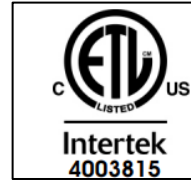


Cable Pair Stabilizer

Model CPS1436-I3 and CPS1436K-I3

US Patent No. 10,298,748



Conforms To UL STD
62368-1
Certified To CSA STD
C22.2 # 62368-1

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1. OVERVIEW

The CPS1436-I3 (Figure 1) delivers direct current (DC) over one or two DSL copper loops to prevent splice oxidation that degrades service performance. The device is installed at the customer premise, between a residential gateway and the interface to the outside plant. CPS1436K-I3 is a kit combining the CPS1436-I3 and the PCA-3063 Power Adapter. Issue 3 of this product adds an identification signature that is detectable by remote test systems only after proper installation of both the unit and jumper(s) at the VRAD/DSLAM location.

Document Status

This document has been reissued to add references to the ARRIS BGW-210 gateway.

Product Features

- Provides optimum sealing current to DSL loops
- Small, lightweight and easy to install
- No additional network equipment required
- Powered from gateway DC supply
- UL and FCC compliant
- Provides CPS Signature ID for remote detection of CPS1436-I3 installation

2. APPLICATIONS

The CPS1436-I3 is used on DSL loops that do not carry analog POTS service (dry loops). Figure 2 illustrates a typical application for a single loop. The CPS1436-I3

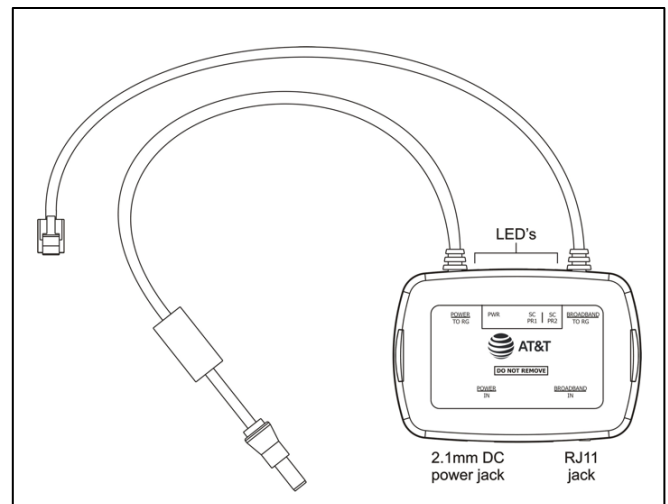


Figure 1. CPS1436-I3

draws a small amount of power from the residential gateway's DC power supply and delivers sealing current (wetting current) over the DSL copper pair. The service provider provides a return path for current by installing a jumper at a voice input near the serving VRAD or DSLAM. The DC path is terminated by the CPS1436-I3 and DSL signals pass transparently through the device to the gateway.

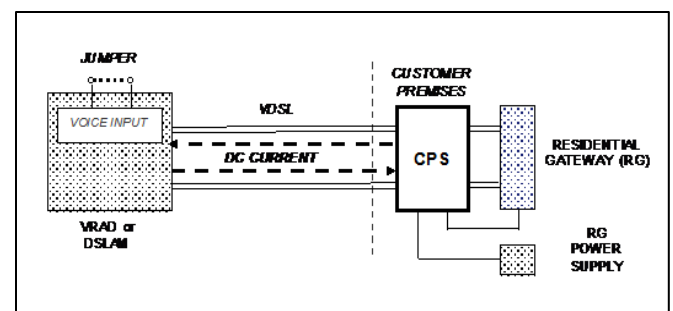


Figure 2. CPS1436-I3 Application

3. DESCRIPTION

The CPS1436-I3 is housed in a compact plastic case with integrated cables for connection to a residential gateway's DSL and DC power inputs. Jacks on the unit connect to cables from the DSL service provider network

and the gateway power supply. LEDs on the side of the CPS1436-I3 indicate status of its DC power input and DC current flow over the copper pairs of the DSL network.

The unit draws a small amount of power from the 12VDC gateway power supply to generate approximately 30mA of DC sealing current (wetting current) over one or two copper pairs of the DSL network. 12VDC power and DSL signals are passed to the gateway through the CPS1436-I3. No DC current is delivered over the DSL interface to the gateway.

To simplify identification of DSL lines utilizing the CPS1436-I3, the device presents a CPS Signature ID which can be seen when a frequency sweep of the DSL line is performed. At approximately 370 KHz a distinctive notch in the data transmission will be seen. Testing systems such as LS-BBT have been updated to detect this signature ID and indicate that a CPS1436-I3 has been installed on the line.

NOTE: This signature notch is only seen when sealing current is flowing which requires installation of both the CPS1436-I3 and jumper(s) at the DSLAM/VRAD location.

