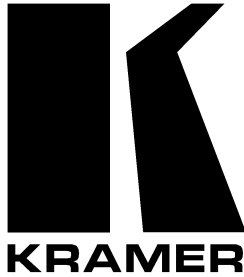


Kramer Electronics, Ltd.



USER MANUAL

Model:

RC-BT1 / BT-1

Bluetooth® controller

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1 Introduction

Dedication by Kramer Electronics since 1981, to the development and manufacture of high quality video/audio equipment, makes the Kramer line an integral part of the finest production and presentation facilities in the world. In recent years, Kramer has redesigned and upgraded most of the line, making the best even better! The Kramer line of professional video/audio electronics is one of the most versatile and complete available, and is a true leader in terms of quality, workmanship, price/performance ratio and innovation. In addition to our high quality controllers, like the Kramer **BT-1 Bluetooth® controller**, we also offer excellent switchers and matrices, distribution amplifiers, presentation processors, interfaces, and computer-related products. Congratulations on purchasing your Kramer **BT-1 Bluetooth® controller**. This product is ideal for:

- Wireless control in a video and/or audio studio
- Presentation applications via remote control of RS-232 devices

The package includes the following items:

- A pair of **BT-1 Bluetooth® controller** units
- 2 power adapters (5V DC Input)
- Null-modem adapter
- This user manual¹ and the Kramer concise product catalog/CD

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

3 Overview

Bluetooth® technology is a short-range radio link connectivity that facilitates RS-232 communication between 2 devices², without the need for a direct cable connection. In this way you can wirelessly transmit commands from a PC or other controller to a Kramer RS-232 controlled device (such as a switcher) without connecting a cable directly between the PC and the switcher.

¹ Download up-to-date Kramer user manuals from the Internet at this URL: <http://www.kramerelectronics.com/manuals.html>

² A transceiver chip that transmits and receives, is included in each device

3.1 Your BT-1 Bluetooth® controller

Your **BT-1 Bluetooth® controller** consists of a pair of Kramer **BT-1 Bluetooth® controller** units, a transmitter and a receiver of identical "dongle" type devices. The advantages of the **BT-1 Bluetooth® controller** include:

- A high quality design—each **BT-1 Bluetooth® controller** unit is robust, compact and light weight
- Ease of use—simply connect the PC to one **BT-1 Bluetooth® controller** unit and the switcher to the other **BT-1 Bluetooth® controller** unit
- An uncluttered working environment—if the PC and the switcher are located in different rooms, or at opposite ends of the same room, you do not need to use lengthy cabling to interconnect them, and you are not restricted to the operation distance limitations of wired RS-232
- A range of up to 10 meters¹ between the pair of **BT-1 Bluetooth® controller** units

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Position your **BT-1 Bluetooth® controller** unit in a location free from moisture and away from excessive sunlight and dust
- Never open your **BT-1 Bluetooth® controller** unit

Figure 1 illustrates the **BT-1 Bluetooth® controller** unit showing the RS-232 DB9F port and the power socket:

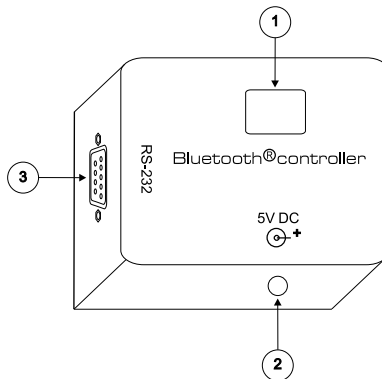


Figure 1: BT-1 Bluetooth® controller

Table 1 defines the **BT-1 Bluetooth® controller** unit:

¹ Future versions are planned to be able to operate several controlled devices simultaneously at an extended range

Table 1: Features and Functions of the BT-1 Bluetooth® controller

#	Feature	Function
1	Display Window	Displays the status of the LEDs
2	5V DC Power Socket	+5V DC connector for powering the unit
3	RS-232 DB9F Port	Connects to PC or switcher

4 Using the Bluetooth® controller

Section 4.1 describes the Bluetooth® controller internal settings. Section 4.1.1 describes the preset master and slave definition and section 4.1.2 describes the Preset DCE Definition. Section 4.2 describes how to connect and operate the Bluetooth® controller.

4.1 Bluetooth® controller Internal Settings

The dipswitches and jumpers inside each **BT-1 Bluetooth® controller** unit are preset and must not be altered.

