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## Chapter 1 MPact Bluetooth® Smart Beacon Overview

## Chapter 2 Beacon Hardware Specifications and Installation

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## Appendix A Customer Support
This chapter is organized into the following sections:

- Using the Documentation
- Zebra Technologies Corporation (“Zebra”) End-User Software License Agreement
Using the Documentation

The following sections provide information about the document and notational conventions used in the guides, and provides a list of related documentation.

Document Conventions

The following conventions are used in this manual to draw your attention to important information:

- **NOTE:** Indicates tips or special requirements.

- **CAUTION:** Indicates conditions that can cause equipment damage or data loss.

- **WARNING!** Indicates a condition or procedure that could result in personal injury or equipment damage.

Revision History

This guide has the following release and revision milestone history:

<table>
<thead>
<tr>
<th>Release</th>
<th>Date</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision A</td>
<td>July, 2015</td>
<td>Initial release of document with new MPact beacons added.</td>
</tr>
</tbody>
</table>
Notational Conventions

The following notational conventions are used in this document:

- Italics are used to highlight specific items in the general text, and to identify chapters and sections in this and related documents
- Bullets (*) indicate:
  - lists of alternatives
  - lists of required steps that are not necessarily sequential
  - action items
- Sequential lists (those describing step-by-step procedures) appear as numbered lists

Related Documentation

MPact Location and Analytics documentation includes the following:

- **MPact Location & Analytics Deployment Guide**
- **MPact Location & Analytics Server Reference Guide**
- **MPact Location & Analytics Android Toolbox User Guide**
- **MPact Location & Analytics iOS Toolbox User Guide**
- **MPact Location & Analytics Client Software Development Kit**
- **MPact Location & Analytics Server API Reference Guide**
- **MPact Location & Analytics Hardware Installation Guide**
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CHAPTER 1 MPACT BLUETOOTH® SMART BEACON OVERVIEW

MPact utilizes Bluetooth® Smart beacons in various modes to unify Wi-Fi and Bluetooth® Smart Technology to capture analytics, accuracy and insight.

Beacon placements can be adjusted within a deployment floor plan, and depending on the mode selected, their battery life can be tracked over time. Administrators can cursor over a beacon on a site’s floor plan to assess the beacon’s remaining battery life. This guide covers a variety of indoor, outdoor and USB type beacons, mounting options, and operational instructions for each beacon type.

This guide includes the following:

- *Beacon Hardware Specifications and Installation*
  - *MB1000 Beacon Part Number: MPACT-T1B20-000-WR*
  - *MB1000 Beacon Part Number: MPACT-T1B10-000-WR*
  - *Beacon Battery Replacement*
  - *Beacon Battery Replacement*
  - *The barcode label should face up toward the ceiling and the smooth front of the beacon should face out to where the mobile client is expected to engage.*
  - *Beacon Battery Replacement*
    - *Replacing MB1000 Battery: MPACT-T1B20-000-WR and MPACT-T1B10-000-WR*
    - *Replacing Battery: MPACT-MB2000-01-WR*
CHAPTER 2 BEACON HARDWARE SPECIFICATIONS AND INSTALLATION

The following setup processes must be completed as a prerequisite to installing beacon hardware:

- **MPact Server Installation and Setup** - see the **MPact Location & Analytics Deployment Guide**
- **MPact Toolbox and Beacon Installation** - see the **MPact Toolbox User Guides**

The guides are available at [www.zebra.com/support](http://www.zebra.com/support).

**Lozier® Shelves**

Beacon brackets for the MPACT-T1B20-000-WR and MPACT-T1B10-000-WR are used with the following Lozier products:

- TL Shelf
- DL Shelf
- HL Shelf
- Standard Base Deck

### 2.1 MB1000 Beacon Part Number: MPACT-T1B20-000-WR

As a prerequisite, the following hardware items are required to mount the tie-wrap style beacon housing to a pole or similar structure:

- Beacon (tie-wrap style housing), part number - MPACT-T1B20-000-WR. (When ordering, use part number: MPACT-T1B20-250-WR (box of 25)).
- Plastic tie wraps for attaching each beacon housing to the shelf
2.1.1 **Installing the Tie-Wrap Style Beacon**

Tie-wrap beacon housings are designed to attach to vertical or horizontal poles or similar mounting surfaces. In Figure 2-1, there are openings on the back of the beacon housing allowing a tie wrap through the openings and wrapped around a pole or similar structure.

