



CENTSYS



**DIAGNOSTICS
MADE
EASY**

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 CENTSYS access automation products.

The document is divided into different sections, each referring to a specific CENTSYS 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 product. 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.

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SLIDING GATE OPERATORS



D-Series Operators

The **D-Series** range of operators, which includes the **D5-Evo/D5-Evo Low-Voltage**, **D10** and **D10 Turbo**, gives useful feedback of fault conditions via an intelligent controller and LCD display. As discussed in the introduction to this guide, the **symptom**  will be presented first, after which all possible information screens associated with the symptom(s) in question will be given and can then be cross-referenced with the **'Possible cause'**  and **'Solution'**  sections.

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 of the minimum site requirements are met.



1. Ensure that the following LEDs are illuminated at all times:
 - a. Safety Open
 - b. Safety Close
 - c. Lck/Stp
2. Check that operator is engaged.
3. Check all drive connections into the controller, i.e. battery and motor wires.
4. Check that there is a tight fit of the battery leads onto the battery terminals.
5. Check that Mains Present icon is solid.
6. Check that the origin magnet on the gate passes as closely as possible to the sensor - approximately 13mm apart.

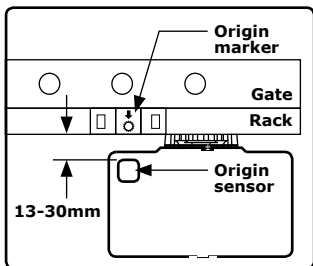


FIGURE 1

7. Check the charge rate of the battery without the battery connected:
 - a. 13.8V for D5-Evo/D5-Evo Low-Voltage
 - b. 27.6V for D10/D10 Turbo
8. Test battery voltage under load; should be no lower than:
 - a. 11V DC for D5-Evo/D5-Evo Low-Voltage
 - b. 22V DC for D10/D10 Turbo

Look at the date stamp on the battery and make sure that the battery is well within its usable life of three to four years from the date on the battery.
9. Check all visible fuses.
10. Check DOSS and sensor connections.
11. Push the gate open and closed manually and check that the gate is running freely and that there are no tight spots in the movement of the gate.
12. Check the state of the gate wheels, examining both the condition of the bearings and the wear on the rolling face of the wheel.
13. Check the condition of the gate rail and ensure that it is perfectly straight and not corrugated.
14. Check for excessive build-up of dirt on the gate rail which might affect its free movement, and ensure that there is no vegetation or anything else obstructing the movement of the gate.
15. Make sure that the rack mesh is within specification along the entire travel of the gate - the rack mustn't press down onto the pinion at any point.
16. Check that the gate aligns properly with its closed catch bracket when closing.
17. Make sure that the gate is fitted with an adequate Endstop that will stop the full force of the gate when opening.
18. Make sure that the gate's guide-rollers adequately support the gate in the upright position and allow free movement of the gate along its entire length of travel.
19. Check that the gearbox is securely mounted and properly aligned to the movement of the gate (i.e. parallel to the gate).

TYPICAL DIAGNOSTIC MESSAGES FOUND ON THE D-SERIES CONTROLLERS

DIAGNOSTIC MESSAGES DURING SETUP



Symptom: Unable to complete Gate Setup



Possible causes

The sensor is receiving dual pulses from the origin magnet due to one of the following causes:

- Sensor positioned too far from the origin magnet
- Sensor and origin magnet positioned at different heights
- Incorrect orientation of magnet inside enclosure
- More than one magnet on gate
- Incorrect orientation of origin magnet
- Magnetised item on rack
- Incorrect orientation of the electric motor is causing induction
- Missing pins on origin enclosure
- Faulty harness
- Faulty origin sensor

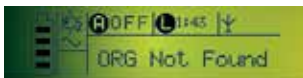


Solutions

- Ensure that the sensor is as close as possible to the origin magnet – ideally the gap should be approximately 13mm. Refer to Figure 1 on page 2
- Sensor and origin magnet should be positioned at the same height
- Ensure that there is only one magnet on the gate
- Ensure that there are no items such as metal bars on the rack that could have become magnetised
- Orientate the electrical motor so that the wires are facing away from the controller
- Replace faulty origin sensor
- Open sensor enclosure and correct orientation of internal magnet



Symptom: Unable to complete Gate Setup



Possible causes

The error indication signifies that the sensor is not receiving a valid pulse from the gate-mounted origin magnet, or the controller is not receiving a signal from the sensor:

- The distance is too great between the origin sensor and the magnet
- The magnet and sensor are mounted at different levels
- Incorrect orientation of magnet
- The gate is getting stuck at a certain point before the magnet has passed the sensor
- Faulty origin sensor



Solutions

- Check the information screen on page 65 – it should display the position of the magnet (left/right) when the magnet is passing the sensor
- Ensure that the magnet and sensor are mounted at the same level
- Ensure that there is an audible 'click' whenever the magnet passes the origin sensor
- Ensure that the arrow on the magnet is facing the operator – there should be a repelling action when the magnet is brought near the sensor
- Move the magnet closer to the origin sensor. Refer to Figure 1 on page 2
- Replace the origin sensor



Symptom: Unable to complete Gate Setup



Possible causes

- Mechanical Endstops have not been installed
- Oil in DOSS chamber
- DOSS faulty or disconnected
- Electric fence contact preventing gate from reaching fully closed position
- Faulty electrical motor



Solutions

- Install physical Endstops in order to induce the stall needed to stop the motor
- Ensure that the harness is connected on both the controller and DOSS side
- Check for evidence of oil on the encoder by following the procedure documented below: (D5-Evo/D5-Evo Low-Voltage only)
 - Remove the DOSS and carrier so that the encoder wheel is clearly visible
 - Disengage the gearbox
 - Place your finger on the wheel
 - Move the gate a metre or so in both directions
 - Check your finger for oil
- Place an endstop approximately 100mm before the fully closed position and perform setup procedure
- Disconnect the motor wires from the controller and place them directly on the battery terminals to check whether the motor runs. If not, replace the electric motor.



Symptom: Unable to complete Gate Setup





Possible causes

- Mechanical Endstops are not securely fitted
- Poor meshing between rack and pinion due to excessive gap, missing teeth, etc.
- Faulty DOSS sensor
- Electric fence contact preventing gate from reaching fully closed position



Solutions

- Ensure that Endstops are sturdy and do not move
- Ensure that gap between rack and pinion is approximately 3mm
- Check for missing teeth on rack
- Place an endstop approximately 100mm before the fully closed position and perform setup procedure

DIAGNOSTIC MESSAGES DURING NORMAL OPERATION



**Symptom: Gate does not open/close.
This error indication applies to D10 and
D10 Turbo only**



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- The maximum current that should be drawn by a D10 controller is 300mA (momentarily); 200mA (continuous)
- This error indication is displayed in the event of excess current being drawn
- Too many auxiliary components connected to 12V auxiliary output
- One specific auxiliary device that is faulty, typically having a short circuit
- Charging voltage significantly higher than 28V DC due to faulty charger or controller

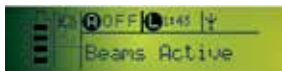


Solutions

- Ensure that the battery charging voltage is no higher than 28V DC. Refer to Appendix A on page 61 for a description of how to test battery and charging voltages
- Disconnect and reconnect auxiliary component one by one in order to isolate the problem



Symptom: Gate does not open/close



Audible feedback

- One beep periodically for 30 seconds



Possible causes

- Beam interrupted
- Beam test inadvertently enabled
- IR PE beams faulty, misaligned or disconnected
- Damaged Safe Common input



Solutions

- Ensure that no people or objects are in the path of the beam
- Ensure that the Safety Open and Safety Close LEDs are illuminated – if not, the inputs can be permanently bridged to Com – or the controller can be reset to factory defaults
- Disable the Beam Test feature under Menu 6: IR Beams
- Ensure that the safety PE beams are in working order and correctly wired
- Replace faulty controller



Symptom: Gate will only move for a very short distance before termination of operation



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- Poor/intermittent motor wire connection
- Faulty electric motor
- Controller hardware problem

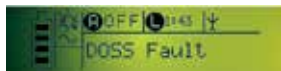


Solutions

- Check connection of motor wires to controller
- Replace green motor wire connector
- Replace faulty electric motor
- Replace faulty controller



Symptom: Gate does not open/close



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- DOSS physically disconnected
- Poor connection on DOSS or controller side
- Faulty harness
- Faulty DOSS
- Faulty controller



Solutions

- Ensure that the DOSS is clipped firmly into its carrier and that the harness is plugged in on both the DOSS and controller side
- Check for bad connections
- Replace DOSS harness
- Replace DOSS unit
- Replace faulty controller



