

75. Acoustical and Optical Results

DRAFT 1.2

UFO Doctor, April 30th, 2014, rev. May 30th, 2014

Circuits: Mama Duck V6, April 29th 2014 and Baby Duck PSD 9, April 30th, 2014

Arduino Program: Miru Duck76

Speaker and Mic: Kobitone

IR-LED: VSMG10850

IR-Diode: BPV10NF

1. Concept

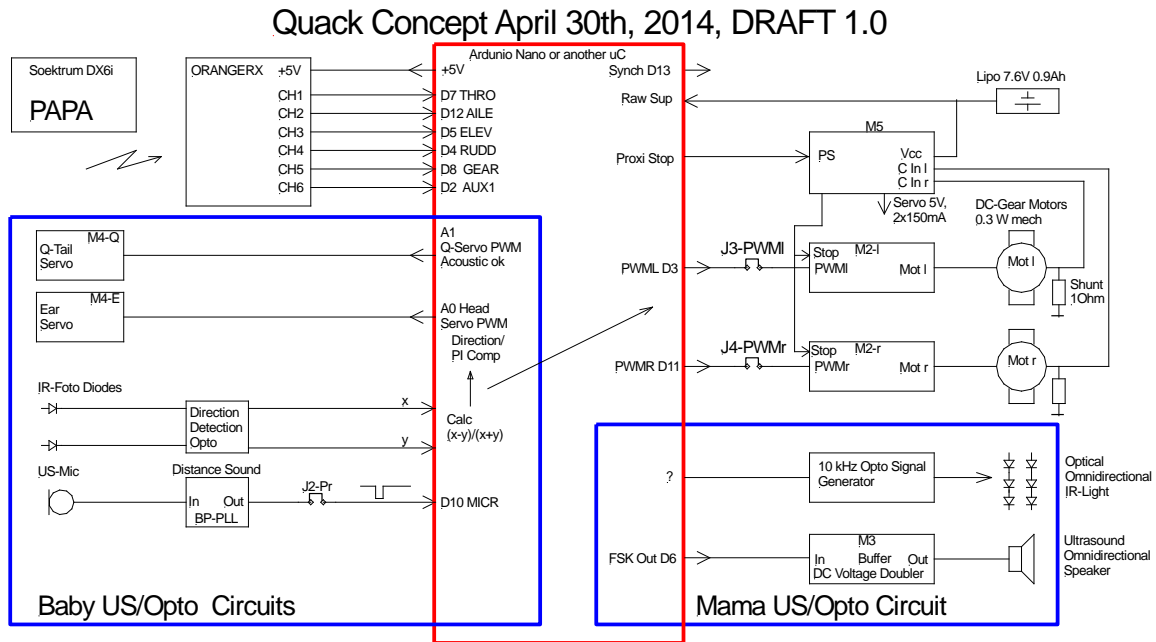


Fig. 1. Block Diagram of the Duck Family

2. Test Setup

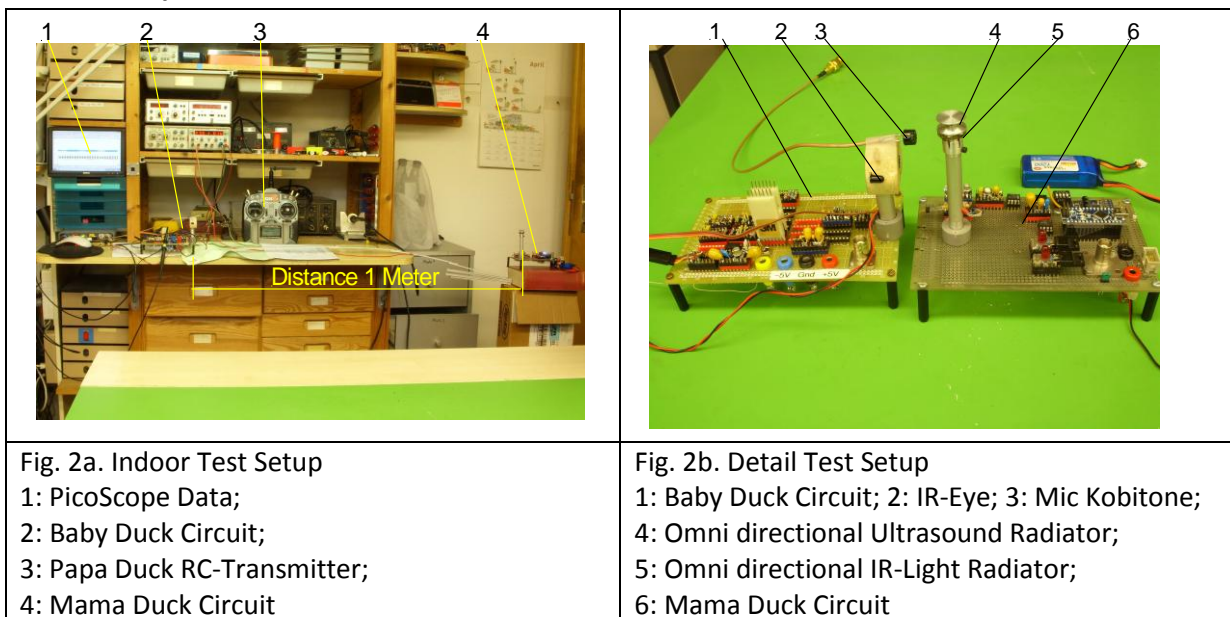


