System Safety

The Reinke Electrogator II System is designed with many electrical and mechanical safety features. However, each operator must read and understand this and all other accompanying owners manuals for the safe and efficient operation of your Reinke Electrogator II System. If this System is operated incorrectly, it can pose a safety threat to the operator and others. The following is a list of safety operating tips which all service and operating personnel must read and understand.

⚠️ The Safety Alert Symbol is displayed many places throughout this manual and on your System to indicate when there is a potential for Personal injury.

⚠️ Throughout this manual and on System Decals, the words “DANGER”, “WARNING”, and “CAUTION” are used with the Safety Alert Symbol to alert the operator of potential hazards. “DANGER” identifies the most serious hazards. “DANGER” or “WARNING” safety signs identify specific hazards. “CAUTION” signs identify specific safety instructions.

⚠️ The movement of an Electrically Powered, Gear-Driven, Irrigation System is relatively slow. Moving parts are exposed and may present a potential hazard. Therefore, keep all equipment, vehicles, people, etc., out of the System’s path.

⚠️ DO NOT attempt to perform any maintenance procedures until the Reinke Main Control Panel Disconnect Switch and all Pump and other Disconnect Switches are locked in the “OFF” position. Electrical component trouble-shooting and replacement should be performed by a certified Reinke Service Technician to ensure built-in safety features remain intact. This also ensures System remains compliant with the National Electric Code and Reinke Manufacturing Specifications. Replace all Protective Guards and Shields before restoring power to the System.

⚠️ Do not allow anyone to ride or climb on the System unless they are qualified and required to do so for maintenance purposes.

⚠️ The Tower Steps have been provided for access to the Tower Control Boxes only. They are not intended for access to the Span. For instance, should the Sprinkler Heads require service, use a ladder to reach them from the ground.

⚠️ Exercise caution when handling fuel near Systems equipped with Combustion Engine-driven Generators and Pumps.

⚠️ If you attempt to repair your System and are uncertain of your methods, contact an authorized Service Person.

⚠️ Keep away from the System during thunderstorms or other severe weather conditions. The Center Pivot is grounded and the System is probably the highest object in the field, making it a good lightning receptor.

⚠️ Be sure Protective Guards are installed on all Belts and Driveshafts of Ancillary Equipment such as Combustion Engines, Electric Motors, Pumps, etc.

⚠️ If you suspect a short circuit or the System is not working correctly, do not touch the System and keep others away from it. Call your Reinke Service Technician. Electrical component trouble-shooting and replacement should be performed by a certified Reinke Service Technician to ensure built-in safety features remain intact. This also ensures System remains compliant with the National Electric Code and Reinke Manufacturing Specifications.
When towing a System from field to field, avoid ditches, rough terrain, overhead power lines, etc. The Ground Wire MUST be re-attached to the Ground Rod and checked for electrical integrity each time the System is towed.

Avoid any bodily contact with high pressure water streams from Sprinklers and End Guns.

Keep away from fields where the System is chemigating. Make sure the applied chemical and water does not blow or drift past the area of intended operation. A Check Valve must be installed between the Pivot Center and the Pump to prevent the mixture of water and chemical from siphoning back into the irrigation water source. Comply with all local, state, and federal regulations.

Do not oversize Fuses. Fuses are sized for a specific circuit. It is very important to make sure you have the proper fuse size in place before initially starting the System and when replacing Fuses.

Do not operate System with water when temperatures are below 40°F (4.5°C). This can cause structural damage to the System.

Maintain adequate crop clearance. Allowing the systems trussing to drag in the crop can cause structural damage to the system.

In most states it is unlawful to spray water on state and county roadways. This is a serious hazard and must not be allowed.

If your System is equipped with any Auto-Stop or Auto-Reverse Mechanism, make sure they are working correctly and a Tower Barricade is properly installed as per this manual. Reinke disclaims any and all liability (including any liability created pursuant to the Irrigation Systems Warranty) with regard to damage to the Irrigation System, or to other property, or personal injury or death, caused by improper installation or maintenance of Reinke-supplied Tower Auto-Reverse or Auto-Stop Switches or Tower Barricades, or by use of customer-supplied Barricades.

Drive shafts may start without warning. Keep away from Drive shafts to prevent clothing or limbs from being entangled, resulting in severe injury.

Do not endanger your own life and possibly the lives of others by being negligent.
Safety Decals - located on Main Control Panel

- Always place Disconnect Switch in the “OFF” position and lock before performing any maintenance on the System.
- NEVER stop or shut down a running System by turning the Main Disconnect Switch to the “OFF” position.

