SERVO INCLINOMETER AND ACCELEROMETER SELF-TEST FUNCTIONALITY

Revision History				
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1 APPLICABILITY

This document describes the function of the self-test feature of the following inclinometer and accelerometer types:

- T435
- LSO
- T233-0001
- A2xx series accelerometers

2 SERVO INCLINOMETERS

2.1 Self-Test Circuit

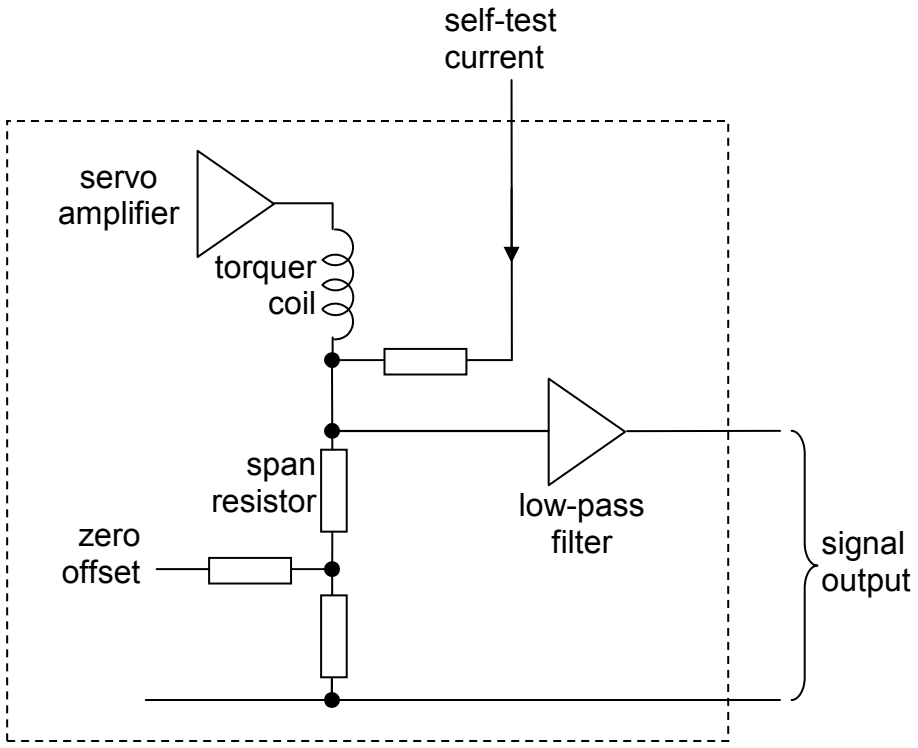

Figure 1 Servo inclinometer self-test circuit block diagram

The self-test circuit is shown in Figure 1. Current is injected into the junction between the torquer coil and the span resistor. This simply sums the torquer current and the self-test current, and the resulting voltage across the span resistor is passed to the output.

Positive current injection (current going into the self-test pin) results in a positive output deviation.

2.2 Self-Test Connections

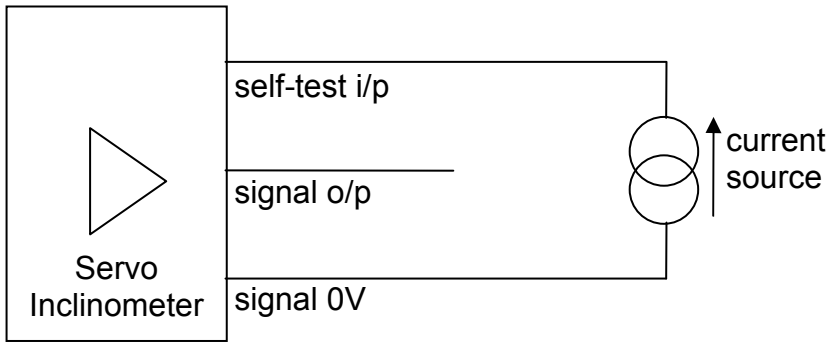

Figure 2 Servo inclinometer self-test wiring

2.3 Self-Test Current Injection

Current required to cause a deviation in the signal output is approximately proportional to the span resistor of the inclinometer.

In order to cause an output deviation of approximately +5V, the current injected into the self-test input is shown in Table 1.

