



THE STRONGEST LINK.

Operating Instructions

ReaderBox

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D 50829 Köln

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Disclaimer

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Specific markings

The markings in these operating instructions refer to specific features that must be noted.

In detail, these are:

 DANGER	This sign alerts users to hazards that will result in death or serious injury if ignored.
 WARNING	This sign alerts users to hazards that may result in death or serious injury if ignored.
 CAUTION	This sign alerts users to hazards that may damage machinery or equipment or result in injury if ignored.
 ATTENTION	Information highlighted by this symbol indicates measures for the prevention of damage to machinery or equipment.
 NOTICE	Information highlighted by this symbol indicates important information of which particular note should be taken.
 DOCUMENTATION	Information highlighted by this symbol refers to a different chapter or section in this manual or other documentation or a web-page.

Warnings



	<p style="text-align: center;">Caution !</p> The device surface may heat up at ambient temperatures higher than +45 °C ! Caution at contact !
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1 Preface

These Operating Instructions contain all aspects relevant to the ReaderBox and for the connection and installation of these devices.

 NOTICE	All data relevant to explosion protection from the EC-type examination certificate were copied into these operating instructions.
	For the correct operation of all associated components please note, in addition to these operating instructions, all other operating instructions enclosed in this delivery as well as the operating instructions of the additional equipment to be connected !

2 Function ReaderBox

The ReaderBox is an intrinsically safe supply and barrier. It is used to connect intrinsically safe devices like barcode scanners or card readers. The supply and the data lines X3 are intrinsically safe (ia).

Other interfaces like power or non intrinsically safe data lines have to be connected inside suitable devices, connection boxes etc.

3 Technical Data

Function / Equipment	ReaderBox-054-xx*	ReaderBox-088-xx*	ReaderBox-104-xx*
Power supply			
Rated operational voltage AC	230 V		
Voltage range AC	100 - 250 V		
Rated operational voltage DC	24 V		
Voltage range DC	10 - 30 V		
Rated operational power	120 W		
Output voltage DC	5.4 V	8.8 V	10.4 V
Connections	via fixed connected cable		
Interfaces			
Serial	1 x RS-232 or 1 x RS-422		
Cable			
Input circuit	3 x 1 mm ²		
Data circuit	5 x 1 mm ²		
Output circuit	5 x 1 mm ²		
Cable length			
Input circuit	2.5 m		
Data circuit	2.5 m		
Output circuit	2.5 m		
Housing	Compact housing with base plate		
Type of protection	IP54		
Ambient temperature range	-40 °C ... +60 °C / -40 °F ... +140 °F		
Mounting position	any position		
Dimensions [mm] / [ft] (L x W x D)	235 x 120 x 68 / 0.771 x 0.394 x 0.223		
Weight [kg] / [lbs]	3.0 / 6.6		

4 Conformity to standards

The ReaderBoxes comply with the following standards and directive:

Standard	Classification
ATEX Directive 2014/34/EU	
Original certificate	
IEC 60079-0 : 2012	General requirements
IEC 60079-5 : 2007	Powder filling "q"
IEC 60079-11 : 2012	Intrinsic safety "i"
IEC 60079-26 : 2007	Equipment with EPL Ga
Electromagnetic Compatibility	
EMV Directive	
2014/30/EU	Classification
EN 61000-6-2 : 2005	Immunity
EN 61000-6-4 : 2011	Emission

5 Certificates

The ReaderBoxes are certified for installation in the following areas:

Europe:

according to ATEX Directive
for installation in zones 1 and 2

International / Australia:

IECEX (International Electrotechnical Commission System for Certification to Standards for Electrical Equipment for Explosive Atmospheres)

Korea:

according to KC
carried out by:
KTL (Korea Testing Laboratory)

5.1 ATEX


The ATEX certification is listed under the following certificate number:

Certificate number: BVS 12 ATEX E 139 X

5.2 IECEx

The IECEx certification is listed under the following certificate number:

Certificate number: IECEx BVS 12.0088X


 DOCUMENTATION	<p>You can access all IECEx certificates on the official website of the IEC under their certificate number. http://iecex.iec.ch/iecex/iecexweb.nsf/welcome?openform.</p>
--	---

5.3 KC

The KC certification is listed under the following certificate number:

Certificate number: 14-KB4BO-0516

6 Marking

Manufacturer	R. STAHL HMI Systems GmbH
Type code	ReaderBox-xxx-xx*
CE classification:	CE 0158
Testing authority and certificate number:	BVS 12 ATEX E 139 X IECEX BVS 12.0088X
Ex classification:	
ATEX directive	 II 2(1) G Ex q [ia Ga] IIC T4 Gb II (1) D [Ex ia Da] IIIC
IECEX	Ex q [ia Ga] IIC T4 Gb [Ex ia Da] IIIC
KC	Ex q ia IIC T4

7 Permitted maximum values

7.1 Intrinsically safe values ReaderBox-054-xx*

Supply line X3-1:					
Output			alternatively output		
U_{Omax}	=	5.40 V	U_{Omax}	=	5.40 V
I_{Omax}	=	413 mA	I_{Omax}	=	413 mA
P_{Omax}	=	1.121 W	P_{Omax}	=	1.121 W
C_o	=	65 μ F	C_o	=	14 μ F
L_o	=	1 μ H	L_o	=	10 μ H

