Nice Apollo Swing Gate Opener

4300 SW - 1/2 HP

4500 SW - 1 HP

Vehicular Swing Gate Opener
CAUTIONS AND NOTES
This instruction manual is intended to aid the installer in the overall process of correct installation at the desired location. Periodically, the manual will illustrate “warnings, cautions and notes” which are items the installer should carefully read to prevent damage to the gate, gate system or personal injury to yourself or others.

EXTREMELY IMPORTANT
Anyone who installs, assists with installation or otherwise facilitates the installation in any manner should thoroughly read and understand this manual in its entirety before any attempt is made to actually begin the installation process.

ETL DEFINITIONS COMPLIANT TO UL325
Vehicular Swing-Gate Operator (or system) - A vehicular gate operator (or system) that controls a gate which slides in a horizontal direction that is intended for use for vehicular entrance or exit to a drive, parking lot, or the like.
• Gate - A moving barrier such as a sliding, swinging, raising, lowering, rolling, or like barrier that is a stand-alone passage barrier or is that portion of a wall or fence system that controls entrance and/or egress by persons or vehicles and completes the perimeter of a defined area.
• Residential Vehicular Gate Operator - Class I - A vehicular gate operator (or system) intended for use in a home of one to four single family dwellings, or a garage or parking area associated therewith.
• Commercial / General Access Vehicular Gate Operator - Class II - A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotel, garages, retail store, or other buildings servicing the general public.
• Commercial / General Access Vehicular Gate Operator - Class III - A vehicular gate operator (or system) intended for use in an industrial location, loading dock area, or other location not intended to service the general public.
• Commercial / General Access Vehicular Gate Operator - Class IV - A vehicular gate operator (or system) intended for use in a guarded industrial location or buildings such as airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

1 - OVERVIEW
• Available in 1 and ½ HP models
• Max gate weight 1000lbs (1hp model) and 600lbs (1/2hp mode)
• Max gate length – 20’
• Key-lock access to the mechanical release and limit switch adjustments
• Built-in open and close limit switches and the controller’s “learn” function helps ensure a quick installation
• Numerous inputs and outputs for accessories are available.

The new Apollo 4300SW and 4500SW line of commercial gate operators are pre-built on the legacy of rugged, reliable ranch and residential gate controllers offered by Apollo over the last 20 years. With an endurance of over 500,000 cycles, and a working temperature range from -4°F to 150°F, these ½ and 1 horsepower systems, can safely move gates up to 1000lbs. and 20’ in length. An industrial design ensures that the Apollo 4300SW and 4500SW gate operators complement any gate installation and architecture while providing the safety features that meet or exceed UL325 and UL991 specifications.

This manual provides documentation that covers the layout, construction, mechanical, electrical installation, and programming of the Apollo 4300SW and 4500SW gate operator for a typical installation. Please consult your Apollo distributor for more information regarding installations or questions not specifically covered in this manual.

Easy-step programming and numerous inputs and outputs for accessories make this control board simple to configure.

1.1 - Gate controller
The gate controller is a 120VAC powered system consisting of the main housing, the chassis, a brushed DC motor, a transformer, an on-off switch, and the main control board. A key-locked manual release and adjustable open and close limit switches are located in a weather-tight enclosure that is accessible at the top of the unit. The main control board is mounted on a tilt-up frame that is accessed by removing the front cover. An access hole is located at the bottom of the unit for connection with an electrical conduit.

1.2 - Main control board
The 1050 main control board is housed in a protective plastic enclosure that includes a 2-line LCD and with 5 dedicated buttons and 3 buttons for navigation of the setup, programming, and information menus. Connectors for power inputs, and output peripherals are arranged around the edges of the board and clearly labeled. A plug-in connector is provided for direct installation of a Nice-brand receiver which can be controlled by up to 1000 transmitters. The O-view programmer with Bluetooth and GSM provides capability to be used to control and manage the unit via PDA. Connectors for other Nice-brand plug-in accessories include Bluetooth with GSM control for gate and management via PC, PDA, or cell phone. These accessory options enable the Apollo 4300SW and 4500SW gate operators to expand their capabilities in the future as necessary without requiring any hardware changes.

Dry contact inputs are provided for loop, probe, and photoelectric detectors, as well as edge sensors, guard station, and fire department control of gate opening and closing. Voltage outputs (+12VDC and +24VDC) are also provided to power safety and entrapment-prevention devices, and a magnetic lock if required. Onboard charge control circuitry delivers reliable power to a backup battery (if installed) and the unit is equipped with input for a solar panel for self-powered installations.

The 1050 main control board can drive 12VDC or 24VDC motors and accepts DC input voltage ranging from 10VDC to 35VDC. A 2-line LCD with dedicated buttons allows the installer to quickly program the 1050 when changes to its factory-default settings need to be made. A real time clock/calendar enables programming for scheduled weekly or daily events like opening, closing, or locking the gate. Gate opening and closing speed, acceleration, soft-start settings, and reversing force may be set to factory default settings, or individually programmed per customized gate installation requirements. Built-in current sensing enables inherent gate force monitoring and limiting for safety and an onboard alarm indicates when two sequential obstructions have been sensed in either direction. The “Learn” function helps the gate installer configure the Apollo 4300SW and 4500SW gate operator semi-automatically for optimum settings of gate opening and closing speeds, with simple programmable adjustments to force and speed settings that may be made with front panel programming.

1.3 - Main control board specifics
• Inputs for solar panel and batteries.
• Low power consumption in stand-by mode.
• Built-in regulator to keep the battery charged (either thru solar or main power).
• Socket for plug-in Nice receivers (SM series).
• Board compatible with Nice Opera System (program and diagnostic also away from the site of installation).
• Easy programming with LCD display and dedicated buttons.
• Digital programming for auto-close, force, speed, opening delay.
• On board programming for operating the gate (Open, Close, Stop).
• Built-in voltmeter to check input voltage, battery voltage, solar panel voltage, motors’ current.
• Temperature sensor to optimize charging battery and system performance.
• Programmable service alarm.
• 2 Programmable timers (from 1 sec to 9 hours).
• Inputs for guard station, additional third party receivers, loop detectors, FIRE and UL/Edge signals.
• 2 programmable inputs (open, close, stop, mid-position, hold to open, hold to close, activating timer).
• Surge suppression on every peripheral input (digital and analog).
• Ports for self-powered Nice plug-in peripherals. (BlueBus).
• Master/Slave bus port for wired control of a second 4300SW and 4500SW gate operator.
2 - GATE INFORMATION

2.1 - ASTM F2200
Gates shall be constructed in accordance with the provisions given for the appropriate gate type listed, refer to ASTM F2200 for additional gate types. Protrusions shall not be permitted on any gate, refer to ASTM F2200 for exceptions, if any. Any non-automated gate that is to be automated in any manner should be upgraded to conform to the provisions contained within the provisions of this document and ASTM F2200 as applicable.

2.2 - Gate material
Gate building materials should be substantial and robust enough to sustain constant usage. This gate opener is manufactured for commercial operations primarily, and therefore the forces placed upon the gate may be in excess of those which may be applied to a residential gate operation. In many instances, tensions, forces and leverages applied in a commercial atmosphere may be in excess of those material specifications meant in residential operations. As a result of this instance, it is recommended that this gate opener never be used in conjunction with any gate system not directly intended for constant industrial or commercial operation.

2.3 - Gate latches
In association with this commercial swing gate operator, at no time should manual gate latches or locks be used. The forces applied to a commercial swing gate operator could be in excess of those forces which are safe for bystanders. Should unnecessary forces be applied to a gate system which is in the locked position, the catastrophic failure of the gate or locking mechanism could result in substantial damage, extensive physical injury and or death.

2.4 - Specific applications
This swing gate operator is intended for those locations where commercial vehicle traffic is intended to be controlled through the use of an entryway obstruction (gate). The gate system should be made of closed material types which prevent any body part from entering, becoming entangled or otherwise entering the gate in any manner. If the gate is not fully closed off from access, the opening or closing of the gate system may result in severe damage, injury or death.

2.5 - Swing gates
Swing gates are designed to swing or move horizontally across an entry control point to prevent or allow controlled access by authorized persons or equipment. Swing gate systems are not necessarily completely autonomous systems, and require regular maintenance and inspection on a periodic schedule. Although with certain safety devices in place the gate system could operate as a completely independent system free from human interaction for a defined period of time, human inspection and testing is required to ensure longevity and safe operation over long periods of time.

