

## MEMORANDUM

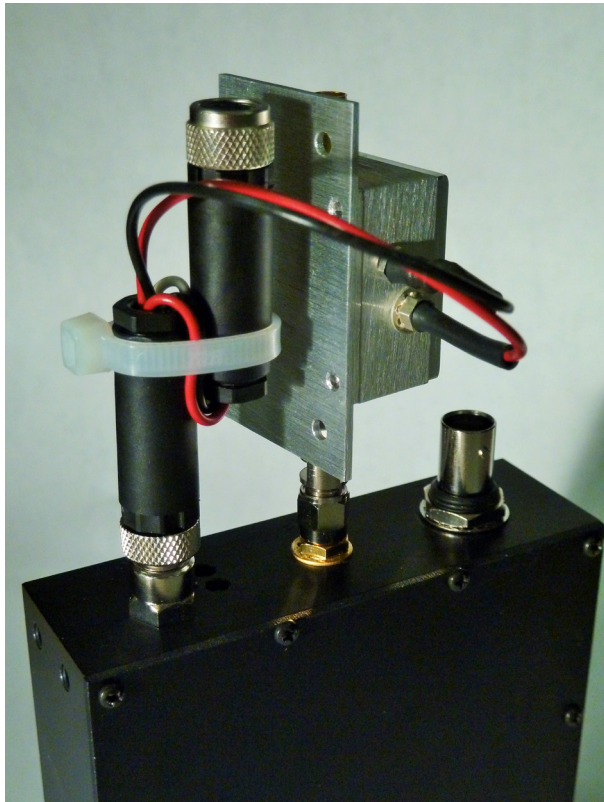
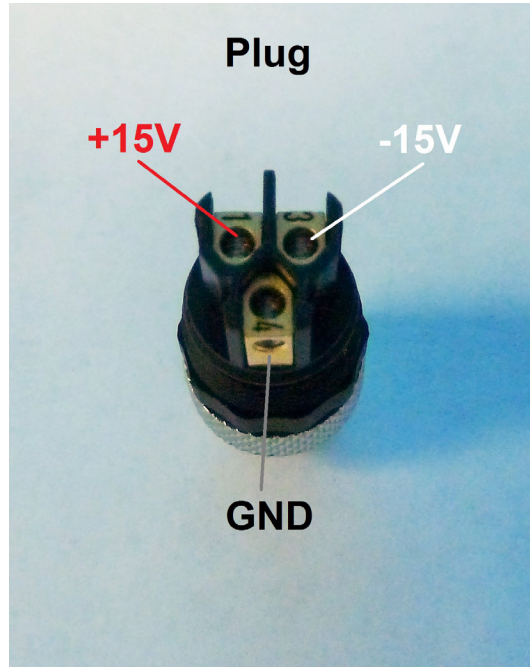
DATE: May 13, 2014

TO: ISC team  
FROM: Daniel Sigg  
SUBJECT: RF Preamplifier for Broadband Photodetector  
Refer to: LIGO-E1400233-v1

The ALS transmission beams have very weak signals which produces an RF beat note at the level of  $-20$  dBm to  $-30$  dBm. This is getting close to the threshold of the phase-frequency detectors which follow. The presented design adds a Mini-Circuits ZFL-500HLN amplifier to the output of the broadband PD. As an alternative the ZLK-500LN amplifier can be used in situations where even more gain is needed. However, the later amplifier saturates at  $+3$  dBm. Power is patched into the existing supply line. A M8 plug is connected to a M8 socket and wired straight-through. The  $+15$  V and GND lines are brought out and connected to the amplifier. See images below.

BOM (for 3 ifo):

Qty	Item	Distributor	Description
6	ZFL-500HLN+	Mini-Circuits	10 MHz to 500 MHz Low Noise Amplifier, 20 dB gain, 16 dBm max. output
6	501-1253-ND	Digi-Key	SMA Plug-Plug Adapter
6	277-4135-ND	Digi-Key	M8 3-pos Socket
6	277-4124-ND	Digi-Key	M8 3-pos Plug
			Hook-up Wire, Cable Tie







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