

USERS MANUAL



Tron 40S MkII  
Tron 40GPS MkII



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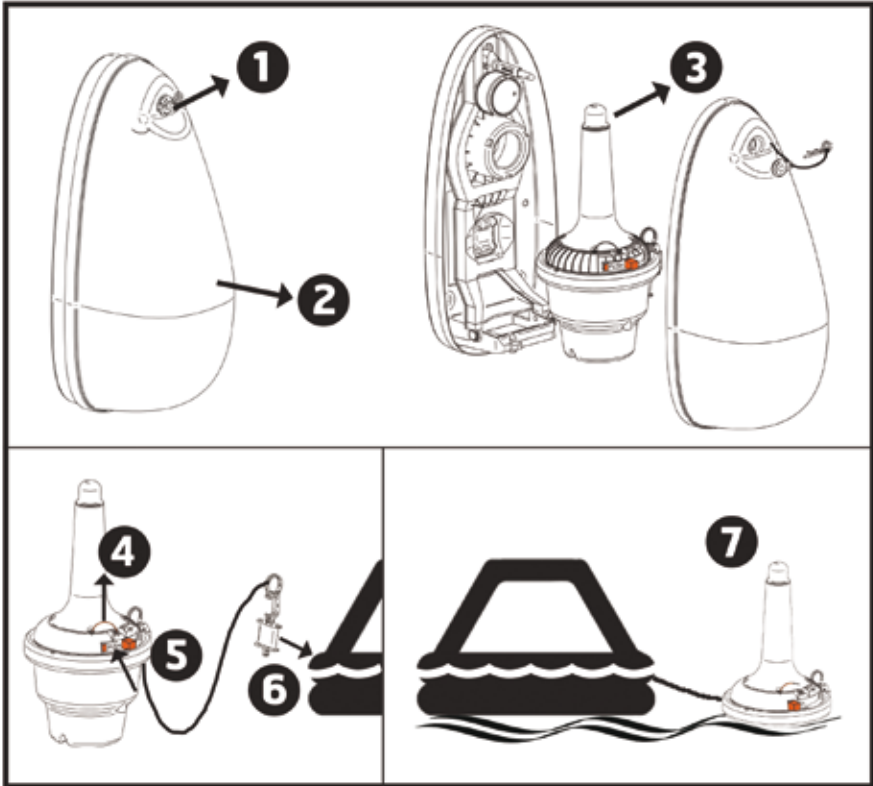
## AMENDMENT RECORDS

Amendment no	By	Date	Page(s)	Vers.	Reason for change
1	ES	05.07.07	Total 36	A	New Manual
2	ES	12.04.07	Total 36	B	New company name
3	ES	31.08.07	27	C	Error message
4	ES	31.01.08	21 and 22	D	Man operation
5	ES	10.03.08	2-6, 25, 30	E	Added text
6	ES	29.04.08	6-24	F	Corrected text
7	TH	30.01.09	Total 36	G	Layout changes
8	ES	06.01.10	17, 24-25, 27, 32, 38, 41	H	New FB6 bracket Included GPS info
9	FIT	25.08.10	Total 42	I	Corrected text
10	FIT	12.07.11	Total 36	J	Added text



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# MANUAL/OPERATION/ACTIVATION



EC Declaration of Conformity, available at [www.jotron.com](http://www.jotron.com)

## ABBREVIATIONS AND DEFINITIONS

### **BAUD**

Transmission rate unit of measurement for binary coded data (bit per second)

### **BIT**

Short form of Binary Digit. The smallest element of data in a binary-coded value

### **BPS**

Bits Per Second

### **COSPAS**

COsmicheskaya Sistyema Poiska Avariynich Sudov (Space System for the Search of Vessels in Distress)

### **EPIRB**

Emergency Position Indicating Radio Beacon

### **GLOBAL POSITIONING SYSTEM (GPS)**

The NAVSTAR Global Positioning System, which consists of orbiting satellites, a network of ground control stations, and user positioning and navigation equipment. The system has 24 satellites plus 3 active spare satellites in six orbital planes about 20,200 kilometers above the earth.

### **IEC**

International Electro-technical Commission

### **IMO**

International Maritime Organization

### **IBRD**

International 406MHz Beacon Registration Database

### **ITU**

International Telecommunication Union



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**LED**

Light Emitting Diode

**LUT**

Local User Terminal (Ground Station)

**MCA**

Marine and Coastguard Agency (UK)

**MCC**

Mission Control Centre

**NOAA**

National Oceanic and Atmospheric Administration (USA)

**RCC**

Rescue Coordination Centre

**SARSAT**

Search and Rescue Satellite-Aided Tracking System

**SBM**

Shore Based Maintenance – as required by SOLAS regulation IV/15.9.2 of SOLAS 1974 as amended with, in accordance with MSC/Circ. 1039 guidelines for Shore-Based Maintenance (SBM) of Satellite EPIRBs within 5 years if:

Passenger ships (> 12 passengers) and cargo ships (> 300GT) engaged in International voyages, shall perform SBM as follows:

- Latest by the date of the EPIRB label with this text, or the battery. Label, whichever is first
- When this EPIRB becomes due for SBM in accordance with national requirements.



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## BATTERY SAFETY DATA SHEET

<b>PRODUCT NAME:</b>	SAFT BATTERIES
<b>TYPE NO.:</b>	LSH14 LIGHT
<b>CELL WEIGHT:</b>	51 g
<b>CHEMICAL SYSTEM:</b>	Lithium/Thionyl chloride
<b>DESIGNED FOR RECHARGE:</b>	No
<b>LITHIUM METAL CONTENT</b>	Below 1 g/cell

### HAZARDS IDENTIFICATION

Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. The Lithium-Thionyl chloride batteries described in this Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the electrode materials and liquid electrolyte they contain are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.

### COMPOSITION & INFORMATION ON INGREDIENTS

Each cell consists of a hermetically sealed metallic container containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release.

