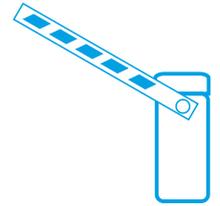


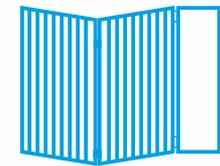
Installation, Operation & Maintenance Manual



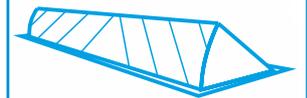
Automatic Barriers



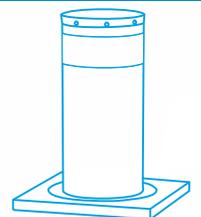
Auto Sliding Gates



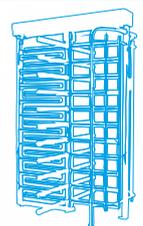
Auto Bi-Fold Gates



Auto Rising Kerbs



Auto Rising Bollards

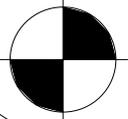
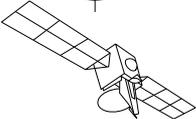
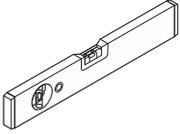
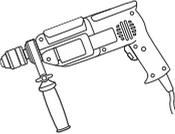
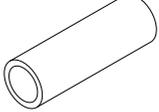
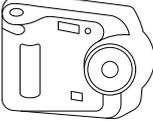
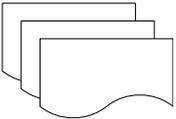


Turnstiles





Automatic Raise Arm Barriers

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Automatic Raise Arm Barriers

Introduction and Warnings

This equipment is part of a large range of traffic flow products. They are designed to be easy to install, as all settings and internal wiring have been completed in our factory. Any of the instructions in this manual should only be carried out by a qualified service engineer or a competent person.

The steps outlined must be completed before the power is turned on to prevent accidents.

The following information is a guide only, and whilst we have made every effort to be accurate and correct there may be printing errors which we cannot be held responsible for.

With a correct installation you can expect to enjoy many years of reliable service from this product, we do however recommend that the product has a bi-annual service carried out by a qualified engineer. Please contact our service department to obtain a quote. As we manufacture the products we are best suited to care for your equipment.

Important Safety Notice



Automatic barriers are designed to Control the flow of vehicular traffic only. It can be dangerous to allow the passage of pedestrians and any other self-powered animal or device to utilise this method of access without appropriate warnings and or signage.

It may be necessary for the end user of this product to provide an alternative, safe method of access to cater for the previously mentioned categories.

The end user should fit all necessary signage and warning notices to either side of the gate, which should be visible and clear from all directions of approach.

The product that was shipped to you was designed with a control program to protect all categories from harm or affect this however is only a fail safe and should not be modified or tampered with by any unauthorised person not sanctioned by the manufacturer.

Please sign and date below to say that you have read and understood this notice before ANY installation work:

/ /20

The "Warnings" leaflet and "Instruction booklet" supplied with this product should be read carefully as they provide important information about safety, installation, use and maintenance.

Scrap packing materials (plastic, cardboard, polystyrene etc) according to the provisions set out by current standards. Keep nylon or polystyrene bags out of children's reach.

Keep the instructions together with the technical brochure for future reference.

This product was exclusively designed and manufactured for the use specified in the present documentation. Any other use not specified in this documentation could damage the product and be dangerous.

The Company declines all responsibility for any consequences resulting from improper use of the product, or use which is different from that expected and specified in the present documentation.

Do not install the product in explosive atmosphere.

The construction components of this product must comply with the European Directives noted in this manual and subsequent amendments. As for all non-EEC countries, the abovementioned standards as well as the current national standards should be respected in order to achieve a good safety level.

Information on using this manual



- Read all information thoroughly
- Pay attention to all safety advice
- Be aware of the symbols (shown above right and above left) as they have different meanings. One is an information symbol, the other a warning.
- There are many artists impressions of the product in this manual you should refer to the images as a guide only. **Professional CAD** drawings should be used as a reference drawing and nothing else. As before every effort has been made to be 100% accurate in this manual but we cannot make any guarantees.
- As we constantly innovate our products we may change the quoted spec and any other details that have been documented in this manual so you should always refer to the supplier to see if the manual that was shipped with your product is the latest edition.
- As with all electrical installations you should use a qualified electrician and obey all of the latest laws and regulations.
- Be sure to fill out and complete **ALL** paperwork where instructed as this manual is the equipments log book and maintenance manual.

The Company declines all responsibility for any consequences resulting from failure to observe Good Technical Practice when constructing closing structures (door, gates etc.), as well as from any deformation which might occur during use.

The installation must comply with the provisions set out by the European Directives and subsequent amendments.

Disconnect the electrical power supply before carrying out any work on the installation. Also disconnect any buffer batteries, if fitted.

Fit an omnipolar or magnetothermal switch on the mains power supply, having a contact opening distance equal to or greater than 3mm.

Check that a differential switch with a 0.03A threshold is fitted just before the power supply mains.

Check that earthing is carried out correctly: connect all metal parts for closure (doors, gates etc.) and all system components provided with an earth terminal.

Fit all the safety devices (photocells, electric edges etc.) which are needed to protect the area from any danger caused by squashing, conveying and shearing, according to and in compliance with the applicable directives and technical standards.



Automatic Raise Arm Barriers

Warranty & Limitations

Warranty and Limitations of Liability

WARRANTY

Our exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by PFL.

PFL MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. PFL DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

PFL SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of PFL for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL PFL BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS PFL'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

Schneider shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, Schneider will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

Schneider/PFL shall not be responsible for the user's programming of a programmable product, or any consequence thereof.



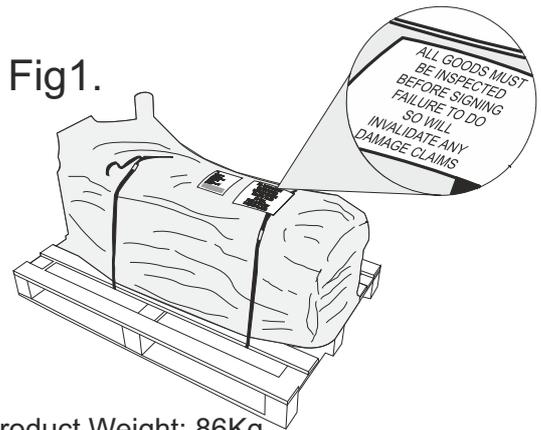
Automatic Raise Arm Barriers

Delivery, Movement & Transportaton

The barrier should ALWAYS! be moved with care and attention. The products are very heavy individually as well as a whole. You should not attempt to move this or any other products by unapproved handling methods.

1. The barrier will be strapped to a pallet.
2. This should be moved using a fork lift truck or something that is designed to handle/move such items.
3. The Aluminium pole will be wrapped and packaged separately and might be delivered as a separate item.
4. If no equipment is available to unload the pallet following correct product handling guidelines then advice is available for separating the package to unload individually.
5. The barriers have a high centre of gravity please take care that these machines do not fall over when moving them about on site.

Fig1.



Product Weight: 86Kg
 Pallet Weight: 21Kg
 Std Pole Weight: 1.11Kg/metre
 HD Pole Weight: 2.24Kg/metre
 Pallet Dimensions: 1200mm x 1600mm x 460mm

The manufacturer will use a qualified transport company to deliver the product conforming to the necessary regulations as detailed below:

- All drivers are qualified
- All drivers are tested once yearly
- All drivers carry risk assessments and method statements (available on request)
- They are controlled under law to conform as there are no trade regulation standards to comply with



Health and safety Considerations:

Moving Goods Safely (MGS) is a national project involving both the Health and Safety Executive (HSE) and Local Authorities (LA) working in partnership. The project aims to reduce injuries and ill-health arising from the movement of goods from supplier through haulier to the recipient and end user including any home deliveries. The project will focus upon the delivery and collection of goods and the hazards this generates. It covers the main areas that cause the majority of injuries and ill-health to workers, including:

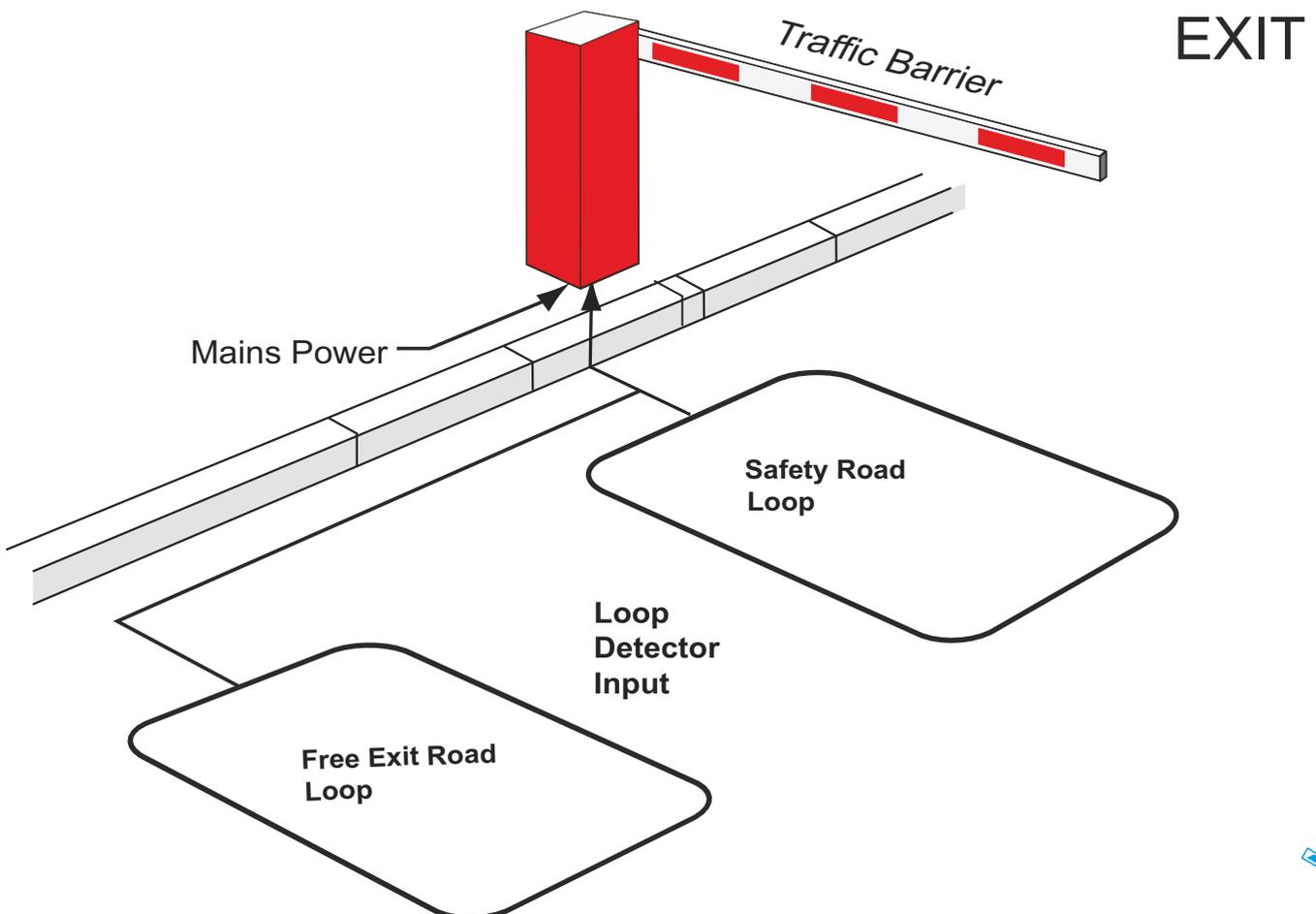
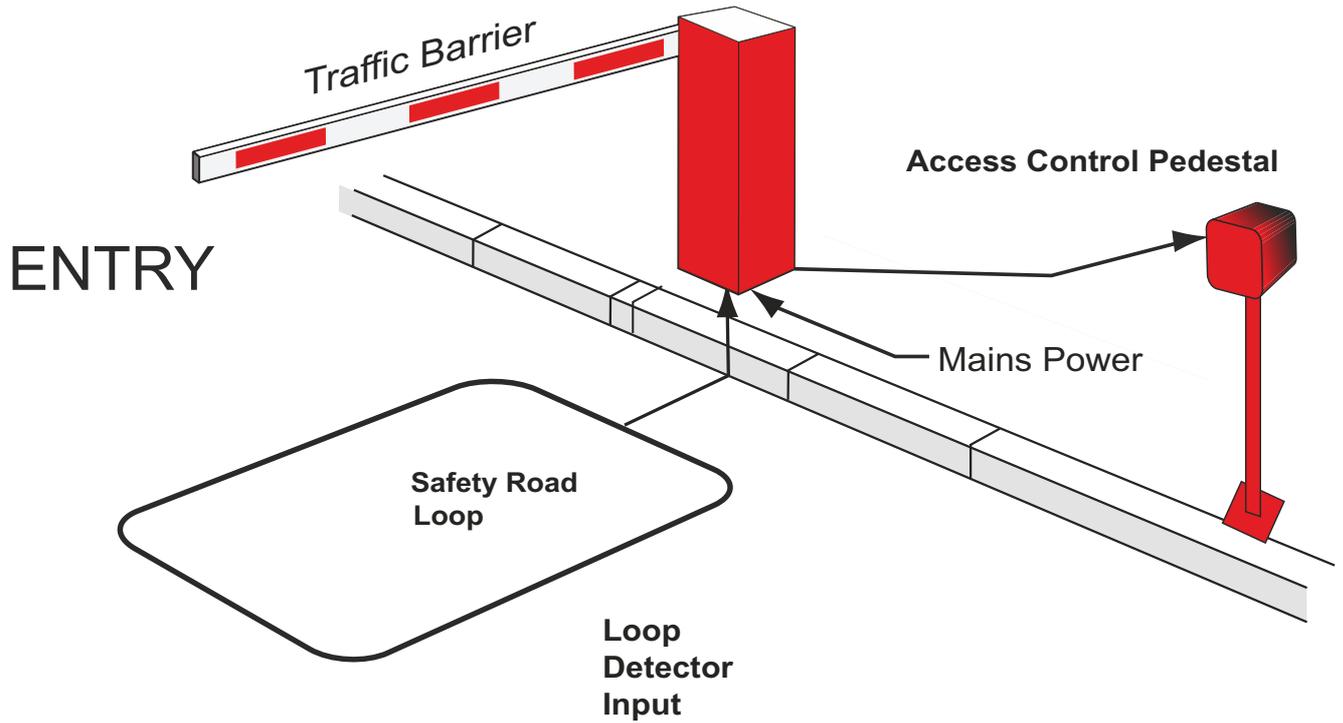
- Workplace transport;
- Slips & trips, and;
- Musculoskeletal disorders (MSD).

The movement of goods presents us, as health and safety regulators, with the challenge of dealing with a huge variety of issues. The commercial organisations involved within the movement of goods are diverse including haulier, third party logistics providers, pallet networks, retailers etc, with some very large companies, thousands of small businesses and the self-employed. The movement of goods is more than just trucks on the road with a large proportion of accidents happening at the delivery/collection sites that are often not directly under the control of the company making the delivery or collection. Communication and cooperation problems can arise due to the many organizations involved in the movement of the goods, and this can also lead to difficulties in effectively managing health and safety.

