

# MODEL ARG10 OPTICAL RAIN GAUGE

## INSTALLING THE RAIN SENSOR

### 1. Determine the Mode / Set DIP switches

You must set the DIP switches so that the ARG10 behaves the right way for your application. The pages that follow describe each of the possible modes, and how to set the DIP switches.

### 2. Mount the Rain Gauge

Mount the rain Gauge where it gets a clear measurement of precipitation— away from overhangs, etc.

The mounting arm is designed to fit over a strap 0.75" (19 mm) wide. Two 0.25" (holes 6.35 mm) are placed 0.75" (19 mm) apart.

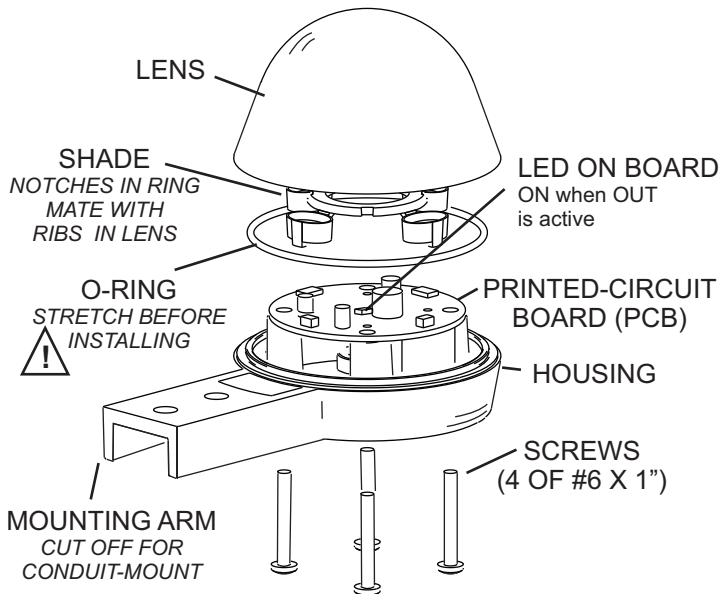
The gland style connector goes in the bottom hole. Be sure to use wire rated for outdoor (high-UV) use.

For conduit applications, the mounting arm may be removed, and the wiring hole drilled out using a step drill to accommodate a 1/2" EMT compression connector or similar style of conduit connector.

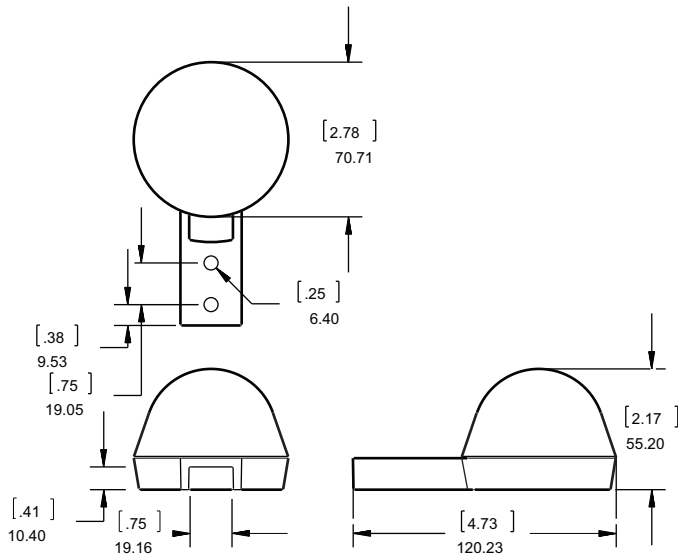
### 3. Assemble the Rain Gauge as shown.

The silicone O-ring fits nicely in the lens groove, but it can fall or slip out during assembly. After the unit is assembled, verify that the O-ring is properly seated by confirming that you can see it through the lens, all the way around.

The Rain Gauge must be assembled when dry. Any water trapped inside can condense and cause corrosion. You may optionally add extra desiccant packets (not supplied). If the Rain Gauge is not subject to splashing or sprayed water, you may optionally vent the enclosure by drilling a 1/8" (3 mm) hole in the bottom of the case.



