Q60AR CONTROL BOARD FOR SWING GATES

SINGLE LEAF
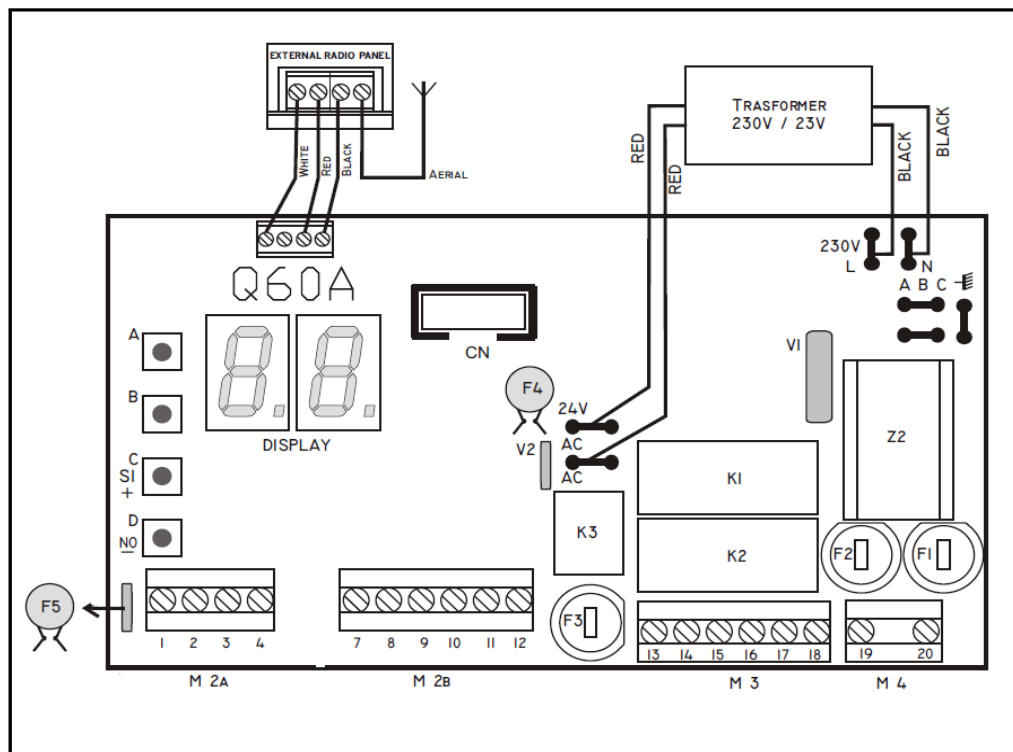
Contents

Q60AR control board layout

Map of Q60AR

Q60AR legend

CONTROL UNIT COMPONENTS

A	TOP LEVEL MENU BUTTON
B	LOWER LEVEL MENU BUTTON
C	BUTTON TO INCREASE OR CHANGE TO YES (SI)
D	BUTTON TO DECREASE OR CHANGE TO NO
FI	230V FUSE 5A
F2	COCOON FUSESFUSE MOTOR 2 1,6 A
F3	COCOON FUSESFUSE MOTOR 1 1,6 A
F4	24V FUSE (SELF-RESTORABLE) 1,6A
F5	24V FUSE (SELF-RESTORABLE) 0,65A
DISPLAY	7 SEGMENTS DISPLAY
MI	RADIO/AERIAL TERMINAL BLOCK
M2A/M2B	CONTROLS AND SAFETY DEVICES TERMINAL BLOCKS
M3	MOTORS TERMINAL BLOCK
M4	MAIN POWER TERMINAL BLOCK
A B C ⏚	EARTH CONNECTIONS
MR	RADIO UNIT
CN	ELECTROLOCK INTERFACE PCB CONNECTOR
Z2	FILTER
KI/ K2	MOTORS RELAY
K3	BLINKER RELAY
VI	PRIMARY VARISTOR
V2	SECONDARY VARISTOR

Pre-installation checks

This control board tells the motors what to do and how to behave. The control board has memory chips onboard which store the key-fob transmitting codes and the parameters the motors will be working to. These memory chips contain a bare-bones program which literally tells the motors how to walk and talk, but of course we need to tell the motor how far they are walking and who they will be talking to at the end. This guide will take you through every step of the installation, one step at a time to ensure that the control board is wired, configured and operating at full capacity to promote safe and durable working life of your gate automation system.

With all installations of electrical equipment, your approach should be methodical and concise. Please do follow this guide correctly, whilst observing personal health and safety for your own protection and for those around you.

DO NOT use live power to the control board during wiring of the equipment to its terminals
DO NOT touch the control board components or the printed circuit board tracking with your fingertips
DO NOT allow moisture / rain / liquid substances to come into contact with the control board in any manner

Stages of installation

- **Error! Reference source not found.**
- **Connecting the motors to the control board**
- Connecting power to the control board
- **Programming the Remote Control (Key-fob)**
- **Sequential Programming**
- **Making minor adjustments**
- **Special functions**
- **Fault Diagnostic**
- **Frequently Asked Questions**
- **Maintenance**

So Before We Get Started.....................
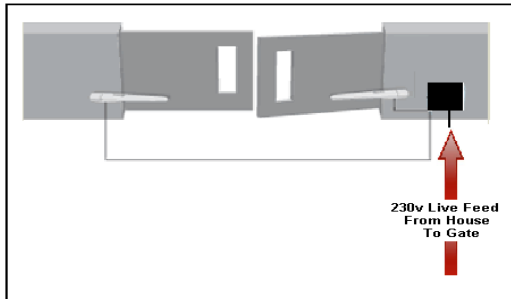
- Ensure sure you have access to 230v power feed from your property to the control panels junction box. Cable used must be 3 core armoured and should be placed inside a conduit and buried underground to reduce risk of trip and accidental cutting hazard.

- The junction box and control board has been located near the gates and is mounted and attached to your pillar securely. This reduces the need for extension cabling to the motors from the control panel and forms a means of ease of access to the gate automation control board should the need arise.
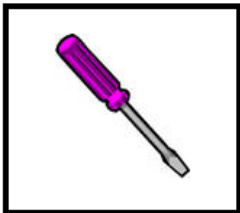
- Have a small flat head electrical screwdriver to hand for tightening the control board terminal screws.

Once the control panel junction box has been fixed into location, and you have power accessible to the control board, we next look at getting your motors physically operational and ensure they are communicating efficiently with the control board.

Linking essential terminals

In order to activate the gate control board, an essential "link" must be fitted. A "link" in this instance, is a piece of wire that connects terminals together so that a voltage charge can be distributed from one terminal to another in or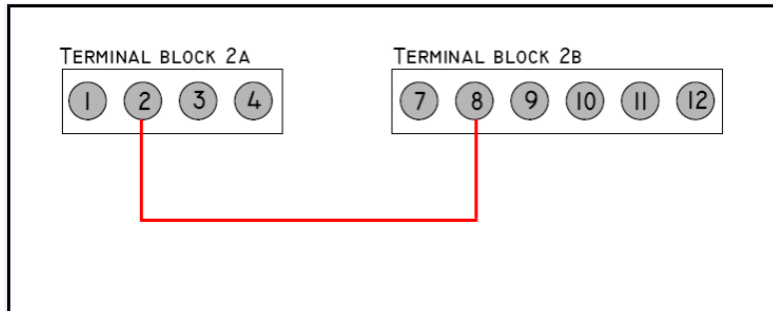der to complete a circuit. Links are placed between terminals on occasions to complete a circuit to "fool" the control board some equipment is there when it is not.

If you do not have an EMERGENCY STOP button fitted, a link must be placed between terminals 2 & 8 (illustrated below)

The EMERGENCY STOP function is an ESSENTIAL SAFETY FEATURE and is a continuous circuit. The quickest way to literally STOP the gates if ever an accident was to occur is to cut all power to the motors – like tripping a fuse. Of course you may not be in a position to "disconnect the power" to the control board and this is never recommended. So in order to **STOP** the gates, a closed circuit (continuous circuit) Gate Motors push button switch can be fitted into terminals 2 & 8 (*optional accessory*). As soon as the push button is pressed, this breaks the circuit and the control board sees the broken circuit and IMMEDIATELY STOPS the motors during their operation.

If you **do not** have an EMERGENCY STOP button and you do not place a link between these two terminals, the control board "thinks" you have pressed a STOP button and, of course, will halt all operations – regardless to any command you may give it.

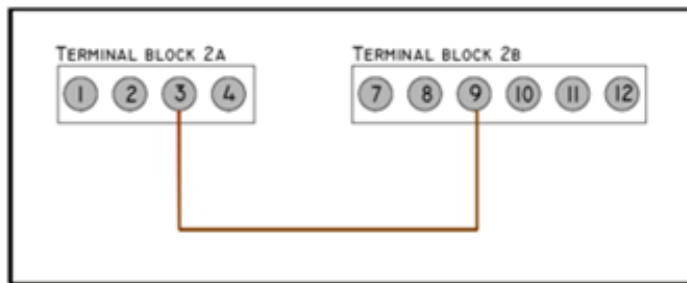Be sure to tighten the terminals screws to ensure good contact is made.

Installation Tip

Some installers tend to fit every piece of equipment into place, including the Infrared safety beams (photocells) and forget that during the programming of the gates opening / closing cycles, the risk of accidentally interrupting the safety beam can happen. When this "invisible trip wire" is broken, the control board "sees" there is an obstacle and tells the motors to stop what they are doing and reverse in their action via the quickest way possible to immediately avoid the risk of crushing the obstacle detected. The motors will immediate back-track at great speed. During mid-programming, if the photocell beam is broken, the control board gets confused as it does not know where its starting position was to begin with - we were in the process of telling the control board this. When the photocell beam is clear, the control board continues with its open / close cycle and the gates may not return back to their original position.