Data line X3-3 or X3-4 (each):								
output			alternatively output			input		
U_{Omax}	=	\pm 5.40 V	U_{Omax}	=	\pm 5.40 V	U_{Imax}	=	\pm 12.50 V
I_{Omax}	=	\pm 12 mA	I_{Omax}	=	\pm 12 mA	I_{Imax}	=	not limited
P_{Omax}	=	16 mW	P_{Omax}	=	16 mW	P_{Imax}	=	not limited
C_o	=	65 μ F	C_o	=	14 μ F	C_i	=	negligible
L_o	=	1 μ H	L_o	=	10 μ H	L_i	=	negligible

7.2 Intrinsically safe values ReaderBox-088-xx*

Supply line X3-1:					
output			alternatively output		
U _{Omax}	=	8.80 V	U _{Omax}	=	8.80 V
I _{Omax}	=	357 mA	I _{Omax}	=	357 mA
P _{Omax}	=	1.454 W	P _{Omax}	=	1.454 W
C _O	=	3.6 µF	C _O	=	1.7 µF
L _O	=	20 µH	L _O	=	100 µH

Data line X3-3 or X3-4 (each):								
output			alternatively output			input		
U _{Omax}	=	±5.40 V	U _{Omax}	=	±5.40 V	U _{Imax}	=	±12.50 V
I _{Omax}	=	±12 mA	I _{Omax}	=	±12 mA	I _{Imax}	=	not limited
P _{Omax}	=	16 mW	P _{Omax}	=	16 mW	P _{Imax}	=	not limited
C _O	=	65 µF	C _O	=	14 µF	C _I	=	negligible
L _O	=	1 µH	L _O	=	10 µH	L _I	=	negligible

7.3 Intrinsically safe values ReaderBox-104-xx*

Supply line X3-1:					
output			alternatively output		
U _{Omax}	=	10.36 V	U _{Omax}	=	10.36 V
I _{Omax}	=	555 mA	I _{Omax}	=	555 mA
P _{Omax}	=	2.258 W	P _{Omax}	=	2.258 W
C _O	=	2.5 µF	C _O	=	1.1 µF
L _O	=	20 µH	L _O	=	100 µH

Data line X3-3 or X3-4 (each):								
output			alternatively output			input		
U _{Omax}	=	±5.40 V	U _{Omax}	=	±5.40 V	U _{Imax}	=	±12.50 V
I _{Omax}	=	±12 mA	I _{Omax}	=	±12 mA	I _{Imax}	=	not limited
P _{Omax}	=	16 mW	P _{Omax}	=	16 mW	P _{Imax}	=	not limited
C _O	=	65 µF	C _O	=	14 µF	C _I	=	negligible
L _O	=	1 µH	L _O	=	10 µH	L _I	=	negligible

7.4 Non intrinsically safe circuits

Input voltage "PWR" (X1):

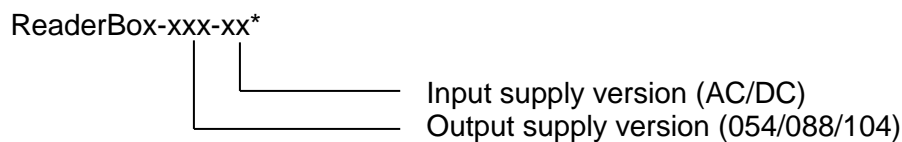
U	= 10 ... 30 V DC (for ReaderBox-xxx-DC*)
U	= 100 ... 250 V AC (for ReaderBox-xxx-AC*)
I	≤ 3 A
P	≤ 120 W
Maximum r.m.s. AC voltage Um	≤ 250 V

Interface "Data" (X2):

U	= ±15 V AC/DC
I	≤ 0.1 A
Maximum r.m.s. AC voltage Um	≤ 250 V

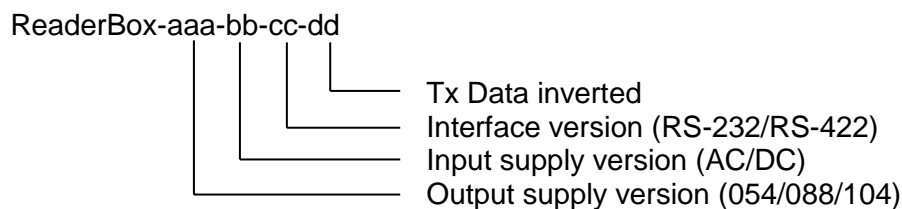
8 Type code

8.1 Certificate



* any alphanumeric or symbolic character, without relevance for explosion protection


8.2 Order variant




Product type:

Order number	Description
	Version with
ReaderBox- 054 -bb-cc-dd	Output supply voltage of 5.4 VDC
ReaderBox- 088 -bb-cc-dd	Output supply voltage of 8.8 VDC
ReaderBox- 104 -bb-cc-dd	Output supply voltage of 10.4 VDC
ReaderBox-aaa- AC -cc-dd	Input supply of 100 - 250 VAC
ReaderBox-aaa- DC -cc-dd	Input supply of 10 - 30 VDC
ReaderBox-aaa-bb- RS232 -dd	RS-232 data Interface
ReaderBox-aaa-bb- RS422 -dd	RS-422 data Interface (point to point)
ReaderBox-aaa-bb-cc- Inv	TX data inverted (for Bartec BCS 3800ex)

9 Safety Advice

 NOTICE	This chapter is a summary of the key safety measures. The summary is supplementary to existing rules which staff also have to study.
	The safety of persons and equipment in hazardous areas depends on compliance with all relevant safety regulations. Thus, the installation and maintenance staff carry a particular responsibility, requiring precise knowledge of the applicable regulations and conditions.

