

# ICCS CAN I/O

Controllers



The **ICCS CAN I/O** modules are part of the Intelligent Control and Command Systems (ICCS) product range. They can be easily integrated into your CAN network or used as standalone modules.

With three different designs the ICCS CAN I/O offers flexible connection and mounting options.

- **ICCS CAN I/O** – the stable base of the CAN I/O series and the forerunner of all other versions. It can be connected to the PCB and used as a standalone module.
- **ICCS CAN I/O 22P** is specially designed for easy connection to the PCB.
- **ICCS CAN I/O Waterproof** has IP68 protection and is suitable for use in harsh environmental conditions.

Optional variants with 5 V reference voltage or RS232 / RS485 communication interfaces are available.

## Applications

- Input and output extensions for CAN bus systems
- Analogue sensor to CAN module
- Connection of digital and analogue sensors via the CAN bus

## Technical data

General information	
Connector	Molex Mini Fit 22 Ways
Dimensions	x 66 x 33 mm (CAN I/O) 95 x 77 x 35 mm (CAN I/O waterproof) 85 x 62 x 21.5 mm (22P)
Weight	75 g (CAN I/O), 95 g (22P), 170 g (CAN I/O waterproof)
Operating temperature	-40 °C to 85 °C (no full load at 85 °C)
Storage temperature	-40 °C to 85 °C
Ingress protection	IP53 (CAN I/O and 22P) IP68 (CAN I/O Waterproof)
EMC	E1
Operating voltage V <sub>supply</sub>	9 V to 30 V DC
Pre-fusing	10 A / block
Current consumption	30 mA
Sleep mode consumption	500 µA
Processor type	Freescale HCS08
Clock frequency	40 MHz
Flash memory	60 kB
RAM	4 kB
EEPROM	1 kB available for graphical programming

CAN bus	
acc. ISO 11898-2	High speed
acc. CAN 2.0 B	29 Bits extended address identifier
acc. CAN 2.0 A	11 Bits address identifier
Baud rate	20 kBit/s to 1000 kBit/s (125kBit/s default value)

