MODEL ROLC

Radio Operated
Lighting Controller

FAA SPECIFICATION
L-854

HELIPORT SYSTEMS, INC.

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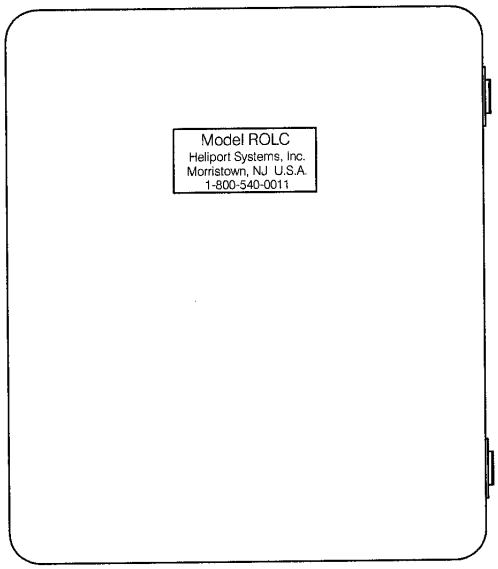
RADIO OPERATED LIGHTING CONTROLLER Model ROLC



- Permits Pilots to turn On (Individually or Incrementally) up to 3 Groups of Lights up to 20 miles from Airfield.
  Timer adjustable 15-60 minutes. Other mfgs. offer only 15 mins.
- Exclusive Pushbutton - not crystal - controlled Tuning. Other mfgs. require sending their units back to change crystal and charge $350.
- Weathertight NEMA 4X Enclosure Permits Mounting Outdoors or Indoors With 50' Coax Cable To Remote Antenna.
- Meets FAA Specification L-854
- U.S. $2450. Includes (3) 25 AMP Double Pole Relays, Antenna and 50' coax Cable. Other mfgs. charge additional for these items.

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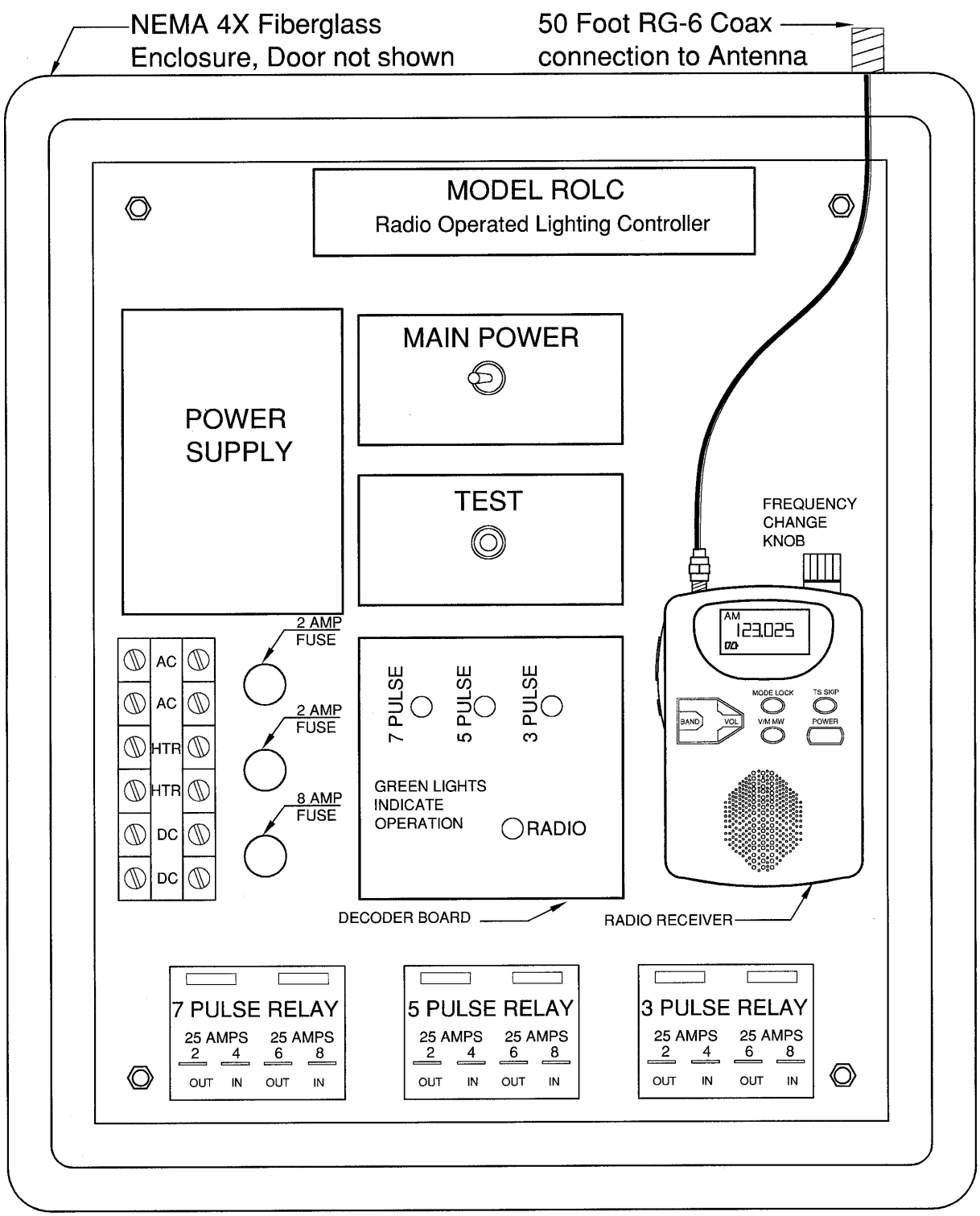


