ESP-LX Plus Site Satellite Controller Addendum

Installation, Connection and Settings

120 VAC, 60 Hz Models	230 VAC, 50 Hz Models
ESPLX16STE	IESPLX16ST
ESPLX20STE	IESPLX20ST
ESPLX24STE	IESPLX24ST
ESPLX16STM	IESPLX16SM
ESPLX20STM	IESPLX20SM
ESPLX24STM	IESPLX24SM

240 VAC, 50 Hz Models

AESPLX16ST
AESPLX20ST
AESPLX24ST
AESPLX16SM
AESPLX20SM
AESPLX24SM

Before You Begin:

Please refer to your ESP-LX PLUS Installation, Programming, & Operation guide for answers to questions regarding installation and connection (valve wires, etc) of an ESP-LX PLUS Controller.

NOTE: When Setting the Time and Date on startup of the ESP-LX PLUS SITE Controller, the ESP-LX PLUS SITE defaults will be MON 12:00 26 MAY 03. Dates earlier than this can not be set in this controller. ESP-LX PLUS Controllers (per the manual) default to SUN 12:00 1 JAN 95.

Installation instructions in this addendum assume conversion of an existing ESP-LX PLUS Controller to an ESP-LX PLUS SITE Controller using the ESP-LX PLUS SITE Module Kit. If purchase of a new ESP-LX PLUS SITE Controller was made, instructions specific to the Module Kit (transformer replacement, etc) may be ignored.

Warnings:

Important: The ESP-LX PLUS SITE Controller is designed to operate up to 4 valve stations plus one Master Valve, simultaneously. It is necessary that only one Rain Bird valve solenoid be connected to each valve station in the controller.

Important: Before installing the Site Satellite Maxicom Interface Site Board (MISB) cabinet, make sure that the area around you is free from dirt and dust and that your hands and arms are clean. This will avoid contamination of the controller's internal parts.

Warning! Don't let water or other liquids come in contact with any part inside the controller cabinet.

Caution: This controller contains a Lithium battery. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used battery according to the manufacturer's instructions

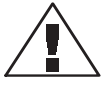
Overview of the Maxicom Interface Site Board (MISB)

To convert your ESP-LX PLUS stand-alone controller into an ESP-LX PLUS SITE Satellite controller, you must install the Maxicom Interface Site Board Cabinet. Once installed, the MISB allows your ESP-LX PLUS controller to function as either an ESP-LX PLUS SITE controller in conjunction with the Maxicom^{2}® Irrigation System, or as a stand-alone unit.

INSTALLATION

Select Location

Follow these Guidelines to select a location for the Maxicom Interface Site Board (MISB) Cabinet.

