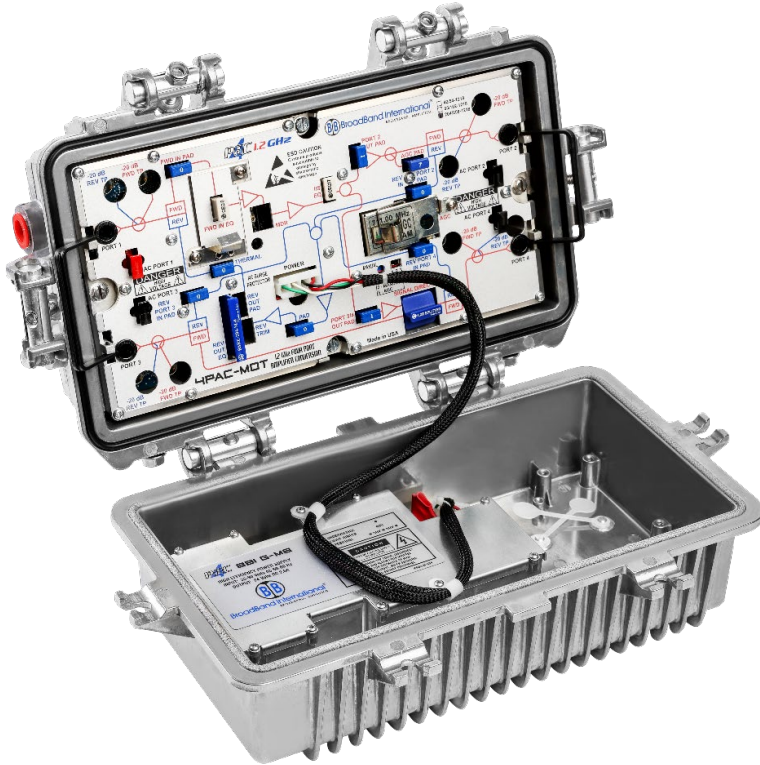


# 1.2 GHz System Amplifiers 4PAC-MOT MiniBridger™ 2-Output

Replaces/Upgrades Commscope®/ARRIS®  
Motorola® 750/870/1000/1218 MHz Systems



## Product Overview

The 4PAC-MOT Mini Bridger High Gain GaN 1.2 GHz enhanced system amplifier module from Broadband International® is designed to drop into any existing Broadband International® or OEM MiniBridger™ system amplifier housing. The forward and reverse operating gain will cover existing spacing to 750 MHz.

The amplifier accepts any standard CE-120® style equalizer and 1.4" JXP style pads. The interstage pad and equalizer set the output gain and slope for maximum performance. The new 1.2 GHz amplifier is equipped with Gallium Nitride (GaN) technology with two RF outputs. A plug-in jumper allows Port 3 or 4 to be enabled/disabled as required for network designs. Port 3 and 4 can also be enabled with the optional splitter or DC-8/12 directional coupler plug-ins.



## Features:

- Specified bandwidth performance to 1.2 GHz
- Utilizes OEM style plug-in equalizers and pads
- Multiple options for return path bandwidth with removable diplex filter
- Low/high pass filters can be changed in the field
- Field upgradable from 42/54 to 85/102 or 204/258 MHz
- Advanced AGC circuitry with loss of pilot protection
- Housing available with Chromate Conversion
- Power supply can be replaced without removing the housing lid cover



