



# Operation Manual



# Table of Contents

## Table of Contents

<b>Table of Contents .....</b>	<b>2</b>
<b>Operation .....</b>	<b>3</b>
<i>Switch on and first use .....</i>	<i>3</i>
<i>Modes of operation .....</i>	<i>4</i>
Hold Open switch .....	4
Remote fobs.....	4
<i>Auto close .....</i>	<i>5</i>
<i>Auto Exit .....</i>	<i>5</i>
<i>Safety Systems .....</i>	<i>5</i>
<b>Accessories .....</b>	<b>7</b>
<i>Access control options.....</i>	<i>7</i>
Remotes .....	7
Intercom Callpoint.....	7
Inbound vehicle entry sensor.....	8
ANPR – Automatic number plate recognition.....	8
Over-height vehicle sensor .....	8
<i>Telematics.....</i>	<i>9</i>
<b>Delivery and commissioning for use.....</b>	<b>10</b>
<i>Barrier boom arm length.....</i>	<i>10</i>
<b>Power, Solar and Battery Management .....</b>	<b>11</b>
<b>Trouble shooting/FAQ.....</b>	<b>12</b>
<b>Appendices: .....</b>	<b>14</b>
<i>Service Plans .....</i>	<i>14</i>
<b>How to get help .....</b>	<b>14</b>

## Operation

Your SOSEC 200 Barrier system is equipped with a rigid boom up to 5m in length. This can be accessorised with either a red/green light kit or a drop skirt, the length will have been set for your site by the engineer when the barrier was commissioned.

This barrier system can operate at an entranceway which is either manned or unmanned, depending on the access control options selected when the barrier was ordered.

If you buy your barrier, rather than hire from us, you will have been given a Handover Pack on the day of delivery. This is a very important document and acts as the legal point at which responsibility for the barrier, maintenance and operation changes from Solar Gates UK Ltd to you, the customer. The document outlines the legal responsibilities under BSEN13241-1 for a moving machine in a public place, including periodic maintenance. It contains the Machinery File and Declaration of Conformity for the machine you have purchased. Please contact Solar Gates UK Ltd should you require any assistance with this.

### Switch on and first use

Each time the barrier is switched on, it must first calibrate its movement before normal operation can occur. Switch on the barrier as shown, using the rotary switch on the side of the cabinet. Wait 5 seconds and then click and release the correct button on the remote, being sure to stand behind the barrier cabinet outside of the arc of the boom arm and the scope of the infra-red sensors. There are two remote options available with different range performance (see section on pairing your remote). Operating at half speed, the barrier will rise to the vertical position and stop.



Ensure there is nothing within the arc of the barrier which may be detected by the laser sensor and then press the remote button once again. The barrier will attempt to move to the horizontal, or closed, position. Assuming the movements are successful the barrier is now ready to run, and subsequent operations will be at normal speed.



*During the calibration phase, the barrier is measuring the limits of the arc of movement, understanding the force that is required to move. It is equipped with an encoder within the motor which will monitor this during normal operation and cease operations if it detects deviation from the norm. This is a safety feature allowing the barrier to stop and reverse*

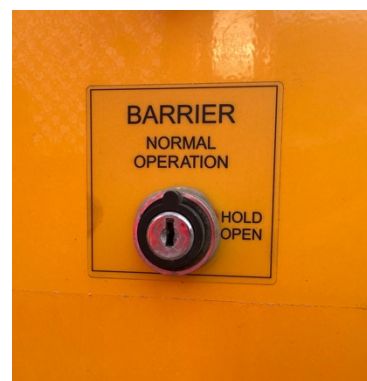
*direction in the event that the barrier arm comes into contact with something during operation. Sometimes, this system can prevent the barrier from moving, if it “thinks” it has detected something. This can sometimes be caused by a change in boom movement caused by environmental factors or sensitivity to the balance of the counterweight spring. If you experience inconsistent boom movements, please make contact with our Service Team.*

## Modes of operation

Ordinarily, the barrier will remain closed by default during operation, returning to the horizontal position automatically after each “Open” operation unless set up otherwise. This default can be altered to suit your site.

### Hold Open switch

On the side of the barrier cabinet, below the power switch, there is a switch to operate the barrier. This requires a key and will have been given to you, along with the cabinet key, when the barrier was handed over to you upon delivery. Rotate the switch 90 degrees to the HOLD OPEN position and the barrier will open. The barrier will stay open while the switch remains in this position. Once the switch is moved to the NORMAL OPERATION position, the barrier will wait a pre-defined delay time (see Auto Close options) before closing. If any of the laser sensors are interrupted before the barrier closes, it will return to the upright, open position and re-set the wait time delay before trying to close once again. The barrier will not respond to the fob while being held open by this control.



