MSM

USER MANUAL

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MONITORING MODULE MFGSM05

![MSM logo]

1. INTRODUCTION

The MFGSM circuits are small and compact remote control devices that are integrated inside our LED beacons. They include the system of transmission and reception of remote control signals through mobile phone GSM messages.

The signals and alarms are transmitted to up to 10 configurable recipients and up to 2 control centres. The ideal complement of the system is the Remote Control Centre GLOBAL NETCOM to manage such information.

Thanks to its modular design, it is possible to install it after the purchase of a MSM beacon.

> **IMPORTANT**
> - In the beacons with the MGSM device the SIM card must be INSERTED for the transmission of data.
> - In the beacons where the SIM card is NOT INSERTED in the MFGSM device, it must be BLOCKED with the MINIDIP 3 according to the item 10. Selection of Work Mode MINIDIPS of this manual[C1].

2. Safety

2.1 GENERAL SAFETY

Installation and maintenance equipment involves applying health and safety standards at Workplace. These requirements vary between countries, so that the local specified regulations will be applied. The health and safety of personnel is a priority, thus any tasks with the equipment shall be executed by qualified and trained personnel to realize them in a safe way.

This user manual is intended for personnel with basic mechanical skills and under the direction of an operator responsible for piece assembling. The following instructions are very important for a correct use of the Equipment. Please ensure to:
- Comply with worker security provisions and professional regulation.
- Equip all personnel with personal protective measures (PPE) such as gloves or safety shoes or other equipment needed when manipulating components.
- Realize the tasks in the presence of a health and security manager that can provide assistance in case of accident.
- Follow the assembly sequence indicated in this manual.
- Have the adequate tools for the assembly of the components.
- Keep a copy of these instructions near the installation site.

2.2 HANDLING SAFETY

Before and during assembly tasks, the following indications should be considered:
- Have fasteners and fixing elements, for working with the product. Improper treatment can damage to beacon plastic components.
- Do not apply paint or adhesive on the surface of the modules.
- Work only in dry conditions, unless provided with appropriate additional protections.
- Use electrical insulation protection for working with direct current and battery components. The handling of batteries should be carried out only by qualified personnel.
- Disconnect the power supply of the beacon, prior to disassembly / assembly of any component.

2.3 INSTALLATION SAFETY

During the installation, the following indications should be followed:
- Check the correct condition of the elements during the assembly and ensure their fixing.
- Do not start a new step in the assembly tasks until having completed the previous one.
- Cover the solar module with an opaque material during the installation to prevent electricity generation.
- Check the stability of the entire equipment mounted prior to its use.

3. General characteristics

Technical specifications

Power range:	From 5.5 to 35V.
Daily average consumption:	10 mA (GSM) 15 mA (GSM+GPS)
Temperature range:	-30º to 60ºC.
GSM/GPRS module:	850, 900, 1,800 and 1,900 MHz. Quad-band, worldwide coverage.
External Digital Inputs:	4 opto-coupled.
External Digital Output:	1 opto-coupled.
MFGPS GPS receiver:	12 channels.

SIM Card

All operators with prepayment or contract.

Full-size SIM card. Do not use MINI- MICRO- or NANO- models.

64KB of Memory or more (16 KB and 32KB not admissible)

Required SMS service.

Optional Voice Service for function of missed calls.

Required Internet/data Service for programming through GPRS.

Beacon Status Signals

Beacon in Night or Day mode.

Battery voltage reading.

LED current consumption reading.

Solar charge current reading (in accumulated Ah per day).

Alarm Signals

Beacon off.

LED diode failure.

Mooring-chain breaking through GPS positioning (for buoys).

Low battery voltage.

Flasher failure.

Photocell failure.

Wrong flashing rhythm.

Excess consumption of the lantern.

Solar module charge failure.

Commands from User/Control Centre to beacon

Report request on beacon general status.

Day-night mode change.

Flasher reset

GPS reset (when included).

GSM reset.

General system reset.

Position self-detection.

Change of MFGSM configuration by SMS and GPRS connection.

Alarm acknowledgement by users.

MFGSM module features

Communication by means of SMS messages.

4-band GSM/GPRS communication module with integrated antenna, for use at worldwide level.

Full-size SIM card with a minimum of 64KB of Memory.

Sending of status and alarms by means of SMS messages.

Direct interrogation from mobile phone or control centre.

Independent communication module from flasher, improving safety and general reliability.

Alarm detection on beacon operation, power supply and mooring-chain breaking in buoys.

Remotely re-programmable via GSM and GPRS.

Protection system through passwords and authorized users.

4 nos. digital inputs configurable by user (impact detection, tampering, etc.).

1 no. digital output.

Security

Authorized user passwords.

SIM card protection by access code.

Record of alarms sent. NETCOM

Options

MFGPS position/synchronisation module via GPS.

Other status/alarm signals and commands available under request.

Remote control system compatible with MSM LED beacons:
- LED self-powered beacon MCL200, MCL250, MCL400.
- LED beacon MBL160, MBL400, MBL500.

The system is composed by two control circuits:
- MFGSM05 control and communications module
- MFGPS04 localization and synchronization module.

3.1 MAIN CHARACTERISTICS OF THE SYSTEM

- Ideal for remote monitoring and control of MSM beacons.

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- Transmits the data to mobile phone and control centre: in a general manner for all the programmed users, with alarm acknowledgement.
- Programmable by PC and RS-232 cable, using free software. It can also be programmed remotely from a mobile phone and through GPRS connection.
- With programmable "sleep" mode for power consumption savings, but maintaining the transmission of signals in real time.
- Position and swing radius in buoys (when MFGPS module is included).
- Minimum power consumption.
- Free communication protocols, which allows the user to use its own control centre or use it for any application they need.
- Includes temperature sensor.
- With "Vigilantic" system.

3.2   MFGSM ALARM COMMUNICATOR

- Circuit controlled by microprocessor.
- GSM communication module or GPRS quad-band with external GSM antenna.
- Communications module independent of the MF12 beacon flasher for more security and overall reliability.
- Operation alarms detection in the beacon, in the power supply system, and broken chain in buoys.
- Programmable and configurable remotely via GSM and GPRS.
- Protection system by passwords and authorized users.
- Beacon test commands.
- Initial self-detection of the buoy mooring position coordinates.
- Buoy real position information using WGS84, including allowed maximum swing radius.
- LED diodes and flasher failure detection.
- Power supply system failure detection.
- Broken chain detection and easy buoy localization with the coordinates in real time (with MFGPS module).
- GSM built-in or external (optional) antenna.
- MFTEL 5 software configuration.

3.3   GPS MODULE ESPECIFICATIONS (BUOYS)

- Module for the detection and synchronization with integrated antenna.
- Circuit controlled by microprocessor.
- 12 channels satellites reception module with high sensitivity.
- Time and date according to GPS satellite signal.
- Operation alarms detection in the beacon, in the power supply and buoy broken chain.
- Flashes' synchronization between beacons.
- Initial self-detection of the mooring buoy position coordinates.
- Real-time buoy position information using WGS84.
- Maximum allowed swing radius configuration to produce a broken chain alarm.

4. Monitoring

The beacon communication allows obtaining information about Status, Alarms and can receive remote signals with actions over the beacon.

