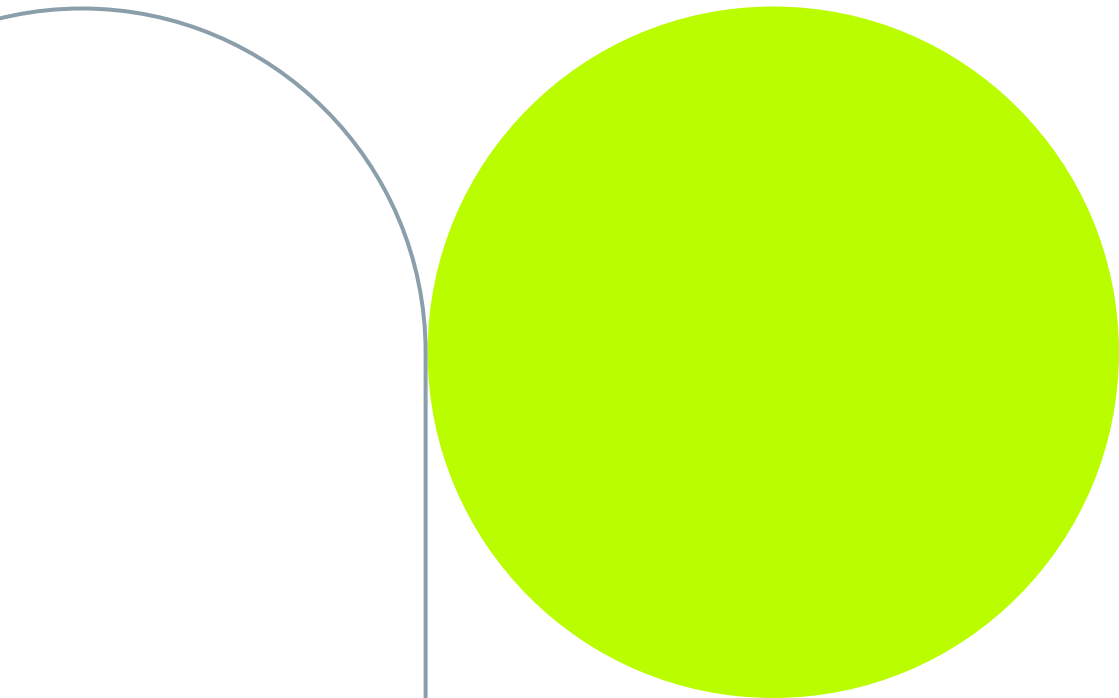


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GemOne Onyx V4 installation guide



GemOne®



Content

General information	4
Technical specs	5
Dimensions	6
Wiring	7
Connector and pinout	7
Pinout description	9
Default wiring harness	10
Custom wiring harness and connectors	11
Wiring schematics	12
Wiring guidelines	13
Mounting positions	15
Antennas	15
Mounting	16
LEDs	17
Data	17
Power	17
GPS	17
Sleep mode	18
Access control	19
General information	19
Technical specs	19
Dimensions	20
Wiring and pinout	20
Wiring	21
Which signal to interrupt?	23
Telematics connector	24
How to use	27
Post installation verification	28
QR-code on the Onyx V4 device	28
Consulting the installation verification page	29
Keeping machine data secured	29
FAQ / Troubleshooting	30
Support	34

General information

The Onyx v4 is a smart telematics unit, which combines basic tracking (location and usage based on its inputs) with advanced functionalities (enabling geofences and impact detection, accelerometer...). With 4G connectivity, high-voltage compatibility, built-in relay, and Dual-CAN support, the Onyx V4 seamlessly meets all your industrial fleet tracking needs.

The Onyx v4 is IP67, which means it can withstand dust and water. Installations should not be protected from dust, rain or splashes of water.

See the installation instructions for more information.



