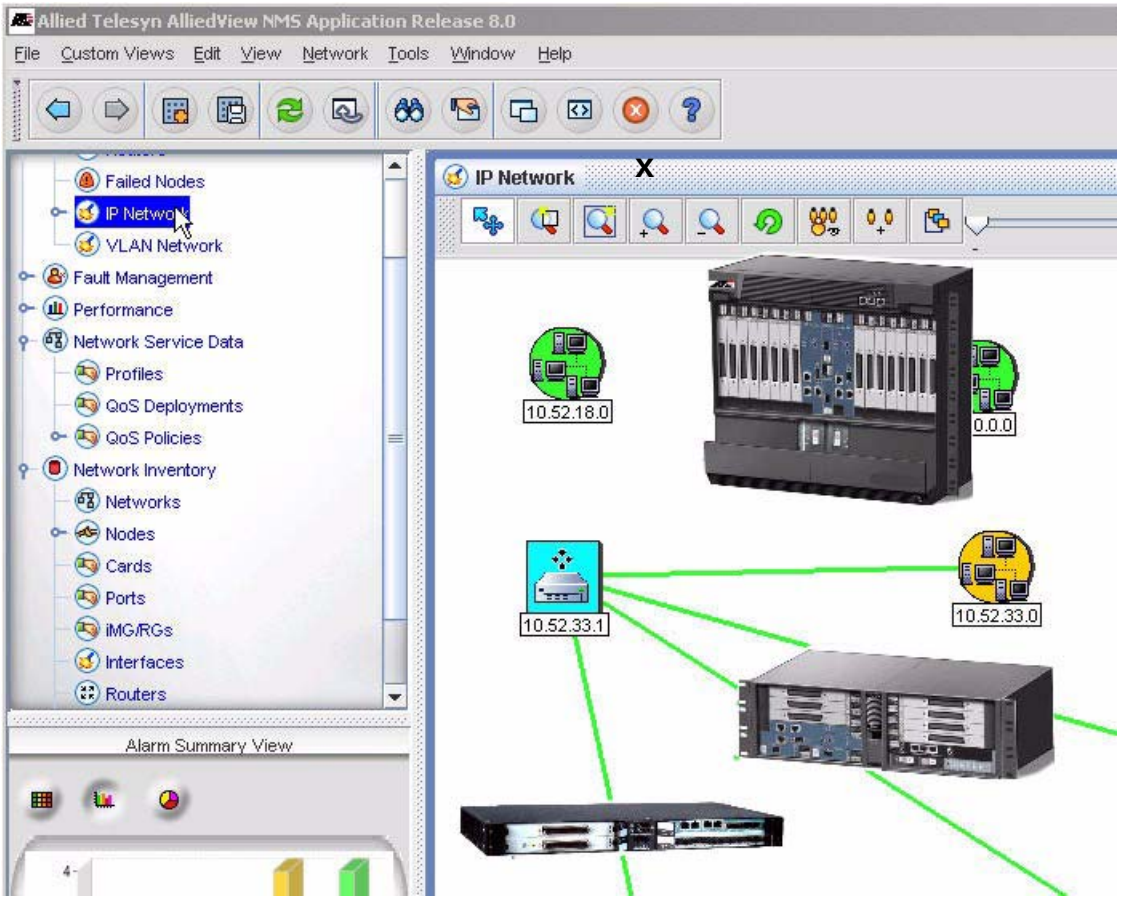


AlliedTelesyn™ Wiring Solutions: For Optimized xDSL Performance Release 8.0 (and up unless reissued) Issue 1

Introduction

Congratulations on your purchase of Allied Telesyn™ products!

Who Should Read This Guide?

This document is intended for sales and network engineers, project managers, and service provider and telco staff who are involved in equipment recommendations, ordering, installation and maintenance of xDSL (ADSL and SHDSL) subscriber service and associated equipment both at the central office and subscriber premises.

About this Guide

This guide provides a description of Allied Telesyn wiring solutions for xDSL extending from the Allied Telesyn Compact Multiservice Access Platform (iMAP) to the subscriber premises equipment.

- Section 1 provides an overview of xDSL performance requirements.
- Section 2 describes the Telesyn CO-based solution, the recommended components and ordering information.
- Sections 3 describes Residential premises recommended components and ordering information.
- The Appendix provides detailed specifications for the components, safety guidelines, and regulatory information.

Reason for Update

Includes configurations with the ADSL24SA (TN-129-A).

Table of Contents

1. Solutions for Optimized ADSL Performance

In order to deliver video, data, and voice service with high ADSL data rates, constant bandwidth, and error-free performance, it is important to consider the overall connection from the ADSL system in the provider's premises to the equipment located at the subscriber's premises, an end to end solution. Careful consideration must be given to the engineering of this solution because its characteristics can and will affect ADSL performance. Each component of the end to end solution must be considered in order to maximize bandwidth, decrease error rates, and maintain high performance.

Telesyn products are installed in telco or provider offices and become part of a total, end to end, solution offered to Telesyn users. Telesyn compact multiservice access platform (MAP) systems are wired into the network connecting subscribers to video, data, and voice services. The wiring and components, originating from the compact multiservice access platform through the office to the subscriber premises is referred to as Telesyn Wiring Solutions for Optimized ADSL Performance and is described in this document.

ADSL solutions come in these versions,

- ADSL8S (no splitter required)
- ADLS16
- ADSL24
- ADSL24A (no splitter required)
- PAC24 (no splitter required)
- 71xx

The 71xx is a small unit that offers three ADSL16 cards of Annex-A service, three ADSL16B cards of Annex-B service, both a maximum of 48 ports, or three ADSL8S cards (8 ports with splitter) for 24 ports.

Figure 1-1 illustrates a complete wiring solution from the iMAP with the CO-based solutions through the office to the subscriber premises with Residential solutions.

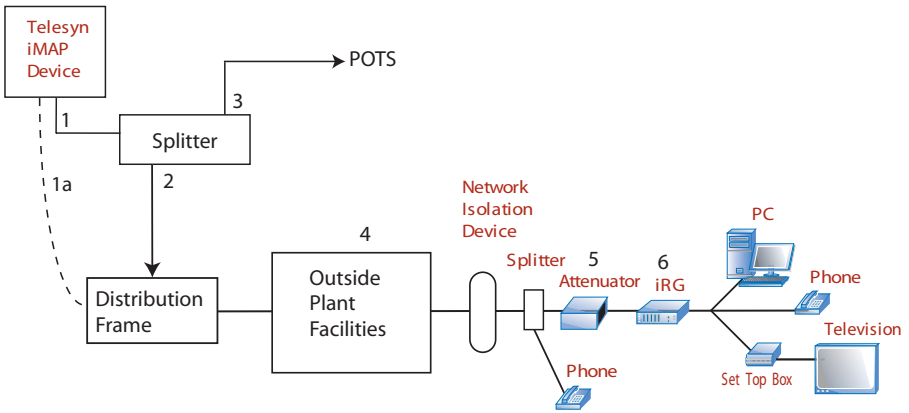


FIGURE 1-1 Generic Telesyn ADSL circuit

Numbered points on Figure 1-1 are explained below:

1. ADSL cabling interfaces the Telesyn system to a splitter if required. (1a is used to wire wrap the unterminated end to existing DF blocks and connect the other end directly to the iMAP card connector.)
2. ADSL Cabling from Splitter to the DF Block.
3. Standard POTS voice circuit.
4. Telco outside plant facilities.
5. ADSL loop attenuator.
6. ADSL Residential Gateway (such as RG634).

2. CO-Based Solutions

2.1 Overview

Cabling, wiring, connection and splitter options for each of the ADSL solutions are described in this chapter. Ordering information is provided. Detailed product specifications are provided in the Appendix.

Each CO-based solution is comprised of the following components:

- Telesyn system with ADSL cards
- Cabling to the Splitter
- Splitter (not required for ADSL8S)
- Distribution frame blocks
- Frame jumpers

Note: Telesyn Compact Multiservice Access Platform (MAP) system ordering information and specifications are contained in the Telesyn MAP Component Specification

Note: For SHDSL configurations, use a standard RJ-21 cable with a standard pinout; for pair usage, refer to the Telesyn MAP Component Specification.

An explanation of part numbers for cable assemblies that are connectorized on both ends follows:

AT-TN-K025-A-xxx

- **AT-TN** - Telesyn
- **K025** - Specific part number
- **A** - A series
- **xxx** - Cable length (see table below)

xxx value	Cable Length	xxx value	Cable Length
005	5 ft.	050	50 ft.
010	10 ft.	060	60 ft.
015	15 ft.	070	70 ft.
020	20 ft.	080	80 ft.

xxx value	Cable Length	xxx value	Cable Length
030	30 ft.	090	90 ft.
040	40 ft.	----------	----------

2.2 AT-TN-101-A (ADSL8S)

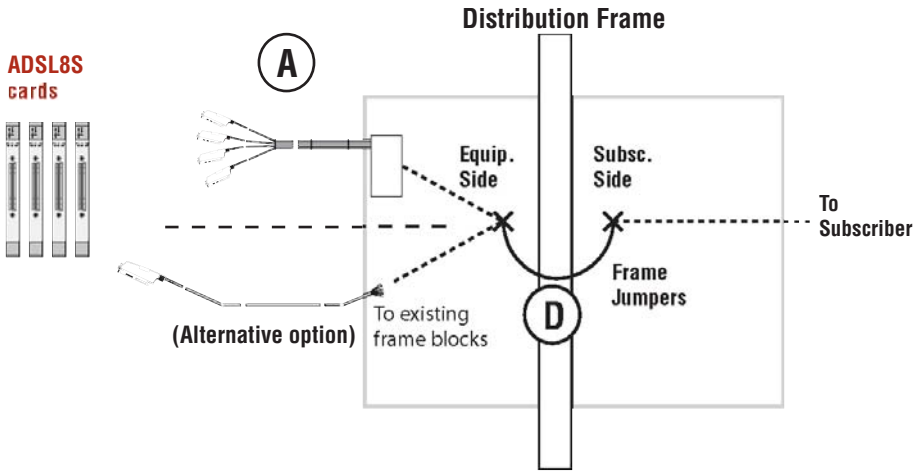


FIGURE 2-1 ADSL8S

The ADSL8S solution is comprised of the following components:

- ADSL8S cards
- Cabling to the distribution frame equipment side
- Distribution frame blocks
- CAT5 DF Jumper Wire

(A) Order one terminal block cable assembly per four ADSL cards. The block is included and should be mounted on the distribution frame and connected directly to the ADSL card.

Part Number	Description
AT-TN-K025-A-005	Terminal block with four Cable Assembly - 5 ft.

AT-TN-K025-A-010	Terminal block with four Cable Assembly - 10 ft.
AT-TN-K025-A-015	Terminal block with four Cable Assembly - 15 ft.
AT-TN-K025-A-020	Terminal block with four Cable Assembly - 20 ft.
AT-TN-K025-A-030	Terminal block with four Cable Assembly - 30 ft.
AT-TN-K025-A-040	Terminal block with four Cable Assembly - 40 ft.
AT-TN-K025-A-050	Terminal block with four Cable Assembly - 50 ft.
AT-TN-K025-A-060	Terminal block with four Cable Assembly - 60 ft.
AT-TN-K025-A-070	Terminal block with four Cable Assembly - 70 ft.
AT-TN-K025-A-080	Terminal block with four Cable Assembly - 80 ft.
AT-TN-K025-A-090	Terminal block with four Cable Assembly - 90 ft.

Alternatively, order one cable assembly per card, wire wrap unterminated end to existing DF blocks and connect directly to the ADSL card. Refer to the Appendix for CAT5 wiring practices 5.3.

Part Number	**Description**
AT-TN-C000-A	25 pair RJ-21 - Unterminated Cable - 15M
AT-TN-C001-A	25 pair RJ-21 - Unterminated Cable - 25M
AT-TN-C002-A	25 pair RJ-21 - Unterminated Cable - 35M
AT-TN-C005-A	4 (4 pair) RJ-21 - Unterminated Cable - 15M
AT-TN-C006-A	4 (4 pair) RJ-21 - Unterminated Cable - 25M
AT-TN-C007-A	4 (4 pair) RJ-21 - Unterminated Cable - 35M

Note: Utilizing this alternative can result in reduced ADSL performance.

Ⓓ Order CAT5 Jumper wire to connect components on the Distribution Frame. Refer to the Appendix for wiring practices 5.3.

Part Number	Description
TN-K015-A	Kit, Jumper Wire, 1 pair, CAT5, White/Blue, 1K ft. Roll

2.3 TN-121-A, TN-124B - Standard Splitter (ADSL24A, ADSL24B)

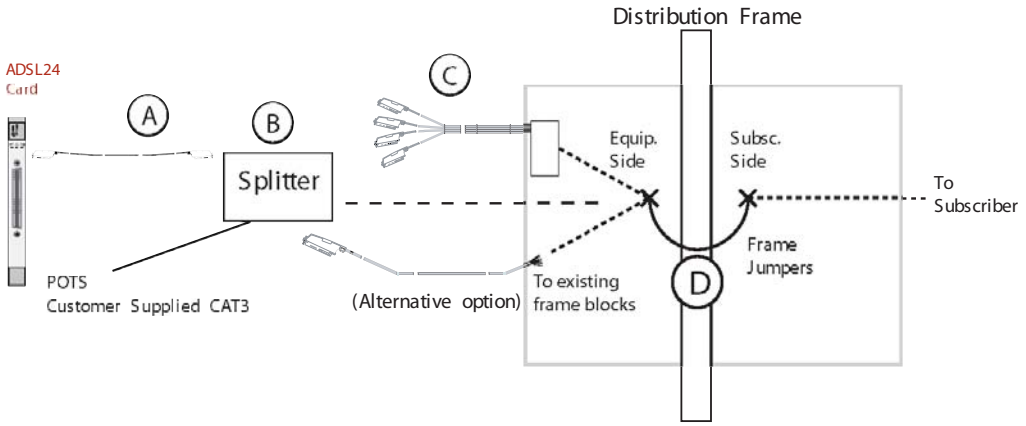


FIGURE 2-2 ADSL16 Option 1

The ADSL24 solution with a standard splitter is comprised of the following components:

- ADSL24 cards
- Cabling to the splitter
- Splitter
- Cabling from the splitter to the distribution frame
- Distribution frame blocks
- CAT5 DF Jumper Wire

(A) Order adapter cables that allow a transition from optimized connections to standard connections. (Optimized end is red.)

Part Number	Description
AT-TN-C018-A-005	Optimized male to Conventional male telco assembly - 5 ft.
AT-TN-C018-A-010	Optimized male to Conventional male telco assembly - 10 ft.
AT-TN-C018-A-015	Optimized male to Conventional male telco assembly - 15 ft.
AT-TN-C018-A-020	Optimized male to Conventional male telco assembly - 20 ft.
AT-TN-C018-A-030	Optimized male to Conventional male telco assembly - 30 ft.
AT-TN-C018-A-040	Optimized male to Conventional male telco assembly - 40 ft.
AT-TN-C018-A-050	Optimized male to Conventional male telco assembly - 50 ft.
AT-TN-C018-A-060	Optimized male to Conventional male telco assembly - 60 ft.
AT-TN-C018-A-070	Optimized male to Conventional male telco assembly - 70 ft.
AT-TN-C018-A-080	Optimized male to Conventional male telco assembly - 80 ft.
AT-TN-C018-A-090	Optimized male to Conventional male telco assembly - 90 ft.

