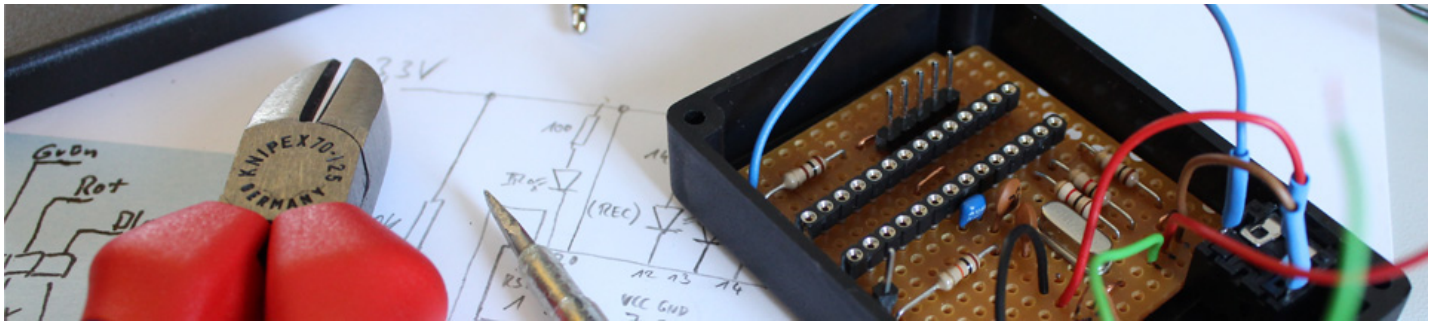
apm motion pictures

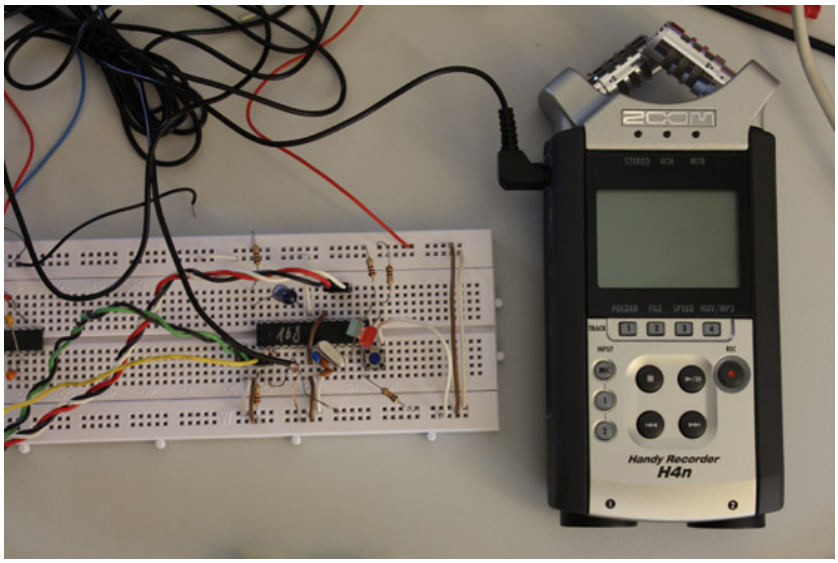


DIY Remote Control for Zoom H4n and Canon 60D

last update 30. September 2012

Within this project I developed a remote control for the Zoom H4n portable audio recorder and the Canon 60D DSLR camera. I want to fix a common problem lot of DSLR shooters have: Starting the camera and audio recorder simultaneously!

