

FEATURES

- Full Tag Read/Write Capability
- Multiprotocol, Multiregional
- 865 Mhz to 955 Mhz Frequency Range
- 0.6 Watt Maximum Output Power
- Single 5 Vdc supply
- Serial Port (RS-232 and TTL Interface)
- Digital Inputs (2)
- Digital Outputs (2)
- Field Programmable Firmware Upgrades

PROTOCOLS

- EPC Generation 2
- EPC Class 1
- EPC Class 0 (includes Impinj 0+ & Matrics 0+)
- ISO 18000-6A, -6B
- EM Marin 4022, 4222, 4223
- Intermec® Intellitag®
- Philips UCODE EPC 1.19

INfinity 9311

Ultra High Frequency Reader Module

EPC Gen 2 Ready

The IN9311 RFID reader module provides a small footprint OEM solution for embedded applications in RFID enabled printers and other devices.

This RoHS compliant, multiprotocol module supports the new EPCglobal™ (“EPC”) Gen 2 tag protocol as well as other legacy UHF protocols including EPC Class 0 and 0+, EPC Class 1, ISO 18000-6A and -6B, Philips UCODE 1.19, EM4222, and Intellitag.

The IN9311 contains one MMCX type antenna port and an integral power and I/O connector for connecting the module to system power and control circuits. All digital, analog, and RF components are enclosed in a shielded aluminum case and the case is available with or without cooling fins depending on the host operational environment. Four mounting holes in the corners of the case provide easy installation in existing systems.



Available in both North American (-Nxx) and World (-Wxx) versions, the IN9311 meets all applicable regulatory requirements including:

- | | |
|---------------|---|
| • FCC Part 15 | • Canada RSS 210 |
| • EN 300 220 | • EN 302 208 |
| • EN 50364 | • EN 301 489 (includes EN 61000 and EN 55022) |
| • EN 60950 | • HKTA 1049 |
| • MIC | • IDA TS-14 |

INfinity 9311

UHF RFID Reader Module

Electrical and RF Specifications

Parameter	Min	Typ	Max	Notes/Condition
RF Output				
Frequency	865 MHz	—	955 MHz	
Transmit Power	0.002 Watt	—	0.6 Watt	Conducted
Transmit Power Precision	—	0.1 dB	—	
Carrier Frequency Shift	—	—	±10 ppm	
RF Input				
Receive Sensitivity	—	—	-96 dBm	ETSI 302 208 "listen" mode
Antenna SWR	—	—	1.25:1	
Power				
Supply Voltage	4.5 Vdc	5.0 Vdc	5.5 Vdc	
Current	0.8A	—	2.0A	Tx power dependent
Current (Idle)	—	0.6A	—	Tx disabled (25o C)
Serial Interface				
Baud Rate	9600	—	57600	RS-232 or TTL signal levels.
Digital Inputs				
Voltage (DC)	3 Vdc	—	25 Vdc	
Current	1 mA	—	5 mA	
Digital Outputs				
Voltage (DC)	—	—	5 Vdc	Open collector to ground
Current	—	—	100 mA	Continuous
ESD Protection				
IEC 1000-4-2 Air Discharge	-15 kV	—	15 kV	
IEC 1000-4-2 Contact Discharge	-8 kV	—	8 kV	
ESD STM5.1-1998	-15 kV	—	15 kV	Human Body Model

(PWR=5V, Transmit=CW, over operating temperature range, unless otherwise noted.)

