

ICCS – Intelligent Control and Command Systems



64P V2 CAN Controller

The **ICCS 64P V2 CAN Controller** can be used as a standalone module or as part of the CAN network. It can perform logical functions or be used just as a I/O device. The module can drive loads up to 2 amps per output and has more than 30 inputs of different types.

The controller is the perfect complement to central electrical units and power boards from Würth Elektronik ICS. It can easily be connected to the printed circuit board and thus enables the control of the entire system, e.g. relay switching and monitoring of the fuse status via CAN bus.

The 16-bit processor (Freescale / NXP HCS12XEQ) with integrated co-processor has sufficient computing power to handle complex tasks. The two CAN interfaces and an optional LIN master interface allow data exchange between independent bus systems. In addition, the controller enables gateway / filter functions and the conversion of data from LIN battery management systems or rain / light sensors to CAN buses.

Applications

- Fuse monitoring and relay control
- Transmission of sensor values to the CAN bus
- CAN to CAN gateway functions
- LIN to CAN gateway functions
- Power supply of devices with low power consumption
- Interface between switches and CAN bus

GENERAL INFORMATION

Housing	Transparent with black potting
Connector	4 x Molex Mini Fit 16 Ways
Dimensions	76 x 116 x 15 mm
Weight	~150 g
Operating temperature	-40 °C to 85 °C (no full load at 85 °C)
Storage temperature	-40 °C to 85 °C
Ingress protection	IP54
Operating voltage	9 V to 30 V DC
Pre-fusing	10 A / block (HSD outputs)
Current consumption	max 50 mA
Processor type	Freescale / NXP HCS12XEQ
Clock frequency	100 MHz
Flash memory	384 kB
RAM	24 kB
EEPROM	1 kB available for graphical programming
E1 certification	ECE10 Rev.05 : 058257



CAN BUS

acc. ISO 11898-2	High speed
acc. ISO 11898-3	Low speed (optional)
acc. CAN 2.0A & B	11 and 29 bit address identifier
Baud rate	20 kBit/s to 1000 kBit/s (125 kBit/s default value)

LIN BUS (OPTIONAL)

LIN 2.1 master	Pull-up to Vsupply, 1 kΩ & diode
Baud rate	4800 to 115200 bps
Vsupply	Recommended max 12 V (1 kΩ-12 V LIN)

INPUTS / OUTPUTS OVERVIEW

4	Analogue inputs	0 - 10 V DC / 0-20 mA
3	Analogue inputs	0 - 10 V DC
3	Analogue inputs	0 - 30 V DC
4	Analogue inputs	0 - 5 V DC
18	Digital inputs	Switch on / switch off level: see Inputs / outputs details
4	Digital / Frequency inputs	Switch on / switch off level: see Inputs / outputs details
8	Digital outputs or PWM outputs	High side outputs max 2 A PWM outputs max 1 A
8	Digital outputs	High side outputs max 2 A



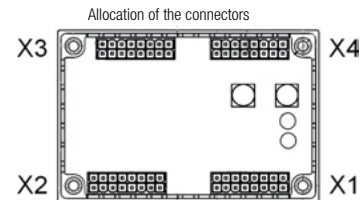
ICCS 64P V2 CAN Controller

INPUTS / OUTPUTS DETAILS	
Analogue inputs	3 x 0-10 V DC and 4 x 0-10 V DC / 0-20 mA
Voltage / current	0-11.4 V DC / 0-23 mA
Resolution	12 bits
Input resistance	22.6 kΩ
Pull-down resistance	Switchable 0.5 kΩ in 0-20 mA mode (4x)
Analogue inputs	4 x 0-5 V DC
Input voltage	0-5 V DC
Resolution	12 bits
Input resistance	High-Z through op. amp.
Analogue inputs	3 x 0-30 V DC
Input voltage	0-33.6 V DC
Resolution	12 bits
Input resistance	66.6 kΩ

