

# GECKO-IR

SOLAR-POWERED  
TRAFFIC COUNTING  
WITH IoT INTEGRATION

IN COOPERATION WITH ADEC TECHNOLOGIES  
GECKO-IR\_BE\_10



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# 1 Introduction

In this chapter you will find preliminary remarks about the usage of the GECKO-IR, as well as explanations about the structure of this manual and the usage of symbols.

## 1.1 About this manual

On the following pages you will learn how to install and operate the device in an appropriate way.

We attach great importance to the safe, appropriate and effective handling of this device. It is therefore important to read this manual thoroughly before using the device. In the manual you will find important instructions helping you to avoid danger and to prolong the reliability and durability of the device and the accessories.

For your own safety you should read the safety instructions. Follow the instructions closely in order to avoid danger for yourself and others or damage to the device.

If you have any questions about the GECKO-IR which are not answered in this manual, or if you have problems understanding the descriptions, please contact:

**SWARCO TRAFFIC SYSTEMS GmbH**  
**Niederkircher Straße 16**  
**54294 Trier**  
**Germany**

**[www.swarco.com](http://www.swarco.com)**

## 1.2 Label

Der GECKO-IR is provided with a quality label and serial number. You will need the indications when talking with the customer service, e. g. ordering accessories or spare parts.

Note here the serial number and name of the device in order to have them available when needed:

Serial number: \_\_\_\_\_

Device identification: \_\_\_\_\_

CE-label:



### 1.3 Further documentation

- Installation manual for TDC1-PIR detector

### 1.4 Symbols

In several places throughout this manual you will find the following symbols stating important safety instructions:



**ATTENTION!**

This symbol indicates dangers which might cause damage to people or property



**NOTE**

This symbol indicates information for installation and function of the device

## 1.5 Safety instructions (EN, FR, IT, ES, FI)

### 1.5.1 EN: Safety Instructions

Read the following safety instructions thoroughly and observe them carefully. They are stated to ensure your own safety and the safety of others and to avoid damage to the device or accessories.



#### **ATTENTION!**

This symbol indicates dangers which might cause damage to people or property: Danger of electricity! Make sure that no liquid may get inside the device. If this happens, interrupt the power supply to the device at once. If you notice any damage, e.g. broken or crushed cables, damaged plugs, enclosures etc., turn off the device at once, interrupt the power supply and make sure that the device cannot accidentally be turned on again. The device may only be installed, brought into service and repaired by an electro-technical expert. Inappropriate operation, improper maintenance or not observing the instructions in this manual can lead to danger. Any malfunction of the device which may limit the safety of its users or others must be removed immediately. All warning and safety labels on the device must be observed and kept complete and legible. The appropriate usage must be observed by all means. For damage resulting from inappropriate usage the manufacturer will not undertake any liability. The device must not be used as a safety component in the sense of the European Directive 98/37/EC ("Machinery Directive"). In systems with high risk additional safety measures are necessary. The operator of the device must ensure that the chosen means of operation will not cause damage to material or danger to people and that all security and safety installations are present and functioning. Before installation and first operation, please observe the instructions in the manual. The manual must be available at the site of usage at any time. It must be read thoroughly and applied appropriately by the person responsible for the operation, maintenance and service of the device.



#### **NOTE:**

This symbol indicates information for installation and function of the device: Our products are in a constant process of improvement and advancement. Because of this, read the current manual thoroughly before installation and first operation. Without prior consent of the manufacturer, no modifications, neither mechanical nor electrical, may be done. Only parts that have the consent of the manufacturer may be used for backfitting or as accessories. Any violations will lead to the termination of conformity and the manufacturer's warranty. The user will subsequently bear the risk. You will find further safety instructions and warnings at the corresponding place in the user manual. If you have any questions about the device which are not answered in this manual, or if you have problems understanding the explanations, please contact before operating the device: SWARCO TRAFFIC SYSTEMS GMBH.



### 1.5.2 FR: Consignes de sécurité

Veillez lire les consignes de sécurité ci-après minutieusement et les suivre à la ligne. Ces consignes de sécurité servent à votre propre sécurité, à assurer celle d'autres personnes et à la prévention d'endommagements de l'appareil et des accessoires.



#### **ATTENTION!**

Ce symbole signale les dangers susceptibles de provoquer des dommages corporels ou matériels :

Danger lié au courant électrique ! Evitez toute pénétration de liquide dans le corps de l'appareil. Pour peu que ceci se produise par inadvertance, interrompez immédiatement l'alimentation en électricité de l'appareil. Dès que vous constatez des endommagements, p. ex. des câbles pliés / coincés, des dégâts au niveau des fiches, prises, boîtiers etc., débranchez l'appareil immédiatement, interrompez son alimentation en électricité et sécurisez l'appareil contre toute remise en marche inopinée. L'installation, la mise en service ou la réparation de l'appareil demeurent du domaine de compétence d'un électronicien spécialisé. Les commandes non conformes à l'usage prévu, les maintenances incorrectes ou l'inobservation des instructions mentionnés dans le manuel d'utilisation peuvent générer des dangers. Eliminer immédiatement toutes les perturbations de l'appareil susceptibles de porter atteinte à la sécurité de l'utilisateur ou de tiers. Tous les avertissements et consignes de sécurité figurant sur l'appareil sont à respecter en veillant à ce qu'ils soient complets et dans un état lisible. Respecter impérativement une utilisation de l'appareil conforme à l'usage prévu. Le fabricant décline toute responsabilité pour les dommages découlant d'une utilisation non conforme à l'usage prévu. L'emploi de l'appareil comme composant de sécurité est interdit dans le sens de la directive pour machines 98/37/CE. Prévoir des équipements et dispositifs de sécurité supplémentaires pour les installations soumises à des potentiels de risques élevés. Il incombe à l'exploitant de garantir que le mode de service choisi par ses soins ne risque pas de produire des endommagements du matériel ou des blessures corporelles et de veiller à la disponibilité et au parfait fonctionnement de tous les équipements de protection et de sécurité. Veuillez toujours observer les avis figurant au manuel d'utilisation avant de procéder au montage et à la première mise en service. Le manuel d'utilisation doit être disponible en permanence sur le poste d'emploi de l'appareil. Il est impératif que les personnes chargées de la commande, de la maintenance ou de l'entretien de l'appareil aient lu les indications du manuel et qu'elles sachent les appliquer.



