PAL™ LIGHTING

PAL TREO MINI +

Installation and Operations Manual

64-EGTSM-V2-80	PAL Treo Mini+ (V2) Multi Color Nicheless Pool & Spa Light with 80ft Cable & Plug
64-EGTSM-V2-150	PAL Treo Mini+ (V2) Multi Color Nicheless Pool & Spa Light with 150ft Cable & Plug
64-EGTSM-V2-001	PAL Treo Mini+ (V2) Multi Color Nicheless Pool & Spa Light Only (No Cable & Plug)

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SECTION 1. SAFETY INSTRUCTIONS

Improper installation carries the potential for electrical hazards, presenting a risk of severe or even fatal injuries to pool users, installers, or bystanders due to the threat of electrical shock, and may also result in property damage.

> **For your safety, it is imperative that this product be installed and maintained by a licensed and qualified contractor specializing in pool equipment, adhering to local regulations. The individual responsible for maintenance should possess extensive experience in pool equipment installation and upkeep to ensure precise adherence to the instructions outlined in this manual. Prior to installation, thorough comprehension, and compliance with all provided warning notices and instructions are crucial. Failure to do so may lead to property damage, personal injury, or loss of life. Any improper installation and/ or operation may void the product's warranty and pose significant electrical hazards, potentially resulting in severe harm, property damage, or fatality. It is strictly advised not to modify this equipment. Installer, please be aware that this manual contains vital information concerning the installation, operation, and safe utilization of this product, which should be communicated to the equipment's owner/operator.**

SECTION 2. PREPARATION

This manual provides installation and operational instructions for the PAL Lighting Treo Mini+ Nicheless Pool Light.

We recommend using thread tape to ensure tight, leak-free connections on threaded components.

Read the installation & operational manual before proceeding with the installation. Keep this manual for future reference.

Before starting the installation, check that you have the correct parts below. If any parts are missing, please call technical support at +1 (713)-946-4343.

2.1 PACKAGE CONTENTS

PAL Treo Mini+ Nicheless Pool Light

1 x PAL Treo Mini+ Nicheless Pool Light
1 x PAL Treo Mini+ Metal Installation & Removal Tool
3 x Trim rings

1 x Power Cord *Select Models

IMPORTANT NOTICE

This is a 24V light, and it requires a compatible 24V transformer for proper operation. DO NOT CONNECT THIS LIGHT TO A 120V CIRCUIT.

2.2 PREPARATION WORK

1. Ensure that the pool's electrical system complies with the standards outlined in the current National Electrical Code (NEC) and all relevant local codes and ordinances.

2. This 24V underwater light must be installed in accordance with the National Electrical Code by a certified electrician or a qualified pool technician.

NOTE: No Bonding Terminal is required on the forming shell since the fixture is an all-plastic construction and complies with NEC article 680 Requirements.

3. This PAL Treo Mini+ Nicheless Pool Light is designed for use with the PCR-1Z and PCR-2Z Series LED Drivers.

4. The Junction Box and the low voltage transformer are located at least 4 inches above ground level or 8 inches above maximum water level, whichever is higher. The Junction Box must be at least 48 inches from the edge of the pool.

5. To be certain that the pool or spa electrical system meets all applicable requirements, the electrician should also consult the local building department.

CANADIAN INSTALLATION

Be sure the electrical system of your pool conforms with the following requirements of the Canadian Electrical Code (CEC), CSA C22.1 and all local codes and ordinances. A licensed or certified electrician must install the electrical system to meet or exceed those requirements before the light and (fixture-housing) is installed. Failure to do so could result in death or serious injury to service technician, pool users or others due to electrical shock.

IMPORTANT NOTICE

SECTION 3. INSTALLATION FOR GUNITE/CONCRETE POOLS

1. Feed electric cord through conduit outlet of the wall fitting to location of transformer. Cut the cord 18"- 24" beyond the length needed to reach the transformer for a service loop. Pull the fixture snug to the wall fitting.

24VAC PAL LED Driver

48" (1.22m) MIN

8" (20.3cm)

18" (46cm) minimum
Junction Box or 12 VAC Voltage
Transformer to the maximum
water level of pool.