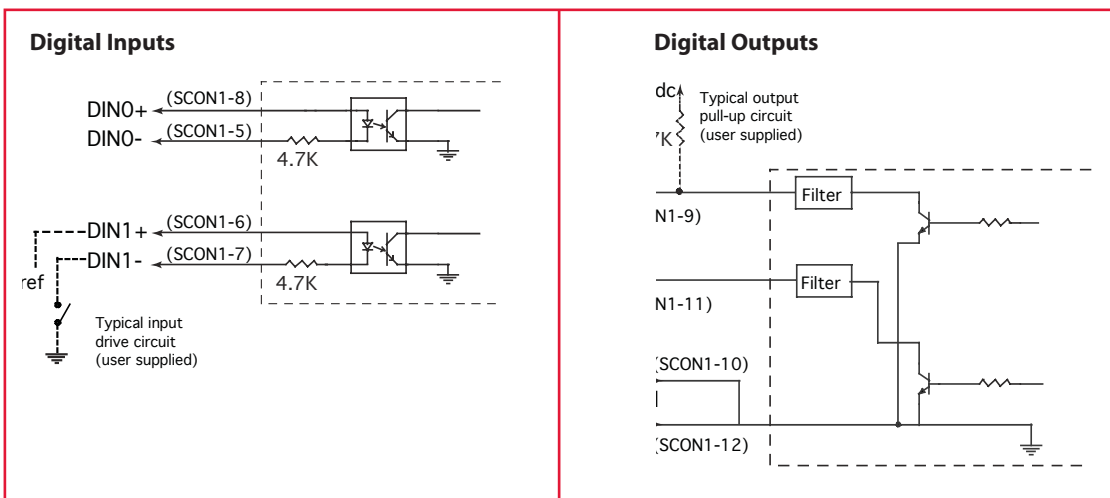


CAUTION – Electrostatic Discharge (ESD) Sensitive Device.

Electrostatic charges as high as 4000 Volts readily accumulate on the human body and test equipment and can discharge without detection resulting in permanent damage to the MP9311 module and its components. To protect against ESD damage, proper ESD protection such as grounded wrist straps and work surfaces must be used.

Digital Inputs and Outputs

The IN9311 is equipped with two logic-level digital input signals (DIN0/DIN1) and two open-collector digital output signals (DOUT0/DOUT1). To activate the digital inputs apply a minimum 3.0 Volt differential across the DINn+ and DINn-. Digital outputs require a 4.7K Ohm pull-up to 5V.



Environmental Specifications

Parameter	Value
Operating Temperature	-4 °F to 131 °F (-20 °C to 55 °C)
Storage Temperature	-40 °F to 176 °F (-40 °C to 80 °C)
Relative Humidity	5% to 80% non-condensing

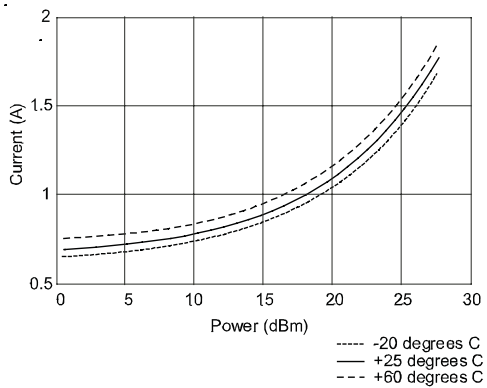
NOTE: The actual internal module temperature is a function of the operating conditions and end product enclosure environment. The maximum recommended module internal operating temperature is +85°C and can be monitored with host software. The embedded RFID application should be verified and monitored for compliance.

Module Reset

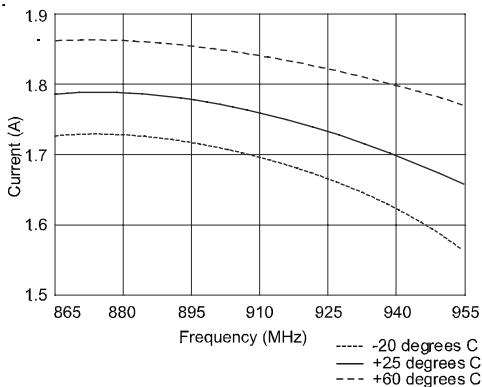
To reset the IN9311 module, drive the RESET line on SC0N1 Low for 3 ms.

