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Chapter 1 Starcom System Overview

The Starcom Helios is the mobile component of Starcom’s advanced vehicle tracking and fleet management system. The system uses advanced software algorithms for field tracking of vehicles and provides customers with a selection of real-time information about the tracked vehicle.

Due to its versatility, you can use the Starcom system for any of the following applications:

- Sending real-time text messages to vehicle owners
- Protecting vehicles from theft
- Securing domestic and business premises
- Managing business enterprises
- Managing large databases, for example, population statuses and digital maps
- Tracing vehicles and calls

The Starcom system consists of:

- The mobile unit – Starcom location control unit – Helios
- The communication layer of the cellular network
- The user interface, consisting of:
  - Web application
  - Control center software
The following figure describes the components of the Starcom System.

Figure 1 Starcom System Overview

This manual describes how to install the Helios and touches on other system components only as required by the Helios.

The Hardware Module – Helios

The Helios integrates a GPS receiver and a GSM or CDMA cellular network modem. It provides a complete vehicle security alarm and fleet management solution. The two-way communication modem, based on existing wireless infrastructure, makes it possible to deploy the system with immediate and full functionality around the world. The modem enables the Helios to communicate via the GPRS/1x or the SMS channel and to receive and send status and location data.

The built-in alarm system monitors the vehicle at all times and alerts the Starcom Control Center software in the case of theft or distress.

After installing the Helios, you can reprogram its parameters remotely and send commands to perform multiple functions.

You can integrate various accessories into the Starcom system, for example, text terminals, temperature sensors, accident/shock detectors, Bluetooth devices, and transponders. For detailed information on the available accessories, refer to Helios Accessories on page 33.
**Basic Helios Logic States**

The Helios is always in one of four following alarm logic states:

- **Idle** – The state of the Helios when the engine is on.
- **Armed** – The immobilizer is activated and the engine is off. The alarm system is active and ready.
- **Garage** – The alarm system is disabled for a predefined period of time. This is useful, for example, when the vehicle is undergoing maintenance.
- **Silent Delay** – The Helios enters this state if triggered while in the Armed state. In this state, only the blinkers are activated. After a predefined period of time has elapsed in Silent Delay mode, the Helios enters Alarm Triggered mode.
- **Alarm Triggered** – The system activates the siren.

**Arming and Disarming the Helios**

There are six ways to arm and disarm the Helios:

- **Remote Control (with or without code)** – The simplest way to actively arm or disarm the Helios.
- **Keypad** – The control center can identify the vehicle driver by the code used. This provides an extra layer of security.
- **Dallas** – Press the Dallas iButton against the Dallas socket. The control center can identify the vehicle driver by which Dallas iButton is used. This provides an extra layer of security.
- **Over-the-Air Command** – Use Starcom software to arm or disarm the Helios with a remote command.
- **Disarm from Input** – Turning the ignition key disarms the Helios.
- **Passive Arming** – The Helios is automatically armed when a predefined period of time has passed after the engine was switched off.

**Communication with the Helios**

The Helios is always ready to receive an SMS text message command. By default, it attempts to connect to the GPRS network once. After succeeding, it remains connected and sends test transmissions (ping) via GPRS. The size this message is 50 bytes (or 1 kB in 20 transmissions), not including the TCP/IP headers.

⚠️ **Important Note:** To enable constant tracking of the Helios’s location and status, use the Tracking command.
Helios Tracking Modes

The Helios enables you to monitor vehicles at constant intervals or continually (this is necessary, for example, in a car chase). The following three tracking modes are available:

- **SMS Tracking** – The Helios transmits at regular intervals in any available communication channel (either SMS or TCP/IP). If no communication channel is available, the unit saves the message until coverage is resumed. The shortest interval available per message is one minute.

- **Roaming** – This mode useful for pass country borders, the Helios transmits at regular intervals that customized according to your requirements (via TCP/IP channel or SMS). The Helios communicates with the local cellular operator of the country it located.

- **GPRS Tracking** – The Helios transmits up to once every ten seconds. GPRS Tracking is only available if the unit is logged in to the TCP/IP network. If the message cannot be sent, it is discarded. This mode can be used for tracking a vehicle during a car chase.

The Communication Module

Communication between the Helios and Starcom software is performed through the GPRS channel (for GSM networks) and 1x (for CDMA networks) or the SMS channel. The following communication protocols are used: TCP/IP, SMPP, direct cable connection, private network, and the UDP protocol for external applications.

- **SMS Channel** – Can be implemented in two ways: Through a terminal unit connected to the server computer, or, in a network with many Helios units, through the SMPP protocol. SMPP protocol enables the system to receive SMS messages directly and enables sending SMS messages to mobile network devices.

- **TCP Channel (GPRS or 1x)** – The Helios connects to the network to send data (either through the Internet or through a private network) and uses the TCP protocol to send its data and receive commands from the Routing application.

- **Private Network** – When there is a large number of Helios units in your Starcom network, it is recommended to establish a private network with the cellular operator. This enables all the Helios units to connect directly to the operator’s Routing application instead of connecting through the Internet. The private network facilitates the fast flow of information, eliminates much noise, blocks viruses, and lowers costs. The private network can be implemented either by setting up a dedicated communication line or a VPN (Virtual Private Network) with the cellular company.

- **The Routing Application** – This is the core of the Starcom communication system and is used to control the mobile network and the LAN/WAN simultaneously. It supports receiving data messages from GPRS/1x and SMS channels and from large numbers of GSM or CDMA units at the same time. The Routing application is installed on a computer that functions as the system server. It is the communication center for all the incoming and outgoing transmissions.
The Helios communicates directly with the Starcom operator local Routing application. When it connects to the GPRS network, it searches for the Routing application. Once the connection is made, communication flows in both directions. The Routing application can also use SMPP and modem terminals to communicate with the Helios units through SMS and send SMS notifications to clients. Typically, the Helios units have a second IP address to use as a backup in case of routing difficulties.

A third party applications interface is available (EAI) for routing. The EAI can work with external applications either via UDP or TCP.

**Computer Requirements**

Your system server must meet the following minimum requirements to run the Routing application:

- Hard Drive: 200 GB
- RAM: 512 MB
- Microsoft® Windows 2000/XP/Vista
- Com Port (RS232)
- Internet Connection
- The computer must be able to accept incoming TCP/IP connections on ports 232 and 6600 and an additional port selected by the client.
- The computer must be connected to the Helios main unit 24 hours per day and 7 days per week for enable the SMS transmission.

**Note:** The computer must run 24 hours per day and 7 days per week.

**The User Interface Module**

The User Interface consists of the following applications:

- **Installer Application** – Ensures correct installation by means of automatic testing for installation control. The program does not permit incorrect installation, prevents false alarms, and ensures customer satisfaction. The application enables programming of all parameters either via the RS232 cable connection or by wireless transmission. The Installer application is provided together with the Evaluation Kit and helps the operator learn the system functions, including programming via RS232 and remotely testing the various features, such as mileage readings from the odometer and by GPS and activating the gradual stop feature.

