

 merlin™  
remote control openers  
security at your fingertips

# G930

residential gate opener **for swing gates**



Installation instructions

**Toll free helpline**

Please have your serial number and  
model name available before calling.

Australia 1800 638 234

New Zealand 0800 653 667

United Kingdom 0800 073 0112

[www.merlingo.com](http://www.merlingo.com)

# Important safety instructions for installation



**WARNING** Incorrect installation can lead to severe injury. Follow all installation instructions.

Merlin Garage Openers Limited does not accept responsibility for damage or injury resulting from installing this opener.

Before installing the drive remove or disable any equipment, such as locks, that is not needed for powered operation.

Before installing the drive check that the gate is in good mechanical condition and that it opens and closes properly.

Do not use force sensitivity adjustments to compensate for a binding or sticking gate. Excessive force may damage the gate.

Install any fixed control, wired or wireless, within sight of the gate but away from moving parts and at a height of more than 1.5 m.

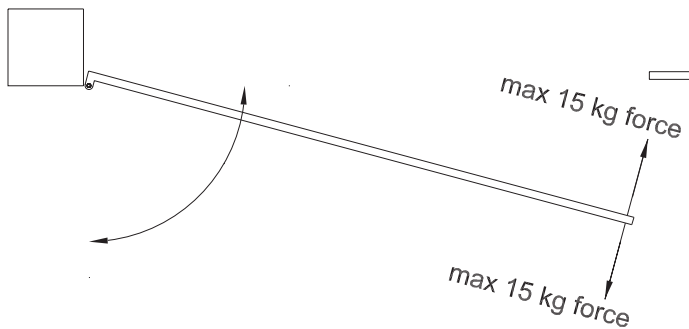
After installation, ensure that the mechanism is properly adjusted and that the drive stops when the gate contacts an obstruction.

## Site requirements

### Gate

This opener is designed for residential swing gates up to 3 metres wide and less than 180 kg.

Using a spring balance, check that less than 15 kg force (150N) is required to move the gate by hand through the full range of movement. The gate should operate smoothly, opening and closing without sticking. Hinges should not have excessive play or friction.



Check the mounting points and hinges for strength and stiffness. Reinforce if necessary.

**Level and square the gate**

The gate hinge pivot points should be perfectly parallel to a plumb line.

When closed, the gate leaves should line up evenly and not bind against each other. The leaves should not be damaged or bent.

**Gate stops**

It is recommended that any of the following are used:

- Overlapping gate leaves
- A tag on one gate
- Gate-stops at the limit of each leaf's travel

**Power supply**

If the opener is to be mainspowered, then the 3-pin power plug should be shielded from the effects of weather.

The product is tested as a unit for electrical safety compliance and if the plug is cut off for hard-wiring, then the electrical safety of the unit becomes the responsibility of the installing electrician.

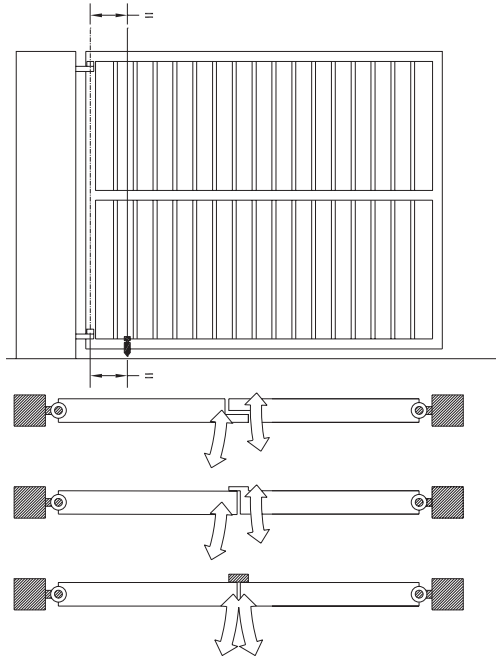
An isolating switch is recommended, but all mains wiring should be in accordance with local regulations, for example AS/NZS 3000:2000.

**Low voltage cable sizes**

Voltage will drop along low voltage cables over long distances. It is recommended to use cable with conductors of the following minimum cross sectional areas. The table lists lengths for twin-core cable, from the supply to the load.

