

BLE  
(1 Output Line Extender)

MB  
(2 or 3 Output Bridger)

## ASEM MOTO BLE & MB Distribution Amplifiers 1002 MHz

The ACI ASEM Moto BLE and MB 1G RF upgrade modules are now offered with the Gallium Nitride (GaN) hybrid technology that allows for 3 dB higher output levels while maintaining close to the same specifications as the previous stations with the Gallium Arsenide (GaAs) hybrids. With this increase in the output level capabilities the cable operators are now able to extend the fiber deeper in their networks at a lower cost by reducing the number of active that are needed. The GaN hybrid technology is also extremely beneficial for use in the traditional HFC networks with the increase in station performance at the standard output levels over the GaAs hybrid stations.

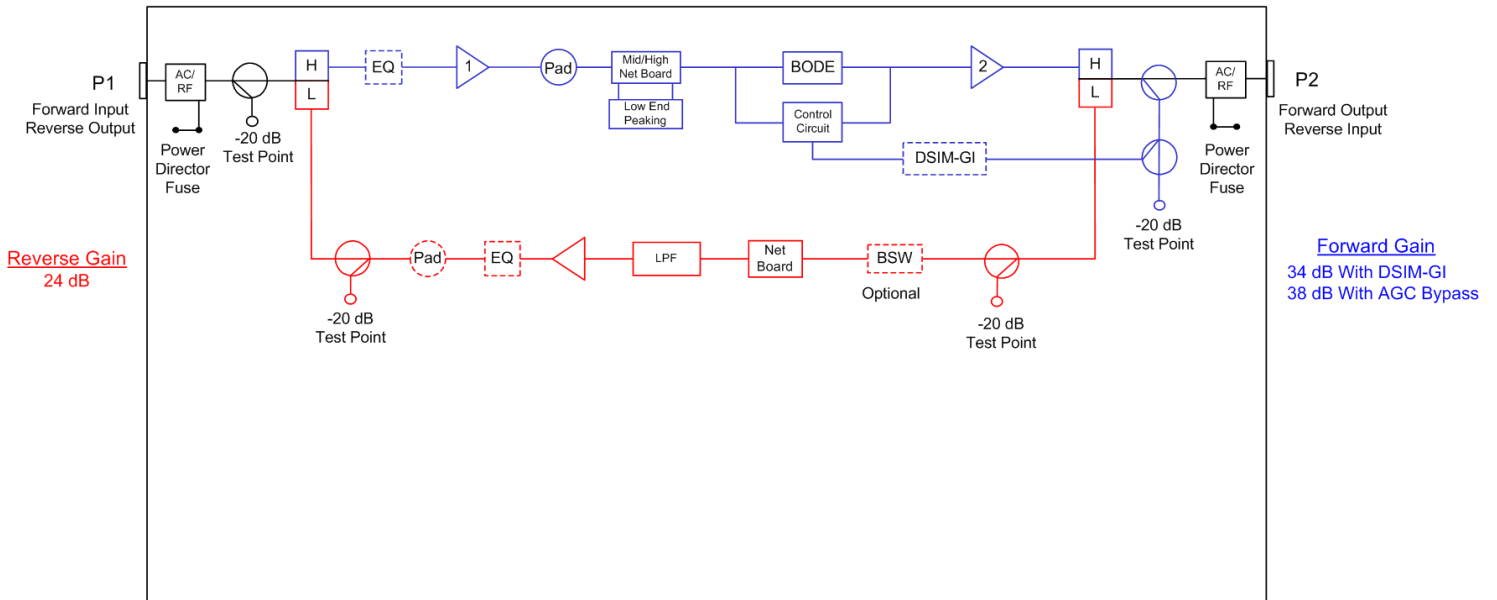
### Features

- ◆ Drop-in 1G replacement RF modules for Motorola® Starline® MB Mini-Bridger and BLE Line Extender
- ◆ 5 to 42, 65, 85 or 204 MHz reverse path
- ◆ Ideal for traditional HFC networks for increased performance & reliability
- ◆ Ideal for fiber deep networks with the extended reach of the amplifiers
- ◆ Patented DSIM technology (Digital AGC)
- ◆ Pad adjustable forward and return EQ's
- ◆ Increased reliability with higher surge protection in the GaN hybrids
- ◆ Up to 3 dB higher output levels with same distortion performance with GaN Hybrids
- ◆ Lower power consumption than OEM amplifiers

