MAG® | Ensuring Your Peace of Mind.

INSTALLATION GUIDE

BG856 ECO SERIES MAG SPRING-FREE BARRIER GATE

GOOD QUALITY & INNOVATION

EXPERT KNOWLEDGE & EXPERIENCE

EXCELLENCE SUPPORT & SERVICE

BG856 MAG SPRING-FREE BARRIER GATE

Description

The **MAG BG856 Spring-Free Barrier Gate** offers a reliable and efficient solution for vehicle access control, engineered for simplified operation and minimal maintenance. Its innovative spring-free design allows for swift left-right arm conversion and easy adaptation to various arm lengths, reducing complexity and inventory needs.

Cost-effective and user-friendly, the MAG BG856 Spring-Free Barrier Gate is your ideal choice for entrance security automation.

Features

Spring-free design allows maximum flexibility and best user experience. Left-right facing conversion is achievable within 1 minute without spring constraints.

RedSpeed Motor is engineered for spring-free operation, built with hardened gears to ensure reliable, cool-running for years. Integrated sensor enables precise, smooth motion control, ideal for high-traffic demands and lasting durability.

Multi-Speed Drive. The BG856 spring-free RedSpeed Motor ensure smooth arm motion at the end of a swift opening/closing.

Smart Preset simplifies setup by automatically configuring speed settings based on arm length selection, saving time and eliminating manual adjustments for optimal performance.

Smart Memory streamlines access control integration, minimizing unnecessary arm movements during peak hours. Ensures smoother, faster throughput, preventing bottlenecks.

Versatile Integration Easily integrate the BG856 with any access controller, vehicle sensor and push button with dry contact input; or use the included remote controller.

Status Indicator LED provides clear, intuitive visual feedback on gate status, enhancing user experience and improving nighttime visibility for safer traffic flow.

Obstacle Detection automatically reverses the arm upon detecting an obstruction, preventing accidents and minimizing potential damage to vehicles or injury to pedestrians.

Arm Swing-Out upon accidental vehicle impact, the arm detaches, significantly reducing damage to both the vehicle and the barrier gate, minimizing repair costs and downtime.

Electronic Clutch enables quick and effortless manual arm operation during power failure, unlike slower, hand-wheel systems, providing flexible traffic and security management.

Advanced Controller offers features like Error Display, Delay Auto Closing, Motorcade and more, providing exceptional adaptability to specific project requirements and optimizing efficiency.

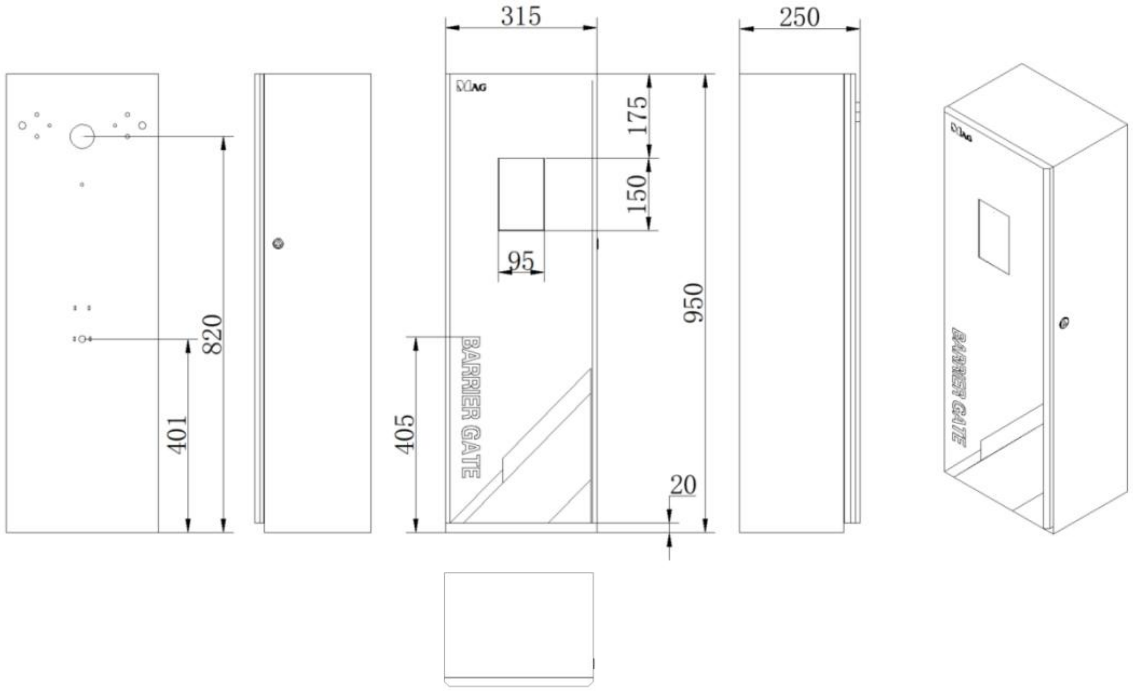
Table of Content

Technical Parameter

Motor	MAG RedSpeed DC Brushless Motor
Max. Torque (arm shaft)	290 Nm
Max. Speed (motor)	650 rpm
Max. Power	180W
Operating Temperature	-35° to 70 °C
Power Supply Input	220V ± 10% AC, 50/60Hz DC Power Supply 24V 10A
Relative Humidity	< 80 %, non-condensing
Pass Through Time	1.8 to 4s, based on arm length
Arm Type and Length	Telescopic arm up to 4.5m 90° Folding arm up to 4m
IP Rating	IP54
Mean Time Before Failure (MTBF)	3.5 million times

1. Barrier arm may have minimal jerk at end position due to manufacturing tolerance of drive mechanism and motor precision. Improper usage (e.g. using heavier or longer arm, adding extra weight on arm) may cause exaggerated jerking and accelerated wear and tear.
2. Barrier arm open and close position may vary ±1° due to manufacturing tolerance, which will not affect functionality or reliability.

