

EM 406 Beacon Decoder Receiver

Operator's Manual



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Caution !!

**The EM 406 Beacon Decoder Receiver can be used as a
406 MHz. COSPAS SARSAT Emergency Position Indicating Radio Beacon (EPIRB) Tester.**

**If done so , all Beacon maintenance and tests should be performed in the
Self Test Mode , if possible.**

**Do not Activate any Beacon in the Normal (Live) Mode unless done in a
Radio Frequency Screened Enclosure or Room.**

Failure to do so could result in the Transmission of a False Distress Alert to the Satellites.

**If a Beacon is accidentally activated in the Normal (Live) Mode outside a
Radio Frequency Screened Enclosure or Room , or if a Beacon Distress Signal
is transmitted accidentally , the Local Rescue Co-ordination Centre (RCC) should be
contacted immediately and informed of the co-ordinates of the Beacon site.**

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1. General Description

The EM 406 Beacon Decoder Receiver is capable of Receiving , Demodulating and Decoding Signals from all existing COSPAS SARSAT Emergency Position Indicating Radio Beacon (EPIRB) Frequency Channels , Message Formats (Short and Long) and Protocols. The EM 406 is Programmable with the Own Beacon's 9 Digit MMSI Number which helps it at distinguishing if the Beacon Burst is received from an Own Beacon or Other Beacon and is capable of Decoding Beacon Bursts that have been transmitted in the Normal (Live) Mode as well as in the Self Test Mode. The Detection of a Valid and Error Free Beacon Burst is indicated with an Audible and Visual Alarm clearly indicating if the Burst source is an Own Beacon or Other Beacon. The EM 406 can receive 406 MHz. Radio Frequencies using it's Internal Built - In Antenna or by using an External Whip Antenna to increase the reception range.

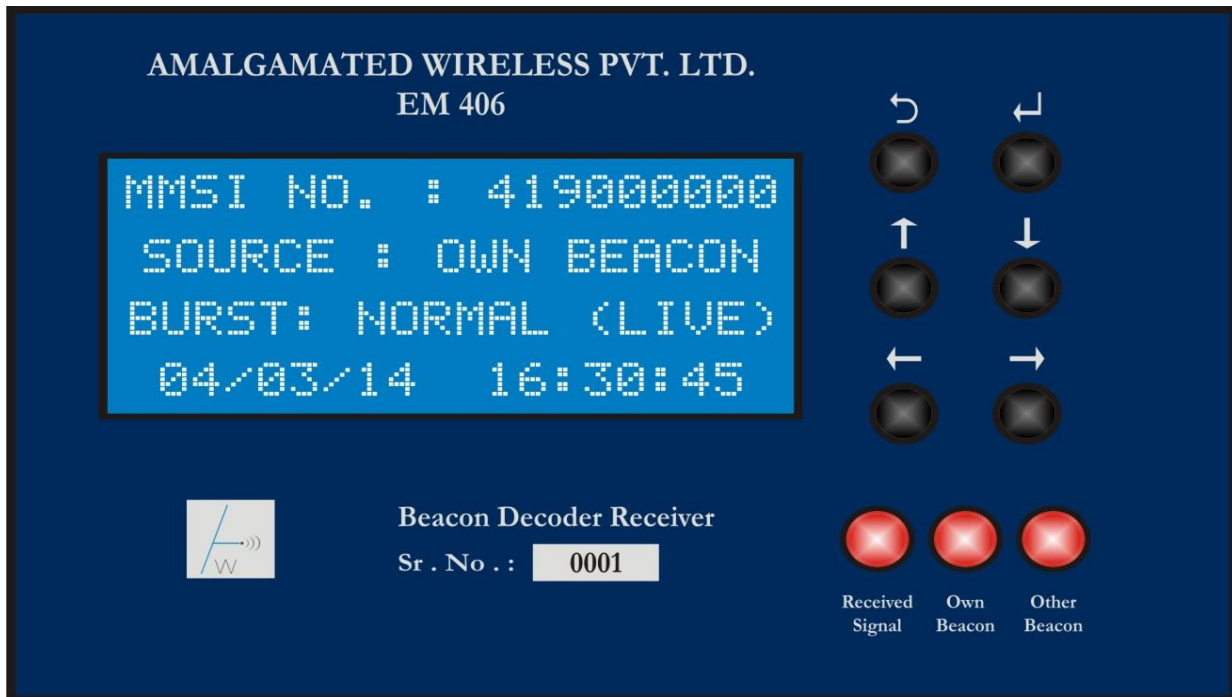
The EM 406 Main Unit comes with a 20 x 4 Character Liquid Crystal Display (LCD) with Backlight , 6 User / Service Interface Keys and Front Panel LED Indicators for Received Signal , Own Beacon Alarm and Other Beacon Alarm. The EM 406 has a Simple Configuration Setup Menu with the Service Setup Menu being Password Protected with a 4 Digit Security Pass Code. The EM 406 is capable of Transferring Serially the Decoded Data to a Computer in Printable Format and is also capable of Logging the Decoded Messages in it's Internal EEPROM Memory. The Date and Time references are taken from the Unit's Internal Real Time Clock (RTC) itself or by extracting it from the NMEA 0183 Data from an External GPS (if interfaced). The EM 406 can also be used as a 406 MHz. COSPAS SARSAT EPIRB Tester to verify the Signal Integrity and Coding Programmed within the Beacon and is designed such so as to have a Standard 2 Year Calibration Cycle. Beacon Bursts detected containing Framing / Data Errors are indicated with an Error Message.

