

Translation

EU-Type Examination Certificate Supplement 3

Change to Directive 2014/34/EU

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 03 ATEX E 166 X**

Product: **Reed Sensor type *MG** * * * * ***

Manufacturer: **Taciak AG**

Address: **Kattenbeck 20, 59394 Nordkirchen, Germany**

This supplementary certificate extends EC-Type Examination Certificate No. BVS 03 ATEX E 166 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. PP 04.2107 EU.


Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

IEC 60079-0:2017	General requirements
EN 60079-11:2012	Intrinsic Safety "i"
EN 60079-26:2015	Equipment with equipment protection level (EPL) Ga

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

The marking of the product shall include the following:

	II 1G Ex ia IIC T4 / T3 Ga	resp.	II 1G Ex ia IIB T4 Ga
	II 1/2G Ex ia IIC T4 / T3 Ga/Gb	resp.	II 1/2G Ex ia IIB T4 Ga/Gb
	I M1 Ex ia I Ma	resp.	I M2 Ex ia I Mb

For allocation see tables in 15.1.2

DEKRA EXAM GmbH
Bochum, 2018-05-18

Signed: Jörg Koch

Certifier

Signed: Dr Michael Wittler

Approver



13 **Appendix**

14 **EU-Type Examination Certificate**

**BVS 03 ATEX E 166 X
Supplement 3**

15 **Product description**

15.1 **Subject and type**

15.1.1 The Reed Sensor may be manufactured according to the test documents stated in the relevant test report and is provided with the following extended type coding:

Reed Sensor type *MG * * * * * * * * * * * * * * * *
aMG bb cc ddd ee ff g h ii jjjj

a W = path or position sensor
N = level sensor

bb variant, 05 = 0 Ω .. 25 kΩ/m, U_i = 30 V
 variant, 06 = 0 Ω.. 50 kΩ/m, U_i = 30 V
 variant, 11 = U 0.5 .. 4.5 V, U_i = 14 V
 variant, 11.1 = U 0.5 .. 4.5 V, U_i = 14 V¹⁾
 variant, 12 = U 0.5 .. 4.5 V, U_i = 14 V
 variant, 51 = 100 .. xΩ, U_i = 8 V
 variant, 52 = 200 .. xΩ, U_i = 11 V
 variant, 53 = 400 .. xΩ, U_i = 15 V
 variant, 54 = 1000 .. xΩ, U_i = 30 V
 variant, 56 = measuring chain Var. 1 U_i = 15 V
 variant, 57 = measuring chain Var. 2 U_i = 30 V
 variant, 71 = U 0.5 .. 4,5 Volt U_i = 30 V
 variant, 72 = U 1 .. 5 Volt, U_i = 30 V
 variant, 73 = U 1 .. 10 Volt, U_i = 30 V
 variant, 81 = I 4 .. 20 mA, U_i = 30 V 2-wire

¹⁾ version 11.1: equal to 11, but current limiting resistors lead type

cc electrical connection, 01 = plug M8x1
 electrical connection, 02 = plug M12x1
 electrical connection, 05 = socket M12x1
 electrical connection, 06 = plug M8x1
 electrical connection, 11 = terminal box
 electrical connection, 21 = plug DIN 43650
 electrical connection, 22 = plug DIN 43650
 electrical connection, 51 = single strands
 electrical connection, 54 = screened cable 2 x 0.14
 electrical connection, 55 = cable 3 x 0.14
 electrical connection, 56 = cable 2 x 2 x 0.14
 electrical connection, 57 = cable 3 x 2 x 0.14
 electrical connection, 58 = cable 4 x 2 x 0.14
 electrical connection, 59 = cable 5 x 2 x 0.14
 electrical connection, 64 = screened cable 2 x 0.25
 electrical connection, 65 = cable 3 x 0.25
 electrical connection, 66 = cable 2 x 2 x 0.25
 electrical connection, 67 = cable 3 x 2 x 0.25
 electrical connection, 68 = cable 4 x 2 x 0.25
 electrical connection, 69 = cable 5 x 2 x 0.25
 electrical connection, 75 = screened cable 3 x 0.14
 electrical connection, 76 = screened cable 2 x 2 x 0.14
 electrical connection, 77 = screened cable 3 x 2 x 0.14
 electrical connection, 78 = screened cable 4 x 2 x 0.14
 electrical connection, 79 = screened cable 5 x 2 x 0.14
 electrical connection, 85 = screened cable 3 x 0.25
 electrical connection, 86 = screened cable 2 x 2 x 0.25

