

## VIDEO LOWPASS FILTERS

**SERIES ATLW Stopband Ratio @45dB = 1.32**

**ATCL Stopband Ratio @45dB = 1.14**

**ATBW Stopband Ratio @45dB = 1.08**

**ABW Stopband Ratio @42dB = 1.066**

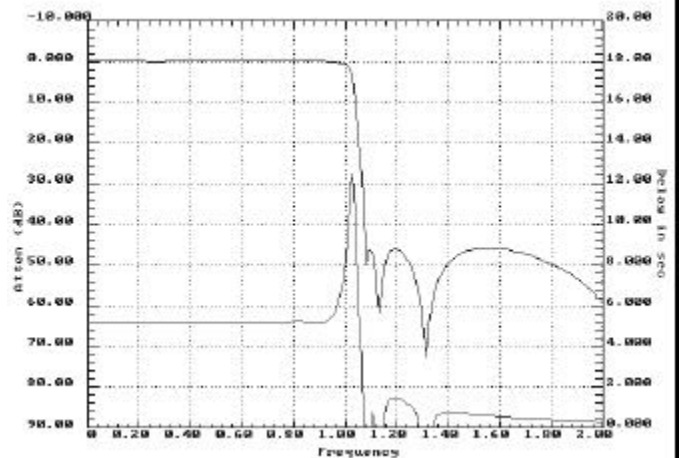
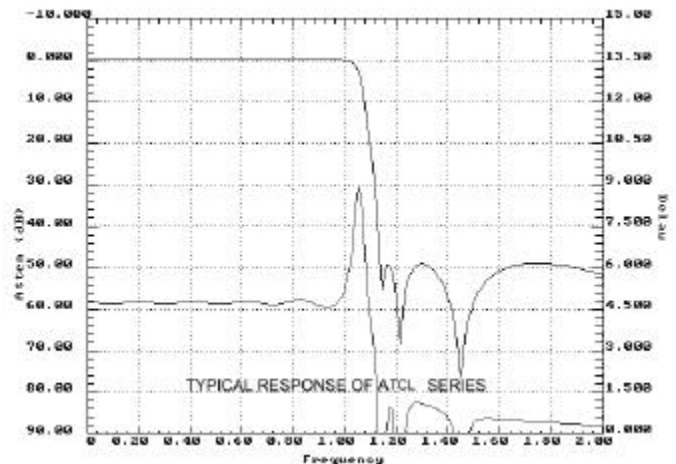
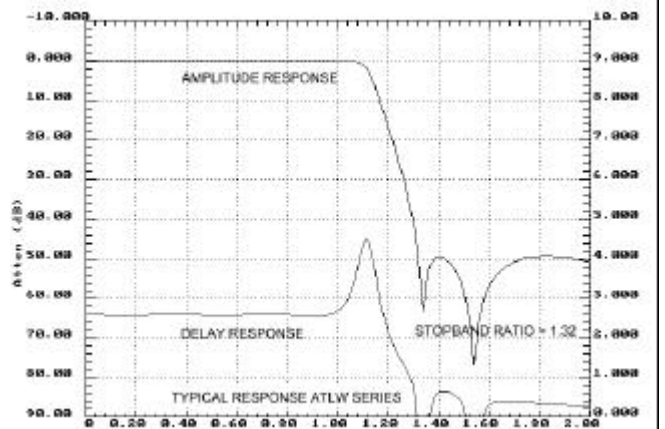
For many years amplitude, Delay and phase corrected filters have found applications in Television Broadcasting, Cable transmission, Direct Satellite Transmission, Analog and Digital Image Processing, Analog to Digital conversion and Computer Graphics. Allen Avionics offers four basic shape factors or stopband ratios in their range of Video Filters.

**ATLW** General purpose filters include amplitude, Phase and Group Delay equalization to improve pulse and bar response. Smooth slower roll off reduces ringing. Can be used as in any Video bandwidth limiting application. Also used as anti aliasing pre filters in analog to digital conversion applications or as post aliasing filters with the addition of  $\sin x/x$  correction.

**ATCL** More complex filter for applications requiring a sharper cutoff rate. The tight control of amplitude, phase and delay of the ATCL series makes them ideal for high performance analog and digital applications.

**ATBW** Almost a Brickwall Filter. The ATBW is a good compromise for sharpness, ringing, insertion loss and cost. The ATBW stopband ratio of 1.08 is close to the ABW series Brickwall ratio of 1.066 but has less ringing, Delay distortion and insertion loss.