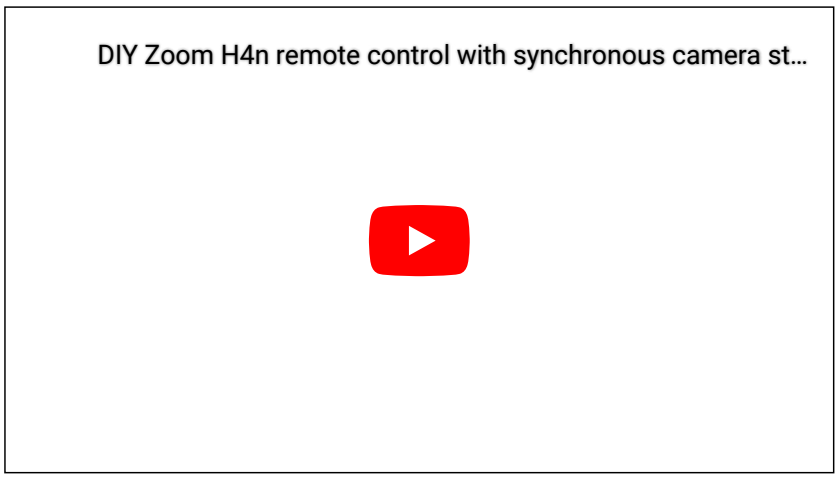
In my eyes there is problem with the H4n when using with a DSLR - You have to press the record button twice. Especially when filming events (e.g. wedding or birthday) the equipment has to be reliable. But with the H4n you can easily miss to tap the record button twice. As a result the sound partly or completely is missing.



The remote control prototype circuit connected to Zoom H4n audio recorder.

As said this project shall fix the problem. The goal is to develop an control circuit (like a remote control) that starts the H4n and the Camera (in my case a Canon 60D) with just on button. The requirements are:

- Small as possible to be able to put the remote control on the camera body.
- Indicator LED for record
- Clipping indicator
- Optional: AGC with Step-down und Step-up (Note: I decided to skip this point)



The prototype circuit in action.

H4n Remote Protocol

The protocol is RS232 with 3,3V level at 2400 baud 8n1. Marcus Wolschon has already decoded most parts of the protocol. For further details please see his blog.

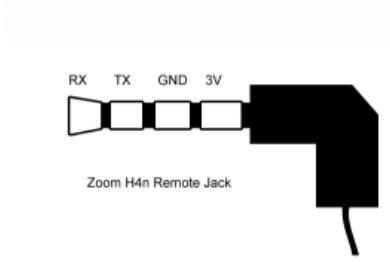
Button	Byte 1	Byte 2
Button released	0x80	0x00
Play	0x82	0x00
Record	0x81	0x00
Stop	0x84	0x00
Next	0x88	0x00
Prev	0x90	0x00
Volume +	0x80	0x08
Volume -	0x80	0x10
RecLevel +	0x80	0x20
RecLevel -	0x80	0x40
Mic	0x80	0x01
Line 1	0x80	0x02
Line 2	0x80	0x04

LED	Byte
Record	0x01
Mic red	0x02
Line 1 red	0x04
Line 2 red	0x08
Mic green	0x10
Line 1 green	0x20
Line 2 green	0x40

Before H4n will reacts on commands from a remote control a registration sequence is needed.

Sender	Byte	Description
RC4*	0x00	Send until H4n sends response.
H4n	0x80	
RC4	0xA1	
H4n	0x80	

*RC4 is the name of the Remote Control



Pinout of H4n Remote Jack

Controlling the camera (Canon 60D)

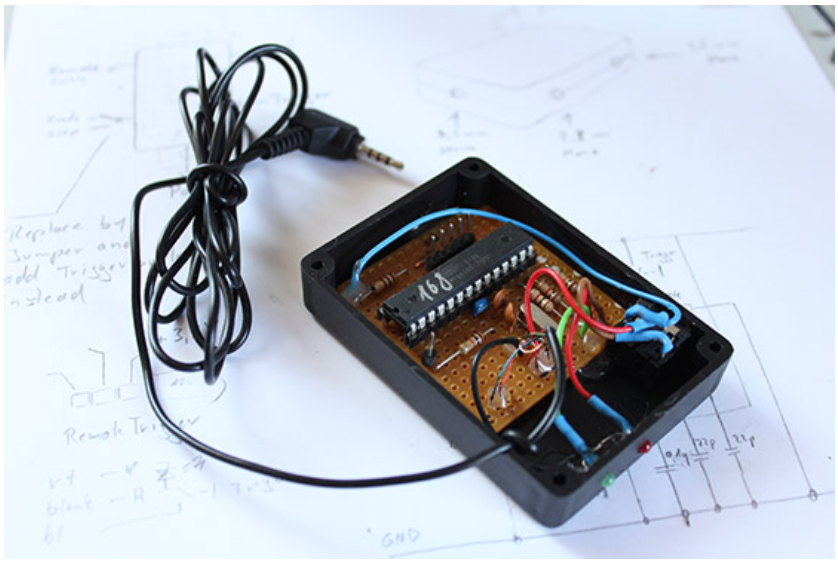
The easiest way to control the camera is through a IR remote control. The protocol is simple and available at doc-diy.net. The good with IR is - it works for other canon cameras (i.e. ti rebel / D500) too.

