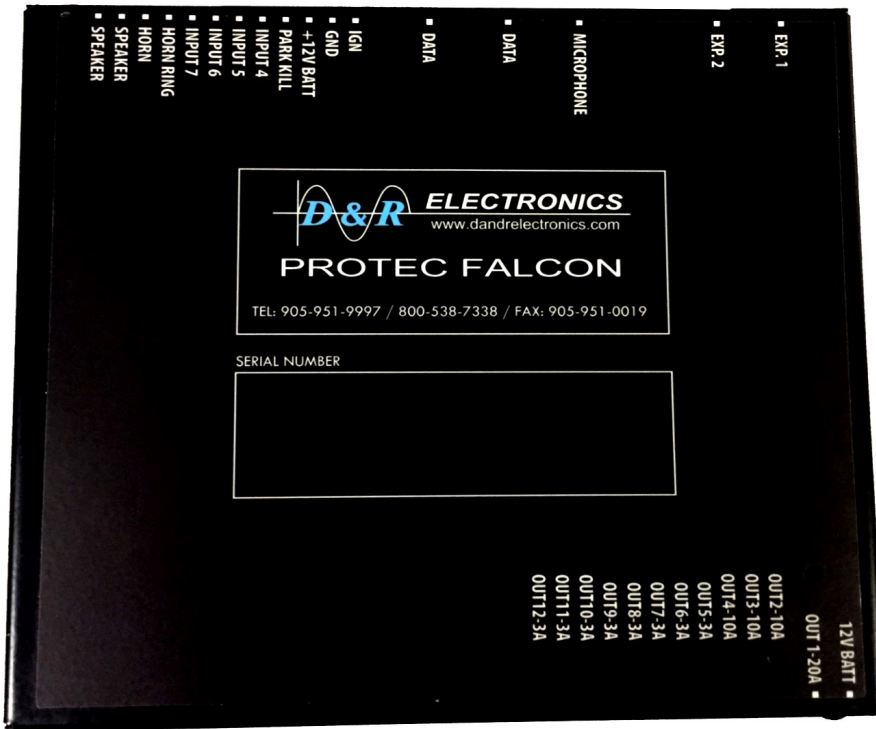


## PFIQ-12 INSTALLATION MANUAL



**Model PFIQ-12**



**IMPORTANT:** Carefully read ALL instructions and warnings before attempting to install and operate this equipment.

# TABLE OF CONTENTS

<b>1—UNPACKING &amp; PRE-INSTALLATION CHECK.....</b>	<b>Page 3</b>
<b>2—SAFETY CONSIDERATIONS.....</b>	<b>Page 3</b>
<b>3—SPECIFICATIONS.....</b>	<b>Page 4</b>
<b>4—INSTALLATION.....</b>	<b>Page 5</b>
<b>5—LABELING INSTRUCTIONS.....</b>	<b>Page 6</b>
<b>6—PFIQ-12 DEFAULT CONFIGURATION.....</b>	<b>Page 7</b>
<b>7—PFIQ-12 TOUCHPAD PROGRAMMING.....</b>	<b>Page 8</b>
<b>8—PFIQ-12 VOLTAGE CALIBRATION.....</b>	<b>Page 8</b>
<b>9—PFIQ-12 TEMPERATURE CALIBRATION.....</b>	<b>Page 9</b>
<b>10—IMAGES.....</b>	<b>Page 11</b>
<b>REAR VIEW CONNECTORS LAYOUT.....</b>	<b>Page 11</b>
<b>FRONT VIEW CONNECTORS LAYOUT.....</b>	<b>Page 11</b>
<b>TOP VIEW (FUSES AND LED INDICATORS).....</b>	<b>Page 11</b>
<b>11—WARRANTY &amp; PRODUCT RETURN POLICY.....</b>	<b>Page 12</b>

## 1. Unpacking & Pre-Installation Check

D&R Electronics Co. recommends that you open and examine all shipments within **48 hours of receipt**. The *PROTEC FALCON IQ* systems are shipped pre-assembled and factory tested. All necessary hardware for standard installation is included. Use this pre-installation check list to verify your unit:

1. Confirm contents with the packing slip
2. Examine unit for damaged in transit (i.e. scratches, broken or bent connectors. etc.).

