Flex Controller Expansion App
User Manual

lex Controller Expansion App (FCEA) is the exclusive software for Flex Controller works on Windows 10 that enables to play video games with mouse or eye tracker.

FCEA can work together with the external switches and the joysticks so that it makes possible the following actions:

- Move the character with the joystick and make moves with the eye movement.
- Select the button with the eye movement then activate it with the external switch.

Contents

Precaution

Please disconnect Flex Controller from Windows PC or turned off Windows PC when you finish playing.

If Nintendo Switch, Windows PC and Flex Controller are left as they are connected, the recognition error would occur. This error can be solved by re-recognition of Flex Controller to PC by clicking [Re-recognize Flex Controller] button in the Advance Option tab in the App Settings.
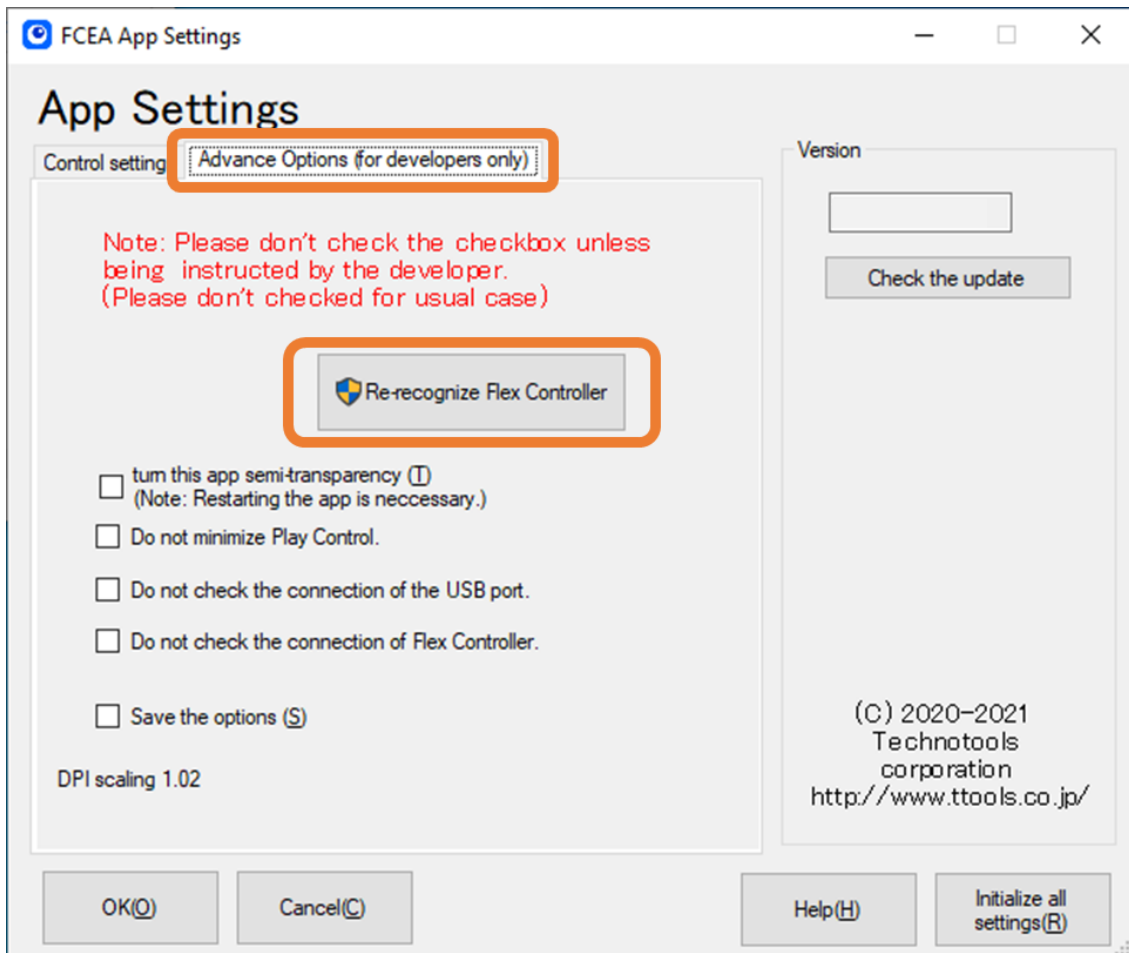
"Re-recognize Flex Controller" runs automatically if FCEA detects the recognition error when it starts up. Follow the instructions on the screen to complete this process.

*Note: Profiles created with v1.2.0.0 or later, cannot be used with older versions (v1.0 to v1.1.3), if it is not the latest version, please update the FCEA.

