

ALM-ØØI

`Pamela's Workout'

- Operation Manual -



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Introduction

'Pamela's Workout' is a compact programmable clock source for your Eurorack modular synthesizer system. It provides 8 highly editable trigger outputs, all correlated to a direct and voltage controlled BPM based clock.

Pamela's workout grew out of a need to flexibly synchronize various clocked modules and external devices but do so in flexible and feature-full manner as to also enable more creative and playful rhythmic usage.

Features

Pamela's Workout provides a wide range of features in a compact space. Such Features include;

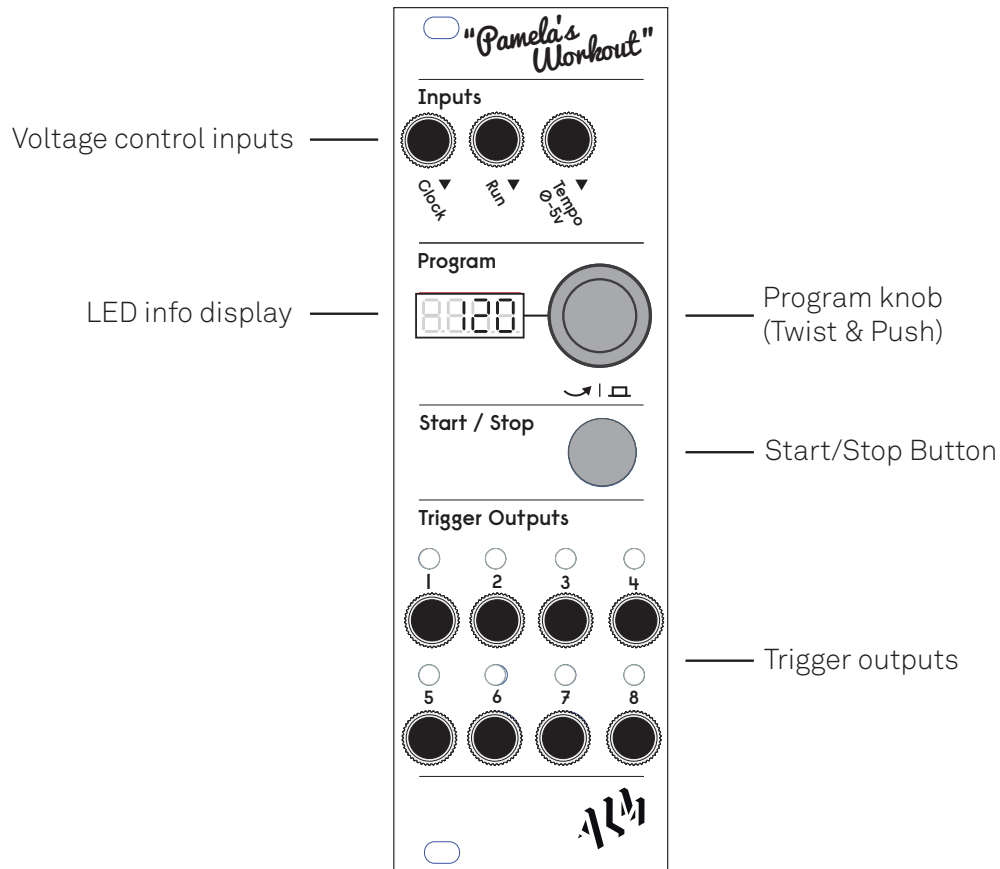
- BPM based clock with rates 25-300BPM.
- 8 clocked trigger outputs each with independent adjustable;
 - Clock divisors and multipliers
 - 32 values from from /512 to *48
 - Triplets, Evens, Odds etc
 - Pulse width
 - Random skip
 - Delay and delay division (for complex shuffle)
- Voltage and direct control of clock stop/start and reset.
- Voltage control of clock rate.
- Sync to an external clock input at 24, 16, 12, 8, 4, 2 or 1 PQN.
- Simple realtime user interface with vintage LED display.
- Non-volatile - settings remembered between power cycles across 5 save banks.
- Easy firmware upgrades with no special hardware needed just an audio out.
- Provides DIN Sync input & output with simple adaptor.
- Skiff friendly
- Made in England.

