

Ruscool Annunciators Config

Version 1.0

User Manual

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Ruscool Annunciators Configuration

Running the **Ruscool Annunciator Config** program allows the user to set up each annunciator output as desired.

The annunciators are split into three categories - Module, Glareshield and MIP

If the Caution and Warning lights are connected, these will be actioned by any corresponding 'Trigger' settings.

The Annunciator LEDs in the Overhead panel and the MIP panel are powered directly from the controller board which is powered by the 5 Volts from the USB cable. It is recommended that the Lamp Test facility is used only for a couple of seconds, because with all annunciators lit up, the current consumed may be close to the limit of the USB port. Older style USB ports are not able to supply high currents, so it is a good idea to use a Powered USB Hub.

The large additional Caution, Warning, and Fire / Extinguisher pushbutton indicators have 12 Volt lamps in them, so they need a separate power supply to enable them to operate. There is a 2 way screw terminal block on the controller board to allow this 12 volt power supply to be connected.

Module Setup

The 'Module' section contains some controller specific settings and initial setup.

The 'Default Annunciator Names' can be used the first time the configuration program is run to automatically enter the standard annunciator names. See <u>'Default Name Setup'</u> for full details

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Module Glareshield	MIP								ELECTRONICS LIMIT	ΕD
Default Annunciator Nar	mes									
	Clear All OB	350 O B200								
	Lamp Test	All annunciators on be	oth panels with	n be activ	ated				Test Mode	
	Caution	Any annunciators flag	iged as 'Cautio	n' will be	activated/o	leared			Not Connected	
	Warning	Any annunciators flag	ged as 'Warni	ng' will b	e activated/	cleared				
	Category	Description			Offset	Туре	On	Off		
Left Fire	Engines ~	Engine Fire Flag - Eng	gine 1	~	3366-0	Byte ~		0		
Right Fire	Engines ~	Engine Fire Flag - Eng	gine 2	~	3366-1	Byte ~	1	0		
							_			
	FS Control Descrip	lion	Event No	Paran	neter					
Left Extinguisher	EXTINGUISH ENGINE F	IRE	66708	1						
Right Extinguisher	EXTINGUISH ENGINE F	IRE	66708	2						

Clicking on 'Test Mode' will allow functionality of the annunciator LEDs to be tested. A button will appear next to the three options which can be clicked to test and clicked a second time to turn them off again.

- Lamp Test will turn all off LEDs. (It is recommended that the Lamp Test facility is used only for a couple of seconds, because with all annunciators lit up, the current consumed may be close to the limit of the USB port.)
- Caution will turn on any connected Master Caution LED buttons
- Warning will turn on any connected Master Warning LED buttons

If Fire and Extinguisher LED pushbuttons are used, these can be connected and setup using FSUIPC Offsets and FS Control events (as shown in the example above).

Default Name Setup

The first time the Ruscool Annunciator Config program is run, all of the annunciator names will be blank (as shown below)

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Module Glareshield	MIP				RONICS LIMITED

If either a KingAir B350 or B200 is being used, click on the relevant 'Default Annunciator Names' selection and click on Apply.

Ruscool	Annunciator Co	onfig			
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Module	Glareshiel	d MIP			
	ult Annunciator No Action	Names O Clear All	B 350	O B200	Apply

Now when viewing the Glareshield and MIP tabs, the names are automatically entered.

Ruscool Annunciator Cor	ıfig						- 🗆 🗙
🗄 🛃 Save 🛛 🎯 Help 🛛 💌	Exit					RL	ISCOOL
Module Glareshield	MIP					ELECT	RONICS LIMITED
		L GEN TIE OPEN	HYD FLUID LOW	RVS NOT READY	R GEN TIE OPEN	R DC GEN	
	L CHIP DETECT	L NO FUEL XFR	BAT TIE OPEN		R NO FUEL XFR	R CHIP DETECT	
			ELEC HEAT ON	EXT PWR	R FUEL QTY	R ENG ICE FAIL	
	L BL AIR OFF	AUTOFEATHER OFF			RUD BOOST OFF	R BL AIR OFF	
	L PITOT HEAT			PROP GND SOL		R PITOT HEAT	
	L IGNITION ON	L ENG ANTI-ICE	FUEL CROSSFEED		R ENG ANTI-ICE	R IGNITION ON	
	WING DEICE	L BK DEICE ON	MAN TIES CLOSE		R BK DEICE ON	DAIL DEICE	
	L PROP PITCH	CABIN ALTITUDE	LDG/TAXI LIGHT	PASS OXYGEN ON	AIR COND N1 LO	R PROP PITCH	

These names can be amended, but the standard default names are set.