**ABW** A true Brickwall Filter. The ABW series is the sharpest cutoff Video filter available anywhere. Tight control of the Amplitude, Phase and Delay Characteristics create a filter unmatched for sharpness, low ringing, insertion loss and cost. Typical NTSC applications use this filter to pass 4.20MHz and reject everything above 4.48MHz which requires a stopband ratio of 1.066. **See Brickwall data sheet.**



# Basic ATLW Specifications

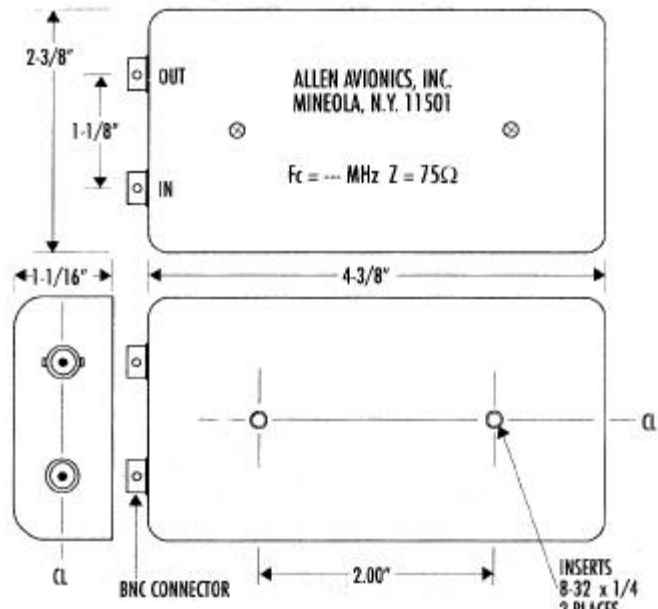
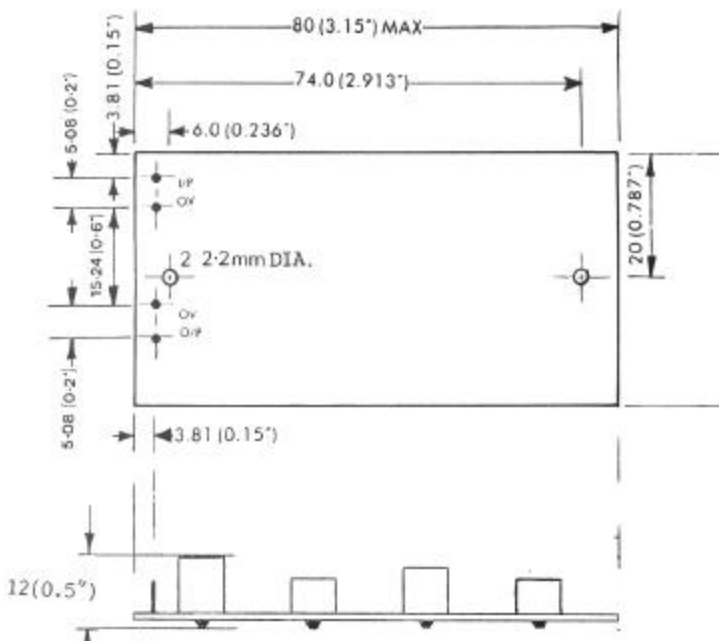
| ATLW PART NUMBER | Fp MHz<br>Ap < .2db | F3dB MHz | Fs, MHz<br>As >45dB | Gd, ns | FGd MHz | Pd ns |
|------------------|---------------------|----------|---------------------|--------|---------|-------|
| ATLW0P46         | 0.46                | 0.52     | 0.61                | 220    | 0.44    | 5500  |
| ATLW0P93         | 0.93                | 1.03     | 1.22                | 110    | 0.89    | 2750  |
| ATLW1P40         | 1.40                | 1.55     | 1.85                | 75     | 1.33    | 1833  |
| ATLW1P87         | 1.87                | 2.06     | 2.47                | 55     | 1.78    | 1375  |
| ATLW2P34         | 2.34                | 2.58     | 3.09                | 45     | 2.22    | 1100  |
| ATLW2P57         | 2.57                | 2.84     | 3.40                | 40     | 2.45    | 1000  |
| ATLW2P80         | 2.80                | 3.09     | 3.70                | 37     | 2.67    | 917   |
| ATLW2P92         | 2.92                | 3.22     | 3.86                | 36     | 2.77    | 881   |
| ATLW3P27         | 3.27                | 3.61     | 4.32                | 32     | 3.11    | 786   |
| ATLW3P74         | 3.74                | 4.12     | 4.94                | 28     | 3.56    | 688   |
| ATLW3P97         | 3.97                | 4.38     | 5.25                | 26     | 3.78    | 647   |
| ATLW4P03         | 4.03                | 4.44     | 5.32                | 25     | 3.83    | 638   |
| ATLW4P21         | 4.21                | 4.64     | 5.56                | 25     | 4.00    | 611   |
| ATLW4P68         | 4.68                | 5.15     | 6.18                | 25     | 4.45    | 550   |
| ATLW4P91         | 4.91                | 5.41     | 6.48                | 21     | 4.67    | 524   |
| ATLW5P15         | 5.15                | 5.67     | 6.80                | 20     | 4.90    | 500   |
| ATLW5P43         | 5.43                | 5.98     | 7.17                | 19     | 5.16    | 474   |
| ATLW5P61         | 5.61                | 6.19     | 7.40                | 18     | 5.34    | 458   |
| ATLW6P08         | 6.08                | 6.70     | 8.03                | 17     | 5.79    | 423   |
| ATLW6P55         | 6.55                | 7.22     | 8.65                | 16     | 6.23    | 393   |
| ATLW7P02         | 7.02                | 7.73     | 9.27                | 15     | 6.68    | 367   |
| ATLW7P49         | 7.49                | 8.25     | 9.89                | 14     | 7.12    | 344   |
| ATLW7P95         | 7.95                | 8.76     | 10.50               | 13     | 7.57    | 324   |
| ATLW8P42         | 8.42                | 9.28     | 11.12               | 12     | 8.01    | 306   |
| ATLW8P89         | 8.89                | 9.79     | 11.74               | 12     | 8.46    | 289   |
| ATLW9P36         | 9.36                | 10.31    | 12.36               | 12     | 8.90    | 275   |

