
# Operating Instructions

## Device platform EAGLE

### ET-xx6-A

SERIES 300 Operator Interfaces
SERIES 400 Panel PC
SERIES 500 Thin Clients

STAHL
THE STRONGEST LINK.

| | |
|---|---|
| **HW-Rev. ET-xx6-A-FX:** | **03.00.13** |
| **HW-Rev. ET-xx6-A-TX:** | **03.00.23** |
| **HW-Rev. ET-xx6-A-FX-BT:** | **03.00.18** |
| **HW-Rev. ET-xx6-A-TX-BT:** | **03.00.28** |

| | |
|---|---|
| **Operating Instructions version:** | **03.00.40** |
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# Disclaimer

Publisher and copyright holder:

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

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

# Specific markings

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

In detail, these are:

| | |
|---|---|
| DANGER | This sign alerts users to hazards that **will** result in death or serious injury if ignored ! |
| WARNING | This sign alerts users to hazards that **may** result in death or serious injury if ignored ! |
| CAUTION | This sign alerts users to hazards that may damage machinery or equipment or result in injury if ignored ! |
| ATTENTION | Information highlighted by this symbol indicates measures for the prevention of damage to machinery or equipment ! |
| NOTICE | Information highlighted by this symbol indicates important information of which particular note should be taken ! |
| DOCUMENTATION | Information highlighted by this symbol (with and without lettering) refers to a different chapter or section in this manual or other documentation or a web-page ! |

## Warnings

| | |
|---|---|
|  | Caution !<br>In ambient temperatures exceeding +45 °C the surface of the devices may heat up. Caution when touching ! |
|  | Caution !<br>The laser diodes installed in our Exicom operator devices, media converters and switches emit invisible laser radiation:<br>100Base-FX - 1300 nm<br>FO-MM / 1000Base-SX - 770 … 860 nm<br>FO-SM / 1000Base-LX - 1270 … 1355 nm<br><br>Acc. to EN 60825-1 the laser diode is classified as a class 1M laser / Do not view directly with optical instruments. The viewing of the laser beam through certain optical instruments (e.g. magnifying glasses, telescopes and microscopes) from a distance of less than 100 mm may damage eyesight. (beam output at the emitting diode (TD-A, TD-B) or the fibre optic end). |

# Table of contents

# 1 Preface

These Operating Instructions contain all aspects relevant to explosion protection for the ET-xx6-A-* HMI devices (SERIES 300 Operator Interfaces – EAGLE, SERIES 400 Open HMI – Panel PC´s and SERIES 500 Thin Clients). They also contain information on the connection and installation of these devices.
These Operating Instructions contain a joint description of all three product lines: Operator Interfaces, Panel PC´s and Thin Clients. Any differences between the three product lines will be explicitly mentioned and dealt with. As a rule, though, the information contained in these Operating Instructions applies to all models of the ET-xx6-A-* series.
The ET-xx6-A-* HMI devices with display sizes of 26 cm / 10.4", 38 cm / 15" and 48 cm / 19" will be available in Hardware Revision 3.

| | |
|---|---|
| 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 note that all certificates of the HMI devices can be found in a separate document (CE_ET-xx6-A).<br>You can find this document in the internet at r-stahl.com or request it from R. STAHL HMI Systems GmbH. |

# 2 Device function

The ET-xx6-A-* HMI devices are explosion-proof equipment for installation in hazardous areas and can be installed in zones 1, 2, 21 and 22 according to ATEX directive.
All devices have a modular structure, which makes changes and maintenance easy. They can be integrated into control cabinets or panels, etc.

## 2.1 Image sticking

Continuous displaying fixed pattern may include image sticking. It’s recommended to use screen saver or moving content periodically if fixed pattern is displayed on the screen.

## 2.2 Processor types

All devices are fitted with modern, powerful processors. Depending on the type of application, different processor types are used for the HMI devices (see Technical Data).
Starting in 2016, a new Intel® Atom™ processor type of the Bay Trail (BT / BS) platform will gradually replace all previous processor types in the HMI devices. This new processor type processes data four times as fast as the previous processors.

## 2.3 Activation pressure touchscreen

To prevent damage to the touchscreen, activation pressure on the screen must be very low (0.1 to max. 1 N).

## 2.4 ET-3x6-A-* (SERIES 300 Operator Interfaces)

The ET-3x6-A-* operator interfaces have been designed for the Visualization of medium-sized automation tasks, operation as built-in device and tankfarm application in hazardous areas. The ET-3x6-A-* operating stations have been designed to run with a proprietary operating system, making them highly secure against external manipulation.
Users operate the device via the membrane keyboard integrated into the front plate and via the LCD display with touch screen.
Communication with control and automation systems runs via the serial interfaces (RS-232 RS-422/485, Ethernet) connected in the "e"-area at the back of the devices. Various peripheral devices, such as barcode scanners, card readers, USB sticks and WLAN / Bluetooth modules can be connected via USB interfaces or optional fitted modules.
With a wealth of functions, these HMI devices provide optimum visualization. Their active communication concept in combination with integrated functionality reduce the automation system workload.

## 2.5 ET-4x6-A-* (SERIES 400 Panel PC)

The ET-4x6-A-* devices are robust Panel PC´s for hazardous areas. With their pre-installed Windows operating system they are ready to run straight away.
As a standard, all Panel PC´s are equipped with a touch screen and several interfaces and are based on the powerful Atom technology, making them the most powerful devices on the market.

## 2.6 ET-5x6-A-* (SERIES 500 Thin Clients)

The ET-5x6-A-* devices of the 500 SERIES can be integrated into modern networks as Thin Clients or with a KVM box via KVM-over-IP, thus providing ideal and flexible access options with central data administration.
The ET-5x6-A-* device, which is used for operation and visualization, is located in the hazardous area, whereas the PC that is operated is located in the safe area. Each ERP / MES network can be accessed from each Thin Client via the IP address.
The Thin Client system supports both modern technologies such as DVI and USB and older technologies such as VGA and PS/2.

## 2.7 Overview hardware revision ET-xx6

| HW-Rev. | Device type | Technical changing | Changing date hardware | OI version | OI date |
|---|---|---|---|---|---|
| 03.00.1x | ET-xx6-A-FX | Approval Rev. 3, FX interface | 25.05.2011 | 03.00.02 | 09.06.2011 |
| 03.00.2x | ET-xx6-A-TX | Approval Rev. 3, TX interface | | | |
| 03.00.x2 | ET-xx6-A-* | 5-wire touch | 23.06.2014 | 03.00.15 | 03.09.2014 |
| 03.00.x3 | ET-xx6-A-* | Internal changes | 29.09.2014 | - | - |
| 03.00.x4 | ET-xx6-A-* | Bay Trail processor, quad core | 10.02.2016 | 03.00.17 | 04.01.2016 |
| 03.00.x5 | ET-3x6-A-*-BS-* | Bay Trail processor, single core | 08.05.2017 | 03.00.25 | 03.06.2017 |
| 03.00.x6 | ET-xx6-A-* | M.2 memory | 14.06.2018 | 03.00.29 | 14.07.2018 |
| 03.00.x7 | ET-3x6-A-*-BS-* | | | | |
| 03.00.x8 | ET-xx6-A-* | BIOS Update BIOS-V1.63r4 no C6 | 29.06.2021 | 03.00.37 | 13.10.2021 |
| 03.00.x9 | ET-3x6-A-*-BS-* | | | | |
| 03.00.x8 | ET-xx6-A-* | SERIES 300 released with Bay Trail quad core prozessor from 01/2024 | 31.05.2021 | 03.00.40 | 12.01.2024 |
| 03.02.xx | ET-xx6-A-*-RS2 | Approval 2nd supplement with COM2 (X22) | 21.11.2012 | 03.02.00 | 16.04.2013 |

# 3 Technical Data

| Function / Equipment | **ET-306-A-*<br>ET-406-A-*** | **ET-316-A-*<br>ET-416-A-*<br>ET-516-A-*** | **ET-336-A-*<br>ET-436-A-*-(SR)<br>ET-536-A-*-(SR)** | **ET-456-A-*<br>ET-556-A-*** |
|---|---|---|---|---|
| Display type | TFT Color,<br>16,777,216 Colors | | | |
| Display size | 26 cm (10.4") | | 38 cm (15") | 48 cm (19") |
| Resolution in pixels | ET-306-A-*<br>VGA 640 x 480<br>ET-406-A-*<br>SVGA 800 x 600 | SVGA 800 x 600 | XGA 1024 x 768 | SXGA 1280 x 1024 |
| Display | Touchscreen on glass | | | |
| Touchscreen *<br>Type TFT<br>Type SR (Sunlight readable) | 5-wire analogue resistive<br>- | | 5-wire analogue resistive | - |
| * Comment | Under extreme environmental conditions (high humidity, temperature), bubbles can form on the touch surface in rare cases. This does not represent any functional restriction and affects only the appearance. | | | |
| Backlight | LED background lighting | | | |
| Service life of backlight at<br>+25 °C [+77 °F]<br>+55 °C [+131 °F] | 70,000 h<br>35,000 h | | | |
| Brightness<br>Type TFT<br>Type SR (Sunlight readable) | VGA 450 cd/m²<br>SVGA 400 cd/m²<br>- | | 350 cd/m²<br>1000 cd/m² | 350 cd/m²<br>- |
| Contrast<br>Type TFT<br>Type SR (Sunlight readable) | 700:1<br>- | | 600:1 | 1000:1<br>- |
| Touchscreen activation | Low activation pressure (0.1 up to max. 1 N) | | | |
| Touchscreen input method | Finger, gloved finger or stylus | | | |
| Touchscreen durability | Polyester foil is easily scratched, with high pressure force the spacer dots could be damaged. | | | |
| Touchscreen scratch hardness MoHS | - | | | |
| Touchscreen scratch hardness pencil hardness test ISO 15184 | 3H | | | |
| Touchscreen transmissivity / optics | Small milky effect due to the foil | | | |
| Touchscreen surface contaminants | Unaffected | | | |
| Touchscreen abrasive resistance | 36 million times with a silicone rubber of R8 finger, hitting rate 250 g at 2 times per second | | | |
| 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<br>105 Keys<br>or<br>107 keys with integrated trackball / joystick<br>(variant with trackball / joystick not for ET-3x6-A-*) | | | |
| Trackball / joystick | Optional for ET-4x6-A-* and ET-5x6-A-* | | | |
| Power supply | Directly in the integrated Ex e connection box | | | |
| Rated operational voltage DC | 24 V | | | |
| Voltage range DC<br>up from 100 GB data memory | 20.4 – 28.8 V<br>21.6 – 28.8 V | | | |
| Current consumption DC | 1.2 A | | | |
| Connections | via screw terminals, 2.5 mm² (AWG14) green (Ex e) (connection X1) | | | |
| Max. operating voltage $U_m$ | 30 VDC | | | |

| Function / Equipment | **ET-306-A-*<br>ET-406-A-*** | **ET-316-A-*<br>ET-416-A-*<br>ET-516-A-*** | **ET-336-A-*<br>ET-436-A-*-(SR)<br>ET-536-A-*-(SR)** | **ET-456-A-*<br>ET-556-A-*** |
|---|---|---|---|---|
| Real-time clock<br>Data buffer<br>Battery<br>Capacitor | yes<br>Lithium battery and capacitor buffered, maintenance-free<br>> 5 years<br>at least 4 days | | | |
| Status display LEDs<br>Below the back cover | for activity on<br>- Solid state flash drive or HD<br>- Ethernet link<br>- COM 1 and COM 2 | | | |
| Interfaces | **Description** | | | |
| Ethernet | Either TX or FX | | | |
| Copper (TX) | 10/100Base-TX, 10/100 Mbit (Ex e) (connection X11) | | | |
| Optical fibre (FX) | 100Base-FX, 100 Mbit, inherently safe (Ex op is) (connection X10) | | | |
| USB | 2x Ex e (connection X5 and X7) / 2x Ex ib (connection X4 and X6) / USB 2.0, 480 Mbit/s | | | |
| Note on USB interfaces | The USB interfaces are based on USB 2.0. Due to explosion protection rules, the USB interface properties (such as speed or power supply) may be restricted. | | | |
| PS/2 (Ex ia) | For external keyboard, mouse*, trackball*, joystick* (connection X9)<br>* not available for ET-3x6-A-* | | | |
| Serial COM1 | RS-232 / RS-422 / RS-485 (Ex e) (connection X2) | | | |
| Readers COM2 | Barcode scanner, Proximity reader interface (Ex ib) (connection X8) | | | |
| Audio | Line out output (Ex e) (connection X3) | | | |
| Fieldbus | not for Thin Client | | | |
| Operator Interface | MPI with MPI Box SSW7-RK512-RS-422 | | | |
| Panel PC | MPI with MPI Box SSW7-HMI-RS-422 | | | |
| | **Design** | | | |
| Ethernet copper (TX)<br>USB (Ex e)<br>PS/2 (Ex ia)<br>Seriell COM1<br>Readers COM2<br>Audio | Screw terminals, 2.5 mm² (AWG14) green | | | |
| USB (Ex ib) | 1x USB female connector type A / 1x screw terminals, 2.5 mm² (AWG14) green | | | |
| Ethernet optical fibre (FX) | SC duplex female connector | | | |
| Data cable / -lenght | | | | |
| Copper (TX) | up to 100 m (330 ft) via CAT5 installation cable AWG22 | | | |
| Optical fibre (FX) | up to 2000 m (6562 ft) via 62.5 / 125 µm (core- / external cross section)<br>multi-mode optical fibre cable | | | |

When using the fibre optic interfaces of EAGLE devices, they must be connected and safely operated with other devices that comply with the limit values of Class 1 according to IEC 60825-1 or are classified as inherently safe optical radiation "op is" according to IEC 60079-28.

| Front plate | Polyester on seawater-proof aluminium with touch technology and safety glass (standard) | | | |
|---|---|---|---|---|
| | or | | | |
| | Stainless steel on seawater-proof aluminium with touch-technology and safety glass, F-keys polyester | | | |
| | - | - | yes<br>(not ET-336-A-*) | yes |

| Function / Equipment | **ET-306-A-*<br>ET-406-A-*** | **ET-316-A-*<br>ET-416-A-*<br>ET-516-A-*** | **ET-336-A-*<br>ET-436-A-*-(SR)<br>ET-536-A-*-(SR)** | **ET-456-A-*<br>ET-556-A-*** |
|---|---|---|---|---|
| Housing | Stainless steel | | | |
| Housing protection type | IP66 | | | |
| HMI Types | PM = PanelMount = panel mount device<br>OS = Operator Station | | | |
| HMI Types comment | Panel mount device (PM): devices without additional enclosure (HSG) and without additional accessories<br>Operator Station (OS): devices mounted inside additional enclosure (HSG) | | | |
| Cable glands | | | | |
| Type * | 8161 (Ex e) | | HSK-M-Ex (Ex e) | |
| Number | 6 x M16 | | 3 x M20 | |
| Thread size | M16 x 1.5 and M20 x 1.5 | | | |
| Cable diameter range | M16 = 5 … 9 mm | | M20 = 6 … 12 mm | |
| Width across flats | M16 = SW20 | | M20 = SW22 | |
| * Comment | Similar certified cabel glands may be used. | | | |
| * Comment a | Not used cabel glands must be closed by certified screw plugs or stopping plugs ! | | | |
| Breathing gland | The breathing gland is part of the enclosure and is included in the device certification. | | | |
| Operating temperature range | | | | |
| Operation | -20 °C … +55 °C * / [-4 °F … +131 °F] * | | | |
| Operation with heater ** | -30 °C … +55 °C * / [-22 °F … +131 °F] * | | | |
| Storage temperature range | -30 °C … +60 °C / [-22 °F … +140 °F] | | | |
| * Comment | for ET-4x6-A-* and ET-5x6-A-*:<br>Operation at +55 °C / [+131 °F] for a maximum of 5 hours,<br>at +50 °C / [+122 °F] for continuous operation (24/7) | | | |
| ** Comment | The heater used must be of such a design that the temperature inside the HMI device's housing does not fall below -20 °C / [-4 °F] (-30 °C / [-22 °F] only at the front) ! | | | |
| | Operators must ensure that the components integrated in the enclosure are only be operated when the temperatures inside the enclosure are within the permitted (certified) temperature range for these components. Further measures may be necessary. | | | |
| Heat dissipation | approx. 50 % via front plate, approx. 50 % via housing | | | |
| HMI Types comment OS | If the HMI device is installed in an additional enclosure (HSG), the upper temperature limit is reduced by 5 °C / [41 °F], due to the device's own heating and lower temperature dissipation in the additional enclosure !<br>Thus, the operator stations offers "only" an operation temperature range of<br>-20 °C ... +50 °C / [-4 °F … +122 °F] ! | | | |
| Environmental conditions | valid for all devices | | | |
| | Level | | Test specification | |
| Relative humidity | 90 % at +40 °C [+104 °F], without condensation | | - | |
| Damp heat | +55 °C [+131 °F] / 95 % | | IEC 60068-2-30 : 2005 | |
| | +55 °C [+131 °F] (±2 °C [+35.6 °F]) ≥95 % | | DNV | |
| (cyclic 2x 24 h) | +55 °C [+131 °F] / 90-100 %<br>+20 °C [+68 °F] / 80-100 % | | LR Type Approval TA 02 (2002) | |
| Corrosion resistant | ISA-S71.04-1985, severity level G3 | | EN 60068-2-60 | |
| Vibration | | | | |
| Vibration (sinus) | 5 up to 13.2 Hz: ±1 mm<br>13,2 up to 100 Hz: ±0.7 g<br>axis X, Y, Z | | IEC 60068-2-6 : 2008<br>and<br>DNV Certification No. 2.4 (2006) | |
| | 10 Hz, 1 g<br>450 Hz, 1 g<br>Sweep cycle 1 oct/min<br>Operating mode 1.2<br>Axis X, Y, Z | | IEC 60068-2-6 : 2008 | |
| Vibration / broadband random | 10 Hz, 0,0100 PSD[(m/s²)²/Hz]<br>450 Hz, 0,0100 PSD[(m/s²)²/Hz]<br>$G_{rms}$ 2.11<br>Axis X, Y, Z | | IEC 60068-2-64 : 2009 | |
| Shock | 20 impacts 20 g/11 ms | | IEC 60068-2-27 : 1995 | |

| Location classes | according to DNV guideline CG-0339 | |
|---|---|---|
| | Temperature | A |
| | Humidity | B |
| | Vibration | A |
| | EMC | B |
| | Enclosure | B |

| | | | | |
|---|---|---|---|---|
| Electromagnetic compatibility | | | | |
| Immunity | According IEC 61000-6-2 (01/2005) and DIN EN 61323-1 (10/2006) for industrial areas | | | |
| Emission | According IEC 61000-6-4 (02/2011), DIN EN 55011 / CISPR 11 (03/2008) for industrial environments and DIN EN 55022 / CISPR 22 (05/2008) for Class A | | | |
| Positive pressure operation | < = 20 mbar (not SR devices) | | | |
| Dimensions [mm] / [ft] | | | | |
| Front (w x h) | 400 x 270 / [1.31] x [0.89] | 372 x 270 / [1.22] x [0.89] | 440 x 340 / [1.44] x [1.12] | 535 x 425 / [1.76] x [1.39] |
| Cut-out w x h (+/- 0.5) / [0.0016] | 385.5 x 257.5 / [1.26] x [0.84] | 359.5 x 257.5 / [1.18] x [0.84] | 427.5 x 327.5 / [1.40] x [1.07] | 522.5 x 412.5 / [1.71] x [1.35] |
| Depth of cut-out | 150 / [0.49] | | 165 / [0.54] | |
| Wall thickness | ≤ 8 / [0.0087] | | | |
| Mounting position | Vertical or horizontal | | | |
| Weight [kg] / [lbs] | | | | |
| Device | 13.00 / [28.66] | 12.60 / [27.78] | 17.30 / [38.14] | 23.50 / [51.81] |
| Fixing frame | 0.6 / [1.32] | 0.6 / [1.32] | 0.7 / [1.54] | 0.9 / [1.98] |

The ET-xx6-A-* devices from the EAGLE device platform are tested for installation in enclosures with type of protection Ex p with a maximum pressure of 20 mbar.