SIMPLIFIED VIEW OF INSIDE UNIT

Model ROLC
Radio Operated Lighting Controller

PURPOSE

Permits pilots when flying to an airport or heliport to turn on airfield lights utilizing their existing the aircraft VHF 118-137 Mhz band radio present in every modern civilian aircraft (Military UHF 225-450 Mhz band). The pilot tunes his radio to the frequency (published or unpublished) programmed inside the Model ROLC, then keys his transmitter either 3, 5, or 7 times in quick succession to turn **ON** up to **three** groups of airfield lights - either **Individually** or **Incrementally** in conformance with FAA Specification L-854. Inside the unit, a timer turns the lights off automatically, adjustable 15-60 minutes. Or the unit can be set to permit the pilot to turn off one group of lights at any time.

The Model ROLC also can receive on other bands - signals from any radio transmitter utilizing **Police, Fire, Emergency, Marine, and some military bands** - permitting people to open or close a gate, turn on dock lights, etc. Other brands do not have this capability.

PRINCIPLE OF OPERATION

When the pilot keys his transmitter 3, 5, or 7 times in short, successive, pulses within a five second period, a radio receiver inside the Model ROLC receives the transmissions. An FAA Style A decoder counts the transmissions (breaks in squelch) and after five seconds activates/closes the corresponding 3, 5, or 7 pulse relays which send current to the lights or other items connected to those three relays, each double pole, 25 amps per pole. Other brands charge extra for these relays.

Lights are turned **OFF** automatically by a timer, set in increments of 15 minutes up to 60 minutes. Other brands permit only one 15 minute setting. Or the pilot can turn off one group of lights.

Should the frequency need to be changed due to 1) too many voice transmissions at the airfield or 2) electrical interference from another source, the Model ROLC's synthesized pushbutton tuning permits changing to a new frequency in seconds. Other brands use an old style single crystal, requiring the unit to be sent back to the factory for two weeks and charge $250-$350 every time the frequency needs to be changed.

Additional Features:

Two groups of lights can be turned ON selectively, and later one group can be turned OFF by the pilot when on the ground, without waiting for the timer. For example, a PAPI can be turned off at the end of an approach to a heliport as it can cause considerable glare when viewed up close, or flood lights can be turned off if they cause glare.

By adding a dimming transformer between the Model ROLC and the lights, the pilot can select a high brightness of lighting - for example when up to 10 miles from the airfield - and as he nears the airfield, dim the lights to normal intensity.

The relays also can send power to other devices, too, such as opening a hangar door.

INSTALLATION

LOCATION:

Aircraft VHF 108-137 Mhz and UHF 225-450 Mhz bands are essentially line of sight and therefore work best when the receiving antenna is located so it has line of sight to the aircraft at the start of an approach. In general, the higher the receiving antenna, the better the reception, although the key factor is line of sight to the aircraft. At a rooftop heliport, the ideal location is atop the roof of the elevator serving the heliport; at a groundlevel heliport, atop the roof of a nearby building if available. The Model ROLC can be installed outdoors or it can be installed indoors with the antenna remote mounted up to 50' from the unit, utilizing 50' of coaxial cable furnished. **Ideally, the unit should be installed indoors** for ease of servicing in inclement weather and longer life, with the **antenna mounted outdoors**, but not more than 50' from the unit.

