

Filter Notation

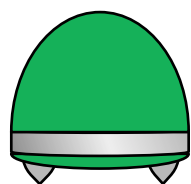
[zero (Hz) : pole (Hz) : dcGain]

n BIO Switch Input

HEPI - SENSORS

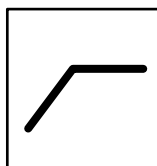
Anti-Aliasing
Chassis
D070081

General
Standards
ADC



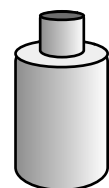
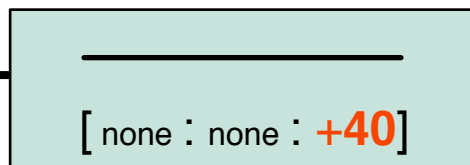
Strekheisen STS-2
1500 V / (m/s)

Inst. Freq. Resp.



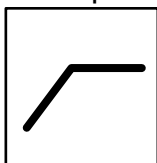
$f_0 = 8 \text{ mHz}$
 $Q \sim 1$

STS Inteferace D040019



Sercel L4-C
275 V / (m/s)

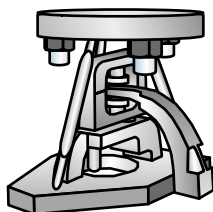
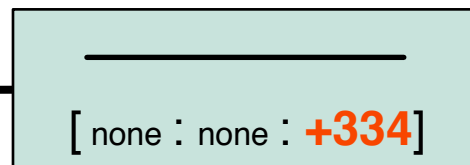
Inst. Freq. Resp.



$f_0 = 1 \text{ Hz}$
 $Q \sim 2$

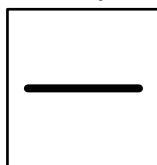
HEPI Pier Inteferace D080521

L4C Interface



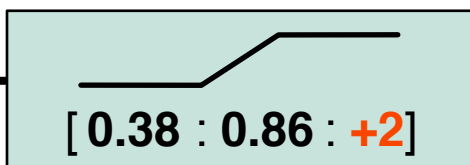
Kaman DIT-5200 Inductive
Position Sensor

Inst. Freq. Resp.



(none)

Inductive Position Sensor Interface

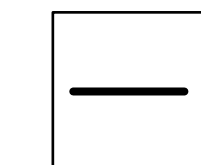


7.87 V / mm
(0.2 V / mil)

HEPI Pressure Preamp D1101839

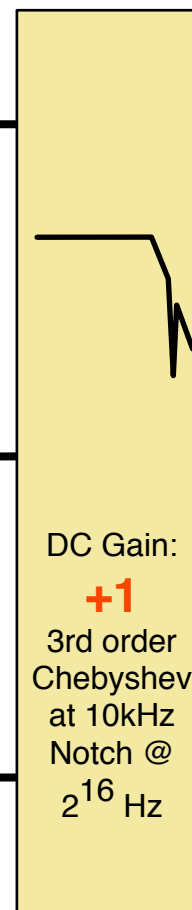


Honeywell SPTMV0300
Pressure Sensor
0.33 mV / PSI

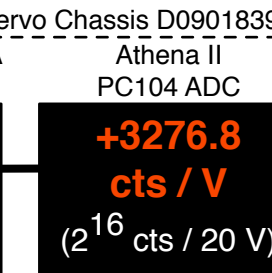
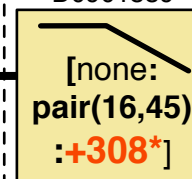


(none)

[none : none : +322*]



HEPI Pump Servo Chassis D0901839
Servo Board AA
D0901559



* Preamp is only used for long-run and chamber-side sensors.

