STS 3192–9B Bridging Office Repeater Installation Guide

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Figure 1. 3192–9B Bridging Office Repeater

1. GENERAL

1.1 Document Purpose

This document describes how to install the 3192–9B Bridging Office Repeater, shown in Figure 1

1.2 Document Status

This document is reprinted to provide a general editorial update.

1.3 Equipment Function

The 3192–9B Bridging Office Repeater is designed for use in any of the 28 transmission module slots in the 3192–11 Span Termination System (STS) Mounting Shelf. See the following documents for addition information:

- Section 319–211–100 (Wescom Span Termination System General Description)
- Section 319–211–200 (Wescom Span Termination System Installation)

1.4 Equipment Features

The 3192–9B Bridging Office Repeater (BOR) has the following features:

- Selectable secondary T1 or Quasi-Random Signal Source (QRSS) output.
- Pre-equalization for up to 655 feet of cable at the primary and secondary outputs.
- Front-panel jacks for Monitor T1 Input, Primary T1 Output, and Secondary Tl/QRSS output.

2. APPLICATION GUIDELINES

The 3192–9B Bridging Office Repeater has two different applications. It can be used as a maintenance aid for span patching, rerouting service onto a Maintenance Span Line. It can also be used as a source of timing by providing a tap for bridged access to primary T1 lines.

3. INSPECTION

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

Charles Industries 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 following models that are manufactured. Therefore, be sure to include both the model number and its issue number when making inquiries about the equipment, 3192–9B Maintenance Application; Transferring to an Idle Line Without Interruption

Modules are shipped in static-protective material to prevent electrostatic charges from damaging CMOS devices. Use approved static-preventative measures when handling modules outside of this protective material. A module intended for future use should be tested as soon as possible and returned to its protective shipping material for storage.

Units are shipped in static-protective material to protect static-sensitive devices. Use static-preventive measures for storage and handling.

