

V-SERIES RANGE SWING GATE OPERATORS



VECTOR2
Swings Gates
Powerfully!

VERT-X

VANTAGE



The **V-Series** range – consisting of the **VECTOR2**, **VERT-X** and **VANTAGE** – is a range of robust, reliable and feature-rich swing gate operators. Like the **D-Series** operators, these controllers boast user-friendly LCD interfaces with comprehensive onboard diagnostics for easy fault-finding.

HOW TO USE THIS GUIDE

The purpose of this guide is to equip users with the necessary skills for accurately diagnosing and resolving any technical challenges which may be encountered while working on Centurion access automation products.

The document is divided into different sections, each referring to a specific Centurion product or range of products, and each section is further divided into the different symptoms typical to the product in question.

Furthermore, diagnostic messages are categorised according to the stage of operation during which they are most likely to occur, be it during setup or normal operation. A category also exists for 'Information Screens'.

The information screen or indication will in each case be presented first, followed by a list of possible symptoms associated with the product in question, possible cause(s) of the diagnostic message and, lastly, all the possible means of resolving the problem will be documented. This system provides the user with a simple means of cross-referencing when performing troubleshooting and diagnostic exercises.



Icons used in this guide

DIAGNOSTIC INDICATION

This is the audible or visual feedback provided by the operator.

Symptom



Refers to the physical behaviour of the operator. For example, a gate not responding to a valid trigger would be a symptom.

LED output



The visual feedback provided by a system's Status LED, which will flash at a specific frequency to indicate a fault condition.

Audible feedback



The feedback provided by the controller's onboard buzzer.

Cause



The underlying reason for an operator behaving a certain way.

Solution(s)



The course of action needed to resolve a fault and return the device to normal operation.

PRELIMINARY CHECKS

The following is a list of standard checks to be performed prior to undertaking any of the advanced diagnostic exercises contained within this document. In the event that any fault condition is experienced, systematically go through the list to ensure that all the minimum site requirements are met.

1. Check all drive connections, i.e. battery and motor wires; check connections on the controller and any junction points between the actuator and the controller.
2. Test battery voltage under load; should be no lower than 11V DC. Refer to the battery test procedure on page 71.
3. Check all visible fuses.
4. Check that the Mains Present icon is solid.
5. Check DOSS and sensor connections to the controller.
6. Always check the operation of the safety beams. On the V-Series controllers, the beam LEDs mirror the state of the beam receiver relay. However, if the controller is in the default state, the LEDs may be off even though the controller tested the beams as 'ok'. In the event that the gates do not open/close, ensure that the beams are functioning properly.
7. Check that actuator(s) is/are engaged.
8. Ensure that A and B dimensions of the rear mounting bracket are within specification.
9. Ensure that the gates are properly balanced.
10. Ensure that the hinges support the gate(s) adequately and allow free movement of the gate.
11. Check that there is no vegetation obstructing the movement of the gate.
12. An electric lock is to be fitted to gates wider than two meters
13. Check that there is an adequate loop in the V-Series cable between the operator and the controller/junction box. The loop should have a radius of approximately 350mm
- 14. Ensure that both operators in a double leaf installation are the same version (e.g. v2 - VECTOR2)**
15. Ensure that the Wall Bracket is securely anchored.
16. Ensure that the actuator's maximum stroke is being utilised.
17. Ensure that your gate and operator are equipped to deal with Wind Loading. Refer to Appendix D - the Wind Loading tables on page 95 for more detail.
18. Ensure that the correct operator is selected during setup.

TYPICAL DIAGNOSTIC MESSAGES FOUND ON THE V-SERIES CONTROLLERS

DIAGNOSTIC MESSAGES DURING SETUP



Symptom: Unable to complete gate setup



Possible causes

- Operator gearbox disengaged
- 'DBL' has been selected for a single-leaf installation
- Loose connection on the sensor terminals
- Installation dimensions are not according to specification
- Crimped or cut cables
- Intermittent connection between DOSS and harness
- The operators in a double leaf installation are different versions, resulting in excess current draw from one operator's encoder sensor
- Incorrect operator has been selected
- DOSS failure
- Faulty controller
- Faulty actuator



Solutions

- Ensure that the gearbox is engaged by turning the actuator override key fully clockwise
- Ensure that 'SGL' is selected when prompted to select the number of leaves (if it is indeed a single-leaf installation)
- Ensure that all connections outside of the unit are secure and that the cable has not been crimped, cut or otherwise damaged
- Ensure that the harness is still securely plugged into the encoder and has not been pulled and yanked loose - as this connection is internal to the actuator, it is preferable to replace it; the operation of the encoder can be tested as follows:

- Set your multimeter to read DC voltage
- Place the negative lead on Common and the positive lead on the purple wire
- Slowly move the gate by hand (the actuator must be disengaged)
- Read the voltage between common (black) and the purple wire
- Pulses should be evident by the voltage moving between +0V and +4.5V
- Repeat for blue wire
- Ensure that both operators in a double leaf installation are the same version (e.g. v2 - VECTOR2)
- Ensure that the correct operator has been selected:
 - VC for VECTOR2
 - VN for VANTAGE
 - VX for VERT-X
- Replace faulty DOSS encoder/controller/actuator
- Replace controller
- Replace actuator

DIAGNOSTIC MESSAGES DURING NORMAL OPERATION



Symptom: Gate does not open/close, or gate runs a short distance and stops



Audible feedback

- Four beeps periodically for ten seconds



Possible causes

The error message will be displayed whenever no DOSS pulses are registered while the motor is supposed to be running.

- The operator is encountering a fixed obstruction
- Excessive Wind Loading
- The operator is jammed into an Endstop
- The gearbox is disengaged

- Loose drive and/or sensor connection (battery or motor terminal)
- The operators in a double-leaf installation are different versions, resulting in excess current draw from one operator's encoder sensor
- Faulty DOSS



Solutions

- Ensure that nothing is physically hindering the trajectory of the gate(s)
- Ensure that the installation dimensions of the actuator's rear mounting bracket are according to specification
- Engage operator by turning the key fully clockwise
- Check for loose drive and/or sensor connections on the controller or any junctions between the actuator and the controller
- Ensure that both operators in a double leaf installation are the same version (e.g. v2 - VECTOR2)
- Replace DOSS encoder. Repair work of this nature should be conducted by a qualified technician



Symptom: Gate does not open/close, or gate runs a short distance and stops



Audible feedback

- Four beeps periodically for ten seconds



Possible causes

- The operator is encountering an obstruction and has reached the pre-set number of allowable collisions
- The controller collision force is set too sensitively
- Number of allowable collisions set to a low value, e.g. 1
- Excessive wind loading
- Damaged encoder

- The operators in a double-leaf installation are different versions, resulting in excess current draw from one operator's encoder sensor
- Dimensions for A, B, and C are incorrect
- Faulty DOSS harness. Repair work of this nature should be conducted by a qualified technician
- Loose drive and/or sensor connections
- Gearbox not fully engaged

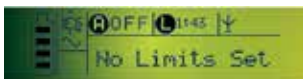


Solutions

- Ensure that the gate is running smoothly and that there is nothing physically hindering the trajectory of the gate
- Increase the collision force (Menu 2: Safety)
- Increase maximum collisions value to a higher number, typically 4
- Ensure A, B, and C dimensions are correct
- Ensure that both operators in a double leaf installation are the same version (e.g. v2 - VECTOR2)
- Replace faulty DOSS harness. Repair work of this nature should be conducted by a qualified technician
- Check battery, motor terminal and sensor connections; check connections on the controller at any junction points between the operator and the controller
- Ensure that operator is fully engaged by turning the key fully clockwise
- Replace faulty DOSS encoder. Repair work of this nature should be conducted by a qualified technician
- As the encoder is mounted inside the actuator, it is preferable to replace the actuator



Symptom: Gate does not open/close



Audible feedback

- Three short beeps for five seconds



Possible cause

- The End-of-travel limits have not been established



Solution

- Set the Gate Travel Limits by accessing the Setting Limits Menu (Menu 1: Setting Limits) and following the onscreen prompts



Symptom: Gate moves a short distance and reverses direction



Possible causes

The error message denotes the fact that the operator is trying to resolve the perceived collision due to one or more of the following reasons:

- The gate is encountering an obstruction
- Excessive wind loading
- Actuator not fully engaged
- Sensor cables may not be connected, incorrectly connected, crimped or cut
- Gate leaf may be too long
- Short Ramp-up and Ramp-down distances
- Gate leaves have fallen out of synchronisation
- Dimensions for A, B, and C are incorrect



Solutions

- Ensure that nothing is physically hindering the trajectory of the gate
- Ensure that installation dimensions of the actuator's rear mounting bracket are according to specification
- Engage actuator by turning the key fully clockwise
- Check all sensor wire connections and joints
- Ensure that the length of the gate leaf is within specification
- Increase the Ramp-up and Ramp-down distances (Menu 5: Run Profile)
- Reset Gate Limits



