CriticalPoint™ Version 3 / Next Generation Public Safety Solution

Public Safety 700/800MHz Class A/B 27/33dBm Fiber DAS and Battery Backup Unit

Public Safety Standards Compliance

- Complies with IFC / NFPA / UL2524
- Master Unit (BDA) FCC Class A: **PX8RX78V2F-A** / Class B**: PX8RX78V2F-B**
- Remote Unit FCC Class A: **PX8RH78V3-A** / Class B**: PX8RH78V3-B**
- UL 2524 Standard Certified – SGS Certificate:
  - Master Unit (BDA): **SGSNA/23/GZ/00254X**
  - Remote Unit: **SGSNA/23/GZ/00246X**
  - BBU: **SGSNA/23/GZ/00235X**
  - System (BDA + BBU): **SGSNA/23/GZ/00028**
  - System (RU + BBU): **SGSNA/23/GZ/00244X**
- Master Unit (BDA) ISED (IC) Class A: **11919A- RX78V3A /** Class B: **11919A- RX78V3B**
- Remote Unit ISED (IC) Class A: **11919A- RH78V3A /** Class B: **11919A- RH78V3B**
- UL50E Type 4 / NEMA 4 enclosure for BDA / BBU

Fiber DAS System

- 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
- Support up to 32 Remote Units
- Both Master Unit and Remote Units have the same output power for coverage
- 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
- Built-in mandatory isolation test to prevent system oscillation
- Auto shutdown with alarm upon oscillation detection
- Web based GUI for intelligent configuration, SNMP 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

Master Unit (BDA)

