

Avantek Products

# YIG-Tuned Oscillators With Analog or Digital Drivers

## Technical Data

**AVD Series  
ADD Series**

### Features

- Analog Driver, 0 to +10 VDC Tuning
- Digital Driver, 12 Bit TTL

### Applications

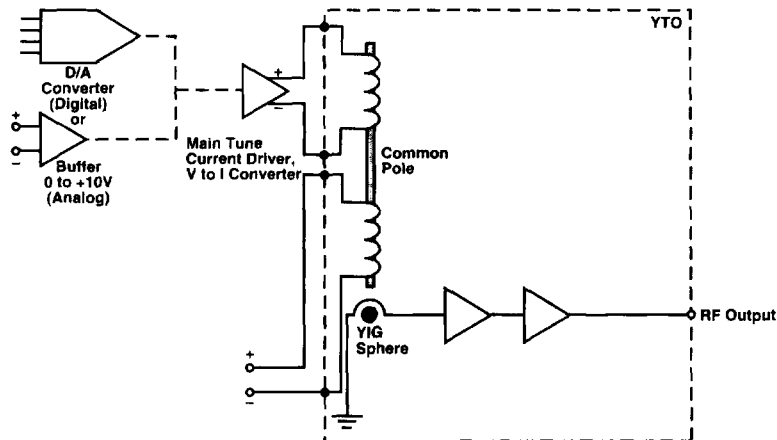
- Bench-top Sources
- Instrumentation
- Test and Measurement Equipment

### Description

HP YIG-tuned oscillators are available with either digitally-tuned or analog voltage-tuned drivers. These drivers control the main tuning coil current via 12-bit digital logic or via an analog voltage thus eliminating the need to build and align tuning current sources.

Both the digital and analog drivers are available in two temperature range version; 0° to 65°C and -54° to +85°C. The former is used with any HP YIG-tuned devices specified over 0° to +65°C while the extended temperature range version will meet all of the environmental specifications of HP's militarized YIG-tuned devices including operation over the -54° to +85°C temperature range.

### Block Diagram



Basic Digital/Analog Driver Hookup to a YTO

# Electrical and Performance Specifications

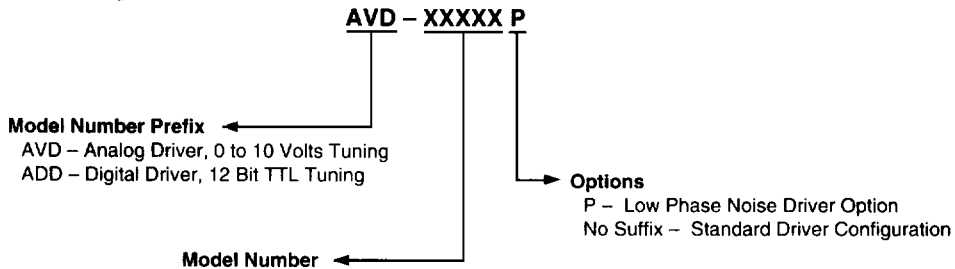
Guaranteed Specifications at 25°C Case Temperature (Operating Temperature Per Device)

Specification <sup>1</sup>	Analog Driver	Digital Driver
Tuning Range	0.000 volts at input corresponds to lowest frequency 10.000 volts at input corresponds to highest frequency	All zeros at input corresponds to lowest frequency All ones at input corresponds to highest frequency
Tuning Accuracy: at 25°C on baseplate, four hour after turn-on, excluding hysteresis and non-linearity resolution	±(0.1% of frequency +2 MHz)	±(0.1% of frequency +2 MHz)
Surface Logic	NA	12 bit positive true logic for increasing frequency TTL or CMOS
Tuning Input Resistance	NA	NA
Common Mode Rejection	≥10 kΩ	NA
Residual FM: (15 Hz–15 kHz bandwidth)	≥40 dB	NA
Non-Linearity	4x10 <sup>-6</sup> of oscillator frequency in hertz +40 kHz, typ.	4x10 <sup>-6</sup> of oscillator frequency in hertz +40 kHz, typ.
Pushing: +15 Volts:	Device specification applies ±(0.01% of frequency +1 MHz + oscillator pushing)/volt, typ.	±(1/2 bit + device non-linearity) ±(0.001% of frequency +0.1 MHz + oscillator pushing)/volt, typ.
-15 Volts:	±(0.01% of frequency +1 MHz)/volt, typ.	±(0.001% of frequency +1 MHz)/volt, typ.
Power Supply Voltage:	±15 volts: ±5%	±15 volts: ±5%
Power Supply Current: +15 Volts:	Oscillator bias current + tuning current at max freq +30 mA	Oscillator bias current + tuning current at max freq +40 mA
-15 Volts:	(Current requirement of -5 volts of oscillator if present +30 mA)	(Current requirement of -5 volts of oscillator if present +40 mA)
Weight	Oscillator weight +12 oz.	Oscillator weight +13 oz.
Device Specifications That Do Not Apply	Main Tuning Coil Sensitivity Main Tuning Coil Input Impedance at 1 kHz Pushing Figure, -5 volts if used	Main Tuning Coil Sensitivity Main Tuning Coil Input Impedance at 1 kHz Pushing Figure, -5 volts if used

Notes: 1. These specifications are in addition to the standard specifications for the basic YIG device to which the driver is coupled, except as noted.

