

# SPECIFICATION FOR APPROVAL

Customer : \_\_\_\_\_

Customer P/N : \_\_\_\_\_

Product Type :           **Digital Ballast**          

Product No. :           **Ultimate 600w 400v Controllable Ballast**          

Issue Date :           **2018.09.17**          

Prepared By			
Checked By	R&D	PM	QC
Approved By			

Web: [www.lumatek-lighting.com](http://www.lumatek-lighting.com)



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## 1. Description

This is a 600W intelligent electronic ballast with 3.5mm headphone jack interface that can be connected to external controller. Input voltage is 220-240V, 50/60Hz. Knob dimming range can be 400W-400SL-600W-600SL and remote wire communication function. It will delay 0-6S ignition randomly. It can match well with 600W HPS/MH lamps according to IEC standard and 600W high voltage HPS lamps.

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## 2. Function and parameters

### 2.1 Knob Control

#### 2.1.1 Input Characteristics

Parameter	Conditions	Min	Type	Max	Units	
<b>Mains Performance</b>	Operational Performance	195	220-240	265	V	
	Operational Safety	185	220-240	275		
<b>Mains Frequency</b> $f_{mains}$	Operational Performance	48	50/60	63	Hz	
	Operational Safety	45	50/60	66		
<b>Mains Power</b> $P_{mains}$	P=600SL	681	702	723	W	
	P=600W	615	636	657		
	P=400SL	441	468	489		
	P=400W	403	424	445		
<b>Mains Current</b> $I_{mains}$	P=600SL	$V_{mains} = 240V$	2.8	2.9	3.0	A
		$V_{mains} = 230V$	2.9	3.0	3.2	
		$V_{mains} = 220V$	3.0	3.2	3.3	
		$V_{mains} = 195V$	3.4	3.6	3.7	
	P=600W	$V_{mains} = 240V$	2.5	2.7	2.8	
<b>Power Factor</b>	P=600SL	0.97	0.98	--	--	
<b>THD</b>	P=600SL	--	--	10%	--	
<b>Inrush Current</b>	$V_{mains} = 240V$ $T_a = 25^\circ C$ , cold start	--	--	30	A	
<b>Pulse Duration</b>		--	--	0.8	ms	

Note: The certified current of this product is : 2.96A.

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## 2.1.2 Output Characteristics

Parameter	Conditions	Min	Type	Max	Units
Lamp Frequency $f_{lamp}$	P=600SL	60	75/120	150	KHz
Efficiency(%)	P=600SL	94	95	--	--
Lamp Power $P_{lamp}$	P=600SL	639	660	681	W
	P=600W	579	600	621	
	P=400SL	419	440	461	
	P=400W	379	400	421	
Lamp Voltage	600W HPS	86	110	135	V
	600W high voltage HPS	160	220	280	
Ignition Voltage	$C_{load} < 100pF$	2800	4000	5000	V
Ignition Interval	--	1-5-5-5-5			Min

Note: Dimming accuracy is 3%

## 2.2 Recommended Matching Lamps

Lamp	LUMATEK LK600HPS
	SUNMASTER HPS600W SL.600W.U46.VRD.HO
	AGROSUN HPS600W SUPER 5002070
	SOLARMAX MH600W MHT 600W/VEG
	SYLVANIA GROLUX HPS 600W
	SUNMASTER MH600W LM.600W.U76.CDX
	PHILIPS MASTER Green Power Plus 600W EL
	LUCALOX HPS600W LU400V/600W/PSL

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## 2.3 Remote Wire Communication Function

### 2.3.1 Remote Dimming

All output specifications are reported as a percentage of the full ballast rating,

