



ADDAC System
Instruments for Sonic Expression
Est.2009

ADDAC System
10th Year Anniversary : 2009 -> 2019
INSTRUMENTS FOR SONIC EXPRESSION



INTRODUCING ADDAC403 VC TIME SIGNATURE CLOCK SOURCES

USER'S GUIDE . REV01
October.2020



ADDAC
System

From Portugal with Love!

Welcome to: ADDAC403 VC TIME SIGNATURE CLOCK SOURCES USER'S GUIDE

Revision.01 November.2020

DESCRIPTION

This is our long due Eurorack Clock module, featuring multiple sections for a combined total of 8 independent trigger outputs. Introducing standard time signature musical notation along with the possibility to generate syncopation, irregular divisions and phasing all at once in a single straight forward unit.

We started by programming an extremely stable digital clock with over time drift compensation and adjustable to any Beat per Minute [BPM] up to 1 decimal case (from 0.1 to 250.0 BPM).

Also implemented a Tap Tempo button and Pingable input for syncing to external clocks using either Soft or Hard [SYNC] modes.

The Time Signature X/Y section defined as [Beats Per Bar] / [Beat Unit] and generating 4 outputs triggering at every: Beat, Bar, Odd Beat (1,3,5...) and Even Beat (2,4,6...).

A [PAUSE] button sets the Pause/Resume state of the clock also allowing different sync methods on Resume.

A [RESET] button resets either each or both the Main and Phasing Clocks

A Divider section can be set to any beat division in Linear (3,4,5,6,7,8,9,10) or Exponential mode (1,2,4,8,16,32,64,128)

The Phasing section features a totally independent clock that can run in two modes: [TEMPO] running at a slower/faster bpm phasing in and out of tempo against the main clock. [OFFSET] running at the same bpm but offsetted/delayed against the main clock generating a steady syncopated beat.

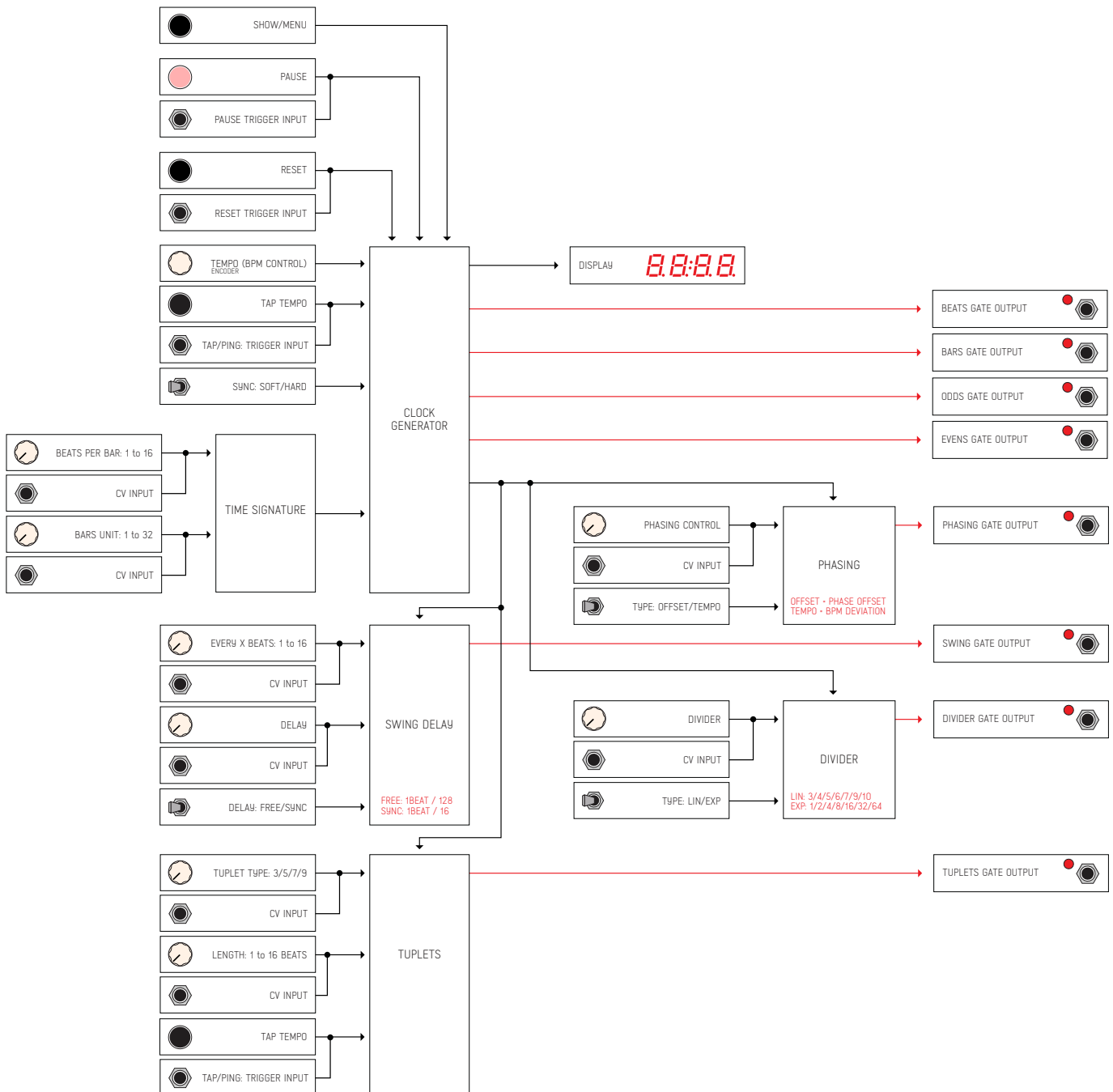
A Triplet section allows the generation of Triplets, Quintuplets, Septuplets and Ninelets with adjustable [LENGTH] or Span of the triplet to any number of Beats from 1 to 16. 4 Modes allow different [TRIGGER] and [MUTE] functionalities: they can run in a loop or one shot mode, [TRIGGER] always triggers/resets the Triplet and [MUTE] can be set to Gate On or Gate Off. Triplets always output irregular divisions of the Beat and allow Polybeat generation.

