

(1) EC TYPE-EXAMINATION CERTIFICATE



- (2) Equipment and Protective Systems intended for use in Potentially Explosive Atmosphere - **Directive 94/9/EC**
- (3) EC Type-Examination Certificate Number

TÜV 13 ATEX 7459 X

- (4) **Equipment:** Transmitter Liquiline M type CM42 - *G* ** * *****
- (5) **Manufacturer:** Endress + Hauser Conducta Gesellschaft für Mess- und Regeltechnik mbH + Co.KG
- (6) **Address:** Dieselstraße 24, 70839 Gerlingen Germany
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV Rheinland Zertifizierungsstelle for ex-protected products of TÜV Rheinland Industrie Service GmbH, Notified Body No. 0035 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies this equipment 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 atmosphere, given in Annex II to the Directive.
The examination and test results are recorded in the confidential report 557/Ex459.00/13
- (9) Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule of this certificate, has been assessed by reference to:
EN 60079-0:2012 EN 60079-11:2012 EN 60079-26:2007 incl. 1st corrigendum 2009
except the requirements, which are listed under item (18).
- (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 specification for construction of the equipment or protective system. It does not cover the process for actual manufacture or supply of the equipment or protective system, for which further requirements of the directive are applicable.
- (12) The marking of the equipment shall include the following:

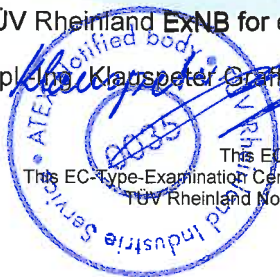


**II (1)2 G Ex ib [ia Ga] IIC T6 Gbor
II (1)2 G Ex ib [ia Ga] IIC T4 Gb**

TÜV Rheinland ExNB for explosion protected equipment

Cologne, 2014-02-06

Dipl.-Ing. Klaus Peter Graf



This EC-Type-Examination Certificate without signature and stamp shall not be valid.
This EC-Type-Examination Certificate may be circulated only without alteration. Extracts or alterations are subject to approval by the TÜV Rheinland Notified Body of TÜV Rheinland Industrie Service GmbH, Am Grauen Stein 51105 Köln
Tel. +49 (0) 221 806-0 Fax. + 49 (0) 221 806 114

(13)

Annex to

(14)

EC-Type Examination Certificate TÜV 13 ATEX 7459 X

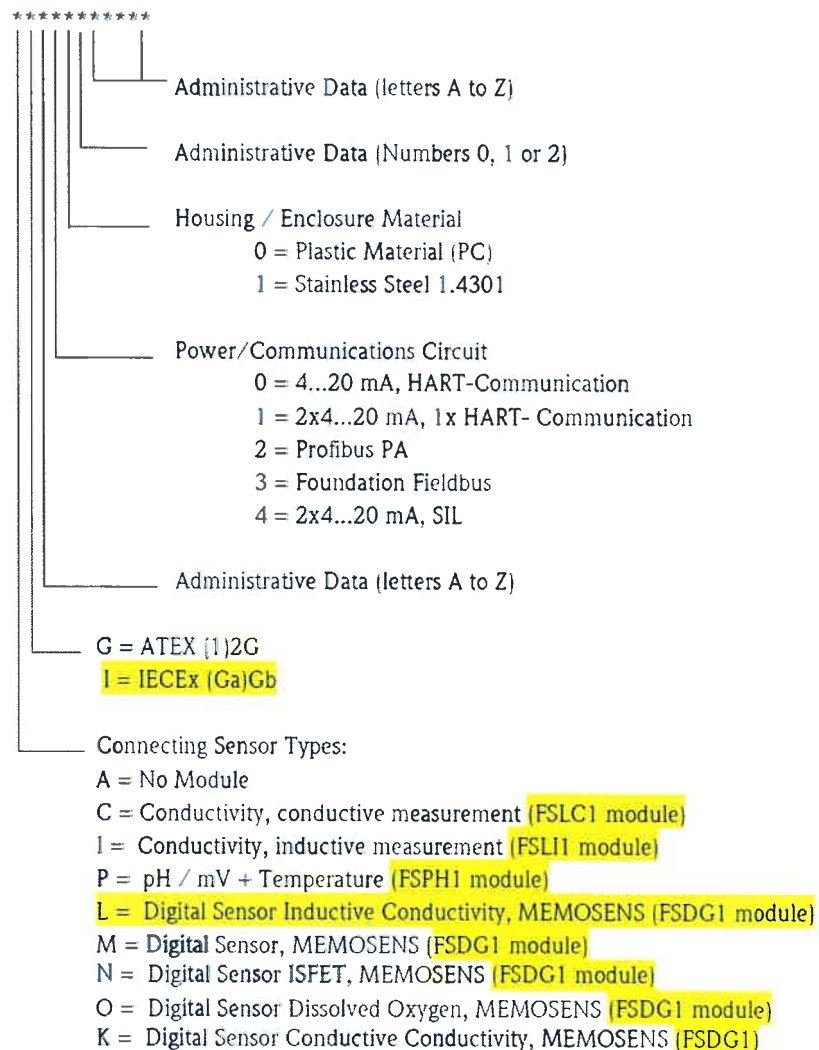
(15)

