



Operating instructions

MT-xx7

**SERIES 400 Panel PC
SERIES 500 Thin Clients
SERIES 600 KVM Systems**

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Specific markings

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

In detail, these are:








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


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1 Preface

These Operating Instructions contain all aspects relevant to explosion protection for the MT-xx7 devices (SERIES 400 Open HMI - Panel PC's, SERIES 500 Remote HMI - Thin Clients and SERIES 600 KVM Systems). They also contain information on the connection and installation (etc.) of these devices.

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

 DOCUMENTATION	Please also note that all certificates of the HMI devices can be found in a separate document (CE_MT-xx7) !
	For more information on the HMIs please also refer to the Manual (available as online manual on www.stahl-hmi.de).

2 Device function

The MT-xx7 HMI devices are explosion-protected equipment for installation in hazardous areas and can be operated in zones 2 and 22 with interfaces for zones 0/1/2 and 20/21/22.

The devices are connected to a communication system via the serial interfaces (RS-232, Ethernet) located in their connection box at the rear. The connection box also contains the USB interfaces for the connection of various peripheral devices. Furthermore, the interfaces for keyboard, mouse, video and audio signals are also located here.

2.1 MT-4x7 (SERIES 400 Panel PC)

The MT-4x7 HMI Panel PCs are intelligent display and operating devices which can run any software and are thus easy to operate.

The devices are fitted with powerful processors and are thus able to process even large applications on-site. The devices have a back-up and recovery system which can be used to save complete images and load them onto new Panel PCs without requiring specific IT skills. The X13 interface is provided for this purpose.

2.2 MT-5x7 (SERIES 500 Thin Client)

The MT-5x7 devices of the 500 SERIES can be integrated into modern networks as Thin Clients or with a KVM box via KVM-over-IP. Digital Ethernet technology is used for the data transfer between KVM box and Remote System.

Up to four MT-5x7 devices can access one KVM box with one software license, thus cost-effectively communicating with several PCs - for example, when monitoring the production process and simultaneously applying Condition Monitoring.

Multi-monitoring with several on-site terminals can as easily be implemented as the application as Thin Client in a server environment with virtual work stations.

2.3 MT-6x7 (SERIES 600 KVM Systems)

The KVM Classic transfer technology is used for the point-to-point connection between a PC and an MT-6x7 device.

There are three versions (DVI1, DVI2 and DVI3) of this transfer technology that have slightly different functionality.

3 Technical Data

Function / Equipment	MT-467 MT-567 MT-667	MT-477 MT-577 MT-677	MT-487 MT-587 MT-687
Display type	TFT Color display 16.7 million colours		
Display size	56 cm (22")	61 cm (24")	61 cm (24"WU)
Resolution in pixels	WSXGA+ 1680 x 1050	Full HD 1920 x 1080	WUXGA 1920 x 1200
Format	16:10	16:9	16:10
Display	Glass		
Touch Screen (optional)	Membrane or glass surface 5-wire analogue resistive		
Backlight	LED background lighting		
Service life (MTBF) of backlight at 20 °C / -4 °F	typically 50,000 h		
Brightness	250 cd/m ²	300 cd/m ²	
Contrast	1000 : 1		
Additional keyboard (optional)	107 keys with integrated trackball / joystick / mouse pad or touch pad		
Power supply	Directly in the integrated connection box		
Connections	via control spring terminals, green flexible cable up to 2.5 mm ² (AWG16) fixed cable up to 4 mm ² (AWG14)		
Voltage supply	24 VDC (20 - 30 VDC) or 100 - 240 VAC, 50 - 60 Hz		
Power consumption [A]	at 24 VDC = max. 3 A at 100 - 240 VAC = max. 1 A		
Power	typically 35 W / max. 150 W (typically 119 BTU / max. 510 BTU)		
Recommended fuses	4 AT		
Max. operating voltage Um	250 VAC		
only for MT-4x7 and MT-5x7			
Real-time clock	Yes		
Data buffer	Lithium battery and capacitor buffered, maintenance-free		
Battery	> 5 years		
Capacitor	at least 4 days		
Interfaces			
Ethernet	Either copper or optical fibre		
Copper (TX)	10/100Base-TX, 10/100 Mbit, (Ex nA) only for MT-6x7 direct connection, Gigabit		
Optical fibre			
(SX)	at MT-4x7 and MT-5x7 1000Base-SX, 1000 Mbit, multi-mode, intrinsically safe (Ex op is)		
(FX) (MM / SM)	only for MT-6x7 (direct connection) 100Base-FX, 100 Mbit, intrinsically safe (Ex op is)		
Cable type			
Optical fibre MM	Multi-mode optical fibre cable (50 µm core cross section and 125 µm external cross section)		
Optical fibre SM	Single mode optical fibre cable (9 µm core cross section and 125 µm external cross section)		
USB	2x Ex ia; 1x Ex nA		
USB	For keyboard and mouse (Ex ia)		
Serial	RS-232, (Ex nA)		
Video in (optional)	FBAS (Ex nA)		
Audio	Line in / out interface (Ex nA) (Line in only for MT-6x7)		
Data cable lengths			
Optical fibre MM	up to 500 m (1,640 ft) via 50/125 µm optical fibre cable, up to 300 m (985 ft) via 62.5/125 µm optical fibre cable		
Optical fibre SM	up to 10,000 m (33,000 ft) via 9/125 µm optical fibre cable		
Copper (TX)	up to 100 m (330 ft) via CAT7 installation cable AWG23		
for DVI1 CAT	up to 140 m (460 ft) via CAT7 installation cable AWG23		
for DVI2 CAT	up to 500 m (1,640 ft) via CAT7 installation cable AWG23		
for DVI3 CAT	up to 150 m (492 ft) via CAT7 installation cable AWG23		
Enclosure	Stahl		
Enclosure protection type	Front IP66 / Back IP65		

