

**Operating Instructions
for
Magnetic Level Switches
Model : M Series**



M series

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Edition: june 2017

2. Note

Please read these operating instructions before unpacking and setting the unit into operation. Follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Magnetic Level Switches for Liquids model: M-...
- Operating Instruction

All parts falling under the standard scope of delivery are properly assembled within the unit.

4. Regulation Use

Magnetic Level Switches are employed for monitoring and control of liquid-levels in boilers and containers. There are innumerable and diverse applications that require these Magnetic Level Switches to be made according to customers' specific requirements.



Attention! These units should not be installed in the vicinity of strong magnetic fields, since this can impair their intended functionality.

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5. Float designs

Model	Form	Materials	Float Outside Ø [mm]	Height [mm]	Bore Hole Ø [mm]	Min. Liquid Density [kg/dm ³]	Max. Temperature °C	Nominal Pressure [bar] at 20 °C
M01	Cylinder solid material	NBR	18	25	10	> 0.6	80 °C	10 bar
M02	Cylinder Hollow	PP	26	16	10	> 0.65	80 °C	3 bar
M03	Cylinder hollow	PVC-U	26	26	10	> 0.9	55 °C	3 bar
M04	Ball hollow	St. steel 1.4404	30	28	9	> 0.8	150 °C	15 bar
M05	Cylinder hollow	PP	42	40	14	> 0.6	80°C	3 bar
M06 ¹⁾	Cylinder solid material	PP	40	20	14	> 0.9	90 °C	100 bar
M07	Cylinder hollow	PVC-U	42	40	14	> 0.9	55 °C	3 bar
M08	Cylinder hollow	St. steel 1.4404	44	52	15	> 0.65	150°C	20 bar
M10	Ball hollow	St. steel 1.4404	52	52	15	> 0.6	150°C	30 bar
M11	Ball hollow	St. steel 1.4404	52	52	15	> 0.6	150°C	30 bar
M13	Cylinder hollow	PVDF	38	60	18	> 0.6	125°C	2 bar
M16	Cylinder hollow	PVC-U	60	60	18	> 0.8	55°C	3 bar
M20	Ball hollow	St. steel 1.4404	95	95	20.8	> 0.5	150°C	15 bar

- 1) For M06 model. one float is required for each switch point.
For all other floats two contacts can be operated with one float.

Supplementary devices:

1. Contact protection relays

We recommend the use of contact protection relays in conjunction with sealed contacts.

Contact protection relays have the following advantages:

- No contact overloads arising from sparking and high currents, which can, for example, be caused by self-induced e.m.f.'s when switching solenoid valves.
- Float switches are electrically isolated from the high voltage power supply system.
- Protection for persons who come into contact with liquids according to VDE 0100.
- **Standard models:**
 - Mod. MSR 10 1 channel, 1 changeover
 - Mod. MSR 20 2 channels, 2 changeover
 - Mod. MSR 11 2 channels, 1 changeover bistable
- **Atex models:**
 - Mod. KFD2-SR2-Ex1.W 1 channel, 1 relay output, supply 24 V_{DC}
 - Mod. KFA6-SR2-Ex1.W 1 channel, 1 relay output, supply 230 V_{AC}
 - Mod. KFD2-SR2-Ex2.W 2 channel, 2 relay output, supply 24 V_{DC}
 - Mod. KFA6-SR2-Ex2.W 2 channel, 2 relay output, supply 230 V_{AC}

2. Damping tube for agitated liquids

Float switches with damping tube for agitated or dirty liquids can be supplied upon request.

3. Temperature monitoring

Float switches with integrated temperature switch, fixed switch point between 60 °C and 150 °C upon request.

Option: Pt 100 available

4. Mounting instructions

Float switches can also be fitted in the bottom for vessels.

Attention: The contact operation is then reversed.

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6. Operating Principle

Kobold magnetic float switches are fitted with a hermetically sealed contact which is situated in the tube.

The float sliding on the tube contains a ring magnet whose magnetic field switches the sealed contact in a non-contacting fashion. The sealed contacts are available as N/O, N/C or changeover contacts.

The float sliding up and down on the liquid is the only moving part in the Kobold magnetic float switches.

7. Mechanical Connection

The slide-tube of the float switch may not be bent or exposed to hard impacts, since otherwise the reed contacts inside the tube can be damaged.

Adjustment-rings or anchor-clamps may not be readjusted, since otherwise the switching function (N.O. contact, N.C. contact or changeover switch) is no more guaranteed.

Ensure the correct use of cable gland and gasket on float switches with plug to prevent the penetration of humidity.

While installation is carried out, please ensure that the float can move freely (due allowance should be given to distances from side-walls!).

Mounting position of the slide-tube may not deviate more than $\pm 30^\circ$ from vertical position.

If the float has to be removed, pay attention to correct orientation when replacing the float.

8. Area of application

Magnetic level switch M series are used exclusively for level control and monitoring of liquid media.

The liquids should not contain suspended solids or tendency to crystallize.

Ensure that the construction materials of the float switch have chemical resistance sufficient to prevent mechanical deformations that may affect it.

9. Maintenance

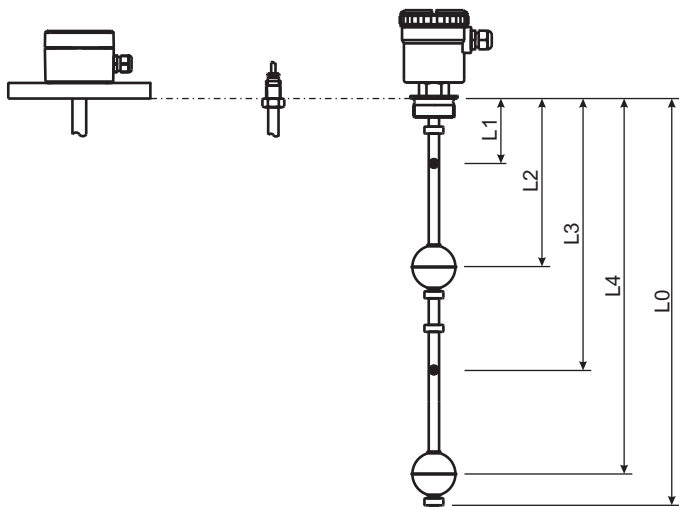
In liquids that can cause deposits, the float has to be cleaned at regular intervals. In this case the measuring tube and float should be cleaned from such deposits. Other maintenance jobs are not required.

