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Rfid Engine R3 Integration Guide

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Introduction

The RF-3 RFID Engine is a dual technology module combining an undecoded laser scan engine with a multi-standard high frequency RFID engine (requiring an ANSI C library for decoding). Thus, it provides a single product allowing reading standard barcode symbologies and 13.56 MHz tags and smart labels.

The Module is physically and electrically compatible with the Motorola SE1200 laser module thus guaranteeing an easy integration within many Hand-Held barcode readers (Host). In addition, it integrates an internal small antenna.
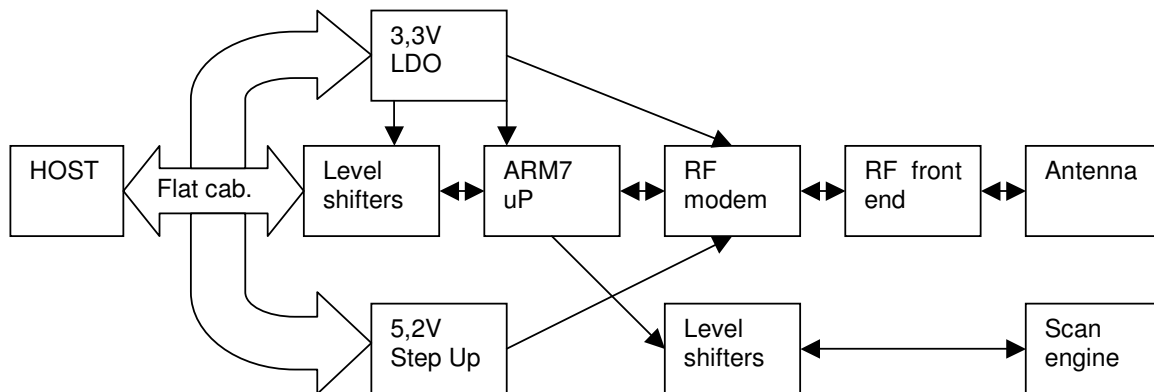
The RFID supports the following standards:
- ISO14443A
- ISO14443B
- ISO15693
- Philips I-Code 1

There are 4 versions available:
- Rfid only
- Rfid only + SE950 barcode reader
- Rfid only – With plastic frame for mounting on Datalogic DLBJET
- Rfid only + SE950 barcode reader – With plastic frame for mounting on Datalogic DLBJET

Block Diagram

- Flat cab.: 10 poles flex cable.
- Antenna: Integral 4 turns loop antenna
- Scan engine: Optional SE950 Module from Motorola.

Comunication Interfaces

The module can be connected to an host trough a 10 wires flex cable.
The pins are used in different ways based on the fact the host is using the module to read a barcode or an RFID tag.
In both modes the SCAN_EN signal (pin 5) can be forced low to place the module in sleep state (low-power mode) and to switch the interface to Barcode Mode.
The module can be switched from barcode mode to RFID mode simply sending a packet on the SPI interface.
Pins 1 and 10 are used for test and configuration at the factory and should be left unconnected.

Pin #	RFID Mode	Barcode Mode
1	UART RX	UART RX
2	**VCC**	**VCC**
3	**MOSI**	**AIM**
4	**Clock**	**LASER_EN**
5	**SCAN_EN**	**SCAN_EN**
6	/	**DBP**
7	**MISO**	**SOS**
8	**CS**	**GND**
9	**GND**	**GND**
10	UART TX	UART TX

Please refer to the SE950 Module integration Guide for further details about the Barcode Interface.
Please use the Datalogic RF-3 communication library software to interface to the Module when in RFID mode.

Flex Cable Length

The maximum allowed/tested flex cable length is 75 mm.

Mechanical installation

There are two types of contrains to take into account when installing the module. The first types relate to the Barcode reader function: to perform according to the specifications the integrated SE950 scan engine requires a laser beam window with specific size, orientation and materials. Please refer to the SE950 intergration guide for details on this matter.
The second type of requirement is about metal parts located near the RFID antenna. Such parts could modify the antenna resonance frequency and lead to reduced antenna effectiveness. Please keep metallic parts as far as possible from the antenna to prevent malfunctioning.

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Regulatory

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

Caution
Modifications or changes to this equipment without the expressed written approval of Datalogic Scanning Group S.r.l. would void the authority to use the equipment.

Labeling requirements for the End Product
Any device incorporating this module must be labeled with the following informations:

Contains FCC ID: U4F0018

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

Technical Features

Electical Features	
Power Supply	From 3,13 Vdc to 5,25 Vdc
Max. Input Current	600mA
Max. Stand-by current	500uA
Radio Features	
RF Frequency	13.56 Mhz
Max. SPI Clock Frequency	100 Kbit/s
RFID reading distance	Up to 10 cm depending on tag.
Environmental Features	
Operating Temperature	-20 a +60'C
Storage Temperature	-40 a +70 'C
Shock resistance	2000 g
Physical Features	
Mechanical dimensions	39.5 x 20 x 28 mm
Weight	19g (with SE950)

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