SIEMENS

SIMATIC HMI
Panel PC Ex
Thin Client Ex

Notes

Supplement to operating instructions

Important Note

This supplement contains important information. The statements made take precedence over those in the operating instructions and online help.

Please read this supplement carefully, it contains helpful information.

This supplement is valid for products with following order numbers:

SIMATIC HMI Panel PC Ex	6AV7200-1…
SIMATIC HMI Thin Client Ex	6AV7200-0…

Edition 02/2013

Please follow the guidelines mentioned in the manual!

Safety Guidelines Safety Guidelines

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by qualified personnel. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:

WARNING

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

Trademarks

The trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Service and support

Local information

If you have questions about the products described in this document, you can find help at: http://www.siemens.com/automation/partner

Technical documentation for SIMATIC products

Further documentation for SIMATIC products and systems can be found at:
http://www.siemens.com/simatic-tech-doku-portal

Easy Shopping at the Mall

Catalog & online ordering system http://www.siemens.com/automation/mall

Training

All the training options are listed at: http://www.siemens.com/sitrain
Find a contact at: Phone: +49(911) 895-3200

Technical support

Tel +49 (0)911 895 7222
Fax +49 (0)911 895 7223
http://www.siemens.com/automation/csi/service
A Web form for Support Request can be found at:
http://www.siemens.com/automation/support-request
When you contact the customer support, please have the following information for the technician on hand:

- BIOS version
- Order No. (MLFB) of the device
- Installed additional software
- Installed additional hardware

Online support

Information about the product, Support and Service, right through to the Technical Forum,
can be found at: http://www.siemens.com/automation/service&support

After-sales information system for SIMATIC PC / PG

Information about contacts, drivers, and BIOS updates, FAQs and Customer Support can be found at: http://www.siemens.com/asis

Notice to device designation
Panel PC Ex devices

The table below lists the Panel PC Ex devices together with their marking on the type plate and the Operating Instructions.

MLFB	Designation Siemens		Device designation (includes)
6AV720 0-1**a**bcdx	a = A	Panel PC Ex, Zone 2, 15“	MT-436-A-xx-TFT-xx
	a = B	Panel PC Ex, Zone 2, 19“	MT-456-A-xx-TFT-xx
	a = D	Panel PC Ex, Zone 1, 15“	ET-436-A-xx-TFT-xx
	a = E	Panel PC Ex, Zone 1, 19“	ET-456-A-xx-TFT-xx
	a = J	Panel PC Ex, Zone 2, 15“, SR	MT-436-A-xx-SR-xx
	a = K	Panel PC Ex, Zone 1, 15“, SR	ET-436-A-xx-SR-xx
6AV720 0-1a**b**cdx	b = A	10/100Base-TX	xx-4x6-A-TX-xx
	b = B	100Base-FX	xx-4x6-A-FX-xx
6AV720 0-1abcdx	c = 1	CF 4GB, 1GB RAM	xx-4x6-A-xx-R1-4GB-xx
	c = 2	CF 16GB, 1GB RAM	xx-4x6-A-xx-R1-16GB-xx
	c = 3	HDD 100GB, 1GB RAM	xx-4x6-A-xx-R1-100GB-xx
	c = 4	CF 4GB, 2GB RAM	xx-4x6-A-xx-R2-4GB-xx
	c = 5	CF 16GB, 2GB RAM	xx-4x6-A-xx-R2-16GB-xx
	c = 6	HDD 100GB, 2GB RAM	xx-4x6-A-xx-R2-100GB-xx
6AV720 0-1abc**d**x	d = 1	Windows XPe	xx-4x6-A-xx-XPe
	d = 3	Windows XP Pro	xx-4x6-A-xx-XPp
	d = 4	Windows 7 Ultimate	xx-4x6-A-xx-7U
6AV7675-0PX00-0AA0	Ethernet Switch		SK-KJ1740

The language sets of Windows XP Embedded contains the following languages:

Windows XPe set 1

- English
- German
- French
- Italian
- Spanish
- Portugese / Portugal
- Portugese / Brazil
- Dutch
- Danish
- Swedish
- Norwegian
- Finnish
- Greek
- Hungarian
- Czech
- Polish
- Russian
- Turkish
- Hebrew (right-to-left layout)
- Arabic (right-to-left layout)
- Chinese (Traditional)
- Chinese (Simplified)
- Japanese
- Korean

Notice to device designation
Thin Client Ex devices

The table below lists the Thin Client Ex devices together with their marking on the type plate and the Operating Instructions.

MLFB	Designation Siemens	Device designation (includes)
6AV720 0-0**a**b00xx	a = A Thin Client Ex, Zone 2, 15“	MT-536-A-xx-TFT-xx
	a = B Thin Client Ex, Zone 2, 19“	MT-556-A-xx-TFT-xx
	a = D Thin Client Ex, Zone 1, 15“	ET-536-A-xx-TFT-xx
	a = E Thin Client Ex, Zone 1, 19“	ET-556-A-xx-TFT-xx
	a = G Thin Client Ex, Zone 2, 15“, SR	MT-536-A-xx-SR-xx
	a = H Thin Client Ex, Zone 1, 15“, SR	ET-536-A-xx-SR-xx
6AV720 0-0a**b**00xx	b = A 10/100Base-TX	xx-5x6-A-TX-xx
	b = B 100Base-FX	xx-5x6-A-FX-xx
6AV7675-0EX00-0AA0	Digital KVM-Box	5x6-KVM-digital
6AV7675-0PX00-0AA0	Ethernet Switch	SK-KJ1740

