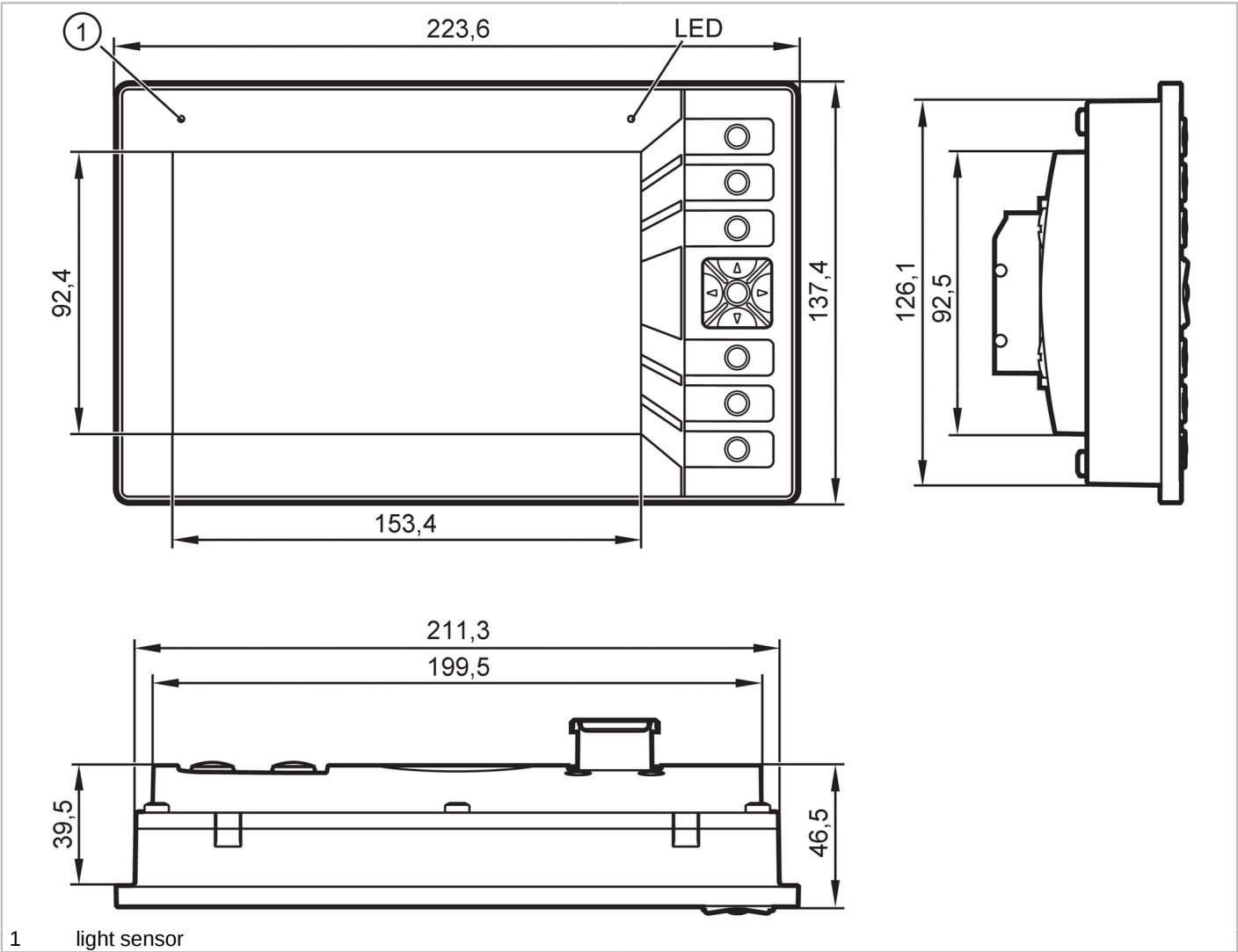


CR1077



Programmable graphic display for controlling mobile machines

ecomatDisplay/7"/Touch



Product characteristics		
Communication interface	Ethernet; CAN; USB	
Operating elements	6	freely programmable, RGB backlit function keys
	1	RGB backlit rocker switch with push function
Display type	TFT LCD colour display with touch function	
Electrical data		
Operating voltage	[V]	8...32 DC; (For information on how to protect the device, please refer to the operating instructions.)
Nominal voltage DC	[V]	12 / 24
Current consumption	[mA]	< 1125; (24 V DC; with switched outputs: < 5000 mA)
Power consumption	[W]	27
Reverse polarity protection	yes; (in case of supply via the on-board system / battery)	
Inputs / outputs		
Number of inputs and outputs	Number of digital inputs: 2; Number of digital outputs: 2	



