AYDIN VECTOR

PDF-202 DUAL PROGRAMMABLE DATA FILTER

TYPE OF CIRCUITRY: The PDF-202 is a dual amplifying, 2 pole low pass filter. It is comprised of two individual channels each containing a programmable gain instrumentation amplifier followed by a 2 pole, resister programmable low pass filter. The following specifications are given for a single channel but they apply to both.

CHANNEL ISOLATION: $\geq$60dB

SIGNAL INPUT VOLTAGE RANGE: ±10 Vdc maximum.

DIFFERENTIAL INPUT IMPEDANCE: $\geq$100 megohms in parallel with 12 pF.

COMMON MODE INPUT IMPEDANCE: $\geq$100 meghoms in parallel with 12 pF.

INITIAL OFFSET: Less than 10 mV

INPUT BIAS CURRENT (either input): 60 nanoamperes maximum from −25°C +85°C.

COMMON MODE REJECTION RATIO, DC TO 60 Hz:
At Gain = 100, 100 dB Minimum.
At Gain = 1, 70 dB Minimum.

GAIN RANGE: 1 to 1000, programmable by external resistor/pot combination.

FIXED GAIN:
Gain = 100 $\leq$ ±0.5%. Factory Preset Jumper Selectable
Gain = 1 $\leq$ ±0.1%.

GAIN STABILITY: 0.03% @ G = 1.
0.35% @ G = 100

OFFSET CORRECTION RANGE ±50 mVdc
programmable by external resistor/pot combination.

OFFSET DRIFT OVER TEMPERATURE RANGE:
$\leq$ ±0.1% F.S. for G $\leq$ 100

OFFSET CORRECTION TERMINAL:
● Input Resistance: 40 k Ω 20%.*
● Input Range: ±10 Vdc Maximum.
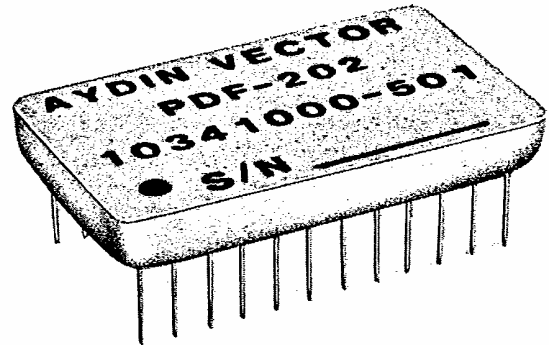● Voltage Gain To Output: Unity, with positive sense.
*If used, driver's source impedance must be less than 100 ohms.

OUTPUT NOISE:
2 mV P-P

OUTPUT CURRENT: ±25 mA typ.

OUTPUT IMPEDANCE: 0.1Ω Maximum

OUTPUT VOLTAGE SWING, 1 kΩ LOAD: ±10 Vdc.

OUTPUT NON-LINEARITY: ±0.2% Maximum.

DISTORTION: 0.2% Maximum @ $f_{out} \geq$ BW, $V_{out} \leq$ 20 V P-P.

FILTER TYPE: Butterworth low pass.

CHARACTERISTICS: 2 Pole Butterworth with an output rolloff of −12dB/octave to within 2dB of the theoretical response.

CUTOFF FREQUENCY RANGE: 5Hz standard, programmable up to 5 kHz maximum by two equal valued resistors.

CUTOFF FREQUENCY POINT: −3.0dB ±1dB from the referenced mid-band response.

CUTOFF FREQUENCY ACCURACY: Initial, ±5% exclusive of external programming resistor drift. Over Operating Temperature, ±5% over the given range.

TEMPERATURE RANGE: Operating, −25°C to +85°C
(For extended temperature range consult factory)
Storage, −55°C to +125°C

POWER SUPPLY INPUT VOLTAGE: +15V and −15 Vdc with 0.5% regulation recommended.

POWER SUPPLY CURRENT (Ea. Supply): 18 mA typ, 25 mA max., exclusive of output load current.

RESISTOR TABLE FOR GAIN PROGRAMMING

GAIN	(RG) REQUIRED RESISTOR
1.0	OPEN
10.0	4440 Ω ±20%
100	FACTORY PRESET JUMPER SELECTABLE
1000	40 Ω ±20%

ENVIRONMENTAL

VIBRATION: Capable of withstanding greater than 30g from 55 to 200 Hz in each major axis.

BURN-IN: 100% burn-in for 168 hours. Screened to MIL-STD-883B.

