Operating Instructions

for

Magnetic Level Switches

Model: MS Series

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Manufactured by:

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Edition: March 2024

2. Note

Please read these operating instructions before unpacking and putting the unit in operation. Follow the instructions precisely as described herein.
The instruction manuals on our website WWW.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that correspond to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

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: MS-...
- 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.

5. Float designs

Model	Form	Materials	Float Outside ∅ [mm]	Height [mm]	Bore Hole ∅ [mm]	Min. Liquid Density [kg/dm³]	Max. Temperature °C	Nominal Pressure [bar] at 20 °C
MS05	Cylinder hollow	PP	42	40	14	> 0.5	80°C	3 bar
MS06[1)]	Cylinder solid material	PP	40	20	14	> 0.9	90 °C	100 bar
MS07	Cylinder hollow	PVC-U	42	40	14	> 0.65	55 °C	3 bar
MS10	Ball hollow	St. steel 1.4404	52	52	15	> 0.6	150°C	30 bar

1) For MS06 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.

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.

6. Commissioning and replacement

Commissioning:

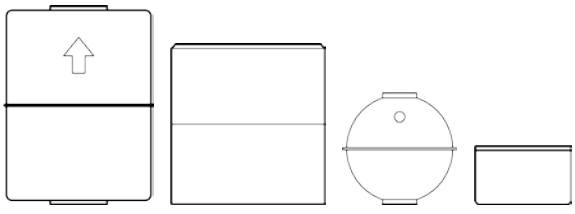
The slide-tube of the float switch may not be bent or exposed to hard impacts, since otherwise the reed contacts inside the tube can be damaged.
Adjustment-rings or anchor-clamps may not be readjusted, since otherwise the switching function (N.O. contact, N.C. contact or changeover switch) is no more 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 sidewalls!).
Mounting position of the slide-tube may not deviate more than ±30° from vertical position.
If the size of the float does not fit through the process connection, the float must be removed before mounting.
All the floats have a kind of mark (arrow, point, notch, …),to remove a float proceed a follows:

- Before removal, mark the position of the float stops
- Check the position of the mark on the float
- Insert the probe through the process connection
- Relocate the float stops at the marked point and the floats paying attention to keep the mark at the same position as the previous one.

Replacement of Float:

- Before removal, mark the position of the float stops
- Check the position of the mark on the float
- Replace the float stops at the marked point and the new float paying attention to keep the mark at the same position as the previous one.

Examples:



7. Area of application

Magnetic level switch MS 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.

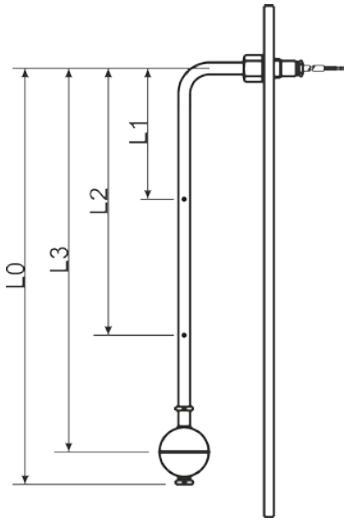
8. Maintenance

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.

9. Technical Data

Contact NO/NC:	230 $V_{AC/DC}$ / 1 A / 60 VA (MS05...MS10)
Contact SPDT:	230 $V_{AC/DC}$ / 1 A / 60 VA (MS05...MS10)
Atex-version:	Ui: 40V, Li: negligible, Ci: negligible
Protection type:	IP65
Min. liquid density:	See float design table
Max. pressure (at 20ºC):	3 bar (MS05, MS07) 30 bar (MS10) 100 bar (MS06)
Max. temp. with PVC cable:	55ºC (models with PVC tube) 70ºC (Models without PVC tube)
Max. temp. with. silicone cable:	See max. temperature in float design table
Max. length of guide tube:	2 m (PVC Ø12 mm) 4 m (st. st. or brass Ø12 mm)
Hysteresis:	5 mm difference in level

Definition of switching points referred to density 1 Kg/dm^3

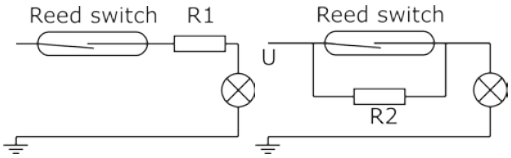


Attention models without earth conductor must be used only with safety extra low voltage (i.e. contact protection relays) or external earthing.

