

TELEMARK-K

Telemark / Telemark-K User Manual



Contents

Welcome!.....	4
Introduction	4
Brief Overview.....	5
Applications	5
What are the Differences Between Nyborg-12 and Telemark?	6
Safety Instructions	7
Power	8
MIDI	9
Initial Tuning	10
Circuit in Details	10
Voltage Controlled Oscillators VCO 1.....	12
Voltage Controlled Oscillators VCO 2.....	13
Sync.....	14
Mixer	14
Voltage Controlled Filter VCF.....	15
Filtering External Sound Sources	16
Envelope Generators	17
Voltage Controlled Amplifier - VCA.....	18
Low Frequency Oscillator - LFO.....	19
Patch Panel Sockets: General.....	21
Panel Sockets: Sub-Osc	21
Panel Sockets: Ring Modulation.....	21
MIDI Channel Setting (non-keys versions)	22
Telemark-k Pitch Bend and Mod Wheel	23
Telemark-K Rear Panel Audio Connections.....	24
Keyboard Version CV/Gate Jacks	25
No Signal?	26
Internal Calibration of internal VCOs	27
Telemark-K MIDI Data Editing.....	28
Parameters and Pages in More Detail.....	29
Specification.....	34
Warranty	36

Welcome!

Telemark is a 100% analogue synth using circuits that date back to the 1970s and 1980s – these give it a really old sound that is rich and full of character.

The circuits are not stabilized and sanitised by CPUs and the controls are not read by CPUs and quantised.

Telemark has a huge sound, especially when used for bass (something it excels at!), a fact often commented to us by our customers with great excitement!

Though a master at big bass sounds, Telemark is exceptionally good at making electronic percussion.

As well as bass and percussion, Telemark will produce leads, effects, modular style and other sounds equally well.

Telemark is extremely powerful. Don't be fooled by the 'simple' looking front panel. The synth has been designed to be easy to use, ideal for beginners, but still have the depth and versatility to enable many years of service.

Many of the controls can route more than one signal to a destination. There are many modulation choices on the rotary select switches. All signal choices have been carefully chosen.

Telemark was designed by a musician of electronic music, and used in many of the music production. We like to think we know what makes a good synth and that is reflected in the design of Telemark.

So Telemark is ideal for both beginners, and more advanced synthesists and musicians. Use anywhere you want big analogue sounds that have a true vintage sound. Ideal also if you have the budget for just one analogue synth since this synth covers so many bases (and basses!).

Introduction

Congratulations on buying the Telemark synthesiser. Telemark is part of the Analogue Solutions range of analogue music equipment. Telemark is a precision electronic musical instrument. It combines all the often needed music electronic circuitry to make a music synthesiser in one compact module.

No compromise has been made with the construction of Telemark. Cheaper options in parts have not been used

- Full rugged steel/aluminium case - no plastic mouldings
- Good quality smooth potentiometers, fully sealed against dust
- Good quality knobs with spun aluminium caps
- High grade double sided circuit board
- High Quality 16bit DAC for MIDI-CV conversion
- Very stable MIDI to CV
- Very stable analogue oscillators
- Hand built by humans
- True retro analogue voice and modulation circuits to give an authentic retro sound

Brief Overview

Telemark is a self-contained TRUE analogue synthesiser. The voice and modulation circuitry are entirely analogue, using all discrete and op-amp components.

Telemark has a similar sound and specification to the classic Oberheim SEM, but with many additional features such as MIDI, Noise, sample and hold and more modulation choices. Note however, Telemark is not intended to be and is not a clone of the SEM. If you want a true SEM sound, buy a SEM!

Applications

MONO SYNTHESISER

Telemark is for use any time you need analogue sound effects, fat basses, screaming leads, beeps, tones, zaps, and all the other crazy sounds associated with analogue synthesis. Use in place of your boring digital synths and DSP soft synths.

EFFECTS PROCESSOR

Telemark has an audio input socket, so you can feed external sounds into the on-board analogue filters for analogue processing.

DRUM SYNTH

Telemark is more than capable of creating electronic percussion such as kicks, snares and hats. Record one track at a time in your DAW and build up the percussion.

What are the Differences Between Nyborg-12 and Telemark?

They essentially share the same circuits, so will sound similar. The main differences are outlined below:

Nyborg12 Advantages / Additions

- Octave switches on the VCO.
- 'Free run' setting - disconnects VCO from MIDI pitch. Good for effects or using the VCO as a modulator.
- Wide setting - allowing the VCO Tune knob to have a super wide range - good for when the VCO is used as a modulator.
- Q Boost on the filter - to make resonance go insane.
- VCO Sub Osc is hard wired to the Mixer - for super convenience.
- Much smaller than Telemark - for those with limited space.
- Lower price point.
- Two Nyborgs can be racked side by side using the optional rack kit.

Telemark Advantages / Additions

Plenty of signal patch points! Telemark can be more fully integrated into an existing modular system. Cross patching between the two is possible.

The patch points enable additional modulation, effects and sounds that cannot be done with the switches alone.

Ring Modulation.

The Sub Osc is not hard wired. This means it can be patched up in other ways, like a clock divider, or to half the rate of the LFO square wave.

So in summary - which to choose?

Main points are

- Size
- Cost
- Do you want the advantages the extra sockets give?

There are points personal to your situation!

If price and size are not an issue - then

Nyborg - the fact it has Sub Osc hard wired allows a wider range of sounds to be made without patching.

Telemark - it will do far more, but requires the work of patching.

So the summary here is Telemark will do much more than Nyborg but requires the extra effort (some patching). Nyborg will do more than an un-patched Telemark.

Safety Instructions

Please read carefully before using:

- Only use the correct power adaptor - 230V (or 115V whatever your country needs)
- Never handle the adaptor with wet hands
- Never excessively bend the adaptor cable or get it trapped or place heavy objects on it. If the adaptor cable becomes damaged, replace the adaptor.
- Ensure the unit is disconnected from the mains before moving or cleaning.
- Always disconnect the unit from the mains if there is lightning in your area.
- Ensure the unit is on a stable surface, and never place heavy objects on top of it.
- Never allow young children or animals to operate the unit or adaptor.
- Do not use excessive force when using the controls or inserting cables to the connectors.
- The unit should not be operated in the rain or near water and should not be exposed to moisture.
- If the unit is brought from a cold environment to a warm one, the unit should be left to reach the ambient temperature.
- Keep away from heat sources, such as radiators, ovens, heaters etc.
- Never allow it to get wet. Do not operate it near water, like pools, sinks, bathrooms etc.
- Do not place beverages on or near it.
- Never open the case or attempt to make repairs. Refer any servicing to qualified service personnel.

Preventing damage to other connected devices

Telemark has a very high dynamic range. It is capable of produce loud signals of very high and sub-sonic frequencies that could blow inadequate speakers if played too loud. It is recommended that input levels to external equipment (mixers, amp's etc.) are kept low when first connected, and then slowly increased to a useable level.

Maintenance Instructions

Any cleaning of the Telemark case should be done with a clean lint-free cloth. DO NOT USE SOLVENTS OR CLEANERS, as this will deteriorate the exterior appearance of the equipment.

Mounting

Mounting does not mean 'place on the wall' or 'to make love to' in this instance. Place Telemark soundly on any stable surface so he cannot fall off or over, causing it or yourself injury.

POWER

The unit needs a 12 to 15V AC supply, minimum 500mA. DC Power supplies will not work

Power

Telemark comes with a power supply. It uses a power supply with an AC output (not DC!)

If your power supply comes with a selection of connector plugs, use the one with the yellow coloured centre. You'll know it's the right one as the fit will feel right.

