LUTRON 041837a QS Sensor Module Instruction Manual

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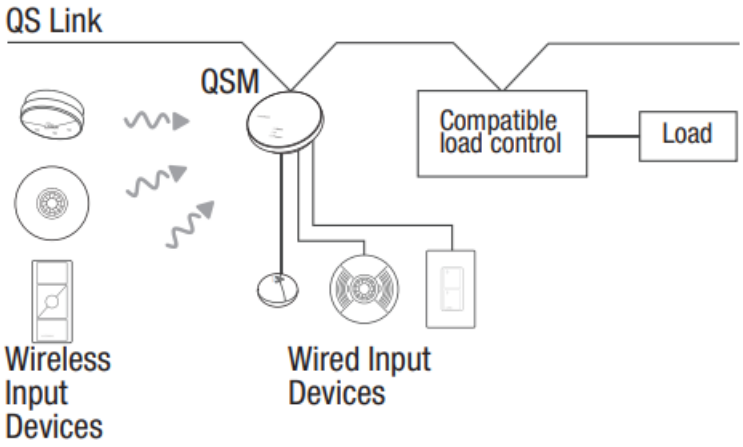
Contents

Compatible Products

- Lutron Wired Sensors
  - Occupancy – LOS-series
  - EcoSystem Daylight – EC-DIR-
  - EcoSystem Infrared (IR) – EC-IR-
- Lutron Pico Wired Control
- Lutron Radio Powr Savr Sensors
  - Occupancy / Vacancy
  - Daylight
- Lutron Pico Wireless Controllers The QSM requires a compatible control for system functionality. Refer to the installation instructions of the following devices for compatibility, set up, and other information, available at www.lutron.com.
  - Quantum
  - Energi Savr Node
  - GRAFIK Eye QS

Product Description

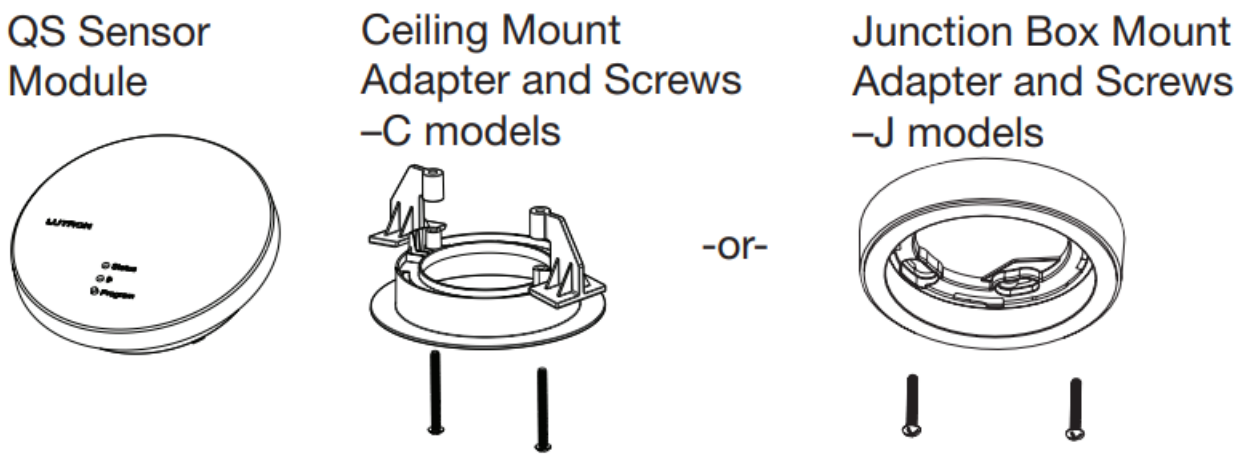
Lutron QS Sensor Module (QSM) allows integration of input devices (wired and/or wireless) such as Lutron occupancy sensors, daylight sensors, IR sensors, Pico wired control, and Pico wireless controllers to a compatible load control. For devices that already integrate directly with sensor inputs, the QSM can expand the number of available inputs or expand the wireless coverage.