**EXPLODED VIEW**



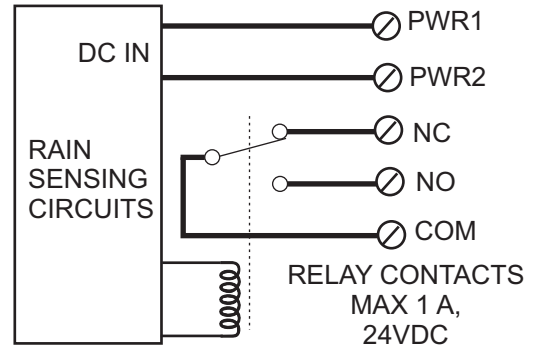
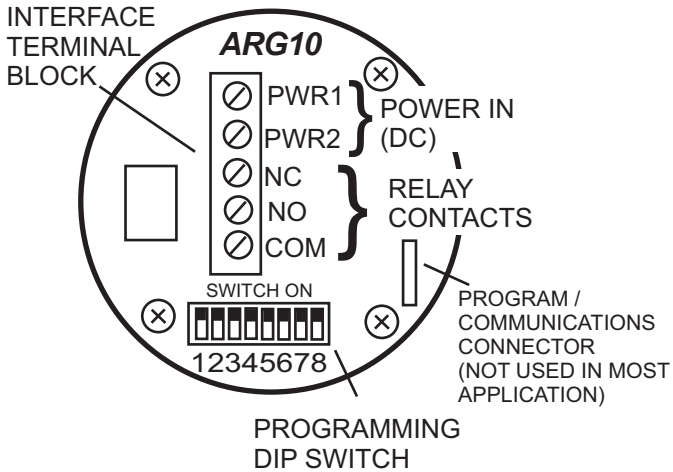
**DIMENSIONAL VIEW**



### - APPLICATION WARNING -

Do not use the ARG10 in any application where the false indication of water or a missed valid detection of water could cause damage to life or property. It is the responsibility of the system designer / integrator to design redundancy into the system so that the failure of any one component, including the ARG10 or other sensor, does not result in disaster. The manufacturer of the ARG10, we will in no way be liable for consequential damages due to the failure or false indication of one of its sensors.

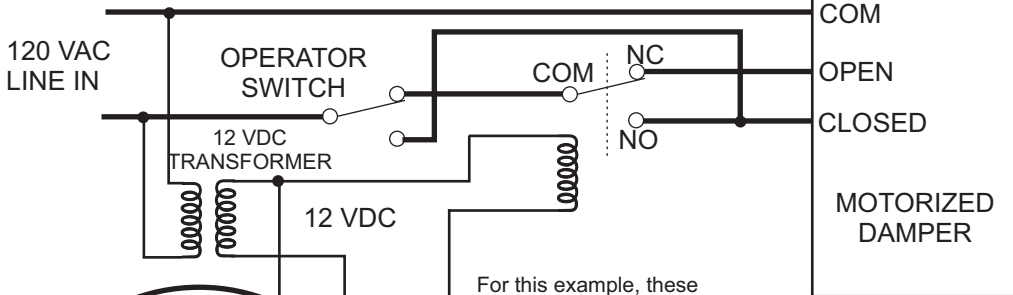
# RAIN GAUGE CONNECTIONS



**EQUIVALENT SCHEMATIC**

## RAIN GAUGE WIRING EXAMPLES

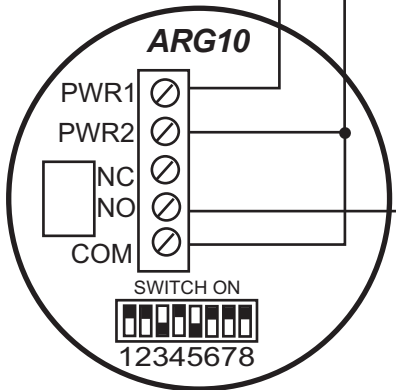
### LINE VOLTAGE CONTROL "IT'S RAINING" APPLICATION



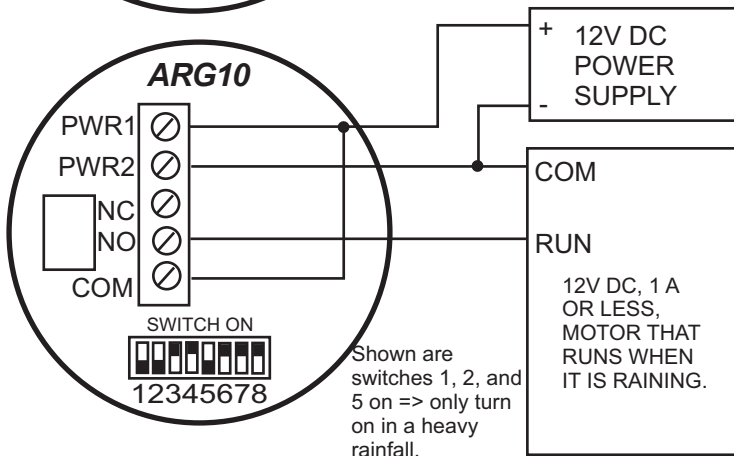
The relay output of the ARG10 is rated for 24VDC, at 1 A. Thus, the ARG10 cannot drive a line voltage (120 VAC) load without an external relay.

The ARG10 requires a DC supply and may not be directly powered from the 120 VAC line.

