PRO SERIES PSU

PRO SERIES PSU

The PRO Series PSU is the latest addition to Rayled's range of specialist PSUs, available now as an option for the RAYMAX and RAYLUX series of illuminators. The PRO PSU is designed to ensure that surveillance cameras achieve the highest quality images at night whatever the application. A number of unique features enable installers to provide flexible solutions that can be tailored and expanded through additional plug-in modules to meet the specific requirements of any customer. This is an important step in Rayled's product development path to deliver more intelligent, more flexible, more interactive lighting solutions.

The PRO Series PSU is a modular design comprising the "PowerCore" motherboard together with optional plug-in modules. The "PowerCore" contains all the features of the current PREMIUM PSU with the built-in capability for the addition of intelligent plug-in modules. There are currently two plug-in modules available; the PRO IQ and the PRO Pulse.

PLUG IN MODULE BOARDS

The PRO Series PSU provides the facility for 'plug in' programmable module boards which provide a variety of unique features and allows for flexible, user defined set-up of the system.

The PRO Series PSU provides all the control features of the current premium power supply *and* provides an easy ready-made platform for upgrade with the optional plug in modules:
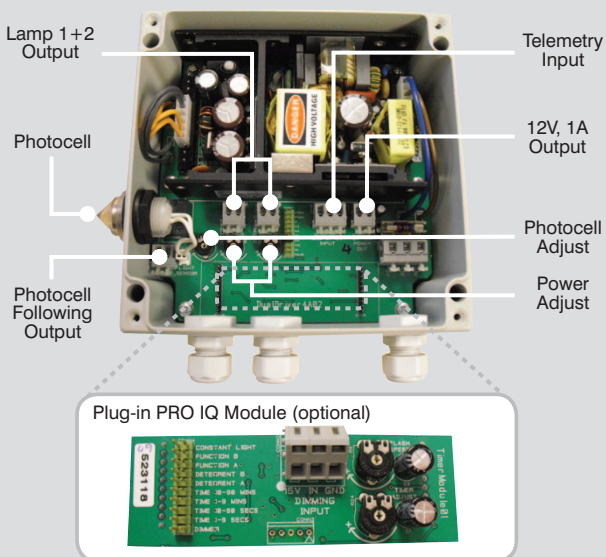
PRO IQ MODULE

- Eco logic economy setting
- PERMA-light
- Remote Dimming
- Power Boost
- 2 Deterrent settings
- 4 Timer settings
- Ultimate Flexibility

PULSE MODULE

- Analogue or Digital TTL signal
- Flexible Pulse width setting
- Flexible Pulse height setting
- Optional in-fill pulses
- Compatible with IR or WL
- Auto detects PAL or NTSC cameras

PRO PSU FEATURES – POWERCORE MOTHERBOARD

Lamp 1+2 Output
Photocell
Photocell Following Output
Telemetry Input
12V, 1A Output
Photocell Adjust
Power Adjust

Plug-in PRO IQ Module (optional)

POWERFUL
- Distances up to 300m
- Latest SMT LED Technology
- Inbuilt power boost

FLEXIBLE
- Adaptive Illumination
- Fully controllable PRO power supply
- ECO.LOGIC lighting on demand

RELIABLE
- 3 Year Warranty
- Perma-Light
- Vandal Resistant

PRO IQ MODULE

THE PRO IQ MODULE IS AN OPTIONAL UPGRADE TO THE PRO PSU UNIT AND OFFERS INCREASED FUNCTIONALITY, ADAPTABILITY AND INTELLIGENCE TO ALL RAYMAX AND RAYLUX ILLUMINATORS

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Allows lamp to operate at 50% power during normal operation and boost to 100% power on activation. The time period of boost can be fully adjusted and user defined: 1 sec. to 90 minutes. This feature can significantly reduce the power consumption of any Infra-Red or White-Light system by providing lighting at a lower level during periods of inactivity and boosting power on activation by local PIR/trigger or remotely at the control room to generate maximum image quality.