It does not matter which way you insert the plug into the end of the power supply lead.

Plug the power leads into the rear of Telemark.



Early Telemark-SK uses standard IEC power cable, supplied. It will either be set to 230V or 115V. It will be set correctly to the country it was originally shipped to. If you have bought yours from another country, or second hand, ensure voltage is correctly set for your country.

Voltage setting is marked on the back panel.

2015 onwards Telemark-K uses the same external power supply as the non keyboard version.

MIDI

Telemark has;

MIDI In to play the synth from a MIDI keyboard, sequencer or DAW.

MIDI Thru outputs a copy of what comes into the MIDI In socket.



Initial Tuning

Once the MIDI and audio connections have been made it may be necessary to tune in the VCOs to the rest of your music set-up. Allow a five minute warm up time.

First set up the controls of Telemark to make a simple sound. It is usually best to leave the VCA at ON. Turn VCO2 to zero volume so you can only hear VCO1.

Play, say, middle C on the keyboard. Using a digital keyboard as a reference, adjust the course or fine tuning of VCO1 until it plays in tune with your reference.

Finally, turn up VCO2 so both VCOs can be heard. Using the tune controls of VCO2, tune it to VCO1.

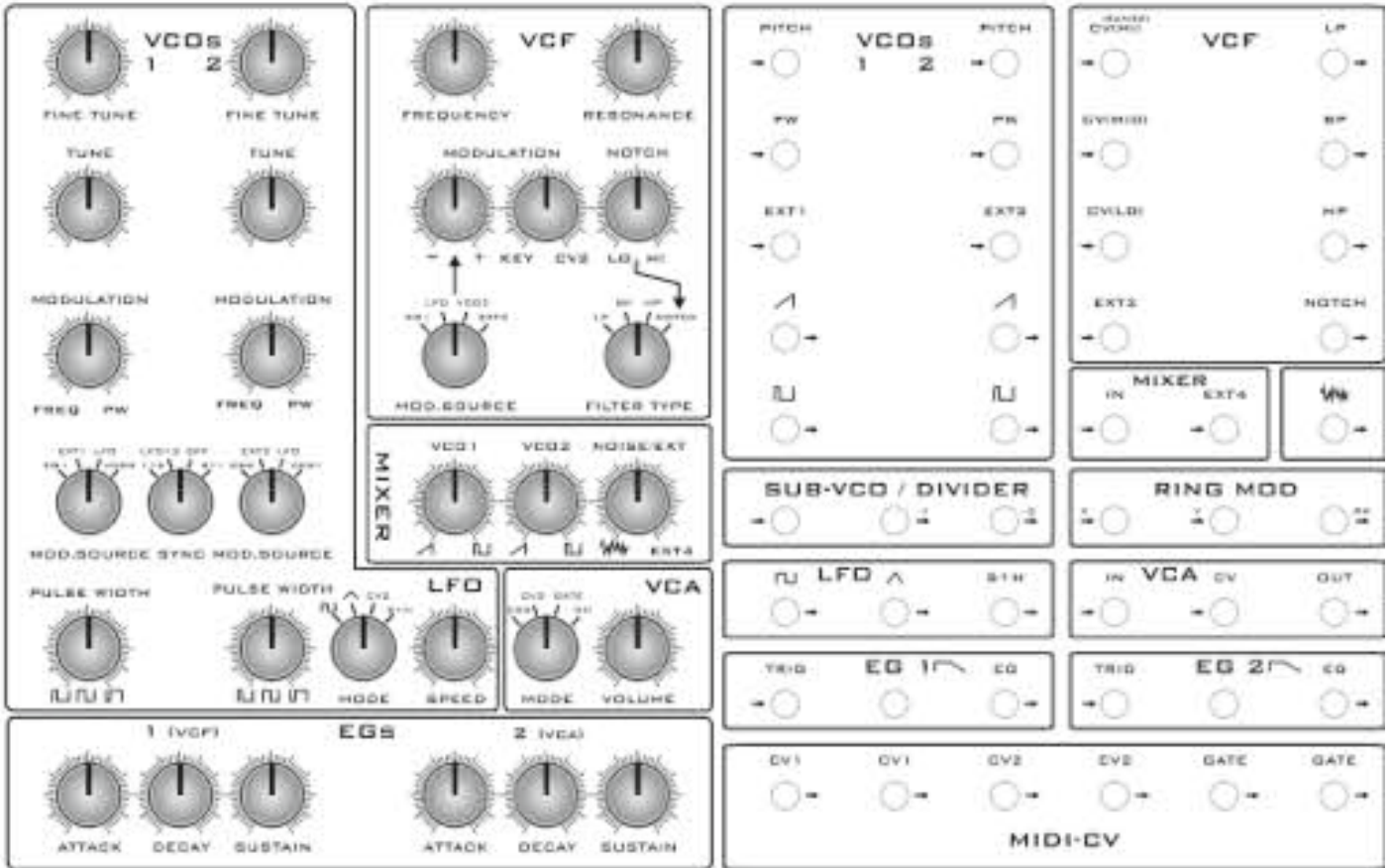
Circuit in Details

Here follows details on all the sockets and controls, with brief simplified explanations of what the circuits do. We have not gone into technical details on how or exactly what each circuit does but tried to explain each control's function and effect.

This synth has been designed to be simple and intuitive to use, just like the original analogue synths of the 70s and 80s. There are no multi-layered menus to work through.

Anyone who has used synthesisers before should be familiar with the terms used and therefore be able to predict their behaviour and how they affect the sound. The best way to learn how to use Telemark is to go straight ahead and play with it. Reading of this manual may only be necessary for finer operational detail.

TELEMARK



JEM MODULATOR

REAL ANALOGUE VOICE
& MODULATION CIRCUITS

ANALOGUE SOLUTIONS

Voltage Controlled Oscillators VCO 1

The voltage controlled oscillators (VCOs 1 and 2) produce the raw audio waveform usually used as the initial source for sound creation. They provide cyclic audio waveforms that can be pitched. VCOs usually receive treatment from the VCF to turn their basic tones into pleasant sounds.

FINE TUNE: Controls fine pitch adjustment of VCO1. Use this to tune VCO1 to your other instruments or VCO2.

TUNE: Controls the course pitch of VCO1. Range is about +/- 2 octaves. Use this to tune VCO1 to your other instruments or to shift the VCO pitch up or down an octave compared to VCO2

MODULATION: This controls the amount of modulation to either pulse width or pitch from the modulation source selected by the SOURCE switch.

Turn this knob clockwise in increasing amounts to apply pulse width modulation (PWM) to the square wave. This will have the effect of thickening up the VCO sound. Extreme settings of modulation may result in the sound cutting out (which can be used for creative effect!). Turn this knob anti-clockwise in increasing amounts to apply frequency modulation (FM) to VCO1.