(Source H&S Executive UK 2008)

Automatic Raise Arm Barriers

Barrier Setup

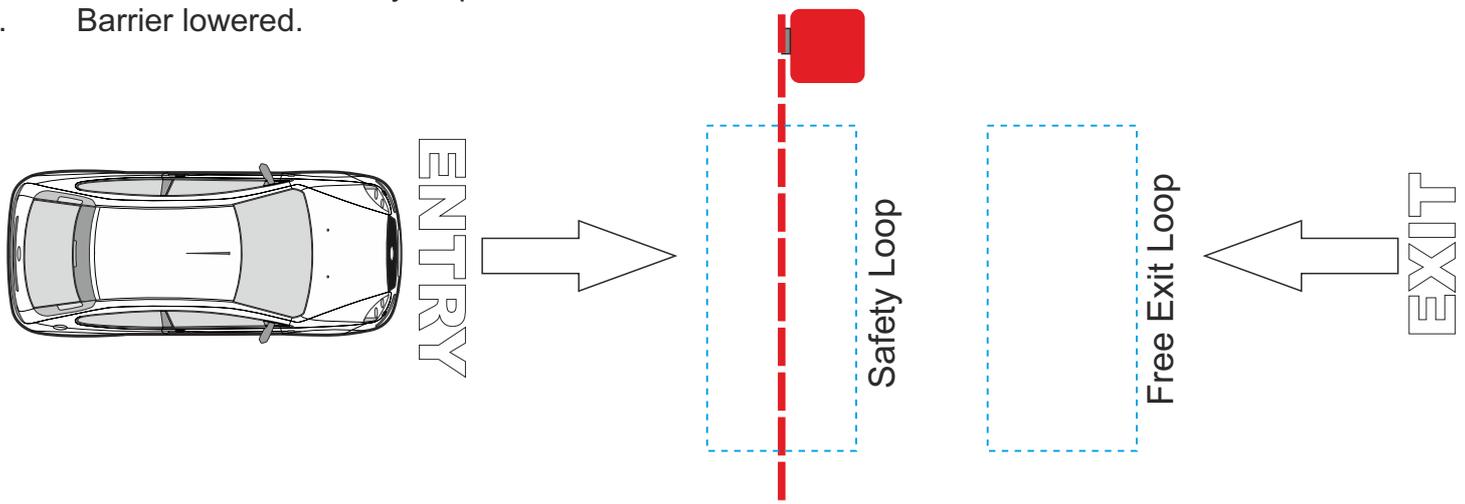


Automatic Raise Arm Barriers

Barrier Sequences Explained

Standard Barrier Entry "One Way" Operation

1. Barrier raise requested (keypad/swipe card etc).
2. Barrier Raised.
3. Barrier "No Passage" timer started.
4. Car moves onto safety loop (free exit loop inhibited, no passage timer cancelled).
5. Car moves off of safety loop.
6. Barrier lowered.



B2A SEQUENCE

Where B is the safety loop, under the barrier, and A is the free exit loop the other side of the barrier.

B2A (Enter Site)

1. Barrier raise requested (keypad/swipe card etc).
2. Barrier Raised.
3. Barrier "No Passage" timer started.
4. Should "No Passage Timer" elapse before safety loop seen, go to 9.
5. Car moves onto safety loop (free exit loop inhibited, no passage timer cancelled).
6. Car moves off of safety loop.
7. Car moves onto free exit loop.
8. Car moves off of free exit loop.
9. Free exit loop active again.
10. Barrier lowered.

A2B (Leave Site)

1. Car moves onto free exit loop.
2. Barrier Raised.
3. Barrier "No Passage" timer started.
4. Should "No Passage Timer" elapse before safety loop seen, go to 9
5. Car moves onto safety loop (no passage timer cancelled).
6. Car moves off of safety loop.
7. Safety Close timer started.
8. Safety Close timer elapses.
9. Barrier lowered.

Automatic Raise Arm Barriers

General Specification

Specification:

CE Approved (Conforms to BS6571)

Maximum Boom length:

6.0 Meters

Boom Diameter:

86mm x 60mm Oval

Opening/closing time:

3.0 – 8.0 Seconds

Drive unit:

3 Phase Motor & Wormed Gearbox

Power Supply:

Single Phase 230v, 50Hz, 10 Amps

Finish:

Chromate Wash and Polyester Powder Coated.

5 year paint life

Cycles:

100% Continuous Duty Rating

Dimensions:

382mm x 359mm x 980mm (centre of pivot)

Optional Extras:

- Folding bottom skirt up to 6.0m
- Hi-Bar Skirt up to 4.5m
- Articulated Arm (Low Ceilings)
- Pogo tip support
- Boom lights
- Magnetic lock
- Lorry height Stop/No Entry signs
- Warning sounder/Flashing Beacon
- Sensing safety edges

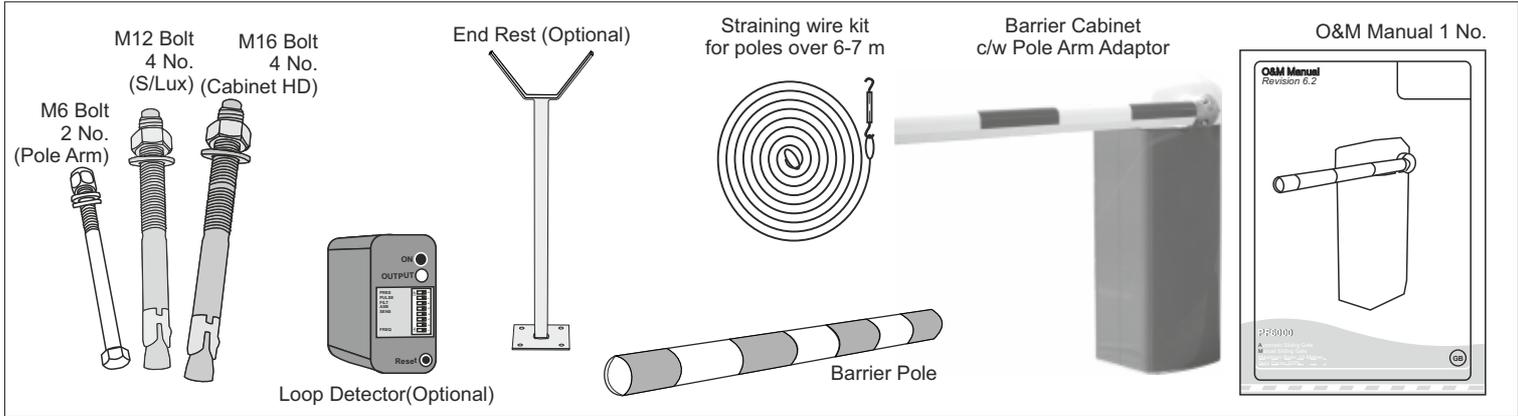
Options for access control:

- Keypad
- Proximity Cards
- Voice/Video Intercom Access
- Token Acceptors
- Remote Control Fobs
- Key switch
- Heavy duty pillar block bearings
- Re-movable Cast Aluminium hood
(non rusting)
3 Phase motor - Single Phase Supply
(guaranteed reliability)
- Door mounted control panel
(for ease of access and adjustment)
- Adjustable speed, acceleration and deceleration
- No springs required -
(no balancing or adjustment necessary)
- Motor & gearbox -
(no pulleys or belts required)
- Plug in loop detectors bases for single channel safety and entry/exit control.
- Encoder systems.
- Feig Logic Control Panel -
(c/w fault diagnostic on screen display)
- Adjustable acceleration and deceleration
- Manual Override
(in case of power failure)
- Comes With M16 anchor shield bolts
(no cabinet mounting plate required)

Automatic Raise Arm Barriers

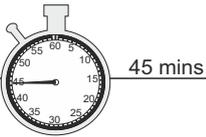
Component Identification & Notes

You should check that you have received the following in your order as they are referred to throughout this manual (note this can change per barrier spec i.e. manual components are different from automatic):



The numbers in the text document below relate to the drawings below.

1. When delivered, the barrier will be on a wooden pallet. the barrier pole will be delivered separately at the time of print it might be delivered as two separate consignments. Check before you sign!
 2. Lower the barrier onto the plinth and visually align. **Make sure that you have pulled all cables through the ducting before bolting down and that the duct is in the centre of the base plate!**
 3. Using one M12/16 fixing, bolt down the main cabinet using one of the holes.
 4. Now make sure that the barrier is now aligned perfectly, continue to bolt down through the other holes using the remaining M12/16 bolts see below.
- Now move on to step 5



1.

2.

Top View of barrier perfectly aligned with rest of end post

Side View of barrier bottom of the pole arm is aligned with the top of the catch post where the pole comes to rest

3.

Drill using a 12/16mm hole using a SDS masonry drill bit.

Clean out the hole and then insert one M12/16 bolt nut end uppermost hammer home until the washer meets the surface then tighten the nut just hand tight

4.

Ducting through base with wiring coming through centre of duct

Picture showing bolt once it has been put in.

Drill and clean out the other holes and insert the other bolts, nut end uppermost hammer home until the washer meets the surface then tighten the nut fully

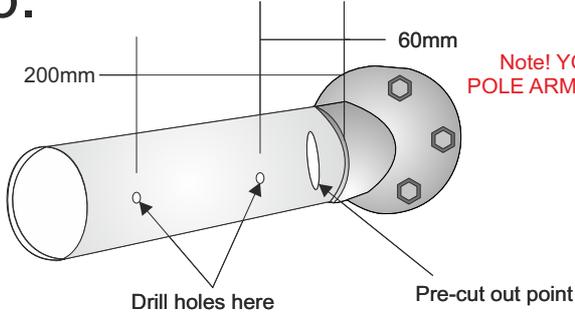
Automatic Raise Arm Barriers

Pole Arm Adaptor Installation

45 mins



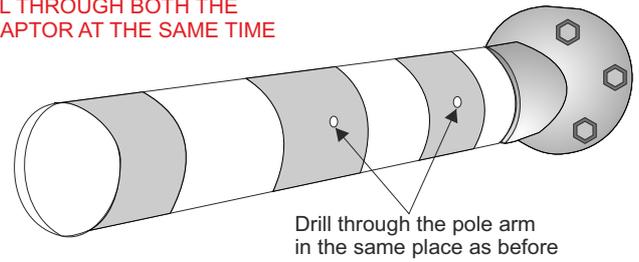
5/6. Picture shown is without pole for illustration purposes



Note! YOU CAN DRILL THROUGH BOTH THE POLE ARM AND THE ADAPTOR AT THE SAME TIME

Pictured above is a domed pole arm adaptor the indicators show where you should drill the 6mm holes using a standard 6mm drill bit, drill all the way through from one side to the other.

7/8. Picture shown is now with a pole



Pictured above is a the pole arm adaptor(left) now covered with a pole (this can be varying lengths) you need to now use the M6 bolts supplied to attach the pole arm.

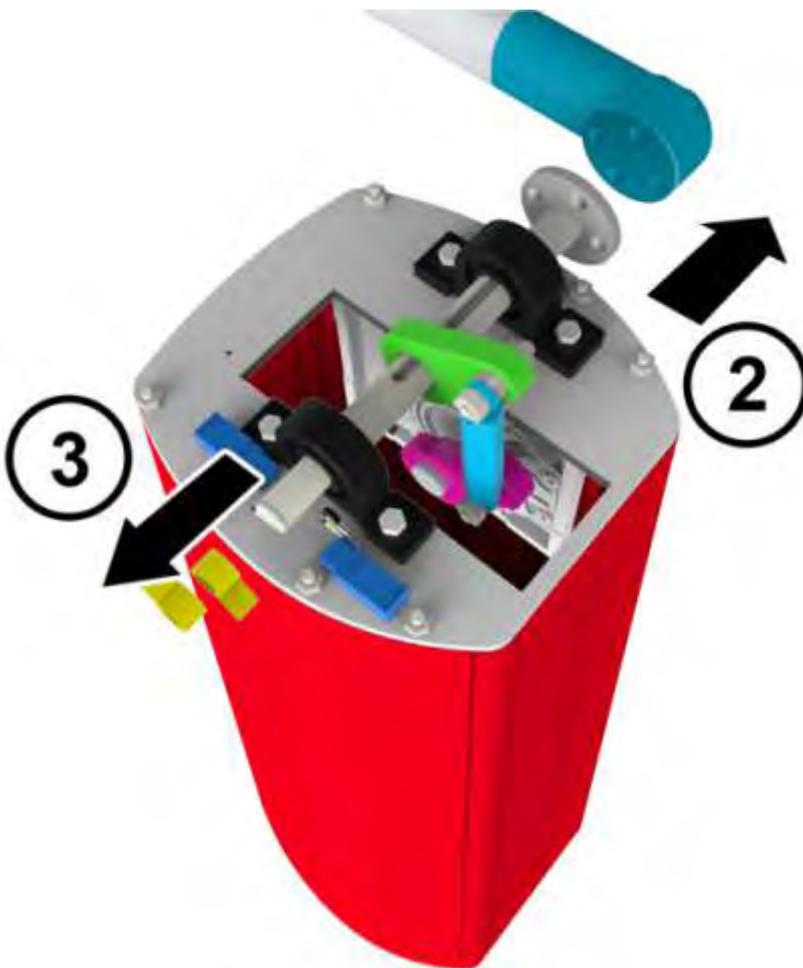
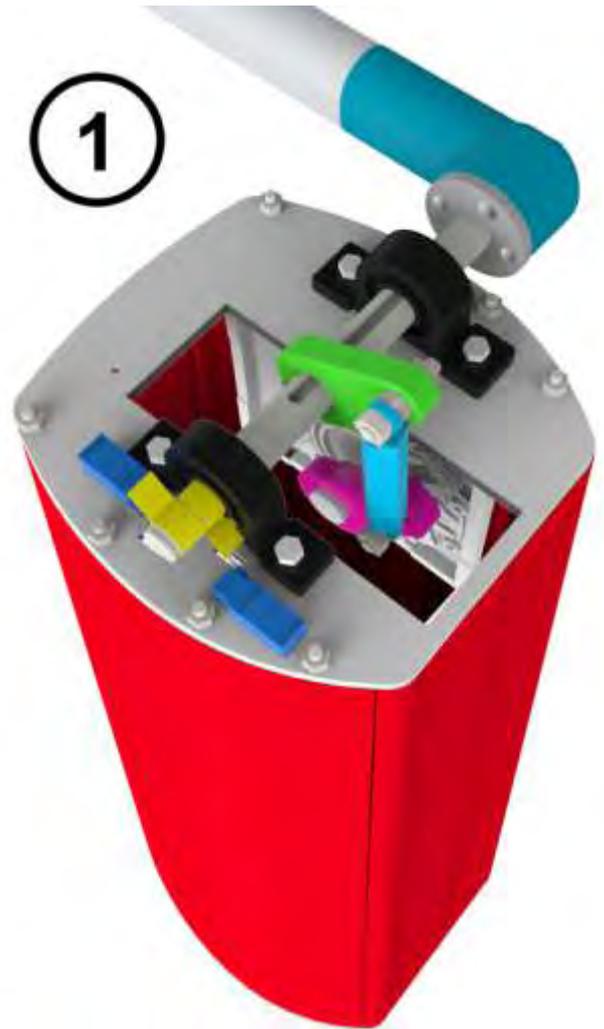
5/6. Now it is time to fit the pole to the barrier, you must drill through the pole **AFTER** you have slid it onto arm using a 6mm HSS drill bit. The holes should be drilled at 60mm then 200mm from the knuckle as shown above. These measurements have been supplied to maintain the optimum strength of the pole arm adaptor. Also please note that the pole is a precise fit so may need a degree of manipulating onto the **7/8.** When all holes have been drilled use the M6 bolts supplied to secure the pole to the adaptor, if you have any accessories such as a mag lock or boom lights connect these before securing the pole. Once this is done manually wind the pole up and down to check operation and alignment. Now connect all loops, power and access control using the wiring diagram. For any other specific wiring access control wiring details please contact your supplier. Just remember to check all connections and the barrier is earthed

	<p>Domed Oval Pole Arm Adaptor</p>	<p>HD Round Pole Arm Adaptor</p>
	<p>Domed Round Pole Arm Adaptor</p>	
	<p>Flat Round Pole Arm Adaptor</p>	

Automatic Raise Arm Barriers

Changing Barrier Handing

-  Top arm
-  Input shaft
-  Turnbuckle
-  Strikers
-  Limit switches
-  Polearm



1. Remove lid
2. Remove polearm
3. Remove/loosen strikers

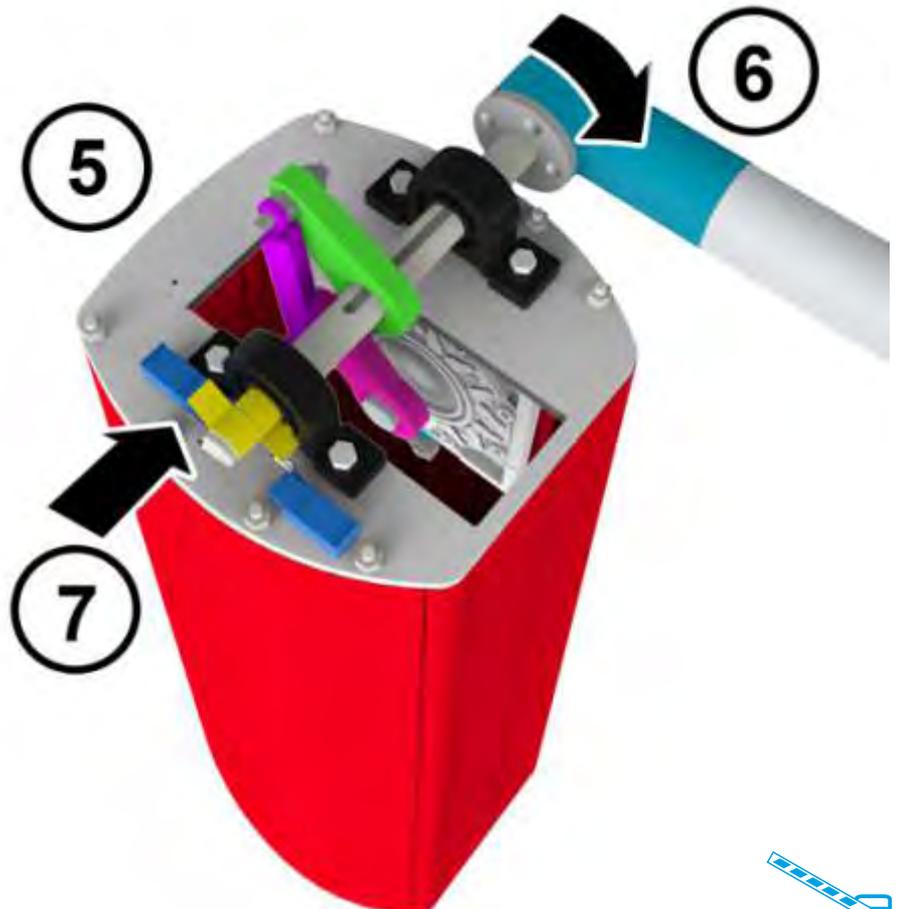
Automatic Raise Arm Barriers

Changing Barrier Handing



4. Remove top arm bolts and rotate shaft to new correct position*
5. Turn motor so that input shaft rotates to correct position*
6. Flip polearm to new position and re-attach to barrier