Wall Fitting: 1.5" (3.81cm)
PVC Pipe for Gunite Only

4" min (10.2cm)
to top of lens

Rigid 1" (3cm) Electrical Rated
Conduit

Plaster
Finish

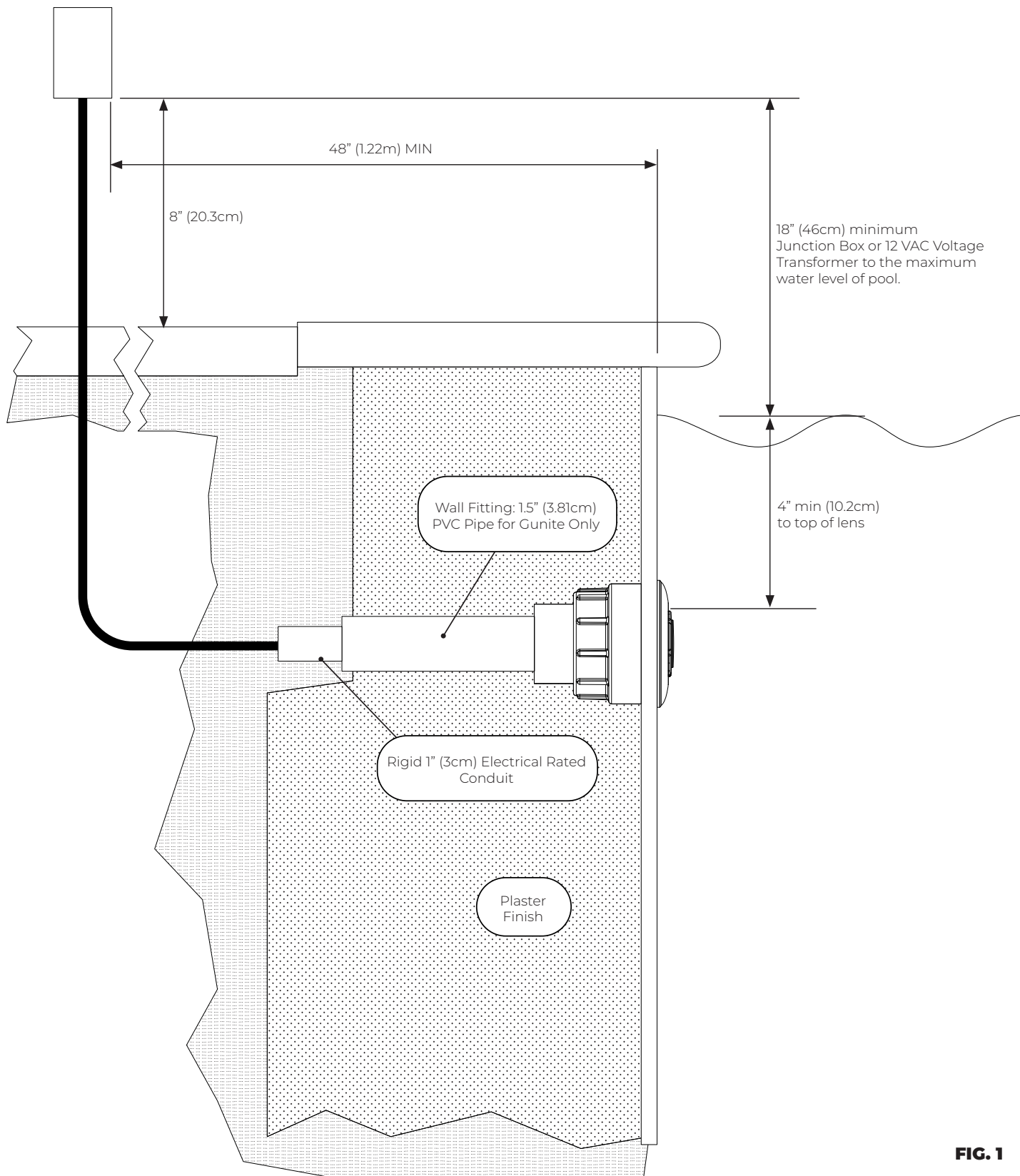**FIG. 1**

2. Use the fitted gasket with plumber's tape around the thread to assist with sealing. (FIG. 2)

Use plumber's tape on the light thread to assist with maintaining a water tight seal.

The light comes with a fitted optional gasket to assist in sealing.

FIG. 2
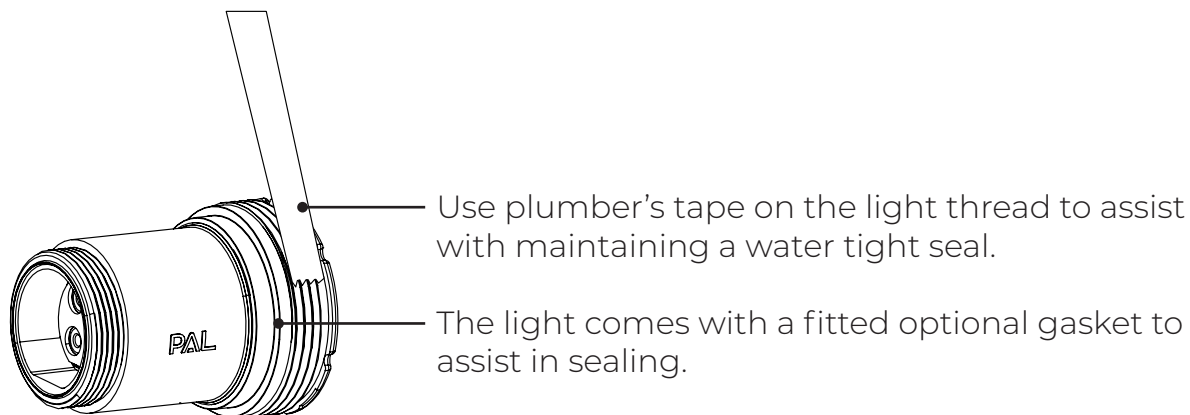
3. Attach PAL Treo Mini+ Light head to plug. (FIG. 3)