So for ease of uninterrupted programming, we "fool" the control to think that it has photocells attached by placing a link, as illustrated below, between:

Terminals 3 & 9   **AND**   **Terminals 4 & 9**

| TERMINAL BLOCK 2A | TERMINAL BLOCK 2B |
| ① ② ③ ④ | ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ |

| TERMINAL BLOCK 2A | TERMINAL BLOCK 2B |
| ① ② ③ ④ | ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ |
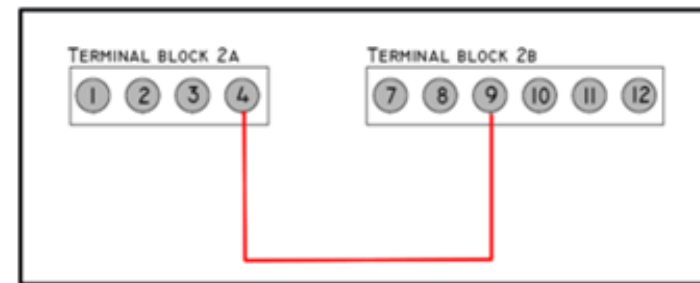
WARNING PLEASE NOTE

This tip is for installation & programming purposes ONLY and should never be considered a permanent option as without photocells, your gate automation system is left UNPROTECTED against risk of accidental crushing and may cause personal injury or damaged to vehicles.

At this stage of the installation:

- We have our emergency stop link in place ✓

- We have temporary links for the photocell terminals ✓

Next stage of the installation is to introduce the motor(s) you have wired to the terminal blocks 13, 14, 15 as described in the 'Motor Installation Guide' (a separate document specific to your particular choice of motors) that has been supplied with your kit.

Connecting the motors to the control board

TERMINAL BLOCK 3

13 14 15

BLACK OR BROWN   GREY (NEUTRAL)   BLACK OR BROWN

MOTOR 1

CAPACITOR
MUST BE WIRED BETWEEN
TERMINALS 13 & 15

IMPORTANT NOTICE

Please follow the wiring scheme for your automation kit model as the Open / Close connections (Black / Brown) do vary.
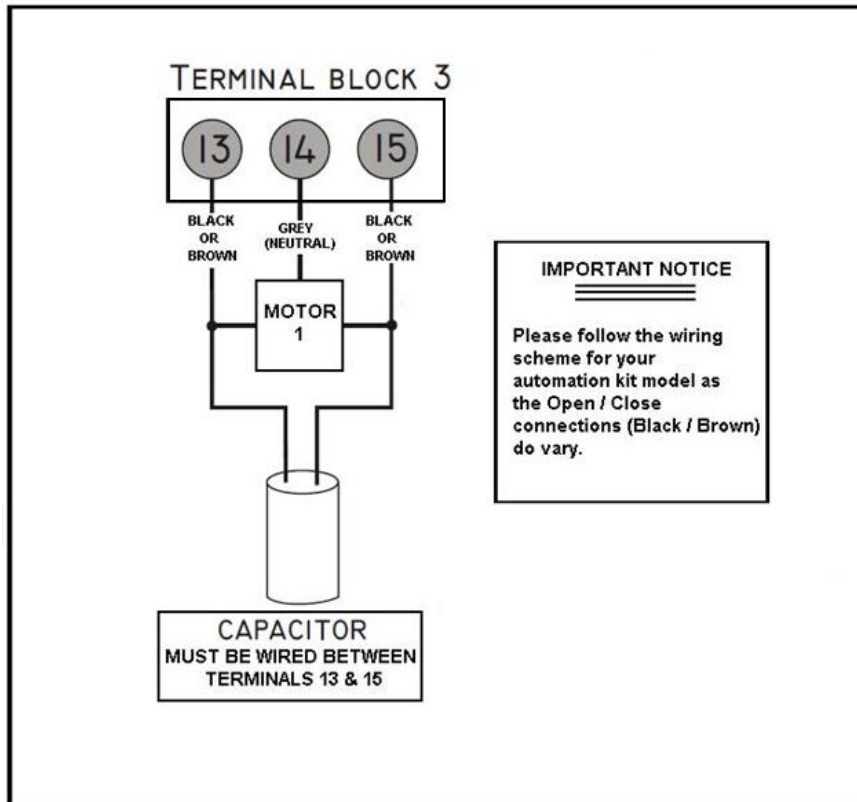
From following your 'Motor Installation Guide', you have wired each cable to the respective terminals as required for your particular model of automation. Simply place the wired terminal block grouping over the exposed spade terminals.

Having attached the motor(s), we can now introduce power to the control board so we can enable the programming of the key-fobs and the programming of the gate automation opening and closing settings.

Connecting power to the control board

Connecting power to the control board using 1.5mm - 3 core armoured cable 230v.

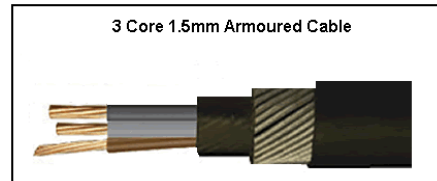### Cable identification should be:

Colour	Identification
Brown	Live
Blue	Neutral
Yellow / Green	Earth

3 Core 1.5mm Armoured Cable

Insert the Live (brown) wire to terminal 20 and the Neutral (blue) to terminal 19 and tighten the terminal screws as illustrated left.
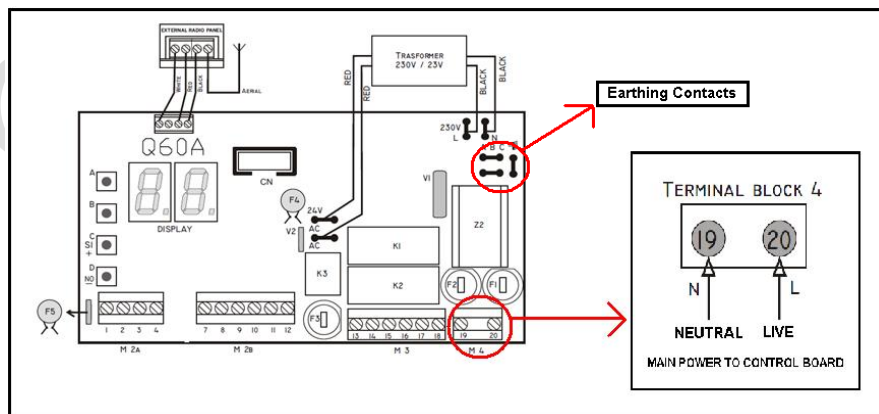
Please connect your Earth (yellow/green) wire to any one of the three Earth contacts provided on the control board.

At this stage we have the necessary link(s) in place, and have temporary linked the photocell terminals, wired the key switch and have connect the power. Please switch the power supply on. After a few seconds You will see two short lines displayed horizontally on the control board screen (illustrated right).
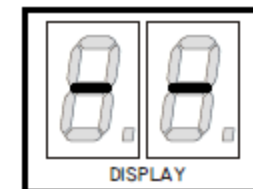
Now we look to program the remote control key-fob(s) to the control board.

DISPLAY

Programming the remote control / key-fob
– Please have your key-fob(s) to hand

Every gate automation kit comes equipped with grey remote control key-fob(s) as standard:

Available remote control key-fobs

Grey   Navy Blue   Black

2 x Remote Control with Double Gate Automation kits
1 x Remote Control with Single Gate Automation kits

These are <u>three channel</u> remotes. Each channel sends an individual code on a 433 MHz frequency that the control board's internal receiver intercepts.

LED illuminates GREEN when transmitting
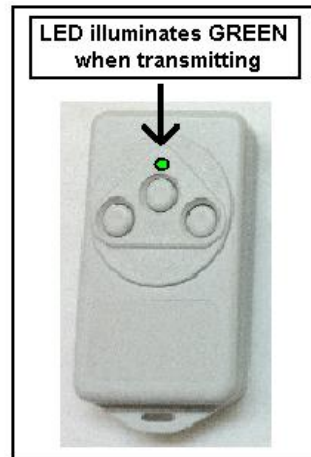
When the key-fob is transmitting a code, a green LED will be seen as illustrated (Pictured left)

So, before we program them to the control board, select **<u>one</u>** button to act as the activation key for your gate automation.

Control Board Operational Buttons - A, B, C, D
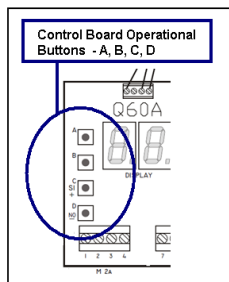
On the control board there are four buttons marked A, B, C & D on the left hand side of the control board (illustrated left). These are the control board's operational buttons. These allow the user to access its many program settings to complete operational set up and make finer adjustments

Saving a new remote control / key-fob to the control board

a) Press the **button A** on the Q60AR gate control panel **2 times**, the display shows **rA**

b) Press **button B** on the Q60AR gate control panel **2 times**, the display shows **tc**

c) Press and hold a button on the remote control (the green

d) light on the key-fob illuminates) until a dot appears on the display. This means that the receiver is ready to store the button's code (Illustrated Right):

e) **Simultaneously press and hold button C** on the Q60AR gate control panel to store the new code. A 2 digit number will briefly show on the screen e.g. "01" before showing **tc**. This number is the location the control board has stored the key-fob code in.

f) Press **button A** on the gate control panel **3 times** to return to the stand-by mode " **- -** "
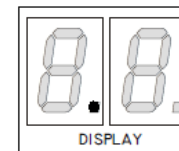
NB: <u>Step D</u>, "simultaneous holding / pressing the remote control button when the dot appears and pressing button C" can be overlooked. Missing this step will cause the process of programming the key-fob to fail.

