Translation

(1) EC-Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) No. of EC-Type Examination Certificate: **BVS 14 ATEX E 060 X**

(4) Equipment: **3D Solids Scanner type 5708 ***

(5) Manufacturer: **Rosemount, Inc.**

(6) Address: **8200 Market Boulevard, Chanhassen, MN 55317, USA**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.

(8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment 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 the Test and Assessment Report BVS PP 14.2149 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 60079-0:2012 General requirements
EN 60079-11:2012 Intrinsic Safety "i"

(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 appendix to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2G Ex ib [ia] IIB T4 Gb
II 1/2D Ex ib [ia] IIIC T110°C Da/Db

DEKRA EXAM GmbH
Bochum, dated 2014-07-02

Signed: Dr. Eickhoff
Certification body

Signed: Dr. Arnold
Special services unit

This certificate may only be reproduced in its entirety and without change.
DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany Phone +49.234.3696-105 Fax +49.234.3696-110 zs-exam@dekra.com

(13) Appendix to

(14) **EC-Type Examination Certificate**
BVS 14 ATEX E 060 X

(15) 15.1 Subject and type

3D Solids Scanner type 5708 *

In the full designation, the '*' is replaced by letters and/or numbers indicating variants.
Detailed type and ordering code:

Detailed type and ordering code																							
5708	*	*	*	*	*	*	**	*	*	*	***	****	*	**	**	***	*	**	**	***	***	*	R****
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w

a – Measurement type	L = level, V = volume, S = volume with special features
b – Tank diameter	C = standard, E = extended, N = not applicable
c – Visualization	V = with visualization, N = not applicable, X = for upgrade purposes
d – Housing material	A = Polyurethane coated aluminum, N = not applicable
e – Signal output	B = 4-20 mA with HART-4W and RS485, N = not applicable
f – Cable thread	1 = NPT ½ '', 2 = M20 x 1.5, N = not applicable
g – Hazardous locations approval	I1 = ATEX approval
h – Operating temperature	S = standard, N = not applicable
i – Antenna Material	P = Polyurethane coated aluminum, N = not applicable
j – O-ring material	B = Buna-N for standard temperature range, S = Silicone for high temp, V = Viton, E = EPDM, K= Kalrez N = not applicable
k – Mounting plate	Blank or 4DA, 6DA, 8DA, TDA, 4AA, 6AA, 8AA, TAA (see manual for details)
l – Extenders / Adaptors	Blank or N030, N050 N100, N160, N300, A010, A020, A100, A105, A110, A115, A120, A130, E030, E050, E100, E160, E300
m – Display type	Blank = standard LCD –display, M2, M0 (see manual for details)
n – Factory configuration	Blank or C1 (see manual for details)
o – Special quality assurance	Blank or Q4 (see manual for details)
p – Final test report	Blank or QXX (see manual for details)
q – Special Certification	Blank or QG (see manual for details)
r – Material Traceability Certification	Blank or Q8 (see manual for details) or blank
s – Safety certifications	Blank or QS, QT (see manual for details) or blank
t – Diagnostic functionality	Blank or D01, DA1, DB1 (see manual for details) or blank
u – Extended warranty	Blank or WR2, WR3, WR5, WR8 (see manual for details)
v – Wireless assembly option	Blank = not provided for ATEX approved models
w – Specials	Blank or R**** = other not Ex-relevant features

Note:
N = not applicable, refers to ordering code of Antenna-Unit or Electronics-Unit, if shipped as replacement part.

This certificate may only be reproduced in its entirety and without change.
DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany Phone +49.234.3696-105 Fax +49.234.3696-110 zs-exam@dekra.com

15.2 Description

The purpose of the 3D Solids Scanner type 5708 * is to measure and display the Silo's content-height, -volume, and -mass by analysing the surface structure of material inside the silo.

The 3D Solids Scanner is designed as intrinsically safe apparatus and divided into two mechanical parts:

- Antenna-Unit, consisting of antenna horn and transducers enclosure which may be located in areas requiring EPL Gb (apparatus category 2G = Zone 1) or EPL Da (apparatus category 1D = Zone 20) equipment.

