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1. SAFETY & WARNINGS

1. Install in accordance with national and local electrical code regulations.
2. This product is intended to be installed and serviced by a qualified, licensed electrician.
3. DO NOT connect directly to high voltage power. Install with a compatible Class 2 constant voltage LED driver (power supply).
4. Only install compatible 12V and 24VDC constant voltage luminaires.
5. This product is rated for indoor installation and is not protected against moisture.
6. Do not modify product beyond instructions or warranty will be void.

2. QUICK SPECS / MODELS

<table>
<thead>
<tr>
<th>DI-RF-REC-CV-A</th>
<th>Input from Driver</th>
<th>Output to Load</th>
<th>Max Load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12 - 24VDC</td>
<td>12 - 24VDC</td>
<td>4CH = 4 Channels</td>
</tr>
<tr>
<td>Constant Voltage</td>
<td>Constant Voltage</td>
<td>4CH x 5A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4CH x 60W (12V)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4CH x 100W (24V)</td>
<td></td>
</tr>
</tbody>
</table>

3. TOOLS FOR INSTALL

- Mini flat-head screwdriver
- Wire Stripper

4. APPROVED LED LUMINAIRES

TOUCHDIAL is compatible with all Diode LED 12V and 24VDC constant voltage tape lights and fixtures.

5. ADDITIONAL TOUCHDIAL COMPONENTS

- DI-RF-REM-RGBW-4
  TOUCHDIAL RGB/RGBW Remote Control
- DI-WIFI-RF-TRMS
  TOUCHDIAL WiFi Hub

6. INSTALLATION OVERVIEW

6.1 CONFIGURING YOUR TOUCHDIAL CONTROL SYSTEM

The following components are required to configure your TOUCHDIAL Control System:

a. LUMINAIRE


b. TOUCHDIAL RECEIVER

In each Zone, a minimum of 1 TOUCHDIAL receiver is set to MASTER and will communicate with Control via RF (Radio Frequency). See options 1. & 2. for expanding system:

1. Hardwired Expansion: Additional receivers are set to COMPANION and wired to MASTER receiver via DATA IN/OUT Terminals. An unlimited # of MASTER receivers can be paired to a single zone.
   - Allows for easy programming as only MASTER receiver is wirelessly paired with control. COMPANION receivers will automatically sync with MASTER receiver.
   - This method is required for syncing Dynamic Mode across receivers for RGB(W) installations.
   - This method is required to extend data signal beyond 95 ft.

2. Wireless Expansion: Additional receivers are set to MASTER and communicate with Control via RF. An unlimited amount of MASTER receivers can be paired to a single zone.
   - Each MASTER receiver will have to be individually paired to the control.
   - This method is acceptable for Solid Color (Dimming) and 2CH K-RANGE installations.
   - This method is acceptable for RGB(W) installations if syncing Dynamic Mode across receivers is not required.

c. Class 2 LED Driver

Used to power receiver and luminaire. Multiple receivers may be wired to a single driver (do not overload driver).

d. TOUCHDIAL Control

Minimum one control required:
- TOUCHDIAL RGBW Remote Control and/or
- TOUCHDIAL WiFi Hub & Apple/Android Mobile Device
6. INSTALLATION OVERVIEW

6.2 TOUCHDIAL GENERAL DIAGRAM
The diagram below shows an example of how to expand your TOUCHDIAL system hardwired or wirelessly. See RECEIVER DIAGRAMS for detailed connections to driver and luminaire.

Max RF Distance Control to MASTER Receiver: 95 ft.
Max # MASTER receivers paired to single zone: Unlimited
Max # Controls Paired to Each MASTER Receiver: Unlimited

Max Data Wire Distance: 300 ft.
Max Companions Wired to MASTER Within 300 ft.: Unlimited

6.3 RECEIVER DIAGRAM - RGB(W) - HARDWIRED EXPANSION
Note: Required to sync Dynamic Mode across all receivers and extend data signal beyond 95 ft.
6. INSTALLATION OVERVIEW CONT.

6.4 RECEIVER DIAGRAM - RGB(W) - WIRELESS EXPANSION

Note: Dynamic Mode will not sync across all receivers

See RGB(W) Receiver Diagram for additional connections.

6.5 RECEIVER DIAGRAM - 2CH K-RANGE®

See RGB(W) Receiver Diagram for additional connections.

6.6 RECEIVER DIAGRAM - SOLID COLOR DIMMING

See RGB(W) Receiver Diagram for additional connections.
7. INSTALLATION

1. TURN POWER OFF AT CIRCUIT BREAKER

 warn: SHOCK HAZARD! May result in serious injury or death. Turn power OFF at circuit breaker prior to installation.

2. DETERMINE LOCATION TO INSTALL COMPONENTS

See 6. INSTALLATION OVERVIEW.

