



Introduction

EQ-90 Group Delay/Amplitude Equalizers are used in satellite transmit/receive terminals to compensate for non-linear delay distortions and amplitude slope generated by the satellite, filters, waveguide, or inter-facility links. Fully compliant with DOMSAT and INTELSAT/CCIR standards, these units interface readily with the uplink/downlink chain.

Features

- Single or dual channel models
- One Rack Unit (1 RU) size
- 70 or 140 MHz IF
- 6 or 10 group delay sections per channel
- Amplitude slope adjustment
- +15 dB gain
- Interfaces directly with V90, V901, and ARC
- Continuously variable group delay and amplitude slope
- Fully compliant with all DOMSAT and INTELSAT/CCIR standards

Description

The EQ-90 equalizer is a 1RU assembly that can be configured for single or dual-channel operation at 70 or 140 MHz.

Each channel of a dual-channel unit is completely independent of the other, including power supplies and fault/status monitoring capability. The dual-channel unit is a compact, lower-cost alternative to installing two single-channel units.

The number of group delay sections required depends upon the IF bandwidth, channel capacity, and RF carrier frequency. Each channel can have 6 or 10 delay sections. For narrow bandwidth applications, 6 delay sections are generally sufficient, unless the RF carrier frequency is located near the useable transponder band edge.

Operation

EQ-90 equalizers offer exceptional flexibility of delay/amplitude response shaping. The equalizer module permits virtually any delay shape within a considerable range of adjustments.

The delay equalizer module has 6 or 10 sections that may be switched in or out of the through-path, with continuously adjustable delay magnitude and frequency (parabolic or linear delay), as well as amplitude/slope correction. For example, two sections can double the delay magnitude. The frequency may be varied to provide flat, "double-humped," true parabolic delay and slope response. It can also be adjusted to provide delay ripple. An amplitude equalizer section provides continuous adjustment for cable amplitude/slope equalization.

EQ90 - Configuration Selection Guide

| | EQ90 - | CHAN () | IF () | SECTIONS () |
|------------------|--|-------------|-------------|-----------------|
| Channels: | Single Dual | (S) (D) | | |
| IF: | 70 MHz 140 MHz | | (7) (14) | |
| Sections: | 6 Section 10 Section (70 MHz only) | | | (6) (10) |
| Examples: | EQ90-S76 is a single channel, 70 MHz, 6 section unit EQ90-D710 is a dual channel, 70 MHz, 10 section unit | | | |

Specifications

Input/Output Characteristics

| | |
|---------------------------------|--|
| Frequency | 70 ± 18 MHz 140 ± 36 MHz |
| Level | -15 dBm, maximum, single carrier -18 dBm, maximum, multi-carrier composite |
| Impedance | 75 Ohms, unbalanced |
| Return Loss | 20 dB, minimum |
| Connector | BNC, female (rear panel) |
| Gain | 15 dB, nominal |
| 1 dB compression | +8 dBm, minimum |
| 3 rd Order Intercept | +18 dBm, minimum |
| Group Delay | < 2 ns, all equalizer sections bypassed |
| Amplitude Adjustment | ± 3 dB, minimum |
| Amplitude Response | Adjustable to ± 0.15 dB, maximum |
| Delay Adjustment (per section) | 70 MHz, < 15 ns ± 18 MHz, to > 40 ns ± 18 MHz 140 MHz, < 10 ns ± 36 MHz, to >30 ns ± 36 MHz |
| IF Fail Trip Point | Approximately -20 dBm output power |
| Fault/Status Output Type | (1) Sum fail, fail-safe, form "C" relay contact, form "A" relay contact |
| Fault | IF output level monitor, internal power supply monitor |
| Connector | 9-pin D male |

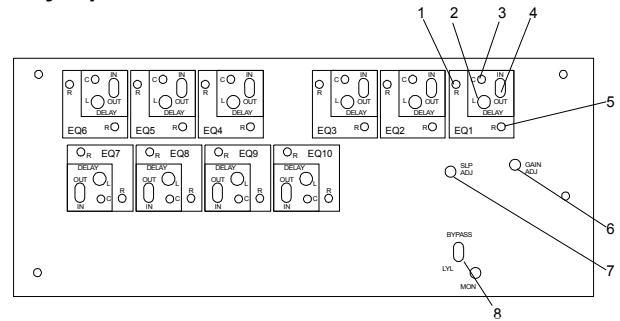
Primary Power Requirements

| | |
|-------------------|--------------------------------|
| Voltage | Universal input, 90 to 265 VAC |
| Frequency | 47 to 63 Hz |
| Power Consumption | 15 W per channel, nominal |

Environmental

| | |
|-------------------------------------|--|
| Temperature | |
| Operating | 0 to 50°C (32 to 122° F) |
| Non-Operating | -30 to +75°C (-22 to 167° F) |
| Maximum Altitude | |
| Operating | 10,000 feet (3,048 meters) |
| Non-operating | 40,000 feet (12,192 meters) |
| Humidity | |
| Operating | 0 to 95% (non-condensing) |
| Non-operating | 0 to 95% (non-condensing) |
| Dimensions (height x width x depth) | 1.75" x 17" x 20" (4.44 x 48.26 x 50.80 cm) |
| Weight | 15 lbs (6.8 kg) |

Delay Equalizer Board



| Item | Nomenclature | Function |
|------|------------------------|--|
| 1 | R Switch | Used to adjust the amplitude tilt. |
| 2 | L Switch | Used to adjust the delay peak magnitude. |
| 3 | C Switch | Used to adjust the delay peak center frequency. |
| 4 | IN/OUT Switch | Used to insert an equalizer delay section to, or remove from, the signal path. |
| 5 | R Switch | Used to adjust the amplitude response. |
| 6 | Gain ADJ Potentiometer | Used to set the IF output signal gain (nominally 15 dB). |
| 7 | SLP ADJ Potentiometer | Used to provide ± 3 dB amplitude slope equalization. |
| 8 | BYPASS/LVL MON Switch | Used to activate the IF output signal level monitoring function. The minimum signal level required to avoid an alarm condition is -20 dB. In the BYPASS position, the signal level is not monitored, however a power supply failure will result in an alarm condition. |