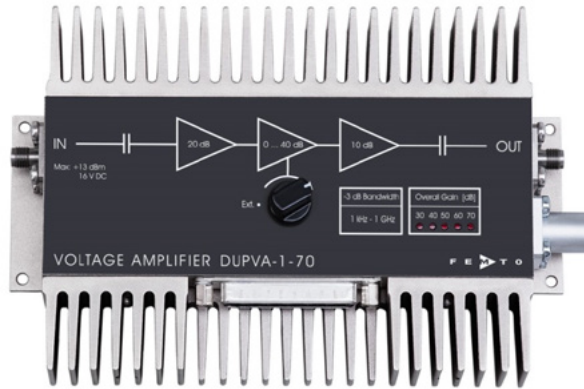


Datasheet

DUPVA-1-70

Variable-Gain
Ultra-Wideband Voltage Amplifier



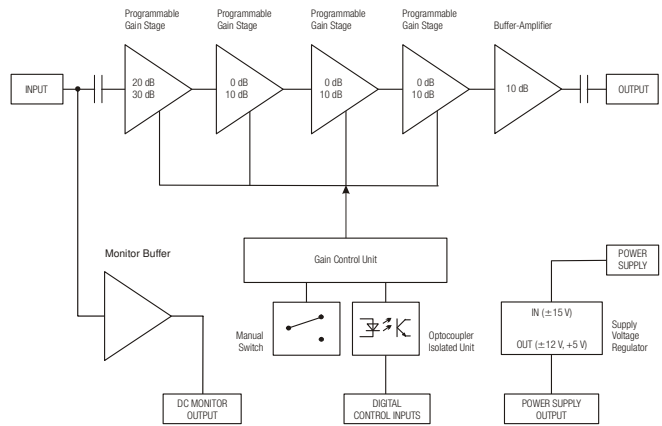
Features

- Variable gain 30 to 70 dB (approx. $\times 30$ to $\times 3000$), switchable in 10 dB steps
- Bandwidth 1 kHz ... 1.1 GHz
- Bandwidth, frequency response and pulse response independent of gain setting
- Local and remote control
- DC monitor output

Applications

- Oscilloscope and transient-recorder preamplifier
- Photomultiplier and microchannel-plate amplifier
- Signal-booster for optical receivers and current amplifiers
- Time-resolved pulse and transient measurements
- Automated measurement systems

Block Diagram



SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



DE-DUPVA-1-70_R17/MB,TH,JM/23MAR2020

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**Variable-Gain
Ultra-Wideband Voltage Amplifier**

Related Models	DUPVA-1-60	Gain values 20, 30, 40, 50, 60 dB Upper cut-off frequency 1.2 GHz	
Available Accessories	CA-SMA-BNC	SMA to BNC adapter	
	PS-15	power supply input: 100 - 240 VAC output: ± 15 VDC, +400/-250 mA	
	LUCI-10	compact digital I/O interface for USB remote control, supports opto-isolation of amplifier signal path from PC USB port, 16 digital outputs, 3 opto-isolated digital inputs, bus-powered operation	
Specifications	Test conditions	$V_g = \pm 15$ V, $T_A = 25$ °C, system impedance = 50 Ω	
Gain	Gain values	30, 40, 50, 60, 70 dB	
	Gain accuracy	± 0.1 dB (between settings) ± 1 dB (overall)	
	Gain flatness	± 0.15 dB	
Frequency Response	Lower cut-off frequency	1 kHz	
	Upper cut-off frequency	1.1 GHz	
	Upper cut-off frequency rolloff	40 dB/oct.	
Time Response	Rise/fall time (10 % - 90 %)	390 ps	
	Group delay	2.2 ns	
Input	Input impedance AC	50 Ω	
	Input impedance DC	100 k Ω	
	Input VSWR (@ 30 dB gain)	1.1 : 1	(f < 1 GHz)
		1.2 : 1	(f < 2 GHz)
	Input VSWR (@ 40 - 70 dB gain)	1.7 : 1	(f < 1 GHz)
		1.7 : 1	(f < 2 GHz)
	50 Ω noise figure	1.9 dB	(@ 70 dB gain)
Equivalent input voltage noise	2.5 dB	(@ 40 - 60 dB gain)	
	330 pV \sqrt{Hz}	(@ 70 dB gain)	
1/f-noise corner	400 pV \sqrt{Hz}	(@ 40 - 60 dB gain)	
	20 kHz		

