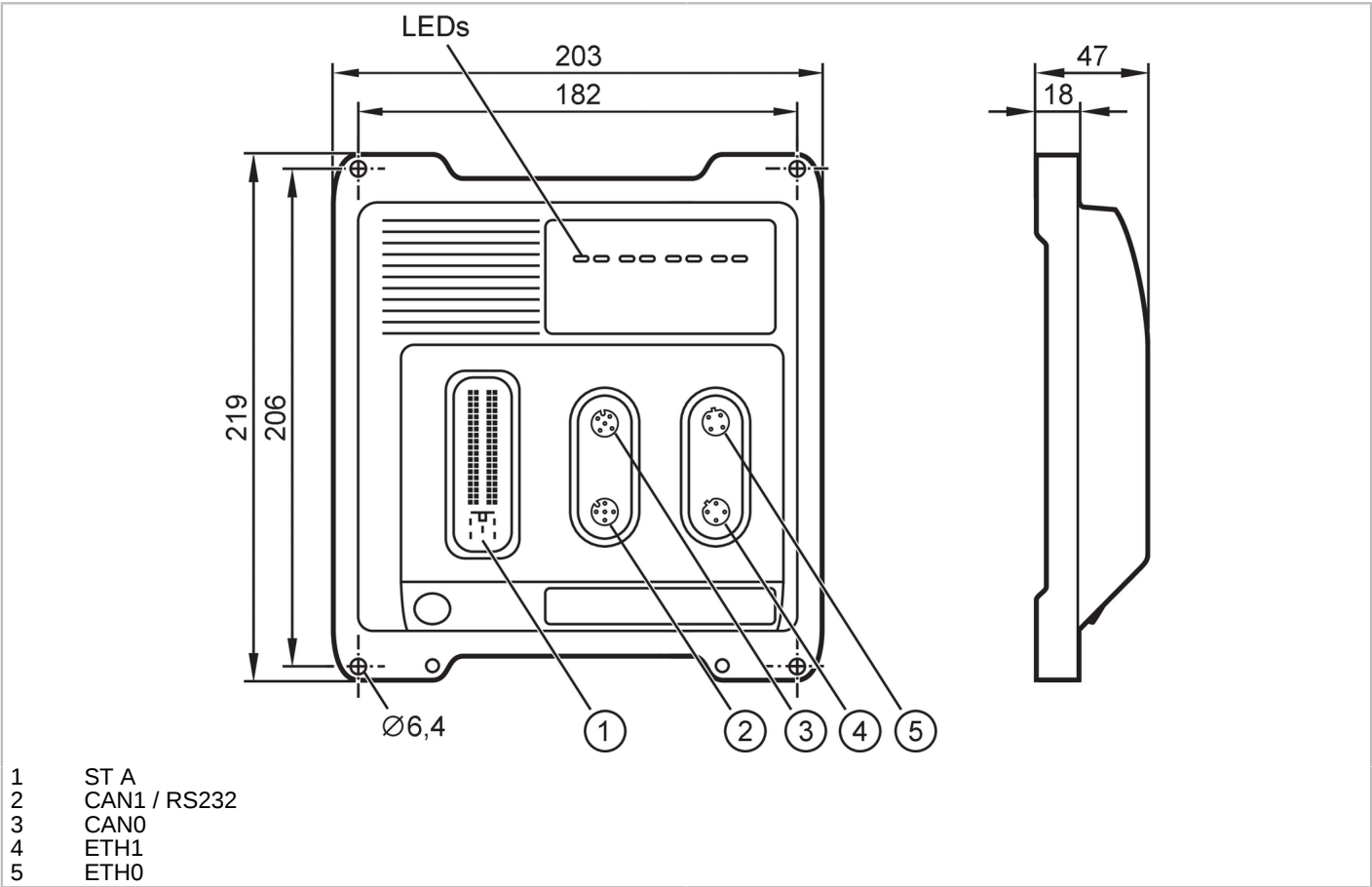


CR711S



Programmable controller for mobile machines

ecomatController/60



Product characteristics		
Total number of inputs		32
Total number of outputs		28
Communication interface		Ethernet; CAN; RS232
Protection		IP 65; IP 67; (for inserted connectors with individually sealed cores and inserted M12 connectors or sealing caps: IP 67)
Electrical data		
Operating voltage	[V]	8...32 DC; (VBB15, VBB30 voltage monitoring)
Nominal voltage DC	[V]	12 / 24
Power consumption	[W]	12; (VBB30)
Reverse polarity protection		yes; (in case of supply via the on-board system / battery)
Inputs / outputs		
Total number of inputs and outputs		60
Inputs		
Total number of inputs		32
Number of frequency inputs		8
Number of resistor inputs		4
Number of digital inputs		32
Number of analog inputs		24