For an optional solar panel, consider the total length from the panel to the controller board, through to the battery.

Follow the table for minimum recommended conductor sizes for given lengths for each power option.



Cable length	From 10 W solar panel to 12 V battery (for max 2% volt drop)	From controller to each motor 12 V @ 4 A max (for max 5% volt drop)
3 m	1.0 mm <sup>2</sup>	1.5 mm <sup>2</sup>
5 m	1.0 mm <sup>2</sup>	2.5 mm <sup>2</sup>
10 m	1.0 mm <sup>2</sup>	4.0 mm <sup>2</sup>
15 m	1.0 mm <sup>2</sup>	6.0 mm <sup>2</sup>
20 m	1.0 mm <sup>2</sup>	10 mm <sup>2</sup>
25 m	1.5 mm <sup>2</sup>	10 mm <sup>2</sup>
30 m	1.5 mm <sup>2</sup>	16 mm <sup>2</sup>

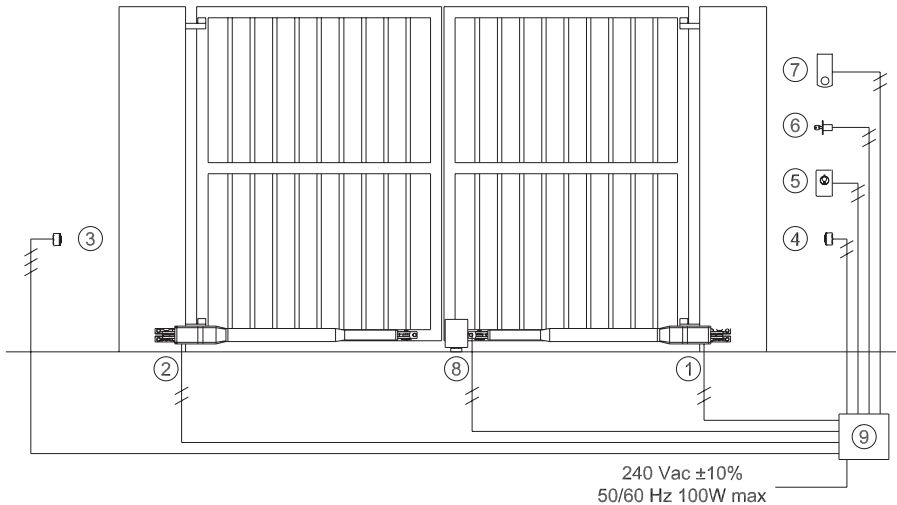
## Trickle charging with battery backup

Due to the high cost of long runs of heavy cable, it may be more economic in some installations to operate the gates from an optional backup battery, which is charged from a remotely located trickle charger.

For example, a 12V 500 mA plug pack can be located at the house, with only light gauge wiring to the gate, controller, and battery some distance away. Due to varying gate loads and duty cycles for each installation, this is a guide only.

## Control box

Locate this in any convenient weather-protected position. All mounting holes and cable entry or exits must be suitably sealed to prevent water from entering the enclosure. Cables should exit the control box from below only.



- 1 Right hand opener
- 2 Left hand opener
- 3 Receiving IR sensor (3-wire)
- 4 Transmitting IR sensor (2-wire)
- 5 Push-button (must be rated suitably for the weather conditions)
- 6 Keyed switch (must be rated suitably for the weather conditions)
- 7 Keypad (wireless control; optionally wired power supply)
- 8 Solenoid lock or latch (avail. for horizontal or vertical applications)
- 9 Enclosure for controller, receiver, and optional backup battery

**NOTE The Merlin M122 wired push-button and M128 wireless push-button are not waterproof, and are only rated for interior use.**

**The Merlin KWF1 keyed switch is not intended for use fully exposed to weather in gate installations.**

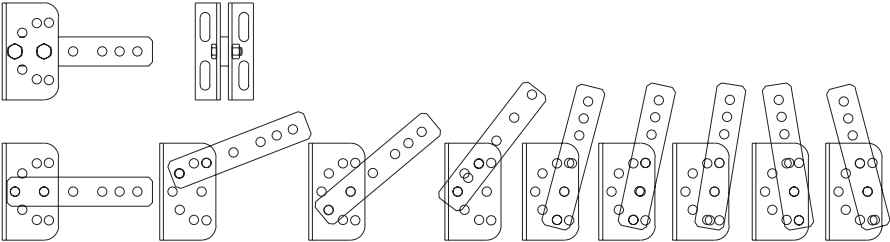
**Merlin does not warranty any items used outside their published ratings or intended use.**

# Installation

## Mounting the operators to the gate posts

There should not be any visible flexing of the mounting points under load. To spread the load, all mounting holes should be used.