With an accidental or inadvertent transmission of a Beacon Distress Signal whether from own vessel or from another vessel within immediate vicinity and in visual range , the local Rescue Co-ordination Centre (RCC) can be contacted immediately and informed of the co-ordinates of the Beacon site hence preventing unnecessary initiation of expensive Search and Rescue (SAR) procedures. The installation of such an equipment is a relatively low - cost and an effective means of avoiding the disruption of shipping activities and rescue services and possibly substantial fines imposed on the Ship Owners in the event of the transmission of a False Distress Alert.

The standard supply of the EM 406 Beacon Decoder Receiver includes :

- Main Unit
- Operator's Manual (English)
- Certificate of Calibration

2. Key Features



- 20 x 4 Character Liquid Crystal Display (LCD) with Backlight
- 6 Key User / Service Interface with Simple Configuration Setup Menu
- Front Panel LED Indicators for Received Signal , Own Beacon Alarm & Other Beacon Alarm
- Service Setup Menu Password Protected with 4 Digit Security Pass Code
- UTC Date and Time Source using Internal Real Time Clock (RTC) or External GPS
- Optically Isolated IEC 61162 Compatible GPS Serial Data Input (NMEA 0183) Interface
- Surge and Transient Immunity Protection on the Serial Data Input and Outputs
- +10 V DC to +32 V DC Power Input with Current Limit (Fuse) & Reverse Polarity Protection
- Internal Built - In and / or External Whip Antenna

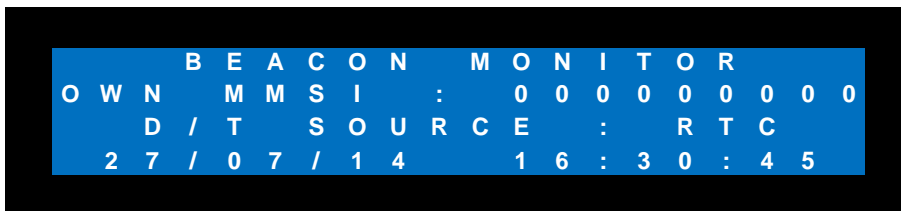
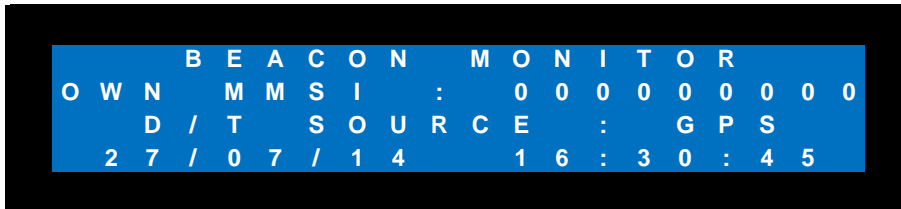
- Detects COSPAS SARSAT EPIRB Frequency Channels from 406.025 MHz. to 406.040 MHz.
- Demodulates Phase Modulated (PSK) Signals with Biφ - L (Manchester) Data Decoding
- Decodes all COSPAS SARSAT EPIRB Message Formats (Short and Long) and Protocols
- Decodes Normal (Live) as well as Self Test Beacon Bursts
- Programmable with Own Beacon 9 Digit MMSI Number (Country Code + Identity)
- Beacon Burst Error Indication on Detection of Framing / Data Errors
- Serial Transfer of Decoded Data to Computer in Printable Format
- Message Logging of Decoded Data for up to 25 Messages in Internal EEPROM Memory
- Audible and Visual Alarm with additional Remote Alarm Relay Output

- Decoded Data includes :
Date , Time , Date Time Source (RTC / GPS) , Beacon Source (Own / Other) ,
Burst Mode (Normal (Live) / Self Test) , Message Format (Short / Long) , Protocol Flag ,
Country Code , Identity , Specific Beacon No. , Radio Locating Device , Beacon Activation ,
Position Data Source (External / Internal) , Beacon Message (Hex) and 15 HEX ID (Hex)
- Can be used as a 406 MHz. COSPAS SARSAT Emergency Position Indicating Radio Beacon (EPIRB) Tester
- Standard 2 Year Calibration Cycle with Certificate of Calibration Provided

- Dimensions : 181 mm. (width) x 116 mm. (height) x 82 mm. (depth)
- Weight : 1050 gms.

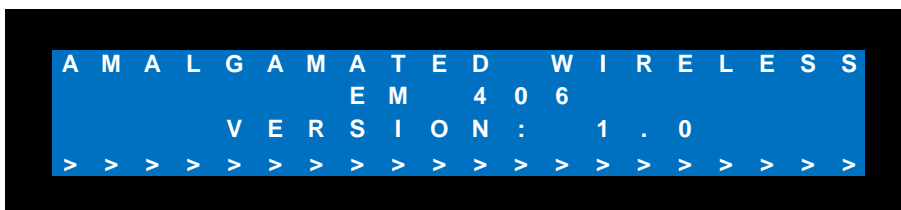
3. Basic Operation

The 20 x 4 Character Liquid Crystal Display (LCD) is used to display the stand by screen of the EM 406 as shown below. It is also used to display the User / Service Setup Menu. The 20 x 4 Character LCD also has a Backlight Control which can be set to the Always Off , Auto Off and Always On modes (Selectable in the User Setup Menu).



