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## **OPERATOR'S MANUAL** **SIPS-BDA-800™ *Li-ion* Portable In-Building** **Communications System**

**TO REDUCE THE RISK OF INJURY, YOU MUST  
READ THIS OPERATOR'S MANUAL AND COMPLY  
WITH ALL INSTRUCTIONS AND PROCEDURES  
DESCRIBED HEREIN.**

**FAILURE TO DO SO MAY RESULT IN FIRE,  
PERSONAL INJURY, AND/OR OTHER DAMAGE.**

Refer to EM-100 Operator's Manual for important information about *Li-ion* battery packs. Observe all guidelines below to assure safe operation of this product.

## **GENERAL SAFETY RULES**

### **! WARNING**

#### **READ AND UNDERSTAND ALL INSTRUCTIONS**

Failure to follow all instructions may result in electrical shock, fire, equipment damage, and/or serious personal injury.

#### **SAVE THESE INSTRUCTIONS**

This manual contains important safety and operating information for the Modtech Corp. SIPS-BDA-800 *Lithium-Ion* powered Portable In-Building Communications (IBC) System. Before using the IBC system, read this operator's manual. Also, read and observe all information on the labels attached to the system and battery packs.

- 1. CAUTION! EXPLOSIVE ATMOSPHERE.** This product includes an integral circuit breaker, which may cause an electrical flash if the breaker should reset. To avoid explosion or fire, do not operate this product in the presence of flammable gases or fumes.
- 2. CAUTION! INDOOR ANTENNA SAFE DISTANCE.** Use a maximum 3 dBi omni-directional antenna. Observe a minimum separation of 20 cm (~ 8 in.) from all users and bystanders so none receive RF exposure beyond the maximum permissible according to section 1.1310. See item 8 below for additional minimum spacing requirements.
- 3. CAUTION! OUTDOOR ANTENNA SAFE DISTANCE.** Use a maximum 11 dBd directional antenna. Observe a minimum separation of 120 cm (~ 4 ft.) from all users and bystanders so none receive RF exposure beyond the maximum permissible according to section 1.1310. See item 8 below for additional minimum spacing requirements.
- 4. LIGHTNING DISCHARGE.** Do not deploy system antennas or other components outdoors during electrical storms.
- 5. AVOID EXPOSING INTERNAL COMPONENTS TO DANGEROUS CONDITIONS AND ENVIRONMENTS.** This product houses components including battery packs in a water-resistant polymer case. Avoid opening the case door if doing so will expose internal components to dangerous conditions and environments including water and gases.
- 6. NO USER SERVICEABLE PARTS INSIDE.** Hazardous voltages are present when the covers of internal components are removed. Removing such covers will void your warranty. If you suspect a malfunction with this product, call your dealer or the Modtech Corp. support line at (440) 942-2133.

**7. ASSURE PROPER ISOLATION BETWEEN OUTDOOR AND INDOOR ANTENNAS.** Failure to do so may lead to amplifier oscillations which may be detrimental to the radio system and cause the amplifier to automatically disable itself. A minimum separation of ~100 ft. in the back field of the outdoor antenna is recommended.

**8. AVOID OPERATING POWERFUL RADIO TRANSMITTERS TOO CLOSE TO THE SYSTEM ANTENNAS.** Doing so may overload the system amplifier and cause it to automatically disable itself. Transmitters operating in the 851 MHz to 869 MHz band should be kept a minimum of 100 ft. from the outdoor antenna. Transmitters operating in the 806 MHz to 824 MHz band should be kept a minimum of 30 ft. from the indoor antenna(s).

**9. REFER TO EM-100 BATTERY PACK MANUAL FOR IMPORTANT ADDITIONAL SAFETY GUIDELINES.**

**10. DO NOT BURN OR INCINERATE BATTERY PACKS.** Battery packs may explode causing personal injury, fire, and/or damage. Fumes resulting from burning of battery packs may be toxic.

**11. DO NOT DROP, CRUSH, IMPACT, OR MECHANICALLY ABUSE BATTERY PACKS.** Cease use of packs that have suffered a sharp impact, been dropped, run over, or damaged in any other way. Such impacts may cause internal damage that is not externally visible and that, over time, may cause short circuits, battery cell leakage, or other events that may lead to fire, personal injury, and or equipment damage.

**12. AVOID BATTERY SHORT CIRCUITS.** A short circuit will result if conductive materials such as wires, metal tools, coins, keys, salt water, or other conductive objects contact the positive and negative terminals at the same time. A short circuit may cause sparks, excessive heat, fire, personal injury, or other equipment damage.

