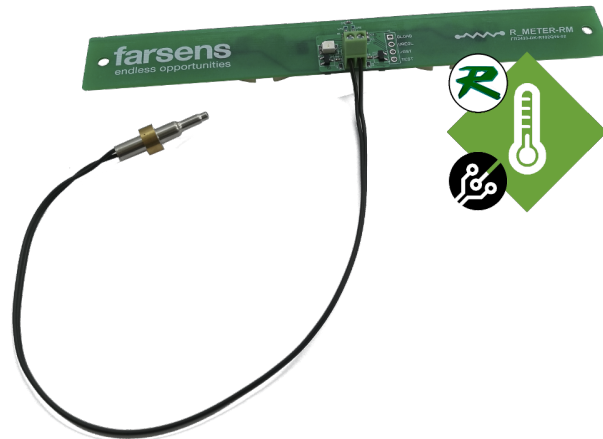


## EPC C1G2 BATTERYLESS CONTACT TEMPERATURE SENSOR

Check for samples: [EVAL01-PYROS-RM-0373](#)



### FEATURES

- EPC C1G2 compliant
- ISO 18000-6 Type C compliant
- 160-bit EPC Bank: Up to 128-bit EPC
- 96-bit TID Bank: Up to 48-bit Serial Number
- Available User Memory: Up to 1008-bit Non Volatile User Data
- Long range in passive mode: 5m
- Extended range in battery assisted passive mode: 20m
- NTC thermistor
  - Temperature range: -25 °C to 105 °C
  - Temperature accuracy:  $\pm 0.5$  °C
- Pick to light indicator for visual identification

### DESCRIPTION

PYROS-RM-0373 is an EPC Class-1 Generation-2 (C1G2) RFID tag based on Farsens' batteryless

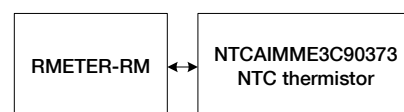
sensor technology. Built in a compact PCB format, the tag includes a contact temperature sensor.

These RFID sensor tags are compatible with commercial UHF RFID readers (EPC C1G2). With a 2W ERP setup the battery-less resistance meter can communicate to over 5 meters - 16 feet.

The PYROS-RM-0373 can be customized with different antenna design and sizes, depending on the specific application. It can be encapsulated in an IP67 or IP68 casing for usage in harsh environments. It may also be possible to customize the specifications of the sensor upon request.

### BLOCK DIAGRAM

The PYROS-RM-0373 tag consists of an RMETER-RM batteryless resistance metering device and a NTCAIMME3C90373 NTC thermistor.



## CHARACTERISTICS

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
<b>RFID</b>					
$r_{operation}$	Operation range full passive		5		m
	Operation range BAP		15		m
	Operation range EBAP		20		m
<b>OPERATING CONDITIONS</b>					
$T_{OP\_TOP}$	Operating temperature range	-40		85	°C
<b>CONTACT TEMPERATURE PROBE</b>					
$T_{range}$	Temperature range	-25		105	°C
$T_{acc}$	Temperature accuracy		±0.5		°C
$t_{response}$	Response time to 63.2%		1.5		s
$L_{probe}$	Probe length		200		mm

## CONTACT TEMPERATURE CONVERSION

The resistance of the device connected to PYROS-RM-0373 can be read using standard EPC read commands. Refer to the documentation of RMETER-RM for detailed instructions.

Once the resistance value of the probe has been read, the value has to be converted to the equivalent contact temperature. Given the characteristics of the thermistor, the following equation can be used for the conversion to Celsius:

$$contact\ temperature\ [^{\circ}C] = \frac{3984}{\log\left(\frac{resistance}{10000 \times e^{\left(\frac{-3984}{25 + 273.15}\right)}}\right)} - 273.15 \quad (1)$$

## DEMO SOFTWARE

Demonstration software to read and control the PYROS-RM-0373 is available in the web. Download the latest software and user guide at: <http://www.farsens.com/software.php>. Check the website for updated reader compatibility list. Up to the date of writing this document, this is the status of the compatibility list:

Fixed readers			
Manufacturer	Model	Tested HW rev.	Tested FW rev.
Impinj	R420	HLA: 1.00   PCBA: 4.00	5.12.1
Impinj	R220	-	-
Impinj	R120	-	-
Nordic ID	Sampo	PWM00282	5.4 A
Nordic ID	Stix	PWM00226	5.10 A

## REFERENCES

The next table shows the available references of the PYROS-RM-0373.

Ref.	Name	Description
40802	EVAL01-PYROS-RM-0373-DKWB	PYROS-RM-0373, dipole wideband antenna, PCB format

For custom references with other antennas and housings, please contact us at [sales@farsens.com](mailto:sales@farsens.com).