Description of equipment

15.1 Equipment and type:

Transmitter

Liquiline M CM42 -



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15.2 Description

The transmitter Liquiline M type CM42-*G* ** * ***** is used to acquire different parameters in analytical measuring technology, such as for example pH value, electrolytical conductivity or dissolved oxygen.

It consists either of a metallic enclosure (type CM42-*G* *1 * *****) or a plastic enclosure (type CM42-*G* *0 * *****), a display with operating elements, and terminals for external connection of the intrinsically safe circuits. For connection of the different intrinsically safe circuits several modules has to be used:

- For communication circuits the assemblies FBIH1 and FBPA1
- for the sensor circuits the modules FSPH1, FSLI1, FSLC1, and FSDG1.

15.3 Technical Data

15.1 Electrical ratings

15.1.1 Communication circuits

15.1.1.1 Assembly FBIH1: 2 Current outputs with HART communication via output 1

Current output 1 in type of protection Ex ib IIC

Terminals: 133-134

Maximum input voltage	U _i	30 V
Maximum input current	I _i	100 mA
Maximum input power	P _i	800 mW
Effective internal capacitance	C _i	1.2 nF
Effective internal inductance	L _i	29 µH

Current output 2 in type of protection Ex ib IIC

Terminals: 233-234

Maximum input voltage	U _i	30 V
Maximum input current	I _i	100 mA
Maximum input power	P _i	800 mW
Effective internal capacitance	C _i	0.2 nF
Effective internal inductance	L _i	24 µH

15.1.1.2 Assembly FBPA1: Current output for connection to a field bus communication system according to the FISCO concept

Current output in type of protection Ex ib IIC

Terminals: 997-998

Maximum input voltage	U _i	17.5 V
Maximum input current	I _i	380 mA
Maximum input power	P _i	5.32 W
Effective internal capacitance	C _i	< 5 nF
Effective internal inductance	L _i	<10 µH

15.1.2 Sensor circuits

15.1.2.1 Sensor modules FSPH1: Sensor input pH/ Redox and temperature

pH/ Redox sensor input and temperature in type of protection Ex ia IIC

Terminals: 317–320; 111-113

Maximum output voltage	U _o	10.08 V
Maximum output current	I _o	4.1 mA
Maximum output power	P _o	10.2 mW
Effective internal capacitance	C _i	28.9 nF

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Effective internal inductance	Li	305 μ H
Effective external capacitance	Co	250 nF
Effective external inductance	Lo	1 mH

pH-ISFET sensor input and temperature in type of protection Ex ia IIC
 Terminals: 315–320; 111-113

Maximum output voltage	Uo	10.08 V
Maximum output current	Io	50.7 mA
Maximum output power	Po	128 mW
Effective internal capacitance	Ci	28.9 nF
Effective internal inductance	Li	305 μ H
Effective external capacitance	Co	250 nF
Effective external inductance	Lo	1 mH

15.1.2.2 Sensor modules FSLI1: Sensor input for Inductive conductivity probe type CLS50 or type CLS54

Sensor input in type of protection Ex ia IIC
 Terminals: 111-113, 215-218

Maximum output voltage	Uo	10.08 V	
Maximum output current	Io	64 mA	
Maximum output power	Po	128 mW	
Effective internal capacitance	Ci	62 nF	(only internally, not effective)
Effective internal inductance	Li	305 μ H	(only internally, not effective)
Effective external capacitance	Co	1.8 μ F	
Effective external inductance	Lo	0.1 mH	