- Lithium content - 3.5-5%

### FIRST AID MEASURES

Emergency contact: For chemical emergency ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at: International: +1-703-527-3887. Within the USA: 1-800-424-9300



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Inhalation: Remove from exposure, rest and keep warm. In severe cases obtain medical attention.

Skin contact: Wash off skin thoroughly with water. Remove contaminated clothing and wash

before re-use. In severe cases obtain medical attention.

Eye contact: Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.

Ingestion: Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.

Further treatment: All cases of eye contamination, persistent skin irritation and casualties who

have swallowed this substance or been affected by breathing its vapours should be seen by a Doctor.

### **FIRE FIGHTING MEASURES**

CO<sub>2</sub> extinguishers or, even preferably, copious quantities of water or water-based foam, can be used to cool down burning Li-SOCl<sub>2</sub> cells and batteries, as long as the extent of the fire has not progressed to the point that the lithium metal they contain is exposed (marked by deep red flames). Do not use for this purpose sand, dry powder or soda ash, graphite powder or fire blankets. Use only metal (Class D) extinguishers on raw lithium.

Extinguishing media

- Use water or CO<sub>2</sub> on burning Li-SOCl<sub>2</sub> cells or batteries and class D fire extinguishing agent only on raw lithium.

### **ACCIDENTAL RELEASE MEASURES**

Remove personnel from area until fumes dissipate. Do not breathe vapours or touch liquid with bare hands. If the skin has come into contact with the electrolyte, it should be washed thoroughly with water. Sand or earth should be used to absorb any exuded material. Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.

### **HANDLING AND STORAGE**

Handling - Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.

Storage - Store in a cool (preferably below 30°C) and ventilated area, away



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from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries.

Temperature above 100°C may result in battery leakage and rupture. Since short circuit can cause burns, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.

Other - Lithium-Thionyl chloride batteries are not rechargeable and should not be tentatively charged. Follow Manufacturers recommendations regarding maximum recommended currents and operating temperature range. Applying pressure on deforming the battery may lead to disassembly followed by eye, skin and throat irritation.

### **EXPOSURE CONTROLS & PERSONAL PROTECTION**

Respiratory protection - In all fire situations, use self-contained breathing apparatus

Hand protection - In the event of leakage wear gloves

Eye protection - Safety glasses are recommended during handling

Other - In the event of leakage, wear chemical apron

### **PHYSICAL AND CHEMICAL PROPERTIES**

Appearance - Cylindrical

Odour - If leaking, gives off a pungent corrosive odour

SEE MORE INFO ON MSDS/TRANSPORT DOCUMENTS ON [WWW.JOTRON.COM](http://WWW.JOTRON.COM)

## **TEST AND MAINTENANCE RECORD**

DATE	N/T/B	SIGN	INSP

**N= New EPIRB installed, T= Test, B= New battery**





## IMPORTANT

### TO PERMANENTLY DISABLE EPIRB

**The battery module must be disconnected from the main module**

The information in this book has been carefully checked and is believed to be accurate. However, no responsibility is assumed for inaccuracies.

## CAUTION!

This equipment contains CMOS integrated circuits. Observe handling precautions to avoid static discharges which may damage these devices. Jotron AS reserves the right to make changes without further notice to any products or modules described herein to improve reliability, function or design. Jotron AS does not assume any liability arising out of the application or use of the described product.

## WARNING / IMPORTANT

Jotron AS is a prime manufacturer of safety equipment designed for rescue of human lives and their property. For safety equipment to be effective in line with the design parameters it is important that they are handled, stowed and maintained in compliance with the manufacturers instructions. Jotron AS can not be held responsible for any damage caused due to incorrect use of the equipment or breach of laid down procedures or for failure of any specific component or other parts of the equipment.

The chapter covering battery replacement is added for information only. Jotron AS does not take any responsibility for improper disassembling/assembling of the beacon. We strongly recommend all service to be done by authorized Jotron AS agents. In addition to normal service, Jotron AS agents have the necessary equipment and education to test the operational functions of the beacon. Non-original maintenance and/or service parts may destroy the equipment function and performance.



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## TEST OF RADIO EQUIPMENT

### **Monthly:**

Float-free and manual EPIRBs to be checked using the means provided for testing on the equipment. Check data for periodical maintenance requirement for float-free EPIRB.

False alerts transmitted by EPIRB

False alerts are a serious problem for the rescue service. Nearly 90% of EPIRB initiated distress alerts turn out to be false alarms.

If for any reason, your EPIRB should cause a false alarm, it is most important that you contact the nearest search and rescue authority and tell them it was a false alarm. They can then stand down any rescue service (coast radio station or appropriate CES or RCC). Use any means at your disposal to make contact. Switch off the distress alarm by de-activating your EPIRB, as soon as possible.

If your beacon is activated in a non-distress situation or a distress situation which has been resolved and you no longer require assistance, contact the nearest search and rescue authorities via the most expeditious means available with the following information:

Beacon ID number (15 character UIN):

Position (At time of activation):

Date of Activation:

Time of Activation (Time zone):

Duration of Activation:

Beacon make and model:

Vessel Name/ID:

Circumstances/cause (if known):

### **USA**

The United States search and rescue authority is the U.S. Coast Guard. The primary points of contact are:

Pacific Ocean Area

USCG Pacific Area Command Centre

Tel: +1 (510)-437-3701



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Atlantic Ocean / Gulf of Mexico Area  
USCG Atlantic Area Command Centre  
Tel: +1 (757)-398-6231

From Any Location  
USCG Headquarters Command Centre  
Tel: +1 (800)-323-7233





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## 1 GENERAL DESCRIPTION

The Tron 40S MkII and the Tron 40GPS MkII are emergency equipment:

- Tron 40S MkII Cospas-Sarsat emergency EPIRB
- Tron 40GPS MkII Cospas-Sarsat emergency EPIRB incl. GPS receiver
- One of the following brackets:
  - FBH4 - Automatic float free bracket v/heating
  - FB6 - Automatic float free bracket
- Older brackets:
  - FB4 - Automatic float free bracket
  - FB5 - Automatic float free bracket
  - MB4 - Manual bracket
  - MB5 - Manual bracket

The Tron 40S MkII EPIRB is developed to meet all the regulations and rules for use on ships, vessels and life rafts in the maritime service. Look at the Tron 40S MkII declaration of conformity document at [www.jotron.com](http://www.jotron.com) to see the regulation and rules used to certify this 406 MHz EPIRB for use in search and rescue operations at sea.