## PERFORMANCE

Passband Flatness: Ripple Less than +/- .1dB  
 Insertion Loss @ 100KHz = 1.0dB Max  
 Impedance = 75 Ohms unbalanced  
 Return Loss = -20dB typical  
 Group Delay Ripple less than +/- 2% of midband delay  
 Stopband Attenuation = 45dB Min  
 Stopband Ratio = 1.32 @ -45dB  
 Temperature Range Operating -20 to +65 Degrees Celsius

## KEY

**Fp** Frequency at which amplitude ripple exceeds Ap (peak to peak ripple)  
**Fs** Frequency at which stopband attenuation exceeds As  
**F3dB** Nominal Frequency at which attenuation is 3dB  
**Pd** Nominal Propagation delay through filter in Nanoseconds  
**Gd** Typical passband group delay ripple, Nanoseconds peak-to-peak  
**FGd** Frequency at which group delay ripple limits is exceeded, MHz  
**Ap** Peak-to-peak passband ripple, dB  
**As** Minimum stopband attenuation, dB



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# Basic ATCL Specifications

| ATCL PART NUMBER | Fp MHz<br>Ap < .2db | Fs, MHz As<br>>45dB | Gd, ns | FGd MHz | Pd ns |
|------------------|---------------------|---------------------|--------|---------|-------|
| ATCL0P46         | 0.46                | 0.53                | 265    | 0.43    | 8846  |
| ATCL0P93         | 0.93                | 1.06                | 134    | 0.86    | 4466  |
| ATCL1P40         | 1.40                | 1.60                | 89     | 1.30    | 2967  |
| ATCL1P87         | 1.87                | 2.13                | 67     | 1.73    | 2233  |
| ATCL2P34         | 2.34                | 2.66                | 53     | 2.17    | 1782  |
| ATCL2P57         | 2.57                | 2.92                | 49     | 2.39    | 1619  |
| ATCL2P80         | 2.80                | 3.19                | 45     | 2.60    | 1488  |
| ATCL2P92         | 2.92                | 3.32                | 43     | 2.71    | 1428  |
| ATCL3P27         | 3.27                | 3.72                | 38     | 3.04    | 1275  |
| ATCL3P74         | 3.74                | 4.26                | 33     | 3.48    | 1114  |
