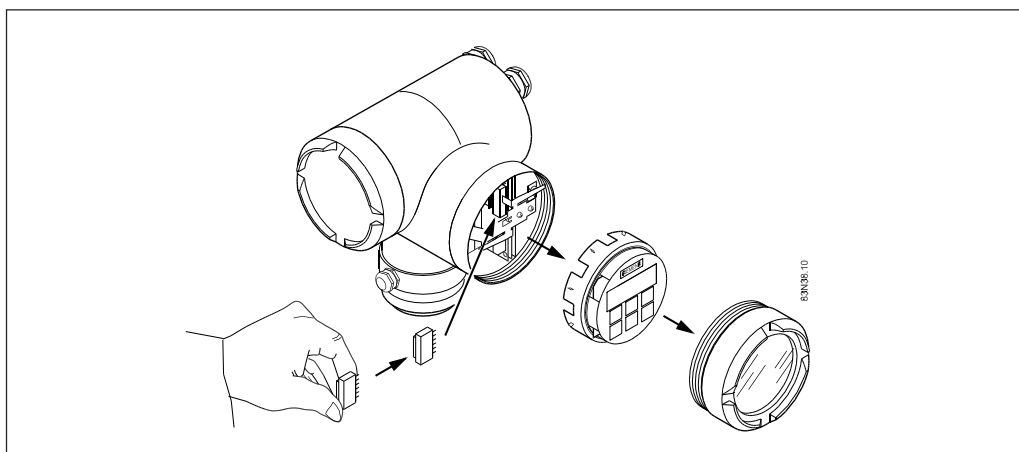
2.3.2 Remote installation - Transmitter



No power up with open lid -
Do **not** open lid while power
on



Fit the SENSORPROM® memory unit in the transmitter.
The SENSORPROM® unit is supplied with the sensor in the terminal box.



2.4 Ex survey according to Directive 94/9/EC (ATEX)

as an example:

II	2G	E	Ex	d	IIB	T3-T6
----	----	---	----	---	-----	-------

Directive 94/9/EC (ATEX)

Instrument groups

I	Applies to instruments used in underground mining operations, as well as their above ground operations, which can be endangered by mine gas and/or flammable dusts.
II	Applies to instruments used in the remaining areas which can be endangered by a potentially explosive atmosphere.

Instrument category

Labelling with gases	Labelling with dusts	Definition
1G (0)	1D (20)	Instruments of this category are for use in areas where ignitable atmospheres, caused by a mixture of air and gasses, vapours or mists or by dust/air mixtures, can exist all of the time or for long periods of time or else frequently.
2G (1)	2D (21)	Instruments of this category are for use in areas where ignitable atmospheres caused, by a mixture of air and gasses, vapours or mists or by dust/air mixtures, can exist some of the time.
3G (2)	3D (22)	Instruments of this category are for use in areas where ignitable atmospheres, caused by a mixture of air and gasses, vapours or mists or by dust/air mixtures, are not likely to exist. However, if they do occur then in all probability, only seldom or for short periods of time.

(The figures in brackets refer to IEC)

Built according to European norm = E

Explosion protected electrical equipment = Ex

Ex protection labelling in square brackets refers to "Associated electrical equipment"

Type of protection

o	Oil encapsulated	i	Intrinsic safety (ia, ib)
p	Pressurized apparatus	n	Non-incentive equipment
q	Powder filling	m	Encapsulation
d	Flameproof enclosure	s	Special protection
e	Increased safety		

Explosion groups

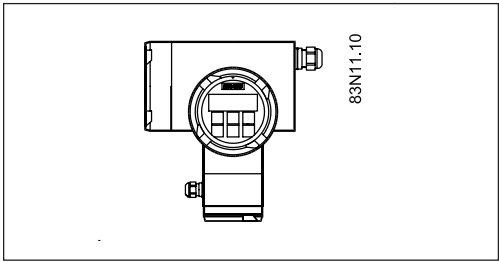
Gases and vapours (examples)	Minimum ignition energy [mJ]	EN/IEC
• Ammonia	-	IIA
• Acetone, aircraft fuel, benzene, crude oil, diesel oil, ethane, ethanoic acid, ether, gasolines, heating oil, hexane, methane, propane	0.18	IIB
• Ethylene, isoprene, town gas	0.06	IIB
• Acetylene, carbon disulphide, hydrogen	0.02	IIC

Ignition temperature

Maximum surface temperature		EN / IEC
450°C	842°F	T1
300°C	572°F	T2
200°C	392°F	T3
135°C	275°F	T4
100°C	212°F	T5
85°C	185°F	T6

EN 50014

2.5 Overview and intrinsically safe data



Specifications:
Supply: 115-230 V or 24 V
Ambient temperature: -20 to 60°C
Enclosure: IP67/NEMA 4X

2.5.1 Transmitter data
MAG 6000 I (Ex d)

SENSOR INTERFACE

1. DN 6 - DN 300 mm
Certificate: Sira 03ATEX1503X
 II 2(1)(2) G D

Remote version: EEx d [ia] ia [ib] ib IIB T6 / **Compact version:** EEx d [ia] [ib] IIB T6

Electrode			Coil		
81,82,83,84			85,86		
	IIB	IIC*		IIB	IIC*
U _o	30 V		U _o	30 V	
I _o	6.1 mA		I _o	105 mA	
C _o	560 nF		C _o	60 nF	
L _o	1 H		L _o	2.07 mH	
P _o	45.5 mW		P _o	3.3 W	

* N/A

2. DN 350 - 2000 mm
Certificate: Sira 05ATEX2072X
 II 2(1)(2) G D

Remote version: EEx d e [ia] ia [ib] ib IIC T6 / **Compact version:** EEx d [ia] [ib] IIC T6

Electrode		
81,82,83,84		
	IIB	IIC
U _o	30 V	30 V
I _o	6.1 mA	6.1 mA
C _o	66 nF	560 nF
L _o	0.96 H	0.96 H
P _o	45.5 mW	45.5 mW

! Coil terminal 85, 86 are "e" terminals.

User I/O INTERFACE

DN 6 - DN 300
Certificate: Sira 03ATEX1503X
 II 2(1)(2) G D

Remote version: EEx d [ia] ia [ib] ib IIB T6 / **Compact version:** EEx d [ia] [ib] IIB T6

DN 350 - DN 2000
Certificate: Sira 05ATEX2072X
 II 2(1)(2) G D

Remote version: EEx d e [ia] ia [ib] ib IIC T6 / **Compact version:** EEx d [ia] [ib] IIC T6

SITRANS F M MAGFLO®

Current (31-32)			Relay (44,45,46)			Freq./pulse (56,57)			Profi (95, 96) (FISCO)			Dig. Input (77,78)		
<i>Passive</i>	IIB/IIC			IIB/IIC			IIB/IIC			IIB/IIC		IIB/IIC		
U _i	30 V		U _i	30 V		U _i	28 V		U _i	17.5 V		U _i	30 V	
I _i	100 mA		I _i	200 mA		I _i	100 mA		I _i	380 mA		I _i		
C _i	16.5 nF		C _i	0		C _i	12 nF		C _i	0		C _i	0	
L _i	36 µH		L _i	0		L _i	36 µH		L _i	0		L _i	0	
									P _i	5.32 W		P _i		
<i>Active</i>	IIB	IIC												
U _o	30 V	30 V												
I _o	87.8 mA	87.8 mA												
C _o	560 nF	66 nF												
L _o	18.41 mH	4.57 mH												
P _o	0.66 W	0.66 W												

MAG 1100 & MAG 3100 EEx ia IIB T3...T6



Category 2 equipment

Sensors may be installed in zone 1 and zone 2.

Sensors intrinsically safe data

See table below.

All MAG 1100 Ex and MAG 3100 Ex sensors have the following ratings and input parameters:

IS data sensor

MAG 1100 DN 6 - 100
MAG 3100 DN 15 - 300 Ex ib

Terminals MAG sensor	85-86 coil	82-83 electrode
U _i	28 V	30 V
I _i	140 mA	50 mA
P _i	2 W	0.5 W
L _i	2 mH	20 µH
C _i	50 nF	50 nF

Terminals MAG sensors	85-86 Coil circuit "ib"	82-83 Electrode circuit "ia"
U _i	30 V	30 V
I _i	140 mA	50 mA
P _i	2 W	0.5 W
L _i	2 mH	20 µH
C _i	50 nF	50 nF

MAG 3100 DN 350 - 2000 Ex e ia

Terminals MAG sensor	85-86 coil	82-83 electrode
U _i	-	
I _i	-	50 mA
P _i	-	0.5 W
L _i	-	
C _i	-	50 nF

2.6 Device identification

Example label, sensor remote MAG 3100 Ex

SITRANS F M MAGFLO MAG3100 Ex

Nom. Size

50

Type No.

7ME63302YF121AA0

Nom. Press.

40 BAR/580 PSI

Code No.

7ME633

Lining.

EPDM

Serial No.

7ME633016913T414

Electrode.

AISI 316 TI

Cal Factor.

1.99221

Flange.

EN1092-1, PN40

Enclosure.

IP67

Year

2004

Fluid Temp. °C

95°C / 203°F

User Tag No.

SIEMENS Flow Instruments Ltd. Magflo House, GL 10 2LU, ENGLAND

83A02.10

83A03.11

SIEMENS

SITRANS F M MAGFLO
MAG3100Ex

SIRA No.03ATEX1442X

EEx d [ia] [ib] IIB T4-T6

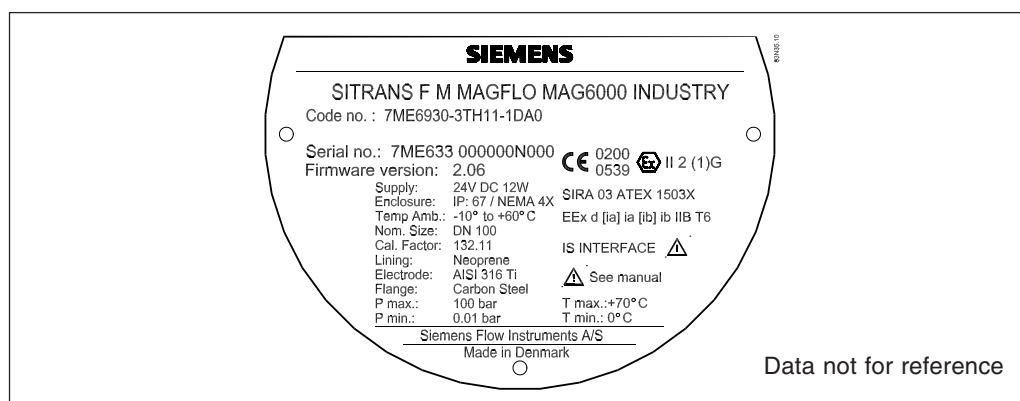
Ex ia TERMINALS: U_i =30V ; I_i =50mA ; P_i =0.5W ; C_i =50nF ; L_i =20µH.

Ex ib TERMINALS: U_i =28V ; I_i =140mA ; P_i =2W ; C_i =50nF ; L_i =2µH.

II 2 (1) (2) G

CE 0518

Example label, transmitter type MAG 6000 I (Ex d) compact



2.7 Ex approvals

MAG 1100 Ex

DN 6 - DN 100

SIRA 03 ATEX 1423X CE 0518

II 2 (1)(2) G

EEx [ia] [ib] IIB T4...T6,

Temperature ratings are as follows*:

T4 (max. surface < 135°C) for liquid temperatures lower than 100°C

T5 (max. surface < 100°C) for liquid temperatures lower than 82°C

T6 (max. surface < 85°C) for liquid temperatures lower than 67°C

For an ambient temperature of -20°C to + 50°C

MAG 3100 Ex

DN 15 - DN 300

SIRA 03 ATEX 1442X CE 0518

II 2 (1)(2) G

EEx d [ia] [ib] IIB T4...T6,

Temperature ratings are as follows*:

T4 (max. surface < 135°C) for liquid temperatures lower than 100°C

T5 (max. surface < 100°C) for liquid temperatures lower than 87°C

T6 (max. surface < 85°C) for liquid temperatures lower than 72°C

For an ambient temperature of -20°C to +50°C

MAG 3100 Ex

DN 350 - DN 2000

SIRA 03 ATEX 3339X CE 0518

II 2 GD IP65 T(**) °C

EEx e ia IIC T3...T6,

where (**) represents the pipeline temperature + 5K for dust approval

Temperature ratings are as follows*:

T3 (max. surface < 200°C) for liquid temperatures lower than 190°C

T4 (max. surface < 135°C) for liquid temperatures lower than 125°C

T5 (max. surface < 100°C) for liquid temperatures lower than 90°C

T6 (max. surface < 85°C) for liquid temperatures lower than 75°C

For an ambient temperature of -20°C to +40°C

MAG 6000 I (Ex d)

For use with **MAG 3100 Ex sizes DN 15 - DN 300**

For use with **MAG 1100 Ex (all sizes)**

For compact and remote mounting DN 6 - DN 300:

SIRA 03 ATEX 1503X

II 2 (1) (2) G D

Remote version: EEx d [ia] [ib] IIB T6 / **Compact version:** EEx d [ia] [ib] IIB T6

For use with **MAG 3100 Ex sizes DN 350 - DN 2000**

SIRA 03 ATEX 2072X

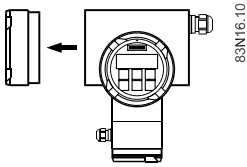
II 2 (1) (2) G D

EEx d e [ia] [ib] IIC, T6

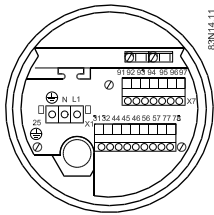
Remote version: EEx d e [ia] [ib] IIC T6 / **Compact version:** EEx d [ia] [ib] IIC T6

* Temperature ratings may be limited by the lining selected, see section 4.

3.1 Transmitter type MAG 6000 I

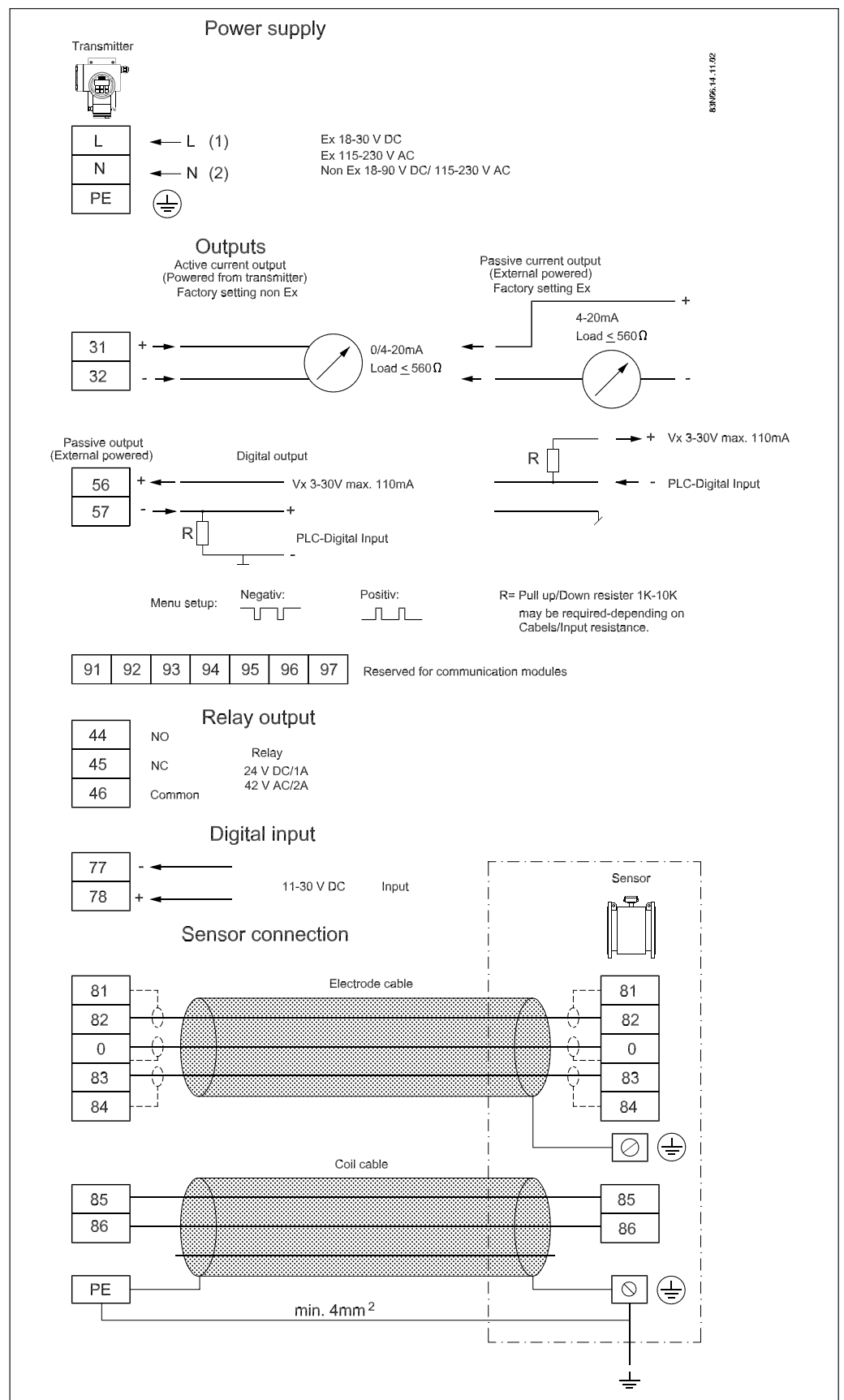


83N16.10



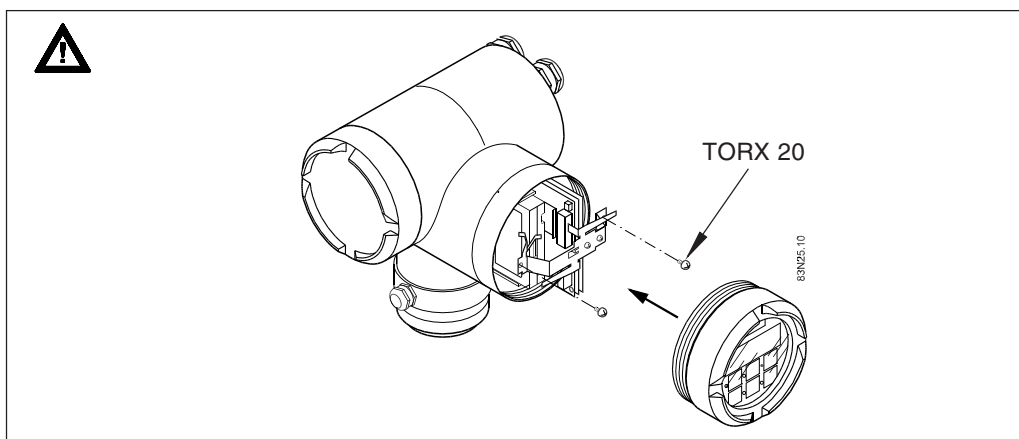
83N14.11

For Ex intrinsically safe specifications, refer to section 2.5

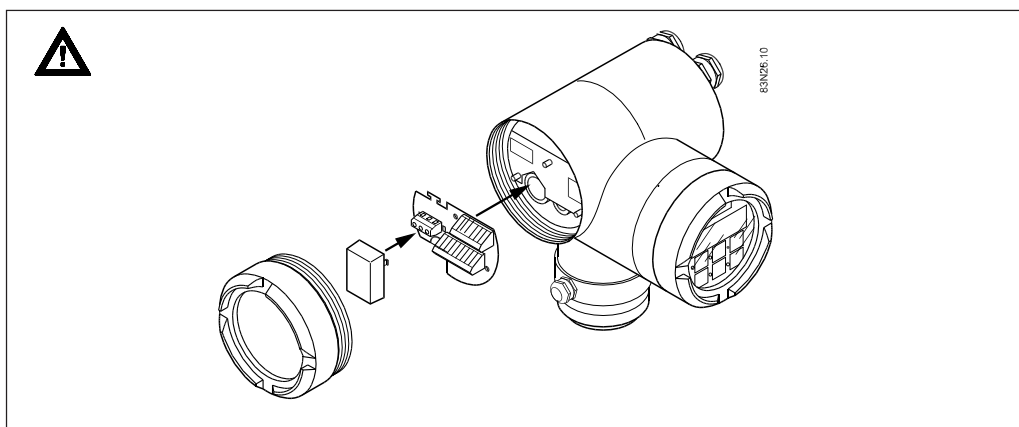


Potential Hazards Grounding

The mains protective earth wire must be connected to the PE terminal in accordance with the diagram (class 1 power supply).