Housing

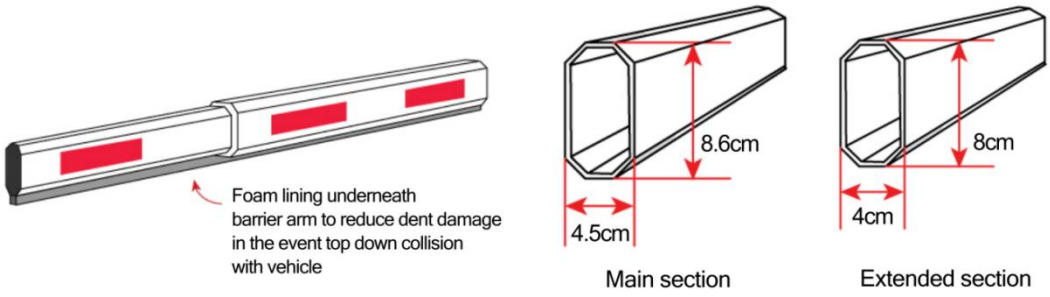


Front Door: RAL7016
Body: RAL7024

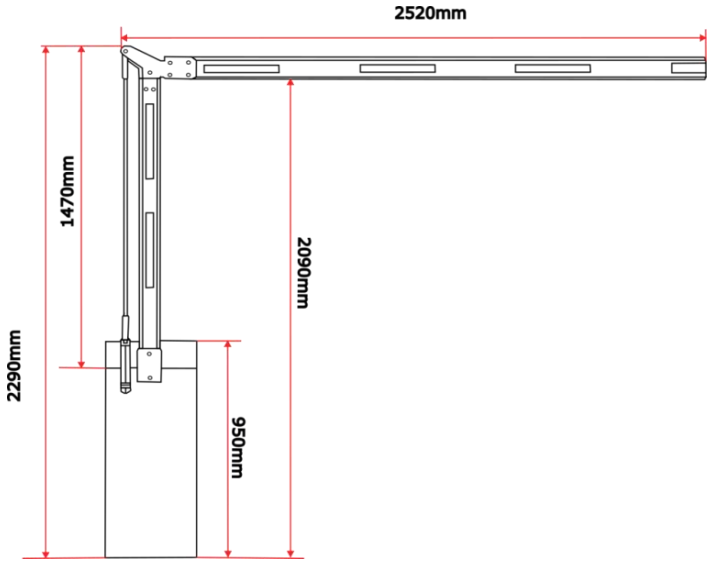
Barrier Arm (Telescopic)

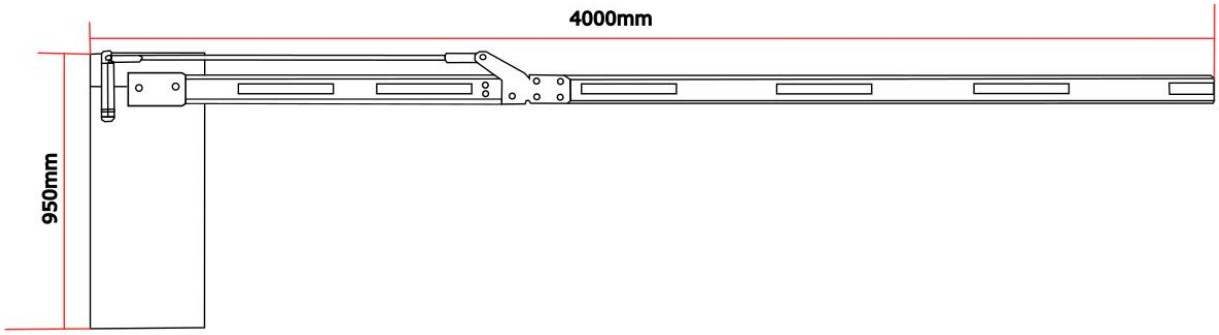
Telescopic arm (no LED)

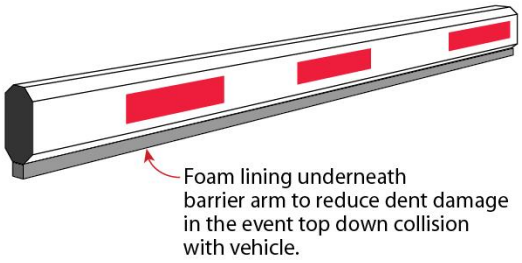
The arm is constructed from octagonal hollow aluminum, available in standard length of 4.5m and 6m. Red reflective adhesive is applied alternately on the arm for improved visibility at night.

