



Operating Instructions

ET-xx6-A

**Series 300 EAGLE
Series 400 Panel PC
Series 500 Thin Clients**

(valid for HW Revision 3)

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Table of contents

	Description	Page
	Disclaimer	2
	Table of contents	3
1	Preface	6
2	Device function	6
2.1	ET-3x6-A (Series 300 EAGLE)	6
2.2	ET-4x6-A (Series 400 Panel PC)	7
2.3	ET-5x6-A (Series 500 Thin Clients)	7
3	Technical Data	7
3.1	Additionally for ET-3x6-A (EAGLE)	9
3.2	Additionally for ET-4x6-A (Panel PC)	9
4	Conformity to standards	10
5	Certificates	10
5.1	ATEX	11
5.2	IECEX	11
5.3	GOST-R	11
5.4	KGS	11
5.5	CKT	11
5.6	NEC/UL	11
5.7	CSA	12
5.8	Inmetro	12
5.9	DNV	12
5.10	LR	12
6	Marking	12
7	Power supply	13
7.1	HMI devices	13
7.1.1	HMI device terminals	13
7.1.1.1	Tightening torque	13
8	Permitted maximum values	14
8.1	External, non-intrinsically safe circuits	14
8.2	External inherently safe optical interface	15
8.3	External intrinsically safe circuits	15
9	Type code	19
9.1	Certificate	19
9.2	Order variant	19
9.2.1	ET-3x6-A (EAGLE)	19
9.2.2	ET-4x6-A (Panel PC)	20
9.2.3	ET-5x6-A (Remote HMI Thin Client)	21
10	Safety Advice	22
10.1	Installation and operation	22
10.2	Cautionary note	23
10.3	Special conditions	23
11	Installation	23
11.1	General information	23
11.2	ET-xx6-A	23

11.2.1	HMI device Installation in housings type of protection "e" or "t"	23
11.3	Usage of the USB-interfaces	24
11.3.1	Usage of USB Memory-Sticks	24
11.3.2	Usage of external USB devices	24
11.4	USB interfaces	25
11.4.1	I.S. USB interfaces USB0, USB2	25
11.4.2	Ex-e USB interfaces USB1, USB3	25
11.4.2.1	Connection variations for Ex-e USB interfaces	25
11.4.2.2	Connection terminal with protection type "e" (EN 60079-7)	26
12	Assembly and disassembly	27
12.1	General information	27
12.2	Cut-out ET-xx6-A	27
13	Operation	27
13.1	General information	27
13.2	Connections	28
13.2.1	Dip switch settings S3 and S4	29
13.2.2	Status LEDs	30
13.2.2.1	LEDs	30
13.3	Connection of Readers	32
13.3.1	Serial connection versions	32
13.3.1.1	Type RSi1 connection version 1	32
13.3.1.2	Type RSi1 connection version 2	32
13.3.1.3	Type RSi2 connection version	33
13.3.2	Wiegand connection versions	33
13.3.2.1	Type WCR1 connection version	33
13.3.2.2	Type WCR2 connection version	33
14	Exicom-SHD-xxx hard disk	34
14.1	Installation of hard disk	34
14.1.1	Mechanical dimensions	34
14.2	Connections	35
14.2.1	Safety advice	35
14.3	Hard disk replacement	35
15	Maintenance, service	36
15.1	Servicing	36
15.2	Saving data with ET-3x6-A	36
15.3	Time function	36
16	Troubleshooting	37
17	Disposal	37
17.1.1	ROHS directive 2002/95/EC	37
17.1.2	China ROHS labelling	37
18	Front panel resistance	38
18.1	Design	38
18.2	Materials	38
18.3	Material properties	38
18.3.1	Entire device	39

18.3.2	Membrane top (Polyester)	39
18.3.3	Touch screen	41
18.3.4	Front panel seal	42
19	General Information	43
19.1	Keyboard features	43
19.2	ET-4x6-A (Panel PC)	44
19.2.1	Licensing issues	44
19.2.2	Recovery Stick	44
19.2.3	Back-up	44
19.2.4	Initial start-up	44
19.2.4.1	Initial start-up XP Pro/WIN 7	44
19.2.4.2	Initial start-up XP Embedded	44
19.2.5	Switching off/closing down	45
19.2.5.1	Note on XP Embedded	45
19.2.6	Installation Windows XP Professional	46
20	UL Certification Drawing	47
21	CSA Control Drawing	48
22	Declaration of EC conformity	51
23	Release notes	52

1 Preface

These Operating Instructions contain all aspects relevant to explosion protection for the ET-xx6-A HMI devices (series 300 EAGLE, series 400 Open HMI - Panel PC's and series 500 Remote HMI Thin Clients). They also contain information on the connection and installation of these devices.

These operating instructions contain a joint description of all three product lines: Eagle, Panel PC's and Thin Clients. Any differences between the three product lines will be explicitly mentioned and dealt with. As a rule, though, the information contained in these operating instructions applies to all models of the ET-xx6-A series.

The ET-xx6-A HMI devices with display sizes of 26 cm/10.4", 38 cm/15" and 48 cm/19" will be available in Hardware Revision 3.



All data relevant to explosion protection from the EC-type examination certificate were copied into these operating instructions. In the case of any discrepancies the original EC-type examination certificate applies.



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 also note that all certificates of the HMI devices can be found in a separate document (CE_ET-xx6-A) !



For more information on the HMIs please also refer to the Manual (available as online manual on www.stahl-hmi).

2 Device function

The ET-xx6-A HMI devices are explosion-proof equipment for installation in hazardous areas and can be installed in zones 1, 2, 21 and 22 according to ATEX directive 94/9/EC.

All devices have a modular structure, which makes changes and maintenance easy. They can be integrated into control cabinets or panels, etc.

2.1 ET-3x6-A (Series 300 EAGLE)

The ET-3x6-A operator interfaces have been designed for the visualisation of medium-sized automation tasks, operation as built-in device and tankfarm application in hazardous areas. The EAGLE operating stations have been designed to run with a proprietary operating system, making them highly secure against external manipulation.

Users operate the device via the membrane keyboard integrated into the front plate and via the LCD display with touch screen.

Communication with control and automation systems runs via the serial interfaces (RS-232 RS-422/485, Ethernet) connected in the "e"-area at the back of the devices. Various peripheral devices, such as barcode scanners, card readers, USB sticks and WLAN / Bluetooth modules can be connected via USB interfaces or optional fitted modules.

With a wealth of functions, these HMI devices provide optimum visualization. Their active communication concept in combination with integrated functionality reduce the automation system workload.

2.2 ET-4x6-A (Series 400 Panel PC)

The ET-4x6-A devices are robust Panel PC's for hazardous areas. With their pre-installed Windows operating systems they are ready to run straight away.

As a standard, all Panel PC's are equipped with a touch screen and several interfaces and are based on the powerful ATOM technology (1.6 GHz clock frequency), making them the most powerful devices on the market.

2.3 ET-5x6-A (Series 500 Thin Clients)

The ET-5x6-A devices of the 500 series can be integrated into modern networks as Thin Clients or with a KVM box via KVM-over-IP, thus providing ideal and flexible access options with central data administration.

The ET-5x6-A device, which is used for operation and visualization, is located in the hazardous area, whereas the PC that is operated is located in the safe area. Each ERP/MES network can be accessed from each Thin Client via the IP address.

The Thin Client system supports both modern technologies such as DVI and USB and older technologies such as VGA and PS/2.

3 Technical Data

Function / Equipment	ET-306-A ET-406-A	ET-316-A ET-416-A	ET-336-A ET-436-A-(SR) ET-536-A-(SR)	ET-456-A ET-556-A
Display type	TFT Color, 16,777,216 Colors			
Display size	26 cm (10.4")		38 cm (15")	48 cm (19")
Resolution in pixels	ET-306-A VGA 640 x 480 ET-406-A SVGA 800 x 600	SVGA 800 x 600	XGA 1024 x 768	SXGA 1280 x 1024
Display	Touch screen on glass			
Touch Screen normal Sunlight readable	8-wire analogue resistive -		5-wire analogue resistive	-
Backlight	LED background lighting			
Service life of backlight at +10°C	130,000 h		500,000 h	50,000 h
at +35°C	55,000 h		70,000 h	-
at +55°C	40,000 h		50,000 h	-
Brightness normal Sunlight readable	VGA 450 cd/m ² SVGA 400 cd/m ² -		350 cd/m ² 1000 cd/m ²	350 cd/m ² -
Contrast normal Sunlight readable	700:1 -		600:1	1000:1 -
Keyboard	Polyester membrane on aluminium plate (> 1 million actions)			
Functional keys	12	12	8	8
Soft keys	10	no	no	no
Cursor keys	yes	no	no	no
Alphanumeric keys	12	no	no	no
System keys	14	no	no	no
Additional keyboard	optional 100 mA max. power consumption 105 Keys or 107 keys with integrated trackball/joystick (variant with trackball/joystick not for ET-3x6-A)			
Trackball/Joystick	optional for ET-4x6-A and ET-5x6-A			

Function / Equipment	ET-306-A ET-406-A	ET-316-A ET-416-A	ET-336-A ET-436-A-(SR) ET-536-A-(SR)	ET-456-A ET-556-A
Power supply	Directly in the integrated Ex-e connection box			
Connections	via screw terminals, 2.5 mm ² green (Ex-e)			
Power supply	24 VDC (20.4 to 28.8 VDC)			
Power consumption [A]	1.2 A			
max. operating voltage U _m ET-xx6-A	30 VDC			
Real-time clock	Yes			
Data buffer	Lithium battery and capacitor buffered, maintenance-free			
Battery	> 5 years			
Capacitor	at least 4 days			
Status display LEDs below the back cover	for activity on - Solid state flash drive or HD - Ethernet link - COM 1 and COM 2			
Interfaces				
Ethernet	Either Tx or Fx			
Copper (Tx)	10/100BaseTx, 10/100 Mbit (Ex-e)			
Optical fibre (Fx)	100BaseFx, 100 Mbit, inherently safe (Ex op is)			
USB	2x Ex-e; 2x Ex-ib			
PS/2 (Ex-ia)	For external keyboard, mouse*, trackball*, joystick* * not available for ET-3x6-A			
Serial COM1	RS-232, RS-422, RS-485 (Ex-e)			
Readers COM2	Barcode scanner, Wiegand reader, Proximity reader interface (Ex-ib)			
Fieldbus	not for Thin Client			
Eagle	Profibus with 9185/12-46-10 MPI with MPI Box SSW7-RK512-RS-422			
Panel PC	MPI with MPI Box SSW7-HMI-RS-422			
Audio	Line Out output (Ex-e)			
Data cable/-length				
Copper (Tx)	up to 100 m via CAT5 installation cable AWG22			
Optical fibre (Fx)	up to 2000 m via 62,5/125 µm (core-/external cross section) multi-mode optical fibre cable			
Front plate	Polyester on seawater-proof aluminium with touch technology and safety glass (standard) or Stainless steel on seawater-proof aluminium with touch-technology and safety glass, F-keys polyester			
	-	-	yes (not ET-336-A)	yes
Housing	Stainless steel			
Housing protection type	IP66			
Operating temperature range				
Operation	- 20°C ... + 55°C*			
Operation with heater *	- 30°C ... + 55°C*			
Operation with heater**, housing insulation and protective screen	- 40°C ... + 55°C*			
Storage temperature range	- 30°C ... + 60°C			
* Comment	for ET-4x6-A and ET-5x6-A: operation at +55°C for a maximum of 5 hours, at +50°C for continuous operation (24/7)			
** Comment	** The heater used must be of such a design that the temperature inside the HMI device's housing does not fall below -20°C (-30°C only at the front) !			
Heat dissipation	approx. 50 % via front plate, approx. 50 % via housing			
Relative humidity	90% at + 40 °C, without condensation			
Vibration				
Operation	3 to 22 Hz: 1 mm 22 to 500 Hz: 9.8 m/s ² = 1 g			
Transport:	3 to 9 Hz: 3.5 mm 9 to 500 Hz: 9.8 m/s ² = 1 g			
Shock loading				
Operation	150 m/s ² = about 15 g / 11 ms			
Transport:	250 m/s ² = about 25 g / 6 ms			

Function / Equipment	ET-306-A ET-406-A	ET-316-A ET-416-A	ET-336-A ET-436-A-(SR) ET-536-A-(SR)	ET-456-A ET-556-A
Dimensions [mm]				
Front (w x h)	400 x 270	372 x 270	440 x 340	535 x 425
Cut-out w x h [mm] (+/- 0.5)	385.5 x 257.5	359.5 x 257.5	427.5 x 327.5	522.5 x 412.5
Depth of cut-out	150		165	
Wall thickness	≤ 8			
Mounting position	vertical or horizontal			
Weight [kg]				
Device	13.00	12.60	17.30	23.5
Fixing frame	0.6	0.6	0.7	0.9

3.1 Additionally for ET-3x6-A (EAGLE)

Processor	LX 800, 266 MHz
Main memory [Mbyte]	256
Data memory [Mbyte]	256
Operating system:	RT Target
Languages	global, multilingual language support
Number of protocol drivers	a maximum of 4 simultaneously
Number of process images	> 1000 dynamic
Number of texts / messages	dynamically limited by main memory
Number of variables per page	255
Number of messages	4096 fault messages, 4096 operation messages
Font sets	4 independent Windows uncondensed fonts
Configuration memory type	Solid state flash drive