The 6 Keys (ESCAPE , ENTER , UP , DOWN , LEFT , RIGHT) provided on the Front Panel are used to make selections within the User / Service Setup Menu. The ENTER Key is used to enter the User / Service Setup Menu. The ESCAPE Key is used to acknowledge any alarms if existing.

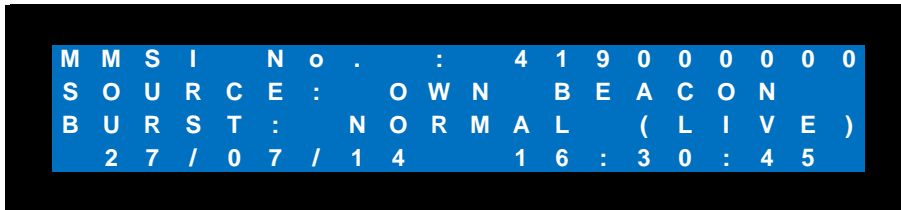
On System Start Up , the EM 406 displays the existing Version of the System Software as shown below.



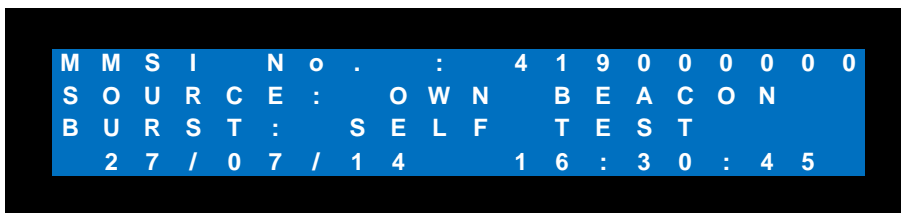
The 20 x 4 Character Liquid Crystal Display (LCD) , LED Indicators on the Front Panel and the On Board Buzzers are also tested at System Start Up.

On the Reception of a valid 406 MHz. Beacon Burst , the EM 406 Decodes the Data and Displays the same on the 20 x 4 Character LCD as shown below. Also the LED Indicators on the Front Panel indicate whether the Burst is from Own Beacon or Other Beacon.

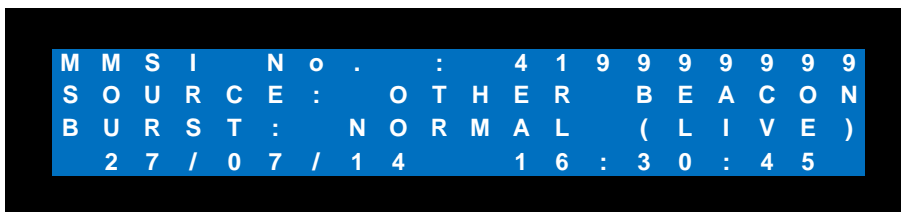
Own Beacon : Normal (Live)



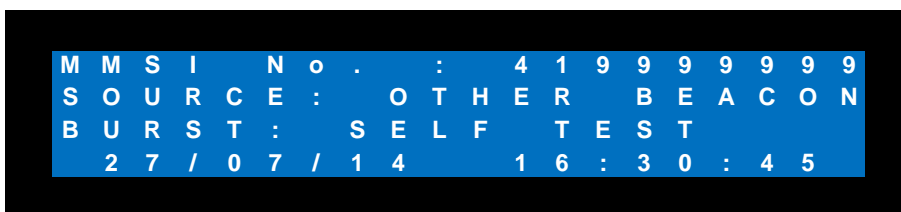
Own Beacon : Self Test



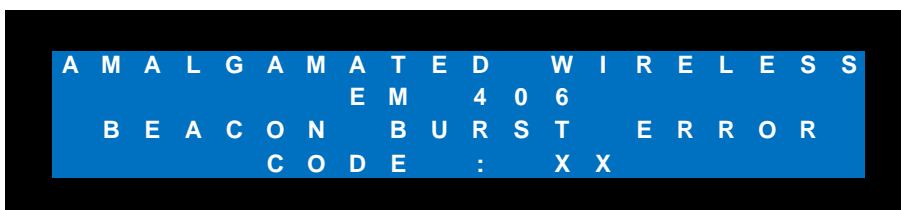
Other Beacon : Normal (Live)



Other Beacon : Self Test



If the Received 406 MHz. Beacon Burst is invalid or fails the error checks then a message is displayed as shown below.



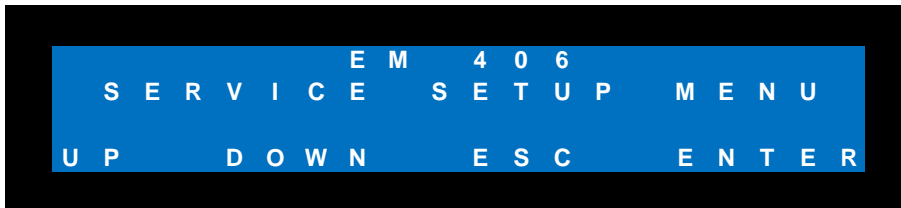
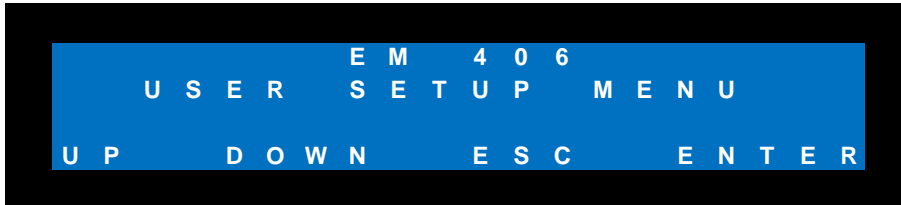
4. User / Service Setup Menu