Remote Unit

Fiber Optical Unit

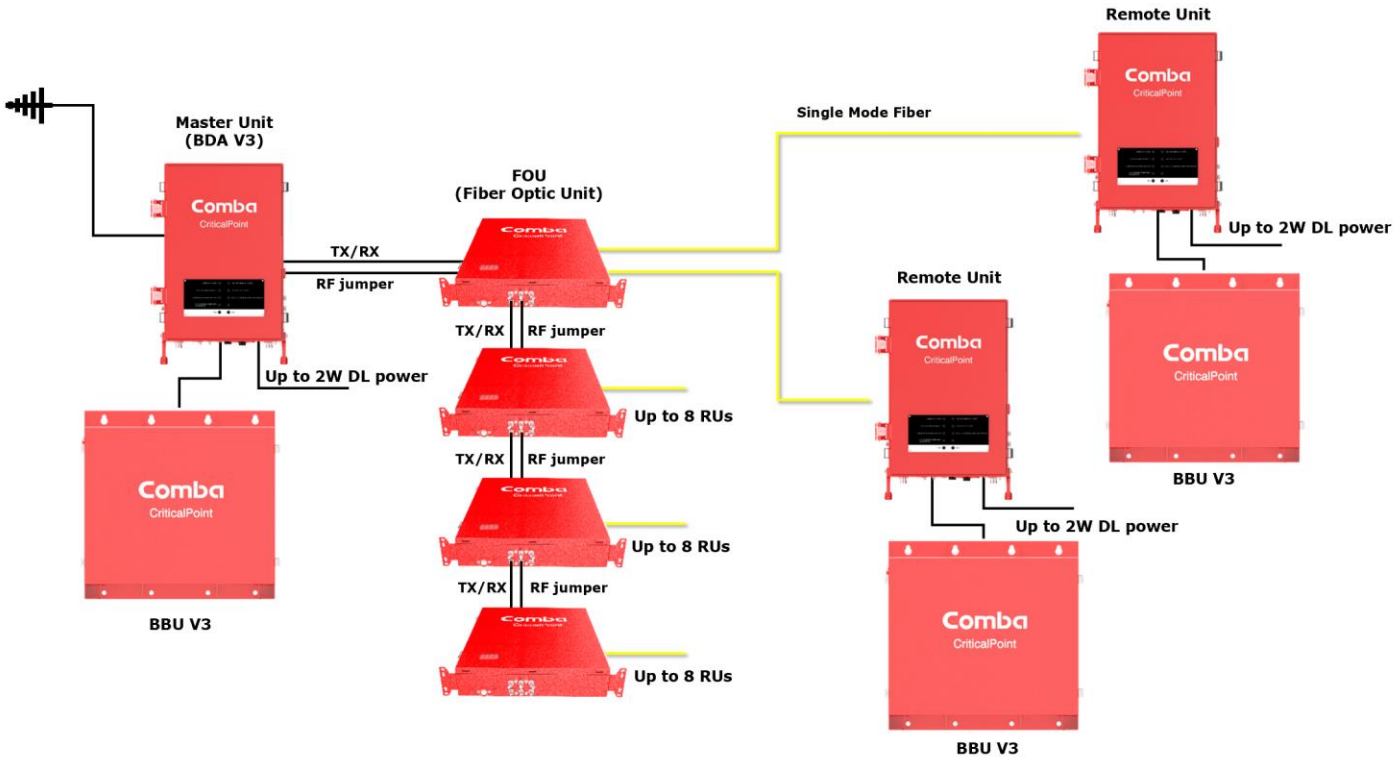
Battery Backup Unit

- Optional dedicated Battery Backup Solution for BDA & DAS 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

Battery Backup Unit

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.

Typical System Block Diagram



Specifications – Fiber Optic Unit

Frequency Band	MHz	758 - 869
Optical Wavelength Uplink	nm	1310
Optical Wavelength Downlink	nm	1550
Optical Connector Type		SC-APC
Optical Fiber Type		Single Mode, WDM (single strand of fiber per Remote Units)
VSWR		≤ 1.5
Number of RU supported per FOU		Up to 4 or 8 RU per FOU
Number of FOU supported per MU		Up to 4
Number of RU supported per MU		Up to 32

Mechanical Specifications – Fiber Optic Unit

Dimensions, H x W x D		in(mm)	18.5 x 15.8 x 3.4 (470 x 400 x 87)
Weight (without bracket)	4 Port	lb(kg)	25.4 (11.5)
	8 Port	lb(kg)	27.6 (12.5)
Power Consumption (approx.)	4 Port	W	15
	8 Port	W	20
Power Supply		VDC	+28 (From Master Unit)
Enclosure Cooling			Convection
Operating Temperature		°F (°C)	-40 to +131 (-40 to +55)
Operating Humidity			≤ 95%
Enclosure Class			UL50E Type 4 / NEMA 4

Note: Typical specifications at room temperature

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.
DS-Control:0-1-1 / 0124

RF Specifications – System (MU and RU)

		700MHz	800MHz
Passband (Downlink / Uplink)	MHz	Configuration S0 – 700MHz: 758-775 / 788 – 805, 800MHz: 851-861 / 806-816 Configuration S1 – 700MHz: 769-775 / 799 – 805, 800MHz: 851-861 / 806-816 Configuration C0 – 700MHz: 768-776 / 798 – 806, 800MHz: 851-869 / 806-824	
Total Output Power, Uplink	dBm	27 (Master Unit Only)	
Total Output Power, Downlink	dBm	27 / 33 (Master and Remote Units)	27 / 33 (Master and Remote Units)
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	≤50 (MU Only: ≤48)	≥ 60dBc @ filter edge + 30KHz
	25	≤32 (MU Only: ≤30)	≥ 60dBc @ filter edge + 50KHz
	75	≤20 (MU Only: ≤18)	≥ 60dBc @ filter edge + 130KHz
	75 LD	≤17 (MU Only: ≤15)	≥ 60dBc @ filter edge + 200KHz
Low Delay Filter Set	12.5	≤32 (MU Only: ≤30)	≥ 60dBc @ filter edge + 65KHz
	25	≤29 (MU Only: ≤27)	≥ 60dBc @ filter edge + 75KHz
	37.5	≤28 (MU Only: ≤26)	≥ 60dBc @ filter edge + 75KHz
	50	≤28 (MU Only: ≤26)	≥ 60dBc @ filter edge + 100KHz
	75	≤17 (MU Only: ≤15)	≥ 60dBc @ filter edge + 200KHz
	100	≤16 (MU Only: ≤14)	≥ 60dBc @ filter edge + 200KHz
	150	≤15 (MU Only: ≤13)	≥ 60dBc @ filter edge + 205KHz

**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

*Actual delay number is various according to firmware version, system delay (MU+RU, including 1m of Fiber)

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.

