

685 SERIES

COMBOPAK OEM LASER CONTROLLER

The 685 ComboPak offers the same high-quality instrumentation that Arroyo Instruments benchtop units are known for, at one-third the size. The ComboPak brings the great performance and laser protection features, plus a stable, high precision temperature controller at a lower cost.



AT-A-GLANCE

Current Ranges:

- ▷ 100mA / 10 Volt
- ▷ 500mA / 10 Volt
- ▷ 1 Amp / 10 Volt
- ▷ 2 Amp / 3.5 Volt

High Accuracy Laser

- ▷ Up to 0.05% of reading + 0.05% of scale

Low Laser Noise

- ▷ As Low as <math><5\ \mu\text{A}</math>

Compliance Voltages

- ▷ Up to 10 Volts available

Stable & Precise TEC

- ▷ 0.004°C stability
- ▷ 0.001°C resolution
- ▷ 0.05°C accuracy

Remote Operation via PC

- ▷ Use your existing control code. Our command set is compatible with other manufacturers.
- ▷ USB and Digital I/O Connections



OVERLAPPING LASER PROTECTION

Including safety interlock, ESD protection, hardware limits for current & voltage, and soft power-on



MULTIPLE OPERATING MODES

Choose from: ● Constant Current ● Constant Power ● Constant Voltage



REMOTE VOLTAGE SENSING

Supports an extra pair of sensing wires to measure the operating voltage of your laser diode or LED.



ROBUST ANALOG INTERFACE

Provides on/off control, and status monitoring signals as well as analog modulation input.



AUTO-TUNE AND MANUAL PID SELECTION

One button auto-tunes your control loop, or choose from 8 factory gain settings, or select your own.



PRECISION TEMPERATURE CONTROLLER

Over 10 Watts of TEC control and up to $\pm 0.004\ ^\circ\text{C}$. Supports industry-standard thermistor-type sensor input.



A FULL LASER SYSTEM

The ComboPak includes both a high performance laser driver and ultra-stable temperature controller for a complete laser control solution in a box.

Build a full laser system that fits in your budget.

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COMBOPAK

LASER

SPECIFICATIONS

		685-0.1	685-0.5	685-01	685-02
Setpoint	Laser Current				
	Range (mA)	0 – 100	0 – 500	0 – 1000	0 – 2000
	Resolution (mA)	0.005	0.02	0.05	0.1
	Accuracy (\pm [% set+mA])	0.025% + 0.03	0.025% + 0.12	0.025% + 0.3	0.025% + 0.5
	Stability (ppm, time)	< 10, 1 hour			
	Temperature Coeff (ppm/°C)	50			
	Noise/Ripple (μ A rms)	< 5	< 5	< 10	< 40
	Transients (μ A)	< 50	< 100	< 150	< 200
	Compliance Voltage (V)	10			3.5
	Photodiode Current				
	Range (μ A)	5 – 5,000			
	Resolution (μ A)	1			
	Accuracy (\pm [% set+ μ A])	0.05% + 1			
	Stability (ppm, time)	< 200, 24 hours			
Temperature Coeff (ppm/°C)	< 200				
PD Bias (V)	-2.5V, fixed				
Laser Voltage					
Range (V)	0 – 10			0 – 2.5	
Resolution (V)	0.001				
Accuracy (\pm [% set+V])	0.05% + 0.005				
Stability (ppm, time)	< 50, 1 hour				
Temperature Coeff (ppm/°C)	< 100				
External Modulation					
Input Range	0 – 10V, 10k Ω				
Modulation Bandwidth (kHz)	150	100	100	100	

Measurement	Laser Current				
	Resolution (mA)	0.005	0.02	0.05	0.1
	Accuracy (\pm [% reading+mA])	0.025% + 0.03	0.025% + 0.12	0.025% + 0.3	0.025% + 0.5
	Laser Voltage				
	Resolution (V)	0.001			
	Accuracy (\pm [% reading+V])	0.05% + 0.005			
Photodiode Current					
Resolution (μ A)	1				
Accuracy (\pm [% reading+ μ A])	0.05% + 0.5				

Limits	Laser Current				
	Resolution (mA)	1			
	Accuracy (\pm [% reading+mA])	2	5	10	20
	Laser Voltage				
Resolution (V)	0.1				
Accuracy (\pm % FS)	2.5%				

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COMBOPAK TEC & GENERAL SPECIFICATIONS

