

 merlin™
remote control openers
security at your fingertips

G950

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

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.

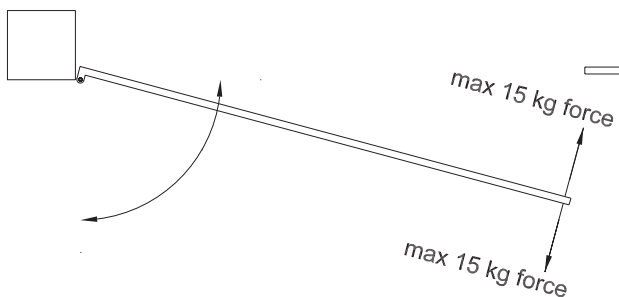
After installation, ensure that the mechanism is properly adjusted and that the drive stops when the gate contacts an obstruction.

Site requirements

Gate

This opener is designed for residential swing gates up to 3 metres wide and less than 230 kg.

Using a spring balance, check that less than 15 kg force (150N) is required to manually move the gate through its 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

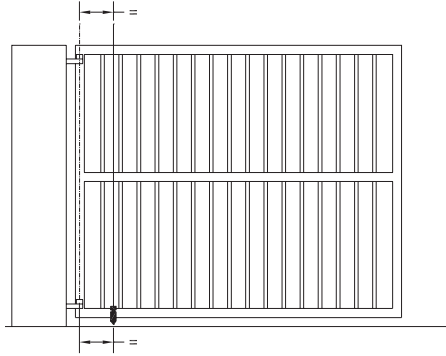
The gate hinge pivot points should be perfectly parallel to a plumb line.

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

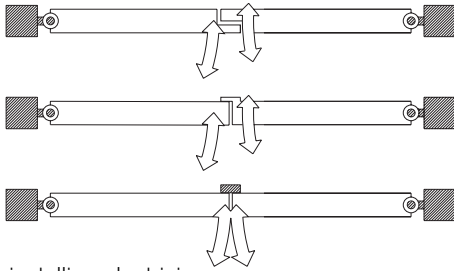


Power supply

If the opener is to be mains-powered, 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.



Wiring

All wiring must be arranged to prevent water entering the controller enclosure. Do not wire mains voltages and low voltage control wires in the same conduit.

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 ²	1.5 mm ²
5 m	1.0 mm ²	2.5 mm ²
10 m	1.0 mm ²	4.0 mm ²
15 m	1.0 mm ²	6.0 mm ²
20 m	1.0 mm ²	10 mm ²
25 m	1.5 mm ²	10 mm ²
30 m	1.5 mm ²	16 mm ²

Battery power with trickle charging

Due to the high cost of long runs of heavy cable, it may be more economic in some installations to operate the gates from a larger 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.

Mounting the operators to the gate posts

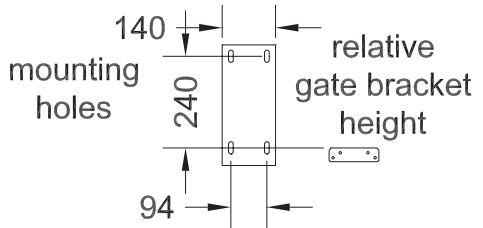
There should not be any visible flexing of the mounting points under load.

To spread the load, all mounting holes should be used.

Mount the opener 50 mm from the inside edge of the gate post.

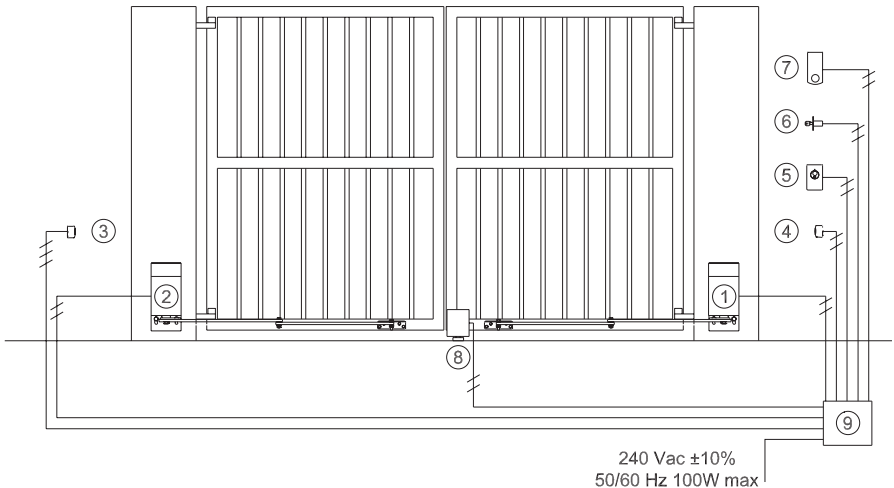
Use fasteners of at least 10 mm diameter x 75 mm length.