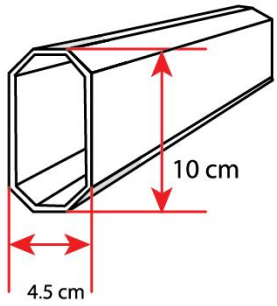


90° Folding arm









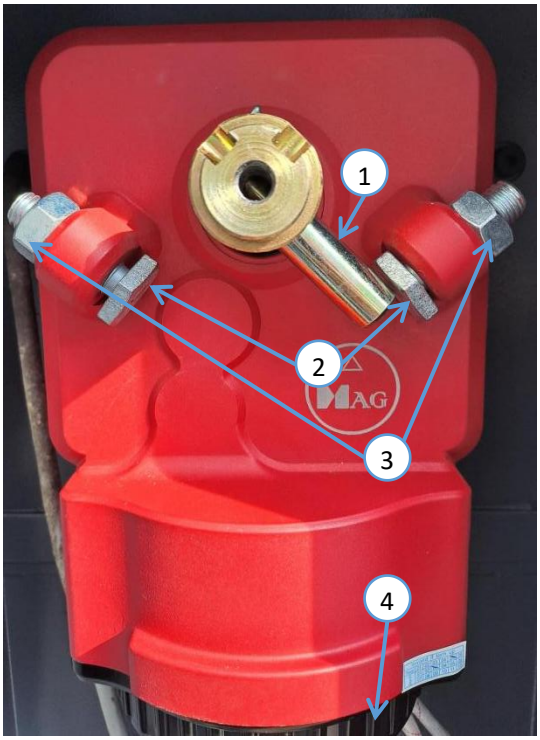
Folding arm

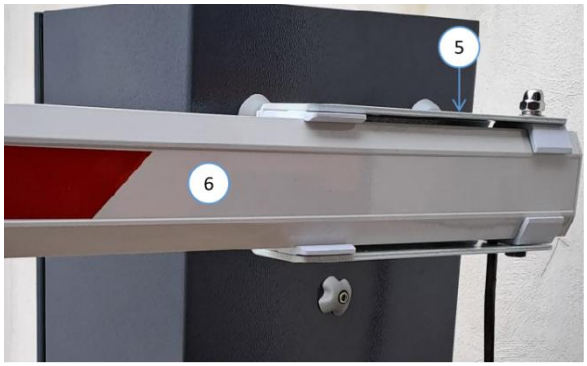
NOTE

For indoor parking applications, a folding arm is recommended due to its space-saving design.

However, for outdoor installations exposed to harsh weather conditions, upgrading the folding arm connectors to a stainless steel variant is advisable to ensure long-term durability and resistance to corrosion.