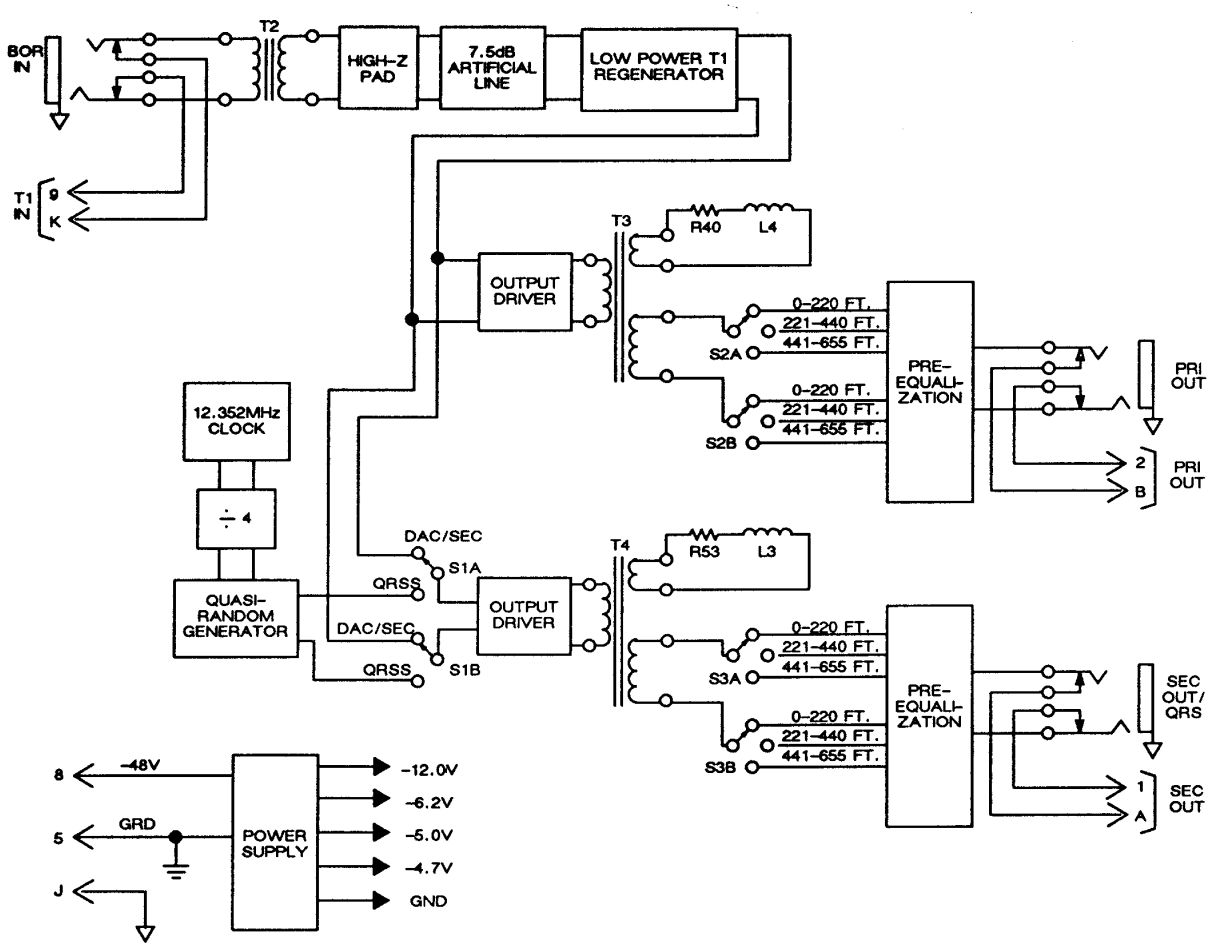


Figure 2. 3192–9B Bridging Office Repeater Block Diagram

4. MOUNTING

The 3192–9B BOR mounts in any one of the first 28 positions of the 3192–11 Mounting Shelf, or any of the first 21 positions of a 19-inch mounting shelf. The remaining rightmost position of the mounting shelf is used to mount a 3192–9F Alarm Module, which is 2 mounting positions wide.

CAUTION

Installation and removal of modules should be done with care. Do not force a module into place. If excessive resistance is encountered while installing a module, remove the module and check the card guides and connector to verify proper alignment and the absence of foreign material.

Use the following steps to mount the office repeater:

Step	Action
1.	Rotate the securing bar by pushing the spring clip tab on the left pivot point away from the shelf, while rotating the bar up and out of the way. The spring clip will hold the bar up and in place so that the module can be removed or inserted.
2.	Insert the module.
3.	Push back the spring clip tab and rotate the bar back into place.

5. INSTALLER CONNECTIONS

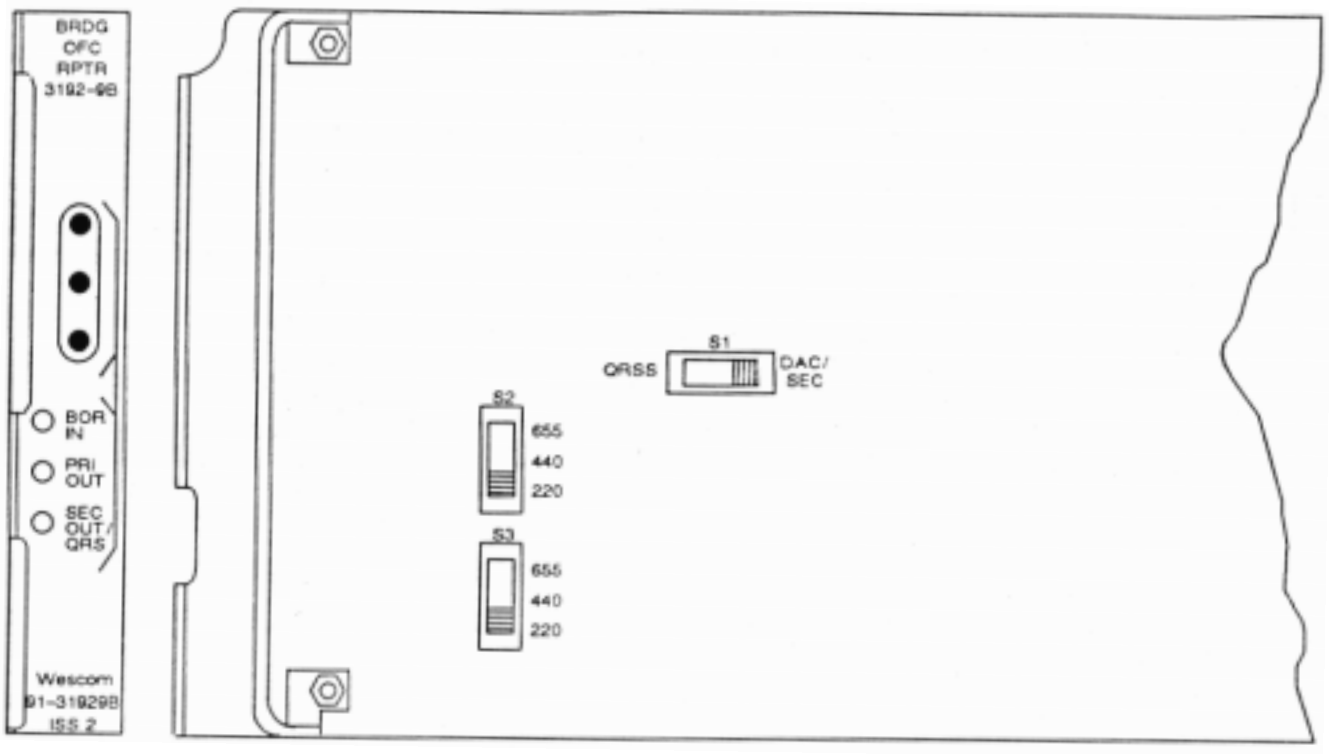
All connections to the 3192–9B are made through the shelf. See the shelf documents for connector and cable information.