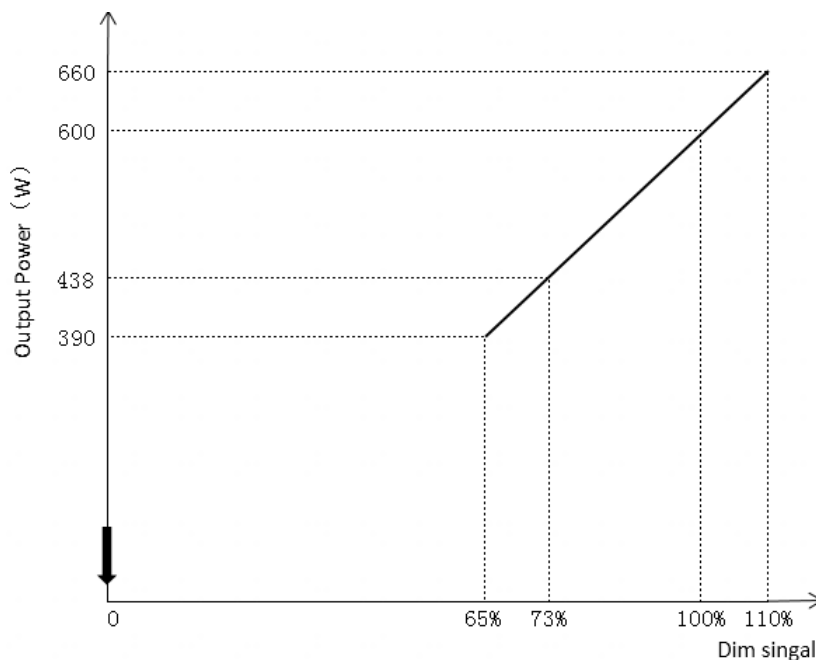
EXP: 75% of 600W ballast = 450W.

Output Mapping Equation (W): (Dimming ratio )\*ballast rating=Output.

Note: 1. Dimming accuracy is 3%(as per the output power of  $V_{mains} = 220V$ ).

when the dimming ratio is 0%, the ballast will be off ;

user can set the parameters show in the 65%-110%.



### 2.3.2 Remote Control Function

- ✧ It can control remotely the ballast's on/off/dimming rate.
- ✧ Group control mode: it can control the state of a set of products .
- ✧ Single lamp control mode : it can control the state of a single product.
- ✧ The ballast is equipped with 3.5mm headphone jack interface, which has the function of receiving remote signals.

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## 2.4 Protection

### 2.4.1 Open Circuit Protection

When output is shut off, the ballast will power off for open circuit protection. When errors are removed and the power is re-applied to the product, it can work normally.

### 2.4.2 Short Circuit Protection

When output is shorted, the ballast will power off for short circuit protection. When errors are removed and the power is re-applied to the product, it can work normally.

### 2.4.3 Over Temperature Protection

When  $T_a > 40^\circ\text{C}$ , the ballast will shut off for high temperature protection. When the temperature drops to normal and the power is re-applied to the product, it can work normally.

### 2.4.4 Lamp END of Life/Rectification

The ballast will be not damaged when the rectification appears at the end of the lamp life. When replacing a new lamp and the power is re-applied, it can work normally.

### 2.4.5 Over-voltage/ Low-voltage Detect Protection

Protection happens when input voltage is below 175V or up to 275V (Output power will drop to 90%, when input voltage is 175-195V). When input voltage is back to normal, the ballast can work normally.

Note: Voltage accuracy is 3%.

### 2.4.6 LED status

Status	LED
Output lock down	Flash*1
Output errors	Flash*2
Low input voltage	Flash*3
Over temperature	Flash*4
High input voltage	Flash*5

Note: when the controller is controlled, LED (controller) flashes 2 times every 2S, When the controller is not contacted or connection failed, LED (controller) is off, if the 3min is still no control signal, "controller" flash, the product is shut down.

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## 3. Environment

Environment \ Conditions	Operating	Shipping and Storage
3.1 Temperature	-20°C--+40°C	-40°C--+70°C
3.2 Humidity	20%--90%, non-condensing	10%--95%, non-condensing
3.3 Vibration	Amplitude:0.035mm	Amplitude:0.15mm
	Frequency: 10-150Hz	
	Test time in any Direction: 30min	
	Sweep velocity: 1oct/min	
Direction: X,Y,Z		
3.4 Waterproof and dustproof	IP20	

## 4. Safety

### 4.1 Surface Temperature Rise

When output power is 600W, ambient temperature is 25°C and input voltage is 220Vac, the surface temperature rise will be less than 40°C.

### 4.2 Leakage Current

$0.75mA_{max} V_{mains}=240V/60Hz.$

### 4.3 Insulation Resistance

The insulation resistance shall be no less than 2M ohm after application of 500Vdc for 60s.

### 4.4 Dielectric Withstand Voltage (HI-POT)

L,N-PE:1500Vac 7.5mA<sub>max</sub>/60s.