3.2 Additionally for ET-4x6-A (Panel PC)

Processor	ATOM 1.6 GHz
Working memory [GB]	1 / 2
Data memory [GB]	4 / 16
	128 GB MLC
	128 GB SLC
Type of data memory	
Standard	Solid state flash drive
Optional	expansion to Exicom-SHD-xxx hard disk 100 GB instead of flash drive
Operating system	Windows XP Embedded Windows XP Professional Windows 7 Ultimate
Standard Software	WIN CC flexible, iFix, RSView (for further software solutions, please refer to our homepage)
Global language support	Via Multi-Language interface of Windows XP embedded (25 languages)

4 Conformity to standards

The ET-xx6-A HMI devices comply with the following standards and directives:

Standard	Classification
Directive 94/9/EC	
1st supplement	
IEC 60079-0 : 2011	General requirements
IEC 60079-1 : 2007	Flameproof enclosure "d"
IEC 60079-7 : 2006	Increased safety "e"
IEC 60079-11 : 2011	Intrinsic safety "i"
IEC 60079-18 : 2009	Encapsulation "m"
IEC 60079-28 : 2006	Optical radiation "op is"
IEC 60079-31 : 2008	Protected by enclosures "t" (dust)
Electromagnetic compatibility	
Directive 2004/108/EC	
EN 61326-1 : 2008	General requirements
IEC 61000-6-2 : 2005	Immunity
IEC 61000-6-4 : 2011	Emission

5 Certificates

The ET-xx6-A HMI devices are certified for installation in the following areas:

Europe:

according to ATEX Directive 94/9/EC
for installation in zones 1, 2, 21 and 22

International/Australia:

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

Russia:

GOST-R (Russian certification)

Korea:

KGS (Korea Gas Safety Corporation)

Kazakhstan:

CKT (CAA JSC The National Center of Expertise and Certification Almaty Branch – Kazakh certification)

USA:

according to NEC 500
for installation in Class I and II, Division 2 as well as Class III, Division 1 and 2
carried out by:
UL (Underwriters Laboratories)

Canada:

according to CSA (Canadian Standard Association)
for installation in Class II, Division 1

Brazil:

Inmetro
carried out by:
UL-BR (UL do Brasil Certificações)

Marine certification

DNV (Det Norske Veritas)
LR (Lloyd's Register)

5.1 ATEX

The ATEX certification is listed under the following certificate number:

Certificate number:	TÜV 11 ATEX 7041 X
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5.2 IECEx

The IECEx certification is listed under the following certificate number:

Certificate number:	IECEx TUR 11.0006X
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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>.

5.3 GOST-R

The GOST-R certification is listed under the following certificate number:

Certificate number:	POCC DE.ГБ04.B01741
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You can find the required operating license RTN, which is necessary for operation of HMI devices in Russia, together with the GOST-R certificate in the certificate package CE_ET-xx6-A.

5.4 KGS

The KGS certification is listed under the following certificate numbers:

Certificate number:	12-GA4BO-0215X
and	12-GA4BO-0317X

NB:

In order to be able to operate these HMI devices in Korea, each device type additionally requires a KCC certificate.

Actually the following devices has such a certificate:

ET-316-A, MT-316-A, ET-416-A, MT-416-A, ET-436-A, MT-436-A, ET-456-A-TX

5.5 CKT

The CKT certification is listed under the following certificate numbers:

Numbers:	KCC No 0822472
	KZ O.02.0317
	KZ 7500317.01.01.17700
	KCCK No 0262971
	KCCK No 0262972

5.6 NEC/UL

The NEC/UL certification is listed under the following UL certificate number:

Certificate number:	20130611-E202379
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5.7 CSA

The CSA certification is listed under the following certificate number:

Certificate number: 2512677

5.8 Inmetro

The Inmetro certification is listed under the following UL-BR certificate number:

Certificate number: UL-BR 12.0265X

5.9 DNV

The DNV certification is listed under the following certificate numbers:

Certificate number: A-12989
File number: 899.60
Job Id: 262.1-001689-6

5.10 LR

The LR (Lloyd's Register) certification is listed under the following certificate number:

Certificate number: 11/20032

6 Marking

Manufacturer	R. STAHL HMI Systems GmbH	
Type code	ET-3x6-A / ET-4x6-A / ET-5x6-A	
CE classification:	CE 0158	
Testing authority and certificate number:	TÜV 11 ATEX 7041 X IECEX TUR 11.0006X	
Ex classification:		
ATEX directive 94/9/EC		II 2 (2) G Ex d e ia ib mb [ia ib] IIC T4 Gb II 2 (2) D Ex ia tb [ia ib] IIIC T80°C Db IP66
ET-xx6-A-Tx		
ET-xx6-A-Fx		II 2 (2) G Ex d e ia ib mb [ia ib op is] IIC T4 Gb II 2 (2) D Ex ia tb [ia ib op is] IIIC T80°C Db IP66
IECEX		
ET-xx6-A-Tx		Ex d e ia ib mb [ia ib] IIC T4 Gb Ex ia tb [ia ib] IIIC T80°C Db IP66
ET-xx6-A-Fx		Ex d e ia ib mb [ia ib op is] IIC T4 Gb Ex ia tb [ia ib op is] IIIC T80°C Db IP66

GOST-R ET-xx6-A-Tx		2Exdeiaibmb[iaib]IICT4 DIP A21 TA80°C, IP66
ET-xx6-A-Fx		2Exdeiaibmb[iaibopis]IICT4 DIP A21 TA80°C, IP66
KGS		Ex d e ia ib mb [ia ib]IIC T4 Ex ia tb [ia ib] IIIC T80°C Db IP66
NEC/UL		Class I, Division 2, Groups A, B, C, D Class II, Division 2, Groups F, G Class III
CSA		Ex d e ia ib mb [ia ib] IIC T4 Gb, Type 4X, IP66 Class II, Division 1, Groups E, F, G, T80°C Ex ia tb [ia ib] IIIC T80°C Db, IP66
Inmetro ET-xx6-A-Tx		Ex d e ia ib mb [ia ib] IIC T4 Gb Ex ia tb [ia ib] IIIC T80°C Db IP66
ET-xx6-A-Fx		Ex d e ia ib mb [ia ib op is] IIC T4 Gb Ex ia tb [ia ib op is] IIIC T80°C Db IP66

7 Power supply

7.1 HMI devices

Power supply: 24.0 VDC (min. 20.4 VDC , max. 28.8 VDC)
 Power consumption: ET-xx6-A 1.2 A

7.1.1 HMI device terminals

Copper wires with cross sections of between 0.2 mm² (AWG 24) and 1.5 mm² (AWG 14) may be connected to any of the terminals of the HMI devices.



When connecting cables to the terminals please make sure that the insulation of the cables goes right up to the terminal contacts.

7.1.1.1 Tightening torque

For the terminals X1 and X11 a tightening torque of:

0,4 Nm up to 0,5 Nm is valid

and for the terminals X2, X3, X4, X5, X6, X7, X8 and X9 a tightening torque of:

0,5 Nm bis 0,6 Nm is valid.

8 Permitted maximum values

8.1 External, non-intrinsically safe circuits

Input voltage (X1):

Rated voltage	24 VDC (+20% / -15%)
Power consumption at U_{rated}	1.2 A max
max. working voltage U_m	30 VDC

RS-422/-232 COM 1 (X2):

Rated voltage	RS-422: 5 VDC	RS-232: ± 12 VDC
Max. operating voltage U_m	253 VAC	

USB-1 (X5):

Rated voltage	5 VDC
Max. operating voltage U_m	253 VAC

USB-3 (X7):

Rated voltage	5 VDC
Max. operating voltage U_m	253 VAC

Copper Ethernet (X11):

Rated voltage	5 VDC
Rated power	100 mW
Max. operating voltage U_m	30 VDC

Audio (X3):

Rated voltage	5 VDC
Max. operating voltage U_m	253 VAC

8.2 External inherently safe optical interface

Ethernet optical fiber (X10):

Wavelength	1350 nm
Radiant power	≤ 35 mW

8.3 External intrinsically safe circuits

USB0 (X4):

The maximum values for group IIC are:

U_i	=	-	V		U_o	=	5.9	V					
I_i	=	-	mA		I_o	=	2.18	A					
P_i	=	-	mW		P_o	=	1.24	W					
C_i	=	0	μF		C_o	=	5.1	11	28	43	μF		
L_i	=	0	mH		L_o	=	10	5	2	1	μH		

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

The maximum values for group IIB are:

U_i	=	-	V		U_o	=	5.9	V					
I_i	=	-	mA		I_o	=	2.18	A					
P_i	=	-	mW		P_o	=	1.24	W					
C_i	=	0	μF		C_o	=	14	40	79	200	μF		
L_i	=	0	mH		L_o	=	50	20	10	5	μH		

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

USB-2 (X6):

The maximum values for group IIC are:

U_i	=	-	V		U_o	=	5.9	V					
I_i	=	-	mA		I_o	=	2.18	A					
P_i	=	-	mW		P_o	=	1.24	W					
C_i	=	0	μF		C_o	=	5.1	11	28	43	μF		
L_i	=	0	mH		L_o	=	10	5	2	1	μH		

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

The maximum values for group IIB are:

U_i	=	-	V		U_o	=	5.9	V					
I_i	=	-	mA		I_o	=	2.18	A					
P_i	=	-	mW		P_o	=	1.24	W					
C_i	=	0	μF		C_o	=	14	40	79	200	μF		
L_i	=	0	mH		L_o	=	50	20	10	5	μH		

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

Reader RSi1 (X8) +U_i 1 (power supply circuit, X8.0, bridge to X8.2):

U _o	=	10.4	V
I _o	=	220	mA
P _o	=	2.29	W
C _o	=	0.08	μF
L _o	=	0.01	mH

Reader RSi1 (X8) +U_{ex}1 (power supply circuit, X8.2, bridge from X8.0):

U _i	=	12.4	V
I _i	=	220	mA
P _i	=	2.29	mW
C _i	=	25	nF
L _i	=	0	mH

Reader RSi1 (power supply reader, X8.3-4):

The maximum values for group IIC are:

U _i	=	-	V		U _o	=	5.36	V	
I _i	=	-	mA		I _o	=	220	mA	
P _i	=	-	W		P _o	=	1.18	W	
C _i	=	5.3	μF		C _o	=	40.7	59.7	μF
L _i	=	0	mH		L _o	=	2	1	μH

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

The maximum values for group IIB are:

U _i	=	-	V		U _o	=	5.36	V	
I _i	=	-	mA		I _o	=	220	mA	
P _i	=	-	W		P _o	=	1.18	W	
C _i	=	5.3	μF		C _o	=	70.7	124.7	μF
L _i	=	0	mH		L _o	=	20	10	μH

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

Reader RSi1 and RSi2 (signal input / output, X8.5-8):

The maximum values for group IIC are:

U _i	=	15	V		U _o	=	5.36	V	
I _i	=	500	mA		I _o	=	46	mA	
P _i	=	2.5	W		P _o	=	62	mW	
C _i	=	0	μF		C _o	=	46	μF	
L _i	=	0	mH		L _o	=	2	μH	

The maximum values for group IIB are:

U _i	=	15	V		U _o	=	5.36	V	
I _i	=	500	mA		I _o	=	46	mA	
P _i	=	2.5	W		P _o	=	62	mW	
C _i	=	0	μF		C _o	=	79	μF	
L _i	=	0	mH		L _o	=	20	mH	

Reader WCR1 (X8) (connection voltage supply, X8.1-2):

U_i	=	11.4	V
I_i	=	200	mA
P_i	=	2.28	W
C_i	=	25	nF
L_i	=	0	mH

Reader WCR1 (power supply reader, X8.3-4):

The maximum values for group IIC are:

U_i	=	-	V		U_o	=	5.88	V
I_i	=	-	mA		I_o	=	200	mA
P_i	=	-	mW		P_o	=	1.18	W
C_i	=	5.3	μ F		C_o	=	27.7	37.7 μ F
L_i	=	0	mH		L_o	=	2	1 μ H

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

The maximum values for group IIB are:

U_i	=	-	V		U_o	=	5.88	V
I_i	=	-	mA		I_o	=	200	mA
P_i	=	-	mW		P_o	=	1.18	W
C_i	=	5.3	μ F		C_o	=	55.7	94.7 μ F
L_i	=	0	mH		L_o	=	20	10 μ H

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

Reader WCR1 and WCR2 (signal input / output, X8.5-8):

The maximum values for group IIC are:

U_i	=	15	V		U_o	=	5.88	V
I_i	=	500	mA		I_o	=	51	mA
P_i	=	2.5	W		P_o	=	75	mW
C_i	=	0	μ F		C_o	=	34	μ F
L_i	=	0	mH		L_o	=	2	μ H

The maximum values for group IIB are:

