

### 1. Purpose

This document provides installation instructions for each line powered XCell ADR and TAD with gel-filled protectors. Installation instructions are also included on the inside of the lid of the ADR and TAD units. This document is provided with each ADR and TAD package shipped to customers and is also available separately. In addition, an up to date copy is included as an attachment to the *System Practice* with each COT Shelf shipped. GoDigital recommends that one copy of the complete *System Practice* be kept in each Central Office that is equipped with XCell or GDSL Systems.

### 2. Products

This Installation Note is relevant for the following GoDigital products:

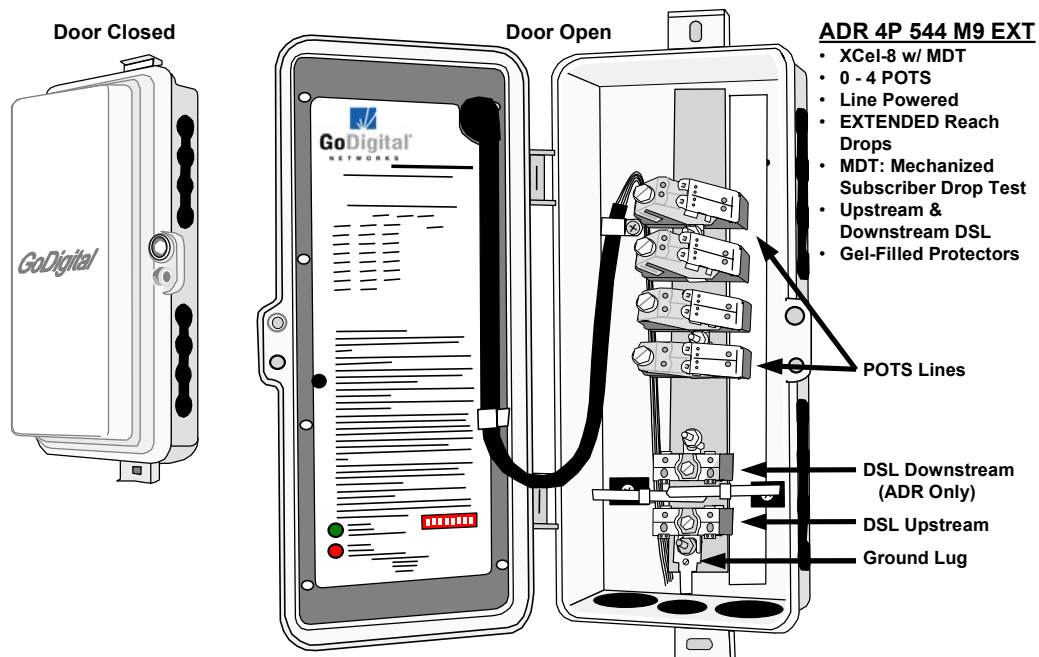
System / Product Name	Part #	Description
<b>XCell-8 Systems, with Mechanized Drop Test (MDT)</b>		
ADR 4P 544 M9 EXT	990132-A	XCell-8 Add/Drop Rptr, 0 - 4 POTS w/ MDT & EXT Reach, w/ Gel-Filled Prot.
TAD 4P 544 M9 EXT	990134-A	XCell-8 Term. Add/Drop, 0 - 4 POTS w/ MDT & EXT Reach, w/ Gel-Filled Prot.

### 3. Overview

The ADR and TAD units are packaged in standard GoDigital gray plastic housing with flanges for pole or wall mounting. The ADR and TAD units have an upstream DSL (ADR & TAD) and a downstream DSL (ADR only) connection on the gel-filled protectors in the base of the housing. Service line drops have separate gel-filled protectors in the base and are labeled. The installation instructions on the lid specify the TIP and RING pair and GROUND connections.

