



CROSSFIRE

HP

HIGH POWER

Dual Band Digital Radios
43dBm per Band
Passive Cooling
GigE IP Support

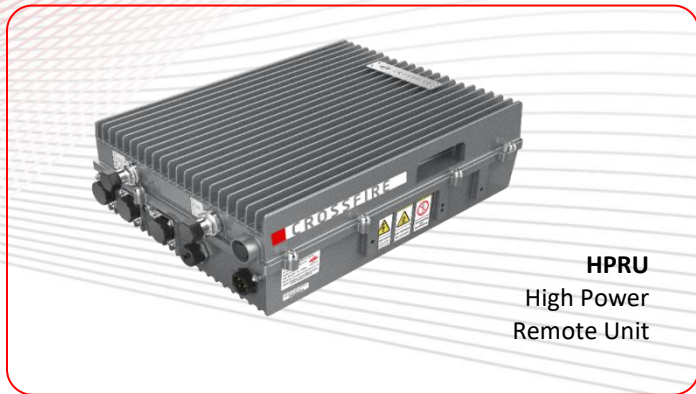
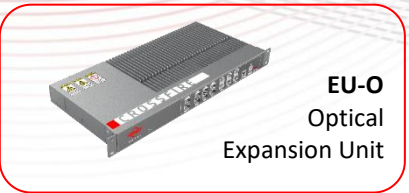
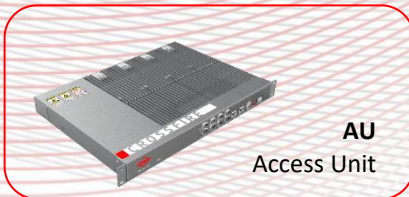
OVERVIEW

CrossFire HP is a digital transmission platform supporting the usage of CPRI protocol over fiber optic cable for cellular, GigE IP and wideband public safety technologies. The power amplifier leverages Digital Pre-Distortion technology, allowing for a significant in power consumption, compared to analog technology. This platform is ideal for multi-operator and multi-band deployments of cellular services for large coverage areas, and an alternative option to single operator RAN solutions.

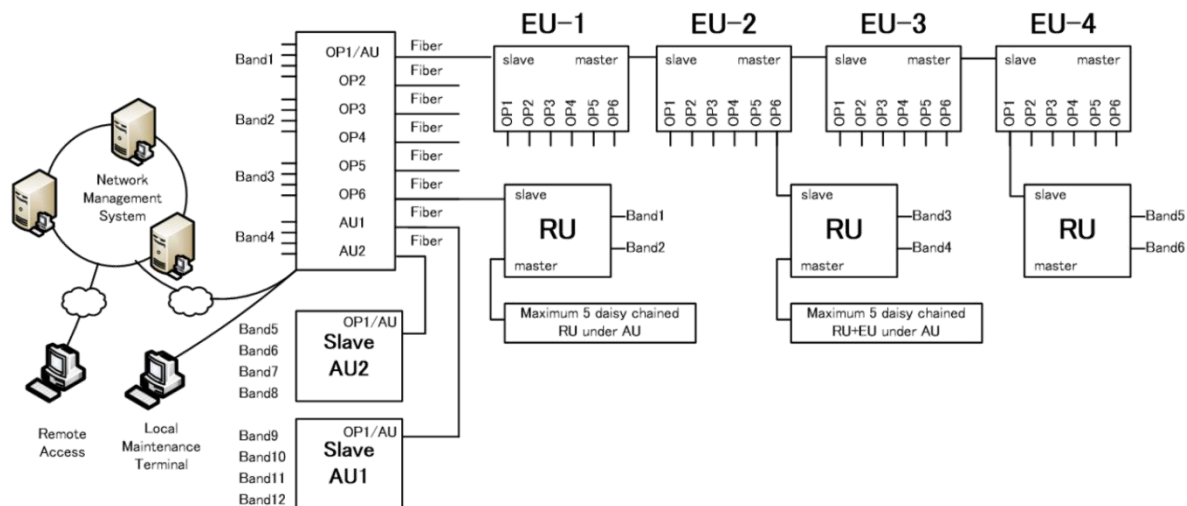
KEY FEATURES

- Up to 43dBm Output Power per Band
- Optical Connectivity
- Integrated IP Transport
- (2) 3GPP Bands per Remote
- External Alarm Interface
- 700 to 2700 MHz Range
- Optical cascading of EU-O's & RU's
- Up to 80 MHz per Band