- **Control Center Program** – Supports 24/7 security control. The application enables operators to respond in a timely and professional manner to routine or emergency situations. The operators using the application follow a predefined set of procedures and respond as quickly and efficiently as possible to the incoming security events, may they be theft, accident, or another emergency situation. The Starcom Control Center application has a multi-language interface. It provides a predefined set of procedures to handle essential tasks such as:
  - **Emergency Calls** – Theft, emergency button, and accidents, while taking into account the vehicle location and emergency services in place.
• **Procedures Support** – Matching the software to the local procedures according to the event type and individual client requests enables quick response for emergency situations.

• **Database Management** – Building and maintaining of databases that include: Clients, installers, personnel, and more. The software has the ability to sort the databases and information by subject and filters.

• **Replay from Logs** – The replay can be viewed on a map along with the vehicle status or on the reports that show trip and driver details.

• **Information Management** – Easy and friendly presentation of information for quick initial response. Ordering by priorities defined by the client, sending the information to another division in the organization, receiving information from the vehicle's sensors and visual display of any information from the vehicle.

• **Reports** – Producing reports based on the system information with a wide variety of filters, such as: Event summary reports, marketing reports, and technical reports. You can also create new reports.

• **Starcom Online Web Application: The Web-based Fleet Management Application** – An advanced tool for real time monitoring, tracking, and reporting. Starcom Online offers:
  
  • Simple and user-friendly interface with many built-in fleet applications.
  
  • Real time alerts on deviation of vehicles and drivers from predefined work schedules. You can redirect alerts directly to the fleet manager's cellular phone or e-mail account.
  
  • Multiple options for production of activity reports.
  
  • Control and support Starcom hardware, including: Geo fencing function, route control, speed alerts, analog and digital input controls, mileage reading (via the GPS), driver identification, commands via the client personal mobile phone, and a wide range of reports.
  
  • Starcom Online can be fully customized to be used with the local Starcom operator corporate branding, including colors, title, logo, and language.
Chapter 2 Helios Alarm System
Chapter 3 Inserting SIM Cards

The Helios stores subscriber data, including its network identity, on a Subscriber Identity Module (SIM) card. If a fault occurs in the Helios, you can move the SIM card to the replacement unit with no loss of subscriber data. The following procedure describes how to install the SIM card in the Helios.

To insert the SIM card into the Helios:
1. Disconnect the Helios from its power source.
2. Unplug the Helios connector.
3. Remove the screw that holds the Helios enclosure closed.
4. Open the Helios enclosure.

⚠️ **Note:** Grasp the Helios firmly in both hands and pull the top and bottom plastic parts apart. Do not use sharp tools and take care not to cause damage.

5. Verify that your SIM card is not protected by a PIN code. If necessary, use a mobile telephone to cancel the PIN code.

⚠️ **Note:** You can request your supplier to provide SIM cards not protected by a PIN code.

6. On the Helios electronic board, locate the SIM card holder.
7. Gently open the SIM card holder and raise it to its upright position.

8. Insert the SIM card into the SIM card holder.

9. Gently push the SIM card holder back to its horizontal position and push it down until it clicks and locks into place.

10. Close the Helios enclosure.

Note: Align the top and bottom plastic parts of the Helios enclosure and push them firmly together until they click and lock into place.
Chapter 4 Starcom Simulator Kit

Figure 5 Helios Simulator

The unit's Tester was developed for Helios unit evaluation and presentation purposes.

The Helios Tester simulates the vehicle and various alarm triggers, while its Leds light up according to Helios logic.

Both round knobs are representing the Analog Inputs 1 and 2, varying voltage as the knob being rotated.

The metal Dallas Housing allows programming a Dallas-iButton by attaching, into the unit’s memory.

Using the Installer application, you can experience with different parameters and observe the changes in unit’s behavior.

Installation:

1. Plug in the USB communication cable and connect the unit to the computer.
2. Plug in the power supply cable to the unit and to the electricity socket. Pay attention, the cable has a DC to DC power adapter, therefore no converter is needed. Switch the power switch to On position when ready to start working.

![Image of activating the simulator](image_url)

**Figure 6 Activating the Simulator**

3. Place the KYPD / DLS switch position according to accessory used in installation. Please pay attention, either a Keypad, OR a Dallas-iButton can be used.

4. Connect the Keypad connector above the Dallas housing, that way it can be programmed into unit's memory directly, or tested.

5. Connect the Helios unit to the Simulator, using the 24-24 pin connector wire bundle. The Molex connector within the wire bundle for Keypad connection.

![Image of connecting the Helios](image_url)

**Figure 7 Connecting the Helios**
Please see properly connected Helios Tester as illustrated below:

![Helios Tester Connection](image)

**Figure 8 Activating Simulator Kit**

**Activation:**

1. Download and install the drivers for Helios Simulator from this link:
   - [http://starcomsystems.com/download/simulator_drivers.exe](http://starcomsystems.com/download/simulator_drivers.exe)
   
   They should be installed before the setup of the Installer Application, although it’s not very important.


3. The Simulator will first check all its Leds by turning them on momentarily.

4. Send a command of activating one of unit's outputs and monitor the relative led light up.

5. Press on Simulator's buttons in order to simulate vehicle's trigger for alert.

* Please pay attention the Helios Basic wire bundle connector nonidentical to the Helios Advanced unit wire bundle connector (for Helios Basic instructions see chapter10)
Chapter 5  Helios Wizard

Configuring Helios Devices

You can connect your Helios to a free COM port on your computer and use the Helios wizard to quickly and easily configure the device. After configuring Helios, you can install it in a vehicle. After performing the initial configuration with the Helios wizard, you can customize Helios according to your requirements. For further information on this topic see "Installer Application Guide" document.

To configure Helios:

1. On the desktop, click . The Installer application is launched and the Helios Wizard Welcome screen appears.

Notes:

- When running Installer for the first time, the Helios Wizard automatically appears and on subsequent occasions, the Installer main screen appears. If, however, you have checked Always show this Wizard on program startup (at the bottom of the wizard), the Helios Wizard appears.

- If the Helios Wizard does not appear, you can access it from the Installer application by clicking Technical > Helios Wizard.

- This manual is not a complete instruction manual for the Installer application.
2. Click **Next**. The Settings screen appears.

![Figure 9 Helios Wizard - Settings](image)

3. Configure the following settings:

   - **COM Port to use** – Specify the COM port on your computer to which you plan to connect Helios, or select **Auto** for automatic detection. Check one of the following to define how to access the GPRS network:
     - **Specify settings manually** – Enter your GPRS Access Point Name (APN). You can obtain this information from your ISP, pay attention to specify you need an APN for **Internet connection** and not WAP.
     - **Existing memory file** – Enter the name of a file (or browse for it) containing your predefined configuration.

