AMP300600040L

10 W Power Amplifier 300 … 6000 MHz

Features

- output power +42 dBm typ.
- high OIP3 +46 dBm typ.
- high dynamic
- reverse polarity protected
- self test function
- optical power and status indication
- status signaling contact (floating)
- appropriate heat-sink available

Applications

- EMC compliance testing
- GSM, UMTS, LTE, 5G, Wifi
- UHF, SHF

Designed for mounting on external heat sink.

At a Glance

AMP300600040L from Becker Nachrichtentechnik is a compact amplifier module in 50 ohms technology designed for the use in professional applications. The robust electric and mechanic design gives solid operations over a long time. The amplifier works stable over a wide frequency range with many octaves. Internal filters and low noise voltage supplies guarantee high suppression of spurious. To avoid damages during installation the supply is protected against reverse polarity. The presence of DC power and the module status is indicated by a LED at the module. The amplifier module is designed for mounting on heat sinks provided by user.

Special Features

The high output power and the ultra-wide operation frequency range makes the medium power amplifier suitable in EMC compliance testing and in systems for cellular and Wifi applications including 5G (FR1).

To adapt the output power to desired value and to minimize heat generation the DC voltage supply of the module can vary.

An internal self-test function monitors current consumption and module temperature. In the case of exceeding the limits a floating contact is opened and the status is signalized by the LED at the module.

Tolerant to Mismatches

Using power transistors with enough head room to maximum ratings make the amplifier module robust against reverse power and therefore robust against loads at the output which are not matched.

Rugged Design

The amplifier is housed is a milled aluminium case. This saves the circuits against mechanical damage and gives best shielding for avoiding EMI influences caused by radio signals coming from the environment. The standard module is designed for mounting on a heat sink provided by the customer. Alternatively, an appropriate heat-sink “UHS-1” is available.

RF Specification (32 V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ω	
low frequency	f_{LOW}			0.3	GHz	
	f_{HIGH}	6.0			GHz	
linear gain	S_{21}	44	50	55	dB	f < 0.7 GHz
	S_{21}	44	47	50	dB	0.7 GHz ≤ f ≤ 3.5 GHz
	S_{21}	42	46	50	dB	3.5 GHz < f ≤ 5.0 GHz
	S_{21}	37	43	47	dB	f > 5.0 GHz
input return loss	S_{11}		-15	-10	dB	f ≤ 5.0 GHz
			-10	-7	dB	f > 5.0 GHz
saturation power	P_{SAT}[1)]	+39	+41		dBm	f < 0.7 GHz
	P_{SAT}[1)]	+40	+42		dBm	0.7 GHz ≤ f ≤ 3.5 GHz
	P_{SAT}[1)]	+39	+41		dBm	3.5 GHz < f ≤ 5.0 GHz
	P_{SAT}[1)]	+37	+39		dBm	f > 5.0 GHz
1 dB compression	P_{1dB}		+38		dBm	
harmonics	D		-27		dBc	P = +37dBm
3rd order intercept	OPIP3[2)]	+44	+46		dBm	f ≤ 5.5 GHz
	OPIP3[2)]	+42	+44			f > 5.5 GHz
noise figure	NF		7	9	dB	
input power	P_{in}			+10	dBm	no damage
DC voltage	U_{DCI}			20	V	RF input
	U_{DCO}			0	V	RF output
ESD discharge resistor	R_{ESD}		4.7		kΩ	RF ports
RF connectors	X_{RF}		SMA female			

Note 1: Tested at P_{IN} = +10 dBm

Note 2: Tested at P_{out} = 2 x +25 dBm; 400M / 500M, 750M / 850M, 950M / 1050M, 1750M / 1850M, 1950M / 2050M, 2950M / 3050M, 3950M / 4050M, 4950M / 5050M, 5450M / 5550M, 5800M / 5900M