U_i	=	15	V		U_o	=	5.88	V
I_i	=	500	mA		I_o	=	51	mA
P_i	=	2.5	W		P_o	=	75	mW
C_i	=	0	μ F		C_o	=	63	μ F
L_i	=	0	mH		L_o	=	20	μ H

PS2 interface (X9):

Connection for keyboard, mouse, trackball, joystick

The maximum values for group IIC are:

U_i	=	-	V		U_o	=	5.88	V	
I_i	=	-	mA		I_o	=	200	mA	
P_i	=	-	mW		P_o	=	1.18	W	
C_i	=	17.6	μF		C_o	=	15.4	25.4	μF
L_i	=	0	mH		L_o	=	2	1	μH

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

The maximum values for group IIB are:

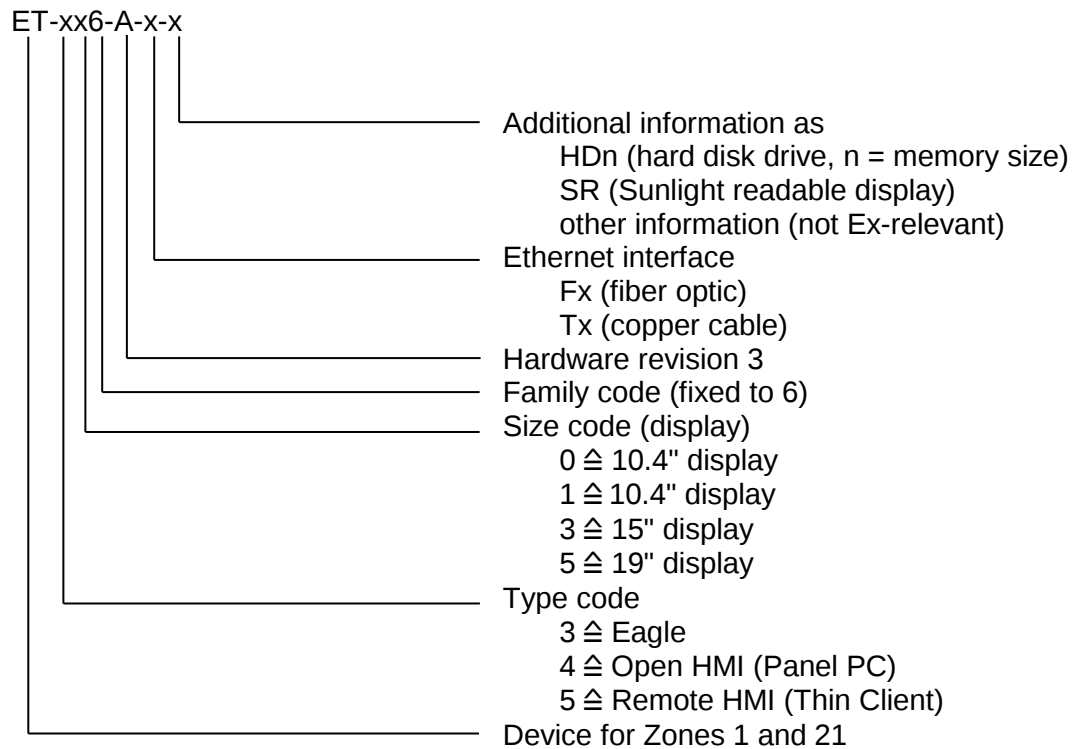
U _i	=	-	V		U _o	=	5.88	V				
I _i	=	-	mA		I _o	=	200	mA				
P _i	=	-	mW		P _o	=	1.18	W				
C _i	=	17.6	μF		C _o	=	10.4	20.4	43.4	82.4	μF	
L _i	=	0	mH		L _o	=	100	50	20	10	μH	

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

☞ Do **NOT** connect the optional external keyboard to live equipment !

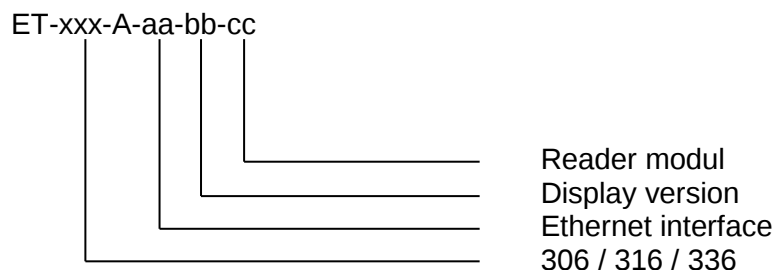
9 Type code

9.1 Certificate



9.2 Order variant

9.2.1 ET-3x6-A (EAGLE)

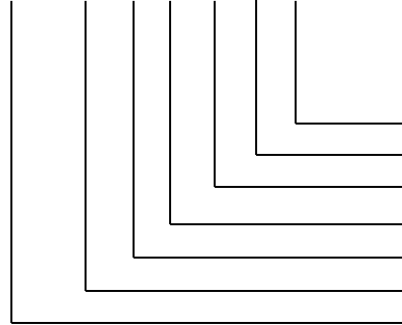


Order variant:

Classification product key	Description
	Type with
ET-3x6-A- Fx -bb-cc	Optical fiber Ethernet interface 100BaseFx (Ex op is)
ET-3x6-A- Tx -bb-cc	Copper Ethernet interface 10/100BaseTx (Ex-e)
ET-3x6-A-aa- TFT -cc	TFT Display (Standard)
ET-3x6-A-aa- SR -cc	Sunlight readable Display 1000 cd/m ² (only ET-336-A)
ET-3x6-A-aa-bb- RSi1	Plug-in module for reader with RS-232 interface, power supply via HMI device
ET-3x6-A-aa-bb- RSi2	Plug-in module for reader with RS-232 interface, power supply of the reader externally
ET-3x6-A-aa-bb- WCR1	Plug-in module for reader with Wiegand interface, power supply via SV 9143/10-114-200-xx
ET-3x6-A-aa-bb- WCR2	Plug-in module for reader with Wiegand interface, power supply of the reader externally

9.2.2 ET-4x6-A (Panel PC)

ET-xxx-A-aa-Rx-bb-cc-dd-ee



Front plate
 Reader modul
 Data memory
 Display version
 Working memory
 Ethernet interface
 406 / 416 / 436 / 456

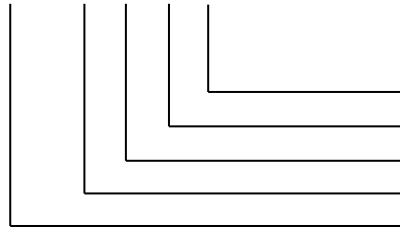
Order variant:

Classification product key	Description
	Type with
ET-4x6-A- Fx -Rx-bb-cc-dd-ee	Optical fiber Ethernet interface 100BaseFx (Ex op is)
ET-4x6-A- Tx -Rx-bb-cc-dd-ee	Copper Ethernet interface 10/100BaseTx (Ex-e)
ET-4x6-A-aa- R1 -bb-cc-dd-ee	Working memory 1 GB
ET-4x6-A-aa- R2 -bb-cc-dd-ee	Working memory 2 GB
ET-4x6-A-aa-Rx- TFT -bb-cc-dd-ee	TFT display (standard)
ET-4x6-A-aa-Rx- SR -bb-cc-dd-ee	Sunlight readable display 1000 cd/m ² (ET-436-A only)
ET-4x6-A-aa-Rx-bb- 4GB -dd-ee	4 GB Solid State Drive (SSD)
ET-4x6-A-aa-Rx-bb- 16GB -dd-ee	16 GB Solid State Drive (SSD)
ET-4x6-A-aa-Rx-bb- 128GBM -dd-ee	128 GB Solid State Drive MLC
ET-4x6-A-aa-Rx-bb- 128GBS -dd-ee	128 GB Solid State Drive SLC
ET-4x6-A-aa-Rx-bb- 100GB -dd-ee	100 GB hard disk (external- Exicom-SHD-xxx) *
ET-4x6-A-aa-Rx-bb-cc- RSi1 -ee	Plug-in module for reader with RS-232 interface, power supply via HMI device
ET-4x6-A-aa-Rx-bb-cc- RSi2 -ee	Plug-in module for reader with RS-232 interface, power supply of the reader externally
ET-4x6-A-aa-Rx-bb-cc- WCR1 -ee	Plug-in module for reader with Wiegand interface, power supply via SV 9143/10-114-200-xx
ET-4x6-A-aa-Rx-bb-cc- WCR2 -ee	Plug-in module for reader with Wiegand interface, power supply of the reader externally
ET-4x6-A-aa-Rx-bb-cc-dd- PES	Polyester front plate
ET-4x6-A-aa-Rx-bb-cc-dd- VA	Stainless steel front plate (436 and 456 only), not SR type

* The Exicom-SHD-xxx hard disk can only be used **instead** of a flash memory card (SSD), **not** in addition to it !

9.2.3 ET-5x6-A (Remote HMI Thin Client)

ET-xxx-A-aa-bb-cc-dd



Front plate
Reader modul
Display version
Ethernet interface
536 / 556

Order variant:

Classification product key	Description
	Type with
ET-5x6-A- Fx -bb-cc-dd	Optical fiber Ethernet interface 100BaseFx (Ex op is)
ET-5x6-A- Tx -bb-cc-dd	Copper Ethernet interface 10/100BaseTx (Ex-e)
ET-5x6-A-aa- TFT -cc-dd	TFT display (standard)
ET-5x6-A-aa- SR -cc-dd	Sunlight readable display 1000 cd/m ² (ET-536-A only)
ET-5x6-A-aa-bb- RSi1 -dd	Plug-in module for reader with RS-232 interface, power supply via HMI device
ET-5x6-A-aa-bb- RSi2 -dd	Plug-in module for reader with RS-232 interface, power supply of the reader externally
ET-5x6-A-aa-bb- WCR1 -dd	Plug-in module for reader with Wiegand interface, power supply via SV 9143/10-114-200-xx
ET-5x6-A-aa-bb- WCR2 -dd	Plug-in module for reader with Wiegand interface, power supply of the reader externally
ET-5x6-A-aa-bb-cc- PES	Polyester front plate
ET-5x6-A-aa-bb-cc- VA	Stainless steel front plate, not SR type

10 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.

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.

10.1 Installation and operation

Please note the following when installing and operating the device:

- The national regulations for installation and assembly apply (e.g. EN/IEC 60079-14).
- The HMI device must only be switched on when it is closed.
- The HMI devices may be installed in zones 1, 2, 21 or 22.
- The intrinsically safe circuits must be installed according to applicable regulations.
- When installed in zones 1, 2, 21 and 22, intrinsically safe devices suitable for categories 2G, 3G, 2D and 3D may be connected to the intrinsically safe power supply circuits.
- If the HMI devices are installed in areas exposed to the risk of dust explosions, the maximum values of Group IIB apply to the intrinsically safe circuits.
- Interconnecting several active devices in an intrinsically safe circuit may result in different safe maximum values. This could compromise intrinsic safety !
- The safe maximum values of the connected field device(s) must correspond to the values listed on the data sheet or the EC type examination certificate.
- During assembly and operation of the HMI device electrostatic surface charging must not exceed that caused by manual rubbing.
- After switching the HMI device off, wait for at least 1 minute before opening it.
- Before opening the housing lid users must ensure that all non-intrinsically safe circuits have been switched off. Circuits supplied from different sources may be connected ! Please note that all associated equipment (such as the SK-KJ1710, for example) must also be switched off !
- The HMI device and any connected equipment must be incorporated into the same potential equalization system (see installation example in the Hardware Manual). An alternative would be to connect only devices that are safely isolated from earth potential.
- 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 device 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 to the device that compromise its explosion protection are permitted !

The device may only be installed and operated in an undamaged, dry and clean condition !

10.2 Cautionary note

Caution:

This is an EN 55022 Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

10.3 Special conditions

The fronts of the HMI devices with a sunlight readable display (type code includes "SR") may be cleaned with a damp cloth only.

11 Installation

11.1 General information

Electrical plants are subject to certain regulations concerning installation and operation (e.g. RL 1999/92/EC, RL 94/9EC and IEC/EN 60079-14).

It is the responsibility of the operators of electrical installations in hazardous environments to ensure that the equipment is kept in proper condition, is operated according to instructions and that maintenance and repairs are carried out.

11.2 ET-xx6-A

- Operators must ensure compliance with the examination certificates before installation. Users must adhere to any "special conditions" therein. Also of importance are the maximum electrical operating values specified therein.
- The earth/ground (PE) connector at the back of the HMI device housing must be connected to the equipotential bonding conductor of the hazardous area. The earthing cable's cross section must be at least 4 mm² and it must be fitted with a suitable cable lug. To prevent equalizing currents flowing to the earth/ground (PE) system of the HMI device it is necessary to safely isolate any connected devices from earth or to integrate them into the earth/ground (PE) system of the HMI device.
- The PE connection part of the HMI device located at the back of the housing is internally connected with the GND supply cable (X1 pins 3 and 4).
- The HMI devices can be mounted and operated in any position. Sufficient air circulation must be ensured, however, so that the maximum operating temperature is not exceeded.
- Intrinsically safe and non intrinsically safe conducting connection parts must be installed with a minimum distance of 50 mm.
- When connecting the HMI devices to the intrinsically safe circuits of the associated equipment the respective maximum values of the field unit and the associated equipment must be observed to ensure explosion protection (proof of intrinsic safety).
- The HMI device's front should be protected by a canopy against permanent exposure to UV light. This increases the front membrane's lifespan. The canopy **MUST NOT** be too close to the front plate and sufficient air circulation must be ensured.
- The ET-4x6-A and ET-5x6-A devices may be operated at + 55°C **ONLY FOR SHORT PERIODS** at a time.