### 1.1 TRON 40S MKII

The Tron 40S MkII is buoyant, and is designed to automatically release and activate in case of an emergency where the EPIRB and its bracket is submerged into the sea. The Tron 40S MkII can also be operated as a manual EPIRB, by manually releasing it from its bracket and then activating it.

Six different brackets are currently compatible with Tron 40S MkII. MB4 and MB5 are the manual bracket and FB4 and FBH4 is the automatic bracket. FB6/FB5 is automatic bracket with cover. The automatic bracket is mounted in a free space outside where the beacon can be released automatically.

The purpose of the Tron 40S MkII is to give a primary alarm to the search and rescue authorities. The EPIRB gives an immediate alarm when activated, transmitting the ID of the ship in distress. Care must be taken not to activate the EPIRB unless in an emergency situation, in such cases the user will be held responsible. For periodic testing a test function is implemented. During the test cycle the EPIRB does a self-test on the transmitters and on the battery status. No emergency signal is transmitted during the self-test. The battery of the EPIRB will last for at least 48 hours from activation of the EPIRB.



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## 1.2 SYSTEM DESCRIPTION

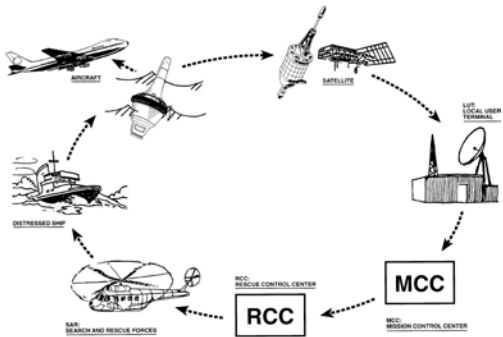
The Cospas-Sarsat system was introduced in 1982 as a worldwide search and rescue system with the help of satellites covering the earth's surface. Since the introduction of the system more than 28000 persons have been rescued by the Cospas-Sarsat system (2009). Currently the system consists of 5 functional satellites in a polar orbit constellation, these satellites cover the entire earth's surface and receive the emergency signal from the 406 MHz transmitter within the Tron 40S MkII, more polar orbiting satellites will be available in the future, giving a faster location and rescue time.

In addition several geostationary satellites are equipped with a 406 MHz transponder, these satellites are not able to locate the Tron 40S MkII but will give an early warning to the rescue forces, minimising the time from an emergency occurs till the rescue forces are at the site.

Each emergency EPIRB in the system is programmed with its own unique code, therefore it is vital that the ships data that is given to the dealer you obtained your Tron 40S MkII, is correct. It is also important that your EPIRB is registered in the database for each country. This database is normally located in the same country that the ship is registered.

### 1.2.1 SIGNAL DETECTION

When the Tron 40S MkII is activated (manually or automatically) it transmits on the frequencies 121.5 MHz and 406.037 MHz. An analogue signal is emitted on 121.5 MHz and a digital signal is transmitted on 406.037 MHz. After the Tron 40S MkII is activated, the next passing satellite will detect the transmitted signal and relay it to an antenna at a ground station, called an LUT.



When the EPIRB transmits 406 message, it is received by low orbit satellites (800 km) and if the position is between 70° north and 70° south, also by geostationary satellites (36000 km). The low orbit satellites which are polar orbiting types will store the distress message and forward to nearest LUT when it passes.

This gives the Cospas-Sarsat system a truly global coverage.

Once the signal is received by the LUT, it is processed for location and sent to a Mission Control Centre (MCC). The MCC sorts the alert data according to geographic search and rescue regions and distributes the information to the appropriate Rescue Co-ordination Centre (RCC), or if outside the national search and rescue area, to the appropriate MCC that covers the area where the distress signal was detected. The RCC in turn takes the necessary action to initiate search and rescue activities.

The International Cospas-Sarsat System ceased satellite processing of 121.5/243 MHz beacons from 1 February 2009. From that date only 406 MHz beacons will be detected by the Cospas-Sarsat satellite system. This affects all maritime beacons (EPIRBs), all aviation beacons (ELTs) and all personal beacons (PLBs). 121.5/243MHz is now only used for homing.

## 1.2.2 DISTRESS LOCATION DETERMINATION



The location of the distress signal is determined by taking measurements of the doppler shift of the EPIRB frequency when the satellite first approach and then pass the EPIRB.

The actual frequency is heard at the time of closest approach (TCA). Knowing the position of the satellite and using the received doppler signal information, it is possible to determine the location of the Tron 40S MkII from the satellite at the TCA. At the LUT, actually two positions are calculated. One is the actual position (A) and the other is the mirror image (B) position. A second satellite pass confirms the correct location (A). With the 406 system the real solution can be determined on the first pass with a reliability of nearly 90% and down to an accuracy of less than 5 km (3.1 miles).

### 1.2.2.1 GPS ADVANTAGE

Tron 40S MkII has been designed to operate with the Cospas-Sarsat system and will enhance further the lifesaving capabilities of conventional beacons. Please see below comparison between Tron 40S MkII and Tron 40GPS MkII depending on detection by polar orbiting or geostationary satellites.





GPS position is updated every 20 minutes.

