



*OTI*  
*EasyFuel*

*Version 1.00*



*On Track Innovations Ltd.*

*(O T I)*

*Confidential & Proprietary*

## **NOTICE**

This document contains intellectual property, including but not limited, to trade secrets and know-how, operation procedures and production procedures that belong solely to OTI. Disclosure and/or use and/or reproduction of any part of the above are strictly forbidden, except under a written license from OTI.

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## FCC Compliance

**These devices (Easy Fuel system comprising SC, VID and NID) comply with Part 15, of the FCC Rules.**

**Operation is subject to the following two conditions:**

- 1. These devices may not cause harmful interference, and**
- 2. These devices must accept any interference received, including interference that may cause undesired operation**

**NOTE:** These equipments have been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. These equipments generate, use and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If these equipments do cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipments and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Changes or modifications in these equipments, not expressly approved by the party responsible for compliance (On Track Innovations Ltd,) could void the user's authority to operate the equipments.**

**FCC IDs:**

- **SC: JNX-OTI-EFSC**
- **VID: JNX-OTI-EFVID**
- **NID: JNX-OTI-EFNID**

**Responsible Party:**

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# 1 Introduction

## 1.1 Concept

Easy Fuel combines Long-range and Proximity RF technologies offering a revolutionary solution to gasoline management.

Long range RF communication between the station fueling controller and the vehicles, combined with a short range proximity RF communication between the vehicles and the fueling nozzles, enable quick and easy secured controlled refueling transactions.

The RF communication replaces hardwired communication between station components, hence greatly simplifying system installation at the gasoline station and reducing the maintenance expenses.

For standard installations the RF frequency is in the range of 902-928MHz as required by the applications.

For special applications which are reached with high power RFID systems radiation (up to 4W between 902.5-927.5 MHz) a special off-communication channel is selected at 902.1 MHz.

EF system comprises three elements:

- **NID (Nozzle IDentification unit):**  
A very low power RF transmitter, mounted on the refueling nozzles. The NID periodically transmit its ID when off hook.  
This ID is used to identify the specific requested nozzle to the station controller.
- **VID (Vehicle IDentification unit):**  
The VID is mounted in the vehicle.  
It is connected to fuel inlet antenna to retrieve the Nozzle ID and to an RF antenna to communicate with the SC.
- **SC (Site Controller):**  
The SC is usually mounted at the station office.  
It communicates with the vehicles VIDs via an RF antenna and with the station controller via serial communication line.



