

Translation

EU-Type Examination Certificate Supplement 6

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

EU-Type Examination Certificate Number: **BVS 08 ATEX E 054 X**

Product: **Input Isolating Amplifier and Repeater Power Supply**
type **MACX MCR-EX-SL-RPSSI-I*****
type **MACX MCR-EX-SL-RPSSI-I-SP*****
type **IOA MCR-EX-RPSS*****

Manufacturer: **PHOENIX CONTACT GmbH & Co. KG**

Address: **Flachsmarktstr. 8, 32825 Blomberg, Germany**

This supplementary certificate extends EU-Type Examination Certificate No. BVS 08 ATEX E 054 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 Testing and Certification 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. BVS PP 08.2075 EU.

The Essential Health and Safety Requirements are assured in consideration of:

EN IEC 60079-0:2018	General requirements
EN IEC 60079-7:2015 + A1:2018	Increased Safety "e"
EN 60079-11:2012	Intrinsic Safety "i"

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:

 **I (M1) [Ex ia Ma] I**
II (1)G [Ex ia Ga] IIC
II (1)D [Ex ia Da] IIIC
II 3 (1)G Ex ec [ia Ga] IIC T4 Gc

DEKRA Testing and Certification GmbH
Bochum, 2022-03-15

Signed: Jörg-Timm Kilisch

Managing Director

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15 Product description

15.1 Subject and type

Repeater Power Supply and Input Isolating Amplifier

type MACX MCR-EX-SL-RPSSI-I***
type MACX MCR-EX-SL-RPSSI-I-SP***
type IOA MCR-EX-RPSS***

In the type with the ending -SP spring-cage-plugs instead of terminals are used. The placeholder *** are not Ex relevant.

15.2 Description

The Repeater Power Supply and Input Isolating Amplifiers are designed for the operation of passive 2-wire transmitters as well as for the connection of active mA current sources (4-wire transmitters). 2-wire transmitters are supplied with power via an active input. 4-wire transmitters or mA current sources can be operated via a passive input. The analogue 0/4...20 measured values are transmitted 1:1 from the input to the output terminals.

Digital (HART) communication signals superimposed on the 4-20 mA signal are transmitted bidirectionally.

The signal circuits are galvanically isolated from each other and from the auxiliary power supply circuit. The intrinsically safe circuits type of protection Ex ia can be led into areas which require EPL Ma, EPL Ga or EPL Da equipment.

While the MACX MCR*** are designed to snap onto a 35 mm top-hat rail, optionally with the TBUS power supply system, the IOA MCR are designed for connection via a VIP/...-BASE element.

Reason for this supplement:

Higher permitted ambient temperatures were added for types MACX MCR-EX-SL-RPSSI-I*** and MACX MCR-EX-SL-RPSSI-I-SP***.

15.3 Parameters

15.3.1 Types: MACX MCR-EX-SL-RPSSI-I*** and MACX MCR-EX-SL-RPSSI-I-SP***

15.3.1.1 Non-intrinsically safe power supply circuit (terminals 1.1 – 1.2, TBUS)

Nominal voltage	U_n	DC	24	V
Nominal power	P_n		1800	mW
Maximum voltage	U_m			
≤ 2000 m above sea level		AC	253	V
		DC	125	V
> 2000 m ≤ 3000 m above sea level		AC	190	V
		DC	110	V
> 3000 m ≤ 5000 m above sea level		AC	60	V
		DC	60	V

15.3.1.2 Non-intrinsically safe signal circuits (terminals 2.1 – 2.2 and 3.1 – 3.2)

Nominal signal			0(4) ... 20	mA
Maximum voltage	U_m	AC	253	V
		DC	125	V

15.3.1.3 Intrinsically safe circuits

The intrinsically safe circuits are galvanically isolated from the non-intrinsically safe circuits and from earth.

15.3.1.3.1 Intrinsically safe output circuit (terminals 4.1 – 4.2)

Maximum output voltage	U_o	DC	25.2	V
Maximum output current	I_o		93	mA
Maximum output power	P_o		587	mW

Maximum external inductivity and capacity with separated connection of C_o or L_o , see table:

	Group IIB	Group IIC	IIA	I
C_o	820 nF	107 nF	2.9 μ F	4.8 μ F
L_o	14 mH	3 mH	26 mH	40 mH

Maximum external inductivity and capacity if concentrated C_o and L_o are connected, see tables:
For Group IIA

C_o	470 nF	570 nF	630 nF	720 nF	1.1 μ F	2.9 μ F
L_o	26 mH	20 mH	1 mH	0.5 mH	0.1 mH	0.005 mH

For Group IIB / III

C_o	370 nF	510 nF	660 nF	820 nF
L_o	16 mH	500 μ H	200 μ H	100 μ H

For Group IIC

C_o	47 nF	49 nF	63 nF	80 nF	107 nF
L_o	2.2 mH	2 mH	1 mH	500 μ H	200 μ H

For Group I

C_o	0.54 μ F	1 μ F	2.9 μ F	4.15 μ F
L_o	37 mH	0.35 mH	0.009 mH	1 nH

15.3.1.3.2 Intrinsically safe input circuit (terminals 5.1 – 5.2)

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		150	mA
Maximum internal capacitance	C_i		negligible	
Maximum internal inductance	L_i		negligible	

