

KREO HMI TUTORIAL Allarms - Messagges

Tutorial dedicated to the programming of alarms and messages

Connect Ideas. Shape solutions.



Introduction

Let's see how the management of alarms and messages in KREO HMI works including the various tables of ACTIVE, HISTORICAL, STATISTICAL ALARMS as well as PRIORITIES and REPORTS.

Please note that, in ESA terminology, the difference between ALARM (ISA) and simple MESSAGE consists in the manual acquisition of the alarm by the operator.

The MESSAGE its displayed only if the alarm bit (or tag value) is active.

How to do it

Suppose you create a tag-array [0.. 9] of INTEGER to handle 160 alarms +
 2 individual INTEGER TAGS to handle 3 messages

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TESTMANUALE	~	ري ط£ + × +					
Configuration			Name ⊽	Description \forall	Туре ⊽	Address type ⊽	Provider ⊽
		104 🖉	TagALARMS		UInt16(10)	Internal	N/A
Pages	(5)	105 🖉	TagWARNING1		Int16	Internal	N/A
Popups	(1)	106 🖉	TagWARNING2		int16	Internal	N/A
ြူ Sequences		107					
√ Tags		108					
Alarms	(0)	109					
Datalogs	(0)	110					



2) I now configure the ALARMS/MSG in different ways and associated with the created tags

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C Configuration		⊽ Folder ⊽	Name ⊽	Message	7	Tag ⊽	Activation type ⊽	Activation value γ	Priority ⊽
Pages	(5)	1 🖉	Alarm1	FIRE !!!! E	VERYBODY OUT	TagALARMS[Element:0]	Bit	0	Error
Popups	(1)	2 🖉	Alarm2	EMERGE	NCY ALARM!	TagALARMS[Element:1]	Bit	7	Error
ြူ Sequences	(1)	3 🖉	Alarm3	SECURIT	Y REMOVED! HALT MACHINE	TagALARMS[Element:2]	Bit	15	Error
	(106)	4 🖉	Msg1	TANK AL	MOST FULL	TagWARNING1	GreaterThen	80	Warning
	(6)	5 🖉	Msg2	TANK FU	u.	TagWARNING1	GreaterThen	100	Warning
Datalogs	(0)	6 🖉	Msg3	TAG OUT	OF RANGE	TagWARNING2	OutOfRange	100	Warning
	(0)	7							
O- Scripts	(0)	8							

Note that alarms have been configured associated with various bits of the tagarray while MESSAGES are activated only when WARNING1>80, >100, WARNING2 if OUT OF RANGE 0..100.

This is just an example of configuration of course. The alarms/messages activation mode is interchangeable.

3) I now configure a display of colors ALARMS=RED and MESSAGES=BLUE

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Pages (6)) 1 Error	0	Red		
Popups (1)) 2 Warning	1	#FF0000C0		
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Tags (106)) 4				
🔥 Alarms (6)) 5				
Datalogs (0)) 6				
Recipes (0)) 7				
Scripts (0)) 8				
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The PRIORITIES are configurable in NAME, LEVEL, COLOR.



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4) On the project page I configure the alarms tables, HISTORICAL

5) By launching the project at RUNTIME and activating ALARMS/MESSAGES I get the following view:

				ALARMS	AND ME	SSAGES		
∽ Sta	te	∽ On Time				rity 🖓	Message	
Ol	1	14:11:27 28/5/202	:		0		FIRE !!!! EVERYBODY OUT	
Ol	1	14:11:32 28/5/202	t	:	0		EMERGENCY ALARM!	
O	1	14:11:33 28/5/202	:	:	0	SI	ECURITY REMOVED! HALT MAC	CHINE
01	1	14:11:36 28/5/202	:		1		TANK ALMOST FULL	
O	٩	14:11:39 28/5/202	:		1		TAG OUT OF RANGE	
ALAR	M 1	ALARM 2	ALARM 3	WARNING	5 1/2	WARNING 3	3	
	M 1	ALARM 2	ALARM 3	WARNING 90	5 1/2	WARNING 3 120	3	ACK
	.M 1	ALARM 2	ALARM 3 ON Ack Time	WARNING 90	5 1/2 ⁷ Priority	WARNING 3 120	3 Message	ACK
ALAR ON State ON	M 1 ⊽ 0	ALARM 2 ON In Time 🛛 .	ALARM 3 ON Ack Time	WARNING 90 Off Time 5	5 1/2 7 Priority ON	WARNING 3 120	Message FIRE !!!! EVERYBODY OUT	ACK
ALAR ON V35tate ON ON	M 1 → C 14:11: 14:11:	ALARM 2 ON 27 28/5/2021 32 28/5/2021	ALARM 3 ON Ack Time \bigtriangledown	WARNING 90 Off Time 5	5 1/2 Priority ON ON	WARNING 3 120	Message FIRE !!!! EVERYBODY OUT EMERGENCY ALARM!	ACK
ALAR ON State ON ON ON	M 1 ▼ 0 14:11: 14:11:	ALARM 2 ON 0n Time 27 28/5/2021 32 28/5/2021 33 28/5/2021	ALARM 3	WARNING 90 Off Time \{ ; ;	5 1/2 Priority ON ON ON	WARNING 3 120	Message FIRE !!!! EVERYBODY OUT EMERGENCY ALARM! CURITY REMOVED! HALT MACH	ACK
ALAR ON State ON ON ON	M 1 ▼ 0 14:11:: 14:11:: 14:11::	ALARM 2 ON Dn Time \heartsuit . 27 28/5/2021 32 28/5/2021 33 28/5/2021	ALARM 3	Off Time 5	5 1/2 Priority ON ON ON ON ON	WARNING 3 120	Message FIRE !!!! EVERYBODY OUT EMERGENCY ALARM! CURITY REMOVED! HALT MACH TANK ALMOST FULL	ACK



Note the activation-ALARM time recorded in the ONTIME column. In this case the ALARMS have not yet been acquired (the MESSAGES do not require acquisition) and there are still 5 active in the machine.

6) Now we acquire the ALARMS with the ACK button (*function*: AlarmAckGlobal)