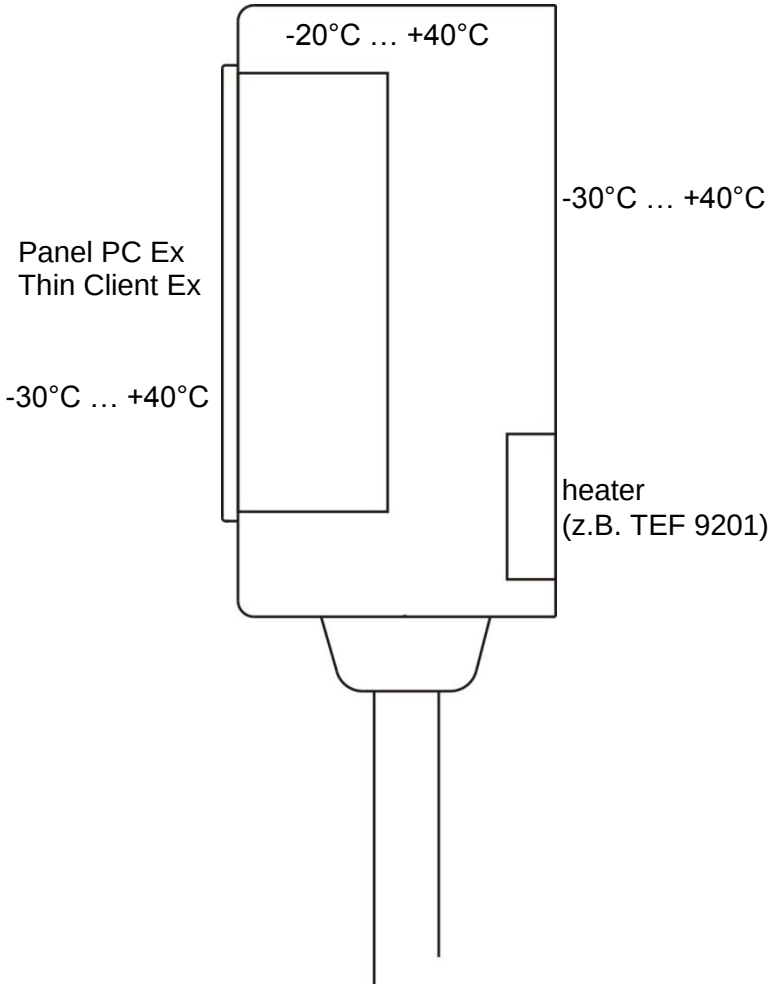
Note on device combinations

If a Panel PC Ex / Thin Client Ex device is installed inside a control cabinet or an enclosure together with an additional heater, please note the special conditions that apply with regard to the minimum temperature.

In general, the entire combination of devices is certified for a temperature range of -30°C to +40°C.

If the temperature of the entire unit falls BELOW –20°C the Panel PC Ex / Thin Client Ex device may only be switched on once the temperature has been raised back to -20°C or above.
This must be ensured by means of monitoring the temperature inside the control cabinet or enclosure.

Alternatively, this can be ensured by pre-heating the unit with a type TEF 9201 100 W heater for one and a half hours.



⚠ 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.

Operating Instructions

ET-xx6-A

Series 400 Panel PC
Series 500 Thin Clients

(valid for HW Revision 3)

HW-Rev. ET-xx6-A-Fx:	**03.00.11**
HW-Rev. ET-xx6-A-Tx:	**03.00.21**
Operating Instructions Version:	**03.00.01**
Issue date:	**12.02.2013**

Table of contents

1 Preface

These Operating Instructions contain all aspects relevant to explosion protection for the ET-xx6-A operator interfaces (series 400 Panel PC and series 500 Thin Clients). They also contain information on the connection and installation of these devices. Please also refer to additional documentation included in the delivery, such as the examination certificate and the hardware manual, which contain further important information.
These operating instructions contain a joint description of product lines Panel PC and Thin Client. Any differences between these 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 operator interfaces with display sizes of 26 cm/10.4", 38 cm/15" and 48 cm/19" will be available in Hardware Revision 3.

⚠ 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 operator interfaces can be found in a separate document !

2 Device function

The ET-xx6-A operator interfaces 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-4x6-A (Series 400 Panel PC)

The ET-4x6-A Panel PC Ex devices are robust Panel PCs for hazardous areas. With their pre-installed Windows operating systems they are ready to run straight away.
As a standard, all Panel PCs 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.

2.2 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 operator interfaces, which are used for operation and visualization, are 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-406-A	ET-416-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	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	400 cd/m² -		350 cd/m² 1000 cd/m²	350 cd/m² -
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			
Trackball/Joystick	optional			
Power supply	Directly in the integrated Ex-e connection box			
Connections	via screw terminals, 2.5 mm² 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 Data buffer Battery Capacitor	Yes Lithium battery and capacitor buffered, maintenance-free > 5 years 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-i			
PS/2 (Ex-i)	For external keyboard, mouse, trackball, joystick			
Serial COM1	RS-232, RS-422, RS-485 (Ex-e)			
Fieldbus	not for Thin Client			
Panel PC	MPI with MPI Box SSW7-HMI-RS-422			
Audio	Line Out output (Ex-e)			
Data cable/-lenght				
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			

Function / Equipment	**ET-406-A**	**ET-416-A**	**ET-436-A-(SR)** **ET-536-A-(SR)**	**ET-456-A** **ET-556-A**
Front plate	Polyester on seawater-proof aluminium with touch technology and safety glass			
Housing	Stainless steel			
Housing protection type	IP 66			
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 operator interface'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/s² = 1 g			
Transport:	3 to 9 Hz: 3.5 mm 9 to 500 Hz: 9.8 m/s² = 1 g			
Shock loading				
Operation	150 m/s² = about 15 g / 11 ms			
Transport:	250 m/s² = about 25 g / 6 ms			
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-4x6-A (Panel PC)

Processor	ATOM 1.6 GHz
Working memory [GB] Data memory [GB]	1 or 2 4 or 16
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
Global language support	Via Multi-Language interface of Windows XP embedded (25 languages)

4 Conformity to standards

The ET-xx6-A operator interfaces 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 operator interfaces are certified for installation in the following areas:

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

IECEx (International Electrotechnical Commision System for Certification to Standards for Electrical Equipment for Explosive Atmospheres)
DNV (Det Norske Veritas)
LR (Lloyd´s Register)
GOST-R (Russion certification)
KGS (Korea Gas Safety Corporation)
CSA (Canadian Standard Association)
UL-BR (UL do Brasil Certificações – INMETRO)

5.1 ATEX

The ATEX certificate is listed under the following certification number:

Certificate number: TÜV 11 ATEX 7041 X

5.2 IECEx

The IECEx certificate is listed under the following certification number:

Certificate number: IECEx TUR 11.0006X

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 DNV

The DNV certification is listed below the following numbers:

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

5.4 LR

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

Certificate number:	11/20032

5.5 GOST-R

The GOST-R certification is listed below the following number:

Certificate number:	РОСС DE.ГБ04.B01741

5.6 CSA

The CSA certificate is listed under the following certification number:

Certificate number:	2512677

5.7 KGS

The KGS certificate is listed under the following certification number:

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

NB:
In order to be able to operate these terminals in Korea, each device type additionally requires a KCC certificate.
Please enquire at our Sales or Support departments which device types have already been issued with such a certificate.

5.8 UL-BR

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

Certificate number:	UL-BR 12.0265X

6 Marking

Manufacturer	R. STAHL HMI Systems GmbH	
Type code	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 ET-xx6-A-Tx		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-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
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
KGS		Ex d e ia ib mb [ia ib]IIC T4
		Ex ia tb [ia ib] IIIC T80°C Db IP66
UL-BR 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 Operator interfaces

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

7.1.1 Operator interface terminals

Copper wires with cross sections of betwee 0.2 mm² (AWG 24) and 1.5 mm² (AWG 14) may be connected to any of the terminals of the operator interfaces.