electrical connection, 87 = screened cable 3 x 2 x 0.25
 electrical connection, 88 = screened cable 4 x 2 x 0.25
 electrical connection, 89 = screened cable 5 x 2 x 0.25
 electrical connection, 91 = screened cable 2 x 0.5
 electrical connection, 92 = SiHF cable 2 x 0.5
 electrical connection, 93 = SiHF cable 4 x 0.25
 electrical connection, 96 = screened cable 2 x 2 x 0.5
 electrical connection, 97 = ASS cable 2 x 2 x 0.25
 electrical connection, 98 = screened cable 3 x 0.75

ddd Length of connecting cable in cm, e.g. 005 = 5 cm

ee material / tube diameter 01 = 1.4571, Ø 12 x 1
 material / tube diameter 02 = 1.4571, Ø 14 x 1
 material / tube diameter 03 = 1.4571, Ø 16 x 1
 material / tube diameter 04 = 1.4571, Ø 16 x 1,5
 material / tube diameter 05 = 1.4571, Ø 18 x 2
 material / tube diameter 06 = 1.4571, Ø 24 x 4
 material / tube diameter 07 = 1.4571, Ø 8 x 1
 material / tube diameter 08 = 1.4571, Ø 10 x 1
 material / tube diameter 09 = 1.4571, Ø 20 x 3
 material / tube diameter 10 = 1.4571, Ø 16 x 2
 material / tube diameter 15 = 1.4571, Ø 16 x 3
 material / tube diameter 51 = PVC-U, Ø 12 x 1
 material / tube diameter 52 = PVC-U, Ø 10 x 0.8
 material / tube diameter 53 = PVC-U, Ø 8 x 0.8
 material / tube diameter 55 = PVC-U, Ø 16 x 1.2
 material / tube diameter 61 = PVC-U, Ø 20 x 2.3

ff mechanical, insert nozzle type X
 mechanical, insert nozzle type Y
 mechanical, insert nozzle type Z

g pressure range, 1 = 6 bar
 pressure range, 2 = 16 bar
 pressure range, 3 = 25 bar
 pressure range, 4 = 100 bar
 pressure range, 5 = 200 bar
 pressure range, 6 = 300 bar
 pressure range, 7 = 400 bar
 pressure range, 8 = 500 bar
 pressure range, 9 = 600 bar
 pressure range, 0 = 1000 bar

h accessories mounted, 1 = 1 x Pt100
 accessories mounted, 2 = 2 x Pt100
 accessories mounted, 3 = 3 x Pt100
 accessories mounted, 4 = 1 x Pt1000
 accessories mounted, 5 = 2 x Pt1000
 accessories mounted, 6 = three contacts
 accessories mounted, 8 = one contact
 accessories mounted, 9 = two contacts
 accessories mounted, 0 = without accessories

i resolution in mm, e.g. 05 = 5 mm

jjjj length measured in full text, e.g. 0050 = 50 mm

The type coding can be supplemented at the end by further markings such as numbers of variants or customer-specific variants; however, these are not relevant for the explosion protection.

15.1.2 The allocation of the different variants of the Reed Sensor regarding types of ignition protection, temperature classes, ambient temperature range and equipment categories (EPLs) is provided in the tables below.
Particularities or restrictions which have to be observed are listed in 'Special conditions for safe use', numbers 17.1 to 17.10.

15.1.2.1 Reed Sensor (metal variant) with plug connection

Reed Sensor type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 01 ddd 0*/10/15 ff g h ii jjjj NMG bb 02 ddd 0*/10/15 ff g h ii jjjj NMG bb 05 ddd 0*/10/15 ff g h ii jjjj NMG bb 06 ddd 0*/10/15 ff g h ii jjjj NMG bb 21 ddd 0*/10/15 ff g h ii jjjj NMG bb 22 ddd 0*/10/15 ff g h ii jjjj	1/2G Ex ia IIC T4 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see 17.1, 17.4.*	-30 °C ≤ T _a ≤ +80 °C
NMG 56 ** ddd 0* ff g h ii jjjj NMG 57 ** ddd 0* ff g h ii jjjj	1/2G Ex ia IIC T3 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see 17.1, 17.4.*	-15 °C ≤ T _a ≤ +150 °C
WMG bb 01 ddd 0*/10/15 ff g h ii jjjj WMG bb 02 ddd 0*/10/15 ff g h ii jjjj WMG bb 05 ddd 0*/10/15 ff g h ii jjjj WMG bb 06 ddd 0*/10/15 ff g h ii jjjj WMG bb 21 ddd 0*/10/15 ff g h ii jjjj WMG bb 22 ddd 0*/10/15 ff g h ii jjjj	1/2G Ex ia IIC T4 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see 17.1, 17.2.*	-30 °C ≤ T _a ≤ +80 °C
WMG 56 ** ddd 0* ff g h ii jjjj WMG 57 ** ddd 0* ff g h ii jjjj	1/2G Ex ia IIC T3 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see 17.1, 17.2.*	-15 °C ≤ T _a ≤ +150 °C

