

EN

# GEM-ACC-KP installation guide



**GemOne®**

# Content

|                              |           |
|------------------------------|-----------|
| <b>General information</b>   | <b>4</b>  |
| <b>Technical specs</b>       | <b>4</b>  |
| Dimensions                   | 5         |
| Wiring                       | 5         |
| <b>Installation</b>          | <b>6</b>  |
| Which signal to interrupt?   | 7         |
| Relay selection              | 8         |
| Installation schematics      | 9         |
| GEM-OX-L                     | 9         |
| GEM-OX-C                     | 10        |
| 9 - 80V                      | 10        |
| 80V - 97V                    | 11        |
| GEM-OX-G                     | 12        |
| <b>Telematics connector</b>  | <b>13</b> |
| <b>How to use</b>            | <b>14</b> |
| Unblocking a machine         | 14        |
| Blocking a machine           | 14        |
| <b>FAQ / Troubleshooting</b> | <b>15</b> |
| <b>Support</b>               | <b>18</b> |
| <b>Warranty</b>              | <b>19</b> |

# General information

The GemOne RFID keypad adds driver identification and access control to your existing fleet. The waterproof design allows you to install this on both indoor and outdoor machines, independent of the machine model. It is compatible with a wide range of GemOne products, including the Onyx product family. Drivers can authenticate themselves using

their personal PIN code or using a mix of RFID technologies such as HID, EM and MIFARE. The built-in LED and buzzer provide immediate feedback to the user, even in a noisy environment. Our GemOne cloud platform allows you to easily manage and assign cards and PIN codes to the different machines, without physical access to the machines.

# Technical specs

|                      |  |
|----------------------|--|
| Dimensions           | 122 (L) x 50 (W) x 21 (H) mm                 |
| Voltage range        | 9 - 80V                                      |
| Supported card types | HID 26-bit<br>EM 26-bit<br>MIFARE Classic 1k |
| IP rating            | IP67   |
| Temperature range    | -30°C - 60°C                                 |
| Weight               | 170g   |

# Dimensions

122 (L) x 50 (W) x 21 (H)mm



# Wiring

| Nr | Wire color | Connection  | Description   |
|----|------------|---|---|
| 1  | Red        |  | Bat+<br>Attach to permanent 9-80V supply                |
| 2  | Black      |  | Ground<br>Attach to the ground of the machine           |
| 3  | Green      |  | 1-wire<br>Attach to the 1-wire data from the tracker    |
| 4  | Yellow     |  | Feedback<br>Attach to the correct Dout from the tracker |

# Installation

The tracker monitors the ignition key using the DIN1/ACC to decide when the engine has to be blocked or not:

- When the ignition is off: the engine is not blocked to reduce battery drain
- When the ignition turns on: the digital output is activated to actively block the ignition until the driver presents a valid card or PIN code

# Which signal to interrupt?

For machines with a combustion engine, the easiest way to block the engine is by interrupting the starter engine. Always make sure the current through the ignition blocking relay never exceeds the advertised maximum (for example 15A for 24V or 30A for 12V relays).

If the starter motor uses more current, check if the starter relay can be interrupted instead of the motor itself.

Some vehicles (e.g. electric forklifts) don't have a starter engine. In that case, the ignition blocking relay could be wired to one of the following items:

- Driver seat switch
- Driver seat belt switch
- Charging switch/input
- ...

Make sure you never circumvent any of the safety features of your machine; always consult your vehicle's technical manual.

# Relay selection

The tracker assumes that a normally closed relay is used. When the ignition is off, the tracker does not activate its digital output and the relay stays closed to prevent battery drain. When the ignition is on, the tracker activates its digital output and the relay opens to block the machine, until the operator signs in by entering a PIN or reading the RFID card.

