HC-ANA devices installation manual

REFERENCE PRODUCTS		
HC-ANA-SIG-Z1-W-B	HC-ANA-SIG-Z2-W-B	HC-ANA-SIG-Z4-W-B
HC-ANA-SIG-Z1-F-B	HC-ANA-SIG-Z2-F-B	HC-ANA-SIG-Z4-F-B
HC-ANA-SIG-Z1-W-TR	HC-ANA-SIG-Z2-W-TR	HC-ANA-SIG-Z4-W-TR
HC-ANA-SIG-Z1-F-TR	HC-ANA-SIG-Z2-F-TR	HC-ANA-SIG-Z4-F-TR

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1. GENERAL CHARACTERISTICS OF THE DEVICES

	SIGFOX	CELLULAR Available from Q3 2019
Frequency	868/902/920 MHz	699 - 1980 MHz Cat.M1/Cat.NB1: LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 LTE TDD: B39
Protocol	Zone 1, Zone 2, Zone 4	GPRS NB-IOT LTE-M (All in One)
Power	2xAA Lithium	2xAA SPIRAL
Battery lasting	Up to 15 years	Up to 12 years
Input #	3 analog inputs + 1 digital Alarm	4 analog inputs
Sensors that could be read	Temperature, Humidity, light, noise, air quality, door sensors, current, voltage, etc.	Temperature, Humidity, light, noise, air quality, door sensors, current, voltage, etc.
Memory	128 Kbyte	128 Kbyte
Protection Degree	IP67 (IP68 optional)	IP67 (IP68 optional)
Mounting	Flags 2 screws / ties	Flags 2 screws / ties

2. CALCULATION BATTERIES DURATION

Batteries duration depends on the sensors connected to the device. Depending of the resistance in the sensor, the batteries duration is different than in the following table.

Frequency of data sending	SIGFOX (Zone 1/2/4)	CELLULAR (Variable)
24 h	15 years	Up to 12 years
12 h	15 years	Up to 12 years
6 h	15 years	Up to 12 years
1 h	4 years	Up to 4 years
30 min	2 years	Up to 2 years
15 min	1 year	Up to 1 year
5 min	Not avail.	Up to 4 months

* Once finished, batteries can be changed easily (Except IP68 versions)

3. STARTING DEVICES

3.1 Initial installation

The device has been designed for easy initial installation. It has also been designed to ensure that during the initial installation of the sensor cables, the inputs do not read any erroneous voltage. Below are the steps that must be followed to correctly install the equipment.

STEP 1: Cover opening. Unscrew the four screws of the cover.

STEP 2: Connection of sensors. This device allows the connection of analog sensors (and 1 extra digital sensor) through 2 wire cables per sensor. The analog sensors (resistance type) should be connected to V and CnX input. The input cables are passed through the cable gland to guarantee tightness. For information on how to connect other kind of sensors to the device please contact HC Technologies.
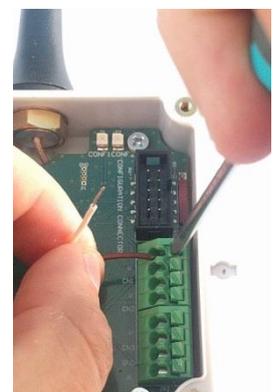
Wires input   First wire connection

Second wire connection

To guarantee the tightness of the HC-ANA products, it is recommended to tighten the cable gland with a wrench once the wires are connected.

STEP 3: Batteries. The device is normally shipped with the batteries connected. In spite of this, the equipment will read the sensor voltage or send any data until the device is activated. Therefore if your device already has the batteries in place but has not yet been initialized, do not worry because it will not read any sensor or send any data, so it can flight without problems.

STEP 4: Device activation. To activate the device the magnet that is attached or any other magnet available by the installer must be used. The HC-ANA device has a rectangular mark that indicates the position where the magnet should be placed for activation:


Initially before activating the device the approach of the magnet causes the following states:

State 1: Magnet placed for a second or less near the mark. The CONF1 led (yellow) will light up only once. In this case, the device will send a normal packet (counts or alarms packet) *(Contact HC Technologies to receive the format and description of the packet).*
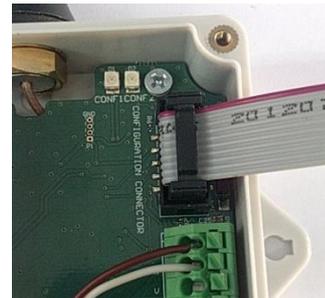

State 2: Magnet placed for more than 1 second and less than 3 seconds close to the mark. The CONF1 led (yellow) will light twice. In this case, a configuration packet will be sent (contains the internal configuration of the device). *(Contact HC Technologies to receive the format and description of the packet).*

State 3: Magnet placed for more than 4 seconds near the mark. The CONF 1 LED (yellow) will light up twice and the CONF2 LED (red) will light for approx. 50 seconds. This is the way to activate the device. In this state, the device is activated and enters connection mode with the server (Downlink for Sigfox devices). Once the red LED is off, the device will start sending data to the pre-programmed frequency or the new frequency received from the remote server.
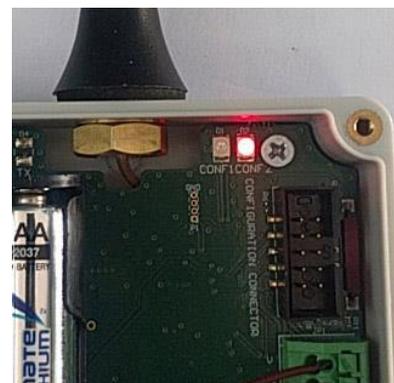
From this moment, whenever the magnet is placed in State 1 mode, the device will send a normal packet, in State 2 mode it will make a configuration packet and in State 3 mode it will make a connection to a remote server (Downlink). To deactivate the device, you must disconnect at least one battery in the Sigfox products and the two batteries in the Cellular products. In this case the readings of the counter inputs are not lost so to reset them must be done through any of the possible configuration processes (USB or Downlink configuration).