Note : Most Menu Items are Accessible / Editable only by Entering the Security / Service Password

► Service Password

└ Enter Password

- ---- ⇒ Enter Security / Service Password in #### Format (Default : 0000)
A Password Match is Indicated by a Buzzer Tone of approximately 1 Sec.
Menu will then be indicated as Service Setup Menu instead of User Setup Menu



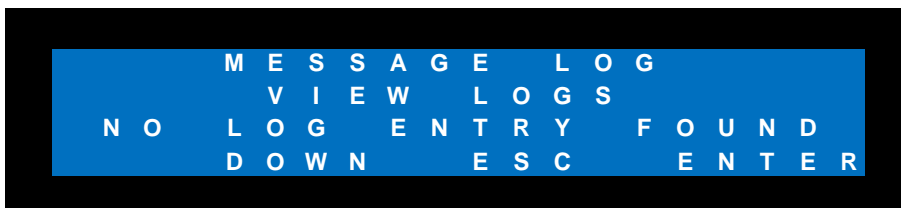
► Message Log

└ View Logs



Press the ENTER key while on the above display to view the Message Log entries.
If one or more Message Log entries are found in the Unit's Internal EEPROM Memory then the latest saved Message Log entry is displayed.

If no Message Log entries are found then a message is displayed as shown below.



Pressing the LEFT or RIGHT keys navigates within the Message Log entry.
Pressing the UP or DOWN keys navigates between the Message Log entries.
Pressing the ENTER key serially transmits the decoded data within the Message Log entry to a computer in printable format.

Message Log Entry : Example 1

```
M E S S A G E   L O G   N o .   :   0 1
M M S I   N o .   :   4 1 9 0 0 0 0 0 0
B U R S T :   N O R M A L   ( L I V E )
2 7 / 0 7 / 1 4   1 6 : 3 0 : 4 5
```

```
S O U R C E :   O W N   B E A C O N
C O U N T R Y   C O D E   :   4 1 9
I D E N T I T Y   :   0 0 0 0 0 0
S P E C .   B E A C O N   N o .   :   1
```

```
M S G : F F F E D 0 5 6 3 4 C 9 A E 9 A
6 9 A 6 8 C 8 E A 4 9 0
1 5   H E X   I D   :   A C 6 9 9 3 5 D
3 4 D 3 4 D 1
```

```
M S G .   F O R M A T   :   S H O R T
P R O T O C O L   F L A G   :   0
P R O .   C O D E   :   M A R I T I M E
B C H   E R R .   C H K .   :   V A L I D
```

```
A C T .   :   M A N U A L
L O C A T I N G :   N O N E
P O S I T I O N   :   E X T E R N A L
D A T E / T I M E   S R C .   :   G P S
```

Message Log Entry : Example 2

```
M E S S A G E   L O G   N o .   :   2 5
M M S I   N o .   :   4 1 9 0 0 0 0 0 0
B U R S T :   S E L F   T E S T
2 7 / 0 7 / 1 4   1 6 : 3 0 : 4 5
```

```
S O U R C E :   O T H E R   B E A C O N
C O U N T R Y   C O D E   :   4 1 9
I D E N T I T Y   :   0 0 0 0 0 0
S P E C .   B E A C O N   N o .   :   1 5
```

```
M S G : F F F E D 0 9 A 3 2 1 1 1 7 0 F
7 F D F F A 1 1 3 4 3 7 8 3 E 0 F 6 6 C
1 5   H E X   I D   :   3 4 6 4 2 2 2 E
1 E F F B F F
```

```
M S G .   F O R M A T   :   L O N G
P R O T O C O L   F L A G   :   1
P R O .   C O D E   :   M A R I T I M E
B C H   E R R .   C H K .   :   V A L I D
```

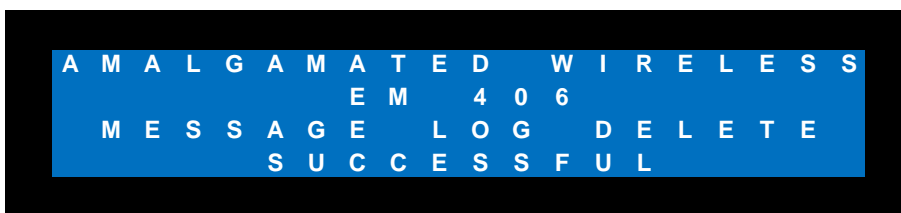
```
A C T .   :   A U T O   /   M A N U A L
L O C A T I N G :   1 2 1 . 5   M H z .
P O S I T I O N   :   I N T E R N A L
D A T E / T I M E   S R C .   :   R T C
```

└ Delete Logs



Press the ENTER key while on the above display to delete all the Message Log entries saved in the Unit's Internal EEPROM Memory.

Once the Message Log entries are deleted , a message is displayed as shown below.