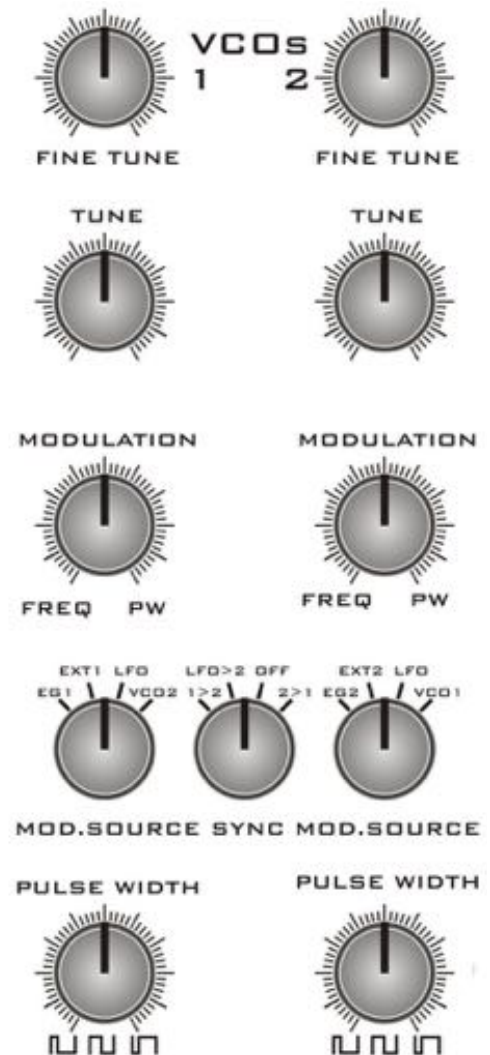
In a central position, there will be no modulation to either PW or Frequency

MODULATION SOURCE rotary switch: This selects the modulation source for either PWM or FM and is routed to the control above.

The source options are;

- EG1** for pitch sweeps. Good for percussion sounds
- EXT2** for sound effects and additional modulation
- LFO** for vibrato and trill effects
- VCO2 Square wave** for frequency modulation effects

PULSE WIDTH: This control allows manual shaping of the pulse wave output. It alters the pulse width (duty cycle) of the pulse wave. In a central position a square wave is produced (50% duty cycle). Try this control and listen to how the tone of the waveform changes. When using Pulse Width Modulation, it is best to set the Pulse Width control to centre, otherwise the sound may cut-out (which can be used for creative effect!)



Voltage Controlled Oscillators VCO 2

The voltage controlled oscillators (VCOs 1 and 2) produce the raw audio waveform usually used as the initial source for sound creation. They provide cyclic audio waveforms that can be pitched. VCOs usually receive treatment from the VCF to turn their basic tones into pleasant sounds.

FINE TUNE: Controls fine pitch adjustment of VCO2. Use this to tune VCO1 to your other instruments or VCO1.

TUNE: Controls the course pitch of VCO2. Range is about +/- 2 octaves. Use this to tune VCO2 to your other instruments or to shift the VCO pitch up or down an octave compared to VCO1

MODULATION: This controls the amount of modulation to either pulse width or pitch from the modulation source selected by the SOURCE switch.

Turn this knob clockwise in increasing amounts to apply pulse width modulation (PWM) to the square wave. This will have the effect of thickening up the VCO sound. Extreme settings of modulation may result in the sound cutting out (which can be used for creative effect!). Turn this knob anti-clockwise in increasing amounts to apply frequency modulation (FM) to VCO2.

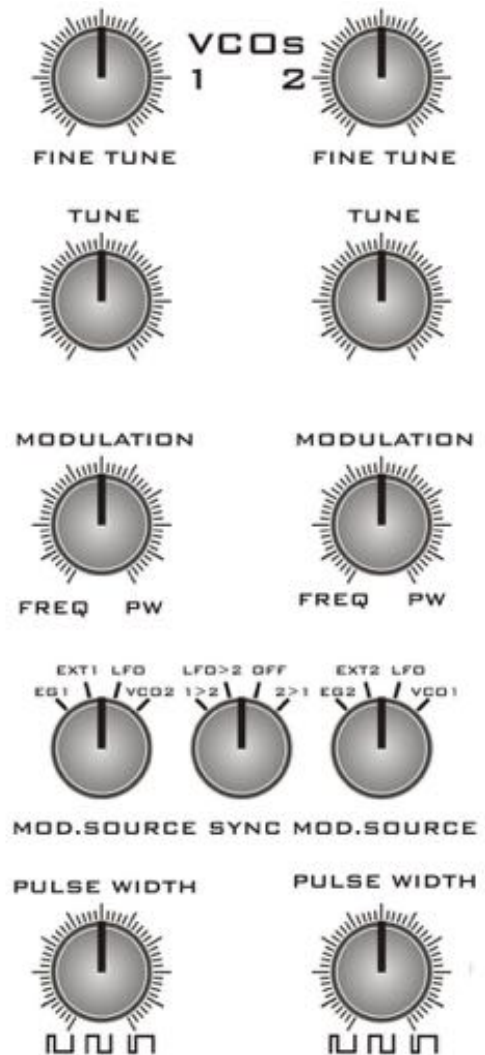
In a central position, there will be no modulation to either PW or Frequency

MODULATION SOURCE rotary switch: This selects the modulation source for either PWM or FM and is routed to the control above.

The source options are;

- EG2** for pitch sweeps. Good for percussion sounds
- EXT2** for sound effects and additional modulation
- LFO** for vibrato and trill effects
- VCO1 Square wave** for frequency modulation effects

PULSE WIDTH: This control allows manual shaping of the pulse wave output. It alters the pulse width (duty cycle) of the pulse wave. In a central position a square wave is produced (50% duty cycle). Try this control and listen to how the tone of the waveform changes. When using Pulse Width Modulation, it is best to set the Pulse Width control to centre, otherwise the sound may cut-out (which can be used for creative effect!).



Sync

SYNC Switch: This switch selects the routings for oscillator sync.

The options are:

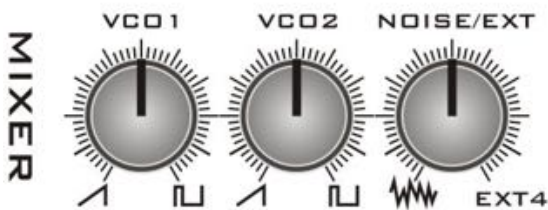
- 1>2** VCO2 slaved to VCO1
- LFO>2** VCO2 slaved to LFO
- OFF** off no sync effect
- 2>1** VCO1 slaved to VCO2

Oscillator sync is where the master signal will reset the waveform of the slave signal each time the master waveform starts a new cycle.

Try the different settings and listen to their effect. You may have to modulate the pitch of either VCO1 or VCO2 to enhance the effect. There is a balancing act between the pitch of the two sound sources (usually the 2 VCOs) to get a good effect, once found you'll know you've found it!

Mixer

The mixer is used to bring various audio source signals together for filtering. There are 3 mixer controls.



NOISE GENERATOR: The noise generator produces white noise. This is like the hiss you hear between radio stations. The signal is available for filtering via the Noise/EXT4 mixer control.

Noise would be used for sound effects such as breath, wind, percussion, etc

Saw/Pulse VCO1 level

Turning the control clockwise in increasing amounts sends VCO1s pulse signal to the mixer. Turning the control anti-clockwise in increasing amounts sends VCO1s sawtooth wave signal to the mixer. In a central position no signal is sent from VCO1 to the mixer.

Saw/Pulse VCO2 level

Turning the control clockwise in increasing amounts sends VCO2s pulse wave signal to the mixer. Turning the control anti-clockwise in increasing amounts sends VCO2s sawtooth wave signal to the mixer. In a central position no signal is sent from VCO2 to the mixer.

Noise/EXT4 Level

Turning the control clockwise in increasing amounts sends the signal (if any) coming in to the front EXT4 socket to the mixer. Turning the control anti-clockwise in increasing amounts sends white Noise to the mixer. In a central position no signal is sent from the Noise generator or EXT4 to the mixer.

Voltage Controlled Filter VCF

The voltage controlled filter (VCF) is used to alter the tone of the VCOs/Noise and is the heart of what gives an analogue synth its character.

