NAYAR

GSR

1 — Last update: Jul 18, 2022

Nayar Systems

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1. Manufacturer note

This manual describes **good practices** recommended by Nayar Systems S.L. in order to ensure an optimal performance in safe conditions. Any improper manipulation, damage caused during the installation of the device and, in general, an incorrect use not explained in this document may void the warranty.

The device must be manipulated only by **qualified and skilled professionals** with specific technical knowledge to avoid a failure of the device due to an inappropriate manipulation.

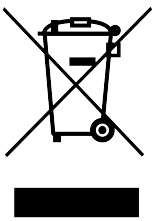
The **optimal performance** of the device can be ensured in good working conditions. This does not include interferences, network signal attenuation due to placing the antennas in an improper location like for example surrounded by metallic surfaces, etc.

Nayar Systems S.L. is not responsible for damage as a result of ignoring the indications and recommendations included in this manual.

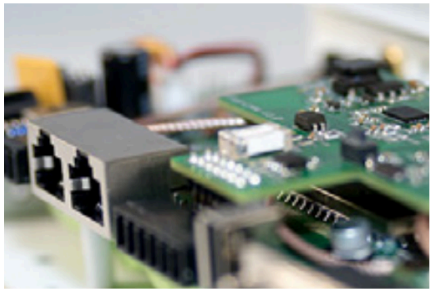
The device must not be wet neither installed in **humid places**.

! The unit contains a **lithium battery**. Do not put the battery in a fire or generic waste. It may be damaged if placed near a fire and may be a dangerous waste, as well as polluting the environment. Use and store the battery in places where the maximum temperature does not exceed 60ºC. In case the battery suffers any damage it may release dangerous toxic gases.

✻ Optimal working **temperatures** are between -20ºC and 60ºC.



2. Device description



GSR • GSM Smart Router® is a device specially designed for elevators and IoT networks. It integrates **2G/3G/4G technology, WiFi** and industrial connectors with the purpose of turning the elevator into an internet device. It is capable of working as a GSM track, an autodialer, can supply connectivity to Advertisim and other compatible devices and is **EN81-28** compliant.

ELECTRICAL PROPERTIES

- Operating range: 18V – 24V
- Idle phone line tension: 48Vdc
- Off-hook phone line tension: 7-10Vdc

