

15 GP-I/Os

vsmStudio

Manual



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General Purpose Interfaces (GPIs) can be used to create logics that start certain processes in accordance with pre-defined triggers.

🗋 🖻 📕 🙏 🔀 🖺 🔀 🕵 🐨 📲 🕄 🌲 🐨 💕 📓 📟 🎜 🔷 💕 🦉 🤌) @
Opening GP-I/O List	

Select the symbol indicated in the screenshot above to access the GP-I/O List.

Con	fia	* (PIs	•=	GPOs]
	Nu	mbor	-		Name
	1.00	00	-		NULL
	1-00	0001		0	Red Tally Mixer In 1
	1-10	0001		0	Red Tally Mixer In 2
	1-10	0002		0	Red Tally Mixer In 2
	1-10	0003	п	0	Red Tally Mixer In 3
	I-10	0004		0	Red Tally Mixer In 5
	1-10	0005		0	Red Tally Mixer In 5
	1-10	0000		0	Red Tally Mixer In 0
	1-10	0007	E E	0	Red Tally Mixer In 7
	1-10	8000		0	Red Tally Mixer In 8
	1-10	0009		0	Red Tally Mixer In 9
	1-10	0110		0	Red Tally Mixer In 10
	1-10	1100		0	Red Tally Mixer In 11
••	1-10	0012	t	0	Red Tally Mixer In 12
•	1-10	0013	甘	0	Red Tally Mixer In 13
••	1-1(0014	甘	0	Red Tally Mixer In 14
••	I-1(0015	甘	0	Red Tally Mixer In 15
••	I-1(0016	Ð	0	Red Tally Mixer In 16
*•	I-1(0017	₽	0	Red Tally Mixer In 17
**	I-1(0018	₽	0	Red Tally Mixer In 18
••	I-1(0019	₽	0	Red Tally Mixer In 19
••	I-1(0020	Ð	0	Red Tally Mixer In 20
••	I-1(0021	₽	0	Red Tally Mixer In 21
	I-1(0022	₽	0	Red Tally Mixer In 22
••	I-10	0023	₽	0	Red Tally Mixer In 23
	I-1(0024	₽ G	P-	Red Tally Miver In 24

The GP-I/O List shows all existing GP-I/Os. GPI inputs (GPIs) are indicated with a red arrow. GPI outputs (GPOs) are located in a separate tab and marked by a green arrow. The difference between a GPI and a GPO is that a GPI does not contain a logic, but merely serves as trigger for a GPO. GPIs are triggered by a device or something similar. A GPO, in turn, can contain a logic that activates it. It can also serve as trigger.

1 Editing the GP-I/O List

1.1 New GPI Group

Modify Remov
+
+

GPI groups

To improve overview, GP-I/O groups can be created. These can be created and edited in the *Config* tab.

Con	fig 📕	• GPIs	• GFOs Tally		
	Numł	mber		Name	
**	•• I-000		0	NULL	
*•	I-1000	1 🕀	0	Red Tally Mixer In 1	
*•	I-1000	2 🕀	0	Red Tally Mixer In 2	
**	I-1000	3 []	0	Red Tally Mixer In 3	
**	I-1000	14 E	0	Red Tally Mixer In 4	
**	I-1000	5 🗗	0	Red Tally Mixer In 5	
	I-1000	6 🗗	0	Red Tally Mixer In 6	
*•	I-1000	7 🗗	0	Red Tally Mixer In 7	
	I-1000	8 🗗	0	Red Tally Mixer In 8	
-	L-1000		0	Red Tally Miver In 0	

Select Add to create a new group. It will be displayed as a tab in the GP-I/O List.

lame:	Usage:
Tally	Mixer Tally
▼ Show	GPIs in this group also in the GPI or GPO Groups
▼ Show	GPIs in this group also in the GPI or GPO Groups

Creating new GPI groups

To create a group, enter a name and, if necessary, a purpose in the field *Usage*. *Show GPIs in this group also in the GPI or GPO Groups* is checked by default. If the checkmark is removed, the GP-I/Os can only be viewed in this group. If it is not removed, they can be viewed in the overview.

