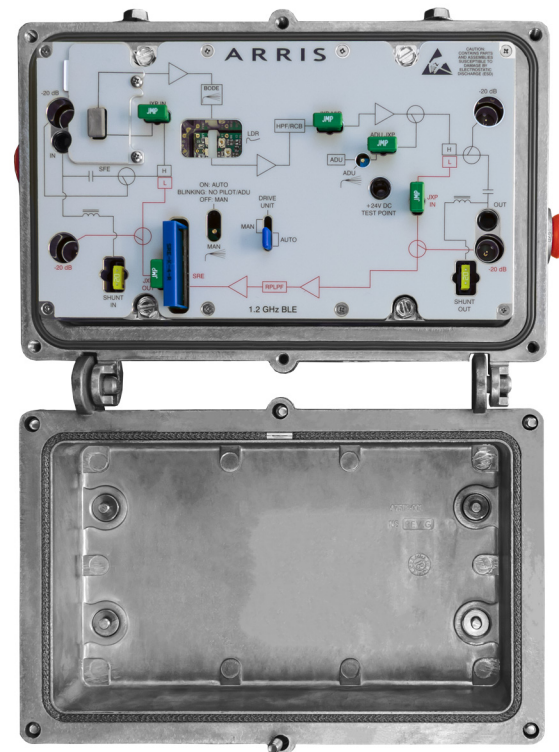


## FEATURES

- Supports 1.2 GHz Downstream and 204 MHz Upstream bandpass for DOCSIS® 3.1 migration
- Modular RF Electronics package with upgradable frequency split options
- Increased gain to allow drop in upgrades for  $\geq 750$  MHz spacing
- Mechanically compatible with legacy BLE amplifier housings
- Expand return path bandwidth with support up to 204 MHz
- QAM ADU options for automatic level control and gain hold in the event of pilot loss



## PRODUCT OVERVIEW

For cable operators looking to ensure maximum backward compatibility, scalability, and protect network investments, ARRIS offers solutions that deliver new services with minimal CAPEX, enhance network efficiency, and increase subscriber satisfaction.

The new ARRIS 1.2 GHz BLE120 Broadband Line Extender Amplifier enables cable operators to take advantage of DOCSIS 3.1 efficiencies while maintaining backward compatibility of existing 750 MHz, 870 MHz, and 1 GHz systems.

### Downstream

The BLE120 configuration is equipped with Gallium Nitride (GaN) hybrid technology and a single driven RF output. New 1.2 GHz Forward Cable Equalizers (CE-120-\*) and Cable Simulators (CS-120-\*) are available to optimize system designs. These new plug-ins are in the JXP-style form factor and plug into a carrier board with a backward compatible footprint so that operators who want to use the new amplifiers in older 870 MHz or 1 GHz systems can re-use their standard accessories. The BLE120 utilizes pluggable diplex filters, which provides operators the flexibility to change band splits in the future.

The following frequency splits are available:

- 5 to 42 MHz/54 to 1218 MHz (042 split)
- 5 to 65 MHz/85 to 1218 MHz (065 split)
- 5 to 85 MHz/102 to 1218 MHz (085 split)
- 5 to 204 MHz/258 to 1218 MHz (204 split)

### Upstream

The BLE120 can be ordered with either 20 dB or 24 dB of gain in the upstream path, depending on network requirements. There is an attenuator location prior to the input test point as well as one following the output test point. The return path equalizer maintains the SRE-\* form factor from the BLE100, and operators can select SRE return path equalizers ranging from 0 to 10 dB in 2 dB increments based on their network design.

### Backward Compatibility

The BLE120 RF electronics package is backward compatible with the previous versions of BLE amplifier housings. The housings will require the installation of the BLE-120-KIT, which contains new seizure platform assemblies to optimize performance for the extended bandwidth above 1 GHz .

#### COMPATIBILITY

Platform	SLR	JLE	XLE	JLX	BLE-75SH	BLE-87	BLE-100
Upgrade to BLE120	No	No	No	Yes*	Yes*	Yes*	Yes*

\* Requires BLE-120-KIT

## SPECIFICATIONS

Downstream Parameter		Units	Specification
Frequency split <sup>1</sup>	042 Split 065 Split 085 Split 204 Split	MHz	54–1218 85–1218 102–1218 258–1218
Flatness <sup>2</sup>		dB	± 0.75
Operational Gain <sup>3</sup>		dB	38
Internal Slope <sup>4</sup>	042 Split 065 Split 085 Split 204 Split	dB	10.4 9.8 9.5 7.4
Noise Figure <sup>5</sup>		dB	7.0 @ F <sub>min</sub> FWD 9.0 @ 1218 MHz
Test Point		dB	20 ± 1.0
Return Loss		dB	16
Hum Modulation @ 15A <sup>6</sup>	F <sub>minfwd</sub> to 1003 MHz 1003 MHz to 1218 MHz	dBc	< 60 < 50
Distortion: 1.2 GHz Analog/Digital, 30 Analog, 160 Digital Channels <sup>7,8</sup>			
Reference Frequency		MHz	1218/258/54
Reference Input Level		dBmV	17/10.4/10.4 (virtual)
Reference Output Level (17 dB Slope)		dBmV	55/41/38 (virtual)
Composite Triple Beat (CTB) <sup>5</sup>		dBc	74
Composite Second Order (CSO) <sup>8</sup>		dBc	78
Carrier to Composite Noise (CCN)		dB	56
Distortion: All Digital (1.2 GHz), Number of Digital Channels <sup>8</sup>			
Reference Frequency		MHz	1218/550/54
Reference Input Level		dBmV	11/4.4/4.4 (actual)
Reference Output Level (17 dB Slope)		dBmV	49/39.2/32 (actual)
CCN <sup>8</sup>		dB	50
BER <sup>8</sup>		dB	< 1x10 <sup>-6</sup>

