

## VECTOR2 user guide



CENTURION



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EXCELLENCE  
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2009

# LINEAR SWING GATE OPERATORS

## Company overview

Centurion Systems has been manufacturing automatic gate systems since 1986, and is committed to providing reliable, cost effective solutions in the field of gate and access automation.

We offer a diverse range of products including gate motors, GSM-based products, garage door motors, remote controls, keypads, traffic barriers, proximity access control and intercom systems.

Our products are developed by an in-house team of talented engineers that are constantly researching new and innovative products to add to our range and upgrade existing models.

We are accredited with the world class quality assurance system, ISO 9001-2008, to ensure that our products are manufactured to the highest level of quality with a 100% test to specification.

Through a team of dedicated technicians and sales personnel, together with a fully fledged in-house training facility, we are committed to providing unmatched service and support for our products.

The equipment is installed worldwide and is available through a network of competent distributors and installers.

Further information is available on our website [www.centsys.co.za](http://www.centsys.co.za).



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# Contents



## IMPORTANT SAFETY FEATURES

1

Introduction	3
VECTOR2 overview	3
<b>1. VECTOR2 parts identification</b>	<b>4</b>
<b>2. VECTOR2 manual override</b>	<b>5</b>
2.1. Disengaging the operator	5
<b>3 Features and functions</b>	<b>6</b>
Introduction	6
3.1. Gate operation	6
3.1.1. Full gate opening	6
3.1.2. Modes of Operation	7
3.1.2.1. Standard Mode	7
3.1.2.2. Reverse Mode	7
3.1.2.3. Condominium Mode	7
3.1.3. Autoclose Mode	9
3.1.3.1. Autoclose Override	10
3.1.3.2. Autoclose Advanced Options	10
3.1.4. Pedestrian Opening	10
3.1.5. Free-exit Opening	11
3.1.6. PIRAC Mode (Beam Autoclose Mode) - optional	12
3.1.6.1. PIRAC Override	13
3.1.7. Holiday Lockout Mode	13
3.1.7.1. Emergency Stop	14
3.1.8. Positive Close Mode	14
3.1.9. Operator Run Profiles	15
3.2. Gate Lock	15
3.3. Anti-crushing Sensitivity	16
3.3.1. Collision Count	17
3.4. Infrared Safety Beam (optional but recommended)	17
3.4.1. Closing Safety Beams	17
3.4.2. Opening Safety Beams	17
3.5. Intruder Detection Alarms (a world first)	18
3.5.1. Ambush Alarm	18
3.5.2. Break-in Alarm	18
3.6. External Gate Status Indication	19
3.7. Courtesy (Pillar) Light Timer (optional feature)	19
3.7.1. Courtesy (Pillar) Light Control	20

3.7.2.	Courtesy (Pillar) Lights act as Warning Light	20
3.7.3.	Pre-open and pre-close delays	20
3.8.	Onboard multichannel receiver	21
3.9.	Battery Low Protection	22
<b>4.</b>	<b>Additional features</b>	23
4.1.	Solar power supply	23
4.2.	Lightning Protection	23
4.3.	Leaf Delay	23
<b>5.</b>	<b>Basic maintenance</b>	24
<b>6.</b>	<b>Diagnostics</b>	26
<b>7.</b>	<b>Troubleshooting Guide</b>	27
<b>8.</b>	<b>Specifications</b>	32
<b>9.</b>	<b>24 Month product warranty</b>	33
<b>10.</b>	<b>Optional extras</b>	34

## Icons used in this user guide



This icon indicates tips and other information that could be useful during the installation.



This icon denotes variations and other aspects that should be considered during installation.



This icon indicates warning, caution or attention! Please take special note of critical aspects that **MUST** be adhered to in order to prevent injury.

# IMPORTANT Safety instructions

**Safety  
FIRST**

## ATTENTION

To ensure the safety of people, it is important that you read all the following instructions. Incorrect installation or incorrect use of the product could cause serious harm to people and/or property.

The installer, being either professional or DIY, is the last person on the site who can ensure that the operator is safely installed, and that the whole system can be operated safely. This Safety Instruction Sheet must be passed on to the end-user responsible for operating the system during the handover.



## Warnings for the installer

**CAREFULLY READ AND FOLLOW ALL INSTRUCTIONS BEFORE BEGINNING TO INSTALL THE PRODUCT**

1. All **installation, repair, and service work** to this product must be done by a **suitably qualified person**.
2. **Endstops** capable of stopping the gate at rated speed **are mandatory** and must be fitted to prevent the gate from overrunning its limits for any reason. **Failure to do this could result in the gate falling onto persons and causing serious injury or death.** Refer to specifications of the operator to determine the operating speed.
3. **Safety devices** such as **gate safety infrared beams must be fitted** to the installation to prevent the gate from moving should anything be in the path of the gate. The mechanical movement of the gate presents risks such as crushing, dragging and shearing.
4. A **Passive Sensitive Edge** high-density foam strip **should be fitted to all shearing edges** of the gate installation. The Passive Sensitive Edge helps absorb the kinetic energy of a moving gate in the event of a collision, and provides additional time for the inherent electronic anti-crushing technology of the operator to react.
5. It is recommended that at least one **warning indicator light** be fitted to every system.
6. Always **fit the warning signs** visibly to the inside and outside of the gate.
7. Do not activate your gate operator unless you can see it and can determine that its area of travel is clear of people, pets, or other obstructions.
8. If a **pedestrian** gate opening device, such as a keypad, has been fitted it is recommended to always **have a pre-opening delay activated** when operating the pedestrian opening. This will allow a pedestrian sufficient time to ensure that he/she is well clear of the gate before it begins to move. Pedestrian gate **opening devices should always be installed on the opposing end** of the gate to where the operator is located to ensure that the gate opens away from where the pedestrian is standing.
9. **NO ONE MAY CROSS THE PATH OF A MOVING GATE.** Always keep people and objects away from the gate and its area of travel.
10. This appliance is not intended for use by persons (including children) **with reduced physical, sensory or mental capabilities,**

**Safety  
FIRST**

or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

11. **Children should be supervised to ensure that they do not play with the gate or operator.**
12. Do not in any way modify the components of the automated system.
13. Do not install the equipment in an explosive atmosphere: the presence of flammable gas or fumes is a serious source of danger and may compromise safety.
14. Before attempting any work on the system, **isolate electrical power and disconnect the batteries.**
15. The mains power supply of the automated system must be fitted with an all-pole switch, mounted within one metre of the operator, with contact opening distance of 3mm or greater. The use of a 5A thermal breaker with all-pole circuit break is recommended.
16. Make sure that an earth leakage circuit breaker with a threshold of 30mA is fitted upstream of the system.
17. Never short circuit the battery and do not try to recharge the batteries with power supply units other than that supplied with the product, or supplied by Centurion Systems and specified for this system.
18. Make sure that the earthing system is correctly constructed, and that all metal parts of the system are suitably earthed.
19. **The installer must explain and demonstrate the manual override operation** of the gate in case of an emergency, and must hand installation documentation, user guides and any Safety/Warning documents provided with the operator over the end-user.
20. Explain these safety instructions to all persons authorised to use this gate automation system, and be sure that they understand the hazards associated with automated gates.
21. **Do not leave packaging materials** (plastic, polystyrene, etc.) **within reach of children** as such materials are potential sources of danger.
22. Dispose of all waste products like packaging materials, worn out batteries, etc, according to local regulations.
23. Always **check the obstruction detection system, and/or safety devices for correct operation** prior to hand over. During the hand-over of the system, explain to the end-user how to perform these checks to confirm that all safety devices are operating correctly.
24. Centurion Systems does not accept any liability caused by improper use of the product, installation that does not conform to instructions as detailed in the installation documentation, or for any use of the operator other than that for which it was designed for.
25. This product was designed and built strictly for the use indicated in the documentation provided with the product. Any other use, not expressly indicated within the documentation, could be a source of danger and/or compromise the service life/operation of the product and invalidate the warranty.
26. Anything not expressly specified in these instructions is not permitted.