Select *Modify* to edit a selected group. Press *Remove* to delete it. Use the arrow buttons to sort the groups.

1.2 New GPI Range

To improve overview, it is possible to set up GP-I/O ranges. In these, numbers can be assigned to certain GP-I/O groups, for instance the numbers 1 to 64 for physical GP-I/Os.

iPI Ranges:				
Range 0001 - 0064	Name Physical	Usage		Add
			-	Madifu
				Remove
			20	
iPO Ranges:				
Range	Name	Usage		
0001 - 0064 📢	Physical	λΥ.		Add
				Modify
			1	Remove

To create a new range, select Add.

GPI Group	
Name: Physical	Usage:
From:	1 🕂 to 64 🛧 Amount: 64 📩
	OK Cancel

GPI range

In the newly opened window, enter a name and, if necessary, a purpose for the GP-I/O. Next, define the GP-I/O range. If, for higher numbers, only the number of the first GP-I/O and the total amount of GP-I/Os is known, the system automatically calculates the last number used in this range using *Amount*.

To edit or delete a created range, select Modify or Remove, respectively.

Conf	ig 🏓 🏓 (PIs	•\$	GPOs Tally		
	Number			Name	Usage	
•=>	0-001	₽	0	disable TL 1	Physical	
•=>	O-002	₽	0	disable TL 2	Physical	
•=>	O-003	₽	0	disable TL 3	Physical	
•=>	0-004	₽	0	disable TL 4	Physical	
•=>	O-005	₽	0	disable TL 5	Physical	
•=>	O-006	⋳	0	Crosspoint	Physical	Ļ
•\$•	O-007	₽	0	Test	Physical	
•=>	0-008	₽	0	Timer 1 Run	Physical	
•=>	0-009	₽	0	Timer 1 Zero	Physical	
•=>	0-010	₽	0	Timer 1 Timeout	Physical	
•=>	0-011	₽	0	Timer	Physical	
•=>	0-012	F	0	CCU1 Red Tallv	Physical	

The name of the range is shown at the appropriate GP-I/Os using the GP-I/O list.

1	ig 🎌	🔹 GPIs		🔹 GPOs Tally		
	Number			Name		
	I-000	Ð	0	NULL		
	I-10001	Ð	0	Red Tally Mixer In 1		
•	I-10002	₽	0	Red Tally Mixer In 2		
••	I-10003	⊕	0	Red Tally Mixer In 3		
••	I-10004	₽	0	Red Tally Mixer In 4		
•	I-10005	무	0	Red Tally Mixer In 5 NULL GPI		

The system automatically creates the GPI *NULL* when a new configuration is first opened. If the GPI *NULL* is dragged into a GPO but not linked, this GPO is set to *High* if the configuration is opened.

2 New GP-I/O

GP-I/O List	
Config 🏾 🍽 GPIs	•= GPOs
Number	Name
	New GP-I/O
	Creating a New GP-I/O

To create a new GP-I/O, right-click into the GP-I/O list.

GP-I/O-Properties	100.00	1000		×
Number:	1			
Name:				
Resulting Enumeration:	°			
Comment:				
	E Set to "True" o	on Startup		
	Suppress defai	ult logging.		
	Enable Color P	ien Faise reset		
Color Preset	vsmPanel	Blink	18000	
Non-Signalled:	Text I	Text 🙄	Text	-
Signalled:	Text 1	Text Text	Text	-
Log on Signalled:	Enable Reporti	ng		
Log on Non-Signalled:				
Instructions:				
				-
		0	K Car	ncel

GP-I/O Properties

Enter name and number for the GP-I/O in the window, GP-I/O-Properties.