For sensors where preamp is used, gain of Servo Board channel is set to 1.0

Filter Notation

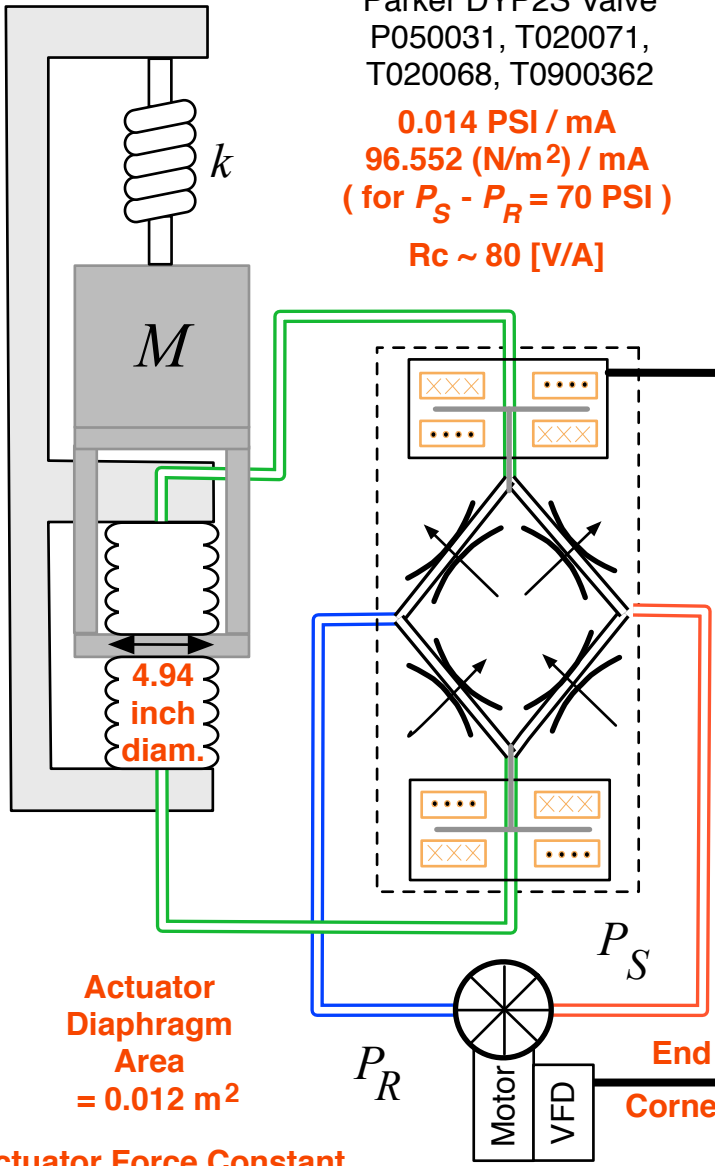
[zero (Hz) : pole (Hz) : dcGain]

n BIO Switch Input

HEPI - ACTUATORS

LIGO Customized
Parker DYP2S Valve
P050031, T020071,
T020068, T0900362

0.014 PSI / mA
96.552 (N/m²) / mA
(for $P_S - P_R = 70$ PSI)
Rc ~ 80 [V/A]



HEPI Pier Interface
D080521

HEPI 8-Ch Valve Driver
D0900117

[none : none : **+1**]

[none : 626 :
+0.173 mA/V]

HEPI Valve Driver Board
D020373

Anti-Imaging
Chassis
D1100202

General
Standards
16-bit DAC

DC Gain:
+1
3rd order
Chebyshev
at 10kHz
Notch @
 2^{16} Hz
D070081

DC Gain:
+3.05e-4
V / ct
($20 \text{ V} / 2^{16} \text{ ct}$)

The Variable Frequency Driver (VFD) controls the motor speed,
which changes the pressure in the pump line(s).
The response depends on the number of pumps and
piping network size, so DC is a rough estimate
See LHO aLOG 16601 for LHO details

End Stations: ~30 PSI / V
Corner Station: ~10 PSI / V

HEPI Pump Servo Chassis D0901839
Servo Board AI
D0901559

Athena II
PC104 DAC

[none:
pair(16,45)
:+1]

+4.88e-3
V / ct
($20 \text{ V} / 2^{12} \text{ ct}$)

