

Ruscool 710 Custom Autopilot

Version 1.0

User Manual

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Configuration

Running the **Ruscool 710 Custom Autopilot Config** program allows the user to customise the functions required for the controller to communicate with the Flight Simulator. By default, these are set to FSUIPC offsets but the Buttons and Encoders can be amended to Macro, FS Event, or LUA script.

The screenshot shows the 'Ruscool GCU710 Configuration' window with three main sections: Buttons, Outputs, and Encoders. Each section contains a table of settings for various functions.

Buttons Table:

Function	Code	Option	Value	Type (if Offset)	Parameter (optional)
HDG	A	Offset	07C8	Byte	
APR	B	Offset	0800	Byte	
NAV	C	Offset	07C4	Byte	
FD	D	Offset	2EE0	Byte	
XFR	E	Offset			
ALT	F	Offset	07D0	Byte	
VS	G	Offset	07EC	Byte	
BC	H	Offset	0804	Byte	
BANK	I	Offset	6700	Byte	
AP	J	Offset	07BC	Byte	
YD	K	Offset	0808	Byte	
VNV	L	Offset			
FLC	M	Offset			
SPD	N	Offset	07DC	Byte	
HDG_SYNC	O	Offset			
CRS1	P	Offset			
ALT_SEL	Q	Offset			
CRS2	R	Offset			

Outputs Table:

Function	Option	Value	Type (if Offset)	On	Off
HDG	Offset	07C8	Byte	1	0
APR	Offset	0800	Byte	1	0
NAV	Offset	07C4	Byte	1	0
ALT	Offset	07D0	Byte	1	0
VS	Offset	07EC	Byte	1	0
BC	Offset	0804	Byte	1	0
BANK	Offset	6700	Byte	1	0
AP	Offset	07BC	Byte	1	0
YD	Offset	0808	Byte	1	0
VNV	Offset				
FLC	Offset				
SPD	Offset	07DC	Byte	1	0
XFR_L					
XFR_R					

Encoders Table:

Function	Inc	Dec	Option	Value	Type (if Offset)	Calc	IncValue	Parameter	DecValue	Parameter
HDG	S	T	Offset	07CC	Short	(* 360) / 65536				
CRS1	U	V	Offset	0C4E	Short					
ALT	X	W	Offset	07D4	Int32	*3.28084/65536				
VS	Y	Z	Event				65894		65895	
CRS2	#	@	Offset	05C5	Short					

Legend:

- OFFSET** - format is four characters (ie 07CC) and it must identify how the data is to be formatted
- EVENT** - format should be a five digit number (ie 65536). The parameter should be 0 if not used
- MACRO** - format is the name of the macro file, followed by a colon and the name of the relevant function in the file. (ie 710AP:VertSpeed) The parameter can be 0 or blank if not used
- LUA** - format is the word lua, followed by a space and the name of the lua file (ie lua 710AutoPilot). The parameter can be 0 or blank if not used

Buttons

Offset

YD	K	Offset	0808	Byte	
VNV	L	Offset		Byte	
FLC	M	Offset		Byte	
SPD	N	Offset	07DC	Int32	
HDG_SYNC	O	Offset		Short	
CRS1	P	Offset			

When selecting 'Offset', type in the offset value which should be 4 characters long.

You also need to select the offset type, which will be either Byte, Int32 or Short.

Because the push buttons on the physical panel are momentary presses, this program will toggle between a 1 and 0 value depending on what the simulator currently shows, so it is not necessary to enter an on or off value.

Event

VNV	L	Offset			
FLC	M				
SPD	N	Event	66353		0
HDG_SYNC	O	Offset			

When selecting 'Event', type in the FS Event Control number which will be a five digit number (normally starting with 65xxx).

Because the push buttons on the physical panel are momentary presses, the event should be a toggle function (not an ON or OFF).

Enter a parameter if required, or type 0 if no parameter is used.

Macro

APR	B	Offset	0800	Byte	
NAV	C	Offset	07C4	Byte	
FD	D	Offset	2EE0	Byte	
XFR	E	Macro	Ruscool_AP:XFR_btn		0
ALT	F	Offset	07D0	Byte	
VS	G	Offset	07EC	Byte	
BC	H	Offset	0804	Byte	

When selecting 'Macro', the Macro should already have been created in the simulator.