In all cases, install the Model ROLC and its 19" high antenna outside the obstruction clearance planes of the flight paths as defined by FAA to ensure it does not become an obstruction and possibly cause an accident. As a general rule, if the windcone present at nearly every airfield is sited properly, the Model ROLC and/or its antenna can be sited nearby for both proper reception and obstruction clearance. However, obstruction clearance must be verified.

When installing the antenna, keep away from power lines and other sources of electrical shock or interference with the unit. The antenna is furnished with a bracket which fastens to any vertical flat surface with two screws, or to a pipe with the pipe clamp furnished. Follow all codes. See **MOUNTING DETAILS** Page 6 and **SUGGESTED ANTENNA MOUNTING**, Page 7.

If the Model ROLC is mounted outdoors near the ground, it must be above snow level and flood level. Conduit for power in to the unit and power out to the airfield lights must enter the bottom of the unit with conduit hubs. Seal the inside of the conduit where it enters the bottom with RTV silicone sealant or equal to prevent any water which has entered the conduit accidentally from flooding the inside of the unit.

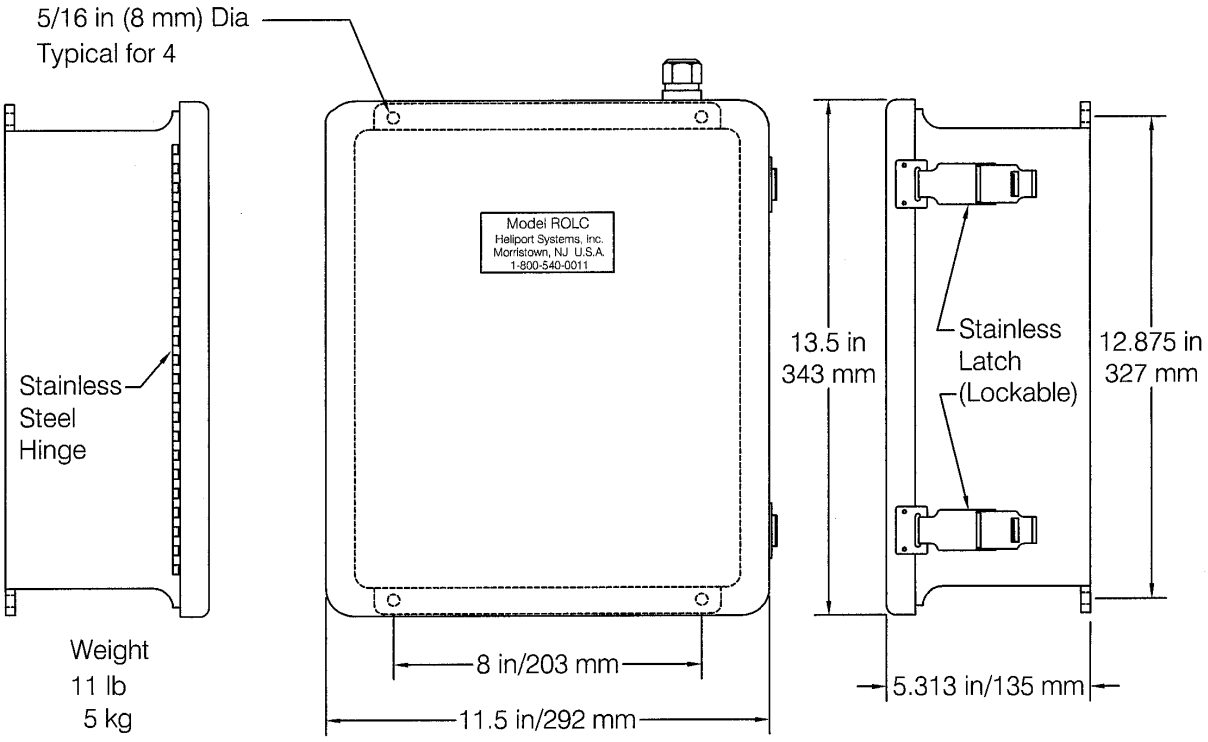
POWER REQUIREMENTS and WIRING TO LIGHTS:

The Model ROLC operates on 100-240 VAC, 50/60 Hz or 12 VDC. Current draw is only 17 watts in standby mode and 75 watts with all three relays closed. In cold climates, a 75 watt, 120 VAC cabinet heater with thermostat set for 70-80 deg. F are furnished, for a total current draw of 175 watts. The heater is prewired, but if a separate power supply is desired, the shunt wires at the terminal strip can be removed for independent power to the heater. In either case, the cabinet heater is not controlled by the Main Power switch. **In event of a power failure at the airfield, the radio receiver has non-volatile EEPROM memory, so the frequency will be retained**.

Each of the three power relays is double pole, 25 amps per pole, ¼" spade connector type. Conduit for power into the unit and power out to the lights must enter the bottom of the unit with conduit hubs, sealing as described above. Follow all codes.

See **TYPICAL WIRING TO LIGHTS**, Page 8.

MOUNTING DETAILS
Model ROLC



- Preferred Mounting: Unit Indoors; Antenna Outdoors.
- Alternate Mounting: Unit & Antenna Outdoors.
- Mount Antenna (usually as high as possible) to achieve Line of Sight to Approach Direction.
- Antenna and Unit Must Not Obstruct Flight Paths.

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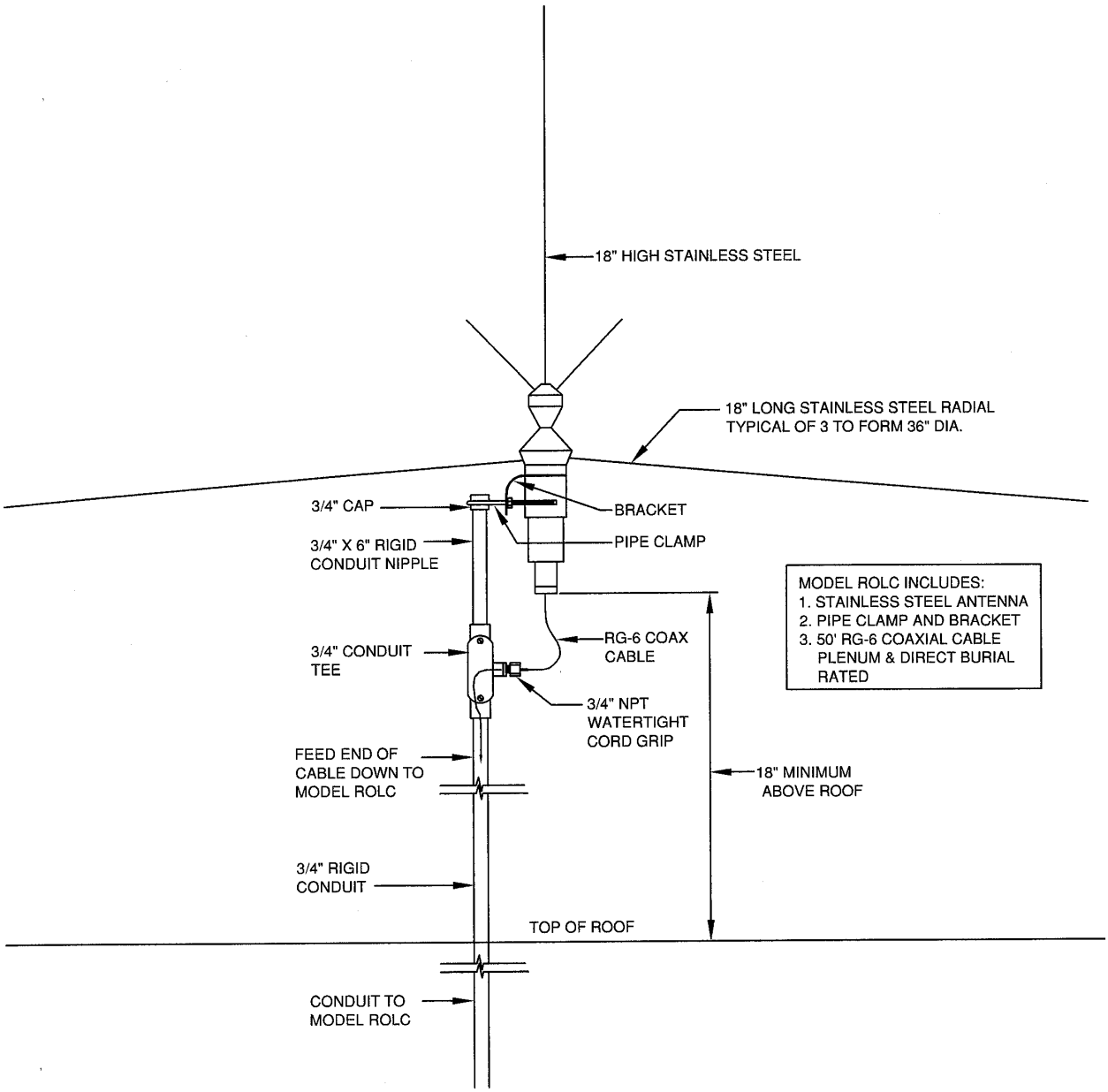
MODEL ROLC SUGGESTED ANTENNA MOUNTING
ROOFTOP FREESTANDING MOUNT



