



ADSL Loop Extender IPTV Booster Line Power Installation Tips

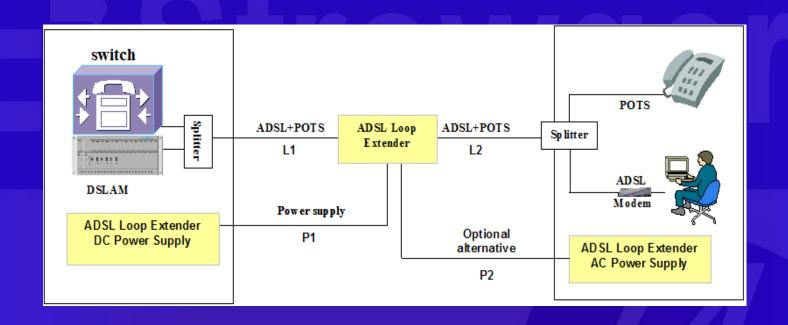
Benefits of ADSL Loop Extender

- Demonstrate to PSC 100% availability of broadband.
- Double the customers you can reach.
- Deliver 2-10 times the bandwidth.
- Defer costly remote DSLAM installations.
- Prove broadband demand in marginal markets.
- Avoid customer loss due to broadband service unavailability caused by extra long distance.
- Improve service quality.
- Comprehensive over-voltage protection.
- Easy to install, deploy and maintain.
- Fully compatible with all ADSL/ADSL2+ systems.
- Fully compatible with analog voice.

ADSL Loop Extender

Original series

Application of ADSL Loop Extender



- L1: The signal wire pair connecting ADSL Loop Extender to CO equipment.
- L2: The signal wire pair connecting ADSL Loop Extender to CPE equipment.
- P1: DC power derived from -48v plant in CO.
- P2: Optional power derived from AC at customer premise or unmetered drop.

ADSL Loop Extender









AER800-1P

AER800-2P

AER800-4P H Module

AER800-8P







AEC-B1P-A110 AEC-B1P-D48 AEC-B1PH-A110 AEC-B1PH-D48

AEC-B4P-D48 AEC-B4PH-D48 AEC-RACK AEC-C2P-D48

Power Module Usage

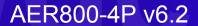
	AEC-B1P-DC48	AEC-B1P-A110	AEC-B1PH-DC48	AEC-B1PH-A110	AEC-B4P-DC48	AEC-B4PH-DC48	AEC-C2P
Product Code							
AER800-1P	1	1			*		*
AER800-2P	1	*			1		✓
AER800-1PB			1	1		1	✓
AER800-2PB			1	1		1	1
AER800-8PB			1	1		1	1
AER800-4P			1	1		1	*
AER800-8P			1	1		✓	✓



ADSL Loop Extender

Version 6.2

AER800 8P v6.2





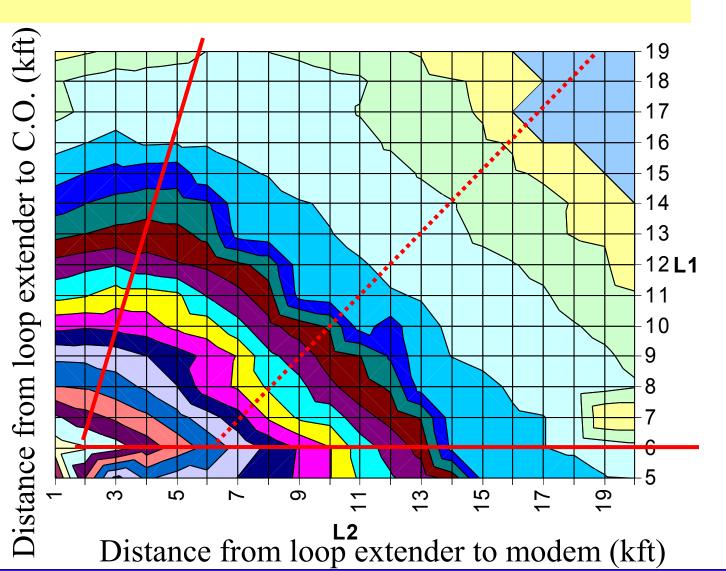


One Power Pair
For 8 subscribers!