# BLOCK DIAGRAMS

## ASEM-BLE

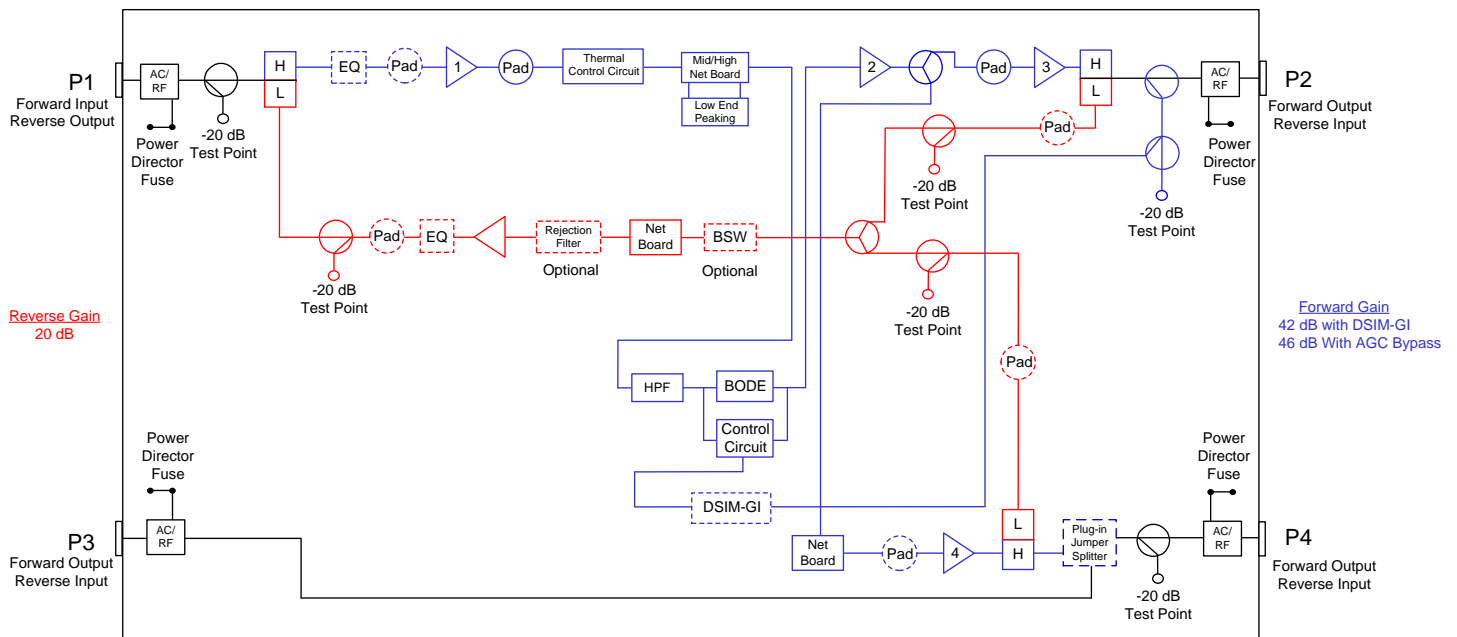
ASEM BLE (Type 3A & 3M) 1002 MHz GaN Amplifier Block Diagram



Note:  
1. Forward gain stated at 1002 MHz. Reverse gain stated at 40 MHz.