All of the annunciator default names can be cleared by selecting 'Clear All' and clicking Apply.

Note: if any names have been entered previously, they will be overwritten by applying any default names.

Glareshield Setup

Select the required annunciator button in the top section of the screen. This will show any information related to that annunciator.

If the default names have been filled in, this will appear in the 'Annunciator Name' field - this can be amended or entered as required. The 'Trigger' is automatically selected as WARNING for the Glareshield, but this can be changed if necessary.

The conditional setup is configured so that you can have a combination of conditions grouped together, and there is also an 'or' section that allows you to have one of two separate condition arguments implemented. See the <u>'Glareshield Examples'</u> section for further details

			L ENG FIRE	L ENG FIRE					
				L'ENG FIRE		CABIN DOOR	ALT WARN	R ENG FIRE	
			L FUEL PRESS					R FUEL PRESS	
			L OIL PRESS	L GEN OVHT		VP TRIM FAIL	R GEN OVHT	R OIL PRESS	
VP DISC			L CHIP DETECT	L BL AIK FAIL		-		R CHIP DETECT	
Annunciato	r Name:	A/P DISC	0			Trigger (if a	oplicable) <i>Caution</i> Warn	ing	
Catego	огу	Des	scription		Offset	Туре	Calculation	ON when value	e: On/Min Max
IF		~		~		~		◯ between ◯ equ	uals
and		~		~				◯ between ◯ equ	
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and		~		~				◯ between ◯ equ	
OR									
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and		~		~		×		◯ between ◯ equ	Jals
and		~		~		~		◯ between ◯ equ	ials
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- Click on the "Category" drop-down and choose the item required. If you don't know which category the item is related to, you can choose (All). Selecting CUSTOM will allow you to enter your own offset details.
- Click on the "Description" drop-down and choose the item required. The program will show you the "Offset" as used by FSUIPC.

You will notice that some FSUIPC offsets (ie. the different lights) have a suffix after the offset value, and this is automatically catered for in this system.

Where FSUIPC does a calculation on the data, this is shown in the "Calculation (if any)" column.

It is not necessary to use every output in each bank, so they can just be ignored if they are blank. However, if they have been previously configured and you now want them to be unused, you must select (None) from the Category drop-down.

Make sure either 'Equals' or 'Between' is selected and the relevant values are entered against each offset.

'Equals' option

If the item chosen has an ON / OFF function like the "POP SYNC ON" for instance, then click on the 'equals' button and the appropriate "1" (or relevant value) will pop up in the On/Min box. If this box is not filled in automatically, it is permissible to type in the appropriate information by hand.

You can reverse the function of the 'equals' conditions by changing the "1" to a "0". (The same applies to any other value pairing)

When you choose to use an 'equals' function, the annunciator will go On at the number typed into the box, otherwise it is off.

'Between' option

You can click on the 'between' button and then type values in the On/Min and Max boxes (like for Gear Positions below).

When you choose to use an 'between' function, the annunciator will go On when the value is between the entered values, otherwise it is off.

For instance, it you need to activate the annunciator for the left engine oil pressure failure, you would choose "Between" and use Min set to 0 and set a Max of 40. This means that any oil pressure below 40 will activate the annunciator. (ie Between 0 and 40)

In a similar manner, if you wanted to activate an annunciator for low voltage from the Generator / Alternator, you would use the "Between" function and set Min as 0 and Max as 22. This means any voltage lower than 22 will activate the annunciator.

Because you don't want annunciators to be active when the Battery switch is OFF, you can use this as the first line of most configurations :

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lodu	le Glareshield	MIP									ELECT	RONICS	LIMIT
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][DUCT	OVERTEMP]	
		LI	CE VANE		BAT	TERY CHARGE	Ð	(T PWR		F	RICE VANE]	
		LAUT	TOFEATHER		ELI	EC TRIM OFF	AIR CO	ND N1 LOW		RA	UTOFEATHER	ļ	
		LICE	VANE EXT	BRAKE DEICE ON	LDG	G/TAXI LIGHT	PAS	SOXYON		RI	CE VANE EXT	ļ	
		LIG	NITION ON	L BL AIR OFF			FUEL	CROSSFEED	R BL AIR OFF	RIC	SNITION ON		
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	/TAXI LIGHT iunciator Name:	LDG/T	AXI LIGHT				Trigger (if a					J	
Ann	unciator Name:						None	Caution	© Warning			0- (115-	
Ann			AXI LIGHT			Offset				ON who	en value:	On / Min	Max
Ann	unciator Name:	De					None	© Caution Calculatio			en value: en © equals		Max
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IF Controls Battery Switch 3102 Byte Equals 1