When reassembling the unit, make sure that the 2 screws are properly tightened in order to ensure a correct assembly and a proper ground connection.



Cover/insulate the power supply terminals with the plastic cover (to secure sufficient insulation).

Installation



- 1) Mains supply 115 to 230 V AC from building installation Class II. A switch or circuit-breaker (max. 15 A) shall be included in the building installation. It must be in close proximity to the equipment and within easy reach of the OPERATOR, and it shall be marked as the disconnecting device for the equipment.
- 2) **The mains protective earth wire must be connected to the PE \oplus terminal, if the earth wire is not connected, personnel can be exposed to 115V/230V.**
Required cable min. AGW16 or 1.5 □ Cu wire.

For field wiring installation **National Installation Code** shall be met of the country, where the flowmeters are installed.

Main voltage terminals must be out of reach for OPERATOR to avoid any hazards!

Intrinsically safe terminals!

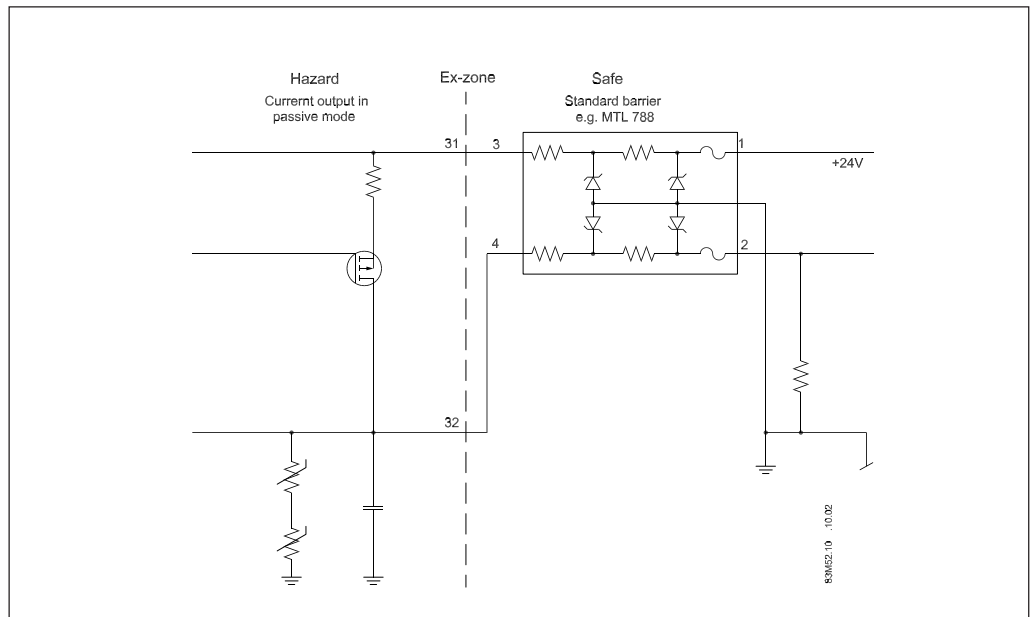
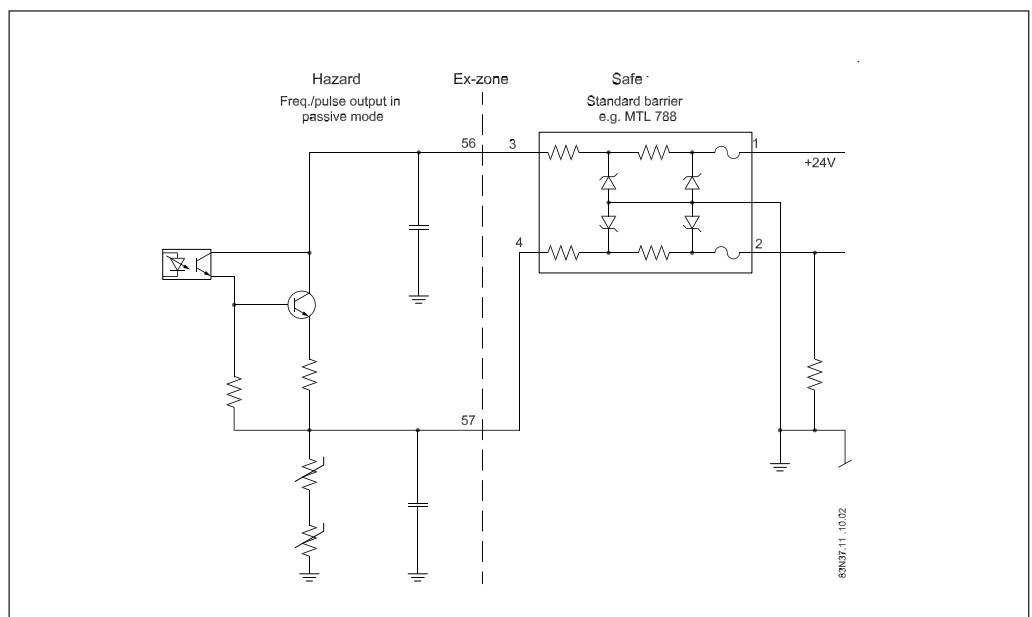
It is an absolute requirement that the wires/terminals of the intrinsically safe circuits **cannot** get into contact with the wires of the other cables. The distance between cables/wires therefore must be at least 50 mm or otherwise protected.

It is recommended to fasten the cables/wires in a way that they, even in case of an error, **cannot** get into contact with each other. Make the wire ends as short as possible.

Digital output

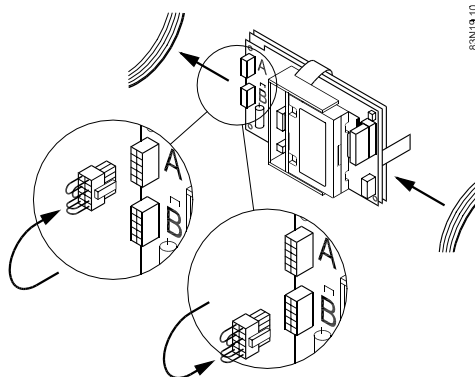
If the internal resistance of the loads exceeds 10K Ω , it is recommended to connect an external 1-10 K Ω load resistor in parallel to the load.

3.2 Installation examples

Current output in passive mode**Frequency/pulse output in passive mode****Active/passive current output**

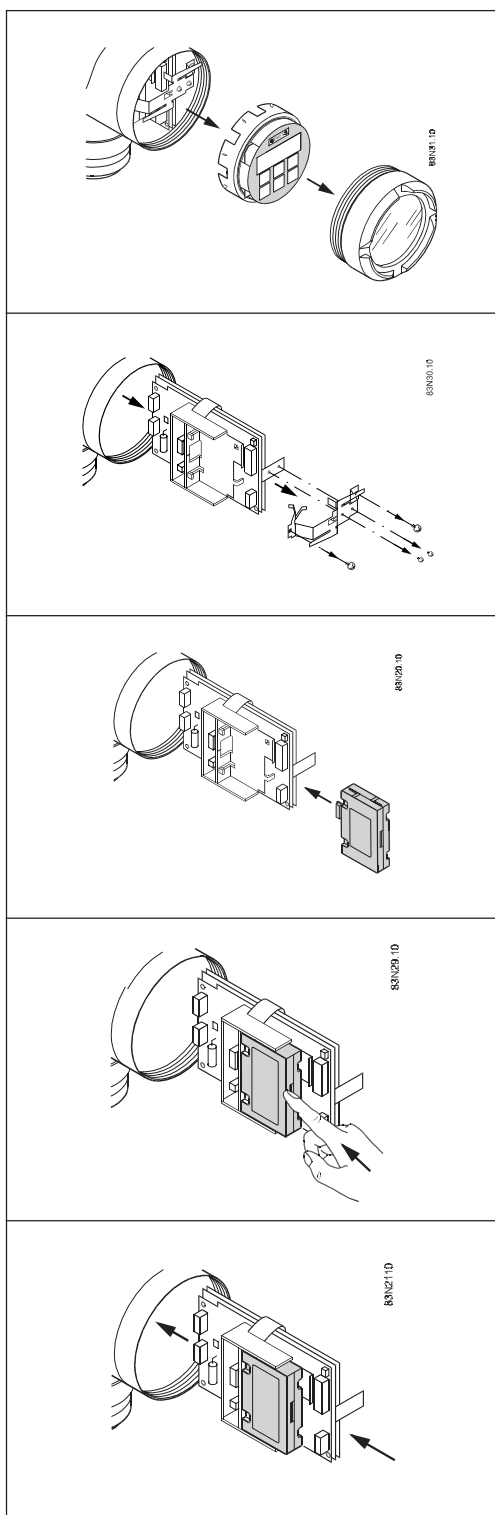
Passive A = Active
(factory default MAG 6000 I)

Passive B = Passive
(factory default MAG 6000 I) (Ex d)



At the MAG 6000 I the current output terminal 31, 32 can be switch between active mode (transmitter powered) to passive mode default (external powered).

3.2.1 Add-on communication module



1. Open transmitter.

2. Remove electronic insert.

3. Unpack the module and fit into module holder.

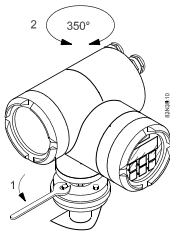
4. Press the add-on module in the direction shown, until it stops and is firmly seated in position.

5. Re-insert the complete transmitter module in reverse order.

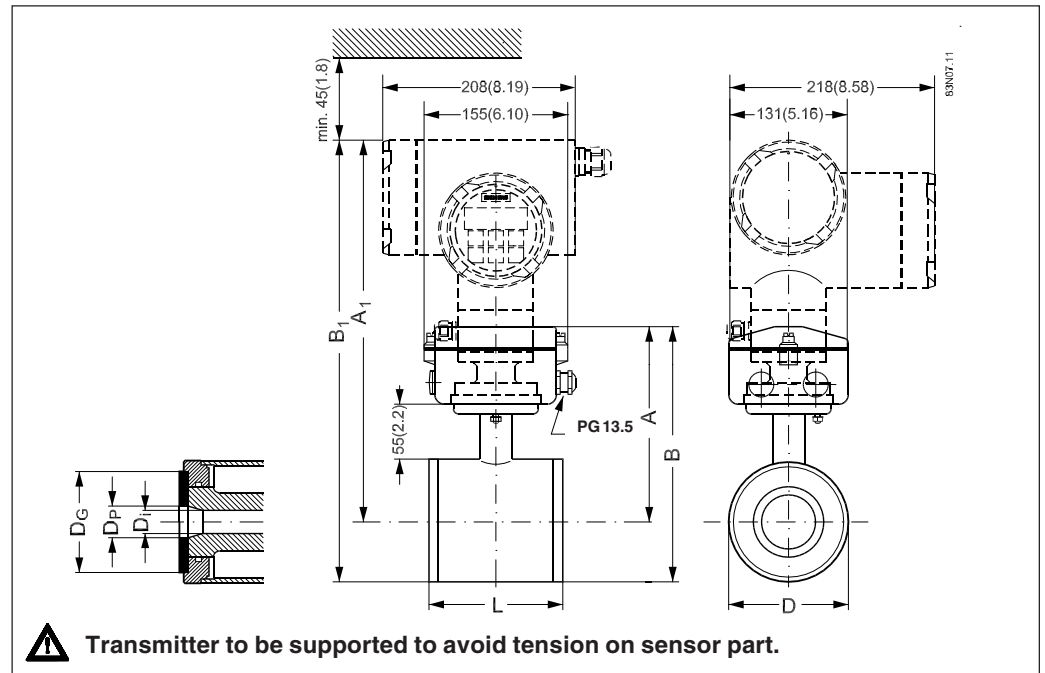
4. Technical data

4.1.1 Dimensions and weight

MAG 1100 standard & Ex



MAG 1100/6000 I compact/separate

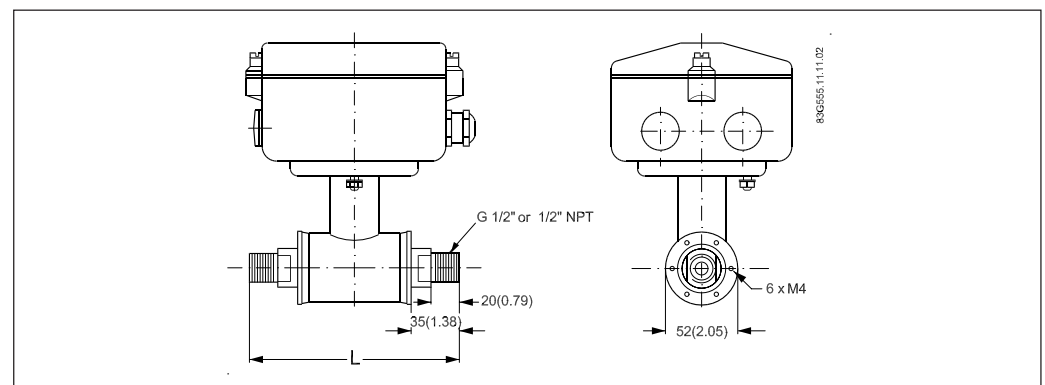


DN	A ¹⁾ [mm]	A ₁ ²⁾ [mm]	B ¹⁾ [mm]	B ₁ ²⁾ [mm]	D [mm]	D _i Ceramic [mm]	D _i (PFA) [mm]	D _p [mm]	D _G [mm]	Weight ³⁾ [kg]
2	161	312	186	336	48.3	2	N/A	17.3	34	2.2
3	161	312	186	336	48.3	3	N/A	17.3	34	2.2
6	161	312	186	336	48.3	6	N/A	17.3	34	2.2
10	161	312	186	336	48.3	10	10	17.3	34	2.2
15	161	312	186	336	48.3	15	16	17.3	40	2.2
25	169	319	201	351	63.4	25	26	28.5	56	2.7
40	181	329	223	371	84.0	40	38	43.4	75	3.4
50	189	338	240	389	101.6	50	50	54.5	90	4.2
65	199	347	259	407	120.0	65	66	62.5	112	5.5
80	205	354	271	420	133.0	80	81	82.5	124	7.0
100	218	367	297	446	159.0	100	100	107.1	150	10.0

1) 13 mm shorter when the AISI terminal box is used (Ex & high temperature 200 °C)

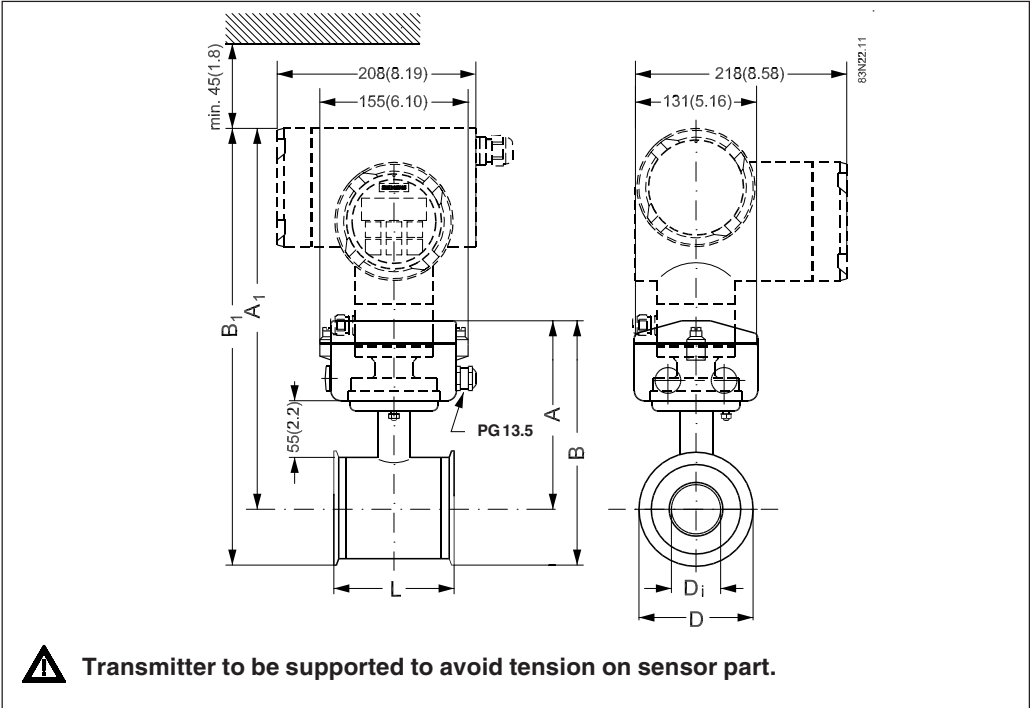
2) Ex version 8 mm higher

3) With transmitter type MAG 6000 I installed, weight is increased by approx. 5.5 kg



