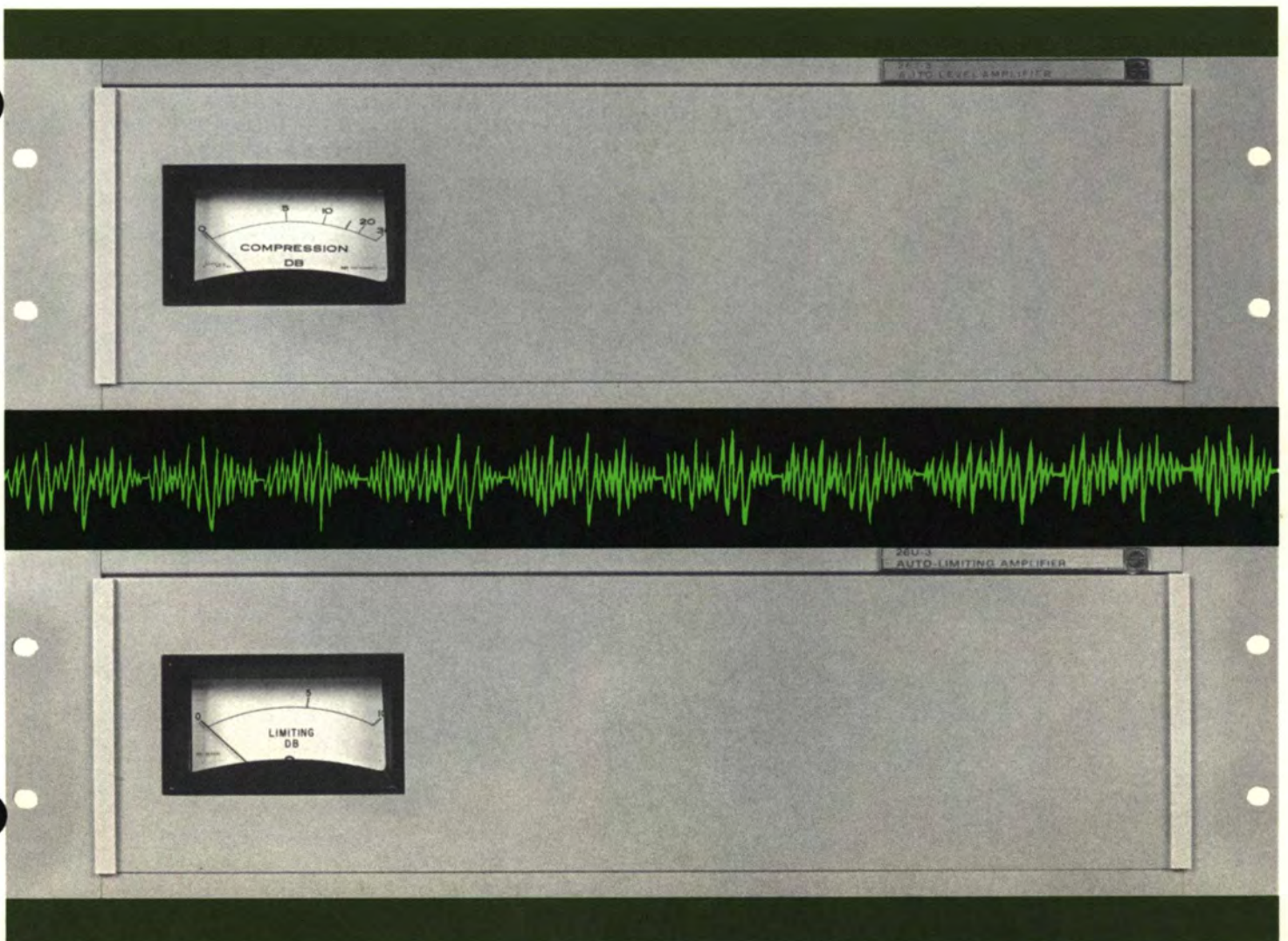


26J-3 Compression Amplifier/26U-3 Limiting Amplifier



26U-3 Limiting Amplifier

The basic purpose of the 26U-3 is to ensure that peak signals are attenuated sufficiently to prevent over-modulation of the transmitter output. Some "soft" means of accomplishing this is desirable to keep distortion, due to clipping, at a minimum, and yet keep the overall signal level as high as possible. This has been accomplished by utilizing optimum attack and release times for the AGC signal. Since the 26U-3 is normally used in connection with the 26J-3 compression amplifier, the limiting required by the 26U-3 is of reasonably short periods.