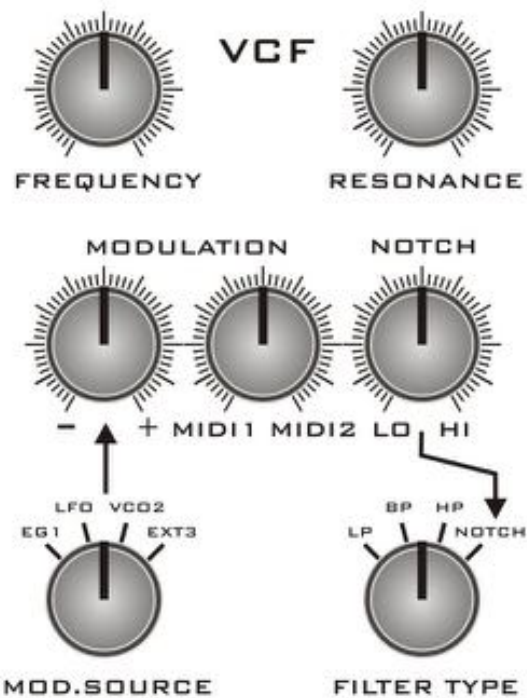
There are 4 types of filter available;

Low Pass

High Pass

Band Pass

Notch Pass (variable between Low/High)



Frequency

This sets the cut-off frequency, the point at which the VCF will start to filter-out harmonics.

Resonance

Resonance is a feature of adding feedback to the filter circuit. The output of the filter is fed back into the filter input. Resonance sets the level of feedback. As the control is increased to higher levels the filter will self-oscillate. The oscillation frequency is set by the frequency control. Use Resonance to alter the tone of the filter effect. It can be used to create squidgy sounds and pulse hits

Modulation Amount

Turning the control clockwise will increase the amount that the modulation source selected by the MOD.SOURCE switch (outlined below) will modulate the cut-off frequency. Turning the control anti-clockwise works just like clockwise except that the modulation signal is inverted (negative). In a central position the selected modulation source will not affect cut-off modulation.

Notch

This sets the relative mix between the low pass and high pass filters that is fed to the Filter Type selection switch (6) Notch position.

MOD SOURCE rotary switch

This selects the modulation source that will affect the filter cut-off and is routed to the control above.

There are 4 modulation sources;

- EG1** EG1 is used as a modulation source. Use for tonal changes.
- LFO** LFO is used as a modulation source. Use for filter sweeps (wah-wah).
- VCO2** Pulse wave of VCO2 is used as a modulation source. Use for effects.
- EXT2** Signal at the EXT2 socket is used as a mod source. Use for external filter control.

Cont...

Filter Type rotary switch

This selects the modulation source that will affect the filter cut-off

- LP** Low Pass: signals above the cut-off frequency are attenuated 12dB/octave
- BP** Band Pass: signals above and below the cut-off frequency are attenuated 12dB/octave.
- HP** High Pass: signals below the cut-off frequency are attenuated 12dB/octave.
- Notch** Notch: signals at the cut-off frequency are attenuated 12dB/octave

MIDI1/MIDI2 MOD amount

Turning the control clockwise will increase the amount that MIDI2 (CV2 MIDI controller/ velocity) will modulate the cut-off frequency.

Turning the control anti-clockwise will increase the amount that MIDI1 (CV1 MIDI note/pitch) will modulate the cut-off frequency.

In a central position MIDI1/2 will not affect cut-off modulation

Filtering External Sound Sources

External sound sources, such as vocals, guitars, mixer sends, samplers, etc. can be sent through the filter for extra treatment. Note, mic's and guitars may need pre-amping use if the signal is too quiet.

Simply plug the sound source into the front panel EXT4 socket.

Turn the mixer control Noise/EXT4 to EXT4, and up to a suitable level.

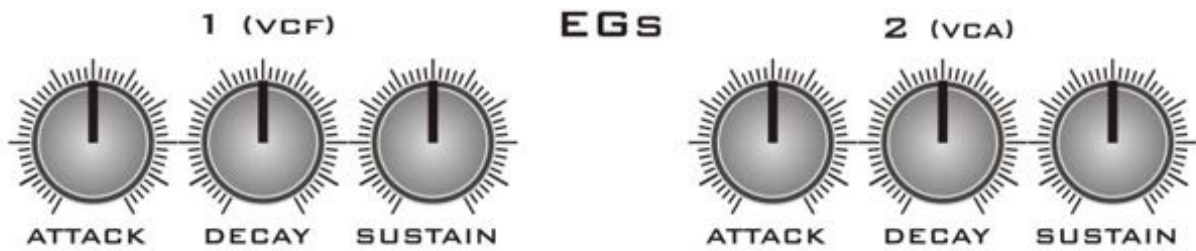
You may wish to return the VCO1 and VCO2 mixer controls to their centre positions so the VCOs cannot be heard.

Turn the VCA mode switch to ON. This will leave the VCA open so a constant signal can be heard. Finally, play around with the filter and modulation settings as necessary.

The VCO signals can also be introduced, and use the various VCA modes and envelopes if you wish to contour the sound level and add additional effects.

Note; The rear panel input sockets are wired direct to the mixer input.

Envelope Generators



EG1 ASR

EG1 is an ASR (attack / sustain / release) envelope generator. Use it to modulate various parameters of the synthesiser. EG1 is generally assigned for use with modulating VCO1 and the filter cut-off.

ATTACK

Controls the Attack time. This is the rate at which the envelope signal will take to reach full level when the MIDI note/key pressed.

DECAY

Controls the Decay / Release time - the time it take the envelope signal to return to zero when the key is released.

SUSTAIN

Controls the level the envelope will hold at when a key is pressed and the attack cycle has completed.

EG2 ASR

EG2 is just the same as EG1. EG2 is generally assigned for use with modulating VCO2 and the VCA.

ATTACK

Controls the Attack time. This is the rate at which the envelope signal will take to reach full level when the MIDI note/key pressed.

DECAY

Controls the Decay / Release time - the time it take the envelope signal to return to zero when the key is released.

SUSTAIN

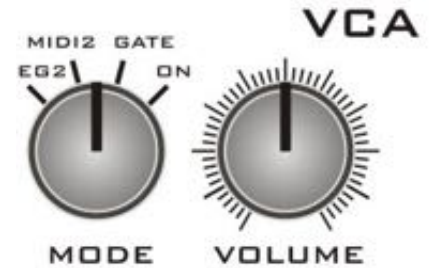
Controls the level the envelope will hold at when a key is pressed and the attack cycle has completed.

Voltage Controlled Amplifier - VCA

The Voltage Controlled Amplifier (VCA) is the circuit that is used to change the output volume. Normally an envelope signal would be used to do this, so the sound starts loud then gradually fades away. The filter audio output is hard-wired to the VCA signal input.

VOLUME - This sets the output level of Telemark, i.e. the output from the VCA that is sent to the SIGNAL output socket

MODE – Rotary Switch



The VCA can be controlled in 4 modes

- EG2** When EG2 is selected, the envelope signal of EG2 is used to modulate the VCA level. Use it if you require the VCA level to change over time.
- MIDI2G** When this is selected, EG2 is again used as the modulation source, but the overall envelope level is in turn controlled by MIDI2 (CV2) This allows velocity / controller dynamics to change the volume. If MIDI2 source is MIDI volume (controller 7) then MIDI volume changes can be realised. Typically MIDI Velocity would be the best modulation source.
- GATE** When GATE is selected, the MIDI note on/off information is used to modulate the VCA. With this, the VCA level is either off or full on. The audio envelope would be like an organ's, with no attack or decay time.

Top Tip!

The Gate in is really a VCA CV input - this means you can use this input to change the amplifier gain with a voltage (range approx 0 to 10V).

- ON** When ON is selected, the VCA is left permanently on at full level. Use this setting if you wish to use the Filter as an effects processor, to process external audio fed into Telemark via the EXT4 socket, for example.

