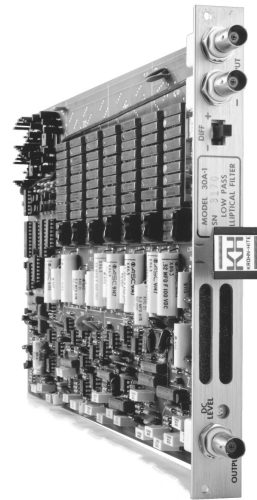


## Model 30A Low-Pass Elliptical Plug-In Filter Card

- **Frequency Range:** 1Hz to 99kHz
- **Filter Type:** 7-Pole, 6-Zero, Elliptical
- **Attenuation Slope:** 115dB/Octave
- **Stopband Attenuation:** >80dB
- **Selectable Input and Output Gain**
- **Selectable Input Type:** Differential and Single-Ended



### DESCRIPTION

The Model 30A Series low-pass, elliptical filter/voltage gain amplifier is one of many plug-in filter cards used in the Models 3905B/3905C/3916B/3916C Programmable Filter Systems chassis.

### FILTER FEATURES

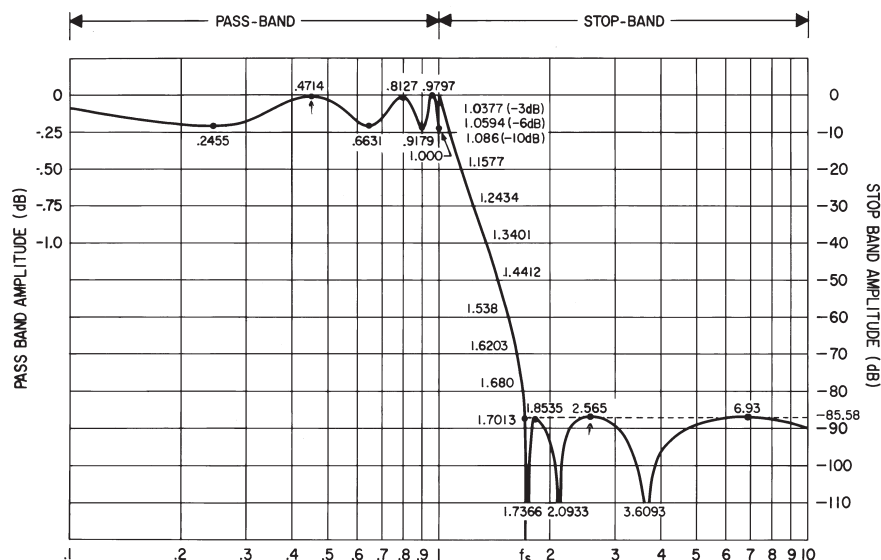
As an elliptical filter, the Model 30A Series has a tunable cutoff frequency range from 1Hz to 99kHz, a roll-off rate of 115dB/octave and a minimum stopband attenuation of >80dB. Pass-band ripple is typically 0.22dB.

The 30A provides either a single-ended or differential input with a

common mode rejection of >60dB. Input gains up to 40dB in 10dB steps and output gains to 20dB are also provided. The 30A will accept input signals of  $\pm 10V$  peak at 0dB gain and has selectable ac or dc coupling. Overload detectors are standard and assist the user in detecting excessive input signals or incorrect gain settings.

### AMPLIFIER FEATURES

The 30A is also a programmable voltage gain amplifier for applications that require a low noise amplifier. The amplifier has a bandwidth of 1MHz and gains to 60dB, selectable in 10dB steps, and a wideband noise of  $<25\mu V$ .



**APPLICATIONS**

Typical applications for the Model 30A are: anti-aliasing in digital signal processing, separating specific bandwidths of information, enhancing signal-to-noise ratio, low noise pre-amplification and many more. Plug-in cards offering other types of filters with different frequency ranges, slopes and number of channels are also available.

**SPECIFICATIONS**

Specifications apply at 25°C ±5°C.

