

SPECIFICATION FOR APPROVAL

Customer : _____

Customer P/N : _____

Product Type : **Digital Ballast**

Product No. : **600W Controllable Ballast**

Issue Date : **2019.03.21**

Prepared By			
Checked By	R&D	DQE	QC
Approved By			

Web: www.lumatek-lighting.com

Contents

1. Description	1
2. Function and parameters	2
2.1 Knob control	2
2.2 Recommended Matching Lamps	3
2.3 Remote Wire Communication Function	4
2.4 Protection	5
3. Environment	6
4. Safety	6
4.1 Surface Temperature Rise.....	6
4.2 Leakage Current.....	6
4.3 Insulation Resistance	6
4.4 Dielectric Withstand Voltage (HI-POT)	6
4.5 Grounded Resistance	6
4.6 Regulatory Standards	6
5. EMC	7
5.1 EMI	7
5.2 EMS.....	7
6. Physical Dimension	8
7. Input	9
8. Output	10
9. Packing	11
10.Mark	12

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. It will delay ignition for random. Knob dimming range can be 250W-400W-600W-660W and remote wire communication function. It can match well with 600W HPS/MH lamps according to IEC standard.

Date	Prepared	Checked	Item No	600W Controllable Ballast

2. Function and parameters

2.1 Knob Control

2.1.1 Input Characteristics

Parameter	Conditions	Min	Type	Max	Units
Mains Performance	Operational Performance	195	220-240	265	V
	Operational Safety	185	220-240	275	
Mains Frequency f_{mains}	Operational Performance	48	50/60	63	Hz
	Operational Safety	45	50/60	66	
Mains Power P_{mains}	P=660W	669	690	711	W
	P=600W	615	636	657	
	P=400W	403	424	445	
	P=250W	244	265	286	
Mains Current I_{mains}	$V_{\text{mains}} = 240\text{V}$	2.8	2.9	3.0	A
	$V_{\text{mains}} = 230\text{V}$	2.9	3.0	3.2	
	$V_{\text{mains}} = 220\text{V}$	3.0	3.2	3.3	
	$V_{\text{mains}} = 195\text{V}$	3.4	3.6	3.7	
Power Factor	P=660W	0.97	0.98	--	--
THD	P=660W	--	--	10%	--
Inrush Current	$V_{\text{mains}} = 240\text{V}$	--	--	30	A
Pulse Duration	$T_a = 25^\circ\text{C}$, cold start	--	--	0.8	ms

Date	Prepared	Checked	Item No	600W Controllable Ballast

2.1.2 Output Characteristics

Parameter	Conditions	Min	Type	Max	Units
Lamp Frequency f_{lamp}	P=660W	37	48	62	KHz
Efficiency(%)	P=660W	94	95	--	--
Lamp Power P_{lamp}	P=660W	639	660	681	W
	P=600W	579	600	621	
	P=400W	379	400	421	
	P=250W	229	250	271	
Lamp Voltage	600W	85	110	135	V
Ignition Voltage	$C_{load} < 100pF$	2800	4000	5000	V
Ignition Interval	--	1-5-5-5-5			Min

