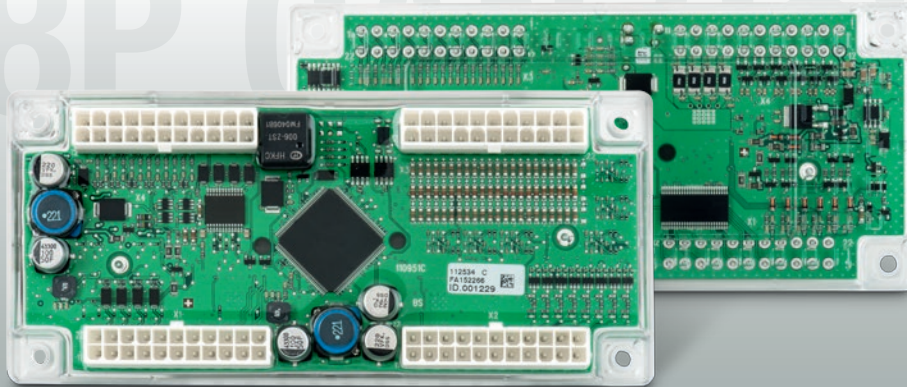


# ICCS – Intelligent Control and Command Systems



## 88P CAN Controller

**ICCS 88P CAN Controller** – Use as standalone module or as an extension to existing CAN systems. Optimally suited for mounting on central electrical units and PCBs.

The 16 bit processor (HCS12XEQ) with an integrated co-processor has enough computing power to handle complex tasks. To control many loads with low power, the 88P module features 28 lowside outputs. Digital information, analogue voltages, currents and signal frequencies can be collected and processed, analogue-controlled actuators can be controlled via four pulse width modulated outputs (PWM).

### Applications

- Graphically programmable control unit for mobile applications
- Connection of binary and analogue sensors via the CAN bus
- Input and output extensions for CAN bus systems
- Control unit for central electrical distribution
- Monitoring of fuses and switching of relay

### Technical data

General information	
Housing	Transparent
Connector	4x Molex Mini Fit 22 Ways
Dimensions	77 x 167 mm
Weight	~235 g
Operating temperature	-40 °C to 85 °C (no full load at 85 °C)
Storage temperature	-40 °C to 85 °C
Ingress protection	IP 54
Operating voltage Vsupply	9 to 30 V DC
Pre-fusing	10 A (HSD outputs)
Current consumption	50 mA
Sleep mode consumption	< 1 mA
Processor type	Freescall HCS12 XEQ
Clk frequency	100 MHz
Flash memory	384 kB
RAM	24 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 1 MBit/s (125 kBit/s default value)

### Inputs/outputs overview

12	Analogue inputs	0-11.4 V DC, 12 Bits
23	Digital inputs	Switch on/off level: 0.85/0.55 Vsupply
4	Coding inputs	High or low active selectable
8	Digital inputs or PWM inputs	PWM inputs: up to 5 kHz
2	Wake up input	1 x high active / 1 x low active
1	Wake up output	Low active 300 mA
27	Digital Low side outputs	300 mA max each
4	Digital or PWM High side outputs	max 2 A (Digital) / 1 A (PWM mode) Current measurement

### Inputs/outputs details

#### Analogue inputs

Input voltage max	Vsupply
Measuring range	0-11.4 V DC
Resolution	12 Bit
Input resistance	22.6 kΩ

#### Digital inputs

Input voltage	0 V DC to Vsupply
Switch-on level	0.85 Vsupply
Switch-off level	0.55 Vsupply
Input resistance	59.8 kΩ

#### Digital outputs

Load current	max 2 A Current measurement for regulation
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#### Coding inputs

Input resistance	Low active 112.6 kΩ
Pull-up resistance	2 kΩ (switchable)

#### PWM inputs

Input resistance	100 kΩ
Pull-up resistance	2 kΩ (switchable)
Input frequency	up to 5 kHz

#### Digital outputs

Load current	Low side (switch to GND) max 0.3 A
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#### PWM outputs

PWM frequency	max 1 kHz
Duty cycle	0 to 100 %
Resolution	0.1 %
Load current	max 1 A

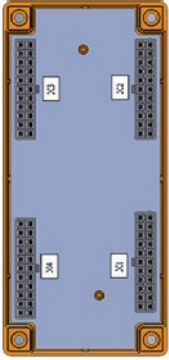
Every analogue input is also usable as a digital input in the programming software.