Use fasteners of at least 10 mm diameter x 75 mm length.



The gate post bracket can be assembled in many different ways to provide a range of possible mounting positions. It may be necessary to cut or re-drill in some circumstances.

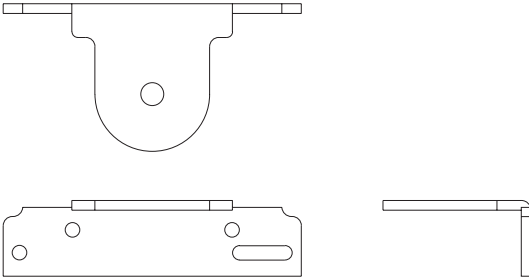
## Attaching the gate bracket to the leaf

The gate bracket connects to the gate leaf.

Position it after following the following diagrams.

Choose a point which is less likely to deflect under load.

If necessary weld support around the area where the bracket must be positioned.



### 90° in-swinging gates

Note the 130 mm and 160 mm offsets from the diagram.

The gate should be no more than 70 mm in front of the rear of the post, to prevent the actuator from touching the corner of the post.

### 110° in-swinging gates

Note the rearward offset reduces to 100 mm. The side offset stays at 160 mm.

The gate should be no more than 70 mm in front of the rear of the post.

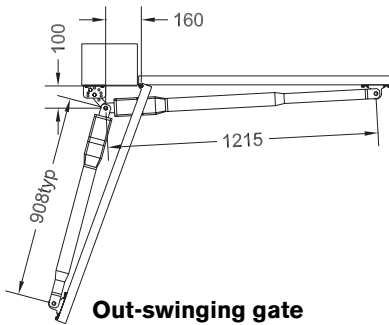
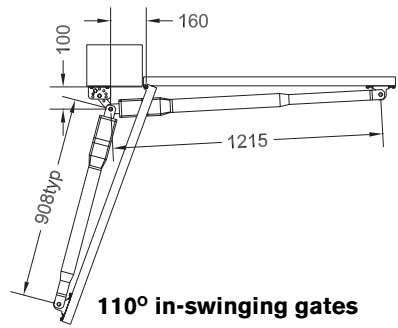
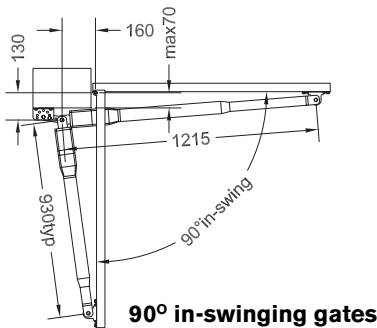
### Out-swinging gate

Note the 130 mm and 160 mm offsets from the diagram below.

Each opener will reduce the available driveway width by 180 mm.