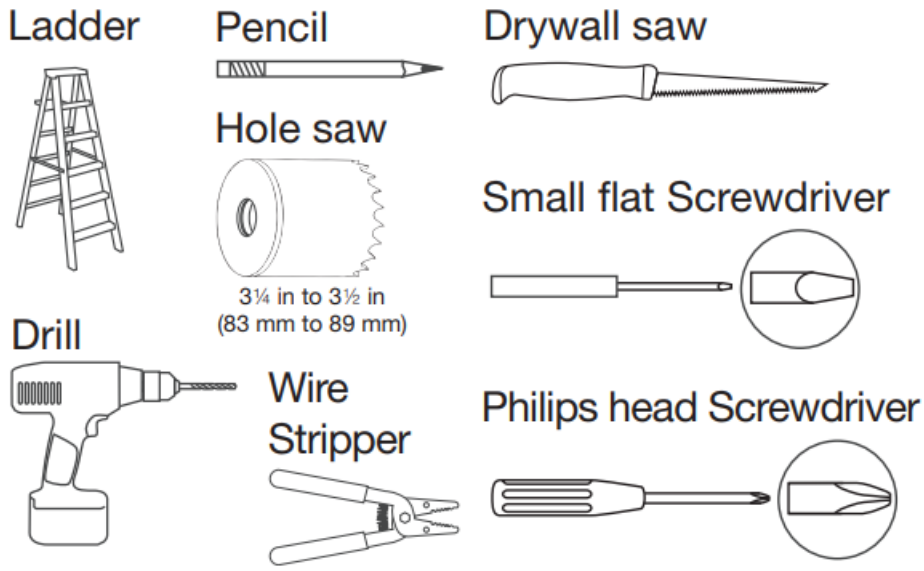
Important Notes

1. QSM is part of a system and cannot be used to control a load without a compatible system device. Refer to www.lutron.com and the instruction sheets of the system device(s) for installation information.
2. Clean QSM with a soft damp cloth only. DO NOT use any chemical cleaners.
3. QSM is intended for indoor use only. Operate between 32 °F and 104 °F (0 °C and 40 °C).
4. DO NOT paint QSM.
5. The range and performance of the wireless system is highly dependent on a variety of complex factors such as:
    - Distance between system components
    - Geometry of the building structure
    - Construction of walls separating system components
    - Electrical equipment located near system components QSM wireless range:
    - 60 ft (18 m) line of sight
    - 30 ft (9 m) through walls
6. Metal objects block wireless communication. Avoid installing QSM on or within metal surroundings other than junction box.
7. Follow appropriate local and national codes to avoid violating required separation guidelines.
8. All wiring attached to the QSM should be wired in accordance with IEC PELV/NEC® Class 2.

Included Components

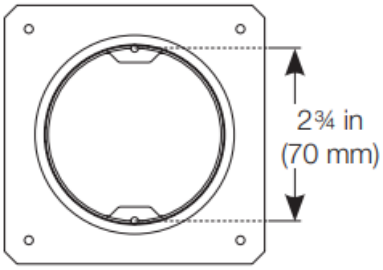


Tools You May Need



Components (not included)