# ICCS 88P CAN Controller



## Hardware Map

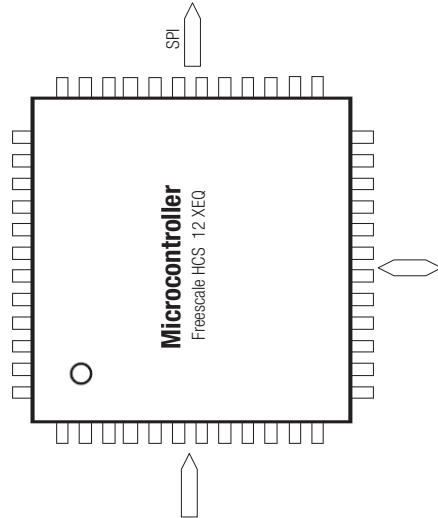
Allocation of the connectors



Pinout of the connectors

22	21	20	19	18	17	16	15	14	13	12
11	10	9	8	7	6	5	4	3	2	1

-X4	11	KL30	High Side Power Supply	1x
-X4	12	BAT	Power Supply CPU	1x
-X1	21	DI_STB	Wake up input	2x
	22	DI_STG		
-X2	19	GND	Ground	2x
	16			



FLASH	384 KB
RAM	24 KB
EEPROM	1 KB*

\*EEPROM available for graphical programming

-X1	8	DI_ADDR1	Coding Input Low active	4x
	9	DI_ADDR2		
	10	DI_ADDR3		
	11	DI_ADDR4		

-X4	2	AL_1	Analogue input 0-11.4 V DC, 12 Bits	12x
	13	AL_2		
	3	AL_3		
	14	AL_4		
	4	AL_5		
	15	AL_6		
	5	AL_7		
	16	AL_8		
	6	AL_9		
	17	AL_10		
	7	AL_11		
	18	AL_12		
-X3	1	DI1	Digital input Switch-on 0.85VBAT Switch-off 0.55VBAT	23x
	2	DI2		
	3	DI3		
	4	DI4		
	5	DI5		
	6	DI6		
	7	DI7		
	8	DI8		
	9	DI9		
	10	DI10		
	11	DI11		
	12	DI12		
-X4	8	DI23	Digital input or PWM input 5V Pull-up switchable	8x
	1	INT1		
	12	INT2		
	2	INT3		
	13	INT4		
	3	INT5		
	14	INT6		
	4	INT7		
	15	INT8		

28x	Low side output max 0.3A		-X1					
	DO1	18						
	DO2	7						
	DO3	17						
	DO4	6						
	DO5	15						
	DO6	4						
	DO7	13						
	DO8	2						
	DO9	1						
	DO10	12						
	DO11	3						
	DO12	14						
	DO13	5						
	DO14	16						
	4x	High side output Digital or PWM max 2A max 1A A relay is used to disconnect the HSD outputs Main supply through relay for HSD outputs Set to 1 to activate the HSD outputs		-X4				
		DO_PWM_HS1			19			
		DO_PWM_HS2			20			
		DO_PWM_HS3			21			
		DO_PWM_HS4			22			
		1x			Reference Voltage 5V, max 500mA	DO_VREF	1	-X4
		1x			CAN BUS	CAN_H CAN_L	9 10	-X4