| ATCL3P97         | 3.97                | 4.52                | 32     | 3.69    | 1050  |
| ATCL4P03         | 4.03                | 4.59                | 31     | 3.75    | 1035  |
| ATCL4P21         | 4.21                | 4.80                | 30     | 3.91    | 990   |
| ATCL4P68         | 4.68                | 5.34                | 27     | 4.35    | 890   |
| ATCL4P91         | 4.91                | 5.59                | 25     | 4.57    | 849   |
| ATCL5P15         | 5.15                | 5.87                | 24     | 4.79    | 810   |
| ATCL5P43         | 5.43                | 6.19                | 23     | 5.05    | 768   |
| ATCL5P61         | 5.61                | 6.39                | 22     | 5.22    | 743   |
| ATCL6P08         | 6.08                | 6.94                | 21     | 5.65    | 686   |
| ATCL6P55         | 6.55                | 7.47                | 19     | 6.09    | 637   |
| ATCL7P02         | 7.02                | 8.00                | 18     | 6.52    | 594   |
| ATCL7P49         | 7.49                | 8.54                | 17     | 6.96    | 557   |
| ATCL7P95         | 7.95                | 9.07                | 16     | 7.40    | 524   |
| ATCL8P42         | 8.42                | 9.60                | 15     | 7.83    | 495   |
| ATCL8P89         | 8.89                | 10.13               | 14     | 8.26    | 468   |
| ATCL9P36         | 9.36                | 10.67               | 13     | 8.70    | 445   |

## PERFORMANCE

Passband Flatness: Ripple Less than +/- .1dB  
 Insertion Loss @ 100KHz = 2.5dB Max  
 Impedance = 75 Ohms unbalanced  
 Return Loss = -20dB typical  
 Group Delay Ripple less than +/- 1.5% of midband delay  
 Stopband Attenuation = 45dB Min  
 Stopband Ratio = 1.14@-45dB  
 Temperature Range Operating 0 to +50 Degrees Celsius

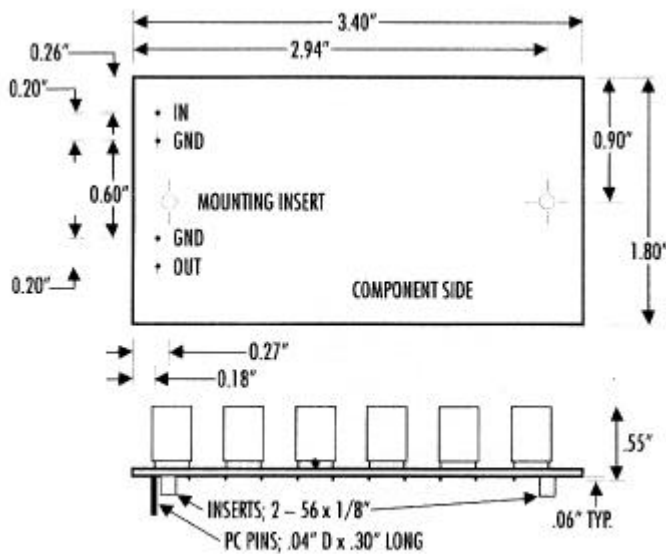
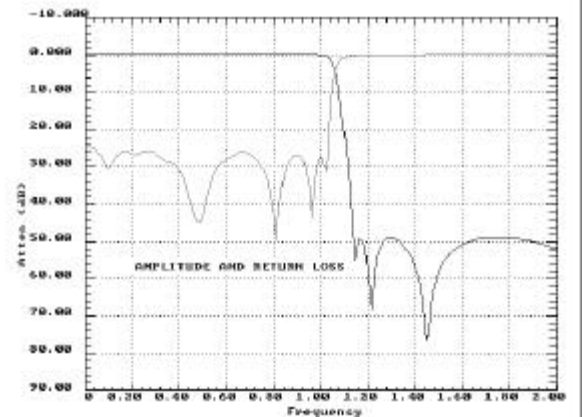
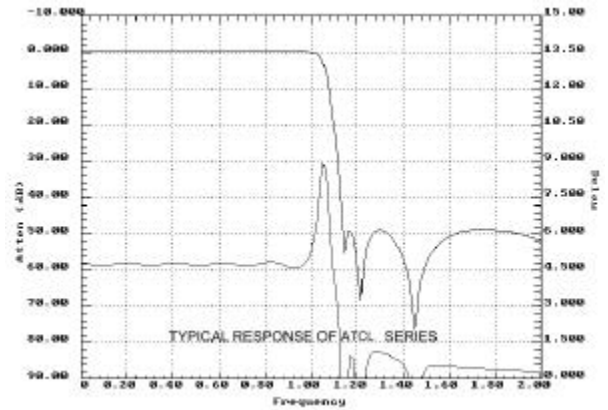
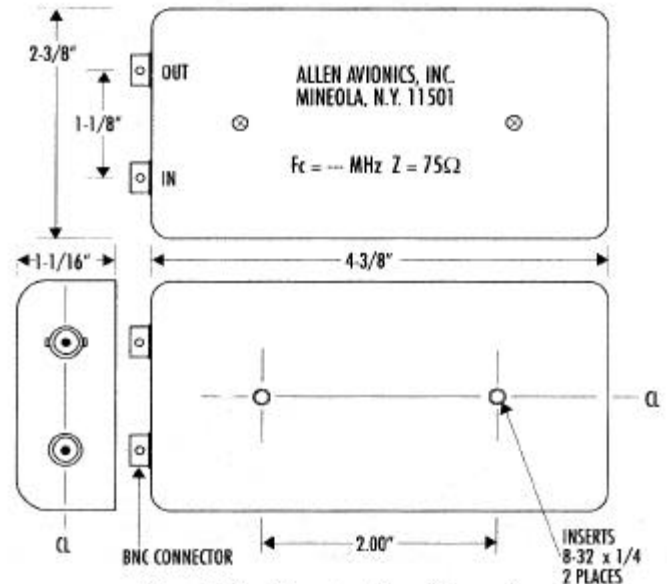