11.2.1 HMI device Installation in housings type of protection "e" or "t"

If the HMI devices ET-xx6-A are mounted inside a cut out of a suitable housing of protection type Ex-e or Ex-t, its mechanical protection regarding impact and IP code protection up to IP 65 is maintained even after the device has been installed. The internal separation requirements and the temperature assessment of the Ex-e housing must be in accordance with the applicable standards. The clearance of HMI device terminals to other bare conducting parts (excepting ground) inside the Ex-e housing shall be at least 50 mm.

11.3 Usage of the USB-interfaces

Hardware and connection				
connection to	intrinsic safety USB devices		intrinsically safe equipment	
	safe area	hazardous areas	safe area	hazardous areas
X4 (Ex-i)	x	-	-	-
X6 (Ex-i)	-	via VB-USB-Plug	-	-
X5 (Ex-e)	-		via VB-USB-INST1	explosion-proof, but not intrinsically safe devices
X7 (Ex-e)				
Functionality and application				
ET-3x6-A	Project transfer (SPSPlusWIN project)		-	corresponding device function *
	Device back-up		-	
ET-4x6-A	Restore factory state		Software installations	
	Creation of User / OEM back-up		-	
	Software installations			
ET-5x6-A	Restore factory state		-	
	Import / Export parameters		-	

 * See also [11.4.2.1 Connection variations for Ex-e USB interfaces](#)

11.3.1 Usage of USB Memory-Sticks

Only USB memory sticks that are certified according to IEC/EN 60079-11 may be used !

- In an industrial area, a permitted, non-explosion proof memory stick may be connected to the I.S. USB interface of the operator interface after having been connected to any PC.

If devices are connected to the I.S. USB interface that have not been approved by R. STAHL HMI Systems GmbH, protective elements may become damaged, thus compromising the intrinsic safety of the interfaces.

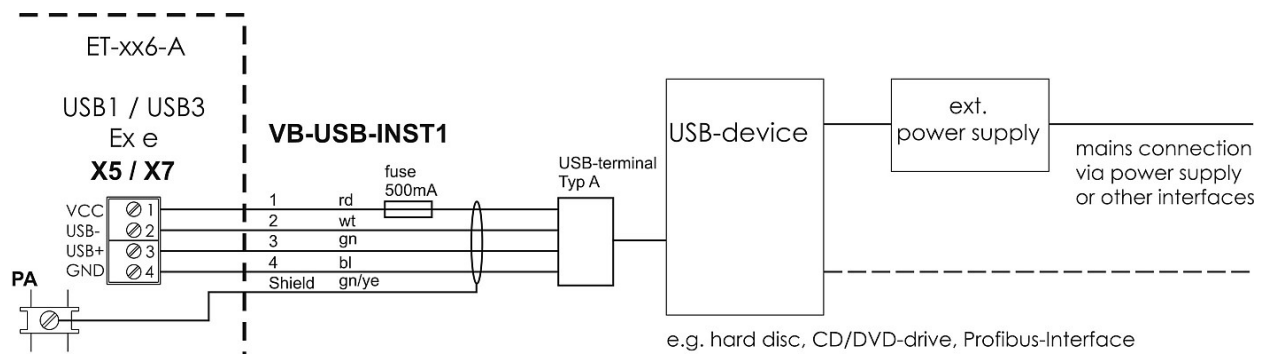
In this case R. STAHL HMI Systems can no longer guarantee the intrinsic safety of the device !

11.3.2 Usage of external USB devices

 Not applicable to ET-5x6-A

Software may be installed with the aid of any external USB devices subject to the following conditions:

- The software is installed in the safe area.
- The USB devices are connected to the Ex-e USB interfaces USB1 or USB3 (X5 or X7) with the VB-USB-INST1 connection cable.



Connection diagram with VB-USB-INST1 (Keyboard, mouse, hard disk, CD/DVD with power supply)



Direct connections to the HMI devices must be via VB-USB-INST1 !
Otherwise, the internal circuits may become damaged and the explosion-protection of the HMI device may become compromised !

11.4 USB interfaces

The ET-xx6-A device series have 4 USB interface channels.

- USB0 at X4 for the internal connection of a USB Drive.
- USB1 at X5 for the connection of external USB devices.
- USB2 at X6 for the connection of an external USB Drive.
- USB3 at X7 for the connection of external USB devices.



The connection diagram for the ET-xx6-A interfaces can be found in [chapter 13.2 connections](#).

11.4.1 I.S. USB interfaces USB0, USB2

The USB0 and USB2 Ex-i interfaces (X4 and X6) are intended for the internal or external connection of USBi Drives.

The maximum value for the joint power supply of USB0 and USB2 is 500 mA.

11.4.2 Ex-e USB interfaces USB1, USB3

The USB1 and USB3 Ex-e USB interfaces (X5 and X7) are intended for the connection of external USB devices.

The maximum value for the joint power supply of USB1 and USB3 is 500 mA.

11.4.2.1 Connection variations for Ex-e USB interfaces

The two Ex-e USB interfaces have an identical structure. The X5 (USB 1) and X7 (USB 3) terminals are for the connection of devices that can be both intrinsically safe or not intrinsically safe.



If intrinsically safe devices are connected to the Ex-e USB interfaces of the ET-xx6-A HMI devices, R. STAHL Systems GmbH cannot guarantee that the intrinsic safety of these devices will continue to apply.

The following versions are possible:

1. If a USB device that is not connected to the mains is connected, voltage can be supplied from the internal power supply (terminal 1).
2. If a USB device that is connected to the mains is connected, the internal power supply (terminal 1) must not be connected. The power must be supplied from an external device.

11.4.2.2 Connection terminal with protection type "e" (EN 60079-7)

The X5 and X7 connection terminals have protection type "e".

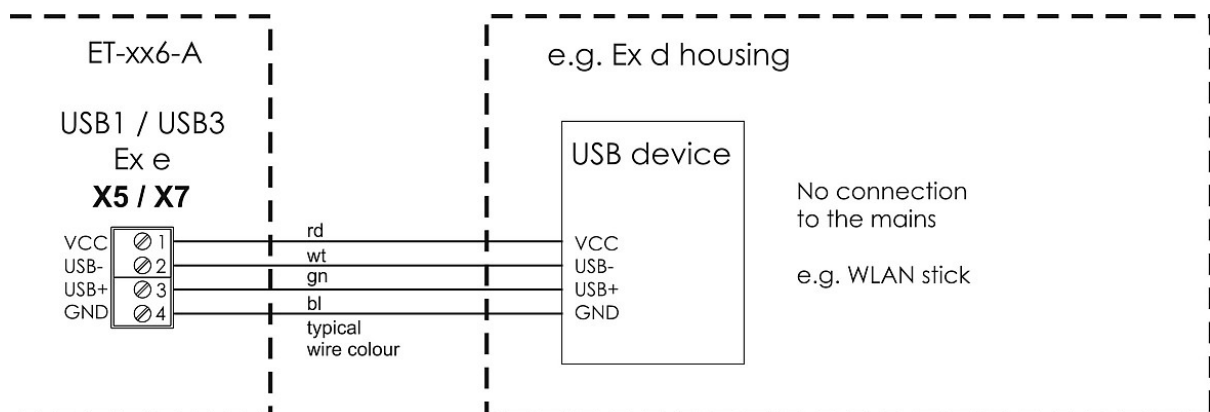
Flexible cables with a cross section of 0.2 – 2.5 mm² can be used.

The maximum cable length for the connection with the Ex-e USB interfaces (X5 and X7) is 2.5 m.

The insulation of the wire must reach right up to the terminal body.

11.4.2.2.1 Type 1 connection version

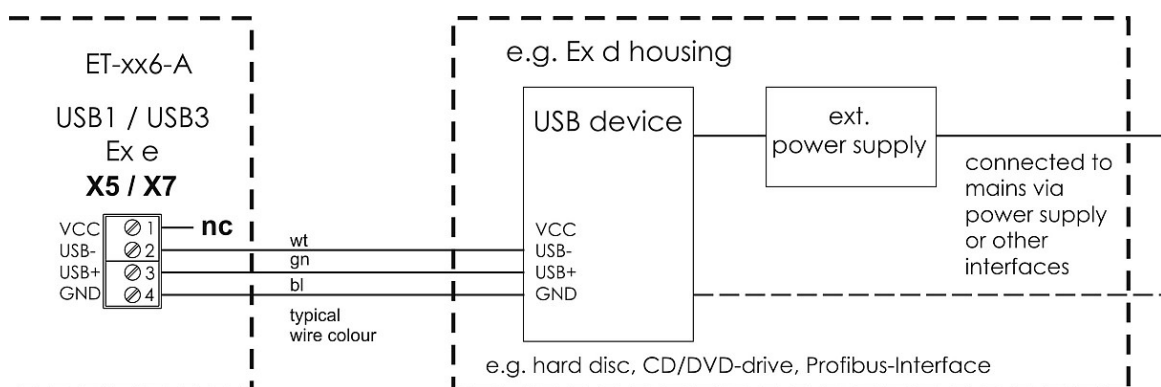
- The USB device does not require an external power supply as it uses less than 500 mA.
- No connection to the mains via other interfaces, e.g. WLAN stick.



Type 1 connection diagram (e.g. WLAN stick)

11.4.2.2.2 Type 2 connection version

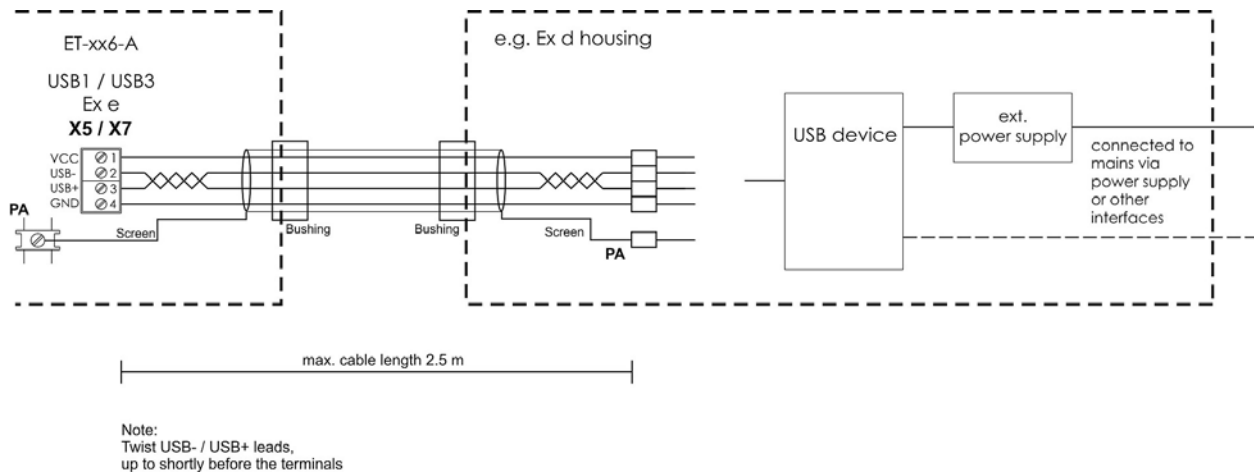
- The USB device does require an external power supply to function because it uses over 500 mA (e.g. hard disks, CD/DVD drives).
- The USB device is connected to the mains via other interfaces (e.g. USB/serial converter, USB-Profibus interface).



Type 2 connection diagram (e.g. hard disk, CD/DVD with power supply)

11.4.2.2.3 Type 3 connection version

- The USB device does require an external power supply to function because it uses over 500 mA (e.g. hard disks, CD/DVD drives).
- The USB device is connected to the mains via other interfaces (e.g. USB/serial converter, USB-Profibus interface).
- The USB device needs the VCC connection of the HMI device (internal supply – terminal 1) to function.



Type 3 connection diagram (any USB device with power supply)

12 Assembly and disassembly

12.1 General information

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

12.2 Cut-out ET-xx6-A

Make a cut-out with the following dimensions:

HMI device	Width	Height	Depth of cut-out	Material thickness
ET-x06-A	385.5 ± 0.5 mm	257.5 ± 0.5 mm	150 mm	up to 8 mm
ET-x16-A	359.5 ± 0.5 mm	257.5 ± 0.5 mm	150 mm	up to 8 mm
ET-x36-A	427.5 ± 0.5 mm	327.5 ± 0.5 mm	165 mm	up to 8 mm
ET-x56-A	522,5 ± 0,5 mm	412,5 ± 0,5 mm	165 mm	up to 8 mm

13 Operation

13.1 General information

When operating the devices, particular care shall be taken that:

- the HMI device has been properly installed according to instructions,
- the device is undamaged,
- the terminal compartment is clean,
- all screws are tightened fast,
- before switching the HMI device on, its external PE terminal is properly connected to the equipotential bonding system at its place of use,
- the cover of the terminal compartment is completely closed.

