



**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 tempo ratios 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

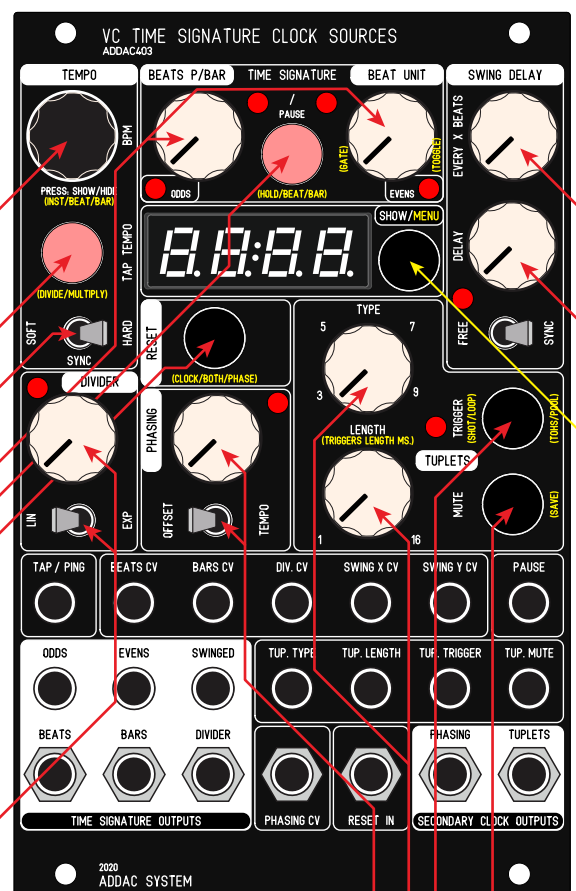
A Divider section can be set to any beat division in Linear (3,4,5,6,7,8,9,10) or Exponential mode (1,2,4,8,16,32,64,128)

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 Tuplet section allows the generation of Triplets, Quintuplets, Septuplets and Ninelets with adjustable [LENGTH] or Span of the tuplet 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 Tuplet and [MUTE] can be set to Gate On or Gate Off. Tuplets 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.



All Knobs and Push-Buttons have their own CV/Trigger inputs except the [BPM] encoder and [SHOW/MENU] button.