(B) Order one Splitter chassis for (up to) every four ADSL cards.

Ⓒ Order one terminal block cable assembly per four splitter cards. The DF block is included and should be mounted on the distribution frame and connected directly to the splitter.

Part Number	Description
AT-TN-K019-A-005	Terminal block with four Cable Assembly - 5 ft.
AT-TN-K019-A-010	Terminal block with four Cable Assembly - 10 ft.
AT-TN-K019-A-015	Terminal block with four Cable Assembly - 15 ft.
AT-TN-K019-A-020	Terminal block with four Cable Assembly - 20 ft.
AT-TN-K019-A-030	Terminal block with four Cable Assembly - 30 ft.
AT-TN-K019-A-040	Terminal block with four Cable Assembly - 40 ft.
AT-TN-K019-A-050	Terminal block with four Cable Assembly - 50 ft.
AT-TN-K019-A-060	Terminal block with four Cable Assembly - 60 ft.
AT-TN-K019-A-070	Terminal block with four Cable Assembly - 70 ft.
AT-TN-K019-A-080	Terminal block with four Cable Assembly - 80 ft.
AT-TN-K019-A-090	Terminal block with four Cable Assembly - 90 ft.

Alternatively, order one cable assembly per card, wire wrap unterminated end to existing DF blocks and connect directly to the splitter. Use CAT5 wiring practices 5.3

Part Number	Description
AT-TN-C000-A	25 pair RJ-21 - Unterminated Cable - 15M
AT-TN-C001-A	25 pair RJ-21 - Unterminated Cable - 25M
AT-TN-C002-A	25 pair RJ-21 - Unterminated Cable - 35M

Note: Utilizing this alternative can result in reduced ADSL performance.

Ⓓ Order CAT5 Jumper wire to connect components on the Distribution Frame. Use CAT5 wiring practices 5.3.

Part Number	Description
TN-K015-A	Kit, Jumper Wire, 1 pair, CAT5, White/Blue, 1K ft. Roll

2.4 TN-121-A, TN-124B - High Performance Splitter (ADSL24A, ADSL24B)

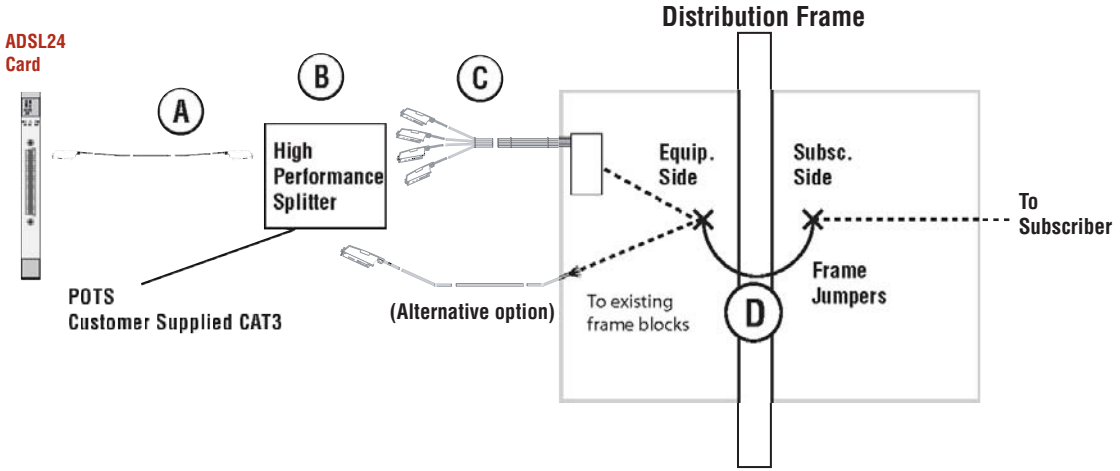


FIGURE 2-3 ADSL24

The ADSL24 solution is comprised of the following components:

- Telesyn system with ADSL24 cards (TN-121-A for Annex A, TN-124B for Annex B)
- Cabling to the splitter
- High Performance splitter
- Cabling to the distribution frame
- Distribution frame blocks
- CAT5 Jumper Wire

Note: For the best ADSL performance, maintain CAT5 wiring standards.

Ⓐ Order one cable per ADSL card and connect one end directly to the ADSL card and the other end to the high performance splitter.

Note: Both ends of the cable assembly are optimized and are therefore red.

Part Number	Description
AT-TN-C013-A-003	Optimized 25 pair Cable Assembly - 3 ft.
AT-TN-C013-A-005	Optimized 25 pair Cable Assembly - 5 ft.
AT-TN-C013-A-007	Optimized 25 pair Cable Assembly - 7 ft.
AT-TN-C013-A-010	Optimized 25 pair Cable Assembly - 10 ft.
AT-TN-C013-A-015	Optimized 25 pair Cable Assembly - 15 ft.
AT-TN-C013-A-020	Optimized 25 pair Cable Assembly - 20 ft.
AT-TN-C013-A-030	Optimized 25 pair Cable Assembly - 30 ft.
AT-TN-C013-A-040	Optimized 25 pair Cable Assembly - 40 ft.
AT-TN-C013-A-050	Optimized 25 pair Cable Assembly - 50 ft.
AT-TN-C013-A-060	Optimized 25 pair Cable Assembly - 60 ft.
AT-TN-C013-A-070	Optimized 25 pair Cable Assembly - 70 ft.
AT-TN-C013-A-080	Optimized 25 pair Cable Assembly - 80 ft.
AT-TN-C013-A-090	Optimized 25 pair Cable Assembly - 90 ft.

B Order one splitter chassis and four high performance splitter cards for every four ADSL24 cards.

Part Number	Description
TN-S004-A	1 Rack Unit Splitter Chassis - supports 96 ports
TN-S101-A	Installed in any of the four card slots of the TN-S004-A chassis. Engineered for the ADSL24A
TN-S116-A	Installed in any of the four card slots of the TN-S004-A chassis. Engineered for the ADSL24B

Provides 3 rack units of up to 4 cards for up to 96 ADSL ports

Ⓒ Order one terminal block cable assembly per four ADSL cards. The DF block is included and should be mounted on the distribution frame and connected directly to the splitter.

Part Number	Description
AT-TN-K022-A-005	Terminal block with four Cable Assembly - 5 ft.
AT-TN-K022-A-010	Terminal block with four Cable Assembly - 10 ft.
AT-TN-K022-A-015	Terminal block with four Cable Assembly - 15 ft.
AT-TN-K022-A-020	Terminal block with four Cable Assembly - 20 ft.
AT-TN-K022-A-030	Terminal block with four Cable Assembly - 30 ft.
AT-TN-K022-A-040	Terminal block with four Cable Assembly - 40 ft.
AT-TN-K022-A-050	Terminal block with four Cable Assembly - 50 ft.
AT-TN-K022-A-060	Terminal block with four Cable Assembly - 60 ft.
AT-TN-K022-A-070	Terminal block with four Cable Assembly - 70 ft.
AT-TN-K022-A-080	Terminal block with four Cable Assembly - 80 ft.
AT-TN-K022-A-090	Terminal block with four Cable Assembly - 90 ft.

Alternatively, order one cable assembly per card, wire wrap unterminated end to existing DF blocks and connect directly to the splitter. Use CAT5 wiring practices 5.3

Part Number	Description
AT-TN-C019-A-015	Optimized 25 pair RJ-21 - Unterminated Cable - 15M
AT-TN-C019-A-025	Optimized 25 pair RJ-21 - Unterminated Cable - 25M
AT-TN-C019-A-035	Optimized 25 pair RJ-21 - Unterminated Cable - 35M

Note: Utilizing this alternative can result in reduced ADSL performance.

Ⓓ Order CAT5 Jumper wire to connect components on the Distribution Frame. Use CAT5 wiring practices 5.3.

Part Number	Description
TN-K015-A	Kit, Jumper Wire, 1 pair, CAT5, White/Blue, 1K ft. Roll

2.5 AT-TN-113-A (POTS24)

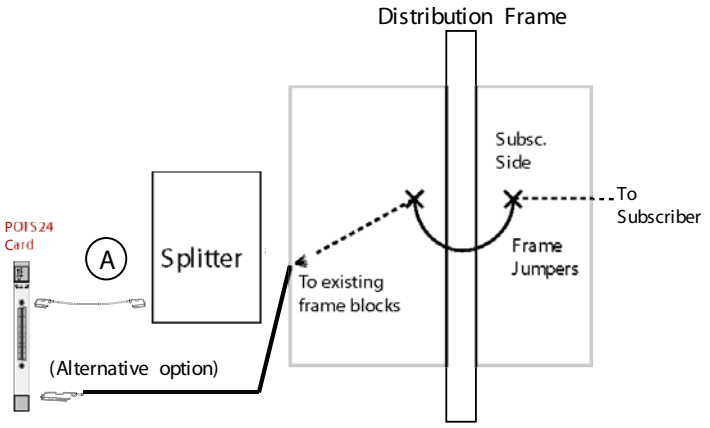


FIGURE 2-4 POTS24

The POTS24 solution is comprised of the following components:

- Telesyn system with POTS24 cards
- Cabling to the splitter
- Splitter
- Cabling from splitter to the POTS24 card

Note: This section only addresses the POTS24 functionality. For connections from the splitter to ADSL24 and the splitter to the DF, refer to 2.3.

(A) Order one cable per POTS24 card and connect one end directly to the POTS24 card and the other end to the splitter PHONE connector

Part Number	Description
TN-C008-A-005	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 5FT.
TN-C008-A-010	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 10FT
TN-C008-A-015	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 15FT

TN-C008-A-020	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 20FT
TN-C008-A-030	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 30FT
TN-C008-A-040	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 40FT
TN-C008-A-050	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 50FT
TN-C008-A-060	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 60FT
TN-C008-A-070	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 70FT
TN-C008-A-080	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 80FT
TN-C008-A-090	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 90FT

Alternatively, order one cable assembly per card, wire wrap unterminated end to existing DF blocks and connect directly to the POTS24. Use CAT5 wiring practices 5.3

Part Number	**Description**
AT-TN-C000-A	25 pair RJ-21 - Unterminated Cable - 15M
AT-TN-C001-A	25 pair RJ-21 - Unterminated Cable - 25M
AT-TN-C002-A	25 pair RJ-21 - Unterminated Cable - 35M

Note: Just as the PAC24 card combines the POTS24 and ADSL24A functionality, the user can separate the two by using the AT-TN-C000-A and providing separate POTS24 and ADSL connections to the subscriber. This would involve using the wiring figures in 2.3 and 2.5.

2.6 AT-TN-123-A (PAC24)

The PAC24 card provides both the POTS24 and ADSL24A functionality on one card, with internal splitters. As a result, a separate splitter is not used.

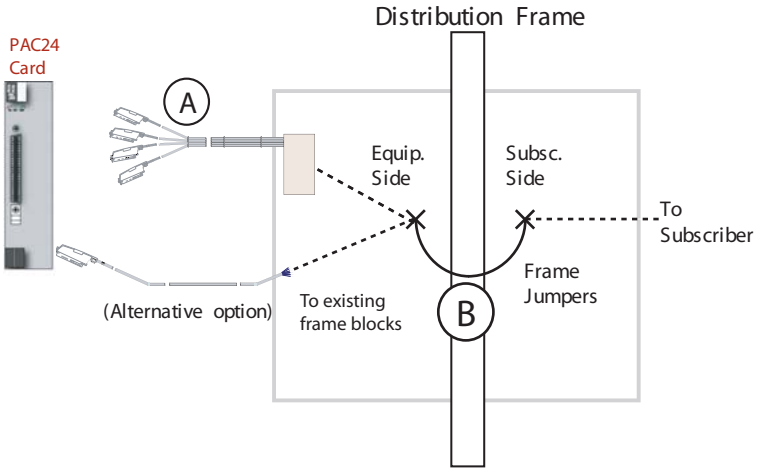


FIGURE 2-5 PAC24

(A) Order one terminal block cable assembly per four ADSL cards. The DF block is included and should be mounted on the distribution frame and connected directly to the splitter.

Part Number	Description
AT-TN-K022-A-005	Terminal block with four Cable Assembly - 5 ft.
AT-TN-K022-A-010	Terminal block with four Cable Assembly - 10 ft.
AT-TN-K022-A-015	Terminal block with four Cable Assembly - 15 ft.
AT-TN-K022-A-020	Terminal block with four Cable Assembly - 20 ft.
AT-TN-K022-A-030	Terminal block with four Cable Assembly - 30 ft.
AT-TN-K022-A-040	Terminal block with four Cable Assembly - 40 ft.

AT-TN-K022-A-050	Terminal block with four Cable Assembly - 50 ft.
AT-TN-K022-A-060	Terminal block with four Cable Assembly - 60 ft.
AT-TN-K022-A-070	Terminal block with four Cable Assembly - 70 ft.
AT-TN-K022-A-080	Terminal block with four Cable Assembly - 80 ft.
AT-TN-K022-A-090	Terminal block with four Cable Assembly - 90 ft.

Alternatively, order one cable assembly per card, wire wrap unterminated end to existing DF blocks and connect directly to the splitter. Use CAT5 wiring practices 5.3

Part Number	Description
AT-TN-C019-A-015	Optimized 25 pair RJ-21 - Unterminated Cable - 15M
AT-TN-C019-A-025	Optimized 25 pair RJ-21 - Unterminated Cable - 25M
AT-TN-C019-A-035	Optimized 25 pair RJ-21 - Unterminated Cable - 35M

Note: Utilizing this alternative can result in reduced ADSL performance.

Ⓑ Order CAT5 Jumper wire to connect components on the Distribution Frame. Use CAT5 wiring practices 5.3.