Performance Specifications - 5-42/54-1218		Unit	Forward	Reverse
Pass Band		MHz	54-1218	5-42
Frequency Response (Flatness)		dB	+/- .75	+/- .5
Return Loss (Min)		dB	16	16
Noise Figure		dB	9	10
Operating Gain Main		dB	48	27
Operating Gain PORT 3 or 4 (with jumper)		dB	48	27
Bode Control Range		dB	+/- .5	N/A
AC Hum Mod @ 12 Amperes (worst case)		dBc	>60	>60
AC Hum Mod @ 15 Amperes (worst case)		dBc	>60	>60
Maximum AC through current (continuous)		Amps	15	15
Reference QAM Output Level (1218/55 MHz)		dBmV	49/31	Varies
Output Slope (typical)		dB	18	Varies
Output Gain Block Technology		dB	GaN/Hybrid	Hybrid
Test Points		dB	-20 (+/-1 dB)	-20 (+/- 1 dB)
Noise and Distortion Performance		Units	Forward	Reverse
Composite Triple Beat-(Analog 54-550/256 QAM 558-1218 MHz)		dB	70	N/A
Cross-Modulation		dB	65	N/A
Composite Second Order		dB	72	N/A
Carrier to Intermodulation Noise (CIN)		dB	52	N/A
NPR at 40 dB CNR at 42 MHz		dB	N/A	31
Amplifier Delay Characteristics				
Forward Chrominance to Luminance Delay ns/3.58 MHz		Reverse Group Delay 1.5 MHz		
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)	
55.25 to 58.83	43	5.0 to 6.5	55	
61.25 to 64.83	15	6.5 to 8.0	25	
67.25 to 70.83	8	39.0 to 40.5	19	
77.25 to 80.83	4	40.5 to 42.0	40	
Powering Data		Units	Voltage/Current	
DC Voltage		VDC	24	
DC Power Consumption- Thermal – 24 V		Amps	1.73	
DC Power Consumption- with AGC – 24 V		Amps	1.78	
AC Input voltage range		VAC	38-90	

**Notes**

1. Forward operating gain and noise figure measured with 1 dB input pad and 0 dB equalizer.
2. Analog loading varies by band split for distortions and CIN.
3. X-Mod measured with 100 percent synchronous modulation.
4. Reverse gain and reverse noise figure measured with 1 dB output pad and 0 dB equalizer.
5. Manual backoff set to 4 dB at 1218 MHz at 75° F.
6. Output level is rated 49 dBmV at 1218 MHz with 18 dB tilt for 54-1218, 17.3 dB tilt for 102-1218, and 15 dB tilt for 258-1218 modules.
7. QAM loading is 256 QAM Annex B 6 MHz channels.
8. Hum modulation is measured with 15 and 12 amperes of AC passing through the port under test.
9. Specifications are listed as typical performance at 75° F and are subject to change without notice.



Performance Specifications -5-85/102-1218		Unit	Forward	Reverse
Pass Band		MHz	102-1218	5-85
Frequency Response (Flatness)		dB	+/--.75	+/--.5
Return Loss (Min)		dB	16	16
Noise Figure		dB	9	10
Operating Gain Main		dB	48	27
Operating Gain PORT 3 or 4 (with jumper)		dB	48	27
Bode Control Range		dB	+/-5	N/A
AC Hum Mod @ 12 Amperes (worst case)		dBc	>60	>60
AC Hum Mod @ 15 Amperes (worst case)		dBc	>60	>60
Maximum AC through current (continuous)		Amps	15	15
Reference QAM Output Level (1218/102 MHz)		dBmV	49/31.7	Varies
Output Slope (typical)		dB	17.3	Varies
Output Gain Block Technology		dB	GaN/Hybrid	Hybrid
Test Points		dB	-20 (+/-1 dB)	-20 (+/- 1 dB)
Noise and Distortion Performance		Units	Forward	Reverse
Composite Triple Beat-(Analog 105-550/256 QAM 558-1218 MHz)		dB	72	N/A
Cross-Modulation		dB	65	N/A
Composite Second Order		dB	75	N/A
Carrier to Intermodulation Noise (CIN)		dB	52	N/A
NPR at 40 dB CNR at 85 MHz		dB	N/A	26.5
Amplifier Delay Characteristics				
Forward Chrominance to Luminance Delay ns/3.58 MHz		Reverse Group Delay 1.5 MHz		
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)	
109.275 - 112.855	10	5.0 to 6.5	55	
115.275 - 118.855	6	6.5 to 8.0	21	
124.2625 - 124.8425	5	82.0 to 83.5	13	
127.2625 - 130.8425	4	83.5 to 85.0	20	
Powering Data		Units	Voltage/Current	
DC Voltage		VDC	24	
DC Power Consumption- Thermal – 24 V		Amps	1.73	
DC Power Consumption- with AGC – 24 V		Amps	1.78	
AC Input voltage range		VAC	38-90	

