8A16DIN

8 analog and 16 digital Inputs to CAN bus

Electrics:

Supply voltage:	5.5V to 16V (24V max peak voltage)
Supply current:	30mA (sensors consumption not included)
Analog inputs:	8
Measuring range:	0 to 5V
ADC resolution:	12bits
Input impedance:	Pulldown 1Mohm
Input lowpass filter:	1600Hz (-3db)
Sensor supply:	two protected 5V +/-1% 50mA
Protected 12V:	4 @500mA nominal
Digital inputs:	16
Pull Up on dig. Inputs:	10k to 5V
Polarity:	Active low
Digital input threshold:	0,4V.
Min/Max dig. Input voltage:	0V to 75V

Mechanics:

Size:	103x56x28mm
Material:	PA12
Protection:	IP50 (for better IP contact THQtronic)
Connector:	JAE MX47039NF1
Matting connector:	JAE MX47039SF1
Terminals:	M47S65H4FA
Accessory:	MX47039XF1 (wedge lock)
Operating temp.:	-20 to 80ºC
Weight:	70g

Functionalities

CAN:	2.0A and 2.0B
Termination	Software selectable
CAN baudrate:	User settable (1M, 500k, 250k, 125k)
Format:	Big or Little endian (user settable)
Message number:	up to 8
Messages Rate:	Individually and user settable up to 1kHz
Messages content:	User settable with several

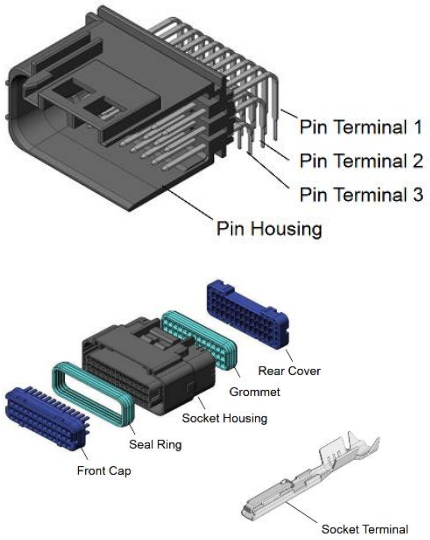
Miscellaneous:

- Freeware THQmonitor for setup using Lawicel or Peak System USB/CAN interface.
- Analog input average period selectable
- Conversion factor for each analog input
- Real time, toggle, long push, toggle long push already managed
- Virtual rotary using analog or digital inputs
- PT1000(*), NTC BOSCH(*) and TCK2ANA conversion table for temperature measurement
- Analog input can be used as digital input (centred at 2500mV. 2 dig input for each analog input).
- Bridge function (each ID are also received and content can be selected as channels)

*: 1k21 external pullup to 5V need

PINOUT

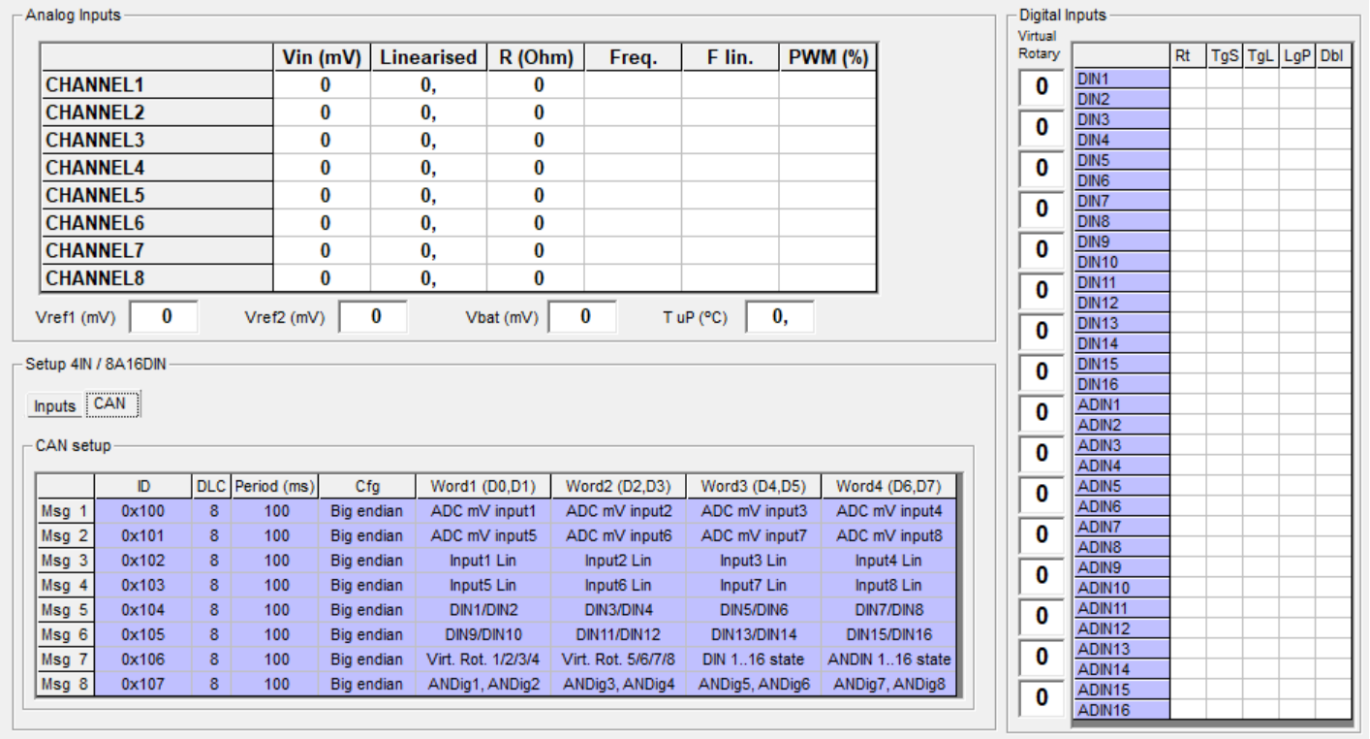
Pin	Function	Pin	Function	Pin	Function
1	12V protected (500mA)	14	12V protected (500mA)	27	12V protected (500mA)
2	Power supply	15	Power supply	28	12V protected (500mA)
3	AGND	16	AGND	29	AIN8
4	GND	17	DIN1	30	AIN7
5	DIN2	18	DIN3	31	AIN6
6	DIN4	19	DIN5	32	AIN5
7	CAN H	20	DIN6	33	AIN4
8	CAN L	21	DIN7	34	AIN3
9	DIN8	22	DIN9	35	AIN2
10	DIN10	23	DIN11	36	AIN1
11	DIN12	24	DIN13	37	5V 50mA
12	DIN14	25	DIN15	38	5V 50mA
13	DIN16	26	DGND	39	DGND



