



CROSSFIRE

NP

## NANO POWER

Quad Band Digital Radios  
15dBm per Band  
Powered over Ethernet  
Software-Defined Bands

## OVERVIEW

CrossFire NP is a digital transmission platform supporting CPRI protocol over CAT6A+ or fiber optic cable for cellular, GigE and public safety technologies. The digital radio supports (4) 3GPP bands across a wideband software defined remote unit. The NP platform provides a Wi-Fi style approach for the deployment of cellular coverage.

## KEY FEATURES

- Universal Model Supports 700 to 2700 MHz
- 4 3GPP band per remote
- 15dBm Output Power per Band
- Up to 80 MHz per Band
- Cat6A for Power and Data
- Software defined Radio Frequency
- Supports 2x2 MIMO in Single Unit
- Integrated IP Transport

## SYSTEM ELEMENTS



**AU**  
Access Unit

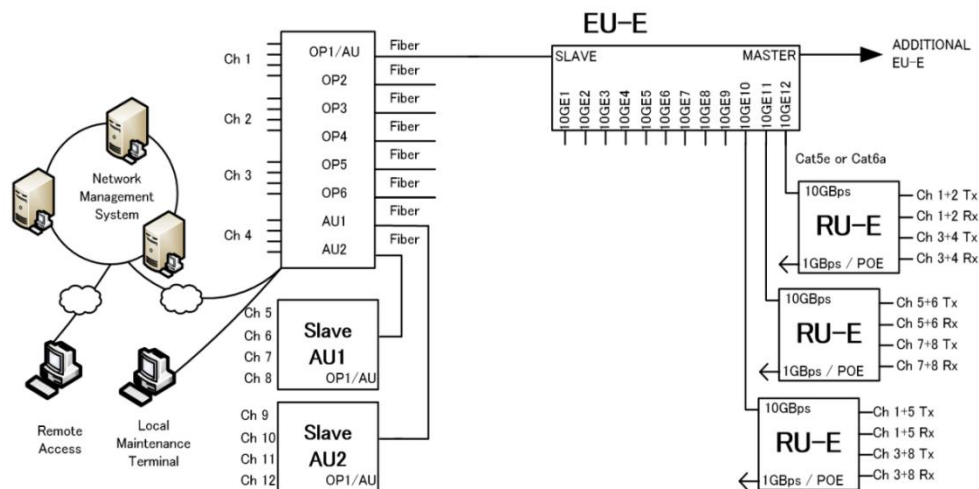


**EU-E**  
Ethernet  
Expansion Unit



**NPRU**  
Nano Power  
Remote Unit

## BLOCK DIAGRAM



## TECHNICAL SPECIFICATIONS

### System

Maximum RF Bands per Access Unit	4
Maximum RF Bands per Remote Unit	4
Maximum RF Bands per System	8
Maximum Access Units per System	3 (1 x Master / 2 x Slaves)
Maximum EUs per Master AU	8
Maximum RUs per EU	12
Maximum EUs cascaded	5
Maximum RUs cascaded	0
Frequency Range (Non-Contiguous)	700MHz – 2700MHz
Bandwidth per Channel (Downlink & Uplink)	≤80MHz (Contiguous)
Digital Bandwidth per Channel (Downlink & Uplink)	40 or 80 MHz
Bandwidth per System (Downlink & Uplink)	≤320MHz + 100MB/s IP
MIMO	2 x 2: 1 x RU (x2) 4 x 4: 2 x RU (x2) 8 x 8: 4 x RU (x2)
IP Transmission Rate per RU	100MB/s
Maximum IP Connections per EU	12
Maximum IP Connections per RU	1
System Delay Adjustment	Up to 80.00μs

### FORWARD PATH (DOWNLINK)

Output Power per Carrier	Number of Carriers			
	1	2	4	8
All Technologies (dBm)	15	12	9	6
Output Power Accuracy	±2dB			
Maximum Gain	15 ± 3dB			
Maximum Input Power	+15dBm (with AGC operating) / 0dBm (without AGC operating)			
Error Vector Magnitude	<3.5% @ 256 QAM			
Ripple	3dB Typical			
Manual Attenuation Control	35dB @ 1dB/step (AU:20dB, RU:15dB)			
System Delay (AU+EU+RU)	9μs			

