

Uniphase / IE Optomech HYB B Laser Power Controller Specifications

Revision 0.1 – 13-July-2003

Summary

There are 2 boards inside the HYB B power controller. The larger (main) board is the laser diode controller and peltier (TEC) controller. The smaller board has a second peltier (TEC) controller.

Potentiometer Specifications

Hybrid Motherboard		Peltier Board	
VR1	Temperature Set	VR1	Temperature Set
VR2	Laser Diode Power Sense Gain Adjust		
VR3	Power / Current Setpoint Adjust		
VR4	Laser Power Sense Gain Adjust		
VR5	Current Limit Set		

Main Board Connector Specifications

This information was collected from several documents. Where the documents differed, I included the alternate descriptions in the notes column.

CON1 – to Laser Head (DB-25)

Pin	Function	Notes
1	Peltier 1 Drive +	
2	Laser Diode anode	
3	Laser Diode Power Photodiode	
4	Laser Power Monitoring Photodiode	
5	Peltier 2 Drive +	
6	0VA	
7	Thermistor Sense	
8	0VA (Thermistor Rtn)	
9	Peltier 2 Drive –	
10	Shutter Sense	
11	GND (solder linkable to 24V)	
12	Thermistor sense 2	Might be User V out
13	5V	
14	Peltier 1 Drive –	
15	Laser Diode Cathode	
16	-5.12V ref	
17	-5.12V ref	
18	Interlock Rtn	
19		Laser Diode 2 Photodiode
20		Shutter Switching Output
21		Thermistor Sense 2
22		Diode 2 Anode
23		Diode 2 Cathode
24	Interlock	
25	Gnd	

CON2 – Outside World (DB15)

Pin	Function	Notes
1	5V input	
2	0V	
3	5.12V ref	
4	0VA	
5	Setpoint input	
6	ON-Off Input	Connect to pin2 for laser on
7	Shutter Control Input	
8	Interlock +	
9	Temperature Lock	
10	GND	
11	RXD	
12	TXD	
13	Interlock Status	
14	On/off status	
15	Shutter Status	

CON3 –Monitoring (26 pin header)

Pin	Function	Notes
1	Laser Power (-1V/Watt)	
2	Laser Setpoint (1V/Watt)	
3	0VA	
4	Laser Current (0.5V/Amp)	
5	Current Limit (0.5V/Amp)	
6	Temperature Setpoint (100mV/C)	
7	Temperature (100mV/C)	
8	0VA	
9	Peltier Current (1V/Amp)	
10	MPD Output (1V/Watt)	
11	V Pelt (1)	MPD 2 (1)
12	V Diode (1)	Peltier Current 2 (100mV/C)
13	12V	
14	0V	
15	-12V	
16	Temperature Lock	Temp2
17	On/off status	Temp SP 2
18	5.12V ref	
19	-5.12V ref	
20	0V	
21	5V	
22	-15V	Current 2
23		Current limit 2
24		Mode
25	Mode in	On/off status
26	Not Connected	Shutter status

CON4 – Power Input (4 pin screw terminal)

Pin	Function	Notes
1	5V	To DIN5 pin 1 (most clockwise looking into socket)
2	GND	To DIN5 Pins 3,4
3	Vplt	Power out to Peltier Board
4	GND	Power out to Peltier Board

CON5 – Expanded Control Input Connector (6 pin header)

Pin	Function	Notes
1	Laser Power Sense	
2	Laser Power	
3	Laser Diode Power Sense	
4	Laser Diode Power	
5	User V in	Wired to peltier board con1-1
6	GND	

CON6 – Alternative Input Voltage Connector (4 pin header)

Pin	Function	Notes
1	12V Input	
2	0VA	
3	-12V Input	
4	Not Connected	This is actually connected to something and is wired to peltier board con1-2

CON100 – Shutter Control and Temperature 2 Control Monitoring (DB9)

Pin	Function	Notes
1	5V	
2	Shutter Sense	Not Connected
3	0VA	
4	Temperature 2	
5	Temperature Setpoint 2	
6	Shutter Switching Output	Not Connected
7	Shutter Sense Rtn	Not Connected
8	Peltier Current	
9	Temperature Lock	

Peltier Board Connector Specifications

This information was not specified in the original documents and is inferred from specifications for the other connectors and inspection of the internal wiring.

CON1 -

Pin	Function	Notes
1		Wired to main board con5-6
2		Wired to main board con6-4
3	Peltier Drive +	Wired to main board con1-5
4	Peltier Drive -	Wired to main board con1-9

CON2 - monitor

Pin	Function	Notes
1	Temperature Lock	Wired to db9 pin 9
2	Temperature	Wired to db9 pin 4
3	Temperature Setpoint	Wired to db9 pin 5
4	Peltier Current	Wired to db9 pin 8
5	12V	Wired to main board con6-1
6		
7	0VA	Wired to main board con6-2 and db9 pin 3
8	-12V	Wired to main board con6-3

CON3 – Power Input

Pin	Function	Notes
1	+5V	
2	GND	

Main Board Solder Link Specifications

Most of the solder links are on the bottom of the board

Link	Function	Notes
1	Processor Set Current Limit	Open
2	Processor temp set point	Open
3	Processor set point	Open
4	Control on MPD feedback	Open
5	Processor Mode Select	Closed
6	Control on Laser MPD Feedback	Closed
7	Link to Power Feedback	Closed
8	-12V inductor short	
9	5V to DC-DC Converter Inductor short	
10	12V inductor short	
11	0VA to GND link	
12	Vplt to Peltier	Closed
13	5V to Peltier	Closed
14	Select Power to RS-232	Closed
15	Select 5V RXD	Open
16	Select full RS-232 RXD	Closed
17	Select full RS-232 TXD	Closed
18	Select 5V RS232	Open
19	GND inductor for DC-DC converter short	
LK1	Mode Select	Open

Main Board LED Specifications

These are only guesses based on partial schematics

LED	Color - Function	Notes
	Orange – laser emission	
	Red – “SHTS”	
	Red – interlock	
	Green – Temperature Lock	

Peltier Board LED Specifications

LED	Function	Notes
D7	Temperature lock	

DB25 – HD15 Controller to Laser Head Cable (4600, 4700 heads)

Still working on this. I'm pretty sure the HD15 pinout is correct, but haven't traced out a cable yet.

HD15	Signal	DB25
1	+5V	
2	SEEPROM CLK	
3	SEEPROM Data	
4	Monitor Photodiode	
5	Monitor Photodiode	
6	GND	
7	TEC 1 +	
8	TEC 2 -	
9	Thermistor 2	
10	0VA (Thermistor common)	
11	TEC 2 +	
12	TEC 1 -	
13	Diode Anode	
14	Thermistor 1	
15	Diode Cathode	

HD15 on 4300 series heads

These are an older generation of Uniphase MicroGreen lasers. **These heads are not compatible with the HYB B or 4800 series power controllers**

HD15	Signal	Notes
1	TEC 1 +	
2	Diode Anode	
3	N/C	
4	Photodiode	
5	Thermistor 1	
6	TEC 1 -	
7	Diode Cathode	
8	N/C	
9	Photodiode	
10	Thermistor 1	
11	TEC 2 +	
12	TEC 2 -	
13	Thermistor 2	
14	Thermistor 2	
15	N/C	