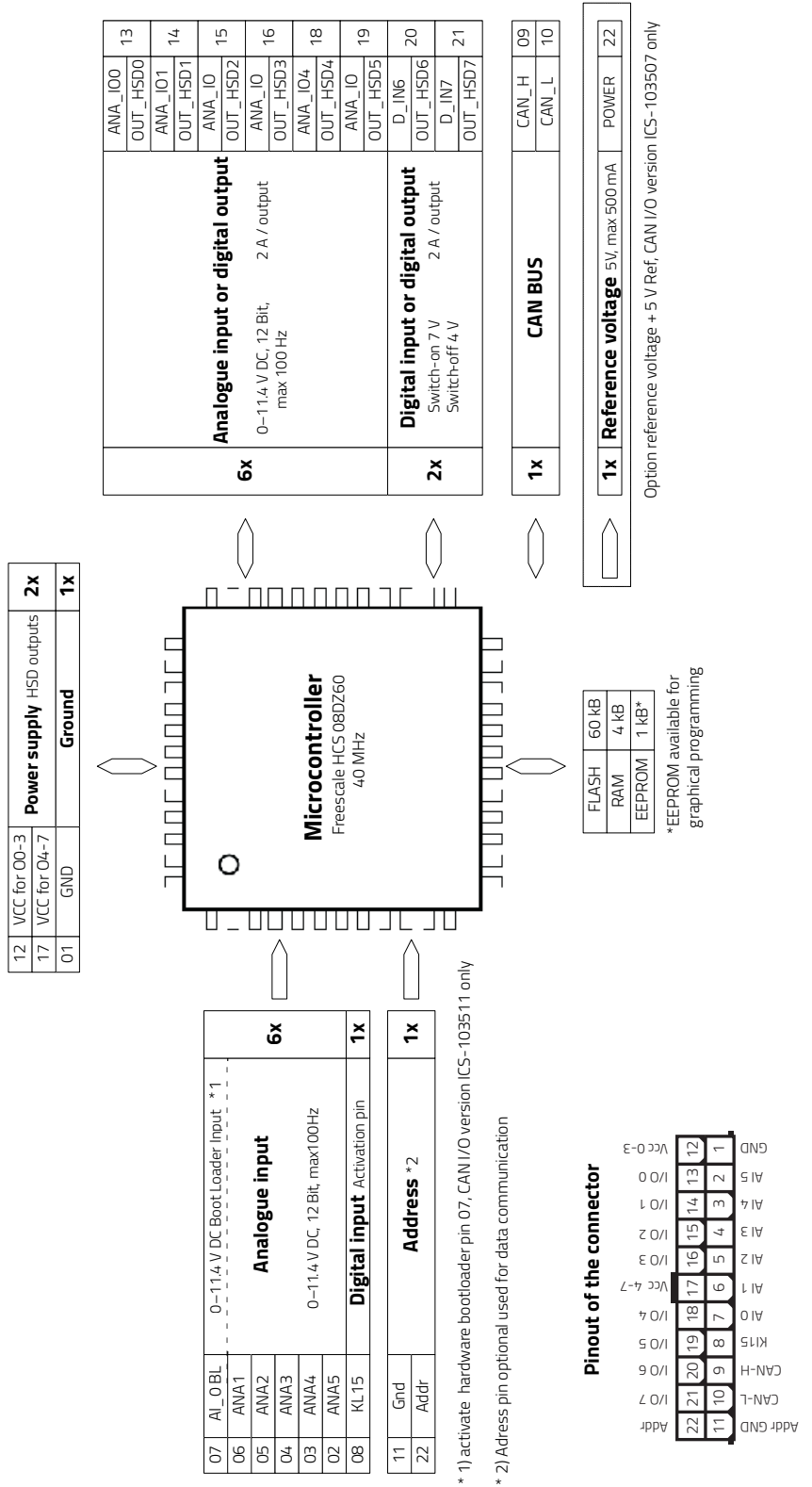
Inputs / outputs overview		
6	Analogue inputs	5 x 0–11.4 V DC 12 Bit 1 x 0–33.67 V DC 12 Bit
1	Activation pin	KL15 Wake-up Input
6	Analogue inputs or digital outputs	0–11.4 V DC 12 Bit High side outputs max 2 A
2	Digital inputs or digital outputs	Switch-on / switch-off level: 7 V / 4 V DC High side outputs max 2 A

Inputs / outputs details	
<b>Analogue inputs</b>	
Input voltage max	V <sub>supply</sub>
Measuring range	0–11.4 V DC / 0–33.67 V DC
Resolution	12 Bit
Input resistance	22.6 kΩ for 0–11.4 V and 66.6 kΩ for 0–33.67 V
Input frequency	60 Hz for 0–10 V, 40 Hz for 0–30 V
<b>Digital inputs</b>	
Input voltage	0 V to V <sub>supply</sub>
Switch-on level	7 V DC
Switch-off level	4 V DC
Input resistance	22.6 kΩ (66.6 kΩ for KL15)
Input frequency	max 100 Hz
<b>Digital outputs</b>	
Load current	max 2 A diagnostic current sense
<b>PWM outputs</b>	
PWM frequency	max 1 kHz
Duty cycle	0 to 100 %
Resolution	0.1 %
Load current	max 1 A

\* Every analogue input is also usable as a digital input in the programming software.