a) Remove caps from plug and light

c) Firmly hand tighten plug nut onto light to seal

b) Align and insert plug into light

FIG. 3
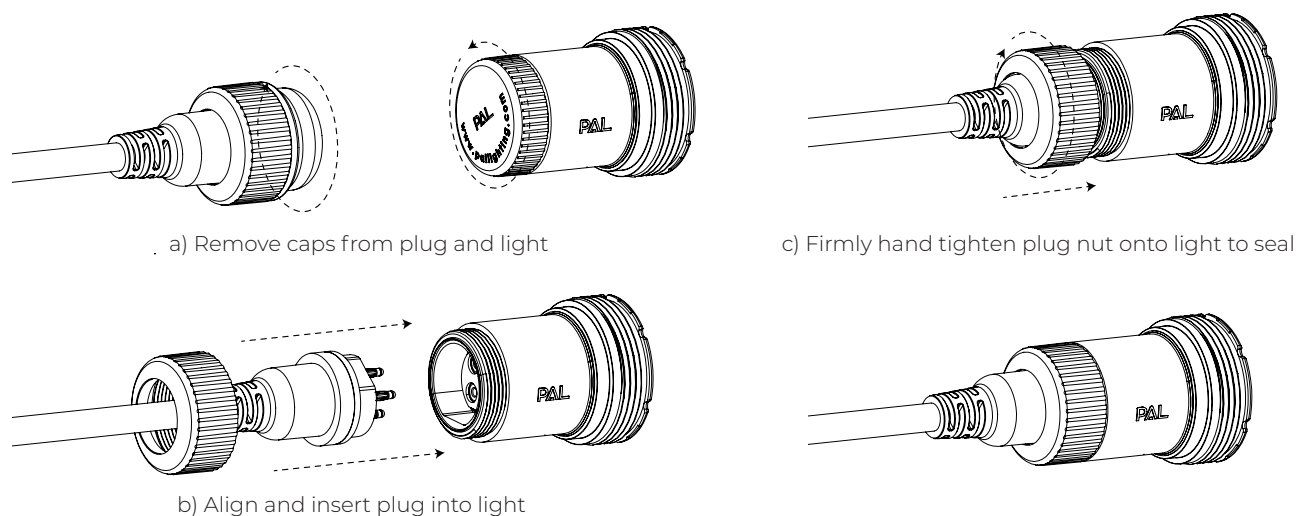
4. Coil excess cable into the wall fitting counter-clockwise.

5. Using the Treo Tool, align the notches of the light head to the tool and turn the light clockwise into the wall fitting until snug and flush with fitting. (FIG. 4)

Treo Tool

FIG. 4
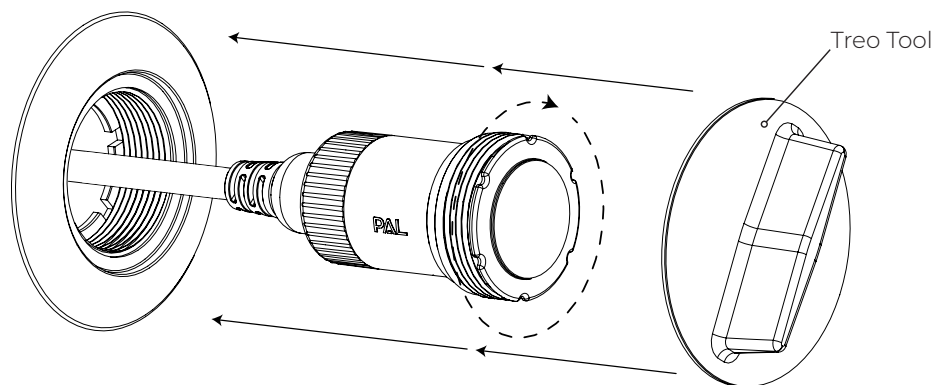
SECTION 4. INSTALLATION FOR VINYL/FIBERGLASS POOLS

1. Cut hole in pool shell (FIG. 5).and install the wall fitting as per manufacturer guidance. Follow the instructions from Section 3.2 for light installation.

