



# PC-102

## Large Pipe & Cylinder Rubber Tag



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### 1 PRODUCT DESCRIPTION

The patent-pending **TROI PC-102 Large Pipe & Cylinder Rubber** 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) screwing or bolting the tag down, 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 **PC-102** can withstand unprecedented high temperature (consistent temperatures of 160 degrees Centigrade), high pressure and severe environmental conditions.

#### 1.1 SPECIFICATIONS

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



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### 1.2 DIMENSIONS

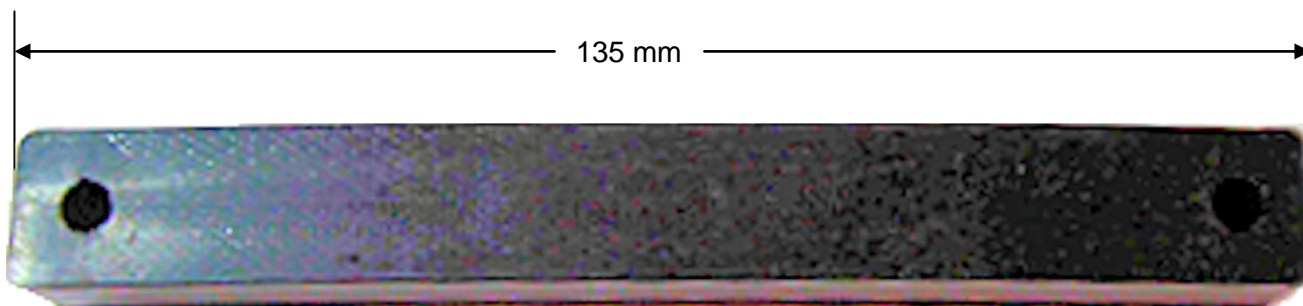
**Long:** 135 mm (5.3 inches)

**Hole Diameter:** 7 mm

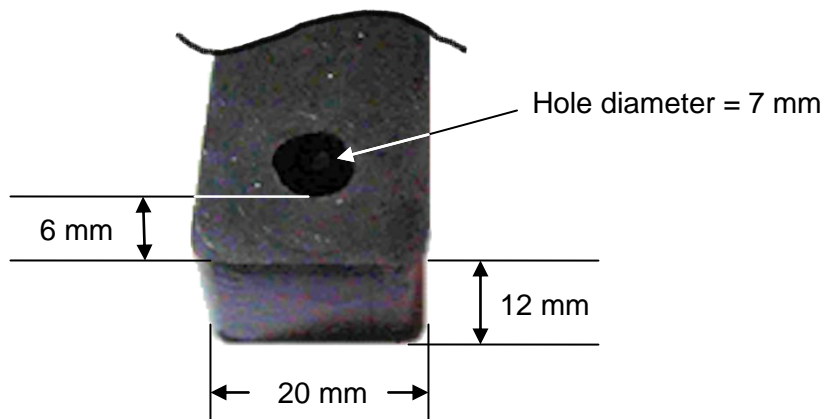
**Wide:** 20 mm (0.79 inches)

**High:** 12 mm (0.47 inches)

#### PLAN VIEW



#### END VIEW – showing mounting hole





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### 1.3 READ RANGE

	UHF max read-range on metal with 4W ERP
<b>PC-102</b> (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

<b>Operating temperature</b>	-50°C to +160°C* -50°F to +320 °F*
<b>Temperature Cycling Test</b>	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 @ 100% RH continuous for 7 days - with no negative affect 160 deg C continuous for 7 days - tag becomes brittle, but functions OK 200 deg C @ 100% RH for 24 hours – with no negative affect
<b>IP classification</b>	IP69K EN 62262 IK-25 - Complete protection against dust - Protection against continuous immersion in water
<b>Weather resistance</b>	Excellent, including UV-resistance and sea water immersion
<b>Pressure resistance</b>	RFID tag tested to 30,000 PSI for 30 days
<b>Chemical resistance</b>	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 the tag 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

<b>Metal surfaces</b>	Metal valves, metal returnable containers, metal pallets, metal pipes, high value metal items, aerospace applications, military applications, etc.
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## 2 INSTALLATION INSTRUCTIONS

It is strongly recommended that you use **TROI's AP-1 Adhesive\_Paint**.

### 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:** When using adhesives, 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 ON TO THE SURFACE.

1. If the **PC-102** 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 the **PC-102** is to be screwed / bolted:
  - a. Place the tag onto the clean metal surface and screw or bolt the tag securely to the metal surface.
3. If using **TROI's AP-1 Adhesive\_Paint**:
  - a. Apply the epoxy to the part.
  - b. Place the part onto the metal, making sure that the part is flat to the metal surface.
  - c. Over-coat the tag with **AP-1 Adhesive\_Paint**: don't over-apply the product.
  - d. Allow the epoxy to dry according to the datasheets recommendations.
    - i. See the **AP-1 Adhesive\_Paint** datasheet for further details.
4. If using adhesives other than those described above:
  - a. Follow manufacturer's directions.



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### 2.3 APPLIED TAG PHOTO'S

PC-102 bolted to clamps



The PC-102 can be mounted using screws or bolts. While it is not critical where, nor how many screws or bolts are used to retain the tag, please don't get carried away – as is shown in the first two pictures, below.

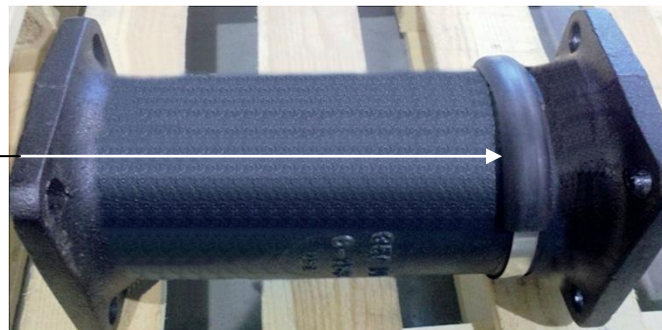
**NOTE:** The tags still work!



**NOTE:** This is how many screws or bolts should be used.



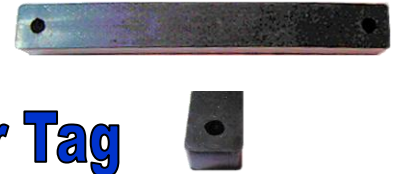
PC-102 banded around a pipe section.





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### 3 CONTACTING TROI LLC

For additional information and technical support contact:

#### **TROI LLC**

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#### **ADVISORY**

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