Note:
at variant *MG 56 / 57 ** ddd 0* ff g h ii jjjj the asterisks '**' will be replaced by the marking for connectors 01, 02, 05, 06, 21, 22 according to the suitability for use in high temperatures

15.1.2.2 Reed Sensor (plastic variant) with plug connection

Reed Sensor Type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 01 ddd 51/52/53/55/61 ff g h ii jjjj NMG bb 02 ddd 51/52/53/55/61 ff g h ii jjjj NMG bb 05 ddd 51/52/53/55/61 ff g h ii jjjj NMG bb 21 ddd 51/52/53/55/61 ff g h ii jjjj	1/2G Ex ia IIB T4 Ga/Gb	I M1 Ex ia I Ma (or optional)	see 17.1, 17.5.*	-30 °C ≤ T _a ≤ +60 °C
WMG bb 01 ddd 51/52/53/55/61 ff g h ii jjjj WMG bb 02 ddd 51/52/53/55/61 ff g h ii jjjj WMG bb 05 ddd 51/52/53/55/61 ff g h ii jjjj WMG bb 21 ddd 51/52/53/55/61 ff g h ii jjjj	1/2G Ex ia IIB T4 Ga/Gb	I M2 Ex ia I Mb	see 17.1, 17.3.*	-30 °C ≤ T _a ≤ +60 °C

15.1.2.3 Reed Sensor (metal variant) with light alloy terminal box

Reed Sensor type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 11 ddd 0*/10/15 ff g h ii jjjj	1/2G Ex ia IIC T4 Ga/Gb	not applicable	see 17.4.*	-30 °C ≤ T _a ≤ +80 °C
NMG 56 11 ddd 0* ff g h ii jjjj NMG 57 11 ddd 0* ff g h ii jjjj	1/2G Ex ia IIC T3 Ga/Gb	not applicable	see 17.4.*	-15 °C ≤ T _a ≤ +150 °C
WMG bb 11 ddd 0*/10/15 ff g h ii jjjj	1/2G Ex ia IIC T4 Ga/Gb	not applicable	see 17.2.*	-30 °C ≤ T _a ≤ +80 °C
WMG 56 11 ddd 0* ff g h ii jjjj WMG 57 11 ddd 0* ff g h ii jjjj	1/2G Ex ia IIC T3 Ga/Gb	not applicable	see 17.2.*	-15 °C ≤ T _a ≤ +150 °C

15.1.2.4 Reed Sensor (plastic variant) with light alloy terminal box

Reed Sensor Type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 11 ddd 51/55/61 ff g h ii jjjj NMG bb 11 ddd 52/53 ff g h ii jjjj	1/2G Ex ia IIB T4 Ga/Gb	not applicable	see 17.5.*	-30 °C ≤ T _a ≤ +60 °C
WMG bb 11 ddd 51/55/61 ff g h ii jjjj WMG bb 11 ddd 52/53 ff g h ii jjjj	1/2G Ex ia IIB T4 Ga/Gb	not applicable	see 17.3.*	-30 °C ≤ T _a ≤ +60 °C

15.1.2.5 Reed Sensor (metal variant) with permanently connected cable, single wires or unscreened cable

Reed Sensor Type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 5* ddd 0*/10/15 ff g h ii jjjj NMG bb 6* ddd 0*/10/15 ff g h ii jjjj	1/2G Ex ia IIC T4 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see, 17.4.*, 17.10	-30 °C ≤ T _a ≤ +80 °C
NMG 56 ** ddd 0* ff g h ii jjjj NMG 57 ** ddd 0* ff g h ii jjjj	1/2G Ex ia IIC T3 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see, 17.4.*, 17.10	-15 °C ≤ T _a ≤ +150 °C
WMG bb 5* ddd 0*/10/15 ff g h ii jjjj WMG bb 6* ddd 0*/10/15 ff g h ii jjjj	1/2G Ex ia IIC T4 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see, 17.2.*, 17.10	-30 °C ≤ T _a ≤ +80 °C
WMG 56 ** ddd 0* ff g h ii jjjj WMG 57 ** ddd 0* ff g h ii jjjj	1/2G Ex ia IIC T3 Ga/Gb	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see, 17.2.*, 17.10	-15 °C ≤ T _a ≤ +150 °C

