SIEMENS

SIMATIC HMI
Panel PC 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…

Edition 06/2012

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

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
6AV720 0-1**a**bcdx	a = A	Panel PC Ex, Zone 2, 15“	MT-436-TFT-xx-xx-xx
	a = B	Panel PC Ex, Zone 2, 19“	MT-456-TFT-xx-xx-xx
	a = D	Panel PC Ex, Zone 1, 15“	ET-436-TFT-xx-xx-xx
	a = E	Panel PC Ex, Zone 1, 19“	ET-456-TFT-xx-xx-xx
	a = F	Panel PC Ex, Zone 1, 15“ High brightness	ET-436-HB-xx-xx-xx
6AV720 0-1a**b**cdx	b = A	10/100Base-TX	xx-4x6-xx-TX-xx-xx
	b = B	100Base-FX	xx-4x6-xx-FX-xx-xx
6AV720 0-1ab**c**dx	c = 1	4GB	xx-4x6-xx-TX-4GB-xx
	c = 2	16GB	xx-4x6-xx-TX-16GB-xx
	c = 3	60GB	xx-4x6-xx-TX-60GB-xx
	c = 4	120GB	xx-4x6-xx-TX-120GB-xx
6AV720 0-1abc**d**x	d = 1	Windows XPe set 1	xx-4x6-xx-xx-xx-XPe1
	d = 2	Windows XPe set 2	xx-4x6-xx-xx-xx-XPe2
	d = 3	Windows XP Pro MUI	xx-4x6-xx-xx-xx-XPpro
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
- Turkish
- Russian

Windows XPe set 2

- English
- German
- Turkish
- Hebrew (right-to-left layout)
- Arabic (right-to-left layout)
- Chinese (Traditional)
- Chinese (Simplified)
- Japanese
- Korean

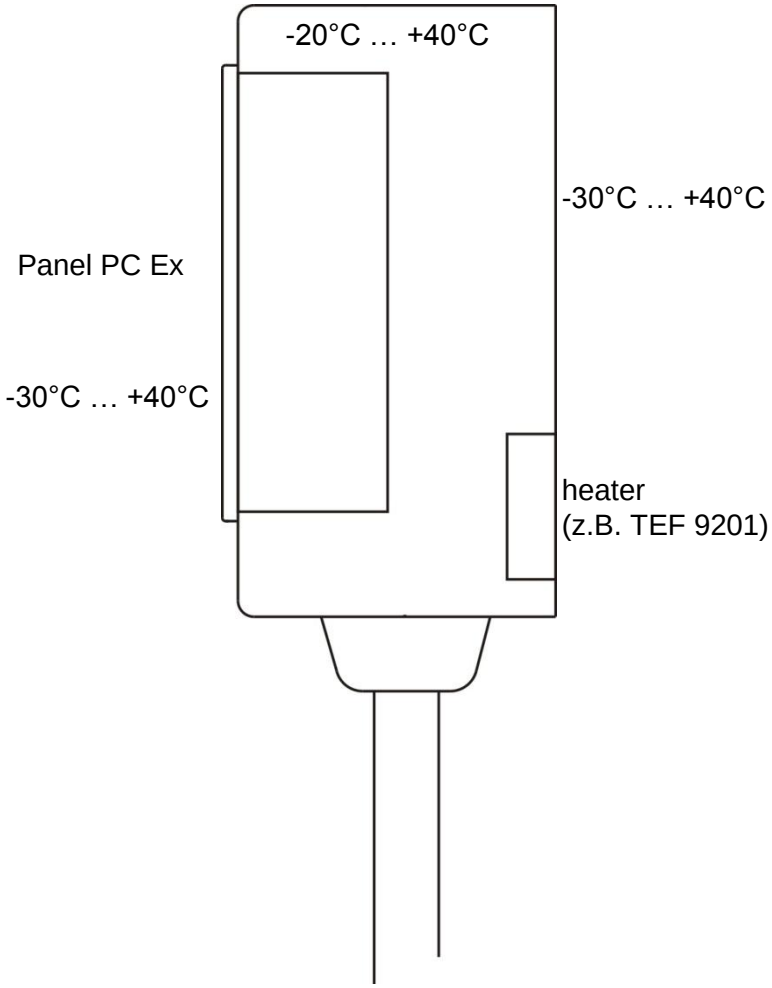
Note on device combinations

If a Panel PC 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 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

Panel PC Ex

HW-Rev. ET-4x6-Tx:	**02.05.23**
HW-Rev. ET-4x6-Fx:	**02.05.13**
Operating instructions version:	**02.05.15**
Issue:	**01.06.2012**

Table of contents

1 Preface

These operating instructions are intended for the safe installation of the Panel PC Ex device series and cover all Ex-relevant aspects. Furthermore, these operating instructions contain all necessary information for assembly and connection of the Panel PC Ex devices.

⚠ 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 Panel PC Ex devices ET-4x6-Tx and ET-4x6-Fx are intelligent display and operating devices for data collection, communication and other applications close to the machine. They are certified according to ATEX directive 94/9/EC for installation in hazardous areas of zones 1, 2, 21 and 22.

The Panel PC Ex device can also be used as thin clients in a remote terminal environment. As a standard, all Panel PC Ex devices are equipped with a touch screen and several interfaces, are based on the powerful Atom technology (up to 1.6 GHz clock frequency), which makes them the most powerful devices on the market. Their modular structure makes changes and maintenance easy.

3 General Information

3.1 Licensing issues

The Panel PC Ex device series are fully pre-installed with the Windows XP Embedded or Windows XP Professional operating systems.
The license sticker is affixed on the back of the Panel PC Ex 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.

3.2 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 Panel PC Ex device 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.

3.3 Backup

☞ We expressly point out that it is the responsibility of the user to generate a backup of the Panel PC Ex device and thus their overall functionality !

☞ We expressly recommend to store such a backup of the Panel PC Ex device on an external storage medium (USB stick (recovery stick), CD, DVD or similar) and/or on the company network !

3.4 Initial start-up

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.

3.5 Switching off and shutting down

☞ The Microsoft Windows operating system stores important data, regardless of the application, in the RAM whilst the system is running. Before the PC or Panel PC Ex device is switched off, this data must be stored on the hard disk.

☞ For the Panel PC Ex device to function safely and without faults it is therefore vitally important that the Panel PC Ex device is shut down properly (see illustration below) and **NOT** simply switched off !

⚠ If this is not done, the existing image of the Panel PC Ex device may become damaged and the device may cease functioning.

Once the data has been stored on the hard disk, Windows informs the user that the PC/the Panel PC Ex device may now be switched off.

⚠ Only switch off the Panel PC Ex device once this message has appeared !

3.5.1 Notes on Windows XP Embedded

When using the Windows XP Embedded operating system together with the Panel PC Ex device series users have the option of write-protection for their C:\ drive.

☞ This is **NOT** the case with the Windows XP Professional operating system !

Recommendation:
For applications that require constant writing to the data carrier the manufacturer recommends you use an external memory such as a USB stick or a network server.

3.6 Installation off Windows XP Professional

If Windows XP Professional will be installed by customers, you will get a message of the MSDTC service after the installation of the Windows XP Professional image. This message is the following:

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 ?

Due to that these MSDTC service is necessary for the SQL Server and the SQL Server is necessary for Siemens WinCC this message **MUST BE** confirmed with **YES** ! Otherwise the MSDTC service will not run.

3.7 Keyboard features

☞ Pressing two keys at once (e.g. F1 + F7) is not supported by the Panel PC Ex 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.

3.8 Mouse features

The right-click emulation at the Panel PC Ex devices is used to simulate a right mouse-click.
As a standard, a short touch of the touch screen is interpreted as a left mouse click. By using the two integrated right-click emulation processes, a right mouse-click can also be simulated.