Pin 2 and 15 are internally connected.

Function description

Main dashboard



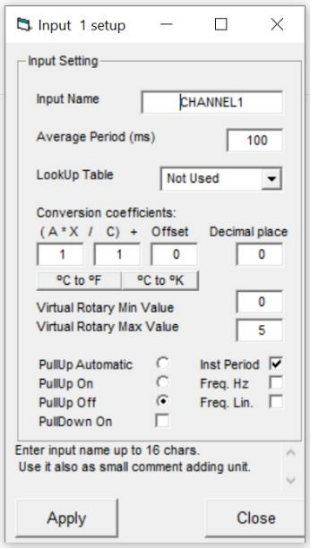
Digital inputs names can also be edited (up to 8 char).
Input real time state, toggle short push, toggle long push, long push detection automatically managed.
For virtual rotary:

- DIN1 is VR1 “Up”, DIN2 VR2 “Down” and so on
- Using analog input, switch to 5V is “Up”. Switch to AGND is “Down”

Input setup:

- Channel name up to 16 char.
- Average period in ms
- Gain, divisor and offset as conversion factor
- Virtual rotary min/max value
- Decimal place (only used for PC displaying values

("config" is not used in 8A16DIN because there is no pull up/down resistor and no frequency measurement available. Only on 4IN family devices)

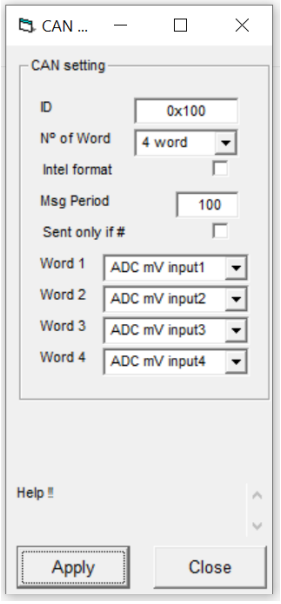


Inputs setup

	Name	Tavg.(ms)	Config	Table	Gain	DIV	Offset	VRmin	VRmax	Dec.
Input 1	CHANNEL1	100	InstP,	Not used	1	1	0	0	5	0
Input 2	CHANNEL2	100	InstP,	Not used	1	1	0	0	5	0
Input 3	CHANNEL3	100	InstP,	CTN Bosch	1	1	0	0	5	0
Input 4	CHANNEL4	100	InstP,	Not used	1	1	0	0	5	0
Input 5	CHANNEL5	100	InstP,	Not used	1	1	0	0	5	0
Input 6	CHANNEL6	100	InstP,	Not used	1	1	0	0	5	0
Input 7	CHANNEL7	100	InstP,	CTN Bosch	1	1	0	0	5	0
Input 8	CHANNEL8	100	InstP,	Not used	1	1	0	0	5	0

Can setup:

- Message ID in standard or extended format.
- Message length (DLC)
- Message period in ms
- Message byte order
- Up to 4 Channels selected on the available list.



