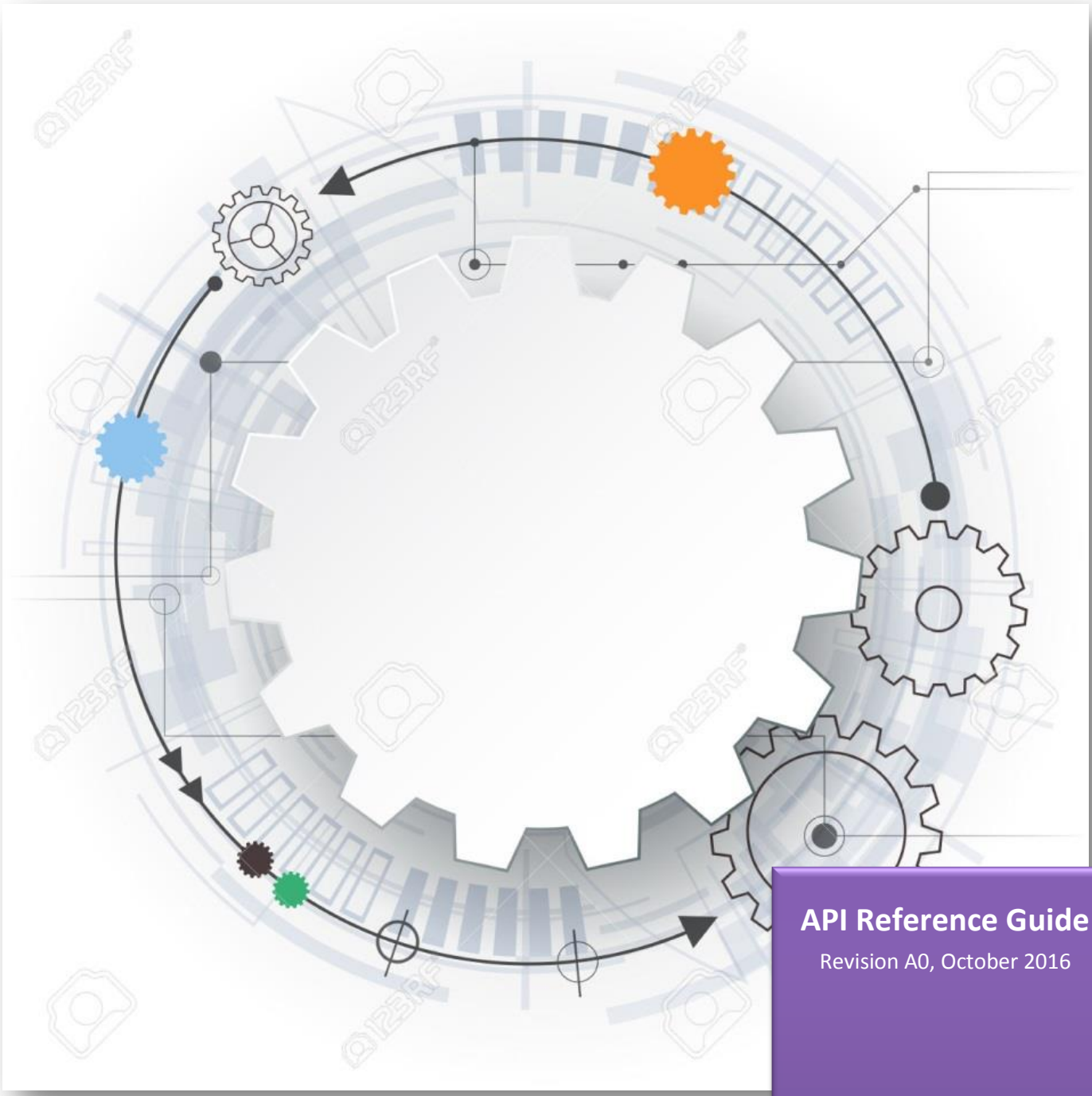

API Reference Guide

Revision A0, October 2016

Developed by
UControl Wireless

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Table of contents

General

This document contains the full API reference for UControl's Wireless products, firmware version 0.2.5.

All commands are written in lowercase.