Common Specification

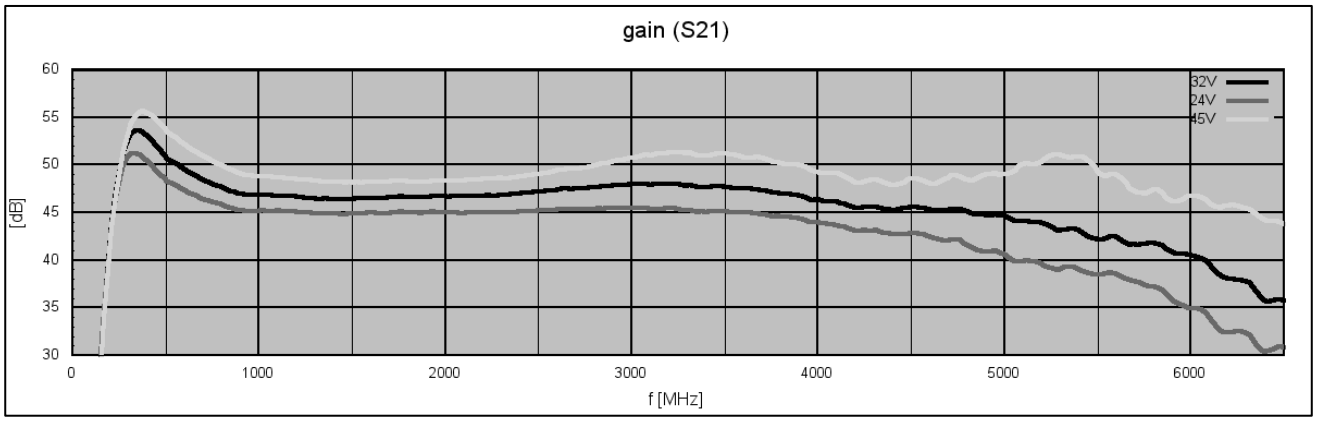
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U_{DC}	24	32	45	V	DC
current consumption	I_{DC}		1500*	2400	mA	@ 32 V DC, *quiescent current
dimensions	W x H x D	approx. 105 x 20 x 90			mm	without connectors
weight	m		360		g	
current threshold	I_{thres}		±20		%	failure if current consumption exceeds
temperature threshold	T_{thres}		+80		°C	failure if temperature exceeds, hysteresis approx. 5 K
failure signalling		STATUS LED				gn / rd
		floating relay contacts				SPDT
SPDT switching current	I_{SW}			1	A	DC
SPDT switching voltage	U_{SW}			42	V	DC
power socket	X_{DC}	Würth WR-TBL3251-5-3.5-W				
power plug	X_{DCP}	Würth WR-TBL3641-5-3.5				part of delivery
operating temp. range	T_O	0		+70	°C	module surface, please comply required cooling
storage temp. range	T_s	-40		+70	°C	
thermal emission	P_{TH}		60W			32V
	P_{TH}		90W			45V
required cooling	R_{TH}		0.5	0.75[3)]	K/W	32V
	R_{TH}		0.3	0.50[3)]	K/W	45V
Variant with fan supply						
fan supply voltage	U_{DC_FAN}		12		V	nominal
fan current consumption	I_{DC_FAN}			400	mA	
		push in clamping connector diameter: 0.2 … 1.5 mm^2 pitch: 3.50 mm				
ordering information	AMP300600040L			1801.5001.1		module for mounting on ext. heat sink
	AMP300600040			1801.5101.1		setup with UHS-1
accessories	UHS-1			2200.550M.1		universal heat sink for AMP-L modules

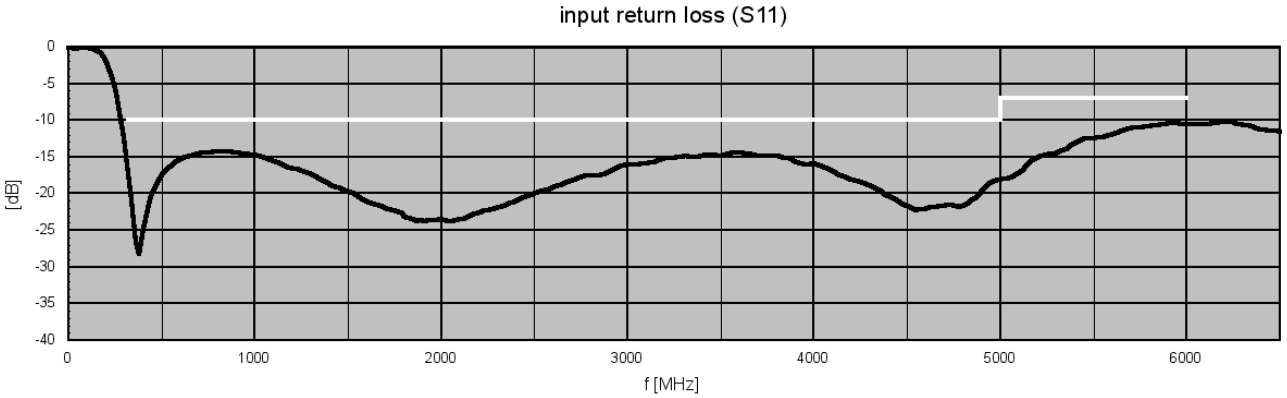
Note 3: effective thermal resistance, TAMB ≤ +30°C

