CriticalPoint™ Version 3 / Next Generation Public Safety Solution

Public Safety 700/800MHz Class A/B 27/33dBm Bi-directional Amplifier and Battery Backup Unit

Public Safety Standards Compliance

- Complies with IFC / NFPA / UL2524
- FCC Class A: **PX8RX78V2F-A** / Class B**: PX8RX78V2F-B**
- UL 2524 Standard Certified – SGS Certificate:
    - BDA: **SGSNA/23/GZ/00254X**
    - BBU: **SGSNA/23/GZ/00235X**
    - System: **SGSNA/23/GZ/00028**
- ISED (IC) Class A: **11919A- RX78V3A** / Class B: **11919A- RX78V3B**
- UL50E Type 4 / NEMA 4 enclosure for BDA / BBU

Bi-directional Amplifier

- Supports P25 P1/P2, digital and conventional analog communications simultaneously
- Built-in cavity filtering to protect the unit from interference from FirstNet Band 14 and other neighbor bands
- Up to 64 channels per band on single band models; up to 96 channels shared across bands on dual band models (maximum of 64 on individual band) (Class A)
- Channelized (Class A) / Wideband Auto Level Control (ALC) supported
- Downlink and Uplink squelch supported
- NetProtect™ Uplink PA shutdown during no traffic periods to minimize noise being introduced to the network
- Built-in mandatory isolation test to prevent BDA oscillation
- Auto shutdown with alarm upon oscillation detection
- Expandable to 700/800MHz V3/NG fiber system
- Web based GUI for intelligent configuration, SNMP v2c/v3 supported
- Integrated Battery Charger Unit, Comba BBU V2 / BBU V3/NG supported
- License based switching between Class A or Class B, Single band or Dual band, 0.5W or 2W configurations
- NFPA / IFC / UL 2524 compliant dry contact alarms and built-in visual / audio annunciator
- OSHPD Special Seismic Certification Preapproval (OSP) listed
- Additional external Comba Annunciator Panel supported

Battery Backup Unit

- Optional dedicated Battery Backup Solution for BDA V3/NG platform
- Powered by Lithium Iron Phosphate (LiFePO4) batteries
- Provides 12 hours backup time with 30AH battery option
- Provides 24 hours backup time with 60AH battery option
- Provides 48 hours backup time with 100AH battery option
- Provides connections for EPO (Emergency Power Off) switch
- Provides AC convenience outlet inside BBU

		700MHz	800MHz
Passband (Downlink / Uplink)	MHz	US Class A: 769 – 775 / 799 – 805 US Class B: 758 – 775 / 788 – 805 CA Class A: 768 – 776 / 798 – 806 CA Class B: 768 – 776 / 798 – 806	US Class A: 851 – 861 / 806 – 816 US Class B: 851 – 861 / 806 – 816 CA Class A: 851 – 869 / 806 – 824 CA Class B: 851 – 869 / 806 – 824
Total Output Power, Uplink	dBm	27	
Total Output Power, Downlink	dBm	27 / 33	27 / 33
Maximum System Gain (Uplink / Downlink)	dB	90	90
Gain Adjustment Range (1dB step) *	dB	60-90 / 35-65 / 10-40 (Under different gain limit modes)	60-90 / 35-65 / 10-40 (Under different gain limit modes)
Pass Band Ripple, p-p (Uplink / Downlink)	dB	S0: ≤3, S1: ≤7	S0: ≤3, S1: ≤7
Uplink Noise Figure	dB	<5 (90dB Uplink Gain), <9 (67dB Uplink Gain)	
Intermodulation	dBm	≤ -13	≤ -13
Spurious	dBm	FCC Compliance	FCC Compliance
Maximum RF Input Level without Damage	dBm	0	0
Maximum RF Input Level without Overdrive	dBm	-10	-10
Input VSWR		≤ 2	≤ 2
Impedance	Ω	50	50

*Gain adjusts down to 10dB total gain but is no longer FCC compliant for NF at that level

Class A and Specialized Filtering			
Number of Filters Downlink			64 Max per single band 96 Max (shared both bands) for 700/800MHz dual band
Number of Filter Uplink			64 Max per single band 96 Max (shared both bands) for 700/800MHz dual band
Filter Bandwidth		KHz	12.5/25/37.5/50/75/100/150**
Filter	Bandwidth (kHz)	Delay(μs)*	Out-of-Band Suppression
High rejection Filter Set	12.5	≤48	≥ 60dBc @ filter edge + 30KHz
	25	≤30	≥ 60dBc @ filter edge + 50KHz
	75	≤18	≥ 60dBc @ filter edge + 130KHz
	75 LD	≤15	≥ 60dBc @ filter edge + 200KHz
Low Delay Filter Set	12.5	≤30	≥ 60dBc @ filter edge + 65KHz
	25	≤27	≥ 60dBc @ filter edge + 75KHz
	37.5	≤26	≥ 60dBc @ filter edge + 75KHz
	50	≤26	≥ 60dBc @ filter edge + 100KHz
	75	≤15	≥ 60dBc @ filter edge + 200KHz
	100	≤14	≥ 60dBc @ filter edge + 200KHz
	150	≤13	≥ 60dBc @ filter edge + 205KHz