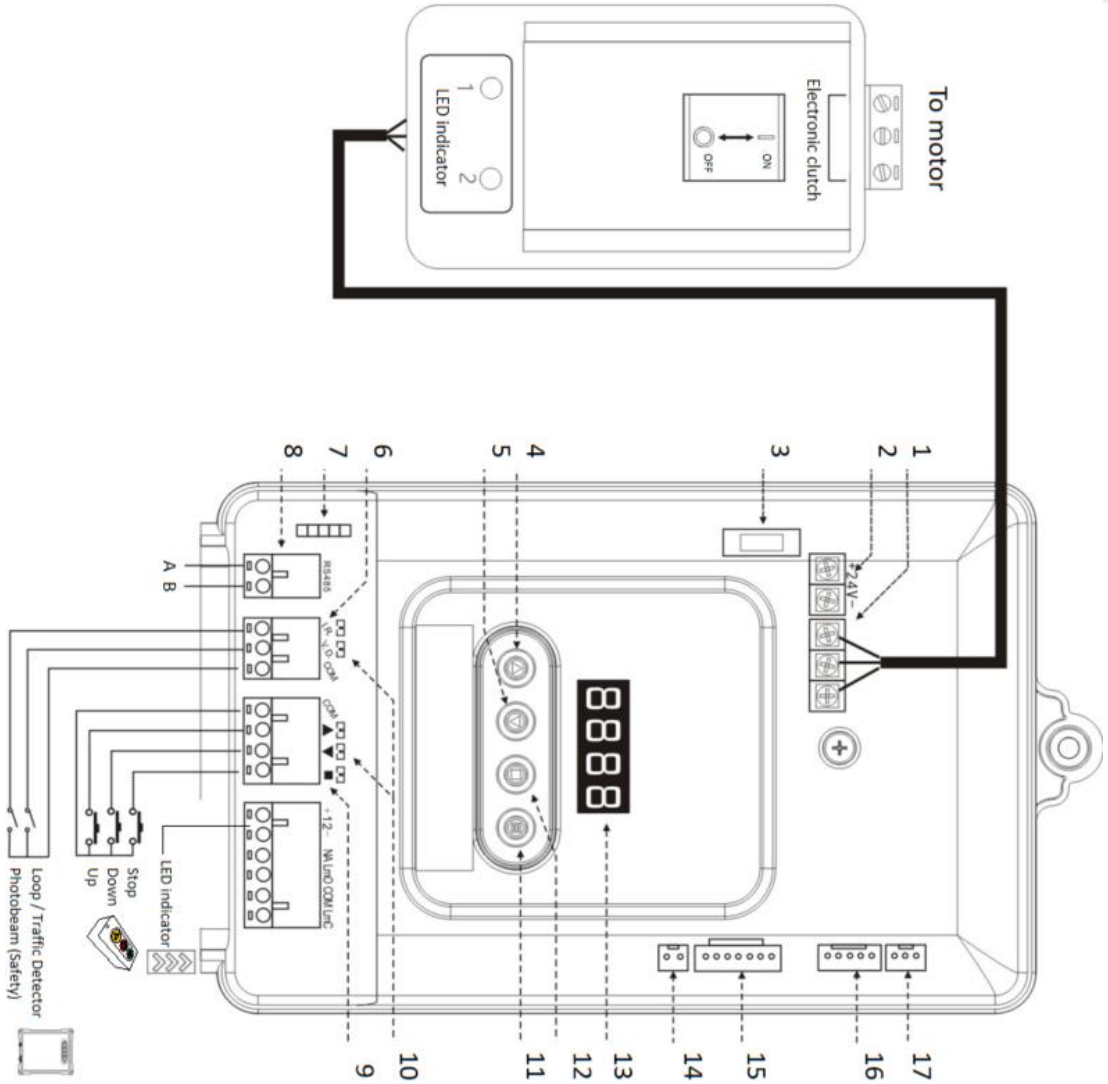
Mechanical Parts





No	Component
1	Mechanical Limit Pin
2	Mechanical Limit Screws
3	Mechanical Limit Nut
4	Motor
5	Arm Bracket
6	Arm

Main Controller Board

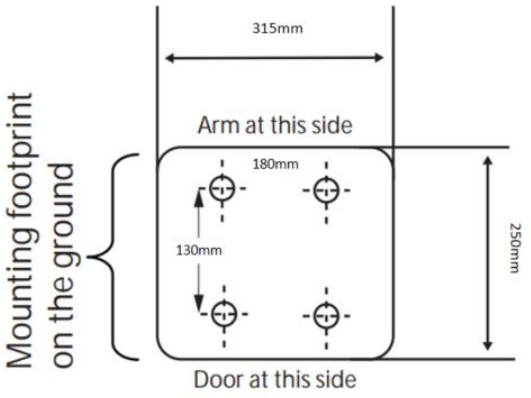


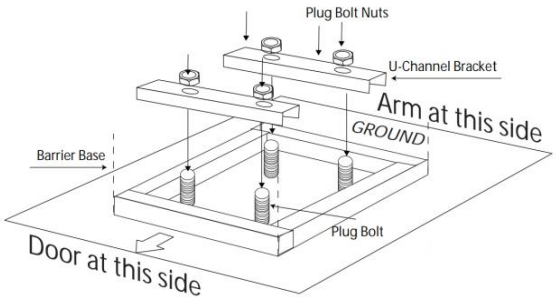
No	Component
1	Electronic Clutch
2	Power Supply (DC 24V)
3	Fuse
4	UP Test Button
5	DOWN Test Button
6	Vehicle Sensor Interface
7	*(not in use)*
8	*(not in use)*
9	Push Button or Access Control
10	LED Signal Status Indicator
11	MENU Button
12	STOP Test Button
13	7-segment Display
14	Fan Connector
15	Motor Sensor
16	Remote Control
17	

Installation

A. Base Installation

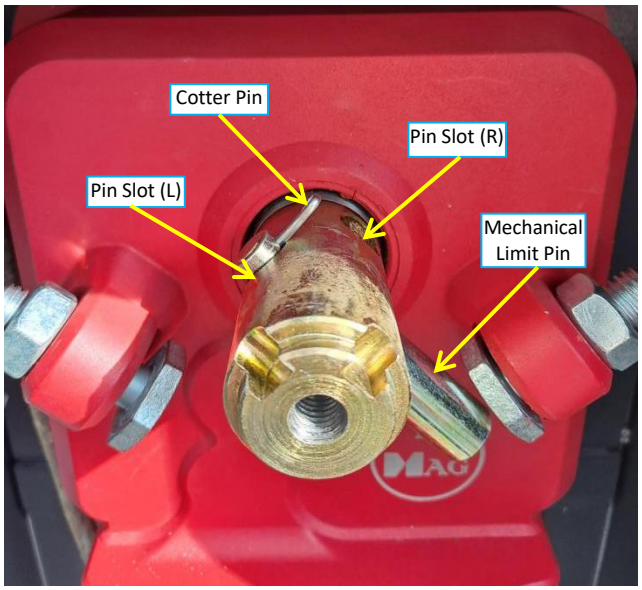
1. Mount the barrier base on the ground using U-channel bracket and plug bolt.
2. Mark the ground based on the plug bolt position.
3. Secure barrier base with U-channel bracket on the ground.





B. Orientation (Left / Right) Settings

Note: It is recommended to perform this setting before installing the arm. (refer to Preset Selection for more info)



When required, BG856 can alternate its arm orientation through the following steps:

1. Remove the Cotter Pin with a pliers.
2. Remove the Mechanical Limit Pin from the pin slot from the bottom.
3. Place the Mechanical Limit Pin in the alternate Left/Right Pin Slot.
4. Re-secure the Mechanical Limit Pin using the Cotter Pin.

Press and hold STOP (■) and MENU (≡) button simultaneously.

At A-01, press MENU (≡) to enter A-01 menu.
Press UP or DOWN until the desired value, then press MENU (≡) to save the value.
Press STOP (■) to exit the menu and return to operation.