IN9311 Current Usage

Current vs. Output at 915.1 MHz



Current vs Frequency for 28 dBm Output Power



System Connector (SC0N1)

Pin	Name	Description
16, 18, 20	PWR	System Voltage, 5.0 Vdc, ± 10%, 2.5A max (all power inputs tied together)
3, 10, 12, 14, 17, 19	GND	Ground (all grounds tied together)
1	V33	3.3 Vdc Output (For factory use only.)
2	PROG	Program Enable (For factory use only.)
4	RESET	Active Low Reset
5	DIN0-	Digital Input 0 – low input (see Note 1)
6	DIN1+	Digital Input 1 – high (reference) input (see Note 1)
7	DIN1-	Digital Input 1 – low input (see Note 1)
8	DIN0+	Digital Input 0 – high (reference) input (see Note 1)
9	DOUT0	Digital output 0, open collector to gnd (5 Vdc @ 100 mA max)
11	DOUT1	Digital output 1, open collector to gnd (5 Vdc @ 100 mA max)
13	TXD	Transmit
15	RXD	Receive

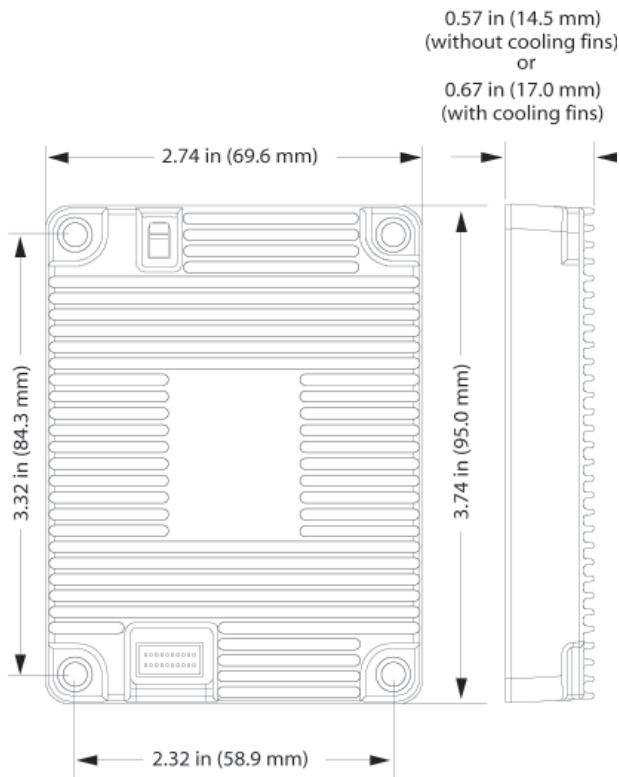
Header 20-pin dual row (2x10), 1.0 mm pitch, .02 mm square pin

NOTE 1: To activate the digital input: $3 \text{ Vdc} < (\text{VDINn+} - \text{VDINn-}) < 25 \text{ Vdc}$
Otherwise: $(\text{VDINn+} - \text{VDINn-}) \sim 0 \text{ Vd}$

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INfinity 9311

UHF RFID Reader Module



Mechanical Specifications

Parameter	Value
Size: IN9311-xRx	2.74 x 3.74 x 0.67 in (69.6 x 95.0 x 17.0 mm)
Mounting Holes (M4 Clearance)	2.32 x 3.32 in spacing (58.9 x 84.3 mm)
Weight	4.5 oz. (127.6 g)
Case Material	Aluminum

Ordering Information

Model No.	Region	Interface
IN9311-WRT*	World	TTL
IN9311-WRR*	World	RS-232

* For lead-free products, add the -PBFREE suffix to the Model No. shown in the table.
For example: IN9311-WRR-PBFREE

About Sirit Inc.

Sirit Inc. (TSX: SI) is a leading provider of Radio Frequency Identification (RFID) reader technology to OEMs and solution providers worldwide. Harnessing the power of Sirit's enabling-RFID technology, customers are able to more rapidly bring high quality RFID solutions to the market with reduced initial engineering costs. Sirit's products are built on more than 13 years of RF domain expertise addressing multiple frequencies (LF/HF/UHF), multiple protocols and are compliant with global standards. Sirit's broad portfolio of products and capabilities are easily customized to address new and traditional RFID market applications including Supply Chain & Logistics, Cashless Payment, Access Control, Automatic Vehicle Identification, Inventory Control & Management, Asset Tracking and Product Authentication. For more information, visit www.sirit.com.

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The "RFID by Sirit" symbol signifies that Sirit Inc.'s high quality RFID reader technology resides within this product.

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