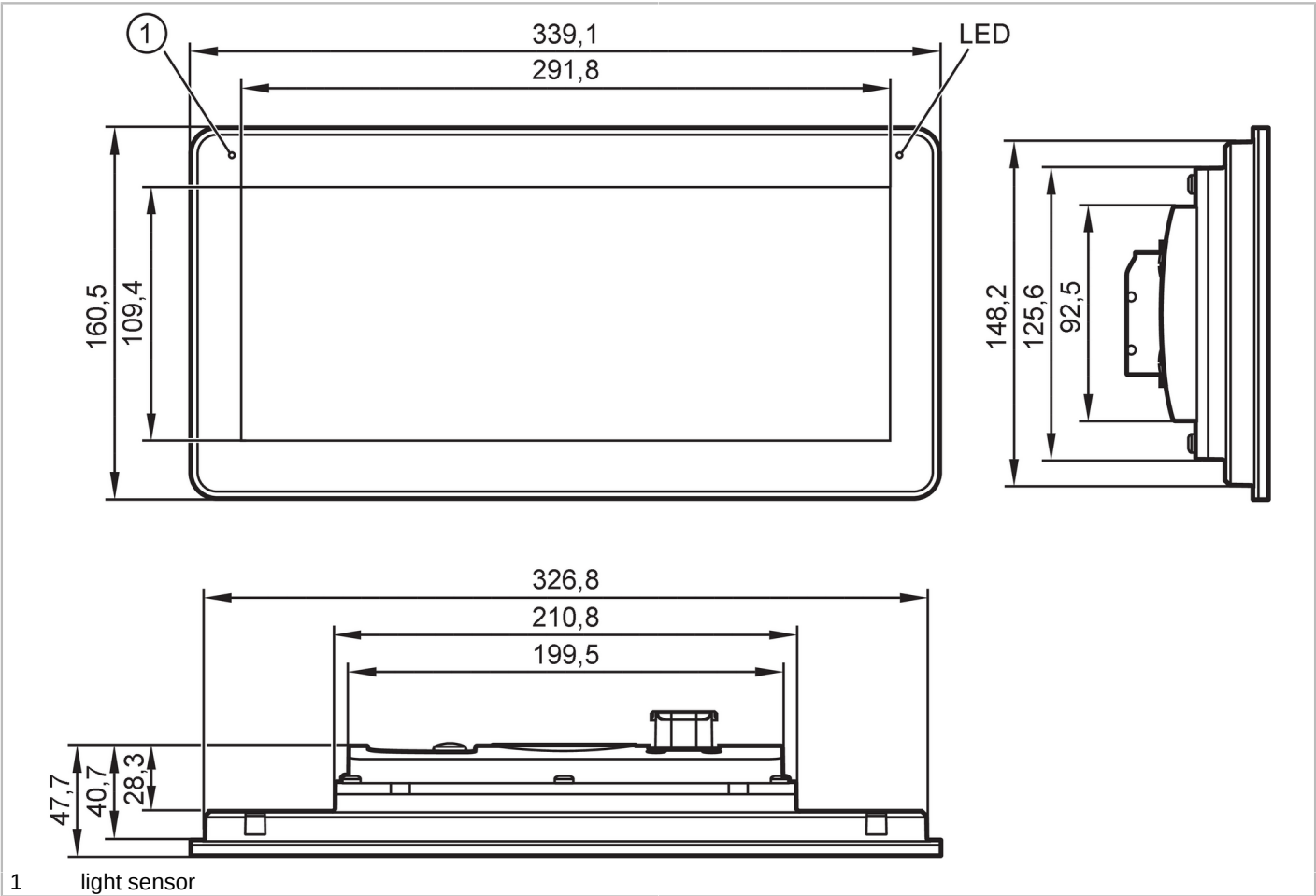




Programmable Human Machine Interface

ecomatDisplay/12"/I8:3/Touch/B



Product characteristics		
Communication interface		Ethernet; CAN; USB
Display type		TFT LCD color 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]	< 1208; (24 V DC; with switched outputs: < 5000 mA)
Power consumption	[W]	29
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
Inputs		
Number of digital inputs		2
Number of video inputs		2; (analog)
Video input		1 Vss, 75 Ohm, PAL, NTSC