### 4.5 Grounded Resistance

$<0.5 \Omega, 30A, 60s.$

### 4.6 Regulatory Standards

EN 61347-1

EN 61347-2-12

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## 5. EMC

### 5.1 EMI

EN55015

Limit value of radio disturbance characteristics of electrical lighting and similar equipment.

### 5.2 EMS

#### 5.2.1 Surge Immunity

IEC 61000-4-5:

L-N:  $\pm 1\text{KV}$ ;

L/N-PE:  $\pm 2\text{KV}$ .

#### 5.2.2 Electrical Fast Transient

IEC 61000-4-4:

L-N-PE :  $\pm 1\text{KV}$ .

#### 5.2.3 Voltage Dips and Interruptions Immunity

IEC 61000-4-11:

Drop: 30% ;cycles: 10;

Drop: 100% ;cycles: 0.5.

#### 5.2.4 Electrostatic Discharge Immunity

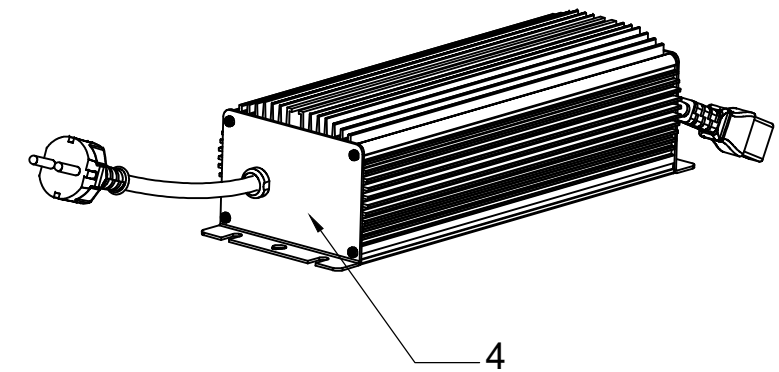
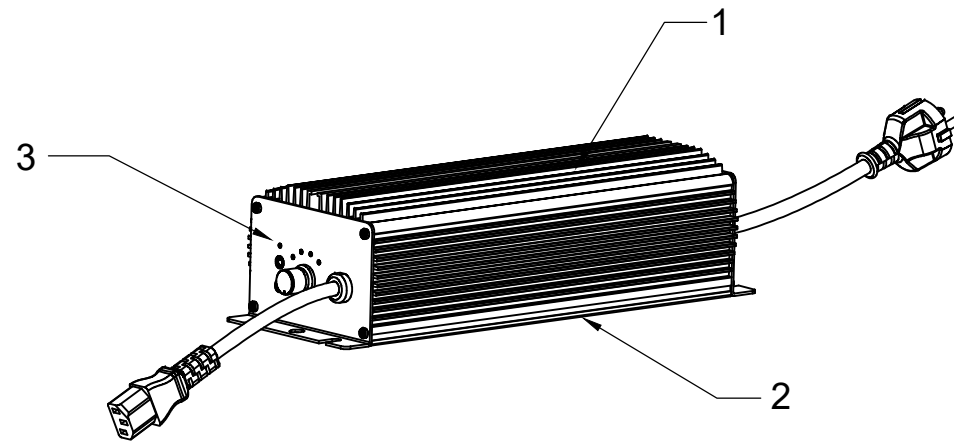
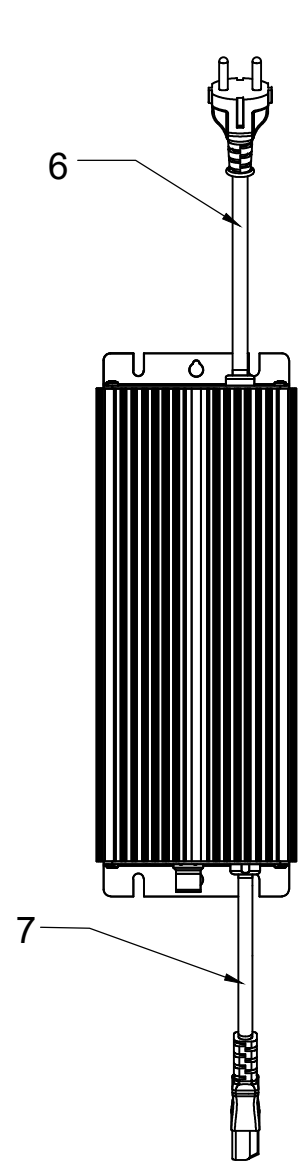
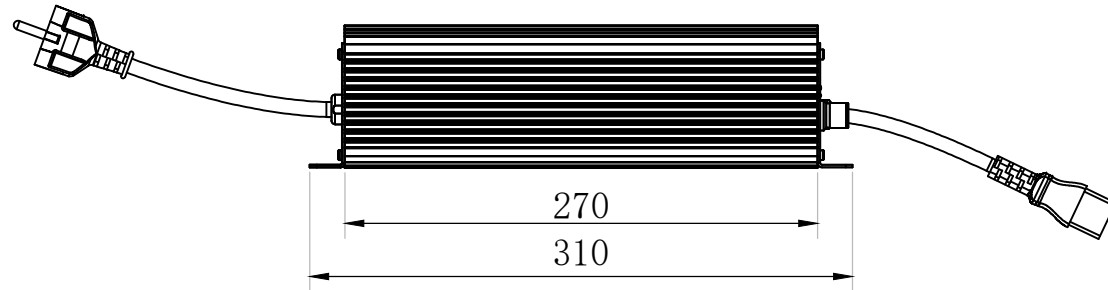
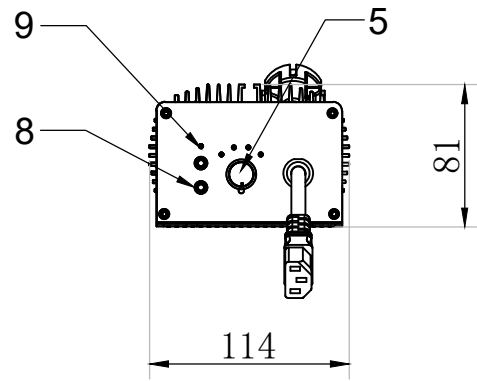
IEC 61000-4-2:

Contact discharge:  $\pm 4\text{KV}$ ;

Air discharge:  $\pm 8\text{KV}$ .

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# 6 Physical Dimension



Item	Part Name	Q'ty	Remark
1	Cover	1	Silvery
2	Cover	1	Silvery
3	Plate	1	Violet
4	Plate	1	Violet
5	Knob	1	Silver White
6	Input Line	1	Black
7	Output Line	1	Black
8	Earphone hole	2	Black
9	LED	5	---

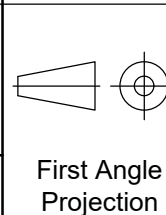
Physical Dimension	
Material	Aluminium
Dimension	310x114x81
Weight	2.83±10%Kg

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Dimensional Tolerances (V)		Holes:±0.05 ( )		Angles:±0.5° ( )	
<30	±0.25	Up~100	±0.2	250~300	±0.4
>30~100	±0.35	100~150	±0.25	300~350	±0.45
>100~300	±0.5	150~200	±0.3	350~400	±0.5
Above300	±0.6	200~250	±0.35	900~Over:	±3.1

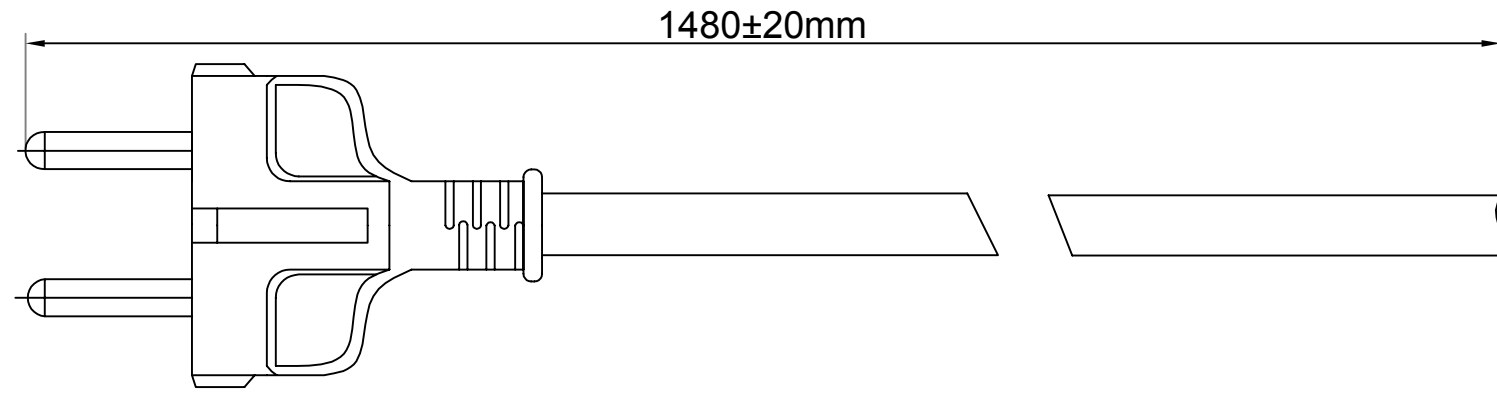
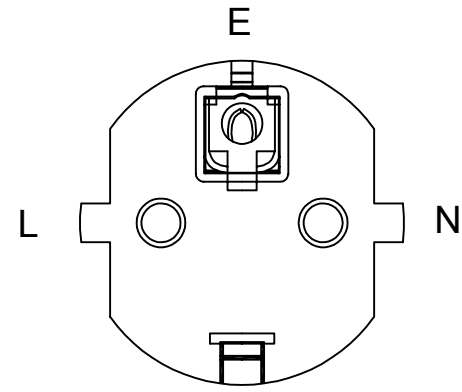


Description:		REV P00	
	Part No:		
	Used On:		Ultimate 600w 400v Controllable Ballast

SIZE  
A3

Scale	---	Unit	mm	Sheet 1 Of 1	Issue Date:	Drawn:	Design:
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# 7 Input

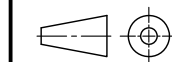


Technical requirements:  
 1.Specifications:VDE H05VV-F 3×1.5mm<sup>2</sup> 70°C

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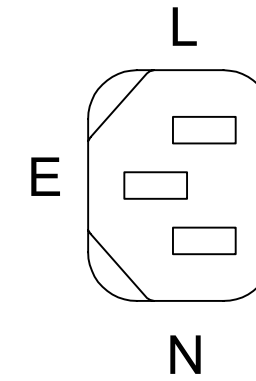
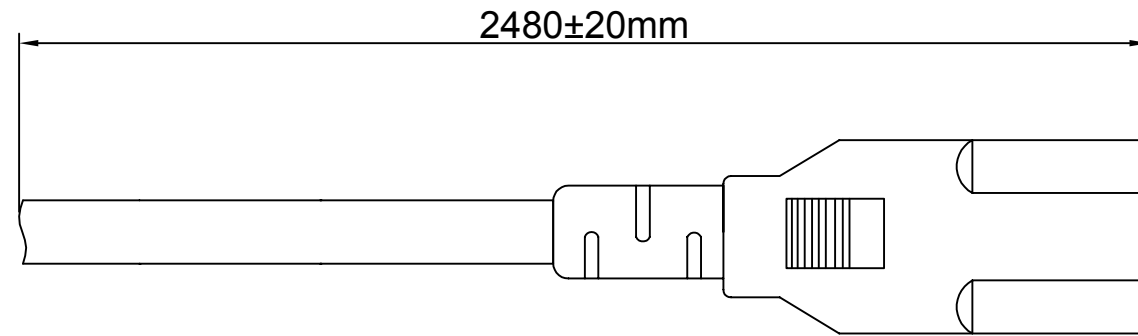


First Angle Projection

<b>Description:</b>	Input	<b>REV</b>
<b>Part No:</b>	--	P00
<b>Used On</b>	Ultimate 600w 400v Controllable Ballast	<b>SIZE</b>
		<b>A3</b>

<b>Scale</b>	---	<b>Unit</b>	mm	<b>Sheet</b> 1 <b>Of</b> 1	<b>Issue Date:</b>	<b>Drawn:</b>	<b>Design:</b>
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# 8 Output