PERMA-LIGHT

Controls the power output of lamp over a 5 year period to ensure lighting output stays consistent throughout. The light output of any LED lamp reduces over time as a function of the quality of thermal management and electronic control of the system and will vary significantly between different manufacturers. Rayled utilise state of the art materials and design techniques to maximise the performance and reliability from our systems. The Perma-Light function further enhances the reliability of Rayled illuminators, and compensates for any slight reduction in power output over time, ensuring that the system delivers consistent light levels at all time.

REMOTE DIMMING

Allows the light output of the illuminator to be adjusted remotely. This feature enables installers or operators to remotely adjust lighting levels to match the exact scene requirement and to alter the level if the scene requirements change. Ideal to make sure the perfect picture can be obtained all the time.

DETERRENT LIGHT

Different deterrent settings with adjustable flash speeds. Ideal for White-Light applications where the light can be used in normal operating mode – but can also act as a deterrent on local PIR/trigger or remotely from control room. The illuminator pulses on / off and quickly alerts the intruder that they have been detected. Duration of deterrent and frequency of the flash can be adjusted (1 sec. to 90 minutes).

POWER BOOST

Lamp output can be boosted by up to 50% for short periods then return to normal power. This allows for longer distances to be achieved and also helps to improve picture quality and focussing in marginal operating conditions.

TIMER CONTROL

4 Different timer settings to turn light on from 1 second to 90 minutes. This function is ideal where the user needs to reduce power consumption to an absolute minimum and only operate lighting for a defined period on activation. It is especially useful where power consumption is key e.g: battery based systems like solar, wind etc. In addition to being available in isolation, the timer functions can also be used to control some of the other features described above including the eco logic setting and deterrent functions.

PULSE MODULE

THE NEW PRO PSU WITH PULSE MODULE WILL REPLACE ALL PULSED POWER SUPPLIES CURRENTLY SUPPLIED BY RAYLED

The Pulse Module allows Rayled illuminators to be set up for any pulsing requirement from a single universal power supply which is compatible with both analogue and digital camera systems. The unit auto detects between PAL and NTSC systems and adjusts the timing of the pulsing accordingly to match the camera settings. In addition the user can select "in-fill" pulses which is essential when using visible wavelengths of light to eliminate the strobe effect when using systems operating at 50hz or less.

The new ProPulse module delivers all the flexibility and control required to meet the requirements of any pulsed application including machine vision, ANPR and other specialist applications.

CUSTOMER DEVELOPMENTS

Rayled is committed to continually delivering increased functionality and flexibility from its illumination systems. The Pro series power supply, with its modular design and plug-in modules, means that new features can be quickly available to all existing and new users. In addition, the flexible design approach means that if customers and end-users have specific operating requirements not currently available, Rayled can design and deliver bespoke plug-in modules to fit to new or existing installations. The possibility for applications is unlimited.

rayMAX and rayLUX
Illuminators installation guide for the PRO Series PSU

Contents

Installation Steps

1. Mount illuminator
2. Mount Power Supply Unit
3. Connect Illuminator to PSU
4. PSU connections
5. Connect PSU to Mains

Set Up Steps

1. Position illuminator adjacent to camera and point towards scene
2. Adjust vertical angle
3. Adjust horizontal angle via Adaptive Illumination (AI) (if required)
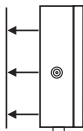4. Tighten all fixings.