Fig. 2a. Indoor Test Setup

- 1: PicoScope Data;
- 2: Baby Duck Circuit;
- 3: Papa Duck RC-Transmitter;
- 4: Mama Duck Circuit

Fig. 2b. Detail Test Setup

- 1: Baby Duck Circuit;
- 2: IR-Eye;
- 3: Mic Kobitone;
- 4: Omni directional Ultrasound Radiator;
- 5: Omni directional IR-Light Radiator;
- 6: Mama Duck Circuit

3. Circuit

3.1. Schematic

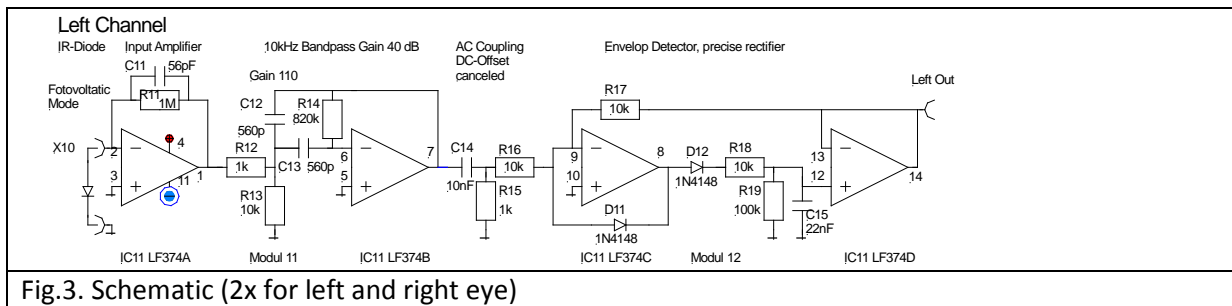


Fig.3. Schematic (2x for left and right eye)

