Key digital®

COMPASS CONTROL®

Discover The Possibilities®

KD-ZRC300
Programming Guide

Video   Audio   Automation   Climate   Lights   Shades   Web   Security

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Table of Contents

About KD-ZRC300

KD-ZRC300 features ZigBee wireless communication, as well as line-of-sight IR support, and is the first universal remote control from Key Digital's Compass Control® series.

Key Features

> **48 Programmable Hard Buttons:** For IR and/or RF ZigBee® commands programmable with Compass Navigator™ PC Software

> **Programming Support:** Unlimited macro and variable actions

> **ZigBee® Signal Transmission:** Up to 100' through walls, doors and floors

> **Device Control:** Up to 7 devices with line-of-sight IR control or up to 9 devices with RF Wireless 2.4 GHz ZigBee® control

> **Backlight:** Motion detected automatic backlighting. The backlight will turn on when movement is detected and will stay on for five seconds after movement has stopped.

> **USB:** Recharging Batteries

> **RS-232:** Programming

> **Multiple System Modes:**
>> *Idle Mode:* Power Saving mode while remote is not in use
>> *Active Mode:* Device switches to Active Mode after a button is pressed or motion is detected. Stays in Active Mode for 5 seconds.
>> *Low Battery Mode:* Activated when the battery has dropped below 2.4V. Backlighting and Configuration Mode are unavailable.
>> *Configuration Mode:* To setup and configure the remote

> **Indication Keys (On/Off):**
>> *Low Battery indicator:* Power OFF LED blinks every one second while in active mode
>> *Battery Charging indicator:* Power ON LED blinks every one second while in active mode
>> *Full Charge indicator:* Both Power ON and OFF LEDs blink every one second while in active mode
>> *Configuration Mode indicator:* Both Power ON and OFF LEDs are steadily illuminated

> **7 Device Keys:** The selected Device Key LED will remain illuminated to indicate which device is selected

> **For more information regarding KD-ZRC300's key features, visit:** http://keydigital.com/items.asp?itemCode=KDZRC300&Company=Key

Connectivity

The KD-ZRC300 remote communicates with the KD-ZRX200 transceiver via wireless ZigBee signals. The KD-ZRX200 transceiver allows for communication from up to 100 feet away with signals extending through most walls, floors and doors. The KD-MC1000 Master Controller must also be connected in the system. Connect the KD-ZRX200 to the KD-MC1000's ZigBee RS-232 I/O port using the supplied 3.5mm 4 conductor stereo male to male cable or using a fabricated wire that may be up to 100 ft. long.

KD-MC1000   **KD-ZRX200**

3.5mm 4 conductor cable

Pair KD-ZRC300 ZigBee remote with KD-ZRX200 transceive antenna.

1. Connect The KD-ZRX200 ZigBee port to the RS-232 ZigBee port on the KD-MC1000 (make sure KD-MC1000 is powered on)

2. Hold down the Pair button located underneath the KD-ZRX200 ZigBee transceiver. Blue lights will begin to flash.

3. As the KD-ZRX200 lights flash, hold down the **A** and **C** buttons on the KD-ZRC300 remote until the blue lights stop flashing.

4. The KD-ZRC300 and KD-ZRX200 connected to KD-MC1000 are now paired.

How It Works

KD-CCKIT1000 Master Controller Kit: Includes KD-MC1000 Master Controller, KD-ZRC300 ZigBee® Wireless 2.4 Ghz & IR Universal Handheld Remote & KD-ZRX200 ZigBee® Wireless 2.4 Ghz to RS-232 Tx & Rx

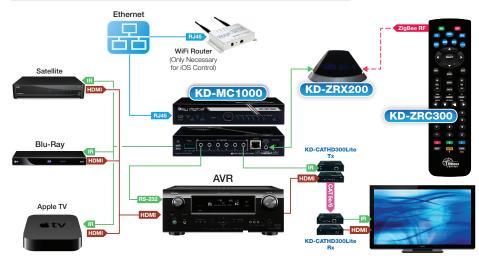**KD-MC1000:** Master Controller (Wired/LAN, Supports up to 8 Ports)