15.1.2.3 Sensor modules FSLC1: Sensor input for certified inductive conductivity probe type CLS**

Sensor input in type of protection Ex ia IIC
 Terminals: 111-113, 219-222

Maximum output voltage	Uo	10.08 V
Maximum output current	Io	23 mA
Maximum output power	Po	57 mW
Effective internal capacitance	Ci	21 nF
Effective internal inductance	Li	305 μ H
Effective external capacitance	Co	50 nF
Effective external inductance	Lo	300 μ H

15.1.2.4 Sensor modules FSDG1: Sensor input for suitable and intrinsically safe certified MEMOSENS devices according to BVS 04 ATEX E121X (Memosens sensors), BVS 12 ATEX E048X (CLS50D sensor), and BVS 12 ATEX E008 (Memocheck Sim)

Sensor input in type of protection Ex ia IIC
 Terminals: 187-188, 197-198

Maximum output voltage	Uo	5.04 V	
Maximum output current	Io	80 mA	
Maximum output power	Po	112 mW	
Effective internal capacitance	Ci	12.4 μ F	(only internally, not effective)
Effective internal inductance	Li	160.4 μ H	(only internally, not effective)

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15.2 Thermal ratings

Ambient temperature range

For temperature class T6 $-20\text{ °C} \leq T_a \leq +50\text{ °C}$

For temperature class T4 $-20\text{ °C} \leq T_a \leq +55\text{ °C}$

(16) **Test-Report No.** 557/Ex459.00/13

Parts of the device, which already fulfill the requirements for the category, were not approved and assessed by TÜV Rheinland Industrie Service.

The electronic was assessed for compliance to requirements of intrinsically safe circuits with level of protection "ib" resp. "ia" and the enclosure for compliance to the requirements of equipments meeting the separation distances according to Intrinsic Safety.

(17) **Special Conditions for safe use**

1. Metal enclosures must be connected to the local equipotential bonding system at the point of installation.
2. Only sensors, intended for use according to the user instruction, must be connected. The rated values of input and output circuits must be followed.

(18) **Basic Safety and Health Requirements**

Covered by afore mentioned standard

TÜV Rheinland ExNB für explosion protected equipment

Cologne, 2014-02-06


Dipl.-Ing. Klauspeter Graffi

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1st Supplement

to

EC - Type Examination Certificate

TÜV 13 ATEX 7459 X



Device: Transmitter Liquiline M type CM42 - *** ** * *****

Manufacturer: Endress + Hauser Conducta Gesellschaft für
Mess- und Regeltechnik mbH + Co.KG

Address: Dieselstraße 24,
70839 Gerlingen,
Germany

Description of supplements and modifications:

(15) **The following modifications are valid for this 1st Supplement**

Standard basis:

EN 60079-0:2012; EN 60079-11:2012; EN 60079-26:2007 incl. 1st Corrigendum 2009

Code for type of protection

 II (1)2 G Ex ib [ia Ga] IIC T4/T6 Gb

15.1 Equipment and Type

Transmitter Liquiline M type CM42-*** ** * *****

This 1st Supplement to the EC - Type Examination Certificate without signature and stamp shall not be valid.
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Page 1 of 3 of 1st Supplement to TÜV 13 ATEX 7459 X

15.2 Description

General product information

Transmitter Liquiline M type CM42-*** ** * *****

Type Code

Asterisk	Description
1	<u>Connecting Sensor Types:</u> A = No Module C = Conductivity, conductive measurement (FSLC1 module) I = Conductivity, inductive measurement (FSLI1 module) P = pH / mV + Temperature (FSPH1 module) L = Digital Sensor Inductive Conductivity, MEMOSENS (FSDG1 module) M = Digital Sensor, MEMOSENS (FSDG1 module) N = Digital Sensor ISFET, MEMOSENS (FSDG1 module) O = Digital Sensor Dissolved Oxygen, MEMOSENS (FSDG1 module) K = Digital Sensor Conductive Conductivity, MEMOSENS (FSDG1)
2	<u>Type of certification:</u> G = ATEX (1)2G E = ATEX (1)2G (baugleich mit "G") I = IECEx (Ga)Gb
3	Administrative Data (letters A to Z)
4	<u>Power/Communications Circuit</u> 0 = 4...20 mA, HART-Communication 1 = 2x 4...20 mA, 1x HART- Communication 2 = Profibus PA 3 = Foundation Fieldbus 4 = 2x 4...20 mA, SIL
5	<u>Housing / Enclosure Material</u> 0 = Plastic Material (PC) 1 = Stainless Steel 1.4301
6	Administrative Data (Numbers 0, 1 or 2)
7-11	Administrative Data (letters A to Z)