3.2. Simulation Bandpass with LF347

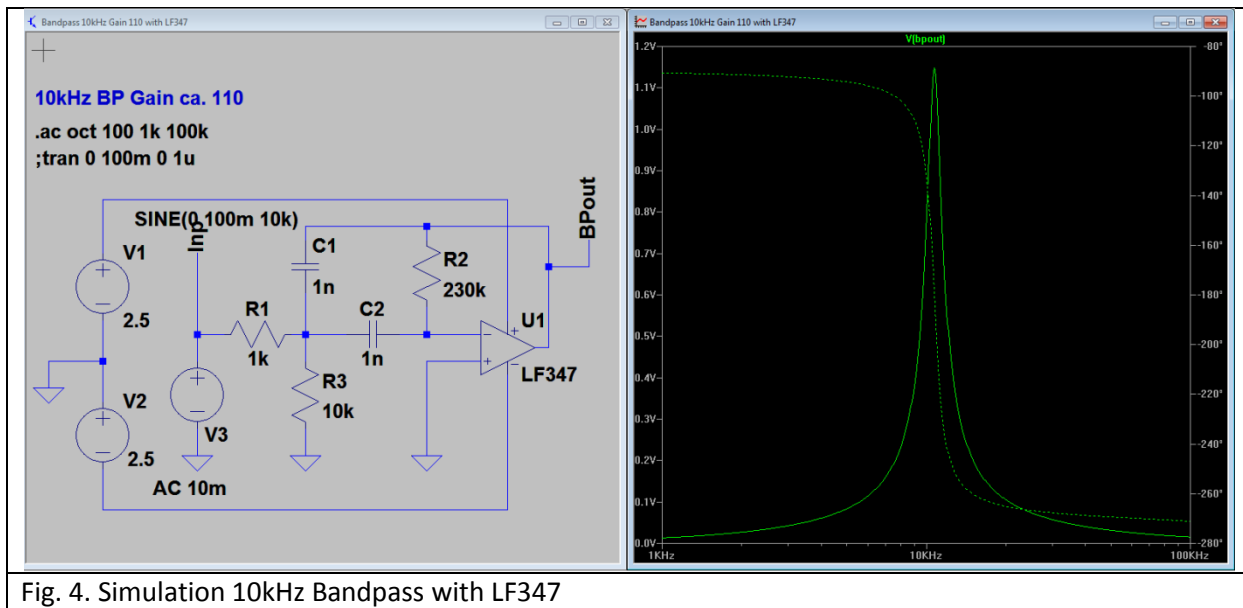


Fig. 4. Simulation 10kHz Bandpass with LF347

3.3. Test Bandpass with LF347

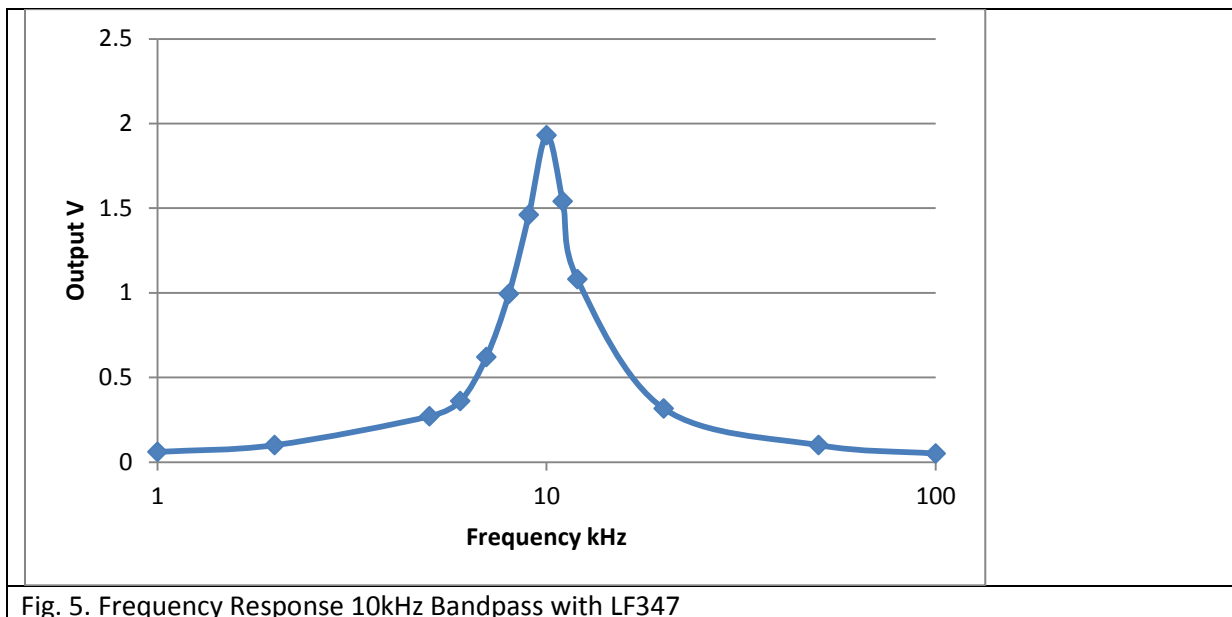


Fig. 5. Frequency Response 10kHz Bandpass with LF347

4. Experimental Results

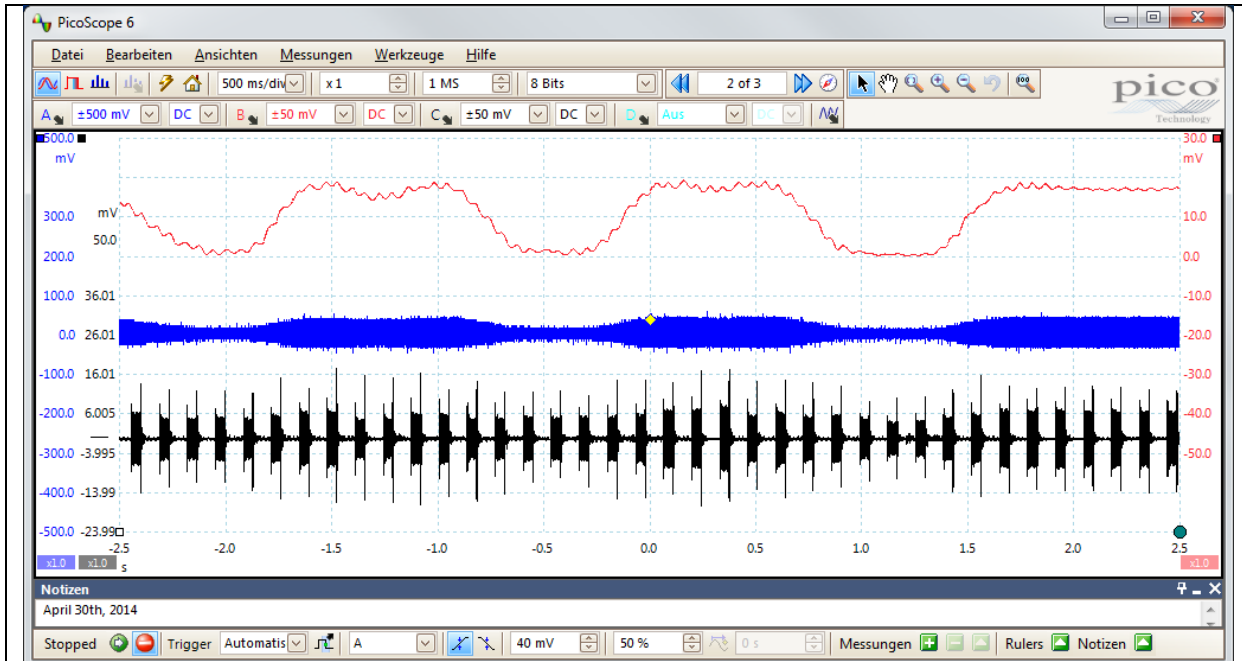


Fig. 3. Acoustical and Optical Data Transmission

Conditions: Transmission Distance: 1Meter, Baby Head rotating about +/-20 Degree

Top: Analog Processed Right Eye Signal

Middle: Optical Amplitude behind 10kHz Band pass filter

Below: US-Signal received by Mic Kobitone (high power radiation)

Comment: Very clear reception of acoustical and optical signals, but the optical signal should be amplified by a factor of 10.

5. Power Consumption Mama Duck

Averaged Current Consumption at 7.6V Supply

- Arduino + ORANGRX: 47mA (Note: could be reduced by a better 5V Regulator!)

+ Voltage Doppler without Speaker: 50mA

+ Speaker Low Power: 52mA (10kOhm in series to Kobitone Speaker)