**Actuator
Diaphragm
Area
= 0.012 m²**

**Actuator Force Constant
→ 1.185 N / mA**

Filter Notation

[zero (Hz) : pole (Hz) : dcGain]

n BIO Switch Input

HAM ISI Production - SENSORS

aLIGO HAM-ISI Interface Chassis D070164

GeoTech GS-13
2200 V / (m/s)

$f_0 = 1 \text{ Hz}$
 $Q \sim 4.5$

40.2

GS-13 Preamp D0902742

GS-13 Interface D1000755

[10 : (50, 2e3, 2.24e3) : +2]

[none : 2e3 : +2]

1

0

1

10

0

Sercel L4-C
275 V / (m/s)

$f_0 = 1 \text{ Hz}$
 $Q \sim 2$

44

L4-C Preamp D1000059

L4-C Interface D1000757

[none : 2e3 : +2]

1

0

1

7

0

Horz :: "Coarse"
Vert :: "Fine"
MicroSense Capacitive Displacement Sensors

(none)

2

ADE Disp. Sensor Satellite Box

Coarse: 10 V / mm
Fine: 10 V / 250 μm

Disp. Sensor Interface D1000067
See z:p derivation in T2400045

[0.1447 : 1.5917 : +1]

Anti-Aliasing Chassis D070081

General Standards ADC

DC Gain: +1

3rd order Chebyshev at 10kHz Notch @ 2¹⁶ Hz

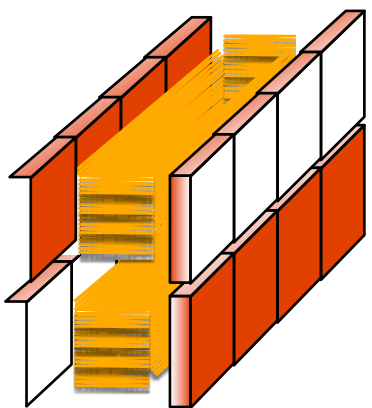
DC Gain: +1638.4 cts / V (2¹⁶ cts / 40 V)

Filter Notation

[zero (Hz) : pole (Hz) : **dcGain**]

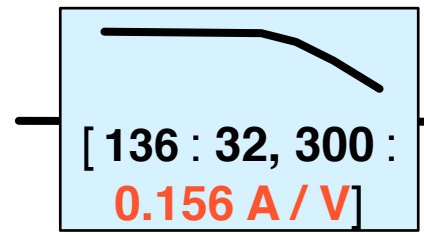
n BIO Switch Input

HAM ISI Production - ACTUATORS



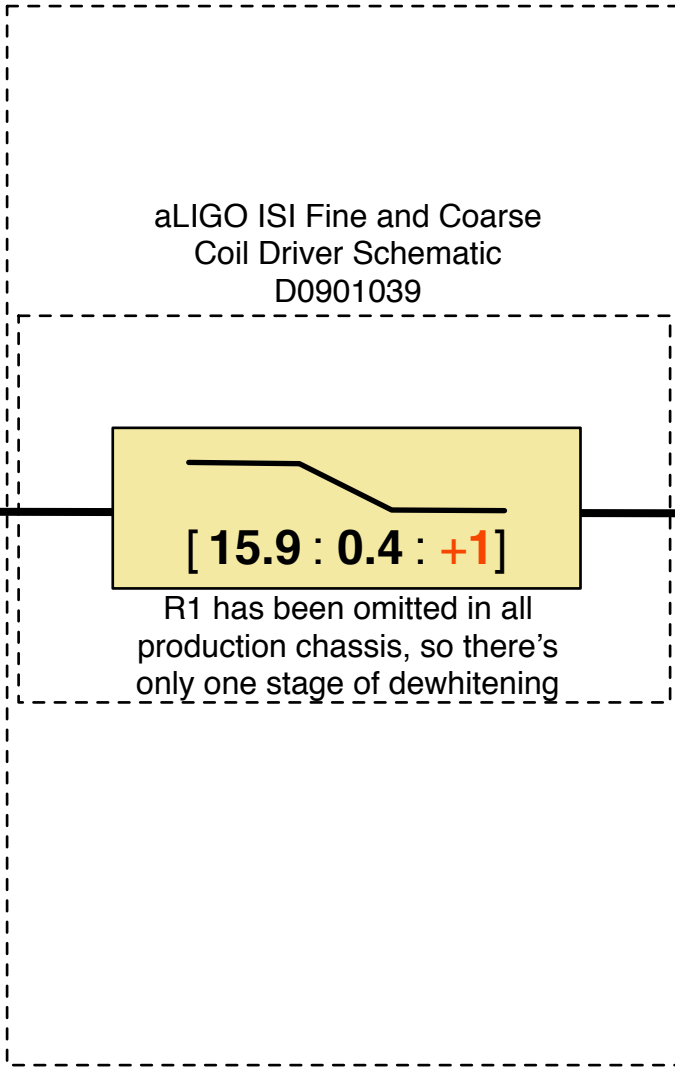
Coarse (Large) Actuator Magnets
T0900564