Drill holes through pool wall

To give the best coverage for the size, shape and interior color of the pool. The center of the light should be positioned 12" below the water level or 18" below the top of the pool deck to provide the best illumination of the pool water. However the light can be installed with a minimum of 4" of water.

Ø 2 ½" Hole Saw

Drill into a flat, easily accessible area of pool wall.

After the hole is cut out, clean the area around the hole to remove rough spots and dust.
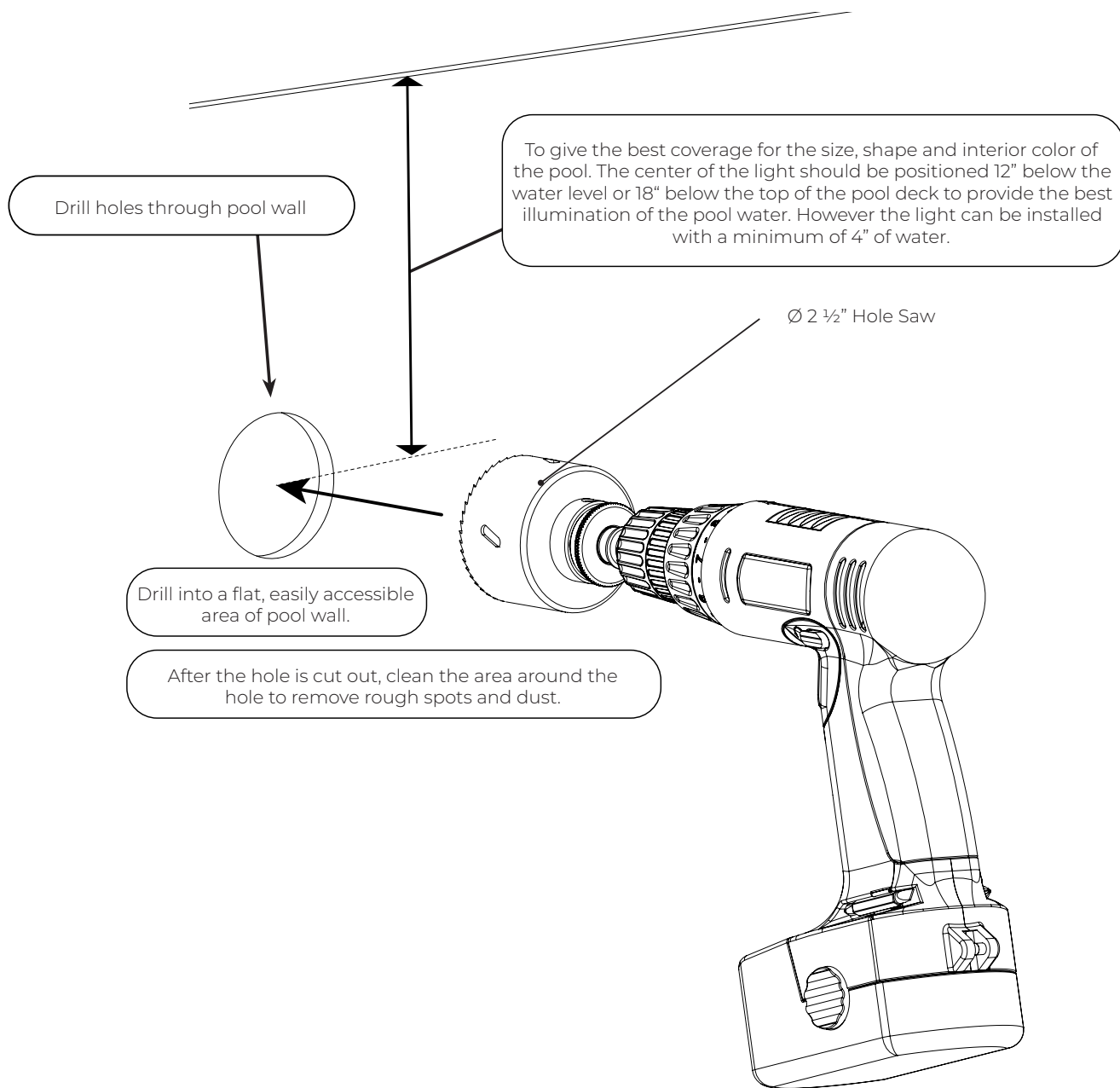
FIG. 5

SECTION 5. INSTALLATION PAL TREO MINI+ INTO DRIVER

HARDWARE INSTALLATION INSTRUCTIONS FOR RGB LIGHTING CONTROLLERS

1. The PCR -1Z-SM/PCR-1Z/PCR-2Z Class 2 Power Supply is a weatherproof construction (IP65) and should be mounted on a flat surface using the mounting legs on the enclosure with appropriate fixtures for the mounting substrate and in a suitable position to suit the intended location of the PAL 4 Wire LED Pool Lights and installed to comply with all the requirements of the National Electrical Code (NEC) and all relevant local codes and ordinances.