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Digital inputs, frequency signal (IN FREQUENCY-B)		
Number	16	
Plug ST A	IN0000...IN0003	
	IN0500...IN0503	
Frequency input	function type	Frequency, cycle time
	software mode	IN_PERIOD_RATIO_CSO
		IN_PERIOD_RATIO_CSI
	input range [V]	0...32
	Frequency [Hz]	0,01...5000
	Switching level high [V]	> 70 % VBB30
	Switching level low [V]	< 30 % VBB30
	input resistance [Ω]	10000
	Accuracy	$\pm 10 \mu\text{s}$
Frequency input	function type	Frequency, cycle time
	software mode	IN_PERIOD_RATIO_US_CSO
		IN_PERIOD_RATIO_US_CSI
	input range [V]	0...32
	Frequency [Hz]	0,1...5000
	Switching level high [V]	> 70 % VBB30
	Switching level low [V]	< 30 % VBB30
	input resistance [Ω]	10000
	Accuracy	$\pm 10 \mu\text{s}$
Frequency input	function type	Frequency, cycle time
	software mode	IN_FREQUENCY_CSO
		IN_FREQUENCY_CSI
	input range [V]	0...32
	Frequency [Hz]	0,5...30000
	Switching level high [V]	> 70 % VBB30
	Switching level low [V]	< 30 % VBB30
	input resistance [Ω]	10000
	Accuracy	$\pm 10 \mu\text{s}$
Frequency input	function type	pulse
	software mode	IN_COUNT_CSO
		IN_COUNT_CSI
	input range [V]	0...32
	Frequency [Hz]	0...30000
	Switching level high [V]	> 70 % VBB30
	Switching level low [V]	< 30 % VBB30
	input resistance [Ω]	10000
	Accuracy	$\pm 10 \mu\text{s}$



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Frequency input	function type	pulse, incremental
	software mode	IN_INC_ENCODER_CSO
		IN_INC_ENCODER_CSI
	input pair ST A	A: IN0000 + B: IN0001
		A: IN0002 + B: IN0003
		A: IN0500 + B: IN0501
		A: IN0502 + B: IN0503
	input range [V]	0...32
	Frequency [Hz]	0...5000
	Switching level high [V]	> 70 % VBB30
	Switching level low [V]	< 30 % VBB30
	input resistance [Ω]	10000
	Accuracy	$\pm 10 \mu\text{s}$
Frequency input	function type	phase
	software mode	IN_PHASE_CSO
		IN_PHASE_CSI
	input pair ST A	A: IN0000 + B: IN0001
		A: IN0002 + B: IN0003
		A: IN0500 + B: IN0501
		A: IN0502 + B: IN0503
	input range [V]	0...32
	Frequency [Hz]	0,0625...5000
	Switching level high [V]	> 70 % VBB30
	Switching level low [V]	< 30 % VBB30
	input resistance [Ω]	10000
	Accuracy	$\pm 10 \mu\text{s}$
Analog input	function type	Voltage
	software mode	IN_VOLTAGE_10
	input range [V]	0...10
	input resistance [Ω]	87600
	Resolution	12 Bit
	Accuracy	$\pm 100 \text{ mV}$
	input frequency [Hz]	< 330
	diagnostic level low	0 V; (configurable)
	diagnostic level high	10 V; (configurable)
Digital input	function type	binary, high-side
	software mode	IN_DIGITAL_CSO
	input range [V]	0...32
	Switching level high [V]	> 65 % VBB30; (configurable)
	Switching level low [V]	< 25 % VBB30; (configurable)
	Resolution	12 Bit
	Accuracy	$\pm 960 \text{ mV}$
	input frequency [Hz]	< 330
	input resistance [Ω]	10000
	diagnostic level low	0 % VBB30; (configurable)
	diagnostic level high	100 % VBB30; (configurable)



