Embedded SMT Module UHF

M500

PRODUCT DESCRIPTION

The iDTRONIC Embedded SMT Module UHF M500 is a high-performance UHF RFID module based on the IMPINJ New Generation reader chips E310/E510/E710. Manufactured as a surface-mounted technology (SMT) with a small form factor, this module is ideal for direct SMT assembly on PCB boards, enabling rapid and seamless integration, particularly in space-constrained designs such as PDA and desktop RFID devices.

With a maximum RF output power of 27 dBm and support for real-time onboard temperature monitoring, it delivers reliable performance in a compact design. It 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. The M500 UHF Module has a single mono-static RF port as antenna interface that supports a power output of max. 27 dBm, enabling read rates of up to 300 tags per second (depending on the IC chip).

For added flexibility, the module is also available in combination with a Carrier Board, simplifying evaluation and integration in prototyping or development environments.

iDTRONIC's hardware comes with an SDK for the development of controller, Linux or Windows-based applications. In addition 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

- **SMT assembly on PCB boards**
- **Integration into mobile devices**

FEATURES

- **EPC C1 GEN2 | ISO 18000-63**
- **Up to 27 dBm RF power output**
- **Clipper-sized footprint & SMT ready**
- **GPIO - TTL**
- **SMT Mounting**

CHIP OPTIONS

- **Based on the latest generation Impinj chipsets E310/E510/E710**

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TECHNICAL DATA

MECHANICAL SPECIFICATIONS	
Operating Frequency	USA: 902…928 MHz (FCC), EU: 865…868 MHz (ETSI)
RF TX Power	5dBm - 27dBm (±1dB) adjustable
Reading Range	≥3m with 3dBi antenna
RF Impendance	50 Ω
Work Mode	Fixed / hop frequency optional
Antenna Ports	Single mono-static RF port
Antenna Connection	1 50Ω IPEX (Optional)

ELECTRICAL SPECIFICATIONS	
Power Supply	3.6~5.0 +/-5%
Power Consumption	2.8W (Peak Value), 0.56A@5V, 27dBm 0.81w Standby 0.01A Boot Load Mode
Connectors	Solder Joints
Communication Interface	20 pin surface mount module (SMT Uart3.3V TTL)
GPIO	2 GPI, 2 GPO (3.3V TTL)
Baudrate	9600 ~ 921600bps, @115200bps

MECHANICAL SPECIFICATIONS	
Dimensions	21 × 21 × 3.7 mm
Weight	2.8 g
Material	PCB: FR4 Gold Plate
Shield material	Aluminium Alloy

ENVIRONMENTAL CONDITIONS	
Operating Temperature	-20 °C up to +55 °C
Storage Temperature	-40 °C up to +85 °C
Humidity	5 - 95 %, non-condensing (+25°C)

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)

CERTIFICATES	
Certificates	CE, ETSI EN 302 208 V3.1.1, RED 2014/53/EU

READING DISCTANCE DEPENDS ON TAG, ANTENNA AND ENVIRONMENTAL CONDITIONS.

M500 WITH CARRIER BOARD

AVAILABLE VERSIONS

	E310	E510	E710
GENERAL SPECIFICATIONS			
Description	EMBEDDED UHF SMT MODULE TTL - 310	EMBEDDED UHF SMT MODULE TTL - 510	EMBEDDED UHF SMT MODULE TTL - 710
RFID IC	IMPINJ E310	IMPINJ E510	IMPINJ E710
RF Sensitivity	- 74 dBm	- 80 dBm	- 87 dBm
Reading Rate	≥300 tags/s	≥ 600 tags/s	≥ 1000 tags/s
Applications	Mobile and Desktop Applications / USB-powered Devices / Short Range	Industrial Applications and Devices / Logistics and Asset Tracking	Demanding Range and Inventory Application / Long Range
GENERAL SPECIFICATIONS			
w/o Carrier Board	OEM-UHF-M503-TTL	OEM-UHF-M505-TTL	OEM-UHF-M507-TTL
with Carrier Board	OEM-UHF-M503-CB-TTL	OEM-UHF-M505-CB-TTL	OEM-UHF-M507-CB-TTL

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