**FUNCTIONS:** Low-pass filter; voltage gain amplifier.

**FILTER MODE**

**Type:** 7-pole, 6-zero elliptical.

**Attenuation Slope:** 115dB/octave.

**Passband Ripple:** 0.22dB typical, 0.4dB max.

**Tunable Frequency Range fc:** 1Hz to 99kHz.

Frequency Resolution:		
Band	Cutoff Frequency Range (Hz)	Resolution (Hz)
1	1-99	1
2	100-990	10
3	1k-9.9k	100
4	10k-99k	1k

**Relative Gain at fc:** -0.22dB at 1.01fc nominal.

**Cutoff Frequency Accuracy:** ±2%.

**Bandwidth:** dc coupled, dc to fc; ac coupled, 0.32Hz to fc.

**Stopband Attenuation:** >80dB.

**Stopband Frequency (fs):** 1.7fc.

**Insertion Loss:** 0dB ±0.1dB.

**Pre-Filter Gain:** 0dB, 10dB, 20dB, 30dB, 40dB ±0.1dB.

**Post-Filter Gain:** 0dB, 10dB, 20dB ±0.1dB.

**Input Coupling:** ac or dc.

**Wideband Noise (RTI with 2MHz BW Detector):** min. gain, 1kHz cutoff <400µV, max fc, <1mV; Max. gain, <20µV.

**Harmonic Distortion:** -80dB at 1kHz.

**Intermodulation Distortion:** -80dB below full scale volts at 0.7 and 0.9 of max input frequency.

**Spurious Components:** -80dB below full scale with input source <50 ohms.

**DC Stability:** Typically ±10µV/°C.

**Crosstalk Between Channels:** -85dB below full scale with input source <50 ohms.

**AMPLIFIER MODE**

**Bandwidth:** dc coupled, dc to >1MHz min. gain, >400kHz max. gain; ac coupled, 0.32Hz to >1MHz min gain, 0.32Hz to >400kHz max gain.

**Insertion Loss:** 0dB ±0.05dB.

**Gain:** 10dB to 60dB in 10dB steps ±0.1dB.

**Input:** Differential or single-ended +(in phase), -(inverted).

**CMRR:** >60dB to 10kHz; approximately 50dB at 100kHz.

**Sensitivity:** 10mV peak with 60dB total gain for 10V peak output.

**Maximum Input:** ±10V peak at 0dB gain reduced in proportion to gain setting.

**Impedance:** 1M ohm in parallel with 100pf.

**Coupling:** ac or dc.

**Maximum DC Component:** ±100V in ac coupled mode.

**Output:**

**Maximum Voltage (o.c.):** 7Vrms to 200kHz; 3Vrms to 500kHz; 1Vrms to 1MHz.

**Impedance:** 50 ohms.

**DC Offset:** Adjustable to zero volts.

**Harmonic Distortion (1V output):** <-80dB (0.01%) to 10kHz <-60dB (0.1%) to 100kHz..

**Wideband Noise (referred to input, 2MHz BW detector):** 150µV min. gain; 25µV max. gain.

**DC Stability (RTI):** Typically ±10µV/° C.

**CE CERTIFICATIONS****Directive 89/336****Standard CEI EN 50081-1**

Radiated Emission EN 55022 (class B)

Conducted Emission EN 55022 (class B)

**Standard CEI EN 50082-1**

Radiated Immunity IEC 801-3 (1984)

Electrostatic Discharge ESD IEC801-2 (1984)

Fast Transient IEC 801-4 (1984)

**GENERAL**

**Phase Match Between Channels:** 1° typical, 2° max from dc to 0.8fc; 2° typical, 4° max from 0.8fc to fc. For like models in same chassis, otherwise consult factory.

**Amplitude Match Between Channels:** ±0.1dB max from dc to 0.8fc; ±0.2dB max from 0.8fc to fc.

**Crosstalk Between Channels:** >85dB below full scale with input source <50 ohms.

**Switch:** For selection of Input, +(in phase), Differential or -(inverted).

**Input/Output Connectors:** BNC.

**Power:** 15 watts.

**Weights:** 1.75 lbs (.8kg).

**Accessories:** Operating manual.

**OPTIONS**

**Extended 1 Year Warranty:** Part No. EW30A.

**NOTE:** Model 30A plug-in filter/amplifier cards must be used with the Krohn-Hite 3905B/3905C or 3916B/3816C chassis.

Specifications subject to change without notice.