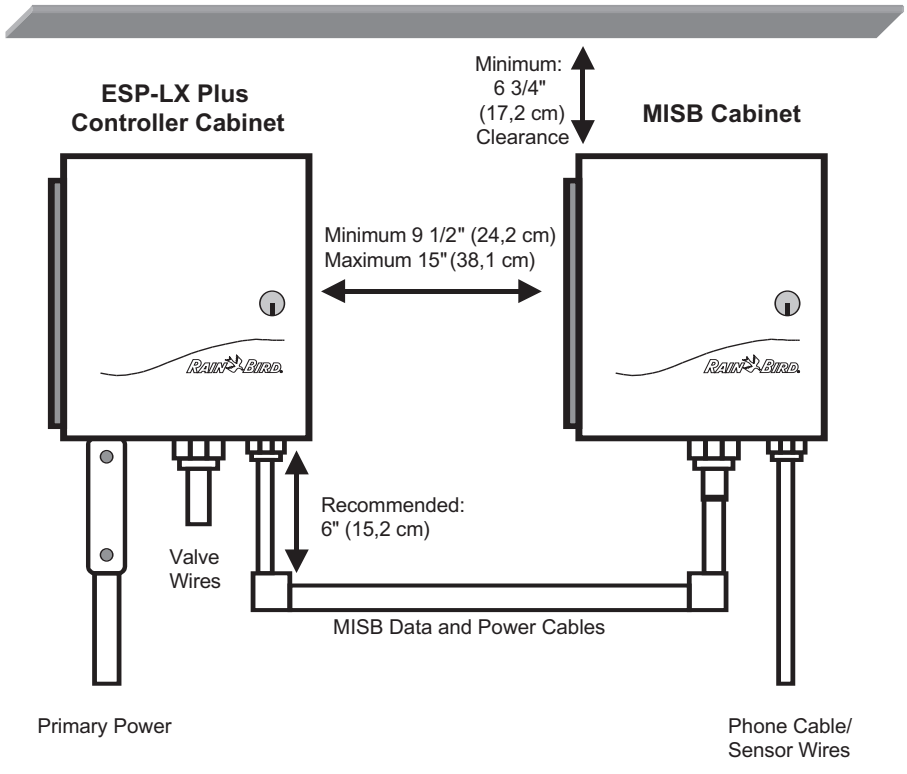


Note: The MISB Cabinet is the same cabinet as used for the ESP-LX PLUS Controller. Please refer to your ESP-LX PLUS Installation, Programming, & Operation guide for detailed description of the mounting of the cabinet.

The MISB Cabinet requires a data and power cable connecting it to the ESP-LX PLUS Controller. This cable includes 36" (91,4 cm) length designed to be outside the two cabinets. Allow enough length for vertical passage through electrical conduit prior to determining horizontal length available.

It is recommended that you place the MISB cabinet not more than 15" (38,1 cm) horizontally from the ESP-LX PLUS controller cabinet. Allow at least 9½" (24,2 cm) of horizontal clearance between the two cabinets, so the hinged cabinet door can swing fully open to the left.

Ensure at least 6¾" (17,2 cm) of clearance above the cabinet door so the hinge pin can be removed to service the controller.


ESP-LX Plus
Controller Cabinet
Minimum:
6 3/4"
(17,2 cm)
Clearance
MISB Cabinet
Minimum 9 1/2" (24,2 cm)
Maximum 15" (38,1 cm)
Recommended:
6" (15,2 cm)
Valve
Wires
MISB Data and Power Cables
Primary Power
Phone Cable/
Sensor Wires

Cabinet Installation

Mount the MISB Cabinet as described on pages 50 and 51 of the ESP-LX PLUS Installation, Programming, & Operation guide.

Transformer Replacement

Remove the LX PLUS Door and Face Panel as described on pages 48 and 49 of the ESP-LX PLUS Installation, Programming, & Operation guide.

WARNING: To prevent electrical shock, make sure all supply power is **OFF** before replacing the transformer.

Remove the existing power transformer

You must replace the existing power transformer in the ESP-LX PLUS controller with the new power transformer included with the Module Kit. First, you will remove the existing transformer:

- Disconnect the transformer from the ESP-LX PLUS terminal board.
- With the door and face panel removed, locate the high-voltage compartment in the lower left corner of the controller cabinet.
- Remove the screw on the right edge of the compartment cover, then swing the cover open to expose the transformer's primary input wires.
- Disconnect the transformer's primary input wires.
- Locate the nut and washer that secure the existing transformer.
- Use a hammer and screwdriver to tap on the nut to loosen it. Once loose, remove the nut and washer from the power transformer's nipple. Retain the nut and washer.
- Push the power transformer's nipple into the cabinet until it clears the hole. Lift the power transformer out of the controller cabinet.

Installing the new transformer

Now you are ready to install the new power transformer.

Place the new power transformer into the same position as the old transformer and slide the transformer's nipple through the hole at the top of the high-voltage compartment.

Thread the washer and the nut on to the new power transformer's nipple. Finger-tighten the nut. Final-tighten the nut by lightly tapping a screwdriver placed against the nut.

Connections to the Main Power Source

The three main power input wires for the standard 120-volt, 60 Hz/ AC transformer are black, white, and green. The international version 230-volt, 50 Hz wires are brown, blue, and green and yellow.