Permitted ambient temperature range	-30 °C ... +60 °C / [-22 °F ... +140 °F]
Operating temperature range	
Cold start temperature	-10 °C ... +50 °C / [+14 °F ... +122 °F]
Operation	-20 °C ... +60 °C / [-4 °F ... +140 °F]
Permanent operation	-20 °C ... +50 °C / [-4 °F ... +122 °F]
Operation with heater version O30 *	-30 °C ... +50 °C / [-22 °F ... +122 °F]
Short-term operation	-30 °C ... +60 °C / [-22 °F ... +140 °F] for a maximum of 5 h
Storage temperature range	-30 °C ... +70 °C / [-22 °F ... +158 °F]
* Note on the O30 version	The O30 version is only available for the AC version devices !
Operating temperature range for DVI1	
Cold start temperature	+5 °C ... +40 °C / [+41 °F ... +104 °F]
Operation	+5 °C ... +40 °C / [+41 °F ... +104 °F]
Permanent operation	+5 °C ... +40 °C / [+41 °F ... +104 °F]
Operation with heater **	+5 °C ... +40 °C / [+41 °F ... +104 °F]
Storage temperature range	-20 °C ... +70 °C / [-4 °F ... +158 °F]
** Comment	The heater used must be of such a design that the temperature inside the HMI device's housing does not fall below -20 °C / [-4 °F] !
Heat dissipation	about 40 % via the front plate and 60 % via the enclosure
Relative humidity	10 to 90 % at +40 °C / [+104 °F], non-condensing
for DVI1	20 to 80 % at +40 °C / [+104 °F], non-condensing
Dimensions [mm] (inch)	
Front (w x h)	660 x 475 (25.98" x 18.70")
Cut-out (w x h) (+/- 0.5) (0.002")	615 x 435 (24.21" x 17.13")
Depth of cut-out	110 (4.33")
Wall thickness	≤ 5 (0.02")
Mounting position:	vertical or horizontal
Weight [kg] (lb)	16.00 (35,3 lb)


3.1 Additionally for MT-4x7 (Panel PC)

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

4 Conformity to standards

The MT-xx7 HMI devices comply with the following standards and directives:

Standard	Classification
directive 94/9 EC	
Initial certification	
EN 60079-0 : 2009 *	General requirements
EN 60079-11 : 2007 *	Intrinsic safety "i"
EN 60079-15 : 2010	Type of protection "n"
EN 60079-28 : 2007	Optical radiation
EN 60079-31 : 2009	Protected by enclosures "tD" (dust)
EN 61241-11 : 2006	
Electromagnetic compatibility	
directive 2004/108 EC	
EN 61000-6-2 : 2006	Interference resistance
EN 61000-6-4 : 2007	Interference emission
Low voltage directive	
directive 2006/95/EC	
EN 50178 1997 :	Fitting power plants with electronic equipment
EN 61010-1 : 2001+	General requirements

 NOTICE	* The MT-xx7 devices corresponds to the requirements of EN 60079-0 : 2012 and EN 60079-11: 2012.
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5 Certificates

The MT-xx7 HMI devices are certified for installation in the following areas:

Europe:

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

International / Australia:

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

5.1 ATEX

The ATEX certificates are listed under the following certification numbers:

Certificate number for MT-xx7:


BVS 12 ATEX E 033 X

5.2 IECEX


The IECEX certification is listed under the following certificate number:

Certificate number:

IECEX BVS 14.0034X

 DOCUMENTATION	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 .
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6 Marking

Manufacturer	R. STAHL HMI Systems GmbH	
Type code	MT-xx7	
CE classification:	CE 0158	
Testing authority and certificate number:	BVS 12 ATEX E 033 X	
Ex classification:		
ATEX guideline 94/9/EC		II 3(1) G Ex nA nR [ia op is Ga] IIC T4 Gc II 3(1) D Ex tc IIIC [ia op is Da] IP66 T110°C Dc
IECEX		Ex nA nR [ia op is Ga] IIC T4 Gc Ex tc IIIC [ia op is Da] IP66 T110°C Dc

7 Power supply

7.1 HMI devices

Power supply:	24 VDC or 100 – 240 VAC, 50 – 60 Hz	
Power consumption:	at 24 VDC	max. 3 A
	at 100 - 240 VAC	max. 1 A

8 Permitted maximum values

8.1 External, non-intrinsically safe circuits

Input voltage "PWR" (X10):

Nominal voltage:	20 ...240 V AC/DC (depending on type)
Power consumption I_{max}	≤ 5 A
Power P_{max}	≤ 150 W
Max. operating voltage U_m	≤ 250 VAC
Short-circuit current I_K	≤ 1500 A

USB (X13):

Rated voltage	5 VDC (± 10 %)
Max. operating voltage U_m	≤ 250 VAC

12 V (X14):

Rated voltage	12 VDC (± 10 %)
Power consumption I_{max}	≤ 400 mA
Max. operating voltage U_m	≤ 250 VAC

RS-232 "SER" (X97):

Rated voltage	15 VDC (± 10 %)
Max. operating voltage U_m	≤ 250 VAC

Video "CAM" (X101):

Rated voltage	5 VDC (± 10 %)
Max. operating voltage U_m	≤ 250 VAC

Audio "AUD" (X105):

Rated voltage	100 VDC (± 10 %)
Max. operating voltage U_m	≤ 250 VAC

Copper Ethernet (CAT7 1) (X16):

Rated voltage	5 VDC (± 10 %)
Max. operating voltage U_m	≤ 250 VAC

8.2 External inherently safe optical interface

Ethernet optical fibre (FO 1) (X18)

Multi-mode

Wavelength	850 nm
Radiant power	0.22 mW
max. radiant power:	35 mW

Single mode

Wavelength	1310 nm
Radiant power	0.22 mW
max. radiant power:	35 mW

8.3 External intrinsically safe circuits

Keyboard (X11)

The maximum values are:

U_i	=	5.5	C		U_o	=	5.5	C
I_i	=	3	A		I_o	=	309	mA
P_i	=	2	W		P_o	=	629	mW
C_i	=	negligible	μ F		C_o	=	50	μ F
L_i	=	negligible	mH		L_o	=	40	μ H

Pointer device (X12):

The maximum values are:

U_i	=	5.5	C		U_o	=	5.5	C
I_i	=	3	A		I_o	=	309	mA
P_i	=	2	W		P_o	=	629	mW
C_i	=	negligible	μ F		C_o	=	50	μ F
L_i	=	negligible	mH		L_o	=	40	μ H

USB1i (X24):

The maximum values are:

U_i	=	5.5	C		U_o	=	5.5	C
I_i	=	3	A		I_o	=	309	mA
P_i	=	2	W		P_o	=	629	mW
C_i	=	negligible	μ F		C_o	=	50	μ F
L_i	=	negligible	mH		L_o	=	40	μ H

USB2i (X25):

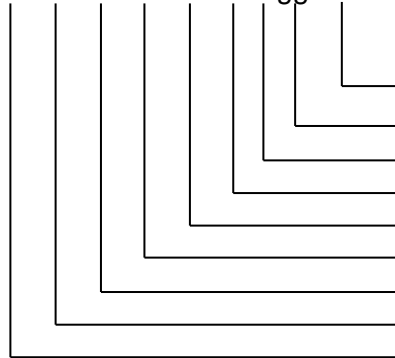
The maximum values are:

U_i	=	5.5	C		U_o	=	5.5	C
I_i	=	3	A		I_o	=	309	mA
P_i	=	2	W		P_o	=	629	mW
C_i	=	negligible	μ F		C_o	=	50	μ F
L_i	=	negligible	mH		L_o	=	40	μ H