15.3 Technical Data

Unchanged

(16) **Test Report No.** 557 / Ex 459.01 / 13

Parts of the device, which already fulfill the requirements for the category, were not approved and assessed by TÜV Rheinland Industrie Service (e.g.xxxx).

The applicability and assembly of mechanical and electrical parts and components were assessed and approved by TÜV Rheinland Industrie Service with respect to the requirements of explosion protection.

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(17) **Special conditions for safe use**

The original certificate has to be observed.

(18) **Basic Safety and Health Requirements**

Covered by mentioned standards in the original certificate.

TÜV Rheinland ExNB for explosion protected equipment

Cologne, 2014-06-11


Dipl.-Ing. Klaus Peter Graf

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2nd Supplement

to

EC - Type Examination Certificate TÜV 13 ATEX 7459 X



Device: Transmitter Liquiline M type CM42 - *** ** * *****

Manufacturer: Endress + Hauser Conducta Gesellschaft für
Mess- und Regeltechnik mbH + Co.KG

Address: Dieselstraße 24,
70839 Gerlingen,
Germany

Description of supplements and modifications:

(15) **The following modifications are valid for this 2nd Supplement**

Standard basis:

EN 60079-0:2012; EN 60079-11:2012; EN 60079-26:2007 incl. 1st Corrigendum 2009

Code for type of protection

 **II (1)2 G Ex ib [ia Ga] IIC T4/T6 Gb**

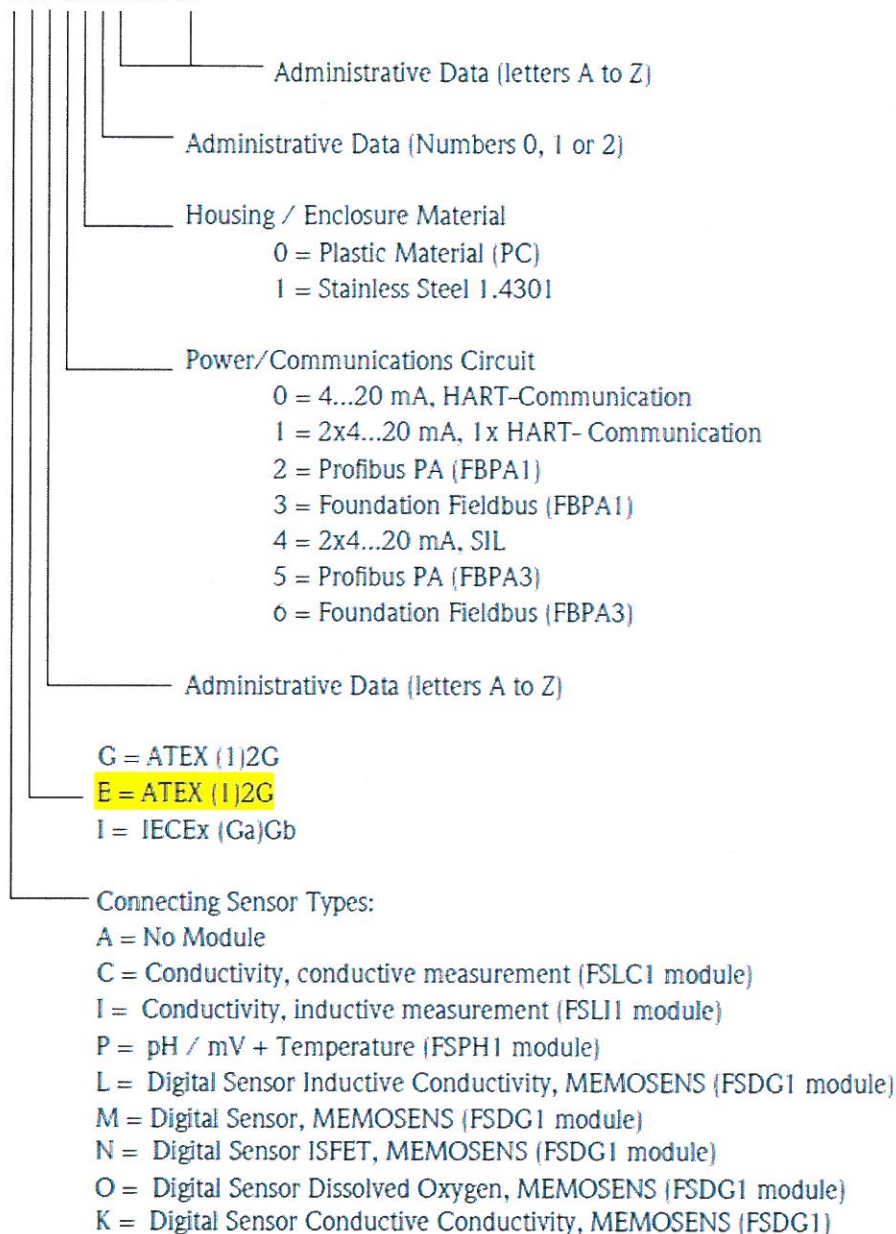
15.1 Equipment and Type

Transmitter Liquiline M type CM42-*** ** * *****

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Transmitter Liquiline M
Type CM42- *****



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15.2 Description

General product information

Transmitter Liquiline M type CM42-*** ** * *****