## ASEM-MB

ASEM MB (Type 2A-TRI & 2M-TRI) 1002 MHz GaN Amplifier Block Diagram



Note:  
1. Forward gain stated at 1002 MHz. Reverse gain stated at 40 MHz.

# SPECIFICATIONS (BLE - Line Extender) – 42/53 MHz Split

STATION PARAMETERS:		1002 MHz 42-53 MHz Split			ASEM - Moto BLE 1002 MHz With GaN Hybrids 14.0 dB Forward Slope @ 1002 MHz High Forward Gain	
SPECIFICATIONS		CONDITIONS	UNITS	Forward	Return	
Housing passband			MHz	53-1002	5-42	
Flatness		Normalized w / 0 dB slope	dB	± 0.5	± 0.5	
Minimum Full Gain			dB	38	NA	
Operation Gain		+1.0 / -0.0 @ 1002MHz	dB	34	24	
Noise Figure		(w / 1dB for input EQ loss)	dB	55 MHz = 11.0 550 MHz = 8.5	11.0	
Test Point		Forward & Return	dB	20 (±1.0 dB)	20 (±1.0 dB)	
Return Loss		Any port, worst case	dB	16	16	
Hum Modulation		Time domain @ rated 15A	dBc	<60	<60	
Slope Reference Frequency			MHz	54 / 550 / 1002	35 (flat)	
Reference Output Level			dBmV	37 / 44 / 51	-	
Operating Interstage Slope		@ 1002 MHz	dB	9 ± 1	NA	
Distortion Performance (Worse Case)				Forward	Return	
Channel loading				NTSC/550 MHz analog channel loading, 79 channels +450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier	6 channel analog	
Composite Triple Beat (CTB)			-dBc	75	80	
Composite Second Order (CSO)			-dBc	71	81	
Cross Modulation (XMOD)			-dBc	70	70	
Carrier-to-Intermodulation Noise (CIN)			-dBc	65	-	
Station Group Delay						
55.25 MHz				40 (35 Typical)		
61.25 MHz			nSec / 3.58 MHz	16		
67.25 MHz				10		
77.25 MHz				4		
ADU				DSIM-GI Single Pilot Channel ADU		
Pilot Channel Type			N / A	NTSC Analog or QAM		
Compensation Range			dB	System compensation input change +3/-6 @ 1002 MHz		
Accuracy			±dB	0.5		
Nominal Loss		@ 77 °F (25 °C)	dB	6.25		
Center Frequency Bandwidth				6 (MHz)		
Power Requirements						
DC Voltage			VDC	24		
Current DC Max.		Current draw @ 24 VDC	mA	1000		
Power Consumption Max.			W	35		
AC Input Voltage Range			VAC	38-90		
AC Current Draw Max.			A	0.5 0.6 0.8		
@ 90VAC						
@ 60VAC						
@ 38VAC						
Weight						
Weight			lbs. (kg)	3.31 (1.5)		
Physical						
Dimensions		(H x W x D)	In, (cm)	5.12 X 8.72 X 3.20 (13.0 X 22.14 X 8.20)		
Environmental						
Operating Temperature			°F (°C)	-40 to +140 (-40 to +60)		

