MOVIN' ON GPS FLEET MANAGEMENT

Installation Guide

MOSS 6500/6501/6550/6551

Commercial Vehicle Productivity and Security

The 65xx is a high-performance beacon designed for commercial productivity and security. It is ideally suited to installations in delivery and service fleets as well as public safety, mass transportation, utility, and off-road or construction vehicles.

The 6500/6501 models transmit data on the core 2G GPRS (general packet radio service) network, commonly used by most providers. The 6550/6551 models make use of the latest 3G HSPA (high speed packet access) network technology for fast and error-free data communication.

Security features include unauthorized vehicle movement and relocation alerts.

65xx Model Comparison

Model	Network	Antenna
6500	2G GPRS	External
6501	2G GPRS	Internal
6550	3G HSPA	External
6551	3G HSPA	Internal

Kit Contents

› GPS Beacon device with SIM
› Combined GPS/Cell Network antenna (if required)
› Wiring harness

Tools and Supplies Required

› Wire cutters, wire strippers
› Voltmeter (multimeter)
› Soldering iron, solder
› Electrical tape

1. Antenna Configuration

The 65xx comes with a combined GPS/Cell Network antenna module. The 6501 and 6551 are equipped with an internal antenna housed within the beacon, while the 6500 and 6550 use an external antenna attached with FAKRA connectors.

For either configuration, the antenna must be positioned in the vehicle so that it has a clear signal path to as much of the sky as possible, without metal obstruction. For internal antennas, the beacon itself must be positioned properly for good signal reception.

External Antenna Installation

The following wedge antenna is included in the 65x0 kit:

- Part #: 65xx-ANT-WEDGE
- Black plastic housing; 5.4 inch (138mm) length; 1.25 in (32mm) width; 0.44 in (11.2mm) depth;
- Mounted with peel-and-stick adhesive patch.

For best performance, the top of the antenna should face the sky through the area of least signal blockage (see diagram).

› If the installation is not required to be covert, an ideal location is underneath the front windshield glass. For covert installations, an ideal location is under the dashboard, as close to the front windshield as possible.

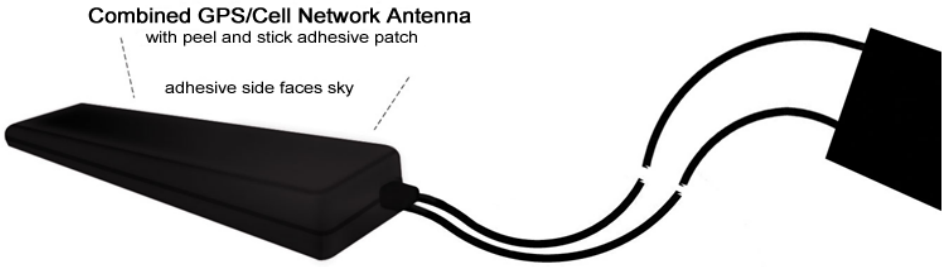
› In a car, the antenna can be mounted under the rear window or in the trunk, under the rear deck, as close to the rear window as possible.

Antenna Installation Notes

› Signals will penetrate upholstery, carpet, plastic dashboards, etc., but not metal panels or brackets.

› Signals will penetrate window glass but not metallic tinted windows or painted edges of windows.

› Radio antenna or defrost wires embedded in glass may degrade signals.



2. Beacon Installation Position

› Determine beacon installation position but do not fasten it in place until all wiring is complete.

› Determine the best location for the beacon – a strong flat surface that can be drilled to accommodate the mounting holes is ideal. Any spot where the beacon can be fastened in place with plastic cable ties is suitable.

› The 6501 and 6551 have internal antennas contained within the beacon housing. It is therefore important that the top face of the beacon (the side with the large label) is facing the sky with no metallic obstruction. These models are ideally located under the dashboard, and the same guidelines for installing an external antenna (described in section 1) are applicable.

› For the 6500 and 6550, that connect to an external antenna, under a seat is often a suitable location for beacon installation. Be sure it is not close to any heat sources or areas that experience moisture or vibration. The beacon is not waterproof or weatherproof and should always be installed in the passenger compartment of the vehicle.

› Visibility of the indicator LEDs will be useful for testing and troubleshooting.

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3. Connect Power and Ignition Sense

The 65xx power harness contains 14 wires, 3 of which are bundled together. The bundle contains the 8-30V constant Power (Red), Ground (Black), and Ignition Sense (White) wires.

Notes:

› Connect the wiring harness to the power and ignition source, as well as any I/O sources (if used), before attaching the harness to the beacon.

› If wiring harness wires need to be extended, use the same gauge wire and solder the extension wire on, then insulate with heat shrink tubing or electrical tape.

› Ensure that no wires are routed near heat sources.

Power Connection Instructions

› Connect the Black (Ground) wire to battery negative or the vehicle chassis – this wire MUST be connected first, before the power or ignition sense wires. Be sure the grounding screw is not painted or coated with an insulating material.

