



SPECTRADYNAMICS, INC.



**PULSE DISTRIBUTION AMPLIFIER
PD-5
OPERATING MANUAL**

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PD-5 Description



The PD-5 is a TTL pulse distribution amplifier that accepts one input and provides five outputs. The outputs are designed to drive low impedance loads and long 50 or 75-ohm cables. The propagation delay through the amplifier is typically 10 ns. The channel-to-channel delay differences are less than 1 ns. The small propagation delay characteristics and low temperature coefficient of delay are essential for the distribution of high quality timing signals. The instrument is available in a 3.5" X 8.4" X 12 " enclosure. The PD-5 can be combined with either a second PD-5 or a one pulse per second generator model PPS-2 to form a standard 19" rack mountable instrument.

Safety and Preparation for Use



CAUTION!

Voltages capable of causing injury or death are present in this instrument. Use extreme caution whenever the instrument cover is removed.

Line Voltage

This instrument may be setup to operate on 100-120 or 220-240 VAC and a line frequency of 50 to 60 Hz. **Locate the power entry module and disconnect the power cord.** The voltage of operation is displayed on the power entry module. If it reads **115** the unit is setup for 100-120 VAC operation. If **230** is displayed the unit is setup for 220-240 VAC operation. To change the line voltage of operation use a flat-blade screw driver to carefully remove the plastic cover of the power entry connector. The cover should swing down towards the IEC power socket. Note you cannot change the voltage setting with the power cord still attached to the unit. Remove the red fuseholder and rotate to select the desired line voltage. The fuse must be replaced too. Insert the fuseholder and replace the plastic cover. The selected line voltage setting will be displayed on the power entry module

Fuse

A 0.5 Ampere 250V slow-blow fuse is used for 100-120 VAC operation.

A 0.25 Ampere 250V slow-blow fuse is used for 220-240 VAC operation.

Only replace fuses with the same type and specifications.

Line Cord

The instrument has a detachable, three wire power cord for connection to a grounded power source. The enclosure of the unit is directly connected to the outlet ground to protect against electrical shock. Always use an outlet with a protective ground and do not disable this safety mechanism.

Service

Do not attempt to service or adjust the instrument unless another person, capable of providing first aid or resuscitation, is present. Contact SDI for any questions or repairs.

Operation

To operate the unit, locate the AC power entry connector on the rear panel and connect the power cable. When power is applied to the unit, a red led located on the front panel, labeled "on", should light up.

The Front Panel



- On** The led is on when power is applied to unit and the unit is operating properly.
- 1PPS LED** The LED will flash on the falling edge of the 1 PPS output signal.
- 1 PPS Input** Pulse input. The input signal should conform to TTL levels.
- Outputs** Distribution amplifier output. The outputs are designed to drive 50 ohm cables. The outputs provide a 2 volt peak-to peak signal into a 50 ohm load.

The Back Panel



AC POWER ENTRY MODULE

The PD-5 is configured to operate on:

- 100-120 VAC
- 220-240 VAC.

Operation



To operate the unit, locate the power entry module on the rear of the enclosure. Make sure that the line voltage selection is correct and connect the power cord. If the line voltage is incorrect please refer to the Safety and Preparation for Use section. Plug the unit into an appropriate power outlet and turn on the power switch. A red LED on the front panel will turn on. Attach a cable with the signal to be distributed to the front panel connector labeled **1 PPS Input**. A red LED on the front panel will flash on the falling edge of each output pulse.

Although the device was designed to distribute precision one pulse per second signals, it may be used to distribute pulses up to a frequency of 100 MHz. The propagation delay is under 12 ns, and the channel to channel delay difference is less than 1 ns.

Specifications



The rise and fall times were tested with a TTL input signal at 100 kHz.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Rise time	10 - 90 %	-	3	4	ns
Fall time	10 - 90 %	-	3	4	ns
Propagation delay	50 ohm load	-	10	12	ns
Differential delay	Channel - Channel		200	500	ps
Impedance	input output		50 10		Ohms
Input High Level	Input signal into 50 ohm load	2	-	5	V
Input Low Level	Input signal into 50 ohm load	-0.7	-	0.8	
Output High Level	50 ohm load	2	2.4	-	V
Output Low Level	50 ohm load	-	0.4	0.5	
Temperature-delay	0 - 50 °C		3	5	ps/°C
Coefficient	25 - 35 °C		3		

Warranty



The PD-5 is warranted to be free of defects under normal operating conditions, as specified, for one year from date of original shipment from SpectraDynamics, Inc (SDI). SDI's obligation and liability under this warranty is expressly limited to repairing or replacing, at SDI's option, any product not meeting the said specifications. This warranty shall be in effect for one (1) year from the date an PD-5 is sold by SDI. SDI makes no other warranty, express or implied, and makes no warranty of the fitness for any particular purpose. SDI's obligation under this warranty shall not include any transportation charges or costs of installation or any liability for direct, indirect, or consequential damages or delay. Any improper use, operation beyond capacity, substitution of parts not approved by SDI, or any alteration or repair by others in such manner as in SDI's reasonable judgement affects the product materially and adversely shall void this warranty. No employee or representative of SDI is authorized to change this warranty in any way or grant any other warranty.