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

Date	Prepared	Checked	Item No	600W Controllable Ballast

2.3 Remote Wire Communication Function

2.3.1 Remote Dimming

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

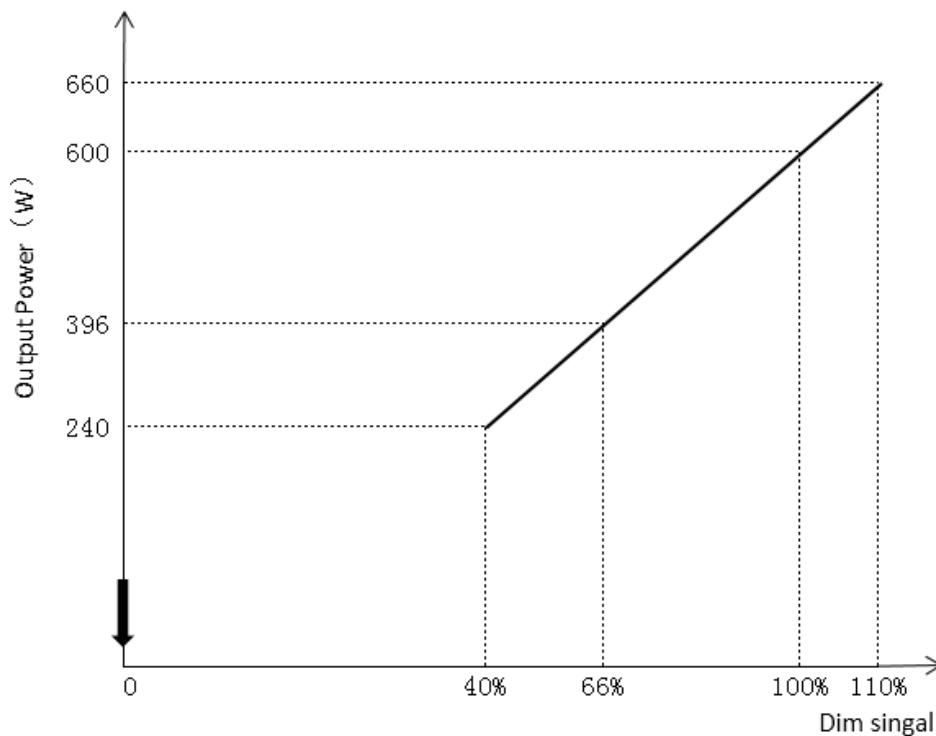
EXP: 75% of 600W ballast = 450W.

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 40%-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.

Date	Prepared	Checked	Item No	600W Controllable Ballast

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 5%.

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.

Date	Prepared	Checked	Item No	600W Controllable Ballast

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 5.5mA_{max}/60s.