› With the vehicle's ignition turned off, use a multimeter to assist in finding a suitable, constant 8-30V power connection point – directly to the vehicle's battery may be best. **Important note: The red (power) cable is configured with an in-line 3-amp fuse. This fuse must be installed as close as possible to the primary power source connection.**

› Ensure that any wires in the wiring harness that are not to be connected do not come in contact with power, ground, or any other voltage. Insulate them with electrical tape.

Ignition Sense Connection

› The ignition sense connection is mandatory. **Failure to install the ignition sense correctly will result in erroneous data being reported from the beacon.**

Important Notices

The 65xx is designated to operate from 8 to 30 Volts DC. The user is responsible for ensuring the voltage supplied to the 65xx remains in this voltage range to include transient voltage spikes and load dump voltages. Failure to comply may damage the 65xx. The current draw under normal operating conditions is approximately 100mA at 12V.

Failure to use the proper 3-amp fuse or to install the fuse in the recommended location could cause a vehicle fire hazard. The fuse provides overload protection for the power cable and the 65xx. The wiring installed between the fuse and primary vehicle power is not protected from overheating if a short should occur.

Failure to install the ignition sense correctly will result in erroneous data being reported from the beacon. This may result in false or incorrect reporting of vehicle starts, stops, ignition on and off.

› Find a source of 8-30V that is switched on and off with the ignition key in the run position (accessory position is not acceptable). This connection should produce 8-30V when the vehicle ignition is ON and 0 Volts when the vehicle ignition is OFF. Connect the white (ignition sense) wire to this point. Voltage transitions must occur instantly. Gradual or stepped transitions from one voltage to another may not be detected.

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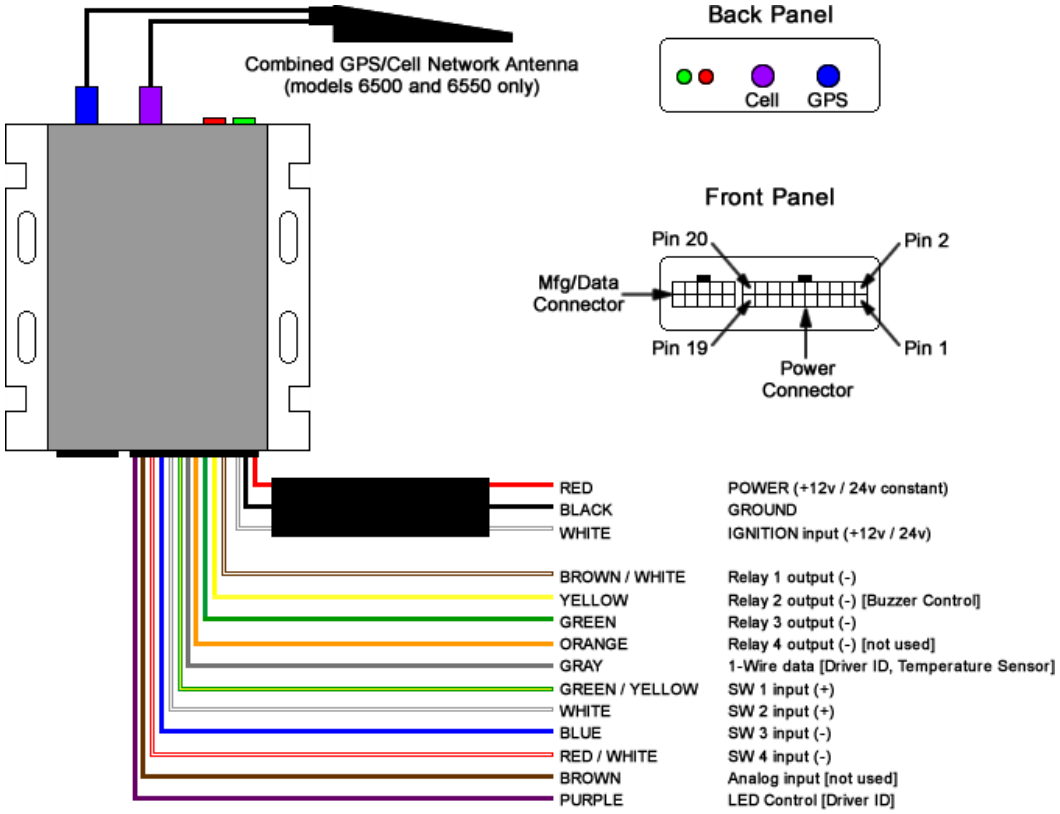
MOSS 65xx Wiring Harness and Connectors



Pin #	Wire Color	Description	Pin #	Wire Color	Description
1	Black	Ground	11	White	Switch 2 input (+)
2	Yellow	Relay 2 output (-) [Buzzer Control]	12		not used
3	Green	Relay 3 output (-)	13	Red/White	Switch 4 input (-)
4	Orange	Relay 4 output (-) [not used]	14		not used
5	Blue	Switch 3 input (-)	15	White (bundle)	Ignition input (+)
6	Gray	1-Wire data [Driver ID, Sensor]	16	Brown/White	Relay 1 output (-)

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7		not used	17		not used
8	Red (bundle)	Power input (+8 to +30v constant)	18	Green/Yellow	Switch 1 input (+)
9		not used	19	Purple	LED Control [Driver ID]
10	Black (bundle)	Ground	20	Brown	Analog input (0 – 16v) [not used]

4. Auxiliary Input and Output

Auxiliary Input

› The auxiliary inputs can be used to detect and report the opening and/or closing of a circuit. There are four auxiliary inputs available on the 65xx beacon models, as indicated in the wiring diagram on the previous page.