A Swing Delay section allow to delay 1 Beat at [Every X Beats]. The [Delay] knob sets the delay in a fraction of 1 Beat, this section also allows the generation of syncopated beats.

More specific settings can be changed in the [SHOW/MENU], menu functions are labeled in gold.



SIGNAL FLOW DIAGRAM



CLOCK SECTIONS

TEMPO (BPM):

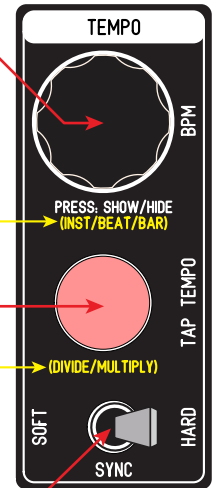
BPM can be set with the [BPM] Encoder from 0.1 to 250.0 BPM
 BPM can also be set by [TAP TEMPO], push button 4 times to set tempo, likewise for CV Input.
 Button LED will blink at every button push or trigger input.

MENU SETTINGS: There's 3 Modes for when the Tempo changes to have effect:

- INST** INSTANT: Changes have an immediate effect
- BEAT** BEAT: Changes will have effect on the next Beat
- BAR** BAR: Changes will have effect on the next Bar

MENU SETTINGS: There's 13 states for dividing/multiplying the incoming Tap /Ping:

- 1:1** **1:8** DIVISION: 1/1 to 1/8
- 1.5** **4** MULTIPLICATION: 1.5 to 4.0

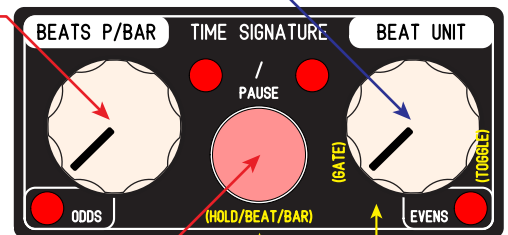


SYNC:

Both the push-button and cv input will be synced using two methods:
 SOFT: Sets new BPM but does NOT sync to the input clock.
 HARD: Sets new BPM and syncs to the input clock.

