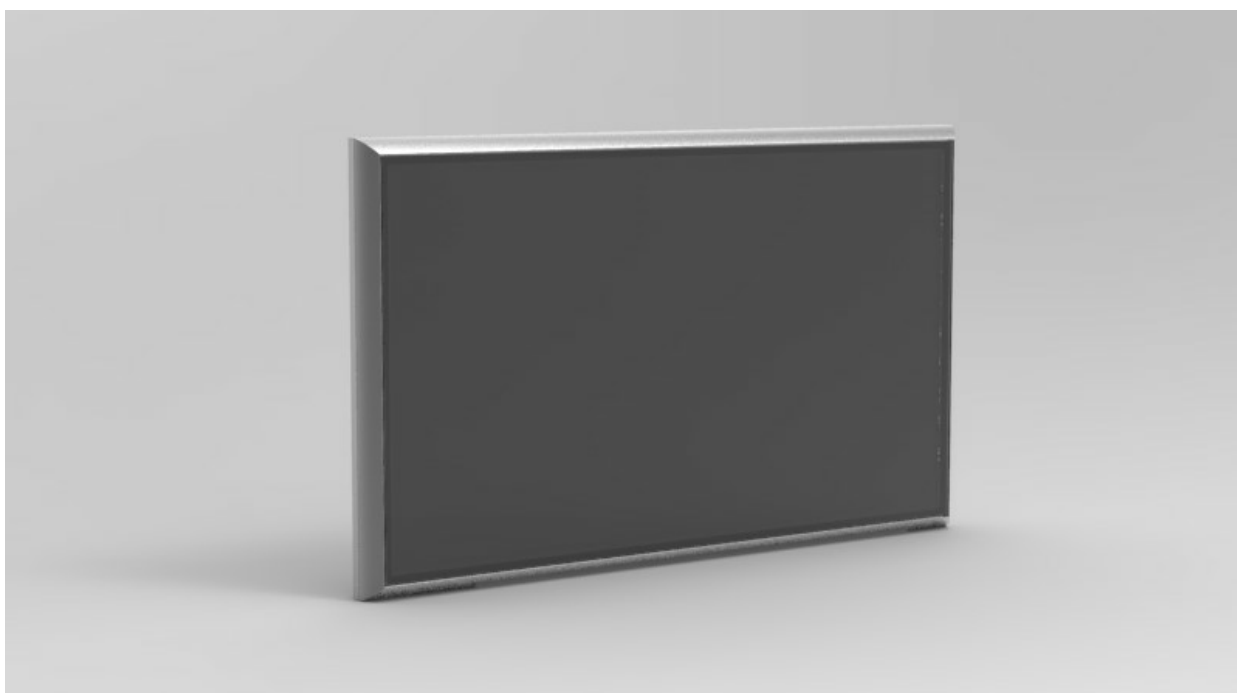


TECHNICAL SPECIFICATIONS

PRODUCT SPECIFICATIONS



Picture shown above is Indicative only

Compact TFT Family

Compact TFT

PROJECT CODE	PRODUCT CODE
Compact	-

REV.	DESCRIPTION	AUTHOR	APPROVED	DATE
0	▪ First emission of the document	Luca Vezzoli	Ennio Bignamini	15 th September 2016
1	▪ General update of the document	Luca Vezzoli	Ennio Bignamini	4 th October 2016
2	▪ Glass info updates	Luca Vezzoli	Ennio Bignamini	5 th October 2016
	▪			

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Introduction

Product overview with general features and product specifications.

Overview

The “**Compact TFT Family**” is a visualization system based on 32”/42”/46”/55” Matrix modules and an Industrial Embedded PC.

The displays are designed for public information provided in indoor and semi outdoor areas.

The display feature a wide viewing angle, high brightness, high contrast and wide aspect ratio.