10. Technical Data

Contact NO/NC:	230 V _{AC/DC} / 0,5 A / 10 VA (M01...M04)
Contact SPDT:	100 V _{AC/DC} / 0,5 A / 3 VA (M01...M04)
Contact NO/NC:	230 V _{AC/DC} / 1 A / 60 VA (M05...M20)
Contact SPDT:	230 V _{AC/DC} / 1 A / 60 VA (M05...M20)
Atex Exia version :	Ui: 40V
Protection type:	IP64 (M01...M04), IP65 (M05...M20) IP65 (all models with connection head)
Min. liquid density:	See float design table
Max. pressure (at 20°C):	2 bar (M13) 3 bar (M02, M03, M05, M16) 3 bar (M01 with PVC tube) 10 bar (M01 with st. st. or brass tube) 15 bar (M04, M20) 20 bar (M08) 30 bar (M10, M11) 100 bar (M06)
Max. temp. with PVC cable:	55°C (models with PVC tube) 70°C (Models without PVC tube)
Max. temp. with. silicone cable:	See max. temperature in float design table
Max. length of guide tube:	1 m (PVC Ø8 mm) 2 m (st. st. or brass Ø8 mm) 2 m (PVC Ø12 mm) 3 m (PVDF or PVC Ø16 mm) 4 m (st. st. or brass Ø12 mm) 6 m (st. st. Ø18 mm)
Hysteresis:	3-5 mm difference in level

M series

Definition of switching points referred to density 1 Kg/dm³



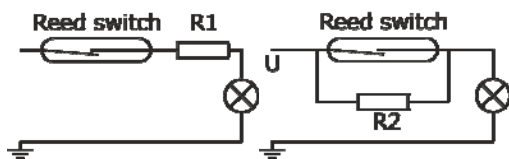
Attention models without earth conductor must be used only with safety extra low voltage (i.e. contact protection relays) or external earthing.

11. Electrical Information

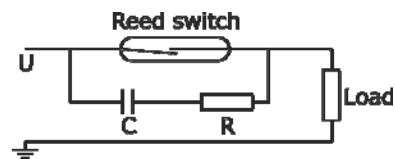
Performance data indicated on the device label are absolute maximum ratings, which may **not** be exceeded even for brief periods of time. They refer to ohmic load (resistive load). When switching inductances (e.g. coils from relays and contactors), the contacts of the float switches should be protected employing suitable means from high cut-off voltage surges.

Examples of protection circuitry

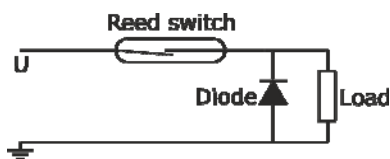
For capacitive, inductive and lamps load, we recommend our contact protection relays or the following suppressor circuits.



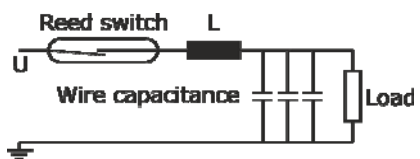
Lamp load with series or parallel resistance to the reed switch.



Protection with a RC suppressor for a.c. current and inductive load.



Protection with a diode for d.c. current and inductive load.



Protection with an inductance or resistance for capacitive load.

The Magnetic Level Switches are connected according to the following connection diagrams.



Attention! While making electrical connections of these devices, please observe relevant safety measures, norms, regulations and EC-guidelines, in particular, DIN VDE 0100, section 610. Float switches made of PVC can be used up to max. 55 °C!

Connection diagrams

Terminal connection coding in connection head	Cable colour coding (DIN47100) for standards in silicone and PVC	
1	WH	White
2	BN	Brown
3	GN	Green
4	YE	Yellow
5	GR	Grey
6	PK	Pink
7	BU	Blue
8	RD	Red
9	BK	Black

* For special cables the codification is by numbers

Models with Plug 3-pole

L1- S or C	L1- W	L1- S or C L2- S or C

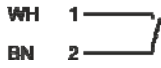
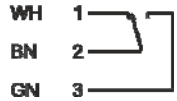
Models with Plug 6-pole

L1- S or C L2- S or C L3- S or C	L1- W	L1- W L2- W


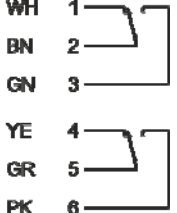

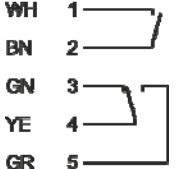
M series

Models M01....M04

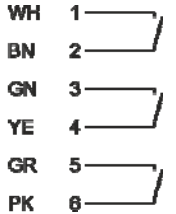
1 switch point (L1)

L1- S or C	L1- W
WH 1  BN 2	WH 1  BN 2 GN 3

2 switch points (L1, L2)

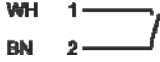
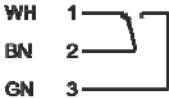
L1- S or C L2- S or C	L1- W L2- W	L1- W L2- S or C	L1- S or C L2- W
WH 1  BN 2 GN 3 YE 4	WH 1  BN 2 GN 3 YE 4 GR 5 PK 6	WH 1  BN 2 GN 3 YE 4 GR 5	WH 1  BN 2 GN 3 YE 4 GR 5

3 switch points (L1, L2, L3)


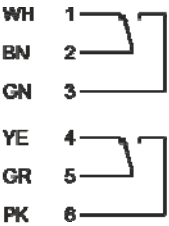
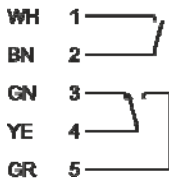
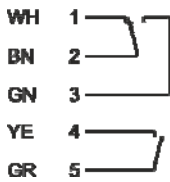
L1- S or C L2- S or C L3- S or C
WH 1  BN 2 GN 3 YE 4 GR 5 PK 6

