

WESCOM DUALINE PLUS
DIGITAL SINGLE SUBSCRIBER CARRIER SYSTEM
DDL 190 REMOTE TERMINAL SIMULATOR

1. GENERAL

1.01 This section is a cover sheet for the Wescom DuaLine Plus DDL 190 Remote Terminal Simulator. This section is copyrighted and reproduced with the permission of Charles Industries.

1.02 Whenever this section is reissued the reason(s) for reissue will be listed in this paragraph.

1.03 The Wescom DuaLine Plus System is a general purpose digital single subscriber carrier (DSSC) system that provides pair gain capability over a non-loaded, two wire, copper facility.

The DuaLine Plus requires installation of a central office terminal and a field module, located at or near the subscriber premise.

1.04 Associated practices for installation and maintenance of the system are:

<u>Section</u>	<u>Title</u>
363-400-800SW	System Overview
502-204-800SW	DDL 102 DuaLine Plus Remote Terminal
502-204-801SW	DDL 104 DuaLine Plus Remote Terminal
502-204-802SW	DDL 112 DuaLine Plus Remote Terminal
363-400-801SW	DDL 201 DuaLine Plus Central Office Terminal Shelf (23 inches)
363-400-802SW	DDL 210 DuaLine Plus Central Office Terminal (COT) Power Unit
363-400-803SW	DDL 221 DuaLine Plus Central Office Terminal (COT) Common Unit
363-400-804SW	DDL 230 DuaLine Plus Central Office Terminal (COT) Line Unit
363-400-805SW	DDL 391 DuaLine Plus Line Unit
502-204-804SW	Digital Signal Trak-A-Tone Model 92-5

1.05 If corrections are required in the attached document, use Form-3973 as described in Section 000-010-015.

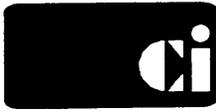
1.06 If manufacturing and/or design problems are encountered, refer to Section SW 010-522-906 for procedures on filing an Engineering Complaint.

2. ORDERING PROCEDURES

2.01 Components of the DuaLine Plus System may be ordered via the Southwestern Inventory Management System (SWIMS).

2.02 To order additional copies of this practice, use WSCM 502-204-803SW.

PROPRIETARY
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Wescom® DDL190 DualLine Plus™ Remote Terminal Simulator

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1. GENERAL

1.01 This Practice provides a general description of the Wescom DDL190 DualLine Plus Remote Terminal Simulator (RTS). The DDL190 RTS is depicted in Figure 1.

1.02 Whenever this Practice is reissued, the reason for reissue will be stated in this Paragraph.

1.03 The DDL190 RTS, which is an addition to the DualLine Plus family of products, is a portable test instrument for verifying operation of the DualLine Plus Line Units (LUs).

2. APPLICATION GUIDELINES

2.01 The Wescom DDL190 DualLine Plus Remote Terminal Simulator (RTS) is used to check the operation of a DualLine Plus Line Unit (LU) (see Figure 2). When connected to the Digital Subscriber Line (DSL) of a DualLine Plus LU, the DDL190 RTS provides LED indicators for power and synchronization. Test points are provided for Tip and Ring of the subscriber drop.