► Front Panel

└ LCD Backlight Mode

- Always Off ⇒ LCD Backlight is Always Off
- Auto Off (10 Secs.) ⇒ LCD Backlight turns off automatically after 10 Secs.
- Auto Off (20 Secs.) ⇒ LCD Backlight turns off automatically after 20 Secs.
- Always On ⇒ LCD Backlight is Always On (Default)

└ Keypad Beep Mode

- Silent (Off) ⇒ Keypad Beep Sound : Silent (Off)
- Audible (On) ⇒ Keypad Beep Sound : Audible (On) (Default)

└ Keypad Time - Out Mode

- Disabled ⇒ Disable User / Service Menu Time - Out
- 10 Secs. ⇒ Enable User / Service Menu Time - Out after 10 Secs.
- 15 Secs. ⇒ Enable User / Service Menu Time - Out after 15 Secs.
- 20 Secs. ⇒ Enable User / Service Menu Time - Out after 20 Secs. (Default)

└ Date & Time Source

- UTC (GPS) ⇒ Date and Time references taken from GPS
- UTC (RTC) ⇒ Date and Time references taken from RTC (Default)

► Real Time Clock

└ Set UTC (RTC) Date

- --/--/-- ⇒ Set UTC (RTC) Date in DD / MM / YY Format

└ Set UTC (RTC) Time

- --:--:-- ⇒ Set UTC (RTC) Time in HH : MM : SS Format

► **Serial Comm. Port**

└ **Receive Mode**

- Disabled ⇨ Serial Comm. Receive Mode : Disabled
- Enabled ⇨ Serial Comm. Receive Mode : Enabled (Default)

└ **Receive Baud Rate**

- 1200 bps. ⇨ Serial Comm. Receive Baud Rate : 1200 bps.
- 2400 bps. ⇨ Serial Comm. Receive Baud Rate : 2400 bps.
- 4800 bps. ⇨ Serial Comm. Receive Baud Rate : 4800 bps. (Default)
- 9600 bps. ⇨ Serial Comm. Receive Baud Rate : 9600 bps.
- 19200 bps. ⇨ Serial Comm. Receive Baud Rate : 19200 bps.
- 38400 bps. ⇨ Serial Comm. Receive Baud Rate : 38400 bps.

└ **Talker Identifier**

- Ignore ⇨ Serial Comm. : Ignore Talker Identifier \$XX (Default)
- Detect ⇨ Serial Comm. : Detect Talker Identifier \$XX

└ **GGA Identifier**

- Ignore ⇨ Serial Comm. : Ignore Sentence Identifier GGA
- Detect ⇨ Serial Comm. : Detect Sentence Identifier GGA (Default)

└ **GLL Identifier**

- Ignore ⇨ Serial Comm. : Ignore Sentence Identifier GLL
- Detect ⇨ Serial Comm. : Detect Sentence Identifier GLL (Default)

└ **RMC Identifier**

- Ignore ⇨ Serial Comm. : Ignore Sentence Identifier RMC
- Detect ⇨ Serial Comm. : Detect Sentence Identifier RMC (Default)

└ **VTG Identifier**

- Ignore ⇨ Serial Comm. : Ignore Sentence Identifier VTG
- Detect ⇨ Serial Comm. : Detect Sentence Identifier VTG (Default)

└ **ZDA Identifier**

- Ignore ⇨ Serial Comm. : Ignore Sentence Identifier ZDA
- Detect ⇨ Serial Comm. : Detect Sentence Identifier ZDA (Default)

└ **GPS Failure Alarm**

- Disabled ⇨
- Enabled ⇨ (Default)

└ **Transmit Mode**

- Disabled ⇨ Serial Comm. Transmit Mode : Disabled
- Enabled ⇨ Serial Comm. Transmit Mode : Enabled (Default)

└ **Transmit Baud Rate**

- 1200 bps. ⇨ Serial Comm. Transmit Baud Rate : 1200 bps.
- 2400 bps. ⇨ Serial Comm. Transmit Baud Rate : 2400 bps.
- 4800 bps. ⇨ Serial Comm. Transmit Baud Rate : 4800 bps. (Default)
- 9600 bps. ⇨ Serial Comm. Transmit Baud Rate : 9600 bps.
- 19200 bps. ⇨ Serial Comm. Transmit Baud Rate : 19200 bps.
- 38400 bps. ⇨ Serial Comm. Transmit Baud Rate : 38400 bps.
- 57600 bps. ⇨ Serial Comm. Transmit Baud Rate : 57600 bps.
- 115200 bps. ⇨ Serial Comm. Transmit Baud Rate : 115200 bps.

► 406 MHz. Receiver

└ Own Beacon MMSI

- - - - - - ⇒ Enter Own Beacon MMSI No. in ##### Format (Default : 00000000)

└ Visual Indication

- Disabled ⇒ Disable Front Panel LED Indication of Received 406 MHz. Signal
- Enabled ⇒ Enable Front Panel LED Indication of Received 406 MHz. Signal (Default)

► Data Reception

└ Global

- Disabled ⇒ Disable Data Reception of All Beacon Bursts
- Enabled ⇒ Enable Data Reception of All Beacon Bursts (Default)

└ Own : Normal

- Disabled ⇒ Disable Data Reception of Own Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Data Reception of Own Beacon Normal (Live) Bursts (Default)

└ Own : Self Test

- Disabled ⇒ Disable Data Reception of Own Beacon Self Test Bursts
- Enabled ⇒ Enable Data Reception of Own Beacon Self Test Bursts (Default)

└ Other : Normal

- Disabled ⇒ Disable Data Reception of Other Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Data Reception of Other Beacon Normal (Live) Bursts (Default)

└ Other : Self Test

- Disabled ⇒ Disable Data Reception of Other Beacon Self Test Bursts
- Enabled ⇒ Enable Data Reception of Other Beacon Self Test Bursts (Default)