   - Check **Run Connectivity Test** – This is always needs to be done before the installation, unless you have accessed the wizard just to exchange memory files. The test verifies that the SIM card is open to the GPRS network and that Helios can connect to the GPRS network and make successful TCP/IP transmissions.
4. Click **Next**. The system performs the following:
   - Locates the Helios device in the network.
   - Verifies that the Helios it has found has the latest firmware version. If this is not the case, the system updates the Helios firmware to the latest version.
   - Runs the connectivity test.
   - Opens the Operation screen.

![Helios Wizard - Operation](image)

**Figure 10 Helios Wizard – Operation**

When these tasks have been successfully completed, the Operation screen displays the message: `unit <unit_number> processed successfully`. 
5. Click **Next**. The Summary screen appears.

![Summary screen](image)

6. Check one of the following:
   - **Configure another unit with the same settings** – Use this option repeatedly to quickly configure multiple units with the same settings.
   - **Configure another unit with new settings** – Use this option to configure another unit with new settings.
     - Connect another Helios.
   - **Exit wizard** – Exit the Helios Wizard.

7. Click **Next**. The system creates a network connection through which to access Helios.

---

**Connectivity Test Errors**

One of main requirements and key features of proper system operation is successfully completing the Connectivity Test before Helios installation in the vehicle.
**Note:** It is VERY important to wait a couple of minutes before running the test, due to modem's initialization.

The following figures show examples of Helios Wizard errors and the ways to overcome those.

Please see **Example 1:**

![Figure 12 Helios Wizard Errors 1](image)

**Explanation:**

1. According to notification itself, first please verify the correct APN is written.
2. Secondly, please contact your cellular provider and make sure the SIM card is indeed opened for GPRS and not WAP!
3. You can see in the Operation window running text, the unit cannot even succeed to register to the network. This fact usually implies about an incorrect APN, or an Internet access blocked SIM card.

**Note:** The fields of username and password aren't necessary for successful Connectivity Test, although still being supplied by cellular provider.
Example 2:

![Helios Wizard Operation](image)

**Figure 13 Helios Wizard Errors 1**

**Explanation:**

1. Please check if unit's power supply is connected properly and powered On.
2. Verify the used COM Port is in order, by trying other COM Ports, or connecting to another computer.
3. Make sure to wait a few minutes after powering up the Helios unit and running the Helios Wizard.
4. Try replacing an adapter cable USB – RS232, PCMC/IA – RS232, some cables are still being produced according to old protocol, which might be incompatible with new computers.

If none of the options described above have been helpful solving a Connectivity Test error, please refer to the Installer Application Guide > Troubleshooting Helios Configuration.

You can also use the button of **Report** and report the subject to Starcom Support Team.
Chapter 6 Helios Pin Allocations

The following figure describes the pin numbers in the Helios J1 connector. Use it as an aid to wiring Helios.

![J1 Connector Pin Numbers](image)

*Figure 13 J1 Connector Pin Numbers*
Wire the Helios J1 connector according to the following table of electrical connections.

Table 1 Helios Pin-out Description

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Function</th>
<th>Color</th>
<th>Designation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Immobilizer and/or Gradual Stop</td>
<td>Blue</td>
<td>Output (-)</td>
<td>Install with an external relay. Refer to Immobilizer and Gradual Stop on page 28.</td>
</tr>
<tr>
<td>2</td>
<td>Door Unlock</td>
<td>Gray</td>
<td>Output (-)</td>
<td>Install with an external relay. Refer to Locking System on page 30.</td>
</tr>
<tr>
<td>3</td>
<td>RS232 TX</td>
<td>Orange/Blue</td>
<td>Communication</td>
<td>Enables direct communication with a PC. The wire bundle provides a Molex connector.</td>
</tr>
<tr>
<td>4</td>
<td>Key (Ignition)</td>
<td>Yellow</td>
<td>Input (+)</td>
<td>Indicates the vehicle ignition state.</td>
</tr>
<tr>
<td>5</td>
<td>Main Power 12V</td>
<td>Red</td>
<td>Power Supply</td>
<td>Main +12V supply. Protected by a 5A fuse.</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td>Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Key Pad/Dallas</td>
<td>Blue/White</td>
<td>Communication</td>
<td>The wire bundle provides a Molex connector.</td>
</tr>
<tr>
<td>8</td>
<td>Emergency Button</td>
<td>White</td>
<td>Input (-)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Microphone (+)</td>
<td>Orange</td>
<td>Audio</td>
<td>Hands free connection kit. The wire bundle provides a Molex connector.</td>
</tr>
<tr>
<td>10</td>
<td>Speaker (+)</td>
<td>Violet</td>
<td>Audio</td>
<td>Hands free connection kit. The wire bundle provides a Molex connector.</td>
</tr>
<tr>
<td>11</td>
<td>Analog 1</td>
<td>Yellow/Blue</td>
<td>Input (-)</td>
<td>Used for fuel consumption.</td>
</tr>
<tr>
<td>12</td>
<td>CAN High</td>
<td>Black/Gray</td>
<td>CAN bus connection</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Door Lock</td>
<td>Gray/Orange</td>
<td>Output (-)</td>
<td>Install with an external relay. Refer to Locking System on page 30.</td>
</tr>
<tr>
<td>14</td>
<td>Arm</td>
<td>Orange/White</td>
<td>Input (-)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>RS232 RX</td>
<td>Blue/Black</td>
<td>Communication</td>
<td>The wire bundle provides a Molex connector.</td>
</tr>
<tr>
<td>16</td>
<td>Door</td>
<td>Green</td>
<td>Input (-)</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Disarm</td>
<td>Pink</td>
<td>Input (-)</td>
<td>Alarm system disarming input.</td>
</tr>
<tr>
<td>18</td>
<td>GND</td>
<td>Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Siren/Vehicle Horn</td>
<td>Red/Black</td>
<td>Output</td>
<td>Install with a relay (according to the vehicle voltage 12V or 24V).</td>
</tr>
<tr>
<td>20</td>
<td>Odometer</td>
<td>White/Black</td>
<td>Pulse Counting Input (+)</td>
<td>Connect to pulse generator.*</td>
</tr>
<tr>
<td>21</td>
<td>Microphone (-)</td>
<td>Green/Red</td>
<td>Audio</td>
<td>Hands free connection kit. The wire bundle provides a Molex connector.</td>
</tr>
<tr>
<td>22</td>
<td>Speaker (-)</td>
<td>Blue/Red</td>
<td>Audio</td>
<td>Hands free connection kit. The wire bundle provides a Molex connector.</td>
</tr>
<tr>
<td>23</td>
<td>Analog 2</td>
<td>Violet/White</td>
<td>Input (-)</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>CAN Low</td>
<td>Gray/Blue</td>
<td>CAN BUS connection</td>
<td></td>
</tr>
</tbody>
</table>

*The odometer input informs the system whether to measure mileage by counting odometer pulses or by calculating the distance traversed by the vehicle using GPS. The odometer can count pulses from any type of pulse generator.*
The following figure shows how to connect all the auto components to the Helios.

