4IN Light and Light+

Four analog Inputs to CAN bus module

Electrics:

Supply voltage:	5.5V to 16V	(can be powered at 5V with radiometric sensor)
Supply current:	15mA	(sensors consumption not included)
Sensor supply:	5V +/-2%	(common for all input and internal electronic)
Sensor current max:	50mA overall	
12V output * :	350mA overall	(ptc protected)
Measuring range:	0 to 5V	
ADC resolution:	12bits	
Input impedance:	>500kOhm	
Input lowpass filter:	1600Hz (-3db)	

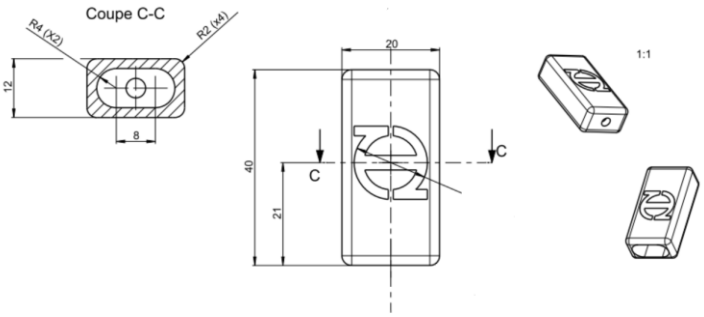
Sig. \ Input	1	2	3	4
Auxiliary Supply (*)	Purple	Purple	Purple	Purple
5V	Red	Red	Red	Red
Signal	White	Yellow	Green	Blue
GND	Black	Black	Black	Black

(*) On 4IN Light+ only

Supply,CAN	
Power Supply	Purple
GND	Black
CAN H	White
CAN L	Blue

Mechanics:

Size:	40x20x12mm without cables
Cables:	KU 22AWG at least 15cm available
Wiring sleeve:	DR-25
Device sleeve	Machined and anodized aluminum
Protection:	IP67 (filled with PU resin)
Operating temp.:	-20 to 80ºC
Weight:	41g



Functionalities

CAN:	2.0A and 2.0B
Termination	Open
CAN baudrate:	User settable (1M, 500k, 250k, 125k)
Format:	Big or Little endian (user settable)
Messages Rate:	Individually and user settable up to 1kHz
Messages content:	mV (1st word) and load resistance (2nd word) for CTN and PT1000.

Miscellaneous:

- Internal 1k21 pull-up or/and pull down switchable
- Configuration through Lawicel USB/CAN or PEAK system tool and free specific software.
- Firmware update possibilities
- The connector choice is left to the customer.

Installation

FTDI drivers must be installed before connect the USBCAN tool from Lawicel. Use administrator mode for this installation. Then, install the Thq4IN software running setup.exe.

