

FRONTGRADE

10259-50000

SIMOPS Dual Channel Power Amplifier 10259-50000

30-512MHz/225-2600MHz Power Amplifier

1/12/2026 | Version #1.0

Product Description

The SIMOPS Dual Channel Power Amplifier supports dual channel, simultaneous, independent, Transmit and Receive functionality. The amplifier delivers 50W of RF Output Power from 30-512MHz in Channel 1 and 20W RF Output Power from 225-512MHz and 1250-2600MHz in Channel 2. This design is well suited for multiple military and commercial platforms requiring high linearity, small form-factor, and light weight requiring operation in harsh environments.

Performance Advantages

- Small Size, Weight, and Power
- Addresses Airborne and Ground platforms, Manned and Unmanned
- Designed to support TSM, SRW, WNW, SINCGARS, ANW2, HAVEQUICK I/II, P25, SATURN
- Simultaneous Dual Channel Operation
- Wide DC input range, 10-36V
- No Interface required, Input frequency sensing
- Small form factor, Lightweight
- Automatic Leveling Control
- VSWR sensing/protection
- Highly Ruggedized, Environmentally sealed design
- Tested to MIL-STD-810, 461, and 1275 requirements
- Field Upgradeable Firmware, supports Field Repair and Sustainability
- Failsafe by-pass path in each channel

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Performance Highlights/Specifications

RF Output Power	30-512 MHz up to 50W 225-512MHz, 1250-2600 MHz up to 20W
DC Voltage Input	10-36 VDC, 28V, MIL-STD-1275 (can be modified to support MIL-STD-704) Over/Under Voltage Protection, Overcurrent Protection, Reverse Polarity Protection
DC Power Consumption	145W nominal, 175W max : 30-512MHz, full rated Output Power 115W nominal, 175W max :225-512MHz, 1250-2600 MHz, full rated Output Power 350W max (both channels at full rated Output Power)
Duty Cycle	100% continuous
Harmonics and Spurious	CE106 typical
Modes and Waveforms	Supports all common commercial and military radios and waveforms
Output Load Impedance	50 ohm nominal
Input Port VSWR	1:5:1 (50 ohms)
Load VSWR	3.0:1 max VSWR Graceful output power reduction >3:1
Rx Gain	11-15 dB (30-512MHz) 11-17 dB (225-512MHz, 1250-2600MHz) (factory configurable or selectable via interface)
Rx Noise Figure	≤ 6 dB (all bands)
EMI/EMC	MIL-STD-461
E3 Survivability	MIL-STD: ESD, NSL, HEMP
Environmental	Operational Temp -40C to +60C Storage Temp -45C to +85C Altitude 40,000 ft Humidity – 95% RH, non-condensing Vibration – Transit, Loose Cargo Shock – Bench Handling, 2 m Drop, High G Enclosure Rating – IP67+, Immersion tested to 2 meters NSL and HEMP
Interfaces provided **(Frequency sensing, no interface required)**	RS 232, 422, 485, LVDS, Ethernet. Custom Interfaces can be supported
Connector Interface	RFin/out – TNC or N-type standard, or as specified by user DC Power and Control/Monitor – 14 pin Circular
Dimensions	4.17”H x 4.15” W x 8.1” D
Weight	6.5 lbs
Color	Clear Chemical film or Painted