3. WIRE DRIVER & LUMINAIRE TO RECEIVER(S)

a. Strip wires.

b. Wire Class 2 driver and LED luminaire to Receiver(s). See RECEIVER DIAGRAMS 6.3, 6.4, & 6.5.

4. SET UP MASTER RECEIVER(S)

a. SET FUNCTION:
Set function of 1st Receiver in each Zone to MASTER. To do so, remove Jumper from Header and set back on single pin. This is now set as the MASTER receiver and will communicate with TOUCHDIAL controls via RF.

b. WIRELESS EXPANSION:
Set additional receivers to MASTER if DATA IN/OUT Terminals aren’t required. Ensure to read CONFIGURING A TOUCHDIAL SYSTEM - b. TOUCHDIAL RECEIVER for additional information.

5. SET UP COMPANION RECEIVER(S)

a. HARDWIRE EXPANSION:
It’s required to hardwire COMPANION receivers to MASTER when Syncing Dynamic Mode for RGB(W) installations. Use CAT5 data cable or other thin gauge wire to link receivers together with DATA IN/OUT Terminals.

b. SET FUNCTION:
Set function of receivers hardwired to MASTER to COMPANION. COMPANION units will sync in real time with MASTER receiver.

MASTER/COMPANION NOTE
Power must be turned off when changing MASTER & COMPANION function. Otherwise, receivers won’t respond to control correctly.

VOLTAGE DROP
See VOLTAGE DROP CHARTS at end of this guide for wire gauge recommendations installed between driver and luminaire.
7. INSTALLATION CONT.

6. TURN POWER ON AT CIRCUIT BREAKER

Prior to troubleshooting, turn power OFF at circuit breaker and verify all connections.

7. SYNC MASTER RECEIVER(S) TO TOUCHDIAL CONTROL(S)

a. Wake up TOUCHDIAL control by pressing On/Off button.

b. Press LEARNING KEY button (for less than 1 second) on TOUCHDIAL MASTER receiver.

c. (1) Press any zone button on control, then (2) swipe finger on color wheel.

d. Luminaire will flash to indicate pairing.

The same syncing instructions apply when utilizing other TOUCHDIAL remote controls or mobile app. See TOUCHDIAL control installation guide (e.g. Remote or WiFi Hub) for more thorough pairing instructions.

8. TROUBLESHOOTING

Prior to troubleshooting, turn power OFF at circuit breaker and verify all connections.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Common Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminaire does not illuminate</td>
<td>• Incorrect wiring.</td>
</tr>
<tr>
<td></td>
<td>• Polarity of Low Voltage V+ and V- are reversed.</td>
</tr>
<tr>
<td></td>
<td>• Circuit breaker is OFF or tripped.</td>
</tr>
<tr>
<td></td>
<td>• Incorrect voltage pairing of dimmer and luminaire. 12V drivers models will not power a luminaire with a higher voltage rating.</td>
</tr>
<tr>
<td>MASTER receiver does not sync with control</td>
<td>• Ensure function is set to MASTER (1 pin) - See step 4.</td>
</tr>
<tr>
<td></td>
<td>• If still not syncing do following: 1) Turn off main power to receiver and turn back on. 2) Reset receiver by holding LEARNING KEY for 5 seconds until LED flashes. 3) Re-sync receiver to control.</td>
</tr>
<tr>
<td>Companion receiver does not sync with MASTER</td>
<td>• Ensure function of MASTER receiver is set to 1 pin and COMPANION receiver is set to 2 pin - See steps 4 &amp; 5.</td>
</tr>
<tr>
<td></td>
<td>• Check D1+ and D1- connections.</td>
</tr>
<tr>
<td></td>
<td>• If still not syncing do following: 1) Turn off main power to all receivers and turn back on. 2) Reset receivers by holding LEARNING KEY for 5 seconds until LED flashes. 3) Re-sync MASTER receiver to control. COMPANION receiver(s) will automatically sync with MASTER.</td>
</tr>
<tr>
<td>Luminaire heats up excessively</td>
<td>• Incorrect voltage pairing of driver and luminaire. Do not attach a 12V luminaire to a 24V driver.</td>
</tr>
<tr>
<td></td>
<td>• Luminaire is not compatible.</td>
</tr>
<tr>
<td></td>
<td>• Refer to luminaire install guide warnings and safety tips.</td>
</tr>
</tbody>
</table>

HOW TO RESET TOUCHDIAL RECEIVER

If receiver is not operating or pairing correctly with control it may be necessary to turn power off/on and then reset the receiver. To reset, hold down the LEARNING KEY button for 5 seconds until LED flashes.
9. VOLTAGE DROP CHARTS

For best performance and lumen output, ensure proper wire gauge is installed to compensate for voltage drop of low voltage circuits.