4. INSTALLATION

NOTE: Refer to AT&T practices for circuit qualification, circuit testing, additional instructions when installing the device with a residential gateway that uses HPNA (Coax) connections, or other details.

Installation consists of connecting a jumper at the voice input near the VRAD or DSLAM for each of the copper pairs and connecting the CPS1436-I3 at the customer premise, between a residential gateway and the network interface.

4.1 Network Jumper Installation

At the VRAD or DSLAM location, identify the voice input pair that would be used to place POTS service onto the DSL line. Connect a jumper from TIP to RING. Repeat for the second voice input pair if the CPS1436-I3 is being used on a 4-wire (bonded) DSL service line.

4.2 Customer Premises Installation

Some gateways, such as ARRIS BGW-210, incorporate different sized power supply jacks. Do not force connections. If power connection cannot be made easily, a PCA-3063 Power Adapter may be needed, (Figure 3).

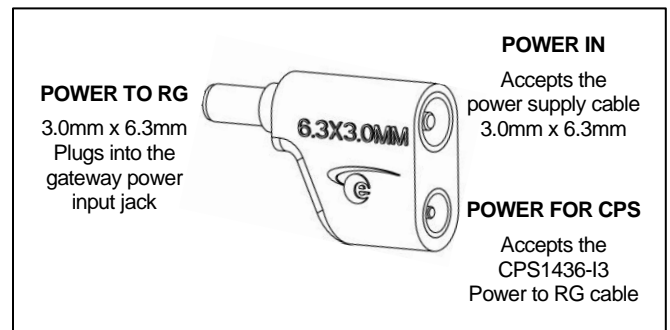


Figure 3. PCA-3063 Power Adapter

Start with the Power to RG cable coming from the CPS1436-I3 and connect it to the gateway as shown in Figure 4. If connection is tight, continue with the other connections shown in Figure 4. Table 1 describes these connections.

If the Power to RG connection to the gateway does not fit tightly, make connections as shown in Figure 5. Table 2 describes the cables and jacks used during the installation of a CPS1436-I3 with the PCA-3063 Power Adapter.

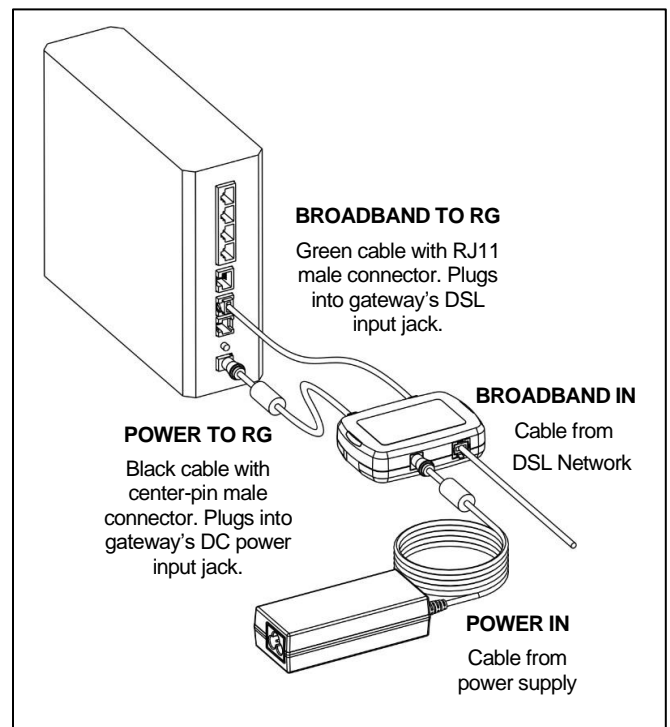


Figure 4. Standard Installation

Table 1. Direct installation of CPS1436-I3

LABEL	DESCRIPTION
POWER TO RG	Black cable with 2.1 mm center-pin male connector. Plugs into the gateway's DC power input jack.
BROADBAND TO RG	Green cable with RJ11 male connector. Plugs into the gateway's DSL input jack.
POWER IN	2.1mm center-pin female jack. Accepts the DC power cable from gateway power supply.
BROADBAND IN	RJ11 female jack. Accepts the RJ11 cable coming from the DSL network.

Table 2. Installation of CPS1436-I3 with PCA-3063

CONNECTOR/LABEL	DESCRIPTION
PCA-3063 POWER TO RG	Male plug on PCA-3063. Plugs into the gateway's DC power input jack.
PCA-3063 POWER IN	Upper female jack on PCA-3063. Accepts the gateway's power supply cable.
PCA-3063 POWER TO CPS and CPS1436-I3 POWER TO RG	Lower female jack on PCA-3063. Accepts the CPS1436-I3 POWER TO RG cable (black cable with 2.1 mm center-pin male connector).
CPS1436-I3 BROADBAND TO RG	Green cable with RJ11 male connector. Plugs into gateway's DSL input jack.
CPS1436-I3 POWER IN	Unused
CPS1436-I3 BROADBAND IN	RJ11 female jack. Accepts the RJ11 cable from the DSL network.