9 Type code

9.1 MT-4x7 (Panel PC)

MT-4x7-aa-bb-cc-dd-ee-ff-gg-hh



- Front design
- Outdoor Option
- Power supply
- Data memory
- Main memory
- Touch screen
- Display type
- Ethernet interface
- 467 / 477 / 487

middle digit = display size
 6 = 56 cm / 22" display
 7 = 61 cm / 24" display
 8 = 61 cm / 24"WU display

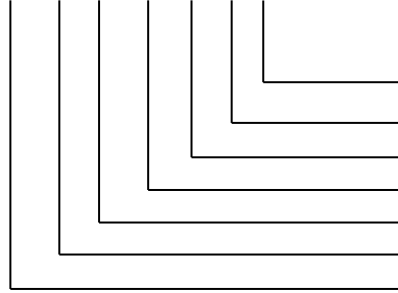
Product type:

Product key structure	Description
	Type with
MT-4x7- SX -bb-cc-dd-ee-ff-gg-hh	Optical fibre Ethernet interface 1000Base-SX (Ex op is), multi-mode
MT-4x7- TX -bb-cc-dd-ee-ff-gg-hh	Copper Ethernet interface 10/100Base-TX (Ex nA)
MT-4x7-aa- TFT -cc-dd-ee-ff-gg-hh	TFT display (standard)
MT-4x7-aa-bb- T -dd-ee-ff-gg-hh	Touch screen (membrane)
MT-4x7-aa-bb- TG -dd-ee-ff-gg-hh	Touch screen glass
MT-4x7-aa-bb-cc- R1 -ee-ff-gg-hh	Working memory 1 GB
MT-4x7-aa-bb-cc- R2 -ee-ff-gg-hh	Working memory 2 GB
MT-4x7-aa-bb-cc-dd- 4GB -ff-gg-hh	4 GB Solid State Drive
MT-4x7-aa-bb-cc-dd- 16GB -ff-gg-hh	16 GB Solid State Drive
MT-4x7-aa-bb-cc-dd- 128GBM -ff-gg-hh	128 GB Solid State Drive MLC
MT-4x7-aa-bb-cc-dd- 128GBS -ff-gg-hh	128 GB Solid State Drive SLC
MT-4x7-aa-bb-cc-dd- 100GB -ff-gg-hh	100 GB hard disk (internal)
MT-4x7-aa-bb-cc-dd-ee- AC -gg-hh	Power supply 100 - 240 VAC, 50 - 60 Hz
MT-4x7-aa-bb-cc-dd-ee- DC -gg-hh	Voltage supply 24 VDC
MT-4x7-aa-bb-cc-dd-ee-ff- O30 -hh	Outdoor installation -30 °C *
MT-4x7-aa-bb-cc-dd-ee-ff-gg- AL	Aluminium front plate
MT-4x7-aa-bb-cc-dd-ee-ff-gg- RM	Rear mount module

NOTICE	* The O30 option is only available for AC devices !
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9.2 MT-5x7 (Remote HMI Thin Client)

MT-5x7-aa-bb-cc-dd-ee-ff



- Front design
- Outdoor Option
- Power supply
- Touch screen
- Display type
- Ethernet interface
- 567 / 577 / 587

middle digit = display size
 6 = 56 cm / 22" display
 7 = 61 cm / 24" display
 8 = 61 cm / 24"WU display

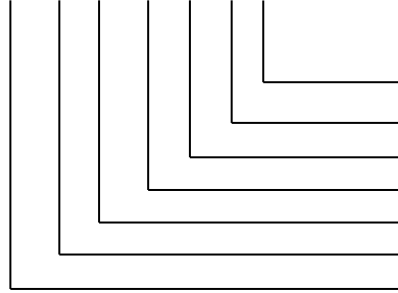
Product type:

Product key structure	Description
	Type with
MT-5x7- SX -bb-cc-dd-ee-ff	Optical fibre Ethernet interface 1000Base-SX (Ex op is), multi-mode
MT-5x7- TX -bb-cc-dd-ee-ff	Copper Ethernet interface 10/100Base-TX (Ex nA)
MT-5x7-aa- TFT -cc-dd-ee-ff	TFT display (standard)
MT-5x7-aa-bb- T -dd-ee-ff	Touch screen (membrane)
MT-5x7-aa-bb- TG -dd-ee-ff	Touch screen glass
MT-5x7-aa-bb-cc- AC -ee-ff	Power supply 100 - 240 VAC, 50 - 60 Hz
MT-5x7-aa-bb-cc- DC -ee-ff	Voltage supply 24 VDC
MT-5x7-aa-bb-cc-dd- O30 -ff	Outdoor installation -30 °C *
MT-5x7-aa-bb-cc-dd-ee- AL	Aluminium front plate
MT-5x7-aa-bb-cc-dd-ee- RM	Rear mount module

