Precision Pulse Control
The Mini-50 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 5 A to 50 A, rise and fall times below 8 µs at 50 A, pulse widths from 25 µs to 1000 µs, forward voltage from 0 V to 48 V, and pulse repetition rate from single shot to 1,000 Hz.

System Operation
The Mini-50 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-50 with 22 AWG twisted pair cable (included) with a length of 15 cm (6 inches) or less.

What is included?
- Mini-50
- Mini-50 Pulser
- DC Input Cable
- Output Cable
- Control Signal Cable

Ordering Information
Mini-50

50 A, 24 V compliance, 20 Hz, 1000 µs pulse width

25 A, 18 V compliance, 20 Hz, 1000 µs pulse width

5 A, 17 V compliance, 20 Hz, 1000 µs pulse width
### Pulse Amplitude

- **Output Current Range**: 5 A to 50 A
- **Setpoint Accuracy**: ±1% of full scale current
- **Current Overshoot**: < 0.1%
- **Current Rise/Fall Time**:
  - ≤ 90 µs: 1 A ≤ current setpoint ≤ 2 A
  - ≤ 55 µs: 2 A ≤ current setpoint ≤ 3 A
  - ≤ 40 µs: 3 A ≤ current setpoint ≤ 4 A
  - ≤ 35 µs: 4 A ≤ current setpoint ≤ 5 A
  - ≤ 30 µs: 5 A ≤ current setpoint ≤ 10 A
  - ≤ 20 µs: 10 A ≤ current setpoint ≤ 20 A
  - ≤ 15 µs: 20 A ≤ current setpoint ≤ 30 A
  - ≤ 10 µs: 30 A ≤ current setpoint ≤ 40 A
  - ≤ 8 µs: 40 A ≤ current setpoint ≤ 50 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 1000 µs
- **Delay (external to output)**: ≤ 1 µs (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 = 50 A output
- **Termination impedance**: 90,000 Ω
- **Response time on change**: ≤ 0.5 µs

### Current Monitor

- **Current monitor**: 0 V to 0.500 V
  - 50 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 ± 5%
- **Voltage Range**: 12 V DC to 60 V DC
- **Current requirements**: 5.0 A

### 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-50 current source meets or exceeds these specifications.
- All specifications are measured with 10 cm of 22 AWG twisted pair wire connecting the Mini-50 to a low impedance/inductance load (HPL-2400-1.00 and HPL-2400-0.250).
- Specifications subject to change without notice.

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