

INNOVATIVE INDUSTRIAL EQUIPMENT



„ELLT” is a brand of the Polish manufacturer of railway systems – Ledatel company. The company was founded in 2007 and quickly implemented its development plans. In 2017, a design office was established to start work on the first systems. This was the beginning of the current production activity. In 2018, the first machines were purchased and the construction of the production line began.

2019 brought further investments. Among the main ones were the purchase of a factory and an environmental chamber. The company also bought many modern workplace tools such as a shaker, a laser engraver and 3d printers. We owe our dynamic development to many years of hard work, the implementation of ambitious innovative projects, the involvement of reliable employees undertaking new, courageous actions and the guarantee of continuous investment in modern machinery and human resources.

New device design is carried out in accordance with the described construction processes, principles of planning, implementation and control of design works related to the design of the product and new technologies. This allows us to meet all the requirements of specific customer expectations, safety and quality.

The designed and manufactured product is subject to a certification process. Depending on whether the product is intended for the Polish or foreign market, appropriate procedures are applied.

Our products are designed in accordance with the latest Technical Specifications for Interoperability - TSI announced by the European Commission. This means that railway vehicles equipped with our devices can travel freely on the railway infrastructure of individual EU countries, without having to stop at the borders and without having to replace locomotives or drivers.

Constructors, designing PCBs and other elements, carrying out tests and diagnostics, check the first product in terms of its full compliance with the requirements for its functionality and safety. The key aspect is the reliability of products, therefore, RAMS (Reliability, Availability, Maintainability, Safety) analyses are performed.

The implementation of ISO 9001 and ISO/TS 22163 certifications guarantees the quality, modernity and safety of our products.

Before they are shipped to customers, ELLT products undergo a proprietary Automated Testing System procedure which ensures full compliance with project requirements.



6

On-board equipment

HMI
Router

10

Displays

Electronic paper
LED
LCD
Digital Signage

25

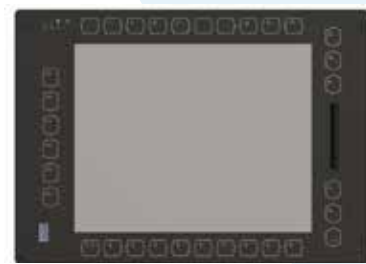
Platform Infrastructure

Infokiosks
Platform displays





HMI PANEL HMI 10,4"



Operator panel with a 10,4" display. Designed for use in railway vehicles. Housing with function buttons and optical sensor that automatically adapts the brightness of the display to the prevailing lighting conditions. The device is also equipped with USB ports and an RFID reader (brak an przed RFID) selected models are also equipped with a touch overlay are also on the screen.

Mechanical properties

Dimensions	314 mm ± 2 mm x 214 mm ± 2 mm x 78 mm ± 2 mm
Weight	3,2 kg ± 0,5 kg
Working temperature	-40°C to +75°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Screen protection	The touch screen is secured with a 3 mm glass
Coated with paint	Any color from the RAL palette
Level of security	IP65 (front), IP64 (back)

Technical parameters

Supply voltage range	16 VDC - 140 VDC
Rated voltage	24 VDC - 110 VDC
Energy consumption	Max consumption 15 W
LAN	2x 10/100 LAN with connector M12 D-code female 4-pin 0
USB port	1 x socket USB 2.0 (front) 1 x M12 USB (back) A-code female 8 pin
Audio input / output	1 x M12 A-code 5 pin female
Video output	1 x HDMI
Communication	1 x CAN (connector DB9 lub M12) M12 A-code 5 pin male
Antenna	2 x SMA (modem antenna)
Memory slot	1 x C-fast reader
Power connector	Power 4 pin connector M12 A-code male
Resolution	1024x768 px
Identification	RFID mifare reader
Luminance (cd / m2)	470 (max)

Standards PN-EN 50155, PN-EN 45545-2:2021.

Possible additional connectors: HDMI, USB, audio line-in/out (M12 A-code 5-pin), CAN (DB9 or M12), SMA. Devices are available in various configurations. It is possible to modify them and create a new model at the customer's request.



HMI PANEL HMI 15"



Operator panel with a 15" display. Designed for use in railway vehicles. Housing with function buttons and optical sensor that automatically adapts the brightness of the display to the prevailing lighting conditions. The device is also equipped with USB ports and an RFID reader; selected models are also equipped with a touch overlay on the screen.

