KasTAS

KasTAS 2.0.84 2023(C)   www.twitch.tv/karstskarn

 ▬ 1. Configure the keys.
 ▬ 2. Test the keys.
 ▬ 3. Read a KAS Script file.
 ▬ 4. Execute a KAS Script file.
 ▬ 5. Generate a KAS Script file using your keystrokes.

Current key mode is [QUAD [A/B/X/Y - 4 Buttons]]
Extended key mode is [ENABLED]
 ▬ 6. Manage output modes.

You can write directly any <.kas> file in the prompt
and will be executed regardless of the menu you are in.

Press the execution control key [K] to stop a script execution.

Type $Credit for use info.

► Choose an option [N|C]: _

KasTAS ".kas" Scripts

Updated to 2.0.84 (10/03/2023)
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Introduction

File Format

KasTAS.exe can read virtually any format as long as it contains valid commands (Since now referred to as "instructions"). But is it recommended to use the *.kas* format file to avoid confusion in case you've got a messy folder.

Is it also recommended to install the included "KAS" language extension if you use Notepad++ or check if the script you write is valid using the built-in function in the KasTAS.exe known as "*3. Read a KAS Script File*".

If an instruction isn't valid or has format issues it will halt the script execution in different ways depending on the kind of error it found.

Remember that you can stop the execution of any ongoing script by pressing **CTRL + C** or **CTRL + BREAK**. This will force the executable shutdown.

The ".kas" syntax and instructions

Valid buttons

DUAL

AA	**A BUTTON**
BB	**B BUTTON**
ST	**START BUTTON**
SE	**SELECT BUTTON**
UP	**UP ARROW BUTTON**
DO	**DOWN ARROW BUTTON**
LE	**LEFT ARROW BUTTON**
RI	**RIGHT ARROW BUTTON**

QUAD

XX	**X BUTTON**
YY	**Y BUTTON**
BL	**BUTTON LEFT**
BR	**BUTTON RIGHT**

Buttons are **not forcibly only** for the console/emulator devices. For example enabling the QUAD Target mode **you can use them for any normal computer application or game.** The buttons' names are only an easy way to remember and reference them.

There's also 10 extra buttons that can be mapped to any valid Windows Key for any extra functionality.

Extra buttons

E0	**EXTRA BUTTON 0**	**E5**	**EXTRA BUTTON 5**
E1	**EXTRA BUTTON 1**	**E6**	**EXTRA BUTTON 6**
E2	**EXTRA BUTTON 2**	**E7**	**EXTRA BUTTON 7**
E3	**EXTRA BUTTON 3**	**E8**	**EXTRA BUTTON 8**
E4	**EXTRA BUTTON 4**	**E9**	**EXTRA BUTTON 9**

Note: To avoid extra delay time checking the use of those buttons their use is disabled by default. To enable them you can set "*01 EXTRA MODE   = false*" to "*true*" in the file "**keydata.ini**".

Note 2: You can change the keys of buttons by editing the file "**keydata.ini**". Be sure it is a valid Windows Key specially with special function keys. Refer to Microsoft Windows Forms Keys Enum documentation to be sure of how every key is called.

https://docs.microsoft.com/es-es/dotnet/api/system.windows.forms.keys

Instruction table

These are the 18 valid instructions that KasTAS 2.0.84 actually supports.

Control instructions

PB	**PRESS BUTTON**
RB	**RELEASE BUTTON**
RA	**RELEASE ALL BUTTONS**
SP	**SOFT PUSH**
FP	**FAST PUSH**
TP	**TURBO PUSH**
KS	**KEY STRING**

Time control instructions

HW	**HOLD/WAIT**
SR	**SYNC RESET**
SW	**SYNC WAIT**
SM	**SET MARKER**
DM	**DISPLAY MARKER**
CM	**COMPARE MARKER**

Miscellany instructions

RE	**TEXT COMMENT / REMARK**
EN	**END OF SCRIPT**

Script jump instructions

JM	**JUMP TO *X* LINE**
JT	**JUMP *Y* TIMES TO *X* LINE**

Remote control instructions

WR	**WAIT FOR REMOTE INPUT**

Control instructions

Control instructions are printed in yellow in the KasTAS.exe console and are the ones used to refer to which buttons are pressed or how long they are pressed.

- **PB Short for "Press Button"**

  Syntax

  PB [BUTTON]

  Press the stated button. It has no time arguments. Note that the stated button will keep being pressed until a "RB" or "RA" instruction is found later in the script.