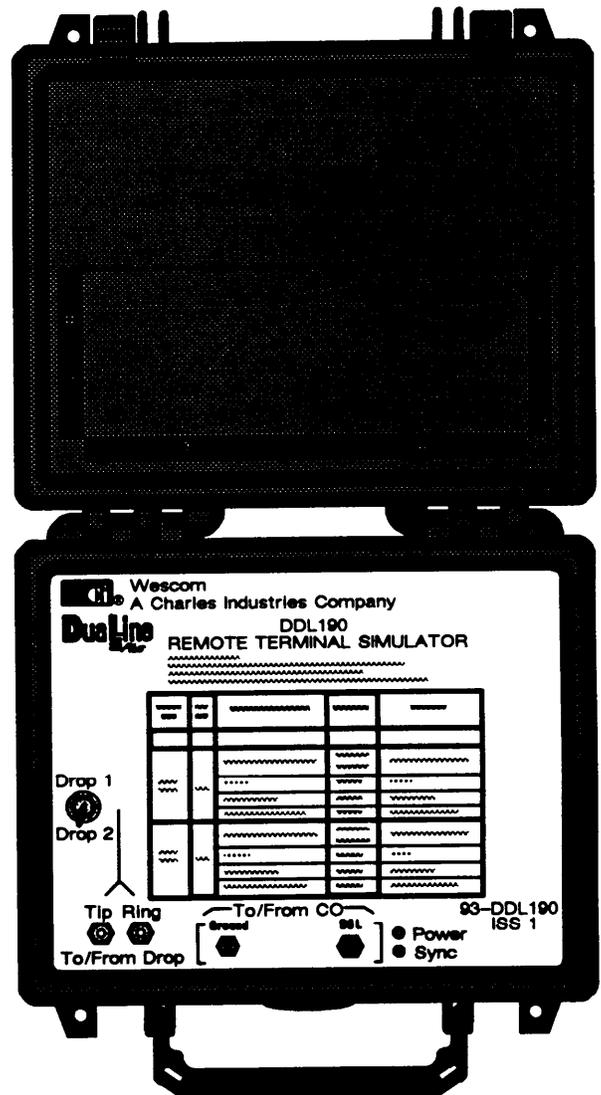


Figure 1. DDL190 DualLine Plus Remote Terminal Simulator

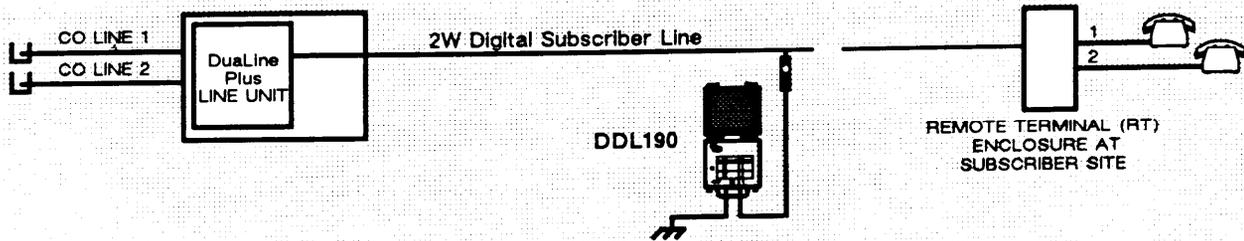


Figure 2. DualLine Plus Remote Terminal Simulator Application

3. CIRCUIT DESCRIPTION

3.01 The Wescom DDL190 DualLine Plus Remote Terminal Simulator (RTS) contains circuitry to interface two Plain Old Telephone Service (POTS) lines to the Digital Subscriber Line (DSL). The RTS also contains power monitoring and synchronization circuits.

3.02 When the simulator is connected to a DSL with the proper voltages, the *POWER* LED will light. Within 30 seconds, the *SYNC* LED will light indicating that the RTS is in synchronization with the DualLine Plus Central Office Line Unit (LU).

3.03 A front panel, two-position switch is provided to allow testing from either drop at the RTS to the corresponding line side of the Central Office LU. Drop side test points are mounted on the front panel for connecting test equipment.

3.04 The DDL190 RTS also contains three cables. Two of these cables are for connecting the RTS to the DSL. A ground cable is also provided.

4. INSPECTION

4.01 Inspect the equipment thoroughly upon delivery. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company.

4.02 Wescom equipment is identified by a model and issue number imprinted on the front panel or located elsewhere on the equipment. Each time a major engineering design change is made on the equipment, the issue number is advanced by one number on any subsequent models that are manufactured. Therefore, be sure to include both the

model number and its issue number when making inquiries about the equipment.

CAUTION

Do not ship or store modules near strong electrostatic, electromagnetic, or magnetic fields, or in a highly radioactive environment.

5. OPERATING INSTRUCTIONS

CAUTION

Hazardous voltages exist on the Digital Subscriber Line (DSL). Always exercise caution when performing maintenance or testing a live circuit.

Operating Instructions

1. Disconnect the Remote Terminal (RT), if any, from the Digital Subscriber Line (DSL). The Central Office Line Unit should show "CBL Alarm" indicating an open DSL. Only one RT or Remote Terminal Simulator (RTS) can be active on the DSL at one time.
2. Insert the ground cable into jack labelled "Ground" and connect to a good ground source.
3. Insert the 310 plug of the appropriate test cable into the 310 jack labeled "DSL" on the RTS. Connect the other end of the test cable to the DSL. One cable is designed to attach to wire wrap pins, such as those used in Central Office wire centers. The other cable has alligator clips for connecting to the other wiring and terminal arrangements.
4. The green *POWER* LED should light.

