FOREMATIC

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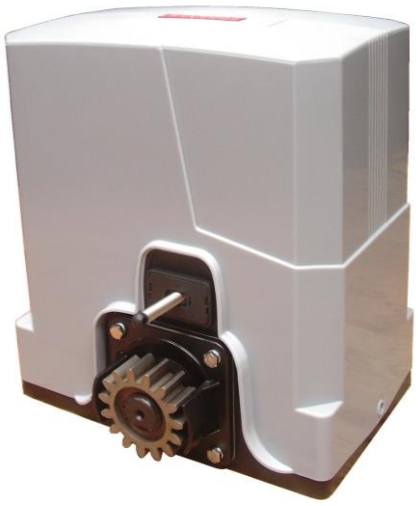
F550/F560 PICO installation manual

Specifications

Supply	220-240Vac 50Hz 2.5A
Pinion	Mod.4 15 teeth
Speed	16mm/sec
Duty cycle	25% 20 times/hr
Gate size	F550 – 600kg F560 – 900kg
Motor power	F550 – 110W F560 – 150W
Temp O/L	120°C
Temp'	-20°C to 50°C
Protection	IP44
Remotes	16 rolling code



Description

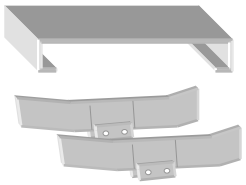
F550 & F560 are sets based on the PICO 24Vdc sliding gate motors. F550 is recommended is for domestic gate applications. F560 is recommended for light industrial gates such as an office development.

A toothed rack fixed to the gate engages with a pinion on the motor. Drive is delivered through a worm drive gearbox. The gate cannot be moved while the gearbox is engaged. A key override disengages the motor from the drive pinion. Used in exceptional circumstances, like power failure.

Two double button rolling code remotes are included. Buttons can be programmed to open fully for vehicles or partial opening for pedestrians. The 2nd button can open another gate. Up to 16 remotes can be registered. A safety photo beam is included to detect vehicles. Further safety devices may be added.

Photobeam

Remotes



Operation

On an input from a remote or an external control, the gate will open fully or partially. The closed and fully open positions are determined by limit switches acting on 'skis' fitted to the rack. If the remote is activated while the gate is running, it will stop. The next remote activation will re-start in the other direction.

For safety, the gate slows at ends of travel. If the automatic close function is enabled, the gate will re-close after a delay.

If the photo beam is interrupted during closing, the gate stops then re-opens. The gate will stay open while the beam is interrupted. The motor has a stall sensor to detect physical blocks in the gates path. If an obstacle is detected in either direction, the gate will stop and reverse direction.

In a power out, when the power is returned, the motor will close. The motor is fitted with a charger, and has ample space for a 1.1Ahr battery.

Safety warnings

Automatic gates can be hazardous. It is the responsibility of the home owner to be aware of the risks and provide, adequate warning of hazards. Users should be given instruction on the safe use of the automatic gate.

This manual is written for engineers aware of construction criteria for automatic gates and accident prevention criteria in force in the automation industry. Only qualified persons may do installation or maintain work on this barrier that may change its risk assessment.

Turn off the power before working on the gate. We recommended signage to warn users and members of the public of risk of injury to pedestrians. Do not permit public access to the gate area. Do not use remotes when out of sight of the gate. Do not let children or untrained people use remotes. Do not let unsupervised children near the gate.

Physical Protection

Gates must be of a robust construction to be automated remotely. Wheels on which the gate roll must be free running & well maintained on clean level ground tracks. Support rollers must be adjusted and maintained for smooth running. Gates must have physical stops at both extremes to prevent derailment hazards when in manual mode

Cables must be sufficiently protected against abrasion that could lead to a hazard due to exposure of electrical conductors. Electrical supplies must be protected by an earth leakage device. There must a disconnect switch outside the gate area.

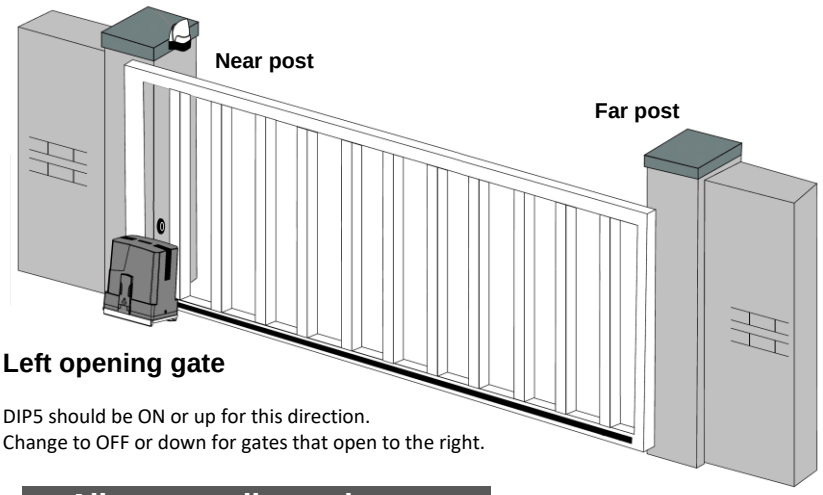
'Automatic gate' signs are required on both sides of the gate warning against risk of contact injury. A pedestrian side gate is preferred for regular pedestrian access.

