

## AMP20002000042L

15 W Power Amplifier Module, 2000 ... 20000 MHz

### Features

- output power:  
+42 dBm  $f \leq 8$ GHz  
+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 signaled 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 in 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**

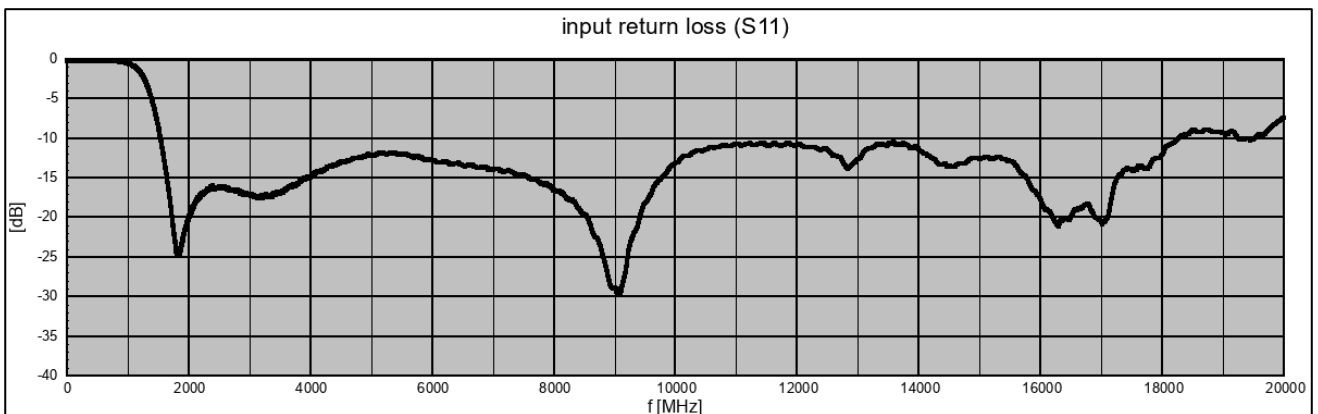
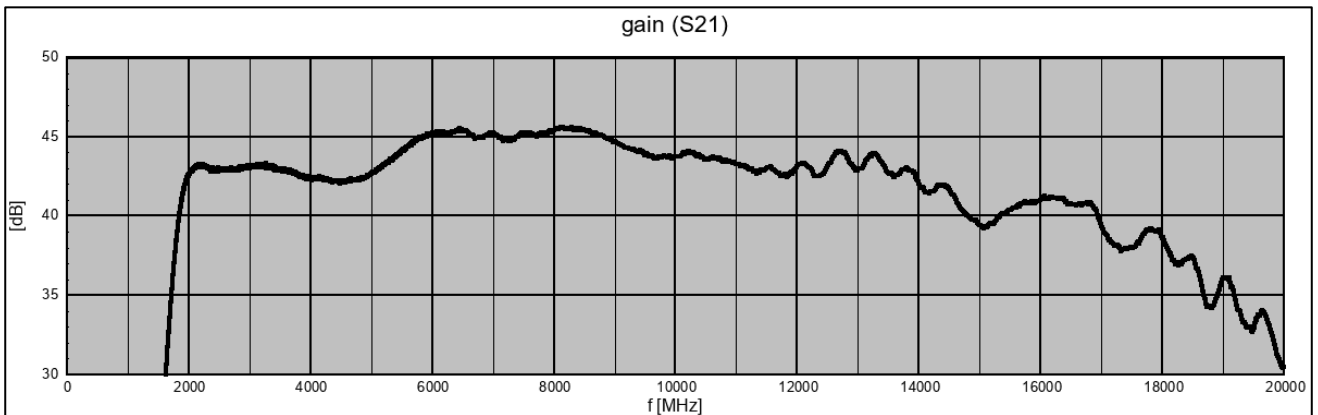
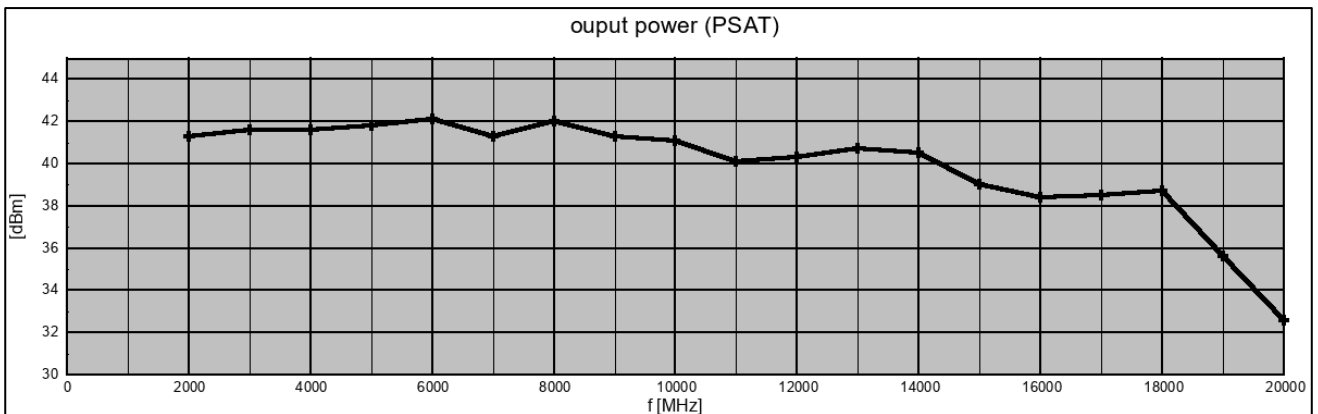
22 V supply voltage