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



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DUPVA-1-70

**Variable-Gain
Ultra-Wideband Voltage Amplifier**

Specifications (continued)

Output	Output impedance	50 Ω	
	Output power P_{1dB}	12 dBm	(@ 100 MHz)
		11 dBm	(@ 500 MHz)
	Output peak-to-peak voltage for linear amplification	2 V	(@ 100 MHz)
		1.7 V	(@ 500 MHz)
	Output VSWR	1.5 : 1	(f < 1 GHz)
		1.7 : 1	(f < 2 GHz)
Monitor Output	Third order intercept point IP_3	20 dBm	
	Reverse isolation	80 dB	
	Dynamic range (without average)	62 dB	(P_{1dB} – min. detectable signal)
	Monitor output gain	1	(@ ≥ 100 k Ω load)
	Monitor output impedance	50 Ω	(designed for ≥ 100 k Ω load)
Digital Control	Monitor output voltage range	± 10 V	
	Monitor output current	± 25 mA	
	Monitor output bandwidth	DC ... 100 kHz	
	Control input voltage range	Low: -0.8 ... $+0.8$ V High: $+1.8$... $+12$ V	
Power Supply	Supply voltage	± 15 V	
	Supply current	$+250$ / -100 mA	(without current consumption from Sub-D-connector)
	Stabilized power supply output	± 12 V / max. 50 mA, $+5$ V / max. 50 mA	(Auxiliary voltage outputs Pin 1-4 Sub-D-connector)
Case	Weight	510 g (1.1 lb)	
	Material	AlMg4.5Mn, nickel-plated	
Temperature Range	Storage temperature	-40 ... $+100$ $^{\circ}\text{C}$	
	Operating temperature	0 ... $+60$ $^{\circ}\text{C}$	
Absolute Maximum Ratings	Signal input power	$+13$ dBm	(f > 500 Hz)
	Signal input DC voltage	± 16 V	(slope max. ± 1 V/ms)
	Signal output reverse power	$+13$ dBm	
	Signal output reverse DC voltage	$+16$ V / -12 V	(slope max. ± 1 V/ms)
	Control input voltage	$+16$ V / -5 V	
	Power supply voltage	± 17 V	

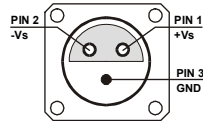
SOPHISTICATED TOOLS FOR SIGNAL RECOVERY

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Datasheet

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**Variable-Gain
Ultra-Wideband Voltage Amplifier**

<p>Connectors</p>	<p>Input SMA female</p> <p>Output SMA female</p> <p>Power supply Lemo® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52)</p> <p>Pin 1: +15V Pin 2: -15V Pin 3: GND</p>  <p>Control port Sub-D 25-pin, female, qual. class 2</p> <p>Pin 1: +12V (stabilized power supply output) Pin 2: -12V (stabilized power supply output) Pin 3: AGND (analog ground) Pin 4: +5V (stabilized power supply output) Pin 5: Monitor output Pin 6 - 8: NC Pin 9: DGND (ground f. digital control pin 10 - 25) Pin 10 - 13: NC Pin 14: Digital control input: gain, LSB Pin 15: Digital control input: gain Pin 16: Digital control input: gain, MSB Pin 17 - 25: NC</p>																								
<p>Remote Control Operation</p>	<p>General Remote control input bits are opto-isolated and connected by logical OR to local switch setting. For remote control of the gain setting, set the local switch to "Ext." and select the wanted gain setting via a 3-bit-code at the corresponding digital inputs:</p> <p>Gain setting - corresponding inputs</p> <table border="1" data-bbox="970 1377 1300 1534"> <thead> <tr> <th>Gain</th> <th>Pin 14</th> <th>Pin 15</th> <th>Pin 16</th> </tr> </thead> <tbody> <tr> <td>30 dB</td> <td>Low</td> <td>Low</td> <td>Low</td> </tr> <tr> <td>40 dB</td> <td>High</td> <td>Low</td> <td>Low</td> </tr> <tr> <td>50 dB</td> <td>Low</td> <td>High</td> <td>Low</td> </tr> <tr> <td>60 dB</td> <td>High</td> <td>High</td> <td>Low</td> </tr> <tr> <td>70 dB</td> <td>Low</td> <td>Low</td> <td>High</td> </tr> </tbody> </table>	Gain	Pin 14	Pin 15	Pin 16	30 dB	Low	Low	Low	40 dB	High	Low	Low	50 dB	Low	High	Low	60 dB	High	High	Low	70 dB	Low	Low	High
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SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