Type	Range (°)	Self-test current (mA)
LSO T233-0001	1	0.04
	3	0.13
	14.5	0.13
	30	0.25
	45	0.35
	90	0.5
T435	3	0.03
	14.5	0.13
	30	0.25
	45	0.35
	90	0.5

Table 1 Servo inclinometer self-test current injection

3 SERVO ACCELEROMETERS

3.1 Self-Test Circuit

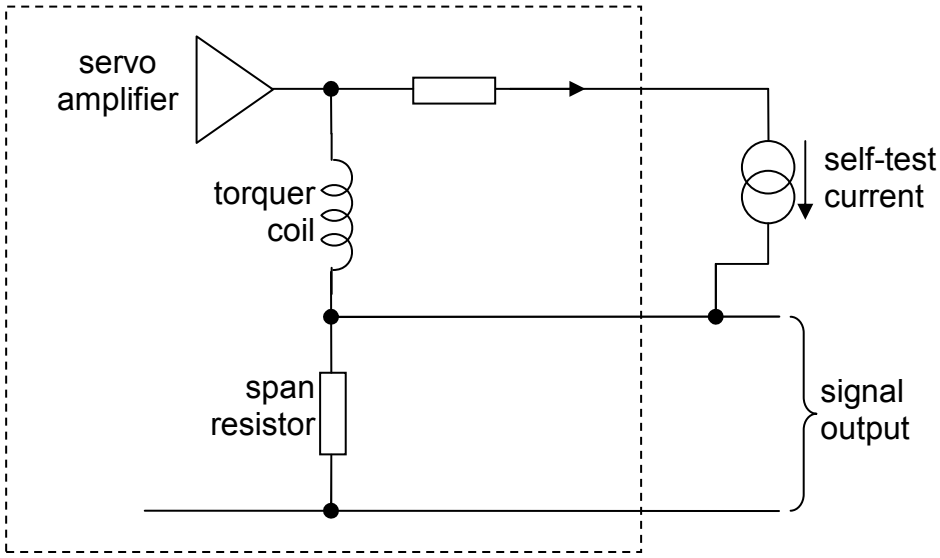

Figure 3 Servo accelerometer self-test circuit block diagram

The self-test circuit is shown in Figure 3. Current is injected into the junction between the output from the servo amplifier and the torquer coil.

Because this current flows through the torquer coil, the servo amplifier reduces its output to maintain the same current flow through the coil, and hence the span resistor. The result of this is that the output voltage remains exactly the same.

The self-test current must therefore be removed so that only the servo amplifier current is measured as a voltage across the span resistor. This way only the change in current from the servo amplifier is measured.

Negative current injection (current coming out of the self-test pin) results in a positive output deviation.

3.2 Self-Test Connections

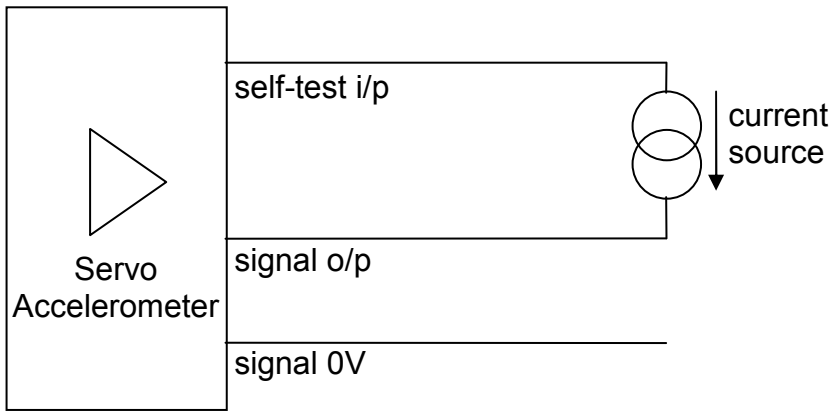

Figure 4 Servo accelerometer self-test wiring

3.3 Self-Test Current Injection

Current required to cause a deviation in the signal output is approximately proportional to the span resistor of the inclinometer.

In order to cause an output deviation of approximately +5V, the current injected into the self-test input is shown in Table 2.

Span Resistor	Self-test current (mA)
5K	-1
2.5K	-2
4.7K	-1.1
5K through filtered output	-0.55
2.5K through filtered output	-1.1
4.7K through filtered output	-0.6

Table 2 Servo accelerometer self-test current injection