5ESS™ EXPORT

PERIODIC PULSE METERING CIRCUIT

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 The Periodic Pulse Metering Unit (PPMU) is used to apply battery reversal pulses and/or (12 KHz or 16 KHz) tone pulses to the subscriber's line, incrementing a charge registration device or collecting coins from a pay phone.

SECTION II - DETAILED DESCRIPTION

1. INTERFACES

1.01 The PPMU has four hardware interfaces: the Main Distribution Frame (MDF), the Line Unit (LU), the Module Controller Unit (MCU) and the Power Fuse Panel.

1.02 If the MDF is equipped with gas tubes, customer lines run from the MDF to the PPMU, back to the MDF, and then to the LU. If the MDF does not have gas tube protection, a Line Interface Frame (LNI), which has the gas tube protection is placed between the MDF and the PPMU. Each line requires one pair of wires (tip/ring). The PPMU is capable of supplying PPM pulses to a maximum of 64 lines.

1.03 Two control channels (PIC-B) run between the duplicated module controllers in the MCU and the nonduplicated PPMU. Only one of the duplicated module controllers and one of the control channels are active at a time.

1.04 Three nominal -48 volt power feeders run from the fuse panel to the PPMU. The following table is a list of the fuse sizes that are to be used for each section of the PPMU and the lug location for the -48 volts feeders on the PPMU.

Section of the unit	Type	Size	Lug Location
Converter-0	70B	2 amp	01-014-0B0
Control and Reverse Batt	70B	2 amp	01-014-0B0
Tone and Tone Test	70B	2 amp	01-014-0B0
Batt Reversal or Tone Pulse	70B	2 amp	01-043-0B0
Batt Reversal or Tone Pulse	70B	2 amp	01-081-0B0

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2. OPERATION

2.01 The PPMU interfaces two types of charge registration devices on subscriber lines. The Battery Reversal Applique Circuit (SN448) applies battery reversal pulses while repeating supervision; the Tone Applique Circuit (SN449) applies 12 KHz or 16 KHz tone pulses.

2.02 Idle State

When the PPMU is in the idle state, the circuits are in a metallic bypass. No components are in the transmission path.

2.03 Talk State

SN448

When the PPMU is in the talk state, the SN448 provides battery feed towards the subscriber's line and a DC termination towards the LU, repeating supervision.

SN449

In the talk state on the SN449, the tone amplifier and filter are switched into the transmission path. The SN449 blocks 12 KHz and 16 KHz tone from getting to the LU but passes voice band frequencies and DC signals.

2.04 Maintenance State

SN448

In the maintenance state on the SN448, tip and ring towards the subscriber and the LU are opened. They are connected to the test bus which runs to the battery reversal test circuit in the PPMU.

SN449

In the maintenance state on the SN449, tip and ring are open towards the subscriber and the LU. They are connected to the test bus which runs to the tone test circuit in the PPMU.

2.05 Send Pulse State

SN448

The send pulse state is used in both the talk state and maintenance state. When a send pulse message is received on the SN448, the battery on tip and ring to the subscriber is reversed for 400 ms.

SN449

When a send pulse message is received on the SN449, a 100 ms burst of 12 KHz or 16 KHz tone is induced onto tip and ring toward the subscriber's line.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 Line Limits

The SN448 circuit can provide DC supervision up to 2000 ohms including the resistance of the station while repeating this supervision to the LU.

The SN449 is capable of supplying one-half watt of power into 200 ohms of 12 KHz or 16 KHz tone. A register, set by software, on the TN996 permits the application of 2, 3, 5 or 9 volt tones. It passes DC and does not affect the working limits of the LU. 12 or 16 KHz tones as seen by the LU will be attenuated a minimum of 20 dB compared to the levels on the customer side.

1.02 Line Conditions

Line conditions such as leakage, foreign potentials, lighting, and earth potentials are the same as the LU.

2. CONNECTING CIRCUITS

2.01 Unit Layout

A fully equipped PPMU provides for 64 lines into the LU. It contains one Control and Reverse Battery Test Pack (TN996), one Tone and Tone Test Pack (SN502), up to 16 line applique packs (SN448 and/or SN449), and one power converter (494LA).

2.02 Bellpack Power Converter (494LA)

The Bellpack power converter takes -48 volts input, providing +5 and +12 volt output power for the TN996, SN502, SN448, and SN449 circuit packs.

2.03 Control and Reverse Battery Test Circuit (TN996)

Control circuitry allows the MCU to control and check the state of PPM circuits. Along with control, the TN996 provides battery reversal test circuitry for SN448 and a frequency detector and pulse width detector test circuitry for the SN449.

2.04 Tone and Tone Test Circuit (SN502)

The SN502 circuit generates the 12 KHz and 16 KHz tone clock supplied to the SN449. In addition to supplying this tone, the SN502 in combination with the TN996 circuitry tests the SN449.

2.05 Battery Reversal Applique Circuit (SN448)

The SN448 applies battery reversal pulses to the subscriber's line, incrementing a charge registration device or collecting coins from a pay phone. There are four circuits per plug-in.

2.06 Tone Applique Circuit (SN449)

The SN449 applies 12 KHz or 16 KHz tone pulses to the subscriber line, incrementing a charge registration device or collecting coins from a pay phone. There are four circuits per plug-in.

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