## Introduction

This User Guide contains all the information you need to configure and operate your new **VECTOR2** swing gate operator. From safety instructions to basic principles of operation and an in-depth description of your CENTURION product's many features and functions. By the time you have finished reading this guide you will have learnt how to make the most out of your **VECTOR2**. Even basic maintenance is covered but, in the unlikely event that your CENTURION product malfunctions, rather leave it to the professionals and contact your installer or nearest CENTURION Branch (contact details listed on the back page) for prompt assistance.

## VECTOR2 overview

The CENTURION **VECTOR2** swing gate operator is powered by a 12V DC motor using a maintenance-free, lead acid battery as the primary power source. The battery is charged via a 220V mains supply or a solar panel. The major benefit of this philosophy is uninterrupted operation of the gates even in the event of a mains power failure.

Each leaf of a single or double swing gate installation requires its own operator.

Two models are available, the **V400** and the **V500**, which have actuation strokes of 400 and 500 millimetres, respectively. The operator with the longer stroke will run the gate more slowly, however, it will be able to handle a gate which is wider and/or heavier. Refer to the specification table on page 32 of this User Guide for more details about the maximum size gate and wind loading that each model of operator can reliably handle.

Each **VECTOR2** operator consists of a high-torque DC motor extending or retracting a piston through a planetary reduction gearbox. The piston is linked to the gate via a gate bracket and release pin. The release pins can be fitted with padlocks where additional security is required. The operators make use of a centrifugal braking system which prevents the gate(s) from being forced open.

Whether a single or double swing, each system must have an electronic controller. This is housed along with the battery supply consisting of a maintenance-free battery (7Ah) and charger, inside a weatherproof enclosure mounted in close proximity to the gate. The electronic controller, which coordinates the operations of the drive units, is further protected by a fully sealed plastic enclosure. For added reliability the controller is fitted with lightning protection circuitry.

The **VECTOR2** operator uses an innovative internal position control system with an external fixed reference origin, to track the movement of the gate and accurately set the 'open' and 'close' positions. As a result of this position control system, it is not necessary to fit gate endstops.

The operator can be fitted to either inward or outward opening swing gates. The operator is fitted with a manual override key-release.



## 1. VECTOR2 identification

Refer to the drawings below, for how to identify your **VECTOR2** operator and its parts.

1. 12V 7.2Ah battery
2. Interface board with an anti-tamper switch
3. Controller with onboard receiver
4. Origin marker bracket and cap screw
5. Gate bracket pin
6. Gate bracket
7. **VECTOR2** gate operator (complete assembly)
8. Camlock
9. Spare fuse holder for both ATO and glass fuses
10. 2A 12V charger
11. Built-in isolator to conform with legal requirements
12. Built-in, easily accessible earth points
13. Controller box
14. Standard wall bracket (complete assembly)

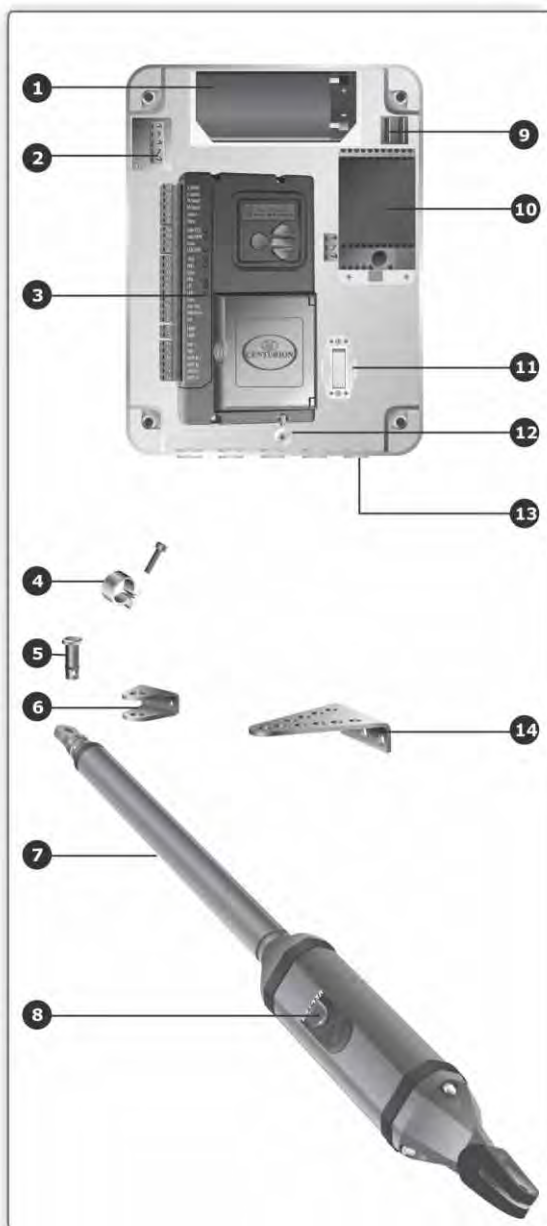


FIGURE 1



## 2. VECTOR2 manual override

### 2.1. Disengaging the operator

Most gate operators have a means of manually operating the gate in the event of a total malfunction of the equipment.

The **VECTOR2** can be manually released, by turning a removable key through 180° in the camlock mounted on the main housing of the **VECTOR2** operator.

- Fit the key into the camlock and rotate through 180°
- Gate can be pushed open manually



Close the camlock cover after removing the key to reduce the ingress of dirt into the lock mechanism



FIGURE 2



FIGURE 3



The manual release keys **MUST** be kept in a safe place as they are unique to the operator and, if lost, will require the operator to be sent to a CENTURION service centre to have the lock replaced

Please record the number of the keys as with this number, replacement keys can be cut at most locksmiths (applicable in the Republic of South Africa only)



FIGURE 3

## 3. Features and functions

### Introduction

The **VECTOR2** linear arm operator is controlled with the **VECTOR2** controller (PCA10501Vx). The controller synchronizes the functions of the gate operator.

The **VECTOR2** controller is particularly user-friendly as it is fitted with a LCD (Liquid Crystal Display) that provides useful information on the status of the system.

Under normal running conditions the 'User Display' is shown on the LCD display. (A 'Debug Display' can be invoked and is typically used by the installer where abnormal operational problems occur)

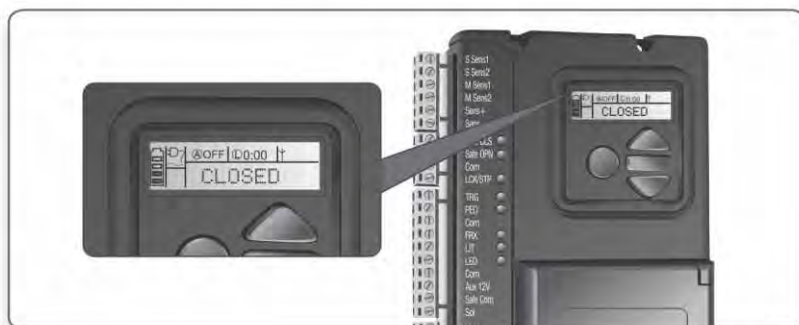


FIGURE 4

### 3.1. Gate operation

#### 3.1.1. Full gate opening

The **CENTURION** rolling code (Keeloq™ encryption) remote controls that operate with the onboard receivers of the **VECTOR2** swing gate operator are used to operate the gate. However, most automatic gate installations are also fitted with an intercom, which provides for communication between the house/building and the gate. The handset is usually fitted with a gate/door release pushbutton which, when pressed, will operate the gate.