If any damage has occurred, file a claim **IMMEDIATELY** with the courier stating the extent of damage. Check **ALL** envelopes, packing slips, shipping labels and tags before removing or destroying them.

## 2. Safety Considerations

The effectiveness of this system is highly dependent upon its proper installation. Please read and follow ALL instructions provided in this manual before attempting the installation.

For proper installation of this product you must have a good understanding of automotive electrical systems and procedures, as well as proficiency in installation and servicing of emergency vehicle sound, lighting and warning equipment. We recommend this equipment be installed only by qualified personnel.

### **WARNING!**

The D&R Electronics PFIQ siren/light controller is an advanced microprocessor based system. Unlike conventional systems, malfunctions and/or improper operation will result if proper installation procedures are not followed. Refer to any accompanying diagrams and pay particular attention to WARNINGS, CAUTIONS and HAZARDS listed in this document. Follow instructions exactly as shown where so indicated.

### **HEARING HAZARDS!**

Your hearing and that of others, in or near the emergency vehicle could be affected by the very loud emergency sounds generated. **Hearing loss or damage could result due to short-term exposure to excessively loud sounds!** Each jurisdiction (country, province/state, etc.) has specific regulations governing exposure to sound. During installation and testing it is recommended that anyone working in the vicinity of the vehicle to wear approved hearing protection devices.

- DO NOT connect this system to vehicle battery until all other electrical connections have been completed, and have been checked that no short-circuits exist.
- When passing wire through compartment walls and drilling holes is required, the installer **MUST** check both sides of the drilling surface before drilling. Make sure that no vehicle components could be damaged by the drilling operation. Clean the holes and remove any burrs. Use a grommet of appropriate size and sealants when passing the wires through the compartment walls.
- Looms, grommets, cable ties or other installation hardware should be used to anchor and protect wires.
- Splices should be minimized and made in a fashion so as to protect them from corrosion to minimize the possibility of loss of conductivity over time.
- **INSTALLATION OF ALL EQUIPMENT AND WIRING SHALL NOT OBSTRUCT, IMPEDE OR INTERFERE WITH THE DEPLOYMENT OF VEHICLE AIR BAGS, OTHERWISE IT COULD POSSIBLY REDUCE THE EFFECTIVENESS THE AIR BAG SYSTEM CAUSING SERIOUS INJURY (OR EVEN DEATH) IN THE EVENT OF AN ACCIDENT.**
- If using non-D&R Electronics components, such as speaker(s), be sure that they are properly rated for the system you are installing.
- All speakers should be installed in a location that will produce minimum sound levels inside the vehicle, while maximizing the warning signal effectiveness to oncoming traffic on the exterior of the vehicle.
- This device is intended for use by authorized personnel only. The user responsibility is to ensure that all local, state/provincial and federal laws are being complied with. D&R assumes no liability for any loss resulting from the use of this device.

### **3. Specifications**

#### **General**

Input Voltage .....	11 to 16 Volts DC
Input Fuse .....	60 Amps (external)
Operating Temperature Ranges .....	-40°C to +65°C
Standby Current .....	50mA $\pm$ 10% during IGNITION OFF time-out
.....	ØmA after time-out

#### **Control Box Weight**

Single Siren.....4.74lb / 2.15kg

#### **Control Box Physical Dimensions**

Height .....	1.96" (50mm)
Width .....	6.14" (156mm)
Length .....	8 46" (215mm)

#### **Siren**

Operating Current .....	10 Amps
Frequency Range .....	700 to 1640 Hz (nominal)
Cycle Rate	
Wail .....	20 cycles/min
Yelp .....	200 cycles/min
Stinger .....	800 cycles/min
Nominal Voltage Output .....	52V p-p (11Ω load)
Audio Frequency Response .....	100 – 4000 Hz $\pm$ 3dB
Audio Distortion .....	10% or less
Audio Output Power .....	32 Watts
Siren Output Power.....	100 Watts

**NOTE: TOTAL current draw not to exceed 60A including siren**

#### **Current Outputs**

##### ***PLUG 1***

Pin 2.....OUTPUT #1..... 20 Amp Max. (fused 20A)