## 3.1 Additionally for ET-3x6-A-* (Operator Interfaces)

### 3.1.1 All devices up to hardware revision 03.00.x2

| | |
|---|---|
| Processor | AMD Geode LX 800; 266 MHz |
| RAM | 512 MB |
| Data memory | 1 GB |
| Operating system | RT Target |
| Image | SPSPlus Runtime |
| Languages | Global, multilingual language support |
| Number of protocol drivers | a maximum of 4 simultaneously |
| Number of process images | > 1000 dynamic |
| Number of texts / messages | Dynamically limited by main memory |
| Number of variables per page | 255 |
| Number of messages | 4096 fault messages, 4096 operation messages |
| Font sets | 4 independent Windows unicondensed fonts |
| Configuration memory type | Flash memory |

### 3.1.2 All devices starting from hardware revision 03.00.x5

| | |
|---|---|
| Processor | Intel Bay Trail (BS) Atom E3815 Single Core; 1.46 GHz |
| RAM | 2 GB |
| Data memory | 16 GB |
| Type of data memory | Flash memory (Solid State Drive - SSD) (internal via CF slot) |
| Graphics controller | Integrated Intel Gen. 7 HD Graphics |
| Operating system | Windows Embedded Compact 7 (WEC7) |
| Image | SPSPlus Runtime (requires SPSPlusWIN V 6) |
| | Movicon CE 4096 I/O |

### 3.1.3 All devices starting from hardware revision 03.00.x7

| | |
|---|---|
| Type of data memory | Flash memory M.2 (Solid State Drive - SSD) (internal via SATA) |
| Storage capacity of data memory | Note: The indication of the available data storage capacity may vary slightly, since the manufacturers reserve a certain area (spare bytes) to ensure long-term stability. |

### 3.1.4 All devices starting from hardware revision 03.00.x8

| | | | |
|---|---|---|---|
| Processor | Intel Bay Trail (BT) Atom E3845 quad core; 1.91 GHz | | |
| RAM | 4 GB | | |
| Data memory | Size | TBW | Test profile |
| | 64 GB | 18.75 | JESD218 Client profile |
| Type of data memory | Flash memory M.2 (Solid State Drive - SSD) (internal via SATA) | | |
| Storage capacity of data memory | Note: The indication of the available data storage capacity may vary slightly, since the manufacturers reserve a certain area (spare bytes) to ensure long-term stability. | | |
| Graphics controller | Integrated Intel Gen. 7 HD Graphics | | |

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

## 3.2.1 All devices up to hardware revision 03.00.x2

| | |
|---|---|
| Processor | Intel Atom N270; 1.6 GHz |
| RAM | 1 or 2 GB |
| Data memory | 4 or 16 GB |
| | 128 GB MLC |
| | 128 GB SLC |
| Type of data memory | Flash memory (SATA) |
| Operating system | Windows XP Embedded / Windows XP Professional / Windows 7 Ultimate |
| Global language support | Via Multi-Language interface of Windows XP Embedded (25 languages) |

## 3.2.2 All devices starting from hardware revision 03.00.x4

| | | | |
|---|---|---|---|
| Processor | Intel Bay Trail (BT) Atom E3845 Quad Core; 1.91 GHz | | |
| RAM | 4 GB | | |
| Data memory | Size | TBW | Test profile |
| | 64 GB MLC | 18.75 | JESD218 Client profile |
| | 128 GB MLC | 37.5 | |
| Type of data memory | Flash memory (Solid state drive - SSD) (internal via CF slot) | | |
| Graphics controller | Integrated Intel Gen. 7 HD Graphics | | |
| Operating system | Windows Embedded Standard 7 / Windows 7 Ultimate | | |
| | Windows 10 IoT Enterprise (64 bit) (included in standard delivery)<br>Windows 10 IoT Enterprise (32 bit) (optional on USB stick) | | |
| Global language support | Via Windows operating system | | |

## 3.2.3 All devices starting from hardware revision 03.00.x6

| | |
|---|---|
| Type of data memory | Flash memory M.2 (Solid State Drive - SSD) (internal via SATA) |
| Storage capacity of data memory | Note: The indication of the available data storage capacity may vary slightly, since the manufacturers reserve a certain area (spare bytes) to ensure long-term stability. |

# 3.3 Additionally for ET-5x6-A-* (Thin Clients)

## 3.3.1 All devices up to hardware revision 03.00.x2

| | |
|---|---|
| Processor | AMD Geode LX 800; 266 MHz |
| RAM | 512 MB |
| | 2 GB * |
| Data memory | 1 GB |
| | 16 GB * |
| Operating system | Windows Embedded Standard 2009 and Remote Firmware |
| | Windows Embedded Standard 7, Remote Firmware and Delta V * |

| | |
|---|---|
| NOTICE | * The combination of 2 GB RAM with 16 GB data memory is only available for the operating system with Delta V ! |

## 3.3.2 All devices starting from hardware revision 03.00.x4

| | |
|---|---|
| Processor | Intel Bay Trail (BT) Atom E3845 Quad Core; 1.91 GHz |
| RAM | 4 GB |
| Data memory | 64 GB |
| Type of data memory | Flash memory (Solid state drive - SSD) (internal via CF slot) |
| Graphics controller | Integrated Intel Gen. 7 HD Graphics |
| Operating system | Windows 10 IoT Enterprise and Remote Firmware |

## 3.3.3 All devices starting from hardware revision 03.00.x6

| | | | |
|---|---|---|---|
| Data memory | Size | TBW | Test profile |
| | 64 GB MLC | 18.75 | JESD218 Client profile |
| | 128 GB MLC | 37.5 | |
| Type of data memory | Flash memory M.2 (Solid State Drive - SSD) (internal via SATA) | | |
| Storage capacity of data memory | Note: The indication of the available data storage capacity may vary slightly, since the manufacturers reserve a certain area (spare bytes) to ensure long-term stability. | | |

# 4 Conformity to standards

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

| Standard<br>1st supplement<br>ATEX directive 2014/34/EU | Classification |
|---|---|
| IEC 60079-0 : 2017 | General requirements |
| IEC 60079-1 : 2014 | Flameproof enclosure "d" |
| IEC 60079-7 : 2017 | Increased safety "e" |
| IEC 60079-11 : 2011 | Intrinsic safety "i" |
| IEC 60079-18 : 2018 | Encapsulation "m" |
| IEC 60079-28 : 2015 | Optical radiation "op is" |
| IEC 60079-31 : 2013 | Protected by enclosures "t" (dust) |
| **The product corresponds to requirements from:** | |
| EN IEC 60079-0 : 2018 | General requirements |
| EN 60079-1 : 2014 | Flameproof enclosure "d" |
| EN IEC 60079-7 : 2015 + A1 : 2018 | Increased safety "e" |
| EN 60079-11 : 2012 | Intrinsic safety "i" |
| EN 60079-18 : 2015 + A1 : 2017 | Encapsulation "m" |
| EN 60079-28 : 2015 | Optical radiation "op is" |
| EN 60079-31 : 2014 | Protected by enclosures "t" (dust) |

| Electromagnetic compatibility | |
|---|---|
| **EMC directive** | |
| **2014/30/EU** | **Classification** |
| EN 61326-1 : 2013 | General requirements |
| EN 61000-6-2 : 2005 | Immunity |
| EN 61000-6-4 : 2007 + A1 2011 | Emission |
| **RoHS directive** | |
| **2011/65/EU** | **Classification** |
| EN IEC 63000 : 2018 | Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances |

# 5 Certificates

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

| Synonym | Scope | Certificate number | Valid until | Comment |
|---|---|---|---|---|
| CE / ATEX | Europe | TÜV 11 ATEX 7041 X | unlimited | |
| IECEx | Global | IECEx TUR 11.0006X | unlimited | |
| NEC | USA | UL 20130611-E202379 | unlimited | |
| CEC | Canada | CSA 2512677 | unlimited | |
| PESO | India | A/P/HQ/TN/104/6108 (P528111) | 31.12.2026 | |
| CCE | | P528111/1<br>P528111/2 | | Identification numbers |
| BIS | | R-41228087 | 26.06.2024 | Device restriction see notice |
| INMETRO | Brazil | UL-BR 12.0265X | 04.06.2024 | |
| KCC | Korea | | unlimited | Device restriction see notice |
| KCS | | 12-GA4BO-0215X<br>12-GA4BO-0317X | unlimited | |
| CCC | China | 2020312309000285 | 01.09.2025 | |
| RCM | Australia | | unlimited | According to declaration of conformity |
| DNV | Marine- / ship certification | TAA00000WA | 05.12.2026 | |
| ABS | | 19-HG1895092-PDA | 08.10.2024 | |
| LR | | LR21402888TA | 28.09.2026 | |

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

| | |
|---|---|
| NOTICE | BIS:<br>The following devices have the BIS certification:<br>ET-316-A-FX, ET-316-A-TX, ET-416-A-FX, ET-416-A-TX,<br>ET-516-A-FX, ET-516-A-TX<br>ET-336-A-FX, ET-336-A-TX, ET-436-A-FX, ET-436-A-TX,<br>ET-536-A-FX, ET-536-A-TX |

| | |
|---|---|
| NOTICE | In order to be able to operate these HMI devices in Korea, each device type additionally requires a KCC certificate.<br>Actually the following devices has such a certificate:<br>ET-316-A-*, MT-316-A-*, ET-416-A-*, MT-416-A-*, ET-436-A-*, MT-436-A-*, ET-456-A-TX |
| | The importer have to use exception documents which are applied in Korea rule for Korea.<br>A corresponding example document, the so-called "Customer confirmation letter", is included in the CE_ET-xx6-A certificate compilation of the devices. |

# 6 Marking

| | | |
|---|---|---|
| Manufacturer | R. STAHL HMI Systems GmbH | |
| Type code | ET-3x6-A-* / ET-4x6-A-* / ET-5x6-A-* | |
| CE classification: | CE 0158 | |
| Testing authority and certificate number: | TÜV 11 ATEX 7041 X<br>IECEx TUR 11.0006X | |
| Ex classification: | | |
| ATEX<br>ET-xx6-A-TX |  | II 2 (2) G Ex db eb ia ib mb [ia ib] IIC T4 Gb<br>II 2 (2) D Ex ia tb [ia ib] IIIC T80°C IP66 Db |
| ET-xx6-A-FX |  | II 2 (2) G Ex db eb ia ib mb [ia ib op is] IIC T4 Gb<br>II 2 (2) D Ex ia tb [ia ib op is] IIIC T80°C IP66 Db |
| IECEx<br>ET-xx6-A-TX | | Ex db eb ia ib mb [ia ib] IIC T4 Gb<br>Ex ia tb [ia ib] IIIC T80°C IP66 Db |
| ET-xx6-A-FX | | Ex db eb ia ib mb [ia ib op is] IIC T4 Gb<br>Ex ia tb [ia ib op is] IIIC T80°C IP66 Db |
| NEC | | Class I, Division 2, Groups A, B, C, D<br>Class II, Division 2, Groups F, G<br>Class III<br>Class I, Zone 2, Group IIC |
| CEC | | Ex d e ia ib mb [ia ib] IIC T4 Gb, Type 4X, IP66<br>Ex ia tb [ia ib] IIIC T80°C Db, IP66<br>Class II, Division 1, Groups E, F, G, T80°C |
| PESO<br>ET-xx6-A-TX | | Ex db eb ia ib mb [ia ib] IIC T4 Gb |
| ET-xx6-A-FX | | Ex db eb ia ib mb [ia ib op is] IIC T4 Gb |
| INMETRO<br>ET-xx6-A-TX | | Ex d e ia ib mb [ia ib] IIC T4 Gb<br>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<br>Ex ia tb [ia ib op is] IIIC T80°C Db IP66 |
| KCC / KCS | | Ex d e ia ib mb [ia ib] IIC T4<br>Ex ia tb [ia ib] IIIC T80°C Db IP66 |
| CCC<br>ET-xx6-A-TX | | Ex db eb ia ib mb [ia ib Gb] IIC T4 Gb<br>Ex ia tb [ia ib Db] IIIC T80°C Db |
| ET-xx6-A-FX | | Ex db eb ia ib mb [ia ib op is Gb] IIC T4 Gb<br>Ex ia tb [ia ib op is Db] IIIC T80°C Db |

# 7 Power supply

## 7.1 HMI devices

| | |
|---|---|
| Power supply: | 24.0 VDC<br>(min. 20.4 VDC , max. 28.8 VDC / (-15 % / +20 %)) |
| Up from 100 GB data memory | (min. 21.6 VDC , max. 28.8 VDC / (-10 % / +20 %)) |
| Power consumption: | 1.2 A |

### 7.1.1 HMI device terminals

Copper wires with cross sections of betwee 0.2 mm² (AWG24) and 2.5 mm² (AWG14) may be connected to any of the terminals of the HMI devices.

| | |
|---|---|
| NOTICE | 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.

| | |
|---|---|
| NOTICE | The stipulated tightening torques of the connection terminals must be observed and applied. Again, they must be checked and possibly adjusted before commissioning ! |

# 8 Permitted maximum values

## 8.1 External, non-intrinsically safe circuits

Input voltage (X1):

| | |
|---|---|
| Rated voltage | 24 VDC (+20 % / -15 %) |
| Power consumption at $Ur_{ated}$ | 1.5 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 |

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

The maximum values for group IIC are:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | - | V | | $U_o$ | = | 5.36 | V | |
| $I_i$ | = | - | mA | | $I_o$ | = | 220 | mA | |
| $P_i$ | = | - | W | | $P_o$ | = | 1.18 | W | |
| $C_i$ | = | 5.3 | µF | | $C_o$ | = | 40.7 | 59.7 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 2 | 1 | µH |

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

The maximum values for group IIB are:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | - | V | | $U_o$ | = | 5.36 | V | |
| $I_i$ | = | - | mA | | $I_o$ | = | 220 | mA | |
| $P_i$ | = | - | W | | $P_o$ | = | 1.18 | W | |
| $C_i$ | = | 5.3 | µF | | $C_o$ | = | 70.7 | 124.7 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 20 | 10 | µH |

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

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

The maximum values for group IIC are:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | 15 | V | | $U_o$ | = | 5.36 | V |
| $I_i$ | = | 500 | mA | | $I_o$ | = | 46 | mA |
| $P_i$ | = | 2.5 | W | | $P_o$ | = | 62 | mW |
| $C_i$ | = | 0 | µF | | $C_o$ | = | 46 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 2 | µH |

The maximum values for group IIB are:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | 15 | V | | $U_o$ | = | 5.36 | V |
| $I_i$ | = | 500 | mA | | $I_o$ | = | 46 | mA |
| $P_i$ | = | 2.5 | W | | $P_o$ | = | 62 | mW |
| $C_i$ | = | 0 | µF | | $C_o$ | = | 79 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 20 | mH |

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

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

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

The maximum values for group IIC are:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | - | V | | $U_o$ | = | 5.88 | V | |
| $I_i$ | = | - | mA | | $I_o$ | = | 200 | mA | |
| $P_i$ | = | - | mW | | $P_o$ | = | 1.18 | W | |
| $C_i$ | = | 5.3 | µF | | $C_o$ | = | 27.7 | 37.7 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 2 | 1 | µH |

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

The maximum values for group IIB are:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | - | V | | $U_o$ | = | 5.88 | V | |
| $I_i$ | = | - | mA | | $I_o$ | = | 200 | mA | |
| $P_i$ | = | - | mW | | $P_o$ | = | 1.18 | W | |
| $C_i$ | = | 5.3 | µF | | $C_o$ | = | 55.7 | 94.7 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 20 | 10 | µH |

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

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

The maximum values for group IIC are:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | 15 | V | | $U_o$ | = | 5.88 | V |
| $I_i$ | = | 500 | mA | | $I_o$ | = | 51 | mA |
| $P_i$ | = | 2.5 | W | | $P_o$ | = | 75 | mW |
| $C_i$ | = | 0 | µF | | $C_o$ | = | 34 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 2 | µH |

The maximum values for group IIB are:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | 15 | V | | $U_o$ | = | 5.88 | V |
| $I_i$ | = | 500 | mA | | $I_o$ | = | 51 | mA |
| $P_i$ | = | 2.5 | W | | $P_o$ | = | 75 | mW |
| $C_i$ | = | 0 | µF | | $C_o$ | = | 63 | µF |
| $L_i$ | = | 0 | mH | | $L_o$ | = | 20 | µH |

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:

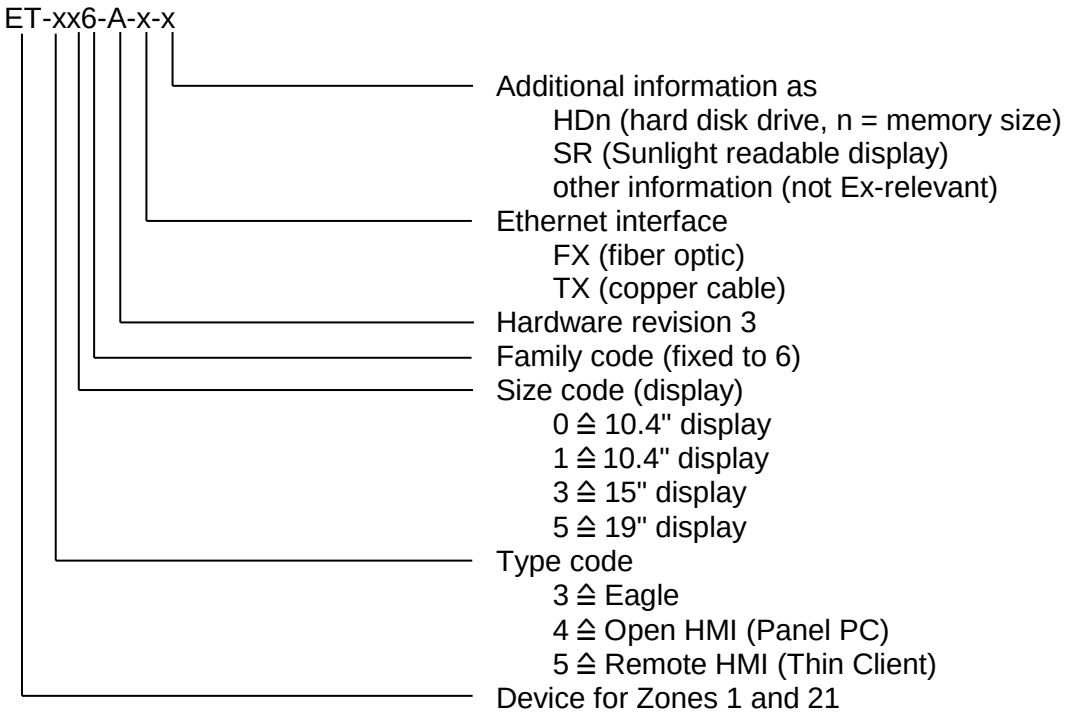
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $U_i$ | = | - | V | | $U_o$ | = | 5.88 | V | | | |
| $I_i$ | = | - | mA | | $I_o$ | = | 200 | mA | | | |
| $P_i$ | = | - | mW | | $P_o$ | = | 1.18 | W | | | |
| $C_i$ | = | 17.6 | µF | | $C_o$ | = | 10.4 | 20.4 | 43.4 | 82.4 | 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.*

| | |
|---|---|
| ATTENTION | Do **NOT** connect the optional external keyboard to live equipment ! |