#### **AVERTISSEMENT:**

Ce symbole attire l'attention sur des informations propres à l'installation et aux fonctions de l'appareil:

Nos appareils bénéficient d'améliorations et de perfectionnements en permanence. Veuillez toujours lire le manuel d'utilisation actuel avec soins, avant de procéder au montage ou à la première mise en service. Il est strictement interdit de procéder à des modifications, qu'elles soient mécaniques ou électriques, sur l'appareil sans l'autorisation du fabricant. Utiliser impérativement les pièces prescrites par le fabricant en cas de transformations et d'accessoires. La conformité et la garantie du fabricant prennent automatiquement fin en cas de transgression. Le risque incombe alors exclusivement à l'exploitant. D'autres consignes de sécurité et avertissements vous sont donnés dans les chapitres respectifs du manuel d'utilisation. Veuillez contacter l'adresse ci-après avant la mise en service, pour peu que vous ayez des questions relatives à l'appareil, auxquelles le manuel d'utilisation était dans l'incapacité de répondre ou en cas de doutes SWARCO TRAFFIC SYSTEMS GMBH.

### 1.5.3 IT: Disposizioni di sicurezza

Leggere e seguire attentamente le seguenti disposizioni di sicurezza. Le disposizioni di sicurezza servono alla sicurezza personale e di altre persone, nonché per evitare danni all'apparecchio e agli accessori.



#### **ATTENZIONE!**

Questo simbolo indica pericoli, per i quali possono insorgere danni materiali o alle persone:

Pericolo di scossa elettrica! Assicurarsi che non entrino liquidi all'interno dell'apparecchio. Nel caso in cui ciò avvenga, staccare subito l'apparecchio dalla corrente. Qualora si riscontrino difetti, per esempio cavi piegati/schiacciati, difetti alla presa, all'alloggiamento, ecc., spegnere immediatamente l'apparecchio, staccare la spina dalla presa di corrente e assicurare l'apparecchio contro un'eventuale accensione. L'apparecchio deve essere installato, messo in funzione o riparato solo da un tecnico elettricista. Un utilizzo improprio, interventi di manutenzione insufficienti e la mancata osservazione delle indicazioni riportate nelle istruzioni d'uso possono generare pericoli. Qualsiasi guasto all'apparecchio, che potrebbe compromettere la sicurezza dell'operatore o di terzi, devono essere eliminati immediatamente. Tutte le disposizioni di sicurezza e gli avvisi riportati sull'apparecchio devono essere osservati e conservati in condizioni leggibili. E' necessario attenersi tassativamente allo scopo d'uso previsto dell'apparecchio. Il produttore non assume alcuna responsabilità per danni che scaturiscono da un utilizzo improprio. Ai sensi della direttiva CE sui macchinari, n. 98/37, l'apparecchio non può essere utilizzato come componente di sicurezza. Negli impianti con un elevato potenziale di rischio sono necessari ulteriori dispositivi di sicurezza. Il gestore deve assicurarsi che la modalità d'uso scelta non causi danni ai materiali o rischi per le persone e che siano presenti e funzionanti tutte le disposizioni di sicurezza. Osservare le indicazioni delle istruzioni d'uso, prima di effettuare il montaggio o la prima messa in funzione. Le istruzioni d'uso devono sempre essere disponibili sul luogo d'impiego degli apparecchi. Devono essere lette attentamente e applicate alla lettera da tutte le persone addette al funzionamento, alla manutenzione e alle riparazioni dell'apparecchio.



#### **INDICAZIONE:**

Questo simbolo indica informazioni relative all'installazione e alle funzioni dell'apparecchio:

I nostri apparecchi vengono costantemente migliorati e potenziati. Per questo motivo è necessario leggere le istruzioni d'uso attuali, prima del montaggio e della prima messa in funzione. Senza previa autorizzazione da parte del produttore non è consentito apportare modifiche, né meccaniche che elettriche. Per quanto riguarda ampliamenti e accessori, possono essere utilizzati solo i componenti indicati dal produttore. In caso di violazioni decade la conformità e la garanzia del produttore. A quel punto la responsabilità ricade sull'operatore. Ulteriori disposizioni di sicurezza e avvertenze sono riportate nelle rispettive sezioni delle istruzioni d'uso. In caso di domande sull'apparecchio, che non vengono chiarite all'interno delle istruzioni d'uso o sono descritte in modo poco comprensibile, contattare, prima della messa in funzione dell'apparecchio, i seguenti numeri: SWARCO TRAFFIC SYSTEMS GMBH.

### 1.5.1 ES: Indicaciones de seguridad

Lea minuciosamente las siguientes indicaciones de seguridad y obsérvelas exactamente, ya que garantizan su propia seguridad, la de otras personas y evitan daños en el aparato y los accesorios.



#### ¡ATENCIÓN!

Este símbolo señala peligros en los que pueden producirse daños a personas o materiales:

¡Peligro por corriente eléctrica! Tenga cuidado que no penetre ningún líquido en el aparato. Si esto sucediera, interrumpa inmediatamente la alimentación de corriente al aparato. Si Vd. descubre defectos, p. ej. cables doblados/aplastados, estropeos en el conector, la carcasa, etc., desactive inmediatamente el aparato, interrumpa la alimentación de corriente y asegure el aparato contra una reconexión. El aparato puede ser instalado, puesto en marcha o reparado sólo por un electricista. Un manejo impropio o la inobservancia de las indicaciones contenidas en las instrucciones de manejo pueden causar peligro. Todas las averías que perjudiquen la seguridad del usuario o de terceros tienen que ser eliminadas inmediatamente. Observe todas las advertencias e indicaciones de seguridad que llevan los aparatos. Manténgalas completas y legibles. Observe absolutamente el uso del aparato según los fines previstos. El fabricante no asume ninguna responsabilidad por daños que se originen por un uso irreglamentario. Según la Directiva de Máquinas 98/37/CE, el aparato no deberá ser utilizado como componente de seguridad. En instalaciones con un elevado potencial de peligro se requieren dispositivos de seguridad adicionales. El propietario tiene que asegurar que el modo de servicio elegido no cause estropeos del material ni ponga en peligro a personas, se dispongan de todos los dispositivos de protección y de seguridad y que éstos se encuentren en condiciones de funcionar. Observe absolutamente las indicaciones de las instrucciones de manejo antes del montaje y la primera puesta en marcha. Las instrucciones de manejo tienen que estar siempre disponibles en el lugar de aplicación de los aparatos. Todas las personas encargadas con el manejo, mantenimiento o conservación del aparato las tienen que leer minuciosamente y aplicarlas.