### Hardware map

- **ICS-103511:** ICCS CAN I/O Hardware-bootloader
- **ICS-103504:** ICCS CAN I/O Software-bootloader
- **ICS-103507:** ICCS CAN I/O Software-bootloader with reference voltage 5 V
- **ICS-103505:** ICCS CAN I/O 22P
- **ICS-104096:** ICCS CAN I/O 22P FreqIN (ANA3 & ANA5)



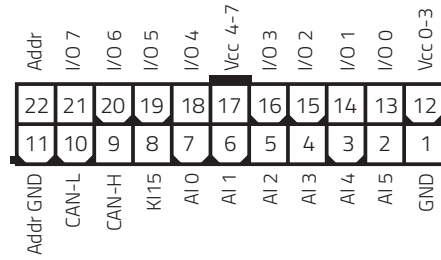
### Pin assignment

Connector of ICS-103511, ICS-103507, ICS-103504, ICS-103505, ICS-104096		
Pin	Description	Function
1	GND	Ground
2	ANA5	Analogue input 0–30 V
3	ANA4	Analogue input 0–10 V
4	ANA3	Analogue input 0–10 V
5	ANA2	Analogue input 0–10 V
6	ANA1	Analogue input 0–10 V
7	ANA0	Analogue input 0–10 V (BL) *1
8	KL15	Activation pin
9	CAN H	CAN Bus High
10	CAN L	CAN Bus Low
11	Addr GND	Address GND
12	VCC for O0-3	Power supply HSD output 0–3
13	ANA_IO0 OUT_HSD0	Analogue input 0–10 V Digital output
14	ANA_IO1 OUT_HSD1	Analogue input 0–10 V Digital output
15	ANA_IO2 OUT_HSD2	Analogue input 0–10 V Digital output
16	ANA_IO3 OUT_HSD3	Analogue input 0–10 V Digital output
17	VCC for O4-7	Power supply HSD output 4–7
18	ANA_IO4 OUT_HSD4	Analogue input 0–10 V Digital output
19	ANA_IO5 OUT_HSD5	Analogue input 0–10 V Digital output
20	D_IN6 OUT_HSD6	Digital input Digital output
21	D_IN7 OUT_HSD7	Digital input Digital output
22	Addr	Single wire address

\*1) Activation pin for bootloader, version ICS-103511 only

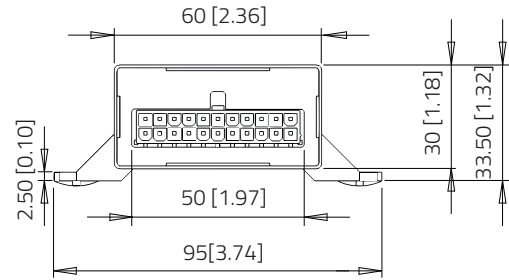
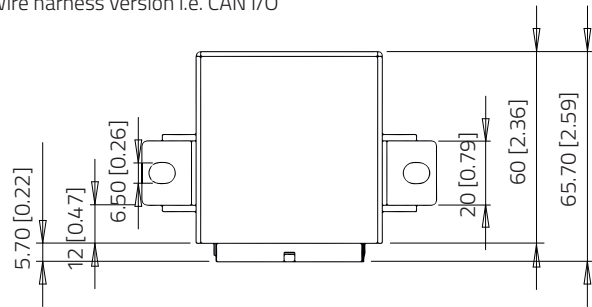