# ICCS 88P CAN Controller

## Pin assignment

X4 Connector		
Pin	Description	Function
1	AI_VREF	+5 V Reference voltage
2	AI_1	Analogue input 0-10 V DC
3	AI_3	Analogue input 0-10 V DC
4	AI_5	Analogue input 0-10 V DC
5	AI_7	Analogue input 0-10 V DC
6	AI_9	Analogue input 0-10 V DC
7	AI_11	Analogue input 0-10 V DC
8	DI23	Digital input
9	CAN_H	CAN Bus High
10	CAN_L	CAN Bus Low
11	KL30	High side Power Supply
12	BAT	Power Supply
13	AI_2	Analogue input 0-10 V DC
14	AI_4	Analogue input 0-10 V DC
15	AI_6	Analogue input 0-10 V DC
16	AI_8	Analogue input 0-10 V DC
17	AI_10	Analogue input 0-10 V DC
18	AI_12	Analogue input 0-10 V DC
19	Out_HS 1	Digital/PWM High side output
20	Out_HS 2	Digital/PWM High side output
21	Out_HS 3	Digital/PWM High side output
22	Out_HS 4	Digital/PWM High side output

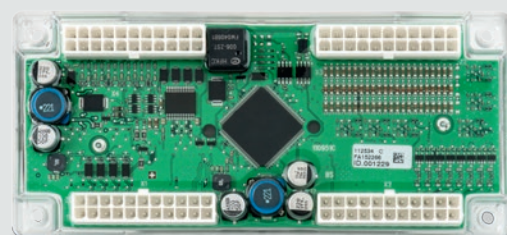
X3 Connector		
Pin	Description	Function
1	DI1	Digital input
2	DI2	Digital input
3	DI3	Digital input
4	DI4	Digital input
5	DI5	Digital input
6	DI6	Digital input
7	DI7	Digital input
8	DI8	Digital input
9	DI9	Digital input
10	DI10	Digital input
11	DI11	Digital input
12	DI12	Digital input
13	DI13	Digital input
14	DI14	Digital input
15	DI15	Digital input
16	DI16	Digital input
17	DI17	Digital input
18	DI18	Digital input
19	DI19	Digital input
20	DI20	Digital input
21	DI21	Digital input
22	DI22	Digital input

X1 Connector		
Pin	Description	Function
1	DO9	Digital output Low side
2	DO8	Digital output Low side
3	DO11	Digital output Low side
4	DO6	Digital output Low side
5	DO13	Digital output Low side
6	DO4	Digital output Low side
7	DO2	Digital output Low side
8	DI_ADDR1	Coding input
9	DI_ADDR2	Coding input
10	DI_ADDR3	Coding input
11	DI_ADDR4	Coding input
12	DO10	Digital output Low side
13	DO7	Digital output Low side
14	DO12	Digital output Low side
15	DO5	Digital output Low side
16	DO14	Digital output Low side
17	DO3	Digital output Low side
18	DO1	Digital output Low side
19	GND	Ground
20	DO_WAKE	Wake up output (usable as Low side)
21	DI_STB	Wake up input
22	DI_STG	Wake up input

X2 Connector		
Pin	Description	Function
1	INT1 (freq in)	Digital/PWM input
2	INT3 (freq in)	Digital/PWM input
3	INT5 (freq in)	Digital/PWM input
4	INT7 (freq in)	Digital/PWM input
5	DO22	Digital output Low side
6	DO20	Digital output Low side
7	DO23	Digital output Low side
8	DO25	Digital output Low side
9	DO27	Digital output Low side
10	DO18	Digital output Low side
11	DO16	Digital output Low side
12	INT2 (freq in)	Digital/PWM input
13	INT4 (freq in)	Digital/PWM input
14	INT6 (freq in)	Digital/PWM input
15	INT8 (freq in)	Digital/PWM input
16	GND	Ground
17	DO21	Digital output Low side
18	DO19	Digital output Low side
19	DO24	Digital output Low side
20	DO26	Digital output Low side
21	DO17	Digital output Low side
22	DO15	Digital output Low side



