COMFORT

Technical Reference Manual

868 EU - LoRaWAN / Sigfox

Applicable for APP versions >= 2.1.0

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NEW DOCUMENTATION / NOUVELLE DOCUMENTATION

	ENGLISH	FRANCAIS
USER GUIDE	• Dedicated to a product • Cautions & electrical warnings • Declaration of conformity • Product functionalities and modes • Casing dimensions • Characteristics (casing and electrical) • LED explanations • Specific wiring on terminal blocks	• Dédié à un produit • Recommandations et avertissements électriques • Déclaration de conformité • Fonctionnalités et modes du produit • Dimensions du boitier • Caractéristiques (boitier et électrique) • Explication des LED • Câblage sur bornier spécifique au produit
TECHNICAL REFERENCE MANUAL	• Dedicated to a product • Registers content • Frame explanations (uplink and downlink)	• Dédié à un produit • Contenu des registres • Explication des trames (uplink et downlink)
INSTALLATION GUIDE	• For all adeunis® products • Configuration of the products • Installation and fixing • Start-up of the products • Opening and closing the case • Replace battery	• Pour tous les produits adeunis® • Configuration des produits • Installation et fixation • Démarrage des produits • Ouvrir et fermer les boîtiers • Remplacer la batterie

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1 REGISTERS

1.1 Generic registers

Register	Size (bytes)	Base	Description	Default Value	Range (Min-Max)	Comments
304	2	10	PIN code	0 (deactivated)	0 - 9999	PIN code used with ATPIN command. Value 0 disables the PIN code.
306	1	10	Product mode	0	0: PARK 1: RUN	In PARK mode, product is not using Radio. In RUN mode, product will send/receive RF uplinks/downlinks.

1.2 Applicative registers

Register	Size (bytes)	Base	Description	Default value	Min-Max Value	Comments
300	2	10	Keep alive period	8640 (24h)	2 ... 65535	X 10 seconds
301	2	10	Transmit period of data	1	0 ... 65535	Number of backups (history logs) to be done before sending a frame (thus defining the sending period). The value 0 is equivalent to disabling the periodic mode.
308	4	16	LED activity	0x40007F	0 … 0xFFFFFFFF	Default: 40007F Other values : reserved
315	1	10	Time zone offset	0	-12 … 14	Defines the Time Zone offset from UTC (in hours). Must be defined for Daylight Saving Time management.
316	1	10	Daylight Saving Time management	0	0 … 1	Only applicable for European countries. 0 : disabled 1 : enabled
318	1	10	Time stamping	0	0 … 1	LoRaWAN only If enabled, adds a time stamp in data frames. 0 : disabled 1 : enabled
319	1	10	RTC calibration value	0	-100 … 100	Allows correcting a possible drift of the clock. In tenths of a second per day.
320	2	10	History period	1	1 ... 65535	Number of readings to be performed before saving in the history logs The value 1 is equivalent to 1 backup per reading
321	2	10	Sampling period	1800 (1h)	0 ... 65535	0: no sampling X 2 seconds
322	2	10	Alarm repetition period	0	0 ... 65535	If an alarm is active, this register allows the product to send periodically a reminder. 0 : no repetition X sampling period (S321)
323	1	10	Number of additional (redundant) samples per frame	0	0 ... 15	Number of samples to be repeated in the next frame

1.3 Alarm registers

1.3.1 Temperature

Register	Size (bytes)	Base	Description	Default value	Min-Max value	Comments
330	1	10	Alarm type	0 (inactive)	0: Inactive 1: Low threshold 2: High threshold 3: Both thresholds	
331	2	10	High threshold value	0	-200 … 600 (-20°C to +60°C)	tenth of °C
332	1	10	High threshold hysteresis	0	0…255	tenth of °C
333	2	10	Low threshold value	0	-200 … 600 (-20°C to +60°C)	tenth of °C
334	1	10	Low threshold hysteresis	0	0… 255	tenth of °C

