AXENTIA

iBus EPM-1000 wireless push button User Manual

Contents

1 EPM-1000 User Manual

1.1 EPM-1000 usage

The EPM-1000 wireless push button is used to trigger the Text-To-Speech (TTS) in the dynamic display IBD3750. IBD3750 is a 5-row LCD display for bus stops that shows bus departures and passenger information.

1.2 EMP-1000 technical functionality

The EMP-1000 wireless push button contains an ISM UHF radio operating in the 915 MHz band. The ISM UHF radio is powered by a Lithium Thionyl Chloride battery.

When the button in the EPM-1000 is pushed, the EPM-1000 will transmit a radio signal that is detected by the display IBD3750. On receiving the radio signal from the EMP-1000, the display IBD3750 will start the TTS functionality, and will make an audio presentation of the information shown on the display rows.

2 FCC and IC statements

2.1 FCC Part 15

This device complies with FCC Rules Part 15 operation is subject to the following two conditions:
1. This device may not cause harmful interference.

2. This device must accept any interference, including interference that may cause undesired operation of the device.
Changes or modifications to this device, not expressly approved by Axentia Technologies AB could void the user's authority to operate the equipment.

FCC RF Exposure Requirements: This product complies with the FCC RF exposure limit set forth for an uncontrolled environment and is safe for intended operation as described in this manual. This device is only authorized for use in a mobile application, at least 20 cm of separation distance between the radiating antenna and the user's body must be maintained at all times. Further RF exposure reduction can be achieved if the product can be kept as far as possible from the user's body or set the device to a lower output power if such a function is available. Separate approval is required for all other operating configurations, including portable configurations with respect to 47 CFR Part 2.1093 and different antenna configurations.

2.2 Industry Canada Notifications

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage ;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ISED RF Exposure Requirements: This product complies with the FCC RF exposure limit set forth for an uncontrolled environment and is safe for intended operation as described in this manual. This device is only authorized for use in a mobile application, at least 20 cm of separation distance between the radiating antenna and the user's body must be maintained at all times. Further RF exposure reduction can be achieved if the product can be kept as far as possible from the user's body or set the device to a lower output power if such a function is available. Separate approval is required for all other operating configurations, including portable configurations with respect to 47 CFR Part 2.1093 and different antenna configurations

2.3 Information about FCC ID and IC ID

FCC ID: 2AR8J-EPM1000
IC: 24627-EPM1000

3 Technical specification for the EPM-1000

Manufacturer: Axentia Technologies AB
Universitetsvägen 14
583 30 Linköping, Sweden
www.axentia.se
+46 13 32 85 31

Product name: iBus wireless push button (EPM-1000)

Product type: Wireless push button for TTS

UHF ISM Radio:

The UHF ISM radio is used for wireless communication with a wireless push button (info button). The wireless push button is optionally used for triggering of the Text-To-Speech functionality.

Modulation: FSK (Frequency-shift keying), Δf = 150 kHz, data rate 25 kbit/s

Frequency Range/Band: 915 ism band. ITU Region 2 frequency range 902 – 928 MHz. Nominal center frequency f_c = 915 MHz

$$f = f_c \pm \Delta f = 915\ MHz \pm 150\ kHz$$

The center frequency f_c is static. It can be changed, but only by uploading new software (in production / production testing, before assembly).

Transmission power: Below 10 mW

Antenna gain: EIRP approx. -2 dBm

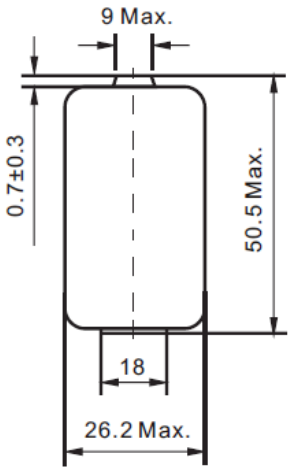
Antenna type: Single F-antenna, gain approx 0 dBi. Non-detachable antenna (integrated on pcb).

Operation mode: Non-adaptive mode only

Tranceiver circuit : Semtech SX1211

Power: Primary Lithium Thionyl Chloride, 3.6 V, 8500 mAh (c.f. “MINAMOTO Push button battery spec.pdf”)

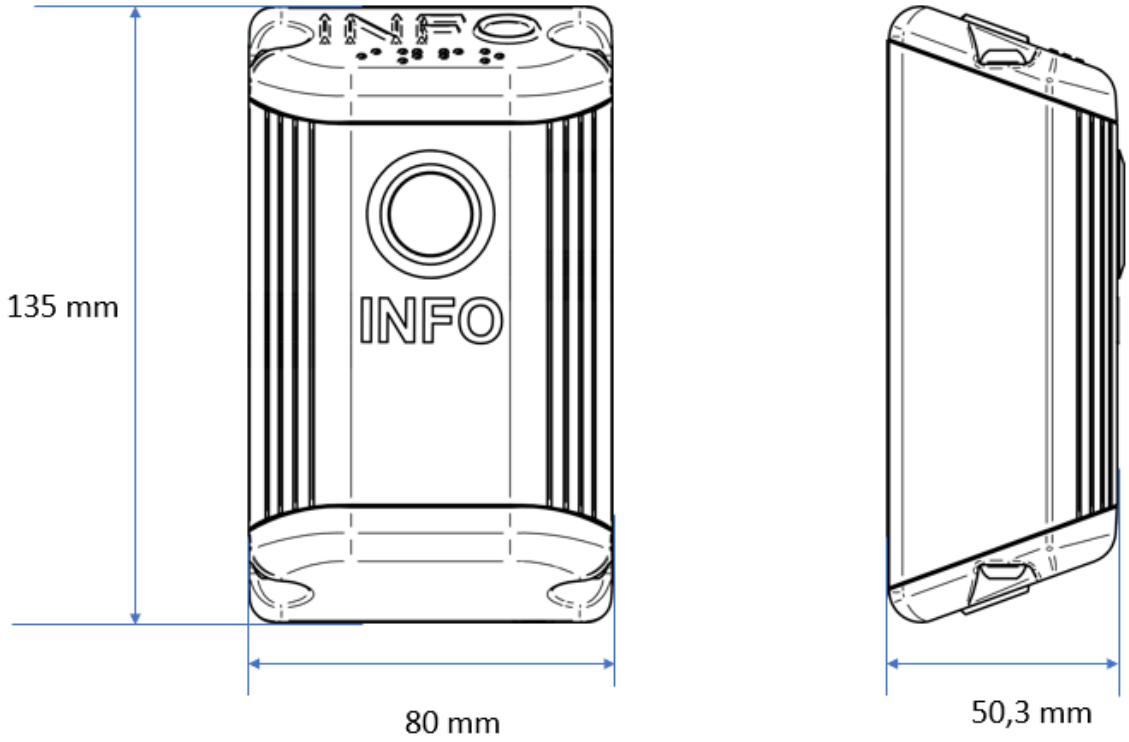
Equivalent Size: C



Dimension in mm

Physical dimensions of the EPM-1000 wireless info-button:

Height:	135 mm
Width:	80 mm
Depth:	50.3 mm
Weight:	370 g



Info button lid (inside):

- Pcb with radio + antenna molded (IP65)
- Mold material: Polyurethane/Epoxy