**Notes**

1. Forward operating gain and noise figure measured with 1 dB input pad and 0 dB equalizer.
2. Analog loading varies by band split for distortions and CIN.
3. X-Mod measured with 100 percent synchronous modulation.
4. Reverse gain and reverse noise figure measured with 1 dB output pad and 0 dB equalizer.
5. Manual backoff set to 4 dB at 1218 MHz at 75° F.
6. Output level is rated 49 dBmV at 1218 MHz with 18 dB tilt for 54-1218, 17.3 dB tilt for 102-1218, and 15 dB tilt for 258-1218 modules.
7. QAM loading is 256 QAM Annex B 6 MHz channels.
8. Hum modulation is measured with 15 and 12 amperes of AC passing through the port under test.
9. Specifications are listed as typical performance at 75° F and are subject to change without notice.



Performance Specifications - 5-204/258-1218		Unit	Forward	Reverse
Pass Band		MHz	258-1218	5-204
Frequency Response (Flatness)		dB	+/- .75	+/- .5
Return Loss (Min)		dB	16	16
Noise Figure		dB	9	10
Operating Gain Main		dB	48	27
Operating Gain PORT 3 or 4 (with jumper)		dB	48	27
Bode Control Range		dB	+/-6	N/A
AC Hum Mod @ 12 Amperes (worst case)		dBc	>60	>60
AC Hum Mod @ 15 Amperes (worst case)		dBc	>60	>60
Maximum AC through current (continuous)		Amps	15	15
Reference QAM Output Level (1218/258 MHz)		dBmV	49/34	Varies
Output Slope (typical)		dB	15	Varies
Output Gain Block Technology		dB	GaN/Hybrid	Hybrid
Test Points		dB	-20 (+/-1 dB)	-20 (+/- 1 dB)
Noise and Distortion Performance		Units	Forward	Reverse
Composite Triple Beat-(Analog 258-550/256 QAM 558-1218 MHz)		dB	73	N/A
Cross-Modulation		dB	65	N/A
Composite Second Order		dB	76	N/A
Carrier to Intermodulation Noise (CIN)		dB	52	N/A
NPR at 40 dB CNR at 204 MHz		dB	N/A	22
Amplifier Delay Characteristics				
Forward Chrominance to Luminance Delay ns/3.58 MHz		Reverse Group Delay 1.5 MHz		
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)	
259.2625 – 262.8425	5	5.0 to 6.5	55	
265.8425 – 268.8425	4	6.5 to 8.0	21	
271.2625 to 274.8425	3	201.0 to 202.5	3	
277.2625 to 280.8425	2	202.5 to 204.0	4	
Powering Data		Units	Voltage/Current	
DC Voltage		VDC	24	
DC Power Consumption- Thermal – 24 V		Amps	1.73	
DC Power Consumption- with AGC – 24 V		Amps	1.78	
AC Input voltage range		VAC	38-90	

**Notes**

1. Forward operating gain and noise figure measured with 1 dB input pad and 0 dB equalizer.
2. Analog loading varies by band split for distortions and CIN.
3. X-Mod measured with 100 percent synchronous modulation.
4. Reverse gain and reverse noise figure measured with 1 dB output pad and 0 dB equalizer.
5. Manual backoff set to 4 dB at 1218 MHz at 75° F.
6. Output level is rated 49 dBmV at 1218 MHz with 18 dB tilt for 54-1218, 17.3 dB tilt for 102-1218, and 15 dB tilt for 258-1218 modules.
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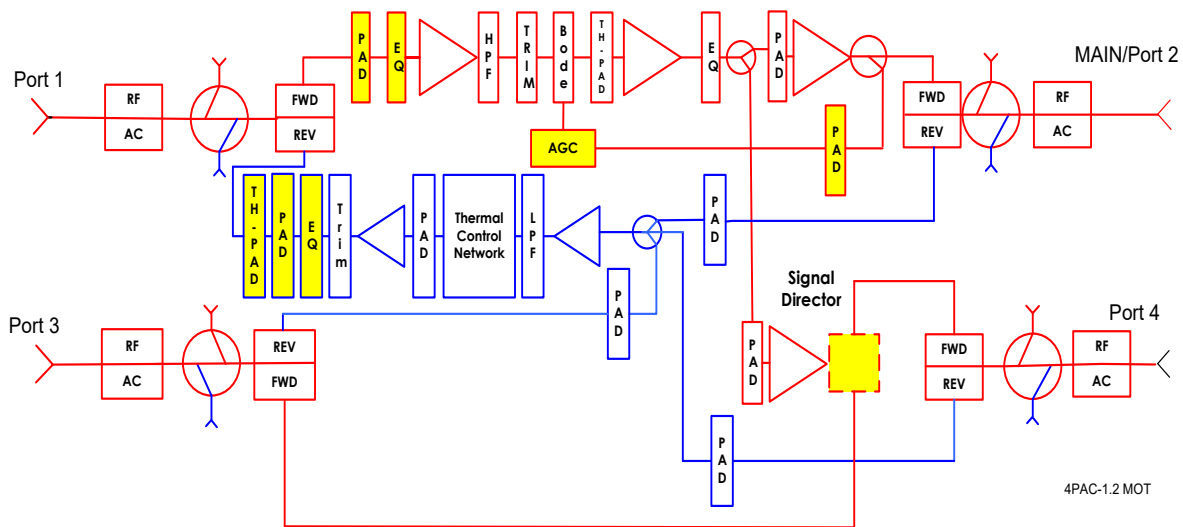