## **1.2 Operational Scenario.**

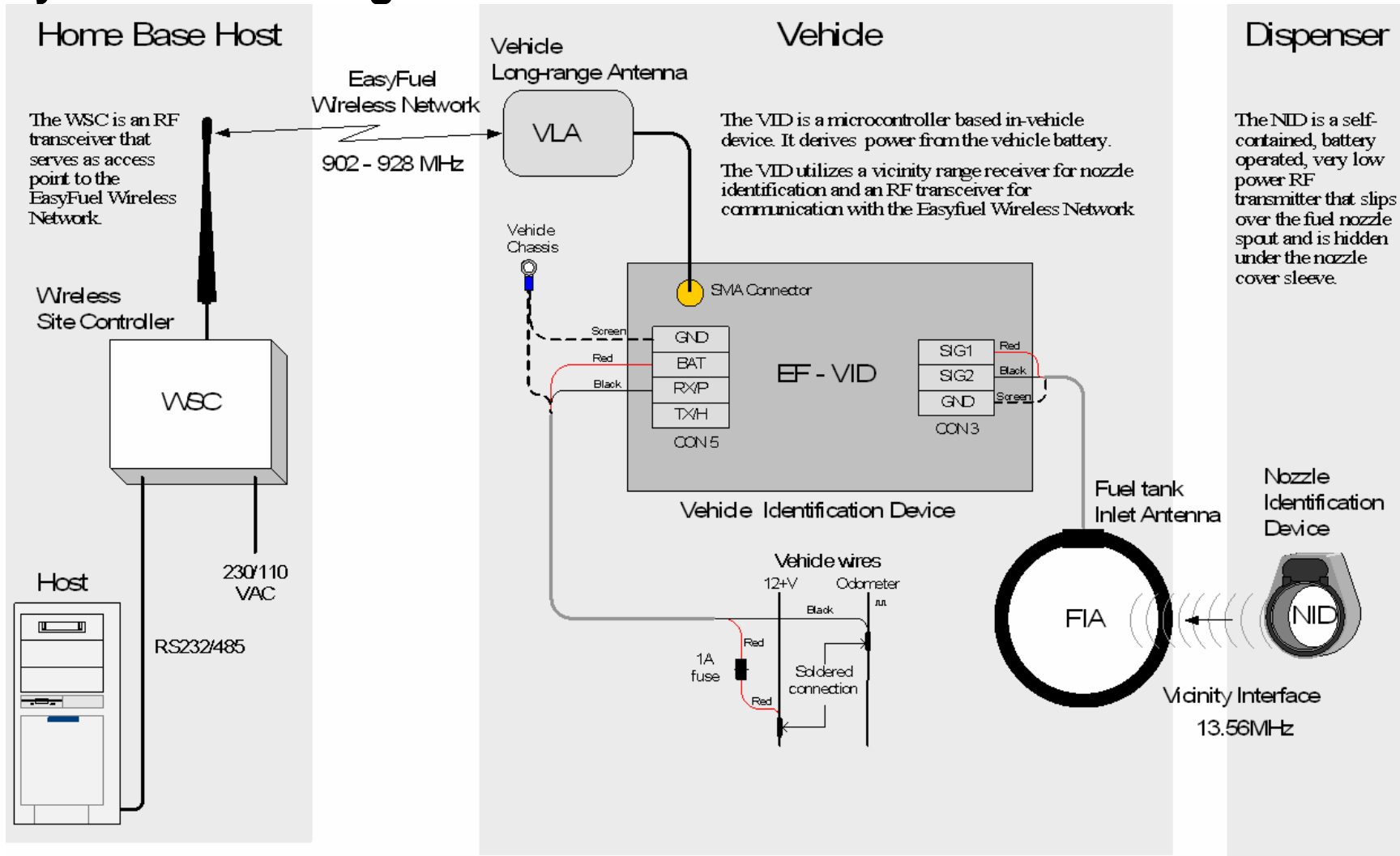
When a nozzle is inserted into a vehicle fuelling inlet, the vehicle VID reads the NID ID. Its Long-range transceiver communicates this nozzle ID, together with the Vehicle ID, to the Site Controller.

The Site Controller transfers the NID and vehicle IDs information to the station controller to approve the refueling.

When the nozzle is removed from the vehicle's fuel inlet, RF communication between the vehicle tag and the nozzle tag is interrupted. This information is transmitted to the Site Controller that routes it to the station controller that disables the fuel flow to the specific nozzle.



# System Block Diagram



## 2 System Components

### 2.1 SC - Site Controller

The SC serves as wireless access point to the vehicles VIDs. It receives information from the vehicles' VIDs in the station and relays this information to the station controller.