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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	
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
PWM output	output frequency [Hz]	< 20
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	1	
Number of USB interfaces	1	
Number of video interfaces (CVBS)	2; (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 4.2; 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	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	



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USB		
Transmission rate	< 480 MBit/s	
Version	2.0	
Note on interfaces	Host-Controller	
Operating conditions		
Ambient temperature [°C]	-30...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 interference:	100 V/m
	DIN EN IEC 61000-6-2	noise immunity
	DIN EN IEC 61000-6-4	noise emission
	ISO 10605 ESD	330 pF / 2000 Ohm
	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
Vibration resistance	ISO 16750-3 Test VIII	random, mounting location cabin, utility vehicles: decoupled cabin
	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
Railway applications	DIN EN 50155 Pkt 13.3	
	EN 50121-3-2	
	EN 55016	
Mechanical data		
Weight [g]	2257	
Housing	rectangular	



Programmable Human Machine Interface

ecomatDisplay/12"/8:3/Touch/B

Type of mounting	panel/surf.; surface mounting with RAM mount system; panel mounting with mounting handle; (panel cutout: 326,8 x 148,2 mm)	
Dimensions [mm]	160.5 x 339.1 x 47.7	
Material	housing: diecast aluminium black powder-coated RAL 9005; Display: glass chemically hardened and anti-reflective color display in optical bonding technology; diaphragm: Gore-Tex	
Information on service life	Display LED lifetime:	> 70000 h

Displays / operating elements

Display	Status LED	1 LED, multi-color freely programmable
	Display	display rotation: 4 x 90°
Display resolution	1280 x 480	
Display type	TFT LCD color display with touch function	
Display size	12.3"	
Aspect ratio	8:3	
Display background illumination	LED	
Color depth	24 Bit	
Brightness [cd/m²]	> 1000; (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)	
Acoustic signal	integrated audio stereo output	

Hardware

Processor	Dual Core 64 Bit 800 MHz + GPU
Working memory	1 GByte RAM
Mass storage	10 GByte Flash
Non-volatile memory	16 kByte

Data memory

Real-time clock	yes; UTC, battery buffered
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Accessories

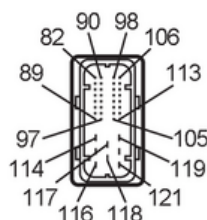
Items supplied	battery: 1 x CR1225 (3 V, 48 mAh), fitted
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Remarks

Remarks	maximum cable length for connection to the video inputs: 30 m
Pack quantity	1 pcs.

Electrical connection - AMP connector

Connector: 1 x (40-pole)





Programmable Human Machine Interface

ecomatDisplay/12"/I8:3/Touch/B

Inputs	
82	n.c.
90	n.c.
98	VIDEO0_GND
99	VIDEO1_GND
100	n.c.
101	n.c.
102	AUDIO_GND
106	VIDEO0_SIGNAL
107	VIDEO1_SIGNAL
108	n.c.
109	n.c.
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

Outputs	
103	n.c.
104	AUDIO_OUT_R-
105	AUDIO_OUT_L-
110	n.c.
111	n.c.
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

Connector: 1 x M12; coding: D; Contacts: 4



1	TxD+
2	RxD+
3	TxD-
4	RxD-
screen (connected to the housing)	

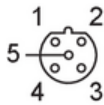


Programmable Human Machine Interface

ecomatDisplay/12"/I8:3/Touch/B

Electrical connection - USB0

Connector: 1 x M12; coding: B; Contacts: 5



1	+ 5 V DC
2	- Data
3	+ Data
4	ID
5	GND
	screen (connected to the housing)