

Crestron **HTT-B10EX** infiNET EX[®] TableTop Controller

Operations Guide



Regulatory Compliance

As of the date of manufacture, the HTT-B10EX and HTTI-B10EX has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

(1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
 - Increase the separation between the equipment and receiver
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
 - Consult the dealer or an experienced radio/TV technician for help
-

Industry Canada (IC) Compliance Statement

This device complies with Industry Canada license-exempt RSS standard(s). 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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Industrie Canada (IC) Déclaration de conformité

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, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

To satisfy RF exposure requirements, this device and its antenna must operate with a separation distance of at least 20 centimeters from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter.

The specific patents that cover Crestron products are listed at patents.crestron.com.

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Contents

infiNET EX TableTop Controller: HTT-B10EX	1
Introduction	1
Features and Functions	1
Specifications	4
Physical Description	5
Setup	8
Identity Code	8
Button Installation	8
Hardware Hookup	9
Setup	10
Joining an infiNET EX Network	10
Leaving an infiNET EX Network	11
Verifying Communications Status	11
Local Button Feedback	12
Uploading and Upgrading	13
Establishing Communication	13
Programs and Firmware	14
Program Checks	14
Operation	15
Problem Solving	16
Troubleshooting	16
Further Inquiries	17
Future Updates	17
Return and Warranty Policies	18
Merchandise Returns / Repair Service	18
Crestron Limited Warranty	18

infiNET EX TableTop Controller: HTT-B10EX

Introduction

The HTT-B10EX and HTTI-B10EX provide a simple, convenient wireless controller for lighting, home automation, and entertainment in the home or office. Two-way infiNET EX™ wireless operation supports true feedback, allowing lighting and security settings to be checked and changed with confidence from any room. A clean array of 10 backlit pushbuttons with individual feedback LEDs affords easy, tactile control of any custom function. The HTT-B10EX and HTTI-B10EX are fully programmable controllers designed to operate as part of a complete Crestron® automation system, communicating via the infiNET EX wireless control network.

The HTT-B10EX (120 Volts ac) and HTTI-B10EX (230 Volts ac) are functionally identical. For simplicity within this guide, HTT-B10EX is used except where noted.

Features and Functions

- Stylish wireless pushbutton controller
- 10 engravable backlit buttons
- Configurable for up to three functions per button
- White LED light pipe feedback indicators
- True feedback and dual bar graph capability
- infiNET EX 2-way RF wireless communications
- Powered by batteries or external power pack
- Wakes instantly when touched or picked up
- Auto-dimmable backlight and LED intensity
- Available in black or white

Multifunction Push buttons

Ten simple push buttons provide just the right amount of control without clutter or complication—perfect for most applications. For situations requiring a little more, each button can be configured to enable up to three separate functions simply by tapping, double-tapping or holding the button. “Shift key” functionality is even possible, allowing any button to be held while pressing another.

Auto-Dimming Backlight

High quality backlit laser engraving provides customizable button text that is easy to read under any lighting condition. A built-in light sensor controls the backlight intensity automatically to achieve a crisp, legible appearance in both darkened and fully lit rooms.

True Feedback

Elegant white LED light pipes beside each button provide reliable status feedback for everything from lighting presets to motorized windows and door locks. Ten different blink patterns are built in, enabling all kinds of blinking LED feedback while simplifying programming and minimizing traffic on the infiNET EX network. Additional bar graph capability uses the same LEDs to display actual level settings in the form of two vertical five segment bar graphs. True feedback for every status and level setting is achieved via infiNET EX’s fully bidirectional wireless protocol. The overall LED intensity is auto-dimmable, adjusting automatically for optimal visibility under varying lighting conditions.

Battery or ac Powered

The HTT-B10EX can be powered by its external power pack or two AA batteries, permitting use as a stationary controller on a desk or table or as a portable wireless remote. Its auto-sleep function affords battery operation for up to eight months on a single set of alkaline batteries. Simply moving or pressing a button on the HTT-B10EX instantly wakes it from sleep mode. Connecting the power pack overrides the sleep/wake function completely for “always on” operation.

infiNET EX

Ultra-reliable infiNET EX wireless technology provides steadfast 2-way RF communications throughout a residential or commercial structure without the need for physical control wiring. Employing a 2.4 GHz mesh network topology, each device functions as an expander, passing command signals through to every other infiNET EX device within range (approximately 150 feet or 46 meters indoors), ensuring that every command reaches its intended destination without disruption.

