

# Operating and monitoring systems

Panel PC SERIES 400  
Device platform EAGLE  
PM ET-456-FX

STAHL



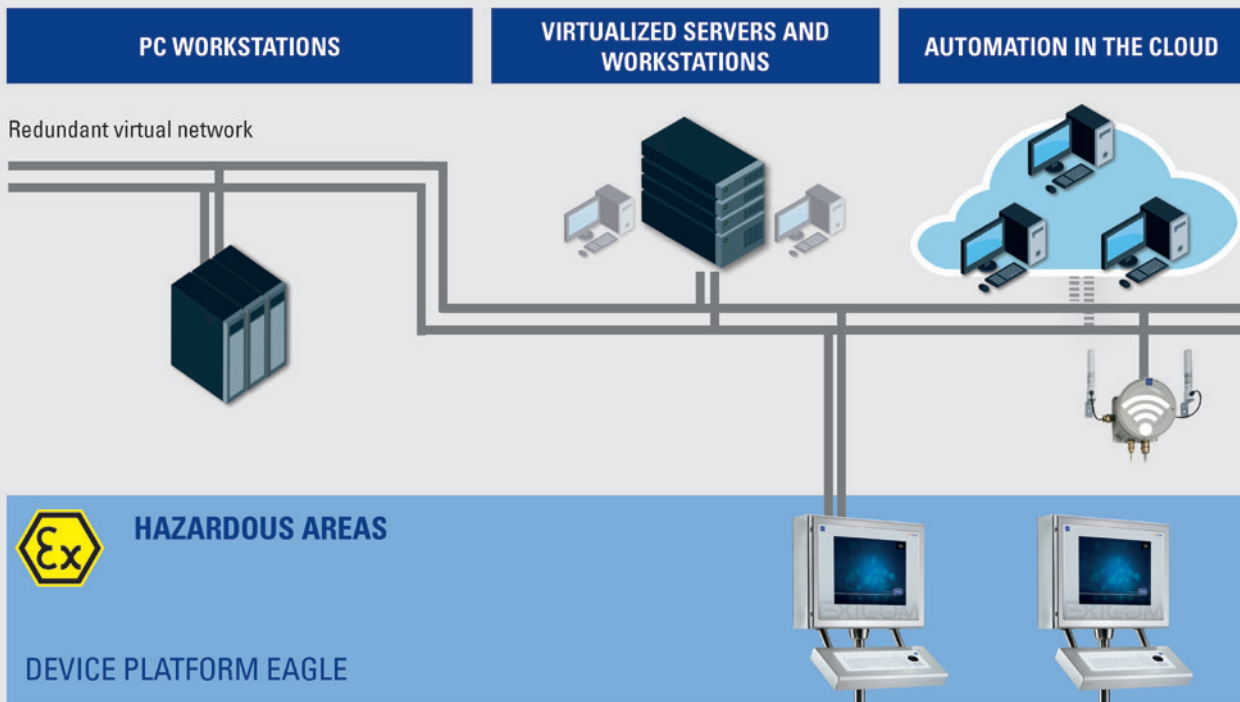
- Panel PC for panel mounting, quad core ATOM E3845
- 19" display, 1280 x 1024 pixels with resistive foil touch screen
- 8 function keys
- Zone 1, 2, 21, 22 und Division 2, can be installed in hazardous areas without additional enclosure
- Data transmission via Ethernet as 100Base-FX via multi-mode fibre optic up to 2 km

WebCode ET456AA



R. STAHL's PM ET-456 HMI systems consists of Panel PCs for panel mounting in hazardous zones 1, 2, 21 and 22 as well as Division 2. Their brilliant 19" displays with analogue-resistive touch screen have a resolution of 1280 x 1024 pixels (format 5:4). Country-specific keyboards, pointer instruments and RFID and barcode scanners are useful accessories making work easier and extending functionality. The state-of-the-art quad core processors can be complemented with various memory sizes and SSDs. Data is transmitted via Ethernet as 100Base-FX via multi-mode fibre optic up to 2 km.

