Operating and Monitoring Systems
Thin Client SERIES 500
Device platform SHARK
ET-538-2FX

- Thin Client, 15" display, optional sunlight-readable 1200 cd/m²
- Rugged design: IP66, shock, vibration and seawater-proof, temperature range -40 °C to +65 °C
- Compact, lightweight HMI design < 25 kg / 55 lbs
- Data is transmitted via dual Ethernet as 100Base-FX via multi-mode fibre optic up to 5 km
- Comfortable, central configuration with Remote Device Manager

MY R. STAHL **SHARKPCT-COSA**

R. STAHL's operating devices with the SHARK device platform are explosion-protected. Their rugged design with degree of protection IP66 makes them shock, vibration and seawater-proof and suitable for temperatures ranging from -40 °C to +65 °C. A chemically hardened, glare-free glass screen protects the display and the function keys, and a projected-capacitive multi-touch touch screen, camera and Bluetooth antenna. The ET-538-2FX is a Thin Client for Zones 1, 2, 21 and 22 with a 15" display (resolution 1024 x 768), optionally available as a sunlight-readable version (1200 cd/m²). Data is transmitted via dual Ethernet as 100Base-FX via multi-mode FO up to 5 km. Configuration options include memory sizes and SSDs.

Technical Data

General	
Series	SHARK Panel PCs / Thin Clients Operator Stations
Product description	15" Thin Client
HMI type	Rugged Panel
Technology	Remote HMI Thin Client
Explosion Protection	
Application range (zones)	1 2 21 22
Application range (divisions)	Class I, Zone 1 Class I, Division 2 Class II, Division 1 and 2 Class III
Scope	EU (CE / ATEX) Global (IECEx) USA (NEC) Canada (CE-Code) India (BIS) India (PESO) China (CCC / CNEx) Australia (RCM) Marine / ship certification ABS Marine / ship certification DNV
IECEx certification	IECEx BVS 14.0116X
ATEX certification	BVS 14 ATEX E 134 X
NEC certification	FM 16 US 0278 X

Explosion Protection	
CE-Code certification	FM 16 CA 0141 X
BIS certification	R-41228087
PESO certification	A/P/HQ/TN/104/5747 (P436617) P436617/1
CCC certification	2020312309000280
CNEx certification	CNEx22.2713X
DNV certification	TAA00001E6
ABS certification	17-HG1687000-PDA
IECEx gas explosion protection	Ex eb q [ia op is Ga] IIC T4 Gb
IECEx dust explosion protection	Ex tb [ia op is Da] IIIC T115°C Db
ATEX gas explosion protection	II 2 (1) G Ex e q [ia op is Ga] IIC T4 Gb
ATEX dust explosion protection	II 2 (1) D Ex tb [ia op is Da] IIIC T115°C Db
NEC gas explosion protection	Class I, Zone 1 AEx eb q [ia op is Ga] IIC T4 Gb Class I, Div. 2 Groups A, B, C, D T4
NEC dust explosion protection	Zone 21, AEx tb [ia op is Da] IIIC T115°C Db Class II, Div. 2 Groups F, G T4 Class III
CE-Code gas explosion protection	Ex eb q [ia Ga] IIC T4 Gb Class I, Div. 2 Groups A, B, C, D T4
CE-Code dust explosion protection	Zone 21, Ex tb [ia Da] IIIC T115°C Db Class II, Div. 1 Groups E, F, G T4 Class III
PESO explosion protection	Ex eb q [ia op is Ga] IIC T4 Gb
CNEX gas explosion protection	Ex eb q [ia op is Ga] IIC T4 Gb
CCC dust explosion protection	Ex tb [ia op is Da] IIIC T115°C Db
CNEx gas explosion protection	Ex eb q [ia op is Ga] IIC T4 Gb
CNEx dust explosion protection	Ex tb [ia op is Da] IIIC T115°C Db
Electrical Data	
Power supply	24 VDC or 230 VAC
Rated operational voltage DC	24 V
Voltage range DC	20 – 30 V
Rated operational voltage AC	230 V
Voltage range AC	100 – 240 V
Frequency range	50 – 60 Hz
Power consumption DC	4.6 A at 24 VDC (6.9 A with heater)
Power consumption AC 1	0.6 A at 230 VAC (0.8 A with heater)
Power consumption AC 2	1.1 A at 110 VAC (1.7 A with heater)
Protection fuse DC	12 A
Protection fuse AC	5 A
Rated operational power	typically 100 W / max. 150 W (typically 340 BTU / max. 510 BTU)
Processor type	Intel® Core™ i5-6442EQ with TPM
Processor details	Intel i5: 1.9 GHz (2.7 GHz), Quad Core, 4 threads, 6 MB Cache, 25W TDP
Operating system	Windows 10 IoT Enterprise (64 Bit)
Language support	User menu: English
Image	Remote Firmware
Cameras	optional, 5 megapixels front

