

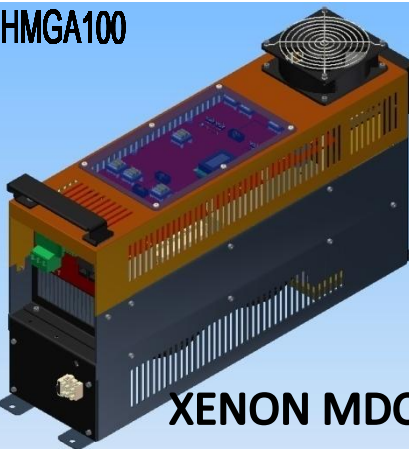
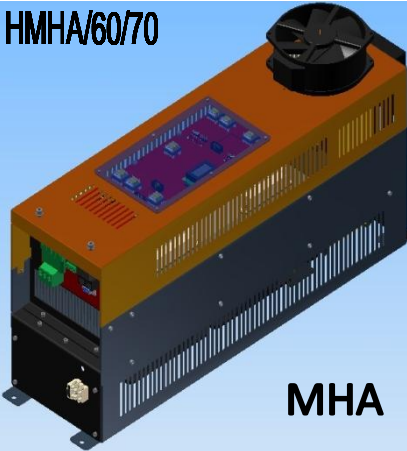
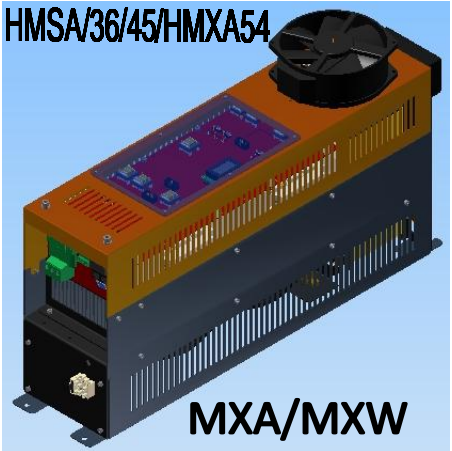
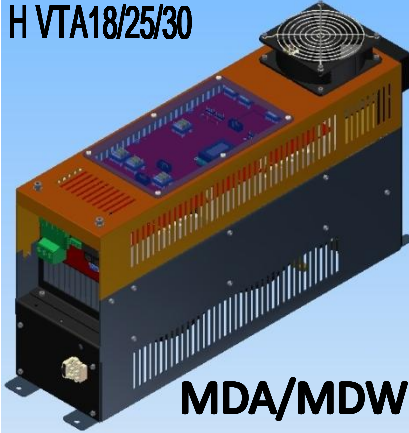
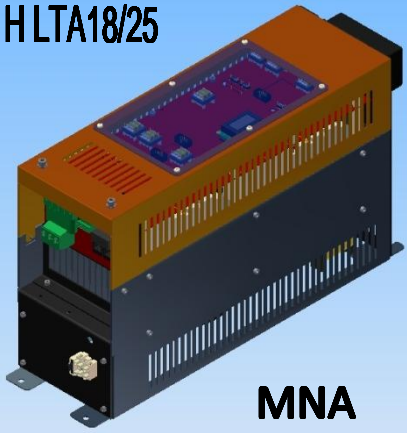
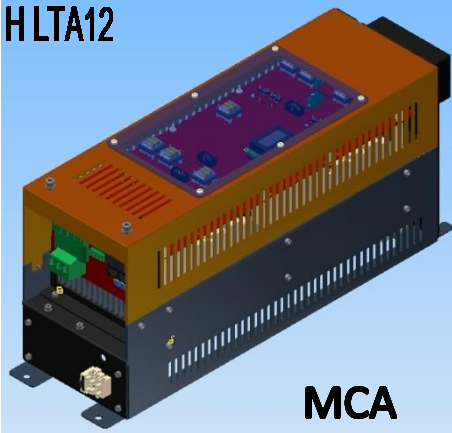