Golden Rules

1. Ensure PSU lid orientation has warning label in line with glands (see PSU diagram, right)
2. Ensure operating voltage is correct for unit being installed
3. Ensure PSU is fully water tight

RAYMAX/ RAYLUX Illuminator

Adaptive Illumination (AI) bolt

LED illuminator

Bracket

LED output cable 2x 2.5m (8.2ft)

PRO Series PSU

Photocell (automatic operation)

WARNING

LED output 1

LED output 2

Mains input

Remote input

⚠ Warnings

Isolate mains before removing PSU cover

Mount PSU to flat surface

Install in a well ventilated area

1.5m
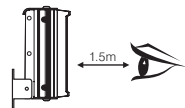
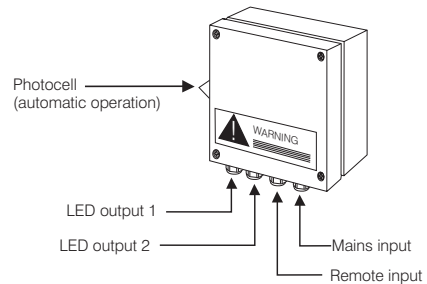Do not continually stare at lamp
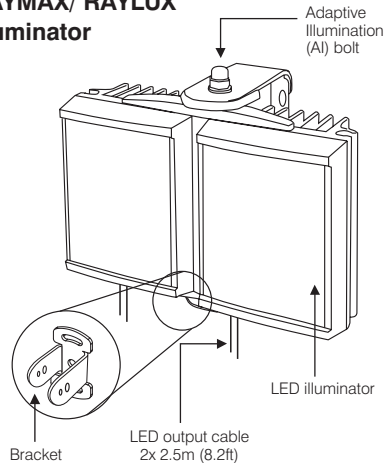
Installation

1 Mount illuminator

2 Mount PSU:

Do not position PSU photocell facing illuminator or other direct light sources

Photocell monitors ambient lighting conditions

Mount PSU on wall/flat surface with glands facing down

1m - 9m
(3.3ft - 29.5ft)
Approx

1

2

3

Mains Lead

! CAUTION:
Red = +ve
Black = -ve
(polarity sensitive)

3 Connect Illuminator to PSU:

Installers can extend or reduce lead length using appropriate cable and weather proof box

## 4 PSU connections:

Connect telemetry if required

Telemtery Input

Volt free contact
or TTL input 0-15V, high input impedance.

WARNING: The PSU current must be set correctly otherwise the illuminator could be damaged

4

5

LED Output x2
(Polarity
Sensitive)

Remote
Input

Mains Input
100V to 230V
AC
Auto-Sensing

5 Connect PSU to Mains

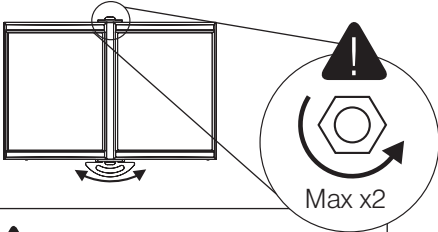CAUTION: Ensure cable glands and PSU lid are water tight by tightening the fixings

!
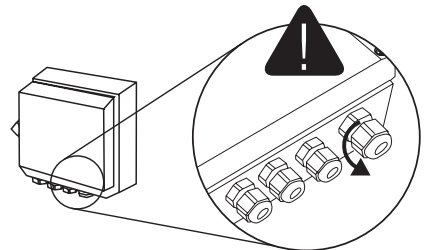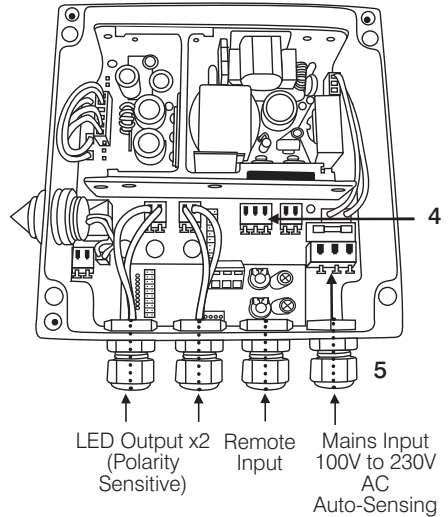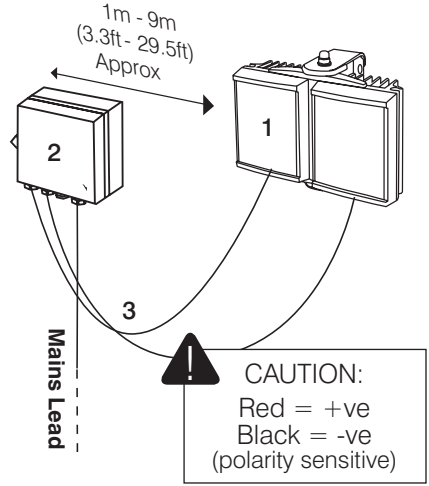
Set Up