13.2 Connections

Terminal	Pin	Definition	Connection
X1	1	Power supply HMI device +24 VDC	Power supply of the HMI device
	2	Power supply HMI device +24 VDC	
	3	Power supply HMI device GND	
	4	Power supply HMI device GND	
X2	1	TxD-b	Serial COM1 interface RS-422/485
	2	TxD-a	
	3	RxD-b	
	4	RxD-a	
	5	TxD-b'	
	6	TxD-a'	
	7	RxD-b'	
	8	RxD-a'	
	9	TxD	Serial COM1 interface RS-232
	10	RxD	
	11	RTS/	
	12	CTS/	
	13	GND	
X3	1	Line Out right	Audio Ex-e
	2	GND	
	3	Line Out left	
X4		USB interface, connection type A	USB0 Ex-i
X5	1	VCC	USB1 Ex-e
	2	USB -	
	3	USB +	
	4	GND	
X6	1	VCC	USB2 I.S.
	2	USB -	
	3	USB +	
	4	GND	
	5	GND	
X7	1	VCC	USB3 Ex-e
	2	USB -	
	3	USB +	
	4	GND	
X8	0	+U_INT1	Reader interface I.S.
	1	0V	
	2	+U_EX1	
	3	GND	
	4	+U_RD	
	5	Signal 1	
	6	Signal 2	
	7	Signal 3	
	8	Signal 4	
X9	9	+U_EX1 (out)	PS2 interface * I.S. for external keyboard / mouse
	1	VCC	
	2	KBDAT	
	3	KBCLK	
	4	MSDAT	
	5	MSCLK	
	6	GND	

X10	1	Optical fiber connection type SC	Ethernet optical fiber interface **
X11	1	TxD (+)	Ethernet copper Connection **
	2	TxD (-)	
	3	RxD (+)	
	4	RxD (-)	

- ☞ Please note that the COM interface may only be physically connected once !
Power is supplied either with a physical RS-232 or an RS-422/485 connection.
- ☞ * Do NOT connect the optional external keyboard to live equipment !
- ☞ ** Please note that the Ethernet connection is either for an optical fibre connection (X10) or for a copper connection (X11), depending on the version ordered !
The optical fiber connection requires a multimode optical fiber cable with 62.5 µm core diameter and 125 µm external diameter.
Copper wires with cross sections of between 0.2 mm² (AWG 24) and 1.5 mm² (AWG 14) may be connected to any of the terminals of the HMI devices.
Which cable cross sections are chosen should be decided on the basis of relevant regulations, such as DIN VDE 0298. Factors that might require a larger cross section, such as current, increased temperatures, cable bundling, etc. must also be taken into account !

13.2.1 Dip switch settings S3 and S4

Switch	Position	Interface	Function
S3-1	OFF	COM1 RS-422/485	No bus terminator resistor set
	ON		Bus terminator resistor TxD line
S3-2	OFF		No bus terminator resistor set
	ON		Bus terminator resistor RxD line

S4-1	S4-2	S4-3	Interface	Keying
0	0	0	RS-422	Automatic keying
0	1	0		Keying always on
0	0	1		Keying enabled by SW
0	1	1		Driver in idle mode
1	0	0	RS-485	Automatic keying
1	1	0		Status not permitted !!!
1	0	1		Keying enabled by SW
1	1	1		Driver in idle mode
S4-4	OFF	ON	Touch	Touch switched off
	ON			Touch switched on

13.2.2 Status LEDs

The status of the respective LEDs at the HMI devices indicates the activity of the corresponding data lines.

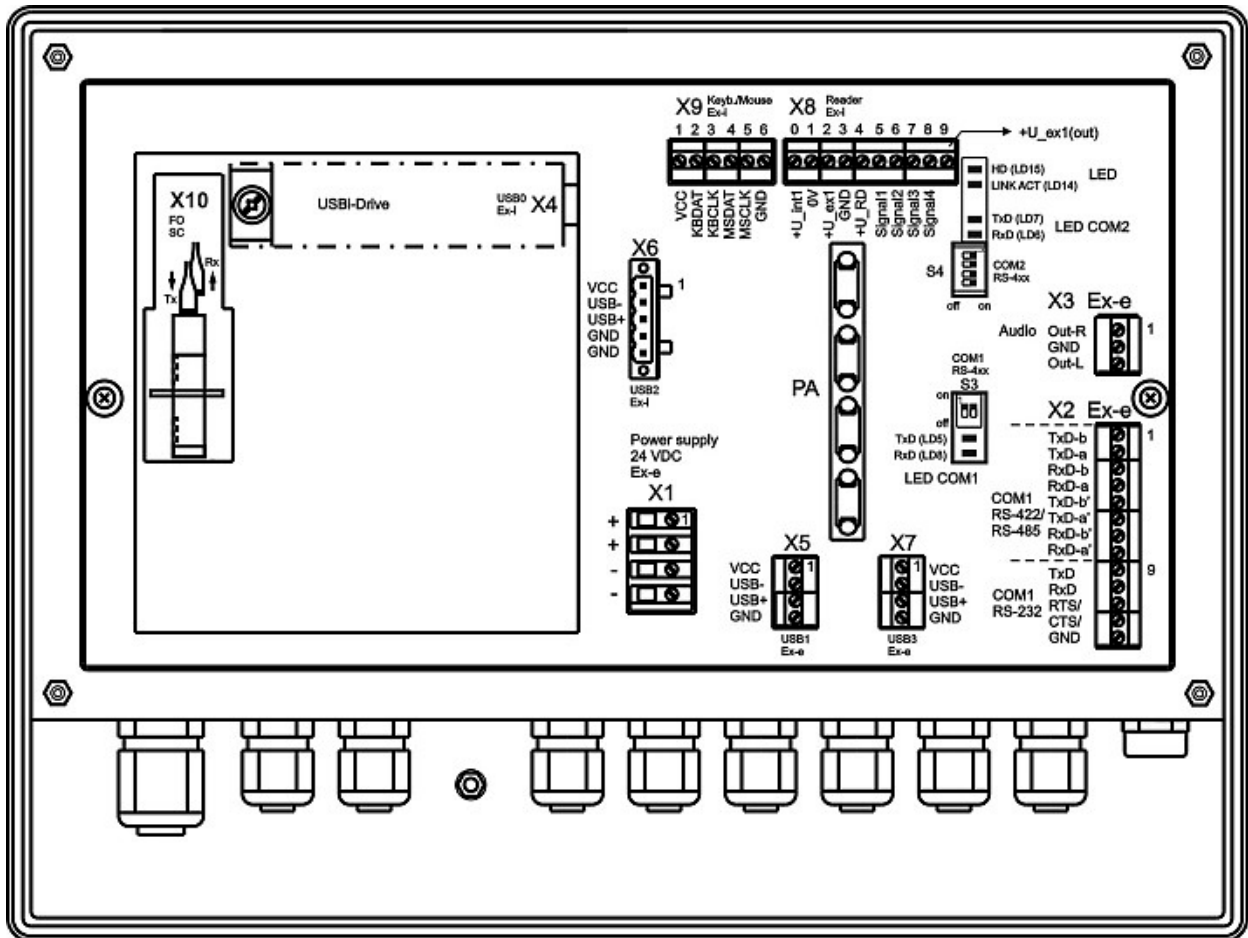


In hazardous areas the HMI device must not be operated without the housing lid !
The status LEDs can therefore only be observed at the first start-up or in safe areas.

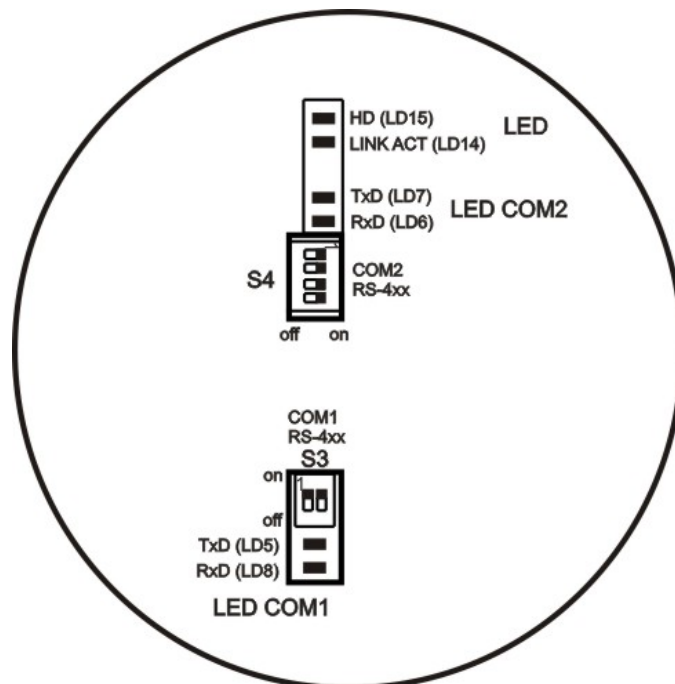
13.2.2.1 LEDs

Definition	Colour	Name	Description
LD5	green	COM1 TxD	Activity on COM1: sending, LED flashing
LD8	yellow	COM1 RxD	Activity on COM1: receiving, LED flashing
LD7	green	COM2 TxD	Activity on COM2: sending, LED flashing
LD6	yellow	COM2 RxD	Activity on COM2: receiving, LED flashing
LD14	yellow	LINK ACT	Ethernet link established, LED always on Activity on Ethernet link, LED flashing
LD15	green	HD	Access to system disk (Solid State, HDD), LED flashing (only for ET-4xx-A devices)

Back view of ET-xx6-A device:



LED section at ET-xx6-A device:



13.3 Connection of Readers

Different types of readers can be connected to the HMI devices. For this, there are two interface connection versions (serial RS-232 and Wiegand) and four connection diagrams.



Please note that the Ex-connection values of the reader must match the safety-relevant values of the interface !



For the exact wiring diagram of each individual reader type, please refer to the actual reader documentation or to the Hardware Manual.

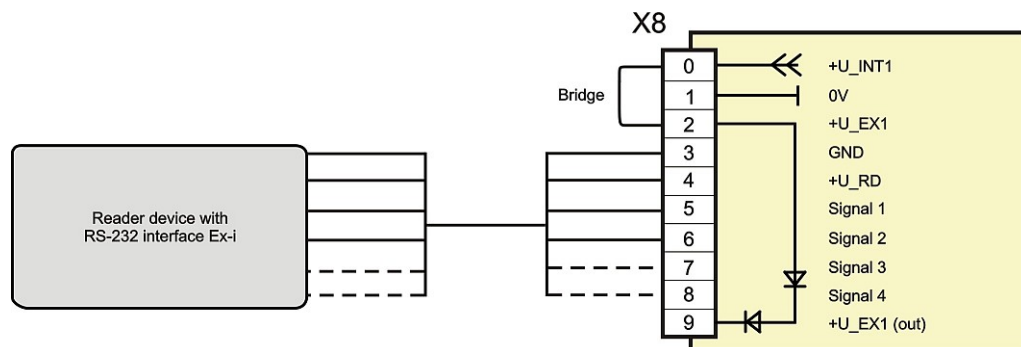
HMI devices of the Panel PC and Thin Client series require an additional software (keyboard wedge) to transfer the data from the reader into the required application. This software is not part of the delivery.

13.3.1 Serial connection versions

Only readers with a serial RS-232 interface can be connected.

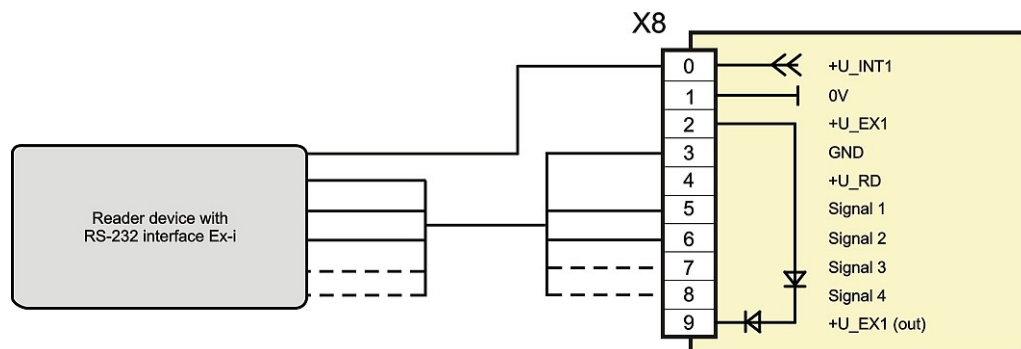
13.3.1.1 Type RSi1 connection version 1

With the RSi1 connection version, the reader is supplied with power via the HMI device. In version 1, a maximum of 5.36 V and 220 mA are available for the reader (e.g. the SK-200 barcode reader).