INTELLIGENT UV INVERTER BALLAST-HAMAL

INTELLIGENT UV INVERTER BALLAST--HAMAL

- **YYY-Charm is Company based in HONGKONG, with international investors, Its Core Business is :design and manufacturer industrial switching power equipment.**
- **YYY-Charm developed the intelligent UV inverter ballast, which are matched with UV Lamp power from 1KW to 40KW with Air or Water cooled system.**
- **HAMAL is combined with microprocessor technology, High frequency switching power supply, and using IGBT inverter technology in order to get highest efficiency, high reliability, more precision control and save energy.**
- **HAMAL will replace and improve the traditional electromagnetic transformer + Capacitor ballast for printing industry, UV curing system and painting industry**
- **Xenon DC Power Supply(1KW to 20KW) can easily turn on different Xenon Lamp such as : USHIO, ORC, ASL, YUMEX, OSRAM without external igniter with high efficiency; which was applied for PCB/LCD/PDP exposure machine, cinema system(Xenon lamp) or solar simulators.**

INTELLIGENT UV INVERTER BALLAST--HAMAL



INTELLIGENT UV INVERTER BALLAST—HAMAL FEATURES AND BENEFITS

Features

■ Output High-frequency(8~16KHz) square wave

■ Tunneling System (HPE's patent)

■ Micro-process Dynamic control

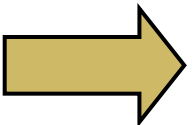
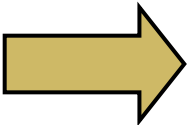
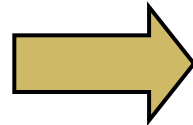
■ High-speed and soft switching IGBT

■ True Power regulator with magnitude control

■ Phase Balance

■ Self-diagnostics and protection

■ Excellent compact design



Benefits

- ◆ More UV radiationn output (increase 20%~30%)
- ◆ Reduce the Dipole overheating
- ◆ Can work in "FLASH MODE" to save energy

- ◆ Lamp live is increased
- ◆ Warm-up time of the lamp is heavily reduced

- ◆ Best efficiency of the Lamp over the time
- ◆ Find the best working point of current and voltage
- ◆ Control and recovery of the external events

- ◆ Very fast response
- ◆ 30ms!!! From stand by to full power

- ◆ Fully Stepless regulation
- ◆ Minimal power is 5% (long term standby)
- ◆ No special algorithm from customer is required

- ◆ Power factor is 96%
- ◆ No inrush current
- ◆ $\text{Cos } \phi = 1$

- ◆ Self-diagnostics
- ◆ Protection technology: LV P,HVP ,OHP, PLP, SCP

- ◆ Weight is 5 times less
- ◆ Volume is 8 times less
- ◆ Easy to setup

Feature 1

Output High-Frequency (8~16KHz) Square Wave

◆ More UV radiationn output
(increase 20%~30%)

➤ **NO DEAD TIME:** eliminates the re-strike in the plasma during the polarity dipole swapping . (this feature qualify the high frequency UV inverter).

➤ HPE HAMAL exhibits only few nano-seconds of dead time where the most popular inverter has about 2 Micro seconds.

➤ The dead time influence the efficiency of the lamp because the re-strike of mercury plasma leads to non emission period.

◆ Reduce the Dipole overheating

➤ Reduce the dipole overheating proper of low frequency ballast ,

➤ This reduction is :

➤ **from** 10ms(50 Hz device) or 2.5ms (250hz inverter)
Down to 50 microsecond.

◆ Can work at FLASH mode to save enery

➤ “Flash mode” means that the lamp is powered only when the curing effect is required , even for some milliseconds, and then the lamp can be placed in standby mode.

➤ This working mode increase the life of the lamp and reduces the energy consumption.

◆ Increase the life of the lamp 2 x

◆ Reduce the time of turn on down to 30% of conventional ballast

➤ The first benefits of Tunneling system is the soft start current control .

➤ The soft Start current applied on the right timing reduce the turn on stress on dipole that is the most important cause of aging of the lamp . The current adjustment is performed every machine-cycle (about 50 microseconds) .