1 Position illuminator adjacent to camera and point towards scene (Optional night set-up for optimum image performance)
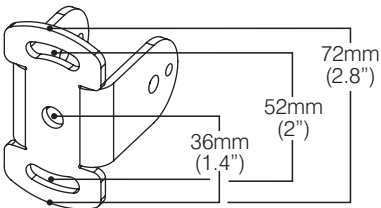
2 Adjust vertical angle

TARGET

3 Adjust horizontal angle via Adaptive Illumination (AI) (if required)
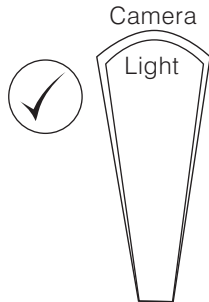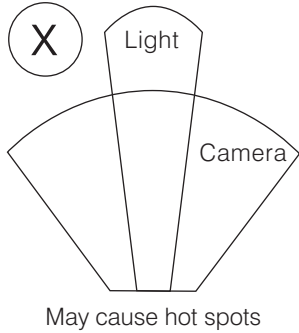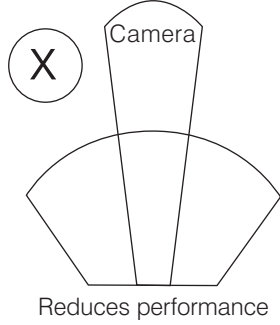

Max x2
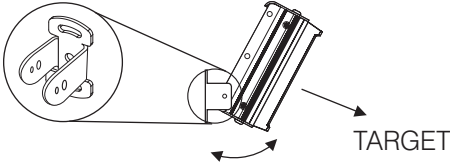
⚠ CAUTION:
Do not fully loosen AI bolt.
Note: Power adjust available if required (see PSU diagram, page 4)

4 Tighten all fixings

Standard Bracketry

72mm
(2.8")

52mm
(2")

36mm
(1.4")

Match illumination to camera field of view

X Camera

Reduces performance

X Light

Camera

May cause hot spots

Camera

Light

✓

PRO Series PSU: Infra-Red and White-Light (Not to scale)

The PRO Series PSU is a modular design comprising the "PowerCore" motherboard together with an optional Pro IQ or Pro Pulse Control Board Module.

Telemetry Input

Lamp 1+2 Output

12V, 1A Output

Photocell

Photocell Following Output

Power Adjust

Photocell Adjust

IQ Control Board

LED Output x2 (Polarity Sensitive)

Remote Input

Mains Input 100V to 230V AC Auto-Sensing
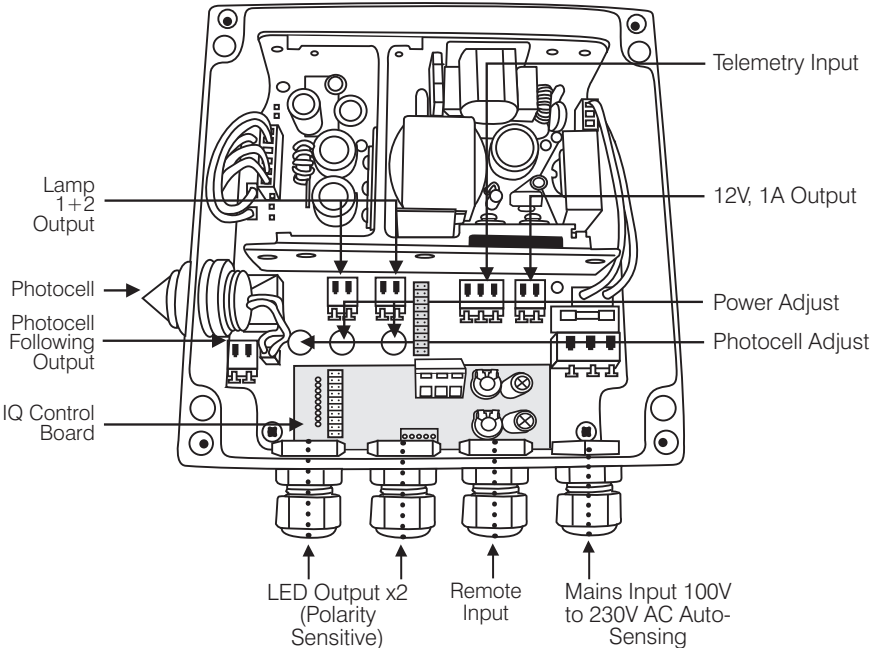
PRO Series PSU Specifications