To connect the power input wires to the main power source,

- If you have the standard 120-volt, 60 Hz model, use wire nuts to connect the black wire to the power source hot wire, the white wire to the common wire, and the green wire to the ground wire.

OR

- If you have a 230-volt or 240-volt, 50 Hz model, use wire nuts to connect the brown wire to the power source hot wire, and the blue to the power source common wire. Connect the green and yellow wire to the ground wire.
- Close the high voltage compartment

Reconnecting the power

Reconnect the controller to the power source.

- Connect the transformer's three wires (two oranges and one green) cable to the terminal board

Note: If you have a 240 VAC, 50 Hz model, your transformer will have only two orange wires for connection to the terminal board. There will be no green ground wire.

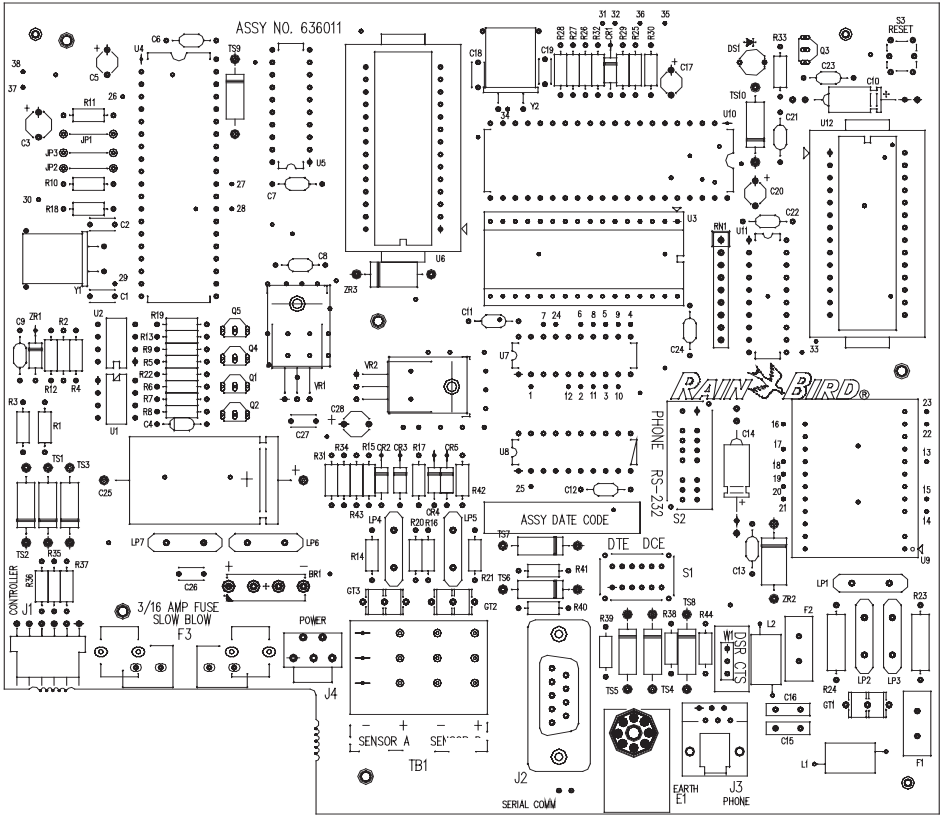
INSTALLING THE MISB DATA AND POWER CABLE

The ESP-LX PLUS cabinet has five knockouts for routing field wires. Three are located on the underside of the cabinet and two are located on the back

- The underside of the cabinet has a knockout for a PVC male adapter sized ¾" (1,9 cm) on the right hand side of the controller. This is the hole to be used for routing of the MISB Data and Power Cables from the LX-Plus Controller. Conduit is recommended between the two cabinets.
- Run the MISB data (end without the ferrite bead) and power cables between the two cabinets. There should be 36" (91.4 cm) of cable available, external to the two cabinets. Recommended conduit run is 6" (15,2 cm) vertical under each cabinet. Horizontal distance is based on cabinet mounting - recommended minimum distance between cabinets is 9½" (24,1 cm).

