



WLC-4150

RS-232 Guide

Configuration instruction for setting up and using the
RS-232 Commands

REVISION HISTORY

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Draft	Initial draft	AL	7/26/2019
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1. Introduction

The WLC-4150 device allows for the use of an approved USB to COM port devices. There can be up to 8 ports in the system using the device. Each port is manually configured.

This document will guide you to the following:

1. Port Configuration
2. Incoming Command sets
3. Outgoing Command Functionality
4. WLC-4150 Configuration

2. Hardware

Part Number	Description
WLC-4150-C WLC-4150-E	Lighting Control unit Version 4.1.1.12 or above.
WRS-232-HUB	USB Hub for 2x WRS-232-4
WRS-232-1	RS-232 serial interface 1-port
WRS-232-4	RS-232 serial interface 4-port
WRS-232-EXT-S	RS-232 range extender
USB Memory Stick	Empty USB stick to hold configuration file.

3. Port Wiring

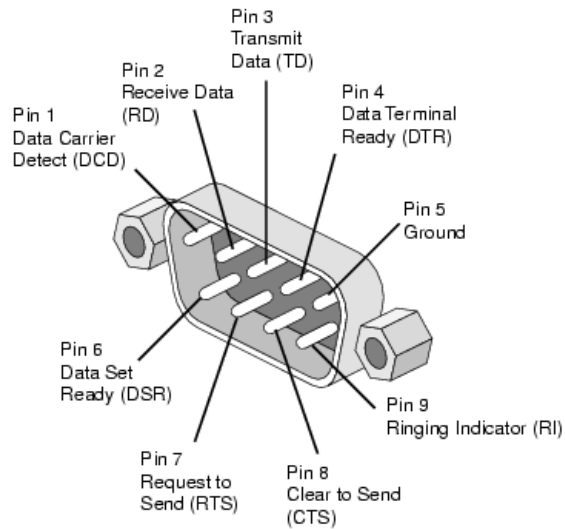
The wiring for our RS-232 connection utilizes a standard DB9 connector.

D-sub 9 Connector Pinout

Pinout and diagram of DE9 connector (DB9 connector), commonly used for serial ports (RS-232).

Pin	SIG.	Signal Name	DTE (PC)
1	DCD	Data Carrier Detect	in
2	RXD	Receive Data	in
3	TXD	Transmit Data	out
4	DTR	Data Terminal Ready	out
5	GND	Signal Ground	-
6	DSR	Data Set Ready	in
7	RTS	Request to Send	out
8	CTS	Clear to Send	in
9	RI	Ring Indicator	in

The DTE (PC) has the male connector (shown below), and the DCE (peripheral) has the female.



Source: <https://www.db9-pinout.com/>

4. WLC-4150 Setup and Port Configurations

The WLC-4150 uses a single json to configure all 8 ports. The file is used to set the following port parameters:

COM port number is the COM port ID at the LCU and it is the COM port the 3rd party device connected to. The value is from 10 to 17.

Baud rate is the COM port baud rate. Possible values are 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200.

Parity check is the COM port parity check. Possible values are None, Odd, Even, Mark, Space.

Data bit is the COM port data bit. Possible values are 7 or 8.

Stop bit is the COM port stop bit. Possible values are 1, 2.

Flow control is the COM port flow control. Possible values are None, XOn/XOff.

5. Setting up the COM Port

Under the "SerialPorts" section, each physical port has an entry

```
{
  "ComPort": "$device\\COM10",
  "BaudRate": 9600,
  "Parity": "None",
  "DataBit": 8,
  "StopBit": "1",
  "FlowControl": "None"
},
```

You can identify which port is you are configuring by the order of physical connection to the WLC-4150. "\$device\\COM10" is the first serial port connected; "\$device\\COM11" is the second serial port extender, and so on.

6. Using RS-232 to Command the Dialog System

The WLC-4150 is designed to receive commands from third-party devices. The syntax is shown below on what commands to send and the reply that will be send to confirm receipt of the command.

COMMAND	REQUEST	REPLY
Relay COMMAND	R # # <command> [CR]	R:R # # <command> [CR]
Relay STATUS	GETR # # [CR]	R:GETR # # <reply> [CR]
Dimmer COMMAND	D # # <command> [CR]	R:D # # <command> [CR]
Dimmer STATUS	GETD # # [CR]	R:GETD # # <reply> [CR]
Group COMMAND	G # <command> [CR]	R:G # <command> [CR]
Group STATUS	GETG # [CR]	R:GETG # <reply> [CR]
Preset/Scene COMMAND	P # <command> [CR]	R:P # <command> [CR]
Preset/Scene STATUS	GETP # [CR]	R:GETP # <reply> [CR]
GLOBAL COMMAND	GP # <command> [CR]	R:GP # <command> [CR]
GLOBAL STATUS	GETGP # [CR]	R:GETGP # <reply> [CR]

*Occupancy and Photo status' are not included

[CR] = "\r" or CTRL+m for our syntax

6.1. Relay Command & Status

```

# # = Dialog Relay address, ie 1.1r -> 1 1
<command> = 0 -> Relay OFF    1 -> Relay ON
<reply>    = 0 -> Relay OFF    1 -> Relay ON