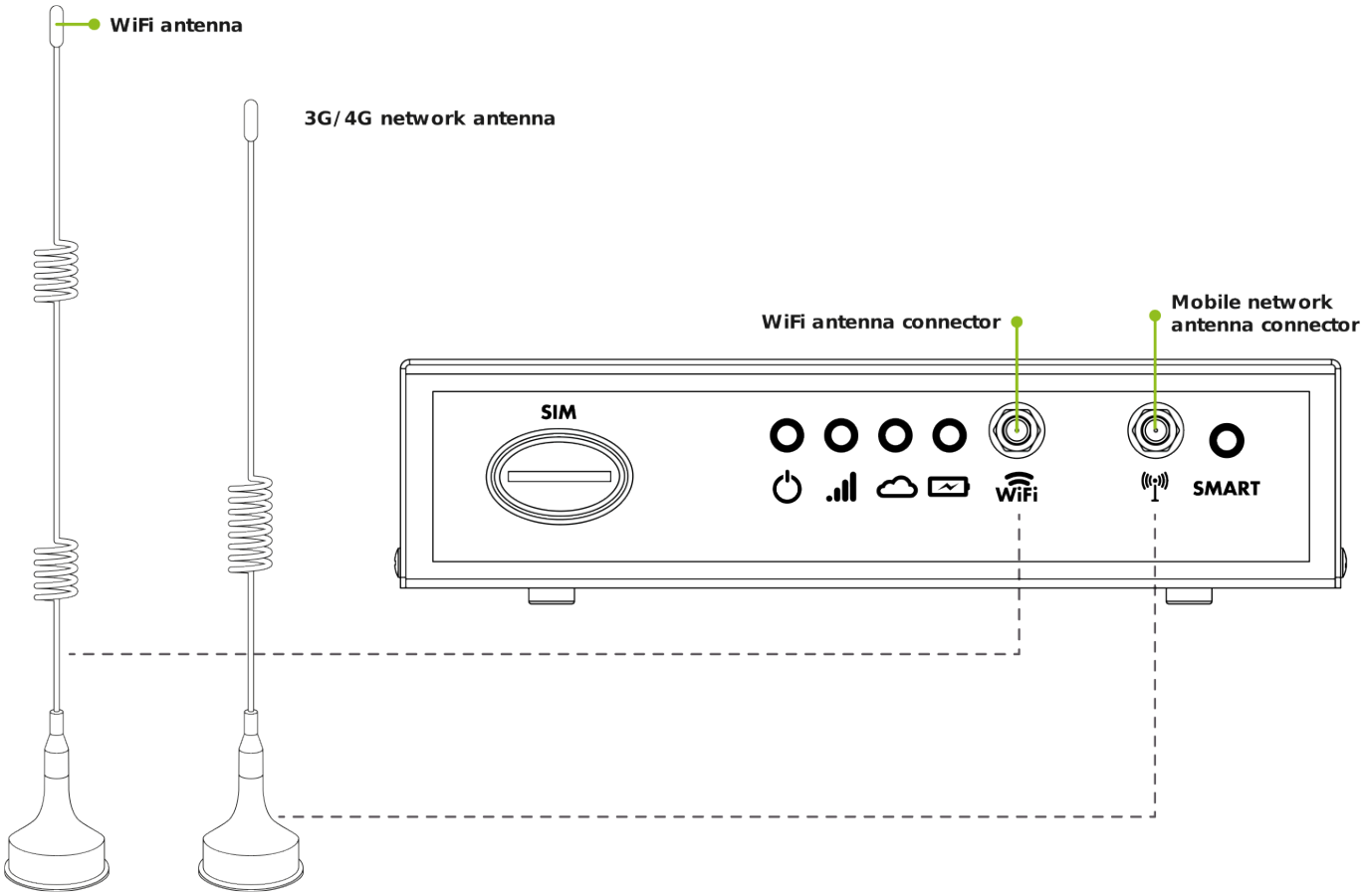
INSIDE THE BOX

- GSR · GSM Smart Router®
- Power supply
- 3G/4G network antenna
- WiFi antenna
- First step instructions

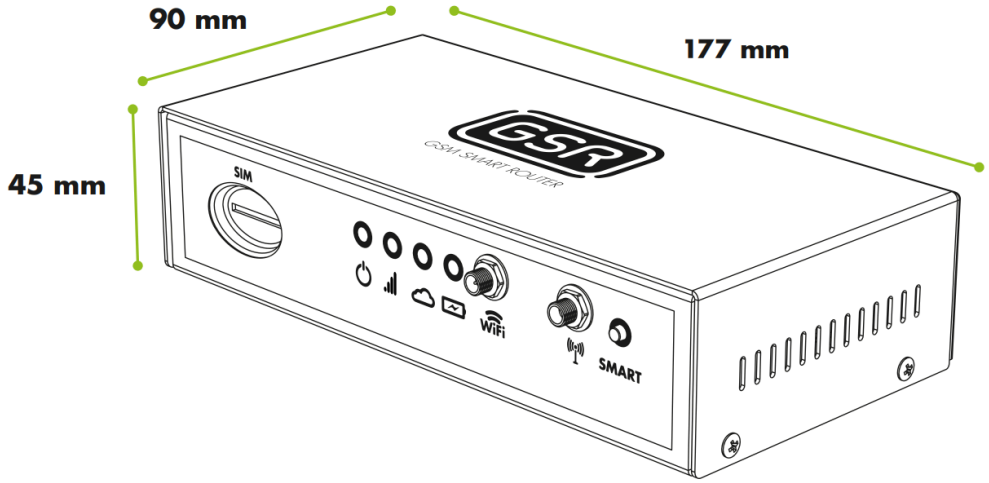
TECHNICAL SPECIFICATIONS AND CONNECTIONS

- CPU architecture: MIPS
- RAM : 64 MB
- Flash: 16 MB
- WiFi: Soporte 150M 2.4Ghz wifi, 802.11 b/g/n support
- SIM slot
- Telephone SLIC
- Mini PCI Express 3G/4G modem
- RJ45 Ethernet 10/100Mbps (2 ports))
- USB Host (0.5A)
- RS232
- CAN
- 12V output (1A)
- SMA F connector for 3G/4G antenna
- RP-SMA F connector for WiFi antenna