Models M05...M20

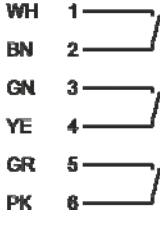
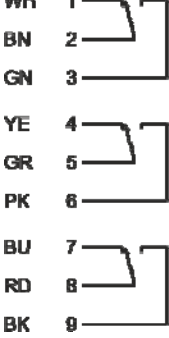
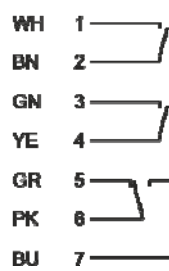
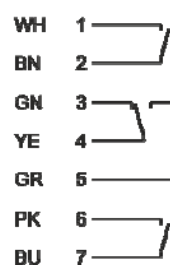
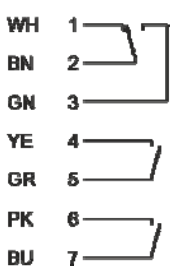
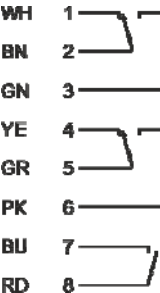

1 switch point (L1)

L1- S or C	L1- W
WH 1  BN 2	WH 1  BN 2 GN 3

2 switch points (L1, L2)








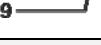
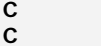
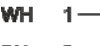




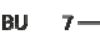

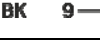








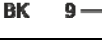

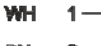






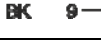









L1- S or C L2- S or C	L1- W L2- W	L1- S or C L2- W	L1- W L2- S or C
WH 1  BN 2 GN 3 YE 4	WH 1  BN 2 GN 3 YE 4 GR 5 PK 6	WH 1  BN 2 GN 3 YE 4 GR 5	WH 1  BN 2 GN 3 YE 4 GR 5

3 switch points (L1, L2, L3)

L1- S or C L2- S or C L3- S or C	L1- W L2- W L3- W	L1- S or C L2- S or C L3- W	L1- S or C L2- W L3- S or C	L1- W L2- S or C L3- S or C
WH 1  BN 2 GN 3 YE 4 GR 5 PK 6 BU 7 RD 8	WH 1  BN 2 GN 3 YE 4 GR 5 PK 6 BU 7 RD 8 BK 9	WH 1  BN 2 GN 3 YE 4 GR 5 PK 6 BU 7	WH 1  BN 2 GN 3 YE 4 GR 5 PK 6 BU 7	WH 1  BN 2 GN 3 YE 4 GR 5 PK 6 BU 7 RD 8
L1- W L1- W L3- S or C	L1- W L2- S or C L3- W			
WH 1  BN 2 GN 3 YE 4 GR 5 PK 6 BU 7 RD 8	WH 1  BN 2 GN 3 YE 4 GR 5 PK 6 BU 7 RD 8			

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4 Switch points (L1, L2, L3, L4)

L1- W L2- S or C L3- S or C L4- S or C	L1- S or C L2- W L3- S or C L4- S or C	L1- S or C L2- S or C L3- W L4- S or C	L1- S or C L2- S or C L3- S or C L4- W
WH 1  BN 2  GN 3  YE 4  GR 5  PK 6  BU 7  RD 8  BK 9 	WH 1  BN 2  GN 3  YE 4  GR 5  PK 6  BU 7  RD 8  BK 9 	WH 1  BN 2  GN 3  YE 4  GR 5  PK 6  BU 7  RD 8  BK 9 	WH 1  BN 2  GN 3  YE 4  GR 5  PK 6  BU 7  RD 8  BK 9 
L1- S or C L2- S or C L3- S or C L4- S or C			
WH 1  BN 2  GN 3  YE 4  GR 5  PK 6  BU 7  RD 8 			

12. Safety Instructions (ATEX)

12.1 Area of validity

These security instructions apply to **M...E** series magnetic level switch for use in explosion-proof atmospheres conform to **CE certificate LOM 06ATEX2054 X** and **M...F** series conforming to **CE certificate LOM 14ATEX2075 X**

12.2 Guidelines.

These security instructions must be applied to the **M...E and M...F** series used in gas or dust explosion hazard environments, category 1G/D.

It is necessary to follow carefully the instructions from the hazardous areas where the **M...E or M...F** will be installed, as well as the safety instructions included in this manual.

Temperature class and/or surface temperature relates solely to a device operated at ambient temperature. On installation, the actual temperature class for process operation has to be determined.

The maximum temperature in the enclosure head depends on the process temperature and may not exceed the maximum service temperature indicated for the junction box for the instruments **M...F** series.

The guide tube must be mechanically protected or in locations with low risk of impact for the instruments **M...F** series.

When the tank inside is a zone 0, a degree of protection at least IP67 must be ensured in the process connection for the instruments **M...F** series.

Inlet bushing and cable glands must conform to the certification for their type in accordance with the directive.

Models without head box must be protected with an enclosure having at least a degree of protection IP20 for **M...E series**.

The use in zone 0 of heads made of aluminium should be restricted to locations where the risk of ignition due to mechanical impact is not possible.

Verify that all data written in the label of the device matches the data required for the installation.

Verify that there is no mechanical stress or deformation due to installation in the tank.

Remove power supply and verify that no explosion risk is present before opening cover of the housing and check that the cover of housing is correctly mounted before applying power to the instruments **M...F** series.

M series

The installation of instruments in hazardous areas must be exclusively done by trained people.

12.3 Protection against ESD (electro static discharges)

Instruments with plastic parts that can produce electro statics discharges, have a label for it.

It is important to follow some rules to avoid ESD:

- Avoid rubbing the device.
- Never clean the device dry.
- Do not install the device near material airflows or near steam outlets.

12.4 Chemical resistance

Ensure that the device construction materials have chemical resistance sufficient to prevent mechanical deformations that may affect the device.

12.5 Maintenance and repairs

The instrument does not require maintenance or servicing.