7. Re-attach strikers so limit switches are clicked at maximum arm positions when up and down

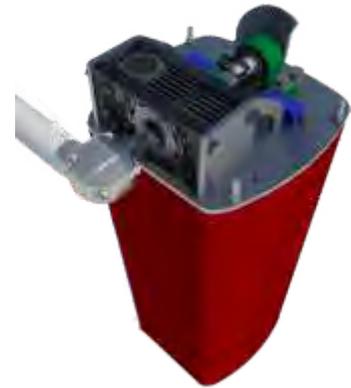


Automatic Raise Arm Barriers

Changing Barrier Handing



Right Handed Barrier



Left Handed Barrier

1. Ensure Power to Barrier is Isolated
2. Barrier to be set with pole arm adaptor in down position (Horizontal)
(if not fully down, use hand wind to lower until mechanical stop touches top plate)
(keyway in top shaft should be facing up)
3. Remove Circlip
4. Take off 'Mechanical Stop'
5. Reverse & Refit 'Mechanical Stop'
6. Replace Circlip
7. Remove 'Pole Arm Adaptor' and refit in reversed position
8. Change Limit Switch Connects

	7	RAISE LIMIT (COM)	
	8	RAISE LIMIT	
	9	LOWER LIMIT (COM)	
	10	LOWER LIMIT	

7 to 9 & 9 to 7

8 to 10 & 10 to 8

9. Reverse Motor Connections

	22	MOTOR WIRE	
	23	MOTOR WIRE	
	24	MOTOR WIRE	

23 to 24 & 24 to 23

10. Adjust limit strikers to new position
11. Switch on power and test barrier (keeping hands clear of moving parts)
12. Finally adjust limit strikers as required for barrier in open & closed position

Automatic Raise Arm Barriers

Manual Release Guide

Please use the following instructions to operate the barrier manually, you **MUST** isolate the barrier and opened the cabinet door:

Do not force the motor at any point please be aware because of the gearing it does take a while to raise/lower manually



fig 1.

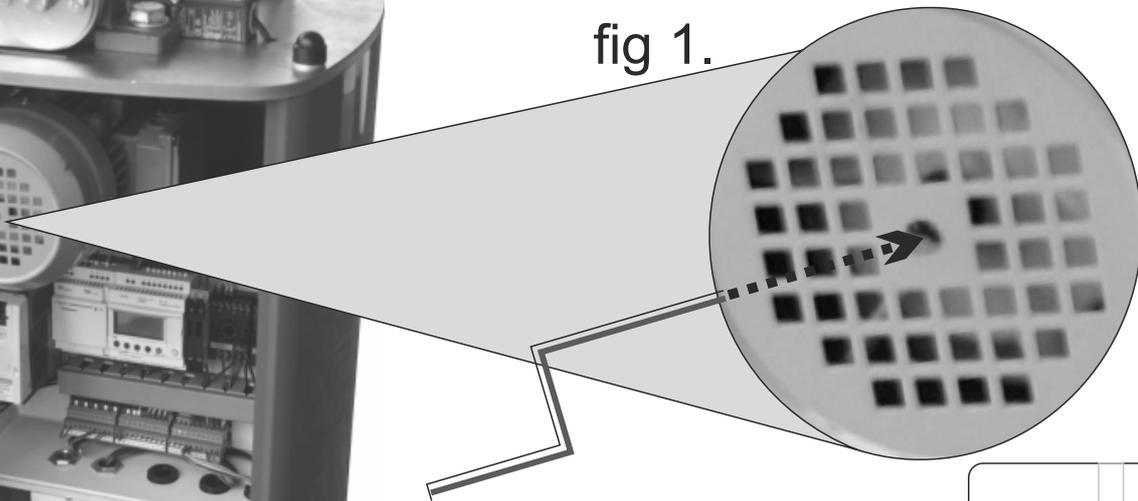
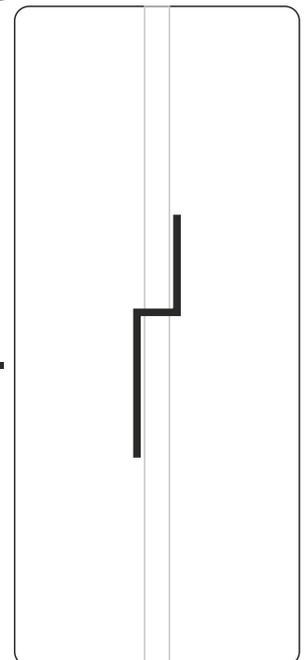


fig 2.



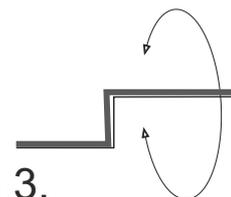
1. Locate the motor which will be suspended from the top of the cabinet (main picture)

2. The Manual release handle is in a holder, which is located on the back of the cabinet door (fig 2.). This is also known as the “crank handle”

3. Insert the longest end of the manual release handle into the central hole in the mesh cowling (fig 1.)

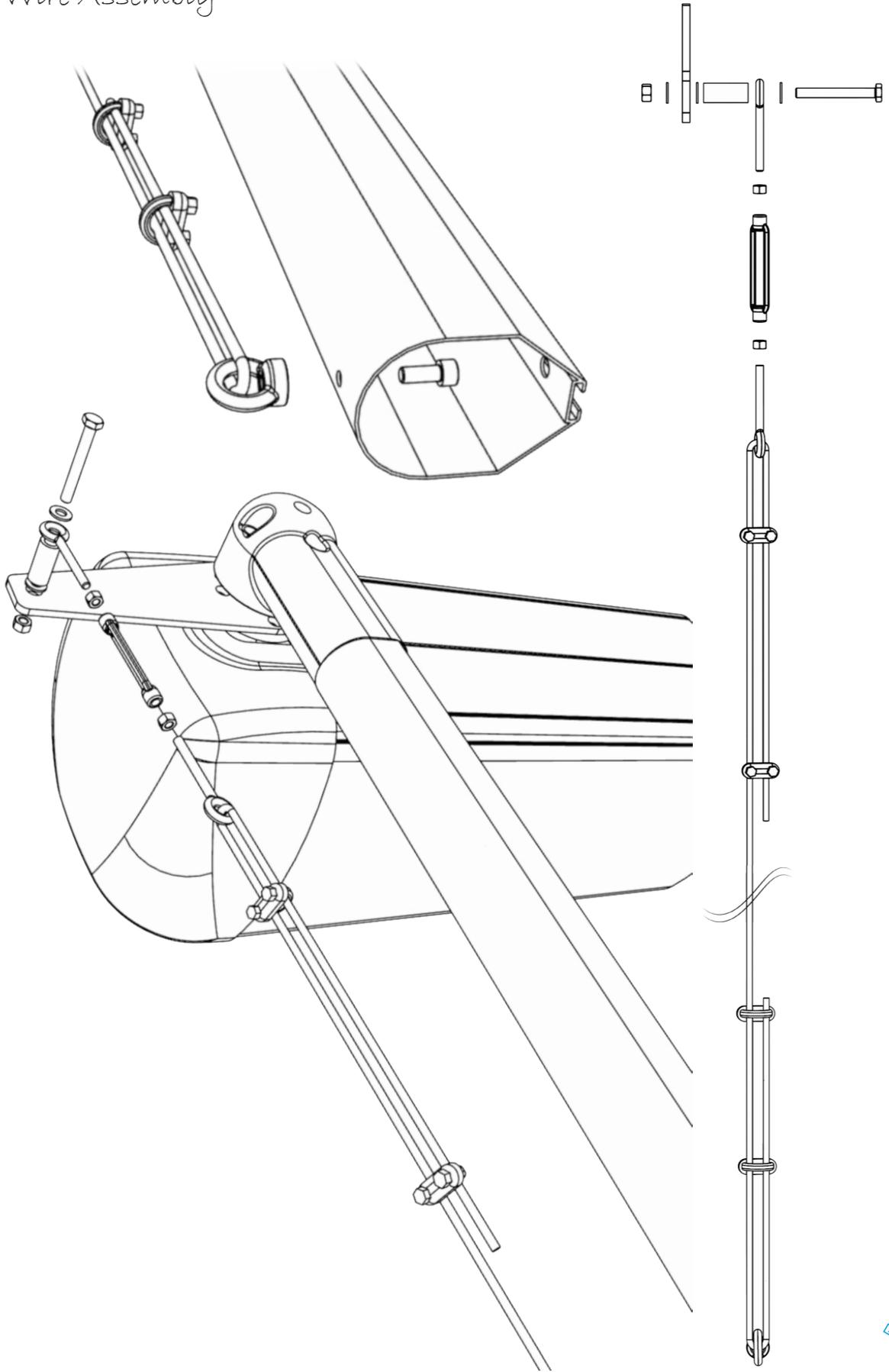
4. With the manual release handle inserted wind to the left or the right to open/close the barrier. Please note this can change depending on the handing of the barrier (fig 3.)

fig 3.



Automatic Raise Arm Barriers

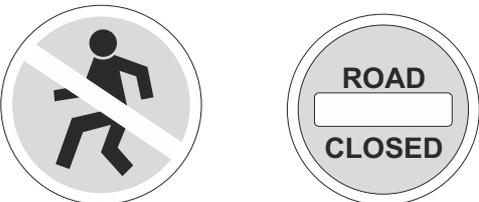
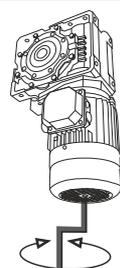
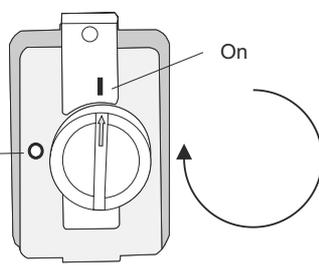
Straining Wire Assembly



Automatic Raise Arm Barriers

First Operation Manoeuvres

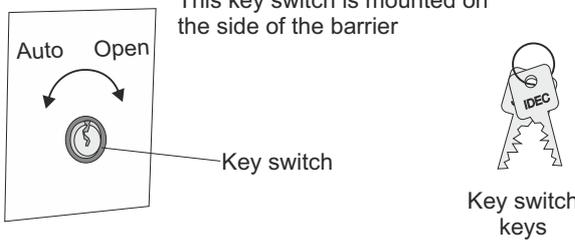
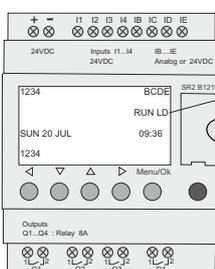
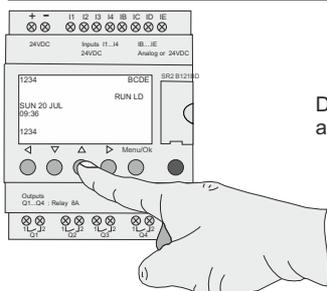
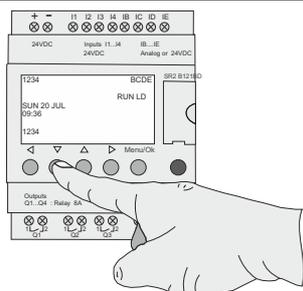
1. Before attempting the steps outlined below please obey common sense and make sure that you have closed the passage the barrier will inhibit provided a diversion and informed site inc pedestrians.
2. Follow the manual release guide in this manual and make sure the barrier moves un-hindered by inserting the winding handle and turning to make the barrier open and then close.
3. If the above step is ok then proceed to close the barrier using the manual method and then power on using the isolator switch as shown (if fitted).
4. Now the cabinet door must be closed for the barrier to work automatically.

<p>1.</p> 	<p>2.</p>  <p>When the Key is inserted fully into the centre hole turn clockwise to open and anti-clockwise to close. After this you must remove the manual release handle.</p>
<p>3.</p>  <p>On Off</p> <p>If an isolator is fitted turn the knob clockwise to power on the barrier.</p> <p>(not fitted as standard optional)</p>	<p>4.</p>  <p>Close the barrier door as this action activates the safety door switch if the switch is not activated the barrier will not run.</p>

There are many options to operate the barrier as it is dependant upon which type of access control you have connected. However there is a standard way to operate the barrier by using the key switch and the PLC . Instructions are assisted by pictures below.

1. Picture shown below is the key switch which is located on the outside of the barrier cabinet (it will always be on the opposite side to the barrier arm, also picture shows the key switch keys.
2. To move the barrier arm using the PLC first make sure the screen says "RUN LD" if it does not follow the troubleshooting guide on page 11 when the screen says "RUN LD" follow below.
3. To make the barrier move upwards or to "open" press the up arrow.
4. To make the barrier move down or to "close" press the down arrow.

Please note that the above 2 manoeuvres will not work if there is something in the way of photocells or on the loops.

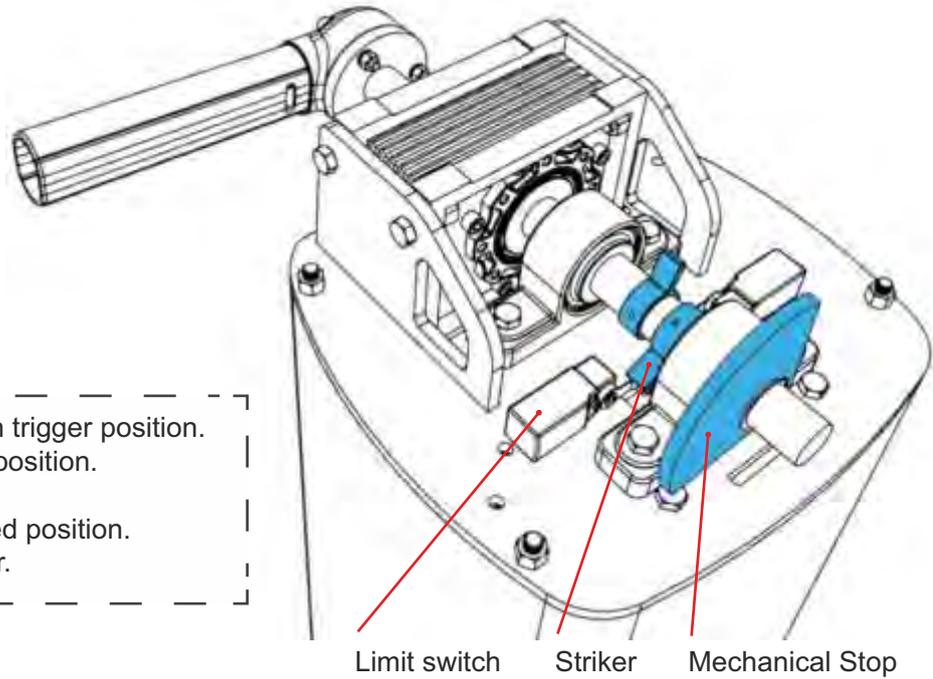
<p>1.</p>  <p>Auto Open</p> <p>Key switch</p> <p>Key switch keys</p>	<p>2.</p>  <p>Display showing run mode</p>
<p>3.</p>  <p>Drawing showing the "UP" arrow being pressed</p>	<p>4.</p>  <p>Drawing showing the "DOWN" arrow being pressed</p>