  Estimated time to process: 0~2 ms.

  Example

  `00 PB ST`

  This example will press the start button.

- **RB Short for "Release Button"**

  Syntax

  RB [BUTTON]

  Releases the stated button. It has no time arguments. If the stated button wasn't pressed at all this instruction will be omitted and won't throw an error.

  Estimated time to process: 0~2 ms.

  Example

  `00 RB AA`

  This example will release the A button.

- **RA Short for "Release All"**

  Syntax

  RA

  Releases all buttons that were pressed until this instruction was read. If no buttons are pressed the instruction will be omitted and won't throw an error.

  Estimated time to process: 0~2 ms.

Example

`00 `**`RA`**

This example will release all buttons.

- **SP Short for "Soft Push"**

Syntax

SP **[BUTTON]** **[TIME]**

Pushes and holds for the stated time and then releases the stated button. Note that soft push adds 25ms after the release of the button to avoid cases where the targetEmulator/Game/Software doesn't detect the button release because it was too fast. Its functionality is pretty concrete and can be easily interchanged with "FP" instructions.

Estimated time to process: 0~2 ms + [TIME] + 25 ms.

Example

`00 `**`SP BB`**` 100`

This example will press the B button during 100 milliseconds + 25 milliseconds after releasing it. (A total of 125 milliseconds in this case).

- **FP Short for "Fast Push"**

Syntax

FP **[BUTTON]** **[TIME]**

Pushes and holds for the stated time and then releases the stated button. This instruction doesn't add time after the button is released.

Estimated time to process: 0~2 ms + [TIME].

Example

`00 `**`FP UP`**` 100`

This example will press the Up arrow button during 100 milliseconds and then release it.

- **TP Short for "Turbo Push"**

Syntax

TP [BUTTON] [TIME]

Pushes and releases every ~1 millisecond during the stated time. This function will make the button behave like a burst creating really fast pushes.

Estimated time to process: 0~2 ms + [TIME].

Example

`00 TP AA 500`

This example will do a burst of pushing the button A during 500 milliseconds and then stop.

Note: Depending on the target software maybe doesn't detect all of the times the button has been pushed. There exists the possibility that the last time the button is released isn't noticed at all by the target software and the button stays pressed in that software. If this happens or there's a possibility of this happening it's recommended to add a "RA" instruction after the "TP" instruction to ensure the target software doesn't get stuck with the button pressed.

- **KS Short for "Keyboard String"**

Syntax

KS [STRING]

Pushes and holds the stated string. Note that must be a valid Windows keyboard string and the time it keeps it pushed is fixed at 50 milliseconds.

Estimated time to process: 0~2 ms + 100 ms.

Example

`00 KS F4`

This example will press the F4 keyboard key during 50 milliseconds.

Note: This function is mainly to communicate with specific and concrete functions that for example an emulator has and is not meant to be used in the creation of the script or macro normal functions. That's why the time is fixed.

Time control instructions

Time control instructions are printed in blue in the KasTAS.exe console and are the ones used to control time synchronization or time between instructions.

- **HW Short for "Hold / Wait"**

    Syntax

    HW [TIME]

    Waits the stated time and then resumes the script execution.

    Estimated time to process: 0~2 ms + [TIME].

    Example
    ```
    00  PB  AA
    01  HW  1000
    02  RB  AA
    ```
    This example will press the A button, then wait 1000 milliseconds and then release the A button.

- **SR Short for "Sync Reset"**

    Syntax

    SR

    Depending on the user computer the execution of a script can be slightly delayed and this delay can accumulate over time specially in long scripts. All the unexpected delay is kept on record; for example if there's a "FP AA 500" instruction that will keep the A button pressed for 500 milliseconds but at the end it took 502 milliseconds, that difference of 2 milliseconds will be added to an internal record.

    Every time an SR instruction is found this record is set to zero which means it is effectively reseted. This is meant to work with the SW instruction. Check the SW instruction below for more info.

    Estimated time to process: 0~2 ms + [TIME].

    Example
    ```
    00  SR
    ```
    This will simply reset the accumulated delay counter.

- **SW Short for "Sync Wait"**

Syntax

SW [TIME]

Waits the stated time but it subtracts the delayed time. This is useful for example if there's a precise button push you want to be done but for some reason some delay did accumulate over the execution script and you want to get rid of it.

It will count the time since the last "SR" instruction and if there's none since the script execution did begin.