Number:		
Hesulting Enumeration:	specify the name of de	escription of the object(s).
Comment:	This field is Itera	ator enabled.
	You can create mu	Itiple objects using Iterators.
	Examples:	
1	Studio{1-10}	creates Studio1, Studio2, Studio3 to Studio10.
Color Preset	C{1-3}{L,R}	creates C1L, C1R, C2L, C2R, C3L, C3R
	M{6-22}{,R}	creates M6, M6R, M7, M7R,
Non-Signalled:	In-{1-13:2}	creates In-01, In-02, In-03 to In-13.
Signalled:	Further Informat	tion:
	See "vsmStudio Ap	pplication Note 020".

Since the name field features an iterator, multiple continuously counted GP-I/Os can be created using winged brackets (also see vsmStudio Application Note 020 Using Iterators). The field *Comment* offers space for comments.

If a GP-I/O was set to *High* at the start of a configuration, the box in front of *Set to "True" on Startup* must be checked. However, this only works for GPOs without logic that merely execute another application or function, for example controlling another GPO.

2.1 Alarm Settings

All other settings refer to the alarm management.



By checking *Suppress default logging*, logging of logfiles (see chapter 2.3.3 Folder LogFiles) can be suppressed for this GP-I/O. The function *Is Signalled when "False"* turns the alarm logic around without requiring a change of the GP-I/O logic. A checkmark before *Enable Color Preset* enables the editing of colours for the alarm management.

2.2 Scheduler Settings

Log on Signalled		 	
Log on Signalica.	<u></u>		
Log on Non-Signalled:	I		
Instructions:			
			1

Scheduler settings

If *Enable Reporting* is checked, a new channel is created in the scheduler. This channel is shown as *Reporting* with the text that was entered under *Instructions* in the scheduler.

2.3 GP-I/Os in the GP-I/O List

All existing GP-I/Os are shown in the GP-I/O list. The green dot shows that this GP-I/O is active. A second, blue dot indicates that this GPO is executing a logic if it is active.



Moreover, the numbers and the name of the GP-I/O are shown in the GP-I/O list. To open the *GP-I/O Edit*, double-click onto a GP-I/O.

10000 Emergeno 10001 "Calcu 10002 "Calcu 10002 "Calcu	Condition Mixer lated Red Tally Mixer In 1" lated Red Tally Mixer In 2"	Logic + [] ↓ 1 0000000000	Description
10000 Emergeno 10001 "Calcu 10002 "Calcu 10003 "Calcu	y Mixer Iated Red Tally Mixer In 1" Iated Red Tally Mixer In 2"	* (
10001 "Calcu 10002 "Calcu 10003 "Calcu	lated Red Tally Mixer In 1" lated Red Tally Mixer In 2"	+ E	
10001 "Calcu 10002 "Calcu 10003 "Calcu	lated Red Tally Mixer In 1" lated Red Tally Mixer In 2"		
10002 "Calcu 10003 "Calcu	lated Red Tally Mixer In 2"		
10003 "Calcu			
	lated Red Tally Mixer In 3"		
erties of "Emergency	Mixer"	23	
Secondary	1		
	1	1	
Application Conc	ition Action 🗸 Value Name	<u> </u>	
		· · · · · · · · · · · · · · · · · · ·	
		× 1	
	rties of "Emergency Seconday Application Cond	rities of "Emergency Mixer" Secondary Application Condition Action ⊂ Value Name	rties of "Emergency Mixer" 23 Secondary Application Condition Action Value Name

BGP-I/O Edit window

Here, the connections of the GP-I/O can be viewed and edited, if required. By right-clicking, the following window opens:

	0-012	17	0	CC01 Ked	rany
•2>•	0-10000	Ð	0	Emergen	Marcal Cat
•=	O-10001	Ð	0	Calculate	Manual - Set
•=	O-10002	₽	0	Calculate_	Manual - Clear
•\$•	O-10003	Ð	0	Calculate	New GP-I/O
•=	O-10004	Ð	0	Calculate	Create Alarm from GP-I/O
•=	O-10005	Ð	0	Calculate -	Comp. Character
•=	O-10006	Ð	0	Calculate	Copy Strg+C
•=	O-10007	Ð	0	Calculate_	Delete Strg+)
•=	O-10008	Ð	0	Calculate	Property

In this window, the selected GP-I/O can be manually activated (Set) or deactivated (Clear). Further, new GP-I/Os can be set-up, and alarms can be created from GP-I/Os. Moreover, it

is also possible to delete the selected GP-I/O or to open the properties window.