Automatic Raise Arm Barriers

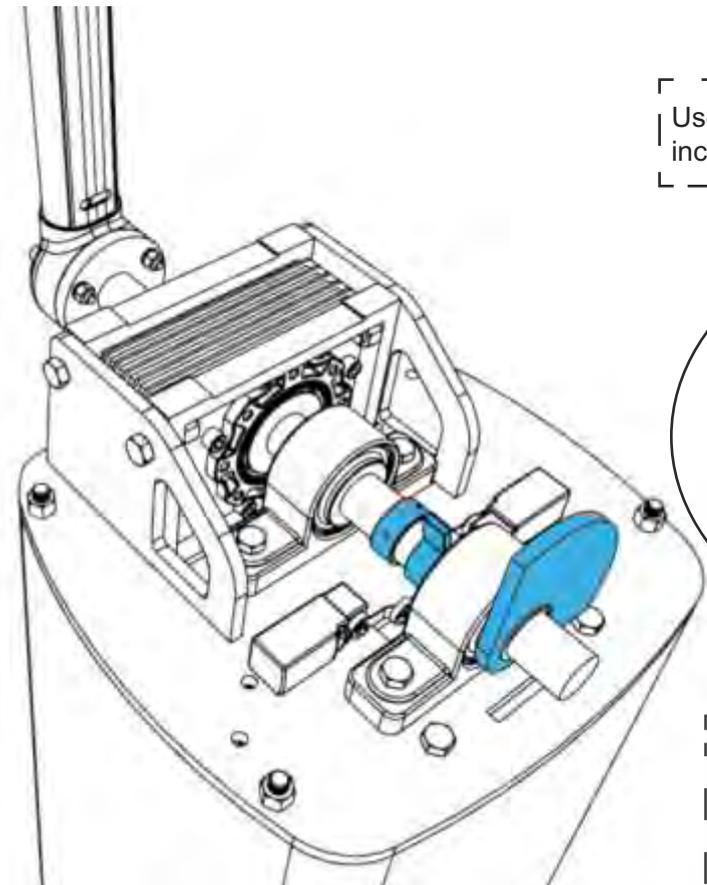
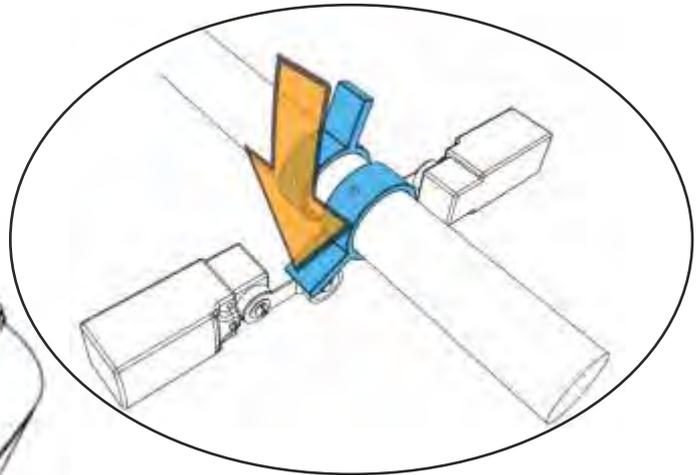
Limit Switch Adjustment

To adjust Upper limit switch trigger position.

- Set barrier to closed position.
- Loosen limit striker.
- Move striker to desired position.
- Re-tighten limit striker.



Use a rubber mallet to advance the striker in small increments to fine tune the position of the pole arm.



To adjust Lower limit switch trigger position.

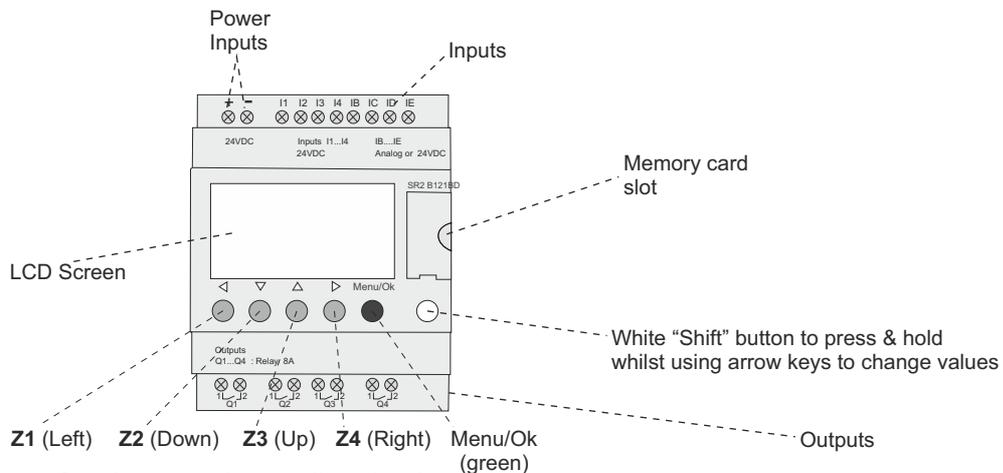
- Set barrier to Open position.
- Loosen limit striker.
- Move striker to desired position.
- Re-tighten limit striker.

Warning! Damage to gearbox and/or motor can occur if limit striker is improperly set.
 The motor will continue to spin the gear box if the limit switch is not properly engaged, regardless of the mechanical stop position.

Automatic Raise Arm Barriers

PLC Usage Explained

 **The barrier has a new program allowing you to select different modes of operation.**



New Barrier Program

Safety Delay – To delay barrier after safety loop or photocell activation

- Press Menu/Ok Button
- Scroll to Parameters
- Press Menu/Ok button
- Scroll to TT1 – Amend time to required value

No Passage Time Out – Barrier will auto close after receiving and open signal

- Press Z1 (left arrow) (opens menu)
- Hold Z2 (down arrow)
- This will inform if no passage on or off

To change time of this value:

- Press Menu/Ok Button
- Scroll to Parameters
- Press Menu/Ok button
- Scroll to TT2 – Amend time to required value

24 Hour Timer – Enables the barrier to be held open or closed automatically during set times

- To enable or disable 24hr timer:
- Press Z1 (left arrow) (opens menu)
- Press Z4 (right arrow)

To change times of this value:

- Press Menu/Ok Button
- Scroll to Parameters
- Press Menu/Ok button
- Scroll to H1 – Amend time to required value
- Note there is also a H2 value timer that can be used also

Free Entry/Exit Timer – You are able to control to when this feature is allowed using a time value

To change time of this value:

- Scroll to Parameters
- Press Menu/Ok button
- Scroll to H3 – Amend time to required value (set to 24hrs 7 days a week as standard)
- In this value you can amend time and days which the free entry/exit is active

Safety Close – This value can be turned on or off e.g. push button only operation required

- Press Z1 (left arrow) (opens menu)
- Hold Z3 (up arrow)

Automatic Raise Arm Barriers

PLC Usage Explained

3 Configuration and Operation

Various aspects of the software can be configured to customise its operation for particular installations. Some features are controlled via the Zelio “parameters” menu, whilst other features are controlled via a custom menu system. The sections below describe how to access these two configuration systems in general terms, and provides a description of each of the configurable parameters.

3.1 Run and Stop modes

The Zelio PLC has two modes: **run mode** and **stop mode**. These are selected via the Zelio front panel by pressing the MENU/OK button, scrolling with the arrow keys to RUN/STOP and pressing MENU/OK again. Run is the normal operation mode. When Stop mode is selected, the PLC will ignore its inputs and no outputs will be activated.

Note: When **run mode** is selected via the menu, the choice of initialising the non volatile memory in the PLC is given. *If the option to initialise the memory is selected (“WITH NONVOLAT INI”), changes made to the configuration using the custom menu system described in section 3.4 will be reset to default values. However, changes made via the parameters menu as described in section 3.2 **will not** be reset.*

It is suggested that all normal configuration be done in run mode. This is because the parameter menu is somewhat simplified in this mode, and the custom menu system is only available when in this mode.

3.2 Configuring parameters via the parameter menu

Only an overview of using the parameters menu is given here. For details consult the Zelio documentation, as the parameters menu is a standard feature of the Zelio PLC. Only editing the parameters menu in run mode is described.

3.2.1 Accessing the parameters menu

The parameters menu is accessed by pressing the MENU/OK button, scrolling with the arrow keys to **CONFIGURATION**, and pressing MENU/OK again. Once this is done the first parameter (normally **H1**) will be displayed, with the cursor (i.e. the flashing character) positioned near the top left of the screen on the parameter number. Whilst the cursor is in this position (*and only whilst in this position*), the up arrow will then cycle forwards through the list of available parameters (i.e. H1, H2, TT1, TT2 ... TT7) and the down arrow will cycle back. As this is done, the screen will change to show the relevant information for that parameter. The diagram below shows a typical screen shot for clock parameter H1, with the bold character showing the cursor position:

```
H1 ----4--  
B  
H:M ON 12:16  
H:M OFF 12:18  
- 5 -
```

The right and left arrows will move between the various parts of the screen that can be altered (see details below). When the cursor is in any position other than the top left, the up and down arrows alter the value that the cursor is currently over.

After altering a value with the up and down arrows, pressing MENU/OK or trying to move to a different parameter (by going to the top left and pressing up or down) will result in a message asking for confirmation of the changes – use the

Automatic Raise Arm Barriers

PLC Usage Explained

up and down arrows and the MENU/OK key to select YES or NO.

Note: The parameters menu may be accessed in both run and stop modes. However, it is suggested that it normally be done in **run mode**. This is because a number of extra parameters are listed when in stop mode which are not configurable. These make it more difficult to access the important parameters.

3.2.2 Altering clock parameters (Hn)

Clocks are used to set the days and times that certain things should happen – for example days and times at which the gate should open automatically. The purpose of each clock is described in section 3.3. This is a brief description of how to set a clock – for more details please refer to the Zelio documentation. A typical clock screen when edited in run mode is shown below. The shaded areas are the areas to which the cursor (the flashing character) may be moved with the left and right arrows. Each of these may be altered with the up and down arrows.

H2 -1--4--

B

H:M ON 12:15

H:M OFF 14:00

The table below describes what each of these fields means:

H2 Indicates which clock is currently being displayed (H2 here).

Using the up and down arrows here will switch to editing another clock or timer. If any values for this clock have been altered you will be asked to confirm your changes.

B Each clock has four “channels” called A, B, C and D. Each channel specifies an on and an off time, and can apply to any combination of days of the week (see below). This parameter selects which channel is currently being displayed for editing.

-1--4-- This displays which days of the week the currently selected channel is active. 0 is Monday and 6 is Sunday, so in the example at left the channel would be active for Tuesday and Friday only. Each day may be selected with the left and right arrows and turned on and off with the up and down arrows.

H:M ON 12:15 This specifies the On time for the currently selected channel.

- 6 -

H:M OFF 14:00 This specifies the Off time for the currently selected channel.

3.2.3 Altering Timer parameters (Tn)

Several timers are used to control aspects of the gate operation – these are listed in section 3.3. This is a brief description of how to set a timer – for more details please refer to the Zelio documentation.

A typical timer screen when editid in run mode is shown below. The shaded areas are the areas to which the cursor (the flashing character) may be moved with the left and right arrows. Each of these may be altered with the up and down arrows.

TT5 TIMER A

RT5 T5t= 00.00

T5

t=00.20 M:S

Automatic Raise Arm Barriers

PLC Usage Explained

The table below describes what each of these fields means:

TT5 Indicates which timer is currently being displayed (T5 here).

Using the up and down arrows here will change screen to another clock or timer. If the value for this timer has been altered you will be asked to confirm your changes.

t=00.20 The value in minutes and seconds for the current timer.

3.3 List of clock and timer parameters

Each of the editable clock and timer parameters are listed below.

Parameter Default

value

Description

H1: Open/
close clock

(1)

All off Sets the times at which the gate will automatically open and close. If opened by the clock in this way, it will not automatically close after a vehicle has passed through.

H2: Open/
close clock

(2)

All off As above – in case four channels (one clock) is not enough.

H3: Open/
close clock

(3)

All off As above – in case eight channels (two clocks) are not enough.

- 7 -

Parameter Default

value

Description

H5: Loop
disable clock

All off Sets times at which the free exit loop is **disabled**.

For example, to disable free exit from 1.00 am to 5.00 am on Saturdays and Sundays, set H2 to be active on days 5 and 6 with an ON time of 01:00 and an OFF time of 05:00

T1: Auto
close timer

Automatic Raise Arm Barriers

PLC Usage Explained

5 seconds Sets the delay before the gate closes after the photocells are clear. This is only active if Auto Close is enabled (see section 3.4.1). The exact behaviour is affected by the early close option – see section 3.4.2.

T2: No
passage
timer

45 seconds If auto close is enabled and the gate is opened but no vehicle passes through, the gate will close automatically after this period.

T3:
Pedestrian
timer

4 seconds This determines how far the gate opens in pedestrian passage mode – the motor will run for this many seconds and then stop.

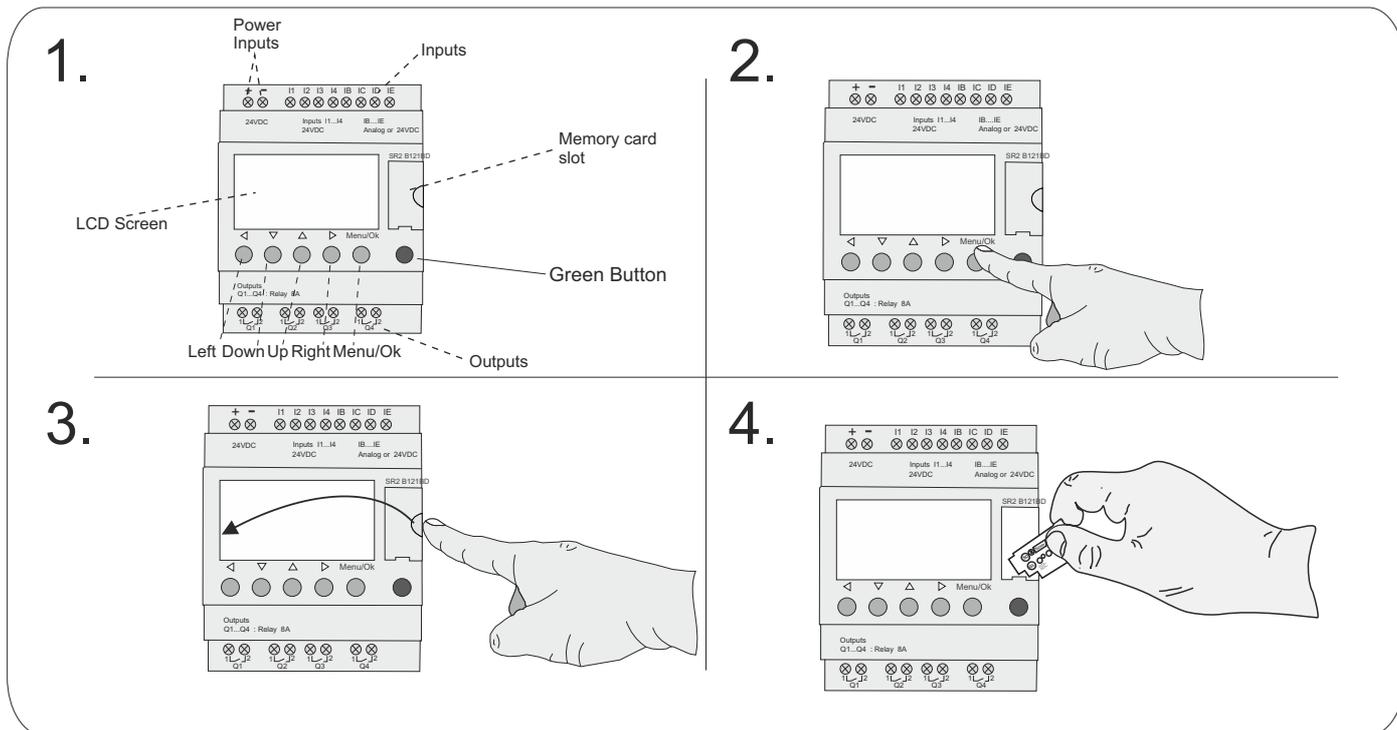
T7: Loop
disable delay

3 seconds The free exit loop is disabled for this length of time after a vehicle has passed through the photocells. This is so that vehicles entering through the gate do not trigger the gate to open again if they pass over the free exit loop after passing through the gate.

TD: Safety
stop timer

30 seconds If “safety stop mode” is **disabled** in the menu system, then this timer sets the delay before the gate will resume normal operation after a safety event.