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	$Z_{in} / Z_{out}$		50		$\Omega$	
low frequency	$f_{LOW}$			2	GHz	
	$f_{HIGH}$	18	20		GHz	
linear gain	$S_{21}$		44		dB	$f \leq 14$ GHz
	$S_{21}$		40			$f > 14$ GHz
input return loss	$S_{11}$		-13		dB	
saturation power	$P_{SAT}^{1)}$		+42		dBm	$f \leq 8$ GHz
	$P_{SAT}^{1)}$		+41		dBm	$8$ GHz $< f \leq 14$ GHz
	$P_{SAT}^{1)}$		+39		dBm	$14$ GHz $< f \leq 18$ GHz
	$P_{SAT}^{1)}$		+34		dBm	$f > 18$ GHz
3 dB compression	$P_{3dB}$		+39		dBm	$f \leq 10$ GHz
1 dB compression	$P_{1dB}$		+37		dBm	$f \leq 10$ GHz
harmonics	d		-20		dBc	$P_{OUT} = +40$ dBm, $f \leq 10$ GHz
3 <sup>rd</sup> order intercept	OIP3 <sup>2)</sup>		+44		dBm	$f \leq 12$ GHz
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		k $\Omega$	RF ports
RF connectors	$X_{RF}$	SMA female				

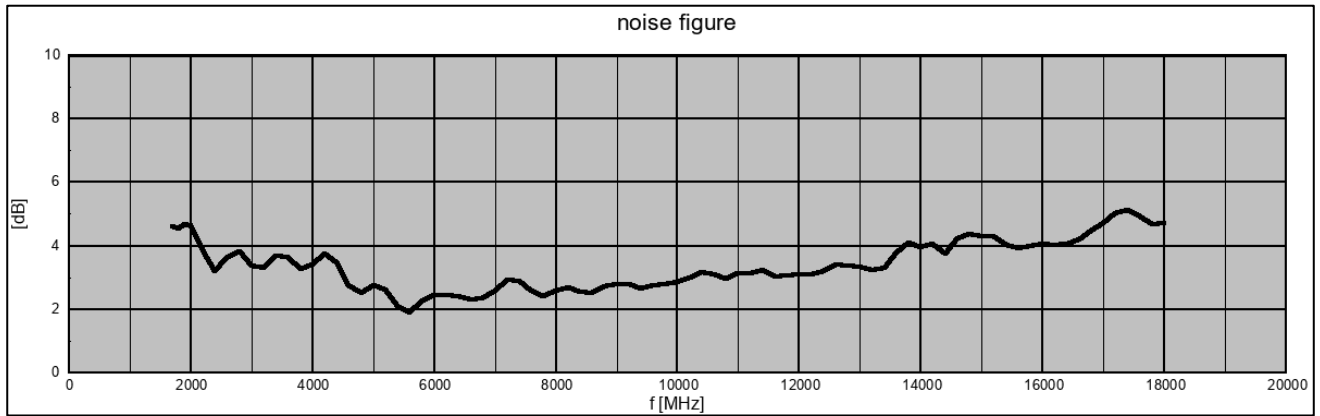
Note 1:  $P_{IN} = +10$ dBmNote 2: Tested at  $P_{OUT} = 2x +27$  dBm;  $\Delta f = 100$ MHz**Common Specification**

