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ITC8000 series combination control modules



"Combi" Controllers, 3 Models
I_{LD} = ±200mA to ±1A
I_{TEC} = ±2A/16W

Combination Current & Temperature Control Modules

The space-saving "combi" modules of the ITC8000 series incorporate in one module a laser current controller and a TEC temperature controller. Three combi models are available. These modules offer laser drive current ranges of 0 to ±200mA, 0 to ±500mA, and 0 to ±1A. All three models incorporate a TEC controller that provides up to ± 2A/16W.

Each combi module comes in two versions, either with a 9-pin connector for laser current output and a 15-pin connector for TEC current output (series ITC8000) or with a common 15-pin connector for both laser and TEC current output (series ITC8000DS15).

All of the ITC8000 modules offer the same exceptional performance as our separate laser controller, and temperature controller modules. All laser diode, and photodiode pin configurations are supported.



This system can easily be configured for controlling eight (8) butterfly lasers. Populate our PRO8000 chassis (page 390) with eight (8) ITC8000 modules and connect it to our LAB8000 8-channel butterfly laser mount with our shielded cables (CAB450). Simply secure the lasers in the ZIF mounts and the system is ready to operate. Such complete turn-key systems can be specified and quoted by our technical sales team, please call for details.

The LAB8000 8-channel laser diode mount is ideally suited to control 8 butterfly lasers in a 19" rack. The convenient slide-out drawer design allows easy access to the laser sockets. For technical specifications on this product please refer to page 381.

Extremely Low Noise

The "combi" controller modules of the ITC8000 series all feature exceptionally low laser current noise (from 2µA to 10µA depending on the model, see table next page), and exceptional temperature stability of better than 0.002°C, when an AD590 temperature sensor is used. The ITC8000 series offers the same great performance independent of the mode of operation - constant current (CC), or constant power (CP).

User-Friendly Controls

After installing a new module into the PRO8000 chassis, the modules can be configured via the front panel softkey controls or via one of the remote computer interfaces. The softkey-keys on the PRO8000 are used to scroll through the slot locations to access all the module settings. Alternatively, the IEEE-488.2 interface also provides convenient access to the controller settings. Once set, all the settings are retained in memory and automatically recalled upon powering up the mainframe.

Built-in Laser Diode Protection Features

The ITC8000 series modules incorporate proven laser protection features to safeguard sensitive laser diodes. Besides common protection functions, such as current limits, laser current soft start, and interrupt protection, an advanced circuit design ensures that AC power-line transients or power outage, as well as RF pickup can not effect the laser diode.

Additionally, a temperature window can be set that will shut the laser down in the event the high or low thresholds of the window are exceeded.

The PRO8000 meets the international requirements regarding laser protection (e.g. CDRH US21 CFR 1040.10). All modules include a key-operated power switch, an interlock, and a delay of the output current, plus many additional features.

Calibrating the Power Display

The display of the laser power can easily be calibrated with respect to the laser's monitor-photodiode current to provide a read out directly in milliwatts. This is accomplished by adjusting the "CALPD" calibration constant that is accessed via the front panel softkeys or the computer interface, please note an optical power meter is required.

Setting the temperature control loop

The P- (gain), D- and I- settings of the PID control loop can each be set independently to optimize the temperature response of the system to different thermal loads.

ITC8000 Series Temperature Sensors

	ITC8022	ITC8052	ITC8102
Thermistor			
Control Range	200Ω to 40 kΩ		
Resolution	0.7Ω		
Accuracy	± 10Ω		
Stability	< 1Ω		
AD590, AD592, & LM335 IC's (No Pt 100 Sensors)			
Control Range	–12.375 °C to + 90 °C		
Resolution	0.0015 °C		
Accuracy	± 0.1 °C		
Temperature stability typ.	< 0.001 °C		
Pt 100 (No IC Sensors)			
Setting Range	–12.3 °C to + 90 °C		
Resolution	0.0015 °C		
Accuracy	± 0.3 °C		
Temperature stability typ.	< 0.005 °C		

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ITC8000 Series Laser Controller

