

# USER MANUAL



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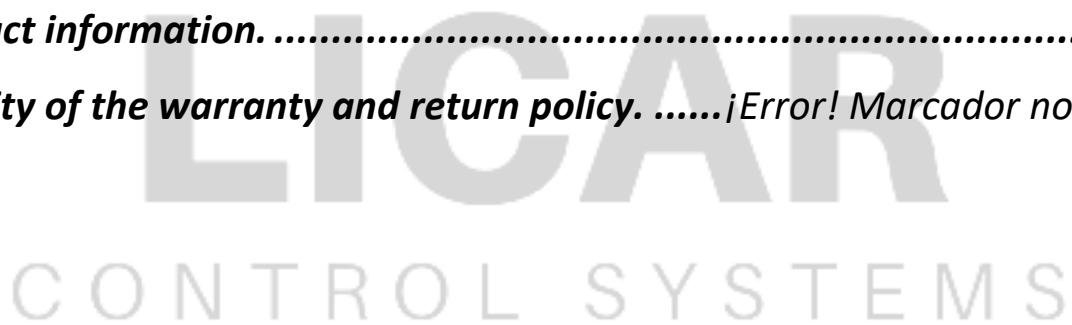
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## WIRELESS AIR SUSPENSION

MANUAL VERSION: 2023-09-22

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# 1. Introduction.

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The air suspension control system using air pressure, LICAR AIR+, is made up of a control unit and its connection accessories, which together with the mechanical accessories for installing the air springs to the vehicle, the air springs themselves and the compressor (purchased separately) complete an automatic Wireless system (using a mobile phone), which allows the digital regulation and control of the height and pressure of the pneumatic suspension of your semi-heavy vehicle, in motorhomes, vans, ambulances, 4x4s, minivans, tow trucks , etc. The system does not need to have contracted mobile data with an operator, nor an active Wi-Fi connection. Just a mobile phone with Bluetooth and the Licar Air+ APP, which is downloaded for free from the Apple and Android platforms.

Thank you for purchasing our Wireless air suspension control system, LICAR AIR+. At LICAR CONTROL SYSTEMS, a Spanish company dedicated to designing digitalized control systems for vehicles, we have dedicated great time and effort to designing (hardware and software), manufacturing, and marketing innovative equipment that we hope will more than meet your expectations.

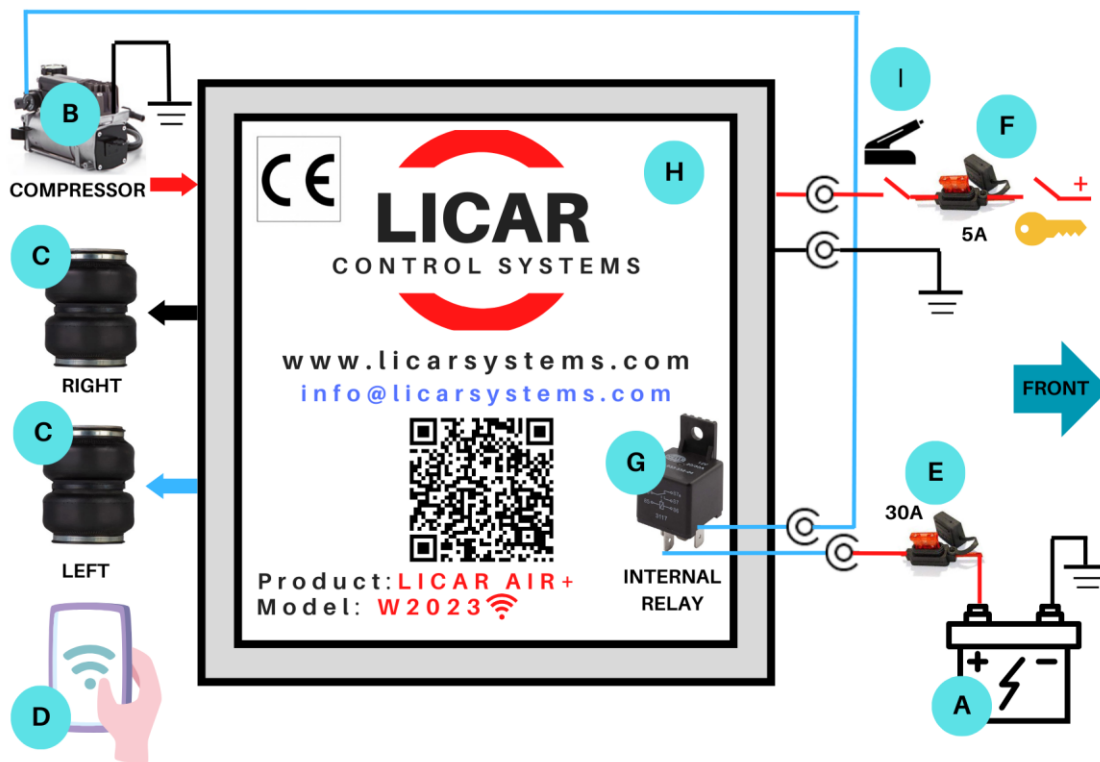
The final result is a system that is very easy to install for our [installers](#), which eliminates all pneumatic or electrical connections in the driving cabin (since the control knob is mobile). LICAR AIR+ is a fully DIGITAL system, with an electro-pneumatic control unit specifically designed to be placed under your vehicle, which reduces the necessary connections to a minimum and therefore ensures reliability and long life of the air suspension solution. . Rest assured, LICAR AIR+ is probably one of the most advanced air suspension control equipment available.

