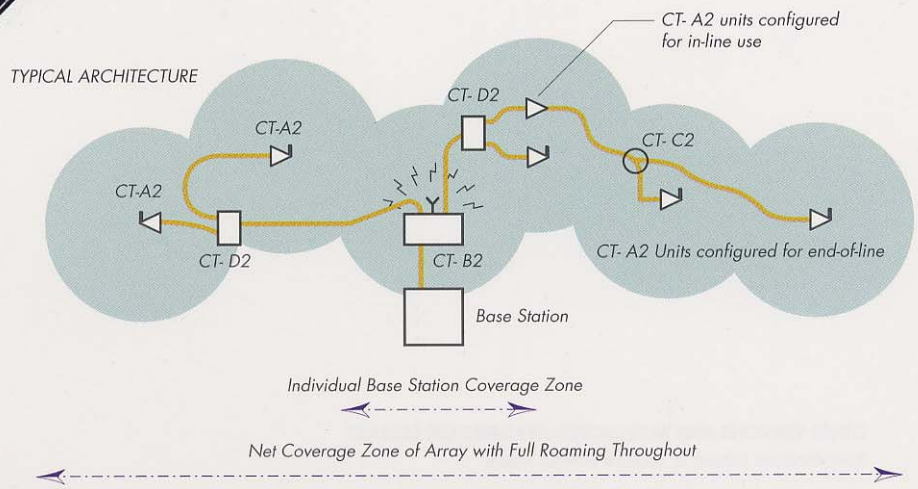
MICROCELL EXTENDER (MEX) PART NO.CT-A2

PCS WIRELESS, INC.

PRODUCT INFORMATION

PCS WIRELESS, INC.'S MICROCELL EXTENDER (MEX) IS A KEY BUILDING BLOCK IN THE DESIGN OF DISTRIBUTED ANTENNA ARRAYS.

- Can act as radiating element for CT-2 and CT-2 Plus distributed antenna arrays
- Compact unit, capable of indoor and outdoor mounting
- Supports moving vehicle and pedestrian voice traffic
- Compatible with DC and AC powering systems
- Can provide sync-out for multi-operator overlays
- Detachable Antenna
- Can be field set for in-line and end-of-line use



PCS WIRELESS, INC.

PATENTED TECHNOLOGY CHANGING THE WAY THE WORLD COMMUNICATES

PCS Wireless, Inc.
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TECHNICAL DATA CT-A2

ANTENNA PORT	**Transmit Power**	7.8 dBm per channel max (set manually)
	Antenna Gain	2.2 dBd nominal
	Transmit/Receive	Country Dependent. Designed for CT-2 band
	Frequency Rx Noise Figure	7 dB max
	In-line Capability	Note Antenna Port may be configured by internal jumper to act as power passing in-line amplifier output
RF INPUT	**Nominal Input Impedance**	75 ohms
MAXIMUM NUMBER OF CHANNELS		Up to 8 channels at 5 dBm output Up to 14 channels at 3 dBm ouput
CONTROL	**Transmit-Receive Control**	Control waveform received from CT-B2 unit down center of coax
GAIN	**Receive Path Gain**	16-36 dB (adjustable)
	Transmit Path Gain	16-36 dB (adjustable
ABSOLUTE DELAY TOLERANCE	**Max coax length between Base Station and CT-A2**	1 mile max. Depends on Base Station specifications
DIFFERENTIAL DELAY TOLERANCE	**Max coax length between simulcast MEX units**	1,200 ft. max. Depends on Base Station and handset specifications
SYNC OUT		See upgrade kit CT-F2 product sheet for Sync Out capable of synchroning a co-located base station
ELECTRICAL-MECHANICAL	**Antenna Connector Type**	TNC female
	RF Connectors Type	F type female
	Power	28 Vdc @ 0.3 A (time averaged) supplied from CT-B2 down center of coax
	AC Power Option	See upgrade kit CT-E2 data sheet
	Packaging	Environmentally Sealed
	Nominal Dimensions	5.5" x 6" x 3.5" plus connectors and antenna (8" whip)

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OTHER VERSIONS AND ACCESSORIES AVAILABLE ON REQUEST
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BASE STATION EXTENDER (BEX) PART NO. CT-B2