Note:
at variant *MG 56 / 57 ** ddd 0* ff g h ii jjjj the asterisks will be replaced by the following marking for unscreened connecting cables suited for high temperatures: 92, 93 or 97

15.1.2.6 Reed Sensor (plastic variant) with permanently connected cable, single wires or unscreened cable

Reed Sensor Type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 5* ddd 51/52/53/55/61 ff g h ii jjjj NMG bb 6* ddd 51/52/53/55/61 ff g h ii jjjj	1/2G Ex ia IIB T4 Ga/Gb	I M1 Ex ia I Ma (or optional)	see, 17.5.*, 17.10	-30 °C ≤ T _a ≤ +80 °C
WMG bb 5* ddd 51/52/53/55/61 ff g h ii jjjj WMG bb 6* ddd 51/52/53/55/61 ff g h ii jjjj	1/2G Ex ia IIB T4 Ga/Gb	I M2 Ex ia I Mb	see, 17.3.*, 17.10	-30 °C ≤ T _a ≤ +80 °C

15.1.2.7 Reed Sensor (metal variant) with permanently connected cable; screened cable

Reed Sensor Type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 7* ddd 0*/10/15 ff g h ii jjjj NMG bb 8* ddd 0*/10/15 ff g h ii jjjj NMG bb 9* ddd 0*/10/15 ff g h ii jjjj	1G Ex ia IIC T4 Ga	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see, 17.8.*, 17.10	-30 °C ≤ T _a ≤ +80 °C
WMG bb 7* ddd 0*/10/15 ff g h ii jjjj WMG bb 8* ddd 0*/10/15 ff g h ii jjjj WMG bb 9* ddd 0*/10/15 ff g h ii jjjj	1G Ex ia IIC T4 Ga	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see, 17.6.*, 17.10	-30 °C ≤ T _a ≤ +80 °C

15.1.2.8 Reed Sensor (plastic variant) with permanently connected cable; screened cable

Reed Sensor Type	Category / additional marking		Particularities or restrictions	Ambient temperature range
	Group II	Group I		
NMG bb 7* ddd 51/52/53/55/61 ff g h ii jjjj NMG bb 8* ddd 51/52/53/55/61 ff g h ii jjjj NMG bb 9* ddd 51/52/53/55/61 ff g h ii jjjj	1G Ex ia IIB T4 Ga	I M1 Ex ia I Ma (or optional) I M2 Ex ia I Mb	see 17.9.*, 17.10	-30 °C ≤ T _a ≤ +60 °C
WMG bb 7* ddd 51/52/53/55/61 ff g h ii jjjj WMG bb 8* ddd 51/52/53/55/61 ff g h ii jjjj NMG bb 9* ddd 51/52/53/55/61 ff g h ii jjjj	1G Ex ia IIB T4 Ga	I M2 Ex ia I Mb	see 17.7.*, 17.10	-30 °C ≤ T _a ≤ +60 °C

15.2 Description

With this supplement the certificate is changed to Directive 2014/34/EU.
(Annotation: In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.)

Reason for the supplement:

- Change to Directive 2014/34/EU
- Update of applied standards as listed in item 9
- Extension with new variants of construction
- Marking 'I M2 Ex ia I Mb' instead of 'I M1 Ex ia I Ma' as an alternate option
- EN 50303:2000 removed; applicable requirements in EN 50303:2000 are incorporated in IEC 60079-0:2017, EN 60079-11:2012, EN 60079-26:2015.

Description of Product

The Reed Sensor type WMG** * * * * * serves the purpose of path or position sensing in liquid or gaseous media in an intrinsically safe manner.

The Reed Sensor type NMG** * * * * * serves the purpose of level sensing of liquid media in an intrinsically safe manner.

A printed circuit board has been mounted into a tube construction of either metal or plastic. On this printed circuit board reed-switches and resistors are mounted as well as an electronic circuit, depending on the variant.

Optionally, one side of the tube construction may feature a permanently connected cable or a terminal box or a plug connection for the intrinsically safe circuits.