2.6 - General requirements
- Safety and security are obviously a number one priority for both the manufacturer and the end user. As a result this manual has been written to make all persons fully aware of the responsibilities required to ensure constant safety, security and longevity are acquired throughout the life of the system.
- The manufacturer of this swing gate system has performed countless hours of testing, analysis and statistical control analysis to ensure that this operator performs its intended function for extended periods of time. The installer should ensure and verify that all required safety devices are installed correctly and in a manner consistent with the requirements of this manual. Additionally, all devices, security devices, safety devices, sensors and other affiliated attachments are installed in a robust manner that will prevent their accidental damage, removal or incidental tampering.
- A basic requirement for this system to operate correctly is that at any time a sensor is tripped, covered, disconnected or otherwise tampered with, that the entire system ceases to function. If any part of the gate safety system is removed or tripped, an immediate safety action by the gate operator is expected (retraction or stoppage). If the gate safety system is not functional, or fails to operate within these guidelines, the gate should be immediately removed from service until repairs can be made.
3 - SAFETY AND CAUTIONS

**WARNING**

**IMPORTANT SAFETY INSTRUCTIONS**

**WARNING - TO REDUCE THE RISK OF INJURY OR DEATH:**

- READ AND FOLLOW ALL INSTRUCTIONS.
- Never let children operate or play with gate controls. Keep the remote control away from children.
- Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.
- Test the operator periodically. The gate MUST reverse on contact with a rigid object or stop or reverse when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate properly can increase the risk of injury or death.
- Use the emergency release only when the gate is not moving.
- KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.
- The entrance is for vehicles only. Pedestrians must use separate entrance.
- SAVE THESE INSTRUCTIONS!

3.1 - Properly installed safety devices

Safety devices are used to sense, register and prevent damage to vehicular traffic which may block the path of the gate system. If properly installed and inspected for functionality within the prescribed maintenance procedures, the safety devices should prevent the gate system from inflicting harm or damage as a result of its opening and closing action.

3.2 - Safety signs, notices to personnel warning signs

Safety devices must alert all who may enter the gate system area, as to the danger posed by moving equipment. Safety features must be installed and work correctly, such as the infrared beam. This safety device prevents serious injury or death as a result of the gate closing while an object or person blocks the gate operating pathway. An optional flashing lamp that is activated anytime the gate is moving should be added in addition to the aforementioned safety features.

3.3 - The gate system safety devices

Automatic gate operators are designed to move a heavy steel gate. Great amounts of force are sometimes used to move these heavy systems. The automatic gate system may cause significant damage or injury if the path of the gate is obstructed. All sensors, safety devices and warning notices must be in place and operable in order for this system to operate properly. It is the installer’s responsibility to install this system properly and to ensure its correct and safe operation.

3.4 - Infrared beams and warning signs

Infrared beams are used to inform the control board that an obstruction is present. Safety devices must be installed properly and inspected periodically to ensure continued reliability and safety. Safety devices, safety sensors, warning signs and notices of moving equipment danger must be installed and readily visible by all paths of approach to the gate system. Failure to post warnings could result in loss of life, damage or physical injury.

3.5 - Establish the location

The installer of this system needs to establish the location of the opener in accordance with instructions contained within this manual. A typical layout is provided at the end of this manual with a nominal basic drawing. It is the installer’s responsibility to ensure that the opener is installed in such a fashion so as to prevent binding, pinching or improper articulation of the system throughout its actuation cycle.

3.6 - Read and follow all instructions

3.7 - Keep children away

Never let children operate or play with gate controls. Keep the remote control away from children.

3.8 - Test the gate system

The gate must reverse on contact with a rigid object or stop when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of injury or death. Test force and correct functionality for photo-eyes and other safety devices at least every 6 months. ONLY USE THE MANUAL RELEASE when the gate is not moving or when the unit fails or in case of power outage.

- Turn the power to the gate controller OFF AND REMOVE BATTERIES before using the emergency release. The ON/OFF switch for the gate operator is located adjacent to the main controller board.

3.9 - Keep gates properly maintained

Read the owner’s manual. Have only a qualified service person make repairs. Unqualified service technicians are not recommended.

4 - PRE-INSTALLATION NOTES

Before installing and operating the unit, installers should:

- Confirm the gate operator being installed is appropriate for the application.
- Confirm the gate is designed and built according to current applicable published industry standards.
- Confirm all appropriate features and accessory devices are being incorporated, including both primary and secondary entrapment protection devices.
- Make sure the gate works freely before installing the operator.
- Repair or service worn or damaged gate hardware before installing the operator.
- Adjust the FORCE device to the minimum force setting that allows reliable gate operation.
- Install operator inside fence line (DO NOT install operator on public side of fence line).
- Swinging gates shall not open into public access areas.
- Install a proper electrical ground to a gate operator.
- Install keypad controls where users cannot touch, or reach through gate while operating controls, which is a minimum of 8 feet from the gate.
- Install controls where user has full view of gate operation.
- A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.
- Test all features for proper functions before placing the automatic vehicular gate into service.
- Demonstrate the basic functions and safety features of the gate system to owners/end users/general contractors, including how to turn off power and how to operate the manual disconnect feature.
- Leave safety instructions, product literature, installation manual and maintenance manual with end user.
- Explain to the owners/users the importance of a service contract that includes a routine testing of the entire system including the entrapment protection devices, and explain the need for the owners to insure that this testing is performed routinely.
- Offer the owner/end user a maintenance contract, or contact them regularly to offer maintenance.
- This system is designed specifically for commercial applications but may be used on residential applications where needed.
- See instructions on the placement of non-contact sensors for each type of application.

4.1 - Follow Instructions

Always follow all instructions included in this manual to ensure safety and the longevity of the operator.

4.2 - Intended usage

THIS GATE SYSTEM IS INTENDED FOR USE WITH VEHICULAR SWING GATES ONLY.

4.3 - Warnings, cautions and notes

4.3.1 Gate system designers, installers and users must take into consideration the inherent hazards associated with each installation, since no two installations will be exactly alike.

4.3.2 Improperly designed, constructed, installed or maintained systems can and may introduce hazards which may or may not be readily seen or identified by users, bystanders, installers or inspectors.

4.3.3 All pinch points must be guarded or eliminated.
4.3.31 Installation of this gate operator in a manner inconsistent with the manufacturer’s recommended instructions, local, State or Federal law transfers the liability unto the installer. Careful consideration has been taken by the manufacturer’s to devise safe measures, safe design and incorporate safety measures to prevent injury, death or property damage. By circumventing, ignoring or modifying any safety system or the exclusion thereof, the installer is creating a new untested process outside the purview of the manufacturer and therefore assumes all risk.

4.3.32 This unit is not to be installed on any gate, door or other structure which serves to block, secure, close off or otherwise control a pedestrian entry point or access point.

4.3.33 Vehicular swing gates shall be designed, constructed and installed in accordance with security related parameters specific to the application in question, with absolute safety in all considerations.

4.3.34 Never mount any device that operates the gate opener where the user can reach around, over or through the gate to operate the controls. Controls should be mounted at minimum, 8 feet away from any moving part of the gate or gate system.

4.3.35 A hard wired control shall be located in such a manner so that electronic communication between the two is never interrupted or the wires damaged.

4.3.36 Any controls used to reset the device after obstruction/entrapment protection incidents should be located within view of the gate and should have safety features that prevent unauthorized use.

4.3.37 Never allow anyone to ride, hang on or otherwise touch the gate.

4.3.38 Safety sensors must be present at all times. The hard wired safety sensors must be arranged and installed in such a manner so that the communication between gate operator and sensor(s) are never interrupted or severed by mechanical damage or movement. All items which have sensors or safety devices must be constructed or installed in such a manner so as to prevent removal or damage. All subsequent sensors must be suitable for the system installed and approved for use.

4.3.39 Never increase the force used to move the gate, beyond the absolute minimum required.

4.3.40 Never use force adjustments to compensate for binding, sticking or resistant operation. These situations should be addressed and corrected before installation of the gate operator. Gate systems should swing freely in all directions prior to installation of this gate operator.