## PANEL PC INTEGRATION



## Technical Data

### General

Series	Panel mount device PM ET-456 (discontinued)
Product description	19" Panel PC
Technology	Panel PC
HMI type	Panel mount device
WebCode	ET456AA

### Explosion Protection

Application range (zones)	1 2 21 22
Application range (divisions)	Class I, Division 2 Class II, Division 1 and 2 Class III
Certifications	ATEX, IECEx, NEC, CEC, EAC, INMETRO, CNEX, KGS, PESO
Ship certificates	DNV, LR, ABS
IECEx certification	IECEx TUR 11.0006X
ATEX certification	TÜV 11 ATEX 7041 X
NEC certification	20130611-E202379
CEC certification	2512677
INMETRO certification	UL-BR 12.0265X
CNEX certification	CNEx14.0065X
KCS certification	12-GA4BO-0215X 12-GA4BO-0317X
PESO certification	A/P/HQ/MH/104/5004(P391127) P391127/1
DNV certification	Certificate number: A-12989 File number: 899.60 Order number: 262.1-001689-6
LR certification	11/20032
ABS certification	15-HG1418766-1-PDA
IECEx gas explosion protection	ET-456-A-TX Ex db eb ia ib mb [ia ib] IIC T4 Gb ET-456-A-FX Ex db eb ia ib mb [ia ib op is] IIC T4 Gb
IECEx dust explosion protection	ET-456-A-TX Ex ia tb [ia ib] IIIC T80°C Db IP66 ET-456-A-FX Ex ia tb [ia ib op is] IIIC T80°C Db IP66
ATEX gas explosion protection	ET-456-A-TX II 2 (2) G Ex db eb ia ib mb [ia ib] IIC T4 Gb ET-456-A-FX II 2 (2) G Ex db eb ia ib mb [ia ib op is] IIC T4 Gb
ATEX dust explosion protection	ET-456-A-TX II 2 (2) D Ex ia tb [ia ib] IIIC T80°C Db IP66 ET-456-A-FX II 2 (2) D Ex ia tb [ia ib op is] IIIC T80°C Db IP66

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## Explosion Protection

NEC explosion protection	Class I, Division 2, Groups A, B, C, D Class II, Division 2, Groups F, G Class III Class I, Zone 2, Group IIC
CEC explosion protection	Ex d e ia ib mb [ia ib] IIC T4 Gb, Type 4X, IP66 Ex ia tb [ia ib] IIIC T80°C Db, IP66 Class II, Division 1, Groups E, F, G, T80°C
CNEX gas explosion protection	ET-456-A-TX Ex d e ia ib mb [ia ib] IIC T4 Gb ET-456-A-FX Ex d e ia ib mb [ia ib op is] IIC T4 Gb
CNEX dust explosion protection	ET-456-A-TX Ex ia tb [ia ib] IIIC T80°C Db IP66 ET-456-A-FX Ex ia tb [ia ib op is] IIIC T80°C Db IP66
KCS explosion protection	Ex d e ia ib mb [ia ib] IIC T4 Ex ia tb [ia ib] IIIC T80°C Db IP66
INMETRO gas explosion protection	ET-456-A-TX Ex d e ia ib mb [ia ib] IIC T4 Gb ET-456-A-FX Ex d e ia ib mb [ia ib op is] IIC T4 Gb
INMETRO dust explosion protection	ET-456-A-TX Ex ia tb [ia ib] IIIC T80°C Db IP66 ET-456-A-FX Ex ia tb [ia ib op is] IIIC T80°C Db IP66
PESO explosion protection	Ex d e ia ib mb [ia ib] IIC T4 Gb

## Electrical Data

Rated operational voltage DC	24 V
Voltage range DC	20.4 – 28.8 V
Power consumption DC	1.2 A
Rated operational power	36 W
Processor type	ATOM E3845
Processor details	Intel Bay Trail (BT); 1.91 GHz; quad core
RAM	4 GB
Data memory	64 GB MLC 128 GB MLC
Graphics controller	integrated Intel Gen. 7 HD Graphics
Memory technology	SSD solid state flash drive M.2
Operating system	Windows Embedded Standard 7 (64-Bit) Windows 7 Ultimate (64-Bit) Windows 10 IoT Enterprise 2019 LTSC (64 bit) (included in standard delivery) Windows 10 IoT Enterprise 2019 LTSC (32 bit) (optional on USB stick)
Language support	via Windows operating system
Ethernet / Data	100Base-FX (Ex op is)
Data cable	62.5 / 125 µm FO cable
Data cable length	max. 2000 m
Interface medium	Multi-mode optical fibre cable
Interface USB	2 x USB (Ex ib) 2 x USB (Ex e)