UCommand Gateway Center

The UCommand Gateway – Local Control Center – will collect and centralize all data from all sensors synced to it. All API's commands will be accepted by the UCommand gateway in text format only. The gateway behaves as a "pipeline" between the user and the sensors. The communication protocol between the gateway and the sensors is secured & unique. An AES-128 bit encryption is used in order to secured all system's data.

These commands are received and sent from the controller in various forms such as SMS, GPRS or direct USB connection. These commands manages all the different sensory system that synchronized the control center.

1. UCommand - General Commands & Alerts

Restart the UCommand	
Restart the UCommand.	
Command	**restartucommand**
Respond	Ucommand: *Serial Number* RTC: *dd/mm/yy hh:mm:ss* GSM: *Enable/Disable* USB: *Enable/Disable* Receive SMS: *Enable/Disable* Transmit SMS: *Enable/Disable*

Read UCommand Status	
Reads the UCommand status.	
Command	**ucmstatus**
Respond	Ucommand: *Serial Number* RTC: *dd/mm/yy hh:mm:ss* GSM: *Enable/Disable* USB: *Enable/Disable* Receive SMS: *Enable/Disable* Transmit SMS: *Enable/Disable*

Read GSM Modem Version	
Reads & Display the GSM Software version.	
Command	**gsmmodemvers**
Respond	GSM Firmware Version : xx.yy.zz

Read Program Software Version	
Reads the UCommand software version that was flashed.	
Command	**readswver**
Respond	SW version : A00

Read Hardware Version	
Reads the UCommand hardware version.	
Command	**readhwvers**
Respond	HW version: A00

Display Real Time Clock	
Display Real Time Clock received from the Mobile operator.	
Command	**getrtc**
Respond	- RTC: *dd/mm/yy hh:mm:ss* - or Failed to read RTC

Set Real Time Clock	
Set the Date and Time to the UCommand.	
Command	**setrtc (ddmmyyhhmmss)**
Respond	- RTC updated to *dd/mm/yy hh:mm:ss* - or Failed To Set RTC

Delete EEProm Memory	
Deleting the I2C Flash.	
Command	**deli2cflash**
Respond	I2C Flash deleted

Wrong Command	
Respond for a wrong command/syntax that has been sent to the Ucommand.	
Respond	Invalid syntax

Non registered ID	
Ucommand receives a command from a non-registered UConnect	
Respond	Non registered ID

2. Main Power Commands & Alerts

UCommand Main Power Input Voltage	
UCommand Main power input voltage.	
Command	**sampextinvolt**
Respond	External Input Voltage: 10.2 V

UCommand Battery Input Voltage	
Measure the external battery input voltage.	
Command	**sampextinvolt**
Respond	External Battery Voltage: 12.3 V

Main Power alerts – Power Down	
Low Voltage on main input power.	
Respond	External Power Down!

Main Power alerts – Power Returns	
Main Power returned.	
Respond	Working On External Power

External Battery alerts – Power Down	
Low Voltage of external battery.	
Respond	External Battery Low Voltage!

External Battery alerts – Power Returns	
Regular External Battery Voltage.	
Respond	Regular External Battery Voltage

3. Communication Commands & Alerts

GSM Enable	
Enable the GSM module.	
Command	**gsmenable**
Respond	GSM Enable or GSM Already Enabled

GSM Disable	
Disable the GSM module.	
Command	**gsmdisable**
Respond	GSM Disable or GSM Already Disabled

USB Enable	
Enable the USB communication with the Computer. This command is use only on SMS messages.	
Command	**usbenable**
Respond	- USB Enable - or USB Already Enabled

USB Disable	
Disable the USB communication with the Computer. This command is use only on SMS messages.	
Command	**usbdisable**
Respond	- USB Already Disable - Or USB Disabled

SMS Receive Enable	
Enable/disable reading received SMS.	
Command	**receivesmsenable** or **receivesmsdisable**
Respond	Receive SMS Enable/Disable

SMS Transmit Enable	
Enable/disable transmit SMS.	
Command	**transmitsmsenable** or **transmitsmsdisable**
Respond	Transmit SMS Enable/Disabled