Notice the up arrow located on the middle of the beacon housing. This arrow indicates the optimal orientation for the beacon to function properly. Additionally, the smooth front of the beacon should face outward toward the aisle where client devices are expected to engage (dwell).

Figure 2-1 shows a beacon with the mylar strip attached to the left-hand side of the housing.

![Figure 2-1 Tie Wrap Style Beacon - Part Number - MPACT-T1B20-000-WR](image)

**NOTE:** When installing numerous beacons, group beacons by category and activate them prior to scanning the barcodes and associating them with positions in the Toolbox.

From MPact the Toolbox, select a site floor plan and an unassigned position for the beacon. Refer to the *MPact Location & Analytics Deployment Guide* for information on how to install and deploy the beacon from the Toolbox.

To mount the tie wrap beacon to a pole or similar structure:

- Mount the beacon to a pole or similar structure using the plastic tie wrap. Tie can be placed vertically or horizontally but the arrow should still point up.

To activate a beacon part number - MPACT-T1B20-000-WR:

- Activate one or more beacons by pulling the mylar strip off the beacon housing.

**CAUTION:** After pulling off the last mylar strip, you have 20 seconds to associate the beacon in either offline or online mode using the Toolbox application.
2.2 MB1000 Beacon Part Number: MPACT-T1B10-000-WR

As a prerequisite, the following hardware items are required to mount beacon brackets to a Lozier style shelf:

- **Lozier® Shelves**
- Beacon: Part number - MPACT-T1B10-000-WR
  - When ordering, use the following part number: MPACT-T1B10-250-WR (box of 25)
- Bracket mount, one of the following:
  - MPACT Metal Lozier Bracket: Part number MPACT-A1O10-004-WR
  - MPACT Plastic Lozier Bracket: Part number MPACT-A1O10-001-WR
- Phillips head screw driver for mounting the bracket (metal brackets only) to the Lozier shelf

2.2.1 Mounting and Installing the Universal Style Beacon

Figure 2-2 shows a universal style beacon. While there is no up arrow on this beacon’s housing, the beacon should be oriented similar to the tie wrap style of beacon housing, see MB1000 Beacon Part Number: MPACT-T1B20-000-WR.

Notice the up arrow located on the middle of the beacon housing. This arrow indicates the optimal orientation for the beacon to function properly. Additionally, the smooth front of the beacon should face outward toward the aisle where client devices are expected to engage (dwell).

![Figure 2-2 Universal Style Beacon - Part Number - MPACT-T1B10-000-WR](image)

**NOTE:** When installing numerous beacons, group beacons by category configurations and activate the beacons prior to scanning the barcodes and associating them with positions in the Toolbox.

From the MPact Toolbox, select a site floor plan and an unassigned position for the beacon. Refer to the **MPact Location & Analytics Deployment Guide** for information on how to install and deploy the beacon from the Toolbox.

The guides are available at [www.zebra.com/support](http://www.zebra.com/support).
To mount the universal style beacon to Lozier® Shelves:

1. Mount the universal beacon shelf-bracket on the shelf:
   - Metal brackets: Fit in place and tighten onto the shelving unit using a phillips-head screw driver.
   - Plastic brackets: Fit in place and snap onto the shelving unit.

2. Fit the beacon’s universal style housing into the bracket (mylar strip pointing up) and turn the beacon housing clockwise 90 degrees.

   The barcode label should face up toward the ceiling and the smooth front of the beacon should face out toward the aisle where the mobile client is expected to engage.

   There are two styles of bracket mounts from which to choose, either metal or plastic for Beacon:
   - Part number - MPACT-T1B10-000-WR.
Activate one or MPACT-T1B10-000-WR model beacons by pulling the mylar strip off the beacon housing.

**CAUTION:** After pulling off the last mylar strip, you have 20 seconds to associate the beacon in either offline or online mode using the Toolbox application.

### 2.2.2 Beacon Battery Replacement

When a beacon’s battery life is less than 20%, the beacon should be prioritized for immediate replacement. The beacon’s battery is located within a battery tray in the beacon’s housing.