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	$I_{THRES}$		$\pm 20$		%	failure if current consumption exceeds
temperature threshold	$T_{THRES}$		+80		$^{\circ}$ 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	$^{\circ}$ C	module surface, please comply required cooling
storage temp. range	$T_s$	-40		+70	$^{\circ}$ C	
thermal emission	$P_{TH}$		90W			22V
required cooling	$R_{TH}$		0.4	0.55 <sup>3)</sup>	K/W	
ordering information		AMP20002000042L		2301.5101.1		
		Universal Heat Sink		2200.550M.1		heat sink for AMP20002000042L

Note 3: effective thermal resistance,  $T_{AMB} \leq +30^{\circ}$ C

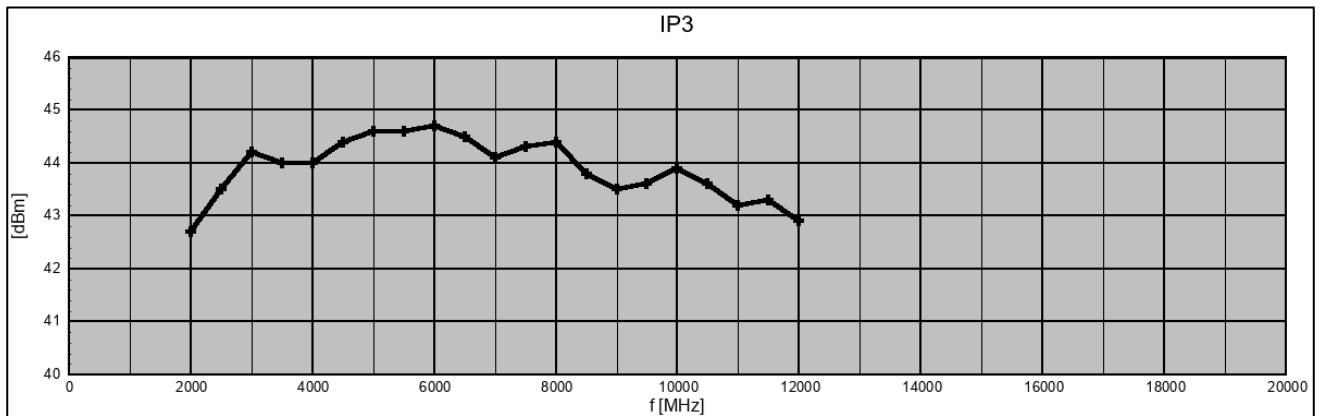
**S-Parameters***typical responses***Output Power**