- 2500 mAh lithium battery

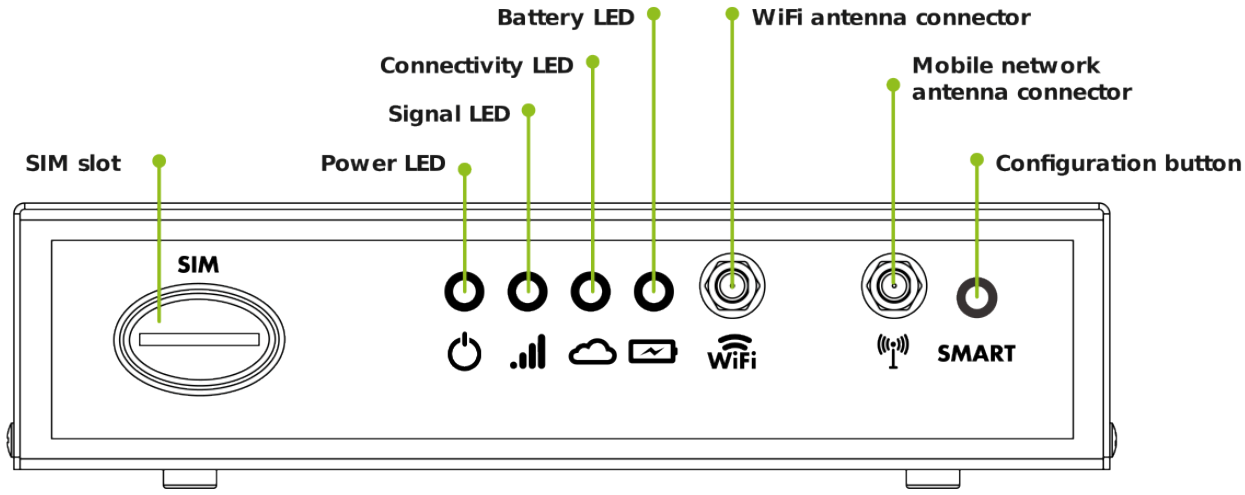


DIMENSIONS



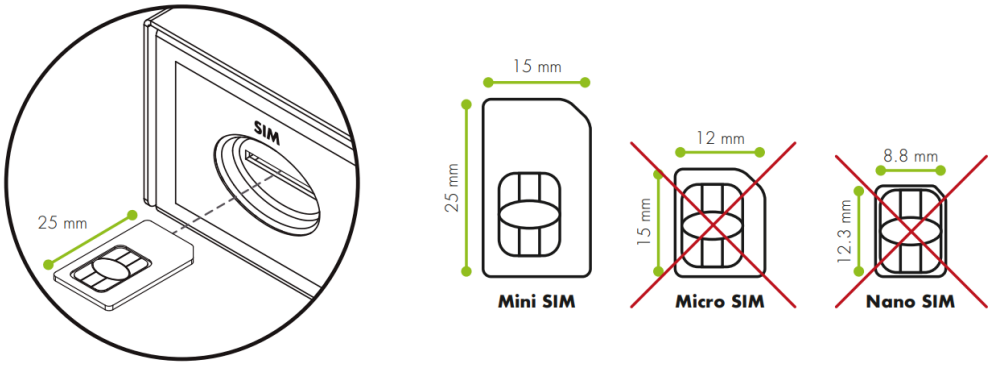
2.1. Device front panel

At the **front panel** of the device can be found the following information:



2.1.1. SIM slot

Place for a standard size **SIM card**. It does not work with microSIM neither nanoSIM cards. It must be inserted as described in the following image:



2.1.2. Status indicator LEDs

GSR has 4 LEDs for showing events and status to the user:

2.1.2.1. Power LED (⏻)

Shows if the device is powered **ON** or **OFF**.

- **Device powered OFF –**
- **Device powered ON –**

2.1.2.2. Signal LED (📶)

Displays the **current mobile network** signal.

4G MODEL

No signal

- **4G –**
- **2G –**

Weak

- **4G –**
- **2G –**

Good

- **4G –**
- **2G –**

Very good

- **4G –** 
- **2G –** 

2.1.2.3. Connectivity LED (☁)

Shows **call** status and **configuration** changes.

OUTCOMING CALL

- **Off-hook –**  (1 second) y  (1 second)
- **Calling –**  (0.5 seconds) y  (0.5 seconds)
- **Ongoing call –** 
- **Busy line –**  (1 second) y  (1 second)

INCOMING CALL

- **Call incoming –**  (0.5 seconds) y  (0.5 seconds)
- **Ongoing call –** 

OTHER STATUS

- **Successful configuration –**  Morse OK
- **Idle –** 

2.1.2.4. Battery LED (▭)

Displays **battery** level.

- **Optimal battery level –** 
- **Low battery according to EN81-28 regulation –** 

2.1.3. Connectivity

WiFi connectivity. The antenna supplied with the device must be connected to the indicated connector in order to use WiFi capabilities. In case the signal is not strong enough, a more powerful antenna can be used.

Mobile network connectivity. The antenna supplied with the device must be connected to the indicated connector in order to get signal from mobile networks. In case the signal is not strong enough, a more powerful antenna can be used.

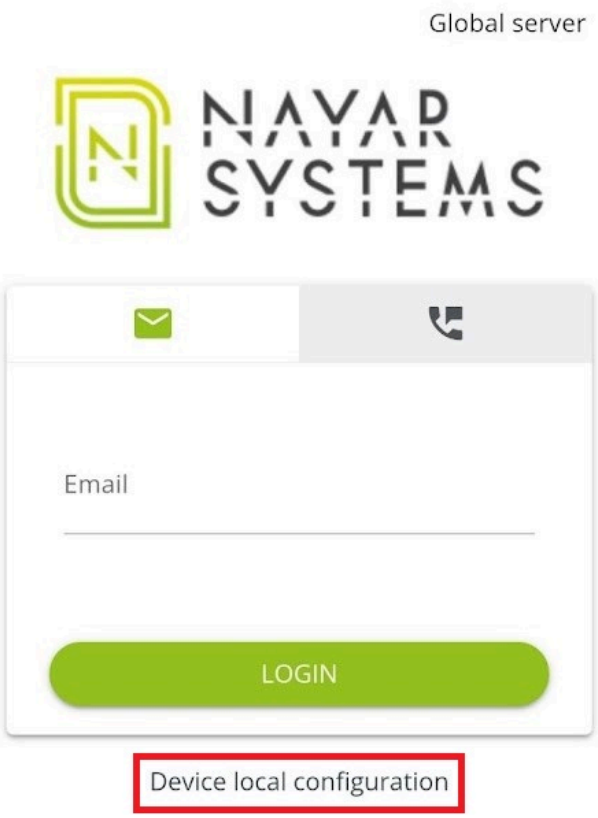
2.1.4. Configuration button (SMART)

This button allows to execute **configuration** actions. Press and hold the defined seconds to run the associated action. The following ones are predefined:

- **Automatic autodialer configuration:** hold pressed between 2 and 6 seconds with the device connected to only one elevator car. During the configuration the connectivity LED ( ) will remain lit and will blink when the process ends successfully. In case the configuration is not successful, the light indicator will turn off without blinking previously. This feature is only available for 72horas customers using GSR devices and autodialers available in the platform. GSR users who are not 72horas customers can use this 2 to 6 seconds button press for a custom action.

