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| DECUS NO. | FOCAL8-175 |
| TITLE | MODIFICATIONS AND SUPPLEMENT TO FOCAL8-50 RC FILTER DESIGN AND PLOT AND 3-POLE BUTTERWORTH FILTERS |
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| SOURCE LANGUAGE | FOCAL, 1969 |

MODIFICATIONS AND SUPPLEMENT TO FOCAL8-50
RC FILTER DESIGN AND PLOT AND 3-POLE BUTTERWORTH FILTERS

DECUS Program Library Write-up

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Modification of FOCAL8-50, RC Filter Design and Plot

1. The filter design program has been recoded so as to run somewhat faster.
2. The design program reinitializes after each computation, allowing the user to make several passes at a design. Previous values of input which the user does not wish to change may be retained by typing ALT MODE.
3. The input and output formats have been altered in the interests of greater clarity. The frequency variable is now named "KH" (kilohertz) in both the computation and the graphing routines.
4. The graphing routine has been slightly simplified. One bug was found and removed.

3-POLE BUTTERWORTH FILTERS - A Supplement to FOCAL8-50

Requirements: PDP-8, 4K FOCAL language with extended functions.

Function: This unambitious routine scales the normalized designs by Kerwin in Huelsman's Active Filters (McGraw-Hill, 1970) to meet the parameters of the user.

Input: R, in kilohms, C in microfarads, K (frequency) in kilohertz. The user enters any two of these, typing zero for the unknown; the routine will then calculate the missing variables.

Output: When K is the unknown, the routine prints out the value of K only. This usually occurs after one or two "passes" at a design, when the user wishes to see what available component values will give him. Otherwise all three R and all three C values are output. R(2) is always 10 times R(1) or R(3) -- the latter two are equal -- and C(2) is always 0.1 times C(1) or C(3).

Response: The comments in the main program indicate how to call up a graph of response vs. frequency.

Note: The whole program, including graph routine, fits into the user core area of FOCAL, 1969. It is not necessary to load the sections separately.

It is hoped that this might fill in the blank left by FOCAL8-50, namely the lack of any odd-pole filters. This is a much more limited routine, but has proved nonetheless useful at the author's installation.

