

**SND**  
**ACME-4 Advanced Clock Management Engine**  
**operating instructions**

March 6, 2012

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# 1 Introduction

The ACME-4 is a rather complex device. Therefore we suggest that you read this manual thoroughly. We have chosen to use an “electronic” manual because the PDF format with its cross-references makes it much more convenient to use than a printed one.

With the ACME-4 one can manipulate musical clock signals in various ways. Four clock channels allow synchronisation of four Midi receivers, two devices with DIN-Sync (also known as “Roland sync”), and two analog sequencers or arpeggiators.

Each clock channel can be shifted in time individually in very small and in 16th steps. A swing or shuffle can be applied to each clock channel. This is not limited to the classic shuffle (every even count is shifted). Using the editor software custom swing patterns can be designed. And it is even possible to use a different swing pattern for each clock channel.

In order to implement all these functions in real-time, clock signals have to be “twisted” massively. Some of the many devices that can be connected to the ACME-4 can handle more “clock twisting” than others. The editor software allows adjusting some parameters of the ACME-4 to match the limits of the devices connected.

And something to keep in mind: because of the many frontpanel controls of the ACME-4 it may be tempting to tweak and turn everything to the max right from the start. This will probably yield rhythmic chaos rather quickly. Musically much more interesting are subtle settings - a small shift here, a light swing there - and suddenly your tracks will groove like they never did before ...

## 2 Quick Reference

If you can't wait to get your new ACME-4 going this is the place to start. Clicking on the keywords will lead you to more detailed information.

First you have to connect a [power source](#) to the ACME-4. Then you have to decide on a [clock source](#). You can choose between [analog clock](#), [USB Midi clock](#) and the [internal clock generator](#). When working with a computer in the studio you will probably use the analog clock input. The use of the USB Midi clock is recommended only for test runs because of its low accuracy. The internal clock may come in handy to run your hardware without booting the computer.

To synchronize the ACME-4 to a software sequencer you have to feed it with either Midi clock or with an audio clock signal coming from a track that you have created for that purpose. Load a clock [sample](#) from our website into that track and route its output to the audio channel the ACME-4 is connected to. In order to clock the ACME-4 properly the sample has to be triggered every 16th note. On our website you find predefined clips (Ableton Live) and regions (Apple Logic) to do this.

Before starting your software sequencer please make sure that it is set to the same measure as the ACME-4 and all slaves connected to it. On the ACME-4 the measure is selected with the rotary [measure](#) switch.

You can now start your software sequencer at any given position, but you should make sure that the song position pointer starts on a bar of your track. If you wish to use the [internal clock generator](#) of the ACME-4 simply press the grey clock button. In either case the clock LED lights up and the ACME-4 starts after one bar of lead-in. The clock LED remains lit as long as a clock is received or generated.

Now you can start making music. Upon start-up the ACME-4 is always in manual mode, meaning that all parameters are set according to the positions of the frontpanel controls. It is easier to begin with a single [clock channel](#) to get acquainted with its functions and controls. Disabled the other channels using their [Run/Halt buttons](#).

Set [Swing Pattern](#) to position 3 for a 16th swing. Now turn the [Swing fine](#) control slowly clock-wise and you'll hear the even 16th steps being played later in time. Turning the control ccw will shift them forward in time. Try other swing patterns as well. A table with the 12 default swing patterns can be found [here](#). You can create your own patterns using the [editor software](#).

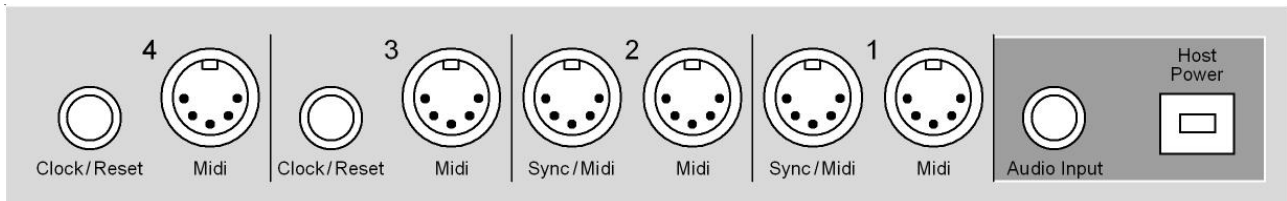
With the [Shift fine](#) controls a clock channel can be time-shifted in very fine increments up to a 32nd note forward or backwards. The [Shift 16th](#) controls allow time-shifting in 16th steps, up to half a bar forward or backward. With the [Tempo switches](#) the channels can be set to double or half tempo. Tempo changes will always occur at the beginning of the next bar.

The [setup mode](#) is used to set permanent fixed time shifts for each clock channel, to compensate for technical latencies of devices connected. One can also select some options for the DIN-sync and analog clock outputs there.

# 3 Connections

## 3.1 Inputs

### 3.1.1 USB / Power



The ACME-4 is powered through its USB port. Its consumption is fairly low, so going through a USB hub is not a problem. When connected to a computer the USB port also allows communication between both devices. When used without a computer the ACME-4 is powered from the USB power supply included.

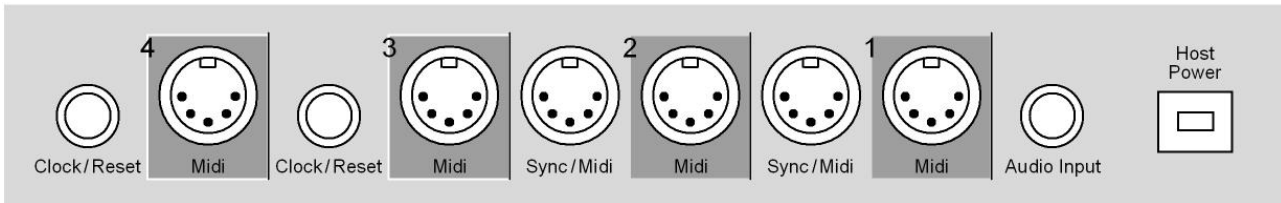
Btw, it is intentional that the USB cable supplied requires a little “determination” when plugged into the ACME-4. Normal USB connections are somewhat shaky (at least the B type), and we wanted a bit more reliability here.

### 3.1.2 Analog Clock Input

This input is used to synchronize the ACME-4 to an external analog clock. A special audio signal, clocks from analog sequencers, or even square waves from an LFO can be used as clock sources.

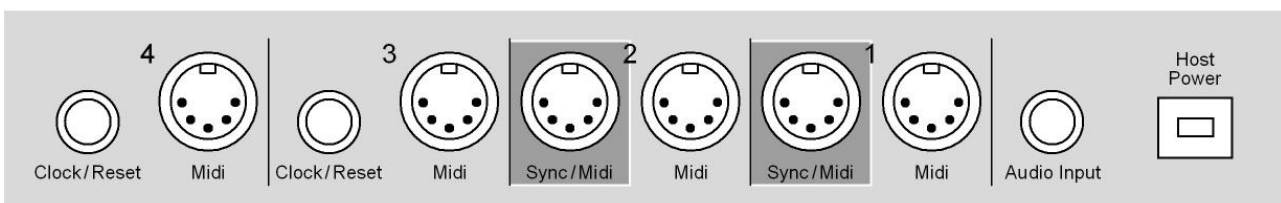
## 3.2 Outputs

### 3.2.1 Midi Outputs



Each clock channel has its separate Midi output. Each of these outputs is assigned to one port of the ACMEs [USB Midi interface](#). This allows the merging of computer-generated Midi commands into the clock streams generated by the ACME-4.

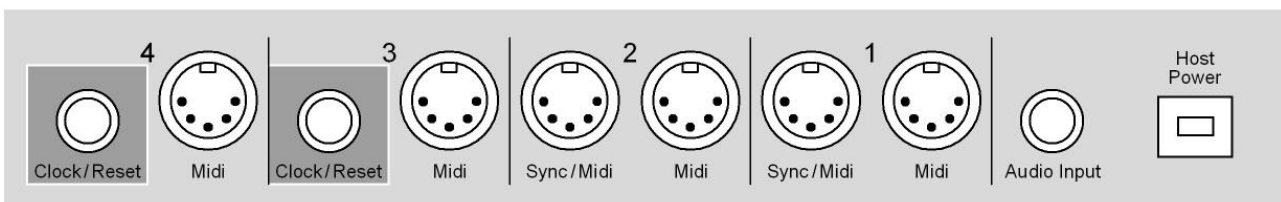
### 3.2.2 DIN-Sync/Midi Outputs



Clock channels 1 and 2 have extra outputs labeled “Sync/Midi”. They can be set to either act as a second Midi output for their channel, or to supply DIN-sync signals. ([→Setup](#))