Symptom: Gate does not open/close



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- Intermittent or loose connection between motor and controller
- The H-bridge on the controller is damaged, possibly a blown FET
- The electric motor is faulty or has been disconnected



Solutions

- Check drive connections
- Check that the MOTOR, FUSE and DRIVE cells are all ticked in the information screen. An 'x', question mark or anything other than a tick indicate a fault. In the case of a damaged H-bridge, the display will typically indicate the part of the bridge that is damaged (i.e. Q1Q3, Q2Q4, etc.). For an explanation of the information screens found on the D-Series range of controllers, refer to Appendix B on page 63
- Ensure that the electric motor terminals are connected to the controller

- Check the function of the electric motor by referring to the information screen described earlier, or test the motor by connecting the motor terminals straight onto the battery. If the motor does not run, the commutator is most probably faulty
- In the event of a Drive Fault, the controller must be repaired by an authorised workshop



Symptom: Gate does not open/close



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- Intermittent or loose connection between motor and the 30A ATO motor fuse has been blown or removed
- Faulty controller



Solutions

- The MOTOR, FUSE and DRIVE cells should all be ticked in the information screen
- For an explanation of the different screens, please refer to Appendix B on page 63
- Check the continuity of the fuse with a multi-meter – set the meter to 'ohms' or audio output
- If the fuse keeps blowing if replaced, the controller is faulty and must be replaced



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
- The operator is jammed into an Endstop
- The gearbox is disengaged (D5-Evo/D5-Evo only)
- Loose drive connection (battery or motor terminal)
- Oil in DOSS chamber
- Faulty DOSS
- Sticky motor brushes



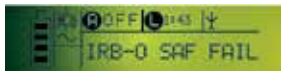
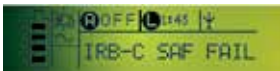
Solutions

- Ensure that the gate is running smoothly and that there is nothing physically obstructing the gate, e.g. dirt or stones on the rail, rack pressing down on the pinion, bad rack joints, etc.
- Connect the motor wires straight onto the battery to drive the gate in the opposite direction and release it from the Endstop
- Engage the gearbox by turning the thumbwheel anti-clockwise (D5-Evo/D5-Evo Low-Voltage only)
- Ensure that drive connections (battery and motor wires) are secure
- Check for evidence of oil on the encoder by following the procedure below: (D5-Evo/D5-Evo Low-Voltage only)
 - Remove the DOSS and carrier so that the encoder wheel is clearly visible
 - Disengage the gearbox
 - Place your finger on the wheel
 - Move the gate a metre or so in both directions
 - Check your finger for oil
- Replace faulty DOSS
- Arrange service with an authorised workshop



Symptom 1: Gate does not close from the fully open position

Symptom 2: Gate does not open from the fully closed position



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- The Beam Test feature has been inadvertently activated
- The safety PE beam transmitter has been wired to normal common – as opposed to safe common – with the Beam Test enabled
- The incorrect operating profile for the region has been selected. The UL325 and CE profiles will always perform a beam test before allowing the gate to run
- PE beams not aligned
- Damaged SAF COM input
- Incorrect PE beam wiring
- Faulty closing/opening PE beams



Solutions

- Ensure that the PE beams are correctly wired and that the connections are secure. Refer to the wiring diagrams on pages 70 and 71
- If not required, Disable the Beam Test feature under Menu 6: IR Beams
- Connect the transmitter negative to Safety Com
- Ensure that you select the correct profile for the region the operator is being installed in, e.g. ZA (Menu 10: General Settings)
- Check PE beam alignment
- Perform a Factory Reset operation, bridge Safety Open to Com or refit the PE beams if they have been disconnected
- Replace the PE beams
- Replace faulty controller



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
- Gate rack resting on pinion
- Seized gate wheels
- The controller collision force is set too sensitively
- Number of allowable collisions set to a low value, e.g. 1
- Damaged encoder wheel
- Tight gearbox
- Oil on DOSS
- Faulty DOSS harness
- Loose drive connections
- Gearbox not fully engaged
- Faulty DOSS sensor
- Faulty electric motor



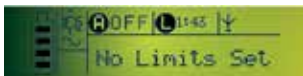
Solutions

- Ensure that the gate is running smoothly and that there is nothing physically obstructing the gate, e.g. dirt or stones on the rail, rack pressing down on pinion, bad rack joints, etc.
- There should be a 2 - 3mm gap between the rack and the pinion
- Increase the Collision Force (Menu 2: Safety)
- Increase maximum collisions value to a higher number, typically 4
- Check for evidence of oil on the encoder by following the procedure below: (D5-Evo/D5-Evo Low-Voltage only)

- Remove the DOSS and carrier so that the encoder wheel is clearly visible
- Disengage the gearbox
- Place your finger on the wheel
- Move the gate a metre or so in both directions
- Check your finger for oil
- Replace faulty DOSS harness
- Check battery and motor terminal connections
- Ensure that operator is fully engaged
- Replace faulty DOSS sensor
- Replace faulty electric motor
- Have the operator serviced by an authorised workshop



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 does not open/close



Audible feedback

- Three short beeps periodically for 30 seconds



Possible causes

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



Solutions

- Ensure that the battery terminals are properly connected on both the controller and battery side
- Measure the battery voltage – it should be no lower than 11V DC for the D5-Evo or 22V DC for the D10/D10 Turbo when placed under load. Refer to Appendix A on page 61 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
- Measure the charger's output voltage. It should be about 14V for the D5-Evo/D5 Evo Low-Voltage and 27V for the D10/D10 Turbo
- Replace faulty controller

GENERAL INFORMATION SCREENS



Symptom: None



Audible feedback

- 4KHz tone for 30 seconds



Possible causes

- The IR PE 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 PE beams
 - If the lenses are unobstructed, check the wiring between the PE beams and the controller (refer to the wiring diagrams on page 70 and 71), as well as between the IRB transmitter and receiver
 - Ensure that the PE 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 PE beams have been interrupted with the gate in the fully closed position
- Inadvertent activation of the Break-in Alarm feature

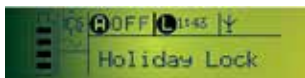


Solutions

- Clear any obstructions from the path of the PE beams
- If the lenses are unobstructed, check the wiring between the PE beams and the controller, as well as between the IRB receiver and transmitter
- Ensure that the PE 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/Stp 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: General Settings)
- Check for any Auto-activations pertaining to Holiday Lockout. Refer to the Time-barring and Auto-activation matrix, a depiction of which is given in Appendix B, page 63

SLIDING GATE OPERATORS



D2 Turbo/D2 Turbo Low-Voltage

The **D2 Turbo/D2 Turbo Low-Voltage** sliding gate operators for domestic gates are renowned for their supremely easy setup, incredibly user-friendly interface and click-together modular design.

Like all CENTSYS operators, the **D2 Turbo/D2 Turbo Low-Voltage** will give feedback should it encounter any errors in its operation, using a combination of the Status LED and the onboard buzzer to provide users with the information necessary to perform diagnostic exercises.

FAULT CONDITIONS DURING SETUP



Symptom: Gate moves to endstop, but does not complete setup



LED output: Continuous 'flashing' red LED



Possible causes

- The origin magnet is missing or incorrectly mounted
- Faulty origin sensor
- Poor connection between battery and controller
- The battery voltage is low or the battery is faulty or disconnected



Solutions

- Check that the magnet is still mounted on the gate and that the gap between the magnet and the sensor is minimal. Refer to Figure 1 on page 2
- Ensure that there is an audible 'click' whenever the magnet passes the origin sensor
- Ensure that the arrow on the magnet is facing the operator – there should be a repelling action when the magnet is brought near the sensor
- Ensure that the battery terminals are properly connected on both the controller and battery side
- Measure the battery voltage – it should be no lower than 11V DC when placed under load. Refer to Appendix A on page 61 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 battery terminals.
- Replace the battery
- Measure the onboard charger's output voltage. It should be about 14V DC with the battery disconnected
- Replace the motor module



Symptom: Gate does not move at all



LED output: Continuous 'flashing' red LED



Audible feedback/Buzzer output

- Five quick beeps continuously



Possible causes

- Poor connection between battery and controller
- The battery voltage is low or the battery is faulty or disconnected
- Poor connection between motor wires and controller
- Motor fuse blown
- DOSS physically disconnected
- Faulty controller
- Faulty motor and DOSS assembly



Solutions

- Ensure that the battery terminals are properly connected on both the controller and battery side
- Measure the battery voltage – it should be no lower than 11V DC when placed under load. Refer to Appendix A on page 61 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 battery terminals
- Measure the onboard charger's output voltage. It should be about 14V DC
- Replace blown fuse. If it blows again, replace the controller
- Disconnect the motor wires and reconnect, ensuring that the screws have been sufficiently tightened
- Ensure that the DOSS cable is securely connected on both the controller and motor assembly side
- Replace the battery
- Replace faulty controller
- Replace motor assembly