Technical specs

Power

Working voltage: 9 - 97V DC with over voltage protection up to 120V
Battery: 2550 mAh Li-ion internal backup battery

Physical specifications

Dimensions: 166 × 90 × 40 mm
Weight: 336g
Ingress protection: IP67
Operating temp.: -20°C - 60°C
Conformity & certifications: CE/RED, FCC, PTCRB, RoHS, UL/ULC and EE

GSM (data)

3FF SIM slot + eSIM
Internal antenna
4G LTE Cat 1 with 2G fallback:
LTE-FDD: B1 / 2 / 3 / 4 / 5 / 7 / 8 /
12 / 13 / 17 / 18 / 19 / 20 / 25 /
26 / 28 / 66
LTE-TDD: B34 / 38 / 39 / 40 / 41
GSM: B2 / 3 / 5 / 8

GNSS (positioning)

Receiver: GPS,
GLONASS, BDS,
Galileo & QZSS
Accuracy: 2.5 meters

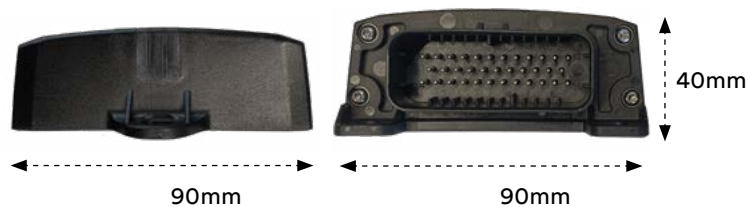
Supported peripherals

Built-in impact and movement detection:
3 axis accelerometer - 3 axis gyroscope
Keypad / RFID reader

Connectivity

Bluetooth 5.4 & LE
3 status LEDs (Data, Power and GPS)
2 CAN-FD busses: Automatic baudrate detection
Multiprotocol support: (J1939/CANOpen/Custom)
Configurable bus termination - 8 analog / digital inputs (0-97V)
2 digital outputs (built-in relays) - 12V / 2A output power
Wiegand interface - RS485 with configurable bus termination

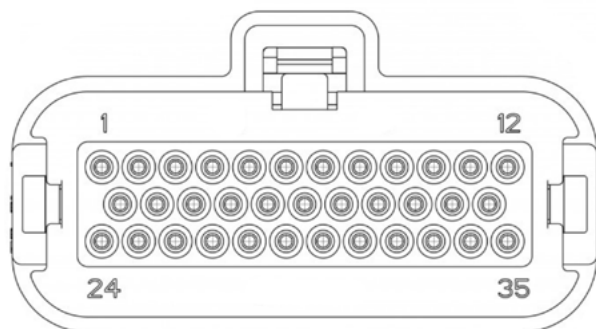
Dimensions



Wiring

Connector and pinout

The Onyx v4 uses a 35-pin connector which mates with TE 776164-1 and has the following pinout:



- | | |
|---------------------------|-----------------------------|
| 1. Bat + | 18. Relay 2 - Common |
| 2. Bat - | 19. Relay 2 - Normal open |
| 3. 12V + | 20. Relay 2 - Normal closed |
| 4. 12V - | 21. CAN1 - High |
| 5. N/A | 22. CAN1 - Low |
| 6. Ain1 / Din1 | 23. CAN2 - High |
| 7. Ain2 / Din2 | 24. CAN2 - Low |
| 8. Ain3 / Din3 | 25. RS485 - A |
| 9. Ain4 / Din4 | 26. RS485 - B |
| 10. Ain5 / Din5 | 27. N/A |
| 11. Ain6 / Din6 | 28. N/A |
| 12. Ain7 / Din7 | 29. RFID keypad D0 |
| 13. Ain8 / Din8 | 30. RFID keypad D1 |
| 14. Relay 1 - Common | 31. RFID Keypad LED |
| 15. Relay 1 - Normal open | 32. RFID Keypad Buzzer |
| 16. N/A | 33. N/A |
| 17. N/A | 34. N/A |
| | 35. N/A |

Pinout description

The Onyx v4 has 3 mandatory pins which need to be connected to function properly:

- **Bat +** and **Bat -** providing constant power to the device
- **Ain1/Din1** indicating to the tracker when the machine is switched on