# 9 Type code

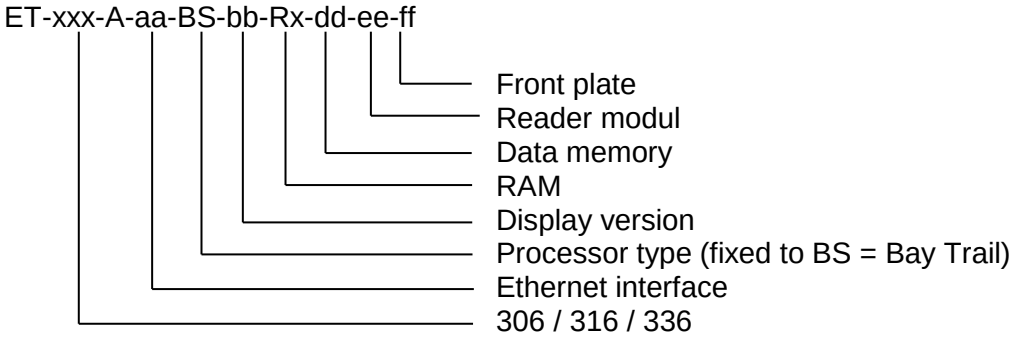
## 9.1 Certificate




## 9.2 Variants

### 9.2.1 ET-3x6-A-*-BS (Operator Interfaces)

| NOTICE | These versions apply to all Operator Interfaces starting from hardware revision 03.00.x5, with Bay Trail Atom E3815 single core processor. |
|---|---|

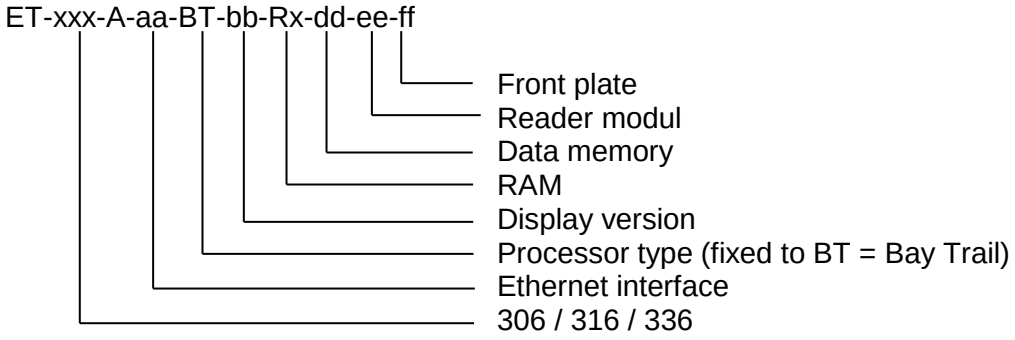



Device variant:

| Classification product key | Description |
|---|---|
| | Type with |
| ET-3x6-A-**FX**-BS-bb-Rx-dd-ee-ff | Optical fiber Ethernet interface 100Base-FX (Ex op is) |
| ET-3x6-A-**TX**-BS-bb-Rx-dd-ee-ff | Copper Ethernet interface 10/100Base-TX (Ex e) |
| ET-3x6-A-aa-BS-**TFT**-Rx-dd-ee-ff | TFT Display (Standard) |
| ET-3x6-A-aa-BS-**SR**-Rx-dd-ee-ff | Sunlight readable Display 1000 cd/m²<br>(only ET-336-A-*-BS) (no longer available) |
| ET-3x6-A-aa-BS-bb-**R2**-dd-ee-ff | 2 GB RAM |
| ET-3x6-A-aa-BS-bb-Rx-**16GB**-ee-ff | 16 GB Solid State Drive |
| ET-3x6-A-aa-BS-bb-Rx-dd-**RSi1**-ff | Plug-in module for reader with RS-232 interface,<br>power supply via HMI device |
| ET-3x6-A-aa-BS-bb-Rx-dd-ee-**PES** | Polyester front plate |

### 9.2.2 ET-3x6-A-*-BT (Operator Interfaces)

| NOTICE | These versions apply to all Operator Interfaces starting from hardware revision 03.00.x8, with Bay Trail Atom E3845 quad core processor. |
|---|---|

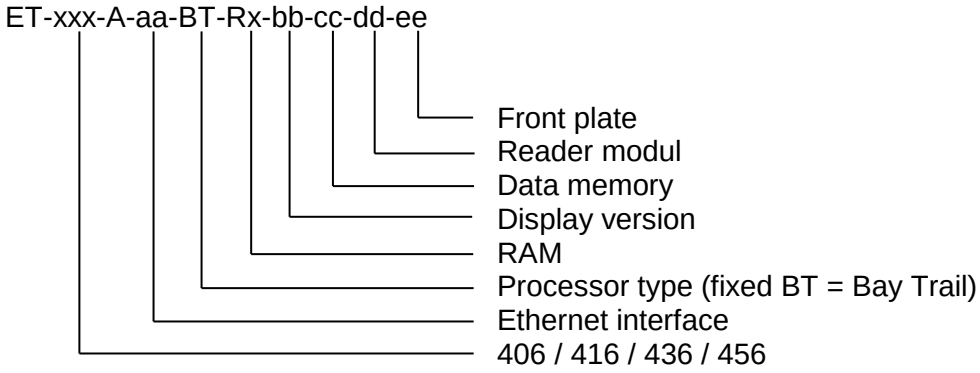



Device variant:

| Classification product key | Description |
|---|---|
| | Type with |
| ET-3x6-A-**FX**-BT-bb-Rx-dd-ee-ff | Optical fiber Ethernet interface 100Base-FX (Ex op is) |
| ET-3x6-A-**TX**-BT-bb-Rx-dd-ee-ff | Copper Ethernet interface 10/100Base-TX (Ex e) |
| ET-3x6-A-aa-BT-**TFT**-Rx-dd-ee-ff | TFT Display (Standard) |
| ET-3x6-A-aa-BT-bb-**R3**-dd-ee-ff | 4 GB RAM |
| ET-3x6-A-aa-BT-bb-Rx-**64GB**-ee-ff | 64 GB Solid State Drive |
| ET-3x6-A-aa-BT-bb-Rx-dd-**RSi1**-ff | Plug-in module for reader with RS-232 interface, power supply via HMI device |
| ET-3x6-A-aa-BT-bb-Rx-dd-ee-**PES** | Polyester front plate |

### 9.2.3 ET-4x6-A-*-BT (Panel PC)

| NOTICE | These versions apply to all Panel PC's starting from hardware revision 03.00.x4, with Bay Trail Atom E3845 quad core processor. |
|---|---|

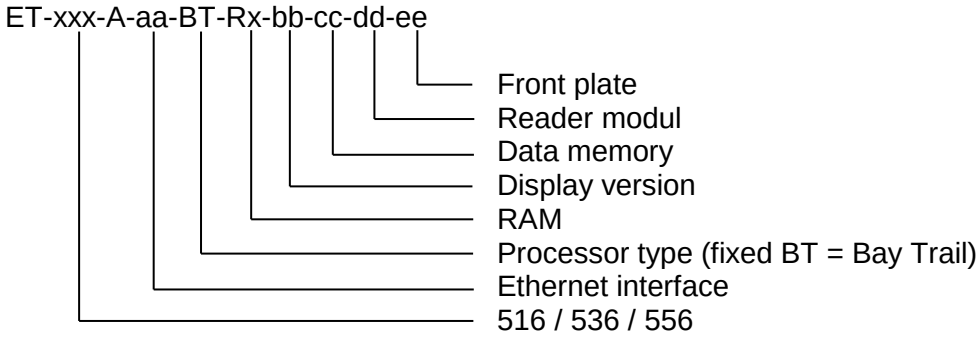



Device variant:

| Classification product key | Description |
|---|---|
| | Type with |
| ET-4x6-A-**FX**-BT-Rx-bb-cc-dd-ee | Optical fiber Ethernet interface100Base-FX (Ex op is) |
| ET-4x6-A-**TX**-BT-Rx-bb-cc-dd-ee | Copper Ethernet interface 10/100Base-TX (Ex e) |
| ET-4x6-A-aa-BT-**R3**-bb-cc-dd-ee | RAM 4 GB |
| ET-4x6-A-aa-BT-Rx-**TFT**-bb-cc-dd-ee | TFT display (standard) |
| ET-4x6-A-aa-BT-Rx-**SR**-bb-cc-dd-ee | Sunlight readable display 1000 cd/m² (ET-436-A-*-BT only) (no longer available) |
| ET-4x6-A-aa-BT-Rx-bb-**64GB**-dd-ee | 64 GB Solid State Drive MLC |
| ET-4x6-A-aa-BT-Rx-bb-**128GBM**-dd-ee | 128 GB Solid State Drive MLC |
| ET-4x6-A-aa-BT-Rx-bb-cc-**RSi1**-ee | Plug-in module for reader with RS-232 interface, power supply via HMI device |
| ET-4x6-A-aa-BT-Rx-bb-cc-dd-**PES** | Polyester front plate |
| ET-4x6-A-aa-BT-Rx-bb-cc-dd-**VA** | Stainless steel front plate (436 and 456 only), **NOT** SR type |

### 9.2.4 ET-5x6-A-*-BT (Thin Client)

| NOTICE | These versions apply to all Thin Client's starting from hardware revision 03.00.x4, with Bay Trail Atom E3845 quad core processor. |
|---|---|




Device variant:

| Classification product key | Description |
|---|---|
| | Type with |
| ET-5x6-A-**FX**-BT-Rx-bb-cc-dd-ee | Optical fiber Ethernet interface 100Base-FX (Ex op is) |
| ET-5x6-A-**TX**-BT-Rx-bb-cc-dd-ee | Copper Ethernet interface 10/100Base-TX (Ex e) |
| ET-5x6-A-aa-BT-**R3**-bb-cc-dd-ee | RAM 4 GB |
| ET-5x6-A-aa-BT-Rx-**TFT**-bb-cc-dd-ee | TFT display (standard) |
| ET-5x6-A-aa-BT-Rx-**SR**-bb-cc-dd-ee | Sunlight readable display 1000 cd/m²<br>(ET-536-A-*-BT only) (no longer available) |
| ET-5x6-A-aa-BT-Rx-bb-**64GB**-dd-ee | 64 GB Solid State Drive (SSD) |
| ET-5x6-A-aa-BT-Rx-bb-**128GB**-dd-ee | 128 GB Solid State Drive (SSD) |
| ET-5x6-A-aa-BT-Rx-bb-cc-**RSi1**-ee | Plug-in module for reader with RS-232 interface, power supply via HMI device |
| ET-5x6-A-aa-BT-Rx-bb-cc-dd-**PES** | Polyester front plate |
| ET-5x6-A-aa-BT-Rx-bb-cc-dd-**VA** | Stainless steel front plate, **NOT** SR type |

# 10 Safety Advice

| | |
|---|---|
| NOTICE | 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. |

| | |
|---|---|
| CAUTION | The notes listed below in section 10.1 must be heeded to avoid injury and damage to equipment ! |

## 10.1 Installation and operation

Please note the following when installing and operating the device:

- The in each case valid national regulations for installation and assembly apply (e.g. IEC/EN 60079-14).
- The 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.
- The HMI device must only be switched on when it is closed.
- The HMI devices may be installed in zones 1, 2, 21 or 22.
- For use according to NEC, please refer to drawings 201717540 and 201133510. Any pre-installations made ex-factory may have to be complemented accordingly.
- The intrinsically safe circuits must be installed according to applicable regulations.
- When installed in zones 1, 2, 21 and 22, intrinsically safe devices suitable for categories 2G, 3G, 2D and 3D may be connected to the intrinsically safe power supply circuits.
- If the HMI devices are installed in areas exposed to the risk of dust explosions, the maximum values of Group IIB apply to the intrinsically safe circuits.
- Interconnecting several active devices in an intrinsically safe circuit may result in different safe maximum values. This could compromise intrinsic safety !
- The safe maximum values of the connected field device(s) must correspond to the values listed on the data sheet or the EC type examination certificate.
- During assembly and operation of the HMI device electrostatic surface charging must not exceed that caused by manual rubbing.
- After switching the HMI device off, wait for at least 1 minute before opening it.
- Before opening the housing lid users must ensure that all non-intrinsically safe circuits have been switched off. Circuits supplied from different sources may be connected !
  Please note that all associated equipment (such as the SK-KJ1710, for example) must also be switched off !
- The HMI device and any connected equipment must be incorporated into the same potential equalization system (see installation example in the Hardware Manual). An alternative would be to connect only devices that are safely isolated from earth potential.
- National safety and accident prevention rules.

- Generally accepted technical rules.
- Safety instructions contained in these operating instructions.
- Any damage may compromise the explosion protection !

Use the device for its intended purpose only (see "Device Function").
Incorrect or unauthorized use and non-compliance with the instructions in this manual will void any warranty on our part.
No changes to the device that compromise its explosion protection are permitted !
The device may only be installed and operated in an undamaged, dry and clean condition !

## 10.2 Cautionary notes

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

| | |
|---|---|
| WARNING | **Explosion Hazard !**<br>Substitution of any components may impair suitability for Class I, Division 2 ! |
| | **Explosion Hazard !**<br>Do not disconnect Equipment while the circuts is life or unless the area is know to be free of ignitable concentrations ! |

## 10.3 Special conditions

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

## 10.4 Industrial Security

Our products with Industrial Security functions support the secure operation of plants, systems and equipment. Protection against cyber threats requires an all-encompassing Industrial Security concept. The key to a successful concept is integrated implementation, continuous maintenance and state-of-the-art technology. This is the responsibility of the plant operator.

The following are key issues for an effective Industrial Security concept:

- Prevention of unauthorised access to plants, systems, equipment and networks
- Systems, equipment and components should only be connected to the company intranet or the internet if and when required
- Employ protective measures such as firewalls and network segmentation
- Only use the latest software product versions
- Carry out software updates as soon as new versions are available
- Use standard user accounts for regular operation
- Use secure passwords
- Appropriate safeguarding of administrator accounts
- Application of security guidelines
- Other measures to be taken as required

R. STAHL uses Windows 10 for its products. It does not develop any cryptographic functions. R. STAHL does not configure / harden the operating system, nor does it provide or refer to security guidelines for doing so.
Furthermore, R. STAHL is constantly working on enhancing its products, thereby contributing to plant security and to minimizing the risk of cyber threats.

# 11 Installation

## 11.1 General information

| | |
|---|---|
| NOTICE | Electrical plants are subject to certain regulations concerning installation and operation (e.g. RL 1999/92/EC, RL 2014/34/EU and IEC/EN 60079-14). |
| | It is the responsibility of the operators of electrical installations in hazardous environments to ensure that the equipment is kept in proper condition, is operated according to instructions and that maintenance and repairs are carried out. |

## 11.2 ET-xx6-A-*

- Operators must ensure compliance with the examination certificates before installation. Users must adhere to any “special conditions” therein. Also of importance are the maximum electrical operating values specified therein.
- The earth / ground (PE) connector at the back of the HMI device housing must be connected to the equipotential bonding conductor of the hazardous area. The earthing cable's cross section must be at least 4 mm² (AWG12) and it must be fitted with a suitable cable lug. To prevent equalizing currents flowing to the earth / ground (PE) system of the HMI device it is necessary to safely isolate any connected devices from earth or to integrate them into the earth / ground (PE) system of the HMI device.
- The PE connection part of the HMI device located at the back of the housing is internally connected with the GND supply cable (X1 pins 3 and 4).
- The HMI devices can be mounted and operated in any position. Sufficient air circulation must be ensured, however, so that the maximum operating temperature is not exceeded.
- Intrinsically safe and non intrinsically safe conducting connection parts must be installed with a minimum distance of 50 mm [0.16 ft].
- When connecting the HMI devices to the intrinsically safe circuits of the associated equipment the respective maximum values of the field unit and the associated equipment must be observed to ensure explosion protection (proof of intrinsic safety).
- The HMI device's front should be protected by a canopy against permanent exposure to UV light. This increases the front membrane's lifespan. The canopy **MUST NOT** be too close to the front plate and sufficient air circulation must be ensured.
- The ET-4x6-A-* and ET-5x6-A-* devices may be operated at +55 °C [+131 °F] **ONLY FOR SHORT PERIODS** at a time.

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

If the HMI devices ET-xx6-A-* are mounted inside a cut out of a suitable housing of protection type Ex e or Ex t, its mechanical protection regarding impact and IP code protection up to IP65 is maintained even after the device has been installed. The internal separation requirements and the temperature assessment of the Ex e housing must be in accordance with the applicable standards. The clearance of HMI device terminals to other bare conducting parts (excepting ground) inside the Ex e housing shall be at least 50 mm [0.16 ft].

### 11.2.2 Cable glands

The HMI devices of the EAGLE device platform (ET-xx6-A) are factory-fitted with cable glands of the type STAHL 8161/* (Ex i - connections) and of the type HSK-M-Ex (Ex e connections). These are selected so that they comply with all relevant approvals for the device. The Ex-relevant markings on the device also contain the bushings and are not necessarily specially marked when the device is shipped from the factory. The following must be observed:

- Unused cable glands must be closed with certified screw plugs or stopping plugs.
- The tightening torques for the cable glands may vary depending on the cables and wires used. The users have to determine and apply the required torques themselves.
- In the case of ex-factory systems, all components are installed correctly and in accordance with applicable standards. Since storage or temperature etc. can have an impact on the cables and cable glands, the pre-installed screw connections must be checked and possibly tightened before commissioning.
- If they are too loose or too tight, the type of protection, sealing or strain relief might be negatively impacted.
- Cable glands with cap nut and without strain relief clamp should only be used for permanently installed cables and electrical lines. Installation of the required strain relief is the responsibility of the system set-up engineer.

Alternative, similar and certified cable glands may be used provided they have an equal or higher area of certification (zone) and permitted temperature range, and the same country approval (e.g. ATEX for Europe) as the HMI device.
Open enclosure holes without cable glands are not permitted and must be closed with a certified screw plug. This certified screw plug must have an equal or higher area of certification (zone) and permitted temperature range, and the same country approval (e.g. ATEX for Europe) as the HMI device.

## 11.3 Usage of the USB-interfaces

<table>
<tr><th colspan="5">Hardware and connection</th></tr>
<tr><td rowspan="2">connection to</td><td colspan="2">intrinsic safety USB devices</td><td colspan="2">intrinsically safe equipment</td></tr>
<tr><td>safe area</td><td>hazardous areas</td><td>safe area</td><td>hazardous areas</td></tr>
<tr><td>X4 (I.S.)</td><td>x</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>X6 (I.S.)</td><td>-</td><td>via VB-USB-Plug</td><td>-</td><td>-</td></tr>
<tr><td>X5 (Ex e)</td><td colspan="2" rowspan="2">-</td><td rowspan="2">via VB-USB-INST1</td><td rowspan="2">explosion-proof, but not intrinsically safe devices</td></tr>
<tr><td>X7 (Ex e)</td></tr>
<tr><th colspan="5">Functionality and application</th></tr>
<tr><td rowspan="2">ET-3x6-A-*</td><td colspan="2">Project transfer (SPSPlusWIN project)</td><td>-</td><td rowspan="7">corresponding device function *</td></tr>
<tr><td colspan="2">Device back-up</td><td>-</td></tr>
<tr><td rowspan="3">ET-4x6-A-*</td><td colspan="2">Restore factory state</td><td>Software installations</td></tr>
<tr><td colspan="2">Creation of User / OEM back-up</td><td>-</td></tr>
<tr><td colspan="2">Software installations</td><td></td></tr>
<tr><td rowspan="2">ET-5x6-A-*</td><td colspan="2">Restore factory state</td><td>-</td></tr>
<tr><td colspan="2">Import / Export parameters</td><td>-</td></tr>
</table>

| | |
|---|---|
| DOCUMENTATION | * See also 11.4.2.1 Connection variations for Ex e USB interfaces |

### 11.3.1 Usage of USB Memory-Sticks

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

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

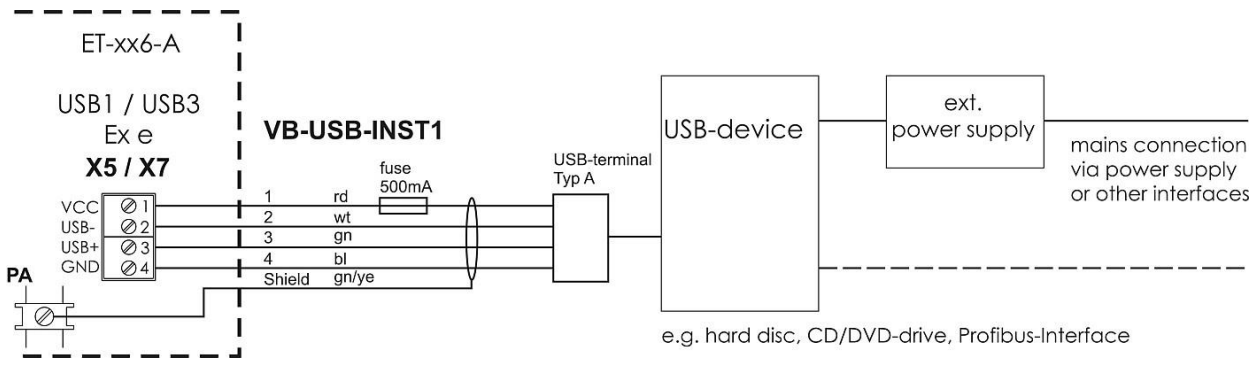
If devices are connected to the I.S. USB interface that have not been approved by R. STAHL HMI Systems GmbH, protective elements may become damaged, thus compromising the intrinsic safety of the interfaces.
In this case R. STAHL HMI Systems can no longer guarantee the intrinsic safety of the device !