NOTE: The driver enclosure should be placed a minimum of 5 feet away from the inner pool wall horizontally and should sit no lower than 1 foot above the maximum water level of the pool, measured up to the top of the enclosure.

NOTE: To properly install the enclosure, utilize its mounting legs and the provided screw set. If mounting on a concrete or block wall, mark the hole locations, drill 3/16" holes with a masonry drill, insert the provided Star Plugs into the holes, and secure them using the stainless-steel screws provided.

2. Using the conduit entry on the bottom (bottom-front on PCR-2Z) right hand side of the PCR-1Z-SM/PCR-1Z connect the 100-120V power supply to NEC code requirements.

3. Using the remaining conduit entries at the bottom of the driver, connect the 4-core wire from the PAL 4 WIRE LED LIGHTS. Please ensure the 4 cores are connected to the correct terminals. The enclosure includes 2 output conduit entries designed for connecting to 2 PAL-LED 4 Wire Pool Lights.

4. The Lighting Controller is factory set to operate with the PCZ-2 Transmitter supplied. Simply fit the two batteries included with the PCZ-2 Transmitter. The PCR-1Z-SM does not operate with the PCZ-2 Transmitter. Please refer to the information supplied with the PCZ-2 Transmitter for full operating instructions and features of the system.

INSTALLATION INSTRUCTIONS FOR PCR-1Z-SM / PCR-1Z RGB OUTDOOR DRIVER

NOTE
Use the 2 x Mounting legs to fasten the enclosure to wall with appropriate fixtures for the mounting substrate

Manual Operation Button   **Code Setting Button**   **LED Indicator**

Module Config

Manual   Code Setting

WiFi

BLUE   GREY   Z1   RED   WHITE

	E	A	N
	EARTH	ACTIVE	NEUTRAL

Module DIP Sw			
S1	S2	S3	MODE
-	-	-	Jandy
-	-	-	Pentair
ON	-	-	Hayward
ON	ON	-	PAL
-	-	ON	Astral

NOTE
Do not use side knock-outs

Wi-Fi Connector
Wi-Fi module attaches to lid of enclosure and connects to PCB as shown.

1/2" PVC Conduit

All PCR-1Z drivers are supplied with 1x PCZ-2 Hand Held Transmitter & Wall Holder

To 110-240v Power Supply

UL1241 - Wiring J Box must be used inline

PAL 4 Wire LED Light

PAL 4 Wire LED Light

FIG. 6

INSTALLATION INSTRUCTIONS FOR PCR-2Z RGB OUTDOOR DRIVER

Other Config Switches

Z2 Terminal Blocks
Zone 2 lights can be connected to Z2 terminal blocks
for separate operation to Zone 1

To 110-240v Power Supply

PAL 4 Wire LED Light

PAL 4 Wire LED Light

UL1241 - Wiring J Box must be used inline

Note 1:
The PCR-1Z is suitable for PAL 4 wire lights.

Note 2:
Knock outs are provided in the enclosure to connect up to 2 x PAL 4 wire UL Listed Pool Lights.

Note 3:
An unlimited number of drivers can be controlled by one transmitter.

Note 4:
A maximum number of 4 x Transmitters can be coded to an individual PCR-1Z

FIG. 7

CLONING SETTINGS (PCR-1Z & PCR-2Z AUTOMATION AND PCR-1Z-SM)

Code Setting Switches
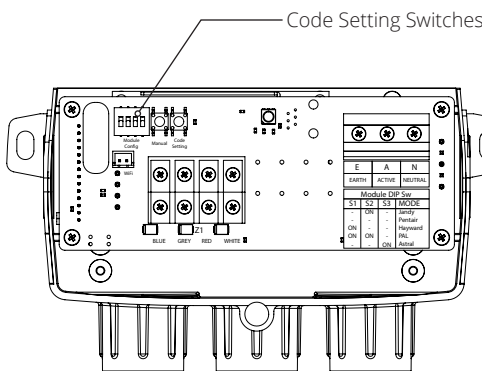
FIG. 8

Switch 1	Switch 2	Switch 3	Switch 4	Mode
OFF	ON	OFF	ON	Jandy
OFF	OFF	OFF	ON	PENTAIR
ON	OFF	OFF	ON	HAYWARD
ON	ON	OFF	ON	PAL LIGHTING
OFF	OFF	ON	ON	ASTRALPOOL