Mechanical Specification - MU

Dimensions, H x W x D		mm / in	330 x 490 x 199 / 13.0 x 19.3 x 7.8	
Weight (without bracket)		kg / lbs	25 / 55.1	
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		<85 (27dBm)	<100 (33dBm)
Enclosure Cooling			Convection	
Heat Dissipation		BTU/Hr	<480 (with Master Unit only, 2A Charging) <580 (Full Load)	
Main RF Connectors / RF Test Port			N-F (DT, MT) / SMA-F (DT-Test, MT-Test), -28dB coupling	
RF Connectors for Fiber DAS expansion			SMA-F (FOU DL, FOU UL)	
Dry Contact Alarm Visual Annunciation			Dry Contact Alarm LED 1-8, ALM, RUN (LED test supported)	
Dry Contact Alarm Audible Annunciation			Buzzer (Mute and Lamp Test supported)	
Communication port			RJ45 (LAN, OMT)	
Dry Contact Alarm Output			8	
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 - RU

Dimensions, H x W x D		mm / in	330 x 490 x 199 / 13.0 x 19.3 x 7.8	
Weight (without bracket)		kg / lbs	25 / 55.1	
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 Port)	
External Device Maximum Power Draw		W	105	
Maximum Charging Current		A	5	
Power Consumption	Single Band	W	<75 (27dBm)	<90 (33dBm)
	Dual Band		<85 (27dBm)	<100 (33dBm)
Enclosure Cooling			Convection	
Heat Dissipation		BTU/Hr	<480 (with Remote Unit only, 2A Charging) <580 (Full Load)	
Main RF Connectors / RF Test Port			N-F (MT) / SMA-F (MT-Test), -28dB coupling	
Dry Contact Alarm Visual Annunciation			Dry Contact Alarm LED 1-8, ALM, RUN (LED test supported)	
Dry Contact Alarm Audible Annunciation			Buzzer (Mute and Lamp Test supported)	
Communication port			RJ45 (OMT)	
Dry Contact Alarm Output			8	
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	

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.

Mechanical Specification - Battery Backup Unit

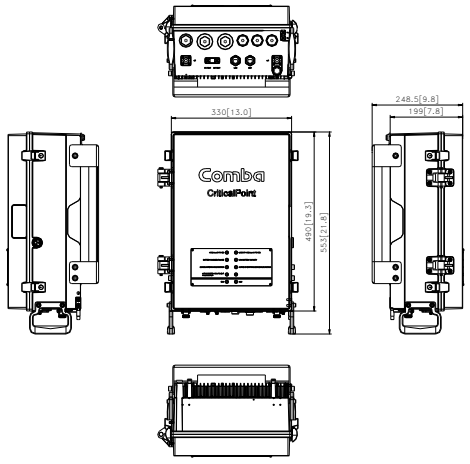
Dimensions, H x W x D	mm / in	605 x 500 x 272.9 / 23.8 x 19.7 x 10.7
Weight (without battery)	Kg / lbs	26 / 57.3
Reserved Knockouts		3/4-inch hole x 4, 1/2-inch hole x 6
Heat Dissipation	BTU/Hr	<100 (with 30AH, 60AH, or 100AH battery)
Operating Temperature and Humidity	°F (°C)	32 to 104 (0 to 40), ≤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

Specification - Battery

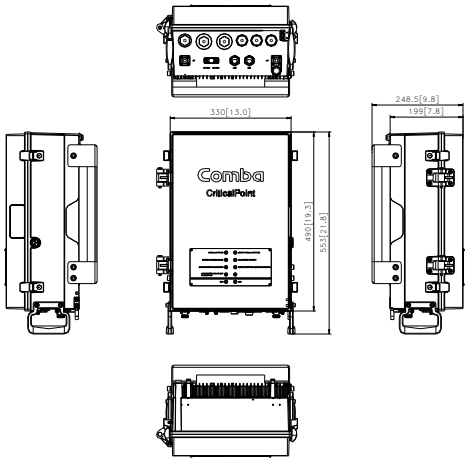
Battery Type		(Lithium Iron Phosphate) LiFePO4		
System Required Quantity	pcs	1	1	1
Capacity, Discharge @ 0.33C	AH	30	60	100
Nominal Voltage	VDC	51.2	51.2	51.2
Charging@2A, from 30%	Hour	10.5	21	35
Backup Hours		48.1 * 30 / Load	48.1 * 60 / Load	48.1 * 100 / Load
Battery Weight	lb(kg)	52.9 (24)	79.8 (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