Note the top face of the gate bracket aligns with the centres of the bottom mounting holes of the opener.



Optional control box (standard in NZ)

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 (slave)
- 2 Left hand opener (slave)
- 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.

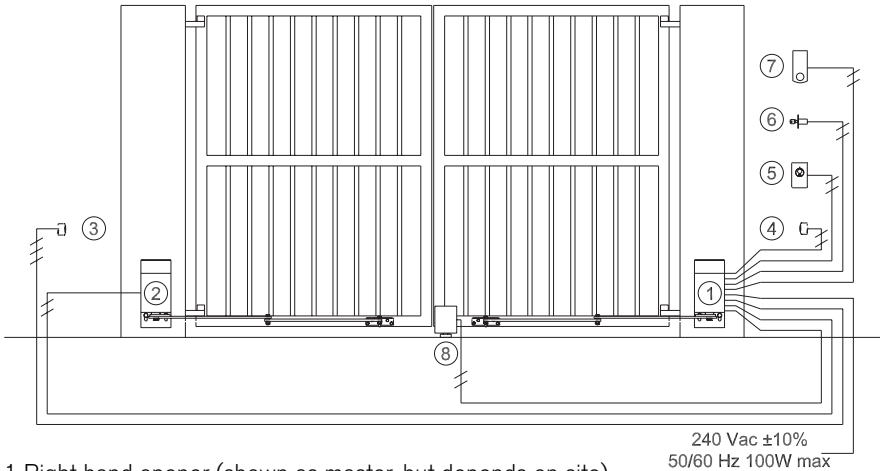
The Merlin KWF1 keyed switch is not intended for use fully exposed to weather in gate installations.

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

Master and slave operators (Australia only)

The Master operator has the controller board, transformer and optional back-up battery inside it. Locate it on the side of the gate nearer to the power supply.

The Slave operator connects to the master by a two-core conductor carrying 12V.



- 1 Right hand opener (shown as master, but depends on site)
- 2 Left hand opener (shown as slave, but depends on site)
- 3 Receiving IR sensor (3-wire, Merlin M103)
- 4 Transmitting IR sensor (2-wire, Merlin M103)
- 5 Push-button (must be rated suitably for the weather conditions)
- 6 Keyed switch (must be rated suitably for the weather conditions)
- 7 Keypad (Merlin M840, wireless, optionally with wired power supply)
- 8 Solenoid lock or latch (avail. for horizontal or vertical applications)

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

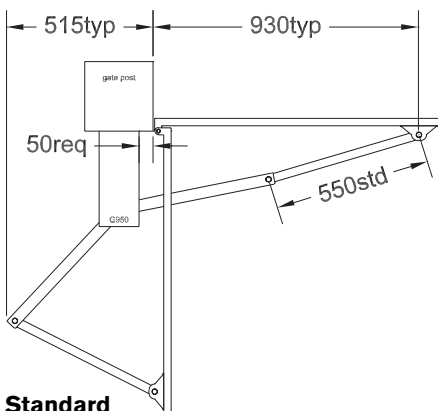
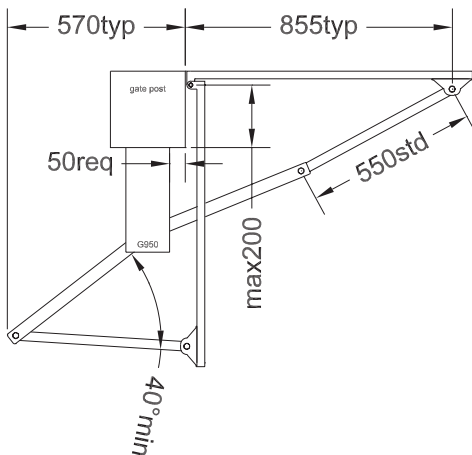
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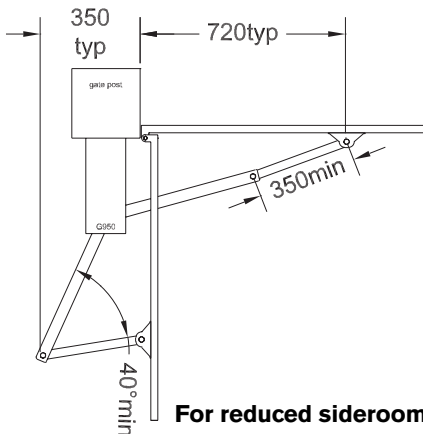
Installation clearances