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1. KEEP ALL SHIELDS IN PLACE.
2. DISCONNECT POWER SOURCE TO ADJUST OR SERVICE.
3. MAKE CERTAIN EVERYONE IS CLEAR OF EQUIPMENT BEFORE APPLYING POWER.
4. DISCONNECT POWER BEFORE RESETTING MOTOR OVERLOAD.
5. KEEP HANDS, FEET, CLOTHING AWAY FROM POWER DRIVEN PARTS IN MOTION.

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1. MANTENGA TODAS LAS CUBIERTAS EN SU LUGAR.
2. DESCONECTE LA FUENTE DE POTENCIA PARA CUALQUIER AJUSTE, MANTENIMIENTO O REPARACION.
3. ASEGúRSE DE QUE TODO EL MUNDO ESTE SUFICIENTEMENTE ALEJADO DEL EQUIPO ANTES DE APLICAR LA POTENCIA.
4. DESCONECTE LA POTENCIA ANTES DE REAJUSTAR LA SOBRECARGA DEL MOTOR.
5. MANTENGA LAS MANOS, LOS PIES Y LAS ROPAS BIEN APARTE DE TODAS LAS PARTES ACTIVABLES DEL MOTOR QUE ESTEN MOVIÉNDOSE.
Do not attempt to perform any maintenance procedure until the main control panel disconnect switch and all pump and other disconnect switches are locked in the “OFF” position.
What factors determine the severity of an electrical shock?
* Amount of current
* Time of exposure
* Path through the body
* Body area exposed to electrical contact
* Size and condition of the body
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Overview

The EOS Multipurpose Board (EOS-MPB) option provides several performance enhancements for your Reinke system, GPS field position, multiple use cases, multiple placements on the system and remote relay control. The EOS-MPB can be useful in several different functions along the Pivot or Lateral systems. Additional enhancements included are:

- User interface flow, look and feel, reduction in complexity making it easier to understand.
- Communication includes Lateral VRI
- A previous key to allow user to move backward in the menu structure if needed.
- End of System pressure transducer feature to communicate end of system pressure to the Touch Screen main control panel.
- Menu timeout has been added to return to the main screen after 30 seconds of no user input. All menu items will be saved as selected prior to the timeout.
- Optional Towable 4-Way switch capabilities for use with multiple base stations.
- Version 4 is compatible with all previous board versions.

GPS Field Position: A primary function of the EOS-MPB is to provide accurate field position information to the RPM Main Control Panel (MCP). The MCP utilizes precise field position data for functions that utilize degree (or feet) inputs such as End Gun, Auto-Stop, Auto-Reverse, Park, Sector, Step and Zone programs. EOS-MPB improves positional accuracy compared to the traditional collector reel resolver. EOS-MPB can be used for different use cases with and without a resolver signal, depending upon a given use case; therefore it is recommended for all remote panel installations.

Remote Relay Control: EOS-MPB allows bi-directional relay control between the main control panel and end of system and just about anywhere in between without running any additional control wires. The EOS-MPB communication system enables GPS position data diagnostics and other control and monitor commands to flow simultaneously.

Use Cases: There are several use cases where this option is useful and recommended:

- Standard Lateral without VRI
- Lateral with VRI - non pivoting
- Lateral with VRI and pivoting (coming soon)
- Pivot with end of system pressure transducer
- Pivot with center base setup
- Pivot with VRI
- Pivot with standard SAC or SSAC
- Pivot with PLC SAC or SSAC

⚠️ Before attempting any service or installation work ensure the Disconnect Switch on the Main Control Panel is **OFF**.
Glossary

**Main Screen** – Samples of the main screens

Note: Switch S1 can be used to reset all settings to factory defaults. Press and hold S1 while powering up the EOS board and continue to hold until the 1st screen shown above appears on LCD screen.

**Menu Interface**

Switch S1 - Next button uses:
1. Advance to next menu while in the menu structure.

Switch S2 - Enter button
1. Enter menu settings screens.
2. Enter menu values into the controller.

Switch S3 - Previous button
1. Go back to previous screen while in menu structure.

Note: Menu will time out and will return to the main screen after 30 seconds of inactivity. All settings will be saved as selected prior to the timeout.

**Setup Menu Description for EOS Multipurpose Board (EOS-MPB)**

**System Type** - Select one of the following:
- Lateral – Lateral machine.
- Pivot – Pivot machine.
- Relay – Relay only board.

**COM Type:** Used with Standard Pivot, Pivot with VRI, Pivot with SSAC, Pivot with PLC/SAC
- Ver 2 – Cold Wire
- Ver 3 - Cold Wire - (VRI)
- Ver 1 – Hot Wire
- Ver 4 - Cold Wire - (Towable)

Please note, Ver 1 is only available on the old unit.