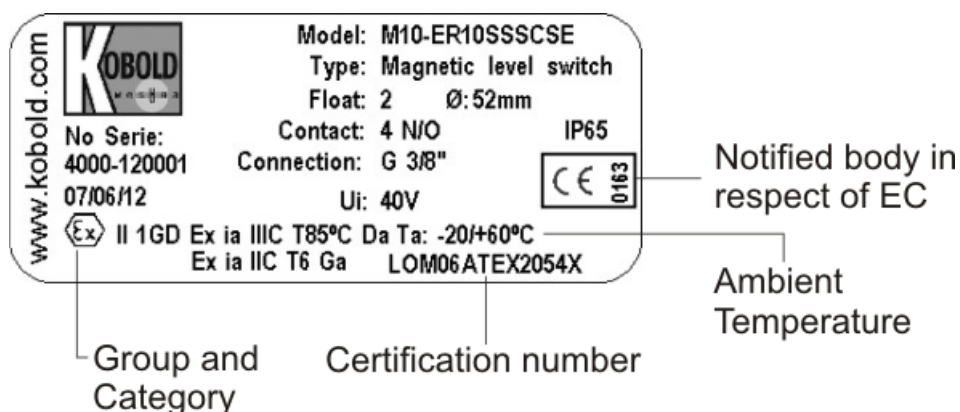
Repairs must be only carried out by Kobold Mesura (manufacturer).

12.6 Storage

Measuring instruments should be protected against humidity and dust.

Storage temperature: -5...+55°C

13. ATEX Label Description

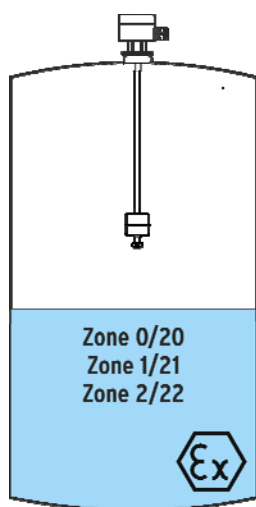


14. Installation in hazardous zone

In classified zones, magnetic level switches series **M...E** (intrinsically safe version), can be installed in zone 0, 1 and 2 and series **M...F** (explosion proof version) can be installed in zone 0,1 and 2.

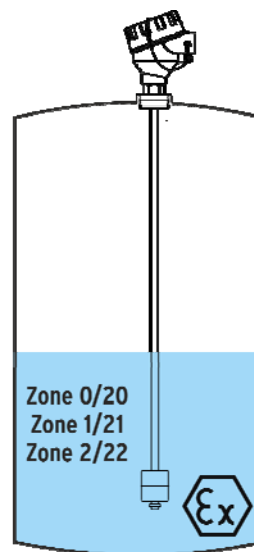
Installation must be done by people trained regarding ATEX environments.

Intrinsically safe version



Zone 0/20
Zone 1/21
Zone 2/22

Explosion proof version

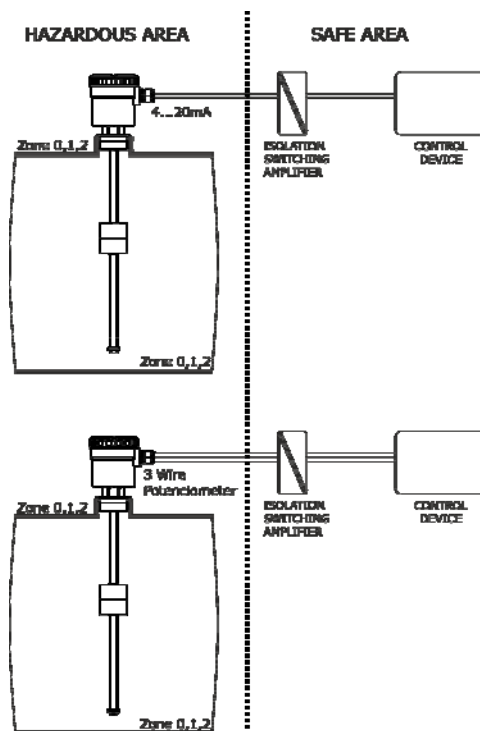


Zone 1/21
Zone 2/22

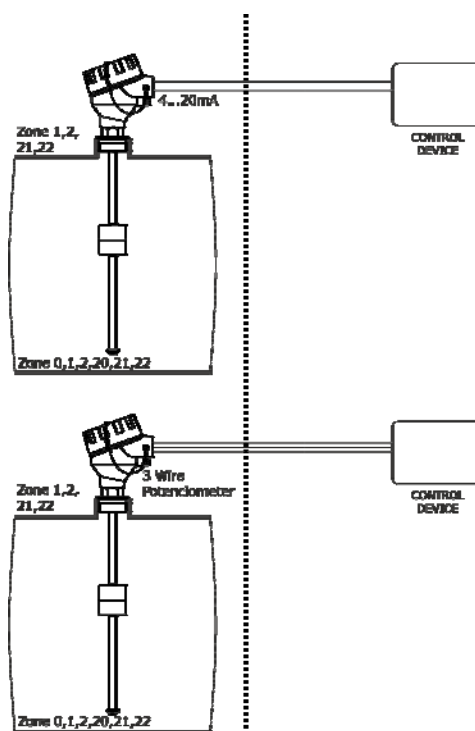
M series

15. Electrical connection in ATEX zone

15.1 Electrical connection in intrinsically safe mode Ex ia



15.2 Electrical connection in explosion proof mode Ex d



16. Declaration of conformity ATEX Ex ia

DECLARACIÓN DE CONFORMIDAD EU

EU DECLARATION OF CONFORMITY
EU-KONFORMITÄTSEKTLÄRUNG
DÉCLARATION DE CONFORMITÉ EU
DICHIARAZIONE DI CONFORMITÀ EU

KOBOLD MESURA SLU
Avda. Conflent 68 nave 15 08915 Badalona (España)

Declara, bajo la propia responsabilidad, que el producto

Declares under our sole responsibility, that the product
Erklärt in alleiniger Verantwortung, dass das Produkt
Déclare sous sa seule responsabilité, que le produit
Dichiara sotto la propria responsabilità, che il prodotto

Magnetic level switch
M..E

A los cuales se refiere esta declaración, son conformes a las siguientes Directivas Europeas:

To which this declaration relates is in conformity with the following European Directives:
Mit folgenden Euroäischen Richtlinien Konform ist:
À auxquels se réfère cette déclaration, ils sont conformes aux Directives Européennes suivant :
A ai quali si riferisce questa dichiarazione, sono conformi alle direttive europee seguente:

EMC2014/30/EU LVD2014/35/EU ATEX2014/34/EU RoHS2011/65/EU

Normas armonizadas y documentos de la normativa aplicados:

Applied harmonised standards and normative documents:
Angewandte harmonisierte Normen und normative Dokumente:
Normes harmonisées et documents normatifs appliqués
Norme armonizzate e documenti normativi applicati:

EN61010-1 :2011 EN60079-0:2012 (acc. EN60079-0:2013)
EN61000-6-2 :2006 EN60079-11:2012 (acc. EN60079-11:2013)
EN60079-31:2009 (acc. EN60079-31:2016)

Certificado de examen CE de tipo

EC-type examination certificate
EG-baumusterprüfbescheinigung
Attestation d'examen CE de type
Certificazione per esame di tipo CE

LOM06ATEX2054X

Marcado

Marking
Kennzeichnung
Inscription
Marchatura



II 1 GD Ex ia IIC T6 Ga / Ex ia IIIC T85°C Da
-20≤Ta≤+60°C

Fabricado en: KOBOLD MESURA SLU Avda. Conflent 68 nave 15 08915 BADALONA (Spain)

Made in:
Hergestellt in:
Fabriqué dans:
Fabbricato in:

Organismo notificado : LOM 0163

Notified organism
Zertifizierungsstelle
Organization annoncée
Organismo informato

Número notificación : LOM 05ATEX9070

Notification number
Zertifikatsnummer
Nombre notification
Notifica di numero

Badalona june 2017
DT0497

Gerente

17. Declaration of conformity ATEX Ex d

DECLARACIÓN DE CONFORMIDAD EU

*EU DECLARATION OF CONFORMITY
EU-KONFORMITÄTSESKLÄRUNG
DÉCLARATION DE CONFORMITÉ EU
DICHIARAZIONE DI CONFORMITÀ EU*

KOBOLD MESURA SLU
Avda. Conflent 68 nave 15 08915 Badalona (España)

Declara, bajo la propia responsabilidad, que el producto

*Declares under our sole responsibility, that the product
Erklärt in alleiniger Verantwortung, dass das Produkt
Déclare sous sa seule responsabilité, que le produit
Dichiara sotto la propria responsabilità, che il prodotto*

Liquid level transducer
M..F

A los cuales se refiere esta declaración, son conformes a las siguientes Directivas Europeas:

*To which this declaration relates is in conformity with the following European Directives:
Mit folgenden Euroäischen Richtlinien Konform ist:
À auxquels se réfère cette déclaration, ils sont conformes aux Directives Européennes suivant :
A ai quali si riferisce questa dichiarazione, sono conformi alle direttive europee seguente:*

EMC2014/30/EU LVD2014/35EU Atex2014/34/EU RoHS2011/65/EU

Normas armonizadas y documentos de la normativa aplicados:

*Applied harmonised standards and normative documents:
Angewandte harmonisierte Normen und normative Dokumente:
Normes harmonisées et documents normatifs appliqués
Norme armonizzate e documenti normativi applicati:*

EN61010-1 :2011	EN60079-0:2012 (acc. EN60079-0:2013)
EN61000-6-2 :2006	EN60079-31:2009 (acc. EN60079-31:2016)
EN61326-1:2013	EN60079-1:2007 (acc. EN60079-1:2015)
	EN60079-26:2007 (acc. EN60079-26:2015)

Certificado de examen CE de tipo

*EC-type examination certificate
EG-baumusterprüfbescheinigung
Attestation d'examen CE de type
Certificazione per esame di tipo CE*

LOM 14ATEX2075 X

Marcado

*Marking
Kennzeichnung
Inscription
Marcatura*

 II 1/2 G Ex d IIC T1..T6 Ga/Gb
II 2 D Ex t IIIC T410..T85°C Db

Fabricado en: KOBOLD MESURA SLU Avda. Conflent 68 nave 15 08915 BADALONA (Spain)

*Made in:
Hergestellt in:
Fabriqué dans:
Fabbricato in:*

Organismo notificado : LOM 0163

*Notified organism
Zertifizierungsstelle
Organization annoncée
Organismo informato*

Número notificación : LOM 05ATEX9070

*Notification number
Zertifikatsnummer
Nombre notification
Notifica di numero*

Badalona Junio 2017
DT0627

Gerente



18. Declaration of conformity

DECLARACIÓN DE CONFORMIDAD EU

*EU DECLARATION OF CONFORMITY
EU-KONFORMITÄTSEKTLÄRUNG
DÉCLARATION DE CONFORMITÉ EU
DICHIARAZIONE DI CONFORMITÀ EU*

KOBOLD MESURA SLU
Avda. Conflent 68 nave 15 08915 Badalona (España)

Declara, bajo la propia responsabilidad, que el producto

*Declares under our sole responsibility, that the product
Erklärt in alleiniger Verantwortung, dass das produkt
Déclare sous sa seule responsabilité, que le produit
Dichiara sotto la propria responsabilità, che il prodotto*

Magnetic level switch
M...