This section includes procedures for replacing batteries for the following part numbers:

- Replacing MB1000 Battery: MPACT-T1B20-000-WR and MPACT-T1B10-000-WR

#### 2.2.2.1 Replacing MB1000 Battery: MPACT-T1B20-000-WR and MPACT-T1B10-000-WR

1. Remove the beacon from the shelving unit.
2. With the bottom of the beacon facing up, gently lift each corner of the beacon’s battery tray.

   **Figure 2-5** shows the beacon battery housing for part number MPACT-T1B20-000-WR and MPACT-T1B10-000-WR and MPACT-T1B10-000-WR. In this example, the battery tray is on the right and the corners of the battery tray are marked in red. When gently lifting each tray corner, slightly push the each corner out to dislodge corners of the tray.

3. With both tray corners dislodged, gently slide the battery tray open, being careful not to drop the tray.

   **Figure 2-6** shows an open battery housing. In this example, the battery tray is a separate piece, along with the battery, on the right-hand side.
4. Remove the old battery, dispose properly, and replace with a Panasonic CR2450 model battery.

**NOTE:** Pay attention to the position of the + on the battery. Installing the battery backwards may damage the Beacon

5. Close the tray, ensuring the latch is secure.

### 2.3 MB2000 Beacon Part Number: MPACT-MB2000-01-WR

As a prerequisite, the following hardware is required to wall mount a beacon:

- **Beacon:** Part number - MPACT-MB2000-01-WR
  - When ordering, use the following part number: MPACT-MB2000-01-WR (box of 25)
- **Bracket mount kit see Figure 2-7 (included with part number MPACT-MB2000-01-WR):**
  - Metal bracket
  - Two 1 inch Phillips head tap screws, and two 1 inch plastic wall inserts
  - Phillips head screw driver for mounting the bracket (metal brackets only) to a wall

#### 2.3.1 Mounting and Installing the Indoor Style Beacon

1. From the MPact Toolbox, select a site floor plan and an unassigned position for the beacon. Refer to the *MPact Location & Analytics Deployment Guide* for information on how to install and deploy the beacon from the Toolbox.
   
   To mount the universal style beacon to a wall:
   
   a. Mount the beacon wall bracket with the provided screws and plastic wall inserts.
   
   b. Press the beacon’s housing onto the bracket as shown in Figure 2-7.

**NOTE:** The barcode label should face up toward the ceiling and the smooth front of the beacon should face out toward the aisle where clients are expected to engage (dwell).

**NOTE:** When installing numerous beacons, group beacons by category configurations and activate the beacons prior to scanning the barcodes and associating them with positions in the Toolbox.
There is one style of bracket mount included with the Indoor Style Beacon: Part number - MPACT-MB2000-01-WR.

![Image of Metal Beacon Wall Mount Bracket: MPACT-MB2000-01-WR]

**NOTE:** Ensure the beacon is positioned correctly, Once the beacon is mounted on the bracket it will be difficult to remove.

2. Activate one or more MPACT-MB2000-01-WR beacons by pulling the mylar strip out from inside the beacon housing.

![Image of Indoor Style Beacon - MPACT-MB2000-01-WR]

**CAUTION:** After pulling off the last mylar strip, you have 20 seconds to associate the beacon in either offline or online mode using the Toolbox application.

### 2.3.2 Beacon Operating Modes Defined

Refer to the following for beacon operating modes definitions.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td>The beacon is not transmitting or accepting client connections.</td>
</tr>
<tr>
<td>Configuration</td>
<td>The beacon accepts connections from clients. Clients can configure the device when connected.</td>
</tr>
<tr>
<td>Broadcast</td>
<td>The beacon is transmitting packets that conform to one of the supported beacon formats (iBeacon, MPact, Battery Save and SecureCast).</td>
</tr>
</tbody>
</table>
Refer to the following for Indoor Style Beacon operating modes:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Sleep</th>
<th>Configuration</th>
<th>Broadcast</th>
<th>LED Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 seconds</td>
<td>No action</td>
<td>No action</td>
<td>No action</td>
<td></td>
</tr>
<tr>
<td>2+ -5</td>
<td>Broadcast</td>
<td>Broadcast</td>
<td>Broadcast</td>
<td>Slow flash when button flashes 300 ms on / 300ms off.</td>
</tr>
<tr>
<td>5+ - 10</td>
<td>Move to configuration</td>
<td>Remain in configuration</td>
<td>Move to configuration</td>
<td>Fast flash – 100ms on &amp; off</td>
</tr>
<tr>
<td>+ 10</td>
<td>Sleep</td>
<td>Sleep</td>
<td>Sleep</td>
<td>Solid light</td>
</tr>
</tbody>
</table>

2.3.3 Beacon Battery Replacement

When a beacon’s battery life is less than 20%, the beacon should be prioritized for immediate replacement. The beacon’s battery is located within a battery tray in the beacon’s housing.