# SPECIFICATIONS (MB – Mini-Bridger) 42/53 MHz Split

STATION PARAMETERS:		1002 MHz 42-53 MHz Split			ASEM Moto-MB 1002 MHz With GaN Hybrids 14.0 dB Forward Slope @ 1002 MHz High Forward Gain	
SPECIFICATIONS		CONDITIONS	UNITS	Forward	Return	
Housing passband			MHz	53-1002	5-42	
Flatness	Normalized w / 0 dB slope		dB	± 0.6	± 0.5	
Minimum Full Gain			dB	46	NA	
Operation Gain	+1.0 / -0.0 @ 1002MHz		dB	42	20	
Noise Figure	(w / 1dB for input EQ loss)		dB	55 MHz = 14.0 550 MHz = 9.0	15.5	
Test Point	Forward & Return		dB	20 (±1.0dB)	20 (±1.0dB)	
Return Loss	Any port, worst case		dB	14.5	14.5	
Hum Modulation	Time domain @ rated 15A		dBc	<60	<65	
Slope Reference Frequency			MHz	54 / 550 / 1002	35 (flat)	
Reference Output Level			dBmV	37 / 44 / 51	-	
Operating Interstage Slope	@ 1002 MHz		dB	14 ± 1	NA	
Distortion Performance (Worse Case)				Forward	Return	
Channel loading				NTSC/550 MHz analog channel loading, 79 channels +450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier	6 channel analog	
Composite Triple Beat (CTB)			-dBc	75	80	
Composite Second Order (CSO)			-dBc	71	81	
Cross Modulation (XMOD)			-dBc	68	70	
Carrier-to-Intermodulation Noise (CIN)			-dBc	73	-	
Station Group Delay						
55.25 MHz				40 (35 Typical)		
61.25 MHz		nSec / 3.58 MHz		16		
67.25 MHz				10		
77.25 MHz				4		
ADU				DSIM-GI Single Pilot Channel ADU		
Pilot Channel Type			N / A	NTSC Analog or QAM		
Compensation Range			dB	System compensation input change +3/-6 @ 1002 MHz		
Accuracy			±dB	0.5		
Nominal Loss	@ 77 °F (25 °C)		dB	6.25		
Center Frequency Bandwidth				6 (MHz)		
Power Requirements						
DC Voltage			VDC	24		
Current DC Max.	Current draw @ 24 VDC		mA	1590		
Power Consumption Max.			W	52		
AC Input Voltage Range			VAC	38-90		
AC Current Draw Max. @ 90VAC @ 60VAC @ 38VAC			A	0.58 0.92 1.45		
Weight						
Weight			lbs. (kg)	3.75 (1.7)		
Physical						
Dimensions	(H x W x D)		In, (cm)	5.9 X 12.6 X 2.36 (15 X 32 X 6)		
Environmental						
Operating Temperature			°F (°C)	-40 to +140 (-40 to +60)		

# SPECIFICATIONS (BLE - Line Extender) – 85/105 MHz Split

STATION PARAMETERS:		1002 MHz 85-105 MHz Split		ASEM - Moto BLE 1002 MHz With GaN Hybrids 13.0 dB Forward Slope @ 1002 MHz High Forward Gain	
SPECIFICATIONS		CONDITIONS	UNITS	Forward	Return
Housing passband			MHz	105-1002	5-85
Flatness		Normalized w / 0 dB slope	dB	± 0.5	± 0.5
Minimum Full Gain			dB	38	NA
Operation Gain		+1.0 / -0.0 @ 1002MHz	dB	34	24
Noise Figure		(w / 1dB for input EQ loss)	dB	109 MHz = 11.0 550 MHz = 8.5	11.0
Test Point		Forward & Return	dB	20 (±1.0 dB)	20 (±1.0 dB)
Return Loss		Any port, worst case	dB	16	16
Hum Modulation		Time domain @ rated 15A	dBc	<60	<60
Slope Reference Frequency			MHz	109 / 550 / 1002	35 (flat)
Reference Output Level			dBmV	38 / 44.4 / 51	-
Operating Interstage Slope		@ 1002 MHz	dB	8 ± 1	NA
Distortion Performance (Worse Case)				Forward	Return
Channel loading				NTSC/550 MHz analog channel loading, 71 channels +450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier	6 channel analog
Composite Triple Beat (CTB)			-dBc	75	80
Composite Second Order (CSO)			-dBc	71	81
Cross Modulation (XMOD)			-dBc	70	70
Carrier-to-Intermodulation Noise (CIN)			-dBc	65	-
Station Group Delay					
109.25 MHz				25	
115.25 MHz			nSec / 3.58 MHz	16	
121.25 MHz				10	
127.25 MHz				3	
ADU				DSIM-GI Single Pilot Channel ADU	
Pilot Channel Type			N / A	NTSC Analog or QAM	
Compensation Range			dB	System compensation input change +3/-6 @ 1002 MHz	
Accuracy			±dB	0.5	
Nominal Loss		@ 77 °F (25 °C)	dB	6.25	
Center Frequency Bandwidth				6 (MHz)	
Power Requirements					
DC Voltage			VDC	24	
Current DC Max.		Current draw @ 24 VDC	mA	1000	
Power Consumption Max.			W	35	
AC Input Voltage Range			VAC	38-90	
AC Current Draw Max.			A	0.5	
@ 90VAC				0.6	
@ 60VAC				0.8	
@ 38VAC					
Weight					
Weight			lbs. (kg)	3.31 (1.5)	
Physical					
Dimensions		(H x W x D)	In, (cm)	5.12 X 8.72 X 3.20 (13.0 X 22.14 X 8.20)	
Environmental					
Operating Temperature			°F (°C)	-40 to +140 (-40 to +60)	