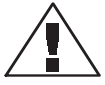
In the MISB Cabinet:

- The bottom (center) of the MISB Cabinet has a knockout for a PVC male adapter sized 1" (2,5 cm) surrounded by a knockout for a 1¼" (3,2 cm) adapter. The 1" (2,5 cm) knockout is what is to be used for routing the MISB data and power cables into the MISB Cabinet. If using conduit, you will need a ½" (1,9 cm) to 1" (2,5 cm) conduit adapter to upsize the conduit to fit the knockout. Note: the right-hand ¾" (1,9 cm) knockout will be used for sensor and phone cables.
- Plug the three-wire (black, white, and green) power cable into the J4 connector on the bottom edge of the MISB, to the left of the sensor ports. **Note:** If you have a 240 VAC, 50 Hz controller your power cable will only have two-wires (black and white).
- Connect the six-wire cable to the J1 connector on the MISB.


ASSY NO. 636011
RAIN BIRD
ASSY DATE CODE
3/16 AMP FUSE
SLOW BLOW
F3
POWER
J4
TB1
SENSOR A
J1
CONTROLLER
J2
SERIAL COMM
J3
PHONE
EARTH
E1
DTE DCE
S1
PHONE RS-232
S2
S3
RESET
DSR CTS
W1

Grounding Connections

The MISB has built-in electrical surge protection. For the system to work, the MISB's earth ground terminal (E1) must be connected to a ground rod that is driven into the earth.



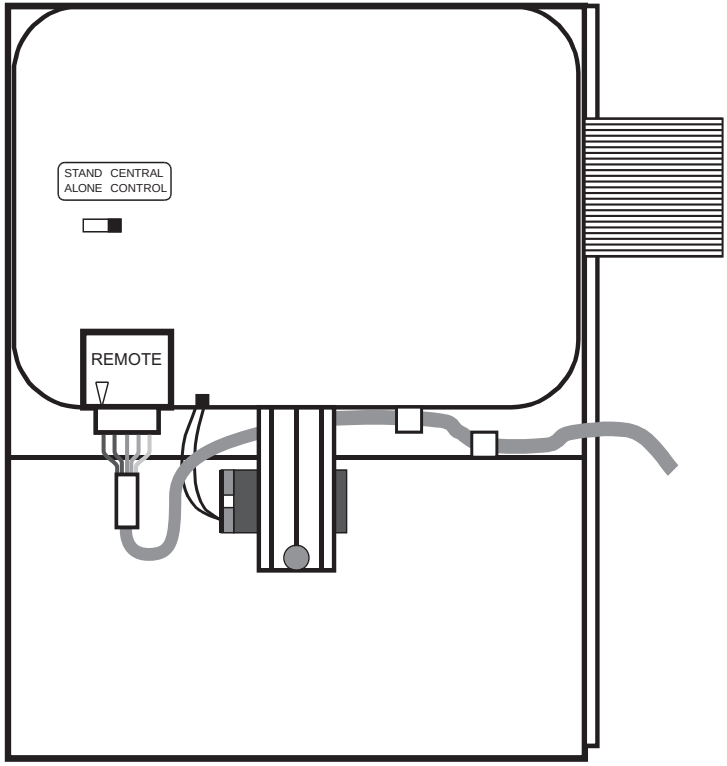
Important: Use a #10 (6 mm) or #8 (10 mm) bare wire to connect the controller to the ground rod or grounding grid.

To connect the ground wire,

1. Feed the ground wire through the large hole at the bottom of the cabinet.
2. Place the ground wire into the copper earth ground terminal. Tighten the screw to secure the wire.

In the LX PLUS Controller Cabinet:

- Install the ESP-LX Plus SITE front panel on the LX PLUS controller. Connect the ribbon cable and two-wire harness from the face panel to the controller's circuit board as shown on page 48 of the ESP-LX PLUS Installation, Programming, & Operation guide.
- Insert the battery into the battery holder on the back of the faceplate and attach the recharging clip to the battery.
- Route the six-wire data cable (end with ferrite bead) through the cable guides on the back of the face panel to the Remote/Comm connection port.
- Plug the six-wire cable (ferrite bead close to the connector) into the Remote/Comm connector.