A los cuales se refiere esta declaración, son conformes a las siguiente Directivas Europeas:

*To which this declaration relates is in conformity with the following European Directives:
Mit folgenden Euroäischen Richtlinien Konform ist:
À auxquels se réfère cette déclaration, ils sont conformes aux Directives Européennes suivant :
A ai quali si riferisce questa dichiarazione, sono conformi alle direttive europee seguente:*

EMC2014/30/EU LVD2014/35/EU RoHS2011/65/EU

Normas armonizadas y documentos de la normativa aplicados:

*Applied harmonised standards and normative documents:
Angewandte harmonisierte Normen und normative Dokumente:
Normes harmonisées et documents normatifs appliqués
Norme armonizzate e documenti normativi applicati:*

EN61010-1 :2011
EN61000-6-2 :2006

Fabricado en: KOBOLD MESURA SLU Avda. Conflent 68 nave 15 08915 BADALONA (Spain)

*Made in:
Hergestellt in:
Fabriqué dans:
Fabbricato in:*



Gerente

Badalona April 2016
DT0498

19. ATEX Certified



LABORATORIO OFICIAL J. M. MADARIAGA



EC-TYPE EXAMINATION CERTIFICATE

(1) **Equipment or protective system intended for use in potentially explosive atmospheres**
Directive 94/9/EC

(2) **EC-Type Examination Certificate number:** **LOM 06ATEX2054 X**

(3) **Equipment or Protection System** Level detectors
Types MIL... EX y RFS...EX

(4) **Applicant:** CONTROL INSTRUMENTS MESURA S.L.

(5) **Address** Guifré, 665 1º
08912 BADALONA(BARCELONA)
SPAIN

(6) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(7) Laboratorio Oficial J.M. Madariaga (LOM), notified body number 0163 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in confidential report nr. **LOM 04.221 JP**

(8) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
— Standards **EN 60079-0:2004** **EN 50020:2002**
pEN 61241-0:2005 **EN 61241-1:2004**

(9) If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(10) This EC-Type Examination Certificate relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive applies to the manufacture and supply of this equipment or protective system. These are not covered by this certificate.

(11) The marking of the equipment or protective system shall include the following:



Ex II 2/1 D



Ex ia IIC T6 / Ex iaD 20

IP65 T85 °C Ta:-20/+ 60 °C

Ta:-20/+ 60 °C



Carlos Fernández Ramón
DIRECTOR OF THE LABORATORY



LABORATORIO OFICIAL J.M. MADARIAGA

Madrid, 16th June, 2006



Angel Vega Remesal
Head of ATEX area

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(Real Decreto 334/1992 de 3 de Abril - BOE 1992-04-29 -)

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LABORATORIO OFICIAL J. M. MADARIAGA

(A1) SCHEDULE

(A2) EC-Type Examination Certificate: : LOM 06ATEX2054 X

(A3) Description of equipment or protective system

Series of float switch magnetic level controllers which are mainly foreseen to be used in liquid tanks. The series is composed of the following types:

- MIL.100.EX y MIL.200.EX Float device in tube as guide and "reed" switch activated by magnet
- MIL.300.EX float device of bascule type and micro-switch
- RFS.12.EX float device of bascule type and "reed" switch

When they are used in explosive gas ambient and/or combustible dust this must be connected to a intrinsically safe circuit, and having the marking:

Ex II 1 GD Ex ia IIC T6 / Ex iaD 20 T85 (simultaneous or alternative)

Alternatively, then can be used as category 2 apparatus when connected to conventional circuits. In this case the head of the apparatus is foreseen to be installed on the outside of tanks or silos; this head is a category 2 apparatus. The sensor that is foreseen to be installed inside tanks or silos have got a category 1; this sensor is a simple mechanical device. The marking is:

Ex II 2/1 D Ex tD A21 IP65 T85 °C

As category 1 devices, the intrinsically safe specific parameter is Ui: 40 V.

As equipment having a protection by enclosure type of protection of category 2D the characteristics are:

Maximum voltage: 250 V Maximum current: 500 mA Maximum power: 4 VA

In all the cases the external ambient temperature is Ta: -20 °C/+60 °C

The floats are foreseen for a maximum process temperature up to 130 °C.

(A4) Test report nr: 04.221 JP

(A5) Special conditions for safe use

The specific marking will determine the ambient type and zone of use.

(A6) Individual tests

None



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LABORATORIO OFICIAL J. M. MADARIAGA

(A1) SCHEDULE

(A2) EC-Type Examination Certificate: : LOM 06ATEX2054 X

(A7) Essential Health and Safety Requirements

Explosion safe requirements are covered by application of the standards indicated in page 1/3 of this certificate.

(A8) Descriptive documents:

	Rev.	Date
- Description nr.	DT0126	0 2006-05-17
- Component lists nr.:	DT0078	0 2006-03-10
	DT0079	0 2006-03-10
	DT0125	0 2006-03-10
	DT0133	0 2006-03-21
- Drawings n°:	PM0347R0	0 1999-12-10
	PM0383R0	0 2004-11-15
	PM0385R0	0 2004-11-15
	PM0391R0	0 2004-11-15
	PM0425R0	0 2005-10-07
	PM0444R0	0 2006-03-10
	PM0447R0	0 2006-03-21



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LABORATORIO OFICIAL J. M. MADARIAGA



(1) EC-TYPE EXAMINATION CERTIFICATE SUPPLEMENT

(2) Equipment or protective system intended for use in potentially explosive atmospheres
Directive 94/9/EC

(3) Supplement nr. 1 to EC-Type Examination Certificate number LOM 06ATEX2054 X

(4) Equipment or Protection System Level detectors
Type ML... EX and RFS...EX

(5) Applicant KOBOLD MESURA, S.L.U.

(6) Address Guifré, 665
08918 BADALONA(BARCELONA)
SPAIN

(7) Report nr. LOM 07.059 NP

(8) Variations included in this certificate

- Change of the manufacturer name, before CONTROL INSTRUMENTS MESURA S.L.