Low Frequency Oscillator - LFO

The Low Frequency Oscillator (LFO) is basically identical to a VCO; it is another oscillator, except that it produces periodic wave forms of low frequency, typically sub-audio. These slow cyclic waveforms are used for modulating other circuit parameters, for example, for sweeping the filter cut-off up and down, either slowly for a nice sweep, or faster for a 'wah-wah' type effect. It could be used to modulate the VCO pitch for vibrato.

The LFO block is grouped together with the VCOs as an LFO is an oscillator just like the VCOs are.

SPEED – This sets the frequency (speed) of the LFO which is indicated by the LED

MODE – This sets the modulation source that is routed to LFO points for modulation selection. The options are:

- | | |
|----------------------|---------------------------|
| SQUARE WAVE | MIDI Control (CV2) |
| TRIANGLE WAVE | SAMPLE and HOLD* |



*Sample and Hold (S+H) is a term that in this instance basically means a modulation is created that has a new random signal level each time the LFO completes a cycle (each time the LFO LED lights up a new modulation level is set)

Patch Panel Sockets: General

Telemark is internally hard wired (pre-patched). Using the patch points will not disconnect any internal connections. People use the term 'modular synth' a bit too loosely sometimes, often using it to describe any synth that has some additional jack sockets.

I like to think an accurate classification of Telemark as a 'semi-modular' synth in that you can re-route signals and introduce external circuits, but is not fully modular as the internal circuits cannot be swapped, removed or new ones added. The concept of a semi-modular synth is good because you do not need to do any patching to get a good sound. The front panel rotary switches provide large combinations of possible internal patching. Some further patches can then be done using the patch points.

Telemark is a MIDI synth, but can just as easily be used entirely from an analogue sequencer. An ideal partner would be our Oberkorn sequencer. Telemark's envelopes can be triggered individually from Oberkorn's two gate trigger outputs, and the two VCOs can be controlled from separate sequencer CV outputs.

The patch sockets are clearly labelled and hold no secrets. If you have a basic knowledge of analogue synths then you will be able to use these sockets with no problem.

Panel Sockets: Sub-Osc

Sub oscillator takes the signal from one of the VCOs, divides it's frequency by two, giving a waveform that has half the pitch (ie one octave down). This then can be re-introduced back into the signal chain. This will really beef up the sound. It is a highly recommended patch to regularly use – especially to thicken up the bass.

The Sub-Osc is a divider. It will also divide clock signals and LFOs.

The basic patch is;

Take either VCO's Sawtooth audio out and patch to SUB-OSC In.
Then patch either the -1 or -2 octave SUB-OSC outputs to the audio mixer via socket EXT4.

Panel Sockets: Ring Modulation

Ring Mod for those metallic and weird noises. Ring Mod can do more than that. The best thing is google and research the web for ideas.

The basic patch is;

Take two audio signals (waveform output of both VCO1 and VCO2 will do!) and patch to the X and Y RINGMOD inputs. Take the RING MOD output and patch into the audio mixer.

MIDI Channel Setting (non-keys versions)

MIDI PROG push button

This button is used to set the MIDI channel and CV2 controller.

Works best if you plug a MIDI keyboard direct to program rather than via a DAW.

To change the MIDI channel and CV2 controller;

Press and hold the PROG button.

Press a MIDI key or move a MIDI controller.

Release the key/controller. Then release the PROG button.

The synth will set its MIDI receive channel to the same channel of the MIDI message that was received.

CV2 will be set to Velocity if you used a MIDI key or to the same controller number of the controller that was moved.

Telemark-k Pitch Bend and Mod Wheel



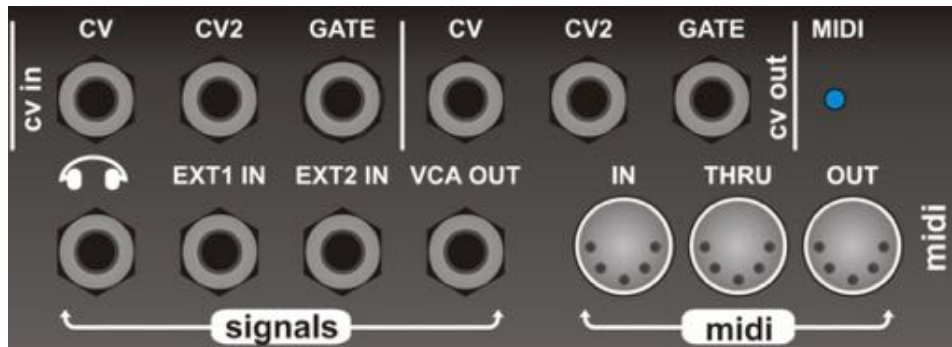
PITCH BEND WHEEL

Pitch Bend range can be set via the LCD display. Default value is usually set to +/-2 semitones. The Pitch Bend MIDI data is sent to the MIDI OUT socket and will also control the on board MIDI to CV converter to affect the pitch of both VCOs equally.

MOD WHEEL

The mod wheel will send MIDI controller one data to the MIDI Out socket. MIDI12 (CV2) can be set to be modulated by any controller, therefore can be set to one to be controlled by the mod wheel. This means that the mod wheel can be used to change, say, filter cutoff.

Telemark-K Rear Panel Audio Connections



CV IN: This is a pitch CV input socket if you want to control Telemark-K's pitch from an external synth. Scaling is 1v/Oct.

CV2 IN: This is a CV input socket if you want to control Telemark-k's the 'MIDI2' patch points (selected via the rotary switches) using an external synth.

GATE IN: This is a Gate input socket if you want to trigger the two envelope generators via an external synth. Triggering is positive 5v or more signal.

CV Out: The pitch CV signal is fed out here from the MIDI to CV converter.

CV2 Out: The MIDI2 aux/controller CV signal is fed out here from the MIDI to CV converter.

GATE Out: The gate signal is fed out here from the MIDI to CV converter.

HEADPHONE: The signal is mono. Level is controlled together with the main output socket level using the volume control on the front panel

EXT1 IN: This an audio input socket to feed audio signals directly into mixer.

EXT2 IN: This a second audio input socket to feed audio signals directly into mixer.

VCA OUT: This is the main audio output from Telemark it is the signal output from the VCA, post Volume control.

MIDI IN: Plug your MIDI cable in here to all another MIDI device to control the Telemark.

MIDI THRU: The MIDI data coming into the In socket is copied to the Thru socket. This is so you can control additional devices from your MIDI controller without the need of a MIDI thru box. The Thru socket will not function when in Poly mode.

MIDI OUT: Use this socket to allow the Telemark to control other MIDI devices or use it as a master keyboard in your MIDI setup.

Keyboard Version CV/Gate Jacks

If you insert a jack plug into the CV in or out sockets then the internal connection will be broken.

E.g., if you connect an external CV sequencer or MIDI to CV converter to the CV1, CV2, Gate In sockets, you will disconnect the Telemark-k internal MIDI-CV converter from the voice circuits. This way you can directly control the voice circuits from an external device. The internal MIDI-CV converter will still work, and its signals still available from the CV1, CV2, Gate Out sockets.

Likewise, if you connect the CV1, CV2, Gate Out sockets to an external analogue synth, the internal MIDI-CV converter will be disconnected from the internal voice circuits.

In summary, the signal flow is such;

Internal MIDI-CV converter -> CV/Gate out Sockets -> CV/Gate In Sockets -> Internal Voice circuits.

By inserting jacks into either the In or Out sockets, you will disconnect the internal MIDI-CV converter from the voice circuits.

