

ILD - IN'O User Guide





NOTICE

Nke Watteco reserves the right to make changes to specifications and product descriptions or to discontinue any product or service without notice. Except as provided in Nke Watteco's Standard Terms and Conditions of Sale for products, Nke Watteco makes no warranty, representation or guarantee regarding the suitability of its products for any particular application nor does Nke Watteco assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including consequential or incidental damages.

Certain applications using semiconductor products may involve potential risks of death, personal injury or severe property or environmental damage. Nke Watteco products are not designed, authorized or warranted to be suitable for use in life saving or life support devices or systems. Inclusion of Nke Watteco products in such applications is understood to be fully at the Customer's risk.

In order to minimize risks associated with the customer's application, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

Nke Watteco assumes no liability for applications assistance or customer product design. Nke Watteco does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of Nke Watteco covering or relating to any combination, machine or process in which such semiconductor products or services might be or are used. Nke Watteco's publication of information regarding any third party's products or services does not constitute Nke Watteco's approval, warranty and endorsement thereof.

Resale of Nke Watteco's products with statements of functionality different from or beyond the parameters stated by Nke Watteco for that product as defined by Nke Watteco's unique part number, voids all express and any implied warranties for that product, is considered by Nke Watteco to be an unfair and deceptive business practice and Nke Watteco is not responsible nor liable for any such use.

Embedded software is based on Nke Watteco proprietary drivers and applicative code and operates on the Contiki kernel from the SICS (Swedish Institute of Computer Science).

www.watteco.com

www.nke-electronics.com

© nke Watteco. All Rights Reserved



DOCUMENT HISTORY

Date	Revision	Modification Description
May 2015	1.0	First revision
	1.1	frequency updating
January 2016	1.2	Adding FCC labels for INO and ILD



CONTENTS

1	Introduction5			
2	Star	t-up	5	
3	Electronic input/output			
	3.1	Electrical schematic example for inputs	6	
	3.2	Electrical schematic example for outputs	6	
4	Human Machine Interface			
5	5 Applicative Layer		7	
6	Exar	mples	7	
	6.1	Configure a standard report on the connector Input 1+/1	7	
	6.2	Configure a standard report on the connector Input 6+/6	8	
	6.3	Configure a batch report on the connector Input 6+/6 and the connector Input 3+/3	8	
	6.4	Toggle the output 2+/2	8	
7 Appendix			9	
	7.1	ILD FCC Label	9	
	7.2	INO FCC Label	9	



1 INTRODUCTION

This document describes the usage of the ILD and IN'O sensor. It is necessary to read the IPSensor User Guide in prerequisite for all generic information.

2 START-UP

The ILD and IN'O sensors manage two different power supplies, one is external and energizable in 9-15V the other one is internal on the battery. To use the external alimentation, just connect the right alimentation on the "Ext power" connector.

Connect wires on Inputs and Outputs which will be used. For connector, it is preferable to use several single wires with a gauge of 20-26 AWG. As the connectors pluck the wires plugged to their bottom at about 4mm of the wire-end, strip the wires on about 5 to 6 mm of their extremity pluged into the connector.

For water protection, it is recommended to use moulted cable.

The housing is intended to be installed inside or outside a building but to the shelter of a vertical splash water and direct sunlight.

Switch on the switch "Power Off" to start-up the device. The green "ASS" led has to be blinked until an association.





3 ELECTRONIC INPUT/OUTPUT

3.1 ELECTRICAL SCHEMATIC EXAMPLE FOR INPUTS



Due to limitation software, the maximum frequency is 500 Hz on each input.

3.2 ELECTRICAL SCHEMATIC EXAMPLE FOR OUTPUTS





4 HUMAN MACHINE INTERFACE

There is three leds on the ILD and IN'O devices:

- ASS: blinking until the association to a network is done.
- FNC: blinking each minute while an input is activated.
- CNF: blinking in the configuration mode.

A button user is available to enter in configuration mode.

