

## CONTROL PROTOCOL

Motorized Projection Screens

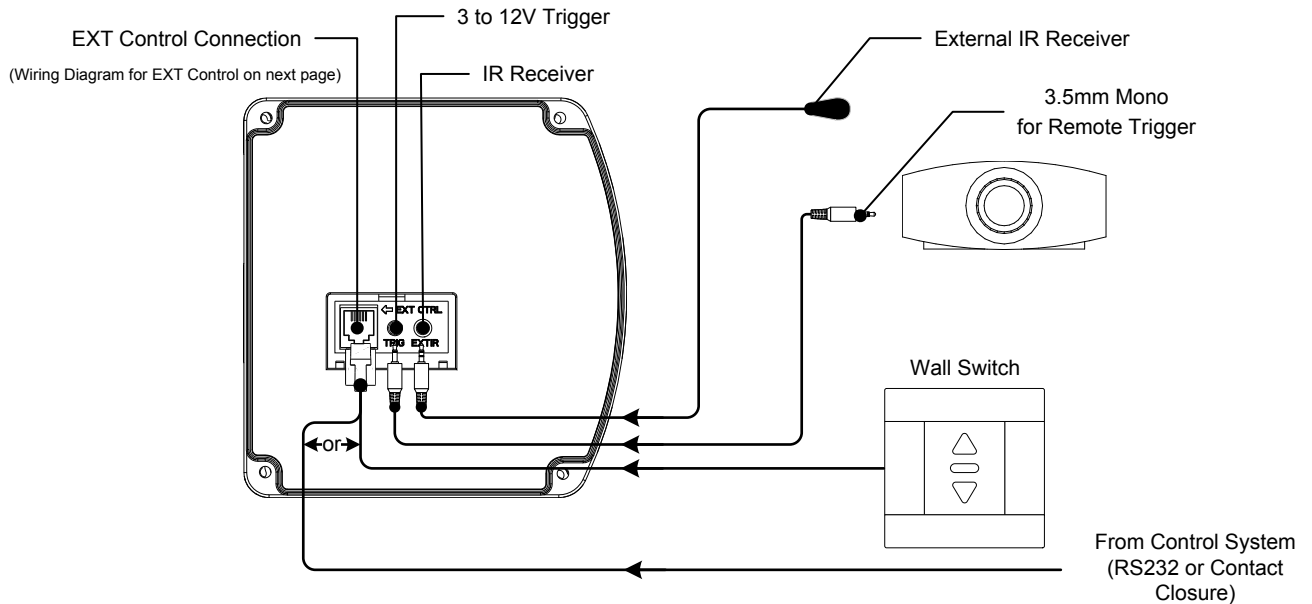
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## Overview

Dragonfly motorized screens can be controlled by various methods: IR commands, 12 volt trigger, contact- or relay-closure, or by RS232 via an automation system. This protocol document will guide the installer through the various methods and provide the details needed to successfully control a Dragonfly motorized screen.

## Control Wiring Diagram



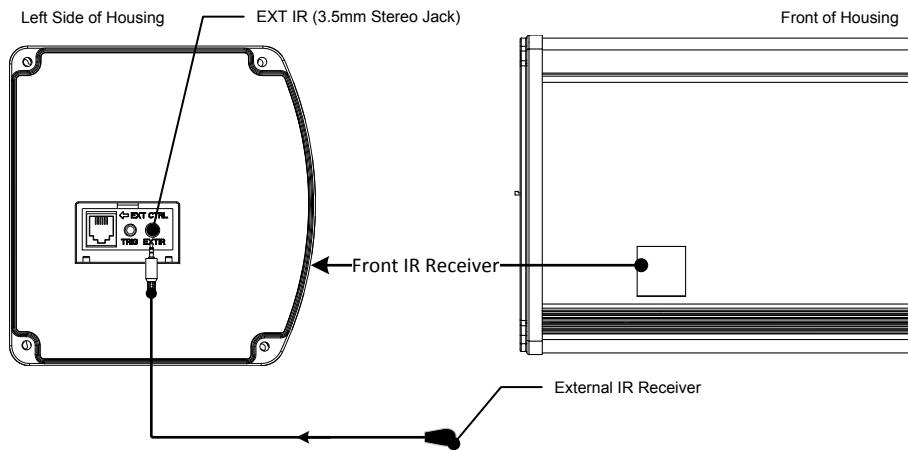
As the diagram above indicates, motorized screens can be controlled via various sources. These can be used individually or in conjunction with each other to allow for easily accessible control the screen.

