AMP20002000042L

15 W Power Amplifier Module, 2000 … 20000 MHz

Features

- output power:
  +42 dBm f ≤ 8GHz
  +39 dBm @ 18 GHz
- high OIP3 +44 dBm typ. (8 GHz)
- high dynamic
- reverse polarity protected
- self test function
- optical power and status indication
- status signaling contact (floating)
- appropriate heat-sink available

Applications

- research & development
- cellular, Wi-Fi
- military
- intelligence service
- jamming

Designed for mounting on external heat sink.

At a Glance

AMP20002000042L 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 guarantees 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 health status of the module can also be queried by a floating relay contact for remote operation. The amplifier module is designed for mounting on a heat sink provided by the user for passive cooling.

Special Features

Using modern semiconductor technologies gives the amplifier module high dynamic properties over a wide operating bandwidth. Due to the ultra-wide operation frequency range the amplifier is suitable in many cellular, Wi-Fi, research and military applications.

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 against 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 protects the circuit against mechanical damage and gives best shielding towards and from the electromagnetic environment. The standard module is designed for mounting on a heat sink provided by the customer. Alternatively, Becker Nachrichtentechnik provides the amplifier with heat sink or even integrated with power supply and active cooling in a 19” 2U housing.

RF Specification

22 V supply voltage

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ω	
low frequency	f_{LOW}			2	GHz	
	f_{HIGH}	18	20		GHz	
linear gain	S_{21}		44		dB	f ≤ 14 GHz
	S_{21}		40			f > 14GHz
input return loss	S_{11}		-13		dB	
saturation power	P_{SAT}[1)]		+42		dBm	f ≤ 8 GHz
	P_{SAT}[1)]		+41		dBm	8 GHz < f ≤ 14 GHz
	P_{SAT}[1)]		+39		dBm	14 GHz < f ≤ 18 GHz
	P_{SAT}[1)]		+34		dBm	f > 18 GHz
3 dB compression	P_{3dB}		+39		dBm	f ≤ 10 GHz
1 dB compression	P_{1dB}		+37		dBm	f ≤ 10GHz
harmonics	d		-20		dBc	P_{OUT} = +40dBm, f ≤ 10GHz
3rd order intercept	OIP3[2)]		+44		dBm	f ≤ 12GHz
noise figure	NF		3		dB	
input power	P_{INRF}			+10	dBm	no damage
DC voltage	U_{DC}			20	V	
ESD discharge resistor	R_{ESD}		4.7		kΩ	RF ports
RF connectors	X_{RF}	SMA female				