Mechanical properties

Dimensions	424 mm (w) x 309 mm (h) x 84 mm (d)
Weight	6,5 kg ± 0,3 kg
Working temperature	-40°C to +75°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Screen protection	The touch screen is secured with a 3 mm glass
Coated with paint	Any color from the RAL palette
Level of security	IP65 (front), IP64 (back)

Technical parameters

Supply voltage range	16 VDC - 140 VDC
RAM	DDR3 4GB
Energy consumption	Max consumption 35 W
LAN	2x 10/100/1000 LAN with connector M12 X-code female
Audio input / output	1 x M12 A-code 5 pin
Video output	1 x HDMI
Communication	1 x CAN (connector DB9 lub M12)
Antenna	2 x SMA (modem antenna)
Power connector	4 pin connector M12 A-code male
Resolution	1024x768 px
Identification	RFID mifare reader
Luminance (cd / m2)	800

Standards PN-EN 50155:2018, PN-EN 45545-2:2021.

Possible additional connectors: HDMI, USB, audio line-in/out (M12 A-code 5-pin), CAN (DB9 lub M12), SMA



INDUSTRIAL NETWORK CONTROLLER EC-3000



Industrial network controller designed for applications in railway vehicles, locomotives and carriages. The device is enclosed in a durable, metal, passively cooled housing. The front panel is equipped with two Ethernet M12 X-code ports, VGA and HDMI sockets for connecting a monitor, two USB 3.0 ports and two slots for 2,5" drives.

Mechanical properties

Dimensions	250 mm ± 0,5 mm x 150 mm ± 0,5 mm x 62 mm ± 0,2 mm
Weight	1,7 kg ± 0,2 kg
Working temperature	-40°C to +70°C
Storage temperature	-40°C to +80°C
Relative humidity	10% - 90% (no condensation)
The size of the ground screw	M4
Level of security	IP40

Technical parameters

Power consumption	40 W
Power management	Voltage that controls / actuates the device
Power	5 pin connector M12 A-code male
USB port	2 x USB 3.0 type A
LAN	2 x M12 X-code female 1x 10/100/1000 LAN 8 pin
Video	1 x HDMI 1 x VGA
DIO	1 x GPI 1 x GPO D-SUB 9 pin male optional: 8 x GPI 4 x GPO D-SUBHD 15 pin male
Audio	1 x Line-out MINI jack 3.5
Standards	EN 45545-2, EN 50155, EN 50124-1, EU directives 2014/30/EU (EMC), 2011/65/CE (RoHS2)



OPERATOR PANEL EH-3000



Operator panel designed for use in the driver's cab of railway vehicles, the automotive industry, in factories as well as in electrical cabinets. The 10,4" display is also an ideal central unit of the Passenger Information System in public transport vehicles.

Mechanical properties

Dimensions	275 mm ± 2 mm x 239 mm ± 2 mm x 77,5 mm ± 2 mm
Weight	3,4 kg ± 0,5 kg
Working temperature	-40°C to +75°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Screen protection	The touch screen is secured with a 3 mm glass
Coated with paint	Any color from the RAL palette
Level of security	IP65 (front), IP64 (back)

Technical parameters

Processor	Intel Apollo Lake (Atom, Celeron lub Pentium)
RAM	DDR3 4GB
Input voltage	16 VDC – 36 VDC
Energy consumption	max. 60 W
Rated voltage	24 VDC
Power	4 pin connector M12 S-code male
USB port	1 x USB 2.0 typ A 1x USB 2.0 M12 A-code female 8 pin (side) 2 x socket USB 3.0 typ A (bottom)
LAN	1 x M12 X-code female 1x 10/100/1000 LAN 8 pin (side) 1 x LAN RJ45 10/100/1000 (bottom)
Audio input / output	1x M12 A-code male 5 pin (side) 1x Audio line out Jack 3,5mm (bottom)
Video	1 x HDMI 1x VGA (bottom)
Communication	1 x CAN M12 A-code female 5 pin (side) 1x RS232C D-SUB 9 pin male (bottom)
DIO	1 x GPI 1x GPO D-SUB 9 pin female (bottom)
Luminance (cd / m2)	470 (max)
Standards	EN 45545-2, EN 50155, EU directives 2014/30/EU (EMC), 2011/65/CE (RoHS2)



COMMUNICATION MODULE ZMK3620PM4



Advanced communication device that fuses the functionality of a router and a controller in one unit. The device is fitted with a 6th gen Intel i7 processor and supports 4G/3G/2G mobile standards.

