



HealthyPhoton

Model : QC750 Touch™

Integrated Current & TEC Driver for QCLs with Touchscreen



Date	Note
2018/12/18	V1.0



Index

Index.....	2
1. Introduction.....	3
2. Product Description.....	3
2.1. Specifications.....	3



1. Introduction

HealthyPhoton introduced a new generation of QCL driver that integrates a newly designed touchscreen UI, which greatly facilitates user operations and measurement. The independently developed circuit features extremely low current noise and temperature drift. The all-in-one driver includes a TEC temperature controller and low noise current driver. It supports external analog signal modulation and displays real-time working status on the touchscreen. Considering the high cost of the QCL chip, our specially designed maximum current soft clamping can avoid damage to the laser chip caused by a large current in an unexpected situation. The driver also has a variety of protection mechanisms to maximize the security of the laser chip. The product is stable, reliable, and suitable for various QCL systems in university laboratories or R&D development.

2. Product Description

- All-in-one module includes both current driver and temperature controller;
- Linear output to TEC greatly extends the Peltier device lifetime;
- Output protection mechanisms ensure the safety of QCL chip: adjustable current clamp, output ramp start, overvoltage and undervoltage protection, overtemperature protection and short-circuit output protection;
- Touchscreen UI is convenient for user operation and status monitoring;
- It is easy to set up and fully compatible with HealthyPhoton's QCL emitter module (HPQCL-Q).

2.1. Specifications

Current driver	
Driving current	0 - 750mA
Current drift (24hr @25°C)	< 1mA
Max bias voltage	>15V
Current noise	<3uA
Analog modulation bandwidth	DC - 100kHz
Slow start time	3 - 4s
Current noise density (1kHz~100kHz@500mA)	<1.5 nA/(Hz) ^{1/2}
TEC temperature controller	
Max TEC driving current	±3A
Max TEC driving voltage	5V
Max thermal power dissipation	48W
Temperature control range (fan cooling)	20 ~ 50°C (no condensation)
Temperature control accuracy	0.01°C
Temperature control stability	0.01°C



Temperature sensor required	10 k Ω NTC thermistors
Signal modulation	
Input resistance	1 k Ω
Modulation coefficient	100mA/V \pm 1%
3dB bandwidth	DC - 100kHz
Max input voltage	\pm 2.5V
General parameters	
Power supply	220 VAC (176-265 V) , 60W
Work temperature	10 ~ 40°C
Storage temperature	-10 ~ 85°C
Digital output	RS232
Analog output	9-pin QCL emitter connector (cable included)
HMI interface	LCD touchscreen display and control, alarm, and historical data storage
Dimension (L*W*H)	21.4×15.4×5.9 cm ³
Weight	< 2kg