VC TIME SIGNATURE CLOCK SOURCES  
ADDAC403

TEMPO

BEATS P/BAR

TIME SIGNATURE

BEAT UNIT

SWING DELAY

PAUSE

SHOW/MENU

ODDS

EVENS

EVERY X BEATS

DELAY

FREE

TRIGGER

TUP. TYPE

TUP. LENGTH

TUP. TRIGGER

TUP. MUTE

BEATS

BARS

DIVIDER

PHASING

RESET IN

SECONDARY CLOCK OUTPUTS

TIME SIGNATURE OUTPUTS

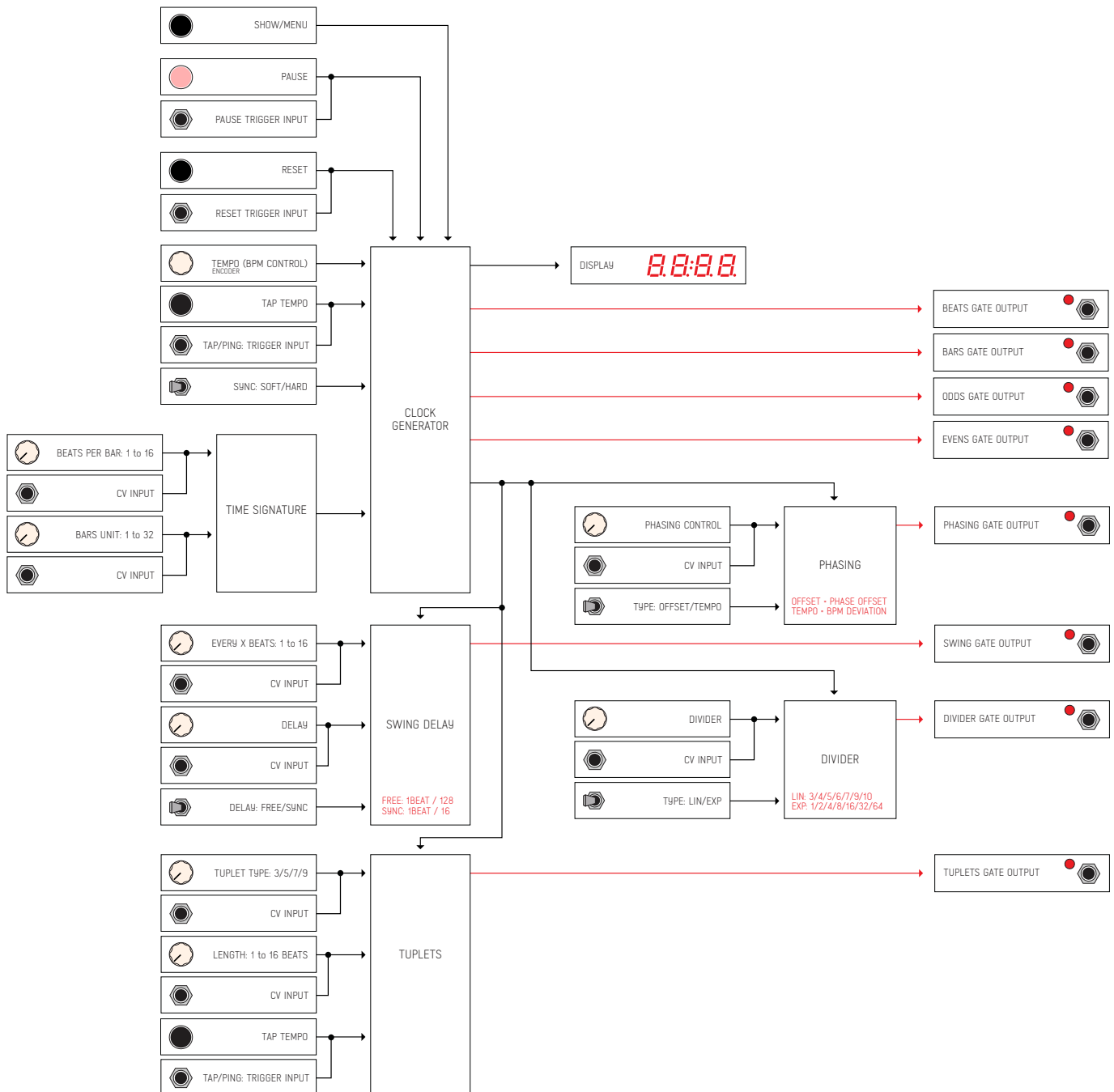
2020  
ADDAC SYSTEM

## CLOCK LOGIC TABLE

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# 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:

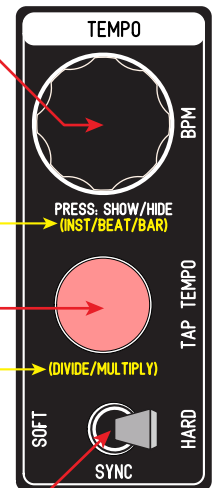
**INST** INSTANT: Changes have an immediate effect  
**BEAT** BEAT: Changes will have effect on the next Beat  
**BAR** BAR: Changes will have effect on the next Bar

**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** **4.0** 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:

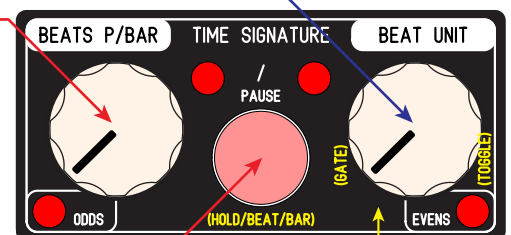
[PAUSE] will pause the clock while LED is ON