4.5 Grounded Resistance

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

4.6 Regulatory Standards

EN 61347-1

EN 61347-2-12

Date	Prepared	Checked	Item No	600W Controllable Ballast

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

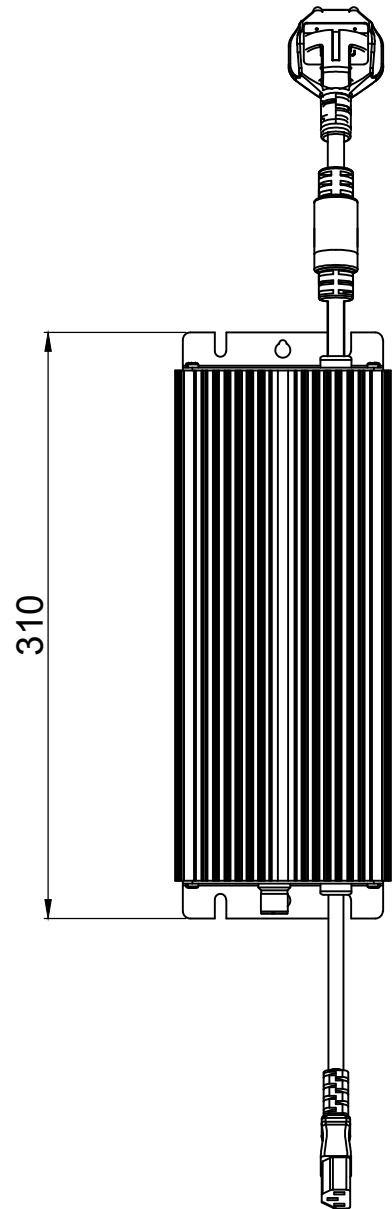
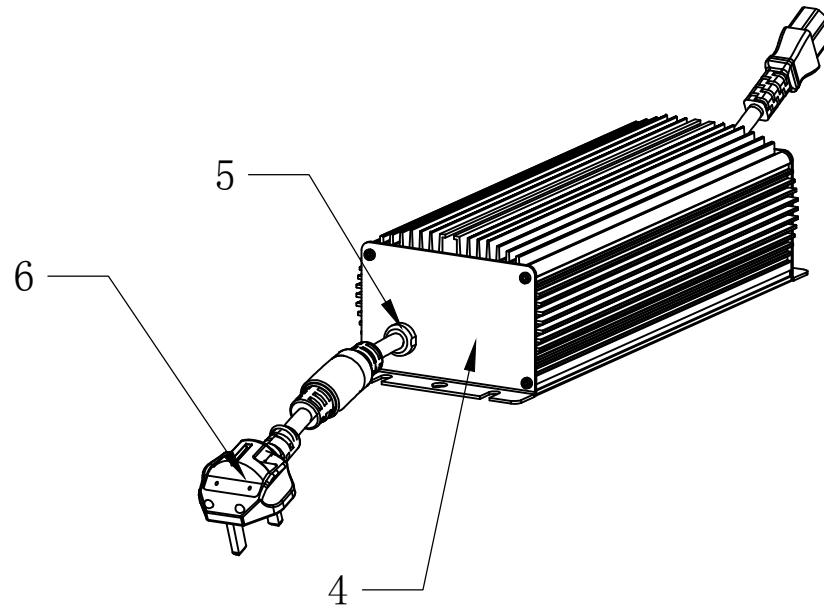
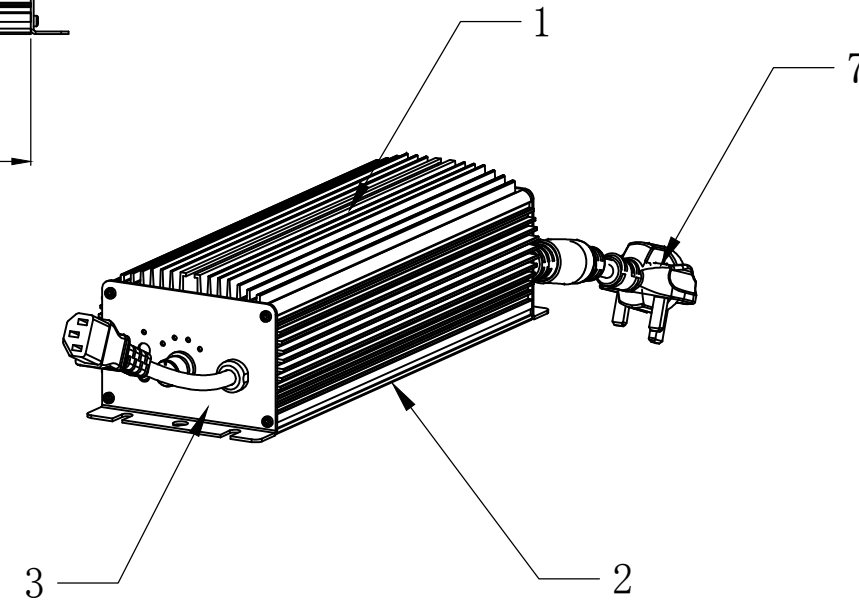
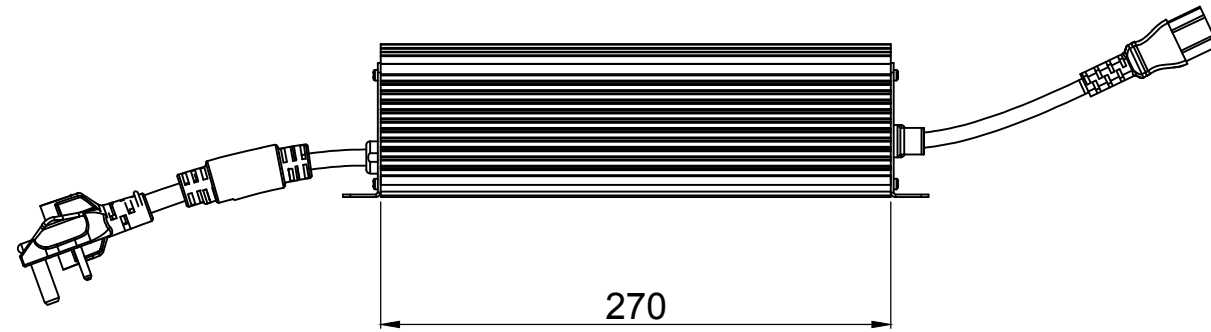
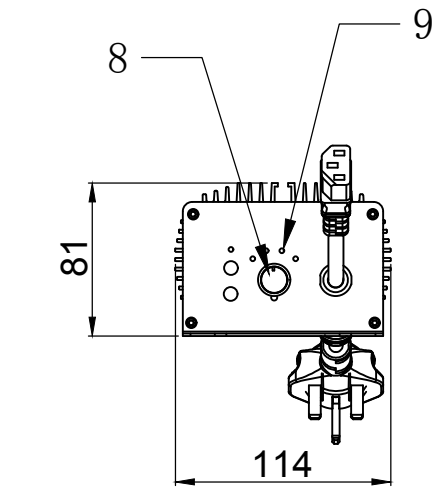
IEC 61000-4-2:

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

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

Date	Prepared	Checked	Item No	600W Controllable Ballast

6 Physical Dimension



Item	Part Name	Q'ty	Remark
1	Cover	1	Purple
2	Cover	1	Purple
3	Plate	1	Purple
4	Plate	1	Purple
5	Strain Relief Bushing	2	Black
6	Input Line	1	Black
7	Output Line	1	Black
8	Knob	1	Silver
9	LED	5	---

Physical Dimension	
Material	Aluminium
Dimension	310×114×81
Weight	TBDKg

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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

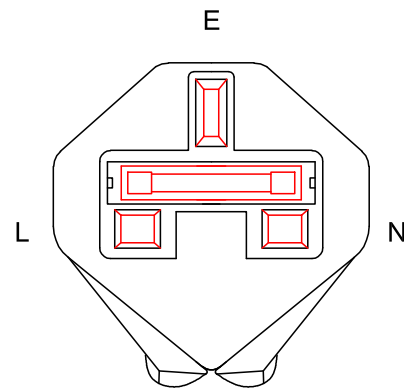
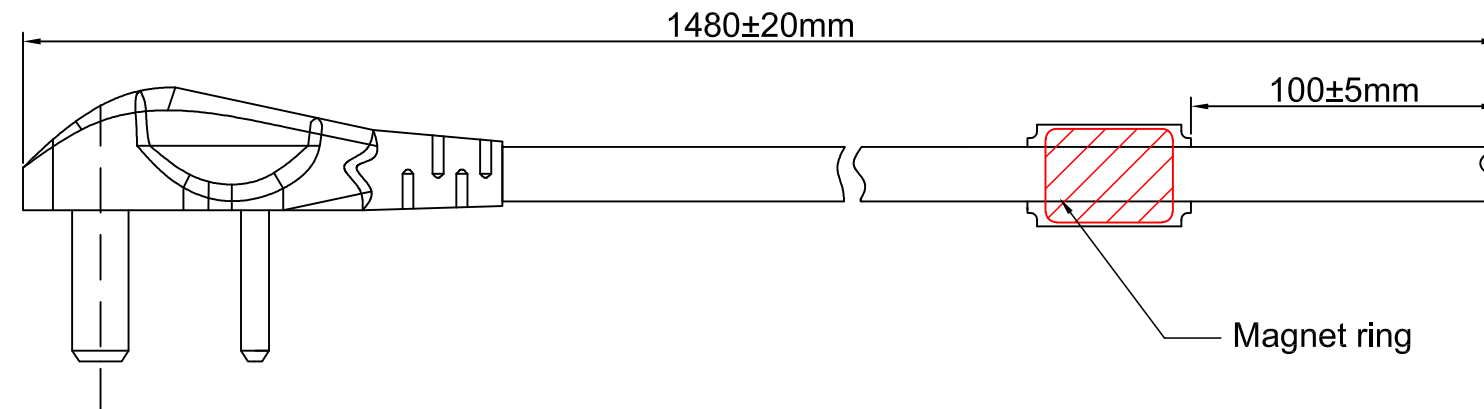