☞ 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 Ur_{ated}	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) +Uint 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_ex1 (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

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:

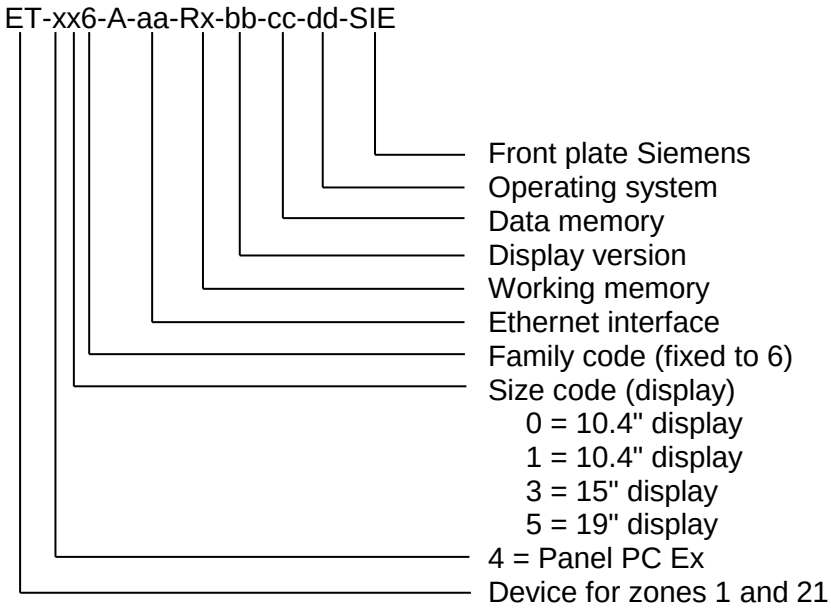
U_i	=	-	V		U_o	=	5.88	V			
I_i	=	-	mA		I_o	=	200	mA			
P_i	=	-	mW		P_o	=	1.18	W			
C_i	=	17.6	µF		C_o	=	10.4	20.4	43.4	82.4	µF
L_i	=	0	mH		L_o	=	100	50	20	10	µH

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 ET-4x6-A (Panel PC)

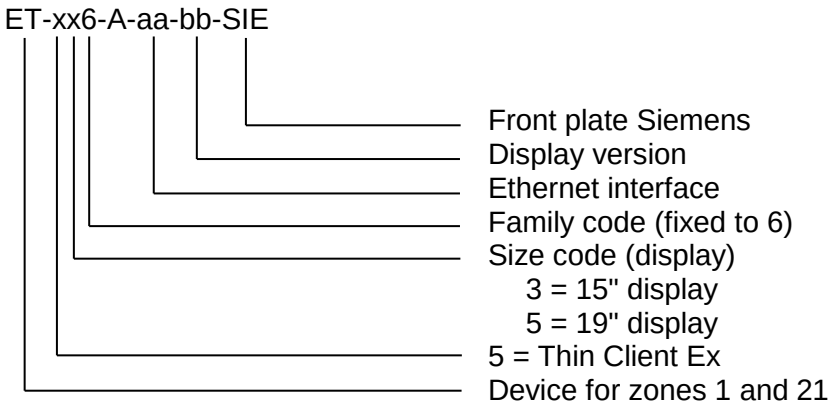


Order variant:

Classification product key	Description
	Type with
ET-4x6-A-**Fx**-Rx-bb-cc-dd-SIE	Optical fiber Ethernet interface100BaseFx (Ex op is)
ET-4x6-A-**Tx**-Rx-bb-cc-dd-SIE	Copper Ethernet interface 10/100BaseTx (Ex-e)
ET-4x6-A-aa-**R1**-bb-cc-dd-SIE	Working memory 1 GB
ET-4x6-A-aa-**R2**-bb-cc-dd-SIE	Working memory 2 GB
ET-4x6-A-aa-Rx-**TFT**-bb-cc-dd-SIE	TFT display (standard)
ET-4x6-A-aa-Rx-**SR**-bb-cc-dd-SIE	Sunlight readable display 1000 cd/m² (ET-436-A only)
ET-4x6-A-aa-Rx-bb-**4GB**-dd-SIE	4 GB Solid State Drive (SSD)
ET-4x6-A-aa-Rx-bb-**16GB**-dd-SIE	16 GB Solid State Drive (SSD)
ET-4x6-A-aa-Rx-bb-**100GB**-dd-SIE	100 GB hard disk (externaly- Exicom-SHD-xxx) *
ET-4x6-A-aa-Rx-bb-cc-**XPe**-SIE	Windows XP embedded
ET-4x6-A-aa-Rx-bb-cc-**XPp**-SIE	Windows XP professional MUI
ET-4x6-A-aa-Rx-bb-cc-**7U**-SIE	Windows 7 ultimate

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

9.2 ET-5x6-A (Thin Client)



Order variant:

Classification product key	Description
	Type with
ET-5x6-A-**Fx**-bb-SIE	Optical fiber Ethernet interface 100BaseFx (Ex op is)
ET-5x6-A-**Tx**-bb-SIE	Copper Ethernet interface 10/100BaseTx (Ex-e)
ET-5x6-A-aa-**TFT**-SIE	TFT display (standard)
ET-5x6-A-aa-**SR**-SIE	Sunlight readable display 1000 cd/m² (ET-536-A only)

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 operator interface must only be switched on when it is closed.
- The operator interfaces 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 operator interfaces 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 operator interface electrostatic surface charging must not exceed that caused by manual rubbing.
- After switching the operator interface 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 operator interface 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 operator interfaces 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 operator interface 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 operator interface it is necessary to safely isolate any connected devices from earth or to integrate them into the earth/ground (PE) system of the operator interface.
- The PE connection part of the operator interface located at the back of the housing is internally connected with the GND supply cable (X1 pins 3 and 4).
- The operator interfaces 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 operator interfaces 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 operator interface'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.

11.3 Installation via USB-interfaces

Installation of software on the operator interfaces via the USB-interfaces:

11.3.1 Software installation using a USB Memory Stick

You may only use USB flash drives permitted for use by the manufacturer. These USB flash drives are below and in general referred to by the manufacturer as "USB(i) Drives". Data may only be copied onto the operator interfaces and software may only be installed with these USB drives.

- In hazardous areas you may only use I.S. certified USB Drives supplied by the manufacturer.
- In an industrial area, a permitted, non-explosion proof USB flash drive may be connected to the I.S. USB interface of the operator interface after having been connected to any PC.
- The manufacturers USB(i) drives may also be connected to non-intrinsically safe interfaces, from where they may be used with operator interfaces of the ET-xx6-A series.

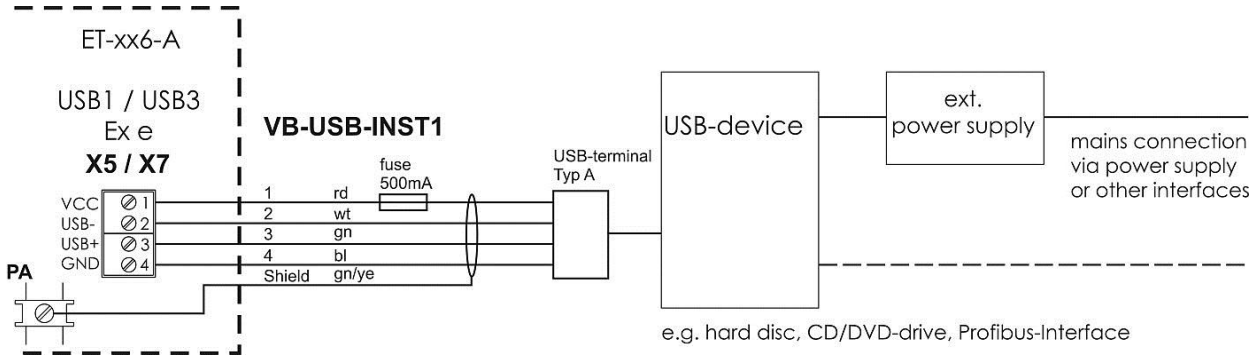
If devices are connected to the I.S. USB interface that have not been approved by the manufacturer, protective elements may become damaged, thus compromising the intrinsic safety of the interfaces.
In this case the manufacturer can no longer guarantee the intrinsic safety of the device !