### REVERSE PATH (UPLINK)

Maximum Output Power per Band	-15dBm
Output Power Accuracy	± 2dB
Maximum Gain	15 ± 3dB
Maximum Input Power	0dBm
Ripple	3dB Typical
Manual Gain Control	35dB @ 1dB/step (AU:20dB, RU:15dB)
System Delay (AU+EU+RU)	9μs
Noise Figure	20dB Typical @ Maximum Gain

SUPPORTED BANDS				
Band	3GPP Band	Downlink	Uplink	Max Bandwidth
700MHz	28	758-803	703-748	45
700MHz Lower	12	729-746	699-716	17
700MHz Upper	13	746-756	776-786	10
800MHz	20	791-821	832-862	30
850MHz	5	869-894	824-849	25
850MHz Extended	26	859-894	814-849	35
900MHz	8	925-960	880-915	25
1800MHz	3	1805-1880	1710-1785	75
1900MHz	25	1930-1995	1850-1915	65
2100MHz	66	2110-2180	1710-1780	70
2100MHz	1	2110-2170	1920-1980	60
2300MHz	30	2350-2360	2305-2315	10
2300MHz TDD	40	2300-2400	2300-2400	80
2500MHz TDD	41 (Lower)	2496-2596	2496-2596	80
2500MHz TDD	41 (Upper)	2590-2690	2590-2690	80
2600MHz	7	2620-2690	2500-2570	70
2600MHz TDD	38	2570-2620	2570-2620	50

INTERFACES	
Antenna Interface (All bands)	QMA Female
Access Unit RF Interface	QMA Female
Transmission Connector Type	SFP+, Standard LC (AU – EU) / RJ45 (EU – RU)
Transmission Rate	9.8304Gbps
Optical Fibre Length	1.4km/ 0.87mi 10km/ 6.21mi 30km/ 18.64mi
Twisted Pair Copper Length	Cat6A: 100m @ 10GB/s   Cat5E: 100m @ 5GB/s
Physical Alarms	DB9, Female (4x in, 4x out)
Maintenance Interface	Ethernet RJ45 / Wi-Fi / USB

ELECTRICAL	
Electromagnetic Compatibility/Interference (EMC/EMI)	3GPP TS36.113   3GPP TS25.113
Maximum Power Consumption (AU/EU-E/RU)	80W/ 100W/ 65W (EU-E Max Load: 800W)
AC Power	AU: 100-240V AC, 50/60Hz
DC Power	AU: 48VDC ± 20% EU-E: 55~57VDC RU: PoE from EU-E

ENVIRONMENTAL	
Mean Time Between Failure (MTBF)	>100,000 hours
Operating Temperature (AU/EU)	-10°C ~ 50°C/ 14°F ~ 122°F
Operating Temperature (RU)	-10°C ~ 40°C/ 14°F ~ 104°F
Storage Temperature	-40°C ~ 70°C / -40°F ~ 158°F
Humidity	5% ~ 85% (Non-Condensing)
Cooling	Passive (AU, EU-E & RU) / Active (EU-E PSU Only)
Installation	AU/EU: Wall or 19" Rack RU: Ceiling or Wall
Ingress Protection Rating	IP30 (Indoor)

MECHANICAL	
AU: Width x Height x Depth (Weight)	440mm x 44mm x 329mm (8.0kg) 17.32in x 1.73in x 12.95in (17.64lbs)
EU-E: Width x Height x Depth (Weight)	440mm x 66mm x 220mm (8.0kg) 17.32in x 2.60in x 8.66in (17.64lbs)
EU-E PSU: Width x Height x Depth (Weight)	440mm x 44mm x 249mm (7.0kg) 17.32in x 1.73in x 9.80in (15.43lbs)
RU: Width x Height x Depth (Weight)	300mm x 60mm x 300mm (3.5kg) 11.81in x 2.36in x 11.81in (7.71lbs)

ELEMENT MANAGEMENT	
OMT (Operations and Maintenance Terminal)	Yes. Access via AU, EU or RU (Web Based)
LMS (Local Management System)	Yes (Ordered separately)
NMS (Network Management System)	Yes (Ordered separately)