Standard side-room vs. Restricted side-room

The standard side room requirement is 550 mm. If less than this is available, it is possible to shorten the secondary arm (the one that attaches to the gate). Do not shorten it to less than 350 mm. Take care that the attachment point between the gate and the secondary arm does not foul on the output shaft. A certain amount of trial and error is involved in selecting the optimum position for the gate bracket. See the following sketches as a guide.



Standard



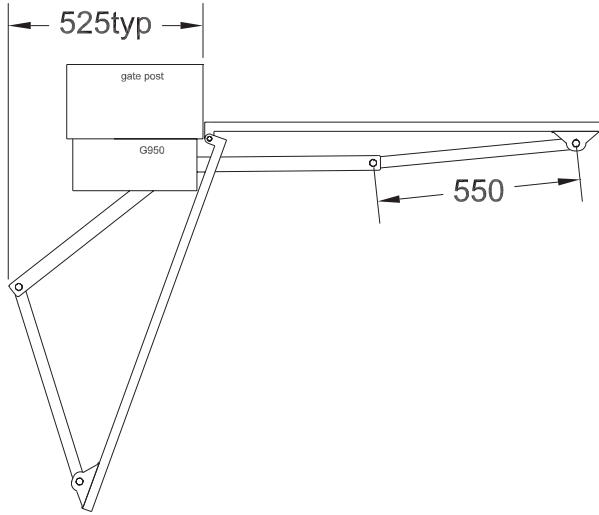
For reduced sideroom

The gate hinge should be no more than 200 mm forward of the mounting face of the drive. In the example shown, reducing the length of the secondary arm reduces sideroom considerably. Note however that the leverage applied by the opener on the gate can change dramatically in the last part of the opening cycle. Ensuring the angle between the arms is always greater than 40 degrees is recommended.

When the arms are fully extended, the angle between them should not be more than 175 degrees.

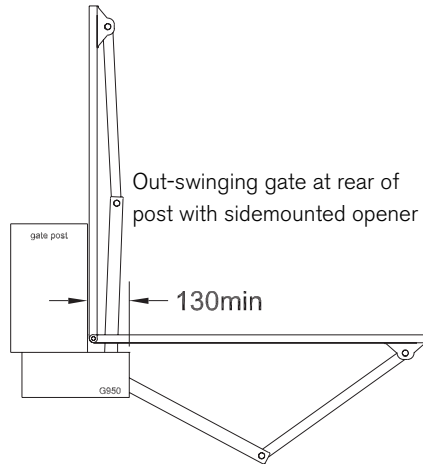
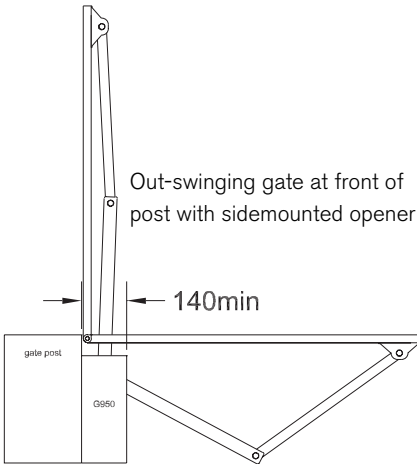
Side mounting

This is useful where the gate must open further than 90 degrees, or where the gate must open outwards. Contact Merlin for side-mounting covers.