MAG 1100 FOOD

MAG 1100 FOOD / 6000 I, compact and separate



DN	L [mm]	A [mm]	A ₁ ¹⁾ [mm]	B [mm]	B ₁ ¹⁾ [mm]	D [mm]	D _i (Al ₂ O ₃) [mm]	D _i (PFA) [mm]	Weight ²⁾ [kg]
10	64	156	303,7	181	335,7	64	10	10	2.2
15	64	156	303,7	181	335,7	64	15	16	2.2
25	79	164	312,2	196	350,9	77.5	25	26	2.7
40	94	176	325,9	218	371,4	91	40	38	3.4
50	104	184	329,5	235	389,0	119	50	50	4.2
65	131	194	342,4	254	407,4	130	65	66	5.5
80	156	200	342,9	266	420,4	155	80	81	7.0
100	186	213	354,9	292	446,4	183	100	100	10.0

1) Ex version 8 mm higher

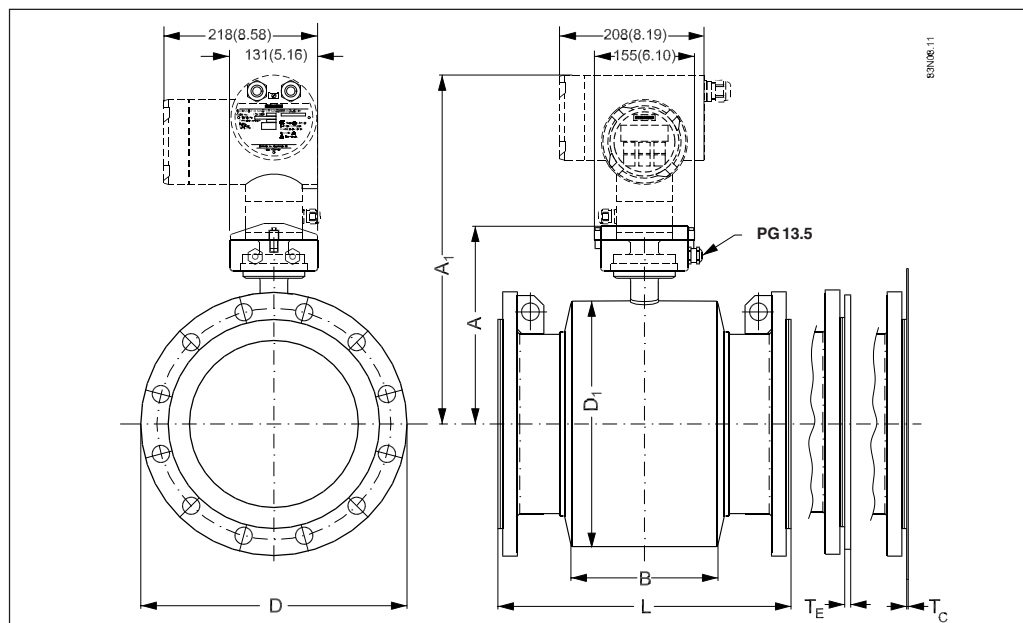
2) With transmitter type MAG 6000 I installed, weight is increased by approx. 5.5 kg

4.1.2 Sensor MAG 1100 Ex

Type		Flangeless sensor (Wafer design)
Nominal size	<i>mm</i>	DN 6, 10, 15, 25, 40, 50, 65, 80, 100
Operating pressure		DN 6 - DN 65: 40 bar, DN 80: 37.5 bar, DN 100: 30 bar Vacuum: 1×10^{-6} bar
Temperature of medium		–20°C to +100°C
Temperature shock		(Duration > 1 min.):
<i>(Ceramic liner)</i>		DN 6, 10, 15, 25: Max. $\Delta T \leq 15^\circ\text{C}/\text{min.}$
		DN 40, 50, 65: Max. $\Delta T \leq 10^\circ\text{C}/\text{min.}$
		DN 80, 100: Max. $\Delta T \leq 5^\circ\text{C}/\text{min.}$
		(Duration ≤ 1 min., followed by 10 min. rest):
		DN 6, 10, 15, 25: Max. $\Delta T \leq 80^\circ\text{C}$
		DN 40, 50, 65: Max. $\Delta T \leq 70^\circ\text{C}$
		DN 80, 100: Max. $\Delta T \leq 60^\circ\text{C}$
Ambient temperature		Remote transmitter: –40°C to +100°C
Liner		Aluminium oxide Al_2O_3 (ceramics)
Electrodes		Platinum with gold/titanium brazing alloy
Enclosure		Stainless steel AISI 316 L (1.4404)
Terminal box		Stainless steel AISI 316 (1.4436)
Fixing studs		Stainless steel AISI 304 (1.4301)
		Number and size to EN 1092-1:2001
Mating flanges		EN 1092-1:2001, ANSI B16.5 class 150 and 300 or equivalent
Gaskets	<i>Standard</i>	EPDM (max. 150°C, PN 40)
	<i>Option</i>	Graphite (max. 200°C, PN 40)
	<i>Option</i>	PTFE (max. 130°C, PN 25)
Cable entries		4 PG 13.5
Enclosure rating	<i>Standard</i>	IP67 to EN 60529 (NEMA 4X) (1 m w.g for 30 min.)
	<i>Option</i>	IP68 to EN 60529 (NEMA 6) (10 m w.g. cont.)
Mechanical load		18-1000 Hz random in all directions to EN 60068-2-36
<i>(vibration)</i>		Sensor: 3.17 G/Compact Ex d: 1.14 G
Test pressure		80 bar ($2 \times \text{PN}$)
Ex approvals		See section 2.7; I_s interface data see section 2.5
Excitation frequency		DN 6 - 65: 6.25 Hz
		DN 80 - 100: 3.125 Hz
Conforms to PED, LVT, EMC		PED - 97/23EC, LVD - 73/23 EEC + amendment 93/68/EEC, EMC - 89/336 EEX

4.2.1 Dimensions and weight MAG 3100 Ex

MAG 3100 Ex



DN	A ¹⁾	A ₁	B	D ₁	L ²⁾								AS 2129 E, AS 4087 PN 16-21- 35	AWWA C-207 Class D	T _C ³⁾	T _E ³⁾	Weight ⁴⁾
					EN 1092-1-2001						BS 1560/ ANSI 16.5						
					PN 6, 10	PN 16	PN 25	PN 40	PN 64	PN 100	Class 150	Class 300					
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
15	199	338	59	104	200	200	200	200	-	-	200	200	200		-	6	4
25	199	338	59	104	200	200	200	200	-	260	200	200	200		1.2	6	5
40	209	348	82	124	200	200	200	200	-	280	270	270	200		1.2	6	8
50	217	356	72	139	200	200	200	200	276	300	270	270	200		1.2	6	9
65	224	363	72	154	200	200	200	200	320	350	280	280	200		1.2	6	11
80	234	373	72	174	200	200	272	272	323	340	290	290	200 ⁵⁾		1.2	6	12
100	254	393	85	214	250	250	250	250	380	400	250	310	250		1.2	6	16
125	267	406	85	239	250	250	250	250	420	450	250	335	250		1.2	6	19
150	288	427	85	282	300	300	300	300	415	450	300	300	300		1.2	6	27
200	316	455	137	338	350	350	350	350	480	530	350	350	350		1.2	8	40
250	344	483	137	393	450	450	450	450	550	620	450	450	450		1.2	8	60
300	369	508	137	444	500	500	500	500	600	680	500	500	500		1.6	8	80
350	362	513	270	462	550	550	550	550	700	800	550	550	550	-	1.6	8	110
400	387	538	270	512	600	600	600	600	750	-	600	600	600	-	1.6	10	125
450	418	569	310	563	600	600	600	600	-	-	600	640	600	-	1.6	10	175
500	443	594	350	614	625	625	625	680	-	-	680	730	625	-	1.6	10	200
600	494	645	430	715	750	750	750	750	-	-	820	860	750	-	1.6	10	300
700	544	695	500	816	875	875	-	-	-	-	-	-	875	875	2.0	-	350
750	571	722	556	869	-	-	-	-	-	-	-	-	937	937	2.0	-	380
800	606	757	560	939	1000	1000	-	-	-	-	-	-	1000	1000	2.0	-	475
900	653	804	630	1042	1125	1125	-	-	-	-	-	-	1125	1125	2.0	-	560
1000	704	906	670	1146	1250	1250	-	-	-	-	-	-	1250	1250	2.0	-	700
1100	755	906	770	1248	1375	1375	-	-	-	-	-	-	-	-	2.0	-	1200
1200	810	961	792	1348	1500	1500	-	-	-	-	-	-	1500	1500	2.0	-	1250
1400	925	1076	1000	1675	1750	1750	-	-	-	-	-	-	-	-	3.0	-	1753
1500	972	1123	1020	1672	-	-	-	-	-	-	-	-	1875	1875	3.0	-	2600
1600	1025	1176	1130	1915	2000	2000	-	-	-	-	-	-	-	-	3.0	-	2341
1800	1123	1274	1250	1974	2250	2250	-	-	-	-	-	-	-	-	3.0	-	3253
2000	1223	1374	1375	2174	2500	2500	-	-	-	-	-	-	-	-	3.0	-	4060

¹⁾ 13 mm shorter with AISI terminal box (Ex and high temperature)

²⁾ When earthing flanges are used, the thickness of the earthing flange must be added to the built-in length

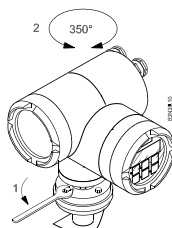
³⁾ T_C = Type C grounding ring, T_E = Type E grounding ring

⁴⁾ Weights are approx. and for PN 16 without transmitter

⁵⁾ PN 35 = 272

D = Outside diameter of flange, see flange tables

4.2.2 Sensor MAG 3100 Ex



Type	Sensor with flanges		
Nominal size <i>mm</i>	DN 15 - DN 2000		
Temperature of medium¹⁾	Temperature classification		
Liner:	T3 + T4	T5	T6
Neoprene (standard)	0 to 70°C	0 to 70°C	0 to 70°C
EPDM ²⁾	-10 to 95°C	-10 to 90°C	-10 to 75°C
Linatex® rubber	-20 to 70°C	-20 to 70°C	-20 to 70°C
Ebonite ²⁾	0 to 95°C	0 to 90°C	0 to 75°C
PTFE	-20 to 100°C	-20 to 90°C	-20 to 75°C
Ambient temperature	Remote transmitter: -20°C to 60°C		
Operating pressure³⁾ [abs.bar]			
Liner:			
Neoprene	0.01 to 100 bar		
EPDM	0.01 to 40 bar		
Linatex®	0.01 to 40 bar		
Ebonite	0.01 to 100 bar		
PTFE teflon:			
DN 15 to 600:	0.3 to 40 bar		
Excitation frequency	DN 15 - 65: 6.25 Hz DN 80/100: 3.125 Hz DN 125 - 300: 1.5625 Hz DN 350 - 1200: 3.125 Hz		
Enclosure rating <i>Standard</i>	IP67 to EN 60529 (NEMA 4X) (1 m w.g for 30 min.)		
<i>Option</i>	IP68 to EN 60529 (NEMA 6) (10 m w.g. cont.)		
Cable entries	4 Pg 13.5		
Mechanical load	18-1000 Hz random, 3.17 G rms in all directions to EN 60068-2-36		
Test pressure	1.5 × PN		
Flanges <i>Standard</i>	DN 15-50: PN 40 DN 65-150: PN 16 DN 200-1000: PN 10 DN 1100 -2000: PN 6		
EN 1092-1:2001 ⁴⁾			
Raised face			
<i>Option</i>	DN 65-1000: PN 6 DN 1200-2000: PN 10 DN 200-2000: PN 16 DN 200-600: PN 25 DN 65-600: PN 40 DN 50-400: PN 63 DN 25-350: PN 100		
ANSI B 16.5 (~BS 1560)	3/4"-24": Class 150 (20 bar) 3/4"-24": Class 300 (50 bar)		
AS 2129	3/4"-48": Table D/E		
AS 4087	PN 16 (DN 50 - 1200, 14 bar) PN 21 (DN 50 - 600, 21 bar) PN 35 (DN 50 - 600, 35 bar)		
AWWA C-207	28"-78": Class D (10 bar)		
Electrodes <i>Standard</i>	AISI 316 Ti (1.4571)		
<i>Option</i>	Hastelloy C-276, Platinum / Iridium, Titanium, AISI 316 Ti Ceramic Coated, Tantalum		
PE - electrodes <i>Standard</i>	As measuring electrodes (except PTFE)		
Measuring pipe <i>Standard</i>	AISI 304 (1.4301)		
<i>Option</i>	AISI 316 L (1.4404)		
Flange and housing material <i>Standard</i>	Carbon steel Corrosion-resistant two-component coating (min. 150 µm)		
<i>Option</i>	AISI 304 (1.4301) flanges and carbon steel housing. Coating as above		
<i>Option</i>	AISI 316 L (1.4404) flanges and housing		
Ex-approval	See section 2.7; I _s interface data see section 2.5		
Conforms to PED, LVD, EMC	PED - 97/23EC, LVD - 73/23 EEC + amendment 93/68/EEC, EMC - 89/336 EEX		

¹⁾ The maximum fluid temperature may be further limited by the approval temperature ratings, see section 2.7

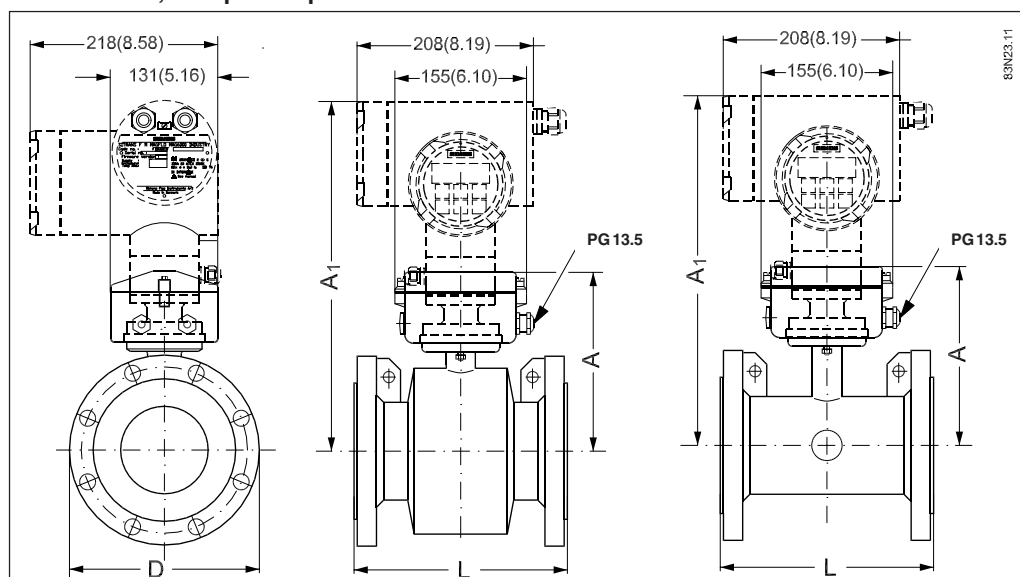
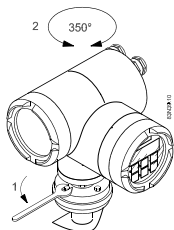
²⁾ With WRC (Water Research Council, UK) approval

³⁾ Maximum operating pressure decreases with increasing operating temperature and with stainless steel flanges

⁴⁾ EN 1092-1, DIN 2501 & BS 4504 have the same mating dimensions




4.2.3 Dimensions and weight MAG 5100 W

MAG 5100 W, compact/separate



Nominal size		A		A ₁		L									
						PN 10		PN 16		PN 40		Class 150		AWWA	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
25	1"	187	7.4	340	13.4	N/A	N/A	N/A	N/A	200	7.9	200	7.9	N/A	N/A
40	1½"	197	7.8	350	13.8	N/A	N/A	N/A	N/A	200	7.9	200	7.9	N/A	N/A
50	2"	188	7.4	341	13.4	N/A	N/A	200	7.9	N/A	N/A	200	7.9	N/A	N/A
65	2½"	194	7.6	347	13.7	N/A	N/A	200	7.9	N/A	N/A	200	7.9	N/A	N/A
80	3"	200	7.9	353	13.9	N/A	N/A	200	7.9	N/A	N/A	200	7.9	N/A	N/A
100	4"	207	8.1	360	14.2	N/A	N/A	250	9.8	N/A	N/A	250	9.8	N/A	N/A
125	5"	217	8.5	370	14.6	N/A	N/A	250	9.8	N/A	N/A	250	9.8	N/A	N/A
150	6"	232	9.1	385	15.2	N/A	N/A	300	11.8	N/A	N/A	300	11.8	N/A	N/A
200	8"	257	10.1	410	16.1	350	13.8	350	13.8	N/A	N/A	350	13.8	N/A	N/A
250	10"	284	11.2	437	17.2	450	17.7	450	17.7	N/A	N/A	450	17.7	N/A	N/A
300	12"	310	12.2	463	18.2	500	19.7	500	19.7	N/A	N/A	500	19.7	N/A	N/A
350	14"	362	14.3	515	20.3	550	21.7	550	21.7	N/A	N/A	550	21.7	N/A	N/A
400	16"	387	15.2	540	21.3	600	23.6	600	23.6	N/A	N/A	600	23.6	N/A	N/A
450	18"	418	16.5	571	22.5	600	23.6	600	23.6	N/A	N/A	600	23.6	N/A	N/A
500	20"	443	17.4	596	23.5	625	24.6	625	24.6	N/A	N/A	680	26.8	N/A	N/A
600	24"	494	19.4	647	25.5	750	29.5	750	29.5	N/A	N/A	820	32.3	N/A	N/A
700	28"	544	21.4	697	27.4	875	34.4	875	34.4	N/A	N/A	N/A	N/A	875	34.4
750	30"	571	22.5	724	28.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	937	36.9
800	32"	606	23.9	759	29.9	1000	39.4	1000	39.4	N/A	N/A	N/A	N/A	1000	39.4
900	36"	653	25.7	806	31.7	1125	44.3	1125	44.3	N/A	N/A	N/A	N/A	1125	44.3
1000	40"	704	27.7	857	33.7	1250	49.2	1250	49.2	N/A	N/A	N/A	N/A	1250	49.2
	42"	704	27.7	857	33.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1250	49.2
1100	44"	755	29.7	908	35.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1375	54.1
1200	48"	810	31.9	963	37.9	1500	59.1	1500	59.1	N/A	N/A	N/A	N/A	1500	59.1