STAND CENTRAL
ALONE CONTROL
REMOTE

MAXICOM INTERFACE SITE BOARD

Central Controller Connection

There are two ways of connecting the ESP-LX PLUS SITE to the computer data path: *the phone or serial port (RS232).*

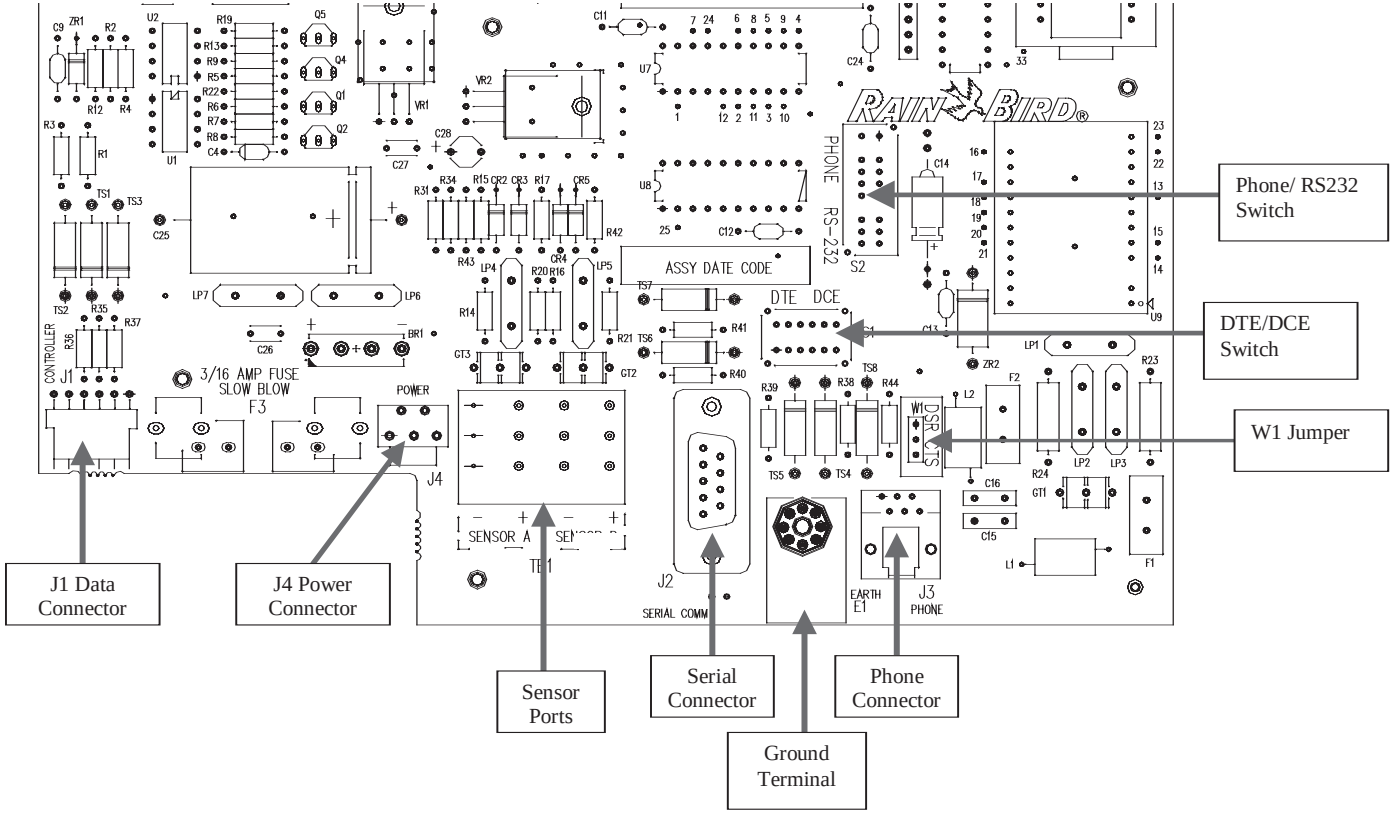
- **Phone:** Connect one side of a RJ-11 telephone cable into J4 (1a) and the other end to an RJ-11 telephone jack (or cellular phone interface, if applicable). Set switch S2 to the "PHONE" position. This is the factory default setting. Run the telephone cable from the MISB Cabinet using the knockout for a PVC male adapter sized ¾" (1,9 cm) on the right hand side of the cabinet. This same hole will be used to run sensor wires to the MISB. Conduit is recommended for both phone and sensor cables/wires."
- **Serial Port (RS-232):** Connect the "cable assembly, modem-site" into the DB-9 Connector and the opposite end to the modem. Set S2 to "RS-232" position.