A right mouse-click emulation is initiated by a circle drawn around the area of touch. This circle will appear after the set interval for the switch delay has elapsed. The right mouse-click is triggered as soon as the circle is closed. Lifting the pen / finger off the screen before then will prevent the right mouse-click from being triggered.

3.9 Software

☞ The Panel PC Ex devices **DO NOT** support the SIMATIC WinAC RTX software. It is therefore **NOT** possible to use this software on the Panel PC Ex devices.

4 Technical details

		
Function / Equipment	**ET-436**	**ET-456**
Display type	TFT Color, 262144 colors	
Display size	38 cm (15")	48 cm (19")
Resolution	XGA 1024 x 768 Pixel	SXGA 1280 x 1024 Pixel
Display	Touch Screen on glass	
Touch Screen	8-wire analogue resistive	
Lighting	CFL backlight	
Service life of backlight at 25°C	50,000h	
Brightness	250 cd/m² (optional 600 cd/m²)	300 cd/m²
Keyboard	Polyester membrane on FR4 material; > 1 million actions	
Functional keys Freely assignable / number Soft keys Cursor keys Alphanumeric keys Numeric keys	8 no no no no no	
External keyboard	optional	
Real time clock / Data buffer	Yes (capacitor buffered, maintenance-free) / > 4 days	
Interfaces		
Communication COM1 (COM2 – optional)	RS-232, RS-422, RS-485	
Ethernet	Alternatively Tx or Fx	
Copper (Tx)	10/100BaseTx, 10/100 Mbit, increased safty (Ex-e)	
Optical fiber (Fx)	100BaseFx, 100 Mbit, inherently safe (Ex op is)	
Cable type optical fiber	Multimode optical fiber cable with 62.5 µm core diameter and 125 µm outer diameter	
USB	2x Ex-e and 2x Ex-i	
PS/2	For external I.S. keyboard (optional)	
Processor	Atom up to 1.6 GHz	
Main memory [GB] Data memory [GB]	1 4 or 16	
Data memory type	Compact-Flash card (Silicon Drive)	
Memory extension (optional)	Hard disc Exicom-SHD-xxx 60 GB or 120 GB	
Operating system	Windows XP Embedded Windows XP Professional	
Global Language support	Via Multi-Language-Interface from Windows XP embedded (25 languages)	
Power supply	24 VDC (20.4 up to 28.8 VDC)	
Power consumption [A]	2.4	2.6
Connections	Via plug-in screw terminals, 2.5 mm^2 green	
Housing	Stainless steel	
Front plate	Aluminum with polyester membrane, touch and safety glass	
Protection type	IP66 (according to EN 60529)	
Temperature range		
Cold start temperature	-10...+50°C **	
During operation	-20...+50°C **	
Operating with heater *	-30...+50°C **	
Operating with heater *, housing insulation and front cover	-40...+50°C **	
Storage temperature	-20...+60°C	
* Comment	The used heater must be construed in the way, that inside of the enclosure of the operator interface the temperature will **NOT** fall below -20°C (-30°C only front plate) !	
** Comment	For devices with ATOM processor +55 °C at a maximum of 6 hours (not for permanent operation) !	
Relative humidity	90% at 40 °C, without condensation	

Vibration		
Operation	3 bis 22Hz: 1mm 22 bis 500Hz: 9,8m/s^2 = 1g	
Transport	3 bis 9Hz: 3,5mm 9 bis 500Hz: 9.8m/s^2 = 1g	
Shock loading		
Operation	150m/s^2 = ca. 15g / 11ms	
Transport	250m/s^2 = ca. 25g / 6ms	
Dimensions [mm]		
Front (w x h)	440 x 340	535 x 425
Cut-out (w x h) (+/- 0.5)	427.5 x 327.5	522.5 x 412.5
Mounting depth	165	
Wall thickness	8	
Weight [kg]		
Operator interface	14.70	22.50
Fixing frame	0.7	0.85

5 Conformity to standards

The Panel PC Ex devices complies with the following standards and directives:

Standard **Directive 94/9/EC** **5th Supplement**	**Classification**
EN 60079-0 : 2006	General requirements
EN 60079-1 : 2007	Flameproof enclosures "d"
EN 60079-7 : 2007	Increased safety "e"
EN 60079-11 : 2007	Intrinsic safety "i"
EN 60079-18 : 2004	Encapsulation "m"
EN 60079-28 : 2007	Optical radiation
EN 61241-0 : 2006	General requirements (dust)
EN 61241-1 : 2004	Protection by enclosures "tD" (dust)
Electromagnetic compatibility	
Directive 2004/108/EC	
EN 61000-6-2 (2005)	Immunity
EN 61000-6-4 (2007)	Emission

6 Certifications

The Panel PC Ex devices have been approved for the following scopes:

By ATEX directive 94/9/EC
for installation in zones 1, 2, 21 und 22
DNV (Det Norske Veritas)
GOST-R (Russian certification)
UL Inmetro (Brazilian certification)
CNEX (Nanyang Explosion Protected Electrical Apparatus Research Institute – Chinese certification)
CKT (CAA JSC The National Center of Expertise and Certification Almaty Branch – Kazakh certification)
UL (Underwriters Laboratories)

6.1 ATEX

The ATEX certification is listed below the following number:

Certificate number:	TÜV 05 ATEX 7176 X

6.2 DNV

The DNV certification is listed below the following numbers:

Certificate number:	A-11822
File number:	899.60
Job Id:	262.1-001689-3

6.3 GOST-R

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

Certificate number:	РОСС DE.ГБ04.В01280

6.4 UL INMETRO

The UL INMETRO certification is listed below the following number:

Certificate number:	06/UL-BRCR-0001X

6.5 CNEX

The CNEX certification is listed below the following number:

Certificate number:	CNEx10. 1832X

6.6 CKT

The CKT certification is listed below the following numbers:

Certificate number:	KCC No 1018112 KZ.0.02.0317 KZ.7500317.01.01.14106

6.7 UL

The UL certification is listed below the following number:

UL File Number: E202379

7 Product identification

Manufacturer	R. STAHL HMI Systems GmbH	
Type code	ET-4x6-Tx and ET-4x6-Fx	
CE classification:	CE 0158	
Testing authority and certificate number:	TÜV 05 ATEX 7176 X	
Ex-classification:		
ATEX-directive 94/9/EC		II 2 (2) G Ex d e mb ib [ib] [op is] IIC T4 II 2 D Ex tD A21 IP65 T90°C
GOST-R		2Exdemib[ib]sIICT4X DIP A21 TA90°C, IP65
UL INMETRO		BR-Ex d e mb ib [ib] IIC T4
CNEX		Exdembib[ib]IICT4 DIP A21 TA, T90°C
UL		Class I, Div. 2, Groups A, B, C, D Class II, Div. 2, Groups F, G Class III, hazardous locations Class I, Zone 2, Group IIC Temperature classification T4, enclosure type 1

8 Power supply

8.1 Operator interfaces

Power supply:	24.0 VDC (min. 20.4 VDC; max. 28.8 VDC)
Power consumption:	max. 2.6 A

9 Permitted maximum values

9.1 External, non-intrinsically safe circuits

Input voltage (X1):

Rated voltage	24 VDC (+20% / -15%)
Power consumption for U_{rated}	2.4 A max
Max. operating 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	

RS-422/-232 COM 2 (X3):

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

Ethernet copper (X11):

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

9.2 External inherently safe optical interface

Ethernet optical fiber (X10):

Wavelength	1350 nm
Radiant power	≤ 35 mW

9.3 External intrinsically safe circuits

USB-0 (X4):