Deleting an existing remote control / key-fob from the control board

a) Press the **button A** on the gate control panel 2 times, the display shows **rA**

b) Press **button B** on the gate control panel 1 time, the display shows **r=**

c) The control board will cycle through the locations of stored key-fob codes e.g. "01"... "02"...

d) Wait until the desired location number is shown then press and hold **button D**. The code in that location will be deleted.

e) Press button A on the gate control panel 3 times to return to the stand-by mode " **- -** "

Deleting all stored remote control / key-fob(s) from the control board

a) Press the button A on the gate control panel 2 times, the display shows **rA**

b) Press button B on the gate control panel 4 times, the display shows **rC**

c) Press and hold button D on the gate control panel until the display shows **r=**, this indicates that all the codes have been erased

Remote control / key-fob battery strength

The LED that is seen on the key-fob doubles-up as a visual indication that they key-fob is responding to you pressing its button and it is transmitting. The key-fob will show a green light to indicate it is transmitting. If the battery in the key-fob is running low, the LED light will be dim.

This dim light indicates that there is low power and may not be enough power to transmit the signal to the gate control panel. This will affect the range and strength of the signal transmitted. This may result in your gate not responding immediately and / or may not respond at all. In reported cases, operators may have to stand close to the control panel in order for the radio receiver to pick up the weakened signal produced by the key-fob.

Batteries that are supplied inside the key-fob are Alkaline 12v and have an average life span of 3-5 years depending on usage.

When the dimly lit LED indication is seen, the battery will need to be replaced.

The batteries are size A23 and can be difficult to obtain from battery stockists. These batteries are available as spares from Gate Motors direct.
Quote stock code: Z-K-BAT-A23

Changing the key-fob battery
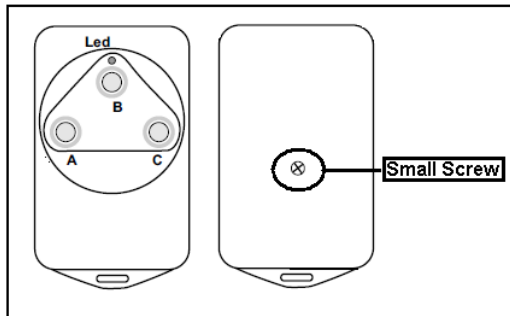
1) Turn the key-fob over so it is resting on its front - exposing the locking screw on its reverse side
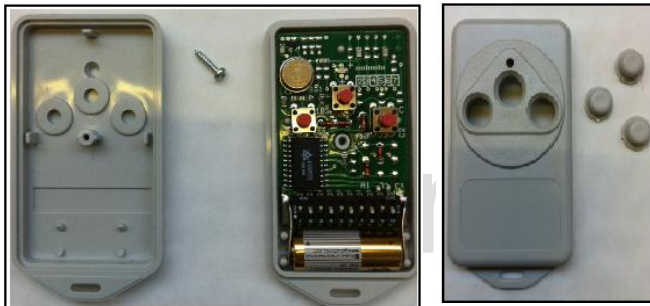
2) Remove the screw and gently pull the two halves of the key-fob casing apart. The push buttons are tactile switches which 'click' as they are pressed.

TIP – be careful when removing front plate as the tactile switch covers are loose circular discs and may fall out of the cover
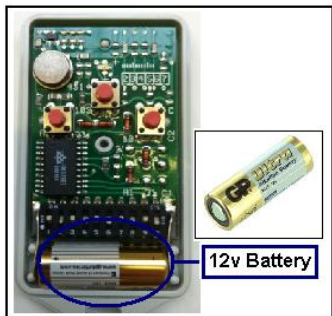
3) Obtain size 23AE 12V battery and replace like for like. Once the battery is in place, return the back half of the key-fob into its original position, insert locking screw and tighten.

Changing the code the key-fob transmits

Upon use of the key-fob, if you find that the code the key-fob transmits is not being identified by the control board, or is intermittent in receiving the signal produced, you can change the rolling code that the key-fob transmits. This is achieved by removing the back cover of the key-fob to expose the printed circuit board and battery compartment. Above the compartment is a row of white DIP switches labelled 1 to 10:- Illustrated below left
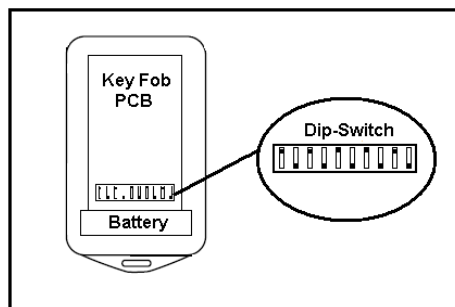
These switches force the key-fob to produce one particular code. By moving each of these switches randomly up and down, the key-fob changes the code it transmits. Once this has been completed you must program the key-fob to the control board so it can recognise the new code generated.

The key-fob signal receiver is built-in to the control panel has a range of up to 30M.
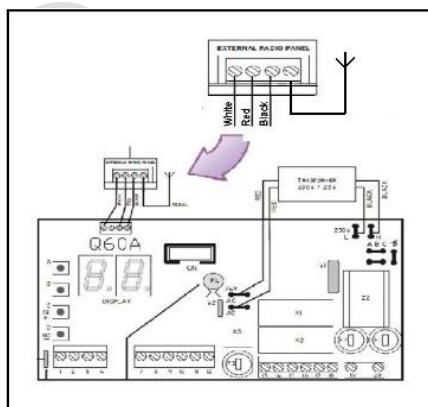
As the signal transmitted from the key-fob is a radio frequency, the signal quality and strength may be hindered if the control panel for the gate automation is mounted onto a metal plate / bracket or is mounted against thick concrete pillar, in addition atmospheric conditions (rain / fog) can reduce the strength of the radio signal. Neighbouring radio signals, especially in built-up areas, can impede the control board's ability to single out your key-fob's code.

Extended Aerial – (optional accessory)
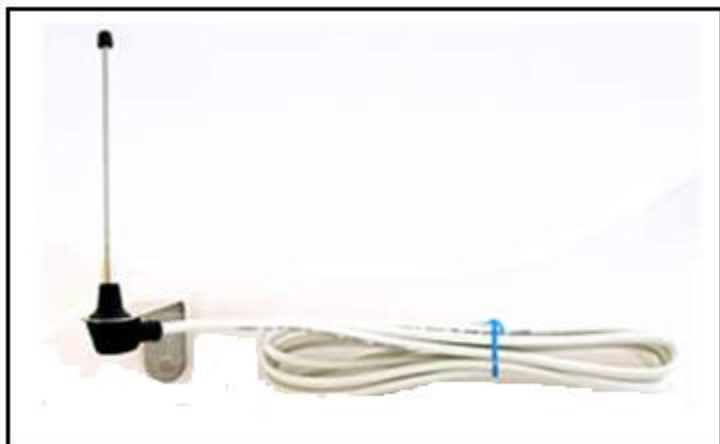
The extended aerial substitutes the standard internal aerial to extend the range of your transmitters to **80m** (max) in free field conditions. Typically mounted on top of the gate pillar, the 2M coaxial cable length makes this unit easy to install on a variety of applications. Using its "L" shaped bracket, the extended aerial is very versatile as it can be mounted on top of pillars, fence posts, or any other structure near your gates that is elevated.

Fitting the Extended Aerial
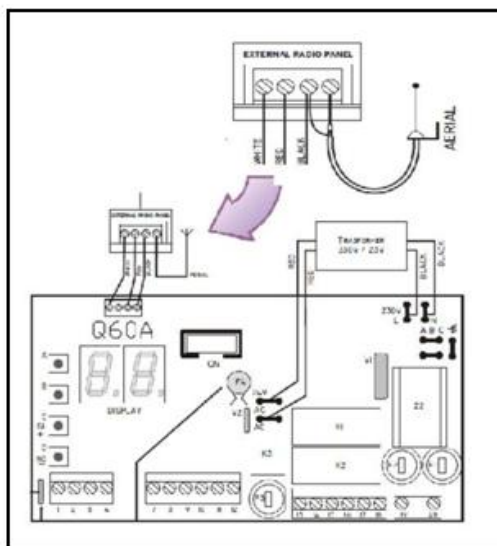
Fitting of the Extended Aerial is very simple and effective.

- Simply remove existing rigid aerial white wire by using a small flat head screwdriver to loosen its terminal screw and take out the aerial cable.

- Place the Extended Aerial coaxial cable into terminal (illustrated left).

- Twist the braiding from the Extended Aerial and place into the terminal to its immediate left along with the black wire that is already in that terminal (illustrated right).
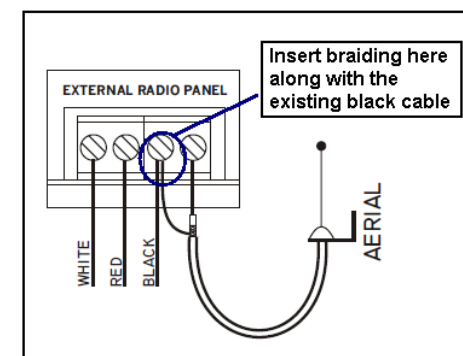
Programming the gates open & closing cycles

At this stage of the installation we have:

- Our emergency stop link in place ✓

- Have temporary links for the photocell terminals ✓

- Have programmed the key-fob remotes ✓

Now we look to program your gates opening & closing cycles and allow the control board to become familiar with the operating of your gate automation by pushing and pulling the weight of your gate leaf(s) to ascertain the correct level of force and time period required to complete the operation. The control board is pre-programmed with a basic set of values to act as indicators for the control board to work with; a basic set of instructions to tell the motors how to walk and talk. We now need to tell them how far they are walking.

Sequential programming of the control board

First, we need to tell the control board it only has one motor attached. Please follow the next set of steps using the control board operational buttons illustrated:

a) Press the **button A** on the Q60AR gate control panel **1 time**, the display shows **PA**
b) Press **button B** on the Q60AR gate control panel **1 time**, the display shows **N1** (first parameter in the list)
c) Press **button B** on the Q60AR gate control panel a further **17 times**, the display will show **P5** (only one motor) then will show **NO**
d) Press **button C** on the Q60AR gate control panel **1 time**, the display will show **SI**
e) Press **button B** on the Q60AR gate control panel **5 times**, the display will show **SU** (the Save function)
f) **Press and hold button C** on the Q60AR gate control panel until you hear the onboard relays "double click" then let go of the button. The control board has saved the change made to the program and has returned itself back to the standby mode "**- -**"

NB: Step F – If this step is not completed, the change will not be saved and the automation will fail to respond to your command because the control board will still be looking for a second motor when there is not one installed.

