MESO

Plastic Models

Programmable LED Driver

Features

MESO LED drivers are designed to generate one constant current output from an AC input, and work with most industry standard lighting controls in dimming applications.

- 120/240/277VAC Input
- DC Input Rated Optional)
- Programmable Output Current
- Dimming Options:
  - Analog Control (0-10V or 1-10V)
  - Digital Control (DALI compatible)
- UL Approved, ENEC Approved, CE Mark
- Long Life
- ROHS Compliant

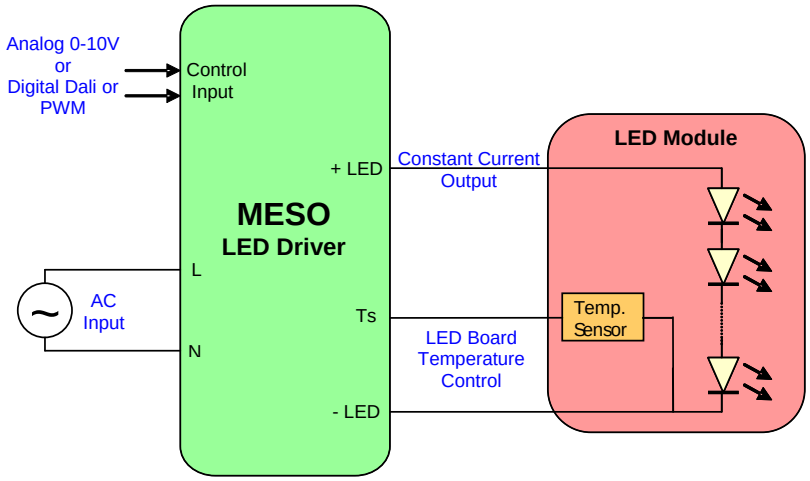
EU Package (Plastic) for Stand Alone Control Gear

Applications and Benefits

MESO is designed for powering LED luminaries with standard lighting controls. The modules operate with:

- Standard Light Switches
- Analog Dimmers (0-10V or 1-10V control)
- DALI controls

The following diagram depicts a typical installation utilizing the MESO:



MESO's versatile control features:

- Settable Output Current. Output current value can be set also by the user
- Dimming Options:
  - Analog Dimming input provides 10-100% Iout Dimming function, includes Temperature sensor (NTC thermistor) to protect the LED from over-temperature.
  - Digital Dimming allows direct interface with PWM input or DALI controls

digitallight

Input and Output Specification

Input Voltage: 120/240 /277 VAC nominal: 90 - 305 VAC and Optional 150 – 400VDC
47-63 Hz Frequency Range

Input Current: < 0.35A

Efficiency: 83% Min @ Nom VAC, Full load

Isolation: Reinforced / double Insulation meets IEC/EN61347-2-13 Class II

Input Harmonics: Meets EN61000-3-2, 3 *

Input Power Factor: > 90% *

Total Harmonic Distortion (THD): < 20% *

* @ 50% to 100% load at 120/240VAC and 60% to 100% load at 277VAC

Output Voltage: 12 – 56VDC (See model table for details)

Output Current: 250mA to 1000mA (See model table for details)

Ripple Current: < 40% (P-P) of maximum Output Current with no dimming

Output Accuracy: +/- 5% of set point

Output Regulation: +/- 5% of max rating

Output Over-Voltage, Over-Current and Short-Circuit Protection (hiccup), Over-Temperature and Auto Recovery

Output Voltage Range Protection: If output voltage goes out of range, unit shuts down and latches after 5 attempts

Startup Time: < 600 mS with no dimmer

Performance Requirements: Meets the requirements of IEC 62384: control gear for LED modules

EMI and EMC:

Conducted and Radiated EMI: EN55015 Class B @ 240/277VAC
FCC Class 47CFR Part 15 Class B @ 120/240/277VAC

Susceptibility: EN61000-4-2, -3, -4, -5, -6 and -11
ANSI c62.41-1991 Category A1, 2.5kV Ringwave

Eu and RoW

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Output Programmability and Options:

MESO models are available with either analog controls (0-10 / 1-10 dimming) or digital controls (DALI / PWM). Each model can be programmed using a ROAL proprietary tool.