**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:

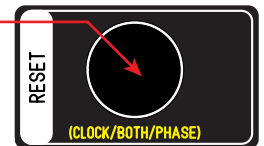
**GATE** GATE: Pauses while Button is pressed or Gate In is On:  
**TOGL** TOGL: Toggles Pause State



## CLOCK SECTIONS

### RESET:

[RESET] Button and Trigger In immediately resets clock



**MENU SETTINGS:** There's 3 Reset Modes:

- 0000** CLOCK: Resets Clock.
- 0011** BOTH: Resets Clock & Phasing Clock
- 1111** PHASE: Resets Phasing Clock

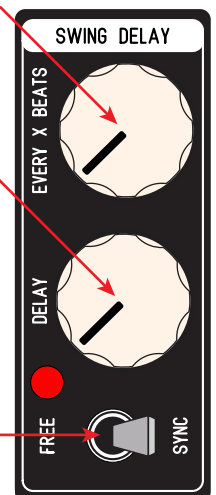
### SWING DELAY:

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

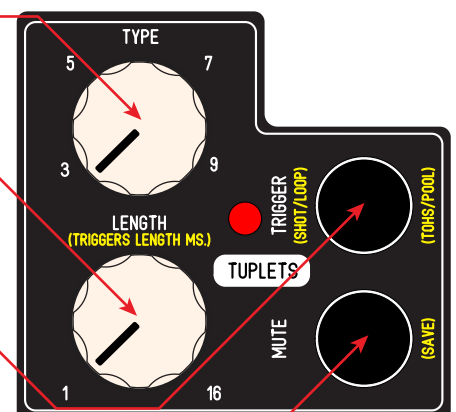
[LENGTH] Lasting how many Beats (1 to 16)

[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 Tuples 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 Tuples in a Loop  
[TRIGGER] Reset the Tuplet  
[MUTE] Gate OFF Mutes Tuplet Output



## CLOCK SECTIONS

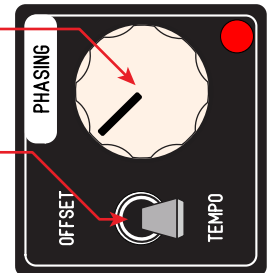
### PHASING:

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



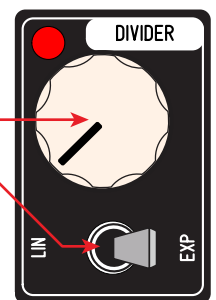
### DIVIDER:

[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	001	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
TUPLES	03:01	09:16	TUPLES: 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:

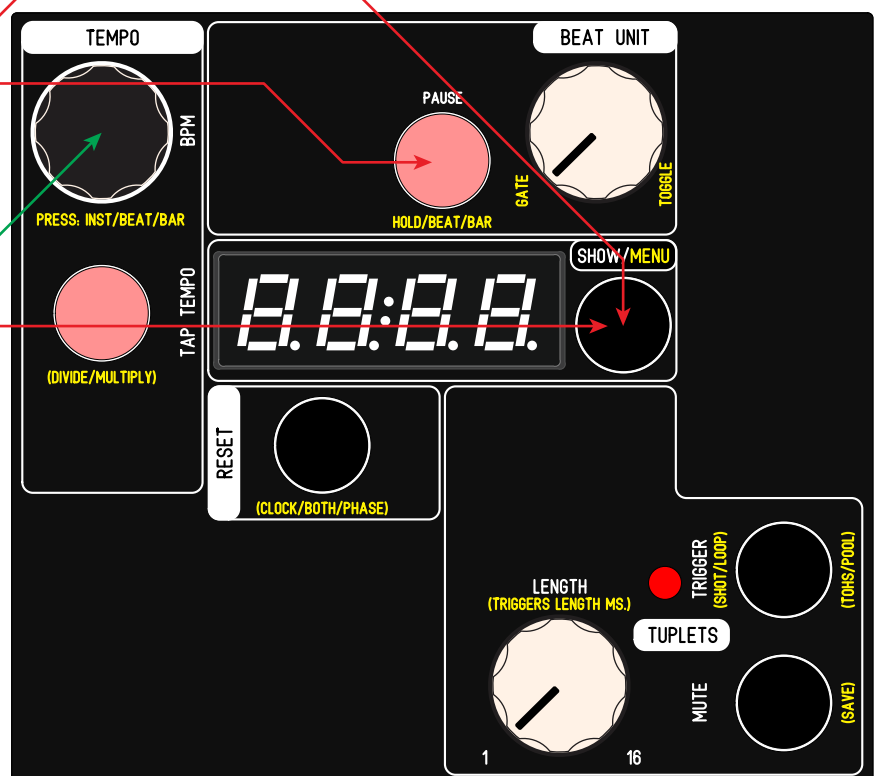
To Enter Menu press [MENU] button for 3 seconds