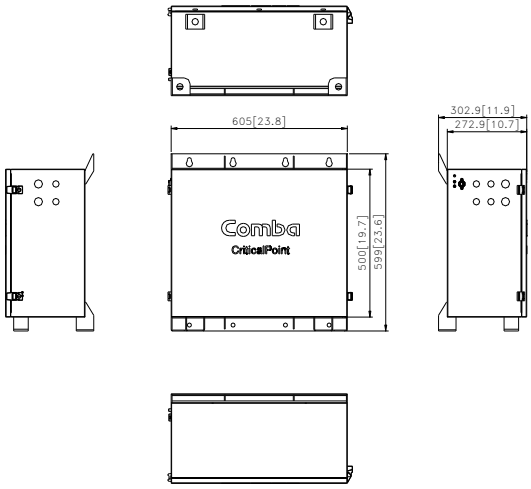
Outline Drawing



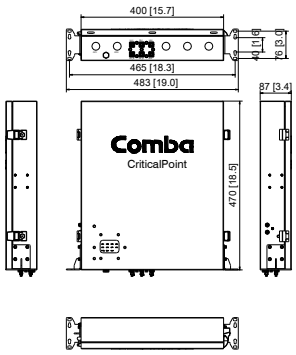
Master Unit V3 NG



Remote Unit V3 NG



BBU V3 NG

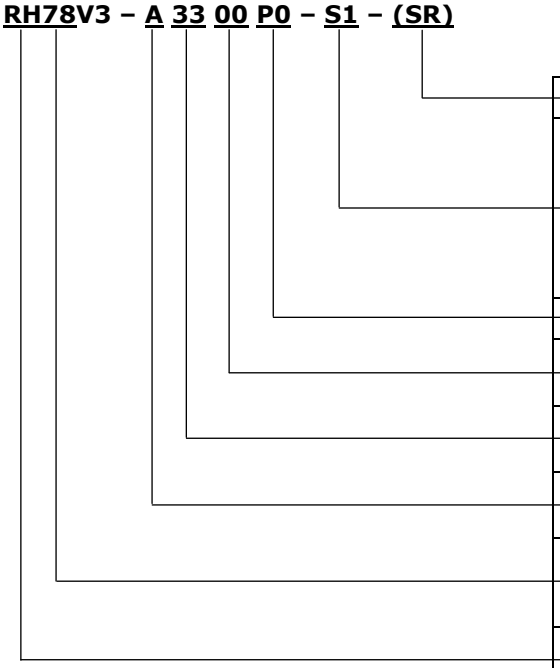


FOU

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.
DS-Control:0-1-1 / 0124

Part Numbers

RH78V3 – A 33 00 P0 – S1 – (SR)



Seismic Rated Part	SR = (Optional) Seismic Rated
BDA Band Configuration	S0 = 700MHz NB, 800MHz NB, B14, ESMR S1 = 700MHz NB, 800MHz NB, High Rejection S2 (NA) = 700MHz NB, High Rejection S3 (NA) = 800MHz NB, High Rejection S4 (NA) = NPSPAC, High Rejection S5 (NA) = 700MHz NB, 800MHz NB, B14, High Rejection 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