4. Users Define Commands

First Phone Number Stored	
Store the first phone number received.	
Command	**first phone number**
Respond	First Phone Number Stored

Store a Phone Number	
Store the authorize phones numbers. Up to 3 phones numbers.	
Command	**phn store** *+3053220346+*
Respond	- Phone Number Stored - or Invalid Syntax - or Phones List Full

Display Phone Numbers List	
Display the Authorize phones number list stored in UCommand memory.	
Command	**phn list**
Respond	Phones list: +972XXXXXXXXX +972YYYYYYYYYY

Delete all Phone Numbers	
Delete all Authorize phones numbers from UCommand memory	
Command	**delete all phn**
Respond	Display list of phone numbers deleted

Delete a specific Phone Number	
Delete a specific Authorize phone number from Phone table	
Command	**phn delete** *+3053220346+*
Respond	- Phone Number Deleted - or Invalid Syntax - or No Such Phone Number

Delete all received text messages from Simcard	
Delete all SMS messages received.	
Command	**delallmsgsim**
Respond	All received messages have been deleted from the SIM card

5. UConnect Sensors

The UConnect sensors purpose is to sample events occurring on the field and report them via wireless connection to the UCommand gateway which will update a control center, or perform a specific action such as turning off the lights or turning-on a water pump. Each type of sensor has a unique set of commands. The sensors are programmed only through the UCommand Gateway.

Managing the sensors routing like working time, sample sensor or closing taps is managed locally on the sensor processor and not on the UCommand gateway. The sensor will report any activity to the user control center via the UCommand.

6. Sensors – General Commands & Alerts

Display Sensors Table connected to the UCommand	
Display Sensors table connected to the UCommand. This command is used only on serial communication.	
Command	**sensorlist**
Respond	IDs Of Registered Sensors list: **Type ID**:*serial number* **Time Slot**: *x* **KeepAlive**: *dd/mm/yy hh/mm/ss* **Type ID**:*serial number* **Time Slot**: *x* **KeepAlive**: *dd/mm/yy hh/mm/ss* …
Type – UConnect type: "**Anl**"=Analog ; "**Dig**"=Digital ; "**Mtn**"=Motion/Compass ; "**Rly**"=Relay ; **Tmp**"=Temperature ; "**Lgt**"=Light ; "**Cur**"=Current. **ID** – UConnect Serial Number. **Time Slot** – UConnect time slot, "**1**" ; "**2**" , "**4**". **KeepAlive** – *Last communication login with the UConnect or 01/01/01 00:00:00 loss of Communication with the UConnect.*	

Delete Sensors from UCommand Local list	
Delete all Sensors stored in the UCommand. This command is used only on serial communication.	
Command	**delallsens**
Respond	All sensors have been deleted from memory

Register Sensor Manually	
Register the sensor list manually.	
Command	**id(*sn*) manualreg tp(*type*) timeslot(*1*)**
Respond	- type ID: Serial Number Registered Manually - or type ID is already registered - or Time Slot not in range!
tp – UConnect type: "**anl**"=Analog ; "**dig**"=Digital; "**mtn**"=Motion/Compass; "**rly**"=Relay; "**tmp**"=Temperature ; "**lgt**"=Light ; "**cur**"=Current. **timeslot** – UConnect time slot, "**1**" ; "**2**" , "**4**".	

Unregister Sensor	
Unregister Sensor from UCommand local sensor list, set the UConnect to Factory default and set it to sleep mode.	
Command	**autounreg id(*sn*)**
Respond	- **Type ID**: *SN* **Updated BT**: *x%* **RS**: *xxx* - or **Type ID**: *SN* Updating Failed
Type – UConnect type: "**Anl**"=Analog ; "**Dig**"=Digital ; "**Mtn**"=Motion/Compass ; "**Rly**"=Relay ; **Tmp**"=Temperature ; "**Lgt**"=Light ; "**Cur**"=Current. **ID** – UConnect Serial Number. **BT** – Battery Level in percentage. **RS** – RSSI Level.	