##### ***PLUG 2***

Pin 1.....OUTPUT #2.....10 Amp Max. (fused)  
Pin 2.....OUTPUT #3.....10 Amp Max. (fused)  
Pin 3.....OUTPUT #4.....10 Amp Max. (fused)  
Pin 4.....OUTPUT #5.....3 Amp Max. (fused)  
Pin 5.....OUTPUT #6.....3 Amp Max. (fused)  
Pin 6.....OUTPUT #7.....3 Amp Max. (fused)  
Pin 7.....OUTPUT #8.....3 Amp Max. (fused)  
Pin 8.....OUTPUT #9.....3 Amp Max. (fused)  
Pin 9.....OUTPUT #10.....3 Amp Max. (fused)  
Pin 10.....OUTPUT #11.....3 Amp Max. (fused)  
Pin 11.....OUTPUT #12.....3 Amp Max. (fused)

## **4. Installation**

### **CONNECTOR #1**

**PIN 1** — Connect a RED 10 AWG wire to the POSITIVE side of the battery, using a 60A breaker

**PIN 2** — OUTPUT 1, 20A MAX

### **CONNECTOR #2**

**PIN 1** — OUTPUT 2, 10A MAX

**PIN 2** — OUTPUT 3, 10A MAX

**PIN 3** — OUTPUT 4, 10A MAX

**PIN 4** — OUTPUT 5, 3A MAX

**PIN 5** — OUTPUT 6, 3A MAX

**PIN 6** — OUTPUT 7, 3A MAX

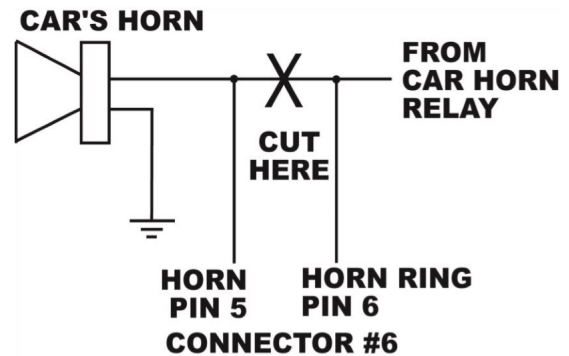
**PIN 7** — OUTPUT 8, 3A MAX

**PIN 8** — OUTPUT 9, 3A MAX

**PIN 9** — OUTPUT 10, 3A MAX

**PIN 10** — OUTPUT 11, 3A MAX

**PIN 11** — OUTPUT 12, 3A MAX



HORN / HORN RING relay connection

### **CONNECTOR #3**

**PIN 1** — Connect a 16 AWG wire to +12V IGNITION feed. This feed is used to turn ON the system.

**PIN 2** — Connect a BLACK 14 AWG wire to battery GROUND.

**PIN 3** — Connect a RED 14 AWG wire to the POSITIVE side of the battery.

**PIN 4** — PARK KILL input, default GROUND control. Optional positive control, see software manual.

**PIN 5-8**— Logic inputs, default +12V triggers. Optional programmable to GROUND triggers, see software manual.

**PIN 9** — HORN

**PIN 10** — HORN RING

**PIN 11** — SIREN SPEAKER

**PIN 12** — SIREN SPEAKER

**CONNECTOR #4,5** — data input used to connect lightbar or temperature sensors.

**CONNECTOR #6** — Microphone and touchpad connection.

### **MICROPHONE VOLUME ADJUSTMENT**

**CONNECTOR #7** - expander control cable OUTPUT 23 to 32

**CONNECTOR #8** - expander control cable OUTPUT 13 to 22

**NOTE:** The expanders are optional modules in case extra outputs are needed. There are 2 different expander modules:

**IQEXP-LC** 10 OUTPUTS @ 2A each

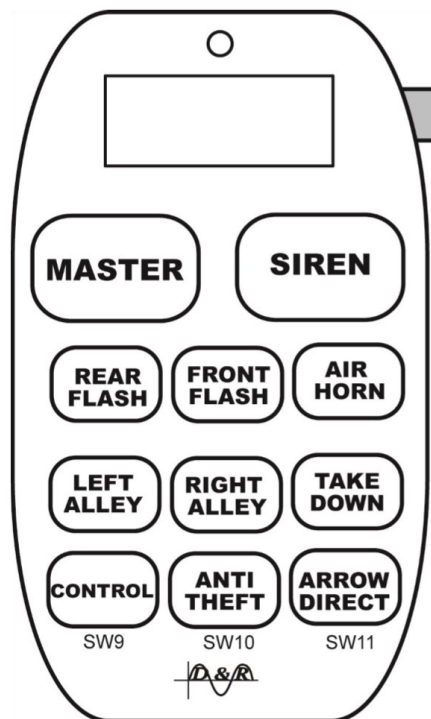
**IQEXP-HC** 4 OUTPUTS @ 20A each & 6 OUTPUTS @ 10A each

