THE SCIENCE >ACR< OF SURVIVAL

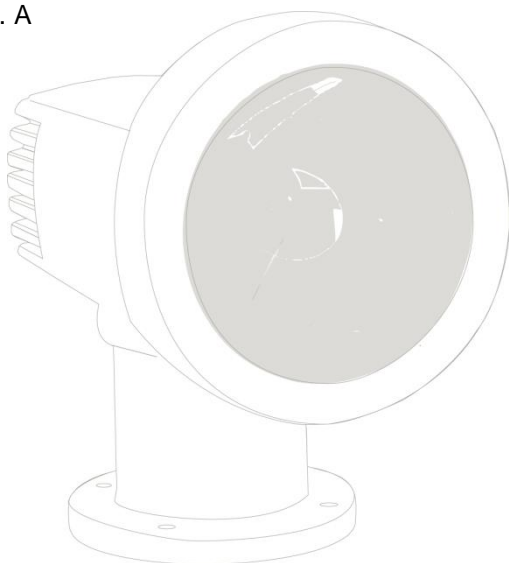PRODUCT SUPPORT MANUAL
RCL-50 LED//

Remote Control LED Searchlight System

Model No.: RCL-50 LED

Product No.: 1960, 1961

Y1-03-0349 Rev. A

⚠ **CAUTION:** Before proceeding to install, test or use your new ACR Electronics product, please read this Product Support Manual in its entirety.

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⚠ **PLEASE READ ALL WARNINGS, CAUTIONS AND NOTES CAREFULLY**

RCL-50 LED, 12/24V
REMOTE CONTROL SEARCHLIGHT SYSTEM

SEARCHLIGHT

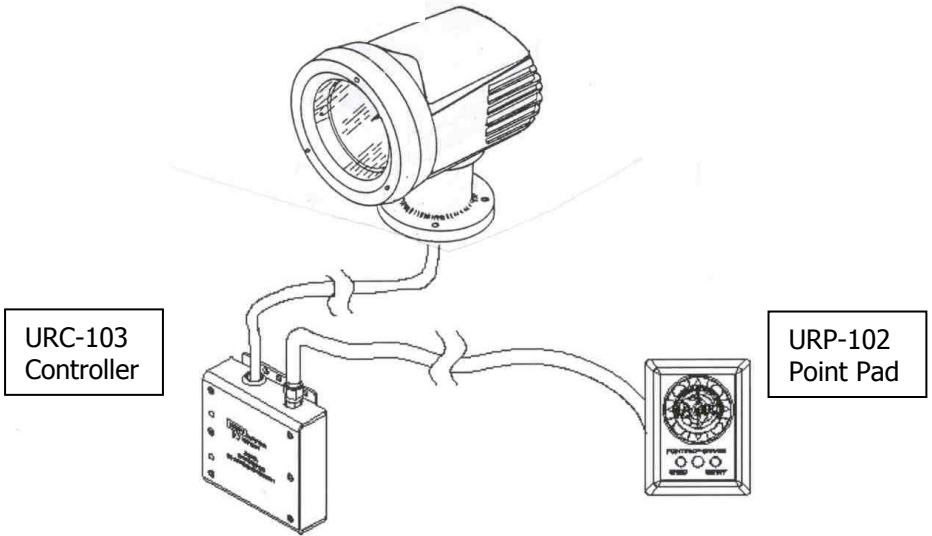**URC-103 Controller**

URP-102 Point Pad

Figure 1- Remote Control Searchlight System

SECTION 1 - FOREWORD

Congratulations and thank you for purchasing the ACR RCL-50 LED Searchlight. The RCL-50 LED has been tested extensively to ensure it can survive the harshest environmental conditions. This assures that the products we offer stand up to the tough marine environment. With proper care and maintenance your searchlight will be in service for years to come.

ACR is proud to be AS9100:2008 certified, the International Standard for Quality.

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SECTION 2 - GENERAL

The RCL-50 LED was specially designed for mariners who require a high intensity remote controlled searchlight that can stand up to the tough marine environment.

The RCL-50 LED 12/24V searchlight system contains a narrow beam searchlight that produces approximately 100,000 peak candle power using a power efficient LED module.

