

Document No.: 251-AN-001

Document Type: Application Note

# **Introduction to I/O port on StarFinder Lite 201**

Version 1.00

Oct. 22, 2012



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### Introduction

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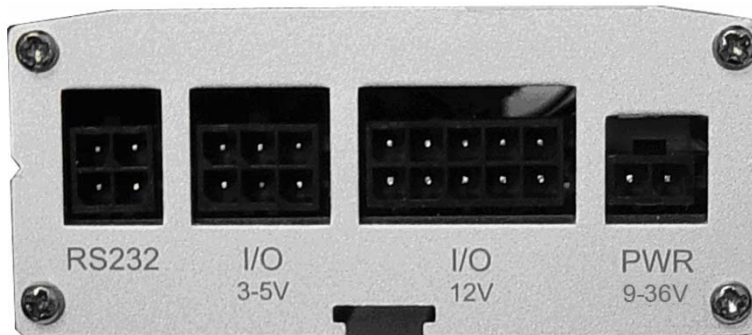
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## Introduction

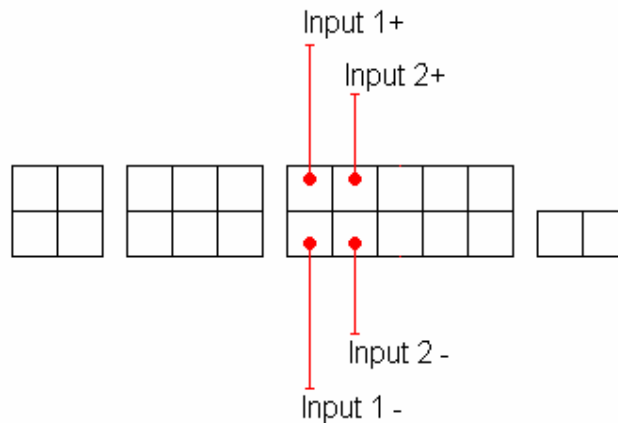
This document aims to help user to know more about the Input/Output (12V) ports on Starfinder 201 (SF-Lite 201) as well as their actual usage.



### 1. Input Port (12V)

There exist two inputs (12V) on SF-Lite 201, both of them are with optical-isolated protective mechanism. To use these inputs, user needs enable them by using utility software “**LocationNow Suite**”.

#### 1.1 Pinout definition

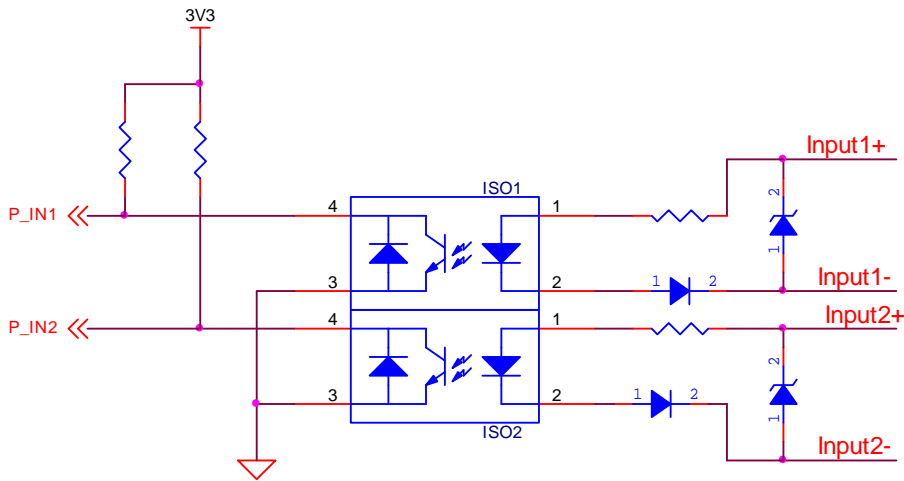


#### 1.2 Electrical Characteristics

	Minimum		Maximum	
	Voltage	Amperage	Voltage	Amperage
Logical HIGH	3.5V	1.3mA	18V	6.7mA
Logical LOW	0V	0mA	1.5V	1.1mA