PRO Series PSU Infra-Red / White-Light		
Input	AC 100-230 universal<80W	**PRO Series PSU Features:**
Fuse	2.5A anti-surge	• Adjustable photocell
Typical Output (Standard)	≤ 6A @ 14V	• Adjustable power
Adjustable Power	10% - 100%	• Telemetry input
Weight	1.65 kg (3.6lbs)	• Photocell following output, volt free relay contact - normally open (day) to normally closed (night)
Dimensions (L x W x D)	160 x 160 x 81mm (6.3 x 6.3 x 3.2")	• 12V DC output @ 1A
Drilling Dimensions	4 x M4 holes @ 145 x 123mm (5.7" x 4.8")	• PRO IQ or PRO PULSE Control Board Module • Ultimate Flexibility

PSU Features

Photocell adjust

The 'photocell adjust' sets the lux level at which the illuminator switches on and off to accommodate for different lighting situations.
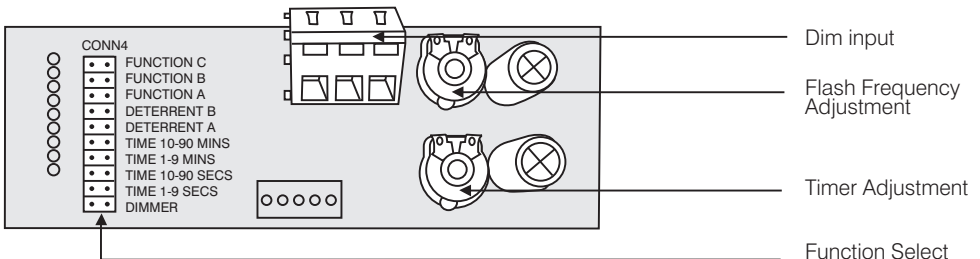
Power adjust

The 'power adjust' allows the lamp output to be adjusted from 10 to 100% to increase or decrease the light intensity. Factory setting is at 100%.

Photocell following output

A volt free output (normally open day/normally closed night) which is triggered by the photocell. Photocell following output allows users to control camera function eg.) day/night mode.

Pro IQ Control Board Optional Settings

CONN4
FUNCTION C
FUNCTION B
FUNCTION A
DETERRENT B
DETERRENT A
TIME 10-90 MINS
TIME 1-9 MINS
TIME 10-90 SECS
TIME 1-9 SECS
DIMMER

Dim input

Flash Frequency Adjustment

Timer Adjustment

Function Select

Pro IQ Control Board Features & Settings

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Function A (Activated via telemetry input)

To select the Eco Logic setting fit a shorting link (jumper) on CONN4 (function select) of the Pro IQ control board across the 2 pins of Function A. It is operated via the Telemetry input on the "PowerCore" motherboard and when this input is activated it causes the lamps to be powered at their maximum output for as long as the telemetry is active before returning to a reduced output of 50%. The Eco Logic setting can also be used in conjunction with the timer function and will be active for the period of time as set by the timer control, (see below timer control). After the desired time the output to the lamps is reduced to 50%.