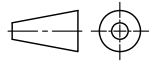


Technical requirements:  
1.Specifications: VDE H05VV-F 3×1.5mm<sup>2</sup> 70°C

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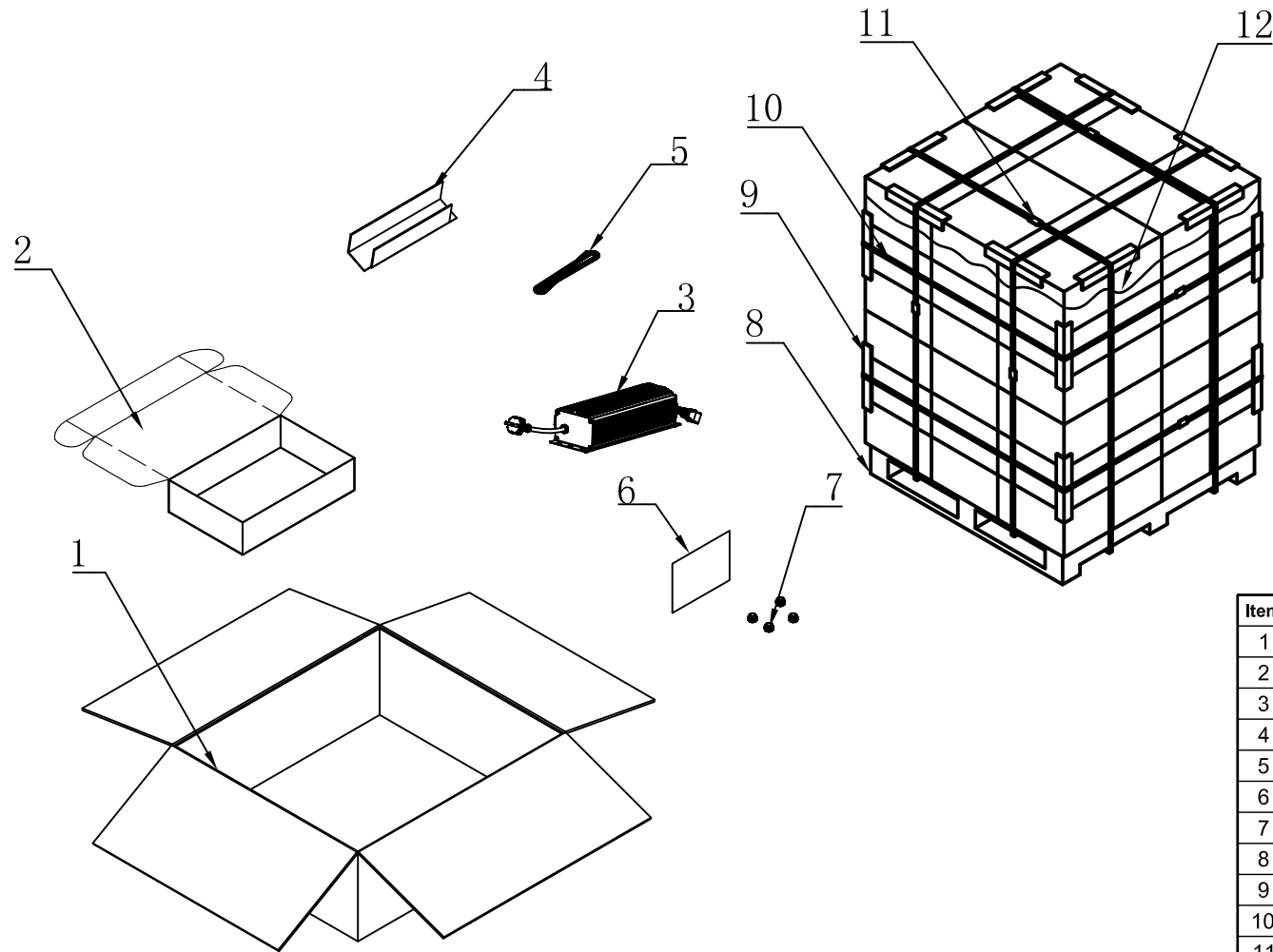


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 First Angle Projection	<b>Description:</b>	<b>Output</b>	<b>REV</b>
	<b>Part No:</b>	--	P00
	<b>Used On</b>	Ultimate 600w 400v Controllable Ballast	<b>SIZE</b>
			<b>A3</b>

<b>Scale</b>	---	<b>Unit</b>	mm	<b>Sheet</b> 1 <b>Of</b> 1	<b>Issue Date:</b>	<b>Drawn:</b>	<b>Design:</b>
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# 9 Packing