9.591 [lbs / A]
42.661 [N / A]

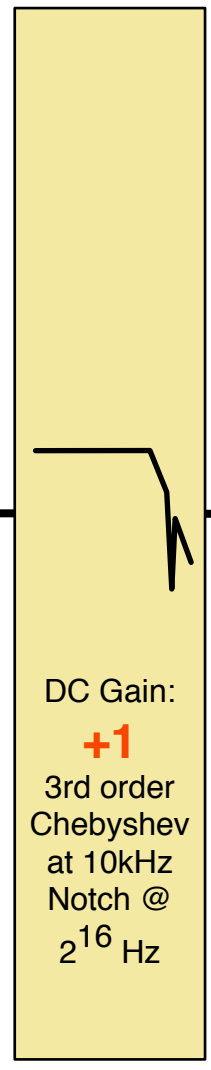


Coarse (Large) Actuator Coil
($R_{coil} = 6.42$ [Ohm]; T0900564)
Freq. Resp. T0900226

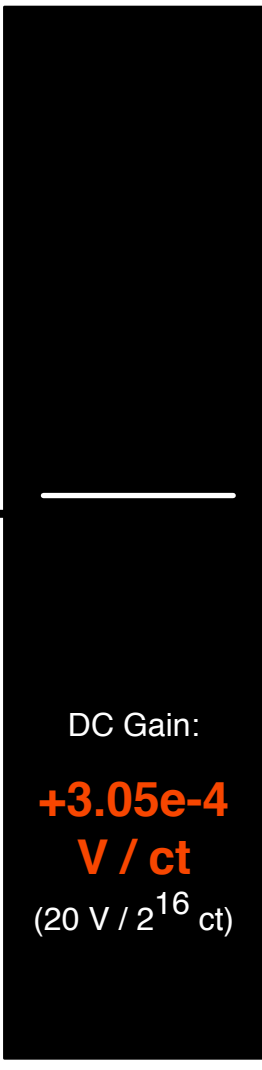
aLIGO ISI Fine/Coarse Coil
Driver Chassis
D0902744



Anti-Imaging
Chassis
D070081



General
Standards
16-bit DAC

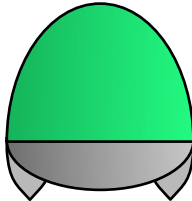


Filter Notation

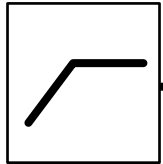
[zero (Hz) : pole (Hz) : **dcGain**]

n BIO Switch Input

BSC ISI Stage 1 - SENSORS

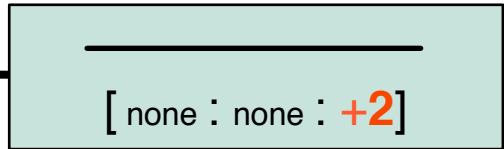


Nanometrics T240
1200 V / (m/s)