Creating the Circuit

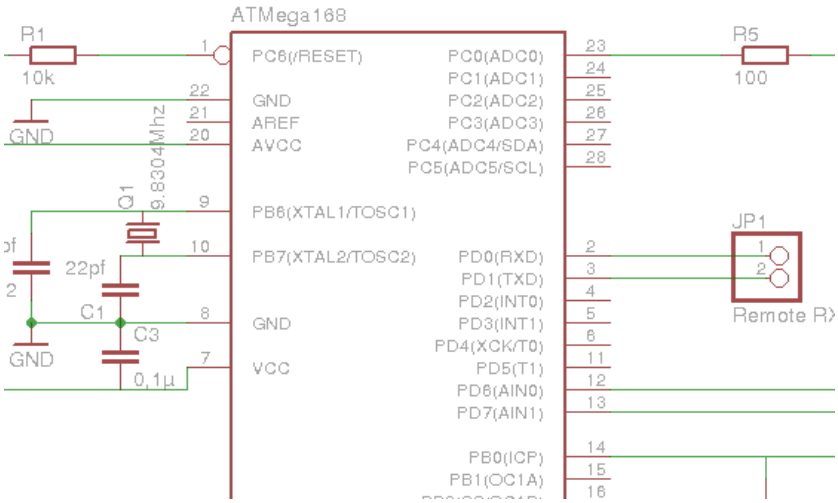
I used the ATMega168 Microcontroller from Atmel because it was available at the moment, you can also use a 'smaller' controller. A little program is used to sent commands to the H4n and to generate the IR signals for the Canon 60D. The circuit is powered by 3,3V through the remote jack on H4n directly, no additional power supply or battery required.

The start/stop trigger button is not build into the housing but connected through a jack and dedicated wire. With this the button can be placed anywhere for more flexibility. Two LEDs are used to indicate recording state and audio clipping. I used low current LEDs for this purpose as I do not know how much power the H4n remote jack can handle, so I am on the save side here.

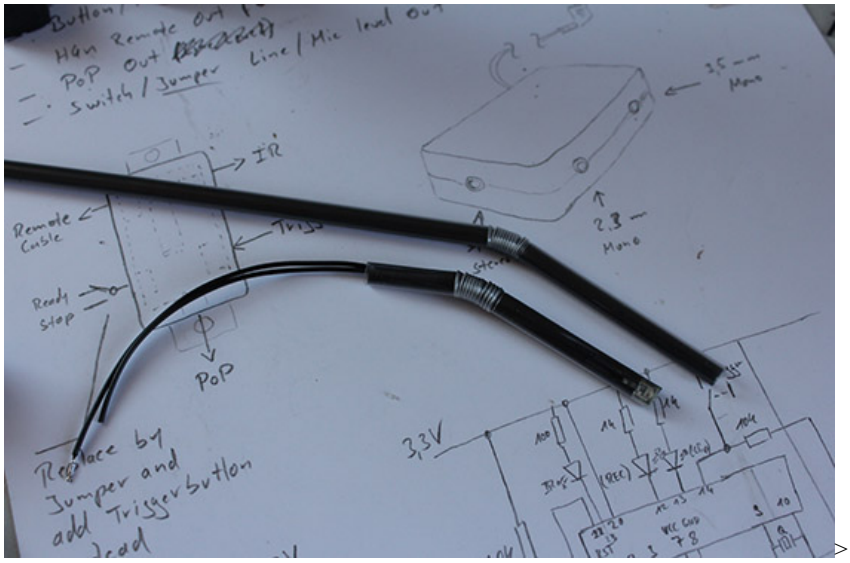
- Download C source code
- Download schematic



The DIY remote control



Schematic (click to enlarge)


Remote Cable
Ready Stop
IR
PoP
3.5 — Mono
2.5 — Mono
3.3V
Replace by Jumper and add Trigger button
>


Canon
PROLUX

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