RS-103

Nano Pipe RISER Tag

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1 PRODUCT DESCRIPTION

The patent-pending **TROI RS-103 Adhesive-backed Nano Pipe / Cylinder – RISER** RFID tag provides automatic identification and tracking capabilities never-before available in such a unique package designed for rugged or hazardous use-areas.

The rubber-covered tag is designed to be mounted to any metallic surface by using one of three methods: 1) the optional embedded magnets, 2) the peel-n-stick adhesive option, or 3) epoxying it on any pipe or round metal object. For best results it is recommended that the tag be over-coated using **TROI's AP-1 Adhesive_Paint.**

The **RS-103** can withstand unprecedented high temperature (consistent temperatures of 200 degrees Centigrade), high pressure and severe environmental conditions.

1.1 SPECIFICATIONS

Device type Passive RFID tag	UHF (Ultra High Frequency band)
Air interface protocol	EPCGlobal Class1Gen2 / ISO/IEC 18000-6C
Operational frequency	865 - 928 MHz
IC options	**Standard**: Alien Higgs 3 (others on request) Optional: EM, Fujitsu, Impinj, NXP (others on request)
EPC memory size	**Standard**: 128 bit Optional: Up to 240 bit
EPC memory content	Unique 96-bit number encoded
Extended memory	**Standard**: 512 bit
TID	Factory-programmed, non-changeable, unique 64-bit ID.
Read range	Real-world: 1 – 2 meters Lab environment: 7 meters
Applicable surfaces	Any metallic material
Tag material	HVP rubber
Tensile strength	2500 psi minimum
Durometer	Shore A 60-70
Elongation	400% minimum
Drop test to asphalt	2 meters with 5 Kg's attached; 250+ times (competition fails at 20) 2 meters with 8 Kg's attached; 150+ times (competition fails immediately) 2 meters with 18Kg's attached; 25+ times (competition fails immediately)
Standards compliancy	ATEX-compliant
Product RoHS compliant?	Yes

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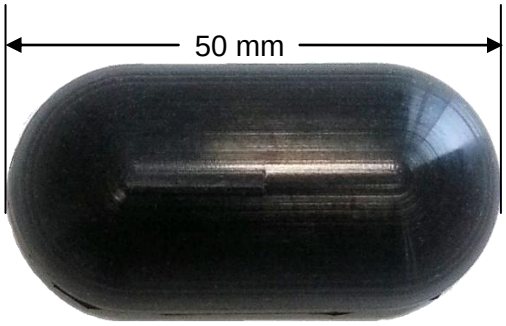
1.2 DIMENSIONS

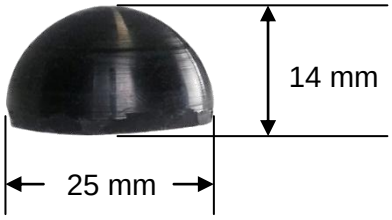
- 50 mm (2 inches) Long
- 25 mm (1 inch) Wide
- 14 mm (0.55 inches) High

PLAN VIEW - Top



PLAN VIEW – Bottom *(showing optional peel-n-stick adhesive)*

END VIEW



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1.3 READ RANGE

	UHF max read-range on metal with 4W ERP
RS-103 (915 MHz)	660.4 cm / 260 inches (6.63 m / 21.75 feet)

The read range listed above was obtained from a lab test environment. Actual test results may be different. Testing in actual use environments is strongly recommended.

1.4 ENVIRONMENTAL SPECIFICATIONS

Operating temperature	-50ºC to +200ºC* -50ºF to +392 ºF*
Temperature Cycling Test	85 deg C continuous for 30-days - with no negative affect 85 deg C / -25 deg C shock for 7 days - with no negative affect 125 deg C continuous for 7 days - with no negative affect 160 deg C continuous for 7 days - tag becomes brittle, but functions 200 deg C for 24 hours – with no negative affect
IP classification	IP69K EN 62262 IK-25 - Complete protection against dust - Protection against continuous immersion in water
Weather resistance	Excellent, including UV-resistance and sea water immersion
Pressure resistance	RFID tag tested to 30,000 PSI for 30 days
Chemical resistance	No physical or performance changes in: - Salt water - NaOH (depending on concentration) - Sulfuric acid (depending on concentration) - Motor oil (tested in 168 hour exposure) Generally good against: - Most solvents - Most acids and bases

* **NOTE**: The RFID tag will not be functional if it is left at the maximum indicated temperatures such that the internal soak temperature exceeds +80 deg C. The RFID tag itself will (resume) function between -50 deg C and +80 deg C.

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1.5 SUPPORTED SERVICES

- Tag pre-encoding

For further details, please contact **TROI LLC**.

1.6 POSSIBLE APPLICATIONS

Metal surfaces	Metal valves, metal returnable containers, metal pallets, metal pipes, high value metal items, aerospace applications, military applications, etc.

2 INSTALLATION INSTRUCTIONS

It is strongly recommended that you use **TROI's AP-1 Adhesive_Paint**.

The following steps are highlights of the adhesive application process. See the **AP-1** datasheet for full details.

2.1 PREPARE THE SURFACE WHERE THE TAG WILL BE MOUNTED.

1. The surface should be clean with no dust, debris, moisture or oils present.
2. **NOTE**: DO NOT buff or polish the metal surface as the adhesive may not adhere; a (slightly) rough surface provides a better "grip" for the adhesive.

2.2 PLACE THE TAG ONTO THE SURFACE.

1. If the **RS-103** has the peel-n-stick adhesive on the back:
    a. Simply remove the liner and press the tag onto the clean metal surface.
2. If using **TROI's AP-1 Adhesive_Paint**:
    a. **NOTE**: When using **TROI's AP-1** for the first time, for best results, push a couple of squeezes of epoxy from the tube, and then let the epoxy sit in the tip for a minute or two before using to ensure mixing.
        i. See the **AP-1 Adhesive_Paint** datasheet for further details.
    b. Apply the epoxy to the part.
    c. Place the part onto the metal, making sure that the part is flat to the metal surface.
    d. Over-coat the tag with **AP-1 Adhesive_Paint**: don't over-apply the product.
    e. Allow the epoxy to dry according to the datasheets recommendations.
3. If using adhesives other than those described above:
    a. Follow manufacturer's directions.

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2.3 APPLICATION VIDEO LINKS

2.3.1 Using AP-1 Adhesive_Paint

- http://www.youtube.com/watch?v=6olWAfafqHM
- http://www.youtube.com/watch?v=mfYpJusgj7w

3 CONTACTING TROI LLC

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ADVISORY

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