The Sequential Programming is a short step-by-step process in which you have full control.

Please have your key-fob close to hand and read the next set of instructions thoroughly **_before_** proceeding. As parts of the stages require instant interaction from you, if the stages are missed or reactions are late – this will affect how the timing of your gate automation will behave and significant minor adjustments may have to be made to compensate.

Sequential programming – Single Gate (for one leaf only)

a) Press **Button A** – **4 times**. Display screen will show **AS**
b) Press **Button B** – **1 time**. Display screen will show **1N** (1 motor)
c) Press Key-fob Button (gives start signal), motor starts to open the gate leaf and display screen will show **N1**.
d) Wait until leaf is **open 90%**, then press key-fob button (gives another start signal), display screen will show **R1**
e) The motor will now slow down and continue to be slow, this is the deceleration phase. Wait until leaf is at rest tight with gate stop and press key-fob button again. The motor stops.
f) Display screen will show **TP**. The control board is now calculating **PAUSE TIME**. This is the amount of time in seconds that the gates will hold open before automatically closing. The display screen will show double figures ascending in value e.g. 01... 02...03 and so forth. Press the key-fob button again after the desired pause time has passed. The gate leaf will begin to close using the same calculations the control board made to open it.
g) When the closing cycle is complete, the gate is resting against centre gate stop and the program cycle is complete. The control board automatically exits from the sequential program process and all working times have been saved. The display screen will now show " **- -** ", the Stand-By mode.

We are nearly there! Your installation is almost complete!

To recap, at this stage we have;

- Our emergency stop link in place

- Have temporary links for the photocell terminals

- Have programmed the key-fob remotes

- Have programmed the opening & closing cycles

- The motors are attached to the control board

We now look to complete the installation by connecting the gate system's safety device, the **photocells**.

Photocells

The photocells are essential for safe use of your gate automation system. These are units that are comprised of a transmitter and receiver. The photocell transmitter projects an Infrared confined beam in a straight line and is intercepted by the photocell receiver. The receiver is not a mirrored unit as it absorbs the Infrared beam. The transmitter and receiver unit must be placed directly opposite each other to have a clear line of sight and be fixed to the inside of your pillar, just beyond your gate. The photocell then acts as an "invisible trip-wire" across your drive way, permanently watching for any kind of obstruction. As soon as the Infrared beam is broken, the "trip-wire" is activated and the motors will immediately stop and will reverse in their motion. Typically the photocells are used for the **closing phase** of the gates automated cycle. "Closing Phase" means that as gates are closing / returning to their original closed position, if your car stalls in-between the gates or an object / pedestrian moves through the closing gates – the gates will immediately stop and reverse to the full open position at great speed. There is no control over the speed at which the motors will run. At this stage the control board's main objective is to get the gates back open as fast as possible. The gates will continue to be held open until the obstruction has been cleared (the Infrared beam has been restored) and the control board will continue with its original closing cycle and your gates will return to their fully closed position.

Photocell positioning

Photocells mounted to the gate pillars
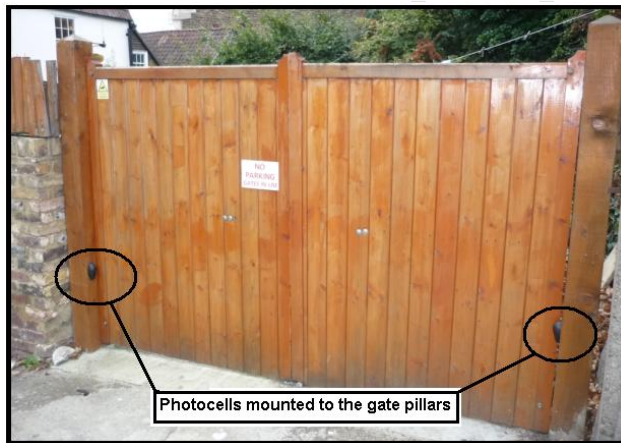
As the transmitter and receiver unit must be directly opposite each other, typically these units are fixed to the inside of your pillar, just beyond your gate (illustrated left). If pillars are not wide enough to support the fixing of the photocells, do consider using photocell column with rain hood (optional accessory – pictured right):
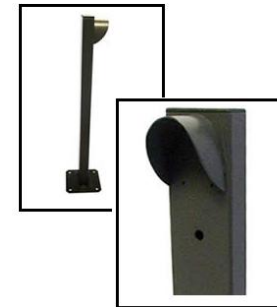
The photocell pack comes complete with fixings. Each fixing pack contains (illustrated left):

- 4 x Threaded screws

- 4 x Rawlplugs

- 2 x Open Cable Grommets (if cable fed through the underside hole, these grommets help prevent insects from gaining access to and nesting inside the photocell units)

- 2 x Closed Cable Grommets (if cable fed through back of unit, these plug the hole on the underside to stop insects gaining access and nesting inside the photocells units)
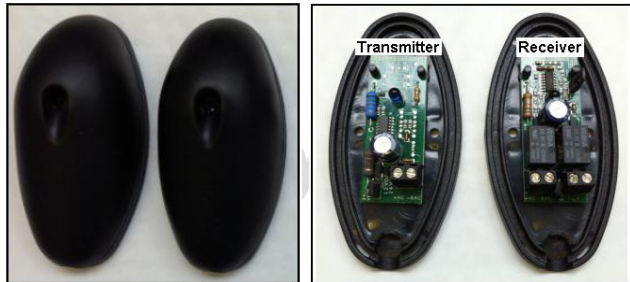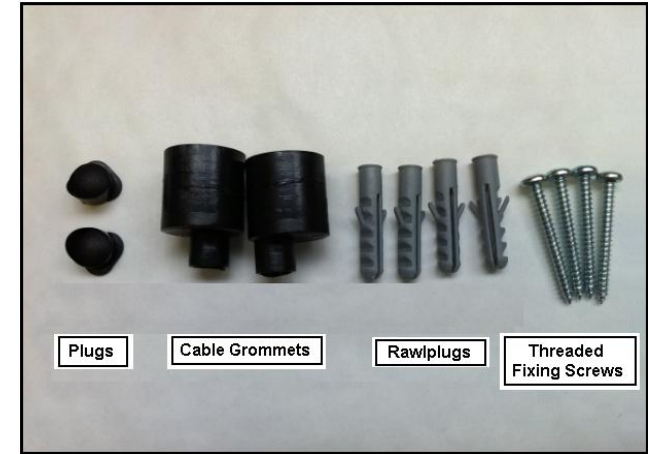
Remove the covers of the photocells by laying them horizontally on a flat surface, insert screwdriver into the cable access hole located at the bottom of the photocell and gently pull the screwdriver towards you. The cover will "pop" and come loose to expose the photocells printed circuit board and terminals (illustrated left)

Photocell Wiring

IMPORTANT SAFETY NOTICE: Please disconnect power to the control board before proceeding. This reduces the risk of personal shock and any voltage feedback to the control board which could trip the two 24v onboard resettable fuses. These fuses govern terminals 1 through to 12 which we will be using now for the photocells. When these fuses trip, the terminals 1 to 12 will not function and as a result the photocells will not function.

There are two functions the photocells can perform depending on how they are wired to the control board.

Option 1 – Closing Phase (photocells placed on the outside of the gates)

CLOSING PHASE

Photocells installed on the outside of the gate and connected to the control boatd using closing phase wiring configuration

Closing Phase means that as gates are closing / returning to their original closed position, if your car stalls in-between the gates or an object / pedestrian moves through the closing gates and breaks the Infrared beam – the gates will immediately stop and reverse to the full open position at great speed.

Option 2 – Opening Phase (photocells installed on the inside of the gates)

OPENING PHASE

Photocells installed on the inside of the gate and connected to the control board using opening phase wiring configuration
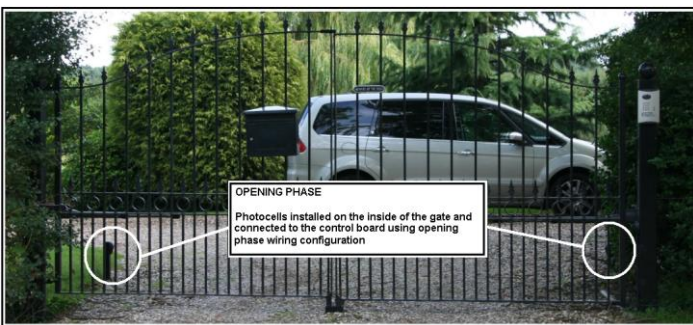
Opening Phase means that as gates are opening, if your car stalls in-between the gates or an object / pedestrian moves through the closing gates and breaks the Infrared beam – the gates will immediately stop and return back to the closed position at great speed.

CONNECTING PHOTOCELL IN CLOSING PHASE

RF 36

PHOTOCELLS CONNECTIONS

8 = Power supply + PHOTO RX
9 = Power supply + PHOTO TX
10= Power supply - COM. PHOTO TX/RX

3 - 8 = Photocells connection

link terminals 4 - 9

Terminal block 2a   Terminal block 2b
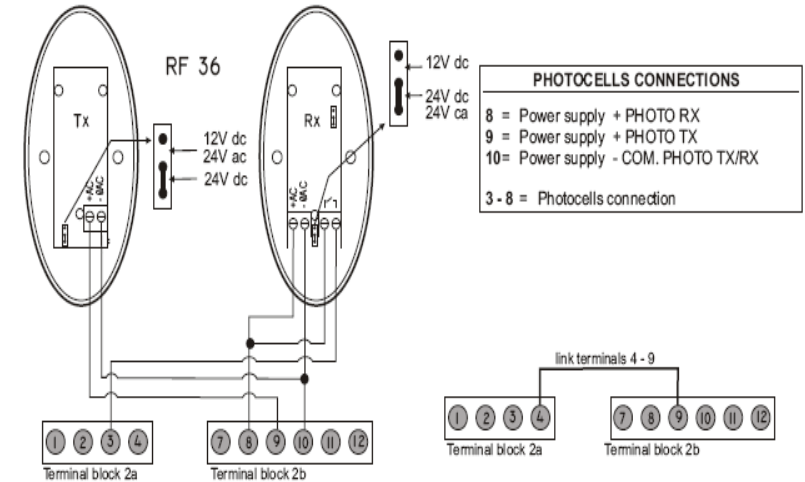
To Use in Closing Phase

To connect power to Transmitter Unit
Use 1 core wire to connect AC+ on photocell Transmitter Unit (TX) to Terminal 9 on the Q60AR Board.