2.4 Copying GP-I/Os

In the window that opens following a right-click onto a GP-I/O, the selected GP-I/O can be copied.

Copy GPI	
Number of Copies: Modify Crosspoint(s):	No changes Increment Source Increment Target
	OK Cancel

Copying a GPI

Next, define how often the GP-I/O should be copied. The functions *Increment Source* and *Increment Target* are used to copy crosspoint-dependent GP-I/Os. The crosspoint logic of this GP-I/O therefore counts either the sources or targets if the relevant function is checked. This way, a continuous series of crosspoint-dependent GP-I/Os can be copied.

3 New GP-I/O Logic

A GP-I/O can contain a logic if it is set to *High* at the point when this logic becomes true. To create a GP-I/O logic, select a GP-I/O or a crosspoint and drag and drop it into the relevant GPO in the GP-I/O list.

3.1 GP-I/O Edit Window



Name and trigger of the GPO

The name, here *Test*, and the GPO's trigger, here a GPI, a GPO, and a crosspoint, can be viewed in the GP-I/O Edit window in the top left under *Name*. The green arrow in front of the GPO's name indicates that the GP-I/O is a GPO.

Name	Condition	Logic	Description
O-013 Test			
		+ []]	
≫• I-000		●○○○○○○ ●□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	NULL
-∢⇒ 0-011			Timer
• 001/001		● <u></u> ●\ <u>≥</u>	"Audio Out 1" « "Audio In 1"
	/vBit <linknown>\</linknown>		
	(Dit distance)		
	{vbit: <unknown>}</unknown>		



The GPO logic is shown in the center of the edit window. The names of triggers are shown under *Description*.

	Name		Co	ndition
(=>	0-013	Test		
	⇒• I-000			
	€ 0-011			
	• 001/00	01		
1	•\$ O-006		"Crosspoin	ť
8 0		>	{vBit: <unkr< td=""><td>nown>}</td></unkr<>	nown>}
		->	{vBit: <unkr< td=""><td>nown></td></unkr<>	nown>

Object triggered with GPO

The bottom left indicates what the opened GPO triggers – the GPO *Crosspoint* in the scenario shown above.

3.2 Boolean Logic

The GP-I/O logic is created according to the Boolean Algebra. This means that the connection arranged in the square above must be true in order to activate this GPO. In turn, the connection arranged below must be false. A situation in which two connections lay sideby-side is called an Or-condition. In this scenario, the GPO logic is triggered by one trigger or the other. A situation where the connections are linked with each other is called an Andcondition. This means that the GPO event will only become active if both triggers are true.



GPO logic

This concept is exemplified in the screenshot above: The opened GPO will become active as soon as the GPO *Timer* is active and the GPI *NULL* is inactive, or the crosspoint *Audio Out 1* < *Audio In 1* is set. The differently coloured connections hereby indicate the following: The orange-coloured dot indicates that the connection is true, but that the execution of the logic is prevented by the And-connection with the other trigger (which is false). A black dot indicates

that the trigger is turned *Clear*. A green dot indicates that the trigger is *Set*, and that the logic is being executed.

4 Secondary Commands for GP-I/Os

When a GP-I/O is opened, a property box will open in addition to the *Edit* window, in which secondary commands can be entered.