**Note:** The EXT CTRL connection maybe on the right side of the TRIG and EXT IR on some screens. While in a different order, the functionality is the same.

## IR Control

Each screen is equipped with an IR receiver located on the front that allows for IR commands to be received from a distance of 26ft at an angle up to 30°. Should greater distance be needed, the included IR receiver can be connected to the EXT IR 3.5mm jack allowing for the receiver to be placed up to 18in away from the screen.

**Important!** The included IR receiver is proprietary to Dragonfly motorized screens. This IR receiver will not work correctly with other devices, and the port is not compatible with any other IR receiver.



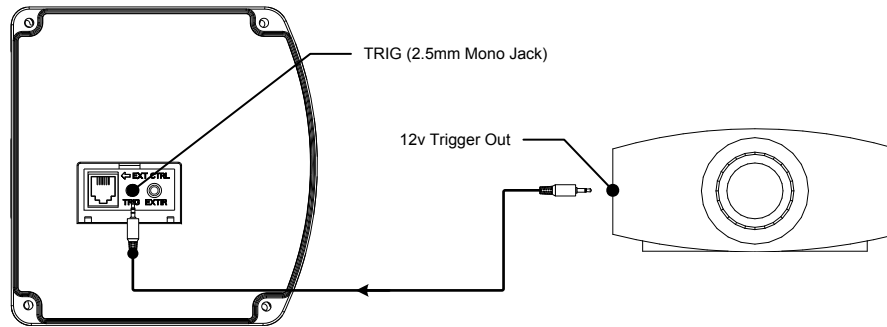
## Remote Button IR Hex Commands

Remote Key	CCF
Up	0000 006E 0020 0000 0031 0010 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0010 002F 0010 002F 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0030 0010 0030 0010 0030 0010 0030 0010 0010 0010
Stop	0000 006E 0020 0000 0031 0010 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0030 0010 0030 0010 0010 002F 0010 002F 0030 0010 0030 0010 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0030 0010
Down	0000 006E 0020 0000 0031 0010 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0030 0010 0030 0010 0030 0010 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0030 0010 0030 0010 0030 0010 0030 0010
Micro Up	0000 006E 0020 0000 0031 0010 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0030 0010 0010 002F 0010 002F 0010 002F 0030 0010 0010 002F 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0010 0010
Micro Down	0000 006E 0020 0000 0031 0010 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0010 002F 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0030 0010 0030 0010 0030 0010 0010 002F 0010 002F 0010 002F 0010 002F 0030 0010 0030 0010 0030 0010 0010 002F 0030 0010 0010 002F 0010 002F 0030 0010 0030 0010

## 12 Volt DC Trigger

Screens may be lowered and raised by connecting the TRIG 2.5mm sub-mini input to the 12v trigger output of a projector. When this method is used, the screen will lower when the projector is turned on and sends a 3 to 12v DC signal. The screen will remain lowered until the projector is turned off and the voltage drops to 0v (zero).