! NOTICE	* The O30 option is only available for AC devices !
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9.3 MT-6x7 (KVM System)

MT-6x7-aa-bb-cc-dd-ee-ff



- Front design
- Outdoor Option
- Power supply
- Touch screen
- Display type
- Transfer technology
- 657 / 667 / 677 / 687
- middle digit = display size
- 6 = 56 cm / 22" display
- 7 = 61 cm / 24" display
- 8 = 61 cm / 24"WU display

Product type:

Product key structure	Description
	Type with
MT-6x7- DVI1-CAT -bb-cc-dd-ee-ff	DVI1 KVM, with direct copper connection Gigabit (Ex nA)
MT-6x7- DVI1-MM -bb-cc-dd-ee-ff	DVI1 KVM, with direct optical fibre connection (Ex op is), multi-mode
MT-6x7- DVI1-SM -bb-cc-dd-ee-ff	DVI1 KVM, with direct optical fibre connection (Ex op is), single mode
MT-667- DVI2-CAT -bb-cc-dd-ee-ff	DVI2 ** KVM, with direct copper connection Gigabit (Ex nA)
MT-6x7- DVI3-CAT -bb-cc-dd-ee-ff	DVI3 KVM, with direct copper connection Gigabit (Ex nA)
MT-6x7- DVI3-MM-FO -bb-cc-dd-ee-ff	DVI3 KVM, with direct optical fibre connection (Ex op is), multi-mode
MT-6x7- DVI3-SM-FO -bb-cc-dd-ee-ff	DVI3 KVM, with direct optical fibre connection (Ex op is), single mode
MT-6x7-aa- TFT -cc-dd-ee-ff	TFT display (standard)
MT-6x7-aa-bb- T -dd-ee-ff	Touch screen (membrane)
MT-6x7-aa-bb- TG -dd-ee-ff	Touch screen glass
MT-6x7-aa-bb-cc- AC -ee-ff	Power supply 100 - 240 VAC, 50 - 60 Hz
MT-6x7-aa-bb-cc- DC -ee-ff	Voltage supply 24 VDC
MT-6x7-aa-bb-cc-dd- O30 -ff	Outdoor installation -30 °C *
MT-6x7-aa-bb-cc-dd-ee- AL	Aluminium front plate
MT-6x7-aa-bb-cc-dd-ee- RM	Rear mount module

NOTICE	* The O30 option is only available for AC devices !
	** The DVI2 KVM solution is only available together with the MT-667 HMI device !

10 Safety information



The notes listed in section 10. must be heeded to avoid injury and damage to equipment !

10.1 General Safety Information

- All relevant accident prevention regulations and the rules for electric installations have to be observed during installation, maintenance and operations. All persons involved in installation, commission, maintenance and repairs of this device and its accessories must be qualified accordingly and must have familiarised themselves with this manual and any associated documentation.
- In case of non-compliance or contravention of the above explosion-protection is no longer guaranteed and all warranty claims shall be null and void.
- National safety and accident prevention rules apply.
- Use the device for its intended purpose only.
- No changes to the device are permitted. The enclosure may only be opened by R. STAHL HMI Systems GmbH.
- The first four digits of the serial number on the type plate stand for the year of manufacture.

10.2 Installation safety information

- The in each case valid national assembly and installation rules and the generally accepted technical rules must be observed. The device and its accessories must be connected and operated according to applicable standards, directives and installation guidelines. Only qualified personnel or personnel that has been instructed accordingly are allowed to install the device.
- The HMI device has been certified as a fixed installed device. It must be fixed with a bracket or be secured in another way at a specified position.
- The HMI device must be disconnected from the mains for a change of position. The EPL must be adhered to.
- Only appropriate tools must be used for the installation.
- The screws on the lid of the Ex nA connection box must be fastened with a torque of 1 N.
- The cable connections of the connection box must be in line with country-specific regulations and may have to be adapted accordingly. Potential changes to the ambient parameters such as temperature must be taken into account.
- The cable entries in the connection box must have ingress protection IP66 or may have to be adapted to meet country-specific requirements. The pre-assembled cable entry threads are:
 - 2x M16x1,5
 - 1x M20x1,5
 - 3x M25x1,5The wall of the terminal box where the cable entries are mounted has a thickness of at least 4 mm.
- The cable connections must be tightened fast according to regulations. Unused cable connections must be sealed with appropriate blind plugs. Only permanently laid cables may be connected to the pre-mounted ATEX cable connections.

