Operating Instruction

USBi-Drive

THE STRONGEST LINK.

Operating Instruction version: **01.04.02**
Issue: **27.06.2024**

Disclaimer

Publisher and copyright holder:

R. STAHL HMI Systems GmbH
Adolf-Grimme-Allee 8
D 50829 Köln

Telephone:	(Sales Support)	+49 221 768 06	- 1200
	(Technical Support)		- 5000
Fax:			- 4200
E-mail:	(Sales Support)	sales.dehm@r-stahl.com	
	(Technical Support)	support.dehm@r-stahl.com	

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 (with and without lettering) refers to a different chapter or section in this manual or other documentation or a web-page !

Warnings

	Caution ! The device surface may heat up at ambient temperatures higher than 45 °C ! Caution at contact !

Table of Contents

1 Preface

These operating instructions are intended for the safe installation of the USBi-Drives and cover all Ex-relevant aspects.

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 !

	Please note that all certificates of the USBi-Drives can be found in a separate document (CE_USBi-Drive). You can find this document in the internet at r-stahl.com or request it from R. STAHL HMI Systems GmbH.

2 Device function

The USBi-Drives are explosion-protected equipment for installation in hazardous areas of zones 1, 2, 21 and 22. The devices may be connected to intrinsically safe and not intrinsically safe USB interfaces. Power supply and data communication takes place via the USB interface. Data may be saved to and read from the USBi-Drive.
The USBi-Drives can be used at devices of EAGLE (ET-/MT-xx6), SHARK (ET-/MT-xx8) and ORCA (ORCA01*) device platforms.

3 Technical data

Function / Equipment	**USBi-Drive-***
Operating voltage	5 VDC, via USB interface
Power consumption Idle mode Active mode	 70 mA 265 mA
Connection type	USB plug type A
Operating temperature range	-20 °C … +70 °C / [-4 °F … +158 °F]
Dimensions (W x H x D)	15 mm x 112.5 mm x 25 mm / [0.59" x 4.43" x 0.98"]
Mounting position	any
Housing	Aluminium
Weight	ca. 100 g / [0.22 lbs]

4 Conformity to standards

The USBi-Drives comply with the following standards and the following directive:

Standard 4th supplement ATEX directive 2014/34/EU	Classification
EN 60079-0 : 2012 + A11 : 2013	General requirements
EN 60079-11 : 2012	Intrinsic safety "i"
The product corresponds to requirements from:	
EN IEC 60079-0 : 2018	General requirements
Electromagnetic compatibility	
EMC directive	
2014/30/EU	**Classification**
EN 61000-6-2 : 2005	Interference resistance
EN 61000-6-4 : 2007 + A1 : 2011	Interference emission
EN 61326-1 : 2013	General requirements
RoHS directive	
2011/65/EU	**Classification**
EN IEC 63000 : 2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

5 Certificates

The USBi-Drives are certified for installation in the following areas:

Synonym	Scope	Certificate number	Valid until	Comment
CE	Europe		unlimited	According to directive 2014/30/EU 2014/34/EU 2011/65/EU
ATEX	Europe	TÜV 06 ATEX 7342	unlimited	
IECEx	Global	IECEx TUR 13.0005	unlimited	

DOCUMENTATION	You can access all IECEx certificates on the official website of the IEC under their certificate number. https://www.iecex-certs.com/#/home.

6 Marking

Manufacturer	R. STAHL HMI Systems GmbH	
Type code	USBi-Drive-xxx-yyy (Rev. H)	
CE classification:	CE 0158	
Testing authority and certificate number:	TÜV 06 ATEX 7342 IECEx TUR 13.0005	
Ex classification:		
ATEX		II 2 G Ex ib IIC T4 Gb II 2 D Ex ib IIIC T130°C Db
IECEx		Ex ib IIC T4 Gb Ex ib IIIC T130°C Db

7 Ambient temperature range

The temperature range is -20°C … +70°C.

8 Safety-related data

8.1 Revision H - actual delivery status

Actual delivery status, should be used at all HMI devices (also previous device version).

The safe maximum values of the USBi-Drives with 32 or 64 GB memory of Revision H are:

U_i:	5.9 VDC
I_i:	3.0 A
P_i:	6.02 W
C_i:	9.5 µF
L_i:	3.5 µH

9 Proof of intrinsic safety

Proof of intrinsic safety for the connection of USBi-Drives with devices of device platform EAGLE (ET-/MT-xx6), SHARK (ET-/MT-xx8) und ORCA (ORCA01*).