4.3.41 After any adjustment is made, all safety modes/features must be tested. Gate must stop or reverse upon any object crossing the path of the gate or the gate comes into contact with any object.

4.3.42 Activate gate only when the gate is in clear view of the user, the gate system is properly adjusted, tested and verified, and there are no obstructions present.

4.3.43 Keep gate and gate system properly maintained and properly inspected at all times.

4.3.44 This operator is intended for installation only on swing gates used to control vehicular traffic.

4.3.45 The gate must be installed in a location so that sufficient clearance is provided between the gate and adjacent structures when opening and closing to reduce the risk of entrapment.

4.3.46 The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.

4.3.47 Install the gate operator only when the operator is appropriate for the construction and the usage class of the gate.

4.3.48 The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.

4.3.49 Controls must be far enough from the gate so that the user is prevented from coming in contact with the gate while operating the controls. Controls intended to be used to reset an operator after two sequential activations of the entrapment protection device(s) must be located in the line of sight of the outdoor gate or easily accessible controls shall have a security feature to prevent unauthorized use.

4.3.50 All warning signs and placards must be installed where visible in the area of the gate.

4.3.51 Care shall be given to reduce the risk of nuisance tripping such as when a vehicle trips the sensor while the gate is still moving.

4.3.52 Gate operators must utilize a contact sensor such as an edge sensor.

4.3.53 A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subject to mechanical damage.

4.3.54 A wireless contact sensor such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions are recommended.
5.1 - Swing operator cutaway drawings-cont.

Built-in control board holder allows controller to be tilted up for easy programming, then stowed back for safe assembly of the gate operator.

Use these holes for attaching I/O cables with plastic zip ties.

WARNING: THIS GATE OPERATOR REQUIRES A 2-MAN LIFT!
6 - INSTALLATION PROCEDURES

1. Remove top cover assembly by unlocking the lid with the supplied key.
2. Turn lid counterclockwise then remove.

Remove side bolts and covers to access interior for installation.

6.1 - Step one-location
Locate the area in which the opener shall be located.

6.2 - Step two-concrete
Fabricate a concrete pad structure sufficient to stabilize and mount the gate opener. Please consult the local building dept. and/or a structural engineer to build a concrete pad that meets building codes and is sufficient for the soil type and climate.

6.3 - Step three-physical mounting
Drill and insert RedHead (1/2" x 3 1/3") concrete anchors into the concrete sufficient to properly mount the gate opener. Mounting position must be a minimum distance of 21 inches distance between the gate and any obstructions as shown to the left. Open the top cover using the supplied key. Remove the top and side covers to gain access to mounting holes. (See figure 3) Set the unit in place and attach wiring as indicated in the wiring section 9.0 wiring and connections of this manual (see figure 4).

6.4 - Step four-manual release
Having removed the top cover, locate the manual release handle. Insert and turn the manual release handle clockwise until the turret assembly is loose and moves freely. The main drive assembly is now disengaged and the gate turret may be operated by hand.

6.5 - Step five-arm assembly
Connect the main arm assembly to turret assembly and test gate for free movement. (Should move freely in both directions) Push the gate by hand to the full movement in each direction to ensure it does not bind or catch in any manner. Connect gate arm to gate bracket. Connect bracket to gate. Put the gate in fully closed position and placed bracket against gate with arms completely straightened. Gate operator should now be wired, installed and connected to the gate.

MAKE SURE ALL POWER IS DISCONNECTED PRIOR TO ANY SERVICE OR INSTALLATION.
6.6 - Learning and programming features
These steps begin the basic "Learning" programming of the gate opener unit. Most of the features and programming are pre-set and already set up for most standard installations. The installer most often will only be required to plug the unit into electrical power, and then "learn" the unit by setting the limits on the gate movement. In most cases this is the extent of the basic programming procedure. If the unit is not in LEARNING MODE see section 6.9 to place the unit into this mode.

Apollo has taken great care to simplify the installation, operation and safety of this device and to ensure longevity and reliability of the unit over time. The learning procedure consists of the following steps.

6.7 - How to set up the system for first use
1. Install electrical power connections to the gate opener unit. Ensure the power switch is in the OFF position prior to touching any of the power connections. Install all gate accessories such as Photo-Eye’s, Sensors, Loops and other safety devices.

2. Using the MANUAL RELEASE, disengage the drive motor if this is not already accomplished (see Figure 9). Ensure that the gate moves freely by moving it manually to the fully opened and fully closed positions verifying there is no binding or cause for resistance.

3. Put gate mid-way and using the MANUAL RELEASE HANDLE, move it counter-clockwise to re-engage the drive system (see Figure 9) and then stow handle.

4. Turn on the electrical power to the unit. The control board is already in the "LEARNING MODE" when shipped (see Figure 10), but in order to select the right kind of gate press FUNCTION, then LEARN then select SWING, then select LIGHT or AVERAGE or HEAVY, then press ENTER.

5. Using the OPEN button on the front of the Control board, hold the OPEN button down until the gate reaches the fully open position or where the installer wants the gate to stop as FULLY OPEN (see figure 12 steps 1-2-3). If the gate moves the wrong direction, refer to section 16.0 to reverse the direction.

6. Once the gate is in the position where the gate is intended to be "FULLY OPEN" the OPEN limit switch must be adjusted to inform the circuit board that the gate is in the correct position to STOP at that position in the future. Use an ALLAN WRENCH to loosen the set screw and move the arm for the open limit until the RED light illuminates on the front of the control board (see Figure 13 steps 4-5-6-7). When the CLOSED limit switch is set, tighten the set screw to hold it in place (see Figure 13 step 7).

6.8 - The learning sequence
Once the limit switches are all set, the final step is to LEARN the control board. To perform this task, follow the below listed steps:
1. The control board is already in the "LEARNING MODE" when shipped. In any case follow steps of section 6.9 in order to select the most appropriate kind of gate according to the installation. Press "OK" to allow the control board to scan for attached items, such as sensors, photo-eye’s and other safety devices.

2. The gate will open partially, then stop. This is being done, so that the control board can sense the type and operational condition of the drive motor. The gate will then run to the closing limit, so that it can properly sense where it is located.

3. The control board will then OPEN the gate slowly to establish travel and limits.

4. Once the gate reaches the fully OPENED limit switch, the control board will now increase gate travel speed to the highest speed allotted, and will now travel to the fully CLOSED position at full speed.

5. The gate opener is now programmed for basic usage.

6.9 - Learning mode
If not in learning mode, follow the below listed steps;
Steps on how to place the Apollo 1050 control board into learning mode.
1. Press Function
2. Press OK
3. Select "Swing"
4. Select weight of gate "Light- Average - Heavy"
5. Press Enter

Unit is now in LEARNING MODE.

Figure 8 - SETTING UP POWER

Figure 9 - MANUAL RELEASE

Figure 10 - LCD DISPLAY

Figure 12
Figure 12

Figure 13

Figure 14 - CONTROL BOARD BUTTONS

Figure 15 - CIRCUIT BOARD LAYOUT
8 - ACCESSORY INPUTS AND OUTPUTS

8.1 - Outputs

**Commercial Gate Operator Accessory Outputs:**

**OUT1 and OUT2:** Individual, isolated relays provide COMMON, NORMALLY OPEN, and NORMALLY CLOSED dry contacts for switching accessories based on programming of the “Auxiliary IO” function. These outputs are programmed in the “FUNCTION Auxiliary I/O” menu.

**Magnetic Lock:** Provides fused power (1.85A max) and isolated relay COMMON, NORMALLY OPEN, and NORMALLY CLOSED dry contacts for electrically powered and maintained magnetic locks. The delay for magnetic lock activation/deactivation may be adjusted from 0 to 5 seconds.

**Lamp:** Provides fused power (1.85A max) to drive a flashing warning lamp to indicate gate operation. This output is active when the gate is operating (Opening and Closing). Sets the amount of time the lamp accessory output is activated prior to gate movement. Settings from 0 to 5 seconds with a step of 0.5 seconds.

**Alarm:** Provides fused power (0.5A @ 12VDC) to drive an alarm siren to signal the occurrence of a hard shutdown, caused by 2 consecutive entrapment events (signals). This alarm output is reset by pressing the “Reset Hard Shutdown” button on the front panel or activating the “FIRE” input.