**Note!** The DIN-Sync standard does not support all functions of the ACME-4. ([→Swing](#))

### 3.2.3 Clock/Reset Outputs



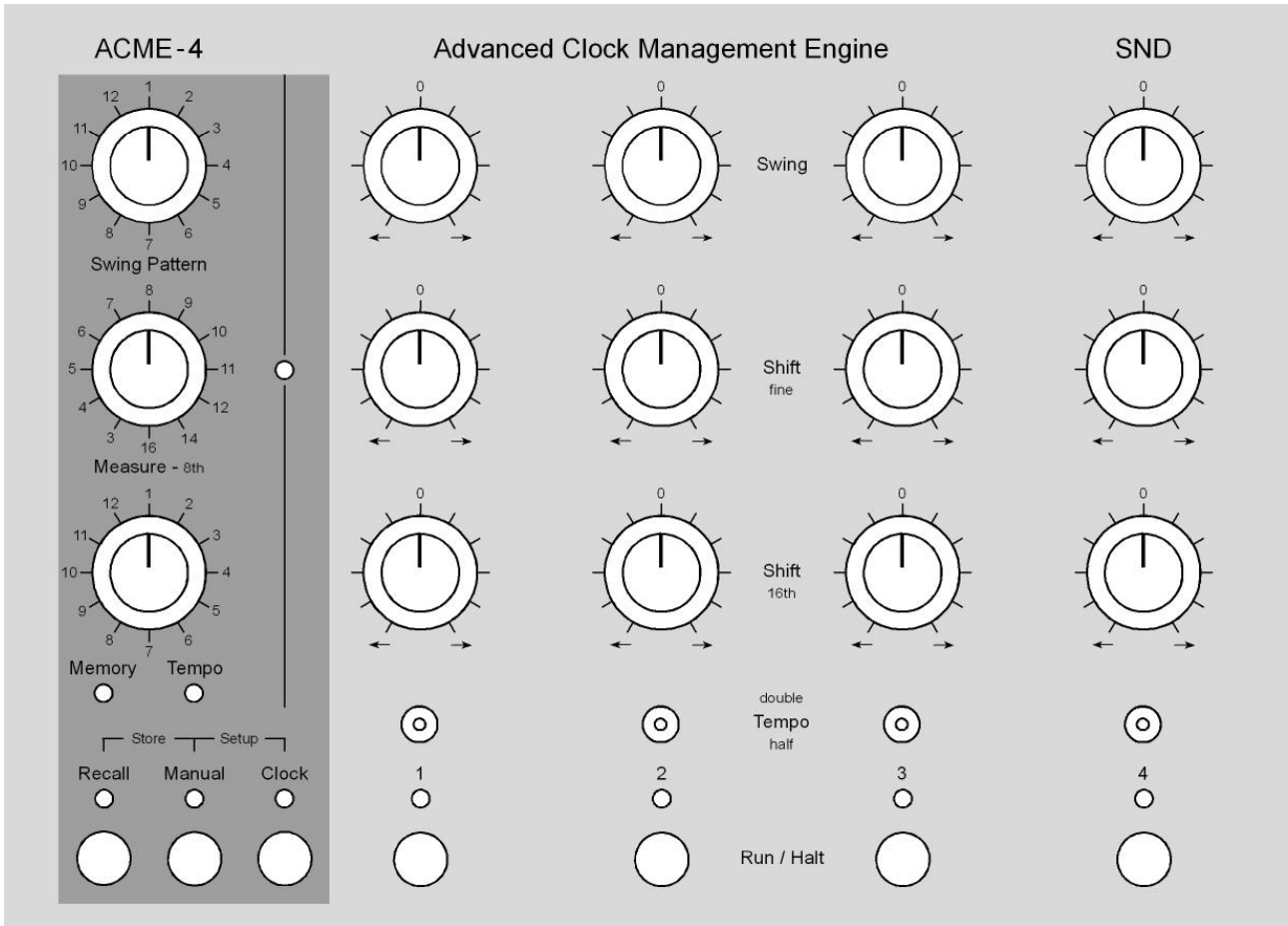
Clock channels 3 and 4 have extra jack outputs labeled “Clock/Reset”. These jacks are stereo. On the left channel (tip) an analog clock is send out, while the right channel (ring) supplies a reset signal. Polarity of these signals can be selected, as well as the clock divider. ([→setup](#)).

The reset signal is produced when one of the 3 master clock sources is started, and also every time a clock channel - having been stopped using the channels “Run/Halt” button - is restarted.

Matching cables (stereo jack to two mono jacks) are often referred to as “insert cables”, and can be obtained from many sources. If only the clock signal is needed, normal mono cables can be used since the reset output - like all outputs of the ACME-4 - is short-circuit-proof.

**Note!** DIN-sync and analog clocks - unlike Midi connections - do not provide what is called “galvanic separation” between devices, and thus are prone to cause ground loops. In the ACME-4 special provisions have been made to prevent that from happening.

# 4 Master Section



The master section on the left side of the ACME-4 contains all the controls that are common to all clock channels. Here one selects the swing pattern, the measure, the operating mode, and controls the [internal clock generator](#).

## 4.1 Swing Pattern

This rotary control is used to select the global and the individual swing patterns. In a swing pattern each 16th step of a bar is marked to be affected or not by the swing controls of the clock channels.

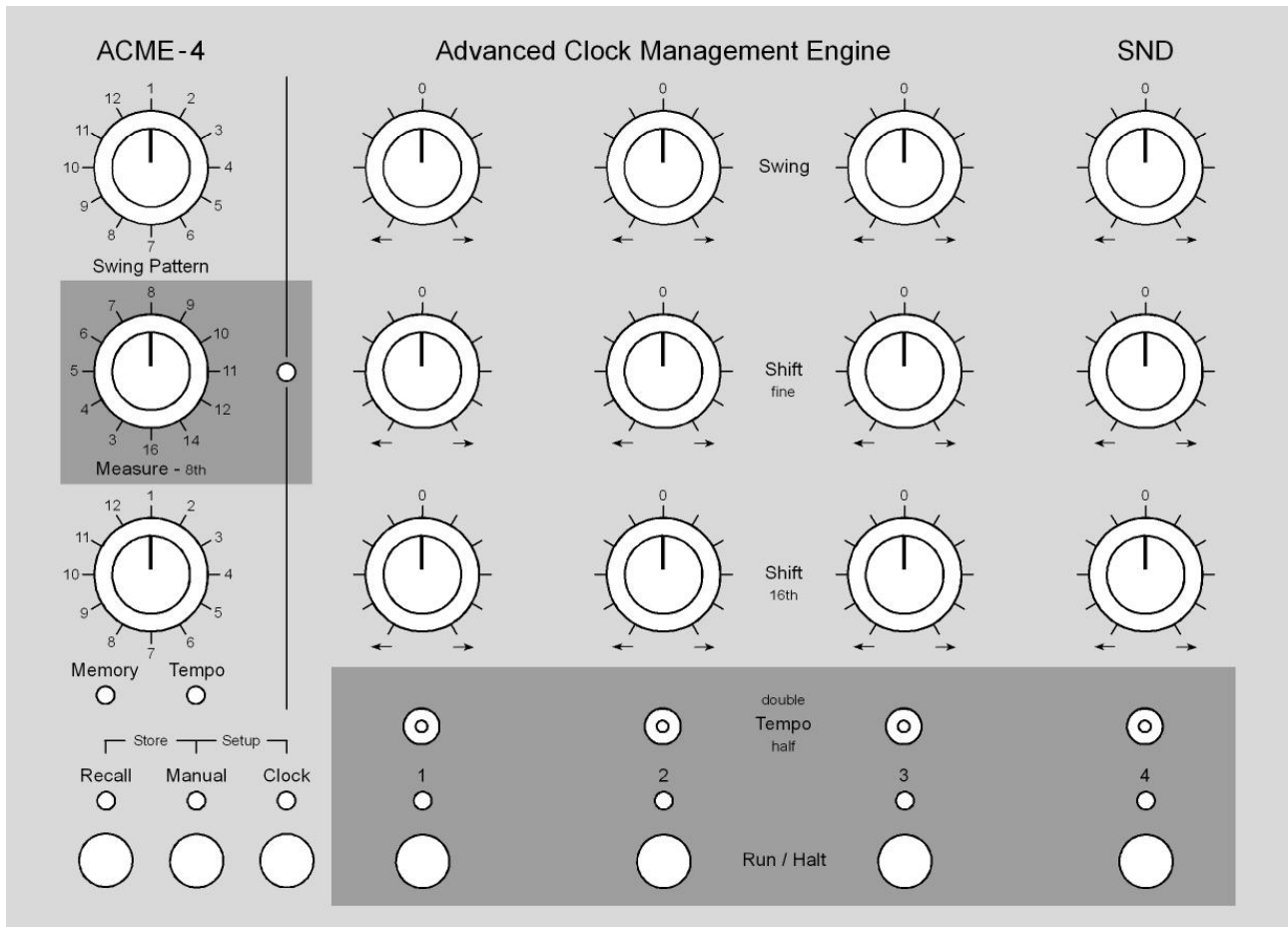
Using our [software editor](#) you can design your own swing patterns. The 12 swing patterns that the ACME-4 contains as factory defaults are listed [here](#). The editor allows you to reload these defaults at any time.

Changes in settings are always applied at the beginning of the next bar. The measure for this is set using the [Measure control](#). Turning this knob while holding down one of the [Run / Halt push buttons](#) will select an individual swing pattern only for that particular channel. Turning the control without pressing any of the channel rn/halt buttons will select the global swing pattern applied to all clock channels

**Note!** Selecting a global swing pattern will override any individual patterns one may have selected.



## 4.2 Measure



This control is used to select the measure, which needs to be set for the ACME-4 to start at the right moment. It always starts with a lead-in of one bar, otherwise it would not be possible to shift clock channels ahead in time (sorry, we did not succeed in building a time-travel device ...). The only exception is the 16/8th measure where the lead-in is only half a bar (8/8th) long.

The LED next to the measure knob flashes at the beginning of each bar. During the lead-in it shows the count-in. If a measure with an odd number of 8th is selected, the LED flashes on every 8th, while with even measures it flashes on every quarter. Apart from the lead-in the selected measure also influences when changes in the run/halt buttons and the tempo switches are executed. These functions always occur at the beginning of a bar.