Status:

- Day-night.
- Latitude, longitude and distance to the initial mooring point.
- Battery voltage (V).
- Beacon consumption power (A)
- Solar charge power accumulated in the last day (Ah/day).
- Failure in the GPS satellite signal and number of detected satellites.
- GSM mobile telephony coverage level.

Alarms:

- Beacon off.
- LED diodes failure.
- Mooring chain breaking.
- Low voltage battery.
- Flasher failure.
- Wrong flashing rhythm.
- Beacon consumption excess.
- Failure in solar module charge.
- 4 digital inputs configurable by user (Impact detector, tampering).
- Day/night and night/day status change.

User-Beacon commands:

- Buoy general status report request.
    - o Day/night, latitude, longitude, swing radius.
    - o Battery voltage, LED power.
    - o GSM and GPS signal quality.
- Remote configuration change of the MFGSM using SMS and GPRS.
- Message recipients and access rights change.
- Remote monitoring control:
    - o Beacon remote On-Off.
    - o General system reset.
    - o Flasher reset.
    - o GPS reset.
    - o Digital output activation.
    - o Operation LOG request.
    - o Date and hour configuration command (only beacons without GPS).

Optional alarms transmission methods

The beacon has 2 action modes when it detects the presence of an alarm:
- General: It sends a SMS message of alarm to the programmed recipients (5 maximum).
- Control centre: It sends SMS messages to a WEB Control Centre for the access to the data through Internet.

These working modes can be used simultaneously, so the beacon sends an SMS message to a mobile phone and to the Control Centre at the same time.

Low operation cost

- SMS text messages cost.
- Only informs in case of alarm or remote commands.
- Configurable spending limit of SMS/day maximum.
- It works with any operator with contracted SIM cards or with prepaid ones.
- Special operator's contracts (M2M type).

Security

- Authorized user passwords.
- SIM card protection with PIN code.
- Sent alarms log.
- Date and time based on GPS satellite signal.

The SMS messages sent to the Control Centre can be showed using the web server application, in which it is possible to see the status and alarms of the monitored device.

Example of the data of a beacon:

5. System configuration

The configuration of the remote monitoring system and setting of all its options is carried out through the MFTEL configuration software.

The configuration is saved in the internal memory of the MFGSM05 module through a programming cable PROG-TX(A).

The configurations made can be saved and opened later. For that purpose, the program creates files with the *.mfg extension with all the settings implemented.

The settings are made in different tabs divided in several groups:

Identification Tab:
- **Identification:** Setting of identification and passwords.
- **Recipients:** Configuration of the users and phone numbers that will receive the SMS.
- **GPS:** To program GPS if it is connected and its parameters.
- **GSM:** To program the GSM and GPRS connection data.
- **Inputs Setup:** To program the time and type of inputs.
- **Output Setup:** To program the time and type of output.

Messages Tab:
- **Alarms:** To program the alarms, their recipients, the type of transmission and if they should be sent to a control centre.
- **Messages:** To program the status of switching to day mode and to night mode.

5.1   IDENTIFICATION WINDOW

Identification settings, passwords and main system parameters.

Identifier	Name that will be in the received message to identify the beacon
Hw	Hardware version of the device.
Fw	Firmware version of the device.
No. Station	Identification number of the beacon for the Web Control Centre
Control centre access key	Key for the transmission of messages from the control centre. The module will answer with the numeric protocol to the messages sent with this key.
User access key	Key for the transmission of messages from phone numbers. The module will answer with easy-to-read alphanumeric message to the messages sent with this key.
Notes	Notes field to identify, remind or tag the configuration (for the programmer).

5.2 GSM SERVICE SETTINGS WINDOW

The GSM window allows us to carry out the settings of the adequate GSM and GPRS connection for the phone line and the operator in use.

PIN	SIM PIN.
PUK	SIM card PUK.
APN	GPRS service APN.
GPRS user	GPRS service user.
GPRS Password	GPRS service password.
GPRS server IP	GPRS connection gateway IP.
T.ON-OFF GSM (*)	Time in which the GSM modem is on/off (**).
GPRS Port	GPRS connection gateway port.
Max. SMS per day	Maximum number of messages per day. The remote commands received will always be answered and this
Band	GSM service band of the country.

- (*) The MFGSM circuit remains always active monitoring the different beacon elements (flasher, LEDs, GPS, external inputs) and GSM telephony module only will be activated in case it needs to send some alarm or during the ON-GSM time for receiving messages and users queries.
- (**) The addition of the ON-GSM and OFF-GSM times must be equal to 30 minutes (e.g. 20 ON + 10 OFF). This allows knowing when we have a communication window opened in real-time (at the beginning of one hour and each half an hour).

5.3 GPS

The GPS window allows carrying out the settings of the GPS receptor to select the formats of the coordinates and seasonal and time zone settings.

With GPS Module activated.

GPS module	YES: GPS active (for buoys). GPS position and time detection NO: GPS NOT installed (in land). Time configuration manually with a remote command.
Swing radius	Distance from which the alarm of broken chain will be activated.
GPS format	Coordinates visualization mode in WGS84: - Degrees, decimal degrees (X.XXXXº). - Degrees, Minutes and Decimal minutes (XXº XX.XXXX'). - Degrees, Minutes, Seconds and Decimal seconds (XXº XX' XX.XX'').
Time resending	Time between transmissions of the alarm of broken chain, with the new detection of position to facilitate the search.
Maximum distance	Safety distance to dismiss erroneous measurements of the GPS position.

With GPS Module deactivated

Month hour forward	Month in which the hour changes forward. Change to summer time (According to each country).
Month hour backward	Month in which the hour changes backward. Change to winter time (According to each country).
Hour time change	Hour in which the change Summer/Winter time happens.
Minute time change	Minute in which the change Summer/Winter time happens.
Time zone	Time zone of the location of the beacon.

5.4   SMS RECIPIENTS CONFIGURATION

Configuration of SMS messages recipient users and mobile phone numbers.
In this window, we will set up all the users authorized to communicate with the beacon.

RECIPIENTS	Name	Number	Description
Recipient 1	TECNICO 1	+34123456789	
Recipient 2	TECNICO 2	+34987654321	
Recipient 3			
Recipient 4			
Recipient 5			
Recipient 6			
Recipient 7			
Recipient 8			
Recipient 9			
Recipient 10			
Modem 1	CENTRO CONTROL	+34123456789	
Modem 2			

> **IMPORTANT**
> - Phone numbers must be preceded by the country prefix (+34 in Spain).
> - You can use recipient phone numbers in any format and number of digits.
> - Do not use accents or special characters ($%&/()=?¿ª!).

5.5   VOICE MISSED CALLS TO MAKE A STATUS REQUEST

A voice call to the beacon allows receiving as an answer a beacon status SMS message.
In a received voice call, the MFGSM identifies the caller telephone number and it checks if it is in the recipient list. If yes, it will answer with a beacon status SMS message.

This method allows the communication with the beacon in a fast and cheap way, because it avoids the cost of a message of status request.

Only the 10 Recipients configured are authorized to make missed calls to make a status request. Other users must know the password and send a status request command. If you use the public mode, any caller will be able to receive status SMS messages.