System requirements

PC	• Windows 10 latest version
	• USB port
	For Nintendo Switch: 2 x USB 2.0 or higher and 1 x USB 3.0 or higher
	For PC: 3 x USB 2.0 or higher
Gaming platform	• Nintendo Switch
	• Windows 10（XInput）
Eye tracker	• Tobii Eye Tracker 4C
	• or Tobii Eye Tracker 5
Mouse	• Windows 10 compatible mouse
	* See details on "Using mouse or keyboard instead of eye gaze".

Equipment and software requirements

1	Windows 10 PC	The PC has to satisfy the system requirements as above.
2	USB cable	The USB cable is being used to connect Flex Controller and the PC. Flex Controller requires USB type A plug.
3	Eye tracker	• Tobii Eye Tracker 4C
		• or Tobii Eye Tracker 5
4	HDMI - USB3.0 video capture unit (Only when the user play Nintendo Switch.)	It is required to capture the screen of Nintendo Switch and display it to the PC monitor.
5	Video capture application (Only for Nintendo Switch.)	Please use the video capture application which is recommended for the video capture unit the user have.

Using mouse or keyboard instead of eye gaze

If checking "Use Mouse" in Application settings, FCEA can be controlled with a computer mouse which is compatible with Windows 10.　Under enabling mouse control, every panel is activated with dwelling a mouse cursor on it. Note that Activation key is available, but Blink is not. In a word, another eye tracker than Tobii Eye tracker 4C or 5 could be a controller for FCEA if it can emulate a computer mouse.

Keyboard control (Beta version)

This is the beta version, but FCEA can be controlled with a keyboard. See details on "Keyboard settings", page19.

How to connect

For Nintendo Switch

1. Install FCEA to the PC that satisfies the system requirements.
2. Toggle Mode Switch to "Nintendo Switch".
3. Connect Controller Cable to Nintendo Switch.
4. Connect the USB port of Flex Controller and the PC with a USB cable.
5. Connect the eye tracker and the video capture unit as following the below figure.
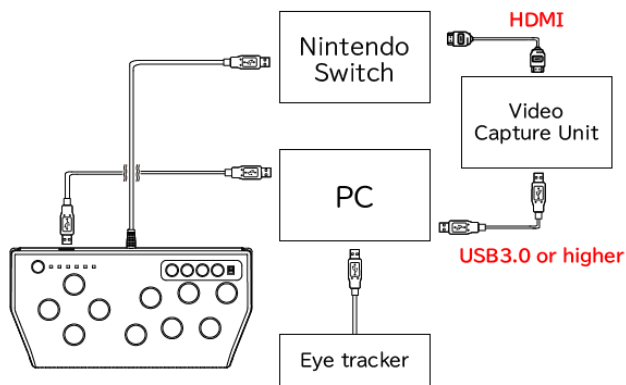
Disconnect Flex Controller from the PC or turned off the PC when Flex Controller is not used. See details here.
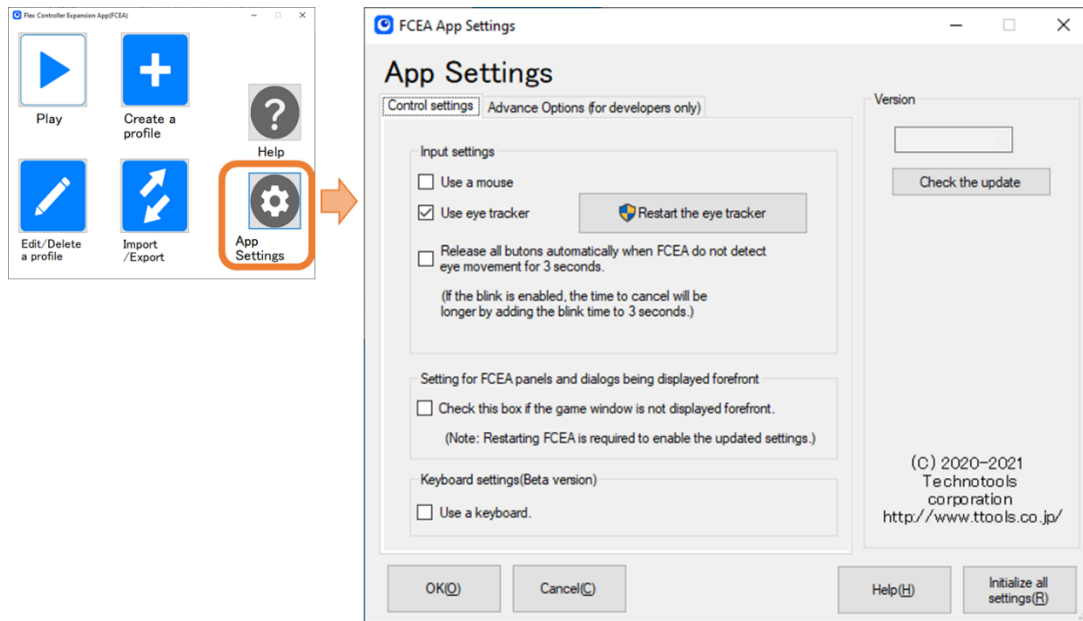
For PC