11.3.2 Software installation with 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 (Keybord, mouse, hard disk, CD/DVD with power supply)

⚠ Direct connections to the operator interfaces must be via VB-USB-INST1!
Otherwise, the internal circuits may become damaged and the explosion-protection of the operator interface 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 operator interfaces, the manufacturer 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".

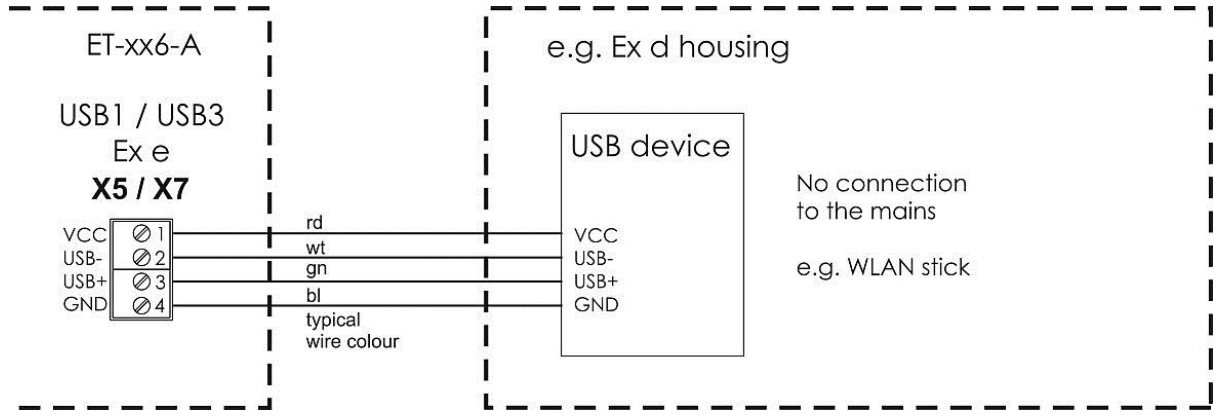
Flexible cables with a cross section of 0.2 – 2.5 mm² can be used.

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

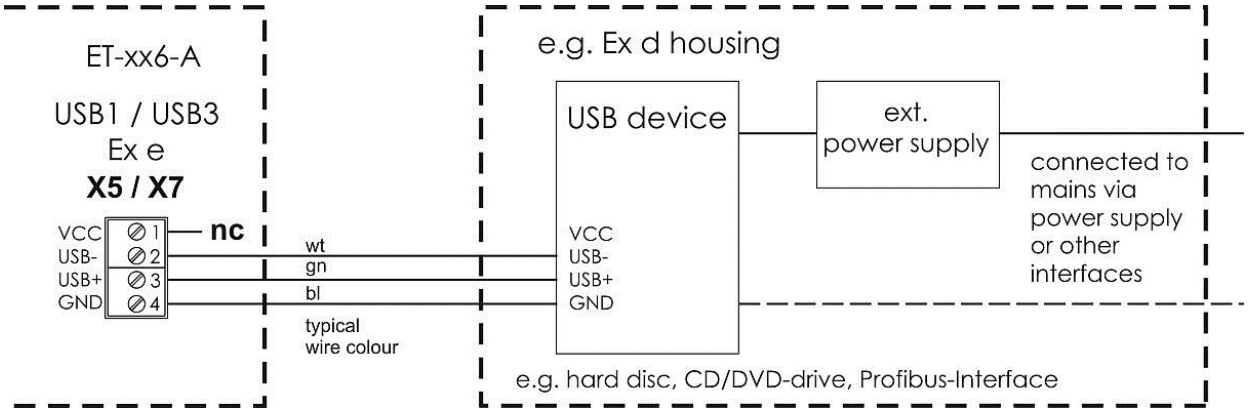
- The USB device does not require an external power supply as it uses less than 500 mA.
- No connection to the mains via other interfaces, e.g. WLAN stick.



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

11.4.2.2.2 Type 2 connection version

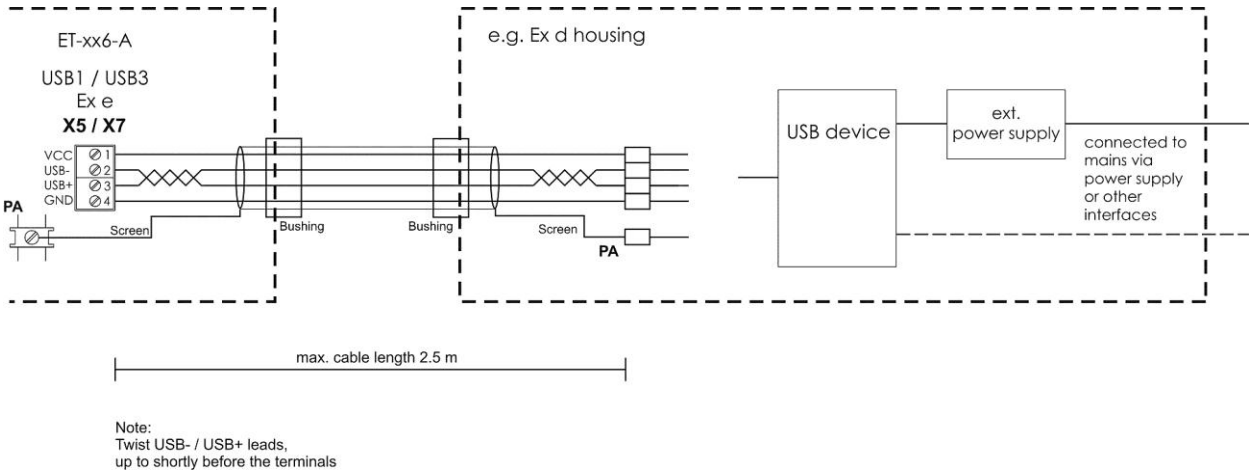
- The USB device does require an external power supply to function because it uses over 500 mA (e.g. hard disks, CD/DVD drives).
- The USB device is connected to the mains via other interfaces (e.g. USB/serial converter, USB-Profibus interface).



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 operator interface (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:

Operator interface	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 operator interface has been properly installed according to instructions,
- the device is undamaged,
- the terminal compartment is clean,
- all screws are tightened fast,
- before switching the operator interface 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 operator interface +24 VDC	Power supply of the operator interface
	2	Power supply operator interface +24 VDC	
	3	Power supply operator interface GND	
	4	Power supply operator interface 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	
	9	+U_EX1 (out)	
X9	1	VCC	PS2 interface * I.S. for external keyboard / mouse
	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 operator interfaces.
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		Touch *	Touch switched off
	ON			Touch switched on

* To switch off the touch via the dip switch S4-4 is at the moment not possible !

