

**STUDER**  
PROFESSIONAL AUDIO EQUIPMENT



# PRODUCT INFORMATION

## **STUDER** **DI9 Echo Celler**

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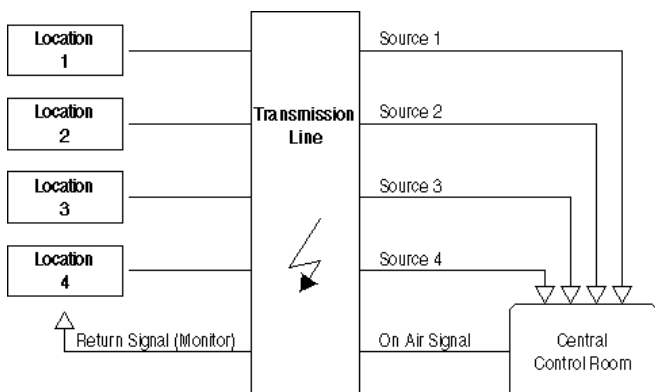
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**PI 11/96, Order No. 10.85.0161 (ED 0397)**

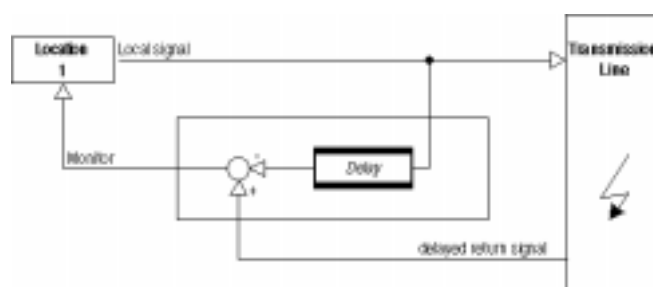
## STUDER Echo Canceller



The Echo Canceller has been designed to overcome problems in live broadcasting, when transmission delays due to digital transmission and data compression processes do not allow using the broadcast signal as monitoring source. When switching between different channels during on-air programs, the local reporters should be able to monitor the final broadcast signal to keep the overview and react to forced switchings due to more important events on other channels (e.g. sports events).

For listening to the current program without being disturbed by the own delayed voice, the echo of the local signal has to be deleted from the return signal.

The delay range of currently available echo suppression products like telephone hybrids is not sufficient for these situations (some 100 ms). The Echo Canceller is using a separate delay line which allows to remove echo signals up to one second. This pre-delay either adapts to the currently measured delay automatically, or it can be set manually for fixed installations.



After being removed from the returning broadcast signal, the local source can be directly added again. The volume of this direct signal is adjustable, and it is added automatically when a return signal is present.

## I. Operation



The Echo Canceller is operated locally with a few frontpanel elements. A serial remote port will be available as option. In addition to the power switch, the following elements are provided.

A 3-digit display indicates the currently selected pre-delay in the range of 0...999 ms.

With the **MODE** key, one of the following operating modes can be selected:

**CONT** In continuous mode the predelay circuit is adapting automatically to the current situation. It is looking for a correlation between local and return signal; the delay line is modified after two valid measurements in sequence.