1. Install FCEA to the PC that satisfies the system requirements of FCEA and the game.
2. Toggle Mode Switch to "PC".
3. Connect Controller Cable to the PC.
4. Connect the USB port of Flex Controller and the PC with a USB cable.
5. Connect the eye tracker to the PC.
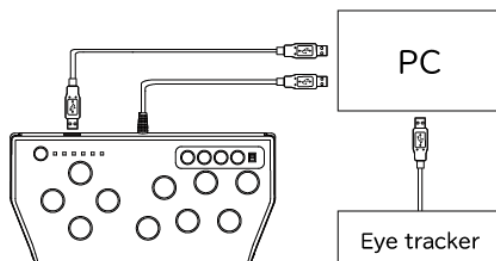
App Settings

Flex Controller Expansion App has Settings panel.　Select "App Settings" button in the Main Menu.

Input settings

If checking "Use eye tracker", FCEA can be controlled with Tobii Eye tracker 4C or 5.

If checking "Use Mouse", FCEA can be controlled with a computer mouse which is compatible with Windows 10.　Under enabling mouse control, every panel is activated with dwelling a mouse cursor on it. Note that Activation key is available, but Blink is not. In a word, another eye tracker than Tobii Eye tracker 4C or 5 could be a controller for FCEA if it can emulate a computer mouse.

Setting for FCEA panels and dialogs being displayed forefront

When you play with FECA or edit panels, the Windows PC games was paused or hided, check this checkbox to solve the problem.

Note: If this setting is enabled, list boxes in FCEA will be sequentially selecting items by clicking.

Keyboard settings

If you need to use keyboard instead of eye gaze, check "Use a keyboard". See "Keyboard settings (Beta version)" page 19 for details.

Advance Options (for developers only) Tab

These are for testing or investigating only.   So please don't check the checkbox unless being instructed by the developer.

Structure of FCEA

FCEA is has 3 components of the Panel, the Panel set and the Profile.

Panel

The panel is the onscreen game controller. They are activated when the user looks at them. White translucent squares in the below figure are the panels.

Panel set

The panel set is the group consists of 1 or more panels. The panel set can be switched according to the situations such as menu mode and play mode.

Figure: Panel and Panel Set.

Profile

The profile consists of up to 3 panel sets. It can be exported and imported.

*Note: Profiles created with v1.2.0.0 or later, cannot be used with older versions (v1.0 to v1.1.3), if it is not the latest version, please update the FCEA.

Main Menu

Main Menu has 5 items.