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Typical Performance Data

Channel 1

Test Condition 25°C Baseplate														
Freq.	Pin	Pout	Gain @ Pwr		2nd Harm.	3rd Harm.	4th Harm.	5th Harm.	In-Band	28V curr.	28V Prime	Rx Gain	Rx NF	Rx IP3
MHz	dBm	dBm	dB		-dBc	-dBc	-dBc	-dBc	Spurs dBc	(A)	(W)	dB	dB	dB
30	30.1	47.2	17.2		-73.3	-85.1	-90.2	-91.8	-77.5	5.1	143.6	14.5	5.2	12.0
40	30.0	47.1	17.1		-75.6	-79.6	-90.1	-89.4	-80.5	5.1	141.3	14.7	4.1	12.1
50	30.0	47.2	17.1		-77.2	-82.9	-82.2	-74.8	-80.7	4.7	130.7	14.4	3.9	13.2
60	30.0	47.3	17.2		-77.3	-84.5	-79.9	-83.1	-81.0	4.6	127.4	14.2	3.8	15.8
70	30.0	47.2	17.2		-59.0	-91.3	-79.6	-84.0	-79.3	4.2	118.1	14.1	3.5	15.7
80	30.1	47.2	17.2		-76.3	-75.7	-82.5	-88.8	-77.1	4.2	118.1	14.1	3.3	14.5
88	30.0	47.3	17.3		-74.0	-77.9	-87.8	-92.0	-72.3	4.3	119.0	14.1	3.2	14.6
118	30.0	47.3	17.3		-80.6	-86.3	-89.9	-92.3	-81.1	5.5	153.1	14.0	3.1	13.5
174	30.0	47.4	17.4		-74.3	-92.2	-91.8	-91.7	-81.4	5.6	156.2	13.9	3.0	12.4
225	30.0	47.3	17.3		-62.3	-79.8	-91.5	-91.4	-78.9	5.5	154.8	13.9	3.1	10.9
255	30.0	47.3	17.2		-81.3	-91.6	-91.2	-90.8	-78.7	5.0	140.8	13.9	3.4	12.9
285	30.0	47.3	17.2		-80.4	-90.8	-91.0	-91.4	-81.7	5.6	157.6	13.9	3.1	13.5
315	30.0	47.3	17.3		-80.4	-90.5	-90.4	-91.2	-74.0	5.2	144.7	13.8	3.1	12.8
345	30.0	47.4	17.4		-78.6	-89.6	-90.5	-86.7	-81.0	5.5	153.1	13.7	3.3	14.7
375	30.0	47.3	17.3		-90.1	-90.7	-90.5	-89.5	-81.7	6.1	170.5	13.7	3.3	14.7
405	30.0	47.3	17.3		-80.4	-91.0	-90.3	-89.6	-81.1	5.2	145.0	13.5	3.3	16.5
430	30.0	47.3	17.3		-84.9	-90.2	-90.5	-90.2	-82.3	4.9	137.2	13.3	3.3	18.0
450	30.1	47.3	17.2		-84.2	-86.8	-87.7	-89.9	-78.6	5.2	145.3	13.1	3.4	16.4
512	30.0	47.2	17.2		-84.7	-80.5	-89.2	-87.5	-81.4	6.1	171.9	12.4	3.6	14.8

Channel 2

Test Condition 25°C Baseplate														
Freq.	Pin	Pout	Gain @ Pwr		2nd Harm.	3rd Harm.	4th Harm.	5th Harm.	In-Band	28V curr.	28V Prime	Rx Gain	Rx NF	Rx IP3
MHz	dBm	dBm	dB		-dBc	-dBc	-dBc	-dBc	Spurs dBc	(A)	(W)	dB	dB	dB
225	30.0	43.1	13.1		-76.4	-88.1	-89.7	-90.7	-71.0	2.6	73.9	16.0	3.3	11.4
255	30.0	43.1	13.1		-80.7	-87.2	-95.3	-94.9	-69.1	2.6	73.9	16.0	3.4	16.4
285	30.0	43.2	13.2		-81.7	-86.3	-89.2	-94.3	-75.0	2.5	68.9	16.0	3.4	18.5
315	30.0	43.2	13.2		-78.0	-95.3	-94.4	-90.6	-69.5	2.7	75.0	16.0	3.4	19.2
345	30.0	43.2	13.2		-89.1	-86.3	-94.3	-88.2	-69.7	2.7	76.7	16.0	3.4	18.9
375	30.0	43.2	13.2		-77.0	-82.7	-92.4	-94.2	-73.3	3.1	87.3	16.2	3.4	19.4
405	30.0	43.2	13.1		-71.6	-94.1	-83.9	-93.0	-74.5	3.3	92.6	16.2	3.8	18.3
430	30.1	43.1	13.0		-71.0	-90.8	-90.5	-93.6	-72.5	3.4	95.4	16.4	3.4	17.6
450	30.0	43.1	13.1		-63.6	-83.7	-88.0	-89.7	-72.1	3.5	98.2	16.5	3.4	16.2
512	30.0	43.2	13.2		-67.1	-86.4	-93.7	-92.8	-74.0	3.9	109.2	16.4	3.3	16.2
1250	30.0	43.2	13.1		-79.6	-76.9	-91.4	-90.6	-72.8	5.7	158.4	15.6	3.7	12.2
1320	30.1	43.1	13.0		-61.7	-80.4	-91.6	-89.5	-74.5	4.4	123.2	15.7	3.7	12.1
1390	30.0	43.2	13.1		-63.2	-82.3	-91.1	-87.9	-69.9	4.0	111.4	15.3	3.8	12.6
1755	30.0	43.1	13.1		-79.5	-90.9	-87.5	-88.5	-71.4	4.5	126.0	15.0	4.1	14.5
1800	30.0	43.1	13.0		-80.5	-90.2	-87.4	-88.7	-73.7	4.7	131.0	15.0	4.0	15.1
1850	30.0	43.0	13.0		-78.9	-89.0	-87.7	-88.9	-73.5	4.0	112.0	15.0	4.0	13.3
1950	30.0	43.1	13.0		-89.1	-90.5	-88.0	-88.9	-74.1	3.8	106.9	14.5	4.2	13.5
2150	30.0	43.1	13.1		-86.7	-90.8	-87.8	-88.3	-73.2	4.8	134.9	14.3	4.3	12.4
2300	30.0	43.1	13.1		-89.5	-88.3	-88.6	-87.8	-73.6	4.7	132.7	13.7	4.6	12.0
2600	30.0	43.1	13.1		-87.9	-85.8	-86.5	-86.2	-76.8	4.6	129.9	11.8	5.5	13.4