### Remote fobs

Alternatively, the operator can trigger the barrier to open through the use of a remote fob. In this scenario, close attention must be paid to the traffic situation around the barrier, since the auto-close time delay will start from the moment the barrier reaches the vertical, open position. See Accessories section for discussion on different remote options.

Both fobs operate in the same way, giving the barrier a command to move, regardless of position. The result of this is that if the remote button is pressed when the barrier is vertical, or moving to the vertical, the barrier will respond by moving to the horizontal closed position.



*It is therefore critical that, if the barrier is vertical and you wish for it to remain so, the HOLD OPEN function is used rather than pressing the fob a second time.*

## Auto close

The barrier can be configured to close automatically after a defined period of time from 2 to 120 seconds. Your installation engineer can set this for you when commissioning the barrier. If you wish to alter this in the future, please contact our Service Team to arrange an engineer callout.

This is the default setting for a SOSEC 200 considering its use at an unmanned entranceway. If you intend to use them in a different way and would prefer to close the barrier with the remote, please contact our Service Team to deactivate Auto Close functionality

## Auto Exit

By default, the barrier will be configured with an Auto Exit vehicle sensor, designed to permit vehicles inside the boundary to exit without the driver needing to get out of the vehicle. For manned entranceways, you may prefer this function to be de-activated. Please advise our Service Team who will take you through the options when the barrier is commissioned.

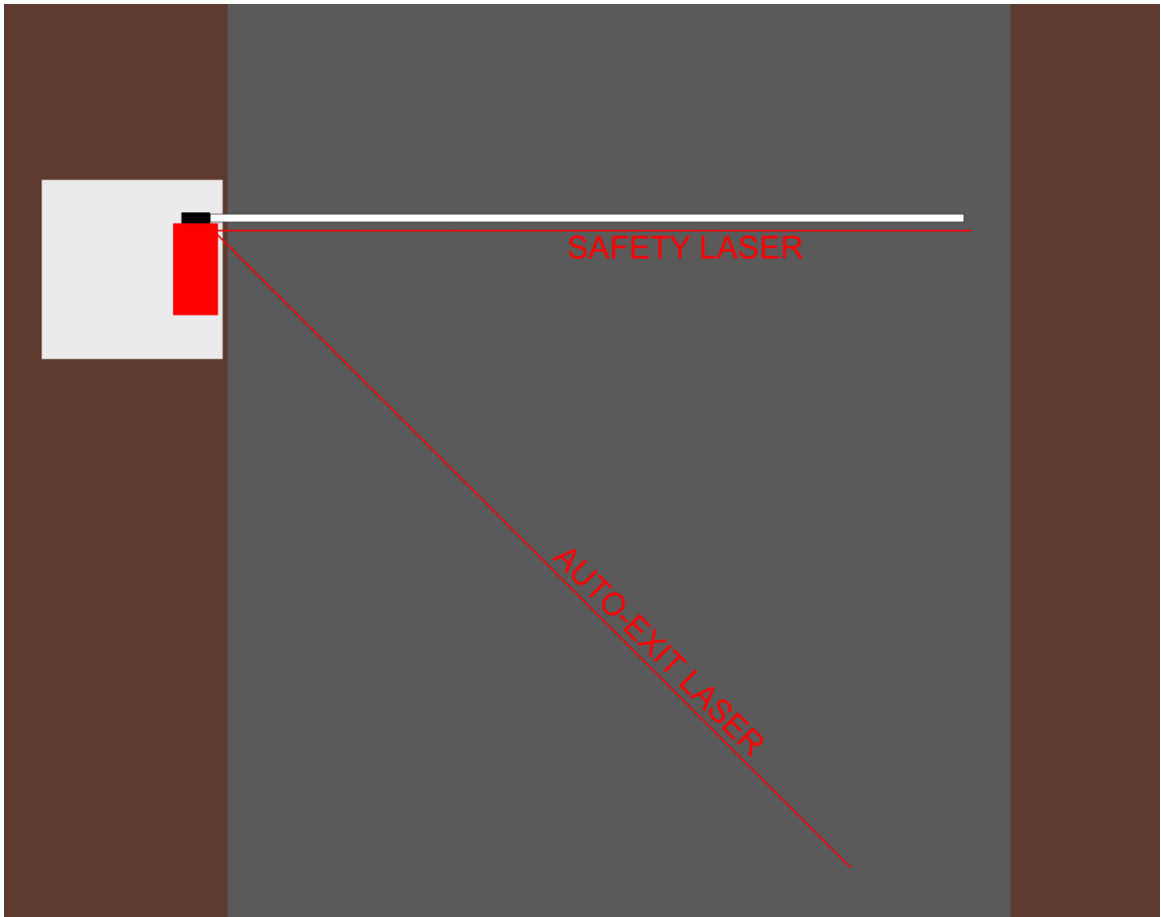
This sensor is the same technology as the sensor used for non-contact safety, discussed below and is mounted at 45 degrees to the cabinet, scanning a distance up to 6m from the barrier. The diagram below highlights the line which is scanned for vehicles.