All functions of the searchlight can be electrically operated by remote control from the pilot area of the vessel using the URP-102 Point Pad™, URC-103 Master Controller, and interconnect cable supplied with the RCL-50 LED. Searchlights equipped with the URC-103 Master Controller have ACR's unique XRCiZ™ feature. The XRCiZ™ feature routinely automatically operates all moving parts in the searchlight to keep the motors and drive mechanism freely running.

SECTION 3 - SEARCHLIGHT

The sleek design and modern construction of the searchlight body makes it attractive for recreational and commercial vessels. The searchlight is totally enclosed and is made of rugged aluminum alloy. It is gasketed and finished to be resistant to the weather.

Mounting
Make sure the area is clean and dry. The searchlight can be mounted where desired, using appropriate length 3/16" diameter, stainless steel fasteners. Four (4) nylon shoulder washers are supplied with the RCL-50 LED searchlight. The nylon washers prevent a galvanic reaction between the mounting hardware and the base of the searchlight. Be sure these washers have been inserted in the base mounting holes and that the mounting base gasket is securely in place before bolting down. Silicone grease should be applied to the bottom of the gasket to help in waterproofing the unit. When mounting, be sure that the searchlight is able to rotate 360° without hitting any obstructions. For the drilling hole pattern, refer to the searchlight mounting template, supplied in the mounting templates.

⚠️**CAUTION:** Do not mount the searchlight upside down. Moisture will not be able to drain from the inverted light head assembly.

NOTE: The searchlight should be left uncovered if the XRCiZ™ feature is enabled.

SECTION 4 - REMOTE CONTROL SYSTEM

The Remote Control System consists of the URC-103 Master Controller and the URP-102 Point Pad™. This system is compatible with 12 VDC and 24 VDC systems without modification. The remote control system may be used with 12 V or 24 V searchlights.

SECTION 5 - URP-102 POINT PAD™

Case Options
The URP-102 Point Pad™ is supplied as a surface mount unit (see Figure 4). A flush mount option is provided (see Figure 5). To switch mounting options, unscrew the six (6) screws on the unit's back plate and remove the front cover. Fit the Point Pad™ with the flush mount cover, replace the back plate, and screw the unit back together.

Mounting
Both the surface mount and flush mount options require access to the backside of the mounting location. Make sure there are no obstructions behind the area where the switch is to be located (e.g. bulkheads, wires, plumbing, or hardware). Check in advance that the coax cable from the master controller can be routed to this location. Generally, the Point Pad™ should be mounted in a protected area.

Install the surface mount Point Pad™ by drilling three (3) holes in the dashboard location using the Point Pad™ surface mount template supplied. Mount the Point Pad™ to the dashboard using the gasket, washers, and nuts supplied. Use a sealant around the bolt holes to protect from moisture intrusion.

When the flush mount option is selected, cut a rectangular hole in the dashboard location using the point pad™ flush mount template supplied in the mounting templates. Use the gasket, washers, nuts, and the two U-clamps provided to secure the Point Pad™. Use a sealant around the cut out to protect from moisture intrusion.

Connecting to the Master Controller
The Point Pad™ communicates with the Master Controller via standard television type RG-59 coaxial cable. The connectors are standard "F" type television connectors. The connector on the back of the Point Pad™ is located in the center of the panel for ease of installation. After the coax cable has been routed and the "F" connectors attached to the coax cable, simply screw the "F" connectors to the Master Controller and the Point Pad™. The cable and connectors are available either through ACR Electronics or other sources of electronic hardware.

Additional Point Pads™ (up to three (3) pads) may be used with one (1) Master Controller. A standard "T" connector or RG-59 television type "splitter" is used for each additional Point Pad™ (see Figure 2). Limit the total length of all coax cable used to 300 feet.

The URP-102 Point Pad™ is backwards compatible with all RCL-100/50 searchlights and with the URC-101 Master Controller.