### Connector module

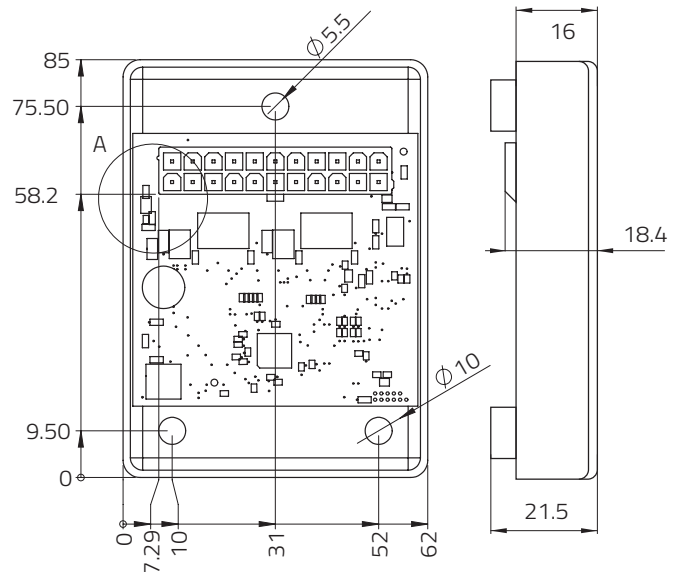


### Dimensions in mm [in inch]

Wire harness version i.e. CAN I/O



PCB mountable version, i.e. 22P

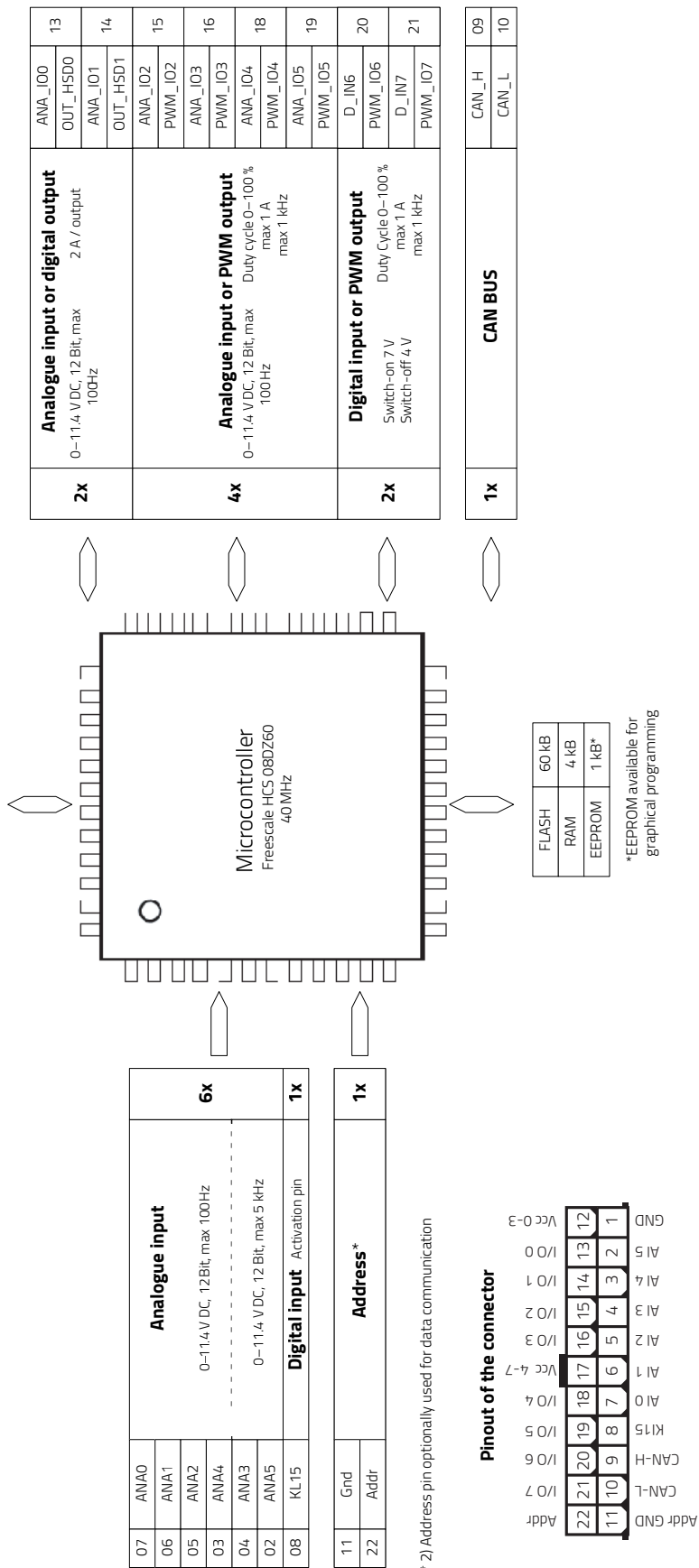


### Hardware map

- **ICS-103506:** ICCS CAN I/O Software-bootloader Diode on PWM-output
- **ICS-103508:** ICCS CAN I/O Software-bootloader 2 x RPM & 6 x PWM-output