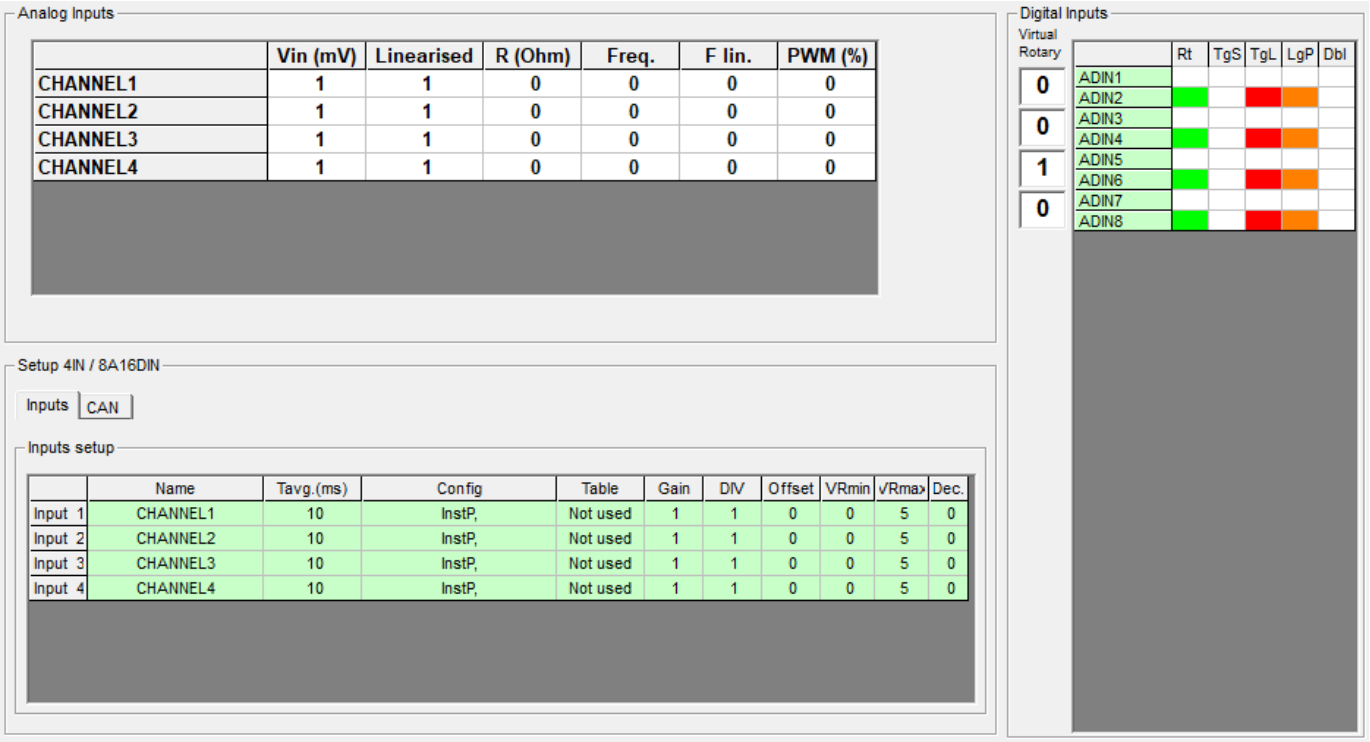
A subd9 adaptor is supply with this tool. Find right wiring details:

Note that only Lawicel USBCAN tool supply by **THQtronic** have power supply present on pin 9 and must powered ONLY THQtronic devices.

Sig.	color	Subd pin
5V (from USB)	Red	9
GND	Black	3
CAN H	White	7
CAN L	Blue	2

Function description

Main dashboard

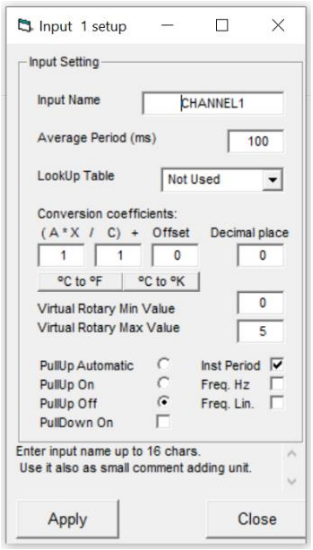


Digital inputs names can also be edited (up to 8 char).
Input real time state, toggle short push, toggle long push, long push detection automatically managed.
For virtual rotary:

- ADIN1 is AVR1 “Up”, ADIN2 AVR2 “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