2. Tuning current at max freq is:  $\frac{\text{Max freq (MHz)}}{\text{Sensitivity (MHz/mA)}} = \text{Max current (mA)}$

## Product Options



## Electrical and Performance Specifications

Guaranteed Specifications at 25°C Case Temperature (Operating Temperature Per Device)

Model Number	Frequency Range (GHz)	Analog Driver Specification Data			Digital Driver Specification Data			
		AVD-XXXXX			ADD-XXXXX			
		E1 <sup>1</sup> Power Supply Current (mA), Max. @ VDC Nom +15 V	E2 <sup>1</sup> Power Supply Current (mA), Max. @ VDC Nom -15 V	Residual FM (kHz p-p) Typical	P1-12 <sup>1</sup> Power Supply Current (mA), Max. @ VDC Nom +15 V	P1-25 <sup>1</sup> Power Supply Current (mA), Max. @ VDC Nom -15 V	P1-13 <sup>1</sup> Power Supply Current (mA), Max. @ VDC Nom +15 V	Residual FM (kHz p-p) Typical
AV-70502	0.5-2.0		Not Available			Not Available		
AV-7104	1.0-2.2	300	30	50	190	40	120	50
AV-7104-9	1.0-2.2	300	30	50	190	40	120	50
AV-7114	1.0-4.0		Not Available			Not Available		
AV-7124	1.0-4.0	390	85	60	140	95	260	60
AV-7134	1.2-4.0		Not Available			Not Available		
AV-7203	2.0-4.0	350	30	60	140	40	220	60
AV-7214	2.0-4.0	510	95	60	240	105	280	60
AV-7224	2.0-4.0	390	95	60	190	105	210	60
AV-7224-9	2.0-4.0	390	95	60	190	105	210	60
AV-7246	2.0-6.0	655	95	60	240	105	425	60
AV-7028	2.0-8.0		Not Available			Not Available		
AV-7278	2.0-8.0	795	95	70	240	105	565	70
AV-7288	2.0-8.0	700	95	70	290	105	420	70
AV-7298	2.0-8.0	650	95	70	240	105	420	70
AV-72B8	2.0-8.0	800	95	70	390	105	420	70
AV-72810	2.0-10.0	760	60	80	240	70	530	80
AV-72012	2.0-12.4	860	60	90	215	70	655	90
AV-72018	2.0-18.0	1390	65	110	340	75	1060	110
AV-7036	3.0-6.0		Not Available			Not Available		
AV-7418	4.0-8.0	795	95	70	240	105	565	70
AV-7443	4.0-8.0	650	95	70	240	105	420	70
AV-7443-9	4.0-8.0	650	95	70	240	105	420	70
AV-7453	4.0-8.0	600	95	70	190	105	420	70
AV-7453-9	4.0-8.0	600	95	70	190	105	420	70
AV-74010	4.0-10.0	760	95	80	240	105	530	80
AV-74012	4.0-12.4		Not Available			Not Available		
AV-74018	4.0-18.0	1440	65	110	390	75	1060	110
AV-76118	6.0-18.0	1365	30	110	315	40	1060	110
AV-76318	6.0-18.0	1440	65	110	390	75	1060	110
AV-78012	8.0-12.4	935	75	90	290	85	655	90
AV-7814	8.0-12.4	935	30	90	215	40	730	90
AV-78112	8.0-12.4	1035	30	90	315	40	730	90
AV-7871	8.0-12.4	810	30	90	165	40	655	90
AV-7871-9	8.0-12.4	810	30	90	165	40	655	90
AV-7873	8.0-12.4	935	30	90	290	40	655	90
AV-7873-9	8.0-12.4	935	30	90	290	40	655	90
AV-78218	8.0-18.0	1265	30	110	215	40	1060	110
AV-78518	8.0-18.0	1365	30	110	315	40	1060	110
AV-78618	8.0-18.0	1365	30	110	315	40	1060	110
AV-78020	8.0-20.0	1360	30	120	315	40	1055	120
AV-78020-9	8.0-20.0	1360	30	120	315	40	1055	120
AV-12018	12.0-18.0	1440	65	110	390	75	1060	110
AV-12118	12.0-18.0	1365	30	110	315	40	1060	110
AV-12218	12.0-18.0		Not Available			Not Available		
AV-71251	12.0-18.0	1240	30	110	190	40	1060	110
AV-71251-9	12.0-18.0	1240	30	110	190	40	1060	110
AV-71220	12.0-20.0	1405	30	120	240	40	1175	120
AV-18126	18.0-26.5	1160	30	150	240	40	930	150
AV-18326	18.0-26.5	1160	30	150	240	40	930	150
AV-18030	18.0-30.0	1285	30	160	240	40	1055	160
AV-20040	20.0-40.0		Not Available	290	290	40	1055 @ +20V	200
AV-26140M	26.5-40.0	1235	30	200	190	40	1055	200
AV-26140W	26.5-40.0	1235	30	200	190	40	1055	200
AV-26240M	26.5-40.0	1235	30	200	190	40	1055	200
AV-26240W	26.5-40.0	1235	30	200	190	40	1055	200
AV-33050	33.0-50.0		Not Available		190	40	1070 @ +20V	240

Note 1: Refer to Case Drawing section for pin designations.