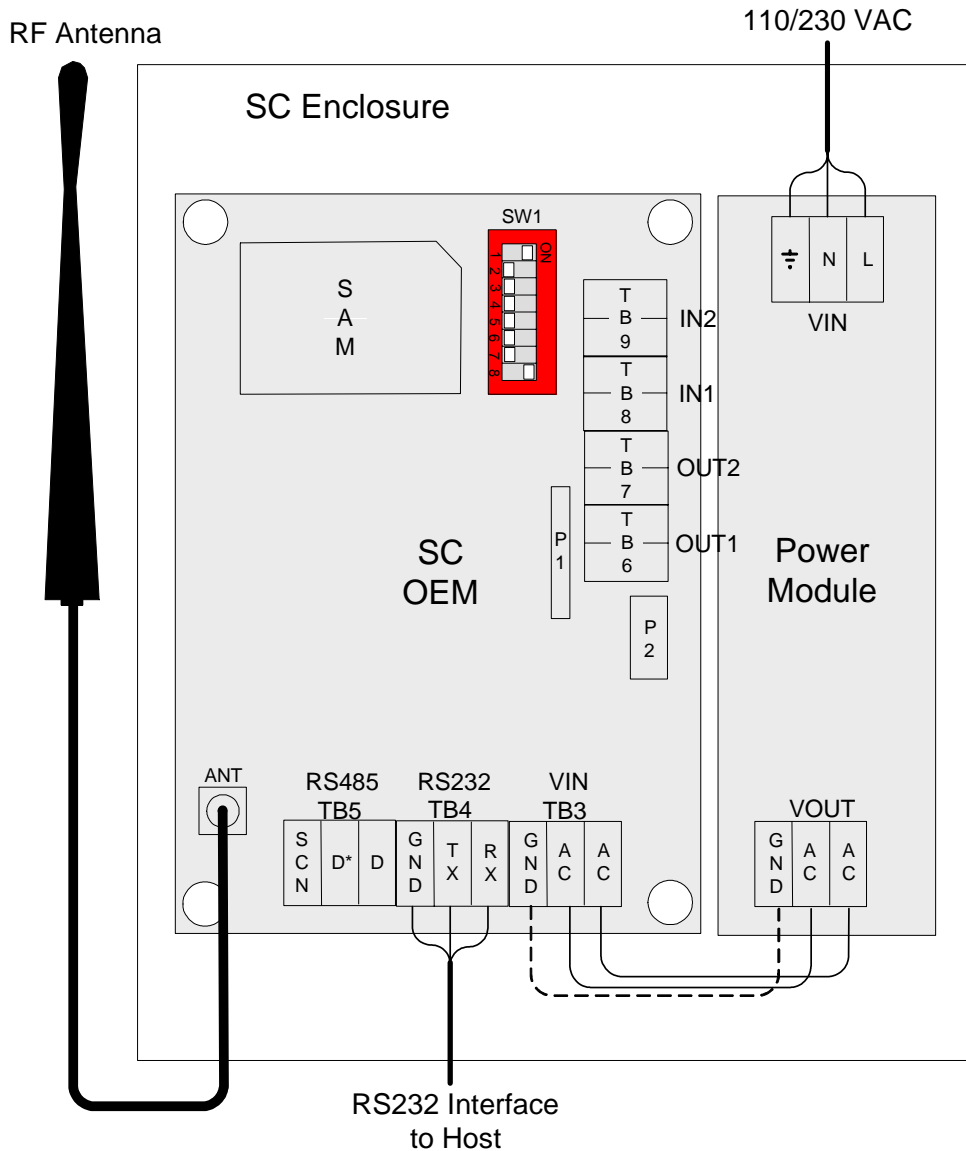


Figure 2-1: SC





## 2.2 VID – Vehicle ID

The VID is installed in the vehicle and stores relevant vehicle data

The VID employs short and longer-range wireless communication systems:

- Proximity receiver reads nozzle ID during refueling.
- Longer-range communication transmits the VID and NID data through the SC to the station controller.

