



## Features

**EL-EX5A** Heavy Duty Sliding Gate Automatic System with state of the art micro computer controller. Equipped with heavy Duty AC Motor 230Vac. Suitable for Sliding Gate weight up to 1,500 kg.  
Safety Approval: **CE**

## Advance Features

- Auto-reverse on closing if it hits an obstacle
- Stopping on opening if it hits an obstacle
- Control to stop immediately at any time when gate is moving
- Limit switch N.C./N.O. selectable (using micro-switch)
- Automatic lighting control with optional photo sensor
- Dual lighting mode control: Follow or delay selectable
- Led indications for easy installation and fault diagnosis
- Photo Electric beam control input available
- Adjustable forcing sensing trimmer
- Emergency release key in case of power failure
- External Dimension : 260mm (L) x 150mm (W) x 240mm (H)

## Specification

### Transmitter and Receiver

- Type: Battery operated, crystal controlled frequency. Modulated radio wave
- Range: Effective 40 Meter
- Pass code: Set by 8 x 3 ways switches easily accessible & changed by user
- Battery: Under normal usage, Battery should last for 6 months
- Case Size: 50mm (L) x 35mm (W) x 12mm (H)

### Gear Rack

- Module: 4 pcs in 1 carton, Galvanized
- Dimension : 1005mm (L) x 30mm (W) x 12mm (H) , weight : 10 kg

## Technical Specification

- Power supply: AC220 V 10%, 50Hz
- Motor speed: 1400 r/min
- Starting current: < 4A
- Opening speed: 12m/min
- Opening strength: > 370 N
- Working temperature: 30C 40C
- Net weight 17kg (including spare parts)



## User Guide:

### Main functions and working conditions

The device is used to drive the sliding gates, with the moving speed of 12 meters per minute, EX5 gate operator is Powered by AC 220V, 50 Hz. It is featured with powerful starting strength, capable of overload at short time. When it is overload, it is protected electrically and mechanically. In case of power failure, a key can be used to release. The device and move the gates manually. The device can be installed indoors or outdoors.

### Working principle and main structure

The size of the out appearance can be seen in Fig. 1.

The device is composed of a single phase motor, worm and worm gear. The main shaft of the motor rotates the worm by the clutch, the worm rotates the worm gear and output gears, which push the racks attached to the sliding gates, thus makes the gates slide.

The structure of the motor and worm is shown in Fig. 2.

Accounting to the weight of the gates and the safety function, the pressure screws can be adjusted. Either pressing or releasing the springs, to produce a small axial motion by the clutch plate at the end of the motor, resulting in the change the pressure between the clutch plate and the output strength as well.

The structure of the worm gear components is shown in Fig. 3.

They consist of a pair of high intensity plastic gear clutch, which can be geared to move the gate by motor. If the clutch is released by key, the gates can be moved manually.

The device is well cooled by the cooling oil, which fills the whole device, including the stator, the rotor of the motor, the worm gear and the worm. The electric controller of the device is installed a time delay equipment, the delay time should be more 5 seconds than gate moving time.

## Installation and adjustment

- The gate operator and the sliding gates should be installed according to Fig. 4, and controlled by button controller. To ensure the safety, it is highly recommended to install a limit device to prevent the gate sliding out of the rails. The rails must be installed horizontally and straight.
- Installation of the gate operator  
The foundation of the gate operator is shown in Fig. 5 and the position between the gate operator and the sliding gate is shown in Fig. 6. When the cements solidified, put the gate operator on the base plate and press it in the direction as shown in Fig. 6. Adjust it to the proper position and fix it with screws and nuts.
- Installation of racks:
  - Weld the fixing shaft (inside the racks package) to the gate;
  - Fix the racks to the fixing shaft with screws and adjust the position of the racks so that the racks can be engaged correctly with gear and the allowance is 1 mm.
  - Install the magnetic switch as shown in Fig. 6 and 7. A magnetic sensitive switch is installed to control the positions of the gates. When the switch is installed, release the gear clutch and push the sliding gates manually to pre determine the position. Then weld the magnetic fixed plate to the racks and lighten the gear clutch. Adjust the magnetic switch to the proper position by moving the gate with the motor. The switch box be within 15 to 20 mm from the magnetic steel. If too far away, the switch would fail to work. (See Fig. 6)

## Installation of Electric Controller

Place the electric controller in the proper position and wire the lines according to the wiring scheme. (See Fig. 8)

## Operation

- Check whether there is cooling oil (filled before shipping) before using the operator. Refill the transformer oil NO. 25 if the oil is below the marked line. Cover the oil tank after refill but not too tightly in case the oil, when heated and pressured, would produce leakage.
- Check the power supply and grounding and wiring before using the operator.
- Release the gear clutch with the special key to make sure whether the gates can be moved manually. If everything goes smoothly, tighten back the clutch with the key.
- Switch on the power and start the operator to watch whether the gates slide smoothly.
- Adjust the position of the magnetic switch until the positions of the opening and closing meet the requirement.
- Adjust the pressure screw to make the output of the gate operator meet the user's requirement, that is, the device is powerful enough to move the gates and capable of release from the clutch when it is blocked.
- The special motor of the operator is only designed to work for short time. It is runs continually for a long time, it would stop work for too hot.