5.6   ALARM TRANSMISSION CONFIGURATION

The alarm window allows the setting of alarm messages, and their recipients.

You can select up to 5 recipients and 2 modems of control centre.
If we do not want to use a specific alarm, then we will not select any recipients.

ACTIVATION MESSAGE	Text sent in the SMS message when the alarm is activated.
DEACTIVATION MESSAGE	Text sent in the SMS message when the alarm is deactivated.
RECIPIENT 1 TO 10	Recipient in the contact list for each alarm.
CONTROL CENTRE	If the boxes are checked it will send the messages to the control centre 1 or 2, o□ ☑□ n.

5.7   MESSAGES TRANSMISSION CONFIGURATION

The message window allows the configuration of the Day/Night messages.

You can select up to 5 recipients and 2 modems (if there is a Control Centre).
If the use of any message is not needed, then we will not select any recipients.

The SMS format of communications with the control centre is totally numeric and is described in the Annex 2- Control Center Protocol.

Once all parameters are set, we can save the configuration in MFTEL parameter format with the *.mfg extension and save the desired configuration.

5.8   EXTERNAL INPUTS AND OUTPUT CONFIGURATION

The setup window allows configuring the external digital inputs and the digital output logic:

The 4 digital inputs can be configured as follows:
-    NO: Normally open: It sends an alarm SMS message when the input is activated.
-    NC: Normally closed: It sends an alarm SMS message when the input is deactivated.
The inputs activation can be delayed from 1 to 99 seconds.
They can be configured as follows:
-    Bi-stable: it sends a message when activated and deactivated.
-    Mono-stable: it only sends a message when activated.
The digital output can be configured as follows:
-    NO: Normally open: It sends an alarm SMS message when the input is activated.
-    NC: Normally closed: It sends an alarm SMS message when the input is deactivated.
The output activation can be delayed from 1 to 99 seconds.

5.9   GPRS CONNECTION

To access the configuration of the module remotely a GPRS connection through the MFTEL software can be used.
To open this connection, we go to the tab of configuration.
We will set the data of the gateway. If you are going to use this service kindly contact with MSM to request your GPRS gateway data.

Port	Gateway connection port.
Time left	Time remaining for the connection closed. (minutes)
Timeout (min.)	Time for the connection to fail (minutes).
Gateway address	GPRS connection gateway IP address.
Connect to GPRS gateway	
Extract MF12 configuration with GPRS	Will extract MF12 configuration.
Upload MF12 configuration with GPRS	Will upload MF12 configuration
Read LOG with GPRS	Read internal LOG.
Reset LOG with GPRS	Reset internal LOG.
Read parameters with GPRS	Read the MFGSM parameters with GPRS.
Write parameters with GPRS	Write the MFGSM parameters.
Port	Gateway connection port.

PROCEDURE OF GPRS CONNECTION

- 1: To establish the GPRS connection, press the button "Connect to GPRS Gateway" and a window with the GPRS Connection Key opens.
- 2: We send by SMS message to the beacon a command of CHANGE TO GPRS that includes the new GPRS Connection Key generated by the MFTEL software. To check the format, kindly refer to item 6.10.
    It will answer correct connection and the MFTEL software will show that the connection is active.

Once established this connection, you can read and write the configuration of the MF12 flasher and MFGSM05 circuit.

5.10 Read and write MFGSM parameters:

We press the button "Read GSM parameters" and start downloading the MFSGM configuration. Once downloaded, it will show us the parameters in the program. We can change what we need and we will press "Write GSM parameters" and start sending the parameters.

5.11 Read and write the MF12 parameters:

We press the button "Extract MF12 configuration" and start receiving the MF12 configuration. Once finalized, a window will open to save the configuration file. Once saved, we will open the software MFCOM.net 4.5.5. We will open the communications tab and press on the button "Open attachment", we select the file we have just downloaded, *.mfbin, with the MFTEL and it will show us the parameters in the program.
To write the parameters, in the MFCOM.net, we will press "Save attachment". If we do not first read a MF12 it will not allow us to save the attachment. Once saved, we will go to the MFTEL, we will connect with GPRS if not already connected, and we will press the button "Upload MF12 configuration".

5.12 Read and reset internal LOG

To download the internal LOG, we will press the button "Read LOG with GPRS" and we will download the LOG that the MFTEL shows us. With the button "Reset LOG with GPRS" we will reset the internal LOG.
The LOG reset is only advisable if we have just installed the beacon or we just have changed one of the parameters and we would like to see its operation. If we reset in an aleatory way, in the future when faced with a failure, we will not be able to analyse correctly the operation of the MFGSM module.

6. Telephony cards adjustment and selection

The SIM mobile phone card can belong to any operator and it can be under contract or prepaid mode.

> **IMPORTANT**
> - SIM card must have the voice mail deactivated and the missed call identification service activated. Check with the different operators the codes or numbers required.

The PIN Code must be modified to the PIN code used by default by the MFGSM (1111).

If we desire to employ a different PIN, we must configure the MFGSM to access to the SIM with a correct PIN.
Kindly refer to item 4.2.

7. Control Commands

7.1 STATUS REQUEST COMMAND

The "STATE" command allows interrogating the beacon to receive a report message with the installation general status data:

- Day/Night status.
- Latitude, longitude, swing radius and GPS signal quality.
- Battery voltage.
- LEDs current consumption.
- GSM signal level RSSI.

Password (Max. 14 digits)
'!'
REQUEST
'='
' (simple inverted comma)
STATE
' (simple inverted comma)

For example: *CANDELAS!REQUEST='STATE'*

You can also make a status request with a simple missed call to the beacon's phone number. The beacon will identify the caller number and it will answer with a SMS message only if the number is one of the 10 authorized users written in the SIM card.

Below you can see a real message sent by a beacon with GSM as an answer to the status command.

Example of status message:

MCL200-MFGMS05!OK='STATE' 22/01/19 00:10 LAT=39*35.1292'N LONG=000*31.8923'W

QGPS=01.8 METERS=00009 NIGHT 12.46V 00.17A 00.0Ah RSSI=10

Beacon Name · Status · Date and Time · GPS Position · GPS Quality · Swing Radius · Day/Night · Battery Voltage · Beacon Current · Solar Current (Accumulated) · GSM Coverage
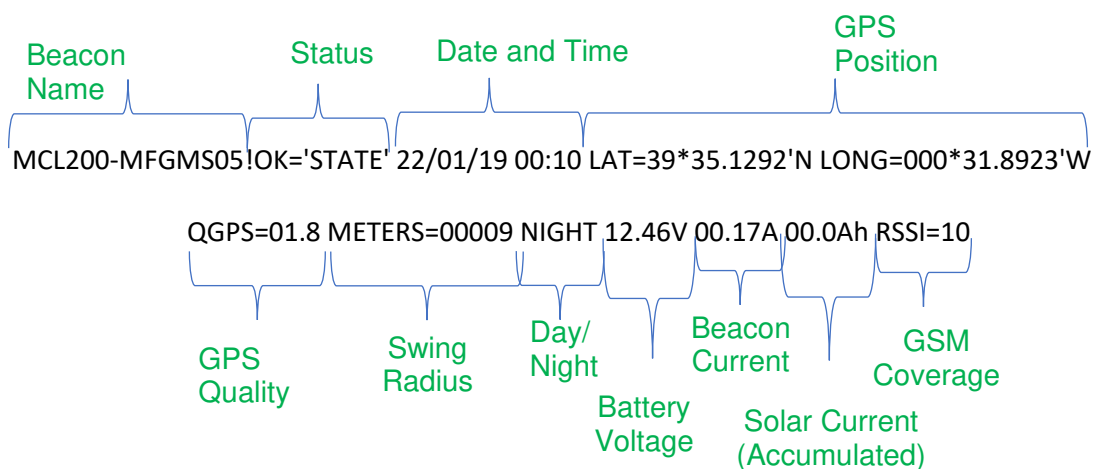
7.2   REMOTE CONTROL COMMAND

