SOLTRONIC
THE RFID COMPANY

Embedded Module UHF

M650

PRODUCT DESCRIPTION

The RFID EMBEDDED UHF Module M650 is a high per-formance UHF RFID module based on the IMPINJ New Generation reader chips (E310/E510/E710). Featuring four SMA antenna ports that support RF sensitivity up to -85 dBm, the module‘s reliable RF performance and advanced anti-jamming design make it ideal for fixed RFID devices.

With an all-aluminum housing and excellent heat dissipation, this reader module can be perfectly embedded into fixed industrial ma-chines, shelving systems and supply chain applications.

The M650 is equipped with UHF Technology EPC Class 1 Gen 2 (ISO 18000-63) and is globally applicable with a frequency band of 840 - 960 MHz. A power output of max. 33 dBm enables it to rapidly read between 350 and 1,000 tags per second (depending on the IC Chip).

Hardware comes with a useful SDK for the develop-ment of controller, Linux or Windows based applications. In addi-tion to the documentation, command protocols and source codes, the SDK includes a Windows-based demo application providing full functionality over all supported UHF RFID standards.

APPLICATIONS

- **Industrial Automation**
- **Parking Automation**
- **Supply Chain**

FEATURES

- **Based on the latest genera-tion Impinj chipsets E310/ E510/E710**
- **EPC C1 GEN2 | ISO 18000-63**
- **33 dBm RF power output**
- **High performance of anti col-lision recognition algorithm**
- **4x SMA External Antenna Ports**
- **UART - TTL**

CHIP OPTIONS

- **UHF**

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Via Selvuzzis 45/2
33100 Udine
Italia
www.soltronic.it
info@soltronic.it
+39 (0)432 610108

TECHNICAL DATA

RADIO SPECIFICATIONS	
Operating Frequency	840…960 MHz, Configurations for USA: 902…928 MHz (FCC), EU: 865…868 MHz (ETSI)
RF TX Power	+5…33 dBm, adjustable: steps of 1 dB
Reading Range	Up to 12 meters*
RF Impendance	50 Ω
Antenna	4 SMA female connectors for external antennas

ELECTRICAL SPECIFICATIONS	
Power Supply	5 Vdc
Power Consumption	1600 mA @ +33 dBm TX Power 120 mA Standby 40 mA enabling Mode
Connectors	15 pin FPC socket
Communication Interface	UART TTL port
Baudrate	9600…921600 bit/s, 115200 bits/s factory default
GPIO	2 Inputs TTL Levels: Logic low: < 0.8 V, minimum 0V Logic high: > 2 V, maximum 3.3 V 2 Outputs TTL Levels: Logic low: maximum 0. 4 V Logic high: minimum 2.9V, maximum 3.3V IO: The maximum output current of the port is 5mA

MECHANICAL SPECIFICATIONS	
Dimensions	74.8 × 48.5 × 8 mm
Weight	58 g
Material	Aluminium

ENVIRONMENTAL CONDITIONS	
Operating Temperature	-25 °C … +65 °C
Storage Temperature	-40 °C … +85 °C
Humidity	up to 95 %, non-condensing

SDK INFORMATION	
Supported OS	Windows, Linux, Android
Supported Languages	C, C#/.NET, Java
Demo Software	Windows

SUPPORTED STANDARD / TAGS	
ISO Standard	ISO 18000-63 (EPC Class 1 Gen 2)
Tag Cache	≥ 1000 Tags @ 12 Bytes EPC size

READING DISCTANCE DEPENDS ON TAG, ANTENNA AND ENVIRONMENTAL CONDITIONS.

AVAILABLE VERSIONS

	E310	E510	E710
UNIQUE SPECIFICATIONS			
Description	EMBEDDED UHF MODULE M650 TTL - 310	EMBEDDED UHF MODULE M650 - TTL - 510	EMBEDDED UHF MODULE M650 TTL - 710
RFID IC	IMPINJ E310	IMPINJ E510	IMPINJ E710
RF Sensitivity	-72 dBm	-78 dBm	-85 dBm
Reading Rate	≥ 350 tags/s	≥ 600 tags/s	≥ 1000 tags/s
Applications	Parking Automation / Production Line Integration / Mid-Range	Industrial Applications and Devices / Logistics and Asset Tracking	Demanding Retail and Inventory Applications / Long Range
ORDER CODES			
	OEM-UHF-M653-TTL	OEM-UHF-M655-TTL	OEM-UHF-M657-TTL

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