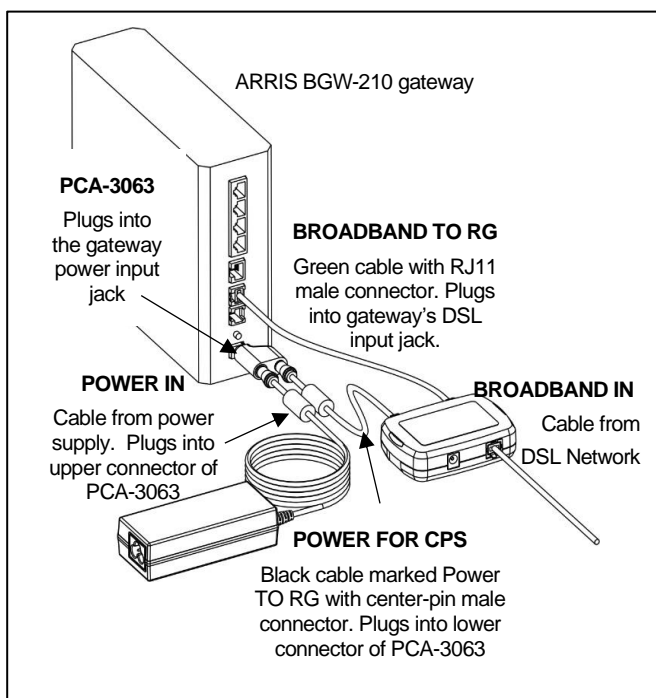


Figure 5. Installation with PCA-3063 Power Adapter

4.3 CPS1436-I3 Status Indicators

Table 3 describes the LED status indicators provided on the CPS1436-I3 to help verify proper operation.

NOTE: SC LEDs will remain off if the Network Jumper described in Section 4.1 has not been installed.

Table 3. Status Indicators

LABEL	STATUS	DESCRIPTION
PWR	ON (GREEN)	CPS1436-I3 is receiving DC power from the gateway power supply.
	OFF	No power source is detected by the CPS1436-I3.
SC PR1	ON (YELLOW)	Sealing current is being delivered by the CPS1436-I3 on pair 1.
	OFF	No sealing current is being delivered by the CPS1436-I3 on pair 1 or Network Jumper has not been installed on pair 1.
SC PR2	ON (YELLOW)	Sealing current is being delivered by the CPS1436-I3 on pair 2.
	OFF	No sealing current is being delivered by the CPS1436-I3 on pair 2 or Network Jumper has not been installed on pair 2.

5. CUSTOMER SERVICE

If technical or customer assistance is required, please contact Engenuity at the following:

Customer Service	1-800-980-3266 customer.service@engenuitycom.com
Technical Support	1-800-841-1005 support@engenuitycom.com
Engenuity Communications 3545 Stern Avenue St. Charles, Illinois 60174 www.engenuitycom.com	

6. WARRANTY & REPAIRS

Warranty

Engenuity warrants this product for one (1) year from date of purchase. Any attempt to repair or modify the equipment by anyone other than an authorized Engenuity representative will void the warranty.

This limited warranty does not cover any losses or damages resulting from shipment to or from the customer, or from improper installation, abuse, modifications, or unauthorized repair by other than Engenuity personnel.

Repair and Return

Engenuity equipment will be repaired or replaced without cost during the warranty period if the product is defective for any reason other than abuse, improper use, or improper installation. Before returning defective equipment, first request a Return Material Authorization (RMA) number from Engenuity Customer Service. Once an RMA number is obtained, return the unit, freight prepaid, along with a brief description of the problem, to:

Engenuity Communications
3545 Stern Avenue
St. Charles, Illinois 60174
ATTN: Repair & Return Dept.

Replacements will be shipped in the fastest manner consistent with the urgency of the situation. Repair or replacement of faulty equipment beyond the warranty period is available for a nominal charge.

7. SPECIFICATIONS

CPS1436-I3 and CPS1436K-I3

Input Voltage	12V +/- 1V DC
Maximum Input Current	3A
Current per Loop	Up to 31 mA DC
Number of Loops	1 or 2
Spectrum Compatibility	Up to 30 MHz
Insertion Loss	0.2 dB, nominal
CPS Signature ID	Approximately 370 KHz
Size (H x W x D)	2.5" x 3.6" x 0.9"
Weight	4 ounces
Temperature Range	0 to 50 degrees C
Compliance	UL 60950

PCA-3063, included with CPS1436K-I3

Size (H x W x D)	1.1" x 1.7" x 0.5"
Weight	1 ounce
Temperature Range	0 to 50 degrees C