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<p>First Angle Projection</p>	Description:	<p>600W Controllable Ballast</p>	REV
	Part No:		P00
	Used On:		SIZE
			A3

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

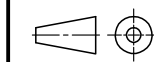


- Technical requirements :
1. Emifil: 19×50.8×10.15
 2. Power cord: Emifil set on the power cord directly, seal
 3. Specifications: VDE H05VV-F 3×1.5mm² 70 °C

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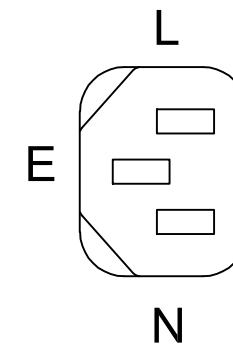
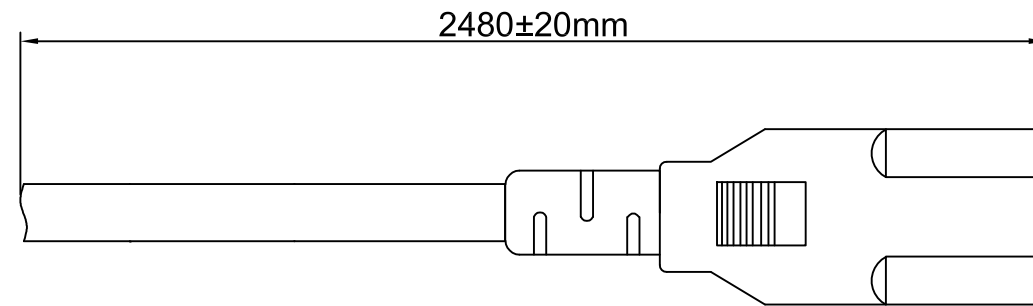


First Angle Projection

Description:	Input	REV
Part No:	--	
Used On	600W Controllable Ballast	
		SIZE
		A3

Scale	--	Unit	mm	Sheet 1 Of 1	Issue Date:	Drawn:	Design:
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8 Output