All variants providing connectors are intended to be connected to a single intrinsically safe 2-wire or multi-wire circuit.

The open leads of variants providing permanently connected cable may be fitted optionally with a connector type TSV024-*-*-*-*.

Variants fitted with a connector type TSV024-*-*-*-* may be enhanced with prefabricated extension-cable.

Path length or position values are generated by means of a position probe, which is placed on the tube construction. The position probe actuates the reed switches via ring magnet inside and is moved for instance by an external machine part at variant Reed Sensor type WMG * * * * *

Filling level values are generated by means of a float lever, which is placed on the tube construction. The float lever actuates the reed switches via ring magnet inside and is moved by the liquid level at variant Reed Sensor type NMG * * * * *

The ring magnet inside the float lever is unbalanced; in order to achieve a constant electrostatically conductive connection with the tube construction

Listing of all components used referring to older standards: Not applicable



15.3 Parameters

15.3.1 Reed Sensor with plug connection, type series

aMG bb 01 ddd ee ff g h ii jjjj
aMG bb 02 ddd ee ff g h ii jjjj
aMG bb 05 ddd ee ff g h ii jjjj
aMG bb 06 ddd ee ff g h ii jjjj
aMG bb 21 ddd ee ff g h ii jjjj
aMG bb 22 ddd ee ff g h ii jjjj

Reed Sensor type (parameters in type coding)		Supply circuit				
bb	h	Voltage U_i	Current I_i	Power P_i	Internal effective capacitance C_i	Internal effective inductance L_i
05	0/1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
06	0/1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
11	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	10 nF	negligible
11.1	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	10 nF	negligible
12	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	negligible	negligible
51	0/1/2/3/4/5/6/8/9	AC/DC 8 V	-	-	negligible	negligible
52	0/1/2/3/4/5/6/8/9	AC/DC 11 V	-	-	negligible	negligible
53	0/1/2/3/4/5/6/8/9	AC/DC 15 V	-	-	negligible	negligible
54	0/1/2/3/4/5/6/8/9	DC 30 V	-	-	negligible	negligible
56	0/1/2/3/4/5/6/8/9	DC 15 V	160 mA	800 mW	negligible	negligible
57	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
71	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
72	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
73	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
81	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	10 nF	negligible
(Parameters in type coding)		Pt100 / Pt1000 - or contact circuit(s) (additionally to the supply circuit) Not galvanically separated from the supply circuit				
bb	h	Voltage U_i	Current I_i	Power P_i *)	Internal effective capacitance C_i	Internal effective inductance L_i
05	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
06	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
11	1/2/3/4/5/6/8/9	DC 14 V	160 mA	800 mW	negligible	negligible
11.1	1/2/3/4/5/6/8/9	DC 14 V	160 mA	800 mW	negligible	negligible
12	1/2/3/4/5/6/8/9	DC 14 V	160 mA	800 mW	negligible	negligible
51	1/2/3/4/5/6/8/9	AC/DC 8 V	160 mA	800 mW	negligible	negligible
52	1/2/3/4/5/6/8/9	AC/DC 11 V	160 mA	800 mW	negligible	negligible
53	1/2/3/4/5/6/8/9	AC/DC 15 V	160 mA	800 mW	negligible	negligible
54	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
56	1/2/3/4/5/6/8/9	DC 15 V	160 mA	800 mW	negligible	negligible
57	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
71	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
72	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
73	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
81	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible

*) if more than one Pt100 / Pt1000 - or contact circuit: sum of all values

15.3.2 Reed Sensor with socket, type series aMG bb 11 ddd ee ff g h ii jjjj

Reed Sensor type (parameters in type coding)		Supply circuit				
bb	h	Voltage U_i **)	Current I_i	Power P_i	Internal effective capacitance C_i	Internal effective inductance L_i
05	0/1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
06	0/1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
11	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	10 nF	negligible
11.1	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	10 nF	negligible
12	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	negligible	negligible
51	0/1/2/3/4/5/6/8/9	AC/DC 8 V	-	-	negligible	negligible
52	0/1/2/3/4/5/6/8/9	AC/DC 11 V	-	-	negligible	negligible
53	0/1/2/3/4/5/6/8/9	AC/DC 15 V	-	-	negligible	negligible
54	0/1/2/3/4/5/6/8/9	DC 30 V	-	-	negligible	negligible
56	0/1/2/3/4/5/6/8/9	DC 15 V	160 mA	800 mW	negligible	negligible
57	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
71	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
72	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
73	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
81	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	10 nF	negligible