It allows sending commands to the beacon to perform actions about the working or system reset:

Password (Max. 14 digits)
'!'
TELECOMMAND
'='
' (simple inverted comma)
DEVICE TO CONTROL MF12 MFGPS MFGSM SD1
'='
ACTION
'(simple inverted comma)

If the recipient of the remote command is MF12 flasher:

Code	Action to do
0	Force MF12 to day. OFF
1	Force MF12 to night. ON
2	We leave it in function of the photocell.
3	Make a MF12 reset.

If the recipient of the remote command is MFGPS:

Code	Action to do
0	New self-detection of initial position coordinates.

If the recipient of the remote command is MFGSM:

Code	Action to do
0	System complete reset.
1	Blocks sending SMS.

If the recipient of the remote command is the Digital Output (SD1):

Code	Action to do
0	Output disconnection.
1	Output activation.

Example: If we want to force the MF12 to day mode ... write:

CANDELAS!TELECOMMAND='MF12=0'

If we want to make a new GPS position self-detection:
<div align="center">**CANDELAS!TELECOMMAND='MFGPS=0'**</div>

> **!** **IMPORTANT**
>
> - The SELF-DETECTION command is necessary after mooring the buoy for a precise initial GPS position detection.

If we want a total reset of all beacon elements, we write:

<div align="center">**CANDELAS!TELECOMMAND='MFGSM=0'**</div>

7.3 RESPONSE TO REMOTE CONTROL COMMANDS

The remote control commands allows carrying out actions on the beacon, which confirmation is done through a SMS reply that informs us of the obtained result.

Those auto replies allow us to verify that the remote control SMS has been received and implemented correctly by the remote-controlled beacon.

Identifier
'!'
TELECOMMAND
'='
' (simple inverted comma)
Recipient of the remote control command:
MF12
MFGPS
MFGSM
'='
Action carried out
' (simple inverted comma)
' ' (Space)
Result of the operation:
Correct
Error
Impossible
Unknow
' ' (Space)
Date

Example: **MCL200-MFGMS05!TELECOMMAND='MFGSM=0' CORRECT 17/01/19 16:49**

7.4 PARAMETERS READING COMMAND
The command READING allows us consulting the parameters remotely through a simple message, without needing to move for the configuration of the beacon.
The format of the message is:

Password (Max. 14 digits)
'!'
READ
'='
Parameter 1 number (see item 8)
'/'
Parameter 2 number (see item 8)
'/'
……
'/'
Parameter 4 number (see item 8)
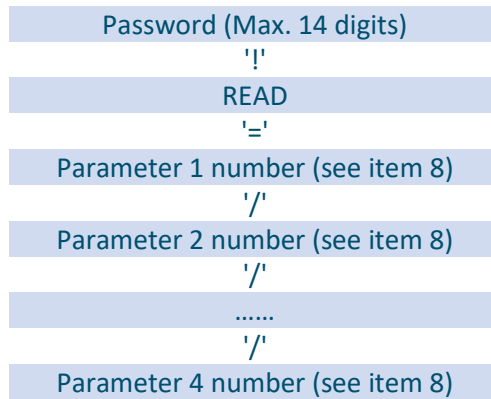
In one single message you can consult from 1 parameter to a maximum of 4.

Example: *CANDELAS!READ=001/045/067/101*

As confirmation of the reception of the message the beacon (MCL200-MFGSM05) sends us an auto reply with the following format:

Memory Position

MCL200[C2]-MFGMS05!READING:001/IGNACIO/045/WRONG FLASH/067/10/101/+01:00/

Parameter value
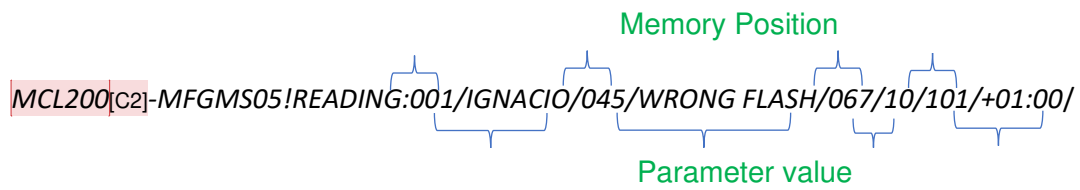
7.5   PARAMETER SETTING COMMAND

This command allows us to change the configuration of the GSM remote module through a SMS, without needing to go to the beacon.

Password (Max. 14 digits)
'!'
WRITE
'='
Parameter number (see item 8)
'/'
Parameter value
'/'
……
'/'
Parameter 4 number (see item 8)
Parameter 4 value
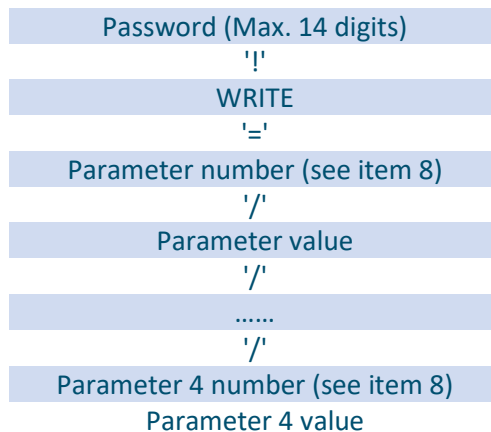
In one single message you can consult from 1 parameter to a maximum of 4.

Example: *CANDELAS!WRITE=009/TECNICO_1/010/+34123456789*

As a confirmation of the reception of the message the beacon (MCL200-MFGSM05) sends us an auto reply with the following format:

MCL200-MFGMS05!WRITE=009/010=OK

7.6   TIME/CALENDAR CONFIGURATION COMMAND

This command allows us to configure remotely a beacon without a GPS receptor circuit.

Password (Max. 14 digits)
'!'
HOUR
'='
' (simple inverted comma)
DAY (In 2 digits).
'_'
MONTH (In 2 digits).
'_'
YEAR (In 2 digits).
' ' (Space)
HOUR (In 2 digits 24h format).
' . '
MINUTE (In 2 digits).
' (simple inverted comma)

Example: *CANDELAS!HOUR='19-01-08 12:30'*

This message can only be taken into account by the MFGSM when there is no GPS module. In case the GPS module is activated in the configuration it will send an ERROR message.