8.2 - Inputs

**Commercial Gate Operator Accessory Inputs:**

**Auxiliary Inputs 1** (16) and 2 (18): These digital inputs may be connected to the digital outputs of accessories and programmed to activate or control the gate operator in a number of different modes. Shorting pin 1 to pin 2 through a dry contact activates the programmed settings for these input. These inputs are programmed in the “FUNCTION Auxiliary I/O” menu.

**LOOP Input:** (22) Dry contact input that can be programmed for an inductive safety loop or photo-eye detector. Activating the LOOP 1 input maintains an OPEN gate fully open and a CLOSED gate fully closed until deactivated. Setting the LOOP 1 input to “Photo Mode” causes the moving gate to stop, then reopens the gate when the LOOP 1 input is deactivated.

**LOOP 2 Input:** (26) Dry contact input that can be programmed for an inductive safety loop or photo-eye detector. Activating the LOOP 2 input (26) closes the gate to the fully closed position. This loop input is intended for use with safety sensors to prevent entrapment between the opening gate and an adjacent wall or structure.

**Edge Input:** (28) This input may be configured as “DIGITAL” or “ANALOG” as required by the sensor type. When configured as “DIGITAL”, this is a dry contact input; otherwise the “ANALOG” must measure 8200ohms when input is activated and stops the gate regardless of direction of travel, momentarily reverses it then stops.

**Exit Input:** (30) Dry contact input for a vehicle exit sensor. Opens gate from the closed position and holds gate open with maintained input or reverses gate if closing.

**Fire Input:** (32) Dry contact input for a fire department control switch. Opens the gate and holds the gate open until the control switch is deactivated. Auto-close is disabled when this input is activated. Also clears hard shutdown.

**GUARD STATION**

**Guard Station Open:** (34) Dry contact input for a guard station open switch. Momentarily shorting the digital input to GND opens the gate (master and slave) to the full open position with the subsequent auto-close feature enabled.

**Guard Station Stop:** (35) Dry contact input (Normally Closed) for a guard station stop switch. Momentarily opening this input stops the opening gate at its current position. While this input is activated, all other inputs are disabled and are not functional.

**Guard Station Close:** (36) Dry contact input for a guard station close switch. Momentarily shorting the digital input to GND closes the gate (master and slave).

**RADIO**

**Radio Open:** (39) Dry contact input for an accessory radio open switch. Momentarily shorting the digital input to GND opens the gate to the full open position with the subsequent auto-close feature enabled.

**Radio Close:** (40) Dry contact input for an accessory radio close switch. Momentarily shorting the digital input to GND closes the gate.

**Radio Input:** Open/Close: (39 and 40) If you tie open and close together the unit will operate like a garage door opener in the instance that each time you press the button, it will either OPEN, STOP or CLOSE.

8.3 - Communication bus

**Overview**

Programming and diagnostic unit which connects directly to the gate controller and is part of the Nice “Opera” control system. The unit can be used in “stand-alone” mode via its front-panel keypad, or it may be accessed via a Bluetooth or cellular-enabled PDA, PC, or Smartphone when used with the...
O-View Software Suite: This unit, when matched with the OVIEW Bluetooth or GSM modules, enables remote control and management of the gate controller. Remote control functions include all programming functions that are available at the front panel LCD on the control board as well as software updates.

OVIEW Software Suite: Provides desktop or Smartphone level control of the gate controller. Other benefits include software updates that can be made wirelessly as new versions of software are made available.

BLUEBUS ACCESSORIES

MOTB: Moon Touch programmable keypad with secure codes (up to 9 digits per code if required) to control gate opening and closing. Connects to the 2-wire BlueBUS connector with inexpensive unshielded twisted-pair wire.

MOMB: Proximity card access control with capacity for up to 255 MOCARD or MOCARDP transponder cards. Connects to the 2-wire BlueBUS connector with inexpensive unshielded twisted-pair wire.

FT210B: Photocell transmitter and receiver pair that connects to the 2-wire BlueBUS connector with inexpensive unshielded twisted-pair wire and is a non-contact sensor for entrapment protection as specified in UL325, Section 31.1 “General Entrapment Protection Provisions”.

MASTER/SLAVE

The gate operator includes a two-pin connector designed to link two separate gate operators together as a Master/Slave pair. The Master/Slave configuration is enabled by connecting two gate operators with simple, unshielded twisted-pair wire (Max. 100 ft.). All entrapment sensors, switch inputs, receiver controls, and outputs must be wired to the gate operator designated as the “Master”. The following procedure outlines the process for configuring the Master/Slave pair.

 Perform the “Learn” process to configure open and close limits with the gate for each operator. See the “Programming Quick Start” procedures in this manual for a description of the gate learning process.


The Master/Slave pair is now configured. The Slave gate operator will perform identical open/close/stop functions in tandem with the Master gate operator.

8.4 - Programming the plug-in receiver and remote controls

SMXI/A Plug-In Receiver: The SMXI/A 433Plug-In Receiver provides up to 15 channels for specific control of individual gate functions. The receiver includes built-in programming functions for adding or removing Nice FloR/A wireless remote controls to/from a gate installation. The following procedures detail the steps to assign a remote control, add a new remote control, delete a single remote control, or remove all remote controls from the receiver memory.

Programming the FloR/A 2-Button or 4-Button Remote Control with the SMXI/A Plug-In Receiver.

These procedures apply to the FloR/A wireless remote control. These procedures assign factory default controls automatically to the remote control.

1. Have a functioning Nice FloR/A 2-button or 4-button remote control with a battery installed prior to programming the remote control.

2. Press and hold the button on the side of the SMXI/A receiver until the led illuminates green on the SMXI/A receiver, then release the button.

3. Within 10 seconds, press and hold any key on the FloR/A remote control until the led in the SMXI/A receiver blinks green 3 times, indicating that the FloR/A is programmed to control the receiver.

4. After the led on the SMXI/A receiver blinks green 3 times, another 10 second interval is started to program another FloR/A remote control if desired.

Repeat step 3 to program the additional FloR/A remote control. Step 3 may be repeated as many times as necessary to program all available FloR/A remote controls.

5. Verify that the FloR/A remote control(s) can control the gate by pressing one or more buttons individually on the remote control(s).

Wirelessly add new remote control to the SMXI/A Plug-In Receiver

A FloR/A remote control that has been programmed to control a SMXI/A receiver may be used to create other FloR/A remote controls for the same receiver. This procedure needs to be performed within 10 to 20m (30 to 60 feet) of the SMXI/A receiver, but the SMXI/A receiver does not need to be physically accessed.

1. Press and hold any button on the un-programmed FloR/A remote control for at least 5 seconds, then release the button, taking note of the button that was pressed.

2. Press the same button on the programmed FloR/A remote control three times.

3. Press the same button in step 1 on the un-programmed FloR/A remote control and release.

4. It is recommended to test the new copy of the FloR/A remote control with the assigned gate controller.

NOTE: This procedure will affect all SMXI/A receivers within radio range.

Deleting a Single FloR/A Remote Control from the SMXI/A Plug-In Receiver Memory

A FloR/A remote control that has been programmed to control a SMXI/A receiver may be removed from the SMXI/A receiver memory without affecting other assigned remote controls. This procedure needs to be performed at the SMXI/A Plug-In Receiver with the affected FloR/A remote control.

1. Press and hold the button on the side of the SMXI/A receiver until the led on the SMXI/A receiver illuminates green and keep the button pressed. The led will illuminate after approximately 4 seconds.

2. Press and hold any button on the FloR/A remote control until the led on the SMXI/A receiver blinks 5 green flashes.

3. Release the button on the side of the SMXI/A receiver.

4. It is recommended to verify that the de-programmed FloR/A remote control no longer controls the gate.

Deleting All FloR/A Remote Controls from the SMXI/A Plug-In Receiver Memory

All programmed remote controls may be removed from the SMXI/A plug in receiver memory. This procedures need to be performed at the gate controller.

1. Press and hold the button on the side of the SMXI/A receiver until the led on the SMXI/A receiver illuminates green and keep the button pressed.

2. Watch the led and on the receiver and verify the following sequence in the led.

3. Within 4 seconds after pressing the button (approx.) the green led illuminates.

4. Within 8 seconds after pressing the button (approx.) the green led turns off.

5. With 12 second after pressing the button (approx.) the green led starts flashing.

6. Count the green led flashes on the SMXI/A receiver. On EXACTLY the 5TH flash, release the button on the SMXI/A receiver.