13.2.2 Status LEDs

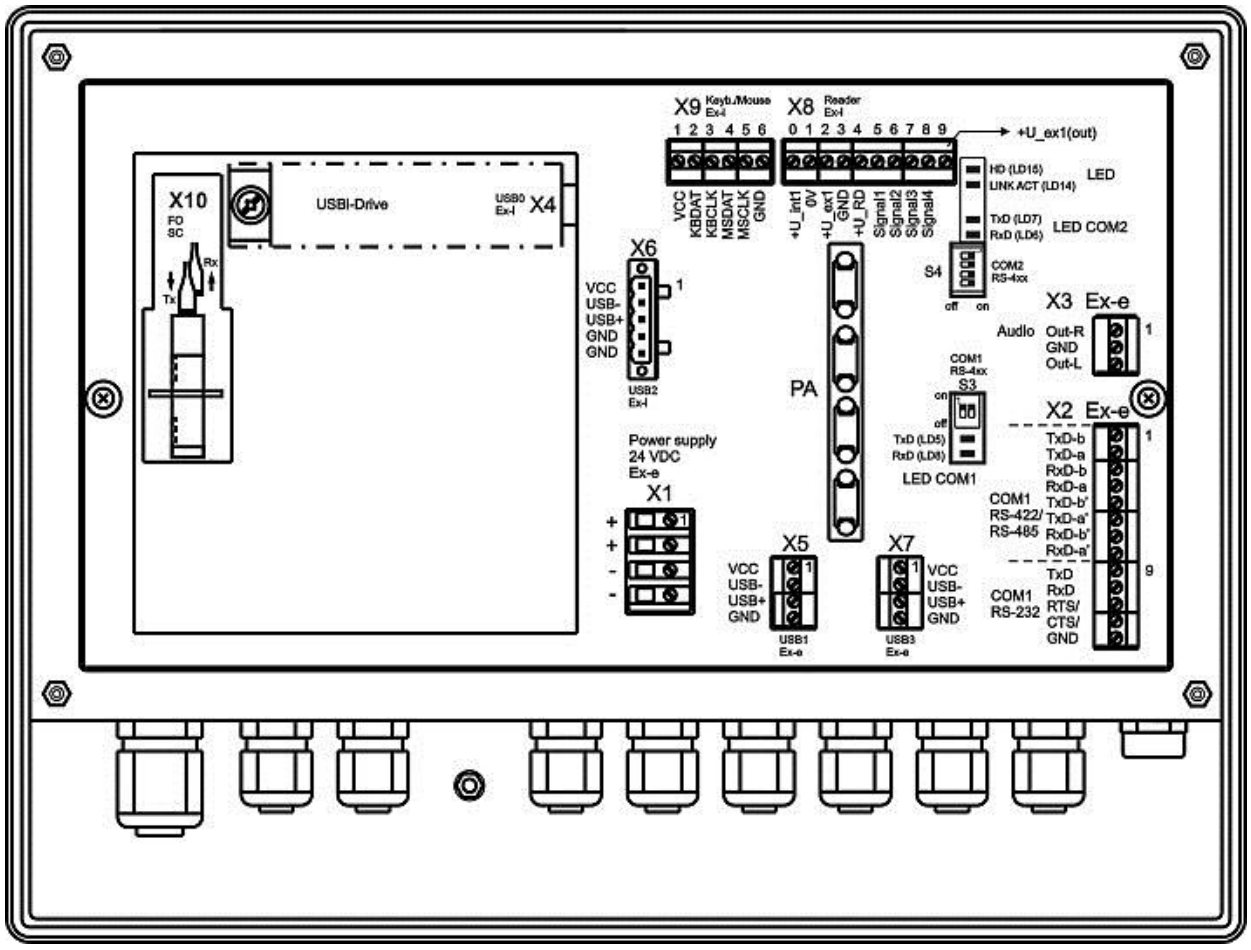
The status of the respective LEDs at the operator interfaces indicates the activity of the corresponding data lines.

⚠ In hazardous areas the operator interface 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.

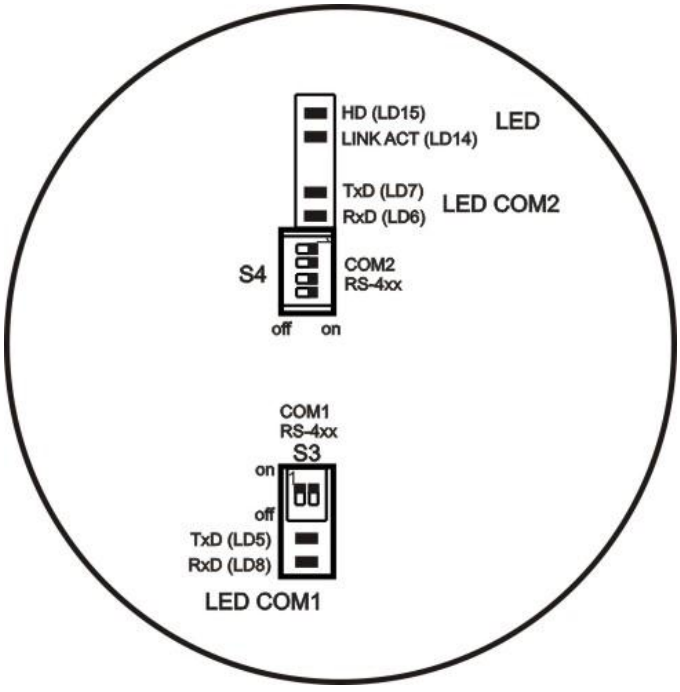
13.2.2.1 LEDs

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:



14 Exicom-SHD-xxx hard disk

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

☞ 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 the manufacturer during the production of its operator interfaces. It is **NOT** possible to install the hard disks at a later date !

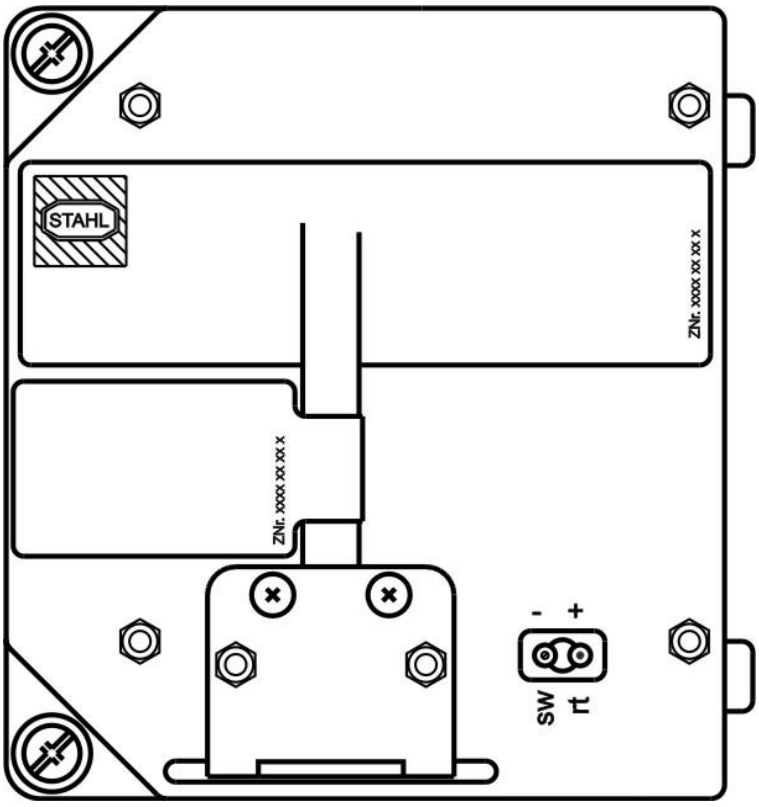
⚠ Installation of the Exicom-SHD-xxx hard disk into the ET-4x6-A operator interfaces reduces the minimum operating temperature to -20°C !
The minimum temperature for the front remains -30°C.