5. On the Main Controller Board, press and hold “Stop” and “Menu” button simultaneously to enter Advanced Menu (A-XX). Navigate to A-01, then press Menu and select the appropriate value using “Up” or “Down” button.
   a) Left: set A-01 = 3
   b) Right: set A-01 =2

Press “Menu” button to confirm the settings and then “Stop” to exit the menu.

6. Select the appropriate speed settings, either through preset (A-02) or by manually adjusting each parameter in Normal Menu (N-XX).

C. Preset Selection

Press and hold STOP (■) and MENU (≡) button simultaneously.

-Navigate to A-02 by pressing UP.
-Press MENU (≡) to enter A-02 menu.
-Press UP or DOWN until the desired value, then press MENU (≡) to save the value.
Press STOP (■) to exit the menu and return to operation.

1. Press and hold the “Menu” and”Stop” button simultaneously on the main controller board to enter Advance Menu (A-XX).
2. Press “Up” button to navigate to A-02, then press “Menu” to enter.
3. Select the matching preset according to your actual arm length and type.
4. Press “Menu” button to confirm the settings and then “Stop” to exit the menu.

Arm Type	Arm Length	Orientation	Preset		Pass Through Time (s)
			A-01	A-02	
Telescopic	2.5m and below	L	3	1	1.7
		R	2	2	
Telescopic	2.6m to 3m	L	3	3	1.8
		R	2	4	
Telescopic	3.1m to 3.5m	L	3	5	2.0
		R	2	6	
Telescopic	3.6m to 4m	L	3	7	2.2
		R	2	8	
Telescopic	4.1m to 4.5m	L	3	9	2.5
		R	2	10	
Telescopic	4.6m to 5m	L	3	11	3.0
		R	2	12	
Telescopic	5.1m to 6m	L	3	13	3.5
		R	2	14	
Folding	4m and below	L	3	15	1.8
		R	2	16	

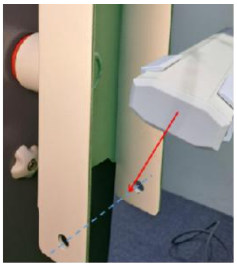
D. Arm Installation

(Telescopic Arm, 4.5m and Below)

Note: For BG856 Spring-free Barrier Gate, you may retract the excess length of the extension arm into the main arm.

After retracting to the appropriate length, drill 4 holes (2 top, 2 bottom, following the holes provided on the main arm) through and secure the extension arm with the steel sleeve screws provided.)

Align and insert the plastic bracket into both sides of the telescopic arm.



Slide the arm into the bracket. Align the screw holes and insert the long screw to secure the arm onto the arm bracket.

Press the arm and ensure it fits tightly into the clip.

1. Align and insert the plastic clip at the last screw hole of the barrier arm.
2. Ensure the barrier gate is in up / open position.
3. Slide the barrier arm into the arm bracket and align the last screw hole. Then insert the long screw and ensure it goes through completely.
4. Press the barrier arm into the arm bracket until an audible click is heard. Check and ensure the barrier arm is secured by the front plastic clip.
5. Tighten the nut on the long screw.

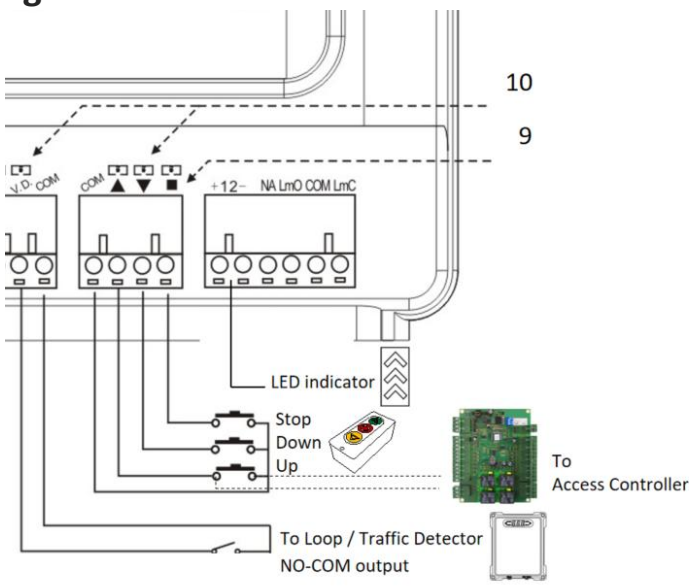
E. Mechanical Limit Screw Settings

To ensure best arm alignment, it is advised to adjust the mechanical limit screw so that the mechanical limit pin is resting on the screw while the arm is level.
1. Press “Up”, then “Down” once to check the position of the mechanical limit screw and the pin.
2. Adjust the mechanical limit screw until it touches the mechanical limit pin, then tighten the nut to secure this position.