Figure 14 Auto Components Block Diagram
Chapter 6 Installing the Helios

**Warning:** Failure to closely adhere to all installation instructions may result in system malfunction and ultimately compromise the reliability of the entire system.

It is assumed that installers are familiar with vehicle wiring and auto electrical devices.

This chapter contains a selection of wiring options from which to select. Select the options best suited to your application.

---

**Avertissement** : Le non-respect de toutes les instructions d’installation peut causer un fonctionnement défectueux du système et par la suite affecter la fiabilité du système entier.

Il est présumé que les installateurs sont familiers avec le câblage du véhicule et les appareils auto électriques.

Ce chapitre inclus une section des options de câblage à choisir. Choisissez l’option la plus adaptée à votre application.

---

**Warnung:** Nichtbefolgen der Installationsanweisungen kann zu Betriebsstörungen im System führen und somit die Verlässlichkeit des gesamten Systems gefährden.

Es wird vorausgesetzt, dass die Person, die es einsetzt mit den Kabeln des Fahrzeugs und den elektrischen Geräten vertraut ist.
Warning: Always adhere to safety instructions to prevent possible injury and avoid damage to existing vehicle systems.

Before beginning an installation, disconnect the vehicle battery. Notify the client that this erases the memory of all auto systems. These will have to be re-programmed.

Test wiring only using a LED test-lamp or voltmeter. Using other types of test-lamps may cause high output currents and significant damage to the vehicle's electrical systems.

Solder all connections created during installation and insulate them using electrical insulation tape and/or insulation sleeves. Twisting wires together without soldering them can result in loose connections and serious faults.

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Take special care to avoid damage to the cables of the vehicle's security systems, for example, vehicle computer and air bags. Take note of this when testing voltage using a voltmeter or test-lamp to prevent undesired system activation.

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

When drilling in the vehicle, verify that there are no cables in the vicinity. Failure to do so may result in severe damage.

Avertissement: Respectez toujours les instructions de sécurité afin de prévenir et éviter un dommage aux systèmes existants du véhicule.

Le danger d’explosion existe lorsque la batterie est remplacée incorrectement. Remplacez la batterie seulement avec la même ou un type équivalent recommandé par Starcom Systems. Déposez les batteries usées en respectant les instructions du fabricant.

Testez le câblage seulement en utilisant une lampe-test LED ou voltmètre. L'utilisation d'autres types de lampes-teste peut causer la production du courant élevé et un dommage significative pour le système électrique du véhicule.
Soudez toutes les connexions créées durant l’installation et isolez les en utilisant un ruban d’isolation électrique et / ou une manche d’isolation. Enserrez les câbles ensemble sans les souder peut se terminer par la perte des connexions et des graves défauts.

Lorsque vous perforez dans le véhicule, vérifiez qu’il n’y a pas des câbles à proximité.

Faites attention de ne pas endommager les câbles du système de sécurité du véhicule comme par exemple l’ordinateur du véhicule ou l’Air bag.

Seules les personnes formées et qualifiées ont l’autorisation d’effectuer les installations, remplacer ou servir cet équipement

Avant de commencer une installation, déconnectez la batterie du véhicule. Informez le client que ceci effacera la mémoire de tout le système auto et devra être reprogrammé.

**Warnung:** Halten Sie sich immer an die Sicherheitsanweisungen, um mögliche Verletzung und Schäden an den vorhandenen Systemen des Fahrzeugs zu verhindern.

Trennen Sie die Verbindung der Fahrzeugbatterie, bevor Sie mit der Installation beginnen. Teilen Sie dem Kunden mit, dass die Speicher aller Systeme des Autos gelöscht werden. Diese müssen neu programmiert werden.

Verkabeln Sie probeweise mit einer LED-Testlampe oder einem Spannungsmesser. Das Verwenden von anderen Testlampenarten kann zu hohem Ausgangsstrom führen und die elektrischen Systeme des Fahrzeugs beträchtlich beschädigen.

Löten Sie alle Verbindungen, die während der Installation erstellt wurden und isolieren Sie sie mit Isolierband und/oder Isolierröhrchen. Wenn Kabel nur verdreht und nicht gelötet werden, kann dies zu lockerer Verbindungen und ernsten Fehlern führen.

Wenn Sie im Fahrzeug bohren, stellen Sie sicher, dass sich keine Kabel in der Nähe befinden. Sollten Sie dies nicht tun, können schwere Schäden die Folge sein.


Nur ausgebildetes und qualifiziertes Personal sollte diese Ausstattung installieren, ersetzen oder warten.
Positioning the Helios Optimally

- Do not install the Helios beneath metal parts, for example, under a shelf supporting loudspeakers.
- To maintain high-quality reception, it is highly recommended to install the Helios in a location that provides an uninterrupted line-of-view with the sky.
- Consider any of the following locations for installing the Helios:
  - Within the vehicle dashboard
  - Near to the glove compartment
  - Behind instrument panel
  - In the center console
  - Under the steering column
- Ensure that the Helios is not near to heat sources, water pipes, or the vehicle computer.
The following figure illustrates some of the possible installation locations.

![Installation Locations Diagram](image)

**Figure 15 Installation Locations**

**Tools Required for Installing the Helios**

The following tools are required for installing the Helios:

- Electric drill and/or screwdriver
- Cone drill
- Adapter for Phillips (cross-head) screws
- Phillips, flat-tip, and star screwdrivers – various sizes
- Wire cutter
- Test-lamp and/or voltmeter (use of voltmeter is preferred and recommended)
- Electrical insulation tape
- Regular and drilling head screws
- Insulation sleeve or soldering iron and solder

**Before Installing**

- Run the **Installer** application and click **Technical > Unit Status** to verify if the type and model of vehicle-under-installation appears in the Wiring by Models table. Study the available information before proceeding.
• If the vehicle type is not listed in the table and you are in possession of the data required for installation, add all the pertinent information.
• For improved system security, it is recommended to vary the installation location randomly for each successive installation.
• Confer with the client as to the location of the keypad, Dallas button, emergency button, and other service buttons.

Installing the Helios

It is very important before installing the Helios unit in vehicle to run the Helios Wizard for latest Firmware version update and connectivity test (TCP Test).

• Use alcohol to clean the surface to which you have decided to attach the Helios.
• Connect all the required wires in the cable to the Helios connector before connecting the connector to the Helios.
• Secure the Helios in its chosen location using cable ties and ensure proper concealment of all wires.

Connecting External Relays to Enable Helios Functions

This section provides guidelines on how to wire the Helios output pins that require the addition of an external relay. This is not an exhaustive discussion and there are many possibilities – you should consider which option is best before commencing.

Note: Check the vehicle voltage (12V or 24V) before beginning work and provide relays of the correct voltage.

Immobilizer and Gradual Stop

The Helios can bring the vehicle to a gradual stop if necessary. For example, if the vehicle is reported as stolen, the control center can issue a Gradual Stop command.