 CAUTION	The notes listed below in section 9.1 must be heeded to avoid injury and damage to equipment !
---	--

9.1 Installation and operation

Please note the following when installing and operating the device:

- The national regulations for installation and assembly apply (e.g. IEC/EN 60079-14).
- The ReaderBox may be installed in zones 1 and 2.
- The ReaderBox may be installed and operated in any position.
- If the ReaderBox is damaged, the device must no longer be operated !
- If any seal at the ReaderBox is damaged, the device must no longer be operated !
- The equipotential bonding connector of the device must be connected to the equipotential bonding conductor of the hazardous area. The earthing cable must have a minimum cross section of 4 mm² and be fitted with a suitable cable lug.
- Cables for intrinsically safe wiring have to pass a test voltage of AC 500 V / DC 750 V. Use the values 200 pF/m and 1 µH/m at unknown cable properties. Do not use premounted X3 interface cable of ReaderBox in Zone 0/20. Use appropriated cables.
- The cables must have a fixed installation. The cable X3 of the intrinsically safe circuits has to be mechanically protected.
- Appropriated Switch boxes or connection compartments must marked with:
"Before opening appropriated switch boxes or connection compartments of the ReaderBox isolate all non intrinsically safe circuits and wait 8 minutes !"
- When the interface of intrinsically safe devices/partial intrinsically safe devices was or is connected to not intrinsically safe interfaces, the license will become void and it must be operated as a not intrinsically safe device. If the device was operated on an intrinsically safe interface with a lower level of international protection (e.g. a Ex ia device on a Ex ib interface), it must not be operated afterwards in applications for a higher level of international protection (e.g. Ex ia).
- The intrinsically safe circuits are connected to earth; along the intrinsically safe circuits potential equalization must exist.
- Cable glands are factory installed by the manufacturer and shall not be changed by customers.
- For mounting the device in category 2D/3D an additional suitable enclosure is required.
- National safety and accident prevention rules.
- Generally accepted technical rules.

- Safety instructions contained in these operating instructions.
- Any damage may compromise the explosion protection.


Use the ReaderBox for its intended purpose only (see "Function ReaderBox").

Incorrect or unauthorized use and non-compliance with the instructions in this manual will void any warranty on our part.

No changes to the ReaderBox power supply are permitted !


The ReaderBox power supply may only be installed and operated in an undamaged, dry and clean condition !


9.2 Marking

 WARNING	"Do not open ! This enclosure has been permanently sealed and cannot be repaired." "Isolate supply and all Ex e and Ex i circuits, wait 8 minutes before opening switch boxes or connection compartments !"
--	--