4.2.4 Sensor MAG 5100 W

			
Type	Sensor with flanges		
Design	Full bore sensor	Coned bore sensor	Full bore sensor
Nominal size mm	25-40	50-300	350-1200
Liner	Hard elastomer ¹⁾ (hard rubber)	Composite elastomer ¹⁾ (hard & soft rubber)	Hard elastomer ¹⁾ (hard rubber)
Liner approvals	WRAS (WRc), NSF		
Medium temperature	-5 to 70°C (23 to 160°F) ²⁾		
Ambient temperature			
Remote transmitter	-40 to 100°C		
Compact transmitter	-20 to 50°C		
Operating pressure	0.01 to 40 bar	0.03 to 20 bar	0.01 to 16 bar
Excitation frequency	12.5 Hz	50-65 mm: 12.5 Hz	3.125 Hz
		80-150 mm: 6.25 Hz	
		200-300 mm: 3.125 Hz	
Enclosure rating <i>Standard</i>	IP 67 to EN 60529 1 m w.g. for 30 minutes		
	<i>Option</i> IP 68 to EN 60529 10 m w.g. continuously		
Cable entries	4 Pg 13.5		
Mechanical load	18-1000 Hz random, 3.17 G rms in all directions to EN 60068-2-36		
Test pressure	1.5 × nominal pressure		
Flanges			
EN 1092-1 <i>Standard</i>	PN 40	50-150 mm: PN 16	PN 10
		200-300 mm: PN 10	
<i>Option</i>		200-300 mm: PN 16	PN 16
ANSI B16.5 <i>Standard</i>	Class 150 lb	Class 150 lb	14"-24": Class 150 lb
AWWA C-207 <i>Standard</i>			28"-48": Class D
AS 4087 <i>Standard</i>	PN 16 (DN 50 - 1200, 14 bar)		
Pressure drop at 3 m/sec.	As straight pipe	Max. 25 mbar	As straight pipe
Electrodes	AISI 316 Ti (1.4571)		
PE/grounding electrodes			
<i>Standard</i>	AISI 316 Ti (1.4571)		
Measuring pipe/meter body	AISI 304 (1.4301)	Composite elastomer	AISI 304 (1.4301)
Flanges	Carbon steel		
Housing	Carbon steel		
Surface finish	Two component epoxy min. 150 microns	Polyester powder coat min. 100 microns	Two component epoxy min. 150 microns
Colour	Siemens light basic 700		
Approvals <i>Conforms to</i>	PED - 97/23EC, LVD - 73/23 EEC + amendment 93/68/EEC, EMC - 89/336 EEX ³⁾		

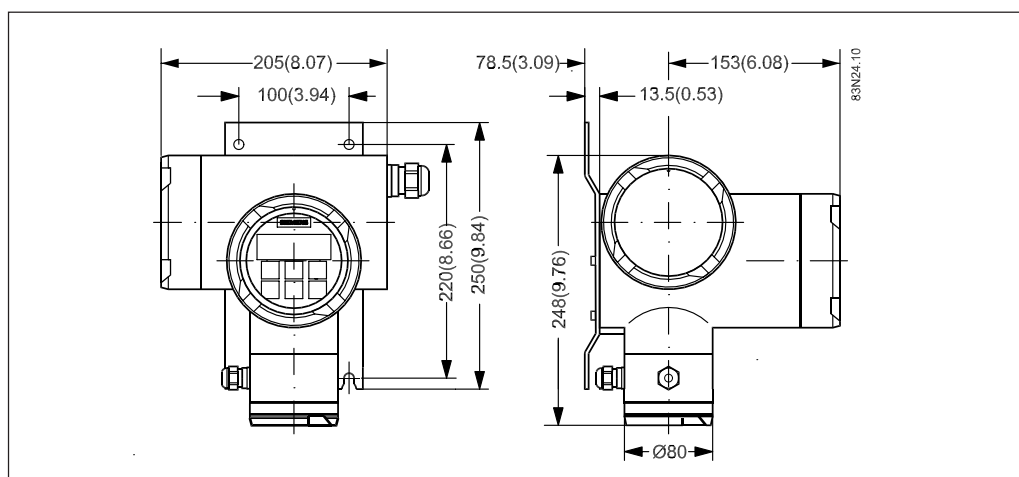
1) Nitrile, NBR

2) Peak temperature up to +90°C (194°F) in periods < 1 hour

3) For sizes greater than 600 mm PED conformity is available as a cost added option, the basic unit will only carry the LVD (Low Voltage Directive) and EMC approval.

4.3 Transmitter type MAG 6000 I Accuracy 0.25%

ENGLISH



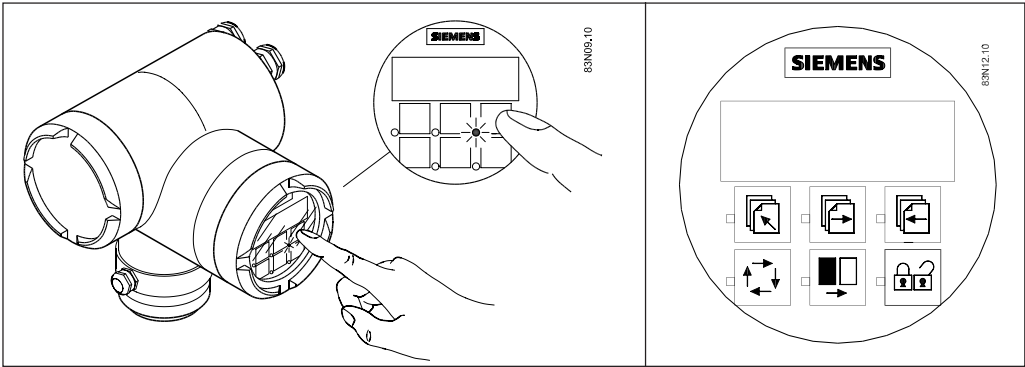
Current output (Active or passive)	Current	0-20 mA, 4-20 mA or 4-20 mA + alarm
	Load	< 560 ohm
	Time constant	0.1-30 s adjustable
		Ex-version Passive default / Non Ex-version Active default
Digital output	Frequency	0-10 kHz, 50% duty cycle
	Time constant	0.1-30 s adjustable
	Passive	3-30 V DC, $1\text{ K}\Omega \leq R_{\text{load}} \leq 10\text{ K}\Omega$
Ex output characteristics (Terminals: 56-57)		Refer to section 2.5
Relay	Time constant	Changeover relay, time constant same as current time constant
	Load	42 V AC/2 A, 24 V DC/1A
Ex output characteristics (Terminals: 31-32)		Refer to section 2.5
Digital input		11-30 V DC, $R_i = 4.4\text{ K}\Omega$
	Activation time	50 ms
	Current	$I_{11\text{ V DC}} = 2.5\text{ mA}$, $I_{30\text{ V DC}} = 7\text{ mA}$
Functions		Flow rate, 2 totalizers, low flow cut-off, empty pipe cut-off, flow direction, error system, operating time, uni/bidirectional flow, limit switches, pulse output
Galvanic isolation		All inputs and outputs are galvanically isolated
Cut-off	Low flow	0-9.9% of maximum flow
	Empty pipe	Detection of empty pipe ¹⁾
Totalizer		Two eight-digit counters for forward, net or reverse flow
Display		Background illumination with alphanumerical text, 3 x 20 characters to indicate flow rate, totalized values, settings and faults
		Reverse flow indicated by negative sign
	Time constant	Time constant as current output time constant
Zero point adjustment		Automatic
Electrode input impedance		$> 1 \times 10^{14}\text{ }\Omega$
Excitation frequency		Sensor size depending pulsating DC current
Ambient temperature		Display version during operation: -20 to +60°C
		During storage: -40 to +70°C (RH max. 95%)
Communication	Standard	Prepared for customer mounted add-on modules
	Optional	HART, Profibus PA on Ex version
Compact	Enclosure material	Die cast Aluminium, painted
	Enclosure rating	IP67/NEMA 4X to EN 60529 and DIN 40050 (1 m w.g. for 30 minutes)
	Mechanical load	18-1000 Hz random, 3.17 G rms in all directions to EN 60068-2-36
EMC performance		EN 61326
Supply voltage		MAG 6000 I: 18-90 V DC / 115-230 V AC
		MAG 6000 I (Ex d): 115-230 V AC or 18-30 V DC
Power consumption		230 V AC: 21,5 VA
		24 V DC: 12 W, $I_N = 380\text{ mA}$, $I_{ST} = 1\text{ A}$ (3 ms)
Profibus PA (Terminals: 95-96)		Refer to section 2.5

¹⁾ Special cable required in separate mounted installation

4.4 Output characteristics
MAG 6000 I

Output characteristics 0-20 mA	Bidirectional mode		Unidirectional mode	
4-20 mA				
Frequency				
Pulse output				
Relay	Power down		Active	
Error relay	No error		Error	
Limit switch or direction switch	1 set point		2 set points	
	Low flow (Reverse flow)		Intermediate flow	
Batch on digital output	High flow (Forward flow)		High flow/ Low flow	
Batch on relay	Hold		Batch	

5. Commissioning
5.1 Keypad and display layout



With the capacitive touch keypad operation is achieved without any open lids. An LED light gives a feedback.

Keypad

The keypad is used to set the flowmeter. The function of the keys is as follows:

- TOP UP KEY This key (hold 2 sec.) is used to switch between operator menu and setup menu. In the transmitter setup menu, a short press will cause a return to the previous menu.
- FORWARD KEY This key is used to step forward through the menus. It is the only key normally used by the operator.
- BACKWARD KEY This key is used to step backward through the menus.
- CHANGE KEY This key changes the settings or numerical values.
- SELECT KEY This key selects the figures to be changed.
- LOCK/UNLOCK KEY This key allows the operator to change settings and gives access to submenus.

Display

The display is alphanumerical and indicates flow values, flowmeter settings and error messages. The upper line is for primary flow readings and will always show either flow rate, totalizer 1 or totalizer 2. The line is divided into 3 fields.

- S: Sign field
- P: Primary field for numerical value
- U: Unit field

The centre line is the title line (T) with individual information according to the selected operator or setup menu.

The lowest line is the subtitle line (ST) which either will add information to the title line or keep individual information independent of the title line.

F: The alarm field. Two flashing triangles will appear by a fault condition.

M: The mode field. The symbols indicate the following.

Communication mode	Basic settings	Operator active
Service mode	Output	Operator inactive
Operator menu	External input	
Product identity	Sensor characteristics	
Language mode	Reset mode	

L: The lock field. Indicates the function of the lock key.

Ready for change	Access to submenu
Value locked	RESET MODE: Zero setting of totalizers and initialization of setting

5.2 Menu build-up

The menu structure of a specific transmitter type is shown in a menu overview map. Details of how a specific parameter is set is shown in a menu detail map for the specific parameter. A detail map is valid for each type of transmitter if not indicated otherwise. The menu structure is valid for the title and subtitle line only. The upper line is for primary readings only and will always be active with either flowrate, totalizer 1 or totalizer 2.

The menu is built up in two parts. An **operator menu** and a **setup menu**.

Operator menu

The operator menu is for daily operation. The operator menu is customised in the operator menu setup. The transmitter always starts in operator menu No. 1. The page forward and page backward keys are used to step through the operator menus.

Setup menu

The setup menu is for commissioning and service only.

Access to the setup menu is gained by pressing the top up key for 2 seconds. The setup menu operates in two modes:

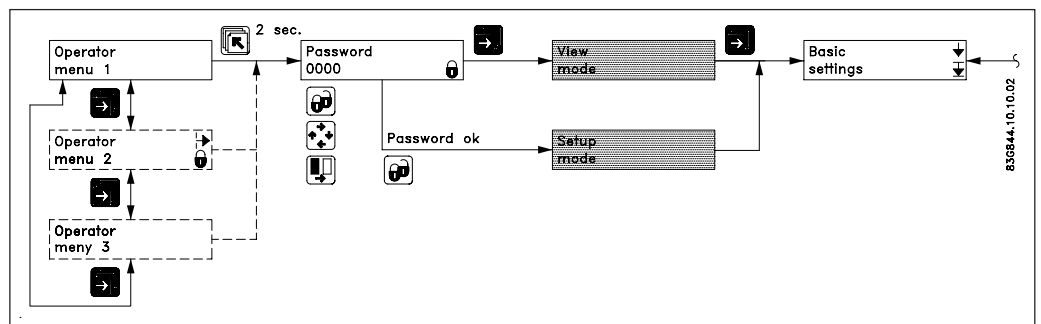
- View mode
- Setup mode

View mode is a read only mode. The pre-selected settings can only be scanned.

Setup mode is a read and write mode. The pre-selected settings can be scanned and changed. Access to the setup mode is password protected. The factory set password is 1000.

Access to a submenu in the set up menu is gained by the lock key. A short press on a top up key will bring you back to the previous menu. A long press (2 sec.) on the top up key will exit the setup menu and bring you back to operator menu No. 1.

5.2.1 Password



The **SETUP MENU** can be operated in two different modes:

VIEW MODE (Read only)

CHANGE MODE (Read and write mode)

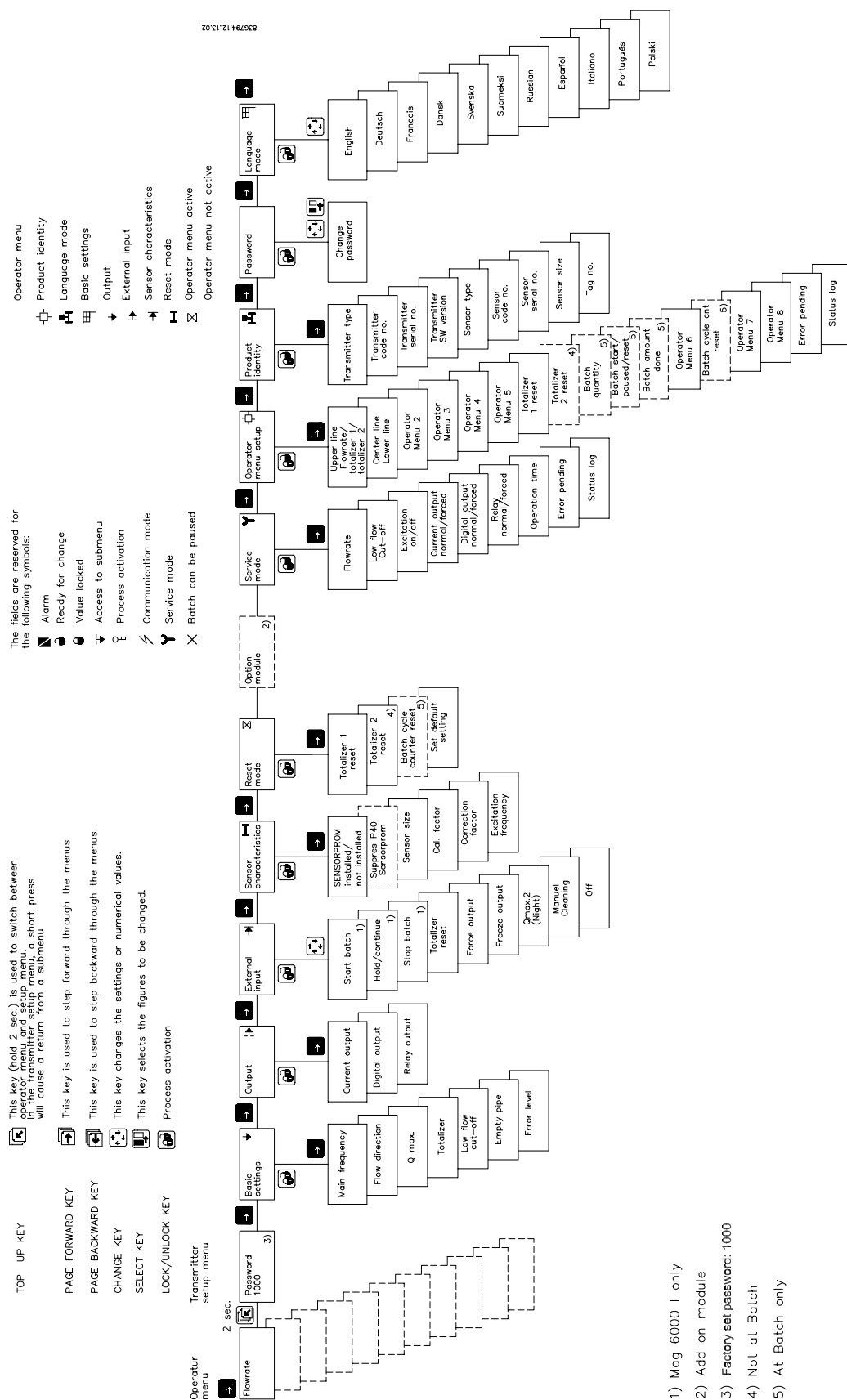
Access to view mode is always gained by pressing the forward key when in the password menu.

Access to change mode is password protected. The password is factory set to 1000, but can be changed to any value between 1 and 9999 in the change password menu.