When there are no alarms, the Immobilizer/Gradual Stop pin (#1) grounds the coil (#85) of the external relay. In this case, the relay powers the vehicle starter or fuel pump (via pin #87).

When a Helios alarm is activated, the Immobilizer/Gradual Stop pin (#1) toggles the ground to the relay coil. As the duty cycle of pin 1 changes, the coil becomes gradually deactivated for longer and longer intervals until it is fully disconnected from ground. Consequently, the starter or fuel pump gradually becomes inactive, bringing the vehicle to a gradual stop.
Figure 16: Immobilizer and Gradual Stop Wiring Scheme
Siren

The Helios can sound the vehicle siren. When wiring the Helios siren function, you can add an external siren or you can use the vehicle’s own horn.

**Note:** The vehicle horn may use a large current and quickly deplete the vehicle battery.

When there are no alarms, the Siren pin (#19) disconnects the coil (#85) of the external relay from ground. In this case, the relay disconnects the siren (which is connected through pin #87 of the relay (#87)). When a Helios alarm is activated, the Siren pin (#19) grounds the relay coil. As a result, the siren is powered through the relay and sounds.

![Siren Wiring Scheme](image)

**Figure 17 Siren Wiring Scheme**

Locking System

Before making any changes to the vehicle wiring, verify which type of locking system is in use. If you can identify the location of the locking engine and gain access to its terminals, you may be able to make a direct connection without adding external relays.

**(-) (--) Locking**

In this locking method, a negative pulse activates the locking mechanism and the next negative pulse activates the unlocking mechanism – this is called (-)(--). It is also possible to use (+)(+).

For vehicles with (--) (--) locking systems, you can wire the Helios without adding any external relays, as follows:

1. Connect Helios the Lock pin (#12) to the locking engine Lock terminal.
2. Connect the Helios Unlock pin (#1) to the locking engine Unlock terminal.

![Figure 18 Wiring the (–) (–) Locking System without External Relays](image)

If you cannot gain access to the locking engine, you can use external relays and connect to the existing wires that lead to the locking engine. The following figure describes this connection.

![Figure 19 Wiring External Relays for (–) (–) Locking](image)
Serial Locking
This method requires the addition of two external relays. Wire them as follows:

![Diagram of wiring external relays for serial locking.

Figure 20 Wiring External Relays for Serial Locking

Arm/Disarm
You can connect the Helios Arm/Disarm function either as a standalone system or in conjunction with the existing system.

Standalone Arming
Arming is performed by passive arming, remote control, or transponder. Disarming is performed by unlock, key pad, remote control, or transponder.

Connecting to the Existing Arm/Disarm System
Locate the existing alarm system brain and connect the Helios Arm pin (#14) to the alarm system brain Arm pin with a diode. Also, connect the Helios Disarm pin (#17) to the alarm system brain Disarm pin with a diode.

Note: If the vehicle’s existing alarm system uses (+) (+) commands, insert external relays to swap the logic to (–) (–).
Chapter 7 Helios Accessories

Remote Devices

Dallas iButton

The Dallas iButton is used to disarm the Helios, activate Garage mode, and identify drivers. You can program up to 50 Dallas iButtons into the Helios memory for identifying drivers.

![Dallas iButton](image)

Figure 21 Dallas iButton

Installing the Dallas iButton

To install the Dallas iButton remotely:

1. Place the Dallas socket on the dashboard and connect the black wire (−) to ground and the gray one to the Key Pad/Dallas pin (#9) of the Helios.
2. Send a command of "Learn Dallas iButton", using an Installer application.
3. Choose Dallas code memory location, according to "Drivers ID" tab in Helios Parameters window.
4. Choose an output to be triggered when pressing the bigger button.
5. Send a command and attach the Dallas to its socket.
6. A green light acknowledges the Dallas has been programmed.

**To program a new Dallas key using Starcom Simulator:**

1. Select a memory location for the Dallas iButton.
2. Click **Send**. The simulator LED lights up.
3. Insert the Dallas iButton in its socket for the duration of the programming (until the LED turns off).
4. Remove the Dallas iButton.

**Important Note:**

*Pay attention to place the switch to DALLAS (DLS) position.*

![Figure 22 Dallas iButton Switch](image-url)
Remote Control

The remote control is used for arming, disarming, Locking, and unlocking the vehicle. You can program up to two remote controls into the Helios memory.

Figure 23: 2-Button Remote Control

To program a new Remote Control:

1. Please download the Installer application update from this link: http://www.starcomsystems.com/1119bo/, then update the unit’s firmware.

2. Big button: used for Arm/Disarm
   Small button: used for emergency.

3. Go to: Helios parameters -> Hardware tab -> mark Remote Control options as displayed, and Send them to the unit.
4. Go to: Unit status window-> Learn Remote Control-> set the requested settings-> send.

Memory location refers to the Drivers ID section at Helios parameters:

When the unit has learned the Remote, you will see the updated code in appropriate place.

To arm/disarm the unit:

Press the Arm/Disarm button.

5. Now you can check the Remote Control functionality -> try to Arm/ Disarm using the button and see if the signaling output changes.
Keypad

The keypad is used to arm and disarm the Helios and for driver identification. You can program up to 50 keypads into the Helios memory.

![Keypad Image]

Figure 24 Keypad

To arm the system:
- Enter (*) and press four times on the 4 button.

To disarm the system:
- Press (*) and enter your PIN code. The key pad buzzer sounds to confirm the operation.

To garage mode:
- In Helios IDLE state, press (*) and four times on the 5 button.

To change/add the keypad PIN code:

Note: In this procedure, you are editing the default codes.

1. In the Installer application, click Technical > Helios parameters > Driver IDs.
2. Click new and insert driver personal code (four digits).
3. Click Send Changes to complete programming.
The keypad LED provides the following indications.

**Table 2 Keypad Indications**

<table>
<thead>
<tr>
<th>State of Helios</th>
<th>State of Keypad LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle</td>
<td>Extinguished</td>
</tr>
<tr>
<td>Alarm Armed</td>
<td>Blinking every 2 seconds for 2 seconds</td>
</tr>
<tr>
<td>Silent Delay</td>
<td>Blinking twice every 2 seconds</td>
</tr>
<tr>
<td>Alarm Triggered</td>
<td>Blinking every 1 second for 1 second</td>
</tr>
<tr>
<td>Garage Mode</td>
<td>Constantly</td>
</tr>
</tbody>
</table>

**Note:** The theft indicating transmission will be initiated in the end of Alarm Triggered state.

**Important Note:**

*Pay attention to place the switch to Keypad (KYPD) position.*

![Figure 25 KEYPAD Switch](image-url)
Transponder

The transponder automatically arms or disarms the system when it comes within or leaves the range of the system.

![Figure 26 Transponder](image)

The Transponder system is comprised of the receiver, connected to the Helios, and the remote transponder.