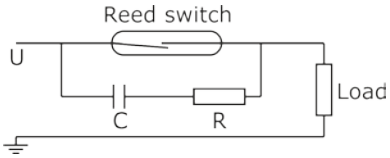
10.Electrical Information

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.

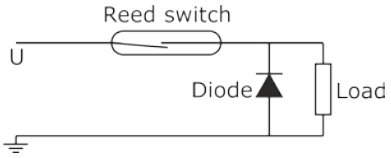
Examples of protection circuitry
For capacitive, inductive and lamps load, we recommend our contact protection relays or the following suppressor circuits.



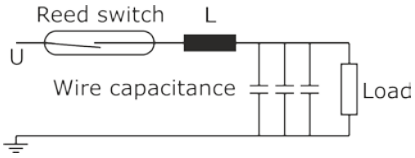
Lamp load with series or parallel resistance to the reed switch.



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 EG-guidelines, in particular, DIN VDE 0100, section 610. Float switches made of PVC can be used up to max. 55 °C!

Connection diagrams

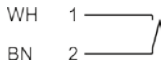
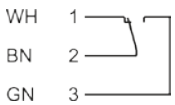
Colour coding per DIN 47100

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

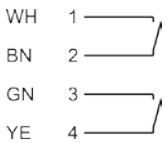
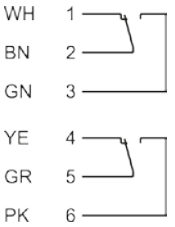
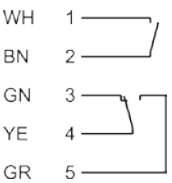
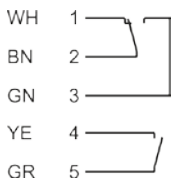
* For special cables the codification is by numbers

Models MS05….MS10

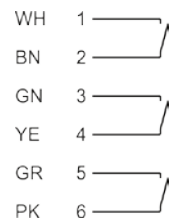
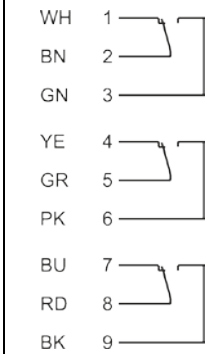
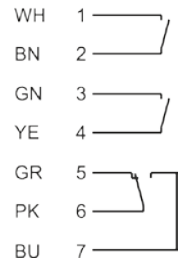
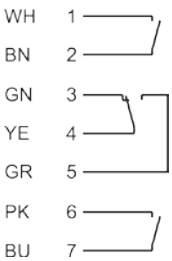
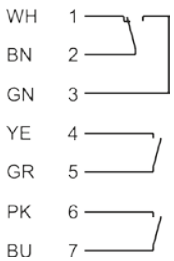
1 switch point (L1)

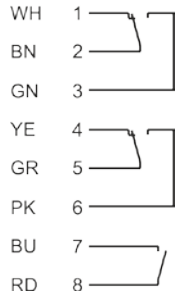
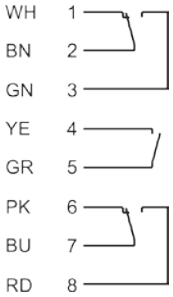
L1- S or C	L1- W
	

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
			

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
				

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

11. Safety Instructions

11.1. Area of validity

These security instructions apply to **MS...E** series magnetic level switch for use in explosion-proof atmospheres conform to **CE certificate LOM 06ATEX2054 X.**

11.2. Guidelines.

These security instructions must be applied to the **MS...E** 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 **MS...E** 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.

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.

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.

Check that cover of housing is correctly mounted before applying power to the instrument.

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

11.3. 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.

