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**Please read this  
document carefully  
before installation!**

# **New Generation ADSL Loop Extender**

## **Installation Manual**

**Version: 008**

**Widearea Telecommunication Technology Co., Ltd**  
Add: 2<sup>nd</sup>, 3<sup>rd</sup> East Round Longtan Industry Garden 10#, Chengdu, Sichuan, China  
Tel: (86)28 84207501 (86)28 84207506 Fax: (86)28 84209696  
E-mail: [master@widearea.com.cn](mailto:master@widearea.com.cn) Web Site: <http://www.widearea.com.cn>

## **Preface**

This manual provides information on how to use this product. To make the best use of this product, please read this manual thoroughly before use and keep this manual handy for ease of reference.

- The contents of this document may be updated in the future, without prior notice.
- This booklet was created with thorough attention to the content. If, however, you have a question, spot an error, or find a description lacking, please refer to the end of this booklet for information on how to contact us.
- All brand names and trademarks are the property of their respective owners.

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## **Abbreviations**

WTT	Chengdu Widearea Telecommunication Technology Co.,Ltd
ALE	ADSL Loop Extender
CO	Center Office
CPE	Customer Point Equipment
DSLAM	Digital subscriber line access multiplexer

# 1. General Description

**ADSL Loop Extender** can extend the coverage of ADSL lines. It will provide systems with higher performance-to-cost ratio, improve the equipment utilization rate and optimize the network. This product will allow you to double the number of subscribers that you can reach while offering more consistent high bandwidth services to your existing customers.

**ADSL Loop Extender** is an active element installed in the outside loop plant. It operates as an amplifier and equalizes the signal.

ADSL Loop Extender' Box and the business card are as below:

- AER800-1PL Box: A Box for 1 AER800-C1PL embedded.
- AER800-4PL Box: A Box for 5 AER800-C1PL embedded.
- AER800-8PL Box: A Box for 9 AER800-C1PL embedded.
- AER800-C1PL: One port ADSL Loop Extender for one ADSL subscriber, can be inserted into the Extender's Box easily.

## Benefits

- Extending ADSL single coverage distance.
- Increasing ADSL rates.
- Not requiring power supply line.
- No need to install any equipment in the CO
- Low power consumption and more environmentally friendly
- ADSL subscriber can be added by inserting the business cards and facilitate the expansion and maintenance.
- Outdoor installation, lightning-proof, surge-voltage proof, rain-proof, over-current protection design.
- Easy to install, deploy and maintain.

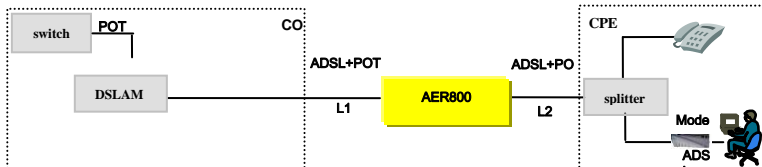
## 2. Technical Specifications

**Table 1 –Technical Specifications of AER800-1PL Box, AER800-4PL Box, AER800-8PL Box, business card AER800-CIPL**

Operating Environment	Temperature	-35°C ~ +65°C
	Relative Humidity	5% ~ 95% (Non-condensing)
Input Power	DC36V-DC72V	
Power Consumption	Less than 0.1W( per port )	
Lightning-proof grade	4000V	
Number of supported subscribers	AER800-1PL	1 ADSL subscriber
	AER800-4PL	5 ADSL subscribers
	AER800-8PL	9 ADSL subscribers
Dimension(LWH)	AER800-1PL Box	160mm×70mm×48mm
	AER800-4PL Box	215mm×290mm×82mm
	AER800-8PL Box	315mm×290mm×82mm

## 3. Application

### 3.1 The actual lines connecting of equipment



**Figure 1 ADSL Loop Extender Application Diagram**

L1: The signal twist pair connecting ADSL Loop Extender to DSLAM.

L2: The signal twist pair connecting ADSL Loop Extender to Modem.