FIGURE 5

### 3.1.2. Modes of Operation

To operate the gate to open fully, the **VECTOR2** has a number of operating modes to choose from depending on the application. Only one mode can be selected at any given time.

- **Standard Mode** (with selectable Autoclose feature)
- **Reversing Mode** (with selectable Autoclose feature)
- **Condominium Mode** (compulsory Autoclose)

**Standard Mode**, which allows full control of the gate, is most commonly used in domestic applications.

An alternative is **Reversing Mode** which provides a greater level of security as described below. Finally, **Condominium Mode** is designed for multi-user, light-industrial applications such as townhouses, housing estates and office parks.

#### • 3.1.2.1. Standard Mode

Standard Mode is the most commonly used mode for domestic applications as it allows full control of the gate. Press the button of the remote control or the gate / door release pushbutton on the intercom for approximately one second to get the gate in motion. If you press the button again while the gate is moving, the gate will stop. Press the button for a third time and the gate will reverse.



Autoclose (page 8) and PIRAC (Beam Autoclose) (page 11) can be used with Standard Mode. An infrared safety beam needs to be installed across the gate entrance and connected to the Closing Safety Beam input on the **VECTOR2** to use this function, in order to prevent the gate from closing on people, pets or vehicles. (Page 16)

#### • 3.1.2.2. Reversing Mode

Reversing Mode offers slightly more security than Standard Mode as it allows you to close your gate quickly by pressing, for instance, your remote control just as you drive through the gate to prevent children or pets running out - or anybody getting in behind you.

When pressing the button of the remote control or the gate/door release pushbutton on the intercom, your gate will be set in motion. If you press the button again, the gate will move in the opposite direction.



So, if the gate is opening and you press the button, the gate will stop and immediately start to close (and vice versa)

#### • 3.1.2.3. Condominium Mode

This mode is ideal for increased safety and security in multi-user applications such as townhouses, estates, factories or office parks.

## Features and functions

If you select Condominium Mode, your gate will open when pressing the button of the remote control or the gate/door release pushbutton on the intercom – but pressing the button again while the gate is opening will be ignored. It will not cause the gate to stop or to reverse. Only the internal Autoclose described on page 11 of this User Guide, which is automatically enabled, will close the gate. If the button of the remote control or intercom gate release is pressed while the gate is closing, the gate will immediately reopen. The gate cannot be stopped in a midway position and will therefore always close. If the button is pressed while the gate is in the open position, the Autoclose timer (page 8) is reset.



The Autoclose Override feature described on page 8 cannot be applied in this mode



We highly recommended that you use protection beams if you select Condominium Mode in order to prevent the gate from closing on people, pets or vehicles



PIRAC (Beam Autoclose) described on page 11 can be used with Condominium Mode

### 3.1.3. Automatic closing (Autoclose Mode)

The **VECTOR2** sliding gate operators have the facility to automatically close the gate after it has opened. When enabling this feature, the time that the gate stays open is by default 15 seconds (this time is adjustable between one and 255 seconds).

As described in the previous section, Autoclose is selectable with Standard and Reversing Modes (page 6) and by default the function is off. However, Autoclose is automatically enabled in Condominium Mode.



CENTURION highly recommends that a safety beam is installed across the gate entrance and connected to the Closing Safety Beam input on the **VECTOR2**, if you enable Autoclose Mode, in order to prevent the gate from closing on people, pets or vehicles

It is possible to adjust the delay before the gate closes in one second increments from zero seconds to four minutes. The default time is five seconds

#### • 3.1.3.1. Autoclose Override

Automatic closing can be overridden in Standard and Reversing Modes by pressing and holding the button of the remote control or intercom gate release for no less than three seconds. The gate response will be to start opening and then to stop as soon as the Autoclose Override feature is activated. On releasing the button, the gate will continue opening until fully open.

Your gate will stay open until you use the remote control or intercom gate release to close the gate. The **VECTOR2** will then revert to normal Autoclose operation.

The Autoclose function cannot be overridden in Condominium Mode.



It is possible to adjust the override time or the time required to hold down the button in order to override Autoclose in one second increments from one to ten seconds. The default time is three seconds



FIGURE 6



- **3.1.3.2. Autoclose advanced options**

You can also independently set Autoclose to function when the gate is partly open, fully open or partly closed.

For example, disable Autoclose when the gate is partly closed to allow construction workers, gardeners, etc. access to your property (although this comes with security risks). Enabling the Autoclose in all states of gate movement, ensures that the gate can never be left in any position other than fully closed. The default setting when enabling Advanced Autoclose is partly open and fully open, but not partly closed.

### **3.1.4. Pedestrian Opening**

The Pedestrian Opening input opens only one leaf of a double leaf installation just wide enough for a pedestrian to pass through the opening. A second button on your remote control can be used to operate the Pedestrian Opening function. You can also set a keyswitch or keypad mounted adjacent the gate entrance to operate this function.

There is a default, but adjustable, two second delay before the gate opens to warn the pedestrian that the gate is about to move as well as give the person enough time to move their hand away if they are reaching through the gate to operate a keyswitch or a keypad.

If the Courtesy Light (page 18) is connected to the control card, it will flash, indicating that the gate will open a default distance of approximately one metre (adjustable). The gate will close after a default time of five seconds (adjustable).

The gate can be kept open by keeping a trigger on the input (keeping your key in the keyswitch, for example) – once removed, the gate will close after the default five seconds.

The Pedestrian Opening Input is fully configurable and can be set to suit your needs. You can adjust the pre-opening time delay; the amount that the gate opens; and the pedestrian autoclose delay using your LCD controller. Refer to the notes on the next page.

If a Safety Beam (page 16) is fitted and the beam is broken while the gate is closing, the gate will stop and open to the pedestrian position. The gate will remain open while the beam is broken and the five second



**FIGURE 7**



**FIGURE 8**

(adjustable) Autoclose delay will only commence once the beam has been cleared.



For safety reasons it is recommended that all pedestrian keyswitches and keypads are installed on the opposite end of the gate to where the operator is installed



It is possible to adjust the delay before the gate opens in one second increments from zero to 65 seconds (one minute and five seconds). The default time is two seconds

It is possible to adjust the width of the pedestrian opening from a minimum of 50 millimetres to the full gate opening in ten millimetre increments. The default opening is one metre

It is possible to adjust the delay before the gate closes in one second increments from zero to 65 seconds (one minute and five seconds). The default time is five seconds

## Features and functions

### 3.1.5. Free-exit Opening

The Free-exit Opening allows visitors to exit townhouses, estates, factories or office parks easily.

An inductive ground loop is mounted under the driveway inside the property a short distance away from the gate. The output of the inductive ground loop detector is connected to the free-exit input on the controller.

When a vehicle drives over the loop, a detector senses the metal in the vehicle and activates the free-exit function which opens the gate. The ground loop cannot be activated by a person or any non-metallic objects and can be set to only activate if it detects a large amount of metal.

Free-exit never initiates a closing cycle, so the Autoclose function (page 8) must be enabled in order for the gate to close. If the gate is already open or opening, triggering the free-exit input will have no effect other than to reset the Autoclose timer. If the gate is closing, triggering the free-exit input will immediately stop and re-open the gate.