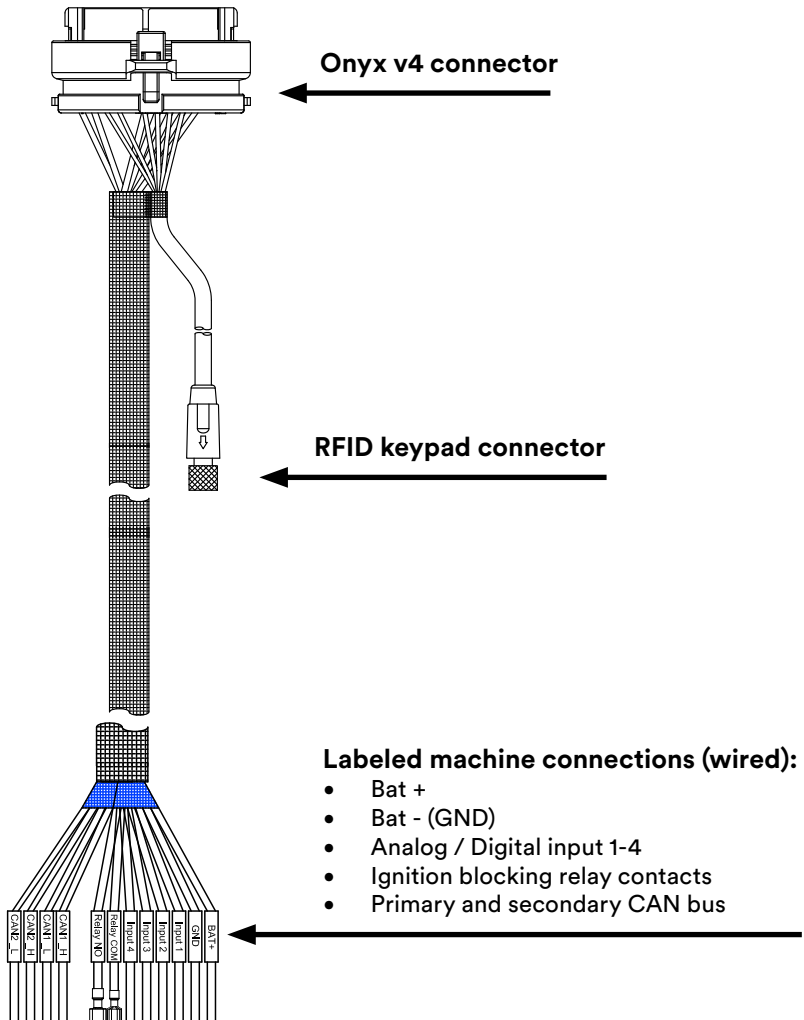
All other connections are optional and depend on your usecase.

Pin	Name	Description
1	Name	Attach to permanent 10-97V DC supply via a 1A fuse (mandatory)
2	Bat +	Attach to the ground or '-' pole of your machine or battery (mandatory)
3	Bat -	12V + output with I _{max} = 2A. This output is used to power external optional accessoires (eg. RFID keypad)
4	12V +	12V output ground
5	12V -	Do not connect - Reserved for future use
6	N/A	Digital input 1: Ignition input (mandatory) - Din1 0-4.5V is logic '0', Ignition off (default threshold, configurable) - Din1 4.5-97V is logic '1', Ignition on Can be used to measure an analog voltage
7	Ain1 /Din1	Digital input 2-8 with input range from 0-97V. Configurable threshold with default 4.5V: - 0-4.5V is logic '0' - 4.5-97V is logic '1' Can be used to measure an analog voltage
8	Ain3 /Din3	
9	Ain4 /Din4	
10	Ain5 /Din5	
11	Ain6 /Din6	
12	Ain7 /Din7	
13	Ain8 /Din8	

Pin	Name	Description
14	Relay 1 - COM	Built-in access control relay, used to block the machine. Normally open contact. Maximum 2A at 30V DC
15	Relay 1 - NO	
16-17	N/A	Do not connect - Reserved for future use
18	Relay 2 - COM	Built-in access control relay, used to block the machine. Normally open and normally closed contact with a maximum of 2A at 30V DC
19	Relay 2 - NO	
20	Relay 2 - NC	
21	CAN 1 - High	Primary CAN bus, configurable internal 120 Ohm termination Connection depends on your machine type (eg. machine, engine, ...)
22	CAN 1 - Low	
23	CAN 2 - High	Secondary CAN bus, configurable internal 120 Ohm termination Connection depends on your machine type (eg. machine, BMS, ...)
24	CAN 2 - Low	
25	RS485 - A	RS485 interface, used to connect to a controller (eg. generator) Configurable internal 120 Ohm termination
26	RS485 - B	
27-28	N/A	Do not connect - Reserved for future use
29	RFID keypad D0	Wiegand data lines (D0 and D1) used to receive the RFID card number or entered PIN code from the reader
30	RFID keypad D1	
31	RFID keypad LED	Signal from the Onyx v4 to the LED indication on the RFID keypad
32	RFID keypad buzzer	Signal from the Onyx v4 to the Buzzer in the RFID keypad
33-35	N/A	Do not connect - Reserved for future use

Default wiring harness

By default, the Onyx v4 is delivered with the basic wiring harness, which provides the most common connections to your machine.