Each pair of **BT-1 Bluetooth® controller** units is unique. If you are using several pairs of **BT-1 Bluetooth® controller** units, be sure to keep each pair together, as a separate set.

4.1.1 Preset Master and Slave Definition

The pair of **BT-1 Bluetooth® controller** units includes one **BT-1** unit preset as the Master¹, and the other as the Slave². It is irrelevant which **BT-1** unit (Master or Slave) connects to the PC. However, if the **BT-1** unit that is connected to the PC is the Slave, the unit that connects to the switcher will be the Master.

4.1.2 Preset DCE Definition

The pair of **BT-1 Bluetooth® controller** units are both preset (via their jumpers) as DCE (Data Computing Equipment) and not as DTE (Data Terminal Equipment).

4.2 Connecting and Operating the Bluetooth® controller

Connect your pair of **BT-1 Bluetooth® controller** units, as the example in Figure 2 illustrates:

1. Connect the 5V DC power adapter to the power socket on one **BT-1** unit and connect the adapter to the mains electricity. Turn on the power. The red LED lights, indicating that the power is ON.

¹ DIPS 1, 2 and 4 are OFF and DIP 3 is ON

² All 4 DIPS are OFF

2. Connect the 5V DC power adapter to the power socket on the other **BT-1** unit and connect the adapter to the mains electricity. Turn on the power. The red LED lights, indicating that the power is ON.
3. Wait a few seconds.
The yellow LED lights momentarily on both **BT-1** units (as well as the red LED), indicating that the *Bluetooth® controller* units are standing-by to communicate. After a few seconds, the yellow LED no longer lights and the green LED lights on both **BT-1** units (as well as the red LED), indicating an active Bluetooth link.
4. Connect a flat cable¹ between the RS-232 DB9F port on one **BT-1** unit and the RS-232 DB9 port on the PC.
5. Connect a flat cable¹ between the RS-232 DB9F port on the other **BT-1** unit and the RS-232 DB9 port on the switcher, using a Null-modem connection if required².
6. Turn on the power on the PC and on the switcher to communicate via the active Bluetooth link³.

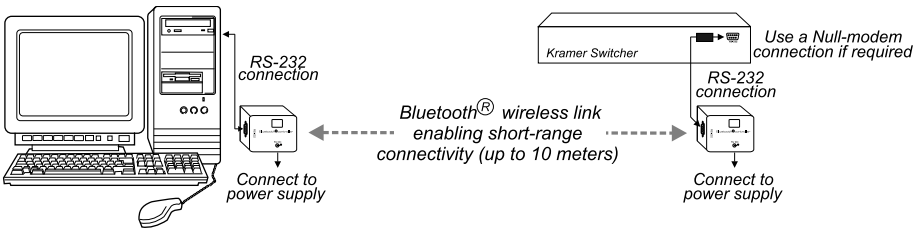


Figure 2: BT-1 Bluetooth® controller Setup

5 Technical Specifications

Table 2: Technical Specifications of the BT-1 Bluetooth® controller

Control:	DB9F connector
LEDs:	Red (power ON), yellow (standing-by to communicate), green (active Bluetooth link)
Dimensions:	6.5 cm x 3.6 cm x 5 cm (2.56" x 1.42" x 1.97", W, D, H)
Power Source:	5V DC
Weight:	0.057 kg (0.13lbs.) approx.
Accessories:	Power supply, null-modem adapter
Serial Interface:	Speed rate: 9600bps, no flow control, 8 bit, no parity, 1 stop bit

¹ Straight one-to-one uncrossed connections

² That is, if connecting that switcher to a PC would require a Null-modem adapter

³ If no data is transferred, disconnect the 5V DC power adapters from both BT-1 units and then reconnect them. If the problem persists, disconnect both BT-1 units—from the PC and from the switcher. Verify proper operation by connecting the PC and the switcher directly via a RS-232 cable connection

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for three years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
 - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
 - ii) Product modification, or failure to follow instructions supplied with the product
 - iii) Repair or attempted repair by anyone not authorized by Kramer
 - iv) Any shipment of the product (claims must be presented to the carrier)
 - v) Removal or installation of the product
 - vi) Any other cause, which does not relate to a product defect
 - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer. This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B – Unintentional radiators"

CAUTION!

- ☒ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ☒ Use the supplied DC power supply to feed power to the machine.
- ☒ Please use recommended interconnection cables to connect the machine to other components.



For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com.

**Updates to this user manual may be found at
<http://www.kramerelectronics.com/manuals.html>.**

We welcome your questions, comments and feedback.



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