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

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

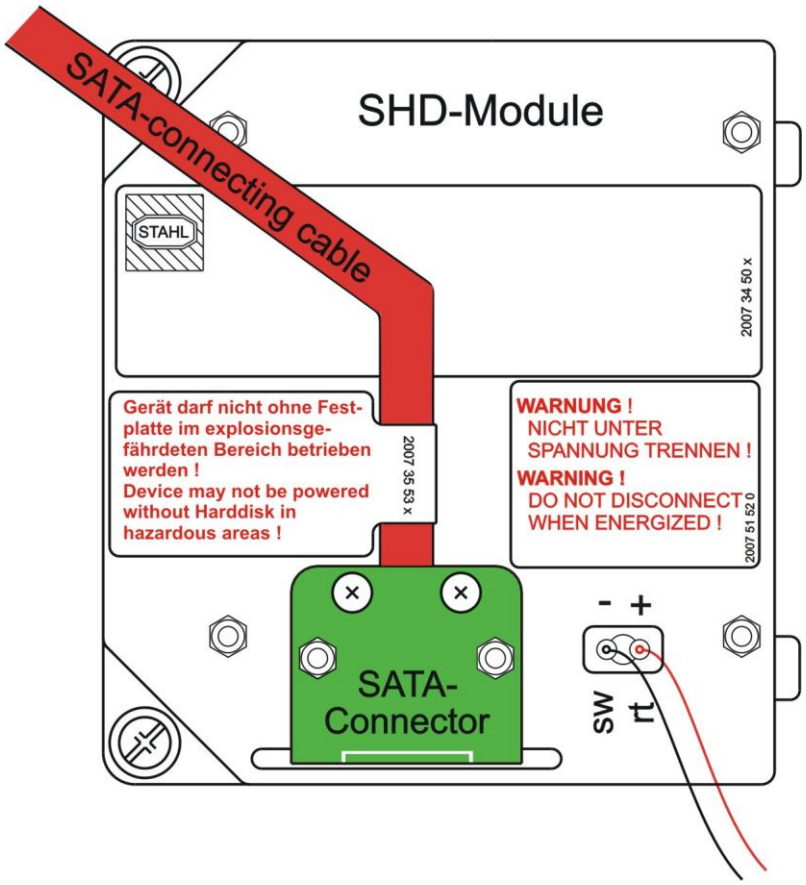
The Exicom-SHD-xxx hard disk is supplied with 24 VDC.
The two connection wires intended for the purpose can be connected to the free contacts of the operator interface's X1 terminal (operator interface supply). The red cable (+ wire) is connected to the + pin (pin 2) and the black cable (- wire) is connected 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 operator interfaces **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 operator interface 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 60079-19, EN 60079-17 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 operator interfaces 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 operator interfaces 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 60079-19 and EN 60079-17, operators of electric plants in hazardous areas are obliged to have them serviced by qualified electricians.

15.2 Time function

Does not apply to ET-5x6-A:
When the ET-4x6-A operator interfaces 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 operator interface 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, operator interfaces 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 operator interfaces, 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))**	**Polybro-minated 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.

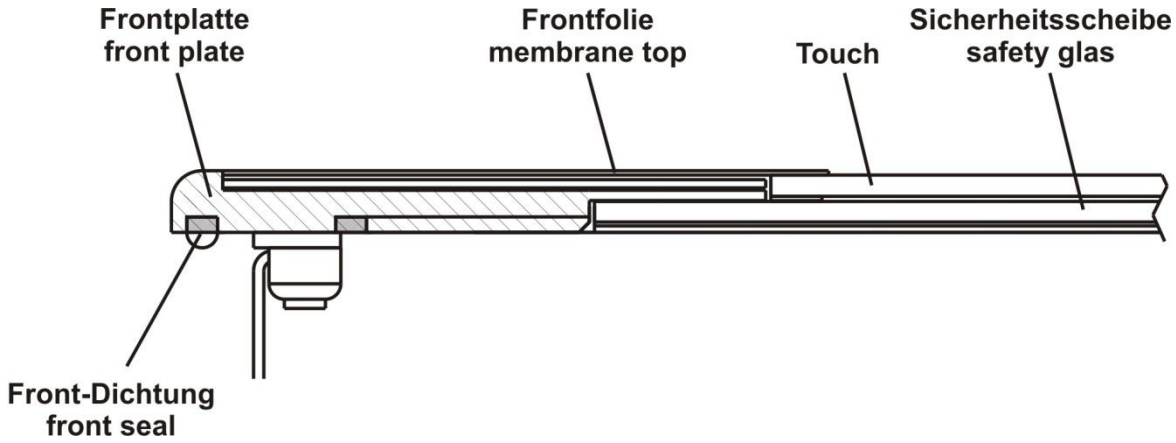
18 Front panel resistance

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

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

18.1 Design

Structure:



18.2 Materials

Application	Material
Membrane top	Polyester
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.
- ☞ More comprehensive lists can be obtained for further information from the manufacturer.
- ☞ Because of the numerous chemical substances available on the market, these lists can only represent a selection.
- ☞ 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 operator interface.
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 Panel PC Ex series of operator interfaces, and **NOT** to the Thin Client Ex series.

19.1 Keyboard features

☞ Pressing two keys at once (e.g. F1 + F7) is not supported by the operator interfaces !
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-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 Ex series operator interfaces 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 operator interface, 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 Ex 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 operator interfaces 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 operator interfaces 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 Ex operator interfaces 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: 🕮 Software installation with 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.

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 / operator interface is switched off.

☞ It is therefore important for the safe and correct operation that the operator interface is closed down properly (see illustration below) and **NOT** simply switched off.

⚠ Otherwise the existing image of the device may be damaged, rendering the operator interface 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 Ex series operator interfaces, the C:\ system drive can be protected from unauthorised writing.

☞ This is **NOT** the case with Windows XP Professional or Windows 7 Ultimate !