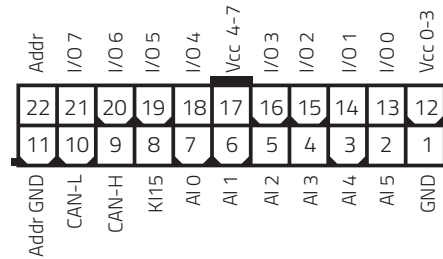
12	VCC für 00-3	<b>Power supply</b> HSD outputs	<b>2x</b>
17	VCC für 04+7		
01	GND	<b>Ground</b>	<b>1x</b>



### Pin assignment

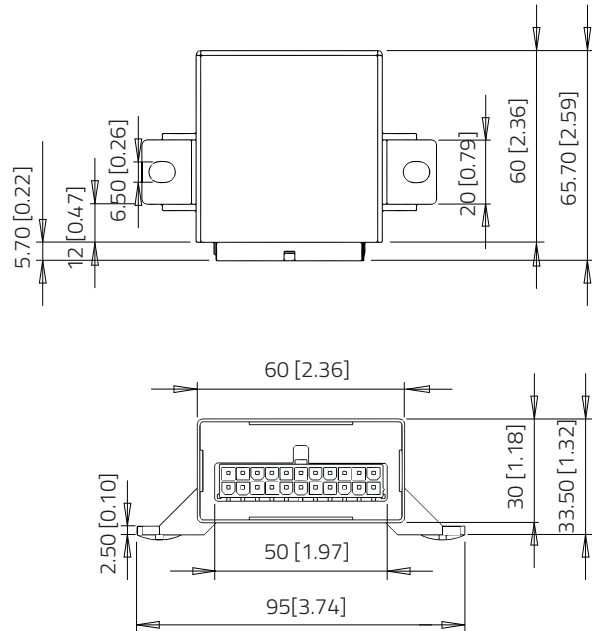
Connector of ICS-103508, ICS-103506		
Pin	Description	Function
1	GND	Ground
2	ANA5	Analogue input 0–10 V max 5 kHz
3	ANA4	Analogue input 0–10 V
4	ANA3	Analogue input 0–10 V max 5 kHz
5	ANA2	Analogue input 0–10 V
6	ANA1	Analogue input 0–10 V
7	ANA0	Analogue input 0–10 V
8	KL15	Activation pin
9	CAN H	CAN Bus High
10	CAN L	CAN Bus Low
11	Addr GND	Address GND
12	VCC for 00–3	Power supply HSD output 0–3
13	ANA_IO0 OUT_HSD0	Analogue input 0–10 V Digital output and status output
14	ANA_IO1 OUT_HSD1	Analogue input 0–10 V Digital output and status output
15	ANA_IO2 OUT_HSD2	Analogue input 0–10 V PWM output and status output
16	ANA_IO3 OUT_HSD3	Analogue input 0–10 V PWM output and status output
17	VCC for 04–7	Power supply HSD output 4–7
18	ANA_IO4 OUT_HSD4	Analogue input 0–10 V PWM output and status output
19	ANA_IO5 OUT_HSD5	Analogue input 0–10 V PWM output and status output
20	D_IN6 OUT_HSD6	Digital input PWM output and status output
21	D_IN7 OUT_HSD7	Digital input PWM output and status output
22	Addr	Single wire address