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Digital input	function type	binary, low-side
	software mode	IN_DIGITAL_CSI
		IN_DIGITAL_CSI_NAMUR
		IN_DIGITAL_CSI_BLANKING
	input range [V]	0...32
	Switching level high [V]	> 70 % VBB30; (configurable)
	Switching level low [V]	< 30 % VBB30; (configurable)
	Resolution	12 Bit
	Accuracy	± 320 mV
	input frequency [Hz]	< 330
	input resistance [Ω]	9500
	diagnostic level low	0 % VBB30; (configurable)
	diagnostic level high	400 % VBB30; (configurable)
Multifunction inputs, analog / digital (IN MULTIFUNCTION-A)		
Number	24	
Plug ST A	IN0100...IN0103	
	IN0200...IN0203	
	IN0600...IN0603	
	IN0700...IN0703	
Analog input	function type	Current
	software mode	IN_CURRENT_CSI
	input range [mA]	0...20
	input resistance [Ω]	298
	Resolution	12 Bit
	Accuracy	± 345 µA
	input frequency [Hz]	< 330
	diagnostic level low	0 mA; (configurable)
	diagnostic level high	20 mA; (configurable)
Analog input	function type	Voltage
	software mode	IN_VOLTAGE_10
	input range [V]	0...10
	input resistance [Ω]	67600
	Resolution	12 Bit
	Accuracy	± 100 mV
	input frequency [Hz]	< 330
	diagnostic level low	0 V; (configurable)
	diagnostic level high	10 V; (configurable)
Analog input	function type	Voltage
	software mode	IN_VOLTAGE_32
	input range [V]	0...32
	input resistance [Ω]	51000
	Resolution	12 Bit
	Accuracy	± 320 mV
	input frequency [Hz]	< 330
	diagnostic level low	0 V; (configurable)
	diagnostic level high	32 V; (configurable)



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Analog input	function type	Voltage, ratiometric
	software mode	IN_VOLTAGE_RATIO
	input range [V]	0...1000 ‰ VBB30
	input resistance [Ω]	51000
	Resolution	12 Bit
	Accuracy	± 320 mV
	input frequency [Hz]	< 330
	diagnostic level low	0 ‰; (configurable)
	diagnostic level high	1000 ‰; (configurable)
Digital input	function type	binary, low-side
	software mode	IN_DIGITAL_CSI
		IN_DIGITAL_CSI_NAMUR
	input range [V]	0...32
	Switching level high [V]	> 70 ‰ VBB30
	Switching level low [V]	< 30 ‰ VBB30
	Resolution	12 Bit
	Accuracy	± 320 mV
	input frequency [Hz]	< 330
	input resistance [Ω]	9500
	diagnostic level low	0 ‰ VBB30; (configurable)
	diagnostic level high	400 ‰ VBB30; (configurable)
Digital / resistor inputs (IN RESISTOR-A)		
Number	4	
Plug ST A	IN0400...IN0401	
	IN0900...IN0901	
Digital input	function type	binary, low-side
	software mode	IN_DIGITAL_CSI
		IN_DIGITAL_CSI_NAMUR
	input range [V]	0...32
	Switching level high [V]	> 70 ‰ VBB30; (configurable)
	Switching level low [V]	< 30 ‰ VBB30; (configurable)
	Resolution	12 Bit
	Accuracy	± 320 mV
	input frequency [Hz]	< 330
	input resistance [Ω]	3200
	diagnostic level low	0 ‰ VBB30; (configurable)
	diagnostic level high	400 ‰ VBB30; (configurable)
Resistor input	function type	binary, high-side
	software mode	IN_RESISTOR
	input range [Ω]	16...30000
	measuring current [mA]	< 2,0
	Resolution	12 Bit
	Accuracy	16...3000 Ω: ± 60 Ω
		3000...15000 Ω: ± 750 Ω
		15000...30000 Ω: ± 3000 Ω
	diagnostic level low	0 Ω; (configurable)
	diagnostic level high	30000 Ω; (configurable)
Digital inputs (IN DIGITAL-B)		
Number	8	