FAULT CONDITIONS DURING NORMAL OPERATION



Symptom: Gate does not move at all



Audible feedback/Buzzer output

- Five beeps



Possible causes

- Motor disconnected
- DOSS disconnected
- Faulty controller



Solutions

- Ensure that the DOSS cable is securely connected on both the controller and motor assembly side
 - Ensure that the motor terminals are connected to the controller
 - Replace faulty controller
-



Symptom: Gate does not move at all



Audible feedback/Buzzer output

- Three short beeps



Possible cause

- End-of-travel limits have not been established



Solution

- Set the gate limits as per the procedure documented in the installation manual



Symptom: Gate does not move at all or move a short distance and stops



Audible feedback/Buzzer output

- Three long beeps



Possible causes

- Poor connection between battery and controller
- The battery voltage is low or the battery is faulty or disconnected
- There is no mains power to the motor
- Faulty controller



Solutions

- Ensure that the battery terminals are properly connected on both the controller and battery side
- Measure the battery voltage – it should be no lower than 11V DC when placed under load. Refer to Appendix A on page 61 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
- Measure the onboard charger's output voltage. It should be about 14V DC
- Ensure that the safety PE beams are in working order
- Replace controller



Symptom: Gate does not close from the fully open position



LED output: Green Safe CLS LED flashes rapidly



Audible feedback/Buzzer output

- Three short beeps



Possible causes

- Closing infrared gate safety PE beams incorrectly wired
- Closing PE beams faulty



Solutions

- Ensure that the PE beam transmitter negative has been connected to Safe Com and not to Com
- Ensure that the PE beam receiver relay Com has been connected to Safe Com (CENTSYS Photon PE beams only) (Refer to D2 Turbo manual)
- Replace faulty infrared PE beams



Symptom: Gate does not close from the fully open position



Audible feedback/Buzzer output

- One beep every two seconds



Possible causes

- Closing infrared gate safety PE beams interrupted
- Closing infrared safety PE beams faulty, misaligned or disconnected
- Damaged Safe Common input



Solutions

- Ensure that no people or objects are in the path of the PE beam
- Ensure that the Safety Open and Safety Close LEDs are lit – if not, the inputs can be permanently bridged to Com, or the controller can be reset to factory defaults.
Bridging the safety inputs will disable all safety features and poses a safety hazard!
- Ensure that the PE beams are in working order
- Replace faulty controller



Symptom: Gate does not open from the fully closed position



LED output (Green): Safe OPN LED flashes rapidly



Audible feedback/Buzzer output

- Three short beeps



Possible causes

- Opening infrared gate safety PE beams incorrectly wired
- Opening PE beams faulty



Solutions

- Ensure that the PE beam receiver relay Com has been connected to Safe Com (CENTSYS Photon PE beams only) (Refer to D2 Turbo manual)
 - Replace faulty infrared PE beams
-



Audible feedback/Buzzer output

- One beep every two seconds



Possible causes

- Opening infrared gate safety PE beams interrupted
- Opening infrared safety PE beams faulty, misaligned or disconnected
- Damaged Safe Common input



Solutions

- Ensure that nothing is in the path of the PE beam
- Ensure that the Safety Open and Safety Close LEDs are illuminated – if not, the inputs can be permanently bridged to Com, or the controller can be reset to factory defaults
Bridging the safety inputs will disable all safety features and poses a safety hazard!
- Ensure that the PE beams are in working order
- Replace faulty controller

V-SERIES RANGE SWING GATE OPERATORS



VECTOR2
Swings Gates
Procedely!

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.

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 61.
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 PE beams. On the V-Series controllers, the PE beam LEDs mirror the state of the PE beam receiver relay. However, if the controller is in the default state, the LEDs may be off even though the controller tested the PE beams as 'ok'. In the event that the gates do not open/close, ensure that the PE 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 84 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

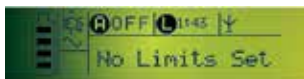


Solutions

- 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 61 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 PE beams are cleared



Possible causes

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

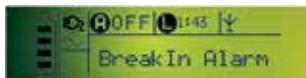


Solutions

- Clear any obstruction from the path of the PE beams
 - If the lenses are unobstructed, check the wiring between the PE beams and the controller
 - Refer to the wiring diagrams on pages 70 and 71), as well as between the IRB transmitter and receiver
 - Ensure that the PE 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 PE beams have been interrupted with the gate in the fully closed position
- Inadvertent activation of the Break-In Alarm feature

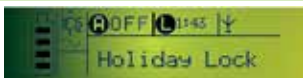


Solutions

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



Symptom: Gate does 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)

TRAFFIC BARRIERS



The **SECTOR**, while technically part of the **D-Series** range, has its own unique set of error codes and as such is discussed separately in this guide.

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. Ensure that the following LEDs are illuminated at all times:
 - a. ILP
 - b. Lck/Stp
2. Check all drive connections, i.e. battery and motor wires.
3. Test battery voltage under load, it should be no lower than 11V DC.
4. Check all visible fuses.
5. Ensure that the barrier is firmly bolted onto its plinth.
6. Ensure that the pole is firmly held by the pole coupler.
7. If a loop has been fitted – check for continuity.
 - a. The impedance should be $<5\Omega$.
8. Check DOSS connections.
9. Ensure that the orientation of the spring corresponds with the orientation of the boom pole (Refer to the SECTOR installation manual for further information)

TYPICAL DIAGNOSTIC MESSAGES FOUND ON THE SECTOR CONTROLLER

DIAGNOSTIC MESSAGES DURING SETUP



Symptom: Unable to complete barrier setup



Possible causes

- DOSS is faulty or disconnected
- The gearbox is slipping



Solutions

- Replace faulty DOSS or reconnect the unplugged connections
 - Contact an authorised agent to service the gearbox
 - Tighten the drive-arm or contact an authorised agent
-



Symptom: Unable to complete barrier setup



Possible cause

- One or both Endstops are moving
- The gearbox is slipping



Solution

- Use a Phillips screwdriver to sufficiently tighten the open and closed Endstops. They should not move at all when subjected to force
- Tighten the drive-arm or contact an authorised agent

DIAGNOSTIC MESSAGES DURING NORMAL OPERATION



Symptom: Boom does not raise/lower, barrier runs a short distance and stops



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

This error indication is displayed in the event of excess current being drawn

- Incorrect spring orientation
- Incorrect spring tension
- Too many auxiliary components connected to 12V auxiliary output
- The maximum current that should be drawn by the SECTOR traffic barrier controller is 3A (momentarily) or 1A (continuous)
- One specific auxiliary device that is faulty, typically having a short circuit
- Charging voltage significantly higher than 14V DC due to faulty charger or controller



Solutions

- Ensure that the orientation of the spring corresponds with the orientation of the boom pole. Refer to the SECTOR manual for further details
- Check the spring balance by referring to the Spring Tension Diagnostic screen, and correct if necessary
- Ensure that the battery charging voltage is no higher than 14V DC. Refer to Appendix A on page 61 for a description of how to test battery and charging voltages
- Disconnect and reconnect auxiliary components one by one in order to isolate the problem



Symptom: Boom does not raise/lower, barrier runs a short distance and stops



Audible feedback

- Four beeps periodically for ten seconds



Possible causes

This 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
- Loose drive connection (battery or motor terminal)
- Blown fuse
- DOSS unclipped from gearbox
- Faulty DOSS
- The gearbox is slipping
- The primary drive-arm is loose on the output shaft



Solutions

- Ensure that nothing is hindering the trajectory of the boom pole
- Ensure that drive connections are secure
- Check 30A ATO fuse
- Ensure that DOSS is firmly clipped into the gearbox
- Replace faulty DOSS
- Contact local authorised agent to service gearbox
- Tighten the primary drive-arm or contact local authorised agent



Symptom: Boom pole will only move for a very short distance before termination of operation



Audible feedback

- Five beeps periodically for 30 seconds



Possible cause

- Controller hardware problem



Solution

- Replace faulty controller



Symptom: Boom does not raise/lower



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- DOSS physically disconnected
- Poor connection on DOSS or controller side
- Faulty harness
- Faulty DOSS
- Faulty controller



Solutions

- Ensure that the DOSS is clipped firmly into its carrier and that the harness is plugged in on both the DOSS and controller side
- Check for bad connections
- Replace DOSS harness
- Replace DOSS unit
- Replace faulty controller



Symptom: Boom does not raise/lower



Audible feedback

- Five beeps periodically for 30 seconds



Possible causes

- Loose drive connections
- Faulty electric motor
- The H-bridge on the controller is damaged, possibly a blown FET
- The electric motor is faulty or has been disconnected



Solutions

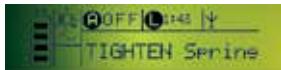
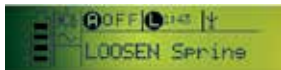
- Check drive connections (motor and battery) and secure if necessary
- Replace faulty electric motor
- Check that the MOTOR, FUSE and DRIVE cells are all ticked in the information screen.