⚠️ **CAUTION:** The URP-102 Point Pad™ is not recommended for use with the first generation URC-100 Master Controllers.
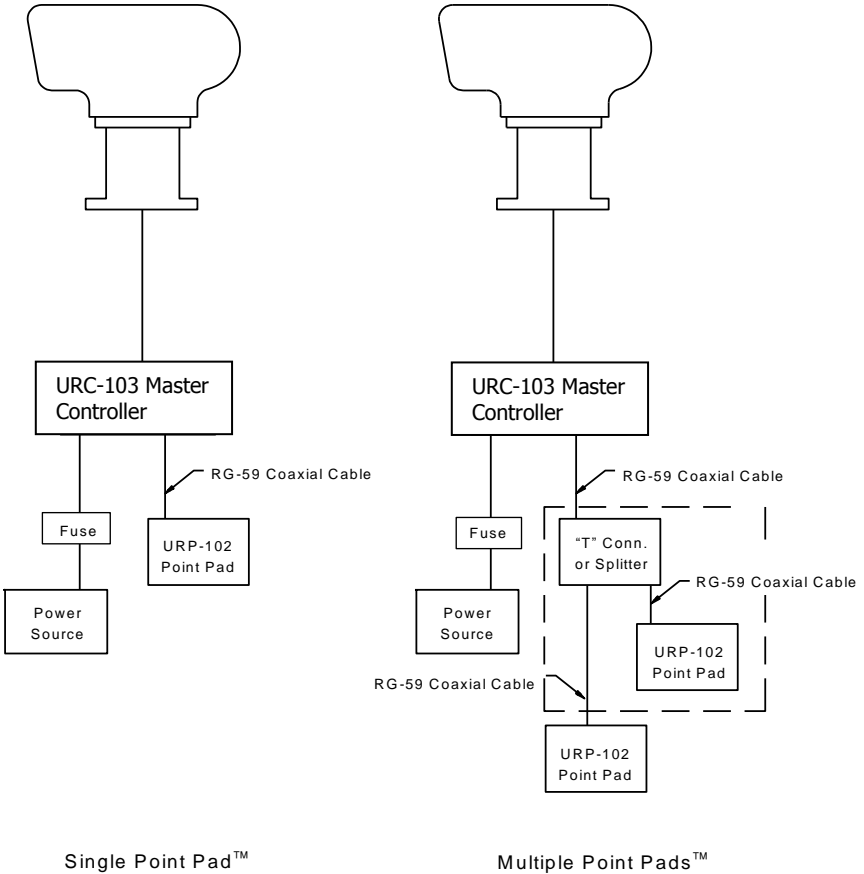

Single Point Pad™   Multiple Point Pads™

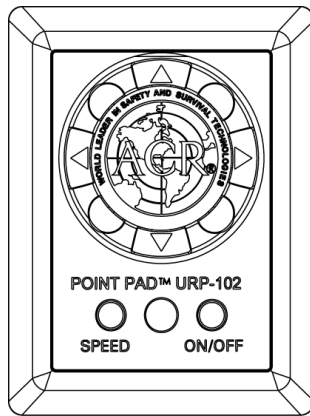**Figure 2-** Point Pad™ Connection Block Diagram

Figure 3- URP-102 Point Pad™ Functions

URP-102 Point Pad Functions

- Press the ON/OFF button to turn the lights ON or OFF.
- Press the SPEED button to toggle between High and Low rotation speeds.
- Press the Right or Left Arrows to rotate the Searchlight in that direction.
- Press the Up or Down Arrows to raise or lower the Searchlight-beam.
- To activate the XRCiZ™ feature, press and hold the ON/OFF button for greater than 5 seconds. The green LED indicates XRCiZ™ feature is enabled.
- To deactivate the XRCiZ™ feature, Press and hold the ON/OFF button for greater than 5 seconds. The red LED indicates XRCiZ™ feature is disabled.
- An LED blinking red / green indicates that the XRCiZ™ feature is now "exercising" the Searchlight.