### 3.2 Resistance and distance demand

**The recommended installation conditions are as follows.**

( 1 ) 26 AWG(0.4mm) twist pair

**Table 2 -The Demand about Resistance and Distance of 26AWG:**

Route	Loop Resistance Demand Ohms	Distance Demand	
		kfeet	km
L1(CO-Extender)	470 ~ 1250	5.5 ~ 14.8	1.7 ~ 4.5
L2(Extender-CPE)	28 ~ 1100	0.3 ~ 9.8	0.1 ~ 4.0
L(CO-Extender-CPE)	579 ~ 1601	8.2 ~ 19.7	2.5 ~ 6.0

( 2 ) 24 AWG(0.5mm) twist pair

**Table 3 -The Demand about Resistance and Distance of 24AWG:**

Route	Loop Resistance Demand Ohms	Distance Demand	
		kfeet	km
L1(CO-Extender)	396 ~ 1032	7.5 ~ 19.7	2.3 ~ 6.0
L2(Extender-CPE)	17 ~ 929	0.3 ~ 17.7	0.1 ~ 5.4
L(CO-Extender-CPE)	568 ~ 1445	10.8 ~ 27.6	3.3 ~ 8.4

## 4. Physical Structure

- AER800-1PL Box: A Box for 1 AER800-C1PL embedded
- AER800-4PL Box: A Box for 5 AER800-C1PL embedded.
- AER800-8PL Box: A Box for 9 AER800-C1PL embedded.
- AER800-C1PL: One port signal line power ADSL Loop Extender for one ADSL subscribers, can be inserted into the Box easily.

## 4.1 AER800-1PL Box

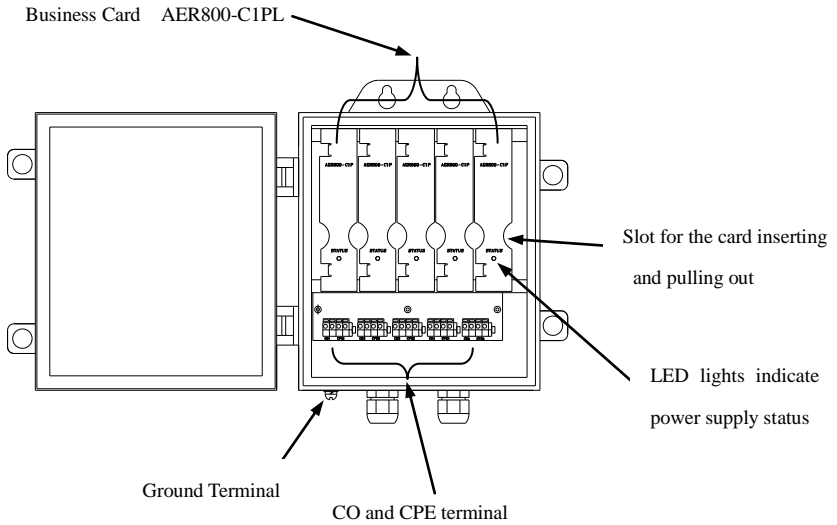


**Figure 2 AER800-1PL Box**

**Table 4 - Twist-pair Connection Description of AER800-1PL**

<b>Color</b>	<b>Connection</b>
Orange/White (A/B)	to DSLAM
Green/White (A/B)	to Modem
Blue/White (A/B)	
Brown/White (A/B)	