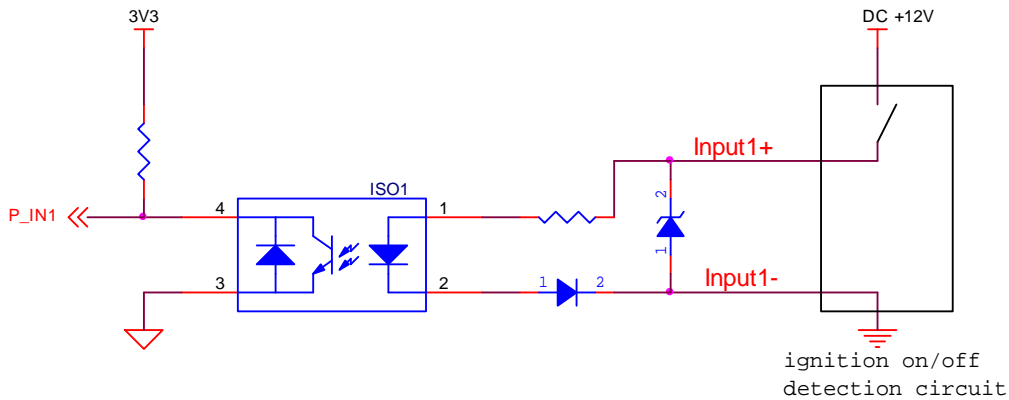
**Note:** An input voltage exceeding 19V could damage the SF- Lite and should be avoided.

**1.3 Optical-isolated mechanism**



**1.4 Typical application examples**

The positive wires are the sensing wires or wires that detect the voltage changes and the negative wires are for common ground. The positive wires are most commonly connected to solenoid wires that drive ignition, horn, air conditioning, gas cap, door open/closed status, etc.



**Fig. 1.4 ignition on/off detection**

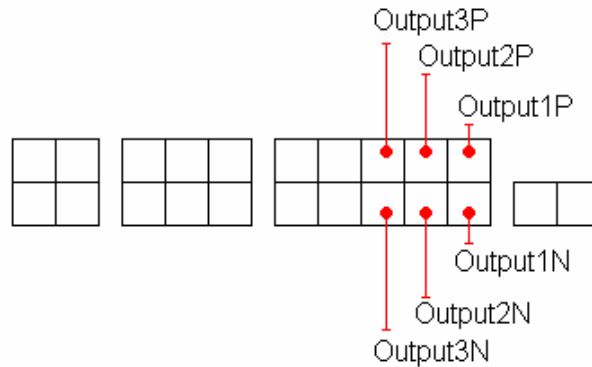
If the input is enabled and the input voltage is active, unit will send a correspondent an input alert message to remote server.

Fig. 1.4 illustrates a usage of using input 1 to detect vehicle's ignition on/off status.

## 2. Output Port (12V)

The Starfinder Lite has three outputs supported by the internal relays. These outputs can be remotely controlled by the control center. Each output serves as an individual “switch” either to drive an external relay or to open/close an existing low amperage circuit. To use these outputs, user needs enable them by using utility software “LocationNow Suite”.

### 2.1 Pinout definition



### 2.2 Electrical Characteristics

To avoid damage incurred to both unit and vehicle, user should pay attention to the electrical characteristics of these “switches” below.

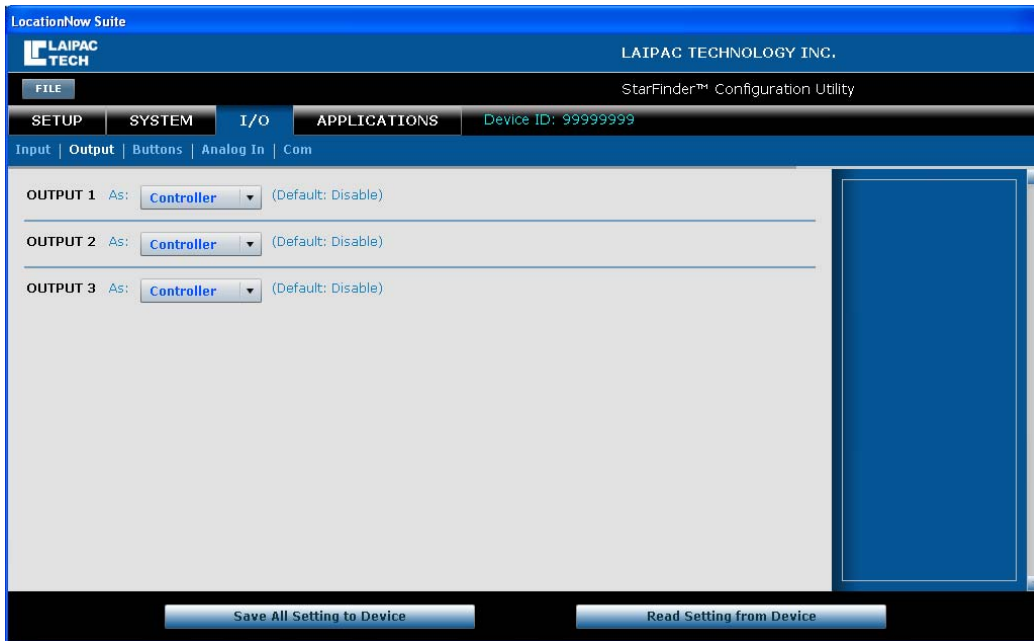
Maximum Allowable Voltage	Maximum Allowable Current
AC 125 V	0.5A
DC 60 V	0.3A
DC 30 V	1A