This document explains and describes the elements that make up the LICAR AIR+ system, its functionalities, its installation and how to use the mobile application for its management.

Additionally, explanatory videos can be found on our page <https://www.licarsystems.com/videos> for:

- Installing the system in the vehicle: <https://www.youtube.com/watch?v=fRKHbVyypmY>
- Downloading the LICAR AIR+ APP: <https://www.youtube.com/watch?v=aQlzt0EfHW0>
- Pairing the mobile with the Control Unit: <https://www.youtube.com/watch?v=kUofX6PpPf4>
- The use of the mobile application to manage the system:
  - Android: <https://www.youtube.com/watch?v=4CxMibKHV7Y>
  - iOS: <https://www.youtube.com/watch?v=Lla0p9t3T3E>

## 2. Constituent elements of the LICAR AIR + air suspension



- A- vehicle battery
- B- Exterior compressor (Normally on the underside of the vehicle)
- C- Pneumatic suspension springs, on the front and/or rear axle.
- D- Mobile phone(s) of user(s) with the suspension control App.
- E- 30A compressor protection fuse
- F- 5A fuse, after ignition key, to protect the Control Unit
- G- External Compressor activation relay
- H- Electropneumatic control unit, LICAR AIR+ (Normally located under the vehicle)
- I- Hand brake

Elements G to H are those supplied by LICAR CONTROL SYSTEMS for all air suspension solutions in any vehicle or manufacturer (Springs or Shock Absorbers with Air Pressure) that want to be controlled wirelessly, even in vehicles that already have a pneumatic suspension. whose control is being carried out from the dashboard. Changing from traditional control from the cabin to wireless control from your mobile phone is easy to do.

For mobile control D, the user's own mobile phone is normally used or, in other cases, it can be supplied by LICAR SYSTEMS. The mobile APP is valid on IOS and Android platforms.

In addition to the above, and for each control unit, 2 air springs or shock absorbers (Elements C) are necessary for each axle, front and/or rear, along with their mechanical accessories for adaptation to the vehicle chassis (AL-KO, for example). example), and the installation of the entire assembly (Consult your [installer](#) closest).

LICAR Control Systems supplies the LICAR AIR+ KIT, which includes elements G (compressor management relay), B (high quality compressor), H (electro-pneumatic control unit), 6 Meters of each pneumatic hose in 3 colors (red, black, Blue) for the pneumatic connection from the control unit to the Ball Bearings.