The HTT-B10EX works together with other infiNET EX devices like our Cameo Wireless In-Wall Dimmers and Switches, communicating with a Crestron control system via the CEN-RFGW-EX infiNET EX Wireless Gateway (sold separately). Up to 100 infiNET EX devices may coexist on a single wireless network, and every device that is added to the network effectively increases the range and stability of the entire network by providing multiple redundant signal paths*. Built-in Dynamic Frequency Allocation continuously monitors RF conditions, automatically selecting the clearest channel to prevent interference from neighboring networks, cordless phones, and microwaves.

NOTE: The HTT-B10EX itself does not function as a repeater.

Color and Engraving Options

The HTT-B10EX is available in either black or white, with an attractive brushed aluminum inlay. Custom backlit engraving is available for each individual column of five buttons.

* Any infiNET EX mesh network device that provides expander functionality will effectively extend the range of the wireless network beyond the initial range of the gateway. Battery-powered infiNET EX devices do not provide expander functionality. A dedicated infiNET EX Wireless Expander, model CLW-EXPEX is also available.

Specifications

Specifications for the HTT-B10EX are listed in the following table.

HTT-B10EX Specifications

SPECIFICATION	DETAILS
Backlight	White LED light pipe backlight for button engraving; software adjustable intensity, auto-dimmable
Movement Sensor	Vibration sensor wakes unit from sleep mode if operating on battery
Wireless RF Transceiver	infiNET EX 2-way RF, 2.4 GHz ISM Channels 11-26 (2400 to 2483.5 MHz), default channel 15; IEEE 802.15.4 compliant
Range (typical)	150 feet (46 meters) indoor, 250 feet (76 meters) outdoor; Subject to site specific conditions and individual device capabilities
Power Requirements Batteries 12 VDC Power Supply	(2) AA alkaline batteries required 6 Watts (0.5 Amps) @ 12 Volts dc HTT-B10EX: 120 Volts ac, 60 Hz (Power supply included) HTTI-B10EX: 230 Volts ac, 50 Hz (Power supply included)
Environmental Temperature Humidity Heat Dissipation	32° to 104° F (0° to 40° C) 10% to 90% RH (non-condensing) 3.4 BTU/Hr
Enclosure	Injection molded plastic, painted, textured, brushed aluminum inlay
Dimensions Height Width Depth	1.46 in (3.71 cm) 3.60 in (9.14 cm) 4.69 in (11.91 cm)
Weight Without batteries With batteries	5.0 oz (143 g) 6.8 oz (192 g)

(Continued on following page)

HTT-B10EX Specifications (Continued)

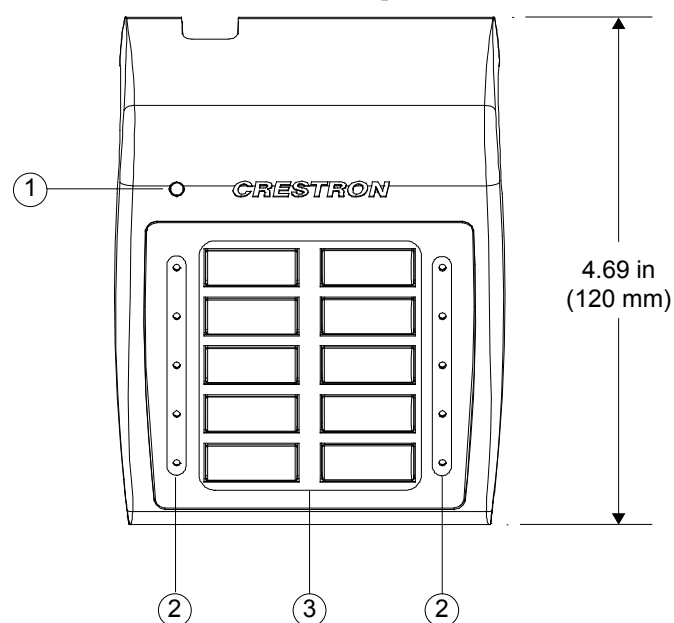
SPECIFICATION	DETAILS
Available Models (120 Vac) HTT-B10EX-B-T HTT-B10EX-W-T	infiNET EX TableTop Controller, Black Textured infiNET EX TableTop Controller, White Textured
International Version (230 Vac) HTTI-B10EX-B-T HTTI-B10EX-W-T	infiNET EX TableTop Controller, Black Textured infiNET EX TableTop Controller, White Textured
Included Accessories Power Pack	12 Volt Power Pack
Available Accessories B10-BTN(B/W)-T	Strip of five engravable button caps, backlit (black or white, textured)