Automatic Raise Arm Barriers



- Shows where key components are located on the Programmable Logic Control.
- To program the PLC using the instructions below the only tool you need to use is one finger making sure to press the correct buttons in the correct sequence.
- To upload a new program via a PLC memory chip open the memory card slot flap and move to step 4.
- Now follow the instructions below very carefully. When asked to insert the chip, hold the chip so that the memory word is the correct way up and at the top. Then with even force push forward into the slot so its sits flush to the PLC housing. Once inserted leave it in place until it states “download complete”. After all steps have been completed you **MUST** replace the slot cover.

Steps to upload a new program from Eprom:

- Press menu / ok button once.(Green Button)
- Scroll down to run / stop (flashing).
- Insert New PLC chip
- Press menu / ok button to stop program.(Green Button)
- Press menu / ok again.(Green Button)
- Scroll down to transfer (flashing).
- Press menu / ok button once.(Green Button)
- The screen will display transfer:
Zelio > memory
Memory > Zelio
- Scroll down to **Memory > Zelio. NOTE! this is very important to select the right path as you may risk wiping the memory!!**⚠
- Press menu / ok button.(Green Button)
- When downloaded TRANSFER OK / STOP LD will be displayed.
- Press menu / ok button.(Green Button)
- Scroll up to run / stop (flashing).
- Press menu / ok button.(Green Button)
- Screen will display RUN PROG.
YES (with nonvolat) (flashing)
NO
- Make sure “YES” is selected then press menu / ok button.(Green Button)
- The chip has now been downloaded.
- STOP CIRCUIT BROKEN may now appear on the screen because the cabinet door is open.
- Now replace the memory slot cover!.

Automatic Raise Arm Barriers

The table (bottom) relates to the diagram directly below to help you trouble shoot electrical component errors

1.
Example showing number 11 and IB input selected

Showing program in "run mode"

Input displays which change as inputs used as detailed in the table below.

Date/Time Display

2.
Example showing number Q1 and Q3 output selected

Showing program in "Stop mode"

Output displays which change as Outputs used as detailed in the table below.

Date/Time Display

1. Inputs			
Input	Polarity	Connected to	Operation when active
I1	Normally Closed	Stop circuit	Barrier stops if door open "Stop Circuit Broken" shown on screen
I2	Normally Open	Raise/Open signal	Barrier is getting a PERMANENT open signal
I3	Normally Open	Lower/Close signal	Lowers barrier
I4	Normally Open	Raise Limit	Barrier arm has reached fully open position. Upper limit switch active
IB	Normally Closed	Loop detector/Safety loop	Detecting vehicle on safety loop. Lowers when vehicle is not detected
IC	Normally Open	Free entry/Free exit loop	Detecting vehicle on free exit/entry loop/ Barrier opens when vehicle present on loop
ID	Normally Open	Lower limit	Arm has reached fully closed position. Lower limit switch active
IE	Normally Closed	Photocells	Photocells Active
2. Outputs			
Output:	Polarity:	Connected to:	Operation when active:
Q1	Normally Open	Motor controller open direction	Active to open barrier
Q2	Normally Open	Motor controller close direction	Active to close barrier
Q3	Normally Open	Boom light or Magnetic arm lock	Signal given to accessories
Q4	Normally Open	Flashing beacon/Siren (if installed in program)	Signal given to accessory if installed in PLC program

Note:

If barriers are set up as a master and slave then see additional wiring info in this section.

Automatic Raise Arm Barriers

Frequently Asked Questions

Here below are the most frequently asked questions and their answers:

Question	Answer
I cannot access some parameters.	Some parameters are not accessible. See the documentation to find out whether these elements can be changed. Example of an element that cannot be changed: Counter function block counting direction. This element is only accessible by wiring in a ladder diagram line.
I still cannot access some parameters.	To access the parameters, you must use the navigation keys ◀ and ▶ to position the cursor above them. The ▼ and ▲ are used to change these values. Then press Menu/OK to confirm the changes.
I cannot RUN my smart relay even though I enable the RUN/STOP option in the main menu using the Menu/OK key.	CAUTION, make sure that the error symbol (!) is not displayed in the contextual menu line. Correct the error in order to RUN the smart module.
I would like to change my diagram lines but the Menu/OK key no longer works.	Ensure that the smart relay is indeed stopped. Changes in RUN mode are not allowed.
When I try to change my diagram lines, the smart relay shows me a screen with only line numbers (LINE No.). Have I lost all my work?	Not necessarily, this situation may occur when 4 consecutive blank lines have been inserted at the start of the ladder diagram or between the command lines.
I have a ladder diagram that uses the Z key (◀, ▼, ▲, ▶) for a pushbutton. I would like to test it but when I display the diagram dynamically, my Z key is no longer operational. Can I make it work?	No this is impossible.
I generated a ladder diagram on a smart relay with a clock. Can I use a backup memory to transfer it to a smart relay without clock?	No this is impossible.
When entering a ladder diagram, the clock function blocks do not appear when choosing the contacts. Is this normal?	It is quite possible that the smart relay is one without a clock. Consequently, the clock function blocks are not accessible. Check the product reference numbers.
When entering a ladder diagram, the analog function blocks do not appear when choosing the contacts. Is this normal?	It is quite probable that the smart relay does not have analog inputs. Consequently, the analog function blocks are not accessible. Check the product reference numbers.

Compatibility between the version of the programming software and the version of the firmware on the smart relay

Introduction

The section below describes the compatibility between the versions of the programming software and the versions of the firmware on the smart relay.

In the Case of a Transfer of the Program from the PC to the Smart Relay

In the case of a transfer of the PC program to the smart relay, all the versions of the programming software are compatible with all the versions of the firmware on the smart relay.

During transfer of the PC program to the smart relay, the firmware associated with the version of the programming software is transferred to the smart relay.

In the Case of a Transfer of the Program from the Smart Relay to the PC

In the case of a transfer of the program from the smart relay to the PC, compatibility between the version of the programming software and the version of the firmware on the smart relay is as follows:

		Smart relay firmware version		
		V2.xx	V3.xx	V4.xx
Version of the programming software	V2.4	Compatible	Incompatible	Incompatible
	V3.1	Incompatible	Compatible	Incompatible
	V4.1	Incompatible	Incompatible	Compatible

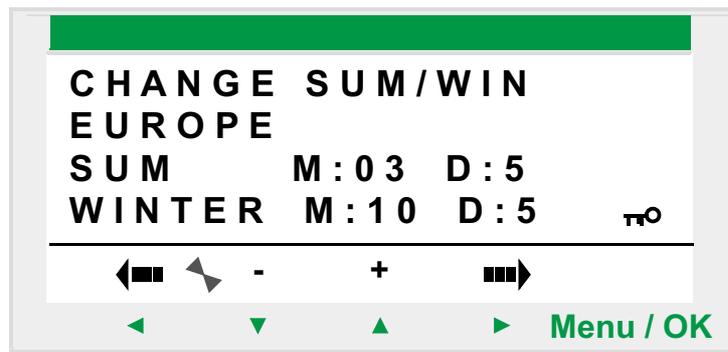
Automatic Raise Arm Barriers

Change Summer/Winter Menu

Description

This function is used to change the time range automatically: Summer/winter, for smart relays with a clock.

Illustration:



The following operating modes are possible:

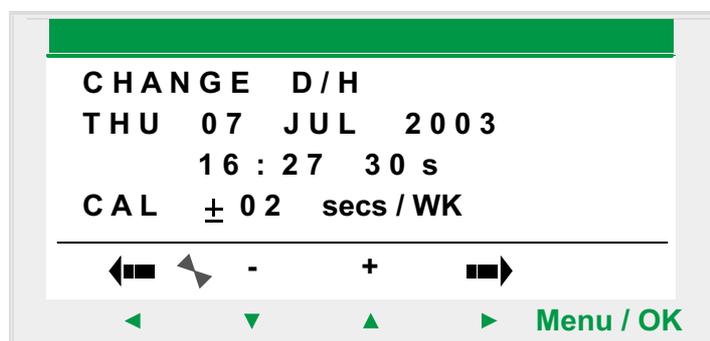
- z **NO**: no change,
- z **Automatic**: The change takes place automatically, the dates are preset according to the geographic zone:
 - z EUROPE: Europe,
 - z USA.
- z **OTHER ZONE**: (MANUAL) the change takes place automatically, but you must specify, for summer and winter:
 - z The month: **M**,
 - z The Sunday: **D** (1, 2, 3, 4 or 5) when the change takes place.

CHANGE DATE/TIME Menu

Description

This function is used to configure the date and time of the smart relays that have a clock.

Illustration:

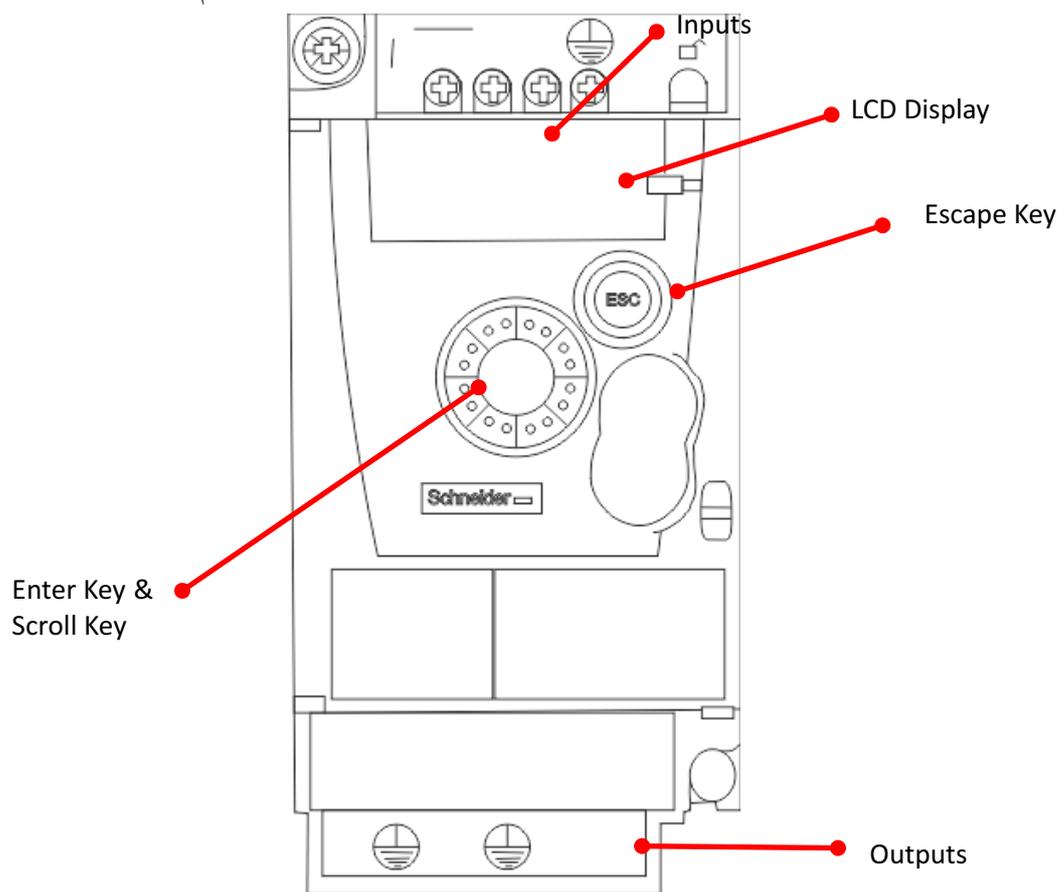


The modifiable parameters are:

- z Day / week / month / year,
- z Hour, minutes, seconds,
- z CAL: Calibration of the internal clock of the smart relay in seconds per week.

Automatic Raise Arm Barriers

Overview of Buttons



How to change Barrier speed

Please be aware limit switch strikers may have to be moved!!

1. The display will show "**RDY**"
2. Press the **ENT** Dial button
3. Scroll the dial until **CONF** is shown on the display
4. Press the **ENT** dial
5. Scroll the dial until **LSP** is shown on the display
6. Press the **ENT** dial
7. The current speed is then shown Example: **32**
8. Now use the scroll dial to set the desired speed you require*
9. **Note** if this is increased/decreased considerably then the **ACC** and the **DEC** will also need to be adjusted to suit. For any advice please contact the service department.
10. Press the **ESC** button until **RDY** is shown in the display to exit the menu.

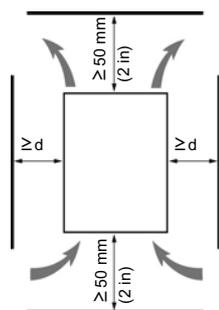
ACC is set to "6" by default this may be increased

DEC is set to "2" by default this may be increased

Automatic Raise Arm Barriers

Inverter Usage Guide

Mounting and temperature conditions



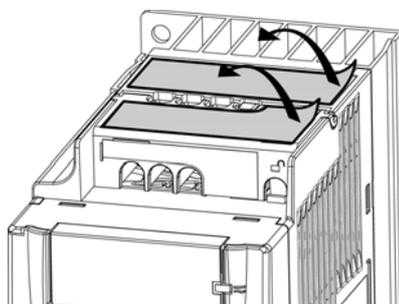
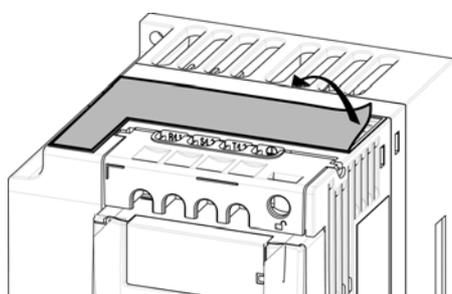
Install the unit vertically, at $\pm 10^\circ$.
 Do not place it close to heating elements.
 Leave sufficient free space to ensure that the air required for cooling purposes can circulate from the bottom to the top of the unit.

Free space in front of unit: 10 mm (0.4 in.) minimum.

When IP20 protection is adequate, we recommend that the vent cover(s) on the top of the drive be removed, as shown below.

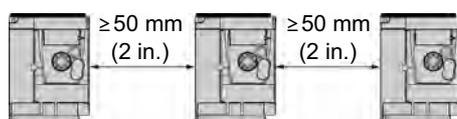
We recommend that the drive is installed on a dissipative surface.

Removing the vent cover(s)



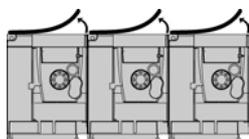
Mounting types

Type A mounting



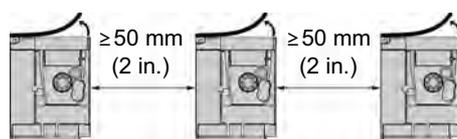
Free space ≥ 50 mm (2 in.) on each side, with vent cover fitted. Mounting type A is suitable for drive operation at surrounding air temperature less than or equal to 50°C (122°F).

Type B mounting



Drives mounted side-by-side, vent cover should be removed (the degree of protection becomes IP20).

Type C mounting



Free space ≥ 50 mm (2 in.) on each side. Vent cover should be removed for operation at surrounding air temperature above 50°C (122°F). The degree of protection becomes IP20.

With these types of mounting, the drive can be used up to an ambient temperature of 50°C (122°F), with a switching frequency of 4 kHz. Fanless drives need derating.