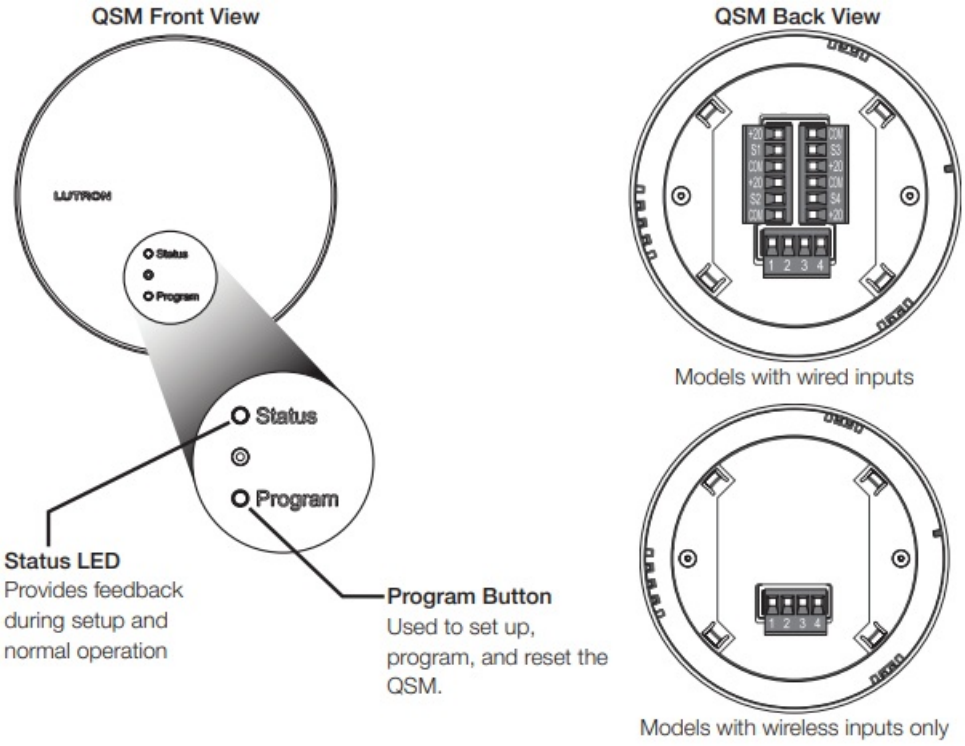
Mud Ring (Use mud ring with hole spacing as shown for –J models only)



Getting Started

Key Features

- Easy Installation. QSM can be mounted on a variety of ceiling materials (thickness ranging from 1 ⁄4 in to 11 ⁄4 in [6 mm to 32 mm) with the adapter provided.
- Easy Set-up. QSM has auto-detection capabilities on the wired sensor inputs. After the inputs are properly wired, the QSM will recognize the input (device) type after a valid signal is received. For example: occupied room, IR signal, etc.
- Clear Connect Technology. Up to 30 wireless devices, comprised of up to 10 Radio Powr Savr daylight sensors, 10 Radio Powr Savr occupancy sensors, and 10 Pico wireless controllers can be associated with QSM.



QSM Operation

- Wired devices: Wired occupancy sensors, EcoSystem daylight sensors, EcoSystem IR sensors, and Pico wired controls can be wired directly to the QSM.
- Wireless devices: Wireless Radio Powr Savr occupancy sensors, Radio Powr Savr daylight sensors, and Pico wireless controllers can be associated to the QSM.
- Power: QSM is powered from the QS link.

Refer to the table below and source power draw unit output to ensure enough power is available to power your system.

QSM Configuration	Power Draw Units (PDU)
QSM	3
Wireless input devices	0
1 wired occupancy sensor	2
1 wired daylight sensor	0.5
1 wired IR (Infrared) sensor	0.5
1 Pico wired control	0.5

Installation

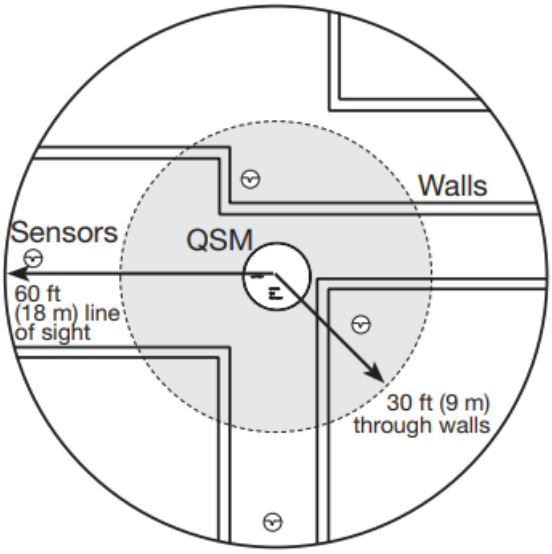
The QSM installation procedure is outlined below. Please follow these steps to ensure that the QSM will perform as intended.