**Note!** A change of measure only takes effect at the next start of the ACME-4.

## 4.3 Memory / Tempo

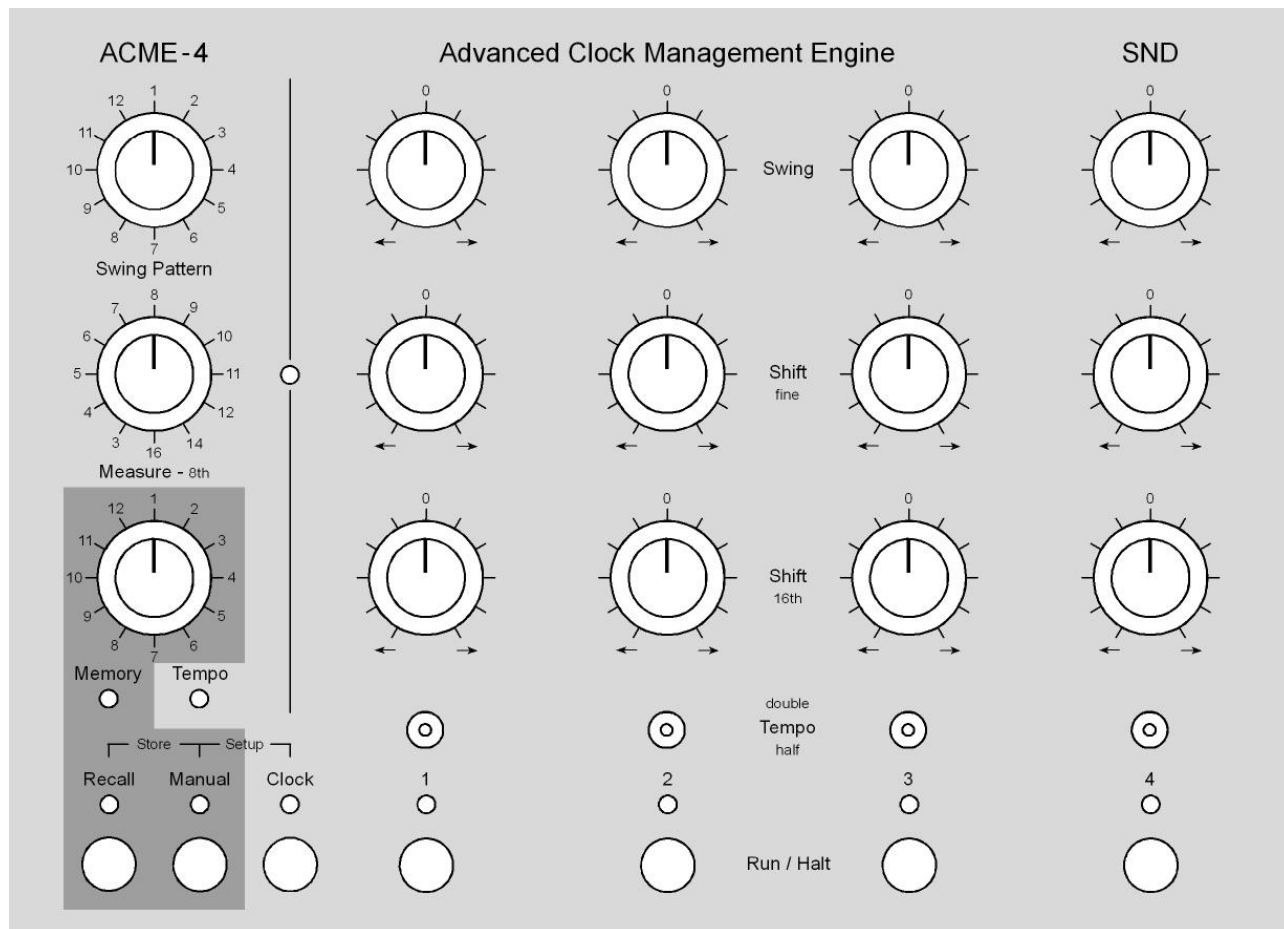
Depending of the current operating mode this rotary switch selects either one of 12 memory locations or controls the speed of the [internal clock generators](#). The LEDs below indicate which of these two functions is currently activ.

## 4.4 Manual

Pressing the Manual button switches to manual mode, in which all parameters correspond to the settings of their respective controls. Pressing the manual button again will make the ACME-4 transmit all its current parameters via USB Midi. This allows the recording of all settings into a software sequencer at the beginning of a song. For further details please refer to [Midi chapter](#).

## 4.5 Recall

The Recall mode is used to store and recall all settings in 12 memory locations.



### 4.5.1 Store Preset

Storing to memory can be done in either manual or recall mode. Select the desired memory location with the Memory/Tempo control, the Recall LED will flash. If the internal clock generator is currently running make sure that the Memory LED is lit. If it is not press the Recall button before selecting the memory location, otherwise you'll change the tempo.

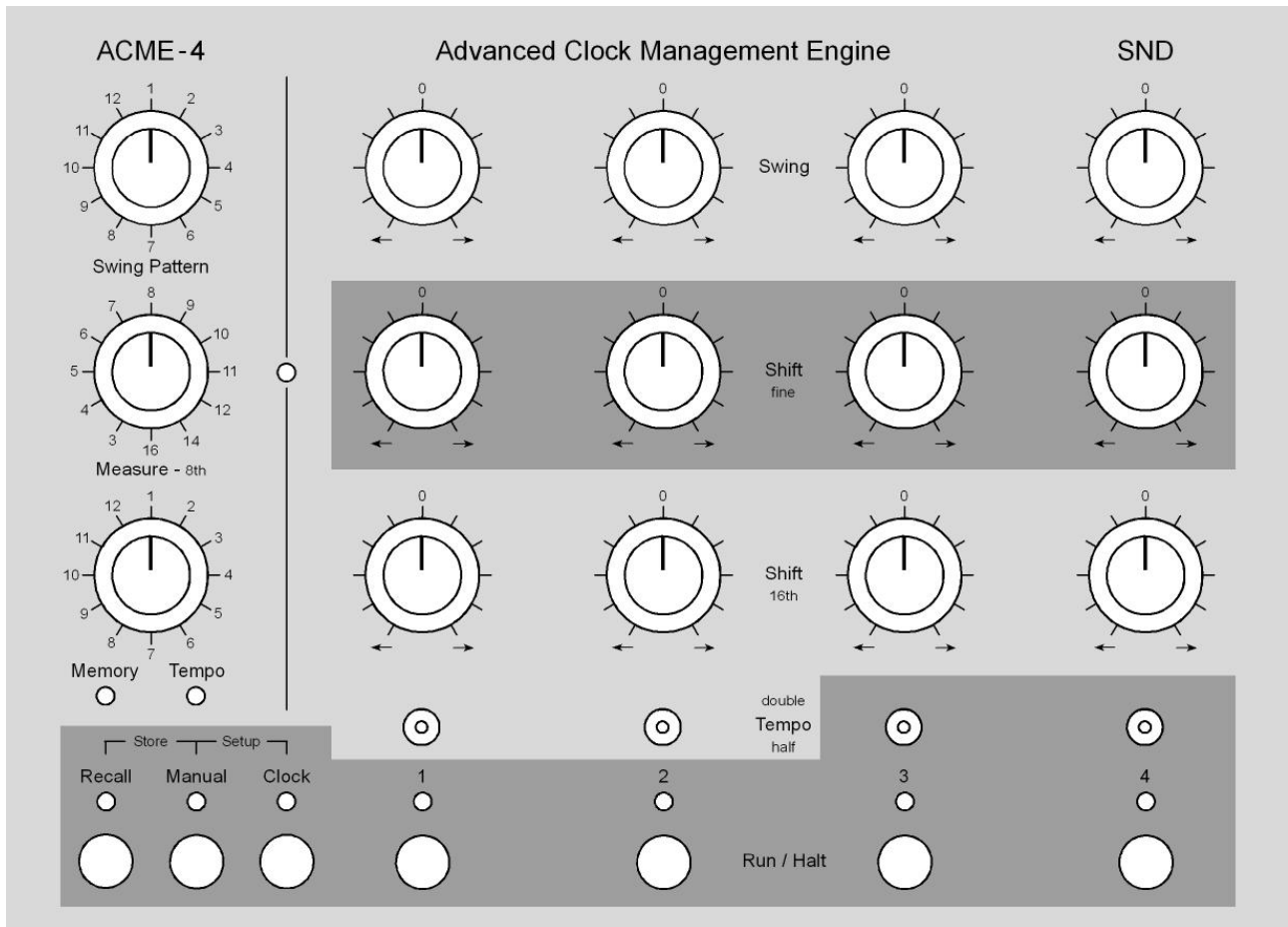
Once the memory destination is selected press the Recall button while holding the Manual button down. The Recall LED will stop flashing and all parameters have been written to memory.

### 4.5.2 Recall Preset

To load a preset first select the memory location just like you did for saving. Again, watch for the memory LED to be lit, otherwise press Recall to switch modes. If, after selecting the memory location, the Recall LED does not flash this means that your current settings are equal to that preset and need not to be reloaded. Otherwise pressing Recall will load the preset and the Recall LED will light up permanently.

After a preset has been loaded from memory all parameter values need to be "picked up" with the frontpanel controls before changes take effect. If settings have been changed, both Recall and Manual LED will flash alternately, indicating the the preset has been modified.

## 4.6 Setup



In setup mode a permanent offset can be set for each clock channel, i.e. to compensate for technical latencies. Also, the second outputs of clock channels 1/2 can be switched between DIN-sync and Midi. And there are some options for the analog outputs of clock channels 3/4 to be selected.

**Activate Setup Mode:** To enter setup mode press Manual, and while holding it down press Clock. While in setup mode the Manual and Clock LEDs flash simultaneously.

**Exit Setup-Modus without Storing:** To exit setup mode, again press Manual and while holding it down press Clock. This will leave the setup mode without permanently storing changes. Changes you may have made will be lost at the next power-down of the ACME-4.

**Store and Exit Setup Mode.** To permanently store changes of the setup parameters press Manual, and while holding it down press Recall.

**Note!** After leaving the setup mode the ACME-4 is always in manual mode. Make sure the all the Shift fine controls are returned to their center positions, unless you wish to shift a channel in addition to its permanent offset.

### 4.6.1 Latency Compensation

For all slaves connected to the ACME-4 to be right “on top of each other” when their Shift fine controls are set to zero, the setup mode allows to select a permanent offset for each clock channel. When in setup mode the Shift fine controls are used to set this offset within a range of +/- 30mS.

To adjust all slaves to a DAW proceed as follows:

1. Have all slaves play a measure in 4/4 using sounds with sharp transients (i.e. a rim shot)
2. Have your software sequencer also play one bar in 4/4
3. Start your clock master
4. On the ACME-4 turn off all clock channels and enter setup mode
5. Turn on clock channel 1
6. Now adjust the Shift fine control until both your DAW track and the sound coming from the slave connected to clock channel 1 are as tight as possible.

Repeat the last step turning on one clock channel after the other. Now all your machines are tight and you can leave the setup mode. Don't forget to save your setup!

### 4.6.2 Sync/Midi Outputs (channels 1/2)

In setup mode the second outputs of channels 1/2 can be switched to DIN-sync or Midi. Pressing Run/Halt will toggle between the two settings. The channel LEDs will indicate the setting as follows:

Off	DIN-Sync
On	Midi

### 4.6.3 Analog Clock Outputs (channels 3/4)

#### Clock Polarity

For each of the analog outputs on channels 3 and 4 the polarity can be changed in setup mode. Pressing Run/Halt toggles between normal and inverted polarity. The inverted clock and reset signals should be chosen for equipment using “switched triggers”, mostly older stuff (i.e. from Moog, Korg, and Yamaha). The channel LEDs will indicate the setting as follows:

Off	normal
On	inverted

#### Clock Divider

Each analog clock has its own divider, which is selected using the Tempo switches.

double =  $\frac{1}{16}$ , normal =  $\frac{1}{8}$ , half =  $\frac{1}{4}$

These note values refer to the center position of the Tempo switch in normal operation. Since there, again, a channel's tempo can be doubled or divided by two, a total of 5 different clock dividers are available:  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ,  $\frac{1}{16}$ ,  $\frac{1}{32}$ .