Custom wiring harness and connectors

We can configure the connectors on our trackers in different ways to suit the needs of your specific fleet.

1. Existing machine connections

Our tracker connectors are already compatible with connectors installed by most manufacturers on your machines. In this case, it's simple: just plug directly into the OEM telematics connection and begin tracking your machines immediately.

Even if the existing machine connectors are already in use, we have model-specific adapters for your fleet. Once these adapters are installed, you can easily and quickly plug-in our trackers to your machines.



2. Custom configuration

Where there are no existing machine connectors available on your machines, we have the expertise to custom configure your machines with GemOne cables to ensure standardised installation across your fleet.

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

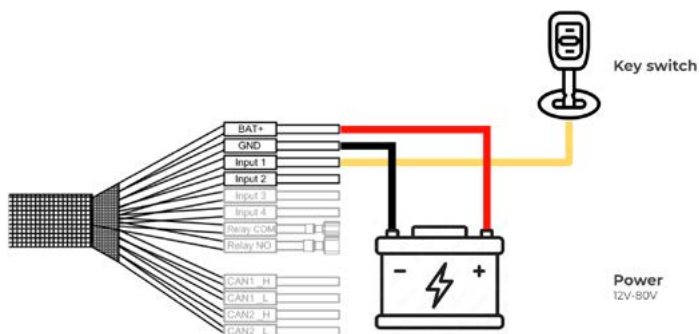


Wiring schematics

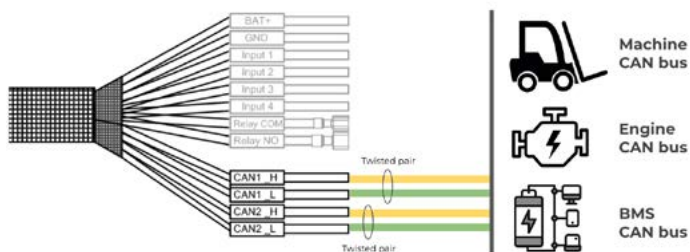
Connect BAT+ and GND to a constant power supply of 12-80V (nominal), 7-97V (maximum). Make sure the power to the tracker is permanent and doesn't switch off when the machine is turned off. Use the appropriate fuse if your machine doesn't provide this (eg. 1A). Always consult the manufacturer manual of your specific machine.

Connect digital input 1 to the keyswitch, this is a mandatory signal.

Other inputs can be connected but are optional (eg. digital input 2 as hour counter)



Connect the primary and secondary CAN bus to your machine, engine or BMS system. This allows the telematics unit to read out values directly from the ECU, VCU or BMS system. Always consult the installation instructions provided by GemOne for your specific machine. When in doubt, contact our support team.



Wiring guidelines

- **B+ and B- (GND)**

The tracker must always be powered, preferably directly to the battery of your machine. It must be connected before the emergency switch and key switch to ensure a continuous power supply. If the tracker is not powered continuously, location of your machine, access control and other features may not work as expected

- **Digital input 1 (ACC)**

Digital input 1 represents the ignition input of our tracker. It is mandatory to connect it to the ignition of your machine. The tracker depends on this input to regulate sleep mode, access control and other advanced features.

The signal must be:

- Low when the machine is off
- High when the machine is switched on - before the engine is running
- High while the engine is running
- Low when the machine is turned off

- **Digital input 2-8**

Digital input 2 represents the hour counter, but - unlike digital input 1 - it is not mandatory to connect it to your machine, especially when the exact hours can be read directly from the machine via CAN. You are free to connect DIN2 to any point in your machine which monitors the usage:

- Physical hour counter with on/off input
- Signal indicating when the engine is on/off
- Pneumatic or hydraulic pumps on/off
- Seat switch
- Foot pedal

If none of the above suggestions are available on your machine, you can opt to base the hours calculation on the ignition input in our cloud platform. Digital input 2 to 8 are optional and can be used to capture additional information from your machine.

- **CAN 1 and CAN2**

Connect the primary and secondary CAN bus to your machine, engine or BMS system. This allows the telematics unit to read out values directly from the ECU, VCU or BMS system. Always consult the installation instructions provided by GemOne for your specific machine. When in doubt, contact our support team.