Type in the name of the Macro file (excluding the .macro extension), followed by a colon and the name of the macro function.

Enter a parameter if required, or type 0 if no parameter is used.

```
Ruscool_AP.macro - Notepad
File Edit Format View Help
[Macros]
1=FD_Left=RX40000138,3
2=VS=RX40000130,3
3=VNAV=RX40000131,3
4=FLC=RX40000136,3
5=NAV=RX40000132,3
6=XFR_btn=RX40000135,3
7=HDG=RX40000134,3
8=APPR=RX4000013a,3
```

Lua

VNV	L	Offset	▼		▼	
FLC	M	Lua	▼	lua 710Autopilot	▼	6
SPD	N	Event	▼	66353	▼	0
HDG_SYNC	O	Offset	▼		▼	
CRS1	P	Offset	▼		▼	

When selecting 'Lua', the lua script should already have been created.
Type in the word *lua* followed by the name of the lua file (excluding the extension).
Enter a parameter if required, or type 0 if no parameter is used.

Encoders

Offset

Encoders											
Function	Inc	Dec	Option	Value	Type (if Offset)	Calc	IncValue	Parameter	DecValue	Parameter	
HDG	S	T	Offset	07CC	Short	(* 360) / 65536					
CRS1	U	V	Offset	0C4E	Short						
ALT	X	W	Offset	07D4	Int32	*3.28084/65536					
VS	Y	Z	Event				65894		65895		
CRS2	#	@	Offset	05C5	Short						

When selecting 'Offset', type in the offset value which should be 4 characters long.

You also need to select the offset type.

The standard offsets are already programmed with the correct calculations and step values, so ideally these would be used where possible.

Event

When selecting 'Event', type in the FS Event Control number which will be a five digit number (normally starting with 65xxx) for both the increment and decrement functions.

Enter a parameter if required, or type 0 if no parameter is used. The parameter can also be left blank if not used.

Macro

Function	Inc	Dec	Option	Value	Type (if Offset)	Calc	IncValue	Parameter	DecValue	Parameter
HDG	S	T	Macro				Ruscool_AP:Hdg_Inc	0	Ruscool_AP:Hdg_Dec	0
CRS1	U	V	Offset	0C4E	Short					
ALT	X	W	Offset	07D4	Int32	*3.28084/65536				

When selecting 'Macro', the Macro should already have been created in the simulator.

Type in the name of the Macro file (excluding the .macro extension), followed by a colon and the name of the macro function.

Enter a parameter if required, or type 0 if no parameter is used. The parameter can also be left blank if not used.

```
[Macros]
1=FD_Left=RX40000138,3
2=VS=RX40000130,3
3=VNAV=RX40000131,3
4=FLC=RX40000136,3
5=NAV=RX40000132,3
6=XFR_btn=RX40000135,3
7=HDG=RX40000134,3
8=APPR=RX4000013a,3
9=ALT=RX4000013d,3
10=YD=RX400000de,3
11=AP=RX4000013b,3
12=FD_Right=RX40000137,3
13=AP_Disc=RX4000012f,3
14=Hdg_Inc=RX40000133,3
15=Hdg_Dec=RX40000133,1
16=Alt_Inc=RX40000006,3
17=Alt_Dec=RX40000006,1
```

Lua

When selecting 'Lua', the lua script should already have been created.

Type in the word *lua* followed by the name of the lua file (excluding the extension).

Enter a parameter if required, or type 0 if no parameter is used.

Outputs

The Outputs must remain as Offsets because the main program reads the value to control the physical lights. However, the offset value can be altered if necessary. You also need to select the offset type, which will be either Byte, Int32 or Short.

The On and Off values would normally be 1 and 0 as this is what the pushbutton values refer to.

Outputs

Function	Option	Value	Type (if Offset)	On	Off
HDG	Offset	07C8	Byte	1	0
APR	Offset	0800	Byte	1	0
NAV	Offset	07C4	Byte	1	0
ALT	Offset	07D0	Byte	1	0
VS	Offset	07EC	Byte	1	0
BC	Offset	0804	Byte	1	0
BANK	Offset	6700	Byte	1	0
AP	Offset	07BC	Byte	1	0
YD	Offset	0808	Byte	1	0
VNV	Offset				
FLC	Offset				
SPD	Offset	07DC	Byte	1	0
XFR_L					
XFR_R					