Unregister Sensor Manually	
Unregister Sensor from the UCommand - Local sensor list.	
Command	**manualunreg (*sn*)**
Respond	ID: SN Unregistered Manually

Restart UConnect	
Command	**id(*sn*) restartuconnect**
Respond	- **type ID**:*serial number* **Updated BT**:*96%* **RS**:*136* - or **type ID**:*serial number* **Updating Failed**

Turn OFF UConnect	
Command	**id(*sn*) uconoff**
Respond	- **type ID**:*serial number* **Updated BT**:*96%* **RS**:*136* - or **type ID**:*serial number* **Updating Failed**

Define the UConnect Time Slot	
Define the time the UConnect wakes up between the SYNC byte of the UCommand. The time slot is from 1 up to 6. "1": 2 milliseconds time slot. "2": 4 milliseconds time slot. "3": 8 milliseconds time slot. "4": 16 milliseconds time slot. "5": 32 milliseconds time slot. "6": 64 milliseconds time slot.	
Command	**Id(*sn*) timeslotupdate(*timeslot*)**
Respond	- **type ID**:*serial number* **Updated BT**:*96%* **RS**:*136* - or **type ID**:*serial number* **Updating Failed**

Working Time Sector	
Set the Working time of the sensors – Start & Stop time.	
Command	**id(*sn*) timesector(*hhmm*)(*hhmm*)**
Respond	- **type ID**:*serial number* **Updated BT**:*96%* **RS**:*136* - or **type ID**:*serial number* **Updating Failed**

UConnect Parameters	
Get the UConnect configuration parameters.	
Command	**id(*sn*) ucnpar**
Respond	See section 3.

UConnect Version	
Get the UConnect HW,SW version.	
Command	**id(*sn*) ucnvers**
Respond	- type ID:SN Updated BT:100% RS:136 ; - or type ID:SN Updating Failed

UConnect Battery Status	
Programming the UConnect battery low level limit Alert.	
Command	**id(*sn*) ucnbatval <*x.y*>**
Respond	- type ID:SN Updated BT:100% RS:136 - or type ID:SN Updating Failed

Low Battery Alert	
Respond	**Rly ID:SN Low Battery Power BT:15% RS:114**
Type – UConnect type. **ID** – UConnect Address. **BT** – Battery status. **RS** – RSSI Level.	

Lack of Communication	
Respond	**Lack of communication with ID:*sn* more than 12 hours.**
ID – UConnect Address.	

7. Analog Sensor:

Analog Sensor status	
Reads the sensor parameters and transmit them to the UCommand.	
Command	**id(*sn*) ucnstatus**
Respond	**Anl ID**:12 **Status**:23.2c **BT**:99% **RS**:132

Anl – UConnect type: "Anl"/"Cur"/"Tmp"/"Lgt".

ID – UConnect address.

Status – Sensor value.

c – Sensor unit.

BT – Battery status.

RS – RSSI Level.

Analog Sensor Programming	
Programming the UConnect as Analog sensor.	
Command	**id(*sn*) angintprg inn(*1*) lgc(*o*) spmin(*0*) spmax(*30*) hys(*2*) p1v(*0.5*) p1u(*0*) p2v(*0.7*) p2u(*20*) unit(*c*) timep(*10*) samf(*10*)**
Respond	type ID:SN Updated BT:100% RS:136 ; type ID:SN Updating Failed

Inn – Input number 1/2.

lgc – Domain Logic OR/AND, OR="o"; AND="a".

spmin – Set point minimum value.

spmax - Set point maximum value.

hys – Hysteresis value. i.e 2°C degree hysteresis.

p1v – Point 1 voltage level on the working line.

p1u – Point 1 unit value on the working line.

p2v – Point 2 voltage level on the working line.

p2u – Point 2 unit value on the working line.

unit – Unit font (1 character only) of the sensor values. i.e c- Celsius. F - farinheight

timep – Time period of sending UConnect status to user in second (0 for disabling) .

samf - Sampling frequency in second.

Analog Sensor Turn-On alert message	
On power-on, the sensor display the following message.	
Respond	Anl ON ID:12 TS:hh:mm hh:mm TR:E Tg1:1 Tg2: Tg3: TL:1 IN:1 LGC:A spmin:0 spmax:5 hys:2 p1v:2.23 p1u:10 p2v:3 p2u:20 unit:z timep:100s samf:20s BV:3.5V BT:99% RS:132

Anl – UConnect type: "Anl"/"Cur"/"Tmp"/"Lgt".