POWER BOOST
Function B (Activated via telemetry input)

To select the Boost setting fit a shorting link (jumper) on CONN4 of the Pro IQ control board across the 2 pins of Function B. When activated via the telemetry input on the "PowerCore" motherboard the lamp output is boosted on a cycle of 10 seconds on, 10 seconds off, for as long as the telemetry is active. The Boost setting can also be used in conjunction with the timer function and will be active for the period of time as set by the timer control (see below timer control). After the desired time the output of the lamp is returned to the standard level.

This function is used to temporarily boost the output of the system to increase range, improve image quality and increase depth of field. The boost function should be activated for short periods of time only to avoid any thermal stress on the LEDs.

PERMA-LIGHT
Function C

To select the Perma-Light setting fit a shorting link (jumper) on CONN4 of the Pro IQ control board across the 2 pins of Function C. This feature gently ramps the output of the lamp over a 5 year period to offset the aging affect of the LEDs. The result is a precise, consistent power output from the LEDs over a 5 year period.

DETERRENT
Deterrent A or B (Activated via telemetry input)

There are two possible deterrent modes which can be selected on CONN4 of the Pro IQ control board (Deterrent A or B - fit jumper onto appropriate pins). When activated via a Telemetry input on the "PowerCore" motherboard the lights will be pulsed in a predetermined pattern. Additionally the duration of the pulsing should be set by the timer control using another jumper (see below timer control). If the timer control is not selected the lamps will continue to pulse for the duration of the telemetry input. This function is designed for use with White-Light units to provide a physical, visible deterrent to intruders. A potentiometer is provided which will adjust the flash rate of the deterrent pattern.

TIMER CONTROL
(Activated via telemetry input)

There are four timer modes available on the CONN4:

- **Time 0-9 secs** - **Time 10-90 secs** - **Time 1-9 mins** - **Time 10-90 mins**

When activated via a Telemetry input on the "PowerCore" motherboard the lights will turn on in the mode selected (by fitting a jumper on the appropriate pins on CONN4) for the time duration set. A potentiometer is supplied to allow the timer duration to be varied. The amount of variation available is limited by the minimum and maximum timing of the mode selected. For example timer mode 10-90 seconds is selected, meaning the potentiometer can adjust the timing between 10 and 90 seconds. This function is designed to reduce running costs of units – lighting is only turned on when required.

REMOTE DIMMING
Dimmer (Activated via dim input)

To select the Remote Dimming setting fit a shorting link (jumper) on CONN4 of the Pro IQ control board across the 2 pins of the Dimmer setting. This feature allows the user to remotely dim the lamps. The dim function can adjust the lamp output from zero up to the maximum it has been set at and then back to zero. The method of dimming is achieved by activating the 'dim input' (see below). This will start by causing the light to dim, and when the desired dim level is reached the dim input should be deactivated. The next time the dim input is activated the lights will start to brighten and so on. Deactivating the dim input stops the dim function. In this way the user can "home in" on the correct brightness level. If the 'Timer' function is activated the remote dimming function can be used within the duration of the time to adjust the intensity. Dim input specifications - Volt free contact or TTL input 0-15V, high input impedance.

PRO Pulse Control Board Module Installation and Set Up Guide

for PRO Series PSU

The PRO Series PSU is a modular design comprising the motherboard together with optional plug-in Control Board modules. These instructions describe using the PRO Pulse Control Board. The Pro Pulse module is used to turn on/off (pulse) your RayLED illuminators in conjunction with an analogue camera (see section 1 below) or with a digital TTL input (see sections 2&3). The Pro Pulse Module is typically used in a variety of applications including ANPR, LPR, Machine Vision and other demanding vision applications.

Please Note:
If the illuminator is to be used at night only, leave the photocell connected.
If the illuminator is to be used 24 hours a day, disconnect the photocell.