**13. REPLACE FUSES ONLY WITH 10A 32V MINI BLADE FUSE.** No exceptions.

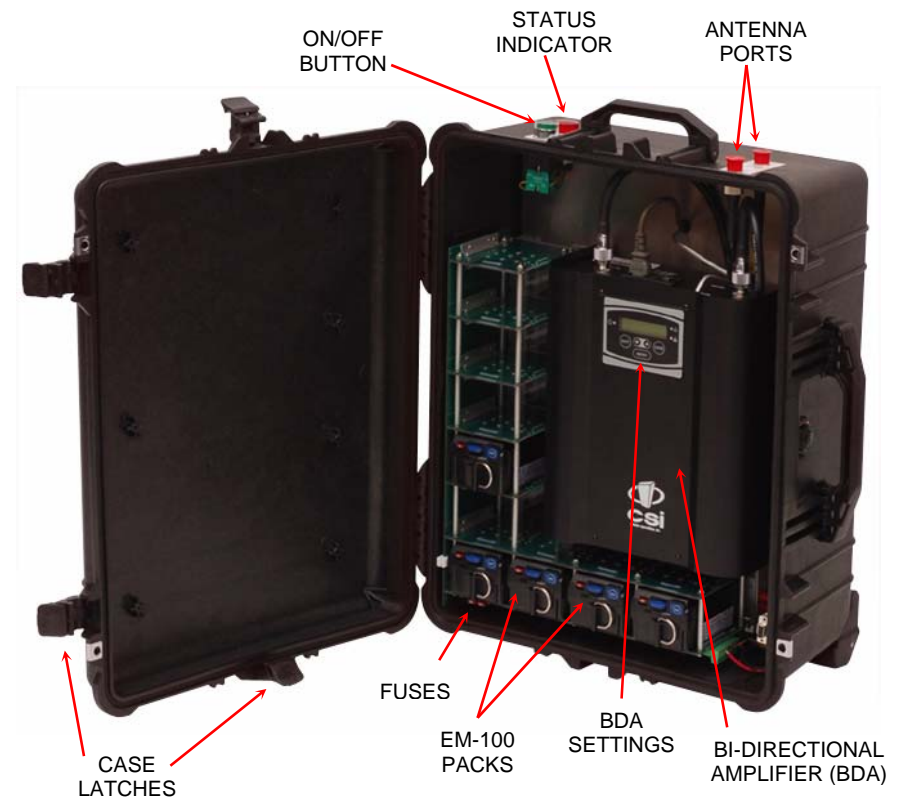
**14. STORE BATTERY PACKS IN A COOL, DRY PLACE.** Avoid leaving the battery pack in direct sunlight, vehicle cabs, compartments, or unventilated storage buildings during hot summer conditions. Under extreme temperature conditions damage may occur. Elevated temperatures in general shorten the life of your battery pack.

**! WARNING**

**READ AND SAVE THESE INSTRUCTIONS FOR FUTURE USE.**

Failure to follow all instructions may result in electrical shock, fire, equipment damage, and/or serious personal injury.

## FUNCTIONAL DESCRIPTION



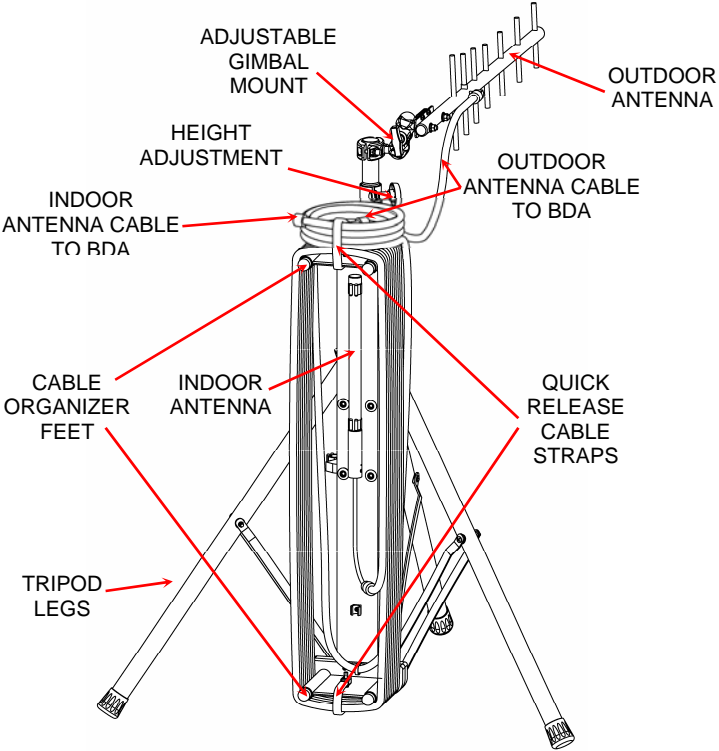
**SIPS-BDA-800 In-Building Communications System Portable Amplifier Kit (see Antenna Kit next page)**

### Basic Operation:

1. Place **Amplifier** near **Antenna** outdoors.
2. Connect **Outdoor Antenna Cable** to Amplifier Outdoor Antenna port.
3. Connect **Indoor Antenna Cable** to Amplifier Indoor Antenna port.
4. **Aim Outdoor Antenna** at nearest system repeater.
5. **Delayed Turn On** will allow time to take the Indoor Antenna into the building safely away from Outdoor Antenna.
6. Delayed Turn On: **Press and Hold ON/OFF Button** until rapid green flashing. Release. You have 30 seconds before amplifier turns on.
7. Take Indoor Antenna into building in area of operation.
8. **Observe safe separation** of antennas, operators, and transmitters.

