



# 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  
 Measuring range: 0 to 5V  
 ADC resolution: 12bits  
 Input impedance: >500kOhm  
 Input lowpass filter: 1600Hz (-3db)

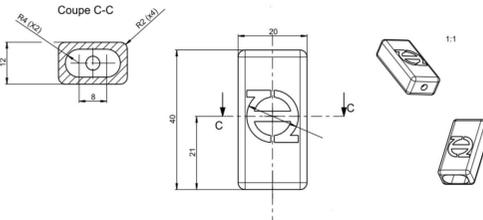
Sig. \ Input	1	2	3	4
Auxiliary Supply (*)	Purple	Purple	Purple	Purple
5V	Red	Red	Red	Red
Signal	White	Yellow	Green	Blue
GND	Black	Black	Black	Black

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

(\*) On 4IN Light+ only

### 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 80°C  
 Weight: 41g



### 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 (1<sup>st</sup> word) and load resistance (2<sup>nd</sup> word) for CTN and PT1000.

### 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.



### 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:

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

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

### 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 chose. 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)	Reserved	Reserved

"All In One" mode

Word1	Word2	Word3	Word4
Input1 voltage (mV)	Input2 voltage (mV)	Input3 voltage (mV)	Input4 voltage (mV)

**Sensor type:** this active pull up commutation.

Self Management will set the pull up on if input voltage is less than 50mV when 4IN in 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 is also available and is for all channels.

### 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.