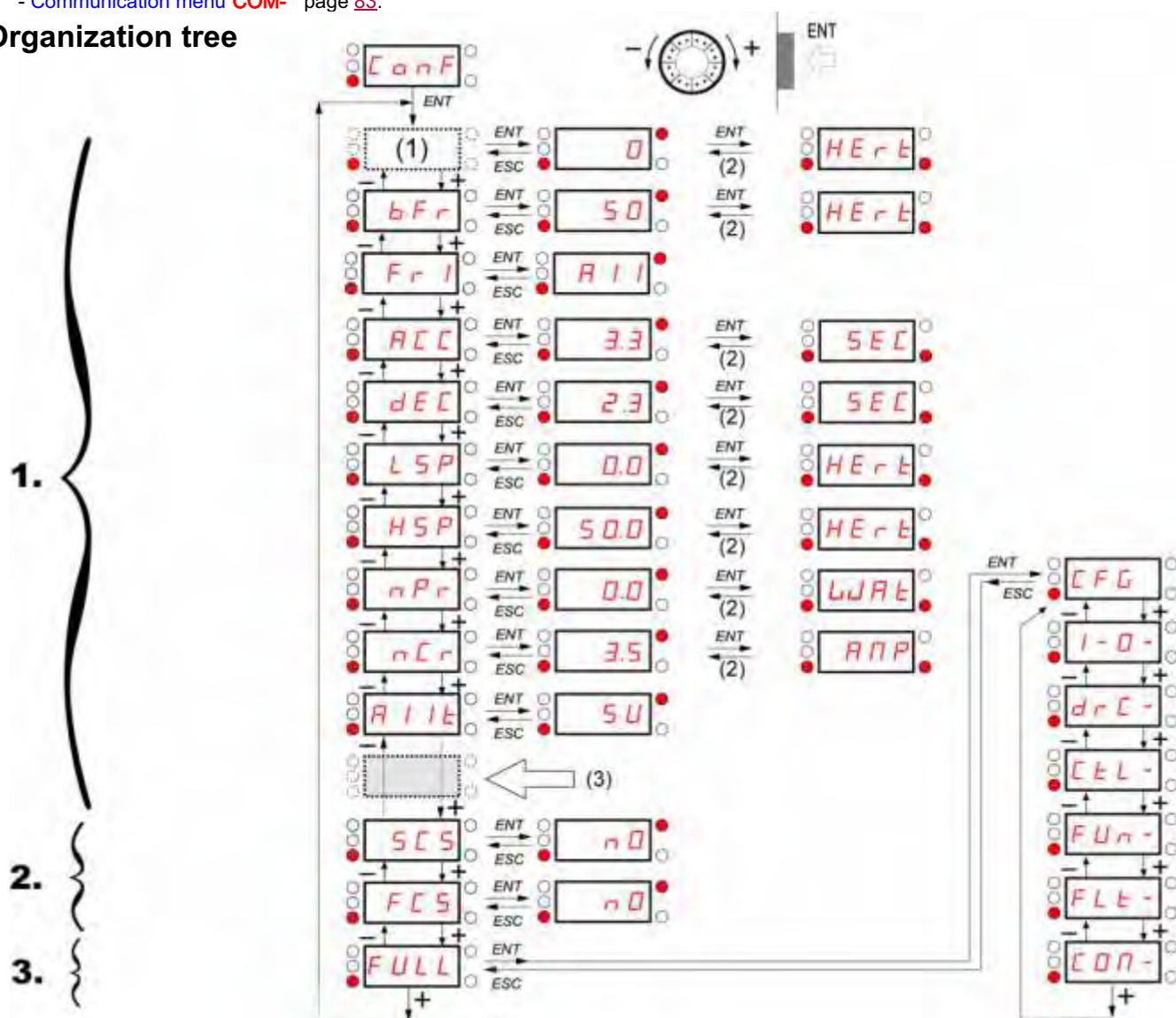
Automatic Raise Arm Barriers

Inverter Configuration

Configuration mode includes 3 parts:

1. MyMenu includes 11 factory set parameters (among them 9 visible by default). Up to 25 parameters are available for user customization using SoMove software.
2. store/recall parameter set: these 2 functions are used to store and recall customer settings.
3. FULL: This menu provides access to all other parameters. It includes 6 sub-menus:
 - Macro-configuration **CFG-** page 46
 - Input Output menu **I_O-** page 47
 - Motor control menu **drC-** page 56
 - Control menu **CtL-** page 60
 - Function menu **FUn-** page 62
 - Fault detection management menu **FLt-** page 77
 - Communication menu **COM-** page 83.

Organization tree



Displayed parameter values are given as examples only

(1) Depending on reference channel active.

(2) 2 seconds or ESC.

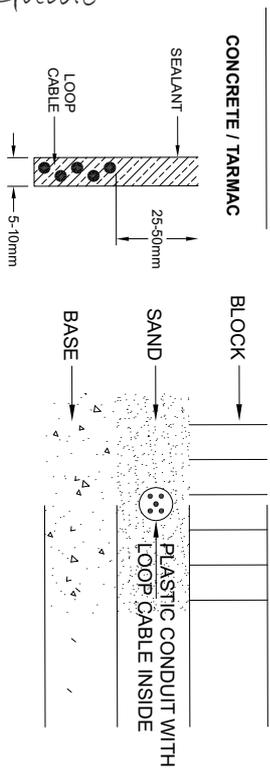
(3) plus 14 other customizable parameters selectable (in "FULL" list) using SoMove.

Possible values: **LFr** or **AU1**



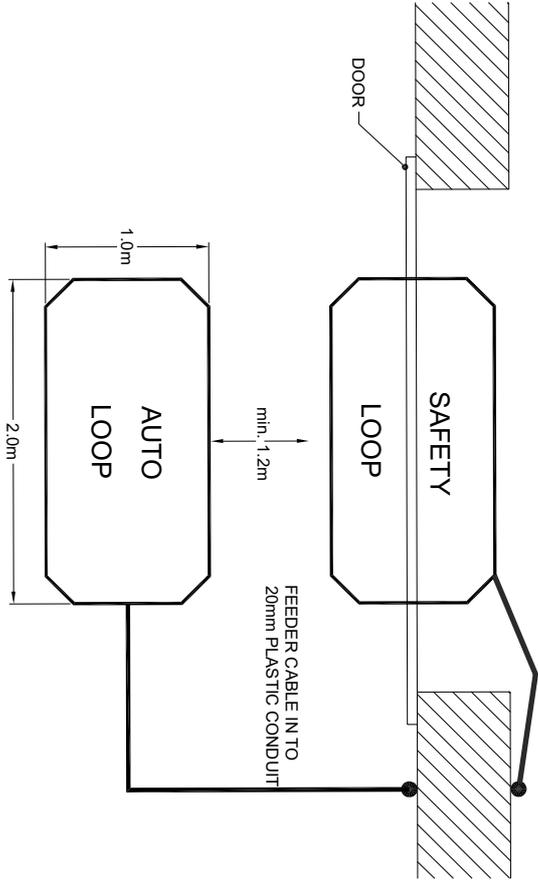
Automatic Raise Arm Barriers

Loop Guide

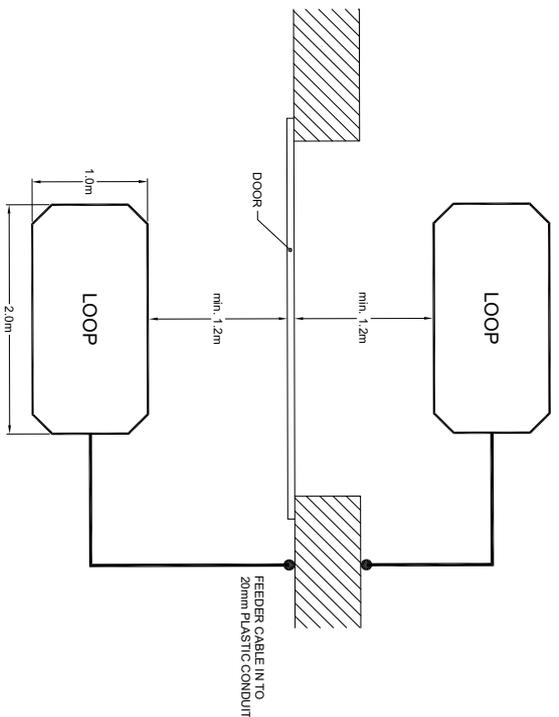


BLOCK PAVING

TYPICAL EXAMPLE OF LOOP INSTALLATION



ANOTHER EXAMPLE OF LOOP INSTALLATION



INSTALLING A LOOP

LOOPABLE: Rubberised insulated wire of 0.75-1.50 sq. mm (awg 20 - awg 16), preferably multi-stranded.

LOOP SIZE:

Note:- High bed vehicles require larger loops.

No. OF TURNS IN LOOP:

LOOP CIRCUMFERENCE	NUMBER OF TURNS
2 - 4m	6
4 - 7m	5
7 - 12m	4
12 - 25m	3

LOOP SLOT: Recommended depth to top of loop cable 25-50mm. (Maximum depth 65mm)

Loop slot **MUST** be sealed after cable has been installed and tested.

Use a flexible, weather proof sealant (i.e. Hot bitumen, Rubberised bitumen sealant).

CAUTION! Never use cement / concrete, etc...

FEEDER CABLE: The feeder cable **MUST** be twisted a minimum 10 times per meter & can be up to 250m long.

LOOP PLACEMENT:

The loop must be placed at least 5m away from high tension cables and at least 1m away from low tension cables. If the loop is placed in an area with reinforcing iron (typically a concrete floor), the loop must be placed at least 50mm above the reinforcement.

TWO or MORE LOOPS:

If the detector is used for detecting high vehicles (lorries etc.) use only one loop for each detector, otherwise it is possible to connect two loops to a single detector. Series coupling the loops will give the largest sensitivity, parallel coupling gives the fastest reaction.

Automatic Raise Arm Barriers

Loop Guide

1 INTRODUCTION

The PD130 is a single channel microprocessor based detector designed specifically for parking and vehicle access control application. The PD130 has been designed using the most up-to-date technology in order to meet the requirements of a vast number of parking applications (in terms of operating conditions and options available to the user.)

The primary function of the detector is to detect vehicle presence by means of an inductance change, caused by the vehicle passing over a wire loop buried under the road surface.



The detector has been designed for ease of installation and convenience. The various modes are selected by changing the positions of the switch on the front of the unit.

The switches allow for different loop frequency settings, sensitivity settings and mode settings.

The PD130 provides visual output (LED) on the front of the enclosure and relay changeover contacts are taken on the 11-pin connector at the rear of the enclosure. The LED indicates the power has been applied to the unit, that a vehicle is present over the loop and if there is a fault on the loop. The Presence relay is fail-safe and will close on a vehicle detect or in the event of power failure or a loop fault.

Automatic Raise Arm Barriers

Loop Guide

2 TECHNICAL DATA

2.1 Functional Data

Tuning	Fully automatic
Self-timing range	20 μ H to 1500 μ H
Sensitivity	Four step switch selectable High 0.02% <input type="checkbox"/> L/L Medium High 0.05% <input type="checkbox"/> L/L Medium Low 0.10 % <input type="checkbox"/> L/L Low 0.50% <input type="checkbox"/> L/L
Frequency	Four step switch selectable Frequency dependent on loop size
Automatic Sensitivity Boost	Switch selectable
Filter	Switch selectable 2 second filter
Presence Relay	Fail-safe
Presence Time	Switch selectable: Limited presence Permanent presence
Pulse Relay	Switch selectable: Pulse on detect Pulse undetect
Pulse Output Duration	150 milliseconds
Response Times	100 milliseconds
Drift Compensation Rate	Approx. 1% <input type="checkbox"/> L/L per minute
Visual Indication	1 x Power LED – Red 2 x Channel Status LED - Green
Detects Outputs	Relays rated - 5A @ 230 VAC
Reset	Push button on PCB
Surge Protection	Loop isolation transformer, gas discharge tubes, and Zener diode clamping on loop input

2.2 Electrical Data

Power requirements	12 V -10% to 24 V +10% (PD134) 120 VAC \pm 10% (48 to 60Hz) 230 VA \pm 10% (48 to 60Hz) Requirement: 1.5 VA Maximum @ 230 V
--------------------	--

2.3 Environmental Data

Storage Temperature	-40°C to \pm 85°C
Operating Temperature	-40°C to +70°C
Humidity	Up to 95% relative humidity without condensation
Circuit protection	Conformal coating over the PCB and all components

Automatic Raise Arm Barriers

Loop Guide

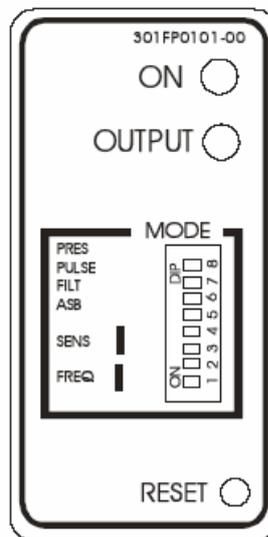
3 OPERATING PROCEDURES

3.1 Hardware Set-Up

The PD130 single channel parking detector is designed to be shelf or DIN rail mounted, with the controls and visual indicators at the front, and wiring at the rear of the enclosure.

The power, loop and relay outputs are all connected to the single 11-pin plug, which is mounted at the rear of the enclosure.

3.2 Switch Setting Selections



3.2.1 Frequency Switch

The frequency switches are the lower two switches, numbered 1 and 2. There are four frequency selections and are set out as follows:

SW2	SW1	
Off	Off	High
On	Off	Medium-High
Off	On	Medium-Low
On	On	Low

The frequency switches allow the operating frequency of the loop to be shifted higher or lower depending on the switch position. The frequency of the loop is determined by the loop size, and the frequency of the switch simply causes a frequency shift on the loop.

Where more than one detector is used, the detectors must be set-up to ensure that there is no cross talk (interference) between the detectors. This can be achieved by ensuring that the loops of the two detectors are spaced sufficiently apart (approximately 2 metres between adjacent edges), and also ensuring that the detectors are set to different frequencies. As a general rule, the detector connected to the inductive loop with the greatest inductance should be set to operate at the lowest frequency. Loop inductance increases as loop size, number of turns in the loop and feeder length increases.

Automatic Raise Arm Barriers

Loop Guide

3.2.2 Sensitivity

The sensitivity of the detector allows the detector to be selective as to the change of inductance necessary to produce a detect. There are four sensitivity selections and are set as follows: -

SW4	SW3	
Off	Off	High
On	Off	Medium-High
Off	On	Medium-Low
On	On	Low

3.2.3 Automatic Sensitivity Boost

Automatic sensitivity boost is a mode which alters the undetect level of the detector. This mode is selected by switch No. 5 on the front of the enclosure and is as follows: -

SW5	
Off	Disabled
On	Enabled

Automatic sensitivity boost causes the sensitivity level to be boosted to a maximum on detection of a vehicle, irrespective of current sensitivity level and maintained at this level during the entire presence of the vehicle over the loop. When the vehicle leaves the loop and the detection is lost, the sensitivity level reverts to the pre-selected level.

3.2.4 Filter Mode

The filter mode is selected with the mode switch No. 6. The filter produces a delay turn-on time of two seconds when a vehicle occupies the loop. This is to enable small, unwanted objects to pass over the loop without being detected. The filter option may be used on any sensitivity setting and is selected as follows: -

SW6	
Off	Disabled
On	Enabled

3.2.5 Pulse Relay

The pulse relay may be made to operate on detect (entry) or on undetect (exit) of a vehicle. This option is selected with Switch No. 7 and is configured as follows: -

SW7	
Off	Pulse on Detect
On	Pulse on undetect

3.2.6 Presence Time

The presence time may be set to permanent presence or to limited presence. In permanent presence mode the detector will continuously compensate for all environmental changes whilst there is a vehicle present over the loop, The presence mode is set with switch No. 8 and is configured as follows: -

SW8	
Off	Limited Presence
On	Permanent Presence

Automatic Raise Arm Barriers

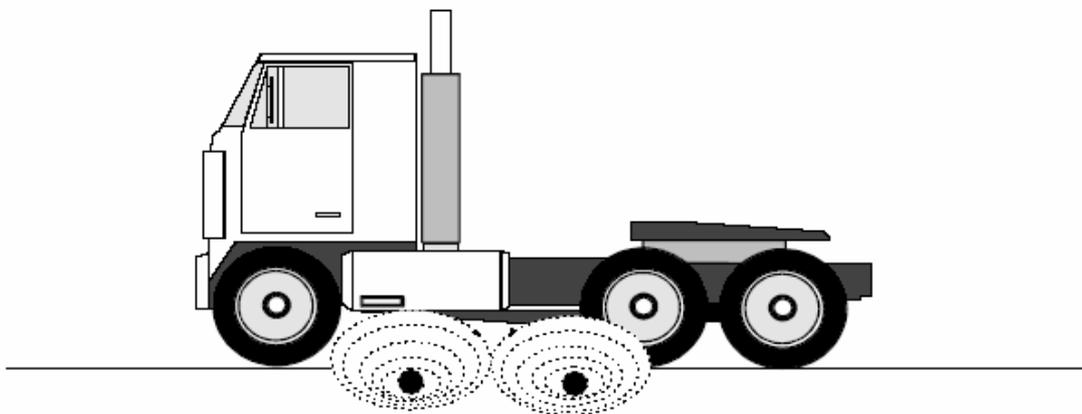
Loop Guide

4 PRINCIPLE OF OPERATION

The inductive loop vehicle detector senses the presence of a vehicle over an area defined by a loop of two or more turns of wire, laid under the road or pavement surface. This loop of wire is connected to the detector by a twisted pair of wires called a loop feeder.

A vehicle passing over a sensing loop causes a small reduction in the inductance of the loop, which is sensed by the detector. The sensitivity of the detector is adjustable to accommodate a wide range of vehicle types as well as different loop and feeder combinations.

Upon detection of a vehicle passing over the loop the detector operates its output relays, which may be used to indicate controls associated with the installation.



4.1 Detector Tuning

Tuning of the detector is fully automatic. When power is applied to the detector upon installation of the system, or when a reset is initiated, the detector will automatically tune itself to the loop to which it is connected. The detector will tune to any loop with an inductance in the range 20 to 1500 microhenries (μH).

This wide range ensures that all loop sizes and feeder combinations will be accommodated in the tuning range of the detector.