#### NOTA:

Este símbolo señala informaciones para la instalación y el funcionamiento del aparato:

Nuestros aparatos son mejorados y perfeccionados continuamente. Por eso le rogamos leer minuciosamente las instrucciones actuales de manejo antes del montaje y la primera puesta en marcha. Sin la autorización del fabricante no deberá efectuar ninguna modificación mecánica ni eléctrica. Para reformas y accesorios sólo se utilizarán las piezas prescritas por el fabricante. En caso de contravenciones, caducará la conformidad y la prestación de garantía del fabricante. El usuario mismo tendrá que correr con todos los riesgos. Otras indicaciones de seguridad y advertencias encontrará Vd. en la parte correspondiente de las instrucciones de manejo. Si Vd. tiene preguntas con respecto al aparato que no se respondan en las instrucciones de manejo, o bien, algo no se ha descrito comprensiblemente, antes de la puesta en marcha le rogamos dirigirse a: SWARCO TRAFFIC SYSTEMS GMBH



## 1.5.2 FI: Turvallisuusohjeet

Lue seuraavat turvallisuusohjeet perusteellisesti ja tarkkaile niitä huolellisesti.



### **HUOMIO!**

Tämä symboli osoittaa vaaroille, jotka saattavat vahingoittaa ihmisiä tai omaisuutta: Sähkön vaara! Varmista, että laitteeseen ei pääse nestettä. Jos näin tapahtuu, keskeytä laitteen virransyöttö kerralla. Jos havaitset vaurioita, esim. rikki tai murskatut kaapelit, vahingoittuneet pistokkeet, kotelot jne., sammuta laite samanaikaisesti, katkaise virta ja varmista, että laitetta ei voi vahingossa käynnistää uudelleen. Laitetta saa asentaa, ottaa käyttöön ja korjata sähkötekniikan asiantuntija. Epäasianmukainen käyttö, virheellinen huolto tai ohjeiden noudattamatta jättäminen vaaraan. Kaikki laitteen toimintahäiriöt, jotka voivat rajoittaa käyttäjien tai muiden turvallisuutta, on poistettava välittömästi. Kaikki varoitus- ja turvamerkinnät laitetta on noudatettava ja pidettävä täydellisenä ja luettavana. Asianmukaista käyttöä on noudatettava kaikin keinoin. Vahingoista, jotka johtuvat sopimattomista Valmistaja ei ota vastuuta. Laitetta ei saa käyttää eurooppalaisen direktiivin 98/37 / EY mukaisena turvakomponenttina ("Konedirektiivi"). Suuriin riskeihin perustuvissa järjestelmissä tarvitaan lisätoimenpiteitä. Laitteen käyttäjän on varmistettava, että valittu keino toiminta ei aiheuta ihmisille aiheutuvaa vaaraa tai vaaraa ja että kaikki turvallisuus- ja turvallisuuslaitokset ovat läsnä ja toimivat. Ennen asennus ja ensimmäinen käyttö, noudata käsikirjan ohjeita. Käsikirjan on oltava käytettävissä käyttöpaikassa milloin tahansa. Se on luettava perusteellisesti ja sovellettava asianmukaisesti laitteen toiminnasta, huollosta ja huollosta vastaavalla henkilöllä.



### **HUOMAUTUS:**

Tämä symboli ilmoittaa laitteen asennusta ja toimintaa varten: Tuotteemme ovat jatkuvaa parannusta ja edistystä. Tämän takia lue nykyinen käsikirja perusteellisesti ennen asennus ja ensimmäinen toiminta. Ilman valmistajan etukäteen antamaa suostumusta ei saa tehdä mekaanisia tai sähköisiä muutoksia. Vain sellaisia osia, joilla on valmistajan suostumus, voidaan käyttää takerteluun tai lisävarusteena. Kaikki rikkomukset johtavat irtisanomiseen vaatimustenmukaisuus ja valmistajan takuu. Tällöin käyttäjä kantaa riskin. Ne on annettu varmistamaan oman turvallisuutesi ja muiden turvallisuuden ja välttää laitteen tai lisävarusteiden vaurioituminen. Lisäohjeet ja varoitukset löytyvät käyttöohjeen vastaavasta paikasta. Jos sinulla on jotain laitteen kysymyksiä, joihin ei ole vastattu tässä oppaassa tai jos sinulla on ongelmia selvitysten ymmärtämisessä, ota yhteys ennen käyttöä laite: SWARCO TRAFFIC SYSTEMS

## 2 First steps in the office

Doing the first steps in the office allows easy testing and bug fixing within the complete data flow from detector to cloud.

### 2.1 Insert SIM and configure Modem

Open the rear cover of the BS2 by loosening the four cross-shaped plastic screws to remove the cover.



#### 2.1.1 Discharging Electrostatic Charges



##### Attention!

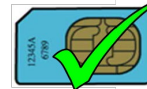
Make sure you are not electrostatically charged by placing the device on an ESD antistatic mat and using an ESD antistatic wrist strap. To be on the safe side, also touch a grounded object such as a radiator.