10 Assembly and disassembly

10.1 General information

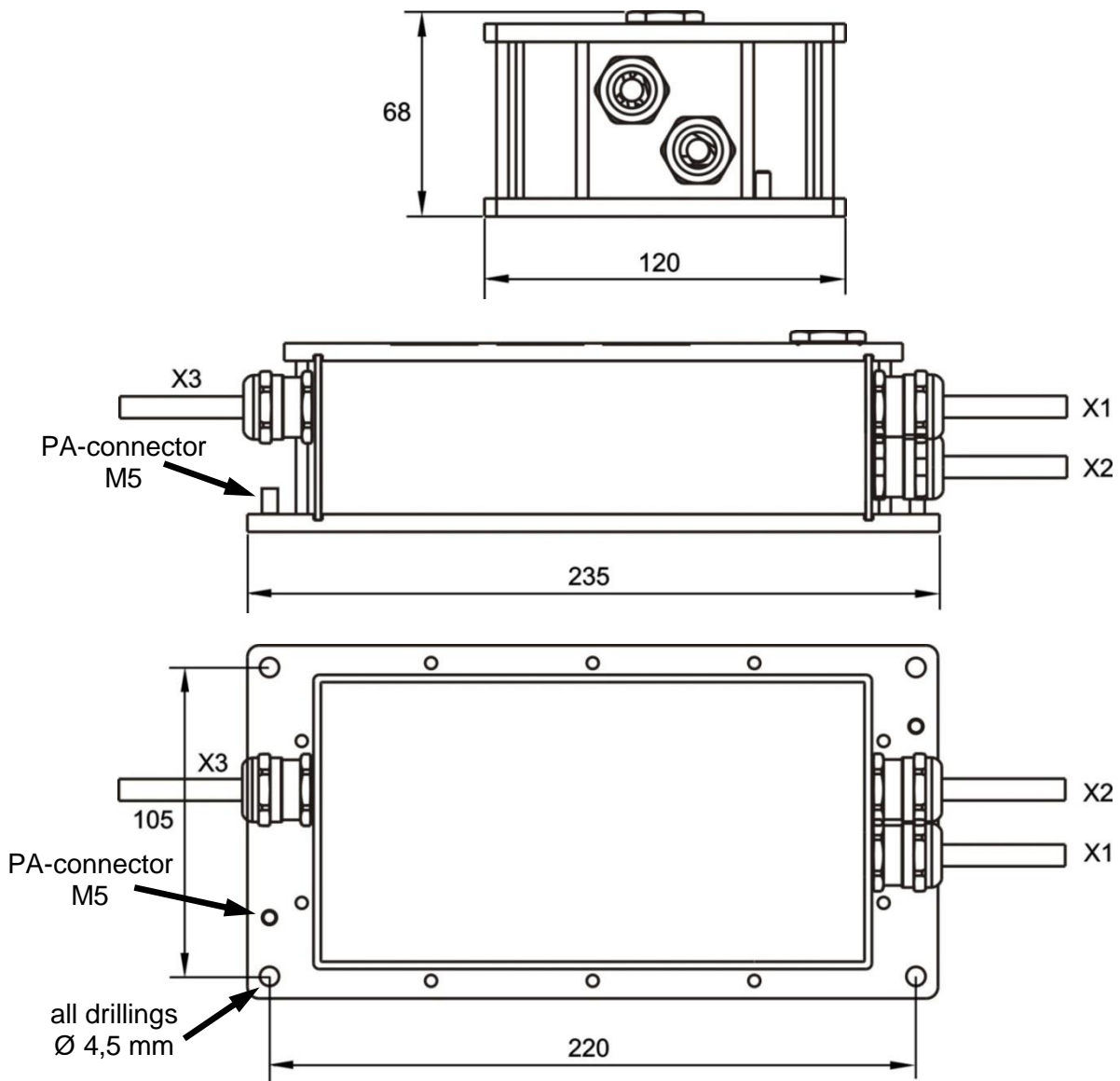
 NOTICE	Assembly and disassembly are subject to general technical rules. Additional, specific safety regulations apply to electronic and pneumatic installations.
---	---

 NOTICE	Please note that the mounting space to be reserved must be larger than these dimensions, since a certain space is also required for the input cables.
---	---

10.2 Mechanical dimensions

Dimensions in mm / ft

235 x 120 x 68 / 0.771 x 0.394 x 0.223 (L x W x H), without cable and cable glands



10.3 Connections ReaderBox

! NOTICE	Input and output circuits are connected by separated cables. Outside wires have to be connected inside suitable devices, switch boxes etc.
	The data cable types for X2 and X3 are of an identical type and multi-core cables. Any unused wires are not assigned in the ReaderBox.
	The unused wires of X2 must be isolated according to applicable regulations. This may be by means of double isolation and mechanical fixing by shrink sleeving or vulcanisation. The shrink sleeving or the vulcanisation must be suitable for at least 500 V and be within the temperature parameters of the device. The shrink sleeving / vulcanisation must not be light blue. When the data cables are shortened, this must also be kept in mind.

10.3.1 PWR circuit X1

! NOTICE	The input circuit cable is 2.5 metres long and type of 3 x 1 mm ² !
-----------------	--

Cable	Colour	Signal name	Definition
1	Brown	L1 or + VDC	Power supply input
2	Blue	N or GND	Power supply input
PE	Green/Yellow	Earth	Protective earth

10.3.2 Data circuit X2

10.3.2.1 RS-232 variant

! NOTICE	The data cable for the RS-232 connection is 2.5 metres long and typically 5 x 1 mm ² !
-----------------	---

Cable	Signal name	Definition
1	TxD	TxD
2	RxD	RxD
3	GND	GND
4	N.U.	- (not used)
5	N.U.	- (not used)

10.3.2.2 RS-422 variant

! NOTICE	The data cable for the RS-232 connection is 2.5 metres long and typically 5 x 1 mm ² !
-----------------	---

Cable	Signal name	Definition
1	TxD-b	TxD-b
2	TxD-a	TxD-a
3	RxD-b	RxD-b
4	RxD-a	RxD-a
5	N.U.	- (not used)

10.3.3 PWR / Data circuit X3 (intrinsically safe)**NOTICE**

The output circuit cable is 2.5 metres long and type of 3 x 1 mm² !

Cable	Signal name	Definition
1	+ VDC	Power supply output
2	GND	Power supply output
3	RxD	RxD
4	TxD	TxD
5	N.U.	- (not used)

11 Disposal

Disposal of old electric and electronic devices, packaging and used parts is subject to regulations valid in whichever country the device has been installed.

For countries under the jurisdiction of the EU the corresponding WEEE directive applies.

The ReaderBoxes are classified according to the table below:

	old	new
Directive	WEEE I Directive 2002/96/EC	WEEE II Directive 2012/19/EU
Valid	until 14.08.2018	from 15.08.2018
Category	9 Monitoring and control devices	SG5 Small equipment <50 cm

We shall take back our devices according to our General Terms and Conditions.

11.1 RoHS directive 2011/65/EC

The revised version of the RoHS (restriction of hazardous substances) 2002/95/EC directive, directive 2011/65/EC, extends its area of application to all electric and electronic products.