## Noise Figure

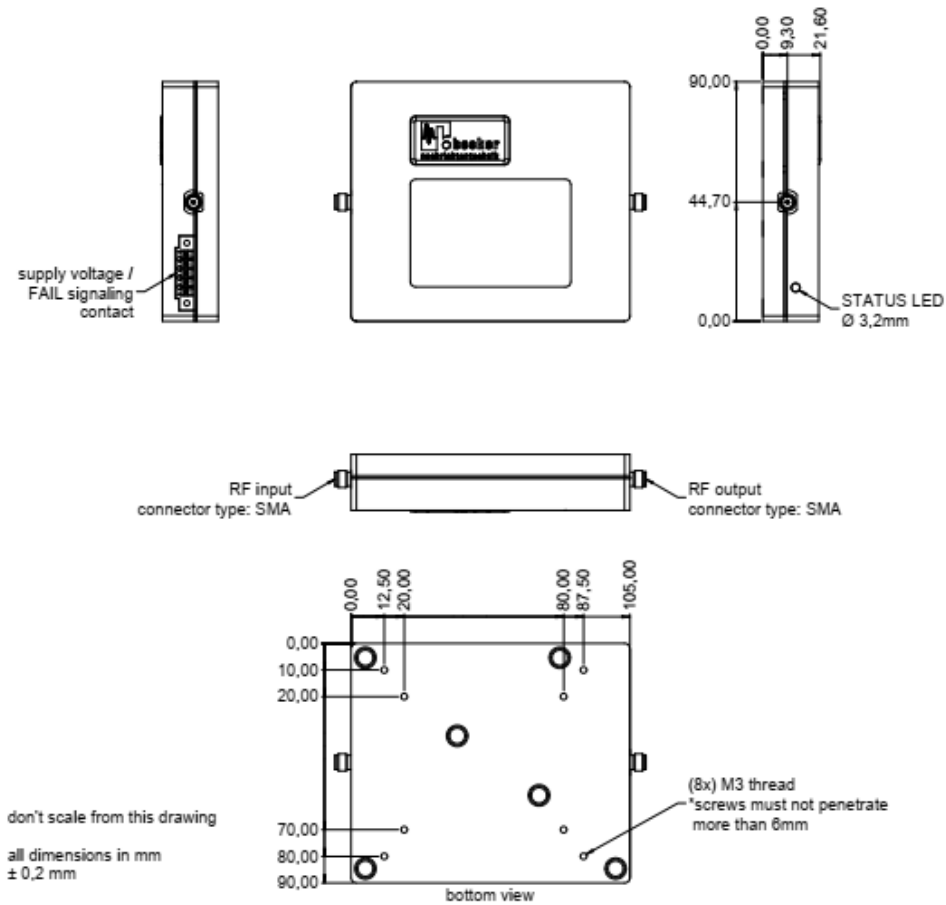


## Linearity

typical responses



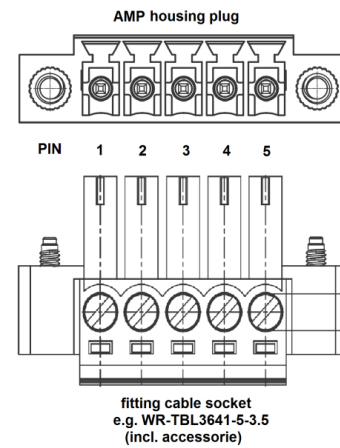
## Dimensions



## PIN Assignment DC / STATUS

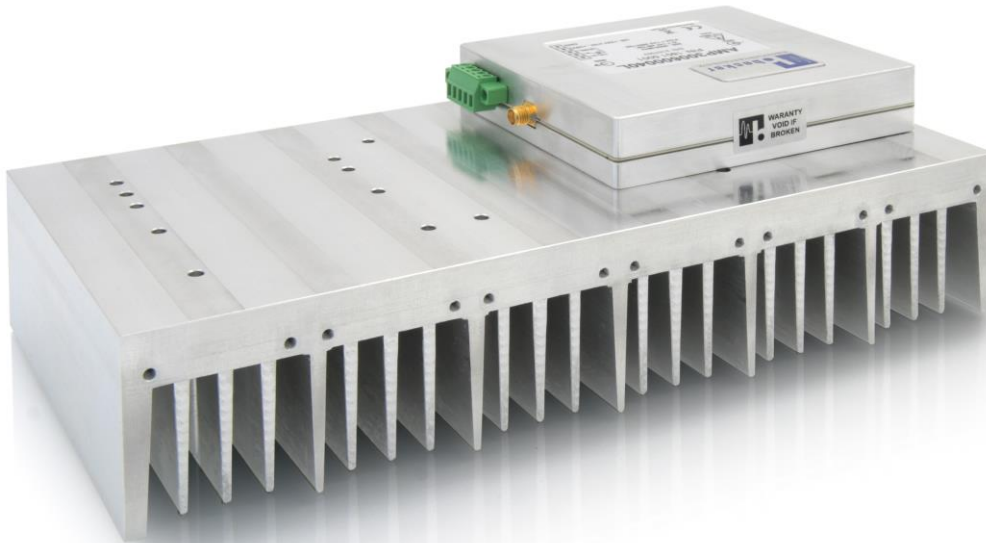
floating contacts