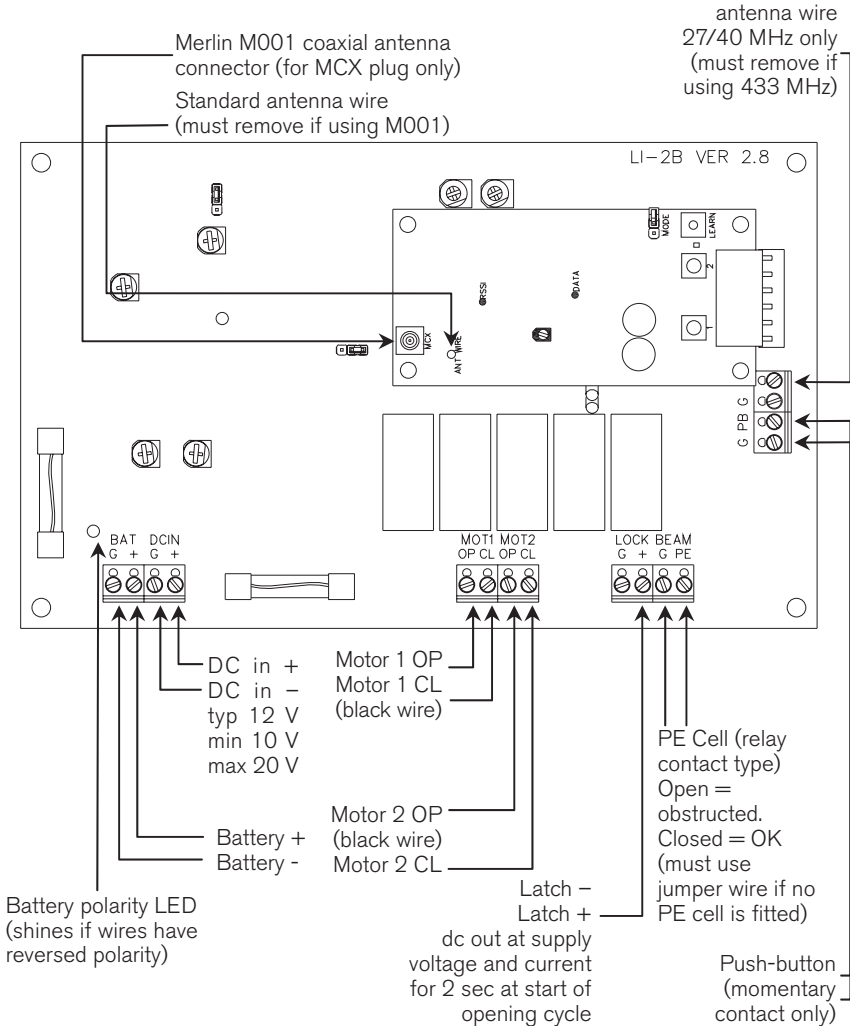
**NOTE The operator should be first installed fully extended. Position the post and gate brackets such that one limit of travel is already correct. It should only be necessary to adjust one limit position after installation.**

**If it is necessary to reduce the length of the extended operator, rotate the ram to screw it inwards.**



# Connecting the board wiring

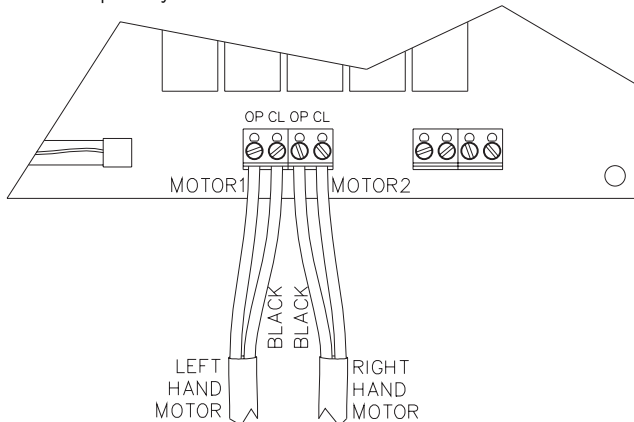
**NOTE** When powering any accessories from the board, (for example: gate latches, additional receivers, keypads, PE beams) ensure the power supply has adequate capacity. Measure the voltage at DC IN under full motor load. If it falls below 9 V dc then the board, receiver, and some accessories, may not function correctly. In this instance, remove accessories, upgrade the power supply, or provide additional power supplies directly to each accessory.



# Connecting the motor wiring

Motor 1 is the left hand motor when facing out of the driveway. If Motor 1 is on the right hand side, reverse the polarity of the motor wires.

If a single opener is fitted, use the Motor 1 terminals. If a single opener is fitted on the right hand side, reverse the polarity of the motor wires.

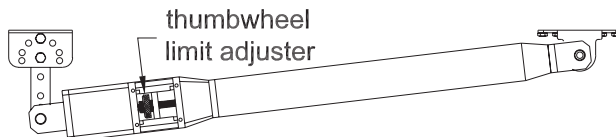


If a motor pushes a gate outwards, reverse the polarity of the motor wires.