KD-ZRC300: Zigbee Wireless 2.4 Ghz IR Universal Handheld Remote

KD-ZRX200: Zigbee Wireless 2.4 Ghz to RS-232 TX & RX

Compass Navigator™ PC Software: Visual Design & Programming of the Compass Control® System

Single Zone Demo System that Utilizes KD-CCKIT1000:

Ethernet

RJ45

WiFi Router
(Only Necessary
for iOS Control)

ZigBee RF

Satellite
IR
HDMI

Blu-Ray
IR
HDMI

Apple TV
IR
HDMI

RJ45

KD-MC1000   **KD-ZRX200**

KD-ZRC300

RS-232

HDMI

AVR

KD-CATHD300Lite
Tx
IR
HDMI

CAT5e/6

KD-CATHD300Lite
Rx

IR
HDMI

IR Light
The remote can be used for line-of-sight IR control or as a Zigbee wireless remote control

Micro USB
Used to charge the two 1.5v rechargeable Alkaline batteries

RS-232 Port
Used for configuring the Zigbee remote. Note: USB cable must be connected to micro USB connector)

3.5mm Stereo Phone Jack Pinout:

Tip: TxD, Ring: RxD, Sleeve: Ground

Function Keys
"A" + "1" Key: Sets configuration mode through the RS-232 port on the handheld remote

"A" + "2" Key: Sets configuration mode through the Zigbee Receiver

"A" + "C" Key: To pair to ZigBee Receiver

"C" Key: To cancel any configuration mode

ON   OFF

TV   CBX   ATV

BRP   AVR   SEC   L/S/H

SELECT

DVR   EXIT

GUIDE

VOL   MUTE   CH

PREV CH

ZOOM   AV   PC
LIGHT   SHADES   HVAC
AM/FM   INT RADIO   SURR

1   2   3
4   5   6
7   8   9
–   0   ↵

A   B   C

HEAT   AUTO   COOL
D   MENU

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Indication Keys
Low Battery indicator: Power OFF LED blinks every second while in active mode.

Battery Charging indicator: Power ON LED blinks every second while in active mode.

Full Charge indicator: Both Power ON and OFF LEDs blink every second while in active mode.

Configuration Mode indicator: Both Power ON and OFF LEDs are steadily illuminated

Device Keys
There are 7 device keys. The selected Device Key LED will remain illuminated to indicate which device is selected

System Modes
Idle Mode: Power Saving mode while remote is not in use

Active Mode: Device switches to Active Mode after a button is pressed or motion is detected. It stays in Active Mode for 5 seconds.
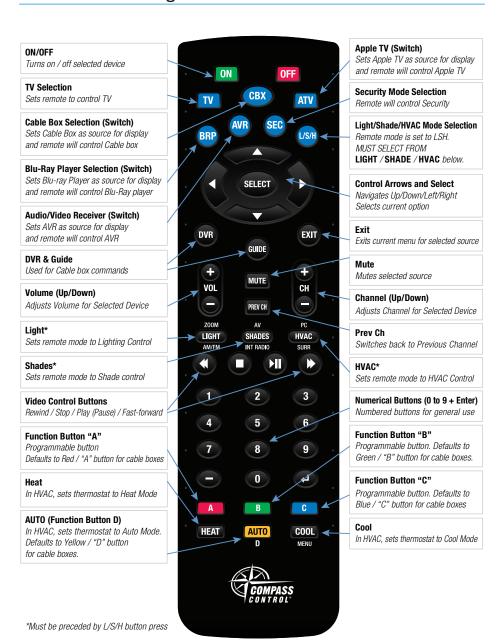
Low Battery Mode: When the battery has dropped below 2.4V the remote switches to Low Battery Mode. Back lighting and Configuration Mode are unavailable.