The ReaderBoxes conform with the requirements from RoHS directive 2011/65/EU, dated 03.01.2013.

12 Declaration of EC conformity

EU-Konformitätserklärung
EU Declaration of Conformity
Déclaration de Conformité UE



R. STAHL HMI Systems GmbH • Adolf-Grimme-Allee 8 • 50829 Köln, Germany

erklärt in alleiniger Verantwortung, *declares in its sole responsibility, déclare sous sa seule responsabilité,*

dass das Produkt: **ReaderBox**
 that the product: **ReaderBox**
 que le produit: **ReaderBox**

Typ(en), type(s), type(s): **ReaderBox-054-AC*, ReaderBox-054-DC***
ReaderBox-088-AC*, ReaderBox-088-DC*
ReaderBox-104-AC*, ReaderBox-104-DC*

*=any alphanumeric or symbolic characters, without relevance for explosion protection

mit den Anforderungen der folgenden Richtlinien und Normen übereinstimmt.

is in conformity with the requirements of the following directives and standards.

est conforme aux exigences des directives et des normes suivantes.

Richtlinie(n) / Directive(s) / Directive(s)	Norm(en) / Standard(s) / Norme(s)
ATEX-Richtlinie 2014/34/EU	EN 60079-0: 2012
<i>ATEX Directive</i> <i>2014/34/EU</i>	EN 60079-5: 2007
<i>Directive ATEX</i> <i>2014/34/UE</i>	EN 60079-11: 2012
	EN 60079-26: 2007

Kennzeichnung, marking, marquage:

II 2 (1) G Ex q [ia Ga] IIC T4 Gb
II (1) D [Ex ia Da] IIC

CE 0158

EG/EU-Baumusterprüfbescheinigung:
EC/EU Type Examination Certificate:
Attestation d'examen CE/UE de type:

BVS 12 ATEX E 139 X
DEKRA EXAM GmbH (ID0158)
 Dinnendahlstraße 9
 44809 Bochum
 Germany

EMV-Richtlinie **2014/30/EU**
EMC Directive *2014/30/EU*
Directive CEM *2014/30/UE*

EN 61000-6-2: 2005
 EN 61000-6-4: 2011

Produktnormen nach RoHS-Richtlinie (2011/65/EU):
Product standards according to RoHS Directive:
Normes des produit pour la Directive RoHS:

EN 50178: 1997
 EN 61010-1: 2001+ Corrigendum / Errata

Köln, 2016-04-22

i.V.

i.V.



Ort und Datum
Place and date
Lieu et date

J. Düren
 Technical Director

W. Bertges
 Quality Manager

13 EC-Type Examination Certificate

13.1 ATEX certificate

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 12 ATEX E 139 X**

(4) Equipment: **ReaderBox-***-*****

(5) Manufacturer: **R. STAHL HMI Systems GmbH**

(6) Address: **Im Gewerbegebiet Pesch 14, 50767 Köln, Germany**

(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 12.2176 EG.


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

EN 60079-0:2012 General requirements
EN 60079-5:2007 Protection by powder filling „q“
EN 60079-11:2012 Intrinsic safety „i“
EN 60079-26:2007 Equipment with equipment protection level (EPL) Ga

(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 2(1)G Ex q [Ia Ga] IIC T4 Gb**
II (1)D [Ex ia Da] IIIC

DEKRA EXAM GmbH
Bochum, dated 28th November 2012

Signed: Hans Christian Simanski

Certification body

Signed: Dr. Franz Eickhoff

Special services unit

Page 1 of 4 to BVS 12 ATEX E 139 X
 This certificate may only be reproduced in its entirety and without change.
 DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Phone +49.234.3695-105 Fax +49.234.3696-110 zs-exam@dekra.com



- (13) Appendix to
- (14) **EC-Type Examination Certificate
BVS 12 ATEX E 139 X**
- (15) 15.1 Subject and type

ReaderBox-***-***

The ReaderBox is available in different variants:

- ReaderBox-054-AC*
- ReaderBox-054-DC*
- ReaderBox-088-AC*
- ReaderBox-088-DC*
- ReaderBox-104-AC*
- ReaderBox-104-DC*

The numbers 054, 088 and 104 indicate different intrinsically safe output voltages. AC/DC specifies the supply voltage type.

In the complete denomination, the asterisk is replaced by alphanumeric or symbolic characters without relevance for explosion protection.

15.2 Description

The ReaderBox-***-*** is used as supply and barrier for intrinsically safe devices like barcode scanners or card readers.

It has a metallic enclosure with level of protection 'Ex q'.

The connection of the ReaderBox-***-*** is made by permanently connected cables (max. length 5 m). The cables X1 and X2 contain non-intrinsically safe circuits. The cable X3 contains intrinsically safe circuits only, level of protection Ex ia IIC resp. Ex ia IIIC. The permanently connected cable X3 must not be installed in category 1D or 1G areas.