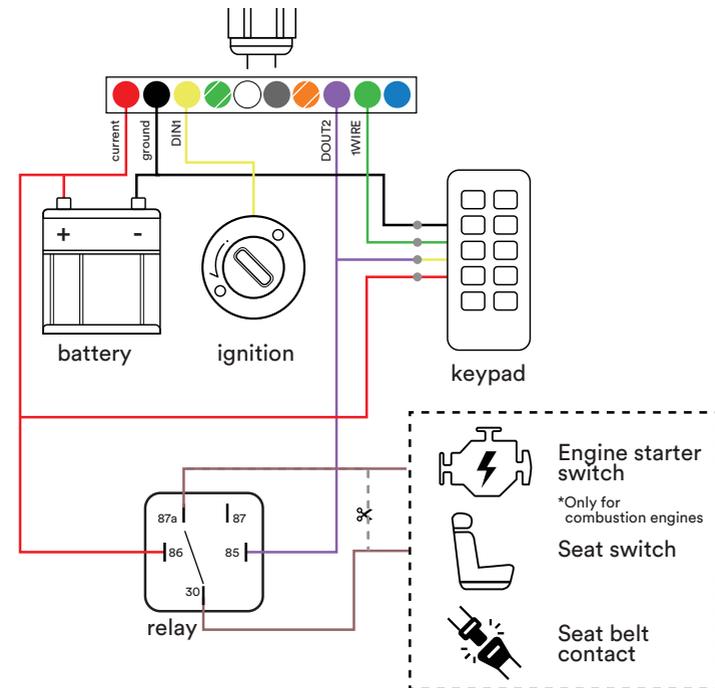
Always make sure that you choose the correct relay for your machine. The coil voltage of the relay needs to be compatible with the machine's battery (12V relay for 12V machines, 24V relay for 24V machines, etc.). Furthermore, to protect the tracker from voltage spikes, the relay must also include a flyback diode. With a flyback diode, the polarity of the coil is important: Bat+ must be connected to the cathode of the diode (relay pin 86) while the digital output must be connected to the anode (relay pin 85).

# Installation schematics

## GEM-OX-L



Make sure to use a normally closed relay that is compatible with your machine's battery and includes a flyback diode. See section 'Relay selection'.

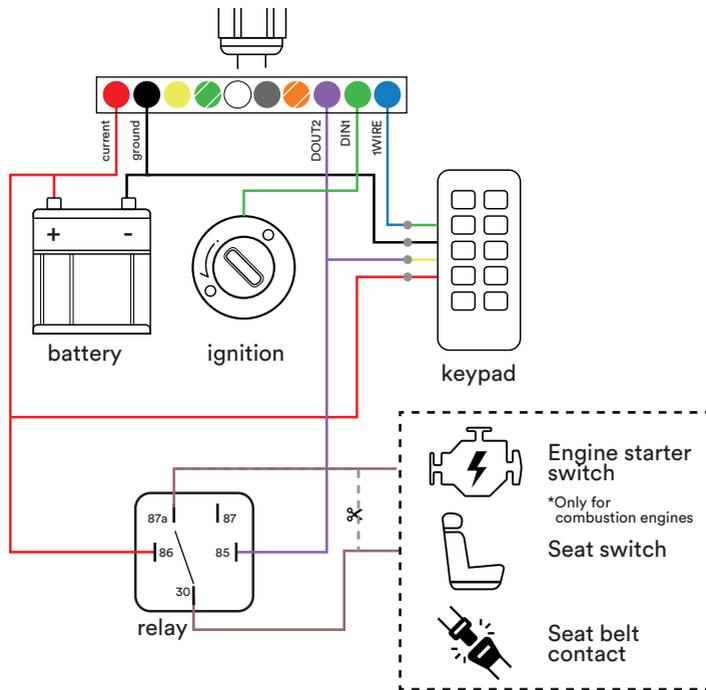


# GEM-OX-C

## 9 - 80V



Make sure to use a normally closed relay that is compatible with your machine's battery and includes a flyback diode. See section 'Relay selection'.