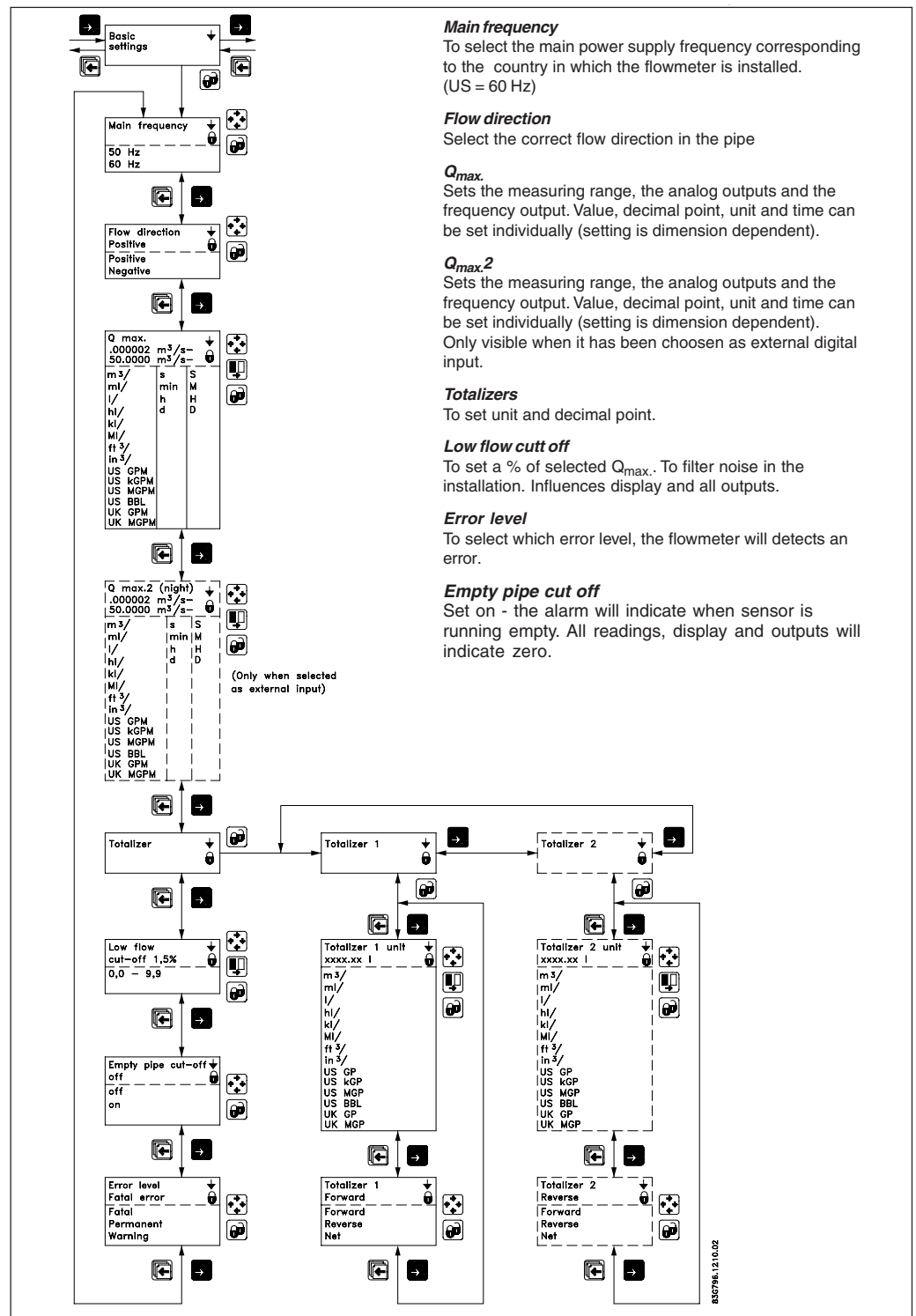
The factory setting of 1000 can be re-established as follows:

- Switch off power supply
- Press the TOP UP key and switch on the power supply
- Release the key after ROM and RAM tests are completed



The user code is now reset to 1000.





5.4 Basic settings



Comma for flow rate, totalizer 1 and totalizer 2 can be individually positioned.

- open the respective window.
- ensure that the cursor is positioned below the comma. Use the SELECT KEY .
- move the comma to the requested position. Use the CHANGE KEY .

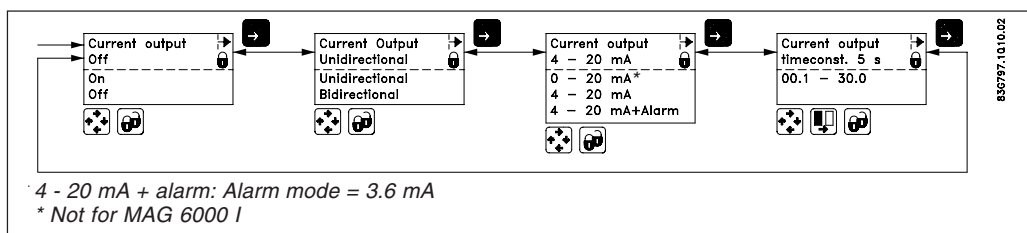
Units are changed by means of the CHANGE KEY  with the cursor placed below the unit selected. Select units (cursor moved) by means of the SELECT KEY .

Totalizer 2 is not visible when batch is selected as digital output.

$Q_{max.2}$ is only visible when it has been chosen as external input.

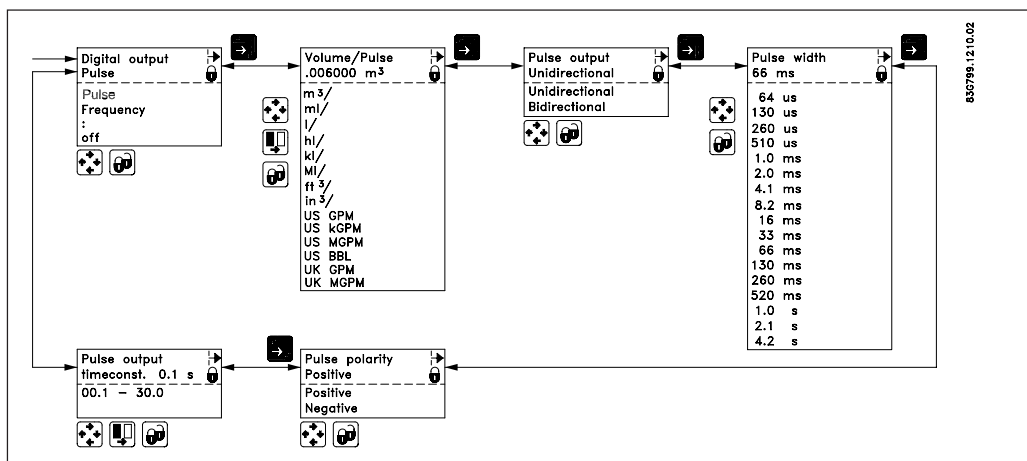
5.4.1
Outputs

Current output
Proportional to flowrate
(Terminal 31 and 32)

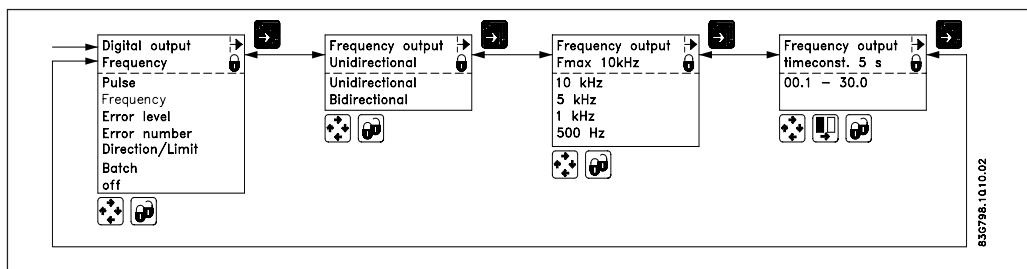


The current output must be set off when not used.

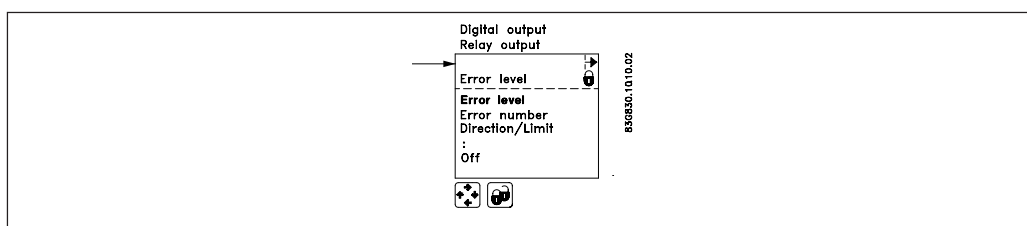
Digital output
Pulse/volume
(Terminal 56, 57)



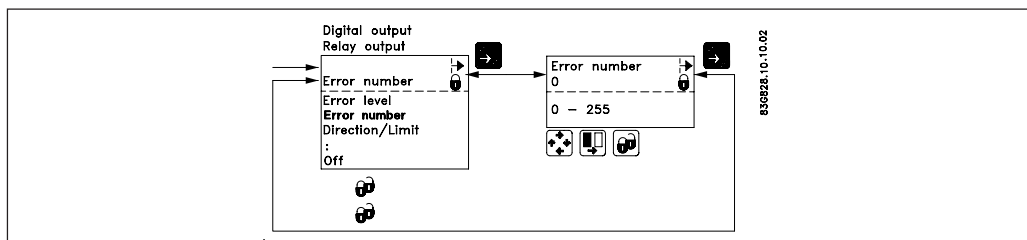
Digital output
Frequency
Proportional to flowrate
(Terminal 56, 57)

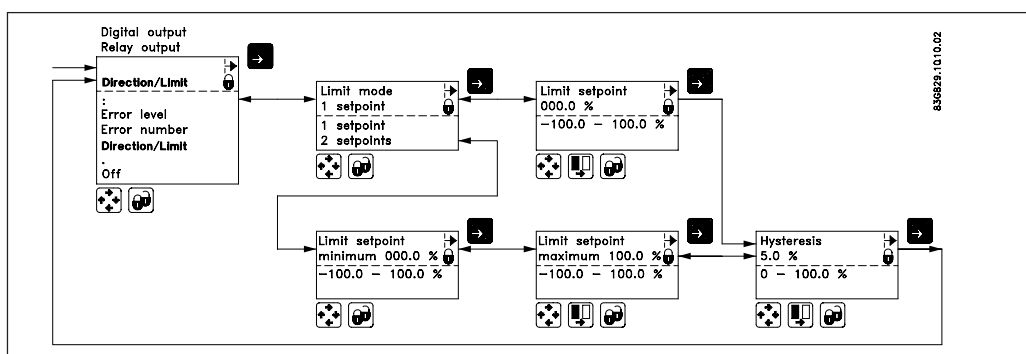
5.4.2
Digital and relay outputs

Error level



Error number

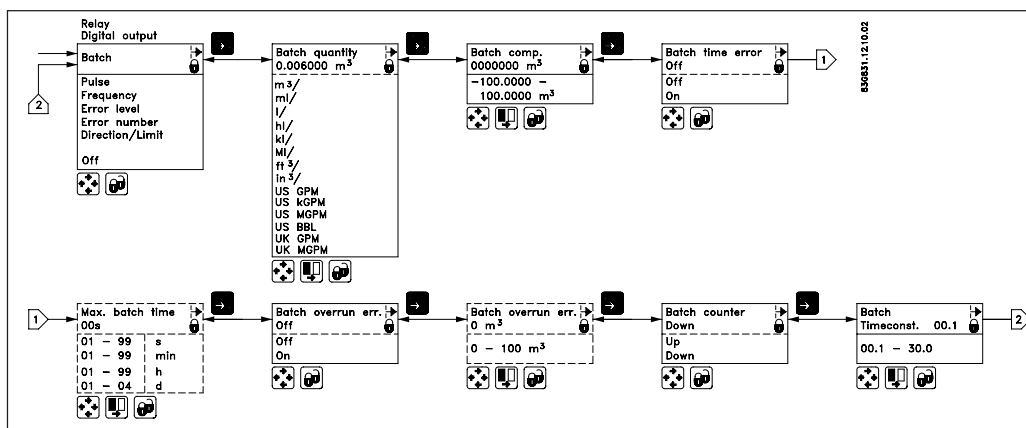


Limit/direction

Limit switches are available for both digital as well as relay output.

Direction mode: 1 set point at 0% flow; hysteresis 5%.

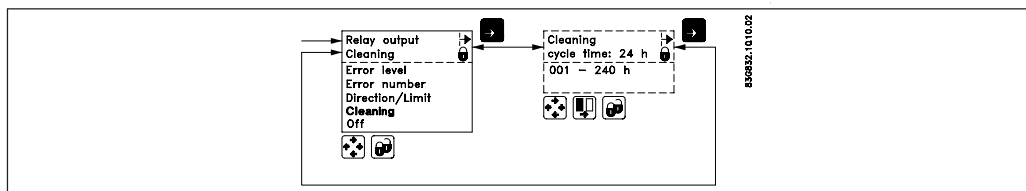
If 2 set points must activate 2 separate outputs, a single set point has to be selected individually for digital as well as relay outputs.

Batch**Note**

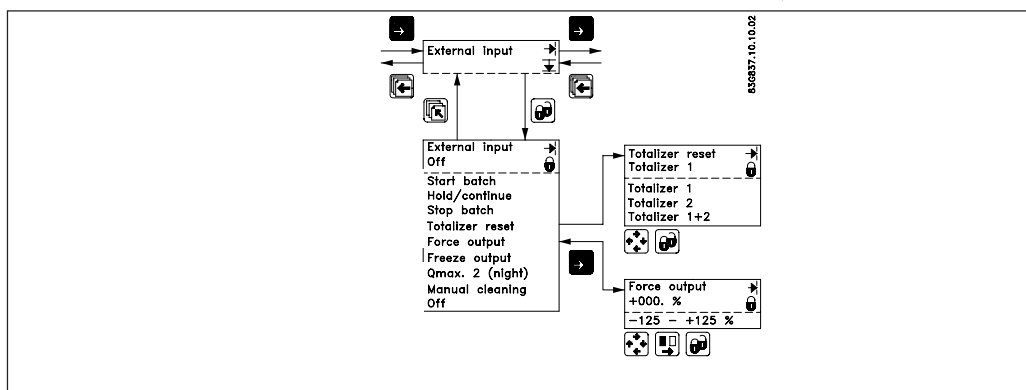
When batch function is on relay - the pulse/frequency output is not possible.

5.4.3**Relay outputs****Cleaning**

! Cleaning not possible with MAG 6000 I.

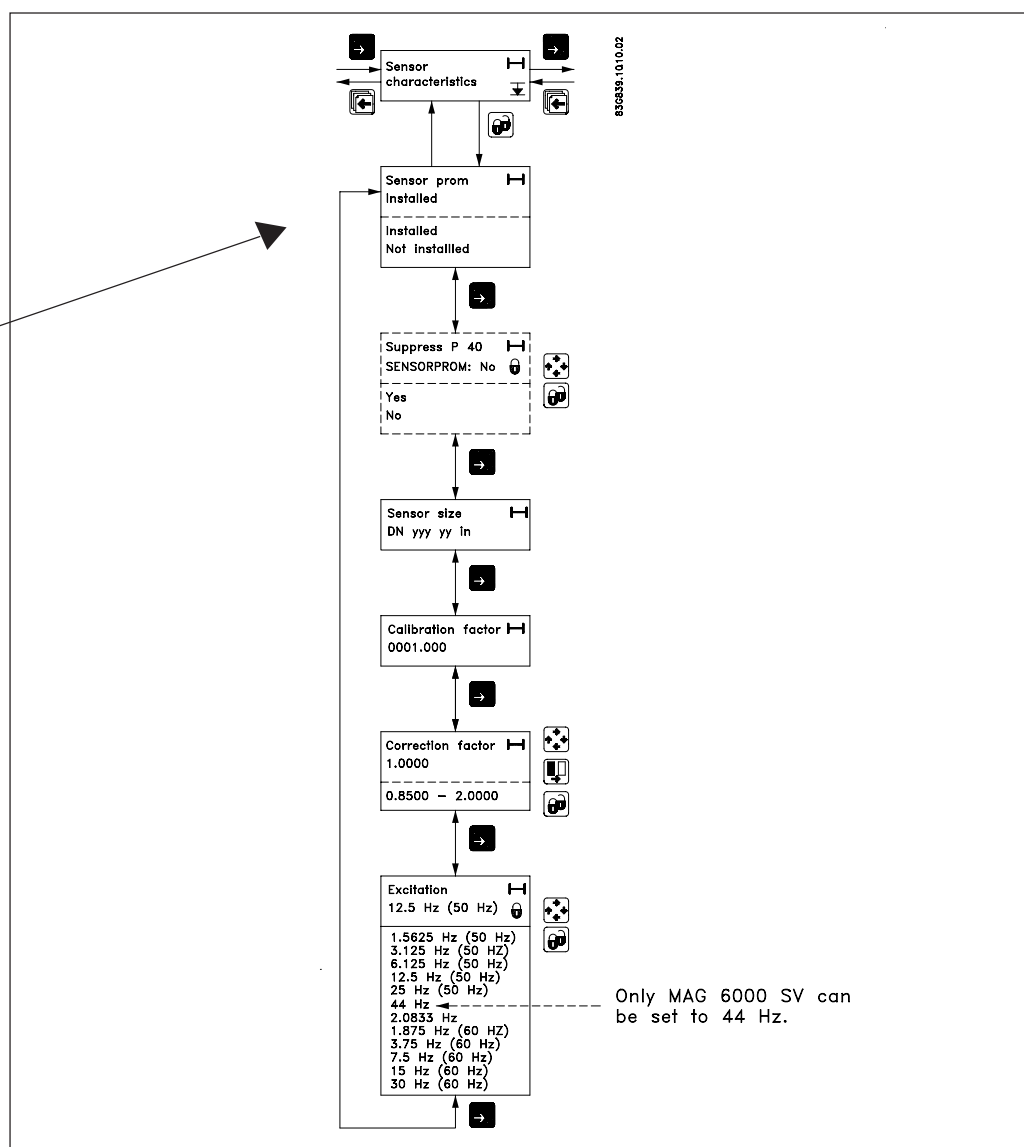


The relay output must always be used to operate the cleaning unit when a cleaning unit has been installed together with the transmitter. The relay output cannot be used for other purposes.