Example: 12V Voltage Drop & Wire Length Distance Chart

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>10 W .83 A</th>
<th>20 W 1.7 A</th>
<th>30 W 2.5 A</th>
<th>40 W 3.3 A</th>
<th>50 W 2.1 A</th>
<th>60 W 4.2 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 AWG</td>
<td>34 ft.</td>
<td>17 ft.</td>
<td>11 ft.</td>
<td>8 ft.</td>
<td>6 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>16 AWG</td>
<td>54 ft.</td>
<td>27 ft.</td>
<td>18 ft.</td>
<td>13 ft.</td>
<td>10 ft.</td>
<td>9 ft.</td>
</tr>
<tr>
<td>12 AWG</td>
<td>86 ft.</td>
<td>43 ft.</td>
<td>29 ft.</td>
<td>21 ft.</td>
<td>17 ft.</td>
<td>14 ft.</td>
</tr>
<tr>
<td>10 AWG</td>
<td>199 ft.</td>
<td>99 ft.</td>
<td>66 ft.</td>
<td>49 ft.</td>
<td>39 ft.</td>
<td>33 ft.</td>
</tr>
</tbody>
</table>

1. Determine load size. Let’s assume load is 55 W. Round up to nearest load.

2. Determine distance from driver to load. Let’s assume the distance is 20 ft. Round up to nearest distance.

3. It’s recommended to install 12 AWG to eliminate excess voltage drop.

12V Voltage Drop & Wire Length Distance Chart

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>10 W .83 A</th>
<th>20 W 1.7 A</th>
<th>30 W 2.5 A</th>
<th>40 W 3.3 A</th>
<th>50 W 2.1 A</th>
<th>60 W 4.2 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 AWG</td>
<td>34 ft.</td>
<td>17 ft.</td>
<td>11 ft.</td>
<td>8 ft.</td>
<td>6 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>16 AWG</td>
<td>54 ft.</td>
<td>27 ft.</td>
<td>18 ft.</td>
<td>13 ft.</td>
<td>10 ft.</td>
<td>9 ft.</td>
</tr>
<tr>
<td>12 AWG</td>
<td>86 ft.</td>
<td>43 ft.</td>
<td>29 ft.</td>
<td>21 ft.</td>
<td>17 ft.</td>
<td>14 ft.</td>
</tr>
<tr>
<td>10 AWG</td>
<td>199 ft.</td>
<td>99 ft.</td>
<td>66 ft.</td>
<td>49 ft.</td>
<td>39 ft.</td>
<td>33 ft.</td>
</tr>
</tbody>
</table>

24V Voltage Drop & Wire Length Distance Chart

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>10 W .42 A</th>
<th>20 W .83 A</th>
<th>30 W 1.3 A</th>
<th>40 W 1.7 A</th>
<th>50 W 2.1 A</th>
<th>60 W 2.5 A</th>
<th>70 W 2.9 A</th>
<th>80 W 3.3 A</th>
<th>100 W 4.2 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 AWG</td>
<td>134 ft.</td>
<td>68 ft.</td>
<td>45 ft.</td>
<td>33 ft.</td>
<td>27 ft.</td>
<td>22 ft.</td>
<td>19 ft.</td>
<td>17 ft.</td>
<td>14 ft.</td>
</tr>
<tr>
<td>16 AWG</td>
<td>215 ft.</td>
<td>109 ft.</td>
<td>72 ft.</td>
<td>54 ft.</td>
<td>43 ft.</td>
<td>36 ft.</td>
<td>31 ft.</td>
<td>27 ft.</td>
<td>22 ft.</td>
</tr>
<tr>
<td>14 AWG</td>
<td>345 ft.</td>
<td>174 ft.</td>
<td>115 ft.</td>
<td>86 ft.</td>
<td>69 ft.</td>
<td>57 ft.</td>
<td>49 ft.</td>
<td>43 ft.</td>
<td>36 ft.</td>
</tr>
<tr>
<td>12 AWG</td>
<td>539 ft.</td>
<td>272 ft.</td>
<td>181 ft.</td>
<td>135 ft.</td>
<td>108 ft.</td>
<td>90 ft.</td>
<td>77 ft.</td>
<td>68 ft.</td>
<td>56 ft.</td>
</tr>
<tr>
<td>10 AWG</td>
<td>784 ft.</td>
<td>397 ft.</td>
<td>263 ft.</td>
<td>197 ft.</td>
<td>158 ft.</td>
<td>131 ft.</td>
<td>112 ft.</td>
<td>98 ft.</td>
<td>82 ft.</td>
</tr>
</tbody>
</table>

10. ADDITIONAL RESOURCES


TOUCHDIAL RECEIVER SPECIFICATION SHEET
For full specifications.

TOUCHDIAL RGB/RGBW 4-ZONE REMOTE CONTROL SPECIFICATION SHEET & INSTALLATION GUIDE
For full specifications and installation instructions.

TOUCHDIAL WIFI HUB SPECIFICATION SHEET & INSTALLATION GUIDE
For full specifications and installation instructions.