Mechanical properties

Dimensions	340 mm x 242 mm x 99,5 mm (± 1 mm)
Weight	5.7 kg (± 0,4 kg)
Working temperature	-25°C to +55°C (according to EN 50155, range T1)
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Housing color	Any color from the RAL palette
Level of security	IP40

Technical parameters

Processor	Intel Gen6 Core i7-6600U 2.6-3.4 GHz
RAM	SO-DIMM DDR4 16GB
OS Disk	128GB SSD
Supply voltage range	16 VDC - 140 VDC
Rated voltage	24-110 VDC
Energy consumption	max. 150 W
Connector	1 x M12 S-code
Antenna connectors	Do 15 x SMA (14 x SMA GSM+ 1 x SMA GPS)*
SIM slot	14 x micro SIM (expandable to 21 SIM) * Optional: additional 2 x standard SIM (slots inactive by default)
Mobile network	4G - LTE B1 (2100), B2 (1900), B3 (1800), B4 (AWS), B7 (2600), B12 (700ac), B13 (700c), B20 (8000D), B5 (850), B25 (1900), B26 (850), B29 (700), B41 (TDD2500), B30 (WCS) 3G-DC-HSPA + / UMTS B1 (2100), B2 (1900), B3 (1800), B4 (1700), B5 (850), B8 (900) 2G- GSM / GPRS / EDGE n.a. LTE Cat Category 6 2 x 2 MIMO antenna ports Data transfer speed lower / upper (max) 300 Mbps / 50 Mbps
GNSS	GNSS navigation system using BeiDou, Galileo, GLONASS, GPS / QZSS, Data server with JSON or NMEA data stream, Tracking sensitivity -167 dBm, Support for passive and active antennas

Standards	PN-EN 50155:2018-01, PN-EN 45545-2:2021, HL1, HL2, HL3, PN-EN 50121-3-2:2017, PN-EN 61373:2011
-----------	--

* depending on the version of the device





INDOOR DISPLAY E Ink 25,3" EP253A



25,3" display uses environmentally friendly electronic paper technology, which requires power consumption only when changing the displayed content. The device is designed for public transport vehicles as well as for commercial use in the Digital Signage sector. Enclosed in a durable metal housing with the possibility of assembly. The front is covered with a 4 mm thick tempered glass.

Mechanical properties

Dimensions	630 mm x 390 mm x 43 mm (± 1 mm) (wall mounted) 630 mm ± 2 mm x 390 mm ± 2 mm x 72.5 mm ± 1 mm (in the recess) 670 mm ± 2 mm x 445 mm ± 2 mm x 29 mm ± 1 mm (built-in)
Weight	Device: 8.56 kg (± 0,4 kg) Device + wall mounting kit: 11.06 kg (± 0,55 kg)
Working temperature while changing the picture	+15°C to +35°C
Working temperature	-25°C to +55°C
Storage temperature	-40°C to +75°C
Relative humidity	10% - 95% (no condensation)
Screen protection	Glass ESG, 4 mm, toughened, colorless, with screen printing
Coated with paint	Any color from the RAL palette
Level of security	IP64

Technical parameters

Supply voltage range	16,8 VDC – 36 VDC (device variant with connector D-code oraz PoE)
Rated voltage	24 VDC
Power connector	1 x plug M12 A-code (m) 4p. 1 x plug M12 D-code (f) 4p. (depending on the variant of the device)
Energy consumption (short-term operation*)	30 W (device variant with connector D-code oraz PoE) 40 W (device variant with connector A-code) *e.g. when changing the displayed image
Antenna connectors	1 x SMA GSM 1 x SMA WLAN 1 x SMA GPS
Ethernet connection	1 x M12 D-code (f) 4p. 1 x M12 D-code (f) 4p. with PoE function (depending on the variant of the device)
Maximum resolution	3200 x 1800 px (25,3")

Standards

PN-EN 45545-2+A1:2015, PN-EN 50155:2018, PN-EN 50121-3-2:2017

Devices are available in various configurations: full kolor, 4 colors (yellow, red, black and white) and black&white.



INDOOR DISPLAY E Ink 13,3" EP133A



13,3" display uses environmentally friendly electronic paper technology, which requires power consumption only when changing the displayed content. The device is designed for public transport vehicles as well as for commercial use in the Digital Signage sector. Enclosed in a durable metal housing with the possibility of assembly. The front is covered with a 4 mm thick tempered glass.