7. It is recommended to test the FloR/A remote controls, if available, with SMXI/A plug in receiver to verify that it no longer affects the gate controller.
9 - WIRING AND CONNECTIONS

Permanent wiring is to be employed for the installation as required by local codes.

Use only U.L. listed (or equivalent) non-contact sensors. Inputs from the photo-beam to the circuit board are Normally Open (N.O.). Use only U.L. listed (or equivalent) non-contact sensors.

Connect the non-contact sensors. Inputs from the photo-beam to the circuit board are Normally Open (N.O.). Photo-beam input shall REVERSE travel of gate when activated during the CLOSE CYCLE ONLY. Gate will resume normal operation when photo-beam is no longer activated.

To reduce the risk of SEVERE INJURY or DEATH:
- Disconnect power to the gate operator by manually opening its dedicated circuit breaker before making any mechanical or electrical adjustments.
- Use a 20 Amp dedicated circuit breaker for each installed gate operator.
- Open dedicated circuit breaker supplying power to this gate operator BEFORE a new installation or making any modifications to an existing installation of this gate operator.
- All wiring connections MUST be made by a qualified individual.
- Run individual circuits in separate U.L. listed conduits. Do not combine high voltage (120VAC) power wiring and low voltage (+12VDC to +24VDC) control wiring in the same conduits.
- It is highly recommended that a grounding rod be installed with each operator according to local building codes to provide protection against near lightning strikes. Contact local underground utility companies BEFORE digging.
- Use the information in table 1 to determine high voltage wire size requirements. The distance shown in the chart is measured in feet from the operator to the power source. If power wiring is greater than the maximum distance shown, it is recommended that a service feeder be installed. When large gauge wire is used, a separate junction box must be installed for the operator connection. The wire table is based on stranded copper wire. Wire run calculations are based on a 110 VAC power source with a 3% voltage drop on the power line, plus an additional 10% reduction in distance to allow for other losses in the system.

Table 1 - Wire Gauges and Maximum Power Circuit Distances

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>14</th>
<th>12</th>
<th>10</th>
<th>8</th>
<th>6</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX RUN (ft)</td>
<td>180</td>
<td>280</td>
<td>460</td>
<td>700</td>
<td>1150</td>
<td>1800</td>
</tr>
</tbody>
</table>

WARNING

This swing gate operator uses an inherent entrapment sensing system as well as external type sensors.

WARNING: External entrapment protection must be added to insure a safe vehicular gate operating system.

Entrapment protection must be provided by a combination of non-contact inherent devices. Disconnect power to the gate operator before installing the non-contact sensors.

Actual placement of sensors is dependent on the specific installation requirements.

One or more non-contact sensors should be located where the risk of entrapment or obstruction exists such as the perimeter reachable by a moving gate or barrier

ISOLATE ALL ELECTRICITY PRIOR TO INSTALLATION OR SERVICE

10 - OPTIONAL INPUTS

10.1 - Fire input and fail safe connector

32 FIRE
33 GND

Dry contact input for a fire department control switch. Normally Open (NO) contact must be shorted to ground through a switch to open the gate. The FAIL SAFE connector which is shorted at the factory with a jumper (Normally Closed NC), may be wired in parallel with the Fire input to release the motor in the event of an emergency entry by the fire department during a power failure. Opening the FAIL SAFE contacts allows the gate to be pushed open by hand during a power outage.

Figure 20 - FIRE DEPT. INPUT CONNECTOR

10.2 - Fail safe connection

A “fail safe” electric motor brake is provide for each of the three motor control outputs on the main gate control board. A jumper is installed at the factory for the primary motor control as shown in the photo to activate this electric brake. This jumper creates an effective brake action on the motor that does not allow the gate to be operated (opened or closed) manually, whether or not the gate operator is powered. This jumper may be removed during a power outage to enable operation of the gate manually, or during installation, the jumper may be removed and this connector may be wired to an external switch for more convenient access. The fail safe jumpers for the Motor 1 and Motor 2 control provide the same electric brake function for external gate motors in alternative installation.

Figure 19 - GROUNDING WIRE

The gate operator should be grounded to a copper rod driven to a minimum depth of 3 feet, and properly grounded to the opener using a ¾” copper wire prior to operation. Ensure proper ground bonding by removing paint around the mounting hole to create a proper connection if required. (Burnishing may be required) Check conductivity using a multimeter to verify bonding. (Ring-Out). See figure 19.
10.5 - Exit and edge inputs wiring diagram

28 EDGE
29 GND
30 EXIT
31 GND

The EDGE input may be configured as a monitored ANALOG input, or DIGITAL (NC or NO) input. The EDGE sensor input is intended for ANSI/UL 325 listed gate edge sensors to protect against entrapment and hazardous pinch points along the moving edge of the closing gate. The EXIT sensor input is provided to activate to open the gate, or re-open a closing gate, upon sensing an exiting vehicle.

10.3 - Magnetic lock connection

7 NC
8 Com (Common)
9 NO
10 GND
11 V+

This connection is used to install the magnetic lock. In this instance a gate can be locked magnetically to prevent a forced opening. Consult lock manual for specifics on installation and wiring.

10.4 - Guard station connection

34 OPEN
35 STOP
36 CLOSE
37 GND

With a Guard Station switch in place, a user could operate the gate by pushing the respective buttons for the command that is desired. Gate Open, Stop, and Close dry contact inputs, controlled by NORMALY OPEN (NO) and NORMALY CLOSED (NC) momentary switches.

NOTE: If guard station inputs are not used STOP (35) and GND (32) need to be tied together.
11 - INSPECTION AND OPERATION

Proper inspection of all equipment is required to ensure continuous functionality, safety, and to ensure reliable operation in all weather conditions. Inspect electrical assemblies and wiring installations for damage, general condition, and proper functioning to ensure the continued satisfactory operation of the electrical system. Adjust, repair, overhaul, and test electrical equipment and systems in accordance with the recommendations and procedures in the OPENER and/or component manufacturer’s maintenance instructions. Replace components of the electrical system that are damaged or defective with identical parts, with manufacturer’s approved equipment, or its equivalent to the original in operating characteristics, mechanical strength, and environmental specifications. A partial list of suggested problems to look for and checks to be performed are listed below:

11.1 Damaged, discolored, or overheated equipment, connections, wiring, bearing caps and installations.
11.2 Excessive heat or discoloration at high current carrying connections. (look for bluing or heat affected metal).
11.3 Misalignment of electrically driven equipment. (Causes strain on pulley assemblies and bearings).
11.4 Poor electrical bonding (broken, disconnected or corroded bonding strap) and grounding, including evidence of corrosion.

11.5 Dirty equipment and connections. Clean equipment and connections.
11.6 Improper, broken, inadequately supported equipment, wiring and conduit, loose connections of terminals, and loose ferrules.
11.7 Poor mechanical or weld joints. Broken welds.
11.8 Condition of circuit breaker and fuses. Ensure that they are of the correct type and amperage.
11.9 Insufficient clearance between exposed current carrying parts and ground or poor insulation of exposed terminals. All exposed connections must be covered (prevent arcing between exposed parts, and electrical shock).
11.10 Broken or missing wire, connectors, etc.
11.11 Operational check of electrically operated equipment such as motors, inverters, generators, batteries, lights, protective devices, etc. Ensure proper functionality of all systems during inspections.
11.12 Ensure safety placards and warning signs are present as specified within this document. Ensure proper functionality of all safety devices as specified. Non-functioning or malfunctioning safety devices should be replaced immediately.

12 - GENERAL LAYOUT AND SAFETY ACCESS

Entrapment Protection Inputs - Typical Installation Diagram Utilizing Loop Sensors and Photocells

Figure 26 - GENERAL GATE LAYOUT IN-GROUND LOOPS
13 - ACCESSORIES AND SENSORS

EXTERNAL ENTRAPMENT PROTECTION
Non-contact and contact sensors must be installed individually or in combination with each other to provide external entrapment protection.

Care should be exercised to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate is still moving, and one or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.

A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subjected to mechanical damage.

A wireless contact sensor such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction.

