

CERTIFICATE

(1) EU-Type Examination

(2) **Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **DEKRA 12ATEX0099 X** Issue Number: **2**

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

(5) Manufacturer: **R. STAHL Schaltgeräte GmbH**

(6) Address: **Am Bahnhof 30, 74638 Waldenburg, Germany**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 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 confidential test report number NL/DEK/ExTR12.0036/01.

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

EN IEC 60079-0 : 2018

EN 60079-7 : 2015 + A1 : 2018

EN 60079-11 : 2012

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) 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.

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



II 2 (1) G

II (1) D

II 3 (1) G

II (1) D

Ex ia [ia Ga] IIC T4 Gb and

[Ex ia Da] IIIC

Ex ec ia [ia Ga] IIC T4 Gc and

[Ex ia Da] IIIC

(Type 9470/32-16-1*)

(Type 9470/33-16-1*)

Date of certification: 19 May 2020

DEKRA Certification B.V.

R. Schuller
Certification Manager



(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 12ATEX0099 X**

Issue No. 2

(15) **Description**

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 category 2 G.

Module type 9470/33-16-1* is in type of protection Ex ec and may be installed in an explosive gas atmosphere requiring equipment of category 3 G.

Both types of modules may be installed in an explosive dust atmosphere requiring equipment of category 2 D or 3 D if mounted in a suitable enclosure that meets the requirements of an appropriate, recognized type of protection in accordance with EN IEC 60079-0.

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

Ambient temperature range:

-40 °C to +75 °C;

-40 °C to +65 °C (upside down installation).

Electrical data

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.

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Intrinsically safe field circuits:

Connector X1 – Channel 0 (1+/2-); Channel 1 (3+/4-); up to Channel 7 (15+/16-).
 Connector 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 EN 60079-11, Annex A. These grey marked values may be used for the assessment as per EN 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:
 $U_o = 9,8 \text{ V}$; $I_o = 10,4 \text{ mA}$; $P_o = 25,5 \text{ mW}$; $C_i = 2,5 \text{ nF}$; $L_i = 0 \text{ mH}$; 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 [μ F]	-	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 [μ F]	-	2,6	2,8	3,3	3,7	4,2	5,1	6	7,2	9,3	12	23

I/O circuits, 2 channels interconnected:

in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
 $U_o = 9,8 \text{ V}$; $I_o = 20,8 \text{ mA}$; $P_o = 51,0 \text{ mW}$; $C_i = 5 \text{ nF}$; $L_i = 0 \text{ mH}$; 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 [μ F]	-	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 [μ F]	-	2,3	2,6	3,1	3,6	4,1	5,1	6	7,2	9,3	12	23

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I/O circuits, 4 channels interconnected:

in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
 $U_o = 9,8 \text{ V}$; $I_o = 41,6 \text{ mA}$; $P_o = 102,0 \text{ mW}$; $C_i = 10 \text{ nF}$; $L_i = 0 \text{ mH}$; 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:
 $U_o = 9,8 \text{ V}$; $I_o = 83,2 \text{ mA}$; $P_o = 204,0 \text{ mW}$; $C_i = 20 \text{ nF}$; $L_i = 0 \text{ mH}$; 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

I/O circuits 16 channels interconnected:

in type of protection intrinsic safety Ex ia IIB/IIC, Ex ia IIIC with the following maximum values:
 $U_o = 9,8 \text{ V}$; $I_o = 164,0 \text{ mA}$; $P_o = 402,0 \text{ mW}$; $C_i = 40 \text{ nF}$; $L_i = 0 \text{ mH}$; 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 product shall be followed in detail to assure safe operation.

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 12ATEX0099 X** Issue No. 2

(16) **Report Number**

No. NL/DEK/ExTR12.0036/01.

(17) **Specific conditions of use**

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 EN IEC 60079-0.

It shall be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.

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

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR12.0036/01.

(20) **Certificate history**

Issue 1 - 215326200	Initial certificate
Issue 2 - 224190000	Assessed per EN IEC 60079-0 : 2018 and EN 60079-7 : 2015 + A1