Note:
- Must turn off power before making DIP switch selection.
- When synching PAL lights to other OEM lights, static colors will match but color change mode timing may vary.
- If the PAL Lights are to be used with Automation, do not use the handheld remote control and disconnect the WiFi module from the board if so equipped.
- If the Automation does not turn the PAL lights on or off and there is power to the driver, press the Z1 button one time to turn on the PAL Driver.
- Note that the PAL features of infinite color selection and dimmability are not available while in Cloned mode.
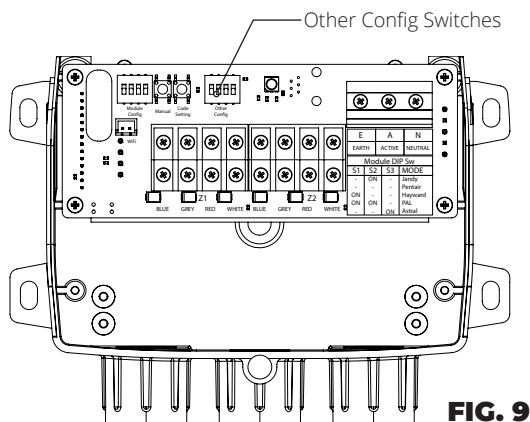
ZONE SETTINGS - PCR-2Z ONLY

FIG. 9

Switch 3	Switch 4	Mode
OFF	OFF	6000K
ON	OFF	5000K
OFF	ON	4000K
ON	ON	3000K

Other Config Operation

- Must turn off power before making DIP switch selection.
- Dip Switch 2: Toggles between 1 and 2 zone operation
- Dip Switch 1: When in single zone mode, this switch selects whether the driver operates entirely as Z1 or Z2 on the remote.
- Dip Switches 3 & 4 change the approximate color temperature of mixed white lights.

Switch 1	Operation
ON	Zone 2
OFF	Zone 1

Switch 2	Operation
ON	Single Zone Operation
OFF	Two Zone Operation

ZONE SETTINGS - PCR-1Z-SM ONLY
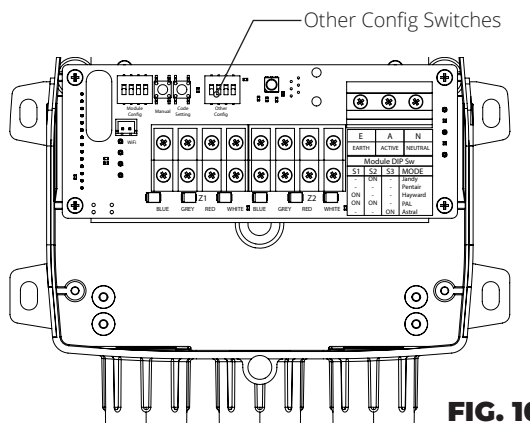
FIG. 10

Switch 1	Operation
ON	Zone 2
OFF	Zone 1

Switch 3	Mode
OFF	6000K
ON	5000K
OFF	4000K
ON	3000K

Other Config Operation

- Must turn off power before making DIP switch selection.
- Dip Switch 2: Toggles between 1 and 2 zone operation
- Dip Switch 1: When in single zone mode, this switch selects whether the driver operates entirely as Z1 or Z2 on the remote.
- Dip Switches 3 & 4 change the approximate color temperature of mixed white lights.

Switch 2	Operation
ON	Single Zone Operation
OFF	Two Zone Operation

AUTOMATION DEDICATED LIGHT OUTPUT RELAY FOR CLONE MODE

Terminal connections apply to PCR-1Z-SM, PCR-1Z and PCR-2Z versions.

Connect Wiring as per NEC code requirements

Wi-Fi not needed for clone mode. Disconnect if not in use.