Mounting position

Antennas

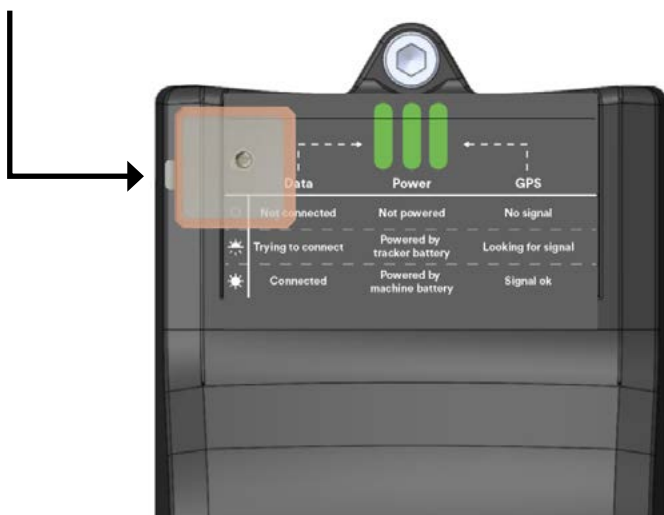
The Onyx v4 telematics unit has an internal GNSS and 2G/4G antenna.

For the antennas to work correctly, the tracker should be mounted with the sticker view to the open sky (metal free) with not less than $\frac{3}{4}$ of metal free area as shown in figure below.

The GNSS antenna is located in the top left corner of the tracker. Specifically make sure not to cover this area in order to have reliable location tracking. Use the 3 mounting tabs to screw the device tightly to the chassis of the machine. M6 Allen keys are recommended.

GNSS antenna

Keep clear of metal and point to sky



Mounting

Mount the device in a reachable place, with the label visible and the antennas pointing to the sky (see Antennas section).

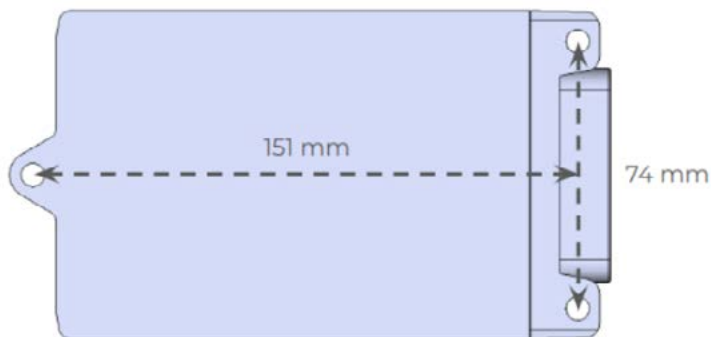
For the best movement and impact detection results, always mount the device to a fixed and sturdy part of the machine (eg. chassis). Make sure the device is properly attached and isn't moving around.

- **Double sided tape**

The flat surface of the tracker on the back allows you to mount the device in your vehicle using double sided tape.

- **Mounting tabs**

Use the 3 mounting tabs to screw the device tightly to the chassis of the machine. M6 Allen keys are recommended.




LEDs

The device has 3 LEDs:

- **Data** - Showing the status of the mobile 2G/4G connection
- **Power** - Showing the status of the power supply
- **GPS** - Showing the location status (GNSS)

The print on the enclosure already provides a short summary what each LED indicates:



	Data	Power	GPS
○	Not connected	Not powered	No signal
☀	Trying to connect	Powered by tracker battery	Looking for signal
☀	Connected	Powered by machine battery	Signal ok

Data

- OFF - The device has no active 2G/4G uplink (eg. no coverage or in sleep mode)
- BLINKING - The device is trying to establish a connection with the mobile network
- ON - The device is connected to the mobile network and able to send telemetry data

Power

- OFF - The device has no external power and the internal battery is empty
- BLINKING - The device has no external power but is still running from the internal battery
- ON - The device has external power from the vehicle (9-97V)

GPS

- OFF - The device has no location lock (eg. no signal or sleep mode)
- BLINKING - The device has no lock but is looking for satellites to get the location
- ON - The device knows its location and has a proper lock

Sleep mode

The tracker is configured to go into sleep mode to preserve the vehicle's battery charge.