*Actual delay number is various according to firmware version
**BDA does not comply with FCC Class A regulation if any filters that are wider than 75KHz are used. Users must use a Class B FCC Label and register the BDA on FCC's WEB Site. Contact Comba Customer Service for support.

Class B Wide Band Filtering		
Number of Filters		3
Filter Bandwidth	MHz	0.6-10
System Group Delay	μsec	≤ 7
Out-of-Band Suppression	dBc	≥ 60 @ filter edge + 1MHz

Mechanical Specification - BDA

Dimensions, H x W x D	mm / in	330 x 490 x 199 / 13.0 x 19.3 x 7.8	
Weight without bracket, (bracket)	kg / lbs	25 / 55.1, (1.81 /4.0)	
Power Supply Input	VAC	100-240V / 50-60Hz / 4.5A Max	
	VDC	+51.2V / 8A Max (Does NOT Support Negative DC Source)	
DC Output Voltage to External Device, Nominal	VDC	+51.2VDC (1 Port), +28VDC (2 Ports)	
External Device Maximum Power Draw	W	105	
Maximum Charging Current	A	5	
Power Consumption	Single Band	W	<75 (27dBm)	<90 (33dBm)
	Dual Band	W	<85 (27dBm)	<100 (33dBm)
Enclosure Cooling		Convection	
Heat Dissipation	BTU/Hr	<480 (with BDA only, 2A Charging) <580 (Full Load)	
Main RF Connectors		N-Female (MT, DT)	
RF Connectors for Fiber DAS expansion		SMA-Female (FOU DL, FOU UL)	
RF Test Port		SMA-Female (DT-Test, MT-Test), -28 (+/-4) dB coupling	
Dry Contact Alarm Visual Annunciation		Dry Contact Alarm LED 1-8, ALM, RUN (LED test supported)	
Dry Contact Alarm Audible Annunciation		Buzzer (Mute supported)	
Communication port		RJ45 (LAN, OMT)	
Dry Contact Alarm Output		8	
Annunciator Panel		1 x Built-in, 2 x External Comba Annunciator Panel Supported	
Alarm / Annunciator Panel Code Compliance		NFPA 1221 2019 / NFPA 1225 2022 / IFC 510 2021 / UL2524 2018	
External Alarm Input		5 (#5 is pre-configured for Door Open Alarm)	
Reserved Knockouts		3/4-inch hole x 1, 1/2-inch hole x 3, 1-inch hole x2	
Operating Temperature and Humidity	°F (°C)	-40 to 131 (-40 to +55), ≤ 95%	
Environmental Class		UL50E Type 4 / NEMA 4	
MTBF	Hr	100,000	

