Configurable DOUT patterns

Introduction

Configurable DOUT patterns can be used with Geofencing feature. It makes DOUT configuration much more flexible and gives users an ability to configure it according to their needs.

Feature was first introduced to FM devices with these firmware versions:

- FM-Tco4 HCV 00.02.23.08
- FM-Tco4 LCV 00.02.23.08
- FM-Pro4 00.02.23.08
- FM-Eco4/4+ and FM-Eco4 light/light+ 00.01.20.10

You can get the latest firmware and configurator from our documentation website: doc.ruptela.lt

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Document change log

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Date	Version	Change details
2016-10-26	1.0	Initial draft.
2016-11-18	1.1	Feature available for the FM-Eco4/4+ and FM-Eco4 light/light+.



Description

Configurable DOUT patterns can be used only together with the Geofencing feature. It works on one DOUT at a time.

Pattern itself is defined by the "Pattern parameters". There are six of them.

Pattern parameters

- t_h duration of the high pulse in milliseconds. Min value 1ms, max value 10000ms.
- $\mathbf{t}_{\mathbf{l}}$ duration of the low pulse in milliseconds. Min value 1ms, max value 10000ms.
- c_h constant, which increments every high pulse duration. Value in milliseconds. Can be negative number, in which case the pulse duration is decreased. Min value -10000, max value 10000.
- **c**_I constant, which increments every low pulse duration. Value in milliseconds. Can be negative number, in which case the pulse duration is decreased. Min value -10000, max value 10000.
- **n** number of cycles. Min value 1, max value 10000.
- State final state for the DOUT. DOUT will remain in this state after the pattern is completed. This can be high – H or low - L.

_	High	Low	High	High	Low	High
Duration ms	t _h +0 · c _h	t _i +0·c _i	t _h +1·c _h	 t_h + (n-1) $\cdot c_h$	t _i + (n-1) · c _i	
Cycle no.	n=	=1	n=2	n		State after pattern is completed

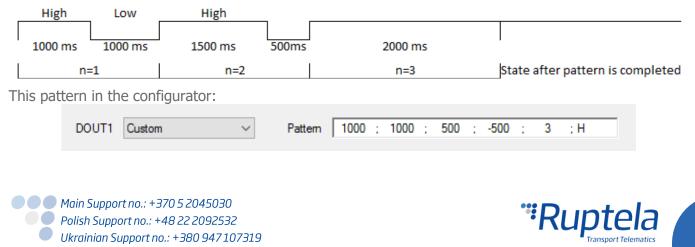
Pattern parameters in the configurator

Pattern parameters field is divided into six sections – one for each pattern parameter. Sections are separated by the semicolon punctuation marks. Starting from the right, parameters match each field in the following order: t_h ; t_l ; c_h ; c_l ; n; **State**.



Pattern examples

Pattern parameters: $t_h = 1000$, $t_l = 1000$, $c_h = 500$, $c_l = -500$, n=3 and state = H.



Pa	ttern parame	ters: t _h =	$1000, t_{l} = 10$	$000, c_h = -50$	$c_{l} = 0, n =$	3 and state	e = H.	
-	High	Low	High			1		_
	1000 ms	1000 ms	950 ms	1000 ms	900 ms	1000 ms		
I	n=1	1	n=	2	n	=3	State after pattern i	s completed
	11-1			-		<u> </u>		o compreteo
Th	nis pattern in t	the config		_				scompleted

Configuration

Set DOUT pattern parameters

- 1. In the main configurator window choose your device (Eco4, Tco4 LCV, Tco4 HCV, Pro4).
- 2. In the **I/O events** section click on the "Options" button. It opens up a new "I/O settings" window, here you can enable or disable I/O parameters.
- 3. In the bottom right corner choose one of the DOUTs. In its dropdown menu select *Custom*. **Pattern** field will be displayed below.

	ration Password	GNSS				Movement sensor sensitivity
	egistration	GNSS : Geofen	election: cing	GPS	~	1 2 3 4 5 6 7 8 9 10 Min Max
🥞 IO settin	gs				×]
1 : Disat	bled	\sim	Protocol selection	on a with v1.1 protoco	bl	
IO properti ID Level Delta	es Enable Accelerometer X 0 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	~				Operator list Options IO events
Average Event on Priority Switch to	1000 ↓ Monitoring ∨ Include data only on event Low Low ∨ No Switch ∨	ms t				Options 2.
IO counter Records o	s n event: 1		DOUT1 DOUT2	Disabled Disabled Disabled	~	
				LED Buzzer Blocking GSM jamming bloc Custom	* <mark>3.</mark>	-
	BL: XX.XX		FW: XX.XX.XX.	XX I	MEI: XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

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4. Enter the pattern parameters in the **Pattern** field.

DOUT1	Custom	\sim	Pattern	1	1	1	1	0	1	0	1	1	; L	
														4.

Enable DOUT in Geofencing options

- 5. Under **Global** settings, in the **Geofencing** section click on the "Options" button. It opens up a new geozones settings popup window.
- Geozones configuration options are described in "EN Internal geozones.pdf" document available here: <u>link</u>. After geozones configuration at least one **Output channel** drop down list on the right should be active. Select *Custom* to activate your DOUT pattern.

COM1 Global	
COM1 Visional Protocol Connection settings Settings of Geozones	Х
Connect O UDP O TCP IP1	
APN settings Port1 0 Correct hard a service	
Send CFG Geozone border crossing	
Get CFG User Pot2 0 Enable 0 🔄 Delay timer in seconds	
Curd DW	~
DIN + Geozones Dizzer	
Configuration Password GNSS ⊡ DIN1	0.
GNSS selection: GPS DIN2 High Low	
Driver registration Geofencing DIN3 High Low	
Options Options 5	~
Send data without GPS fix Towing detection	
Enable Options Options	
Do not use with Trust Track server!	
→ AIN2 < → 0 → mV	
Profile 1 Profile 2 Profile 3 Profile 4	~
Steep Data conclori	
Disabled v after 600 💠 sec Time without engine 60 🔷 s Additional parameters + Geozones	
Data sending Engine Always on V Enable	
✓ Enable	
Period 60 🔿 s	
Link Timeout 7 🚖 s Output channel: Buzzer	~
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BL: XXXX FW: XXXXXXXX IMEI: XXXXXXXXXX SIM status:	
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