	Polar orbiting satellites (LEOSAR)	Geostationary satellites (GEOSAR)
Tron 40S MkII	Delayed alert (-90 min) Position by Doppler (5km)	Immediate alert (5 min) NO position
Tron 40GPS MkII (IMSI Standard Location Protocol Long)	Delayed alert (-90 min) Position by GPS (120m)	Immediate alert (5 min) Position by GPS (120 m)

Longer Delay. Low resolution position

Fast alert and accurate position

### 1.2.3 EPIRB REGISTRATION

Normally the MCC will contact the vessel or the contact person registered in a shipping register and/or an EPIRB register (Ships owner, family member etc.) before alerting the RCC. This is to determine if the alarm from the EPIRB for some reason is a false alarm, and an expensive rescue operation can be avoided. Because of this it is important that the ships data is correct in the shipping register or in the EPIRB database.

You should register your beacon with the national authority associated with the country code in the hexadecimal identification (15 Hex ID) of your beacon. You can register your beacon online with the Cospas-Sarsat IBRD if your country does not provide a registration facility and your country has allowed direct registration in the IBRD: [www.406registration.com](http://www.406registration.com)

If your country operates a national beacon registry, consult the document C/S S.007 "Cospas-Sarsat Handbook of Beacon Regulations" available at [www.Cospas-Sarsat.org](http://www.Cospas-Sarsat.org) to obtain the point of contact. Some EPIRB registration links:

USA: <http://www.beaconregistration.noaa.gov>

UK: <http://www.mcga.gov.uk> (search for "EPIRB registration")

#### USA

Vessel owners shall advise NOAA in writing upon change of vessel or EPIRB ownership. Transfer of EPIRB to another vessel, or any other change in registration information, NOAA will provide registrants with proof of registration and change of registration postcards.



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## 2 TECHNICAL SPECIFICATIONS

### 2.1 GENERAL

Battery:	Lithium , Metal, 7,2v/7Ah, 5 years service life
Housing:	Glass reinforced polycarbonate
Dimensions:	Height: 379 mm
Max diameter:	180 mm, Weight app.: 2.0 kg
Materials:	Polycarbonate.
Compass safe distance:	1.5 m
Temperature range:	-20°C to + 55°C
Temperature storage:	-40°C to + 55°C
Operating life:	Minimum 48 hours at -20°C

### 2.2 COSPAS-SARSAT TRANSMITTER

Frequency:	406.037 MHz $\pm$ 2 ppm
Output power:	5W $\pm$ 2 dB
Protocols:	Tron 40S/GPS MkII: Maritime, Serialized, Radio Call sign
Modulation:	Phase modulation 1,1 $\pm$ 0.1 rad
Data encoding:	Bi Phase L
Stability:	Short term: $\leq 2 \times 10e^{-9}$ Medium term: $\leq 10e^{-9}$ Residual noise: $\leq 3 \times 10e^{-9}$
Bit rate:	400 b/s
Antenna:	Built in, omnidirectional.

### 2.3 HOMING TRANSMITTER

Frequency:	121.500 MHz
Output power:	Up to 100 mW
Modulation:	A9, AM sweep tone between 300Hz and 1600Hz. Sweep range: 700 Hz. Sweep rate: 2.5 Hz.
Stability:	10 ppm over temperature range.
Antenna:	Built in, omni directional.

### 2.4 BRACKETS

Materials:	Luran S/ ABS
Dimensions:	See ch. 4.1.4
Release mechanism:	Hydrostatic release unit Hammar H20 with Jotron special bolt





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## **3 EPIRB DESCRIPTION**

### **3.1 GENERAL**

The Tron 40S MkII consists of upper and lower house mounted together with an equator ring with gasket and locking pin.

Tron 40S MkII may be split into the following main parts:

- EPIRB module with antenna
- Battery module
- Equator ring with gasket

#### **3.1.1 EPIRB MODULE WITH ANTENNA**

The EPIRB module consists of two printed circuit boards, which are mounted in the upper housing:

- The main board with main switch.
- Antenna board (121.5 / 406 MHz) with indicator / flash LED

#### **3.1.2 BATTERY MODULE**

The Battery module supplies the EPIRB module with 7.2 VDC power to keep the EPIRB transmitters active for 48 hours when activated, and for test sequences. The battery module is attached inside the lower house. The housing is made of glass reinforced polycarbonate. In the lower part of the housing there is one reed contact, which is activated by a magnet in the release mechanism. This is the safety switch, which prevents the seawater contacts from activating the beacon while placed in the mounting bracket. There is a internal brass weight, which gives stability while floating.

The seawater contacts are also mounted in the battery module, and are connected to the electronic unit via the battery connector.

The batteries are mounted in a plastic battery holder.

#### **3.1.3 EQUATOR RING WITH GASKET**

The two parts of the housing are held together by the equator ring, and is locked with a U-shaped bolt of stainless steel and a split pin. Between the two halves of the housing there is a gasket made of neoprene.



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## 4 INSTALLATION

### 4.1 BRACKETS

2 different brackets are currently available for the Tron 40S MkII. FB6 and FBH4 are the automatic brackets. The automatic brackets are mounted in a free space outside where the beacon can be released automatically. FB6 is delivered with protective cover. The older brackets; FB4, FB5, MB4 and MB5 are still compatible with Tron 40S MkII.

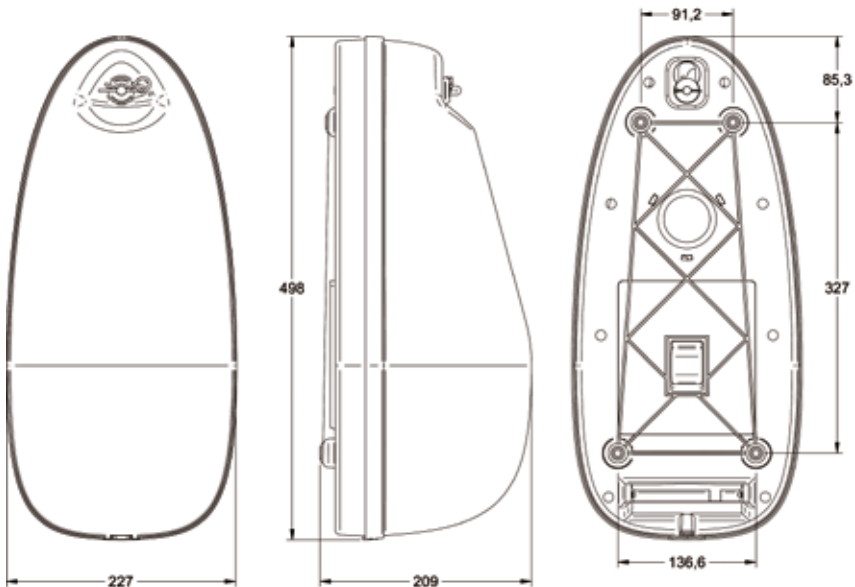
#### 4.1.1 FLOAT FREE BRACKETS FB6, FB5 AND FB4