The maximum values for group IIC are:

U_i	=	-	V		U_o	=	5.9	V			
I_i	=	-	mA		I_o	=	1.02	A			
P_i	=	-	mW		P_o	=	6.02	W			
C_i	=	0	µF		C_o	=	8	13	30	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	=	1.02	A			
P_i	=	-	mW		P_o	=	6.02	W			
C_i	=	0	µF		C_o	=	14	26	50	89	µF
L_i	=	0	mH		L_o	=	0.1	0.05	0.02	0.01	mH

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	=	1.02	A			
P_i	=	-	mW		P_o	=	6.02	W			
C_i	=	0	µF		C_o	=	8	13	30	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	=	1.02	A			
P_i	=	-	mW		P_o	=	6.02	W			
C_i	=	0	µF		C_o	=	14	26	50	89	µF
L_i	=	0	mH		L_o	=	0.1	0.05	0.02	0.01	mH

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

Reader (X8) +Uint 1 (power supply circuit, X8.0):

The maximum values for group IIC are:

U_i	=	-	V		U_o	=	10.4	V
I_i	=	-	mA		I_o	=	220	mA
P_i	=	-	mW		P_o	=	2.29	W
C_i	=	-	µF		C_o	=	2.41	µF
L_i	=	-	mH		L_o	=	0.02	mH

The maximum values for group IIB are:

U_i	=	-	V		U_o	=	10.4	V
I_i	=	-	mA		I_o	=	220	mA
P_i	=	-	mW		P_o	=	2.29	W
C_i	=	-	µF		C_o	=	12	µF
L_i	=	-	mH		L_o	=	50	µH

PS2 interface (X9):

Connection for keyboard

The maximum values for group IIC are:

U_i	=	-	V		U_o	=	5.9	V	
I_i	=	-	mA		I_o	=	200	mA	
P_i	=	-	mW		P_o	=	1.18	W	
C_i	=	14	µF		C_o	=	19	29	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	=	5.9	V		
I_i	=	-	mA		I_o	=	200	mA		
P_i	=	-	mW		P_o	=	1.18	W		
C_i	=	14	µF		C_o	=	13	23	46	86	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.

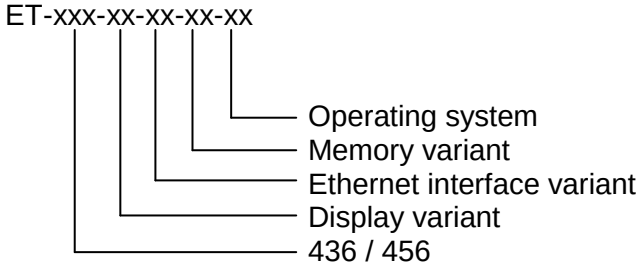
☞ Please note !

- The terminal name for the keyboard as listed on the TÜV 05 ATEX 7176 X EC-type examination certificate is wrong !
  "X7" is incorrect, the correct terminal name is X9 !

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

10 Type code

Basic device:



Device designation	Description
	Device with
ET-436-xx-xx-xx-xx	15" Display
ET-456-xx-xx-xx-xx	19" Display
ET-xxx-TFT-xx-xx-xx	TFT Display (Standard)
ET-436-HB-xx-xx-xx	High Brightness Display 600 cd/m² (ET-436 only)
ET-xxx-xx-Fx-xx-xx	Optical fiber 100BaseFx (Ex op is) interface
ET-xxx-xx-Tx-xx-xx	Copper 10/100BaseTx Ethernet interface (Ex-e)
ET-xxx-xx-xx-4GB-xx	4 GB CF memory card
ET-xxx-xx-xx-16GB-xx	16 GB CF memory card
ET-xxx-xx-xx-60GB-xx	60 GB hard disk
ET-xxx-xx-xx-120GB-xx	120 GB hard disk
ET-xxx-xx-xx-xx-XPe1	Operating system Windows XP Embedded, language set 1
ET-xxx-xx-xx-xx-XPe2	Operating system Windows XP Embedded, language set 2
ET-xxx-xx-xx-xx-XPpro	Operating system Windows XP Professional
ET-4x6-xx-UL	Device with UL certification (May **ONLY** be used in ATEX areas with cable glands instead of Conduit Hubs !) *

* 🕮 See note in section "UL certification" !

11 Safety Advice

This chapter is a summary of the key safety measures. The summary is supplementary to existing rules which staff also have to study.
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.

11.1 Installation and operation

Please note the following when installing and operating the device:

- Only Panel PC Ex devices with UL certification may be installed and operated in areas covered by the NEC (see chapter "UL certification") !
  In areas covered by ATEX, this device may **ONLY** be installed and operated if the two Conduit Hub connections have been replaced by conventional cable glands !
- During assembly and operation of the Panel PC Ex device electrostatic surface charging must not exceed that caused by manual rubbing.
- The national regulations for installation and assembly apply (e.g. EN 60079-14).
- The Panel PC Ex devices may be installed in zones 1, 2, 21 or 22.
- The intrinsically safe circuits must be installed according to applicable regulations.
- The Panel PC Ex device must only be switched on when it is closed.
- When installed in zones 1, 2, 21 and 22, intrinsically safe devices suitable for zones 1, 2, 21 and 22 may be connected to the intrinsically safe power supply circuits.
- 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.
- Interconnecting several active devices in an intrinsically safe circuit may result in different safe maximum values. This could compromise intrinsic safety !
- After switching the Panel PC Ex 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 must also be switched off !
- 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 Panel PC Ex devices for its intended purpose only (see "Function").
Incorrect or unauthorized use and non-compliance with the instructions in this manual will void any warranty on our part.
No changes may be made to the Panel PC Ex device or its components that compromise explosion protection !
The Panel PC Ex device may only be installed and operated in an undamaged condition !

11.2 Special conditions

- The housing of the Panel PC Ex device must be protected against prolonged UV radiation.
- The Panel PC Ex device and any connected equipment must be incorporated into the same potential equalization system. An alternative would be to connect only devices that are safely isolated from earth potential.

11.3 Installation via USB interfaces

Installation of software on the Panel PC Ex devices:

11.3.1 Software installation using a USB Flash-Drive

You may only use USB Flash-Drives permitted for use by the manufacturer. These USB Flash-Drives are below referred to as "USB(i) Drives". Data may only be copied onto the Panel PC Ex devices and software may only be installed with these USB Drives.

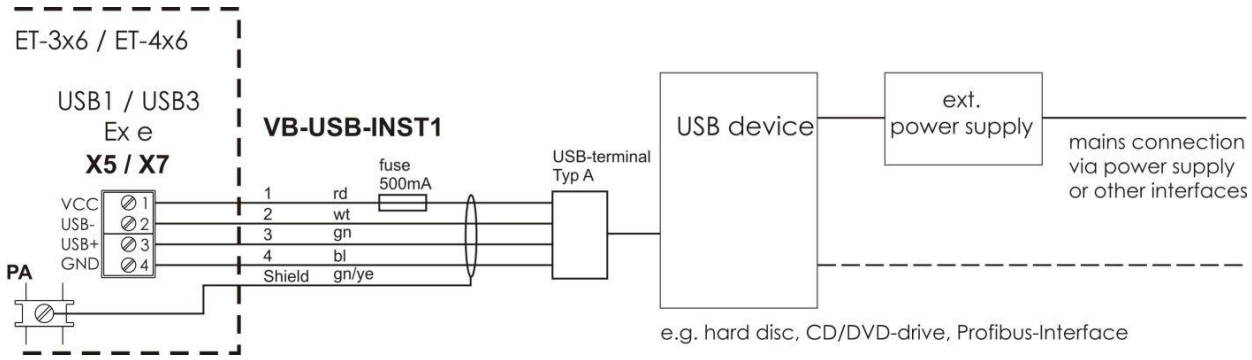
- In an industrial area, a permitted, non-explosion proof USB Flash-Drive may be connected to the I.S. USB interface of the Panel PC Ex device after having been connected to any PC.
- USB(i) drives from the manufacturer may also be connected to non-intrinsically safe interfaces and can be used with the Panel PC Ex devices when connected to such interfaces.