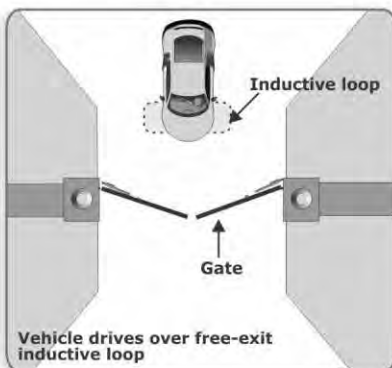


FIGURE 9

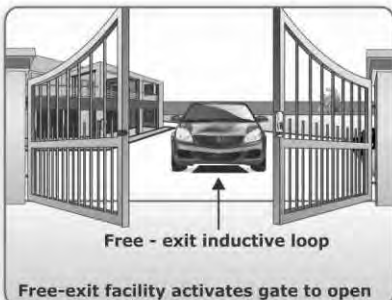


FIGURE 10



An infrared beam can be used instead of an inductive ground loop, but the beam will be activated if a person (or any object) moves through it, so this option is typically less secure.

Please contact CENTURION for more information on whether a ground loop or infrared beam is better suited to your needs.

### 3.1.6. PIRAC Mode (Beam Autoclose Mode) - optional



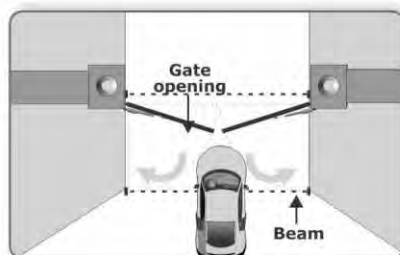
This mode can only be used if a Closing Safety Beam (page 16) is fitted

This mode can be used in conjunction with any of the operating modes-Standard, Condominium and Reversing Mode.

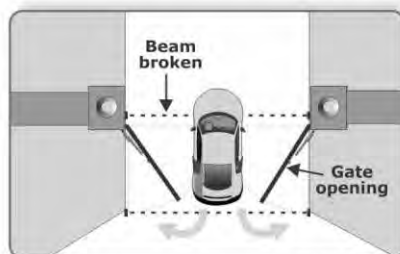
With PIRAC Mode enabled, your gate will close as soon as you have driven through and passed the safety beam – giving intruders no time to follow behind you.

If Autoclose is enabled and the gate has been opened but nothing moves through the Closing Safety Beam, the gate will stay fully open for the duration of the Autoclose timer before closing. However, if something passes through the Closing Safety Beam the gate will close immediately.

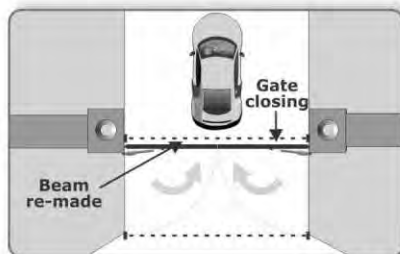
If something crosses the beam while the gate is opening, it will continue to open until the beam is cleared and the gate will then stop and close. If the gate has reached its fully open position, it will stop and remain open until the beam is cleared or the Autoclose timer expires whichever occurs first.



**FIGURE 11**



**FIGURE 12**



**FIGURE 13**

PIRAC Mode's 'stop on opening' configuration will open the gate a short, adjustable distance past the point at which the beam was broken and stop, wait for the beam to be re-made or the Autoclose timer to expire, then close.

### • 3.1.6.1 PIRAC Override

PIRAC (Beam Autoclose) Mode can be overridden in Standard and Reversing Modes. Similar to overriding the Autoclose function you must press and hold the button of the remote control or intercom gate release for at least six seconds. The gate response will be to start opening and then to stop for a pause time of three seconds and then continue to open as soon as the PIRAC Override feature is activated. Once the gate resumes opening you may release the remote control button or intercom gate release and the gate will continue to the fully open position with PIRAC Mode overridden.

Your gate will stay open until you use the remote control or intercom gate release to close the gate. The **VECTOR2** will then revert to normal PIRAC operation.

### 3.1.7. Holiday Lockout Mode

This feature completely immobilises the operator and deactivates all inputs so nobody can get into your property while you are away.

One of the buttons on your remote control can be used to switch the Holiday Lockout Mode as well as a latching keyswitch or keypad mounted adjacent the gate entrance, accessible from the outside of the property.

When Holiday Lockout Mode is enabled, any of the access control devices that are connected to the **VECTOR2**, will be inactive and not even tampering with the keyswitch, keypad or access tag readers on the outside of the property, will open the gate – particularly useful if you intend leaving your property unattended for extended periods of time.

If Holiday Lockout Mode is enabled while the gate is moving or in the open position, it will only activate when the gate is back in the closed position.

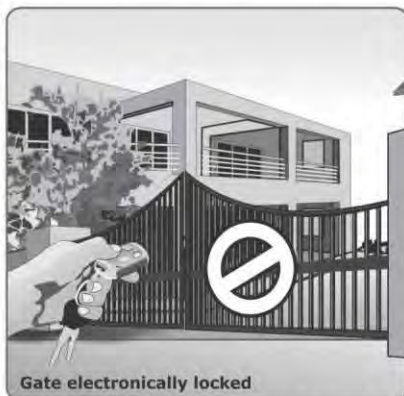


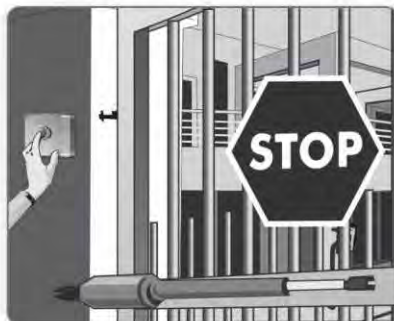
FIGURE 14



If somebody tries to open the gate via a valid access control device, such as a remote control, etc. with Holiday Lockout Mode enabled, the onboard buzzer will beep periodically for 30 seconds to confirm that the gate operation has been disabled using this feature

- **3.1.7.1. Emergency Stop**

The Holiday Lockout function can also be used as an Emergency Stop function. Mount an emergency stop pushbutton in a weatherproof housing near the gate and you can bring your gate to an immediate stop with just one press. The emergency stop button must be reset before the gate can be operated again.



**FIGURE 15**



Emergency Stop will override normal Holiday Lockout Mode functions

If somebody tries to operate the gate via a valid access control device, such as a remote control, etc. with Emergency Stop, the onboard buzzer will beep periodically for 30 seconds to confirm that the gate has been disabled using this feature.



The Emergency Stop is typically used at a manned entrance so that security is not compromised with a would-be intruder possibly gaining access to the Emergency Stop button. In a domestic situation you can set up one of your remote push-buttons to operate the Emergency Stop without compromising your security

### **3.1.8. Positive Close Mode**

Positive Close Mode (PCM) allows the gate to drive up hard to an endstop without causing the anti-crush mechanism to operate. This feature only operates during the last few millimetres of piston travel when the gate is closing. (See note on the next page)

This feature is used to firmly engage two leaves together of a double swing gate installation without having to fit mechanical endstops. A mechanical 'lip' is fitted to one leaf which will push up against the other leaf, and with PCM it will keep pushing until the gates are mechanically locked.

To ensure that the gates do not close past their desired end point, the leaf against which the leaf with the mechanical lip pushes can be preset to stop slightly short of its closed position. This is referred to as the 'Short Stop' distance. If the 'Short Stop' distance is correctly set, the pushing leaf will engage with the other leaf sufficiently before the closed position and via the PCM, push the two leaves into the fully closed position, but not past.

Contact your gate automation specialist for assistance.



The Positive Close Mode feature can be enabled on one or both leaves of a double swing gate installation in addition to adjusting the amount of force applied by the operator

### 3.1.9. Operator Run Profiles

In order to set up the system for optimum performance a number of the operating parameters can be adjusted via the controller.