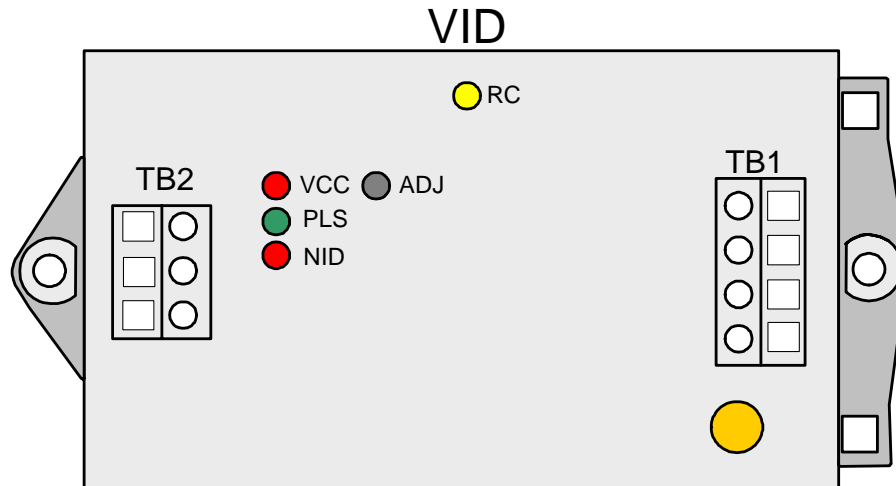


Figure 2-2: VID

## 2.3 NID – Nozzle ID

The NID is attached to the fuel nozzle and identifies the nozzle to the system. Its data is transmitted to the station controller through the VID and the SC.

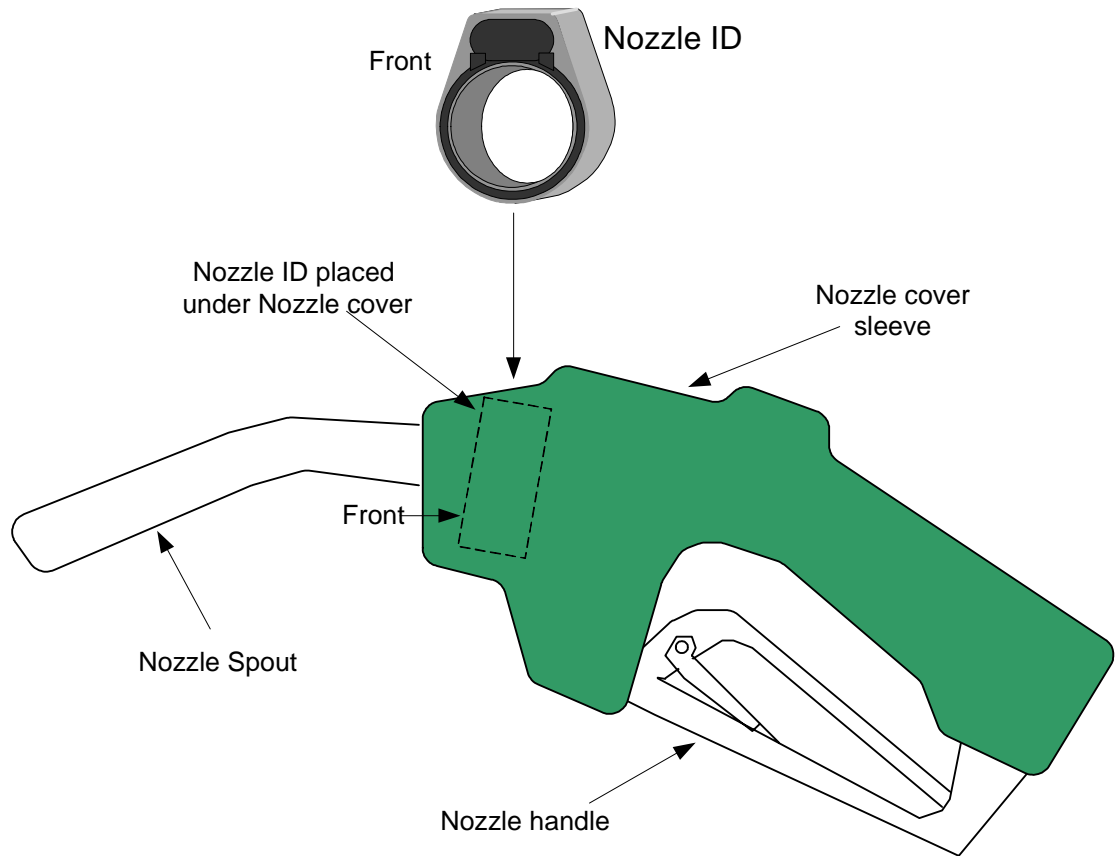


Figure 2-3: NID