## Safety Systems

There are two safety systems in your SOSEC 200 barrier. To avoid contact by the boom with anything, a laser sensor is fitted which scans the area under the boom for obstructions. This will scan along a line 30cm out from the cabinet up to a defined position set by the installation engineer, related to the length of the barrier arm. If the laser beam is broken between these points *while moving to the horizontal position*, the barrier will revert to the vertical, open position. Objects closer than 30cm will not be detected.



Should the closing barrier arm make contact with an obstruction not detected by the laser sensor, the previously described encoder in the motor will detect this. The motor will stop, reverse direction and return to the vertical open position. The barrier will exert a maximum force of 178N, less than the maximum force of 400N detailed in the BS-EN12445 and BS-EN12453 British Safety Standards.



## Accessories

The SOSEC 200 includes some accessories as standard and can also be fitted with some optional accessories, selected to suit your site operation.

### Access control options

The SOSEC 200 can be specified with access control devices to assist with times when the barrier is not manned. This will often include an intercom device so that people arriving to site can make contact with the appropriate personnel on your site. The following features are possible:

### Remotes

There are two remotes available which can operate your SOSEC 200.



#### **Mitto**

This is the SOSEC 200 default remote and will provide control of up to two barriers with a nominal 50m range. This may alter and will be affected by environmental conditions such as the amount of radio frequency (RF) activity around your site in the 433MHz range.



#### **Long Range TRAP**

This remote is an optional accessory. This remote can control up to four barriers with a nominal range of 800m and has IP57 rating to protect it from adverse weather conditions. This may alter and will be affected by environmental conditions such as the amount of radio frequency (RF) activity around your site in the 868MHz range.

### Intercom Callpoint

A button on the intercom will place a call to appropriate site personnel. Those answering the call can permit entry to site by remotely triggering the barrier using the dial pad on the mobile device. If the first person is unable to answer it is possible to cascade the call to two other numbers.

#### **PIN Number**

Personal PIN numbers can be set to trigger the barrier. This can be changed remotely to manage site security.

#### **Dial-to-open**

The barrier intercom can be dialled from user mobile devices and will permit access to site if their number has been set on a whitelist of approved numbers. This can be particularly useful for site personnel arriving to site on a daily basis.

It is possible to programme these features yourself if you wish using a mobile app. Please contact Solar Gates UK Ltd for assistance with programming to suit your site.

### Inbound vehicle entry sensor

Working in the same way as the Auto-exit sensor, it is possible to permit auto-entry. With this optional sensor fitted, the barrier will open to anything which approaches it, within the scope of the sensor which is again positioned at 45 degrees to the barrier but “looking” out of your site.



*In this mode, the barrier provides a visual deterrent only and does not provide a security perimeter. Pedestrians or animals passing may also be detected and will cause the barrier to open.*

### ANPR – Automatic number plate recognition

If specified, your barrier will have been fitted with a connected camera, capable of reading vehicle number plates. The data is then referenced against an internal database which will permit or prevent entry for specific vehicles. Contact Solar Gates UK Ltd for assistance in remote managing the vehicle database to suit your site.

### Over-height vehicle sensor

The GS6 detector is a sensor mounted on a pole which will trigger the barrier to close should anything go past which is higher than the position to which the sensor has been set.



Position the SOSEC barrier at least 9m from the protected asset, switch it on and complete the setup procedure as laid out within this document in [Setup and first use](#). Then, for a site speed limit of 10mph, position the over height sensor at least 31m up the road. Using the cable reel, run the connection cable back to the barrier and connect the cable to the barrier using the socket on the outside of the cabinet, under the power switch.