➤ The warm-up current is managed to achieve the highest current according with the lamp characteristic . During the ignition time , the lamp is mapped to obtain the data to be processed along warm up period .

➤ This process takes care of the aging and the temperature of the lamp ,
➤ Automatic self adjusting procedure is performed by microcontroller every time the ignition take place.

Feature 3

Micro-process Dynamic control

- ◆ **Best efficiency of the Lamp over the time**

- *The lamp is automatically mapped during the ignition and warm up time*
- *The vectorial control permits to achieve the fastest response compatible with the lamp capability.*

- ◆ **Find the best working point of current and voltage**

- **Internal algorithm shares voltage and current controls to find the best working point**

- ◆ **Control and recovery of the external events**

- **Control the status of the lamp every 1 ms**
- **control and recovery of the external event such as line voltage variation**

Feature 4

High-speed and Soft Switching IGBT

◆ Very fast response

- Better than 100hz band pass
- the terms of comparison are :
 - 3HZ for the electronics inverter .
 - 0.5Hz for magnetic ballast . .
- So at least 30 time faster than the best product on the Market.

◆ 8ms!!! From stand by to full power

- The dimming is obtained by amplitude modulation this permits to achieve even 5% of minimum power during " **long standby**" working mode .
- Amplitude modulation is the best technique to reduce the unwanted lamp trip off when fast transient are requested to the lamp .
- This technique together with the vectorial control permits to scale the power from min to max in only 8ms , avoiding at the some time the unwanted trip off .

Feature 5

True Power Regulator with Magnitude Control

◆ Fully Stepless regulation

➤ The power output can be controlled from 5 to 100 % of the lamp power output totally step less.

◆ Minimal power is 5% for long term standby

➤ In “long Standby mode“ the minimal power can be 5% (depend on the lamp property)

◆ No special algorithm from customer is required

➤ The lamp stands always ready, even when minimal power is required(with the proper ventilation to the lamp).

➤ The maximum power is continuously regulated to avoid the permanent damaging of the lamp in case of cooling system failure.

➤
➤ the minimal request of power is continuously adjusted to avoid unwanted trips .

Feature 6

Phase Balance

◆ Power factor is 96%

◆ Absence of inrush current

◆ $\text{Cos } \phi = 1$

Feature 7

Self-Diagnostics and Protection

◆ Self-diagnostics

◆ Output is protected against ground, overload and short circuit, additionally open circuit causes no problems