If no movement is detected and the ignition is off (digital input 1), after 5 minutes it will go into sleep mode. In sleep mode, the GSM, Bluetooth and GPS module switch off. Movement, ignition (digital input 1) and external power is still monitored for changes. The tracker also sends a message every hour if no activity is detected.

Sleep mode is switched off when the internal accelerometer detects movement or when the ignition is switched on.

The device can run at least 48 hours from the internal battery when in sleep mode (waking up every hour) or at least 6 hours when continuously transmitting data.

Access Control

General information

The Onyx v4 RFID keypad reader provides driver identification and access control on your existing installation. The waterproof design allows you to install this on both indoor and outdoor machines, independent of the machine model.

The easy connector makes it plug-and-play with your existing Onyx v4 installation. 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	9-18V (Powered via Onyx v4 12V output)
Pin code	1 to 16 digits
Supported cards	HID prox (26-bit, 36-bit, 37-bit, ...) EM ID (26-bit) ISO 14443 Mifare, Desfire, ... (32-bit and 56-bit)
IP rating	IP67
Temperature	-40°C to 60°C
Weight	180g

Dimensions



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

Wiring and pinout

The RFID keypad reader comes by default with a connector, plug-and-play with the Onyx v4. The small connector size allows you to easily guide the wiring through your machine to mount the keypad in a convenient location, easily reachable for the operator.



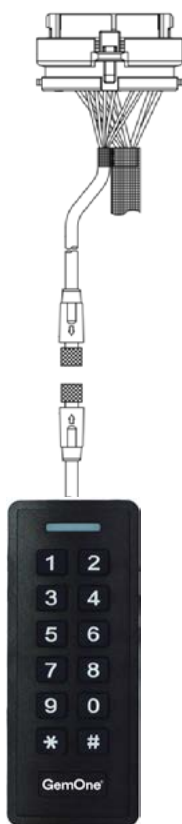
M6 connector

Pin	Name	Description
1	Wiegand D0	Wiegand data lines (D0 and D1) used to send the RFID card number or entered PIN code from the reader to the telematics unit
2	Wiegand D1	
3	LED	Signal from the Onyx v4 to the LED indication on the RFID keypad to switch between red and green
4	V+ (9-18V)	Power supply from the Onyx v4 to the RFID keypad. By default, the RFID keypad is only powered when the machine is on (Din1 / Keyswitch)
5	Ground	
6	Buzzer	Signal from the Onyx v4 to the Buzzer in the RFID keypad

Wiring

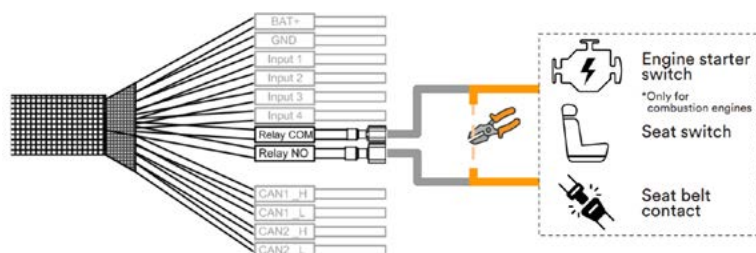
Connect the RFID keypad to the telematics unit via the circular M6 connector and fasten the connector using the screwfix.

Don't use any tools to tighten the screws, hand-tight is sufficient to keep the connection in place.



Select a signal in your machine which allows you to block the machine. Place the Relay COM and Relay NO contacts in series with the selected signal. This allows the telematics unit to interrupt the signal to block the machine. See ‘Which signal to interrupt’ for more information.

Always make sure that the voltage and current doesn't exceed the rating of the internal relays! Try to interrupt a signaling wire in the machine instead of a power wire. If you need to interrupt a power signal which exceeds the specs of the internal relay, connect an external relay with the proper rating.



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 internal ignition blocking relay never exceeds the advertised maximum (2A / 30VDC). 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 circuits:

- 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.

It's not recommended to directly interrupt the key switch, always interrupt the coil to the starter engine, driver seat switch, seat belt switch, charging input, ... but in some cases, interrupting the key switch is the only option. If you do, check the voltage and current upfront and make sure you're not exceeding the maximum of the internal relays.