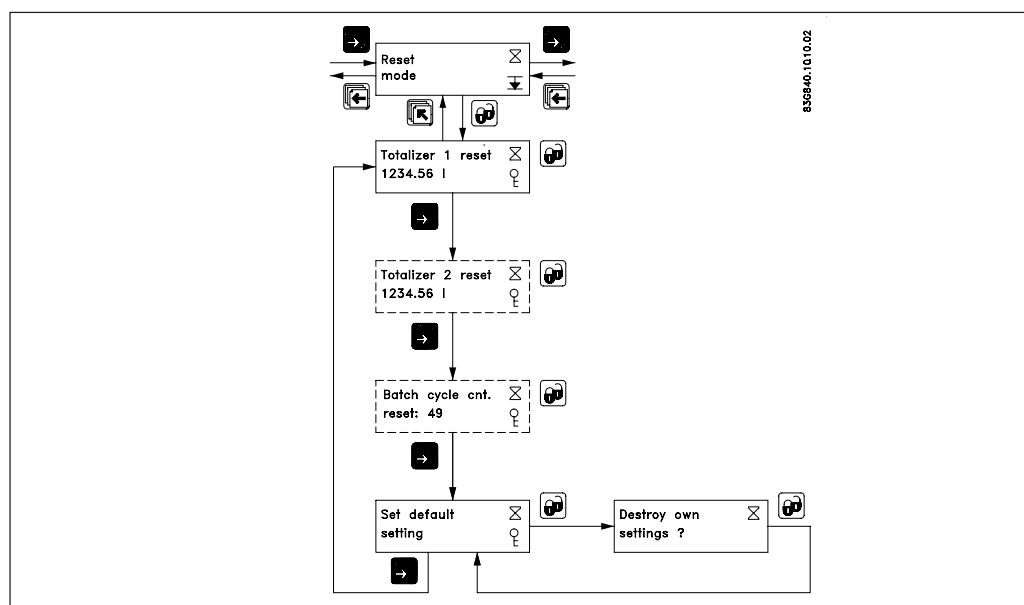
5.4.4**External input**

5.4.5 Sensor characteristics

If "SENSORPROM not installed" is shown, refer to chapter 6 (depending on type of mounting configuration).

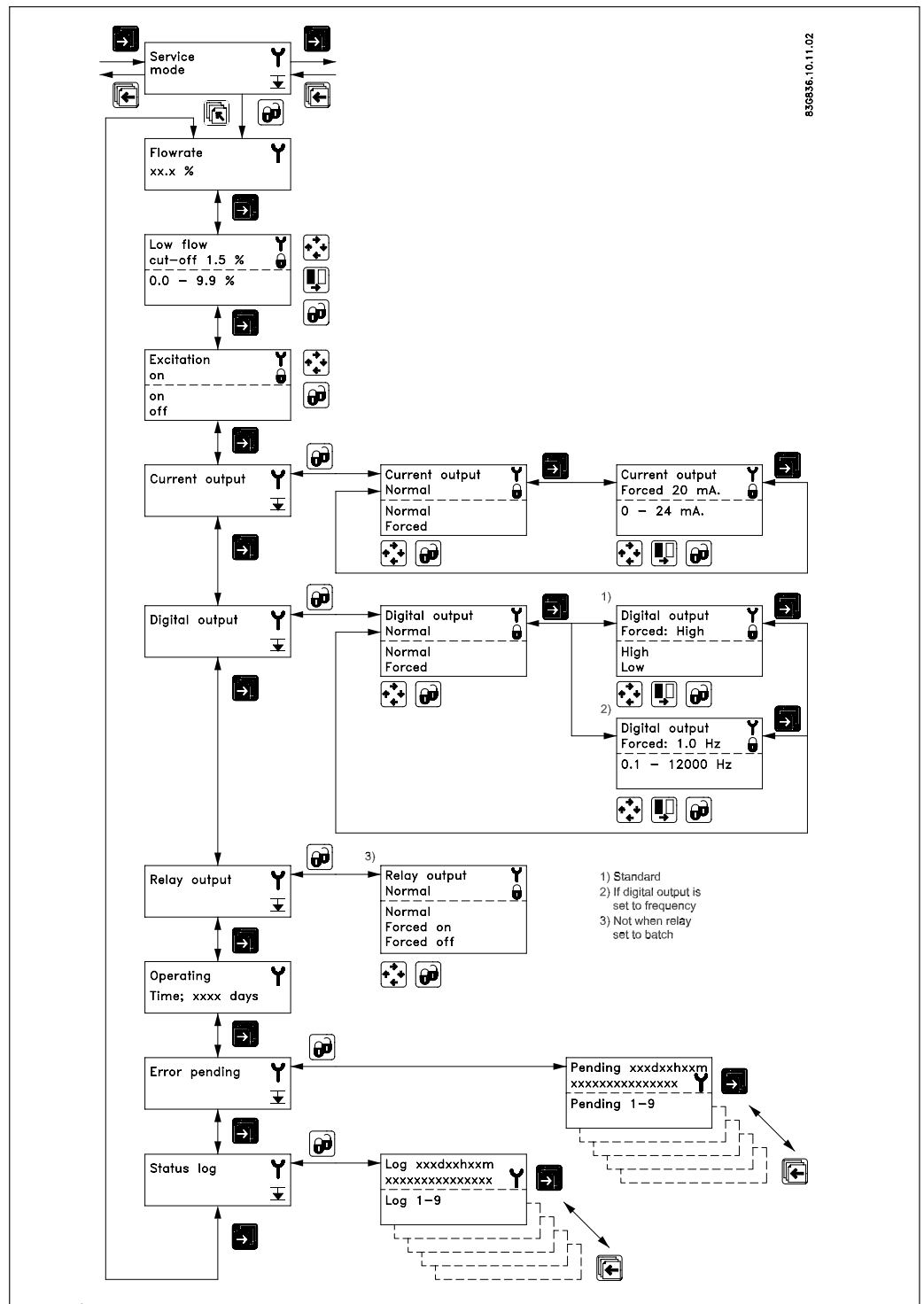


5.4.6 Reset mode



5.4.7

Service mode



All previous settings are reinitialised when service mode is exited using the top up key.

The error system

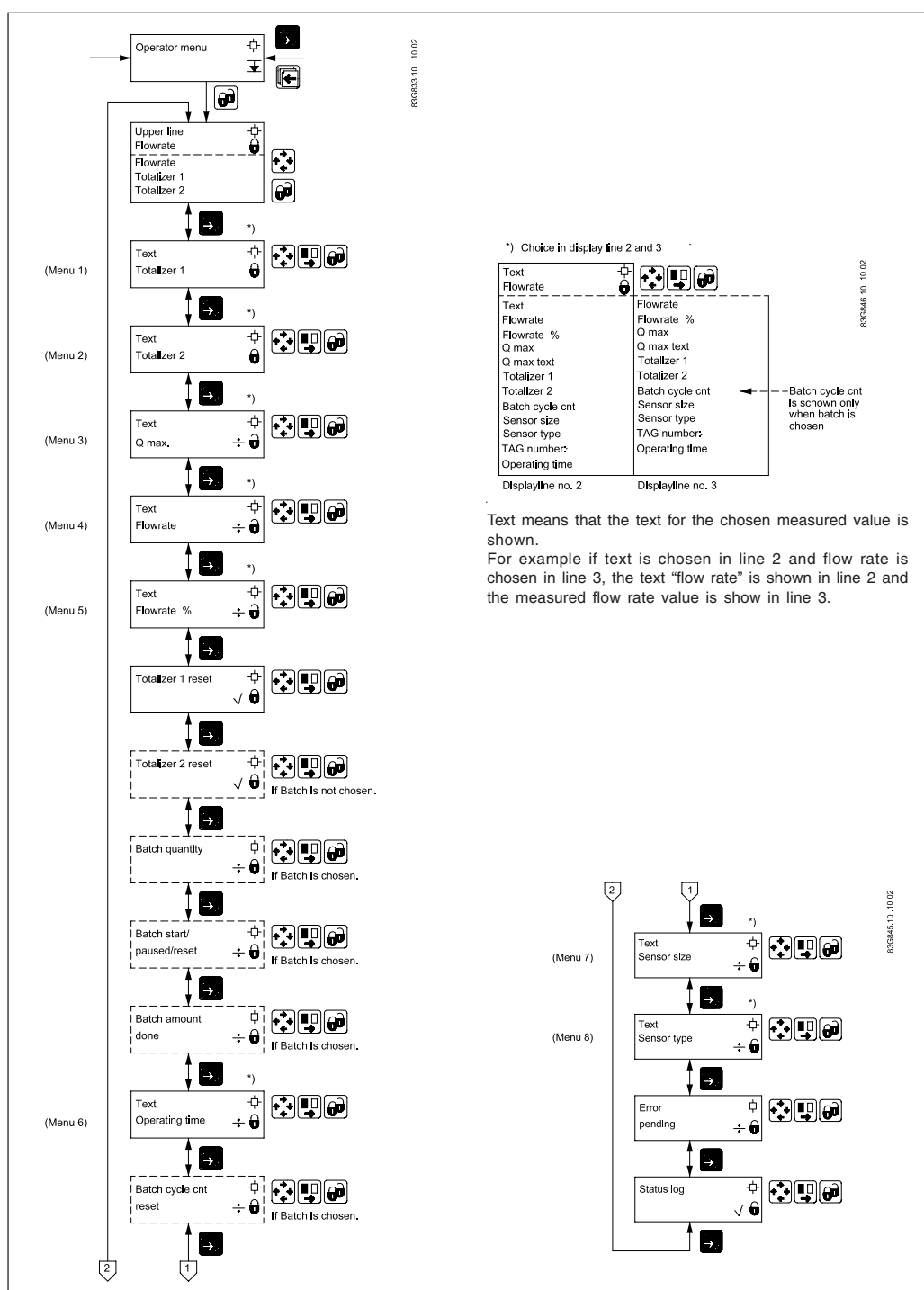
The error system is divided into an error pending list and a status log list. Time is gained as days, minutes and hours since the error has occurred.

The first 9 standing errors are stored in error pending. When an error is removed it is removed from error pending.

The latest 9 errors are stored in the status log. When an error is removed it is still kept in status log. Errors in status log is stored for 180 days.

Error pending and status log are accessible when enabled in the operator menu.

5.4.8 Operator menu setup



The upper line is always active and can never be deselected.

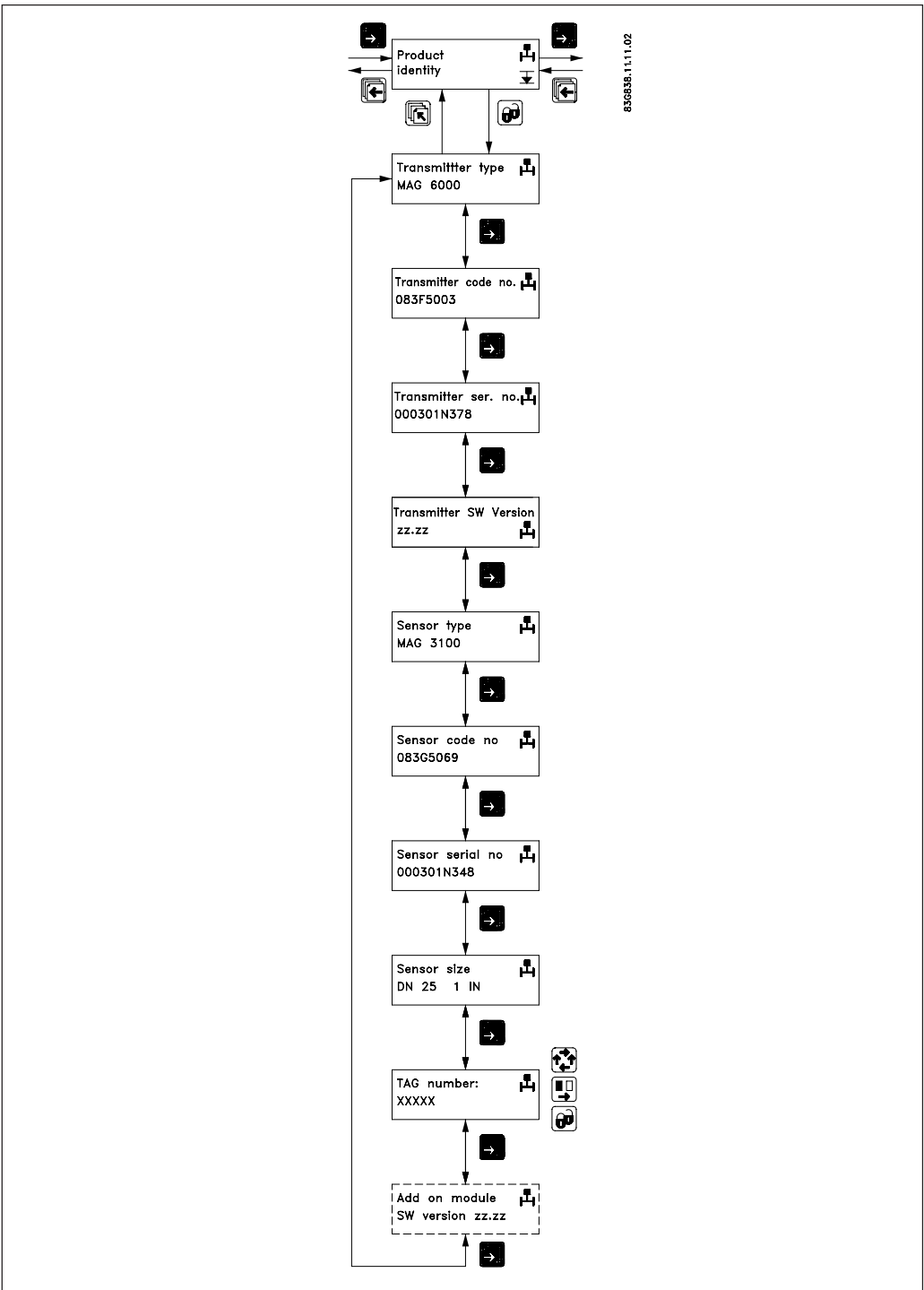
The two lower lines are for individual operator information. Information which the operator can scroll through with the forward key.

- A closed lock key in the operator menu setup, means that the menu is enabled when viewing the operator menu.
- An open lock key symbol, means that the menu is not available in the operator menu.

The middle line can either be used as a heading "Text line" for the lower line, or as a flow reading. A flow reading can be individually selected for each menu.

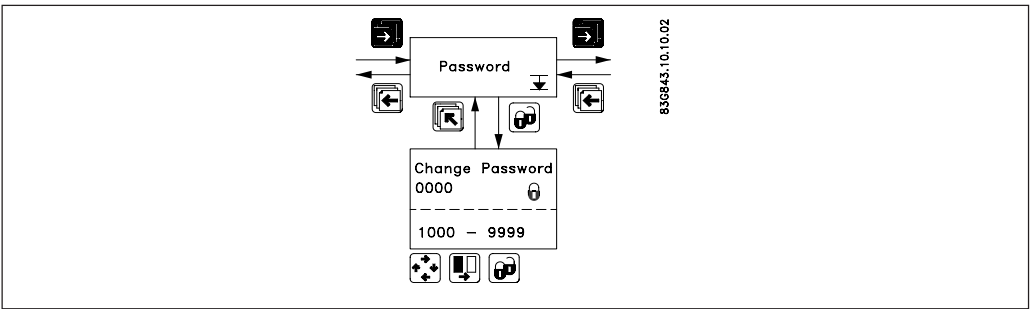
The lower line may be used for an additional flow reading to the reading already available in the upper line.

5.4.9
Product identity

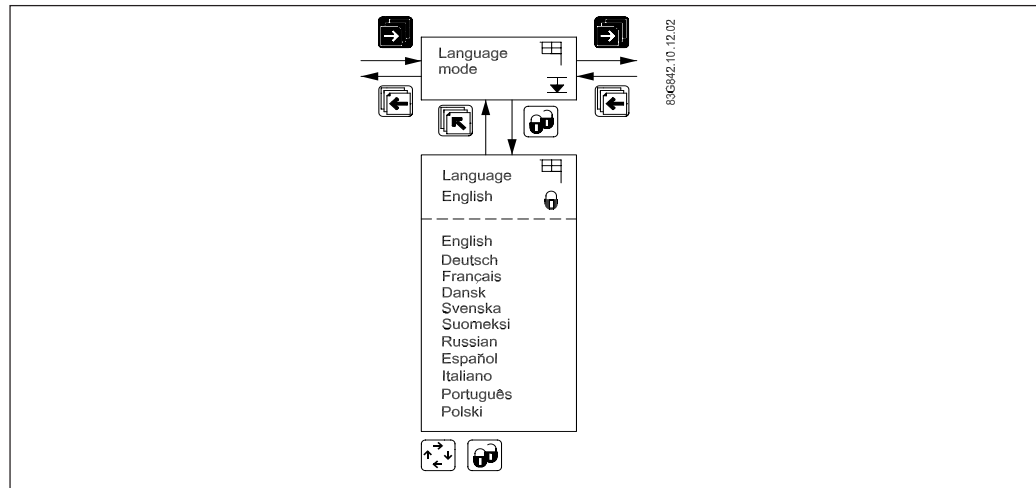


Software version of add-on module is only available if the add-on module has been installed.