### 11.3.2 Usage of external USB devices

| | |
|---|---|
| NOTICE | 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 (hard disk, CD / DVD with power supply)

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

## 11.4 USB interfaces

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

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

| | |
|---|---|
| DOCUMENTATION | 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 I.S. 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.

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

The following versions are possible:

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

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

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

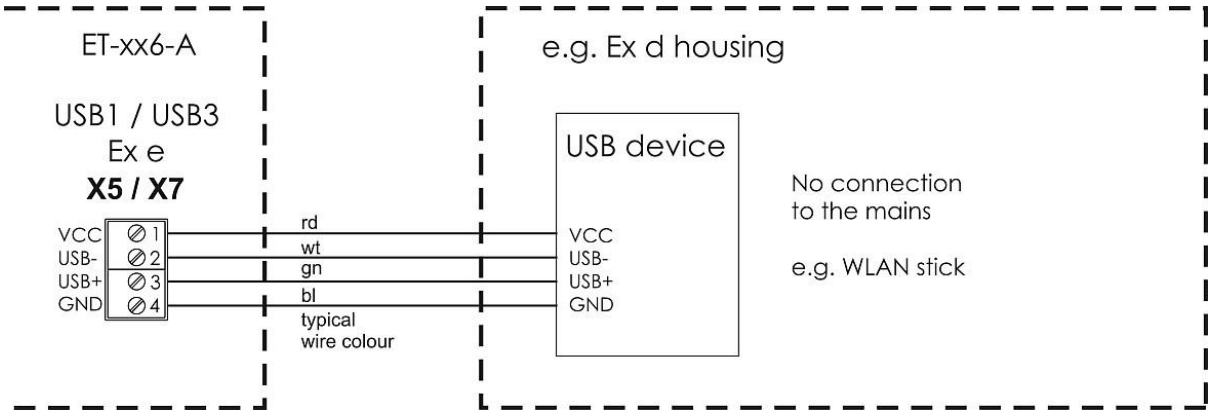
Flexible cables with a cross section of 0.2 – 2.5 mm² (AWG24 - AWG14) can be used.

The maximum cable length for the connection with the Ex e USB interfaces (X5 and X7) is 2.5 m [8.2 ft].

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

##### 11.4.2.2.1 Type 1 connection version

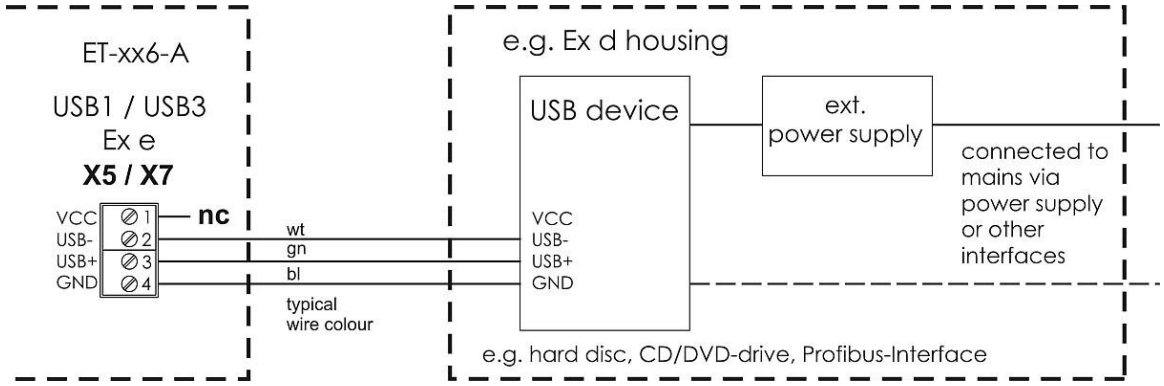
- The USB device does not require an external power supply as it uses less than 500 mA.
- No connection to the mains via other interfaces, e.g. WLAN stick.




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

##### 11.4.2.2.2 Type 2 connection version

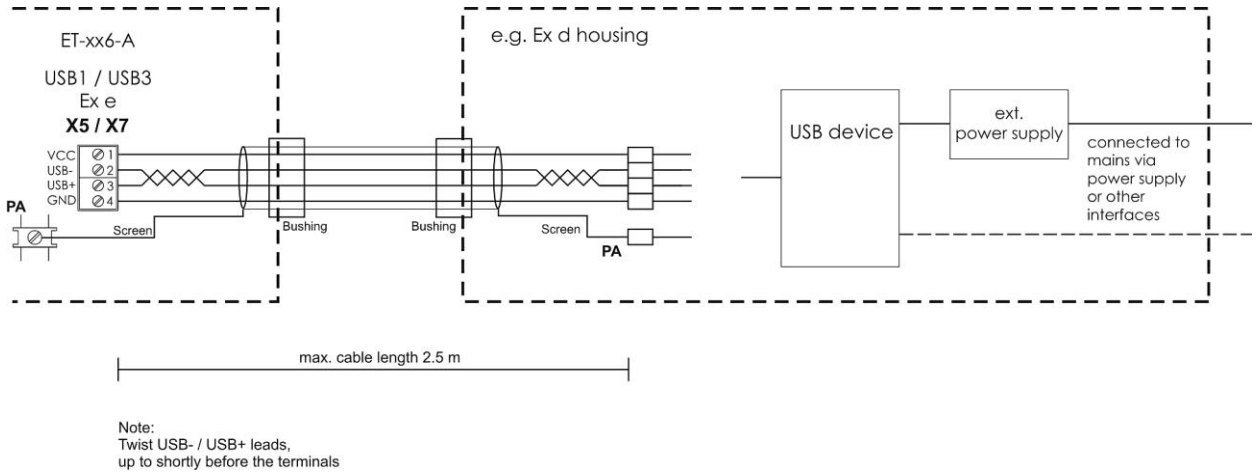
- The USB device does require an external power supply to function because it uses over 500 mA (e.g. hard disks, CD / DVD drives).
- The USB device is connected to the mains via other interfaces (e.g. USB / serial converter).




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).
- The USB device needs the VCC connection of the HMI device (internal supply – terminal 1) to function.




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

# 12 Assembly and disassembly

## 12.1 General information

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

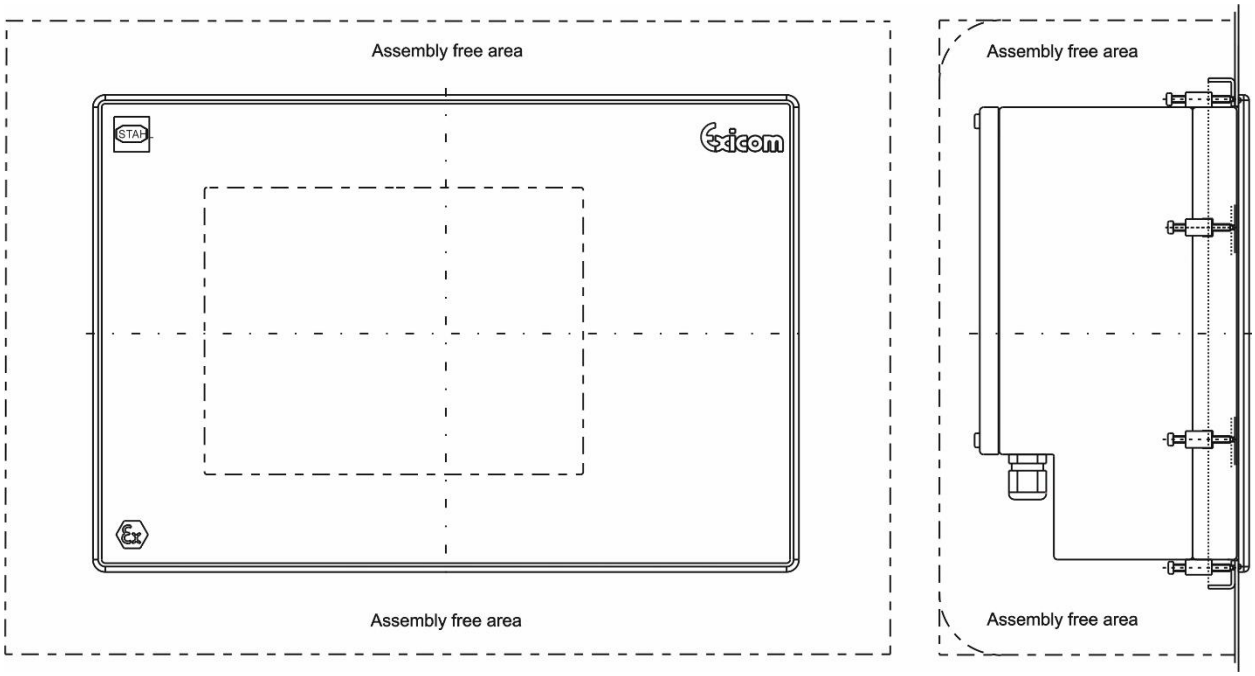
## 12.2 Cut-out ET-xx6-A-*

Make a cut-out with the following dimensions:

| HMI device | Width | Height | Depth of cut-out | Material thickness |
|---|---|---|---|---|
| ET-x06-A-* | 385.5 ± 0.5 mm [1.26 ± 0.0016 ft] | 257.5 ± 0.5 mm [0.84 ± 0.0016 ft] | 150 mm [0.49 ft] | up to 8 mm [0.0087 ft] |
| ET-x16-A-* | 359.5 ± 0.5 mm [1.18 ± 0.0016 ft] | 257.5 ± 0.5 mm [0.84 ± 0.0016 ft] | 150 mm [0.49 ft] | up to 8 mm [0.0087 ft] |
| ET-x36-A-* | 427.5 ± 0.5 mm [1.40 ± 0.0016 ft] | 327.5 ± 0.5 mm [1.07 ± 0.0016 ft] | 165 mm [0.54 ft] | up to 8 mm [0.0087 ft] |
| ET-x56-A-* | 522.5 ± 0.5 mm [1.71 ± 0.0016 ft] | 412.5 ± 0.5 mm [1.35 ± 0.0016 ft] | 165 mm [0.54 ft] | up to 8 mm [0.0087 ft] |

## 12.3 Assembly free area

| | |
|---|---|
| NOTICE | The area shown in the sketch must be kept free of all other components or installations !<br>When the HMI devices are installed in enclosures supplied by R. STAHL, these requirements are met. |




| HMI device | Width | Height | Depth |
|---|---|---|---|
| ET-x06-A-* | 484 mm [1.59 ft] | 356 mm [1.17 ft] | 200 mm [0.66 ft] |
| ET-x16-A-* | 458 mm [1.50 ft] | 356 mm [1.17 ft] | 200 mm [0.66 ft] |
| ET-x36-A-* | 526 mm [1.73 ft] | 426 mm [1.40 ft] | 200 mm [0.66 ft] |
| ET-x56-A-* | 621 mm [2.04 ft] | 511 mm [1.68 ft] | 215 mm [0.71 ft] |

# 13 Operation

## 13.1 General information

| | |
|---|---|
| NOTICE | When operating the devices, particular care shall be taken that:<br>• the HMI device has been properly installed according to instructions,<br>• the device is undamaged,<br>• the terminal compartment is clean,<br>• all screws are tightened fast,<br>• before switching the HMI device on, its external PE terminal is properly connected to the equipotential bonding system at its place of use,<br>• the cover of the terminal compartment is completely closed. |

## 13.2 Connections

| Terminal | Pin | Definition | | Connection |
|---|---|---|---|---|
| X1 | 1 | Power supply HMI device +24 VDC | | Power supply of the HMI device |
| | 2 | Power supply HMI device +24 VDC | | |
| | 3 | Power supply HMI device GND | | |
| | 4 | Power supply HMI device GND | | |
| X2 | 1 | TxD-b | B (+) | Serial COM1 interface RS-422/485 |
| | 2 | TxD-a | 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 - female | | 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 / mouse |
| | 2 | KBDAT | |
| | 3 | KBCLK | |
| | 4 | MSDAT | |
| | 5 | MSCLK | |
| | 6 | GND | |
| X10 | 1 | Optical fiber connection type duplex SC - female | Ethernet optical fiber interface ** |
| X11 | 1 | TxD (+) | Ethernet copper Connection ** |
| | 2 | TxD (-) | |
| | 3 | RxD (+) | |
| | 4 | RxD (-) | |

NOTICE

The COM interface **may only** be wired as a RS-232 **or** as a RS-422/485 connection !
Simultaneous wiring of the RS-232 and RS-422/485 interface is **not allowed** !

* 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.
When using the fibre optic interfaces of the devices, they must be connected and safely operated with other devices that comply with the limit values of Class 1 according to IEC 60825-1 or are classified as inherently safe optical radiation "op is" according to IEC 60079-28.
Copper wires with cross sections of between 0.2 mm² (AWG24) and 2.5 mm² (AWG14) may be connected to any of the terminals of the HMI devices.
Which cable cross sections are chosen should be decided on the basis of relevant regulations, such as DIN VDE 0298. Factors that might require a larger cross section, such as current, increased temperatures, cable bundling, etc. must also be taken into account !

### 13.2.1 Dip switch settings S3 and S4

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

| S4-1 | S4-2 | S4-3 | Interface | Keying |
|---|---|---|---|---|
| 0 | 0 | 0 | RS-422 | Automatic keying |
| 0 | 1 | 0 | | Keying always on |
| 0 | 0 | 1 | | Keying enabled by SW |
| 0 | 1 | 1 | | Driver in idle mode |
| 1 | 0 | 0 | RS-485 | Automatic keying |
| 1 | 1 | 0 | | Status not permitted !!! |
| 1 | 0 | 1 | | Keying enabled by SW |
| 1 | 1 | 1 | | Driver in idle mode |
| **S4-4** | OFF | | Touch | Without function |
| | ON | | | |

### 13.2.2 Status LEDs

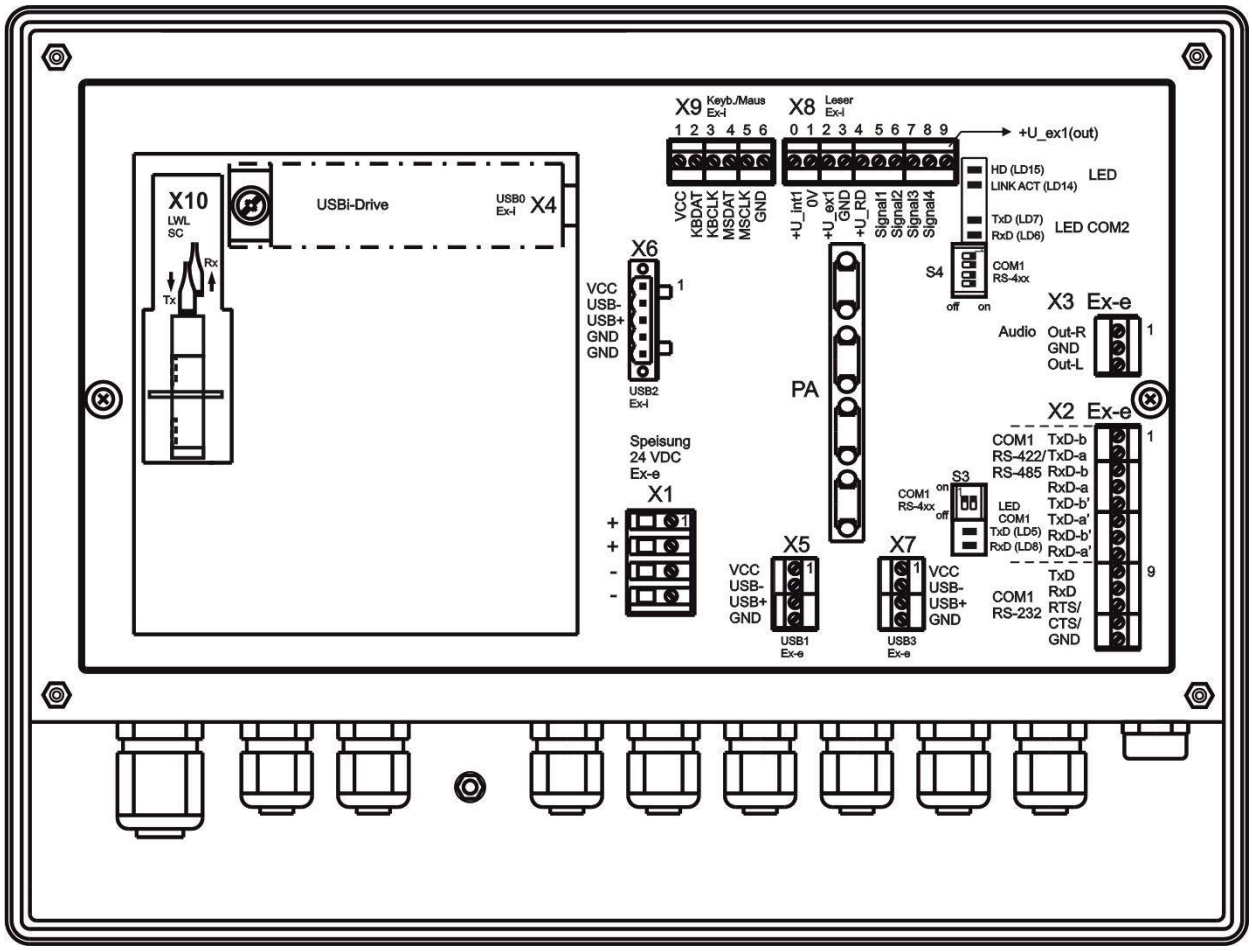
The status of the respective LEDs at the HMI devices indicates the activity of the corresponding data lines.
These LEDs are located underneath the additional back lid that covers the interface circuit board. This additional back lid needs to be removed in order to see these LEDs.