The main signal output is on the rear panel and is oddly labelled VCA OUT. Connect this socket to a spare mixing desk input channel. If you want to feed external signals into Telemark, use the rear panel EXT1 or EXT2 sockets. Maybe hardwire it from your desk's effect send.

It is recommended to keep your MIDI and CV/audio cables as short as possible to keep the signal quality as high as possible. We recommend no more than 3 metre cable lengths.

No Signal?

Check the following...

- Your mixing desk / monitoring equipment is on and working correctly.
- Check the synth is switched on and that the power adaptor is functioning correctly.
- Check it is connected to your monitoring equipment correctly and that the cable is not faulty.
- Ensure the output volume is high enough.
- Ensure the mixer level controls are turned to some sound source like the VCOs or Noise.
- Certain extreme filter settings may filter out all of the signal or produce low level signals. Try adjusting the filter cut-off.
- Certain extreme PW/PWM settings may cause the pulse outputs to cut-out. Try adjusting PW/PWM as necessary.
- Try putting the VCA to ON to hear the raw sound, but if you are using a MIDI keyboard to trigger the envelopes and VCA, ensure correct MIDI connection, and that the correct channels have been selected.

Internal Calibration of internal VCOs

Calibration of Telemark is done at the factory and usually should not need to be changed. Only attempt this yourself if you are fully confident you can do it. You may just end up ruining the settings, and be aware calibration is something that we cannot help with other than the phone. There are no additional guides we can give by phone to help that are not already printed here.

Trimmers

There are 3 trimmers per VCO, arranged in a vertical line accessed through small holes in the top panel.

- Top trimmer is Tune
- Middle is Scale
- Bottom is High End.

VCO1

1. Monitor VCO1.
2. Turn Fine and Course Tune controls to centre.
3. With MIDI connected, play C4.
4. Monitor the VCO1 output, and adjust bottom trimmer (tune) until the pitch of VCO matches your reference of a 'C' note (reference using guitar tuner, digital keyboard, etc.).
5. Play C3.
6. Adjust the top trimmer (Scale) until it matches your reference of a lower 'C' note.
7. Repeat steps 3 to 6 several times until all is in tune and a good octave is obtained.
8. Play C6 and adjust the middle trimmer (Hi-Track) until it matches your reference.
9. Repeat steps 3 through 8 until all is in tune.

VCO2

1. For VCO2 you repeat the above steps VCO1 can be used as a reference instead of a tuner, using the zero-beat method.

Telemark-K MIDI Data Editing

The keyboard / MIDI setup can be edited using the buttons and LCD. All the parameters are self-explanatory, but details are here.



PAGE, PARAM -10, -1, +10, +1

There are six pages of parameters. Each page contains two sets of parameters.

To scroll through the 6 pages of data press the PAGE button. Each press advances you to the next page and will cycle back to page 0 once you get to page 6. To move the cursor between the 2 sets of data in each page, press the PARAM button (parameter). Each press will toggle you between the two available parameters.

To alter a parameter's value, first select the parameter, ensuring the cursor is under the appropriate parameter, then use the +/- buttons to edit the value.

There are four +/- buttons;

- 1 decreases data by 1
- +1 increases data by 1
- 10 decreases data by 10
- +10 increases data by 10

OCT-, OCT+

You can quickly alter the keyboard octave setting +/- four values. Octave setting can also be edited via the LCD. The octave parameter/buttons are used to transpose the keyboard in whole octaves.

Transpose and Octave parameters only affect the keyboard data. That is the note information sent to the voice circuits and the data sent to the MIDI Out socket. These parameters will not affect MIDI information received at the MIDI In socket.

STORING PARAMETERS

The new value of any parameter you edit will be lost if you switch off the machine. So ensure you store the setup before switching off.

Press the PAGE button until you get to the store page. Then Press OCT+ to store the setup. Then the LCD will revert back to PAGE0.

If you do not wish to store, then just press PAGE again to return to PAGE0

Parameters and Pages in More Detail

Page number (0-5) is displayed on the far left as a single digit. The top line shows parameter names, bottom line show parameter value.

PAGE0	(1) RX.CHAN 1-16	(2) TX.CHAN 1-16	1 2	Sets the MIDI receive channel for the internal MIDI-CV converter Sets the MIDI transmit channel of the keyboard.
PAGE1	(3) TRANSPOSE 000-015	(4) OCTAVE 000-003	3 4	Transposes the keyboard in semitones upwards. Transposes the keyboard in 12 semitone increments (i.e. whole Octaves)
PAGE2	(5) AUX.CC# 000-127	(6) PB.RANGE 000-007	5 6	Changes the MIDI controller number for CV2 (aux.CV). 127 is used to set velocity as the source. This setting will affect which MIDI controller the keyboard or external MIDI will be the source for modulating CV2 (aux.CV). The controller you set can then be used to control whatever synth setting is set to MIDI on the front panel, for example filter cut-off. Pitch bend range. +/- 0-7 semitone range.
PAGE3	(7) F.TUNE 0000-255	(8) P.SCALET 000-255	7 8	A very fine tune setting. This is used to trim the internal MIDI-CV DAC. Normally there would be no need to alter this. This alters the octave spacing for the MIDI-CV converter. This affects the pitch/scaling of the VCOs. Normally there would be no need to alter this.
PAGE4	(9) LOCAL 000-001	(10) RE-TRIG 000-001	9 10	This turns on/off Local. 0= off. This means the keyboard will not play the internal voice. The voice can only be controlled via the CV/Gate sockets or an external MIDI device such as a sequencer. 1= on. This means the keyboard will play the internal voice. Either way, the note that you play on the keyboard will be sent to the MIDI Out socket. 0=off. This means that if you overlap notes, the new note will not re-trigger the sound. However, the pitch will change. 1=on. This means that if you overlap notes, the envelopes will retrigger each time.
PAGE5	STORE SETUP PRESS +OCT TO STORE			This is the page used to store set-up, as described earlier.

RESTORING FACTORY DEFAULTS

Hold down button 8 (OCT+) whilst turning on the machine to restore factory default settings.