# 5 Clock Sources

The ACME-4 can use 3 different sources as its clock reference. There are two external clock sources (analog und USB-Midi clock) as well as an internal clock generator. External clock sources are turned off while the internal clock generator is running, and vice versa. Also, one should make sure to apply only one external clock at any time.

## 5.1 Analog Clock Input

At its audio input the ACME-4 expects to see a clock signal based on 16th steps. This signal can come from one of our clock generating plugins or from a special sample file being played by a DAW, both available on our website. Analog clocks coming from an analog sequencer or even a square-wave LFO can also be used as clock signals.

### **Ableton Live is used as an example for working with plugins:**

1. Connect an output of your audio interface to the audio input of the ACME-4.
2. Create an audio track in Live and assign it to the output the ACME-4 is connected to.
3. On this track open one of the clock generating plugins from our website.
4. Make sure that the output level is high enough (at least 0dBm pp).
5. Make sure that your Live song and the ACME-4 are set to the same measure.
6. Start Ableton Live. The ACME-4 will start sending out clocks after a lead-in of one bar.

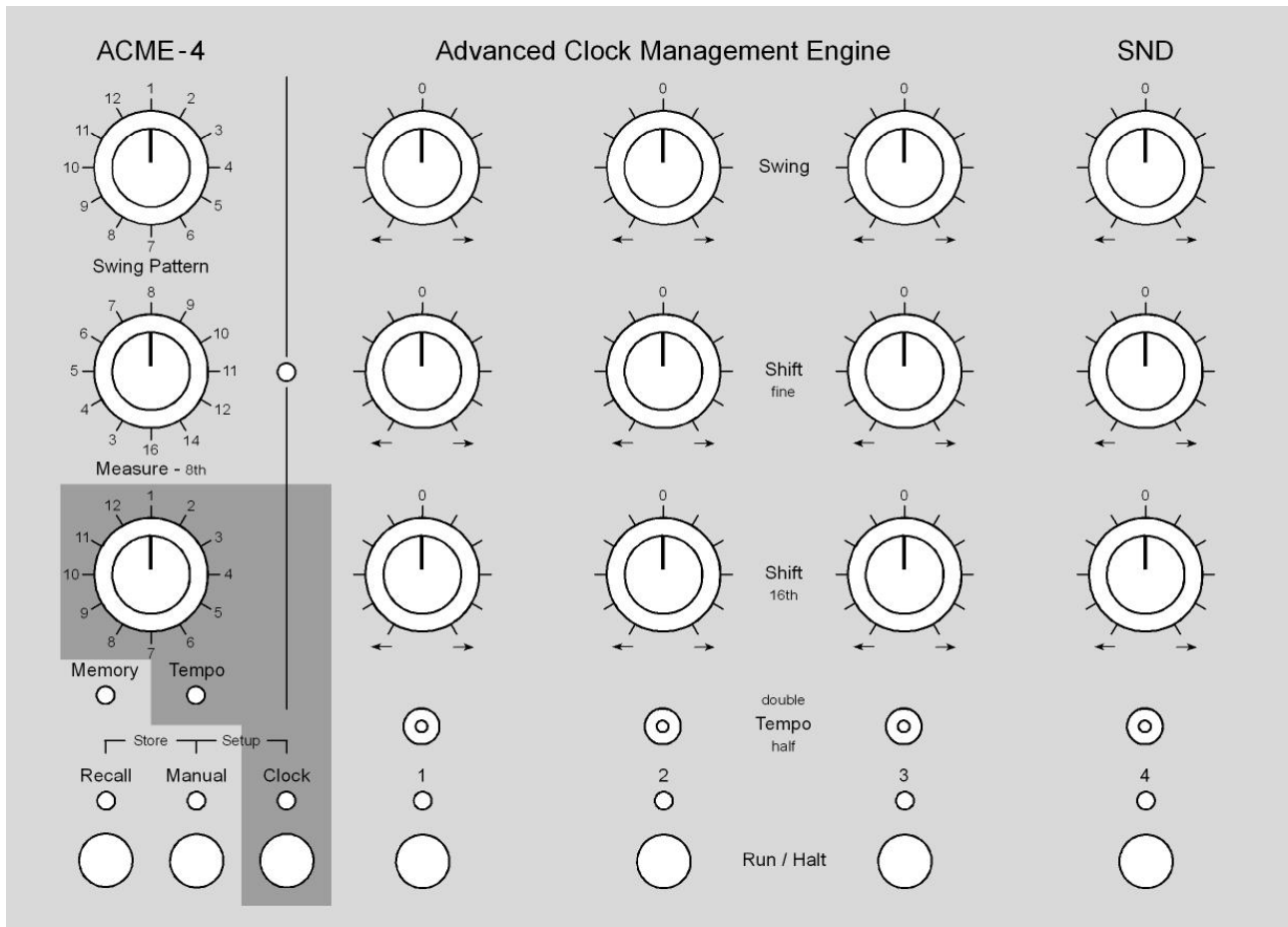
### **When using an AKAI MPC proceed is follows:**

1. Download the clock sample from our website.
2. Load the sample into your MPC and set it to "Single Shot".
3. Assign an individual audio output to that sample and connect that output to the ACME-4.
4. Create a track with a continuous 16th pattern of one bar length and loop that bar.
5. Make sure the playback level is set to max.
6. When you now hit "Play", the MPC should output 16th triggers on the output connected to the ACME-4, which in turn will start after a one-bar lead-in.

## 5.2 USB Midi Clock

If you wish to synchronize it by means of midi clock, set your software to send out clock on the fifth midi port of the ACME-4. USB Midi clock is supported only for convenience when doing quick test runs. Because of design flaws in both Windows and Mac OS (not in the ACME-4!) it has a much higher jitter and is not recommended for serious work. We therefore urge you to use the audio input.

## 5.3 Internal Clock Generator



The internal clock generator is the most accurate of the clock sources. Using a special “catch 22” the ACME-4 is able to generate the internal clock without any jitter at all. To our knowledge the ACME-4 is the only device in the world to generate 100% jitter-free midi clocks.

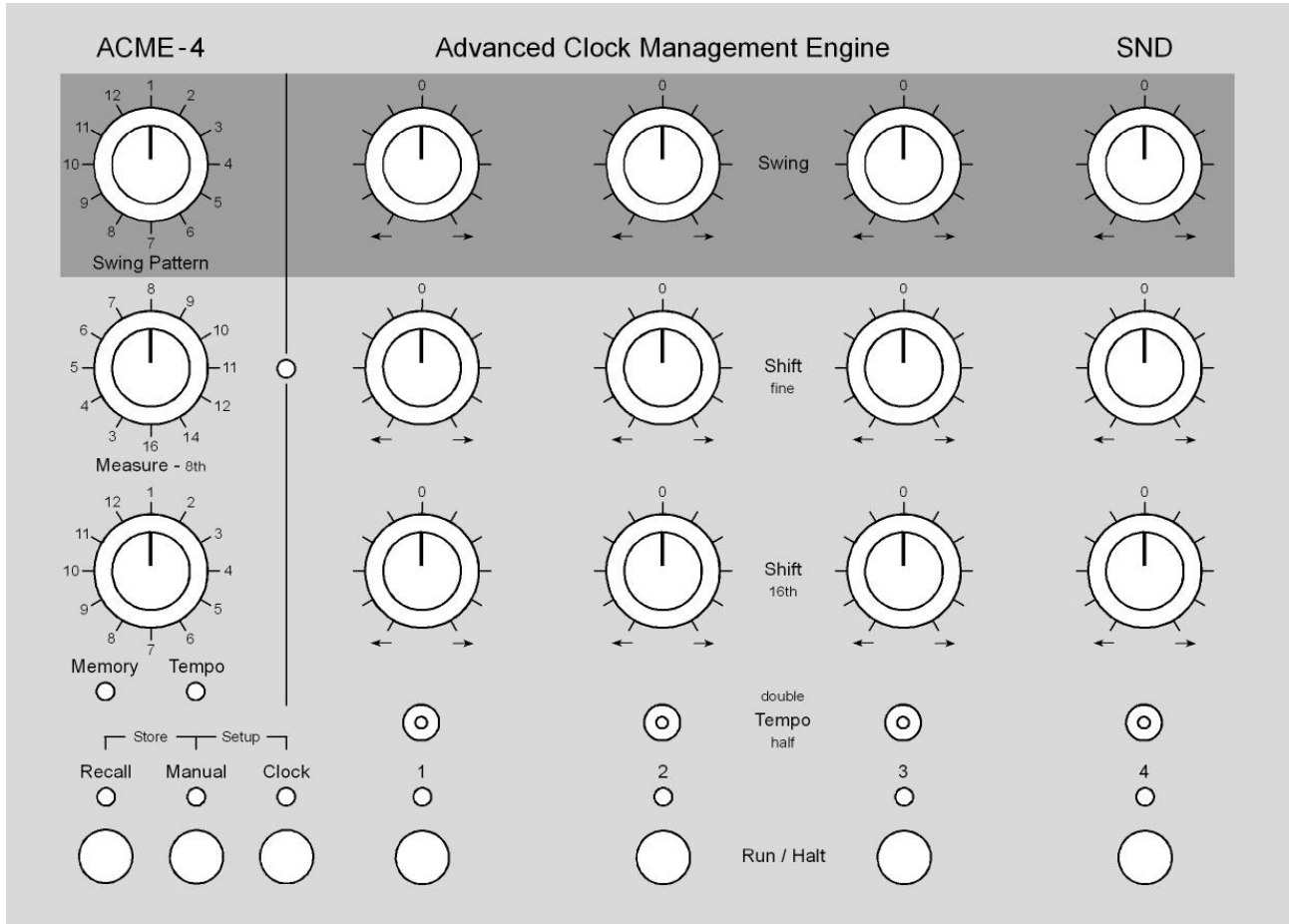
The internal clock generator is started by pressing the grey push-button. It will only start if no external clock signal is received. While it is running the external clock sources are disabled.

