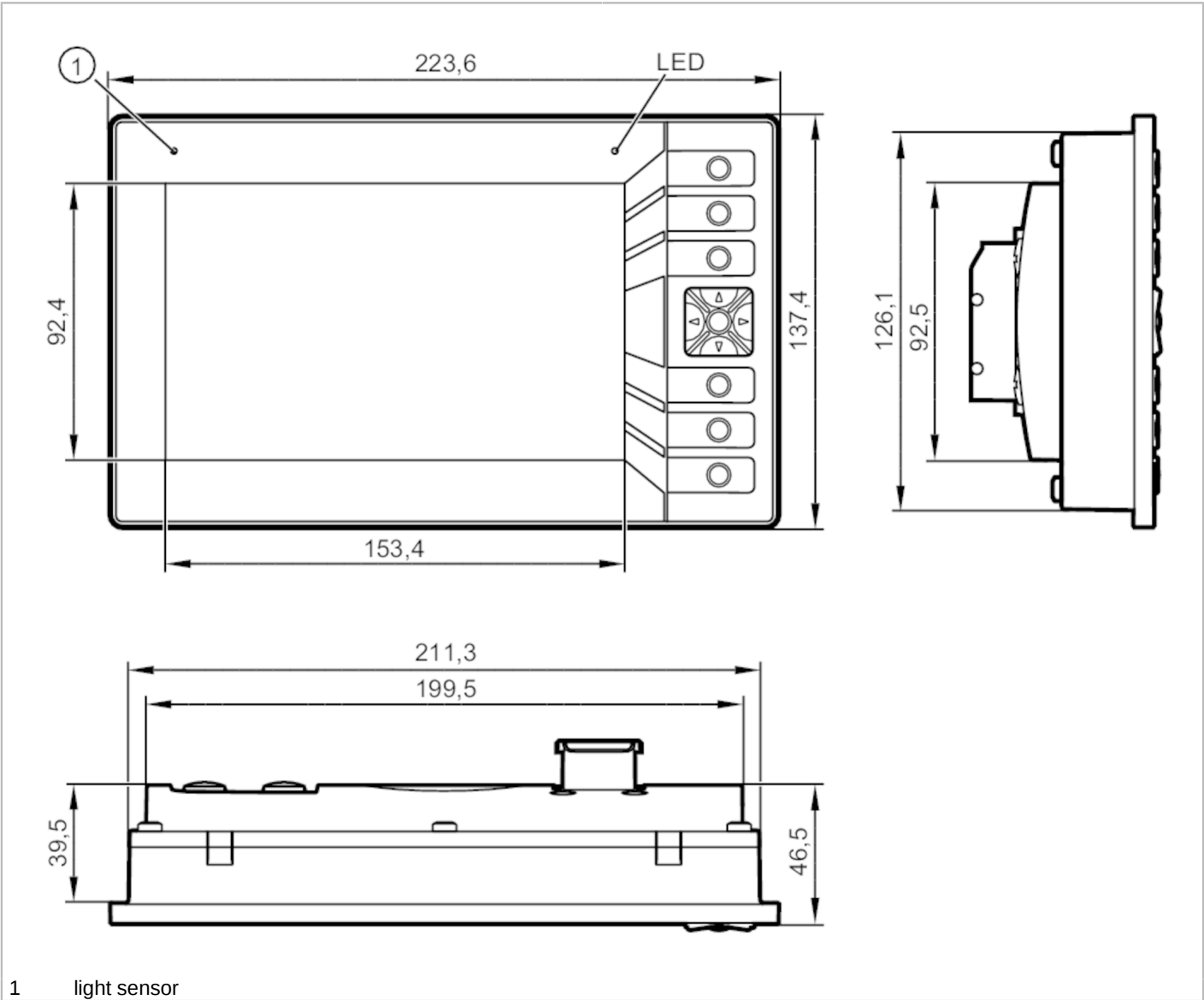




Programmable Human Machine Interface

ecomatDisplay/7"/Touch



Product characteristics		
Communication interface	Ethernet; CAN; USB	
Operating elements	6	freely programmable backlit function keys
	1	Navigation key with pushbutton
Display type	color display with touch function	
Electrical data		
Operating voltage	[V]	8...32 DC
Nominal voltage DC	[V]	12 / 24
Current consumption	[mA]	< 5000
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	