Physical Description

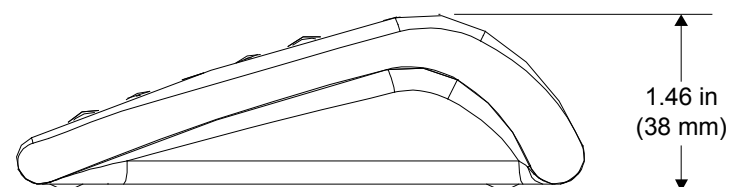
This section provides information on the connections, controls and indicators available on your HTT-B10EX.

HTT-B10EX Physical View

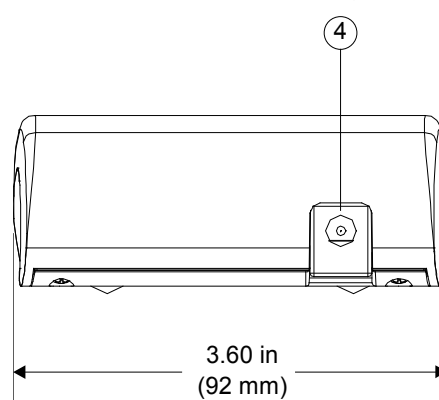
HTT-B10EX Overall Dimensions (Top View)



HTT-B10EX Overall Dimensions (Side View)



HTT-B10EX Overall Dimensions (Rear View)



Connectors, Controls, and Indicators

#	CONNECTORS, CONTROLS, AND INDICATORS	DESCRIPTION
1	LIGHT SENSOR	Photo sensor for control of auto-dimming function.
2	LED INDICATORS	FEEDBACK - (10) White LED light pipes, one per button; Programmable, auto-dimmable, adjustable intensity, 10 blinking patterns. BAR GRAPH – (2) Five step bar graphs utilizing the 10 feedback indicators.
3	BUTTONS	KEYPAD BUTTONS – (10) push buttons BUTTON EVENTS – Programmable for normal, tap, double-tap and hold. ENGRAVING – Custom backlit engraved button caps available separately.
4	POWER 	(1) 2.5 mm barrel dc power jack; 12 Volt DC power input (power supply included).

NOTE: The HTT-B10EX comes from the factory with a protective plastic overlay installed to prevent scratches in the metal face. Remember to remove this overlay prior to handing the product over to your customer.

Setup

Identity Code

NOTE: The latest software can be downloaded at www.crestron.com/software.

Every HTT-B10EX communicating via RF with a Crestron control system through a wireless gateway requires a unique RF ID. The RF ID is a 2-digit hexadecimal number that can range from 03 to 6C. The RF ID of the unit, set using Crestron Toolbox™, must match the RF ID specified in the SIMPL Windows program.

When setting the RF ID, consider the following:

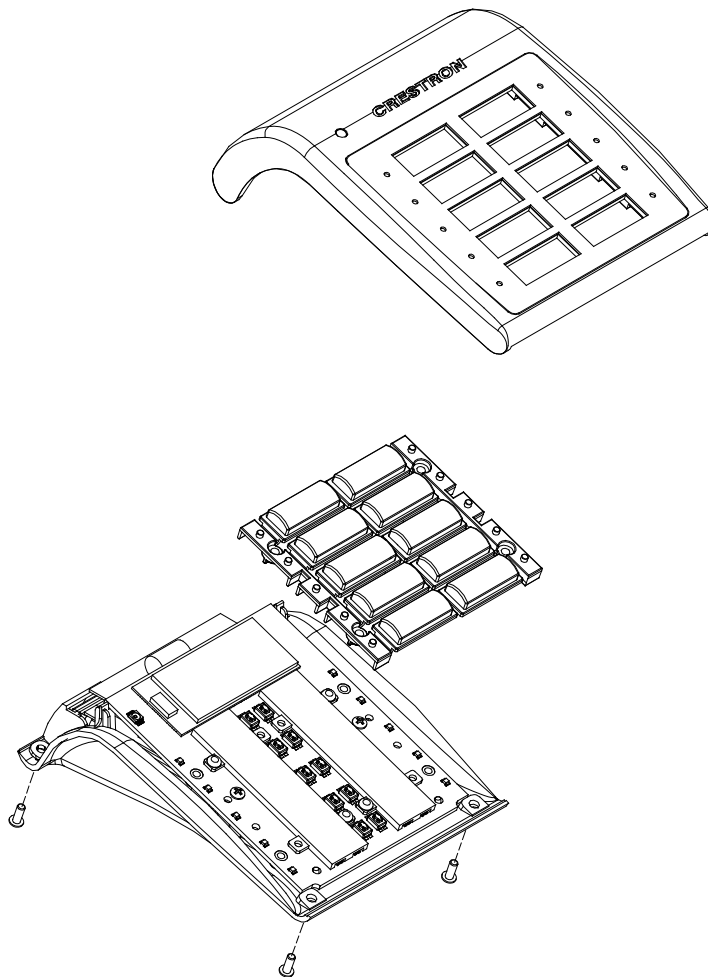
- The RF ID of each unit must match an ID code specified in the SIMPL Windows or SystemBuilder™ program.
- Each network device on the same gateway must have a unique RF ID.

For more details, refer to the Crestron Toolbox help file.

Button Installation

The HTT-B10EX is shipped with 10 blank buttons (two columns of five buttons each). To replace one or both button columns, follow this procedure:

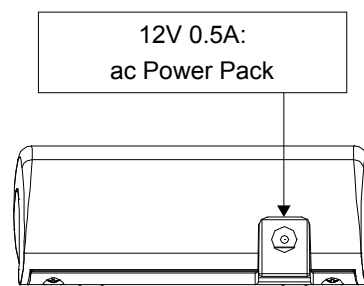
1. Disconnect the 12 volt power pack (if connected) and remove the batteries.
2. Remove the four Phillips screws from the four corners on the bottom of the unit.
3. Remove the faceplate from the front of the unit.
4. Remove the old button column(s) and replace with the new one(s), making sure the column is seated in the two small holes on the side. No screws are required.
5. Replace the faceplate on the front of the unit.
6. Replace the four Phillips screws on the bottom of the unit.
7. Reinstall batteries and reconnect 12 volt power pack.

HTT-B10EX Button Installation**Hardware Hookup**

The only connection to the HTT-B10EX is for the included 12 Volt power pack.

When connecting the HTT-B10EX, consider the following:

- Use Crestron power supplies for Crestron equipment.
- The included cable cannot be extended.

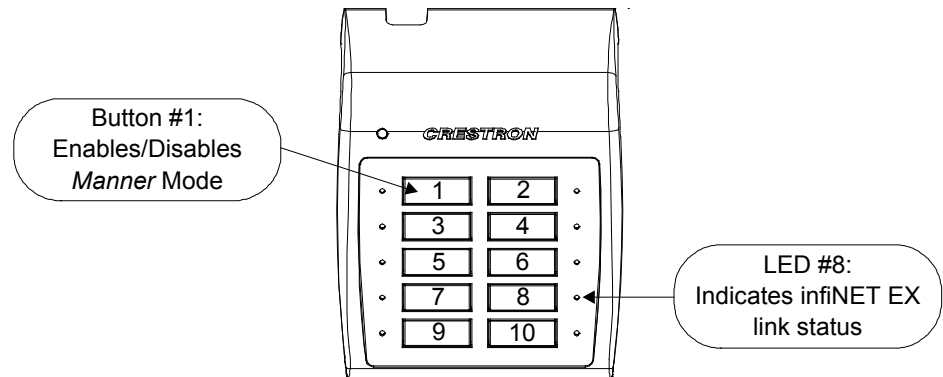
Hardware Connections for the HTT-B10EX

NOTE: The HTT-B10EX will not charge rechargeable AA batteries.