Choose a Location to Install

All wireless devices to be associated to the QSM must be within the specified range listed below. In addition, 4 wired inputs can be connected to the same QSM. Refer to the Wiring section for details.

QSM wireless range:

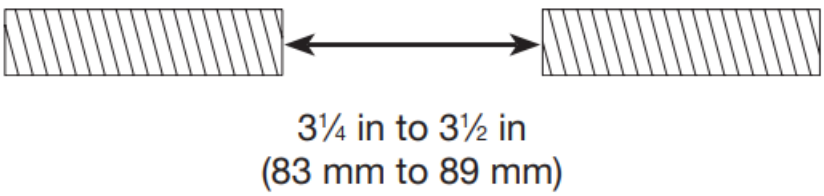
- 60 ft (18 m) line of sight
- 30 ft (9 m) through walls



- Wired sensors: up to 4.
- Wireless devices (up to 30 total):
  - Max. 10 Radio Powr Savr occupancy sensors
  - Max. 10 Radio Powr Savr daylight sensors
  - Max. 10 Pico wireless controllers

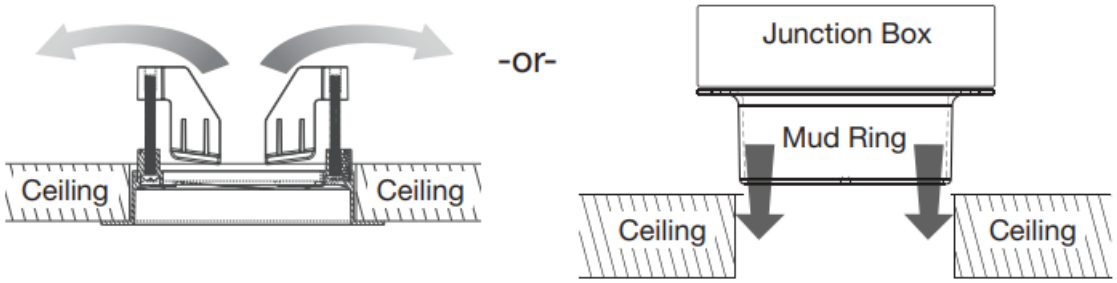
Installing the Ceiling Mount Adapter

Cut a 31 ⁄4 in to 31 ⁄2 in (83 mm to 89 mm) diameter mounting hole to insert the mud ring.



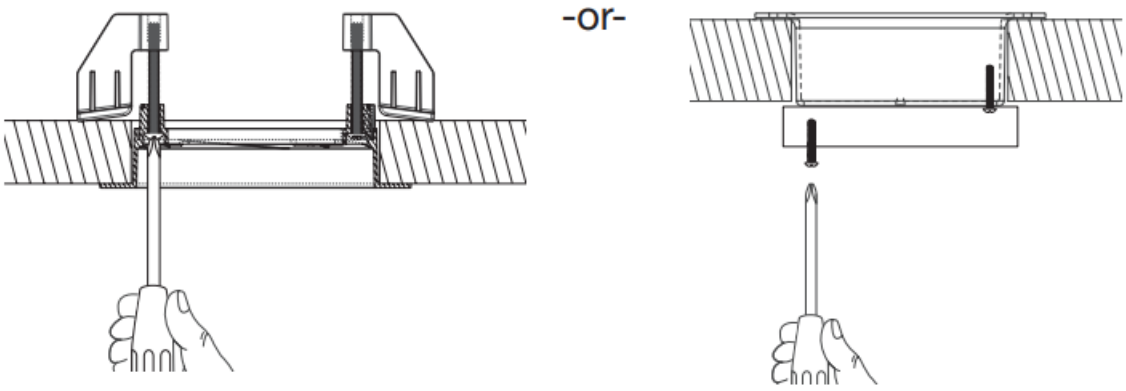
Insert Mud Ring or Ceiling Mount Adapter