TELEMARK

VCOS 1 FINE TUNE, MODULATION, FREQ PW

VCOS 2 FINE TUNE, MODULATION, FREQ PW

VCF FREQUENCY, RESONANCE, MODULATION, NOTCH, FILTER TYPE

MIXER VCO1, VCO2, NOISE GATE

LFO LFO, MODE, SPEED, VOLUME

EGS 1 (VCF), 2 (VCA) ATTACK, DECAY, SUSTAIN

PITCH VCOS 1, VCOS 2, PW, EXTS

SUB-VCO / DIVIDER IN, OUT

VCA IN, OUT, TRIG, EG 1, EG 2

MIDI-CV CV1, CV2, CV3, CV4, DATE

TELEMARK

REAL WORLD VOICE
 A MODULATED CIRCUIT

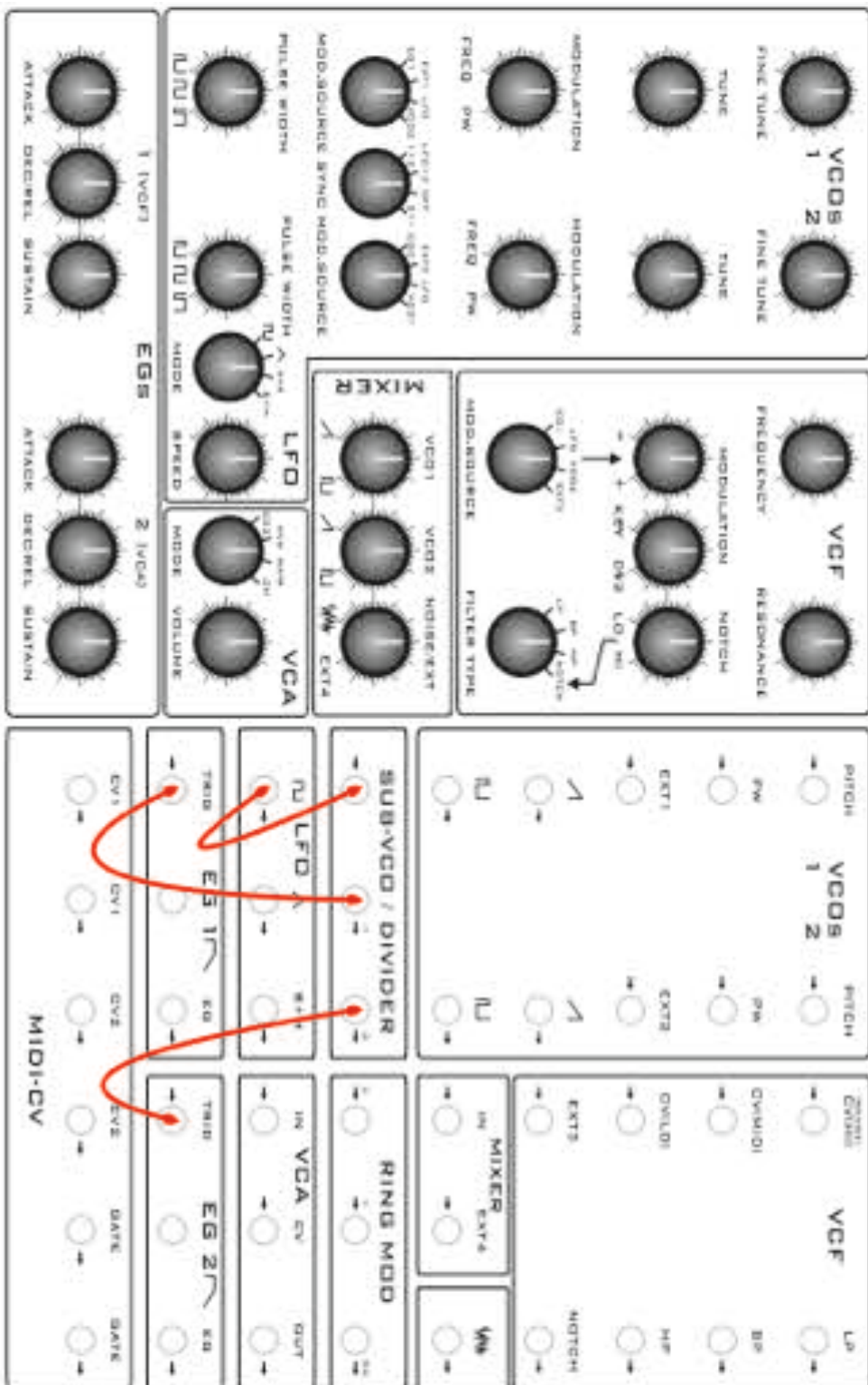
ANALOGUE SOLUTIONS

LFO Divider

This patch uses the Divider to halve and quarter the LFO speed. Then these two outputs are each sent to the EGs. The divider will then trigger each EG at different rates - one half as often as the other.

MOD MANUAL
PAGE: 11110

TELEMARK V2



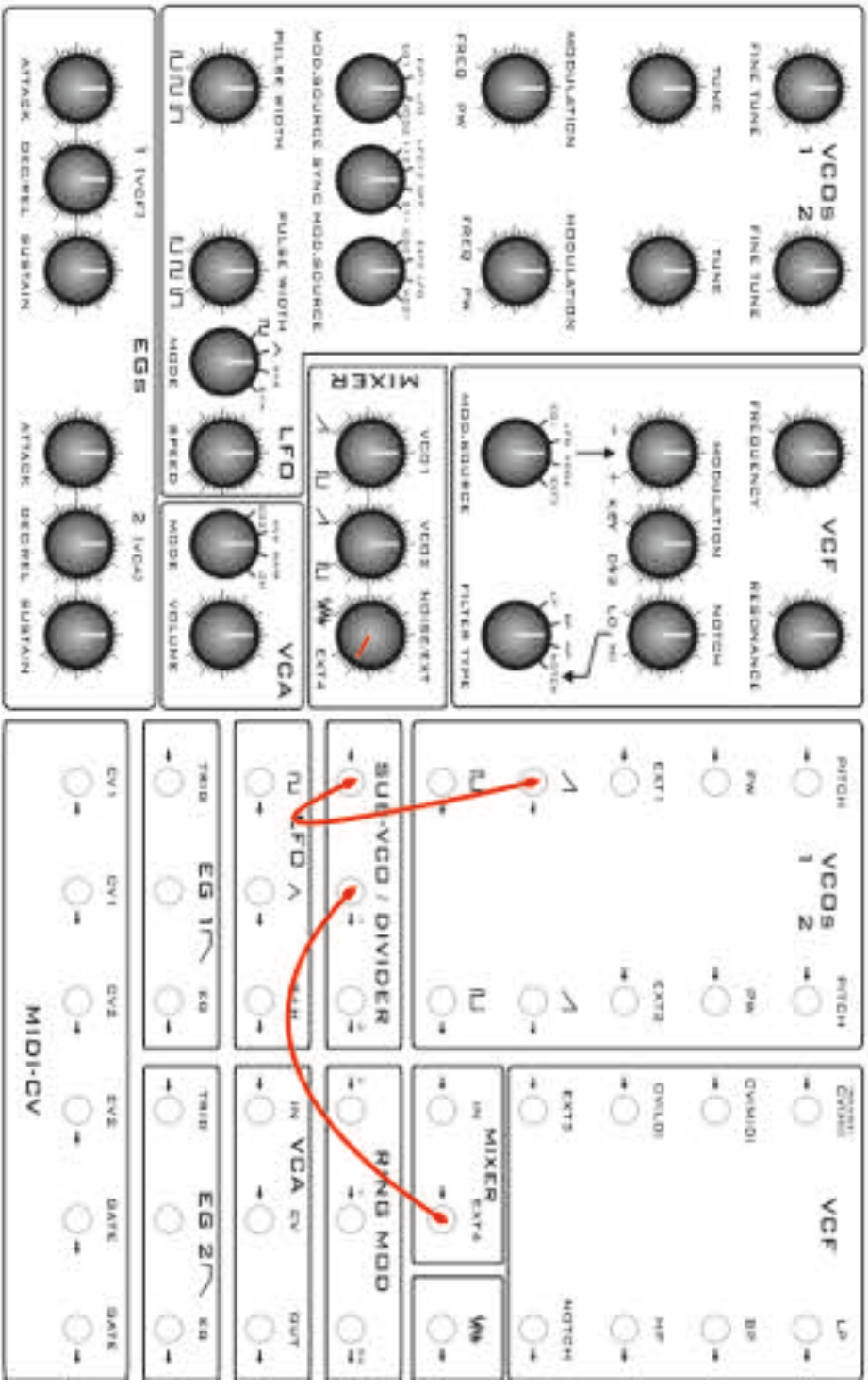
Only important knob positions are shown. Others use at will. Play around - this is a guide only!

Sub Osc

Use to beef up the sound, especially for basslines. The Divider is used to create a waveform that is one (or two) octaves below the source oscillator. Use triangle, since if you use square wave, and PWM is applied - it can confuse the divider (which in itself can be interesting?)

WAVY MANUAL
PROG. TRIM.