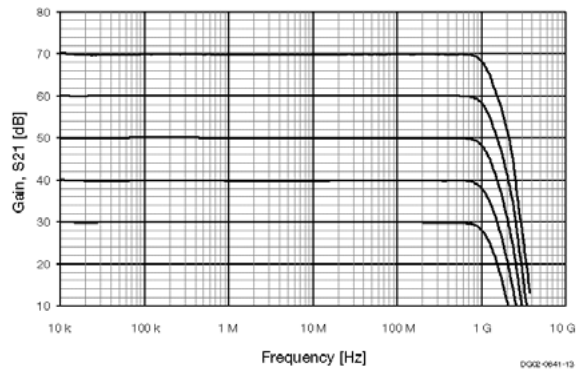
Datasheet

DUPVA-1-70

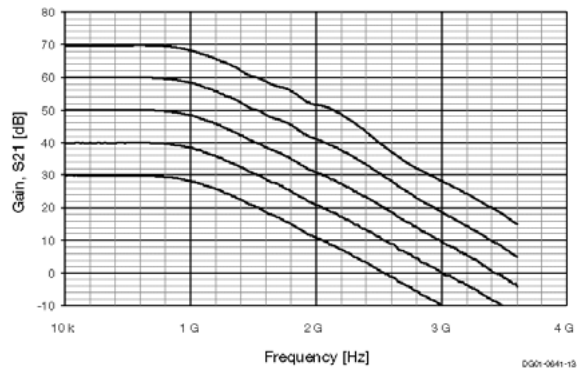
**Variable-Gain
Ultra-Wideband Voltage Amplifier**

Typical Performance
Characteristics

Frequency response (logarithmic)



Frequency response (linear)



SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



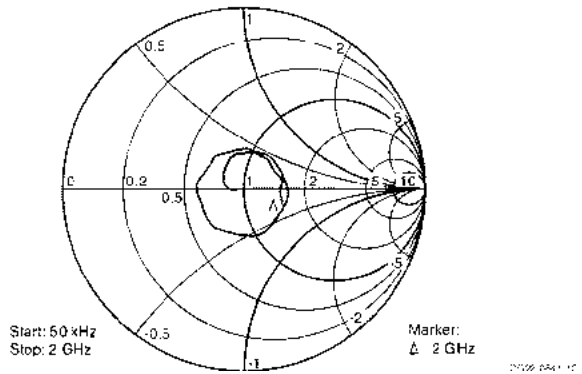
Datasheet

DUPVA-1-70

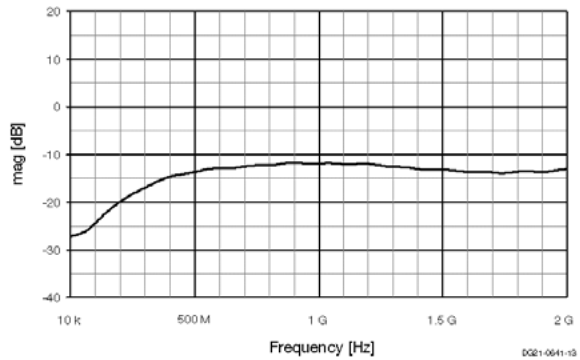
**Variable-Gain
Ultra-Wideband Voltage Amplifier**