9.1 General information

Proof of intrinsic safety is based on the principles of IEC/EN 60079-14 and the standards referred to therein. Particular reference is made to Chapter 12 "Additional requirements for the type of protection i -intrinsic safety" in IEC/EN 60079-14.

Proof has been drawn up on the basis of conformity certification as per IEC/EN 60079-0 and IEC/EN 60079-11 or the EC type examination certificate in accordance with Directive 94/9/EC and the comparison of the safety-related data listed in these documents.

The following EC-type examination certificates were used:

Device		*EC type examination certificate*
ET-xx6	—	TÜV 05 ATEX 7176 X
MT-xx6	—	TÜV 07 ATEX 7471 X
ET-xx6-A	—	TÜV 07 ATEX 7041 X
MT-xx6-A	—	TÜV 11 ATEX 7103 X
ET-xx8		BVS 14 ATEX E 134 X
MT-xx8		
ORCA01*		UL 23 ATEX 2902X
USBi-Drive-xxx-yyy (Rev. H)	—	TÜV 06 ATEX 7342

The testing authority has listed **all** conditions applicable to intrinsic safety in the EC type examination certificates.
If an EC type examination certificate for a device only specifies the input voltage (Ui), for example, intrinsic safety is guaranteed if the associated supply does not exceed this voltage (Uo is less than / equals Ui).
Other output parameters specified in the examination certificate of the power supply (e.g. Io, Po) are in this case irrelevant to intrinsic safety.

NOTICE	The data given in this document do **NOT** absolve the fitter and / or operator of the systems from their obligation to ensure compliance with legal requirements, directives and regulations. Due diligence remains the sole responsibility of the fitter and / or operator !

9.2 Interconnection

In this part we list the voltages, currents, capacitance and inductance values of all circuits to determine whether the USBi-Drives may be connected to the HMI devices of device platform EAGLE (ET-/MT-xx6), SHARK (ET-/MT-xx8) und ORCA (ORCA01*).

9.2.1 ET-/MT-xx6-TX/FX HMI device (HW-Rev. 2.xx)

a) ET-/MT-xx6 HMI device with USBi-Drive-xxx-yyy (Rev. H)

Source / active			==>	Acceptor / passive
ET-/MT-xx6				USBi-Drive-xxx-yyy (Rev. H)
Connection X4 or X6				
Uo = 5.9 VDC			≤	Ui = 5.9 VDC
Io = 1.02 A			≤	Ii = 3 A
Po = 6.02 W			≤	Pi = 6.02 W
Co_{IIC} [µF] =	13		≥	Ci 9.5 µF
Lo_{IIC} [µH] =	5		≥	Li 3.5 µH
Co_{IIB} [µF] =	50	89	≥	Ci 9.5 µF
Lo_{IIB} [µH] =	20	10	≥	Li 3.5 µH

C_o and L_o pairs directly above/underneath each other may be used.

9.2.2 ET-/MT-xx6-A HMI device (HW-Rev. 3.xx)

a) ET-/MT-xx6-A HMI device with USBi-Drive-xxx-yyy (Rev. H)
Circuits in zone 1

Source / active				==>	Acceptor / passive
ET-/MT-xx6-A					USBi-Drive-xxx-yyy (Rev. H)
Connection X4 or X6					
Uo = 5.9 VDC				≤	Ui = 5.9 VDC
Io = 2.18 A / 2.69 A *				≤	Ii = 3 A
Po = 1.24 W				≤	Pi = 6.02 W
Co_{IIC} [µF] =	11			≥	Ci 9.5 µF
Lo_{IIC} [µH] =	5			≥	Li 3.5 µH
Co_{IIB} [µF] =	40	79	200	≥	Ci 9.5 µF
Lo_{IIB} [µH] =	20	10	5	≥	Li 3.5 µH

C_o and L_o pairs directly above/underneath each other may be used.

a1) MT-xx6-A HMI device with USBi-Drive-xxx-yyy (Rev. H)
Circuits in zone 2

Source / active					==>	Acceptor / passive
MT-xx6-A						USBi-Drive-xxx-yyy (Rev. H)
Connection X4 or X6						
Uo = 5.9 VDC					≤	Ui = 5.9 VDC
Io = 2.18 A / 2.69 A *					≤	Ii = 3 A
Po = 1.24 W					≤	Pi = 6.02 W
Co_{IIC} [µF] =	24		12		≥	Ci 9.5 µF
Lo_{IIC} [µH] =	5		10		≥	Li 3.5 µH
Co_{IIB} [µF] =	37 / 29 *	92 / 84 *	200 / 190 *	790 / 770 *	≥	Ci 9.5 µF
Lo_{IIB} [µH] =	50	20	10	5	≥	Li 3.5 µH

C_o and L_o pairs directly above/underneath each other may be used.