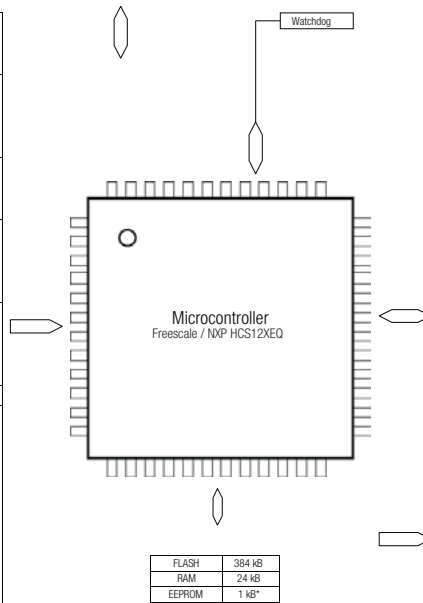
INPUTS / OUTPUTS DETAILS	
Digital inputs	18
Input voltage	0 V DC to Vsupply
Switch-on level	7 V DC
Switch-off level	4 V DC
Input resistance	22.6 kΩ
Frequency inputs	4
Input resistance	100 kΩ
Input frequency	5 kHz
Digital outputs	16 x High side
Load current	max 2 A Diagnostic current sense, freewheel diode
PWM outputs	max 8 of digital outputs
PWM frequency	max 1 kHz
Duty cycle	0 to 100 %
Resolution	0.10 %
Load current	max 1 A
5 V supply	Switchable from SW
Max current	400 mA

Hardware Map

-X2	8	KL30_1	Power supply for outputs 0 to 3	1x
-X2	1	KL30_2	Power supply for outputs 4 to 7	1x
-X1	8	KL30_3	Power supply for outputs 8 to 11	1x
-X1	1	KL30_4	Power supply for outputs 12 to 15	1x
-X1	2	AGND	Ground	1x
-X3	2	AGND	Ground	1x



-X1	7	AI_DI_0	Analogue input 0-11.4 V DC, 12 Bits	3x
	6	AI_DI_1		
	5	AI_DI_2		
	4	AI_DI_3		
-X3	13	AI_DI_5	Analogue input 0-5 V DC, 12 Bits	4x
	5	AI_DI_6		
	12	AI_DI_7		
	4	AI_DI_8		
-X3	11	AI_DI_9	Analogue input 0-33.6 V DC, 12 Bits	3x
	3	AI_U_I_10		
	10	AI_U_I_11		
	1	AI_U_I_12		
-X3	9	AI_U_I_13	Analogue input 0-20 mA or 0-11.4 V DC, 12 Bits	4x
	6	FREQ_A0		
	7	FREQ_A1		
	14	FREQ_B0		
-X2	15	FREQ_B1	Digital / Frequency input	4x
	3	DI_KL15		
	16	DI_0		
	8	DI_1		
-X4	15	DI_2	Digital input Switch-on 7 V Switch-off 4 V	17x
	7	DI_3		
	14	DI_4		
	6	DI_5		
	13	DI_6		
	5	DI_7		
	12	DI_8		
	4	DI_9		
	11	DI_10		
	3	DI_11		
	10	DI_12		
	2	DI_13		
	9	DI_14		
1	DI_15			
-X3	16	DI_16	Digital input or LIN BUS	1x
	8	DI_17		



*EEPROM available for graphical programming

8x	Digital output or PWM output 2 A / output 1 A / output	DO_HSD_0	16	-X2	
		DO_HSD_1	15		
		DO_HSD_2	14		
		DO_HSD_3	13		
		DO_HSD_4	12		
		DO_HSD_5	11		
		DO_HSD_6	10		
		DO_HSD_7	9		
		DO_HSD_8	16		-X1
		DO_HSD_9	15		
DO_HSD_10	14				
DO_HSD_11	13				
DO_HSD_12	12				
DO_HSD_13	11				
DO_HSD_14	10				
DO_HSD_15	9				
1x	5 V Reference voltage Switchable, max 400 mA	5V_REF	2	-X2	
1x	CAN BUS 0 High Speed (11898-2)	CAN_GH	4	-X2	
		CAN_OL	5		
1x	CAN BUS 1 High Speed (11898-2) or Low Speed (11898-3)	CAN_TH	6	-X2	
		CAN_TL	7		