Symptom: Gate does not open/close



Audible feedback

- Three short beeps for 30 seconds



Possible causes

- Poor connection between battery and controller
- The battery voltage is low or the battery is faulty or disconnected
- Faulty controller



Solutions

- Ensure that the battery terminals are properly connected
- Measure the battery voltage – it should be no lower than 11V DC when placed under load. Refer to Appendix A on page 71 for an explanation of how to accurately test battery voltage
- Check for corrosive build-up around the battery terminals. If there is corrosion, replace both the battery and terminals
- Replace the battery
- Ensure that the 'Mains Present' icon is solid
- Replace faulty controller

GENERAL INFORMATION/ALERT SCREENS



Symptom: None



Audible feedback

- 4KHz until beams are cleared



Possible causes

- The IR beams have been interrupted for the pre-set period of time with the Ambush Alarm feature enabled
- Inadvertent activation of the Ambush Alarm feature

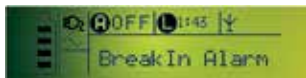


Solutions

- Clear any obstruction from the path of the beams
- If the lenses are unobstructed, check the wiring between the beams and the controller
- Refer to the wiring diagrams on pages 80 and 81), as well as between the IRB transmitter and receiver
- Ensure that the beams are properly aligned
- If not required, disable the Ambush Alarm feature in Menu 6: IR Beams



Symptom: None



Audible feedback

- 4KHz tone for 30 seconds



Possible causes

- The IR Beams have been interrupted with the gate in the fully closed position
- Inadvertent activation of the Break-In Alarm feature

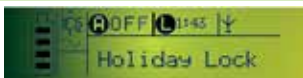


Solutions

- Clear any obstruction from the path of the beams
- If the lenses are unobstructed, check the wiring between the beams and the controller, as well as between the IRB receiver and transmitter
- Ensure that the beams are properly aligned
- If not required, disable the Break-In Alarm feature in Menu 6: IR Beams



Symptom: Gate does not open from fully closed position



Audible feedback

- One beep periodically for 30 seconds



Possible cause

- The Holiday Lockout feature has been enabled



Solutions

- Ensure that the green LCK LED is illuminated
- Press the transmitter button or switching device that invoked Holiday Lockout Mode
- Bridge the LCK input to Com or reset the controller to factory defaults (Menu 10: General Settings)

APPENDIX B

EXPLANATION OF INFORMATION SCREENS

The following screens can be accessed by using the triangular up and down buttons. The information is very useful when doing fault finding to provide the user with better feedback of the various diagnostic conditions or when acquiring general operational information.

Voltages



BATTERY	CHARGER
13.8v	14.3v

- Charger voltage - should be approximately 14V DC for the **D5-Evo/D5-Evo Low-Voltage/SECTOR/V-Series** and 27V DC for the **D10/D10 Turbo**
- Battery voltage - the unit will not operate if the voltage falls more than 3V DC under load. A quick way of checking the battery's voltage under load is to apply a force in the opposite direction to the movement of the gate; the battery voltage should never drop more than 2V DC. The system will enter Battery-low state at 10V DC (**D5-Evo/D5-Evo Low-Voltage/SECTOR/V-Series**) or 21.0V DC (**D10/D10 Turbo**) and will shut down, allowing the batteries to charge

Speed



SPEED	POSITION
0.0 RPM	0.0 °

- This display indicates the speed at which the gate/**SECTOR** is travelling in metres per minute; the speed of the **SECTOR** is indicated in degrees per minute
- Say, for example, that the gate has been set to run at maximum speed, but this information screen indicates that it is not running at maximum speed, it is an indication that the gate is heavy or it might be time to change the wheels

Current / Collision Count and Lost



The screenshot shows a control panel display with a green background. It features a table with the following data:

Current	Max	0.0
0.0	ColCnt	Lost
0.0	0/4	0/6

- This screen will display the instantaneous current drawn during operation; typically it should be between 6A and 8A for the **D5-Evo/D5-Evo Low-Voltage**, between 3A and 6A for the **D10/D10 Turbo** and around 2A for the **SECTOR**. Note that the current drawn by the various operators could vary greatly depending on the load. A heavy gate would naturally result in more current being drawn. The maximum current draw is limited to 15A
- This screen will help determine whether the gate is running properly or not. If the current drawn is much higher than 6A, it could be an indication that the gate weight is excessive or something is obstructing the free movement of the gate. Check for dirt on the rail and ensure that the wheels move freely; the maximum current may be zeroed at any stage by pressing the oblong pushbutton on the controller
- **ColCnt** – indicates the number of collisions encountered during a specific cycle. The counter will reset to zero after every successful cycle
- **Lost** – if a system encounters six consecutive collisions, it will enter a realignment procedure to try and determine the true positions of its Endstops and Origin Marker