Part Number	Description
TN-K015-A	Kit, Jumper Wire, 1 pair, CAT5, White/Blue, 1K ft. Roll

2.7 AT-TN-129-A - Internal Splitter Annex-A (ADSL24SA)

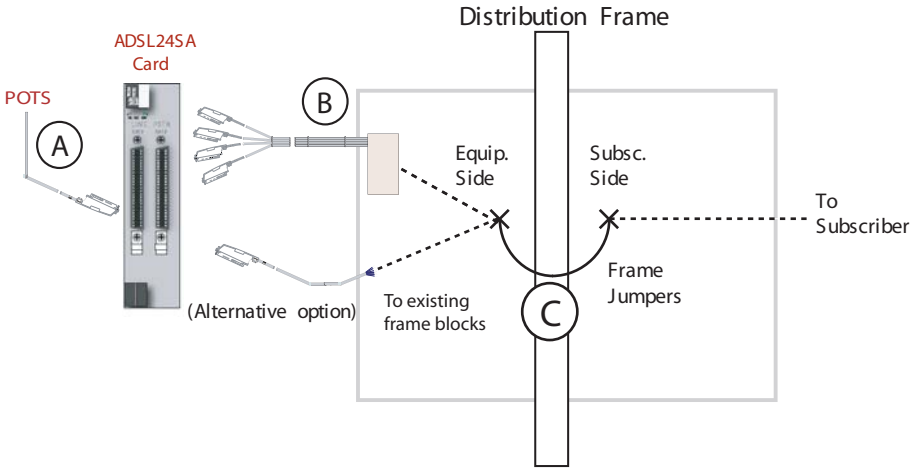


FIGURE 2-6 ADSL24SA

The ADSL24SA provides the ADSL24A functionality on one double-width card, with internal POTS splitters. The connection is comprised of the following components:

- Telesyn system with ADSL24SA cards (TN-129-A)
- Cabling from connectors labeled **PSTN CAT 3** to the CO Class 5 switch. This uses standard RJ21 wiring.
- Cabling from the ALDS24SA labeled **Line CAT 5** to the distribution frame. This uses optimized CAT5 wiring.
- Distribution frame blocks
- CAT5 Jumper Wire

Note: For the best ADSL performance, maintain CAT5 wiring standards.

Ⓐ Order one cable per ADSL24SA card and connect one end directly to the (label **PSTN CAT 3)** and the other end to a POTS connection.

Note: This uses standard RJ21 wiring, so exisitng cable could be used instead of this cable.

.

Part Number	Description
TN-C008-A-005	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 5FT.
TN-C008-A-010	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 10FT
TN-C008-A-015	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 15FT
TN-C008-A-020	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 20FT
TN-C008-A-030	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 30FT
TN-C008-A-040	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 40FT
TN-C008-A-050	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 50FT
TN-C008-A-060	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 60FT
TN-C008-A-070	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 70FT
TN-C008-A-080	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 80FT
TN-C008-A-090	CABLE, CONVENTIONAL RJ21 MALE TO CONVENTIONAL RJ21 MALE, 90FT

Ⓑ Order one terminal block cable assembly per four ADSL24SA cards. The DF block is included and should be mounted on the distribution frame and connected directly to the ADSL24SA card (**Line CAT 5**)**.**

Part Number	Description
AT-TN-K022-A-005	Terminal block with four Cable Assembly - 5 ft.
AT-TN-K022-A-010	Terminal block with four Cable Assembly - 10 ft.
AT-TN-K022-A-015	Terminal block with four Cable Assembly - 15 ft.
AT-TN-K022-A-020	Terminal block with four Cable Assembly - 20 ft.

AT-TN-K022-A-030	Terminal block with four Cable Assembly - 30 ft.
AT-TN-K022-A-040	Terminal block with four Cable Assembly - 40 ft.
AT-TN-K022-A-050	Terminal block with four Cable Assembly - 50 ft.
AT-TN-K022-A-060	Terminal block with four Cable Assembly - 60 ft.
AT-TN-K022-A-070	Terminal block with four Cable Assembly - 70 ft.
AT-TN-K022-A-080	Terminal block with four Cable Assembly - 80 ft.
AT-TN-K022-A-090	Terminal block with four Cable Assembly - 90 ft.

Alternatively, order one cable assembly per card, wire wrap unterminated end to existing DF blocks and connect directly to the ADSL24SA card. Use CAT5 wiring practices 5.3

Part Number	Description
AT-TN-C019-A-015	Optimized 25 pair RJ-21 - Unterminated Cable - 15M
AT-TN-C019-A-025	Optimized 25 pair RJ-21 - Unterminated Cable - 25M
AT-TN-C019-A-035	Optimized 25 pair RJ-21 - Unterminated Cable - 35M

Note: Utilizing this alternative can result in reduced ADSL performance.

Ⓒ Order CAT5 Jumper wire to connect components on the Distribution Frame. Use CAT5 wiring practices 5.3.

Part Number	Description
TN-K015-A	Kit, Jumper Wire, 1 pair, CAT5, White/Blue, 1K ft. Roll

2.8 AT-TN-71xx-A

In release 6.1, the 7101, 7102, 7103, 7104, and 7105 are no longer available. Instead, the following product is available:

- TN-07112-A - Provides ADSL Annex-A service for 48 ports. This product replaces the 7101, 7102, 7103, and 7104.

Note: In a future release, the TN-9100-A can be configured to replace the TN-7105-A and provide Annex-B service.

The connections for the two ADSL24-A cards are similar to the line interfaces for the TN-121-A, using the TN-S101-A splitter. Refer to 2.4.

2.9 Cabinet Solutions

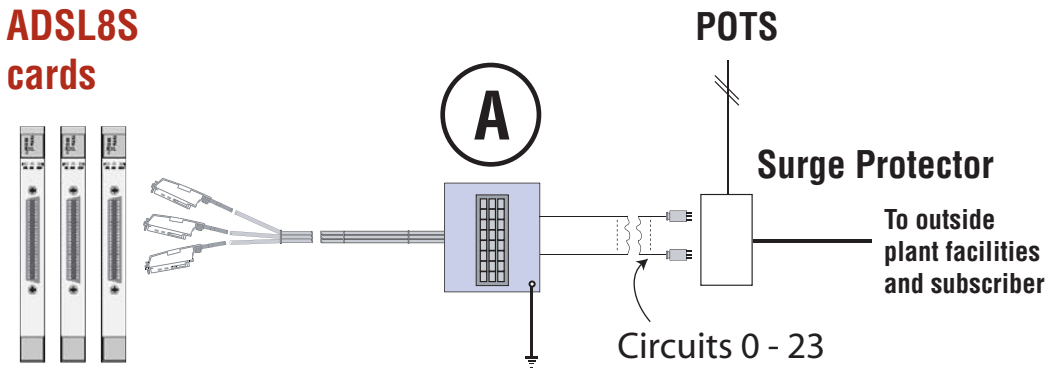


FIGURE 2-7 Surge Protector Adapter Assembly

(A) Order one 24 circuit surge protector adapter assembly for every 3 ADSL8S cards (one adapter assembly protects 3 ADSL8S cards).

1. Connect the ground cable from the surge protector adapter assembly to GND.
2. Connect 3 RJ21 connectors to the ADSL8S cards.
3. Identify the specified circuit on the cabinet surge protector.
4. Remove the protection module for the specified circuit from the cabinet surge protector.
5. Connect the circuit from the surge protector adapter assembly into the cabinet surge protector.
6. Install a protection module on the surge protector adapter assembly for the specified circuit.

Part Number	Description
AT-TN-K026-A	24 circuit surge protector adapter assembly _ ft.

3. Installation recommendations

3.1 Overview

This section illustrates recommended wiring installation procedures for the solutions detailed in the previous sections.

3.2 AT-TN-C013-A

The following diagram illustrates the wiring required at the distribution frame for the AT-TN-C013-A, ADSL24 card, and High Performance splitter. For each ADSL24 card, the user would:

1. Connect one AT-TN-C013-A of correct length from the ADSL24 card to the High Performance splitter card **ADSL** connector.
2. Connect one AT-TN-K022-A of correct length from the splitter card **LINE** connector to the distribution frame.
3. Connect a customer-supplied CAT3 cable/wiring of correct length from the splitter card **PHONE** connector to the Class #5 switch for POTS service.

To connect the first subscriber, the user would:

1. Connect the subscriber's incoming line to the AT-TN-K022-A installed in step 2 above. The subscriber's pair would be connected to pair 1 on the AT-TN-K022-A.

   (Note that subsequent subscriber's pairs would be connected to pair 2, pair 3, and so on.)

2. Connect the subscriber's corresponding pair to the Class #5 switch for POTS service.

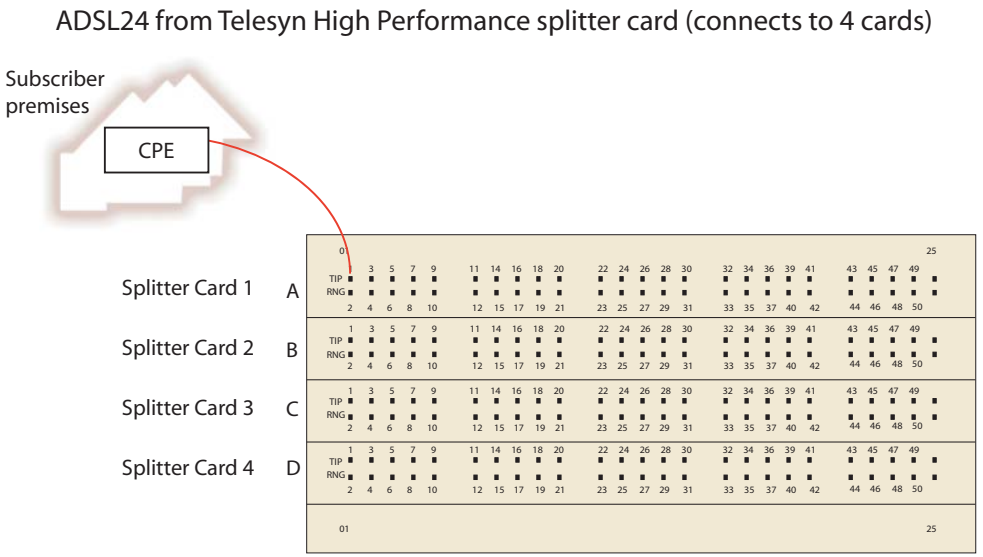


FIGURE 3-1 ADSL24 solution with High Performance splitter card

3.3 AT-TN-K019-A

The following diagram illustrates the wiring required at the distribution frame for the AT-TN-K019-A and ADSL16 card. For each ADSL16 card, the user would:

1. Connect one AT-TN-C008-A of correct length from the ADSL16 card to the splitter card **ADSL** connector.
2. Connect a customer-supplied CAT3 cable/wiring of correct length from the splitter card **PHONE** connector to the Class #5 switch for POTS service.
3. Connect one AT-TN-K019-A of correct length from the splitter card **LINE** connector to the distribution frame. Note that the AT-TN-K019-A can serve 4 splitter cards.

To connect the first subscriber, the user would:

1. Connect the subscriber's incoming line to the AT-TN-K019-A installed in step 3 above. The subscriber's pair would be connected to pair 1 on the AT-TN-K019-A.

   (Note that subsequent subscriber's pairs would be connected to pair 2, pair 3, and so on.)

2. Connect the subscriber's corresponding pair to the Class #5 switch for POTS service.

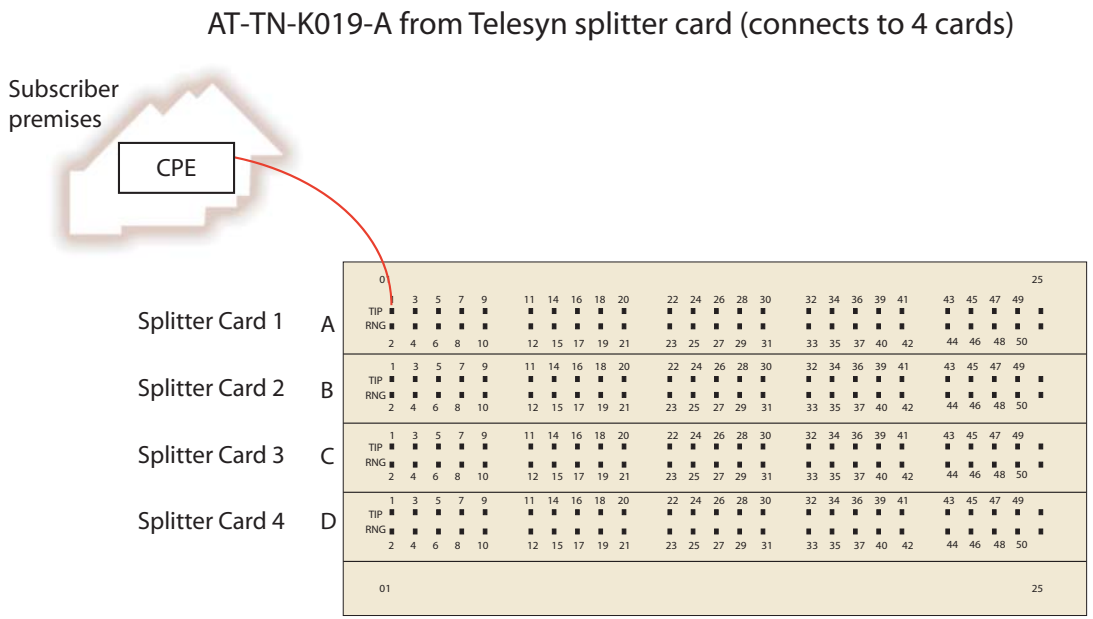


FIGURE 3-2 AT-TN-K019-A connections for one subscriber

3.4 AT-TN-K022-A

3.4.0.1 ADSL16 High Performance - Optimized

The following diagram illustrates the wiring required at the distribution frame for the AT-TN-K022-A and ADSL16 card. For each ADSL16 card, the user would:

1. Connect one AT-TN-K019-A of correct length from the ADSL16 card to the distribution frame.
2. Connect one AT-TN-K022-A of correct length from the splitter card **ADSL** connector to the distribution frame.
3. Using CAT5 wiring, jumper the AT-TN-K019-A pairs in step 1 above to the AT-TN-K022-A pairs in step 2 above.
4. Connect one AT-TN-K022-A of correct length from the splitter card **LINE** connector to the distribution frame.
5. Connect a customer-supplied CAT3 cable/wiring of correct length from the splitter card **PHONE** connector to the Class #5 switch for POTS service.

To connect the first subscriber, the user would:

1. Connect the subscriber's incoming line to the AT-TN-K022-A installed in step 4 above. The subscriber's pair would be connected to pair 1 on the AT-TN-K022-A.

   (Note that subsequent subscriber's pairs would be connected to pair 2, pair 3, and so on.)