You will need to open the cabinet and disable the safety sensor. Please note – this is critical for operation as an overheight detector; the barrier will need to close the road regardless of whether something is under the boom in order to protect the overhead asset which may be a bridge or a power cable. When returning the barrier to normal operation after use providing over height safety, ALWAYS be certain to re-enable the safety sensor.



**GS6 is safety critical.** For detailed information follow the guidelines for GS6 use on our website:

<https://www.solargates.co.uk/resource/122/GS6%20Fitting%20Guide%202021.pdf>

## Telematics

The barrier can be fitted with a remote telematics device to offer important information to the user. This can be very useful on a large or busy site for monitoring plant and remote diagnostics. The device can report the following information:

- GPS Position
- Time of last update
- Position of boom arm
- Battery voltage

In addition it is possible to remote control the barrier through the telematics device.

The telematics platform can be access from the Solar Gates website at this link:

[https://www.solargates.co.uk/resources/tracker\\_login](https://www.solargates.co.uk/resources/tracker_login)

Please contact Solar Gates UK Ltd for your log on or if you would like to learn more about telematics on your barrier.

## Delivery and commissioning for use

When your barrier was delivered, the installing engineer will have commissioned it for use on your worksite. It is, however a mobile piece of plant and you may wish to re-position it yourself. If you elect to move or adjust it, you will need to bear in mind the following:

### Barrier boom arm length

The SOSEC 200 can use either the SOSEC boom with a drop skirt, or the SOSEC boom with Red/Green LED lights. If the length of the boom is adjusted, by cutting the SOSEC boom shorter, the counterweight spring will need to be adjusted to ensure the system is still balanced. The process for this must be followed and is safety critical. The barrier must be switched off and then re-calibrated afterwards.

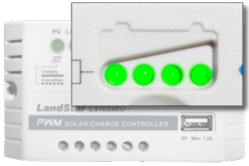
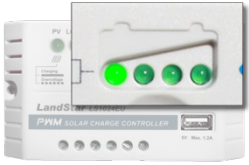



*Follow the guides in the appendices to this document to balance the boom and then follow the initial setup procedure. Please contact Solar Gates UK should you need any assistance with this safety critical procedure.*

Once the boom length has been adjusted, it is critical to similarly adjust the settings on the safety laser sensor. If this is scanning beyond the reach of the boom arm it may detect obstructions which do not impede the arc of the boom and so prevent movement unnecessarily.

## Power, Solar and Battery Management

The SOSEC 200 is designed to offer performance 24/7 365, running from the installed battery store and charging from its solar panel, which must be oriented to be South-facing. This will have been undertaken by your commissioning engineer upon delivery, but will need to be considered should you elect to move the barrier to another location on your site. The effect of any shade created by the install environment may have an effect on the battery performance of the barrier.

Charge regulator readout	Telematics Voltage	Barrier Status
	26.7V	Fully Charged
	24.0V	Low Battery
	23.7V	Empty

## Trouble shooting/FAQ

<p>My barrier has come down on a vehicle – why? Isn't this supposed to not happen?</p>	<p>To understand why a vehicle strike has occurred it helps to consider first the safety systems that are designed to prevent this.</p> <p>Firstly the laser sensor positioned under the barrier scans a perfect line from 300mm out from the cabinet until the programmed maximum range, usually pre-set to the length of the boom. This line has to be broken for 0.1s before the switch engages and the safety circuit cuts in. Once this happens the barrier movement has to stop and then reverse direction to move the arm back to the vertical. If the vehicle is moving at a reasonable pace, it is possible that the barrier arm will not move out of the way quickly enough to avoid the top surface of a high vehicle such as a HGV, and this is exacerbated when the boom arm is fitted with a drop skirt. <i>Vehicles should not proceed through the barrier once it starts moving.</i> If the barrier does not give arriving drivers sufficient time to return to their vehicles and proceed through the barrier, please contact Solar Gates UK to arrange an engineer visit to adjust the delay time on your barrier.</p> <p>Vehicles with a high ground clearance between the axles, such as ADV's, will not break this laser line if they stop with a wheel either side of the sensor; the laser will look clear under the vehicle and see no obstruction. It is advisable to discourage vehicles from stopping under the arc of the barrier.</p> <p>Neither of these eventualities are, particularly, failures of the design of the barrier, but limitations of the nature of a solar powered, and mobile, device.</p>
<p>My barrier tries to come down but goes back up to the vertical position</p>	<p>This is most often caused by the barrier detecting something with the safety laser as the barrier arm comes down. Very often this is the barrier's own skirt which has become bent or distorted and which the sensor can "see" as the arm come down.</p> <p>Other things that can cause this behaviour are loose site elements such as storage wrappings or pieces of hoardings which move around in a breeze and, again, are detected by the sensors on the barrier, including the exit sensor (SOSEC 100 and 200 only). Observe and</p>