WITHOUT GPS MODULE: *MCL200-MFGMS05!HOUR='MFGSM=1' CORRECT 17/01/19 17:01'*

WITH GPS MODULE: *MCL200-MFGMS05!HOUR='MFGSM=1' IMPOSSIBLE 22/01/19 00:41'*

7.7   IO STATUS request command

With this message we can ask the MFGSM to give us the state of alarms and status.

Password (Max. 14 digits)
'!'
REQUEST
'='
' (simple inverted comma)
STATE IO
' (simple inverted comma)

Example: *CANDELAS!REQUEST='STATE IO'*

The MFSGM answers with a message with the state of the status and alarms as indicated in the table below:

Identifier	
'!'	
OK	
'='	
' (simple inverted comma)	
STATE	
' (simple inverted comma)	
' ' (Space)	
Date and time SMS sent (DD/MM/YY HH:MM)	
' ' (Space)	
STATE1 (ALARMS) (YES=1 ; NO=0)	Alarm Broken Chain Alarm Low Battery Alarm Light Off Alarm High solar module consumption Alarm High LEDs consumption Alarm MF12 Communication Failure Alarm Wrong Flash Alarm External input 1
STATE2 (ALARMS) (YES=1 ; NO=0)	Alarm External input 2 Alarm External input 3 Alarm External input 4
STATE3:	Bit 0: Day/night (Night=0 ; Day=1) Bit 1: MF12 forced night (YES=1 ; NO=0) Bit 2: MF12 forced day (YES=1 ; NO=0) Bit 3: Output 1 (1=ON ; 0=OFF)

Example: *MCL200-MFGMS05!OK='IO STATE' 22/01/19 08:48 STATE1(Alarms):00000000*
STATE2(Alarms):000 STATE3:1000

7.8 READING FORMAT OF THE INTERNAL LOG BY SMS

The MFGSM module has an internal LOG that stores important data on its operation. This LOG is not erased even if it is without power, it is only erased if reset via SMS or via MFTEL.

Password (Max. 14 digits)
'!'
LOG

Example: *CANDELAS!LOG*

The module sends us a reply with the information of the LOG with the following format.

Identifier
'!'
LOG
'='
Quantity of resets of the MFGSM05 (10 digits)
Hours in service MFGSM05 (10 digits) h
0000000000 (10 digits)
Vmax MF12 (XX.xx) V
Vmin MF12 (XX.xx)V
Tmax MF12 (XXX) ºC
Tmin MF12 (XXX) ºC
Taverage MF12 (XXX) ºC
Quantity communications failure MF12 (10 digits)
Average GPS Satellites (XX)
Quality average GPS Satellites (XX.x)
Quantity communications failure MFSINC (10 digits)
Q GSM max. (XX)
Q GSM min (XX)
Q GSM average (XX)
Quantity GSM coverage failure (10 digits)

Example: *MCL200-MFGMS05!LOG='MCL200-MFGMS05035 0000000038 0000000139 0000000000 13.34 05.04 047 009 016 0000000035 06 0.0 0000000002 17 00 11 0000000000*

7.9 INTERNAL LOG RESET FORMAT VIA SMS

This command will reset the internal LOG of the module. It is advisable to do this reset to the beacon when it is installed at its final location, therefore we erase the data generated in previous tests and will obtain true data of its behavior at installation.

Password (Max. 14 digits)
'!'
RESET LOG

Example: *CANDELAS!RESET LOG*

The module will send us as a reply a LOG with reset values.

7.10 ORDER CHANGE TO GPRS FORMAT

This format will make the MFGSM to go into EMAIL mode. This mode is used to connect remotely to the module through GPRS and set up the parameters.

Password (Max. 14 digits)
'!'
GPRS
'='
PC Software Key

Example: **CANDELAS!GPRS=12345**

Software key: This key is given by the software MFTEL. We have to introduce the key given by the MFTEL software for safety. Without this key, the connection GPRS will not happen.

Example: **MCL200-MFGMS05!GPRS=CORRECT/12345**
MCL200-MFGMS05!GPRS=IMPOSSIBLE/12345 Error Password

7.11 ALARMS TRANSMISSION FORMAT

MFGSM can send up to 11 different alarms that can be configured individually.
The message that it is sent in the SMS message as well as the recipient can be edited in the MFTEL program.
The alarm SMS message format is as follows:

Password (Max. 14 digits)
' ' (Space)
SMS Date and Time (DD/MM/YY HH:MM)
' ' (Space)
' (simple inverted comma)
Alarm message (28 characters max.)
' (simple inverted comma)
' ' (Space)
' (simple inverted comma)
Data (if necessary)
' (simple inverted comma)

Example: **MCL200-MFGMS05 30-07-12 10:00 'BATTERY LOW ALARM' '11,09V'**
MCL200-MFGMS05 20/01/19 17:54 'LIGHT OFF'

8. Synchronizer mode

The MFGPS satellite receptor circuit allows knowing the position, date and time and also allows synchronization between multiple beacons that have the same flash rhythm.

This function allows a better identification of groups of beacons to produce simultaneous flashes, alternate or sweeps as desired.

9. SIM remote programming

The configuration of the remote command system is made with MFTEL program, programming the content of internal memory of the MFGSM module.
This initial configuration can be modified later remotely, with a remote command of writing of parameters and through GPRS connection.
The following table shows the memory positions written by the program MFTEL.

PARAMETER	SMS Number Parameter	Bytes	Range and Description
Hardware and Firmware	0	8	Hardware (2 characters) Subhardware (2 characters) Firmware (2 characters) Subfirmware (2 characters)
Recipient 1	1	14	The unused "gaps" will be written as spaces
Phone number Recipient 1	2	14	The unused "gaps" will be written as spaces
Recipient 2	3	14	The unused "gaps" will be written as spaces
Phone number Recipient 2	4	14	The unused "gaps" will be written as spaces
Recipient 3	5	14	The unused "gaps" will be written as spaces
Phone number Recipient 3	6	14	The unused "gaps" will be written as spaces
Recipient 4	7	14	The unused "gaps" will be written as spaces
Phone number Recipient 4	8	14	The unused "gaps" will be written as spaces
Recipient 5	9	14	The unused "gaps" will be written as spaces
Phone number Recipient 5	10	14	The unused "gaps" will be written as spaces
Recipient 6	11	14	The unused "gaps" will be written as spaces
Phone number Recipient 6	12	14	The unused "gaps" will be written as spaces
Recipient 7	13	14	The unused "gaps" will be written as spaces
Phone number Recipient 7	14	14	The unused "gaps" will be written as spaces
Recipient 8	15	14	The unused "gaps" will be written as spaces
Phone number Recipient 8	16	14	The unused "gaps" will be written as spaces
Recipient 9	17	14	The unused "gaps" will be written as spaces
Phone number Recipient 9	18	14	The unused "gaps" will be written as spaces
Recipient 10	19	14	The unused "gaps" will be written as spaces
Phone number Recipient 10	20	14	The unused "gaps" will be written as spaces
Control Centre 1	21	14	The unused "gaps" will be written as spaces
Phone number Control Centre 1	22	14	The unused "gaps" will be written as spaces
Control Centre 2	23	14	The unused "gaps" will be written as spaces