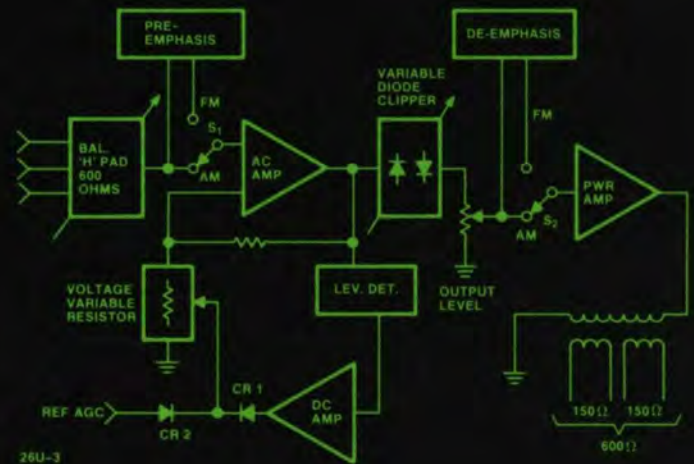
In the 26U-3 block diagram, at lower right, the output of the AC amplifier drives a single level detector. The detector develops an AGC voltage that is controlled by an RC network. The shaped AGC signal is sent through the DC amplifier to provide impedance and level matching. The resistance value of R is controlled by either the DC amplifier thru CR1 or by the reference AGC through CR2. Whenever the input signal level is large enough to develop an AGC voltage that is larger than the reference AGC, the AC amplifier begins to compress the peak signals in a manner determined by the shape of AGC voltage. Fast attack time and release time corresponding to normal program level fluctuations assure a more constant output signal level.

The AGC signal is passed through a DC amplifier which drives a relative gain indicating meter and the voltage controlled resistor (R), which controls the gain of the AC amplifier. This operation is the same as described for the 26J-3.

In normal transmitter installations the peak limiting amplifier is the final signal conditioner prior to the modulation circuitry. It thus becomes the responsibility of this unit to provide adequate means to keep transmitter over-modulation at an absolute minimum while maintaining average modulation at the highest possible level. The Collins 26U-3 Limiting Amplifier retains the proved method of diode clipping following the automatic gain control circuitry, and provides the operator the option to control the amount of clipping he desires. This, of course, may be significantly different from one installation to another, depending on the type of program material transmitted. The variable clipper shown in the block diagram enables the operator to select only one or both signal peaks for clipping. He may also adjust the amount of clipping from no clipping at all to approximately 6 db continuous clipping, referenced to a continuous sine wave. Both controls are a "behind the panel" adjustment so that inadvertent adjustment is impossible.

Manual control switches, S₁ and S₂, engage pre-emphasis and de-emphasis networks for FM transmitter installations. The pre-emphasis network enables the automatic gain control amplifier to attenuate the higher frequencies to a greater extent. This feature is necessary to compensate for the pre-emphasis of signals in an FM transmitter. The de-emphasis network, controlled by S₂, matches the pre-emphasis network to reestablish proper signal level relationship over the audio bandwidth.

The result of these additional functions allows the 26U-3 Limiting Amplifier to be used in either AM or FM installations. Because of the time constants chosen, cross-coupling for stereo is unnecessary, thus enabling any mono broadcast station utilizing the 26U-3 to convert to stereo operation.



26U-3



Specifications

| | 26J-3 | 26U-3 |
|--|--|--|
| Frequency Response | 50-15 kHz Flat within 1 db | 50-15 kHz Flat within 1 db |
| Total Distortion | Less than 1% at maximum output & all compression levels | Less than 1% at maximum output & all compression levels |
| Automatic Gain Control Range | 30 db dynamic range min. | 10 db dynamic range min. |
| Compression Ratio | 15:1 minimum | 10:1 minimum |
| Normal Input/Output Levels | 10 dbm | 10 dbm |
| Maximum Output Levels | 20 dbm | 20 dbm |
| Input Impedance | Fully balanced 600 ohms | Fully balanced 600 ohms |
| Output Impedance | Dual floating 150-ohm secondaries for any 600 or 150 connections | Dual floating 150-ohm secondaries for any 600 or 150 connections |
| Automatic Gain Control Threshold | 20 dbm below normal input | Not applicable |
| Gain Below Threshold | Automatically returns to nominal gain after extended signal pause | Not applicable |
| Suggested Input Level Range | + 30 to - 15 dbm | + 20 to - 5 dbm |
| Power Requirements | 30 watts max. @ 115 - 120 vac 60 Hz | 30 watts max. @ 115 - 120 vac 60 Hz |
| Weight | 15 lbs. max. | 15 lbs. max. |
| Physical Dimensions | 5¼" H x 15¾" D, std. 19" EIA rack mtg. | 5¼" H x 15¾" D, std. 19" EIA rack mtg. |
| Peak Output Control | Not applicable | Adjustable clipping symmetrical or unsymmetrical |
| AM/FM Operation | Either | Either |

Features

- 26J-3 has 10 db more automatic gain control range than units heretofore available.
- 26J-3 and 26U-3 provide a true balanced 600-ohm input, not just a floating input. Both units provide either 600-ohm or 150-ohm operation.
- Either unit may be added to a station's existing amplifier to establish stereo operation.
- The 26U-3 will operate in either AM or FM installations. Converting from one to the other is achieved with simple changes of two internal switches.
- In the 26U-3, symmetrical or unsymmetrical clipping is selected with a switch. Soldering of jumper wires on a circuit board is not required.

COMMUNICATION / COMPUTATION / CONTROL



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