Note 1: P_{IN} = +10dBm

Note 2: Tested at P_{OUT} = 2x +27 dBm; Δf = 100MHz

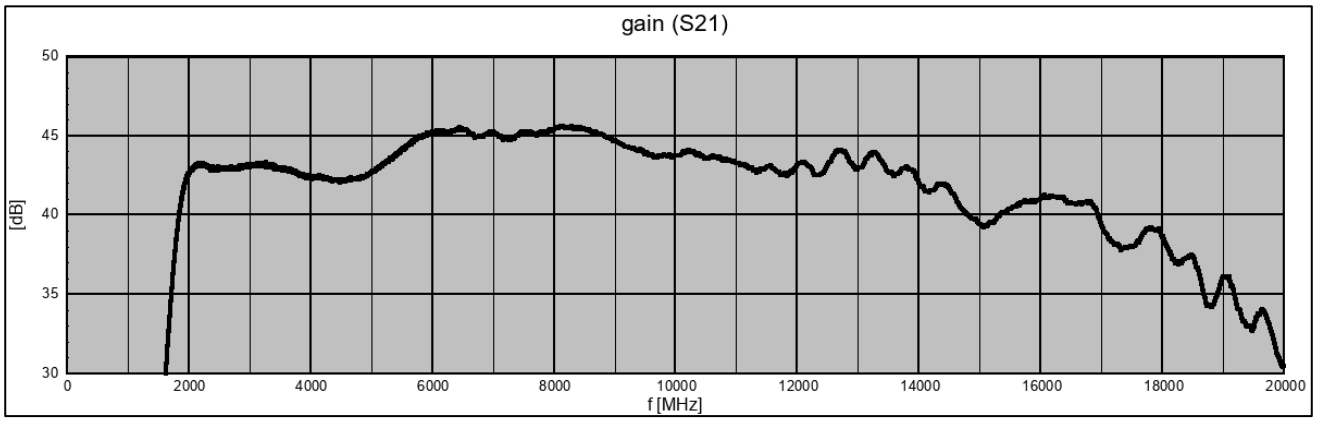
Common Specification

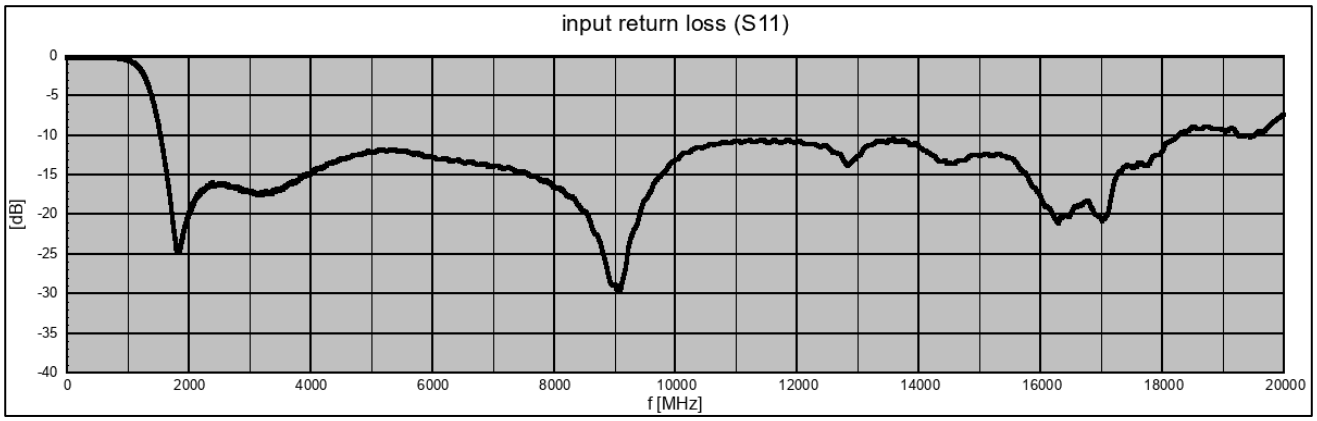
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U_{DC}	18	22	23	V	DC
current consumption	I_{DC}		3.9*	6	A	@ 22 V DC, *quiescent current
dimensions	W x H x D	approx. 105 x 20 x 90			mm	without connectors
weight	m		370		g	
current threshold	I_{THRES}		±20		%	failure if current consumption 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}		90W			22V
required cooling	R_{TH}		0.3	0.55[3)]	K/W	
Fan supply						
fan supply voltage	U_{DC_FAN}		12		V	nominal
fan current consumption	I_{DC_FAN}			400	mA	
fan supply socket		push in clamping connector diameter: 0.2 … 1.5 mm² pitch: 3.50 mm				
ordering information	AMP20002000042L			2301.5101.1		Module without heat sink
	AMP20002000042			2301.5111.1		Module mounted on heat sink, actively cooled

