



Confidex Halo™

Technical Product Specification
Version 1.1
November 2008

Contents

1.	PRODUCT DESCRIPTION	2
1.1	SPECIFICATION DATA.....	2
1.2	DIMENSIONS	2
1.3	PERFORMANCE DATA	3
1.4	SUPPORTED COMPONENTS	4
1.5	SUPPORTED SERVICES.....	5
1.6	POSSIBLE APPLICATIONS	6
2	INSTALLATION INSTRUCTIONS.....	6
2.1	TAG PLACEMENT.....	6
2.2	TAG FIXING METHODS	6
3	ORDER INFORMATION.....	8

1. Product description

The Confidex Halo™ RFID tag is manufactured using high strength temperature-resistant plastic that provides IP67 protection. The product has been designed to be easily attached by adhesive or magnetic holder, and also with cable ties through its mounting holes. The new design also makes it ideal for tracking IT assets such as blade servers and network routers.

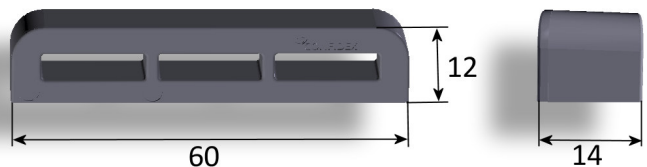
Due to innovative solutions like Confidex Halo™, inventory management with RFID is one of the fastest growing applications as it cuts down the time and resources needed for asset inventory tasks. With excellent performance on-metal, the Confidex Halo RFID tag works well with both fixed and handheld readers.

1.1 Specification data

Device type	Class 1 Generation 2 passive UHF RFID transponder
Air interface protocol	EPCGlobal Class1 Gen2 ISO 18000-6C
Operational frequency	885-869 MHz (EU), 902-928MHz (US), 952-955 MHz (JPN)
IC options	NXP UCODE G2XM
EPC memory	up to 240 bit
EPC memory content	Unique number encoded as a default
Extended memory	512 bit
Read range	up to 5-7 m / 16-23 ft, reader power 2W ERP (dependent on application)
Applicable surface materials	Metal surfaces
Encapsulation material	PC/ABS
Color	Dark grey
Weight	7 g
Delivery format	Single
Amount in box	1250 pcs (default)
Product is RoHS compliant	

1.2 Dimensions

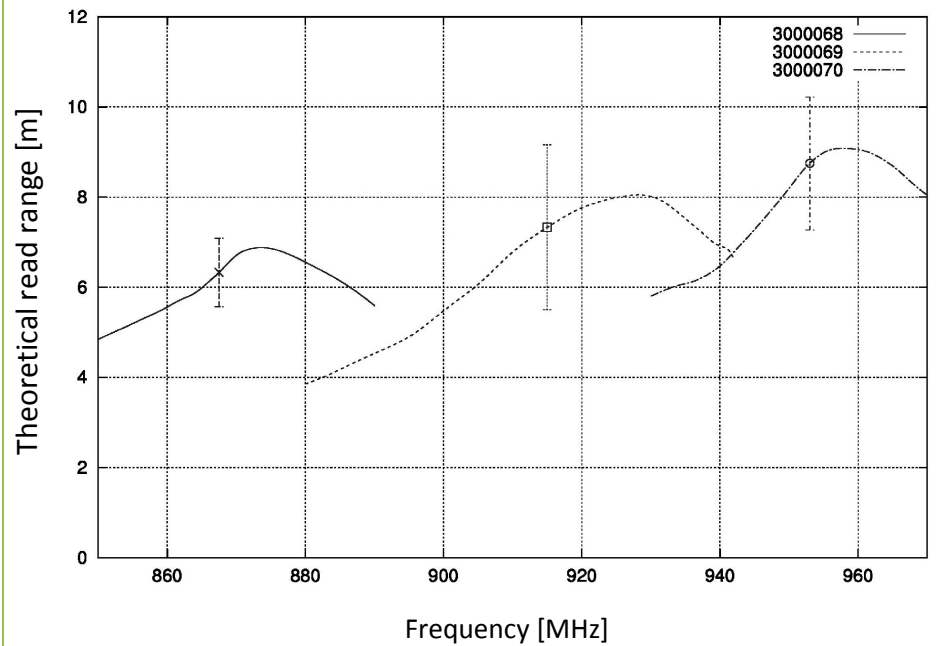
General dimensions 60 x 12 x 14 mm / 2.36 x 0.47 x 0.55 in
(Width x Height x Thickness)