- The outer cable diameters must correspond to the cable connection specifications.
 - Cable entry M16 for round cable, outside cable cross-section 5...9 mm (0.2"...0.35")
 - Cable entry M20 for round cable, outside cable cross-section 9...13 mm (0.35"...0.51")
 - Cable entry M25 for round cable, outside cable cross-section 11...16 mm (0.43"...0.63")
- The device must not be opened, maintained or repaired in hazardous atmospheres (sole exception: the connection box) All circuits must be completely de-energised before the device is connected. Before opening the connection box ensure that all circuits are isolated. You must also ensure that the power supply circuit is isolated. The cable diameter must meet the terminal specifications. The connection box must be tightly sealed.
- The wire used for earthing must have a minimum cross section of 4 mm² ! Make sure that there is equipotential bonding between the devices.
- We recommend you use screened cables with the device. Routing of the data cable may reduce performance. The cables used in intrinsically safe circuits must have been tested to AC 500 V / DC 750 V. If the cable properties are unknown, assume 200 pF/m and 1 µH/m.
- If display types MT-xx7-DVI1-MM or MT-xx7-DVI1-SM are used, terminal X16 remains unused.
- To establish a secure earthed connection between device and plant and to prevent inadvertent loosening of the cables, each cable with its screen must be connected to the corresponding earthing bracket located in the Ex nA connection box close to the associated terminal.
- At the place of installation voltage must not exceed 250 V and short-circuit current must not exceed 1500 A.
- A tick close to the X10 terminal indicates the voltage type (AC/DC). For the 24 VDC types the cable cross-sections depend on the cable length of the voltage supply cable, as follows:

Cable length in metres (ft)	Cable cross-section in mm ² (AWG)
max. 55 m (180 ft)	1.5 mm ² (AWG16)
max. 90 m (295 ft)	2.5 mm ² (AWG14)
max. 150 m (492 ft)	4 mm ² (AWG12)
max. 225 m (738 ft)	6 mm ² (AWG10)
max. 375 m (1230 ft)	10 mm ² (AWG8)
max. 600 m (1968 ft)	16 mm ² (AWG6)

If the cable's cross section is greater than the maximum possible for the terminals, the cable needs to be routed according to regulations via a smaller cable cross section before being inserted into the connection box (possibly using the Ex e terminal box).

- If the intrinsically safe interfaces of an intrinsically safe device or a partially intrinsically safe device are or have been connected to a not intrinsically safe circuit, the certification ceases to apply and the device may no longer be operated as an intrinsically safe device. After the device has been operated as intrinsically safe with a low level of protection (e.g. an Ex ia device at an Ex ib interface), it may no longer be operated in applications for a higher level of protection (e.g. ia).

- If the device is being used in a dust atmosphere and must be replaced, the device or the enclosure in which it is mounted must be disconnected from the mains first and then, according to regulations, be left to cool down. Before opening the device or its enclosure and whilst they are open, the environment must be kept dust-free so that no dust can intrude into the inside of the enclosure. When mounting new components please ensure that all seals are undamaged and fit tightly.
- Before starting up the device you must ensure that it has been installed according to regulations and that neither the device nor its cables are damaged.

10.2.1 Only for HMI devices with DVI3

- The USB interfaces of the MT-6x7-DVI3 devices are only certified for the connection of keyboards and pointer units from R. STAHL HMI Systems GmbH.

10.3 Safety information for operation

- Operate the device only if it is clean and undamaged. If the device is in any way damaged, do not touch it to avoid injury. In the case of any damage that may compromise ingress protection (e.g. cracks, holes or broken components) the device must be taken out of commission immediately. Before the device is recommissioned the damaged components must be replaced.
- If you want to use the device in zone 20, 21 or 22 as EPL Da/Db/Dc, dust deposits of a thickness exceeding 5 mm must be removed and you have to ensure that no high-energy loading mechanisms at the operating surface of the unit (e.g. pneumatic particle transport) occur during operation. The device may not be used in environments where propagating brush discharges may occur.
- In general, and particularly when opening and closing enclosures, users must take care not to get injured by getting caught / trapped.
- In case of non-compliance or contravention of the above explosion-protection is no longer guaranteed and all warranty claims shall be null and void.

10.4 Special conditions

Equipotential bonding must be established for the external intrinsically safe circuits of the accessories to be connected, e.g. display, keyboard or pointer device.