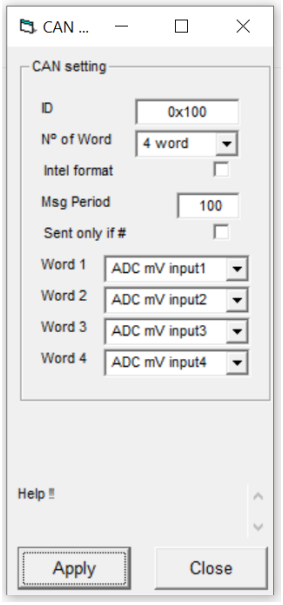


Inputs setup

	Name	Tavg.(ms)	Config	Table	Gain	DIV	Offset	VRmin	VRmax	Dec.
Input 1	CHANNEL1	10	InstP,	Not used	1	1	0	0	5	0
Input 2	CHANNEL2	10	InstP,	Not used	1	1	0	0	5	0
Input 3	CHANNEL3	10	InstP,	Not used	1	1	0	0	5	0
Input 4	CHANNEL4	10	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	0x300	8	10	Big endian	ADC mV input1	ADC mV input2	ADC mV input3	ADC mV input4
Msg 2	0x301	8	0	Big endian	Input1 Lin	Input2 Lin	Input3 Lin	Input4 Lin
Msg 3	0x302	8	0	Big endian	Freq.raw Input1	Freq.raw Input2	Freq.raw Input3	Freq.raw Input4
Msg 4	0x303	8	0	Big endian	ANDig1/ANDig2	ANDig3/ANDig4	ANDig5/ANDig6	ANDig7/ANDig8
Msg 5	0x304	8	0	Big endian	AN V.Rot. 1/2/3/4	Not Used	Not Used	Not Used
Msg 6	0x305	8	0	Big endian	Not Used	Not Used	Not Used	Not Used
Msg 7	0x306	8	0	Big endian	Not Used	Not Used	Not Used	Not Used
Msg 8	0x307	8	0	Big endian	Not Used	Not Used	Not Used	Not Used

Digital input byte description (ADINx bytes):

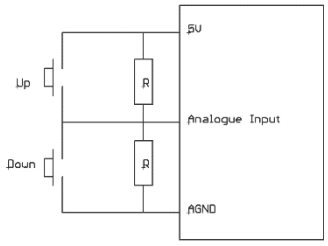
Bit	State
7	Not used
6	Not used
5	Long push
4	Toggle long
3	Toggle short
2	Actual state
1	Falling edge
0	Rising edge

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

- Big endian : D0=ADIN1 , D1=ADIN2
- Little endian: D0=ADIN2, D1=ADIN1

Analog input used as virtual rotary:

Two internal resistors must be activated for set idle voltage to 2,5V..



BRIDGE

Each ID set is also received by the device and frame are save in buffer. To access to the frame datas, you can select the channels “Msg1_Wrd1” to ”Msg8_Wrd8”.
So, the device is able to received frame from ID1 and sent them with ID2.
Not that the ID receiving the frame must be set with period=0 for discard CAN bus conflict.

List of channels selectable for CAN messages

"ADC raw input1"
"ADC raw input2"
"ADC raw input3"
"ADC raw input4"
"ADC mV input1"
"ADC mV input2"
"ADC mV input3"
"ADC mV input4"
"Input1 Lin"
"Input2 Lin"
"Input3 Lin"
"Input4 Lin"

"R Input1"
"R Input2"
"R Input3"
"R Input4"
"Freqency input1"
"Freqency input2"
"Freqency input3"
"Freqency input4"
"Freq. Lin input1"
"Freq. Lin input2"
"Freq. Lin input3"
"Freq. Lin input4"
"Virt. Rot. 1/2/3/4"
"ANDig1/ANDig2"
"ANDig3/ANDig4"
"ANDig5/ANDig6"
"ANDig7/ANDig8"
“AN V.Rot. 1/2/3/4"
"ANDIN 1..8 state"

"Msg1_Wrd1"
"Msg1_Wrd2"
"Msg1_Wrd3"
"Msg1_Wrd4"
"Msg2_Wrd1"
"Msg2_Wrd2"
"Msg2_Wrd3"
"Msg2_Wrd4"
"Msg3_Wrd1"
"Msg3_Wrd2"
"Msg3_Wrd3"
"Msg3_Wrd4"
"Msg4_Wrd1"
"Msg4_Wrd2"
"Msg4_Wrd3"
"Msg4_Wrd4"
"Msg5_Wrd1"
"Msg5_Wrd2”
"Msg5_Wrd3"
"Msg5_Wrd4"
"Msg6_Wrd1"
"Msg6_Wrd2"
"Msg6_Wrd3"
"Msg6_Wrd4"
"Msg7_Wrd1"
"Msg7_Wrd2"
"Msg7_Wrd3”
"Msg7_Wrd4"
"Msg8_Wrd1"
"Msg8_Wrd2"
"Msg8_Wrd3"
"Msg8_Wrd4"

Export to DBC:

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