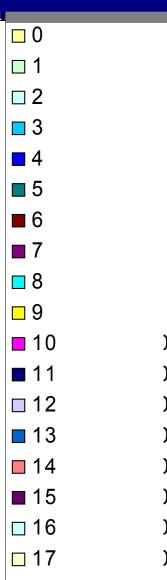


AER800-C1P v6.2

Loop Extender Performance



M bits / sec



IPTV Booster

AER800 B-Series

Problem

IPTV needs 15Mbit downstream speed to give 3 standard definition channels, but the ADSL loop extender doesn't improve things enough at these high speeds. So we developed the ipTV booster...

IPTV Booster



AER800-1PB



AER800-2PB



AER800-8PB



AEC-B1PH-A110 AEC-B1PH-D48

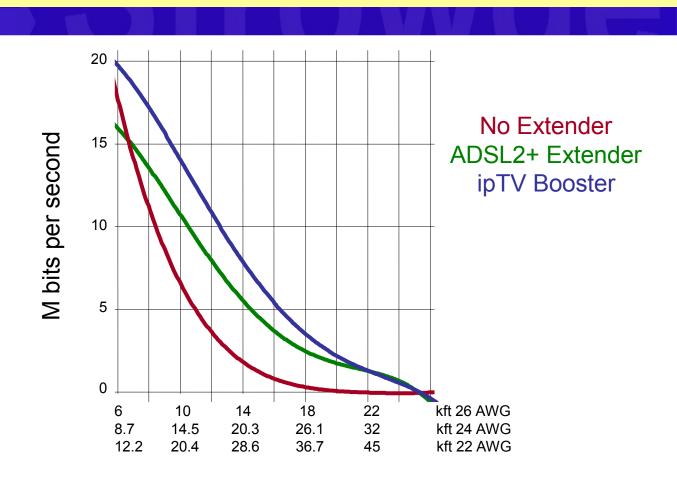


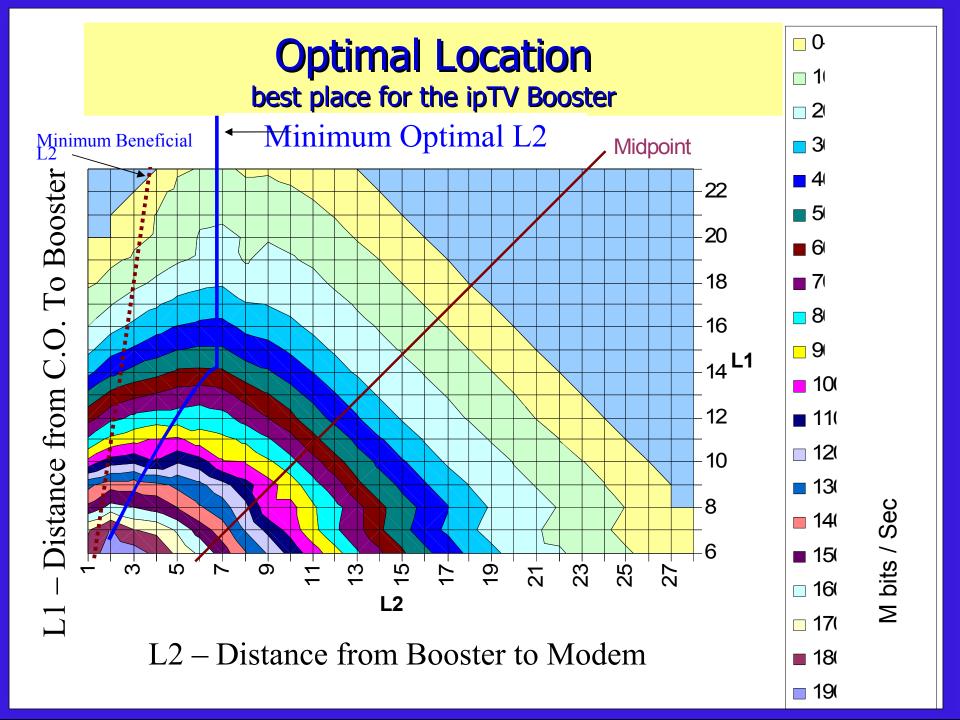
AEC-B4PH-D48



AEC-RACK-D48 AEC-C2P

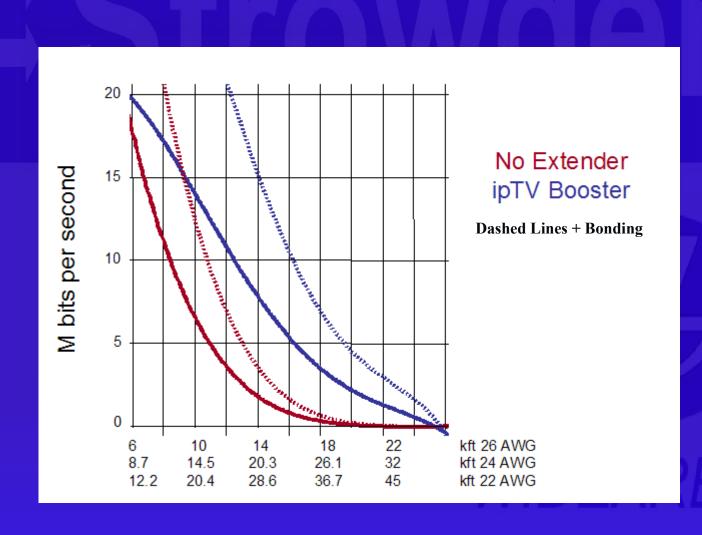
ipTV Booster vs. ADSL Loop Extender



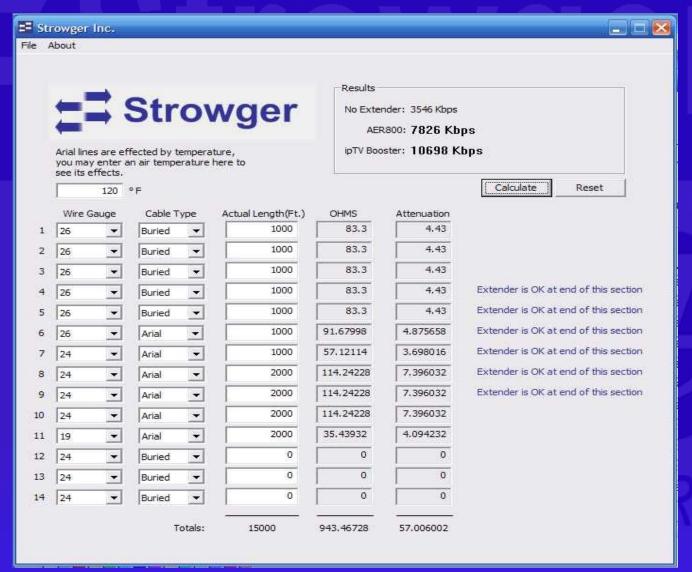


Loop Extender plus Bonding

