PIM-Mini-20 Pulsed Current Source — Datasheet





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 μ s at 20 A, pulse widths from 25 μ s to 2300 μ s, 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

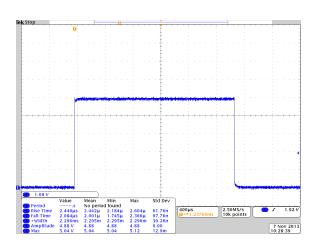
The laser or load is connected to the Mini-20 with 22 AWG twisted pair cable (included) with a length of 15 cm (6 inches) or less.

What is included?

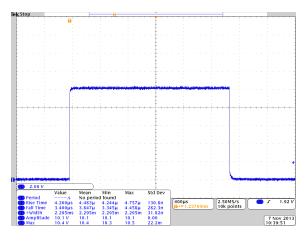
Mini-20

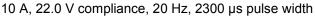
Mini-20 Pulser DC Input Cable Output Cable Control Signal Cable

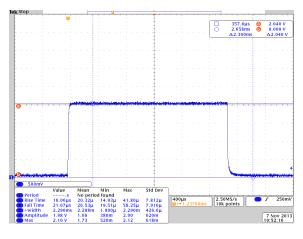
Ordering Information Mini-20

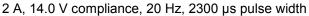


20 A, 17.0 V compliance, 20 Hz, 2300 µs pulse width









PIM-Mini-20 Pulsed Current Source — Datasheet



Pulse Amplitude		
Output Current Range		

Setpoint Accuracy Current Overshoot Current Rise/Fall Time

2 A to 20 A

- ±1 % of full scale current
- < 0.1 % ≤ 75 µs : 0.5 A ≤ current setpoint ≤ 1 A
- \leq 50 µs : 1 A \leq current setpoint \leq 2 A
- \leq 35 µs : 2 A \leq current setpoint \leq 4 A
- $\leq 25 \ \mu s : 4 \ A \leq current \ setpoint \leq 6 \ A$
- \leq 17 µs : 6 A \leq current setpoint \leq 8 A \leq 14 µs : 8 A \leq current setpoint \leq 12
- \leq 14 µs : 8 A \leq current setpoint \leq 12 A \leq 10 µs : 12 A \leq current setpoint \leq 16 A
- \leq 8 µs : 16 A \leq current setpoint \leq 20 A

Polarity Forward Voltage Positive 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 pote

Termination impedance Response time on change 5 V or open : internal potentiometer control 0 V : external control 9,000 Ω ≤ 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 Response time on change 90,000 Ω ≤ 0.5 µs

Current Monitor

Current monitor

Current monitor termination Current monitorconnector 0 V to 0.500 V 20 A output current = 0.500 V (typical) 50 Ω SMB

Control Signal Connector (J1)

Connector

nnector (J1) 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 requirements12 V DC ± 5%Current requirements0.100 A

DC Input Connector (J2)

Connector

Molex # 22-12-2024 Pin 1: DC + Pin 2: DC –

DC Input Power Specifications

Voltage requirements Voltage Range Current requirements forward voltage + 12 V DC 12 V DC to 60 V DC 5.0 A

^{*1} 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

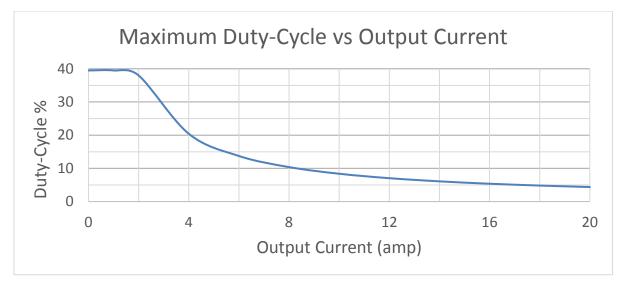
Warranty—One year parts and labor on defects in materials and workmanship.

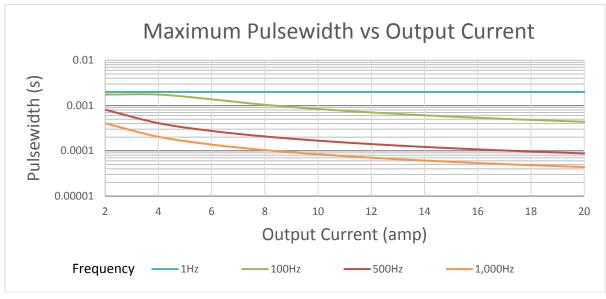
The Mini-20 current source meets or exceeds these specifications.

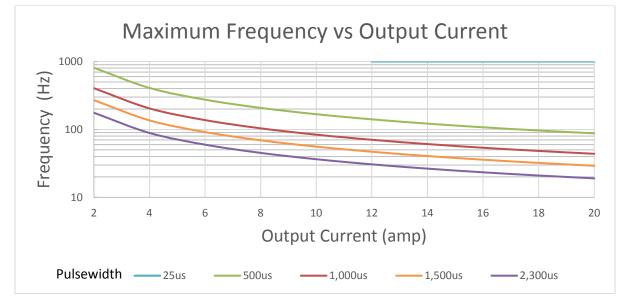
All specifications are measured with 10 cm of 22 AWG twisted pair wire connecting the Mini-20 to a low impedance/inductance load (HPL-2400-1.00 and HPL-2400-0.250).

Specifications subject to change without notice.









For more information: 970.493.1901 or sales@directedenergy.com Document #7675-0007 Rev B1. © Copyright 2019 Directed Energy, Inc. All rights reserved.