Studer D19

Echo Canceller



STUDER
PROFESSIONAL AUDIO EQUIPMENT

Studer D19

The Echo Canceller

The Studer Echo Canceller is a reliable and easy-to-use system for a problem in digital live broadcasting: monitoring signals return to the commentator with a noticeable delay. The resulting irritating echo effect is suppressed with the Echo Canceller.

- Echo suppression for live broadcast monitoring
- Compensates satellite and MPEG Codec processing delays
- Automatically adapts to delays of up to 1 second
- Easy operation with automatic or manual delay setting
- Compact Studer D19 design



Operation

– The Echo Canceller is operated locally with a few frontpanel elements.
– A 3-digit delay indicates the currently selected pre-delay in the range of 0...999 msec.
– With the mode switch one of the following modes can be selected:

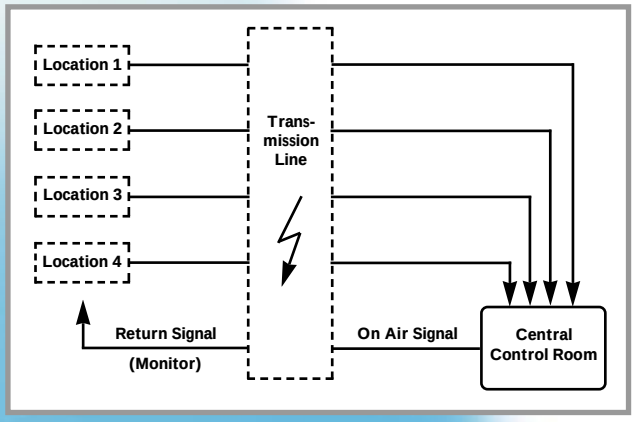
CONT

In continuous mode the pre-delay circuit is adapting automatically to the current situation. The delay line is set after having detected a reliable correlation between local and return signal. This mode is selected for environments with changing configurations. ■

The problem

Digital transmission in outside broadcast has a number of obvious advantages but also some unwanted side effects. In complex live broadcasts the signal can sometimes be connected via cable and sometimes via satellite; in some cases the data is transmitted in bit reduced form. Delays of up to several hundred milliseconds are the result. This becomes particularly noticeable if the broadcast signal returns to the source as a monitoring signal.

A typical example is sport broadcasting. The program is switching from one location to another, the reporter is listening and waits. When instructed by the control room, he will start to speak ... and will be confronted with his own delayed voice in his headset. ■





MAN

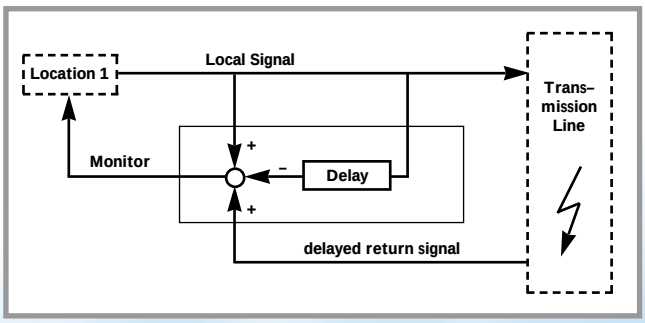
If the installed configuration has a known delay, the manual mode will be the preferred one. It allows to set the pre-delay with the up and down key, to increment or decrement the current delay. ■

ONCE

The one-shot mode is to set the delay line once, it then remains constant. It combines the advantages of continuous and manual mode - automatic adaption and reliable operation with low quality return signals. ■

The solution

For suppressing line reflections and feedback in telephone applications a solution in the form of a echo compensating circuit was already developed in telephone hybrid applications. Corresponding algorithms for the digital realisation are available, but their working range is not wide enough.
The Studer Echo Canceller is looped locally (in the OB van) into the return line. By using an additional delay line (0...1 sec) the standard algorithm now works in its optimal range of 5...20 msec. ■



The algorithms will suppress the delayed commentator signal from the incoming on-air signal. The reporter hears all sound sources except his own delayed voice.
In place of the suppressed signal, the local comment can be added directly, allowing the reporter to hear his own voice undelayed.
The delay line can be set automatically through a correlation measurement from the local and delayed signal, or have a fixed setting if the data are known. ■



With the direct volume potentiometer the volume of the directly added local signal is adjusted from mute to full level.

The return signal may be bypassed to the local output by means of the bypass key.

The display field provides further information about selected modes and the status of the pre-delay adjustment. ■

Specifications

■ Input / Output

– LOCAL IN Analog line input of local source signal
XLR, balanced, transformer coupled
Sensitivity -6 ... +24 dBu

– FAR IN Analog line input of return signal
XLR, balanced, transformer coupled
Sensitivity -6 ... +24 dBu

– LOCAL OUT Analog line output of processed return signal
XLR, electronically balanced
Sensitivity -6 ... +24 dBu

■ General

Sampling Rate	16 kHz
Bandwidth	140...7300 Hz
Compensation Range	1 sec maximum
Echo Suppression	typ. 15...35 dB, depending on quality of return signal
Measuring Rate	typ. 20...30/min.
Power Supply	90...260 V AC, 50...60Hz
Mechanical Size	19" rack mount size, 1 HU
Ordering Number	60.662.001.00