► **Display on Reception**

└ **Global**

- Disabled ⇒ **Disable Display of All Beacon Bursts**
- Enabled ⇒ **Enable Display of All Beacon Bursts (Default)**

└ **Own : Normal**

- Disabled ⇒ **Disable Display of Own Beacon Normal (Live) Bursts**
- Enabled ⇒ **Enable Display of Own Beacon Normal (Live) Bursts (Default)**

└ **Own : Self Test**

- Disabled ⇒ **Disable Display of Own Beacon Self Test Bursts**
- Enabled ⇒ **Enable Display of Own Beacon Self Test Bursts (Default)**

└ **Other : Normal**

- Disabled ⇒ **Disable Display of Other Beacon Normal (Live) Bursts**
- Enabled ⇒ **Enable Display of Other Beacon Normal (Live) Bursts (Default)**

└ **Other : Self Test**

- Disabled ⇒ **Disable Display of Other Beacon Self Test Bursts**
- Enabled ⇒ **Enable Display of Other Beacon Self Test Bursts (Default)**

► **Visual Alarm**

└ **Global**

- Disabled ⇒ **Disable Visual Alarm of All Beacon Bursts**
- Enabled ⇒ **Enable Visual Alarm of All Beacon Bursts (Default)**

└ **Own : Normal**

- Disabled ⇒ **Disable Visual Alarm of Own Beacon Normal (Live) Bursts**
- Enabled ⇒ **Enable Visual Alarm of Own Beacon Normal (Live) Bursts (Default)**

└ **Own : Self Test**

- Disabled ⇒ **Disable Visual Alarm of Own Beacon Self Test Bursts**
- Enabled ⇒ **Enable Visual Alarm of Own Beacon Self Test Bursts (Default)**

└ **Other : Normal**

- Disabled ⇒ **Disable Visual Alarm of Other Beacon Normal (Live) Bursts**
- Enabled ⇒ **Enable Visual Alarm of Other Beacon Normal (Live) Bursts (Default)**

└ **Other : Self Test**

- Disabled ⇒ **Disable Visual Alarm of Other Beacon Self Test Bursts**
- Enabled ⇒ **Enable Visual Alarm of Other Beacon Self Test Bursts (Default)**

► Audible Alarm

└ Global

- Disabled ⇒ Disable Audible Alarm of All Beacon Bursts
- Enabled ⇒ Enable Audible Alarm of All Beacon Bursts (Default)

└ Own : Normal

- Disabled ⇒ Disable Audible Alarm of Own Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Audible Alarm of Own Beacon Normal (Live) Bursts (Default)

└ Own : Self Test

- Disabled ⇒ Disable Audible Alarm of Own Beacon Self Test Bursts
- Enabled ⇒ Enable Audible Alarm of Own Beacon Self Test Bursts (Default)

└ Other : Normal

- Disabled ⇒ Disable Audible Alarm of Other Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Audible Alarm of Other Beacon Normal (Live) Bursts (Default)

└ Other : Self Test

- Disabled ⇒ Disable Audible Alarm of Other Beacon Self Test Bursts
- Enabled ⇒ Enable Audible Alarm of Other Beacon Self Test Bursts (Default)

► Remote Alarm Relay

└ Global

- Disabled ⇒ Disable Remote Alarm Relay of All Beacon Bursts
- Enabled ⇒ Enable Remote Alarm Relay of All Beacon Bursts (Default)

└ Own : Normal

- Disabled ⇒ Disable Remote Alarm Relay of Own Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Remote Alarm Relay of Own Beacon Normal (Live) Bursts (Default)

└ Own : Self Test

- Disabled ⇒ Disable Remote Alarm Relay of Own Beacon Self Test Bursts
- Enabled ⇒ Enable Remote Alarm Relay of Own Beacon Self Test Bursts (Default)

└ Other : Normal

- Disabled ⇒ Disable Remote Alarm Relay of Other Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Remote Alarm Relay of Other Beacon Normal (Live) Bursts (Default)

└ Other : Self Test

- Disabled ⇒ Disable Remote Alarm Relay of Other Beacon Self Test Bursts
- Enabled ⇒ Enable Remote Alarm Relay of Other Beacon Self Test Bursts (Default)

► **Serial Transfer**

└ **Global**

- Disabled ⇒ Disable Serial Transfer of All Beacon Bursts
- Enabled ⇒ Enable Serial Transfer of All Beacon Bursts (Default)

└ **Own : Normal**

- Disabled ⇒ Disable Serial Transfer of Own Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Serial Transfer of Own Beacon Normal (Live) Bursts (Default)

└ **Own : Self Test**

- Disabled ⇒ Disable Serial Transfer of Own Beacon Self Test Bursts
- Enabled ⇒ Enable Serial Transfer of Own Beacon Self Test Bursts (Default)

└ **Other : Normal**

- Disabled ⇒ Disable Serial Transfer of Other Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Serial Transfer of Other Beacon Normal (Live) Bursts (Default)

└ **Other : Self Test**

- Disabled ⇒ Disable Serial Transfer of Other Beacon Self Test Bursts
- Enabled ⇒ Enable Serial Transfer of Other Beacon Self Test Bursts (Default)

► **Message Logging**

└ **Global**

- Disabled ⇒ Disable Message Logging of All Beacon Bursts
- Enabled ⇒ Enable Message Logging of All Beacon Bursts (Default)

└ **Own : Normal**

- Disabled ⇒ Disable Message Logging of Own Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Message Logging of Own Beacon Normal (Live) Bursts (Default)