(Parameters in type coding)		Pt100 / Pt1000 or contact circuit(s) (additionally to the supply circuit) galvanically separated from the supply circuit				
bb	h	Voltage U_i **)	Current I_i	Power P_i *)	Internal effective capacitance C_i	Internal effective inductance L_i
05	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
06	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
11	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
11.1	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
12	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
51	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
52	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
53	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	negligible	negligible
54	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
56	1/2/3/4/5/6/8/9	DC 15 V	160 mA	800 mW	negligible	negligible
57	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
71	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
72	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
73	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible
81	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	negligible	negligible

*) if more than one Pt100 / Pt1000 - or contact circuit sum of all values

**) to AC 30 V the following applies: sum of peak values of voltages of different circuits ≤ 60 V

15.3.3 Reed Sensor with permanently connected cable type series

- aMG bb 51 ddd ee ff g h ii jjjj (single wires)
- aMG bb 55/56/57/58/59 ddd ee ff g h ii jjjj (cable unscreened)
- aMG bb 64/65/66/67/68/69 ddd ee ff g h ii jjjj (cable unscreened)
- aMG bb 75/76/77/78/79 ddd ee ff g h ii jjjj (cable screened)
- aMG bb 85/86/87/88/89 ddd ee ff g h ii jjjj (cable screened)
- aMG bb 91/96/98 ddd ee ff g h ii jjjj (cable screened)
- aMG bb 92/93/97 ddd ee ff g h ii jjjj (SiHF / ASS cable)

Reed Sensor type (parameters in type coding)		Supply circuit				
bb	h	Voltage U_i **)	Current I_i	Power P_i	Internal effective capacitance C_i	Internal effective inductance L_i
05	0/1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
06	0/1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
11	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	10 nF + 0.2 nF/m	1 µH/m
11.1	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	10 nF + 0.2 nF/m	1 µH/m
12	0/1/2/3/4/5/6/8/9	DC 14 V	-	-	0.2 nF/m	1 µH/m
51	0/1/2/3/4/5/6/8/9	AC/DC 8 V	-	-	0.2 nF/m	1 µH/m
52	0/1/2/3/4/5/6/8/9	AC/DC 11 V	-	-	0.2 nF/m	1 µH/m
53	0/1/2/3/4/5/6/8/9	AC/DC 15 V	-	-	0.2 nF/m	1 µH/m
54	0/1/2/3/4/5/6/8/9	DC 30 V	-	-	0.2 nF/m	1 µH/m
56	0/1/2/3/4/5/6/8/9	DC 15 V	-	-	0.2 nF/m	1 µH/m
57	0/1/2/3/4/5/6/8/9	DC 30 V	-	-	0.2 nF/m	1 µH/m
71	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
72	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
73	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
81	0/1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	10 nF + 0.2 nF/m	1 µH/m

(Parameters in type coding)		Pt100 / Pt1000 - or contact circuit(s) ***) (additionally to the supply circuit) galvanically separated from the supply circuit				
bb	h	Voltage U_i **)	Current I_i	Power P_i *)	Internal effective capacitance C_i	Internal effective inductance L_i
05	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
06	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
11	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
11.1	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
12	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
51	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
52	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
53	1/2/3/4/5/6/8/9	AC/DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
54	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
56	1/2/3/4/5/6/8/9	DC 15 V	160 mA	800 mW	0.2 nF/m	1 µH/m
57	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
71	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
72	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
73	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m
81	1/2/3/4/5/6/8/9	DC 30 V	160 mA	800 mW	0.2 nF/m	1 µH/m

*) if more than one Pt100 / Pt1000 - or contact circuit sum of all values
 **) to AC 30 V the following applies: sum of peak values of voltages of different circuits ≤ 60 V
 ***) not possible for variant aMG bb 55/65/75/85/98 ddd ee ff g h ii jjjj

15.3.4 Ambient temperature range:

- 30 °C ≤ T_a ≤ +80 °C (type aMG bb cc ddd 01/02/03/04/05/06/07/08/09/10/15 ff g h ii jjjj)
- 30 °C ≤ T_a ≤ +60 °C (type aMG bb cc ddd 51/52/53/55//61 ff g h ii jjjj)
- 15 °C ≤ T_a ≤ +150 °C (type aMG 56/57 01/02/05/06/21/22 ddd 0* ff g h ii jjjj)
- 15 °C ≤ T_a ≤ +150 °C (type aMG 56/57 92/93/97 ddd 0* ff g h ii jjjj)