## Maintenance

- When the environment temperature is above -10°C, choose transformer oil No. 25 as the cooling oil. If the temperature drops to below -10°C, transformer oil No. 45 should be used.
- Check the oil monthly and refill if necessary. Change the oil once a year if possible.
- In case of rust, put some grease to the end of the worm gear shaft.
- Regular check the grounding.
- The spare parts can be purchased directly from our factory.

## Troubles and solution

Troubles	Possible Position	Cause	Solution
Too weak to move the gate	(friction) clutch	The pressure on friction clutch too small	Increase the pressure by adjusting the pressure screw
Motor stops when sliding gates are blocked	(friction) clutch	The pressure on friction clutch too big	Reduce the pressure by releasing the pressure screw
Sliding gate fails to move back after opening or closing	Worm gear and worm are blocked	Wrong position of magnetic switch	Release clutch with the key and push gates back and readjust the position of magnetic switch
Oil leakage at sealing parts	Sealing rings, output shaft, oil meter, oil refill oil hole and ends of lines	Temperature too high, over-working and increased pressure	Loose the cover of oil tank and left off air inside the motor

**FIGURE 1**

1. Output gear 2. Pressure nut 3. Gear clutch  
4. Worm gear 5. Mandrel 6. Release key

**FIGURE 2**

1. Pressure screw 2. Pressure spring 3. Rotator  
4. Friction plate 5. Worm 6. Taper bearing

**FIGURE 3**

1. Output gear 2. Pressure nut 3. Gear clutch  
4. Worm gear 5. Mandrel 6. Release key

**FIGURE 4**

1. Sliding gate 2. Electric controller 3. Power  
4. Gate operator

**FIGURE 5**

Size of foundation L: 350mm W: 300mm D: 350mm  
1. U Shape steel 2. Bolt 3. Base plate  
4. Pressure bar 5. Power supply

**FIGURE 6**

1. Sliding gate 2. Magnet 3. Magnet fixing plate  
4. Fixed pile 5. Rack 6. Output gear

**FIGURE 7**

1. Output Gear 2. Pressure Nut 3. Gear Clutch  
4. Worm Gear 5. Mandrel 6. Release key

**Spring Switch Type**  
1. Jam screw 2. Strike block 3. Rack

**Magnet Switch Type**  
1. Magnet 2. Magnet fixing plate 3. Rack  
4. Welding position

**FIGURE 8**

1. Jam screw 2. Strike block 3. Rack

**FIGURE 9**

1. Pressure screw 2. Special motor 3. Wiring terminal  
4. Capacitor 5. Magnetic switch 6. Output gear  
7. Operator shell 8. L Shape steel 9. Oil screw