**Installing the Transponder**

**To install the transponder:**

1. Connect the red wire (pin 1) to +12V.
2. Connect the black wire (pin 2) to ground.
3. The gray wire (pin 12) is used to arm the Helios. Connect it to the Helios Arm pin (#18).
4. The blue wire (pin 11) is used to disarm the unit. Connect it directly to the Helios Disarm pin (#17).
5. The violet wire (pin 6) is used to avoid false disarms. Typically, connect it to the ignition. In this case, when the receiver receives +12V after receiving a valid transmission, it does not send an arm command even if the transponder signal is lost for more than 45 seconds.
6. The yellow wire (pin 5) is used to couple transponders. Typically, it remains unused because the transponder and receiver are shipped already coupled. If you wish to couple a new transponder, use the following procedure:
   a. Short the yellow wire to ground.
   b. After three seconds the receiver module LED turns on.
   c. Press the transponder button repeatedly. When the receiver module has coupled with the transponder, the LED blinks (turns quickly off and back on steady).

Should the need arise to reprogram the receiver to be associated with other transponders, it is possible to perform coupling of transponders remotely and without having to rewire the system: Connect the yellow wire to one of the digital outputs of the Helios (for example, pin 1 of 6 pole connector).
Hands Free Kit

The Helios voice function enables you to communicate with the control center or with any fleet station by commanding the hand set. When the channel is open, the control center can hear whatever transpires in the vehicle.

To activate the handset:

1. Plug in the communication cable to the Speaker and to the HFK connector within the 24pin wire-bundle. **Important to connect the black outgoing wire to Ground (-) connection.**

2. If the power supply cable not used for connection to cigarette lighter, cut the lighter connector and release the internal red and black wires for (+) and (-) connections as following:
3. Plug in the microphone cable.

4. Send a command of Voice Call from Starcom Online -> Map -> Commands -> enter a number for unit to dial -> Send.

5. The unit will start dialing that number using the Voice channel.

- **Speaker** – The speaker volume control is next to the earphone plug.
- **Microphone** – The microphone must be located at least 50 cm from the speaker.
- **Hands Free LED Indicator** – This is constantly on.
- **Power LED Indicator** – Indicates whether the hand set is active. The hand set is activated by a Voice Call command.

**Important Note:** It is highly recommended to twist around the red and the black cables within the wire-bundle for noise filtering effect and improving the voice quality.

- The hands free kit supports 12V only. To use in a 24V vehicle, power it from the cigar lighter receptacle (which supplies 12V in all vehicles).
- The modem disconnects automatically one minute after disconnecting a call.
- TCP/IP communication is not possible while the voice channel is active.
- Set hands free kit volume as low as possible when using the Helios as an emergency application. This is because the hands free kit creates a dialing tone whilst receiving phone calls.
- You may connect the hands free kit to the Helios while the unit is powered up.
- When the hands free button is in the OFF position, the hands free kit cannot hear the caller, but the caller is able to hear what is going on in the vehicle.
- The hands free kit connects to a 4-pin Molex connector on the Helios J1 connector wire bundle.
**Net-960E Mobile Data Terminal**

The Net-960E is a programmable Mobile Data Terminal (MDT) that can be installed in vehicles. It is designed to withstand the tough vehicle environment including extreme temperatures, providing the reliability required for critical mobile data applications. The current firmware version is v5.09.

The Net-960E displays incoming messages and can initiate outgoing messages between the vehicle and the fleet manager. It uses the English language by default. You can add text templates in other languages using the Installer application (MDT Canned Add/Del or Reply Add/Del).

**To add a template:**

- Write a template and send it to the MDT using the **CannedAdd** command.

**To remove a template:**

- Write the exact template and send it to the MDT with **CannedDel** command.

The same procedures apply to the reply templates list.

The NET-960E is fully integrated with Starcom fleet management software and can be used to send and receive messages from the Starcom Online Web application.

![Figure 29 Net-960E](image)

**Assembling the Net-960E**

**To mount the Net-960E:**

1. Insert the rubber mounting pads on the inside of the bracket and thread the rubber pins through any of the three parallel holes on each side.
2. Rotate the mounts so the holes in the center of the mounts align with the parallel holes in the bracket.
3. Hold the terminal between the rubber mounts, attach the side screws, and ensure the terminal is firmly in position. Do not over-tighten.
To attach the control box:
1. Connect the Net-960E control box cable (9 pin connector) to the SER 1 connector on the Net-960E.
2. Connect the Net-960E control box cable (RJ 45) to the RS232 input pin (#15) on the Helios.
3. Connect the Net-960E power and ground to the vehicle battery only after you have powered up the Helios. Turn the power switch on the control box (PWR) to ON.

MDT Activation:
- Before activating a Mobile Data Terminal, please change the communication rate between the Helios unit and the MDT.
- Using an Installer application, read the unit's parameters, approach "Hardware" tab, check the box of "Use 57600 baud rate" and send the new parameters to the unit.
Note: It is important to restart the unit after changing the Baud rate; otherwise the change won't be updated.

Starcom Online:
- In order to send and receive text messages using Starcom Online application, update Helios unit as a text Terminal.
- Log on to Starcom Online and approach the Resources section. Click on the unit's number and update the field of "Terminal" to "Text".
- From now on, the command of "Send Text" will be available in the commands list at Map section.

Receiving Text messages:
- Go to Monitor screen > Settings, and create a New Alert to alert you on incoming Text transmissions.
- After updating the new text alert - you can use the Monitor screen to see all the incoming Text messages from the units.

Operational Indications and Commands
- **MSG LED** – Blinks slowly when there is one new message and blinks fast if there are multiple messages to be read.
- **ACK LED** – Blinks when a message has been transmitted and the Net-960E is waiting for the first level acknowledgement. In normal operating conditions, this state is too short to be noticed. When the first acknowledgement is received the Net-960E waits for the host level acknowledgement and the ACK LED is on.
- **CLR** – Enables you to clear the screen and return to the main menu.
- **ENT** – Enables you to access functions using the navigation dial.
- **F1 MSG** – Displays a list of pre-defined (canned) messages. Scroll through the list using the navigation dial and press the navigation dial or ENT to transmit the selected message. Pressing the navigation dial again toggles between the list and single item display modes.
- **F2 TEXT** – Enables you to enter an alphanumeric data string. The 1 key is used for a space in alphanumeric data entry. In order to enter a message, use the alphanumeric keys and press F2 again. In order to clear a single character (backspace), rotate the navigation dial counterclockwise.
- **F3 VIEW** – Displays the incoming messages (received from the host). Scroll with the navigation dial. The Net-960E can store up to 10 incoming messages. The next message (number eleven) overwrites the first message, and so on.
- **F4 PEPLY** – Opens a list of messages. Scroll to the desired message with the navigation dial, and press the dial. You can update the messages with the Installer application.
- **F5 CNTL** – Opens the control menu. You can configure backlight, contrast, sound, fonts, and more. When in control mode, use the numeric keypad as follows:
  - **Key 1** – Toggles the screen backlight.
  - **Key 2** – Sets the sound tone.
• **Key 3** – Toggles the sound – This is not active in the demo unit.

