

4IN Full

Four analog and Frequency 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% (separate from internal supply)
 Sensor current max: 50mA overall

Measuring range: 0 to 20V
 ADC resolution: 12bits
 Input impedance: 500kOhm
 Input lowpass filter: 1600Hz (-3db) (analogue inputs)
 Auxiliary supply: Common to power supply but individually fused by polyswitch (350mA)
 Input threshold: Auto adaptive. Centred to average value +300mV min, up to +2.3V.
 Frequency range: 1Hz to 65kHz
 PWM range: 8 to 99% (Low/High, 10V square signal, @100Hz)

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

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

Mechanics:

Size: 47x31x10mm without cables
 Cables: KU 22AWG; 130mm length
 Wiring sleeve: DR-25
 Enclosure: Aluminium
 Protection: IP67 (tropicalized PCB)
 Operating temp.: -20 to 80°C
 Weight: 45g

Functionalities

CAN: 2.0A and 2.0B
 Termination: Open
 CAN baudrate: User settable (1M, 500k, 250k, 125k)
 IDs: One message ID for each input, user settable.
 (!!! Extended IDs 0x00000010 and 0x00000011 are reserved)
 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.
 Frequency (3rd word) and PWM (4th word).
 In "All In One" mode, the fourth input selected values are sent on the same message.

Miscellaneous:

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



Lawicel USB/CAN tool

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, at the right, wiring details:

Note that only Lawicel USBCAN tool supplied by **THQtronic** have power supply present on pin 9 and must powered ONLY THQtronic devices. Absolute voltage measurement can't be down when device is supplied by USBCAN tool

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

Software description

CAN bus

Select the CAN bus speed of your system where you will use 4IN modules. Default factory speed is 1Mb.

Choose word format sent (Little or Big Endian).

Choose recursion type of messages

- Fixe recursion: message will be sent each period set
- Minimum recursion: message will be sent when value is changed but with minimum time set (in ms) or at least each second.

Sensor

ID:

For each channel, an identifier can be set. In "All In One" mode, first input ID is the only one considered.

Message:

Normal mode

Word1	Word2	Word3	Word4
Input voltage (mV)	Sensor resistance (Ohm)	Frequency (Hz or 0.1Hz)	PWM (0.1%) (*)

*: if PWM measurement is available

"All In One" mode

Word1	Word2	Word3	Word4
Input 1 selected value	Input 2 selected value	Input 3 selected value	Input 4 selected value

Sensor type: this active pull up commutation.

Self Management will set the pull up on if input voltage is less than 50mV when 4IN is powered.
Temperature type: set 1k21 pull up on for CTN or PT1000
Powered sensor: pull up is off because sensor type is potentiometer or pressure,...

Recursion emission:

Choose message recursion in millisecond. Set to "0" for disable message.
Recursion mode setting (fixed or minimum recursion) is also available and is for all channels.

Frequency resolution:

Frequency can be 0,1Hz resolution or 1Hz resolution.

Frequency average:

Frequency can be averaged (frequency average between two CAN message sent) or instantaneous. In this last case, only last period measured is sent.

Take care on the pullup resistor configuration for frequency measurement. Manual mode must be better option and user choice must be done in case of pickup or hall effect sensor.

PWM

PWM measurement is available only if instantaneous period is selected and 0.1Hz resolution is also selected.

Important note:

CTN or PT1000 must be connected between signal and ground.

In case of automatic pull up management, take care that the powered sensor used have a measurement range >50mV up to 5000mV. Also, all powered sensor must be plugged with 4IN switched off (hot plug not allowed).

Remember that extended IDs 0x00000010 and 0x00000011 are not allowed on the CANbus where 4IN are used.

5V sensors supply must not exceed 50mA.