Note 3: effective thermal resistance, T_{AMB} ≤ +30°C

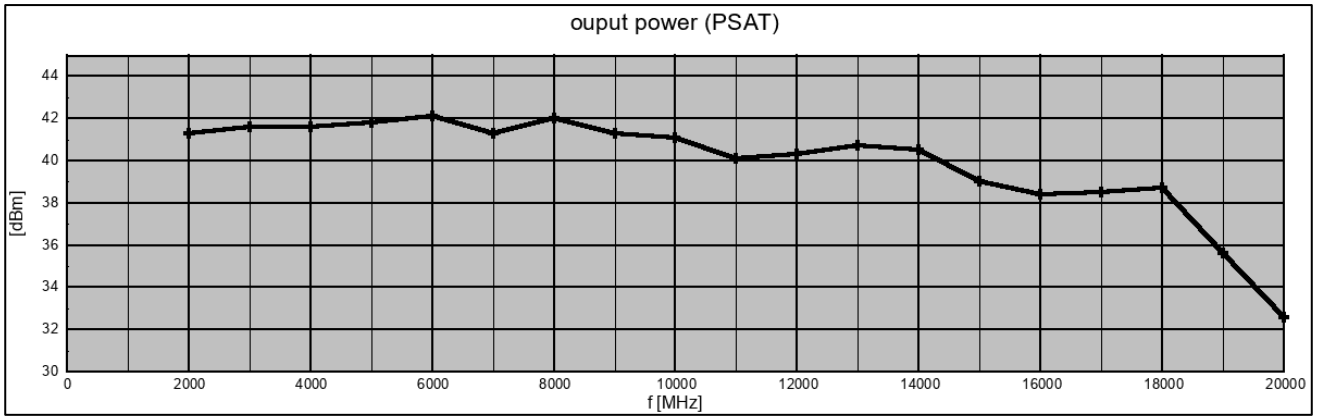
S-Parameters

typical responses

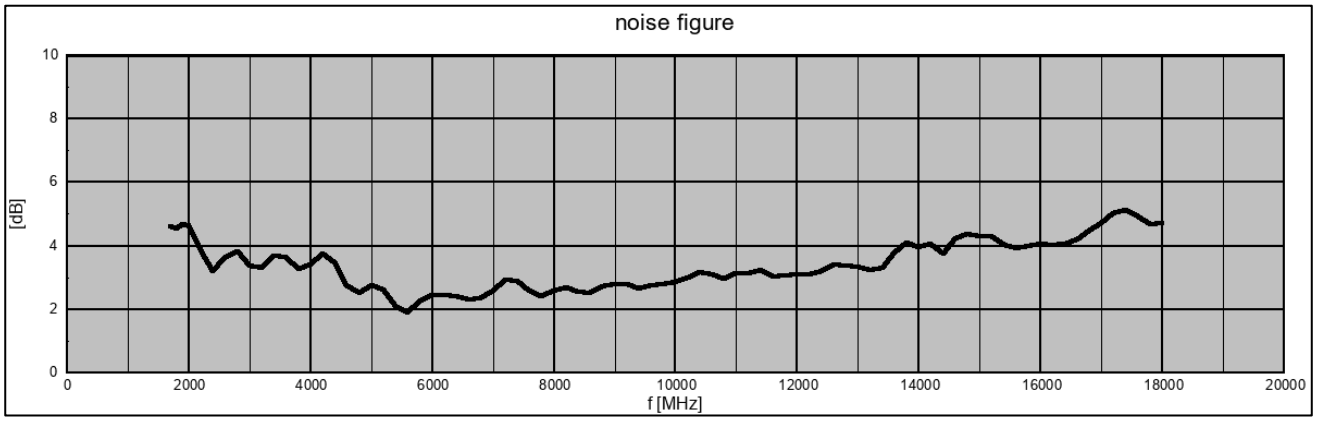




Output Power

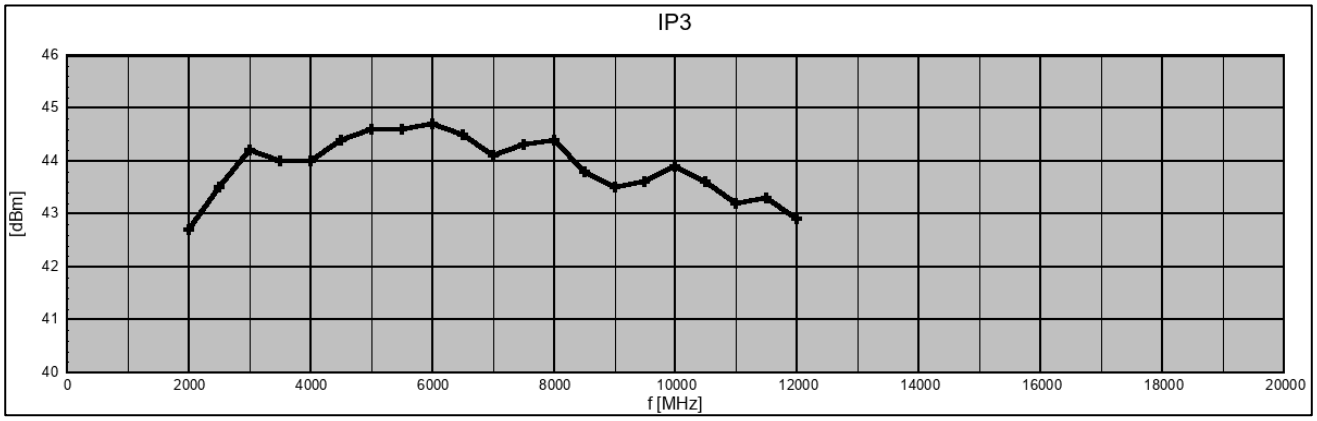


Noise Figure

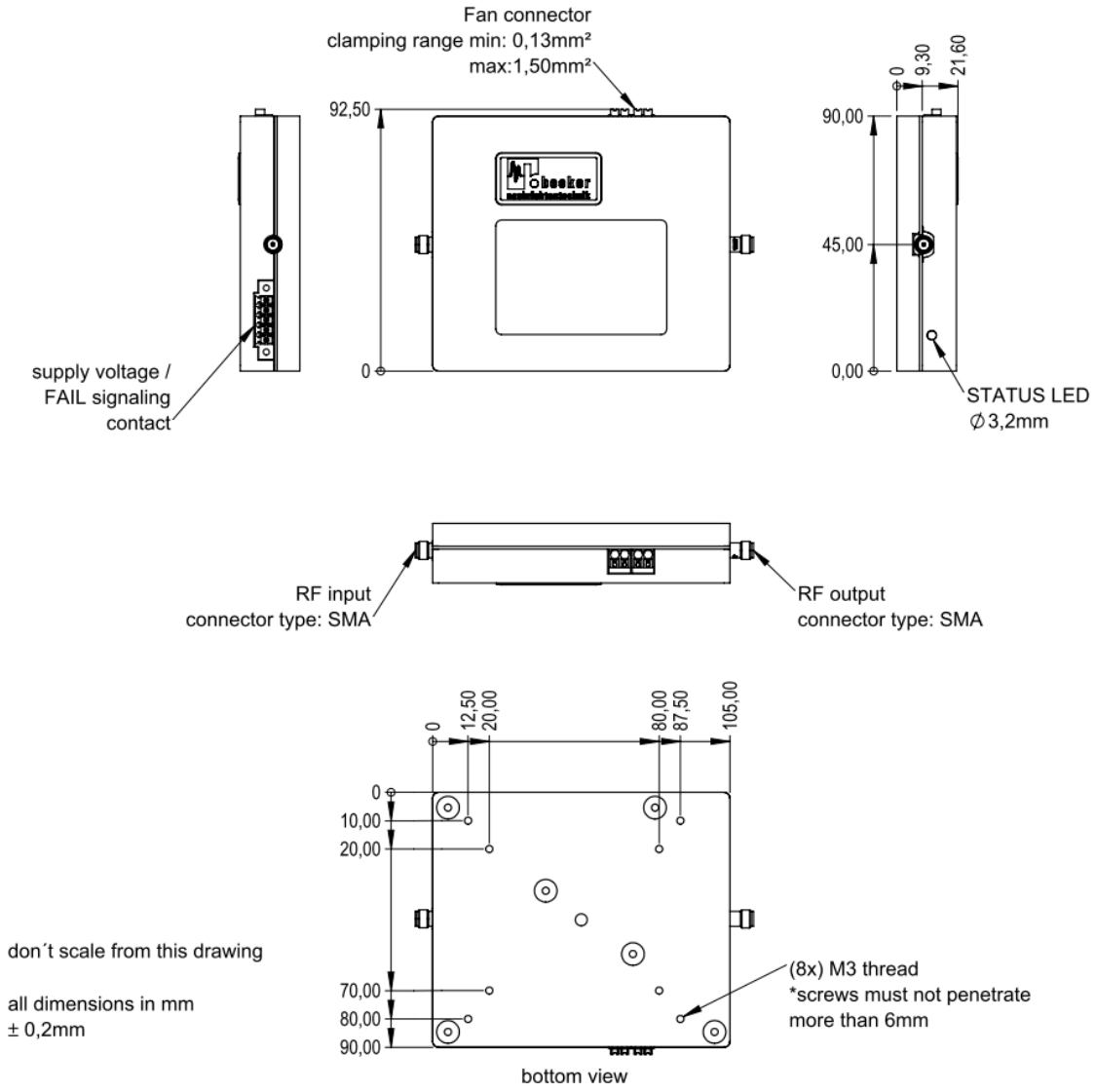


Linearity

typical responses



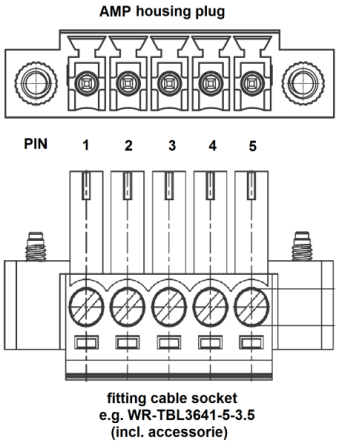
Dimensions