	ITC8022	ITC8052	ITC8102
Laser Controller: Current Control			
Control range of injection current	0 to ± 200mA	0 to ± 500mA	0 to ± 1A
Compliance voltage		> 5V	
Resolution	3µA	7.5µA	15µA
Accuracy (full scale)		± 0.05 %	± 0.1%
Noise without ripple (10Hz to 10MHz, rms, typ.)	< 2 µA	< 5 µA	< 10µA
Ripple (50Hz, rms, typ.)		< 1µA	< 1.5µA
Transients (processor, typ.)	< 15µA	< 30µA	< 50µA
Transients (other, typ.)	< 200µA	< 500µA	< 1mA
Drift (30 min, at constant ambient temperature, typ.)	< 5µA	< 12µA	< 25µA
Temperature coefficient		< 50ppm/ °C	
Laser Controller: Power Control			
Control range of photo current		10µA to 2mA	
Reverse bias voltage		0 to 10V (adjustable)	
Resolution photo current		30nA	
Accuracy (typ.)		± 0.1%	
Laser Controller: Current Limit			
Setting range	0 to ≥ 200mA	0 to ≥ 500mA	0 to ≥ 1A
Resolution	6µA	15µA	30µA
Accuracy	± 200µA	± 500µA	± 2mA
Temperature Controller: Current Limit			
Setting range (20-turn pot)		0 to ≥ 2A	
Resolution		0.5mA	
Setting accuracy		± 20mA	
Temperature Controller: Output			
Control range of TEC current		–2A to + 2A	
Compliance voltage		> 8V	
Maximum output power		16W	
Measurement resolution of TEC current		0.07mA	
Measurement resolution of TEC voltage		0.3mV	
Noise and ripple typ.		< 1mA	
Laser Voltage Measurement			
Measurement principle		4-wire measurement	
Measurement range		0 to 10V	
Resolution		0.3mV	
Accuracy		± 5mV	
General Data			
LD/TEC-connector		9-pin/15-pin D-Sub (ITC8000) : 15-pinDSub(ITC8000DS15)	

ITEM#	$	£	€	¥	DESCRIPTION
ITC8022	$1,909.00	£1,162.00	€1.660,00	¥265,600	PRO 8000 LD & TEC controller, 200mA / 16W, 9-pin / 15-pin D-Sub connector
ITC8022DS15	$1,909.00	£1,162.00	€1.660,00	¥265,600	PRO 8000 LD & TEC controller, 200mA / 16W, 15-pin D-Sub connector
ITC8022PT	$2,127.50	£1,295.00	€1.850,00	¥296,000	PRO 8000 LD & TEC controller, 200mA / 16W, Pt100, 9-pin / 15-pin D-Sub connector
ITC8022PTDS15	$2,127.50	£1,295.00	€1.850,00	¥296,000	PRO 8000 LD & TEC controller, 200mA / 16W, Pt100, 15-pin D-Sub connector
ITC8052	$2,035.50	£1,239.00	€1.770,00	¥283,200	PRO 8000 LD & TEC controller, 500mA / 16W, 9-pin / 15-pin D-Sub connector
ITC8052DS15	$2,035.50	£1,239.00	€1.770,00	¥283,200	PRO 8000 LD & TEC controller, 500mA / 16W, 15-pin D-Sub connector
ITC8052PT	$2,242.50	£1,365.00	€1.950,00	¥312,000	PRO 8000 LD & TEC controller, 500mA / 16W, Pt100, 9-pin / 15-pin D-Sub connector
ITC8052PTDS15	$2,242.50	£1,365.00	€1.950,00	¥312,000	PRO 8000 LD & TEC controller, 500mA / 16W, Pt100, 15-pin D-Sub connector
ITC8102	$2,070.00	£1,260.00	€1.800,00	¥288,000	PRO 8000 LD & TEC controller, 1000mA / 16W, 9-pin / 15-pin D-Sub connector
ITC8102DS15	$2,070.00	£1,260.00	€1.800,00	¥288,000	PRO 8000 LD & TEC controller, 1000mA /16W, 15-pin D-Sub connector
ITC8102PT	$2,288.50	£1,393.00	€1.990,00	¥318,400	PRO 8000 LD & TEC controller, 1000mA / 16W, Pt100, 9-pin / 15-pin D-Sub connector
ITC8102PTDS15	$2,288.50	£1,393.00	€1.990,00	¥318,400	PRO 8000 LD & TEC controller, 1000mA / 16W, Pt100, 15-pin D-Sub connector

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