- An ADR is used to repeat a XCell/GDSL loop signal, and to simultaneously drop service lines at the repeater (ADR) location.
- A TAD is used to drop lines at the end of a XCell/GDSL loop in the same manner as an RTU (Remote Terminal Unit). However, a TAD drops fewer lines than the total system capacity (example: 4 of 8 lines), and a TAD uses less power than an RTU enabling longer loop reach

**NOTE:** The Configur8r software tool is the **ONLY** planning tool that can properly support the power and performance engineering of a XCell/GDSL-8 System. Do **NOT** engineer a loop without the proper Configur8r



# Installation Note

## XCel ADR & TAD with Gel-Filled Protectors



### 4. Summary of Engineering and Installation Steps

1. Verify that the loop has been designed in accordance with the GoDigital Configur8r™ System Design tool, with the proper loop span reach.
2. If EXTENDED drop units are used, verify the number and type of drops (LONG or SHORT) were correctly designated in the Configur8r.
3. Mount the ADR or TAD housing to a pole, or other designated mounting location.
4. Ground the ADR or TAD unit properly to an adequate local ground.
5. Connect the upstream (ADR & TAD) DSL pair to the unit.
6. Connect the downstream (ADR only) DSL pair to the unit.
7. Connect the drops to the drop protector terminals. Zero to four drops as appropriate.
8. Select the lines to be dropped with the selector switches on the lid of the unit.
9. After the loop is completely built, apply power by seating the CTU in the Central Office.
10. The ADR or TAD will automatically link in the standard XCel/GDSL linking process.

### 5. Grounding

- 5.1 Properly ground the unit using the ground connection inside the box. The ground connection lug will support up to a #6 AWG conductor.

**CAUTION: XCel/GDSL Outside Plant (OSP) elements require that proper grounding techniques are used in accordance with standard telco and local practices for proper operation and lightning protection. Units not properly grounded will be subject to damage from lightning and power surges and are not covered by warranty.**

**CAUTION: Do NOT use a cable sheath ground to ground OSP devices. The ground must be established to a properly installed ground rod.**

- 5.2 Verify that the ground established is in accordance with standard industry and local practices with respect to the OSP element, the ground wire clamp and the earth ground rod.

### 6. Identification of Upstream and Downstream DSL Cable Pairs

The installation instructions on the lid of the unit specify the color-coded DSL and Ring/Tip wiring.

**NOTE: The XCel/GDSL system is not sensitive to DSL Tip and Ring polarity.**

- 6.1 Identification of upstream and downstream cable pairs. If you do not know which cable pair goes toward the central office (upstream) you can:
- Request that the system be powered up in the office and look for the presence of the DSL powering voltage on the upstream pair, or
  - Request the upstream pair be shorted and use your Volt/Ohm meter to detect the correct pair.

### 7. Service Drop Connections

The installation instructions on the inside of the lid for the ADR or TAD unit identify the cable pair colors for the individual service drops.

### 8. Turn-up and Link-up

Once the Upstream and Downstream DSL pairs are properly connected, and the loop is powered from the CTU line card, the linking process will start. If the loop or span is within the specified distance limitations and is free of load coils the linkup will be completed typically within three minutes. Please allow five minutes for completion before beginning troubleshooting procedures.

### 9. LED indications

The LEDs in the faceplate of the ADR and TAD units provides multiple types of information for installation and troubleshooting support. The TADs have one green LED and the ADRs have two LEDs - one green and one red.

#### 9.1 Green LED – BLINKING two (2) times per second, constant rate

The unit detects a signal from an upstream element and is attempting to link.

#### 9.2 Green LED – SOLID ON

The unit is linked with an upstream element.

#### 9.3 Green LED - SOLID ON, but ‘BLINKS’ out once every five (5) seconds

Linked upstream but not linked downstream..

#### 9.4 Red LED on ADR only - solid on

A customer served from this location is off-hook or a downstream customer line is busy.

#### 9.5 Green LED on TAD only - solid, but ‘blinks’ out three times in quick succession, every five seconds

A channel selection conflict exists, in that the same channel was selected at more than one add/drop location. The three wink indication appears on all units that are in conflict. NOTE that the upstream element has channel priority, so even though there is a conflict the upstream unit will take the channel. ADDED NOTE: Since the RTU has no channel selection, anytime an ADR is used in conjunction with an RTU the ADR LED will signal conflict. This serves as an alert to the installer that there is an RTU downstream and to be cautious about taking away an operating channel.