Setup

Prior to using the HTT-B10EX as part of a Crestron system, it must be configured for use on an infiNET EX network.

HTT-B10EX Button Reference



Joining an infiNET EX Network

Before an HTT-B10EX can be used in a lighting system, it must first join an infiNET EX network by being acquired by an infiNET EX gateway.

NOTE: An HTT-B10EX can be acquired by only one gateway.

To acquire an HTT-B10EX, perform the following:

1. Put the infiNET EX gateway into *Acquire* mode from the unit itself or from Crestron Toolbox, as described in its manual, available at www.crestron.com/manuals.

NOTE: In an environment where multiple gateways are installed, only one gateway should be in the *Acquire* mode at a time.

2. Place the HTT-B10EX into *Acquire* mode by doing the following:
 - a. Tap either the left or right top button three times then press and hold it down (tap-tap-tap-press+hold) until the top LED on the device flashes once (this can take up to 10 seconds).
 - b. Release the button to start the acquire process. The top LED blinks slowly to show that the device is actively scanning the infiNET EX network.
 - The device is acquired when the LED stops blinking.
 - If the acquire process fails, the LED flashes rapidly. If the device is on battery power, the LEDs stop flashing after 5 seconds.
3. Take the infiNET EX gateway out of *Acquire* mode from the unit itself or from Crestron Toolbox, as described in the latest version of its manual.

Leaving an infiNET EX Network

To leave a network, simply place the INET-CBDEX into *Acquire* mode (step 2 above) when there is no gateway in *Acquire* mode.

Verifying Communications Status

To check the communication status of the device, tap either the left or right top button three times then press and hold it down (tap-tap-tap-press+hold) for less than 2 seconds. The top LED indicates the communication status. Refer to the following table for details.

LED Status Table

LED DISPLAY (Top LED)	COMMUNICATIONS STATUS
Turns on for 5 seconds	Device communicating with gateway and control system.
Blinks three times	Device communicating with gateway, but gateway not communicating with control system.
Blinks twice	Device is acquired but not communicating with gateway.
Blinks once	Device not acquired to a gateway.

Local Button Feedback

Use SIMPL Windows to enable/disable local button feedback. Local button feedback provides positive confirmation for any button press. When enabled, the LED next to the button being pressed will light for as long as the button is pressed.

When the button is released, feedback is governed by the program. When local button feedback is disabled (the default), button feedback is always governed by the program.

Uploading and Upgrading

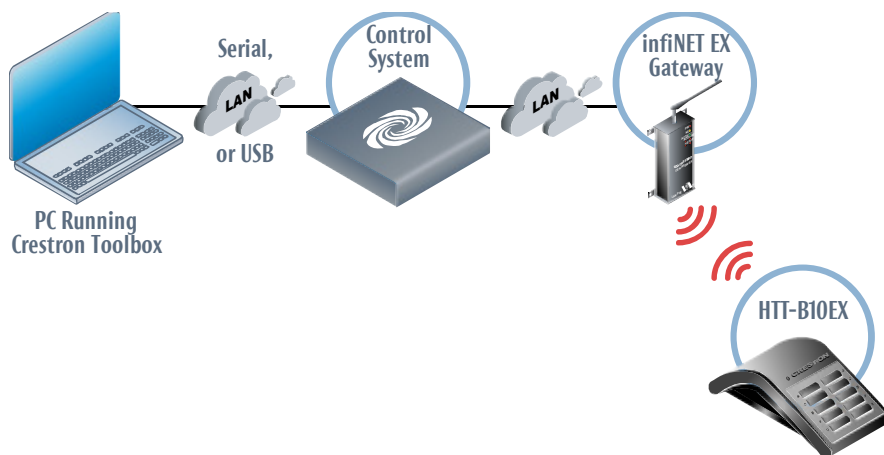
Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs or firmware) can be transferred to the control system (or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

NOTE: Crestron software and any files on the Web site are for authorized Crestron dealers and Crestron Service Providers (CSPs) only. New users must register to obtain access to certain areas of the site (including the FTP site).

Establishing Communication

Use Crestron Toolbox for communicating with the HTT-B10EX; refer to the Crestron Toolbox help file for details. There is a single method of communication: indirect.