The opening and closing speeds of the gate can be independently set but common between the two leaves of a double swing gate installation. The ramp-up to full speed and the ramp-down to the crawl speed before the gate stops can also be adjusted. The distance that the gate moves at its crawl speed before stopping can also be set.

Please contact CENTURION for more information on finding the configuration that is best for you.

### 3.2. Gate Lock

The **VECTOR2** controller provides a 12V supply to drive either an electric solenoid or magnetic lock. Both the lock pre-release time (time before the gate starts to move) and the release time (time while the gate is moving) can be adjusted in addition to being able to specify whether the gate is locked in either the open or closed position or both. Finally, the supply can be set to either AC or DC where with AC, the controller will power the lock with a 50Hz square wave.

Contact your gate automation specialist for assistance.



### 3.3. Anti-crushing Sensitivity

The **VECTOR2** incorporates, a sensitive electronic anti-crushing technology that activates if a person or vehicle obstructs your gate.

If the anti-crushing circuitry is invoked during the opening cycle, then the controller will stop the gate. The second gate leaf (if fitted for a double-swing system) will continue to open.

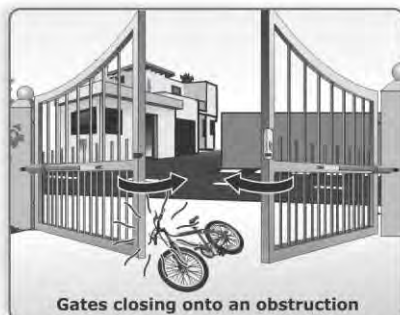
Once the obstruction is cleared, the obstructed gate can immediately be operated using the remote control, or gate release pushbutton, or other access control device (refer to Multiple Collision overleaf), the gate will close.

If the gate is closing, both leaves will re-open, regardless of whether the anti-crushing mechanism on one or both leaves senses the obstruction. As per the above, when triggering the system again, the gate will close.

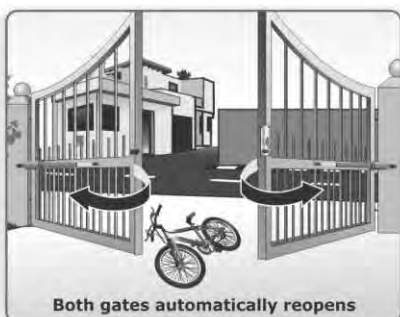
Collision force can be set independently per direction of travel and can be set from minimum to maximum in five incremental steps. A sixth incremental step will disable collision sensing entirely and allow for maximum force – the motor will run until it stalls at which point a collision will be detected.



**FIGURE 16**



**FIGURE 17**



**FIGURE 18**



Step six referred to above, should only be used if additional safety measures such as infrared beams and passive sensitive edges are present

### • 3.3.1. Collision Count

A counter monitors the number of collisions the gate experiences before it fully closes. If the number exceeds the default value of four, which can be adjusted in the Multiple Collisions Counter, the controller will shut down. The Status LED (page 18) will flash four times every two seconds until a valid trigger is received.

Please refer to Gate Status Indication (page 18) for more information on this diagnostic device.

## 3.4. Infrared Safety Beam (optional but recommended)

### • 3.4.1. Closing Safety Beams

Closing Safety Beams provide additional protection against your gate closing on people, pets or vehicles.

If the closing beam is broken while the gate is opening, it will continue to open. If the gate is open, the gate cannot be closed and if the gate is closing, it will stop and reopen.

If you select the Autoclose (page 8) feature, the gate will remain open if the beam is broken and only close after the set Autoclose time has expired when the beam has cleared.

You can use other protection devices like an inductive ground loop instead of an infrared beam, but loops are only sensitive to the presence of a vehicle (large metal objects) and provide no protection to people or other objects in the path of the gate.

Please contact CENTURION for more information on suitable protection devices.



**FIGURE 19**

### • 3.4.2. Opening Safety Beams

These beams prevent your gate from opening if an object or person is in the way.

If the beams are broken while the gate is closed, the gate will not open. If the gate is opening, it will stop then close. If the gate is closing, it will continue to close.

Please contact CENTURION for more information on suitable protection devices.

### 3.5. Intruder Detection Alarms\* (a world first)

#### • 3.5.1. Ambush Alarm

Once activated, if the opening or closing beams are continuously interrupted for a predefined time, the Ambush Alarm will sound. Intruders often cover beam lenses, thus breaking the beam, so your gate stays open after you have entered or left your property – but with the Ambush Alarm enabled you can be instantly alerted to any criminal activity.



FIGURE 20

#### • 3.5.2. Break-In Alarm

If the closing beam on the outside of your property is broken, the Break-In Alarm will sound and continue until 30 seconds have passed since the beam is re-made.

Intruders will not be able to loiter outside your property as the Break-In Alarm will immediately alert you of their presence – and the noise of the onboard buzzer is often an effective deterrent. Optionally the alarm signal can be routed to an armed response company.



FIGURE 21

If either the Ambush Alarm or Break-In Alarm is utilised, the system may be configured to operate one of the following outputs provided on the controller:

- Onboard buzzer – emits a continuous tone
- Pillar / Courtesy light contact
- Safety beam common
- Status LED output
- Auxiliary IO (which can be used to connect to a third party alarm and security company, or a CENTURION G-SWITCH-22 device to alert you of the alarm via SMS)



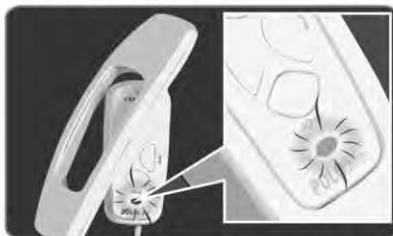
It is typical to select only one of the alarm features.

\*Requires infrared gate safety beams to be installed



### 3.6. External Gate Status Indication

A LED (Light Emitting Diode) mounted on your intercom allows you to view the position of your gate and the condition of the battery and power supply from the safety of your home. The different signals of the LED are described below:



**FIGURE 22**

Off	Gate is closed
On	Gate is partially or fully open
Continuous slow flash	Gate is opening
Continuous fast flash	Gate is closing
One flash every two seconds	Courtesy (Pillar) lights on
Two flashes every two seconds	No mains present
Three flashes every two seconds	Battery voltage is low
Four flashes every two seconds	Multiple collisions have occurred



If you choose not to fit a Gate Status Indicator, the Status LED on the controller can also be used for trouble-shooting

### 3.7. Courtesy (Pillar) Light Timer (optional feature)

Courtesy (Pillar) Lights can be connected through the controller if a 220V power supply is available at the gate. The lights will switch on every time the gate is given a signal to operate and stay on for an adjustable period of one second to ten minutes (in increments of one second) then automatically turn off.



**FIGURE 23**

The purpose is to bathe your entrance with light when you open the gates and increase your security as you drive into your property – it also saves electricity as the lights only come on when you use the gate motor.



Using the Pedestrian Opening feature will cause the Courtesy (Pillar) Lights to flash three times before the gate opens

### • 3.7.1. Courtesy (Pillar) Light Control

The Courtesy (Pillar) Lights can be switched on from inside your home or office by connecting a pushbutton to the **VECTOR2** controller.

For your safety this pushbutton switches only low-voltage signals.

Press and release the button for the lights to switch on for the defined period then switch off automatically. Press and hold the button for three to four seconds for the lights to stay on permanently, until you push the button again. If the Gate Status Indicator is fitted to the intercom handset, the LED will flash once every two seconds to indicate that the lights are on permanently.

This feature can also be operated using your remote control. Simply set one of the spare buttons on the transmitter to switch your Courtesy (Pillar) Lights on and off.