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Plug ST A	IN0300, IN0301	
	IN0800, IN0801	
Digital input	function type	binary, low-side
	software mode	IN_DIGITAL_CSI
		IN_DIGITAL_CSI_NAMUR
	input range [V]	0...32
	Switching level high [V]	> 70 % VBB30; (configurable)
	Switching level low [V]	< 30 % VBB30; (configurable)
	Resolution	12 Bit
	Accuracy	± 320 mV
	input frequency [Hz]	< 330
	input resistance [Ω]	3200
	diagnostic level low	0 % VBB30; (configurable)
diagnostic level high	400 % VBB30; (configurable)	
Reset (RESET-COM)		
Number	1	
Plug ST A	PIN 72	
Digital input	Switching level high [V]	> 70 % VBB30
	Switching level low [V]	< 30 % VBB30
	Accuracy	± 5 % FS
Outputs		
Total number of outputs	28	
Number of digital outputs	27	
Number of analog outputs	1	
Number of PWM outputs	27	
Number of PWM-I outputs	18	
Number of outputs with H-bridge	2	
Output groups (OutputGroup-A)		
Number	3	
Plug ST A	VBB0...VBB2	
Output group switch	function type	second independent switch-off mode of the output group
	software mode	OUT_DIGITAL_VIRT
	Voltage range [V]	6...32 DC
	voltage measurement [V]	0...36
	voltage measurement accuracy [mV]	± 360
	Current rating [A]	12
	accuracy of the current measurement [mA]	± 600
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	12000; (configurable)
Digital / PWM outputs; 4,0 A; H bridge (OUT PWM-40-BRIDGE-A)		
Number	6	
Plug ST A	OUT0006, OUT0007	
	OUT0106, OUT0107	
	OUT0206, OUT0207	



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PWM output	function type	binary, high-side
	software mode	OUT_PWM_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	output frequency [Hz]	20...1000
	pulse/pause ratio	1...1000 ‰; (configurable)
	Resolution	1 ‰; (20...250 Hz)
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...6
	accuracy of the current measurement [mA]	± 60
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	4000; (configurable)
PWM output	function type	binary, low-side
	software mode	OUT_PWM_CSI
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	output frequency [Hz]	20...500
	pulse/pause ratio	1...1000 ‰; (configurable)
	Resolution	1 ‰; (20...250 Hz)
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	thermal protection
	current measurement [A]	0...6
PWM-I output	accuracy of the current measurement [mA]	± 60
	function type	current-controlled
	software mode	OUT_CURRENT_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	output frequency [Hz]	20...1000
	control range [A]	0,05...4
	setting resolution [mA]	1
	control resolution [mA]	2
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...6
	accuracy of the current measurement [mA]	± 60
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	4000; (configurable)



Programmable controller for mobile machines

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Digital output	function type	binary, high-side
	software mode	OUT_DIGITAL_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...6
	accuracy of the current measurement [mA]	± 60
	switching status monitoring [V]	2
	switching status monitoring accuracy [V]	± 1
	Diagnostic function	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	4000; (configurable)
Digital output	function type	binary, low-side
	software mode	OUT_DIGITAL_CSI
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	thermal protection
	current measurement [A]	0...6
	accuracy of the current measurement [mA]	± 60
Digital / PWM outputs; 4,0 A (OUT PWM-40-A)		
Number	3	
Plug ST A	OUT0008, OUT0108, OUT0208	
PWM output	function type	binary, high-side
	software mode	OUT_PWM_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	output frequency [Hz]	20...2000
	pulse/pause ratio	1...1000 ‰; (configurable)
	Resolution	1 ‰; (20...250 Hz)
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...6
	accuracy of the current measurement [mA]	± 60
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	4000; (configurable)



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PWM-I output	function type	current-controlled
	software mode	OUT_CURRENT_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	output frequency [Hz]	20...2000
	control range [A]	0,05...4
	setting resolution [mA]	1
	control resolution [mA]	2
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...6
	accuracy of the current measurement [mA]	± 60
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	4000; (configurable)
Digital output	function type	binary, high-side
	software mode	OUT_DIGITAL_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...4
	Min. load resistance [Ω]	12 V: 3 Ω / 24 V: 6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...6
	accuracy of the current measurement [mA]	± 60
	switching status monitoring [V]	2
	switching status monitoring accuracy [V]	± 1
	Diagnostic function	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	4000; (configurable)
Digital / PWM outputs; 2,5 A (OUT PWM-25-A)		
Number	9	
Plug ST A	OUT0000, OUT0002, OUT0004	
	OUT0100, OUT0102, OUT0104	
	OUT0200, OUT0202, OUT0204	
PWM output	function type	binary, high-side
	software mode	OUT_PWM_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...2,5
	output frequency [Hz]	20...2000
	pulse/pause ratio	1...1000 ‰; (configurable)
	Resolution	1 ‰; (20...250 Hz)
	Min. load resistance [Ω]	12 V: 4,8 Ω / 24 V: 9,6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...4
	accuracy of the current measurement [mA]	$\pm 37,5$
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	2500; (configurable)