S-Parameters

typical responses

S21 versus supply voltage (24V, 32V and 45V)

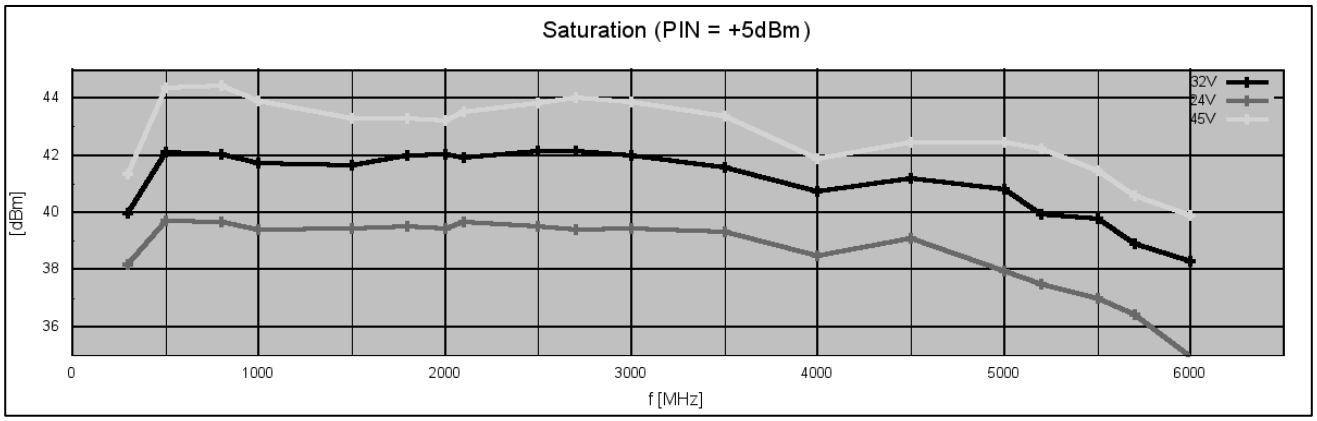


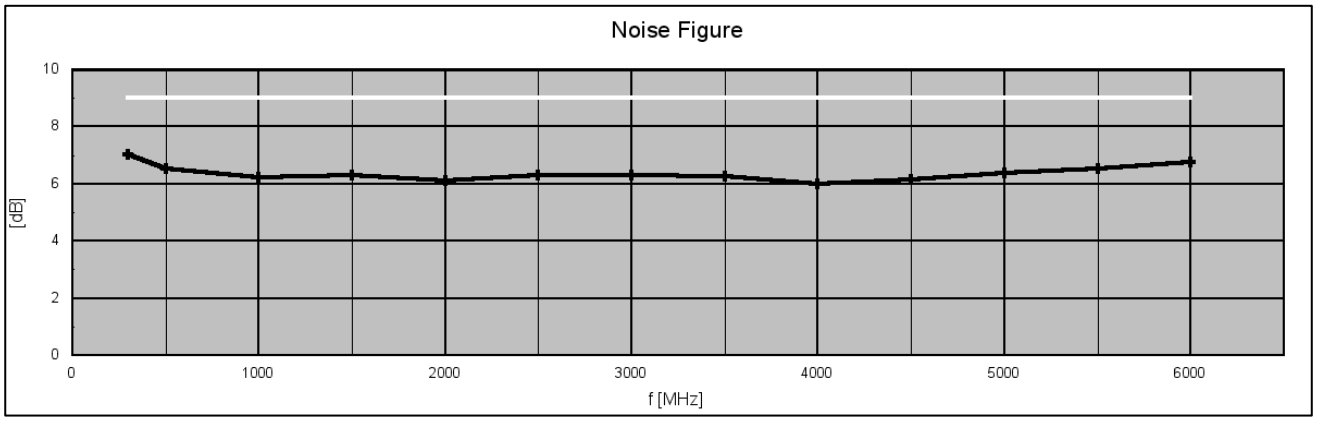


Dynamic Range

typical responses

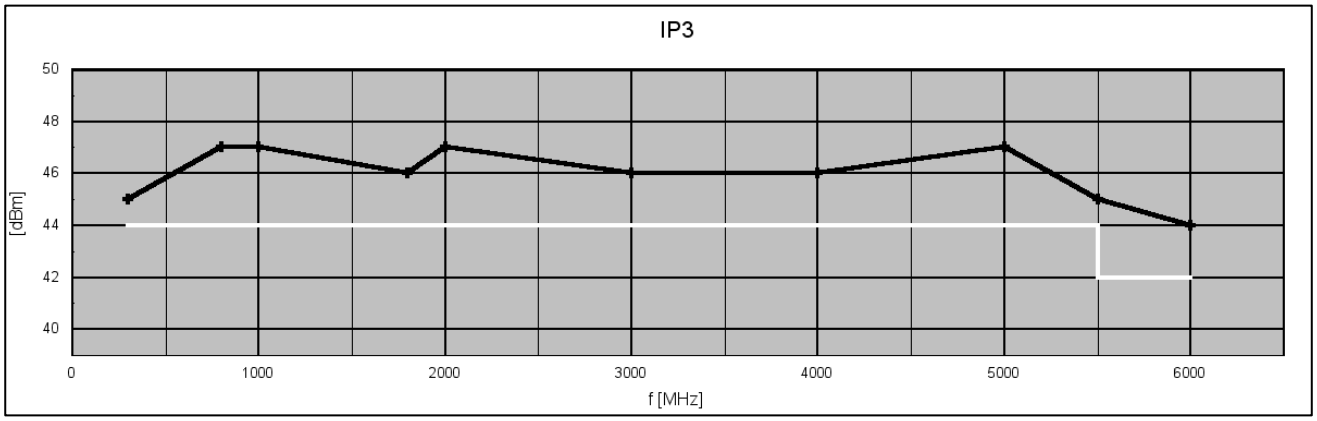
Saturation versus supply voltage (24V, 32V and 45V)