15.3 Parameters

15.3.1 Non intrinsically safe power supply circuit (PWR), cable X1

Nominal voltage				
For type ReaderBox-***-AC*	AC	100 .. 250		V
For type ReaderBox-***-DC*	DC	10 .. 30		V
Nominal current		≤ 3		A
Nominal power		≤ 120		W
Max. input voltage	Um AC	250		V

15.3.2 Non intrinsically safe data interface (DATA), cable X2

Nominal voltage	DC	±15		V
	AC	15		V
Nominal current		≤ 0.1		A
Max. input voltage	Um AC	250		V



15.3.3	Intrinsically safe circuits, ignition protection Ex ia IIC resp. Ex ia IIIC, cable X3				
15.3.3.1	Supply circuit (X3-1), Wires 1(+VDC) -2(GND)				
15.3.3.1.1	<u>For type ReaderBox-054-***</u>				
	Max. output voltage	Uo	DC	5.4	V
	Max. output current	Io		413	mA
	Max. output power	Po		1.121	W
	Trapezoidal output characteristics				
	Max. external capacitance	Co		65	µF
	for max. external inductance	Lo		1	µH
	or				
	Max. external capacitance	Co		13	µF
	for max. external inductance	Lo		10	µH
15.3.3.1.2	<u>For type ReaderBox-088-***</u>				
	Max. output voltage	Uo	DC	8.8	V
	Max. output current	Io		357	mA
	Max. output power	Pa		1.454	W
	Trapezoidal output characteristics				
	Max. external capacitance	Co		3.6	µF
	for max. external inductance	Lo		20	µH
	or				
	Max. external capacitance	Co		1.7	µF
	for max. external inductance	Lo		100	µH
15.3.3.1.3	<u>For type ReaderBox-104-***</u>				
	Max. output voltage	Uo	DC	10.36	V
	Max. output current	Io		555	mA
	Max. output power	Po		2.258	W
	Trapezoidal output characteristics				
	Max. external capacitance	Co		2.5	µF
	for max. external inductance	Lo		20	µH
	or				
	Max. external capacitance	Co		1.1	µF
	for max. external inductance	Lo		100	µH
15.3.3.2	Data interfaces (X3-3, X3-4), Wires 3(TxD)-2(GND), 4(TxD)-2(GND)				
	For each circuit				
	Max. output voltage	Uo		± 5.4	V
	Max. output current	Io		± 12	mA
	Max. output power	Po		16	mW
	Max. internal capacitance	Co		negligible	
	Max. internal inductance	Li		negligible	
	Linear output characteristics				
	Max. external capacitance	Co		65	µF
	for max. external inductance	Lo		1	µH
	or				
	Max. external capacitance	Co		14	µF
	for max. external inductance	Lo		10	µH
	Max. input voltage	Ui		± 12.5	V
15.3.4	Ambient temperature range	Ta		-40 °C ... +60 °C	

(16) Test and assessment report

BVS PP 12.2176 EG as of 28.11.2012

Page 3 of 4 to BVS 12 ATEX E 139 X

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DEKRA EXAM GmbH Dinnendahlstrasse 9 44609 Bochum Phone +49 234 3695-105 Fax +49 234 3695-110 zs-exam@dekra.com



(17) Special conditions for safe use

1. The cables must have a fixed installation.
2. The corresponding terminal boxes of the non-intrinsically safe circuits must carry the following warning:
"WARNING – Before opening appropriated switch boxes or connection compartments isolate all circuits and wait 8 minutes!"
3. The intrinsically safe circuits are connected to earth; along the intrinsically safe circuits potential equalization must exist.
4. The cable X3 of the intrinsically safe circuits has to be mechanically protected.
5. Do not use premounted X3 interface cable of ReaderBox in Category 1G resp. 1D areas.

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, 28th November 2012
BVS-Le/Mu A20120858

A handwritten signature in black ink, appearing to be 'L. ...', written over a horizontal line.

Certification body

A handwritten signature in black ink, appearing to be 'L. ...', written over a horizontal line.

Special services unit

Page 4 of 4 to: BVS 12 ATEX E 139 X

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13.2 IECEx certificate

		<h1>IECEx Certificate of Conformity</h1>	
INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres <small>for rules and details of the IECEx Scheme visit www.iecex.com</small>			
Certificate No.:	IECEx BVS 12.0088X	issue No.:0	Certificate history:
Status:	Current		
Date of Issue:	2012-12-17	Page 1 of 3	
Applicant:	R. STAHL HMI Systems GmbH Im Gewerbegebiet Pesch 14 50767 Köln Germany		
Electrical Apparatus: Optional accessory:	ReaderBox type -***.***		
Type of Protection:	Equipment protection by intrinsic safety "I", Equipment with equipment protection level (EPL) Ga, Equipment protection by powder filling "q"		
Marking:	Ex q [Ia Ga] IIC T4 Gb [Ex ia Da] IIC		
Approved for issue on behalf of the IECEx Certification Body:	H.-Ch. Simanski		
Position:	Head of Certification Body		
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 the Official IECEx Website.			
Certificate issued by:			
	DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany		



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 12.0088X
 Date of Issue: 2012-12-17 Issue No.: 0
 Page 2 of 3
 Manufacturer: **R. STAHL HMI Systems GmbH**
 Im Gewerbegebiet Pesch 14
 50767 Köln
 Germany

Additional Manufacturing location
(s):

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 electrical apparatus 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 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011-06 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety 'i'
IEC 60079-26 : 2006 Edition: 2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
IEC 60079-5 : 2007-03 Edition: 3	Explosive atmospheres - Part 5: Equipment protection by powder filling "q"

*This Certificate **does not** indicate compliance with electrical 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:

DE/BVS/ExTR12.0091/00

Quality Assessment Report:

DE/BVS/QAR06.0007/06



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 12.0088X

Date of Issue: 2012-12-17

Issue No.: 0

Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

General product information:

The ReaderBox-***-*** is used as supply and barrier for intrinsically safe devices like barcode scanners or card readers. It has a metallic enclosure with level of protection "Ex q".