Phone number Control Centre 2	24	14	The unused "gaps" will be written as spaces
Description Recipient 1		28	Additional information for the user
Description Recipient 2		28	Additional information for the user
Description Recipient 3		28	Additional information for the user
Description Recipient 4		28	Additional information for the user
Description Recipient 5		28	Additional information for the user
Description Recipient 6		28	Additional information for the user
Description Recipient 7		28	Additional information for the user
Description Recipient 8		28	Additional information for the user
Description Recipient 9		28	Additional information for the user
Description Recipient 10		28	Additional information for the user
Description Control Centre 1		28	Additional information for the user
Description Control Centre 2		28	Additional information for the user
Message activation "Alarm Broken Chain"	25	28	
Message deactivation "Alarm Broken Chain"	26	28	
Recipients "Alarm Broken Chain"	27	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient "Alarm Broken Chain"	28	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			    0 => NO
			    1 => YES

Message activation "Alarm Low Battery"	29	28	
Message deactivation "Alarm Low Battery"	30	28	
Recipients "Alarm Low Battery"	31	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient "Alarm Low Battery"	32	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			    0 => NO
			    1 => YES

Message activation "Alarm Light off"	33	28	
Message deactivation "Alarm Light off"	34	28	
Recipients "Alarm Light off"	35	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient "Alarm Light off"	36	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			    0 => NO
			    1 => YES

Message activation "High LEDs consumption"	37	28	
Message deactivation "High LEDs consumption"	38	28	
Recipients "High LEDs consumption"	39	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient "High LEDs consumption"	40	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			   0 => NO
			   1 => YES

Message activation "Communications failure with MF12"	41	28	
Message deactivation "Communications failure with MF12"	42	28	
Recipients "Communications failure with MF12"	43	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient "Communications failure with MF12"	44	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			   0 => NO
			   1 => YES

Message activation "Alarm wrong flash"	45	28	
Message deactivation "Alarm wrong flash"	46	28	
Recipients "Alarm wrong flash"	47	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient "Alarm wrong flash"	48	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			   0 => NO
			   1 => YES

Message activation "Alarm external input 1"	49	28	
Message deactivation "Alarm external input 1"	50	28	
Recipients "Alarm external input 1"	51	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient
Control Centre Recipient "Alarm external input 1"	52	2	Character 0 => First Control Centre Character 1 => Second Control Centre

|			0 => NO 1 => YES
Message activation "Alarm external input 2"	53	28	
Message deactivation "Alarm external input 2"	54	28	
Recipients "Alarm external input 2"	55	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient
"Alarm external input 2"
	56	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			   0 => NO
			   1 => YES

Message activation "Alarm external input 3"	57	28	
Message deactivation "Alarm external input 3"	58	28	
Recipients "Alarm external input 3"	59	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient
"Alarm external input 3"
	60	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			   0 => NO
			   1 => YES

Message activation "Alarm external input 4"	61	28	
Message deactivation "Alarm external input 4"	62	28	
Recipients "Alarm external input 4"	63	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient
"Alarm external input 4"
	64	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			   0 => NO
			   1 => YES

Information "Change Night to Day"	65	28	
Recipients "Change Night to Day"	66	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient

Control Centre Recipient
"Change Night to Day"
	67	2	Character 0 => First Control Centre
			Character 1 => Second Control Centre
			   0 => NO
			   1 => YES

Information "Change Day to Night"	68	28	

Recipients "Change Day to Night"	69	10	Characters 0 and 1 => 1st Recipient Characters 2 and 3 => 2nd Recipient Characters 4 and 5 => 3rd Recipient Characters 6 and 7 => 4th Recipient Characters 8 and 9 => 5th Recipient
Control Centre Recipient "Change Day to Night"	70	2	Character 0 => First Control Centre Character 1 => Second Control Centre 0 => NO 1 => YES
Access key "Person SMS"	71	14	The unused "gaps" will be written as spaces
Identifier	72	14	
No. Station	73	3	Identifier for the Control Centre (0-999)
Maximum quantity of SMS / DAY	74	2	(0-99)
GPS position extraction	75	1	0=> Degrees, decimal degrees (X,XXXX*) 1=> Degrees, Minutes and decimal minutes (XX* XX.XXXX') 2=> Degrees, Minutes, Seconds and decimal seconds (XX* XX' XX.XX'')
Operation external input	76	1	0= Bi-stable 1= Mono-stable Bit 0 => External input 1 Bit 1 => External input 2 Bit 2 => External input 3 Bit 3 => External input 4
Swing radius	77	3	Meters (1-999)
Time activation external input 1	78	3	(1 unit= 100 msg) (0-99,9) seconds
Time activation external input 2	79	3	(1 unit= 100 msg) (0-99,9) seconds
Time activation external input 3	80	3	(1 unit= 100 msg) (0-99,9) seconds
Time activation external input 4	81	3	(1 unit= 100 msg) (0-99,9) seconds
External input status	82	4	0= Normally open 1= Normally closed Character 0 => External input 1 Character 1 => External input 2 Character 2 => External input 3 Character 3 => External input 4
GSM band selection EGSM_MODE => Extended GSM-900 Band (includes Standard GSM-900 band) DCS_MODE => GSM-1800 Mhz GSM850_MODE => GSM-850 Mhz PCS_MODE => (Personal Communications Service) 1900Mhz EGSM_DCS_MODE => (900Mhz+1800Mhz) GSM850_PCS_MODE:(850Mhz+190	83	8	Character 0=>EGSM_MODE Character 1=>DCS_MODE Character 2=>GSM850_MODE Character 3=>PCS_MODE Character 4=> EGSM_DCS_MODE Character 5=> GSM850_PCS_MODE Character 6=> EGSM_PCS_MODE Character 7=> ALL_BAND 0 => OFF 1 => ON

0Mhz) EGSM_PCS_MODE:(900Mhz+1900 Mhz) ALL_BAND			
PIN code	84	4	
PUK code	85	8	
GSM ON time	86	3	(0-255) minutes
GSM OFF time	87	3	(0-255) minutes
Time transmission broken mooring chain	88	3	(0-255) minutes
GPS Module	89	1	0 => If there is no module 1=> If there is a module
Output configuration	90	1	0= Normally open 1= Normally closed
Output timing	91	5	If value is 0 => Fixed output status. If value is != 0 => Timed output status Up to 9999,9
APN	92	28	
GPRS user	93	14	
GPRS password	94	14	
GPRS IP Server	95	28	
GPRS Port Server	96	5	
Note 1		14	
Note 2		14	
Note 3		14	
Note 4		14	
Month Hour Forward	97	2	0 => If there is no time change 1 to 12 (January to December)
Month Hour Backward	98	2	0 => If there is no time change 1 to 12 (January to December)
Hour time change	99	2	0-23
Minute time change	100	2	0-59
Timezone	101	6	- 11:MM / +13:MM
Maximum distance (m) to give broken mooring chain alarm	102	4	0-9999 metres
Control Centre Access Key	103	14	The unused "gaps" will be written as spaces