› Auxiliary inputs 1 and 2 are considered to be closed when connected to a vehicle power source, and are considered to be open when connected to ground or an open circuit. Auxiliary inputs 3 and 4 are considered to be closed when connected to ground, and are considered to be open when connected to a vehicle power source or an open circuit.

› When using auxiliary inputs to measure the state of vehicle circuits, it is recommended that you use a relay to control the input signal to the device.

Output

› Outputs can be used to remotely control vehicle functions such as door lock/unlock and starter disable/enable. There are three outputs available on the 65xx beacon models, as indicated in the wiring diagram on the previous page. Output 2 is reserved for the Buzzer output, while Outputs 1 and 3 are configurable for general use.

› Outputs 1 and 3 can be configured via the web portal to interactively toggle an external circuit between open and closed states, or to pulse the circuit to the closed state for either 1 or 3.2 seconds, then automatically open the circuit.

› To close an external circuit, the 65xx output acts as a ground source (or what is referred to as a current sink) to the external circuit. To open an external circuit, the 65xx output will be open. Since the 65xx output can draw a maximum current of 150mA, it is recommended that you use the output to control a relay and use the relay to manage the external circuit.

5. Connect and Mount Beacon

› For 6500 and 6550 beacons, connect the two antenna cables to the beacon using the corresponding FAKRA connectors, ensuring a firm, positive connection is made.

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› Attach the wiring harness to the beacon and ensure that the retaining clip snaps in place.

› Affix the beacon securely to the vehicle using the mounting holes found in the tabs on either side of the beacon. If the beacon is not securely mounted, it may report a false AWP, Start and Stop.

› If a suitable panel for affixing the beacon is not available, fastening the beacon to a bracket or wire bundle with plastic cable ties is also adequate.

› Secure any loose or extra lengths of wire.

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6. LED Indicators

› The Green and Red LED indicators on the back panel of the 65xx are used for troubleshooting installations.

› Watch the indicator LEDs on the beacon for the first few minutes after all power and antennas have been connected. If the LEDs do not light up when power is first connected, the vehicle ignition must be turned on to initialize the device.

› When the ignition is first turned on the Green indicator will show solid for about 30 seconds. After this initial setup period, the **Green** LED will blink slowly (8 times in 10 seconds) when the Ignition is turned off, and rapidly (25 times in 10 seconds) when the Ignition is turned on.

› The **Green** LED can also be used to monitor Auxiliary Input status. When an Input is active, the **Green** LED will flash a number of times equal to the identifier of the Input. For example, if Input 2 is active there will be two short flashes every 3 seconds.

› The **Red** LED is used to indicate error conditions by flashing a 2-digit code. The first digit indicates the general error type (1=hardware, 2=modem, 3=GPS, 4=end-to-end service) and the second digit indicates a more specific error described in the table below.

Note that if multiple error conditions exist, the **Red** LED will cycle through all current error conditions.

Red LED Error Codes

1st Digit	2nd Digit	Error Condition
1	1	**License key has expired.** Please contact Movin' On GPS Support.
1	2	**Low supply voltage.** Please check the power connection to the device and ensure that the vehicle battery is supplying adequate voltage. If the error persists after the ignition is turned on, please contact Movin' On GPS Support.
1	3	**Data usage exceeded.** Please contact Movin' On GPS Support.
2	1	**Modem module fault.** Please contact Movin' On GPS Support.
2	2	**No SIM inserted.** Please contact Movin' On GPS Support.
2	3	**No cellular signal.** *
2	4	**Network not found.** For a new installation, this code may indicate that the SIM has not been activated yet. If the antenna is connected and the error persists, please contact Movin' On GPS Support.

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2	5	**Last data session failed.** *
2	6	**GPRS not attached.** Please verify beacon activation.
3	1	**GPS module fault.** Please contact Movin' On GPS Support.
3	2	**GPS antenna fault.** *
3	3	**GPS not tracking any satellites.** *
3	4	**GPS no fix (<3 satellites).** *
3	5	**GPS has no time.** *
4	2	**Data transfer failed.** *

*These issues may be caused by an incorrectly connected or positioned antenna. If the antenna is connected properly and has a clear view of the sky, and the error persists, please contact Movin' On GPS Support.

7. Testing and Troubleshooting

Beacon Test Tools are available for mobile devices (smartphones and tablets). These are convenient to test the 65xx installation and connectivity, immediately displaying the results for the installer on their handheld device. Please contact Movin' On GPS Support if you need help configuring access to the tools.

After installation, it is strongly recommended that a road test be performed to verify the beacon wiring and to ensure that the configured scenarios are performing correctly.

If you are still experiencing difficulties after following the steps in this guide, please contact Movin' On GPS Support at info@movinongps.com.

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