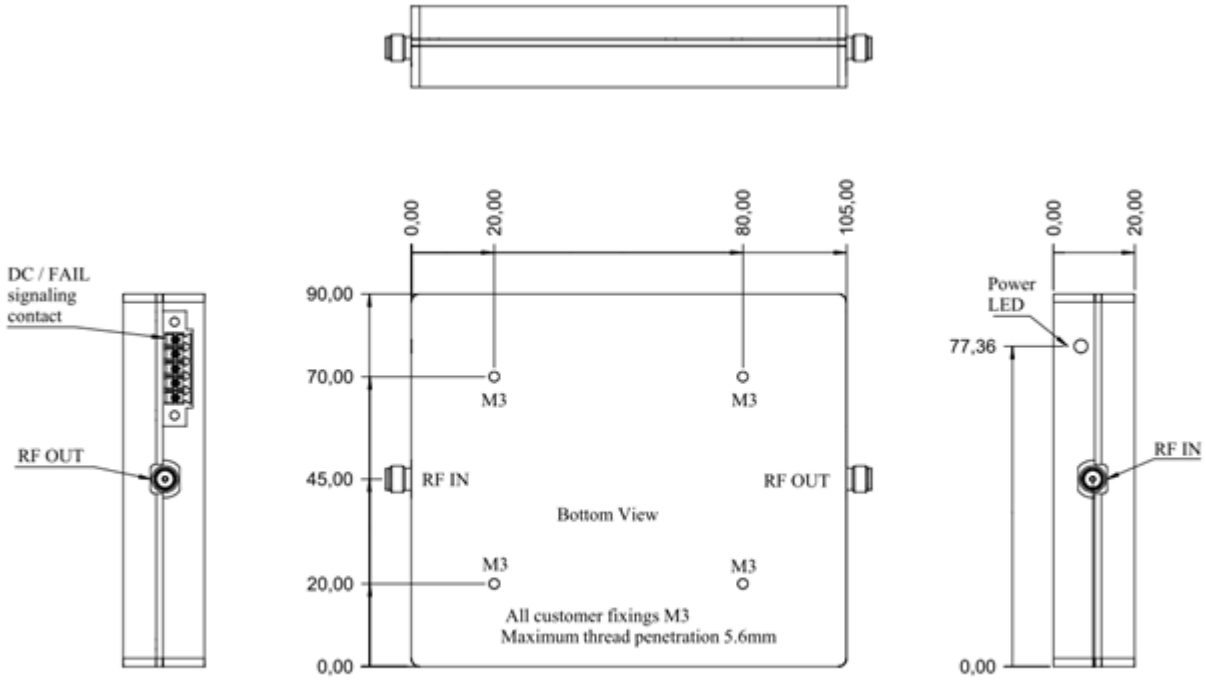


Linearity

typical responses



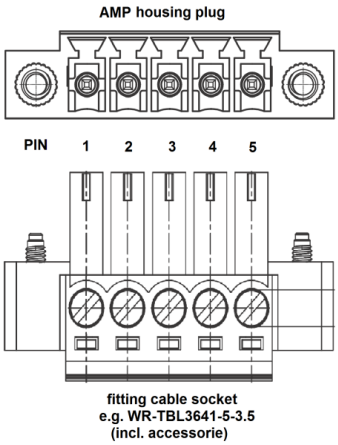
Dimensions



PIN Assignment DC / STATUS

floating contacts