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

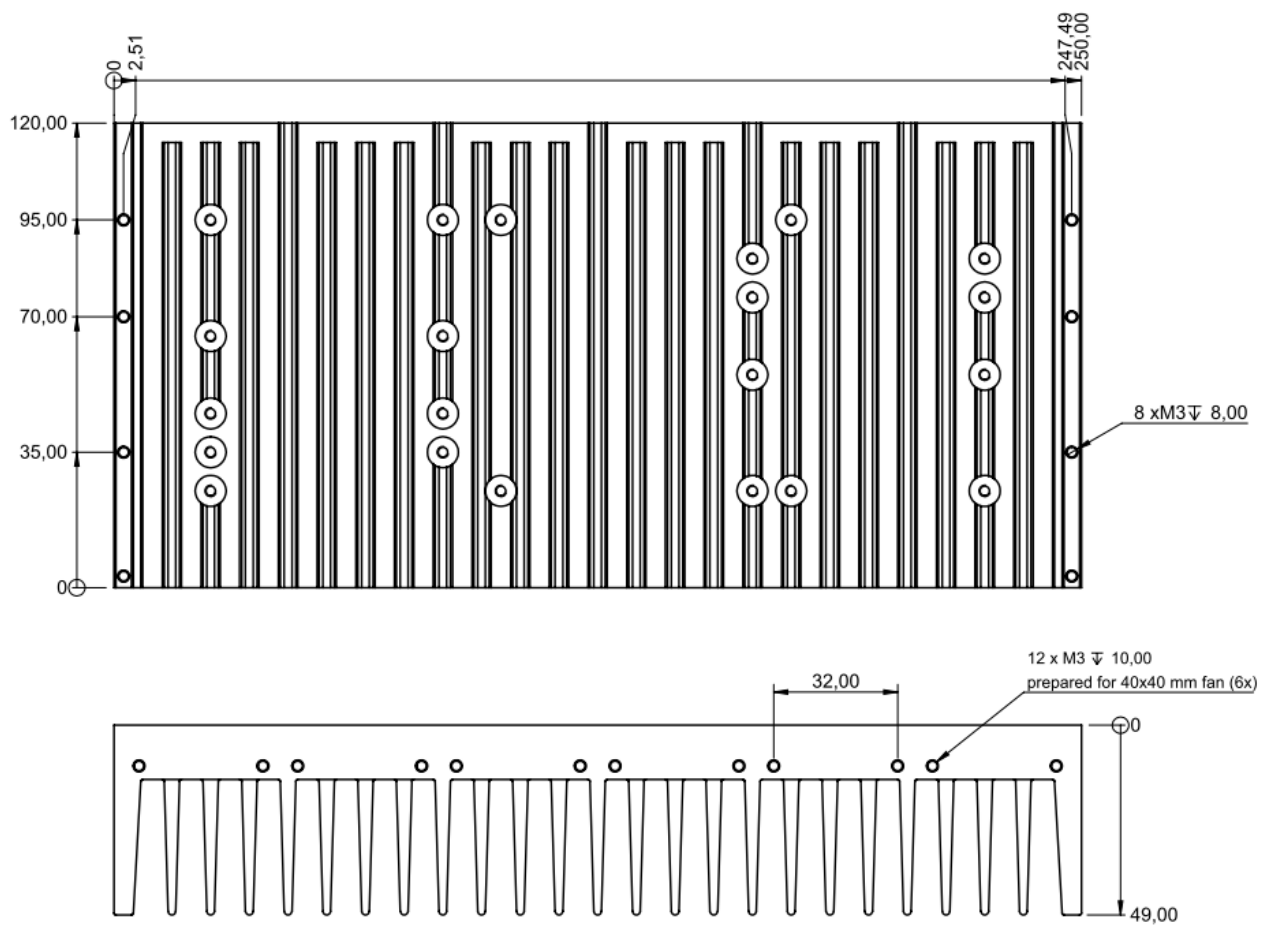


## Setup with Universal Heat Sink UHS-1

### Appearance



### Dimensions



## Setup as 2U – 19" Rack Device – AMP20002000042-R

2200.5752.1



