REFRAME COUNTER UNIT
DESCRIPTION
D3 CHANNEL BANK
DIGITAL TRANSMISSION SYSTEMS

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1. GENERAL

1.01 This section describes the reframe counter unit (RCU) which is placed in the D3 channel bank to detect and record reframing activity. This test is useful for identifying systems with intermittent troubles or hits which do not initiate trunk processing. The description in this document presents both the physical and functional features of the unit. Reference drawings J98718AN and SD-3C119-01 also cover the RCU.

1.02 Whenever this section is reissued, the reason for reissue will be given in this paragraph.

2. DESCRIPTION

2.01 Reframing is a receiver function that occurs if the incoming PCM signal contains framing bit errors or if the receiver is out of sync with the framing code. This code is the 010101... pattern of framing pulses (bits) at the end of each frame of information. If three or more out of five consecutive framing bits are in error, the receiver reframer circuitry deletes pulses to permit skipping through frames to restore sync with the incoming pattern. If sync cannot be restored, a red AR alarm condition exists and service is automatically removed. The RCU is connected to the receive not frame alarm (RNFAL) output on the receive unit and counts each time the RNFAL logic level drops. This level drops whenever the receiver detects an out-of-frame condition.

2.02 The RCU (Fig. 1) plugs into the channel bank next to the receive unit (RU) in the slot allocated for the transmission monitor unit (TMU). This slot is vacant in a conventional D3 channel bank because the development of the TMU test board was cancelled. In the D3B channel bank, the data logic unit already occupies this slot, and the RCU cannot be used.

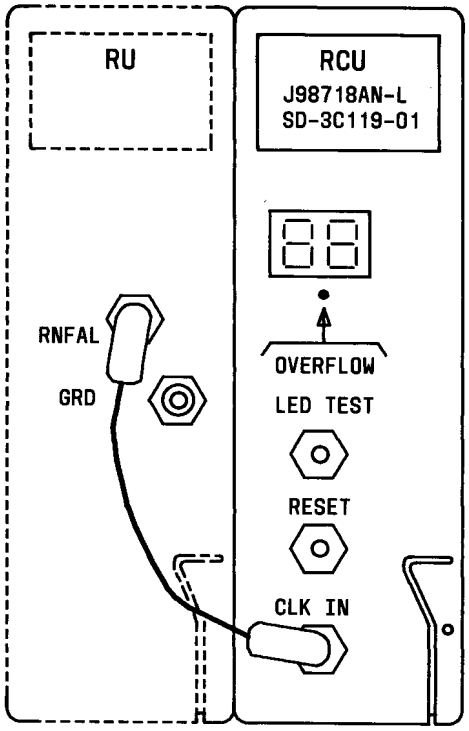

Fig. 1—RCU Installed and Connected for Operation

2.03 A short jumper lead equipped with pin plugs is connected between the CLK IN jack on the RCU and the RNFAL jack on the adjacent RU (Fig. 1). The RCU can be inserted and the jumper lead installed without interrupting service. However, when the jumper is connected to the RNFAL jack, the other end must not be allowed to touch the front of the units because the ground will cause a local alarm.

Caution: To avoid grounding the RNFAL point and causing a local alarm and service interruption, connect the jumper to the CLK IN jack (on RCU) first and the RNFAL (on RU) last.

2.04 Inside the RCU are integrated circuits for the counters and display driver amplifiers and two discrete transistor amplifiers. Circuit powering voltages (4 and 12 volts) are obtained from the channel bank slot, but the only signal connection is via the CLK IN jack. The signal is a high logic level when the receiver is in frame and drops when out of frame. An amplifier in the unit applies the signal to counters which register each transition to a low signal level. The two decade counters are cascaded to register a count of 99. Driver amplifiers connect the counters to the display.

2.05 The display is a 2-digit LED display for numbers (counts) up to 99 and has an OVERFLOW indicator which lights after a count of 100 is reached. A plastic viewer on the front of the RCU protects the face of the display. The RESET button resets the counters in the RCU and resets the display to zero so that the count can be repeated. When the unit is first installed, a meaningless display will be seen in the right digit position, but after pressing the RESET button, a zero will be displayed until counts are registered. The left digit display is suppressed until the count goes over 9. The LED TEST button controls the application of a ground which momentarily forces each stage of the counters to produce an output, lighting all segments of the display. After this button is released, the counters revert to the count that was previously registered.

3. MAINTENANCE

3.01 The RCU is completely tested in the shop with a specially designed test set and requires no field calibration or routine maintenance. If trouble develops in the course of use, the RCU is simply replaced. A preliminary test of an RCU suspected of being defective is to press the RESET button and observe if a zero is displayed. If not, the 4- and 12-volt supply voltages can be checked at the channel bank slot. Check the 4-volt supply at pins 37 and 36 (grd) and the 12-volt supply at pins 39 and 38 (grd).