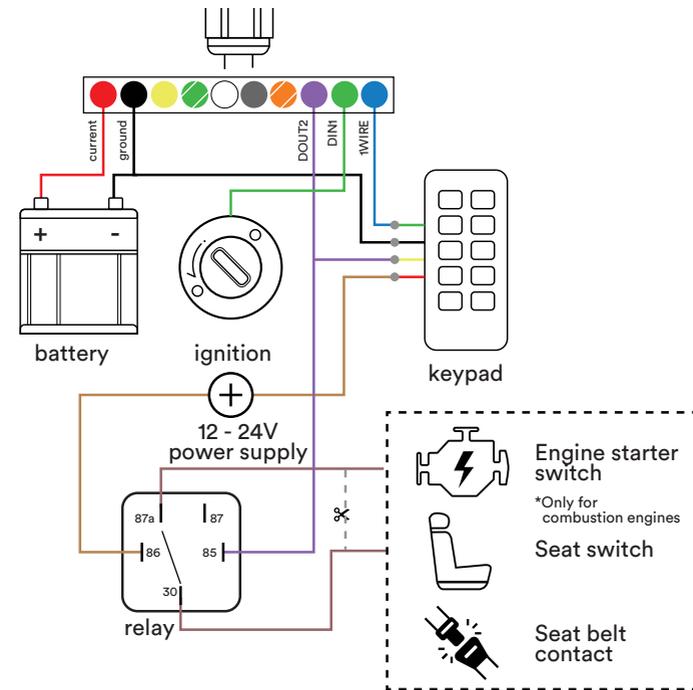


# GEM-OX-C

## 80V - 97V

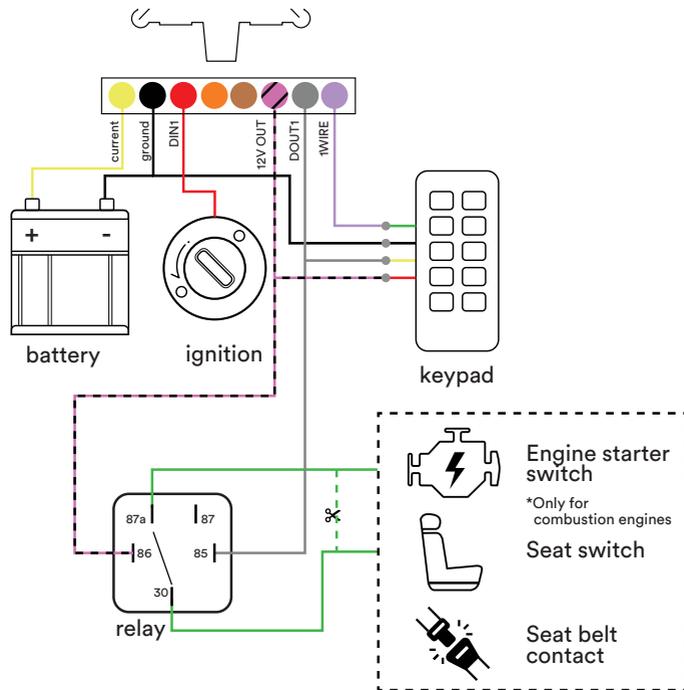
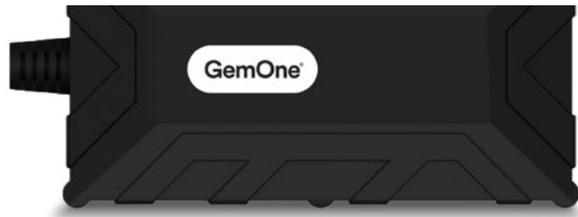


Make sure to use a normally closed relay that is compatible with your machine's battery and includes a flyback diode. See section 'Relay selection'.



## GEM-OX-G

- ⚠ Make sure to use a 12V normally closed relay with a flyback diode. See section 'Relay selection'.



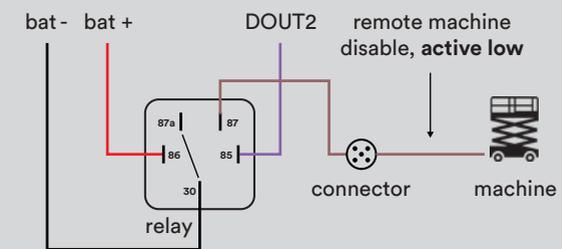
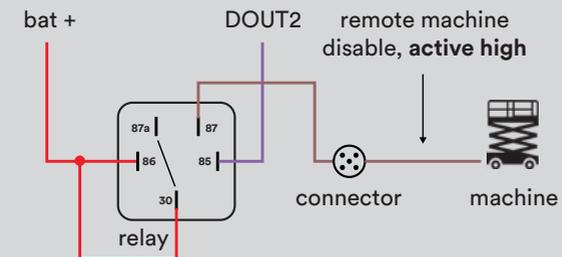
## Telematics connector

Some machines have built-in support for ignition blocking. Models like this have a specific telematics connector or wire that allows the telematics module to block the machine in a safe manner.

We can divide these machines into 2 categories: models with active HIGH or active LOW blocking.

- Machines with active HIGH blocking will disable the ignition when Bat+ is applied to the 'remote machine disable' wire.
- Active LOW blocking on the other hand will disable the ignition when the 'remote machine disable' wire is connected to ground (chassis or Bat-).