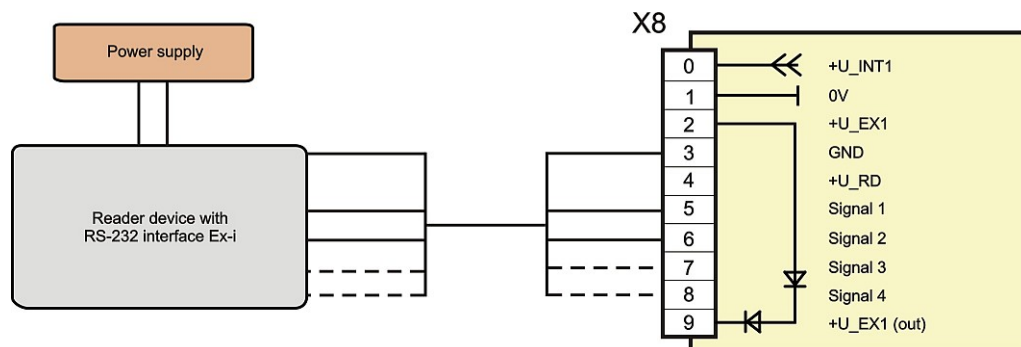
13.3.1.2 Type RSi1 connection version 2

In version 2, a maximum of 10.4 V and 220 mA are available for the reader (e.g. the RFIDI-RDR-2-xxx chipcard reader).



13.3.1.3 Type RSi2 connection version

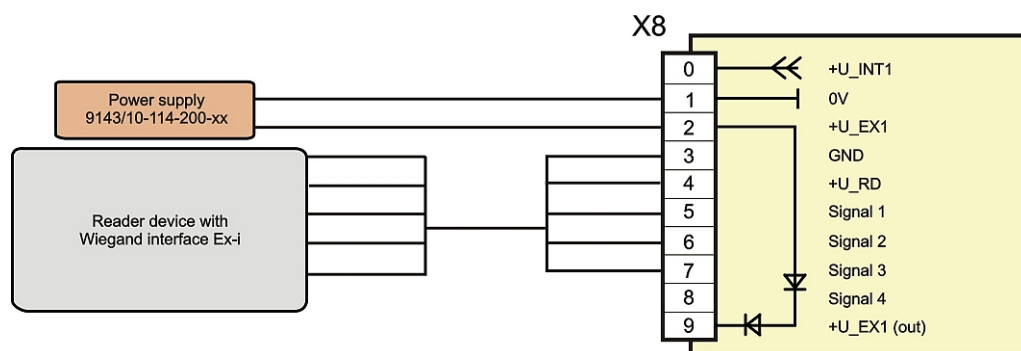
With the RSi2 connection version, the reader itself is supplied with power from an external source. The maximum values of the reader apply in this case.



13.3.2 Wiegand connection versions

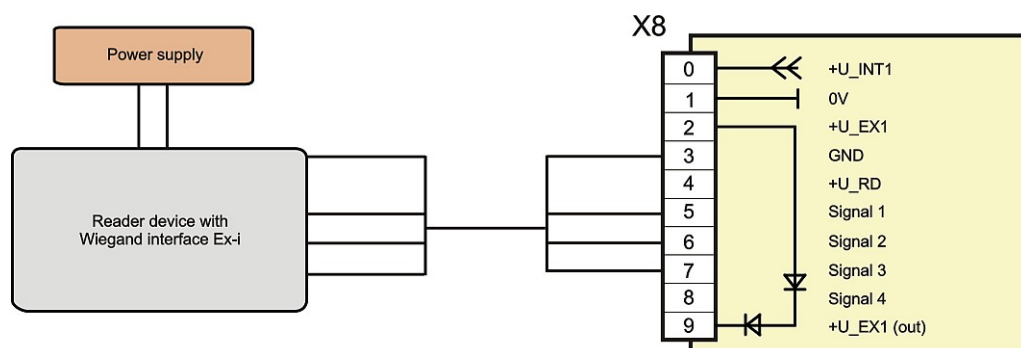
13.3.2.1 Type WCR1 connection version

With the WCR1 connection version, the reader is supplied with power via the HMI device. For the actual power supply, the 9143/10-114-200-xx power supply must be used. The maximum supply for the reader is 5.88 V and 200 mA.



13.3.2.2 Type WCR2 connection version

With the WCR2 connection version, the reader itself is supplied with power from an external source. The maximum values of the reader apply in this case.



14 Exicom-SHD-xxx hard disk

The optional Exicom-SHD-xxx hard disk can be fitted inside the ET-4x6-A HMI devices.

- ☞ The Exicom-SHD-xxx hard disk can only be used **instead** of a flash memory card (SSD), **not** in addition to it !

14.1 Installation of hard disk

The Exicom-SHD-xxx hard disk is mounted by R. STAHL HMI Systems GmbH during the production of its HMI devices. It is **NOT** possible to install the hard disks at a later date !

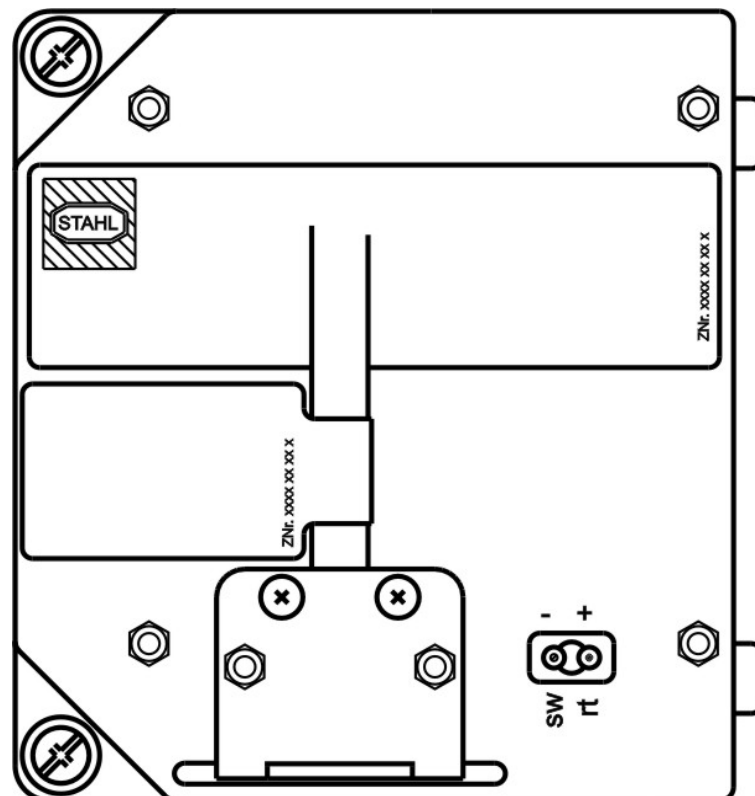
- ⚠ Installation of the Exicom-SHD-xxx hard disk into the ET-4x6-A HMI devices reduces the minimum operating temperature to -20°C !
The minimum temperature for the front remains -30°C.

- ⚠ The Exicom-SHD-xxx is incorporated into the HMI device's PA by means of two fixing screws.
The fixing screws must be **FIRMLY** affixed to the housing of the HMI device to ensure this.
The **SAFE** integration of the Exicom-SHD-xxx hard disk into the HMI device's PA is guaranteed due to its factory-mounting by R. STAHL HMI Systems GmbH.

14.1.1 Mechanical dimensions

Hard disk housing (l x w x h, in mm) 113 x 92 x 31

Top view:



14.2 Connections

The Exicom-SHD-xxx hard disk is supplied with 24 VDC.

The two connection wires intended for the purpose can be connected to the free contacts of the HMI device's X1 terminal (HMI device supply). The red cable (+ wire) is connected to the + pin (pin 2) and the black cable (- wire) is connected to the – (GND) pin (pin 3) of X1.

The data cable of the hard disk is connected with the S-ATA plug to the associated 11-pin connector which protrudes from the encapsulation.

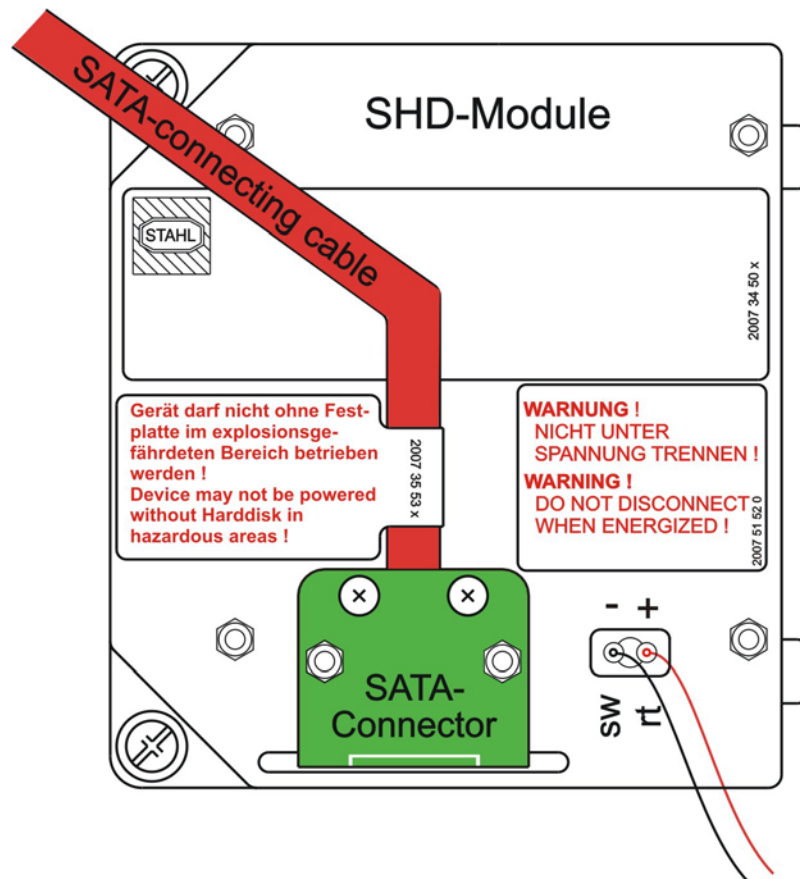
14.2.1 Safety advice

- ⚠ **DO NOT** operate the ET-4x6-A HMI devices **WITHOUT** the **HARD DISK** or if the SATA connection cable is **DISCONNECTED** !

A warning notice to this effect is attached to the SATA connection cable (see illustration).

- ⚠ While the HMI device is switched on, the SATA connector and the power supply of the Exicom-SHD-xxx hard disk **MUST NOT** be disconnected.

A warning notice to this effect is attached to the Exicom-SHD-xxx hard disk (see illustration).



14.3 Hard disk replacement

The Exicom-SHD-xxx hard disk may be replaced. However, only specially trained staff with expertise in explosion-protection may carry out such a replacement.

- 📖 For information on how to replace the hard disk, please refer to the Operating Instructions "OI_Harddisk_SHD".

15 Maintenance, service

Associated equipment is subject to maintenance, service and testing according to guidelines 1999/92/EC, IEC/EN 60079-14, -17, -19 and BetrSichVer (Betriebssicherheitsverordnung - Occupational Safety and Health) !

Because the transmission of the devices remains reliable and stable over long periods of time, regular adjustments are not required.

The following principles apply to repairs *, spare parts purchase* or exchange of parts * (where this can be done by the user !):

- Only original parts provided by the manufacturer must be used.
- Fuses may only be replaced by equivalent fuse types.



* Please also note [section Troubleshooting](#) !

If the ET-xx6-A HMI devices are stored for more than 6 months, they should be operated every six months for at least one hour at room temperature (20°C ± 5°C).

The ET-xx6-A series HMI devices are maintenance-free across their entire lifespan.

System maintenance should focus on the following:

- a. Seal wear
- b. Display damage
- c. All screws are tightened fast
- d. All cables and lines are properly connected and undamaged

15.1 Servicing

In accordance with IEC/EN 60079-19 and IEC/EN 60079-17, operators of electric plants in hazardous areas are obliged to have them serviced by qualified electricians.

15.2 Saving data with ET-3x6-A

All online data is stored on the internal flash card and are therefore also available after the device has been switched off for a long time.

According to the current state-of-the-art the flash cards retain stored data for about 10 years.

15.3 Time function

Does not apply to ET-5x6-A:

When the ET-3x6-A and ET-4x6-A HMI devices are switched off, their clock function is maintained by a battery and a capacitor. As long as the battery is intact, the clock function is maintained. Once the battery fails, the capacitor takes over and maintains the clock function for about four days. If the HMI device is switched on after a longer interval than that, the time and date have to be re-set manually or via a connected system.

16 Troubleshooting

Devices operated in hazardous areas must not be modified. Repairs may only be carried out by qualified, authorized 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 requested – have been authorized by the manufacturer.

17 Disposal

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

The disposal of devices sold after August 13th, 2005, and installed in countries under the jurisdiction of the EU is governed by directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Under this directive, HMI devices are listed in category 9 (monitoring and control instruments).

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

17.1.1 ROHS directive 2002/95/EC

The prohibition of hazardous substances as detailed in directive 2002/95/EC (ROHS) does not apply to electronic equipment of categories 8 and 9, and is therefore not applicable to the equipment described in these operating instructions.

17.1.2 China ROHS labelling

According to new Chinese legislation in force since 01.03.2007, all devices containing hazardous substances must be labeled accordingly.