Technical Specifications

- Supply: +12V
- Current Draw: ~30 - 80ma (*all triggers simultaneously open*)
- Size: 8 HP
- Depth: 22mm (*including power header*)
- Triggers: 0-5v

Core Operation

Panel Layout



Setting Core Tempo

When initially powered on Pamela's Workout LED info display shows the current clock tempo setting in beats per minute (BPM). Twisting the program knob adjusts this BPM value between its maximum and minimum values.

Clicking the 'Start / Stop' button starts the clock with this selected BPM tempo shown on the display. With the clock now running, timed trigger pulses are sent

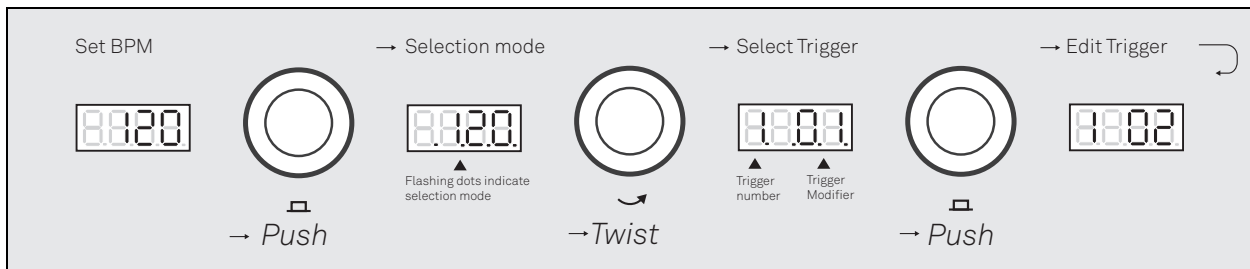
through each of the output jacks as indicated by their relevant green LED's. The timing of each trigger pulse is a factor of the set BPM tempo.

Clicking the 'Start / Stop' button again stops and resets the clock

Basic Per Trigger Adjustment

The timing of each trigger can be adjusted to varying factors of the set tempo. These factors or 'modifiers' can be either divisors or multiples of the main clock tempo. Also they can be set to permanently on or off (i.e a gate).

To adjust a trigger, from the BPM display, first enter selection mode by **pushing and clicking** the program knob. Four flashing dots appear on the bottom of the LED display indicating selection mode is entered. Twisting the program knob will now cycle through each of the eight numbered trigger 'screens' before returning back to the main BPM screen. Clicking the program knob again will exit selection mode (dots will disappear) and allow editing of a selected trigger or editing of the BPM value.



Each trigger screen is represented by the trigger number together with the current set modifier value. The trigger number corresponds to its numbered output jack. The modifier value is either a multiplier, a divisor or a special value (on, off, pulse) correlated to the BPM value.

A multiplier outputs a multiple of the main tempo - i.e a value of '2' would output 2 trigger pulses for every beat, a value of 4, 4 triggers per beat etc. For a divisor, a division of the main tempo is used, for example /2 would be 1 trigger every 2 beats, /4, 1 trigger every 4 beats.

Special special symbols are used on the display to represent modifier values. They are;



Indicates a divisor.



Two of these indicate an 'always on' gate when clock is running.



'Pulse(s)' indicate special trigger that provides a single pulse on clock start, another when the clock stops or one for each (two pulses)



A triplet value.



A power of two. Used to represent large divisors. For example; 9P = /512, 8P = /256

To change the selected modifier value, twist the program knob. This will cycle through and set from available trigger modifier values.

Extended Per Trigger Adjustment

Each trigger output can be further adjusted through extended settings. These allow for the trigger or pulse width to be varied, timing delays added, random skipping and the settings of an offset or rotation to a divisor modifier.

With a trigger screen selected, pushing and holding the program knob for approximately 1 second will access extended trigger parameter selection. The various parameters can be cycled through and edited again by use of the program knob. Each screen is represented by the selected trigger number, a symbol and the corresponding value.

The various symbols used to represent screens and there available settings are;



Random skip. Set triggers will be randomly skipped dependent on value set here - the higher the value more likely a skip is to occur.



Delay. Delays triggers by 1/96th's of a beat. It is automatically limited by the set multiplier up to full beat.



Divider. A divider for which trigger the delay prior alters. I.e a Setting of 2 means every other trigger would get delayed, 3 every third. Use to produce shuffle effects.