4.1 Crosspoint as Secondary GP-I/O Command

Properties of "Tes	ŧ					Master View	
-⊯ Se	condary					Layout 🗮	Current 🔸 G
Application	Condition	Action	Value	Name	_	<u>b</u>	
Gpi	False	Connect		"Audio Out 1" « "Audio In 1"			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
							dio o dio o dio
						dentifier	
					×	Audio In 1	
						Audio In 2	
						Audio In 3	
						Audio In 4	
						Audio In 5	
						Audio In 6	
						Audio In 7	
						Audio In 8	

Crosspoint as secondary GPI command

It is, for example, possible to drag-and-drop a crosspoint from the GPI view of the master matrix (see chapter 6.3 GPI View) into this window, for which various functions can be setup.

l Se	condary				
Application	Condition	Action	7	Value	Name
Gpi 👖	False False True	Connect	•		"Audio Out 1" « "Audio In 1" 🛛 🔳

Conditions for a secondary command

In the property window, the *Condition* as well as the *Action* that is to be executed if the condition becomes true or false can be defined. An action can, for example, be the connecting or toggling of a crosspoint.

Sec	ondary			
Application	Condition	Action 🗸	Value	Name
ырі 🗾	False Connect Queue: Co Queue: Au Queue: Ru Queue: Di Toggle	Connect & Flush uto-Acknowledge equest Next sconnect & Flush		"Audio Uut 1" « "Audio In 1" 📑

4.2 Gadget as Secondary GP-I/O Command

It is also possible to drag a gadget from the gadget tree (see chapter 10.2 Gadget Tree) into the secondary command window.



Gadget as secondary GPI command

In this case, a value can be entered in addition to *Condition* and *Action* which will cause the GPI to become active as soon as this gadget value is reached. The order of secondary commands can be changed with the blue arrows on the right side of the window. Use the red cross to delete them.

5 Tally GPOs

If a GPO is dragged onto a signal, a tally is created for this signal (see chapter 14 Tally Management).



The desired tally colour can be defined using the arrow beside the tally symbol. The greyedout colour – red in the screenshot below – is already assigned. Since each colour can only be used once, it can no longer be selected.



6 Crosspoint-GPO-Connection

	o disable TL 1 disable TL 2										
	disable TL 2			1.	N	0	4	0	0 ~		0 0
л				ort	Det	Out	ort	50	d d	Oct	t of
U (disable TL 3	E		ę	dio	dio	ę	8.		dio	el el
0	disable TL 4		_ Identifier	NA.	TIV.	NA.	P.	2		PAU	NA.
⊕	disable TL 5		Audio In 1				T	Τ			
Ð	Crosspoint		Audio In 2								
Ð) Test2		Audio In 3								
E (Timer 1 Run		Audio In 4				-	-			
) Timer 1 Zero		Audio In 5	-			-	+			-
E () Timer 1 Timeout		Audio In 7				+				+
- - -	Timer		Audio In 8								
л (COUL Pod Tally		Audio In 9 🕨						_		
					Crosspoint as GPO triager						

6.1 Triggering a Crosspoint through a GPO

A GPO can be triggered with a crosspoint. To do so, drag the relevant crosspoint from the GPI view of the master matrix (see chapter 6.3 GPI View) into a GPO.



If this crosspoint is set, the GPO becomes active (also see chapter 6.3.2 Connection of a GPO with a Crosspoint)

6.2 Setting a Crosspoint through a GPO



In turn, it is also possible to drag a GPO onto a crosspoint (in the GPI view of the master matrix) so that the crosspoint is set once the GPO is activated (also see chapter 6.3.1 Connection of a Crosspoint with a GPI).

•=>	O-004	₽	0	disable TL 4		_ Identifier		PA.	P.A.	NA.	2 2	PAL	AL	N.	N.
•=>	O-005	₽	0	disable TL 5		Audio In 1	•	•			Ť.			Ĩ	T
020	O-006	Ð	0	Crosspoint		Audio In 2	•								
	O-007	Ð	0	Test2		Audio In 3	•								
•=	O-008	Ē	0	Timer 1 Run		Audio In 4					-		-	-	
	0-009	다	0	Timer 1 Zero		Audio In 5	-							-	
				Crosspo	oint set using a (GPO									

This allows, for example, the setting of two crosspoints simultaneously through activating a GPO: If, for example, the crosspoint *Audio Out 1 > Audio In 1* is connected with the GPO *Crosspoint* and this GPO is connected with the crosspoint *Audio Out 2 > Audio In 2*, setting the crosspoint *Audio Out 1 > Audio In 1* actives the GPO, which will also automatically set the second crosspoint.