10. Selection of work modes (Minidips)

The 4 MINIDIPs allow selecting the work mode of the MFGSM05 circuits.
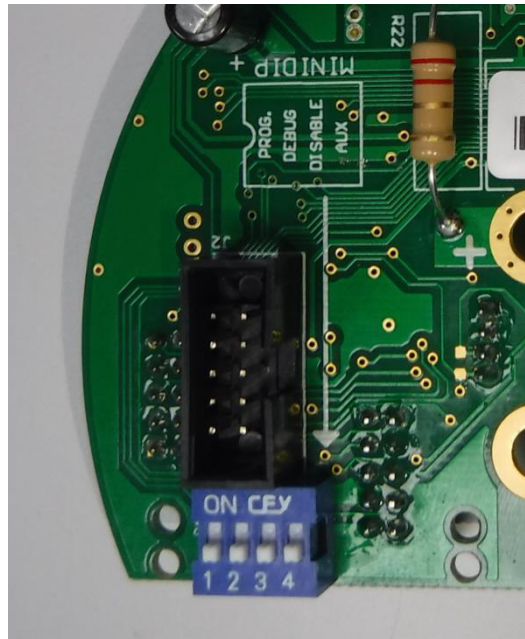
MINIDIP 1 Firmware Programming Mode:
> This switch is only used to program the firmware of the device. If we set it to 1 the MFGSM will not start.

MINIDIP 2 Debug Mode:
> With this minidip we start the debug mode. In this mode, the MFGSM, through Hyperterminal, will give us information of all the actions that it is carrying out internally.

MINIDIP 3 Programming Mode:
> If we put this minidip ON, we open the mode of parameter programming. If it is activated the module does not start the GSM modem and only remains listening the programming serial port.

MINIDIP 4 Free switch:
> This switch has no function at the moment.

IMPORTANT

The **Normal Mode** of operation of the MFGSM05 requires turning the 4 **MINIDIPs** OFF as shown in the picture above.

If the MFGSM device is NOT used (do not put a SIM card), this must be BLOCKED, setting the MINIDIP 3 on ON, to avoid a HIGH CONSUMPTION of the beacon (especially in self-contained lanterns, since it would discharge the battery).

11. SMS Remote Commands

	REMOTE COMMAND	MESSAGE FORMAT	EXAMPLE	RESULT
1	STATUS QUERY	PASSWORD!INTERROGATE='STATE'	CANDELAS!INTERROGATE='STATE'	SMS with general information on the status of the beacon.
2	RESET FLASHER	PASSWORD!TELECOMMAND='MF12=3'	CANDELAS! TELECOMMAND ='MF12=3'	Reset of the beacon's flasher.
3	FORCE ON	PASSWORD!TELECOMMAND='MF12=1'	CANDELAS!TELECOMMAND='MF12=1'	Maintains the beacon ON
4	FORCE OFF	PASSWORD!TELECOMMAND='MF12=0'	CANDELAS!TELECOMMAND='MF12=0'	Maintains the beacon OFF.
5	NORMAL MODE	PASSWORD!TELECOMMAND='MF12=2'	CANDELAS!TELECOMMAND='MF12=2'	Recovers normal mode with control by photocell.
6	GENERAL RESET	PASSWORD!TELECOMMAND='MFGSM=0'	CANDELAS!TELECOMMAND='MFGSM=0'	General reset of all the circuits.
7	COORDINATES DETECTION	PASSWORD!TELECOMMAND='MFGSM=0'	CANDELAS!TELECOMMAND='MFGSM=0'	Self-detection of the initial mooring coordinates.
8	SMS BLOCKING	PASSWORD!TELECOMMAND='MFGSM=1'	CANDELAS!TELECOMMAND='MFGSM=1'	Blocks the transmission of SMS from the beacon to recipients. Only auto reply.
9	GPS RESET	PASSWORD!TELECOMMAND='MFGPS=0'	CANDELAS!TELECOMMAND='MFGPS=0'	Reset of the GPS circuit.
10	READ PARAMETERS	PASSWORD!READING=Nº PARAMETER/Nº PARAMETER.../Nº PARAMETRO	CANDELAS!READING=001/069/.../101	SMS with the parameters of the position queried. Maximum 4 in a same message.
11	WRITE SIM CONTACT LIST	PASSWORD!WRITING=Nº PARAMETER/VALUE/Nº PARAMETER/VALUE/....	CANDELAS!WRITING=001/TECNICO1/101/25/...	SMS with the confirmation that the position queried has been recorded properly.
12	ADJUST. WATCH/CALEN.	PASSWORD!HOUR='19-01-08 12:30'	CANDELAS!HOUR='19-01-08 12:30'	Adjusts the clock of the MFGSM to date and hour: 19-01-08 12:30.

12. Terms of responsibility

MSM warrants the purchaser that the product supplied is free of defects from materials or workmanship, and agrees to replace it in case of defects from materials and / or manufacture. To ensure that the product is not damaged during transport and replacement, it is highly recommended that the product is returned in the same package with which it was delivered.

The MFGSM05 warranty is provided in the Conditions of Sales, Warranty and Technical Support.

Warranty does not cover:
  a) Failure to carry out regular maintenance tasks. This includes the tasks described in section of maintenance, such as cleaning, internal reviews or hardware lubrication.
  b) Damage due to wrong handling, transport or storage and faulty/improper installations.
  c) Use of abrasive products and not recommended, such as solvents, or alcohols.
  d) Use of parts other than the originals. The use may damage the functions the product was designed for initially. Therefore they can only be used after conformity of MSM.

If corrosion appeared within the product warranty period, subject to the above limitations, MSM will replace all parts with such corrosion.

Since the use of the product and maintenance conditions are outside the control of MSM, MSM will not accept any compensation for loss, damage or costs others than the replacements in the cases cited above.

For repairs and inquiries, contact MSM, as follows:

Mediterráneo Señales Marítimas, S.L. / ☎ +34 96 276 10 22 / ✉ msm@mesemar.com / **www.mesemar.com**