11 Assembly and disassembly

11.1 General information



NOTICE

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


11.2 Cut-out MT-xx7

Make a cut-out with the following dimensions:

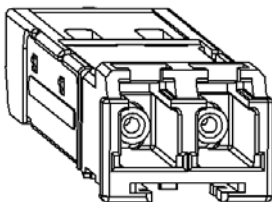
Width	Height	Depth of cut-out	Material thickness	Unit of measurement
615 ± 0.5	435 ± 0.5	110	up to 5	mm
24.21" ± 0.002"	17.13" ± 0.002"	4.33"	up to 0.02"	inch (")

12 Operation


12.1 General information

 NOTICE	<p>When operating the devices, particular care shall be taken that:</p> <ul style="list-style-type: none"> • the HMI device has been properly installed according to instructions, • the HMI device is undamaged, • the terminal compartment is clean, • all screws are tightened fast, • before switching the HMI device on, its external equipotential bonding terminal is properly connected to the equipotential bonding system at its place of use, • the cover of the terminal compartment is completely closed.
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12.2 Connections

Terminal	Pin	Definition / typical cable colour		Connection
X10 PWR	1	Power supply HMI device +24 VDC or 100 - 240 VAC		Power supply of the HMI device Ex nA
	2	Power supply HMI device 0 VDC or 100 - 240 VAC		
	3	Earth connection HMI device		
X11 KBi	1	+UB	Red	USB interface Ex ia for External keyboard
	2	D-	White	
	3	D+	Green	
	4	GND	Black	
X12 Mi	1	+UB	Red	USB interface Ex ia for Mouse
	2	D-	White	
	3	D+	Green	
	4	GND	Black	
X13	1	+UB	Red	USB Ex nA
	2	D-	White	
	3	D+	Green	
	4	GND	Black	
X14	1	+12 V	Red	12 VDC Output Ex nA
	2	GND	Black	
X16 CAT7 1 Data	1	TRD0+	White / Orange	Ethernet copper connection * Ex nA
	2	TRD0-	Orange	
	3	TRD1+	White / Green	
	4	TRD1-	Green	
	5	TRD2+	Blue / White	
	6	TRD2-	blue	
	7	TRD3+	White / Brown	
	8	TRD3-	Brown	
	9	SHLD	Screen	
X18 FO 1 Data		 Tx Rx		Ethernet optical fibre interface * Ex op is

X24 USB1i	1	+UB	Red	USB interface Ex ia
	2	D-	White	
	3	D+	Green	
	4	GND	Black	
X25 USB2i	1	+UB	Red	USB interface ** Ex ia
	2	D-	White	
	3	D+	Green	
	4	GND	Black	
X97 SER	1	TxD	Blue / White	Serial Ex nA interface RS-232
	2	RxD	blue	
	3	RTS	White / Orange	
	4	CTS	Orange	
	5	GND	Black	
X105 AUD	1	CH1 / line out left	Red	Audio Ex nA interface
	2	CH2 / line out right	Black	
	3	CH3 / line in left	Red	
	4	CH4 / line in right	Black	
	5	GND	Black	

 NOTICE	<p>The following applies to all terminals: 0.2 - 2.5 mm² / AWG24 - AWG16 for flexible cable 0.2 - 4 mm² / AWG24 - AWG16 for rigid cable Strip cable of 7 mm (0.28 in) insulation max. one cable per terminal Empfohlene Kabellänge für die Klemmen X11, X12, X13, X14, X24, X25: max. 3 m (10 ft)</p> <p>* Please note that the Ethernet connection is either for an optical fibre connection (X16) or for a copper connection (X18), depending on the version ordered ! If display types MT-xx7-DVI1-MM or MT-xx7-DVI1-SM (optical fibre versions) are used, terminal X16 remains unused. In the case of an optical fibre connection the following cable is recommended: Multi-mode optical fibre cable: 50 µm core cross section and 125 µm external cross section Single mode optical fibre cable: 9 µm core cross section and 125 µm external cross section</p> <p>** The USBi2 connection (X25) is NOT available for devices with touch screen and may NOT be connected.</p>
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13 Maintenance


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

Keep the units clean so that the enclosure locks and screws remain accessible. Maintenance may be required for the enclosure seal.

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

14 Troubleshooting

	<p>Devices operated in hazardous areas must not be modified. Repairs may only be carried out by qualified, authorized staff specially trained for this purpose.</p>
	<p>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.</p>

14.1 Repairs / hazardous substances

An error description must be enclosed with any units returned to R. STAHL HMI Systems GmbH for repairs.

