

Preliminary Product Description and Specifications

This document describes the features and specifications for Intelligent Peripheral Solutions' Programmable Infrared Source Driver (O.E.M. Version).

Unless arrangements have been made with the SD-2 manufacturer, it is suggested that the procedure described in the attached Safety limit sheet be followed.

Product Description

This Pulsed Source Driver (SD-2) is a small, programmable electronic package that delivers drive current to an Incandescent Infrared Source. It is specifically designed to provide the capability to drive pulsable sources with long on/off response times. In addition, it will drive steady state Incandescent sources.

With pulsable sources, this is accomplished by turning the source on and off with a programmable chopping/low frequency modulation. The on portion of the chopping cycle is a 10 KHz, Pulse Width Modulated (PWM) drive signal. This technique has major advantages over most other source drivers.

The SD-2 runs autonomously or can be controlled with the SD-2 Communications package available from the manufacturer G.P. &Company, or by download from the Internet.

Any D.C. supply voltage of 4.5 to 15 VDC (not provided) may be used to power the SD-2 and Source by setting the proper high frequency pulse width. This pulse width is controllable by the communications package.

No special power supply is required to accommodate the Source V-I requirements.

The salient design features are it's inherent electrical and thermal efficiencies. No external semiconductor heat sinking is required for the driver; but you must observe the heat sinking and power dissipation limits of the Source.

The circuitry is designed to stop delivering power if the high frequency pulses cease.

The SD-2 is easily incorporated directly into the users product line.

For steady state source applications, on-board pins for a jumper are provided to enable PWM pulsing 100% of the time. This may also be set or reset by software control with the SD-2 Communications package.

Functional Description

The SD-2 on-board microprocessor controls the source drive based upon non-volatile, internally stored values that are modifiable via the RS232 communications program. The user has the capability to program the Microprocessor with the PWM and LF pulse parameters via this program from his computer.

The SD-2 produces a 10kHz PWM pulse train, and the pulse width is modifiable by the Communications program. This Pulse width and the chopping rate are stored in the Microprocessor NVRAM so that restarting the driver will restore the PWM and chopping rate. The 10kHz pulses are substantially above the thermal time constant of the source, thus the source will filter the pulse train. Furthermore, internal control insures that the same number of 10kHz pulses will be in every chopping cycle. This prevents low frequency beat effects that can result from the low frequency chopping dropping in and out of phase with the high frequency PWM.

Specifications

Low Frequency on time:	0 to 4 Seconds, in .104 mSec Steps
High Frequency on time:	0 to 4 Seconds, in .104 mSec Steps
Low frequency duty cycle:	0 to 100%
High frequency (HF):	9600 Hz PWM
High frequency PWM duty cycle:	0 to 81.64% in 24usec. Steps
Maximum load current:	2.8 Amps Max, Average 19 Amps Max, Peak
For an ambient temperature less than 100 °C/212 °F.	
Power supply:	+4.5 to +15 VDC Logic Supply +7.0 to +18 VDC Optional **
Remote Programming Port:	RS-232 Serial port
Computer interface:	RS-232 programming for LF & HF
Pulse failure Protection:	Circuit shuts down with HF loss
Size:	PCB: 2.1" X 1.52", 5.34 X 3.86 cm.

**Low frequency is disabled when the 100% PWM steady state source mode is selected. This mode is enabled via software or by installing an on board jumper.*

*** The PCB is layed out to accommodate an additional resistor and Zener diode for this power supply voltage range.*