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BVS PP 04.2107 EU, as of 2018-05-18

17 **Special Conditions for Use**

- 17.1 Reed Sensor type aMG bb cc ddd ee ff g h ii jjjj marked with 'I M1 Ex ia I Ma' or 'I M2 Ex ia I Mb'
Reed Sensor with plug connection: type aMG bb 01/02/05/06//21/22 ddd ee ff g h ii jjjj
None
- 17.2 Reed Sensor type WMG bb cc ddd ee ff g h ii jjjj marked with 'II 1/2G Ex ia IIC T* Ga/Gb'
Reed Sensor type WMG bb cc ddd 01/02/03/04/05/06/07/09/10/15 ff g h ii jjjj;
(skid tube and position probe made of metal).
- 17.2.1 The Reed Sensor has to be mounted in boundary walls between areas that require Category 1G (EPL Ga) equipment and less hazardous areas in such a manner that degree of protection IP67 according to EN 60529 is ensured.
- 17.2.2 The enclosure of the Reed Sensor shall be integrated into the equipotential bonding.
- 17.2.3 The technical information provided by the manufacturer regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical damage by external mechanically moved parts have to be adhered too.
- 17.3 Reed Sensor type WMG bb cc ddd ee ff g h ii jjjj marked with 'II 1/2G Ex ia IIB T4 Ga/Gb'
Reed Sensor type WMG bb cc ddd 51/52/53/55/61 ff g h ii jjjj
(skid tube made of plastic, position probe made of metal).
- 17.3.1 The Reed Sensor has to be mounted in boundary walls between areas that require Category 1G (EPL Ga) equipment and less hazardous areas in such a manner that degree of protection IP67 according to EN 60529 is ensured.
- 17.3.2 The metallic fasteners of the Reed Sensor and the position probe moved by external machine parts shall be integrated into the equipotential bonding.
- 17.3.3 The technical information provided by the manufacturer regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical damage by external mechanically moved parts have to be adhered too.
- 17.4 Reed Sensor type NMG bb cc ddd ee ff g h ii jjjj marked with 'II 1/2G Ex ia IIC T* Ga/Gb'
Reed Sensor type NMG bb cc ddd 01/02/03/04/05/06/07/09/10/15 ff g h ii jjjj
(skid tube and float lever made of metal)
- 17.4.1 The Reed Sensor has to be mounted in boundary walls between areas that require Category 1G (EPL Ga) equipment and less hazardous areas in such a manner that degree of protection IP67 according to EN 60529 is ensured.
- 17.4.2 The enclosure of the Reed Sensor shall be integrated into the equipotential bonding.
- 17.4.3 The technical information provided by the manufacturer regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical hazards caused by vibration or agitation have to be adhered too.
- 17.5 Reed Sensor type NMG bb cc ddd ee ff g h ii jjjj marked with 'II 1/2G Ex ia IIB T4 Ga/Gb'
Reed Sensor type NMG bb cc ddd 51/52/53/55/61 ff g h ii jjjj
(skid tube made of plastic, float lever made of metal)
- 17.5.1 The Reed Sensor has to be mounted in boundary walls between areas that require Category 1G (EPL Ga) equipment and less hazardous areas in such a manner that degree of protection IP67 according to EN 60529 is ensured.
- 17.5.2 The metallic fasteners of the Reed Sensor shall be integrated into the equipotential bonding.
- 17.5.3 The technical information provided by the manufacturer regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical hazards caused by vibration or agitation have to be adhered too.
- 17.5.4 The Reed Sensor may only be used in conjunction with liquids that are earthed and have a conductivity of ≥ 1000 pS/m.