Trigger or pulse width. Widen the base trigger width in 1/96th's of a beat. It is automatically limited by the set multiplier up to a full beat. If the trigger is a divisor it is possible to go beyond 96 and into actual beat widths - the trigger now essentially becomes a gate. The symbol will change to a large 'N'.



Initial skip: Skips the set amount of initial triggers.



Rotate. The will offset divisors by the specified value in beats. It is useful for creating basic rhythms - i.e a snare on every 2nd beat. This option is only available to divisors

To exit back to the main trigger screen at any point again push and hold the program knob for approximately 1 second.

Pamela will automatically save and remember trigger settings between power cycles. Settings are automatically saved but *not* whilst the clock is running (changes are 'queued' and then saved when the clock stops).

Voltage Control

As well as direct user control, Pamela's clock can be control via 3 external signal inputs - clock, run and tempo.



Clock Input

An external trigger pulse or clock input. When connected the device will sync or 'follow' a pulsed input (such as a square wave from an LFO). The frequency of the input will need to be in acceptable range as to fit maximum and minimum BPM values.

By default a 24 pulses per quarter note (PQN) clock will be expected (i.e a DIN Sync clock). This can be changed to 1, 2, 4, 8, 12 or 16 PQN by pressing and holding the program knob on the BPM screen for approximately 1 second. Then select the 'c' screen and click again to select. The external clock PQN value will then be shown and made editable by twisting the program. Press and hold again to exit.

It is recommended for timing accuracy the highest PQN is always used. Multiplier accuracy may suffer when low PQNs are used.

This input when connected and active will override any user control. The display will show the approximate followed BPM rate.

Run Input

The 'run' input is used to externally stop, start and reset the clock.

When set high to approximately 2 volts or more, the clock will start. When then set low it will stop. The clock can only be stopped by voltage control *if it was started by it*.

Pressing the start/stop button in this situation, with the input high, the clock will **reset** not stop.

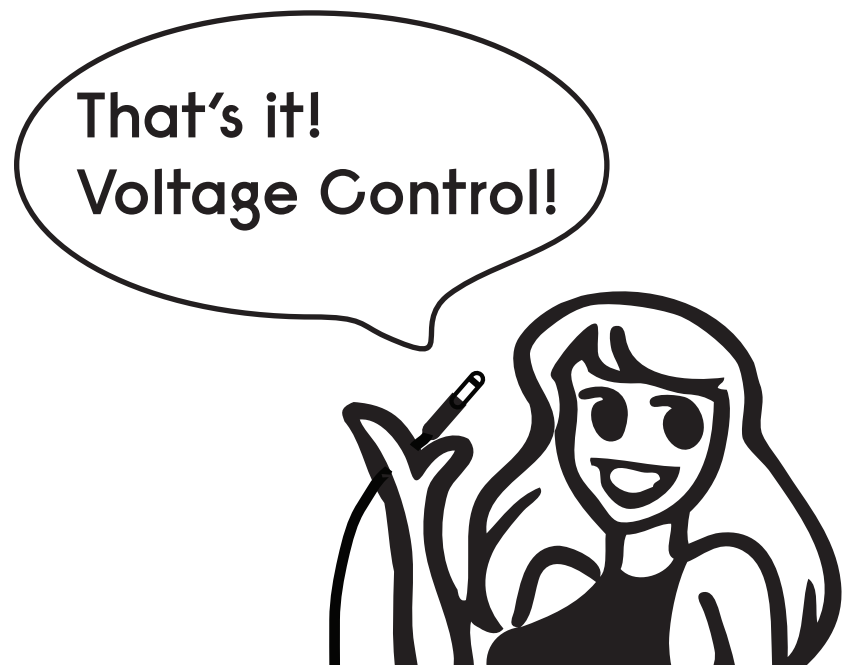
Alternatively if the clock is started by the start/stop button the run input will behave as a clock reset when pulsed high.

<i>Clock Started Via</i>	<i>To Stop Clock</i>	<i>To Reset Clock</i>
Clock input set HIGH	Set clock input LOW	Press Start/Stop button
Start/Stop button	Press Start/Stop button	Set run input high (i.e rising edge)

Tempo Input

CV control of the BPM rate. A value of 0-5v will set the tempo between minimum and maximum BPM values. See the advanced setting chapter for more uses of this input.