* Values depending from number of supplement of EC type examination certificate

9.2.3 HMI devices ET-/MT-xx8

a) ET-/MT-xx8 HMI device with USBi-Drive-xxx-yyy (Rev. H)

Source / active			==>	Acceptor / passive
ET-/MT-xx8				USBi-Drive-xxx-yyy (Rev. H)
Connection X35				
Uo = 5.36 VDC			≤	Ui = 5.9 VDC
Io = 1.264 A			≤	Ii = 3 A
Po = 2.949 W			≤	Pi = 6.02 W
Co [µF] =	23	19	≥	Ci 9.5 µF
Lo [µH] =	3.68	4.68	≥	Li 3.5 µH

C_o and L_o pairs directly above/underneath each other may be used.

9.2.4 HMI devices ORCA01*

a) ORCA01* HMI device with USBi-Drive-xxx-yyy (Rev. H)

Source / active			==>	Acceptor / passive
ORCA01*				USBi-Drive-xxx-yyy (Rev. H)
Connection X7 or X8				
Uo = 5.54 VDC			≤	Ui = 5.9 VDC
Io = 0.757 A			≤	Ii = 3 A
Po = 3.9 W			≤	Pi = 6.02 W
Co [µF] =	15.6	11.6	≥	Ci 9.5 µF
Lo [µH] =	4	5	≥	Li 3.5 µH

C_o and L_o pairs directly above/underneath each other may be used.

10 Type code

10.1 Revision H - actual delivery status

Type code:

USBi-Drive-xxx-yyy Rev. H

- Revision id.
- Version of software functionality
- Memory

Product type:

- USBi-Drive-64GB

11 Safety Advice

	This chapter is a summary of the key safety measures. The summary is supplementary to existing rules which staff also have to study.
NOTICE	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 11.1 must be heeded to avoid injury and damage to equipment !

11.1 Installation and operation

Please note the following when installing and operating the device:

- The in each case valid national regulations for installation and assembly apply (e.g. IEC/EN 60079-14).
- The USBi-Drives may be installed in zones 1 or 2 and 21 or 22.
- The USBi-Drives can be operated in any position.
- If the USBi-Drive is constantly in use it must be protected by a housing or cover of suitable protection type.
- The intrinsically safe circuits must be installed according to applicable regulations.
- When installed in zones 1, 2, 21 and 22, the USBi-Drives may be connected to intrinsically safe input circuits.
- The USBi-Drives can be connected to an intrinsically safe as well as non-intrinsically safe USB interface.
- The safety values of the USBi-Drive must match those of the device to which it is connected.
- Interconnecting several active devices in an intrinsic safety circuit may result in different safe maximum values. This could compromise intrinsic safety !
- 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 USBi-Drive for its intended purpose only (see "Device Function").
Incorrect or unauthorized use and non-compliance with the instructions in this manual will void any warranty on our part.
No changes may be made to the USBi-Drives or their components that compromise explosion protection !
The USBi-Drives may only be installed and operated in an undamaged, dry and clean condition !

12 Maintenance, service

NOTICE	Associated equipment is subject to maintenance, service and testing according to guidelines 1999/92/EG, IEC/EN 60079-14, -17, -19 and BetrSichVer (Betriebssicherheits-verordnung - German Regulation of Workplace Safety) also apply !

The USBi-Drives contain no replaceable parts. It is therefore not necessary to carry out regular adjustments.
Maintenance should focus on the following:

- Damage to / dirt on the plug-in terminal
- Housing damage
- Encapsulation material damage

12.1 Servicing

It is the responsibility of the operator of an electrical plant in a hazardous environment to have the plant serviced. Please also note the appropriate national rules and regulations.

13 Troubleshooting

The USBi-Drives cannot be repaired.

In addition, the following applies:

NOTICE	Devices operated in hazardous areas must not be modified. Repairs may only be carried out by qualified, authorised staff specially trained for this purpose.
	Repairs may only be carried out by specially trained staff who are familiar with all basic conditions of the applicable user regulations and – if necessary – have been authorized by the manufacturer.

14 Disposal / Restricted substances

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 are classified according to the table below:

Directive	WEEE II directive 2012/19/EU
Valid	from 2018-08-15
Category	SG5 Small equipment <50 cm

R. STAHL HMI Systems GmbH meets the requirements of directive 2012/19/EU (WEEE) and is registered under the number DE 15180083.