An 'x', question mark or anything other than a tick indicates a fault. In the case of a damaged H-bridge, the display will typically indicate the part of the bridge that is damaged (i.e. Q1Q3, Q2Q4, etc.). For an explanation of the diagnostic screens found on the **D-Series** range of controllers, refer to Appendix B on page 63

- In the event of a Drive Fault, the controller must be repaired by an authorised workshop
- Ensure that the electric motor terminals are connected to the controller
- Check the function of the electric motor by referring to the information screen described above, or test the motor by connecting the motor terminals straight onto the battery
- If the motor does not run, the commutator is most probably faulty



Symptom: Barrier may continue to operate but movement will be accompanied by audible error indication



Audible feedback

- Three beeps periodically while boom is moving



Possible cause

- The spring tension is incorrect; it is too loosely / tightly wound



Solution

- A handy information screen, including graphic representation, can be found by scrolling upwards on the controller. Refer to Appendix B, on page 63 for further information. This will show you exactly how many turns are needed and in which direction (i.e. clockwise or counter-clockwise)



Symptom: Barrier does not raise/lower or barrier 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
- Faulty DOSS harness
- Incorrect spring tension
- Incorrect combination of spring gearbox, and pole length
- Loose drive connections
- Faulty DOSS
- Faulty or disconnected electric motor



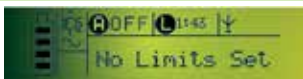
Solutions

- Ensure that nothing is physically hindering the trajectory of the boom
- Increase the Collision Force (Menu 2: Safety)
- Increase maximum collisions value to a higher number, typically 4
- Replace faulty DOSS harness
- Ensure the correct spring and gearbox is used for the current pole length in use
- Check battery and motor terminal connections
- Replace faulty DOSS
- Ensure that the blue and black motor wires are connected to the controller. If they are and the barrier still won't operate, it might be necessary to replace the electric motor. Refer to the MOTOR information screen discussed in Appendix B on page 63 to determine whether the motor is read by the controller

- A handy information screen, including graphic representation, can be found by scrolling upwards on the controller. Refer to Appendix B, on page 63 for further information. This will show you exactly how many turns are needed and in which direction (i.e. clockwise or counter-clockwise)



Symptom: Boom does not raise/lower



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 (Menu1: Setting Limits) and following the onscreen prompts



Symptom: Boom does not raise/lower



Audible feedback

- Three beeps periodically 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 61 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 SCREENS



Symptom: None



Audible feedback

- 4KHz tone for 30 seconds



Possible causes

- The closing loop has been activated while the boom is lowered
- Inadvertent activation of the Break-in Alarm feature

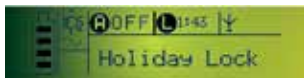


Solutions

- Remove any metal objects from the closing loop
 - Check the loop wiring and impedance (should typically be $<5\Omega$)
 - If not required, disable the Break-in Alarm feature in Menu 6: Loop Detector
-



Symptom: Boom does not raise from fully lowered position



Audible feedback

- One beep periodically for 30 seconds



Possible cause

- The Holiday Lockout feature has been enabled

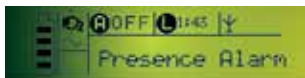


Solutions

- 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)
 - Check for any Auto-activations pertaining to Holiday Lockout. Refer to the Time-barring and Auto-activation matrix, a depiction of which is given in Appendix B on page 63
-



Symptom: None



Audible feedback

- 4KHz tone until closing loop is cleared



Possible causes

- The closing loop has been activated for the time specified in Menu 6.5.1.2: Presence Time
- Inadvertent activation of the Presence Alarm feature



Solutions

- Remove any metal objects from the closing loop
- Check the loop wiring and impedance (should typically be $<5\Omega$)
- If not required, disable the Presence Alarm feature in Menu 6: Loop Detector

KEYPAD ACCESS CONTROL



SMART GUARD™

SMART GUARD™
air

The **SMARTGUARD** (hard-wired) and **SMARTGUARDair** (wireless) access control keypads provide diagnostic feedback via a collection of tri-colour LEDs on the face of the unit, as well as an onboard buzzer which will alert users to any errors in its operation.



Symptom: Entering the correct access code does not activate the relay/device that the keypad is connected to



LED output: Green LED illuminates



Possible causes

- The code has been programmed to activate Output 2 or 3 (SMARTGUARD)
- Device has not been paired to a CENTSYS code-hopping receiver (SMARTGUARDair)



Solutions

- Program the code to activate Output 1
 - Enter Programming Mode = * Master Code*
 - Select Add Menu = 1 #
 - Enter User Address = Address #
 - Enter Access Code = New access code #
 - Select Channel = Channel 1#
 - Enter Access limit = [Accesses] #
 - Exit Add menu = #
 - Exit Program Mode = #
- Pair the keypad with a CENTSYS code-hopping receiver (SMARTGUARDair)
 - Place the receiver into Learn Mode
 - Enter a valid access code on the SMARTGUARDair, followed by #. The SMARTGUARDair will now transmit for a short time, and will pair with the receiver
 - Exit Learn Mode on the receiver
 - Test the system by entering a valid access code, followed by #



Symptom: Entering the correct access code does not activate the relay/device that the keypad is connected to



LED output: Red LED illuminates



Possible causes

- The access code has not been learned into memory
- The access code was learned into memory with an access limit set



Solutions

- Learn the access code into memory:
 - Enter Program Mode = * Master Code*
 - Select Add Menu = 1 #
 - Enter User Address = Address #
 - Enter Access Code = New access code #
 - Select Channel = Channel #
 - Enter Access limit = [Accesses] #
 - Exit Add menu = #
 - Exit Program Mode = #



Symptom: Entering the correct access code does not activate the relay/device that the keypad is connected to



LED output: Red LED triple-flashes rapidly every four seconds. The tone of the onboard buzzer will also be different from its normal pitch when pressing keys



Possible cause

- Battery voltage low (SMARTGUARDair)



Solutions

- Replace batteries



Symptom: Entering the correct access code does not activate the relay/device that the keypad is connected to



LED output: Green and red LEDs flash in sequence



Possible cause

- Code has been incorrectly entered three times
- Inadvertently changed access code when editing settings



Solutions

- Make sure that the code entered is correct
 - Learn the code again
-



Symptom: Electric gate lock not being activated



Possible cause

- Incorrect wiring



Solution

- Refer to wiring diagram in installation manual

POLOPHONE INTERCOM SYSTEMS



Thanks to its incredibly user-friendly design – utilising a simple two-wire bus system – the **POLOphone** intercom system is known for reliable, hassle-free installation and operation. However, should something go wrong, this diagnostic guide will help you to easily diagnose and resolve any issues that may arise.



Symptom: Lights off on Entry Panel



Possible causes

- Polarity of power supply wires incorrect
- Polarity of two-wire bus incorrect
- Supply voltage too low
- Voltage on two-wire bus too low



Solutions

- Check polarity of power supply wires
 - Check polarity of two-wire bus
 - Measure supply voltage
 - Measure two-wire bus voltage at Entry Panel; it should be between 6.8V and 8V
-



Symptom: Entry Panel howling when active



Possible cause

- Volume too high at Entry Panel



Solutions

- Reduce volume at Entry Panel
- Make sure that there is a sponge between the Entry Panel speaker and the speaker holder
- Make sure that there is a sponge between the Entry Panel microphone and the Base cover
- Make sure that the unit is properly closed



Symptom: Entry Panel relay not triggering when gate button pressed on Handset



Possible causes

- Incorrect group selected on Entry Panel
- Bus voltage at Entry Panel too low



Solutions

- Ensure that correct group (1 or 2) is selected on Entry Panel
 - Measure two-wire bus voltage at Entry Panel; it should be between 6.8V and 8V
 - Replace faulty Entry Panel
-



Symptom: Handset not ringing when called



Possible causes

- Polarity of two-wire bus incorrect
- Voltage on two-wire bus at Handset too low
- Poor connection between Handset and coil cord
- Incorrect Handset group selected
- Cradle not properly placed on the Handset



Solutions

- Check polarity of two-wire bus
- Measure two-wire bus voltage at Handset; it should be between 6.8V and 8V
- Check coil cord connection
- Ensure that correct group (A or B) is selected on Handset
- Ensure that the cradle is properly placed on the Handset and is pressing the Hook switch



Symptom: No speech when Handset is lifted



Possible causes

- Handset volume set too low
- Poor connection between Handset and coil cord
- Hook switch jammed



Solutions

- Increase Handset volume
- Check coil cord connection
- Ensure that hook switch moves freely

GSM DEVICES G-SWITCH-22 GSM MODULE



Diagnostic exercises on the **G-SWITCH-22** are mostly symptom-based; however, the device's onboard LEDs will provide useful information about the overall system health, as will the G-WEB online interface.