### **LICAR AIR+ KIT**

The LICAR CONTROL SYSTEMS control unit, LICAR AIR +, can be connected to any air cylinder on the market that admits a pressure range between 0.0 to 7.0 Bars. Let's consult in [info@licarsystems.com](mailto:info@licarsystems.com) to choose the most appropriate solution for your vehicle.

### 3. Air suspension control functionalities.

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- Wireless control and management (With one or more user phones) of the suspension. You only need to pair them with the Control Unit. Never again controls without batteries or damaged.
- A Control unit governs the inflation/deflation of 2 air suspension springs (front and/or rear) independently, manually using buttons on the mobile phone, or automatically to the pressure presets already memorized and defined by the user.
- Up to 4 pressure memories for each spring in the vehicle, M1 to M4, easily definable by the user (Specific names such as “Highway” can be given), for quick change of suspension pressures (Examples: M1 for highway, M2 for board the ferry, M3 to evacuate dirty water, etc.). Memorization is carried out by teaching, manually inflating or deflating the balloons to the desired pressures, and memorizing them. These pressures are stored in the Control Unit, and are available for all users' mobile phones.
- A control unit can be paired to several mobile phones (No limit), allowing only one simultaneous connection (Example: 2 people can control the same motorhome from their mobile phones, not at the same time).
- Vehicle concept in the mobile APP. One cell phone can control several vehicles. There is no limit to the number of paired vehicles (Example: A mobile phone controls the father's and son's motorhome).
- **A mobile can control 2 control units simultaneously, installed in the same vehicle**(Front and rear undercarriage), being able to save the preselection memories M1 to M4 for both units, and therefore leveling a vehicle with 4 springs.
- Completely digitalized system, from 0.0 to 7.0 Bars of pressure. User units are definable (Bars/Psi). The system displays the current air pressures of the cylinders at all times on the mobile phone.
- From the APP: Link to online help on the web, with videos for the installation, configuration and use of the LICAR AIR+ system.
- Several languages of use (Basque, Spanish, English), although the operation is very simple.
- The Control Unit uses Bluetooth technology and can only maintain one connection with one mobile device at a time. If one device is connected, another device cannot be connected to the control unit until the previous connection is closed.
- The power supply to the Control Unit is 12 VDC, with a fuse placed behind the ignition key. For operation it is necessary to have the vehicle key inserted and turned ON. The vehicle's engine may be off.
- Compressor activation via Relay, with a fuse placed after the battery. See connection diagram to element G.

## 4. Sequence of installation and use of the Wireless LICAR AIR+ control system.

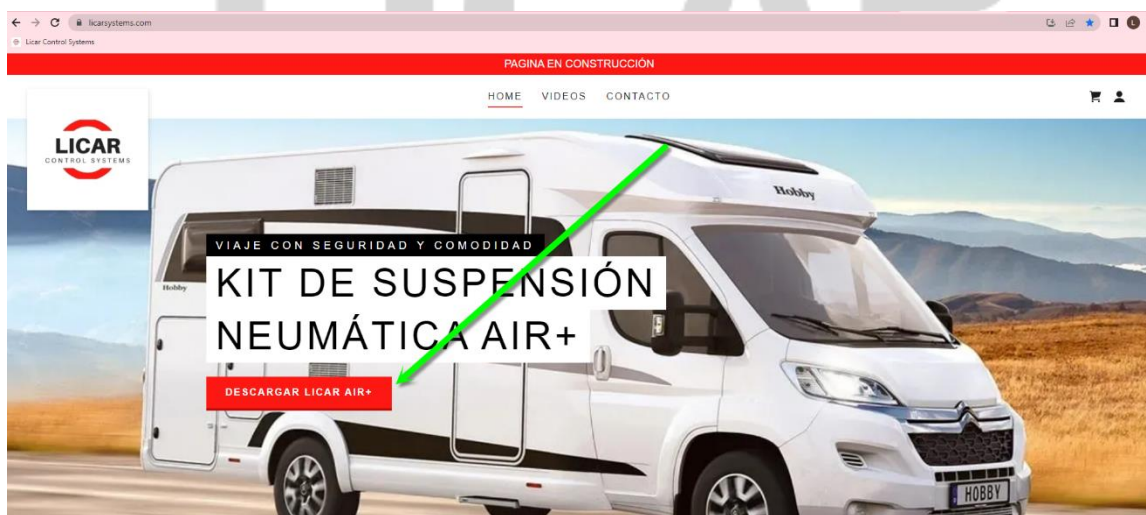
After receiving the kit by the installer, the necessary steps are:

**4.1 Install the assembly in the vehicle, according to the diagram on page 4, from elements A to H, by an authorized installer.**

- FOR CONNECTION AND INSTALLATION PRESS [HERE](#)
- FOR THE LIST OF INSTALLERS PRESS [HERE](#)

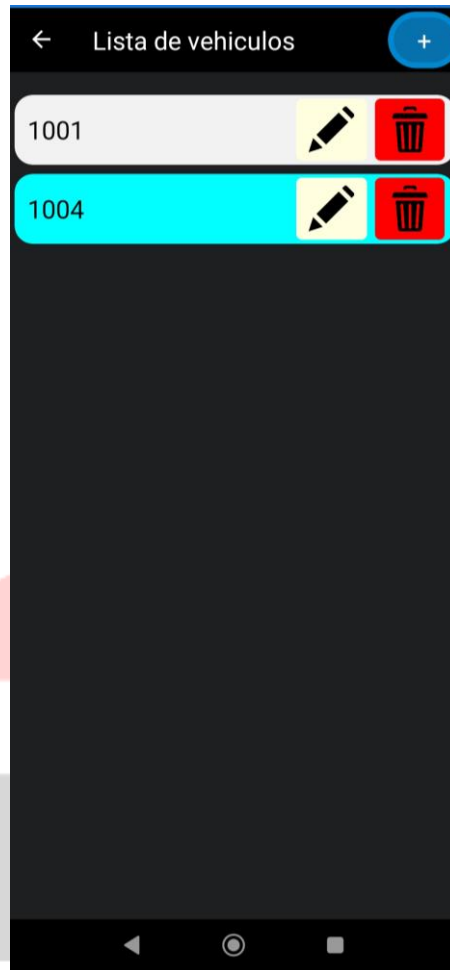
**4.2 Get and download the LICAR AIR+ APP for free [HERE](#)**

The easiest thing is to download the application from your mobile phone, accessing the APP Store (IOS) or the Play Store (Android).