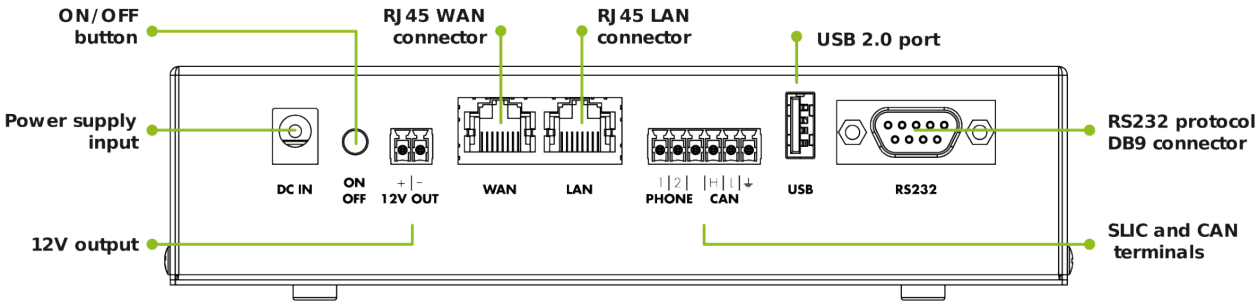
- **Factory reset:** hold pressed between 15 and 60 seconds. All LED lights will turn on and off after the device is reset to factory settings.

- **Local configuration of the device / Offline mode**: This mode allows you to make changes to the device's configuration when it does not have access to the internet. To use it, it is necessary to download the Nayar Systems application. Download links: Android / iOS. Once the application is open, click on **"Device local configuration"** and follow the steps described in the assistant.


Global server
NAYAR SYSTEMS
Email
LOGIN
Device local configuration

2.2. Device rear panel

At the **rear panel** of the device can be found the following information:



DC IN

Input for the **power supply**. When possible, the device must be always powered with the original power supply. In case the original power supply can not be used, it is recommended to use a 18V-24V and 2A power unit for an optimal battery charge.

ON / OFF

Button used for turning **ON** or **OFF** the device. When OFF, all current passage is interrupted from both power supply and the battery.

12V OUT

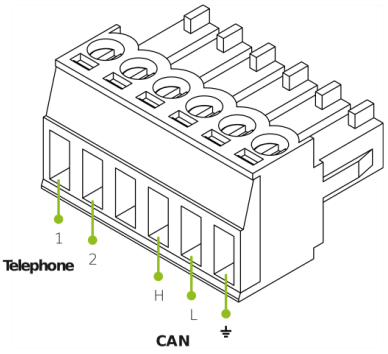
12V output with polarity as indicated in the graphic. It can be used to connect several autodialers in case they need external power, taking into consideration that the maximal supported current is **1A**.

WAN/LAN

- **WAN**: RJ45 connector to receive internet connectivity from other devices.
- **LAN**: RJ45 connector to supply internet connectivity to other devices.

PHONE / CAN

GSR can be connected to autodialers through the integrated **SLIC** or **CAN** modules. To do so, the device has terminal connectors that must be used as described:



- **1 y 2 (phone line)**: the pair of phone line wires or TIP and RING have to be connected to the first two positions as indicated. The order of the connectors does not affect the signal.
- **H, L and GND (CAN connection)**: to ensure a correct operation, special attention must be paid when connecting H, L and GND. Please follow the indica ted steps.

USB

Compatible with **USB 2.0 (0.5A)** devices like for example expansion modules, a bluetooth adaptor, a webcam, etc.

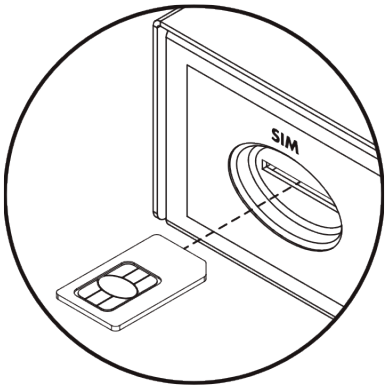
RS232

Male **DB9** connector. Compatible with RS232 standard (DCD,RTS/CTS,RI, DSR). It is the access point to the control panel or other devices using this communication standard.