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### Electrical Data

Interface serial	1 x RS-232 / RS-422 / RS-485 (Ex e)
Interface PS/2	for external keyboard (Ex ia)
Optional interface 1	-
Optional interface 2 reader	optional, reader interface (Ex ib)
Interface audio	1 x Audio line out (Ex e)
Connection compartment	Power supply direct in integrated Ex e connection box
Connections	via screw terminals, green, 2.5 mm <sup>2</sup> (AWG14) (Ex e)
Wiring	Flexible conductors 0.2 to 2.5 mm <sup>2</sup> (AWG24 to AWG14) Rigid conductors 0.2 to 2.5 mm <sup>2</sup> (AWG24 to AWG14)
Plug version FO	SC duplex connector
Plug version USB	1x USB connector type A
Max. input voltage U <sub>m</sub>	30 VDC
Real-time clock	yes
Real-time clock data buffer	Lithium battery and capacitor buffered, maintenance-free
Battery buffered	> 5 years
Capacitor buffered	at least 4 days
Status LED	below the back lid: for activity on: - Solid state drive or HD - Ethernet Link - COM 1 and COM 2

### Display

Display version	TFT Colour display
Display version 2	16.7 million colours
Display size inch	19
Display size centimetres	48
Display resolution	SXGA
Total pixels	1280 x 1024
Display dimensions	5:4
Display brightness	TFT 350 cd/m <sup>2</sup>
Display contrast	TFT 700:1
Touchscreen	analogue resistive
Touchscreen technology	5-wire
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.
Touch screen scratch hardness MoHS	-
Touchscreen scratch hardness pencil test ISO15184	3H
Touchscreen transmissivity / optic	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
Backlight	LED Technology
Backlight service life	70000 h at +25 °C 35000 h at +55 °C

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### Display

Front plate (display)	Polyester on aluminium (optional: stainless steel on aluminium)
Function keys	8

### Ambient Conditions

Ambient temperature operation	-20 °C ... +55 °C
Ambient temperature operation 1	-30 °C ... +55 °C with heater
Storage temperature	-30 °C ... +60 °C
Temperature note 1	Operating temperature +55 °C for a maximum of 5 h, for constant operation (24/7) +50 °C.
Heat dissipation	about 50% via the front plate and 50% via the enclosure
Relative humidity	90% at +40 °C, without condensation
Damp heat	+55 °C / 95 %
Damp heat cyclic	+55 °C / 90-100 % +20 °C / 80-100 %
Corrosion resistance	ISA-S71.04-1985, severity level G3
Vibration sinus	5 to 13.2 Hz: ±1 mm 13.2 to 100 Hz: ±0.7 g Axis X, Y, Z
Vibration sinus 1	10 Hz, 1 g 450 Hz, 1 g Change cycle 1 oct/min Operating mode 1.2 Axis X, Y, Z
Vibration broadband random	10 Hz, 0.01 PSD[(m/s <sup>2</sup> ) <sup>2</sup> /Hz] 450 Hz, 0.01 PSD[(m/s <sup>2</sup> ) <sup>2</sup> /Hz] Grms 2.11 Axis X, Y, Z
Shock	20 Shocks 20 g/11 ms
EMC Immunity	According IEC 61000-6-2 (01/2005) and DIN EN 61323-1 (10/2006) for industrial areas
EMC 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

### Mechanical Data

Dimensions (WxHxD)	535 mm x 425 mm 165 mm
Cut-out (WxH)	522.5 mm x 412.5 mm
Wall thickness	≤ 8 mm
Depth of cut-out	165 mm
Mounting position	vertical or horizontal
Weight	25 kg
Material front	Polyester or stainless steel (on aluminium)
Material back	Stainless steel
Ingress protection	IP66
IP enclosure front	IP66
IP enclosure back	IP66
Fixing frame	yes
Cable gland type	8161 (Ex e)
Cable gland number	6 x M16, 3 x M20
Cable gland thread size	M16 x 1.5 / M20 x 1.5
Cable gland cable diameter range	M16 = 5 ... 9 mm / M20 = 7 ... 13 mm

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Cable gland wrench size	M16 = SW 20 / M20 = SW 24
Breather	yes, part of the enclosure and device approval

## Mounting / Installation

Mounting option	Panel mount
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## Components

Keyboard	optional, 105 keys or 107 keys with integrated trackball / joystick
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