The function of the rotary memory/tempo control will automatically jump to “Tempo” as indicated by the LED below. Turning the control adjusts the clock tempo in steps of one BPM. Upon startup the internal speed is set to 120 BPMs. Btw, tempo settings are store together will all other settings in the program memories.

Pressing [Recall](#) will switch the function of the rotary control to “Memory”. As long as the control has not been moved (the Recall LED does not flash), pressing Recall again will take you back to Tempo mode. When in [Manual mode](#), the control always serves to adjust the tempo.

# 6 Clock Channels

## 6.1 Swing



The Swing controls allow to adjust for each clock channel individually, in which direction and how strong the swing is applied. Turning the control clock-wise will delay all the 16th-steps, that are marked in the swing pattern currently in use. Turning the control ccw will cause these steps to be played earlier.

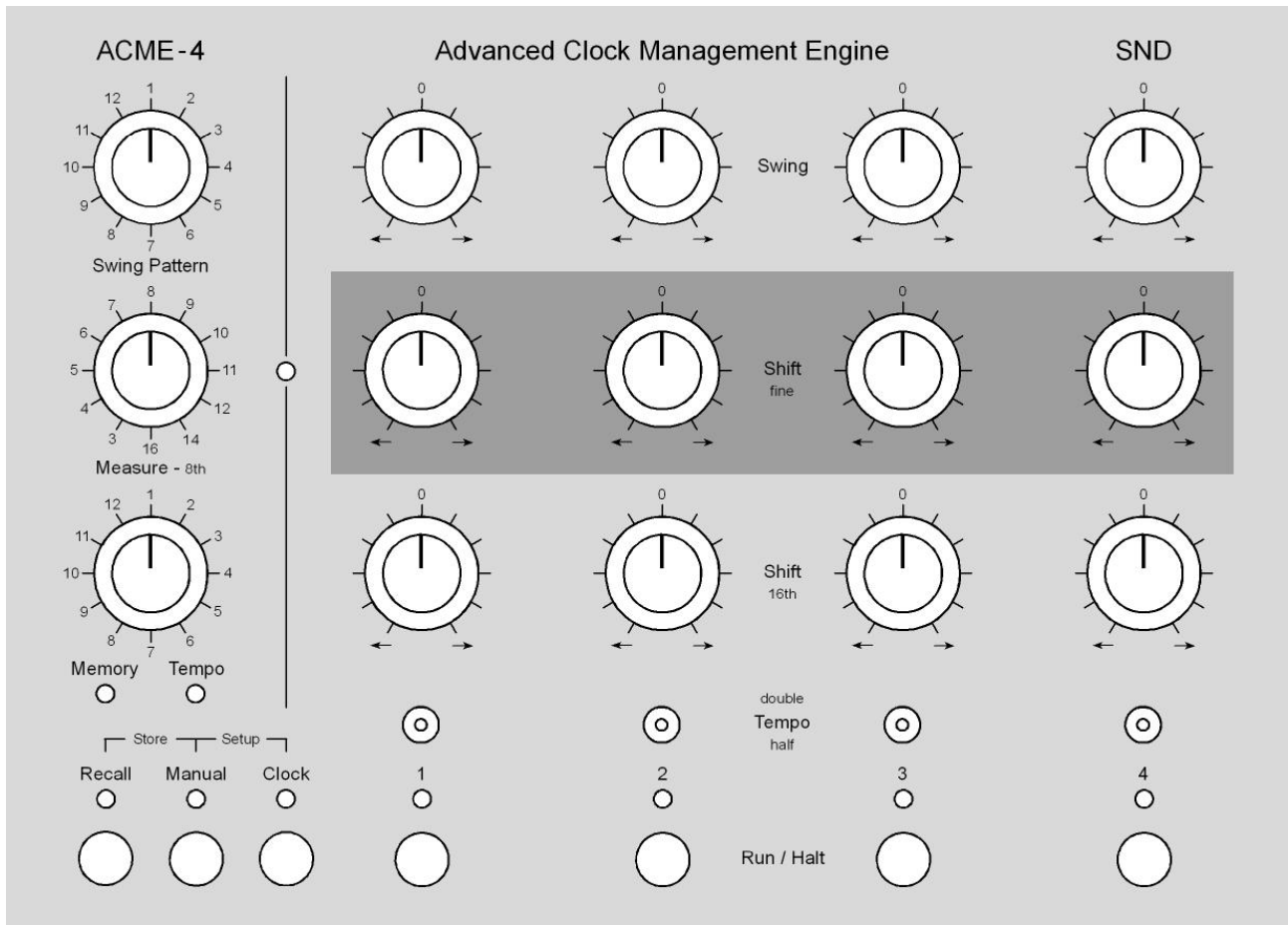
There are two different systems in use to describe the intensity of a swing. One uses 50% to describe a straight beat (no swing), while 100% indicate that the shuffled beats are delayed to their dotted value. For a 16th-note that means that they fall on the next 32nd step. The other way to look at it is to use 0% to indicate a straight beat, and 100% to indicate a delay to the next step. This would be the next 16th for a 16th-swing. We consider the second method to be more obvious, so we use that one.

The maximum usable range for beats to be shifted in depends on the slaves connected to the ACME-4. In order to create a strong swing clock ticks have to be “pushed around” rather heavily. Some machines are more tolerant to this than others. Upon delivery maximum swing range is limited to about 50%, which should work safely with most receivers.

Using the [software editor](#) one can adjust the maximum swing range individually for each clock channel to match the capabilities of the machines connected. With some of them much more extreme swing ranges are possible. Check the [software editor](#) section for more detail.

**Note!** Slaves using DIN-sync are not able to handle swing and double tempo at the same time!

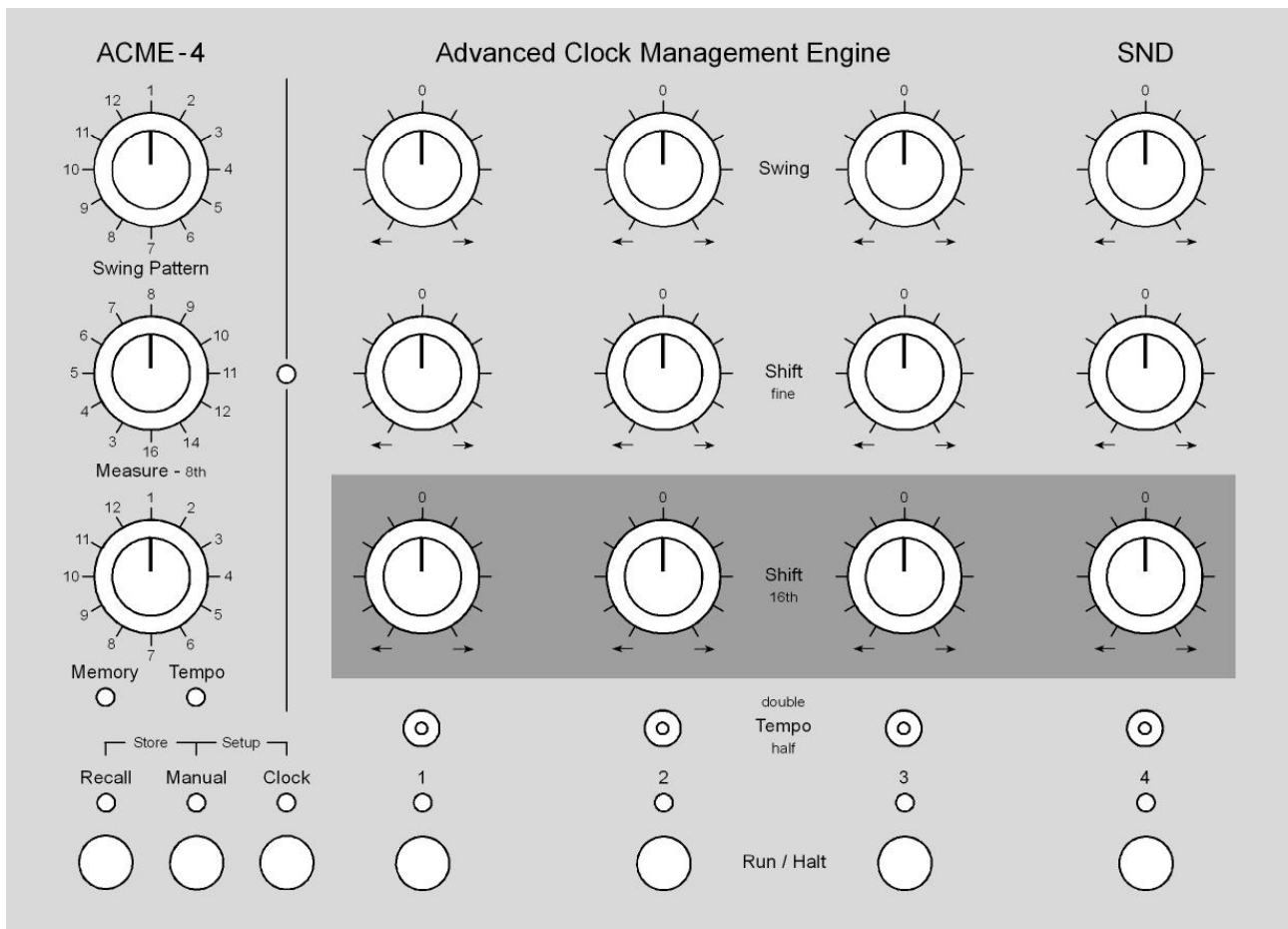
## 6.2 Shift fine



The Shift fine controls allow each clock channel to be time-shifted up to a 32nd note in very fine steps. Turning the control clock-wise will delay the channel, turning it ccw will shift it ahead.