Mechanical properties

Dimensions	330 mm x 271 mm x 36 mm (±2 mm) (Wall mounted)
Weight	Device: 3,02 kg (±0,15 kg) Device + wall mounting kit: 3,77 kg (±0,19 kg)
Working temperature while changing the picture	+15°C to +35°C
Working temperature	-25°C to +55°C
Storage temperature	-40°C to +75°C
Relative humidity	10% - 90% (no condensation)
Screen protection	Glass ESG, 4 mm, toughened, colorless, with screen printing
Coated with paint	Any color from the RAL palette
Level of security	IP64

Technical parameters

Supply voltage range	16,8 VDC – 36 VDC (device variant with connector D-code oraz PoE)
Rated voltage	24 VDC
Power connector	1 x plug M12 A-code (m) 4p. 1 x plug M12 D-code (f) 4p. (depending on the variant of the device)
Energy consumption (short-term operation *)	30 W (device variant with connector D-code oraz PoE) 40 W (device variant with connector A-code) *e.g. when changing the displayed image
Antenna connectors	1 x SMA GSM 1 x SMA WLAN 1 x SMA GPS
Ethernet connection	1 x M12 D-code (f) 4p. 1 x M12 D-code (f) 4p. with PoE function (depending on the variant of the device)
Maximum resolution	1600 x 1200 px (13")

Standards

PN-EN 45545-2+A1:2015, PN-EN 50155:2018-01, PN-EN 50121-3-2:2017



OUTDOOR DISPLAY E Ink 25,3" ED253TT1



25,3" display uses environmentally friendly electronic paper technology, which requires power consumption only when changing the displayed content. The device is designed for public transport vehicles as well as for commercial use in the Digital Signage sector. Enclosed in a durable metal housing with the possibility of assembly. The front is covered with a 4 mm thick tempered glass.

Mechanical properties

Dimensions	700 mm x 385 mm x 40 mm
Weight	10 kg / aluminum, (stainless steel - 20 kg)
Working temperature	-20°C to +60°C (according to EN50155-T1) If there is no change (still image / unchanged): -25°C to +70°C
Working temperature while changing the picture	+35°C to +70°C
Storage temperature	-40°C to +75°C
Relative humidity	10% - 95% (no condensation)
Screen protection	4 mm semi-tempered glass with an anti-reflective layer and UV filter, glued to the housings with screen printing on the edges
Coated with paint	From the rear (rear cover) on 4 M8 4xM8 screws
Level of security	IP64

Technical parameters

Supply voltage range	PoE (Power over Ethernet) IEEE 802.3af® (standardowe)
Rated voltage	50 VDC PoE
Energy consumption	Max. 30 W
LAN	10/100 LAN with connector M12 D-code female
LTE	Option with built-in LTE modem and external antenna
USB	USB 2.0 connector (service) from the bottom of the board
Additional power supply	M8 4-pin connector for connecting an external solar panel 10 - 15 W or an external power supply with a voltage of 8-19 VDC max. 30 W



OUTDOOR DISPLAY E Ink 13,3" ELLTeINK13



13,3" display uses environmentally friendly electronic paper technology, which requires power consumption only when changing the displayed content. The device is designed for public transport vehicles as well as for commercial use in the Digital Signage sector. Enclosed in a durable metal housing with the possibility of assembly. The front is covered with a 4 mm thick tempered glass.

Mechanical properties

Dimensions	330 mm (w) x 271 mm (h) x 36 mm (d) (wall mounted)
Weight	Device: 3,02 kg (±0,19 kg) Device + wall mounting kit: 3,77 kg
Working temperature	-25°C to +55°C
Working temperature while changing the picture	+15°C to +35°C
Storage temperature	-40°C to +75°C
Relative humidity	10% - 95% (no condensation)
Screen protection	Glass ESG, 4 mm, toughened, colorless, with screen printing
Coated with paint	Any color from the RAL palette
Level of security	IP64

Technical parameters

Supply voltage range	16,8 VDC – 36 VDC (device variant with connector D-code oraz PoE)
Rated voltage	24 VDC
Power connector	1 x plug M12 A-code (m) 4p. 1 x plug M12 D-code (f) 4p. (depending on the variant of the device)
Energy consumption (short-term operation *)	30 W (device variant with connector D-code oraz PoE) 40 W (device variant with connector A-code) *e.g. when changing the displayed image
Antenna connectors	1 x SMA GSM 1 x SMA WLAN 1 x SMA GPS
Ethernet connection	1 x M12 D-code (f) 4p. 1 x M12 D-code (f) 4p. with PoE function (depending on the variant of the device)
Maximum resolution	1600 x 1200 px (13")



LED COLOR DISPLAY TLED3.160X64K



Color display designed for installation in public transport vehicles. It can display content in text, graphic or mixed form, including route direction, station names, line number and pictograms. Equipped with adaptive LED brightness levels.