**Pivot Board Type:**
- Center – Configures board as Pivot center board in the RPM Panel.
- EOS – Configures board as end of system board which sends GPS data to the pivot center board.
- SA-PLC – Configures board as SAC or SSAC PLC board which sends data to the PLC.

**Pivot VRI/X10:**
- Yes – Configures the board for VRI controls.
- No – Configures the board as a standard Pivot system.
Setup Menu Description for EOS-MPB Continued

**House ID – Select House ID if VRI/X10 is “yes”**
- If pivot center board default is the master VRI board. No house ID is required for the pivot center board.
- If last end of system board then house ID can be selected from A-N

**Set Base:**
- Yes – Sets the selected base for the base setup.
- No – No base is selected. No base setup.

**GPS Ant – selection of GPS antenna type:**
- Garmin – Garmin antenna
- Hemi – Hemisphere antenna
- NOGPS – Shuts off GPS communication

**Use WAAS:**
- Yes – WAAS bit turns on.
- No – WAAS bit turns off.

**Reset GPS:**
- Yes – Resets the GPS antenna.
- No – Does not reset the GPS antenna.

**Position** – Displays the current position and reports the position to the RPM Panel. Position is reported in degrees for a Pivot and in feet or meters for Lateral.

**NUMResets:** Displays the number of GPS resets (000-999) counter will go back to 000 after it reaches 999 on the counter.

**Serial Out – Serial output to other devices:**
- Ontrac – Position is sent to the Ontrac device every 0.2 degree for Pivot or 2 foot/meter change for Lateral.
- Analog – for engineering use only
- Time/Position – for engineering use only
- Lat/Long – for engineering use only

**Serial Baud – Select Baud Rate (1200/2400/4800):**
- Default Baud Rate is 2400bps for Ontrac.

**Test Signal** – for engineering use only.
Setup Menu Description for EOS Board Continued

Lateral VRI—Answer Yes or No:

- Yes—Lateral VRI mode.
- No—Lateral mode default no VRI.

Lateral VRI board type—(shows during VRI yes mode only)

- Lateral Center—Lateral VRI master board, will receive VRI commands through the antenna from the Touch Screen.
- Lateral VRI—Sets the board as intermediate board with house ID from A-N.
- Lateral POS—Sets the end of system board to receive GPS signals and sends the data through the XM- XM+ to the Touch Screen.

Lateral COM Type:

- RRLLAT—Used for Lateral center boards and end of system house boards. Communicate the VRI commands from the center board and pressure data from the end of system.
- RRLINT—The intermediate VRI (or) house board only. Used to receive VRI commands from the pivot center board.
- RRLPOS—Used only for Pivoting Lateral VRI machines.

Sel Base:

- 0/1/2/3—Allows user to select appropriate base.

Metric:

- Yes—Changes lateral distances from feet to meters.
- No—Remains at the default distances of feet.

Position—Displays the current position and reports the position to the RPM Panel. Position is reported in degrees for a Pivot and in feet or meters for Lateral.
Relay VRI/X10:
Yes – Intermediate house boards can be selected from A-N.
No – Boards can be set as extension or relay boards for sending control operations from pivot center or end of system boards.

Relay House ID – Select House ID if VRI/X10 is “yes”
If pivot center board default is the master VRI board. No house ID is required for the pivot center board.
If last end of system board then house ID can be selected from A-N

Relay AC Line
A-RLY PIV-Relays controlled from MCP board
B-RLY EOS-Relays controlled from end of system board
STD LATERAL

- EOS-MPB
- RS-232
- RS-485

- Touch Screen or Advanced MCP
- Resolver not available

- NO VRI

- Garmin (or) Hemisphere

- Shows ft/m from base point

RS-485 COMM
To send position to Touch Screen or Advanced MCP

- XM +XM (EOS-MPB)

- RCV+ RCV- (Touch Screen or Advanced MCP)

EOS-MBP Board Settings
SYS TYPE: LATERAL
LAT VRI: NO
Pivoting With VRI

EOS-MPB Center Board Settings
SYSTYPE: PIVOT
COM TYPE: COLD WIRE (Type-3)
BRD TYPE: CENTER
VRI/X10: YES
VRI/X10: YES
(OR)

EOS-MPB INT Board Settings
SYSTYPE: RELAY
VRI/X10: YES
HOUSE ID: A–N

EOS-MPB EOS Board Settings
SYSTYPE: PIVOT
COM TYPE: COLD WIRE (Type-3)
BRD TYPE: EOS
VRI/X10: YES
HOUSE ID: A–N

RS-485 COMM
1. For sending position to Touch Screen
2. For sending VRI commands
3. For receiving pressure data