### 2.3 The default connection status of output

As mentioned above, these 3 outputs can be treated as 3 individual “switches”. If not enabled, these switches’ default connection status are listed below

- Output1 (Output1P & Output1N) --- normally opened (NO)
- Output2 (Output2P & Output2N) --- normally opened (NO)
- Output3 (Output3P & Output3N) --- normally opened (NO)

## 2.4 The typical application and control strategy on output port



**Controller:** The “Controller” option is used to enable the specified functionality on the certain output. Each of these 3 outputs is coming with a different function. The table below outlines those functions, which being with firmware **V1.34** and up

Output	Command Type sent by remote server	Switching Action on output	Control strategy	Action times	“close” time (s)	“open” time (s)
3	switch Relay “on”	Instant “Close”	Timed “Close”	1	1	
2	switch Relay “on” or “off”	“Close” or “Open”	Control by command	1	Control by command	Control by command
1	switch Relay “on”	A series of “Close” & “Open” action sequence	Timed “Close” & “Open”	12	1	1

**Table 2.4**

**Note:**

- a. “on” or “off” command is sent by remote server to control the behavior of those internal relays. For customer who wants to use his own server, he needs purchase the protocol from Laipac.
- b. As typical vehicle application, with proper external relays, user can use Output3 to control door-open, Output2 for ignition on/off control and Output1 for driving a horn.
- c. For Output 2, after unit executes the “switch Relay2 on” command, the switch status of Output 2 will be kept as “close” until unit receives another “switch Relay 2 off” or disable Relay 2 by using LocationNow Suite utility.

Fig. 2.4 shows a reference wiring drawing for using these 3 outputs.

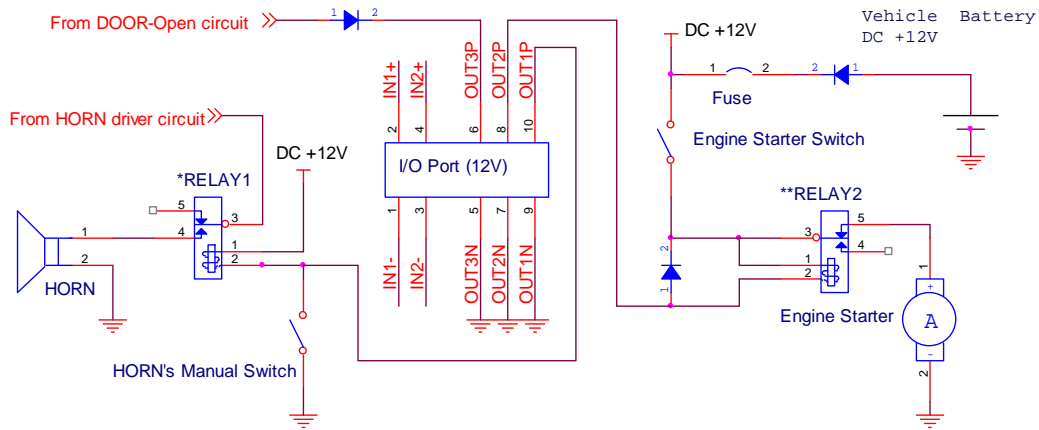


Fig. 2.4

**Note:**

\*Without executing “switch Relay 1 on” command, the switch status on external Relay 1 is “Normally Open” (NO)

\*\*Without executing “switch Relay 2 on” command, the switch status on external 1 Relay 2 is “Normally Close” (NC)

**It is user’s responsibility to select proper external relays and peripheral circuit to meet need of the practical application case.**

**Depending on actual application, user may have different control strategy on Output Port (12V), he/she can contact to Sales Dept. of Laipac Technology Inc. for customizing his/her own request on those 3 outputs.**