5 <u>APPLICATIVE LAYER</u>

The ILD and IN'O device is a sleepy device. It implements "ON/OFF" and "Binary Input" clusters, associated to their Outputs and Inputs. The corresponding between the connectors and the EndPoint is done below:

Connector	End Point	Cluster
Output 1+/1-	0	ON/OFF
Output 2+/2-	1	ON/OFF
Output 3+/3-	2	ON/OFF
Output 4+/4-	3	ON/OFF
Input 1+/1-	0	Binary Input
Input 2+/2-	1	Binary Input
Input 3+/3-	2	Binary Input
Input 4+/4-	3	Binary Input
Input 5+/5-	4	Binary Input
Input 6+/6-	5	Binary Input
Input 7+/7-	6	Binary Input
Input 8+/8-	7	Binary Input
Input 9+/9-	8	Binary Input
Input 10+/10-	9	Binary Input

All the End Points are avalaible by software on ILD or IN'O, only the hardware is different between the two kinds of sensor. Grey field are not available on the ILD sensor.

ILD and IN'O integrate clusters:

Cluster	Cluster name	Managed attributes
0x0000	Basic	All
0x0050	Configuration	All
0x0006	ON/OFF	All
0x000F	Binary Input	All

6 EXAMPLES

6.1 CONFIGURE A STANDARD REPORT ON THE CONNECTOR INPUT 1+/1-

<u>Specification:</u> Report immediately the counter all the 5 pulses on the connector Input 1+/1-. The counter has to be reported at least each hour.

Solution: A counter on Input 1+/1 is the End Point 0, Cluster "Binary Input" is 0x000F, Attribut "Count" is 0x0402. The maximum field has to be 0x0e10 to have a report all one hour and the minimum field has to be 0x0000 to have a report immediately after the right incrementation. The right incrementation, so the delta has to be configured to 0x05 for a report all the 5 pulses.



Applicative payload is: 1106000f0004022300000e100000005

6.2 CONFIGURE A STANDARD REPORT ON THE CONNECTOR INPUT 6+/6-

<u>Specification:</u> Report the counter all the 1 pulse on the connector Input 6+/6-. The counter has to be reported at less each 10 minutes, and a minimal timing of 10 seconds between 2 reports has to be setted to optimize the consumption.

Solution: A counter on Input 6+/6- is the End Point 5, Cluster "Binary Input" is 0x000F, Attribut "Count" is 0x0402. The maximum field has to be 0x800A to have a report all 10 minutes and the minimum field has to be 0x000A to have a minimal timing between two reports. The delta has to be configured to 0x01 for a report all the 1 pulses.

Applicative payload is: b106000f00040223000a800a000000a

6.3 CONFIGURE A BATCH REPORT ON THE CONNECTOR INPUT 6+/6 AND THE CONNECTOR INPUT 3+/3-

<u>Specification:</u> Timestamp and record the Input 6+/6- all the 100 pulses; and timestamp and record the level of the Input 3+/3-. A report has to be sent at least all 24 hours.

Solution: A counter on Input 6+/6- is the End Point 5, Cluster "Binary Input" is 0x000F, Attribut "Count" is 0x0402. A level on Input 3+/3- is End Point 2, Cluster "Binary Input" is 0x000F, Attribut "Present Value" is 0x0055. There are two different values to record in the batch, so the tag size has to be 2. Label 0 can be used for counter, and Label 1 for level. For counter, the delta is 100 and resolution 1. For level, the delta is 1 and the resolution 1. The maximum has to be configured for all to 0x87F8.

It is necessary to send two frames to configure this batch.

Applicative payloads are:

b106000f1d04020000087f80000006400000010200550000087f801010a (Count) 9106000f1100550000087f801010a (Present Value)

6.4 TOGGLE THE OUTPUT 2+/2-

<u>Specification:</u> *Toggle the output 2+/2-.*

<u>Solution:</u> The output 2+/2- is the End Point 1, Cluster "ON/OFF" is 0x0006. It is necessary to use a specific command 0x50 with payload 0x02 for the toggle.

Applicative payload is: 3150000602



7 APPENDIX

7.1 ILD FCC LABEL

FCC ID: 2AGTV50-70-010

ILD SENSOR

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

▲ *Caution:* Changes or modifications not expressly approved by the party responsible for FCC compliance could void the user authority to operate the device. (Cf. FCC Part 15.21).

7.2 INO FCC LABEL

FCC ID: 2AGTV50-70-024

INO SENSOR

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications not expressly approved by the party responsible for FCC compliance could void the user authority to operate the device. (Cf. FCC Part 15.21).