Iocalhost	t8080/sys/ma	ister/master_	w.html									
						ALARMS	S AND ME	ESSAGE	S			
5	7 State	7	⊽ On Time	🖓 Ack Ti	me	\bigtriangledown Off Time	🖓 Prie	ority	∽ Messag	e		
	ON+AC	CK 14	4:11:27 28/5	2021 14:33:02 28	3/5/2021			0	FIRE !!!! EVERY	BODY OUT		
	ON+AC	CK 14	4:11:32 28/5	2021 14:33:02 28	3/5/2021			0	EMERGENCY	ALARM!		
	ON+AC	CK 14	4:11:33 28/5	2021 14:33:02 28	3/5/2021			0	SECURITY REMOVED	HALT MACHI	NE	
	ON	14	4:11:36 28/5	2021:				1	TANK ALMO	ST FULL		
	ON	14	4:11:39 28/5	2021:				1	TAG OUT OF	RANGE		
A	ALARM	11	ALARM	2 ALARM	3	WARNIN	G 1/2	WARN	VING 3			
Α		11		2 ALARM	3	WARNING 90	G 1/2	WARN 1	NING 3 20		ACK	
	ALARM ON ^{8tate}	11	ALARM ON Time 28/5/2021	2 ALARM ON	3 ⊽ 0:	WARNING 90	G 1/2	WARN 1	NING 3 20 Message	ARMI	АСК	
A J	ALARM ON 8tate ON 1 ON 1	1 1	ALARM ON Time 28/5/2021 28/5/2021	2 ALARM ON	3	WARNING 90 mf Time (G 1/2 Priority ON ON	WARN 1. V	NING 3 20 Message EMERGENCY AL/ SECURITY REMOVEDI HA	ARM!	ACK	
A	ALARM ON 8tate ON 1 ON 1	√ 0n 4:11:32 4:11:33	ALARM ON Z8/5/2021 28/5/2021 28/5/2021	2 ALARM ON ✓ Ack Time -: -: -:	3	WARNING 90 mft Time s	G 1/2 Priority ON ON ON	WARN 1:	NING 3 20 Message EMERGENCY ALL SECURITY REMOVEDI HA TANK ALMOST F	ARM! LT MACHINE FULL	АСК	
A R	ALARM ON Batate ON 1 ON 1 ON 1 ON 1	√ On (4:11:32 (4:11:36 (4:11:36	ALARM ON 28/5/2021 28/5/2021 5 28/5/2021 2 28/5/2021	2 ALARM	3	WARNING 90 ff Time (G 1/2	WARN 1	NING 3 20 Message EMERGENCY ALL SECURITY REMOVEDI HA TANK ALMOST F TAG OUT OF RA	ARM! LI MACHINE ULL NGE	ACK	
A	ALARM ON 8tate ON 1 ON 1 ON 1 ACK	√ On 4:11:32 4:11:33 4:11:36 (4:11:39	ALARM ON 28/5/2021 28/5/2021 28/5/2021 28/5/2021 28/5/2021	2 ALARM ON ✓ Ack Time 4:33:02 28/5/202	3	WARNING 90 ff Time (G 1/2 Priority ON ON ON ON ACK	WARN 1.	NING 3 20 Message EMERGENCY AL SECURITY REMOVEDI HA TANK ALMOST F TAG OUT OF RA SECURITY REMOVEDI HA	ARM! LT MACHINE ULL NGE LT MACHINE	АСК	
A 57	ALARM ON Btate ON 1 ON 1 ON 1 ACK ACK	√ 0n 4:11:32 4:11:33 4:11:39 - -	ALARM ON Time 28/5/2021 328/5/2021 28/5/2021 28/5/2021 28/5/2021 -: 1	2 ALARM ON ✓ Ack Time 4:33:02 28/5/202 4:33:02 28/5/202	3	WARNING 90	G 1/2 Priority ON ON ON ACK ACK	WARN 1:	NING 3 20 Message EMERGENCY AL SECURITY REMOVEDI HA TANK ALMOST F TAG OUT OF RA SECURITY REMOVEDI HA EMERGENCY AL	ARM! LIT MACHINE ULL NGE LIT MACHINE ARM!	ACK	

The acquisition time was recorded in the appropriate column of the ACTIVES and HISTORICAL tables.

This procedure allows you to confirm to the system that the operator has become aware of the ALARMS in the machine.