The connection of the ReaderBox-***-*** is made by permanently connected cables (max. length 5 m). The cables X1 and X2 contain non-intrinsically safe circuits. The cable X3 contains intrinsically safe circuits only. Level of protection Ex ia IIC resp. Ex ia IIIC. The permanently connected cable X3 must not be installed in Zone 20 or Zone 0.

Subject and Type:

ReaderBox-***-***

The ReaderBox is available in different variants:

ReaderBox-054-AC*

ReaderBox-054-DC*

ReaderBox-088-AC*

ReaderBox-088-DC*

ReaderBox-104-AC*

ReaderBox-104-DC*

The numbers 054, 088 and 104 indicate different intrinsically safe output voltages.

AC/DC specifies the supply voltage type.

In the complete denomination, the asterisk is replaced by alphanumeric or symbolic characters without relevance for explosion protection.

Parameters:

see Annex

CONDITIONS OF CERTIFICATION: YES as shown below:

Special conditions for safe use:

1. The cables must have a fixed installation.
2. The corresponding terminal boxes of the non-intrinsically safe circuits must carry the following warning:
"WARNING - Before opening appropriated switch boxes or connection compartments isolate all circuits and wait 8 minutes!"
3. The intrinsically safe circuits are connected to earth; along the intrinsically safe circuits potential equalization must exist.
4. The cable X3 of the intrinsically safe circuits has to be mechanically protected.
5. Do not use premounted X3 interface cable of ReaderBox in Zone 0 resp. Zone 20.

Annexe: BVS_12_0088x_R.Stahl_HMI_.pdf



IECEx Certificate of Conformity



Certificate No.: IECEx BVS 12.0088X
Annex
Page 1 of 2

Parameters

1	Non intrinsically safe power supply circuit (PWR), cable X1				
	Nominal voltage				
	For type ReaderBox-***-AC*	AC	100...250	V	
	For type ReaderBox-***-DC*	DC	10...30	V	
	Nominal current				
			≤ 3	A	
	Nominal power				
			≤ 120	W	
	Max. input voltage	Um	AC	250 V	
2	Non intrinsically safe data interface (DATA), cable X2				
	Nominal voltage				
		DC	±15	V	
		AC	15	V	
	Nominal current				
			≤ 0.1	A	
	Max. input voltage	Um	AC	250 V	
3	Intrinsically safe circuits, ignition protection Ex ia IIC resp. Ex ia IIIC, cable X3				
3.1	Supply circuit (X3-1), Wires 1(+VDC) -2(GND)				
3.1.1	<u>For type ReaderBox-054-***</u>				
	Max. output voltage	Uo	DC	5.4 V	
	Max. output current	Io		413 mA	
	Max. output power	Po		1.121 W	
	Trapezoidal output characteristics				
	Max. external capacitance	Co		65 µF	
	for max. external inductance	Lo		1 µH	
	or				
	Max. external capacitance	Co		13 µF	
	for max. external inductance	Lo		10 µH	
3.1.2	<u>For type ReaderBox-088-***</u>				
	Max. output voltage	Uo	DC	8.8 V	
	Max. output current	Io		357 mA	
	Max. output power	Po		1.454 W	
	Trapezoidal output characteristics				
	Max. external capacitance	Co		3.6 µF	
	for max. external inductance	Lo		20 µH	
	or				
	Max. external capacitance	Co		1.7 µF	
	for max. external inductance	Lo		100 µH	





IECEX Certificate of Conformity



Certificate No.: **IECEX BVS 12.0088X**
Annex
Page 2 of 2

3.1.3	<u>For type ReaderBox-104-***</u>				
	Max. output voltage	Uo	DC	10.36	V
	Max. output current	Io		555	mA
	Max. output power	Po		2.258	W
	Trapezoidal output characteristics				
	Max. external capacitance	Co		2.5	µF
	for max. external inductance	Lo		20	µH
	or				
	Max. external capacitance	Co		1.1	µF
	for max. external inductance	Lo		100	µH
3.2	Datenschnittstellen – Data interfaces (X3-3, X3-4), Wires 3(TxD)-2(GND), 4(TxD)-2(GND) For each circuit				
	Max. output voltage	Uo		± 5.4	V
	Max. output current	Io		± 12	mA
	Max. output power	Po		16	mW
	Max. internal capacitance	CI		negligible	
	Max. internal inductance	LI		negligible	
	Linear output characteristics				
	Max. external capacitance	Co		65	µF
	for max. external inductance	Lo		1	µH
	or				
	Max. external capacitance	Co		14	µF
	for max. external inductance	Lo		10	µH
	Max. input voltage	Ui		± 12.5	V
4	Ambient temperature range	Ta		-40 °C ... +60 °C	