Figure 1: Open Construction Dimensions



Closed Box Construction Dimensions

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# Basic ATBW Specifications

| ATBW PART NUMBER | Fp MHz<br>Ap < .2db | Fs, MHz<br>As >45dB | Gd, ns | FGd MHz | Pd ns |
|------------------|---------------------|---------------------|--------|---------|-------|
| ATBW0P46         | 0.46                | 0.49                | 265    | 0.42    | 10612 |
| ATBW0P93         | 0.93                | 1.00                | 140    | 0.86    | 5591  |
| ATBW1P40         | 1.40                | 1.52                | 93     | 1.30    | 3710  |
| ATBW1P87         | 1.87                | 2.02                | 70     | 1.72    | 2780  |
| ATBW2P34         | 2.34                | 2.53                | 56     | 2.16    | 2222  |
| ATBW2P57         | 2.57                | 2.78                | 51     | 2.37    | 2023  |
| ATBW2P80         | 2.80                | 3.03                | 47     | 2.59    | 1857  |
| ATBW2P92         | 2.92                | 3.15                | 45     | 2.70    | 1780  |
| ATBW3P27         | 3.27                | 3.54                | 40     | 3.02    | 1590  |
| ATBW3P74         | 3.74                | 4.04                | 35     | 3.45    | 1390  |
| ATBW3P97         | 3.97                | 4.29                | 33     | 3.67    | 1310  |
| ATBW4P03         | 4.03                | 4.35                | 33     | 3.72    | 1290  |
| ATBW4P21         | 4.21                | 5.63                | 31     | 3.89    | 1235  |
| ATBW4P68         | 4.68                | 5.05                | 28     | 4.32    | 1111  |
| ATBW4P91         | 4.91                | 6.54                | 27     | 4.54    | 1059  |
| ATBW5P15         | 5.15                | 5.56                | 26     | 4.76    | 1010  |
| ATBW5P43         | 5.43                | 5.87                | 24     | 5.02    | 957   |
| ATBW5P61         | 5.61                | 6.05                | 23     | 5.18    | 926   |
| ATBW6P08         | 6.08                | 6.56                | 21     | 5.62    | 855   |
| ATBW6P55         | 6.55                | 7.08                | 20     | 6.05    | 793   |
| ATBW7P02         | 7.02                | 7.59                | 19     | 6.49    | 740   |
| ATBW7P49         | 7.49                | 8.09                | 18     | 7.92    | 694   |
| ATBW7P95         | 7.95                | 8.59                | 17     | 7.35    | 654   |
| ATBW8P42         | 8.42                | 9.10                | 16     | 8.78    | 617   |
| ATBW8P89         | 8.89                | 9.60                | 15     | 8.22    | 584   |
| ATBW9P36         | 9.36                | 10.11               | 14     | 8.65    | 555   |