Electrical Data	
Ethernet / Data	2x 100Base-FX (Ex op is)
Data cable	50/125 µm FO cable or 62.5/125 µm FO cable
Data cable length	max. 5000 m (for core cross section 50 and use of 9721/13-11-14) max. 4000 m (for core cross section 62.5 and use of 9721/13-11-14)
Interface medium	Multi-mode optical cable
Interface USB	3 x USB (Ex ia) 1 x USB (Ex eb)
Interface serial	1 x RS-232 / RS-422 / RS-485 (Ex eb)
Interface reader	1 x reader / barcode reader interface (Ex i)
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)
WLAN	2.4 / 5 GHz (802.11 a/b/g/n/ac)
Bluetooth	V. 2.1 / 3 / 4.1 / 4.2
Bluetooth frequency	2.4 GHz
Front camera	optional, 5 megapixels, in-built
Connection compartment	Power supply direct in integrated Ex e terminal box
Connections	Via plug-in screw terminals, green
Wiring	Flexible conductors 0.2 to 2.5 mm² (AWG24 to AWG14) Rigid conductors 0.2 to 2.5 mm² (AWG24 to AWG14)
Plug version FO	SC duplex socket
Plug version USB	USB-A connector
Max. input voltage U_m	250 VAC
Status LED	LEDs for: - on / off (green) - voltage applied to supply line / power supply OK (orange) - heater on (blue)
Display	
Display version	TFT colour display or sunlight-readable display
Display version 2	16.7 million colours
Display size inch	15
Display size centimetres	38
Display resolution	1024 x 768
Total pixels	1024 x 768
Display dimensions	4:3
Display brightness	TFT 450 cd/m² SR 1200 cd/m²
Display contrast	TFT 500:1 SR 600:1
Touchscreen	projected capacitive (PCAP), multi-touch
Touchscreen technology	projected capacitive (PCAP), protected under glass

Display	
Touchscreen activation	capacitive, no activation pressure required
Touchscreen input method	Finger, thin gloved finger or special gloves, conductive stylus
Touchscreen durability	Very good
Touch screen scratch hardness MoHS	6
Touchscreen scratch hardness pencil test ISO15184	9H
Touchscreen transmissivity / optic	very good
Touchscreen surface contaminants	unaffected (may however be affected by conductive fluids such as saltwater)
Touchscreen abrasive resistance	no abrasion by finger or rubber
Backlight	LED Technology
Backlight service life	70000 h at +25 °C
Front plate (display)	Hardened glass front in aluminium enclosure, powder-coated
Function keys	8
Ambient Conditions	
Heater operation	Automatic
Ambient temperature operation	-10 °C … +65 °C
Ambient temperature operation 1	-40 °C … +65 °C with heater
Storage temperature	-40 °C … +70 °C
Cold start temperature	-10 °C or -40 °C
Temperature note 1	The cold-start temperature depends on the "outdoor installation" (with / without heater).
Temperature note 2	Cold-start temperature: If the HMI device is switched on at temperatures below -10 °C, the electronics and the display will need a certain warm-up time before everything works smoothly and the display starts to be legible. Depending on how low the temperature is, this process may last up to 3 hours.
Heat dissipation	Via heat pipes and cooling fins
Damp heat	+55 °C / 95 %
Damp heat cyclic	+55 °C (±2 °C) ≥ 95 % Humidity location class B
Corrosion resistance	Salt water 5 % NaCl / +20 °C / 2 h 93 % r.H. / +40 °C / 168 h ISA-S71.04-1985, severity G3
Vibration sinus	5 to 13.2 Hz: ±1 mm 13.2 to 100 Hz: ±0.7 g Change cycle 1 oct/min Axis X, Y, Z
Vibration sinus 1	5 to 58 Hz: ±0.075 mm 58 to 500 Hz: ±1 g Change cycle 1 oct/min Axis X, Y, Z
Vibration sinus 2	5 to 1000 Hz 5 g
Shock	18 Schocks 25 g / 6 ms Axis X, Y, Z

Mechanical Data	
Enclosure / Design (1)	VESA 200 Standard
Dimensions (WxHxD) (1)	380 mm x 394 mm x 137 mm (+52 mm for cable entries)
Cable gland type (1)	HSK-MZ-Ex
Cable gland number (1)	3 x M16, 3 x M20, 2 x M25
Cable gland thread size (1)	M16 x 1.5 / M20 x 1.5 / M25 x 1.5
Cable gland cable diameter range (1)	M16 = 4 … 8 mm / M20 = 10 … 14 mm / M25 = 14 … 18 mm
Cable gland wrench size (1)	M16 = SW 19 / M20 = SW 22 / M25 = SW 30
Enclosure / Design (2)	VESA 200 Top Connect
Dimensions (WxHxD) (2)	380 mm x 394 mm x 212 mm
Cable gland type (2)	Screw plug
Cable gland number (2)	3 x M16, 3 x M20
Cable gland thread size (2)	M16 x 1.5 / M20 x 1.5
Mounting possibility	Panel mount with xx8 Mounting-Kit
Cut-out (WxH)	for xx8 Mounting-Kit: 360 mm x 364 mm (±1 mm)
Mounting position	any
Material front	Seawater resistant and coated aluminium, hardened glass
Material back	Seawater-resistant powder coated aluminum
Ingress protection	IP66
IP enclosure front	IP66
IP enclosure back	IP66
Weight	25 kg
Breather	yes, part of the enclosure and device approval
Mounting / Installation	
Enclosure type	Rugged Panel Design (RP)
Enclosure design	VESA 200 Standard, VESA 200 Top Connect
Mounting option	Yoke and wall-mounting, handle and feet, sun protection roof, panel mount (with xx8 Mounting-Kit)
Mounting type	when switched on: a fixed device (stationary, non-portable equipment)
Components	
Keyboard	optional, attached keyboard and pointing device (trackball, joystick or touchpad (Ex ia))