1.3.2 Humidity

Register	Size (bytes)	Base	Description	Default value	Min-Max value	Comments
340	1	10	Alarm type	0 (inactive)	0: Inactive 1: Low threshold 2: High threshold 3: Both thresholds	
341	1	10	High threshold value	0	0 … 100	
342	1	10	High threshold hysteresis	0	0 … 255	
343	1	10	Low threshold value	0	0 … 100	
344	1	10	Low threshold hysteresis	0	0 … 255	

1.4 Digital inputs

Register	Size (bytes)	Base	Description	Default value	Min-Max Value	Comments
380	1	16	Configuration digital input 1 (button)	0x41	<7:4> Debounce duration 0: no debounce 1: 10 ms 2: 20 ms 3: 50 ms 4: 100 ms 5: 200 ms 6: 500 ms 7: 1 s 8: 2 s 9: 5 s A: 10 s B: 20 s C: 40 s D: 60 s E: 5 minutes	

					F: 10 minutes <3:0> Type 0 = Deactivated 1 = Event ON 2 = Event OFF 3 = Event ON/OFF	
381	2	10	Digital input 1 threshold	1	1 ... 65535	Number of detections When the number of detected events becomes above this threshold, an alarm is triggered
382	1	16	Configuration digital input 2	0x0 (deactivated)	<7:4> Debounce duration 0: no debounce 1: 10 ms 2: 20 ms 3: 50 ms 4: 100 ms 5: 200 ms 6: 500 ms 7: 1 s 8: 2 s 9: 5 s A: 10 s B: 20 s C: 40 s D: 60 s E: 5 minutes F: 10 minutes <3:0> Type 0 = Deactivated 1 = Event ON 2 = Event OFF 3 = Event ON/OFF	
383	2	10	Digital input 2 threshold	1	1 ... 65535	Number of detections When the number of detected events becomes above this threshold, an alarm is triggered
390	4	10	Global counter for channel 1	0	0 – 4294967295	In-RAM counter that accumulates the duration in seconds of the detected events on the channel This register is not saved in EEPROM. Its value is therefore set to 0 if the product is not powered anymore
391	4	10	Global counter for channel 2	0	0 – 4294967295	

1.5 Radio registers

1.5.1 LoRaWAN Network Registers

Register	Description	Encoding	Details
201	Spreading Factor (SF) by default (Read Only)	Decimal	Default: 12 Min/max: 4 to 12 Unit: None
204	Reserved	Hexadecimal	Do not use
214	LORA APP-EUI (first part – MSB)	Hexadecimal	Default: 0 Key encoded on 16 characters. Each register contains a part of the key. Used during the JOIN phase in OTAA mode E.g.: APP-EUI = 0018B244 41524632 • S214 = 0018B244 • S215 = 41524632
215	LORA APP-EUI (second part – MSB)	Hexadecimal	
216	LORA APP-KEY (first part – MSB)	Hexadecimal	Default: 0 Key encoded on 32-byte characters. Each of the 4 registers contains 8 characters. Used during the JOIN phase in OTAA mode E.g.: APP-KEY = 0018B244 41524632 0018B200 00000912 • S216 = 0018B244 • S217= 41524632 • S218=0018B200 • S219= 00000912
217	LORA APP-KEY (second part – MID MSB)	Hexadecimal	
218	LORA APP-KEY (third part – MID LSB)	Hexadecimal	
219	LORA APP-KEY (fourth part – LSB)	Hexadecimal	
220	LoRaWAN Options	Hexadecimal	Default: 5 Bit 0: Activation of the ADR ON(1)/OFF(0) Bit 1: Reserved Bit 2: DUTYCYCLE ON(1)/DUTYCYCLE OFF(0) Bits 3 & 4: Reserved Bits 5 to 7: Reserved CAUTION: Deactivation of the Duty Cycle may result in a violation of the conditions of use of the frequency band, depending on the use of the device, thus violating the regulations in force. In the case of disabling the Duty Cycle, liability is transferred to the user.
221	Mode of activation	Decimal	Default: 1 Choice: (see NOTE 1 after the table) • 0: ABP • 1: OTAA
222	LORA NWK_SKEY (first part – MSB)	Hexadecimal	Default: 0 Parameter encoded on 16 bytes. Each of the 4 registers contains 4 bytes.
223	LORA NWK_SKEY (second part - MID MSB)	Hexadecimal	
224	LORA NWK_SKEY (third part - MID LSB)	Hexadecimal	
225	LORA NWK_SKEY (fourth part – LSB)	Hexadecimal	
226	LORA APP_SKEY (first part – MSB)	Hexadecimal	Default: 0 Parameter encoded on 16 bytes, each register with 4 bytes.
227	LORA APP_SKEY (second part - MID MSB)	Hexadecimal	
228	LORA APP_SKEY (third part - MID LSB)	Hexadecimal	

