IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx DEK 12.0044X**	Certificate history: Issue 0 (2012-10-17)
Status:	**Current**	Issue No: 1
Date of Issue:	2020-05-19	

Applicant:
R. STAHL Schaltgeräte GmbH
Am Bahnhof 30
74638 Waldenburg
Germany

Equipment: **Digital Input Output Module (DIOM) Type 9470/3*-16-1***

Optional accessory:

Type of Protection: **Ex ia, Ex ec**

Marking:
Type 9470/32-16-1*:
Ex ia [ia Ga] IIC T4 Gb
[Ex ia Da] IIIC
Type 9470/33-16-1*:
Ex ec ia [ia Ga] IIC T4 Gc
[Ex ia Da] IIIC

Approved for issue on behalf of the IECEx
Certification Body:

R. Schuller

Position:

Certification Manager

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Netherlands

DEKRA

Certificate No.: **IECEx DEK 12.0044X**	Page 2 of 4
Date of issue: 2020-05-19	Issue No: 1

Manufacturer: **R. STAHL Schaltgeräte GmbH**
Am Bahnhof 30
74638 Waldenburg
Germany

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017
Edition:7.0
Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-11:2011
Edition:6.0
Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

IEC 60079-7:2017
Edition:5.1
Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

NL/DEK/ExTR12.0036/01

Quality Assessment Report:

DE/BVS/QAR10.0002/15

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Digital Input Output Module (DIOM) Type 9470/3*-16-1*, for operation in the Remote I/O Systems IS1 and IS1+.

The module is connected to the system via a Bus Rail and it provides 16 intrinsically safe input and/or output channels (configurable) for connection and supply of up to 16 potential free contacts or proximity switches (according to NAMUR) or up to 16 valves or indicators or any mixture of input and output channels.
Channels 8 to 15 can also be used for frequency measurement or as pulse counters.

The intrinsically safe input/output circuits are infallibly galvanically isolated from the IS1 and IS1+ bus supply and data circuits up to a peak voltage of 60 V.

Module type 9470/32-16-1*. is intrinsically safe and may be installed in an explosive gas atmosphere requiring equipment of Equipment Protection Level (EPL) Gb.
Module type 9470/33-16-1*. is in type of protection Ex ec and may be installed in an explosive gas atmosphere suitable for EPL Gc.
Both types of modules may be installed in an explosive dust atmosphere requiring equipment of EPL Db or EPL Dc if mounted in a suitable enclosure that meets the requirements of an appropriate, recognized type of protection in accordance with IEC 60079-0.

The enclosure of the module provides a degree of protection IP20 according to IEC 60529.

The Digital Input Output Module (DIOM) Type 9470/3*-16-1* may be disconnected or connected to the IS1 or IS1+ Bus Rail while in operation.

Refer to Annex 1 for electrical data and temperature data.

SPECIFIC CONDITIONS OF USE: YES as shown below:
When installed in an explosive gas atmosphere:
The Digital Input Output Module (DIOM) Type 9470/3*-16-1* shall be placed in an enclosure or cabinet that meets the requirements of an appropriate, recognized type of protection in accordance with IEC 60079-0.
It shall be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Assessed per IEC 60079-0 : 2017 (Ed. 7) and IEC 60079-7 : 2017 (Ed. 5.1)

Annex:

224190000-ExTR12.0036.01-Annex 1.pdf

Electrical and thermal data

Ambient temperature range:
-40 °C to +75 °C;
-40 °C to +65 °C (upside down installation).

Circuit connecting to the IS1 or IS1+ System:

Power supply (input); Plug to BusRail V101/ Pin 7, 8, 9, 10 (+), Pin 27, 28, 29, 30 (–):
in type of protection intrinsic safety Ex ia IIC, with the following maximum values:
U_i = 26.2 V.
The circuit is equipped with an internal current limitation that limits the current to 300 mA.

Address- and Databus (communication); Plug to BusRail V101/ Pin: 4 (Bus Red.); 5 (Bus Prim.);
14, 15, 16, 24 (Bank 1-4):
in type of protection intrinsic safety Ex ia IIC, only for connection to the internal Address- and
Databus of the IS1/IS1+ System with the following maximum values:
U_o = 6.6 V; I_o = 102 mA; P_o = 168 mW
U_i = 6.6 V; C_i = 0 nF; L_i = 0 mH

Electronic switch control (input); Plug to BusRail V101/ Pin: 18, 19:
in type of protection intrinsic safety Ex ia IIC, with the following maximum values:
U_o = 26.2 V; I_o = 5.4 mA.