# USER INTERFACE OPERATION

## FUNCTIONAL DESCRIPTION – cont'd



SIPS-BDA-800 In-Building Communications System  
Portable Antenna Kit (see Amplifier Kit previous page)

### Basic Operation cont'd:

1. Place **Antenna Stand** face down on **Cable Organizer Feet**.
2. **Extend Tripod Legs** and stand tripod up.
3. **Aim Outdoor Antenna** using Gimbals adjustment.
4. **Release Cable Straps**.
5. **Connect Outdoor and Short Indoor Cables to Amplifier**.
6. **Pop Indoor Antenna** from clips and **Convey to Building** – cable unfurls easily from cable organizer behind you.
7. **Observe safe separation** of antennas, operators, and transmitters.

The SIPS-BDA-800 user interface includes:

1. **On/Off Pushbutton Switch**
2. **Green Indicator Light** (integral to Pushbutton Switch)
3. **Red Status Indicator Light**

### 1. On/Off Pushbutton Operation:

- **Normal On/Off:** Press the pushbutton momentarily and release.
- **Delayed On:** Press and hold the pushbutton for 2 to 3 seconds (until Green flashes rapidly) and release for 30 second delayed on cycle. Turn off as usual.

### 2. Green Indicator Operation:

Amplifier	Shore Power	Charging	Green Light
Off	No	Don't Care	<b>Off</b>
On	No	Don't Care	Light <b>blinks</b> with on-time proportional to battery charge
On	Yes	Don't Care	Light is <b>mostly on</b> , quick blink off
Off	Yes	Done	<b>One quick flash</b>
Off	Yes	Charging	<b>Two quick flashes</b>

### 3. Red Indicator Operation:

- Normal Turn On: **several flashes** to prove indicator light is functional.
- Fault Condition: **repeating sequences of 3 flashes**.

## MAINTENANCE AND STORAGE

Moisture and heat are deleterious to battery pack operation and life. Refrain from exposing packs or other components internal to the amplifier case to rain, snow, or moisture of any kind. When storing the amplifier with battery packs installed, a cool, dry location is mandatory for good preservation of capacity and life. It is also advantageous to store packs for extended periods at 40% to 50% charge level if possible. This will optimize shelf life and service life. 50% state of charge with a standard compliment of battery packs will provide for 5 to 6 hours operation. If full runtime on demand is required, batteries may be kept at 100% by leaving unit attached to shore power.

If the amplifier is disconnected from shore power, it should be re-attached to shore power overnight (~ 8 hours) at least weekly.

Battery packs placed in prolonged storage should be checked once or twice a year. When a pack is seen to decline to 10% charge level, it may be charged for approximately 1 hour to return it to 50% charge level. If the pack is allowed to discharge fully, it will become disabled but not otherwise damaged. In this case, a very short flash of the LED will occur when the test push button is pressed (see Table 1 EM-100 Manual). A disabled pack should be charged at the user's earliest convenience, preferably for approximately one hour if it is to be returned to storage.

If the pack is to be transported for recycling or other purposes, or at time of disposal or recycling, **remove the external fuse**. This will electrically disconnect the pack contacts from the batteries inside and provide a safer state for avoiding short circuit conditions. The fuse may be simply re-installed when the pack is to be returned to service.

## DISPOSING OF BATTERY PACKS

**Lithium ion** battery packs are more environmentally friendly than many other types of batteries (e.g. lead acid or nickel cadmium types). Always dispose of battery packs according to federal, state, and local regulations. Contact a recycling agency in your area for recycling instructions and locations.

Always treat battery packs with care, do not incinerate or burn, and avoid crushing or compacting. Remove the external fuse when the pack is to be discarded or recycled. Do not allow the pack to become submerged in water.

## RBRC BATTERY RECYCLING

The RBRC™ Battery Recycling Seals indicate that the battery pack may be recycled. When a spent pack is to be retired, return it to Modtech Corp. or a participating distributor for recycling. For more information, visit the RBRC web site at [www.rbrc.org](http://www.rbrc.org).

## SPECIFICATIONS

Battery Type	EM-100 24 VDC <b>Lithium Ion</b>
Runtime (5 batteries)	Approximately 12 hours
Shore Power	90 to 130 VAC, 50 to 60 Hz, 1.5A
Amplifier Uplink	806 MHz to 824 MHz
Amplifier Downlink	851 MHz to 869 MHz
Amplifier Gain	75 dB, AGC 0 to -25
Amplifier Manual Gain Adjust	0 to -30 dB
Maximum TX Power	27 dBm (~1/2 W)
Indoor Antenna	0 dBi omni-directional
Outdoor Antenna	11 dBd directional
Minimum Operating Temperature	-20 °C
Minimum Charging Temperature	0 °C
Maximum Charging Temperature	45 °C
Maximum Operating Temperature	50 °C
External Fuses	10 A, 32 V MINI-BLADE, FAST ACTING
Dimensions	Amplifier Kit 14" x 18" x 25" Antenna Kit 10" x 12" x 60"
Weight	Amplifier Kit 45 lb. Antenna Kit 40 lb.



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