Master Unit / BDA V3 NG

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

Remote Unit V3 NG

BDA Part Numbers	Band	Class	DL PWR	Duplexer Configuration
RH78V3-A3300P0-XX	700/800MHz	Class A	33dBm	XX=S1/S0/C0
RH07V3-A3300P0-XX	700MHz	Class A	33dBm	XX=S1/S0/C0
RH08V3-A3300P0-XX	800MHz	Class A	33dBm	XX=S1/S0/C0
RH78V3-A2700P0-XX	700/800MHz	Class A	27dBm	XX=S1/S0/C0
RH07V3-A2700P0-XX	700MHz	Class A	27dBm	XX=S1/S0/C0
RH08V3-A2700P0-XX	800MHz	Class A	27dBm	XX=S1/S0/C0
RH78V3-B3300P0-XX	700/800MHz	Class B	33dBm	XX=S1/S0/C0
RH07V3-B3300P0-XX	700MHz	Class B	33dBm	XX=S1/S0/C0
RH08V3-B3300P0-XX	800MHz	Class B	33dBm	XX=S1/S0/C0
RH78V3-B2700P0-XX	700/800MHz	Class B	27dBm	XX=S1/S0/C0

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.

FOU (Fiber Optic Units) for DAS V3 NG

FOU Part Numbers	Description
RHFOUV2F-E04UL	Critical Point Fiber Optical Unit for platform V2F and V3 NG, 4 port, UL 2524 Standard Certified
RHFOUV2F-E08UL	Critical Point Fiber Optical Unit for platform V2F and V3 NG, 8 port, UL 2524 Standard Certified

Battery Backup Unit V3 NG

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

Master Unit V3 NG Licenses

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

Remote Unit V3 NG Licenses

License Part Numbers	Configuration	
RH78V3-L-2733AASS	27dBm to 33dBm upgrade license	27dBm to 33dBm upgrade license, for Single Band, Class A units
RH78V3-L-2733AADD		27dBm to 33dBm upgrade license, for Dual Band, Class A units
RH78V3-L-2733BBDD		27dBm to 33dBm upgrade license, for Dual Band, Class B units
RH78V3-L-3333AASD	Single Band to Dual Band upgrade license	Single band to Dual Band upgrade license, for 33dBm, Class A units
RH78V3-L-3333BBSD		Single band to Dual Band upgrade license, for 33dBm, Class B units
RH78V3-L-2727AASD		Single band to Dual Band upgrade license, for 27dBm, Class A units
RH78V3-L-3333BASS	Class B to Class A upgrade license	Class B to Class A upgrade license, for 33dBm, Single Band units
RH78V3-L-3333BADD		Class B to Class A upgrade license, for 33dBm, Dual Band units
RH78V3-L-2727BADD		Class B to Class A upgrade license, for 27dBm, Dual Band units

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.
DS-Control:0-1-1 / 0124

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.
DAS Remote Unit	
RH78V3-A3300P0-S1-SR	DAS Remote Unit V3 700/800MHz Dual Band, Class A, 2W DL per band, S1 Configuration, HCAI OSP listed.
RH07V3-A3300P0-S1-SR	DAS Remote Unit V3 700MHz Single Band, Class A, 2W DL per band, S1 Configuration, HCAI OSP listed.
RH08V3-A3300P0-S1-SR	DAS Remote Unit V3 800MHz Single Band, Class A, 2W DL per band, S1 Configuration, HCAI OSP listed.
RH78V3-A2700P0-S1-SR	DAS Remote Unit V3 700/800MHz Dual Band, Class A, 0.5W DL per band, S1 Configuration, HCAI OSP listed.
RH07V3-A2700P0-S1-SR	DAS Remote Unit V3 700MHz Dual Band, Class A, 0.5W DL per band, S1 Configuration, HCAI OSP listed.
RH08V3-A2700P0-S1-SR	DAS Remote Unit V3 800MHz Dual Band, Class A, 0.5W DL per band, S1 Configuration, HCAI OSP listed.
Fiber Optic Unit	
RHFOUV2F-E04UL-SR	Critical Point Fiber Optic Unit for platform V2F and V3 NG, 4 port, UL 2524 Standard Certified, HCAI OSP listed.
RHFOUV2F-E08UL-SR	Critical Point Fiber Optic Unit for platform V2F and V3 NG, 8 port, UL 2524 Standard Certified, 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.

© 2023 Comba Telecom. All rights reserved
Information contained in this document is subject to confirmation at time of ordering.
Specifications may differ depending on region and customers' requirements.
DS-Control:0-1-1 / 0124