Reach everybody with ipTV



Bandwidth Estimator www.widearea.us



Line Power

AER800 L-Series

- *Utilize switch power on working POTS/ADSL line.
- *Allows loop extenders to be used even when pairs are scarce.

Line Power Architecture



Line Powered Loop Extender

NEW

AER800-8PL v8.0



AER800-4PL v8.0



No Power Supply Needed



AER800-C1PL v8.0

AER800-1PL



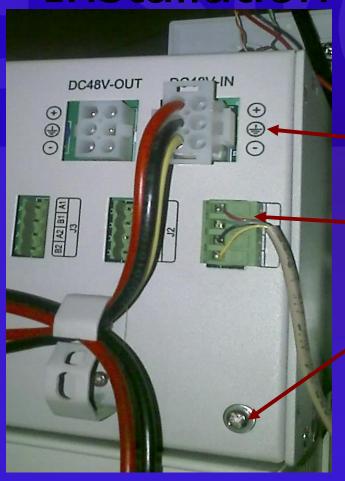
Line Power for remote devices





Installation Tips

Installation – AEC RACK



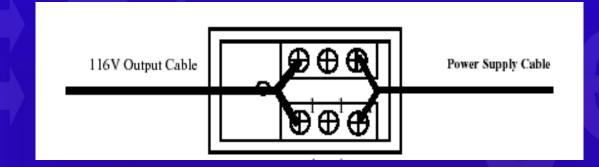
-48vDC input to 7-10A fuse

Two 116/155vDC outputs per slot to main distribution frame. Polarity not important. Current limited to 60mA.