Item	Part Name	Outside Dim(mm)	Q'ty
1	Carton	410×364×208	1/4
2	Inner Box	342×193×85	1
3	Digital Ballast	310×114×81	1
4	Liner	320×231×3	1
5	Signal line	\	1
6	Instruction	A5	1
7	Rubber Feet	\	4
8	Pallet	\	1/n
9	Angle Paper	\	\
10	Plastic Strip	\	\
11	Staple Wire	\	1
12	PE Film	t=0.02	1

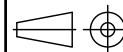
**Notes:**

1. Units:mm
2. All the packing material should meet Lumatek specification.

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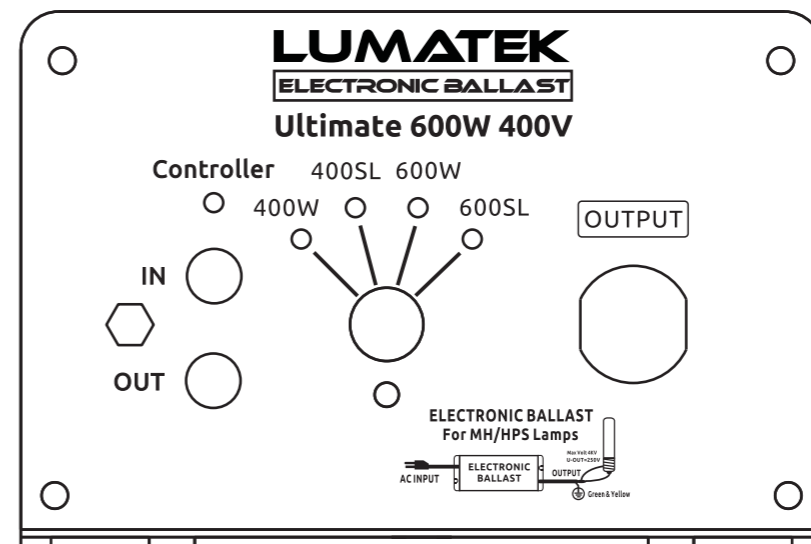
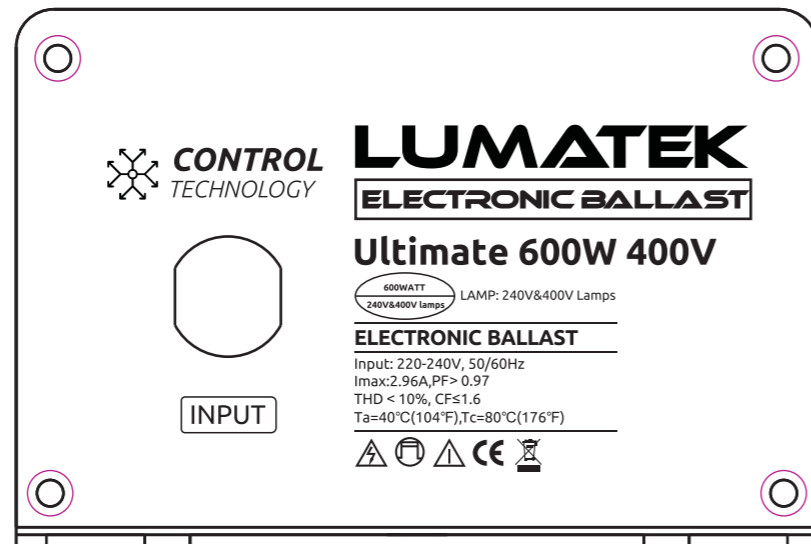


First Angle Projection

Description:		REV P00
Part No:	-	SIZE A3
Used On:	Ultimate 600w 400v Controllable Ballast	

Scale	--	Unit	mm	Sheet 1 Of 1	Issue Date:	Drawn:	Design:
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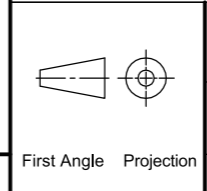
# 10 Mark(TBD)



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**PROFESSIONAL LIGHTING**

Scale	---	Unit	mm	Sheet 1 Of 1	Issue Date:	Drawn:	Design:
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Description:	Mark	REV P00
	Part No: --	
Used On	Ultimate 600w 400v Controllable Ballast	SIZE A3