CAN setup

	ID	DLC	Period (ms)	Cfg	Word1 (D0,D1)	Word2 (D2,D3)	Word3 (D4,D5)	Word4 (D6,D7)
Msg 1	0x100	8	100	Big endian	ADC mV input1	ADC mV input2	ADC mV input3	ADC mV input4
Msg 2	0x101	8	100	Big endian	ADC mV input5	ADC mV input6	ADC mV input7	ADC mV input8
Msg 3	0x102	8	100	Big endian	Input1 Lin	Input2 Lin	Input3 Lin	Input4 Lin
Msg 4	0x103	8	100	Big endian	Input5 Lin	Input6 Lin	Input7 Lin	Input8 Lin
Msg 5	0x104	8	100	Big endian	DIN1/DIN2	DIN3/DIN4	DIN5/DIN6	DIN7/DIN8
Msg 6	0x105	8	100	Big endian	DIN9/DIN10	DIN11/DIN12	DIN13/DIN14	DIN15/DIN16
Msg 7	0x106	8	100	Big endian	Virt. Rot. 1/2/3/4	Virt. Rot. 5/6/7/8	DIN 1..16 state	ANDIN 1..16 state
Msg 8	0x107	8	100	Big endian	ANDig1, ANDig2	ANDig3, ANDig4	ANDig5, ANDig6	ANDig7, ANDig8

Digital input byte description (DINx bytes):

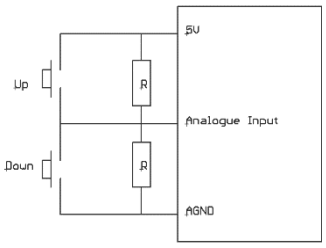
Bit	State
7	Not used
6	Not used
5	Long push
4	Toggle long
3	Toggle short
2	Actual state
1	Falling edge
0	Rising edge

Note that each word have 2 digital inputs information. Depending of format used order give (ex) :

- Big endian : D0=DIN1 , D1=DIN2
- Little endian: D0=DIN2, D1=DIN1

Analog input used as virtual rotary:

Two external resistors must be add for set idle voltage to 2,5V. No special value recommended but 10k should be good compromise for noise immunity.



List of channels selectable for CAN messages

"ADC raw input1"	"R Input1"	"Msg1_Wrd1"
"ADC raw input2"	"R Input2"	"Msg1_Wrd2"
"ADC raw input3"	"R Input3"	"Msg1_Wrd3"
"ADC raw input4"	"R Input4"	"Msg1_Wrd4"
"ADC raw input5"	"R Input5"	"Msg2_Wrd1"
"ADC raw input6"	"R Input6"	"Msg2_Wrd2"
"ADC raw input7"	"R Input7"	"Msg2_Wrd3"
"ADC raw input8"	"R Input8"	"Msg2_Wrd4"
"ADC mV input1"	"DIN1/DIN2"	"Msg3_Wrd1"
"ADC mV input2"	"DIN3/DIN4"	"Msg3_Wrd2"
"ADC mV input3"	"DIN5/DIN6"	"Msg3_Wrd3"
"ADC mV input4"	"DIN7/DIN8"	"Msg3_Wrd4"
"ADC mV input5"	"DIN9/DIN10"	"Msg4_Wrd1"
"ADC mV input6"	"DIN11/DIN12"	"Msg4_Wrd2"
"ADC mV input7"	"DIN13/DIN14"	"Msg4_Wrd3"
"ADC mV input8"	"DIN15/DIN16"	"Msg4_Wrd4"
"Input1 Lin"	"Virt. Rot. 1/2/3/4"	"Msg5_Wrd1"
"Input2 Lin"	"Virt. Rot. 5/6/7/8"	"Msg5_Wrd2"
"Input3 Lin"	"ANDig1/ANDig2"	"Msg5_Wrd3"
"Input4 Lin"	"ANDig3/ANDig4"	"Msg5_Wrd4"
"Input5 Lin"	"ANDig5/ANDig6"	"Msg6_Wrd1"
"Input6 Lin"	"ANDig7/ANDig8"	"Msg6_Wrd2"
"Input7 Lin"	"ANDig9/ANDig10"	"Msg6_Wrd3"
"Input8 Lin"	"ANDig11/ANDig12"	"Msg6_Wrd4"
	"ANDig12/ANDig14"	"Msg7_Wrd1"
	"ANDig13/ANDig16"	"Msg7_Wrd2"
	"AN V.Rot. 1/2/3/4"	"Msg7_Wrd3"
	"AN V.Rot. 5/6/7/8"	"Msg7_Wrd4"
	"DIN 1..16 state"	"Msg8_Wrd1"
	"ANDIN 1..16 state"	"Msg8_Wrd2"
	"Vref1"	"Msg8_Wrd3"
	"Vref2"	"Msg8_Wrd4"
	"Vbat"	

Export to DBC:

After CAN setup, you can export the CAN configuration to DBC file format.