1.3 Performance data

Electrical performance

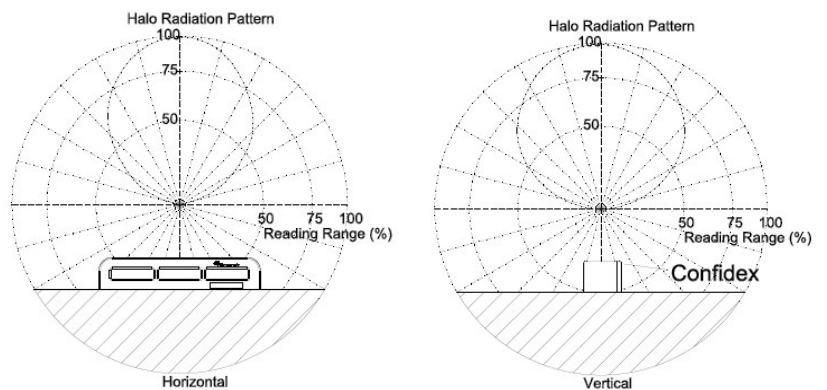
Halo
NXP G2XM



* Read ranges are theoretical values that are calculated for non-reflective environment, in where antennas with optimum directivity are used with maximum allowed operating power according to ETSI EN 302 208 (2W ERP). Variation of 3σ from test batch marked in the picture.

Radiation patterns

Estimated radiation pattern when tag orientation towards reader antenna is optimized.



Resistance against environmental conditions*

Operating temperature	-35°C to +85°C / -31°F to +185°F
Ambient temperature	-35°C to +85°C / -31°F to +185°F
IP classification	IP67: <ul style="list-style-type: none">- Complete protection against dust- Protection against temporary immersion in water
Weather ability	Good, incl. UV-resistance and sea water
Vibration resistance	Good: <ul style="list-style-type: none">- According to JESD22-B103B, service condition 2; vibration that is aligned with tag height (z-axis).
Chemical resistance	No physical or performance changes in: <ul style="list-style-type: none">- Salt water (salinity 10%, tested in 168h exposure)- NaOH (10%, pH 13, tested in 168h exposure)- Sulfuric acid (10%, pH 2, tested in 168h exposure)- Motor oil (tested in 168h exposure) Generally good with moderate concentrations: acids, alcohols, alkalis, detergents and cleaners. Acetone should be avoided.

* Values in the table are the best recommendations; resistance against environmental conditions depends on the combination of all influencing factors, exposure duration and chemical concentrations. Thus, product's final suitability for certain environmental conditions is recommended to be tested. Contact Confidex for more specific information.

1.4 Supported components

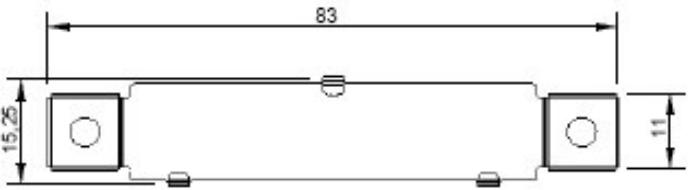
3M background adhesive

Purpose	High performance adhesive for attaching Halo on metal surfaces. Suitable for applications without shear forces pointing towards the tag and when tag application is done indoors.
Advantages	Quick and simple attachment method without additional tools
Size	Die-cut according to the tag shape
Type	3M 300LSE High performance acrylic adhesive
Delivery format	Attached to the tag
Minimum order quantity	10 000 pcs

Halo magnetic holder

Purpose	Magnetic holder for attaching Halo to metal surfaces. Can be used also for screw attachment without magnets.
Advantages	No need to make holes to the surface like with other mechanical attachment methods. Quick way of fixing which enables changing tag location when needed.

Dimensions	83 x 15,25 x 5,7 mm / 3.27 x 0.6 x 0.22 in
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Dimensions with the tag	83 x 15,25 x 14,3 mm / 3.27 x 0.6 x 0.56 in
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Holder material	Stainless steel
Magnet material	NdFeB, N45
Magnet quantity	Two, in both ends of the holder
Delivery format	Attached to the tag with two pop rivets
Minimum order quantity	10 000 pcs

1.5 Supported services

Standard customer personalization

Either one or several personalization options can be selected.