Pro Pulse Control Board Module
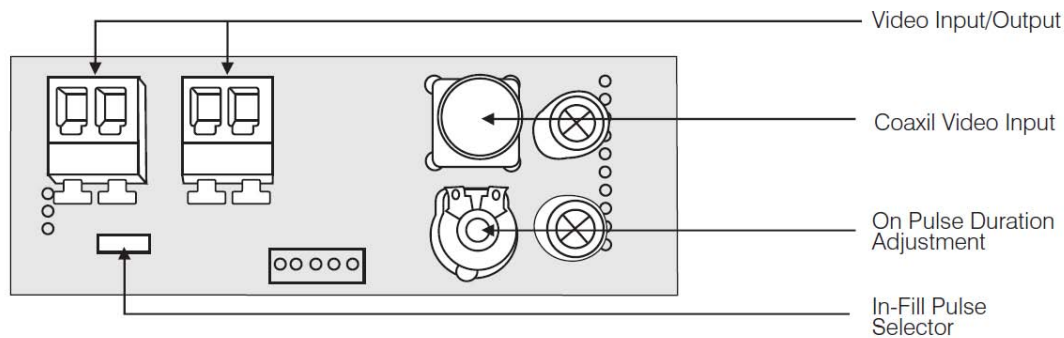
1) For Analogue Video

Feed video (coax) "through" Pro Pulse Module using the video input and video output connectors provided - ensuring video and ground connections are correctly orientated (polarity sensitive) and securely wired. Wire video output as per normal into your video system e.g. monitor, DVR, computer or other viewing device.

The Pro Pulse Module auto senses between PAL and NTSC and times pulsing accordingly. No further adjustment should be required. To reduce power output of illumination, adjust power adjustment pots (for both lamp outputs) on the main control board.

The system is typically designed to work with camera shutter speeds of 1,000th of a second duration. Factory default pulse duration is ~1.5msec.

2) For TTL Input – TTL Tracking

When a pulse of the same duration as a TTL high input (typically from a digital camera or computer system etc) is required – the Pro Pulse Module board is not required. Simply wire the TTL input into

the telemetry input on the main control board. No timer adjustment should be required. For power adjustment – use appropriate pots (for both lamp outputs) on main control board. The TTL input is configured to accept input from 5V to 15V TTL.

3) For TTL – TTL Triggered

When a pulse duration is to be triggered from the positive going edge of a TTL input (typically from a digital camera or computer system etc) for a duration that is different to the duration of the input then use the Pro Pulse Module board. Wire the TTL input into the telemetry input on the main control board. Factory default setting is ~2.5msec.

Duration of the pulse width can be adjusted by using the duration pot on the Pro Pulse Module board; Min ~2msec to Max ~4msec.

In-fill Pulsing

When using visible white light systems, there may be a perceived flicker as the illuminators are pulsing on and off. By selecting the In-Fill Pulse selector "on" using the jumper on the Pro Pulse Control Board Module, the system will automatically provide in-fill pulses to reduce or remove any perceived flicker. In-fill pulsing can be used with both analogue and TTL systems.