Subject of this supplement is the introduction of the new assembly FBPA3 which has the same function and external electrical parameters like assembly FBPA1.

Minor changes to assembly type FBIH1 and type FSPH1 are documented as well.

15.3 Technical Data

15.3.1 Electrical ratings

Assembly FBPA3: Current output for connection to a field bus communication system according to the FISCO concept

Current output in type of protection Ex ib IIC

Terminals: 997-998

Maximum input voltage	Ui	17.5 V
Maximum input current	Ii	380 mA
Maximum input power	Pi	5.32 W
Effective internal capacitance	Ci	< 5 nF
Effective internal inductance	Li	<10 µH

15.3.2 Thermal ratings

Unchanged

(16) **Test Report No.** 557 / Ex 459.02 / 13

Parts of the device, which already fulfill the requirements for the category, were not approved and assessed by TÜV Rheinland Industrie Service (e.g.xxxx).

The applicability and assembly of mechanical and electrical parts and components were assessed and approved by TÜV Rheinland Industrie Service with respect to the requirements of explosion protection.

(17) **Special conditions for safe use**

The original certificate and the 1st supplement has to be observed.

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(18) **Basic Safety and Health Requirements**

Covered by mentioned standards in the original certificate.

TÜV Rheinland ExNB for explosion protected equipment

Cologne, 2014-10-02

Dipl.-Ing. Klauspeter Graffi



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3rd Supplement

to

EC - Type Examination Certificate TÜV 13 ATEX 7459 X



Device: Transmitter Liquiline M type CM42 - *** ** * *****

Manufacturer: Endress + Hauser Conducta Gesellschaft für
Mess- und Regeltechnik mbH + Co.KG

Address: Dieselstraße 24,
70839 Gerlingen,
Germany

Description of supplements and modifications:

(15) The following modifications are valid for this 3rd Supplement

Standard basis:

EN 60079-0:2012; EN 60079-11:2012

Code for type of protection

 II (1)2 G Ex ib [ia Ga] IIC T6/T4 Gb

15.1 Equipment and Type

Transmitter Liquiline M type CM42-*** ** * *****

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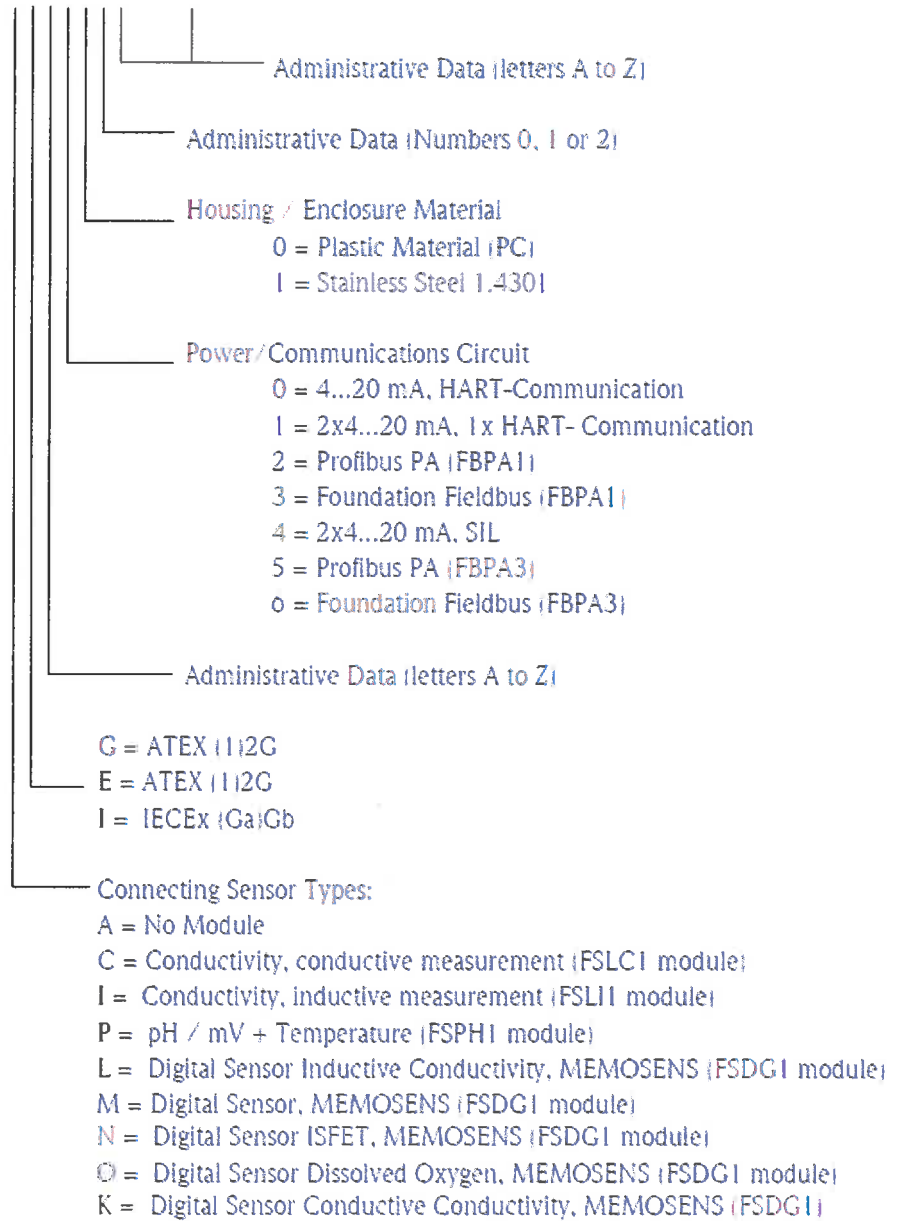
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Transmitter Liquiline M

Product Type Code:

Liquiline M CM42 -

*** ** * * * * * *



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15.2 Description

General product information

Transmitter Liquiline M type CM42-*** ** * *****

Subject of this supplement issue the certificate without an annex to EN 60079-26:2015, because the transmitter is an equipment with a single standardized Types of Protection (here Ex "ia") and these equipment are not in scope of EN 60079-26 anymore.

Beside this, minor hardware changes which do not effect the type of protection have been done to the construction of the transmitter as well as editorial changes because of a new document structure.

15.3 Technical Data

15.3.1 Electrical ratings

Unchanged

15.3.2 Thermal ratings

Unchanged

(16) **Test Report No.** 557 / Ex 459.03 / 13

Parts of the device, which already fulfill the requirements for the category, were not approved and assessed by TÜV Rheinland Industrie Service (e.g.xxxx).

The applicability and assembly of mechanical and electrical parts and components were assessed and approved by TÜV Rheinland Industrie Service with respect to the requirements of explosion protection.

(17) **Special conditions for safe use**

The original certificate, the 1st supplement and the 2nd supplement has to be observed.

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(18) **Basic Safety and Health Requirements**

Covered by mentioned standards in the original certificate.

TÜV Rheinland ExNB for explosion protected equipment

Cologne, 2015-10-09

Dipl.-Ing. Klaus Peter Graffi



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