TIME SIGNATURE:

[BEATS P/BAR] sets how many Beats per BAR: 1 to 16
 [BEAT UNIT] sets the unit that represents 1 Beat:
 1:whole-note, 2:half-note, 4:quarter-note,
 8:eighth-note, 16:sixteenth-note, 32:thirty-second note



PAUSE:

[PAUSE] will pause the clock while LED is ON

MENU SETTINGS: There's 3 Modes for when Pause is disengaged:

- HOLD** HOLD: Resumes Clock where it was paused.
- BEAT** BEAT: Resumes Clock and advances to the next Beat
- BAR** BAR: Resumes Clock and Resets to the Beat 1

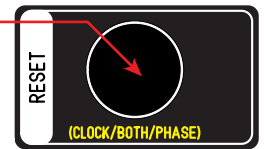
MENU SETTINGS: There's 2 Modes for how Pause behaves:

- GATE** GATE: Pauses while Button is pressed or Gate In is On:
- TOGL** TOGL: Toggles Pause State

CLOCK SECTIONS

RESET:

[RESET] Button and Trigger In immediately resets clock



MENU SETTINGS: There's 3 Reset Modes:

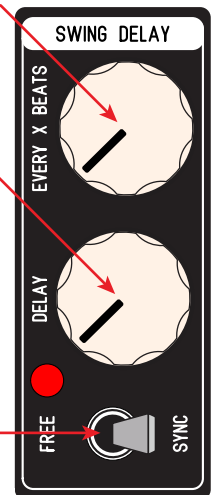
- 0000** CLOCK: Resets Clock.
- 807H** BOTH: Resets Clock & Phasing Clock
- PHAS** PHASE: Resets Phasing Clock

SWING DELAY:

Swing [DELAY] delays one Beat [EVERY X BEATS]

[SYNC] The delay can be set to 2 Modes:

- FREE (0-63): Divides 1 Beat by 64.
- SYNC (0-15): Divides 1 Beat by 16.



TUPLETS:

[TYPE] Triplets, Quintuplets, Septuplets, Ninelets

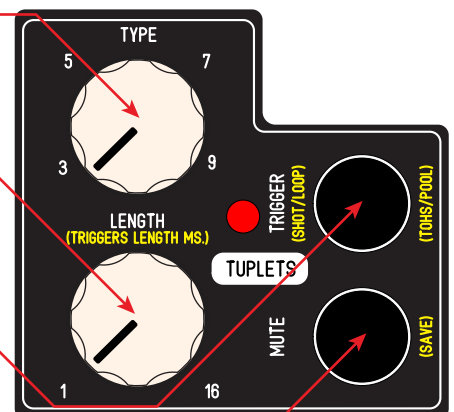
[LENGTH] Lasting how many Beats (1 to 16)

[TRIGGER] Will Start/Reset the Tuplet

[MUTE] Mutes the Tuplet Output

MENU SETTINGS: How [TRIGGER] and [MUTE] behaves

- SHOT** SHOT: Plays 1 Tuplet then Stops
[TRIGGER] Starts/Reset the Tuplet
[MUTE] Gate ON Mutes Tuplet Output
- LOOP** LOOP: Plays Tuplets in a Loop
[TRIGGER] Reset the Tuplet
[MUTE] Gate ON Mutes Tuplet Output
- TOHS** TOHS: Plays 1 Tuplet then Stops
[TRIGGER] Starts/Reset the Tuplet
[MUTE] Gate OFF Mutes Tuplet Output
- POOL** POOL: Plays Tuplets in a Loop
[TRIGGER] Reset the Tuplet
[MUTE] Gate OFF Mutes Tuplet Output

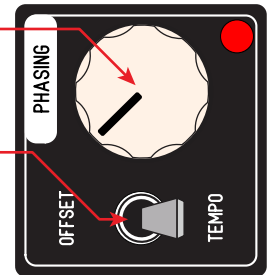


CLOCK SECTIONS

PHASING:

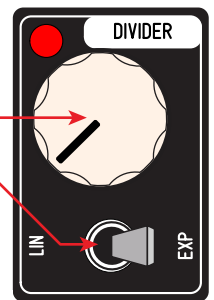
PHASING generates a secondary clock.
 [PHASING] sets the OFFSET/TEMPO deviation

[OFFSET/TEMPO] Sets the Clock Mode:
 OFFSET: Offset to the main clock (0/16 to 15/16) - same BPM
 TEMPO: BPM decrease/increase from main clock = -16 to +16 BPM



DIVIDER:

[DIVIDER] Sets the Clock Division
 [LIN/EXP] Sets the Mode:
 LIN: 3, 4, 5, 6, 7, 8, 9, 10
 EXP: 1, 2, 4, 8, 16, 32, 64, 128



SHOW/MENU:

Pressing [SHOW] button sequentially shows the current settings

BPM	8800	2500	BPM: 0.1 to 250.0
TIME	01:01	16:32	TIME: 01:01 to 16:32
SWING	00:00	16:63	SWING: 00:00 to 16:63
TUPLETS	03:01	09:16	TUPLETS: 03:01 to 09:16
PHASING	-016	016	PHASING: -016 to 16
DIVISION	001	128	DIVISION: 001 to 128



SHOW/HIDE BEHAVIOUR:

Whenever any change happens to any knob/cv input the display will show the respective section parameters for 3 seconds.

As this can get confusing when using multiple external CV sources, each section can be automatic display can be hidden. To hide a section simply press the [BPM] encoder while a section is showing and the display will show HIDE **HIDE** informing the user that the respective section is now hidden and will not be shown when changes to the controls are made.

To Show parameters again simply press [SHOW] button until the desired section is shown and press the [BPM] encoder, at each press the display will toggle between SHOW and HIDE

SHOW HIDE

MENU

SHOW/MENU:

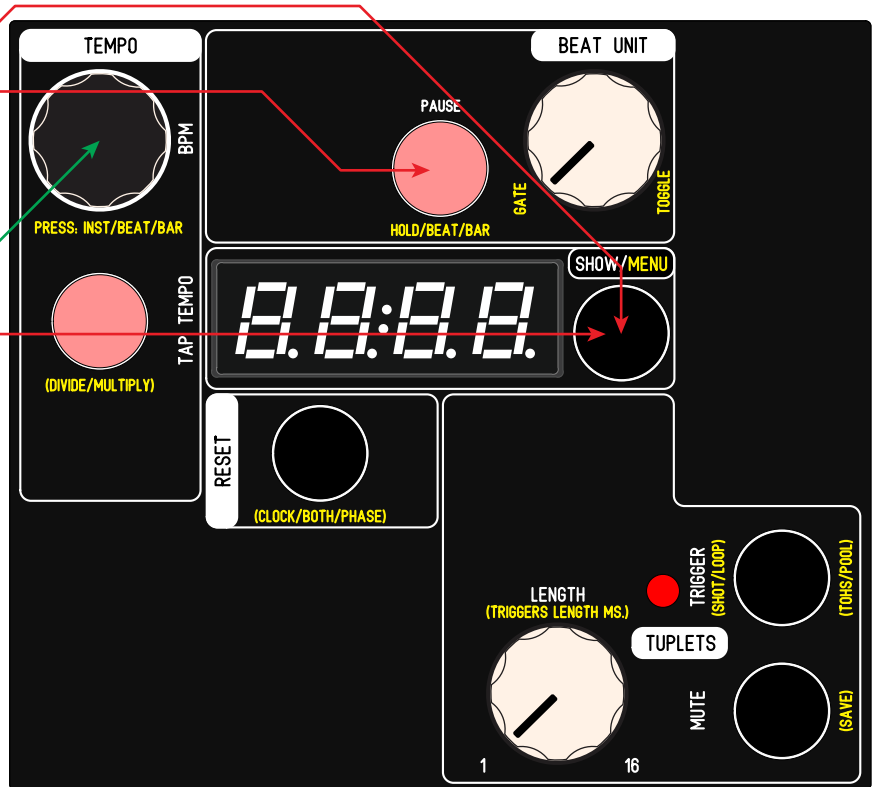
To Enter Menu press [MENU] button for 3 seconds

While in MENU STATE [PAUSE] button LED will Blink

To Exit Menu press [MENU] Button one time

Holding [BPM] encoder while in MENU STATE for 5 seconds Resets the module to "Factory Settings"

While in MENU STATE all gold labelling will be active. All other parameters are disabled.