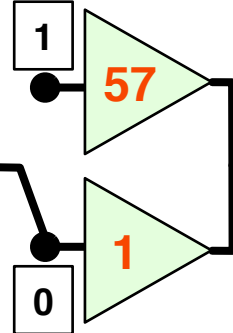


$f_0 = 4 \text{ mHz}$
 $Q \sim 1$

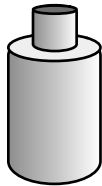
Trillium Interference D1000749



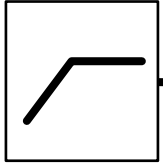
[none : none : +2]



aLIGO BSC ISI Interface Chassis D070164

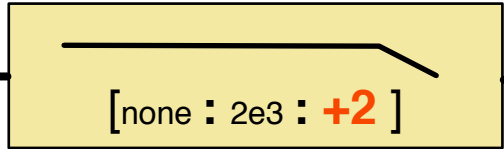


Sercel L4-C
275 V / (m/s)

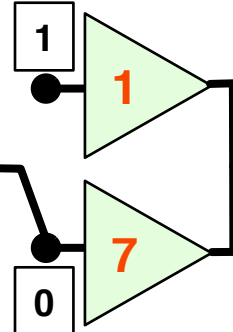
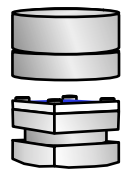


$f_0 = 1 \text{ Hz}$
 $Q \sim 2$

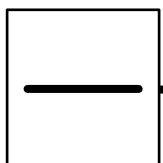
L4-C Preamp D1000059



[none : 2e3 : +2]

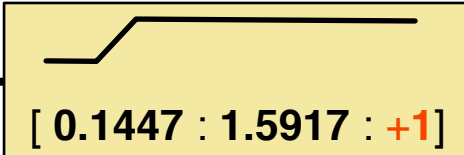



“Coarse” MicroSense Capacitive Displacement Sensor
Coarse: 10 V / mm



(none)

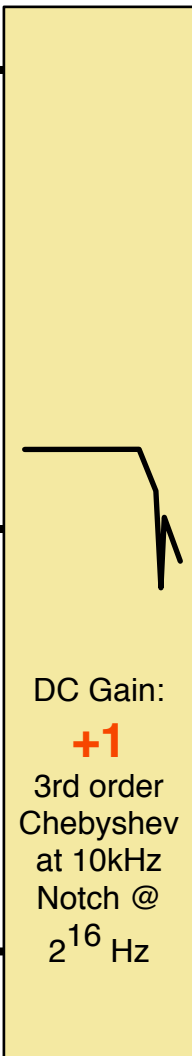
ADE Disp. Sensor Satellite Box



[0.1447 : 1.5917 : +1]