UL1241 - Wiring J Box must be used inline

FROM SUPPLY

PAL 4 Wire LED Light

PAL 4 Wire LED Light
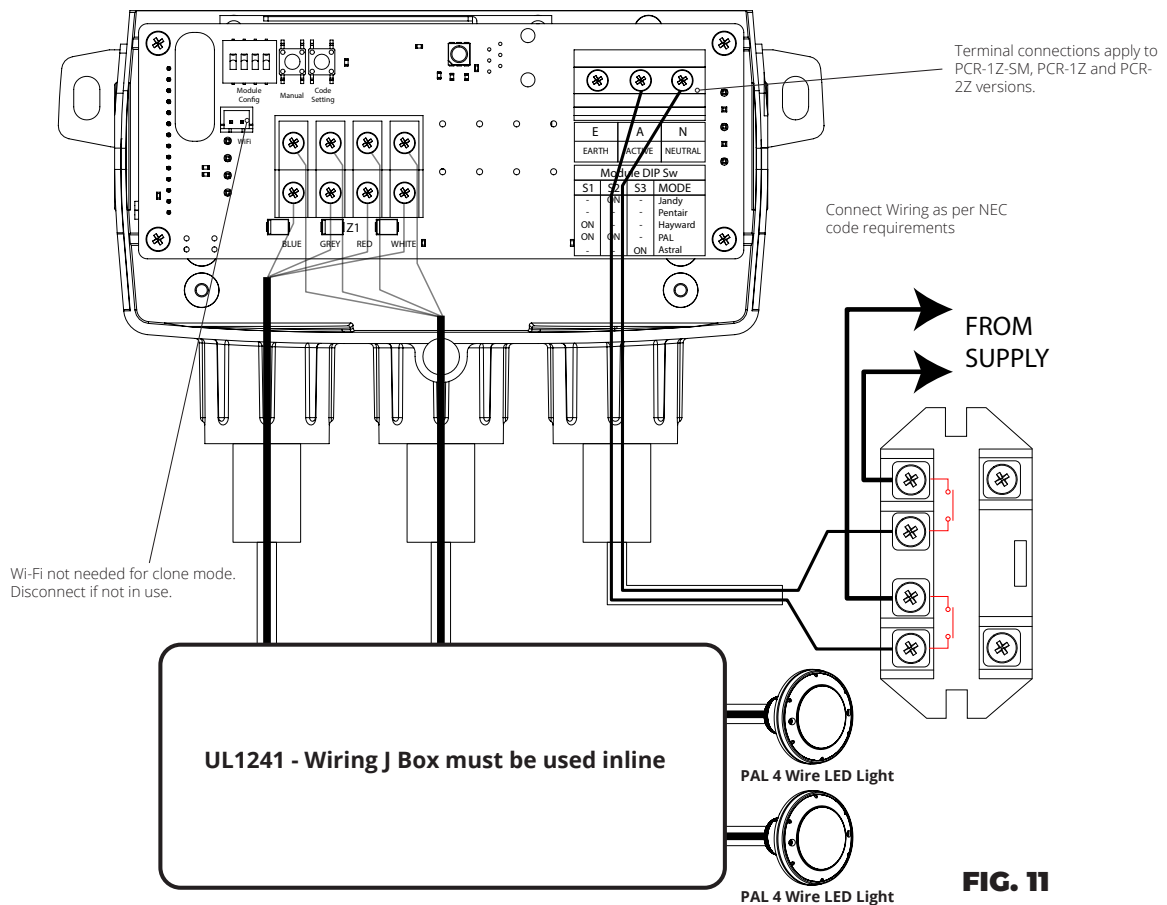
FIG. 11

PAL TOUCH PCZ-2 TRANSMITTER HAND HELD REMOTE

53

110

ON/OFF

COLOR WHEEL
Can select any color from the color wheel.
Can select Brightness (B) on any selected color

OPERATIONAL RED LED
Flashes when any remote operation is initiated

BRIGHTNESS (UP/DOWN)
5 Brightness Settings (100%, 80%, 60%, 40%, 20%)

ZONE (UP/DOWN)
Zone selection (not applicable to single zone controllers)