User Instructions

It is the site owner or manager's responsibility to ensure that only trained people operate the gate, and ensure all personnel are aware of potential gate hazards. Operators must take responsibility for the safety of any person within the hazard area. Never let children play near gates in motion.

Keep the gate area clear of objects. Examine the gate for imbalance or signs of wear. Have gate properly maintained and repaired by qualified personnel when necessary.

Manufacturers are not responsible for injury resulting from failure to meet the requirements in this manual. An adequate clearance must be provided around the gate to prevent entrapment.



Left opening gate

DIP5 should be ON or up for this direction.
Change to OFF or down for gates that open to the right.

Mechanical

Gates must be level and free running on a ground track, or on cantilever gate bearings. It is usual to support the gate at the top with nylon rollers. Two gates mounted on the same track may slide from each side of an opening to meet in the centre.

The motor's steel base plate is set in concrete at the same time as the gate track. Their relative height will depend on the size of the gate wheel used, typically 80 – 100mm diameter.

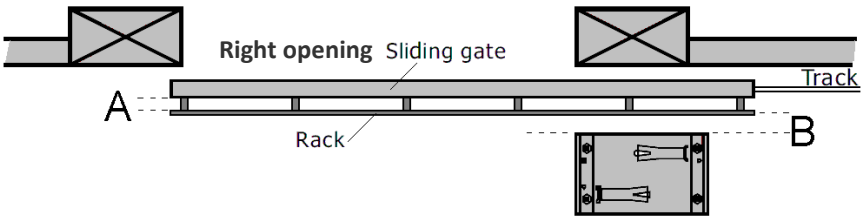
The motor can be packed higher to meet the rack if required. The toothed rack normally has slotted mounting holes to allow accurate adjustment.

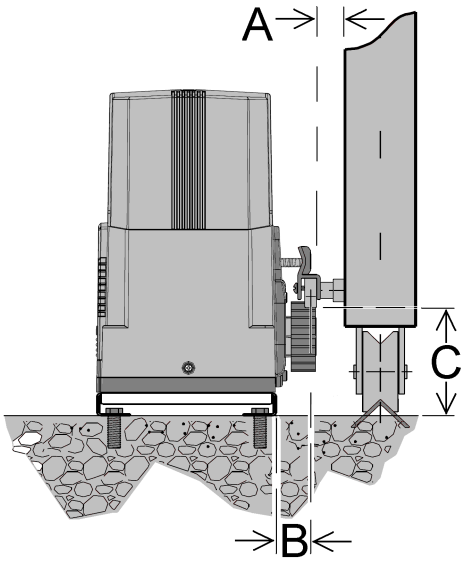
Alignment dimensions

A Allow 25mm from the face of the gate to the back of the toothed rack.

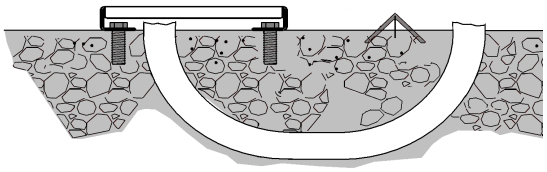
B Allow 30mm from the centre the toothed rack to the edge of the base plate.

C Allow a min 92mm from underside of the base plate to bottom of toothed rack.





For wheels bigger than 100mm diameter, it may be necessary to cast the base plate into a raised concrete plinth. If not, the base plate can be bolted to a ground level concrete pad incorporating the ground track. We recommend fixing studding with resin because the motor's high shear force and vibration is inclined to loosen expansion bolts. Always use washers and self locking nuts.

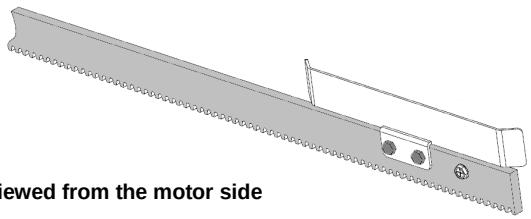


Mounting the motor and rack

Slotted holes in the motor base allow some adjustment. Mount the motor square to the gate with the rack central to the pinion.