1. Play ：Play a game with the existing profile.
2. Create a profile ：Create the new profile.
3. Edit / Delete a profile ：Edit or delete existing profiles.
4. Import / Export ：Import or export profiles.
5. Application Settings ：Change the settings of FCEA.
6. Help ：Open Help
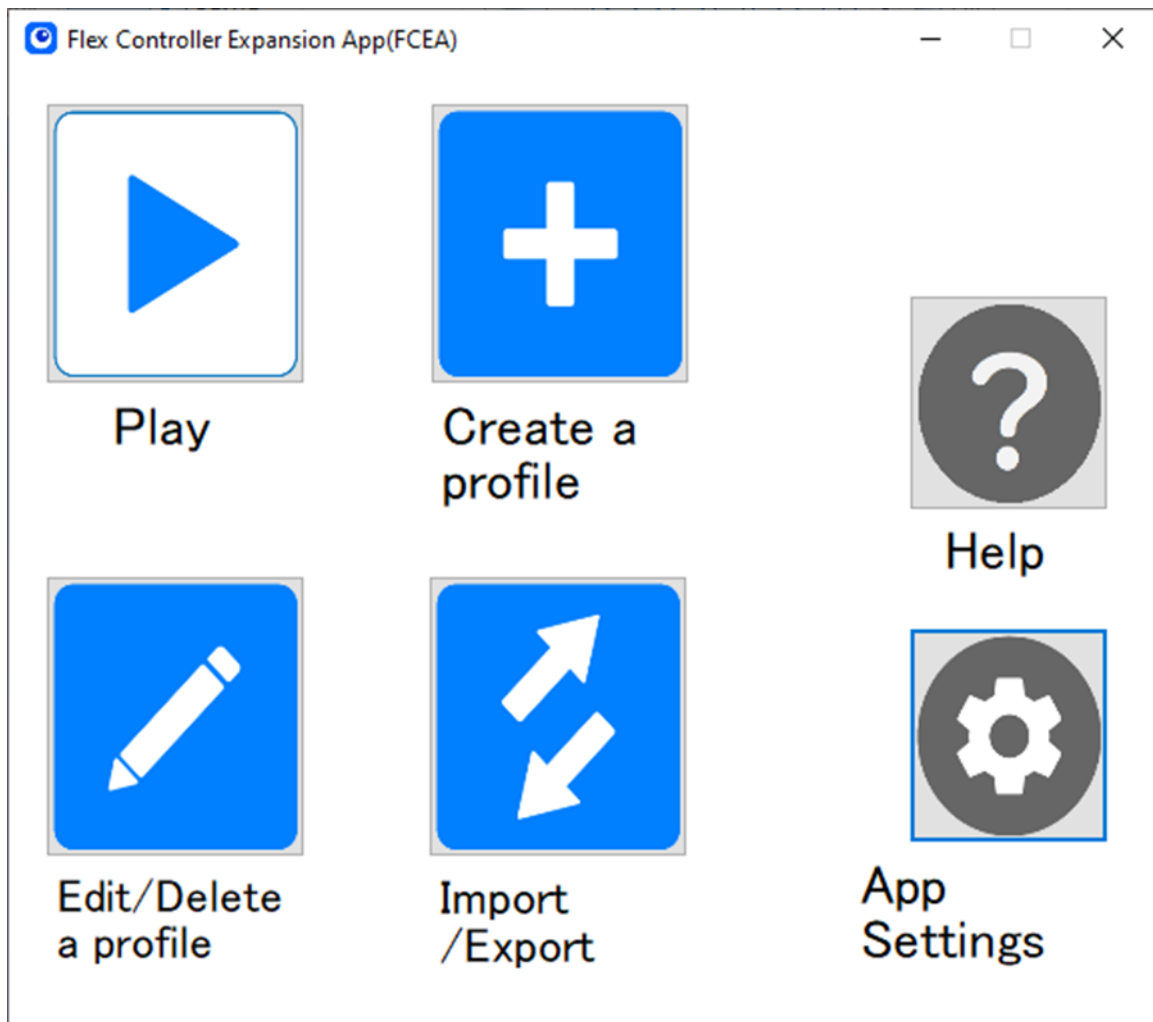
Create a profile

Create a new profile from scratch, from a copy of an existed profile and from templates. After creating a new profile, edit details on Edit Menu (see "Edit / Delete a profile" and "Edit a panel").

Template: Nintendo Switch

Item	Panels
Template－6 panels	↑, ↓, ←, →, A, B, Pause, Switch the Panel Set
Template－10 panels	↑, ↓, ←, →, A, B, X, Y, L, R, Pause, Switch the Panel Set
Template－14 panels	↑, ↓, ←, →, A, B, X, Y, L, R, ZL, ZR, +, -, Pause, Switch the Panel Set

Template: Windows PC

Item	Panels
Template－6 panels	↑, ↓, ←, →, A, B, Pause, Switch the Panel Set
Template－10 panels	↑, ↓, ←, →, A, B, X, Y, LB, RB, Pause, Switch the Panel Set
Template－14 panels	↑, ↓, ←, →, A, B, X, Y, LB, RB, LT, RT, START, BACK, Pause, Switch the Panel Set

Profile List

All existing profiles are listed at the top page of Play, Edit/Delete and Import/Export.

- The profile list can be sorted by selecting buttons of "Name", "Recently played" and "Date".
- Click the star for registering or canceling a profile as the favorite.
- Only the favorite profiles are listed when checking "Favorite Only".
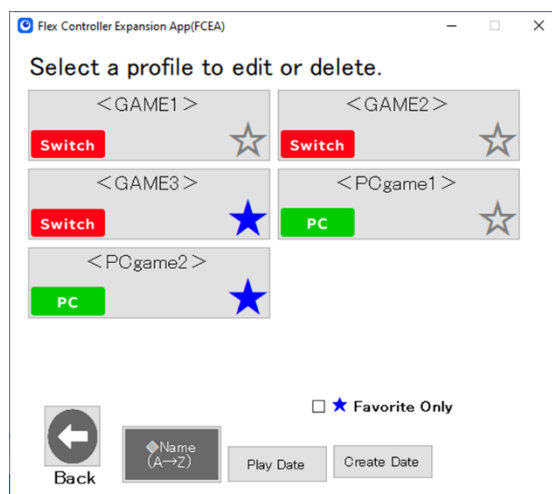
Edit / Delete a profile