SHOCK: Capable of withstanding at least 20g shock in each major axis.

ACCELERATION: Capable of withstanding at least 100g acceleration in each major axis.

ALTITUDE: Unlimited.

HUMIDITY: 95% RH non-condensing.

WEIGHT: 13 grams

Recommended External Resistors For Gain:
Programming, Fixed; RN55C
Variable: Cermet, or Low T.C. Wirewound Type

Recommended External Resistors for Cutoff Frequency Programming (Resistors Equal Each Channel)
Type RN55C for values to 301 kΩ
Type CC (Cermet) Allen-Bradley for values to 22 megohms.

To calculate resistor values for cutoff frequencies other than those shown in the resistor table, use the following formula:

R_1, R_2 - Channel 1
R_3, R_4 - Channel 2

$$R = \frac{1.875 \times 10^7}{FC-5}$$

(Each channel may be set to a different cutoff frequency independent of the other channel)
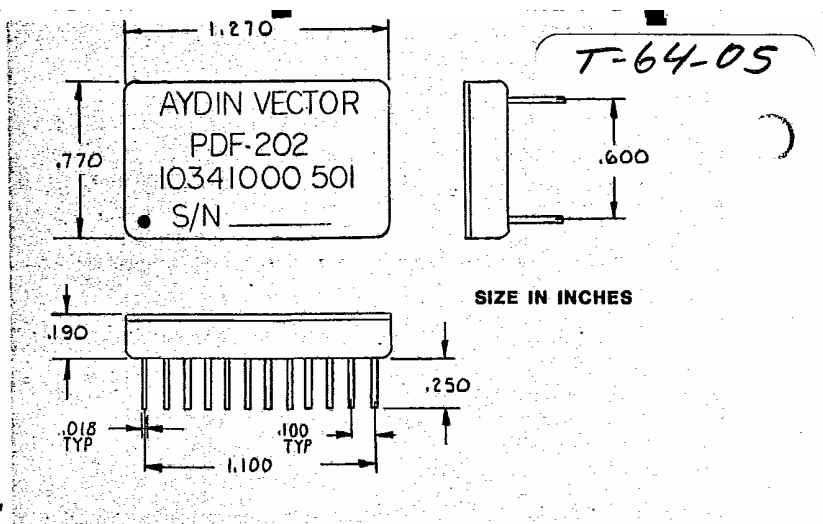
Where: R = Resistor value for R_1 and R_2 or R_3 and R_4
FC = Desired cutoff frequency

For example, to calculate −3 dB point at 3400 Hz
FC = 3400 Hz

$$R = \frac{1.875 \times 10^7}{3400.5} = 5522.8 \text{ ohms}$$
5.52 kohms

Since the exact values are not always available you must round off to the nearest available value.

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PDF-202
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S/N _____

SIZE IN INCHES

PIN	FUNCTION	PIN	FUNCTION
1	+INPUT A	13	+INPUT B
2	RG2A	14	RG2B
3	−INPUT A	15	−INPUT B
4	REF IN A	16	REF IN B
5	X100 A	17	X100 B
6	RG1A	18	RG1 B
7	GND	19	+VS
8	CHASSIS GND	20	−VS
9	OUTPUT B	21	OUTPUT A
10	PROG RB2	22	PROG RA2
11	COMM B	23	COMM A
12	PROG RB1	24	PROG RA1
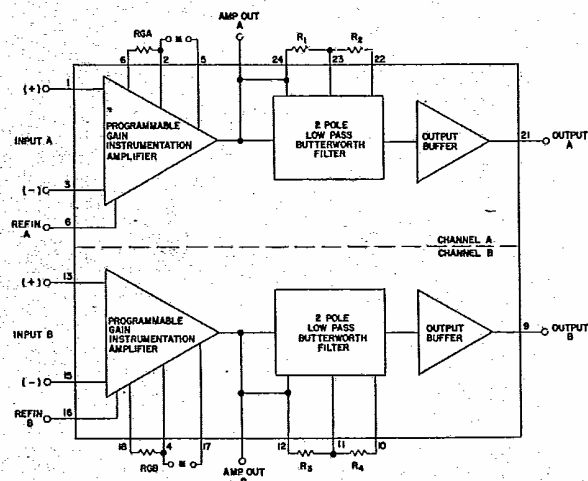
NOTE 1) RGA, RGB out and * Jumper inplace GAIN = 100
2) RGA, RGB out and * Jumper out GAIN = 1

PDF-202 Block Diagram