## Setting the limits

The fully extended limit should already be set after installing the gate and post brackets correctly.

The full retracted limit may need to be adjusted.



Remove the four allen-head countersunk screws to expose the thumbwheel limit adjuster. Move the gate to the desired position and rotate the knurled adjuster wheel until it touches the microswitch underneath.

Test the operation and adjust as required. Replace the cover and screws.



# Board adjustments

## **Sensitivity**

Allow for the effect of weather. Wind or water will make the gates more difficult to move. If the sensitivity is set to react to extremely light obstructions then the gates may fail to open or close fully. After adjustment, check that the force on an obstruction at the far end of the gate leaf does not exceed 150N (15 kg). Use a spring balance.

## **Travel time**

Allow 3 – 5 seconds more than the normal travel time. This compensates for any possible slow-down due to unusual loads and will allow the gates to fully open or close. The yellow LED will stay on while the timer is active.

## **Auto-close**

The jumper must be moved to the AUTO CLOSE position.

Turn the control clockwise to increase the time, from a minimum of 6 seconds up to a maximum of around 210 seconds.

Consider the use of the multi-user option.

**NOTE Non-contact sensor beams must be fitted when using auto-close.**

## **Multi-user option**

Move the jumper to the MU position. In this position every command will open the gate. The only way to close the gate is to wait for the auto-close timer. The advantage of this mode is that an opening gate with a car travelling through it can not be caught by someone pressing a remote control to close the gate.

Autoclose must also be enabled, otherwise the gates can never be closed.

## **Motor 1 open delay**

Essential when using gate tabs or overlapping leaves. To prevent clashing of the gate leaves when opening, increase the Motor 1 open delay by turning the adjuster clockwise.

## **Motor 2 close delay**

Essential when using gate tabs or overlapping leaves. To prevent clashing of the gate leaves when closing, increase the Motor 2 close delay by turning the adjuster clockwise.

# Receiver setup

## Mode jumper

This jumper must be removed. If it is not removed then the remote will only operate the gate once for every two button presses. This jumper enables the latching output on the receiver card.

## Learning remotes

The receiver can learn up to 20 remotes. After 20 remotes, the 20th will be overwritten.

Only one button per remote can operate the receiver.

To learn a remote, press and hold the LEARN button until the receiver status LED goes out. Press the desired button on the remote control and hold till the status LED flickers. Press it again to confirm.

## Remote Transmitter Learning (RTL)

This option allows a user to add remotes without accessing the receiver card. It does not allow the deletion of remotes.

After 20 remotes, the 20th will be over-written.

If RTL is enabled the receiver status LED will double-flash in the standby state.

If RTL is disabled the receiver status LED will single-flash in the standby state.

To change state, hold the LEARN button down for three seconds as the power is reset. Check the receiver status LED flashes to confirm the state change.

Merlin recommends enabling this option. Check for a double-flash on the receiver status LED at standby.

## Deleting remotes

All remotes can be deleted by pressing and holding the LEARN button for 11 seconds, until the receiver status LED stops fast-flashing. This resets the receiver back to its default settings. Check you still have the desired RTL state.

## Common Access installations

To allow unlimited numbers of common access users, the M832C or M834C remote controls are required. These have a DIP switch code block that sets a fixed code for the main button on the M832C or on two buttons of the four on the M834C. The remaining buttons are high-security code-hopping.

The M834C is useful for separate entry and exit gates.

Common access remotes are only available in the full-sized remote controls.

## Adding an external antenna

Only connect a Merlin M001 to the MCX co-axial connector on the receiver card.