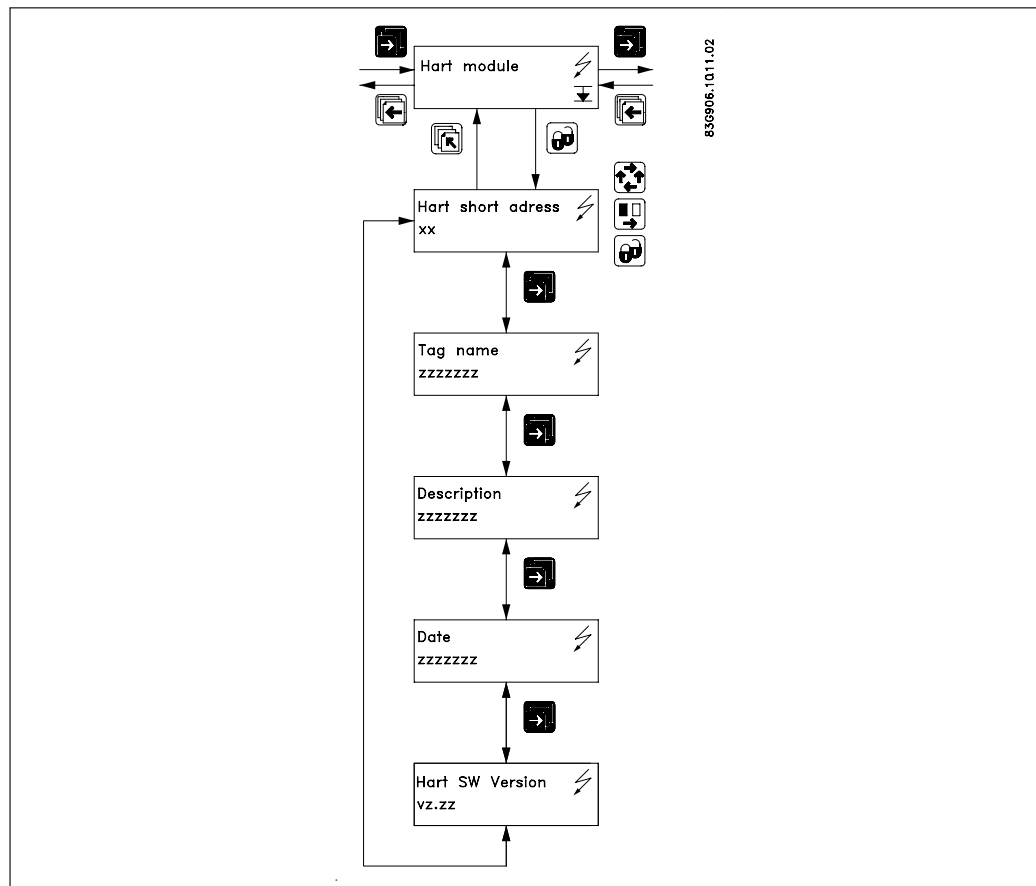
5.4.10
Change password



5.4.11 Language mode



5.4.12 HART® communication



5.5. Settings available

The transmitter is delivered with factory settings ready to measure the actual flow.

Parameter	Factory settings	Settings available
Password		
Default value	1000	
Password	1000	1000 - 9999
Basic settings		
Flow direction	Positive	Positive, negative
Q _{max} .	Dim. dependent	Dim. dependent
- Volume units	Dim. dependent	m ³ , ml, l, kl, hl, Ml, ft ³ , in ³ , USG, USkG, USMG, UKG, UKMG, USBBL
- Time units	Dim. dependent	Sec., min., hour, day
Totalizer 1	Forward	Forward, reverse, net
- Totalizer 1 units	Dim. dependent	m ³ , ml, l, kl, hl, Ml, ft ³ , in ³ , USG, USkG, USMG, UKG, UKMG, USBBL
Totalizer 2	Reverse	Forward, reverse, net
- Totalizer 2 units	Dim. dependent	m ³ , ml, l, kl, hl, Ml, ft ³ , in ³ , USG, USkG, USMG, UKG, UKMG, USBBL
Low flow cut-off	1.5 %	0 - 9.9 %
Empty pipe	Off	Off, on
Error level	Warning	Fatal, permanent, warning
Output		
Current output	Off	On/off, uni-/bidirectional, 0/4 - 20 mA
- Time constant	5 s	0.1 - 30 s
Digital output	Pulse no., off	Error, direction/limit, batch, frequency, pulse, error
Relay output	Error	Error, direction/limit, cleaning, error No., off
Direction/limit switch	Off	1 set point/2 set points, -100 - 100%
- Hysteresis	5%	0.0 - 100%
Batch	Off	
- Batch quantity	0	Dim. dependent
- Batch compensation	0	-100 - 100 m ³
- Batch counter	Down	Up/down
- Time constant	0.1 s	0.1 - 30 s
Frequency	Off	500 Hz, 1 kHz, 5 kHz, 10 kHz
- Time constant	5 s	0.1 - 30 s
Pulse	On	
- Pulse polarity	Positive	Positive/negative
- Pulse width	66 ms	64 µs, 130 µs, 260 µs, 510 µs, 1.0 ms, 2.0 ms, 4.1 ms, 8.2 ms, 16 ms, 33 ms, 66 ms, 130 ms, 260 ms, 520 ms, 1.0 s, 2.1 s, 4.2 s.
- Volume/pulse	Dim. dependent	Dim. dependent
- Time constant	0.1 s	0.1 - 30 s
Electrode cleaning	Off	Off/cleaning
- Cleaning cycle time	24 h	1 - 240 h
External input		
External input	Off	Batch, reset totalizer, freeze output, forced output, off
- Batch		Start, hold/continue, stop, Q _{max} . 2
Sensor characteristics		
Correction factor	1	0.85 - 2.00
Language	English	English, German, French, Danish, Swedish, Finnish, Spanish, Russian, Italian, Portuguese and Polish
Operator menu		
Primary field	Flow rate	Flow rate, Totalizer 1, Totalizer 2
Title/subtitle line	Flow rate	Flow rate, Flow rate %, Q _{max} ., Totalizer 1, Totalizer 2, Totalizer 1 reset, Totalizer 2 reset, Batch start/paused/stop, Batch cycle counter, Batch cycle counter reset, Sensor size, Sensor type, Error pending, Status log, Tag No.

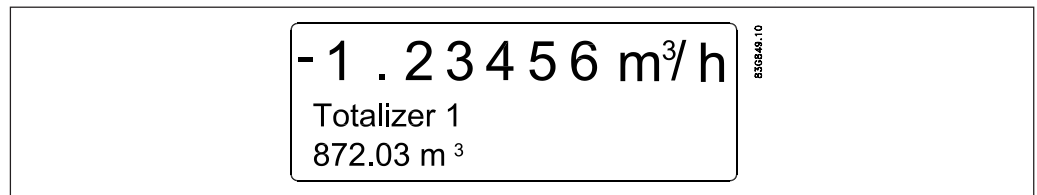
5.5.1 Dimension dependent factory settings

DN		Q _{max.}						Volume/ pulse	Pulse unit	Totalizer unit
mm	[inches]	fac.set.	MAG 5100 W		MAG 1100, 3100, 3100 W		unit			
			min.	max.	min.	max.				
2	1/12	30	-	-	3.9	156.7	l/h	1	l	l
3	1/8	70	-	-	6.4	254.5	l/h	1	l	l
6	1/4	300	-	-	25.5	1017	l/h	1	l	l
10	3/8	900	-	-	70.7	2827	l/h	1	l	l
15	1/2	2000	-	-	159.1	6361	l/h	1	l	l
25	1	5000	442.0	17671	442.0	17671	l/h	10	l	l
40	1 1/2	12	1.2	45	1.2	45	m³/h	10	l	l
50	2	20	1.6	63	1.8	70	m³/h	10	l	l
65	2 1/2	30	2.5	100	3.0	119	m³/h	100	l	l
80	3	50	4.0	160	4.6	180	m³/h	100	l	l
100	4	120	6.3	250	7.1	282	m³/h	100	l	l
125	5	180	10.0	400	11.1	441	m³/h	100	l	m³
150	6	250	15.7	629	16.0	636	m³/h	100	l	m³
200	8	400	24.9	997	28.3	1130	m³/h	1	m³	m³
250	10	700	40.0	1600	44.2	1767	m³/h	1	m³	m³
300	12	1000	62.5	2500	63.7	2544	m³/h	1	m³	m³
350	14	1200	86.6	3463	86.6	3463	m³/h	1	m³	m³
400	16	1800	113.1	4523	113.1	4523	m³/h	1	m³	m³
450	18	2000	143.2	5725	143.2	5725	m³/h	1	m³	m³
500	20	3000	176.8	7068	176.8	7068	m³/h	1	m³	m³
600	24	4000	254.5	10178	254.5	10178	m³/h	10	m³	m³
700	28	5000	346.4	13854	346.4	13854	m³/h	10	m³	m³
750	30	6000	397.7	15904	397.7	15904	m³/h	10	m³	m³
800	32	7000	452.4	18095	452.4	18095	m³/h	10	m³	m³
900	36	9000	573.0	22902	573.0	22902	m³/h	10	m³	m³
1000	40	12000	707.0	28274	707.0	28274	m³/h	10	m³	m³
1100	44	14000	855.3	34211	855.3	34211	m³/h	10	m³	m³
1200	48	15000	1018.0	40715	1018.0	40715	m³/h	10	m³	m³
1400	54	25000	-	-	1385.5	55417	m³/h	10	m³	m³
1500	60	30000	-	-	1590.5	63617	m³/h	10	m³	m³
1600	66	35000	-	-	1809.6	72382	m³/h	10	m³	m³
1800	72	40000	-	-	2290.3	91608	m³/h	10	m³	m³
2000	78	45000	-	-	2827.5	113097	m³/h	10	m³	m³

5.5.2 Dimension dependent batch and pulse output settings

	Volume/pulse or batch quantity	
	min.	max.
DN 2	3.6 µl	0.09 m³
DN 3	5.9 µl	0.15 m³
DN 6	24 µl	0.62 m³
DN 10	65 µl	1.72 m³
DN 15	147 µl	3.86 m³
DN 25	409 µl	10.7 m³
DN 40	1.05 ml	27.5 m³
DN 50	1.64 ml	42.9 m³
DN 65	2.77 ml	72.5 m³
DN 80	4.19 ml	110 m³
DN 100	6.54 ml	172 m³
DN 125	10.2 ml	268 m³
DN 150	14.7 ml	386 m³
DN 200	26.2 ml	686 m³
DN 250	40.9 ml	1072 m³
DN 300	58.9 ml	1544 m³
DN 350	80.2 ml	2102 m³
DN 400	105 ml	2745 m³
DN 450	133 ml	3474 m³
DN 500	164 ml	4289 m³
DN 600	236 ml	6177 m³
DN 700	321 ml	8407 m³
DN 800	419 ml	10981 m³
DN 900	530 ml	13897 m³
DN 1000	654 ml	17157 m³
DN 1200	942 ml	24706 m³
DN 2000	2.62 l	68629 m³

5.6 Flow rate



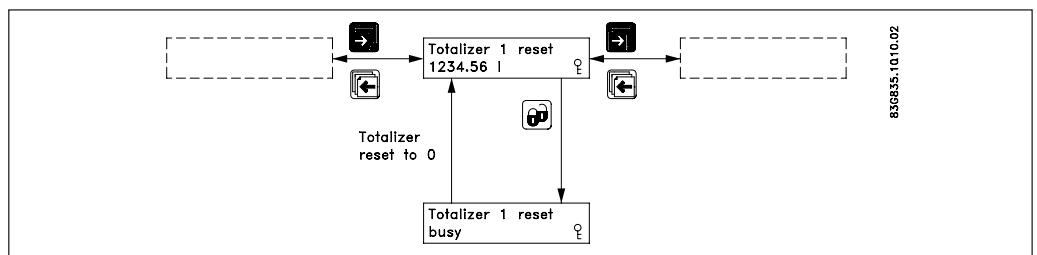
The 1st display line is always active and shows the value enabled in the operator menu setup.

- Flow rate
- Totalizer 1
- Totalizer 2

The 2nd and 3rd display lines are individually set in the operator menu. The page forward key steps through the enabled settings.

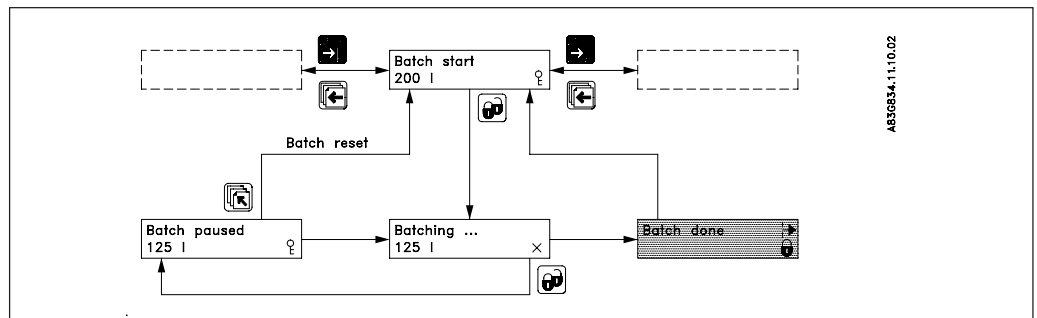
- Flow rate
- Totalizer
- Totalizer reset
- Batch control
- Batch cycle counter
- Batch cycle counter reset
- Pipe size
- Sensor type
- Pending errors
- Status log
- Tag No.

5.6.1 Totalizer



A totalizer is reset by pressing the lock key when the corresponding totalizer reset window is open.

5.6.2 Batch



A batch can be started, paused or stopped from the operator menu, in addition to the externally operated batch control. The batch is controlled using the lock and the top up keys.

The lock key:

- Starts the batch
- Holds the batch (pause) when pressed during batching
- Restarts the batch to continue when pressed during a pause.

The top up key resets a batch completely during a pause.

Batch cycle counter

The accumulated number of performed batches can be viewed when enabled in the operator menu setup.

Batch cycle counter reset

The batch cycle counter is reset by pressing the lock key in the "batch cycle cnt reset" menu.

5.6.3 List of error numbers

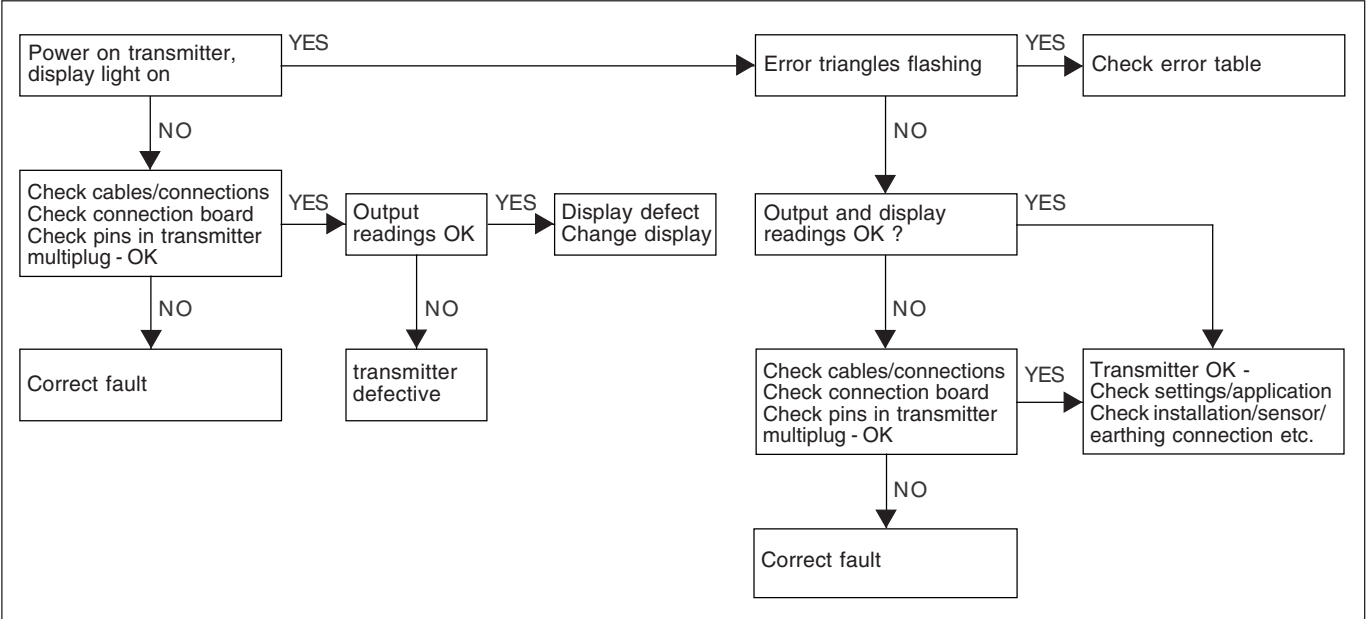
Note
Some error codes might never appear in the MAG 6000 I

Error No.	Error text Remedy text	#Comment	Outputs status	Input status
1	I1 - <i>Power on</i> OK	Power on has happened	Active	Active
2	I2 - <i>Add-on module</i> Applied	A new module has been applied to the system	Active	Active
3	I3 - <i>Add-on module</i> Install	An add-on module is defect or has been removed. This can be an internal add-on module	Active	Active
4	I4 - <i>Param. corrected</i> OK	A less vital parameter in the transmitter has been replaced by its default value	Active	Active
20	W20 - <i>Totalizer 1</i> Reset manually	During initialisation the check of the saved totalizer value has failed. It is not possible to rely on the saved totalizer value anymore. The totalizer value must be reset manually in order to rely on future readings	Active	Active
20	W20 - <i>Totalizer 2</i> Reset manually	During initialisation the check of the saved totalizer value has failed. It is not possible to rely on the saved totalizer value anymore. The totalizer value must be reset manually in order to rely on future readings	Active	Active
21	W21 - <i>Pulse overflow</i> Adj. pulse settings	Actual flow is too big compared with pulse width and volume/pulse	Reduced pulse width	Active
22	W22 - <i>Batch timeout</i> Check installation	Duration of batching has exceeded a predefined max. time	Batch output on zero	Active
23	W23 - <i>Batch overrun</i> Check installation	Batch volume has exceeded a predefined maximum overrun volume	Batch output on zero	Active
24	W24 - <i>Batch neg. flow</i> Check flow direction	Negative flow direction during batch	Active	Active
30	W30 - <i>Overflow</i> Adj. Q_{max}	Flow is above Q_{max} settings	Max. 120 %	Active
31	W31 - <i>Empty pipe</i>	Pipe is empty	Zero	Active
40	P40 - <i>SENSORPROM®</i> Insert/change	SENSORPROM® unit not installed	Active	Active
41	P41 - <i>Parameter range</i> Switch off and on	A parameter is out of range. The parameter could not be replaced by its default value. The error will disappear at the next power-on	Active	Active
42	P42 - <i>Current output</i> Check cables	Current loop is disconnected or the loop resistance is too big	Active	Active
43	P43 - <i>Internal error</i> Switch off and on	Too many errors occurred at the same time Some errors are not detected correctly	Active	Active
44	P44 - <i>CT SENSORPROM®</i>	SENSORPROM® unit has been used as CT version	Active	Active
60	F60 - <i>CAN comm. error</i> Transmitter/AOM	CAN bus communication error. An add-on module, the display module or the transmitter is defect	Zero	Inactive
61	F61 - <i>SENSORPROM® error</i> Replace	It is not possible to rely on the data in SENSORPROM® unit anymore	Active	Active
62	F62 - <i>SENSORPROM® ID</i> Replace	The SENSORPROM® unit ID does not comply with the product ID. The SENSORPROM® unit is from another type of product MASSFLO®, SONOFLO® etc.	Zero	Inactive
63	F63 - <i>SENSORPROM®</i> Replace	It is not possible to read from the SENSORPROM® unit anymore.	Active	Active
70	F70 - <i>Coil current</i> Check cables	Coil excitation has failed	Active	Active
71	F71 - <i>Internal error</i> Replace transmitter	Internal conversion error in ASIC	Active	Active

6. Service Often problems with unstable/wrong measurements occur due to insufficient/wrong earthing or potential equalization. Please check this connection. If OK, the SITRANS F M MAGFLO® transmitter can be checked as described in the handbook.

