Precision Pulse Control

The Mini-20 is a compact and lightweight pulsed current source designed to drive laser diodes, bars, arrays, or any low-impedance load. The key specifications are output current from 2 A to 20 A, rise and fall times below 8 µs at 20 A, pulse widths from 25 µs to 2300 µs, forward voltage from 0 V to 48 V, and pulse repetition rate from single shot to 1,000 Hz.

System Operation

The Mini-20 output current may be set with an internal potentiometer or an analog voltage. The pulse width is controlled with the input trigger signal.

The system requires two DC voltages for operation, 12 V and compliance voltage equal to 12 V above the laser diode’s forward voltage.

Output Cable

The laser or load is connected to the Mini-20 with 22 AWG twisted pair cable (included) with a length of 15 cm (6 inches) or less.

What is included?

- Mini-20
- Mini-20 Pulser
- DC Input Cable
- Output Cable
- Control Signal Cable

Ordering Information

Mini-20
**Pulse Amplitude**  
Output Current Range: 2 A to 20 A  
Setpoint Accuracy: ±1% of full scale current  
Current Overshoot: < 0.1%  
Current Rise/Fall Time:
- ≤ 75 µs: 0.5 A ≤ current setpoint ≤ 1 A  
- ≤ 50 µs: 1 A ≤ current setpoint ≤ 2 A  
- ≤ 35 µs: 2 A ≤ current setpoint ≤ 4 A  
- ≤ 25 µs: 4 A ≤ current setpoint ≤ 6 A  
- ≤ 17 µs: 6 A ≤ current setpoint ≤ 8 A  
- ≤ 14 µs: 8 A ≤ current setpoint ≤ 12 A  
- ≤ 10 µs: 12 A ≤ current setpoint ≤ 16 A  
- ≤ 8 µs: 16 A ≤ current setpoint ≤ 20 A  

Polarity: Positive  
Forward Voltage: 0 V to 48 V  

**Trigger (J1-Pin 6)**  
Frequency Range: ≤ 1,000 Hz * See SOA graphs on next page  
Input Voltage Levels: 0 V, output off  
5 V, output on  
Termination impedance: 50 Ω  
Trigger pulse width: 25 µs to 2300 µs  
Delay (external to output): ≤ 1µs (typical)  

**Current Setpoint Control (J1-Pin 4)**  
Input Voltage Levels:
- 5 V or open: internal potentiometer control  
- 0 V: external control  
Termination impedance: 9,000 Ω  
Response time on change: ≤ 0.5 µs  

**Analog Current Setpoint (J1-Pin 5)**  
Input Voltage Levels:
- 0 V to 2.0 V  
- 0.0 V = 0 A output  
- 2.0 V = 20 A output  
Termination impedance: 90,000 Ω  
Response time on change: ≤ 0.5 µs  

**Current Monitor**  
Current monitor: 0 V to 0.500 V  
20 A output current = 0.500 V (typical)  
Current monitor termination: 50 Ω  
Current monitor connector: SMB  

**Control Signal Connector (J1)**  
Connector: Molex # 70553-0110  
Pin 1: 12 V DC  
Pin 2: 12 V return  
Pin 3: 12 V return  
Pin 4: Current setpoint control  
Pin 5: Analog current setpoint  
Pin 6: Trigger  

**Output Connector (J6)**  
Connector: Molex # 22-12-2024  
Pin 1: Out +  
Pin 2: Out –  

---

**12 V Power Specifications (J1-Pin 1)**  
Voltage requirements: 12 V DC ± 5%  
Current requirements: 0.100 A  

**DC Input Connector (J2)**  
Connector: Molex # 22-12-2024  
Pin 1: DC +  
Pin 2: DC –

**DC Input Power Specifications**  
Voltage requirements: forward voltage + 12 V DC  
Voltage Range: 12 V DC to 60 V DC  
Current requirements: 5.0 A  

* Operation of instrument outside of this voltage can cause permanent damage to the instrument and/or load.  

**General**  
Size (HxWxD): 11.3 cm x 12.65 cm x 5.4 cm  
(4.425” x 4.975” x 2.125”)  
Weight: 0.5 kg  
(16 oz)  
Mounting hole diameter: 4.5 mm  
(0.180”)  
Mounting hole placement: 3.49 cm x 11.6 cm  
(1.375” x 4.575”)  
Operating Temperature: 10°C to 40°C  
Cooling: Convection air cooled  

**Notes**  
Warranty—One year parts and labor on defects in materials and workmanship.  
The Mini-20 current source meets or exceeds these specifications.  
All specifications are measured with 10 cm of 22 AWG twisted pair wire connecting the Mini-20 to a low impedance/inductance load (HPL-2400-1.00 and HPL-2400-0.250).  
Specifications subject to change without notice.