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PWM-I output	function type	current-controlled
	software mode	OUT_CURRENT_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...2,5
	output frequency [Hz]	20...2000
	control range [A]	0,05...2,5
	setting resolution [mA]	1
	control resolution [mA]	2
	Min. load resistance [Ω]	12 V: 4,8 Ω / 24 V: 9,6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...4
	accuracy of the current measurement [mA]	$\pm 37,5$
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	2500; (configurable)
Digital output	function type	binary, high-side
	software mode	OUT_DIGITAL_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...2,5
	Min. load resistance [Ω]	12 V: 4,8 Ω / 24 V: 9,6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...4
	accuracy of the current measurement [mA]	$\pm 37,5$
	switching status monitoring [V]	2
	switching status monitoring accuracy [V]	± 1
	Diagnostic function	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	2500; (configurable)
Digital / PWM outputs; 2,5 A (OUT PWM-25-B)		
Number	9	
Plug ST A	OUT0001, OUT0003, OUT0005	
	OUT0101, OUT0103, OUT0105	
	OUT0201, OUT0203, OUT0205	
PWM output	function type	binary, high-side
	software mode	OUT_PWM_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...2,5
	output frequency [Hz]	20...2000
	pulse/pause ratio	1...1000 ‰; (configurable)
	Resolution	1 ‰; (20...250 Hz)
	Min. load resistance [Ω]	12 V: 4,8 Ω / 24 V: 9,6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...4
	accuracy of the current measurement [mA]	± 125
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	2500; (configurable)



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Digital output	function type	binary, high-side
	software mode	OUT_DIGITAL_CSO
	Voltage range [V]	6...32 DC
	switching current [A]	0,025...2,5
	Min. load resistance [Ω]	12 V: 4,8 Ω / 24 V: 9,6 Ω
	protective circuitry	inductive load; thermal protection
	current measurement [A]	0...4
	accuracy of the current measurement [mA]	± 125
	switching status monitoring [V]	2
	switching status monitoring accuracy [V]	± 1
	Diagnostic function	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	2500; (configurable)
Sensor supply (OUT SUPPLY-A)		
Number	1	
Plug ST A	OUT3000	
Sensor supply	function type	voltage supply
	software mode	OUT_SENSOR_05
	Output voltage [V]	5
	Accuracy [mV]	± 600
	min. load current [mA]	10
	max. load current [mA]	400
	current measurement [A]	0...2,5
	accuracy of the current measurement [mA]	± 125
	voltage measurement [V]	0...10
	voltage measurement accuracy [mV]	± 500
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	2500; (configurable)
Sensor supply	function type	voltage supply
	software mode	OUT_SENSOR_10
	Output voltage [V]	10
	Accuracy [mV]	± 600
	min. load current [mA]	10
	max. load current [mA]	200
	current measurement A	0...2,5
	accuracy of the current measurement [mA]	± 125
	voltage measurement [V]	0...10
	voltage measurement accuracy [mV]	± 500
	Diagnostic functions	wire break; short circuit; current monitoring
	lower limit of current monitoring [mA]	0; (configurable)
	upper limit of current monitoring [mA]	2500; (configurable)
Analog outputs (OUT VOLTAGE-A)		
Number	1	
Plug ST A	OUT3001	



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Analog output	function type	Voltage
	software mode	OUT_ANALOG_10
	Voltage range [V]	0...10 DC
	Accuracy [mV]	± 500
	Current rating [mA]	5
	step response time [ms]	< 1,8 (10...90 %)
	voltage measurement [V]	0...10
	voltage measurement accuracy [mV]	± 500
Software / programming		
Parameter setting options	CODESYS 3.5	
PLC function to IEC 61131-3	yes	
Operating system	real-time operating system	
Interfaces		
Communication interface	Ethernet; CAN; RS232	
Number of CAN interfaces	4	
Number of Ethernet interfaces	2	
Number of R232 interfaces	1	
CAN		
Transmission rate	20 kBit/s... 1 MBit/s	
Protocol	CANopen; SAE J1939; CANopen Safety	
Interface	CAN Interface 2.0 A/B ISO 11898	
Ethernet		
Transmission standard	10Base-T; 100Base-TX	
Transmission rate	10 MBit/s; 100 MBit/s	
Protocol	TCP/IP; UDP/IP; Modbus TCP	
Note on interfaces	2 ports with integrated switch	
RS-232 service interface		
Transmission rate	9,6...115,2 kBit/s	
Operating conditions		
Housing temperature	[°C]	-40...85
Storage temperature	[°C]	-40...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	
Chemical media	ISO 16750-5	AA, BB, BD, CC, DB, DC, DD, ED
		only one chemical permitted at a time