Mechanical Specification - Battery Backup Unit
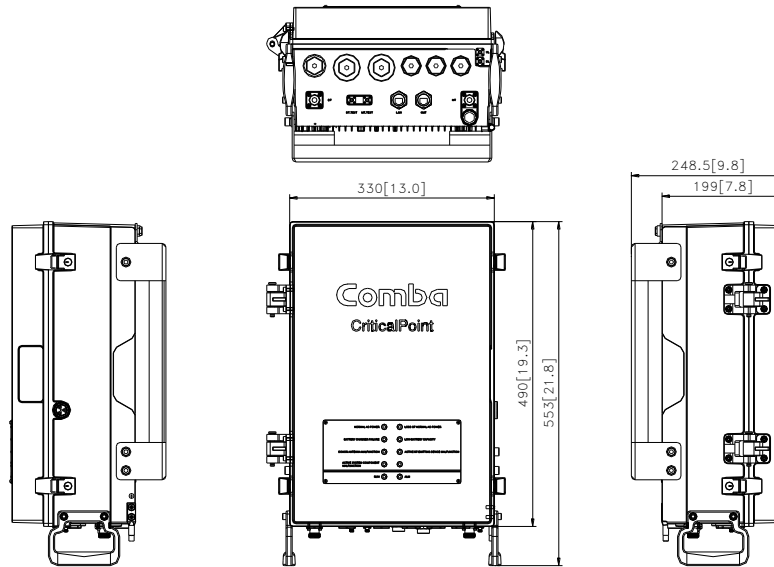
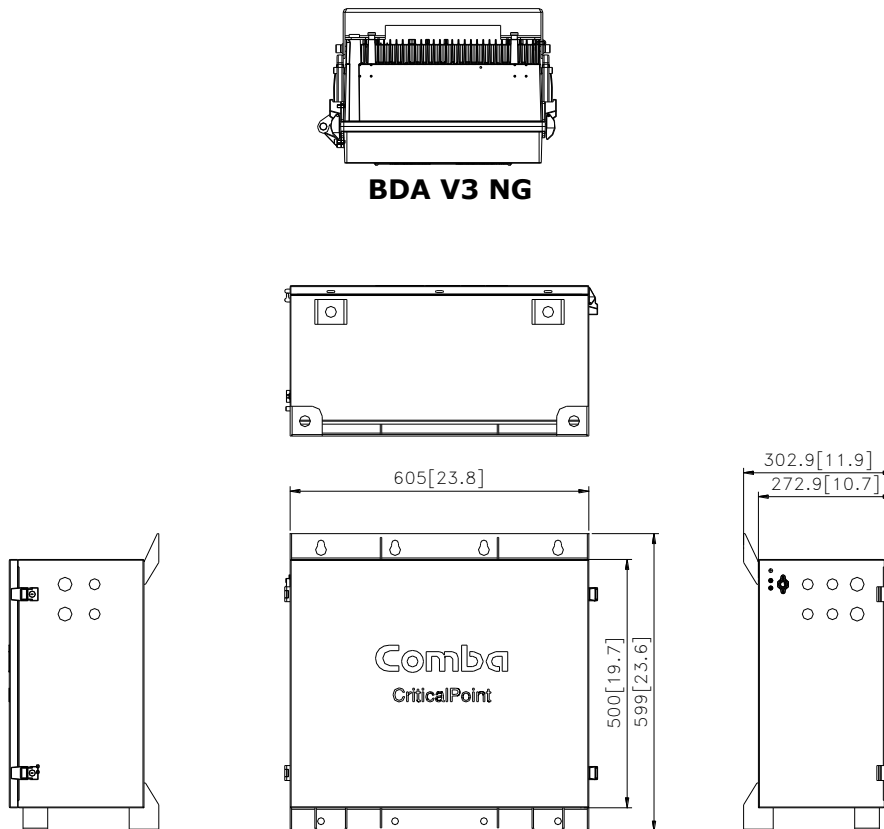|		
Dimensions, H x W x D	mm / in	605 x 500 x 272.9 / 23.8 x 19.7 x 10.7
Weight (without battery)	Kg / lbs	26 / 57.3
Reserved Knockouts		3/4-inch hole x 4, 1/2-inch hole x 6
Heat Dissipation	BTU/Hr	<100 (with 30AH, 60AH, or 100AH battery)
Operating Temperature and Humidity	°F (°C)	32 to 104 (0 to 40), ≤ 95%
Enclosure Environmental Class		UL50E Type 4 / NEMA 4
MTBF	Hr	100,000

Specification - Battery

Battery Type		(Lithium Iron Phosphate) LiFePO4		
System Required Quantity	pcs	1	1	1
Capacity, Discharge @ 0.33C	AH	30	60	100
Nominal Voltage	VDC	51.2	51.2	51.2
Charging@2A, from 30%	Hour	10.5	21	35
Backup Hours		48.1 * 30 / Load	48.1 * 60 / Load	48.1 * 100 / Load
Battery Weight	lb(kg)	52.9 (24)	79.8 (36.2)	123.5 (56)
Battery Electrolyte Counts		0.456 Gallons / 4.6 lbs	0.913 Gallons / 9.1 lbs	1.758 Gallons / 17.6 lbs
BMS Comm. Port		Serial port (RS485)		

*Typical specifications at room temperature

BDA V3 NG

BBU V3 NG

Part Numbers

RX78V3 − A 33 27 P0 − S1 − (SR)

Seismic Rated Part	SR = (Optional) Seismic Rated
BDA Duplexer Configuration	S0 = 700MHz NB, 800MHz NB, B14, ESMR S1 = 700MHz NB, 800MHz NB, Reject B14, ESMR S2 (NA) = 700MHz NB, Reject 800MHz NB, B14, ESMR S3 (NA) = 800MHz NB, Reject 700MHz NB, B14, ESMR S4 (NA) = NPSPAC, Reject all other bands S5 (NA) = 700MHz NB, 800MHz NB, B14, Reject ESMR C0 = Canada Version
BDA Power Supply	P0 = AC input with internal charger
BDA UL Power	27 = 27dBm 00 = No Uplink Output (Remote Unit)
BDA DL Power	33 = 33dBm 27 = 27dBm
BDA Class	A = Class A B = Class B
BDA Authorized Band	07 = 700MHz single band 08 = 800MHz single band 78 = 700MHz and 800MHz dual band
Master Unit / Remote Unit	RX = Master Unit (BDA) RH = Remote Unit