Use 1 core wire to connect AC- on photocell Transmitter Unit (TX) to Terminal 10 on the Q60AR Board.

To connect power to Receiver Unit
Use 1 core wire to connect AC+ on photocell Receiver Unit (RX) to Terminal 8 on the Q60AR Board.

Use 1 core wire to connect AC- on photocell Receiver Unit (RX) to Terminal 10 on the Q60AR Board.

To connect the relay function to Receiver Unit
Use 1 core wire to connect 3rd terminal (looking from left to right) on photocell Receiver Unit (RX) to Terminal 8 on the Q60AR Board.

Use 1 core wire to connect 4th terminal (looking from left to right) on photocell Receiver Unit (RX) to Terminal 3 on the Q60AR Board.

IMPORTANT: Please place a link between terminals 4 and 9 on Q60AR board. Without this link, you will see a TC/TA error.

To Use in Opening Phase

CONNECTING PHOTOCELL IN OPENING PHASE

RF 36

Tx

Rx

12V dc
24V ac

24V dc

12V dc
24V dc
24V ca

PHOTOCELLS CONNECTIONS

8 = Power supply + PHOTO RX
9 = Power supply + PHOTO TX
10= Power supply - COM. PHOTO TX/RX

4 - 8 = Photocells connection

3 - 9: Link terminals 3 and 9 if the photocells are not used in the closing phase.

link terminals 3 - 9

Terminal block 2a

Terminal block 2b

To connect power to Transmitter Unit
Use 1 core wire to connect AC+ on photocell Transmitter Unit (TX) to Terminal 9 on the Q60AR Board.

Use 1 core wire to connect AC- on photocell Transmitter Unit (TX) to Terminal 10 on the Q60AR Board.

To connect power to Receiver Unit
Use 1 core wire to connect AC+ on photocell Receiver Unit (RX) to Terminal 8 on the Q60AR Board.

Use 1 core wire to connect AC- on photocell Receiver Unit (RX) to Terminal 10 on the Q60AR Board.

To connect the relay function to Receiver Unit
Use 1 core wire to connect 3rd terminal (looking from left to right) on photocell Receiver Unit (RX) to Terminal 8 on the Q60AR Board.

Use 1 core wire to connect 4th terminal (looking from left to right) on photocell Receiver Unit (RX) to Terminal 4 on the Q60AR Board.

IMPORTANT: Please place a link between terminals 3 and 9 on Q60AR board. Without this link, you will see a TC/TA error.

Ensure all wiring is touching the metal contact within each individual terminal block on the control board – you can use a Choc Block (terminal strip) as an expansion. The terminals on the control board are narrow and may have multiple cables in them depending on what other accessories you may be using in conjunction with your gate automation kit. Please ensure all wires are touching the metal contact strip within the terminal. This ensures that power can flow through the cable. If you are using a terminal strip, make sure the cable used to connect the terminal strip to the terminal block is sufficient to carry the current.

Photocells are one piece of equipment supplied with the automation kit that **does** require regular maintenance. As they sit on the pillar and quietly operate, they can be forgotten. **TC and TA faults** can occur if insects, webs, dirt or grease is present in and around the sensors or the case lenses (inside and out). This scatters the Infrared beam and the control board will interpret this as a warning that an obstacle is present and the motors will fail to respond to your command – this is a safety feature. The motors will not operate if they believe there is an obstacle that may potentially cause damage.

The photocells are supplied with cable grommets in an attempt to keep the bugs on the outside. Check that the cases are clean and obstacle free and have the grommets in place. You may find using a silicone sealant may help to keep the bugs at bay.

Your installation is now complete!

<u>Double checked?</u>

Emergency Stop link in place ✓

Programmed the key-fob remotes to the control board ✓

Wired the photocells to their terminals ✓

The motor(s) are attached to the control board
and correct link in place with their capacitors in place ✓

Only One Motor setting has been changed ✓

Programmed the opening & closing cycles ✓

Have you tried the gate automation's full open & close cycle for the first time since completion of the installation?

Did the gate(s) open and close perfectly?

If not, do not panic..... We just need to fine the Q60AR's Program Parameters.

Q60AR Control Board Program Adjustments - Parameters

From time to time some fine adjustments may need to be made. The motor(s) may be moving the gates too easily than you thought, the run time on either motor is just a second or two out or the motor(s) may be struggling to get moving during the winter period. The control board is extremely versatile and we can change the behaviour of each independent motor by telling the control board to operate slightly differently.

Remember, it is the control board that tells the motor(s) what to do and when to do it.

Main Menu

This menu is available on start-up. To select each menu option press button A. Every time button A is pressed, the control board will scroll through each menu option individually. Below is a table showing the Main Menu layout:

Q60A Q60AR	Control Board Parameters And Their Meanings	
TOP LEVEL MENU		
Screen Display	**Description**	**Function**
"- -"	Stand-By Mode	System ready to accept command
"P A"	Parameters	To access the control boards program settings
"R A"	Radio	To access the key fob management program
"d E"	Default	To re-set the control board back to factory settings
"A S"	Sequential Programming	To start the Sequential Program (initial set up for the gates)

Parameters

This sub menu is the core rules that govern the motor(s). This is where the control board receives its instructions and passes them on to the motor(s).
To access the Parameters:

- From standby mode "- - ", press button A once. You will see "P A" on the display screen
- Press button B once. You will now see " N 1" on the display screen. This is the very first Parameter.

Control Board Parameters and Their Meanings

Below is the complete list of parameters available to fine tune the gate automation system:

PARAMETER	MEANING	DESCRIPTION
n1	Operating time for Motor 1	This is the full time it takes to open/close a gate leaf. In turn this setting controls the opening angle and can be set differently to the other leaf.
F1	Torque / power adjustment for Motor 1	This is the setting to control the power the motor will use during its opening/closing cycle. The heavier the gate, the more power the motor needs
Fr	Power applied when motors are in their deceleration cycle	This is the setting to control the power that both motors use during the slowing down process to achieve soft closing/opening
r1	Motor 1 deceleration time	This setting is used at the end of th eopen/close cycles to pull the gate tight against its stop point (or Gate Stop - if fitted)
tP	Delay between automatic closing (PAUSE)	Use this setting to adjust how long the gate stays open before automatically closing. Default is 3 seconds, you may wish to keep them open longer.
Pd	Pedestrian opening time	If a switch is used on th epedestrial mode, this setting determines how long the gate will open to allow access on foot. Motor 1 will only work as a pedestrian gate, opening default 45 degree angle
tC	Lock Pulse Time	FOR USE WITH ELECTROLOCK ONLY - This is the amount of time, in half second increments, that the motors will operate at full speed when they are near to closing to ensure lock returns to its striker plate
PO	Reversing Stroke	FOR USE WITH ELECTROLOCK ONLY - When turned ON this setting makes the motors push in opposit direction to help release the electrolock if the pins are tight in the striker plate
P1	Electro Lock	This setting tells the control board that it has an electrolock fitted. Change this to "S I" if an electrolock has been installed.

Control Board Buttons Legend

PRESS BUTTON *B* TO SELECT THE NEXT PARAMETER IN THE LIST

PRESS BUTTON *C* TO INCREASE VALUE OF PARAMETER

PRESS BUTTON *D* TO DECREASE VALUE OF PARAMETER

NB: Parameters
N1– The Value seen for this parameter is in SECONDS. Each increase / decrease in value is equivalent to a SECOND. E.g. Value 21 = 21 Seconds
F1 – The value seen for this parameter denotes LEVEL of torque. There is no specific Newton thrust equivalent per level due to outside factors such
as the weight of the gate / wind resistance.
tP – The Value seen for this parameter is in SECONDS. Each increase / decrease in value is equivalent to a SECOND. E.g. Value 3 = 3 Seconds
Pd - The Value seen for this parameter is in SECONDS. Each increase / decrease in value is equivalent to a SECOND. E.g. Value 7 = 7 Seconds

| PARAMETER	MEANING	DESCRIPTION
P2	Multi Occupation	This tells the control board to only accept ONE open / close command at a time. This is used for multi-dwellings, flats, groups of houses where more than one person could activate the gate at the same time.
P3	Automatic Closing	This tells the control board to automatically close or not. This is always defaulted to "S I" (yes). If you do not want your gates to automatically close, change the setting to "NO" - but remember to press your key fob again to close the gate when you want it closed
P4	Pre-Blinking	This setting controls any blinker (warning light) that may be attached. This is defaulted to NO. If changed to SI and a blinker is attached, this will flash coninuously.
P5	Only One Motor	This setting is default to NO for double swing gates. If you have a single leaf gate, change this to SI . This tells the control board to only look for ONE motor when the gate open/close sequence is activated.
P6	Deceleration on	This setting turns on and off the deceleration part of the open/close cycle. By default, this setting is ON. If this if turned off, the motors will travel at full speed and stop. This creates a risk of your gate leaf(s) banging against your gate stop and could cause damage to the gates.
P7	Motors Test	This setting tells the control board to perform a quick start up test to make sure they are in operation. By default, this setting is SI - and should be left on SI.
P8	Photocells Test	This setting tells the control board to perform a quick start up test with the photocells to make sure they are in operation. By default, this setting is SI - and should be left on SI.
P9	Soft Start	This setting tells the motors to build up their travelling speed gently within the first 2 / 3 seconds of its open/close cycle. After which the motors will travel at full speed. The default value for this setting is SI. If turned off, the motors will start at full speed and continue at full speed until the cycle is complete.
SU	Save Changes	This setting saves any changes to have made to the program to the memory chip on the control board. IF you do not save the changes that have been made, the control board will "forget" them and revert back to its default settings in the event of a power cut / loss of power to the control board.

