

Two Channel Extension Unit

type WH 0490

for use with Digital Frequency Analyzer Type 2131

FEATURES:

- Expansion of 2131 1/3 octave display by two extra channels
- Each channel selectable A, B, C, D or linear weighting
- Each channel selectable IEC "Fast", "Slow" or "Impulse" response
- Allows hold of spectrum as detected signal level passes through a maximum

USES:

- Display of A, B, C, D or linear weighted level on 2131 with 1/3 octave spectrum
- To trigger Linear averaging of transients and impulses
- Detection of maximum spectrum in, e.g., pass-by noise measurements

Introduction

The Two Channel Extension Unit WH 0490 extends the analysis possibilities already available with the Digital Frequency Analyzer Type 2131 by adding a further two channels when a 1/3 octave spectrum is being measured. Each of these two channels can be set to measure the A, B, C, D or linearly weighted signal levels with IEC "Fast", "Slow" or "Impulse" response. The signal levels in each channel are displayed in the two rightmost positions of the 2131 display and may be read using the 2131 channel selector. They may also be output in analog or digital read-outs as the last two channels of a 1/3 octave spectrum.

In addition to the above WH 0490 adds two other functions. The first function allows the start of a linear average to be triggered when the input signal passes through a preset trigger level. The average then proceeds as normal. The second function allows a spectrum to be stored in the 2131 when the detected signal level in the second of the two channels of WH 0490 passes through a maximum. When the detector response of the 2131 and WH 0490 is the same (e.g., "Fast" on WH 0490 and exponential averaging 1/4 second on the 2131), the spectrum of the maximum detected signal level will be held. These two functions may be used in both octave and 1/3 octave analysis.

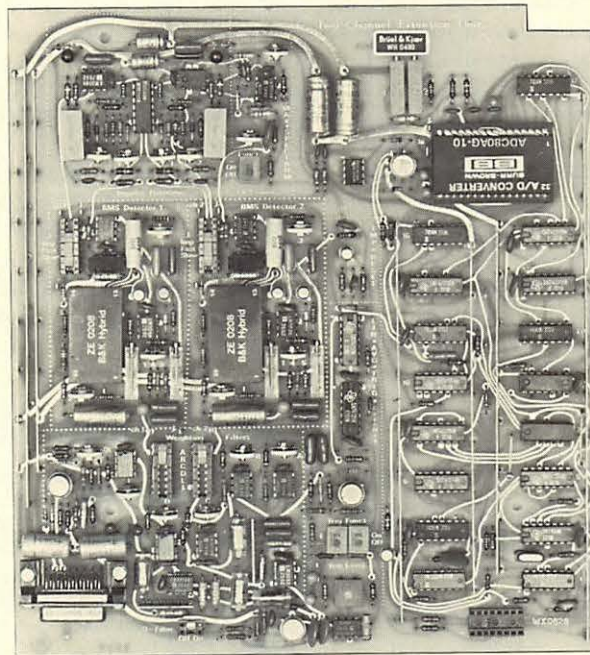
Description

WH 0490 is an extra circuit card which is mounted inside the 2131 (this

involves a slight modification of the 2131). Its simplified block diagram is shown in Fig. 1. The controls for selecting the weighting and detector response of each channel, and for enabling the triggered linear average and the maximum spectrum functions are located on the circuit card. Access to these controls is obtained by sliding back the left-hand side panel of the 2131.

The input signal to WH 0490 is taken from the output of the 2131 anti-aliasing filter. This is fed to the A, B, C and D Weighting Networks. Since the D Weighting network peaks con-

siderably above 1 kHz, it is equipped with its own Overload Detector (other overloads are detected by the 2131). Two parallel channels of detection with selectable "Fast", "Slow" or "Impulse" (Ch. 1) or "Impulse Hold" (Ch. 2) response can be switched to the outputs of the various weighting networks or to the linearly weighted input signal. Finally, the detected signal levels are converted into digital form for transmission to the 2131 for display. Display takes place in channels 53 and 54 of the 2131 display and is disabled when the 2131 is set to display octave spectra. Their display is also disabled when the 2131 input



