

# LEVEL & FREQUENCY DETECTOR

FOR MODEL 200  
AUTOMATIC PLOTTING SYSTEM

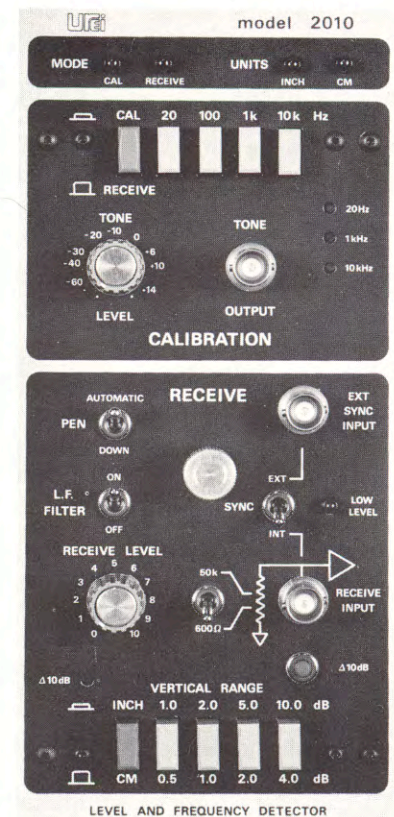
MODEL  
2010  
PLUG-IN MODULE

The 2010 Level and Frequency Detector is one of a series of plug-in modules for UREI'S Model 200 X-Y plotter. The 2010 detects the frequency and relative level of pre-recorded or remote signal sources, such as test recordings, test tapes or any audio signal generator. It then provides DC analog voltages, proportional to the frequency and level values of the input signal, to drive the Model 200 X-Y plotter. Thus are produced hard copy amplitude vs. frequency plots on standard K & E or DIN graph paper of any coherent audio signal from 20 Hz to 20 kHz with previously unobtainable accuracy.

A unique feature of the Model 2010 plug-in is a "smart" frequency detection circuit, which is able to distinguish between coherent test signals and random (stochastic) signals such as voice announcements on records or tapes. During signal interruptions, the last measured frequency is stored in a memory which holds the Model 200 carriage arm at that position until the system is updated with a new frequency and level reading. Also, during interruptions or random signals (such as announcements) the pen is automatically lifted from the paper to prevent invalid markings on the response plot.

The frequency detection circuit may be synchronized from either the input signal or a different external source. This enables the user to plot channel separation, crosstalk between tape head sections, and similar parameters. The Model 2010/200 system surpasses any comparable production or laboratory equipment in its accuracy, stability and repeatability of measurements, and yet is simple to operate under widely varying environmental conditions.

The 200 system with Model 2010 Level & Frequency Detector plug-in is ideal for all phases of audio frequency equipment research and development, manufacturing, quality control, and maintenance.



2010 PLUG-IN MODULE

## APPLICATIONS:

Audio response measurements of:

- Tape recorders/reproducers
- Phono cartridges
- Tone arm resonances
- Stylus wear
- Transmission lines
- Delay Lines
- Optical/magnetic sound heads
- Complete audio systems

## FEATURES:

- Plug-in versatility
- Simple operation
- Built-in calibration standards
- Calibrated pilot tones
- Automatic rejection of spurious signals
- 64 dB dynamic range
- 0.05 dB resolution, 20 Hz to 20 kHz
- Metric and English scaling
- Automatic pen lift and drop



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MODEL  
2010

# TECHNICAL SPECIFICATIONS

## ELECTRICAL

### Receive Section

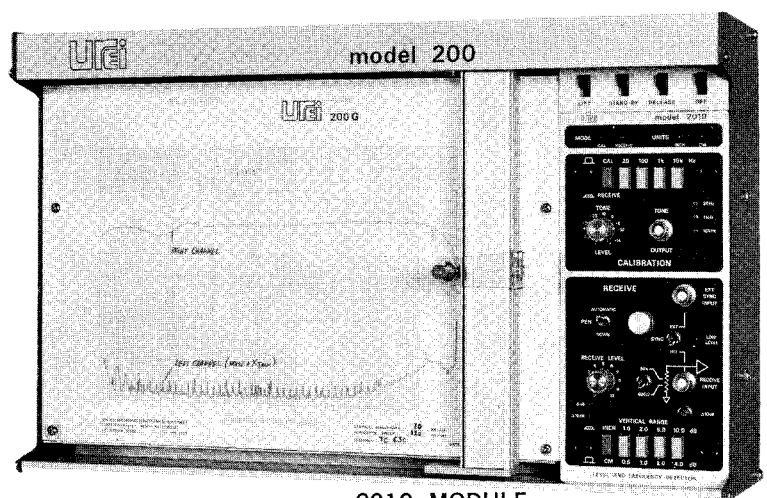
Sensitivity	: 50 mV RMS for 0 dB reference at center of Y axis.
Input Impedance	: 50 kohm or 600 ohm switch selectable
Input Attenuator Range	: >60 dB, continuously variable
Dynamic Range	: 64 dB (displayed)
Vertical Range	: 1 dB, 2 dB, 5 dB, 10 dB/inch, 0.5 dB, 1 dB, 2 dB, 4 dB/cm
Vertical Range Check	: $\Delta$ 10 dB, calibrated to $\pm$ 0.1 dB
Display Accuracy	: $\pm$ 0.1 dB, 20Hz to 20 kHz $\pm$ 0.5 dB, L.F. Filter ON
Calibration Stability	: $\pm$ 1% / 24 hours (after warmup)
Signal Detection	: Any coherent signal with S/N ratio of: 30 dB.
Frequency Range	: 20 Hz to 20 kHz
Sweep Synchronization	: Internally from received signal, or externally from SYNC input
Sync Signal Input	: 20 mV to 1V RMS
Sync Input Impedance	: 10 kohm
LED	: Indicates that the signal level of the selected frequency reference is too low for reliable tracking.
L.F. Filter	: 12 dB/octave tracking filter to remove low frequency components from the signal

### Calibration Section

Tone output	: Sine wave
Tone Level	: -50 dBm to +14 dBm, continuously variable
Output Impedance	: $\leq$ 3 kohm
Calibrated Discrete Freq.	: 20 Hz, 100 Hz, 1 kHz, 10 kHz, $\pm$ 1%
Amplitude Uniformity	: $\pm$ 0.5 dB, 20 Hz to 10 kHz

## CONTROLS

CAL-RECEIVE	: Push-push button to select either CAL or RECEIVE mode
4 PUSHBUTTONS	: Interlocked, to select precision internal oscillator frequencies for calibration of X-Y recorder
TONE LEVEL	: Adjusts level of calibration tone output
INPUTS, OUTPUT	: BNC connectors
RECEIVE LEVEL	: Adjusts input sensitivity
50 k/600 ohm	: Toggle switch to select input termination
$\Delta$ 10 dB	: Momentary pushbutton which changes the input sensitivity 10 dB to check vertical range calibration
INCH/CM	: Push-push button to select inch or metric vertical scaling
VERTICAL RANGE	: 4 interlocked pushbuttons to select calibrated vertical ranges
SYNC Switch	: Toggle switch selects either the received signal or the external SYNC Input as a frequency reference
L.F. Filter Switch	: Toggle switch. In the ON position the receive signal is filtered to remove unwanted low frequency components.
PEN Switch	: Toggle switch. In AUTO-MATIC position the pen will lift in the absence of a valid coherent signal. In DOWN position, this function is disabled and the pen will remain in writing position.



2010 MODULE  
IN MODEL 200 MAIN FRAME