11.4. Chemical resistance

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

11.5. Maintenance and repairs

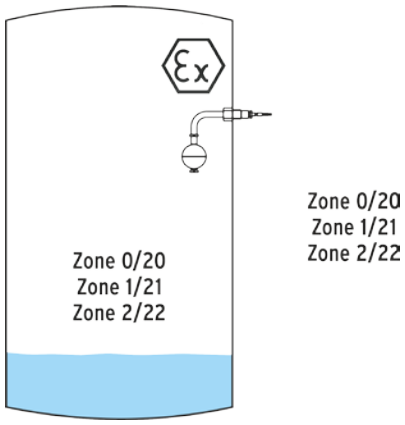
In liquids that can cause deposits, the float switch has to be cleaned at regular intervals. In this case the measuring tube and float should be cleaned from such deposits. Other maintenance jobs are not required.
Repairs must be only carried out by Kobold Mesura (manufacturer).

11.6. Storage

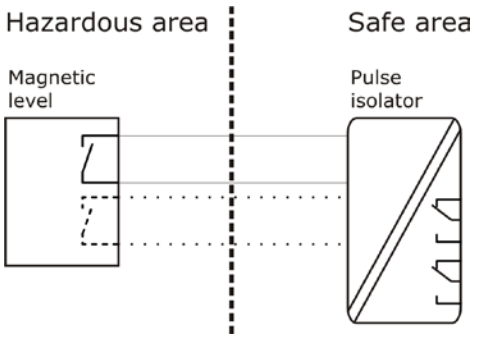
Measuring instruments should be protected against humidity and dust.
Storage temperature: -5…+55ºC

12. Installation in hazardous zone

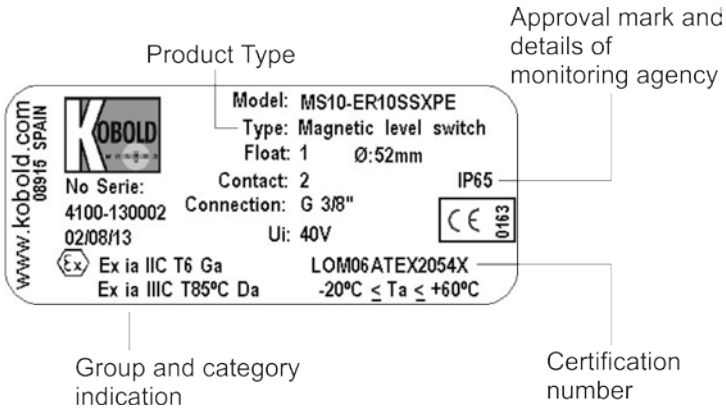
In classified zones, magnetic level switches series **MS**…**E** (ATEX version), can be installed in zone 0, 1, 20, 21 or in a not classified area.
Installation must be done with trained people on ATEX environments.



13.Electrical connection in ATEX zone



14.ATEX Label Description



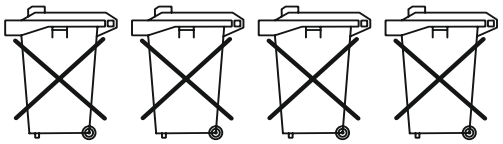
15.Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

Batteries

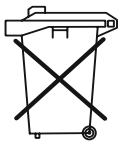
Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



Cd[1] Hg[2] Pb[3] Li[4]

1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment



16. Declaration of conformity ATEX Ex ia

DT0497

DECLARACIÓN DE CONFORMIDAD EU

EC DECLARATION OF CONFORMITY
EG-KONFORMITÄTSERKLÄRUNG
DÉCLARATION DE CONFORMITÉ
DICHIARAZIONE DI CONFORMITÀ CE

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 propia responsabilità, che il prodotto

Magnetic level switch
MS...E

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 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/A1:2020
EN61000-6-2 :2019
EN61326-1:2011
EN60079-0:2009 (acc. EN60079-0:2018)
EN60079-11:2012
*No changes are required to enable compliance with the replacement standards.