Once tuned, any slow environmental change in loop inductance is fed to a compensating circuit within the detector, which keeps the detector correctly tuned.

4.2 Detector Sensitivity

Sensitivity of the detection systems dependent on factors such as loop size, number of turns in the loop, feeder length and the presence of metal reinforcing beneath the loop.

The nature of the application determines the required sensitivity, which may be adjusted by means of the sensitivity switches on the front of the enclosure.

Sensitivity levels of the PDI30 have been carefully optimised for parking and vehicle access control applications. The detection of small unwanted objects such as bicycles and trolleys can be eliminated by selecting lower sensitivity levels whilst high-bed vehicles and vehicle/trailer combinations will not lose detection by using **A**utomatic **S**ensitivity **B**oost (ASB) option.

ASB operates as follows. When ASB is disabled, the undetect level is dependent on the sensitivity setting of the detector. Hence as the detector is made less sensitive, the undetect level will reduce accordingly. When the ASB is enabled, the undetect level will always be the same irrespective of the sensitivity setting and will be equivalent to the undetect level when the sensitivity is on maximum setting.

Automatic Raise Arm Barriers

Loop Guide

4.3 Modes Of Operation

In the presence mode the detector will give a continuous output during the presence of a vehicle over the inductive loop. As the detector is designed with the permanent presence feature, the detector will indicate vehicle presence for an unlimited period of time. If the permanent presence is not selected, then the detect time will be dependent on the change of inductance. The presence time on the limited presence setting will be approximately 1 hour for 3% \square L/L.

The pulse relay outputs a pulse of 150 milliseconds duration. When set to "pulse on detect" the detector will give a pulse on detection of a vehicle. When set to "pulse on undetect" the detector will give a pulse output when the vehicle leaves the loop.

The presence output is known as a fail-safe output. This implies that in the event of a power failure the detector will give a detect output. The pulse outputs are not fail-safe and will not operate if a failure occurs.

4.4 Response Times

The response time of the detector is the time taken from when a vehicle moves over the loop to when the detector gives an output.

The response times of the PD130 have been adjusted to prevent false operation in electrically noisy environments, but retain adequate response to vehicles in parking and vehicle access control applications.

8.2.1.3 Sensitivity

For a standard loop of 1.0 metres by 2.0 metres with 2 turns (circumference less than 10 m) and a ten meter feeder cable the following table shows typical sensitivity values for different vehicle types:

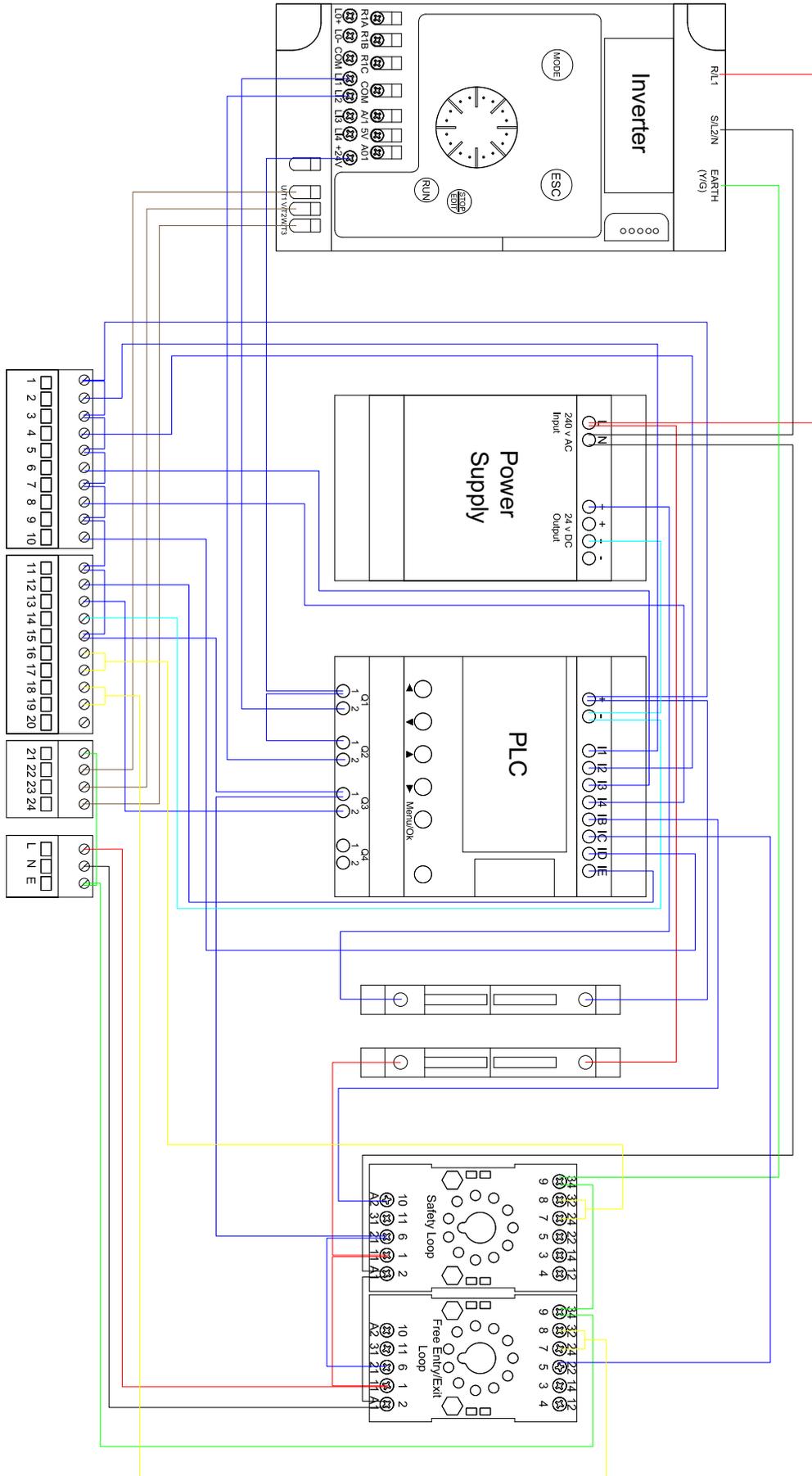
VEHICLE TYPE	% \square L/L
Metal Supermarket Trolley	
Bicycle	0.04
Motorbike	0.12
Articulated Truck	0.38
Four Wheel Drive	0.40
5 Ton Tip Truck	0.45
Motor Car	> 1.00
Forklift	> 1.00

8.1 Fault Finding

FAULT	CAUSED BY	REMEDY
Red LED does not glow on power up.	If the indicator is off then there is a fault on the power connection to the unit.	Check power feed to the unit.
After the initial tune period the Green LED flashes (ON for 1 second and OFF for 1/2 second)	Unit cannot tune to the loop due to faulty loop or feeder connection. Loop may be too small or too large Faulty detector unit.	Check loop installation and connections. Re-cut as per installation instructions. Replace unit.
After tuning, the loop output LED flashes <u>intermittently</u> and the relay chatters.	The loop is getting spurious detects due to: a) Crosstalk with adjacent detector. b) Faulty loop or feeder connection	a) Change frequency setting. b) Check that the feeders are correctly connected and adequately twisted.

Automatic Raise Arm Barriers

Wiring Diagram



Automatic Raise Arm Barriers

Wiring Diagram

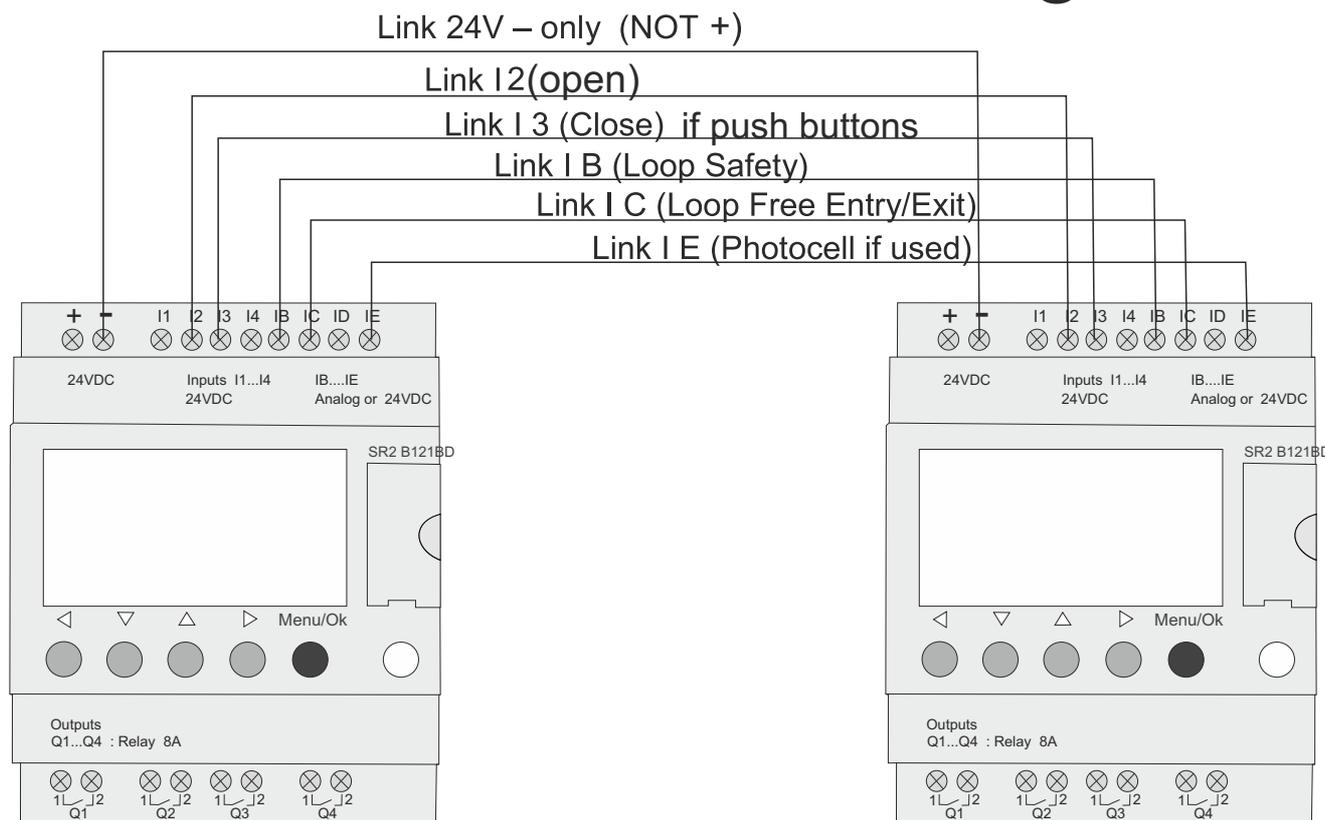
⊘	1	STOP (COM)	⊘
⊘	2	STOP	⊘
⊘	3	RAISE (COM)	⊘
⊘	4	RAISE	⊘
⊘	5	LOWER (COM)	⊘
⊘	6	LOWER	⊘
⊘	7	RAISE LIMIT (COM)	⊘
⊘	8	RAISE LIMIT	⊘
⊘	9	LOWER LIMIT (COM)	⊘
⊘	10	LOWER LIMIT	⊘
⊘	11	24V +	⊘
⊘	12	PHOTO CELL	⊘
⊘	13	MAG LOCK/BOOMLIGHT	⊘
⊘	14	24V -	⊘
⊘	15	24V +	⊘
⊘	16	SAFETY LOOPS	⊘
⊘	17	SAFETY LOOPS	⊘
⊘	18	FREE EXIT /ENTRY LOOPS	⊘
⊘	19	FREE EXIT /ENTRY LOOPS	⊘
⊘	20	SPARE	⊘
⊘	21	EARTH	⊘
⊘	22	MOTOR WIRE	⊘
⊘	23	MOTOR WIRE	⊘
⊘	24	MOTOR WIRE	⊘
⊘	L	LIVE	⊘
⊘	N	NEUTRAL	⊘
⊘	E	EARTH	⊘

Q3 Safety Loop
 Q4 Free Exit/Entry Loop

Automatic Raise Arm Barriers

Wiring Diagram

Master/Slave Wiring



1 safety loop for BOTH barriers

All photo-cells if more than one wired to MASTER barrier only (In series)

Master/Slave panels are identical, so either barrier can be the master, it just requires a link between the PLC inputs.

1. Link 24v negative between PLC's (DO **NOT** LINK + positive)
2. Link I1 between PLC's - Stop Command
3. Link I2 between PLC's - Open Command
4. Link I3 between PLC's - Close Command
5. Link IB between PLC's - Safety Loop (just needed in master barrier only)
6. Link IC between PLC's - Free Entry/Exit Loop (Just needed in master barrier only)
7. Link IE between PLC's - Photocells (If used if more than one - wire in series)

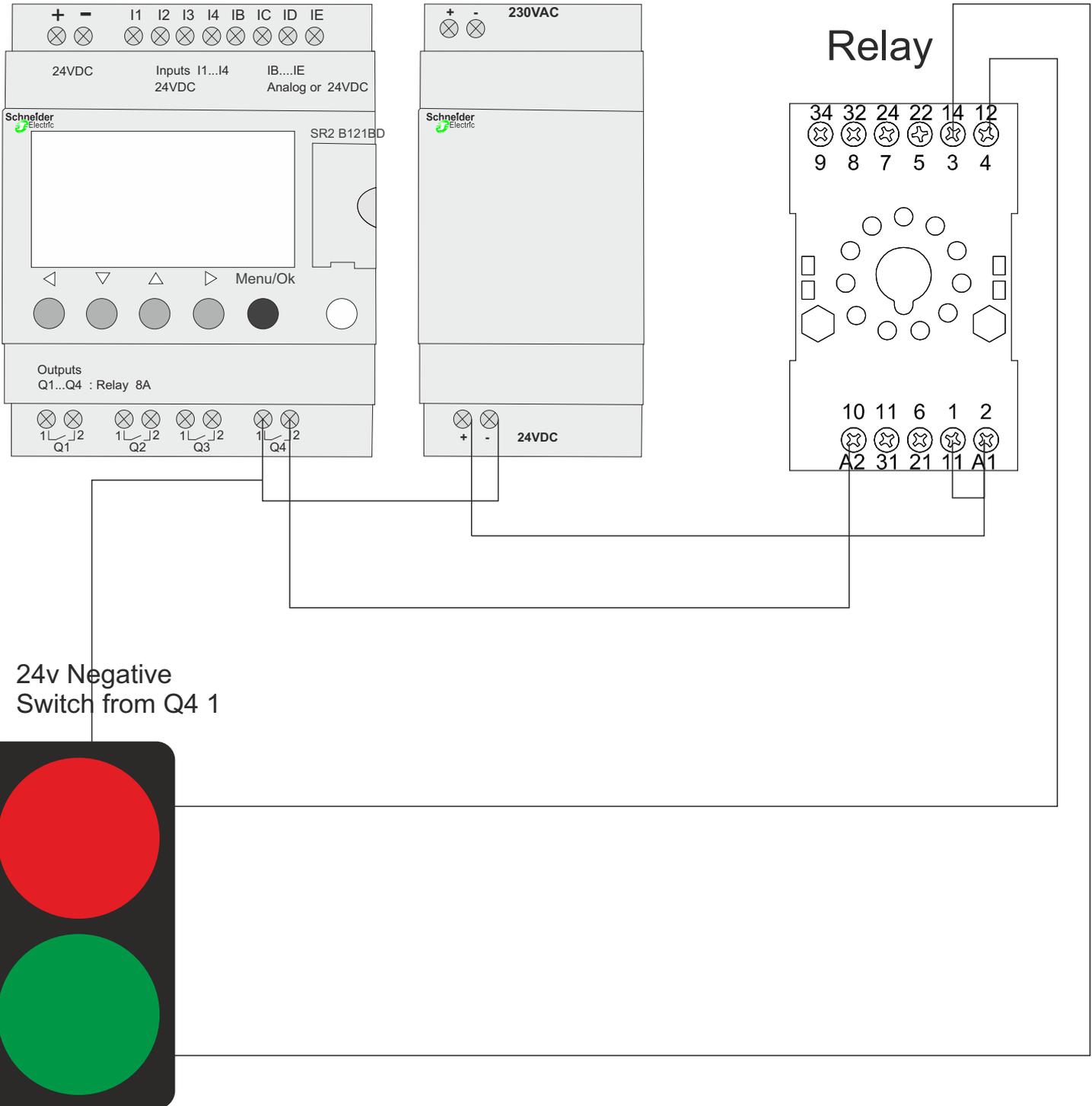
Automatic Raise Arm Barriers

Wiring Information

PLC

Power Supply

Relay

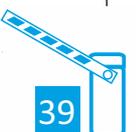


This shows 24v wiring ONLY!!!