DURING INSTALLATION
- DISCONNECT POWER at the control panel before making any electric service power connection.
- Be aware of all moving parts and avoid close proximity to any pinch points.
- Know how to operate the manual release.
- Adjust the unit to use the minimum force required to operate the gate smoothly even during mid-travel reversing.
- Place controls a minimum of 8 feet away from the gate so that the user can see the gate and operate controls but cannot touch the gate or gate operator while operating the controls.
- Warning signs must be placed on each side of the gate or in high-visibility areas to alert of automatic gate operations.

Figure 27 - GENERAL GATE LAYOUT WITH PHOTOCELLS
THE PROGRAMMING BUTTONS INDICATED IN THE ABOVE REFERENCE SHOULD BE USED ONLY AFTER UNDERSTANDING THE MANUAL AND ITS RELATION TO THE PROGRAMMING SEQUENCES SHOWN ON THE FOLLOWING PAGES. CARE SHOULD BE TAKEN WHenever CHANGES ARE IMPLEMENTED TO ENSURE PROPER FUNCTIONALITY AND SAFETY.
15 - PROGRAMMING BUTTONS

15.1 - Force

**Static:** Set sensitivity to constant force on a scale of 1 to 10 (1 being the most sensitive).

**Dynamic:** Set sensitivity of sudden impact force to the moving gate on a scale of 1 to 10 (1 being most sensitive).

**ESC:** Exit the FORCE menu.

15.2 - Speed

**Max:** Sets the limit of maximum allowed gate speed on a scale of 20% to 100% (20% being the lowest setting).

**Standard:** Sets the limit of the gate speed during normal movement (not soft start/stop) on a scale of 20% to MAX (20% being the lowest setting).

**Low:** Sets the limit of the gate speed while in LEARNING mode and when moving in SLOW, on a scale of 20% to STANDARD (20% being the lowest setting).

**Slowdown:** Set gate speed when going into approaching the open or close limits on a scale of 20% to LOW (20% being the lowest setting).

15.3 - Acceleration

**Max:** Sets the limit of gate acceleration when reversing the gate after an obstacle has been detected by the UL/Edge or current sense feature (Force). Settings from 1 to 10, with 10 being the highest rate of gate acceleration.

**Standard:** Sets the limit of the gate acceleration in normal operation. Settings from 1 to 10, with 10 being the highest rate of gate acceleration.

**TO PREVENT DAMAGE TO THE GATE OR THE CONTROLLER USE LOWER ACCELERATION SETTINGS FOR HEAVIER GATES.**

**ESC:** Exit the SPEED menu.

15.4 - Delay

**Auto Close:** Sets the timeout before the gate closes automatically from the fully open position. Settings from 5 to 120 seconds.

**Slave:** Sets the delay for opening the slave gate leaf in a Master/Slave (Motor 1 and Motor 2 operation), (dual gate) system. Settings from 0 to 5 seconds with a step of 0.5 seconds.

**Lamp/Strobe:** Sets the amount of time the Lamp accessory output is activated prior to gate movement. Settings from 0 to 5 seconds with a step of 0.5 seconds.

**Lock:** Sets the amount of time the Magnetic Lock accessory output is activated to disable the lock when opening the gate. Settings from 0 to 5 seconds with a step of 0.5 seconds.

**Run Time:** Sets the maximum run time for the gate. Used in case the gate doesn’t reach its limits. Settings from 5 to 120 seconds with a step of 1 second.

**ESC:** Exit the DELAY menu.

15.5 - Function

**Learn:** Puts the gate operator into learning mode for a Swing or Swing gate, and Blue BUS peripherals. Learning mode for a Swing or swing style gate involves selecting the gate type (Light, Average, Heavy), then fully opening and closing the gate to sense the limits. Selecting the gate type selects pre-calculated values for the FORCE, SPEED, and ACCELERATION settings. Learning the Blue BUS peripherals enables the gate operator to discover and integrate accessory devices like Blue BUS access control and safety devices.

**Positions:** Configures the points in the gate open, close, and partial cycles at which deceleration occurs:

- **Slow Down – Open:** Sets the point in the % of gate opening when the gate begins deceleration to the fully open position.
- **Slow Down – Close:** Sets the % of gate opening when the gate begins deceleration to the fully close position.
- **Partial:** Sets the point in the % of gate opening when the gate begins deceleration to the Partial open position.

**Auxiliary Inputs:** Auxiliary inputs IN AUX1 (16) and IN AUX2 (18) can be programmed with one of the following options:

- No program
- No Function used
- OPEN the Gate
- CLOSE the Gate
- STEP Cycling Step (Open-Stop-Close-Stop)
To program weekly events EV1 through EV8, perform the following steps:

1. Press FUNCTION -> Events.
2. Press and hold OK to display EV1 (display will blink “EV1”).
3. Press UP or DOWN to toggle between events, then press OK to make a selection. The display changes to hours.
4. Press UP or DOWN to toggle between hours, then press OK to make a selection. The display changes to minutes.
5. Press UP or DOWN to toggle between minutes, then press OK to make a selection. The display changes to individual days of the week.
6. Press UP or DOWN to toggle between days of the week. Press OK to toggle between ON and OFF for each day of the week. Continue toggling through the days of the week until ESC is displayed. Press OK to advance to the next event.
7. Repeat step 2 through 6 for event EV2 through EV8.

To temporarily suspend one or more weekly events (EV1 through EV8), perform the following steps:

1. Press FUNCTION -> Events.
2. Press OK quickly to display EV1 active days.
3. Press OK quickly again to display “Suspend”. Event EV1 is now suspended and will not run until re-enabled.
4. Press UP or DOWN to toggle through the events EV1 – EV8 and repeat steps 2 through 3 to suspend or enable other weekly events.

Charger: A battery charger is built-in with the Control board for use with a backup battery. The charger may be manually programmed for customized charge settings or set to “Auto” to provide a battery charging profile that automatically compensates for temperature and current during the charging process. The following parameters are available for programming the battery charger:

- Charger On/Off
- Select Max current for charging (from 0.1A to 1.5A step 0.05A)
- Cycling Time (1 second off charging every cycling time)
- Auto (best charge considering temperature)

Standby: Programs the timeout for the gate operator to go into low power standby mode. Low power standby is Settings from 5 to 120 seconds, or may be disabled with “OFF”. During low power standby there is no data displayed on the gate operator LCD and it consumes a minimum amount of power to extend the life of the backup battery. All the outputs are switched off and the LED OK blinks to show this standby status of the system.

Advance Settings: The following settings are available for customizing the gate operator as required by the customer’s installation requirements:

- Set Language (English Spanish Italian)
- Set clock 12H/24H
- Set LCD Contrast
- Set Direction Opening (Adapts the motor direction as necessary depending upon the opening direction of the Swing or swing gate).
- Set Virtual Encoder (Used for motors without built-in encoders)
- Set Anti-tailgate (Closes gate immediately after vehicle has cleared safety sensors)
- Select inputs LOOP or PHOTO
- Select UL/EDGE input type (NO, NC, Analog)
- Select Master / Slave Motor1 or Motor2
- Activate link for remote Master/Slave (Enables control of an additional gate operator board)

Default: This setting gives the installer/user the option of returning some or all settings of the gate operator to the original factory settings:

- System settings
- Radio Channel settings
- Event settings
- Charger settings

ESC: Exit the FUNCTION menu.

15.6 - Display
ESC: Exit the DISPLAY menu.

Info: Displays the manufacturer name, product name/model, software versions, and serial number.

Clock: Displays the calendar date and time in the real time clock. Pressing and holding the “OK” button for 5 seconds enables the date and time settings to be updated manually.

Main Volt: Displays the gate operator main control voltage in volts DC.

Battery Volt: Displays the gate operator backup battery voltage in volts DC.

Sun Volt: Displays the solar panel input voltage in volts DC.

Motor Volt: Displays the voltage at the motor in volts DC.

UL Volt: Displays the voltage at the UL/Edge sensor input in volts DC.

Temperature: Displays the temperature of the gate controller board in degrees Centigrade or Fahrenheit (press OK and hold 5 seconds to change scale).

Service: The following information is recorded and viewable about the operating history of the gate:

- Total: Displays the total number of open-close cycles (non- Settings ).
- Partial: Display the total number of partial cycles. Reset by pressing the “OK” button for several seconds.
- Maint. Display the amount of cycles before service is required. Settings from 1000 to 5000 cycles in increments of 1000 cycles.