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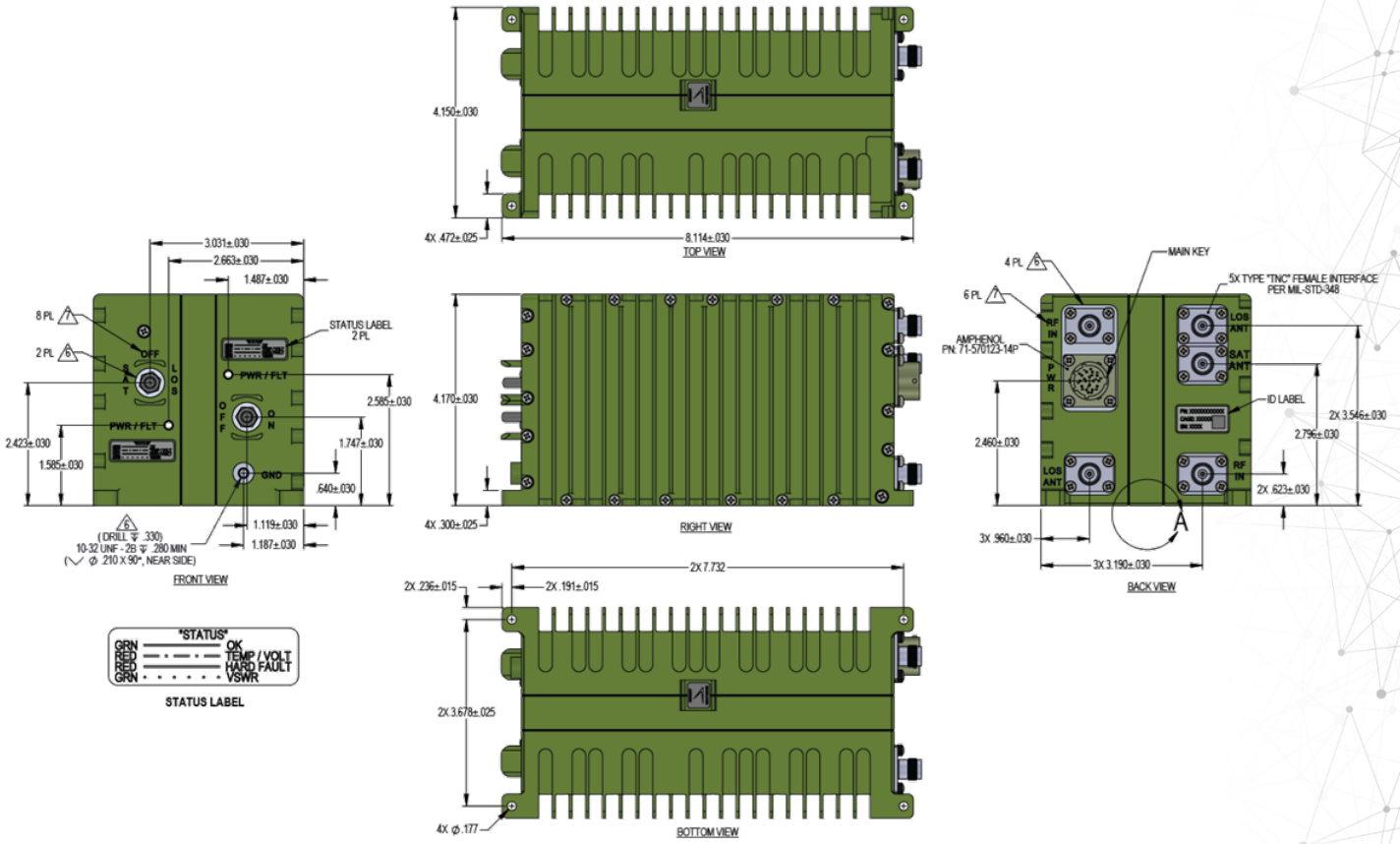
Case Outline/Dimensions



"CONTROL CONNECTOR TABLE"				
PIN	SIGNAL NAME	SIGNAL TYPE	SIGNAL LEVEL	ADDITIONAL INFO
A	V IN	INPUT	11-36VDC	
B	V IN	INPUT	11-36VDC	
C	GND	INPUT		
D	V IN	INPUT	11-36VDC	
E	V IN	INPUT	11-36VDC	
F	GND	INPUT		
H	GND	INPUT		
J	V IN	INPUT	11-36VDC	
K	SERIAL_DATA_IN	INPUT	0-3.3VDC	CH2
L	GND	INPUT		
M	GND	INPUT		
N	SERIAL_DATA_IN	INPUT	0-3.3VDC	CH1
P	SERIAL_DATA_OUT	OUTPUT	0-3.3VDC	CH1
R	SERIAL_DATA_OUT	OUTPUT	0-3.3VDC	CH2

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