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

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 (hard disk, CD/DVD with power supply)

11.4 USB interfaces

The Panel PC Ex devices 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 Panel PC Ex interfaces can be found in Chapter 15.2, connections.

11.4.1 I.S. USB interfaces USB0, USB2

The USB0 and USB2 I.S. USB 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 Panel PC Ex devices, the manufacturer can no longer guarantee the intrinsic safety of these devices !

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 then be supplied externally.

- The interrupting capacity of the fuses of the internal USB power supplies is 1.5 kA.
- The tripping characteristic of the fuses is T (time-lag, type T fuse).
- The USB accessory parts are fitted inside an appropriate housing.

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

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

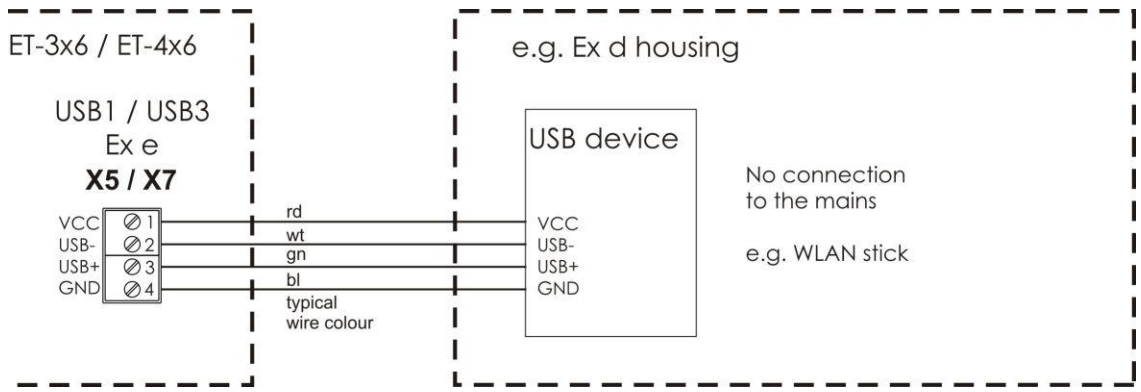
Flexible cables with a cross section of 0.2 – 2.5 mm² can be used.

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.

11.4.2.2.1.1 Type 1 connection version

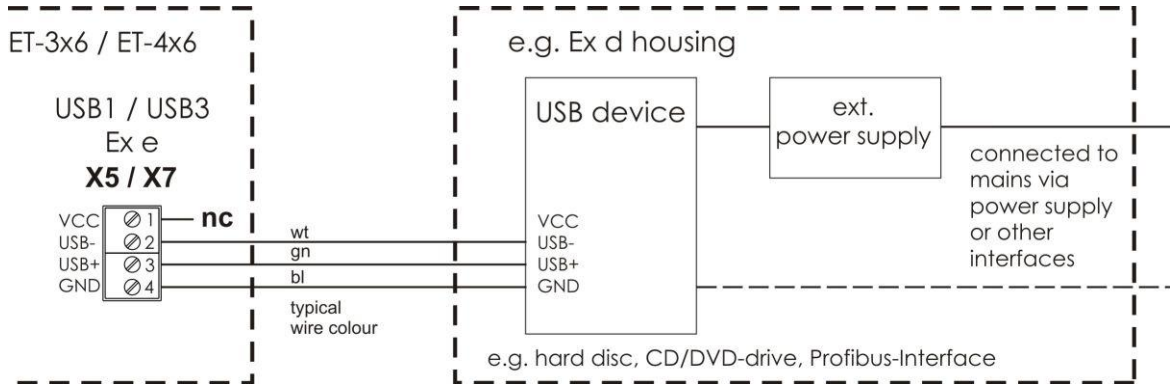
- The USB device does not require an external power supply as it uses less than 500 mA.
- No connection to the mains via other interfaces, e.g. WLAN stick.



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

11.4.2.2.2 Type 2 connection version

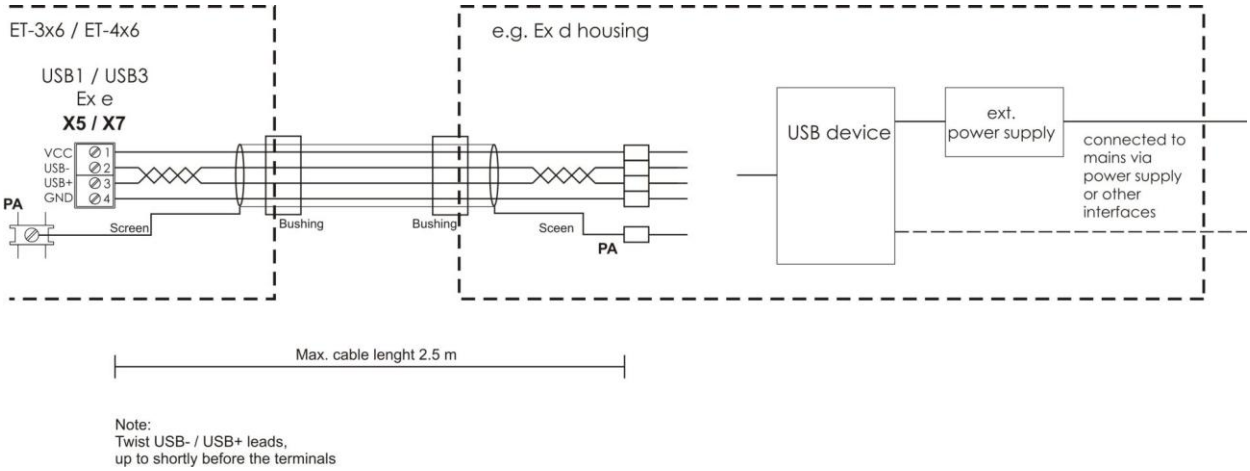
- The USB device does require an external power supply to function because it uses over 500 mA, e.g. hard disks, CD/DVD drives.
- The USB device is connected to the mains via other interfaces, e.g. USB/serial converter, USB-Profibus interface.



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 Hard disk Exicom-SHD-xxx

The optional hard disk Exicom-SHD-xxx can be mounted inside of the Panel PC Ex devices.

☞ Please specify when ordering if and which hard disk version you like to use.

Separate operating instructions for the hard disk Exicom-SHD-xxx are available.

12.1 Installation of hard disk

The installation of the hard disk Exicom-SHD-xxx is done during the manufacturing of the Panel PC Ex devices. Any subsequent installation of the hard disk Exicom-SHD-xxx into the Panel PC Ex devices is **NOT** possible !

12.2 Warnings

⚠ The Panel PC Ex devices may **NOT BE OPERATED WITHOUT HARD DISK** or **DISCONNECTED** SATA-connection cabel !
Therefor is a warning label at the SATA-connection cabel of the hard disk Exicom-SHD-xxx.

⚠ It is **NOT ALLOWED TO DISCONNECT** the SATA- and the power supply connection of the hard disk Exicom-SHD-xxx from the Panel PC Ex device **WHILE ENERGIZED** !
Also therefor is a warning label at the hard disk Exicom-SHD-xxx.

12.3 Changing of hard disk

The hard disk Exicom-SHD-xxx may be exchanged. This exchange is only allowed by qualified and authorized staff with knowledge in explosion protection !

