

305 Baby Duck Sensor Design

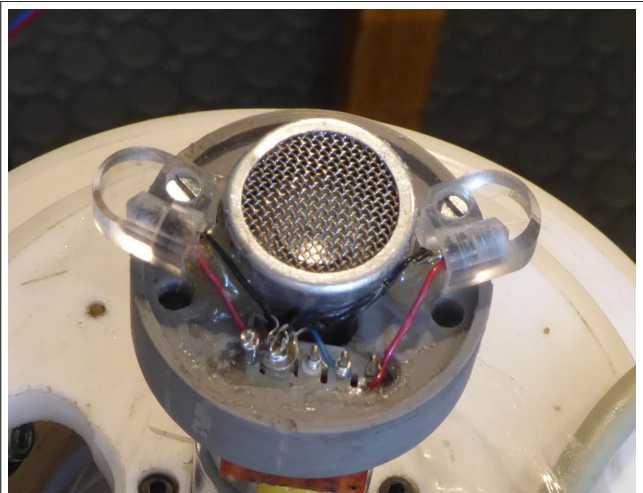
PAN, June 28 th, 2018

1. Test Setup

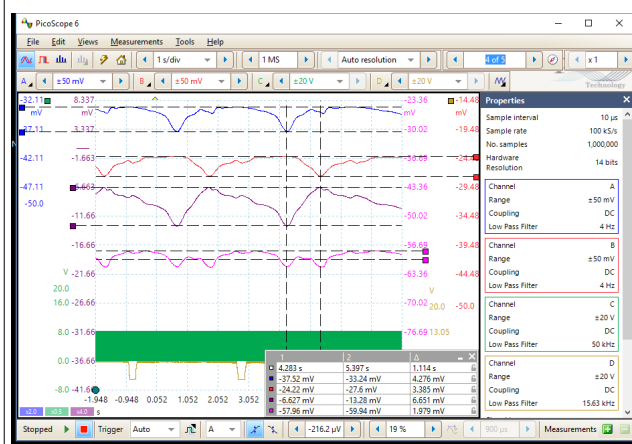
Distance: 0.5 m, Source 40 kHz 8V, 120 Ohm to TSAL4400,
Foto Transistor TEFT4300 with optical bias by TSAL4400: 4 mA, Vcc 5 V,
US Source: UST-40T at 8V mounted in a horizontal omnidirectional PVC Radiator
Traces: Left Eye A, Right Eye B, A-B = direction, A+B = Signal at 0 Deg, Source 40 kHz,
0 Deg Marker Turntable



A, B 3.6/3.1 mV, A-B: 6.0 mV, linear
A+B: 1.6 V, Range: 102 Deg
US: 7.7 mV



Head open, Eyes mounted at 130 Deg



A, B: 4.3/3.4 mV, A-B: 6.6 mV, quite linear
A+B: 1.98 mV, Range: 106 Deg
US: 3.3 mV (-7.3 dB)



Head closed, mounted on Turntable

Comments:

Eyes mounted at 130 Deg is the optimal compromise for large optical capture range and linearity . The Left/Right capture range is about 180 Deg, the quasi-linear measuring range amounts to about 106 Deg.

The Microphone UST-40R is omnidirectional. A totally closed head skull shows an attenuation of about 7.3 dB.