Motor: Displays the Motor position, voltage, and current.

Motor 1: Displays the Motor position, voltage, and current.

Motor 2: Displays the Motor position, voltage, and current.

Charger: Displays the battery charger voltage and current.

Last Reset: Displays the code diagnostic review. Used for diagnostic and troubleshooting.

ESC: Exit the DISPLAY menu.

16 - GATE DIRECTION REVERSAL

WARNING: GATE DIRECTION REVERSAL CAN ONLY BE ACCOMPLISHED IN LEARNING MODE

Gate Direction Reversal
If for some reason, the installer were to install the opener on the opposite side of the gate from which the unit is programmed, and when you press the “OPEN” button, the gate actually CLOSES, the installer will need to REVERSE the direction of travel to match the buttons on the control board.

Press “OPEN” and note if the gate actually opens. If it does not, and instead is traveling in a CLOSING direction follow the below steps to correct; (if already in learning mode, follow the below listed steps).

1. Press FUNCTION
2. Scroll through the options to reach “ADVANCED SETTINGS”
3. Press ENTER
4. Scroll through selection to reach “DIRECTION OF MOTOR”
5. Press ENTER
6. The direction arrows on the display begin to blink.
7. Choose the appropriate direction of travel
8. Press DISPLAY to return to the MAIN MENU
9. Press OPEN to verify that the gate now OPENS.

If not in learning mode, follow the listed steps below.

Steps on how to place the Apollo 1050 control board into learning mode.
1. Press Function
2. Press OK
3. Select SWING
4. Select LIGHT, AVERAGE OR HEAVY
5. Press Enter
18 - EMERGENCY VEHICLE ACCESS

18.1 The automatic vehicular gate system must be designed to allow access to emergency vehicles under different operating conditions.

18.2 During normal powered operation, emergency vehicles access the gate by use of the emergency vehicle access device installed on your gate system. The type of device that is used in your community is dependent on your city codes. These devices may include (but are not limited to) Fire Department lock boxes, Click-2-Enter radio receivers, strobe light sensors, siren sensors, etc.

18.3 Check with your installer to determine if your gate system is equipped with a back-up power system. In the event of a primary (AC) power failure and a back-up system (DC) power failure (low charged or dead batteries for example), the system must have a release system to allow the gate to be manually operated. The release device must be accessible from either side of the gate and must be present so that emergency personnel can gain access through the gate under this condition.

18.4 This operator is equipped with a manual release system that will allow the gate to be pushed open in the event of a power outage or equipment failure.

18.5 NOTE: Never attempt to manually push open any gate with an operator attached to it until you have verified that power to the operator has been shut-off.

18.6 The automatic vehicular gate system must be designed to allow access to emergency vehicles under different operating conditions.

18.7 In the event of a power failure, the emergency vehicle access device may not be functional because the gate operator is un-powered. NOTE: DC powered back-up systems are optional and your gate system may or may not be equipped with one. Check with your installer to determine if your gate system is equipped with a back-up power system.

18.8 The FAIL-SAFE manual operation system is the most reliable and safest method for placing an automated gate in manual operation and is the preferred method of emergency gate operation under worse case conditions by many Fire Chiefs and Building Inspectors and is typically used in CLASS I and CLASS II applications.

18.9 For manual fail-safe gate operation, turn power to the operator OFF. If a backup power system is in use, be sure that this power is turned OFF also. Once power is OFF, the gate can be manually operated, by using the MANUAL RELEASE handle under the top cover.

19 - GLOSSARY

BLOCK - Ceases all operator function except HIGH PRIORITY inputs.

COMMERCIAL / GENERAL ACCESS VEHICULAR GATE OPERATOR - CLASS II - A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotels, garages, retail store, or other building servicing the general public.

ENTRAPMENT - The condition when an object is caught or held in a position that increases the risk of injury.

FORCE STATIC - Constant load threshold for sensitivity setting.

FORCE DYNAMIC - Impact sensitivity setting.

GATE - A moving barrier such as a swinging, sliding, raising, lowering, or the like, barrier, that is a stand-alone passage barrier or is that portion of a wall or fence system that controls entrance and/or egress by persons or vehicles and completes the perimeter of a defined area.

(STEP H) HIGH PRIORITY - Step by step control.

INHERENT ENTRAPMENT SENSOR SYSTEM - An automatic sensor system which senses entrapment of a solid object and is incorporated as a permanent and integral part of the operator.

INDUSTRIAL / LIMITED ACCESS VEHICULAR GATE OPERATOR - CLASS III - A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.

RESTRICTED ACCESS VEHICULAR GATE OPERATOR - CLASS IV - A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

RESIDENTIAL VEHICULAR GATE OPERATOR - CLASS I - A vehicular gate operator (or system) intended for use in a home of one-to four single family dwellings, or garage or parking area associated therewith.

STEP BY STEP - Command that opens-stops-closes-stops the gate with each press of the button.

SYSTEM - In the context of these requirements, a system refers to a group of interacting devices intended to perform a common function.

UNBLOCK - Resumes normal operation after a blocked condition.

WIRED CONTROL - A control implemented in a form of fixed physical interconnections between the control, the associated devices, and an operator to perform predetermined functions in response to input signals.

WIRELESS CONTROL - A control implemented in means other than fixed physical interconnections (such as radio waves or infrared beams) between the control, the associated devices, and an operator to perform predetermined functions in response to input signals.
## 20 - MAINTENANCE SCHEDULE - APOLLO GATE OPENER

### Table 2

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>COMPLETE</th>
<th>BASIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>Active the primary (inherent) reverse system by blocking the gate with a solid object. The gate should reverse momentarily then stop. Restart the gate and block again with a solid object. The gate should reverse momentarily, then stop, and go into hard shutdown with an alarm</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Backup System</td>
<td>If operator is equipped with option DC backup system, check to be sure the system opens the gate upon loss of AC power</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Battery</td>
<td>If operator is equipped with option DC backup system, check the batteries for any leakage or loose connections. Batteries should be replaced every two years</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Fire Dept</td>
<td>Check emergency vehicle access device for proper operation</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Reverse System</td>
<td>Check that the gate reverses on contact with an object in both the opening and closing cycles</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Loop(s)</td>
<td>Check vehicular reverse and shadow loops for proper operation</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Release</td>
<td>Check manual release for proper operation</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td>Overall Check: Complete check of gate and gate operating system</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Mounting Hardware</td>
<td>Check screws and nuts</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Rain Drain</td>
<td>Remove top lid and sweep out any debris or dust that may have accumulated. Every 6 months</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

## 21 - INSTALLATION DRAWING (1)

### Gate Arm Attachment

Sample installation

![Gate Arm Attachment Diagram](image)
Table 3

**Chart A (90°)**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>51&quot;</td>
<td>std</td>
<td>std</td>
<td>40</td>
<td>11</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>52-⅜&quot;</td>
<td>std</td>
<td>std</td>
<td>37</td>
<td>11</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>54-⅝&quot;</td>
<td>std</td>
<td>std</td>
<td>34</td>
<td>11</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>55-⅞&quot;</td>
<td>std</td>
<td>std</td>
<td>31</td>
<td>11</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>57&quot;</td>
<td>std</td>
<td>std</td>
<td>28</td>
<td>11</td>
<td>41&quot;</td>
</tr>
<tr>
<td>59-⅝&quot;</td>
<td>std</td>
<td>std</td>
<td>20</td>
<td>11</td>
<td>39-½&quot;</td>
</tr>
</tbody>
</table>

**Chart B (90°)**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>48&quot;</td>
<td>std</td>
<td>std</td>
<td>40</td>
<td>14</td>
<td>40-¼&quot;</td>
</tr>
<tr>
<td>50&quot;</td>
<td>std</td>
<td>std</td>
<td>37</td>
<td>14</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>51-⅝&quot;</td>
<td>std</td>
<td>std</td>
<td>34</td>
<td>14</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>52-⅜&quot;</td>
<td>std</td>
<td>std</td>
<td>31</td>
<td>14</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>54&quot;</td>
<td>std</td>
<td>std</td>
<td>28</td>
<td>14</td>
<td>42-¾&quot;</td>
</tr>
<tr>
<td>56-⅝&quot;</td>
<td>std</td>
<td>std</td>
<td>20</td>
<td>14</td>
<td>41-½&quot;</td>
</tr>
</tbody>
</table>