Pinout of the connectors



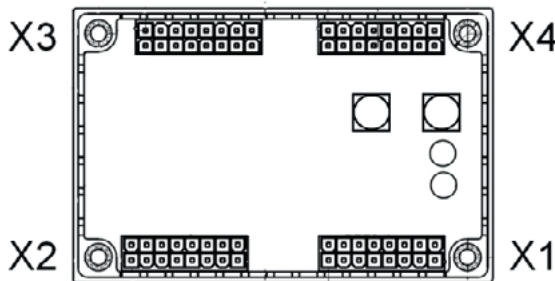
ICCS 64P V2 CAN Controller

Pin assignment

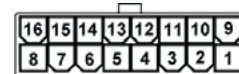
X3 CONNECTOR		
Pin	Description	Function
1	ANA_UI_12	Analogue input 0-10 V or 0-20 mA
2	AGND	Ground
3	ANA_UI_10	Analogue input 0-10 V or 0-20 mA
4	ANA8	Analogue input 0-30 V
5	ANA6	Analogue input 0-5 V
6	DIGIN_RPM_A0	Digital / Frequency input
7	DIGIN_RPM_A1	Digital / Frequency input
8	DIGIN_DI17	Digital input (X03259) or LIN BUS
9	ANA_UI_13	Analogue input 0-10 V or 0-20 mA
10	ANA_UI_11	Analogue input 0-10 V or 0-20 mA
11	ANA9	Analogue input 0-30 V
12	ANA7	Analogue input 0-30 V
13	ANA5	Analogue input 0-5 V
14	DIGIN_RPM_B0	Digital / Frequency input
15	DIGIN_RPM_B1	Digital / Frequency input
16	DIGIN_DI16	Digital input

X4 CONNECTOR		
Pin	Description	Function
1	DIGIN_DI15	Digital input
2	DIGIN_DI13	Digital input
3	DIGIN_DI11	Digital input
4	DIGIN_DI9	Digital input
5	DIGIN_DI7	Digital input
6	DIGIN_DI5	Digital input
7	DIGIN_DI3	Digital input
8	DIGIN_DI1	Digital input
9	DIGIN_DI14	Digital input
10	DIGIN_DI12	Digital input
11	DIGIN_DI10	Digital input
12	DIGIN_DI8	Digital input
13	DIGIN_DI6	Digital input
14	DIGIN_DI4	Digital input
15	DIGIN_DI2	Digital input
16	DIGIN_DIO	Digital input