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

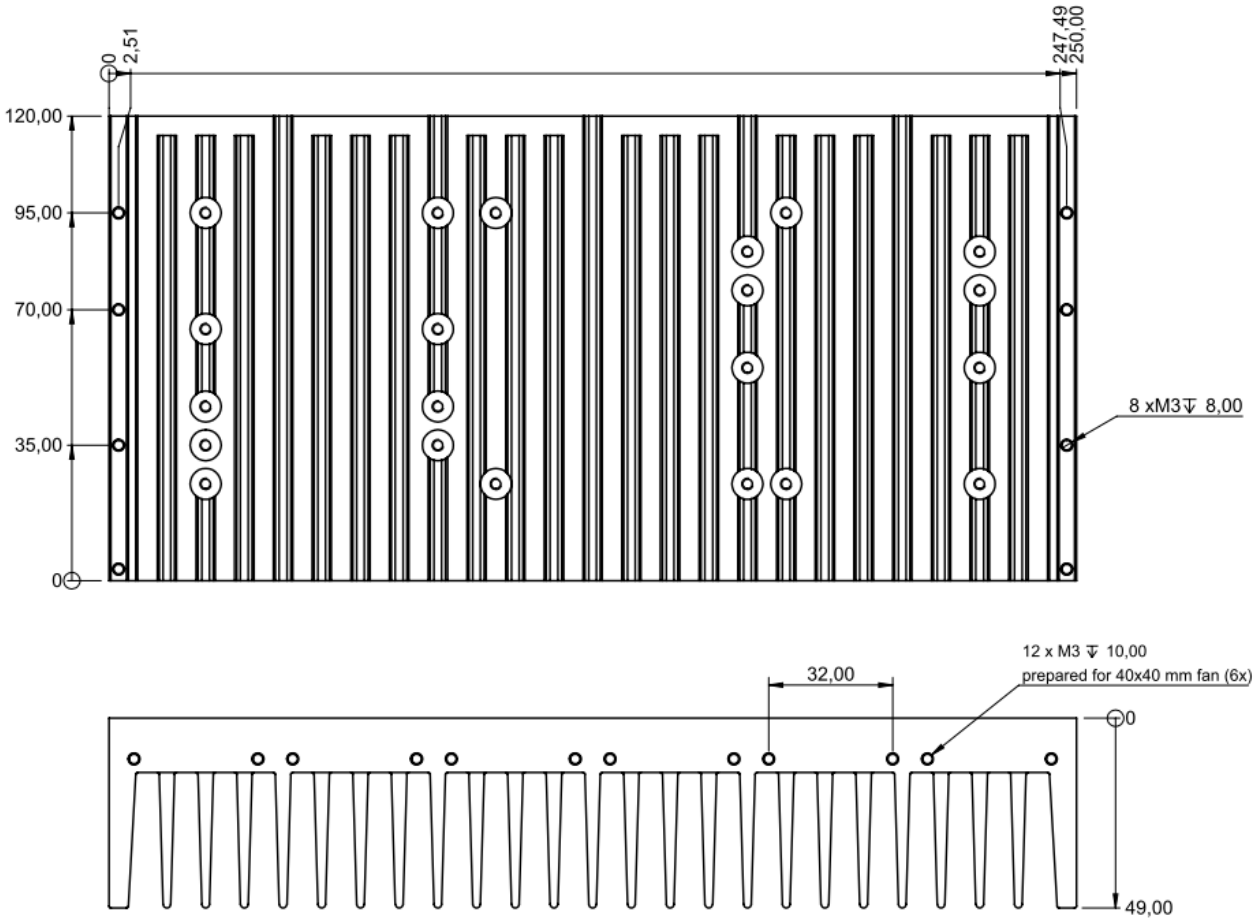


Setup with Universal Heat Sink UHS-1

Appearance

Similar apprearance

Dimensions



Setup as 2U – 19” Rack Device – AMP20002000042-R

2200.5752.1

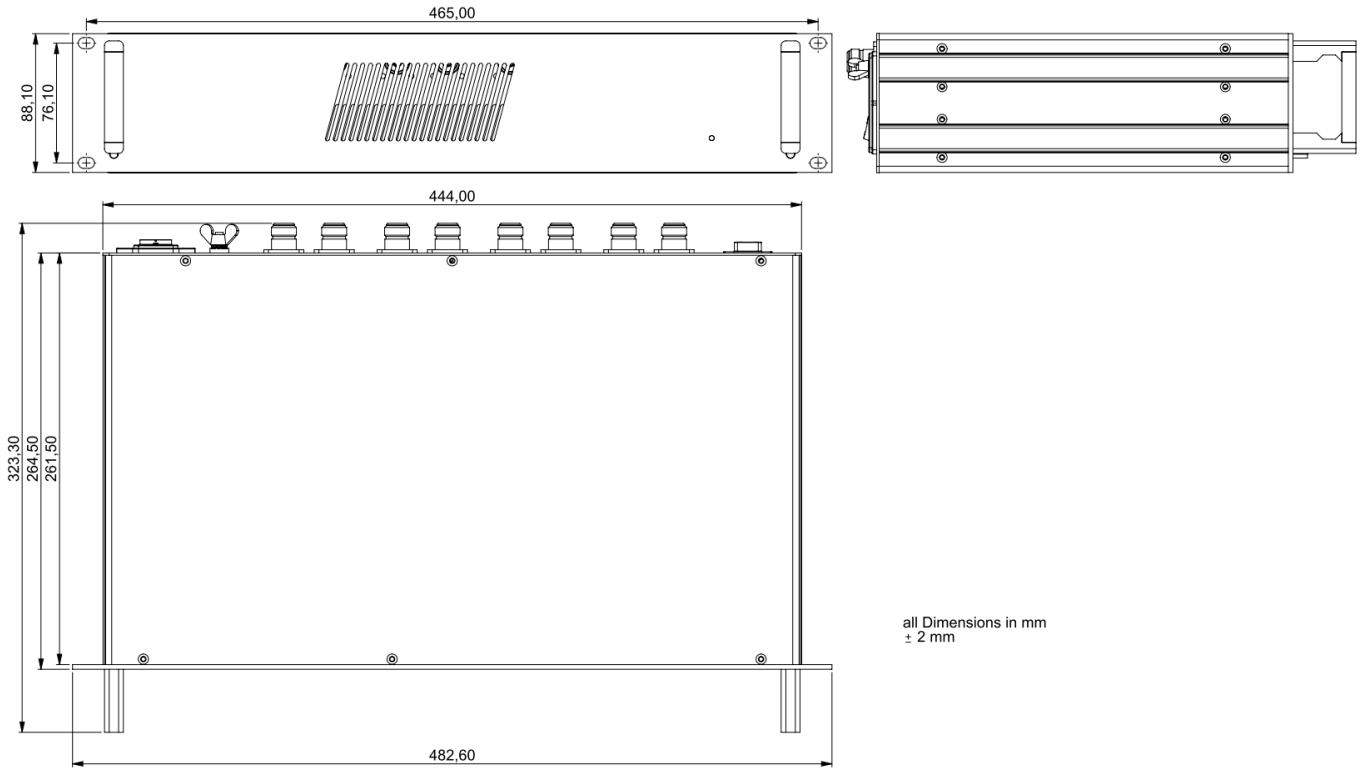
Appearances

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
AMP3060036L	4 W Ultra High Linearity Wideband Amplifier Module 30…600 MHz	1602.5001.2
AMP3060036	4 W Ultra High Linearity Wideband Amplifier Module 30…600 MHz	1602.5001.1
AMP20280035B	4.5 W Wideband Amplifier Module 20…2800 MHz	1209.5201.X
AMP300600040L	10 W Power Amplifier Module 300 … 6000 MHz	1801.5001.1
AMP300600040-R	10 W Power Amplifier 300 … 6000 MHz	2200.5512.1
AMP300600043-R	20 W Power Amplifier 300 … 6000 MHz	2200.5522.1
AMP17001300038L	6 W Power Amplifier Module 1700…13000 MHz	2004.5011.1
AMP17001300038-R	6 W Power Amplifier 1700…13000 MHz	2200.5702.1
AMP20002000042L	10 W Power Amplifier Module 2000 MHz … 20 GHz	2301.5101.1
AMP20002000042-R	10 W Power Amplifier 2000 MHz … 20 GHz	2200.5752.1

Remark: All modules with P/N extension with ".x" are available with horizontal or vertical orientated DC power connector.