#### 2.1.2 Insert the Mini-SIM card in the SIM slot

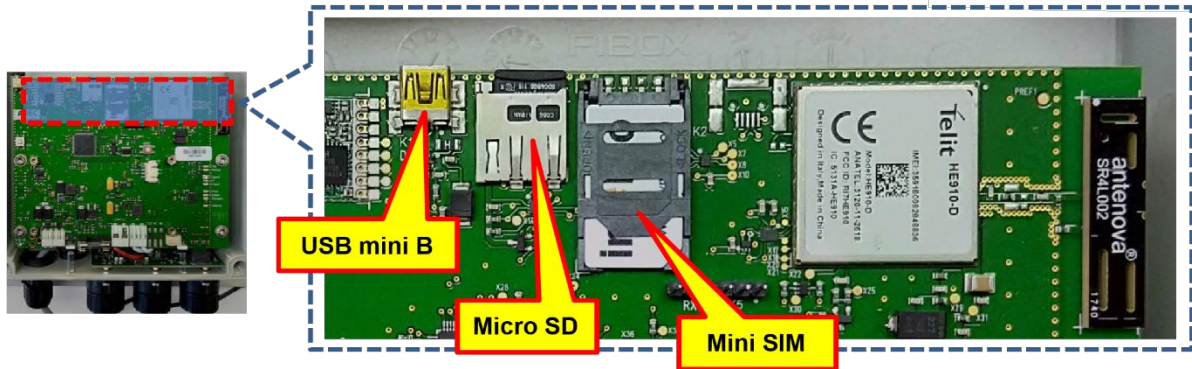


##### Please note:

The SIM card is not included in the delivery!



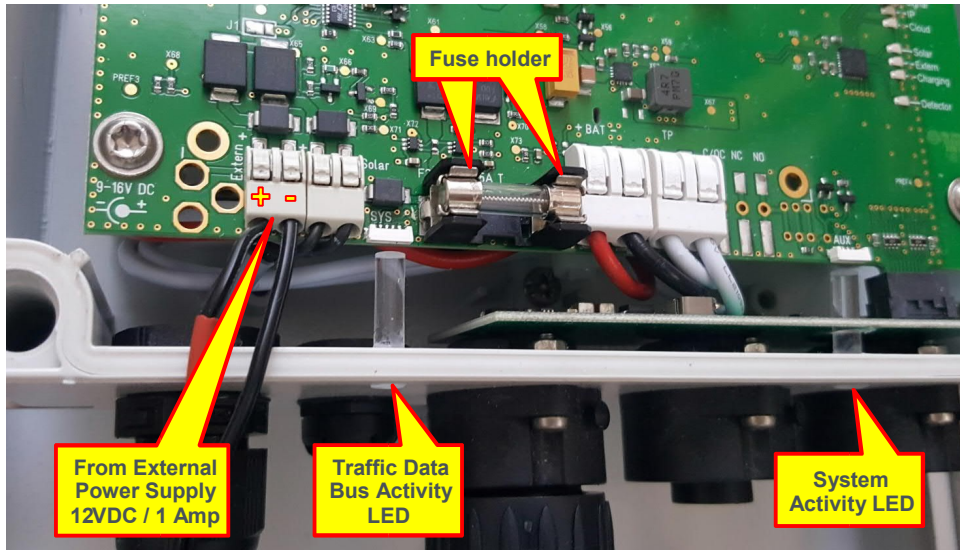
Make sure that the SIM-card holder is locked in place and that the micro-SD card is inserted correctly.



#### 2.1.3 Switch on the BS2-TS Device

Insert the fuse into the fuse holder. This is attached to the inside of the BS2 with tape for transport. The LEDs light up. The BS2 is delivered with fully charged batteries. The batteries may lose their charge during prolonged storage.

In this case the battery can be charged via a 12 V DC / 1.5 A mains adapter. Use the left terminals of the BS2 card (labeled: external) to connect the power supply.



**Note:**

Charge the battery for at least 12 hours to make sure that they are completely charged. During the charging process the fuse must be inserted.

**2.1.4 Setting up the modem**

To allow BS2 to communicate with the cloud, the modem settings must be configured according to the SIM card settings (APN, APN user name, APN password, SIM pin).

To do so, you need a PC with a terminal program and a USB cable with mini-B connector.

**Connection to the BS2 via local USB**

The BS2 is equipped with a mini-USB connector, which is compatible with the mini-USB plug. The connector is located at the edge of the PCB.

When connecting the BS2 to a Windows PC, three serial communication interfaces (COM ports 1-3) and a mass memory (micro-SD) are available. If Windows does not automatically recognize the three COM ports, please install the driver in the device manager. You can download the driver under: [www.swarco.com](http://www.swarco.com).

- Communication interfaces: The ports are currently simply referred to as serial USB ports
  - Port 1: Provides a terminal program. We recommend using an established program such as Hterm.  
Set Data/Stop/Parity to 8/1/None  
For RX and TX, set 'newline at' to CR
  - Port 2: Used for communication via DET-Soft.
  - Port 3: (only for BS2-T) is the local RS485 interface wired to the C16 device connectors to which the TDC detectors are connected



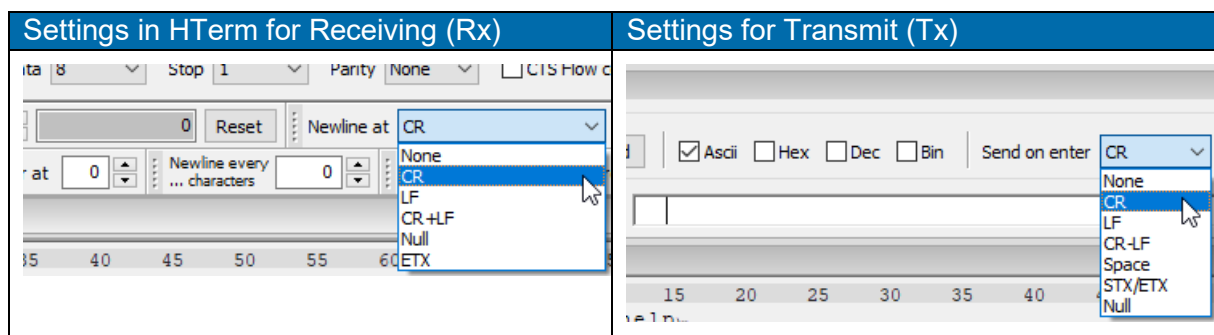
**Note:**

The COM ports are not addressed at predictable intervals, so searching for the correct port may involve several failed attempts until a connection to the terminal program can be established. Select a port, "Connect", type "status" |ENTER|. If there is no response, try the next port until BS2 responds.