### 4.2 AER800-4PL Box

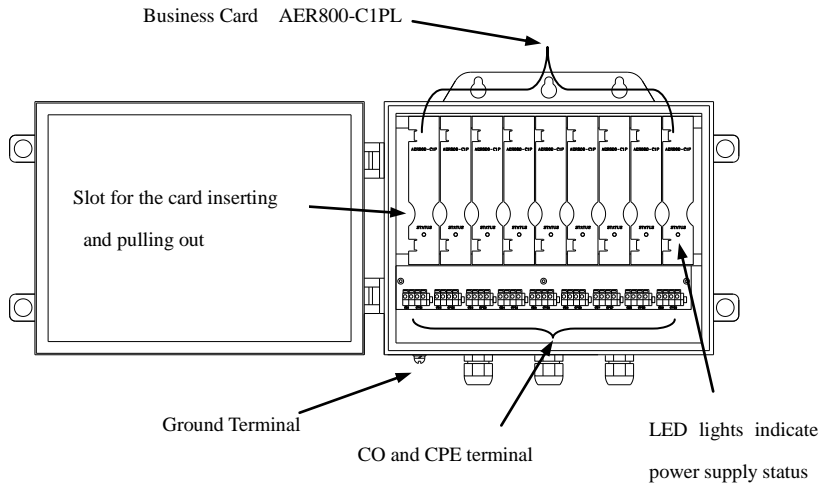


**Figure 3 AER800-4PL Box**

Business card AER800-C1PL can be easily inserted into the Box. Wiring terminals on front panel for twist pairs connecting.



### 4.3 AER800-8PL Box



**Figure 4 AER800-8PL Box**

Business card AER800-C1PL can be easily inserted into the Box. Wiring terminals on front panel for twist pairs connecting.

#### 4.4 Business card AER800-C1PL

In the Box, wiring terminals on front panel for twist pairs connecting. "CO" connects the signal line from DSLAM to AER800-C1PL, "CPE" connects the line to the modem. LED lights indicate power supply status. Please follow the Figure 3/4.

## 5. Installation Procedure

### 5.1 Unpack

Unpack equipment carefully; check for completeness against the purchase order. Notify the supplier if items are missing.

**Note: Save packing material. All equipment returned must be packed in the original packing material.**

Inspect equipment for shipping damage, including bent or loose hardware, and broken connectors. If equipment was damaged in transit, contact the supplier.

## 5.2 Install the ADSL Loop Extender

(1) Fix the AER800-1/4/8PL Box in the junction cabinet or at the supplied mounted brackets.

Ground the Box through the grounding screw in the bottom outside the Box.

**Attention: Copper-core wire with no less than 2.5mm<sup>2</sup> section area is required as ground wire. One end of the wire should connect to Loop Extender's ground terminal. The other end of the wire should connect to a good ground point. Grounding reliability can only ensure effective lightning-proof.**

(2) Insert business card AER800-C1PL into AER800-4/8PL Box.

(3) Connect the cable

Connect the signal line to AER800-C1PL, the line from DSLAM to the "CO" terminal, the line linked to the modem to the "CPE" terminal. After the CO side twisted pair is connected, the "STATUS" LED should be lightened.

(4) After confirming that all the twist-pair cables are connected correctly and Box is securely installed, the ADSL Loop Extender will work within 10 seconds after power is supplied steadily.

**Attention:**

"A" and "B" represent A and B wire of the twist-pair. No polarity

## 6. Troubleshooting

**Table 5 - ADSL Loop Extender Troubleshooting**

Problem Description		Possible Reason	Suggested Resolution
Equipment does not work after connected. Status LED is OFF.		CO side cable is not connected properly.	Check CO side cable.
No connection	Business Card status LED is always on.	Cables at DSLAM side or Modem side are not connected properly.	Correct the cable connection.

		Line quality is worse between CO and CPE side.	Change good quality cable.
		There is telephone before the splitter on CPE side.	Discard the telephone before the splitter on CPE side.
		Cables linked ADSL Loop Extender are not connected properly.	Correct the cable connection. Or check whether the distance between DSLAM, Extender, Modem is proper.
There is noise in user's telephone		Cable is connected to ground or the insulation is not good caused by men during the construction process.	Check the cables.
		Cable is too near to some electric equipments with strong magnetic field, such as high power sounder, selenium rectifier and high power motor.	Make cable far from the strong magnetic field.
Internet is slow, frequent off-line problem		Affection of computer hardware failures, system failures and virus.	Check computer or take with PC, testers and so on to deal with.
		The parallel cable at CPE side is too long or the connector is oxidation.	It is better to change the parallel cable to copper twist cable.
		The cable to CPE side is connected with too many connectors.	Avoid exposed connectors, use good quality cable instead scattered connectors.