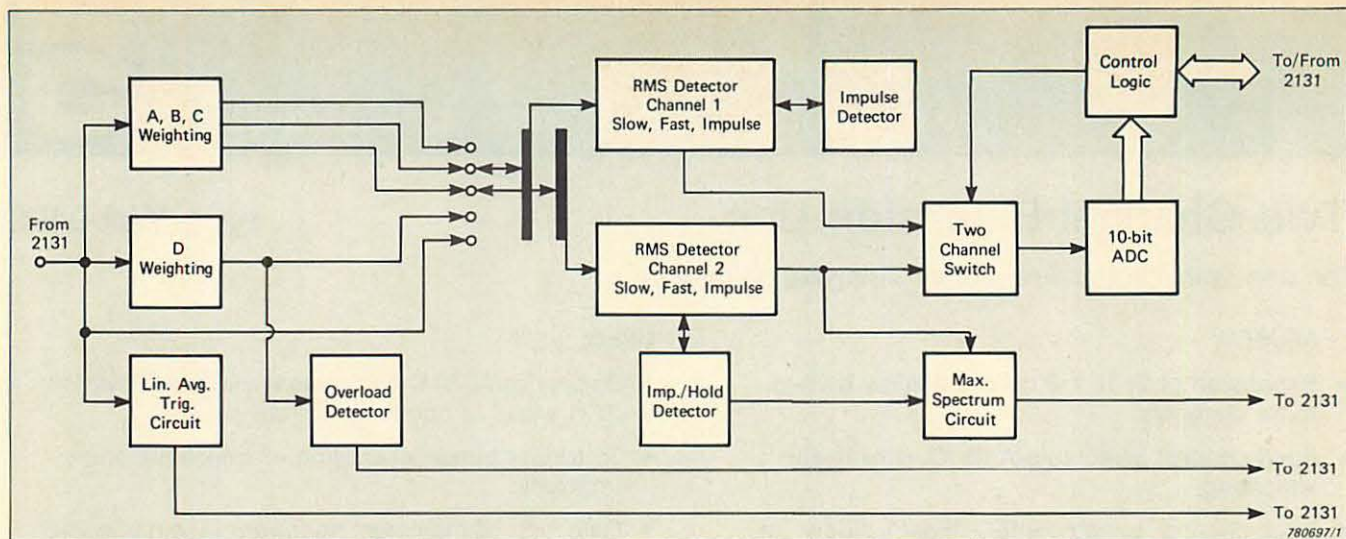


Fig. 1. Simplified block diagram of the WH 0490

signal is A-weighted, which prevents the possibility of a double weighting.

The trigger and maximum spectrum functions of WH 0490 can be used when the 2131 is set to display either octave or 1/3 octave spectra. The Linear Averaging Trigger Circuit has a trigger level adjustable over the top 40 dB of the 2131 display range with selectable positive or negative slope. When enabled, it senses the input signal to WH 0490. The Maximum Spectrum Circuit senses the output of channel 2 of WH 0490, and operates the 2131 "Store" function when this output passes through a maximum.

Options for the WH 0490

WI 1624 Lin. Averager, mounted on the rear side of the Extension Unit. True L_{eq} values are calculated when detector response Fast/Slow is selected, while averaging over the impulse detector response allows measurements according to DIN 45 635 part 19, ANSI S1.29 and ECMA 74.

WI 1211/WB 0341 Allows external control of all WH 0490 functions. WI 1211 (control board) is mounted on the WH 0490 and control can be exercised from the WB 0341 control box via the Remote Control socket of the Analyzer.

Note that the WH 0490 unit can only be fitted with one of the options, WI 1624 or WI 1211, simultaneously since the room available (behind the side cover of the 2131) is insufficient to accommodate both options. Also note that a special controller, WH 0333, must be mounted in the 2131 if Expansion Units 5765 and WH 0490 are used together.

Specifications WH 0490

WEIGHTING FILTERS:

A, B, C filters to IEC Recommendation 179
D filter to proposal for measurement of jet engine noise

LINEAR FILTER:

Frequency Range: 2 Hz to 20 kHz, ± 1 dB re 1 kHz
Approx. 3 dB limits: 0.8 Hz and 27 kHz

RMS DETECTORS:

Detector Characteristic: true RMS logarithmic detection

Crest Factor Capability: 3,5 (11 dB) at FSD, increasing to 30 (30 dB) at 19 dB below FSD
Response: Slow, Fast and Impulse to IEC 179

DISPLAY:

Displayed in two rightmost positions of 2131 display screen when 2131 is set to display 1/3 octave spectra

ALPHANUMERIC READ-OUT:

Levels read out on 2131 display when channel selector set to channels 53 and 54

ANALOG OUTPUT:

Read out as the last two channels of a 1/3 octave spectrum immediately after the 20 kHz channel

DIGITAL OUTPUT:

Read out as the last two channels of a 1/3 octave spectrum immediately after the 20 kHz channel

TRIGGER FUNCTIONS:

Maximum Spectrum: causes spectrum to be stored when detected level in channel 2 of WH 0490 passes through a maximum

Linear Average Trigger: starts a linear average when the conditioned input signal passes through a preset trigger level. Level adjust-

able over top 40 dB of 2131 display range, selectable positive or negative slope

DIMENSIONS:

Height: 234 mm (9,21 in)
Width: 214 mm (8,42 in)
Card mounted inside 2131

ACCESSORIES AVAILABLE:

Control Board..... WI 1211
Control Box..... WB 0341
Controller..... WH 0333
Linear Averager..... WI 1624

This instrument is a development of the Brüel & Kjær Systems Engineering Group and is not a standard production instrument. Specifications can be modified, on a contract basis, to meet individual requirements.

For prices and delivery time, please contact your local B & K representative.