2. Connect the subscriber's corresponding pair to the Class #5 switch for POTS service.

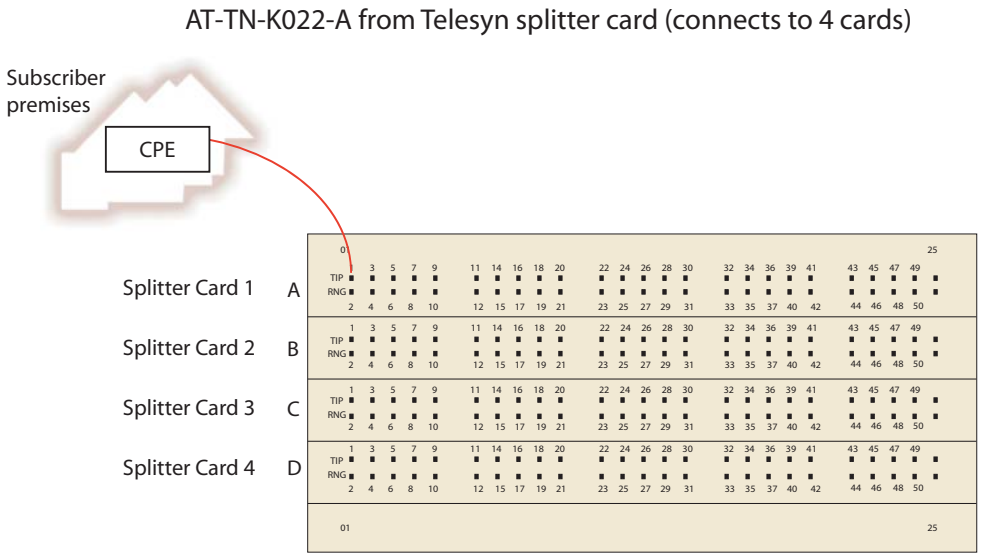


FIGURE 3-3 AT-TN-K022-A connections for one subscriber

3.4.0.2 ADSL16 High Performance

The following diagram illustrates the wiring required at the distribution frame for the ADSL16 card and TN-S105-A high performance splitter card. For each ADSL16 card, the user would:

1. Connect one AT-TN-C018-A of correct length from the ADSL16 card to the TN-S105-A splitter card **ADSL** connector.
2. Connect a customer-supplied CAT3 cable/wiring of correct length from the splitter card **PHONE** connector to the Class #5 switch for POTS service.
3. Connect one AT-TN-K022-A of correct length from the splitter card **LINE** connector to the distribution frame. Note that the AT-TN-K022-A can serve 4 splitter cards.

To connect the first subscriber, the user would:

1. Connect the subscriber's incoming line to the AT-TN-K022-A installed in step 3 above. The subscriber's pair would be connected to pair 1 on the AT-TN-K022-A.

   (Note that subsequent subscriber's pairs would be connected to pair 2, pair 3, and so on.)

2. Connect the subscriber's corresponding pair to the Class #5 switch for POTS service.

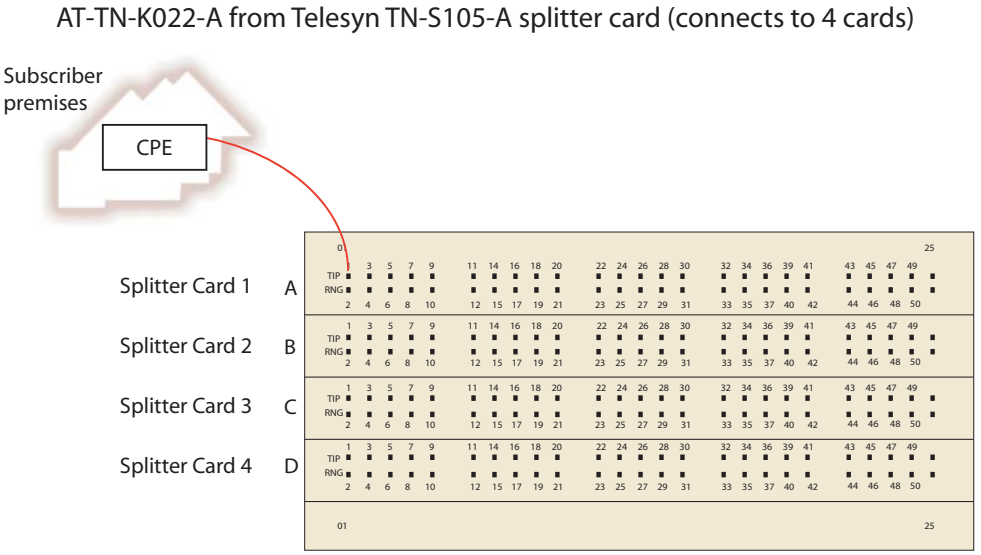


FIGURE 3-4 AT-TN-K022-A connections for 1 subscriber and TN-S105-A high performance splitter

3.5 AT-TN-K025-A

The following diagram illustrates the wiring required at the distribution frame for the AT-TN-K025-A and ADSL8S card.

1. Connect one AT-TN-K025-A of correct length from the ADSL8S card to the distribution frame.

The user should refer to the connector pinouts for the pin connection numbering. This is how a single subscriber line would be wired.

1. Pair 1 is connected to the incoming subscriber line.
2. Pair 2 is connected to the Class 5 switch for POTS service.

For the next subscriber, the user would connect pair 3 to the incoming subscriber line, then connect pair 4 to the Class 5 switch for POTS service and so on.

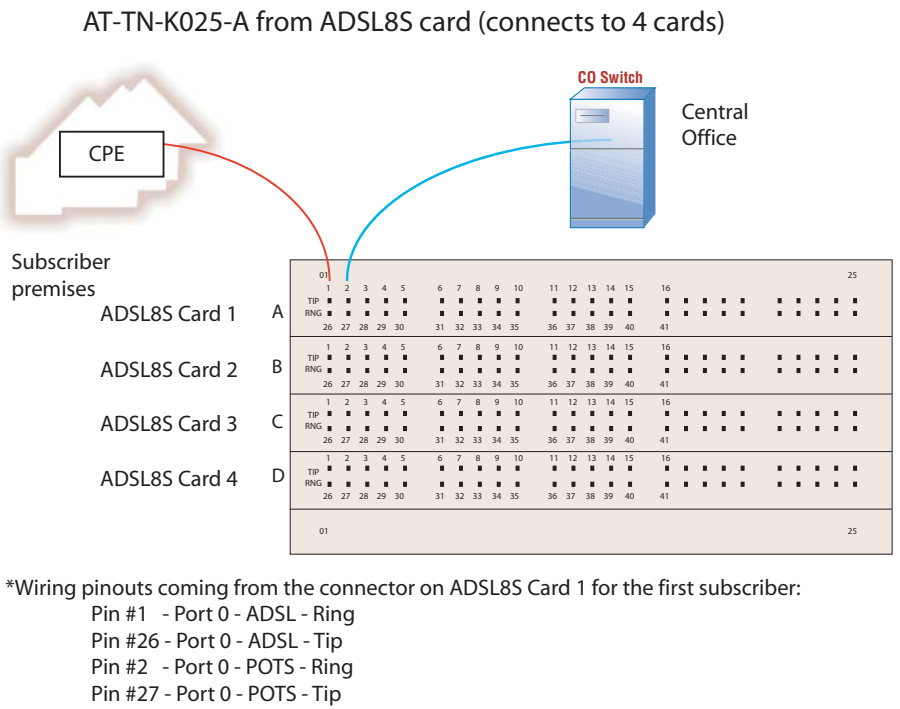


FIGURE 3-5 ADSL8S connections for one subscriber line

4. Residential Premises

4.1 Customer Premises Equipment

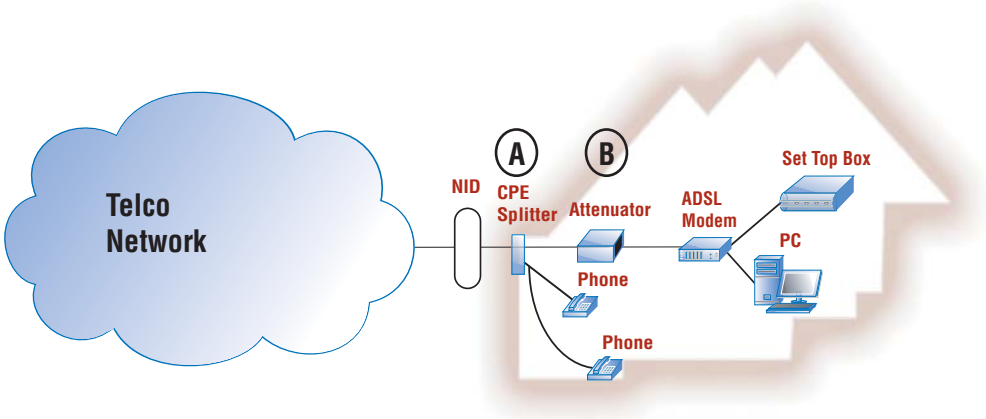


FIGURE 4-1 Video and Data solution

The following components are described in this section:

- CPE Splitter
- Attenuator

Ⓐ Order one CPE Splitter per subscriber ADSL connection. Should be mounted at the entry to the house and a Home-Run taken directly from the splitter to the ADSL Modem

Part Number	Description
Market Specific	Market dependent requirements

Ⓑ Order sufficient attenuators to apply one to each short loop of ADSL service that is deployed. (A short loop is defined as being less than 3500 feet).

Part Number	Description
TN-S900-A	ADSL Line Attenuator

Note: See Appendix for more application information 5.20.

5. Appendix

5.1 General Safety Guidelines

Note: Only personnel familiar with local telco practices should install, replace, or service this equipment.

Note: Before starting equipment installation procedures, the user should read the whole chapter for important information and safety warnings.

Before cabling the equipment, the user should be aware of standard safety practices and the hazards involved in working with electricity to avoid accidents. See the following section for all cautions and warnings to ensure that the installation is safe and free of hazards.

Follow these guidelines to insure overall safety:

- The user should keep all work areas clear and clean during and after installation.
- The user should keep all tools away from walk areas where personnel could trip over them.
- The user should not wear loose clothing that could catch on equipment.
- The user should wear safety glasses if working under conditions that might be hazardous to eyes.
- The user should not perform any action that creates an unsafe or hazardous situation for themselves or other personnel.

Safety Precautions While Working with Electricity and electrically powered equipment:

- Locate the Power Off switch for the system being installed or serviced. In the event of an electrical accident, the user can quickly turn the power off.
- Disconnect all power by turning the circuit breakers off before:
  - Installing or removing a chassis
  - Working near the power supply
- Do not work alone if potential hazards exist.
- Never assume that power is disconnected from a circuit; always check the circuit.
- Inspect the work area carefully for possible hazards, such as moist floors, moist or wet ground, ungrounded power extension cables, frayed power cords, and missing safety grounds.

Setup Precautions and Antistatic Procedures

Electrostatic discharge (ESD) can damage equipment when electronic equipment is handled improperly. ESD damage can produce total or partial failures in electronic equipment. Follow these ESD-prevention procedures when handling systems cards and modules:

1. Verify that the frame is electrically connected to earth ground.
2. Wear an ESD-preventive device such as a foot strap or wrist strap, ensuring that it makes good contact with the user's skin. If a foot strap is being used, the floor must be ESD conductive.
3. Connect the clip from the ESD-preventative device to an unpainted surface of the frame, rack or ESD point on the chassis frame connecting it directly to ground. This ensures that unwanted ESD voltages safely flow to ground.
4. Wear the ESD-preventive device correctly to properly guard against ESD damage and shock. If no foot or wrist strap is available, the user should ground themselves by making contact with an unpainted, metal part of the chassis.

Cabling Safety Precautions

- Do not perform any action that creates a potential hazard to personnel or causes equipment to be unsafe.
- Carefully examine work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety ground.
- Never use or install telephone wiring during a lightning storm.
- Never install telephone wiring in a wet environment unless it is specifically designed for wet environment.
- Never touch uninsulated telephone wiring or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

5.2 ADSL Card Connector cable pinout

The ADSL card connector pin number locations are illustrated in the next figure.

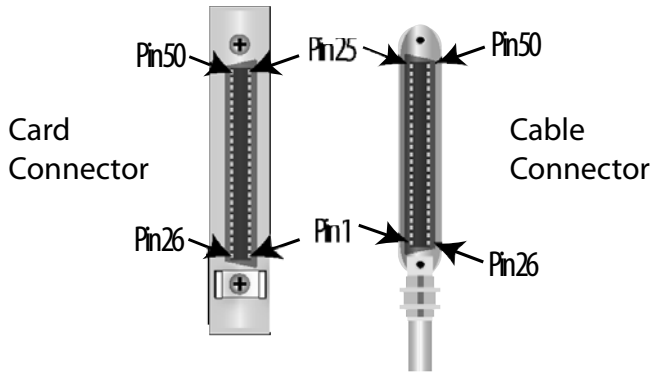


FIGURE 5-1 ADSL card connector cable pinout

5.3 CAT5 Best Practices

Follow these recommendations when installing connectorized cables.

- Carefully install the connectorized cables to the connector.
- Carefully run cables, following local telco practices, to destination connectors avoiding any kinks or loops.
- Tightly bundle all cables and secure them with tie wraps.

CAT5 wiring guidelines:

- Minimize lengths of untwisted cable pairs.
- Minimize turning radius
- Ensure wiring is not twisted or looped
- Separate POTS, and other disturbers such as T1s, from ADSL
- Dress wiring neatly and securely tighten.

5.4 TN-101-A (ADSL8S)

The table below illustrates the ADSL8S card RJ-21 connector and pin layouts.

TABLE 5-1 Wiring table for RJ-21 - ADSL8S

		TIP		RING	
Pair	**ADSL Port #**	**Pin #**	**Wire Color**	**Pin #**	**Wire Color**
1	ADSL 0	26	WHITE/BLUE	1	BLUE/WHITE
2	POTS 0	27	WHITE/ORANGE	2	ORANGE/WHITE
3	ADSL 1	28	WHITE/GREEN	3	GREEN/WHITE
4	POTS 1	29	WHITE/BROWN	4	BROWN/WHITE
5	ADSL 2	30	WHITE/SLATE	5	SLATE/WHITE
6	POTS 2	31	RED/BLUE	6	BLUE/RED
7	ADSL 3	32	RED/ORANGE	7	ORANGE/RED
8	POTS 3	33	RED/GREEN	8	GREEN/RED
9	ADSL 4	34	RED/BROWN	9	BROWN//RED
10	POTS 4	35	RED/SLATE	10	SLATE/RED
11	ADSL 5	36	BLACK/BLUE	11	BLUE/BLACK
12	POTS 5	37	BLACK/ORANGE	12	ORANGE/BLACK
13	ADSL 6	38	BLACK/GREEN	13	GREEN/BLACK
14	POTS 6	39	BLACK/BROWN	14	BROWN//BLACK
15	ADSL 7	40	BLACK/SLATE	15	SLATE/BLACK
16	POTS 7	41	YELLOW/BLUE	16	BLUE/YELLOW
17-25	Unused	42	----------	17	----------

Note: CAT5, 25 pair cable must be used.

5.5 AT-TN-C000-A

Used to connect a conventional splitter to the DF using 25 pairs (50 wires) of unterminated wires. Pinouts for RJ-21 to unterminated 15m cable assembly.