Fault codes – Self diagnosis display codes

The control board monitors itself and the units attached to it. Every time you press your key-fob remote button, the control board "pings" a signal to the terminals to see what is attached. If a unit does not send a return signal back, the control board will warn you immediately by displaying a two letter code on the display screen. You are then required to take immediate action.

Due to the nature of the automation, the control board will not respond to any commands you give whilst the fault display is seen. The fault must be cleared in order for the automation to carry out its duty with care and safety.

This is an important safety feature

Below is a list of the fault code library contained within the control board. Each warning message is described in the table below with suggested remedial action to take.

Motor related fault codes

SELF DIAGNOSTIC DISPLAY MESSAGE	MESSAGE MEANING	SOLUTION
MOTOR 1 FAULT (terminals 13 & 14 & 15)	The control board has sent a "ping" test (small current) to MOTOR 1 and it has not responded. The control board cannot see MOTOR 1.	This is purely a wiring fault. Back track the wiring from termianals 13 & 14 & 15 to MOTOR 1 ensuring clean contact interninals, no breaks in cabling, check fuse F3 on control board, check any fused spurs (if fitted) and make sure the CAPACITORS supplied are connected to terminals 13 & 15.
MOTOR 2 FAULT (terminals 16 & 17 & 18)	The control board has sent a "ping" test (small current) to MOTOR 1 and it has not responded. The control board cannot see MOTOR 2.	This is purely a wiring fault. Back track the wiring from termianals 16 & 17 & 18 to MOTOR 2 ensuring clean contact interninals, no breaks in cabling, check fuse F2 on control board, check any fused spurs (if fitted) and make sure the CAPACITORS supplied are connected to terminals 16 & 18.
BOTH MOTORS FAULT (terminals 13 to 18)	The control board has sent a "ping" test (small current) to MOTOR 1 and MOTOR 2 and BOTH have not responded. The control board cannot see BOTH motors.	This is purely a wiring fault. Back track the wiring from termianals 13 through to 18, ensuring clean contact in interninals, no breaks in cabling, check fuse F2 & F3 on control board, check any fused spurs (if fitted) and make sure the CAPACITORS supplied are connected to terminals 13 & 15, 16 & 18

NB: N2 and Nr fault may show if you have not told the control board it only has ONE motor attached
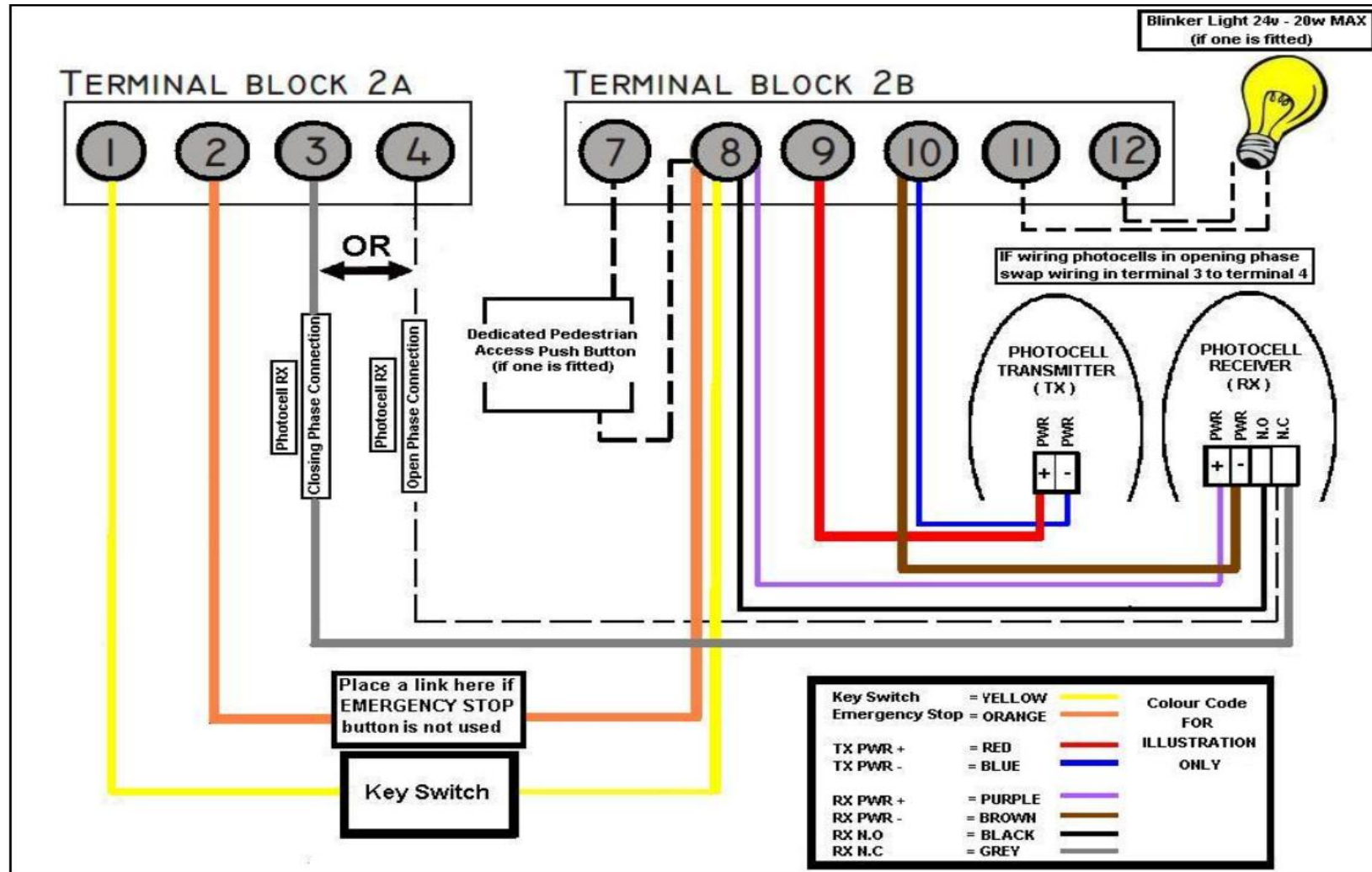
General operational fault codes

SELF DIAGNOSTIC DISPLAY MESSAGE	MESSAGE MEANING	SOLUTION
EF PHOTOCELL TEST ERROR	The control board has sent a "ping" test (small current) to the photocells and they have not responded. The control board cannot see the photocells.	This is purely a wiring fault. Back track the wiring from appropriate termianals to each photocell including cable quality inspection. Check re-settable fuses have not tripped by disconnecting power to the control board for 30 seconds then re-connect
tA OPENING CYCLE PHOTOCELL BEAM BROKEN	The control board can see the photocells but can see the opening cycle beam has been permanently broken due to obstruction. This is a safety feature.	Check for obstruction. If no obstruction found, check the case of photocells for damage and dirt. Check inside photocell case for any insect nests, webs and insects themselves that may have covered the photocell sensor
tC CLOSING CYCLE PHOTOCELL BEAM BROKEN	The control board can see the photocells but can see the closing cycle beam has been permanently broken due to obstruction. This is a safety feature.	Check for obstruction. If no obstruction found, check the case of photocells for damage and dirt. Check inside photocell case for any insect nests, webs and insects themselves that may have covered the photocell sensor
FH BOTH OPENING & CLOSING PHOTOCELL BEAMS BROKEN	The control board can see the photocells but can see both opening & closing cycle beams have been permanently broken due to obstruction. This is a safety feature.	Check for obstruction. If no obstruction found, check the case of photocells for damage and dirt. Check inside photocell case for any insect nests, webs and insects themselves that may have covered the photocell sensor
St STOP BUTTON PRESSED	The control board has detected a stop button has been pressed and has broken the continuous circuit. This is a safety feature.	If a emergency stop button has not been fitted make sure there is a link between terminals 2 & 8. If an emergency button has been fitted, make sure this has been wired into terminals 2 & 8 and check the button is not stuck or in a closed position
PE PERMANENT START SIGNAL - PEDESTRIAN	The control board has detected a dedicated pedestrian access button (wired into terminals 7 & 8) has been pressed and is stuck which has created a continuous circuit.	If an access button has not been fitted in these terminals make sure there is NO link between terminals 7 & 8. If an access button has been fitted, make sure this has been wired into terminals 7 & 8 and check the button is not stuck or in a closed position
Go PERMANENT START SIGNAL - MAIN GATES	The control board has detected an access device (wired into terminals 1 & 8) has been pressed and is stuck which has created a continuous circuit.	If an access control device has not been fitted in these terminals make sure there is NO link between terminals 1 & 8. If an access control device has been fitted, make sure this has been wired into terminals 1 & 8 and is in a ready state (i.e. not activated)
-.- KEY FOB CONTINUOUSLY TRANSMITTING	The control board is receiving a permanent radio signal from a key fob. Make sure all of the 3 buttons on the key fob(s) are not stuck	The control board is receiving a permanent radio signal from a key fob. Make sure all of the 3 buttons on the key fob(s) are not stuck down

Appendix: A

Q60AR connection map – terminals 1 to 12

Colour Coded Chart of the control board upon completion of installation: Key Switch, Photocells, Emergency Stop (**optional**) Pedestrian Access (**optional**), and Blinker (**optional**)

Appendix: A (continued)

Q60AR connection map – terminals 1 to 12 (Functions)