Edit, rename, or delete the selected profile. The Edit menu consisted of 6 icons as below is appeared when editing the profile.

| Add a new panel | Add a new panel set | Test play | Save the profile | Profile settings | Quit editing |

Add a new panel
Create a new panel on the current panel set.

Add a new panel set
Create a new panel set from scratch or from a copy of an existed panel set, or switch to other panel set.

Note: All panels are hidden when clicking "Hide panels temporary" in sub menu of Add a new panel set. It is canceled when clicking "Show all panels" or other icons of the Edit menu. It is useful for refer to desktop screen in editing.

Test play
Save the profile and test it.

Enter the Pause menu of Play mode when you make right click on the "Test play" icon.

Profile settings
Check and change settings of a profile.

Tab	Item	Content
Assistance	Shortcut setting	Send HOME button at the same time you pause FCEA by Ctrl+Shift+Q shortcut (Enable for Nintendo Switch only).
	Blink input settings	Set blink time (time to close eyes) and the sound.
Profile information	–	Check the profile name and the gaming device.

Edit a panel

Drag   : Move a panel.

Drag corners or sides   : Change panel size.

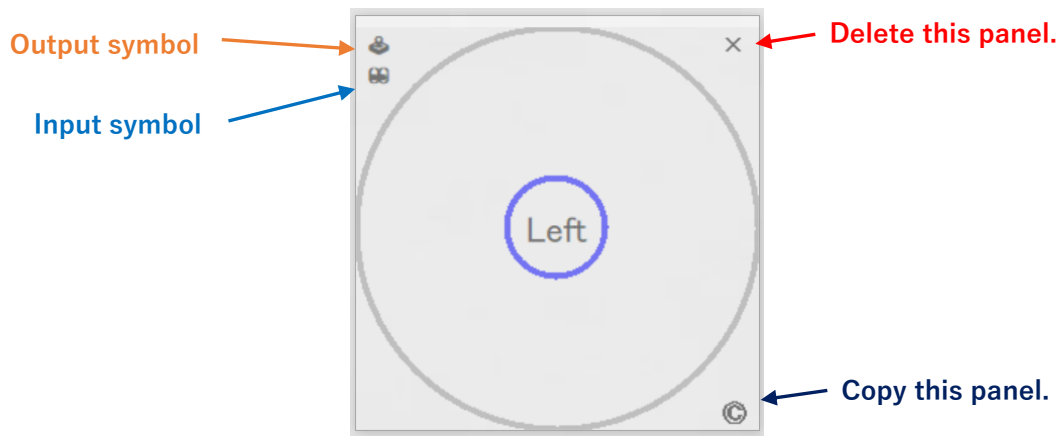Double click   : Open Panel Settings dialog box.
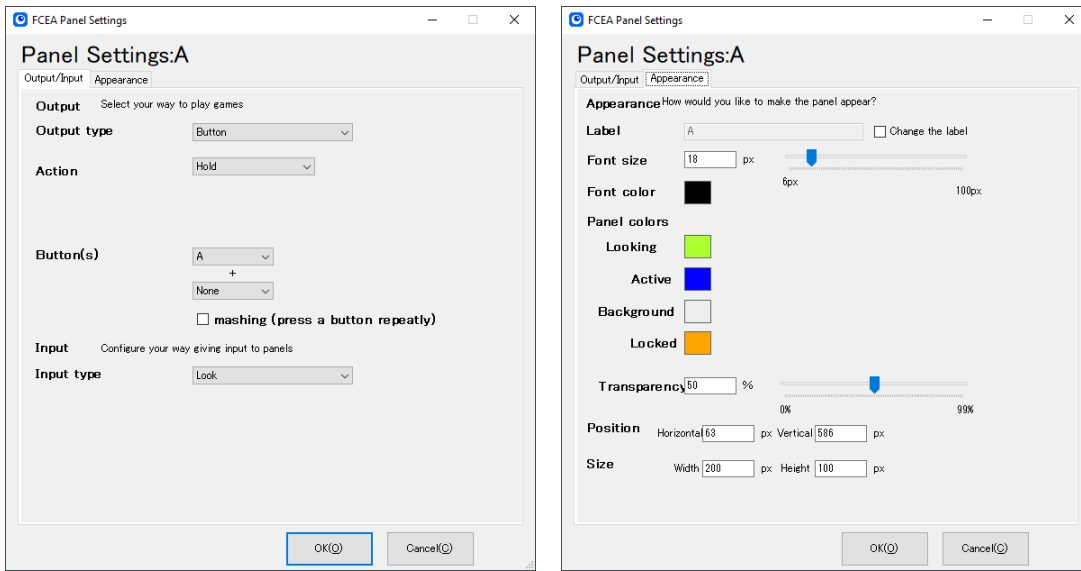
Tab	Item	Contents
Output/Input	Output	Set up an output from the panel to a video game. See details of output types on "Output type", page 13.
	Input	Set up user's action to activate the panel. See details of input types on "Input type", page 14.
Appearance	Appearance	Edit the label, font size, font color, panel colors and transparency of the panel.
	Position	Set panel position in pixels. Or it can be set by dragging the panel.
	Size	Set panel size in pixels. Or it can be set by dragging corners or sides of the panel.