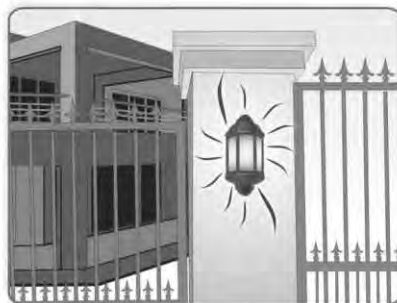
Please refer to Onboard Multichannel Receiver (page 22) for more information on the various functions you can operate with your remote control.

Low-wattage, 12V DC light fittings are also readily available and can be connected to the system, drawing power directly from the battery. However, please ensure that the power drawn by the lights and motor does not exceed the recharge rate of the battery. Larger charger units can be fitted to cope with the additional load – contact your gate automation specialist or CENTURION for more info.

### • 3.7.2. Courtesy (Pillar) Lights act as Warning Light

For additional safety, the Courtesy (Pillar) Light output can be configured to act as a warning light before the gate operates and while the gate is moving.

Contact your gate automation specialist or CENTURION for more details on the different Warning Light Modes.



**FIGURE 24**

### • 3.7.3. Pre-open and pre-close delays

If you make use of the Warning Light feature, you can set your gate to have a slight delay before it opens or closes to allow the light to warn pedestrians or vehicles that the gate is about to move.

The pre-open and pre-close delays can be independently set and also independent of enabling the warning light feature referred to above.

### 3.8. Onboard Multichannel Receiver

The **VECTOR2** controllers are supplied standard with a multichannel receiver compatible with CENTURION's secure rolling code (Keeloq™ encryption). The receiver will allow any combination of the different inputs (such as Trigger, Pedestrian, Holiday Lockout, etc.) to be operated from a single multi-button remote control.

You can artificially increase the number of buttons of a CENTURION multi-button remote control by using a two-button combination. One of the buttons is used as a shift button to allow the other buttons to be used again in combination with this button. Press and hold the shift button and then press one of the other buttons to create a new button. The shift button cannot be used as a button on its own; it must always be used in combination with another button.

Use of the shift key principle allows a three button transmitter to gain an extra button and operate four functions and a four button transmitter gains two extra buttons and can operate six functions.



FIGURE 25

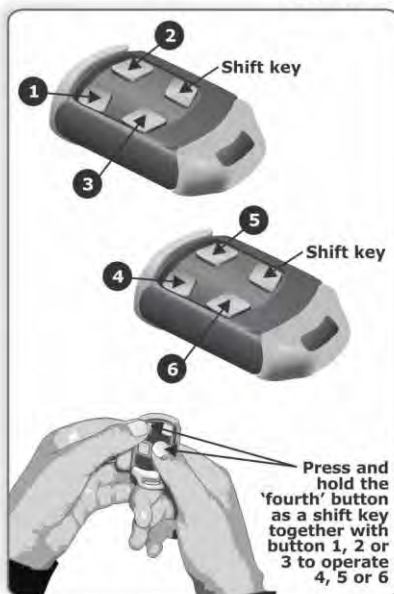


FIGURE 26

This is quite handy if you'd like to control additional devices from a single multi-button remote control, for example, your garage doors if they are equipped with CENTURION rolling code receivers.

However it's also important to note that other devices cannot be activated with the new shift button, only the **VECTOR2** (and other CENTURION operators that are equipped with an onboard receiver) are able to recognise the shift button signals. Using a shift button also prevents you from enabling functions like Holiday Lockout Mode by accident because you have to use both hands to press the two button combination.

Another function provided with this receiver is the ability to record the memory location of each remote control, mapping this to the name of the owner of the remote (if recorded). This allows any transmitter that is lost or stolen to be selectively erased from the system without affecting any of the other remotes installed.

It is also possible to erase the functions of certain buttons on a remote control if they're no longer required. Alternatively, the functionality of certain buttons can be changed to trigger different functions.

At any stage remote controls can be selectively added, deleted or edited within the system.

Contact your gate automation specialist or CENTURION for assistance.

### **3.9. Battery Low Protection**

The controller has circuitry that monitors the state of the battery. During a power-failure, energy is drawn from the battery, but is not replaced. To prevent the battery from being run totally flat, and being damaged, the protection circuitry shuts off the gate system when the battery voltage drops below 10.5 volts.

The Gate Status Indication LED will flash three times every two seconds and the controller LCD will state 'Battery Low'. The gate will complete its current cycle and then shut down until the battery has recovered.

If you see the Battery Low signal, check that the power circuit feeding the gate motor is switched on. Otherwise, contact your local gate automation specialist or CENTURION for assistance.



## 4. Additional features

### 4.1. Solar power supply

A solar panel can be used to charge the battery instead of the conventional charging circuit. A 20W panel will provide enough power for 20 operations (less if 12V DC security lights are fitted) on an average gate.



FIGURE 30

You will need to fit a deep-cycle low-maintenance battery (minimum 35Ah) in order to provide sufficient backup capacity during days of poor weather. The charger supplied with the standard **VECTOR2** system must also be replaced with a high efficiency solar regulator.

These are typical values for Southern Africa. Contact CENTURION or your gate automation specialist for details on what solar panel to select in your area.

### 4.2. Lightning Protection

The **VECTOR2** controller has onboard lightning protection.

The protection circuitry was originally designed in conjunction with the South African Centre for Scientific and Industrial Research (CSIR). It is however, important to realise that the controller's protection only functions correctly if an adequate lightning-earth is fitted during installation.

Contact your gate automation specialist for assistance.



Lightning damage is not covered under the normal guarantee of the equipment

### 4.3. Leaf Delay

Some double swing gate installations are designed with one of the leaves having a mechanical 'lip' to cover the gap between the leaves when they are closed. With others a lock is fitted to one of the leaves in addition to the 'lip'.

The **VECTOR2** controller has the ability to set a leaf delay so that the one leaf opens before the other in order to prevent the two leaves obstructing with each other due to the 'lip' and/or the lock.

Likewise, when the gate closes the controller will ensure that the two leaves are properly synchronised so that it closes properly.

Contact your gate automation specialist for assistance.

The leaf delay can be adjusted and this is measured in millimetres of operator piston travel.

Additional  
features

## 5. Basic maintenance

CENTURION operators are designed to be maintenance-free. However, there are some basic checks that should be carried out regularly, (every six months). These checks will increase the long term reliability of the system and prevent erratic operation of your gate.



**WARNING! Isolate mains supply as well as disconnect the battery before cleaning or working on the equipment**

### 5.1. General

- Remove all shrubs and vegetation which may interfere with the gate opening or closing correctly
- Make sure that all terminals are tight and that the terminals are firmly plugged into the sockets on the **VECTOR2** controller
- Keep the inside of the control housing clear of insects and dirt
- Grease the gate hinges to ensure that the gate swings freely
- Spray a good quality insect spray on the wall surrounding the controller housing, do not spray onto or inside of the housing itself
- Ensure that the manual release camlocks work correctly and lubricate as necessary
- A graphite powder lubricant is sometimes better than oil, or grease, as it does not attract dust
- Ensure that the camlock covers are closed to prevent the ingress of dust and insects
- If padlocks (optional extra) are fitted to the pins securing the **VECTOR2** to the gate and wall-brackets, then check that these padlocks can be opened
- Lubricate padlocks as required, particularly during the rainy seasons
- Check that the operator wall mounting brackets are still securely fixed to the gate pillar or wall. Similarly, examine the condition of the fixing of the gate brackets to the gate itself. There are very large forces applied to all the brackets and they can be worked loose

### 5.2. Battery

CENTURION operators, which are fitted with maintenance-free lead acid batteries, should provide at least three years of normal service life.