BDA Part Numbers	Band	Class	DL PWR	Duplexer Configuration
RX78V3-A3327P0-XX	700/800MHz	Class A	33dBm	XX=S1/S0/C0
RX07V3-A3327P0-XX	700MHz	Class A	33dBm	XX=S1/S0/C0
RX08V3-A3327P0-XX	800MHz	Class A	33dBm	XX=S1/S0/C0
RX78V3-A2727P0-XX	700/800MHz	Class A	27dBm	XX=S1/S0/C0
RX07V3-A2727P0-XX	700MHz	Class A	27dBm	XX=S1/S0/C0
RX08V3-A2727P0-XX	800MHz	Class A	27dBm	XX=S1/S0/C0
RX78V3-B3327P0-XX	700/800MHz	Class B	33dBm	XX=S1/S0/C0
RX07V3-B3327P0-XX	700MHz	Class B	33dBm	XX=S1/S0/C0
RX08V3-B3327P0-XX	800MHz	Class B	33dBm	XX=S1/S0/C0
RX78V3-B2727P0-XX	700/800MHz	Class B	27dBm	XX=S1/S0/C0

BBU Part Numbers	Battery Type	Capacity	Backup Hours
BBUV3-LFP48030	Lithium iron phosphate	30AH	>12H for 110W
BBUV3-LFP48060	Lithium iron phosphate	60AH	>24H for 110W, 12H for 220W
BBUV3-LFP48100	Lithium iron phosphate	100AH	>48H for 110W, 24H for 220W

License Part Numbers	Configuration	
RX78V3-L-2733AASS	27dBm to 33dBm upgrade license	27dBm to 33dBm upgrade license, for Single Band, Class A units
RX78V3-L-2733AADD		27dBm to 33dBm upgrade license, for Dual Band, Class A units
RX78V3-L-2733BBDD		27dBm to 33dBm upgrade license, for Dual Band, Class B units
RX78V3-L-3333AASD	Single Band to Dual Band upgrade license	Single band to Dual Band upgrade license, for 33dBm, Class A units
RX78V3-L-3333BBSD		Single band to Dual Band upgrade license, for 33dBm, Class B units
RX78V3-L-2727AASD		Single band to Dual Band upgrade license, for 27dBm, Class A units
RX78V3-L-3333BASS	Class B to Class A upgrade license	Class B to Class A upgrade license, for 33dBm, Single Band units
RX78V3-L-3333BADD		Class B to Class A upgrade license, for 33dBm, Dual Band units
RX78V3-L-2727BADD		Class B to Class A upgrade license, for 27dBm, Dual Band units

HCAI/OSHPD Special Seismic Certification Preapproval (OSP) Parts

Part Numbers	Description
BDA / DAS Master Unit	
RX78V3-A3327P0-S1-SR	BDA/Master Unit V3 700/800MHz Dual Band, Class A, 2W DL per band / 0.5W UL, S1 Configuration, HCAI OSP listed.
RX07V3-A3327P0-S1-SR	BDA/Master Unit V3 700MHz Single Band, Class A, 2W DL per band / 0.5W UL, S1 Configuration, HCAI OSP listed.
RX08V3-A3327P0-S1-SR	BDA/Master Unit V3 800MHz Single Band, Class A, 2W DL per band / 0.5W UL, S1 Configuration, HCAI OSP listed.
RX78V3-A2727P0-S1-SR	BDA/Master Unit V3 700/800MHz Dual Band, Class A, 0.5W DL per band / 0.5W UL, S1 Configuration, HCAI OSP listed.
RX07V3-A2727P0-S1-SR	BDA/Master Unit V3 700MHz Single Band, Class A, 0.5W DL per band / 0.5W UL, S1 Configuration, HCAI OSP listed.
RX08V3-A2727P0-S1-SR	BDA/Master Unit V3 800MHz Single Band, Class A, 0.5W DL per band / 0.5W UL, S1 Configuration, HCAI OSP listed.
Battery Backup Unit	
BBUV3-LFP48030-SR	Battery Backup Unit V3, 30AH LiFePO4 Battery, HCAI OSP listed.
BBUV3-LFP48060-SR	Battery Backup Unit V3, 60AH LiFePO4 Battery, HCAI OSP listed.
BBUV3-LFP48100-SR	Battery Backup Unit V3, 100AH LiFePO4 Battery, HCAI OSP listed.
Annunciator Panel	
CPAPV1-DC-B-UL-SR	Annunciator Panel V1, DC, Supports Dry Contact Alarm Output, UL 2524 Standard Certified, HCAI OSP listed.

Page 6 of 6