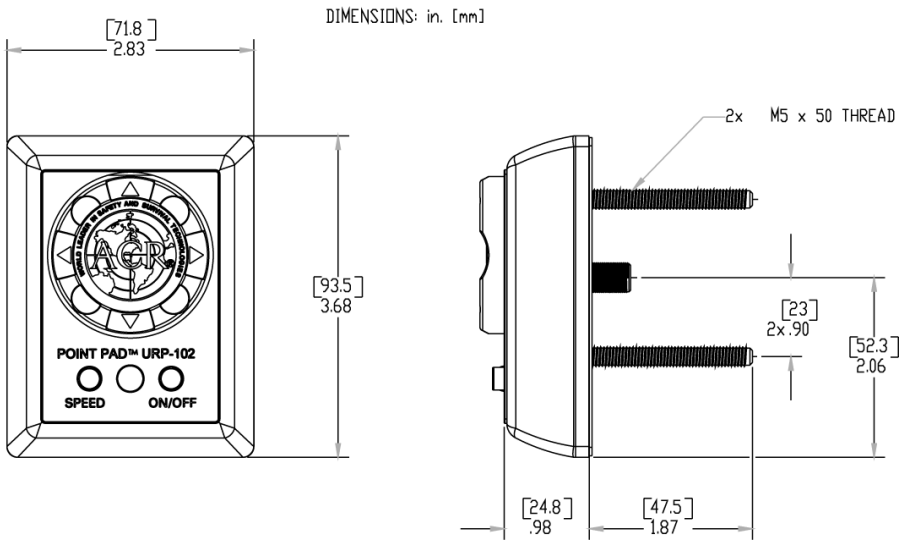**NOTE:** XRCiZ™ feature is only available when paired with a URC-103 Master Controller.

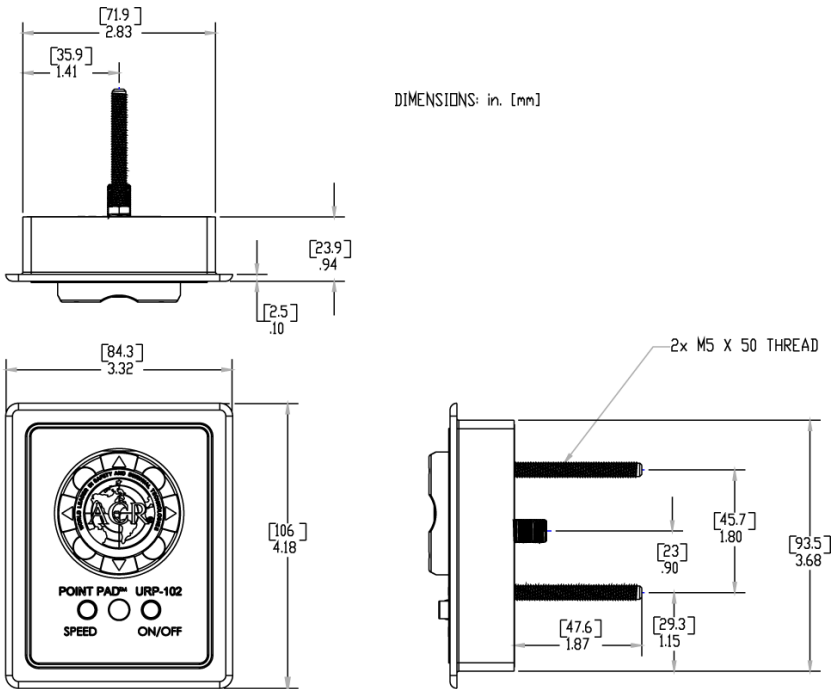**Figure 4-** URP-102 Point Pad™ Surface Mount Case

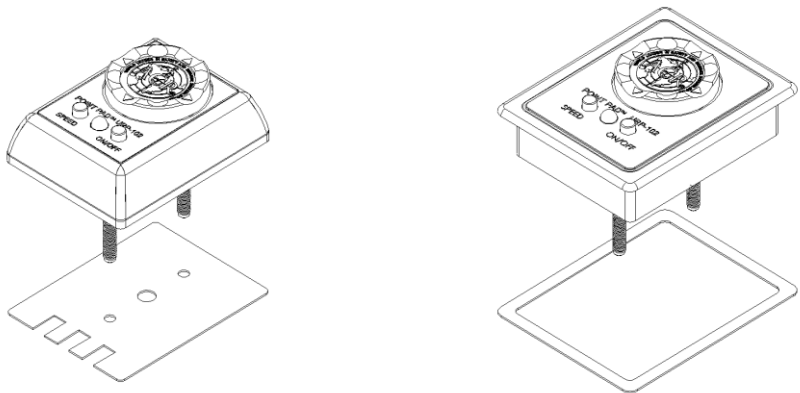**Figure 5-** URP-102 Point Pad™ Flush Mount Case