- The micro-SD card of the BS2 is used as storage device. This allows the easy data transfer from and to the BS2.

## 2.2 Command Line Interface (CLI)

To enter commands, use a terminal program such as HTerm or Hyperterm. The commands are transmitted via plain ASCII and terminated with the carriage return ASCII 0x0D ("r"). It is therefore necessary to configure the terminal program to send 0x0D when the <Enter> key is pressed. For example, in HTerm under 'Rx' you can configure the newline which is set to CR for both receive and transmit:



Use the following settings:

- **Baud:** *The setting has no influence on the serial connection via USB*
- **Data:** 8
- **Stop:** 1
- **Parity:** None

CTS Flow control: *The setting has no influence on the serial connection via USB*

Commands and parameters are not case-sensitive. The structure is as follows:

```
command [argument 1, argument 2, ... , argument n]
```

Whether or not the command requires additional arguments depends on the command and the command type. If the command is a parameter, the mere name without argument returns the current value of the command. If an argument is specified, the command sets the value of the parameter to the specified argument:

1. To get a value, enter `command<Enter>`
2. To set a parameter to a certain value, enter `command [value] <Enter>`
3. To execute a function, enter `command [optional arguments]`
4. To show a list of available commands, enter `help<Enter>`
5. To display the help for a certain command, enter `command help<Enter>`

## SIM Card Configuration via Terminal Program

Connect BS2 as described above, start the terminal program and open the serial COM port where BS2 runs with the terminal program. Make sure that CR is set for 'newline'. The values in the following example are for illustration. Replace these values with those of the mobile network operator.

- Set the SIM-Pin to *1234*:  
`simPin 1234<ENTER>`
- Set APN to *example.internet.com*:  
`apn internet.telekom<ENTER>`
- Set the APN user name to *userOfAPN*:  
`apnusername t-mobile<ENTER>`
- Set the APN password to *secretPwd*:  
`apnpassword tm <ENTER>`

These commands store the values in a non-volatile memory.

### 2.2.1 Function Control

When the modem settings are set correctly and GSM coverage is available after about 15 minutes, the system activity LED ("AUX" LED) at the bottom right will be flashing green every 10 seconds.

This means that BS2 has successfully established communication with the cloud. If this is not the case, contact SWARCO.



#### Note:

The system activity LED will not flash green until the modem settings are done. After adjusting the modem settings to correct values, it takes a few minutes to establish a successful connection!



### 2.2.2 Check Mobile Network Coverage of the Provider

If the System Activity LED does not flash green after this time, check that there is sufficient network coverage. To do this, use a mobile phone that is operated in the same network as the SIM card used in the BS2.

Check the signal strength and make sure that a signal strength of at least one bar is available in the according mobile network band.



If this is not ensured, relocate and start the function check again.



### 2.3 Connect TDC1-PIR Detector(s)

Connect the TDC1-PIR detector(s) physically with the BS2-TS. When connecting several detectors, please make sure to use different detectors IDs (see "ID" label on the detector).

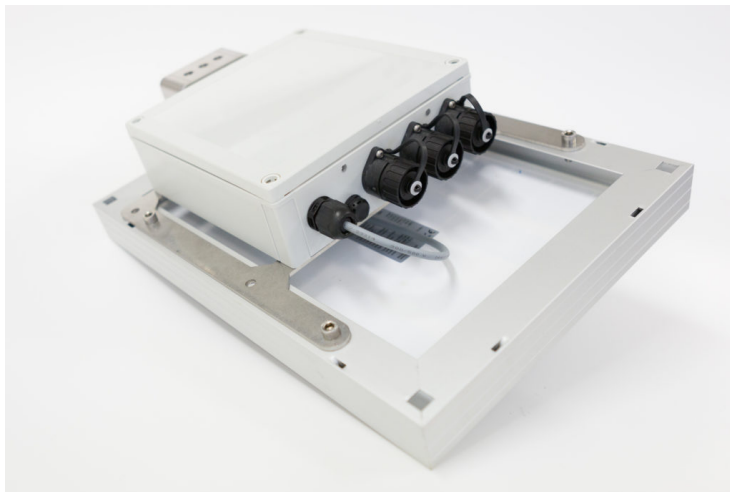


**Note:**

Each detector to be connected to the BS2 must have a unique ID.

If no different IDs are available, these can be changed (see appendix).

If the detector is not configured with a cable and pre-mounted plug, please read the TDC1-PIR manual to properly install the required cable plugs before proceeding to the next step.



**Note:**

Only three TDC1-PIR-C detectors can be connected directly to the BS2. In order to connect a fourth detector, use the expanded connection option of the Junction Box type JBL3.

## 2.4 Gecko-IR Device Registration

The device registration is used to allocate the device to your Cloud account, to determine the location and the device configuration as well as to allocate TDC1-PIR detectors to the BS2.

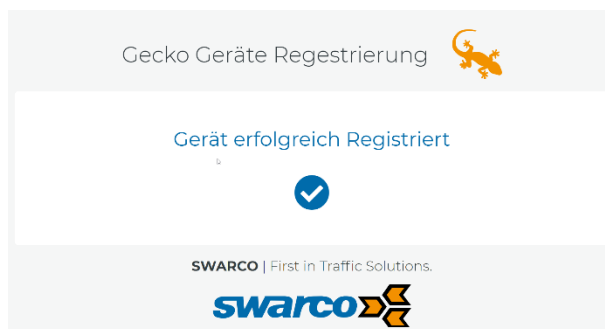
Additionally, the data is used for a plausibility check (such as speed limit, power supply, etc.).

Scan the QR-code of the BS2 by means of your smartphone and confirm if necessary the opening of the link in the browser.



To register, use the customer number with which you bought the device. You can find the number on your delivery note or invoice.

After selecting the language and entering the customer number, you will come to the device registration.



Follow the dialog and fill in all fields until the registration can be successfully sent.

Make sure that the TDC1-PIR-Detektoren are physically connected and that the detectors of the according BS2 are successfully allocated.

