

eRFquake user manual

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2. QUICK START

To activate alarms on motion, send the following command to the sensor (RFID), managing the Operation mode parameter (byte 0x01) through the SetParameter command: 0x20(RFID)1101220101

3. TECHNICAL CHARACTERISTICS

1. Radio characteristics

Characteristics	Minimum value	Typical value
Operating frequency		868.325MHz
Channel width		50 kHz
Frequency spread		16kHz
Baud rate		9600 in NRZ mode.
Conducted* sensitivity	-108dbm	-110
Conducted* Tx power	10dbm	12dbm
Range in open space		800m

* Sensitivity and radio power are given in conducted values (50 Ohms charge).

2. Electrical characteristics

Characteristics	Value/Norm
Power supply	3.6V, 3.1AH
Standby consumption	< 5uA
Tx consumption	< 40mA
Rx consumption	< 17mA
RF norm	EN 300-220-1

3. Environment

Characteristics	Value/Norm
Operating temperature	-20C to +70C
Storage temperature	0C to +50C *
Water resistance	IP68/IP65

* High storage temperatures tend to create some battery drainage. Ideal storage temperature is stored between 10C and 30C.

4. LIST OF PARAMETERS

Offset	Size	Default	Label	Content
0x01	1	0x38	Operation mode	b0: 0=Asset management 1=Tracker b1: Activate anti-theft b2: Priority tracker b3: PTI active b4: PA enabled b5: Use ultrasound stage b6: Use GPS stage b7: Economic mode, Start&Stop notifications only
0x02	1	0	Wakeup settings	[Flags] b0: Use parameter 0x08 b1: Use parameter 0x09
0x03	1	0	Wakeup period	
0x04	2	0	Daily activity start	B0: Hour, B1: Minutes
0x05	2	0	Daily activity stop	B0: Hour, B1: Minutes
0x08	1	0	Days on which to start activity at the time specified in 0x04, and	[Flags] b0: Monday

			end activity at the time specified in 0x05	b1: Tuesday b2: Wednesday b3: Thursday b4: Friday b5: Saturday b6: Sunday
0x09	1	0	Daily activity disabled on specified days	[Flags] b0: Monday b1: Tuesday b2: Wednesday b3: Thursday b4: Friday b5: Saturday b6: Sunday
0x15	1	0x05	Pulse threshold for motion start	
0x16	1	0	Pulse threshold for motion end	
0x17	1	0x0A	Sampling duration threshold for motion start	
0x18	1	0x64	Sampling duration threshold for motion end	
0x19	1	0x01	Maximum alarm attempts	
0x1A	1	0x06	Alarm re-attempt delay	
0x20	1		Status	b0: In motion b1: Anti-theft b2: PTI - Buzzer alarm b3: PTI - Alarm b4: PTI - Alarm out of range b5: Linked to beacon b6: Within Exit beacon location b7: Non-acked entry
0x22	1		Alarm configuration	b0 Alarm on start b1 Alarm on stop b2 Alarm on passing by (tracking) b3 Alarm on loss of vertical position b4 Alarm on case opening b5 b6 b7 Alarm on loss of beacon coverage.
0x24	2	550	Preamble duration	
0x25	2	500	Scan activity interval	
0x26	1	0x01	Power amplifier enabled	0x01=Active, 0x00=Inactive Active: 100-1000 meters Inactive:2-16 meters
0x80	1	0x05	Measure period	Multiples of 6.1 ms
0x85	1	0	Group number (polling mode)	
0xA1	1		Firmware version	
0xA3	8	0x01	Number of packets sent & received	B0-B3: uint32 Packets sent B4-B7: uint32 Packets received
0xB0	1	0	Number of relays	0-3
0xB1	6		RFID first relay	
0xB2	6		RFID second relay	
0xB3	6		RFID third relay	
0xB4	6		RFID network root	
0xB5	1	0x0E	TxPower	0-14
0xB6	1	0x0A	Minimum RSSI for entry	