F. Arm angle adjustment

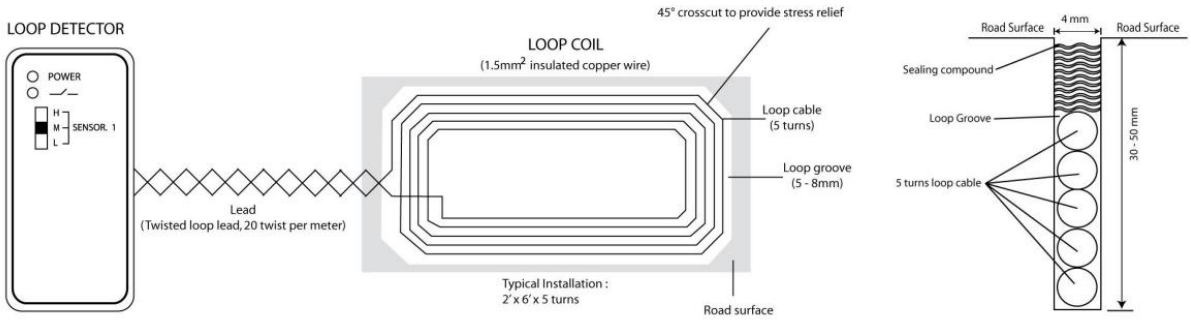
1. Press the “Menu” button (≡).
2. For UP limit, navigate to N-01, then press the “Menu” button again. Press “Up” or “Down” until the desired value.
3. Press “Menu” button to save. Press “Stop” to return to operation.
4. For DOWN limit, navigate to N-07, then press the “Menu” button again. Press “Up” or “Down” until the desired value.
5. Press “Menu” button to save. Press “Stop” to return to operation.

G. Typical Wiring Connection



H. Loop / Traffic Detector

Loop Detector



Nominal groove width: 4mm
Nominal groove depth: 30 to 50 mm

1. Loop must consist of multi-strand insulated copper wire with cross-sectional area equivalent of 0.75mm^2 and above. Insulation of the wire must be able to withstand high temperature and corrosion. Do not use single strand copper wire as it will easily break.

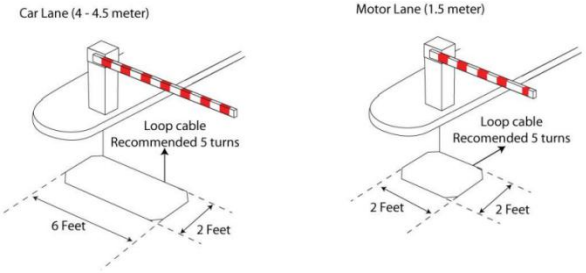
(RECOMMENDED) High temperature loop cable

Loop cable 0.75mm^2 stranded wire with Teflon insulator. Highly recommended when hot asphalt is used to fill into loop groove as it provide great resistance against long term high temperature exposure.

2. When long feeders are used or feeders are routed together with other electrical wiring, the use of screened cable is highly recommended for the feeder. The screen must be earthed at the detector end only.

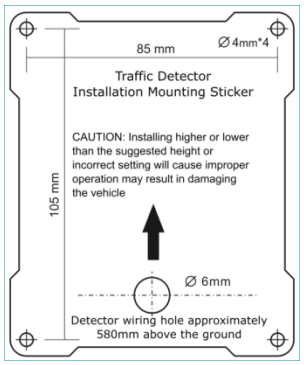
3. When winding the loop cable, please make sure it is not twisted. All wire in the groove must run almost perfectly parallel with each other. Only the feeder cable need to be twisted.

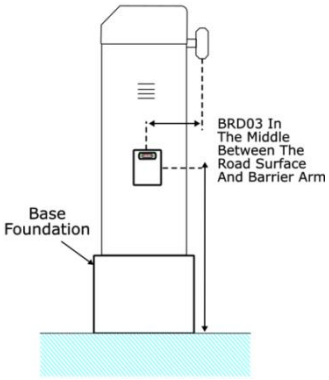
4. When silicon is used to fill up the groove, make sure to press tightly downwards to ensure there is no space for the wires to vibrate, which will ensure reliability.
Example:



Traffic Detector

1. Before the installation, make sure there are no obstacles within the detection range except the barrier arm.
2. The BRD03 DualRay traffic detector need to be installed 550mm from the bottom of the barrier gate (base included).
3. Use the mounting sticker / template included inside the BRD03 DualRay packaging box. Paste the sticker on the area that BRD03 DualRay will be mounted.
4. Drill all necessary hole by referring to the template.
5. Mount the BRD03 DualRay on the surface and insert all 4 screw and cable into each hole.





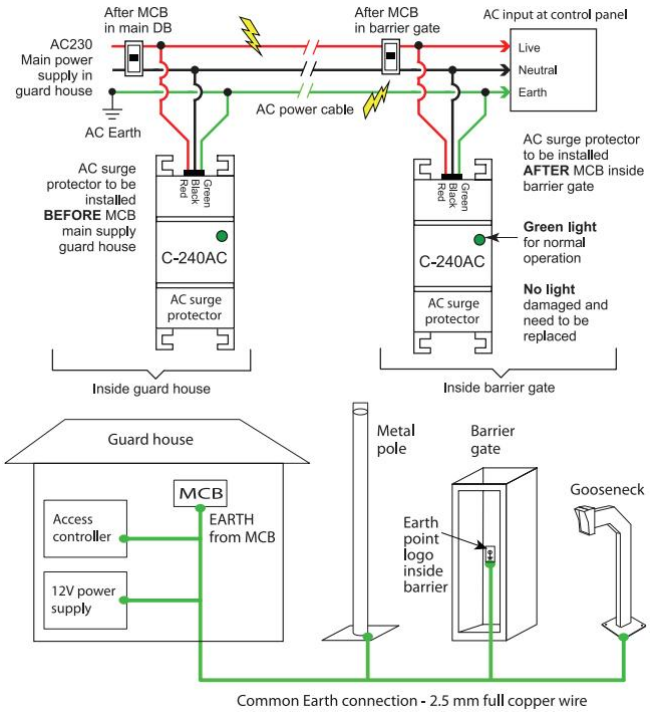
NOTE

For a higher base foundation, the traffic detector must be located in the middle between the road surface and below the barrier gate arm. Sensitivity must be set to high.