Symptom: Missed Call not activating one or both of the outputs



Possible causes

- The user phone number has not been added to system memory
- The Caller Line Identification Presentation has not been enabled on user phone number or G-SWITCH-22 SIM
- No network coverage
- The G-SWITCH-22 module is not powered up



Solutions

- Ensure that the user phone number has been successfully added and also check that the command syntax is correct if adding using SMS
 - Enable Caller Line Identification Presentation
 - Check the signal strength LEDs on the module and move the antenna to obtain optimal network coverage
 - Check that the device is powered up
-



Symptom: When giving the module a Missed Call, Voicemail or a busy tone is heard



Possible causes

- Call forwarding/Voicemail has been enabled
- No network coverage
- The G-SWITCH-22 module is not powered up
- The device is currently engaged in the synchronisation stage



Solutions

- Insert the module SIM card into a mobile phone and disable Call forwarding/Voicemail
- Check the signal strength LEDs on the module and move the antenna to obtain optimal network coverage



Symptom: When giving the module a Missed Call, the relay activates and then the call goes to Voicemail



Possible cause

- Call forwarding/Voicemail has been enabled (Busy)



Solution

- Insert the module SIM card into a mobile phone and disable Call forwarding/Voicemail



Symptom: G-SWITCH-22 not synchronising via G-WEB



Possible causes

- The G-SWITCH-22 module is not powered up
- No network coverage
- No airtime on the module SIM card
- SIM card not registered - Check with local communication authority
- Data service not enabled on the SIM
- Incorrect network specified on the website



Solutions

- Check that the device is powered up
- Check the signal strength LEDs on the module and move the antenna to obtain optimal network coverage
- Load airtime onto the module SIM card
- Have SIM card registered in terms of local regulation in force
- Contact SIM card provider to make sure that the SIM card has data connection enabled
- Make sure that the correct network is specified

APPENDICES

APPENDIX A

LOW BATTERY VOLTAGE CONDITION

APPENDIX B

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APPENDIX C

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APPENDIX D

WIND LOADING TABLES

APPENDIX E

**D10 TURBO MAXIMUM OPERATING SPEED
FOR CORRESPONDING GATE MASS**

APPENDIX F

QUICK SELECTION GUIDES

APPENDIX G

KEYPAD MENUS

LOW BATTERY VOLTAGE CONDITION

Status light flashes three times - LCD indicates Battery-Low (on operators with LCD interfaces).

If the battery voltage is less than 10.5V DC under load (D10/D10 Turbo = 21V DC), the unit will not operate at all. For any other voltage, the battery could still be the cause of the problem. Check that the battery is being properly charged.

- Check the 'Mains Present' icon on the main diagnostic screen or scroll to the battery charger diagnostic screen and check the charging voltage – right-hand voltage.
- This should indicate approximately 14V (D10/D10 Turbo = 28V)
- Check that the mains power is switched on (measure between 90V and 240V AC on the mains connector)
- Check that the red LED on the side of the charger is illuminated
- Check the charger's supply fuse
- Check that the white battery charger connector is making proper contact with the controller
- Check the condition of the battery leads, terminals and connectors. Look for and correct all loose connections and signs of corrosion
- The battery might be discharged. Measure the battery voltage with the charger connected; if the voltage is below 11V, then the battery is discharged. The number of cycles per hour may be excessive, thus discharging the battery
- The charger may be faulty. Disconnect the battery and measure the voltage on the battery leads. It must be between 13.6V and 13.8V (D10/D10 Turbo = 27.5V). If not, replace the charger
- The battery might be old, and might have to be replaced. If in doubt test as follows:
- Check that the battery is charged, by ensuring that the battery voltage is above 13.5V (D10/D10 Turbo = 27.5V) with the charger connected. (If the battery is in a good condition it would probably pass the test without being fully charged)
 - Disconnect the charger from the battery
 - Remove the DC motor leads from the DC controller

- Apply the DC motor leads directly to the battery, while measuring the battery voltage
- It should not be less than 10.5V DC under load (**D10/D10 Turbo** = 21V DC under load)

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 second
- 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



Current	Max	0.0
0.0 A	ColCnt	Lost
	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:



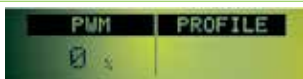
- **Open, Close and Current** - compares the open/close If not, it is safe to assume that the encoder sensor is not counting the pulses accurately or that electrical noise is present around the DOSS system. Equipment such as GSM modules, switch mode chargers or other electrical devices with high electrical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

Magnet Position



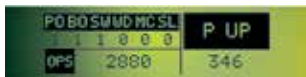
- The display will indicate the position of the magnet relative to the position of the motor. When the display is contradicting the fact, it is an indication that the magnet polarity is incorrect

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



PO	BO	SW	MD	MC	SL	P UP
1	1	0	0	0	0	
OPS	2880				346	

- 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 C

WIRING DIAGRAMS

Wiring diagram for opening safety PE beams

The image used is for illustrative purposes only.
The actual controller may differ from this image.

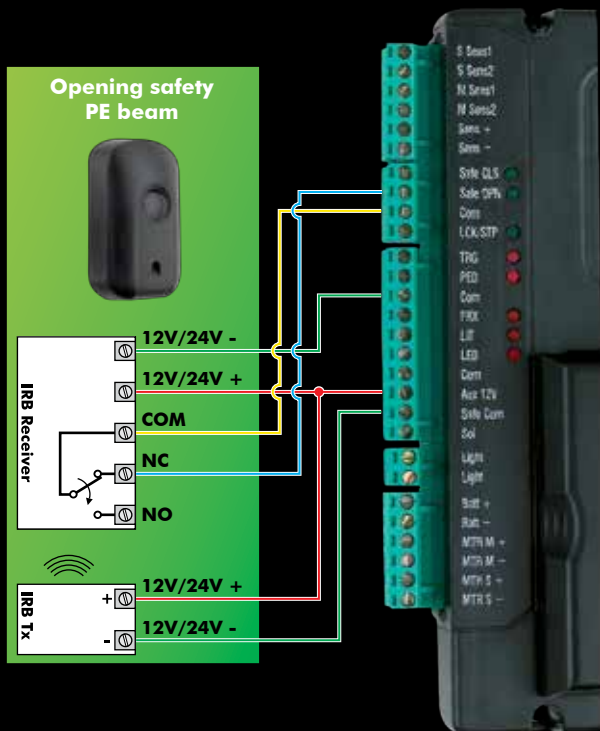


FIGURE 2

APPENDIX C

WIRING DIAGRAMS

Wiring diagram for closing safety PE beams

The image used is for illustrative purposes only.
The actual controller may differ from this image.

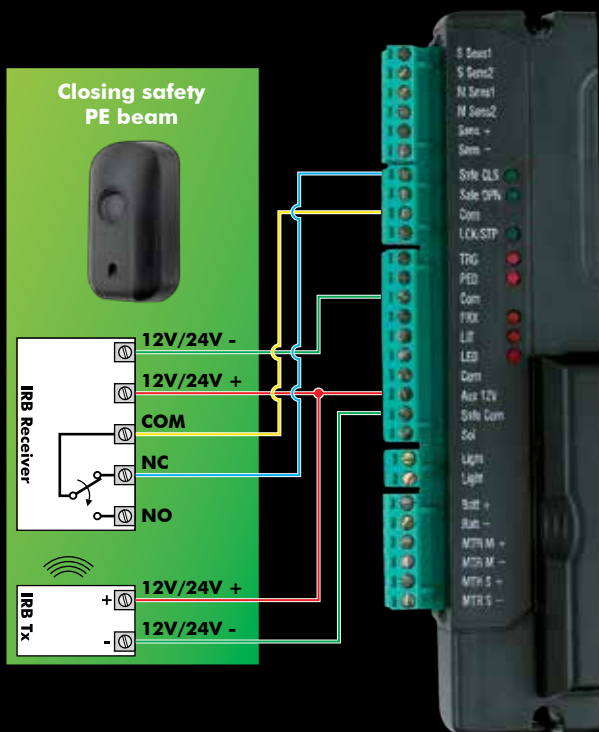


FIGURE 3

APPENDIX C

WIRING DIAGRAMS

Wiring diagram for various inputs

The image used is for illustrative purposes only.
The actual controller may differ from this image.