Position Count



- Open, Close and Current - compares the open/close count in the fully open/closed position with the current count in these positions; it should be within ten counts
- For example, if the gate is in the fully closed position and the Closed Count displays 5, but the Position Count is 16, it indicates a problem. See the point that follows:



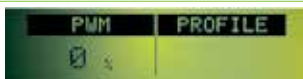
- **Open, Close and Current** - compares the open/close If not, it is safe to assume that the encoder sensor is not counting the pulses accurately or that electrical noise is present around the DOSS system. Equipment such as GSM modules, switch mode chargers or other electrical devices with high electrical noise could contribute to problems in this area

Magnet Position



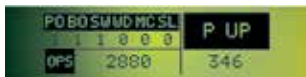
- The display will indicate the position of the magnet relative to the position of the motor. When the display is contradicting the fact, it is an indication that the magnet polarity is incorrect

PWM



- This is an indication of the percentage of battery power that the controller is able to deliver to the motor. The heavier the gate, the lower this percentage is likely to be. If the system is running at full speed but only 80% of battery power is being delivered to the battery, it might be time to change the gate wheels

Operations/Power ups



- The **OPS screen** acts as a trip counter and counts and stores the number of operations completed over a period of time
- For example, the diagnostic screen above indicates that the gate in question has completed 2880 cycles (open and closed) in total
- **P UP** – Indicates the total number of times that the controller has had the power cycled (power removed and reapplied). A high number of power-ups on a battery backed-up system indicates a problem with either the battery or the charger.
- Both these counters can be reset by removing the power to the controller, holding in all four buttons and reapplying power
- **PO** – Power-on-reset has occurred. This reset condition occurs if the control card is powered up from a completely powered down state, meaning that no power is connected to the control card and the super-cap is completely discharged
- **BO** – A Brown-out-reset has occurred. Generally this condition occurs if the voltage to the microprocessor drops below some critical threshold value. The device is held in reset in such situations to prevent abnormal operation. If this flag is set on its own, it's a good indicator that there may be something wrong with the electrical supply to the operator. The system should be checked by a qualified service technician. During a power-on-reset (see above), the BO flag is always set simultaneously with the PO flag. This is completely normal, and should not cause concern
- **SW** – A Software-reset has occurred. This flag is set in the event of abnormal software execution, device failure, or after the system powers up following recovery from Sleep Mode. The device enters sleep when all power is removed from the controller, but the super-cap continues to power the real-time clock circuitry. If the control card is powered up before the super-cap discharges and the time is lost, the system will generate a software reset and set the SW flag
- **WD** – A Watchdog-reset has occurred. This flag is set in the event of abnormal software execution, or some form of device failure. The system should be checked by a qualified service technician if the event is flagged repeatedly

- **MC** – A Master-Clear-reset has occurred. This flag is set in the event of abnormal software execution, or some form of device failure. The system should be checked by a qualified service technician if the event is flagged repeatedly
- **SL** – The device has entered and recovered from Sleep Mode. This flag is infrequently set, as it is cleared during a device reset which usually follows the exit from Sleep Mode. It is not relevant to normal controller operation, and should not be a cause for concern if it does happen to be set

Drive, Fuse and Motor

DRIVE	FUSE	MOTOR
✓	✓	✓

- **DRIVE** – This indicates whether all the transistors present in the H-bridge are operational
- **FUSE** – Fuse in working condition
- **MOTOR** – Motor is connected

Example

DRIVE	FUSE	MOTOR
Q ₂ Q ₄ SC	X	?