This input when connected and active will override any user control.



Advanced Settings

A number of advanced and special case settings are available under the BPM sub menu. *These features are available in a firmware version 0101 and later - if they are not available on your device refer to appendix 1 for update procedure.*

Save Banks

Pamela will automatically save trigger settings when the clock is not running. Saves are made to any one of five currently selected 'save banks' which are selectable through the save bank screen.

To switch save banks, access the 'Save Bank' screen by pressing and holding the program knob on the BPM screen. Then cycle through screens until 'bn' is shown on the display with the currently selected save bank number. Once selected the save bank can be changed. Trigger settings in this selected bank will be loaded and any subsequent saved back to the selected bank.

There is also a special bank labeled 'r' which when selected will set all triggers in the current save bank to a default state (120BPM, no extended trigger settings).

NOTE: This will not reset the tempo input assignments (see below).

Free Run Mode

In 'Free Run Mode' Pamela can be started by and follow an external clock which provides only a clock pulse, no start/stop signal (i.e the run input is not used). The presence the the clock signal will start and stop the clock (with some limitations).

To enable, access the 'Free Running' screen via a long program knob hold on the BPM screen. Cycle through screens until 'fr' is shown, then select. A '1' indicates the free running mode is enabled, a '0' disabled.

In free running mode the clock must be 'primed' to expect a clock signal and then, only on receipt of a clock signal, will start. The start/stop button will prime the clock. Once primed Pamela will display a flashing 'CLK' until a clock signal arrives. Once received the clock will start and continue until the external signal stops. Pushing the start/stop button also stop the clock or un-prime.

This setting is saved between power cycles.

Tempo input assignment

The Tempo input can be re assigned to give voltage control over features other than the actual tempo. Alternate assignments include an extra reset, save bank selection and voltage control of a triggers modifier.

To use, access the 'Tempo input assignment' screen via a long program knob hold on the BPM screen. Cycle through screens until 'tE' is shown, then select. The selected symbol on the right of the display corresponds to the assignment; A 't' indicates usual tempo behavior, a 'r' indicated the input will provide a clock reset, A 'b' indicates the input voltage will control bank selection (see above section) and finally a numeric value indicates a trigger whose modifier will be voltage controlled. ***NOTE: setting a triggers modifier to be voltage controlled will make the trigger modifier unresponsive to changes via the controls!***

This setting is saved between power cycles.

Tricks & Tips

Shuffle

A trigger can be made to 'shuffle' or 'swing' by setting its delay and delay divisor values. For example a basic 8th swing can be set by setting the trigger multiplier to 2, the delay to approximate '10' and the delay divisor to 2. Experiment!

Tap Tempo

With the clock input PQN set to 1, a manual gate connected to the clock input can be used for 'Tap Tempo' setting of the BPM.

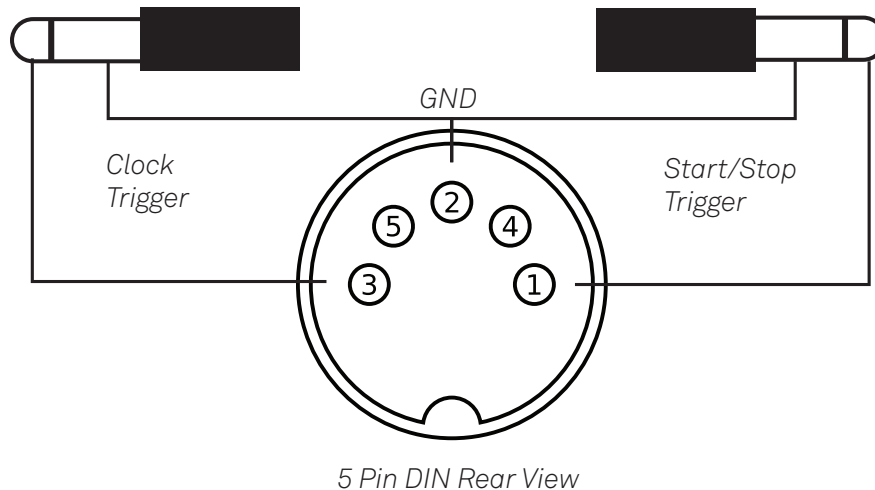
CV Sequencer

Connect a number of trigger outputs, with a wide trigger widths and varying divisors to a CV mixer. The output of this mixer can then be connected to an oscillator or other CV recipient. Interesting sequences can be created with the Pamela clock running and the adjustment of trigger settings and mixer input levels.¹

¹ Thanks to Simon Pott for this patch idea.