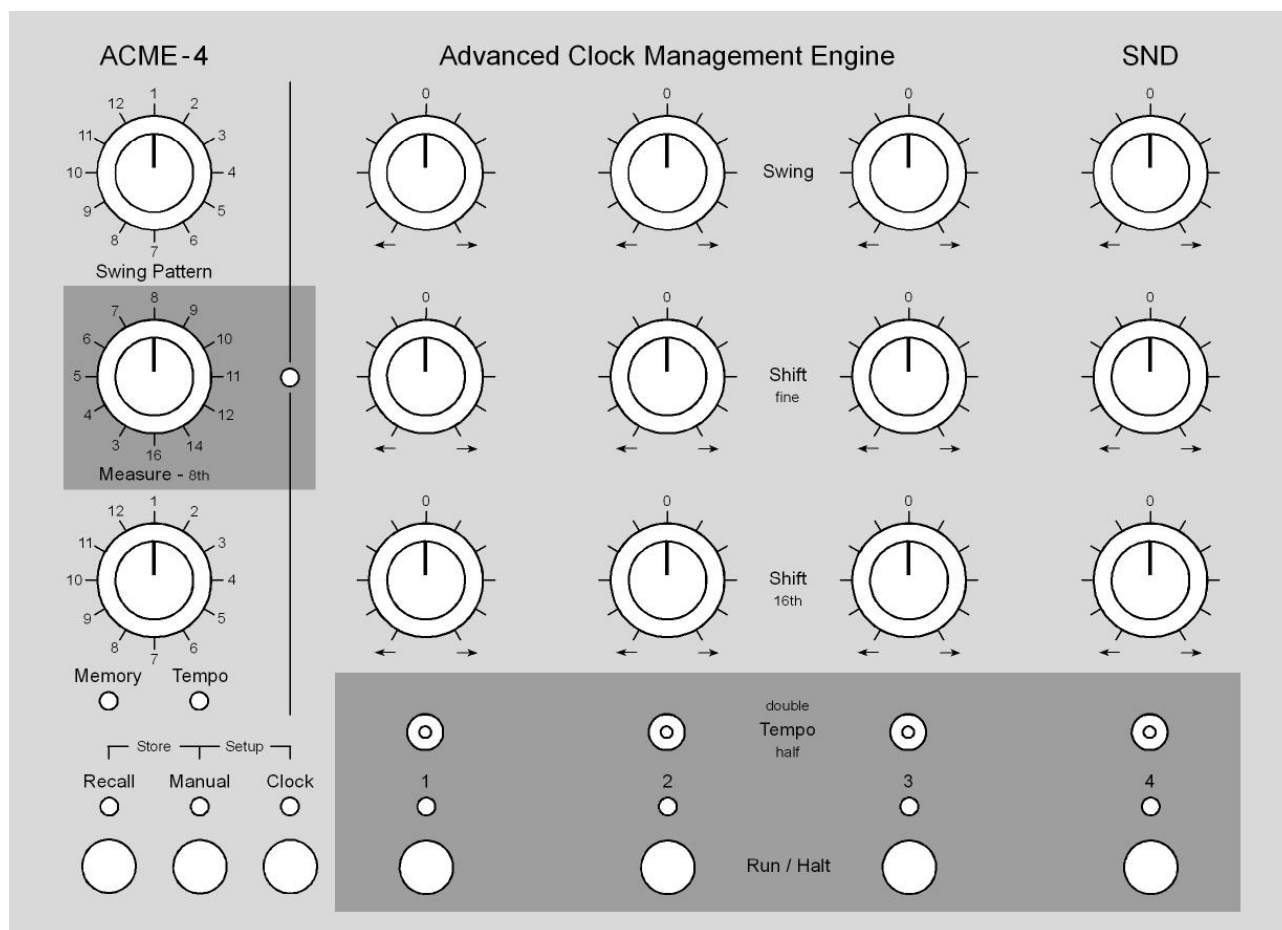


## 6.3 Shift 16th



The Shift 16th controls allow each clock channel to be time-shifted in 16th-note steps. The maximum shift range forward (ahead) depends on the selected measure. For measures below  $\frac{8}{8}$  the maximum shift forward is one bar. For all other measures the forward range is  $\frac{8}{16}$ . The maximum shift backwards is always  $\frac{8}{16}$ .

## 6.4 Double / Half Tempo



With these switches you can set individual clock channels to double, normal, or half tempo on the fly. Changes in tempo will always occur at the beginning of the next bar, as defined by the [measure](#) selected.

When in half tempo the change may take two bars of the normal tempo channels to take effect, depending on where during the channel's bar (twice as long at this speed) the switching occurs. The ACME-4 always plays full bars on all channels before tempo changes are executed.

## 6.5 Run / Halt

These push-buttons allow the clock channels to be turned on and off while the master clock is running. Like with the tempo switches, changes take effect at the beginning of the next bar. The corresponding channel LED will flash when a change is pending to be executed. When the master clock is not running, flashing channel LEDs indicate "armed" channels that will run when the master clock is started.

**Note!** Make sure that the measure of the ACME-4, the master clock source, and all devices connected are the same, otherwise channels may be still in sync but off-beat when turned off and on.

**Note!** If you have an **AKAI MPC** connected to one of the channels, use the [software editor](#) to put that channel into [MPC mode](#). Otherwise, the MPC will not start again if the Shift 16th parameter is not set to zero.

# 7 Midi

## 7.1 Midi Interface

When connected to a computer the ACME-4 will log in as a USB audio device with 5 Midi output ports and 1 Midi input port. Output ports 1 through 4 correspond to the 4 output channels of the ACME-4. If you wish to send Midi data from your computer to one of the devices connected to the ACME-4 simply address it through the Midi port that corresponds to the output channel the particular device is connected to.

Midi data sent to these ports is merged with the clock data generated by the ACME-4. As an example, one could have the computer “throw in” additional fills on top of a programmed beat on a TR-909. All types of Midi commands are passed through, except for real-time and system exclusive.

Output port 5 and the input port allow communication with the ACME-4 itself for remote control and for the [editor software](#)

## 7.2 Midi Remote Control

Almost all functions of the ACME-4 can be remote controlled via Midi. A Midi implementation chart with all controllable parameters can be found in the [appendix](#). As mentioned above the ACME-4 communicates with your computer through its Midi output port 5 and its input port. When you adjust controls on the ACME-4, it will always send the corresponding Midi commands through to Midi output port 5.

When receiving commands the ACME-4 will immediately and always respond, independent of its current operating mode. If the ACME-4 is [Manual Mode](#) when receiving remote control commands it will go into [Recall Mode](#). This indicates that parameters that were changed via Midi now need to be “picked up” when using the frontpanel controls.

# 8 Editor

## 8.1 Requirements

To use the editor software **Java Runtime** has to be installed on your computer. If this is the case a double-click on the **ACME-4 Editor.jar** file will start the program. Otherwise please download Java Runtime first (available for free at [www.java.com](http://www.java.com)). Note: On Apple computers OS 10.5 (or higher) is required to run the editor software, on Windows machines Windows XP (or higher).

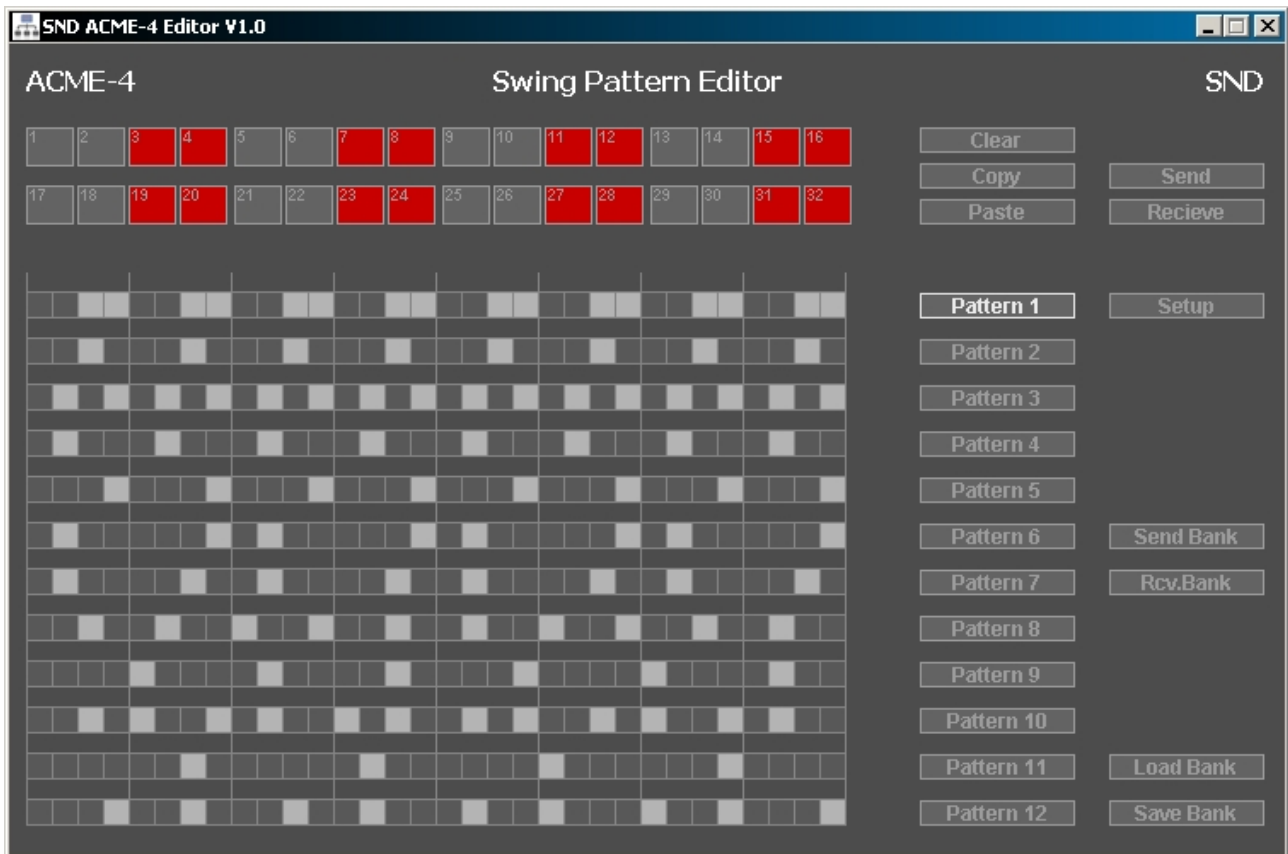
Also, your ACME-4 should run **firmware version 1.7** (or higher), for all functions to work properly. On the left side of the setup screen of the editor you can find out your current firmware version. If an older version is shown here, please install the latest version first, to be found at [www.s-n-d.com/acme-4/downloads.html](http://www.s-n-d.com/acme-4/downloads.html).