Disp. Sensor Interface D1000067
See z:p derivation in T2400045

Anti-Aliasing Chassis D070081



DC Gain: +1
3rd order Chebyshev at 10kHz Notch @ 2^{16} Hz

General Standards ADC

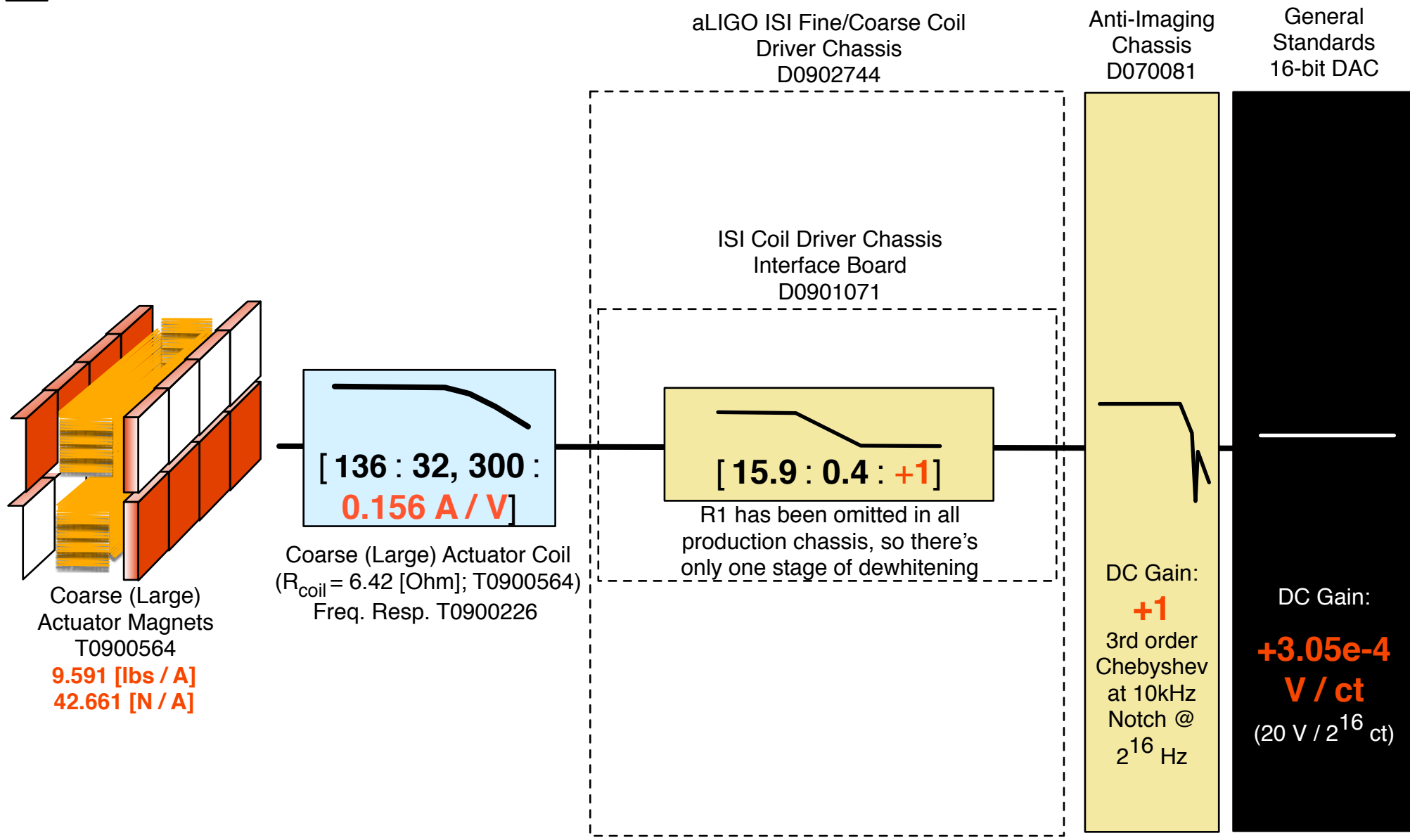
DC Gain: +1638.4 cts / V
(2^{16} cts / 40 V)

Filter Notation

[zero (Hz) : pole (Hz) : dcGain]