7) Finally we reset the ALARMS / MESSAGES in the machine

					ALARN	1s ai	ND ME	SSAGES			
	e 🖓	On Time	🖓 Ack Tii	me	⊽ Off Tin	ne		ity 🖓		Message	
				~			(2				
ALAR	M1 /	ALARM 2	ALARM	3	WARNI	NG 1	/2	WARNIN	NG 3		
	M 1 /	ALARM 2		3	WARNI	NG 1	/2	WARNIN	NG 3		ACK
ALAR	M 1 /	ALARM 2		3	WARNI (NG 1)	/2	WARNIN 0	NG 3		ACK
		ALARM 2	ALARM ON Ack Time	3	WARNI (NG 1	/2 Priority	WARNIN 0	NG 3	Message	ACK
ALAR ON State ACK	M 1 /	NLARM 2	ALARM ON Ack Time 33:02 28/5/202	3	WARNI (Off Time	NG 1	/2 Priority ACK	WARNIN 0 V	NG 3 Emerc	Message GENCY ALARM!	ACK
ALAR ON State ACK ACK	M 1 /	ALARM 2 ON me ⊽ - 14:: - 14::	ALARM ON Ack Time 33:02 28/5/202 33:02 28/5/202	3	Off Time	NG 1	/2 Priority ACK ACK	WARNIN 0 ⊽	NG 3 EMER FIRE !!!!	Message GENCY ALARM! EVERYBODY OU	ACK
ALAR ON State ACK ACK OFF	M 1 A ∇ On T: :-	ALARM 2 ON me 14:: - 14:: -	ALARM ON Ack Time 33302 28/5/202 33302 28/5/202	3 ▽ 1 14:3:	WARNI (Off Time 5:29 28/5/2021	NG 1	/2 Priority ACK ACK OFF	WARNIN 0 V	NG 3 EMERG FIRE !!!! FIRE !!!!	Message GENCY ALARM! EVERYBODY OU EVERYBODY OU	ACK T T
ALAR ON State ACK OFF OFF	M 1 A ∇ On Tr 	ALARM 2 ON me ▼ - 14:: - 14:: -	ALARM ON Ack Time 33702 28/5/202 33:02 28/5/202 : :-	3 √ 1 1 14:3: 14:3:	Off Time 5:29 28/5/2021 5:31 28/5/2021	NG 1	/2 Priority ACK ACK OFF OFF	WARNIN 0 V	NG 3 EMERG FIRE !!!! FIRE !!!! EMERG	Message GENCY ALARM! EVERYBODY OU EVERYBODY OU GENCY ALARM!	ACK T T
ALAR ON State ACK ACK OFF OFF	M 1 /	MLARM 2 ON me ♥ 14:: - 14:: -	ALARM ON Ack Time 33:02 28/5/202 33:02 28/5/202 : :-	3 ↓ 1 14:3: 14:3: 14:3:	WARNI Off Time 5:29 28/5/2021 5:31 28/5/2021 5:31 28/5/2021	NG 1	/2 Priority ACK ACK OFF OFF OFF	WARNIN 0 V	EMER FIRE !!!! FIRE !!!! EMER SECURITY REM	Message GENCY ALARM! EVERYBODY OU EVERYBODY OU GENCY ALARM! MOVED! HALT MA	T T XCHINE
ALAR ON State ACK ACK OFF OFF OFF	M 1 /	MLARM 2 ON me ♥ - 14:: - 14:: 	ALARM ON Ack Time 33302 28/5/202 33:02 28/5/202 	3	WARNI Off Time 5:29 28/5/2021 5:31 28/5/2021 5:31 28/5/2021 5:34 28/5/2021	NG 1	/2 Priority ACK ACK OFF OFF OFF	WARNIN O S	EMERI FIRE !!!! FIRE !!!! EMERI SECURITY REM TANK	Message GENCY ALARM! EVERYBODY OU EVERYBODY OU GENCY ALARM! MOVED! HALT M/ ALMOST FULL	ACK T T XCHINE

The ACTIVE table is empty and the HISTORY keeps the states recorded so far.



Information and additional alerts

Other tables give additional alarms/messages informations. Specific system tags (SYSTEM-TAGS) provide information on the status of the alarms (full history, acquired alarm, active, export path,..... Below example of statistics table



In the figure below the alarm SYSTEM-TAGS

🛅 Pages	(8)	2	Ŵ	т.			14
Popups		3	Ø	Tag		Database	Evente
Sequences		4	Ŵ	lag		Database	Events
✓ Tags		5	Ŵ	Name	Tag10	9	
Alarms		6		Address ty	ype Syste	m	~
📃 📃 Datalogs		7	Ŵ	System tag	g		^
		8			SYS_#	MarmEventExist MarmExist	Î
©= Scripts		9	\swarrow	Use in	n scri SYS_A SYS_A	NarmFull NarmIsaExist	
Canpta Ø=		10			SYS_A	NarmMainId NarmMainKey	
		11	Ŵ		SYS_4	larmMainMessage	_
Gadgets		12	Ŵ		SYS_A	NarmMainName NarmMainPriority	
() Timers		13	D		SYS_A	NarmNotAck	
💮 Tasks		14			SYS_4	JarmNum	
Pipelines	(0)	16			SYS_A	NarmsNum NarmsPath	

Other widgets integrate the alarm signals, such as ICONS and BANNERS of



ALARMS / MESSAGES.