6. OPTIONS

The 3192–9B is equipped with slide switches that are used to condition the module for proper application and operation. Refer to Figure 3 for option locations and option summary.

6.1 Slide Switch S1 (Secondary Output)

Slide switch S1 is used to control the secondary output of the 3192–9B. When S1 is in the QRSS position, a standard quasi-random signal source will appear at pins A and 1 of the module's edge connector and at the front-panel jack, labeled SEC OUT/ QRS. This signal can be used for testing or as a keep-alive signal on the maintenance spare T1 line, Placing S1 in the DAC/SEC position will allow the 3192–9B to produce two identical T1 outputs from a single input. The primary output will appear on pins B and 2, while the secondary output will appear on pins A and 1. This feature can be used to provide two timing sources from one T1 line.



OPTION	FUNCTION
S1	Placing switch S1 to the DAC/SEC position causes the secondary output to repeat the repeater input signal. Placing switch S1 to the QRSS position causes the secondary output to repeat the internal quasi-random signal source.
S2	Slide switch S2 optimizes the primary output signal (PRI OUT) from the repeater to the DSX for 0–220, 221–440, or 441–655 feet of ABAM cable.
S3	Slide switch S3 optimizes the secondary output signal (SEC OUT) or the QRSS output from the repeater to the DSX for 0–220, 221–440, or 441–655 feet of ABAM cable.

Figure 3. 3192–9B Option Locations And Option Summary

6.2 Slide Switch S2 and S3 (Pre-equalization)

Slide switches S2 and S3 control the amount of pre-equalization applied to the primary and secondary outputs, respectively. Placing the switches in the 220 position optimizes the T1 output going toward the DSX for up to 220 feet of ABAM cable. The 440 position is used for cable lengths between 221 and 440 feet, and the 655 position is used for lengths between 441 and 655 feet. Refer to Table 1.

Table 1. Slide Switch S3 Pre-equalization

Switch Settings for Optional Output Signal			
	S3 Switch Setting		
	220	440	655
22 Gauge Cable (ft.)	0–220	221–440	441–655
24 Gauge Cable (ft.)	0–150	151–220	221–320

7. TESTING

Proper operation of a 3192–9B BOR module can be determined by patching a monitor-level signal into the BOR IN jack on the front panel, and then connecting a signal monitor device to the PRI OUT jack to verify signal passage through the BOR. If the BOR is optioned for providing a secondary output signal, a signal monitor device can be connected to the SEC OUT jack as well. Alternatively, patching the PRI OUT signal (or SEC OUT signal) to any inactive repeater receive side RPT jack while viewing its LOS indicator can also verify that the 3192–9B BOR is passing a DS1 signal.

8. TECHNICAL ASSISTANCE

8.1 Technical Assistance — U.S.

If technical assistance is required, contact Charles Industries' Technical Services Center at:

847–806–8500
847–806–8556 (FAX)
800–607–8500
techserv@charlesindustries.com (e-mail)

8.2 Technical Assistance — Canada

Canadian customers contact:

905–821–7673 (Main Office)
905–821–3280 (FAX)

9. WARRANTY & CUSTOMER SERVICE

9.1 Warranty

Charles Industries, Ltd. offers an industry-leading, 5-year warranty on products manufactured by Charles Industries. Contact your local Sales Representative at the address or telephone numbers below 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.