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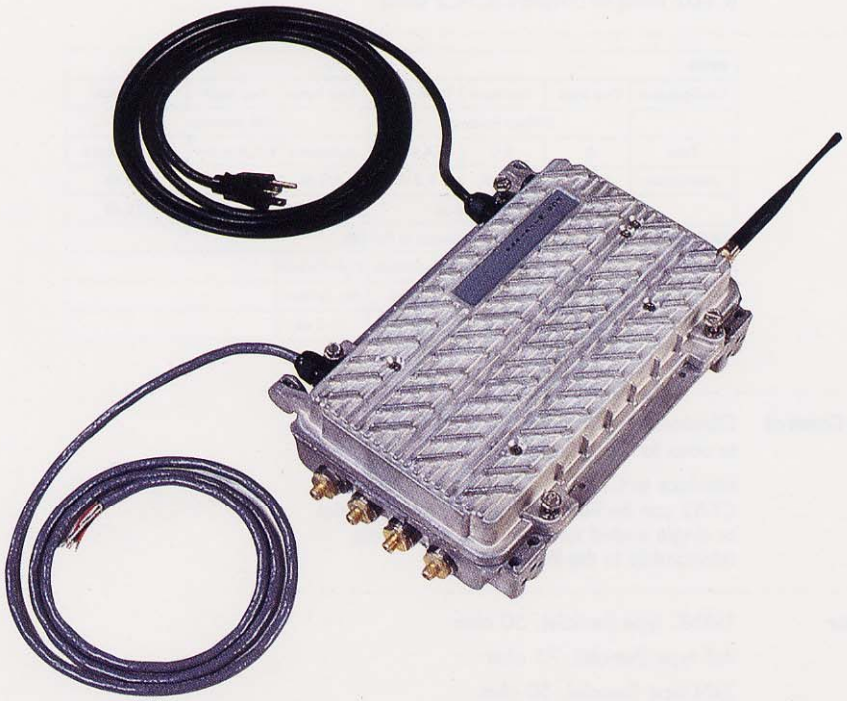
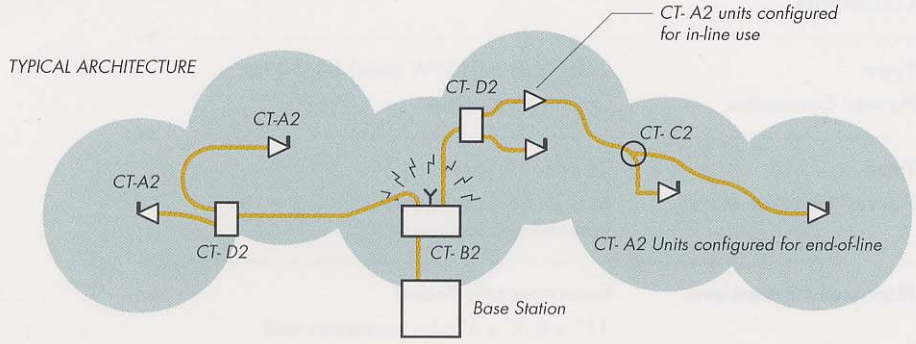
PCS WIRELESS, INC.'S BASE STATION EXTENDER (BEX) IS A KEY BUILDING BLOCK IN THE DESIGN OF DISTRIBUTED ANTENNA ARRAYS.



- Acts as the dc powering unit for up to eight MEX units (CT-A2), CT-2 and CT-2 Plus distributed antenna arrays
- Capable of combining 1, 2, or 3 base stations
- Can provide 1, 2, or 4 outputs for MEX units
- Can provide its own local coverage zone
- Software driven Sync-in capability is compatible with all base station vendors
- Compact unit, capable of indoor and outdoor mounting
- Can act as a local power inserter for networks of more than eight MEX's

TYPICAL ARCHITECTURE



Individual Base Station Coverage Zone

Net Coverage Zone of Array with Full Roaming Throughout

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ANTENNA PORT	**Antenna Gain**	2.2 dBd nominal
	Base Station RF Port to Antenna Port Loss	With 1 RF Input 3.5 dB With 2 RF Inputs 7 dB With 3 RF Inputs 10.5 dB
	Transmit Receive Frequency	Country Dependent. Designed for CT-2 frequency band
BASE STATION RF PORTS 1-3	**Nominal Input Impedance**	50 ohms Note internal jumpers allow ports 1,2, and 3 to be RF combined for multi-base station use. 15-23 dB isolation between ports
RF OUTPUTS 1-4		These ports provide RF,control and power signals on the inner of the coax
	Nominal Impedance	75 ohms Note internal jumpers allow the port 1 or ports 1,2 or ports 1,2,3,4 to act as the RF output
	Number of CT-A2 units supported	Note the CT-B2 can support up to 8 CT-A2 units using additional, external splitters (CT-D2 units) or couplers (CT-C2 units)
BASE STATION TO RF PORT LOSS	**Bex**	

INPUTS						
Configuration	One Input	Two Input	Three Inputs	One Inputs	Two Input	Three Inputs
	Without Antenna			With Antenna		
Ports	A	B,C	A,B,C	A,Antenna	B,C,Antenna	A,B,C,Antenna
Attenuation	1.5 dB	5.0 dB	8.5 dB	5.0 dB	8.5 dB	12.0 dB
	Antenna Attenuation			3.5 dB	7.0 dB	10.5 dB

OUTPUTS	Attenuation of Port (dB)				
Configuration	One Output	Two Outputs	Four Outputs	Eight Outputs	
Ports	1	1,2	1,2,3,4	Ext. Splitters	
Attenuation	0 dB	3.5 dB	7.0 dB	11.5 dB	