General Features:

- Visualization area composed of a TFT matrix LED back lighted;
- Typical brightness: 500cd/m² (on Matrix Module)
- Resolution of 1920x1080px;
- Aspect ratio of: 16:9;
- Central unit composed of an industrial embedded PC;
- Operating temperature range : 0°C / +50°C;
- High reliability without any maintenance required;
- Onsite Maintenance (Preventive & Corrective; direct access by frontal door of main components);
- Ethernet communication (on CU) for firmware / software update and data transmission;
- Ready for Landscape or Portrait installation types
- Ready for audio information system or audio entertainment

Upon request:

- Size 32”/42”/46”/55” with brightness till 700cd/m² (on Matrix Module)
- Extended operating temperature range : -25°C+50°C
- Laminated glass 3+3mm and different glass treatments
- Monitor can be equipped with audio for passenger information in audio format

Mechanical characteristics:

- Aluminum housing to ensure rigid body and minimal weight;
- Front protection based on tempered monolithic glass, up to 6mm thickness maximum;
- Up to IP65 protection degree;



Fig.: 1 – Example of Passenger Entertainment (on left) and Passenger Information (on right)

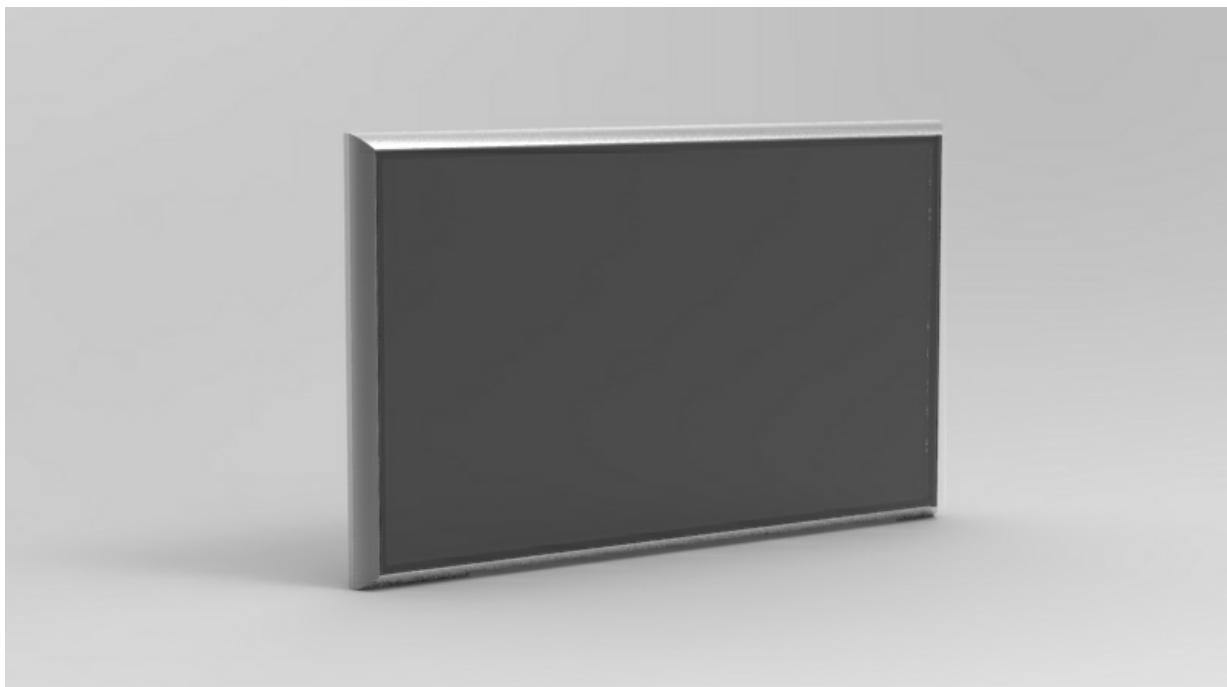


Fig.: 2 – Front side

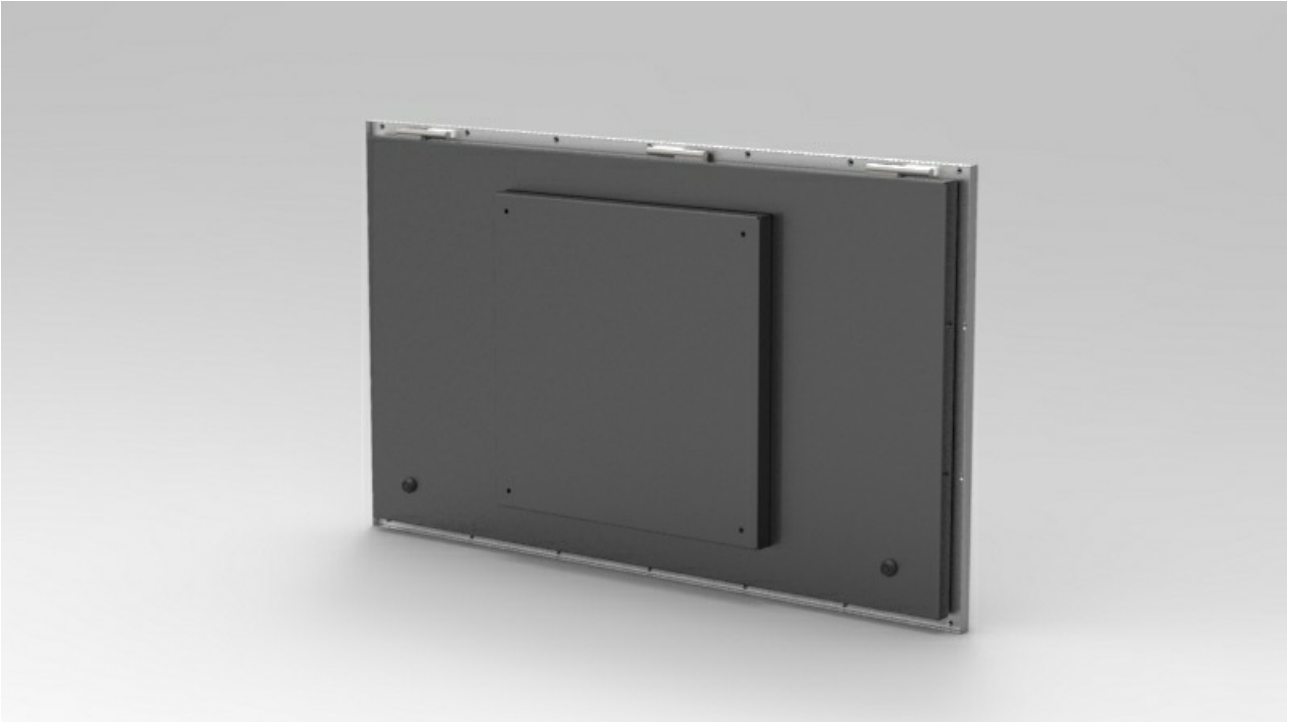


Fig.: 3 – Rear side

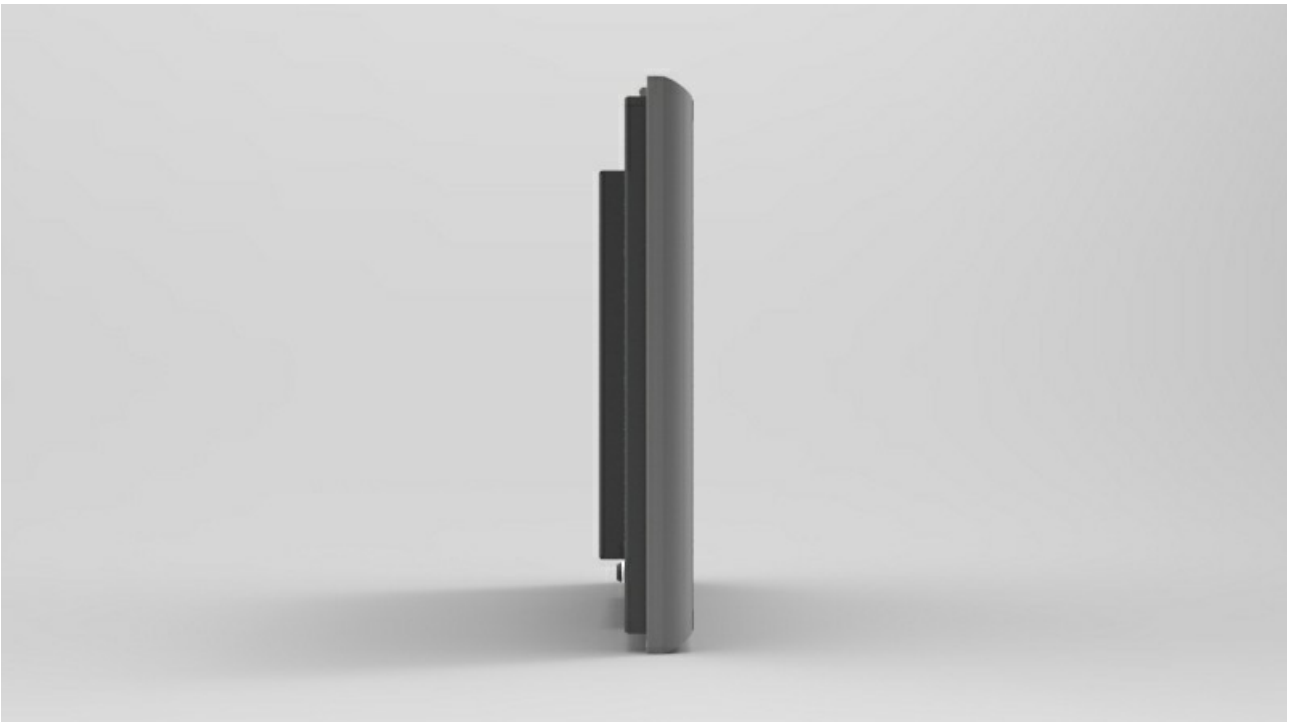


Fig.: 4 – Lateral side

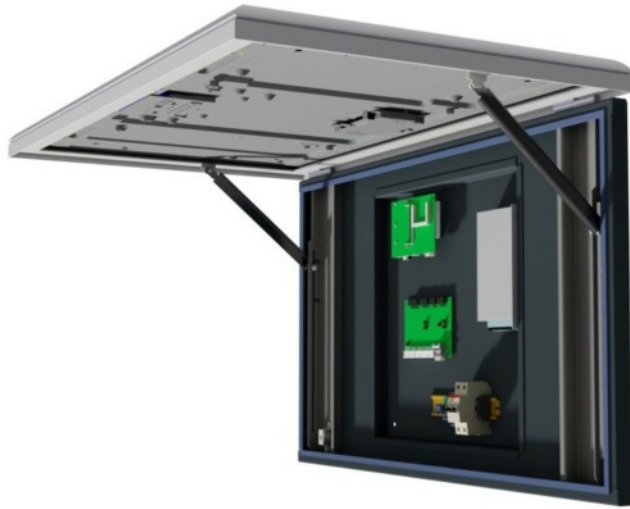


Fig.:5 – Views

The information showed in figures above are indicative.