#### 9.6 Red LED on ADR only - blinking several times per second, constant rate

A channel selection conflict exists, in that the same channel was selected at more than one add/drop location. The conflict indication appears on all units that are in conflict. NOTE that the upstream element has channel priority, so even though there is a conflict the upstream unit will take the channel. ADDED NOTE: Since the RTU has no channel selection, anytime an ADR is used in conjunction with an RTU the ADR LED will signal conflict. This serves as an alert to the installer that there is an RTU downstream and to be cautious about taking away an operating channel.

### 10. Trouble Conditions

If the DSL pair IS NOT connected in accordance with the above so that the Upstream and Downstream connections are reversed, please note the following conditions:

#### 10.1 No other Upstream element (STR nor ADR) exists between the ADR or TAD and the Central Office:

- **LED Indication:** The LED will blink on and off (1 per second) for approximately 5 minutes.
- The ADR will power down (LED Dark) for 10 seconds.
- The linking process will begin again after the ten second power down period and continue to repeat until reversal is cleared.

#### 10.2 An Upstream or a Downstream element (STR or ADR) exists and is connected in the loop:

- **LED Indication:** The LED will blink on and off (1 per second) continuously.
- There will be no power down cycle.

**Note: This is the same LED indication that will be seen if the loop distance is too great or if a load coil exists.**

# Installation Note

## XCel ADR & TAD with Gel-Filled Protectors



### 11. Replacement Protector Options

**Note: Protectors normally shipped with new products are identified with arrows. →**  
**GoDigital reserves the right to use any listed gel-fill protector for DSL lines in new product shipments.**

These ADR and TAD units are shipped with gel-filled protectors installed to provide lightning protection for the unit on each POTS line and each DSL line. The protectors for the DSL lines require higher breakdown voltage than protectors for the POTS lines, and as a result the DSL protectors may be a different protector than the POTS protector in a new unit shipped. Tables 1 and 2 specify APPROVED and NON-APPROVED replacement protectors for the DSL and POTS lines.

**Table 1  
SERVICE Line Protectors**

Approved XCel OSP POTS Line Protectors:		
MFG	MODEL or PART #	Type
TYCO *	GSSP-0302-00-WOOB-A *	Gel
Other approved ADSL replacement protectors		
TYCO	GSSP-0202-00-WOOB-A	Gel
TYCO	GSSP-0101-00-WOOB-A	Gel
TII	AD-03-W-FS	Gel
TII	AD-M2-W-FS	Gel
TII	AD-02-W-FS	Gel
TII	AD-01-W-FS	Gel
Corning (Siecor)	SPD 127-XV-S	Gel
TII	356M2	356
Corning (Siecor)	356-XY	356
Corning (Siecor)	356-SW	356

**Table 2  
DSL Line Protectors**

Approved XCel OSP DSL Line Protectors, Gel Filled:		
MFG	MODEL or PART #	Type
TII	AD-03-W-FS	Gel
Corning (Siecor)	SPD 127-XV-S	Gel
Other approved DSL replacement protectors		
Corning (Siecor)	356-XY	356
<del>NON-Approved XCel OSP DSL Line Protectors:</del>		
<del>MFG</del>	<del>MODEL or PART #</del>	<del>Type</del>
<del>TYCO *</del>	<del>GSSP-0302-00-WOOB-A *</del>	<del>Gel</del>
<del>TYCO</del>	<del>GSSP-0202-00-WOOB-A</del>	<del>Gel</del>
<del>TYCO</del>	<del>GSSP-0101-00-WOOB-A</del>	<del>Gel</del>
<del>TII</del>	<del>AD-M2-W-FS</del>	<del>Gel</del>
<del>TII</del>	<del>AD-02-W-FS</del>	<del>Gel</del>
<del>TII</del>	<del>AD-01-W-FS</del>	<del>Gel</del>
<del>Corning (Siecor)</del>	<del>356-SW</del>	<del>356</del>
<del>TII</del>	<del>356M2</del>	<del>356</del>

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