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

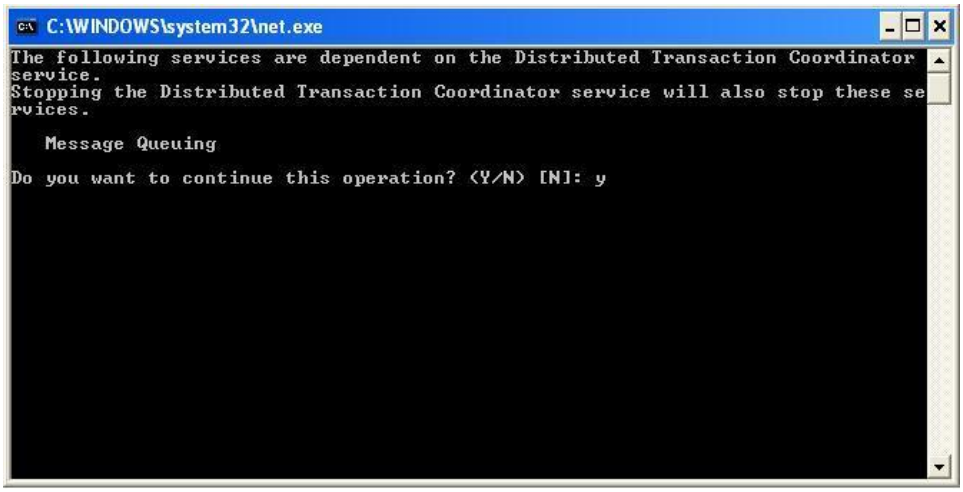
19.2.6 Installation Windows XP Professional

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.