	<p>check the sensor areas for anything which could be picked up.</p> <p>This behaviour can sometimes be caused by excessive play in the fitment of the boom mounting onto the gearbox axle. This can happen if the barrier sees a high number of usage cycles or is used in an area with very high winds, or is often stored in the upright position. As the barrier moves, the play is detected by the motor encoder and the barrier interprets this as a safety concern. This should be addressed by periodic servicing as detailed in the Handover Pack and Machinery File. Contact Solar Gates UK to arrange a service visit by our engineering team.</p>
<p>My barrier won't come down</p>	<p>There are only a few scenarios in which the barrier will not attempt to come down to the horizontal, closed position.</p> <p>The most obvious thing to verify is that the barrier is switched on at the power switch on the side.</p> <p>Verify there is sufficient battery power, as described in <b>Power, Solar and Battery Management</b>.</p> <p>Ensure that the Hold Open switch is in the Normal Operation position.</p> <p>If the above has been addressed and the barrier still does not move, the most likely reason is that the safety systems are preventing motion. Check that there is nothing being detected by the safety laser sensor. You can isolate the safety systems to check this, by opening the barrier cabinet and sliding the <b>SAFETY</b> switch to off.</p> <p><b>PLEASE NOTE: This is a safety critical procedure. Always verify that it is safe to undertake any tests before requesting the barrier to move. This mode operates the barrier with NO SAFETY SYSTEMS.</b></p> <p>If the barrier moves in this mode, the barrier movement is being prevented by the laser safety sensor. Re-engage the safety switch on the control board and verify the operation of the safety laser. Call Solar Gates UK for advice and an engineer callout if required.</p>

## Appendices:

A number of one page guides exist on our website to assist with regular tasks in the SOSEC and INSTABOOM range.

How to change batteries:

<https://www.solargates.co.uk/resource/121/Battery%20Charge%20and%20Change.pdf>

How to pair Mitto fob:

<https://www.solargates.co.uk/resource/125/Mitto%20pairing%20instructions.pdf>

How to pair long range remote fob:

[https://www.solargates.co.uk/resource/127/TRAP\\_T4\\_Pairing\\_guide\\_v2.pdf](https://www.solargates.co.uk/resource/127/TRAP_T4_Pairing_guide_v2.pdf)

How to change batteries in remote fob:

[https://www.solargates.co.uk/resource/126/T4\\_Remote\\_Battery\\_Exchange.pdf](https://www.solargates.co.uk/resource/126/T4_Remote_Battery_Exchange.pdf)

Manual release: <https://www.solargates.co.uk/resource/123/Manual%20Release.pdf>

How to set up and use GS6:

<https://www.solargates.co.uk/resource/122/GS6%20Fitting%20Guide%202021.pdf>

## Service Plans

In line with the Machinery Directives, we recommend your barrier is regularly serviced. Solar Gates offers a range of Service Plans to cover your equipment. Details can be found on our website (<https://www.solargates.co.uk/service/maintenance>). Callouts to site are not charged but any part replacements will be charged. Repairs to damage (i.e. that caused by a vehicle strike) will be charged including the callout.

## How to get help

Your barrier is fitted with a metal rating plate on the outside of the barrier cabinet. This is usually on the door or the front face of the cabinet enclosure of your SOSEC 200. This will tell you the manufacture date of your product and its serial number. This serial number is very important, and you will need to quote this to us in any communications with us.

Our website has many useful resources for our products including one page guides and video content. Please check this resource first as your question may be answered more quickly than you expect.

Should you need to get assistance, please contact our engineering technical support team on 01622 534000 or alternatively email [support@solargates.co.uk](mailto:support@solargates.co.uk). You will need to quote your barrier's serial number. Our first line support will always be to offer you telephone assistance as this is by far the most expedient way to resolve your problem.

Should telephone support fail to resolve your problem we will endeavour to send an engineer to your site.

Those hiring our barriers receive a fully managed service including proactive maintenance. Breakdown parts will not be charged at all but cost of repairs to damaged products will be the responsibility of the hirer.