# SPECIFICATIONS (MB – Mini-Bridger) 85/105 MHz Split

STATION PARAMETERS:			1002 MHz 85-105 MHz Split		ASEM Moto-MB 1002 MHz With GaN Hybrids 13.0 dB Forward Slope @ 1002 MHz High Forward Gain	
SPECIFICATIONS		CONDITIONS	UNITS	Forward	Return	
Housing passband			MHz	105-1002	5-85	
Flatness		Normalized w / 0 dB slope	dB	± 0.6	± 0.5	
Minimum Full Gain			dB	46	NA	
Operation Gain		+1.0 / -0.0 @ 1002MHz	dB	42	20	
Noise Figure		(w / 1dB for input EQ loss)	dB	109 MHz = 14.0 550 MHz = 9.0	15.5	
Test Point		Forward & Return	dB	20 (±1.0dB)	20 (±1.0dB)	
Return Loss		Any port, worst case	dB	14.5	14.5	
Hum Modulation		Time domain @ rated 15A	dBc	<60	<65	
Slope Reference Frequency			MHz	109 / 550 / 1002	35 (flat)	
Reference Output Level			dBmV	38 / 44.4 / 51	-	
Operating Interstage Slope		@ 1002 MHz	dB	13 ± 1	NA	
Distortion Performance (Worse Case)				Forward	Return	
Channel loading				NTSC/550 MHz analog channel loading, 71 channels +450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier	6 channel analog	
Composite Triple Beat (CTB)			-dBc	75	80	
Composite Second Order (CSO)			-dBc	71	81	
Cross Modulation (XMOD)			-dBc	68	70	
Carrier-to-Intermodulation Noise (CIN)			-dBc	73	-	
Station Group Delay						
109.25 MHz					25	
115.25 MHz			nSec / 3.58 MHz		16	
121.25 MHz					10	
127.25 MHz					3	
ADU				DSIM-GI Single Pilot Channel ADU		
Pilot Channel Type			N / A	NTSC Analog or QAM		
Compensation Range			dB	System compensation input change +3/-6 @ 1002 MHz		
Accuracy			±dB	0.5		
Nominal Loss		@ 77 °F (25 °C)	dB	6.25		
Center Frequency Bandwidth				6 (MHz)		
Power Requirements						
DC Voltage			VDC	24		
Current DC Max.		Current draw @ 24 VDC	mA	1590		
Power Consumption Max.			W	52		
AC Input Voltage Range			VAC	38-90		
AC Current Draw Max. @ 90VAC @ 60VAC @ 38VAC			A	0.58 0.92 1.45		
Weight						
Weight			lbs. (kg)	3.75 (1.7)		
Physical						
Dimensions		(H x W x D)	In, (cm)	5.9 X 12.6 X 2.36 (15 X 32 X 6)		
Environmental						
Operating Temperature			°F (°C)	-40 to +140 (-40 to +60)		

## Accessory Ordering Information:

The ASEM Moto ordering matrix provides the part number information to order the configured stations. This page contains the ordering information for the required accessories that will be needed to make the stations functional in the field or the optional accessories that can be ordered separately.