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

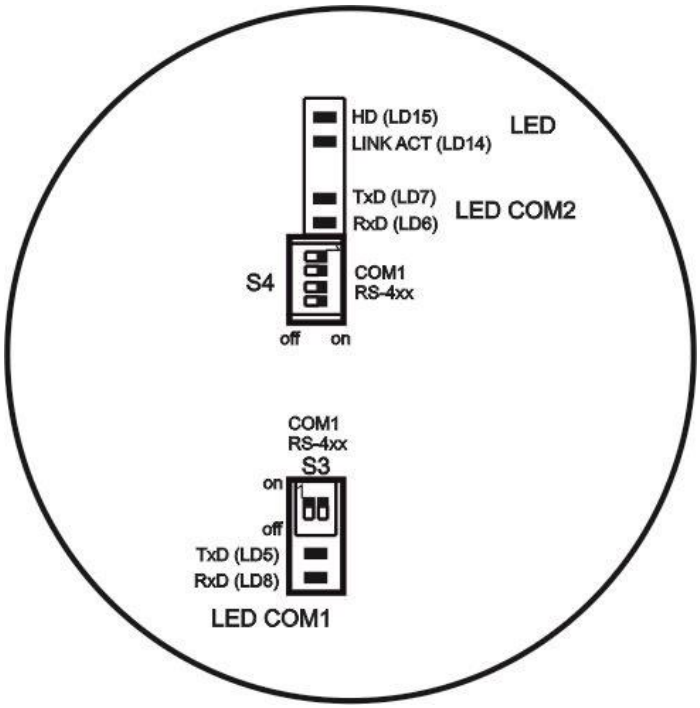
#### 13.2.2.1 LEDs

| Definition | Colour | Name | Description |
|---|---|---|---|
| LD5 | green | COM1 TxD | Activity on COM1: sending, LED flashing |
| LD8 | yellow | COM1 RxD | Activity on COM1: receiving, LED flashing |
| LD7 | green | COM2 TxD | Activity on COM2: sending, LED flashing |
| LD6 | yellow | COM2 RxD | Activity on COM2: receiving, LED flashing |
| LD14 | yellow | LINK ACT | Ethernet link established, LED always on<br>Activity on Ethernet link, LED flashing |
| LD15 | green | HD | Access to system disk (Solid State, HDD), LED flashing<br>(only for ET-4x6-A-* devices) |

Back view of ET-xx6-A-* device:




LED section at ET-xx6-A-* device:



## 13.3 Connection of Readers

Readers with a serial RS-232 interface can be connected to the HMI devices. For this, the HMI device had to be fitted with a corresponding module for reader devices (see type code) or the power supply VM125-ex must be used.

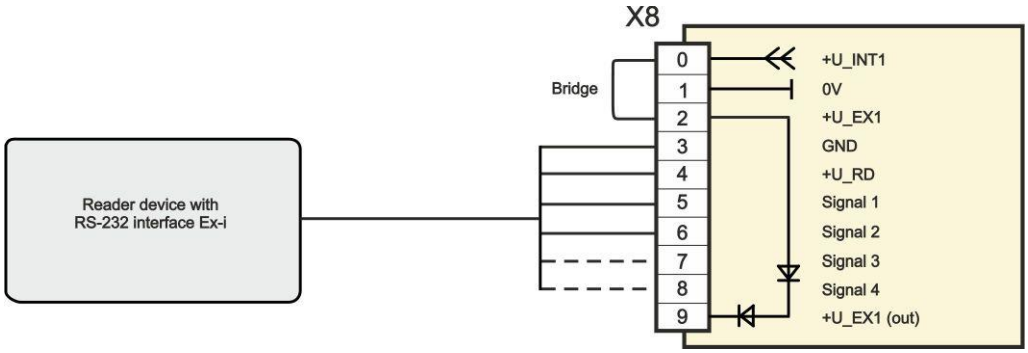
| | |
|---|---|
| ATTENTION | Please note that the Ex-connection values of the reader must match the safety-relevant values of the interface ! |

| | |
|---|---|
| DOCUMENTATION | For the exact wiring diagram of each individual reader type, please refer to the actual reader documentation. |

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

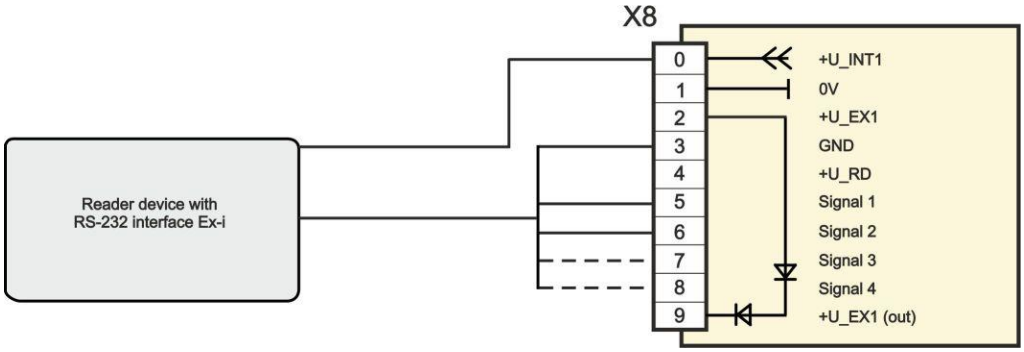
### 13.3.1 Type RSi1 connection version 1

With the RSi1 connection version, the reader is supplied with power via the HMI device.
In version 1, a maximum of 5.36 V and 220 mA are available for the reader.




### 13.3.2 Type RSi1 connection version 2

In version 2, a maximum of 10.4 V and 220 mA are available for the reader.



# 14 Maintenance, service

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

Because the transmission of the devices remains reliable and stable over long periods of time, regular adjustments are not required.
The following principles apply to repairs *, spare parts purchase* or exchange of parts * (where this can be done by the user !):

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

| | |
|---|---|
| DOCUMENTATION | * Please also note section Troubleshooting ! |

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

System maintenance should focus on the following:

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

| | |
|---|---|
| CAUTION | If the device in its factory state is damaged or altered in any way, decommission it immediately and contact the manufacturer ! |

## 14.1 Damaged sealing

| | |
|---|---|
| NOTICE | If a defective seal is found on a device that has been returned to the manufacturer, an agreement is made with the customer as to whether it should be repaired (replaced).<br>If this exchange is not necessary, the option "No hazloc approved panel mount" is marked on the device by the manufacturer. |
| | The device is only approved for installation inside an Ex e or Ex tb enclosure if no "No hazloc approved panel mount" option is indicated on the device. If the "No hazloc approved panel mount" option is indicated on the device, certification according to NEC / CEC is no longer possible or becomes void ! |

## 14.2 Servicing

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

## 14.3 Saving data with ET-3x6-A-*

All online data is stored on the internal flash card and are therefore also available after the device has been switched off for a long time.
According to the current state-of-the-art the flash cards retain stored data for about 10 years.

## 14.4 Time function

Does not apply to ET-5x6-A-*:
When the ET-3x6-A-* and ET-4x6-A-* HMI devices are switched off, their clock function is maintained by a battery and a capacitor. As long as the battery is intact, the clock function is maintained. Once the battery fails, the capacitor takes over and maintains the clock function for about four days. If the HMI device is switched on after a longer interval than that, the time and date have to be re-set manually or via a connected system.

# 15 Troubleshooting

| | |
|---|---|
| NOTICE | 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. |

# 16 Disposal / Restricted substances

Disposal of old electric and electronic devices, packaging and used parts is subject to regulations valid in whichever country the device has been installed.
For countries under the jurisdiction of the EU the corresponding WEEE directive applies.

The devices are classified according to the table below:

| | |
|---|---|
| Directive | WEEE II directive 2012/19/EU |
| Valid | from 2018-08-15 |
| Category | SG2 screens, monitors, devices with monitors >100 cm² |

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

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

## 16.1 Declaration of substances and restricted substances

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

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

### 16.1.1 Declarable substance groups

ECHA Legal Entity UUID of the R. STAHL HMI Systems GmbH:
ECHA-a4dd94d5-bcd2-405d-8fdd-010a535d7e87

SCIP number: fa5bf564-360c-465f-973e-1c33b9e27517

| Component | Name | Mass (g) | Declarable Substance Groups and Substances (IEC 62474 database) | CAS No. | Mass % | Exemption (acc. to directive) |
|---|---|---|---|---|---|---|
| BR2330 | Lithium coin cell ATOM boards | 3.2 | Ethylene glycol dimethyl ether (1.2-Dimethoxyethan / EGDME) | 110-71-4 | 3.8100 | - |

### 16.1.2 RoHS directive 2011/65/EC

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

### 16.1.3 IMO Resolution MEPC.269(68)

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

### 16.1.4 China RoHS labelling

The part of all toxic or hazardous substance contained in the homogeneous materials of the HMI devices is below the limit requirements in SJ/T11363-2006.

# 17 General information

## 17.1 Touch driver

| | |
|---|---|
| NOTICE | The UPDD touch driver is copyrighted licensed software supplied strictly for use with original R. STAHL HMI Systems GmbH touch systems and under no circumstances should this driver be downloaded or used on any other equipment ! |

## 17.2 Keyboard features

| | |
|---|---|
| | The information according the keyboard features applies **ONLY** to the 300 and 400 SERIES of HMI devices, and **NOT** to the 500 SERIES. |
| | Pressing two keys at once (e.g. F1 + F7) is not supported by the HMI devices !<br>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 !<br>The key pressed second is ignored. |
| NOTICE | The key kombination of Ctrl + Alt + Del can **NOT** be realized via the virtual keyboard !<br>For this you must use an external connected keyboard !<br><br>If you like to have a simulation from the key kombination of Ctrl + Alt + Del via the F-keys of the HMI device, it must be stated when ordering, as it can only be done by the manufacturer **before delivery**.<br><br>Pressing the keys F1, F2 and F8 at the same time, if the F-key simulation is activated, it has the same effect as pressing Ctrl + Alt + Del ! |
| | **ET-306-A-* only:**<br>Pressing the S1 – S10 softkeys on the ET-306-A-* has the same effect as pressing the numerical keys (num lock) 0 – 9.<br><br>At the image Movicon CE only the S1 – S10 softkeys are allocated as the combination of Shift + F1 – Shift + F10 keys function. |
| | **ET-406-A-* only:**<br>Pressing the S1 – S10 softkeys on the ET-406-A-* has the same effect as pressing the combination of Shift + F1 – Shift + F10 keys function. |

## 17.3 ET-4x6-A-* (Panel PC)

### 17.3.1 Up to Windows 7 operating systems

#### 17.3.1.1 Licensing issues

The Panel PC devices SERIES 400 which are pre-installed with a Windows operating system are equipped with a license sticker.
The license sticker is affixed on the back of the HMI device, next to the type plate.
Please note that according to the license issued for Windows the application of this system as an Office PC is not permitted.

| | |
|---|---|
| DOCUMENTATION | Please also note the information on the licensing stipulations for Windows operating systems contained in the "TechNote Windows Operating Systems" file located on the CD / DVD / USB stick, which is part of the delivery. |

#### 17.3.1.2 Note on Windows Embedded operating systems

When using the Windows Embedded operating systems (XP or Windows Standard 2009 / 7) on the Panel PC devices SERIES 400, the C:\ system drive can be protected from unauthorised writing (EWF).

| | |
|---|---|
| NOTICE | This is **NOT** the case with other Windows operating systems ! |

| | |
|---|---|
| ATTENTION | R. STAHL HMI Systems GmbH recommends you leave the write protection filter on at all times ! |

| | |
|---|---|
| DOCUMENTATION | For further information regarding this Write Protection (EWF), please refer to the OpenHMI_help_en.chm help file in the "STAHL" folder on the device or on the CD / DVD / USB stick that is included in the delivery. |

### 17.3.2 Windows® 10 IoT Enterprise 2019 LTSC operating system

The operating system is based on Windows 10 for PC platforms with 64 bit x86 processors. For the LTSC (Long Term Servicing Channel) versions, Microsoft guarantees 10 years of security updates and new builds with feature updates only every 2-3 years, with these being optional. The LTSC versions are ideal for industrial applications and feature additional security components such as write filters (UWF) and HORM (start of a system snapshot from the RAM plus write protection).

From 2016 LTSB onwards, Microsoft has tied its licensing model to the processor performance:
ENTRY for AMD® GX and ATOM™
VALUE for Intel® Core i5™
HIGH for Intel® Core i7™

The Panel PC SERIES 400 HMI devices with Windows 10 IoT Enterprise 2019 LTSC operating systems have the license provided as part of the image, with the corresponding label affixed to the back of the device. When delivered, the devices have already been registered and activated.

The EOL (End of Life) date for Windows 10 IoT Enterprise 2019 LTSC for support and updates has been set by Microsoft to 09.01.2029.

#### 17.3.2.1 Recovery

| | |
|---|---|
| NOTICE | If a Panel PC is reset to the factory state (recovered) it will remain registered but will have to be reactivated !<br>This requires an active internet connection to a Microsoft server ! |

#### 17.3.2.2 Company-specific Windows installations

| | |
|---|---|
| NOTICE | The Windows 10 IoT license key is tied to STAHL images !<br>The installation of own Windows 10 IoT operating systems requires a separate license key ! |
| | All necessary drivers are provided by R.STAHL HMI Systems GmbH.<br>Please contact our Support department. |

### 17.3.3 Initial start-up

When the device is started for the first time, the Windows installation assistant starts where users have to select certain settings.
Please follow the instructions of the installation assistant.

### 17.3.4 Recovery Stick

| | |
|---|---|
| NOTICE | To restore your Panel PC device to its original state you will need a Recovery Stick, which is available as an optional extra. This recovery stick (USB-drive, also available intrinsically safe) contains the factory image, with which the system can be restored to delivery status within a very short time.<br>Please note that you can restore the HMI devices to their original state only with the aid of the Recovery Stick |
| | As an option, the recovery stick can also contain a backup software, with which you can back up your own device configuration. |

### 17.3.5 Back-up

| | |
|---|---|
| NOTICE | Please note that it is the sole responsibility of the operator to generate a back-up of the HMI devices and their overall function. |
| | We strongly recommend such a back-up to be stored on an external storage medium or on the company network. |

### 17.3.6 Switching off / closing down

| | |
|---|---|
| NOTICE | 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 HMI device is switched off. |

| | |
|---|---|
| ATTENTION | It is therefore important for the safe and correct operation that the HMI device is closed down properly (see illustration below) and **NOT** simply switched off.<br>Otherwise the existing image of the device may be damaged, rendering the HMI device non-functioning. |

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

| | |
|---|---|
| ATTENTION | Only switch off the HMI device once you have received this message ! |

### 17.3.7 Data loss

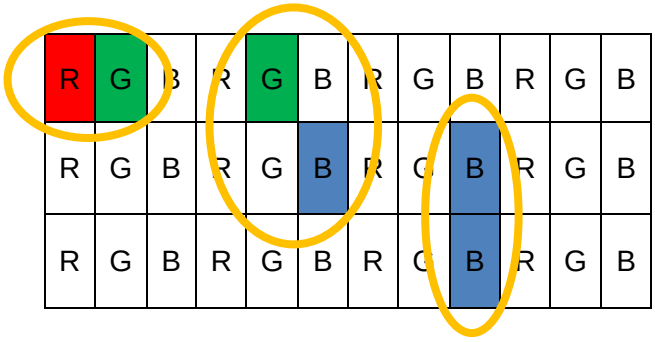
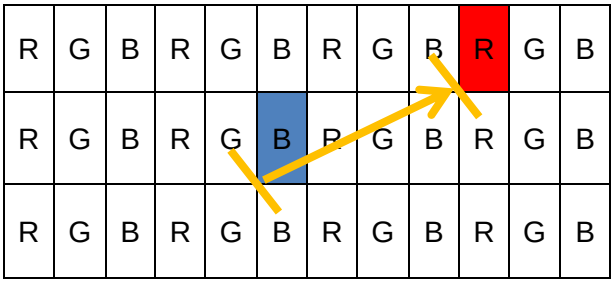
| | |
|---|---|
| NOTICE | In the case of applications that require constant writing into memory, R. STAHL HMI systems recommends you use external storage media (USB sticks, network servers) for these write processes. |

| | |
|---|---|
| ATTENTION | Try and avoid cyclical writes (log files, databases, etc.) to the SSD !<br>The endurance of an SSD depends on the number of write cycles (TBW / terabytes written).<br>Writing to the SSD with a simultaneous drop in voltage is most likely going to result in data loss ! |

## 17.4 Defective pixels

As a result of the manufacturing process (production tolerances and errors) for the displays they may be delivered with defective pixels. Provided they are within the range of the specification below these potential defective pixels are not a display or HMI error or defect.

### 17.4.1 Terminology

| | |
|---|---|
| Defective pixels | Pixels or sub-pixels that do not perform as expected and are either always on or always off |
| Pixel | Image point on the display consisting of 3 sub-pixels in the basic colours red, green and blue   |
| Dot | Sub-pixel in the basic colour red, green or blue   |
| Bright | Sub-pixel (dot) to which light is passing through, creating a bright dot that is on |
| Dark | Sub-pixel (dot) to which no light is passing through, creating a dark dot that is off |
| adjacent dots | dots positioned next to one another, horizontally, vertically or diagonally, bright or dark (e.g. the following pattern and sub-pixels)   |
| Distance between Dots | Definition of distance between two defective dots horizontal, vertical or diagonal, bright or dark (e.g. the following pattern and sub-pixels)   |

### 17.4.2 Display specification

| Type of defect / description | max. number of permitted defects | | |
|---|---|---|---|
| | 10.4" display | 15" display | 19" display |
| Linear defect (horizontal, vertical) | not permitted | | |
| Defective pixels | | | |
| bright dots | ≤ 3 | ≤ 2 | ≤ 2 |
| dark dots | ≤ 4 | ≤ 3 | ≤ 5 |
| total number of dots | ≤ 5 | ≤ 5 | ≤ 5 |
| adjacent dots | | | |
| 2 bright dots | not permitted | ≤ 1 pair | ≤ 1 pair |
| more than 3 bright dots | not permitted | | |
| 2 dark dots | ≤ 1 pair | ≤ 1 pair | ≤ 2 pairs |
| more than 3 dark dots | not permitted | | |
| Distance between the dots | | | |
| between 2 bright dots | not permitted | ≥ 15 mm | ≥ 15 mm |
| between 2 dark dots | ≤ 5 mm | ≥ 15 mm | ≥ 15 mm |
| between 1 bright and 1 dark dot | ≤ 15 mm | ≥ 15 mm | ≥ 15 mm |
| ND filter for mura effects, bright and dark dots | view with 6% filter | view with 5% filter | view with 5% filter |

# 18 Optical acceptance of surfaces

This section covers the acceptance criteria applicable to the minimum requirements for surfaces of devices and components.
The values for imperfection types listed under "tolerance limits" do not constitute a defect or an imperfection of the device or component and must therefore be tolerated.

## 18.1 Optical acceptance glass

| Imperfection type | Criterion | Tolerance limits |
|---|---|---|
| Total imperfections | Number | Max. 3 |
| Cleanness of glass surface | Clearly visible dirt | not permitted |
| Edge crack / incipient crack | visible | not permitted |
| Scratches | Width | up to 0.16 mm |
| | Length | up to 40 mm |
| | Cumulative length of all scratches | max. 40 mm |
| | Long side of glass < 300 mm, distance > 70 mm | |
| | Number | 2 |
| | Long side of glass 300 - 600 mm, distance > 70 mm | |
| | Number | 3 |
| Hairline scratches / scraper damage | Width | max. 0.05 mm |
| | Length | max. 40 mm |
| Large point defects | Size | max. 0.4 mm² |
| | Number | 2 |
| Small point defects | Size | max. 0.16 - 0.4 mm² |
| | Number | 5 |
| Permitted point defects | Size | < 0.16 mm², provided there is no cluster *** |
| Interference points | Ø < 0.2 mm | permitted |
| | 0.2 mm < Ø ≤ 0.6 mm | permitted provided there is no cluster *** |
| | 0.6 mm < Ø ≤ 1.3 mm | 5 |
| | 1.3 mm < Ø ≤ 2.0 mm | 2 |
| | Ø > 2.0 mm | not permitted |
| Inhomogeneity * | minor colour variations | permitted |
| White haze ** | only visible in reflection | permitted |
| | not visible when device is in operating position. | permitted |

NOTICE

* in the case of coated float glass, inhomogeneity in the form of minor colour variations can occur and cannot be prevented by any technical means

** large, cloudy blemish, can be more pronounced towards the centre of the glass, but can also affect larger parts of the glass.

*** a cluster is an accumulation of more than 7 disregarded, permitted imperfections that occur within an inspected area of a diameter of 40 mm.