Configuration Mode: To setup and configure the remote

Backlight
The backlight will turn on when movement is detected and will stay on for five seconds after movement has stopped

ON/OFF
Turns on / off selected device

TV Selection
Sets remote to control TV

Cable Box Selection (Switch)
Sets Cable Box as source for display and remote will control Cable box

Blu-Ray Player Selection (Switch)
Sets Blu-ray Player as source for display and remote will control Blu-Ray player

Audio/Video Receiver (Switch)
Sets AVR as source for display and remote will control AVR

DVR & Guide
Used for Cable box commands

Volume (Up/Down)
Adjusts Volume for Selected Device

Light*
Sets remote mode to Lighting Control

Shades*
Sets remote mode to Shade control

Video Control Buttons
Rewind / Stop / Play (Pause) / Fast-forward

Function Button "A"
Programmable button
Defaults to Red / "A" button for cable boxes

Heat
In HVAC, sets thermostat to Heat Mode

AUTO (Function Button D)
In HVAC, sets thermostat to Auto Mode. Defaults to Yellow / "D" button for cable boxes.

ON   OFF

TV   CBX   ATV

BRP   AVR   SEC   L/S/H

SELECT

DVR   EXIT

GUIDE

VOL   MUTE   CH

PREV CH

ZOOM   AV   PC
LIGHT   SHADES   HVAC
AM/FM   INT RADIO   SURR

1   2   3
4   5   6
7   8   9
–   0   ↵

A   B   C

HEAT   AUTO   COOL
D   MENU

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Apple TV (Switch)
Sets Apple TV as source for display and remote will control Apple TV

Security Mode Selection
Remote will control Security

Light/Shade/HVAC Mode Selection
Remote mode is set to LSH.
MUST SELECT FROM
LIGHT / SHADE / HVAC below.

Control Arrows and Select
Navigates Up/Down/Left/Right
Selects current option

Exit
Exits current menu for selected source

Mute
Mutes selected source

Channel (Up/Down)
Adjusts Channel for Selected Device

Prev Ch
Switches back to Previous Channel

HVAC*
Sets remote mode to HVAC Control

Numerical Buttons (0 to 9 + Enter)
Numbered buttons for general use

Function Button "B"
Programmable button. Defaults to Green / "B" button for cable boxes.

Function Button "C"
Programmable button. Defaults to Blue / "C" button for cable boxes

Cool
In HVAC, sets thermostat to Cool Mode

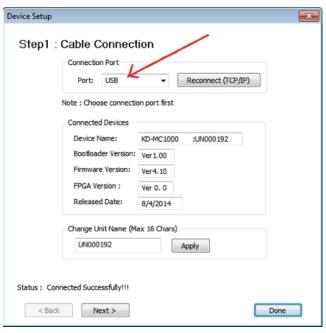**Must be preceded by L/S/H button press*

Setup Master Controller IP address

1 Use provided USB Cable to connect the PC to the KD-MC1000.
Must use a PC or Mac with PC software.

2 Open Master Controller Device Manager Software

3 Click **Setup**

4 In Connection Port make sure USB is selected and click on **Next**

5 Fill in the desired IP information for the KD-MC1000 (AKA host) and Router IP address and click **Apply**
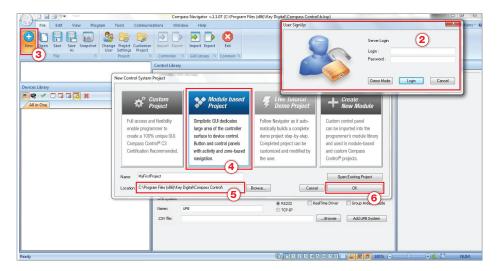

6 Click **Done** and close the Master Controller device manager

Programming

The KD-ZRC300 is programmed through Compass Navigator™

Creating New Project:

1. Open the Compass Navigator™ PC software

2. Enter your Compass Control® login information

   » (If you don't have a username, please type in the default one: **Zigbee@keydigital.com**, the password will appear automatically)