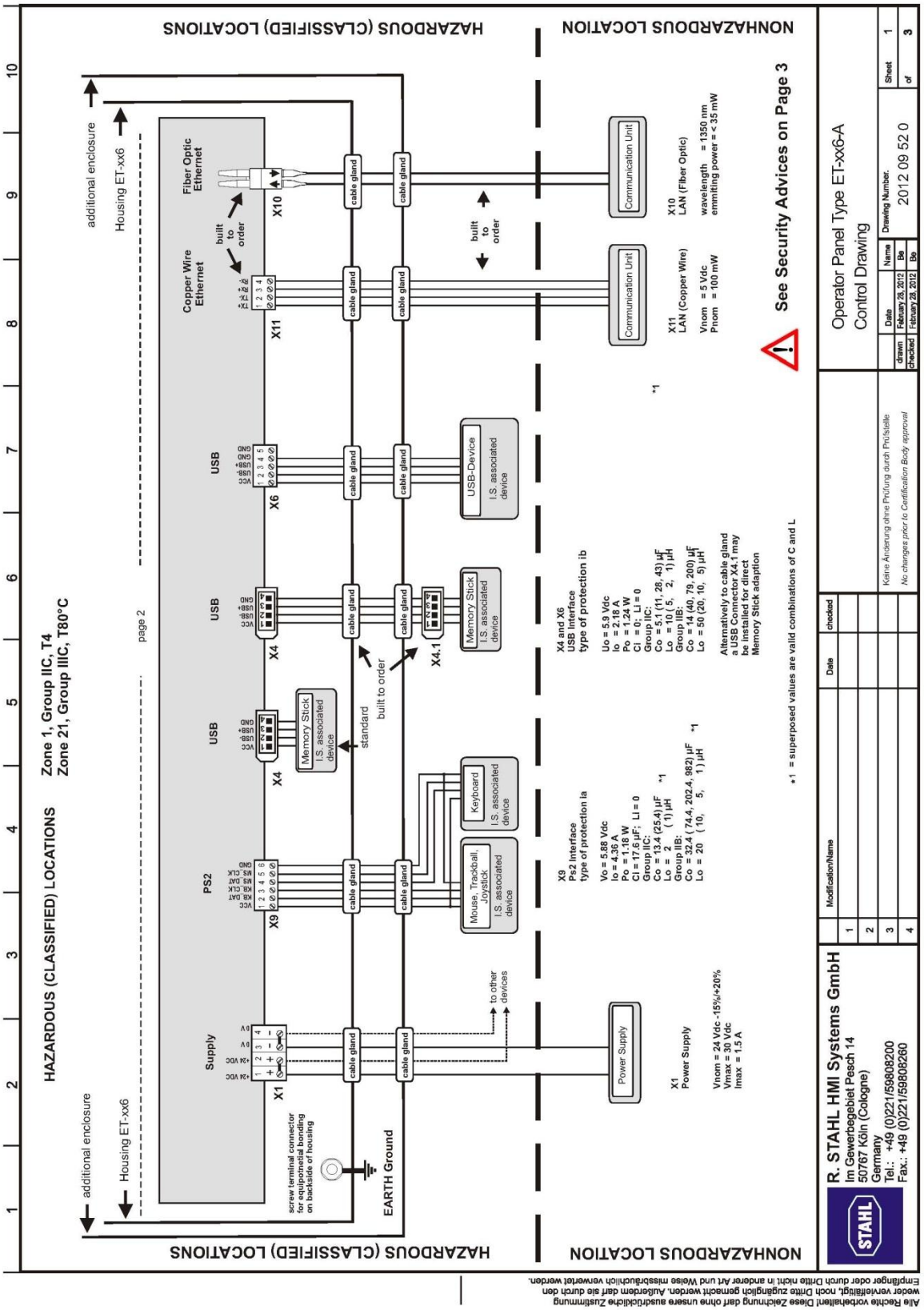
Message Queuing

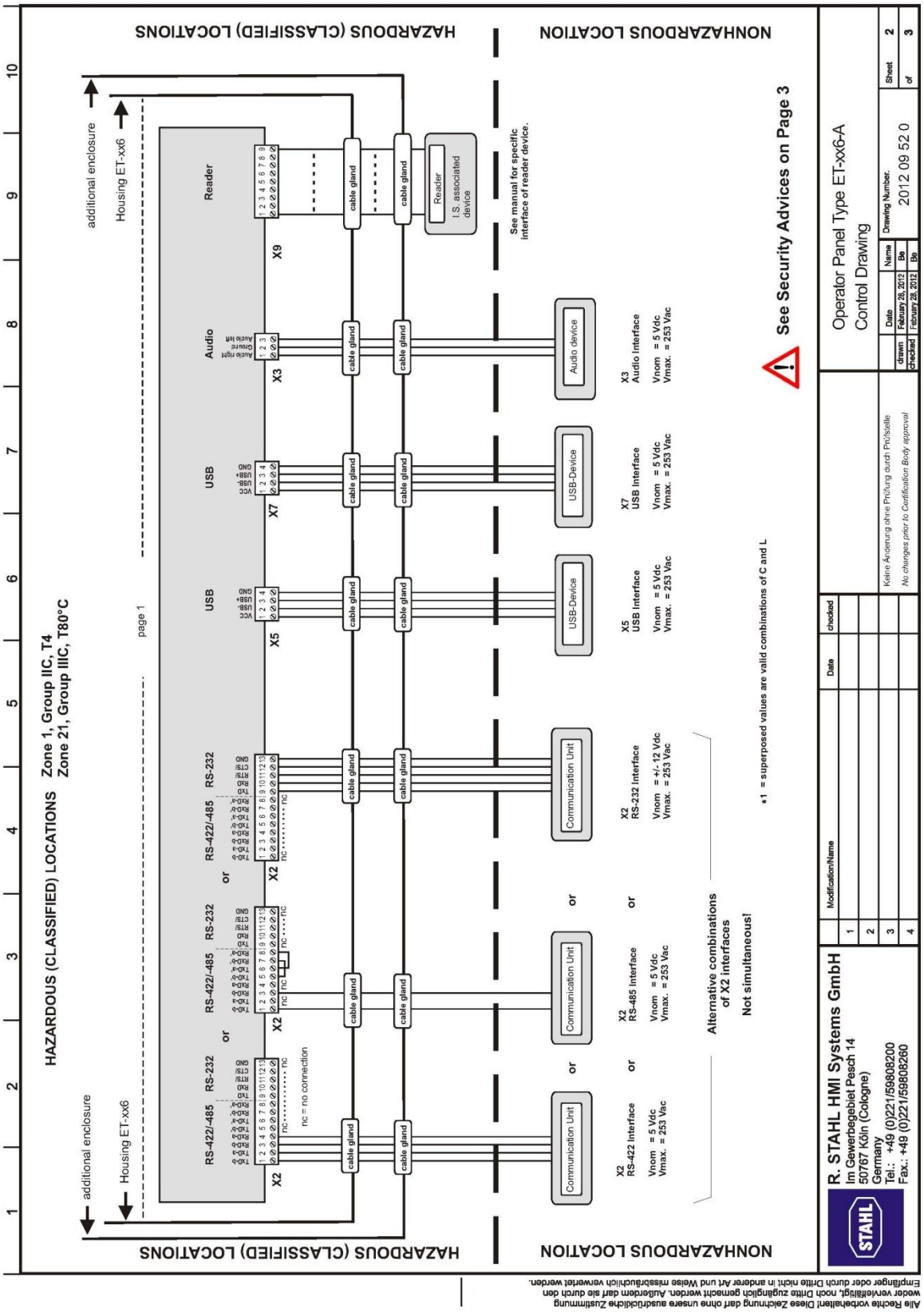
Do you want to continue this operation ?



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 CSA Control Drawing




HAZARDOUS (CLASSIFIED) LOCATIONS
Zone 1, Group IIC, T4
Zone 21, Group IIIC, T80°C
NONHAZARDOUS LOCATION
additional enclosure
Housing ET-xx6
page 1
Reader
Audio
USB
RS-232
RS-422/-485
Communication Unit
USB-Device
Audio device
Reader
I.S. associated device
cable gland
nc = no connection
Alternative combinations of X2 interfaces
Not simultaneous!
*1 = superposed values are valid combinations of C and L
See Security Advices on Page 3
See manual for specific interface of reader device.
R. STAHL HMI Systems GmbH
Im Gewerbegebiet Pesch 14
50767 Köln (Cologne)
Germany
Tel.: +49 (0)221/59808200
Fax.: +49 (0)221/59808260
Operator Panel Type ET-xx6-A
Control Drawing
Drawing Number.
2012 09 52 0
Sheet 2
of 3
Kleine Änderung ohne Prüfung durch Prüfstelle
No changes prior to Certification Body approval
Alle Rechte vorbehalten! Diese Zeichnung darf ohne unsere ausdrückliche Zustimmung weder vervielfältigt, noch Dritte zugänglich gemacht werden. Außerdem darf sie durch den Empfänger oder durch Dritte nicht in anderer Art und Weise missbräuchlich verwertet werden.

Security Advices

1. No revision to drawing prior to certification body.
2. The Associated Apparatus must be approved by a NRTL.
3. Manufacturer's installation drawing must be followed when installing associated apparatus.
4. Interconnection of equipment apparatus type of protection „I.S." with associated apparatus is allowed when the following is true:

I.S. Equipment		Associated Apparatus
Vmax	≥	Uo
Imax	≥	Io
Pi	≥	Po
Ci + Ccable	≤	Co
Li + Lcable	≤	Lo

WARNING:

- Substitution of components may impair Safety.
- To prevent ignition of flammable or combustible atmospheres disconnect power and wait a minimuum of 60s before servicing.

The ET-/MT-xx6 operator interfaces and connected devices must be integrated in the same system of potential equalization.
As an alternative to this, only devices hat are isolated from earth potential may be connected.

All circuits must be wired as specified in the Canadian Electric Code for installation within Canada.

Calculation of cable length

1.) Determination of maximum possible capacitance of cable:

Cmax = Co - Ci (associated Apparatus)

Determination of maximum possible inductance of cable:

Lmax = Lo - Li (associated Apparatus)

2.) Determination of maximum possible cable length by capacitance and inductance of cable:

length C = $\frac{Cmax}{Ccable}$ (*1)

length L = $\frac{Lmax}{Lcable}$ (*1)

3.) Determination of maximum length of cable:

length C or lenght L, whatever is less.

(*1) when cable parameters are unknown, the following values may be used:

Cable = 60 pF/ft. (200 pF/m)
Lcable = 0.2 µH/ft. (0.66 µH/m)

	Modification/Name	Date	checked
1			
2			
3			
4			

Kleine Änderung ohne Prüfung durch Prüfstelle
No changes prior to Certification Body approval

	Date	Name
drawn	February 28, 2012	Be
checked	February 28, 2012	Be

Operator Panel Type ET-xx6-A
Control Drawing

Drawing Number. 2012 09 52 0

Sheet 3 of 3

R. STAHL HMI Systems GmbH
Im Gewerbegebiet Pesch 14
50767 Köln (Cologne)
Germany
Tel.: +49 (0)221/59808200
Fax.: +49 (0)221/59808260

21 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*	**Bedien- und Beobachtungsgeräte** *Operating and Monitoring Devices* *Consoles de commande et de visualisation*
Typ, *type, type:*	**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 *94/9/EC: ATEX Directive* *94/9/CE: Directive ATEX*	IEC 60079-0:2011 IEC 60079-1:2007 IEC 60079-7:2006 IEC 60079-11:2011	IEC 60079-18: 2009 IEC 60079-28: 2006 IEC 60079-31: 2008
2004/108/EG: EMV-Richtlinie *2004/108/EC: EMC Directive* *2004/108/CE: Directive CEM*	EN 61326-1:2006	

Köln, 09.01.2012
Ort und Datum
Place and date
Lieu et date

J. Düren
Technical Director

W. Bertges
Quality Manager

Datei: CE_produktname_yyyymmdd.docx

Vorlage: F068_EG-Konferklärung-HMI_20110325.docx

22 Release notes

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

Version 03.00.00

- First edition with HW-Rev. 3 SIE
- Including of data cable length in" technical data"
- Including of Windows 7 Ultimate in "note on XP Embedded"

Version 03.00.01

- Text and layout changes
- Changing of "technical data"
- Text of type code adapted
- Inclusion of note to hard disk "usage instead of a flash memory"

Siemens AG
Industry Sector
Postfach 48 48
90327 NÜRNBERG
DEUTSCHLAND