## 18.2 Optical acceptance printing

| Description | Tolerance limits |
|---|---|
| Labelling | Clearly legible, minimum stroke weight 0.3 mm |
| Characters | clearly legible |
| Lines and symbols | Gaps not permitted |
| Ink coverage | sufficient if underlying layers and structures not visible |
| Acutance | +/- 0.15 mm |
| Edge blurring | +/- 0.15 mm |
| Print overlap | possible colour variations in the overlap area are permitted |
| Variations of stroke weight | 10 % |
| Within a shaping print | "Fine" as specified in DIN ISO 2768-1 General tolerance class |
| Between shaping prints | < 400 mm +/- 0.3 mm<br>≥ 400 mm +/- 0.5 mm |

| Imperfection type | Criterion | Tolerance limits |
|---|---|---|
| Dirt and dust particle inclusions, stains, fluff, | Size | max. 0.16 mm² |
| | Size for weak colour contrast | max. 0.25 mm² |
| | Number / 100 cm² | 1 |
| | Minimum distance | 80 mm |
| | Lower limit | 0.063 mm² |

## 18.3 Optical acceptance, other surfaces

**Definitions**

| | |
|---|---|
| Scratch | straight or curved / wavy surface damage |
| Dents / dings | plastic deformation inwards or outwards |
| Scuff mark without dent | "punch mark"-type depression |

**Surface categories**

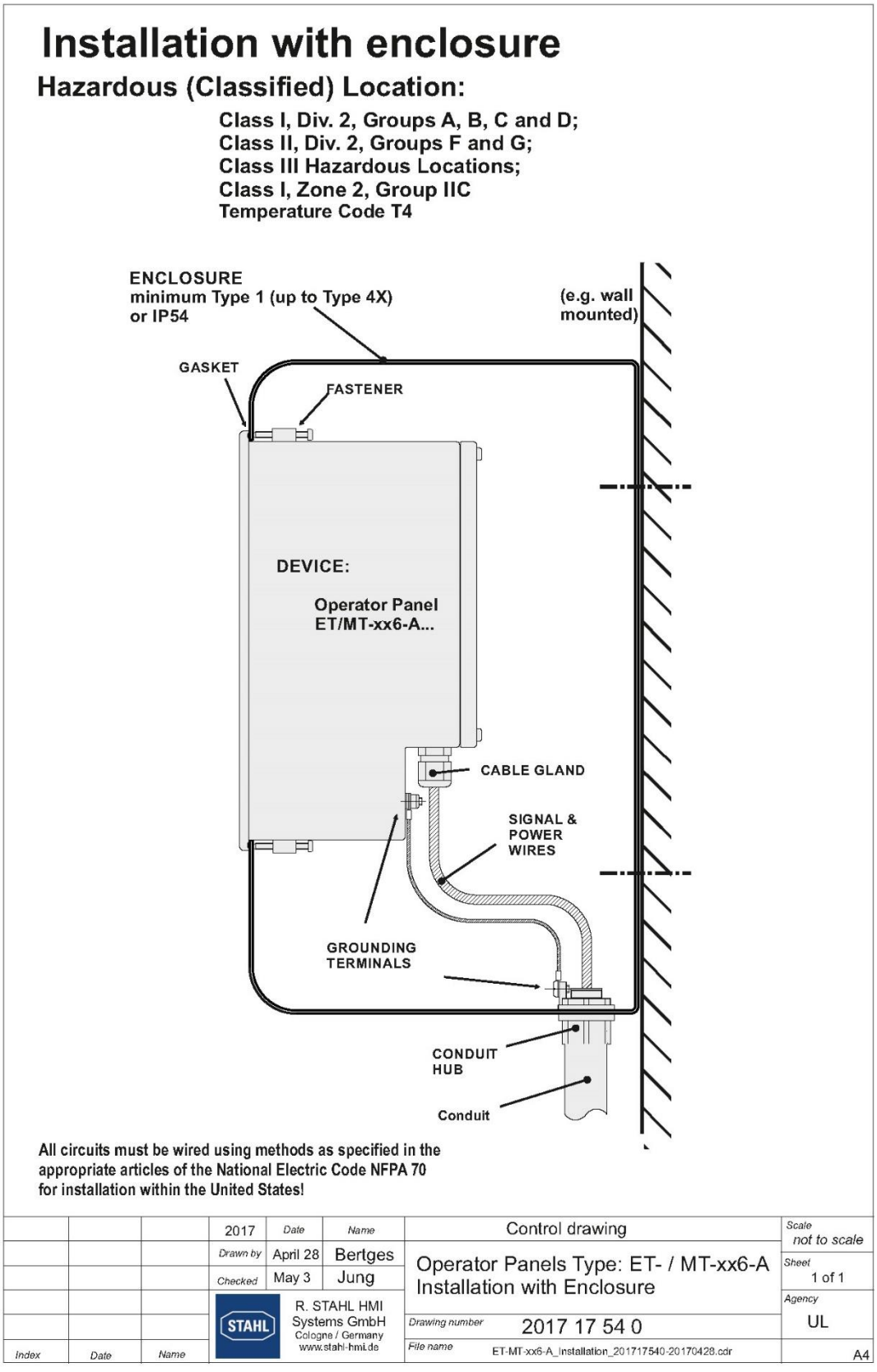
If not specified otherwise in the drawing, the following applies:

| | | |
|---|---|---|
| A surface | Surface is frequently viewed, typically the front plate. Surface is in customer's field of vision | |
| | Colour code | |
| B surface | Surface is occasionally viewed, typically the sides of the device | |
| | Colour code | |
| C surface | Surface is rarely viewed, typically the back or bottom of device | |
| | Colour code | |
| D surface | Surface is never viewed, typically the inside of the device | |
| | Colour code | |

Accessories such as stand, wall bracket etc. are termed C surfaces

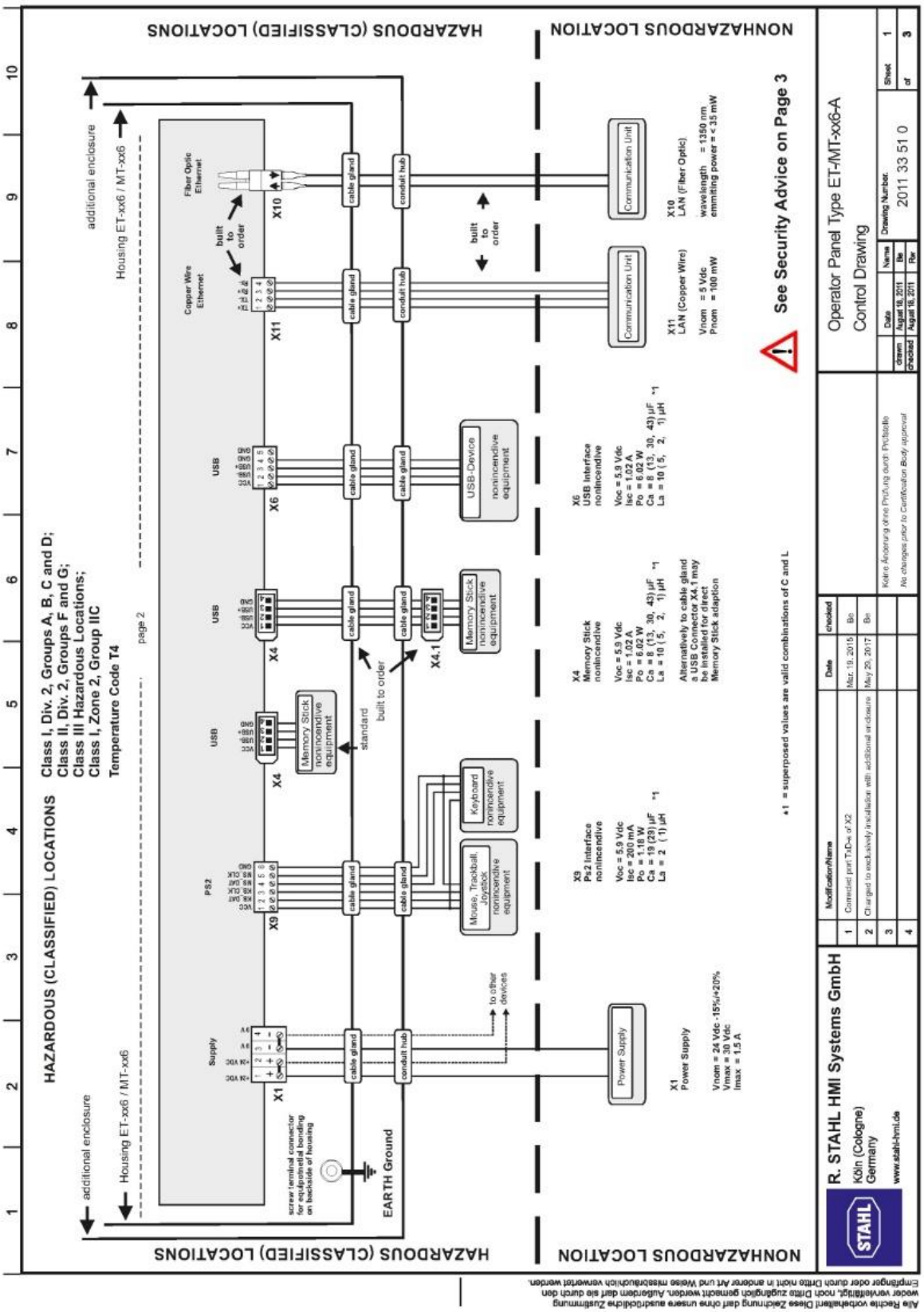

| Imperfection type | A surface | B surface | C surface | D surface |
|---|---|---|---|---|
| Scratches | max. 1 per side | max. 2 per side | 1x up to 100 mm with the grain | permitted |
| | 0.05 – 0.1 mm wide and max. 10 mm long | 0.05 – 0.1 mm wide and max. 10 mm long | | |
| | **or** | **or** | **and** | |
| | 0.01 – 0.05 mm wide and max. 40 mm long | 0.01 – 0.05 mm wide and max. 40 mm long | 3x up to 15 mm against the grain | |
| | | | **or** | |
| | only with the grain | only with the grain | 1x up to 30 mm against the grain | |
| Gouges, depressions (punch-mark-type depression) | not permitted | not permitted | max. 2 per side | permitted |
| | | | max. 0.3 mm wide | |
| | | | max. 3 mm long | |
| Dents / cavities | not permitted | not permitted | not permitted | not permitted |
| welding flaws | not permitted | not permitted | not permitted | not permitted |
| Chatter marks | not permitted | not permitted | not permitted | not permitted |
| Material flaws | not permitted | not permitted | not permitted | not permitted |
| Orange peel: surface not homogeneous | not permitted | not permitted | not permitted | permitted |

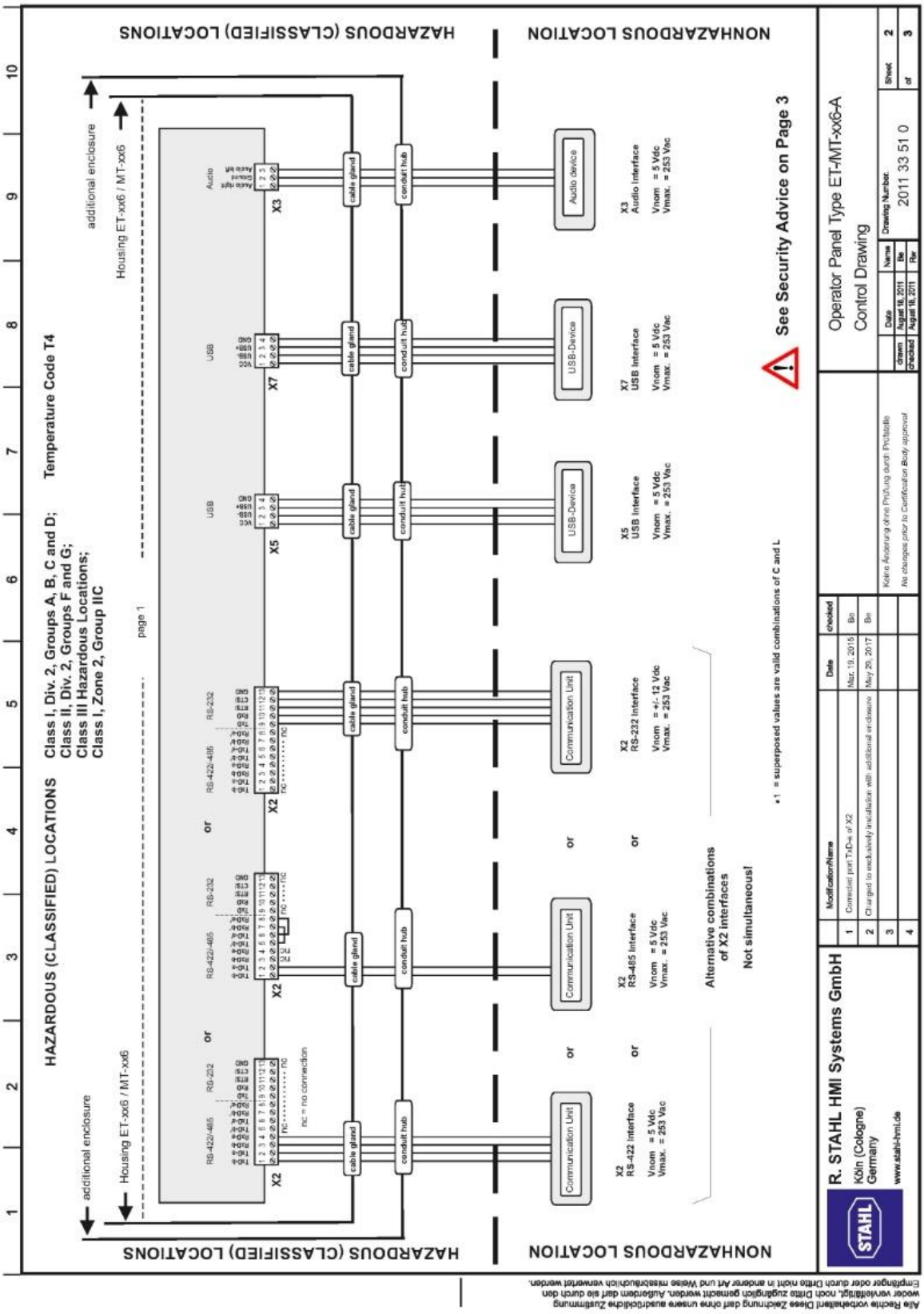
# 19 Certification Drawing NEC



# 20 Control Drawing

## 20.1 NEC





## Security Advice

1. No revision to drawing prior to certification body.
2. The Associated Apparatus must be NRTL 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 maximum possible capacitance of cable:

Cmax = Ca - Ci (associated Apparatus)

Determination of maximum possible inductance of cable:

Lmax = La - 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 | Connector part TxDx- or X2 | Mar. 19, 2015 | Bn |
| 2 | Changed to exclusively installation with additional enclosure | May 29, 2017 | Bn |
| 3 | | | |
| 4 | | | |

R. STAHL HMI Systems GmbH
Köln (Cologne)
Germany
www.stahl-hmi.de

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

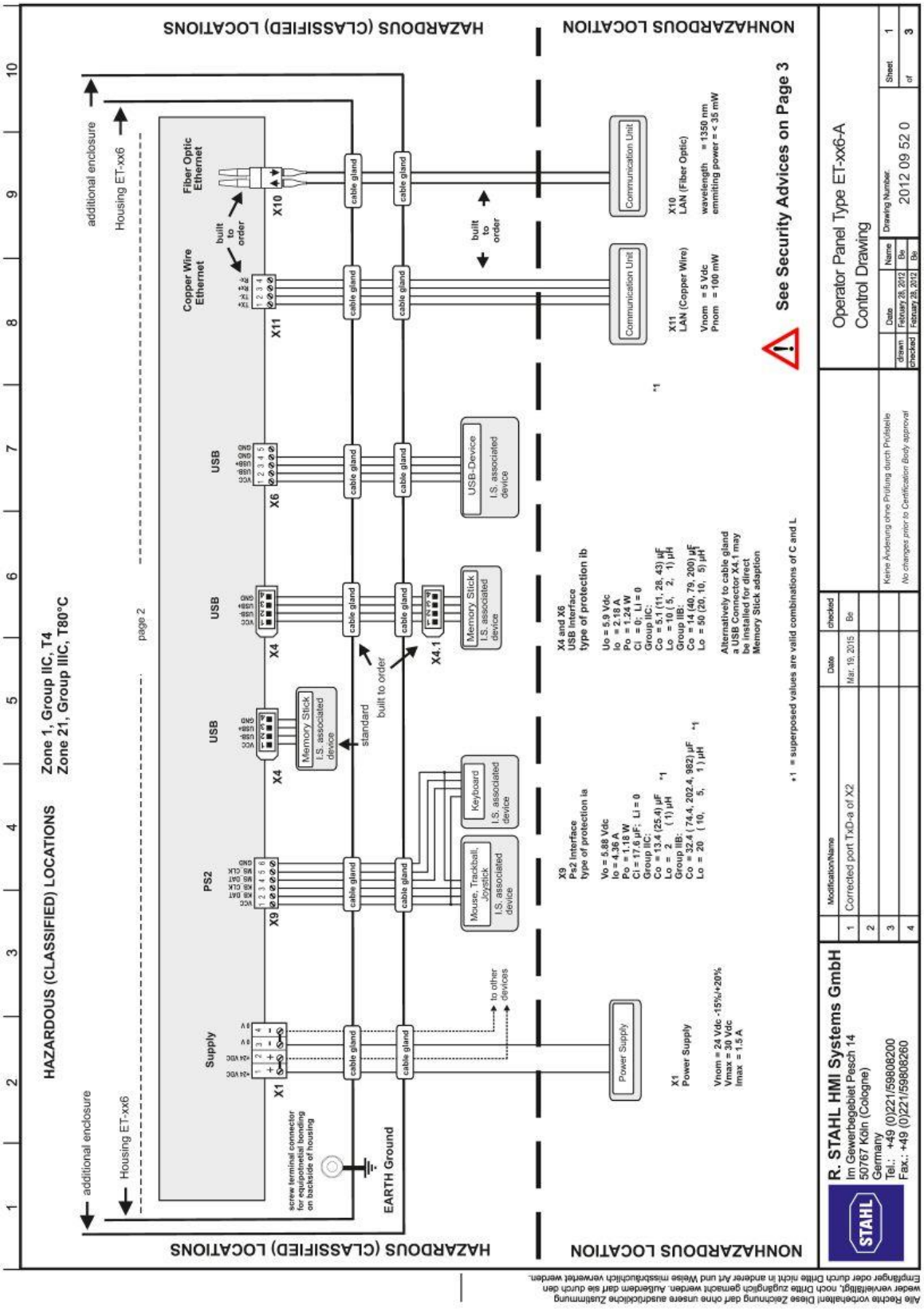
| | Date | Name |
|---|---|---|
| drawn | August 18, 2011 | Be |
| checked | August 18, 2011 | Rw |