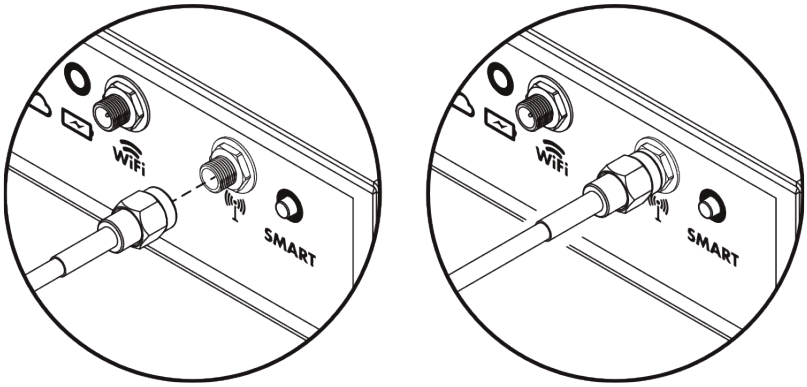
3. Installation and start-up

1. Put the device in a comfortable place for manipulation.

2. Insert a **SIM card** as indicated.

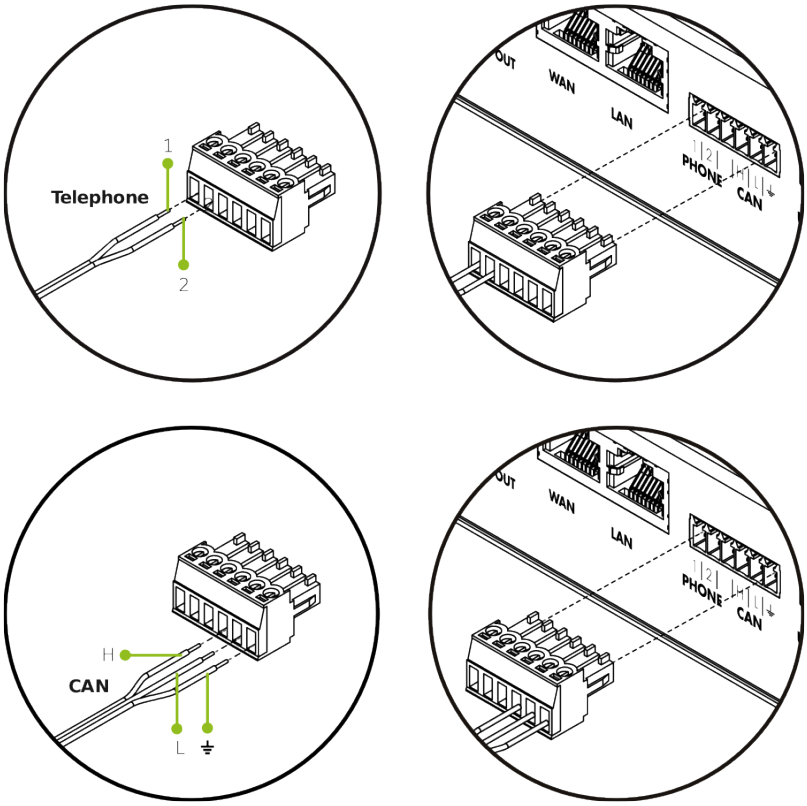


3. Connect the **3G/4G antenna**. It must be always connected to the device.



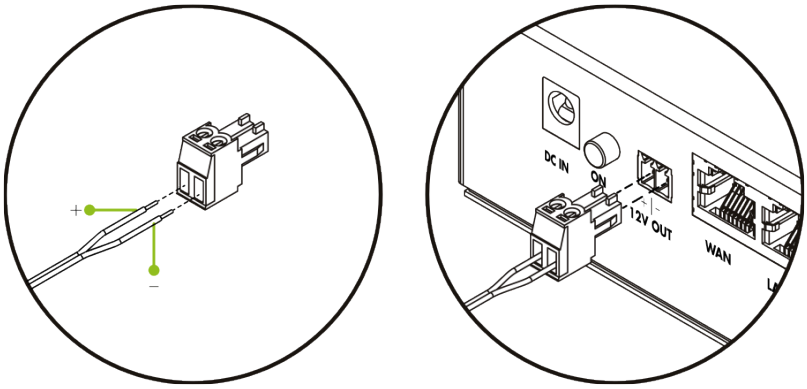
4. Connect the **WiFi antenna** when connectivity for other devices is needed.

5. Connect **phone line** wires or **CAN**, as needed.

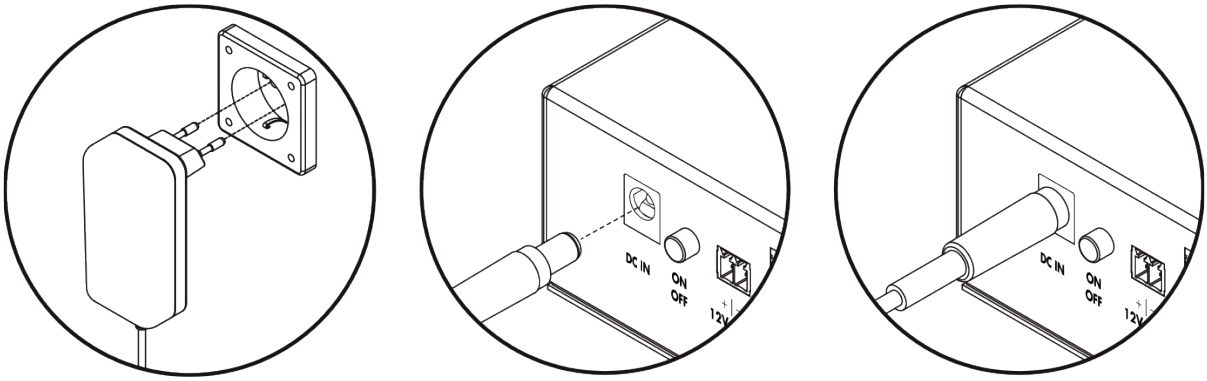


6. Insert the terminal in its position.

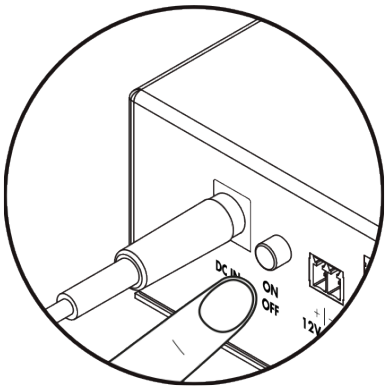
7. Supply **12V** to the autodialer device if needed.



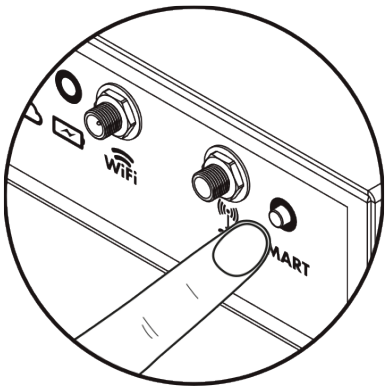
8. Connect the **power supply** to the electric current and DC IN.