This section includes procedures for replacing batteries for the following:

- Replacing Battery: MPACT-MB2000-01-WR

2.3.3.1 Replacing Battery: MPACT-MB2000-01-WR

To replace a beacon’s battery in part number MPACT-MB2000-01-WR:

1. Remove the beacon from the shelving unit (see information on the appropriate beacon part number).
2. With the bottom of the beacon facing up, use your finger nail to gently lift the clip up to remove the back off the beacon’s battery enclosure.
3. Remove the old batteries and dispose of properly and replace it with two new 2AA batteries.

NOTE: Pay attention to the polarity (+ and -) of the batteries. Installing the batteries incorrectly may damage the Beacon.

Figure 2-9 Open Battery Enclosure: MPACT-MB2000-01-WR

Close the battery enclosure, ensuring the clip is secure.
2.4 USB Beacon Part Number: MPACT-MB3000-01-WR

A USB powered interface is required to power the USB Beacon. No additional hardware is required.

2.4.1 Installing the USB Style Beacon

To activate a MPACT-MB3000-01-WR model beacon:

1. Insert the beacon into any standard USB power source. The beacon moves into connect mode automatically after insertion.

![USB Style Beacon - MPACT-MB3000-01-WR](image)

*Figure 2-10 USB Style Beacon - MPACT-MB3000-01-WR*

When installing numerous beacons, group beacons by category configurations and activate the beacons prior to scanning the barcodes and associating them with positions in the Toolbox.

NOTE: The USB beacon barcode is not on the beacon itself but on the on its plastic packaging.

2. After inserting the beacon(s) into any standard USB power source, associate the beacon in either offline or online mode in the Toolbox application.

3. From the MPact Toolbox, select a site floor plan and an unassigned position for the beacon. Refer to the *MPact Location & Analytics Deployment Guide* for information on how to install and deploy the beacon from the Toolbox. The guides are available at [www.zebra.com/support](http://www.zebra.com/support).
2.5 MB 4000 Beacon Part Number: MPACT-MB4000-01-WR

As a prerequisite, the following hardware items are required to mount a beacon.

- Beacon: Part numbers - MPACT-MB4000-01-WR
- Two No. 6 gauge or M3.5 screws (not included) for use on the intended surface
- Phillips head screw driver compatible with No. 6 gauge screws for mounting the Outdoor Style beacon

2.5.1 MPACT-MB4000-01-WR - Antennae Positions

The following are antennae positions for the MPACT-MB4000-01-WR Outdoor Beacon:

- MPACT-MB4000-01-WR orients its antenna down at a 20 degree angle
- MPACT-MB40001-01-WR orients its antenna down to the side at a 20 degree angle

Figure 2-11 Antennae Positions of the MPACT-MB4000-01-WR Beacon
2.5.2 Mounting and Installing the Outdoor Style Beacon

1. From the MPact Toolbox, select a site floor plan and an unassigned position for the beacon. Refer to the MPact Location & Analytics Deployment Guide for information on how to install and deploy the beacon from the Toolbox.

To prepare the Outdoor style beacon for mounting:
   a. Prepare a surface with 3M VHB double-sided tape. See section 2.5.2.1 Preparing Surface for Mounting with 3M VHB Double-sided tape: on page 2-11.

   Or

   b. Prepare to mount the Outdoor style beacon with two No. 6 gauge or M3.5 screws (not included).

   **NOTE:** If the surface is clean and smooth, the 3M VHB tape should be used to mount the beacon. However, is wood, brick or some other surface that is not smooth and clean, the 3M tape will not adhere to the surface. Use the appropriate screws for mounting (not included). When using screws to mount to a surface, do not expose the 3M VHB tape.

2.5.2.1 Preparing Surface for Mounting with 3M VHB Double-sided tape:

To prepare a surface before mounting the Outdoor style beacon to a wall with 3M VHB double-sided tape:

Clean the surface with a 50:50 mixture of isopropyl alcohol (IPA) and water before applying 3M™ VHB™ tape.