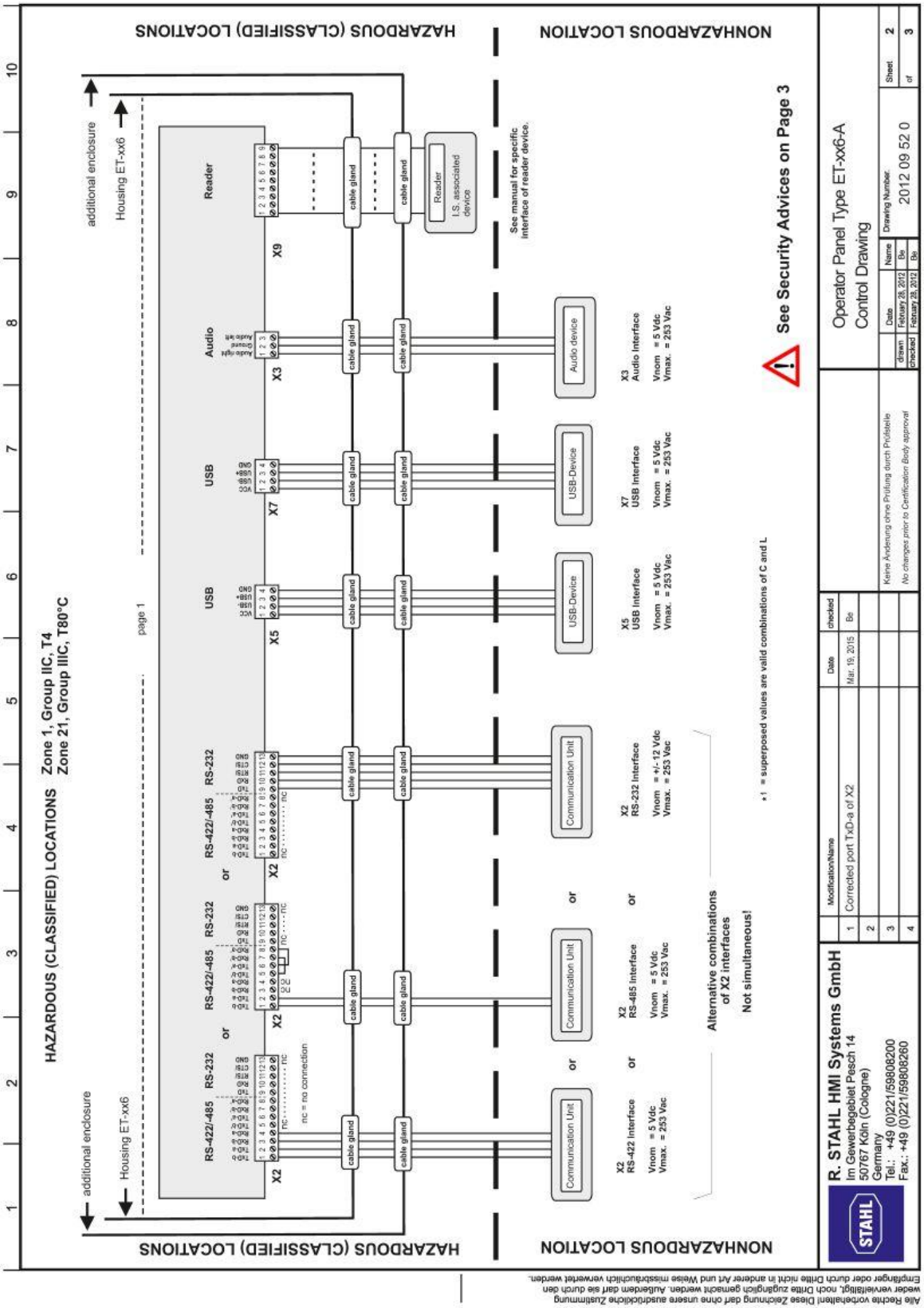
Operator Panel Type ET-/MT-xx6-A
Control Drawing

Drawing Number: 2011 33 51 0

Sheet 3 of 3

## 20.2 CEC





## 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 = $\frac{\text{Cmax}}{\text{Ccable (*1)}}$

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

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 | Corrected port TxD-a of X2 | Mar. 19, 2015 | Be |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |

Keine 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 Installation Instructions Requirements China

**安装使用要求**
**Installation Instructions Requirements**

**认证编号**
Certification No. CN2020C2309-003906-1

本产品经认证符合 CNCA-C23-01: 2019《强制性产品认证实施规则 防爆电气》的要求。
The product(s) is verified and certified according to CNCA-C23-01: 2019 China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product.

| # | **产品名称 Product**<br>**型号 Type** | **防爆标志**<br>Ex Marking |
|---|---|---|
| 1 | 防爆人机界面<br>ET-**6-A-*-*** | Ex db eb ia ib mb [ia ib Gb] IIC T4 Gb<br>Ex ia tb [ia ib Db] IIIC T80℃ Db<br>Ex db eb ia ib mb [ia ib op is Gb] IIC T4 Gb<br>Ex ia tb [ia ib op is Db] IIIC T80℃ Db |

| | |
|---|---|
| **系列标准**<br>**Series standards** | GB/T3836.1-2021, GB/T3836.3-2021, GB/T3836.4-2021, GB/T3836.7-2017, GB/T3836.31-2021 |
| **安全使用条件**<br>**Specific conditions of safety use:** | - 人机操作界面设备前部安装的防眩光显示屏（类型代码含“SR”）以及其他型号的显示屏表面涂装了一层附加膜，只能用湿布清洁。<br>- 本产品认证不包括对光辐射“op is”标准的评价和试验。<br>- For ET - * * 6 - A - * - *SR* : The front of the operator interface equipped with a sunlight readable display(type code includes “SR”) may be cleaned with a damp cloth only.<br>- The evaluation and test of the optical radiation "op is" standard are not included in the scope of this product certification. |

R. STAHL HMI Systems GmbH

**产品上的符合性标志:**
Compliance marks on product:

中国强制性认证
China Compulsory Certification
CCC: 2020312309000285

德国制造 Made in Germany
Doc No.： OI_ET-xx6-A
Approved: Date ： 2023.03.20

# 22 Declarations of conformity

## 22.1 EU

**EU-Konformitätserklärung**
*EU Declaration of Conformity*
*Déclaration de Conformité UE*

STAHL

**R. STAHL HMI Systems GmbH • Adolf-Grimme-Allee 8 • 50829 Köln, Germany**
**erklärt in alleiniger Verantwortung,** *declares in its sole responsibility, déclare sous sa seule responsabilité,*

| | |
|---|---|
| **dass das Produkt:**<br>*that the product:*<br>*que le produit:* | Bedien- und Beobachtungsgeräte<br>*Operating and Monitoring Devices*<br>*Consoles de commande et de visualisation* |
| **Typ(en)**, *type(s), type(s):* | **EXICOM**<br>**ET-306-A-*-**; ET-406-A-*-**; ET-506-A-*-**;**<br>**ET-316-A-*-**; ET-416-A-*-**; ET-516-A-*-**;**<br>**ET-336-A-*-**; ET-436-A-*-**; ET-536-A-*-****<br>**ET-356-A-*-**; ET-456-A-*-**; ET-556-A-*-****<br>* = Fx or Tx<br>** = HDn and/or SR and/or additional information (not ex-relevant) |

**mit den Anforderungen der folgenden Richtlinien und Normen übereinstimmt.**
*is in conformity with the requirements of the following directives and standards.*
*est conforme aux exigences des directives et des normes suivantes.*

| Richtlinie(n) / *Directive(s) / Directive(s)* | | Norm(en) / *Standard(s) / Norme(s)* | |
|---|---|---|---|
| **2014/34/EU**<br>*2014/34/EU*<br>*2014/34/UE* | **ATEX-Richtlinie**<br>*ATEX Directive*<br>*Directive ATEX* | IEC 60079-0:2017<br>IEC 60079-1:2014<br>IEC 60079-7:2017<br>IEC 60079-11:2011<br>IEC 60079-18:2018<br>IEC 60079-28:2015<br>IEC 60079-31:2013 | Das Produkt entspricht Anforderungen aus:<br>*Product corresponds to requirements from:*<br>*Produit correspond aux exigences:*<br>EN IEC 60079-0:2018<br>EN 60079-1:2014<br>EN IEC 60079-7:2015 + A1:2018<br>EN 60079-11:2012<br>EN 60079-18:2015/A1:2017<br>EN 60079-28:2015<br>EN 60079-31:2014 |

**Kennzeichnung,** *marking, marquage:*

**TypeTX:**
**II 2 (2) G Ex db eb 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 db eb 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**
**CE 0158**

| | |
|---|---|
| **EU-Baumusterprüfbescheinigung:**<br>*EU Type Examination Certificate:*<br>*Attestation d'examen UE de type:* | **TÜV 11 ATEX 7041 X**<br>**TÜV Rheinland Industrie Service GmbH (NB 0035)**<br>Am grauen Stein, 51105 Köln (Cologne), Germany |
| **2014/30/EU** **EMV-Richtlinie**<br>*2014/30/EU* *EMC Directive*<br>*2014/30/UE* *Directive CEM* | EN 61000-6-2:2005<br>EN 61000-6-4:2007 + A1:2011<br>EN 61326-1:2013 |
| **Produktnormen nach RoHS-Richtlinie (2011/65/EU):**<br>*Product standards according to RoHS Directive:*<br>*Normes des produit pour la Directive RoHS:* | EN IEC 63000:2018 |

20155070017 Konformitätserklärung ET-xx6-A.docx Template_ EGEU_Konf_20150720.docx, Page 1 / 2

## EU-Konformitätserklärung
*EU Declaration of Conformity*
*Déclaration de Conformité UE*

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

| | | |
|---|---|---|
| Köln, 2020-04-26 | i.V. | i.V. |
| **Ort und Datum**<br>*Place and date*<br>*Lieu et date* | **A. Jung**<br>Director R&D | **N. Benighil**<br>Head of Certification |

## 22.2 RCM

### Supplier's declaration of conformity

Australian Government | acma Australian Communications and Media Authority

As required by the following Notices:

- *Radiocommunications (Compliance Labelling - Devices) Notice 2014* made under section 182 of the *Radiocommunications Act 1992*;
- *Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2017* made under section 182 of the *Radiocommunications Act 1992*
- *Radiocommunications (Compliance Labelling – Electromagnetic Radiation) Notice 2014* made under section 182 of the *Radiocommunications Act 1992* and
- *Telecommunications (Labelling Notice for Customer Equipment and Customer Cabling) Instrument 2015* made under section 407 of the *Telecommunications Act 1997*.

**Instructions for completion**

- ***Do not return this form to the ACMA.*** This completed form must be retained by the supplier as part of the documentation required for the compliance records and must be made available for inspection by the ACMA when requested.

**Supplier's details (manufacturer, importer or authorised agent)**

Company Name (OR INDIVIDUAL)

| |
|---|
| R. STAHL Australia Pty Ltd |
| |
| TRADING AS R. STAHL HMI Systems GmbH |

ACN/ARBN

| |
|---|
| ABN 81150955838 |

OR

New Zealand IRDN

| |
|---|
| |

Street Address (AUSTRALIAN or NEW ZEALAND)

| |
|---|
| 848 Old Princes Highway |
| Sutherland, NSW |
| POSTCODE 2232 |
| Phone: +61 2 4254 4777 |

**Product details and date of manufacture**

Product description – brand name, type, current model, lot, batch or serial number (if available), software/firmware version (if applicable)

| |
|---|
| Operating and Monitoring Devices<br>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-*-**; * = Fx or Tx, ** = HDn and/or SR and/or additional information |
| Operating and Monitoring Devices<br>EXICOM MT-306-A-*-**; MT-406-A-*-**; MT-506-A-*-**; MT-316-A-*-**; MT-416-A-*-**; MT-516-A-*-**; MT-336-A-*-**; MT-436-A-*-**; MT-536-A-*-**; MT-356-A-*-**; MT-456-A-*-**; MT-556-A-*-**; * = Fx or Tx, ** = HDn and/or SR and/or additional information |
| Keyboard<br>KBD(i)-PS2-***; *** = In the complete type denomination, the asterisks are replaced by letters or numbers to identify different variations. |
| Keyboard with Joystick / Trackball<br>KBD(i)-TB-PS2-**; KBD(i)-JS-PS2-**; **=any character without relevance for explosion protection |

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| |
|---|
| Keyboard with Joystick<br><br>KBDi-JS2-PS2-xx; xx = The asterisks are replaced by letters to mark different country-specific keyboard-designs. |
| |

## Compliance – applicable standards and other supporting documents

Evidence of compliance with applicable standards may be demonstrated by test reports, endorsed/accredited test reports, certification/competent body statements.

Having had regard to these documents, I am satisfied the above mentioned product complies with the requirements of the relevant ACMA Standards made under the *Radiocommunications Act 1992* and the *Telecommunications Act 1997*.

List the details of the documents the above statement was made, including the standard title, number and, if applicable, number of the test report/endorsed test report or certification/competent body statement

| |
|---|
| EN 61000-6-4:2011-09; EN 61000-6-4:2007 + A1:2011; EN 55022:1994 + A1:1995 + A2:19997 |
| |
| |
| |
| |

## Declaration

I hereby declare that:

1. I am authorised to make this declaration on behalf of the Company mentioned above,
2. the contents of this form are true and correct, and
3. the product mentioned above complies with the applicable above mentioned standards and all products supplied under this declaration will be identical to the product identified above.

***Note:*** Under section 137.1 of the *Criminal Code Act 1995*, it is an offence to knowingly provide false or misleading information to a Commonwealth entity.
Penalty: 12 months imprisonment

| | |
|---|---|
| SIGNATURE OF SUPPLIER OR AGENT | Managing Director<br>POSITION IN ORGANISATION |
| John Zagame<br>PRINT NAME | 2018-10-15<br>DATE |

The *Privacy Act 1988* (Cth) (the Privacy Act) imposes obligations on the ACMA in relation to the collection, security, quality, access, use and disclosure of personal information. These obligations are detailed in the Australian Privacy Principles.

The ACMA may only collect personal information if it is reasonably necessary for, or directly related to, one or more of the ACMA's functions or activities.

The purpose of collecting the personal information in this form is to ensure the supplier is identified in the 'Declaration of conformity'. If this Declaration of Conformity is not completed and the requested information is not provided, a compliance label cannot be applied.

Further information on the Privacy Act and the ACMA's Privacy Policy is available at www.acma.gov.au/privacypolicy. The Privacy Policy contains details about how you may access personal information about you that is held by the ACMA, and seek the correction of such information. It also explains how you may complain about a breach of the Privacy Act and how we will deal with such a complaint.

Should you have any questions in this regard, please contact the ACMA's privacy contact officer on telephone on 1800 226 667 or by email at privacy@acma.gov.au.



 

## 22.3 CCC

### 22.3.1 English version

# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

**No.**: 2020312309000285

| | |
|---|---|
| **Applicant** | R. STAHL HMI Systems GmbH |
| **Address** | Adolf-Grimme-Allee 8, 50829 Köln, Germany |
| **Manufacturer** | R. STAHL HMI Systems GmbH |
| **Address** | Adolf-Grimme-Allee 8, 50829 Köln, Germany |
| **Production Factory** | R. STAHL HMI Systems GmbH |
| **Production Address** | Adolf-Grimme-Allee 8, 50829 Köln, Germany |
| **Product** | Operator Interface |
| **Model/Type** | ET-**6-A-*-*** |
| **Ex marking** | See annex |
| **Reference Standards** | GB/T 3836.1-2021，GB/T 3836.2-2021，GB/T 3836.3-2021，GB/T 3836.4-2021，GB/T 3836.9-2021，GB/T 3836.31-2021 |

**Certification mode** Type Test + Initial Factory Inspection + Post-Certification Surveillance

The product(s) is verified and certified according to CNCA-C23-01: 2019 *China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product* and CNEX-C2301-2019 *Guideline of China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product.*

See Annex for the detailed product information(7 pages)

Initial issue date: 2020-09-02
Issued date: 2023-04-28 Valid to: 2025-09-01

The validity of this certificate is maintained through the regular supervision of the issuing authority during the validity period.

Where any discrepancy arises between the English translation and the original Chinese version, the Chinese version shall prevail.

Director:

CNEX C C C

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNAS 中国认可 产品 PRODUCT CNAS C208-P

http://www.ccc-cnex.com
ccc.china-ex.com

Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

CN 0001894

# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

**No.**: 2020312309000285



**Product information:**

1. This certificate covers the following models:

- ET-**6-A-*-***

Type code:

| ET | - | * | * | 6 | - | A | - | * | - | *** |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | | 5 | | 6 | | 7 |

| | | |
|---|---|---|
| 1 | Device for zone 1 and 21 | |
| 2 | Type Code: | 3=EAGLE(STAHL Operating System) |
| | | 4=OPEN HMI(Windows, Linux OS) |
| | | 5=REMOTE HMI(Windows remote operating system) |
| 3 | Size Code: | 0=10" VGA display |
| | | 1=10" SVGA display |
| | | 3=15" display |
| | | 5=19" display |
| 4 | Family code fixed to 6 | |
| 5 | Revision 3 | |
| 6 | FX=Fiber optic LAN<br>TX=Copper wire LAN | |
| 7 | *HDn*=equipped with hard disk drive(memory size n)<br>and or<br>*SR*=Sunlight Readable display<br>and or<br>additional information(not relevant to Ex) | |

Issued date: 2023-04-28

Director:

CNEX CCC

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

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# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

**No.**: 2020312309000285



Technical data:

| | | |
|---|---|---|
| Operating range: | temperature | -30°C≤ Ta ≤ +55°C at front of unit<br>-20°C≤ Ta ≤ +55°C at rear of unit |
| IP code pf enclosure | | IP66 |

Electrical data:

1) External, non-intrinsically safe circuit

| | |
|---|---|
| Input voltage (X1): | |
| Rated voltage | 24 VDC (+20% /-15%) |
| max. voltage Um | 30 VAC |
| Rated current | 1.5 A |
| RS-422/-232 COM 1 (X2): | |
| Rated voltage RS232: | ±12 VDC |
| RS422: | 5 VDC |
| max. voltage Um | 253 VAC |
| Audio out (X3): | |
| Rated voltage | 5 VDC |
| max. voltage Um | 253 VAC |
| USB-1 (X5): | |
| Rated voltage | 5 VDC |
| max. voltage Um | 253 VAC |
| USB-3 (X7): | |
| Rated voltage | 5 VDC |
| max. voltage Um | 253 VAC |
| LAN (X11): | |
| Rated voltage | 5 VDC |
| max. voltage Um | 30 VAC |

Issued date: 2023-04-28

Director:

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# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

**No.**: 2020312309000285



RS-422/-232 COM 2-3 (X22):
Rated voltage RS232: ±12 VDC
RS422: 5 VDC
max. voltage Um 253 VAC

2) External intrinsically safe circuits

Superposed L and C values are allowed combinations, the results see the table bellow. $C_o$ and $L_o$ pairs directly above/underneath each other may be used.

If the operator interfaces are installed in Zone 21 the maximum values for L and C of Group IIB apply to the intrinsically safe circuits.

(1) USB-0 (X4) and USB-2 (X6)
Uo = 5.9 V
Io = 2.69 A Summed current when all connections from USB-0 (USB- 2) are short-circuited to GND.
Po = 6.02 W Power available when all connections from USB-0 (USB- 2) are short-circuited to GND.

Maximum values calculated with ispark, rectangular source for Zone 1 Group IIC:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.01 | 0.005 | 0.002 | 0.001 | mH |
| Ci | = | 0 | µF | Co | = | 5.1 | 11 | 28 | 40 | µF |

Maximum values calculated with ispark, rectangular source for Zone 1 Group IIB:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.05 | 0.02 | 0.01 | 0.005 | mH |
| Ci | = | 0 | µF | Co | = | 14 | 40 | 79 | 200 | µF |

(2) ET-Reader-2-RSi1 and RSi2(X8)

Reader-2-RSi1 module supply (internal UB_RDR output), terminal X8.0(bridged to X8.2)
Uo =10.4V Io = 220m A Po = 2.29 W

Maximum values calculated with ispark, rectangular source for Zone 1 Group IIC:

Issued date: 2023-04-28

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

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# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

**No.**: 2020312309000285



Li = 0 mH Lo = 0.01 mH
Ci = 1.72 µF Co = 0.8 µF
Remark: no values for IIB as connection to X8.2 are already permitted with level IIC parameters.