Out-swinging gates

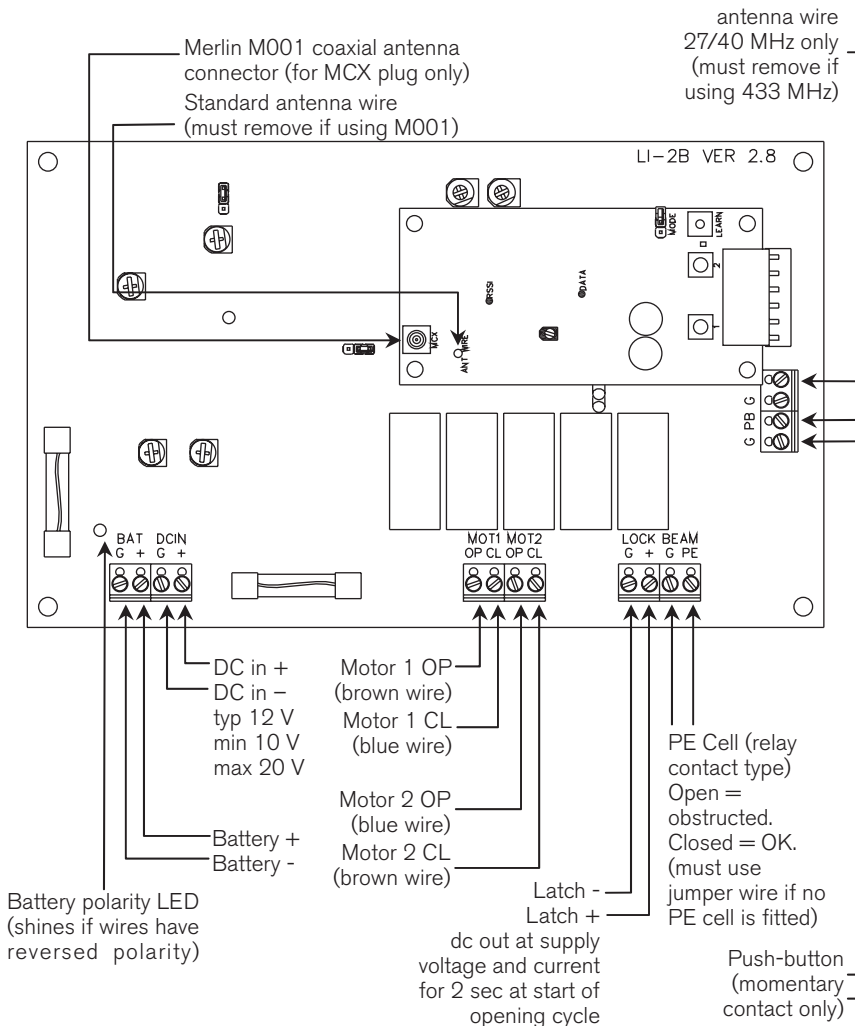
This also requires side-mounting covers. It may be necessary to fabricate longer primary arms for some installations.



Attaching the gate bracket to the leaf

The gate bracket connects the secondary arm to the gate leaf. Position it after following the diagrams above. The primary and secondary arms must never be less than 5 degrees off a straight line from each other. Choose a point which is less likely to deflect under load. If necessary weld support around the area where the bracket must be positioned.

Connecting the board wiring



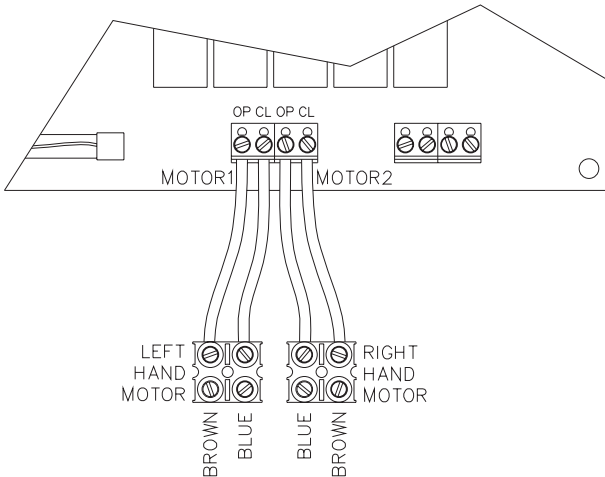
NOTE When powering any accessories from the board, (for example: gate latches, additional receivers, keypads, PE beams) ensure the power supply has adequate capacity. Measure the voltage at DC IN under full motor load. If it falls below 9 V dc then the board, receiver, and some accessories, may not function 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.