It is also possible to configure HELP PAGES for each alarm / message configured, thus integrating the information related to each specific ALARM / MSG.



Note that the HELP pages for each ALARM/MSG are simple project pages (FULL PAGE or POPUP) associated with the various alarms.

A RUNTIME will just need a single HELP button to call them according to the ALARM / MSG selected in the ACTIVE table(*function:* **GridAlarmShowPage**). It is also possible to set a double-click on the ADVANCED >> TABLE GRAPHIC PROPERTIES to perform the same function



Column display and sort filters

For a better reading of a table with many ALARMS /MSG you can take advantage of column sorting and display filters. Pressing on the column-header sorts the ALARMS/MSG according to the alphabetical/time content of the sorted column.

Below example of sorting by text-message:

S ≸tate	∽ On Time		♥ Off Time		V	Message	Δ
ON	16:51:34 28/5/2021	:	;	ON		EMERGENCY ALARM!	
ACK		16:51:58 28/5/2021		ACK		EMERGENCY ALARM!	
OFF			16:52:02 28/5/2021	OFF		EMERGENCY ALARM!	
ON	16:51:33 28/5/2021			ON		FIRE !!!! EVERYBODY OUT	
ACK		16:51:58 28/5/2021		ACK		FIRE !!!! EVERYBODY OUT	
OFF			16:52:01 28/5/2021	OFF		FIRE !!!! EVERYBODY OUT	
ON	16:51:35 28/5/2021			ON	S	ECURITY REMOVED! HALT MACHINE	
ACK		16:51:58 28/5/2021		ACK	S	ECURITY REMOVED! HALT MACHINE	
OFF			16:52:03 28/5/2021	OFF	S	ECURITY REMOVED! HALT MACHINE	
ON	16:51:49 28/5/2021	:)	ON		TAG OUT OF RANGE	
OFF			16:52:08 28/5/2021	OFF		TAG OUT OF RANGE	
ON	16:51:40 28/5/2021			ON		TANK ALMOST FULL	
OFF			16:52:06 28/5/2021	OFF		TANK ALMOST FULL	
ON	16:51:44 28/5/2021			ON		TANK FULL	
OFF			16:52:06 28/5/2021	OFF		TANK FULL	

To facilitate the reading of the table at RUNTIME you can apply filters to alarms / MSG that can be activated from the icons highlighted below:



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	OFF	:	:	16:52:06 28/5/2021		OFF
	ON	16:51:44 28/5/2021	:	:		ON
	OFF	:)	16:52:06 28/5/2021		OFF
	ON	16:51:40 28/5/2021	:	1		ON
	OFF	:		16:52:08 28/5/2021		OFF
	ON	16:51:49 28/5/2021	:			ON
	OFF	:	:	16:52:03 28/5/2021		OFF
	ACK	:	16:51:58 28/5/2021	:		ACK
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Depending on the selected column-filter, dedicated filters will be activated.

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Status-column filter that contains text that begins with ACK





FILTER-COLUMN MESSAGE that contains the text FIRE + OUT (AND of 2 filters)