RS-232 COMM

Power Line (Cold Wire COMM)

Garmin (or) Hemisphere
Pressure transducer
RS-232

RCV+ RCV- (TOUCH SCREEN)

-E M +XM (EOS-MPB)
LATERAL With VRI

NO PIVOTING

EOS-MPB Center Board Settings
SYS TYPE: LATERAL
LAT VRI: YES
BRD TYPE: LAT VRI
COM TYPE: RRLLAT

EOS-MPB INT Board Settings
SYS TYPE: LATERAL
LAT VRI: YES
BRD TYPE: LAT VRI
COM TYPE: RRLINT
HOUSE ID: A--N

EOS-MPB HOUSE Board Settings
SYS TYPE: LATERAL
LAT VRI: YES
BRD TYPE: LAT VRI
COM TYPE: RRLLAT
HOUSE ID: A--N

EOS-MPB Board Settings
SYS TYPE: LATERAL
LAT VRI: YES
BRD TYPE: LAT POS
COM TYPE: RRLLAT

RS-232 COMM
1. for sending position to Touch Screen
2. For sending VRI commands
3. For receiving pressure data

EOS-MPB GPS

Touch Screen

RS-485 COMM

Pressure transducer

NO GPS AT END OF SYSTEM

EOS-MPB HSEA
A:000000

EOS-MPB HSEB
B:000000

EOS-MPB HSEC
B:000000

Gammin (or) Hemisphere

Power Line (Cold Wire COMM)

RS-232

RS-485

Touch Screen Advanced

Tells ft/m moved

-XM +XM (GPP)

RCV+ RCV- (TOUCH SCREEN)
Robust GPS p/n 117167
The new Robust GPS boards are now standard equipment on all new systems utilizing GPS positioning. The Robust boards feature a new power line modem which utilizes 4 carrier frequencies per channel compared to the older ver.4.04 boards which only used 1 frequency per channel. By having 4 frequencies per channel the communications become more reliable and noise immunity is increased substantially. The menu structure of the robust boards are identical to the previous version, except there is now no option for com type 1 Hot wire. These boards are NOT backwards compatible with previous versions of GPS equipment due to the change in communication methods. If you are using the robust boards to replace older equipment in the field, both boards PIVCEN and EOS must be updated to the new board for successful operation.

The LCD screen displays pertinent information in regards to the status of the GPS system, it is also where the board setup menu is displayed. On the main screen the information center will be shown. In the information center the # of satellites being detected by the antenna at the end of the system will be displayed, there will also be a W present on the right hand side of the screen if WAAS is present. WAAS (Wide Area Augmentation System) is a system of satellites and ground stations that provide GPS signal corrections and allows for around 5 times better position accuracy. A WAAS-capable receiver can give you a position accuracy of better than 3 meters in most cases, currently WAAS satellite coverage is only available in North America. On the bottom line of the screen there will be Two arrows that periodically flash, these arrows indicate communication between the End of System (EOS) board and the Pivot Center (PIVCEN) board. To the Right of the arrows there is a Communication Error Counter, the error counter will increment anytime that the board receives a bad string of data or large jumps in positioning. The arrows and error counter can be useful in diagnosing communication issues within the GPS system. To the left of the screen there is a LCD contrast adjustment knob, this knob is used to adjust the screen for your viewing preference.
The channel selector allows for the use of different frequencies, each channel is comprised of 4 sub carrier frequencies. This is needed when two or more systems with end of system GPS share a common electrical service, by placing each machine on a different channel cross talk between machines will be eliminated. There are a total of 8 channels available for use the default channel is #1. A channel is selected by placing the corresponding dipswitch in the up position, to select channel #8 place sw1 and sw7 in the up position.

<table>
<thead>
<tr>
<th>Channel</th>
<th>Sub Carrier 1</th>
<th>Sub Carrier 2</th>
<th>Sub Carrier 3</th>
<th>Sub Carrier 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>300KHz</td>
<td>200KHz</td>
<td>100KHz</td>
<td>10KHz</td>
</tr>
<tr>
<td>2</td>
<td>30KHz</td>
<td>230KHz</td>
<td>430KHz</td>
<td>530KHz</td>
</tr>
<tr>
<td>3</td>
<td>45KHz</td>
<td>155KHz</td>
<td>355KHz</td>
<td>480KHz</td>
</tr>
<tr>
<td>4</td>
<td>80KHz</td>
<td>130KHz</td>
<td>500KHz</td>
<td>600KHz</td>
</tr>
<tr>
<td>5</td>
<td>20KHz</td>
<td>250KHz</td>
<td>400KHz</td>
<td>450KHz</td>
</tr>
<tr>
<td>6</td>
<td>60KHz</td>
<td>180KHz</td>
<td>320KHz</td>
<td>620KHz</td>
</tr>
<tr>
<td>7</td>
<td>115KHz</td>
<td>270KHz</td>
<td>340KHz</td>
<td>550KHz</td>
</tr>
<tr>
<td>8</td>
<td>580KHz</td>
<td>610KHz</td>
<td>370KHz</td>
<td>170KHz</td>
</tr>
</tbody>
</table>