Note: If the joystick panels overlap each other, they will not work properly because of tilting in different directions at the same time, and so on, so make sure that the joystick panels do not overlap.

Symbols on the panel during profile editing.

These symbols are not displayed when you play (or test-play) games.

Output symbol → ◉✔

Input symbol → 👀⏳

B

✕ ← **Delete this panel.**

ⓒ ← **Copy this panel.**

Output symbol →

Input symbol →

Left

✕ ← **Delete this panel.**

ⓒ ← **Copy this panel.**
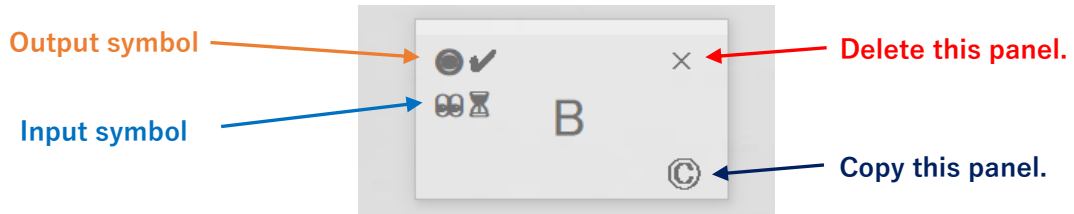
Output symbol

Symbol	Meaning
◉	Hold
◉✔	Press once
◉🔁	Toggle (press->release)
🕹	Joystick
⏭	Switch the Panel Set
‖	Pause
Ⓜ	Macro

Input symbol

Symbol	Meaning
👀	Look
👀⏳	Gaze
A	Activation key
👀✔	Blink

Output type

Nintendo Switch

Output type	Output
Button	↑, ↓, ←, →, ↘, ↙, ↗, ↘, A, B, X, Y, L, R, ZL, ZR, LSB*, RSB*, +, -, HOME, Capture
Joystick	Left, Right
Switch the Panel Set	Next Panel Set, Panel Set 1, Panel Set 2, Panel Set 3
Pause	Suspend FCEA and display Pause Menu.
Macro	Send a sequential command of buttons and joysticks. See details of description method on "Macro", page 16.

*LSB: Left Stick Button, RSB: Right Stick Button

Windows PC (XInput)

Output type	Output
Button	↑, ↓, ←, →, ↘, ↙, ↗, ↘,A, B, X, Y, LB, RB, LT, RT, LSB*, RSB*, START, BACK
Joystick	Left, Right
Switch the Panel Set	Next Panel Set, Panel Set 1, Panel Set 2, Panel Set 3
Pause	Suspend FCEA and display Pause Menu.
Macro	Send a sequential command of buttons and joysticks. See details of description method on "Macro", page 16.

*LSB: Left Stick Button, RSB: Right Stick Button

Input type

1. Look

- Activate the panel when look at it.

2. Gaze

- Activate the panel when gaze (keep looking) at it.
- Set Gaze Time between 0.5 to 5.0 seconds.

3. Activation key

- Lock the panel by looking at it, then activate it by the input of activation key.
- Select the activation key from buttons of gaming controller, keys of keyboard and mouse buttons.
- Select the action to unlock from "Look a different Panel" or "Look the locked Panel".
- Turn on/off "Keep locking after activating".

4. Blink

- Lock the panel by looking at it, then activate it by blinking eyes.
- Set eye blink time between 0.3 to 10.0 seconds in Profile Settings.
- Select the action to unlock from "Look a different Panel" or "Look the locked Panel".
- Turn on/off "Keep locking after activating".