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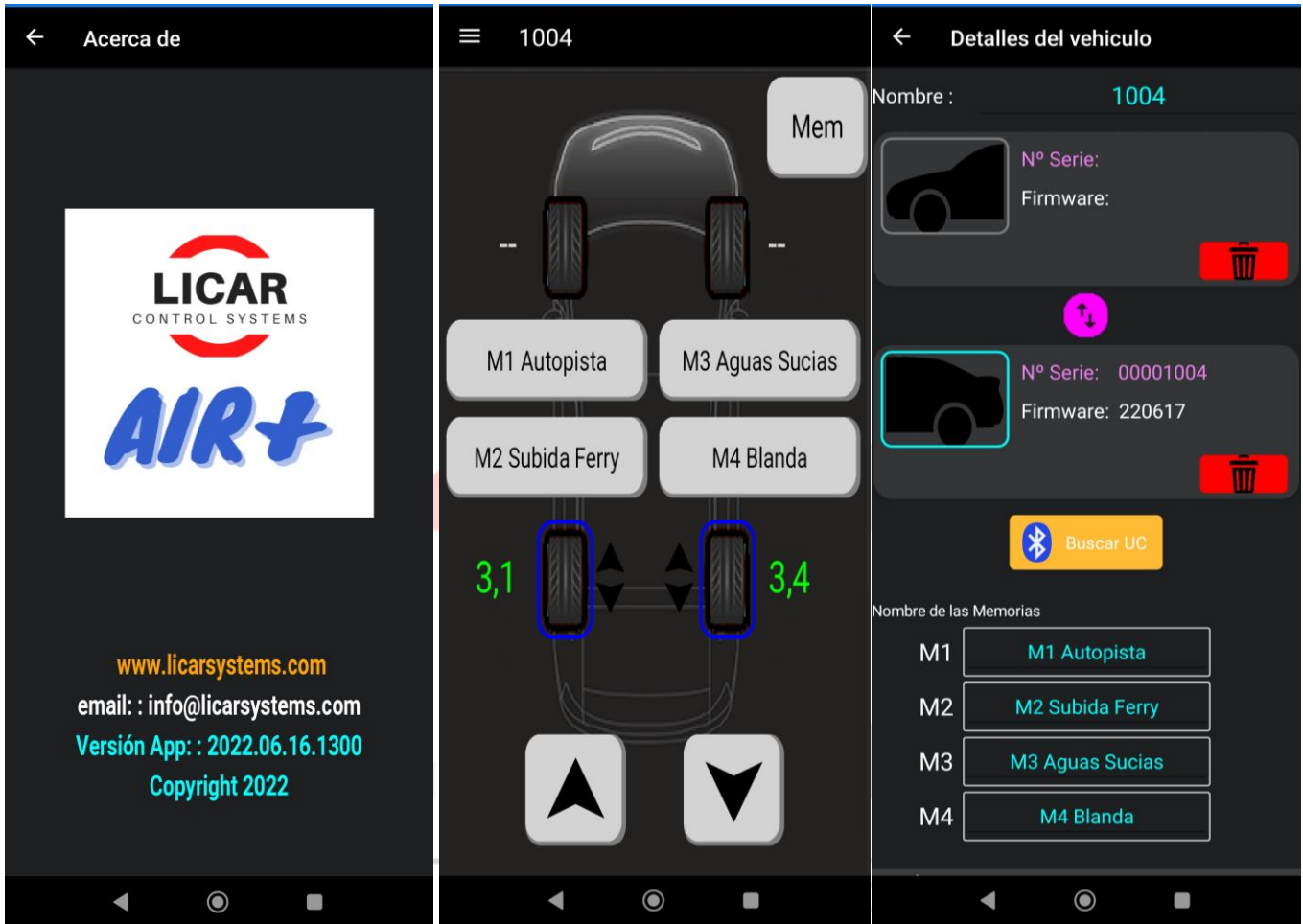
1. Install the app using [this video](#)
2. Pair the mobile phone with the remote control only once, according to [explanatory video](#). The Control Unit, once it enters pairing mode, will remain in this mode for 5 minutes. In this mode you can continue pairing more mobiles, or use the already paired mobiles. It will only be necessary to pair again with the control unit when you want to add another additional mobile or there is no paired vehicle in the vehicle list of the mobile APP.



List of Paired Control Units



3. Once the mobile is paired, start using the application, here is the video tutorial [Android/iOS](#).








Different application screens


## 5. Most common errors.

To solve possible handling or installation errors, it is better to have the vehicle's engine stopped (but with the ignition key turned ON), and thus be able to listen to the activations or deactivations of the compressor or other elements (air exhaust valves, for example).

After a new installation of the system in a vehicle, it is advisable to leave the airbags inflated to a certain pressure for 24 hours. After that, check that there are no air losses in them, thus ensuring a correct pneumatic installation and the tightness of the circuits.