Encoding	- Unique number <i>Default in the tags</i>	Unique number is programmed to IC EPC memory bank
	- EPC encoding	Customer specific EPC code can be programmed to IC EPC memory bank
Visual marking	- Data label	White adhesive data label with black printing can be added on top of the tag: Information can include printed EPC code, UID code, barcode or customer logo etc. Size: 35 x 11 mm.
	- Tampo printing	Same customer specific image or data is printed on top of the all tags.
	- Laser engraving	Variable customer specific data can be engraved on the tag. Maximum character amount 24, can contain numbers and letters.
	- Pair packing	Tags delivered in pairs
	Minimum order quantity	10 000 pcs for standard customer specific personalization

1.6 Possible applications

Metal surfaces	Metal returnable transit items, metal containers, metal pallets, high value items, aerospace applications, train wagons, etc.
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2 Installation instructions

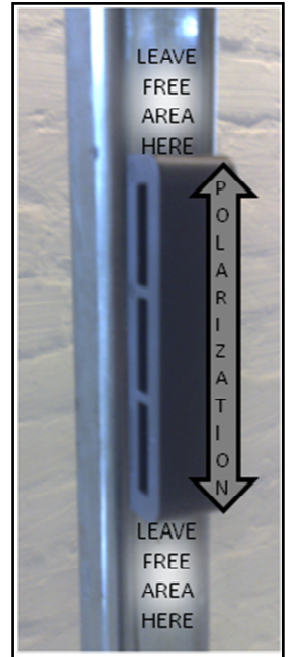
2.1 Tag placement

Halo tag polarization is perpendicular to the Confidex text.

In order to achieve the optimum performance Halo must be placed on metal surface without covering its front side.

When selecting the location on metal surface, ensure the following:

- Select an even surface so that there is direct metal contact underneath the whole tag.
- The metal background should be preferably as large as possible and tag should be placed in the middle of the surface.
- If surface is small or tag should be installed to the surface edge, install the tag in such way that **most free metal area is left at the ends of the tag** (see picture on the right side).



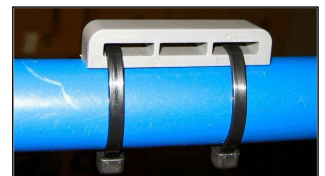
2.2 Tag fixing methods

Mechanical fixing

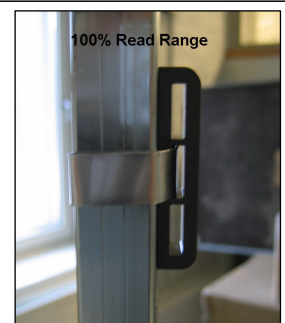
Mechanical fixing ensures the best and most reliable grip in various use conditions. It's recommended to be used in every application that includes risk for high mechanical stress or low temperature during tag fixing. Halo tag can be attached mechanically with:

- Cable ties (metal or plastic)

Procedure: When using plastic cable ties, it's possible to use any of the three holes of the tag. Put the tag on the metal surface and tighten the cable tie so that there is no gap in between the tag and surface (picture on the right side).



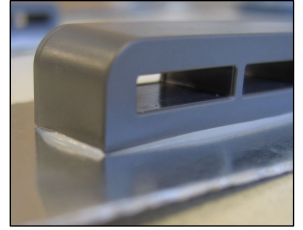
Metal cable ties: Use the middle hole for ensuring that the metal cable tie won't affect tag's RF performance. Put the tag on the metal surface and tighten the cable tie so that there is no gap in between the tag and surface (see picture on the right side)



Adhesive fixing

- Silicone sealants
- 3M acrylic adhesive

Silicone sealant adhesives like Dow Corning AS 7096 provide very high bond strength and resistance against mechanical stress. Usually, fixing must be done indoors in room temperature and in 50% humidity. Total curing time can be several days.



Procedure: When fixing the tag with sealant adhesive, insert a layer of sealant under the tag and press the tag on the surface. **Insert max. 1mm layer of sealant under the tag.**

Please refer silicone sealant supplier for exact product specifications.

3M 300LSE adhesive: When mounting the tag with its adhesive background, clean and dry the surface for obtaining the maximum bond strength. Remove the liner and place the tag on the correct location. Ideal application temperature is from +21°C to +38°C (+70°F to +100°F), bond strength can be improved with firm application pressure and moderate heating from +38°C to +54°C (+100°F to +130°F). Application at temperatures below 10°C (50°F) is not recommended.

Additional fixing tools

- Magnetic holder

When the application requires either the quickest fixing method to be used or the tag should be removed during its use to another location, magnetic holder is the best fixing method. Two strong NdFeB magnets will grip metal surface efficiently.

3 Order information

Product number	Product name
3000068	Halo ETSI NXP G2XM
3000069	Halo FCC NXP G2XM
3000080	Halo JPN NXP G2XM

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