**Chart C (> 90°)**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Ang</th>
</tr>
</thead>
<tbody>
<tr>
<td>53°</td>
<td>std</td>
<td>std</td>
<td>20</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>53-13/16&quot;</td>
<td>std</td>
<td>std</td>
<td>20</td>
<td>21</td>
<td>110</td>
</tr>
<tr>
<td>50°</td>
<td>std</td>
<td>std</td>
<td>20</td>
<td>28</td>
<td>120</td>
</tr>
</tbody>
</table>

Figure 30 - LAYOUT TEMPLATE
Table 4

<table>
<thead>
<tr>
<th>Chart D</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>32-3/8&quot;</td>
<td>23-1/8&quot;</td>
<td>25-1/8&quot;</td>
<td>25</td>
<td>11</td>
<td>21&quot;</td>
</tr>
</tbody>
</table>
Figure 32 - ARM MEASUREMENTS
CORRECT LAYOUT

INCORRECT INSTALLATION

Figure 33

Figure 34
This procedure allows slight mechanical adjustment of the gate’s closing angle by extending or retracting the main arm.

1. Using a 2.5mm or 3/32 hex key, turn the locking bolt on the side of the arm counter-clockwise to release the adjustment knob.
2. Rotate the knob as shown to increase or decrease the length of the main arm. **NOTE**: Do not extend the main arm more than 2”!
3. Using a 2.5mm or 3/32 hex key, turn the locking bolt on the side of the arm clockwise to lock the adjustment knob in place.

---

**26 - MECHANICAL ADJUSTMENT OF GATE CLOSING POSITION**

---

**27 - APOLLO GATE OPENER TROUBLESHOOTING**

<table>
<thead>
<tr>
<th>SYMPTOM(S)</th>
<th>POSSIBLE SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator will not Power On.</td>
<td>Check that power to the operator is turned ON</td>
</tr>
<tr>
<td>Power LED is OFF</td>
<td>Check terminal block wiring for loose or broken wires</td>
</tr>
<tr>
<td></td>
<td>Check for 115 VAC at source. If voltage measures OK, check the terminal block</td>
</tr>
<tr>
<td></td>
<td>Check the fuse</td>
</tr>
<tr>
<td>Gate opens a short distance, then</td>
<td>Check the UL/Edge input on the gate controller</td>
</tr>
<tr>
<td>stops and reverses</td>
<td>Adjust Force Settings</td>
</tr>
<tr>
<td>Gate opens but will not close</td>
<td>Check the input LEDs. Any ON will hold the gate open and indicates a problem with</td>
</tr>
<tr>
<td></td>
<td>the safety device</td>
</tr>
<tr>
<td></td>
<td>Check the loop detectors. Any activated safety device can hold the gate open and</td>
</tr>
<tr>
<td></td>
<td>indicates a problem with the loop detector or ground loop</td>
</tr>
<tr>
<td>Battery backup system will not open</td>
<td>Check if backup system is set to open gate automatically or requires an input to</td>
</tr>
<tr>
<td>gate upon AC power outage</td>
<td>open</td>
</tr>
<tr>
<td></td>
<td>Check the batteries for proper voltage. Replace if necessary</td>
</tr>
<tr>
<td>Hard Shutdown (2 back to back</td>
<td>Clear any obstructions from the path of the gate. Press RESET to clear (or hard</td>
</tr>
<tr>
<td>obstructions) LED blinking, Buzzer</td>
<td>reset button)</td>
</tr>
<tr>
<td>sounds for 5 minutes</td>
<td></td>
</tr>
<tr>
<td>Gate opens by itself</td>
<td>Check accessory inputs and clear them as necessary</td>
</tr>
</tbody>
</table>
28.1 - Learning the gate
1. Install electrical power to the gate opener unit.
2. Install all gate accessories such as Photo-Eye’s, Sensors, Loops and other safety devices.
3. Turn on the electrical power to the unit.
4. Using the MANUAL RELEASE HANDLE, disengage the drive motor.
5. Move the gate manually (with your hands) to ensure that the gate travels to the fully open and fully closed positions with no binding or problems. Gate should move freely.
6. Using the MANUAL RELEASE HANDLE, re-engage the drive system and stow the handle.
7. Using the open button on the front of the Control board, hold the button down until the gate reaches the fully open position.
8. Adjust the Open Limit Switch until the GREEN light illuminates on the front of the control board. The FULLY OPEN limit switch is now set.
9. Using the CLOSE button on the front of the Control Board, hold the button down until the gate reaches the fully closed position.
10. Adjust the CLOSED Limit Switch until the RED light illuminates on the front of the control board. The fully CLOSED limit switch is now set.
11. The control board is already in the “LEARNING MODE” when shipped. If not in LEARNING MODE see section 28.3) Press “OK” to allow the control board to scan for attached items, such as sensors, photo-eye’s and other safety devices.
12. The gate will open partially, then stop. This is being done, so that the control board can sense the type and operational condition of the drive motor. The gate will then run to the closing limit, so that it can properly sense where it is located.
13. The control board will then OPEN the gate slowly to establish travel and limits.
14. Once the gate reaches the fully OPENED limit switch, the control board will now increase gate travel speed to the highest speed allotted, and will now travel to the fully CLOSED position at full speed.
15. The gate opener is now programmed for basic usage.

28.2 - Gate direction reversal
WARNING: GATE DIRECTION REVERSAL CAN ONLY BE ACCOM-PLISHED IN LEARNING MODE
If for some reason, the installer were to install the opener on the opposite side of the gate from which the unit is programmed, and when you press the “OPEN” button, the gate actually CLOSES, the installer will need to REVERSE the direction of travel to match the buttons on the control board. Press “OPEN” and note if the gate actually opens. If it does not, and instead is traveling in a CLOSING direction follow the below steps to correct:
1. Press FUNCTION
2. Scroll through the options to reach “ADVANCED SETTINGS”
3. Press ENTER
4. Scroll through selection to reach “DIRECTION OF MOTOR”
5. Press ENTER
6. The direction arrows on the display begin to blink
7. Choose the appropriate direction of travel
8. Press DISPLAY to return to the MAIN MENU
9. Press OPEN to verify that the gate now OPENS

If not in learning mode, follow the below listed steps.

28.3 - Putting the controller into learning mode
Steps on how to place the Apollo 1050 control board into learning mode.
1. Press Function
2. Press OK
3. Select Swing
4. Select weight of gate
5. Press Enter
Unit should now be in LEARNING MODE
Left box is for installer check off and the right box is for customer check off.

1. The gate has been checked to make sure it is level and moves freely in both directions.

2. Potential pinch areas have been guarded so as to be inaccessible OR have contact and/or non-contact obstruction sensing devices installed.

3. The installer has installed one or more contact or non-contact obstruction sensing devices, in compliance with UL325 requirements for this installation.

4. If pedestrian traffic is expected, a separate pedestrian gate has been installed, a minimum of seven feet from the gate. The customer has been informed that all pedestrian traffic must use the pedestrian gate.

5. Warning signs have been installed on each side of the gate in highly visible locations. The customer has been informed that these signs must remain at all times.

6. There are no controls installed on the gate operator, or within 8 feet of the gate.

7. The installer has properly adjusted the obstruction sensing feature and has tested the gate to make sure that the gate stops and reverses a short distance with minimal resistance applied (Approximately 40 lbs. on a swing gate, at the end of the gate).

8. The installer has instructed the customer in the proper use of the gate operator and reviewed all of the operational functions, obstruction sensing devices, warning beeper and reset, etc.

9. The installer has instructed the customer in the proper use of the operator’s manual disconnect feature. The manual disconnect must never be used while the gate is in motion. The power switch must be turned off before using the manual disconnect and disengaging the operator.

10. The installer has reviewed all safety instructions with the customer, and has left the safety instructions and owner’s information sheets for their reference.

11. The installer has answered any questions the customer has regarding the operation of the gate operator and gate operator safety precautions.

12. The installer has explained to the customer that a regular maintenance schedule for both the gate and the gate operator is recommended.

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Installation Acceptance

Address where opener is located

Installer name, number and address

End user name and telephone number