For sites utilising an external large capacity (+/-35Ah) low maintenance battery, ensure that the level of liquid (electrolyte level) is correct.

In all instances check for corrosion of the battery terminals. Clean and apply copper-based grease as necessary.

### 5.3. Charger

The **VECTOR2** operators have chargers separate to the main controller. In the case of product malfunction, the charger fuse should be checked, but only by a qualified electrician.

Always isolate the mains supply to the operator before attempting to remove and check the fuse.

Check the 'Mains Present' icon on the main diagnostic screen or switch to the battery charger diagnostic screen and check the charger voltage – right-hand value. This should indicate, 13.6V DC to 13.8V DC, at charge rate under full load of +/-1Amp. Each charger has a red light (LED) to indicate mains supply.

## **Basic maintenance**



## 6. Diagnostics

Depending on the type of fault or condition of the motor, audible feedback will be given via the onboard buzzer. Listen out for this and refer to the table below:

The different conditions are given in order of precedence:

**Break-in Alarm** – if the safety beams have been broken with this feature set, the buzzer will emit a continuous tone for 30 seconds

**Ambush Alarm** – if the safety beams have been broken with this feature set, the buzzer will emit a continuous tone until the safety beams have been cleared

**Battery Low** – Buzzer will emit three beeps every two seconds for 30 seconds. Refer to section, Battery Low

**Multiple collision** – Buzzer will beep periodically until condition is cleared. Refer to section, Anti-crushing, Collision count

**Holiday lockout** – If Holiday Lockout Mode has been enabled, when triggering to operate the gate, the gate will not operate but the buzzer will emit one beep periodically for 30 seconds

**Emergency Stop** – If the emergency stop button has been activated, the buzzer will emit one beep periodically for 30 seconds

**Mains failure** – If the mains supply to the charger has failed the buzzer will emit two beeps every two seconds for 30 seconds

**Safety beam broken** – if something is in the path of the beams the buzzer will emit one beep periodically for 30 seconds

**Safety beam failure** – if the safety beams are not operating the buzzer will emit five beeps periodically for 30 seconds (beam test circuit must be enabled)

Contact your gate automation specialist or CENTURION for further assistance.

### Diagnostics



**WARNING! Do not attempt to repair the unit yourself. Any work performed by unauthorised personnel may void the warranty**

## 7. Troubleshooting guide

This is a basic checklist for your gate automation system. Should you experience a fault with the system, see if the symptom corresponds to any given in the list below. For each symptom listed, the probable cause and action to be taken is given. Terminals and LEDs referred to in the fault-finders table usually refer to those found on the **VECTOR2** controller in the enclosure that is usually mounted on the gate pillar closest to the Master **VECTOR2** operator.

In the event of the symptom not being listed, consult your installer, or Centurion Systems, for assistance.



**Prior to working inside the control card enclosure, ensure that the mains supply to the system has been isolated. With the battery connected, the actuator will remain operational**



As this product is used outside of the control of the manufacturer, Centurion Systems (Pty) Ltd, it cannot be held responsible for consequential damage as a result of the end user attempting to maintain the unit without the assistance of a qualified installer

Symptom	Cause	Action
Gate does not open, or close, fully, or gate moves a short distance and then stops.	• There is an object obstructing the movement of the gate	<ul style="list-style-type: none"><li>• INDICATION: STATUS LED will be flashing four times per two seconds and the LCD will show 'Collision Detected - Trig to reset'</li><li>• Clear any obstructions from the gate.</li></ul>
	• Anti-crushing device setting is too sensitive	• Disconnect the <b>VECTOR2</b> from the gate by removing the pin from the gate bracket. Check that the motor operates correctly without the gate connected. Consult your installer should there still be a problem
	• Position control system is malfunctioning	<ul style="list-style-type: none"><li>• Check that the cables from the <b>VECTOR2</b> actuator are terminated correctly and making good contact.</li><li>• Consult your installer should there be a problem</li></ul>

**Trouble-  
shooting  
guide**

Symptom	Cause	Action
	<ul style="list-style-type: none"> <li>Battery voltage is low and the battery low protection has activated</li> </ul>	<ul style="list-style-type: none"> <li>INDICATION: STATUS LED will be flashing three times per two seconds &amp; LCD display will indicate 'Battery-Low' symbol</li> <li>Check that the battery is charging. (Check LCD display for correct 'Charging' symbol)</li> <li>Check that the mains supply to the system is connected and switched on. The red gate status LED either on the <b>VECTOR2</b> controller, or inside the house, will flash twice every two seconds if the mains supply is not present and the LCD display will indicate 'No Mains' symbol</li> <li>Check that battery connections are tight and that there is no corrosion</li> <li>When was the battery last changed?</li> </ul>

\* The life span of the 7Ah maintenance-free battery supplied with the system is typically up to three years.

Gate does not operate but you hear a relay click (the LCD display may indicate the Gate is opening).	<ul style="list-style-type: none"> <li>Motor fuse blown on the control card</li> </ul>	<ul style="list-style-type: none"> <li>Replace blown fuse</li> <li>15A ATO type fuse (typically used in motor cars) make sure that the motor fuseholders are making good contact</li> </ul>
	<ul style="list-style-type: none"> <li>Battery voltage is low</li> </ul>	<ul style="list-style-type: none"> <li>See action earlier in this troubleshooting guide for 'Battery voltage is low' and the battery low protection is being activated</li> </ul>

Symptom	Cause	Action
Gate does not operate and there is no reaction from any of the relays on the <b>VECTOR2</b> controller either. (If the remote transmitter is pressed, only the radio receiver relay 'clicks').	<ul style="list-style-type: none"> <li>• Gate lock not releasing</li> </ul>	<ul style="list-style-type: none"> <li>• Solenoid Lock: Check that the lock is trying to release. It will make a distinctive 'click' sound when energised. Then check that the lock is not being mechanically held due to misalignment, dirt, etc.</li> <li>• Magnetic Lock: Pull on the lock when activating the gate to release and feel whether the lock is releasing. Try disconnecting the lock (remove wire from terminal marked 'Sol')</li> <li>• Consult your installer if there is a problem</li> </ul>
	<ul style="list-style-type: none"> <li>• There is an incorrect trigger input to the controller causing it to malfunction</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the GREEN ('Safe CLS' and 'Safe OPN') LED's on the <b>VECTOR2</b> controller are ON.</li> <li>• Check that the GREEN 'LCK/STP' (holiday lockout/emergency stop) LED is ON</li> <li>• Check that the other RED input LEDs (e.g. 'TRG', 'PED', 'FRX', etc) are OFF. They must only light up when the corresponding input is activated</li> <li>• Try operating the system using the RUN (▶) pushbutton on the control card</li> <li>• Consult your installer if there is a problem</li> </ul>