6.1 Transmitter check list When checking SITRANS F M MAGFLO® installations for malfunction the easiest method to check the transmitter is to replace it with another MAG 6000 I electronic insert with a similar power supply.

If no spare electronic insert is available - then check transmitter according to check table.



6.2 Troubleshooting MAG transmitter

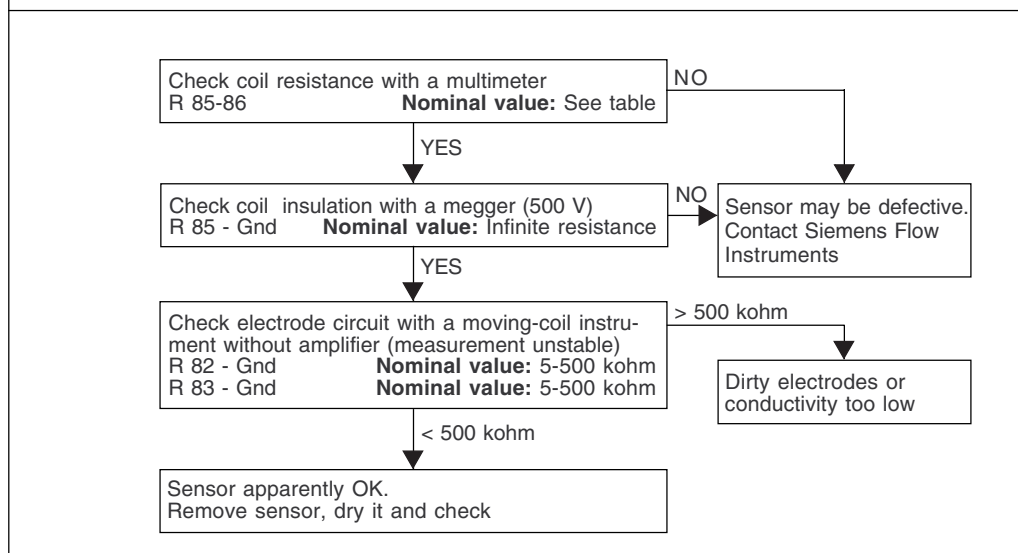
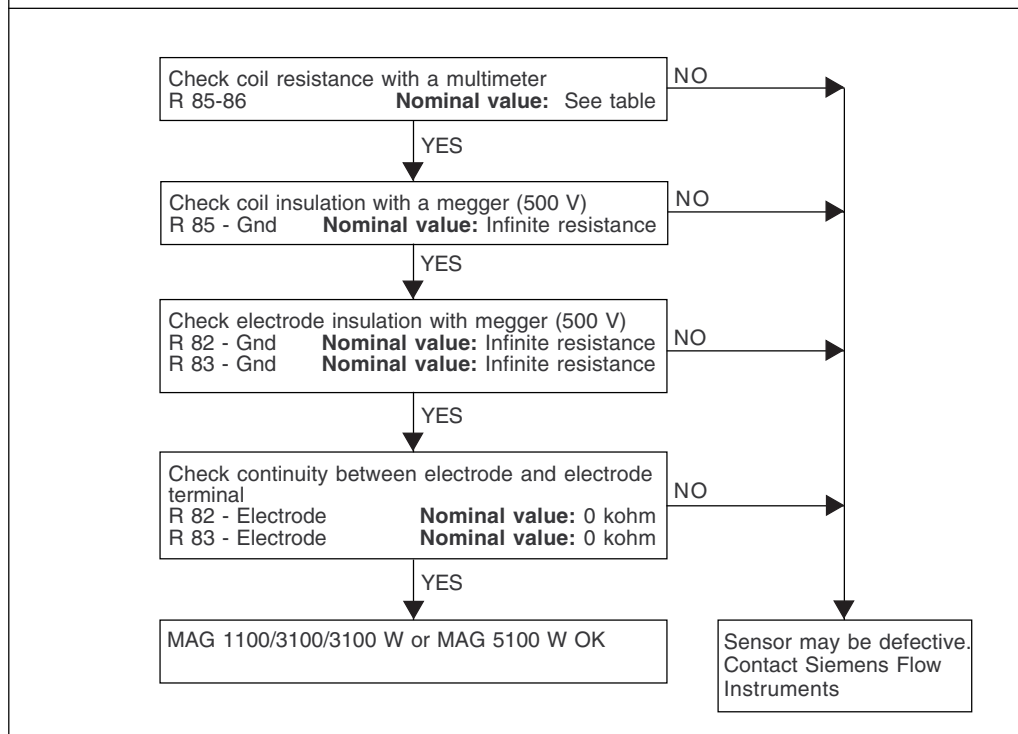
Symptom	Output signals	Error code	Cause	Remedy
No display reading	Minimum		1. No power supply	Power supply Check MAG 6000 I for bended pins on the connector
			2. MAG 6000 I defective	Replace MAG 6000 I
No flow signal	Minimum		1. Current output disabled	Turn on current output
			2. Digital output disabled	Turn on digital output
			3. Reverse flow direction	Change direction
		F70	Incorrect or no coil current	Check cables/connections
		W31	Measuring pipe empty	Ensure that the measuring pipe is full
	F60		Internal error	Replace MAG 6000 I
Indicates flow with no flow in pipe	Undefined	P41	Initializing error	Switch off MAG 6000 I, wait 5 s and switch on again
			Measuring pipe empty	Select empty pipe cut-off
			Empty pipe cut-off is OFF	Ensure that the measuring pipe is full
			Electrode connection missing/ electrode cable is insufficiently screened	Ensure that electrode cable is connected and sufficiently screened
Unstable flow signal	Unstable		1. Pulsating flow	Increase time constant
			2. Conductivity of medium too low	Use special electrode cable
			3. Electrical noise potential between medium and sensor	Ensure sufficient potential equalization
			4. Air bubbles in medium	Ensure medium does not contain air bubbles
			5. High concentration of particles or fibres	Increase time constant
Measuring error	Undefined		Incorrect installation	Check installation
		P40	No SENSORPROM® unit	Install SENSORPROM® unit
		P44	CT SENSORPROM® unit	Replace SENSORPROM® unit or reset SENSORPROM® unit with MAG CT transmitter
		F61	Deficient SENSORPROM® unit	Replace SENSORPROM® unit
		F62	Wrong type of SENSORPROM® unit	Replace SENSORPROM® unit
		F63	Deficient SENSORPROM® unit	Replace SENSORPROM® unit
		F71	Loss of internal data	Replace MAG 6000 I
	Maximum	W30	Flow exceeds 100% of $Q_{max.}$	Check $Q_{max.}$ (Basic Settings)
Measuring approx. 50%			Pulse overflow • Volume/pulse too small • Pulse width too large	Change volume/pulse Change pulse width
			Missing one electrode connection	Check cables
Loss of totalizer data	OK	W20	Initializing error	Reset totalizer manually
##### Signs in display	OK		Totalizer roll over	Reset totalizer or increase totalizer unit

6.3

Check list MAG sensor

ATTENTION!

If there is leakage from MAG 1100/3100/3100 W or MAG 5100 W and the unit has been used to measure inflammable/explosive liquids, there might be a risk of explosion when checking with a megger.

Disconnect all leads to MAG 1100/3100/3100 W or MAG 5100 W***MAG 1100/3100/3100 W or MAG 5100 W installed and filled with the medium:******MAG 1100/3100/3100 W or MAG 5100 W removed from system – empty and dry:***

6.4

Coil resistance

DN	Coil resistance						
	MAG 1100	MAG 3100		MAG 3100 W		MAG 5100 W	
	Resistance	Resistance	Tolerance	Ohms	Tolerance	Ohms	Tolerance
2	104 Ω \pm 5	104					
3	104 Ω \pm 5	104					
6	98 Ω \pm 4	104					
10	98 Ω \pm 4	104					
15 ¹⁾	98 Ω \pm 4	104					
25	98 Ω \pm 4	104	\pm 2	104	\pm 2	104	\pm 2
40	98 Ω \pm 4	92	\pm 2	92	\pm 2	92	\pm 2
50	98 Ω \pm 4	92	\pm 2	92	\pm 2	124	\pm 4
65	98 Ω \pm 4	100	\pm 2	100	\pm 2	127	\pm 4
80	98 Ω \pm 4	94	\pm 2	94	\pm 2	126	\pm 4
100	98 Ω \pm 4	92	\pm 2	92	\pm 2	125	\pm 4
125		92	\pm 2	92	\pm 2	126	\pm 4
150		94	\pm 2	94	\pm 2	116	\pm 4
200		90	\pm 2	90	\pm 2	109	\pm 4
250		92	\pm 2	92	\pm 2	104	\pm 4
300		100	\pm 2	100	\pm 2	108	\pm 4
350		112	\pm 2	112	\pm 2	112	\pm 2
400		100	\pm 4	100	\pm 4	100	\pm 4
450		108	\pm 4	108	\pm 4	108	\pm 4
500		122	\pm 4	122	\pm 4	122	\pm 4
600		115	\pm 4	114	\pm 4	114	\pm 4
700		128	\pm 4	112	\pm 4	112	\pm 4
750		133					
800		128	\pm 4	127	\pm 4	127	\pm 4
900		131	\pm 4	93	\pm 4	93	\pm 4
1000		131	\pm 4	103	\pm 4	103	\pm 4
1100		126					
1200		130	\pm 4	124	\pm 4	124	\pm 4
1400		130					
1500		124					
1600		133					
1800		133					
2000		147					

¹⁾ On MAG 1100 DN 15 produced as from May 1999 the coil resistance must be 86 ohm, \pm 8/-4 ohm.

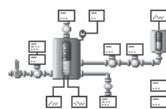
All resistance values are at 20 °C.

The resistance changes proportionally 0.4% / °C.

7. Ordering

Please look on our homepage <http://www.siemens.com/flow> under

"Product Selector".



8.1 EC-declaration of conformity

Please note the following certificates are incomplete for the full version please refer to <http://siemens.com/flow>

SIEMENS

EC Declaration of Conformity EG-Konformitätserklärung

No. 083R3101 - KM I1042 001 265

Manufacturer: <i>Hersteller:</i>	Siemens Flow Instruments A/S
Address: <i>Anschrift:</i>	Nordborgvej 81, 6430 Nordborg, Denmark
Product description: <i>Produktbezeichnung</i>	Magnetic Inductive Flowmeter, SITRANS F M Type / Typ MAG6000 Industry (and Ex versions) with sensors MAG1100/3100/5100 and Ex versions

The product described above in the form as delivered is in conformity with the provisions of the following European Directives:

Das bezeichnete Produkt stimmt in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender Europäischer Richtlinien überein:

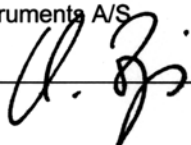
- | | |
|------------|--|
| 89/336/EEC | Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility.(amended by 91/263/EEC, 92/31/EEC and 93/68/EEC)
<i>Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit.(geändert durch 91/263/EWG, 92/31/EWG und 93/68/EWG).</i> |
| 73/23/EEC | Council Directive on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits. (amended by 93/68/EEC).
<i>Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen. (geändert durch 93/68/EWG)</i> |
| 94/9/EC | Directive of the European Parliament and the Council on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres.
<i>Richtlinie des Europäischen Parlaments und des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen.</i> |
| 97/23/EC | Directive of the European Parliament and the Council on the approximation of the laws of the Member States concerning pressure equipment.
<i>Richtlinie des Europäischen Parlaments und des Rates über Druckgeräte</i> |

Nordborg, 26.06.2004

Siemens Flow Instruments A/S

A. Zips, R&D

Name, function
Name, Funktion



signatur
Unterschrift

M. Thomsen, Operation

Name, function
Name, Funktion



signatur
Unterschrift

Annex A is integral part of this declaration.

Anhang A ist integraler Bestandteil dieser Erklärung.

This declaration certifies the conformity to the specified directives but contains no assurance of properties.

The safety documentation accompanying the product shall be considered in detail.

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusicherung von Eigenschaften. Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.

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8.2 EC type examination certificate

Please note the following certificates are incomplete for the full version please refer to <http://siemens.com/flow>



sira
Certification Service

1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 03ATEX1442X

4 Equipment: SITRANS F M MAGFLO MAG3100Ex DN15 and DN25 Flowmeters

5 Applicant: Siemens Flow Instruments Limited

6 Address: Magflo House
Ebley Road
Stonehouse
Gloucester
GL10 2LU
UK

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R53M10688A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 (A1 and A2)

EN 50018:2000

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2(1)(2)G

EEx d [ia][ib] IIB T4-T6

Project Number 53M10688
Date 27 August 2003
C. Index 13

M D Shearman
Certification Manager

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk

Sira Certification Service is a service of Sira Test & Certification Ltd

Appendix to certificate Number: Sira 03ATEX1442X.



EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER	Sira 03ATEX1442X	Dated	27 August 2003
VARIATION NUMBER	1 (ONE)	Dated	21 October 2003

VARIATION TO EQUIPMENT

To permit:

- 1 Additional sizes of flowmeter in the range, sizes DN40 to DN300.
- 2 A modification to the cable entry device to include a circlip.
- 3 The removal an additional external earth stud.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
083A0275	1 of 1	3	20 Aug 03	Data label
083A0281	1 of 1	2	15 Oct 03	Certification label
083R1538	1 of 1	1	17 Oct 03	Certification drawing – snubber circuit installation
083Z9583	1 of 1	3	14 Oct 03	Certification drawing DN15 to DN25 flowsensor
083Z9585	1 of 1	2	14 Oct 03	Certification drawing DN40 to DN300 flowsensor

CONDITIONS OF CERTIFICATION

The Condition of Certification 17.3 in the original certificate is modified as follows:

- 17.3 Each enclosure shall be subjected to a routine pressure test of 9.2 bar for at least 10 s as required by clause 16.1 of EN 50018:2000. There shall be no permanent deformation as a result of the tests.

M D Shearman
Certification Manager

File No 53A10792

Report No. R53A10792A

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1 EC TYPE-EXAMINATION CERTIFICATE

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 03ATEX1423X

4 Equipment: SITRANS F M MAGFLO MAG1100Ex DN6 to DN100 Range of Flowmeters

5 Applicant: Siemens Flow Instruments Limited

6 Address: Magflo House
Ebley Road
Stonehouse
Gloucester
GL10 2LU
UK

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R53M10551A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 1127-1:1998

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2(1)(2)G
EEx [ia][ib] IIB T4-T6

M D Shearman
Certification Manager

Project Number 53M10551
Date 27 August 2003
C. Index 13

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sira
Certification Service

ENGLISH

1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 03ATEX3339X

4 Equipment: SITRANS F M MAGFLO MAG3100 Ex

5 Applicant: Siemens Flow Instruments

6 Address: Magflo house
Ebley Road
Stonehouse
Gloucestershire
GL10 2LU

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number 52V10518.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 (A1 and A2)
EN 50019:2000
EN 50020:2002
EN 50281-1-1:1998

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2 G D
EEx e ia IIC T3 to T6

M D Shearman
Certification Manager

Project Number 52V10518
Date 29 August 2003
C. Index 13

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ST&C(Chester) Form 9176 Issue 8

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Please note the following certificates are incomplete for the full version please refer to <http://siemens.com/flow>



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Certification Service

1 EC TYPE-EXAMINATION CERTIFICATE

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 03ATEX1503X

4 Equipment: SITRANS F M MAGFLO MAG6000 INDUSTRY
Compact Version and Remote Version

5 Applicant: Siemens Flow Instruments A/S

6 Address: Norborgvej 81
6430 Nordborg
Denmark
DK-6400

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R52A10764A and R52A10764B.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 + A1 and A2
EN 50018:2000 + A1
EN 50019:2000
EN 50020:2002

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

Compact version



II 2 (1)G
EEx d e [ia] ia IIB T6
Ta = -10°C to +60°C

Remote version



II 2 (1)(2)G
EEx d e [ia] [ib] ib IIB T6
Ta = -10°C to +60°C

Project Number 52A10764
Date 21 June 2004
C. Index 12

D R Stubbings BA MIEE
Certification Manager

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Form 9176 Issue 10

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Sira Certification Service

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sira
Certification Service

1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 05ATEX2072X

4 Equipment: SITRANS F M MAGFLO6000 INDUSTRY compact and remote version

5 Applicant: Siemens Flow Instruments A/S

6 Address: Norborgvej
6430 Nordborg
Denmark
DK-6400

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R52A14179A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 + A1 and A2
EN 50018:2000 + A1
EN 50020:2002
EN 60079-1:2004
EN 50281-1-1:1998

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2(1)(2) GD T85°C
Compact Version: EEx d [Ia] [Ib] IIC T6 Ta -10°C to +60°C
Remote Version: EEx de [Ia] [Ib] IIC T6 Ta -10°C to +60°C

D R Stubbings BA MIEE
Certification Manager

Project Number 52A14179
Date 2 December 2005
C. Index 12

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We have checked the contents of this manual for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are always welcomed.

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