Should the program not find the ACME-4, you will be asked to select the midi ports yourself. But this should happen only with Windows XP, where the midi ports of the ACME-4 are not listed by name but show up as *USB audio device, unknown vendor*. Select this as input port and *USB audio device[5], unknown vendor* as output port. If you now click on **Test**, your ACME-4 should be found.

When running later versions of Windows, you might occasionally get a timeout error message at startup. If this happens just start the program again.

The editor consists of two screens: the [swing-pattern editor](#) screen and the [setup](#) screen.

## 8.2 Swing Pattern Editor



### 8.2.1 Editing Swing Patterns

By clicking on one of the 12 **Pattern** buttons you choose the pattern to be edited. Now you can select for each of the 32 16th-steps of the pattern whether it will be influenced by the swing function (step button red), or not. **Clear** de-selects all 32 steps at once.

**Note!** Step 1 cannot be moved by the swing function, and thus cannot be selected.

Use **Send** to transfer the pattern you've just edited to the ACME-4 and save it there. Should you change your mind after editing a pattern, you can recuperate the original pattern from the ACME-4 by pressing **Receive**. **Send** and **Receive** always refer to the pattern currently selected.

### 8.2.2 Copying Swing Patterns

Choose the pattern to be copied by clicking on one of the **Pattern** buttons. Now select **Copy** and choose the destination pattern. Pressing **Paste** copies the pattern.

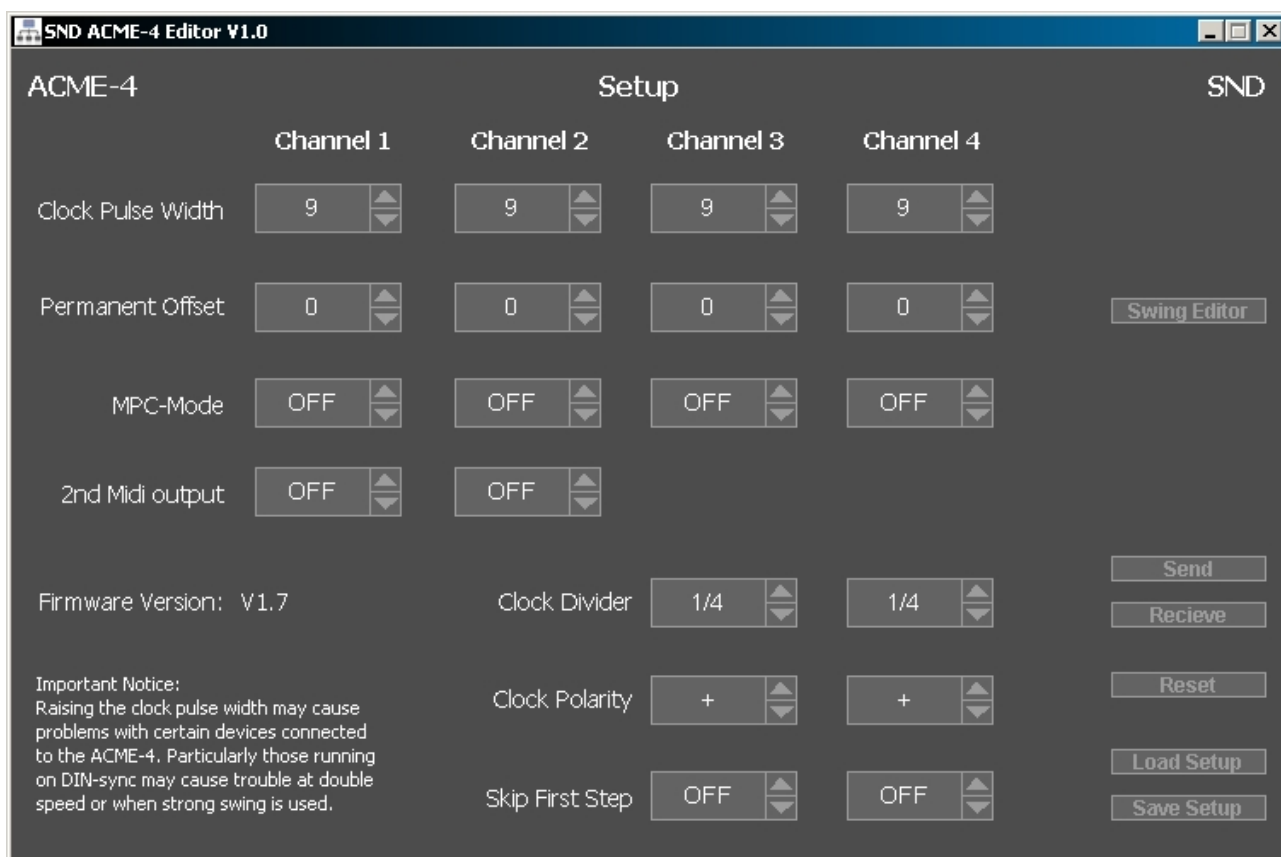
### 8.2.3 Sending and Receiving Pattern Banks

Click on **Rcv.Bank** to request all 12 swing patterns at once from the ACME-4. **Send Bank** transfers all 12 swing pattern currently in the editor to the ACME-4 and stores them there.

### 8.2.4 Saving and Loading Pattern Banks

With **Save Bank** you can write the pattern bank currently in the editor to a file on your computer. **Load Bank** allows you to load one of these files back into the editor. Swing pattern files have a ".acmp" file extension.

## 8.3 Setup Editor



Pressing **Setup** takes you to the setup screen. Here, you can edit all the parameters found in the ACME-4 setup mode. In addition there are few more parameters that cannot be edited on the ACME-4 itself. Pressing **Swing Editor** takes you back to the swing pattern editor screen.

**Note!** Except for **Clock Speed Limit** and **Permanent Offset** changes to parameters will only transfered to the ACME-4 by using the **Send** function. Changes of Clock Speed Limit and Permanent Offset are transferred immediately, but also need to be permanently stored in the ACME-4 by pressing the **Send** button.

### 8.3.1 Clock Pulse Width

This parameters sets the maximum step shift when turning the swing control fully cw/ccw. Not all sequencers/drum machines handle strong clock shifts equally well. Therefor the ACME-4 comes from the factory with a Clock Pulse Width setting of 9, which should work fine for most machines. If you want to use more extreme swing, you should adjust this parameter for the slaves you have connected to the ACME-4.

Here is a proven method to figure out the maximum setting a machine can handle:

1. Connect a sequencer/drum machine to one clock channel to use as reference.
2. Connect your test candidate to another clock channel
3. Turn the candidate's channel to double tempo and start the ACME-4.
4. In the editor bring up the candidate's Clock Pulse Width until the two machines are no longer in sync.
5. Now stop the ACME-4 and increase the Clock Pulse Width by one.
6. Restart the ACME-4. Should the 2 machines still be out of sync, go back to the step above.

**Note!** Be careful when setting the Clock Pulse Width. With this parameter it is possible to get everything to a point where nothing is in sync anymore. When in doubt it's better to go back to a setting of 9.

### 8.3.2 Permanent Offset

This parameter is used to give each clock output a permanent offset, to compensate for latencies of machines connected to the ACME-4 (see also [Latency Compensation](#))

### 8.3.3 MPC Mode

Akai's MPC workstations interpret the absence of Midi-clock commands as a stop command after a certain time. To overcome this switch the parameter to **On** when connecting MPCs. Otherwise the machine won't start anymore after having been stopped using the *Run/Halt* button with the *16th Shift* control not being set to zero.

### 8.3.4 2nd Midi Output

The *DIN/Sync* connectors of channels 1 and 2 can be switched between DIN-Sync and Midi. (See also [Setup](#))

### 8.3.5 Clock Divider

The analog clock outputs of channels 3 and 4 have a prescaler, that can be selected here. The value shown always refers to the center tempo setting. (See also [Setup](#))

### 8.3.6 Clock Polarity

Here you select the polarity of the analog clock and reset signals. (See also [Setup](#))

### 8.3.7 Skip First Note

Analog sequencers react differently to reset signals. Some are set to the first step, such that the first clock pulse will take them to step 2. Others are set to the last step, and the first clock pulse will bring them to step 1. Choose the appropriate mode for your sequencer.

### 8.3.8 Sending and Receiving Setups

After having set all parameters press **Send** to send them to the ACME-4 and store them there.

Press **Receive** to load all setup parameters from the ACME-4 into the editor. This will be done automatically when starting the program. Should you, after having edited some parameters, wish to return to the original settings, just press Receive.

### 8.3.9 Loading and Saving of Setups

**Save Setup** allows you to store all setup settings in a file on your computer. With **Load Setup** one can later reload those settings into the editor. Setup files use ".acms" as file extension.

### 8.3.10 Reset

Use **Reset** to bring back all settings (and all the swing patterns!!) to their factory defaults.

**Attention:** you will loose all custom settings and swing patterns that might be in your ACME-4!

# 9 Appendix

## 9.1 Troubleshooting / FAQ

### **the ACME-4 won't start when using the analog clock input**

1. Is the clock cable connected properly?
2. Have you selected the same audio output on your clock track as the one the ACME-4 is connected to?
3. Is the output level of your clock track high enough? The ACME-4 expects pulses of at least 0.7 volts. This corresponds roughly to 0 dBm peak.

### **the ACME-4 starts but has drop outs**

1. Check the clock level (see above)
2. Should you not use one of the clock templates from our website, you have to make sure that your clock track in fact sends out 16th triggers continuously.