n BIO Switch Input

BSC ISI Stage 1 - ACTUATORS

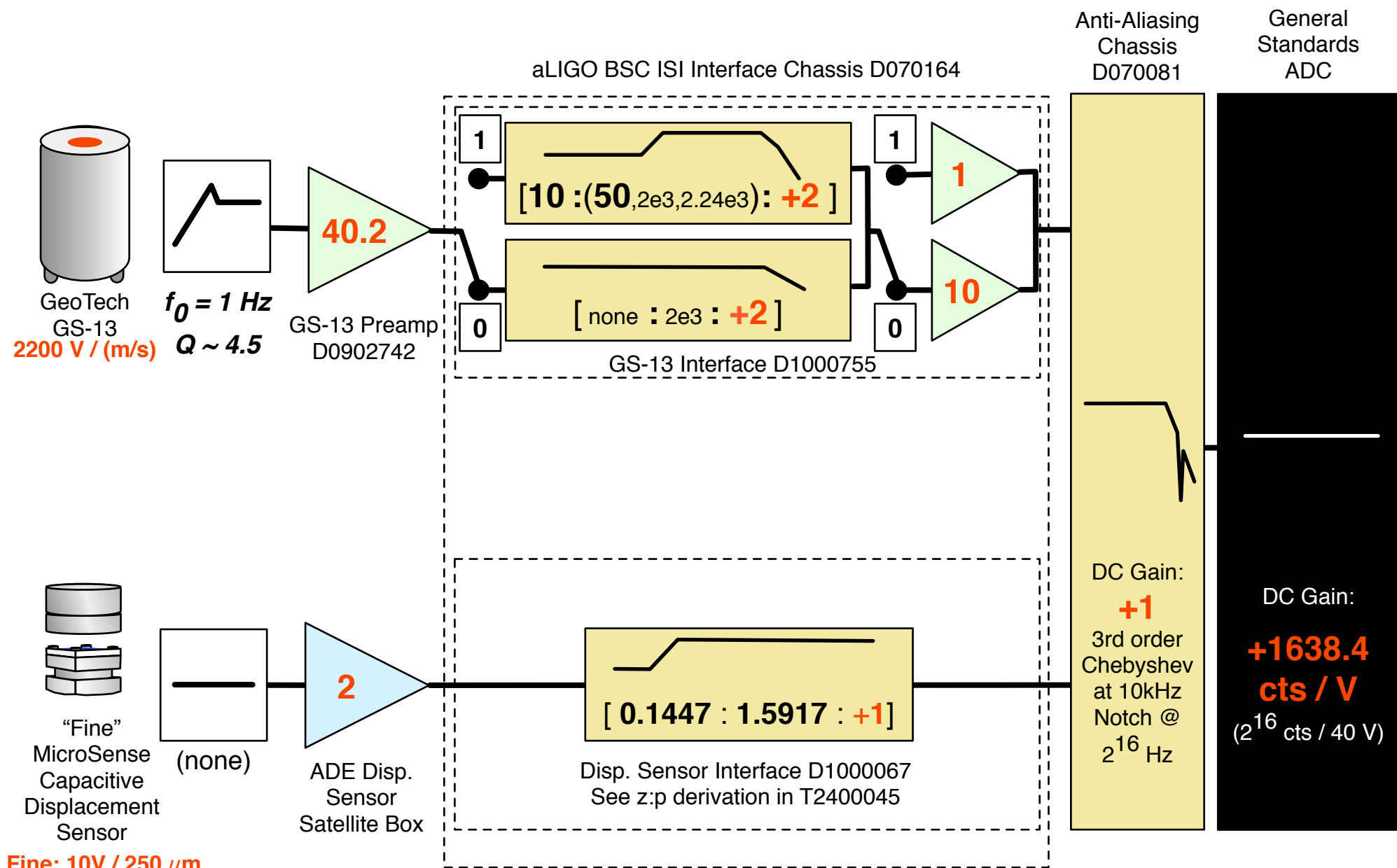


Filter Notation

[zero (Hz) : pole (Hz) : dcGain]

n BIO Switch Input

BSC ISI Stage 2 - SENSORS

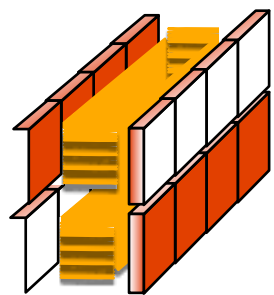


Filter Notation

[zero (Hz) : pole (Hz) : **dcGain**]