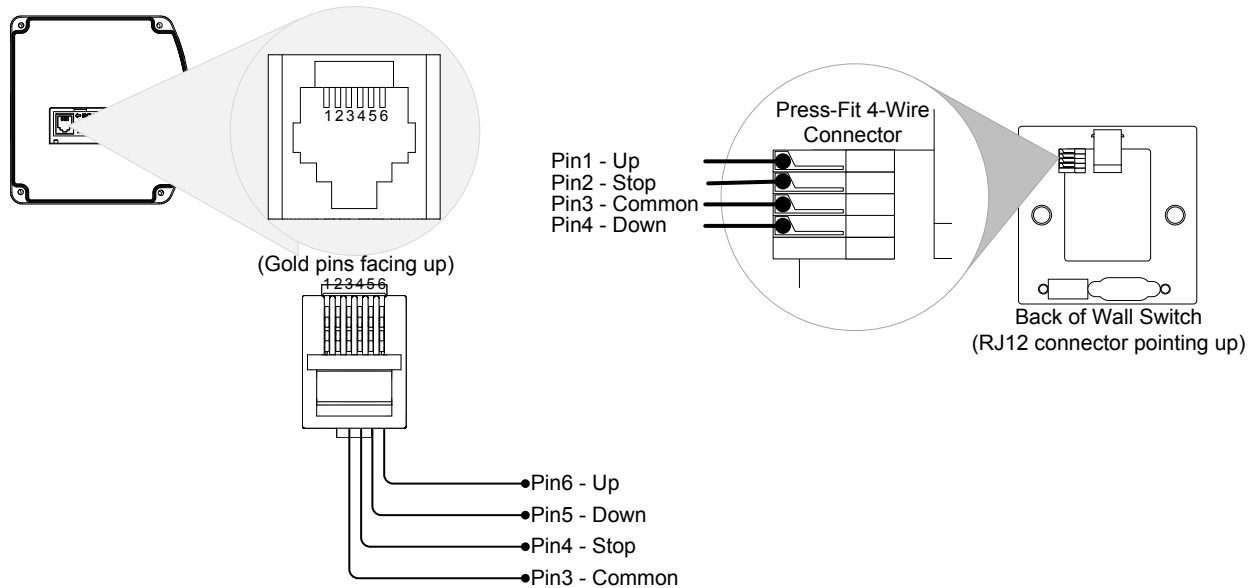
A 33ft cable has been included with 2.5mm sub mini plug for connection to the screen, and a 3.5mm mono plug for connection to a projector to allow for a quick installation.



## Wall Switch

The included wall switch and back-box can be surface mounted near the projection screen and used for manual control of the screen. A 10ft RJ12 cable is included to connect the switch to the screen. This cable may be replaced with a custom Cat5e/6 cable if longer runs are required due to the location of the switch.

## Extending Wall Switch Wiring

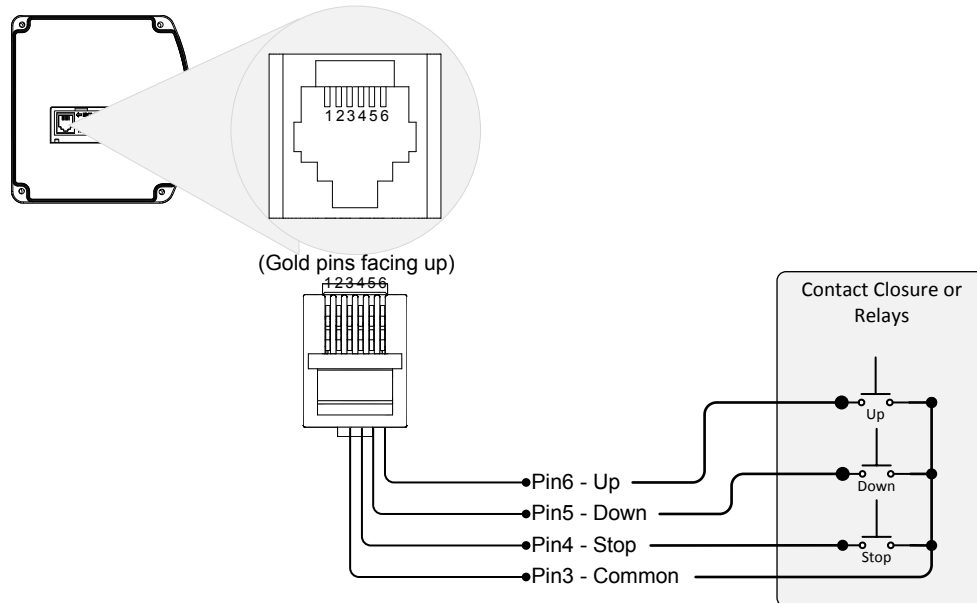


**Note:** The EXT CTRL connection maybe on the right side of the TRIG and EXT IR on some screens. While in a different order, the functionality is the same.