SYSTEM ELEMENTS



BLOCK DIAGRAM



TECHNICAL SPECIFICATIONS

SYSTEM

Maximum RF Bands per Access Unit	4
Maximum RF Bands per Remote Unit	2
Maximum RF Bands per System	12
Maximum Access Units per System	3 (1 x Master/ 2 x Slaves)
Maximum EUs per Master AU	8
Maximum EUs cascaded	5
Maximum RUs cascaded	6
Frequency Range (Non-Contiguous)	700 MHz ~ 2700 MHz
Bandwidth per Channel (Downlink & Uplink)	≤ 80 MHz (Contiguous)
Digital Bandwidth per Channel (Downlink & Uplink)	20/ 30/ 40/ 60/ 80 MHz
Bandwidth per System (Downlink & Uplink)	≤ 280 MHz (in each direction)
MIMO	2 x 2: 1 x RU 4 x 4: 2 x RU 8 x 8: 4 x RU
IP Transmission Rate per RU	1 GB/s
Maximum IP Connections per EU	6
Maximum IP Connections per RU	1
System Delay Adjustment	Up to 80.00 μs

FORWARD PATH (DOWNLINK)

	Number of Carriers	1	2	4	8
		Output Power per Carrier	UMTS (dBm)	43	40
	LTE (dBm)	43	40	37	34
Output Power Accuracy	± 2 dB				
Maximum Gain	43 ± 3 dB				
Maximum Input Power	+ 15 dBm				
Error Vector Magnitude	< 8.0% @ 64 QAM				
Ripple	3 dB Typical				
Manual Gain Control	45 dB @ 1dB/step (AU:30 dB, RU:15 dB)				
System Delay (AU+EU+RU)	12 μs				
VSWR (AU/RU)	1.5:1				

REVERSE PATH (UPLINK)

Maximum Output Power per Band	- 7 dBm
Output Power Accuracy	± 2 dB
Maximum Gain	43 ± 3 dB
Maximum Input Power	- 35 dBm
Ripple	3 dB Typical
Manual Gain Control	45 dB @ 1dB/step (AU:30 dB, RU:15 dB)
System Delay (1AU + 1EU + 1RU)	8 μs
Noise Figure	4 dB Typical @ Maximum Gain

TECHNICAL SPECIFICATIONS

Supported Bands

Band	3GPP Band	Downlink	Uplink	Max Bandwidth
600 MHz	71	617-652	663-698	35
700 MHz APT	28	758-798	703-743	40
700 MHz Brazil	28	763-803	708-748	40
800 MHz	20	791-821	832-862	30
850 MHz	5	869-894	824-849	25
850 MHz Extended	26	859-894	814-849	35
900 MHz	8	925-960	880-915	35
1800 MHz	3	1805-1880	1710-1785	75
1900 MHz	25	1930-1995	1850-1915	65
2100 MHz	1	2110-2170	1920-1980	60
2100 MHz AWS	66	2110-2180	1710-1780	70
2300 MHz TDD	40	2300-2400	2300-2400	80
2300 MHz	30	2350-2360	2305-2315	10
2500 MHz TDD	41 (Lower)	2496-2576	2496-2576	80
2500 MHz TDD	41 (Upper)	2610-2690	2610-2690	80
2600 MHz	7	2620-2690	2500-2570	70
2600 MHz TDD	38	2570-2620	2570-2620	50

