

### 1. Purpose

This document provides installation instructions for each XCel/GDSL STR with gel-filled protectors. Installation instructions are also included on the inside of the lid of the STR units. This document is provided with each STR 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 XCel/GDSL COT Shelf shipped. GoDigital recommends that one copy of the complete *System Practice* be kept in each Central Office that is equipped with XCel/GDSL Systems.

### 2. Products

This Installation Note is relevant for the following GoDigital products:

System / Product Name	Part #	Description
<b>XCel-8, GDSL-8 and GDSL-3i Systems</b>		
STR 544	990064 -E	Straight Through Repeater for XCel/GDSL-8 & GDSL-3i Gel-Filled Protectors

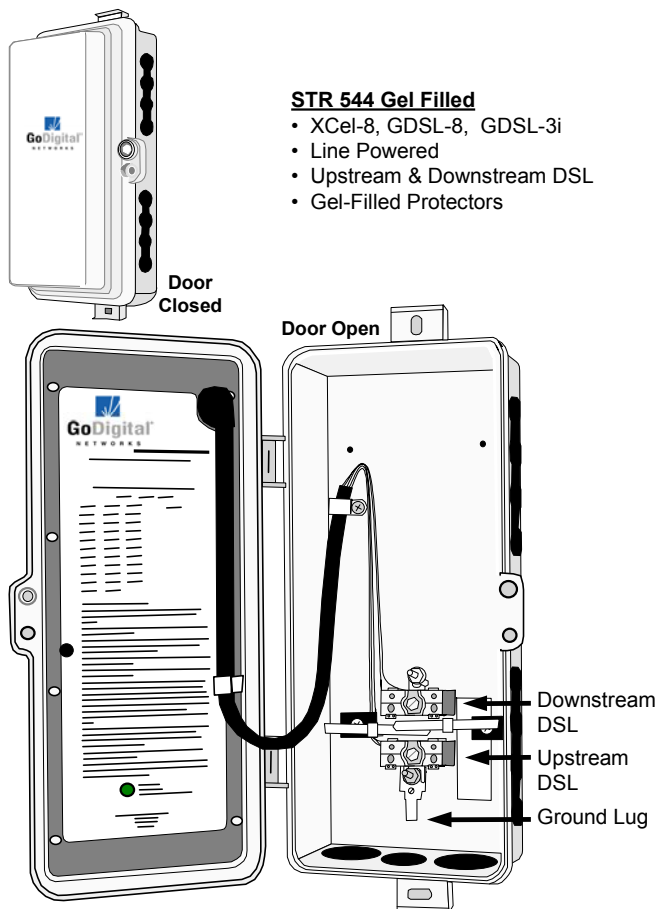
### 3. Overview

A Straight through Repeater (STR) is used to repeat a XCel/GDSL loop signal. The STR is packaged in a standard GoDigital gray plastic housing with flanges for pole or wall mounting. The STR has an upstream DSL and a downstream DSL connection on the gel-filled protectors in the base of the housing. The installation instructions on the lid specify the TIP and RING pair and GROUND connections.

**NOTE** The Configur8r software tool is the **ONLY** planning tool that can properly support the power and performance engineering of a XCel/GDSL-8 System. Do NOT engineer a loop without the proper Configur8r. XCel/GDSL-8 System loops should not be installed without using the Configur8r software tool.

### 4. Summary: 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. Mount the STR housing to a pole, or other designated mounting location.
3. Ground the STR unit properly to an adequate local ground.
4. Connect the downstream DSL pair to the unit.
5. Connect the upstream DSL pair to the unit.
6. After the loop is completely built, apply power by seating the CTU in the Central Office.
7. The STR will automatically link in the standard XCel/GDSL linking process.



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### 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 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 Tip and Ring polarity.**

- 6.1 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. Turn-up and Link-up

Once the Upstream and Downstream DSL pairs are properly connected and the loop is powered by the XCel/GDSL 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 3 minutes. Please allow 5 minutes for completion of the linkup before beginning troubleshooting procedures.

### 8. LED indications

The Green LED in the faceplate of the STR unit has three standard states for installation and troubleshooting support.

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

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

#### 8.2 Green LED – SOLID ON

The unit is linked with an upstream element.

#### 8.3 Green LED - SOLID ON, but 'BLINKS' out once every five (5) seconds

Linked upstream but not linked downstream.

### 9. Trouble Conditions

If the DSL pair is NOT connected in accordance with the above (Identification of Upstream and Downstream cable pairs) such that the Upstream and Downstream connections are reversed, please note that the following LED indications will exist:

9.1 If no other Upstream elements (either, STR or ADR) exists between the STR and the Central Office the following LED condition can be observed:

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

9.2 If one or more Upstream or a Downstream elements (either, STR or ADR) exist and is connected in the DSL 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 in the DSL loop.**

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### 10. Replacement Protectors

**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.**

This STR is shipped with gel-filled protectors installed to provide lightning protection for the unit on each DSL line. The protectors for the DSL lines require higher Tip to Ring breakdown voltage than normal POTS station protectors can provide. As a result, the DSL protectors must be specifically qualified by GoDigital. Tables 1 and 2 identify APPROVED and NON-APPROVED replacement protectors for the DSL lines.

**Table 1**  
**APPROVED SHDSL 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

**Table 2**

**NON-Approved SHDSL Line Protectors**

NON-Approved XCel OSP DSL Line Protectors:		
MFG	MODEL or PART #	Type
TYCO *	GSSP-0302-00-WOOB-A *	Gel
TYCO	GSSP-0202-00-WOOB-A	Gel
TYCO	GSSP-0101-00-WOOB-A	Gel
TII	AD-M2-W-FS	Gel
TII	AD-02-W-FS	Gel
TII	AD-01-W-FS	Gel
Corning (Siecor)	356-SW	356
TII	356M2	356

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