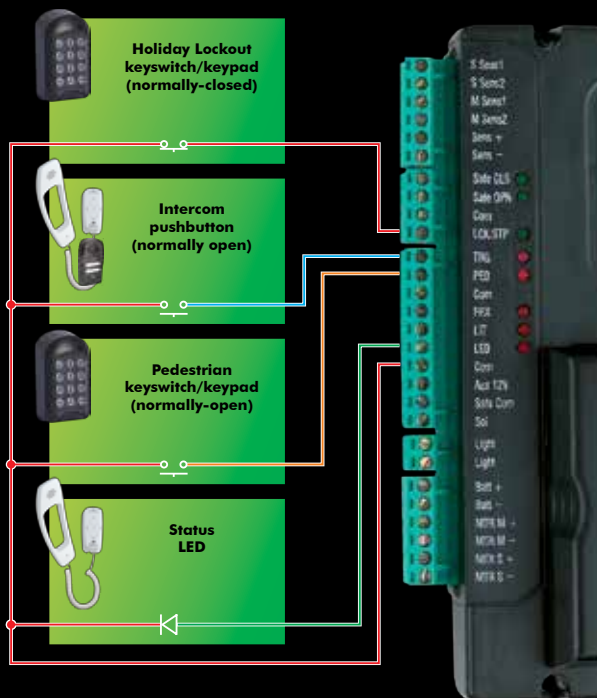


FIGURE 4

WIRING DIAGRAMS

Wiring diagram for pillar lights

The image used is for illustrative purposes only.
The actual controller may differ from this image.

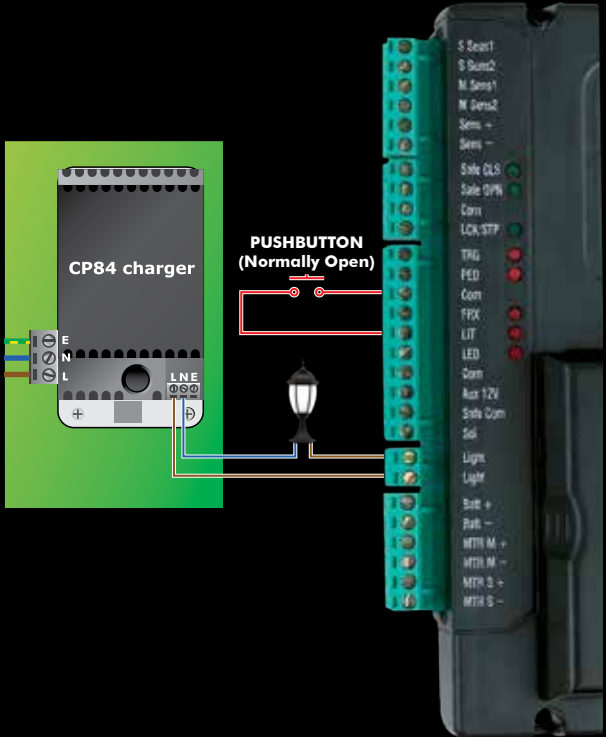


FIGURE 5

APPENDIX C

WIRING DIAGRAMS

Wiring diagram for VECTOR2, VERT-X and VANTAGE master and slave motors

The image used is for illustrative purposes only.
The actual controller may differ from this image.

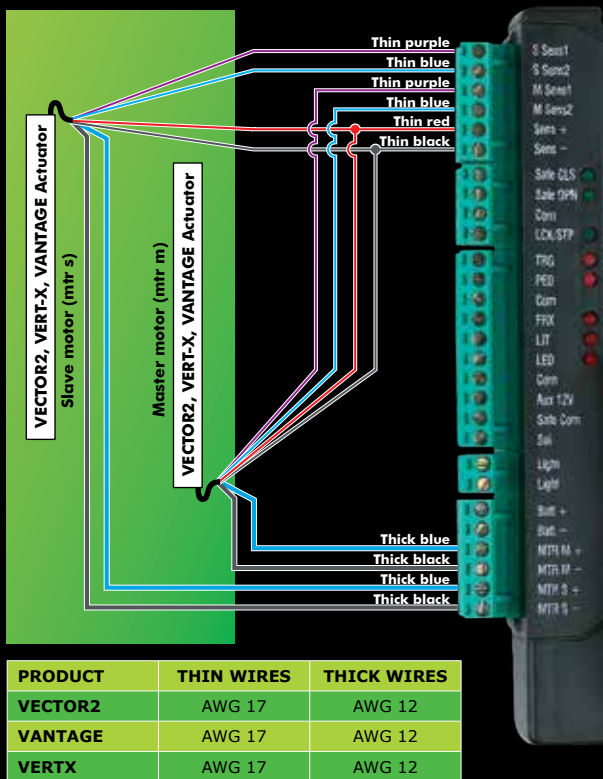


FIGURE 6

APPENDIX C

WIRING DIAGRAMS

Wiring diagram of SMARTGUARD keypad to an electric lock

The image used is for illustrative purposes only. The actual controller may differ from this image.

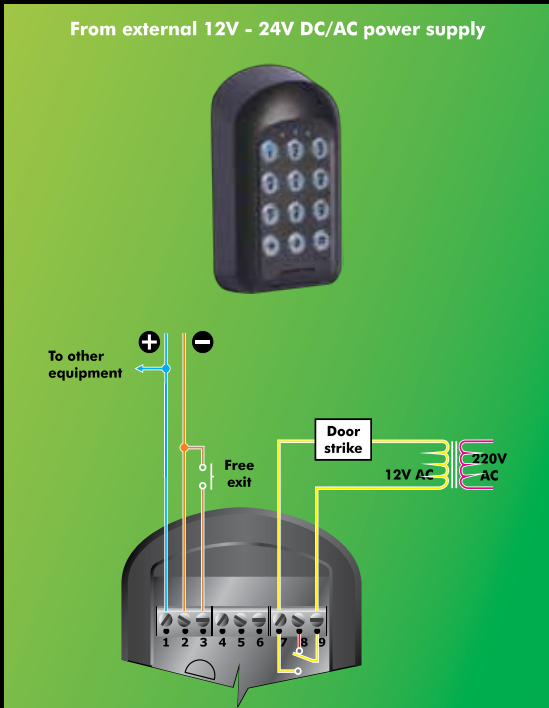


FIGURE 7

APPENDIX C

WIRING DIAGRAMS

Wiring diagram of SMARTGUARD keypad to a magnetic lock

The image used is for illustrative purposes only.
The actual controller may differ from this image.

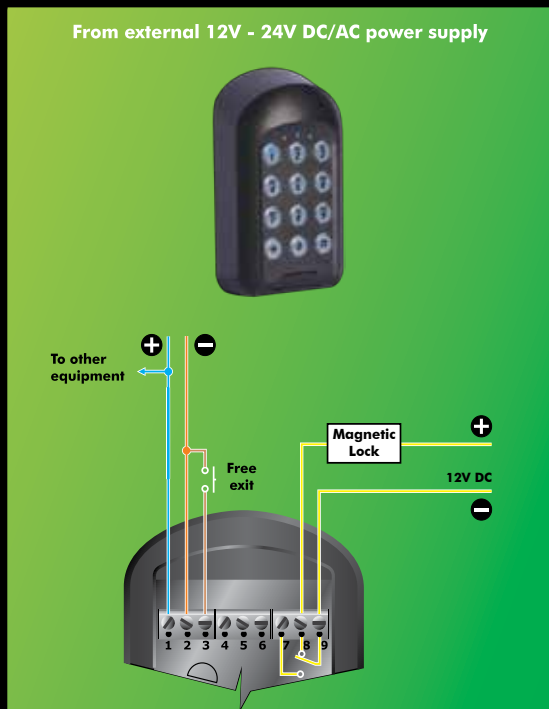


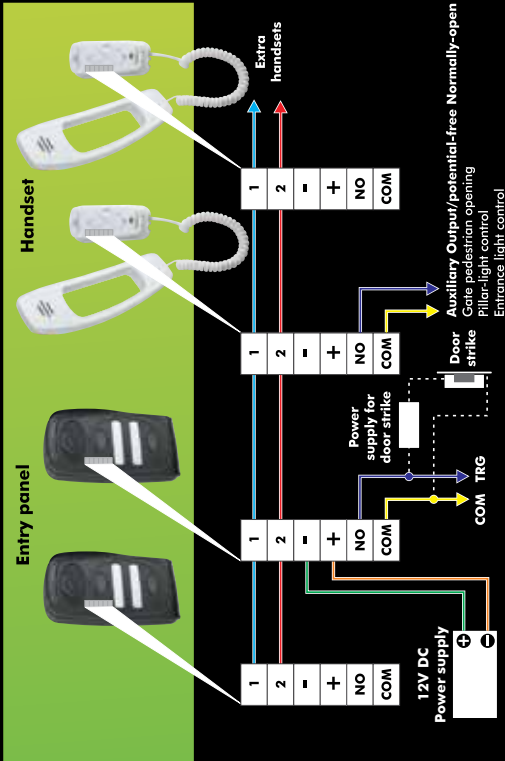
FIGURE 8

APPENDIX C

WIRING DIAGRAMS

Wiring diagram of the POLOphone intercom system

The image used is for illustrative purposes only.
The actual controller may differ from this image.