9. Press **ON/OFF** and check that all LED indicators turn on and off once.



10. Once the LED shows that GSR has mobile network signal (check **2.1.2.2. Signal LED**) press and hold the **SMART** button 2 to 6 seconds to configure the autodialer (only 72horas customers).



To know how to connect the controllers, follow the next steps in **Physical Connections**

4. SMS Configuration

GSR's configuration parameters can be programmed sending SMS messages to the device. The accepted format is as follows:

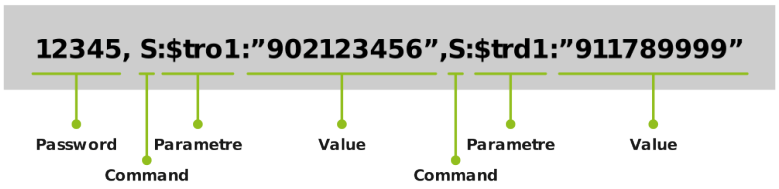
password,command,command, … ,command

A sequence is created starting with the password and continuing with a list of commands separated by commas (,). The default password is **12345**.

The **commands** used for the SMS configuration are:

- **S** is used for configuring a parameter. The structure begins with (S), followed by colon (:), the parameter to set, colon again (:) and the value assigned to that parameter.
- **C** is used to run commands. The structure begins with (C), followed by colon (:) and the command to run. Certain commands also use values, in these cases add colon again (:) and set the value.
- Add **W** at the end of the SMS to save the changes introduced through that particular message. In case this command is not added, the changes will be lost after rebooting the device.
- **G** is used to consult a parameter. The structure begins with (G) followed by colon (:) and the parameter to consult. A response will be received with its current value.

Here follows an example:



Perform the following actions according to listed commands:

4.1. Consulting a parameter

G command is used to consult parameters as shown in the following example:

12345,G:$tro1

Response:

[“parametre_value_$tro1”]

4.2. APN configuration

The APN the device uses can be configured with the following parameters:

$apn – to set up UPN adres

$apnu – to set up user

$apnp – to set up password

The following SMS is an example of how to configure correctly APN settings:

12345,S:$apn:“apnaddress.com”,S:$apnu:“user”,S:$apnp:“password”

Response:

[“OK”,“OK”,“OK”]

This example sets the APN **apnaddress.com** ($apn) with the user **user** ($apnu) and the password **password** ($apnp). These values must be inside quotation marks (“) when setting up APN configuration.

4.3. WiFi connectivity

GSR is programmed to supply wireless internet connectivity only to **Advertisim devices**. As soon as an Advertisim device detects a GSR wireless network it will connect automatically. There is no need to perform any previous or additional settings to Advertisim nor GSR given that the connection is established automatically. GSR allows to enable or disable its WiFi network with the following SMS:

12345,C:wifi:1 – enable WiFi

12345,C:wifi:0 – disable WiFi

The response in both cases is:

[“OK”]

4.4. Status report

The device features a SMS report. It shows:

- Device ID
- Battery charge status
- Battery voltage
- Signal strength (CSQ: 0 – 31)
- Modem temperature
- ICC
- IMEI
- VPN connection status

The report can be requested with the following SMS:

12345,C:rp

Example response:

[{"id":"gsr.a8404118569f","max17048.soc":98.6,"max17048.v":8.36,"max17048.crate":0,"modem.csq":17,"modem.cmte":36,"modem.icc":"89340751002528079 53","modem.imei":"863789024756532","n4m.online":true}]

Where:

- **“id”**: device identification.
- **“max17048.soc”**: remaining battery percentage.
- **“max17048.v”**: battery voltage.
- **“max17048.crate”**: shows if the battery is charging or discharging. If the number is positive, the battery is charging, when 0 it is idle and if negative the battery is discharging.
- **“modem.csq”**: mobile networks signal strength. Values between 0 and 31. The value 99 indicates an error in the network.
- **“modem.cmte”**: modem temperature shown in ºC.
- **“modem.icc”**: SIM card ICC identifier.
- **“modem.imei”**: modem IMEI identifier.
- **“n4m.online”**: connection status to net4machines VPN. Its values can be true or false.

4.5. Low battery alert

The battery alert can be received via http or SMS. To configure the URL is used (use) the parameter **$aburl** as shown in the following example:

12345,S:$aburl:“battery_alert_destination_URL”

Response:

[“OK”]

Use the following SMS to configure battery alert:

12345,S:$sab:“battery_alert_destination_number”

Response:

[“OK”]

When the battery drops below the defined safe value, the device will send a SMS with the following format (example values):

```
{"id": "gsr.a8404118566f", "date": "Fri Mar 23 10:19:57 2018", "alert": {"name":"v","alert_level":7,2,"alert_safe":7,4,"value":7,2}}
```

Where:

- **“id”**: device identifier.
- **“date”**: date and time in UTC format.
- **“alert”**: indicates the type of alert.
- **“name”**: indicates the parameter, in this case “v” stands for voltage.
- **“alert_level”**: shows the low level value. This is a default value.
- **“alert_safe”**: shows the safe level value. This is a default value.
- **“value”**: indicates current value of a parameter.