INTERFACES

Antenna Interface (All bands)	4.3-10 Female
Access Unit RF Interface	QMA Female
Optical Connector Type	SFP+, Standard LC
Optical Transmission Rate	9.8304 GB/s
Optical fiber Length	1.4 km/ 10 km/ 30 km (0.87 mi/ 6.21 mi/ 18.64 mi)
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-O/ RU)	80 W/ 50 W/ 250 W
AC Power	100-240 V AC, 50/ 60 Hz
DC Power	48 VDC \pm 20% (AU/ EU-O)

TECHNICAL SPECIFICATIONS

Environmental

Mean Time Between Failure (MTBF)	>100,000 hours
Operating Temperature (AU/ EU)	-10°C ~ 50°C / 14°F ~ 122°F
Operating Temperature (RU)	-40°C ~ 50°C / -40°F ~ 122°F
Storage Temperature	-40°C ~ 70°C / -40°F ~ 158°F
Humidity	5% ~ 85% (Non-Condensing)
Cooling	Passive
Installation	AU/ EU: Wall or 19" Rack RU: Wall or Pole
Ingress Protection Rating	AU/ EU: IP30 (Indoor) RU: IP65 (Outdoor)

MECHANICAL

AU: Width x Height x Depth (Weight)	440 mm x 44 mm x 329 mm (8.0 kg)/ 17.32 in x 1.73 in x 12.95 in (17.64 lbs)
EU-O: Width x Height x Depth (Weight)	440 mm x 44 mm x 220 mm (5.0 kg)/ 17.32 in x 1.73 in x 8.66 in (11.02 lbs)
RU: Width x Height x Depth (Weight) <i>excluding Bands 12, 13 & 14</i>	400 mm x 125 mm x 300 mm (16.0 kg) 15.75 in x 4.92 in x 11.81 in (35.27 lbs)
RU: Width x Height x Depth (Weight) <i>for Bands 12, 13 & 14</i>	400 mm x 135mm x 300 mm (18.0 kg) 15.75 in x 5.31 in x 11.81 in (39.68 lbs)