Analog Control Models:

The output characteristics of the analog MESO models can be set using the Ozone programming tool, **RSOZ070-PTOOL**. The tool uses a proprietary digital interface so that once programmed, the driver cannot be changed by the ordinary user. The output current is set through 2 rotary switches to between 50% and 100% rating. DIP switches set the fade time and characteristic of the analog dimming. The following are the features that can be programmed:

1. Adjust Iout from 50% to 100% in 10mA increments
2. Fade time of 0, 2, 5 or 10 seconds
3. 0 – 10 or 1 – 10 Dimming

The Analog control models have 3 signal wires described below:

Dim (purple/ grey): The dimming input can be used to adjust the output setting via a standard commercial wall dimmer, an external control voltage source (1 to 10VDC), or a variable resistor. This input permits 100% to 50% trimming and 100% to 10% dimming. This allows active control of the driver and may be used for trimming and dimming purposes

Ts (orange): The Temperature Sense input may be connected to a 100k NTC thermistor. The thermistor should be located on the LED assembly to monitor its temperature. If the temperature exceeds a predetermined set point, the output current of the module is automatically reduced to regulate the temperature of the LED at a safe level. See Application Notes for details.

Digital Control Models:

The output characteristics of the digital MESO models can be set using the DALI programming tool (RHPS368), **RSOZ070-PDALI**. The DALI interface is used to program the MESO driver as well as test the DALI functions. The output current can be set to between 50% and 100% rating. The following are the features that can be programmed:

1. Adjust Iout from 50% to 100% in 10mA increments
2. Read the drivers settings
3. Set for DALI or PWM enabled
4. Actively dim the output

The Digital control models have 3 signal wires described below:

DALI or PWM Input (yellow/ yellow): When DALI enabled, controls the output of the driver through the DALI interface that is compatible with IEC62386. When PWM enabled, the input accepts a pulse width modulated signal. This permits a 0% to 100% dimming of the output current and is compliant with EN 60929.

Ts (orange): The Temperature Sense input may be connected to a 100k NTC thermistor. The thermistor should be located on the LED assembly to monitor its temperature. If the temperature exceeds a predetermined set point, the output current of the module is automatically reduced to regulate the temperature of the LED at a safe level. See Application Notes for details.

See Application Note 3, MESO Settings, for details on the programming features.

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Environmental

Operating Temperature:	-30°C to +85°C case temp wit hout derating, 55°C max ambient
Operating Relative Humidity:	5% to 95%, non condensing
Storage Temperature:	-40°C to +85°C
Surface Temperature:	Exposed surfaces <90°C under a ll operating conditions
Cooling:	Convection cooled

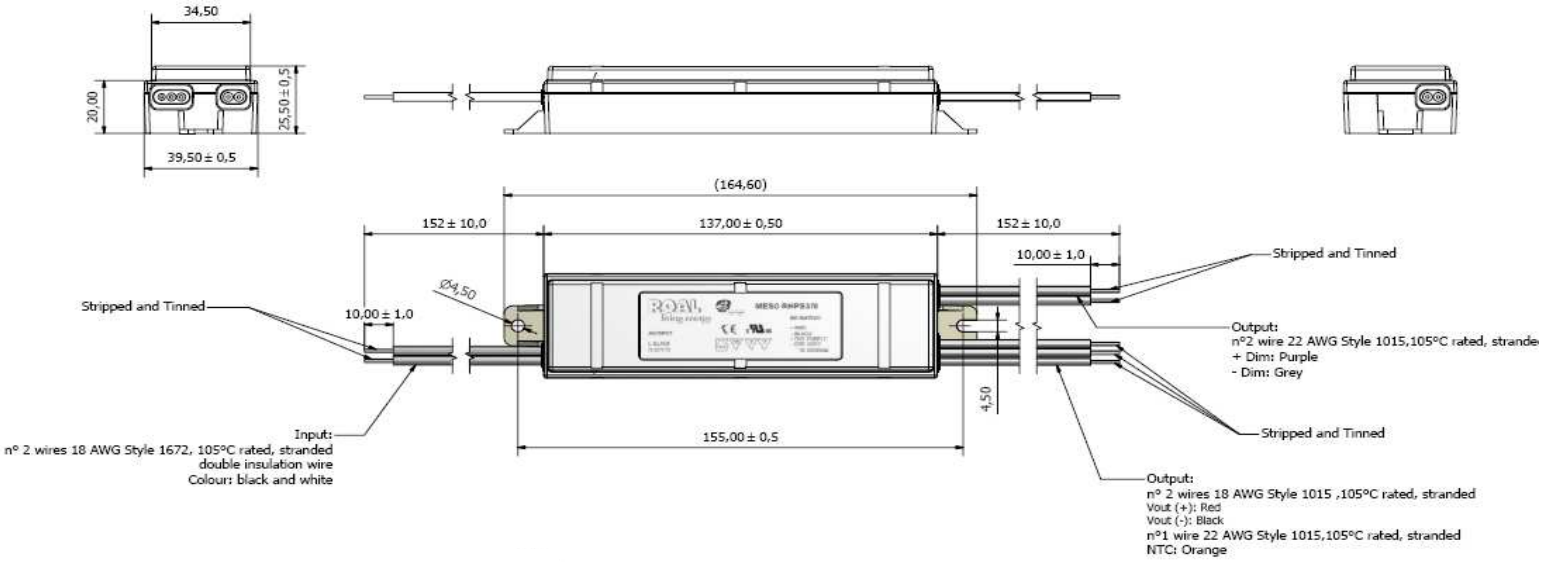
Mechanical Details- Plastic EU Package (-P)