## Trouble-shooting guide

Symptom	Cause	Action
Gate does not autoclose.	<ul style="list-style-type: none"> <li>Infrared beam(s) (if fitted) is(are) faulty</li> </ul>	<ul style="list-style-type: none"> <li>Check that the GREEN LEDs adjacent the 'Safe CLS' and 'Safe OPN' inputs are ON when the infrared beams are clear</li> <li>Check that beam is correctly aligned. It should be possible to hear the relay within the 'receiver' side of the infrared beam 'click' as the beam is broken and cleared</li> </ul>
	<ul style="list-style-type: none"> <li>Check that the auto-close override facility is not being operated</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that nobody is mistakenly pressing and holding down the gate-release pushbutton on, either the remote, or intercom for too long when activating the unit. Refer section Autoclose Override</li> </ul>
Gate starts closing but stops and re-opens.	<ul style="list-style-type: none"> <li>Intermittent operation of infrared beam if fitted</li> <li>Anti-crushing device is set too sensitively</li> </ul>	<ul style="list-style-type: none"> <li>Check the GREEN 'Safe CLS' LED on controller. It must remain ON if beam is clear</li> <li>Consult your installer if there is a problem</li> <li>Disconnect the <b>VECTOR2</b> from the gate by removing the pin from the gate bracket. Check that the operator runs correctly when not loaded by the gate. Consult your installer if there is a problem</li> </ul>
Operator drives too far and does not stop in the correct open and closed positions.	<ul style="list-style-type: none"> <li>Origin system not functioning correctly</li> <li>Origin position has been shifted</li> </ul>	<ul style="list-style-type: none"> <li>Check that the cables from the <b>VECTOR2</b> actuator are terminated correctly and making good contact. Consult your installer should there be a problem</li> </ul>

Symptom	Cause	Action
Gate opens on its own.		<ul style="list-style-type: none"> <li>• Make sure that the origin clamp has not shifted position on the piston. Consult your installer should this be suspected</li> </ul>
	<ul style="list-style-type: none"> <li>• Permanent input on one of the trigger lines to the controller</li> <li>• Faulty trigger line cables</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the RED LED's adjacent each trigger input on the controller ('TRG', 'FRX', 'PED') are OFF and only switch ON when that input is activated</li> <li>• Consult your installer</li> </ul>
Radio transmitter has poor range.	<ul style="list-style-type: none"> <li>• Transmitter battery flat</li> <li>• Radio receiver cannot receive transmitter signal properly</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the fault only occurs with one of the transmitters. Replace battery</li> <li>• Make sure that the aerial is straight</li> <li>• Consult your installer</li> </ul>
Master gate opens to pedestrian and closes.	<ul style="list-style-type: none"> <li>• Key-switch (where applicable) used for activating pedestrian facility is faulty</li> <li>• Anti-crushing device is set too sensitively</li> </ul>	<ul style="list-style-type: none"> <li>• Check for corrosion of the wire terminations behind the key-switch. Consult your installer should there be a problem</li> </ul>
External gate courtesy/pillar-light does not operate.	<ul style="list-style-type: none"> <li>• Light fuse blown</li> <li>• Light bulb blown</li> </ul>	<ul style="list-style-type: none"> <li>• Replace fuse - 220V 3A Fast Blow. (⚠ CAUTION 220V, make sure supply to system is isolated)</li> <li>• Pillar light terminal plug-socket is not plugged in correctly</li> <li>• Check that the lamp load does not exceed 500W</li> <li>• Check the bulb and replace if necessary. Make sure that the bulb is making good electrical contact in its holder</li> </ul>

### Trouble-shooting guide

## 8. Specifications

### Technical specifications

VECTOR2 400	
Input voltage	220V AC $\pm$ 10%, 50Hz*
Motor voltage	12V DC
Motor power supply	Battery driven (standard capacity - 7Ah) <sup>†</sup>
Battery charger*	
Domestic <sup>Ⓢ</sup>	CP84E - 800mA @ 13.8V
Light-industrial <sup>Ⓢ</sup>	CP84SM - 2A @ 13.8V
Current consumption (mains)	60mA <sup>Ⓢ</sup> / 170mA <sup>Ⓢ</sup>
Current consumption (motor at rated load)	15A - max
Operator push force - maximum	250kgf
Operator stroke	400mm
Piston extension / retraction speed	27mm/sec
Typical gate opening time <sup>⚡</sup>	<14 sec
Manual override	Key release
Maximum number of operations per day*	100 <sup>Ⓢ</sup> / 250 <sup>Ⓢ</sup>
Duty cycle - mains present **	25% <sup>Ⓢ</sup> / 50% <sup>Ⓢ</sup>
Operations in standby with 7Ah battery <sup>⚡</sup>	
Half day	70
Full day	58
Collision sensing	Electronic
Controller solenoid output rating	2A DC
Operating temperature range	-15°C to +50°C
Onboard receiver type	CENTURION rolling code (Keeloq™ encryption) multichannel
Receiver code storage capacity	64 transmitter buttons
Receiver frequency	433MHz
Mass of unit packed (excluding battery)	
Single kit	8.5kg
Double kit	14kg

### Specifications

\* Can operate off a solar supply, consult Centurion Systems for assistance

<sup>†</sup> Can increase battery capacity for longer standby times

\* Based on 25°C ambient temperature and unit not in direct sunlight

\* Based on an operator push force of less than 50% of rated

<sup>⚡</sup> Based on double kit excluding infrared safety beams

\* Assumes a 90° opening gate and optimum mounting position

<sup>⚡</sup> Assumes full stroke of operator is used



## 9. 24 Month product warranty



You can register your product(s) online at **[www.centsys.co.za](http://www.centsys.co.za)**, which will assist you in keeping a record of your date of purchase or installation, serial numbers, etc.

This information may come in handy for future reference to help you in the event of a warranty claim, or to remember your installer's details, or for any other future reference needs that may arise.

All CENTURION products are manufactured with extreme care, thoroughly inspected and tested. All CENTURION products are warranted against faulty materials and workmanship for a period of 24 months from the invoice date of the product or 26 months from the manufacturing date (as shown on the serial number label of the operator), whichever expires first.

The warranty will cover the repair or replacement, at the discretion of Centurion Systems, of such faulty materials or parts free of charge provided that the equipment is returned to our workshop. The workmanship of the installation of the products carried out by any third party is specifically not covered under this warranty (please consult with your installer about their workmanship warranty terms and conditions). For equipment not of CENTURION's manufacture the warranty as supplied by the original manufacturer will apply.

No claims whatsoever will be recognised under the terms of this warranty which pertain to damage, injury, cost or expense, suffered by persons and / or to property, which either directly or indirectly arise out of any one of the following occurrences:

- a) Failure to install the product in accordance with the installation instructions provided by Centurion Systems.
- b) Failure to abide by the safety instructions provided by Centurion Systems.

### **This warranty will not apply to any equipment which:**

- a) Has not been installed in accordance with the installation instructions provided.
- b) Has been subject to misuse or which has been used for any purpose other than that designed for by the manufacturers.
- c) Has damage caused as a result of handling during transit, atmospheric conditions (including lightning), insect infestation, power surges or other forces outside of the control of Centurion Systems.
- d) Has been repaired by any workshop and / or person NOT previously authorised by Centurion Systems.
- e) Has been repaired with components not previously tested, passed or authorised by Centurion Systems.

**24 Month  
product  
warranty**

## 10. Optional extras

### i5 Infrared Safety Beams

Always recommended on any gate automation installation.

### SMARTGUARD keypad

Cost-effective and versatile keypad, allowing for access to pedestrians, armed response companies, etc.

### SOLO/Lattice Proximity Access Control System

Proximity reader, allowing for access to both pedestrians and vehicles, while offering a higher level of security than a keypad.

### Pedestrian keyswitch

Allows for pedestrians to partially open the gate using a key.

### POLOphone Intercom System

Allow visitors to communicate with residents in order to gain access to the property.



i5 Infrared  
safety beams



SMARTGUARD  
keypad



SOLO/Lattice Proximity  
Access Control System



Pedestrian  
keyswitch



POLOphone  
Intercom

FIGURE 38

# Notes





**Sharecall 0860-CENTURION (0860 236 887)**  
**Head Office: +27 11 699 2400**

**Sharecall Technical Support 0861 003 123 or**  
**+27 11 699 2481**  
**from 07h00 to 18h00 (GMT+2)**

**(Sharecall numbers applicable when dialed from within South Africa only)**



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