229	LORA APP_SKEY (fourth part – LSB)	Hexadecimal	
280	NETWORK ID	Hexadecimal	Default: 0 Read only
281	DEVICE ADDRESS	Hexadecimal	Default: 0

NOTE 1: The “Over The Air Activation” (OTAA) mode uses a JOIN phase before being able to transmit on the network. This mode uses the APP_ EUI (S214 and S215) and APP_KEY (S216 to S219) codes during this phase to create the keys for network communication. Once this phase is completed, the codes APP_sKEY, NWK_sKEY and DEVICE ADDRESS will be present in the corresponding registers. A new JOIN phase is started every time the device exits Command mode, a reset is performed, or the device is turned on.
Codes:
• APP_EUI identifier for global use (provided by default by adeunis®)
• APP_KEY device application key (provided by default by adeunis®)
The “Activation by personalization” (ABP) mode has no JOIN phase; it transmits directly on the network using the codes NWK_sKEY (S222 to S225), APP_sKEY (S226 to S229) and DEVICE ADDRESS (S281) to communicate.
Codes:
• NWK_sKEY network session key (provided by default by adeunis®)
• APP_KEY applicative session key (provided by default by adeunis®)
• DEVICE ADDRESS Address of the device in the network (provided by default by adeunis®)

Register	Size (bytes)	Base	Description	Default Value	Range (Min-Max)	Minimum required Application version	Comments
303	1	10	LoRaWAN Confirmed mode	0	0-1	V1.2.0	LoRaWAN only – activation or deactivation of the confirmed mode 0: deactivation 1: activation
312	4	10	Maximum delay between 2 authentication attempts	43200 (12h)	60-2592000	V2.1.0	X 1 second Period: 1 minute to 30 days
313	2	10	Weighting factor for initial authentication attempts	1	1-65535	V2.1.0	
314	1	10	Number of tries for each authentication attempt	10	1-255	V2.1.0	

1.5.2 Sigfox Network Registers

Register	Size (bytes)	Base	Description	Default Value	Range (Min-Max)	Minimum required Application version	Comments
307	2	10	Sigfox Downlink period	1440 (24h)	0-65535	>= V2.0.0	X 1 minute ⇨ Period : 1 min to 45 days
317	1	10	Sigfox DutyCycle	1	0-1	V1.2.0	0 : dutycycle activated 1 : dutycycle deactivated Not displayed anymore in LoRaWAN since 2.0.0

1.6 Coherency check

A configuration coherency check is made at the time of the backup.
Cases where backups are refused because considered as inconsistent:

Cases refused	Description
(S330 = 3) && (S333 > S331)	TEMPERATURE : Low threshold > High threshold
(S330 = 3) && ((S333 + S334) > (S331 - S332))	TEMPERATURE : (Low threshold + Low hysteresis) > (High threshold - High hysteresis)
(S340 = 3) && (S343 > S341)	HUMIDITY : Low threshold > High threshold
(S340 = 3) && ((S343 + S344) > (S341 - S342))	HUMIDITY : (Low threshold + Low hysteresis) > (High threshold - High hysteresis)
(S340 = 1) && ((S344 + S343) > 100)	HUMIDITY : (Low threshold + Low hysteresis) > 100
(S340 = 2) && (S342 > S341)	HUMIDITY : High hysteresis > High threshold

2 RADIO PROTOCOL

Data with size greater than 1 byte will be transmitted MSB first.
In LoRaWAN, frames are sent on port 1.

2.1 Status byte

All frames sent by the product contain a status byte. Its format is identical for all IoT Adeunis products.

Alarm Status	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	Frame Counter			AppFlag2	AppFlag1	Timestamp	Low Bat	Config
No Error	0x00 to 0x07			0	0	0	0	0
Configuration done				0	0	0	0	1
Low bat				0	0	0	1	0
Timestamp				0	0	1	0	0
AppFlag1				0	1	0	0	0
AppFlag2				1	0	0	0	0

The status byte provides two bits reserved for a specific use of each product (AppFlag1 and AppFlag2).
For this product:

- AppFlag1: configuration inconsistency
  - Samples lost in periodic data frame because the payload is not sufficient.

2.2 Uplink Frame format

2.2.1 Product configuration (0x10)

This frame is sent following the reception of a frame with code 0x01, or at the start of the product.

Offset (in byte)	Data	Description
0	0x10	Frame code
1	Status	Status byte
2-3	S300	Transmission period of the Keep Alive frame
4-5	S301	Transmission period of the periodic frame
6-7	S320	History period
8-9	S321	Sampling period
10	S323	Number of additional (redundant) samples per frame

Decoding example:

Offset (in byte)	Data	Description
0	0x10	Frame code
1	0x10	Frame counter: 0 Bit4@1: 2 sensors activated Bit1@0: no LowBat
2-3	0x21C0	8640 => 8640 x 10s = 86400s = 24h
4-5	0x0001	1
6-7	0x0001	1
8-9	0x0708	1800 => 1800 x 2s = 3600s = 1h
10	0x00	No redundancy

2.2.2 TOR configuration (0x1F)

This frame is sent following the start of the product (except when it is a reboot after a downlink).

Offset (in byte)	Data	Description
0	0x1F	Frame code
1	Status	Status byte
2	S380	Configuration TOR 1
3-4	S381	Alarm threshold TOR 1
5	S382	Configuration TOR 2
6-7	S383	Alarm threshold TOR 2

Decoding example:

Offset (in byte)	Data	Description
0	0x1F	Frame code
1	0xA0	Status byte
2	0x41	TOR 1: 100 ms debounce, Event ON
3-4	0x0001	Alarm TOR 1 sent after 1 event
5	0x21	TOR 2: 20 ms debounce, Event ON
6-7	0x0001	Alarm TOR 1 sent after 1 event

2.2.3 Network configuration (0x20)

This frame is sent following the reception of a frame with code 0x02, or at the start of the product.

2.2.3.1 LoRaWAN 868

Offset (in byte)	Data	Description
0	0x20	Frame code
1	Status	Status byte
2	S220	LoRaWAN options Bit 0: Activation of the ADR ON(1)/OFF(0) Bit 1: Reserved Bit 2: DUTYCYCLE ON(1)/DUTYCYCLE OFF(0) Bits 3 & 4: Reserved Bit 5: CLASS A (0) Bits 6 to 7: Reserved
3	S221	Provisioning mode (0: ABP, 1:OTAA)

Decoding example:

Offset (in byte)	Data	Description
0	0x20	Frame code
1	0x20	Frame counter: 1 Bit1@0: no LowBat
2	0x05	CLASS A Dutycycle activated ADR ON
3	0x01	OTAA

2.2.3.2 Sigfox RC1

Offset (in byte)	Data	Description
0	0x20	Frame code
1	Status	Status byte
2	S202	Retry count
3-4	S307	Downlink period

Decoding example:

Offset (in byte)	Data	Description
0	0x20	Frame code
1	0x20	Frame counter: 1 Bit1@0: no LowBat
2	0x02	2 retries
3-4	0x05A0	1440 (24h)

2.2.4 Software version (0x37)

This frame is sent at the start of the product only if KARE+ is enabled.