Indirect Communication



HTT-B10EX connects to the gateway, which connects to control system via Ethernet.

An Address Book entry must be defined for the gateway. For information, refer to the Toolbox help file.

Programs and Firmware

Program or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron Web site as new features are developed after product releases. One has the option to upload programs via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the Crestron Studio help file, SIMPL Windows help file, or the Crestron Toolbox help file.

Crestron Studio / SIMPL Windows

If a Crestron Studio (or SIMPL Windows) program is provided, it can be uploaded to the control system using Crestron Studio (or SIMPL Windows) or Crestron Toolbox.

Firmware

Check the Crestron Web site to find the latest firmware. (New users must register to obtain access to certain areas of the site, including the FTP site.)

Upgrade HTT-B10EX firmware via Crestron Toolbox.

1. Establish communication with the HTT-B10EX and display the “System Info” window.
2. Select **Functions | Firmware...** to upgrade the HTT-B10EX firmware.

Program Checks

Using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree View**) to show all network devices connected to the control system and all infiNET devices that have been acquired by the gateway. Right-click on the HTT-B10EX to display actions that can be performed on the HTT-B10EX.

Operation

The behavior of the HTT-B10EX will differ depending upon whether it is powered via the included 12 volt power pack or via two AA batteries. When powered from the 12 volt power pack, the unit will behave much like a wired keypad, constantly communicating with the control system via the gateway. When powered from batteries, the unit will shut itself down to conserve power when not in use and will “wake up” when a button is pressed or the unit detects motion (e.g. because it was picked up).

When powered by its 12 volt power pack, the HTT-B10EX will behave much like a typical wired keypad, with the exception of *Manner* mode, described previously (refer to “Manner Mode” on page **Error! Bookmark not defined.**). When 12 volt power is connected to the HTT-B10EX the device acts as a router/repeater for other infiNET EX devices

When powered by AA batteries, the HTT-B10EX will automatically shut itself off after some period of inactivity. This is done to conserve battery life and works as follows:

- When no button has been pressed and the unit has not been moved for five seconds, the unit will slow down infiNET EX communications with the gateway, communicating every three seconds instead of continuously.
- After an additional 10 seconds of inactivity, the unit will go to “sleep”, turning off its radio, the backlight and the LED feedback indicators.
- The unit will “wake up” as soon as a button is pressed or the unit is moved.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

HTT-B10EX Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Device does not function.	Device is not receiving power from a Crestron power source.	Use the provided Crestron power source. Verify connections.
	Device is not receiving sufficient power.	Check batteries (if running on battery power).
	Device is not communicating with the gateway.	Acquire the device to the infiNET EX network (refer to "Joining an infiNET EX Network" which starts on page 10).
	RF ID of device (or the gateway ID) is not set to match the RF ID of the SIMPL Window program.	Use the Network Device Tree infiNET EX network in Crestron Toolbox to poll the infiNET EX network. Verify the RF ID for the infiNET EX device is set to match the RF ID specified in the SIMPL Windows program. NOTE: For communication with Crestron Toolbox, the HTT-B10EX should be powered from its 12 Volt power pack.
All LEDs blink four times after waking or button press.	HTT-B10EX is not acquired by gateway.	Acquire the device to the infiNET EX network (refer to "Joining an infiNET EX Network" which starts on page 10).
All LEDs blink four times after waking or button press. (Continued)	HTT-B10EX is out of range of gateway.	Move unit back into range.
	Gateway is off.	Turn gateway on.

Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or, for assistance within a particular geographic region, refer to the listing of Crestron worldwide offices at www.crestron.com/offices.

To post a question about Crestron products, log onto Crestron's Online Help at www.crestron.com/onlinehelp. First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the HTT-B10EX and HTTI-B10EX, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron Web site periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from Crestron. To obtain warranty service for Crestron products, contact an authorized Crestron dealer. Only authorized Crestron dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a Crestron Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to Crestron, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. Crestron reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by Crestron, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

Crestron Limited Warranty

Crestron Electronics, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from Crestron, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touch screen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from Crestron or an authorized Crestron dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

Crestron shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall Crestron be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. Crestron is not liable for any claim made by a third party or made by the purchaser for a third party.

Crestron shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, Crestron makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

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10.13

Specifications subject to
change without notice.