

Short Cable Controller-to-laser

1/

LD+

1/27/2014

Control Volt	Current LD+	Optical Power	12v Current
1.49	1.04 A	49 mW	
2.00	1.92 A	231 mW	
3.00	3.22 A	205 mW	
4.00	4.56 A	641 mW	
5.00	4.99 A	1.432 W	
2.50	2.68 A	458 mW	
3.50	3.94 A	613 mW	

5A max

LD+

5.00	4.99 A	1.415 W	3.39 A	2.0v
4.00	4.61	1.254 W	3.15 A	
3.50	3.95	800 mW	2.69 A	
3.00	3.31	200 mW	2.27 A	
2.50	2.69	468 mW	1.86 A	
2.00	1.97 A	257 mW	1.48 A	

CrystalTEC+

5.00	305 mA	1.451 W	3.47 A
4.00	285 mA	1.307 W	3.22
3.50	270 mA	722 mW	2.78
3.00	246 mA	220 mW	2.34
2.50	179 mA	460 mW	1.91 A
2.00	127 mA	259 mW	1.48 A

6A max?

LDTEC+

5.00	605 mA	1.443 W	3.54
4.00	567 mA	1.310 W	3.29
3.50	487 mA	780 mW	2.85 A
3.00	418 mA	210 mW	2.42
2.50	351 mA	498 mW	1.97
2.00	278 mA	250 mW	1.50 A

6A max

LD- > 2.01v
LD+

LDTEC+ > 0.401v
LDTEC-

xtalTEC+ > 0.193v
xtalTEC-

LD+

Central Volt	Signal Current	Optical Power	12v current	
5.00	3.62	527mW	2.50A - 4.10A	2.43v - 1.93v
4.00	2.78	542mW	1.90A - 3.20A	
3.50	2.31	409	1.60 - 3.2	
3.00	1.91	296	1.40 - 3.0	
2.50	1.54	202	1.8 - 2.8	
2.00	1.13	102	1.8 - 2.5	

Crystal TEC+

5.00	0-20mA	541mW	2.4 - 4.1A
4.00	50-80mA	543mW	1.9 - 3.5A
3.50	75-108	399mW	1.6 - 3.1A
3.00	100-140	288mW	1.4 - 3.0A
2.50	125-150	187mW	1.7 - 2.9A
2.00	165-180	98mW	1.6 - 2.5A

LDTEC+

5.00	-1.5 - 1.4A	528mW	2.6 - 4.0A
4.00	-1.5 - 1.0	554mW	1.9 - 3.2A
3.50	-1.5 - 1.1	417mW	1.7 - 3.3A
3.00	-1.5 - 1.1	300mW	1.4 - 2.9A
2.50	-1.5 - 1.0	196mW	1.5 - 2.6A
2.00	-1.5 - 1.0	104mW	1.2 - 2.0A