Some surfaces may require additional preparation such as the following:

- Use degreasers or solvent-based cleaner to remove heavy oil or grease from a surface followed by cleaning with IPA/water
- Scrape the surface, followed by cleaning with IPA/water to remove heavy dirt or oxidation and increases surface area to improve adhesion.
- Prime the surface to improve initial and ultimate adhesion to many materials such as plastics and paints.
- Seal porous and fibered materials such as wood, particleboard, and concrete to provide a unified surface.

After preparing the surface the Outdoor Style beacon is now ready to be mounted.

2.5.2.2 Mounting Outdoor Style Beacon

To mount a Outdoor Style beacon with 3M™ VHB™ tape:

1. Peel the plastic off from 3M™ VHB™ tape.
2. Press the backside of the Outdoor Style beacon firmly to a smooth clean mounting surface.

To mount a Outdoor Style beacon with No. 6 gauge or M3.5 screws:

1. Press the backside of the beacon to the mounting surface.
2. Insert screws into the screw holes as shown in Figure 2-13 on page 2-12.

   **NOTE:** Zebra recommends not removing the plastic backside of the 3M tape when mounting the beacon with screws.
3. Hand tighten the screws to firmly secure the beacon.

**NOTE:** Ensure the beacon is positioned correctly. Once the beacon is mounted it should be difficult to remove.

![Image](Image17x729 to 594x756)

*Figure 2-12* Back of Outdoor Style Beacon - Outdoor Beacon

![Image](Image76x624 to 125x673)

*Figure 2-13* Top of Outdoor Style Beacon - MPACT-MB4000-01-WR

**NOTE:** When installing numerous beacons, group beacons by category configurations and activate the beacons prior to scanning the barcodes and associating them with positions in the Toolbox.
2.5.2.3 Activating Outdoor Style Beacon

To activate a beacon part number - MPACT-MB4000-01-WR:

1. Swipe your finger across the capacitive switch several times to wake the beacon out of shipping mode into broadcast mode. The light becomes solid and then turns off.

![Figure 2-14 Activating Outdoor Style Beacon - MPACT-MB4000-01-WR](image)

To put the beacon part number - MPACT-MB4000-01-WR into connect mode:

1. Press your finger on the capacitive switch for about five seconds. The LED will flash slowly. Refer to the table below for information about operating modes.

**NOTE:** When installing numerous beacons, group beacons by category configurations and activate the beacons prior to scanning the barcodes and associating them with positions in the Toolbox.

The barcode label should face up toward the ceiling and the smooth front of the beacon should face out to where the mobile client is expected to engage.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Shipping</th>
<th>Sleep</th>
<th>Configuration</th>
<th>Broadcast</th>
<th>LED Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 seconds</td>
<td>No action</td>
<td>No action</td>
<td>No action</td>
<td>No action</td>
<td></td>
</tr>
<tr>
<td>2+ -7</td>
<td>Broadcast</td>
<td>Broadcast</td>
<td>Broadcast</td>
<td>Broadcast</td>
<td>Solid light</td>
</tr>
<tr>
<td>7+ - 12</td>
<td>Move to configuration</td>
<td>Remain in configuration</td>
<td>Move to configuration</td>
<td></td>
<td>Slow flash when button flashes 300 ms on / 300ms off.</td>
</tr>
<tr>
<td>+ 12</td>
<td>Sleep</td>
<td>Sleep</td>
<td>Sleep</td>
<td>Sleep</td>
<td>Fast flash – 100ms on &amp; off</td>
</tr>
</tbody>
</table>
If you have a problem with your equipment, contact Support for your region. Support and issue resolution is provided for products under warranty or that are covered by a services agreement. Contact information and Web self-service is available by visiting www.zebra.com/support.

When contacting Support, please provide the following information:

- MAC ID of the unit
- Model number or product name
- Software type and version number

Support responds to calls by email or telephone within the time limits set forth in support agreements. If you purchased your product from a business partner, contact that business partner for support.

Customer Support Web Site

The support site, located at www.zebra.com/support provides information and online assistance including developer tools, software downloads, product manuals, support contact information and online repair requests.

Manuals

To see manuals, go to: www.zebra.com/support.