### Connector module



### Dimensions in mm [in inch]

Wire harness version i.e. CAN I/O

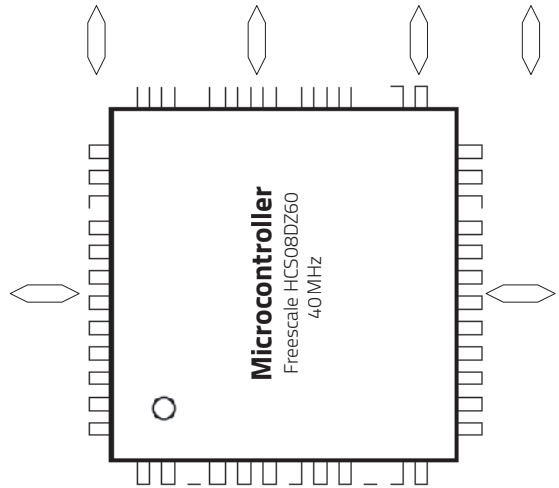


### Hardware map

- **ICS-101976:** ICCS CAN I/O Waterproof



B1	VCC for 00-3	<b>Power supply</b> HSD outputs	<b>2x</b>
B8	VCC for 04-7		
B6	GND	<b>Ground</b>	<b>2x</b>
C1			



C7	ANA0	<b>Analogue input</b> 0-11.4 V DC / 0-20 mA, max 30 Hz	<b>6x</b>
C6	ANA1		
C5	ANA2		
C4	ANA3		
C3	ANA4		
C2	ANA5		

C8	KL15	<b>Digital input</b> Activation pin	<b>1x</b>
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#### Pinout of the connector



<b>2x</b>	<b>Analogue input or digital output</b> 0-11.4 V DC, 12 Bit, max 100 Hz 2 A / output	ANA_IO0	A1
		OUT_HSD0	A1
<b>4x</b>	<b>Analogue input or PWM output</b> 0-11.4 V DC, 12 Bit, max 100 Hz Duty Cycle 0-100 % max 1 A max 1 kHz	ANA_IO1	A2
		OUT_HSD1	A2
		ANA_IO2	A3
		OUT_HSD2	A3
		ANA_IO3	A4
		OUT_HSD3	A4
<b>2x</b>	<b>Digital input or PWM output</b> Switch-on 7 V Switch-off 4 V Duty Cycle 0-100 % max 1 A max 1 kHz	ANA_IO4	A5
		OUT_HSD4	A5
<b>1x</b>	<b>CAN BUS</b>	ANA_IO5	A6
		OUT_HSD5	A6
<b>1x</b>	<b>Optional RS485</b>	D_IN6	A7
		OUT_HSD6	A7
<b>1x</b>	<b>Reference voltage</b> 5 V max 500 mA	D_IN7	A8
		OUT_HSD7	A8
<b>1x</b>	<b>Reference voltage</b> 5 V max 500 mA	CAN_H	B2
		CAN_L	B3
<b>1x</b>	<b>Optional RS485</b>	Opt. A	B4
		Opt. B	B5
<b>1x</b>	<b>Reference voltage</b> 5 V max 500 mA	POWER	B7

FLASH	60 KB
RAM	4 KB
EEPROM	1 kB*

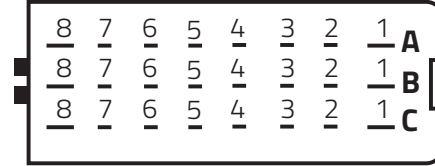
\*EEPROM available for graphical programming

### Pin assignment

Connector of ICS-101976		
Pin	Description	Function
A1	ANA_IO0	Analogue input 0–10 V
	OUT_HSD0	Digital output
A2	ANA_IO1	Analogue input 0–10 V
	OUT_HSD1	Digital output
A3	ANA_IO2	Analogue input 0–10 V
	OUT_HSD2	Digital / PWM output
A4	ANA_IO3	Analogue input 0–10 V
	OUT_HSD3	Digital / PWM output
A5	ANA_IO4	Analogue input 0–10 V
	OUT_HSD4	Digital / PWM output
A6	ANA_IO5	Analogue input 0–10 V
	OUT_HSD5	Digital / PWM output
A7	D_IN6	Digital input
	OUT_HSD6	Digital / PWM output
A8	D_IN7	Digital input
	OUT_HSD7	Digital / PWM output
B1	VCC for O0-3	Power supply HSD output 0–3
B2	CAN H	CAN Bus High
B3	CAN L	CAN Bus Low
B4	Opt. A	Optional RS485-A
B5	Opt. B	Optional RS485-B
B6	GND	Ground
B7	VREF_OUT	5 V reference
B8	VCC for O4-7	Power supply HSD output 4–7
C1	Addr GND	Address GND
C2	ANA5 / D_ANA5	Analogue input 0–30 V
C3	ANA4 / D_ANA4	Analogue input 0–10 V
C4	ANA3 / D_ANA3	Analogue input 0–10 V
C5	ANA2 / D_ANA2	Analogue input 0–10 V / 0–20 mA
C6	ANA1 / D_ANA1	Analogue input 0–10 V / 0–20 mA
C7	ANA0 / D_ANA0	Analogue input 0–10 V / 0–20 mA
C8	KL15	Activation pin