13.3 KC certificate

제2019-006360-01-1호(1/2)

안 전 인 증 서

R.STAHL HMI Systems GmbH
Adolf-Grimme-Allee 8, 50829 Cologne, Germany

위 사업장에서 제조하는 아래의 품목이 「산업안전보건법」 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목
Reader Box


형식·모델(용량·등급) / 인증번호
Type***_***(Ex q [ia] IIC T4) / 14-KB4BO-0516X

인 증 기 준
고용노동부고시 제2013-54호

인 증 조 건

1. 제조공장
·본 인증서는 'Adolf-Grimme-Allee 8, 50829 Cologne, Germany'에서 생산하는 제품에 한함.
2. 제품개요
·바코드 스캐너 또는 카드 리더기와 같은 본질안전기기를 위하여 배리어와 전원을 공급하기 위한 박스임.
·정격 및 본질안전을 위한 전기적 파라미터: 별첨 1의 전기적 파라미터 참조
·사용주위온도: $-40\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$
3. 인증범위: 본 인증서는 아래의 형식번호에 한하여 유효함.
·ReaderBox-(a)(b)(c)-(d)(e)(f)
-(a)(b)(c) 본질안전을 위한 최대출력전압: 054, 088, 104
-(d)(e) 입력전압 파형: AC, DC
-(f) 방폭성능에 영향을 주지 않는 코드임.
4. 안전한 사용을 위한 조건
·관련 IECEx 인증서(IECEx BVS 12.0088X issue No.0) 3페이지 specific condition of use 참조
5. 인증(변경)사항
· 1차 변경(2019.02.19.): 기존 제2014-035930-01호에서 주소 및 인증서 기재사항 변경 등을 위한 재발행
6. 그 밖의 사항
·안전인증품의 품질관리, 확인심사 수검, 변경사항 신고 등 인증 받은 자의 의무 준수
·본 안전인증서는 반드시 관련 IECEx 인증서(IECEx BVS 12.0088X issue No.0)과 함께 사용

2014년 9월 5일



한국산업기술시험원

산업안전보건법 시행규칙 [별지 제10호의6서식] (08389) 서울시 구로구 디지털로 26길 87(구로동) <http://www.ktl.re.kr>
(52852) 경상남도 진주시 충의로 10(충무공동)



제2019-006360-01-1 호(2/2)

인 증 조 건

[별첨 1] 전기적 파라미터

- 비본안 전원공급회로(PWR), Cable X1
 - 정격전압: ReaderBox-***-AC*, (100~250) Vac / ReaderBox-***-DC*, (10~30) Vdc
 - 정격전류: 3 A 이하
 - 정격전력: 120 W 이하
 - 입력 최대전압 U_m : 250 Vac
- 비본안 데이터 인터페이스(DATA), Cable X2
 - 정격전압: ± 15 Vdc / 15 Vac
 - 정격전류: 0.1 A 이하
 - 입력 최대전압 U_m : 250 Vac
- 본안 회로(DATA), Cable X2

Terminal	Type	본질안전을 위한 전기적 파라미터
전원공급회로 (X3-1), Wires 1(+VDC)-2(GND)	ReaderBox-054-***	$U_b = 5.4$ Vdc, $I_b = 413$ mA, $P_o = 1.121$ W, $C_o = 65$ μ F, $L_o = 1$ μ H 또는 $C_o = 13$ μ F, $L_o = 10$ μ H
	ReaderBox-088-***	$U_b = 8.8$ Vdc, $I_b = 357$ mA, $P_o = 1.454$ W, $C_o = 3.6$ μ F, $L_o = 20$ μ H 또는 $C_o = 1.7$ μ F, $L_o = 100$ μ H
	ReaderBox-104-***	$U_b = 10.36$ Vdc, $I_b = 555$ mA, $P_o = 2.258$ W, $C_o = 2.5$ μ F, $L_o = 20$ μ H 또는 $C_o = 1.1$ μ F, $L_o = 100$ μ H
데이터 인터페이스 (X3-3, X3-4), Wires 3(TxD)-2(GND), 4(TxD)-2(GND)		$U_b = \pm 5.4$ V, $I_b = \pm 12$ mA, $P_o = 16$ W, $G = 0$, $L = 0$, $C_o = 65$ μ F, $L_o = 1$ μ H 또는 $C_o = 14$ μ F, $L_o = 10$ μ H, $U = \pm 12.5$ V

산업안전보건법 시행규칙 [별지 제10호의6서식] (08389) 서울시 구로구 디지털로 26길 87(구로동) <http://www.ktl.re.kr>
(52852) 경상남도 진주시 충의로 10(충무공동)

14 Release notes

The chapter entitled "Release Notes" contains all the changes made in every version of the Operating Instructions.

Version 01.00.08

- Removal of previous release notes
- Renew KC certificate
- Formal changes

Version 01.00.09

- Correction of data circuit X3 signal assignment of wires 3 and 4, RxD and TxD swapped

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THE STRONGEST LINK.