Glareshield Examples

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Modu	e Glareshield	MIF	0							ELECT	RONICS	LIMITED
			L ENG FIRE	L ENG FIRE	C	ABIN DOOR		ALT WARN	R ENG FIRE			
			L FUEL PRESS						R FUEL PRESS			
			L OIL PRESS	L GEN OVHT	A	P TRIM FAIL		R GEN OVHT	R OIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC		R BL AIR FAIL	R CHIP DETECT			
	N DOOR unciator Name:	CA	BIN DOOR			Trigger (O None		plicable) Caution	,			
IF	Category		Description		Offset	Туре		Calculation	ON when	value:	On / Min	Max
	Controls	~	Battery Switch	~	3102	Byte	\sim		O between @	equals	1	
and	Plane	~	Doors Open Flag - Exit 1	~	3367-0	Byte	\sim		O between @	equals	1	
and		~		~			\sim		O between (equals		
and		~		~			~		O between (equals		
OR												
	Plane	\sim	Doors Open Flag - Exit 2	~	3367-1	Byte	~		O between @	equals	1	
and	Plane	~	Doors Open Flag - Exit 3	~	3367-2	Byte	\sim		O between @	equals	1	
and	Plane	\sim	Doors Open Flag - Exit 4	~	3367-3	Byte	\sim		O between @	equals	1	
and		\sim		~			\sim		O between (equals		

	e Glareshield	MIII			_			1				RONICS	
			L ENG FIRE	L ENG FIRE	(CABIN DOOR		ALT WARN		ENG FIRE			
			L FUEL PRESS							UEL PRESS			
			L OIL PRESS	L GEN OVHT	A	/P TRIM FAII		R GEN OVHT		DIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC		R BL AIR FAIL	R Cł	HIP DETECT			
	. PRESS unciator Name:	LC	IL PRESS			Trigger		oplicable) O Caution	ning				
IF	Category		Description		Offset	Туре		Calculation		ON when va	alue:	On / Min	Max
	Controls	~	Battery Switch	~	3102	Byte	~		() between 🖲	equals	1	
nd	Engines	~	Engine 1 Oil Pressure	~	08BA	Short	~	*55/16384	(● between 〇	equals	0	40
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You can read this setup as "If the Battery Switch is ON, and Engine 1 Oil Pressure is below 40, turn on the annunciator.

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Modul	e Glareshield	MIP						EL	ECTI	RONICS	LIMITED
			L ENG FIRE	INVERTER		CABIN DOOR	ALT WARN	R ENG FIRE			
			L FUEL PRESS					R FUEL PRESS			
			L OIL PRESS	L GEN OVHT		√P TRIM FAIL	R GEN OVHT	R OIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC	R BL AIR FAIL	R CHIP DETECT			
	G FIRE unciator Name:	L EN	G FIRE			Trigger (if a	pplicable) Caution Warning	7			
IF	Category	C	escription		Offset	Туре	Calculation	ON when valu	le:	On / Min	Max
	Controls	• E	Battery Switch	-	3102	Byte -		🔘 between 🖲 ec	quals	1	
and	Engines	• E	Engine Fire Flag - Engine 1	•	3366-0	Byte -		🔘 between 🖲 ec	quals	1	
and		•		•		-		◯ between ◯ ec	quals		
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lodu	e Glareshield	MIP								CTRONICS	LIMI1
			L ENG FIRE	INVERTER		CABIN DOOR		ALT WARN	R ENG FIRE		
			L FUEL PRESS						R FUEL PRESS		
			L OIL PRESS	L GEN OVHT		VP TRIM FAIL		R GEN OVHT	R OIL PRESS		
	EL PRESS		L CHIP DETECT	L BL AIR FAIL		A/P DISC			R CHIP DETECT		
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IF	Category	D	escription		Offset	Туре		Calculation	ON when value	: On / Min	Max
	Controls	▼ E	Battery Switch	•	3102	Byte	•		💿 between 🖲 equ	als 1	
and	Engines	• E	Engine 1 Fuel Pressure	•	08F8	Int32	•	/144	● between © equ	als O	10
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Modul	e Glareshield	MIF							ELECT	RONICS	LIMITED
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			L FUEL PRESS					R FUEL PRESS			
			L OIL PRESS	L GEN OVHT		A∕P TRIM FAIL		R OIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC	R BL AIR FAIL	R CHIP DETECT			
	AIR FAIL unciator Name:	LB	L AIR FAIL			Trigger (if a	plicable) Caution Warning				
IF	Category		Description		Offset	Туре	Calculation	ON when v	alue:	On / Min	Max
	Controls	•	Battery Switch	•	3102	Byte 🔻		🔘 between 🖲	equals	1	
and	Engines	•	Turbine Engine 1 Bleed Ai	r PSI 🔹	206C	Double •		ø between	equals	0	40
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and		-		-				🔵 🔘 between 🔘	equals		