Nitrosoft

0xB8	1	0x1E	Duration of radio awareness after motion start	Seconds
0xB9	1	0x1E	Duration of radio awareness after motion end	Seconds
0xBA	1		Rearm anti-theft	
0xC5	1		PTI sampling duration	Seconds
0xC6	2		PTI sampling threshold	Number of pulses
0xC7	2		PTI – delay before buzzer	Seconds
0xC8	2		PTI – delay before root notification	Seconds
0xC9	2		PTI – Delay before notification out of coverage	Seconds

5. AVAILABLE COMMANDS

Commands are sent by using the Point to point communication mode:

0x20(RFID)(Payload).

Size	Content
1	0x20
6	RFID of recipient
1-132	Payload

The following commands describe only the payload part of commands.

A. Accessing parameters

4. Get

Reading parameters is achieved by sending the following command to the sensor:

Request

Size	Content	Description
1	0x10	Read parameters
1	0xXX	Number of parameters to read
1	parameter offset (see parameter table)	First parameter ID to read
1	parameter size (see parameter table)	First parameter Size to read
1	parameter offset (see parameter table)	Second parameter ID to read
1	parameter size (see parameter table)	Second parameter Size to read
1	parameter offset (see parameter table)	Next parameter ID to read
1	parameter size (see parameter table)	Next parameter Size to read
..

Response

Size	Content	Description
1	0x90	Read parameters
1	0xXX	Number of parameters to read
1	parameter offset (see parameter table)	First parameter ID to read
1	parameter size (P0) (see parameter table)	First parameter Size to read
P0	Value of parameter	
1	parameter offset (see parameter table)	Second parameter ID to read
1	parameter size (P1) (see parameter table)	Second parameter Size to read
P1	Value of parameter	

1	parameter offset (see parameter table)	Next parameter ID to read
1	parameter size (P2) (see parameter table)	Next parameter Size to read
P2	Value of parameter	
..

5. Set

Writing parameters is achieved by sending the following command to the sensor:

Request

Size	Content	Description
1	0x11	Write parameters
1	0xXX	Number of parameters to write
1	parameter offset (see parameter table)	First parameter ID to write
1	parameter size (P0) (see parameter table)	First parameter Size to write
P0	Value of parameter	First parameter value
1	parameter offset (see parameter table)	Second parameter ID to write
1	parameter size (P1) (see parameter table)	Second parameter Size to write
P1	Value of parameter	Second parameter value
1	parameter offset (see parameter table)	Next parameter ID to write
1	parameter size (P2) (see parameter table)	Next parameter Size to write
P2	Value of parameter	Next parameter value
..

Response

Size	Content	Description
1	0x91	Read parameters
1	0xXX	Number of parameters to read
1	parameter offset (see parameter table)	First parameter ID to read
1	parameter size (P0) (see parameter table)	First parameter Size to read
1	Status of parameter	0x00=OK, 0xFF=Failed
1	parameter offset (see parameter table)	Second parameter ID to read
1	parameter size (P1) (see parameter table)	Second parameter Size to read
1	Status of parameter	0x00=OK, 0xFF=Failed
1	parameter offset (see parameter table)	Next parameter ID to read
1	parameter size (P2) (see parameter table)	Next parameter Size to read
1	Status of parameter	0x00=OK, 0xFF=Failed
..