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Inputs		
Number of digital inputs		2
Number of video inputs		4; (analogue)
Video input		1 Vss, 75 Ohm, PAL, NTSC
Audio input		Stereo Line-In
Digital inputs		
Digital input	function type	binary, low-side, CSI
	input range [V]	0...32
	switching level high [V]	> 70 % VBB30
	switching level low [V]	< 30 % VBB30
	input frequency [Hz]	< 20
	input resistance [Ω]	10000
Outputs		
Number of digital outputs		2
Max. current load per output [mA]		2500
Switching frequency DC [Hz]		< 20
Audio output		Stereo Class D; 2 x 1W; 8 Ω ; BTL
Headphones		
Audio output		Stereo; $\geq 16 \Omega$
Digital / PWM outputs		
Digital output	function type	binary, high side, CSO
	voltage range [V]	8...32
	switching current [A]	0,025...2,5
	protective circuitry	inductive load, thermal protection
	diagnostic functions	short circuit
	output frequency [Hz]	< 20
PWM output		
Software / programming		
Parameter setting options		CODESYS 3.5; Qt
PLC function to IEC 61131-3		yes
Operating system		Embedded Linux
Interfaces		
Communication interface		Ethernet; CAN; USB
Number of CAN interfaces		4
Number of Ethernet interfaces		2
Number of USB interfaces		2
Number of video interfaces (CVBS)		4; (1 Vss, 75 Ohm, PAL, NTSC)
CAN		
Transmission rate		20 kBit/s... 1 MBit/s
Protocol		CANopen; SAE J1939; free protocol
Profile		CiA DS 301 Version 4; CiA DS 401 Version 1.4
Interface		CAN Interface 2.0 A/B ISO 11898
Factory settings		Transmission rate: 250 kBit/s



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Ethernet		
Transmission standard	10Base-T; 100Base-TX	
Transmission rate	10 MBit/s; 100 MBit/s	
Protocol	TCP/IP; UDP; Modbus TCP; OPC UA; EtherNet/IP; PROFINET; EtherCAT	
Note on interfaces	OPC UA Micro Embedded Device Server	
	PROFINET Master	
	EtherCAT Master	
USB		
Transmission rate	< 480 MBit/s	
Version	2.0	
Note on interfaces	Host-Controller	
Operating conditions		
Ambient temperature	[°C]	-35...65
Note on ambient temperature	2000 m: -30...65 °C	
	3000 m: -30...60 °C	
	The temperature of the mainboard must not exceed 85 °C.	
	for further information please see the operating instructions	
Storage temperature	[°C]	-35...85
Max. relative air humidity	[%]	90; (non condensing)
Max. height above sea level	[m]	3000
Protection	IP 65; IP 67; (for inserted connectors with individually sealed cores and inserted M12 connectors or sealing caps: IP 67)	
Pollution degree	2; (before installation and when the device is replaced)	
Chemical media	ISO 16750-5	AA, BA, BD, CC, DB, DC, DD, ED
		only one chemical permitted at a time
Tests / approvals		
EMC	UN/ECE-R10 noise emission and noise immunity:	100 V/m immunity
	DIN EN 61000-6-2	immunity
	DIN EN 61000-6-4	noise emission
	ISO 10605 ESD	330 pF / 2000 Ohm
	DIN EN ISO 13766-1	± 6 kV contact discharge / (150 pF / 330 pF) / ± 8 kV air discharge / function state C
	ISO 7637-2 pulse 1	severity level 4 / function state C (24 V)
	ISO 7637-2 pulse 2a	severity level 4 / function state A (24 V)
	ISO 7637-2 pulse 2b	severity level 4 / function state C (24 V)
	ISO 7637-2 pulse 3a	severity level 4 / function state A (24 V)
	ISO 7637-2 pulse 3b	severity level 4 / function state A (24 V)
	ISO 7637-2 pulse 4	severity level 4 / function state A (24 V)
	ISO 7637-2 pulse 5	severity level 3 / function state C (24 V)
	ISO 7637-2 pulse 4	severity level 4 / function state A (12 V)
	Continuous shock resistance	ISO 16750-3
Vibration resistance	ISO 16750-3 Test VII	random, mounting place car body
	EN 60068-2-6 sine	10...500 Hz 0.72 mm/10 g / 10 cycles/axis, sine
Climatic tests	EN 60068-2-30 damp heat: cyclical	55 °C upper temperature limit / 6 cycles
	EN 60068-2-78 damp heat: constant	40 °C 93 % rH / test period 21 days
Salt spray test	EN 60068-2-52 Salt spray	test method 3 / motor vehicle