Mechanical properties

Dimensions	508 mm (w) x 216 mm (h) x 36 mm (d)
Weight	4,33 kg (±0,3 kg)
Working temperature	-40°C to +70°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 95% (no condensation)
Screen protection	Tempered glass
Coated with paint	Any color from the RAL palette
Level of security	IP60

Technical parameters

Supply voltage range	16.8 VDC - 36 VDC
Rated voltage	24 VDC
Energy consumption	Max consumption 95 W
LAN	10/100 LAN with connector M12 D-code female
Power connector	9-pin connector MATE-N-LOK male
Resolution	160x64 px
Pixel raster	P3 (3mm)
Luminance (cd / m2)	max 9000cd (with white color)

Standards	EN 50155:2018, EN 45545-2, TSI-PRM
-----------	------------------------------------



LED COLOR DISPLAY TLED3.288X64



Device designed for use in public transport vehicles. Adaptive of LED brightness levels ensures that the displayed content is readable regardless of whether it is light or dark. Pictograms, line names or route direction are examples of information that can be displayed in any color.

Mechanical properties

Dimensions	892 mm (w) x 216 mm (h) x 36 mm (d)
Weight	7,29 kg ± 0,4 kg
Working temperature	-40°C to +70°C
Storage temperature	-40°C to +75°C
Relative humidity	10% - 95% (no condensation)
Screen protection	Tempered glass
Coated with paint	Any color from the RAL palette
Level of security	IP60

Technical parameters

Supply voltage range	16.8 VDC - 36 VDC
Rated voltage	24 VDC
Energy consumption	Max consumption 190 W
LAN	1x 10Mb LAN with connector M12 D-code (two mounting locations to choose from)
Power connector	4-pin connector M12 S -code (two mounting locations to choose from)
Resolution	288x64 px
Pixel raster	P3 (3mm)
Luminance (cd / m2)	max 9000cd (white color)

Standards	PN-EN 50155:2018, PN-EN 61180:2016-12, PN-EN 60068-2-1:2009, PN-EN 60068-2-2:2009, PN-EN 60068-2-30:2008, PN-EN 61000-4-4:2013, PN-EN 61000-4-5:2014, PN-EN 61000-4-3:2007, PN-EN 61000-4-6:2014, PN-EN 55016-2-3:2017, PN-EN 55016-2-1:2014, PN-EN 61000-4-2:2011, PN-EN 61373:2011, PN-EN 45545-2, TSI-PRM
-----------	--



LED COLOR DISPLAY TLED3.192X32V2



Display designed for installation in public transport vehicles. Suitable for displaying graphics, text and mixed content in any color. A built-in sensor ensures perfect, adaptive adjustment of the LED brightness levels.

Mechanical properties

Dimensions	604 mm + 2 mm - 1 mm x 120 mm + 2 mm - 1 mm x 47,5 mm ± 1 mm
Weight	3,15 kg ± 0,25 kg - display in ZT variant 3,1 kg ± 0,2 kg - display in ZG variant
Working temperature	-40°C to +75°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Screen protection	Tempered glass 3mm
Coated with paint	Any color from the RAL palette
Level of security	IP64 (front), IP40 (back)

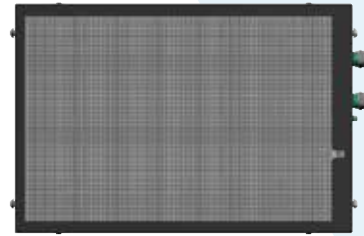
Technical parameters

Supply voltage range	16 VDC ÷ 140 VDC
Rated voltage	24 VDC ÷ 110 VDC
Energy consumption	Max consumption 55 W
LAN	1 x 10/100 Mb LAN with connector M12 D-code (two mounting locations to choose from)
Power connector	4-pin connector M12 A-code male (two mounting locations to choose from)
Resolution	192x32px
Pixel raster	P3 (3mm)
Luminance (cd / m2)	max 2500cd (white color)

Standards	PN-EN 50155:2018, PN-EN 45545-2:2021, TSI-PRM
-----------	---



LED COLOR DISPLAY TLED3.96x64



Display with color LEDs used as a number display board in public transport vehicles. A built-in optical sensor enables automatic adaptation of the LED brightness level adjustment, ensuring ideal visibility of the displayed content.