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

INST BEAT BAR

### EXTERNAL SYNC SETTINGS:

[TAP TEMPO] button: DIVIDE / MULTIPLY

DIVIDE MULTIPLY

### PAUSE/PLAY SETTINGS:

[PAUSE] button: HOLD / BEAT / BAR

HOLD BEAT BAR

[BEAT UNIT] knob: GATE / TOGGLE

GATE TOGGLE

### TUPLETS SETTINGS:

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

SHOT LOOP TOHS POOL

### ALL TRIGGERS LENGTH:

[LENGTH] knob: Length in Milliseconds

0000 4000

### RESET SETTINGS:

[RESET] button: CLOCK / BOTH / PHASE

CLOCK BOTH PHASE



# 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**

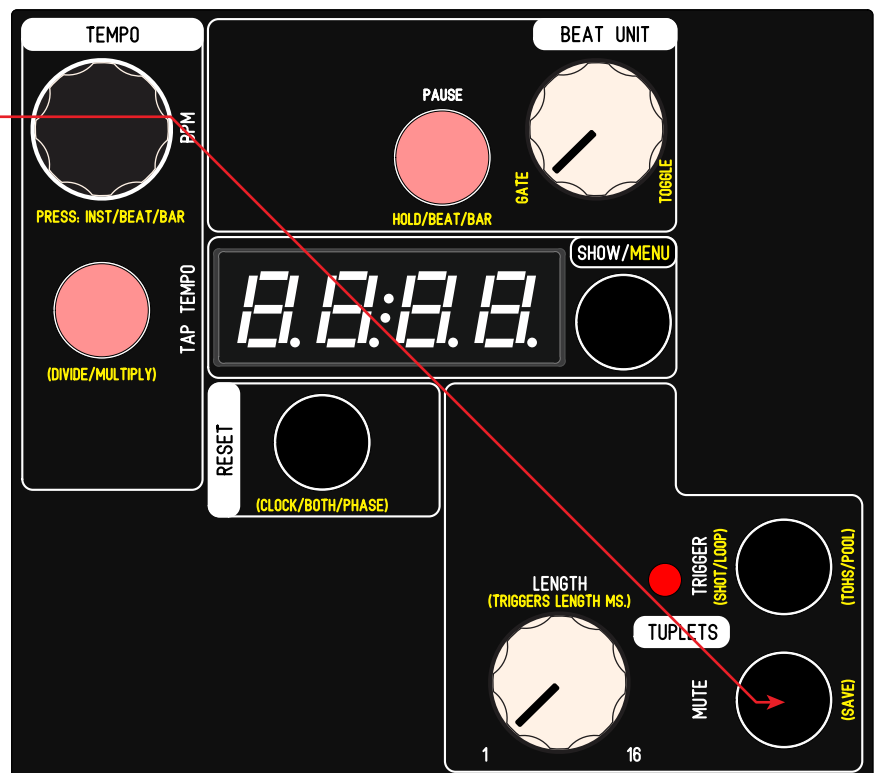
**Press [SAVE] button once more.**

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:  
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