Programmable Human Machine Interface

ecomatDisplay/7"/Touch

Inputs		
Number of digital inputs		2
Number of video inputs		4; (analog)
Video input		1 Vss, 75 Ohm, PAL, NTSC
Audio input		Stereo Line-In; -10 dBV (= 0,316 V); Max 0 dBV (= 1 V)
Outputs		
Number of digital outputs		2
Max. current load per output [mA]		2500
Switching frequency DC [Hz]		< 20
Audio output		Stereo Class D; 1W; 8 Ω; BTL
Software / programming		
Parameter setting options		CODESYS 3.5
PLC function to IEC 61131-3		yes
Operating system		Embedded Linux 4.14
Interfaces		
Communication interface		Ethernet; CAN; USB
Number of CAN interfaces		4
Number of Ethernet interfaces		2
Number of USB interfaces		2
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
Ethernet		
Transmission standard		10Base-T; 100Base-TX
Transmission rate		100 MBit/s
Protocol		TCP/IP; UDP; Modbus TCP; OPC UA; EtherNet/IP
Note on interfaces		OPC UA Micro Embedded Device Server
USB		
Transmission rate		< 480 MBit/s
Version		USB 2.0
Operating conditions		
Ambient temperature [°C]		-35...60
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



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Protection	IP 65; IP 67; (for inserted connectors with individually sealed cores and inserted M12 connectors or sealing caps: IP 67)	
Degree of soiling	2	
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 interference:	100 V/m
	DIN EN 61000-6-2	
	DIN EN 61000-6-4	
	ISO 10605 ESD	
	DIN EN ISO 13766-1	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	30 g 6 ms / 24000 shocks
Vibration resistance	ISO 16750-3 Test VII	random, mounting place car body
	EN 60068-2-6 sine	10...500 Hz / 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	severity level 3 / motor vehicle
MTTF [years]		37
Railway applications	DIN EN 50155 Pkt 12.2	
	EN 50121-3-2	
	EN 55016	

Mechanical data

Weight [g]	1512	
Housing	rectangular	
Type of mounting	panel/surf.	
Dimensions [mm]	137.4 x 223.6 x 46.5	
Material	housing: diecast aluminium powder-coated; Display: glass anti-reflective and hardened	
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-color freely programmable
	Display	display rotation: 4 x 90°
Operating elements	6	freely programmable backlit function keys
	1	Navigation key with pushbutton
Display resolution	800 x 480	
Display type	color display with touch function	
Display size	7"	
Aspect ratio	16:10	

CR1077



Programmable Human Machine Interface

ecomatDisplay/7"/Touch

Display background illumination	LED
Color 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, optimized for wet conditions and gloves)

Hardware

Processor	ARM Quad Core 64 Bit 1,2 GHz
Working memory	1 GByte RAM
Mass storage	8 GByte Flash
Non-volatile memory	16 kByte

Data memory

Real-time clock	yes; UTC, battery buffered
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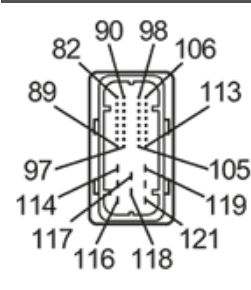
Accessories

Items supplied	battery: 1 x CR1225 (3 V, 48 mAh), fitted
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Remarks

Pack quantity	1 pcs.
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Electrical connection - AMP connector



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



Programmable Human Machine Interface

ecomatDisplay/7"/Touch

Interfaces	
83	IFM0-
84	CAN0_L
85	CAN1_L
86	CAN2_L
87	CAN3_L
88	IFM1-
89	SERVICE1
91	IFM0+
92	CAN0_H
93	CAN1_H
94	CAN2_H
95	CAN3_H
96	IFM1+
97	SERVICE0

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

Electrical connection - ETH0



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



Programmable Human Machine Interface

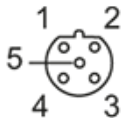
ecomatDisplay/7"/Touch

Electrical connection - ETH1



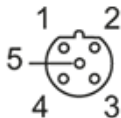
1	TxD+
2	RxD+
3	TxD-
4	RxD- Schirm am Gehäuse aufgelegt

Electrical connection - USB0



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

Electrical connection - USB1



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