**REMOTE TRANSMITTER**

**Press Button**  
• Press 1 or 2 to open/close gate  
• Press 1 or 2 during movement to stop gate

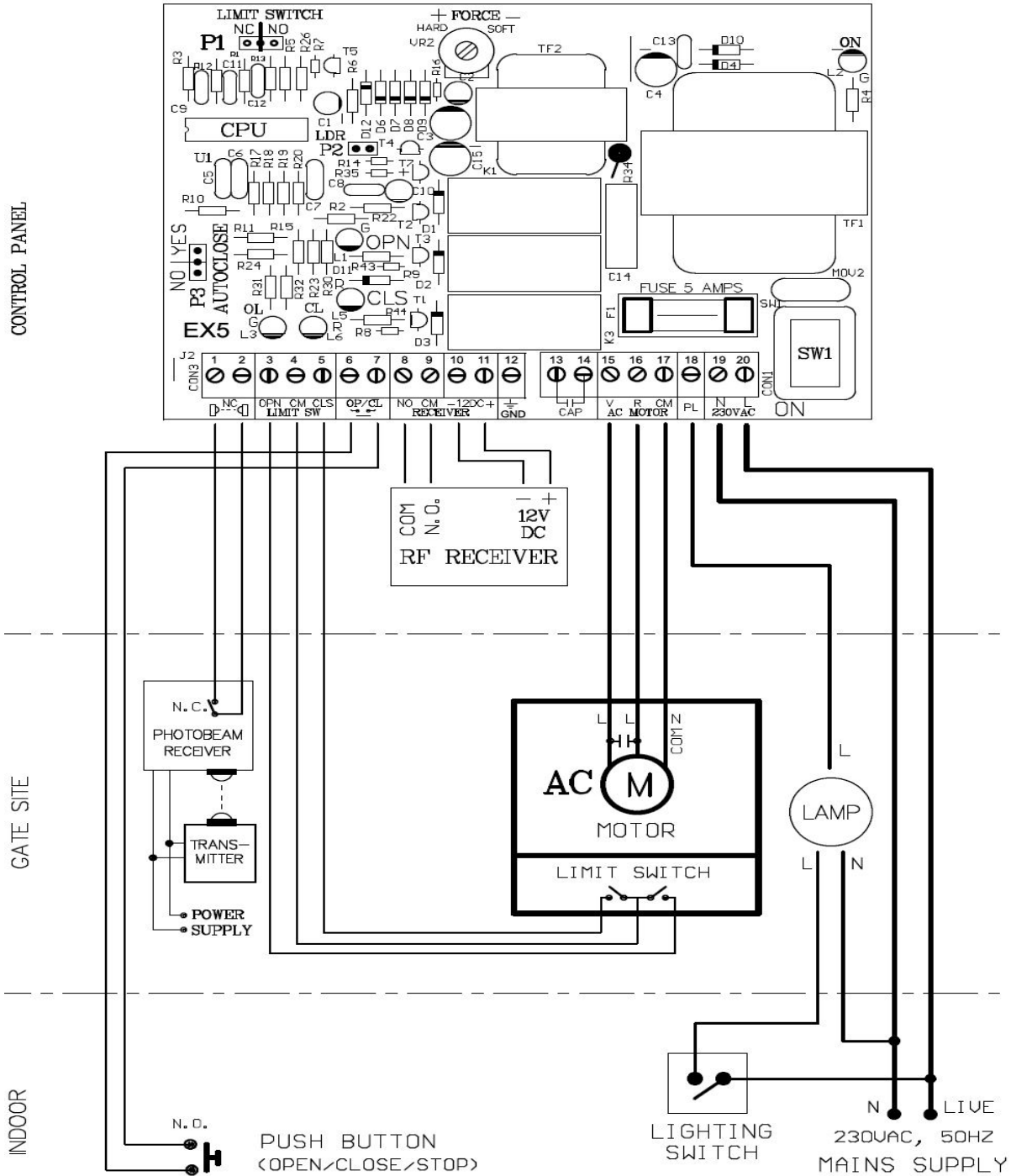
**Battery Level Indicator**  
If indicator light may be low. Please replace battery.  
Battery type 12V DC

**Inside of Transmitter**  
8 way x 3 Dip Switch  
(the Switch Are user selectable and both the transmitter and receiver should have matching selection for proper function)

**Receiver Card**  
8 way x 3 Dip Switch  
(the Switch Are user selectable and both the receiver and transmitter should have matching selection for proper function)

See diagram on the top portion of control panel connection No 8, 9, 12, 13

## Electrical Connection



## Operation Instructions

With a push and release of a push button or RF transmitter, the gate slides open. It will continue to move until it reaches the open limit position. The next press will make the gate moves in closing direction. Upon reaching the close limit position, it stops again. If the is moving and a pushbutton is pressed, the gate will stop. Another press later will move the gate in the reverse direction.

A dynamic force sensing device is built in to prevent jamming. Control point for safety device using photo beam is also provided. Maximum motor running time is 90 second; once exceeded, it will be cut out automatically to prevent overheating.