By default, the low level value guarantees one hour of operation time according to EN81-28 regulation. If necessary for **international phone numbers**, use (+) before country code.

4.6. Device reboot

The device can be rebooted with the following SMS:

12345,C:rbt

Response:

[“OK”]

All LEDs will blink and the device will reboot.

4.7. Software reboot

To reboot only the internal software, the following SMS must be used:

12345,C:rst

Response:

[“OK”]

All LEDs will switch on for a few seconds and then off until the software is running again.

4.8. Blacklist management

The device can manage a blacklist to restrict outcoming calls to listed phone numbers. In order to **add** a number to the blacklist use the command **bladd**, as shown in the following example:

12345,C:bladd:first_number_to_add_to_the_blacklist,C:bladd:second_number_to_add_to_the_blacklist

Response:

[“OK”,“OK”]

Multiple numbers can be sent in the same SMS. The answer will contain as much **“OK”** as added numbers.

To **remove a number** from the blacklist, use command **blrem**:

12345,C:blrem:number_to_remove_from_the_blacklist

Response:

[“OK”]

All numbers can be deleted at once with the following SMS:

12345,C:bldel

Response:

[“OK”]

4.9. Setting work mode

The device has two working modes: as a GSM module or an autodialer. The **GSM mode** allows to connect one or more autodialers through the FXS connection while the **autodialer mode** can work with up to four CAN audio modules where GSR has the autodialer logic. In order to configure the device as an autodialer it is necessary to indicate the **number of elevator cars** that connect to GSR in the installation and they can be between 1 and 4. To select among the work modes must be sent one of the following SMS:

12345,C:wmgsm – GSM mode

12345,C:wmta:number_of_connected_elevator_cars – Autodialer mode

If the SMS format is correct the response is:

[“OK”]

4.9.1. GSM Module configuration commands

4.9.1.1. Programming a call diversion

GSR supports up to **6 call memories**. It refers to the positions with numbers that go from 1 to 6:

	Origin	Destination
Position 1	$tro1	$trd1
Position 2	$tro2	$trd2
Position 3	$tro3	$trd3
Position 4	$tro4	$trd4
Position 5	$tro5	$trd5
Position 6	$tro6	$trd6

When introducing a **phone number**, this must be inside quotation marks (“). A call diversion can be set with the following SMS:

12345,S:$tro1:“first_origin_number”,S:$trd1:“first_destination_number”

Response:

[“OK”,“OK”]

In this case it indicates that outcoming calls to **first_origin_number** must be diverted to **first_destination_number**.

If there is a need **to restrict an outcoming call** to a particular number, the destination must be left blank like in this example:

12345,S:$tro1:“number_to_restrict”,S:$trd1:””“

Response:

[“OK”,“OK”]

As soon as the device detects an attempt of an outcoming call to **number_to_restrict** it will not do allow it. If the goal is to restrict all calls with a common prefix, the asterisk symbol (*) must be used:

12345,S:$tro1:“902 * “,S:$trd1:””“

Response:

[“OK”,“OK”]

Doing this all outcoming calls starting with **0870** will be stopped (will not be carried out).

4.9.1.2. Whitelist management

All outcoming calls identified with the asterisk symbol (*) can be directed to that same number with the equal sign (=) as destination. With the same format used in diverted calls, a whitelist can be created with the following SMS:

12345,S:$tro6:” * “,S:$trd6:”=”

Response:

[“OK”,“OK”]

This is the standard behaviour of the device when the whitelist is empty.

4.9.1.3. Polarity inversion simulation

The device has the capacity to simulate polarity inversion in outcoming calls (polarity is not inverted as standard). To do so it counts with the parametre **$swpl** and it can be set to the values **t** or **f** (no quotation marks) as shown:

12345,S:$swpl:t – inverts polarity

12345,S:$swpl:f – does not invert polarity

In both cases the response is:

[“OK”]

4.9.2. Autodialer configuration commands

4.9.2.1. Emergency numbers programming

The text message used to set up **to four emergency phone numbers** for the autodialer is as follows:

```
12345,S:$e0:"emergency_phone_number_1",S:$e1:"emergency_phone_number_2",S:$e2:"emergenc
y_phone_number_3",S:$e3:"emergency_phone_number_4"
```

Response:

[“OK”,“OK”,“OK”,“OK”]

4.9.2.2. Elevator car top and pit emergency phone numbers programming

The following SMS must be sent to programme rescue numbers for the car top and pit:

12345,S:$sos0:“sos_phone_number_1”,S:$sos1:“sos_phone_number_2”

Response:

[“OK”,“OK”]

4.9.2.3. Periodical test programming

GSR is able to run the periodical test through two different channels: **using data** sending IP packets or using the **voice channel** with a phone call. The device can store up to 4 different test destinations. It works with both URL addresses and phone numbers, users can set **up to 4 memory positions**. GSR will do the test starting with the one that is in first position, if the process is successful it will not repeat it until the periodical test period is reached. In case the first test position is not successful it will skip to the next one and if this one is not successful either it will try with the one after it until verifies the test is OK or reaching the fourth and last position. Both phone numbers and URL addresses are stored in memories **test0, test1, test2 y test3**.