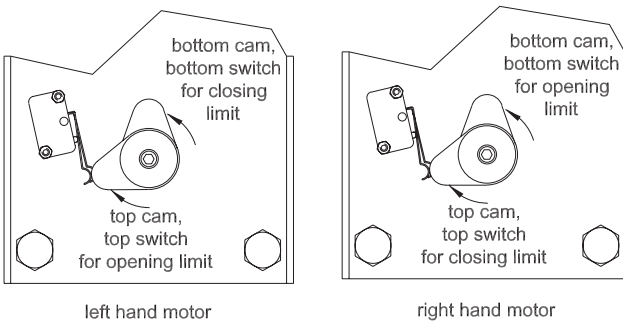
If a single opener is fitted, use the Motor 1 terminals. If a single opener is fitted on the right hand side, reverse the polarity of the motor wires.

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



Setting the motor limit cams

Do not fully fit the primary arm to the drive before setting the limits. Leave the bolt loose so that the drive does not engage with the arm. This will prevent possible injury or damage before the limits are correctly set.



Close the gates

Operate the motors until their output shafts are in the correct position to engage with their primary arms of closed gates. Loosen the limit cam cap-screw.

Left hand motor: rotate the bottom cam anticlockwise until it actuates the switch.

Right hand motor: rotate the top cam clockwise until it actuates the switch.

Re-tighten the limit cam cap-screw.

Open the gates

Operate the motors until their output shafts are in the correct position to engage with their primary arms. Loosen the limit cam cap-screw.

Left hand motor: rotate the top cam clockwise until it actuates the switch.

Right hand motor: rotate the bottom cam anticlockwise until it actuates the switch.

Re-tighten the limit cam cap-screw.

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

Set the timer to 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 timer control clockwise to increase the delay, from a minimum of 6 seconds up to a maximum of around 210 seconds.

Consider the use of the multi-user option (see below).

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.

NOTE Autoclose must also be enabled, otherwise the gates can not 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 control 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