Cent Side

Laser Side

2.42v

LD+/-

1.94v

-1V to +1.8v

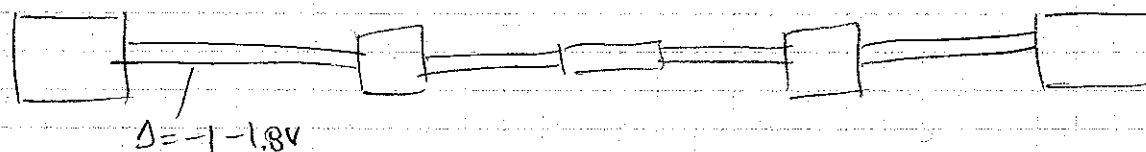
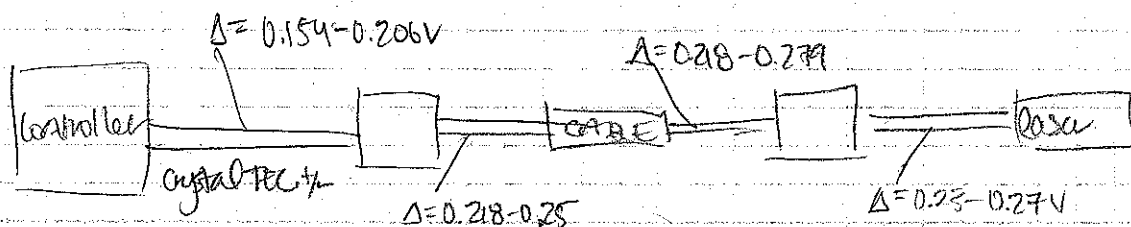
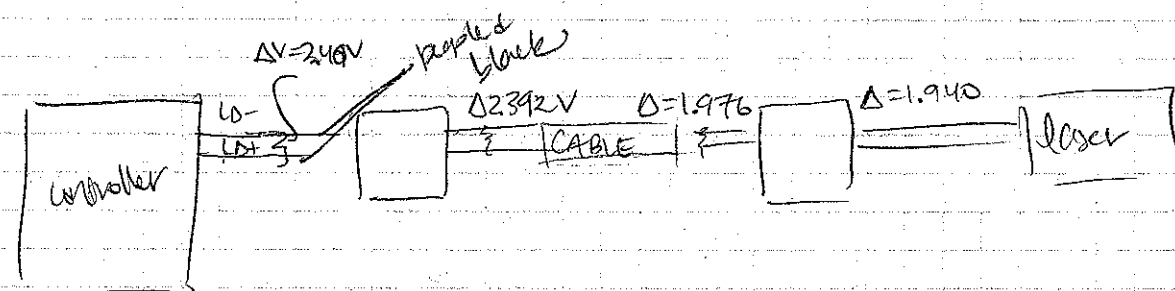
LDTEC +/-

-1.1 to +1.8v

0.17v to 0.24v

xtal TEC +/-

0.14 to 0.2v



LD+ pins 2 & 3
LD- pins 6 & 7

Using BK Precision Dummy Load model 8500 on one end
Using Agilent DC Power Supply model E3634 on other end

Dummy Load

Power Supply

<u>Inom</u>	<u>R_{LOAD}</u>	<u>V_{LOAD}</u>	<u>I_{LOAD}</u>	<u>$\Delta V = V_{COND}$</u>	<u>V_{SRC}</u>	<u>I_{SRC}</u>	<u>R_{COND}</u>
1	5.00 Ω	4.88v	0.974 A	120mV	5.00v	0.976 A	123m Ω
2	2.50 Ω	4.79v	1.914 A	210mV	5.00v	1.915 A	110m Ω
3	1.67 Ω	4.69v	2.806 A	310mV	5.00v	2.807 A	110m Ω
4	1.25 Ω	4.60v	3.678 A	400mV	5.00v	3.679 A	109m Ω
5	1.00 Ω	4.51v	4.508 A	490mV	5.00v	4.510 A	109m Ω

$$\frac{490mV}{2m} = 0.245 V/m \text{ loss}$$

Removed pins 2 & 6 at each end

<u>R_{LOAD}(Ω)</u>	<u>V_{LOAD}</u>	<u>I_{LOAD}</u>	<u>$\Delta V = V_{COND}$</u>	<u>V_{SRC}</u>	<u>I_{SRC}</u>	<u>R_{COND}</u>
5.00						
2.50						
1.67						
1.25						
1.00						

20 AWG wire
10.5 Ω per 1000 ft @ 20°C
per 304.8m

22 AWG wire
16.9 Ω per 1000 ft

$$\frac{10.5 \Omega}{304.8m} = 34.45 m\Omega/m$$

$$\frac{16.9 \Omega}{304.8m} = 55.45 m\Omega/m$$

w/ 2, 20 gauge $\Rightarrow$ 670 mW
w/ 3, 20 gauge $\Rightarrow$ 1308 mW

2.288 V (controller) $\Downarrow$ 2.018 V (laser)
 $\Delta = 0.170V$

1358 mW w/ new test cable, single uses