There are two headers on the GPS board that are used for wiring, first there is the main wiring connector this is where all the inputs and outputs are terminated. Starting at the left there are Pink, Purple, and White terminals these 3 terminals provide power for the board depending on direction of system travel. 120V will be present on the Purple wire when the machine is running in the forward direction, In the reverse direction the Pink wire will be energized with 120V, the White terminal is where the neutral from the system is terminated. The SERTX terminal is used to output GPS information to an Auxiliary device such as an Ontrac Unit. The GND and +12 terminals are used to power the board with 12VDC, this is helpful when doing a base setup on a system with a remote panel or a lateral move machine. The NO1, NO2, AC1, and AC2 terminals are used with the remote relay function. AC1 and AC2 are the inputs and NO1 and NO2 are the outputs, When 120V is applied to one of the inputs the corresponding output on the other board will output 120V, this function allows for external devices at the end of system to be controlled from the panel without having to run extra wires. The fuse terminal is a constant 120V output, the last two terminals to the right are XM+ and XM-, these are used to Transmit GPS data to the main control panel.
Switch S1 can be used to reset all setting to factory defaults. Press and hold S1 during power up and hold until the “SELECT SYS TYPE” screen appears, then press S2 after pressing the screen will display Loading once the next screen is loaded you can use S1 to toggle forward through the different system types S3 can be used to toggle backwards through the menu as well. There are 3 options for system type Lateral, Pivot, and Relay the one selected will be determined by which kind of configuration the multipurpose board is being used in. Once the desired system type is on the screen press S2 to save the selection. After saving the system type the setup menu will appear. After initial setup the setup menu can be accessed anytime from the main screen by pressing S2. the following slide will discuss the setup menu options for each of the 3 system types.
The GPS receiver jack is where the GPS receiver (antenna) is connected to the board. The GPS Receiver provides real-time position data to the end of system board, which is then modulated and sent out to the main control panel via the cold direction wire (CDW). There are two GPS Receiver options that are currently offered, the first is the Garmin 19x. The Garmin is a WAAS enabled receiver and is the standard for most end of system gps applications. The other option is a Hemisphere A100, this receiver does not have WASS capabilities so it is typically used in countries where the WAAS system is not present. The wiring diagram on the bottom right shows how each receiver is wired into the 5 position plug, be sure to reference this chart when installing a new antenna.

There numerous LED indicator lights on the board that help indicate what the gps system is doing. LED1 is the power on indicator this light will illuminate solid red when the gps board is powered. LED2 and LED3 are tied to the power line modem. LED2 will blink green when the board is receiving a packet on the cold wire and LED3 will blink green when the board is transmitting a packet on the cold wire. There are also 2 LED indicators on the RS485 output, D16 will blink red when data is being sent out the RS485 port to the panel, D12 is tied to the RS485 receive line this will blink red when there is incoming data on the RS485 port.
The multipurpose board has a simple and easy to use interface while is controlled via the 3 buttons on the left side of the board.

S1: used to advance to next screen while in the menu structure.
S2: used to enter the menu settings screen, also used to change values or options in menu structure.
S3: used to go back to the previous screen while in the menu structure.

On the bottom right hand corner of the GPS board there are 6 LED lights, these lights can be useful when troubleshooting a GPS system. The first set of lights AC1 and NO1 will be lit up when remote relay 1 is in use, AC1 LED will be lit up on the pivot center board indicating that there is 120V present on the AC1 input, in turn NO1 on the EOS board lit will be illuminated and have 120V on the NO1 output. AC2 and NO2 work in the same way just controlling remote relay 2, when 120V is present on AC2 at the pivot center board the LED will be, and NO2 at the end of the system will be lit and outputting 120V. The next LED is labeled D20. D20 will blink on the pivot center board when it is transmitting end of system pressure data to the touch screen panel. The last LED is D21. D21 will blink on the end of system board when there is position data being received from the GPS receiver (antenna).
**EOS-MPB Component Assembly**

Do NOT mount the EOS-MPB box until after the base location is set for remote panel systems. Standard center point MCP systems can set the base using the MCP EOS-MPB Board. The EOS-MPB box will mount next to the existing C or H Box on Pivots and above the power tower for Lateral systems. The mounting bracket for the EOS-MPB box will bolt to the pipe flange as shown below. Reuse the existing flange bolts to mount the EOS-MPB bracket. Bolt the base of the EOS-MPB box and bracket together using the bolts provided with the EOS-MPB box. Use the retro mount shown on page 12 for installations where the pipe flange is not available.