Intrinsically safe field circuits:

X1 – Channel 0 (1+/2-); Channel 1 (3+/4-); up to; Channel 7 (15+/16-)
X2 – Channel 8 (17+/18-); Channel 9 (19+/20-); up to; Channel 15 (31+/32-)

The values of L_o and C_o in the following tables are the maximum values for combined inductance and capacitance (including cable inductance and capacitance). The values for L_o and C_o marked in grey are the values determined according to the curves and tables of IEC 60079-11, Annex A. These grey marked values may be used for the assessment as per IEC 60079-11, clause 10.1.5.2.

I/O circuits, per single channel:
in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
U_o = 9.8 V; I_o = 10.4 mA; P_o = 25.5 mW; C_i = 2.5 nF; L_i = 0 mH; Linear source; C_o and L_o per tables below:

Table for IIC, per single channel											
L_o [mH]	280	100	50	20	10	5	2	1	0.5	0.2	0.1	0.02
C_o [µF]	-	0.49	0.56	0.64	0.72	0.81	0.96	1.1	1.3	1.6	2	3.3

Table for IIB / IIIC, per single channel											
L_o [mH]	1000	100	50	20	10	5	2	1	0.5	0.2	0.1	0.01
C_o [µF]	-	2.6	2.8	3.3	3.7	4.2	5.1	6	7.2	9.3	12	23

Annex 1
To IECEx DEK 12.0044X and NL/DEK/ExTR12.0036/01
Digital Input Output Module (DIOM) Type 9470/3*-16-1*

I/O circuits, 2 channels interconnected:
in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
U_o = 9.8 V; I_o = 20.8 mA; P_o = 51.0 mW; C_i = 5 nF; L_i = 0 mH; Linear source; C_o and L_o per tables below:

Table for IIC, 2 channels interconnected											
L_o [mH]	-	100	50	20	10	5	2	1	0.5	0.2	0.1	0.02
C_o [µF]	-	0.3	0.44	0.57	0.67	0.77	0.93	1.1	1.3	1.6	2	3.3

Table for IIB / IIIC, 2 channels interconnected											
L_o [mH]	270	100	50	20	10	5	2	1	0.5	0.2	0.1	0.01
C_o [µF]	-	2.3	2.6	3.1	3.6	4.1	5.1	6	7.2	9.3	12	23

I/O circuits, 4 channels interconnected:
in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
U_o = 9.8 V; I_o = 41.6 mA; P_o = 102.0 mW; C_i = 10 nF; L_i = 0 mH; Linear source; C_o and L_o per tables below:

Table for IIC, 4 channels interconnected											
L_o [mH]	-	-	27	20	10	5	2	1	0.5	0.2	0.1	0.01
C_o [µF]	-	-	0.32	0.41	0.56	0.69	0.88	1	1.2	1.6	2.0	3.3

Table for IIB / IIIC, 4 channels interconnected											
L_o [mH]	-	100	50	20	10	5	2	1	0.5	0.2	0.1	0.01
C_o [µF]	-	1.5	2.1	2.8	3.4	3.9	4.9	5.9	7.1	9.3	12	23

I/O circuits, 8 channels interconnected:
in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
U_o = 9.8 V; I_o = 83.2 mA; P_o = 204.0 mW; C_i = 20 nF; L_i = 0 mH; Linear source; C_o and L_o per tables below:

Table for IIC, 8 channels interconnected											
L_o [mH]	-	-	-	-	6.7	5	2	1	0.5	0.2	0.1	0.01
C_o [µF]	-	-	-	-	0.4	0.5	0.76	0.96	1.2	1.6	1.9	3.3

Table for IIB / IIIC, 8 channels interconnected											
L_o [mH]	-	-	29	20	10	5	2	1	0.5	0.2	0.1	0.01
C_o [µF]	-	-	1.7	2.1	2.9	3.6	4.7	5.7	6.9	9.1	11	23

Annex 1
To IECEx DEK 12.0044X and NL/DEK/ExTR12.0036/01
Digital Input Output Module (DIOM) Type 9470/3*-16-1*

I/O circuits, 16 channels interconnected:
in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
U_o = 9.8 V; I_o = 164.0 mA; P_o = 402.0 mW; C_i = 40 nF; L_i = 0 mH; Linear source; C_o and L_o per tables below:

Table for IIC, 16 channels interconnected												
L_o [mH]	-	-	-	-	-	-	1.8	1	0.5	0.2	0.1	0.01
C_o [µF]	-	-	-	-	-	-	0.53	0.77	1	1.5	1.8	3.3

Table for IIB / IIIC, 16 channels interconnected												
L_o [mH]	-	-	-	-	7.7	5	2	1	0.5	0.2	0.1	0.01
C_o [µF]	-	-	-	-	2.1	2.8	4.2	5.3	6.6	8.9	11	23

Installation instructions
The instructions provided with the equipment shall be followed in detail to assure safe operation.