If the "SW" instruction had a long enough time to compensate for all the delay the milliseconds of delay erased will appear in green at the right of the instruction line in the execution window. Otherwise it will appear as red and will mean that despite erasing some delay it stills existing some.

Estimated time to process: 0~2 ms + [TIME] - [SYNC DELAY].

Example
```
00  SR
01  PB  BB
02  HW  500
03  RB  BB
04  TP  AA  100
05  FP  UP  150
06  FP  LE  150
07  FP  DO  150
08  SW  1000
```
This example will press do some random button presses and suppose that it did accumulate 10 milliseconds of delay meanwhile it was executing all those instructions it will wait 1000 milliseconds - 10 milliseconds resulting in a real wait of 990 milliseconds.

- **SM Short for "Set Marker"**

Syntax

SM

All milliseconds elapsed in a script execution are counted. This allows the script to be really precise if these instructions are properly used. The "SM" instruction resets the counter of milliseconds elapsed to zero. Note that will count the milliseconds that the instruction itself takes to realize the operation afterwards.

Estimated time to process: 0~2 ms.

Example
```
00  SM
```
This will simply reset milliseconds elapsed and set it to zero.

- **DM Short for "Display Marker"**

DM

This instruction will show the elapsed time until this instruction was found. Is meant to be used as a debug feature or quick visual control feature to be able to calibrate properly the "CM" exposed below.

Estimated time to process: 0~2 ms.

Example
```
00  SM
02  PB  BB
03  HW  500
04  RB  BB
05  TP  AA  100
06  FP  UP  150
07  DM
```

This will display the number of milliseconds elapsed until the DM instruction was found. In this case it should be more or less ~750 milliseconds.

- **CM Short for "Compare Marker"**

Syntax

CM [MILLISECONDS]

This instruction will check if the stated milliseconds are ahead or behind the current elapsed milliseconds. If the execution current milliseconds are behind the stated milliseconds in the instruction it will wait until the number matches. If the execution time is ahead of the stated milliseconds it will skip the instruction and won't wait.

Note that this instruction doesn't reset in fact the millisecond counter like "SM" does.

Estimated time to process: 0~2 ms.

Example
```
00  SM
01  PB  BB
02  HW  500
03  RB  BB
04  TP  AA  100
05  FP  UP  150
06  CM  800
```

This will wait until the millisecond counter gets to 800 to resume the script execution. Taking in consideration that all the instructions behind the "CM" would take approximately ~750 milliseconds. This "CM" instruction in this case will wait approximately ~50 milliseconds.

Jump instructions

Jump instructions are printed in dark magenta in the KasTAS.exe console and are the ones used to jump to another line of script. For example used in repetitive sequences.

- **JM Short for "Jump"**

  Syntax

  JM [LINE]

  This instruction will jump to the stated line. Beware this instruction will create an endless loop if the line is behind this instruction and must be used carefully because of that.

  Note: In the script execution the first line is always considered the number 0. Consider this with editing with notepads that start in line 1.

  Estimated time to process: 0~2 ms.

  Example
  ```
  00  PB AA
  01  PB BB
  02  HW 500
  03  RA
  04  SP ST 100
  05  TP AA 500
  06  JM 3
  ```

  This will execute the script and when it finds the "JM" instruction will jump to the 3rd line and continue the execution from there creating a loop.

- **JT Short for "Jump X Times"**

  Syntax

  JT [TIMES] [LINE]

  This instruction will jump the stated times to the stated line. Once the instruction has been found and executed the stated amount of times it will be ignored and will continue the execution beyond that point.

  Note: Only one "JT" instruction is considered as active if it finds another "JT" instruction in the script between the goal jump line and the current jump instruction; the first one will be forgotten and the active "JT" instruction will be set to the last one it did found.

  This can potentially cause unexpected behaviors depending on the context of the whole script or can end up causing odd infinite loops.

  Note 2: In order to keep the format integrity, if the number of times the jump must be done is less than 10 the number must be written with a zero in front. For

example "JT 4 3" isn't valid while "JT 04 3" is the valid way to be written. Otherwise the instruction will be considered as an error.

Note 3: Following the **Note 2** rule the maximum number of repetitions is actually 99 because this argument doesn't support more (or less) than two digits.

Estimated time to process: 0~2 ms.

Example

```
00  PB  AA
01  PB  BB
02  HW  500
03  RA
04  SP  ST  100
05  TP  AA  500
06  JT  04  3
07  PB  AA
08  HW  1000
09  RB  AA
```

This will jump 4 times to the line 3 and then the execution will continue past the 6th line and continue as normal.