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
Access Unit Chassis	
AU-4-AC	Access Unit Chassis, 4 Bands, 700 - 2700 MHz supported, 100-240v AC Powered
AU-4-DC	Access Unit Chassis, 4 Bands, 700 - 2700 MHz supported, \pm 48v DC Powered
Access Unit Modules	
AU-AC-M600	Access Unit Module, 4 Way Active Combiner 600 MHz (UL 663-698/ DL 617-652)
AU-AC-M700	Access Unit Module, 4 Way Active Combiner 700 MHz (UL 703-748/ DL 758-803)
AU-AC M800	Access Unit Module, 4 Way Active Combiner 800 MHz (UL 832-862/ DL 791-821)
AU-AC M850	Access Unit Module, 4 Way Active Combiner 850 MHz (UL 824-849/ DL 869-894)
AU-AC-M850E	Access Unit Module, 4 Way Active Combiner 850 MHz Extended (UL 814-849/ DL 859-894)
AU-AC M900	Access Unit Module, 4 Way Active Combiner 900 MHz (UL 880-915/ DL 925-960)
AU-AC-M1800	Access Unit Module, 4 Way Active Combiner 1800 MHz (UL 1710-1785/ DL 1805-1880)
AU-AC M1900	Access Unit Module, 4 Way Active Combiner 1900 MHz (UL 1850-1915/ DL 1930-1995)
AU-AC-M2100	Access Unit Module, 4 Way Active Combiner 2100 MHz (UL 1920-1980/ DL 2110-2170)
AU-AC M2100A	Access Unit Module, 4 Way Active Combiner 2100 MHz AWS (UL 1710-1780/ DL 2110-2180)
AU-AC M2300	Access Unit Module, 4 Way Active Combiner 2300 MHz (UL 2305-2315/ DL 2350-2360)
AU-AC M2300T	Access Unit Module, 4 Way Active Combiner 2300 MHz TDD (2300-2400)
AU-AC M2500TL	Access Unit Module, 4 Way Active Combiner 2500 MHz TDD Lower (2496-2596)
AU-AC M2500TU	Access Unit Module, 4 Way Active Combiner 2500 MHz TDD Upper (2590-2690)
AU-AC-M2600	Access Unit Module, 4 Way Active Combiner 2600 MHz (2500-2570/ 2620-2690)
AU-AC M2600T	Access Unit Module, 4 Way Active Combiner 2600 MHz TDD (2570-2620)
AU/RU-NC	Blanking Card to suit AU or Indoor Low Power RU
Expansion Units	
EU-O-6-AC	Expansion Unit Supports up to 6 x Optical Outputs. 100-240v AC Powered
EU-O-6-DC	Expansion Unit Supports up to 6 x Optical Outputs. \pm 48v DC Powered
Remote Unit Chassis	
HPRU-OD-2-AC	Outdoor High Power Remote Unit Supports up to 2 Discrete Bands. 100-240v AC Powered
Remote Unit Modules	
HPRU-OD-M600	Outdoor High Power Remote Unit Module, 600 MHz (UL 663-698/ DL617-652), 10W output power
HPRU-OD-M700	Outdoor High Power Remote Unit Module, 700 MHz (UL 703-743/ DL 758-798)
HPRU-OD-M700BR	Outdoor High Power Remote Unit Module, 700 MHz (UL 708-748/ DL 763-803)
HPRU-OD-M800	Outdoor High Power Remote Unit Module, 800 MHz (UL 832-862/ DL 791-821)
HPRU-OD-M850	Outdoor High Power Remote Unit Module, 850 MHz (UL 824-849/ DL 869-894)
HPRU-OD-M850E	Outdoor High Power Remote Unit Module, 850 MHz Extended (UL 814-849/ DL 859-894)
HPRU-OD-M850AU	Outdoor High Power Remote Unit Module, 850 MHz Australia (UL 825-844.6/ DL 870-889.6)
HPRU-OD-M900	Outdoor High Power Remote Unit Module, 900 MHz (UL 880-915/ DL 925-960)
HPRU-OD-M900AU	Outdoor High Power Remote Unit Module, 900 MHz Australia (UL 893.8-915/ DL 938.8-960)
HPRU-OD-M1800	Outdoor High Power Remote Unit Module, 1800 MHz (UL 1710-1785/ DL 1805-1880)
HPRU-OD-M1900	Outdoor High Power Remote Unit Module, 1900 MHz (UL 1850-1915/ DL 1930-1995)
HPRU-OD-M2100A	Outdoor High Power Remote Unit Module, 2100 MHz (UL 1710-1780/ DL 2110-2180)
HPRU-OD-M2100	Outdoor High Power Remote Unit Module, 2100 MHz (UL 1920-1980/ DL 2110-2170)
HPRU-OD-M2300	Outdoor High Power Remote Unit Module, 2300 MHz (UL 2305-2315/ DL 2350-2360)
HPRU-OD-M2300T	Outdoor High Power Remote Unit Module, 2300 MHz TDD (2300-2390)

HPRU-OD-M2500TL	Outdoor High Power Remote Unit Module, 2500 MHz TDD Lower (2496-2576)
HPRU-OD-M2500TU	Outdoor High Power Remote Unit Module, 2500 MHz TDD Upper (2610-2690)
HPRU-OD-M2600	Outdoor High Power Remote Unit Module, 2600 MHz (UL 2500-2570/ DL 2620-2690)
HPRU-OD-M2600AU	Outdoor High Power Remote Unit Module, 2600 MHz Australia (UL 2500-2570/ DL 2620-2690)
HPRU-OD-M2600MY	Outdoor High Power Remote Unit Module, 2600 MHz Malaysia (UL 2500-2570/ DL 2620-2690)
HPRU-OD-M2600TMY	Outdoor High Power Remote Unit Module, 2600 MHz TDD Malaysia (2575-2615)
Other Items	
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)

Contact Us

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