Reader7

Operational Description

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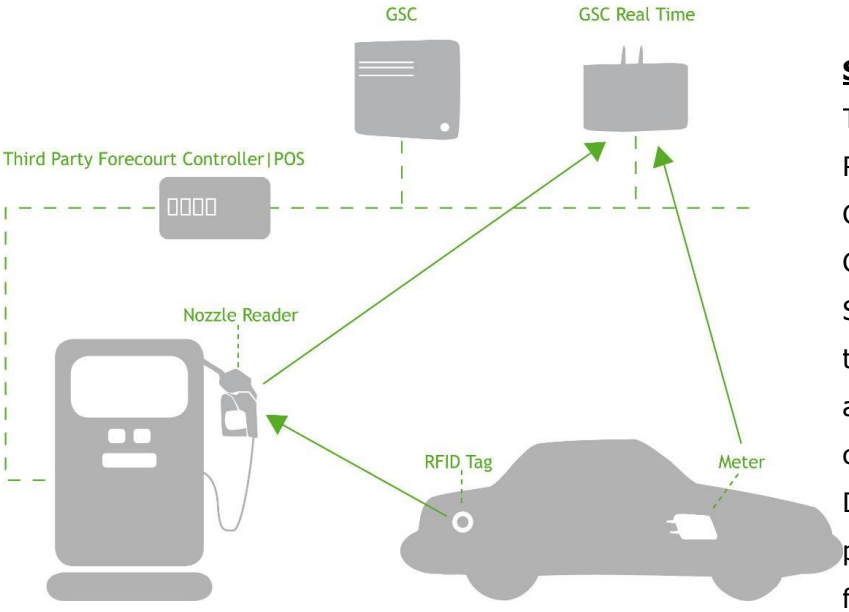
Introduction

This document describes the Operation of the Reader7 unit of the Automatic filling solution. The solution is based on RFID technology, with high security and very low cost.

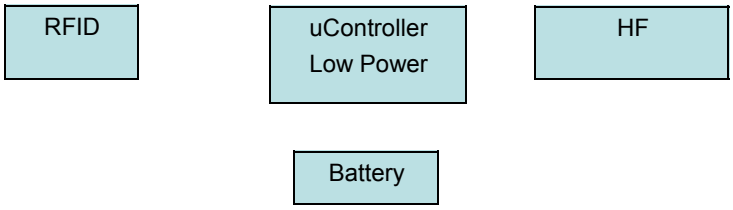


System Overview

The Petratec system components are RFID Tag, RFID Reader, Meter and GSC (Gas Station Controller). The GSC communicates with the Gas Station System (Forecourt Controller that includes a Data Base of the authorized vehicles). The Forecourt controller controls the Fuel Pump. During normal operation, the GSC polls the Reader and Meter, looking for a Reader and Meter response. With a Reader response, the GSC receives the Reader information. When a nozzle is picked up, the GSC poll the Reader and requests a search for a RFID Tag. When a Reader has found a Tag, it sends the vehicle data written in the Tag to the GSC. Within the Tag data there is the associated Meter ID address.

The GSC polls the Meter by the given address and receives the Meter response that contains the vehicle Odometer information. The Tag and the Meter information are sent to the Forecourt controller for further process (Authorization and service). The Reader continues to sense the RFID Tag in order to report to the Forecourt Controller of "Tag Lost" or "Tag Re-acquired" states until the Forecourt Controller completes the transaction by requesting the GSC to poll the Reader with a Stop command.

Nozzle RFID Reader7



Normally, the Reader is in Idle (sleep) mode, and wakes up every single Second to receive the GSC clock sync and goes back to sleep. During the wakeup, the controller activates the Reader Rx part for the GSC communications and waits to receive clock sync packet from the GSC. If the GSC wants to poll the Reader, it requests the Reader by the clock sync packet to stay awake and to wait for the command packet. The Reader stays awake and gets the command packet with the intended Response Time Slot Number. The Reader performs the command and sends a relevant response to the GSC at the received response time slot.

When the GSC polls the Reader and requests to search for a Tag, the Reader performs the command by activating the RFID section and reads a Tag, if exists.

Readers/GSC Communications

The communication between the GSC and the Reader is wireless. A GSC communicates with each of the Readers which attached to it. The Reader and GSC use this communication channel to exchange status and data.

The RFID Read functionality is driven with minimal Power consumption criteria in mind and is powered by a Battery that lasts for more than a year. Therefore, communication needs to be as minimal as possible.

Specifications

ParaMeter	Value			Unit
	Min	Typical	Max	
Operating (Reader)				
volTage	3	3.3	3.6	V
Quiescent current	10	70	90	uA
Current	20	30	100	mA
Temperature	-50	30	80	C^0
Battery				
volTage		3.6		V
Capacity		5.8		Ah
Cutoff @ +20C^0	3	3.28		V
Pulse current		1000	2000	mA
Size		"C"		
Temperature range	-50		80	C^0
Storage max. temp			30	C^0
Weight (approx)		60		g
RFID characteristics				
Frequency		13.56		MHz
Bandwidth		0.4		MHz
Modulation		ASK		
HF characteristics				
Frequency		2.45		GHz
Bandwidth		64		MHz
Modulation		CSS		