## NOTES:

- Operating passband of station, determined by the diplex filters, forward correction board and high pass filter installed in the amplifier.
- Flatness is measured with respect to slope. Slope is calculated using best fit.
- Includes the gain control back off of 4.5 ± 0.1 dB and forward equalizer loss.
- Calculated for 12.7 dB of cable loss at 1218 MHz. Internal slope with 0 dB input EQ installed.
- Measured at 1218 MHz. Specified at the housing cable entry facility over temperature and includes the loss of 1 dB for the equalizer.
- Hum modulation is measured at 15 Arms AC current passing through the port under test.
- SC-QAM channels (256 QAM Annex B).
- The QAM load is 256 QAM, J.83 Annex B, 5.360537 MS/s; 6 MHz/channel. Near Noise correction is applied to compensate for the source MER contribution. The BER is specified without any forward error correction.

## SPECIFICATIONS

Upstream Parameter		Units	Specification
Frequency split <sup>1</sup>	042 Split 065 Split 085 Split 204 Split	MHz	5-42 5-65 5-85 5-204
Flatness <sup>2</sup>		dB	± 0.5
Operational Gain, 5-42 MHz		dB	20 or 24 (according to gain option selected)
Reference Operating Slope		dB	± 1.0
Noise Figure (20 dB Gain Option)		dB	7.5
Noise Figure (24 dB Gain Option)		dB	6.0
Test Points		dB	20 ± 1.0 dB
Return Loss		dB	16
Hum Modulation @ 15A <sup>3</sup>		dBc	< -50, 5-10 MHz < -60, 11-F <sub>maxreturn</sub> MHz
Distortion: All Digital, 6 Digital Channels <sup>6</sup>			
Reference Frequency		MHz	42/5
Reference Input Level (20 dB Gain Option)		dBmV	16/16
Reference Input Level (24 dB Gain Option)		dBmV	12/12
Reference Output Level (20 dB Gain Option, 0 dB Slope)		dBmV	36/36
NPR Dynamic Range <sup>4</sup>		dB	36
BER Dynamic Range <sup>5</sup>		dB	42
Reference Output Level (24 dB Gain Option, 0 dB Slope)		dBmV	36/36
NPR Dynamic Range <sup>4</sup>		dB	32
BER Dynamic Range <sup>5</sup>		dB	38
Distortion: All Digital, 13 Digital Channels <sup>6</sup>			
Reference Frequency		MHz	85/5
Reference Input Level (20 dB Gain Option)		dBmV	12/12
Reference Input Level (24 dB Gain Option)		dBmV	8/8
Reference Output Level (20 dB Gain Option, 0 dB Slope)		dBmV	32/32
NPR Dynamic Range <sup>4</sup>		dB	33
BER Dynamic Range <sup>5</sup>		dB	39
Reference Output Level (24 dB Gain Option, 0 dB Slope)		dBmV	32/32
NPR Dynamic Range <sup>4</sup>		dB	29
BER Dynamic Range <sup>5</sup>		dB	35

## NOTES:

1. Operating passband of station, determined by the diplex filters, Return Path Low Pass Filter and Return Equalizer installed in the amplifier.
2. Flatness is measured with respect to slope.
3. Hum modulation is specified from 10 MHz to F<sub>maxret</sub> and is measured with 15 Arms AC current passing through the port under test.
4. The NPR dynamic range is specified for an NPR greater than or equal to 40 dB.
5. The BER dynamic range is specified for an uncorrected (Pre-FEC) BER less than or equal to 1.0 x 10<sup>-6</sup>.
6. The QAM load is 256 QAM, J.83 Annex B, 5.360537 MS/s; 6 MHz/channel.