It is advisable to use double-sided tape first to test the exact height for optimal performance.

I. Surge Protection Installation Guide

1. It is COMPULSORY to install surge protector when installing barrier gate outdoor.
2. All installed surge protector must be connected to earth.
3. Metal housing of all equipment must be connected together to a Common Earth.
4. Earth connection wiring must be at least 2.5mm.
5. Warranty does not cover damage due to lightning surge.



J. Other Function

Manual Release with Electronic Clutch

CAUTION: *Failure to follow the steps below may cause the barrier arm to slide down rapidly immediately after unlocking the electronic clutch. MAG will not be liable to any damage due to the misuse of electronic clutch.*

1. Ensure the barrier arm is in either horizontal or vertical position, and the arm is not moving.

    -If the barrier arm is sliding down slowly, please wait until it stops completely at horizontal level before unlocking the electronic clutch.

    -If the barrier arm is stops at neither vertical nor horizontal, the barrier arm must be pressed down to horizontal level before unlocking.

2. Remove the cover of the electronic clutch, toggle the switch to "OFF". This will disconnect the motor from the main board, and unlock the barrier arm for manual movement.
3. Move the barrier arm manually to either horizontal or fully vertical as required.
4. Toggle the switch back to "ON". This will reconnect the motor to the main board and lock the barrier arm.

Pair Remote Controller (N-16)

1. Press the "Menu" button.
2. Navigate to N-16 using "Up" or "Down" button, then press the "Menu" button to enter the menu.
3. Press and hold any button on the remote controller to be paired. Upon successful pairing, the main board buzzer will sound once. If the remote controller is already paired with the main board, the buzzer will sound thrice.
4. The display value shows the total number of remote controller currently paired. It will increase by 1 if a new remote controller is successfully paired.
5. Press the "Stop" button twice to exit the menu and resume operation.
6. Maximum 30 remote controllers can be paired to each barrier gate.

Smart Memory (A-13)

Note: This function is activated by default.

1. Default: A-13 = 1.

Smart memory will only register an additional signal when UP signal is given while vehicle detector signal is active, and maximum signal count registered is 2.

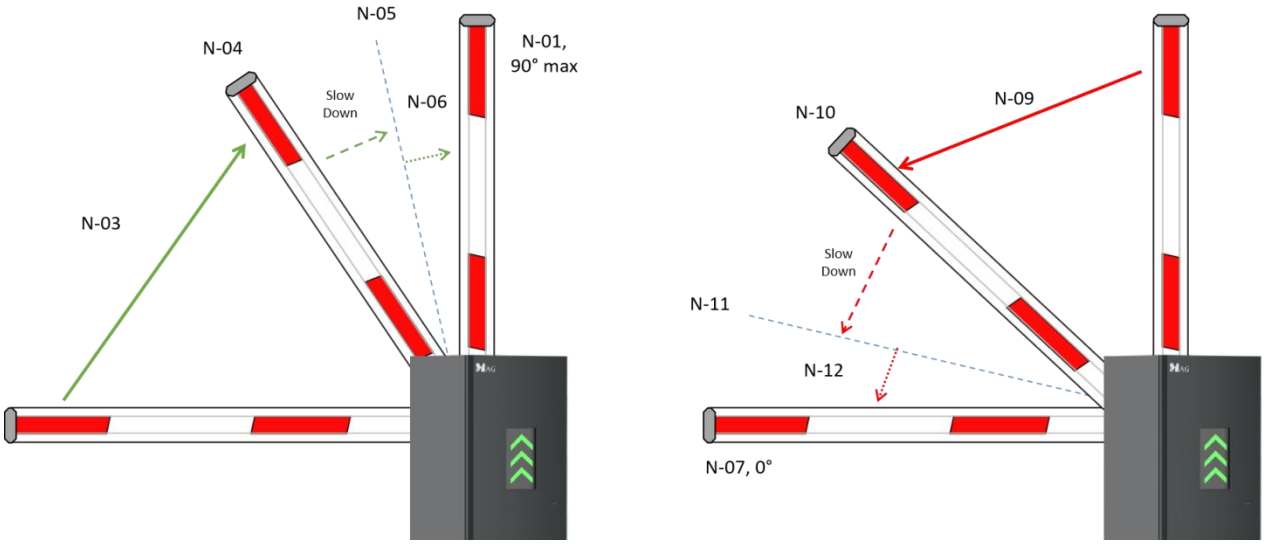
2. A-13 = 2 ~ 10.

e.g. When (n) number of UP signal is received, barrier arm will only close after (n) vehicle detector signal. Maximum value of n registered into main controller is set by A-13 value (2 to 10).

Appendix: Settings Menu and Status Code

Normal Menu (N-XX)

Note: It is recommended to use Smart Preset Menu (A-02), which will automatically select the optimum parameters corresponding to the arm length.