The toothed rack is best fitted using the motor pinion to set the height. Make the fixing near the motor, then slide the gate along to set next fixing height. Allow a 2mm gap between rack and pinion to reduce drag and wear. This can be done by packing the motor up by 2mm, then remove the packing later.

Skis are brackets bolted to the toothed rack to strike the motor limit switches. Slide the gate to the open position. Set the ski so that it bends the spring. Repeat for the closed position. Final adjustment can be made when motor is running.



Skis fixing viewed from the motor side

Ducts & Cabling

When casting the foundations, be sure to provide one or more cable ducts to the underside of the motor base. It will not be possible to run cables above the gate's ground track. While installing the ground track, it is useful to run another duct or direct burial cable under the track to the opposite gate post.

Align the ducts with the fifth hole in the base plate. Cables will be required for mains supply, photo beams and any access control devices, for example an intercom. The motor has two cable glands in the base for the cables.

At minimum, you will need a low voltage cable to each gate post, and a mains supply to the motor base. The cable type will depend on the duct standard. An eight core outdoor grade alarm cable is adequate. More than one device at the same location can be run from one cable using the universal wiring scheme.

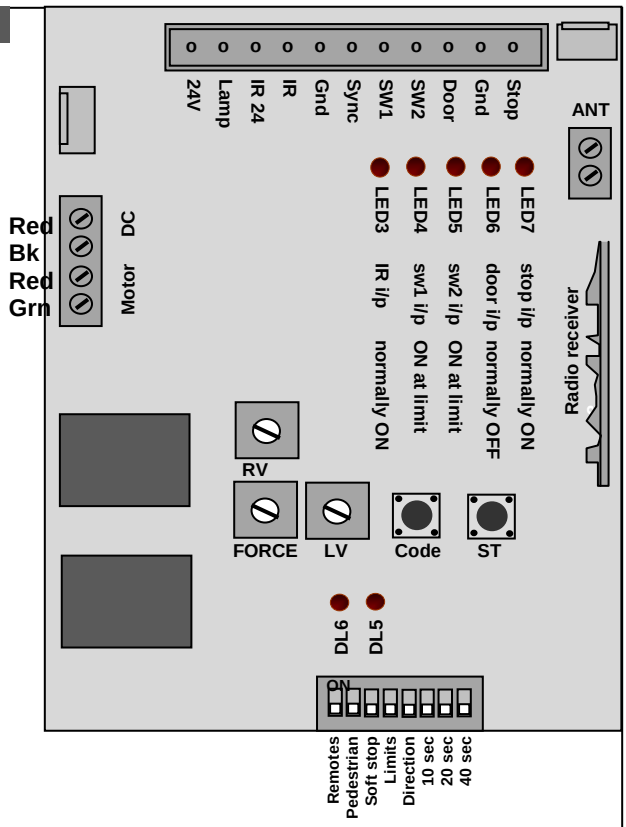
Device	Rating
Photo-beam on near post	1 core + Gnd
Photo-beam on far post	3 core + Gnd
Mains supply	2 core + Earth, typ. 1.5mm²
24V lamp output	2 core, typ. 0.5mm²
230Vac lamp	2 core + Earth, typ. 0.75mm²
Intercom	4 core + Gnd

1. Quick setup

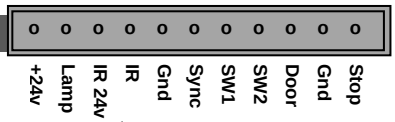
Motor must be engaged with the rack and skis set for short travel.

1. Connect mains supply to L & N terminals on power board.
2. Link terminals IR, Stop & Gnd. These will be linked from new.
3. Set DIP 3&6 up, the rest down. Set all adjustments to half way.
4. Hold down ST button for 5 secs until DL5 flashes. Let go.
5. Press ST once. Gate opens, stopping when at the left limit.

The gate will now open and close on the remote control, with a 10 sec auto-close.
A test setup can be done on the bench for familiarity. Limits will need to be reset.



2. Connections



Control connections are made at the top of the PCB on an 11 way plug-in screw terminal connector.