START
STOP
CONTACT PHOTO 1
CONTACT PHOTO 2
COMMON +24V DC
PEDESTRIAN
COMMON
+24 PHOTO RX
+24 PHOTO TX
COM. −24 PHOTO RX/TX
BLINKER
24V MAX 20W
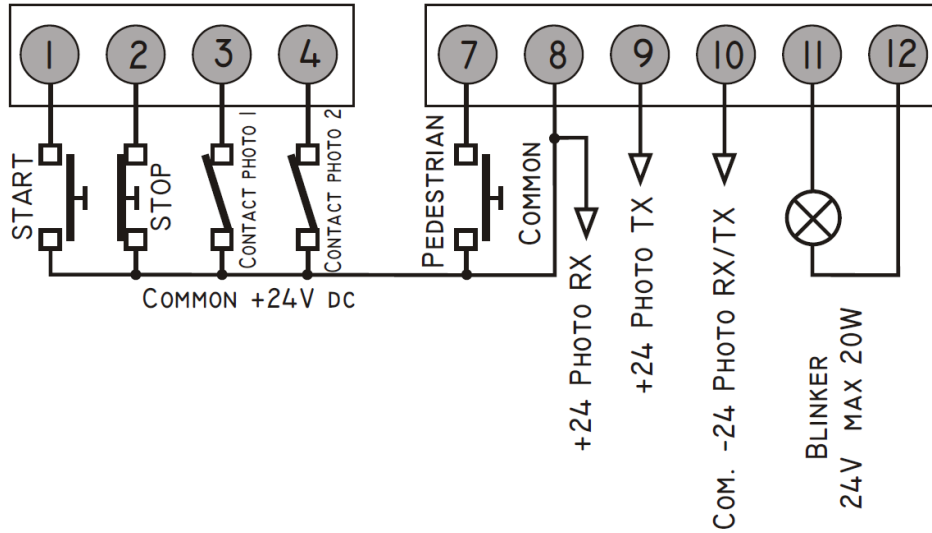
Appendix: B

Q60AR connection map – terminals 13 to 18

TERMINAL BLOCK 3

13   14   15

BLACK OR BROWN   GREY (NEUTRAL)   BLACK OR BROWN

MOTOR 1

CAPACITOR
MUST BE WIRED BETWEEN
TERMINALS 13 & 15

IMPORTANT NOTICE

Please follow the wiring scheme for your automation kit model as the Open / Close connections (Black / Brown) do vary.
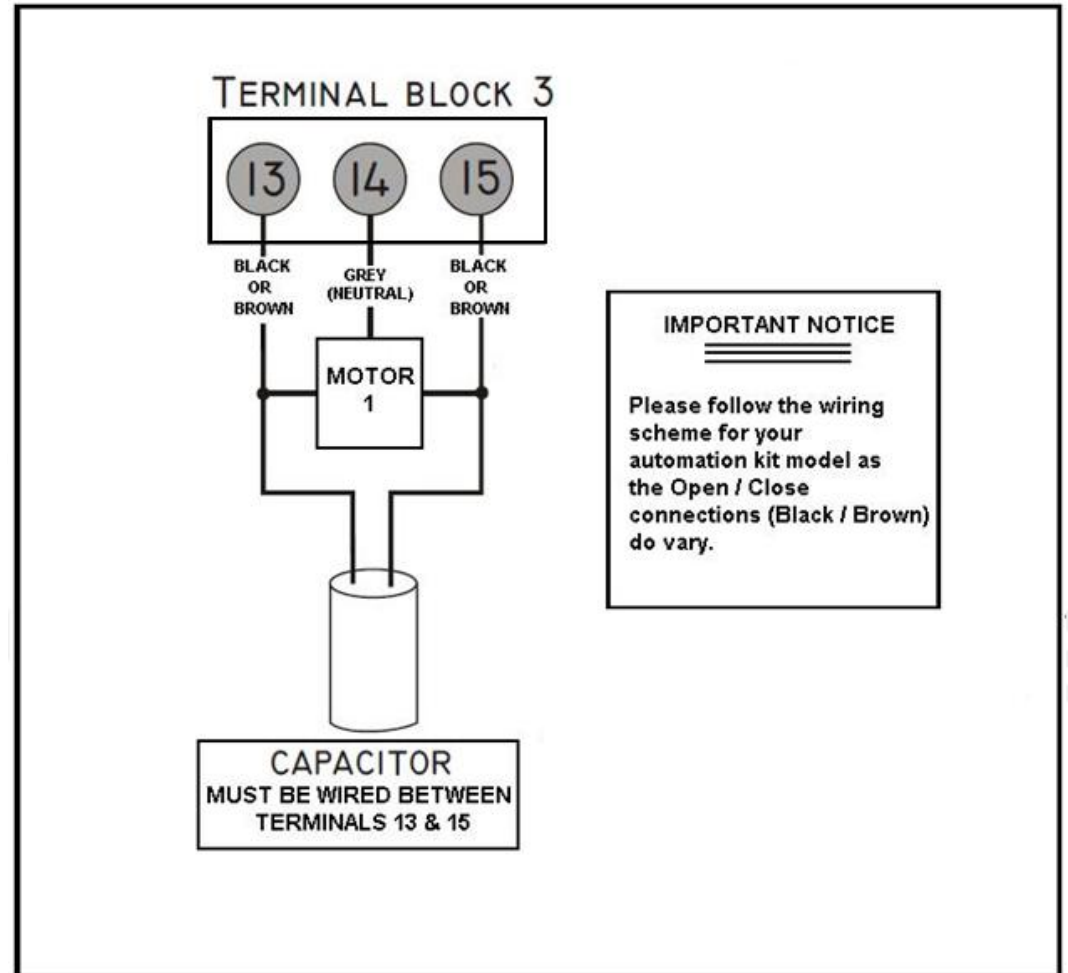
Q60AR connection map – terminal 19 to 20

TERMINAL BLOCK 4

19   20

N   L

NEUTRAL   LIVE

MAIN POWER TO CONTROL BOARD
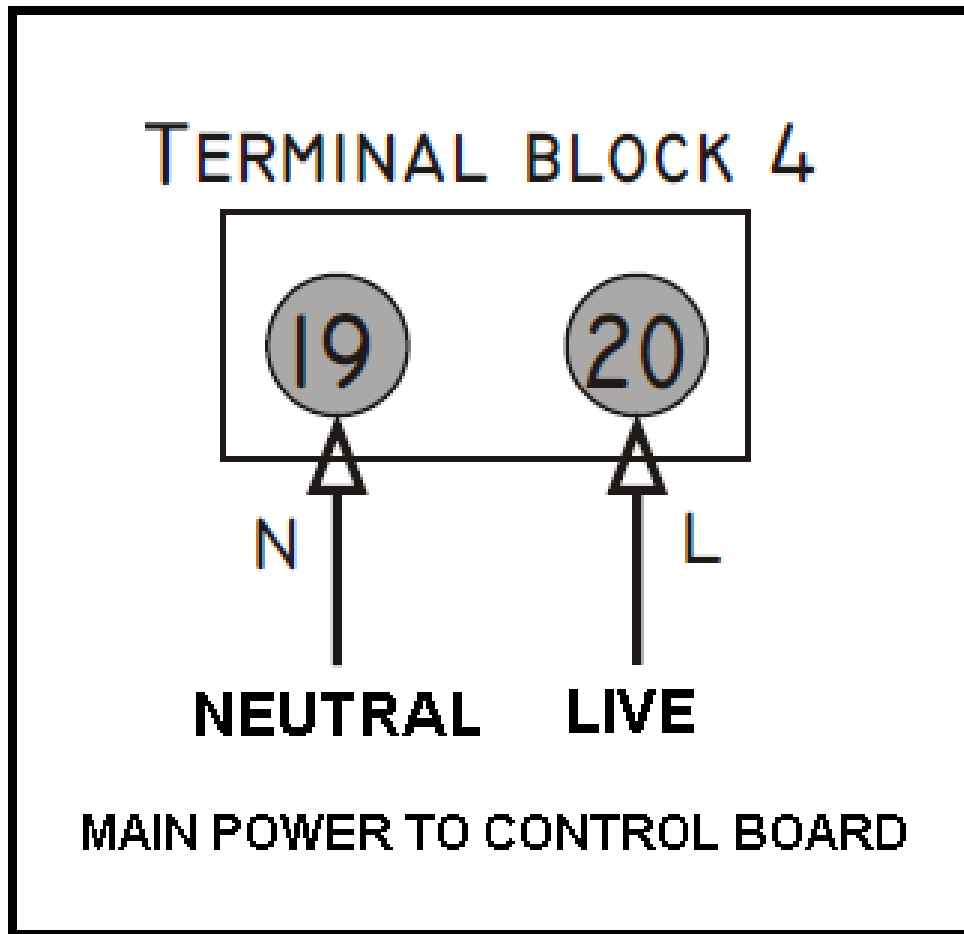
Appendix: D

Q60AR control board – FAQ'S

Photocells – Do I need to use the photocells that come with the kit?

Included in each double and single gate automation kit is a pair of safety photocells – one transmitter cell and one receiver cell. The transmitter projects an Infrared beam direct across the drive way to the receiver unit. These units should be mounted on each gatepost, directly opposite each other. This creates an invisible "Trip Wire" that detects any obstacles that comes into its path. As soon as the beam is broken, the relay in the receiver sends a signal to the control board telling it there is an obstruction. If the gates are in their fully closed or open position, the breaking of the photocell beam will stop any automation from commencing until the obstacle is/has cleared. If the beam is broken during the automated open / close cycle, the breaking of the beam triggers the relay in the receiver to send a signal to the control board telling it there is an immediate obstruction. The motors will instantly stop and begin to reverse. Once the motors have reversed the cycle they were currently in, the motors will stop until the photocell receiver can see the beam transmitted from its opposite unit. Once the beam is seen again, unbroken, the motors will continue to complete their original cycle. The photocells are an important safety feature and must be installed – at all times.

If you have large / deep gates then an additional pair of photocells should be purchased and mounted on posts just beyond the leading edges of the open gate. These will protect the full radial sweep of the gate.

Photocells - My gates are not working, I am seeing FH / TC / TA error code on the display, what can I do?

