



- Panel PC for panel mounting, quad core ATOM E3845
- 10" display, 800 x 600 pixels with resistive foil touch screen
- 12 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



R. STAHL's PM ET-416 HMI systems consists of Panel PCs for panel mounting in hazardous zones 1, 2, 21 and 22 as well as Division 2. Their brilliant 10" displays with analogue-resistive touch screen have a resolution of 800 x 600 pixels (format 4:3). 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.

## Technical Data

General	
Series	EAGLE and MANTA Panel PCs / Thin Clients for Machine operation
Product description	10.4" Panel PC
Technology	Panel PC
HMI type	Panel-mount device
Explosion Protection	
Application range (zones)	1 2 21 22
Application range (divisions)	Class I, Division 2 Class II, Division 1 and 2 Class III
Scope	EU (CE / ATEX), International (IECEX), Russia (EAC), USA (NEC), Canada (CEC), India (PESO), Brazil (INMETRO), Korea (KCC), Korea (KCS), China (CCC / CNEx), Australia (RCM), Marine / ship certification DNV-GL, Marine / ship certification ABS, Marine / ship certification LR,
IECEX certification	IECEX TUR 11.0006X
ATEX certification	TÜV 11 ATEX 7041 X
EAC certification	EA9C RU C-DE.HA91.B.00085/19
NEC certification	20130611-E202379
CEC certification	2512677
INMETRO certification	UL-BR 12.0265X
CCC certification	2020312309000285
CNEX certification	CNEx18.5523X
KCS certification	12-GA4BO-0215X 12-GA4BO-0317X

# Operating and Monitoring Systems

Panel PC SERIES 400

Device platform EAGLE

PM ET-416-FX



## Explosion Protection

KCC certification	ja
PESO certification	A/P/HQ/TN/104/6108 (P528111) P528111/1 P528111/2
DNV / GL certification	TAA00000WA
LR certification	LR21402888TA
ABS certification	19-HG1895092-PDA
IECEx gas explosion protection	Ex db eb ia ib mb [ia ib op is] IIC T4 Gb
IECEx dust explosion protection	Ex ia tb [ia ib op is] IIIC T80°C Db IP66
ATEX gas explosion protection	II 2 (2) G Ex db eb ia ib mb [ia ib op is] IIC T4 Gb
ATEX dust explosion protection	II 2 (2) D Ex ia tb [ia ib op is] IIIC T80°C Db IP66
EAC gas explosion protection	1Ex d e ia ib mb [ia ib op is] IIC T4 Gb X
EAC dust explosion protection	Ex ia tb [ia ib op is] IIIC T80°C Db
NEC gas explosion protection	Class I, Division 2, Groups A, B, C, D
NEC dust explosion protection	Class II, Division 2, Groups F, G Class III Class I, Zone 2, Group IIC
CEC gas explosion protection	Ex d e ia ib mb [ia ib] IIC T4 Gb, Type 4X, IP66
CEC dust explosion protection	Ex ia tb [ia ib] IIIC T80°C Db, IP66 Class II, Division 1, Groups E, F, G, T80°C
CNEX gas explosion protection	Ex d e ia ib mb [ia ib op is] IIC T4 Gb
CNEX dust explosion protection	Ex ia tb [ia ib op is] IIIC T80°C Db IP66
INMETRO gas explosion protection	Ex d e ia ib mb [ia ib op is] IIC T4 Gb
INMETRO dust explosion protection	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

Power supply	24 VDC
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 Windows 7 Ultimate (64 Bit) Windows 10 IoT Enterprise (64 Bit)
Operating system note	For Windows 7 Ultimate and Windows 10 IoT the 64 Bit version is preinstalled on the device. Additionally, the 32 Bit version of each Windows version is installed on the recovery stick included in the delivery.
Language support	via Windows operating system
Ethernet / Data	100Base-FX (Ex op is)
Data cable	62.5/125 µm FO cable

# Operating and Monitoring Systems

## Panel PC SERIES 400 Device platform EAGLE PM ET-416-FX



### Electrical Data

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)
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 reader note	RFID reader, support of the following standards: MIFARE Classic, DESFire, DESFire EV1, LEGIC prime and advant, NFC, INSIDE Secure, Sony FeliCa, ISO 14443A & 15693 1D/2D Barcode scanner: support of all common 1D/2D codes, wired or Bluetooth
Interface audio	1 x Audio line out (Ex e)
Connection compartment	Power supply direct in integrated Ex e terminal 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 socket
Plug version USB	1x USB connector type A
Max. input voltage U <sub>m</sub>	30 V DC
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 Color display
Display version 2	16.7 million colours
Display size inch	10.4
Display size centimetres	26
Display resolution	800 x 600
Total pixels	800 x 600
Display dimensions	4:3
Display brightness	400 cd/m <sup>2</sup>
Display contrast	700:1
Touchscreen	resistive foil touchscreen
Touchscreen technology	5-wire foil touch
Touchscreen activation	Foil touch: low activation pressure (0.1 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

# Operating and Monitoring Systems

Panel PC SERIES 400  
Device platform EAGLE  
PM ET-416-FX



## Display

Touchscreen transmissivity / optic	slightly milky effect due to foil
Touchscreen surface contaminants	unaffected
Touchscreen abrasive resistance	36 million activations with a silicone rubber finger R8, 250 g for 2 activations per second
Backlight	LED Technology
Backlight service life	70000 h at +25 °C 35000 h at +55 °C
Front plate (display)	Polyester foil on aluminium
Function keys	12

## Ambient Conditions

Ambient temperature operation	-20 °C ... +55 °C
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 [+104 °F], 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 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 Schocks 20 g/11 ms
EMC Immunity	Acc. to IEC 61000-6-2 (01/2005) and DIN EN 61323-1 (10/2006) for industrial areas
EMC Emission	Acc. to 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
Positiv pressure operation	<= 20 mbar

## Mechanical Data

Dimensions (WxHxD)	372 mm x 270 mm 150 mm
Cut-out (WxH)	359.5 mm x 257.5 mm
Wall thickness	≤ 8 mm
Depth of cut-out	150 mm
Mounting position	vertical or horizontal
Weight	13.2 kg
Material front	Polyester on aluminium
Material back	Stainless steel
Ingress protection	IP66
IP enclosure front	IP66
IP enclosure back	IP66

# Operating and Monitoring Systems

Panel PC SERIES 400

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PM ET-416-FX



## Mechanical Data

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

## Mounting / Installation

Mounting option	Front installation
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