Important: Do not set switch S2 in the center position; it must always be set fully left or right.

If your controller is connected directly to the computer, or if you are using a short-haul modem (point to point), set the S1 switch to the DCE position.

If your communication line is connected to one of the non-hardwire or multi-drop short-haul modem options set the S1 switch to the DTE position.

Verify that the black, two-pronged W1 jumper is inserted in the "DSR" position. The W1 jumper in the "CTS" position is only necessary for trunk radio communication.


Phone/ RS232 Switch
DTE/DCE Switch
W1 Jumper
J1 Data Connector
J4 Power Connector
Sensor Ports
Serial Connector
Phone Connector
Ground Terminal
RAIN BIRD
PHONE RS-232
S2
ASSY DATE CODE
DTE DCE
S1
3/16 AMP FUSE
SLOW BLOW
F3
POWER
J4
J1
CONTROLLER
SENSOR A
TB1
J2
SERIAL COMM
EARTH
E1
J3
PHONE
W1
DSR
CTS

Device Connections

The ESP-LX PLUS SITE has a maximum of 2 sensor inputs. The ESP-LX PLUS SITE works with any open or closed switch sensor or pulse-type devices.

Note: The information from this sensor system feeds back information to the central control system (Maxicom[2®]).

Important: The wires you use to connect the controller to the sensor must be approved for underground use. See the Rain Bird Catalog for exact wire specifications.

Important: The sensor wires should be installed in a conduit other than the one that contains the wires to the LX PLUS Controller main power source.

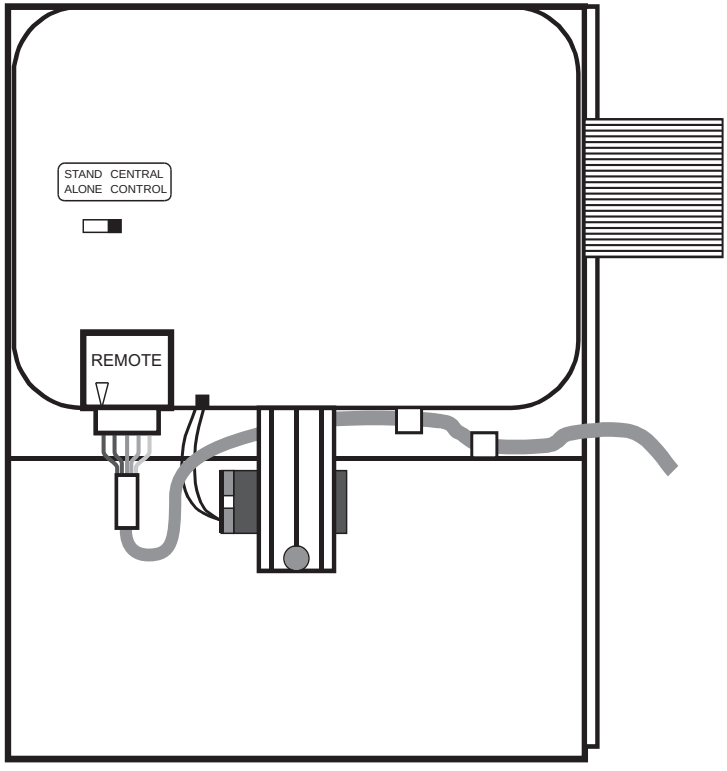
To connect the sensor's wires to the controller,