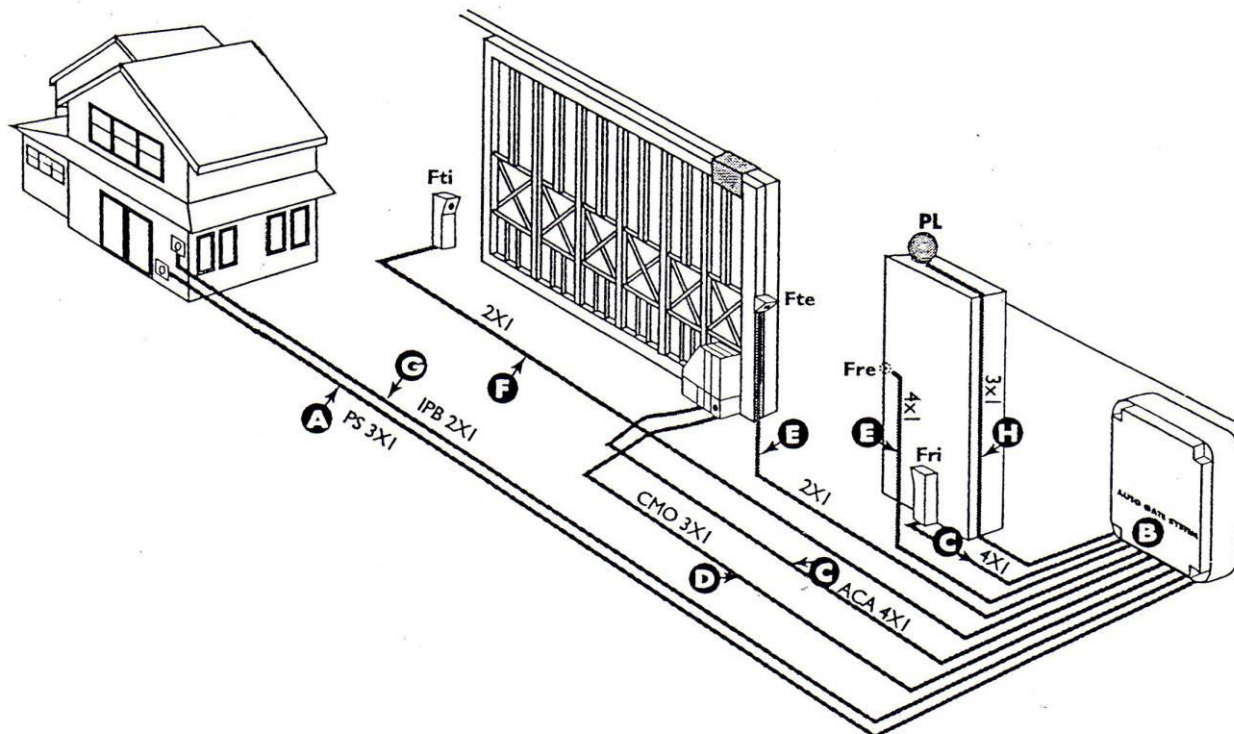
## Function Description

- Dynamic force sensing
  - VR2** Closing and opening dynamic force adjustment. Tuning VR2 clockwise for more sensitive reaction.  
During closing, gate reverses if overload occurred.  
During opening, gate stops if overload occurred.
  
- Photobeam or loop detector
  - 1, 2** This is a N.C. input points for additional safety protection.
    1. If the gate had stopped before photobeam is blocked, push button press has no effect.
    2. During closing, photobeam block will cause the gate to open.
    3. During opening, photobeam block is ignored.
  
- Limit switch terminals
  - 3, 4, 5** Terminal 3 is open limit control, 4 is common point and 5 for close limit.  
Limit switch mode, NC or NO type, is selectable by jumper P1.
  
- Open/Close push button
  - 6, 7** This push button (N.O.) will cause the gate to open, stop and close with each subsequent trigger.
  
- Wireless remote control
  - 8, 9** These 2 points are connected to the wireless receiver's N.O. output control.
  - 10, 11** These 2 points are the receiver's 12V DC power supply terminals.

- Induction motor (AC)
  - 13, 14** Optional terminals for the motor's capacitor.
  - 15, 16, 17** Connect to induction motor (1 HP max); terminal 17 is the common point.
  
- Automatic lighting
  - 18** Output is 230VAC. It is always on whenever the gate is opened fully or partially. It will be off after it is closed shut. If there is a manual switch to it, ensure same power phase is used.
  
- Main Power Supply
  - 19, 20** Terminal 20 is the Live input and terminal 19 is the Neutral point. This connection must be followed if pillar lighting is used. Nominal mains power is 230VAC, 50Hz
  
- Auto close function
  - P3** Auto close is cancelled if jumper is set at NO position. If set to YES position, the gate will automatically start to close in 30 seconds after it has opened fully.



## Arrangement of The Electrical Installation



	PARTICULARS		WIRES
<b>A</b>	<b>PS</b>	Power supply AC 230V to operate the Control Panel, Actuator, Receiver, Micro Switch and Push Button Switch are optional	2.5mm
<b>B</b>		Control Box, Control Panel, Transformer and Receiver	
<b>G</b>	<b>ACA</b>	A. C. Actuator 230V 50Hz	1.5mm
<b>D</b>	<b>CMO</b>	Colse. Com. Open (micro switch)	1.5mm
<b>E</b>	<b>Fte - Fre</b>	Pair of photo cells external Transmitter and Receiver (optional)	
<b>F</b>	<b>Fti - Fri</b>	Pair of photo cells internal Transmitter and Receiver (optional)	
<b>G</b>	<b>IPB</b>	Indoor Push Button	1.5mm
<b>H</b>	<b>PL</b>	Pillar Light	1.5mm