⚠ Please note the instructions and advices for the exchange of the hard disk Exicom-SHD-xxx written in the operating instructions anyway !

13 Installation

13.1 General information

Electrical installations are subject to the relevant regulations for installation and operation, such as RL 1999/92/EC, RL 94/9/EC und IEC/EN 60079-14.

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

13.2 Panel PC Ex

- The Panel PC Ex devices may be installed in zones 1, 2, 21 or 22. The intrinsically safe circuits must be installed according to applicable regulations.
- Intrinsically safe and non intrinsically safe conducting connection parts must be installed with a minimum distance of 50 mm.
- Operators must ensure compliance with the EC type examination certificates before installation. Users must adhere to any “special conditions” therein. Also of importance are the maximum electrical operating values specified therein.
- When connecting the Panel PC Ex 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 earth/ground (PA) connector at the back of the Panel PC Ex device housing must be connected to the equipotential bonding conductor of the hazardous area. To prevent equalizing currents flowing to the earth/ground (PA) system of the Panel PC Ex device it is necessary to safely isolate any connected devices from earth or to integrate them into the earth/ground (PA) system of the Panel PC Ex device.
- The PA connector of the Panel PC Ex device, located at the back of the housing, is internally connected to the GND supply cable (X1, pins 3 and 4).
- 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.

14 Assembly and disassembly

14.1 General information

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

14.2 Cut-out

Make a cut-out with the following dimensions:

Panel PC Ex device	Width	Height	Depth of cut-out	Material thickness
ET-436	427.5 ± 0.5 mm	327.5 ± 0.5 mm	165 mm	up to 8 mm
ET-456	522.5 ± 0.5 mm	412.5 ± 0.5 mm	165 mm	up to 8 mm

15 Operation

15.1 General information

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

- the Panel PC Ex device has been properly installed according to instructions,
- the Panel PC Ex device is undamaged,
- the terminal compartment is clean,
- all screws are tightened fast,
- the screws on the cable inlets are tightened fast,
- before switching the Panel PC Ex device on, its external bonding terminal (PA-connector) is properly connected to the equipotential bonding system at its place of use,
- the cover of the terminal compartment is completely closed.

15.2 Connections

Terminal	Pin	Definition	Connection
X1	1	Power supply device +24 VDC	Power supply of the Panel PC Ex device
	2	Power supply device +24 VDC	
	3	Power supply device GND	
	4	Power supply 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	TxD-b	Serial COM2 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 COM2 interface RS-232
	10	RxD	
	11	RTS/	
	12	CTS/	
	13	GND	
X4		USB interface, connection type A	USB0 I.S.
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
	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 also note that the COM interfaces may only be physically connected once !
The interconnection is 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 fiber connection (X10) **or** for a copper connection (X11), depending on the version ordered !
For the optical fiber connection you have to use an multimode optical fiber cable with 62.5 µm core diameter and 125 µm outer diameter.
Cables connected to the Ethernet terminals (X11) must have a minimum cross section of 0.2 mm² (metrically) (AWG 24).
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.

15.2.1 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	OFF	COM2 RS-422/485	No bus terminator resistor set
	ON		Bus terminator resistor TxD line
S4-2	OFF		No bus terminator resistor set
	ON		Bus terminator resistor RxD line

16 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 !

Because the transmission of the Panel PC Ex devices remains reliable and stable over long periods of time, regular adjustments are not required.
The following general principles apply for repairs *, purchase of spare parts * or exchange of parts *, where these may be carried out 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 17 Troubleshooting !

The Panel PC Ex devices have no batteries and are thus maintenance-free during their entire life cycle.

If Panel PC Ex devices are in storage for longer than six months they should be operated for at least an hour at room temperature (20°C ± 5°C) every six months.

System maintenance should focus on the following:

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

16.1 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.

16.2 Time function

A capacitor ensures the continuation of the time function while the Panel PC Ex devices are switched off. The capacitor can keep up the time function for about five days while the Panel PC Ex device is switched off. If the Panel PC Ex device is switched back on later than after an interval of five days, the time has to be reset/synchronized manually or via another, connected system/server.

17 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 have been authorized by the manufacturer.

18 Disposal

Disposal of packaging and used parts is subject to regulations valid in whichever country the Panel PC Ex device has been installed.
The disposal of Panel PC Ex 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, Panel PC Ex devices are listed in category 9 (monitoring and control instruments).
We shall take back our devices according to our General Terms and Conditions.

18.1.1 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.

18.1.2 China ROHS labeling

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

For our Panel PC Ex 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))**	**Poly-brominated biphenyls (PBB)**	**Poly-brominated 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.

19 Front panel resistance

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

19.1 Design

Structure:

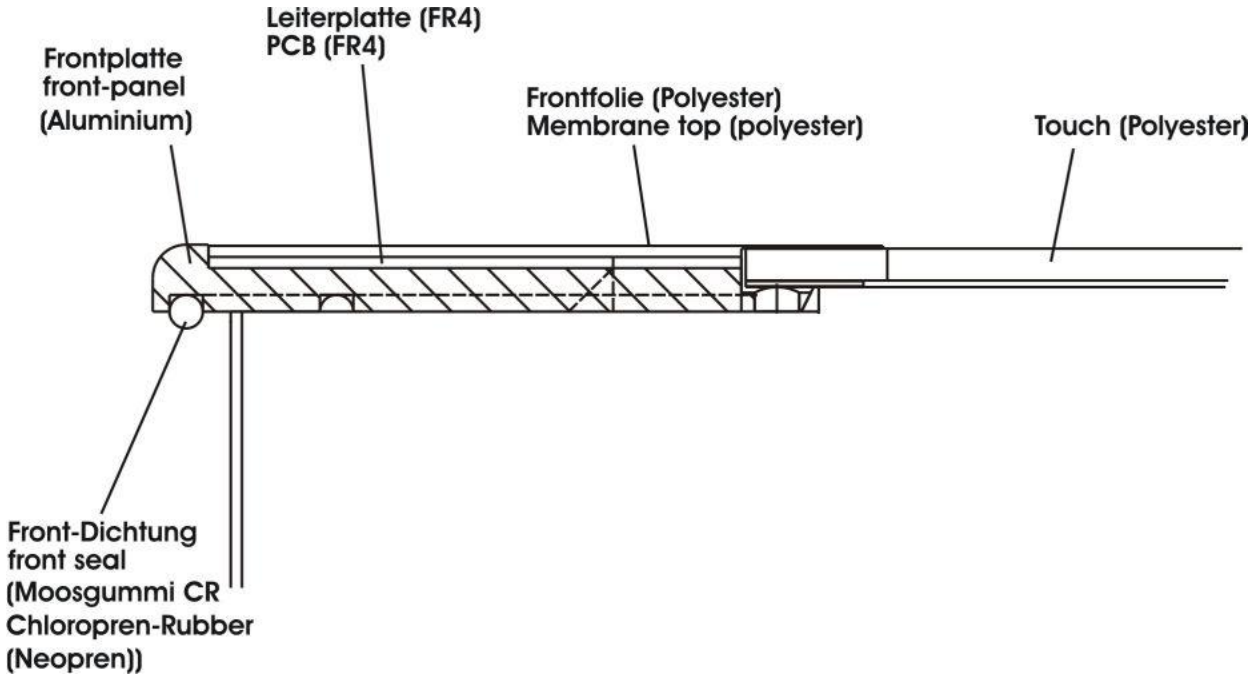
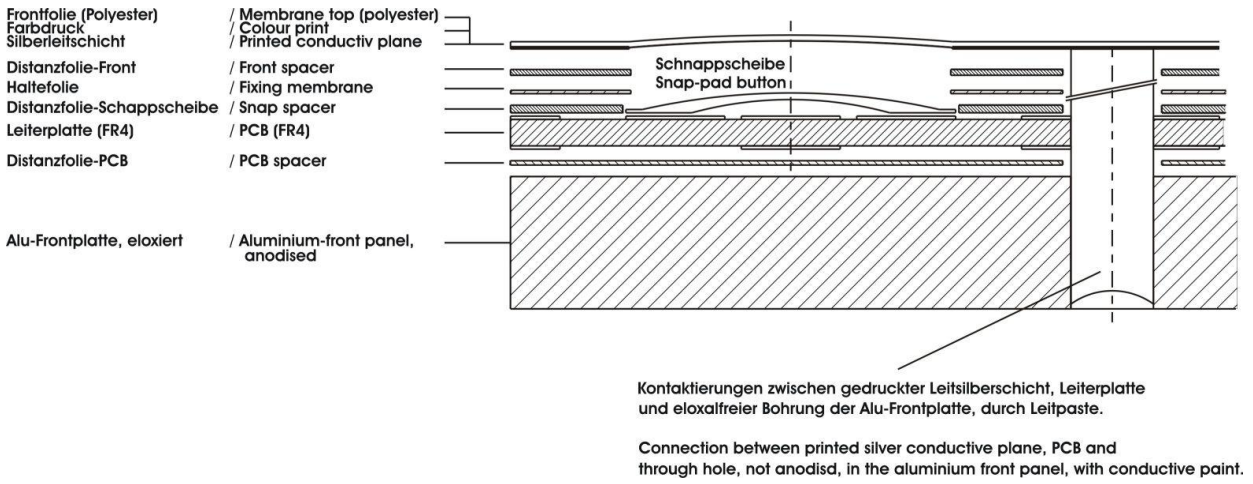