Allocation of the connectors



Pinout of the connectors



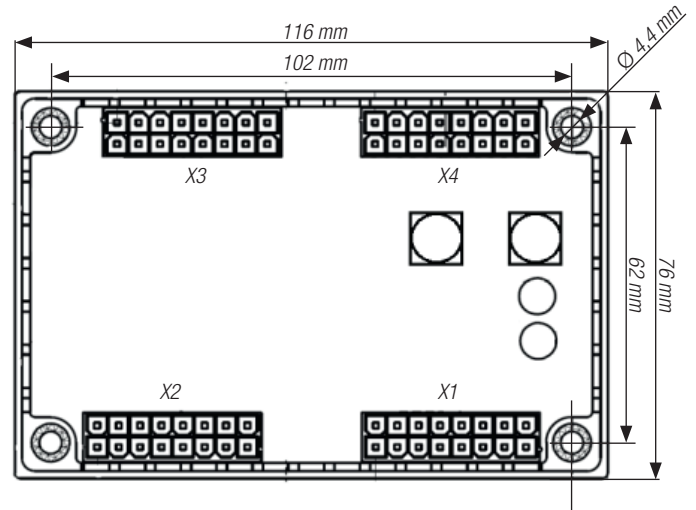
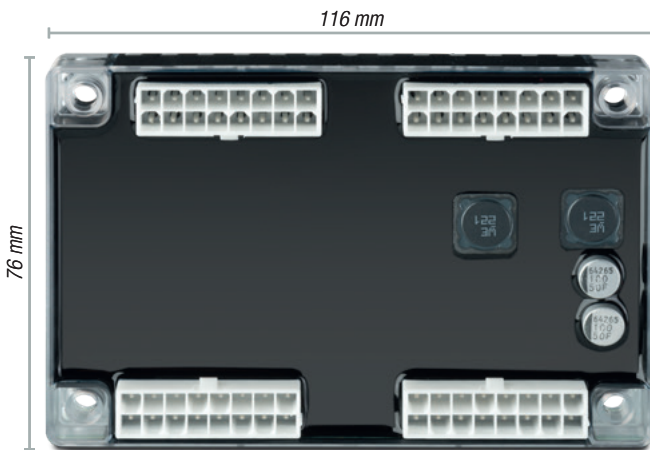
X2 CONNECTOR		
Pin	Description	Function
1	KL_30_2	Power supply for outputs 4-7
2	5V_REF	+5 V / 400 mA Voltage reference
3	KL15	Activation pin
4	CAN_OH	CAN Bus 0 High
5	CAN_OL	CAN Bus 0 Low
6	CAN_1H	CAN Bus 1 High
7	CAN_1L	CAN Bus 1 Low
8	KL_30_1	Power supply for outputs 0-3
9	DIGOUT_HSD7	Digital output or PWM Output
10	DIGOUT_HSD6	Digital output or PWM Output
11	DIGOUT_HSD5	Digital output or PWM Output
12	DIGOUT_HSD4	Digital output or PWM Output
13	DIGOUT_HSD3	Digital output or PWM Output
14	DIGOUT_HSD2	Digital output or PWM Output
15	DIGOUT_HSD1	Digital output or PWM Output
16	DIGOUT_HSD0	Digital output or PWM Output

X1 CONNECTOR		
Pin	Description	Function
1	KL_30_4	Power supply for outputs 12-15
2	AGND	Ground
3	ANA4	Analogue input 0-5 V
4	ANA3	Analogue input 0-5 V
5	ANA2	Analogue input 0-10 V
6	ANA1	Analogue input 0-10 V
7	ANA0	Analogue input 0-10 V
8	KL_30_3	Power supply for outputs 8-11
9	DIGOUT_HSD15	Digital output max 2 A
10	DIGOUT_HSD14	Digital output max 2 A
11	DIGOUT_HSD13	Digital output max 2 A
12	DIGOUT_HSD12	Digital output max 2 A
13	DIGOUT_HSD11	Digital output max 2 A
14	DIGOUT_HSD10	Digital output max 2 A
15	DIGOUT_HSD9	Digital output max 2 A
16	DIGOUT_HSD8	Digital output max 2 A

ICCS 64P V2 CAN Controller



Dimensions



Order information

AVAILABLE REFERENCES	PART NUMBER WE ICS
ICCS 64P V2 XEQ 2 CAN HS	ICS-102924
ICCS 64P V2 XEQ 2 CAN HS 1 LIN master	ICS-103075
ICCS 64P V2 XEQ 1 CAN HS 1 CAN LS 1 LIN master	ICS-102486

MATING CONNECTOR	PART NUMBER WE EISOS
Housing: Female Dual Row Plug WR-MPC4	649 016 113 322
Crimp contact: WR-MPC4, AWG 16 (1.31 mm ²)	649 005 137 22
Crimp contact: WR-MPC4, AWG 24 - 18 (0.2 to 0.82 mm ²)	649 006 137 22
Crimp contact: WR-MPC4, AWG 28 - 22 (0.08 to 0.33 mm ²)	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 at
www.we-online.com/ics or call
+49 7940 9810-0

Würth Elektronik ICS GmbH & Co. KG
Intelligent Power & Control Systems
Gewerbepark Waldzimmern
Würthstraße 1
74676 Niedernhall
Tel. +49 7940 9810-0
Fax +49 7940 9810-1099
ics@we-online.com
www.we-online.com/ics