##### **WARNING:**

DO NOT INSTALL THE EPIRB NEAR STRONG MAGNETIC FIELDS THAT COULD ACTIVATE THE BEACON

When the Tron 40S/GPS is mounted in the float-free bracket, FB6, it will operate as an automatic float free unit. The satellite float-free EPIRB should be located/installed so that the following requirements are fulfilled:

- The EPIRB should, with greatest possible probability, float-free and avoid be-



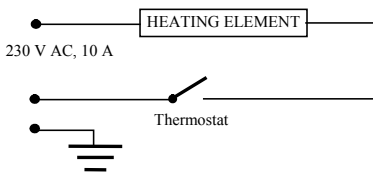
- ing caught in railings, superstructure, etc., if the ship sinks.
- The EPIRB should be located so that it may be easily released manually and brought to the survival craft by one person. It should therefore not be located in a radar mast or any other places which can only be reached by vertical ladder.

The location should be well protected from environmental conditions such as direct sea-spray, chemicals, oil, exhaust and vibrations. – see more detailed information in "COMSAR/Circ.32" regarding "Harmonization of GMDSS requirements for radio installations onboard SOLAS ships"

#### 4.1.2 FLOAT FREE BRACKET W/HEATING FBH4

See next page for installation.

The float free bracket FBH4 must be connected to the fixed installation (230V AC, 10A) through the thermostat connection box according to the connection diagram below.



The actual current consumption is maximum 30W, but power is turned off by the thermostat over approx. 0°C (32°F)

Figure 4.1.2 Connection diagram FBH4

#### 4.1.3 MANUAL BRACKET MB5 AND MB4 (OLDER MANUAL BRACKETS)

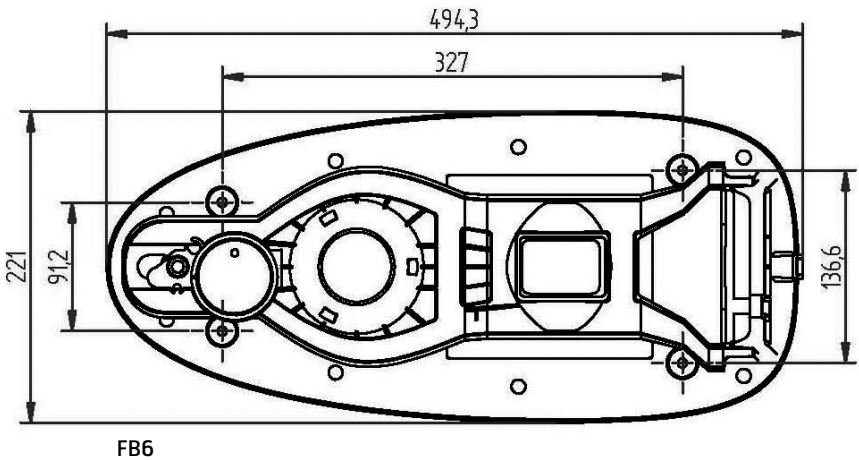
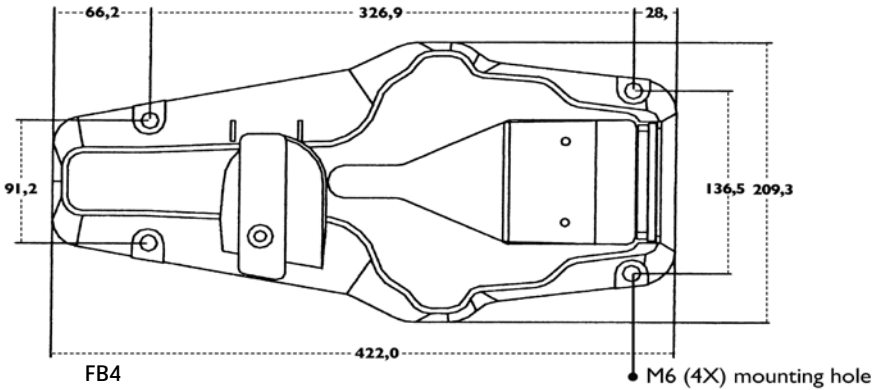
When the Tron 40S MkII is mounted in the MB5 or MB4 bracket, it will operate as a manual unit. This bracket is similar to the FB6, FB5 and FB4 bracket but does not have the hydrostatic release mechanism. This bracket is typically used to store the EPIRB inside the wheelhouse or other protected areas of the ship. When the Tron 40S MkII is mounted in the MB5 or MB4 bracket, it must be manually removed before any operation can take place, therefore the bracket should be mounted in an easily accessible place where it can be removed in a hurry in case of an emergency.



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#### 4.1.4 MOUNTING THE FB6/FB5/MB5/FB4/FBH4/MB4 BRACKETS

The bracket is mounted with 4x6mm bolts according to the drawing. Use the bolts supplied with the bracket. The bracket could be mounted in either a vertical or horizontal position, whichever is the best regarding maintenance and operation.