- Strip ½" (1,3 cm) from the end of the sensor wires. Insert one wire to each of the sensor terminal holes on the MISB. If the wire does not enter securely into the hole, press down on the lever as you insert the wire.
- Route the wires through the knockout for a PVC male adapter sized ¾" (1,9 cm) on the right hand side of the cabinet. This same hole will be used to run phone cable to the MISB. Conduit is recommended for both phone and sensor cables/wires
- Connect the other end of the wires to the sensor's common terminals or wires.
- Follow the sensor's directions for placing and connecting the sensor's probes and for setting the shutoff level, if appropriate.

ESP-LX PLUS SITE OPERATION

Central Control / Stand-Alone Switch

On the back of the face plate of the LX Plus SITE controller is a switch labeled "Central Control – Stand-Alone Switch". This switch must be placed in the "Central Control" position for the controller to work as a Site-Satellite. If left in Stand-Alone, the controller will function as a Stand Alone ESP-LX PLUS.


STAND CENTRAL
ALONE CONTROL
REMOTE

Maxicom Communications Status

When the “Central Control – Stand-Alone Switch” switch is in the “Central Control” position, the LX PLUS Controller display indicates the status of central control communications:

Indication	Meaning
NO COMM	Ready, but not linked up with the Central Control System
LINKED	Linked to Maxicom$^{2®}$, but no stations running
CENTRAL CONTROL *blink* CHAN XX *blink* STA XX	Linked to Maxicom$^{2®}$ and under central control. Channel XX, Station XX running.

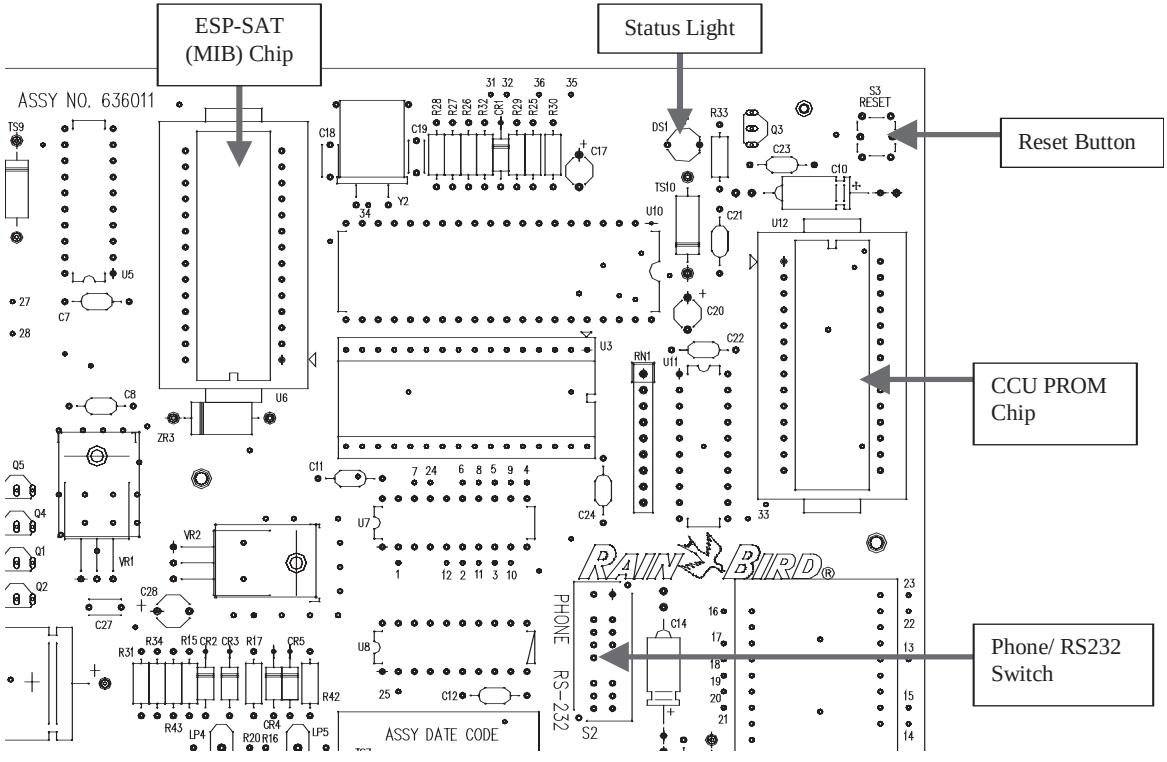
Note: “NO COMM” or “LINKED” indications are only visible if the rotary switch is in the “Auto” position.