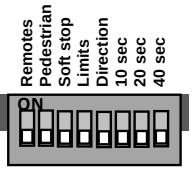
Terminal	Function	Description
Stop	Gate stops in either direction. On re-connection, the gate pauses then re-closes.	N/C switch connects between Stop and Gnd terminals
Door	Control button input	N/O button input connected between 'Door & Gnd terminal
Sync	Synchronising two motors	Interconnect 'Sync' and 'Gnd' terminals of the two motors
Lamp	24V flashing lamp or sounder output	Flashing 2Hz while motor runs. Use terminals 'Lamp' & '+24V'
24V	Accessory supply	Constant DC supply 32Vdc max
IR	Safety input re-opens while closing. Also for hold open	N/C contact between 'IR' & 'Gnd' terminal.
IR 24V	Photo beam power saving supply.	24Vdc supply on when the gate is in moving or open.
Gnd	Ground	Common to all I/O

The power board is on top of the transformer. Connect an RCD protected mains supply run in external grade cable. Refer to example wiring page for more info.

Terminal	Description
220V	Mains supply. Fused with T2.5A on the board
AC lamp (type FA40)	The lamp output ON while the motor is in motion. Use a mains rated cable. Optional.
Batt	Backup batteries fitted below the transformer. Optional. Use 1mm² wire.

There are five LEDs monitoring inputs. See the control panel drawing. DL5 and the ST button are used for programming the run times. DL5 also flashes quickly in slow down. DL6 an code button are used for programming remotes.

3. DIP switches



	OFF (down)	ON (up)
DIP1	**Buttons** - one enabled	Both remote buttons enabled to open
DIP2	**Pedestrian** - disabled	Pedestrian opening enabled by remote
DIP3	**Soft stop** disabled	Enables the end of travel slow down
DIP4	**Limits** – (N/O for Pico)	N/C (for other motors)
DIP5	**Right** to open	**Left** to open (as page 2)
DIP6	**Pause time** (all off disables auto-close)	+ 10secs
DIP7		+ 20secs
DIP8		+ 40secs

4. Adjustments

Adjustments set the safe running of the gate. Follow the order below. On completion additional controls and safety devices can be wired in without the need to re-adjust.

DIP switches. Typical setting; DIP1,2,3 on, DIP4 off. Refer to diagrams on previous page for DIP5. Pause times add together. (eg DIP6&7 ON gives 50secs).

RV. Speed setting. It determines kinetic energy of the gate which affects mid travel safety. Set heavy gates to run slower.

LV. Sets the speed in slow down zone. Set to close the gate firmly against the post within force test limits.

Force. Regulates the maximum force applied by the motor before obstacle detection kicks in. Set it high enough to move the gate reliably, but not much more. The finer it is set, the more sensitive to reversal.

Limit learning. Reset the skis after setting speed and force then re-run the limit learning. Hold down ST button for 5 secs until DL5 lights then let go. Press ST again. Gate opens and stops at the limit. Run a cycle.

Buttons. "CODE" adds remotes to memory. See below for programming. During programming, "ST" is used to set the run time. Afterwards, it acts as an on board "DOOR" input, useful during commissioning.

5. Remotes

Each remote button must be programmed individually. Buttons can be set for full opening (stops at limit switch), or pedestrian opening stops after 1.5m. To enable partial opening set DIP1 off, DIP2 on.

Up to 16 remotes can be programmed in. A programmed button when pressed, will light DL6 brightly. An un-programmed button flashes DL6 briefly, but shows the remote is functioning.

Full opening. Press CODE button for 2secs until DL6 lights. Press the new remote button twice. DL6 switches off

Pedestrian opening. Set DIP1 off and DIP2 on. Press CODE for 2secs until DL6 lit. Press CODE again. DL6 flashes. Press remote's pedestrian button twice. DL6 switches off.

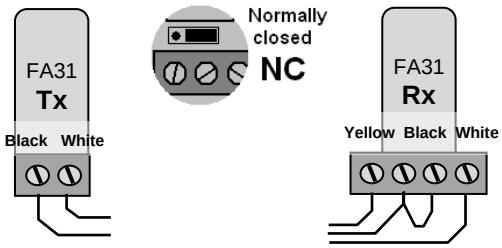
Universal wiring scheme

Following a standard wiring scheme simplifies wiring while allowing additions in the future. For PICO we recommend an 8 core alarm cable with the following allocation.