For our HMI devices, the following conditions apply:

Names and contents of toxic or hazardous substances or elements:

Part	Toxic or hazardous substances and elements					
Name	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybromi- nated Biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
all PCBs	X	O	O	O	O	O
Miscellaneous	O	O	O	O	O	O

O Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirements in SJ/T11363-2006.

X Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials for this part is below the limit requirements in SJ/T11363-2006.

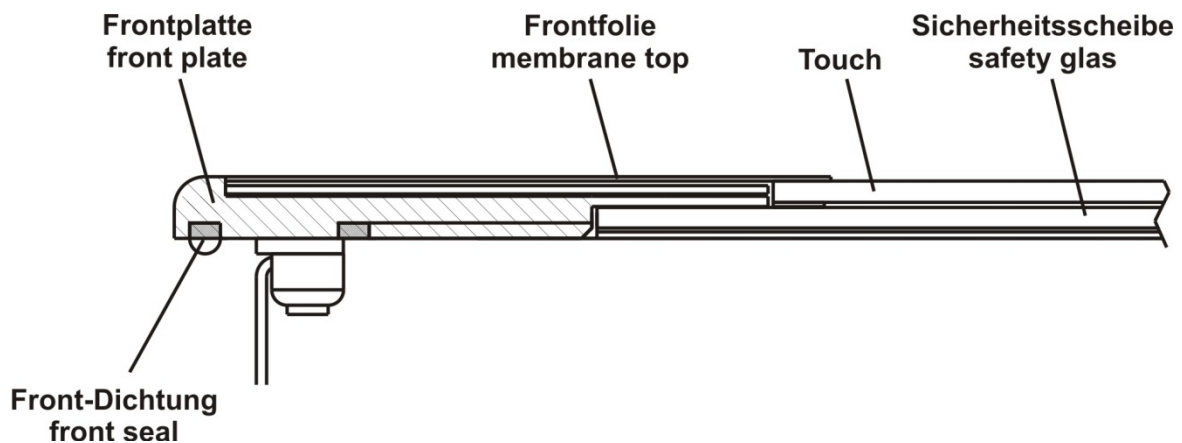
18 Front panel resistance

This section contains information on the resistance of the HMI devices to various environmental factors. These have an impact on the mechanical, thermal and chemical stability of the HMI devices.

The resistance to chemicals was tested according to DIN 42115 Part 2, i.e. the stability over 24 hours without visible changes to the HMI devices.

18.1 Design

Structure:



18.2 Materials

Application	Material
Membrane top	Polyester or stainless steel
Touch screen	Polyester
Display window	Safety glas
Front plate	Aluminum
Housing	Stainless steel
Front panel seal	Polyurethane
Back cover seal (not visible)	Silicone

18.3 Material properties

- ☞ The selection of chemicals listed here is not exhaustive.
- ☞ Further information can also be found on the following homepage:
<http://macdermidautotype.com/>

18.3.1 Entire device

- ☞ The chemical substances and resistances are the lowest common denominator of all materials used in the HMI device.
Thus, the entire device has a somewhat lower chemical resistance than the individual materials.

Property	Chemical material class / group	Chemical substances	Test method
Chemical • Chemical resistance	Alcohols	Glycerin	DIN 42115 DIN 53461
	Aldehydes	Formaldehyde 37--42%	
	Household chemicals	Detergents	
	Oils	Petrol	
Property	Resistance		Test method
Mechanical • Service life after imprint • Operating force • MIT folding resistance	5 million touches max. 50 N >20000 folding operations		Autotype method ASTM D2176
Thermal • Dimensional • Dimension stability	Max. 0.2% at 120° longitudinal Typically 0.1%		Autotype method

18.3.2 Membrane top (Polyester)

Property	Chemical material class / group	Chemical substances	Test method
Chemical • Chemical resistance	Alcohols	1,3 Butanediol 1,4 Butanediol Cyclohexanol Diacetone alcohol Ethanol Glycol Glycerol Isopropyl alcohol Methanol Neopentyl glycol Octanol 1,2 Propylene glycol Triacetin Dowandol DRM/PM	DIN 42115 DIN 53 461 Oder ASTM-F-1598-95
	Aldehydes	Acetaldehyde Formaldehyde 37--42%	
	Amines	Ammonia < 2%	
	Esters	Amyl acetate Ethylacetate N-Butyl acetate	

Ethers	1.1.1. Trichloroethane Ether Dioxane Diethyl ether 2-Methyltetrahydrofuran (2-ME-THF)
Aromatic hydrocarbons	Benzene Toluene Xylene Paint thinner (white spirit)
Ketones	Acetone Methyl ethyl ketone Cyclohexanone Methyl isobutyl ketone (MIBK) Isophorone
Diluted acids	Formic acid <50% Acetic acid < 5% Phosphoric acid <30% Hydrochloric acid <10% Nitric acid <10% Trichloroacetic acid <50% Sulfuric acid <30%
Diluted alkaloids (bases)	Caustic soda <40%
Household chemicals	Ajax Ariel Domestos Downey Fantastic Formula 409 Gumption Jet Dry Lenor Persil Tenside Top Jop Vim Vortex Washing powder Fabric conditioner Whis Windex
Oils	Petrol Drilling muds Braking fluid Decon foam Diesel oil Varnish Keroflux Paraffin oil Castor oil Silicone oil Solvent naphta Mineral turpentine Kerosene

	No specific material class	Acetonitrile Alkali carbonate Dichromates Potassium dichromate Caustic soda <20% Dibutyl phthalate Dioctyl phthalate Iron II chloride (FeCl ₂) Iron II chloride (FeCl ₃) Haloalkanes Potassium soap Potassium hydroxide <30% Sodium bisulfate Tetrachloroethylene Salt water Trichloroethylene Water Hydrogen peroxide >25%	
Property		Resistance	Test method
Mechanic (keyboard)			
- Service life after imprint - Operating force - MIT folding resistance		5 million touches max. 50 N >20000 folding operations	Autotype method ASTM D2176
Mechanic (touch screen)			
point activation		1 million activations at any single point	3M method
Thermal			
- Dimensional - Dimension stability		Max. 0.2% at 120° longitudinal Typically 0.1%	Autotype method

18.3.3 Touch screen

Property	Chemical material class / group	Chemical substances	Test method
Chemical			
Chemical resistance	(see front membrane)	(see front membrane)	(see front membrane)
Property	Resistance		Test method
Mechanical			
- Service life after imprint - MIT folding resistance	(see front membrane)		(see front membrane)
Thermal			
- Dimensional - Dimension stability	(see front membrane)		(see front membrane)

18.3.4 Front panel seal

Property	Chemical material class / group	Chemical substances	Test method
Chemical • Chemical resistance	Alcohols	Glycerol	DIN 53461
	Aldehydes	Formaldehyde	
	Ketones	Acetone	
	Household chemicals	Detergents Soap suds	
	Oils	Petrol Diesel oil Heizöl Hydrauliköl Leinöl	
Property	Resistance		Test method
Mechanical	(No information available at present)		
Thermal • Installation area	-30 to 80°C		DIN 53461

18.3.5 Rückdeckeldichtung

Property	Chemical material class / group	Chemical substances	Test method
Chemical • Chemical resistance	Alcohols	Methanol Glycerol	DIN 53461
	Aldehydes	Formaldehyde	
	Amines	Ammonia	
	Diluted acids	Sulfuric acid 25%	
	Household chemicals	Detergents Soap suds	
	Oils	Petrol Braking fluid Mineral oils Engine oils Axle grease / lube oil	
Property	Resistance		Test method
Mechanical	(No information available at present)		
Thermal • Installation area	-60 to 200°C		DIN 53461

19 General Information

The General Information below **ONLY** applies to the EAGLE and Panel PC series of HMI devices, and **NOT** to the Thin Client series.

19.1 Keyboard features

☞ Pressing two keys at once (e.g. F1 + F7) is not supported by the HMI devices !
In such a case, the system considers the key that was pressed first as "active" and implements the associated functions and / or key bit functions !
The key pressed second is ignored.

☞ Pressing any three of the following keys at the same time has the same effect as pressing Ctrl + Alt + Del !

The keys are: F1, F2, F7 and F8.

ET-306-A only:

☞ The S1 – S10 softkeys can **NOT** be used in combination with Shift / Alt / Ctrl !
The system will only execute the original key command.

ET-406-A only:

☞ Pressing the S1 – S10 softkeys on the ET-406-A has the same effect as pressing the numerical keys 0 – 9.

☞ As an alternative, you may also allocate the Shift + F1 – Shift + F10 functions to the S1 – S10 keys.

If this is required, it must be stated when ordering, as it can only be done by the manufacturer **before delivery**.

19.2 ET-4x6-A (Panel PC)

19.2.1 Licensing issues

The Panel PC series devices are fully pre-installed with the Windows XP Embedded, Windows XP Professional or Windows 7 Ultimate operating systems.

The license sticker is affixed on the back of the HMI device, next to the type plate.

Please note that according to the license issued for Windows XP Embedded the application of this system as an Office PC is not permitted.

19.2.2 Recovery Stick

 To restore your Panel PC device to its original state you will need a Recovery Stick, which is available as an optional extra. This recovery stick (USB-drive, also available intrinsically safe) contains the factory image, with which the system can be restored to delivery status within a very short time.

Please note that you can restore the HMI devices to their original state only with the aid of the Recovery Stick.

 As an option, the recovery stick can also contain a backup software, with which you can back up your own device configuration.

19.2.3 Back-up

 Please note that it is the sole responsibility of the operator to generate a back-up of the HMI devices and their overall function.

 We strongly recommend such a back-up to be stored on an external storage medium (USB stick / recovery stick, CD, DVD or similar) or on the company network.

19.2.4 Initial start-up

19.2.4.1 Initial start-up XP Pro/WIN 7

 When the Panel PC devices are run for the first time with the Windows XP Professional or Windows 7 Ultimate operating systems, this requires a keyboard that must be connected via the VB-USB-ISNT1 cable included in the delivery !

See also:  [Usage of external USB devices](#)

19.2.4.2 Initial start-up XP Embedded

When the device is started for the first time, a Wizard starts where users have to select certain settings.

Please follow the instructions of the Wizard carefully.

 For further information regarding this Wizard please refer to the OpenHMI_help_en.chm help file in the "STAHL" folder on the device or on the CD/DVD that is included in the delivery.

19.2.5 Switching off/closing down

- ☞ The Microsoft Windows operating system stores key data in the main memory, regardless of the application, and has to store this data on the hard disk before the PC / HMI device is switched off.
- ☞ It is therefore important for the safe and correct operation that the HMI device is closed down properly (see illustration below) and **NOT** simply switched off.
- ⚠ Otherwise the existing image of the device may be damaged, rendering the HMI device non-functioning.



After the data has been stored, Windows informs the user that the device can now be switched off.

- ⚠ Only switch off the device once you have received this message.

19.2.5.1 Note on XP Embedded

When using the Windows XP Embedded operating system on the Panel PC series devices, the C:\ system drive can be protected from unauthorised writing.

- ☞ This is **NOT** the case with Windows XP Professional and Windows 7 Ultimate !
- 📖 For further information regarding this Write Protection, please refer to the OpenHMI_help_en.chm help file in the "STAHL" folder on the device or on the CD/DVD that is included in the delivery.

Recommendation:

In the case of applications that require constant writing into memory, R. STAHL HMI systems recommends you use external storage media (USB sticks, network servers) for these write processes.

19.2.6 Installation Windows XP Professional

After installing the Windows XP Professional Image, the following message will pop up when starting up the device again:

The following services are dependent on the distributed transaction coordinator service. Stopping the distributed transaction coordinator service will also stop these services.