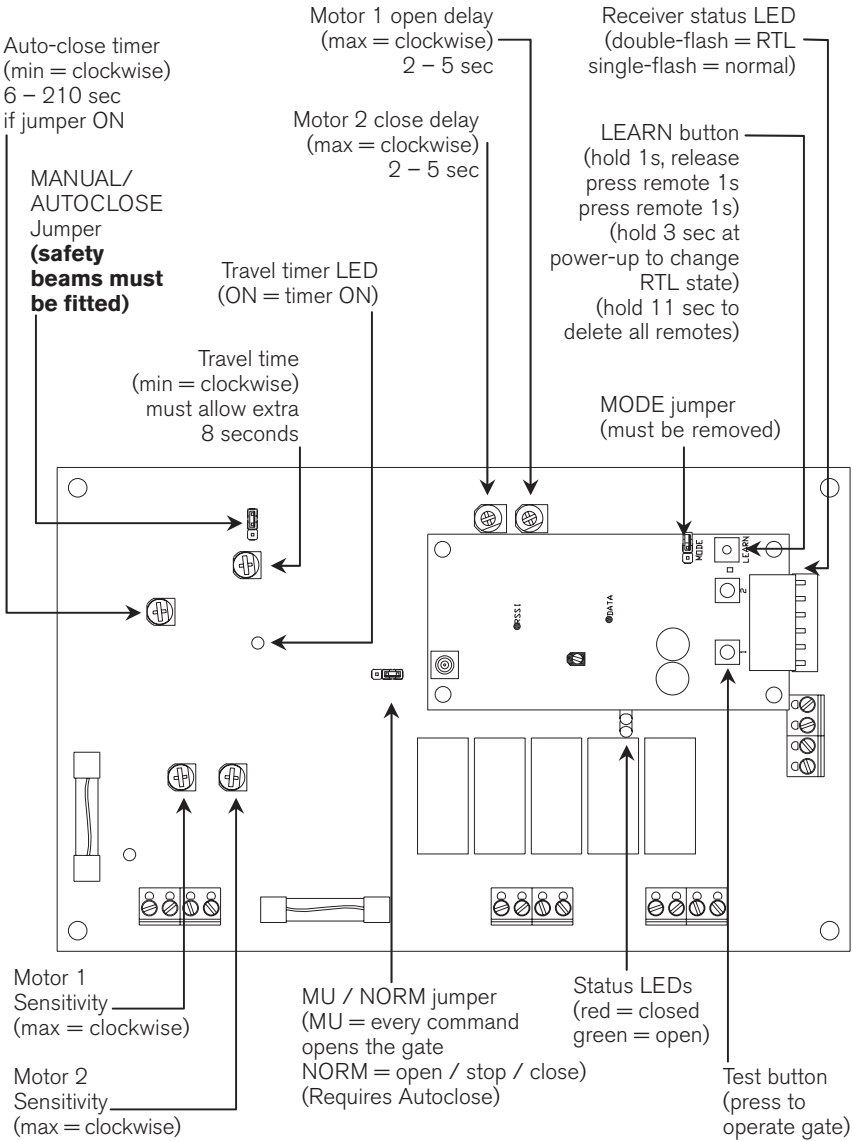
This antenna, cable and connector is tuned to give the best performance.

Snip the simple wire antenna from the receiver card so that only one antenna is active.

The ground plane of the M001 greatly improves the antenna's performance. An alternative is to mount the antenna through a metal plate that is at least as large in each direction as the ground plane's length. For optimum performance any ground plane should make good electrical contact with the metal boss of the M001 antenna.

Contact Merlin for M002 (10m) or M003 (3m) antenna extension cables if additional distance is required between the controller and the antenna.

# Setting up the board



EDR4 1202 04/03

**NOTE Reverse motor wires if open and close LEDs don't match gate travel.**

# Optional extras

## Keypad

The Merlin M840 keypad can accept a hardwired power supply to overcome the need for replacement batteries. See the keypad documentation for full details, but any supply with 50 mA at 10 – 24 V ac or dc is suitable. Control of the gate opener is wireless using high security code-hopping RF.

## Solenoid lock (latch)

See the lock's documentation for installation details. Merlin can supply either horizontal or vertically actuating latches.

## PhotoElectric (PE) sensor beams

You can fit any sensor beams with relay contact outputs that can be configured as open contacts when obstructed and closed contacts when OK.

Merlin M103 sensor beams require three wires for the receiver beam and two wires for the transmitter beam.