Offset (in byte)	Data	Description
0	0x37	Frame code
1	Status	Status byte
2-4	APP version	Byte 5 : MAJOR Byte 6 : MINOR Byte 7 : PATCH
5-7	RTU version	Byte 5 : MAJOR Byte 6 : MINOR Byte 7 : PATCH

Decoding example:

Offset (in byte)	Data	Description
0	0x37	Frame code
1	0x20	Frame counter: 1 Bit1@0: no LowBat
2-4	0x020100	APP v2.1.0
5-7	0x020001	RTU v2.0.1

2.2.5 Keep alive frame (0x30)

This frame is sent:
- after an amount of time determined by S300 register
- following the reception of a frame with code 0x02

Offset (in byte)	Data	Description
0	0x30	Frame code
1	Status	Status byte

Decoding example:

Offset (in byte)	Data	Description
0	0x30	Frame code
1	0xE2	Frame counter: 7 Bit1@1: LowBat detected

2.2.6 Periodic data frame (0x4C)

The measure frequency is defined by: S321 * S320
The sending frequency is defined by: S321 * S320 * S301
The number of samples per channel is defined by: (S301 + S323)

Maximum number of samples per frame:

- LoRaWAN 868: 16 samples (15 samples with time stamping)
- Sigfox RC1: 3 samples

Offset (in byte)	Data	Description
0	0x4C	Frame code
1	Status (AppFlag2 = 0)	Status byte
2-3	$T°_{(t0)}$	In tenth of °C
4	$H_{(t0)}$	In %
5-6	$T°_{(t-1)}$	In tenth of °C
7	$H_{(t-1)}$	In %
8-9	$T°_{(t-2)}$	In tenth of °C
10	$H_{(t-2)}$	In %
11-12	$T°_{(t-3)}$	In tenth of °C
13	$H_{(t-3)}$	In %
…	…	
	Timestamp	Only for LoRaWAN product with timestamping enabled. Timestamp of the last measure in EPOCH 2013 format.

Decoding example (for 2 samples):

Offset (in byte)	Data	Description
0	0x4C	Frame code
1	0x80	Frame counter: 4 Bit1@0: LowBat not detected
2-3	0x01B3	435 => 43.5°C for t=0
4	0x3E	62 => 62% for t=0

2.2.7 Alarms (0x4D)

This frame is sent during the appearance, or disappearance, of a threshold exceeding alarm.

2.2.7.1 1 active channel

Offset (in byte)	Data	Description
0	0x4D	Frame code
1	Status (AppFlag2 = 0)	Status byte
2	Alarm status	Bit 4: Temperature 0: alarm is not active 1: alarm is active Bit 0: Humidity 0: alarm is not active 1: alarm is active
3-4	Temperature	In tenth of °C
5	Humidity	In %
6-9	Timestamp	Only for LoRaWAN product with timestamping enabled. Timestamp of the frame in EPOCH 2013 format

Decoding example:

Offset	Data	Description
0	0x4D	Frame code
1	0x80	Frame counter: 4 Bit1@0: LowBat not detected
2	0x10	Bit4@1: Alarm Temperature is active Bit1@0: Alarm Humidity is not active
3-4	0x0246	582 => 58.2°C
5	0x32	50 => 50%

2.2.8 Digital input alarm (0x51/0x52)

This frame is sent when the number of detected events exceeds the threshold

Offset (in byte)	Data	Description
0	0x51 0x52	Frame code for digital input 1 (button) Frame code for digital input 2
1	Status	Status byte
2	Alarm state	Define precisely the input/output state (ON/CLOSED : 1, OFF/OPEN : 0) • <0> Channel1 current state • <1> Channel1 state when sending the previous frame
3-6	Global counter	Global counter of detected events
7-8	Instant counter	Number of events detected since the last alarm sending
9-12	Timestamp	Only for LoRaWAN product with timestamping enabled. Timestamp of the last input state change in EPOCH 2013 format.