- If the green *POWER* LED does not light, wait 30 seconds. If the *SYNC* LED lights but the *POWER* LED does not, the *POWER* LED has failed. The RTS will still test the DSL but should be repaired.
- If neither the *SYNC* nor *POWER* LEDs light, disconnect the RTS from the DSL. The Line Unit (LU) should show a "CBL Alarm". Check the voltage on the DSL. The DSL voltage should be $> \pm 75V$ Tip to Ring, Tip to Ground, or Ring to Ground. Below are the possible DSL voltage conditions:
 - If there is no voltage, verify that there is continuity between the DSL test point and the CO. If there is continuity, check for a Tip to Ring short on the DSL. If there is no short, replace the LU.
 - If voltage is present, reconnect the RTS to the DSL. If the *POWER* and/or *SYNC* LEDs still do not light, there is a bad LU or RTS.
- If the *POWER* LED lights but not the *SYNC* LED, verify that only one RT (or RTS) is connected to the DSL.

If only one RT is connected, the LU or RTS is

malfunctioning or the DSL is out of range. If possible, test the DSL in the CO to verify that the LU is operating properly.

5. Within 30 seconds after the *POWER* LED lights, the green *SYNC* LED should light.
6. Connect a test telephone to the Tip and Ring test points on the RTS. Battery voltage should be present. If the POTS lines are connected to the LU in the CO, offhook, ringing and dialing can be tested on Line 1 and Line 2 at the RTS.
7. If all tests pass, disconnect the RTS and reconnect the RT to the DSL. Disconnect the drop wires from the RT. Test for battery voltage and dial tone on the RT. If these tests fail, replace the RT. If the battery voltage and dial tone are present at the RT, reconnect the drop wires and test for the battery voltage and dial tone again. If the tests fail, the problem is in the drop side wiring.

6. OPTIONS

There are no options on the DDL190 RTS.

POWER LED/LAMP	SYNC LED/LAMP	SUSPECTED PROBLEM	CHECK	ACTION
ON	ON	None	None	None
ON STEADY	OFF	2 RTs or Simulators on Cable	Number of RTs or Simulators on Cable	Remove 2nd RT or Simulator
		Line Unit	Test in CO	Replace Line Unit
		Cable loaded	Test in CO	Unload cable
		Cable out of range	Test in CO	Reduce cable length
OFF or FLASHING	OFF	2 RTs or Simulators on Cable	Number of RTs or Simulators on Cable	Remove 2nd RT or Simulator
		Cable	Cable	Repair cable
		Line Unit	Test in CO	Replace Line Unit
		Cable loaded	Test in CO	Unload Cable
		Cable out of range	Test in CO	Reduce cable length

Table 1. Power and Sync LED Troubleshooting Guide

7. TECHNICAL ASSISTANCE

7.01 If technical assistance is required, contact Charles Industries, Ltd. Customer Services Department at:

Charles Industries - Wescom
 5600 Apollo Drive
 Rolling Meadows, Illinois 60008
 Telephone: (708) 806-6300 (Main)
 (708) 806-8500 (Tech Service)
 (708) 806-6231 (FAX)

8. WARRANTY AND CUSTOMER SERVICE

8.01 Wescom offers an industry-leading, 5-year warranty on products manufactured by Wescom. Contact your local Sales Engineer for warranty details. The warranty provisions are subject to change without notice. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract.

8.02 Field repairs involving the replacement of components within a unit are not recommended (and may void warranty). If a unit is in need of repair, contact Wescom by telephone, letter, or FAX for instructions regarding replacement or repair.

8.03 If a replacement is required, it will be shipped in the fastest manner consistent with the urgency of the situation. Upon receipt of the

replacement unit, return the out-of-service unit in the carton in which the replacement was shipped, using the pre-addressed shipping label provided.

Repair or Exchange Services

8.04 Wescom offers a repair or exchange service for those units out of warranty. Under this arrangement, out-of-service units may be shipped to Wescom and either completely repaired and quality tested or exchanged for a replacement unit. To obtain details of this service and a schedule of prices, contact your local Sales Engineer.

9. SPECIFICATIONS

9.01 The physical characteristics of the DDL190 are shown below.

OPERATING ENVIRONMENT		
Temperature	-40 to 149 degrees F. -40 to 65 degrees C.	
WEIGHT		
5.5 lbs. 12.11 Kg		
DIMENSIONS		
Width	Depth	Height
10.5 in. 26.67 cm	9.5 in. 24.13 cm	4.5 in. 11.43 cm

Table 2. DDL190 Physical Characteristics