1. **Resolver** - (P/N 147025 EOS-MPB box Asy-INT Antenna)
2. **Nut** - (P/N 1014 Nut 3/8 NC Dmpl Lcknt ZC)
3. **Bolt** - (P/N 2086 Bolt 3/8NC X 4 HHD-GR5-ZC)
4. **Bracket** - (P/N 144509-G Bracket-Boom Rod/Light Brkt/-G)
5. **Spacer** - (P/N 145010-G Spacer G Box Cen Lift Lateral)

The following list of parts are not pictured above but are included in the EOS-MPB Option. These parts are used to connect the existing C or H Box to the end tower EOS-MPB box.

6. **Strain Relief** - (P/N 112527 Strain Relief 3/4"-wdhd#5540)
7. **Washer** - (P/N 112562 - Washer-Reducing 1-3/4 Conduit)
8. **Locknut** - (P/N 113138 - Locknut 3/4"-Bridgeport #102)
9. **Control Lead** (P/N 147006 - GPS Control Lead 6ft 7Cond)
End of System Wiring - Connecting C or H Box to EOS-MPB box.
A 7 conductor cable (147006) will connect the C or H Box to the EOS-MPB box. Follow the schematic diagram below for all wire connections.

EOS-MPB Box Installation

The 7 conductor cable from the C Box is connected to the disconnect switch in the EOS-MPB box.

Antenna location

The 5 position plug connects the GPS antenna/receiver cable to the EOS-MPB board.

Neatly loop and zip tie the GPS antenna/receiver cable inside the EOS-MPB box.
EOS-MPB Main Control Panel Wiring

When ordering EOS-MPB as a new system option, all main control panel wiring is factory installed. Use the following wiring diagram as needed for retrofit installations and troubleshooting.

EOS-MPB Board Setup

EOS-MPB circuit boards (137053) must be configured for board type depending on the board location in the system. The main control panel board is set to Center and the EOS-MPB board is set to EOS. Boards sold with a new system are configured at the factory. Checking the configuration during system installation is a good practice to avoid setup problems.

Board Setup:
1) Press Setup Switch S2 to enter setup, sub-menus, enter selection and toggle a selection on the menu.
2) Press S1 to go to next menu, also used to end setup and save changes.
3) Press S3 to go to previous menu item.
**Recording the pivot center location (base setup) is a crucial step required for proper operation of the EOS-MPB system. Follow each step carefully for a successful setup. Verify base setup procedure before mounting the GPS antenna/receiver at the end of system.**

Please note, the following Base Setup procedures can be used on the new Robust systems as well as the older legacy systems.

**Recording Pivot Center Base Location for Pivot Center Mounted MCP**

The pivot center/base location is recorded using the pivot center board, end of system board, and the GPS antenna/receiver. Complete all system wiring before performing the base setup. To record the pivot center location, use a long cabled GPS antenna with 5 position connector (P/N137007). Place the GPS antenna/receiver on top of the collector reel cover and connect the GPS antenna to the pivot center board. To power the EOS-MPB system set the system speed to 0% and start the Pivot.

When the EOS-MPB is powered with the GPS antenna/receiver connected to the pivot center board, the base setup routine will start automatically. The LCD will display BASE SET while the setup routine runs (up to 15 minutes). When the setup is completed the LCD will display CHECK GPS RCVR AT EOS if no antenna is connected to the end tower board. It will work normally if antenna is connected to the end tower board. System power can then be turned off. If it has been more than 15 minutes and setup has not completed, stop and start the system again to repeat this step.

The base location is maintained in the end of system board. The base location data is transmitted to the end of system board during base setup using the EOS-MPB. Therefore, both the MCP and end of system boards must be wired and powered before base setup can be completed using this method.