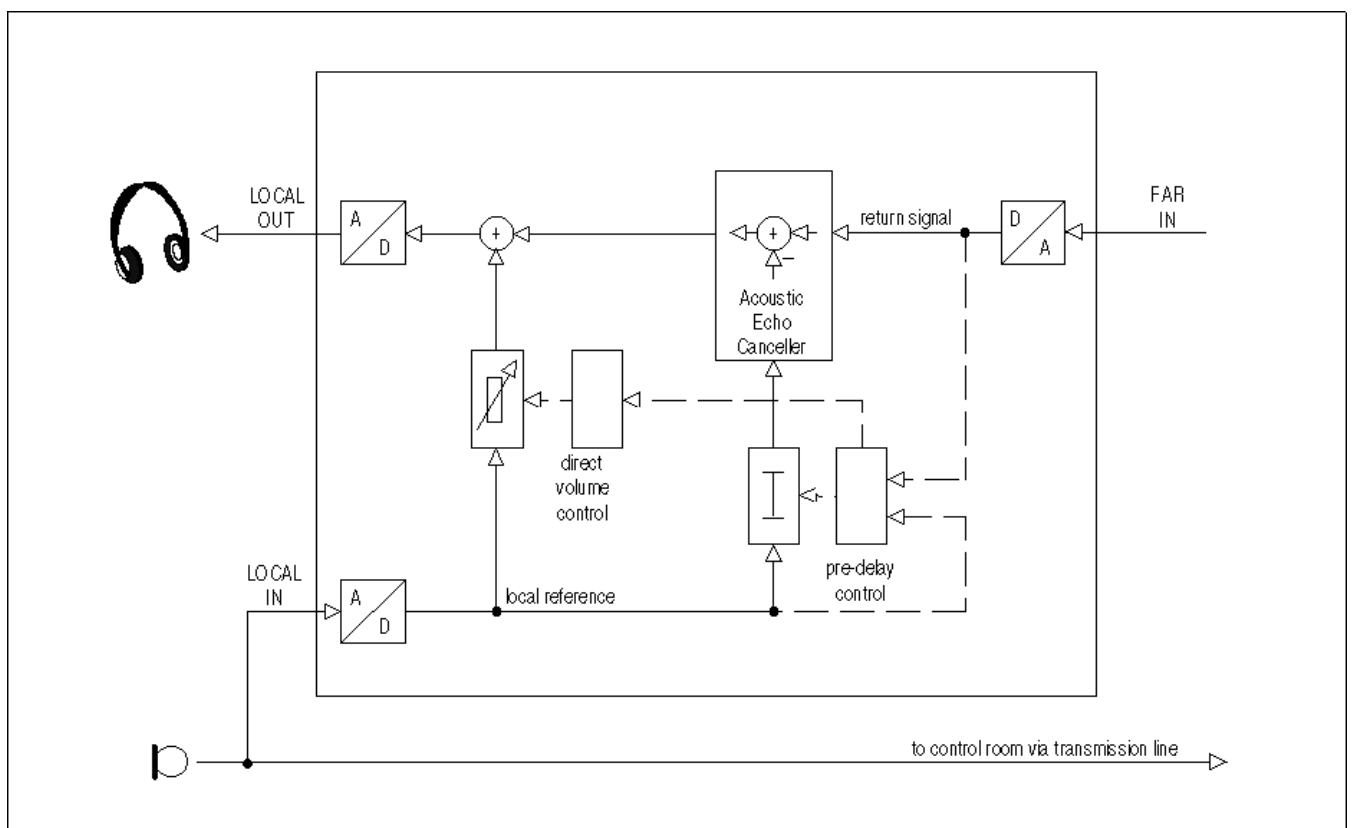
**MAN** The manual mode allows to set the pre-delay with an **UP** and a **DOWN** key, which increment or decrement the current delay.

**ONCE** The one-shot mode is setting the delay line once. After the first two valid measurements in sequence the delay will remain constant.

The return signal may be bypassed to the *LOCAL OUT* output with the **BYP** key.

With the **DIRECT VOLUME** potentiometer, the volume of the directly added local signal is adjusted from mute to full level position.

A **LOCK** indication is switched on during correct operation of the unit. Whenever no correlation is found or the delay time is being modified, the **LOCK** indication goes off.



2. Inputs / Output

- LOCAL IN**  
Analog line input of local source signal (XLR, transformer-balanced)
- FAR IN**  
Analog line input of return signal (XLR, transformer-balanced)
- LOCAL OUT**  
Analog line output of processed return signal (XLR, balanced)

3. Specifications

- Sampling Rate 16 kHz
- Bandwidth 140...7300 Hz
- Compensation Range 1 s maximum
- Echo Suppression typ. 15...35 dB, depending on quality of return signal
- Power Supply 90...260 V<sub>AC</sub>  
50...60 Hz
- Mechanical Size 19" rack mount size, 1 HU