ON/Reg/PAR– Turning/registration/parameters message.

ID – UConnect address.

TS – Time sector (working frame) start hour & end hour

TR – Enable/Disable triggering UConnect relays, "E"=enable ; "D"=disable.

tg1/tg2/tg3 – UConnects relay addresses.

IN – Input number 1/2.

LGC – Domain Logic OR/AND, OR="O";AND="A"

spmin – Set point minimum value.

spmax - Set point maximum value.

hys – Hysteresis value.

p1v – Point 1 voltage level on the working line.

p1u – Point 1 unit value on the working line.

p2v – Point 2 voltage level on the working line.

p2u – Point 2 unit value on the working line.

unit – Unit font (1 character only) of the sensor values.

timep – Time period of sending UConnect status to user in second (0 for disabling) .

samf - Sampling frequency in second .

TL – UConnect time slot.

BV– Battery nominal voltage.

BT – Battery status.

RS – RSSI Level.

Analog Sensor Event Alert	
This message alert is display when an "Event" is occurs. Event can be when value sampled passes user limit threshold.	
Respond	**Anl ID:***12* **EVT Status:***23.2c* **BT:***99%* **RS:***132*

Anl – UConnect type: "Anl"/"Cur"/"Tmp"/"Lgt".

ID – UConnect address.

EVT – Event message.

Status – sensor value.

c – sensor unit.

BT – Battery status.

RS – RSSI Level.

8. Digital Sensor :

Digital Sensor status	
Reads the sensor parameters and transmit them to the UCommand.	
Command	**id(***serial number***) ucnstatus**
Respond	**Anl ID**:12 **Status**:23.2c **BT**:99% **RS**:132
Dig – UConnect type: Digital. **ID** – UConnect address. **Status** – Sensor value. **c** – Sensor unit. **BT** – Battery status. **RS** – RSSI Level.	

Digital Sensor Programming	
Programming the UConnect type as Digital.	
Command	**id<***SN***> digprg workmode(***0***) inn(***1***) cnt(***10***) tml(***22***) tba(***12***) timpeen(***e***) timep(***10***)**
Respond	type ID:SN Updated BT:100% RS:136 ; type ID:SN Updating Failed
workmode – See Appendix A. **inn –** Input number 1/2. **cnt –** Number of counting. **tml -** Time frame limit for counting in second. **tba –** Time between arming in second. **timep –** Time period of sending UConnect status to user in second. **timpeen –** Enable/Disable time period, enable="e";disable="d".	

Digital Sensor Turn-On alert message	
On power-on, the sensor display the following message.	
Respond	**Dig ON ID:***12* **TS:***hh:mm hh:mm* **TR:***E* **Tg1:***11* **Tg2:***456* **Tg3:** *278* **TL:***1* **WM:***0* **In:***1* **CNT:***10* **timep:***10s* **TBA:***5s* **BV:***3.5V* **BT:***99%* **RS:***132*

Dig – UConnect type.

ON/Reg/PAR– Turning/registration/parameters message.

ID – UConnect address.

TS – Time sector (working frame) start hour & end hour

TR – Enable/Disable triggering UConnect relays, "E"=enable ; "D"=disable.

Tg1/Tg2/Tg3 – the triggering UConnects addresses.

WM – working mode see appendix A.

In – Input number can be input 1 or input 2.

CNT – Number of counting.

timep – Time period for sending the UConnect status to the uCommand in second ("D"for disabling) .

TBA – Time between arming in second.

TL – UConnect time slot.

BV– Battery nominal voltage.

BT – Battery status.

RS – RSSI Level.

Digital Sensor Event Alert	
This message alert is display when an “Event” is occurs. Event can be when value sampled passes user limit threshold.	
Respond	**Dig ID:***12* **EVT Status:***23.2c* **BT:***99%* **RS:***132*

Dig – UConnect type: Digital.

ID – UConnect address.

EVT – Event message.

Status – sensor value.

c – sensor unit.

BT – Battery status.

RS – RSSI Level.