Figure 6- URP-102 Point Pad™
Surface Mount Case with gasket and Flush Mount Case with gasket

SECTION 6- URC-103 Master Controller

Mounting
The Master Controller can be mounted in any position near the searchlight that is protected from the weather. Check in advance that the coax cable from the Point Pad™ and the wiring harness from the searchlight can be routed to this location. Mount the Master Controller with the wires and coax facing down. Use an appropriate fastener for your mounting location. Use a sealant in fastener holes to prevent moisture intrusion.

General wiring scheme
The RCL-50 LED has a unique wiring scheme. Special attention must be paid to the following chart. The Master Controller is supplied with an in-line fuse-holder on the orange power lead. Use only 5 amp fuses in this fuse-holder. See Figure 7 for the master controller wiring diagram.

⚠️ **WARNING:** Failure to follow this arrangement may damage components.

Master Controller Wire	Searchlight Cable Wire	Power Source Lead	Function
Orange		+12 VDC or +24 VDC**	Power
Blue		(-ve) Ground	Ground
Yellow	Yellow		Lamp Power
Green	Green		Lamp Power
Red	Red		Up
White	White		Down
Black	Black		Right
Brown	Brown		Left

Table 1

> ⚠️ **WARNING:** The ORANGE wire <u>MUST</u> be fused with a 5 amp fuse in the Master Controller's in-line fuse-holder.

Wiring to Searchlight

The RCL-50 LED searchlight is supplied with a 15 foot integral wire harness. If you must lengthen the wire harness, use the same gauge wire to minimize the voltage drop. This is especially important for the ORANGE lamp power (+) and BLUE lamp ground (-) wires.

Following the wiring scheme shown in Table 1 use the supplied butt connectors to connect the master controller to the searchlight.

Wiring to Point Pad™

The RG-59 coax cable is supplied without the "F" connectors attached for ease of routing. After the coax has been routed, strip the insulation and crimp the "F" connectors in place. Screw the "F" connectors to the master controller and the Point Pad™.

Wiring to Power Supply

The power source must be a fused 12 VDC, 5-amp supply or 24 VDC, 5-amp supply. Following the wiring scheme in Table 1, use the supplied butt connectors to connect the Master Controller to the power source. Refer to Table 2 for proper wire size for connection of the input power lines.

⚠️ **CAUTION**: observe polarities when attaching wires!

Wire Size	Maximum Cable Length	
	12v System	24v System
#8 AWG	25 ft.	100 ft.
#10 AWG	15 ft.	60 ft.
#12 AWG	10 ft.	40 ft.

Table 2

Function

The URC-103 Master Controller is designed to perform up to six different duties on searchlights, winches, and other electrical devices. The Master Controller provides optimum voltage to ensure brightest performance and long lamp life, regardless of boat system voltage fluctuations. The Master Controller is compatible with devices requiring 12 VDC or 24 VDC operation.

The URC-103 Master Controller has the unique XRCiZ™ feature. The XRCiZ™ feature routinely operates all moving parts in the searchlight to keep the motors and drive mechanism freely running. Once activated, and every 30 days thereafter, the XRCiZ™ feature wakes up and operates the searchlight. The searchlight will rotate 360° in both directions and the reflectors will move to the full up and down positions. This feature keeps the searchlight in peak working order when not in service for long periods of time.

To activate the XRCiZ™ feature, press and hold the Point Pad™ on/off button for greater than 5 seconds. The green LED on the URP-102 Point Pad™ indicates that the XRCiZ™ feature is enabled. While enabled, the XRCiZ™ feature can be started outside of its 30-day cycle by pressing and holding the speed button on the Point Pad™ for greater than 5 seconds.

While the XRCiZ™ feature is operating the searchlight, pressing any Point Pad™ button will stop the current cycle and leave the searchlight to follow any additional commands.