BS2 connects to the cloud approximately every 5 minutes (unless another transmission interval has been requested) and checks for configuration changes. Only then does BS2 know that detectors have been configured and takes them into account during data transmission.

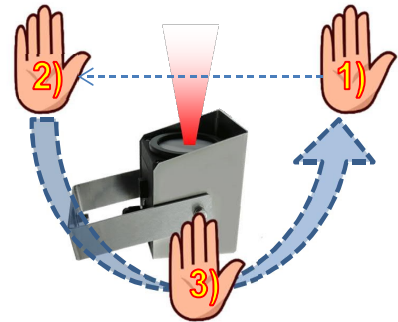


### Note:

The device registration must be done at the final location. With the correct customer number, the registration can be run through again and again to correct entries and settings. Please note that the previous settings will be irretrievably overwritten.

### 2.4.1 Check the Transmission of the Traffic Data to the BS2

Place a connected TDC-PIR flat on the table (sensor facing the ceiling). Move your hand several times over the detector as shown in the figure. If the system is set up correctly the lower left LED lights up (Traffic Data Bus) and the activity LED on the BS2 flashes blue.



If nothing happens, wait 15 minutes and try again. If no LED lights up after retrying, refer to the BS2 manual for troubleshooting.

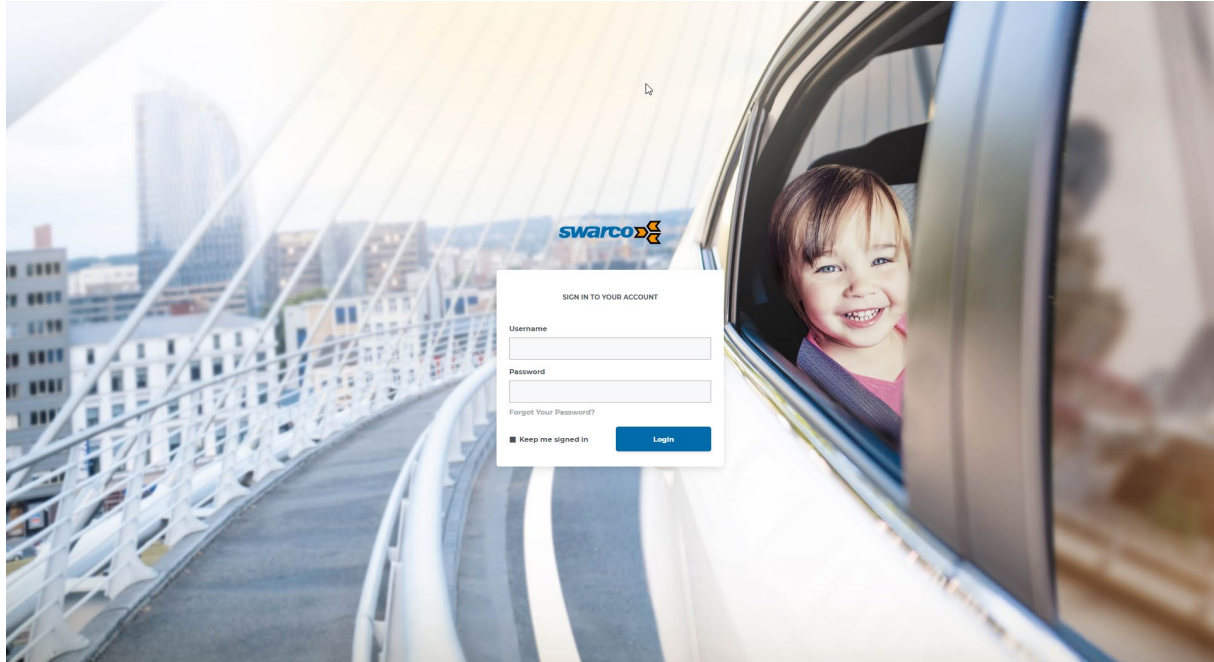
If the Activity LED (visible from below when the housing is closed) flashes red instead of blue, this means that the TDC1-PIR is not connected correctly or the configuration via the cloud is incomplete or faulty (e.g. assigned ID does not match the physical ID of the TDC1-PIR).

If nothing happens wait for 15 minutes and try again. If this is not successful and no LED is activated, please contact SWARCO.

### 2.4.2 Verifying Cloud Connectivity and Traffic Data Transmission

To do so, please register with your personal login data at SWARCO MYCITY or follow the link: [gecko.mycity.swarco.com](http://gecko.mycity.swarco.com)

You will receive your personal login data as part of the cloud assignment.



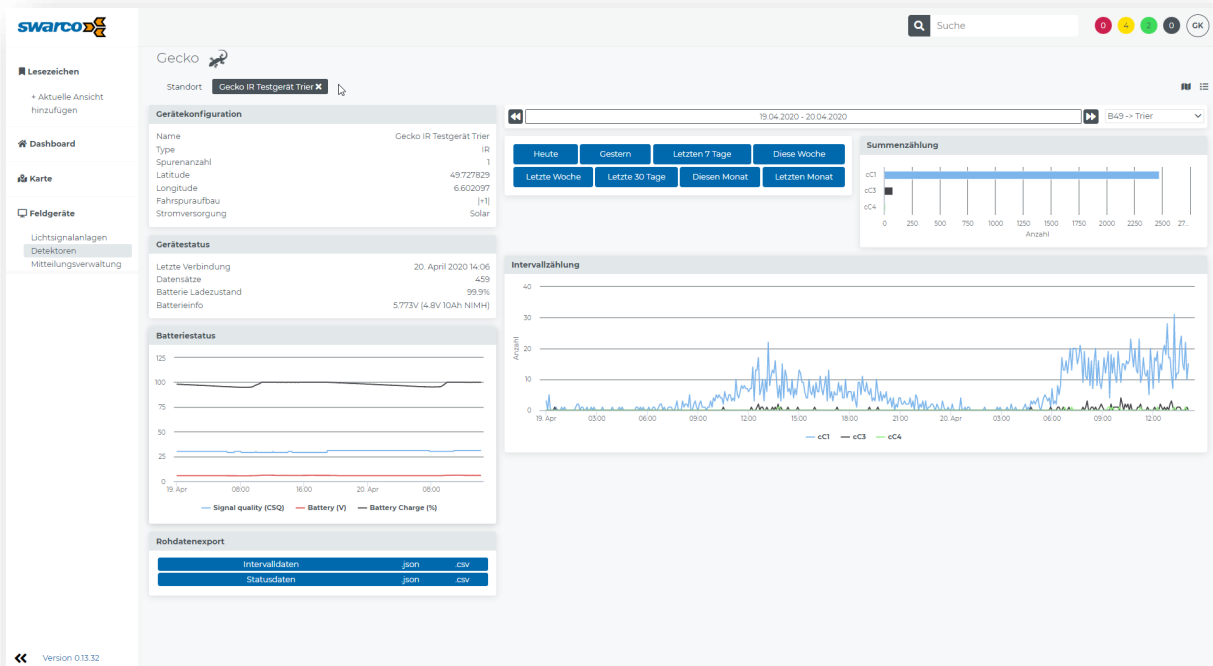
You can find the new Gecko IR in the field device detectors section under the previously entered name or via the map display at the registered location.