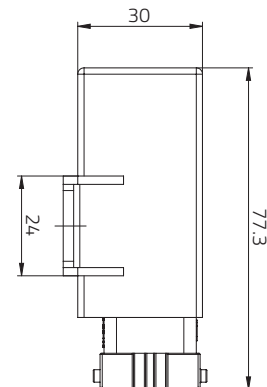
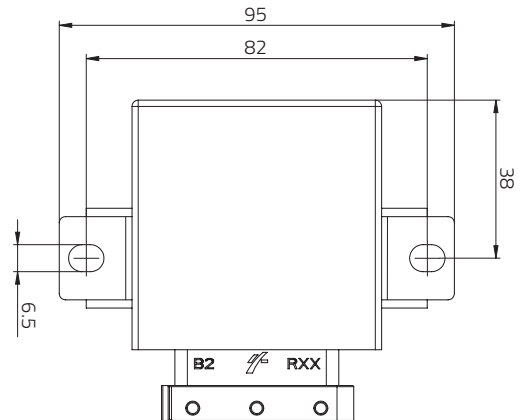
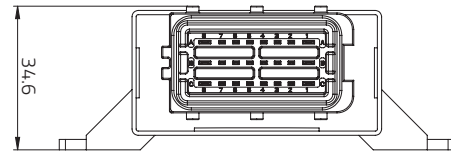


### Connector module



### Dimensions in mm

Wire harness version i.e. CAN I/O Waterproof



### Order information

Available references	Part number WE ICS
ICCS CAN I/O Hardware Bootloader	ICS-103511
ICCS CAN I/O Software Bootloader	ICS-103504
ICCS CAN I/O Software Bootloader Diode on PWM output	ICS-103506
ICCS CAN I/O 2 x RPM 6 x PWM Software Bootloader	ICS-103508
ICCS CAN I/O + 5 V REF Software Bootloader	ICS-103507
ICCS CAN I/O Waterproof	ICS-101976
ICCS CAN I/O 22P	ICS-103505
ICCS CAN I/O 22P freqIN	ICS-104096

Mating connector (CAN I/O and 22P)	Part number WE eiSos
Housing: Female Dual Row Plug WR-MPC4	649 022 113 322
Crimp contact: WR-MPC4, AWG 16	649 005 137 22
Crimp contact: WR-MPC4, AWG 24-18	649 006 137 22
Crimp contact: WR-MPC4, AWG 28-22	649 007 137 22

For 100 pieces packages, please add „DEC“ at the end of the reference.

Mating connector (CAN I/O WP)	Part number WE eiSos
Housing: FCI SICMA: 24 Pins (18 x 1.5 mm + 6 x 2.8 mm), female	211 PC24950033
FCI Locking cam	211 A247 001
Terminals: SICMA-3 1.5 terminal female, 0.34...0.75 mm <sup>2</sup>	211 CC251160
Terminals: SICMA-3 1.5 terminal female, 1.00...2.00 mm <sup>2</sup>	211 CC252160
Terminals: SICMA-3 2.8 terminal female, 0.35...0.75 mm <sup>2</sup>	211 CC351160
Terminals: SICMA-3 2.8 terminal female, 1.0...2.5 mm <sup>2</sup>	211 CC352160
Plug seals for unused contact chambers	210 A015019



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