While in MENU STATE any time a parameter changes it will be shown in the display. It is advised to unconnect any CV/TRIGGER while inside the Menu, the incoming CV will override the knobs and buttons pushes and possibly make undesired changes.

MENU CHEAT SHEAT:

BPM SETTINGS:

[BPM] encoder PRESS: INSTANT / BEAT / BAR 0050 0000 0000

EXTERNAL SYNC SETTINGS:

[TAP TEMPO] button: DIVIDE / MULTIPLY 0010 0000 0000 0400

PAUSE/PLAY SETTINGS:

[PAUSE] button: HOLD / BEAT / BAR 0000 0000 0000
 [BEAT UNIT] knob: GATE / TOGGLE 0000 0000

TUPLETS SETTINGS:

[TRIGGER] button; SHOT / LOOP / TOHS / POOL 0000 0000 0000 0000

ALL TRIGGERS LENGTH:

[LENGTH] knob: Length in Milliseconds 0000 0000

RESET SETTINGS:

[RESET] button: CLOCK / BOTH / PHASE 0000 0000 0000

SAVE

SAVE:

There's a single save state that will be recovered at startup. To save the current state get inside the Menu State and **press [SAVE] button once.**

The display will then show:
"SAVE" *SAVE*

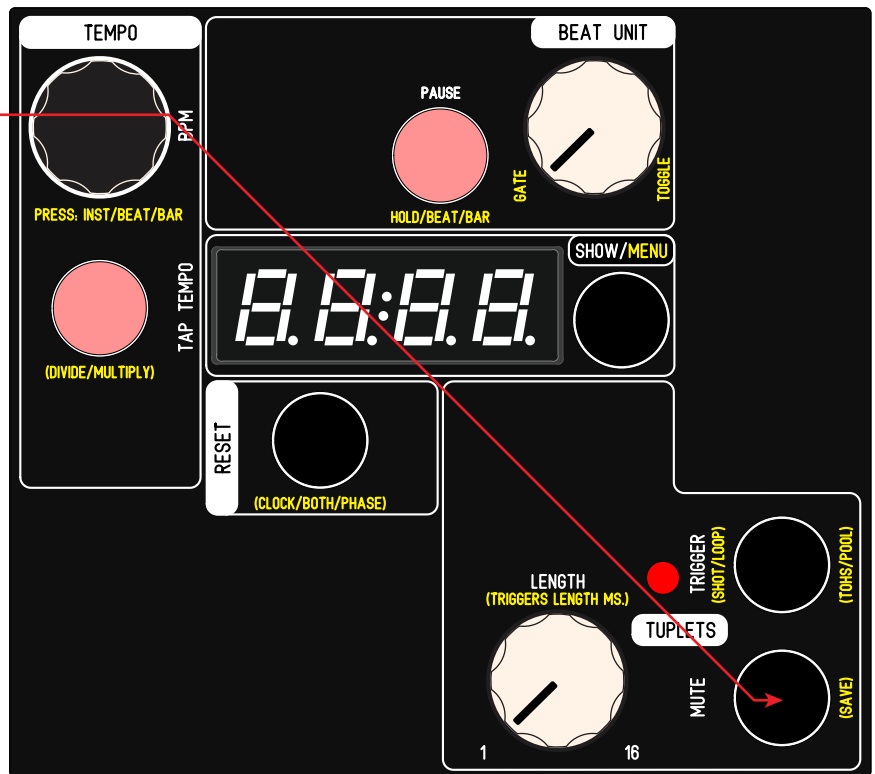
Press [SAVE] button once more.

The display will then show:
"SURE" *SURE*

Confirm you wish to overwrite the memory state by pressing the [SAVE] button once again.

The display will then show:
"DONE" *DONE*

Your new settings are now saved!



CONTROLS OVERALL DESCRIPTION



For feedback, comments or problems please contact us at:
addac@addacsystem.com