

# SmartFPV

## RC Zoom Camera

### User Guide



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## INTRODUCTION

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This is 700TVL 10X optical zoom camera with RC controlled zoom for FPV. It uses 1/3" CCD and Sony Effio technology. Just plug RC control cable to your RC receiver and Video cable to video transmitter (connecting camera power properly) and camera is ready to use.

### Specification

Signal	PAL/NTSC
CCD	1/3" SONY CCD
Effective resolution	976(H) x 596(V)
Horizontal resolution	700TVL
Minimum illumination	Color: 0.01Lux, B/W: 0.001Lux
Focus length	3.9~39mm
Power supply	12VDC, 90~120mA
Work temperature	-20°C~+70°C
Dimension	W40mm x H38mm x L63mm
Weight	120g
RC signal	PWM, CPPM
RC Control	Zoom, Focus, Menu

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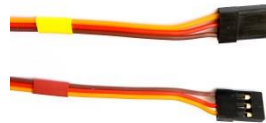
## CONNECTING

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Camera has two servo style cables:

**Yellow** marked for video out and 12V camera power

**Red** marked for RC control



**Servo style cables have standard pin meaning**

Wire	Yellow marked cable	Red marked cable
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<b>Brown</b>	Ground	Ground
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<b>Red</b>	12V	5V
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<b>Yellow</b>	Video signal	RC signal
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## CONTROL

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It is possible to control camera using regular RC channel outputs (PWM) or using CPPM signal available on many RC control systems.

Advantages of CPPM signal is that all RC channels are transmitted through one signal cable and you don't need additional cable for every channel you need for control.

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### Regular PWM signal control

When using regular RC channels to control camera, red marked cable is used for zoom control.

You also can control focus and menu. To do that you should solder additional wires to "F" and "M" pads on zoom controller for Focus and Menu functions accordingly. You should connect these wires to Focus and Menu control channels on RC receiver.

Control channel functions are show in this table

Value	Zoom CH		Focus CH	Menu CH
	Zoom CH (Pot)	Zoom CH (Switch)		
0%	Zoom Wide	Zoom Out (Down)	Focus Far (Left)	Menu
50%	Zoom Middle	Stop Zoom	Stop Focus	Idle
100%	Zoom Tele	Zoom In (Up)	Focus Near (Right)	

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### CPPM signal control

If using CPPM signal to control camera there are 3 channels used. Channel functions are always in this order and following each other: **Zoom control, Focus control, Menu control.**

By default CPPM channels 8,9,10 are used to control camera: CH8 – Zoom, CH9 – Focus, CH10-Menu.

To change CPPM channels used you need to toggle 8 times RC transmitter Zoom switch within 10s after powering camera zoom controller by connecting it to RC receiver. After toggling 8 times transmitter switch blue LED on camera control board flashes one time indicating saving of new configured channel. **Focus and Menu control channels will always be following 2 channels after Zoom control channel.**

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### Transmitter Switch operation

Camera zoom can be controlled in 2 ways – potentiometer or using 3position switch on RC transmitter. How to change Zoom control modes is described in Configuration chapter.

#### Zoom Pot mode

By default Zoom control is controlled by following Zoom channel value. This means that zoom level is equal to channel value. If channel value is 0% then camera zooms minimal value (1X). If channel value is 100% camera zooms to maximum value (10X). If changing value from 0% to 100% zoom value will change proportionally.

This is used for Zoom control with transmitter potentiometer. This way you can rotate potentiometer which position you want and camera will zoom to that value.

### Zoom Switch mode

Second way you can zoom camera is using 3 position switch. Side positions zoom in and out and middle position stops zoom. Hold switch in middle position and when needed switch either to Zoom IN or Zoom OUT position – wait while zoomed enough and switch to middle position to stop zooming.

Focus control is used same way as Zoom control with 3 position switch.

To enter camera Menu you need to toggle Menu control channel from 50% to 0% value and back. You can use Zoom and Focus control channels to navigate and change values in menu: Zoom switch to move up/down, Focus switch to change values +/-.

Toggle Menu command one more time to exit Menu.

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### Buttons

You can also use buttons on RC Zoom controller to Zoom IN/OUT, control Focus and enter camera menu.

U – Zoom IN / Up

D – Zoom OUT / Down

L – Focus Far / Left

R – Focus Near / Right

M - Menu

E – Enter



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### CONFIGURATION

There is possibility to change some options of Zoom controller. It is done by simultaneously pressing 2 buttons and then powering ON Zoom controller (connecting red marked cable to RC receiver). Options will be cycled with each time you do this.

After power ON LED flashes one time or two times showing configured value.

#### Button combination for configuration

Buttons to hold	Changed option	1 LED flash	2 LED flashes
Menu + Up	Zoom mode	Switch mode	Pot mode
Menu + Down	Control protocol	PELCO-D	Sony

When using PELCO-D protocol menu function is not available!