Automatic Raise Arm Barriers

Troubleshooting Guide

ELECTRICAL ERRORS	CAUSE	CORRECTION
Blank screen on PLC but power to other devices in the control panel	Door switch circuit not making	Press door switch in and check PLC screen
	PLC has developed an electrical fault or had a power spike	Change PLC
Barrier does not run (stays open)	Check inverter is in ready (rdy) mode on display	Power down then back up
	Loop detector is faulting or sensing presence	Clear obstacle or reset the detector
	Check inverter settings	ACC - 6.0 DEC - 2.0 LSP - 25-40 (Variable)
	Barrier staying up in raise position	Access control giving a constant pulse shorten this
	Photo cell batteries (if fitted)	Check that the fitted batteries still have power to them. They should only be replaced with special 3.6V Lithium-ion batteries made for purpose. These can be provided by your supplier
	Photo cells dirty (if fitted)	Clean photo cells make sure they are debris free
Mains on but no power	Isolator fuse	Check and meter fuse in isolator
Barrier not going up	Access control may be faulty	Remove and check barrier function via the PLC
Barrier Staying up	Car has driven off before clearing the loop	Complete cycle by going through the ground loop
"Stop Circuit Broken" displaying on screen	Barrier door is open	Close door or check switch for faults
Barrier staying open and not closing	If photo-cells fitted then batteries may have expired	Check and if needed replace batteries
	Faulty loop detector	Check & set or replace faulty unit
	Barrier does not have loops fitted or these have been removed	Call the technical department for assistance the program/wiring needs to change
	Key switch left in open position	Put the switch back into the "Auto" position
	Permanent supply/signal to the raise terminals	Check wiring to terminal blocks remove any access control try again
	Barrier programmed for safety only or barrier is on a timer	Contact your supplier for a program modification chip



Automatic Raise Arm Barriers

Troubleshooting Guide

MECHANICAL ERRORS	CAUSE	CORRECTION
Barrier arm keeps going up and down	Limit switch fault	check and reset limit switches
Barrier creaking when moving	Check turn buckle	Oil or grease turn buckle
Barrier motor not running	Loss of voltage	Check motor supply test 3 phases
Barrier not raising or lowering	Drive shaft connections	Re-connect any drive shaft connections
Barrier not raising or raising half way	Gearbox	Gears stripped due to overloading replace
Barrier raises slowly and lowers too fast	Lack of balance counter weight compensation	Fit counter weights
Barrier not running at all	Door has been left open or switch not pushed in	Close the door and issue a signal to open or close
Barrier raised will not lower	Key switch is left in open position	Turn key switch to auto
	Loop fault or loop detecting	Check if green light is on detector if so remove object that it is detecting or replace loop

Inverter Fault detection codes that cannot be reset automatically (continued)

Code	Name	Possible causes	Remedy
OCF	Overcurrent	<ul style="list-style-type: none"> Parameters in the Motor control menu drC- page 55 are not correct Inertia or load too high Mechanical locking 	<ul style="list-style-type: none"> Check the parameters Check the size of the motor/drive/load Check the state of the mechanism Connect line motor chokes Reduce the Switching frequency SFr page 57 Check the ground connection of drive, motor cable and motor insulation.
SCF1	Motor short circuit	<ul style="list-style-type: none"> Short-circuit or grounding at the drive output Ground fault during running status Commutation of motors during running status Significant current leakage to ground if several motors are connected in parallel 	<ul style="list-style-type: none"> Check the cables connecting the drive to the motor, and the motor insulation Connect motor chokes
SCF3	Ground short circuit		
SCF4	IGBT short circuit	<ul style="list-style-type: none"> Internal power component short circuit detected at power on 	<ul style="list-style-type: none"> Contact your local Schneider Electric representative
SOF	Overspeed	<ul style="list-style-type: none"> Instability Overspeed associated with the inertia of the application 	<ul style="list-style-type: none"> Check the motor Overspeed is 10% more than Maximum frequency tFr page 55 so adjust this parameter if necessary Add a braking resistor Check the size of the motor/drive/load Check parameters of the speed loop (gain and stability)
tnF	Auto-tuning	<ul style="list-style-type: none"> Motor not connected to the drive One motor phase loss Special motor Motor is rotating (being driven by the load, for example) 	<ul style="list-style-type: none"> Check that the motor/drive are compatible Check that the motor is present during auto-tuning If an output contactor is being used, close it during auto-tuning Check that the motor is completely stopped

Automatic Raise Arm Barriers

Troubleshooting Guide

1. If the barrier has a permanent raise signal for over 2 minutes the PLC display will show:

PERMANENT RAISE SIGNAL

2. If the Free Exit/Entry Loop Detector has a constant signal the PLC display will show:

CHECK FREE EXIT LOOP DETECTOR

3. If the barrier has photocells or a safety edge connected and they are faulty PLC display will show:

CHECK PHOTOCELLS / SAFETY EDGE

PLEASE NOTE THAT THE PHOTOCELLS AND OR SAFETY EDGE ON BARRIER ARE ACTIVE FOR A FEW SECONDS OF THE BARRIER REACHING THE LOWER LIMIT SWITCH. THIS IS FOR SAFETY REASONS.

ATTENTION!

IT IS THE RESPONSIBILITY OF SITE TO DO THEIR OWN RISK ASSESSMENT TO HIGHLIGHT THE RISKS ASSOCIATED WITH THE AUTOMATIC BARRIER FOR THEIR SITE. SITE MANAGEMENT SHOULD ALSO ENSURE ANY OPERATORS OF THE EQUIPMENT ARE TRAINED APPROPRIATELY.

WE ADVISE THAT EXTREME WEATHER CONDITIONS & HIGH WINDS ARE INCLUDED IN A SITE RISK ASSESSMENT. IT MAY BE NECESSARY FOR BARRIERS TO BE DISABLED DURING EXTREME WEATHER CONDITIONS (IN THE DOWN POSITION, SECURED) OR FOR THE POLE & ANY SKIRTING TO BE TEMPORARILY REMOVED.



Automatic Raise Arm Barriers

Barrier Maintenance

As stated at the beginning of this manual we recommend a bi-annual service, but at a bare minimum, it is imperative that you get a service done once every 12 months. This is not a sales tactic in disguise, there is a very serious health and safety issue/risk associated with not complying to this. Also in order for your barrier to keep complying with the appropriate legislation.

- Before carrying out any maintenance to the installation, disconnect the mains power supply.
- Make sure you have disconnected/isolated the power before attempting any work.
- A Maintenance Contract should be sought from a specialist company after a maximum of 5000 manoeuvres or 1 year from the install date.
- Occasionally clean the photocell optical components and make sure they are free from dirt, water, rain, soil etc.. Batteries in photo cells may need to be changed every 6 months or sooner dependant on use. Barrier will not work properly without photo cell function.
- Have a qualified technician (installer) check the correct setting of the electric clutch.
- If the power supply cable is damaged, it must be replaced by the manufacturer or its technical assistance service, or else by a suitably qualified person, in order to prevent any risk.
- When any operational malfunction is found, and not resolved, disconnect the mains power supply and request the assistance of a qualified technician (installer). When automation is out of order, activate the manual release to allow the opening and closing operations to be carried out manually.
- Gearbox drive unit is "sealed" for life and requires no further lubrication.

MAINTENANCE JOB SHEET

No:

Date of Visit:	Postcode:
Customer:	Contact:
Site Address:	Contact Number:

BARRIER 1 - Entry

Check safety device and equipment	Check and grease rod ends
Ensure ground anchor is stable and secure	Check pole fixings
Check all electrical connections	Check barrier skirt and fixings
Check motor and fixings	Check and lubricate as necessary
Check pole arm adaptor and fixings	Check and grease all bearings
Check pole for damage and signs of stress	Test door switch operation is functioning
Check end rest is secure and functional	Check and level pole arm, if required
Check reader post is securely fixed and cold holder, etc are functioning	Check automated operation of barrier open and close
Check for visual damage	Check manual operation open and close
Check and tighten all nuts and bolts	Clean and wipe barrier
Check limit switches	Fill out service log in manual
Check any external controls (if our system)	Fit next service due sticker and service phone number sticker

BARRIER 1 - Exit

Check safety device and equipment	Check and grease rod ends
Ensure ground anchor is stable and secure	Check pole fixings
Check all electrical connections	Check barrier skirt and fixings
Check motor and fixings	Check and lubricate as necessary
Check pole arm adaptor and fixings	Check and grease all bearings
Check pole for damage and signs of stress	Test door switch operation is functioning
Check end rest is secure and functional	Check and level pole arm, if required
Check reader post is securely fixed and cold holder, etc are functioning	Check automated operation of barrier open and close
Check for visual damage	Check manual operation open and close
Check and tighten all nuts and bolts	Clean and wipe barrier
Check limit switches	Fill out service log in manual
Check any external controls (if our system)	Fit next service due sticker and service phone number sticker





Automatic Raise Arm Barriers

Potential System Hazard Areas

Please note these are things that you should look out for with the equipment that has been installed on your/your customers site. This is in no way a health and safety guide just a few key areas for you to be aware of and possibly make future changes to.

Plan view (from above)

Sketch system layout, detailing and numbering potential hazard areas for the client.

Blank area for sketching the system layout and numbering potential hazard areas.

Potential Hazard Areas - see diagram:

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

Additional Comments / Descriptions concerning safety on this site

Five horizontal dotted lines for additional comments or descriptions concerning safety on the site.

.....Signed:.....

Automatic Raise Arm Barriers

Installation/Commissioning Check List

System Operation - The user FULLY understands	YES	NO
How to operate the system with all control devices	<input type="checkbox"/>	<input type="checkbox"/>
How to isolate the power to the automation system	<input type="checkbox"/>	<input type="checkbox"/>
How to manually release the system in event of power failure	<input type="checkbox"/>	<input type="checkbox"/>
The safety rules and issues associated with your system	<input type="checkbox"/>	<input type="checkbox"/>
Safety devices on the system have been verified and checked	<input type="checkbox"/>	<input type="checkbox"/>
Safety devices and features suit the site/application for which it was designed	<input type="checkbox"/>	<input type="checkbox"/>
How to open the door on the equipment	<input type="checkbox"/>	<input type="checkbox"/>
Check the following items	YES	NO
Door keys have been handed over	<input type="checkbox"/>	<input type="checkbox"/>
Key switch keys have been handed over	<input type="checkbox"/>	<input type="checkbox"/>
All equipment and site has been left in a clean and safe state	<input type="checkbox"/>	<input type="checkbox"/>
Any warning signage has been fitted by Engineer/Client to make people aware	<input type="checkbox"/>	<input type="checkbox"/>
Any times and special programming instructions undertaken	<input type="checkbox"/>	<input type="checkbox"/>
Product works the way site need it to this includes "no passage time out" etc	<input type="checkbox"/>	<input type="checkbox"/>
System has had the completed conformity certificate	<input type="checkbox"/>	<input type="checkbox"/>
All items on the delivery note have been handed over to client/site - <small>this should be signed for on the separate sheet which is titled "Delivery Note" (green/ or yellow paper) if parts missing call supplier</small>	<input type="checkbox"/>	<input type="checkbox"/>
The engineer has expressed the importance of regularly maintaining the equipment	<input type="checkbox"/>	<input type="checkbox"/>
POWER ISOLATION - The power isolator for your automation system is located at:		

The following denotes that the above has been completed to a satisfactory standard. The engineer has explained the system of operation to you and any devices that you have had fitted. If this is agreed and has been displayed please sign in the indicated fields below. All information will be passed on correctly to other system users. The users of the system will use this system correctly and safely.

Engineers Name: Engineers Signature:

Clients Name: Clients Signature:



Commissioning Certificate

We certify that the system covered by this certificate has been commissioned satisfactorily.

Contract Reference		Completion	
Contract Title		Engineers Installing	
Installation Commenced	/ /20	Commissioning	
Works Description			
Part/Whole Certificate			
Handover Date			

Part 3. The system(s) designed and installed in accordance with the following documents:

<u>Document Ref:</u>	<u>Revision</u>	<u>Description</u>
PF6000Lux O&M	4.2	System guides and drawings as defined within O&M Manuals

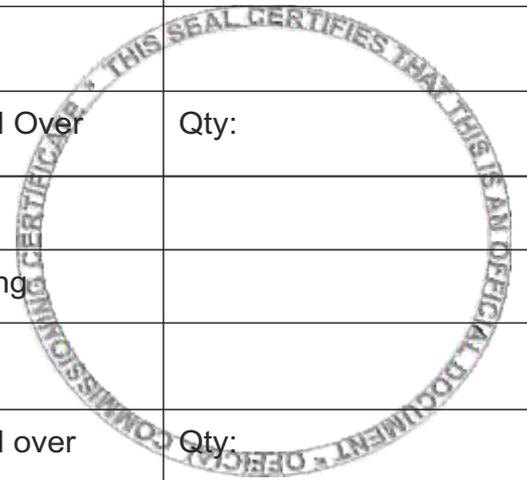
Part 4. The following test procedures refer:

Check Lists (pages 15 & 16) /Commissioning Certificate

Part 5. Existing Installation Items not covered under warranty/ This certificate:

Part 6. Certificate Signing off Section

Installers Name		Signature	
On Behalf of		Date of Signing	
Address		Position	
		Parts Handed Over	Qty:
Client Name		Signature	
On Behalf of		Date of Signing	
Address		Position	
		Parts Handed over	Qty:





Declaration



Declaration of Conformity



We hereby certify that the machinery stipulated below complies with all relevant provisions of the EC Machinery Directive and National Laws and Regulations adopting this Directive.

Manufacturer & European Agent:	<p align="center">Parking Facilities Ltd Unit 1 Kingsbury Link Industrial Estate Trinity Road Tamworth Staffs B78 2EX United Kingdom</p>
Telephone:	01827 870 250
Description:	Automatic Raise Arm barrier
Info:	The product to which this Declaration of Incorporation relates must not be put into service until the relevant machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive.
Model Number:	PF6000
Serial Number:	
EU Directives & Standards Applied:	The above product is in conformity with the essential Health and Safety requirements of the Machinery Directive 2006/42/EC, the Low Voltage Directive 2006/95/EC, the Electromagnetic Compatibility Directive 2004/108/EC and the CE Marking Directive 93/68/EC. The equipment has been designed to meet the following standards:- Electrical Safety: BS EN 60204-1:2006+A1:2009; BS 7671:2008+A1:20011+A2:2013; BS EN 62061:2005+A1:2013; BS EN 61439-1:2011; BS EN 61439-2:2011; BS EN 12978:2003+A1:2009 Mechanical Safety: PD5304:2014; BS EN ISO 12100:2010; BS EN 60529:1992+A2:2013 BS EN ISO 13849-1:2008; BS EN 12453:2001; BS EN 12604:2000; BS EN 12444:2001; BS EN 12635:2002+A1:2008; BS EN 16005:2012; BSEN 13241-1:2003+A1:2011; BS EN 12605:2000; BS EN 12445:2001; BS EN ISO 13857:2008 Electromagnetic Compatibility: BS EN 61000-6-1:2007; BS EN 61000-6-3:2007+A1:2011

Responsible Person:
Damian Speer
Parking Facilities Ltd

Name: Anthony Green

Signature:

Position:
Date:

Managing Director
12th January 2015



in



Parking and access control equipment manufactured in the UK

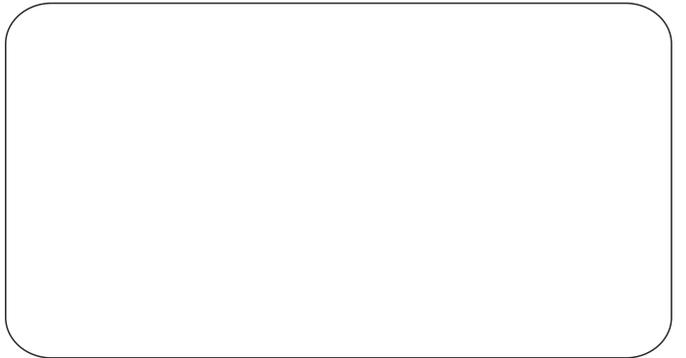
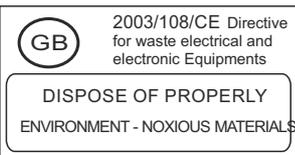
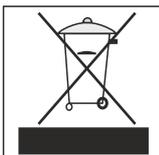


Automatic Raise Arm Barriers



CE EUROPEAN MARK CERTIFYING CONFORMITY TO THE ESSENTIAL REQUIREMENTS OF THE STANDARDS 2006/42/EC

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