

PLANNING GUIDE

Farm and Rural

SOLAR COMPATIBLE

MIGHTY MULE 350 Single One Piece
E-Z GATE[®] OPENER

Residential

SOLAR COMPATIBLE

MIGHTY MULE 500 Heavy Duty Single
E-Z GATE[®] OPENER

Ranch and Estates

SOLAR COMPATIBLE

MIGHTY MULE 502 Heavy Duty Dual
E-Z GATE[®] OPENER

OUR OPENERS WORK ON ALL TYPES OF GATES

Chain Link • Ornamental • Tube • Vinyl • Wood

QUESTIONS to consider when purchasing an opener:

- 1) Do you have a single or dual gate?
- 2) Does your gate swing or slide?
 - A) If swing, continue with guide below.
 - B) If slide, ask your retailer about special ordering or call 1-800-543-GATE (4283) for additional information.
- 3) Does your gate swing into or away from your property?
- 4) How long is each gate leaf?
- 5) How much does each gate leaf weigh?
- 6) Is your gate within 1000 ft. of a 110V AC power source? **IF NOT, SOLAR CHARGING IS AN OPTION.**
- 7) If your gate is longer than 18 ft. or weighs more than 850 lbs. per leaf; ask you retailer about special ordering or call 1-800-543-GATE (4283) for additional information.



Which Mighty Mule Gate Opener Is Right For You?

	34686 FM350 Single One Piece	34662 FM500 Heavy Duty Single	34670 FM502 Heavy Duty Dual
GATE TYPE	Single	Single	Dual
MAX. GATE WEIGHT	Up to 550 lbs. (Max weight is relative to length of gate)	Up to 850 lbs. (Max weight is relative to length of gate)	Up to 850 lbs. (per leaf) (Max weight is relative to length of each leaf)
MAX. GATE LENGTH	16 feet	18 feet	18 feet (per leaf)
AC POWER SUPPLY <small>(within 1000' of gate)</small>	18V Heavy-Duty Transformer is included	18V Heavy-Duty Transformer is included	18V Heavy-Duty Transformer is included
BATTERY	NOT INCLUDED (12 V automotive/marine style battery required)	INCLUDED	INCLUDED
SOLAR COMPATIBLE	Yes	Yes	Yes (requires 10 Watt minimum)
CYCLES PER DAY	175 (with transformer) with 1500 battery backup cycles	225 (with transformer) with 50 battery backup cycles	115 (with transformer) with 25 battery backup cycles
GATE OPENING DIRECTION	Gates opening away from property require an optional bracket (FM148)	Gates opening away from property require an optional bracket (FM148)	Dual gates opening away from property require two optional brackets (FM148)

GATE OPENER GUIDE

Which automatic gate opener is right for you?

SINGLE SWING:

- 34686 (FM350) - Light duty swing gate opener
- 34662 (FM500) - Heavy duty swing gate opener

DOUBLE SWING:

- 34670 (FM502) - Heavy duty dual gate opener

SLIDE:

- 34676 (MM-SL1000B) - Light duty slide gate opener
- 34691 (MM-SL2000B) - Heavy duty slide gate opener

1 How will you open your gate from your vehicle?

- 34663 (FM135) - Single button transmitter
- 34665 (FM134) - Two-button transmitter
- 34672 (RB743) - Three-button transmitter
- GCRB709 (RB709) - Garage door receiver - enables GTO transmitter to open garage door and gate.

2 How will you provide secure access for your gate?

- 34664 (FM137) - Digital keypad
- 34684 (FM136) - Wireless intercom keypad
- 34770 (FM100) - Mounting post for your keypad

3 Would you like hands-free exit from the property?

- 34669 (FM138) - 50 ft. gate opening sensor
- GCFM140 (FM140) - 100 ft. gate opening sensor
- 34677 (FM141) - 150 ft. gate opening sensor

4 How will you secure the gate?

- 34666 (FM143) - Automatic gate lock - Secures gate in closed position
- 34668 (FM133) - Pin lock - Secures the gate opener to gate
- GCFM145 (FM145) - Bulldog gate lock - Secures walk-through gates

5 How will you keep the gate opener battery charged?

(Kit includes AC transformer, solar power is optional)

POWER EQUIPMENT:

- 3467 (FM121) - 5 watt solar panel
- GCFM123 (FM123) - 10 watt solar panel
- 34698 (RB509) - Wire needed for installation
- 34697 (FM150) - Replacement battery for models FM500, FM502

Special Considerations

- Does your gate open away from property?
Gates opening away from property, require an optional bracket per gate leaf. 34694 (FM148)
- AC power source is more than 1000 ft. from gate?
Solar power is required. 3467 (FM121) or GCFM123 (FM123)
- Require livestock containment?
An Automatic Gate Lock 34666 (FM143) is recommended.
- Windy conditions?
An Automatic Gate Lock 34666 (FM143) is recommended.