Factory default setting: In-Fill Pulsing OFF

PRO Series PSU: Infra-Red and White-Light
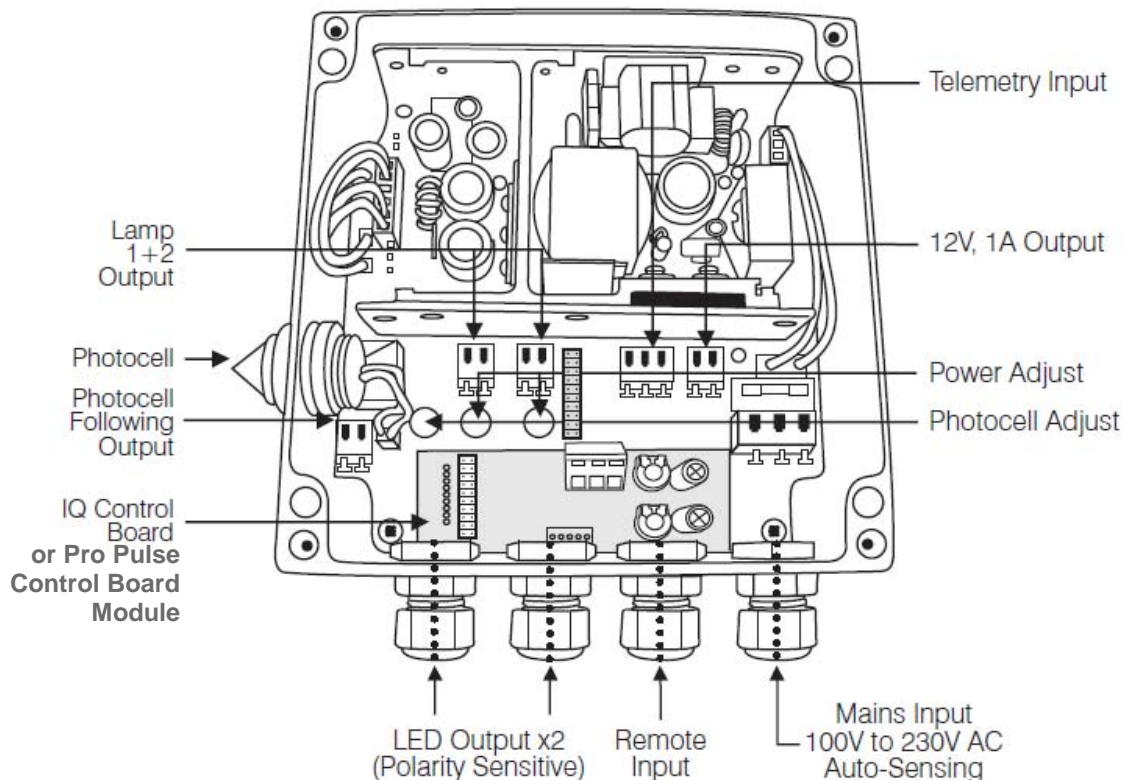
Trouble Shooting

Ensure all tests are undertaken by a qualified, trained engineer
Ensure safe working practices are followed at all times

Step 1: Basics

- Check polarity of Lamp connection
  red=+ve, black=-ve

- Check telemetry link is in

- Check photocell is working

- Check power setting pot fully clockwise

- Check mains input

- Check fuse intact

If OK…

Step 2: Lamp Test

Check voltage of lamp o/p approx 14V (8V for pulsed units)

Check current of lamp – see instructions for correct current setting

To check lamp current (this must be done while both LED panels are connected to the PSU) remove +ve LED from both lamp supply cables and connect multimeter set to 10A current in line with the lamp. [One lead of multimeter in common (COM), other lead into 10A socket of multimeter; set multimeter to 10A readings]. Refer to PSU Specifications for correct current settings, see pages 6-7.

Step 3: Set-up Camera, lens and illumination

Check alignment of lamp

Check camera lens – fully open at night & set correctly

Check model number to RayLED performance specification to ensure required distance is achievable

Step 4: Contact RayLED for further assistance

Note down:

• Model and serial number of PSU and illuminator

• Camera make and model

• Lens make and model

Additional Information
UL 1838 & CSA 22.2 No 9.0 – 96 Classification

• Suitable for indoor and outdoor use

• Suitable for use in wet locations

• Suitable for mounting on flammable surfaces

• Suitable for combustible surface use

• Suitable for temperatures not exceeding 35°C

Do not connect PSU to an ungrounded supply

Do not install within 10ft of pool or spa

Do not use with dimmers

Do not connect two or more power supplies in parallel

This product must be installed by a person familiar with the construction and operation of the product and the hazards involved, in accordance with the applicable installation code.

The device is accepted as a component of a landscape lighting system where the suitability of the combination shall be determined by CSA or local inspection authorities having jurisdiction. Such systems should be protected by a ground fault circuit interrupter of the Class A type.