4PAC-MOT MB	High Gain GaN	AC Voltage											
		I DC	90	85	80	75	70	65	60	55	50	45	40
<b>Thermal</b>	1.73	AC current draw	0.77	0.78	0.83	0.85	0.91	0.96	1.03	1.12	1.21	1.3	1.37
<b>AGC</b>	1.78	AC current draw	0.81	0.82	0.87	0.89	0.95	1.01	1.08	1.18	1.27	1.35	1.44

Physical Specifications	
Operating temperature range (degrees)	-40 to +140 F (-40 to +60 C)
Amplifier dimensions (inches)	11.7 in. L x 6 in. H x 2 in. D
Weight (lbs.) Module only	3 lb., 8 oz.
Weight (lbs.) Housing with power supply	11 lbs. 12 oz.
Weight (lbs.) Housing, module and power supply	15 lb., 4 oz.

### 4PAC-MOT 1.2 GHz Diagram and Ordering Information

The following Required Accessories highlighted in yellow must be ordered separately (all other pads and equalizers are provided)



The Broadband International® 4PAC-MOT amplifier can be configured with many different options. Please consult your account representative for assistance with specific plug-in options.



## Required Accessories

Plug-In 1.2 GHz Pads* (Attenuators) – available in 1 dB steps from 0 to 26 dB	Part Number
1 Pad required for forward input	5640XXSN
1 Pad required for reverse output	
**1 Pad required for AGC, if applicable	
Forward 1.2 GHz Equalizers for Forward Input	
1 Forward Cable Equalizer – available in 1 dB steps from 0 to 20 dB	56712XX
Or - 1 Forward Inverse Equalizer – available in 1 dB steps from 1 to 10 dB	56712XXC
Reverse Cable Equalizers for Reverse Output	Part Number
1 Reverse Equalizer - available in 1 dB steps from 0 to 12 dB (42 MHz)	142401EK
1 Reverse Equalizer - available in 1 dB steps from 0 to 12 dB and 2 dB steps from 14 to 20 dB (85 MHz)	142801EN
1 Reverse Equalizer - available in 2 dB steps from 0 to 20 dB (204 MHz)	142201EM

\*\*To determine AGC pad value, subtract 35 dB from the design value main port RF output level at the AGC Pilot Frequency

Signal Directors	Part Number
Jumper (Low Profile - .5" tall without pins)	800MBJ
Jumper (Tall – Ergonomic 1.18" tall without pins)	700-309
2-Way Splitter	317104
DC-8	319208
DC-10	319210
DC-12	319212