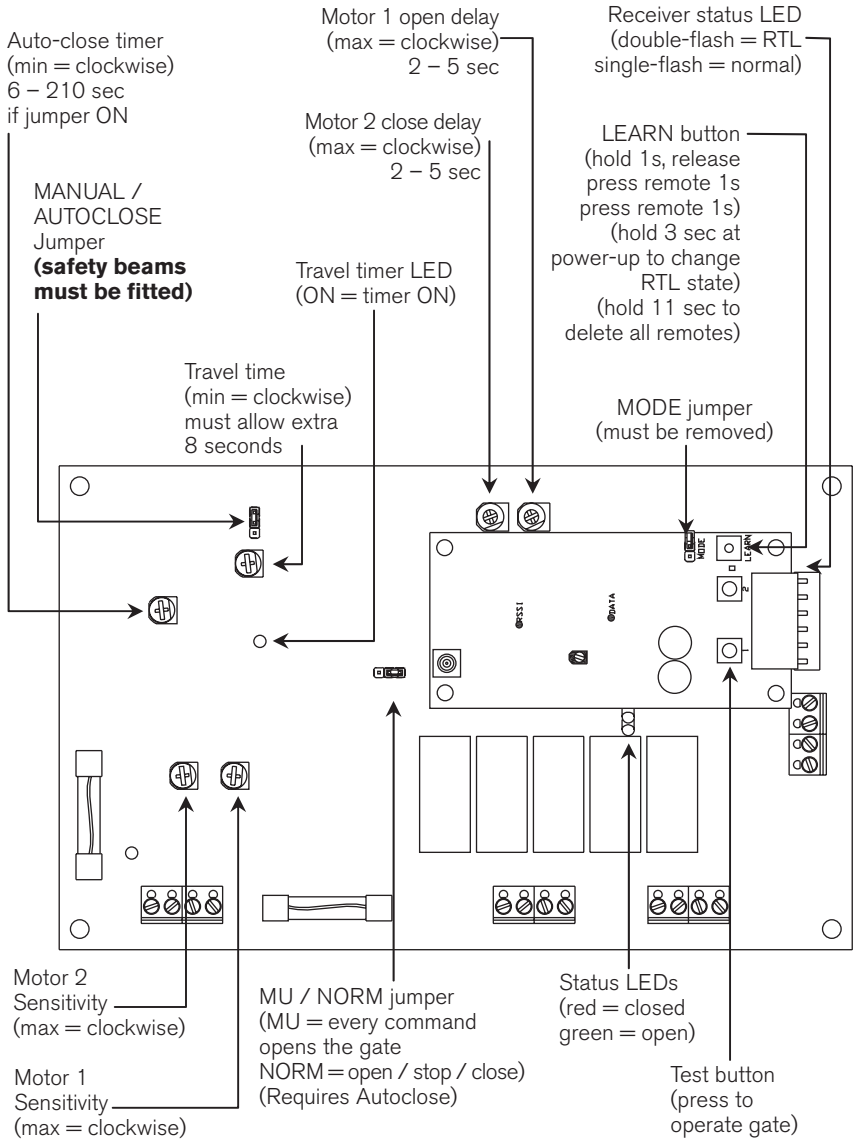
Only connect a Merlin M001 external antenna with MCX co-axial connector to the receiver card. This antenna, cable and connector is tuned to give the best performance.

Before attaching the co-axial connector, 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 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



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 locks.

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 Sensor beams must be fitted when Autoclose is enabled.

Battery backup

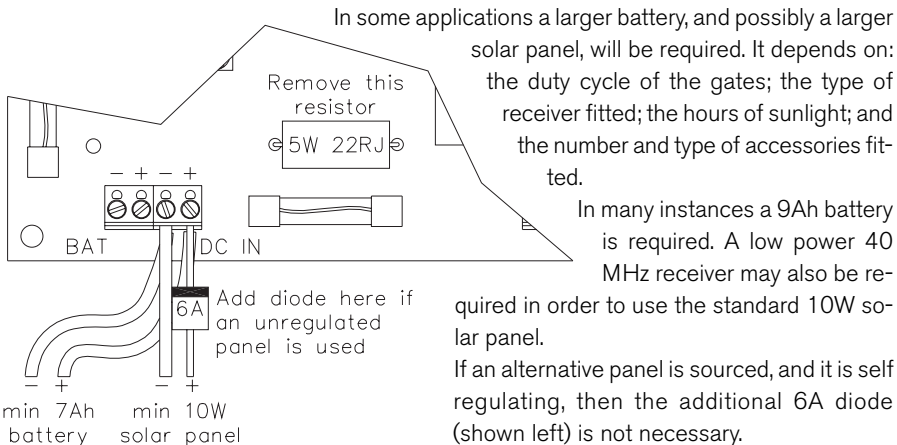
A trickle charging circuit is included in the controller board. Connect the 12 V 2 Ah battery to the terminals. A dc supply from a transformer will charge the battery.

Battery power

If a 9Ah battery is fitted, then in some installations it may be possible to charge the battery from a small (12 V 500 mA, for example) plug pack. Note that the duty cycle of the gates, and the load presented by the gates, will affect the viability of this option, and the size of power pack required.

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.



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.

In normal conditions it is not expected that any additional lubrication or service is required. 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)	4 A per motor at 12 V dc
Rated load	max 300 N (approx 30 kg force) at right angles to the end of the primary arm
Stand-by power consumption	max 0.5 W
Operating power consumption	max 50 W per motor
Gate length	max 3 m
Gate weight	max 230 kg
Operating time	typ 10 – 15 seconds (increases with load)
Opening angle (standard)	max 110 degrees
Opening angle (with side mount kit)	max 130 degrees
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

