Experimental Investigation on Noise Characteristics of Ring-core Sensor for Fluxgate Magnetometer

Chikara Furukawa [1], Fumio Tohyama [2]

[1] Space Engineer.,Tokai Univ, [2] Space Engineer., Tokai Univ

Ring-core typed fluxgate magnetometer is practically used to measure DC level magnetic field(>0.01nT).We experimentally investigated sensor sensitivities,noise characteristics and temparature drifts about some parameters and tried to find suitable parameter to develop a low noise fluxgate magnetometer.The parameters are 1)Drive method(pulse duty,drive frequency,drive amplifer),2)ring size,parmalloy wrap number,and 3)core made in Japan,USA and Rossia.Duty25% pulse wave gives maximum sencond harmonic wave.High drive frequency(16kHz) shows a low noise and drive amplifer(>5erstedp-p) is steady noise.Parmalloy wrap number of 6turn shows a low noise more than that of 12turn.Temparature drift is 1nT/degreeC order for all cores.