CONTROL	**Transmit-Receive Control**	Obtained from Base Station. Sent via inner to coax to CT-A2 units Interface to CT-B2 is by twisted pair lead. CT-B2 can be field configured for differential or single ended sync, with a fixed timing relationship to the RF envelope
ELECTRICAL-MECHANICAL	**Antenna Connector**	1xTNC type (female), 50 ohm
	RF Connectors	4xF type (female), 75 ohm
	Base Station Connectors	3xN type (female), 50 ohm
POWER INPUT	**Type**	240/120v ac 150W (max) 60/50 Hz
	Power Connector	Country Dependent
POWER OUTPUT	**Type**	28v dc 3A (max)
	Power Inserter Mode	May be field configured for in-line power insertion applications
PACKAGING	**Nominal Dimensions**	Environmentally Sealed 11" x 8.5" x 3" plus connectors and antenna (8" whip)

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REMOTE ANTENNA DRIVER (RAD) PLATFORM PART NO.CT-A1

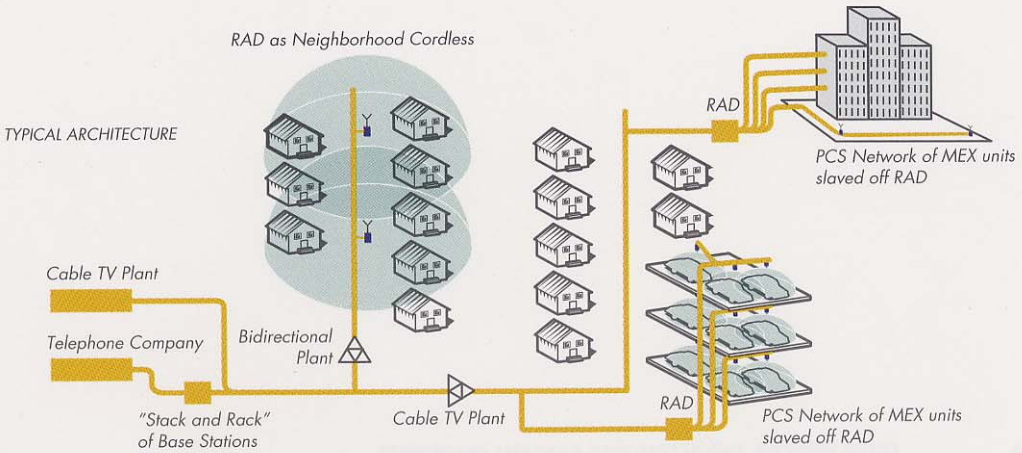
PCS WIRELESS, INC.

PRODUCT INFORMATION

PCS WIRELESS, INC.'S RAD PLATFORM IS A KEY BUILDING BLOCK FOR CABLE TV BASED DISTRIBUTED ANTENNA ARRAYS.

- Strand mountable housing
- Powered off 60 vrms ac cable plant
- Engineering control channel for remote call splitting, status monitoring and diagnostics
- Supports slaved MEX networks
- Supports up to three handset specific modules

The CT-A1 unit is designed to provide mechanical mounting, power, and remote control to handset specific modules (See CT-H series of data sheets). These handset specific modules can also support Microcell extender units on dedicated coax.



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HIGHLIGHTS OF CABLE TV – DISTRIBUTED ANTENNA ECONOMIC ANALYSIS BASED ON PCS WIRELESS RAD TECHNOLOGY

Excellent Trunking Efficiencies	Base Station Resources are centralized and dynamically allocated. *Compare with other approaches where the resource is fixed assigned.*
Excellent Call blocking statistics at any given RAD site	RAD is inherently a multi-channel concept that can support multiple simultaneous calls. *Compare with other approaches where multiple transceiver cards are required to get reasonable performance.*
Excellent "Roamer Capabilities"	RAD can be used as an element of a distributed antenna array supporting roamer corridors without any additional equipment. *Compare with other approaches where the inter-Base Station communication network necessary to support software call hand-off is as complex as the voice communication network.*
Strand Mounted, Cable Powered antenna sites are often ideal and readily available	*Compare with other approaches where site rental, site powering and site hook-up to the PSTN are all negotiated on a site-by-site basis.*
Local Loop Bypass is straightforword	*Centralization of the Base Station resource naturally leads to bypass switching at the central site.*
Support for Multiple Handset types (and frequency bands) is straightforward	*RAD can support multiple handset types and frequencies simultaneously. Compare with other approaches where multiple handset types supported implies multiple transceiver cards of different types, at the field location.*
Maintenance and Upgrade programs are straightforward	*Handset/Frequency dependent equipment are centrally located.* *Base Station issues are simplified by the indoor; centralization of the resource.* *RAD issues are simplified by the remote reconfigurability capabilities.* *Compare with other approaches where the system upgrade and maintenance issues are field issues.*
Uses an existing asset to provide an incremental income	*Compare to other approaches where a complete network must be laid from scratch, or where heavy use of the PSTN is required.*
	In a detailed study by the fourth largest Cable TV Operator in the USA, it was concluded that the RAD approach could reduce costs by 93% (Cablevision System Corp FCC Experimental Filing, dated August 1993).

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