• **Key 4** – Enables you to configure fonts for incoming and outgoing messages. You can also configure a limit for the number of characters in messages (the maximum is 220 characters).

• **Key 8** – Enables you to set the screen contrast.

• **Key 9** – Toggles the Net-960E on or off.

• **F6 I/O** – Displays the state of the inputs and outputs.

**Notes:**

• The Demo unit is a unit with the basic Net-960E functions and without any customizing process. For example, the sound tone function is not active and outgoing messages are limited to 33 characters and incoming messages are limited to 40 characters.

• After two minutes of inactivity, the screen backlight turns off. It automatically turns on with new incoming messages or when any key is pressed.

• The Net-960E display driver can display text using character fonts of 8, 6, 5, or 4 pixels width. It can display 30, 40, or 48 characters per line. Several fonts as well as text attributes and character doubling may be intermixed on the same screen.

• There is no option to scroll within the message being displayed.

**Net-960E Specifications**

**Memory**

• Flash – 128 kB to store system and application software, inbound/outbound canned messages, or forms

• RAM – 128 kB of data and system memory

**Communication**

• Main – RS232 serial port, up to 57,600 kBPS, connected to DB9 connector

• Secondary – RS232 serial port, up to 57,600 kBPS, connected to RJ11 connector

• Multiplex – Each port can be multiplexed between an internal and external connector

**Control Signals**

• Two inputs and two outputs at the automotive voltage level, connected to a DB9 connector

  Or

• One input and one output at the automotive voltage level and one input (CTS) and one output (RTS) at RS232 voltage level

**Display**

• 240x64 graphic LCD with LED backlight

• Variable font sizes. Maximum – 10 lines of 60 characters in a 7x5 standard matrix

• FSTN technology at contrast ratio of 7:1
Programmable Keyboard
- 12 Alpha Numeric keys (cell phone style)
- 6 Programmable function keys
- Special navigation knob
- Backlight for all keys

Indication Lamps
- Activity LED
- Alert indicators LED

Buzzer
- Audible alerts
- Programmable frequency pitch and duration

Power
- Direct car battery connection – 8V–18V (for 24V vehicle, use a converter)
- Current: Idle–18 mA. Active – 200 mA

Environment
- Operating temperature: –20°C to +70°C (–4°F to +158°F)
- Storage temperature: –20°C to +80°C (–4°F to +176°F)

Dimensions
- Length – 200 mm (7.87”) x Width – 82 mm (3.22”) x Depth – 38 mm (1.5”)
Temperature Sensor

You can use the temperature sensor to measure the temperature when this information is important, for example, in an oil tanker.

Figure 31 Temperature Sensor

The temperature sensor is factory-fitted with a filter to which it connects with a shielded cable. The filter reduces environmental noise and measures temperature in the range \(-20^\circ\text{C}\) to \(+40^\circ\text{C}\).

Install the probe in the location whose temperature you wish to track.

Note: The following figure shows how the filter is connected to the temperature sensor. Ground connections are marked by square shapes on the printed circuit board and positive signals by round shapes.

Figure 32 Temperature Sensor and Filter Connections

To calibrate the temperature sensor:

1. Using a thermometer calibrated by an approved laboratory, measure the temperature in the area of the vehicle whose temperature you wish to track.
2. Record the value registered by the temperature sensor.
3. Repeat steps 1 and 2 for three or four different temperatures.
4. Access Starcom Online and upload the values you measured. Starcom will send you a calibration update.
Bluetooth Adaptor
The Bluetooth adaptor enables advanced connectivity using the Bluetooth standard. This enables the system components to transmit information such as the Installer application and navigation. It also enables interfacing between handheld computers (for example Palm Pilot and IPAQ) and the Helios.

Bluetooth Specifications

Bluetooth Protocol
- Standard: 1.2
- Class: II
- 1 mWatt transmitter power
- Operating distance: 10 meters (without obstructions)
- Frequency band: 2.40 GHz – 2.48 GHz
- Power supply on pin 9 of RS232 connector
- Operating temperature: –20°C – 80°C

Bluetooth Adaptor
- RS232 connector male connector (DTE)
- 12 to 30 volt power supply
- Reverse polarity protection
- Internal status LED
- Automatically sends \g to the Helios at power-up making it compatible with any portable navigator (tested with TomTom)
- Makes the Helios directly visible to installers without directly accessing it
- No drivers required

Installing the Bluetooth Adaptor
The Bluetooth device connects directly to the Helios cable (connect only the 9-pin connector), as follows:
- Connect INS 2 and 3 according to the standard Helios cable.
- Connect pin 9 to +Vcc.
- Connect pin 5 to GND (the Helios GND).
When you search the adapter with a Bluetooth device (laptop, PocketPC, etc.), you will find GPDSAT. The key code is 1234.
# Chapter 8 Helios Technical Specifications

The following table describes the technical specifications of the Helios:

## Table 3 Helios Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supply</strong></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>8V-28V (in one unit)</td>
</tr>
<tr>
<td>Power</td>
<td>1 mA (sleep mode) – 92 mA (transmit)</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td></td>
</tr>
<tr>
<td>Operational Storage</td>
<td>-40°C to 60°C</td>
</tr>
<tr>
<td>Storage</td>
<td>-40°C to 85°C</td>
</tr>
<tr>
<td><strong>Operating humidity</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50% – 80%</td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.701 x 61 x 21 or 24.5 mm (Motorola), 150 grams</td>
</tr>
<tr>
<td><strong>Cellular modem</strong></td>
<td></td>
</tr>
<tr>
<td>GSM</td>
<td>Motorola G24-L, Quad Band (850, 900, 1800, 1900). Built in antenna</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>GSM, GPRS, and SMS</td>
</tr>
<tr>
<td>Voice</td>
<td>Headset kit available</td>
</tr>
<tr>
<td><strong>Messages</strong></td>
<td></td>
</tr>
<tr>
<td>SMS</td>
<td>Encrypted protocol</td>
</tr>
<tr>
<td>GPRS</td>
<td>TCP/IP over PPP</td>
</tr>
<tr>
<td><strong>CPU capacity</strong></td>
<td></td>
</tr>
<tr>
<td>Static RAM</td>
<td>128 Kb</td>
</tr>
<tr>
<td>Nonvolatile memory</td>
<td>34 Kb</td>
</tr>
<tr>
<td>Flash memory</td>
<td>2048 Kb</td>
</tr>
<tr>
<td><strong>Alarm system</strong></td>
<td></td>
</tr>
<tr>
<td>Immobilizers</td>
<td>External – usage as gradual stop</td>
</tr>
<tr>
<td>Disarming options</td>
<td>Keypad, Dallas key, remote control, Remote control with keypad</td>
</tr>
<tr>
<td><strong>Backup battery</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>PoLiFlex, 800-1200 mAh</td>
</tr>
<tr>
<td><strong>Comm port</strong></td>
<td></td>
</tr>
<tr>
<td>RS232</td>
<td>115,200 bps (default)</td>
</tr>
</tbody>
</table>
Chapter 9 Helios Product Line