Remote MCP and Lateral Base Setup:

Place EOS-MPB box on top of the collector reel at the pivot center. Power up the board by either using a 120V into PNK or PUR and the neutral/WHT, or by placing a 12V source into +12 and the 12V ground/GND. Force a base setup by pressing and holding setup “S1” during power on cycle. Also, selecting SET BASE/YES or SETBASE1-4/YES will initiate the base setup routine when exiting the setup menu. These methods run BASE SET regardless of the board type selected. Therefore, these methods should be used when setting base with the end of system board or in Lateral mode. Remote panels must use the EOS-MPB to set the base location.
Channel selector DIP switch
default channel 1 selected

The modem amplifier on 117053 can be switched ON/OFF using jumpers JP1 & JP2, the default position is OFF. Noise immunity is improved with the amplifier OFF, leave the jumpers in the OFF position for normal operation.

Amplifier jumpers,
default OFF position shown

The modem amplifier on 117053 can be switched ON/OFF using jumpers JP1 & JP2, the default position is OFF. Noise immunity is improved with the amplifier OFF, leave the jumpers in the OFF position for normal operation.

Amplifier OFF
default

Amplifier ON


Re-Connecting GPS antenna/receiver Cable  (For Reference Only)

Reattach the GPS antenna/receiver wires to the 5 position adapter as shown below. Neatly coil the excess cable inside the resolver box and secure with wire ties. Follow the connection diagram on the circuit board for the GPS antenna/receiver type used.

Garmin 19X connections shown, follow the table for other receivers. 19X requires a resistor on the orange wire.

Towable Pivot & Lateral Move Systems

Towable Pivots

When using EOS-MPB with a Towable Pivot the base location does not have to be reset each time Pivot is moved. A 4-way base selector switch can be installed on the MCP panel as retrofit option. For this installation the following is required, (1) 354056 Switch-Towable Base Sel Kit and (1) EOS-MPB board that has version 4.0.3 or higher firmware installed. To do initial base setup for each base, follow base setup routine on page 16 and make sure both the boards are set to COM Type 4. After the initial base setup is done, appropriate base is selected at the MCP using the 4-way switch each time the pivot is moved. For the installation procedure, follow “Installation Switch Towable Base Sel Kit” procedure at the end of the manual.
EOS-MPB for Lateral Move Systems

Lateral Systems can utilize multiple base locations which are recorded using the setup program options. The USEBASE function is set using a panel mounted selector switch to provide outputs according to the following table.

<table>
<thead>
<tr>
<th>AC1</th>
<th>AC2</th>
<th>Usebase</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>USEBASE1</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>USEBASE2</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>USEBASE3</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>USEBASE4</td>
</tr>
</tbody>
</table>

120vac inputs to AC1 and AC2 on the EOS-MPB control which base is used in Lateral mode.

For Lateral systems the EOS-MPB box and GPS antenna/receiver may be installed on the system before base setup. Base setup is done at the reverse end of the field. Mount the GPS tower box and receiver on the power tower above the main control panel. Follow the optional base setup outlined on page 7. The 7 conductor cable (142723) will run power and data between the MCP and the EOS-MPB.

To power the EOS-MPB system; start the Lateral with the percent timer set to 0%. Base location can be set with the EOS-MPB fully installed if the System is located at the reverse end of run. Force a base setup by pressing and holding setup “S1” during power on cycle. Also, selecting SET BASE/YES or SETBASE1-4/YES will initiate the base setup routine when exiting the setup menu. These methods run BASE SET regardless of the board type selected. Once the base is set, the GPS will transmit the distance from the base location.

Connect yellow to RCV+ and orange to RCV- in the MCP. You must setup the panel for Lateral mode and GPS position input.
LATERAL WIRING DIAGRAM

LATERAL SYSTEMS USE ONE 117047 CDW BOARD LOCATED IN THE GPS RESOLVER BOX.

USE SETUP TO SET SYSTEM TYPE TO LATERAL. EDS BOARD IS SET TO BRD TYPE "END SYS"

PRESS FOR SETUP/NEXT
CHANGE MENU OR ENTER
PREVIOUS MENU OPTION

GPS RECEIVER CONNECTIONS (US) VARY WITH THE TYPE OF RECEIVER.
USES: FOLLOW THE TABLE COLOR CODE FOR THE APPLICABLE RECEIVER.

GPS RCVR/CABLE 117007 (GARMIN)
117049 (HEMISPHERE)

FIELD ASSEMBLY NOTE:
IF THIS BOX IS USED WITH A TOWABLE LATERAL, INSTALL A BRN (DASHED) WIRE BETWEEN THE DISCONNECT SWITCH AND "AC IN 2" ON THE CDW BOARD.
IF THE LATERAL WILL BE Towed TO 3 OR 4 LOCATIONS, A CONTROL WIRE (NOT SHOWN) MUST ALSO BE CONNECTED TO "AC IN 1" ON THE CDW BOARD. USE 143054 CABLE INSTEAD OF 142711 BETWEEN MCP AND THIS BOX.
Options

Channel Selection
When multiple EOS-MPB systems are located on the same electrical service transformer bank, the EOS-MPB may intercept line communication from the other system causing interference. When operating multiple systems from one electrical service, select a different channel for each system using channel selector DIP switch. For each system, both the end of system and MCP board must be set to the same channel. All boards are shipped from the factory set to channel 1.