General overview regarding product specifications

General information

Norms:	<p>EN 60950-1 – Information technology equipment - Safety - Part 1: General requirements</p> <p>EN 50122-1 – Railway applications – Fixed installation - Part 1: protective provisions relating to electrical safety and earthing</p> <p>EN 50121-1 – Railway applications - Electromagnetic compatibility - Part 1: General</p> <p>EN 50121-4 – Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus</p> <p>EN 61000-3-2 – Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)</p> <p>EN 61000-3-3 – Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection</p> <p>EN 61000-4-2 – Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test</p> <p>EN 61000-4-3 – Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques – Radiated, radiofrequency, electromagnetic field immunity test</p> <p>EN 61000-4-4 – Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test</p> <p>EN 61000-4-5 – Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test</p> <p>EN 61000-4-6 – Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radiofrequency fields</p> <p>EN 61000-4-9 – Electromagnetic compatibility (EMC) - Part 4-9: Testing and measurement techniques - Pulse magnetic field immunity test</p> <p>EN 61000-6-4 – Electromagnetic compatibility (EMC) - Part 6-4: Generic standards – Emission standard for industrial environments</p> <p>EN 61000-4-11 – Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests</p> <p>EN 62262 – Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)</p> <p>EN 60529 – Degrees of protection provided by enclosures (IP Code)</p> <p>EN 60068-2-1 (test Ad) – Environmental testing - Part 2: Tests - Tests A: Cold</p> <p>EN 60068-2-2 (test Bd) – Environmental testing - Part 2-2: Tests - Test B: Dry heat</p>
Conformity:	CE
Version:	Single sided
Typical application:	Indoor / Semi-outdoor (roofed)
Installation:	Wall / Ceiling / Embedded / Pole support (for further details see the attached mechanical drawing)
Installation mode:	Landscape / Portrait
Tilting:	The display could be installed with a tilt between 0° and 10°: inside this range it is

	guaranteed that the display will respect mechanical and thermal project behaviour (according to the bracket – Not provided)			
Mechanical				
Size	TFT 32”	TFT 42”	TFT 46”	TFT 55”
Dimensions:	784 (L) x 478 (H) x 104 (D) mm	1022 (L) x 615 (H) x 73/104 (D) mm	1109 (L) x 663 (H) x 104 (D) mm	1310 (L) x 780 (H) x 90/130 (D) mm
Estimated Weight	35Kg	40Kg	50Kg	55Kg (TBC)
Finish Front :	Aluminium, RAL Range, 50% GLOSS, not reflecting MAT, powder coating			
Finish Rear :	Aluminium, RAL Range, 50% GLOSS, not reflecting MAT, powder coating			
Protection grade:	IP54 <i>Upon request higher IP protection degree up to maximum IP65.</i>			
Front protection:	Tempered monolithic glass up to maximum 6mm thickness. <i>Upon request :</i> - <i>laminated glass up to 3+3mm.</i> - <i>Different glass treatments.</i>			
Lock system:	Hinged door, polyurethane bi-component vulcanized gasket; Special anti-vandal locks			
Interfaces:	1x Power Supply (interface on internal terminal block) 1x RJ45 Data Line 1x M6 Additional ground interface 1x Optional Audio Output (for further details see the attached mechanical drawing) <i>Upon request:</i> - <i>HDMI Interface</i>			
Fixing points:	Monitor: Vesa standard 200x200mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)	Monitor: Vesa standard 400x400mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)	Monitor: Vesa standard 400x400mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)	Monitor: Vesa standard 400x400mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)

Electrical				
Size	TFT 32'''	TFT 42'''	TFT 46'''	TFT 55'''
Input power supply voltage:	Nominal 230 V _{AC}			
	Range: 90V _{AC} ÷ 264V _{AC}			
Input power supply frequency range:	50Hz (47 ÷ 63 Hz)			
Protections:	Overload, overvoltage, over temperature			
Power Consumption:	Typ.: 70W (@ 70% Brightness)	Typ.: 100W (@ 70% Brightness)	Typ.: 105W (@ 70% Brightness)	Typ.: 170W (@ 70% Brightness)
	Max.: 85W (@ 100% Brightness)	Max.: 130W (@ 100% Brightness)	Max.: 135W (@ 100% Brightness)	Max.: 210W (@ 100% Brightness)
Environmental				
Operating temperature:	0° ÷ 50° Celsius			
	<i>Upon request: start-up from -25°C</i>			
Thermal management:	At high temperature: <ul style="list-style-type: none"> - Automatic TFT-LCD matrix brightness linear derating down to maximum 50% with the increase of the environmental temperature - TFT-LCD matrix and PC switched OFF when the highest temperature limit is reached 			
	At low temperature: <ul style="list-style-type: none"> - display is switched off when the lowest temperature limit is reached 			
Operating humidity:	10 % ÷ 95 % R.H. without condensation			
Storage temperature:	-20° ÷ 60° Celsius – Ambient temperature 10% ÷ 95% - R.H. at this conditions: <ul style="list-style-type: none"> - till +40°C @90% R.H. - till +50°C @60% R.H. - till +60°C @40% R.H. 			
Cooling system:	Fanless (filterless)			
Heating system:	<i>Upon request as usual combined with the extended operating temperature range</i>			
Temperature Sensor	Installed			
Light Sensor	Installed			