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Tests / approvals		
EMC	UN/ECE-R10 Noise emission and noise interference:	100 V/m
	DIN EN 61000-6-2	noise immunity
	DIN EN 61000-6-4	noise emission
	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 A (24 V)
	ISO 7637-2 pulse 4	severity level 4 / function state A (12 V)
	EN 45545-2	
	EN 50121-3-2	
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
Electrical safety	IEC 61010-1	safety requirements: general requirements
	IEC 61010-2-201	safety requirements: particular requirements for control equipment
Safety classification		
Complies with the requirements	ISO 13849-1 PL d	
	IEC 61508 SIL 2	
	IEC 62061 SIL 2	
	ISO 25119 AgPLd	
	ISO 26262 ASIL C	
According to IEC 61508		
Mission time TM	20 years	
PFH [1/h]	external one-channel input	4.0E-09
	external two-channel input	5.0E-10
	logic	1.0E-07
	external one-channel output	2.0E-08
	external two-channel output	1.0E-09
According to ISO 26262		
Total Life Time	20 years	
TTrip	10 h	
Typical use case	PMFH: 48 Fit	this classification applies to the following assumption:
		TLifetime (Total Operating Hours) = 40000 h
		(operating and non-operating phase of the device considered)
		(this is equivalent to operation for 20 years, 8 h a day on 250 days of the year or 10 h a day on 200 days)



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Worst case	PMFH: 73 Fit	this classification applies to the following assumption:
		"always on"
		(non-operating phase of the device not considered)

Mechanical data		
Weight	[g]	1525.5
Housing		rectangular
Type of mounting		screw mounting; (4 x M6)
Dimensions	[mm]	219 x 203 x 47
Material		housing: diecast aluminium powder-coated

Displays / operating elements		
Display	Ethernet (ETH0)	1 LED, green
	Ethernet (ETH1)	1 LED, green
	status (SYS0)	1 LED, multi-color
	status (SYS1)	1 LED, multi-color
	status (APP0)	1 LED, multi-color programmable
	status (APP1)	1 LED, multi-color programmable
	status (APP2)	1 LED, multi-color programmable
	status (APP3)	1 LED, multi-color programmable

Operating states - system / hardware		
Display	no operating system loaded	LED (SYS0), green flashing 5 Hz
	hardware error fatal error+	LED (SYS0), red lights
	system error fatal error	LED (SYS0/SYS1), red lights
	update	LED (SYS0/SYS1), yellow/green flashing 2 Hz
	sleep mode	LED (SYS0), blue lights

PLC application (SYS0 / SYS1)		
Display	no application	LED, green lights
	run	LED, green flashing 2 Hz
	fault	LED, red flashing 10 Hz
	debug run	LED, yellow flashing 2 Hz
	debug stop	LED, yellow lights

Ethernet (ETH0)		
Display	connection	LED, green lights
	Data transmission	LED, green flashing

Hardware		
Processor		32-Bit Triple-Core
Working memory		2,7 MByte RAM
Mass storage		9 MByte Flash
Non-volatile memory		10 kByte
Boot time		< 3 s

Accessories		
Items supplied		Protective cap: M12
		self-tapping screw: 1 x M4, for shield connection



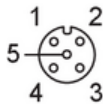
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Remarks	
Remarks	the maximum height above sea level is 5000 m in case of supply via the battery / on-board system
	can be used in applications up to SIL 2 in accordance with IEC 62061
	can be used in applications up to PL d in accordance with ISO 13849-1
	can be used in applications up to AgPL d in accordance with ISO 25119
	can be used in applications in accordance with DIN EN ISO 13766-2
Pack quantity	1 pcs.