N menu	Function	Default	Range	Description
N-01	Opening Limit (Vertical)	*Preset*	1-1200	Adjust vertical alignment for barrier gate arm
N-02	Open Limit Braking Force	Preset	0-15	Braking force at UP limit, used to minimize arm jerking and ensure accurate alignment. Higher value, greater force
N-03	Opening High Speed	*Preset*	15-100	Maximum speed for motor while opening. Higher value, higher speed
N-04	Opening Decelerate Angle	*Preset*	10-80	Position where motor starts to decelerate to low speed while opening (unit: °)
N-05	Opening Low Speed Angle	*Preset*	15-90	Position where low speed starts for opening
N-06	Opening Low Speed	*Preset*	1-50	Low speed for motor while opening. Higher value, higher speed
N-07	Closing Limit (Horizontal)	*Preset*	1-1200	Adjust horizontal alignment for barrier gate arm

N-08	Close Limit Braking Force	*Preset*	0-15	Braking force at DOWN limit, used to minimize arm jerking and ensure accurate alignment. Higher value, greater force
N-09	Closing High Speed	*Preset*	15-100	Maximum speed for motor while closing. Higher value, higher speed
N-10	Closing Decelerate Angle	*Preset*	10-80	Position where motor starts to decelerate to low speed while closing (unit: °)
N-11	Closing Low Speed Angle	*Preset*	0-75	Position where low speed starts for closing
N-12	Closing Low Speed	*Preset*	1-50	Low speed for motor while closing. Higher value, higher speed
N-13	Initialization Speed	*Preset*	10-80	Arm movement speed during initialization
N-14	Auto-close Delay Duration	0	0-255	Barrier gate auto-closing time (unit: s)
N-15	Collision Reversal Sensitivity	*Preset*	1-40	Smaller value, higher sensitivity.
N-16	Remote Control Pairing	2	0-30	Used to pair receiver with remote control. Value shows total remote controller paired.

Status Code

Status Code	**Description**
IdLE	Motor undetected. Possible cause: motor sensor disconnected or faulty.
STOP	Barrier arm stopped at DOWN LIM.
STOP.	Barrier arm stopped before DOWN LIM (after exceeding A-03 threshold).
LocK	Motorcade mode activated.
uPxx	Multiple Access Memory count. "xx" shows the count of Up signal registered.

dExx	Delayed Auto-close countdown. "xx" shows the time (in s) remaining before the barrier arm will auto-close, according to N-14 settings.
X-XX	Firmware version number, displayed during power-on initialization.
Loxx	Power Loss Auto-open activated. "xx" shows the threshold voltage value.
uLxx	Input voltage level. "xx" shows the input voltage level detected.
cL.xx	Barrier arm is closing or fully closed (DOWN LIM) . "xx" shows the signal source: 2: Remote control 4: Vehicle detector 7: Access control interface or main board button 10: Delay auto-close 12: Safety sensor 15: Initialization
oP.xx	Barrier arm is opening or fully opened (DOWN LIM) . "xx" shows the signal source: 1: Remote control 3: Vehicle detector 6: Access control interface or main board button 12: Safety sensor 15: Initialization

Error Code

Error Code	Description
Er.ob	Obstruction detected. The arm will reverse after it detects an obstacle during its downward motion. This error is triggered when the barrier arm accidentally hits an obstacle; or the speed set is too slow for the closing movement.
Er.7	Anti-lift alarm triggered.

	This alarm is triggered when barrier arm is illegally lifted beyond the detection level.
Er.11	Motor operation overtime. When this error message is shown, power to the motor is cut off for overtime protection. This error is triggered when the motor operation during Up/Down is more than 30s.
uLxx (blinking)	Abnormal voltage error. "xx" in the "uLxx" display shows the current voltage supplied to the main controller board. This error is triggered when the voltage supplied is either lower than 15V; or higher than 30V.
Er.L0	Initialization error. This error is triggered when STOP signal from the access control interface is detected during initialization. Kindly remove the wiring connection to the access control interface for troubleshooting.
Er.L1	Initialization error. This error is triggered when UP signal from the access control interface is detected during initialization. Kindly remove the wiring connection to the access control interface for troubleshooting.
Er.L2	Initialization error. This error is triggered when DOWN signal from the access control interface is detected during initialization. Kindly remove the wiring connection to the access control interface for troubleshooting.
Er.L3	Initialization error. This error is triggered when Loop /Traffic Detector signal from the vehicle sensor interface is detected during initialization. Kindly remove the wiring connection to the vehicle sensor interface for troubleshooting.
Er.L4	Initialization error. This error is triggered when Photobeam signal from the vehicle sensor interface is detected during initialization. Kindly remove the wiring connection to the vehicle sensor interface for troubleshooting.

Er.L5	Initialization error. This error is triggered when STOP signal from the remote control interface is detected during initialization. Kindly remove the wiring connection to the remote control interface for troubleshooting.
Er.L6	Initialization error. This error is triggered when UP signal from the remote control interface is detected during initialization. Kindly remove the wiring connection to the remote control interface for troubleshooting.
Er.L7	Initialization error. This error is triggered when DOWN signal from the remote control interface is detected during initialization. Kindly remove the wiring connection to the remote control interface for troubleshooting.

***Product performance is based on testing in a controlled environment. Your results may vary due to several external and environmental factors.**