MIP Setup

Select the required annunciator button in the top section of the screen. This will show any information related to that annunciator.

If the default names have been filled in, this will appear in the 'Annunciator Name' field and the 'Trigger' will be selected accordingly - this can be amended or entered as required. The 'Trigger' can be selected as None, Caution or Warning (normally the MIP annunciators are either None or Caution).

The conditional setup is configured so that you can have a combination of conditions grouped together, and there is also an 'or' section that allows you to have one of two separate condition arguments implemented. See the <u>'MIP Examples'</u> section for further details

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odule Glareshield	MIP					ELECT	RONICS LIMI
	L DC GEN	L GEN TIE OPEN	HYD FLUID LOW	RVS NOT READY	R GEN TIE OPEN	R DC GEN	
	L CHIP DETECT	L NO FUEL XFR	BAT TIE OPEN		R NO FUEL XFR	R CHIP DETECT	
	L ENG ICE FAIL		ELEC HEAT ON	EXT PWR	R FUEL QTY	R ENG ICE FAIL	
	L BL AIR OFF	AUTOFEATHER OFF		OXY NOT ARMED	RUD BOOST OFF	R BL AIR OFF	
	L PITOT HEAT			PROP GND SOL		R PITOT HEAT	
	L IGNITION ON	L ENG ANTI-ICE	FUEL CROSSFEED		R ENG ANTI-ICE	R IGNITION ON	
	WING DEICE	L BK DEICE ON	MAN TIES CLOSE		R BK DEICE ON	DAIL DEICE	
	L PROP PITCH	CABIN ALTITUDE	LDG/TAXI LIGHT	PASS OXYGEN ON	AIR COND N1 LO	R PROP PITCH	
	L DC GEN			gger (if applicable) None	O Warning		
Annunciator Name: Category	L DC GEN Description		0			ON when value:	On/Min Max
Annunciator Name:	L		0	None	on	ON when value :	On/Min Max
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MIP Examples