To deactivate the XRCiZ™ feature, press and hold the Point Pad™ on/off button for greater than 5 seconds. The red LED on the URP-102 Point Pad™ indicates that the XRCiZ™ feature is disabled.

NOTE: The searchlight should not be covered while the XRCiZ™ feature is enabled.

The URC-103 Master Controller also has a searchlight motor timeout feature. If a Point Pad™ rotation switch (right or left) is continuously engaged for more than 50 seconds, the Master Controller will interrupt the operation until the Point Pad™ switch is disengaged. This feature will save the searchlight motor from burnout due to accidental activation. The elevation motor has similar features which will timeout in approximately 20 seconds.
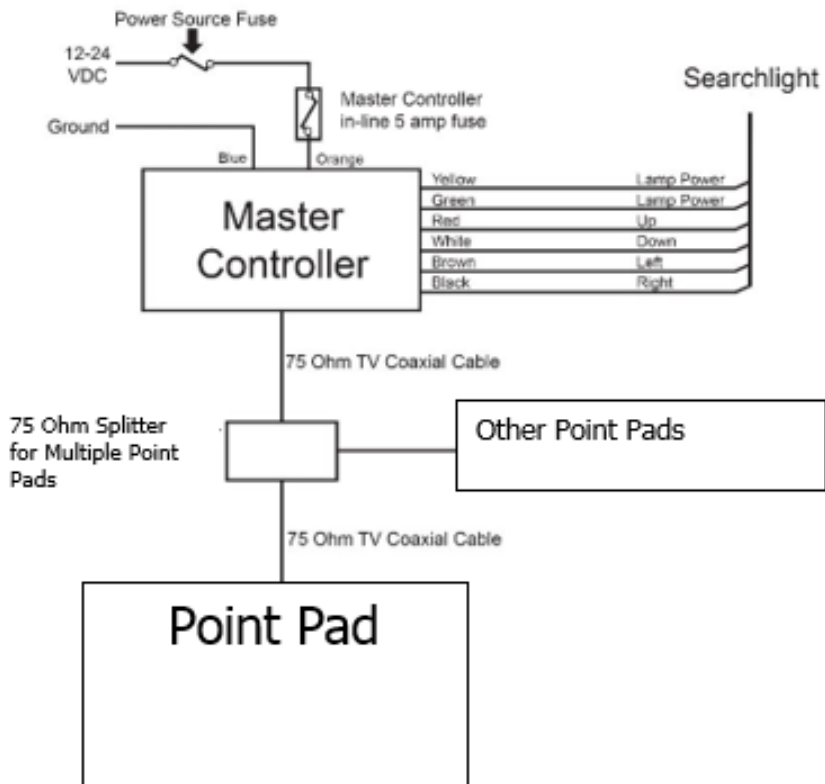
Figure 7- URC-103 Master Controller Wiring Diagram *(Note: Wiring must be in accordance with this diagram, improper wiring will damage components)*
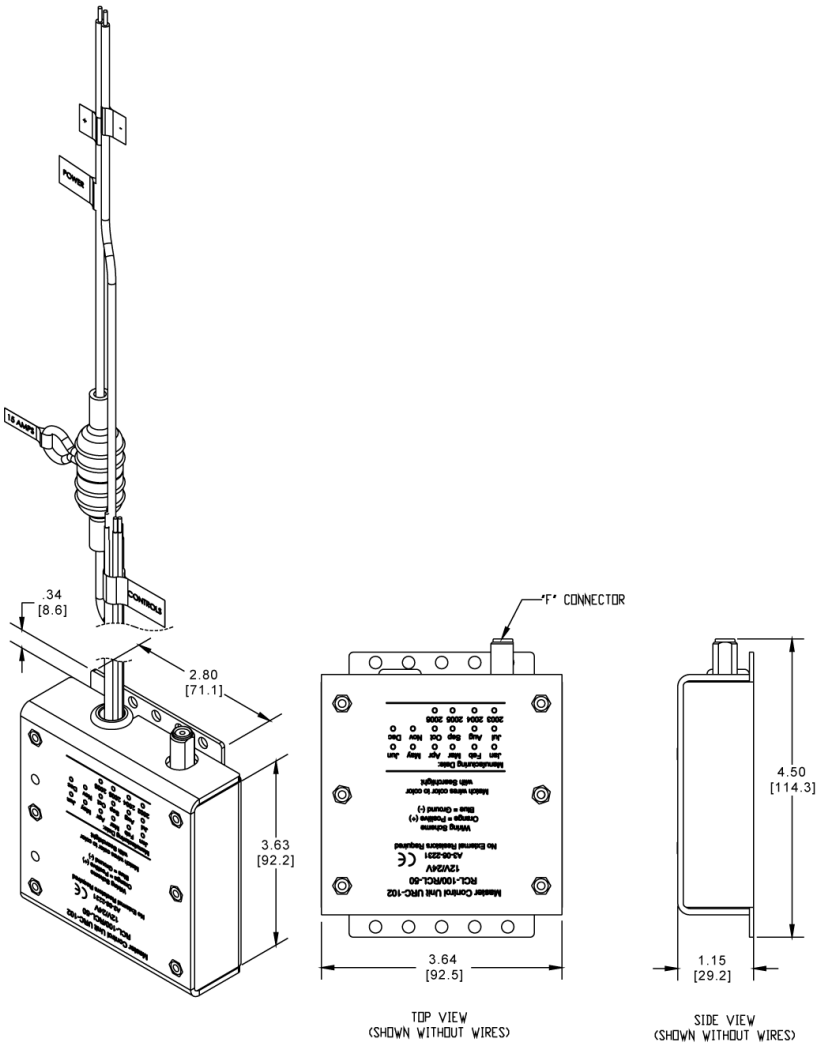
Figure 8 - URC-103 Master Controller