Insert the ceiling mount adapter into the hole and rotate brackets outwards by turning screws. –C models
Insert the mud ring with junction box as shown below. Do not allow the ceiling tile to bear the weight of junction box. –J models



Clamp Adapter to Ceiling

Using a Philips screwdriver, hand-tighten the brackets, clamping the adapter to the ceiling. Do not overtighten. –C models
Using a Philips screwdriver, hand-tighten the brackets, clamping the adapter to the mud ring. Do not overtighten. –J models

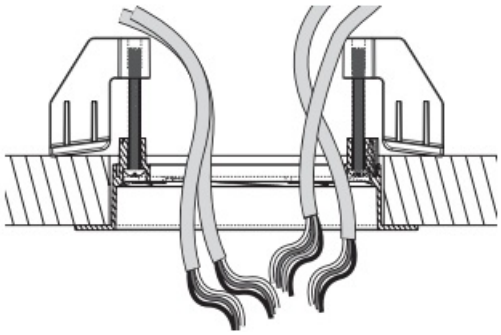


Run Wires

For each wired input that will be connected to the QSM, run wiring for QS link and pull through the ceiling mount adapter hole. Leave enough wire to connect to QSM.

Note: Refer to table for appropriate wiring information. Strip wire to 3⁄8 in (9 mm)

Note: Do not run QSM control and/or power wire in/with Class 1 or lighting control conductors as this may affect performance. Please refer to PN 369242 at **www.lutron.com** for additional information.



<table>
<tr><th colspan="3">Wire Gauge</th><th>Available from Lutron in one cable</th></tr>
<tr><td rowspan="3">QS Link</td><td rowspan="2">Less than
500 ft (153 m)</td><td>Power (terminals 1 and 2): 1 pair 18 AWG
(1.0 mm2)</td><td rowspan="2">GRX-CBL-346S or GRX-PCBL 346S</td></tr>
<tr><td>Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm2), twisted and shielded*</td></tr>
<tr><td rowspan="2">500 ft (153 m) to
2000 ft (610 m)</td><td>Power (terminals 1 and 2): 1 pair 12 AWG
(4.0 mm2)</td><td rowspan="2">GRX-CBL-46L or GRX-PCBL-46L</td></tr>
<tr><td>Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm2), twisted and shielded*</td></tr>
<tr><td rowspan="3">Wired Inputs</td><td>Max. wire length</td><td>150 ft (46 m)</td><td rowspan="3">C-CBL-S222S-WH-1 or C-PCBL-S222S-CL-1</td></tr>
<tr><td>Max. wire gauge</td><td>16 AWG (1.5 mm2)</td></tr>
<tr><td>Min. wire gauge</td><td>22 AWG (0.5 mm2)</td></tr>
</table>

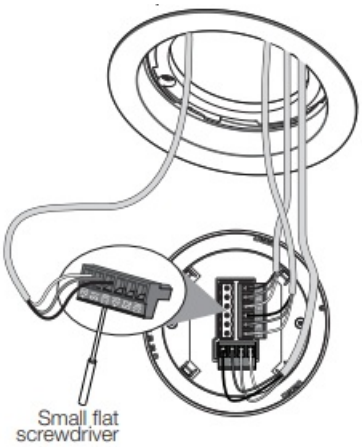
Alternate data-only cable: Use approved data link cable (22 AWG [0.5 mm2] twisted, shielded) from Belden, model #9461.