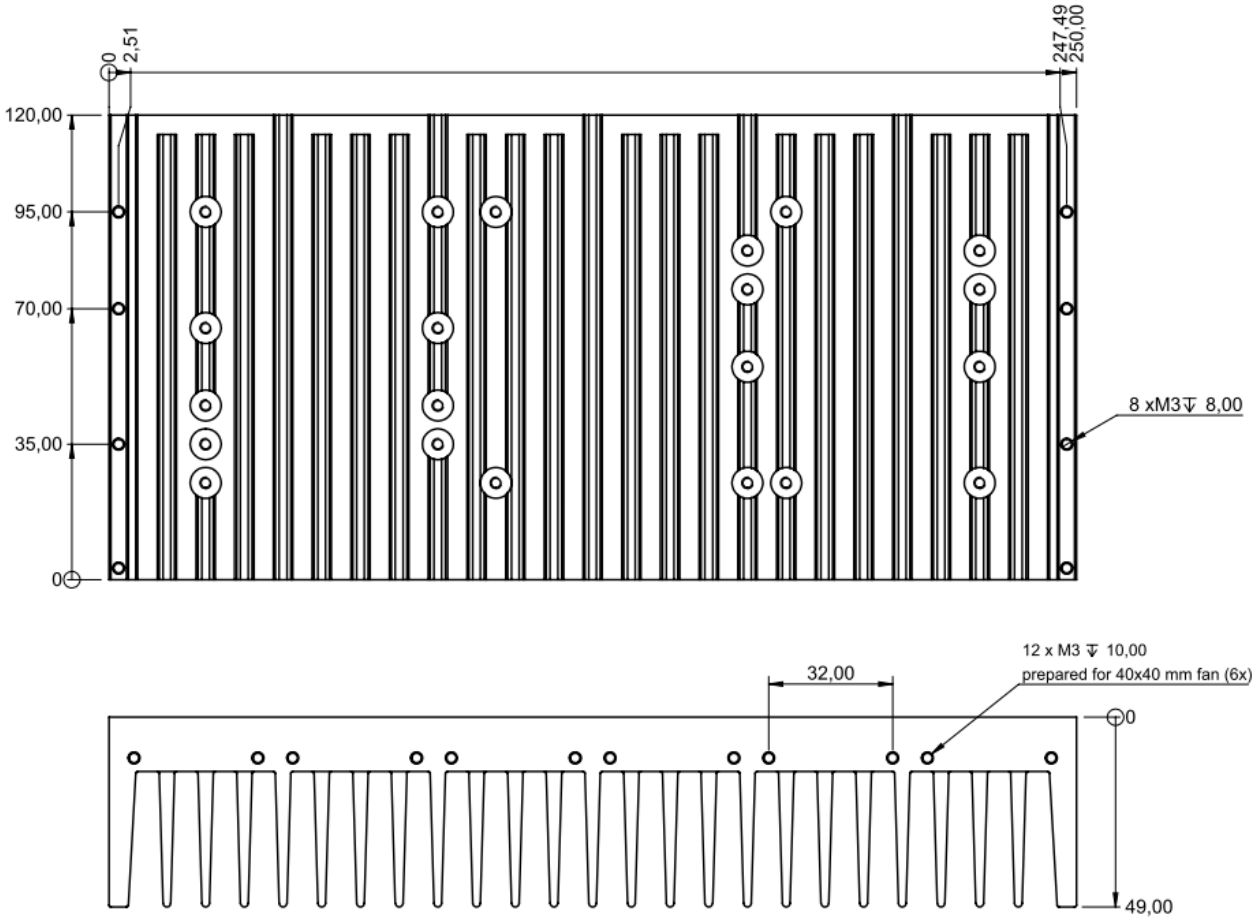
PIN	Designation	Remark
1	GND	Ground
2	+UB	DC supply voltage
3	REL_COM	relay common
4	REL_OK	OK when closed
5	REL_FAIL	failure when closed