Make sure to consult your machine manual for model-specific installation instructions.



# How to use

## Unblocking a machine

When a machine is equipped with access control, a driver should use the following steps to unlock the machine:

- ① Turn on the ignition using the key switch or on/off switch of the machine.
- ② The tracker will now actively block the machine. This is indicated by the red LED on the keypad.
- ③ To unlock the machine using a PIN code, enter the correct PIN code and confirm by pressing the # sign.
- ④ To unlock the machine using an RFID card, hold the card on top of the buttons of the keypad. The keypad will provide a short beep when the card is detected.
- ⑤ If the PIN code or card was accepted by the tracker, the LED will turn green and the keypad will beep for 5 seconds. The machine is now unblocked and can be operated.

## Blocking a machine

- ① To end your session on the machine, turn off the ignition using the key switch or on/off switch. The LED stays green when the session ends.
- ② To operate the machine again, the unblocking procedure needs to be used as described above.

# FAQ / Troubleshooting

## My machine is not blocking.

- **Is the tracker powered correctly?**  
In order for the tracker to function correctly, it needs to be connected to a permanent power supply.
- **Is the ignition signal wired correctly?**  
Make sure the ignition is connected and turned on. Turning on the ignition is vital, as the tracker will only start blocking the machine once the ignition signal is detected. DIN1/ACC of the tracker needs a positive voltage in order to block the machine.
- **Is access control enabled on the GemOne cloud platform?**  
In order for access control to be enabled on the tracker, cards or PIN codes need to be assigned to the corresponding machine on the GemOne cloud platform. If no cards or no PIN codes are assigned to the machine, access control is disabled on the tracker.
- **Was the correct relay selected?**  
Make sure that the voltage of the relay coil matches with the used supply to trigger the relay. See 'Relay selection' for more information.
- **Is the relay correctly powered?**  
Pin 86 should be connected to the power supply and not to the output of our tracker. This is because the relay has an internal flyback diode. The digital outputs of our tracker will only switch between the 'floating' and 'pull to ground' states - so it needs to be connected to pin 85 of the relay.
- **Is the relay interrupting a relevant wire to block the machine?**  
There is sometimes confusion about the cable going from the ignition to the engine. This wire should be cut in two. The first part goes from the ignition to the relay (pin 87a). The second part goes from the relay (pin 30) to the engine.

The LED of the keypad is off, pressing keys or presenting a card does nothing.

- **Is the power to the keypad wired correctly?**  
Make sure the keypad is correctly powered using 9-80V DC between the red (Bat+) and black (ground) wires.

My machine is unblocked, but when I enter a PIN code or present the correct card it starts blocking?

- **Is the normal closed contact used to interrupt the machine?**  
Since the tracker only actively blocks - the relay should use the NC contacts to interrupt the machine (pin 87a, not 87).

Blocking and unblocking works, but the LED always stays green.

- **Is the feedback wire connected properly?**  
The RFID keypad reader will provide user feedback (LED and buzzer) based on the input from the yellow wire. If this wire is not connected to the correct output of the tracker, feedback will be missing - resulting in an always green LED and no sound.

My machine is blocked, but cannot be unblocked.

- **Is the 1-wire data line connected?**  
Make sure the green wire of the keypad is connected to the tracker. This wire is used to communicate the PIN code or card to the tracker.
- **Is the correct card type used?**  
If the reader doesn't give a short beep while presenting your card, the card is not supported. See 'Technical specs' to get a list of supported cards.
- **Is the RFID card presented correctly?**  
Make sure to hold the RFID card in front of the keypad buttons. Keep the card there for a moment until you get the short feedback beep.
- **Is the used PIN or card allowed access?**  
Cards or PIN codes need to be assigned to the corresponding machine on the GemOne cloud platform before they can unlock the machine.

# Support

In case of issues, questions or feedback, feel free to contact our support team.

 +32 56 43 64 00

 [support\\_emea@gemone.com](mailto:support_emea@gemone.com)

## Save time with our connectors

Request for connectors for your machines to save time while installing our trackers. GemOne offers a multitude of different connectors. Get in contact with your account manager for an offer.



# Warranty

Our warranty does not cover any damage resulting from unauthorized modification or wrong installation of the product.

## Lets get connected:

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