WARNING
If the gate trigger wire is connected to a potential-free contact (NO or COM) on the entry panel, the gate can be opened by joining the NO and COM terminals together.
For additional security it is advisable to wire to the auxiliary terminals on the handset or connect the POLOswitch in the gate motor.

FIGURE 9

APPENDIX C

WIRING DIAGRAMS

Wiring diagram of G-SWITCH-22 to D5-Evo

The image used is for illustrative purposes only.
The actual controller may differ from this image.

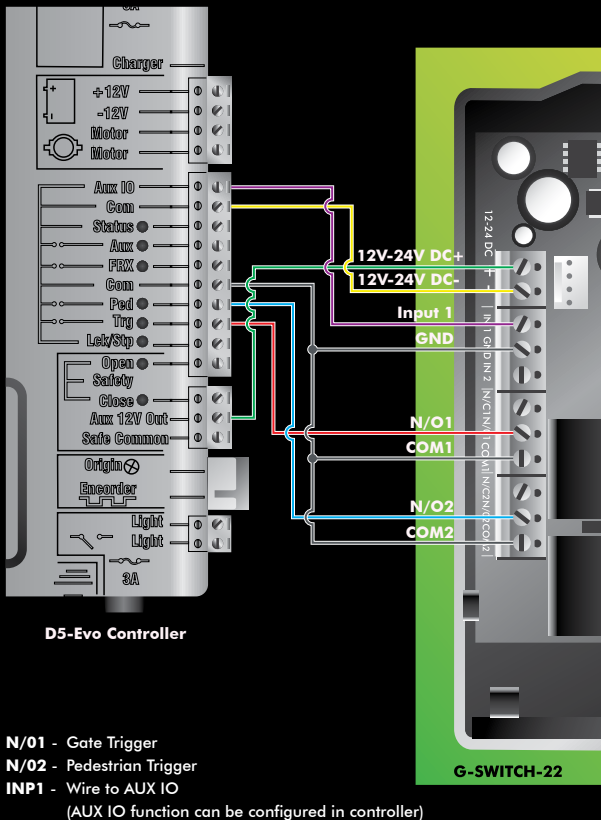


FIGURE 10

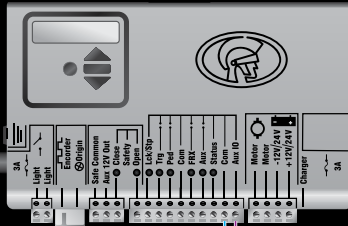
APPENDIX C

WIRING DIAGRAMS

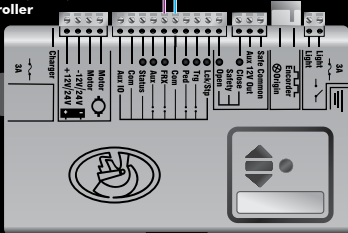
Synchronising two D-Series gate operators

The image used is for illustrative purposes only.
The actual controller may differ from this image.

Motor 1 (Master) controller



Motor 2 (Slave) controller



Controller settings on Master



Safety

External gate indication status.....	Indicator output.....	AUX IO
Closed indication.....	Off	
Part close indication.....	Off	
Closing indication.....	Off	
Part open indication.....	Off	
Opening indication.....	On	
Open indication.....	On	
Pedestrian indication.....	Off	
Unknown indication.....	Off	

Controller settings on Slave



Autoclose

Autoclose status.....	ON
Autoclose timer.....	0Seconds

FIGURE 11

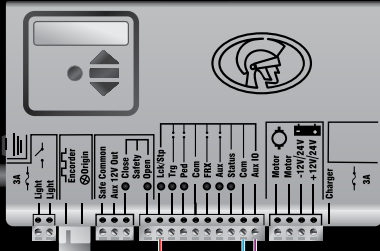
APPENDIX C

WIRING DIAGRAMS

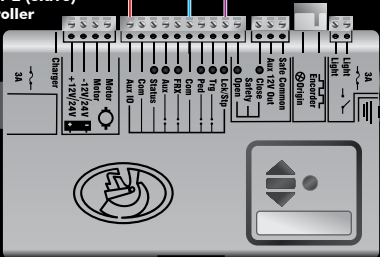
Interlocking two D-Series operators

The image used is for illustrative purposes only.
The actual controller may differ from this image.

Motor 1 (Master) controller



Motor 2 (Slave) controller



Controller settings on both Master and Slave



Safety

External gate indication status.....	Indicator output.....	AUX IO
	Closed indication.....	On
	Part close indication.....	Off
	Closing indication.....	Off
	Part open indication.....	Off
	Opening indication.....	Off
	Open indication.....	Off
	Pedestrian indication.....	Off
	Unknown indication.....	Off

FIGURE 12

APPENDIX C

WIRING DIAGRAMS

Wiring of V-Series controller to an electric gate lock

The image used is for illustrative purposes only.
The actual controller may differ from this image.

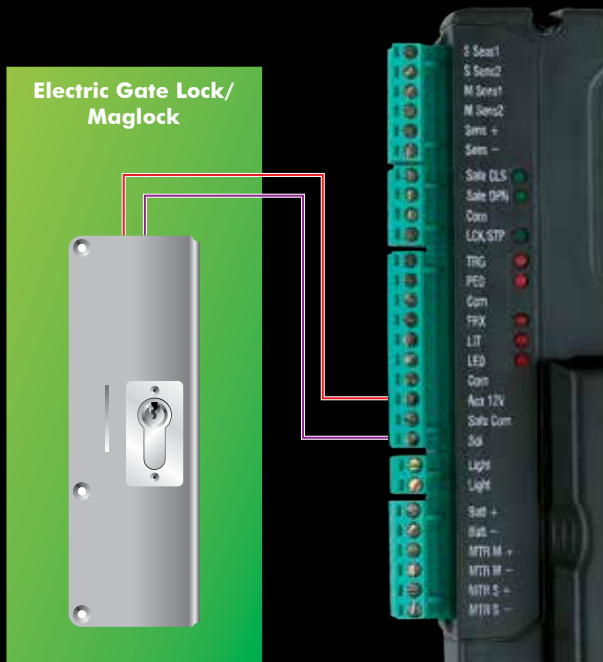


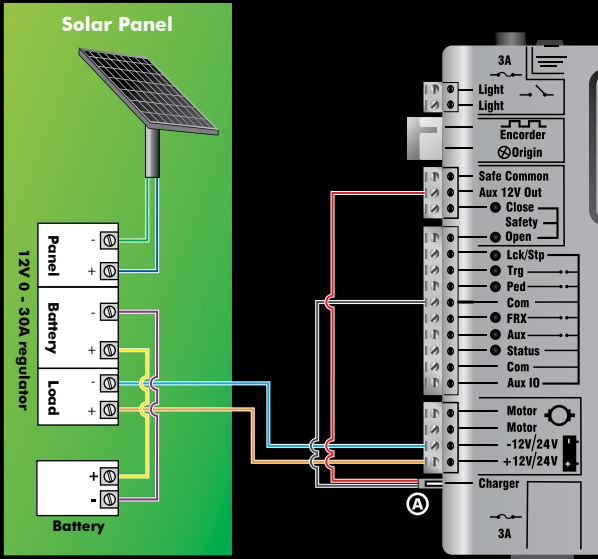
FIGURE 13

APPENDIX C

WIRING DIAGRAMS

Wiring of a Solar panel to D5-Evo

The image used is for illustrative purposes only.
The actual controller may differ from this image.



Bridging¹

This scenario may change in future through firmware upgrades. In order to silence the buzzer on the controller from warning that there is no mains power present please bridge the controller's charger terminals with Aux 12V Out and Com.

To do this follow these steps:

- Remove all power from the operator.
- Cut the charger wires (A) from where they go into the charger (leaving them intact where they plug into the controller).
- Connect the red wire to the 'AUX 12V OUT' terminal and connect the black wire to the 'COM' terminal.

This overrides the mains failure buzzer.