Electrical connection - CAN

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



CAN0

1	n.c.
2	n.c.
3	GND_COM
4	CAN_H
5	CAN_L

CAN1 / RS232

1	RS232_TxD
2	RS232_RxD
3	GND_COM
4	CAN_H
5	CAN_L

Electrical connection - Ethernet

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

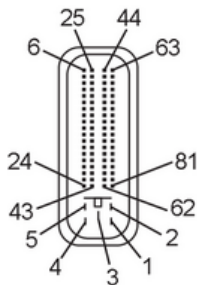


ETH0 / ETH1

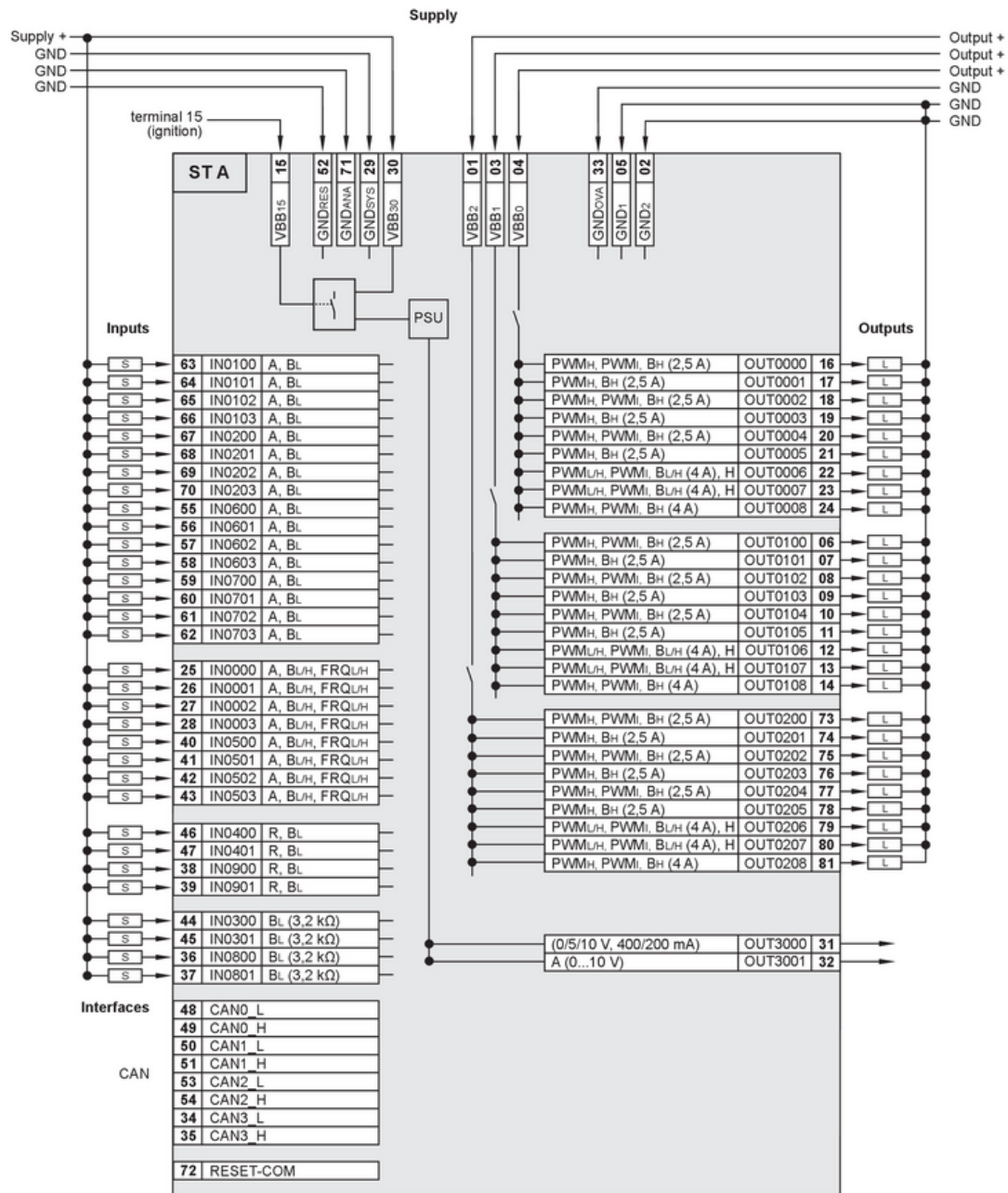
1	TD+
2	RD+
3	TD-
4	RD-

Electrical connection - ST A

Connector: 1 x AMP



Connection



A	analog
B_L	binary, low-side (CSI)
B_H	binary, high-side (CSO)
B_L/H	binary input, configurable, low-side (CSI) / high-side (CSO)
FRQ_L/H	frequency/pulse input (CSO)
H	H bridge
PSU	power supply for the system
PWM_L/H	pulse width modulation, configurable, low-side (CSI) / high-side (CSO)
PWM-I	pulse width modulation, current-controlled
R	resistor input
VBB0...VBB5	voltage supply, output group
VBB30	voltage supply, controller



