




# 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.

# 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.**

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#### Symptom



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

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#### LED output



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

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#### Audible feedback



The feedback provided by the controller's onboard buzzer.

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#### Cause



The underlying reason for an operator behaving a certain way.

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#### Solution(s)



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

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# 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.

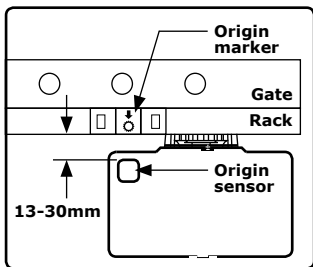


FIGURE 1

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

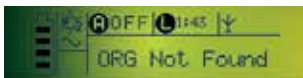


### Solutions

- 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

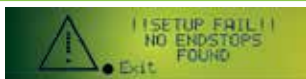


### Solutions

- Check the information screen on page 75 – 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

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

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## Audible feedback

- Five beeps periodically for 30 seconds



## Possible causes

- The maximum current that should be drawn by each D-Series controller is:
  - D10: 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

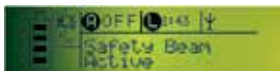
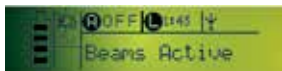


## Solutions

- Ensure that the battery charging voltage is no higher than 28V DC. Refer to Appendix A on page 71 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 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 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

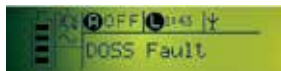


### Solutions

- 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 73
- 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 73
- 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

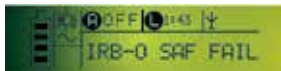
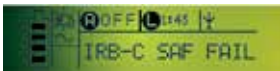


### Solutions

- 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 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
- Beams not aligned
- Damaged SAF COM input
- Incorrect beam wiring
- Faulty closing/opening beams



### **Solutions**

- Ensure that the beams are correctly wired and that the connections are secure. Refer to the wiring diagrams on pages 80 and 81
- 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 beam alignment
- Perform a Factory Reset operation, bridge Safety Open to Com or refit the beams if they have been disconnected
- Replace the 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

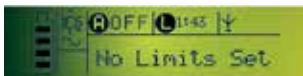
- Ensure that the gate is running smoothly and that there is nothing physically obstructing the gate, e.g. dirt or stones on the rail, rack pressing down on pinion, bad rack joints, etc.
- There should be a 2 - 3mm gap between the rack and the pinion
- Increase the Collision Force (Menu 2: Safety)
- 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 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
- 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

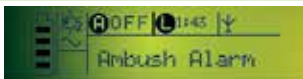
## GENERAL INFORMATION SCREENS

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### Symptom: None

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### Audible feedback

- 4KHz tone for 30 seconds



### 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 page 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

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### 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

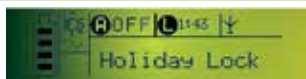


## Solutions

- Clear any obstructions 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/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 73

# APPENDIX A

## 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

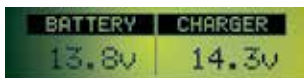
- Apply the DC motor leads directly to the battery, while measuring the battery voltage
- It should not be less than 10.5V DC under load (**D10/D10 Turbo** = 21V DC under load)

# 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 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

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## Current / Collision Count and Lost

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Current	Max	0.0
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



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## Position Count

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- 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 count in the fully open/closed position with the current count in these positions; it should be within ten counts. 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

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## Magnet Position

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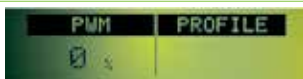


- The display will indicate the position of the magnet relative to the position of the motor. When the display is contradicting the fact, it is an indication that the magnet polarity is incorrect

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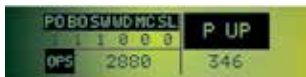
## PWM

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- 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

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## Drive, Fuse and Motor

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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 <sub>2</sub> Q <sub>4</sub> SC	X	?

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

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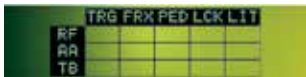
## Serial Number and Firmware version

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<b>M</b> 3.4.39	<b>C</b> 2.8.00
<b>SN</b> 00000000	<b>E</b> 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

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## Remote Control Information

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- **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

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## SECTOR Spring tension screen

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- 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 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