Typical Performance
Characteristics

Input reflection, S11



Input return loss, S11 (Linear Magnitude)



SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



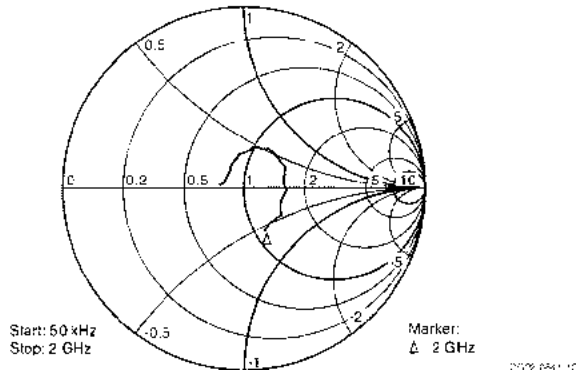
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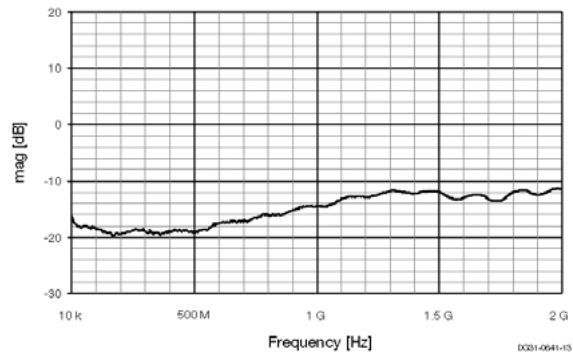
**Variable-Gain
Ultra-Wideband Voltage Amplifier**

Typical Performance
Characteristics

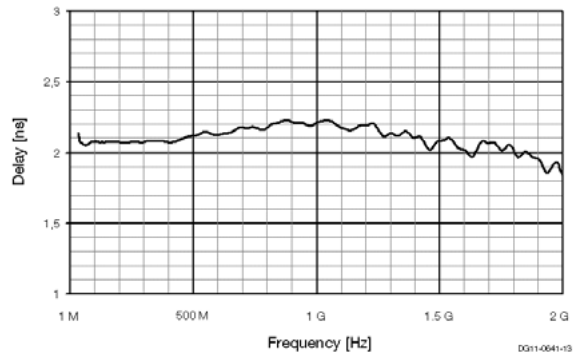
Output reflection, S22



Output return loss, S22 (Linear Magnitude)



Group delay



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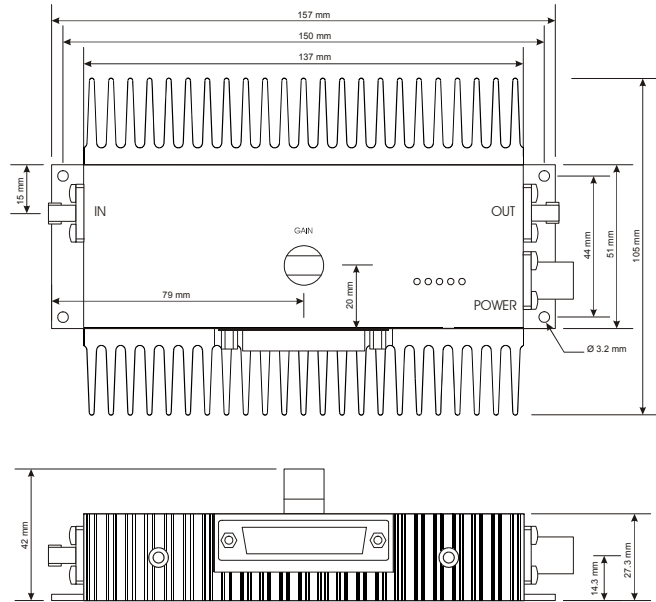


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**Variable-Gain
Ultra-Wideband Voltage Amplifier**

Dimensions



0201-0640-14

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