DIN Sync

'DIN Sync' is an interface introduced by Roland in the 1980s for the timing synchronization of synths, sequencers and drum machines etc. The interface uses a 5 pin DIN connectors but by means of a simple jack plug adapter (purchased or DIY), Pamela's Workout can be used with DIN Sync devices.



By connecting a DIN Sync clock to the clock input (with a setting of 24 PQN) and the start/stop to the run input Pamela will run as a DIN Sync slave syncing to an external clock signal.

By using two trigger outputs, one set as a 24 multiplier connected to the DIN Sync clock trigger and the other set as a constant gate connected to the DIN Sync Start/Stop trigger Pamela can act as a DIN Sync master and drive external DIN Sync devices.

ALM004 - 'D.S.G' provides such an adaptor in eurorack module format. Also a suitable adaptor cable is made by 'Expert Sleepers' with the code 'DJ-1200'.

Limited Warranty

From the date of manufacture this device is guaranteed for a period of 2 years against any manufacturing or material defects. Any such defects will be repaired or replaced at the discretion of ALM. This does not apply to;

- Physical damage arising from mis-treating (i.e. dropping, submerging etc).
- Damage caused by incorrect power connections.
- Overexposure to heat or direct sunlight.
- Damage caused by inappropriate or mis-use.
- Use of incorrect or non-official firmware

No responsibility is implied or accepted for harm to person or apparatus caused through operation of this product.

By using this product you agree to these terms.

Support

For the latest news, additional info, downloads and firmware updates please visit the ALM website at <http://busycircuits.com> and follow @busycircuits on twitter.

Please send any questions or comments to info@busycircuits.com



Appendix I: Updates

Pamela's firmware can be updated by playing a specially encoded audio file into the clock input. The audio file needs to be played uncolored and untreated at high volume (approx 6v peak to peak). Computer playback via a firewire or usb audio interface headphone out at near max volume is best recommended. Beware of amplification coloring the signal and causing problems - particularly through mixing desks.

When playing the audio file into Pamela it is **critical** that the file has not been re-encoded (i.e is a .wav not an .mp3), is not being treated by any audio effects and that nothing is played over the top - watch out for any IM or new mail announcement sounds if playing via computer. Be aware of playback software that fades in or fades out an audio file during playback.

You update the firmware at your own risk. An incomplete update can leave Pamela in a 'limbo' state, un-useable until a full update is completed. If you are unsure contact your point of purchase, they may be able to provide the update for you.

Follow these steps to perform an update;

1. *Unzip firmware zip file. You should now have a .wav file.*
2. *Power down modular.*
3. *Push and hold Pamela's Program knob.*
4. *With Program knob held down, Power on modular*
5. *Pamela's display should show a flashing 'UPDT'*
6. *Keep Program knob held for approx 5 seconds until Pamela shows a small 'pulse' symbol on display.*
7. *Connect audio output to Pamela's clock input.*
8. *Playback wav file over audio output at high volume*
9. *If volume is high enough the pulse will **rapidly** animate. Pamela is now updating!*
10. *Playback the full wav file un interrupted into Pamela.*

11. *On success Pamela display will blank for a couple of seconds and then display '120'. Pamela is now ready for use with new firmware.*

On failure Pamela will display 'Err' there for check volume, check playback was not interrupted, repeat above process to try again. It may take a few tries to get levels right. Do not panic if it fails, just try again.

A partly updated Pamela will just show the pulse symbol on start up - this indicates Pamela is in a part updated (limbo) state and is waiting for the audio file to be played in correctly (i.e jumping direct to step 6 above) before functioning normal again.

Updating the firmware will will wipe any saved setting.

To see the current firmware version installed, power Pamela on with the start/stop button held down. The firmware version will be display on the LED. This manual is for the firmware version 0108 (As shown on title page).

Please use only official firmware audio files when made available from the BusyCircuits website.