15.3.2 Type: IOA MCR-EX-RPSS***

15.3.2.1 Non-intrinsically safe power supply circuit (Port 10/11)

Nominal voltage	U_n	DC	24	V
Nominal power	P_n		1800	mW
Maximum voltage	U_m			
≤ 2000 m above sea level		AC	253	V
		DC	125	V
> 2000 m ≤ 3000 m above sea level		AC	190	V
		DC	110	V
> 3000 m ≤ 5000 m above sea level		AC	60	V
		DC	60	V

15.3.2.2 Non-intrinsically safe signal circuits (Port 5/6)

Nominal signal			0(4) ... 20	mA
Maximum voltage	U_m			
≤ 2000 m above sea level		AC	253	V
		DC	125	V
> 2000 m ≤ 3000 m above sea level		AC	190	V
		DC	110	V
> 3000 m ≤ 5000 m above sea level		AC	60	V
		DC	60	V

15.3.2.3 Intrinsically safe circuits

The intrinsically safe circuits are galvanically isolated from the non-intrinsically safe circuits and from earth.

15.3.2.3.1 Intrinsically safe output circuit (Port 15/18)

Maximum output voltage	U_o	DC	25.2	V
Maximum output current	I_o		93	mA
Maximum output power	P_o		587	mW

Maximum external inductivity and capacity with separated connection of C_o or L_o , see table:

	Group IIB	Group IIC	IIA	I
C_o	817 nF	104 nF	2.9 μ F	4.8 μ F
L_o	14 mH	3 mH	26 mH	40 mH

Maximum external inductivity and capacity if concentrated C_o and L_o are connected, see tables:

For Group IIA

C_o	467 nF	567 nF	627 nF	717 nF	1.1 μ F	2.9 μ F
L_o	26 mH	20 mH	1 mH	0.5 mH	0.1 mH	0.005 mH

For Group IIB / III

C_o	367 nF	507 nF	657 nF	817 nF
L_o	16 mH	500 μ H	200 μ H	100 μ H

For Group IIC

C_o	44 nF	46 nF	60 nF	77 nF	104 nF
L_o	2.2 mH	2 mH	1 mH	500 μ H	200 μ H

For Group I

C_o	537 nF	1 μ F	2.9 μ F	4.15 μ F
L_o	37 mH	0.35 mH	0.009 mH	1 nH

15.3.2.3.2 Intrinsically safe input circuit (Port 19/22)

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		150	mA
Maximum internal capacitance	C_i		negligible	
Maximum internal inductance	L_i		negligible	

15.3.3 Ambient temperature range

Types: MACX MCR-EX-SL-RPSSI-I*** and MACX MCR-EX-SL-RPSSI-I-SP***

≤ 2000 m above sea level	-40 °C ≤ T _a ≤ +60 °C/+70 °C*
> 2000 m ≤ 3000 m above sea level	-40 °C ≤ T _a ≤ +54 °C/+63 °C*
> 3000 m ≤ 4000 m above sea level	-40 °C ≤ T _a ≤ +48 °C/+56 °C*
> 4000 m ≤ 5000 m above sea level	-40 °C ≤ T _a ≤ +42 °C/+49 °C*

*T_{amb} with derating: With 6 mm distance around all sights of the housing and only when mounted vertically (DIN rail horizontally).

Types: IOA MCR-EX-RPSS***

≤ 2000 m above sea level	-40 °C ≤ T _a ≤ +70 °C
> 2000 m ≤ 3000 m above sea level	-40 °C ≤ T _a ≤ +63 °C
> 3000 m ≤ 4000 m above sea level	-40 °C ≤ T _a ≤ +56 °C
> 4000 m ≤ 5000 m above sea level	-40 °C ≤ T _a ≤ +49 °C

16 Report Number

BVS PP 08.2075 EU, as of 2022-03-15

17 Special Conditions for Use

17.1 For all types:

For the installation of the Smart Repeater in areas where EPL Gc (Zone 2) equipment is required, it has to be mounted in enclosures which are in accordance with EN IEC 60079-7.

17.2 Type IOA MCR-EX-RPSS***:

The device has to be installed in an environment fulfilling overvoltage Category I/II and pollution degree II. The device has to be installed in an enclosure with minimum IP54 in accordance with EN IEC 60079-0.

If the device is installed outside the hazardous area, installation in an environment with pollution degree II is sufficient instead of installation in a housing with IP54 according to EN IEC 60079-0.

17.3 Type MACX MCR-EX-RPSS***:

The temperature range differs depending on the installation; refer to the parameters.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

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 Testing and Certification GmbH
Bochum, 2022-03-15
BVS-Scho/Alh/MGR A20211405



Managing Director