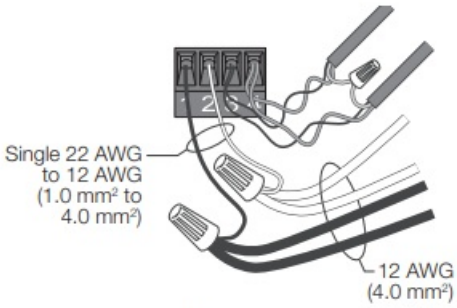
Connect wiring

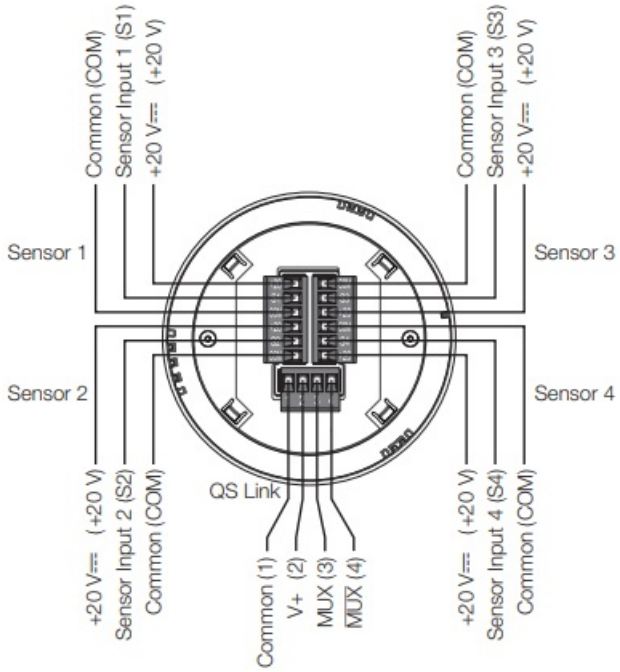
Connect wiring for QS link and wired sensors (if applicable) to the appropriate terminals on the QSM.

QS Link Terminal Connections

Each QS link terminal can accept up to two 18 AWG (1.0 mm2) wires. Two 12 AWG (4.0 mm2) wires will not fit. Connect as shown below using appropriate wire connectors.

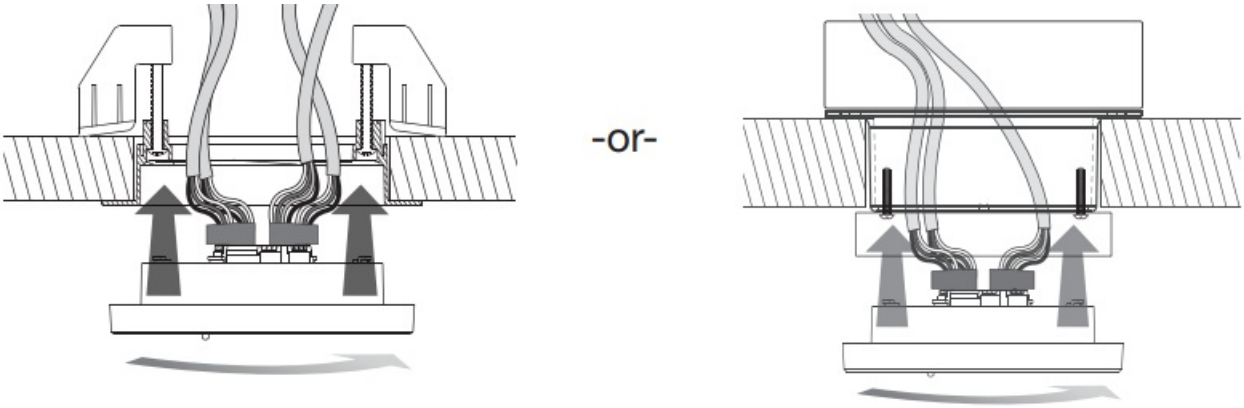






Attach QSM to Adapter

Attach the QSM into the ceiling mount adapter by inserting and twisting in a clockwise direction until the sensor locks into place.



Set-up

A. Wired Input Devices (if available)

There are 4 types of wired input devices that can be connected to a QSM; Lutron occupancy sensors, Lutron

EcoSystem daylight sensors, Lutron EcoSystem IR sensors, and Lutron Pico wired controls.