Frame ground. 14AWG min.



Installing AEC-B1P-D48





Power Supplies

- Can also be installed in remote DSLAM cabinet with AC or 48v DC source
- All Power Supplies must be powered directly from fused battery!
- Never use switch line card to power a power supply!
- Power supply DOES NOT go in the ped
- Accept no more than 2V/1000 ft loss



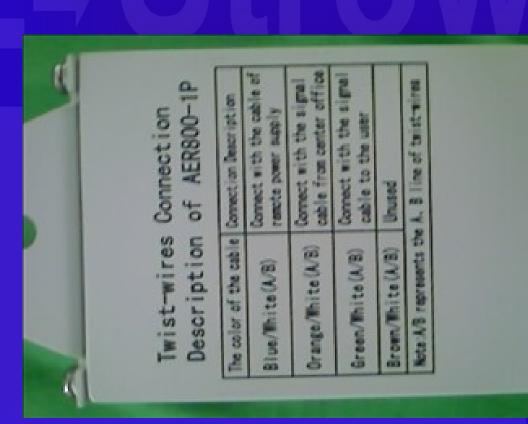
Where to install Loop Extender





9/1/2004 Confidential

Wiring at the Ped



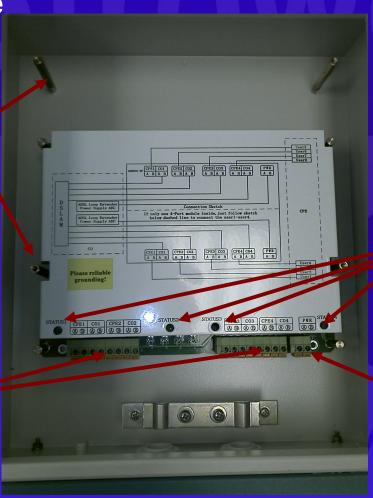
Blue – Power Orange – C.O. Green - Customer

Installation - AER800-8p

Single 4p Module

Mounting screws for 2nd 4p module

DSL Lines 4 in 4 out





LEDs blink when power applied Solid when tones

Power

/IDEAREA

9/1/2004

Confidential

Voice Engineering

- Voice will pass through the loop extender even in power outage conditions.
- The use of "Smart Coils" for H-88 type loading is recommended for longer loops at normal copper intervals for the Voice (POTS) transmission. Smart Coils, allow the transparent passage of DSL Data while providing loading for voice.
- Do not install load coils / smart coils on high voltage parts of the circuit.

Sync Tips

- You must be at least 200 ohms from the extender to test sync.
- Try sealing current to bond the connections: ring the phone, answer it.
- If you drop the minimum SNR margin to 1 and minimum data rate to 32k you can get sync if is possible at all. Then slowly increase these parameters until you reach the desired service level.
- Walk the circuit back ped by ped. Compare the data rate you achieve with the Bandwidth Estimator.

Tandem Extenders

- Two loop extenders on the same circuit can improve downstream speeds on longest loops (< 2Mbit goal).</p>
- IpTV booster has switch inside that increases range by up to 1 additional mile (38kft on 24AWG)
- DSLAM should allow ADSL2 / Annex L
- Tandem extenders should not be your first installation!
- Call for further details.

ADSL Tester WAT-2A

- Low Cost hand held test set
- Works like a modem
- LED Shows line statistics
- Simplifiestroubleshooting atPED or NID



Why Widearea?

- Lowest cost solution
- Widest selection of locations to install
- Automatically adjusts gain for changing line conditions
- Highest bandwidth
- Complies with NEBS, IP66, UL, FCC
- Multi-port models available / Compact size
- The most lines in service

Thanks A Lot!

- Strowger, Inc.
- www.strowger.com
- www.widearea.us
- Office number: (816) 272-1826