- Electronics-Unit (head unit), consisting of an enclosure which may be located in areas requiring EPL Gb (apparatus category 2G = Zone 1) or EPL Db (apparatus category 2D = Zone 21) equipment..

For installation purposes, the Electronics-Unit may be removed from the Antenna-Unit.

The Electronics Unit contains printed circuit boards of the main electronic assembly embedded in casting compound. The free space above the casting compound is carried out as terminal-box for the external IS circuits.

Display and keyboard are integrated in the top side of the Electronic-Unit enclosure.

Internal interconnection circuits between Antenna-Unit and Electronics-Unit comply with intrinsic safety level of protection 'ia' Group IIB as required for dust applications requiring EPL Da equipment.

Internal interconnection circuits between display, keyboard and main electronic assembly inside the Electronics-Unit comply with intrinsic safety level of protection 'ib' Group IIB as required for dust applications requiring EPL Db equipment.

15.3 Parameters

15.3.1 Power supply / Interface circuit

Parameter	Supply circuit)[1]		Interface	
	Input)[1]	Output)[2]	4 -20 mA	RS 485
Level of protection	Ex ib IIB / Ex ib IIIC	Ex ib IIB / Ex ib IIIC	Ex ia IIB / Ex ia IIIC	Ex ia IIB / Ex ia IIIC
Voltage U_i	DC 24 V	N / A	DC 10.5 V	DC 6.51 V
Current I_i	)[3]	N / A	106 mA	2 x 0.651 A
Power P_i	3 W	N / A	1.1 W	2 x 1.06 W
Internal effective capacitance C_i	8 nF		8 nF	0 nF
Internal effective inductance L_i	negligible		negligible	0 mH
Voltage U_o	N / A	DC 24 V)[3]	DC 10.5 V	DC 6.51 V
Current I_o	N / A	)[3]	106 mA	2 x 0.651 A
Power P_o	N / A	3 W)[3]	1.1 W	2 x 1.06 W
max. external capacitance C_o	N / A	)[4]	16 µF	2 x 285 µF
max. external capacitance L_i	N / A	)[4]	80 µH	83.9 µH
max. inductance- / resistance ratio L_o/R_o	N / A	)[4]	17.77 µH/Ω	67.12 µH/Ω
Characteristics	N / A	)[3]	trapezoid	linear
Terminals	J5.1 (+), J5.2 (GND)	J6.1 (+), J6.2 (GND)	J5.3 (4 – 20 mA signal), J5.4 (GND)	J6.3 (+), J6.4 (RTN)

Remarks:
)[1] shall be connected only to IS power supply devices providing level of protection 'ib' Group IIB as a minimum
)[2] J5.1, J5.2 directly connected to J6.1, J6.2
)[3] same values as of the interconnected IS power supply
)[4] same values as of the interconnected IS power supply reduced by C_i, L_i
N / A = not applicable

This certificate may only be reproduced in its entirety and without change.
DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany Phone +49.234.3696-105 Fax +49.234.3696-110 zs-exam@dekra.com

15.3.2 Sonic radiation

Radiated power (average power density)	≤	0.1 W/cm²
Pulse radiation	≤	2 mJ/cm²
Frequency range		3.5 kHz ≤ f ≤ 10 kHz

15.3.3 Ambient temperature range: -40 °C ≤ T_a ≤ +85 °C

(16) Test and Assessment Report

BVS PP 14.2149 EG as of 2014-07-02

(17) Special conditions for safe use

17.1 Dust application

The installation of the 3D-Solids Scanner or of the Antenna Unit of models providing head separation in the wall to areas requiring EPL Da (apparatus category 1D) equipment shall provide a degree of protection IP6X according to EN 60529 and shall be carried out in such a way, that all metallic parts are integrated in the local equipotential bonding.

Manufacturer's technical information related to use of the 3D Solids Scanner in contact with aggressive / corrosive media and to avoid any risk of mechanical impact shall be observed.

17.2 Gas application

None

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
44809 Bochum, 2014-07-02
BVS-Scha/Mu A 20140176

Certification body

Special services unit

This certificate may only be reproduced in its entirety and without change.
DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany Phone +49.234.3696-105 Fax +49.234.3696-110 zs-exam@dekra.com