



synthesis technology  
MOTM analog modular synthesizers

## MOTM-1485 GX-1 VCF Frac Rack Edition

### Controls

**FREQ:** initial cutoff frequency  
**FM:** reversing attenuator for frequency CV  
**RES:** resonance (feedback) of the filter  
**RES CV:** resonance CV attenuator  
**GAIN 1/GAIN 2:** input level to the VCF

### Jacks

**1V/OCT:** exponential control voltage for cutoff  
**FM IN:** exponential modulation for cutoff  
**IN 1/IN 2:** mono audio inputs (AC coupled)  
**RES CV:** resonance CV  
**OUT:** mono output of VCA (AC coupled)



### Connecting power to the module

The power cable is compatible with Blacet, PAiA and other Frac Rack power supplies. The module requires +15VDC at 28ma. The power cord has a red wire (-15V), 2 black wires (ground) and a white wire (+15V). Be absolutely sure the white wire is on the +15V pin (it is clearly marked on the pc board) and the red wire is on the -15V pin (near the ribbon cable). **Note:** the color scheme of this power cord may not correspond to the colors used by other manufacturers.

### Using the MOTM-1485

The module is either a high-pass (HP switch position) or low-pass filter (LP position) with a slope of -12dB/Oct. Any audio signal (synth, VCO, drum machine, etc) can be applied to the IN jacks. The resonance of the filter is set by summing the RES pot with any RES CV that is patched (the RES CV is optional). The MOTM-1485 is temperature-compensated to track at 1V/OCT. You can also patch another CV into the FM IN jack. The FM panel control sets the depth of the modulation CV (this is a reversing control).

It is important that the user understand that this VCF's design is quite different than any other VCF in the market. The VCF uses what are called 'diode rings' to vary the filter's cutoff frequency. However, diode rings introduce high harmonic distortion, **especially in the HP mode of this module.** Be very careful with output levels in the HP mode as in some cases the level can clip at high resonance. *HP mode may appear unstable, noisy and highly distorted.*

There are 2 trim pots on the pc board. The Range trimmer (TP1) sets the VCF's cutoff frequency when the FREQ panel control is at mid-position (the '5' tick). The Feedback trimmer (TP2) sets the maximum amount of feedback, as set by the RES panel control. Note: this VCF will *not* self-resonate! This trim is factory set at about 75% feedback. Trim to suit your taste.