Diagram:



19.2 Materials

Application	Material
Membrane top	Polyester
Touch screen	Polyester / safety glass
PCB	FR4
Front plate	Aluminum
Housing	Stainless steel
Front panel seal	Chloropren-Rubber (Neopren)

19.3 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.

19.3.1 Entire device

☞ The chemical substances and resistances are the lowest common denominator of all materials used in the Panel PC Ex 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	Ethanol Methanol Glycerin	DIN 42115 DIN 53461
	Amines	Ammonia <2%	
	Ketones	Acetone	
	Diluted acids	Acetic acid <5%	
	Diluted alkaloids (bases)	Caustic soda <2%	
	Household chemicals	Detergents	
Property	**Resistance**		**Test method**
Mechanical • Service life after imprint • MIT folding resistance	5 million touches >20000 folding operations		Autotype method ASTM D2176
Thermal • Dimensional • Dimension stability	Max. 0.2% at 120° longitudinal Typically 0.1%		Autotype method

☞ Polyester films have a limited resistance against UV light and should therefore not be exposed to sunlight for longer periods.

19.3.2 Membrane top

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)	
	Aliphatic hydrocarbons		
	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 III 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 • MIT folding resistance	5 million touches >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

☞ Polyester films have a limited resistance against UV light and should therefore not be exposed to sunlight for longer periods.

19.3.3 Display / Touch screen

Polyester:

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)

19.3.4 Front panel seal

Property	Chemical material class / group	Chemical substances	Test method
Chemical • Chemical resistance	Alcohols	Methanol Glycerol	DIN 53461
	Amines	Ammonia	
	Ketones	Acetone	
	Diluted acids	Formic acid Acetic acid Hydrochloric acid Nitric acid <10%	
	Diluted alkaloids (bases)	Sodium hydroxide	
	Household chemicals	Detergents	
Property	**Resistance**		**Test method**
Mechanical	(No information available at present)		
Thermal • Installation area	-30 to 100°C		DIN 53461

20 UL Certification

20.1 General information

Only Panel PC Ex devices with the UL certification may be installed and operated in countries covered by the NEC.

☞ Panel PC Ex devices for installation in countries covered by the NEC have separate ordering numbers (see type code). Please state these when ordering.

⚠ In areas covered by ATEX, an Panel PC Ex device with UL certification may **ONLY** be installed and operated if the two Conduit Hub connections have been replaced by conventional cable glands !
To this end, the delivery of Panel PC Ex devices with UL certification includes two cable glands.

The Panel PC Ex devices with the UL certification may be installed in the following hazardous areas:

- Class I, Division 2, Groups A, B, C, D
- Class II, Division 2, Groups F and G
- Class III, hazardous locations
- Class I, Zone 2, Group IIC
- Temperature classification T4, enclosure type 1

as defined by the NEC, or in non-hazardous areas.

☞ Before installation and operation of the Panel PC Ex users **MUST** refer to Control Drawing No. 2010 11 7000 0 !

20.2 Safety Advice

Before switching on the Panel PC Ex devices and associated equipment, its external equipotential bonding terminal must be properly connected to the equipotential bonding system at its place of installation.
As an alternative, you may connect devices to the Panel PC Ex that have been safely disconnected from the earth potential.

20.2.1 Caution

⚠ Non-observance of this safety advice may lead to an explosion !

- The substitution of any component of the Panel PC Ex devices may affect safety in hazardous areas and is therefore **not** permitted.
- Connected equipment must **not** be disconnected from the operator interface when still live, except if the environment is known to be free of ignitable concentrations.

20.3 Permitted maximum values

20.3.1 Electrical

Power supply (X1):

Vnominal	=	24.0 VDC (min. 20.4 VDC; max. 28.8 VDC)
Vmax	=	30 VDC
Imax	=	2.4 A

Interfaces RS-232, RS-422 and RS-485 (X2, X3):

RS-422, RS-485:	Vnom = 5 VDC, Vmax = 253 VAC
RS-232:	Vnom = ±12 VDC, Vmax = 253 VAC

USBi Drive (X4), USB interface (X6)
Entity parameters for nonincendive field wiring:

Voc	=	5.9 V			
Isc	=	1.02 A			
Po	=	6.02 W			
Ca	=	8 µF	13 µF	30 µF	43 µF
La	=	10 µH	5 µH	2 µH	1 µH

The capacitances (Ca) and inductances (La) that are right underneath each other are associated pairs.

USB interfaces (X5, X7):

Vnom	=	5 VDC
Vmax	=	253 VAC

PS2 interface (X9):
Entity parameters for nonincendive field wiring:

Voc	=	5.9 V		
Isc	=	200 mA		
Po	=	1.18 W		
Ca	=	19 µF	29 µF	
La	=	2 µH	1 µH	

The capacitances (Ca) and inductances (La) that are right underneath each other are associated pairs.