9. Relay Sensor:

Relay Status - Opened/Closed	
Reads the sensor on-line status and transmit them to the UCommand.	
Respond	**Rly ID**:*12* **Relay** *Closed/Opened* **BT**:*99%* **RS**:*132*
Rly – UConnect type. **ID** – UConnect address**.** **Status** – "Opened" / "Closed" **BT** – Battery status. **RS** – RSSI Level.	

Relay Sensor Programming	
Programming the UConnect Relay.	
Command	**id**(*sn*) **rlyprg tg1***(256)* **tg2***(10)* **tg3***(11)* **drnplsms/s/m/h**(2.5) **workmode**(2) **defout***(c)* **> drnsces/m/h***(100)*
Respond	- type ID: SN Updated BT:100% RS:136 - *or* type ID:SN Updating Failed
tg1/tg2/tg3 – UConnect Serial Number that triggers the URelay. **drnplsms/s/m/h –** Output pulse time duration in millisecond/second/minute/hour. **workmode –** See appendix A. **defout –** Default output: Open="o" ; Close="c". **drnsces –** Scenario time limit time duration in second/minute/hour.	

Relay Sensor Triggers	
Enable/Disable triggering of the UConnect relays (ID's SN1,SN2,SN3) .	
Command	**id(***sn***) ucntrgen/ds tg1(***SN1***) tg2(***SN2***)tg3(***SN3***)**
Respond	- **Rly ID**:*sn* **Updated BT**:*100%* **RS**:*136* ; - Or **Rly ID**:*sn* **Updating Failed**

Relay Sensor Output – Fixed Mode	
Update the Relay output to open/close in fixed mode.	
Command	**id(***sn***)> rlyoutcngopen/close fixed**
Respond	**Rly ID**:*sn* **Updated BT**:*100%* **RS**:*136* or **Rly ID**:*sn* **Updating Failed**

Relay Sensor Output – Pulse Mode	
Update the Relay output to open/close in pulse mode.	
Command	**id(*sn*)> rlyoutcngopen/close drnplsms/s/h<*x.y*>**
Respond	- **Rly ID**:*sn* **Updated BT**:*100%* **RS**:*136* - or **Rly ID**:*sn* **Updating Failed**
drnplsms/s/m/h – Output pulse time duration in millisecond/second/minute/hour.	

Relay Sensor Turn-On alert message	
On power-on, the sensor display the following message.	
Respond	**Rly ON/Reg ID**:*12* **TS**:*hh:mm hh:mm* **WM**:*0* **DO**:*O* **Tg1**:*1* **Tg2**:*113* **Tg3**: *246* **STL**:*20s* **PUD**:*100s* **TL**:*1* **BV**:*3.5V* **BT**:*99%* **RS**:*132*

Rly – UConnect type.

ON/Reg/PAR– Turning/registration/parameters message.

ID – UConnect address.

TS – Time sector (working frame) start hour & end hour

WM – Work mode see appendix A.

DO – Default output: open="O" ; close="C".

Tg1/Tg2/Tg3 – UConnects Addresses for triggering.

STL– Scenario time limit time duration in second/minute/hour.

PUD – Output pulse time duration in millisecond/second/minute/hour.

TL – UConnect time slot.

BV– Battery nominal voltage.

BT – Battery status.

RS – RSSI Level.

10. Motion Sensor:

Motion Sensor status	
Reads the sensor parameters and transmit them to the UCommand.	
Command	**id(*sn*) ucnstatus**
Respond	**Mtn ID**:*12* **Status**:*23.2c* **BT**:*99%* **RS**:*132*

Mtn – UConnect type: Motion.

ID – UConnect address.

Status – Sensor value.

BT – Battery status.

RS – RSSI Level.

Motion Sensor Programming	
Programming the Motion/Compass.	
Command	**Id(*3*) mtnprg workmode(*0*) spmin(*0*) spmax(*20*) hys(*2*) timep(*10*) samf(*1*)> tba<(*0*)> ths(*4*)**
Respond	type ID:SN Updated BT:100% RS:136 ; type ID:SN Updating Failed

workmode – See appendix A.

spmin – Set point minimum value.

spmax - Set point maximum value.

hys – Hysteresis value.

tba – Time between arming in second.

timep – Time period of sending UConnect status to user in second (in motion mode 160ms per count).

ths – Threshold level in motion mode (64mg per count)

samf - Sampling frequency in second .