Setup with Universal Heat Sink UHS-1

Appearance

Dimensions



Setup as 2U – 19” Rack Device - AMP300600040-R

2200.5512.1

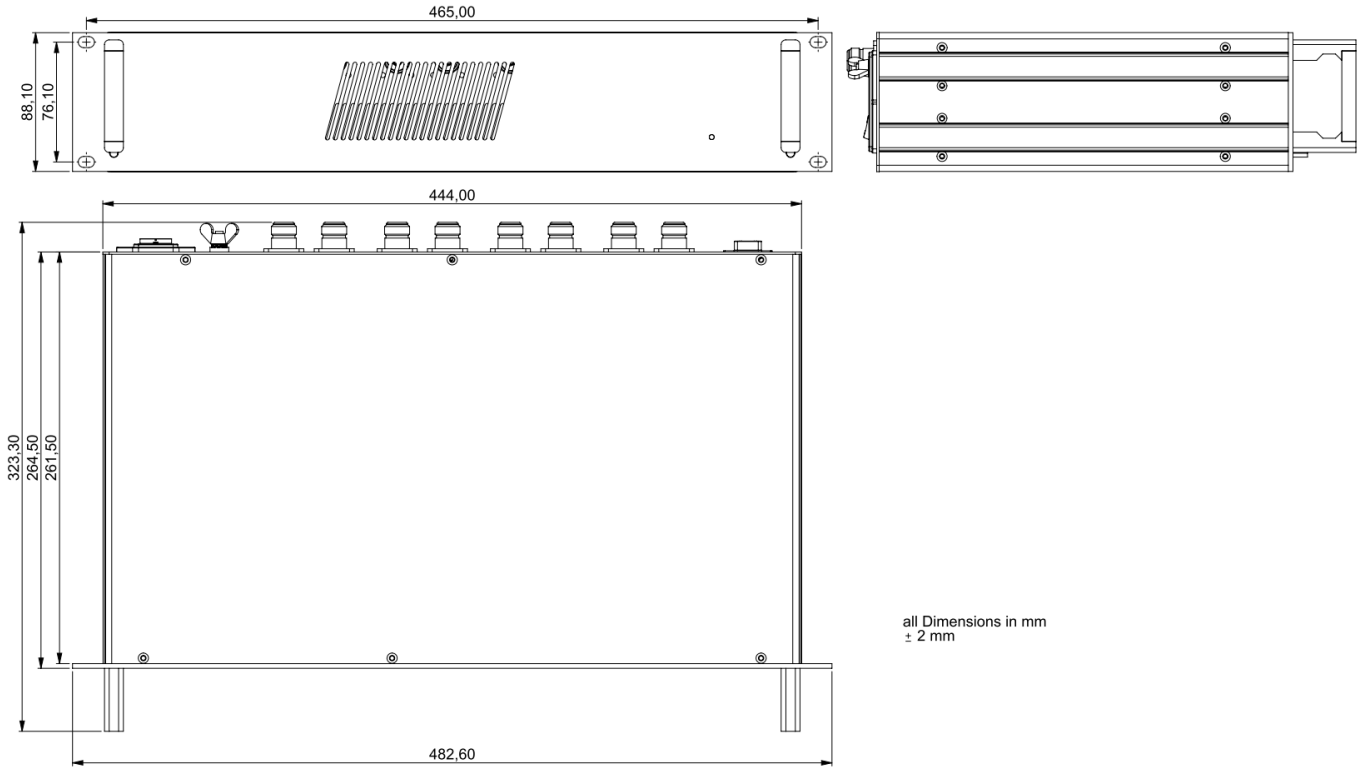
Appearances

number of N-connectors on the back depends on product variant

Front View

Rear View

Dimensions



all Dimensions in mm
± 2 mm

Related Products

Product	Description	P/N
AMP20002000042	10 W Power Amplifier Module, 2000 MHz … 20 GHz Module with external heat sink	2301.5111.1
AMP20002000042L	10 W Power Amplifier Module, 2000 MHz … 20 GHz Module for mounting on external heat sink	2301.5101.1
AMP101800030	1 W Ultra-Wideband Linear Amplifier Module, 10 … 18000 MHz	2106.5001.x
AMP17001300038	6 W Power Amplifier Module, 1700 … 13000 MHz Module with external heat sink	2004.5111.1
AMP17001300038L	6 W Power Amplifier Module, 1700 … 13000 MHz Module for mounting on external heat sink	2004.5011.1
AMP300600040	10 W Power Amplifier Module, 300 … 6000 MHz Module with external heat sink	1801.5101.1
AMP300600040L	10 W Power Amplifier Module, 300 … 6000 MHz Module for mounting on external heat sink	1801.5001.1
AMP01600017B	50 mW Wideband Amplifier, 100 kHz … 6000 MHz	1604.5001.2
AMP51505925-TRX	Wi-Fi TX/RX Booster Amplifier for Radiating Cables	1802.5001.1
AMP51505925-TRX-K	Kit for 5 GHz Wi-Fi Coverage Extension using Radiating Cables	1802.5011.1
AMP20280035B	4.5 W Wideband Amplifier Module, 20 … 2800 MHz	1209.5201.x
AMP5270026	400 mW High Dynamic Amplifier Module, 5 … 2700 MHz	1005.5201.x
AMP5220031	1 W High Dynamic Amplifier Module, 5 … 2200 MHz	1005.5101.x
AMP5170033	2 W Amplifier Module 5 … 1700 MHz	1401.5011.1