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
Marcatura

II 1 GD Ex ia IIC T6 Ga / Ex ia IIIC T85ºC Da
-20≤Ta≤+60ºC

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 March 2024

Gerente

17. EU Declaration of Conformity

DT0498

DECLARACIÓN DE CONFORMIDAD EU

EU DECLARATION OF CONFORMITY
EG-KONFORMITÄTSERKLÄRUNG
DÉCLARATION DE CONFORMITÉ
DICHIARAZIONE DI CONFORMITÀ EU

KOBOLD MESURA SLU
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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
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Magnetic level switch
MS...

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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/A1:2020
EN61000-6-2 :2019
EN61326-1:2011

Fabricado en: **KOBOLD MESURA SLU Avda. Conflent 68 nave 15 08915 BADALONA (Spain)**
Made in:
Hergestellt in:
Fabriqué dans:
Fabbricato in:

Badalona March 2024

Gerente

18.UK Declaration of Conformity

DT0665

DECLARACIÓN DE CONFORMIDAD UK

UK DECLARATION OF CONFORMITY
UK-KONFOMITÄTSERKLÄRUNG
DÉCLARATION DE CONFORMITÉ UK
DICHIARAZIONE DI CONFORMITÀ UK

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

We Kobold Mesura S.L.U. declare under our sole responsibility that the product:

Magnetic level switch
MS...

To which this declaration relates is in conformity with the standards noted below:

BS EN 61010-1:2010+A1:2019

Safety requirements for electrical equipment for measurement,controL, and laboratory use. General requirements

BS EN 61000-6-2:2019

Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments

BS EN 61000-6-2:2019

Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements

Also, the following UK guidelines are fulfilled:

S.I. 2016/1091 Electromagnetic Compatibility Regulations 2016.

S.I. 2016/1101 Electrical Equipment (Safety) Regulations 2016.

S.I. 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

Badalona March 2024

Gerente

19. ATEX Certified

LABORATORIO OFICIAL J. M. MADARIAGA

EC-TYPE EXAMINATION CERTIFICATE

(1)

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

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

(4) Equipment or Protection System: Level detectors
Types MIL... EX y RFS...EX

(5) Applicant: CONTROL INSTRUMENTS MESURA S.L.

(6) Address: Guifré, 665 1º
08912 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 04.221 JP**

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

(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 applies 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:

Ex II 2/1 D Ex tD A21 IP65 T85 ºC Ta:-20 /+ 60 ºC

Ex II 1 GD Ex ia IIC T6 / Ex iaD 20 T85 Ta:-20 /+ 60 ºC

OFICIAL LABORATORIO J.M. MADARIAGA LOM

Madrid, 16th June, 2006

Carlos Fernández Ramón
DIRECTOR OF THE LABORATORY

Angel Vega Remesal
Head of ATEX area

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ENSAYOS E INVESTIGACIONES DE MATERIALES Y EQUIPOS PARA ATMÓSFERAS EXPLOSIVAS Y MINERÍA
(Real Decreto 334/1992 de 3 de Abril - BOE 1992-04-29 -)
Alenza, 1 - 28003-MADRID • ☎ (34) 91 4421366/ 91 3367009 • Fax.(34) 91 4419933 • ✉ lom@lom.upm.es

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 thus 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 ; 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.

OFICIAL LABORATORIO J.M. MADARIAGA LOM

(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 nº:	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

OFICIAL LABORATORIO J.M. MADARIAGA

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LABORATORIO OFICIAL J. M. MADARIAGA

EC-TYPE EXAMINATION CERTIFICATE SUPPLEMENT

(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 MIL... 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

	Rev.	Date
- Drawings nr.: DT0132R2	2	2007-07-17

OFICIAL LABORATORIO LOM J.M. MADARIAGA

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

EC-TYPE EXAMINATION CERTIFICATE SUPPLEMENT

(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. **2** to EC-Type Examination Certificate **LOM 06ATEX2054 X**

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

(5) Manufacturer: KOBOLD 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 1GD 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 Remesal
Head of the ATEX

OFICIAL LABORATORIO J.M. MADARIAGA LOM

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

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Technical data
Subject to change without prior notice