1. Run a Cat5e/6 cable from the projection screen EXT CTRL port to the switch location. Install the cable into the wall at the switch location, and cut a 1" hole at the desired switch height. Pull about 6" of cable out of the hole for attachment to the wall switch.
2. Remove the knockout from the back of the switch back-box and mount it over the cable with the opening for the RJ12 port in the back-box pointing down. Use the supplied screws and anchors to secure it to the wall.
3. Cut the RJ12 control cable and leave about 12" of cable attached to the connector. Splice four of the Cat5e/6 conductors to the appropriate wires as shown above at the projection screen, and then plug the RJ12 into the EXT CTRL port. Insulate the ends of the unused RJ12 conductors 1 and 2 to prevent short circuits.
4. Strip the insulation from each of the four conductors used in the Cat5e/6 cable about ¼". Locate the press-fit connector on the switch assembly and terminate the conductors as shown above, making sure to match the pin-out correctly between the screen and the wall switch.
5. Mount the wall switch to the back-box using the included screws, making sure to orient it correctly for the up and down buttons to face in the right direction.

## Contact Closure and Relay Control

The Dragonfly motorized screen may also be controlled via contact closure or relay control. Using the same conductors that are used for the wall switch, momentarily connect the Common wire to the Up, Down, or Stop wire for the desired operation.



**Note:** The EXT CTRL connection maybe on the right side of the TRIG and EXT IR on some screens. While in a different order, the functionality is the same.

1. Run a Cat5e/6 cable from the control system processor location to the projection screen.
2. Cut the RJ12 cable and leave about 12" of cable attached to the connector.
3. Terminate conductors in the Cat5e/6 to the desired pins of the RJ12 connector as shown in the diagram above. Insulate the ends of the unused RJ12 conductors to prevent short circuits.
4. Terminate the same conductors to the appropriate wires on the RS232 port or contact/relay connection of the control system processor.

## RS232 Serial Control

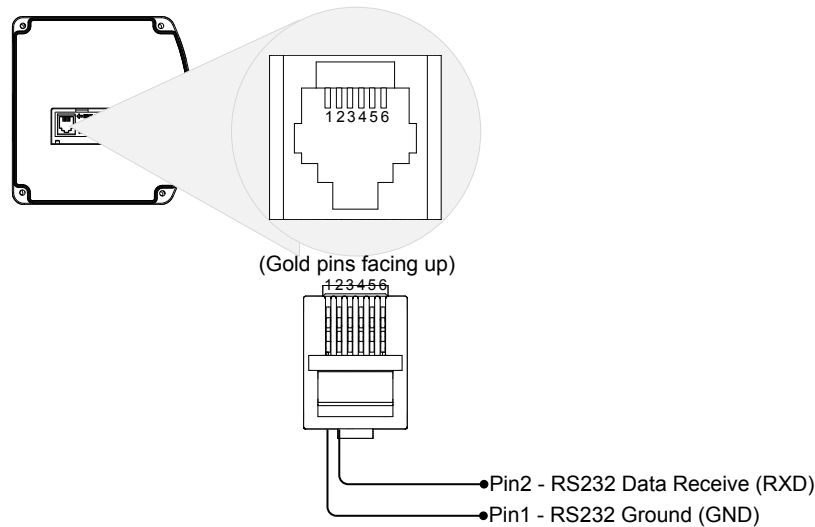
The screen can be controlled via RS232 serial to perform the functions for Up, Down, and Stop by connect to pins 1 and 2 on the EXT CTRL RJ12 input. This is a 1 way communication so no status is available back to the automation controller.

### Controller Port Configuration

Baud Rate : 2400  
Data Bit : 8 bits  
Initial Bit: 1  
Parity : None  
Stop Bit : 1

### EXT CTRL RJ12 Pins

RS 232 control uses pin 1 for Ground (GND), and 2 Data Receive (RXD) on the EXT CTRL RJ12 jack.



**Note:** The EXT CTRL connection maybe on the right side of the TRIG and EXT IR on some screens. While in a different order, the functionality is the same.

### RS232 Command Structure

OUTPUT	HEX VALUE
Up	0xFF 0xEE 0xEE 0xEE 0xDD
Stop	0xFF 0xEE 0xEE 0xEE 0xCC
Down	0xFF 0xEE 0xEE 0xEE 0xEE