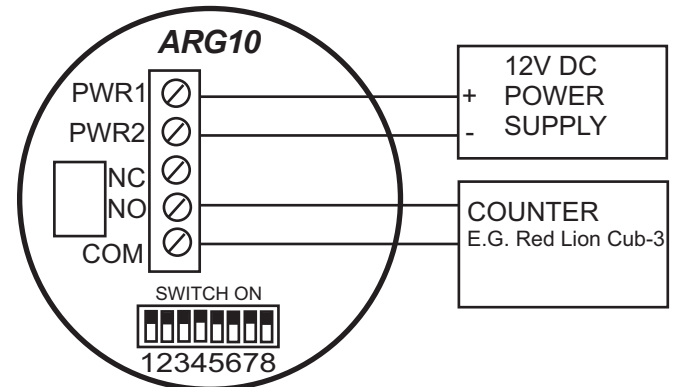
For this example, these switches are on:  
SW 5 - Sets the sensor to "It's Raining" mode.  
SW 3 - Monostable extend output for 15 minutes.



### LOW VOLTAGE "IT'S RAINING" APPLICATION



### TIPPING BUCKET REPLACEMENT EXAMPLE



In many cases, the ARG10 may directly replace tipping buckets in existing systems. The switch settings shown here- all off- will emulate a tipping bucket of 0.01"

## Specifications

Parameter	Value
Input Voltage	Nominal 12 VDC (Range 10 -15 VDC) 50V surge Reverse polarity protected to 50V
Current Drain	15 mA nominal. (No outputs on, not raining, no heater) about 1.5 mA in micro-power sleep mode. 50 mA with output on. 55 mA - With heater on, 12V DC input.
Output	Relay closure, Normally Open and Normally Closed contacts. Max load 1A, 24 VDC.
Operating Temperature range	-40 C to +60C

### DIP Switches

Set the DIP switches for the application according to the tables below. Generally, a few switch positions (5, 6, and 7) set the overall mode of operation, and others (1, 2, 3, 4) adjust the behavior within the modes.

**In the tables, 1 = Switch on, 0 = Switch off, X = switch in either position.**

### Software Revision

This manual corresponds to software revision 016. The software revision is printed on a sticker place on the connector block. See [www.rainsensors.com](http://www.rainsensors.com) (click on "support") for information about differences in software revisions. Differences are generally minor.

### Switch 8 is Enable Micro-power Sleep Mode in most applications.

Most applications will use SW 8 off. If micro-power is enabled, the low-power heater is disabled. In micro-power mode, if a long time (about 20 min) has elapsed since the last rain was detected, the unit will enter a less sensitive sleep mode. A large drop will cause it to exit sleep mode and resume normal operation. This is for battery or solar powered applications. Micro-power mode is disabled in Condensation sensing mode and in irrigation mode. Switch 8 must be off for First Flush Controller. The unit will not read the DIP switches during sleep.

### OUT LED

The LED in the center of the circuit board turns on when OUT is on, as an aid to debugging.

### Condensation

Generally, the ARG10 will sense condensation as if it were rainfall, but this seldom amounts to a significant accumulation of water. The built-in low power heater (DIP SW 8 off) will tend to reduce condensation.

### Ambient Light Interference

The RG-11 is almost completely immune to the effects of ambient light, and may freely be mounted in direct sunlight.

### Heater Notes

A built-in low power (0.25W) heater extends operation of the device to freezing (32 F or 0C). This is disabled if the micro-power (SW 8) is enabled. Note that this is a very modest amount of power; it will tend to drive off a modest amount of frost, but will not melt ice.

### Dark Sensing

Turns output on when it is dusk-- nominally less than 2000 lux. This is for applications such as retracting sun-shields in the evening, when they are not needed. (Only in Mode 1, "It's Raining" applications.)

### LED Flicker / Relay Buzz

If the relay and LED remain on for a long period of time (seconds), the LED may flicker, and the relay may make a barely audible buzz. This is because the RG-11 pulse-width modulates the relay drive signal to reduce current consumption. It does this to prevent excessive heat in the RG-11. This does not affect functionality in any way.

## J2 Connector

J2 is a pin-field on 0.1" centers, used for programming, development, and testing of the ARG10. Most applications do not connect to J2, and we make this information available only for special applications.

Connector field is 0.025" square pins on 0.1" centers. An example compatible connector is Molex part number 22-01-3067. This is available from Digi-Key as part number WM2004-ND. The necessary crimp-on wire terminals are Molex 08-55-0131 / DigiKey WM4591-ND.

### J2 Pin assignments

J2 - 1 GND  
J2 - 2 +5V OUT  
J2 - 3 SW4  
J2 - 4 SW1  
J2 - 5 SW2  
J2 - 6 RS232 and SW 5.

### Remote Switching

These connections may be used to remotely operate the corresponding switches, by grounding the connections. This can be used for operator-accessible sensitivity adjustment in wiper control applications.

### RS-232 communications

Requires an external resistor.