Reader -2-RSi1 module supply input , terminal X8.2(bridged to X8.0)
Ui = 12.4 V Ii = 220 mA Pi =2.29W
Li = 0 mH Ci = 25 nF

Reader-2-RSi1 power supply for reader, terminals X8.3-4

Uo = 5.36 V Io = 220 mA Po = 1.18 W

Maximum values, rectangular source for Zone 1 Group IIC:
Li = 0 mH Lo = 0.002 0.001 mH
Ci = 5.3 µF Co = 40.7 59.7 µF

Maximum values, rectangular source for Zone 1 Group IIB:
Li = 0 mH Lo = 0.02 0.01 mH
Ci = 5.3 µF Co = 70.7 124.7 µF

Reader-2-Rsi1 and -Rsi2 signal input/output, terminals X8.5–8
Ui = 15 V Uo = 5.36 V
Ii = 500 mA Io = 46 mA
Pi = 2.5 W Po = 62 mW

Maximum values, linear source for Zone 1 Group IIC:
Li = 0 mH Lo = 0.002 mH
Ci = 0 µF Co = 46 µF

Maximum values, linear source for Zone 1 Group IIB:
Li = 0 mH Lo = 0.02 mH
Ci = 0 µF Co = 79 µF

(3) ET-Reader-2-WCR1 and WCR2 (X8)

Issued date: 2023-04-28

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

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# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

**No.**: 2020312309000285



Reader-2-WCR1 module supply (from external is-power supply) terminal X8.1 - 2

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ui | = 11.4 | V | Ii | = | 200 | mA | Pi | = | 2.28 W |
| Li | = 0 | mH | Ci | = | 25 | nF | | | |

Reader-2-WCR1 power supply for reader, terminals X8.3 – 4

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Uo | = 5.88 | V | Io | = | 200 | mA | Po | = | 1.18 W |

Maximum values, rectangular source for Zone 1 Group IIC:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 0.002 | 0.001 | mH |
| Ci | = 5.3 | µF | Co | = | 27.7 | 37.7 | µF |

Maximum values, rectangular source for Zone 1 Group IIB:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 0.02 | 0.01 | mH |
| Ci | = 5.3 | µF | Co | = | 55.7 | 94.7 | µF |

Reader-2-WCR1 and -WCR2 signal input/output, X8.5–8

| | | | | | | |
|---|---|---|---|---|---|---|
| Ui | = 15 | V | Uo | = | 5.88 | V |
| Ii | = 500 | mA | Io | = | 51 | mA |
| Pi | = 2.5 | W | Po | = | 75 | mW |

Maximum values, linear source for Zone 1 Group IIC:

| | | | | | | |
|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 0.002 | mH |
| Ci | = 0 | µF | Co | = | 34 | µF |

Maximum values, linear source for Zone 1 Group IIB:

| | | | | | | |
|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 0.02 | mH |
| Ci | = 0 | µF | Co | = | 63 | µF |

(4) Keyboard & Pointing device protection level "ib"(X9)

| | | |
|---|---|---|
| $U_o$ | = 5.88 | V |
| Io | = 200 | mA |
| Po | = 1.18 | mW |

Issued date: 2023-04-28

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

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http://www.ccc-cnex.com ccc.china-ex.com

Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008

Tel: 0377-63239734 Email: ccc@cn-ex.com

# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

**No.**: 2020312309000285



Maximum values, rectangular source for Zone 1 Group IIC:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 2 | 1 | μH | | |
| Ci | = 17.6 | μF | Co | = | 15.4 | 25.4 | μF | | |

Maximum values, rectangular source for Zone 1 Group IIB:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 100 | 50 | 20 | 10 | μH |
| Ci | = 17.6 | μF | Co | = | 10.4 | 20.4 | 43.4 | 82.4 | μF |

(5) Keyboard & Pointing device protection level "ia"(X9)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Uo | = 5.88 | V | Io | = | 4.36 | A | Po | = | 1.18 W |

Maximum values, rectangular source for Zone 1 Group IIC:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 2 | 1 | μH |
| Ci | = 17.6 | μF | Co | = | 13.4 | 25.4 | μF |

Maximum values, rectangular source for Zone 1 Group IIB:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Li | = 0 | mH | Lo | = | 20 | 10 | 5 | 1 | μH |
| Ci | = 17.6 | μF | Co | = | 32.4 | 74.4 | 202.4 | 982 | μF |

3) External inherently safe optical interface X10
Wavelength = 1350 nm
Radiant power ≤ 35 mW

Ingress Protection: IP66

Ex marking:

ET-**6-A-TX-***:
Ex db eb ia ib mb [ia ib Gb]IIC T4 Gb，Ex ia tb [ia ib Db] IIIC T80℃ Db

ET-**6-A-FX-***:
Ex db eb ia ib mb [ia ib op is Gb]IIC T4 Gb，Ex ia tb [ia ib op is Db] IIIC T80℃ Db

- Producers should organize production in accordance with the technical documents approved by the certification body.

Issued date: 2023-04-28

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNAS 中国认可 产品 PRODUCT CNAS C208-P

http://www.ccc-cnex.com ccc.china-ex.com
Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

**No.**: 2020312309000285



2. Specific conditions of safety use:

   - For ET - * * 6 - A - * - *SR* : The front of the operator interface equipped with a sunlight readable display(type code includes "SR") may be cleaned with a damp cloth only.

   - The evaluation and test of the optical radiation "op is" standard are not included in the scope of this product certification.

   - Before application, CCC certified cable gland that suitable for the conditions of use and/or stopping plug shall be applied, and correctly installed.

   - See instruction for other information.

3. Certificate related report(s):

   - Type test report: CQST2005C017, CQST2005C017/01

   - Factory inspection report: CN2023Q030119.

4. Certificate change information:

   - 1st change on April 28, 2023: Updated the standards for certification.

Issued date: 2023-04-28

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

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http://www.ccc-cnex.com ccc.china-ex.com

Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008

Tel: 0377-63239734 Email: ccc@cn-ex.com

### 22.3.2 Chinese version

# 中国国家强制性产品认证证书

编　号：2020312309000285

| | |
|---|---|
| 委　托　人 | R. STAHL HMI Systems GmbH |
| 地　　址 | Adolf-Grimme-Allee 8, 50829 Köln, Germany |
| 生　产　者 | R. STAHL HMI Systems GmbH |
| 地　　址 | Adolf-Grimme-Allee 8, 50829 Köln, Germany |
| 生 产 企 业 | R. STAHL HMI Systems GmbH |
| 生 产 地 址 | Adolf-Grimme-Allee 8, 50829 Köln, Germany |
| 产 品 名 称 | 防爆人机界面（操作屏） |
| 型 号 规 格 | ET-**6-A-*-*** |
| 防 爆 标 志 | 见附页 |
| 依 据 标 准 | GB/T 3836.1-2021，GB/T 3836.2-2021，GB/T 3836.3-2021，GB/T 3836.4-2021，GB/T 3836.9-2021，GB/T 3836.31-2021 |
| 认 证 模 式 | 型式试验+初始工厂检查+获证后监督 |

**上述产品符合 CNCA-C23-01: 2019《强制性产品认证实施规则　防爆电气》和 CNEX-C2301-2019《强制性产品认证实施细则　防爆电气》的要求。**

产品相关信息见附页（共 7 页）。

首次发证日期：2020 年 09 月 02 日

颁发日期：2023 年 04 月 28 日　　有效期至：2025 年 09 月 01 日

**证书有效期内本证书的有效性依据发证机构的定期监督获得保持。**

主任：

南阳防爆电气研究所有限公司

CNEX CCC　　CNAS 中国认可 产品 PRODUCT CNAS C208-P

网址：www.ccc-cnex.com　ccc.china-ex.com　地址：中国河南省南阳市仲景北路20号　电话：0377-63239734　邮政编码：473008　邮箱：ccc@cn-ex.com

CN 0025790

# 中国国家强制性产品认证证书
## （附页）

编　号：2020312309000285

第 1 页 共 7 页

**产品相关信息：**

1、本证书覆盖产品如下：

- ET-**6-A-*-***

型号含义见下表：

| ET | - | * | * | 6 | - | A | - | * | - | *** |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | | 5 | | 6 | | 7 |

| | | |
|---|---|---|
| 1 | 适用于 1 区或 21 区 | |
| 2 | 型号代码： | 3=EAGLE(STAHL 操作系统) |
| | | 4=开放式人机界面(Windows, Linux 操作系统) |
| | | 5=远程人机界面(Windows 远程操作系统) |
| 3 | 尺寸代码： | 0=10" VGA 显示 |
| | | 1=10" SVGA 显示 |
| | | 3=15"显示 |
| | | 5=19"显示 |
| 4 | 系统代码 6 | |
| 5 | 版本 3 | |
| 6 | FX=光纤局域网<br>TX=铜缆局域网 | |
| 7 | *HDn*=配备硬盘驱动器（内存大小 n）<br>*SR*=防眩光显示屏<br>附加信息（与防爆无关） | |

颁发日期：2023 年 04 月 28 日

主任：

南阳防爆电气研究所有限公司

网址：www.ccc-cnex.com
ccc.china-ex.com

地址：中国河南省南阳市仲景北路20号
电话：0377-63239734

邮政编码：473008
邮箱：ccc@cn-ex.com

# 中国国家强制性产品认证证书
## （附页）

编　号：2020312309000285



技术参数：

| | |
|---|---|
| 使用环境温度： | 前部：-30℃≤ Ta ≤ +55℃<br>后部：-20℃≤ Ta ≤ +55℃ |
| 防护等级 | IP66 |

电气参数：

1）外部非本安电路

| | | |
|---|---|---|
| 输入电压（X1）： | | |
| 额定电压 | | 24V DC(+20%/-15%) |
| 最高电压 $U_m$ | | 30V AC |
| 额定电流 | | 1.5A |
| RS-422/-232 COM1(X2)端口： | | |
| 额定电压 | RS232 | ±12V DC |
| | RS422 | 5V DC |
| 最高电压 $U_m$ | | 253V AC |
| 音频输出（X3）： | | |
| 额定电压 | | 5V DC |
| 最高电压 $U_m$ | | 253V AC |
| USB-1（X5）： | | |
| 额定电压 | | 5V DC |
| 最高电压 $U_m$ | | 253V AC |
| USB-3（X7）： | | |
| 额定电压 | | 5V DC |
| 最高电压 $U_m$ | | 253V AC |
| LAN（X11）： | | |
| 额定电压 | | 5V DC |

颁发日期：2023 年 04 月 28 日

主任：

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网址：www.ccc-cnex.com　　地址：中国河南省南阳市仲景北路20号　　邮政编码：473008
ccc.china-ex.com　　电话：0377-63239734　　邮箱：ccc@cn-ex.com

# 中国国家强制性产品认证证书
## （附页）

编　号：2020312309000285



最高电压 $U_m$　30V AC

RS-422/-232 COM2-3(X22)端口：

| | | |
|---|---|---|
| 额定电压 | RS232 | ±12V DC |
| | RS422 | 5V DC |
| 最高电压 $U_m$ | | 253V AC |

2）外部本安电路

允许叠加的 L 和 C 值组合，结果请参见下表。

可以使用彼此正上方/正下方的 Co 和 Lo 配对。

如果安装在 21 区中，则 IIB 组的 L 和 C 最大值适用于本安电路。

(1) USB-0(X4)、USB-2(X6)

| | | | | |
|---|---|---|---|---|
| Uo | = | 5.9 | V | |
| Io | = | 2.69 | A | USB-0（USB-2）的所有连接都短路到 GND 时的总电流. |
| Po | = | 6.02 | W | 当 USB-0（USB-2）的所有连接都短路到 GND 时可用的电源功率。 |

适用于 1 区 IIC 组的最大值

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.01 | 0.005 | 0.002 | 0.001 | mH |
| Ci | = | 0 | μF | Co | = | 5.1 | 11 | 28 | 40 | μF |

适用于 1 区 IIB 组的最大值

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.05 | 0.02 | 0.01 | 0.005 | mH |
| Ci | = | 0 | μF | Co | = | 14 | 40 | 79 | 200 | μF |

(2) ET-Reader-2-RSi1 and RSi2(X8)

Reader-2-RSi1 模块电源（内部 UB_RDR 输出），端子 X8.0（桥接到 X8.2）

Uo = 10.4 V　Io = 220 mA　Po = 2.29 W

颁发日期：2023 年 04 月 28 日

主任：

南阳防爆电气研究所有限公司

CNEX CCC

CNAS 中国认可 产品 PRODUCT CNAS C208-P

网址：www.ccc-cnex.com　ccc.china-ex.com

地址：中国河南省南阳市仲景北路20号　电话：0377-63239734

邮政编码：473008　邮箱：ccc@cn-ex.com

# 中国国家强制性产品认证证书
## （附页）

编　号：2020312309000285

第 4 页 共 7 页

适用于 1 区 IIC 组的最大值

| | | | | | | |
|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.01 mH |
| Ci | = | 1.72 | μF | Co | = | 0.8 μF |

备注：无与 X8.2 连接的 IIB 值参数， 允许使用 IIC 参数值

Reader-2-RSi1 模块电源输入，端子 X8.2（桥接到 X8.0）

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ui | = | 12.4 | V | Ii | = | 220 | mA | Pi | = | 2.29 W |
| Li | = | 0 | mH | Ci | = | 25 | nF | | | |

Reader-2-RSi1 提供电源给读取设备，端子 X8.3-4

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Uo | = | 5.36 | V | Io | = | 220 | mA | Po | = | 1.18 W |

适用于 1 区 IIC 组的最大值

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.002 | 0.001 mH |
| Ci | = | 5.3 | μF | Co | = | 40.7 | 59.7 μF |

适用于 1 区 IIB 组的最大值

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.02 | 0.01 mH |
| Ci | = | 5.3 | μF | Co | = | 70.7 | 124.7 μF |

Reader-2-Rsi1 和-Rsi2 信号输入/输出，端子 X8.5-8

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ui | = | 15 | V | Ii | = | 500 | mA | Pi | = | 2.5 W |
| Uo | = | 5.36 | V | Io | = | 46 | mA | Po | = | 62 mW |

适用于 1 区 IIC 组的最大值

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.002 | mH |
| Ci | = | 0 | μF | Co | = | 46 | μF |

适用于 1 区 IIB 组的最大值

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 0.02 | mH |
| Ci | = | 0 | μF | Co | = | 79 | μF |

颁发日期：2023 年 04 月 28 日

主任：

南阳防爆电气研究所有限公司

CNEX CCC

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网址：www.ccc-cnex.com ccc.china-ex.com
地址：中国河南省南阳市仲景北路20号
电话：0377-63239734
邮政编码：473008
邮箱：ccc@cn-ex.com

# 中国国家强制性产品认证证书
## （附页）

编　号：2020312309000285



(3) ET-Reader-2WCR1 and WCR2(X8)

Reader-2-WCR1，模块电源（来自外部本安电源）端子 X8.1-2

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ui | = | 11.4 | V | | Ii | = | 200 | mA | Pi | = 2.28 W |
| Li | = | 0 | mH | | Ci | = | 25 | nF | | |

Reader-2-WCR1 提供电源给读取设备, terminals X8.3-4

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Uo | = | 5.88 | V | | Io | = | 200 | mA | Po | = 1.18 W |

适用于 1 区 IIC 组的最大值

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | | Lo | = | 0.002 | 0.001 | mH |
| Ci | = | 5.3 | μF | | Co | = | 27.7 | 37.7 | μF |

适用于 1 区 IIB 组的最大值

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | | Lo | = | 0.02 | 0.01 | mH |
| Ci | = | 5.3 | μF | | Co | = | 55.7 | 94.7 | μF |

Reader-2-WCR1 和-WCR2 信号输入/输出，端子 X8.5-8

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ui | = | 15 | V | | Ii | = | 500 | mA | Pi | = 2.5 W |
| Uo | = | 5.88 | V | | Io | = | 51 | mA | Po | = 75 mW |

适用于 1 区 IIC 组的最大值

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | | Lo | = | 0.002 | mH |
| Ci | = | 0 | μF | | Co | = | 34 | μF |

适用于 1 区 IIB 组的最大值

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | | Lo | = | 0.02 | mH |
| Ci | = | 0 | μF | | Co | = | 63 | μF |

(4) 键盘和点触设备的保护等级 " ib" (X9)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Uo | = | 5.88 | V | | Io | = | 200 | mA | Po | = 1.18 W |

颁发日期：2023 年 04 月 28 日

主任：穆大玉

南阳防爆电气研究所有限公司

CNEX CCC

CNAS 中国认可 产品 PRODUCT CNAS C208-P

网址：www.ccc-cnex.com ccc.china-ex.com

地址：中国河南省南阳市仲景北路20号

电话：0377-63239734

邮政编码：473008

邮箱：ccc@cn-ex.com

# 中国国家强制性产品认证证书
## （附页）

编　号：2020312309000285



适用于 1 区 IIC 组的最大值

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 2 | 1 | μH |
| Ci | = | 17.6 | μF | Co | = | 15.4 | 25.4 | μF |

适用于 1 区 IIB 组的最大值

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 100 | 50 | 20 | 10 | μH |
| Ci | = | 17.6 | μF | Co | = | 10.4 | 20.4 | 43.4 | 82.4 | μF |

(5) 键盘和点触设备的保护等级 " ia" (X9)

Uo = 5.88 V　　Io = 4.36 A　　Po = 1.18 W

适用于 1 区 IIC 组的最大值

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 2 | 1 | μH |
| Ci | = | 17.6 | μF | Co | = | 13.4 | 25.4 | μF |

适用于 1 区 IIB 组的最大值

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Li | = | 0 | mH | Lo | = | 20 | 10 | 5 | 1 | μH |
| Ci | = | 17.6 | μF | Co | = | 32.4 | 74.4 | 202.4 | 982 | μF |

3) 外部本安型光接口 X10
波长= 1350 nm
辐射功率≤35 mW

外壳防护等级：IP66

防爆标志：

ET-**6-A-TX-***:

Ex db eb ia ib mb [ia ib Gb]IIC T4 Gb，Ex ia tb [ia ib Db] IIIC T80℃ Db

ET-**6-A-FX-***:

颁发日期：2023 年 04 月 28 日

主任：

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网址：www.ccc-cnex.com ccc.china-ex.com
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电话：0377-63239734
邮政编码：473008
邮箱：ccc@cn-ex.com

# 中国国家强制性产品认证证书
## （附页）

编　号：2020312309000285



Ex db eb ia ib mb [ia ib op is Gb]IIC T4 Gb，Ex ia tb [ia ib op is Db] IIIC T80℃ Db

- 生产者应按照认证机构批准的技术文件组织生产。

2、安全使用条件：

- 人机操作界面设备前部安装的防眩光显示屏（类型代码含“ SR”）以及其他型号的显示屏表面涂装了一层附加膜，只能用湿布清洁。

- 本产品认证不包括对光辐射“op is”标准的评价和试验。

- 本产品安装使用时，应配用已获得 CCC 认证且适合使用条件的电缆引入装置和/或堵头，并正确安装。

- 其他见产品使用说明书。

3、证书关联报告：

- 产品型式试验报告：CQST2005C017, CQST2005C017/01

- 工厂检查报告：CN2023Q030119

4、证书变更信息：

- 2023 年 04 月 28 日第 1 次变更：产品认证依据标准变更。

颁发日期：2023 年 04 月 28 日

主任：穆大玉

南阳防爆电气研究所有限公司

CNEX CCC

CNAS 中国认可 产品 PRODUCT CNAS C208-P

网址：www.ccc-cnex.com ccc.china-ex.com

地址：中国河南省南阳市仲景北路20号

电话：0377-63239734

邮政编码：473008

邮箱：ccc@cn-ex.com

# 23 Release notes

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

Version 03.00.40

- Removal of previous release notes
- Removal of HW Rev. ET-3x6-A-xx-BS devices at cover
- Removal of FSB notice
- Removal of EAC certification
- Removal of EAC Ex classification
- Removal of EAC declaration of conformity
- Correction r-stahl link
- Addition of table "Overview Hardware Revision" with "SERIES 300 with quad core processor"
- Addition of "Technical data" with "Hardware revision 03.00.x8 for ET-3x6-A-*"
- Changing arrangement in table "Ex classification"
- Addition of "Location classes" at "Technical data"
- Correction of information for "Cable glands" in "Technical data"
- Addition of notice for "Positive pressure operation" in "Technical data"
- Addition of type code for ET-3x6-A-* (Operator Interfaces) with BT quad core
- Addition of notice for FO interfaces at "Technical data"
- Addition of notice for FO interfaces at "Connections"
- Renew of CCC certification
- Addition of CCC Ex classification
- Exchange of CCC declaration of conformity
- Removal of CNEx certification, expired
- Addition of "TC" field function in certificates
- Addition of section "Installation Instructions Requirements China"
- Formal changes

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

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

r-stahl.com