ORDERING INFORMATION	
Part Code	Part Description
<b>Access Unit Chassis</b>	
AU-4-AC	Access Unit Chassis, 4 Bands, 700 - 2700MHz supported, 100-240v AC Powered
AU-4-DC	Access Unit Chassis, 4 Bands, 700 - 2700MHz supported, ± 48v DC Powered
<b>Access Unit Modules</b>	
AU-AC-M700	Access Unit Module, 4 Way Active Combiner 700MHz (UL 703-748/ DL 758-803)
AU-AC-M700L	Access Unit Module, 4 Way Active Combiner 700MHz Lower (UL 698-716/ DL 728-746)
AU-AC-M700U	Access Unit Module, 4 Way Active Combiner 700MHz Upper (UL 776-787/ DL 746-757)
AU-AC-M800	Access Unit Module, 4 Way Active Combiner 800MHz (UL 832-862/ DL 791-821)
AU-AC-M850	Access Unit Module, 4 Way Active Combiner 850MHz (UL 824-849/ DL 869-894)
AU-AC-M850E	Access Unit Module, 4 Way Active Combiner 850MHz Extended (UL 814-849/ DL 859-894)
AU-AC-M900	Access Unit Module, 4 Way Active Combiner 900MHz (UL 880-915/ DL 925-960)
AU-AC-M1800	Access Unit Module, 4 Way Active Combiner 1800MHz (UL 1710-1785/ DL 1805-1880)
AU-AC-M1900	Access Unit Module, 4 Way Active Combiner 1900MHz (UL 1850-1915/ DL 1930-1995)
AU-AC-M2100A	Access Unit Module, 4 Way Active Combiner 2100MHz AWS (UL 1710-1780/ DL 2110-2180)
AU-AC-M2100	Access Unit Module, 4 Way Active Combiner 2100MHz (UL 1920-1980/ DL 2110-2170)
AU-AC-M2300	Access Unit Module, 4 Way Active Combiner 2300MHz (UL 2305-2315/ DL 2350-2360)
AU-AC-M2300T	Access Unit Module, 4 Way Active Combiner 2300MHz TDD (2300-2400)
AU-AC-M2500TL	Access Unit Module, 4 Way Active Combiner 2500MHz TDD Lower (2496-2596)
AU-AC-M2500TU	Access Unit Module, 4 Way Active Combiner 2500MHz TDD Upper (2590-2690)
AU-AC-M2600	Access Unit Module, 4 Way Active Combiner 2600MHz (2500-2570/ 2620-2690)
AU-AC-M2600T	Access Unit Module, 4 Way Active Combiner 2600MHz TDD (2570-2620)
AU/RU-NC	Blanking Card to suit AU or Indoor Low Power RU
<b>Expansion Units</b>	
EU-E-12-DC	Expansion Unit, Supports up to 12 x Ethernet Outputs. 0MHz Bandwidth. ±56v DC Powered
EU-E-12-PSU56	Power Supply Unit to support EU-E-12-DC, 1000W @ 90-176v AC
EU-E-SW-aSC	Upgrade Software License to support up to 960MHz on EU-E-12-DC
EU-E-SW-Lite	Upgrade Software License to support up to 1920MHz on EU-E-12-DC
EU-E-SW-STD	Upgrade Software License to support up to 3840MHz on EU-E-12-DC
EU-E-SW-aSC-Lite	Upgrade Software License from EU-E aSC to Lite (960MHz increased to 1920MHz)
EU-E-SW-aSC-STD	Upgrade Software License from EU-E aSC to STD (960MHz increased to 3840MHz)
EU-E-SW-Lite-STD	Upgrade Software License from EU-E Lite to STD (1920MHz increased to 3840MHz)
<b>Remote Unit</b>	
NPRU-ID-4x2_PW	Indoor Nano Remote, 15dBm, 0MHz (No Bandwidth)
<b>Other Items</b>	
FAN-1U-AC	AC Fan Unit to support AU & LPRU Chassis, 1U Rack Unit Height, 100-240v AC Powered
FAN-1U-DC	DC Fan Unit to support AU & LPRU Chassis, 1U Rack Unit Height, ±48v DC Powered
SFP+1.4-SS	1.4km Optical SFP+ Module, Simplex, Single-Mode (Sold as a pair)
SFP+10-DS	10.0km Optical SFP+ Module, Duplex, Single-Mode (Sold as a pair)

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