3. Click "**New**" to create a new project

4. Click "**Module Based Project**" and enter the name of the project (no spaces or special characters)

5. Select your desired save to location

6. Click "**Ok**" to confirm

Setup Controllers

1. Click the "**Program**" Tab on top (between View/Tools)

2. Click "**Setup Controllers**"

3. Add KD-ZRC300 ZigBee Remote

   » a. Enter the name of the ZigBee Remote in the "**Name**" field

   » b. Select the KD-ZRC300 remote by going into the dropdown menu and selecting "**ZigBee Remote**"

   » c. Add the **ID** number for the remote

      » Note: If you do not have an ID for the remote, read the next section "Get ZigBee Device ID" for ID generation instructions

   » d.   Click "**Add Controller**"

4. Add the Master Controller

   » a. Enter the name of the Master Controller in the "**Name**" field

   » b. Select **KD-MC1000** from the dropdown menu.

   » c. Enter the appropriate IP address for your Master Controller

   » d. Click "**Add Master Controller**"

KD-ZRC300 ID

Follow the steps below to generate a Device ID for your ZigBee remote, or collect info from battery compartment. The ID is all numerical.

(Note: In the back of the remote, when removing the battery cover, there is a serial number on the bottom of a serial bar. The Device ID number is between the beginning and ending letters.)
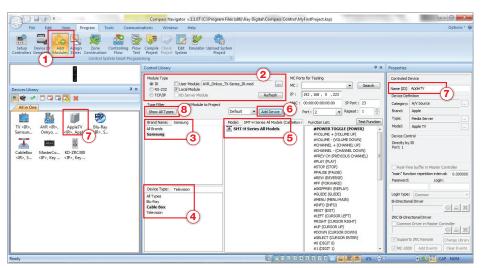
1. Select the ZigBee Remote in "**Devices Library**"

2. Go to the **Properties** window to see the information of the remote

3. Press and hold down the ⬛**A**⬛ and ⬛**2**⬛ buttons on the KD-ZRC300 remote to put the device into ZigBee configuration mode.
    (Active when ⬛**ON**⬛ and ⬛**OFF**⬛ buttons are illuminated)

4. Click "**MC**" in the "**Connection**" section

5. Press "**Get ID**" on the **Properties** window

6. ID will appear in "**Device ID**" textbox after a few seconds.

7. Press ⬛**C**⬛ button to exit ZigBee configuration mode at KD-ZRC300

Add Modules

1. Click "**Add Modules**"

2. From the "**Control Library**" choose a "**Module Type**" (IR, RS-232 or TCP/IP) and browse the lists to find the necessary devices.

    » **Local Module:** A pre-installed library made by Key Digital with variety of device codes for many manufactures' equipment.

    » **User Module:** Allows you to select a Library you've created or received

3. Search in the "**Brand Name**" textbox to find products by brand name

4. Search in the "**Device Type**" textbox to narrow your search results

5. Search in the "**Model**" textbox to choose the product model you wish to add

6. Select "**Add Device**" to add the device to the project

7. To change the name of the device, click the device in the "**Devices Library**", go to the Properties window and go to the "**Name(ID)**" textbox to change the device's name

8. To refresh the search, clear the textbox next to Brands, Device Types or Models, make a new search and then click "**Show All Types**"

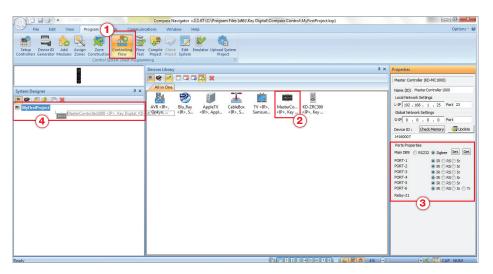9. Repeat the process from the above steps for each search