### Required Accessories

Description	Part Numbers (Where XX.X = dB value)
JXP style attenuator pads <ul style="list-style-type: none"> <li>• 1 Required for forward input</li> <li>• 1 Required for reverse output</li> <li>• 1 Required for forward input Equalizer</li> <li>• 1 Required for reverse output Equalizer</li> </ul>	JXP137B-XX (0 to 26 dB in 1.0 dB steps)

### Optional Accessories

Description	Part Numbers
Digital Station Intelligence Manager - Single Pilot AGC Module (Analog or Digital)	DSIM-GI-MDL-02
Digital Station Intelligence Manager -Controller	DSCT-xxx-yyy xxx = Pilot Channel Number yyy = Channel Type IRC = Analog IRC Spacing DIG = Digital / QAM
DSIM Bluetooth Dongle Apple iOS or android	DSIM-DONGLE-02
Digital Station Intelligence Manager - Cable Assembly For Computer Interface	240327-01
Cable assembly DSIM adaptor to connect controller	240330-01
Pad Adjustable Equalizer JXP Platform 0-18 dB	AEQDA1G
Pad Adjustable Cable Equivalent Equalizers JXP Platform 0-9 dB	ACEQ1G
Pad Adjustable Reverse Equalizers 5-42, 85 and 204 MHz JXP Platform 0-12 dB (5 Pin)	AREQ42 AREQ85 AREQ204
Reverse Rejection Filter 14 MHz	RPRFLTR-14
Reverse Rejection Filter 8 MHz	RPRFLTR-8
Reverse Rejection Filter by-pass	RPRFLTR-JMP
Motorola MB DC/SP2 For P3 or P4	088131-01 (Jumper One include with Unit) SDASPLTR3.5 SDADC7 SDADC10 SDADC12
Test Probe (5.5" Long)	100685-01
Test Probe (1.57" / 4 cm Long)	TP-7504
Seizure 15 Amp RED 10 Amp Housing for Motorola MB (QTY 4)	120577-04
Seizure 15 Amp RED 15 Amp Housing for Motorola MB (QTY 4)	120578-04
Conversion Kit, 85/105 ASEM MOTO BLE	120579-01
Conversion Kit, 85/105 ASEM MOTO MB	120580-01

# Ordering Matrix

## ASEM Moto Product Configuration Worksheet

Customer: \_\_\_\_\_

Created By: \_\_\_\_\_ Order Date: \_\_\_\_\_

### ORDERING MATRIX

October 9, 2018

Position	1	2	3	4	5	6	7	8	9	10
PART NUMBER										

1,2  STATION TYPE

BL = 1 Output LE      MB = 2 or 3 Output Bridger

3  BANDPASS SPLIT

K = 5-42 MHz / 54- 1002 MHz      H = 5-204 MHz / 258-1002 MHz  
 N = 5-85 MHz / 105- 1002 MHz

4,5  STATION GAIN (Forward)

Amplifier Model	BL	MB
Max gain with DSIM-GI	34	42
Max gain w/AGC bypass	38	46

6  FORWARD GAIN CONTROL TYPE

M = Manual (AGC Bypass)      D = Digital Station Intelligence Manger (DSIM-GI)

7  STATION SLOPE

	42/54		85/105		204/258	
A =	MB	BL	MB	BL	MB	BL
	14.0	9.0	13.0	8.0	12.0	7.0

8  STATION GAIN (Reverse)

B = 20 dB min (MB Only)  
 L = 24 dB min (BL Olny)

9  HOUSING OPTIONS

M = RF Module Only

10  CUSTOM OPTIONS

0 = NONE  
 X = Determined by Product Management

Generic Order Form: Not all configurations are available



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