## SPECIFICATIONS

Upstream Parameter (cont.)	Units	Specification
Distortion: All Digital, 33 Digital Channels <sup>1</sup>		
Reference Frequency	MHz	204/5
Reference Input Level (20 dB Gain Option)	dBmV	9/9
Reference Input Level (24 dB Gain Option)	dBmV	5/5
Reference Output Level (20 dB Gain Option, 0 dB Slope)	dBmV	29/29 (actual)
NPR Dynamic Range <sup>2</sup>	dB	29
BER Dynamic Range <sup>3</sup>	dB	34
Reference Output Level (24 dB Gain Option, 0 dB Slope)	dBmV	29/29 (actual)
NPR Dynamic Range <sup>2</sup>	dB	25
BER Dynamic Range <sup>3</sup>	dB	30
Powering Specifications	Units	Specification
DC Voltage	VDC	24
Current DC Max	mA	825
AC Input Voltage Range	VAC	38–90
AC Input Current (typical)	@ 44 V @ 60 V @ 90 V	0.71 A / 22.7 W 0.63 A / 23.1 W 0.51 A / 24.4 W
AC Bypass Current	A	15
General Specifications	Units	Specification
Operating Temperature Range	C F	–40° to +60° –40° to +140°
Housing dimensions, L x W x D	inches mm	10.6 x 8.0 x 4.7 270 x 204 x 120
Weight	lb kg	7.2 3.3

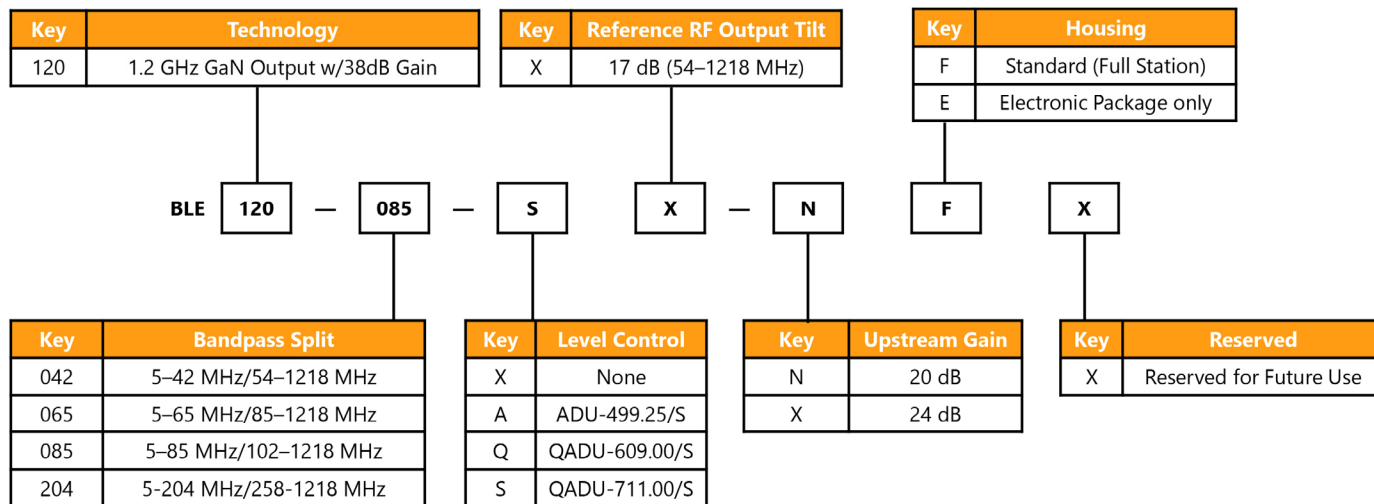
### NOTES:

1. The QAM load is 256 QAM, J.83 Annex B, 5.360537 MS/s; 6 MHz/channel.
2. The NPR dynamic range is specified for an NPR greater than or equal to 40 dB.
3. The BER dynamic range is specified for an uncorrected (Pre-FEC) BER less than or equal to  $1.0 \times 10^{-6}$ .

## RELATED PRODUCTS

ADU/QADU	SRE Return Equalizers
BLE120	Installation Services
SFE-120 Forward Equalizers	SCS-120* Cable Simulators

## 1.2 GHZ BLE ORDERING GUIDE



**NOTE:**

1. FTEC and 30A fuses are included in all models as standard.

### REQUIRED ACCESSORIES

Model Name	Description
CE-120-*	Forward 1218 MHz Cable Equalizer 1 to 20 dB in 1 dB steps -or-
CS-120-*	Forward 1218 MHz Cable Simulator 1 to 10 dB in 1 dB steps
SRE-*-*	Return Equalizer, 5–42 MHz (042 Split), 5–65 (065 Split), 5–85 (085 Split), 5–204 (204 Split), values 0 to 10 dB in 2 dB steps
NPB-*	Plug-in attenuator/pad (values 0 to 26 dB in 1 dB steps)

### OPTIONAL ACCESSORIES

Model Name	Description
QADU-609.00/S-R	609.00 MHz QAM Automatic Drive Unit for 1.2 GHz Amplifiers
QADU-711.00/S-R	711.00 MHz QAM Automatic Drive Unit 1.2 GHz Amplifiers
ADU-499.25/S-R	499.25 MHz Automatic Drive Unit 1.2 GHz Amplifiers
BLE-120-KIT	15 Amp platform kit to upgrade older Line Extender housings for improved performance to 1.2 GHz

**Note:** Specifications are subject to change without notice.

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