After selecting the Gecko IR location, you will see the set device configuration, the device status and the simulated vehicle data in the detailed view.



**Note:**

Depending on the predefined transmission interval, it may take some time before the data is displayed. Unless otherwise specified, the data are updated every 5 minutes.



If no data is displayed, make sure that you have simulated at least ten vehicle passes with your hand (move your hand past the sensor ten times - as shown in the previous chapter), wait at least 5 minutes and refresh the browser manually (press F5)

If this is not successful, please contact SWARCO.

**2.4.3 Prepare the BS2-TS / TDC1-PIRs for mounting**

Once the cloud connection and vehicle data have been received, remove the fuse, reattach it with the adhesive tape in the housing. Close and screw the cover carefully and evenly with the 4 plastic screws.

If problems occur, leave the setup unchanged, do not remove the fuse and do not close the cover. Contact SWARCO for further assistance. Provide a Windows PC for this purpose.

### 3 Field installation

Open the BS2 and insert the fuse into the fuse holder. Place the cover on the back of the BS2, tighten the 4 cross-shaped plastic screws carefully and evenly. Check that all connectors are properly plugged in and tightened to prevent water from entering!

#### 3.1 Positioning and adjusting the BS2-TS

In general, the BS2 with solar system must be installed in a place that receives at least 5 hours of sunlight on a sunny day. Locations under trees must be avoided. The angle of inclination to the vertical should be chosen in such a way that on the shortest day of the year (the day with the fewest hours of sunlight) the sun is perpendicular to the solar panel.



**Note:**

Be especially attentive when positioning the solar module. Please note that the angle may differ from usual solar installations! Be sure to follow the instructions in this manual!

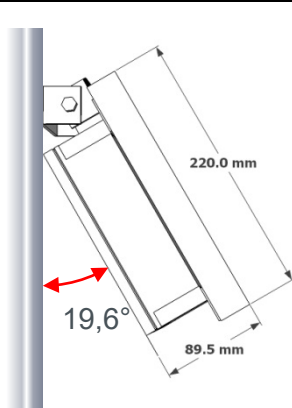
The solar panel must be optimized for the position of the sun in December.

##### 3.1.1 Alignment (Inclination)

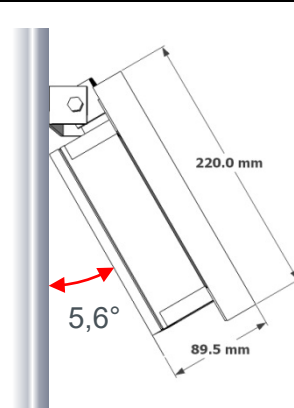
As the BS2 is solar powered, the mounting angle is the most important factor next to the mounting location to get maximum sunlight. It is recommended not to use standard angles, but instead to use an angle measured from the horizontal plane that is equal to the latitude of the polar circle (66.57°) – the latitude of the installation location:

For an installation in Zurich, Switzerland (47.4° North), the BS2 is therefore tilted 67 degrees from the horizontal or 23 degrees from the vertical:

Degrees from the vertical = 70 - latitude [degrees]
---



Zurich is located approx. on the latitude 47°, the calculated angle is therefore  $66.57^\circ - 47^\circ = 19.57^\circ \approx 1.6^\circ$



Anchorage (Alaska) is located approx. on the latitude 61°, the calculated angle is therefore  $66.57^\circ - 61^\circ = 5.57^\circ \approx 5.6^\circ$



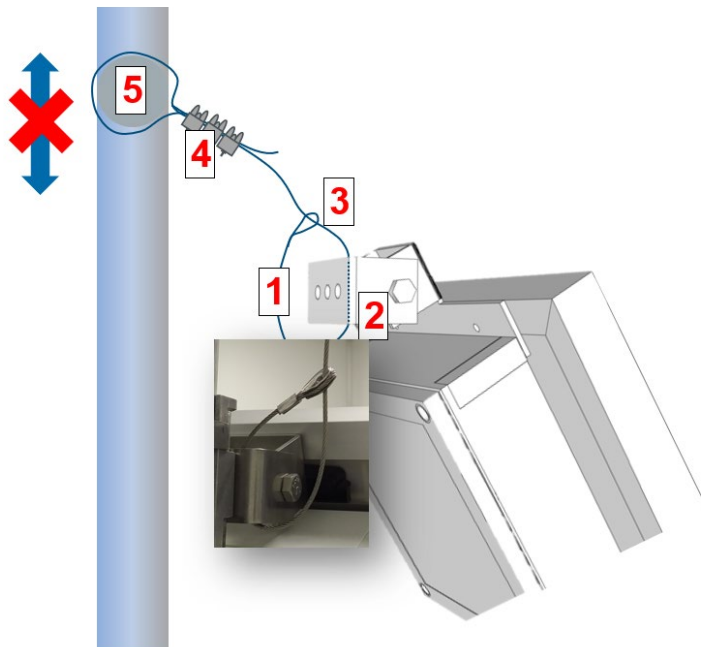
### 3.1.2 Alignment (Rotation)

The solar panel should be aligned to the true south or true north (in the southern hemisphere). To do so, please use a declination calculator to compensate for the compass deviation. The declination angle in German-speaking countries is between approx. 1° in the west and approx. 4° in the east.