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

14.1 Declaration of substances and restricted substances

The present declaration is based on the procedure described in the international standard and directives as listed in the table below:

- IEC 62474 : 2018 (DIN EN IEC 62474 : 2019-09)
- (EG) Nr. 1907/2006 (REACH)
- Directive 2011/65/EU (RoHS)
- Resolution MEPC.269(68) "International Maritime Organization" (IMO); particularly "2015 Guidelines for the Development of the Inventory of the Hazardous Materials" (IHM)

14.1.1 Declarable substance groups

Component	Designation	Mass (g)	Declarable Substance Groups and Substances (IEC 62474 database)	CAS Nr.	Mass %	Exemption (acc. to directive)
-	-	-	No SVHC material existing	-	-	-

14.1.2 RoHS directive 2011/65/EC

The devices meet the requirements of RoHS Directive 2011/65/EU.

14.1.3 IMO Resolution MEPC.269(68)

The devices meet the requirements of the MEPC.269(68) Resolution of the "International Maritime Organization" (IMO), in particular the "2015 Guidelines for the Development of the Inventory of the Hazardous Materials" (IHM).

15 Declaration of 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: *that the product:* *que le produit:*	**USB Memory Stick**
Typ(en), *type(s), type(s):*	**USBi-Drive-xxx-yyy (Rev.H)** with xxx = storage capacity yyy = software functionality (not Ex-relevant)

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)*	
2014/34/EU **ATEX-Richtlinie** *2014/34/EU* *ATEX Directive* *2014/34/UE* *Directive ATEX*	EN 60079-0:2012 + A11:2013 EN 60079-11:2012	Das Produkt entspricht Anforderungen aus: *Product corresponds to requirements from:* *Produit correspond aux exigences:* EN IEC 60079-0:2018

Kennzeichnung, *marking, marquage:*
II 2G Ex ib IIC T4 Gb
II 2D Ex ib IIIC T130°C Db
CE 0158

EU-Baumusterprüfbescheinigung:
EU Type Examination Certificate:
Attestation d'examen UE de type:
TÜV 06 ATEX 7342
TÜV Rheinland Industrie Service GmbH (NB 0035)
Am grauen Stein, 51105 Köln (Cologne), Germany

2014/30/EU	**EMV-Richtlinie**	EN 61000-6-2:2005 EN 61000-6-4:2007 + A1:2011 EN 61326-1:2013
2014/30/EU	*EMC Directive*	
2014/30/UE	*Directive CEM*	

Produktnormen nach RoHS-Richtlinie (2011/65/EU): *Product standards according to RoHS Directive:* *Normes des produit pour la Directive RoHS:*	EN IEC 63000:2018

Für spezifische Merkmale und Bedingungen siehe Betriebsanleitung.
For specific characteristics and conditions see operating instructions.
Pour les caractéristiques et conditions spécifiques, voir le mode d'emploi.

Köln, 2020-12-15	i.V. Joachim Düren	i.V. A. Jung
Ort und Datum *Place and date* *Lieu et date*	**J. Düren** Technical Director	**A. Jung** Ex Representative

20155070062 Konformitätserklärung USBi-Drive_H.docx Template_ EGEU_Konf_20150720.docx, Page 1 / 1

16 Release notes

This chapter lists the changes made in the most recent versions of these Operating Instructions.

Version 01.04.00

- Addition of 4th supplement
- Addition of USBi-Drive Rev. H with all data in all sections
- Renew "Declaration of EC conformity"
- Text-, layout- and formal corrections

Version 01.04.01

- Adaption of section "Disposal" according to the current WEEE directive
- Formal changes

Version 01.04.02

- Adaption title page to current design
- Adaption disclaimer with current data
- Update back page
- Changing text (with and without lettering) to documentation note in "Specific markings"
- Removal of reference to "Online manual" in "Preface"
- Renew "Declaration of conformity"
- Adaption "Conformity to standard"
- Modification of section "Certificates"
- New IECEx link
- Adaptation of section "Proof of intrinsic safety", addition of SHARK and ORCA01*
- Removal of note in "Interconnection"
- Changing order variants to 64GB
- Adaptation of section "Disposal / Restricted substances"
- Addition of text according to "Using of USBi-Drives" in section "Device function"
- Formal changes

R. STAHL HMI Systems GmbH
Adolf-Grimme-Allee 8
D 50829 Köln

T: (Sales Support) +49 221 768 06 - 1200
(Technical Support) +49 221 768 06 - 5000
F: +49 221 768 06 - 4200
E: (Sales Support) sales.dehm@r-stahl.com
(Technical Support) support.dehm@r-stahl.com

r-stahl.com