MODE SELECTION (UP/DOWN)
1. White - Can change Brightness (B) [Default]
2. Color Change - Can change Brightness (B) & Speed (S)
        Red, Amber, Green, Aqua, Blue, Purple, White with initial setting of 2 second delay. This time can be increased to 4, 6, 8 or 10 Sec by pressing (S -)
3. Disco - Can change Brightness (B)
4. White Gradual Change - Can change Brightness (B) & Speed (S)
5. Blue Gradual Change - Can change Brightness (B) & Speed (S)
6. Green Gradual Change - Can change Brightness (B) & Speed (S)
7. Red Gradual Change - Can change Brightness (B) & Speed (S)
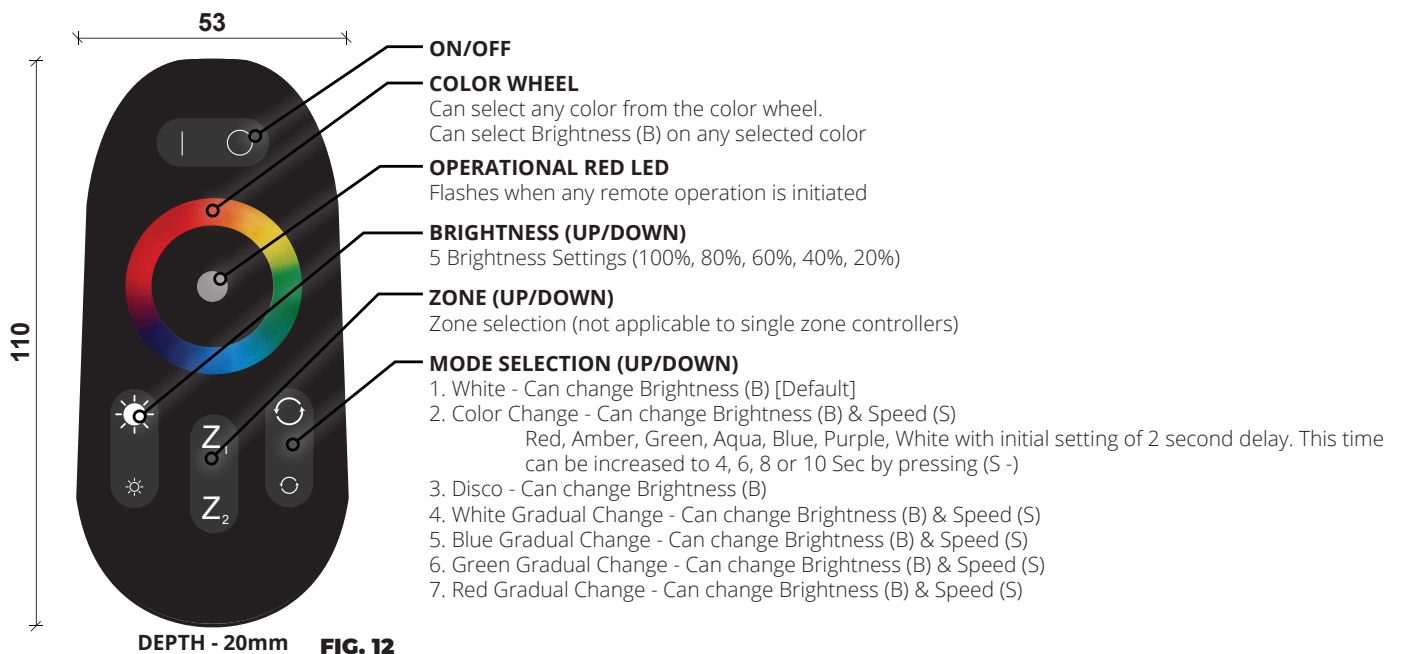
DEPTH - 20mm   **FIG. 12**

FEATURES
1. Matching Code - Apply power to the receiver. Then press Z_1 once within 5 seconds. The output light will flash white 3 times if matching is successful.
2. Clearing Code - Apply power to the receiver. Hold down Z_1 for 3 seconds. The output light will flash 6 times if clearing the code is successful.
After successfully clearing the existing code a new code will have to be applied by following the matching code procedure above.
3. 1 Transmitter (PCZ-2) can operate an unlimited number of Receivers (PCR-1Z)
4. 1 Receiver (PCR-1Z) can be controlled by a maximum of 4 Transmitters (PCZ-2)
5. Touching the color wheel will reset any Mode selection.
6. Memory Feature - Remembers color selection after being switched off.
7. Once the transmitter and receiver are successfully coded the receiver will remember the code if powered off.

SECTION 6. WINTERIZATION & MAINTENANCE

Ensure the water level is at least 4 inches above or below the light, based on the specific winterization requirements of the pool. Always consult a local swimming pool professional to determine the correct procedure for your region. Never drain water from the pool without first checking local groundwater levels as this may cause structural damage.

To remove the light, use the Treo Tool. Align the notches of the light and tool and rotate out counter clockwise. (FIG.13).

NOTE: If water is trapped in conduit, damage may occur from freezing expansion. If partially draining the pool, DO NOT maintain the water level at the height of the light.
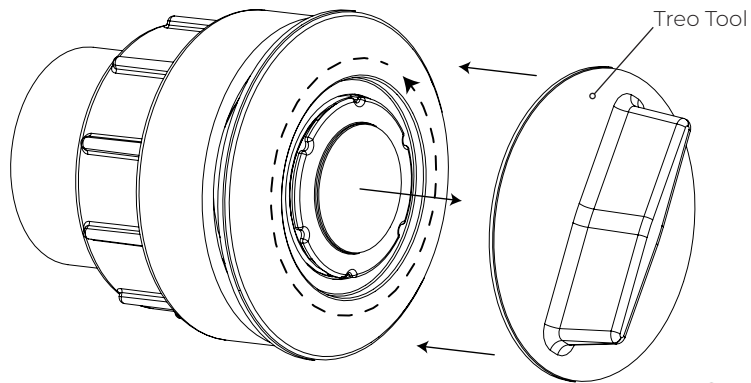
Treo Tool

FIG. 13

NOTES

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