STEP 5: Cover closure. Close the lid and tighten the four screws. To ensure tightness it is recommended that in case of having to open and close the lid more than 2 times, please contact HC TECHNOLOGIES for the supply of spare sealing rubber.

3.2 Device configuration

The devices can be configured in two different ways: Either through our USB configurator or remotely through the applications with which the device connects. For example, Sigfox devices can be configured using the Downlink mode from the Sigfox Backend or through the application that receives the data.

Configuration by USB

All our devices can be configured through our USB configurator and our configuration application. The configurator must be connected to the device configuration connector using a flat cable with an IDC10 connector as shown below.
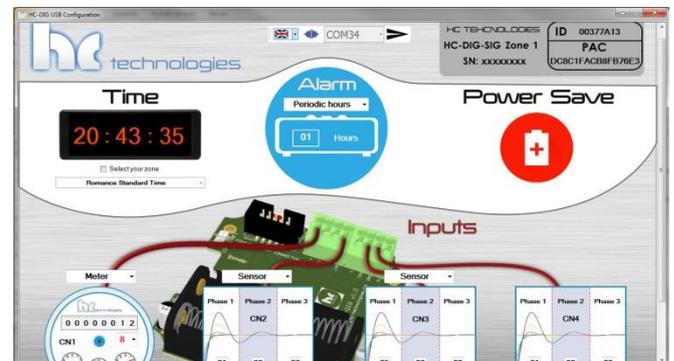
The configurator must be connected to a USB port of a PC, Laptop or Tablet with Windows OS installed. Once connected, the HC USB Configurator application can be used. You can find all the information about the use of the application in the manual USB CONFIGURATOR MANUAL.pdf

Sigfox Downlink Mode

For more information about the Sigfox Downlink mode that allows you to configure Sigfox devices without the need of the configurator, by wireless connection, please consult our Manual_Sigfox_Downlink_HC.pdf

4. DEVICE OPTIONS

4.1 Antenna

Devices can be delivered with a fixed external antenna in the box, or with a flat antenna with a cable as long as needed. In cases where it is necessary that the equipment does not have any antenna outside the box, do not hesitate to ask, since we can also send the equipment with an internal antenna.

The flat antennas are special to install the devices inside a metal box in which there is no coverage of the technology of the equipment and you want to install the antenna outside the box for example, or for similar cases. We can also deliver the devices with larger cables, special antennas etc. for use in places without coverage, etc.

4.2 Power

HC-ANA devices have two different feeding systems. Those references with -B refer to devices powered by batteries. The standard batteries we use are AA batteries, however, the device has been designed in such a way that larger batteries can be used for special cases in which greater power capacity is required.

The -TR references refers to devices with an internal AC / DC transformer. So that the devices can be powered with 110 / 230V AC. Specially designed for applications with close power (high power consumer sensors, etc.).

The internal AC power system has been designed so that you can not have contact with the AC signals at any time. In addition, a 5x20 mm 240V 100mA fuse protected by a plastic cover is used. In the event of a short circuit or any other problem, to replace the fuse, remove the plastic cover, insert the new fuse in the cover and reconnect the plastic cover to the fuse holder.

5. SENSOR INSTALLATION IN HC-ANA BOX

HC Technologies can install the sensors into the HC-ANA box if needed. We can install the sensors in different places and also change the antenna installing mode, etc. Following, two different installation are shown, one with three different sensors (temperature, moisture and light sensors), and the

other with an air quality sensor to be installed in the ceiling.

Temperature, moisture and light sensors

Air quality sensor

6. DEVICE INSTALLATION

All devices are delivered with a front sticker on which you can write the information of the meters or signals connected to each input. It is recommended the use of indelible markers or similar to avoid writing deleting by water, sun etc.

6.1 Installation in walls, pipes, etc.

All HC-ANA devices have two flags with a 5 mm hole for screwing the device to the wall, pipes, etc. These flags also allow the use of plastic ties for securing the devices to attach them to pipes.

6.2 Installation in buried manholes or similar

The HC-ANA-F units are specially designed for use in buried boxes. The installation of these in the buried boxes has multiple possible solutions, so only one option of installation in a pit buried by images is shown below. For other types of installation, consult HC TECHNOLOGIES.

The main objective is to install the device inside the manhole, but the flat antenna, outside of it:

Use a piece of plastic gutter to protect the antenna. Make a recess in the ground

Install the HC-ANA device in the box and connect the antenna cable once it has passed through the exit hole of the made manhole. Connect the flat antenna

Apply a thin layer of cement or mortar on the antenna (not more than 1 cm) and close the manhole lid

The devices are shipped with an installation bag. Studs, lag bolts, plastic ties and a magnet are included in the bag as standard. For installations in which any other type of material is required, contact HC TECHNOLOGIES.

For any questions or clarification about this or other products please contact **HC TECHNOLOGIES** through the following procedures:

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