+ Speaker High Power: 57mA

+ 6 IR LED, 2x130mA with about 10% D.C.: 66mA

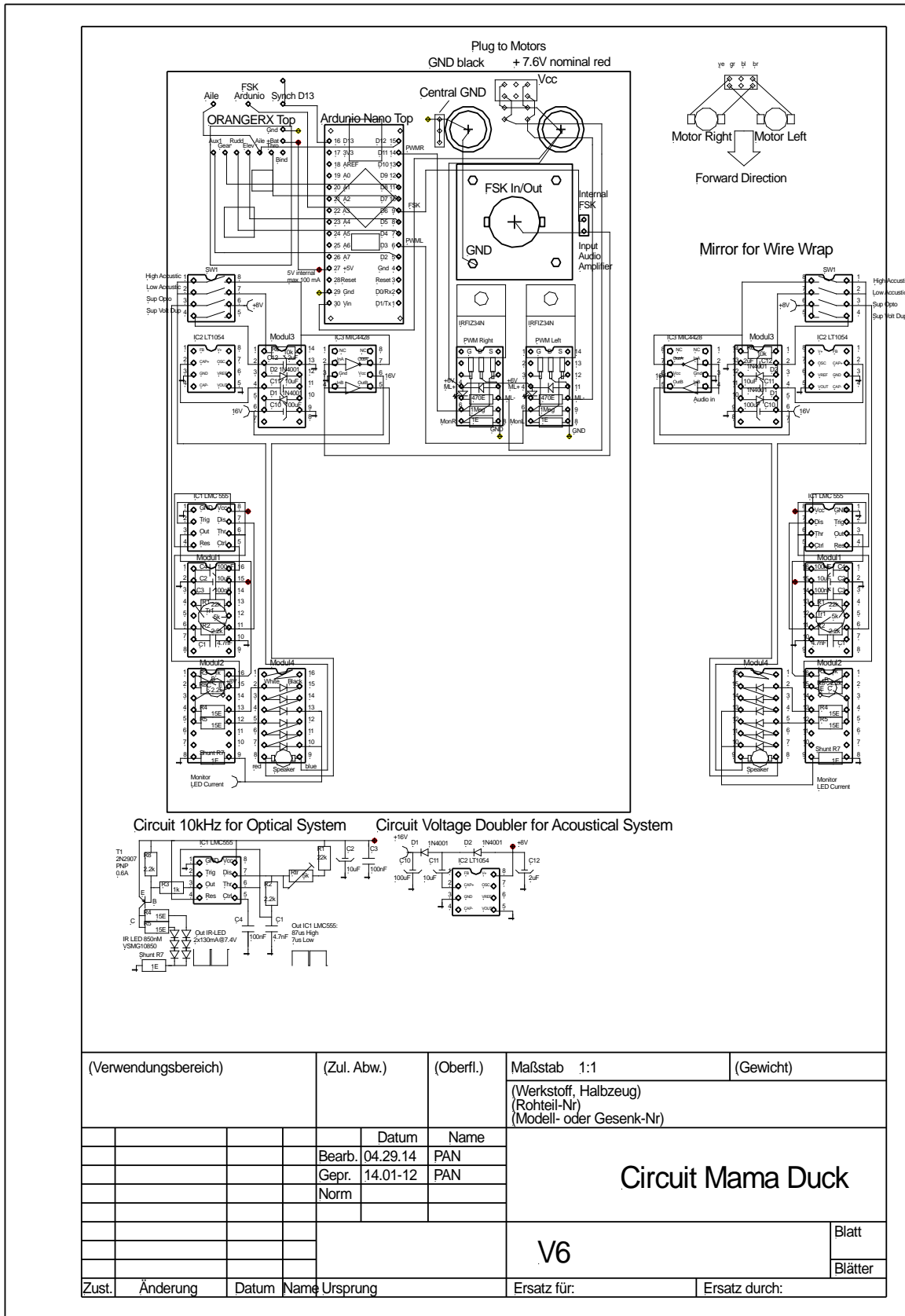
IR-LED: VSMG10850: 850nm, max 130mA at 50 %D.C and 100usec, 75 Degree