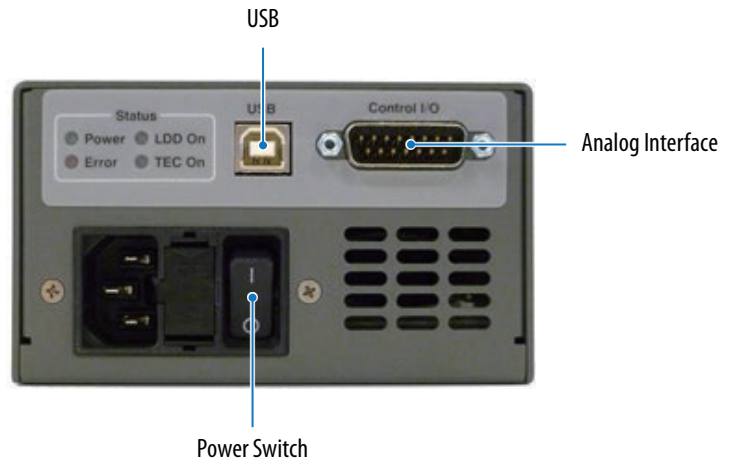
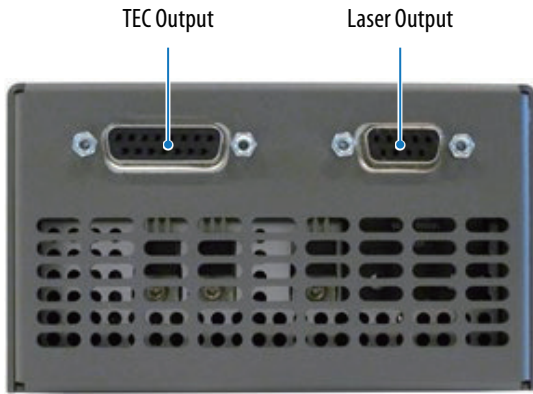
		685 TEC
Drive Channel	Current	
	Range (A)	3
	Compliance Voltage (V)	> 3.5
	Max Power (W)	> 10.5
	Resolution (A)	0.01
	Accuracy (\pm [% set point + mA])	0 + 30
	Noise/Ripple (mA, rms)	< 5
	Temperature Control	
	Range ($^{\circ}\text{C}$) ¹	-99 to 250
	Resolution ($^{\circ}\text{C}$)	0.001
	Thermistor Accuracy (\pm $^{\circ}\text{C}$) ²	0.05 ³
Short Term Stability (1hr) (\pm $^{\circ}\text{C}$) ⁴	0.004	
Short Term Stability (24hr) (\pm $^{\circ}\text{C}$) ⁴	0.01	

Measurement Channels	Current	
	Resolution (mA)	10
	Accuracy (\pm [% reading + mA])	0 + 30
	Voltage	
	Resolution (mV)	10
	Accuracy (\pm [% reading + V])	0 + 0.05
	Sensor	
	Type	Thermistor
	Range (k Ω)	0.02 – 45
	Resolution (k Ω)	0.001
	Accuracy (\pm [% reading + k Ω])	0.05 + 0.005
Current Limit		
Resolution (mA)	10	
Accuracy (\pm mA)	50	

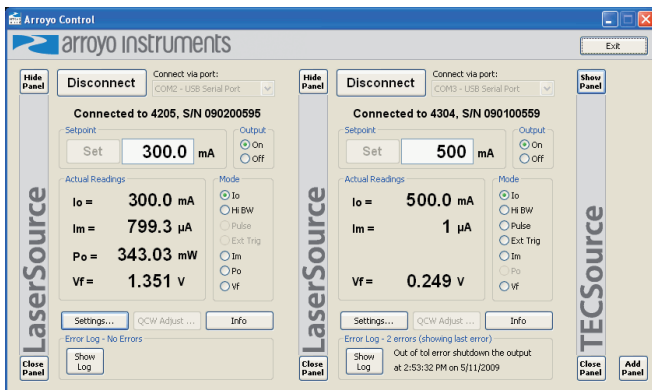
General	Laser Connector	DB-9, female
	TEC Connector	DB-15, female
	Fan Supply	4 – 8.5V, 350mA max
	Computer Interface	USB 2.0 Full Speed (Type B)
	Power	Universal, 90V to 240V, 50/60 Hz
	Size (H x W x D) [inches (mm)]	2.6 (66) x 4.5 (114.3) x 8.5 (215)
	Operating Temperature	+10 $^{\circ}\text{C}$ to +40 $^{\circ}\text{C}$
	Storage Temperature	-20 $^{\circ}\text{C}$ to +60 $^{\circ}\text{C}$

1. Software limits. Actual range dependent on sensor type and system dynamics.
2. Accuracy figures are the additional error the 5240 adds to the measurement, and does not include the sensor uncertainties.
3. 25 $^{\circ}\text{C}$, 100 μA thermistor.
4. Stability measurements done at 25 $^{\circ}\text{C}$ using a 10 k Ω thermistor on the 100 μA setting. The number is $\frac{1}{2}$ the peak-to-peak deviation from the average over the measurement period.

REAR VIEW



ARROYO CONTROL



Control any Arroyo laser driver or temperature controller directly from your PC. Simply connect to your Arroyo device via USB or RS-232 and gain direct access to settings, device limits, and adjustments from an easy-to-use Windows interface. You can even connect to multiple instruments at the same time.

Download ArroyoControl for free from www.arroyoinstruments.com.

LabView drivers available.



ACCESSORIES

1402-RM

PAK SERIES RACK MOUNT KIT, 3 OR 5 UNITS

This rack mount kit will mount any 485 LaserPak, 585 TEC Pak, or 685 ComboPak controller. When positioned flat, the 1402-RM can hold three units in a 2U space.



Mount the controllers on their sides, and the 1402-RM can hold five units in a 5U space.



There is also mounting support for a 7-port USB hub as well as holes for securing and dressing wiring to the tray with cable ties.