P–1		P–2
26	WHT–BLU	NC
1	BLU–WHT	NC
27	WHT–ORG	NC
2	ORG–WHT	NC
28	WHT–GRN	NC
3	GRN–WHT	NC
29	WHT–BRN	NC
4	BRN–WHT	NC
30	WHT–GRY	NC
5	GRY–WHT	NC
31	RED–BLU	NC
6	BLU–RED	NC
32	RED–ORG	NC
7	ORG–RED	NC
33	RED–GRN	NC
8	GRN–RED	NC
34	RED–BRN	NC
9	BRN–RED	NC
35	RED–GRY	NC
10	GRY–RED	NC
36	BLK–BLU	NC
11	BLU–BLK	NC
37	BLK–ORG	NC
12	ORG–BLK	NC
38	BLK–GRN	NC
13	GRN–BLK	NC
39	BLK–BRN	NC
14	BRN–BLK	NC
40	BLK–GRY	NC
15	GRY–BLK	NC
41	YEL–BLU	NC
16	BLU–YEL	NC
42	YEL–ORG	NC
17	ORG–YEL	NC
43	YEL–GRN	NC

P–1		P–2
18	GRN–YEL	NC
44	YEL–BRN	NC
19	BRN–YEL	NC
45	YEL–GRY	NC
20	GRY–YEL	NC
46	VIO–BLU	NC
21	BLU–VIO	NC
47	VIO–ORG	NC
22	ORG–VIO	NC
48	VIO–GRN	NC
23	GRN–VIO	NC
49	VIO–BRN	NC
24	BRN–VIO	NC
50	VIO–GRY	NC
25	GRY–VIO	NC

FIGURE 5-2 RJ-21 to Unterminated

5.6 AT-TN-C001-A

RJ-21 to unterminated 25m cable assembly.

Note: See AT-TN-C000-A for wiring pinouts

5.7 AT-TN-C002-A

RJ-21 to unterminated 35m cable assembly.

Note: See AT-TN-C000-A for wiring pinouts

5.8 AT-TN-C005-A

Used to connect the ADSL8S to two different positions on the DF, one for POTS and one for ADSL using 16 pairs (32 wires) of unterminated wires, 4 pair to a bundle. 4 (4-pair) 15m cable assembly (unterminated).

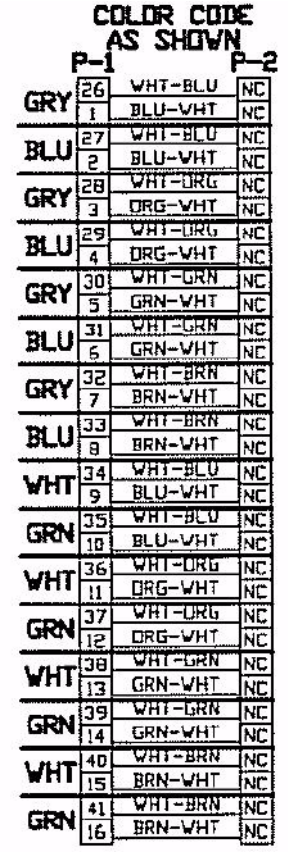


FIGURE 5-3 4 - 4-pair CAT5E cable assembly

5.9 AT-TN-C006-A

4 (4-pair) 25m cable assembly.

Note: See AT-TN-C005-A for wiring pinouts

5.10 AT-TN-C007-A

4 (4-pair) 35m cable assembly.

Note: See AT-TN-C005-A for wiring pinouts

5.11 AT-TN-C008-A-xxx

Used to connect the Telesyn system to a standard splitter

Male RJ-21 Connector			Male RJ-21 Connector	
Pair	Pin		Pin	
	1	ADSL-Ring-1	1	ADSL-Ring-1
1	26	ADSL-Tip-1	26	ADSL-Tip-1
	2	ADSL-Ring-2	2	ADSL-Ring-2
2	27	ADSL-Tip-2	27	ADSL-Tip-2
	3	ADSL-Ring-3	3	ADSL-Ring-3
3	28	ADSL-Tip-3	28	ADSL-Tip-3
	4	ADSL-Ring-4	4	ADSL-Ring-4
4	29	ADSL-Tip-4	29	ADSL-Tip-4
	5	ADSL-Ring-5	5	ADSL-Ring-5
5	30	ADSL-Tip-5	30	ADSL-Tip-5
	6	ADSL-Ring-6	6	ADSL-Ring-6
6	31	ADSL-Tip-6	31	ADSL-Tip-6
	7	ADSL-Ring-7	7	ADSL-Ring-7
7	32	ADSL-Tip-7	32	ADSL-Tip-7
	8	ADSL-Ring-8	8	ADSL-Ring-8
8	33	ADSL-Tip-8	33	ADSL-Tip-8
	9	ADSL-Ring-9	9	ADSL-Ring-9
9	34	ADSL-Tip-9	34	ADSL-Tip-9
	10	ADSL-Ring-10	10	ADSL-Ring-10
10	35	ADSL-Tip-10	35	ADSL-Tip-10
	11	ADSL-Ring-11	11	ADSL-Ring-11
11	36	ADSL-Tip-11	36	ADSL-Tip-11
	12	ADSL-Ring-12	12	ADSL-Ring-12
12	37	ADSL-Tip-12	37	ADSL-Tip-12
	13	ADSL-Ring-13	13	ADSL-Ring-13
13	38	ADSL-Tip-13	38	ADSL-Tip-13
	14	ADSL-Ring-14	14	ADSL-Ring-14
14	39	ADSL-Tip-14	39	ADSL-Tip-14
	15	ADSL-Ring-15	15	ADSL-Ring-15
15	40	ADSL-Tip-15	40	ADSL-Tip-15
	16	ADSL-Ring-16	16	ADSL-Ring-16
16	41	ADSL-Tip-16	41	ADSL-Tip-16
	17	ADSL-Ring-17	17	ADSL-Ring-17
17	42	ADSL-Tip-17	42	ADSL-Tip-17
	18	ADSL-Ring-18	18	ADSL-Ring-18
18	43	ADSL-Tip-18	43	ADSL-Tip-18
	19	ADSL-Ring-19	19	ADSL-Ring-19
19	44	ADSL-Tip-19	44	ADSL-Tip-19
	20	ADSL-Ring-20	20	ADSL-Ring-20
20	45	ADSL-Tip-20	45	ADSL-Tip-20
	21	ADSL-Ring-21	21	ADSL-Ring-21
21	46	ADSL-Tip-21	46	ADSL-Tip-21
	22	ADSL-Ring-22	22	ADSL-Ring-22
22	47	ADSL-Tip-22	47	ADSL-Tip-22
	23	ADSL-Ring-23	23	ADSL-Ring-23
23	48	ADSL-Tip-23	48	ADSL-Tip-23
	24	ADSL-Ring-24	24	ADSL-Ring-24
24	49	ADSL-Tip-24	49	ADSL-Tip-24
	25		25	
25	50		50	

FIGURE 5-4 Male to Male connector pinouts

5.12 AT-TN-C013-A-xxx

Used to connect ADSL24 cards to a high performance splitter.

Opt Male RJ-21 Connector			Opt Male RJ-21 Connector		
Pair	Pin		Pair	Pin	
	1	ADSL-Ring-1		1	ADSL-Ring-1
1	2	ADSL-Tip-1	1	2	ADSL-Tip-1
	3	ADSL-Ring-2		3	ADSL-Ring-2
2	4	ADSL-Tip-2	2	4	ADSL-Tip-2
	5	ADSL-Ring-3		5	ADSL-Ring-3
3	6	ADSL-Tip-3	3	6	ADSL-Tip-3
	7	ADSL-Ring-4		7	ADSL-Ring-4
4	8	ADSL-Tip-4	4	8	ADSL-Tip-4
	9	ADSL-Ring-5		9	ADSL-Ring-5
5	10	ADSL-Tip-5	5	10	ADSL-Tip-5
	11	ADSL-Ring-6		11	ADSL-Ring-6
6	12	ADSL-Tip-6	6	12	ADSL-Tip-6
	13			13	
	14	ADSL-Ring-7		14	ADSL-Ring-7
7	15	ADSL-Tip-7	7	15	ADSL-Tip-7
	16	ADSL-Ring-8		16	ADSL-Ring-8
8	17	ADSL-Tip-8	8	17	ADSL-Tip-8
	18	ADSL-Ring-9		18	ADSL-Ring-9
9	19	ADSL-Tip-9	9	19	ADSL-Tip-9
	20	ADSL-Ring-10		20	ADSL-Ring-10
10	21	ADSL-Tip-10	10	21	ADSL-Tip-10
	22	ADSL-Ring-11		22	ADSL-Ring-11
11	23	ADSL-Tip-11	11	23	ADSL-Tip-11
	24	ADSL-Ring-12		24	ADSL-Ring-12
12	25	ADSL-Tip-12	12	25	ADSL-Tip-12
	26	ADSL-Ring-13		26	ADSL-Ring-13
13	27	ADSL-Tip-13	13	27	ADSL-Tip-13
	28	ADSL-Ring-14		28	ADSL-Ring-14
14	29	ADSL-Tip-14	14	29	ADSL-Tip-14
	30	ADSL-Ring-15		30	ADSL-Ring-15
15	31	ADSL-Tip-15	15	31	ADSL-Tip-15
	32	ADSL-Ring-16		32	ADSL-Ring-16
16	33	ADSL-Tip-16	16	33	ADSL-Tip-16
	34	ADSL-Ring-17		34	ADSL-Ring-17
17	35	ADSL-Tip-17	17	35	ADSL-Tip-17
	36	ADSL-Ring-18		36	ADSL-Ring-18
18	37	ADSL-Tip-18	18	37	ADSL-Tip-18
	38			38	
	39	ADSL-Ring-19		39	ADSL-Ring-19
19	40	ADSL-Tip-19	19	40	ADSL-Tip-19
	41	ADSL-Ring-20		41	ADSL-Ring-20
20	42	ADSL-Tip-20	20	42	ADSL-Tip-20
	43	ADSL-Ring-21		43	ADSL-Ring-21
21	44	ADSL-Tip-21	21	44	ADSL-Tip-21
	45	ADSL-Ring-22		45	ADSL-Ring-22
22	46	ADSL-Tip-22	22	46	ADSL-Tip-22
	47	ADSL-Ring-23		47	ADSL-Ring-23
23	48	ADSL-Tip-23	23	48	ADSL-Tip-23
	49	ADSL-Ring-24		49	ADSL-Ring-24
24	50	ADSL-Tip-24	24	50	ADSL-Tip-24

FIGURE 5-5 Optimized Male to Optimized Male connector pinouts

5.13 AT-TN-C018-A-xxx

Used to adapt or transition from high performance CAT5 cabling to standard telco cabling.

Opt Male RJ-21 Connector			Conv Male RJ-21 Connector	
Pair	Pin		Pin	
	1	ADSL-Ring-1	1	ADSL-Ring-1
1	2	ADSL-Tip-1	26	ADSL-Tip-1
	3	ADSL-Ring-2	2	ADSL-Ring-2
2	4	ADSL-Tip-2	27	ADSL-Tip-2
	5	ADSL-Ring-3	3	ADSL-Ring-3
3	6	ADSL-Tip-3	28	ADSL-Tip-3
	7	ADSL-Ring-4	4	ADSL-Ring-4
4	8	ADSL-Tip-4	29	ADSL-Tip-4
	9	ADSL-Ring-5	5	ADSL-Ring-5
5	10	ADSL-Tip-5	30	ADSL-Tip-5
	11	ADSL-Ring-6	6	ADSL-Ring-6
6	12	ADSL-Tip-6	31	ADSL-Tip-6
	13			
	14	ADSL-Ring-7	7	ADSL-Ring-7
7	15	ADSL-Tip-7	32	ADSL-Tip-7
	16	ADSL-Ring-8	8	ADSL-Ring-8
8	17	ADSL-Tip-8	33	ADSL-Tip-8
	18	ADSL-Ring-9	9	ADSL-Ring-9
9	19	ADSL-Tip-9	34	ADSL-Tip-9
	20	ADSL-Ring-10	10	ADSL-Ring-10
10	21	ADSL-Tip-10	35	ADSL-Tip-10
	22	ADSL-Ring-11	11	ADSL-Ring-11
11	23	ADSL-Tip-11	36	ADSL-Tip-11
	24	ADSL-Ring-12	12	ADSL-Ring-12
12	25	ADSL-Tip-12	37	ADSL-Tip-12
	26	ADSL-Ring-13	13	ADSL-Ring-13
13	27	ADSL-Tip-13	38	ADSL-Tip-13
	28	ADSL-Ring-14	14	ADSL-Ring-14
14	29	ADSL-Tip-14	39	ADSL-Tip-14
	30	ADSL-Ring-15	15	ADSL-Ring-15
15	31	ADSL-Tip-15	40	ADSL-Tip-15
	32	ADSL-Ring-16	16	ADSL-Ring-16
16	33	ADSL-Tip-16	41	ADSL-Tip-16
	34	ADSL-Ring-17	17	ADSL-Ring-17
17	35	ADSL-Tip-17	42	ADSL-Tip-17
	36	ADSL-Ring-18	18	ADSL-Ring-18
18	37	ADSL-Tip-18	43	ADSL-Tip-18
	38			
	39	ADSL-Ring-19	19	ADSL-Ring-19
19	40	ADSL-Tip-19	44	ADSL-Tip-19
	41	ADSL-Ring-20	20	ADSL-Ring-20
20	42	ADSL-Tip-20	45	ADSL-Tip-20
	43	ADSL-Ring-21	21	ADSL-Ring-21
21	44	ADSL-Tip-21	46	ADSL-Tip-21
	45	ADSL-Ring-22	22	ADSL-Ring-22
22	46	ADSL-Tip-22	47	ADSL-Tip-22
	47	ADSL-Ring-23	23	ADSL-Ring-23
23	48	ADSL-Tip-23	48	ADSL-Tip-23
	49	ADSL-Ring-24	24	ADSL-Ring-24
24	50	ADSL-Tip-24	49	ADSL-Tip-24
			25	
			50	

FIGURE 5-6 Optimized Male to Conventional Male connector pinouts

5.14 AT-TN-C019-A-xxx

Used to connect the high performance splitter to the DF. Pinouts for Optimized 5-wired RJ-21 to unterminated 15m, 25m, and 35m cable assembly.