TELEMARK V2

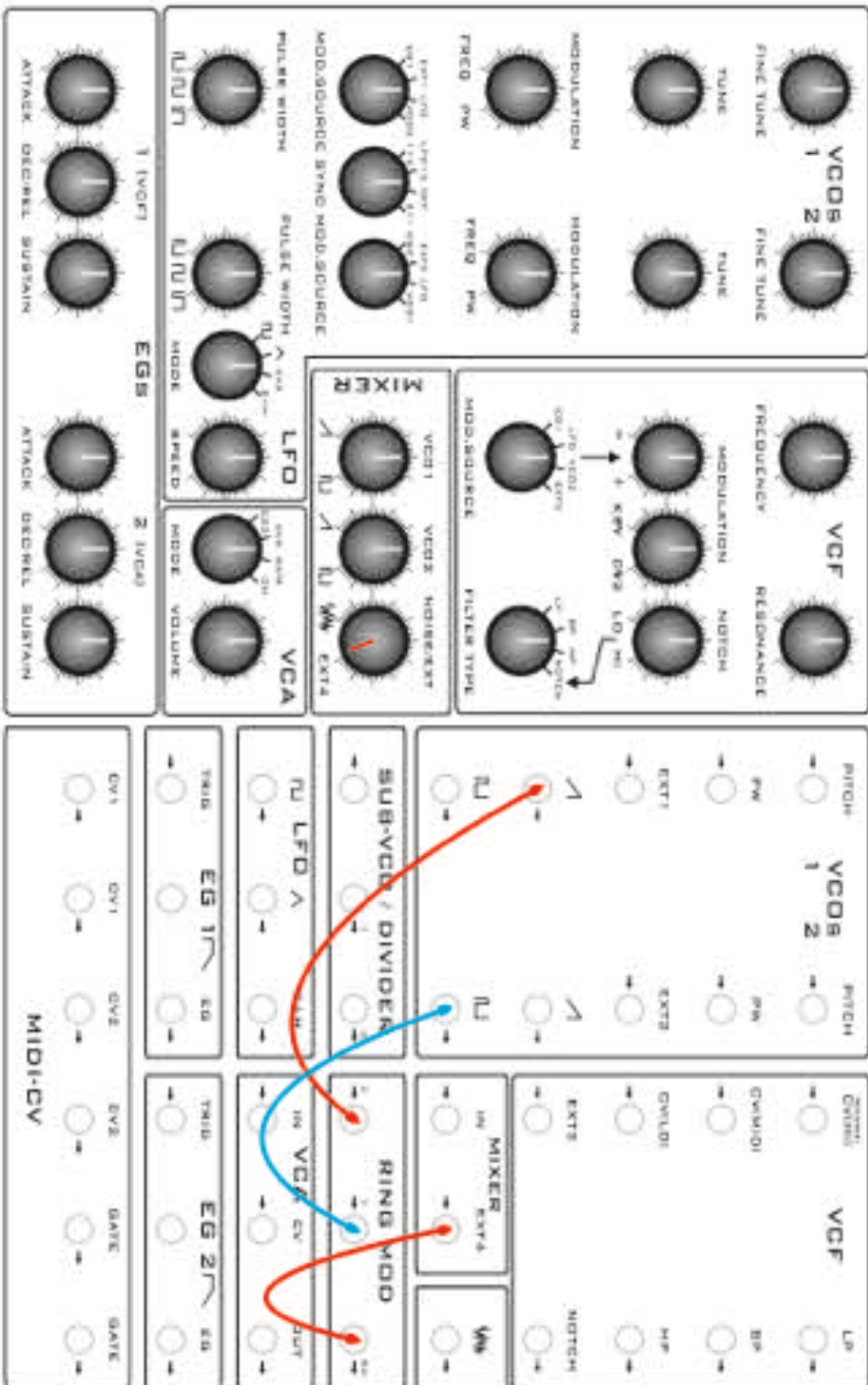


Only important knob positions are shown. Others use at will. Play around - this is a guide only!

- Ring Mod**
- Typically used to create metallic weird sounds. Uses the two VCOs as audio sources. Use wide modulation or tune settings on the VCOs' pitches for extreme sounds.

WOT MANUAL
PROG. 7M10

TELEMARK V3



Only important knob positions are shown. Others use at will. Play around - this is a guide only!

Specification

Telemark-K

VCO1	Fine Tune, Tune, PW Mod, FM, manual PW, Mod Source controls, Saw out, Pulse out, Sync
VCO2	Fine Tune, Tune, PW Mod, FM, manual PW, Mod Source controls, Saw out, Pulse out, Sync
VCF	Low pass filter, High pass filter, Band pass filter, Notch filter, variable Notch filter. Cut-off, Resonance, Modulation Amount, Mod Source, MIDI Mod
Mixer	Audio source mixer
VCA	Mode switch, Output volume
EG1	ASR envelope with trigger LED
EG2	ASR envelope with trigger LED
LFO	Speed, Output Mode (Square, Triangle, Gate, External CV)
Noise Generator	White noise
Keyboard	Velocity sensitive
Wheels	Mod and Pitch wheels
Sample and Hold	For random modulation effects
MIDI to CV Converter	16 bit high resolution with auxiliary controller CV2 output
Rotary controls:	24
Rotary switches	6
Push button	
LEDs	5
Jack sockets	(6.35mm, mono)
MIDI Sockets	3
Dimensions:	Keyboard version 565mm x 405mm x 135mm (W x D x H)
Weight	Keyboard version 7.7Kg
Power:	Uses 15VAC, 500mA mains adaptor, 2.1mm DC type barrel plug (draws approx. 40mA)
Accessories:	Manual, Mains adaptor
Rugged steel construction	

Telemark

VCO1	Fine Tune, Tune, PW Mod, FM, manual PW, Mod Source controls, Saw out, Pulse out, Sync
VCO2	Fine Tune, Tune, PW Mod, FM, manual PW, Mod Source controls, Saw out, Pulse out, Sync
VCF	Low pass filter, High pass filter, Band pass filter, Notch filter, variable Notch filter. Cut-off, Resonance, Modulation Amount, Mod Source, MIDI Mod
Mixer	Audio source mixer
VCA	Mode switch, Output volume
EG1	ASR envelope with trigger LED
EG2	ASR envelope with trigger LED
LFO	Speed, Output Mode (Square, Triangle, Gate, External CV)
Noise Generator	White noise
Sample and Hold	For random modulation effects
MIDI to CV Converter	16 bit high resolution with auxiliary controller CV2 output
Rotary controls:	24
Rotary switches	6
Push button	2
LEDs	4
Jack sockets	3 (6.35mm, mono)
MIDI Sockets	2
Dimensions:	Height: 306mm Width: 430mm. Depth: 140mm
Weight	2.3Kg
Power:	Uses 15VAC, 500mA mains adaptor, 2.1mm DC type barrel plug (draws approx. 40mA)
Accessories:	Manual, Mains adaptor (230v)
Rugged steel construction	

Warranty

Telemark comes with a 1 year (from purchase date) back to base warranty, (i.e. customer must arrange and pay for carriage to and from Analogue Solutions or the dealer from which purchased).

This warranty shall not apply where the product has been subject to alteration, misuse accident, neglect (such as extremes of temperature and/or moisture) or to wear resulting from normal use.

At the sole discretion of Analogue Solutions, the warranty is deemed to be void should the unit be or considered to have been opened or any other modifications or tampering be carried out by unauthorised parties.

CE Compliance

This unit complies with EU Directives 73/23/EEC and 89/336/EEC.

Standards: EN55103-1, EN55103-2, EN60065



ANALOGUE SOLUTIONS

Telemark-k 'user manual'

Analogue Solutions

web: www.analoguesolutions.com

web: www.analoguesolutions.co.uk

email: info@analoguesolutions.com