Programming these memories can be done with the following SMS:

```
12345,S:$test0:"URL_or_test_number_1",S:$test1:"URL_or_test_number_2",S:$test2:"URL_or_t
est_number_3",S:$test3:"URL_or_test_number_4"
```

Response:

[“OK”,“OK”,“OK”,“OK”]

4.9.2.4. Periodical test cycle programming

To configure the frequency with which GSR will run the test must be used the following SMS:

12345,S:$ci:minutes_between_each_test

Response:

[“OK”]

Standard value is set to 4320 minutes that represents **3 days** as **EN81-28 regulation** specifies.

4.9.2.5. Recall attempts programming

The number of recall attempts can be set with the following SMS:

12345,S:$mda:number_of_recall_attempts

Response:

[“OK”]

4.9.2.6. Alarm validation command programming

To configure the DTMF tones that the device will accept as **alarm validation** (ACK) must be sent the following SMS:

12345,S:$ackdtmf:“alarm_validation_command”

Response:

[“OK”]

4.9.2.7. Emergency button press time programming

To set the time that the emergency button of each elevator car must be pressed to generate an outcoming call, use the following SMS where X stands for the number of the elevator car (1-4):

12345,S:$abpsX:time_in_seconds

Response:

[“OK”]

4.9.2.8. Emergency button logic programming

To set the emergency button logic of each elevator car individually send:

12345,S:$ablX:emergency_button_logic (t/f)

X indicates the number of the elevator car to configure and the logic can be **t** which stands for **normally closed (NC)** or f that stands **for normally open (NO)**.

In both cases the response is:

[“OK”]

4.9.2.9. Hang up from elevator car programming

To set individually to hang up the emergency phone from the elevator car, where X stands for the elevator car number, use:

12345,S:$abchX:t – hang up from the elevator car allowed

12345,S:$abchX:f – hang up from the elevator car not allowed

In both cases the response is:

[“OK”]

4.9.2.10. Alarm filter programming

To enable or disable the alarm filter of each elevator car individually, where X stands for the elevator car number, send:

12345,S:$abfX:t – alarm filter enabled

12345,S:$abfX:f – alarm filter disabled

Response:

[“OK”]

4.9.2.11. End Of Alarm (EOA) notification

In order to indicate to the device that the rescue is done and the alarm situation is finished for a particular elevator car use the following SMS:

12345,C:eoa:elevator_car_number

Response:

[“OK”]

4.9.2.12. Speaker volume settings

To configure the speaker volume of each elevator car individually, where X stands for the elevator car number, send the following SMS:

12345,S:$svX:speaker_volume_level

Allowed values go from 0 to 9, where 0 is the lowest and 9 the highest.

Response:

[“OK”]

4.9.2.13. Microphone volume settings

To configure the microphone volume of each elevator car individually, where X stands for the elevator car number, send the following SMS:

12345,S:$mvX:microphone_volume_level

Allowed values go from 0 to 9, where 0 is the lowest and 9 the highest.

Response:

[“OK”]

4.9.2.14. Daytime speech synthesis volume settings

In order to set the daytime speech synthesis volume individually, where X stands for the elevator car number, use the following SMS:

12345,S:$dsvX:daytime_speech_synthesis_volume

Allowed values go from 0 to 9, where 0 is the lowest and 9 the highest.

Response:

[“OK”]

4.9.2.15. Speech synthesis language settings

To configure the speech synthesis language send the following SMS:

12345,S:$sl:xxxxxx

Each digit different to 0, from left to right, is synthesized in the indicated language:

1. Spanish

2. Portuguese
3. Italian
4. English
5. German
6. French

The following example SMS would indicate English speech synthesis:

12345,S:$sl:400000

Response:

[“OK”]

5. Technical support

In case of any incidence with your GSR device or service when needed technical support, please contact Nayar Systems after-sales service: **(+34) 964 06 69 95 / info@nayarsystems.com**

6. Troubleshooting

State	Cause	Solution
All LED indicators are OFF after turning the device ON	The device is not powered	Power ON the device with the external power supply
	Power cable is not plugged in	Plug in the power cable
	The battery has no charge	Plug in the power cable
	The power supply is damaged	Replace the power supply. Contact Nayar Systems after-sales service
Mobile network signal LED indicator does not turn ON	SIM card is not registered correctly	Take out and put in again the SIM card.
	Mobile network signal is not strong enough	Change the position of the network signal antenna.
	The SIM card is not activated	Verify the state of the SIM card and its services.
	The SIM card has a PIN code	Take out the SIM card, insert it into a mobile phone and deactivate the PIN code.
	The SIM card is not inserted correctly	Insert the SIM card following the indications of the manual.
	The SIM card is damaged	Insert the SIM card in a mobile phone to check if the card is working.
Mobile network signal LED indicator only lights red (permanent or blinking)	The device does not have good mobile network signal	Change the position of the network signal antenna
The autodialer has no line	The cables are inserted in the wrong terminals	Connect the line cables following the indications in this manual.
	The terminal is inserted in a wrong position	Insert the terminal to positions 1 and 2 for the phone line.
	The autodialer does not detect	Disable the line tone detection for the autodialer.

	line tone	
After an outage thedevice does not remain working for more than one hour	The battery does not have enough charge	Leave the device charging at least 2 hours
	The battery is not charging correctly despite being days or hours connected to the power supply	Contact Nayar Systems after-sales service to check the device.
After pressing SMART button the device is not configuring automatically	There is not enough mobile network signal to connect to the server	Check that the antenna is in good condition / Place the antenna in a different location for better signal / Send a report SMS to see the mobile network signal strength, a minimal value of 14 is needed to run SMART functionality correctly.