Charles Industries, Ltd.
5600 Apollo Drive
Rolling Meadows, Illinois 60008–4049

Telephone: 847–806–6300 (Main Office)
847–806–6231 (FAX)

9.2 Field Repairs (In-Warranty Units)

Field repairs involving the replacement of components within a unit are not recommended and may void the warranty and compatibility with any applicable regulatory or agency requirements. If a unit needs repair, contact Charles Industries, Ltd. for replacement or repair instructions, or follow the *Repair Service Procedure* below.

9.3 Advanced Replacement Service (In-Warranty Units)

Charles Industries, Ltd. offers an “advanced replacement” service if a replacement unit is required as soon as possible. With this service, the unit will be shipped in the fastest manner consistent with the urgency of the situation. In most cases, there are no charges for in-warranty repairs, except for the transportation charges of the unit and for a testing and handling charge for units returned with no trouble found. Upon receipt of the advanced replacement unit, return the out-of-service unit in the carton in which the replacement was shipped, using the preaddressed shipping label provided. Call your customer service representative at the telephone number above for more details.

9.4 Standard Repair and Replacement Service (Both In-Warranty and Out-Of-Warranty Units)

Charles Industries, Ltd. offers a standard repair or exchange service for units either in- or out-of-warranty. With this service, units may be shipped to Charles Industries for either repair and quality testing or exchanged for a replacement unit, as determined by Charles Industries. Follow the *Repair Service Procedure* below to return units and to secure a repair or replacement. A handling charge applies for equipment returned with no trouble found. To obtain more details of this service and a schedule of prices, contact the CI Service Center at 217–932–5288 (FAX 217–932–2943).

Repair Service Procedure

1. Prepare, complete, and enclose a purchase order in the box with the equipment to be returned.

2. Include the following information:

   – Company name and address
   – Contact name and phone number
   – Inventory of equipment being shipped
   – Particulars as to the nature of the failure
   – Return shipping address

3. Ship the equipment, purchase order, and above-listed information, transportation prepaid, to the service center address shown below.

   CI Service Center
   Route 40 East
   Casey, IL 62420–2054

4. Most repaired or replaced units will be returned within 30 or 45 days, depending on the product type and availability of repair parts. Repaired units are warranted for either 90 days from the date of repair or for the remaining unexpired portion of the original warranty, whichever is longer.

10. SPECIFICATIONS

10.1 Electrical

The electrical characteristics of the 3192–9B Bridging Office Repeater are as follows:

(a) OFFICE REPEATER TYPE: Passive dual-output transmit (with S1 in SEC position); regenerative receive.

(b) LINE SIGNAL TYPE: Bipolar at 1.544Mbps ±200bps.

(c) REPEATER OUTPUT SIGNAL PULSE WIDTH: 324 ± 45nsec.

(d) REPEATER OUTPUT SIGNAL PULSE OVERSHOOT: 10 to 30 percent of pulse height, 20 percent nominal.

(e) REPEATER OUTPUT SIGNAL PULSE RISE AND FALL TIME: 100nsec maximum.

(f) INPUT IMPEDANCE: 1000 ohms nominal at 772kHz.

(g) OUTPUT IMPEDANCE: 100 ohms nominal at 772kHz.

(h) LINE BUILD-OUT: Automatic, 0 to 12.0dB.

(i) INPUT CURRENT: With all-ones input signal, 85mA typical; with quasi-random input signal, 65mA typical.

(j) QUASI-RANDOM OUTPUT: Generated (with option switch S1 in the QRSS position) per Bellcore PUB.62411. (QRSS output follows normal T1 output criteria.)

(k) PRE-EQUALIZER: Switch selectable for both outputs (i.e., PRI and SEC/QRSS) for 0 to 220 feet, 221 to 440 feet, or 441 to 655 feet of ABAM cable.

10.2 Physical

See Table 2 for the physical characteristics of the office repeater.

Table 2. Physical Specifications

Feature	U.S.	Metric
Height	4.75 inches	12.06 centimeters
Width	0.687 inch	1.746 centimeters
Depth	10.5 inches	26.67 centimeters
Weight	7 ounces	199 grams
Temperature	–40 to 149°F	–40 to 65°C