Mechanical properties

Dimensions	318 mm ± 1 mm x 216 mm ± 1 mm x 38 mm ± 1 mm
Weight	3,15 kg ± 0,2 kg
Working temperature	-40°C to +75°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Screen protection	Tempered glass 4 mm
Coated with paint	Any color from the RAL palette
Level of security	IP64 (front), IP40 (back)

Technical parameters

Supply voltage range	16 VDC - 140 VDC
Rated voltage	24 VDC - 110 VDC
Energy consumption	max 60 W
LAN	1x 10/100 Mb LAN with connector M12 D-code
Power connector	4-pin connector M12 S-code 4-pin connector M12 A-code (optional)
Resolution	96x64 px
Pixel raster	P3 (3 mm)
Luminance (cd / m2)	7000cd ÷ 8000 cd

Standards	PN-EN 50155:2018, PN-EN 45545-2:2021, TSI-PRM
-----------	---



LED COLOR DISPLAY TLED6.208X32



Device with adaptive LED brightness level capabilities. Can be used as directional or front board in public transport vehicles. Displays information such as line number, route or pictograms in any color.

Mechanical properties

Dimensions	1276 mm (-1 mm, +4 mm) x 208 mm (-1 mm, +4 mm) x 49 mm(-1 mm, +2 mm).
Weight	11 kg ± 0.6 kg
Working temperature	-40°C to +75°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Screen protection	Tempered glass 3 mm
Coated with paint	Any color from the RAL palette
Level of security	IP64 (front), IP40 (back)

Technical parameters

Supply voltage range	16 VDC - 140 VDC
Rated voltage	24 VDC - 110 VDC
Energy consumption	Max consumption 140 W
LAN	1x 100 Mb LAN with connector M12 D-code, female (two mounting locations to choose from)
Power connector	4-pin connector M12 S-code male (two mounting locations to choose from)
Resolution	208x32 px
Pixel raster	P6 (6 mm)
Luminance (cd / m2)	5000cd ÷ 6000 cd

Standards	PN-EN 50155:2018, PN-EN 45545-2:2021, TSI-PRM
-----------	---



LED COLOR DISPLAY TLED6.192X32V2



This color display can present information such as pictograms, the line number and route. It can be installed in the front or on the side of a vehicle and is equipped with adaptive LED brightness capability.

Mechanical properties

Dimensions	1180 mm ± 2 mm x 208 mm ± 2 mm x 50,5 mm ± 1 mm
Weight	6,5 kg ± 0,3 kg
Working temperature	-40°C to +70°C
Storage temperature	-40°C to +75°C
Relative humidity	10% - 95% (no condensation)
Screen protection	Tempered glass 3 mm
Coated with paint	Any color from the RAL palette
Level of security	IP64 (front), IP40 (back)

Technical parameters

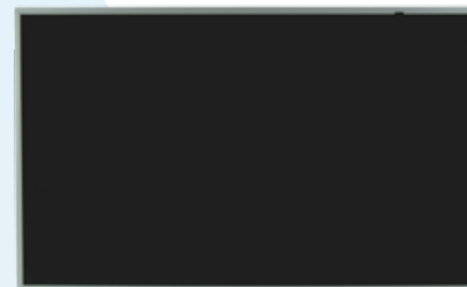
Supply voltage range	16.8 VDC - 36 VDC
Rated voltage	24 VDC
Energy consumption	Max consumption 120 W
LAN	1x 10 Mb LAN with connector M12 D-code (two mounting locations to choose from)
Power connector	2-pin connector MATE-N-LOK male (two mounting locations to choose from)
Resolution	192x32 px
Pixel raster	P6 (6 mm)
Luminance (cd / m2)	6000cd ÷ 7000cd

Standards	EN 45545-2:2020, EN 50155:2017
-----------	--------------------------------





LCD COLOR DISPLAY TLCD220PCV3



21,5" LCD display available with or without an integrated, fanless industrial computer. Designed for railway applications. Provides high performance in a wide range of operating temperatures with low power consumption. The display can be mounted on the „VESA” bracket and the „V-Twin” and „V-Twin V2” brackets suspended from the vehicle ceiling.

Mechanical properties

Dimensions	515 mm ± 0,2 mm x 312 mm ± 2 mm x 60 mm ± 1 mm
Weight	5,9 kg ± 0,35 kg
Working temperature	-40°C to +75°C
Storage temperature	-40°C to +75°C
Relative humidity	10% - 90% (no condensation)
Screen protection	Glass 4 mm
Coated with paint	Any color from the RAL palette
Level of security	IP64 (front), IP40 (back)