TABLE 5-2 Wiring table for RJ-21 to unterminated cable assembly

P1	Wire Color	P2		P1	Wire Color	P2
1	BLUE/WHITE	NC		26	GREEN/BLACK	NC
2	WHITE/BLUE	NC		27	BLACK/GREEN	NC
3	ORANGE/WHITE	NC		28	BROWN//BLACK	NC
4	WHITE/ORANGE	NC		29	BLACK/BROWN	NC
5	GREEN/WHITE	NC		30	GRAY/BLACK	NC
6	WHITE/GREEN	NC		31	BLACK/GRAY	NC
7	BROWN/WHITE	NC		32	BLUE/YELLOW	NC
8	WHITE/BROWN	NC		33	YELLOW/BLUE	NC
9	GRAY/WHITE	NC		34	ORANGE/YELLOW	NC
10	WHITE/GRAY	NC		35	YELLOW/ORANGE	NC
11	BLUE/RED	NC		36	GREEN/YELLOW	NC
12	RED/BLUE	NC		37	YELLOW/GREEN	NC
	NC	NC			NC	NC
14	ORANGE/RED	NC		39	BROWN/YELLOW	NC
15	RED/ORANGE	NC		40	YELLOW/BROWN	NC
16	GREEN/RED	NC		41	GRAY/YELLOW	NC
17	RED/GREEN	NC		42	YELLOW/GRAY	NC
18	BROWN//RED	NC		43	BLUE/VIOLET	NC
19	RED/BROWN	NC		44	VIOLET/BLUE	NC
20	GRAY/RED	NC		45	ORANGE/VIOLET	NC
21	RED/GRAY	NC		46	VIOLET/ORANGE	NC
22	BLUE/BLACK	NC		47	GREEN/VIOLET	NC
23	BLACK/BLUE	NC		48	VIOLET/GREEN	NC
24	ORANGE/BLACK	NC		49	BROWN/VIOLET	NC
25	BLACK/ORANGE	NC		50	VIOLET/BROWN	NC

5.15 AT-TN-K019-A-xxx

Used to terminate ADSL24 or standard splitter at the distribution frame. This view illustrates the DF block with flap opened and turned upright

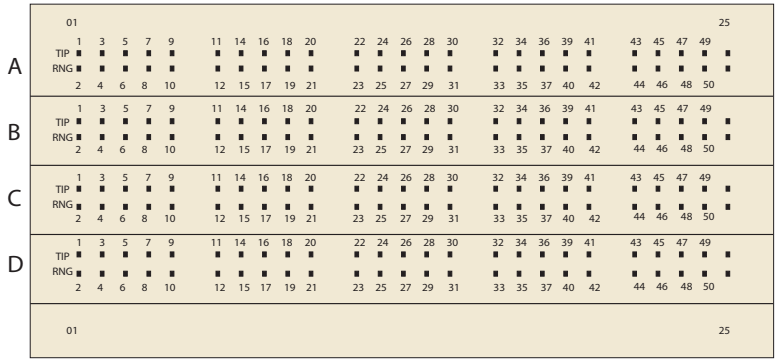


FIGURE 5-7 ADSL16 solution DF block pinouts

Pinouts for ADSL16 to connector rows A-D are detailed in the next four figures.

RJ-21 Male Connector				Telect Pin connections		
Cable	Pair	Pin		Pin Field	Column	Tip/Ring
A		1	ADSL-Ring-1	A	01	Ring
A	1	26	ADSL-Tip-1	A	01	Tip
A		2	ADSL-Ring-2	A	02	Ring
A	2	27	ADSL-Tip-2	A	02	Tip
A		3	ADSL-Ring-3	A	03	Ring
A	3	28	ADSL-Tip-3	A	03	Tip
A		4	ADSL-Ring-4	A	04	Ring
A	4	29	ADSL-Tip-4	A	04	Tip
A		5	ADSL-Ring-5	A	05	Ring
A	5	30	ADSL-Tip-5	A	05	Tip
A		6	ADSL-Ring-6	A	06	Ring
A	6	31	ADSL-Tip-6	A	06	Tip
A		7	ADSL-Ring-7	A	07	Ring
A	7	32	ADSL-Tip-7	A	07	Tip
A		8	ADSL-Ring-8	A	08	Ring
A	8	33	ADSL-Tip-8	A	08	Tip
A		9	ADSL-Ring-9	A	09	Ring
A	9	34	ADSL-Tip-9	A	09	Tip
A		10	ADSL-Ring-10	A	10	Ring
A	10	35	ADSL-Tip-10	A	10	Tip
A		11	ADSL-Ring-11	A	11	Ring
A	11	36	ADSL-Tip-11	A	11	Tip
A		12	ADSL-Ring-12	A	12	Ring
A	12	37	ADSL-Tip-12	A	12	Tip
A		13	ADSL-Ring-13	A	13	Ring
A	13	38	ADSL-Tip-13	A	13	Tip
A		14	ADSL-Ring-14	A	14	Ring
A	14	39	ADSL-Tip-14	A	14	Tip
A		15	ADSL-Ring-15	A	15	Ring
A	15	40	ADSL-Tip-15	A	15	Tip
A		16	ADSL-Ring-16	A	16	Ring
A	16	41	ADSL-Tip-16	A	16	Tip
A		17	ADSL-Ring-17	A	17	Ring
A	17	42	ADSL-Tip-17	A	17	Tip
A		18	ADSL-Ring-18	A	18	Ring
A	18	43	ADSL-Tip-18	A	18	Tip
A		19	ADSL-Ring-19	A	19	Ring
A	19	44	ADSL-Tip-19	A	19	Tip
A		20	ADSL-Ring-20	A	20	Ring
A	20	45	ADSL-Tip-20	A	20	Tip
A		21	ADSL-Ring-21	A	21	Ring
A	21	46	ADSL-Tip-21	A	21	Tip
A		22	ADSL-Ring-22	A	22	Ring
A	22	47	ADSL-Tip-22	A	22	Tip
A		23	ADSL-Ring-23	A	23	Ring
A	23	48	ADSL-Tip-23	A	23	Tip
A		24	ADSL-Ring-24	A	24	Ring
A	24	49	ADSL-Tip-24	A	24	Tip
A		25				
A	25	50				

FIGURE 5-8 ADSL16 to DF block for the A row

Note: The same wiring pattern applies to rows B, C, and D

5.16 AT-TN-K022-A-xxx

Used to terminate high performance splitter cards at the distribution frame. This view illustrates the DF block with flap opened and turned upright.

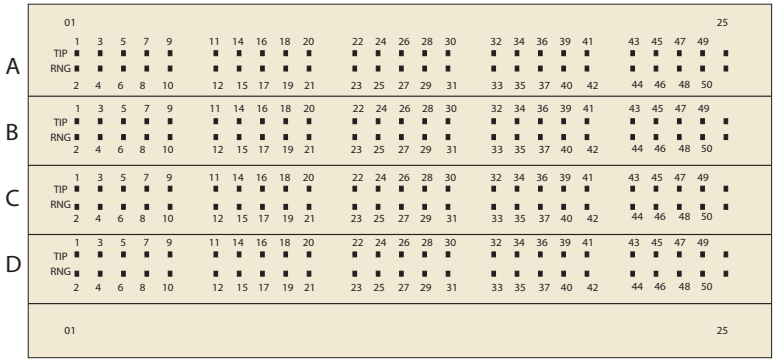


FIGURE 5-9 ADSL24 Solution DF Block pinouts

Note: For applicable solution, refer to 2.4

Pinouts for ADSL24 to connector rows A-D are detailed in the next four figures.

RJ-21 Male Connector				Telect Pin connections		
Cable	Pair	Pin		Pin Field	Column	Tip/Ring
A		1	ADSL-Ring-1	A	01	Ring
A	1	2	ADSL-Tip-1	A	01	Tip
A		3	ADSL-Ring-2	A	02	Ring
A	2	4	ADSL-Tip-2	A	02	Tip
A		5	ADSL-Ring-3	A	03	Ring
A	3	6	ADSL-Tip-3	A	03	Tip
A		7	ADSL-Ring-4	A	04	Ring
A	4	8	ADSL-Tip-4	A	04	Tip
A		9	ADSL-Ring-5	A	05	Ring
A	5	10	ADSL-Tip-5	A	05	Tip
A		11	ADSL-Ring-6	A	06	Ring
A	6	12	ADSL-Tip-6	A	06	Tip
A		13				
A		14	ADSL-Ring-7	A	07	Ring
A	7	15	ADSL-Tip-7	A	07	Tip
A		16	ADSL-Ring-8	A	08	Ring
A	8	17	ADSL-Tip-8	A	08	Tip
A		18	ADSL-Ring-9	A	09	Ring
A	9	19	ADSL-Tip-9	A	09	Tip
A		20	ADSL-Ring-10	A	10	Ring
A	10	21	ADSL-Tip-10	A	10	Tip
A		22	ADSL-Ring-11	A	11	Ring
A	11	23	ADSL-Tip-11	A	11	Tip
A		24	ADSL-Ring-12	A	12	Ring
A	12	25	ADSL-Tip-12	A	12	Tip
A		26	ADSL-Ring-13	A	13	Ring
A	13	27	ADSL-Tip-13	A	13	Tip
A		28	ADSL-Ring-14	A	14	Ring
A	14	29	ADSL-Tip-14	A	14	Tip
A		30	ADSL-Ring-15	A	15	Ring
A	15	31	ADSL-Tip-15	A	15	Tip
A		32	ADSL-Ring-16	A	16	Ring
A	16	33	ADSL-Tip-16	A	16	Tip
A		34	ADSL-Ring-17	A	17	Ring
A	17	35	ADSL-Tip-17	A	17	Tip
A		36	ADSL-Ring-18	A	18	Ring
A	18	37	ADSL-Tip-18	A	18	Tip
A		38				
A		39	ADSL-Ring-19	A	19	Ring
A	19	40	ADSL-Tip-19	A	19	Tip
A		41	ADSL-Ring-20	A	20	Ring
A	20	42	ADSL-Tip-20	A	20	Tip
A		43	ADSL-Ring-21	A	21	Ring
A	21	44	ADSL-Tip-21	A	21	Tip
A		45	ADSL-Ring-22	A	22	Ring
A	22	46	ADSL-Tip-22	A	22	Tip
A		47	ADSL-Ring-23	A	23	Ring
A	23	48	ADSL-Tip-23	A	23	Tip
A		49	ADSL-Ring-24	A	24	Ring
A	24	50	ADSL-Tip-24	A	24	Tip

FIGURE 5-10 ADSL24 to DF Block for the A row

Note: The same wiring pattern applies to rows B, C, and D

5.17 AT-TN-K025-A-xxx

Used to terminate ADSL8S at the distribution frame. This view illustrates the DF block with flap opened and turned upright.

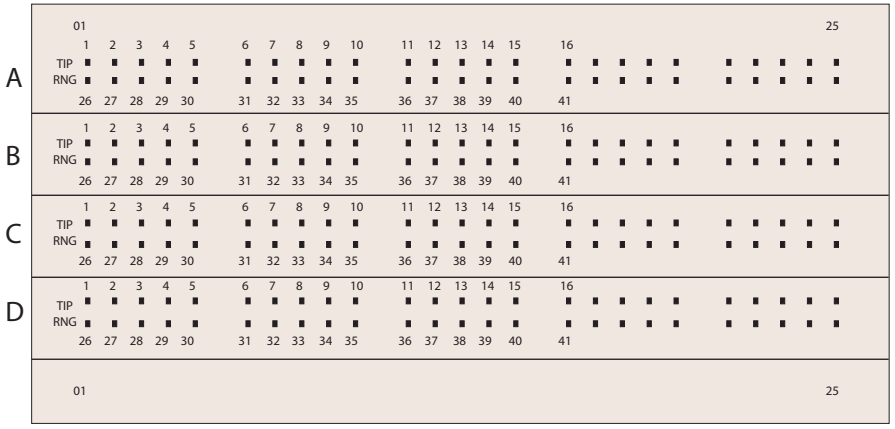


FIGURE 5-11 ADSL8S Solution DF Block pinouts

Pinouts for ADSL8S to connector rows A-D are detailed in the following figures.

RJ-21 Male Connector				Telect Pin connections		
Cable	Pair	Pin		Pin Field	Column	Tip/Ring
A		1	ADSL-Ring-1	A	01	Ring
A	1A	26	ADSL-Tip-1	A	01	Tip
A		2	Line-Ring-1	A	02	Ring
A	1L	27	Line-Tip-1	A	02	Tip
A		3	ADSL-Ring-2	A	03	Ring
A	2A	28	ADSL-Tip-2	A	03	Tip
A		4	Line-Ring-2	A	04	Ring
A	2L	29	Line-Tip-2	A	04	Tip
A		5	ADSL-Ring-3	A	05	Ring
A	3A	30	ADSL-Tip-3	A	05	Tip
A		6	Line-Ring-3	A	06	Ring
A	3L	31	Line-Tip-3	A	06	Tip
A		7	ADSL-Ring-4	A	07	Ring
A	4A	32	ADSL-Tip-4	A	07	Tip
A		8	Line-Ring-4	A	08	Ring
A	4L	33	Line-Tip-4	A	08	Tip
A		9	ADSL-Ring-5	A	09	Ring
A	5A	34	ADSL-Tip-5	A	09	Tip
A		10	Line-Ring-5	A	10	Ring
A	5L	35	Line-Tip-5	A	10	Tip
A		11	ADSL-Ring-6	A	11	Ring
A	6A	36	ADSL-Tip-6	A	11	Tip
A		12	Line-Ring-6	A	12	Ring
A	6L	37	Line-Tip-6	A	12	Tip
A		13	ADSL-Ring-7	A	13	Ring
A	7A	38	ADSL-Tip-7	A	13	Tip
A		14	Line-Ring-7	A	14	Ring
A	7L	39	Line-Tip-7	A	14	Tip
A		15	ADSL-Ring-8	A	15	Ring
A	8A	40	ADSL-Tip-8	A	15	Tip
A		16	Line-Ring-8	A	16	Ring
A	8L	41	Line-Tip-8	A	16	Tip
A		17				
A		42				
A		18				
A		43				
A		19				
A		44				
A		20				
A		45				
A		21				
A		46				
A		22				
A		47				
A		23				
A		48				
A		24				
A		49				
A		25				
A		50				

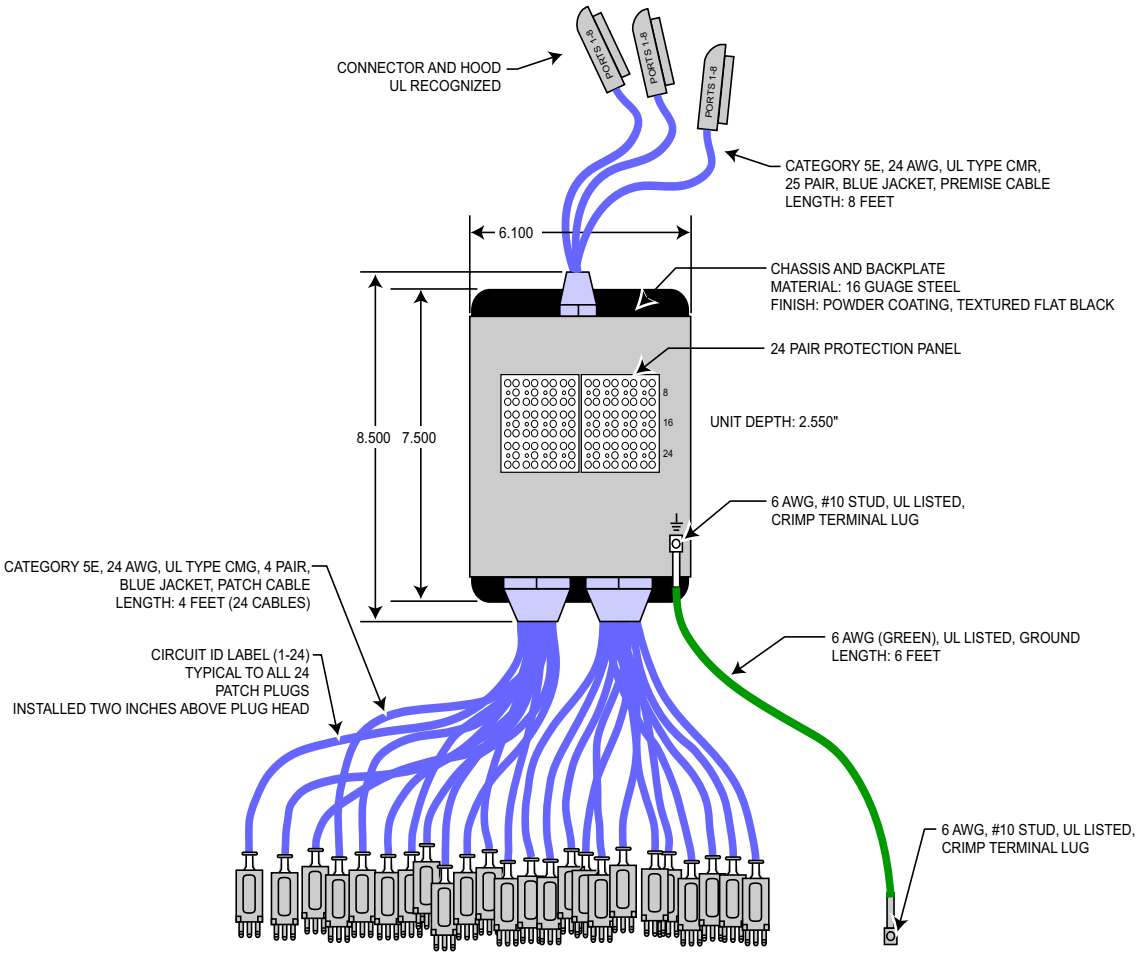
(Connected, but unused)

FIGURE 5-12 ADSL8S to DF block for the A row

The same wiring pattern applies to rows B, C, and D.