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voltage supply

15	VBB15
30	VBB30
4	VBB0
3	VBB1
1	VBB2
29	GND_SYS
71	GND_ANA
52	GND_RES
33	GND_OVA
5	GND1
2	GND2

multifunction inputs, analog / digital (IN MULTIFUNCTION-A)

63	IN0100 IN MULTIFUNCTION-A
64	IN0101 IN MULTIFUNCTION-A
65	IN0102 IN MULTIFUNCTION-A
66	IN0103 IN MULTIFUNCTION-A
67	IN0200 IN MULTIFUNCTION-A
68	IN0201 IN MULTIFUNCTION-A
69	IN0202 IN MULTIFUNCTION-A
70	IN0203 IN MULTIFUNCTION-A
55	IN0600 IN MULTIFUNCTION-A
56	IN0601 IN MULTIFUNCTION-A
57	IN0602 IN MULTIFUNCTION-A
58	IN0603 IN MULTIFUNCTION-A
59	IN0700 IN MULTIFUNCTION-A
60	IN0701 IN MULTIFUNCTION-A
61	IN0702 IN MULTIFUNCTION-A
62	IN0703 IN MULTIFUNCTION-A

digital inputs, frequency signal (IN FREQUENCY-B)

25	IN0000 IN FREQUENCY-B
26	IN0001 IN FREQUENCY-B
27	IN0002 IN FREQUENCY-B
28	IN0003 IN FREQUENCY-B
40	IN0500 IN FREQUENCY-B
41	IN0501 IN FREQUENCY-B
42	IN0502 IN FREQUENCY-B
43	IN0503 IN FREQUENCY-B

digital / resistor inputs (IN RESISTOR-A)

46	IN0400 IN RESISTOR-A
47	IN0401 IN RESISTOR-A
38	IN0900 IN RESISTOR-A
39	IN0901 IN RESISTOR-A

digital inputs (IN DIGITAL-B)

44	IN0300 / IN DIGITAL-B
45	IN0301 / IN DIGITAL-B
36	IN0800 / IN DIGITAL-B
37	IN0801 / IN DIGITAL-B



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Interfaces	
48	CAN0_L / CAN0
49	CAN0_H / CAN0
50	CAN1_L / CAN1
51	CAN1_H / CAN1
53	CAN2_L / CAN2
54	CAN2_H / CAN2
34	CAN3_L / CAN3
35	CAN3_H / CAN3
72	RESET-COM / RESET-COM
Outputs, group: VBB0	
16	OUT0000 / OUT PWM-25-A
17	OUT0001 / OUT PWM-25-B
18	OUT0002 / OUT PWM-25-A
19	OUT0003 / OUT PWM-25-B
20	OUT0004 / OUT PWM-25-A
21	OUT0005 / OUT PWM-25-B
22	OUT0006 / OUT PWM-40-BRIDGE-A
23	OUT0007 / OUT PWM-40-BRIDGE-A
24	OUT0008 / OUT PWM-40-A
Outputs, group: VBB1	
6	OUT0100 OUT PWM-25-A
7	OUT0101 OUT PWM-25-B
8	OUT0102 OUT PWM-25-A
9	OUT0103 OUT PWM-25-B
10	OUT0104 OUT PWM-25-A
11	OUT0105 OUT PWM-25-B
12	OUT0106 OUT PWM-40-BRIDGE-A
13	OUT0107 OUT PWM-40-BRIDGE-A
14	OUT0108 OUT PWM-40-A
Outputs, group: VBB2	
73	OUT0200 OUT PWM-25-A
74	OUT0201 OUT PWM-25-B
75	OUT0202 OUT PWM-25-A
76	OUT0203 OUT PWM-25-B
77	OUT0204 OUT PWM-25-A
78	OUT0205 OUT PWM-25-B
79	OUT0206 OUT PWM-40-BRIDGE-A
80	OUT0207 OUT PWM-40-BRIDGE-A
81	OUT0208 OUT PWM-40-A
Sensor supply	
31	OUT0300 OUT SUPPLY-A
analog output	
32	OUT0301 OUT VOLTAGE-A