Move the channel selection DIP switch to the desired operating channel. Factory default shown with channel 1 in the ON position.

EOS-MPB Circuit Board

Hot Wire Communication Mode
The default communication mode is cold wire. Using cold wire ensures a minimum of interference and reliable communication. Under normal conditions cold wire is the preferred communication. For retrofit or custom installations you can operate the EOS-MPB in hot wire mode.

To operate in hot wire mode move jumper J6 to the position shown on pins 2-3 for both MCP and EOS-MPB boards.

GPS antenna/receiver Options
The EOS-MPB system can use four different GPS antenna/receivers, Garmin 17, Garmin 17X, 19X and Hemisphere. Each receiver uses a different color code for connecting the receiver cable to the EOS-MPB. The color code table is shown on page 15 and is printed on the EOS-MPB. Make sure that the receiver is connected using the correct color code.

Garmin 17, 17X and 19X use the same EOS-MPB software setting, ANTENNA/GARMIN and WAAS/YES. When using a Hemisphere Receiver make sure the EOS-MPB is set to, ANTENNA/HEMISPHERE and WAAS/NO. Both EOS-MPB and MCP boards must be set for the correct receiver type.
Swing Arm Installation

Installing EOS-MPB on Swing Arm Systems

An additional kit is required to mount the EOS-MPB tower box to the SAC span. The GPS EOS SAC RETRO (357027) includes the following:
1. 113550 - (CLAMP T-BOLT 6-5/8 HOSE ASY EA)
2. 141531-G - (MT-RETRO TWR BX-FORMED-6 5/8)
3. 141535 - (CLIP CONTROL BOX MOUNT RETRO)

When assembling the mount, place the clip (141535) in the slots of the formed mount (141531-G) as shown in the side picture. Place the mount on the SAC span next to the H-box. The picture below shows a completed installation. Make sure the clamp is directly over the clip before it is completely tightened.

The EOS-MPB box will be mounted on the swing arm next to the H-box using the retro mount. Place and tighten the mount (141531-G) on the swing arm next to the H-box. Once the mount is secure, bolt the EOS-MPB box to the mount. The 7 conductor cable will connect the H-box to the EOS-MPB box, see diagram on page 12 for wiring connections.
TOUCH Panel Setup
GPS is the default position sensor for Touch Screen. Verify that GPS is the selected position sensor in the Touch Screen general system setup menu.

Set Touch Screen position sensor to GPS.
(See VRI Touch Screen Manual P/N 117112-1.0 for additional VRI set-up details)

RAMS Panel Setup
RAMS panel setup is required for RAMS to use the EOS-MPB position data. Follow the procedure below to setup your RAMS panel for the EOS-MPB CDW option. RAMS program version V5.00C or later is required.

Pac III Timer Setup
The PAC III Timer must be set to POSITION INPUT - GPS for use with the EOS-MPB CDW option. Refer to the Reinke Pac III timer owners manual for programming details.
Towable Base 4 Way Switch

The function of this switch is to enable selection of different base as system is moved to a different field, this reduces the need for continual base setups each time the system is moved.

For this installation the following is required:
(1) 354056 SWITCH-TOWABLE BASE SEL KIT
(1) EOS-MPB board that has version 4.0.2 or higher firmware installed.

Panel Mounting Instructions

Follow these steps to mount the 4-way switch on Main Control Panel,

1. Using the 4-way switch plate (a) as a template, hold it to the bottom of the Main Control Panel (below Touch Screen as shown on fig. 2) and mark the center of the five holes 4 outside corners and one center hole.
2. Drill four outside holes at 7/32” diameter and the center hole for the shaft at 5/16” using the marked positions to center the drill.
3. The 4-way switch plate will (a) will be mounted from the front of the Main Control Panel as shown in fig. 2 and the switch body (b) will be inserted from the back of Main Control Panel through to the front as shown in fig. 3. Then mount the 4-way switch (b) using the 3/16” screws in the installation kit.
4. Place label plate (e) on top of (a) in front of the Main Control Panel and press to click and lock it as shown in fig. 4.
5. Place the switch knob (d) on top of the label plate (e) facing position 1 and tighten the screw (f) located inside the knob as shown in fig. 5.