Data Communication

Type of communication:	Copper LAN Ethernet 10/100/1000 Base TX
Protocol type:	Different protocol types supported (according to the software player hosted), SNMP protocol for diagnostic data
Other:	<i>Upon request:</i> <i>- Built-in LAN Ethernet 10/100Base TX to 100Base FX Media converter (multimode) (for further details refer to the commercial offer)</i>

Connectors

Power supply:	1x Harting PushPull Power 2/0, panel feed-through and connector, 3-poles (2+PE)
Data line :	1x Harting PushPull RJ45 Technology, RJ45-panel jack feed-through
Optional Audio output	1x Cable Gland
Ground interface:	1x M6 male ground point
Other :	<i>Upon Request : HDMI panel</i>

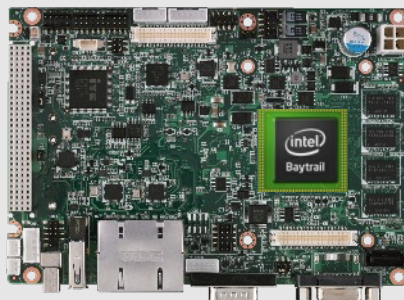
Optical specifications (matrix module)

Size:	TFT 32"	TFT 42"	TFT 46"	TFT 55"
Format:	16:9			
Type:	Normally black			
(*) Active area:	698.4 (H) x 392.85 (V) mm	930.24 (H) x 523.26 (V) mm	1018.08 (H) x 572.67 (V) mm	1209.6 (H) x 680.4(V) mm
(*) Pixel pitch:	0.36375 x 0.36375 mm x RGB	0.4845 x 0.4845 mm x RGB	0.53025 x 0.53025 mm x RGB	0.63 x 0.63 mm x RGB
Pixel format:	1920 (H) x 1080 (V) (Native resolution)			
Colour depth:	16.7M colors			
Luminance:(on white colour)	500 cd/m ² (typ.) @ the centre point			
	<i>Upon request 700cd/mq</i>			
Contrast ratio:	4000 : 1 typ. (with dimming)			
Viewing angle (CR > 10):	R/L 178° (typ.) – U/D 178° (typ.)			
Response time:	8ms (Typ., Grey-to-Grey)	8ms (Typ., Grey-to-Grey)	8ms (Typ., Grey-to-Grey)	6.5ms (Typ., Grey-to-Grey)
Backlight Technology:	LED			

Brightness control

Automatic / Adjustable

PC Embedded



Picture shown above is Indicative only

CPU type:	x86 Intel Bay Trail
CPU speed (min.):	1.33 Dual Core / 1.91 GHz Quad Core
Memory Provided:	2GB <i>Upon request: 4GB</i>
Display Controller:	Graphic features: DirectX11/10/9, OpenGL4.2/4.0/3.2, OpenGL-ES 2.0, OpenCL1.2 HW decode: H.264, MPEG2, MVC, VC-1, WMV9, MJPEG and VP8 HW Encoder: H.264, MPEG2
Video output interface:	LVDS (48-bit LVDS up to WUXGA 1920 x 1200 at 60Hz) / HDMI or combination between DisplayPort / VGA / DVI
Ethernet:	Speed: 10/100/1000Mbps Connector: 1x RJ45 <i>Upon request: 2x RJ45 Ethernet Ports*</i>
Audio:	High Definition Audio (HD), Line-in, Line out, Mic-in
Watchdog Timer:	Output system reset, Programmable counter from 1 ÷ 255 minutes/seconds
Storage Interface:	SATA II / mSATA: (Full-size)
Storage Provided:	Capacity: 32GB Endurance: 2.000.000 program/erase cycles <i>Upon request: 64GB storage capacity* (same specifications as per 32GB)</i>
I/O Connector (min.):	1x 10/100/1000Mbps Ethernet on RJ45 1x USB 2.0 1x USB 3.0 1x RS232
OS (Compatible):	Microsoft Windows 7 Embedded / 7 Embedded Compact Microsoft Windows 8 Embedded Std Runtime Microsoft Windows 10 IoT Enterprise LTSB Entry/Value/High (CPU platform dependent) Linux (Additional Codec or Player Licenses as Adobe Flash are not included)