Technical parameters

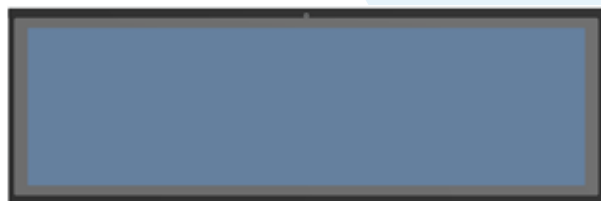
Processor	Intel Apollo Lake (Atom, Celeron lub Pentium)
RAM	1x DDR3L SO-DIMM to 4GB
Supply voltage range	16 VDC ÷ 140 VDC
Rated voltage	24 VDC ÷ 110 VDC
Energy consumption	Max consumption 35 W (25 W without PC)
Exit ports	1x USB3.0
LAN	1x 10/100 LAN with connector M12 D-code female (optional 2x 10/100 LAN with connector M12 D-code female, does not apply to the version without PC)
Power connector	4-pin connector M12 A-code male
Screen diagonal	21,5" (16:9)
Maximum resolution	1920x1080 px
Luminance (cd / m2)	max 350 cd
Contrast	3000:1 (max), 1000:1 (min)
mSata	1x mSata 128GB
Standards	EN 45545-2:2020, EN 50155:2017, EN 50121-3-2:2016, EN 61373:2010, EN 50124-1:2017, Dyrektywy UE: 2014/30/EU (EMC), 2011/65/CE (RoHS2), 1907/2006/CE (REACH)

Devices are available in various configurations. It is possible to modify them and create a new model at the customer's request.





LCD COLOR DISPLAY TLCD370PC



37" LCD display available with or without an integrated, fanless industrial computer. Designed for railway applications. Provides high performance in a wide range of operating temperatures with low power consumption and comes with adaptive LED brightness levels.

Mechanical properties

Dimensions	964 mm ± 2 mm x 318 mm ± 2 mm x 78,5 mm ± 2 mm
Weight	15,5 kg ± 0,3 kg
Working temperature	-25°C to +55°C
Storage temperature	-40°C to +85°C
Relative humidity	10% - 90% (no condensation)
Screen protection	Tempered glass P4 (4.4.4 ESG VSG)
Coated with paint	Any color from the RAL palette
Level of security	IP64 (front), IP40 (back)

Technical parameters

Processor	Intel Apollo Lake (Atom, Celeron lub Pentium)
RAM	DDR3 4GB
Supply voltage range	16 VDC - 140 VDC
Rated voltage	24 VDC - 110 VDC
Energy consumption	Max consumption 80 W
USB port	2x USB2.0
LAN	2x 10/100 LAN with connector M12 D-code female
Power connector	4-pin connector M12 S-code male
Video	1x HDMI
Screen diagonal	37"
Maximum resolution	1920x540 px
Luminance (cd / m2)	max 700 cd
Contrast	4000:1 (max)
Viewing angles	178° vertical, 178° horizontally
mSata	1 x mSata SSD 128GB
Standards	PN-EN 50155:2018, PN-EN 45545-2:2021, TSI-PRM



EDGE DISPLAY EXTERNAL WK-TFT46



The display is an element of the Dynamic Passenger Information System (SDIP), the task of which is to provide the live information such as train arrivals and departures at a given station. The device, intended for installation on railway platforms, is based on a professional 46" color monitor with high light intensity. It is adapted to long-term operation in a wide temperature range, and displays clear, FullHD images.

Mechanical properties

Dimensions	1228 mm x 780 mm x 263 mm
Weight	110 kg
Working temperature	-40°C to +60°C (accroding to EN50155-T1)
Storage temperature	-40°C to +80°C
Relative humidity	10% - 95% (no condensation)
Closing method	Door pressure with two universal locks and protection against opening with a patent key
Mechanical protection grade	IK09 (accroding to PN-EN 50102:2001)
Level of security	IP65 (accroding to PN-EN 60529)

Technical parameters

Power system	single-phase in the TN-S or TT system with splices
Supply voltage range	230 VAC ±10% 50 Hz ±1% (accroding to PN-EN 60038:2012)
Power consumption (max)	800 W (with attached cooling system)
Average power consumption	200 W (normal operation)
Electric protection	overcurrent type B16; residual current class A, 30mA; surge protectors; anti-interference
Glass protecting the screen	Safety glass P2A (PN-EN 356: 2000), 8 mm thick, glued with PVB foil with a double anti-reflective layer (inside and outside), glued from the inside to the housing
Attaching the housing	From the rear (rear cover) on 4 M8 screws or on the short sides 4xM8
Interfaces	Giga Ethernet 1000Base-T, connector M12 - D-Code, HDMI, 2x USB3.0, 2x RS232
Standards	PN-EN 50121-1: 2017-06 and PN-EN 50121-4: 2017-04 in terms of EMC resistance, PN-EN 62368-1: 2015-03, PN-EN 60068-2, TSI-PRM



CUMULATIVE STATION DISPLAY TYPE WZS-TFT55



The display is an element of the Dynamic Passenger Information System (SDIP) which presents live information about train schedules. Based on a professional 55" FullHD display with high light intensity, it is adapted to long-term operation in a wide temperature range. The device is designed for installation in waiting areas, lobbies, VIP rooms, as well as in halls and on the walls of railway stations.