POWERING GUIDE

There are two ways the Mighty Mule's battery can be charged.

1. Transformer (18V included with kit)

All Mighty Mule E-Z Gate Openers come with a transformer for maintaining the battery charge. You can run up to 1000 ft. of low voltage wire 34698 (RB509 *not included*) from the opener control box to the 110 V AC outlet where the transformer is plugged. If your gate is more than 1000 ft. from an AC power source, or you just prefer to use solar power, you can use the optional Mighty Mule solar panel(s) to maintain the Mighty Mule battery backup.



2. Optional Solar Power Kits.

The solar option will have some limits. The table and map illustrate the maximum number of gate cycles to expect per day in a particular area when using 5 to 30 Watts of Mighty Mule solar panels. The figures shown are for winter (minimum sunlight) and do not account for the use of any accessory items. Accessories connected to your system will draw additional power from the battery.



Solar Panel Application Charts Mighty Mule® Automatic Gate Openers

Model #	Watts	Zone 1	Zone 2	Zone 3	
350/500 SINGLE Swing Gates	FM350/500	5	4	8	13
	FM350/500	10	8	16	26
	FM350/500	15	11	20	30
	FM350/500	20	14	28	38
	FM350/500	25	17	36	46
FM350/500	30	20	44	54	
<i>(estimated number of cycles per day)</i>					
502 DUAL Swing Gates	FM502	10	4	8	13
	FM502	15	7	13	20
	FM502	20	10	18	27
	FM502	25	13	23	34
	FM502	30	16	28	41
<i>(estimated number of cycles per day)</i>					

Dual gates require a minimum of 10 Watts solar charging power

NOTE: A maximum of 30 Watts of solar charging power can be connected to Mighty Mule E-Z Gate Openers.

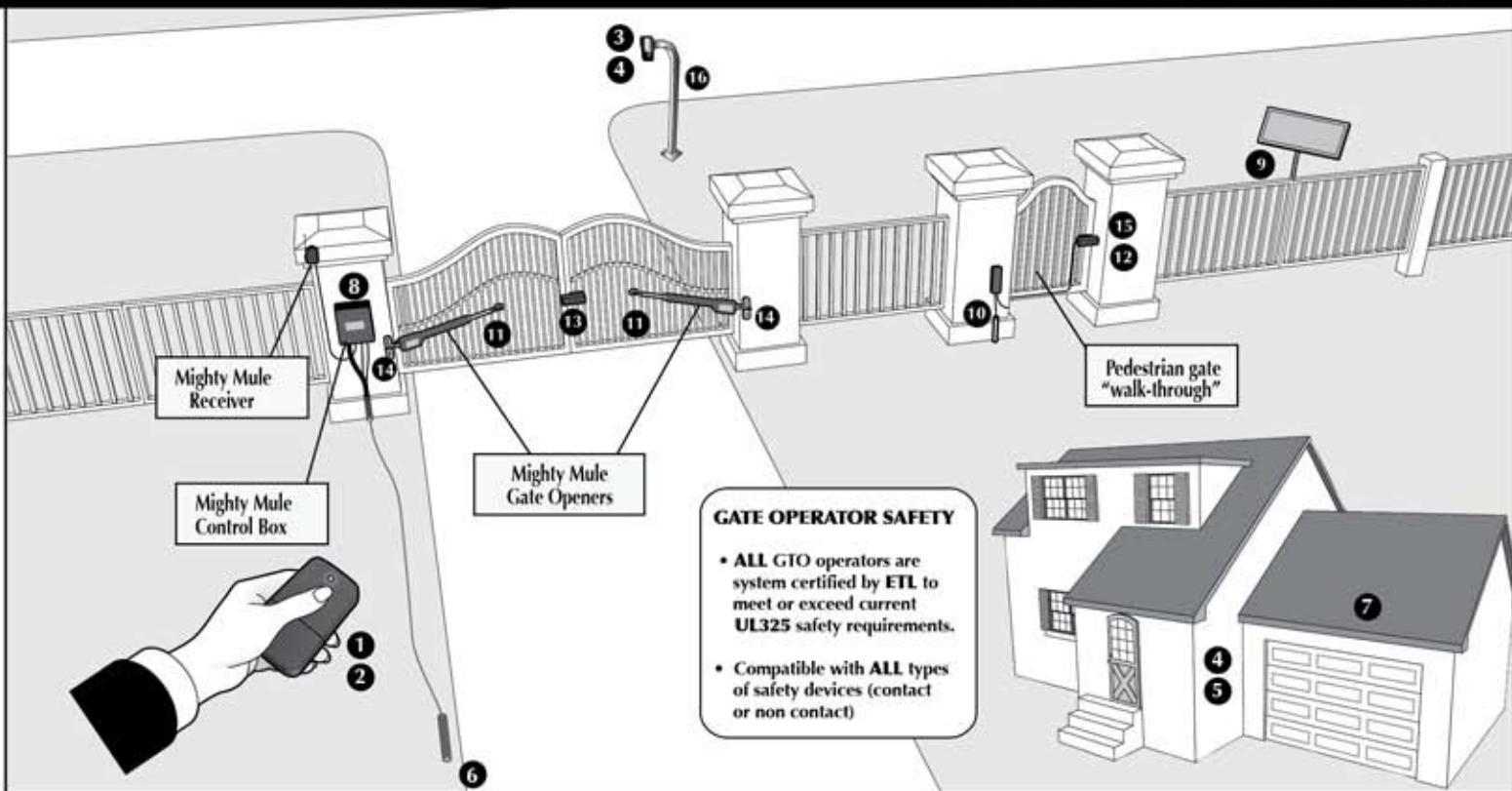
Special Considerations:

- For solar applications using Mighty Mule models FM500 & FM502, it is recommended that you purchase an optional second battery 34697 (FM150) for back up cycles during overcast days. The control boxes are prewired for the optional second battery.
- Dual gate require 10 Watts of solar charging power. Use two 5 watt panels 3467 (FM121) or one 10 Watt solar panel GCFM123 (FM123) available by special order.



ACCESSORIES

FOR GATE OPENERS



GATE OPERATOR SAFETY

- ALL GTO operators are system certified by ETL to meet or exceed current UL325 safety requirements.
- Compatible with ALL types of safety devices (contact or non contact)

ENTRY / EXIT ACCESSORIES

1 Single Button Entry Transmitter 34663 (FM135)
The Mighty Mule entry transmitter includes a visor clip and has adjustable code settings. This is the standard transmitter included in every Mighty Mule gate opener kit. (Battery is included)

2 Dual Button Key Chain Transmitter 34665 (FM134)
This transmitter is the same as Mighty Mule entry transmitter with the addition of a key chain and a second button. Both buttons are programmable to control multiple gate openers on different gates and / or garage door openers. [see Garage Door Receiver] (Battery is included)

3 Digital Keypad 34664 (FM137)
The digital keypad can be easily installed as a wireless or wired keypad. It can be programmed to use up to twenty-five different personal identification number (PIN) codes. This used in combination with the Mighty Mule automatic gate lock (see automatic gate lock) adds an additional layer of security for your property.

4 Wireless Intercom/Keypad 34684 (FM136)
This versatile digital intercom with keypad system is ideal for any residential application, and can accept up to four base units for maximum flexibility. The intercom provides superior range with crystal clear two-way communication up to 500 ft. (152.4 m) wireless or 1,000 ft. (304.8 m) wired.

5 Push Button Control 34667 (FM132)
Unlit doorbell button for remote entry or exit control. Wire this control directly to the control board. Uses 16 gauge multi-stranded, dual conductor Low Voltage Wire. 34673 (RB509)

6 Gate Opening Sensor 34669 (FM138)
The gate opening sensor is an electromagnetic sensor, which offers 'hands free' operation of the Mighty Mule Gate Opener with a 12 ft. (3.7 m) radius of detection of vehicles in motion.

7 Garage Door Receiver GCRB709U (RB709U)
The garage door receiver allows you to use the same Mighty Mule entry transmitter that is standard with your Mighty Mule gate opener kit or optional transmitters (see dual and triple transmitters) to operate multiple gate openers and / or garage door openers. Compatible with most garage door openers.