## PERFORMANCE

Passband Flatness: Ripple Less than +/- .1dB  
 Insertion Loss @ 100KHz =4dB Max  
 Impedance =75 Ohms unbalanced  
 Return Loss = -20dB typical  
 Group Delay Ripple less than +/- 1.25% of midband delay  
 Stopband Attenuation = 45dB Min  
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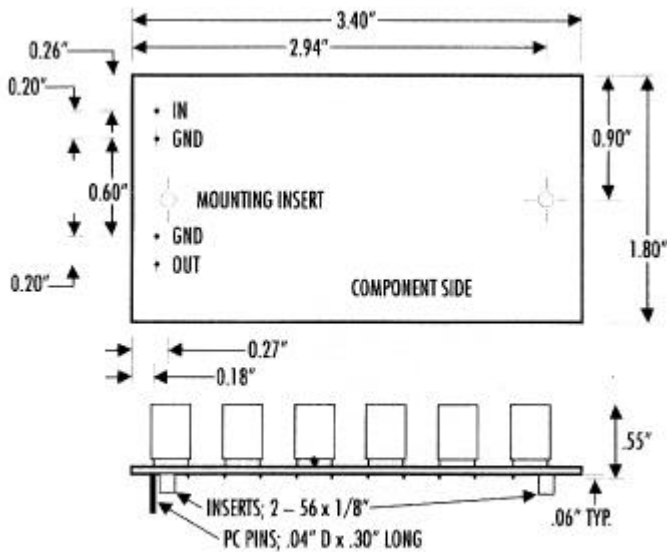
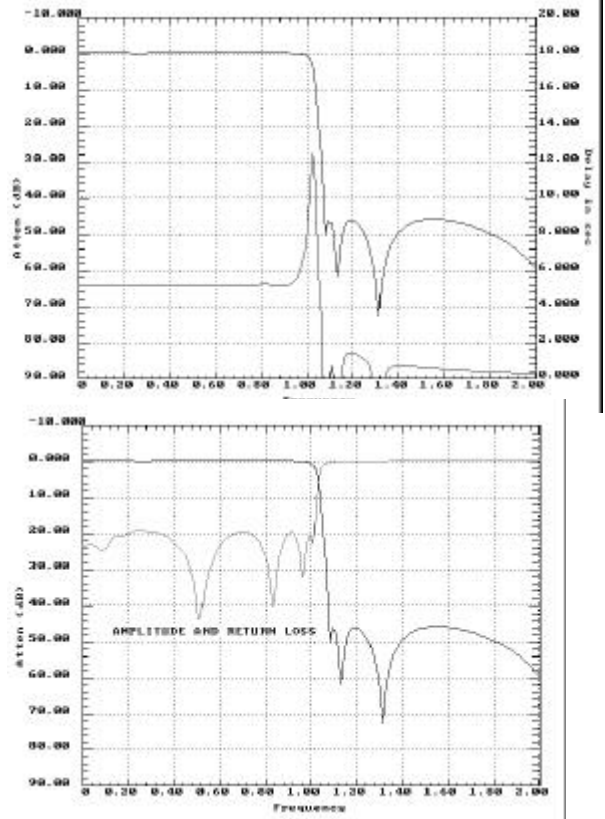
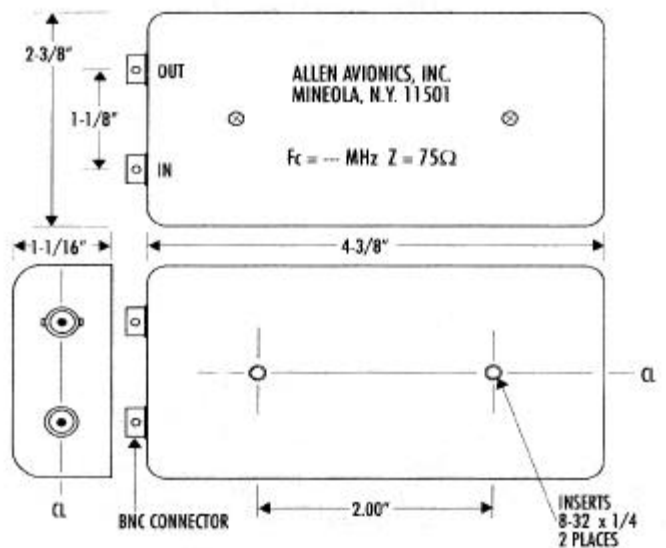


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Closed Box Construction Dimensions

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