5.18 AT-TN-K026-A

Used to connect 3 ADSL8S cards into a cabinet. 24 circuit surge protector adapter assembly.



5.18.1 Wiring Installation

1. Connect the ground cable from the surge protector adapter assembly to GND.
2. Connect 3 RJ21 connectors to the ADSL8S cards.
3. Identify the specified circuit on the cabinet surge protector.
4. Remove the protection module for the specified circuit from the cabinet surge protector.

5. Connect the circuit from the surge protector adapter assembly into the cabinet surge protector.
6. Install a protection module on the surge protector adapter assembly for the specified circuit.

TABLE 5-3 Wiring Table for Surge Protector Adapter Assembly

Pair	5 Pin Conn.	5 Pin Conn. Cable	24 Pair Port. Panel	Amp Champ (1-8)	AMP Cable Wire Color
1	Tip (EQ.) Voice	white/orange	Splice	27	white/orange
1	Ring (EQ) Voice	orange/white	Splice	2	orange/white
1	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	26	white/blue
1	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	1	blue/white
			|		
2	Tip (EQ.) Voice	white/orange	Splice	29	white/brown
2	Ring (EQ) Voice	orange/white	Splice	4	brown/white
2	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	28	white/green
2	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	3	green/white
			|		
3	Tip (EQ.) Voice	white/orange	Splice	31	red/blue
3	Ring (EQ) Voice	orange/white	Splice	6	blue/red
3	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	30	white/slate
3	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	5	slate/white
			|		
4	Tip (EQ.) Voice	white/orange	Splice	33	red/green
4	Ring (EQ) Voice	orange/white	Splice	8	green/red
4	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	32	red/orange
4	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	7	orange/red
			|		
5	Tip (EQ.) Voice	white/orange	Splice	35	red/slate
5	Ring (EQ) Voice	orange/white	Splice	10	slate/red
5	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	34	red/brown
5	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	9	brown/red
			|		
6	Tip (EQ.) Voice	white/orange	Splice	37	black/orange
6	Ring (EQ) Voice	orange/white	Splice	12	orange/black
6	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	36	black/blue
6	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	11	blue/black
			|		
7	Tip (EQ.) Voice	white/orange	Splice	39	black/brown

TABLE 5-3 Wiring Table for Surge Protector Adapter Assembly (Continued)

Pair	5 Pin Conn.	5 Pin Conn. Cable	24 Pair Port. Panel	Amp Champ (1-8)	AMP Cable Wire Color
7	Ring (EQ) Voice	orange/white	Splice	14	brown/black
7	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	38	black/green
7	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	13	green/black
			|		
8	Tip (EQ.) Voice	white/orange	Splice	41	yellow/blue
8	Ring (EQ) Voice	orange/white	Splice	16	blue/yellow
8	Tip (OSP) Voice/DSL	white/blue	Tip (OSP) | Tip (EQ)	40	black/slate
8	Ring (OSP) Voice/DSL	blue/white	Ring (OSP) | Ring (EQ)	15	slate/black

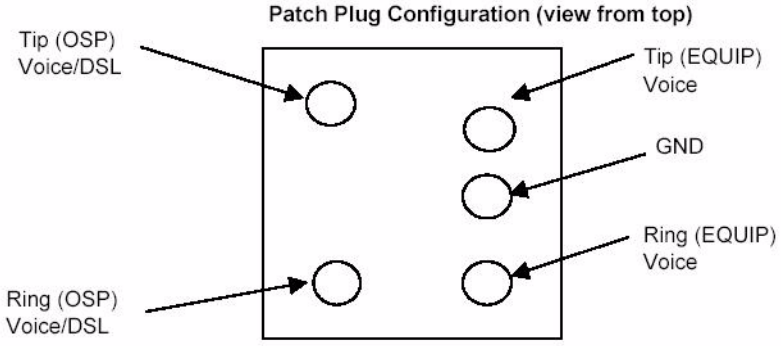


FIGURE 5-13 Protection module wiring diagram

5.19 TN-S004-A (Splitter Chassis)

Used to separate the incoming ADSL24 line into voice and data. This high performance, high isolation splitter is specially designed to implement the functionality of low pass filtering of POTS over an ADSL application. It supports 96 lines and contains 4 splitter cards with 24 lines per card.

TABLE 5-4 Splitter Specifications

Parameter	Criteria
Splitter Card Support	TN-S116-A - Splits the customer loop which contains both ADSL **Annex B** data and POTS voice signals into two separate signal paths - an ADSL data path and a voice band/ISDN path. TN-S101-A - Installed in any of the four card slots of the TN-S004-A chassis. Engineered for the ADSL Annex A.
Unit Dimensions	Width - 18.9 in (482.2 mm) Height - 5.24 in (133 mm) Depth - 10.24 in (260 mm) Weight - 8.8 lb. (4 kg) Designed for 19 in rack mounting.
Environmental	Operating Temperature: -40°F to 149°F (-40° to 65°C) Storage Temperature: -40°F to 185°F (-40°C to 85°C) Relative Humidity: 0 to 95%, non-condensing Withstands normal shipping and handling shock.
Capacity	Up to 96 lines in 3 rack unit system with up to 4 cards

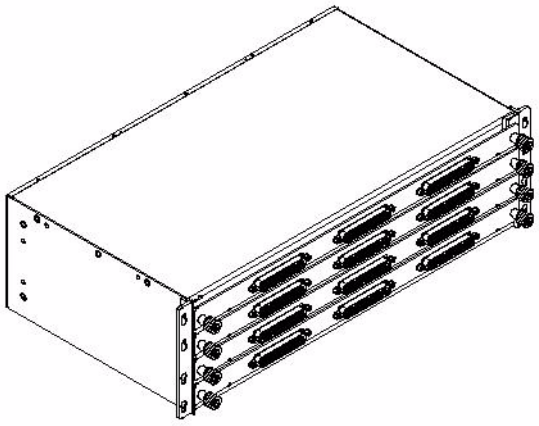


FIGURE 5-14 **High Performance Splitter Chassis - Fully Installed with Four Splitter Cards**

5.19.1 Splitter Conformance

TO BE SUPPLIED

	***Splitter Safety Warnings*** • ***Never work alone when potentially hazardous conditions exist, and never assume that power has been disconnected from a circuit- always check.*** • ***Do not perform any action that creates a potential hazard to personnel or causes equipment to be unsafe.*** • ***Carefully examine work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety ground.*** • ***Never use or install telephone wiring during a lightning storm.*** • ***Never install telephone wiring in a wet environment unless it is specifically designed for wet environment.*** • ***Never touch uninsulated telephone wiring or terminals unless the telephone line has been disconnected at the network interface.*** • ***Use caution when installing or modifying telephone lines.***

5.19.2 TN-S116-A (Splitter Card) - Annex B

The TN-S116-A is used to split the customer loop which contains both ADSL Annex B data and POTS voice signals into two separate signal paths - an ADSL data path and a voice band/ISDN path. This high performance, high isolation splitter card is specially designed to implement the low pass filter that removes the ADSL data from the voice band/ISDN signals.

This splitter card is compliant to:

- IEC 60950
- ITU-T K.20
- ETSI ETS 300 019
- ETSI TS101952-1-4
- EN 55022 Class
- ITU-T G992.1
- ITU-T G992.3
- ITU-T G992.5

5.19.3 TN-S101-A (Splitter Card)

This splitter card is engineered for ADSL.

5.19.4 Wiring Installation Overview

Connections for the TN-S101-A and TN-S116-A are as follows:

- Tip and Ring from the subscriber premises is connected to the LINE connector.
- Tip and Ring from the CLASS 5 switch is connected to the PHONE connector.
- Tip and Ring from the Telesyn MAP is connected to the ADSL connector.

The following figures illustrate the connections:

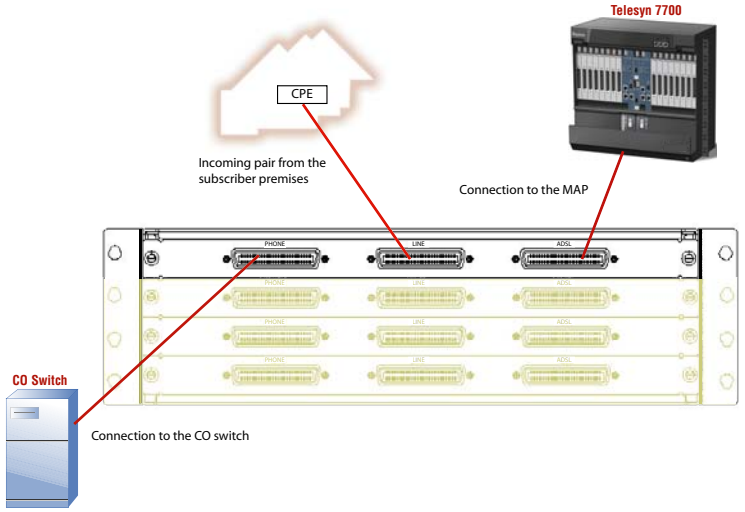


FIGURE 5-15 TN-S004-A Chassis Connections

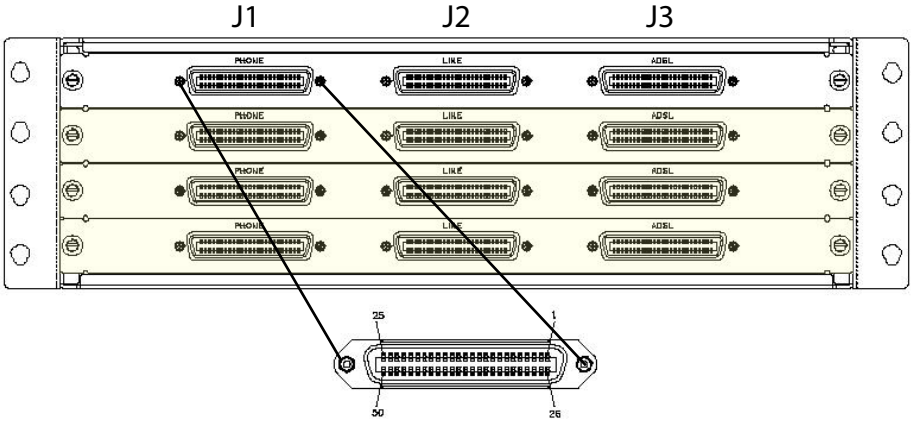


FIGURE 5-16 Connector Pinout Numbering

Note: Each card includes brackets and screws to facilitate the installation of tie wraps for the 90° RJ-21 connectors. (Tie wraps are customer provided).

5.19.5 Connector Pinouts - TN-S116-A

Use Table 5-5, Table 5-6, and Table 5-7 to locate the connectors PHONE (**J1**), LINE (**J2**), and ADSL (**J3**) on the splitter. The following tables provide the pinouts.

Note: Refer to 5.19.6 for connector pinouts for the TN-S101-A.

TABLE 5-5 J1 - POTS input from PSTN Switch (Traditional Pinout)

Pin	Function	Pin	Function
1	POTS Ring 1	26	POTS Tip 1
2	POTS Ring 2	27	POTS Tip 2
3	POTS Ring 3	28	POTS Tip 3
4	POTS Ring 4	29	POTS Tip 4
5	POTS Ring 5	30	POTS Tip 5
6	POTS Ring 6	31	POTS Tip 6
7	POTS Ring 7	32	POTS Tip 7
8	POTS Ring 8	33	POTS Tip 8
9	POTS Ring 9	34	POTS Tip 9
10	POTS Ring 10	35	POTS Tip 10
11	POTS Ring 11	36	POTS Tip 11
12	POTS Ring 12	37	POTS Tip 12
13	POTS Ring 13	38	POTS Tip 13
14	POTS Ring 14	39	POTS Tip 14
15	POTS Ring 15	40	POTS Tip 15
16	POTS Ring 16	41	POTS Tip 16
17	POTS Ring 17	42	POTS Tip 17
18	POTS Ring 18	43	POTS Tip 18
19	POTS Ring 19	44	POTS Tip 19
20	POTS Ring 20	45	POTS Tip 20
21	POTS Ring 21	46	POTS Tip 21
22	POTS Ring 22	47	POTS Tip 22
23	POTS Ring 23	48	POTS Tip 23
24	POTS Ring 24	49	POTS Tip 24
25	NC	50	NC

TABLE 5-6 J2 - Combined ADSL + POTS Output (Non-traditional)

Pin	Function	Pin	Function
1	Ring 1	26	Ring 13
2	Tip1	27	Tip13
3	Ring 2	28	Ring 14
4	Tip 2	29	Tip 14
5	Ring 3	30	Ring 15
6	Tip 3	31	Tip 15
7	Ring 4	32	Ring 16
8	Tip 4	33	Tip 16
9	Ring 5	34	Ring 17
10	Tip 5	35	Tip 17
11	Ring 6	36	Ring 18
12	Tip 6	37	Tip 18
13	NC	38	NC
14	Ring 7	39	Ring 19
15	Tip 7	40	Tip 19
16	Ring 8	41	Ring 20
17	Tip 8	42	Tip 20
18	Ring 9	43	Ring 21
19	Tip 9	44	Tip 21
20	Ring 10	45	Ring 22
21	Tip 10	46	Tip 22
22	Ring 11	47	Ring 23
23	Tip11	48	Tip 23
24	Ring 12	49	Ring 24
25	Tip 12	50	Tip 24

TABLE 5-7 J3 - ADSL input to splitter from SM (Non-traditional)

Pin	Function	Pin	Function
1	Ring 1	26	Ring 13
2	Tip1	27	Tip13
3	Ring 2	28	Ring 14
4	Tip 2	29	Tip 14
5	Ring 3	30	Ring 15
6	Tip 3	31	Tip 15
7	Ring 4	32	Ring 16
8	Tip 4	33	Tip 16
9	Ring 5	34	Ring 17
10	Tip 5	35	Tip 17
11	Ring 6	36	Ring 18
12	Tip 6	37	Tip 18
13	NC	38	NC
14	Ring 7	39	Ring 19
15	Tip 7	40	Tip 19
16	Ring 8	41	Ring 20
17	Tip 8	42	Tip 20
18	Ring 9	43	Ring 21
19	Tip 9	44	Tip 21
20	Ring 10	45	Ring 22
21	Tip 10	46	Tip 22
22	Ring 11	47	Ring 23
23	Tip11	48	Tip 23
24	Ring 12	49	Ring 24
25	Tip 12	50	Tip 24

5.19.6 Connector Pinouts - TN-S101-A

Use Table 5-8, Table 5-9, and Table 5-10 to locate the connectors PHONE (**J1**), LINE (**J2**), and ADSL (**J3**) on the splitter. The following tables provide the pinouts.