Status Light

The status light on the MISB is an indicator that the ESP-LX PLUS SITE is functioning correctly. The status light should always be blinking at one-second intervals. Refer to the troubleshooting section (Page 3) if the status light is not lit or is not blinking.

Reset Button

In addition to canceling active schedules at the ESP-LX PLUS SITE, you can use the reset button to initialize the call handle of an ESP-LX PLUS SITE when using a direct-connect communication method. Refer to your MAXICOM guide to operations for further information.


ESP-SAT
(MIB) Chip
Status Light
Reset Button
CCU PROM
Chip
Phone/ RS232
Switch
ASSY NO. 636011
ASSY DATE CODE
PHONE RS-232
S2
RAIN BIRD

CHANGING THE CCU'S PROM CHIP

Important

- Before working with the circuit board, turn off all power to the Control Unit Board.
- Before working with the circuit board, make sure you are grounded and are working in a static-free environment. Static charges can damage the chips.
- Do not perform any operations on the circuit board unless advised to do so by an Authorized Rain Bird Service technician.
- The PROM chip is located in the upper center of the Control Unit Board. It typically is labeled with a large white sticker.
- The PROM chip rests inside a plastic cradle. Using the tabs at either end of PROM chip, gently wiggle the chip and lift it straight up until it comes free.
- After removing the chip, notice that one end of chip has one vertical tab, while the other end has two vertical tabs. These tabs fit into corresponding grooves in the cradle.
- To replace the PROM chip with a new chip, align the vertical tabs with the grooves in the cradle. The chip will not fit in the cradle if the chip is turned the wrong direction.
- Gently press the chip into place.

TROUBLESHOOTING

Raster Test of the ESP-LX+SITE

The Raster Test on the ESP-LX+SITE has a different indication than the ESP-LX+ in the event of a defective Triac:

Controller	**ESP-LX+**	**ESP-LX+SITE**
Indication during test (if Triac defective)	"FAIL X"	"LDP xxx" then "LDN xxx" then "LDD xxx" then "LDM xxx" then "LDT xxx" then "SCR X"
At the end of the test (if Triac defective)	"CHECK" then "FAIL X"	"CHECK" then "SCR X"

The "LDP xxx", etc, messages that are displayed during the test of the ESP-LX+SITE relate to the internal values that are being checked to validate the failure. These values are meant to aid Rain Bird Engineers during technical troubleshooting. For the ESP-LX+SITE, if you encounter a "SCR X" message, please contact Rain Bird Technical Services.

Problem:

The ESP-LX PLUS SITE "locks up" (The STATUS light doesn't blink, won't light up, or stays on all the time).

Solution:

Press the RESET button.

The STATUS light should start blinking, if the STATUS light still does not begin blinking in one-second intervals, see your Authorized Rain Bird MAXICOM Distributor.

Problem:

A MAXICOM feature appears to operate correctly at the computer but will not function when it is sent to the ESP-LX PLUS SITE.

Solution:

Verify channel assignment on ESP-LX PLUS SITE matches maximum PC channel assignments.

The ESP-LX PLUS SITE has a maximum number of 6-channel assignments; you should not exceed this limit on the MAXICOM channel assignment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Rain Bird Corporation, could void the user's authority to operate the equipment.

This product was FCC certified under test conditions that included the use of shielded I/O cables and connectors between system components. To be in compliance with FCC regulations, the user must use shielded cables and connectors and install them properly.

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