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## 5 OPERATION INSTRUCTIONS

### WARNING

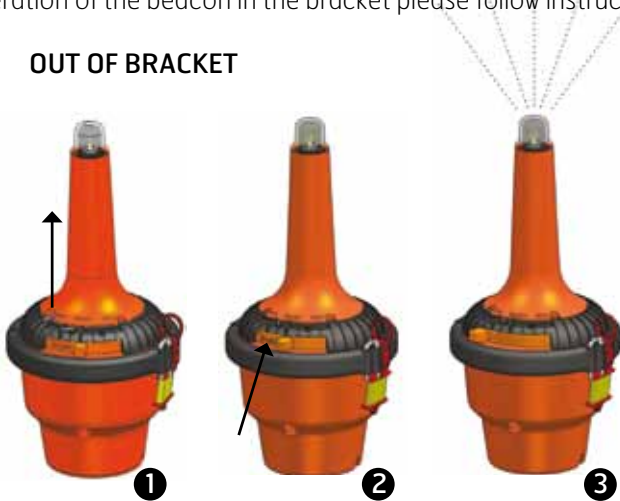
- USE ONLY DURING SITUATIONS OF GRAVE AND IMMINENT DANGER
- REPLACE THE BATTERY AFTER THE SATELLITE EPIRB IS OPERATED FOR ANY PURPOSE OTHER THAN A TEST

The Tron 40S MkII is designed to be operated either manually or automatically. The EPIRB is always armed, that is the EPIRB will automatically start to transmit when the EPIRB is out of the bracket and deployed into water. In the lower part of the EPIRB there is an automatic safety switch. This switch prevents the seawater contacts from operating the EPIRB (caused by ice, sea-spray etc.) as long as the EPIRB is placed in its bracket. See chapter 6.4 Error codes.

### 5.1 MANUAL OPERATION

For operation of the beacon in the bracket please follow instructions 1 to 3.

#### 5.1.1 OUT OF BRACKET



### WARNING

USE ONLY DURING SITUATIONS  
OF GRAVE AND IMMINENT DANGER

Regarding the 3 pictures above, follow instructions from 3-6 on page 23.



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### 5.1.2 IN FLOAT FREE BRACKET (FB4):

It is not recommended to operate the beacon inside a life raft or under a cover or canopy. Do NOT tie the lanyard to the ship in distress, as this will prevent the unit to functioning if the ship sinks.

#### Option 1:

Tron 40S MkII may be activated inside the FB4 bracket. If this is desirable, follow instructions on last page, chapter 5.1.1, pictures 1-3

#### Option 2:

- Pull out the locking pin on the clamp and open the retaining rod that holds the EPIRB
- Remove EPIRB from bracket
- Break the seal and pull the locking pin holding the main activator switch
- Push slider to move switch to ON position (the switch is spring-loaded and will automatically go to the ON position)
- Tie the beacon lanyard to you or to the survival craft
- The strobe light, located at the top of the EPIRB, will start flashing indicating that the EPIRB is operating

If possible keep the EPIRB in an open area, away from any metal objects (ship construction etc.) that may limit the satellite coverage. Transmission can be stopped by turning the switch to READY position.

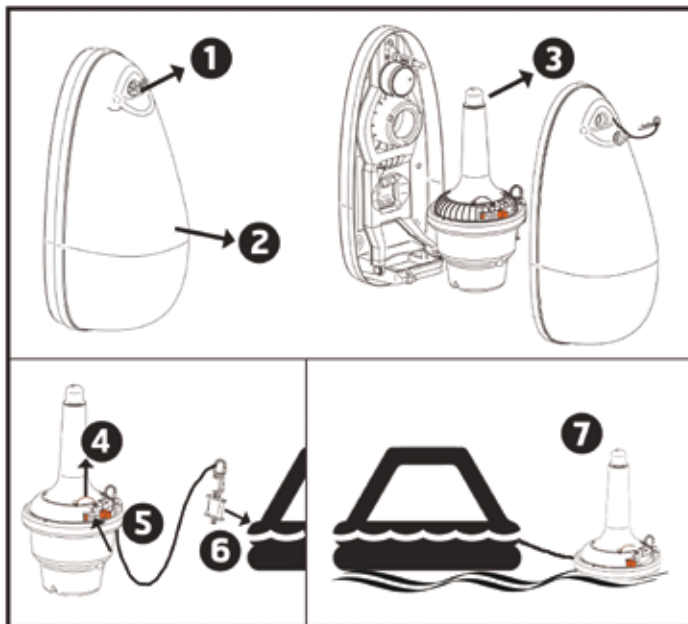






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### 5.1.3 IN FLOAT FREE BRACKETS (FB5, FB6)



It is not recommended to operate the beacon inside a life raft or under a cover or canopy. Do NOT tie the lanyard to the ship in distress, as this will prevent the unit to functioning if the ship sinks.

1. Remove the locking pin from bracket cover
2. Remove the cover
3. Take out the EPIRB from the bracket
4. Break the seal and pull the locking pin holding the main activator switch
5. Push slider to move switch to ON position (the switch is spring-loaded and will automatically go to the ON position)
6. Tie the beacon lanyard to you or to the survival craft
7. The strobe light, located at the top of the EPIRB, will start flashing indicating that the EPIRB is operating

If possible keep the EPIRB in an open area, away from any metal objects (ship construction etc.) that may limit the satellite coverage. Transmission can be stopped by turning the switch to READY position.



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## 5.2 AUTOMATIC OPERATION (FB4/FBH4/FB5/FB6)



1. The Tron 40S MkII will automatically release from the bracket, float to the surface and start to transmit when the EPIRB, in its bracket is deployed into water at a depth of app. 2-4 meters (6 - 13 feet).
2. Transmission will continue until the EPIRB is lifted out of the water, and dried off. The transmission can also be stopped by placing the EPIRB in the bracket. (If switch is in "READY" position, otherwise move switch to this position).