Remote control instructions

Since the version 2.0.84 you can pause the script and wait to be remotely started again. This is done with the **listen control key** (*Defined in the line #24 of the keydata.cfg file*).

- **WR Short for "Wait for Remote Input"**

   Syntax

   `WR`

   This instruction will pause the script until the listen control key is pushed by the user. Note that *KasTAS.exe* actively listens for the control key input even when it is executed in the background while you're using any other application or game.

   Estimated time to process: *Undefined.*

   Example

   ```
   00  WR
   01  PB  BB
   02  HW  10
   03  RB  BB
   04  HW  50
   05  PB  AA
   06  HW  20
   07  RB  AA
   08  JM  0
   ```

   This will stay inactive until the user presses the listen control key, then will press in sequence buttons B and A and jump to the line 0 and stay paused until the user presses the listen control key again.

Miscellany instructions

In the version 2.0.84 there's only two additional instructions which use isn't essential as the ones stated previously.

- **RE Short for "Remark / Text Comment"**

Syntax

RE [TEXT]

This instruction is made to be able to quickly and easily label or remark a part of the script. Anything written after the "RE" instruction won't be readed as instruction data and will be just shown on screen.

Estimated time to process: 0~2 ms.

Example
```
00 SM
01 PB BB
02 HW 500
03 RE HELLO!
04 TP AA 100
05 FP UP 150
06 CM 800
```
This will simply show "HELLO!" at the third line in the KasTAS script execution window.

- **EN Short for "End"**

Syntax

EN

This instruction ends the script execution. It's not mandatory to be introduced at the end of the script because anyways the execution will end when it finds no more lines to read but it may be useful to end a script execution if the end isn't the last line.

Estimated time to process: 0~2 ms.

Example
```
00 RE SCRIPT START
01 PB BB
02 HW 500
03 JM 8
04 TP AA 100
05 FP UP 150
06 TP AA 100
07 EN
08 HW 250
09 FP UP 150
10 TP AA 100
11 JM 4
```
This will jump from line 3 to the line number 8 skipping the ones in between and then it will jump from line 11 to the line number 4 where it will execute some

instructions until it reaches line 7 where there's an "EN" instruction and the script will end there.

Generating a KAS Script file

To generate KAS files using your keystrokes simply go to the "**5. *Generate a KAS Script file using your keystrokes.***" by either typing "5" or "G".

Once you have typed in the desired file name and started recording you can leave KasTAS.exe running in the background.

KASTas.exe will not start recording your keystrokes until you activate it using the control key (By default [L]).

Once you want to stop the recording just press the control key stated above and it will automatically stop recording and save the file with your desired name in the KasTAS Script directory.

When you do large recordings (e.g. an entire speedrun/gameplay) it is strongly recommended to split the recordings and do small sections of recording and **then merge them manually in notepad or any other application**. This will reduce the changes to desyncs to occur. Also is it extremely useful to manually adjust all recordings once they're done so you can perfect the timing.

Note: *There's many complementary functions and adjustments that are intended to assist with any possible delay / sync issue that can happen during the recording. **I strongly recommend avoiding touching them if it's not clearly needed.***

General Considerations

When you use the built-in function in the KasTAS.exe known as "**3. Read a KAS Script File**" errors will appear in red. Anything that doesn't fit the specified formats explained in this document will be treated as an error and may cause unexpected behavior.

Take special caution with spaces because since there's no end marker as in other languages (";") the spaces are mainly what determine the data structure.

Normally extra spaces after for example a **[TIME]** or a **[BUTTON]** value won't cause a fatal error but **if it's possible avoid them.**

The errors that can lead to a code execution unexpected stop are mostly the ones that are the result of not respecting the single space between words in the instruction. These ones are detected in the "Read Mode". **Also if you use "JT" instructions read carefully the "JT" notes that this document states.**

Despite all the stuff stated above no error will corrupt/damage the script in any way and just fixing the cause will make it work again.

Script Control Considerations

In case of getting the executable stuck in for example an infinite loop between jumps or a series of unexpected script format errors, remember that **CTRL + C** or **CTRL + BREAK** will immediately close the program without any problem.

Anyway since version 2.0.84 if you want to stop the execution of any script while it is running in the background you can always use the execution control key (By default is **[K]**)

In some scripts you will need to repeatedly press the execution control key in order to make it work properly since that input is only being readed between instruction executions. (This is an optimization perk).

Note: *You can change the control keys by editing the* ***<keydata.ini>*** *file.*