AMP50130036	4 W High Linearity, Full Redundant, UHF Wideband Amplifier, 50…1300 MHz Module with heat sink	1602.5001.4
AMP50130036L	4 W High Linearity, Full Redundant, UHF Wideband Amplifier, 50…1300 MHz Module for mounting in external heat sink	1602.5001.5
AMP590033	2 W Booster Amplifier Module 5 … 900 MHz Module with heat sink	0901.5011.x
AMP590033L	2 W Booster Amplifier Module 5 … 900 MHz Module for mounting in external heat sink	0901.5011.x
AMP590033H	2 W Amplifier Module 5 … 900 MHz Module with heat sink	0901.5001.x
AMP590033HL	2 W Amplifier Module 5 … 900 MHz Module for mounting in external heat sink	0901.5001.x
LNA1080014	400 mW Low Noise Amplifier Module 10 … 800 MHz	0901.5501.x
AMP3060036	4 W Ultra High Linearity, Full Redundant, Wideband Amplifier Module 30 ... 600 MHz with heat sink	1602.5001.1
AMP3060036L	4 W Ultra High Linearity, Full Redundant, Wideband Amplifier Module 30 ... 600 MHz for mounting on heat sink	1602.5001.2
AMP1053045	30 W Linear Power Amplifier Module 10 … 530 MHz	1908.5001.1
AMP17024048L	60 W DAB Linear Power Amplifier Module 170 … 240 MHz Module for mounting on external heat sink	2104.5011.4
AMP17024048	60 W DAB Linear Power Amplifier Module 170 … 240 MHz Module with external heat sink	2104.5101.4
AMP7610849L	80 W FM Power Amplifier Module 76 … 108 MHz Module for mounting on external heat sink	2104.5011.3
AMP7610849	80 W FM Power Amplifier Module 76 … 108 MHz Module with external heat sink	2104.5101.3
AMP018032	1.3 W High Linearity Amplifier Module 100 kHz…80 MHz	1002.5701.x

Note: Sorted descending by upper limit frequency.
All modules with P/N extension with ".x" are available with horizontal or vertical orientated DC power connector.