- 17.6 Reed Sensor type WMG bb cc ddd ee ff g h ii jjjj marked with 'II 1G Ex ia IIC T* Ga'
 Reed Sensor type WMG bb 7*/8*/9* ddd 01/02/03/04/05/06/07/09/10/15 ff g h ii jjjj;
 (skid tube and position probe made of metal).
- 17.6.1 The permanently connected cable has to be fastened / screwed in the boundary wall between areas that require Category 1G (EPL Ga) equipment and less hazardous area in such a manner that degree of protection IP67 is ensured according to EN 60529.
- 17.6.2 The enclosure of the Reed Sensor, the position probe moved by external machine parts and the screen of the permanently connected cable shall be integrated into the equipotential bonding.
- 17.6.3 If the permanently connected cable is installed in Zone 0 (EPL Ga area), intensive electrostatic charges have to be prevented.
- 17.6.4 The technical information provided by the manufacturer regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical damage by external mechanically moved parts have to be adhered too.
- 17.7 Reed Sensor type WMG bb cc ddd ee ff g h ii jjjj marked with 'II 1G Ex ia IIB T4 Ga'
 Reed Sensor type WMG bb 7*/8*/9* ddd 51/52/53/55/61 ff g h ii jjjj;
 (skid tube mad of plastic; position probe made of metal).
- 17.7.1 The permanently connected cable has to be fastened / screwed in the boundary wall between areas that require Category 1G (EPL Ga) equipment and less hazardous area in such a manner that degrees of protection IP67 are ensured according to EN 60529.
- 17.7.2 The metallic fasteners of the Reed Sensor, the position probe moved by external machine parts and the screen of the permanently connected cable shall be integrated into the equipotential bonding.
- 17.7.3 If the permanently connected cable is installed in Zone 0 (EPL Ga area), intensive electrostatic charges have to be prevented.
- 17.7.4 The technical information provided by the manufacturer regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical damage by external mechanically moved parts have to be adhered too.
- 17.8 Reed Sensor type NMG bb cc ddd ee ff g h ii jjjj marked with 'II 1G Ex ia IIC T* Ga'
 Reed Sensor type NMG bb 7*/8*/9* ddd 01/02/03/04/05/06/07/09/10/15 ff g h ii jjjj
 (skid tube and float lever made of metal)
- 17.8.1 The permanently connected cable has to be fastened / screwed in the boundary wall between areas that require Category 1G (EPL Ga) equipment and less hazardous area in such a manner that degrees of protection IP67 are ensured according to EN 60529.
- 17.8.2 The enclosure of the Reed Sensor and the screen of the permanently connected cable shall be integrated into the equipotential bonding.
- 17.8.3 If the permanently connected cable is installed in Zone 0 (EPL Ga area), intensive electrostatic charges have to be prevented.
- 17.8.4 The technical information provided by the manufacture regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical hazards caused by vibration or agitation have to be adhered too.
- 17.9 Reed Sensor type NMG bb cc ddd ee ff g h ii jjjj marked with 'II 1G Ex ia IIB T4 Ga'
 Reed Sensor type NMG bb 7*/8*/9* ddd 51/52/53/55/61 ff g h ii jjjj
 (skid tube made of plastic, float lever made of metal)
- 17.9.1 The permanently connected cable has to be fastened / screwed in the boundary wall between areas that require Category 1G (EPL Ga) equipment and less hazardous area in such a manner that degrees of protection IP67 are ensured according to EN 60529..
- 17.9.2 The metallic fasteners of the Reed Sensor and the screen of the permanently connected cable shall be integrated into the equipotential bonding.
- 17.9.3 If the permanently connected cable is installed in Zone 0 (EPL Ga area), intensive electrostatic charges have to be prevented.

- 17.9.4 The technical information provided by the manufacturer regarding the use of the Reed Sensor in conjunction with aggressive or corrosive media and the prevention of mechanical hazards caused by vibration or agitation have to be adhered too.
- 17.9.5 The Reed Sensor may only be used in conjunction with liquids that are earthed and have a conductivity of ≥ 1000 pS/m.
- 17.10 Reed Sensor with permanently connected cable (refers to all Ex-markings)
type aMG bb 51/56 to 59 ddd ee ff g h ii jjjj; type aMG bb 66 to 69 ddd ee ff g h ii jjjj,
type aMG bb 76 to 79 ddd ee ff g h ii jjjj; type aMG bb 86 to 89 ddd ee ff g h ii jjjj,
type aMG bb 93/96/97 ddd ee ff g h ii jjjj;
If the permanently connected multi-strand cable carries different intrinsically safe circuits, it has to be protected against mechanical damage by suitable installation.

18 Essential Health and Safety Requirements

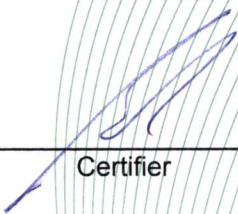
The Essential Health and Safety Requirements are covered by the standards listed under item 9.
The standard IEC 60079-0:2017 is equivalent to the harmonized Standard EN 60079-0:2012 + A11:2013 in terms of safety.

19 Drawings and Documents

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
Bochum, dated 2018-05-18
BVS-Scha/Mu A 20170856



Certifier



Approver