## 5. LABELING INSTRUCTIONS

- 1 Select the appropriate push button label from the enclosed label packet.
- 2 Every button has a recess which matches the size of the labels provided with the system. Select the label, align it inside of the button and with the top cover resting on a flat surface, evenly apply finger pressure to the label to ensure that it has been stick properly.
- 3 Apply all required remaining labels in the same manner.

## 6. PFIQ-12 DEFAULT TOUCHPAD CONFIGURATION

The touchpad setup is a standard factory default. For setup changes refer to the software manual for programming. The labels can be rearranged as per customer's preference.



**SIDE BUTTON** — Activates public address (PA) function.

**SIREN** — Cycles all siren tones : Wail, Yelp, Stinger and Inter-Clear.

**AIR HORN** — Activates momentary the AIR HORN tone.

**HANDS FREE**— The Hands-Free mode is activated when STBY or any of the siren buttons is ON. A first press of the horn ring it will activate the WAIL tone. A second press it will activate the YELP tone. A third press it will activate the STINGER tone. A fourth press it will activate again the WAIL tone. This cycle continues until the user deactivates the Hands-Free mode. Pressing the horn ring twice, in a quick succession, when STBY is selected it will turn OFF the siren tone and sets the system into Hands -Free ready mode. Pressing the horn ring twice , in a quick succession, when any of the siren tones is selected it will turn OFF the siren. Turning OFF the STBY or any of the siren buttons will turn OFF the siren tone and deactivates the Hands-Free mode.

**REAR FLASH** — Activates Output 1 & 2 continuous ON and the rear of the lightbar

**FRONT FLASH** — Activates Output 3 & 4 continuous ON and the front of the lightbar.

**LEFT ALLEY** — Activates Output 5 continuous ON and the left alley of the lightbar.

**RIGHT ALLEY** — Activates Output 6 continuous ON and the right alley of the lightbar.

**TAKE DOWN** — Activates Output 7 & 8 continuous ON and the take down of the lightbar.

**CONTROL** — Activates Output 9 as 9 second timer, with IGNITION ON only.

**ANTI-THEFT** — Activates Output 10 MOMENTARY, with IGNITION ON only.

**ARROW DIRECT** — Activates Output 11 & Output 12 as 2 trigger traffic director:

LEFT ARROW—Output 11 continuous ON

RIGHT ARROW—Output 12continuous ON

CENTER OUT—Output 11 & Output 12 continuous ON

## **7. PFIQ-12 TOUCHPAD PROGRAMMING**

The PFIQ-12 system provides access to the following features: display intensity, push-buttons backlight intensity, push-buttons ON light intensity through touchpad programming.

To make settings adjustments follow these steps:

**Step 1:** Copy the proper touchpad setup file on a USB Drive

**Step 2:** Connect all the components to the data line. Connect the system to +12VDC and GROUND. Switch ON the IGNITION to activate the system. All the touchpad switches are OFF.

**Step 3:** Plug in the USB drive. The touchpad will scan the USB drive for all IQ system compatible files. When the scan ends, all the compatible files are shown on the display. SW9, SW10 and SW11 are used for the upload process. During the upload process, the 3 switches have the following functions:

- SW9—upload file
- SW10—scroll down in file list
- SW11—scroll up in file list



STEP 1



STEP 3

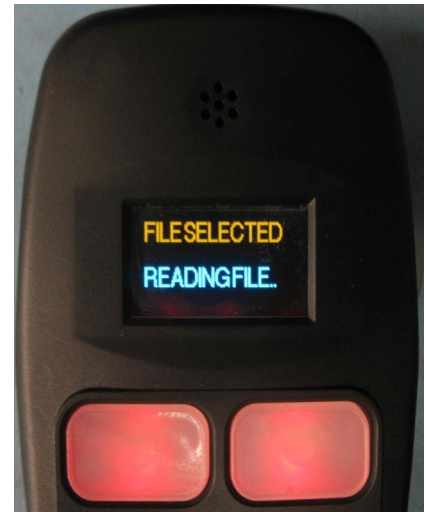
**Step 4:** Using SW10 and SW11, scroll up or down to select the touchpad setup file to be loaded. The selected file has the name displayed between "<" and ">".

