ELSYS.se

Downlink payload specification

Sensor downlink payload

Downlink payloads are sent on the configured port + 1. If configured port is the default (5) then downlink settings should be sent on port 6. You can find an interactive downlink generator at elsys.se/en/downlink-generator.

Payload format

Header byte (0x3E)	Payload length	Settings data	...	Settings data
1 byte	1 bytes	n bytes		n bytes

Settings data format

Type	Value
1 byte	0-16 bytes

Possible settings

ID (hex)	Setting	Size	Reboot	Disabled[1]	Min. version
0x01	AppSKey	16 byte key	■		
0x02	NwkSKey	16 byte key	■		
0x03	DevEUI	8 byte device EUI	■	■	
0x04	AppEUI	8 byte application EUI	■		
0x05	AppKey	16 byte key	■		
0x06	DevAddr	4 byte device address	■		
0x07	OTA	1 byte bool			
0x08	Port	1 byte			
0x09	Mode	1 byte		■	
0x0A	Ack	1 byte bool			
0x0B	DrDef	1 byte			

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1   Sensor will ignore commands which are disabled.

ID (hex)	Setting	Size	Reboot	Disabled	Min. version
0x0C	DrMax	1 byte			
0x0D	DrMin	1 byte			
0x0E	Payload	1 byte		■	
0x0F	Power	1 byte		■	
0x10	ExtCfg	1 byte	■[2]		
0x11	PirCfg	1 byte			
0x12	Co2Cfg	1 byte			
0x13	AccCfg	4 byte config			
0x14	SplPer	4 byte period	■[3]		
0x15	TempPer	4 byte period			
0x16	RhPer	4 byte period			
0x17	LightPer	4 byte period			
0x18	PirPer	4 byte period			
0x19	Co2Per	4 byte period			
0x1A	ExtPer	4 byte period			
0x1B	ExtPwrTime	4 byte time (ms)			
0x1C	TriggTime	4 byte time (s)			
0x1D	AccPer	4 byte period			
0x1E	VddPer	4 byte period			
0x1F	SendPer	4 byte period			
0x20	Lock	4 byte lock code			
0x21	RFU	4 byte, not used		■	
0x22	LinkCheck	4 byte link threshold, period			
0x23	PressPer	4 byte period			
0x24	SoundPer	4 byte period			2.3.0
0x25	Plan	1 byte channel plan	■		2.3.0
0x26	SubBand	1 byte channel plan sub-band	■		2.3.0
0x27	LBT	1 byte Listen-Before-Talk mode			2.3.0
0x28	LedCfg	1 byte led config			2.3.2
0xF5	Sensor	1 byte sensor type			2.3.2
0xF6	Output	2 bytes output settings[4]			2.3.0

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2   Reboot is enforced from version 2.3.0.

3   Reboot is enforced from version 2.3.0.

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ID (hex)	Setting	Size	Reboot	Disabled	Min. version
0xF7	Pulse1	4 bytes pulse counter value			2.3.0
0xF8	Pulse2	4 bytes pulse counter value			2.3.0
0xF9	Settings	0 bytes, request sensor settings			2.3.0
0xFA	EXT/LED	4 bit ext mode, 4 bit LED mode[5]			
0xFB	Version	2 byte version number		■	
0xFC	Sleep	4 byte forced sensor sleep (s)			
0xFD	Generic	1 byte length, x byte NFC string			
0xFE	Reboot	0 bytes	■		

Examples

Reboot sensor only

3E	01	FE
Header	Length of settings	Reboot

Payload: 3E01FE

Set application settings

3E	1C	05 2B7E1…F4F3C	04 00…00	07 01
Header	Length of settings	Set AppKey (16 bytes)	Set AppEUI (8 bytes)	Enable OTAA

Payload: 3E1C052B7E151628AED2A6ABF7158809CF4F3C0400000000000000000007 01

Lock/unlock sensor

3E	05	20 1234FF00
Header	Length of settings	Unlock/lock

Payload: 3E05201234FF00

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4   See appendix 2 for possible output settings.

5   See appendix 1 for available EXT/LED modes.

Appendix 1 – Ext/LED control

Structure

FA	0	0
Type (Ext/LED control)	4 bit EXT mode	4 bit LED action

EXT modes

Mode	Value (hex)
Force output off (persistent)	0x0
Force output on (persistent)	0x1
Remove persistent output setting	0x2
Set output off (non-persistent)	0x3
Set output on (non-persistent)	0x4
Force IO2 output off (persistent)	0x5
Force IO2 output on (persistent)	0x6
Remove persistent IO2 output setting	0x7

LED actions

Mode	Value (hex)
LED off	0x0
LED on, green	0x1
LED on, red	0x2
LED on, orange	0x3

LED actions can be chained, see example payload below;

Green, 1s on, then off

3E	04	FA 21	FA 20
Header	Length of settings	LED green	LED off

Payload: **3E04FA21FA20**

Appendix 2 – Output settings

These settings are designed to be used on the ELT-2 with a ELT-MOD-EXT attached. Usage without this module may have undefined behavior and is not supported. The command will be ignored if sent to a device incapable of having the module fitted. See the ELT-MOD-EXT product sheet for more information.

Structure

F6	0	000
Type (Output settings)	4 bit output mode	12 bit output value

Output modes

Mode	Value (4-bit, hex)	Output value (12 bit)
Restore normal behavior (IO1)	0x8	Not used
Restore normal behavior (IO2)	0x0	Not used
IO2 on-off mode	0x1	0 = Off, 1 = On
IO2 PWM output mode	0x2	0-4095 steps, 0-10V range

Examples

IO2 5V output

3E	03	F6 2	800
Header	Length of settings	IO2 PWM output	2048 = 5V (approx.)

Payload: **3E03F6**2800

IO2 on-off output

3E	03	F6 1	001
Header	Length of settings	IO2 on-off output	Output on.

Payload: **3E03F6**21001