Input and Output

（○：Effective、×：Ineffective）

Input ＼Output	Hold	Press once	Toggle (Press -> Release)
Look	○	○	○
Gaze	○*1	○	○*4
Activation key	○*2	○	○*5
Blink	○*3	○	○*6

*1Hold a button by gazing the panel longer than Gaze Time. -> Release a button by turning gaze from the panel.

*2 Lock the panel by looking at it. -> Hold a button by the input of the activation key. -> Release a button by unlocking the panel.

*3 Lock the panel by looking at it. -> Hold a button by blinking eyes. -> Release a button by unlocking the panel.

*4 Press and hold a button by gazing the panel longer than Gaze Time. -> Release a button by gazing the panel longer than Gaze Time again.

*5 Lock the panel by looking at it. -> Press and hold a button by the input of the activation key. -> Release a button by the input of the activation key again (Keep locking the panel).

*6 Lock the panel by looking at it. -> Press and hold a button by blinking eyes. -> Release a button by blinking eyes again (Keep locking the panel).
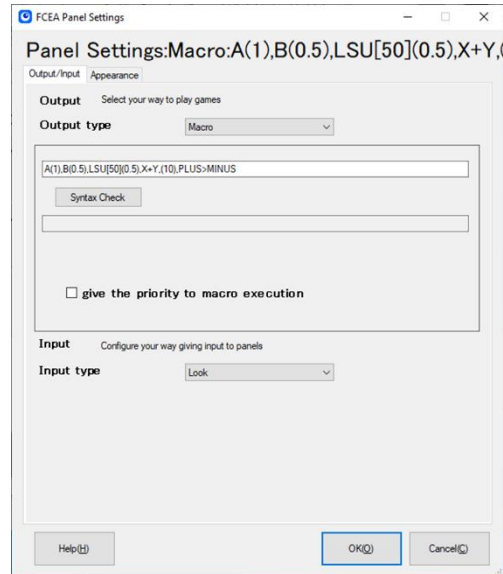
Macro

You can make a panel of a sequential command (Macro).

How to make a macro panel.

1. Make a new panel and go to "Panel Settings" by double clicking it.
2. Select "Macro" in the pulldown list of Output type.
3. Describe a sequential command (Macro) in the text box.
4. Click "Syntax Check" button.
5. Set an input to activate this panel.
6. Click "OK" button for saving this panel.
7. The panel is named automatically as "Macro: Described macro command.". The name can be changed at the "Appearance" tab in the Panel Settings.

Macro example

Action	Contents	Description
Sequential pressing	Press/tilt and release A, B, L-stick up and L-stick down sequentially.	A,B,LSU,LSD
Simultaneous pressing	Press/tilt and release A, B and L-stick up at the same time.	A+B+LSU
Sequential-simultaneous pressing (1)	Press and hold A and press B then release them sequentially.	A>B
Sequential-simultaneous pressing (2)	Press and hold A and press B then release them at the same time.	A>B|
Sequential-simultaneous pressing (3)	Press and hold A then press X and press Y then release them sequentially.	A>{X,Y}
Repeat	Repeat tilting L-stick down 50% 3 times.	FOR(3){LSU[50]}

Description method

Buttons

Describe a button name.

A B L R X Y ZL ZR UP DOWN LEFT RIGHT PLUS MINUS HOME CAPTURE LSB RSB   **LB*** **RB*** **LT*** **RT*** **BACK*** **START***   *These are the buttons for PC gaming.

Joysticks

Describe L-stick or R-stick, and direction of tilting.

LS/RS + L/R/U/D/LU/LD/RU/RD [Value]	
LS RS	L-stick or R-stick
L R U D LU LD RU RD	Direction of tilting (Up, Down, Left, Right, Left up, Right up, Left Down or Right down)
[Value]	Specify the percentage of tilting in [ ] from [0] to [100]. The value becomes [100] if nothing is specified.

.

Example

LSU	Tilt L-stick up.
LSRU	Tilt L-stick right up.
RSLD[30](2)	Tilt R-stick left down by 30% and keep it for 2 sec.

Time

Specify the time in seconds in ( ) at the right side of button or joystick command. The value becomes (0.2) sec if nothing is specified as a time. The value in ( ) becomes waiting time if no button or no joystick is specified at the left side of ( ).

(Value)

Example

A(1)	Press A for 1 sec.
B(0.5)	Press B for 0.5 sec.
RSDL[30](10)	Tilt R stick left down by 30% and keep it for 10 sec.
A,(2),B	Press A then press B after 2 sec.