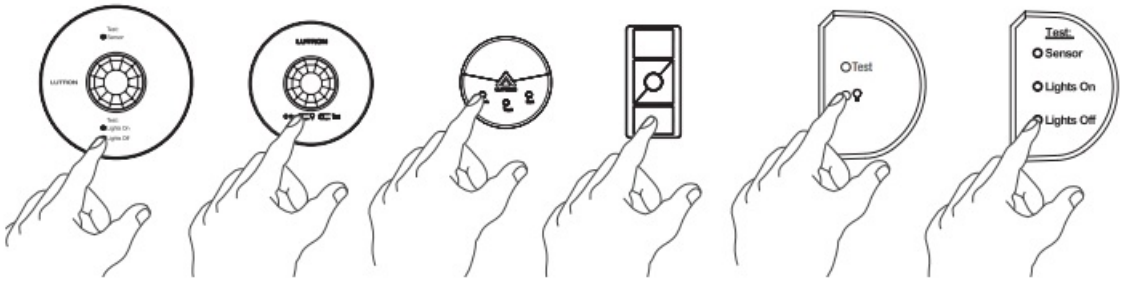
1. Once these inputs are connected to a QSM, upon power up, the QSM will automatically detect and configure the wired inputs after a valid signal is received (i.e. occupied room, IR signal, etc.).
2. If inputs are ever removed and rewired into different ports, the QSM will need to be reset so the new configuration can be detected.
3. To reset and redetect wired inputs press and hold “Program” button for 10 seconds.
   Note: First, there will be a long beep after 3 seconds. Continue to hold until the second long beep after 10 seconds. QSM will power up and new configuration of wired input devices will be detected after valid signals are received.
   Note: Load control logic may need to be reconfigured.
4. Refer to instructions of connected device to setup input function and logic.

B. Wireless Input Devices (if available)

Wireless input devices must be associated to only one QSM before they are assigned to control system devices.

1. Press and hold “Program” button on the QSM for 3 seconds to enter Sensor Association Mode. You will hear a 1-second beep upon entering. LED will blink twice every second in the sensor association mode.

2. For each wireless device you wish to associate, press and hold the appropriate button on the device according to the following table.



Input Device	**Button**	**Duration**
Radio Powr Savr Occupancy Sensor	Lights Off/	6 seconds
Radio Powr Savr Daylight Sensor	Link	6 seconds
Pico Wireless Controller	Bottom	6 seconds

After each successful input association, QSM will respond with 3 long beeps.
If maximum number of associations to QSM has been exceeded for a wireless input device type, QSM will

respond with a long 5 second beep.

3. If an input device has already been associated to another QSM, the QSM to which you are attempting to associate will respond with 10 short beeps to warn that the input device is already associated to a different QSM.

   If you choose to ignore the warning and try to associate the same input device to the QSM a second time, the input device will be removed from association with the previous QSM and will now be associated with the new QSM.

4. Press and hold “Program” button on QSM for 3 seconds to exit Sensor Association Mode. Note: QSM will time-out and exit Sensor Association Mode after 10 minutes of inactivity.

Program System Logic

QSM is part of a system and cannot be used to control a load without a compatible system device with correct settings. After wired and wireless inputs are associated with QSM, you must program the system logic and functionality using a compatible system load control component (Energi Savr Node, Quantum, GRAFIK Eye QS, etc.).

Troubleshooting

Symptom	Possible Causes	Solution
Unit does not power wired sensors. Lights don’t turn on when supposed to. Status LED on front of QSM is not on.	Miswire.	Check wiring. Refer to section 5. Run Wires.
	Power source not connected or is turned off.	Check connection or source of power.
	System short circuit.	Find and correct shorts.
	Current budget of the power-	Make sure QSM is not overloaded and only 1 wired sensor is connected to each sensor input.