1. This scenario may change in future through firmware upgrades

FIGURE 14

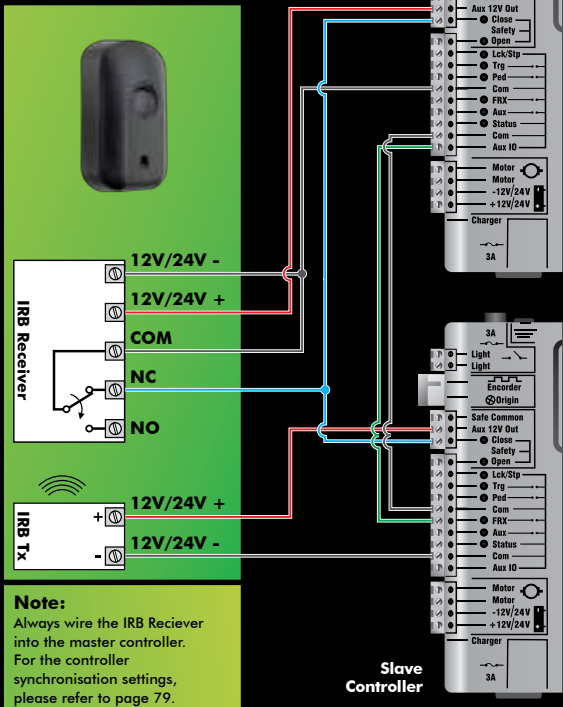
APPENDIX C

WIRING DIAGRAMS

Wiring of one set of i5 infrared gate safety PE beams to two synchronised D-Series gate motors

The image used is for illustrative purposes only. The actual controller may differ from this image.

Please Note:
Ensure that beam test is disabled on both controllers



Note:
Always wire the IRB Receiver into the master controller. For the controller synchronisation settings, please refer to page 79.

FIGURE 15

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 [±]	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m [★]	Up to 3.5m [★]	Up to 4m [★]
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 [±]	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m [★]	Up to 3.5m [★]	Up to 4m [★]
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

★ An electric lock must be fitted  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	Up to 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

APPENDIX E

D10 Turbo maximum operating speed for corresponding gate mass

Gate mass kg	Operator maximum running speed (m/min)
240	50
300	42
400	36
500	32
600	29
700	27
800	25
900	24
1000	23

APPENDIX F

PRODUCT QUICK SELECTION GUIDES

Sliding Gate Operator Quick Selection Guide

Technical Data	Domestic		Light-Industrial		Industrial	
	D2 Turbo Low-Voltage	D5-Evo Low-Voltage	D5-Evo 90V-240V AC	D10 Turbo 90V-240V AC	D10 90V-240V AC	A10 Endurance 220V-240V AC
Input voltage	10V-240V AC 10V-28V DC	15V-19V AC 21V-26V DC	90V-240V AC	90V-240V AC	90V-240V AC	220V-240V AC
Motor voltage	12V DC	12V DC	  	  	  	
Motor power supply	Battery-driven 800mA charger	Battery-driven	Battery-driven - 1.8A charger	Battery-driven - 1.8A charger	Battery-driven - 1.8A charger	Inverter
Gate mass - max	250kg	500kg	500kg	240kg- 1000kg	1000kg	2000kg
Push force - rated	9kgf ³	17kgf ³	17kgf ³	15kgf ³	30kgf ³	35kgf ³
Gate speed at push force <5kgf	 24m/min	 22m/min	 22m/min	 22m/min	 26m/min	-
Gate speed at push force	 22m/min	 18m/min	 18m/min	 4.5m/min	 22m/min	 13.6m/min
Duty cycle - mains present	50% ³	50% ³	50% ³	25% ³	45% ³	80%
Maximum daily operations	Motor life expectancy: 10 years	Motor life expectancy: 10 years	55 ⁵	750 ^{5,6}	750 ^{5,6}	Only limited by duty cycle

- 90V - 240V AC
- Dependant on gate running speed
- Based on a 25°C ambient and unit not in direct sunlight
- At 10 operation per day
- Battery-driven typically using a 7Ah (SAH-D2 Turbo) battery and a charger (Battery can be upgraded for longer power failure autonomy - mounted separately)
- With a brush replacement interval of two years




Solar Power may also be used

APPENDIX F

PRODUCT QUICK SELECTION GUIDES




Swing Gate Operator Quick Selection Guide (Part1)

Technical Data	Domestic	Domestic / Light-industrial	Light-industrial	Industrial
Operator type	R3 Rotary arm	VECTOR2 500 Linear actuator	VECTOR2 400 Linear actuator	Maxi-mate Rotary arm
Input voltage	220V-240V AC 	90V-240V AC 	90V-240V AC 	220V-240V AC 
Motor voltage	12V	12V	12V	12V
Motor power supply ¹	Battery-driven - 1.8A charger	Battery-driven - 1.8A charger	Battery-driven - 1.8A charger	Battery-driven - 1A charger
Maximum gate leaf width for corresponding gate mass ²	1.5m - 400kg 2m - 300kg	2m - 500kg 3.5m - 200kg	2m - 750kg 3.5m - 310kg	2m - 750kg 3.5m - 175kg
Typical gate opening time	 10 seconds	 14 seconds	 17 seconds	 17 seconds
Maximum daily operations ³	100	200	200	250

1. Battery-driven typically using a 7Ah battery and a charger (Battery can be upgraded for longer power failure autonomy - mounted separately).
2. Assumes a 90° opening gate
3. Based on a 25°C ambient and unit not in direct sunlight



Solar power may also be used

Technical Data	Domestic	Domestic / Light-Industrial
Operator type	VERT-X Linear actuator	VANTAGE 400 Linear actuator
Input voltage	220V-240V AC 	VANTAGE 500 Linear actuator 90V-240V AC 
Motor voltage	12V	12V
Motor power supply ¹	Battery-driven - 1.8A charger	Battery-driven - 1.8A charger
Maximum gate leaf width for corresponding gate mass ²	2m - 335kg 3m - 150kg	2m - 750kg 3.5m - 410kg
Typical gate opening time	 11 seconds	 14 seconds  18 seconds
Maximum daily operations ³	250	250

1. Battery-driven typically using a 7Ah battery and a charger (Battery can be upgraded for longer power failure autonomy - mounted separately).
2. Assumes a 90° opening gate
3. Based on a 25°C ambient and unit not in direct sunlight



Solar power may also be used

APPENDIX F

PRODUCT QUICK SELECTION GUIDES

GSM Devices Quick Selection Guide

Technical Data	G-SWITCH-22	G-SPEAK CLASSIC	G-SPEAK CLASSIC+
Supply voltage range	12V - 24V DC	12V - 24V DC	12V - 24V DC
Channels	2 Inputs - 2 Outputs	1 Output	4 - Individually configurable as either Input or Output
Web interface	Yes	No	Yes
Reacts to SMS and Missed Call	Yes	Yes	Yes
Reacts to: Please Call Me	Yes	No	No
Programming	Web and SMS	SMS	Web and SMS
Maximum number of users	1200	2 Voice Phones, 10 Switch Phones	4 Voice Phones, 100 Switch Phones
Full reporting	Web-based	NA	Web-based
Limited uses counter	Based on number of uses	NA	No
Automatic activations	Yes	No	No
Standby current	100mA	50mA	50mA
Number of SIM card slots	1	1	1
Airtime query	Yes, via SMS and WEB	Yes, via SMS	Yes, via SMS and WEB
Permitted Access	Yes	Yes	Yes

APPENDIX G

COMMONLY USED KEYPAD MENUS

Adding a code

Enter the following keystrokes:

- | | |
|-----------------------|---------------|
| 1. Enter program mode | *Master Code* |
| 2. Select add menu | 1# |
| 3. Enter user address | Address# |
| 4. Enter access code | Code# |
| 5. Select channel | Channel# |
| 6. Enter access limit | [Accesses]# |
| 7. Exit add menu | # |
-

Deleting a code

Enter the following keystrokes:

- | | |
|-----------------------|---------------|
| 1. Enter program mode | *Master Code* |
| 2. Select delete menu | 2# |
| 3. Enter user address | Address# |
| 4. Exit delete menu | # |
| 5. Exit program mode | # |
-

Changing the relay time (hard-wired model only)

Enter the following keystrokes:

- | | |
|-----------------------|---------------|
| 1. Enter program mode | *Master Code* |
| 2. Select output menu | 3# |
| 3. Enter channel | Channel# |
| 4. Enter pulse time | Seconds# |
| 5. Exit output menu | # |
| 6. Exit program mode | # |
-

Changing the master code

Enter the following keystrokes:

- | | |
|-----------------------|----------------------------|
| 1. Enter program mode | *Master Code ^{1*} |
| 2. Select KwikLearn | 0# |
| 3. Enter address | 0# |
| 4. Enter a new code | Code |

¹Default master code = 1 2 3 4

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