6. Power Consumption Baby Duck

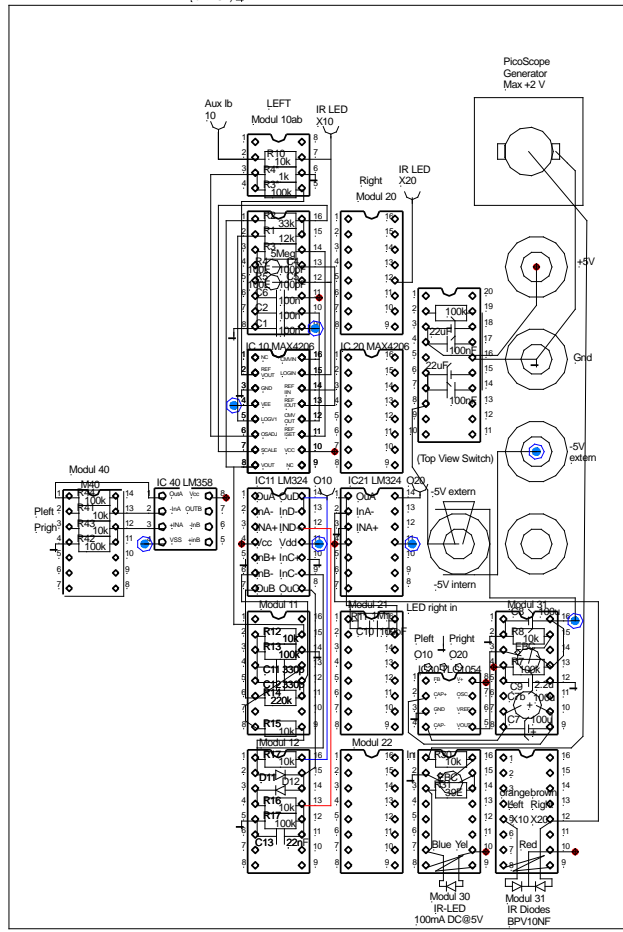
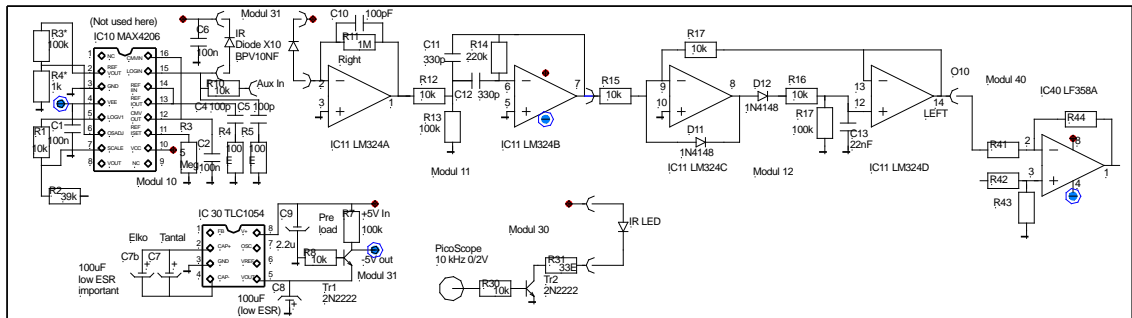
Averaged Current Consumption at 5V Supply: 17 mA

IR-Diode: BPV10NF : 850-1000nm, 20 Degree

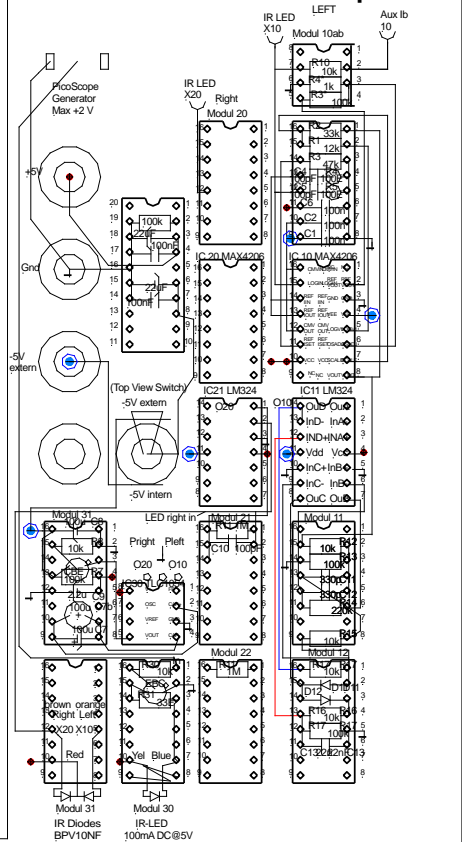
7. Circuit Mama Duck



8. Circuit Baby Duck



Mirror for WireWrap



(Verwendungsbereich)	(Zul. Abw.)	(Oberfl.)	Maßstab 1:1	(Gewicht)
			(Werkstoff, Halbzeug) (Rohteil-Nr) (Modell- oder Gesenk-Nr)	
		Datum	Name	Opto Circuit Dual Sup
		Bearb. 04.30.14	PAN	
		Gepr. 00.00.00	PAN	
		Norm		
Zust.	Änderung	Datum	Name Ursprung	Blatt
				Blätter
			Ersatz für:	Ersatz durch:

PSD9

9. Drawing Omni directional Sound and Light Radiator of Mama Duck