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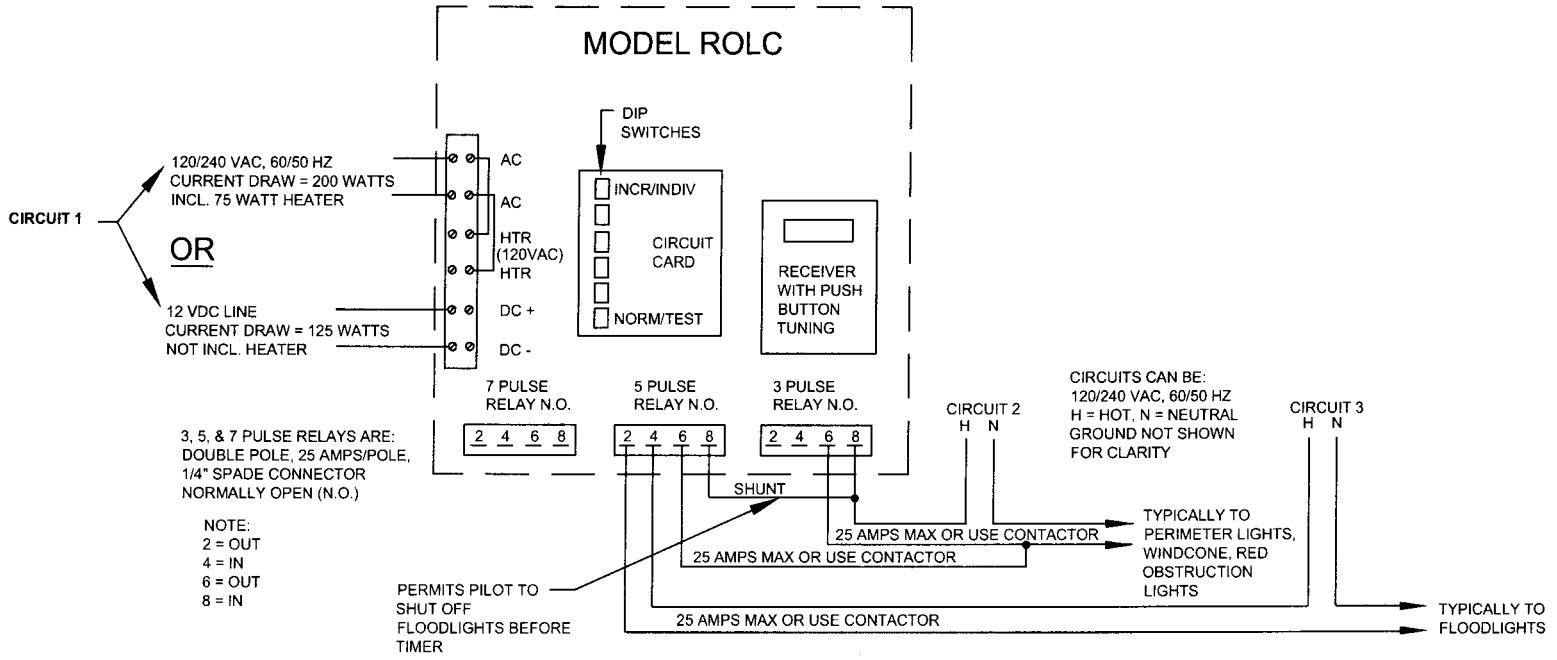
TYPICAL WIRING TO LIGHTS



DESIRED OPERATION: ON APPROACH TO HELIPORT, PILOT TURNS ON PERIMETER AND WINDCONE LIGHTS. AFTER LANDING, PILOT TURNS ON FLOOD LIGHTS. BEFORE DEPARTING, PILOT CAN TURN OFF FLOOD LIGHTS. AT END OF 15-60 MINUTE TIMER TURNS OFF PERIMETER AND WINDCONE LIGHTS.