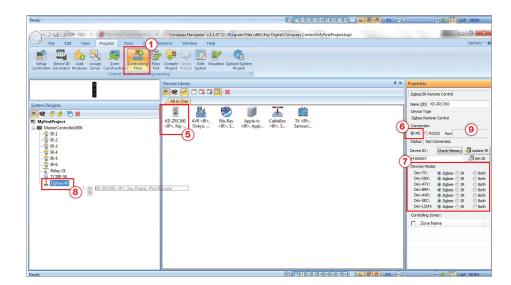## Controlling Flow

1. Click "**Controlling Flow**"
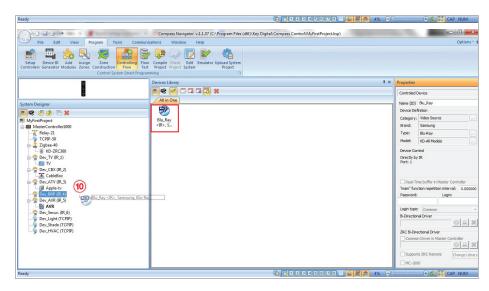
Master Controller Properties

2. Click the **Master Controller** in the "**Devices Library**"

3. An MC Device Port may be changed from the default IR port to an RS-232 port, or TCPIP control by clicking on the port name in the Master Controller properties and changing the "**Port Properties**" on the "**Properties**" window on the right side of the screen.

4. Drag the Master Controller into the System Designer window and place it on your project name

ZigBee Remote Properties

5. Click the **ZigBee Remote** in the "**Devices Library**".

6. In the "**Connection**" section, be sure to click "**MC**".

7. To make changes to the connection types in the KD-ZRC300 remote, go to the **Device Modes** section in the "**Properties**" window, and determine if the device is to be controlled via line-of-sight IR, ZigBee or both.

8. Drag the ZigBee remote into the **System Designer** window and place it on the text "ZigBee-40" underneath the Master Controller group.

9. In the **Properties** window, Port properties can be adjusted depending on the control format of the device.

10. Based on your devices in your device library, drag them onto their proper placement underneath the Zigbee Remote group.

For Example:

» TV would go to DEV_TV

» Blu-Ray player would go to DEV_BRP

Editing Button Functions

By default, buttons are automatically linked with the corresponding function for the respective device. For example, the POWER ON function for each device is attached to the **ON** button. The command(s) executed on each button are dictated by which blue device button was pressed last.

You can edit the commands attached to each button and also create macros (many events) on desired buttons (Figure 1).

1. Press "**Edit System**" button in the Program tab

2. Select the **KD-ZRC300** remote in the System Designer control tree. The KD-ZRC300 has been named "**Zigbee**" in the below figure.

3. Expand the Default Hard Buttons hierarchy in the **Controller Designer** tree

4. Choose desired button to view/edit events/commands

5. Events/commands are displayed in the **Events & Actions** window and are placed within device tabs where executed commands are dictated by which blue device button was pressed last

6. Use the **Events & Actions** tools to add/edit the events/commands attached to each button. See Figure 2 for more details.

7. When editing events/commands, typical IR, RS-232 or TCP-IP events require two selections be made: **Device Name** and **Command**
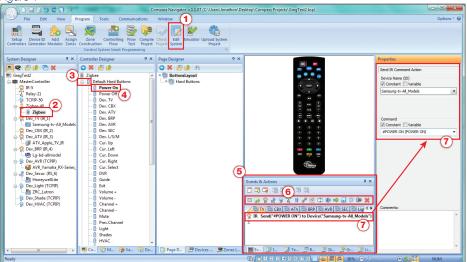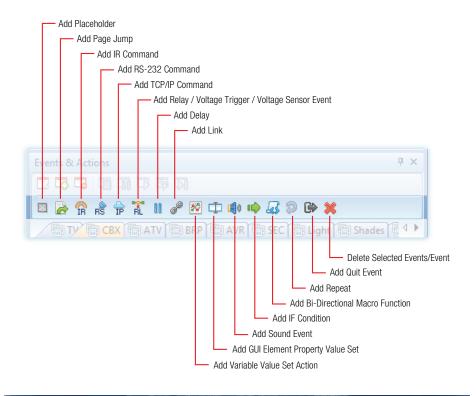
Figure 1