POWERING ACCESSORIES

8 Replacement Battery 34697 (FM150)
For models: 34662 (FM500) / 34670 (FM502) use 34697 (FM150) which is a standard 12 Volt, 7.0 amp-hour, maintenance-free battery for the Mighty Mule gate opener systems. For model 34686 (FM350) please use a 12 Volt marine or automotive battery that is not provided in kit.

9 Solar Panel 5 Watt 3467 (FM121) or 10 Watt GCFM123 (FM123)
The solar panel is for use for up to 30 Watts of solar charging power for Mighty Mule models 34686 (FM350), 34662 (FM500) and 34670 (FM502). Each solar panel comes with tubular steel support, mounting clips, wire connectors, and 8 ft. of Low Voltage Wire.
NOTE: Dual gates require a minimum of 10 Watts.

10 Low Voltage Wire 34698 (RB509)
The 16 gauge, multi-stranded, dual conductor Low Voltage Wire is for connecting the AC powered transformer, or the solar panel to the control board. Also used for the connection of accessories, such as automatic gate lock 34666 (FM143), digital keypad 34664 (FM137), 34684 (FM136), Push Button 34667 (FM132) and other wired control devices. This specially designed wire is UV treated, PVC coated and ready for direct burial. Available in 1000 ft. (304.8 m) rolls or special lengths.

LOCKING ACCESSORIES

11 Pin Lock 34668 (FM133)
The Pin Lock is a substitute for the clevis pin at the front mounting point of all models of SWING Mighty Mule gate openers and the chains of the Mighty Mule SLIDE Gate Openers to help prevent theft of the opener.

12 Bulldog Pedestrian Gate Lock GCFM145 (FM145)
Designed for horizontal use on "walk-through" gates. An affordable solution for protecting swimming pool areas, playgrounds, tennis courts, boat docks, etc., from unwanted access. Can be used with the digital keypad 34664 (FM137) or 34684 (FM136) and is solar compatible.

13 Automatic Gate Lock 34666 (FM143)
A MUST for added security. Unlocks and locks automatically as gates open and close. Used with Mighty Mule systems for maximum stability and security. Comes with a keyed manual release. Recommended for gates over 8 ft. (2.4 m) long. Ideal for animal enclosures or high wind areas. (Not compatible with 34676 (MM-SL1000B)/34691 (MM-SL2000B))

HARDWARE ACCESSORIES

14 Push to Open Bracket 34694 (FM148)
Required when a Mighty Mule swing gate opener(s) must push a gate open, such as on a sloping driveway or where space prevents gate(s) from opening into the property (pulled open). Order 2 brackets for a dual gate installation.

15 Column Mount Lock Receiver 34673 (433IH)
For mounting the automatic gate lock 34666 (FM143) or the Bulldog Pedestrian Gate Lock GCFM145 (FM145) on brick columns, walls, or for other applications with limited space between gate and post.

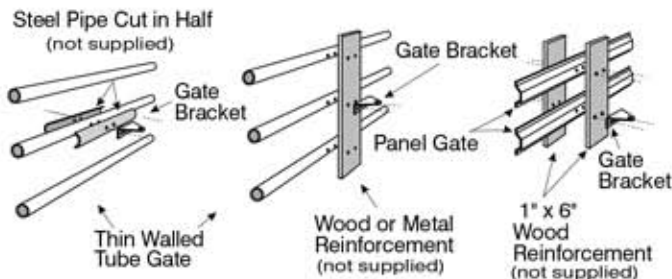
16 Keypad Mounting Post 34770 (FM100 / FM110)
For mounting the digital keypad, available with stand or direct burial.

What else will you need?