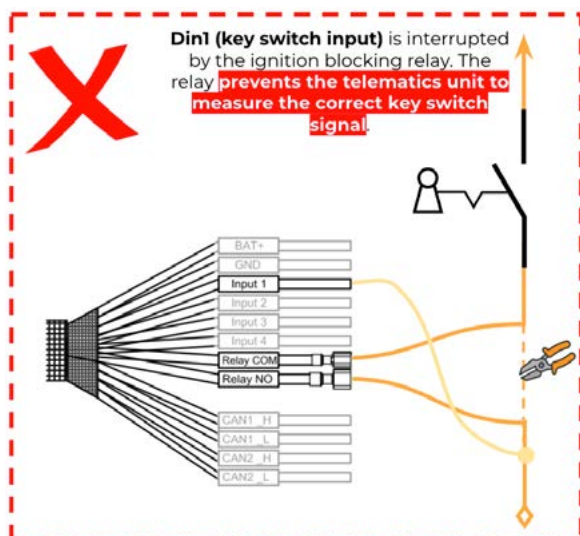
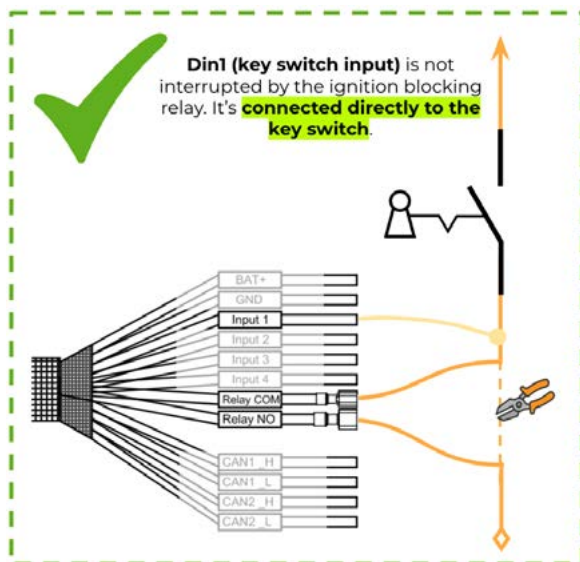
The relay should never interrupt the key switch signal going to digital input 1. The ignition signal should always be available to the telematics unit, even if the machine is immobilized by the relay.

If the device is installed incorrectly (the key switch signal on digital input 1 drops as soon as the blocking relay activates) then a feedback loop is created, causing the machine to block and unblock in an endless loop:

- Ignition signal is detected on Din1
- The blocking relay is activated
- The ignition signal is interrupted on Din1 because of a wrong installation.
- The blocking relay is deactivated
- The ignition signal is present again since the relay is inactive
- The blocking relay is activated again
- ...

Keep in mind that interrupting the key switch signal on digital input 1 could happen by mistake either directly - by wiring the relay before the digital input, or indirectly - if the machine takes away the ignition signal when the blocking relay is active. Both situations must be prevented.

If your machine has no other option except for interrupting the key switch, then make sure to connect digital input and the relay in the correct order. See next page for a good and a bad example.



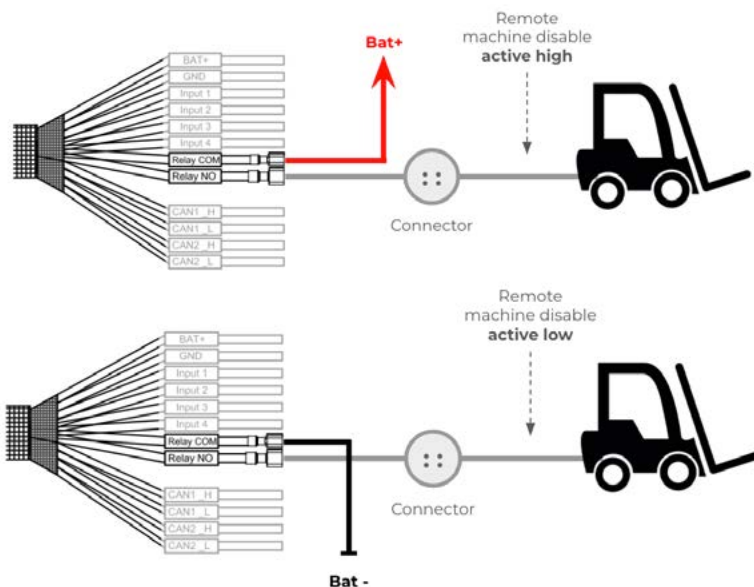
Telematics connector

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 or the keypad turns off completely when the session ends, depending on the power settings.
2. To operate the machine again, the unblocking procedure needs to be used as described above.