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APPENDIX A- RCL-50 LED SPECIFICATIONS (with URC-103 Controller)

Specification	12V or 24V Unit
Mirror diameter	4in (10.16cm)
Input voltage (Volt)	DC12V – DC24V
Input current (A)	2.6A (12V) 1.3A (24V)
Applicable lamp	LED (LSM20)
Peak beam candle power (candela)	>100,000
Beam spread (degrees)	Approximately 10°
Elevation angle (degrees)	Up 20°, Down 20°
Turning angle (degrees)	360° (continuous)
Elevation speed	Approximately10° per second @ 12V
Turning speed	Approximately 31° per second @ 12V
Weight	7.72lbs (3.5 kg)
Interconnect cable	15ft (4.57 m)

All specifications are nominal values

APPENDIX B- PRODUCT COMPONENTS
Product No. 1960 (white) or 1961 (black) – RCL-50 LED Searchlight Kit includes:

Description	Quantity	ACR Part Number
Searchlight, RCL-50 LED, 12/24 V	1	A3-06-3202 (white) or A3-06-3202-1 (black)
Kit, Nylon Washers (4)	1	A3-06-1940
Connector, "F"	2	A1-03-0220
Cable, Coaxial	15ft	A2-07-0002-6
Master Controller, URC-103	1	A3-06-2231-2
Connector, "In-Line"	8	A1-03-0222
Point Pad™, URP-102 with Surface Mount Case	1	A3-06-2230
Case, Flush Mount	1	A1-18-1875-2
Gasket, Surface Mount	1	A1-25-0140-1
Gasket, Flush Mount	1	A1-25-0140-2
U Clamp	2	A1-17-1366

Description	Quantity	ACR Part Number
Nuts, Nylon-lock	2	A1-05-0776
Washers	2	A1-05-0777
Warranty Card	1	A1-20-1166
Product Support Manual	1	Y1-03-0349
Mounting Templates	1	Y1-03-0138-1

APPENDIX C- ACCESSORY COMPONENTS

Product No. 1949 - URC-103 Master Controller Installation Kit includes:

Description	Quantity	ACR Part Number
Master Controller, URC-103	1	A3-06-2231-2
Connector, "In-Line"	8	A1-03-0222
Instruction Sheet, Master Controller	1	Y1-06-0314

Product No. 1928.3 - URP-102 Point Pad™ Installation Kit includes:

Description	Quantity	ACR Part Number
Point Pad™, URP-102 with Surface Mount Case	1	A3-06-2230
Case, Flush Mount	1	A1-18-1875-2
Gasket, Surface Mount	1	A1-25-0140-1
Gasket, Flush Mount	1	A1-25-0140-2
U Clamp	2	A1-17-1366
Nuts, Nylon-lock	2	A1-05-0776
Washers	2	A1-05-0777
Adapter Plate, Flush mount	1	A1-18-1871
Adapter Plate, Surface mount	1	A1-18-1892
Instruction Sheet, Point Pad™	1	Y1-06-0179
Mounting Templates	1	Y1-03-0138-1

Product No. 1929.1 - Wiring Kit RCL-50 / 100 series searchlights includes:

Description	Quantity	ACR Part Number
Connector, "F"	2	A1-03-0220
Cable, Coaxial	15ft	A2-07-0002-6

Product No. 9282.3 – URP-102 Point Pad™ Secondary Station Installation Kit includes:

Description	Quantity	ACR Part Number
Point Pad™, URP-102 with Surface Mount case	1	A3-06-2230
Case, Flush Mount	1	A1-18-1875-2
Gasket, Surface Mount	1	A1-25-0140-1
Gasket, Flush Mount	1	A1-25-0140-2
U Clamp	2	A1-17-1366
Nuts, Nylon-lock	2	A1-05-0776
Washers	2	A1-05-0777
Adapter Plate, Flush mount	1	A1-18-1871
Adapter Plate, Surface mount	1	A1-18-1892
Splitter, 2-Way Signal	1	A1-03-0235
Screw, #6	2	A1-05-0614
Cable, Coaxial	15ft	A2-07-0002-6
Connector, "F"	4	A1-03-0220
Instruction Sheet, Point Pad™	1	Y1-06-0179
Mounting Templates	1	Y1-03-0138-1

Product No. 9283.4 – Remote Control Installation Kit Includes:

Description	Quantity	ACR Part Number
Master Controller, URC-103	1	A3-06-2231-2
Connector, "In-Line"	8	A1-03-0222
Point Pad™, URP-102	1	A3-06-2230
Case, Flush Mount	1	A1-18-1875-2
Gasket, Surface Mount	1	A1-25-0140-1
Gasket, Flush Mount	1	A1-25-0140-2
U Clamp	2	A1-17-1366
Nuts, Nylon-lock	2	A1-05-0776
Washers	2	A1-05-0777
Adapter Plate, Flush mount	1	A1-18-1871
Adapter Plate, Surface mount	1	A1-18-1892
Cable, Coaxial	15ft	A2-07-0002-6
Connector, "F"	2	A1-03-0220
Instruction Sheet, Master Controller	1	Y1-06-0178
Instruction Sheet, Point Pad™	1	Y1-06-0179
Mounting Templates	1	Y1-03-0138-1

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EC DECLARATION OF CONFORMITY

ACR Electronics, Inc. hereby declares under its sole responsibility that the following product is in conformity with Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on Electromagnetic Compatibility (EMC Directive). In accordance with the relevant community harmonized legislation, the product will be marked with the CE conformity marking as follows:

$$C\,E$$

Product: Searchlight
Model: RCL-50 LED

Regulations and Standards: IEC 60533: 2015: Emissions:
   CISPR 16-1-2: 2014 (Conducted Emissions)
   CISPR 16-1-4: 2019 (Radiated Emissions)
IEC 60533: 2015: Immunity:
   IEC 61000-4-2: 2008 (Electrostatic Discharge)
   IEC 61000-4-3: 2010 (Radiated Immunity)
   IEC 61000-4-4: 2012 (Transient/Burst Immunity)
   IEC 61000-4-5: 2017 (Surge Immunity)
   IEC 61000-4-6: 2013 (Conducted Immunity, Power and I/O Leads)
   IEC 61000-4-11: 2017 (Voltage Dips and Interrupts)
   IEC 61000-4-16: 2015 (Common mode disturbances)

Manufacturer: ACR Electronics Inc.
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Fort Lauderdale, FL 33312 USA

Signed for and on behalf of ACR Electronics Inc.

Signed: _____

Name: Dan Stankovic **Date: March 31, 2020**

Title: Director, Certification and Test

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