- Update of applied standards to: EN 60079-0:2006, EN 60079-11:2007, EN 61241-0:2006, EN 61241-1:2004 and EN 61241-11:2006

(9) Marking variations

None

(10) Descriptive documents

- Drawings nr.: DT0132R2

Rev. Date
2 2007-07-17



Madrid, 24th July, 2007

Carlos Fernández Ramón
DIRECTOR OF THE LABORATORY

Angel Vega Remesal
Head of ATEX area

This supplement must be an inseparable part together with the base certificate LOM 06ATEX2054 X
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LABORATORIO OFICIAL J. M. MADARIAGA



(1) EC-TYPE EXAMINATION CERTIFICATE SUPPLEMENT

(2) Equipment of protective system intended for use in potentially explosive atmospheres
 Directive 94/9/EC

(3) Supplement nr. **2** to EC-Type Examination Certificate **LOM 06ATEX2054 X**

(4) Equipment of protective system
 Level detectors
 Types MIL...EX, RFS...EX y M...E

(5) Manufacturer **ROBOLD MESURA, S.L.U.**

(6) Address
 Guifré, 665
 08918 BADALONA(BARCELONA)
 SPAIN

(7) Test report nr.: **LOM 12.256 KP**

(8) Variations included in this certificate
 Update to the standards EN 60079-0:2009, EN 60079-11:2007 and EN 60079-31:2009
 To include two new series named "M..E" and "MS..E" with intrinsically safe type of protection, with straight or angled tube respectively. May include junction box or direct cable connection
 To include new connection boxes and connectors for the variants MIL.100.EX, MIL.200.EX and RFS.12.EX
 Process temperature is not limited

(9) Changes in marking
 All variants used in intrinsically safe circuits
 Variant MIL.300.EX used as protection by enclosure type of protection



II IGD Ex ia IIC T6 Ga
 Ex ia IIIC T85 °C Da
 -20 °C ≤ Ta ≤ +60 °C



II 2D Ex t IIIC T85 °C Db
 -20 °C ≤ Ta ≤ +60 °C

(10) Changes in the special conditions for a safe use
 It is added:
 The temperature class or surface temperature refers only to equipment operating at room temperature. In class facility shall be determined on the basis of actual temperature of the process.

(11) Descriptive documents

	Rev.	Date
- Descriptions nr.:	DT0494	2012-07
	DT0495	2012-07
- Drawings nr.:	DT0496	2012-07

Getafe, 2012-10-22

Carlos Fernández Ramón
 DIRECTOR OF THE LABORATORY



Angel Vega Remesa
 Head of the ATEX

This supplement must be an inseparable part together with the base certificate LOM 06ATEX2054 X
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UNIVERSIDAD POLITÉCNICA DE MADRID
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 (Real Decreto 334/1992 de 3 de Abril - BOE 1992-04-29)

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LABORATORIO OFICIAL J. M. MADARIAGA



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(1) EC-TYPE EXAMINATION CERTIFICATE SUPPLEMENT

(2) Equipment or protective system intended for use in potentially explosive atmospheres
Directive 94/9/EC

(3) Supplement nr. **3** to EC-Type Examination Certificate number **LOM 06ATEX2054 X**

(4) Equipment or protection system Level detectors
Types MIL...EX, RFS...EX, M...E0 y MM...E

(5) Manufacturer Kobold Mesura S.L.U.

(6) Address Avda. Conflent 68, nave 15
08915 Badalona (Barcelona)
SPAIN

(7) Test report nr.: **LOM 14.120 CP**

(8) Variations included in this certificate

1. To include a new series called MM...E

```

graph TD
    A[MM...E] --- B[Float material]
    A --- C[Process connection / head]
    A --- D[Output / transmitter]
    
```

This new series is manufactured with intrinsically safe type of protection. It is based on a chain resistances and contact type "reed" driven by the magnetic field of the float, with potentiometric measurement.

The output signal can be direct, or using the loop signal converters for 4-20 mA, HART or PROFIBUS / FIELDBUS, intrinsically safe using certified transmitter modules.

Used transmitters	Type	Certificate	Manufacturer
	5333D	KEMA 03ATEX1535	PR electronics A/S
	5335D, 5337D	KEMA 03ATEX1537	
	5350B	KEMA 02ATEX1318	

Also it cans include a display type CombiView DFFON 5XX from Baumer A/S with certificate TUV 13ATEX113124 X.

The input parameters of the intrinsically safe type of protection will be the same as those indicated in the transmitter modules. For the version with direct connection the input parameter is *Pf*: 1.2 W.

(9) Changes in marking

II IGD Ex ia IIC T6 Ga
-20 °C ≤ Ta ≤ +60 °C

This supplement must be an inseparable part together with the base certificate **LOM 06ATEX2054 X**
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UNIVERSIDAD POLITÉCNICA DE MADRID
ENSAYOS E INVESTIGACIONES DE MATERIALES Y EQUIPOS PARA ATMOSFERAS EXPLOSIVAS Y MINERÍA
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LABORATORIO OFICIAL J. M. MADARIAGA

(3) Supplement nr. **3** to EC-Type Examination Certificate number **LOM 06ATEX2054 X**

(10) Changes in the special conditions for a safe use

- Attention should be paid to electrostatic risk of head and parts of the sensor / float made of plastic materials.
- The use in zone 0 of heads made of aluminium should be restricted to locations where the risk of ignition due to mechanical impact is not likely.

(11) Descriptive documents

	Rev.	Date
- Technical description nº:	DT0602	2014-05
- Drawings nr.:	DT0596	2013-12
	DT0598	2014-03
	PE0234	2014-02-11
	DT0615	2014-04-11

Getafe, 2014-06-23

Carlos Fernández Ramón
Responsible of the Certification Committee



LABORATORIO OFICIAL J. M. MADARIAGA

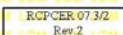


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(1) EC-TYPE EXAMINATION CERTIFICATE							
(2)	Equipment or protective system intended for use in potentially explosive atmospheres Directive 94/9/EC						
(3)	EC-Type Examination Certificate nr. LOM 14ATEX2075 X						
(4)	Equipment or protection system Magnetic level sensors Types M**-****P						
(5)	Manufacturer KOBOLD MESURA, S.L.U.						
(6)	Address Avda. Conflent, 68. Nave 15 08915 Badalona (Barcelona) SPAIN						
(7)	This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.						
(8)	Laboratorio Oficial J.M. Madariaga (LOM), notified body number 0163 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in confidential report nr. LOM 14.477 VP						
(9)	Compliance with the Essential Health and Safety Requirements has been assured by compliance with: <table border="0"> <tr> <td>Standards</td> <td>EN 60079-0:2012</td> <td>EN 60079-1:2007</td> </tr> <tr> <td></td> <td>EN 60079-26:2007</td> <td>EN 60079-31:2009</td> </tr> </table>	Standards	EN 60079-0:2012	EN 60079-1:2007		EN 60079-26:2007	EN 60079-31:2009
Standards	EN 60079-0:2012	EN 60079-1:2007					
	EN 60079-26:2007	EN 60079-31:2009					
(10)	If the sign X is placed after the certificate number, it indicates that the equipment or protective system 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 this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive apply to the manufacture and supply of this equipment or protective system. These are not covered by this certificate.						
(12)	The marking of the equipment or protective system shall include the following: <table border="0"> <tr> <td rowspan="2" style="text-align: center;"></td> <td>II 1/2 G Ex d IIC T1...T6 Ga/Gb</td> </tr> <tr> <td>II 2D Ex t IIIIC T410...T85 °C Db</td> </tr> </table> <p style="text-align: right;">Getafe, 2015-07-28</p> <div style="text-align: right;"> Carlos Fernández Ramón Head of Certification Committee </div>		II 1/2 G Ex d IIC T1...T6 Ga/Gb	II 2D Ex t IIIIC T410...T85 °C Db			
	II 1/2 G Ex d IIC T1...T6 Ga/Gb						
	II 2D Ex t IIIIC T410...T85 °C Db						