Mechanical properties

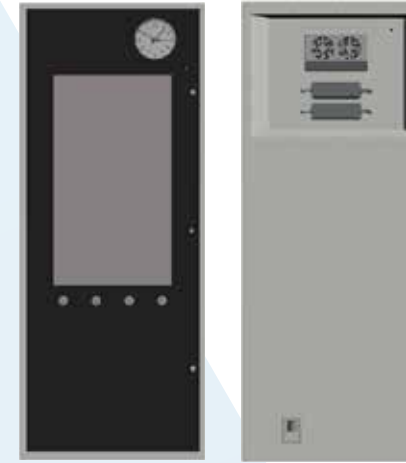
Dimensions	1336 mm x 823 mm x 185 mm
Weight	90 kg
Working temperature	-40°C to +60°C (wg. EN50155-T1)
Storage temperature	-40°C to +80°C
Relative humidity	10% - 95% (no condensation)
Screen protection	Door pressure with two universal locks and protection against opening with a patent key
Coated with paint	IK 09 (according to PN-EN 50102:2001)
Level of security	IP65 (according to PN-EN 60529)

Technical parameters

Power system	single-phase in the TN-S or TT system with splices
Supply voltage range	230 VAC ± 10% 50 Hz ± 1% (according to PN-EN 60038: 2012)
Power consumption (max)	800 W (with attached cooling system)
Average power consumption	300 W (normal operation)
Electric protection	overcurrent type B16; residual current class A, 30mA; surge protectors; anti-interference
Glass protecting the screen	Safety glass P2A (PN-EN 356: 2000), 8 mm thick, glued with PVB foil with a double anti-reflective layer (inside and outside), glued from the inside to the housing
Attaching the housing	From the rear (rear cover) on 4 M8 screws or on the short sides 4x M8
Interfaces	Giga Ethernet 1000Base-T, connector M12 - D-Code, HDMI, 2x USB3.0, 2x RS232
Standards	PN-EN 50121-1:2017-06, PN-EN 50121-4:2017-04 in terms of EMC resistance, PN-EN 62368-1:2015-03, PN-EN 60068-2, TSI-PRM



OUTDOOR STATION KIOSK TYPE IKZ-TFT46



The device is part of the Dynamic Passenger Information System (SDIP) used to provide up-to-date information on train arrivals and departures at a given station. The interactive kiosk is built around a professional-grade 46" Full HD screen capable of prolonged operation in a wide range of temperatures. The design is adapted to long-term operation in a wide range of temperatures.

Mechanical properties

Dimensions	903 mm x 2200 mm x 300 mm
Weight	110 kg
Working temperature	-40°C to +60°C (according to EN50155-T1)
Storage temperature	-40°C to +80°C
Relative humidity	10% - 95% (no condensation)
Screen protection	Door pressure with two universal locks and protection against opening with a patent key
Coated with paint	IK 09 case (according to PN-EN 50102:2001) IK 08 buttons
Level of security	IP65 (according to PN-EN 60529)

Technical parameters

Power system	single-phase in the TN-S or TT system with splices
Supply voltage range	230 VAC ± 10% 50 Hz ± 1% (according to PN-EN 60038: 2012)
Power consumption (max)	800 W (with attached cooling system)
Average power consumption	200 W (normal operation)
Electric protection	overcurrent type B16; residual current class A, 30mA; surge protectors; anti-interference
Glass protecting the screen	Safety glass P2A (PN-EN 356: 2000), 8 mm thick, glued with PVB foil with a double anti-reflective layer (inside and outside), glued from the inside to the housing
Attaching the housing	Stainless steel (0H18N9) 1.5 - 2 mm, powder coated, closed with a clamp with two universal locks and protected against opening with a patent key
Interfaces	Giga Ethernet 1000Base-T, connector M12 - D-Code, HDMI, 2xUSB3.0, 2xRS232
Standards	PN-EN 50121-1: 2017-06 and PN-EN 50121-4: 2017-04 in terms of EMC resistance, PN-EN 62368-1: 2015-03, PN-EN 60068-2, TSI-PRM



Distributor: LEDATEL sp. z o.o. i Wspólnicy sp.k.
Office: Terespolska 144, 05-074 Nowy Konik, Poland
M: biuro@ledatel.pl
Phone number: +48 22 621 75 69
www.ledatel.pl