

# How do I convert my RFL® 9745 analog teleprotection equipment to operate over leased DDS digital lines?

## The Scenario:

Telephone companies will no longer support audio leased lines starting as early as 2015. This presents an issue for utilities currently operating their RFL® 9745 equipment with an analog communications interface. In some scenarios, 56 or 64 kbps leased digital data service lines are available for a nominal monthly fee. Utilities are looking for a path forward that minimizes operational impact, requires little engineering, and assures comparable security & dependability for their protection signalling.

## The Solution:

For point-to-point teleprotection applications, RFL offers a complete digital DDS upgrade kit that allows the customer to replace the 9745 analog interface with a digital interface module set. The RS-449 digital interface cables directly into a Channel Service Unit / Digital Service Unit, which in turn plugs directly into a 56 kbps DDS line. This layout is mirrored on the remote end teleprotection equipment.

For each side, the following equipment is required:

Description	Manufacturer	Part #
9745 Digital Comms Module	RFL Electronics	105060-2
9745 RS-449 interface Module	RFL Electronics	105065-1
Cable, EIA-449 to EIA-530	RFL Electronics	304994 6
Rack Mount Chassis with redundant 125VDC Power Supplies	Raymar Telenetics	RMX 220-R
Channel Service Unit/ Digital Service Unit	Raymar Telenetics	DDS/MR64

## The Results:

This field-proven design ensures out-of-the box performance in a substation's operational environment. The digital system improves tolerance to analog noise that would otherwise cause mis-operation, resulting in improved dependability of the protection system. Thanks to a modular



**Before Upgrade: Analog Teleprotection over 4-wire leased lines**



**After Upgrade: Digital Teleprotection over DDS leased lines**

*Because RFL and Hubbell® have a policy of continuous product improvement, we reserve the right to change designs and specifications without notice.*

architecture, there is no need to replace the unit, de-wire the unit from the relay, or remove the unit from the rack. Hardware and software installation time is typically completed in under 90 minutes.

## Related Products:

RFL provides a complete installation kit with all necessary equipment and cables, removing the guesswork from upgrades.



### RFL® 9745

The RFL® 9745 is a fully programmable Teleprotection Channel

suitable for Direct Transfer Trip, Permissive Transfer Trip, Blocking and Unblocking applications.

The communications interface can be converted in the field to adapt to different types of media: audio, digital or fiber optic.

## About RFL

RFL designs and manufactures a comprehensive line of highly-reliable, mission-critical, cost-effective communications and protection solutions for the electric utility and transportation markets, oil and gas markets, government agencies and engineering consulting firms. RFL is focused on guaranteeing mission-critical data will arrive on-time, every time.



RFL  
353 Powerville Road  
Boonton, NJ 07005,  
USA  
Tel: 973.334.3100  
Fax:973.334.3863  
www.rflect.com