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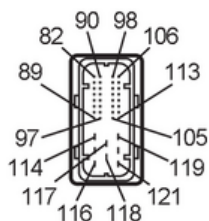
MTTF	[years]	37
Railway applications	DIN EN 50155 Pkt 13.3	
	EN 50121-3-2	
	EN 55016	
Mechanical data		
Weight	[g]	1549.8
Housing		rectangular
Type of mounting		panel / surface; surface mounting with RAM mount system; panel mounting with mounting handle; (panel cutout: 213 x 128 mm)
Dimensions	[mm]	137.4 x 223.6 x 46.5
Materials		housing: diecast aluminium black powder-coated RAL 9005; Display: glass chemically hardened and anti-reflective colour display in optical bonding technology; diaphragm: Gore-Tex
Information on service life	pushbuttons:	1000000 Betätigungen
	navigation key with pushbutton:	1000000 Betätigungen
	Display LED lifetime:	> 70000 h
Displays / operating elements		
Display	status LED	1 LED, multi-colour freely programmable
	Display	display rotation: 4 x 90°
Operating elements	6	freely programmable, RGB backlit function keys
	1	RGB backlit rocker switch with push function
Display resolution		800 x 480
Display type		TFT LCD colour display with touch function
Display size		7"
Aspect ratio		16:10
Display background illumination		LED
Colour depth		18 Bit
Brightness	[cd/m²]	> 800; (adjustable: 0...100 %; In steps of: 1 %)
Contrast ratio		1000:1
Touchscreen version		PCAP; (recognition up to 10 fingers, optimised for wet conditions and gloves)
Acoustic signal		integrated audio stereo output and headphone output
Hardware		
Processor		Quad Core 64 Bit 1,2 GHz + GPU
RAM		1 GByte RAM
Mass storage		18 GByte Flash
Non-volatile memory		16 kByte
Data memories		
Real-time clock		yes; UTC, battery buffered
Accessories		
Items supplied		battery: 1 x CR1225 (3 V, 48 mAh), fitted
Remarks		
Remarks		maximum cable length for connection to the video inputs: 30 m
		For further information please see the operating instructions. (audio input)
Pack quantity		1 pcs.

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Electrical connection - AMP connector

Connector: 1 x (40-pole)



Inputs

82	VIDEO3_GND
90	VIDEO3_SIGNAL
98	VIDEO0_GND
99	VIDEO1_GND
100	VIDEO2_GND
101	AUDIO_IN_R
102	AUDIO_GND
106	VIDEO0_SIGNAL
107	VIDEO1_SIGNAL
108	VIDEO2_SIGNAL
109	AUDIO_IN_L
115	IN0
116	IN1

Interfaces

83	IFM0- (preconfigured for ifm operating unit)
84	CAN0_L
85	CAN1_L
86	CAN2_L
87	CAN3_L
88	IFM1- (preconfigured for ifm operating unit)
89	SERVICE1
91	IFM0+
92	CAN0_H
93	CAN1_H
94	CAN2_H
95	CAN3_H
96	IFM1+
97	SERVICE0
110	n.c.

Outputs

103	HEAD_OUT_R
104	AUDIO_OUT_R-
105	AUDIO_OUT_L-
111	HEAD_OUT_L
112	AUDIO_OUT_R+
113	AUDIO_OUT_L+
117	OUT0
118	OUT1

voltage supply

114	VBB0
119	VBB15
120	GND
121	VBB30



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Electrical connection - Ethernet

Connector: 2 x M12; coding: D; Contacts: 4

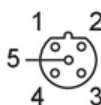


ETH0, ETH1

1	TxD+
2	RxD+
3	TxD-
4	RxD- Schirm am Gehäuse aufgelegt

Electrical connection - USB

Connector: 2 x M12; coding: B; Contacts: 5



USB0, USB1

1	+ 5 V DC
2	- Data
3	+ Data
4	ID
5	GND Schirm am Gehäuse aufgelegt