Post installation verification

QR-code on the Onyx V4 device

The housing label on the Onyx V4 contains a QR-code meant for verifying whether the installation has been successful. When scanning the QR-code, the URL directs to an installation verification web page. On this page, a specific set of most recent device parameters can be consulted:



Installation verification page

- GPS location (longitude, latitude)
- Digital inputs (state)
- Analog inputs (state)
- Asset battery voltage (value)
- Device battery voltage (value)
- CAN1 connectivity (yes / no)
- CAN2 connectivity (yes / no)

Consulting the installation verification page

The page is view only and no authentication is necessary to consult the installation verification web page. If the device needs a change in configuration (e.g. change digital inputs, link the device to an asset on the portal , unclaim it on the G1C portal, or any other action) a login button to the GemOne Cloud portal is available.

Keeping machine data secured

The Onyx V4 features a robust tamper-proof measure to safeguard and prevent access to information from other machines. Thanks to stringent security measures, randomly modifying the URL will lead to an unavailable web page, ensuring that no machine data can be consulted under any circumstances. This advanced protection provides a secure and reliable installation verification experience.

FAQ / Troubleshooting

None of the LEDs turn on

- Verify if the tracker has power between B+ (red) and GND (black). The tracker needs a voltage between 9-97V to function properly
- Verify if the 1A fuse is still intact if applicable

The tracker sends data but I can't see the location of the vehicle.

Verify if the installation was done according to the guidelines. The GemOne logo should face the open sky, without metal obstructions. See 'Antennas' section for more information.

The GPS signal isn't always available inside so location tracking may not work indoors.

Ignition or hour counter input stays high - even if the machine is not running.

Check if the ignition is actually used by the operators. In a lot of cases, the emergency switch is used instead of the ignition switch. On some machines, this disables the machine but keeps the ignition signal high. The installation must match the actual usage of the machine. If the emergency switch is used instead of the ignition switch, then it might be better to use another point in the machine. Please consult your machine's technical documentation for more information.

The same applies to all other inputs including digital input 2 (hour counter).

My machine has multiple control panels - which ignition signal do I use?

Some machines have multiple control panels, each with its own key switch and/or emergency stops (eg. one on the platform and another on the ground control panel). In that case, you have to make sure that the ignition digital input of our tracker measures both signals. Some machines have a combined signal available, please consult your schematic and manual.

I don't get any CAN data in the web portal

Make sure you've configured the right make and model in the web portal. This configuration is used by the telematics unit to read out data via the CAN according to the machines specifications.

Verify if CAN high and low are properly connected, if possible with a twisted pair. Make sure you connect the primary and secondary CAN bus to the right points in the machine. Contact your GemOne support team for more info about your particular machine.

Is your machine already supported? If not, check with your sales representative. Machine support can be added after installation via an over the air firmware upgrade.

I installed access control but 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.

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

- **Is the keypad properly connected to the telematics unit?**
Make sure the M6 connector is connected properly to the wiring harness of the Onyx v4 and screwed snug. Check if the contacts are clean and make sure no dirt has entered the connection. Verify if the cable to the RFID keypad is intact and has no kinks or cuts.
- **Is the ignition switched on?**
The Onyx v4 is configured by default to power down the keypad if the machine is not in use (Digital input 1 / keyswitch off). Make sure the machine is on and check the signal on Digital input 1

My machine is blocked, but cannot be unblocked.

- **Is the keypad properly connected to the telematics unit?**
Make sure the M6 connector is connected properly to the wiring harness of the Onyx v4 and screwed snug. Check if the contacts are clean and make sure no dirt has entered the connection. Verify if the cable to the RFID keypad is intact and has no kinks or cuts.
- **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.

My machine keeps blocking and unblocking as soon as I turn on the key switch.

- **Are the relay contacts and Din1 connected properly?**
Make sure the blocking relay is not interrupting the ignition signal on digital input 1. The tracker should always see an active ignition signal, even if the machine is immobilized. See 'Which signal to interrupt' for more information.

Support

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

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 support@gemone.com

Save time with our connectors

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

FCC Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

IC statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

The term "IC": " before the certification/registration number only signifies that the Industry Canada technical specifications were met.

This product meets the applicable Industry Canada technical specifications.

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

1) L'appareil ne doit pas produire de brouillage; 2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

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