FILTER-ON-TIME column that contains ALARMS/MSG between 2 dates/time

∇ Intermodel ∇ Ack Time ∇ Off Time ∇ Priority ∇ MessageOFF>=16:14:12 28/5/2021<=17:14:12 28/5/2021Image: Cancel of the state of the sta	n – ⊑ ☆
OFF I6:14:12 28/5/2021 Image: Tank Full OFF Tank Full Tank Full OFF Image: Tank ALMOST Full Tank ALMOST Full ON Information of tank ALMOST Full Tank ALMOST Full ON Information of tank ALMOST Full Tank ALMOST Full ON Information of tank ALMOST Full Tank ALMOST Full ON Information of tank ALMOST Full	∇
ON F 10:11:12:00:12:01 F TANK FULL OFF F TANK ALMOST FULL TANK ALMOST FULL OFF TANK ALMOST FULL TANK ALMOST FULL OFF TAG OUT OF RANGE TAG OUT OF RANGE ON CANCEL OK TAG OUT OF RANGE OFF 16:51:35 28/5/2021 OFF SECURITY REMOVED! HALT MACHINE ACK 16:51:35 28/5/2021 ON SECURITY REMOVED! HALT MACHINE ON 16:51:35 28/5/2021 ON SECURITY REMOVED! HALT MACHINE OFF ON SECURITY REMOVED! HALT MACHINE OK ON SECURITY REMOVED! MALT MACHINE	
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ON TANK ALMOST FULL OFF TAG OUT OF RANGE ON CANCEL OK TAG OUT OF RANGE OFF : 16:51:58 28/5/2021 OFF SECURITY REMOVED! HALT MACHINE OK : 16:51:58 28/5/2021 : ACK SECURITY REMOVED! HALT MACHINE ON 16:51:35 28/5/2021 : ON SECURITY REMOVED! HALT MACHINE OFF : IG:51:58 28/5/2021 : ON SECURITY REMOVED! HALT MACHINE OFF : IG:51:58 28/5/2021 : ON SECURITY REMOVED! HALT MACHINE OFF : IG:51:58 28/5/2021 -: ON SECURITY REMOVED! HALT MACHINE OFF : IG:51:58 28/5/2021 OFF FIRE !!!! EVERYBODY OUT OFF : ACK FIRE !!!! EVERYBODY OUT ON EVERYBODY OUT ON EVERYBODY OUT	
OFF TAG OUT OF RANGE ON CANCEL OK TAG OUT OF RANGE OFF :- 16:52:03 28/5/2021 OFF SECURITY REMOVED! HALT MACHINE ACK :- 16:51:58 28/5/2021 :- ACK SECURITY REMOVED! HALT MACHINE ON 16:51:35 28/5/2021 :- ACK SECURITY REMOVED! HALT MACHINE ON 16:51:35 28/5/2021 :- ON SECURITY REMOVED! HALT MACHINE OFF :- 16:52:01 28/5/2021 OFF FIRE !!!! EVERYBODY OUT ACK :- 16:51:58 28/5/2021 :- ACK FIRE !!!! EVERYBODY OUT ACK :- 16:51:58 28/5/2021 :- ACK FIRE !!!! EVERYBODY OUT ACK -: 16:51:58 28/5/2021 -: ACK FIRE !!!! EVERYBODY OUT	
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ACK : 16:51:58 28/5/2021 : ACK SECURITY REMOVED! HALT MACHINE ON 16:51:35 28/5/2021 : ON SECURITY REMOVED! HALT MACHINE OFF : 16:52:01 28/5/2021 OFF FIRE !!!! EVERYBODY OUT ACK : 16:51:58 28/5/2021 -: ACK FIRE !!!! EVERYBODY OUT ACK : 16:51:58 28/5/2021 -: ACK FIRE !!!! EVERYBODY OUT	
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OFF : 16:52:01 28/5/2021 OFF FIRE !!!! EVERYBODY OUT ACK : 16:51:58 28/5/2021 : ACK FIRE !!!! EVERYBODY OUT ON 16:51:33 28/5/2021 : ACK FIRE !!!! EVERYBODY OUT	
ACK ACK FIRE !!!! EVERYBODY OUT ON 16:51:33 28/5/2021 ON EIDE !!!! EVERYBODY OUT	
ON 10.51.55 26/5/2021 ON PREE:::: EVERTBOD 1 001	
OFF: 16:52:02 28/5/2021 OFF EMERGENCY ALARM!	
ACK: 16:51:58 28/5/2021: ACK EMERGENCY ALARM!	
ON 16:51:34 28/5/2021: ON EMERGENCY ALARM!	



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