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LABORATORIO OFICIAL J. M. MADARIAGA

(A1) SCHEDULE

(A2) EC-Type Examination Certificate nr.: LOM 14ATEX2075 X

(A3) Description of equipment or protective system

Magnetic level sensors series M***F, MM***F and MS***F consist of a float containing a magnet and sliding on the outside of a stainless steel tube, said tube containing in its interior switches type "reed" actuated by the magnet. They are designed for level measurement of liquids in containers. The electrical connections are made in a head which have flameproof and protection by enclosure type of protection.

Three variants of heads are used

Type TTE* with component certificate CESI 08 ATEX 029U

Maximum service temperature 95 °C and 100 °C

Type XD-A* with component certificate FTZU 03 ATEX 0074U

Maximum service temperature 100 °C, 150 °C y 200 °C

Type XD-A*win with component certificate FTZU 03 ATEX 0074U

Enclosure with window glass when the equipment incorporates a display

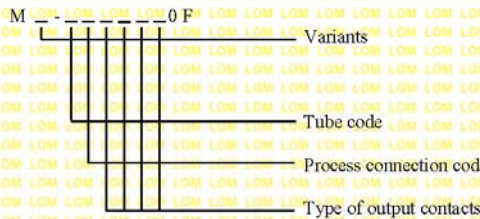
Maximum service temperature 85 °C

Variants M***F y MS***F consist in direct contact outputs working at 230 V / 1 A / 60 VA.

Variants M** - ***F have to head straight tube provided to connect on top of the containers.

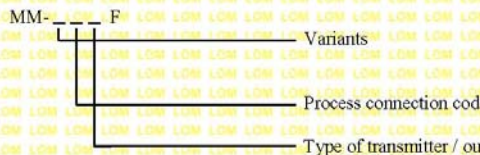
Variants MS***F have an elbow pipe with connection head expected to connect on the side of the containers.

Type codification:



The MM***F variants have resistive output, or transmitter in the head with analog output 4-20 mA or digital communication.

Type codification:



The sensors are designed for process temperature up to 400 °C, but the temperature of the head shall not exceed the indicated for this head.

The process connection is made using standardized threaded or flanged.

Ambient temperature: -20 °C ≤ Ta ≤ +60 °C

The temperature class and surface temperature of the equipment depends on the process temperature:

Process temperature	≤ 80 °C	≤ 95 °C	≤ 130 °C	≤ 195 °C	≤ 290 °C	≤ 400
Temperature class	T6	T5	T4	T3	T2	T1
Surface temperature	T85 °C	T100 °C	T135 °C	T200 °C	T300 °C	T410 °C



LABORATORIO OFICIAL J. M. MADARIAGA

(A1)	SCHEDULE																														
(A2)	EC-Type Examination Certificate nr.: LOM 14ATEX2075 X																														
(A3)	<p><u>Description of equipment or protective system</u> (continued)</p> <p>Marking</p> <div style="display: flex; align-items: center;"> <p> II 1/2 G Ex d IIC T* Ga/Gb II 2D Ex t IIIC T* °C Db </p> </div> <p>T* according process temperature</p>																														
(A4)	Test report nr.: LOM 14.477 VP																														
(A5)	<p><u>Special conditions for safe use</u></p> <ul style="list-style-type: none"> - The maximum temperature in the enclosure head depends on the process temperature and may not exceed the maximum service temperature indicated for the junction box - The tube must be mechanically protected or in locations with low risk of impact. - When the container inside is a zone 0 a degree of protection of at least IP67 must be ensured in the process connection. 																														
(A6)	<p><u>Individual tests</u></p> <p>Overpressure tests required on the head enclosures.</p>																														
(A7)	<p><u>Essential Health and Safety Requirements</u></p> <p>Explosion safe requirements are covered by application of the standards indicated in the first page of this certificate.</p>																														
(A8)	<p><u>Descriptive documents</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Technical description nr.:</th> <th>Rev.</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>DT0603</td> <td>3</td> <td>2015-07</td> </tr> <tr> <td>DT0611</td> <td></td> <td>2014-03</td> </tr> <tr> <td>DT0612</td> <td>7</td> <td>2014-03</td> </tr> <tr> <td>DT0618</td> <td>7</td> <td>2014-07</td> </tr> <tr> <td>DT0619</td> <td>7</td> <td>2014-09-10</td> </tr> <tr> <td>DT0620</td> <td></td> <td>2014-10</td> </tr> <tr> <td>IN0028</td> <td></td> <td>2014-09-15</td> </tr> </tbody> </table> <p>Drawings n°:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>DT0613R2</td> <td>2</td> <td>2015-07</td> </tr> <tr> <td>PM1186R0</td> <td>0</td> <td>2014-09-23</td> </tr> </tbody> </table>	Technical description nr.:	Rev.	Date	DT0603	3	2015-07	DT0611		2014-03	DT0612	7	2014-03	DT0618	7	2014-07	DT0619	7	2014-09-10	DT0620		2014-10	IN0028		2014-09-15	DT0613R2	2	2015-07	PM1186R0	0	2014-09-23
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