Motion Sensor Turn-On alert message	
On power-on, the sensor display the following message.	
Respond	**Mtn ON ID**:*12* **TS**:*hh:mm hh:mm* **TR**:*E* **Tg1**:*1* **Tg2**:*113* **Tg3**:*212* **TL**:*1* **WM**:*1* **LGC**:*A* **spmin**:*0* **spmax**:*5* **hys**:*2* **p1v**:*2.23* **p1u**:*10* **p2v**:*3* **p2u**:*20* **timep**:*100s* **samf**:*20s* **TBA**:*10* **ths**:*2* **BV**:*3.5V* **BT**:*99%* **RS**:*132*

Mtn– UConnect type**.**

ON/Reg/PAR– Turning/registration/parameters message.

ID – UConnect address**.**

TS – Time sector (working frame) start hour & end hour

TR – Enable/Disable triggering UConnect relays**,** "**E**"=enable ; "**D**"=disable.

Tg1/Tg2/Tg3 –UConnects relay addresses.

WM – working mode see appendix A.

LGC – Domain Logic OR/AND, OR="**O**";AND="**A**"

spmin – Set point minimum value.

spmax - Set point maximum value.

hys – Hysteresis value.

p1v – Point 1 voltage level on the working line.

p1u – Point 1 unit value on the working line.

p2v – Point 2 voltage level on the working line.

p2u – Point 2 unit value on the working line.

timep – Time period of sending UConnect status to user in second (0 for disabling) .

samf - Sampling frequency in second .

ths – Threshold level in motion mode (64mg per count)

TBA – Time between arming in second.

TL – UConnect time slot.

BV– Battery nominal voltage.

BT – Battery status.

RS – RSSI Level.

Motion Sensor Event Alert	
This message alert is display when an "Event" is occurs. Event can be when value sampled passes user limit threshold.	
Respond	**Mtn ID**:*12* **EVT COMP Status**:*20* **BT**:*99%* **RS**:*132*

Mtn– UConnect type**.**

ID** – UConnect address**.

EVT – Event message

***COMP Status** – sensor value in degree.*

BT – Battery status.

RS – RSSI Level.

Motion Sensor – Free Falling Event	
Free Falling Status Event	
Respond	**Mtn ID**:*12* **EVT FF BT**:*99%* **RS**:*132*

Mtn– UConnect type**.**
ID – UConnect address**.**
EVT – Event message
FF *– Free Falling event.*
BT – Battery status.
RS – RSSI Level.

Motion Sensor – Transient Event	
Transient Movement Status Event	
Respond	**Mtn ID**:*12* **EVT TRANS BT**:*99%* **RS**:132

Mtn– UConnect type**.**
ID – UConnect address**.**
EVT – Event message
TRANS – Transient event.
BT – Battery status.
RS – RSSI Level.

11. Compass Sensor:

Compass Sensor Turn-On alert message	
On power-on, the sensor display the following message.	
Respond	**Mtn ON ID**:*12* **TS**:*hh:mm hh:mm* **TR**:*E* **Tg1**:*1* **Tg2**:*113* **Tg3**:*212* **TL**:*1* **WM**:*1* **LGC**:*A* **spmin**:*0* **spmax**:*5* **hys**:*2* **p1v**:*2.23* **p1u**:*10* **p2v**:*3* **p2u**:*20* **timep**:*100s* **samf**:*20s* **TBA**:*10* **ths**:*2* **BV**:*3.5V* **BT**:*99%* **RS**:*132*

Mtn– UConnect type**.**

ON/Reg/PAR– Turning/registration/parameters message.

ID – UConnect address**.**

TS – Time sector (working frame) start hour & end hour

TR – Enable/Disable triggering UConnect relays**,** "**E**"=enable ; "**D**"=disable.

Tg1/Tg2/Tg3 –UConnects relay addresses.

WM – working mode see appendix A.