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					BAT			EXTPWR		R ICE VANE]	
		L	AUTOFEATHER		EL	EC TRIM OFF	AIR	OND N1 LOW		R AUTOFEATHER		
		L	ICE VANE EXT	BRAKE DEICE ON	LDO	G/TAXI LIGHT	P	ASS OXY ON		R ICE VANE EXT		
		L	IGNITION ON	L BL AIR OFF			FUI	L CROSSFEED	R BL AIR OFF	R IGNITION ON		
	_											
						L DC GEN						
	nciator Name:						O None	applicable)	O Warning			
Ca	nciator Name: ategory		C GEN Description							ON when value:	On / Min	Max
C:					~		O None Type	Caution		ON when value:	On / Min	Max
F Ca	ategory	~	Description Battery Switch	ral Generator Switch		Offset	O None Type Byte	Caution Calculation			_	Max
F Ca ad Ca	category	~	Description Battery Switch Engine 1 Gener	ral Generator Switch nator 1 Bus Voltage	~	Offset 3102	O None Type Byte	Caution Calculatio		⊖ between	1	Max
F Ca and Ca and Ca	Controls	~	Description Battery Switch Engine 1 Gener		~	Offset 3102 3B78	 None Type Byte Int32 Double 	Caution Calculatio		○ between ● equals○ between ● equals	1]
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lub	e Glareshield	MIP								ELECT	RONICS	LIMI
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		LI	ICE VANE		BAT	TERY CHARGE	E EXT PWR			R ICE VANE		
		LAUT	TOFEATHER			EC TRIM OFF	AIR COND N1 LOW			R AUTOFEATHER		
			E VANE EXT	BRAKE DEICE ON		G/TAXI LIGHT				R ICE VANE EXT		
		LIGN	NITION ON	L BL AIR OFF			FUEL CROSSFEED	R BL AIR OFF		R IGNITION ON		
_	NITION ON unciator Name:	R IGNI	ITION ON][Trigger (if applicable)					
F	unciator Name: Category	De	escription]	Offset	None Cautic Type Calculation	n 🔘 Warning		when value: ween () equals	On / Min	Max
F	Category	De Ba	escription attery Switch	er Switch Position		Offset 3102	None Cautio	n 🔘 Warning	⊚ bet	ween 💿 equals	1	Max
IF (nd (unciator Name: Category	De Ba	escription attery Switch	er Switch Position		Offset	None Cautio Type Calcula Byte	n 🔘 Warning	© bet ⊚ bet		1	Max
IF	Category	De Ba	escription attery Switch	er Switch Position	•	Offset 3102	None Cautic Type Calcula Byte Short	n 🔘 Warning	⊘ bet ⊘ bet ⊘ bet	ween equals ween equals	1	Max
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odu	le Glareshield	MIP							ELEC	TRONICS	LIMIT
	[L DC GEN	HYD FLUID LOW	PR	OP SYNC ON	RVS	NOT READY		R DC GEN]	
	(TOVERTEMP]	
	(L ICE VANE		BAT	TERY CHARGE		EXTPWR		R ICE VANE]	
		L AUTOFEATHER		EL	EC TRIM OFF	AIR C	OND N1 LOW		RAUTOFEATHER	Į	
		L ICE VANE EXT	BRAKE DEICE ON	LDO	G/TAXI LIGHT	PA	SS OXY ON		R ICE VANE EXT	ļ	
		L IGNITION ON	L BL AIR OFF			FUE	LCROSSFEED	R BL AIR OFF	R IGNITION ON		
	ļ										
Ann	/TAXI LIGHT nunciator Name: Category	LDG/TAXI LIGHT			Offset	Trigger (if <i>None</i> Type	applicable) © <i>Caution</i> Calculatio		ON when value:	On / Min	Max
Ann	unciator Name:			·		None	Caution		ON when value:		Max
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Because there is a light in the nose gear of many King Air aircraft, it is useful to have a warning annunciator to tell you that the Landing or Taxi light is still ON when the landing gear is retracted.

The example above effectively says :

If the Battery Switch is ON, and the landing gear in anywhere in the retracting / retracted state (ie between 1 and 16380) and the Landing Lights or Taxi Lights are ON, then activate the LDG/TAXI LIGHT annunciator.

Note : Gear down and locked has a value of 16383

Main Annunciator Program

The main 'Ruscool Annunciators' program will start minimised and wait for the Flight Simulator software to start, so it can be running prior to the simulator being started.

If necessary, the program can be maximised and will show the annunciators that are triggered.

elp -									RL	
	Caution		Warning	En	L g Fire	R Eng Fire		L Extinguisher	R Extingui	sher
	L ENG F	IRE	L ENG FI	RE	CABIN D	OOR	ALT	WARN	R ENG FIRE	E
	L FUEL PF	RESS							R FUEL PRE	ss
	L OIL PR	ESS	L GEN OV	нт	A/P TRIN	/ FAIL	R GEI	N OVHT	R OIL PRES	S
	L CHIP DE	TECT	L BL AIR F	AIL	A/P D	ISC	R BL /	AIR FAIL	R CHIP DETE	ст
L DC	GEN	HYD FL	UID LOW	PROPS	SYNC ON	RVS NOT R	EADY			R DC GEN
						DUCT OVER	RTEMP			
LICE	VANE			BATTERY	CHARGE	EXT PW	/R			R ICE VANE
LAUTOR	EATHER			ELECT	RIM OFF	AIR COND N	1 LOW			R AUTOFEATHER
L ICE VA	NE EXT	BRAKE	E DEICE ON LDG		.DG/TAXI LIGHT		PASS OXY ON		R ICE VANE I	
LIGNIT	ION ON	LBL	AIR OFF			FUEL CROS	SFEED	R BL AI	ROFF	R IGNITION ON

When closing Flight Simulator, the following message will appear allowing the 'Ruscool Annunciator' program to close smoothly.