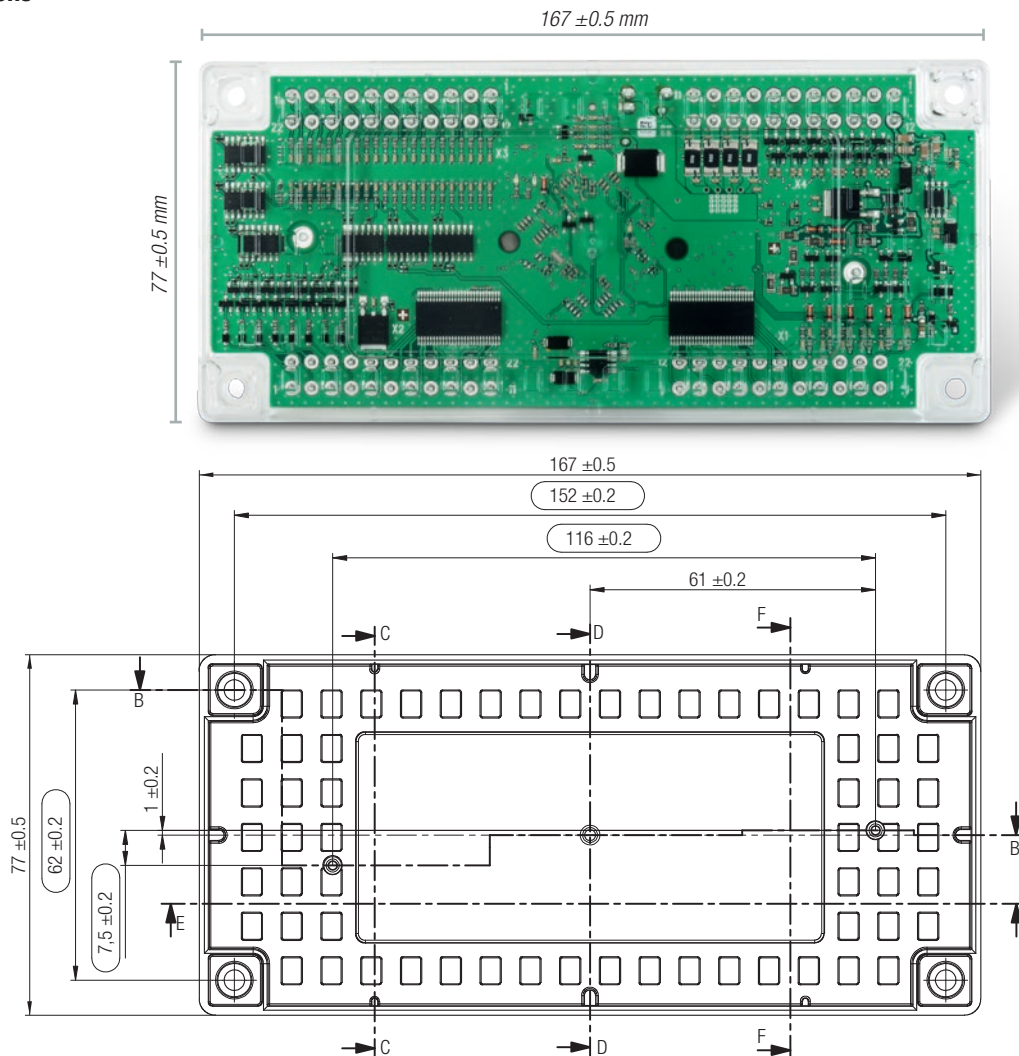
(Connector module)



# ICCS 88P CAN Controller



## Dimensions



## Order information

Available references	Part number WE ICS
ICCS CAN Controller 88P (unprogrammed)	ICS-100635

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.

This item is a standard product, please consider the relevant datasheet notes.  
The user is responsible for the product's functionality in its purposed system environment.

For more information visit us  
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