DIP SWITCH INCR / INDIV (INCREMENTAL / INDIVIDUAL) MUST BE SET TO INDIV.

1. AT START OF APPROACH WHEN PILOT KEYS TRANSMITTER 3 TIMES, TIMER STARTS CYCLE, 3 PULSE RELAY CLOSES, TURNING ON CIRCUIT 2 (PERIMETER/WINDCONE) LIGHTS. IF PILOT DOES NOT KEY TRANSMITTER AGAIN BY END OF TIMER CYCLE, TIMER OPENS 3 PULSE RELAY, TURNING OFF CIRCUIT 2 LIGHTS. NOTE: WHENEVER TIMER CYCLE ENDS, ANY CLOSED RELAYS OPEN.

2. AFTER LANDING WHEN PILOT KEYS TRANSMITTER 5 TIMES, TIMER STARTS CYCLE AGAIN, 3 PULSE RELAY OPENS, 5 PULSE RELAY CLOSES, TURNING ON CIRCUIT 3 (FLOOD) LIGHTS. SHUNT FROM 5 PULSE RELAY TO 3 PULSE RELAY KEEPS CIRCUIT 2 LIGHTS ON.

3. JUST BEFORE DEPARTING WHEN PILOT KEYS TRANSMITTER 3 TIMES, TIMER STARTS AGAIN, 5 PULSE RELAY OPENS, TURNING OFF CIRCUIT 3 (FLOOD) LIGHTS. 3 PULSE RELAY CLOSES, KEEPING ON CIRCUIT 2 (PERIMETER/WINDCONE) LIGHTS, UNTIL END OF TIMER CYCLE WHEN TIMER OPENS ALL CLOSED RELAYS, TURNING OFF ALL LIGHTS.

FREQUENCY SELECTION

Because the Model ROLC ***receives,*** not transmits, no FCC license is required. A frequency already assigned to an airfield may be selected, but if it is very busy or crowded, select a quieter or unused frequency to ensure no false activations of lighting. Although capable of receiving 100 frequencies per second and storing 400 frequencies/channels, only ONE frequency is necessary. Selecting more than one frequency is akin to selecting a busy, crowded single frequency with possible false activations. Also, every airfield should have its own discrete frequency so that only its lights are turned on and off – for obvious safety reasons.

FREQUENCY INPUT

Turn on **MAIN POWER**. Turn **Radio's power on** by pushing the orange Power button for two seconds. The radio has automatic squelch; there is no need for adjustment. On the green decoder board, the LED marked "Radio" will illuminate green, indicating the Radio is operating.

To change the frequency, simply rotate the frequency knob to change the frequency. We suggest writing the frequency down so if it is changed accidentally, it can be returned.

DO NOT PRESS ANY OTHER BUTTONS / USE ANY OTHER FEATURES ON THE RADIO.

INCREMENTAL vs. INDIVIDUAL Relay Operation

On the decoder board's left side are six dip slide switches. The top switch is labeled **INCR/INDIV**. In **INCR** = INCREMENTAL operation, the pilot activates one relay at a time, in any order, but cumulatively. The first relay remains activated when the second relay is activated and both remain activated when the third relay is activated; all remain activated until the timer finishes its cycle which restarts whenever a relay is activated. But after the third relay is activated the decoder board ignores any additional signals until the timer finishes its cycle when all relays deactivate and the unit is ready to receive signals again.

In **INDIV** = INDIVIDUAL operation, the pilot activates one relay at a time, in any order, but individually. The first relay deactivates when the second relay activates; only one relay is ever activated at a time and it remains activated until either 1) the next relay is activated or 2) the timer finishes its cycle. The timer cycle restarts whenever a relay is activated.