**Step 5:** Once the file has been selected, press SW9 to load the file from the USB drive to the touch pad. Once SW9 is pressed, the file transfer starts and the display will show "READING FILE..."





STEP 4



STEP 5

**Step 6:** Once the transfer is finished, the touchpad display “DONE; REMOVE DEVICE” to confirm that the transfer has been successful. If the touchpad display shows an error message it means that the transfer had not been successful. Please check the error list for details.

**Step 7:** Unplug the USB drive. The touchpad will reset—the touchpad button’s backlight and the display will turn OFF and ON. When ready to use, the touchpad display shows again the voltage value.



STEP 6



STEP 7

## **8. PFIQ-12 VOLTAGE CALIBRATION**

The PFIQ-12 system provides a continuous battery voltage reading on the touchpad's display. After a set-up update, the display will show "Voltage 0V" even though the voltage input is connected to the battery. The system needs a voltage reading calibration.

To make adjustments follow these steps:

- Step 1: Using a multi-meter measure the input voltage in the IQ system.
- Step 2: Press and hold down SW9 and SW11.
- Step 3: Enter "BACKLIGHT" setup.  
Continue to hold down SW9 and release SW11.
- Step 4: Enter "RELAYBOX INPUTS" status. Release SW9.  
Press SW9 to save and move to next step.
- Step 5: Enter "LIGHTBAR INPUTS" status.  
Press SW9 to save and move to next step.
- Step 6: Enter "CALIBRATION VOLTAGE".  
Adjust the voltage on the display to match the voltage measured in *Step 1*.  
Use SW10 to increase and SW11 to decrease value.  
Press SW9 to save and exit voltage calibration.

## **9. PFIQ-12 TEMPERATURE CALIBRATION (optional equipment)**

The PFIQ-12 system provides an optional connection for up to 3 temperature sensor modules.

To calibrate the temperature follow these steps:

- Step 1: Using a thermometer, record the temperature were the temperature sensor is installed.
- Step 2: Repeat *Step 2* to *Step 6* from previous section: "**8. PFIQ-12 VOLTAGE CALIBRATION**".
- Step 3: Enter "CALIBRATION TEMPESENSOR 1".  
Adjust the temperature on the display to match the temperature measured in *Step 1*.  
Use SW10 to increase and SW11 to decrease value.
- Step 4: Press SW9 to save.  
If a second temperature sensor is present, repeat *Step 3* to calibrate *TempSensor 2*.  
If not, the system will exit temperature calibration process.
- Step 5: Press SW9 to save.  
If the third temperature sensor is present, repeat *Step 3* to calibrate *TempSensor 3*.  
If not, the system will exit temperature calibration process.
- Step 6: Press SW9 to save and exit temperature calibration.