TABLE 5-8 J1 - POTS input from PSTN Switch (Traditional Pinout)

Pin	Function	Pin	Function
1	POTS Ring 1	26	POTS Tip 1
2	POTS Ring 2	27	POTS Tip 2
3	POTS Ring 3	28	POTS Tip 3
4	POTS Ring 4	29	POTS Tip 4
5	POTS Ring 5	30	POTS Tip 5
6	POTS Ring 6	31	POTS Tip 6
7	POTS Ring 7	32	POTS Tip 7
8	POTS Ring 8	33	POTS Tip 8
9	POTS Ring 9	34	POTS Tip 9
10	POTS Ring 10	35	POTS Tip 10
11	POTS Ring 11	36	POTS Tip 11
12	POTS Ring 12	37	POTS Tip 12
13	POTS Ring 13	38	POTS Tip 13
14	POTS Ring 14	39	POTS Tip 14
15	POTS Ring 15	40	POTS Tip 15
16	POTS Ring 16	41	POTS Tip 16
17	POTS Ring 17	42	POTS Tip 17
18	POTS Ring 18	43	POTS Tip 18
19	POTS Ring 19	44	POTS Tip 19
20	POTS Ring 20	45	POTS Tip 20
21	POTS Ring 21	46	POTS Tip 21
22	POTS Ring 22	47	POTS Tip 22
23	POTS Ring 23	48	POTS Tip 23
24	POTS Ring 24	49	POTS Tip 24
25	NC	50	NC

TABLE 5-9 J2 - Combined ADSL + POTS Output (Non-traditional)

Pin	Function	Pin	Function
1	Ring 1	26	Ring 13
2	Tip1	27	Tip13
3	Ring 2	28	Ring 14
4	Tip 2	29	Tip 14
5	Ring 3	30	Ring 15
6	Tip 3	31	Tip 15
7	Ring 4	32	Ring 16
8	Tip 4	33	Tip 16
9	Ring 5	34	Ring 17
10	Tip 5	35	Tip 17
11	Ring 6	36	Ring 18
12	Tip 6	37	Tip 18
13	NC	38	NC
14	Ring 7	39	Ring 19
15	Tip 7	40	Tip 19
16	Ring 8	41	Ring 20
17	Tip 8	42	Tip 20
18	Ring 9	43	Ring 21
19	Tip 9	44	Tip 21
20	Ring 10	45	Ring 22
21	Tip 10	46	Tip 22
22	Ring 11	47	Ring 23
23	Tip11	48	Tip 23
24	Ring 12	49	Ring 24
25	Tip 12	50	Tip 24

TABLE 5-10 J3 - ADSL input to splitter from SM (Non-traditional)

Pin	Function	Pin	Function
1	Ring 1	26	Ring 13
2	Tip1	27	Tip13
3	Ring 2	28	Ring 14
4	Tip 2	29	Tip 14
5	Ring 3	30	Ring 15
6	Tip 3	31	Tip 15
7	Ring 4	32	Ring 16
8	Tip 4	33	Tip 16
9	Ring 5	34	Ring 17
10	Tip 5	35	Tip 17
11	Ring 6	36	Ring 18
12	Tip 6	37	Tip 18
13	NC	38	NC
14	Ring 7	39	Ring 19
15	Tip 7	40	Tip 19
16	Ring 8	41	Ring 20
17	Tip 8	42	Tip 20
18	Ring 9	43	Ring 21
19	Tip 9	44	Tip 21
20	Ring 10	45	Ring 22
21	Tip 10	46	Tip 22
22	Ring 11	47	Ring 23
23	Tip11	48	Tip 23
24	Ring 12	49	Ring 24
25	Tip 12	50	Tip 24

5.20 TN-S900-A (Attenuator)

5.20.1 Overview

The TN-S900-A loop attenuator is used to artificially increase the distance between the DSLAM (ATU-C) and the Customer Premise Equipment (ATU-R). Each TN-S900-A adds approximately 2000 ft. of “cable” to the customer loop. The attenuator is detailed in Figure 5-17.

Increasing distance, or loop length, can result in higher powered ADSL signaling, thereby reducing near end cross talk (NEXT). Therefore, attenuating short loops, within binders of mixed-length loops, will enhance the over-all system performance by equalizing the power output by all ports on an individual iMAP ADSL card.

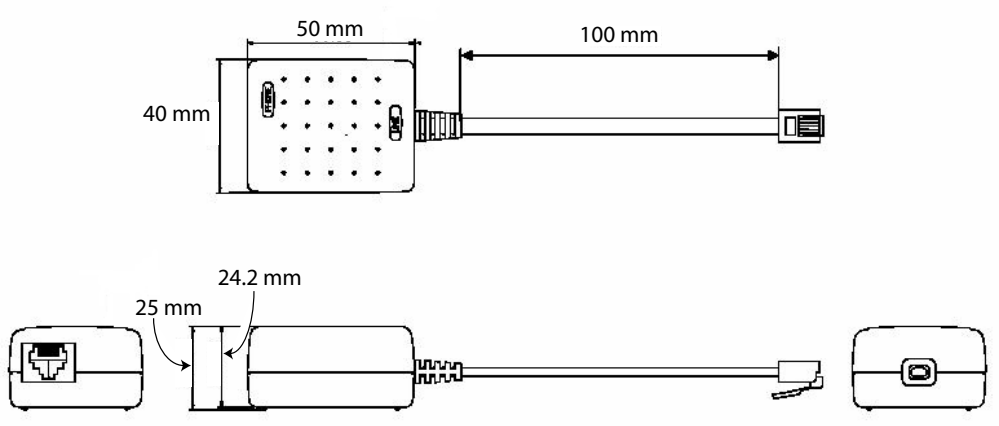


FIGURE 5-17 Attenuator Dimensions

5.20.2 TN-S900-A Physical Installation

The TN-S900-A loop attenuator is installed between the interface to the telco outside plant facilities and the ADSL modem at the subscriber's premises.

The TN-S900-A has two labels, LINE and PHONE (see Figure 5-18). For ease of installation and maintenance, the TN-S900-A is co-located with the modem, so the pig tail of the TN-S900-A is plugged into the modem, and the RJ-11 receptacle faces the wall jack.

Note: If required by installation, the TN-S900-A connections can be reversed, with the pig tail connected to the wall jack and an RJ11 cable connecting to the modem. (A telephone can be connected in a series as well.)

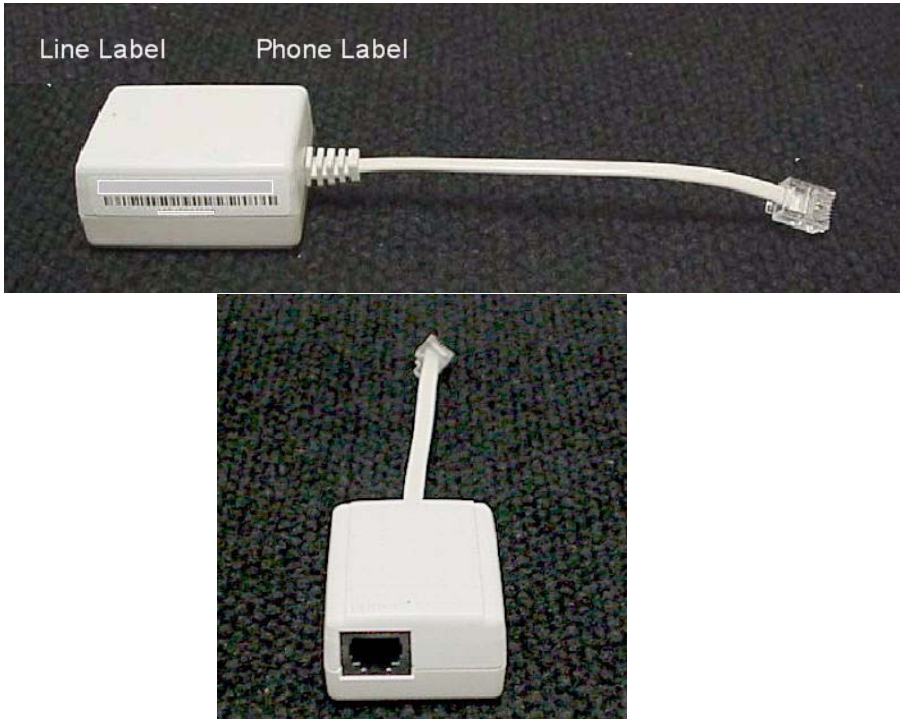


FIGURE 5-18 Attenuator Connections

5.20.3 Determining if Installation of TN-S900-A is Needed

This subsection provides steps to determine if you should install the TN-S900-A, and an example that illustrates what to look for when performing these steps.

5.20.3.1 Determining if Installation of TN-S900-A is Needed

Use these guidelines to determine if installing an attenuator is appropriate. (These include references to an example in the next subsection.)

1. Determine the subscriber's loop length.

   If the loop is greater than 3500 ft. do NOT install an attenuator, otherwise proceed to Step 2.

Note: Installing an attenuator on a loop greater than 3500 ft.in length can degrade ADSL performance.

2. Determine the ADSL Power Requirements (shown in 5.20.3.2).

If the DSLAM power output is between 16.0 and 30.0 dBm (or greater), do NOT install an attenuator; otherwise proceed to Step 3.

3. Determine the existing ADSL line attenuation (shown in 5.20.3.2).

   If the perceived line attenuation of the CPE is between 25.0 and 50.0 dB (or greater), do NOT install an attenuator; otherwise proceed to Step 4.

4. An attenuator may be installed as shown in subsection 5.20.2. (Figure 5-18).

5.20.3.2 Example to Determine Need for Attenuator

The following example, using an iMAP console running firmware version 6.0.2, shows where an attenuator can be optionally installed. See the Telesyn User's Guide for details specific to your firmware version.

```
officer SEC>> show interface 4.9

 --- ADSL Interfaces ---

 Interface.......................... 4.9
 Type............................... ADSL
 State.............................. UP-UP-Online
 Description........................ <none>

 Provisioning
    Provisioning Profile............ AutoProv
    Mode............................ Auto2+
    Line Type....................... Interleave
    Interleave Delay................ 32 msec
    Target SNR Margin............... 8 dB
    Echo Cancellation............... Off
    Line Quality Monitor............ Medium
    Downstream
      Maximum Rate.................. 26624 kbps
      Minimum Rate.................. 32 kbps
    Upstream
      Maximum Rate.................. 1024 kbps
      Minimum Rate.................. 32 kbps
    Performance Monitoring.......... Off
    Remote Monitoring............... Off

 Actual
    Connection State................ Showtime
    Direction....................... Customer
    Physical Address................ 00:0C:25:03:90:5B
    Annex........................... Annex A
    Mode............................ ADSL2+
    Line Type....................... Interleave
    Trellis Coding.................. Active
    Downstream
      Rate...................(ATU-C) 19977.1 kbps
      Max Attainable Rate....(ATU-C) 23095.2 kbps
      Signal-to-Noise Ratio..(ATU-R) 8.0 dB
     Attenuation............(ATU-R) 8.4 dB <- - - - - - - -  Line Attenuation (Step
3)
      Output Power...........(ATU-C) 10.3 dBm <- - - - - --  Power Output (Step 2)
```

```
Upstream
  Rate...................(ATU-R) 1021.9 kbps
  Max Attainable Rate....(ATU-R) 1371.6 kbps
  Signal-to-Noise Ratio..(ATU-C) 12.5 dB
  Attenuation............(ATU-C) 4.0 dB
  Output Power...........(ATU-R) 6.5 dBm
```

5.20.4 Specifications

TABLE 5-11 Attenuator Specifications

Parameter	Criteria
Unit Dimensions	Width - 1.6 in (40 mm) Height - 1.0 in (25 mm) Length - 2 in (50 mm) Length of attached RJ45 cable - 4 in (100 mm)
Environmental	Designed to be used in indoor applications Long time operation temperature - 41°F - 104° F (5° - 40°C) Short time operation temperature - 32°F - 122°F (0° - 50°C) ETS 300 019, class 3.2 Storage and transportation - 68°F - 185°F (20° - +85°C) MIL-STD-202 method 107 Operational humidity: Long time operation humidity - 5 - 85% Short time operation humidity - 5 - 90% Note: Short time period is within 72 continuous hours and 15 days in a year Withstands normal shipping and handling shock.

5.20.5 Conformance

Certificate Number CU 72040104 01. Tested to Tested to UL 60950:2000, CAN/CSA-C22.2 No. 60950-00. Certified under 47 CFR Part 68 Connection of Terminal Equipment to the Telephone Network.

Attentuator Safety Guidelines

When using telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to personnel, including the following:

- ***Do not use this product near water for example near a bath tub, wash bowl, kitchen, sink or laundry tub, in a wet basement or near a swimming pool.***
- ***Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.***
- ***Do not use the telephone to report a gas leak in the vicinity of the leak.***
- ***Never touch uninsulated telephone wiring or terminals unless the telephone line has been disconnected at the network interface.***

Use caution when installing or modifying telephone lines.

FCC - This Allied Telesyn product complies with FCC requirements for emissions radiation. Users of this Allied Telesyn product are cautioned that any changes or modifications not expressly approved by the party responsible for FCC compliance could void the user's authority to operate the product.

1) This equipment complies with Part 68 of the FCC rules and the requirements adopted by ACTA. On the bottom of this equipment is a label that contains among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

2) The jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC part 68 rules and requirements adopted by the ACTA.

3) The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. The REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3).

4) If the TN-S900-A causes harm to the telephone network, the telephone company will notify you in advance that a temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

5) The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

6) If trouble is experienced with the TN-S900-A, for repair or warranty information, please contact Allied Telesyn International at 1-###-###-####. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

7) The TN-S900-A must be returned to ATI for any required repairs.

8) If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of the TN-S900-A does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.