MISTAKES	CAUSES	SOLUTIONS
<p><b>ERROR 1:</b> Without communication between the mobile phone and the Control Unit, a crossed-out blue connector is displayed:</p> 	<ul style="list-style-type: none"> <li>No bluetooth connection.</li> <li>Too much distance.</li> <li>Do not have Bluetooth activated on your mobile.</li> <li>The control unit does not receive adequate voltage or has interference.</li> <li>Vehicle ignition key not ON</li> <li>UC power fuse blown.</li> </ul>	<p><b>Solution 1:</b> Communication between the mobile and the unit must be done within the possible range (Maximum 15 meters).</p> <p><b>Solution 2:</b> Check that the initial pairing between UC and mobile has been made.</p> <p><b>Solution 3:</b> Check that the electrical power connection of the control unit and that its fuse is in correct condition, receiving 12 VDC from the ignition key output.</p> <p><b>Solution 4:</b> Have BT communication and location (GPS) activated on your mobile phone.</p>
<p><b>ERROR 2:</b>A red Alarm symbol is displayed and the current pressure value of some balloon is indicated in red.</p> 	<ul style="list-style-type: none"> <li>The inflation pressure &gt; 7.0 Bar or deflation pressure &lt; 0.1 Bar has been reached.</li> <li>There is a pressure loss in the system</li> </ul>	<p><b>Solution 1:</b>The balloon(s) controlled by the control unit are below 0.5 bars or above 7.0 bars (overinflation of the balloons is prevented).</p> <p><b>Solution 2:</b> Check that there is no pressure loss due to air leakage in the Pneumatic connection. Inflate the balloons.</p>

MISTAKES	CAUSES	SOLUTIONS
<p><b>ERROR 3:</b>The compressor does not activate when trying to inflate the balloons</p> 	<ul style="list-style-type: none"> <li>• Some electrical connection is in poor condition.</li> <li>• The startup steps have not been completed correctly.</li> <li>• If the mobile app activates the outputs to inflate the balloons, the UC is activating the outputs of the air inflation solenoid valves.</li> </ul>	<p><b>Solution 1:</b>Check that the electrical connection of the external activation relay and its fuse are in correct condition.</p> <p><b>Solution 2:</b>Make sure that there is a battery voltage greater than 10 VDC volts to activate the compressor. Check that the vehicle ignition key is in the ON position and that the Control Unit and compressor power fuses are OK.</p>
<p><b>ERROR 4:</b>The balloons do not inflate despite activating the compressor.</p> 	<p>The lines/balls lose air.</p>	<p><b>Solution 1:</b>The integrity of the pneumatic connection of the air inlet from the compressor to the Control Unit, as well as the outlets from the UC to each of the air cylinders, must be checked.</p>
<p><b>ERROR 5:</b>A balloon does not deflate when pressing  deflate from the APP or the other air balloon deflates.</p>	<ul style="list-style-type: none"> <li>• Defective pneumatic connections.</li> </ul>	<p><b>Solution 1:</b>When deflating, the compressor can never be activated (there would be something connected incorrectly). Check that the pneumatic connections from the Control Unit to the air springs and the compressor are made correctly, they are not interchanged (Follow the connection with the established pneumatic colors).</p>
<p><b>ERROR 6:</b>During the pressure search in automatic mode to a preselected memory, the system</p>	<ul style="list-style-type: none"> <li>• Low battery.</li> <li>• The compressor is not working</li> </ul>	<p><b>Solution 1:</b>The process is designed to take no more than 1 minute for each of the steps</p>

MISTAKES	CAUSES	SOLUTIONS
<p>stops and does not finish adjusting it</p>	<p>properly.</p> <ul style="list-style-type: none"> <li>• The connection is not good.</li> <li>• There is a loss of communication between the mobile and the UC.</li> </ul>	<p>necessary to finish the automatic sequence and achieve the desired pressure. Both the activation of the compressor and the integrity of the pneumatic and electrical connections must be checked, as well as that the battery voltage is within range.</p>
<p><b>BUG 7:</b>Loss of pressure in the balloons, without performing inflation/deflation sequences</p> 	<ul style="list-style-type: none"> <li>• Leaks in the pneumatic system</li> </ul>	<p><b>Solution 1:</b>Check that there are no leaks in the pneumatic tubes connected from the Control Unit to the Ball Bearings.</p>



## 6. Contact information.

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