I/O Connections:	Flying leads, 152mm long, 105°C Ra ted, Stranded, Stripped by approximately 10mm and tinned. Input and output leads are 18AWG, control leads are 22 AWG. 5 leads max for DC output and signals. Independent unit wiring
Mounting Details:	Molded mounting feet
Ingress Protection:	IP20
Environmental rating:	Rated for Damp Locations

Dimensions (not including mounting feet): 40mm x 26mm * x 137mm, 1.58" x 1.02" x 5.39"
Max Dimensions (including mounting feet): 40mm x 26mm x 164.5mm, 1.58" x 1.02" x 6.48"

Volume: 142.5 cm3, 8.68 in3
Mass: 156 grams, 5.5 Oz. *PCB must fit inside a 25.4mm height for NA applications.

Drawing shows model with 0-10 Dimming. With DALI option, the Purple and Grey wires are replaced with Yellow wires.



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Safety Agency Approvals (some models pending)

UL8750 Recognized for Class 2 Output

EN61347-2-13 electronic control gear for LED Modules ENEC Mark and CE Mark for EU

Notes Regarding European (ENEC) approvals:

1. All models with Vout < 25VDC are SELV equivalent per EN61347-2-13.
2. All models with Vout > 25VDC are considered "Isolated Control Gear" per EN61347-2-13
3. Independent unit as per EN61347-2-13

Notes regarding North American (UL) approvals:

1. All models are approved for use in damp applications as Class 2 devices.
2. All models with Vout< 42.4VDC are approved as Class 2 devices.
3. All models with Vout > 42.4VDC exceed CSA Class 2 limits. These units will still be marked UL recognized but LPS, not class 2.

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Model Table

Model Number		Rating					
Base Model Number	Option Letter **	Pout Max (watts)	Vin Range (vac)	Vout Min (vdc)	Vout Max (vdc)	Iout* Set (mA)	Iout* Max (mA)
RMLD-500A-P-		25	90 - 305	28	56***	250	500***
RMLD-500B-P-		12	90 - 305	12	24	250	500
RMLD-700A-P-		25.2	90 - 305	18	36	350	700
RMLD-1000A-P-		24	90 - 305	12	24	500	1000

* The factory setpoint for the analog models is the Iout Set value. For digital dimming models, the factory setpoint is the Iout Max value.

** A (Analog) or D (Digital) option must be selected - See Option Table for details

*** Derated to 450mA between 50V and 56V to limit output power to 25W

Option Table	
Option letter	Description
AA	AC Input and Analog – 0-10V Dimming
AD	AC Input and Digital – DALI Dimming
DA	AC & DC Input and Analog – 0-10V Dimming
DD	AC & DC Input and Digital – DALI Dimming

Model Number example – 1000mA model with Digital dimming option = RMLD-1000A-PD

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