### **The various slaves drift away from the master clock, but “meet” again in regular intervals**

Make sure that all slaves, the song in your software sequencer, and the ACME-4 are all set to the same measure

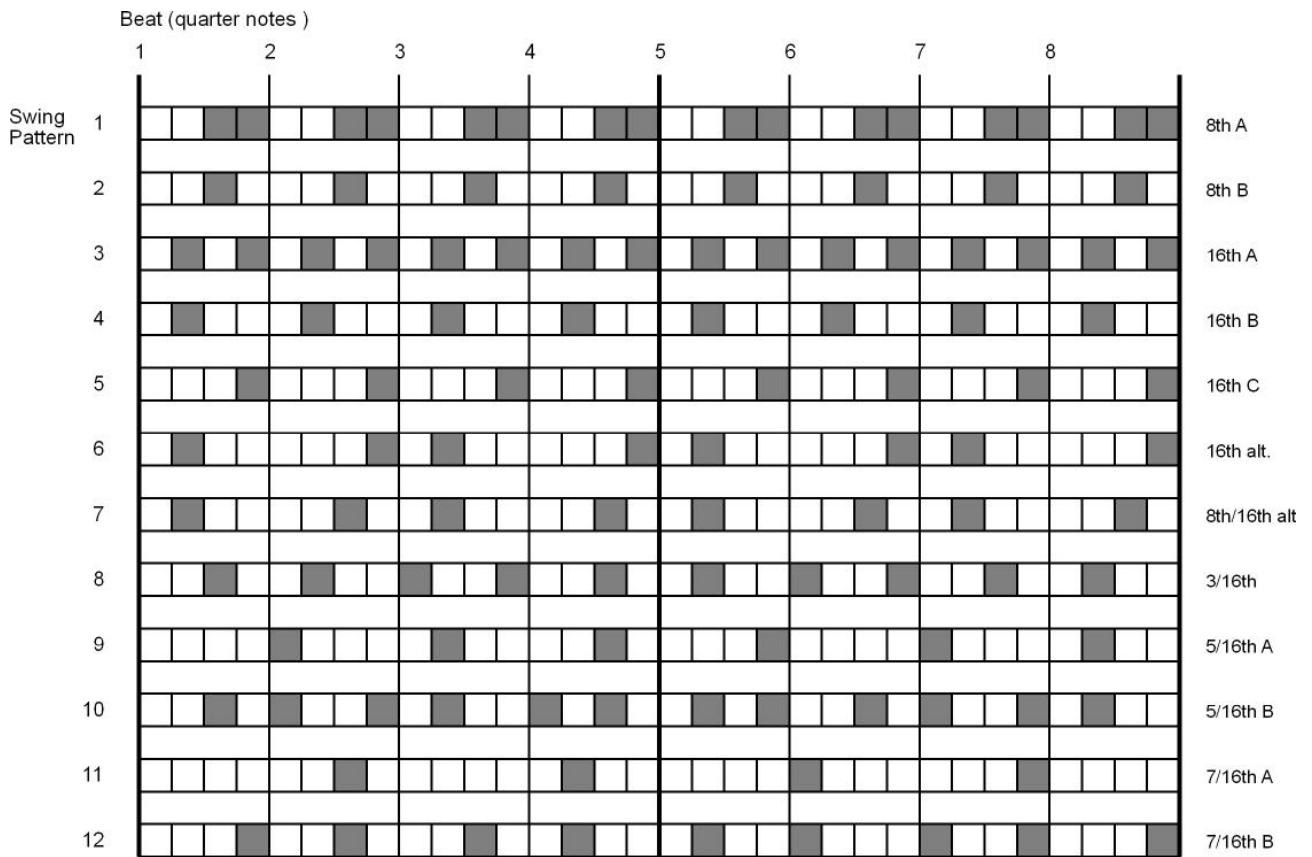
### **The tempo of the internal clock generator cannot be changed**

Is the Tempo LED (below the Memory/Tempo control) lit? If not you are in Recall mode (the Memory LED is lit) and you need to press Recall again.

Should the Recall and Manual LEDs light up alternately some parameters of the current memory have been changed. If you wish not to lose these changes you first have to store the current settings. Then you press Recall again.



## 9.2 Default Swing Patterns



## 9.3 Midi Implementation

<b>Function</b>	<b>Data Typ</b>	<b>Nr</b>	<b>Value</b>
Swing Channel 1 LSB	Controller	56	0 .. 127
Swing Channel 1 MSB	Controller	24	0 .. 7
Swing Channel 2 LSB	Controller	57	0 .. 127
Swing Channel 2 MSB	Controller	25	0 .. 7
Swing Channel 3 LSB	Controller	58	0 .. 127
7 Swing Channel 3 MSB	Controller	26	0 .. 7
Swing Channel 4 LSB	Controller	59	0 .. 127
Swing Channel 4 MSB	Controller	27	0 .. 7

Shift fine Channel 1 LSB	Controller	52	0 .. 127
Shift fine Channel 1 MSB	Controller	20	0 .. 7
Shift fine Channel 2 LSB	Controller	53	0 .. 127
Shift fine Channel 2 MSB	Controller	21	0 .. 7
Shift fine Channel 3 LSB	Controller	54	0 .. 127
Shift fine Channel 3 MSB	Controller	22	0 .. 7
Shift fine Channel 4 LSB	Controller	55	0 .. 127
Shift fine Channel 4 MSB	Controller	23	0 .. 7

<b>Function</b>	<b>Data Typ</b>	<b>Nr</b>	<b>Value</b>
Shift 16th Channel 1	Controller	48	0 .. 16
Shift 16th Channel 2	Controller	49	0 .. 16
Shift 16th Channel 3	Controller	50	0 .. 16
Shift 16th Channel 4	Controller	51	0 .. 16

Double/Full/Half Switch Ch 1	Controller	60	0 / 64 / 127
Double/Full/Half Switch Ch 2	Controller	61	0 / 64 / 127
Double/Full/Half Switch Ch 3	Controller	62	0 / 64 / 127
Double/Full/Half Switch Ch 4	Controller	63	0 / 64 / 127

Channel 1 On	NoteOn	36	> 0
Channel 1 Off	NoteOn	38	> 0
Channel 2 On	NoteOn	40	> 0
Channel 2 Off	NoteOn	41	> 0
Channel 3 On	NoteOn	43	> 0
Channel 3 Off	NoteOn	45	> 0
Channel 4 On	NoteOn	47	> 0
Channel 4 Off	NoteOn	48	> 0

<b>Function</b>	<b>Data Typ</b>	<b>Nr</b>
Memory 1	ProgChange	0
Memory 2	ProgChange	1
Memory 3	ProgChange	2
Memory 4	ProgChange	3
Memory 5	ProgChange	4
Memory 6	ProgChange	5
Memory 7	ProgChange	6
Memory 8	ProgChange	7
Memory 9	ProgChange	8
Memory 10	ProgChange	9
Memory 11	ProgChange	10
Memory 12	ProgChange	11

<b>Function</b>	<b>Data Typ</b>	<b>Nr</b>
Global Swing Pattern 0	ProgChange	12
Global Swing Pattern 1	ProgChange	13
Global Swing Pattern 2	ProgChange	14
Global Swing Pattern 3	ProgChange	15
Global Swing Pattern 4	ProgChange	16
Global Swing Pattern 5	ProgChange	17
Global Swing Pattern 6	ProgChange	18
Global Swing Pattern 7	ProgChange	19
Global Swing Pattern 8	ProgChange	20
Global Swing Pattern 9	ProgChange	21
Global Swing Pattern 10	ProgChange	22
Global Swing Pattern 11	ProgChange	23
Global Swing Pattern 12	ProgChange	24

<b>Function</b>	<b>Data Typ</b>	<b>Nr</b>
Individual Swing Pat. 1 Ch 1	ProgChange	25
Individual Swing Pat. 2 Ch 1	ProgChange	26
Individual Swing Pat. 3 Ch 1	ProgChange	27
Individual Swing Pat. 4 Ch 1	ProgChange	28
Individual Swing Pat. 5 Ch 1	ProgChange	29
Individual Swing Pat. 6 Ch 1	ProgChange	30
Individual Swing Pat. 7 Ch 1	ProgChange	31
Individual Swing Pat. 8 Ch 1	ProgChange	32
Individual Swing Pat. 9 Ch 1	ProgChange	33
Individual Swing Pat. 10 Ch 1	ProgChange	34
Individual Swing Pat. 11 Ch 1	ProgChange	35
Individual Swing Pat. 12 Ch 1	ProgChange	36
Individual Swing Pat. 1 Ch 2	ProgChange	37
Individual Swing Pat. 2 Ch 2	ProgChange	38
Individual Swing Pat. 3 Ch 2	ProgChange	39
Individual Swing Pat. 4 Ch 2	ProgChange	40
Individual Swing Pat. 5 Ch 2	ProgChange	41
Individual Swing Pat. 6 Ch 2	ProgChange	42
Individual Swing Pat. 7 Ch 2	ProgChange	43
Individual Swing Pat. 8 Ch 2	ProgChange	44
Individual Swing Pat. 9 Ch 2	ProgChange	45
Individual Swing Pat. 10 Ch 2	ProgChange	46
Individual Swing Pat. 11 Ch 2	ProgChange	47
Individual Swing Pat. 12 Ch 2	ProgChange	48
Individual Swing Pat. 1 Ch 3	ProgChange	49
Individual Swing Pat. 2 Ch 3	ProgChange	50
Individual Swing Pat. 3 Ch 3	ProgChange	51
Individual Swing Pat. 4 Ch 3	ProgChange	52
Individual Swing Pat. 5 Ch 3	ProgChange	53
Individual Swing Pat. 6 Ch 3	ProgChange	54
Individual Swing Pat. 7 Ch 3	ProgChange	55
Individual Swing Pat. 8 Ch 3	ProgChange	56
Individual Swing Pat. 9 Ch 3	ProgChange	57
Individual Swing Pat. 10 Ch 3	ProgChange	58
Individual Swing Pat. 11 Ch 3	ProgChange	59
Individual Swing Pat. 12 Ch 3	ProgChange	60

<b>Function</b>	<b>Data Typ</b>	<b>Nr</b>
Individual Swing Pat. 1 Ch 4	ProgChange	61
Individual Swing Pat. 2 Ch 4	ProgChange	62
Individual Swing Pat. 3 Ch 4	ProgChange	63
Individual Swing Pat. 4 Ch 4	ProgChange	64
Individual Swing Pat. 5 Ch 4	ProgChange	65
Individual Swing Pat. 6 Ch 4	ProgChange	66
Individual Swing Pat. 7 Ch 4	ProgChange	67
Individual Swing Pat. 8 Ch 4	ProgChange	68
Individual Swing Pat. 9 Ch 4	ProgChange	69
Individual Swing Pat. 10 Ch 4	ProgChange	70
Individual Swing Pat. 11 Ch 4	ProgChange	71
Individual Swing Pat. 12 Ch 4	ProgChange	72

## 9.4 Software Updates

New firmware can be transferred into the ACME-4 via USB. If you register with an email with “ACME-4 updates” in the subject line you will be automatically informed about software updates as they become available.

## 9.5 Technical Information

Power supply: via USB or external power supply, 1 *unit load* (5V, 100mA max.)

Clock/Reset outputs: 0/5V, 10mS pulse width