Decoding example:

Offset	Data	Description
0	0x52	Frame code (digital input2)
1	0x80	Frame counter: 4 Bit1@0: LowBat not detected
2	0x01	Bit0@1 => Current state: ON/CLOSED Bit1@0 => Previous state: OFF/OPENED
3-6	0x000001230	0x1230 => 4656 events detected since the device is in production mode
7-8	0x0003	3 events detected since the last alarm sending

2.2.9 Response to Get register request (0x31)

Following reception of a downlink frame with the code 0x40, the frame 0x31 is transmitted. It contains all the values of the registers requested in the downlink frame 0x40.

Offset (in byte)	Data	Description
0	0x31	Frame code
1	Status	Status byte
2-3	Value 1	If value 1 is a 2-byte register
4	Value 2	If value 2 is a 1-byte register
5-8	Value 3	If value 3 is a 4-byte register
…		

If an error is detected in the request, the returned 0x31 frame will be empty.

Note: the size of the data registers is variable depending on the register number. Refer to the list of registers to determine the size of each one and to deduce the total size of the data returned by the 0x31 frame.

Decoding example:

Offset (in byte)	Data	Description
0	0x31	Frame code
1	0x80	Frame counter: 4 Bit1@0: LowBat not detected
2-3	0x1234	4660 (considering that value 1 is a 2-byte register)
4	0xFF	255 (considering that value 2 is a 1-byte register)
5-8	0x00000000	0 (considering that value 3 is a 4-byte register)
…		

2.2.10 Response to Set register request (0x33)

Following reception of a downlink frame with the code 0x41, the frame 0x33 is transmitted. It shows whether the downlink frame (0x41) has been received and gives information on the support status of the latter.

Offset (in byte)	Data	Description
0	0x33	Frame code
1	Status	
2	Request status	- 0x00 : N/A - 0x01 : success - 0x02 : success – no update (value to set is the current register value) - 0x03 : error – coherency - 0x04 : error – invalid register - 0x05 : error – invalid value - 0x06 : error – truncated value - 0x07 : error – access not allowed - 0x08 : error – other reason
3-4	Register Id	Indicates to the user the register that caused the error (only if “Request Status” is different from 0x01).

CAUTION: if the request 0x41 concerns several registers, the device will stop the analysis of the Downlink request at the first error and will send the Status frame with the reason and the identifier of the register concerned.

In the event of an error, if a partial reconfiguration has taken place before the error was detected, the device restarts and returns to its last valid configuration. As a result, you will have to configure the device again with the new data.

Decoding example:

Offset (in byte)	Data	Description
0	0x33	Frame code
1	0x80	Frame counter: 4 Bit4@0: 1 sensor activated Bit1@0: LowBat not detected
2	0x04	invalid register
3-4	0x0140	320: register S320 does not exist (should be S3XX)

2.2.11 Transmit conditions

Frame code	Description	Sending conditions
0x10	Status (configuration)	• Product start up • Exit configuration mode (AT command) • Reception of frame 0x01 (get product config)
0x20	Network configuration	• Product start up • Exit configuration mode (AT command) • Reception of frame 0x02 (get network config)
0x30	Keep alive	• Periodically if no periodical data is defined • Reception of frame 0x05 (get value)
0x4C	Periodic data	• Periodically
0x4D	Alarm	• Threshold crossing

2.3 Downlink Frame format

2.3.1 Get applicative configuration (0x01)

Offset (in byte)	Data	Description
0	0x01	Frame code

When the device receives the downlink, it will generate a product configuration frame (0x10).