If necessary, adjustments should be made to the infrastructure, which can delay the sunrise or accelerate the sunset.

### 3.1.3 Safety Tension Wire

The safety tension wire (optional accessory) is used to secure BS2 when required (check with your local regulations for the requirement to use a fail-safe mechanism).



- a. Insert the safety tension wire [1] into the hinge [2] of the station's bracket.
- b. Insert it through the thimble [3] of the tension wire
- c. Secure the loose end with the three galvanized wire rope clips [4] to a vertically fixed structure [5] from which the loop cannot slip off [6].

### 3.2 Installation and adjusting of the TDC1-PIR Detector(s)

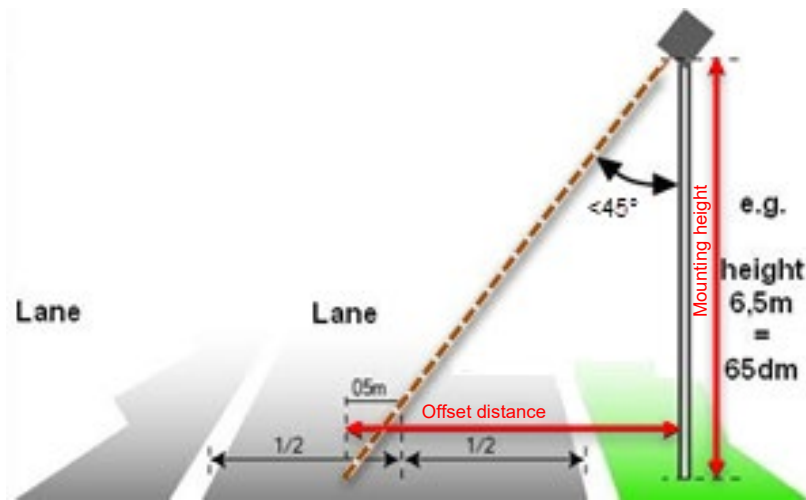
Refer to the TDC1-PIR alignment instructions in the user manual. Use the TDC-AH leveler to align each detector correctly.



**Note:**

Optimum data quality can only be achieved by correct alignment!

Once the TDC1-PIR is installed and aligned, measure the "mounting height" and the "offset distance" to the lane to be detected as shown in the image. This information must be entered in the device registration.



### 3.3 Verifying the BS2-TS Operation by monitoring the Status LEDs

After installation of the complete system and correct alignment of the detectors, the two (2) LEDs will light up.

The right "System Activity" LED should flash green every 10 seconds and the second LED (Traffic Data) should flash blue when traffic is detected by a detector. (See also BS2 manual)

If no LED flashes, check again that the fuse is correctly inserted.

### 3.4 Gecko-IR Device Location Registration and Entering of Installation parameters

Use your smartphone to scan the QR Code of BS2 and confirm the opening of the link in the browser if necessary.

After selecting the language and entering the customer number you will be directed to the device registration.

Please follow the dialog and fill in all fields until the registration can be sent successfully.



Further information can be found in chapter 2.4

### 3.5 Document the finished installation with several photographs!

Photograph the finished installation, especially with regard to the position of the solar module, with the vertical plane and the position of the TDC1-PIR detector in relation to the lane to be selected. In case of doubt, please send the pictures to [detection@swarco.de](mailto:detection@swarco.de) with the location of the installation.

## 4 Appendix

### 4.1 Change the ID at an TDC

To do so, you will need the DETSoft detector software which can be downloaded from the SWARCO website under Downloads:

<https://www.swarco.com/products/detection-sensors/cloud-solutions-iot/gecko-ir>

#### Quick guide:

Please refer to the more extensive TDC1-PIR manual to change the ID.

- a) Start configuration software DETSoft
- b) Mark BS2 COM Port
- c) Select menu item "open interface"
- d) Enter in the field "Change address range" an according selection for the connected (e.g. 0-4)
- e) Select "Search detectors..." in the menu "Interface"
- f) Select the detector to be changed, select menu items "other function" and change ID; enter the new ID
- g) Repeat steps e) and f) for each connected detector
- h) Control by deleting the two detectors and selecting "Search for detectors" in the menu Interfaces; check the result.

### 4.2 Command Line Interface (CLI)

#### General Commands

Command	Description	Response
status	Prints general system status	\$
status help	Prints available modules	Modules: - CloudIf - RF - Battery \$
nlprint	Prints list of connected detectors	\$ nlprint - 000: <uid of detector 0> - 001: <uid of detector 1> ... - N: <uid of detector N> OK \$

Command	Description	Response
n!add	Adds detector with specified UID to the list. The list can be overwritten when a cloud connection exists. If the list is full, an error message is displayed.	<pre> UID added successfully: OK \$  UID not added: ERROR \$ </pre>
n!clear	Removes ALL connected detectors from the list. The detectors can be reinserted if a cloud connection is established.	<pre> OK \$ </pre>
n!remove	Removes an individual detector with a specified UID from the list. If the UID is not part of the list, an error message is displayed.	<pre> existing UID: OK \$  not existing UID: ERROR \$ </pre>

### Further commands

Command	Description	Response
status	<p>DetectorIf ist he physical connection to the traffic detector.</p> <p>Traffic data acquisition (TDA) ist he TLS Master to poll the detectors for traffic data.</p> <p>Traffic data storage (TDS) administers the traffic data and the upload.</p>	<pre> DetectorIf: - Enabled: true - Power good: true - Detector voltage: 6.845V - Detector voltage: 0mA TDA: - Enabled: true - Muted: false - Polling interval: 500ms TDS: - Storage usage: 0/256 - Overflow count: 0 </pre>
detIf12V 0	Sets the detector's voltage to This value is stored in a non-volatile memory.	OK
detIf12V 1	Sets the detector's voltage to 12 V. This value is stored in non-volatile memory.	OK



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