Other Materials You May Need

- Low voltage wire 34698 (RB509) (16 gauge, multi-stranded, dual conductor, direct burial) wire will be needed. Wire length depends upon which accessories are used and the distance between the transformer power supply and the gate. [1000 ft. (304 m) max.]
- If your gate is more than 1000 ft. (304 m) away from an 110V AC power source, Mighty Mule Solar Panels must be used to trickle charge the battery. The 34686 (FM350), 34662 (FM500) and 34670 (FM502) are solar compatible.
- If your gate opens out from your property, you need to purchase or special order a "push-to-open" bracket 34694 (FM148) through your retailer. Call 1-800-543-1236 for technical support. (dual gates require 2 brackets).
- If you have thin walled tube or panel gates, you will need to reinforce them. See diagrams below for tips on reinforcing these types of gates.
- Depending on the type of gates, a horizontal cross member or mounting plate may be needed to mount the opener arm and gate bracket to the gate.
- Your gate must be in good working order, firmly hung on a well seated fence post, which swings freely and evenly. This operator will not work on gates with wheels or gates that drag on the ground.
- Gates weighing more than 250 lbs. (111.4 kg) require ball bearing hinges (not provided by Mighty Mule).
- Gate post greater than 8" (20.3 cm) thick will require longer bolts than those provided to mount gate brackets to post. (Rule of thumb, gate post thickness plus two more inches.)
- Gate post less than 4 inches will require reinforcement hardware; large metal washers or steel plates for each side of the post.
- Masonry column installation may require special procedures. Call 1-800-543-1236 (GTO Technical Support) for details.

Suggestions for materials you will need to reinforce your gate: (not in kit or available from GTO)



Tools You'll Need:

- Power Drill
- Open End Wrenches: 3/8", 7/16", 1/2", and 9/16"
- 3/8" Drill Bit
- Hacksaw or Heavy Duty Bolt Cutters
- Slotted (Flat Bladed) Screwdriver
- Phillips Screwdriver
- Tape Measure
- Level
- Wire Strippers
- C-Clamps — (small, medium, and large)



All Mighty Mule E-Z Gate® Openers are Certified and Listed in COMPLIANCE with UL325 SAFETY STANDARDS.

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Checklist

- Do you have all the tools for the installation?
- Did you purchase the proper power supply option? (low voltage wire or solar)
- If your gate swings out from your property did you purchase the push-to-open bracket(s) 34694 (FM148)?
- Did you note the 'standard' hardware package – will this suit your installation (some additional hardware maybe needed)?
- If you purchased the digital keypad, did you get 3 AA batteries?

Answers to commonly asked questions

- 1. What is a Mighty Mule E-Z Gate Opener?**
A Mighty Mule E-Z Gate is a remote controlled automatic gate opener system. It is the industry leading gate opener available for the "Do-It-Yourself" installer. Because it is battery operated and uses low voltage power, it is safe (no electrician needed), affordable, and easy to install.
- 2. How is a Mighty Mule E-Z Gate Opener Powered?**
All Mighty Mule gate openers are low voltage systems with a 12 Volt battery back up system. This assures operation of your gate during a power outage. The battery can either be charged by the included transformer, OR can be charged by optional solar panel(s).
- 3. How do I Install the Solar Panels?**
The Mighty Mule solar panel 3467 (FM121) is a complete kit for easy mounting within 8 ft. of the control box. If your panel(s) must be placed farther away than 8 ft. (up to 250 ft.) to receive maximum sunlight, additional low voltage wiring will be required. It is important that the solar panels face South and are placed in full sunlight, away from overhanging trees, or any obstacle that may shade the panels(s).
- 4. Will the Mighty Mule Open During A Power Outage?**
Yes. A fully charged 34662 (FM500) or 34670 (FM502) battery will provide an average of fifty (50) cycles (open and close) and the 34686 (FM350) battery (12 Volt car or marine battery not included) provides up to 1500 cycles during a power outage. This number can vary depending on factors such as the type of gate, number of accessories added, and weather conditions if using solar panel(s) 3467 (FM121) to charge the battery.
- 5. Can I Manually Open the Gate?**
Yes! Each opener arm is mounted to the brackets on the post(s) and gates(s) with clevis pins and clips. By removing the pin and clip at the front end, the arm can be removed and allow the gate to be opened manually.
- 6. What Happens if the Gate Opener Hits Something?**
All Mighty Mule E-Z Gate openers have built-in safety obstruction sensing which will cause the gate(s) to "Stop" and "Reverse" its direction for two seconds if it comes in contact with an object. If the gate comes in contact with the object twice before returning to its fully open or close position, an alarm will sound for 5 minutes.
- 7. Is the Mighty Mule Gate Opener Difficult to Install?**
No. Most installations can be completed easily in two to three hours. Dual gates will take slightly longer because two operator arms are required. All installations can be completed with tools commonly used by most homeowners. Kits include an installation video (see box for details.)
- 8. What Maintenance is required?**
All Mighty Mule E-Z Gate Openers are designed to be virtually maintenance free. However, it is recommended that the push-pull tube be sprayed once a month with a good grade of "silicone" spray. DO NOT use an oil based spray as this will attract sand and dirt.