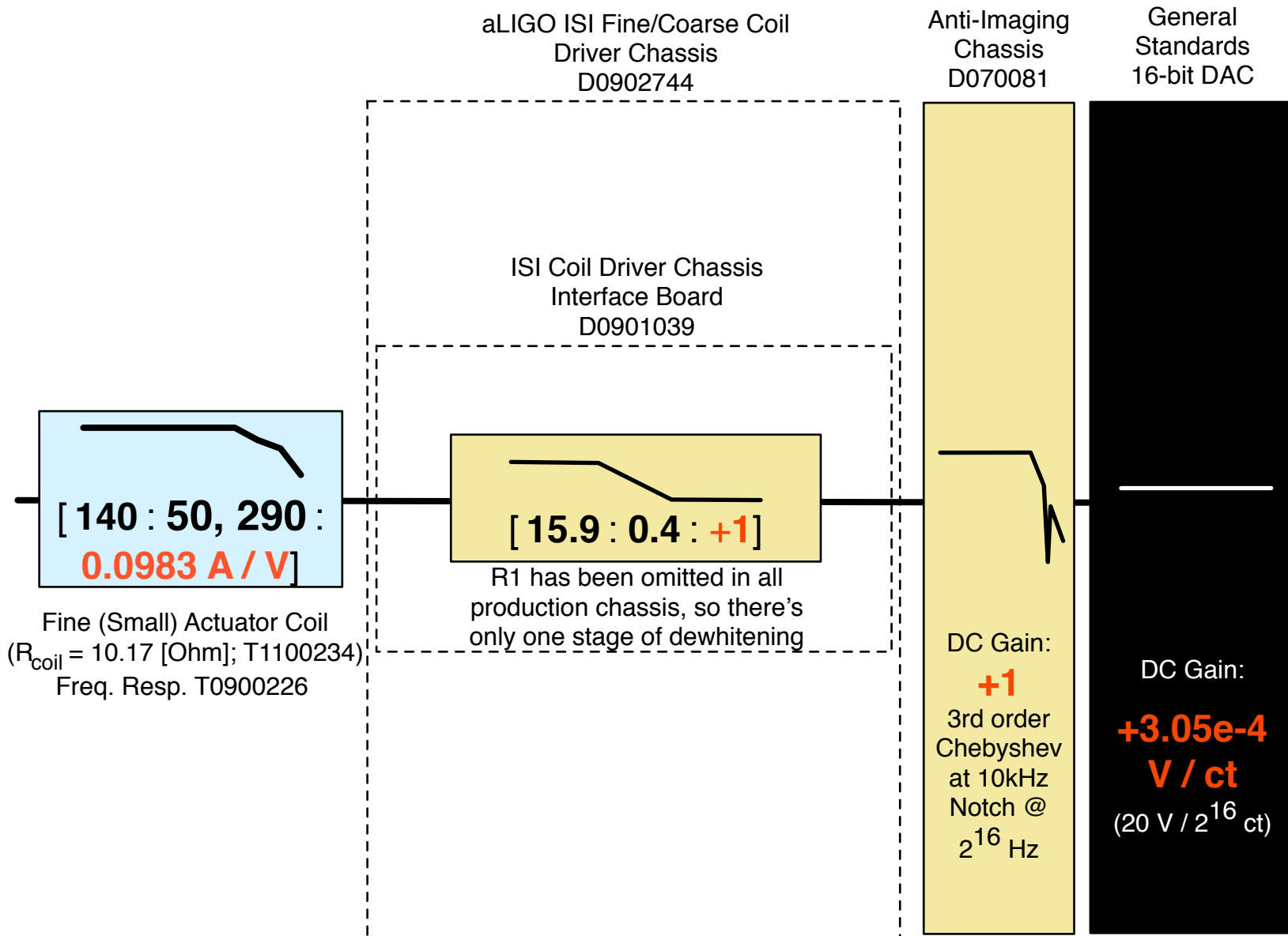
n BIO Switch Input

BSC ISI Stage 2 - ACTUATORS



Fine (Small) Actuator Magnets
T1100234

6.630 [lbs / A]
29.49 [N / A]



Filter Notation

[zero (Hz) : pole (Hz) : dcGain]

n BIO Switch Input

HAM ISI - TEST STAND