└ **Own : Self Test**

- Disabled ⇒ Disable Message Logging of Own Beacon Self Test Bursts
- Enabled ⇒ Enable Message Logging of Own Beacon Self Test Bursts (Default)

└ **Other : Normal**

- Disabled ⇒ Disable Message Logging of Other Beacon Normal (Live) Bursts
- Enabled ⇒ Enable Message Logging of Other Beacon Normal (Live) Bursts (Default)

└ **Other : Self Test**

- Disabled ⇒ Disable Message Logging of Other Beacon Self Test Bursts
- Enabled ⇒ Enable Message Logging of Other Beacon Self Test Bursts (Default)

5. Decoded Data

Examples of the Serial Transfer of the Decoded Data to a Computer in Printable Format is as shown under :

*** EM 406 ***

Date : 27/07/14

Time : 16:30:45

Source : GPS

Beacon Source : Own

Burst Mode : Normal (Live)

Message Format : Short

Protocol Flag : 0

Protocol Code : Maritime

Country Code : 419

Identity : 000000

Specific Beacon No. : 0

Radio Locating : None

Beacon Activation : Auto / Manual

Position Data Source : External

Beacon Message : FFFED05634C9AE9A69A68C8EA490

15 HEX ID : AC69935D34D34D1

BCH Error Check : Valid

*** EM 406 ***

*** EM 406 ***

Date : 27/07/14

Time : 16:30:45

Source : RTC

Beacon Source : Other

Burst Mode : Self Test

Message Format : Long

Protocol Flag : 1

Protocol Code : Maritime

Country Code : 419

Identity : 000000

Specific Beacon No. : 15

Radio Locating : 121.5 MHz.

Beacon Activation : Manual

Position Data Source : Internal

Beacon Message : FFFED09A3211170F7FDFFA11343783E0F66C

15 HEX ID : 3464222E1EFFBFF

BCH Error Check : Valid

*** EM 406 ***

6. Technical Specifications

Power Supply

- Voltage : +10 V DC to +32 V DC
- Protection : Current Limit (Fuse) and Reverse Polarity

Front Panel

- Display : 20 x 4 Character Liquid Crystal Display (LCD) with Backlight
- User Interface : 6 Keys (Escape , Enter , Up , Down , Left , Right)
- LED Indicators : Received Signal , Own Beacon Alarm , Other Beacon Alarm
- UTC Date and Time Source : Internal Real Time Clock (RTC) or External GPS
- Alarms : Audible , Visual , Remote Relay Output

Logging and Decoded Data

- Logging : Up to 25 Messages in Internal EEPROM Memory
- Decoded Data : Date, Time, Date Time Source (RTC / GPS), Beacon Source (Own / Other), Burst Mode (Normal (Live) / Self Test), Message Format (Short / Long), Protocol Flag, Country Code, Identity, Specific Beacon No., Radio Locating Device, Beacon Activation, Position Data Source (External / Internal), Beacon Message (Hex) and 15 HEX ID (Hex)

406 MHz. Receiver

- Frequency Range : 406.018 MHz. ~ 406.048 MHz.
- Demodulation : Phase (PSK) , ± 1.1 Radians
- Data Decoding : Biφ - L (Manchester)
- Bit Rate : 400 bps.
- Sensitivity : - 110 dBm (Super Heterodyne Receiver)
- Input RF Level : 10 dBm Max.

COSPAS SARSAT

- EPIRB Frequency Channels : 406.025 MHz., 406.028 MHz., 406.037 MHz. and 406.040 MHz.
- EPIRB Message Formats : Short and Long
- EPIRB Bursts : Normal (Live) and Self Test
- Own EPIRB MMSI No. : Programmable ; 9 Digit (Country Code + Identity)

Antenna

- Options : Internal Built - In and / or External Whip
- Impedance : 50 Ohms
- External Antenna Connector (on Equipment) : BNC Female

Serial Comm. Interface

- Compatibility : IEC 61162
- Protocol : 8 Data Bits , No Parity , 1 Stop Bit , No Flow Control
- GPS Serial Data Input : NMEA 0183 ; Optically Isolated
- Input Baud Rate : Selectable as 1200, 2400, 4800, 9600, 19200 or 38400 bps.
- Output Baud Rate : Selectable as 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bps.
- Protection : Surge and Transient Immunity