Figure 2

Add Placeholder
Add Page Jump
Add IR Command
Add RS-232 Command
Add TCP/IP Command
Add Relay / Voltage Trigger / Voltage Sensor Event
Add Delay
Add Link

Delete Selected Events/Event
Add Quit Event
Add Repeat
Add Bi-Directional Macro Function
Add IF Condition
Add Sound Event
Add GUI Element Property Value Set
Add Variable Value Set Action

Creating Device Selection Macros

By default, the blue Device Select buttons serve only one purpose- to determine which device the next button presses will apply to. However, typical applications can be modified to intelligently configure the room based on a single press of the blue Device Select buttons. See Figure 1 on the next page.

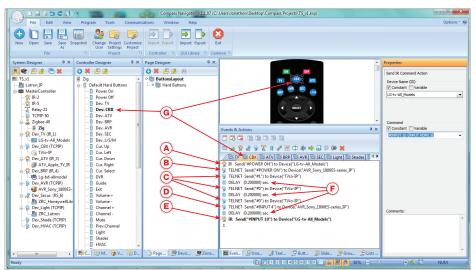For example, the [CBX] button can be programmed to:

- » **A.** turn on the television
- » **B.** turn on the AV receiver
- » **C.** turn the cable box to the desired channel (ie. channel 100)
- » **D.** set the AV receiver to the correct input
- » **E.** set the television to the correct input

F. Delays can be added to insert time between each command sent.

IMPORTANT: Since the default function of the blue Device Select buttons is to simply determine the device that the next button presses will apply to, **G. Device Selection** macros must be placed on the Events & Actions tab corresponding with the desired Device Select button.

These practices can be applied to any other buttons you wish to nest a macro within.
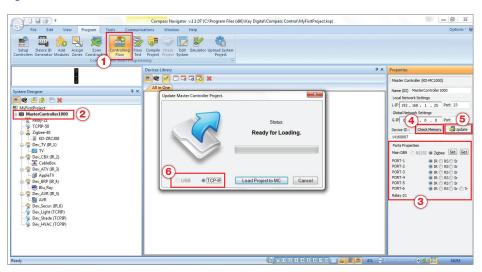
Figure 1

Finishing Process

Upload the programmed project to the KD-MC1000 (Figure 1)

To begin using the KD-ZRC300 Remote, follow these steps:

1. Click "**Controlling Flow**" in Program menu

2. Click the **Master Controller** in the "**System Designer**" window

3. Click "**Check Memory**" in the "**Properties**" window

   - » (Note: Make sure memory is less than 100% and ID number is written in the "**Device ID**" textbox)

4. Once completed, select "**Update**"

5. As the "**Update Master Controller Project**" window opens, click either USB or TCP/IP connection and then click "**Load Project to MC**" to begin controlling.

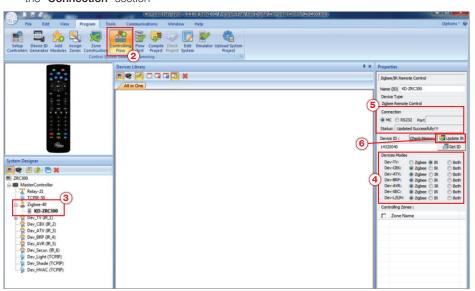6. When completed, KD-ZRC300 remote is ready for use with the KD-MC1000 controller

Figure 1

Upload the IR data into the ZigBee remote control (KD-ZRC300)

Only if you need to upload IR data into Zigbee Remote for line-of-sight control.

There are two ways to load IR data into the KD-ZRC300. **Method 1** is the default method and is most convenient. **Method 2** is useful if you will use KD-ZRC300 as a universal IR remote only (no KD-MC1000).