### Appearances

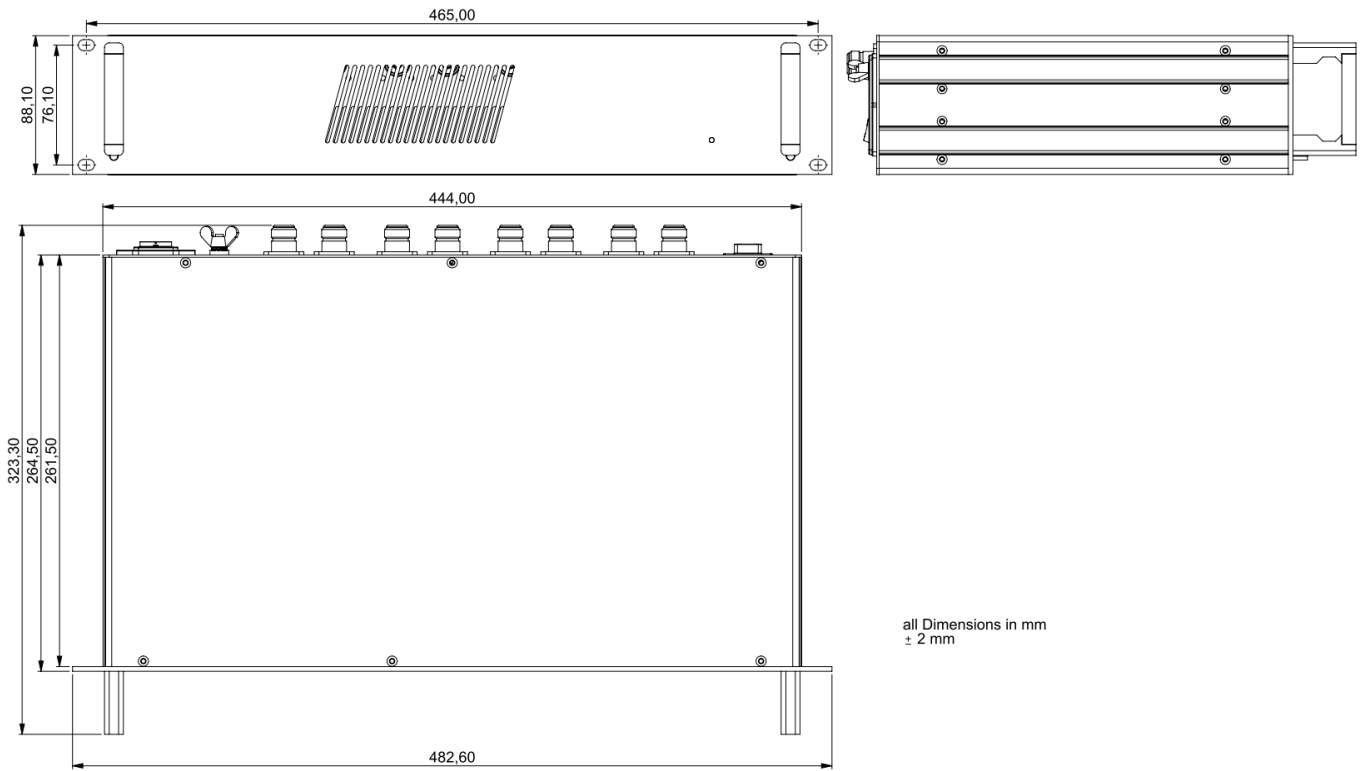
number of N-connectors on the back depends on product variant

#### Front View



#### Rear View



**Dimensions**



**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.