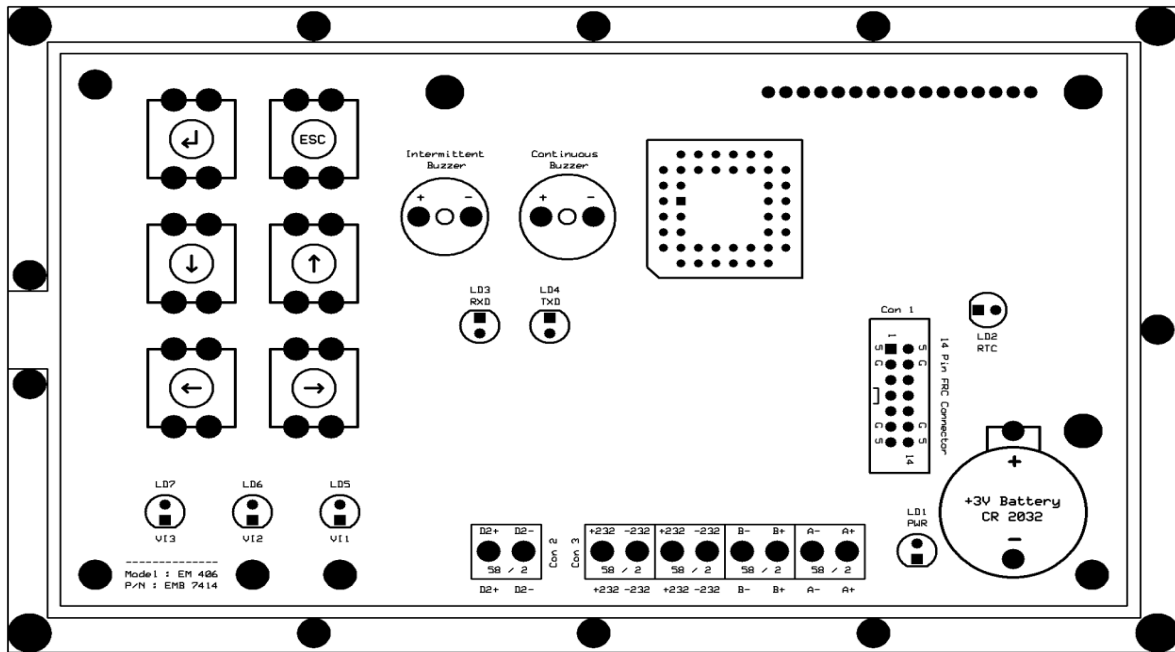
Temperature Range

- Operating : 0° C to 50° C
- Storage : - 20° C to 60° C

Physical Attributes

- Dimensions : 181 mm. (width) x 116 mm. (height) x 82 mm. (depth)
- Weight : 1050 gms.

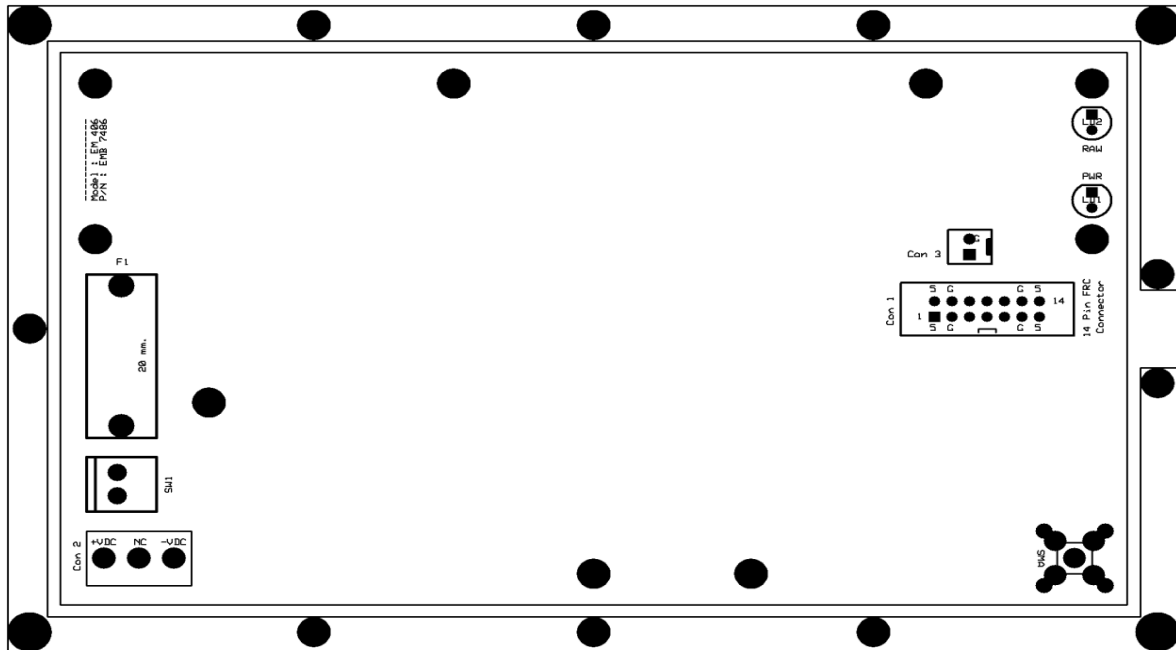
7. PCB Layouts and Connections



Model : EM 406 P/N : EMB 7414

- LD1 : +5 V DC Power LED Indicator
- LD2 : Internal Real Time Clock (RTC) LED Indicator
- LD3 : Serial Comm. Received Data Activity LED Indicator
- LD4 : Serial Comm. Transmitted Data Activity LED Indicator
- LD5 : Received 406 MHz. Signal Front Panel LED Indicator
- LD6 : Own Beacon Alarm Front Panel LED Indicator
- LD7 : Other Beacon Alarm Front Panel LED Indicator

- Con 1 : 14 Pin FRC Connector for Inter - PCB Flat Ribbon Cable Connection
- Con 2 : Serial Comm. Data Input
- Con 3 : Serial Comm. Data Output



Model : EM 406 P/N : EMB 7486

- LD1 : +5 V DC Power LED Indicator
- LD2 : Received 406 MHz. Signal LED Indicator

- Con 1 : 14 Pin FRC Connector for Inter - PCB Flat Ribbon Cable Connection
- Con 2 : +10 V DC to +32 V DC Power Input
- Con 3 : Remote Alarm Relay Output

- SW1 : Power ON / OFF Switch
- F1 : 20 mm. Fuse

- SMA : On Board External Antenna Pigtail Connection

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8. Notes

9. Certificate of Calibration