2.3.2 Get network configuration (0x02)

Offset (in byte)	Data	Description
0	0x02	Frame code

When the device receives the downlink, it will generate a network configuration frame (0x20).

2.3.3 Get registers (0x40)

This frame (0x40) allows you to inform the device through the network that it must send the values of specific S3XX registers in an uplink frame (0x31).

Offset (in byte)	Data	Description
0	0x40	Frame code
1	CONFID1	Index of the register to be sent. The corresponding register is 300 + CONFIDX value.
2	CONFID2	
3	CONFID3	

IMPORTANT: the user can specify several CONF IDs in the downlink frame but it is up to the user's responsibility to verify that according to the protocol, the size of the data available in a downlink will be large enough to contain all the desired data. Otherwise, the application will send only the first values.

In Sigfox mode: backend may request to send 8 bytes in a downlink. All unused bytes should set to 0xFF to ask the product to stop the downlink frame parsing.

Coding example:

Offset (in byte)	Data	Description
0	0x40	Frame code
1	0x00	Get register S300
2	0x14	Get register S320
3	0x20	Get register S332
4-7	0xFFFFFFFF	In SFX : ignored by product

2.3.4 Set registers (0x41)

This frame (0x41) allows you to change the value of requested S3XX registers.

Offset (in byte)	Data	Description
0	0x41	Frame code
1	CONFID1	Index of the register to be changed. The corresponding register is “300 + CONFID1“
2	Value of CONF ID 1	Value to set In this example, its value is contained in 1 byte
3	CONFID2	Index of the register to be changed. The corresponding register is “300 + CONFID2”
4-5	Value of CONF ID 2	Value to set In this example, its value is contained in 2 bytes
…		

Following the sending of the downlink 0x41, the associated uplink 0x33 is immediately returned. If the update of the register(s) went well, the device will perform a backup and begin its restart procedure automatically. In addition, the Config bit of the status byte will be set to 1 in the next scheduled uplink frame (periodic or alarm or keep alive frame) if everything went well.

Coding example:

Offset (in byte)	Data	Description
0	0x41	Frame code
1	0x14	Register to modify is S320
2-3	0x00AA	Value to set in S320 is 170 (S320 is a 2-byte register)
4	0x1E	Register to modify is S330
5	0x02	Value to set in S330 is 2(S330 is a 1-byte register)
…		

2.3.5 Reboot (0x48)

This frame (0x48) allows you to reboot the device.

Offset (in byte)	Data	Description
0	0x48	Frame code
1-2	delay	Delay before reboot in minutes (from 1 to 65535)

Following the sending of the downlink 0x48, an uplink ACK (0x2F) is sent. After the specified delay, the device will then begin its restart procedure.

Coding example:

Offset (in byte)	Data	Description
0	0x48	Frame code
1-2	0x05A0	Reboot of the product in 24 hours (1440 minutes)

2.3.6 Set time (0x49)

This frame (0x49) allows you to set the time of the device.

Offset (in byte)	Data	Description
0	0x49	Frame code
1-4	Date / time	Date / time to set (EPOCH2013 format). Date / time is valid from 2020/01/01 00:00:00 to 2089/12/31 23:59:59 Use 0xFFFFFFFF value to not change current time.
5	Clock drift compensation	Compensation of the clock drift (in tenth of seconds per day). Valid values are from -100 to 100 (-10.0 to 10.0 seconds per day). Use 0x80 value to not change current drift compensation.

Following the sending of the downlink 0x49, an uplink ACK (0x2F) is sent.

Coding example:

Offset (in byte)	Data	Description
0	0x49	Frame code
1-4	0x0E38F5AC	2020-07-24 17:38:52
5	0xDD	Clock drift compensation of -3.5 seconds per day