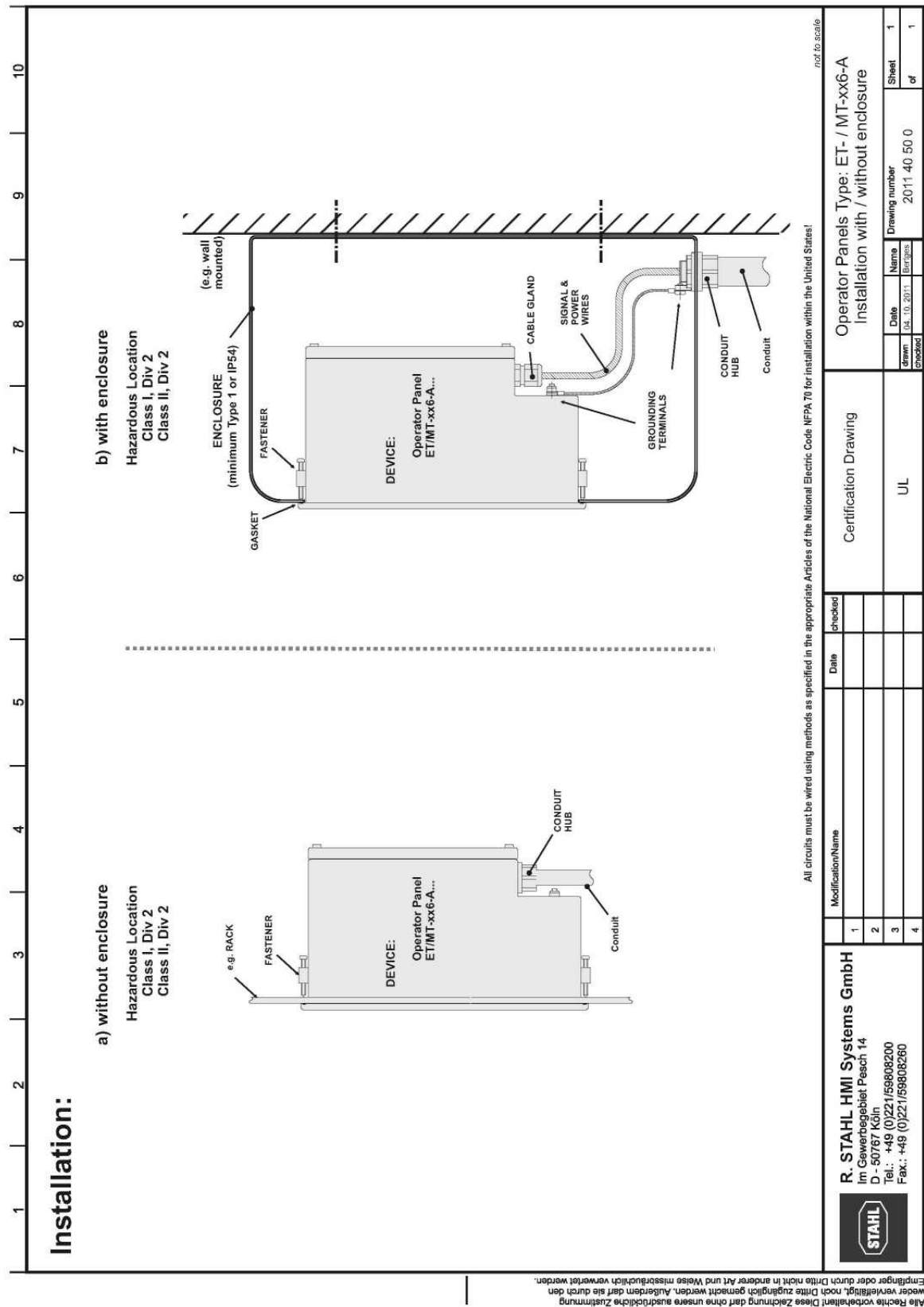
Message Queuing

Do you want to continue this operation ?

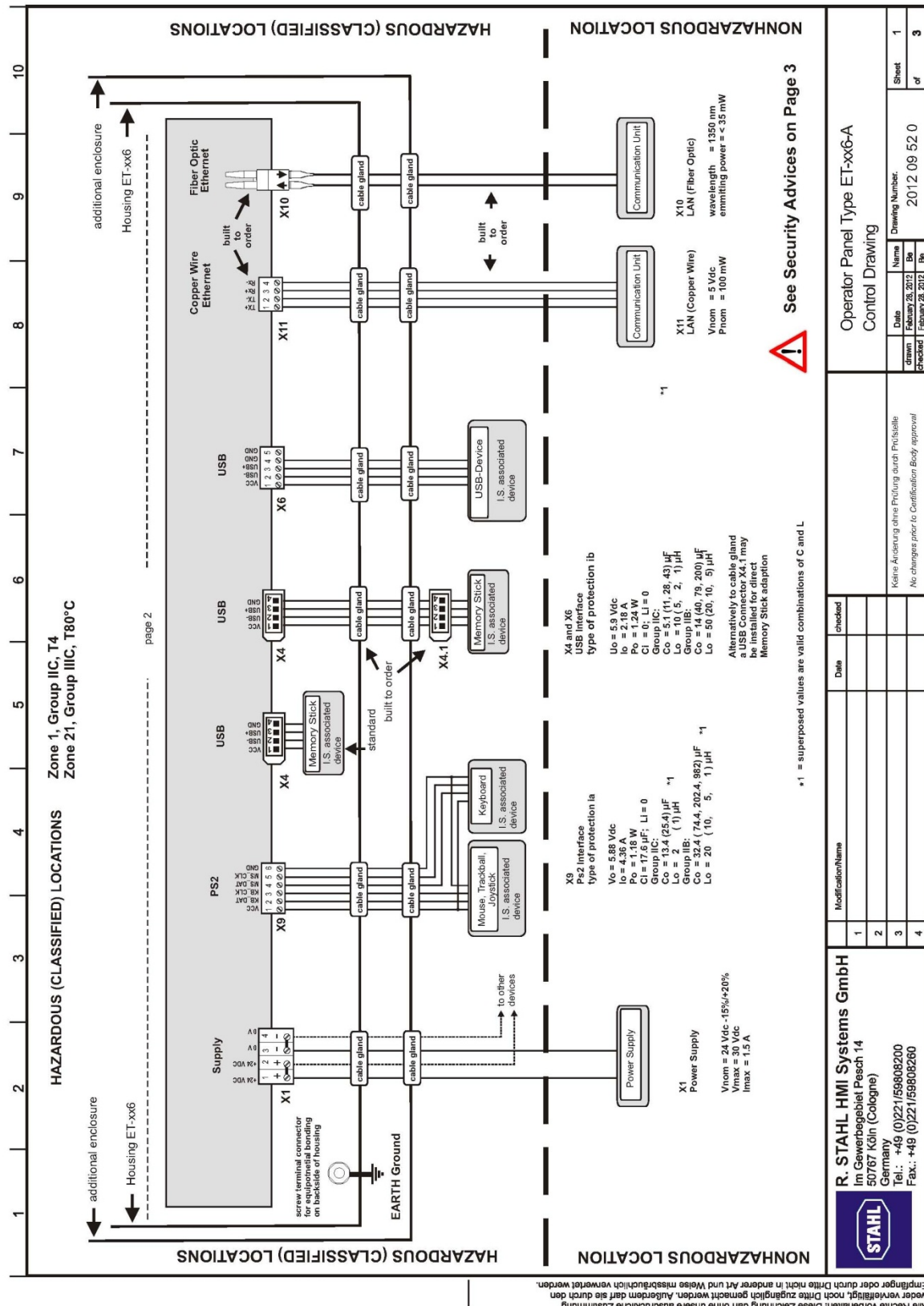


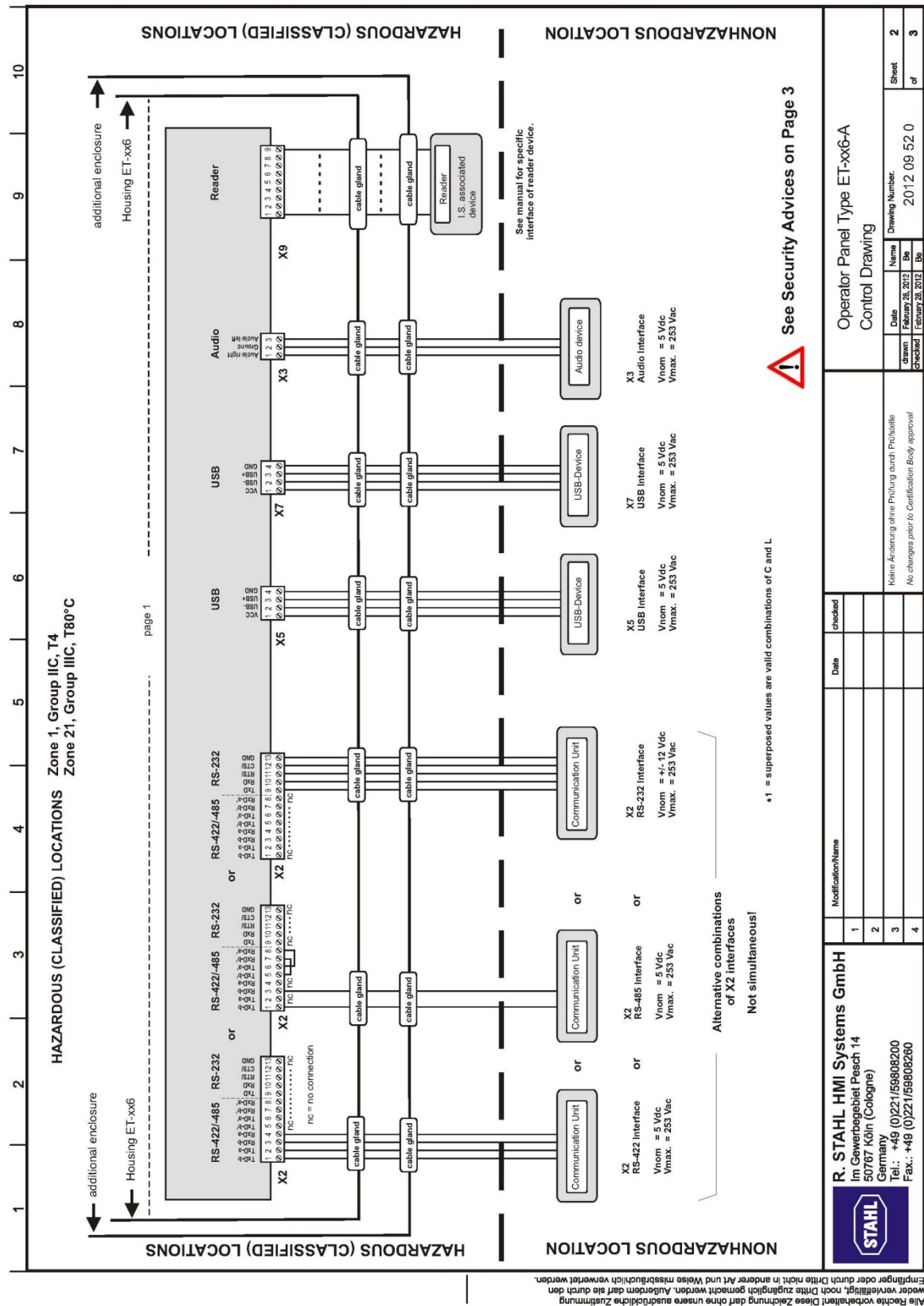
The MSDTC service is necessary for the SQL server, which in turn is necessary for Siemens WinCC. For this reason, the message **MUST** be confirmed with **YES**, otherwise the start-up of this service will fail.

20 UL Certification Drawing



21 CSA Control Drawing





22 Declaration of EC conformity

EG-Konformitätserklärung EC-Declaration of Conformity Déclaration de Conformité CE



R. STAHL HMI Systems GmbH • Im Gewerbegebiet Pesch 14 • 50767 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

Typ, type, type:

Bedien- und Beobachtungsgeräte
Operating and Monitoring Devices
Consoles de commande et de visualisation

EXICOM ET-306-A.. ; ET-406-A.. ; ET-506-A.. ;
ET-316-A.. ; ET-416-A.. ; ET-516-A.. ;
ET-336-A.. ; ET-436-A.. ; ET-536-A.. ;
ET-356-A.. ; ET-456-A.. ; ET-556-A..

Kennzeichnung, marking, marquage:

TypeTX:
II 2 (2) G Ex d e ia ib mb [ia ib] IIC T4 Gb
II 2 (2) D Ex ia tb [ia ib] IIIC T80°C Db IP66

Type FX:
II 2 (2) G Ex d e ia ib mb [ia ib op is] IIC T4 Gb
II 2 (2) D Ex ia tb [ia ib op is] IIIC T80°C Db IP66

mit der EG-Baumusterprüfbescheinigung,
ausgestellt durch Benannte Stelle:
under EC-Type Examination Certificate,
issued by notified body:
avec Attestation d'examen CE de type,
exposé par organisme notifié:

TÜV 11 ATEX 7041 X

TÜV Rheinland Industrie Service GmbH
Am grauen Stein
51105 Köln (Cologne)
Germany

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standards or normative documents
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmungen der Richtlinie Terms of the directive Prescription de la directive	Nummer sowie Ausgabedatum der Norm Number and date of issue of the standard Numéro ainsi que date d'émission de la norme	
94/9/EG: ATEX-Richtlinie	IEC 60079-0:2011	IEC 60079-18: 2009
94/9/EC: ATEX Directive	IEC 60079-1:2007	IEC 60079-28: 2006
94/9/CE: Directive ATEX	IEC 60079-7:2006	IEC 60079-31: 2008
	IEC 60079-11:2011	
2004/108/EG: EMV-Richtlinie	EN 61326-1:2006	
2004/108/EC: EMC Directive		
2004/108/CE: Directive CEM		

Köln, 09.01.2012

Ort und Datum
Place and date
Lieu et date

Joachim Düren

J. Düren
Technical Director

W. Bertges

W. Bertges
Quality Manager

23 Release notes

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

Version 03.00.13

- Formale corrections
- Changings in preface
- Rebuilt section certificates, splitting into countries
- Addition of NEC certification according to UL
- Addition of Kazakh certification CKT
- Addition of KCC 436
- Inclusion of note on RTN
- Inclusion of flash memory 128 GB in technical data
- Addition of information to "HMI device installation in housings type of protection "e" or "t"
- Text changes in section "USB interfaces"
- Switch S4-4 Touch funktion changed
- Adaption of guidelines in section 15
- Addition of UL certification drawing
- Removal of previous Release Notes

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