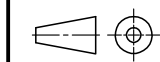


Technical requirements:
 1.Specifications: VDE H05VV-F 3×1.5mm² 70 °C

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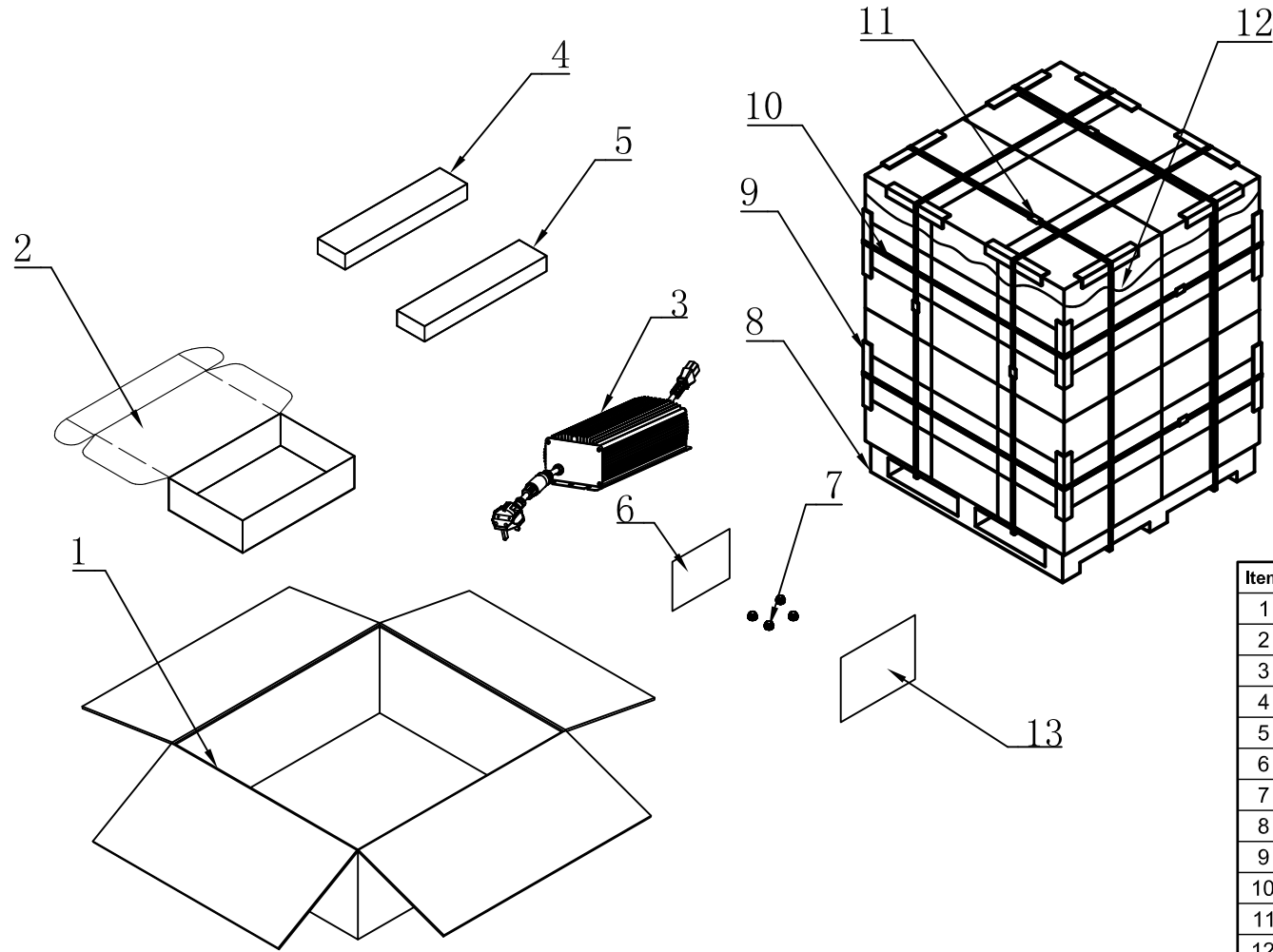


First Angle Projection

Description:	Input	REV P00 SIZE A3
Part No:	--	
Used On	600W Controllable Ballast	

Scale	--	Unit	mm	Sheet 1 Of 1	Issue Date:	Drawn:	Design:
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9 Packing

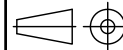


Item	Part Name	Outside Dim(mm)	Q'ty
1	Carton	430×360×195	1/4
2	Inner Box	345×205×85	1
3	Digital Ballast	310×114×81	1
4	EPE	40×28×112	1
5	EPE	35×20×115	1
6	Instruction	A5	1
7	Rubber Feet	\	4
8	Pallet	\	1/n
9	Angle Paper	\	\
10	Plastic Strip	\	\
11	Staple Wire	\	1
12	PE Film	t=0.02	1
13	EPE	600×400×0.5	1

Notes:

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

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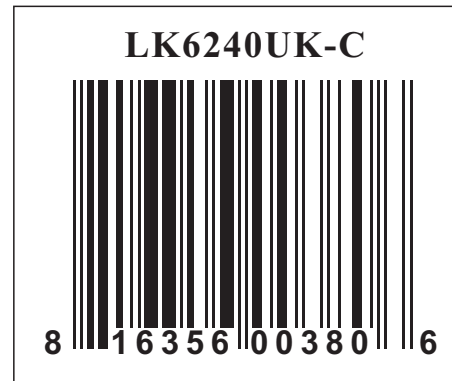
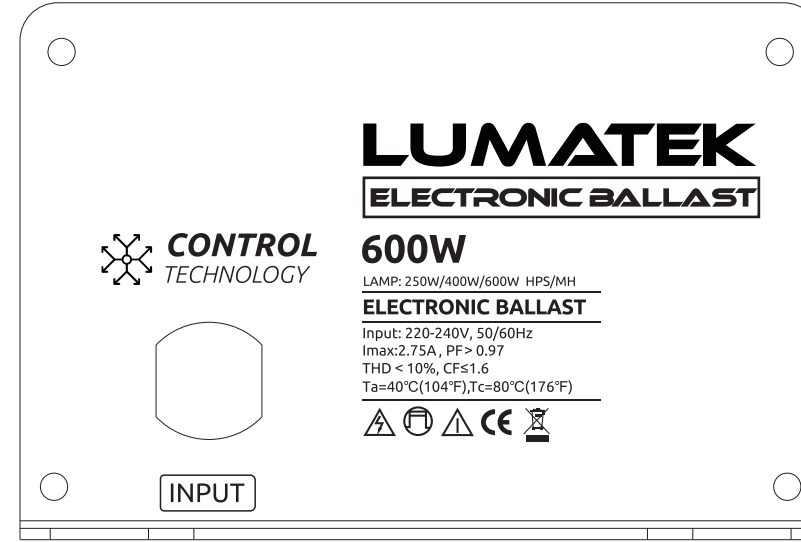
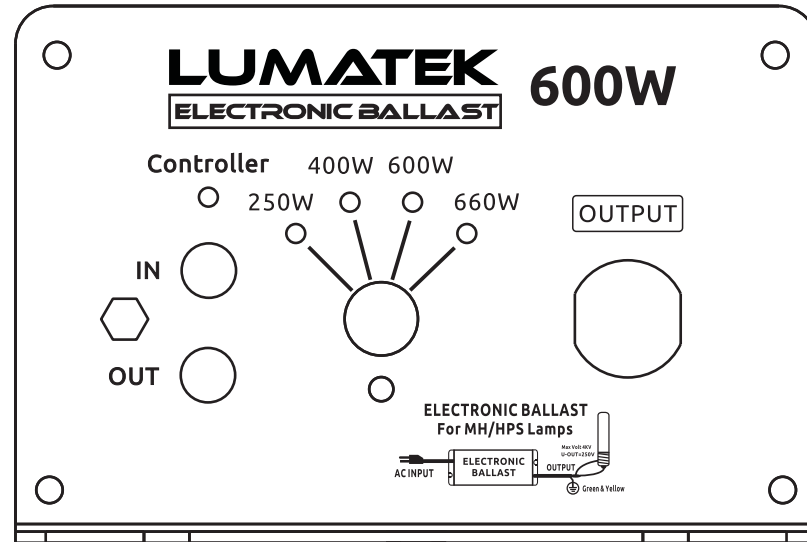


First Angle Projection

Description:		REV P00
Part No:	-	SIZE A3
Used On:	600W Controllable Ballast	

Scale	--	Unit	mm	Sheet 1 Of 1	Issue Date:	Drawn:	Design:
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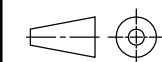
10 Mark



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First Angle Projection

Description:	Mark	REV P00
	Part No:	
Used On	600W Controllable Ballast	SIZE A3

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