# 10. IMAGES

## PROTEC IQ-CONTROL BOX REAR VIEW & FRONT VIEW

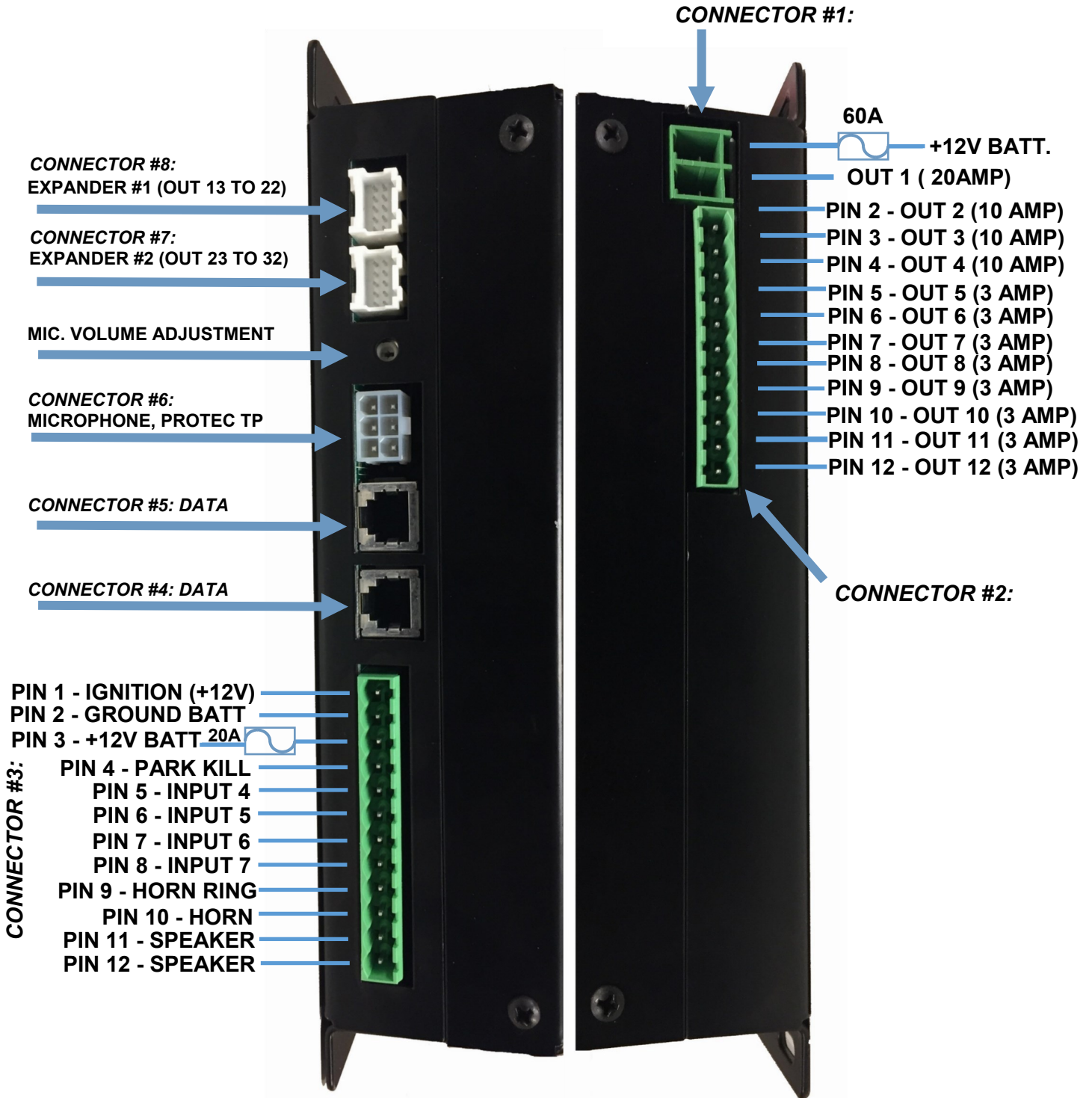


Figure 1: Input / Output Layout

## WARRANTY

D & R Electronics warrants its new products to be free from defects in material and workmanship, under normal use and service for a period of three years on parts replacement. This warranty applies only to original purchasers acquiring the product directly from D&R Electronics, or its authorized dealers. Warranty will not be recognized without proof of purchase or bill of sale.

This warranty is not transferable.

The warranty begins on the date of delivery to the first user/purchaser.

This warranty shall not apply to products which must be repaired due to normal wear and tear, negligence, improper installation, abuse, misuse, or which have been altered or modified at a facility other than D & R Electronics, or its authorized depot centers.

Units proved to be defective within the warranty period, based on an examination by D&R Electronics, will be replaced or repaired at D & R Electronics' option. This warranty does not cover travel expenses or labor charges for removal or installation.

Lamps, flash tubes, batteries or other items considered consumables are not covered under warranty.

This warranty is in lieu of all other express warranties. D&R Electronics makes no warranties, expressed or implied, other than the express warranties contained herein.

## PRODUCT RETURN POLICY

In order to provide you with faster service, product returns for repair or replacement, must have a **Return Goods Authorization Number (RGA number)**. Please contact our company to obtain a RGA number before you return the product to D & R ELECTRONICS. Write the RGA number clearly on the exterior of the package. Be sure you use sufficient packing materials to avoid damage to the product being returned while in transit.

D & R ELECTRONICS assumes no responsibility or liability for expenses incurred for the removal and/or the installation of products requiring service and/or repair. Repairing or replacing product is at the discretion of D & R ELECTRONICS.

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