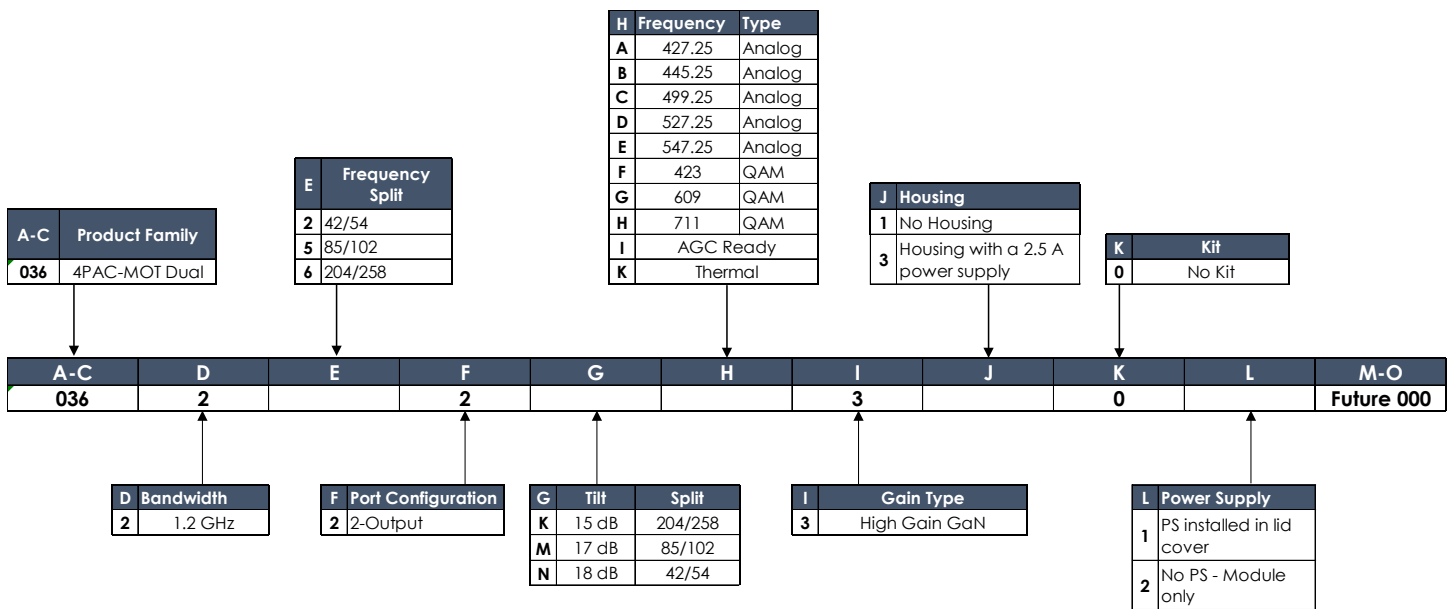
## Optional Accessories

Optional – Automatic Gain Control (AGC)	Part Number
423.00 MHz – QAM	225423-GC
427.25 MHz – Analog	225427-GC
445.25 MHz – Analog	225445-GC
499.25 MHz – Analog	225499-GC
527.25 MHz - Analog	225527-GC
547.25 MHz – Analog	225547-GC
609.00 MHz – QAM	225609-GC
711.00 MHz – QAM	225711-GC



Optional – Accessories Continued	Part Number
Housing for Mini Bridger Style Amplifiers- Housing with 15 amp seizure assemblies - no power supply or umbilical cord	36-3000
Housing for Mini Bridger Style Amplifiers- Housing with 15 amp seizure assemblies, power supply and umbilical cord	36-1200
Housing Lid Cover Kit, for Mini Bridger Style Amplifier - Lid Cover Kit includes, housing lid cover, 2.5 Amp power supply, and umbilical cord	361200PSLD
BBI Umbilical cord to connect the BBI Power Supply Module to either the BBI or OEM Mini Bridger amplifier	361200
1 GHz and 1.2 GHz Mini Bridger red seizure assemblies kit (set of 4)	MB-12-005-K
Optional – Accessories Continued	Part Number
BBI 4PAC-MOT Mini Bridger, High-Split Upgrade Kit 5-204/258-1218 MHz	32312204MB-K
BBI 4PAC-MOT Mini Bridger, Mid-Split Upgrade Kit 5-85/102-1218 MHz	3231285MB-K
Surge protector -Crowbar for BBI 1.2 GHz MB	264T1200

## Ordering Information



The Broadband International® 4PAC-MOT amplifier can be configured with many different options. Please consult your account representative for assistance with specific options.