B. GetOperationMode

Request

Size	Value	Description
1	0x01	GetOperationMode

Response

Size	Value	Description
1	0x81	Response to GetOperationMode
1	OperationMode	
1	Status	
1	RSSI	
6	(Optional) Linked becon	

C. GetIPSLocation

Request

Size	Value	Description
1	0x02	GetIPSLocation

Response

Size	Value	Description
1	0x82	Response to GetIPSLocation
1	Alarm state	Mask indicating which flags are relevant in the Alarm value flags byte
1	Alarm value flags	b0: Motion (1=Start, 0=Stop) b1: Passing-by (0=beacon, 1=Exit beacon) b2: Linked (0=no 1=yes) b3: Buzzer (0=no 1=yes) b4: Anti-theft (0=no 1=yes) b5: PTI (0=no 1=yes) b6: PTI Out-of-range (0=no 1=yes) b7: Prioritary (0=no 1=yes)
1	Operation mode	See byte 0x01 description
1	Status	See byte 0x20 description
1	Group number	

D. GetDataLog

Request

Size	Value	Description
1	0x03	GetDataLog

Response

Size	Value	Description
1	0x83	Response to GetDataLog
1	0x1E	
30	Log of recorded pulses	Log is stored for the past 60 seconds, every 4 bits stores the number of pulses recorded in one second.

E. Payload

63-bytes long buffer for user-defined data. It may contain a web-service URL.

6. Get

Request

Size	Value	Description
1	0x14	GetPayload

Response

Size	Value	Description
------	-------	-------------

1	0x94	Response to GetPayload
1	Length of payload (P0)	
P0	Payload	Char array

7. Set

Request

Size	Value	Description
1	0x15	SetPayload
1-64	Payload	Char array

Response

Size	Value	Description
1	0x95	Response to SetPayload
1	Status	0x00=OK 0xFF=Failed

F. DateTime

8. Get

Request

Size	Value	Description
1	0x12	GetDatetime

Response

Size	Value	Description
1	0x92	Response to GetDatetime
7	Datetime	

9. Set

Request

Size	Value	Description
1	0x13	SetDatetime
7	Datetime	

Response

Size	Value	Description
1	0x93	Response to SetDatetime
1	Status	0x00=OK 0xFF=Failed

G. GetRSSI

Request

Size	Value	Description
1	0x20	

Response

Size	Value	Description
1	0xA0	

Nitrosoft

1	0x16	
1	Current RSSI	
1	0x01	
1	0x16	

H. GetFirmware**Request**

Size	Value	Description
1	0x28	GetFirmware

Response

Size	Value	Description
1	0xA8	Response to GetFirmware
1	0x56	
2	Wavenis protocol mode	0xA300
1	Firmware version	
1	0	

I. SetOutput

Controls the state of the GPIO output (for example, controlling a solenoid)

Request

Size	Value	Description
1	0x31	SetOutput
1	Value	0=Off 1=On

Response

Size	Value	Description
1	0xB1	Response to SetOutput
1	Status	0=OK, 0xFF=Failed

J. Alarms**10. Notifications (sent by sensor)**

Size	Value	Description
1	0x40	Alarm packet notification
1	Alarm state	Mask indicating which flags are relevant in the Alarm value flags byte
1	Alarm value flags	b0: Motion (1=Start, 0=Stop) b1: Passing-by (0=beacon, 1=Exit beacon) b2: Linked (0=no 1=yes) b3: Buzzer (0=no 1=yes) b4: Anti-theft (0=no 1=yes) b5: PTI (0=no 1=yes) b6: PTI Out-of-range (0=no 1=yes) b7: Prioritary (0=no 1=yes)
1	Operation mode	See byte 0x01 description
1	Status	See byte 0x20 description
1	Groupnumber	Ground number (for classes of assets)
6	Linked beacon	RFID of linked beacon
1	RSSI	Link quality

11. Acknowledging

Size	Value	Description
1	0xC0	Alarm packet acknowledge
1	Alarm value flags to reset	b0: Motion (1=Start, 0=Stop) b1: Passing-by (0=beacon, 1=Exit beacon) b2: Linked (0=no 1=yes) b3: Buzzer (0=no 1=yes) b4: Anti-theft (0=no 1=yes) b5: PTI (0=no 1=yes) b6: PTI Out-of-range (0=no 1=yes) b7: Priority (0=no 1=yes)