Control commands

Sequence	,	Press A, B, X and Y sequentially for 2 sec each.
Simultaneous	+	Press A and B for 0.2 sec, then press X and Y for 0.2 sec.
Sequence and simultaneous	>	A>B>X>Y A>B>X>Y| Press and hold A, B, X, Y sequentially then release them sequentially in reverse order after 0.2 sec. Or release them simultaneously if | is put at last of the command.
	>{command}	A>{X,Y} Press and hold A while press X then press Y.
Repeat	FOR(Value){Command}	Repeat 3 times to press A then press B.
Limitation	1. To nest { } is invalid. 2. > is not allowed to specify +. E.g. "A+B>X", A>X+Y and A+B>{X.Y} is invalid.	

Syntax Check button

Syntax check proceeds with clicking this button.

Error detection	Color	Message	Result box
No error	Green	no errors were found.	All commands you made are displayed there.
Error	Red	Syntax error:(Only the part of the given string which can be interpreted correctly is begin showed)	All commands before the detected error are displayed there.

Check box: give the priority to macro execution.

Blank	Macro execution is cancelled if another panel turns to be activated when the macro is in process.
Checked	Macro execution has a priority even if another panel turns to be activated when the macro is in process.

Keyboard settings (Beta version)

Check "Use a keyboard" at Control settings in Application settings to control FCEA with keyboard.

Note: This function is beta version.

Keyboard control

Button	Key
↑	Cursor up
↓	Cursor down
←	Cursor left
→	Cursor right
↖	None
↙	None
↗	None
↘	None
A	A
B	B
X	X
Y	Y

Button (Windows)	Key
L (LB)	L
R (RB)	R
ZL (LT)	7
ZR (RT)	8
LSB*	1
RSB*	2
+ (START)	+
- (BACK)	-
HOME (None)	HOME
Capture (None)	C

*LSB: Left Stick Button, RSB: Right Stick Button

Switch L/R stick	
PageUp	L-stick
PageDown	R-stick

Control L-stick or R-stick with a ten-key pad. Enabling NumLock is required.			
	/: B	*:A	-:none
7: ↖	8: ↑	9: ↗	+:none
4: ←	5:A	6: →	
1: ↙	2: ↓	3: ↘	Enter:A
0:X		.:Y	

FAQ

Q. I cannot play a game on windows PC because the game window disappears.

A. Select the checkbox of [Setting for the front displaying of panels and dialogs] at [Application Settings] in the Main Menu.

Q. Can I control FCEA with a mouse?

A. Yes you can. See details on "Using mouse or keyboard instead of eye gaze", page 4.

Q. Can I control FCEA with a keyboard?

A. Yes you can. See details on " Keyboard settings (Beta version)", page 19.

Q. How to change the blinking time and the sound of the blinking?

A. You can set these items for each profile at [Profile Settings] in the Edit Menu.

Q. How to rename the existed profiles?

A. You can rename them at [Edit Delete a profile] in the Main Menu.

Q. FCEA is terminated when I start the profile.

A. This problem may occur in certain user's environments. It can be solved by re-recognition of Flex Controller to PC by clicking [Re-recognize Flex Controller] button in the Advance Option tab in the App Settings.
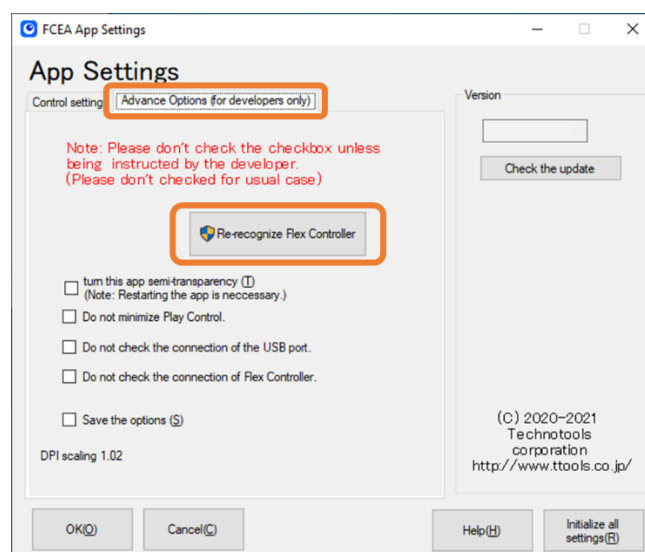
Q. Flex Controller does not work suddenly.

A. This problem may be caused by the recognition error between Windows PC and Flex Controller.

See more details on "Precaution", page 3.