* *Optional configuration (available upon request)*

Diagnostic, control & setup

Control:	Ambient Light sensor IrDA
Diagnostic:	Power supply Internal Temperature Backlight Status External PC HW Watchdog
Control & setup:	Remote via Ethernet through SNMP protocol Locally via IRDA interface Locally via VNC (virtual network computing)
LED Status:	Green: Power Status Orange: Ethernet Activity Red: Fault / Watchdog

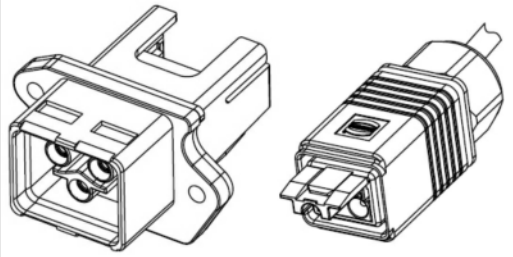
RAMS values

MTBF:(Mean time between failures)	46.870 hrs* * note: standard configuration with backlight included
MTTR:(Maximum time to internal components replacement)	20 min onsite
Other:	-

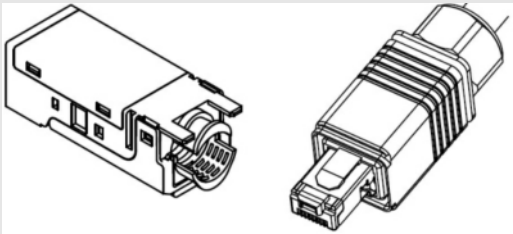
Connectors Pinout

Connectors type and signals description

Power Supply

Connector Type	Pin #	Signal	Description
 <p>Harting Push pull V4 Power plug</p>	1	L	Line 230Vac power input
	2	N	Neutral 230Vac power input
	3	GND	Ground

Ethernet data line

Connector Type	Pin #	Signal	Description
 <p>Harting Push pull V4 RJ45</p>	1	TX+	Transmit Data +
	2	TX-	Transmit Data -
	3	RX+	Receive Data +
	4	BI_DC+ (GHz)	DC+ for GBe
	5	BI_DC- (GHz)	DC- for GBe
	6	RX-	Receive Data -
	7	BI_DD+ (GHz)	DD+ for GBe
	8	BI_DD- (GHz)	DD- for GBe

Option: Audio

Chapter

4

Audio Specifications

Audio Amplifier

Operating voltage:	12V
Current consumption:	Max. 2A
Loudspeaker connection:	4ohm
Loudspeaker connection:	4ohm
Music Power:	25W with 12V at a 4ohm loudspeaker
Frequency response:	40...20.000Hz

Loudspeaker

Rated power:	10W
Maximum Power:	15W
Impedance:	8Ω
Frequency response:	130-20.000Hz
Mean sound pressure level:	84db (1W/1m)

Attachments

- *"73 170 4 01 - Compact TFT 32" IP55 ETH Single Sided R.1"*
- *"73 171 4 01 - Compact TFT 42" IP55 ETH Single Sided R.0"*
- *"73 172 4 01 - Compact TFT 46" IP55 ETH Single Sided R.1"*
- *"73 ### 4 01 - Compact TFT 55" IP55 ETH Single Sided R.1"*