	sourcing device has been exceeded.	Depending on the wired sensor load, current draw of QSM may exceed the limits of the power sourcing device (refer to power source device instructions for power draw budget). In such a case, use QSPS to power QSM.
Front enclosure is warm.	Normal operation.	QSM circuit dissipates a small amount of power. No action is required.
Cannot associate a wireless device to the QSM.	Wireless device is not compatible with QSM.	Radio Powr Savr occupancy sensor, Radio Powr Savr daylight sensor, and Pico wireless controller are the only wireless devices that can be associated to QSM.
	QSM is not in sensor association mode.	Make sure QSM is in sensor association mode. Refer to section 7. Set-up.
	Maximum number of wireless devices has been reached.	If you are getting a 5-second long beep after sensor association attempt, this means you've already reached the limiting number in that particular type of wireless input. Additional QSMs may be needed to accommodate all input devices.
	Wireless device is out of range.	Verify wireless device is within range (30 ft [9 m] through walls, 60 ft [18 m] line of sight). For more info on wireless range, refer to section 1. Choose a Location to Install.
	Miswire.	Check wiring. Check if sensors receive power from QSM. Refer to section 5. Run Wires.

Auto-detection of wired sensors does not work.	Sensor inputs swapped after detection has occurred.	Once the wired sensors are detected, they are assigned to their sensor ports. Swapping the sensors after auto-detection will cause malfunction. QSM will re-detect new locations (if wired inputs are reset). Refer to section 7A. Wired Input Devices for reset instructions. System logic and functionality must be updated with new detected configuration.
	QSM has not received a valid signal from input device.	Under normal circumstances, auto-detection may take a few minutes depending on room conditions. To facilitate this, user can shine a flashlight at daylight sensors, trigger occupancy sensors, and send valid IR signals to IR sensors. QSM must receive a valid signal to detect the input device.
Associated wireless devices do not control assigned lights/wireless devices operate incorrectly.	Wireless device has been unassigned from QSM.	Re-assign wireless device to QSM.
	Devices are not receiving power.	Check wireless device’s battery.
	Out of wireless range.	Verify wireless device is within range (30 ft [9 m] through walls, 60 ft [18 m] line of sight). For more info on wireless range, refer to section 1. Choose a Location to Install.
	System is not configured correctly or wireless devices are not properly located.	Make sure the logic for QSM sensors and inputs has been programmed on other system devices (i.e. Energi Savr Node, GRAFIK Eye QS, etc.).

Wireless occupancy sensors have differe nt user interfaces.	Normal.	Successive Radio Powr Savr occupancy models have a different user interface. All types associate using the l ights off or button.

Customer Assistance

For questions concerning the installation or operation of this product, call the Lutron Customer Assistance Center. Please provide exact model number when calling.

U.S.A. and Canada (24 hrs / 7days)
1.844.LUTRON1
Mexico 8am – 8pm ET
+1.888.235.2910
India, New Delhi Lutron GL Sales
and Services
+91 124 471 1900
Singapore
+65.6220.4666
China, Shanghai
+86.21.5153.3600

Other countries 8am – 8pm ET
+1.610.282.3800
United Kingdom
0800.282.107
Europe
+44.(0)20.7680.4481
Hong Kong
+852.2104.7733
Japan
+81.3.5575.8411
www.lutron.com/support

FCC/IC Information

NOTE: 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 and Industry Canada license-exempt RSS standard(s). 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 and television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of 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.

Caution: Changes or modifications not expressly approved by Lutron Electronics Co. could void the user's

authority to operate this equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

CE

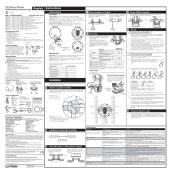
Lutron Electronics hereby declares that QSM3-4W and QSM3-XW are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. A copy of the DoC can be obtained by writing to:
Lutron Electronics Co., Inc. 7200 Suter Road, Coopersburg, PA 18036 U.S.A.

Limited Warranty

For limited warranty information, please visit www.lutron.com

Lutron Electronics Co., Inc.
7200 Suter Road, Coopersburg, PA 18036-1299, U.S.A.
P/N 041837a 01/2022

Documents / Resources

	LUTRON 041837a QS Sensor Module [pdf] Instruction Manual 041837a QS Sensor Module, 041837a, QS Sensor Module

References

- Lutron: Beautiful light. Intelligent Shades. Powerful Controls
- Lutron Support Center | Lutron
- Lutron |