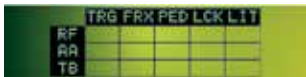
- The screen pictured above indicates a faulty H-bridge, blown fuse and a motor in an unknown state

Serial Number and Firmware version

M 3.4.39	C 2.8.00
SN 00000000	E 2

- **M** and **C** – Indicates the software version loaded on the controller
- **SN** – Serial Number of controller
- **E** – Displays the EEPROM version number

Input Matrix



	TRG	FRX	PED	LCK	LIT
RF					
AA					
TB					

- This screen aids in indicating which inputs are active
- **RF** – This row determines whether any inputs (in this case RF inputs) are being activated by RF functionality. If any cell in this row has an ellipse icon in it, the respective RF input is currently being activated. The activation may arise from a latched remote control transmission, or from a currently active pulsed remote control transmission
- **AA** – This row determines whether a physical input is being activated by an Auto Activation Time-Period
- Any cell with an ellipse icon in it indicates that the respective input is active due to some currently active Auto Activation Time-period
- **TB** – This row determines whether a physical input is inhibited from affecting the control card by a time-barring Time-period. Any cell with an ellipse icon in it indicates that the respective physical input is prevented from affecting the controller
- **TRG** – The trigger input column
- **FRX** – The free-exit input column
- **PED** – The pedestrian input column
- **LCK** – The Holiday Lockout input column
- **LIT** – The Courtesy Light LIT input column

Example



	TRG	FRX	PED	LCK	LIT
RF					
AA		•			
TB					

- The screen picture above shows that an Auto Activation is present for the Free-exit function

Remote Control Information



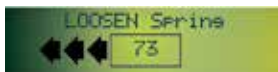
- **ID No** – Displays the identification number of the last remote used to trigger the system
- **LB** – A black dot will appear in this field if the battery of the remote being activated is nearing the end of its functional life
- **PL** – Will indicate the type of input/output (pulsed or latching)
- **TB** – A dot in this field indicates that the remote is time-barred
- **Button** – Indicates which remote button was used for the last valid trigger
- **1/500** – Indicates the memory usage, i.e. how many buttons have been learned into the controller's memory
- The field towards the centre of the display will indicate what function the particular remote button has been assigned to activate, i.e. TRG, FRX, LCK, etc.

Example



- The screen pictured above indicates that the last transmitter button to be pressed had the ID number 737 and it was a pulsed input activating the TRG input. Button one of the transmitter was used and only three transmitter buttons out of the possible 500 programmable buttons have been used

SECTOR Spring tension screen



- This screen indicates how many turns of the spring tensioning nut are needed and which way it should be turned, i.e. clockwise or counter-clockwise

APPENDIX D

WIND LOADING TABLES

Wind speeds for which VECTOR2 motor will still operate the gate

For a 25% covered gate: (Palisades, etc.) x 1.8m high

Value of A or B dimensions once installed ¹	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m ²	Up to 3.5m ²	Up to 4m ²
100mm	94km/h	48km/h	44km/h	41km/h	37km/h	37km/h
140mm	119km/h	65km/h	57km/h	51km/h	46km/h	46km/h
180mm	138km/h	78km/h	67km/h	60km/h	53km/h	53km/h
220mm	156km/h	89km/h	76km/h	67km/h	60km/h	60km/h
260mm	171km/h	99km/h	84km/h	74km/h	65km/h	65km/h
300mm	186km/h	108km/h	91km/h	80km/h	71km/h	71km/h
340mm	199km/h	116km/h	98km/h	86km/h	76km/h	76km/h

For a 100% covered gate: (Fully clad gates, etc.) x 1.8m high

Value of A or B dimensions once installed ¹	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m ²	Up to 3.5m ²	Up to 4m ²
100mm	47km/h	33km/h	24km/h	22km/h	20km/h	19km/h
140mm	59km/h	43km/h	32km/h	28km/h	26km/h	23km/h
180mm	69km/h	50km/h	39km/h	34km/h	30km/h	27km/h
220mm	78km/h	57km/h	44km/h	38km/h	34km/h	30km/h
260mm	86km/h	63km/h	49km/h	42km/h	37km/h	33km/h
300mm	93km/h	68km/h	54km/h	46km/h	40km/h	35km/h
340mm	100km/h	74km/h	58km/h	49km/h	43km/h	38km/h

1. An electric lock must be fitted

2. Refer to the VECTOR2 Installation Manual for installation details

APPENDIX D

WIND LOADING TABLES

Wind speeds for which VERT-X, Vantage 400, and Vantage 500 motors will still operate the gate

Maximum Allowable Coverage in Wind Speeds

Length (m)	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m
Height (m)	Up to 1.8m	Up to 1.8m	Up to 1.8m	Jusqu'à 1.8m
Coverage	Maximum Wind Speeds (Km/h)			
25%	91km/h	68km/h	55km/h	45km/h
50%	64km/h	48km/h	39km/h	32km/h
75%	52km/h	39km/h	31km/h	26km/h
100%	45km/h	34km/h	27km/h	23km/h