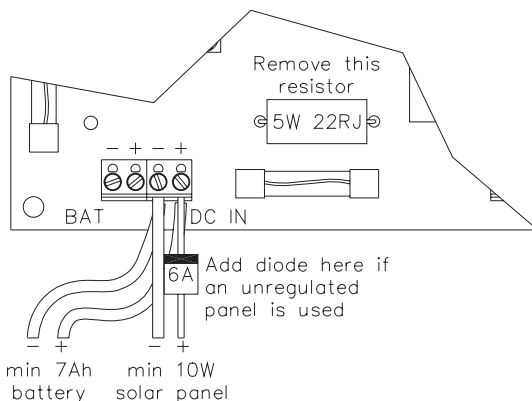
**NOTE Beams must be fitted when Autoclose is enabled.**

## Battery backup

A trickle charging circuit is included in the controller board. Connect the 12 V 2 Ah battery to the terminals. A mains supply will keep it charged.

## Solar power

Contact Merlin for the correct board, battery and panel. However, if it is necessary to modify an existing board, remove the resistor shown and connect as follows.



In some applications a larger battery, and possibly a larger solar panel, will be required. It depends on: the duty cycle of the gates; the type of receiver fitted; the hours of sunlight; and the number and type of accessories fitted.

In many instances a 9Ah battery is required. A low-power 40 MHz receiver may also be required in order to use the standard 10W solar panel.

If an alternative panel is sourced, and it is self regulating, then the additional 6A diode shown above is not necessary.

# Troubleshooting

## **Remote controls will not function while gate is moving**

The total load on the power supply may be exceeding its capacity. Measure the voltage into the board. If less than 9V dc when the motors are under load, then a higher capacity power supply must be fitted, or some accessories removed, or separate power supplies provided for the accessories.

## **Gate will not open or close**

The gate should operate smoothly, opening and closing without sticking or requiring undue force. Release the gate from the opener and check that it is possible to move the gate freely by hand through the full range of the opening.

There may be a power failure. Plug another appliance into the power point to check. Opener may require service. If solar powered, the battery may not be fully recharging.

**SOLUTION:** Operate the gate manually. Phone an installer for service.

## **Gate will open but not close**

If a sensor beam is fitted then it may be obstructed or misaligned. The gate mechanism may have broken, presenting an abnormal load, causing the safety system to activate.

**SOLUTION:** Look for anything blocking the beam sensor. Is the beam aligned correctly? Release the manual release and check the gate can be operated easily by hand. Have your gate repaired or serviced if it is heavy to move by hand.

## **Transmitter range is less than normal**

Your transmitter battery may be going flat. If you have an external antenna then the wire may be damaged.

**SOLUTION:** Replace the transmitter battery. Phone for service if the antenna wire is damaged

## **Transmitter doesn't work some times**

There may be occasional radio interference in your area. Your transmitter battery may be going flat.

**SOLUTION:** Check for nearby baby monitors, remote control toys, cordless phones. Replace the transmitter battery.

## **Radio interference**

Gate remote controls are required to operate in shared radio frequency bands. Regulations permit other users to continuously operate higher powered devices such as baby monitors or wireless headphones in these shared bands.

These devices may cause radio interference that reduces the performance of the remote control. Switch off interfering devices if possible. Remote controls and receivers that operate on alternative frequencies are available at additional cost.

## **Transmitter doesn't work at all**

Your transmitter battery may be flat. **SOLUTION:** Replace the transmitter battery.

# Maintenance

In an area where ant or insect infestation is likely, regularly spray around the opener and any electrical installation with insecticide.

Occasionally wipe the ram clean and spray it with a silicone lubricant.

Keep the path of the gate free from debris and foliage.

# Specifications

Mains power required	220 V to 240 V ac, 50 Hz, earthed
Extra Low Voltage supply (optional)	3 A per motor at 12 V dc
Rated force	max 500 N
Stand-by power consumption	max 0.5 W
Operating power consumption	max 40 W per motor
Gate length	max 3 m
Gate weight	max 180 kg
Operating time	typ 18-20 seconds
Opening angle	max 110 degrees
Rated duty cycle	max 100%
Replacement board fuse	0.5 A (32 mm x 6.35 dia)
Replacement motor fuse	10 A (32 mm x 6.35 dia)
Replacement remote control battery	Depends on model, either 4LR44 (6V) or CR2025 (3V coin cell)
Gate stops	optional but recommended
Gate solenoid lock	optional but recommended

**NOTE Any additions or alterations outside of these specifications may void the product's warranty**