## 5.3 TEST

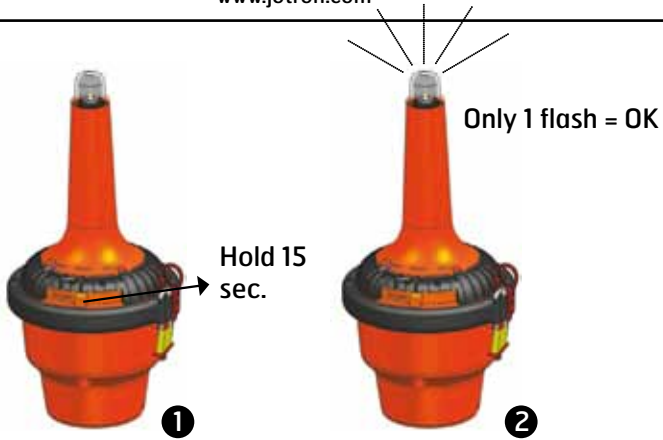
To perform the self-test, the EPIRB has to be removed from the bracket.

FB4 bracket: Remove EPIRB from the bracket by pulling out the locking pin on the clamp and open the retaining rod that holds the beacon.

FB6/FB5 bracket: Release top cover by removing the locking split pin and special washer.



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### WARNING

The EPIRB can drop out of the FB6/  
FB5 bracket when releasing top cover

#### 1. Push and hold switch in TEST position for 15 seconds

Keep hands and other objects away from the upper part of the EPIRB (away from the antenna).

#### 2. Test passed after one single flash only!

#### 3. Release the switch and put the EPIRB back into the bracket

### 5.4 EPIRB ERROR MESSAGES

If the self-test detects a fault in the EPIRB module one or more of the following indications are shown:

Number of flashes:	Fault indication:
1	NONE
2	Low power on 406 MHz transmitter
3	Low battery voltage
4	Low power on 121.5 MHz transmitter
5	PLL on 406 MHz transmitter out of lock
6	PLL on 121.5 MHz transmitter out of lock
7	EPIRB module not programmed or programming not complete



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## 6 PERIODICAL CONTROL

### **Every Month:**

Perform EPIRB self-test

What the self-test actually does is to send out a short test signal on 121,5 and 406,037MHz, testing the output of the transmitter. While transmitting the test signal, the battery voltage, output power and phase lock is tested. During the test of the 406MHz transmitter a test message is transmitted, this test message is coded with a special synchronization code and will not be recognized as real alert by the COSPAS/SARSAT satellites. Carry out visual inspection for defects on both the Tron 40S MkII and Bracket. The Tron 40S MkII should be easily removed and replaced in the Bracket. Make sure that the Tron 40S MkII and Bracket is not painted or otherwise covered with chemicals, oil, etc. Check the expiry date of the EPIRB Battery and the Hydrostatic Release Mechanism. Check the presence of a firmly attached lanyard in good condition and that it is neatly stowed and is not tied to the vessel or the mounting bracket. If the Tron 40S MkII is the main EPIRB on board, these rules must be followed.

### **Every 12th month:**

If the Tron 40S MkII is the main EPIRB on board and the ship falls under the SOLAS regulations, these rules must be followed: Perform extended annual test according to IMO's MSC/Circ.1040 (Annual testing of 406 MHz satellite EPIRBs) as required by SOLAS IV/15.9. This test can be carried out by one of Jotron AS authorized representatives or any other service provider in possession of a Tron UNIDEC or any other Cospas/Sarsat EPIRB tester/decoder.

### **Every 2nd Year:**

Hydrostatic Release Mechanism including Plastic Bolt on the Float Free Brackets must be replaced. (Check expiry date on label).

### **Every 5th Year: (Or 4th year in some countries)**

- Battery change
- SBM (see 7.1)



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## 7 MAINTENANCE

### 7.1 EPIRB MODULE / BATTERY MODULE

If the EPIRB is fitted on a vessel which requires GMDSS compliant equipment, the EPIRB shall be tested and approved as required by SOLAS regulation IV/15.9.2 of SOLAS 1974 as amended with, in accordance with MSC/Circ.1039 guidelines for shore-based maintenance of Satellite EPIRBs within 5 years, or by the date of battery expiry, whichever comes first.

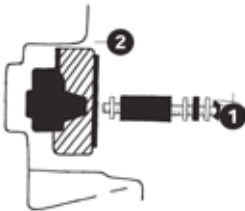
#### 7.1.1 CHANGE OF BATTERY

The Tron 40S MkII battery must be changed at Jotron SBM authorized workshop to be GMDSS compliant.

If your Tron 40S MkII is not under any international or national regulations, battery can be change by authorized Jotron representatives/partners/dealers.

### 7.2 HYDROSTATIC RELEASE REPLACEMENT

#### 7.2.1 FB4/FBH4 BRACKET



The hydrostatic unit fitted on the float free bracket [FB4/FBH4] must be replaced every 2 years. Marking the expiry date on the hydrostatic unit.

The hydrostatic comes complete with a new bolt and accessories.

- Remove the EPIRB from its bracket by pulling out the locking pin on the clamp and open the retaining rod that holds the beacon.
- Unscrew the plastic bolt (1) by screwing it counter clockwise and remove the hydrostatic release mechanism (2).
- Check expiration date on the new hydrostatic release mechanism. The date should be approximately 2 years from the date of installation.
- Mount the new hydrostatic release mechanism. The unit is fixed to the bracket with a plastic bolt containing washer, rubber seal, washer, O-ring.
- Secure the plastic bolt by hand force only!



## 7.2.2 FB5 BRACKET

### 7.2.2.1 DISASSEMBLY



**WARNING**  
The EPIRB can drop out of the FB6/FB5 bracket when releasing top cover

Remove the locking pin from bracket cover



- Remove cover
- Remove EPIRB



Press down the spring-loaded bracket plate and remove the hydrostatic unit by sliding it out of its locking slot (b).



Carefully release the spring loaded stainless bracket plate and remove the Hydrostatic Release Unit (HRU).

### 7.2.2.2 ASSEMBLY



Insert the new HRU into the spring-loaded bracket plate's "key hole" as seen on picture.



Press down the Bracket plate and make sure the stainless washer goes through the hole in the bracket back cover.