```

ie: Turn ON Relay address 1.1r

```

COMMAND: R 1 1 1\r
REPLY:   R:R 1 1 1\r

```

```

STATUS REQUEST: GETR 1 1\r
REPLY:         R:GETR 1 1 1\r

```

6.2. Dimmer Command & Status

= Dialog Dimmer address, ie 1.1d -> 1 1
<command> = Values 0-100
<reply> = Values 0-100

ie: Set Dim 100% on Dimmer address 1.1d

COMMAND: D 1 1 100\r
REPLY: R:D 1 1 100\r

STATUS REQUEST: GETD 1 1\r
REPLY: R:GETD 1 1 100\r

6.3. Group Command & Status

= Dialog Group address, ie G001 -> 1
<command> = 0 -> Relays OFF 1 -> Relays ON
 -1 -> Relays no change
 (Optional) Values 0-100 for Dimming
<reply> = 0 -> Relays OFF 1 -> Relays ON
 (Optional) Values 0-100 for Dimming

ie: Turn ON relays in Group address G001

COMMAND: G 1 1\r
REPLY: R:G 1 1\r

STATUS REQUEST: GETG 1\r
REPLY: R:GETG 1 1 0\r

ie: Set Dimmers in Group address G001 to 35%

COMMAND: G 1 -1 35\r
REPLY: R:G 1 -1 35\r

STATUS REQUEST: GETG 1\r
REPLY: R:GETG 1 1 35\r

6.4. Preset / Scenes Command & Status

= Dialog Preset address, ie LP001 -> 1
<command> = 0 -> Deactivate 1 -> Activate
<reply> = 0 -> Scene Mis-Match 1 -> Scene Match

ie: Activate Local Preset address LP001

COMMAND: P 1 1\r
REPLY: R:P 1 1\r

STATUS REQUEST: GETP 1\r
REPLY: R:GETP 1 1\r

6.5. Global Preset / Scenes Command & Status

= Dialog Global Preset address, ie GP001 -> 1
<command> = 0 -> Deactivate 1 -> Activate
<reply> = 0 -> Scene Mis-Match 1 -> Scene Match

ie: Activate Global Preset address GP001

COMMAND: GP 1 1\r
REPLY: R:GP 1 1\r

STATUS REQUEST: GETP 1\r
REPLY: R:GETP 1 1\r

7. Using RS-232 to Control a Third-party System

Using the json configuration file we can identify a Dialog Event. This event would then trigger a “payload” command to be sent on the appropriate port.

To setup the Dialog Event Trigger, the EventMap area of the json file is used. You require the control syntax from the other system. With the syntax you can build the “payload” to send the string command to the third-party device to do an action.

The Dialog Event is structured in the file similar to the incoming commands. You can use the following items to track its state:

Dialog Event Type	Dialog Event Type Code	Dialog Event Status
Relay	R	0 for Off, 1 for On
Dimmer	D	{Dimmer value}
Group (Relay)	G	0 for Off, 1 for On
Group (Dimmer)	DG	{Dimmer value}
Local Preset	P	0 for Off, 1 for On
Global Preset	GP	0 for Off, 1 for On

Example of Event Trigger:

```
"DialogEvent": {  
  "DialogType": "DG",  
  "Address": "1",  
  "Status": 35  
},
```

To package the “payload” command you need to identify the COM port you want the message sent on and the string. Typically, most messages will end with a terminating character. You can have multiple messages on multiple ports per Dialog Event.

Example of Command:

```
"Commands": [  
  {  
    "ComPort": "$device\\COM10",  
    "Payload": "~sB35\r"  
  },  
  {  
    "ComPort": "$device\\COM11",  
    "Payload": "0101U\r"  
  },  
]
```

Example of full set:

```
"DialogEvent": {  
  "DialogType": "DG",  
  "Address": "1",  
  "Status": 35  
},  
"Commands": [  
  {  
    "ComPort": "$device\\COM10",  
    "Payload": "~sB35\r"  
  },  
  {  
    "ComPort": "$device\\COM11",  
    "Payload": "0101U\r"  
  },  
]
```

8. Loading the Configuration

**WARNING ONLY ADVANCED USER AND DOUGLAS TECHNICIANS ARE ABLE TO
RECONFIGURE THE WLC-4150 AND PORTS**

The following access level will give you the ability to irreversibly damage the WLC-4150

After you configure the file with the port configurations and any Dialog Event the file needs to be loaded on to the WLC-4150. The WLC-4150-C and -E (Version 4.1.1.12 or above) requires you to know the tech login password. With the tech login go to debug menu and exit the application.

You will need to copy the file from the Explorer.

1. Locate the USB drive (name is dependent on formatting)
2. Navigate to the folder containing DialogRS232.json
3. Locate the DialogRS232.json
4. Tap Edit on the top menu, then the COPY command shows up.
5. Navigate to “\FlashDisk\DouglasLighting\”
6. Tap Edit on the top menu, then the PASTE command shows up.

Appendix 1

Minimum Serial set up file for incoming WLC-4150-x control:

```
{  
  "Version": 1,  
  "SerialPorts": [  
    {  
      "ComPort": "$device\\COM10",  
      "BaudRate": 9600,  
      "Parity": "None",  
      "DataBit": 8,  
      "StopBit": "1",  
      "FlowControl": "None"  
    }  
  ],  
  "EventMap": []  
}
```