Remove all material residues. Please pay particular attention to the seal grooves and slits where material residues may be lodged. We have to ask you not to return a unit if you are unable to completely remove any hazardous substances. We shall bill you for any costs arising from insufficiently cleaned units, such as disposal or damage to persons (chemical burns, etc.).

15 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 (amendment) 2012/19/EU on waste electrical and electronic equipment (WEEE). Under this directive, HMI devices are listed in category 9 (monitoring and control instruments).

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

15.1 ROHS directive 2011/65/EC

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

In the case of HMI devices (category 9 – monitoring and controlling devices) a transitional period applies until 22.07.2017, after which the banned substances listed in ROHS 2011/65/EC directive apply to all devices newly put on the market.

16 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

MT-##7
 MT-##7
 MT-##7

Typ, type, type:

Display Unit MT-##7*-CAT7*
 Display Unit MT-##7*-MM*
 Display Unit MT-##7*-SM*

*=any alphanumeric or symbolic character, without relevance for explosion protection
 #=one numeric character, without relevance for explosion protection

Kennzeichnung, *marking, marquage:*

For Display Unit:
 II 3(1) G Ex nA nR [ja op is Ga] IIC T4 Gc
 II 3(1) D Ex tc IIC [ja op is Da] IP66 T110°C Dc
CE0158

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:

BVS 12 ATEX E 033 X

DEKRA EXAM GmbH (ID 0158)
 Dinnendahlstraße 9,
 44809 Bochum
 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 <i>Terms of the directive</i> <i>Prescription de la directive</i>	Nummer sowie Ausgabedatum der Norm <i>Number and date of issue of the standard</i> <i>Numéro ainsi que date d'émission de la norme</i>	
94/9/EG: ATEX-Richtlinie 94/9/EC: ATEX Directive 94/9/CE: Directive ATEX	EN 60079-0: 2009 EN 60079-11: 2007 EN 60079-15: 2010 EN 60079-28: 2007 EN 60079-31: 2009 EN 61241-11: 2006	Das Produkt entspricht Anforderungen aus: <i>Product corresponds to requirements from:</i> <i>Produit correspond aux exigences:</i> EN 60079-0: 2012, EN 60079-11: 2012
2004/108/EG: EMV-Richtlinie 2004/108/EC: EMC Directive 2004/108/CE: Directive CEM	EN 61000-6-2: 2006 EN 61000-6-4: 2007	
2006/95/EG: Niederspannungsrichtlinie 2006/95/EC: Low Voltage Directive 2006/95/CE: Directive Basse Tension	EN 50178: 1997 EN 61010-1: 2001+ Corrigendum / Errata	

Köln, 29.01.2015

Ort und Datum
Place and date
Lieu et date

J. Düren
 Technical Director

W. Bertges
 Quality Manager

Datei: CE_MT-xx7_20150129.docx

Vorlage: F058_EG-Konferklärung-HMI_20110325.docx

17 Release notes

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

Version 1.01.00

- Original version of the operating instructions

Version 01.01.01

- Changing title, rename into series
- Changing name of the devices into Panel PC (MT-4x7), Thin Client (MT-5x7), KVM System (MT-6x7)
- Deletion of section "Document created with all due care" and "No liability in case of errors"
- Inclusion of chapter "specific markings"
- Changes to preface
- Changing of all markings according to the new definition
- Deletion of sentence "In case of discrepancies the original BMP applies" in the preface
- Addition of values of the imperial measurement system
- Changing layout "point of degrees"
- Correction of cable type into AWG23, in section "technical data"
- Rebuilt section "certificates", splitting into countries
- IECEx certificate added
- DVI3 included
- All information on 19" device removed
- Type code changed
- Information on "USB interfaces of the DVI3 HMI devices" included
- DVI2 solution limited to MT-667 version
- Removing of video interface from section "connections"
- Removing of section " Trademarks" and "Front panel resistance"
- Formal, text and layout changes

Version 01.03.00

- Changing / inclusion of installation safety information, first sentences with "in each case valid"
- Inclusion of installation safety information with listed point "certified as a fixed installed device"
- Inclusion of installation safety information with listed point "disconnected from the mains for a change of position"
- Changing point 2 in section 11.4 "use the device in zone 20, 21 or 22 as EPL Da/Db/Dc"
- Changing information to cable entry, now with M25
- Adaptation section "Disposal" according to the newest WEEE and ROHS directive
- Text and layout changes

Version 01.02.01

- Update Declaration of EC conformity
- Addition of note according to "conformity to standards"

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