TIMER SELECTION

Relays can be activated in 15 minute increments up to 60 minutes by four dip slide switches. To set 15 minutes, slide the 15 min. switch to the right for the ON position; for 30 minutes, turn the 15 min. switch OFF (slide back to the left position) and slide the 30 min. switch to the right for ON, etc. **If no 15 minute increments of time are selected, one minute of time is provided**.

NORM/TEST

In **NORM** position, the timer operates normally in ***minutes***. In **TEST** position, the timer runs in ***seconds*** so that installers and maintenance personnel can test all time settings and relay closings without having to wait for the full length of time. For example, with a 30 minute time selected with NORM/TEST in NORM position, the timer completes its cycle in 30 minutes; in TEST position the timer completes its cycle in 30 seconds. When no 15 minute increments are selected and NORM/TEST is in NORM position, the timer operates for one minute; in TEST position, the timer operates for one second.

TESTING

To test the decoder board and relays, push the TEST button 3, 5, or 7 times quickly, but distinctly, within a *five second* period to test the 3, 5, or 7 pulse relays respectively. On the decoder board, green LEDs will illuminate when the appropriate relay is activated/closed.

Start test with INCR/INDIV in INDIV mode and no 15 minute period (1 minute) set and NORM/TEST **in TEST position** which will provide **1 second duration**. Push TEST button 5 times quickly but distinctly within 5 seconds and wait a few seconds. The 5 pulse relay will close and the 5 pulse green LED on the decoder board will illuminate for 1 second. Push 7 times within 5 seconds and the 7 pulse relay will close and the 7 pulse green LED will illuminate for 1 second. Push 3 times and wait several seconds and the 3 pulse relay will close and 3 pulse green LED will illuminate for 1 second. Repeat test with 15 minutes set in TEST mode; relays should close for 15 seconds. Repeat test with 30 mins. set in TEST mode; relays should close for 30 seconds, etc.

Change from INDIV to INCR mode. Change from TEST to NORM mode and **no 15 minute periods (1 minute) set** to provide enough time to test all three relays. Push TEST button 3, 5, or 7 times to test corresponding relays. Relays should remain closed for 1 minute after last relay closes.

For a complete test of the unit, transmit from a handheld radio or have someone transmit from a parked aircraft.

Most owners wire per the Typical Wiring to Lights, Page 8, and the timer is set for 30 minutes.

RECEIVING RANGE OF FREQUENCIES

All frequencies between .495 Mhz through 1309.995 Mhz except cellular telephone frequencies.

MAINTENANCE

Every six months or sooner:

1. Test by transmitting from a handheld radio or nearby parked aircraft.
2. Check inside the unit for overall condition.
3. Check antenna, antenna cable, and connections.

TROUBLESHOOTING

Main Power Light does not illuminate

- Check power to the unit
- Because the power supply inside the unit is fused on both the primary (AC) side and secondary (DC) side, BOTH the AC and DC fuses, each 2 amps, must be OK.

Radio green light on decoder board does not illuminate

- Radio is not turned on
- Squelch is not set to automatic (call Heliport Systems for procedure)

Relays do not close but Radio green light is illuminated

- Pushing TEST button too fast or too slow, or not counting correctly
- Transmitting from aircraft too fast or too slow, or not counting correctly
- Squelch is not set to automatic (call Heliport Systems for procedure)

False activations of lighting

- More than one frequency is set in radio (Set one frequency only)
- Frequency set in radio is very busy (Change to another frequency)
- Spurious transmissions (Change to another frequency)

FOR QUESTIONS, CONTACT HELIPORT SYSTEMS, INC., Morristown, NJ

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SPECIFICATION

Install where indicated in the drawings per manufacturer's instructions. The Radio Operated Lighting Controller shall permit pilots to turn on three different groups of airfield/heliport lights from the aircraft by keying the aircraft's radio 3, 5, or 7 times in quick succession on a specific frequency set in the unit. Unit shall have synthesized tuning to permit changing of frequency without having to send the unit back to the manufacturer as is required for crystal controlled units. A timer with settings of 15, 30, 45 and 60 minutes shall shut off all lights at the end of the timer cycle. Unit shall be housed in a weatherproof NEMA 4X fiberglass enclosure with stainless steel latches capable of being locked. Unit shall be furnished with three 25 amp double pole relays, stainless steel antenna, and 50' of coaxial cable rated for both direct burial and plenum installation. Unit shall be Model ROLC as mfg. by Heliport Systems, Inc., Morristown, NJ 07960.