FH, TC, TA are all fault diagnosis reports. The board is telling us that it can see the photocells but the beam(s) are broken. Without this resolved, the motors will not work – this is a safety feature. Make sure there are no obstructions breaking the beam(s) – custom brackets, branches etc. If there are no obvious obstructions then we need to look closely at the photocells themselves.

TC and TA faults do occur if insects, webs, dirt or grease is present in and around the sensors or the case lenses (inside and out). Photocells are supplied with cable grommets in an attempt to keep the bugs on the outside. Check that the cases are clean and obstacle free.

Heavy rain and direct sunlight may cause disruption to the photocell Infrared beam. An attempt to stop the disruption can be made by using a hood protector to cover the photocells

Key-fob – I am pressing the button but my gates are not opening, what can I do?

If your key-fob is new, check that it has been programmed to the control board. If not, please follow instruction below:

*-Press the button A on the gate control panel repeatedly until the display shows rA*

-Press button B on the gate control panel until the display shows tc

-Press and hold any button on the remote control (the green light on the key-fob illuminates) until a dot appears on the display (this means that the receiver is ready to store the button's code) and simultaneously press button C on the gate control panel to store the new code.

We have discovered that some of our clients miss the simultaneous holding / pressing the remote control button when the dot appears and pressing button C and due to this the process seems to fail. A simple press of a remote control button will automatically give you a dot under normal operation.

If the key-fob has been programmed to the control board and has been working fine before, check the key-fob indicator LED is alit when you are pressing the button. If the light is not seen or is faintly illuminated, please change the battery. Remove the small screw on the reverse side of the key-fob and remove the key-fob cover, this will show the battery compartment.

If the key-fob has been programmed to the control board, has been working fine before and the above step has been followed, check to see if you see a small red dot in the bottom left hand corner of the first screen segment (as shown):
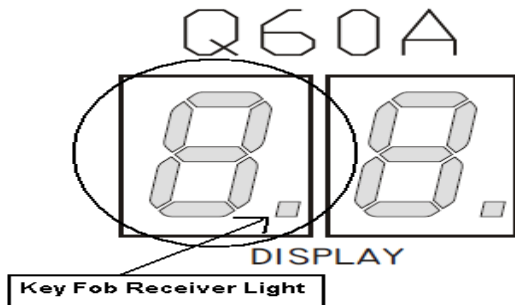
If the red dot is not seen when the key-fob button is pressed, your receiver unit may have developed a fault.

Weather condition - As the key-fob remotes function by transmitting a radio frequency signal to the control board, signal quality can be diminished as a result of poor weather; rain, fog and in some cases electrical storms. In these situations, capture range can reduce to as little as 5M. Using an extended aerial will increase capture range to 80M in all weather.

Key-fob - My gates are opening randomly for no reason, is someone else using my key-fob signal?

With any unit that transmits a radio frequency, there are incidences where radio receiving equipment catches the signal and thinks it is intended for that unit by recognizing the coding contained within that frequency it has intercepted. In this case, the gate control board radio receiver unit has collected a signal that is similar if not almost the same as the one your key-fob is transmitting and believes it is being told to open by you.

The Grey and Navy blue key-fobs transmit a 433,92Mhz frequency, with potential 16,000,000 combinations in 24 bit code. To resolve this clash of signals, we need to give the control board another code to recognize. This is done in three steps:

Step 1: Deleting your existing key-fob code.

-Press the button A on the gate control panel repeatedly until the display shows rA

-Press button B once on the gate control panel, you will see the display show $r=$

The display will now cycle through each stored code location from 01... 02... etc

Once you have seen the location for your key-fob:

-Press and hold button D on the gate control panel

(If you do not know the location of your key-fob, simply press the button and your location will be shown)

Step 2: Re-modulating the frequency code

On the reverse side of your key-fob's casing is a small metal screw. Remove the screw and remove the front cover of the key-fob. Please be careful when removing the key-fob cover as the tactile switch circular button covers are loose and may fall out from their place.

Look towards the bottom of the key-fob's printed circuit board (PCB) and you will see a row of white tiny DIP switches. By moving the DIP switches, the key-fob will transmit a different coded frequency. Use a pin or tip of pencil to move a few of these switches up and down. Re-attach the key-fobs case, paying attention to the alignment of the tactile switch covers and screw the case tightly in place.

Step 3: Programming the control board to accept your key-fob signal

STORING NEW REMOTE CONTROL CODE

-Press the button A on the gate control panel repeatedly until the display shows rA

-Press button B on the gate control panel until the display shows tc

-Press and hold any button on the remote control (the green light on the key-fob illuminates) until a dot appears on the display (this means that the receiver is ready to store the button's code) and simultaneously press button C on the gate control panel to store the new code.

We have discovered that some of our clients miss the simultaneous holding / pressing the remote control button when the dot appears and pressing button C and due to this the process seems to fail. A simple press of a remote control button will automatically give you a dot under normal operation.

Key-fob - What range does the remote key-fob have?

The radio frequency range is 30m from the key-fob, on an ideal day. As the key-fob remotes function by transmitting a radio frequency signal to the control board, signal quality can be diminished as a result of poor weather including rain or fog and in some cases electrical storms. In these situations, capture range by the built-in aerial can reduce to as little as 5m. Using the Gate Motors Extended Aerial in conjunction with your automation kit will ensure up to 80m signal capture range in all conditions.

Key-fob – What are the extra buttons on the remote key-fob for?

To avoid having to carry around a pile of different remote controls for your other remote devices, these buttons may be programmed to open a second gate, a garage door, outside lighting, etcetera. In order for these devices to work with the Gate Motor key-fob remotes, each device will need an additional radio receiver.

Aerial - What does the extended aerial do and do I need one?

The extended aerial boosts the radio frequency capture range to 80m in all weather conditions. As the key-fob remotes function by transmitting a radio frequency signal to the control board, signal quality can be diminished as a result of poor weather. The improved signal capture range can also help for installations where there is a long drive way to the gates or you need to open the gates much before you arrive.

Intercom Wired – I have an intercom system, how do I connect it to my gate?

Power
Majority of intercoms have their own power supply units. Where applicable do you them. The Q60AR have two 24v outputs (terminal 8 for 24v+, terminal 10 for 24v-). We do not recommend that you power intercoms from gate control board because if you lost power to the gates, you would also lose power to the intercom.

Audio and opening the gate
The gate opening action is generally made from the physical intercoms handset which maybe represented as a "key" symbol button.
To connect to our control board to operate the gate. Do check your intercom guides and look for output connections marked N/O and C (or labelled as Normally open / Volt Free / Dry Contacts). These contacts are wired into Q60 terminals 1 and 8.

Intercom Wireless – I have a wireless Daitem intercom system, how do I connect it to my gate?

Power
Daitem intercoms use 12/24v DC to power. There are transformers available and dedicated 12v inline power supplies.

Audio and opening the gate
The gate opening action is made from the physical intercoms handset (key symbol button).
To connect to Q60 control board to operate the gate:

On the wireless controller unit of intercom: Terminal Strip
Terminal 14 to Q60AR Terminal 1
Terminal 12 to Q60AR Terminal 8

I have my gates in full automatic mode, how can i make my gates stay open and not close?

The control board is set by default to be in full automatic mode. In turn, when the gates have completed their opening cycle and have paused (stayed open) for the duration you set during the initial set up, they will automatically close without you needing to press your key-fob button. In the event that you wish to keep the gates open until you press your key-fob button again to close them, simply follow the steps below:

1) From standby mode (- -), press button **A** once. PA will be seen on the screen.

2) Press button B once. **N1** will be seen on the screen.

3) Press button B a further 15 times. **P3** will be seen on the screen followed by the letters **SI**.

4) Press button D to change **SI** to **NO**.

5) Press button B a further 7 times. **SU** will be seen on the screen (save function).

6) Press and hold button C. The control board relays will double click to signify the change has been saved and the board will show (- -) on the screen (standby mode).

It, at any time, you wish to revert back to the original setting, follow steps above until **step 4** then press button C to change from **NO** to **SI** the follow remains steps as normal.

Will my gates still open in the winter when it is very cold and icy?

Climate conditions do affect how the internal mechanics operate. During periods where the outside temperature can drop as low as -20 in some parts of the UK, the motors can physically have trouble starting, just like a motor vehicle. Although the internal gears are protected by machine grease, of course anti-freeze cannot be used. If the motors do struggle to push and pull the gates and you are finding them closing short or opening short, a simple adjustment to the torque force is required to give the motors an extra helping hand. This adjustment will increase the power output to the motor to help it mobilise. During the summer season or where the temperature increases, this torque force adjustment may need to be reversed as the mechanics will be able to move a lot more freely and you may find your gates closing quicker or over closing / opening. For the Gate Motors Kit Diamond and Aster, if you are finding ice forming on the motor arms, wiping the arm with liquid paraffin will help reduce ice formation. Due to the unique way the motors are fabricated, no ice will get into the motor via the arms, however if it has settled and compacts when the arm retracts to open your gate, the ice build-up may force the arm not to fully retract.

What happens if there is a power cut?

In the event of a power cut, naturally the gate automation kit will not function. Once the automation kit has completed either a closing or opening cycle, the arms are locked into position. All Gate Motors automation kits have an emergency release system, where a special key is used to disengage the motor gearing from its mechanical arm to allow the gates to be opened manually.

Always remember to re-engage the emergency release when power has been restored. If the release is not engage, the motor(s) will fail to operate.

If the power cut is a result of a grid surge and you find the gate automation kit ceases to function once power has been restored, check the quick blow fuses on the control board to ensure these have not blown.

Do the motors need maintaining?

Unlike hydraulic motors, the Gate Motor gate automation kits are electromechanical motors and do require periodic maintenance including cable checks to make sure there are no breaks, chew marks from animals and make sure the motors are free from dirt, free from fallen branches from neighbouring trees and other obstacles that could pose as a risk to the efficient working of the gate motors.

Following practical maintenance will ensure continued uninterrupted automation service.