



# MODEL KMW2040-M20 100 WATTS CW 225 to 400 MHz

AR Modular RF’s **KMW2040-M20** is the next generation of legacy amplifier **KMW2040-M17**. The amplifier is built, tested and sold as a system including an off the shelf filter, external RF cable and cable harness for unit interface and control.

<p><b>Key Features:</b></p> <ul style="list-style-type: none"> <li>• Amplifier built, tested and sold as an integrated system with external filter</li> <li>• Precision Gain</li> <li>• Maximum Level Control</li> <li>• Overdrive Protection</li> <li>• Mismatch/VSWR Protection</li> </ul>	
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The following specifications apply to amplifier **Model KMW2040-M20** – a custom **AR Modular RF** amplifier integrated with an external filter, combined and sold as a single system. **Model KMW2040-M20** is an RF power amplifier module for OEM applications or integration into a user system. The module comprises a printed wiring assembly housed in a machined aluminum enclosure with external connections for power and control. Cooling and environmental protections are the responsibility of the end user.

For information on all **KMW2040-M20** model configurations available, see table, “ORDERABLE MODEL CONFIGURATIONS” below.

## PERFORMANCE SPECIFICATIONS – MODEL KMW2040-M20 AMPLIFIER

### ELECTRICAL

The electrical specifications detailed below apply at 100W output power when the amplifier is operating with an installed external filter and RF cable.

SPECIFICATION		Units	Minimum	Typical	Maximum	Notes
Amplifier Class		-	AB			
Operational Ranges	Frequency	MHz	225	-	400	Amplifier operating range; Specifications herein apply across noted range at 100 W output power; Performance outside these limits not guaranteed
	Output Power	W	-	100	160	Rated at CW; Single Carrier
		dBm	-	50	52	
	Input Power	mW	-	0.63	2	See MLC below
dBm		-	-2	3		
Maximum Level Control (MLC) Operation		-	-	-	-	MLC circuitry limits PEP as follows: <ul style="list-style-type: none"> <li>• 51 dBm ± 1.0 dB over 225 to 290 MHz</li> <li>• 51 dBm ± 0.5 dB over 290 to 320 MHz</li> <li>• 51 dBm ± 1.0 dB over 320 to 400 MHz</li> </ul>
P1dB Compression		W	100	-	-	
		dBm	50	-	-	
Power Gain @ 100 W		dB	50	52	54	225 MHz to 290 MHz
			51.5	52	52.5	290 MHz to 320 MHz
			50	52	54	320 MHz to 400 MHz
Power Gain @ 10 W		dB	50	52	55	225 MHz to 290 MHz
			51.5	52	53.5	290 MHz to 320 MHz
			50	52	55	320 MHz to 400 MHz
Blanking		µs	-	-	30	RF ON/OFF, (see <b>Interface &amp; Control</b> ) Power transistor shut off completely during blanking
ON/OFF Ratio		dBc	80	TBD	-	Ratio between amplified (amplifier ON) and non-amplified (blanked, amplifier OFF) signals, as controlled by Pin 3, with constant RF input drive
Input / Output Impedance		Ohm	-	50	-	
VSWR Tolerance		-	-	-	∞	Output power is automatically reduced above 3:1 mismatch
Spurious Outputs		dBc	-	TBD	-80	@ 100 W output, 0.2 to 10 MHz from carrier, 10 Hz RBW
Harmonic Performance (2 <sup>nd</sup> , 3 <sup>rd</sup> )		dBc	-	TBD	-70	
Harmonic Performance (4 <sup>th</sup> )		dBc	-	TBD	-80	
IMD Performance		dBc	-	-26	-20	Two tones, each @ 25 W, with 0.2 MHz spacing
Broadband Noise		dBm	-	TBD	-120	dBm/Hz
Input Power (DC)		V	27	28	29	
		A		9.5	11	Control Pin to ON
		A		0.35		Control Pin to OFF

## MECHANICAL & ENVIRONMENTAL

The mechanical and environmental specifications detailed below apply only to the AR Modular RF manufactured amplifier portion of the **KMW2040-M20**.

SPECIFICATION	Units	Details	Notes
Size	Inches	See outline drawing below	
Weight	kg	TBD	
Operating Temperature, Ambient	°C	See Notes	Customer must maintain unit case temperature below 80°C to avoid shutdown; Amplifier specifications guaranteed up to case temperature of 50°C
Relative Humidity	%	95%	
Cooling	-	Customer Controlled	Customer responsible for unit cooling
Interface & Control Connector	-	Wired harness w/ MOLEX connector	12" long cable harness assembly terminated with Molex P/N 03-09-1094

## INTERFACE & CONTROL

The **KMW2040-M20** has external interface and control pins as defined in the table below.

Element	Pin	Details	Notes
VSWR	1	Indicator	VSWR pin status: <ul style="list-style-type: none"> <li>• <math>\geq 2.5</math> V, Normal amplifier operation</li> <li>• <math>\leq 0.7</math> V, Amplifier output power limited</li> </ul>
OVER DRIVE	2	Indicator	Over drive pin status: <ul style="list-style-type: none"> <li>• <math>\geq 2.5</math> V when MLC circuitry NOT active</li> <li>• <math>\leq 0.7</math> V when MLC circuitry active</li> </ul>
ON / OFF	3	Control	Function: <ul style="list-style-type: none"> <li>• <math>\leq 0.7</math> V, Amplifier commanded OFF</li> <li>• <math>\geq 5</math> V or no connection = ON</li> </ul>
OVER TEMPERATURE	4	Indicator	Indicates amplifier has shut down due to enclosure temperature in excess of 80°C Normal operation restored after enclosure cools to below 75°C Status: <ul style="list-style-type: none"> <li>• <math>\leq 0.7</math> V, Amplifier OFF</li> <li>• <math>\geq 2.5</math> V, Amplifier ON</li> </ul>
FAN	5	Indicator	Pin will go to ground (8A capability) when enclosure reaches 50°C
DC Power (+)	6 & 7	Input	+28V nominal
DC Power (-)	8 & 9	Input	Ground

## ORDERABLE MODEL CONFIGURATIONS

MODEL NAME	SPECIFICATIONS
<b>KMW2040-M20</b>	Standard Configuration (C1) – Specifications as detailed in this document. Unit is shipped, pre-assembled, with integrated RF cable, low pass filter and harness for interface and control.

BLOCK DIAGRAM & OUTLINE DRAWING

Note – Drawing is representative of the standard **KMW2040-M20** model and may not be applicable to all model variations.