LGC – Domain Logic OR/AND, OR="**O**";AND="**A**"

spmin – Set point minimum value.

spmax - Set point maximum value.

hys – Hysteresis value.

p1v – Point 1 voltage level on the working line.

p1u – Point 1 unit value on the working line.

p2v – Point 2 voltage level on the working line.

p2u – Point 2 unit value on the working line.

timep – Time period of sending UConnect status to user in second (0 for disabling) .

samf - Sampling frequency in second .

ths – Threshold level in motion mode (64mg per count)

TBA – Time between arming in second.

TL – UConnect time slot.

BV– Battery nominal voltage.

BT – Battery status.

RS – RSSI Level.

Compass Sensor Calibration	
Calibrate the magnet sensor to the iron area.	
Command	**Id(*3*) magcalib**
Respond	- **COMP ID**:*sn* **Updated BT**:*100%* **RS**:*136* - or **COMP ID**:*sn* **Updating Failed**

Compass Sensor Programming	
Programming the Motion/Compass.	
Command	**Id(*3*) mtnprg workmode(*0*) spmin(*0*) spmax(*20*) hys(*2*) timep(*10*) samf(*1*)> tba<(*0*)> ths(*4*)**
Respond	type ID:SN Updated BT:100% RS:136 ; type ID:SN Updating Failed

workmode – See appendix A.

spmin – Set point minimum value.

spmax - Set point maximum value.

hys – Hysteresis value.

tba – Time between arming in second.

timep – Time period of sending UConnect status to user in second (in motion mode 160ms per count).

ths – Threshold level in motion mode (64mg per count)

samf - Sampling frequency in second .

Compass Sensor status	
Reads the sensor parameters and transmit them to the UCommand.	
Respond	**Comp ID**:*12* **COMP Status**:*20* **BT**:*99%* **RS**:*132*

Mtn – UConnect type.

ID – UConnect address**.**

CAMP Status – sensor value in degree.

BT – Battery status.

RS – RSSI Level.

Compass Motion Event	
Compass Motion Status Event	
Respond	**Comp ID**:*12* **EVT COMP Status**:*20* **BT**:*99%* **RS**:*132*

Mtn– UConnect type**.**

ID – UConnect address**.**

EVT – Event message

CAMP Status – sensor value in degree.

BT – Battery status.

RS – RSSI Level.

Compass Sensor - End Of Calibration	
Compass Calibration End Alert	
Respond	**Comp ID**:*12* **EOC Status**:*20* **BT**:*99%* **RS**:*132*

Comp – UConnect type**.**

ID – UConnect address**.**

EOC - End Of Calibration.

Status – sensor value in degree.

BT – Battery status.

RS – RSSI Level.

12. Appendix A

Relay Sensor Working Mode:

Type	AND/OR	Pulse or Fixed	Scenarios	Automatic	On Demand
0	AND	Fixed	✓		
1	OR	Fixed	✓		
2	AND	Pulse	✓		
3	OR	Pulse	✓		
4	-	Fixed		✓	
5	-	Pulse		✓	
6	-	-			✓

Digital Sensor Working Mode:

Type	Pulse Type	Logic Pulse	Timeless	Time limited
0	Rise pulse	On change		
1	Fall pulse	On change		
2	Rise pulse	Counter	✓	
3	Fall pulse	Counter	✓	
4	Rise pulse	Counter		✓
5	Fall pulse	Counter		✓
6	Rise or Fall pulse	On change		
7	Rise or Fall pulse	Counter	✓	
8	Rise or Fall pulse	Counter		✓

Motion Sensor Working Mode:

Mode	Type	Axis	Set points	And/Or	Sampling Freq.	Time Period	Hysteresis	Threshold	Time between arms	Acceleration or Deceleration	Calibration	On demand
0	Axis Compass	XY	✓	✓	✓	✓	✓				✓	✓
1		XZ	✓	✓	✓	✓	✓				✓	✓
2		ZY	✓	✓	✓	✓	✓				✓	✓
3	Free Falling	-				✓		✓	✓			
18	Transient	X				✓		✓	✓			
19		Y				✓		✓	✓			
20		Z				✓		✓	✓			
21		XY				✓		✓	✓			
22		XZ				✓		✓	✓			
23		YZ				✓		✓	✓			
24		XYZ				✓		✓	✓			

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