MSM

1. DRAWINGS

CONNECT TO
TEL PORT
DEL MF12

MINIDIP

PC

C28

PROG.
DEBUG
DISABLE
AUX

MINIDIP

MSM

R22

MFSINC

J1

C27

C29

SIMCARD

COMUN

J5

COMMON

E4 ── IN4
E3 ── IN3
E2 ── IN2
E1 ── IN1

MFGSM05 HW5-2

C20

OUT1

SD1

+

ANTENNA

PRO24-7

MFGSM05
HW: 5.2   FW: 3.7

ING
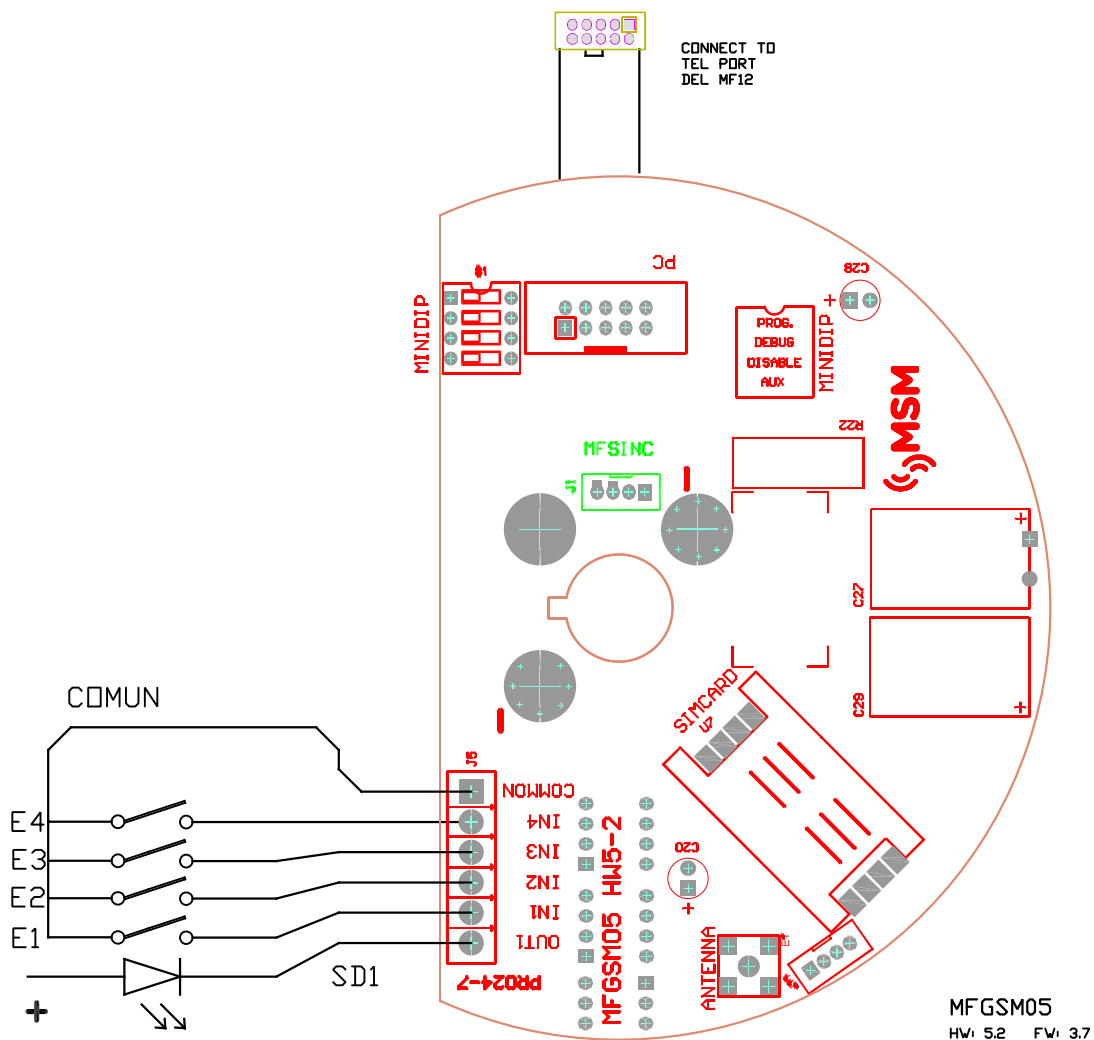
DIGITAL SIGNALS	
MFGSM05	

REF	MFGSM05-M2	REV.	01

MSM
MEDITERRANEO SEÑALES MARITIMAS S.L.
VALENCIA - ESPAÑA.   www.mesemar.com

2. PROTOCOL

	SIGNAL	DIGITS	EXAMPLE	POSITION	UNITS
0	ID heading	XXXXXX	MFGSM2	start	
1	No. of Remote Station of origin	XXX	110	1-3	--
2	Day	XX	09	5-6	Day
3	Month	XX	04	8-9	Month
4	Year	XX	08	11-12	Year
5	Hour	XX	12	14-15	Hour
6	Minute	XX	24	17-18	Minute
7	Seconds	XX	36	20-21	Second
8	Latitude degrees	XX	43	23-24	Degrees WGS84
9	Latitude minutes	XX.XXXX	12.8573	26-32	minutes WGS84
10	Latitude (N or S)	X	1=north 3=south	34	--
11	Longitude degrees	XXX	5	36-38	degrees WGS84
12	Longitude minutes	XX.XXXX	09.3273	40-46	minutes WGS84
13	Longitude (E or W)	X	2=east 4=west	48	--
14	Number of satellites	X	6	50	--
15	Quality GPS signal	XX.X	04.0	52-55	--
16	Meters from origin	XXXX	34	57-60	METERS
17	**State 1 (Alarms)**	XXX	248	62-64	Decimal
	Alarm Broken chain (YES=1 ; NO=0)	1			
	Alarm Low battery (YES=1 ; NO=0)	2			
	Alarm Light off (YES=1 ; NO=0)	4			
	Without use	8			
	Alarm High LED consumption (YES=1 ; NO=0)	16			
	Alarm MF12 communication failure (YES=1 ; NO=0)	32			
	Alarm Wrong flash (YES=1 ; NO=0)	64			
	External input 1 (YES=1 ; NO=0)	128			
18	**State 2 (Alarms)**	XXX	004	66-68	Decimal
	External input 2 (YES=1 ; NO=0)	1			
	External input 3 (YES=1 ; NO=0)	2			
	External input 4 (YES=1 ; NO=0)	4			
	FREE	8			
	FREE	16			
	FREE	32			
	FREE	64			
	FREE	128			
19	**State 3 (Status)**	XXX	000	70-72	Decimal
	Night=0 ; Day=1	1			
	Bits 2 and 1 (value 4 and 2)=> Extended1 distance	2			
	0 0 (0) => Distance in m nominal				
	0 1 (2) => Distance in m nominal x10				
	1 0 (4) => Distance in m nominal x100				
	1 1 (6) => Distance in m nominal x1000	4			
	Bit 3 (value 8)=> Extended1 temperature				
	0 => Positive temperature				
	1 => Negative temperature	8			
	MF12 forced Night	16			
	MF12 forced Day	32			
	FREE	64			
	FREE	128			
20	Battery Voltage	XX.XX	12.63	74-78	V
21	Current LEDs	X.XX	1.26	80-83	A
22	Current Solar Panel	XX.X	26.3	85-88	Ah/day
23	Temperature	XX	26	90-91	ºc
24	Flashing rhythm period	XX.X	05.0	93-96	Seconds
25	RSSI (GSM coverage)	XX	16	98-99	--
26	**Confirmation of the sms sent**	X	3	101	--
	0 => No confirmation of ssms				
	1 => Confirmation sms writing in memory				
	2 => Confirmation sms status request				
	3 => Confirmation remote command				
	4 => Confirmation sms new hour				
27	**Remote command recipient**	X	1	103	--
	0 => No recipient				
	1 => MF12				
	2 => MFGPS				
	3 => MFGSM				
	4 => SD1				
	9 => UNKNOWN				
28	**Remote command action carried out**	X	1	105	--
	8 => Error				
	9 => Impossible (because of incompatibility in the configuration)				
	If recipient is MF12:				
	0 => Force to day				
	1 => Force to night				
	2 => According to photocell				
	3 => Reset MF12				
	If recipient is MFGPS:				
	0 => New self-detection of position				
	If recipient is MFGSM:				
	0 => Complete reset of the system				
	1 => Hour setting (without GPS module)				
	If recipient is SD1:				
	0 => Output deactivated				
	1 => Output activated				

Mediterráneo Señales Marítimas

IALA