Slide the HRU UPWARDS to the end of the "Keyhole".



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Shows **CORRECT** mounting  
(photo from back of bracket)



Shows **INCORRECT** mounting  
(photo from back of bracket)



Reinstall the EPIRB and the top cover and mount washer and locking pin. Note: Make sure that top cover is in lock at bottom.

### 7.2.3 FB6 BRACKET



Remove the locking pin from bracket cover

**WARNING**  
The EPIRB can drop out of the FB6/FB5 bracket when releasing top cover



- Remove cover
- Remove EPIRB



Slide the HRU UPWARDS to the opposite side of the "Keyhole".



Carefully release the spring loaded bracket plate and twist the Hydrostatic Release Unit (HRU) as seen on the picture to release it.



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### 7.2.3.1 DISASSEMBLY



Insert the new HRU into the spring-loaded bracket plate's "key hole" as seen on picture by twisting it.



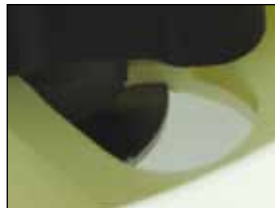
Press the HRU and bracket plate down and make sure that the stainless washer goes through the hole in the bracket back cover



Slide the HRU DOWNWARDS to the end of the "Keyhole" and make sure it goes into correct position.



Shows correct positioned HRU in contact with "end stop"



Detail of washer currently sealed seen through "key hole".



Shows **CORRECT** mounting (photo from back of bracket)



Shows **INCORRECT** mounting (photo from back of bracket)



Reinstall the EPIRB and the top cover and mount washer and locking pin. Note: Make sure that top cover is in lock at bottom.





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## **8 SPARE PARTS/OPTIONS**

82819	User Manual
99897	Programming (Country, Call Sign, MMSI)
83051	Tron 40S MkII, electronic unit
83056	Battery kit, Tron 40S/GPS MkII
80414	Hydrostatic release mechanism kit for FB5/FB6
85216	FB6 Float-free bracket, automatic release, w/protective cover
97777	FBH4 Float-free bracket, automatic release, with heating
97821	Hydrostatic release mechanism for FB4
98204	Release kit for FB4

NOTE: Keep the original satellite EPIRB packaging, since it may be needed if the EPIRB has to be shipped for servicing. UN requirements for shipping some batteries as hazardous goods require certain packaging standards and labelling.



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## 9 SERVICE PROCEDURE 2011

### WARRANTY CLAIM

Warranty claims are valid until 5 years from delivery from our warehouse. The warranty is valid as long as service and battery replacement are carried out by authorized Jotron distributors or agents.

All products are warranted against workmanship and factory defect, in material. Any warranty claims must be sent to Jotron, in writing.

Jotron reserve the right to decide whether a defective unit is within warranty terms and conditions.

If Jotron make a decision of repairing a defective product, a written description of the claim and a Jotron RMA number, should follow the unit when returning it back to Jotron's factory.

Please be noted that un-protective electronics board MUST be packed in anti-static bag, before returning to Jotron's factory.

Any costs related to transportation and/or workmanship linked up to the return of the product being repaired shall be covered by the customer.

Jotron's obligations during warranty replacement;

- Replace defective unit, including any programming
- Delivery terms: DAP Incoterms 2010 by regular freight to "Place" (Airport)

Service agent's obligations during warranty claims:

- Supply replacement unit from own stock if available
- If agreed, return defective unit to Jotron
- Electronic units must be shipped in antistatic bags or covered with Jotron's plastic cover

### SERVICE – NOT WARRANTY CLAIM

Service, such as testing, installation, programming, replacement, marking and battery exchange are provided by an authorized Jotron service agent.

Jotron do not meet the cost for services mentioned above. Distributor or service agent should stock the most commonly needed spare parts.



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## 10 SERVICE AGENTS

Please look at [www.jotron.com](http://www.jotron.com) for Marine Service Agents.

Jotron Group subsidiary companies:

Jotron UK Ltd.  
Crosland Park  
Cramlington  
NE23 1LA  
United Kingdom  
Tel +44 1670 712000  
Fax +44 1670 590265  
E-mail: [sales@jotron.com](mailto:sales@jotron.com)

Jotron Asia Pte. Ltd.  
Changi Logistics Center  
19 Loyang Way #04-26  
Singapore 508724  
Tel +65 65426350  
Fax +65 65429415  
E-mail: [sales@jotron.com](mailto:sales@jotron.com)

Jotron USA, Inc.  
10645 Richmond Avenue, Suite 170  
Houston, TX 77042  
USA  
Tel +1 713 268 1061  
Fax +1 713 268 1062  
E-mail: [sales@jotron.com](mailto:sales@jotron.com)



## CONTACT INFORMATION

### **Jotron AS (HQ)**

P.O.Box 54  
3281 Tjodalving  
Norway  
Tel: +47 33 13 97 00  
Fax: +47 33 12 67 80  
sales@jotron.com

### **Jotron AS**

P.O.Box 274  
3192 Horten  
Norway  
Tel: +47 33 08 35 00  
Fax: +47 33 08 35 01  
sales@jotron.com

### **Jotron AS**

Dølasletta 7  
3408 Tranby  
Norway  
Tel: +47 32 84 53 87  
Fax: +47 32 84 55 30  
sales@jotron.com

### **Jotron UK Ltd.**

Crosland Park  
Cramlington  
NE23 1LA  
United Kingdom  
Tel: +44 (0) 1670 712000  
Fax: +44 (0) 1670 590265  
sales@jotron.com

### **Jotron Asia Pte. Ltd.**

19 Loyang Way  
Changi Logistics Centre  
Rear Office Block 04-26  
Singapore 508724  
Tel: +65 65426350  
Fax: +65 65429415  
sales@jotron.com

### **Jotron USA, Inc.**

10645 Richmond Avenue  
Suite 170  
Houston, TX 77042  
USA  
Tel: +1 713 268 1061  
Fax: +1 713 268 1062  
sales@jotron.com