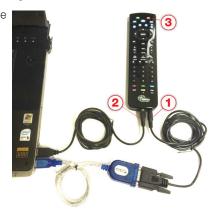**Method 1:** Upload the IR data into the KD-ZRC300 ZigBee Remote via KD-MC1000

1. Press and hold down the [A] and [2] buttons on the KD-ZRC300 remote to put the device into **ZigBee configuration mode**. *(Note: Active when* [ON] *and* [OFF] *buttons are illuminated)*

2. Click "**Controlling Flow**" in Program menu

3. Click the **ZigBee remote** in the "**System Designer**" window

4. In the "**Properties**" window, Devices Modes can be changed from ZigBee connection to IR connection per device or both.

5. Click "**MC**" in the "**Connection**" section.

6. If at least one device mode is changed to IR, click "**Update IR**" button on the Properties window

7. If IR update is completed, you will see "**Updated Successfully!!!**" message on Status in the "**Connection**" section
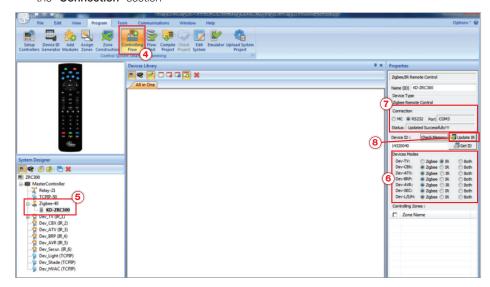

Method 2: Upload the IR data into the KD-ZRC300 ZigBee Remote via direct from PC

1. Connect 3.5mm Stereo male to female DB9 cable to 3.5mm Stereo jack at KD-ZRC300 Zigbee Remote Control and RS232(COM) port at PC

   » (Note: If your PC does not have serial, a USB serial converter may be required)

2. Connect Micro USB cable to KD-ZRC300 Remote Control and USB port on PC

3. Press and hold down the [A] and [1] buttons on the KD-ZRC300 remote to put the device into **RS232 configuration mode**. *(Note: Active when* [ON] *and* [OFF] *buttons are illuminated)*

4. Click "**Controlling Flow**" in Program menu

5. Click the **ZigBee remote** in the "**System Designer**" window

6. In the "**Properties**" window, Devices Modes can be changed from ZigBee connection to IR connection per device or both.

7. Click "**RS232**" in the "**Connection**" section

8. If at least one device mode is changed to IR, click "**Update IR**" button in the Properties window

9. If IR update is completed, you will see "**Updated Successfully!!!**" message on Status in the "**Connection**" section

⚠️ Important Note:

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

The antennas used for this transmitter must be installed to provide a separation distance of at least 25 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

⚠️ Safety Instructions:

Please be sure to follow these instructions for safe operation of your unit.

1. Read and follow all instructions.

2. Heed all warnings.

3. Do not use this device near water.

4. Clean only with dry cloth.

5. Install in accordance with the manufacturer's instructions.

6. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

7. Only use attachments/accessories specified by the manufacturer.

8. Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way including:

   » Damage to the power supply or power plug

   » Exposure to rain or moisture

⚠️ Power Supply Use:

You MUST use the Power Supply **provided** with your unit or you **VOID** the Key Digital® Warranty and risk damage to your unit and associated equipment.

How to Contact Key Digital®

System Design Group (SDG)

For system design questions please contact us at:

› Phone: 914-667-9700

› E-mail: sdg@keydigital.com

Technical Support

For technical questions about using Key Digital® products, please contact us at:

› Phone: 914-667-9700

› E-mail: tech@keydigital.com

Repairs and Warranty Service

Should your product require warranty service or repair, please obtain a Key Digital® Return Material Authorization (RMA) number by contacting us at:

› Phone: 914-667-9700

› E-mail: rma@keydigital.com

Feedback

Please email any comments/questions about the manual to:

› E-mail: customersupport@keydigital.com

Warranty Information

All Key Digital® products are built to high manufacturing standards and should provide years of trouble-free operation. They are backed by a Key Digital Limited Lifetime Product Warranty Policy.

» http://www.keydigital.com/warranty.htm