The Helios product line comprises of the following units:

- Helios Basic
- Helios Logger
- Helios Advanced

The following table describes the features of the different Helios units:

Table 4 Helios Product Line

<table>
<thead>
<tr>
<th>Specification</th>
<th>Helios Basic</th>
<th>Helios Logger</th>
<th>Helios Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS</td>
<td>Built in</td>
<td>Built in</td>
<td>Built in</td>
</tr>
<tr>
<td>GSM</td>
<td>+</td>
<td>+</td>
<td>Optional</td>
</tr>
<tr>
<td>ZIGBEE</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Connector</td>
<td>5 pins, USB</td>
<td>24 pins, Molex</td>
<td>24 pins, Molex</td>
</tr>
<tr>
<td>Accelerometer</td>
<td>Optional</td>
<td>Optional</td>
<td>Built in</td>
</tr>
<tr>
<td>Canbus</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Use</td>
<td>Track and trace basic functions</td>
<td>Full fleet without GSM communication costs</td>
<td>Full fleet and full security functions. Can be used as stand alone alarm system</td>
</tr>
<tr>
<td>Advantage</td>
<td>Quick installation Low cost Can be used as mobile unit Can be transferred between vehicles</td>
<td>No communication and modem costs</td>
<td>The most advanced unit</td>
</tr>
</tbody>
</table>
Chapter 10 – Helios Basic unit

Helios Basic unit is a simple and cost effective solution for limited requirements of security and fleet management.

It has less inputs and outputs, while the technology stays the same as in Helios Advanced unit.

The Helios unit's Tester was developed for Helios unit evaluation and presentation purposes.

The Helios Tester simulates the vehicle and various alarm triggers, while its Leds light up according to Helios logic.

Using the Installer application, you can experience with different parameters and observe the changes in unit's behavior.

Pay attention that when using the Helios simulator with Helios Basic unit, you will be able to test only the ignition input, disarm input (as free input) and the output for siren connection or immobilizer connection (bare in mind that when the Helios Basic connected with the RS232 connection the output function for testing purposes disabled).
Installation:

Plug in the USB communication cable and connect the unit to the computer. Plug in the power supply cable to the unit and to the electricity socket. Pay attention, the cable has a DC to DC power adapter, therefore no converter is needed. Switch the power switch to On position when ready to start working.

Figure 6 Activating the Simulator

Connect the Helios unit to the Simulator, using the Helios Basic connector wire bundle.

Connecting the Helios Basic
Please see properly connected Helios Tester as illustrated below:

Activating Simulator Kit

**Activation:**

1. Download and install the drivers for Helios Simulator from this link: [http://starcomsystems.com/download/simulator_drivers.exe](http://starcomsystems.com/download/simulator_drivers.exe)

   They should be installed before the setup of the Installer Application, although it's not very important.


3. The Simulator will first check all its Leds by turning them on momentarily.

4. Send a command of activating one of unit's outputs and monitor the relative led light up.

5. Press on Simulator's buttons in order to simulate vehicle's trigger for alert.
**Helios Basic pin-out:**

Yellow cable - Ignition Input

Green cable - Free Digital/Analog Input (can be used for Fuel connection)

Red cable - Main Power – constant (+)

Black cable – GND- constant (-)

Blue cable - Immobilizer Output, when connected - the RS232 direct communication is disabled.

RS232 cable – being activated instead of the Immobilizer output. Communication wise everything the same as Helios Advanced.

**Helios Basic - Siren connection:**

A following example of Siren connecting to Helios Basic is brought, pay attention, when An Output is used – no RS232 communication is available, only OTA.

To activate the siren in Helios Basic, you should connect the only output - the blue cable of Immobilizer - to the siren through a relay.

Relay Connection:

Normally Open relay pinout connection:

- connect the pin 86 to constant (+)
- connect the Blue Helios Output wire to pin 85
- pin 30 is connecting to (-) - GND
- pin 87 is connecting to the Siren

In normal inactive state, there is no signal on the output. The siren is being activated by grounding the signal to the (-), therefore the output is connected to pin 85, so the activating current won’t go through the unit.

When connected, define in Helios Parameters:

Immobilizer > Not used.
Gradual Stop > On Constantly:
First test it just with the command of > Set Output > Immobilizer / Gradual Stop On; only then include it in the workplans.
Appendix

Cellular Phones Commands Helios

You can use a cellular phone to send commands to the Helios. You must first contact the Starcom Online operator and state the phone number from which you intend to issue commands. The control center will issue you with a phone number for the destination commands.

To send SMS text message commands:

- Send an SMS text message in the following format:

  `<COMMAND> <UNIT NUMBER> <STARCOM USERNAME> <STARCOM PASSWORD>`

For example, if your login credentials in Starcom Online are "starcom / starcom1" and the unit's number is 1234, you can activate the siren by sending a command:

**AS 1234 starcom starcom1**

**Note:** Insert spaces between the command, the unit number, and the password.

The following table defines the SMS text commands supported by the system.
Table 5 Helios SMS Text Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>Activate Siren</td>
</tr>
<tr>
<td>DS</td>
<td>Deactivate Siren</td>
</tr>
<tr>
<td>AL</td>
<td>Activate Lights</td>
</tr>
<tr>
<td>DL</td>
<td>Deactivate Lights</td>
</tr>
<tr>
<td>AI</td>
<td>Activate Immobilizer</td>
</tr>
<tr>
<td>DI</td>
<td>Deactivate Immobilizer</td>
</tr>
<tr>
<td>LD</td>
<td>Lock Doors</td>
</tr>
<tr>
<td>UD</td>
<td>Unlock Doors</td>
</tr>
<tr>
<td>AG</td>
<td>Activate Gradual Stop</td>
</tr>
<tr>
<td>DG</td>
<td>Deactivate Gradual Stop</td>
</tr>
<tr>
<td>AD</td>
<td>LED On</td>
</tr>
<tr>
<td>DD</td>
<td>LED Off</td>
</tr>
<tr>
<td>STAT</td>
<td>Status Request</td>
</tr>
</tbody>
</table>

Helios Hyper Terminal Commands

Terminal commands enable you to control the Helios cellular modem via the RS232 connector. You can do this to test communication quality and solve installation problems.

Notes:

- Preface all commands with a backslash (\) and end them with "Enter".
- You can be online and connect to the Hyper Terminal concurrently.
- All commands are case-sensitive.
### Table 6 Helios Hyper Terminal Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tdm</td>
<td>Cellular Mode</td>
<td>Gives direct access to the modem.</td>
</tr>
<tr>
<td>tdg</td>
<td>GPS Mode</td>
<td>Gives direct access to the GPS.</td>
</tr>
<tr>
<td>tdr</td>
<td>TCP Mode/Already in TCP Mode</td>
<td>Connects to the TCP/IP network immediately.</td>
</tr>
</tbody>
</table>