LAN optical fibre (X10):

Wavelength	=	1350 nm
Radiant power	≤	35 mW

LAN copper cable (X11):

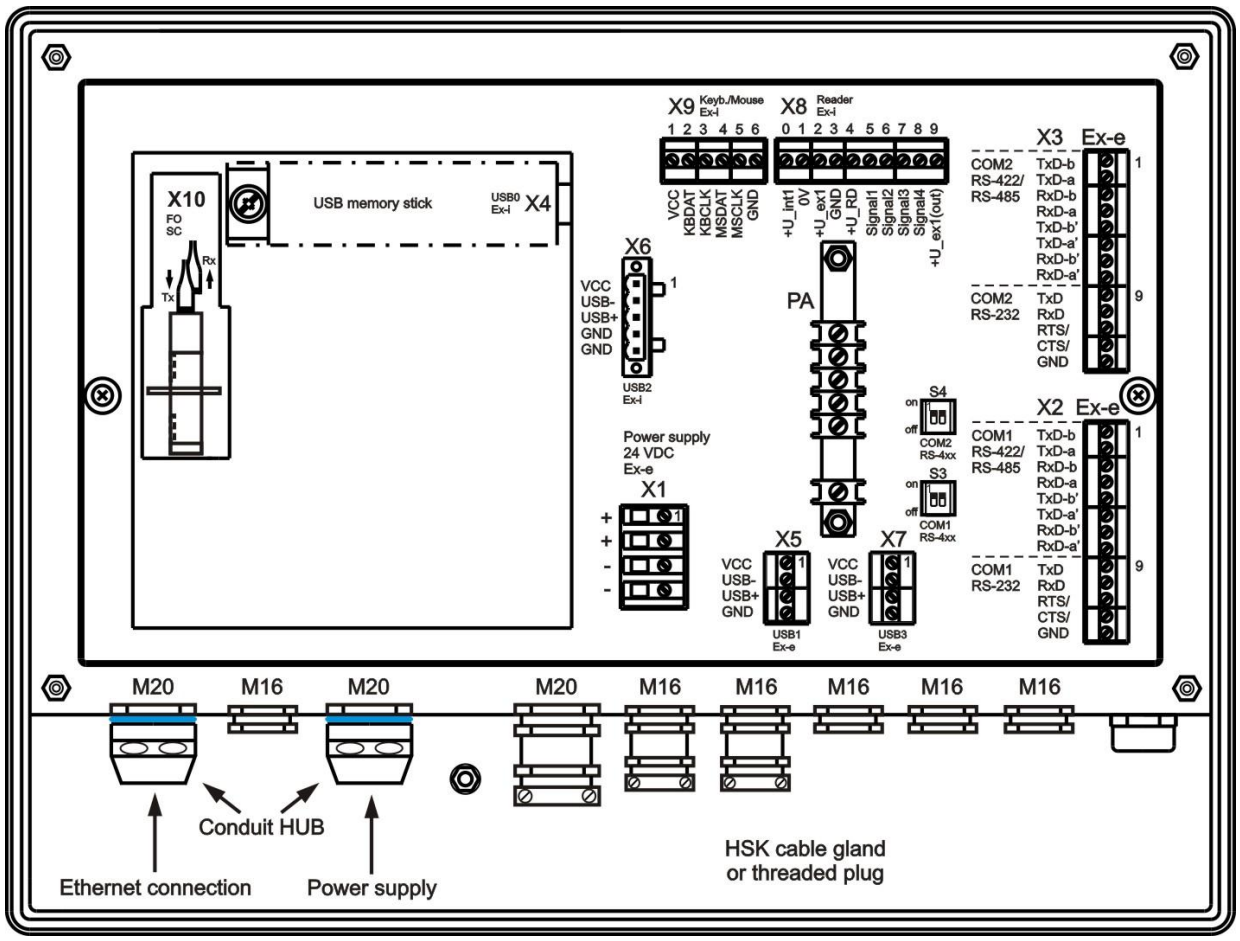
Vnom	=	5 VDC
Pnom	=	100 mW

20.3.2 Temperature range

-20°C up to + 50°C

20.4 Device with UL certification

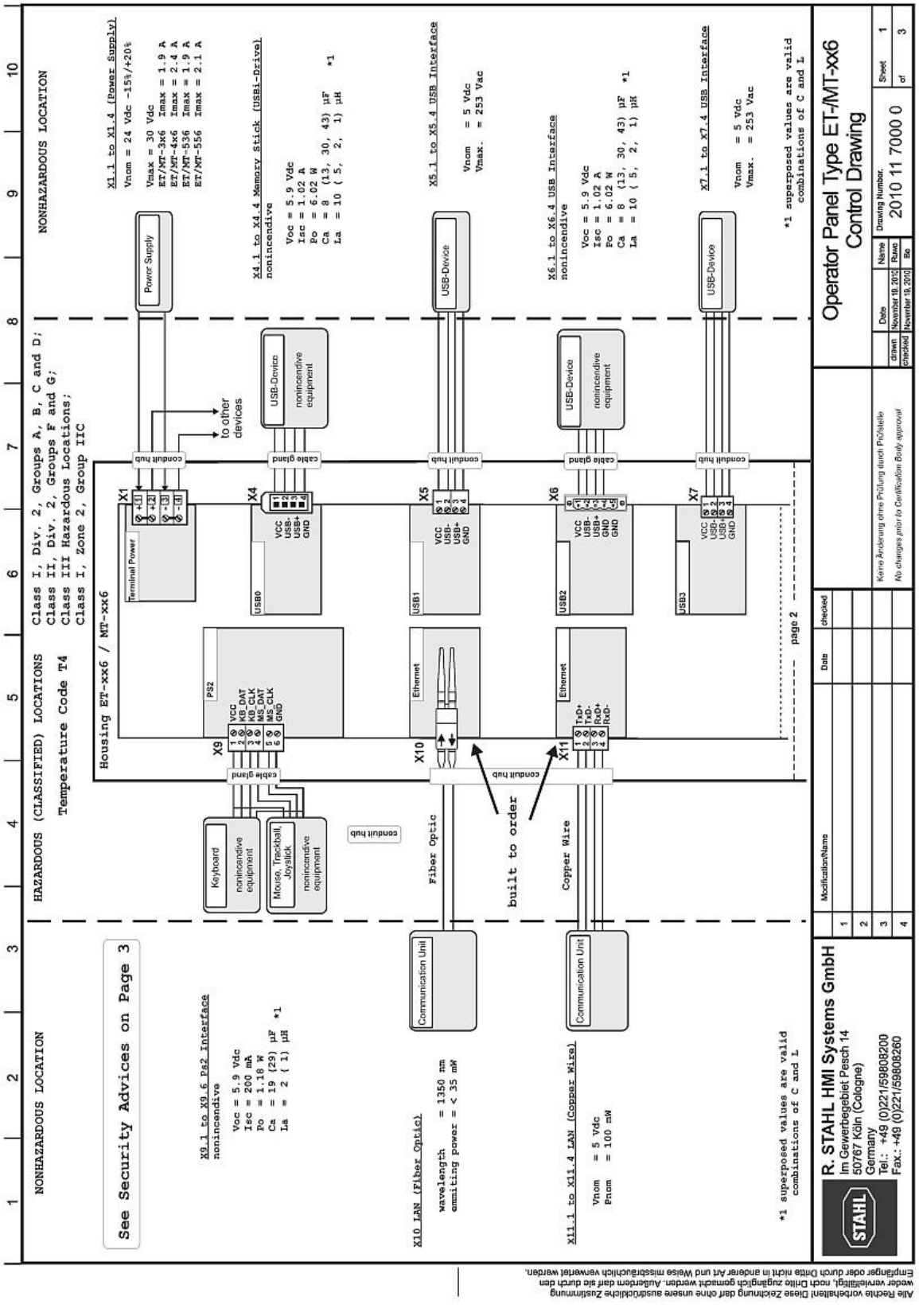
Back view:
Example for placement of cable glands in accordance to UL:

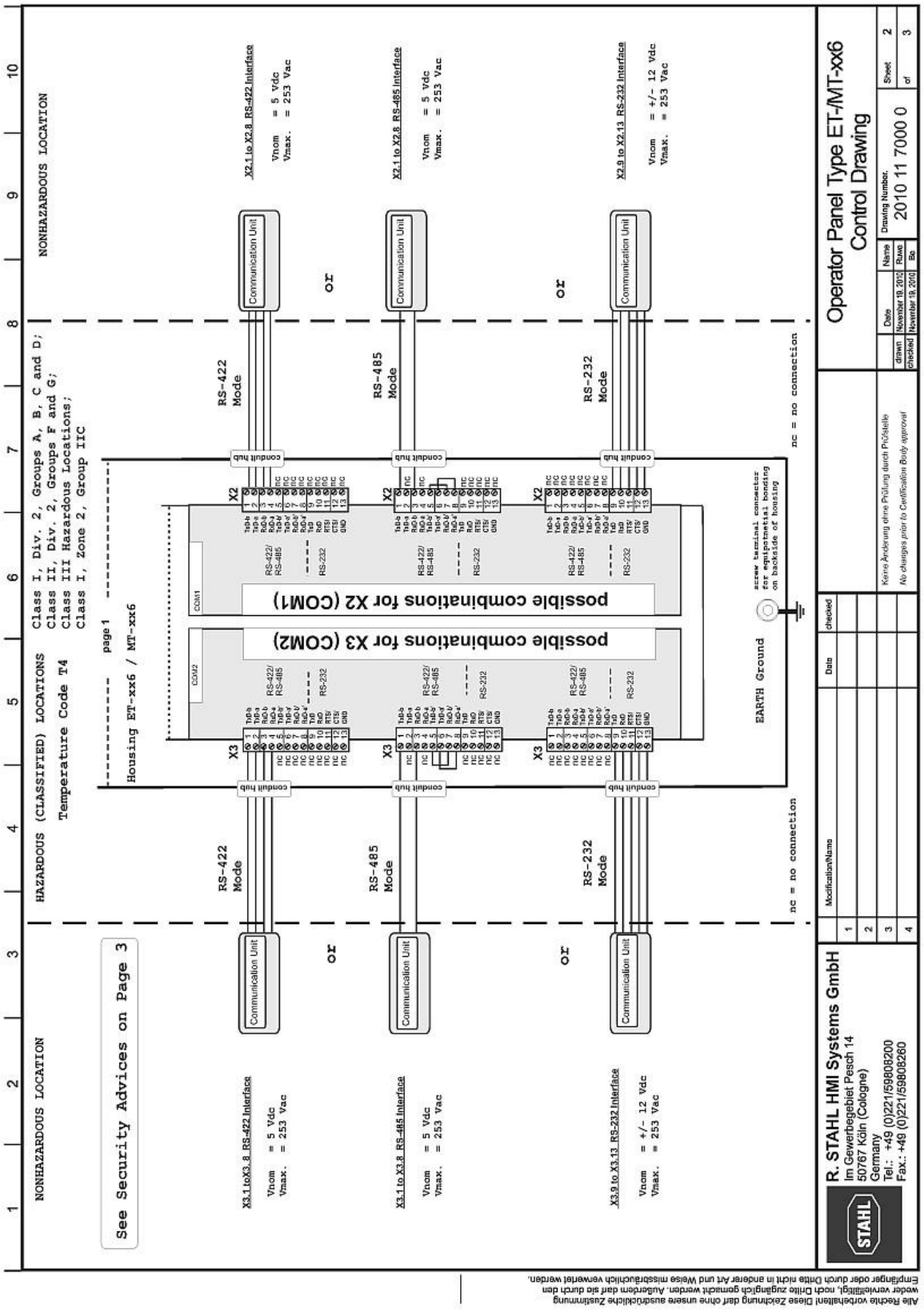


Any cable glands at the Panel PC Ex device that are not required **MUST BE** replaced by threaded plugs so that the opening in the housing is covered.

☞ Please only use the cable glands for the cables indicated in the CONTROL DRAWINGS !

20.5 Control Drawings





Security Advices

1. No revision to drawing prior to certification body.
2. The Associated Apparatus must be UL Approved.
3. Manufacturer's installation drawing must be followed when installing associated apparatus.
4. Interconnection of nonincendive equipment apparatus with associated apparatus is allowed when the following is true:

nonincendive Equipment		Associated Apparatus
Vmax	≥	Voc or Uo
Imax	≥	Isc or Io
Pi	≥	Po
Ci + Ccable	≤	Ca (or Co)
Li + Lcable	≤	La (or 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 using

- Class I, Div. 2 methods as specified in Article 501.10(B);
- Class II, Div. 2 methods as specified in Article 502.10(B);
- Class III, Div. 1 methods as specified in Article 503.10(A);
- Class III, Div. 2 methods as specified in Article 503.10(B) with ref. to Article 503.10(A);

of the National Electric Code NFPA 70 for installation within the United States

Calculation of cable length

1.) Determination of Ccablemax and Lcabelmax:
Ccablemax = Co - Ci(ass.Ap.)

Determination of Lcablemax
Lcablemax = Lo - Li(ass.Ap.)

2.) Determination of cable length C and length L:

$$\text{length C} = \frac{\text{Ccablemax}}{\text{Ccable}} \quad (*1)$$

$$\text{length L} = \frac{\text{Lcablemax}}{\text{Lcable}} \quad (*1)$$

3.) Determination of absolute cablelength:
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)

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

	Modification/Name	Date	checked
1			
2			
3			
4			

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

Operator Panel Type ET-/MT-xx6
Control Drawing

	Date	Name	Drawing Number.	Sheet 3
drawn	November 19, 2010	Ruwe	2010 11 7000 0	of 3
checked	November 19, 2010	Be		

21 Declaration of EC conformity

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

Wir / *We* / Nous

R. STAHL HMI Systems GmbH
Im Gewerbegebiet Pesch 14
D-50767 Köln

erklären in alleiniger Verantwortung dass unser(e) Produkt(e):
declare under our sole responsibility that the product(s):
attestons sous notre responsabilité que le(s) produit(s):

Exicom
ET-306, ET-316, ET-336 -(VA)
ET–406, ET–416, ET-436 (-VA), ET-456 (-VA)
ET–506, ET–516, ET-536 (-VA), ET-556 (-VA)

gekennzeichnet:
marked:
marqué:

II 2 (2) G Ex d e mb ib [ib] [op is] IIC T4
II 2 D Ex tD A21 IP65 T90°C

übereinstimmend ist (sind) mit der (den) folgenden Norm(en) oder normativen Dokumenten:
is (are) in conformity with the following standard(s) or normative documents:
est (sont) conforme aux norme(s) ou aux documents normatifs suivants:

Bestimmung der Richtlinie *Terms of the directive* Prescription de la directive	**Titel und/oder Nr. sowie Ausgabedatum der Norm** *Title and/or No. and date of issue of the standard* Titre et/ou No. ainsi que date d'émission des normes
2004/108/EG: Elektromagnetische Verträglichkeit *2004/108/EC: Electromagnetic compatibility* 2004/108/CE: Compatibilité électromagnétique	EN 61000-6-2:2005 EN 61000-6-4:2007
94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explositionsgefährdeten Bereichen *94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres* 94/9/CE: Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles	EN 60079-0:2006 EN 60079-1:2007 EN 60079-7:2007 EN 60079-11:2007 EN 60079-18:2004 EN 60079-28:2007 EN 61241-0:2006 EN 61241-1:2004
EG-Baumusterprüfbescheinigung Nr., ausgestellt durch benannte Stelle: *EC-Type Examination Certificate No., issued by notified body:* Attestation d'examen CE de type No. exposé par organisme notifié:	**TÜV 05 ATEX 7176 X** TÜV Rheinland Industrie Service GmbH TÜV Rheinland Group Am Grauen Stein 51105 Köln/Cologne Deutschland/Germany/Allemagne

Köln, den 01.04.2010
Ort und Datum
Place and date
lieu et date

Joachim Düren
Technical Director

Werner Bertges
Quality Manager

exicom et-3_-4_-5x6_konf-5n_1.docx

22 Release Notes

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

Version 02.05.15

- Removing of all previous release notes
- Addition of note on device combinations

Siemens AG
Industry Sector
Postfach 48 48
90327 NÜRNBERG
DEUTSCHLAND