Core	Function	Terminal
Red	Accessory supply	**24V**
Black	Supply & input common	**Gnd**
Yellow	Safety input 1	**IR**
Orange	Safety input 2	**STOP**
White	Switched accessory supply	**IR24**
Green	Open button	**DOOR**
Blue	Audio2 or pedestrian input or safety link	
Brown	Audio1 or lock or DC lamp	

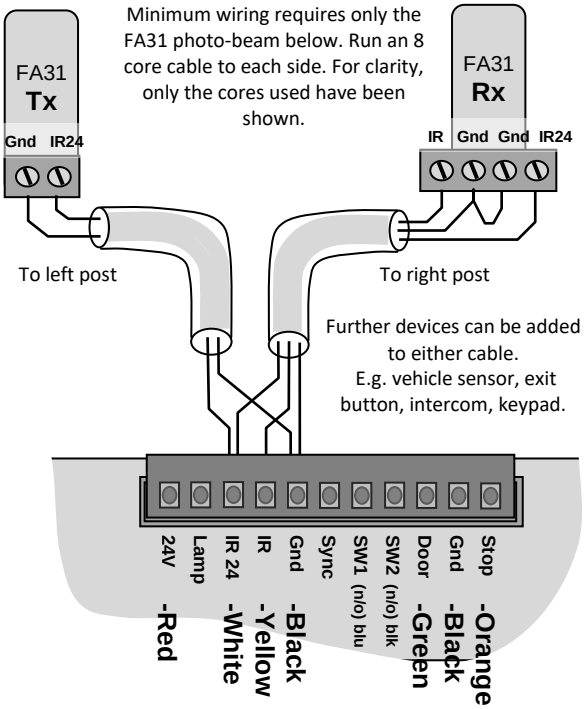
Run a cable to each location, or from one device to the next in a chain. Connect to the device according to the table below. The PICO also has the benefit of wireless devices.

FA31 Photo-beam (single set)



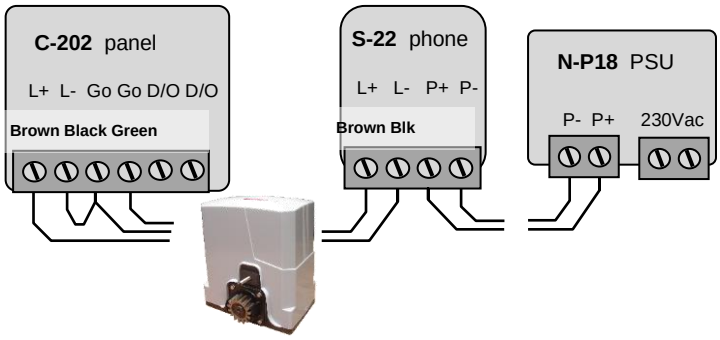
Make sure the link on the FA31 Rx is set to NC as shown.

PICO set wiring



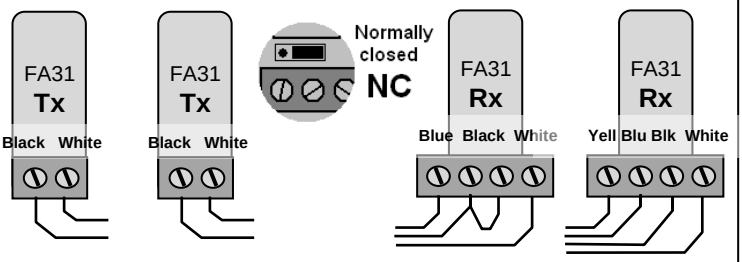
R200 Intercom

This 2 wire intercom follows the universal wiring scheme. Wire the power supply to the house phone (P+ & P-).



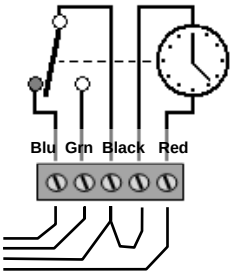
FA31 Photo-beam (double set)

The wiring is different for two photo-beams. In this scheme the two blue wires are joined together in the control panel. Make sure the link on both FA31 Rx is set to NC as shown.



Timer & hold open

A hold open device such as a timer or switch can be included. It takes the place of the first photo-beam Rx in the diagram above. There is also a green wire connection.



Declaration of Conformity

We hereby declare, that gate openers F-550 has been manufactured in accordance with the following standards or normative documents

EN 60335-2-95: 2004
EN 60335-1/A13: 2008/A2: 2006
EN 62233: 2008
EN 61000-3-2: 2006, + A1: 2009 +A2: 2009
EN 61000-3-3: 2008
EN 55014-1: 2006 +A1: 2009 EN 55014-2: 1997 +A2: 2008
EN 50371: 2002

In accordance with the provisions of the following directives
98/37/EC Machinery Directive with amending directives
2006/95/EC LV Directive
2004/108/EEC EMC Directive
1999/5/EC R&TTE Directive

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WARRANTY

3 year return to base warranty covers defective manufacture and material. The warranty does not cover accidental damage, misuse, or abnormal wear. Warranty is conditional on good installation, maintenance and service recommended in this manual. Warranty is void if PICO is subject of unauthorised modification or repair, or abnormal input voltage. This does not affect your statutory rights