Connection of two crosspoints via GPO

7 GP-I/Os on Control Panels

	Number			Name		Dana	Edit (5)	Tost			
•=	0-010	Ð	0	Timer 1 Timeout		- Farie	Edit (5)	liest			
•=	0-011	⊕	0	Timer		New	Page	Move <	Name		L hun
•=	0-012	Ð	0	CCU1 Red Tally		i n	Draw	Move>	Delete	Сору	
•=	0-013	Ð	0	Test							
•=	O-10000	Ð	0	Emergency Mixer	E						
•=	0-10001	⊕	0	Calculated Red Tally Mixer In 1			Test				
•=	0-10002	Ð	0	Calculated Red Tally Mixer In 2			Tes	at 0	1	02	
•=	O-10003	Ð	0	Calculated Red Tally Mixer In 3	- 5		0-01				
•=	0-10004	⊕	0	Calculated Red Tally Mixer In 4							
•=	0-10005	Ð	0	Calculated Red Tally Mixer In 5				0	9	10	
•=	0-10006	Ð	0	Calculated Red Tally Mixer In 6							
•=	O-10007	Ð	0	Calculated Red Tally Mixer In 7		trolr	lanal				
				Placing a GPU on a	con	uorp	anei				

In the GP-I/O window, it is indicated whether a GP-I/O is used on a control panel.



Display in the GPO edit window

The information that the GPO is being used on a control panel is shown in the relevant GPO's *Edit* window with ID (5) and name (*Test*) of the panel. Secondary commands of the GPO are listed here as well – in the screenshot above, the crosspoint *Audio Out 1 > Audio In 1* and a gadget parameter. Moreover, system-specific *vBit* entries are shown here as well, which should be neglected.

8 GP-I/O Status

	🔧 💵 🐷 🖉 - 🗓 🏚 🚧 🎝 🎟 - 🎽 🜉 🚥 🚜	🗢 💕 🧭 🗿 🔌 🎾				
GP-I/O status display						

To open the GP-I/O status display, select the corresponding symbol in the main menu. All GP-I/Os are shown in this view and can be activated or deactivated there.

	GP-I/O	State	25	l	-	6	2	23	
GF	P-Output	s G	P-Inp	outs	Bot	h			
									~
	0000	0.	• •	••	•••	••	•	(
	0010	••	••	•••	• • •	•	•		
	0020	••	• •	ō e	• • •	•	•		
	0030	••	• 🔘) • •	• • •	• •	•		
	0040	••	• •	• •	• • •	• •	•		
	0050	• 0	ОC	0.0	00	0 0	0		
	0060	00	οс	0.0	00	0 0	0		
	0070	00	οс	0.0	00	0 0	0		
	0080	00	ОC	0.0	00	0 0	0		
	0090	00	οс	0.0	00	0 0	0		
	0100	00	ОC	0.0	00	0 0	0		
	0110	00	οс	0.0	00	0 0	0		
		G	PC) st	ate				

Under the tab *GP-Outputs*, the GPOs are displayed as dots. Green dots indicate that these GPOs are active.

GP-I/O S	tates 🗆 🗆 🔀					
GP-Outputs	GP-Inputs Both					
	A					
0000		1				
0010						
0020						
0030						
0040						
0050						
0060 0						
0070 0						
0080 0						
0090 Г						
GPI state						

The same applies to the two tabs *GP-Inputs* and *Both*, in which GPIs and GP-I/Os are displayed.

GP-I/O	States 💷 😐	
GP-Output	s GP-Inputs Both	
		<u>_</u>
0000		
0010		
0020		
0030		
0040		
0050	• 0 0 0 0 0 0 0 0 0 0	
0060	000000000000000000000000000000000000000	
0070	000000000000000000000000000000000000000	
0080		
	GP-I/O state	



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