Feature 8

Excellent Compact Design

◆ Weight is 5 times less

◆ Volume is 8 times less

◆ Easy to setup

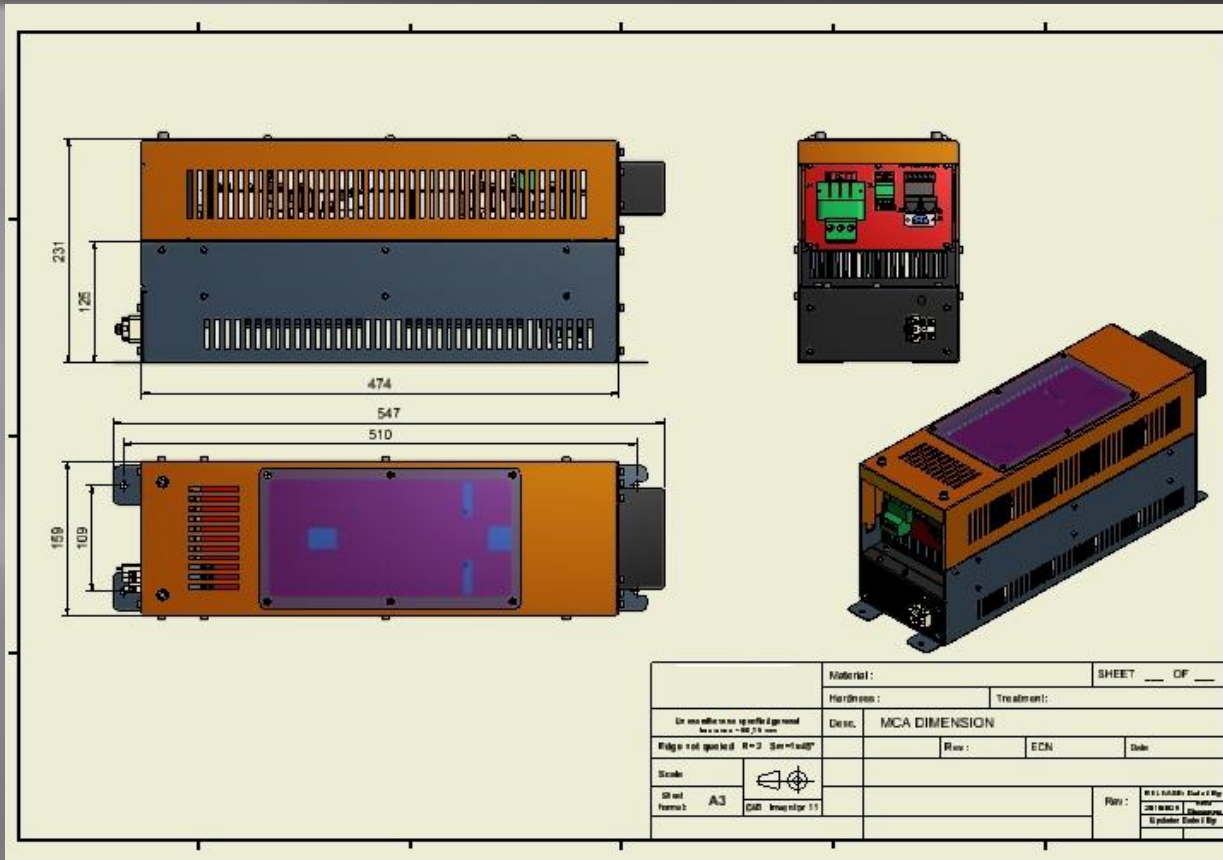
HAMAL TECHNICAL SPECIFICATION

HAMAL Specification	Machine Type						
	Air Cooled					Water Cooled	
	MCA	MNA	MDA	MXA	MHA	MDW	MXW
Output Characteristics	HLTA	HLTA	HVTA	HMSA/HMXA	HMHA	HMGA	HMGA
Max. Power Output	1KW~7KW	3KW ~10KW	11KW~17KW	18KW~21KW	22KW~30KW	6KW~17KW	18KW~30KW
MAX. Lamp Voltage	370V	380V~1200v	500V~3000V	3000V	3000V	3000V	3000V
MAX. Lamp Current	Max. 30A						
Input Requirements							
24V Maximum Power consumption	25W (+Contactor Power Consumption)						
220V Fan Power consumption	70W						
Main Voltage							
Main Current(at 30KW)	<=3 x43A						
Main Frequency	50~60Hz						
Electrical Properties:	3 PHASE 400VAC±10%;(OR 220V,440V, 480V)						
Electrical Efficiency	>90%						
Power factor	>95%						
Power Line Loading	Symmetrically on 3 Phases						
Connection	R, S, T, PE						
Control Range(respect of Max. Power)	5% ~100% Step less						
Maximum Lamp Cable Length	30MT						
Response Time	30ms (Part to Full Power)						
Physical Properties							
Ambient Temperature	10~40°C						
Relative Humidity	30~60%						
Maximum Cooling Liquid Pressure	N/A					5Bar or 500KPa	
Dimension L(mm) x W (mm) x H(mm)	532 x 160 x 230	532 x 160 x 295	624 x 160 x 342	670 x 160 x 360	765 x 160 x 342	624 x 160 x 342	670 x 160 x 360
Weight (Kg)	15	20	25	28	25		28
Installed Position	Horizontal or Vertical						

MECHANICAL DRAWING

MICRO(1KW~7KW) $\leq 370v$

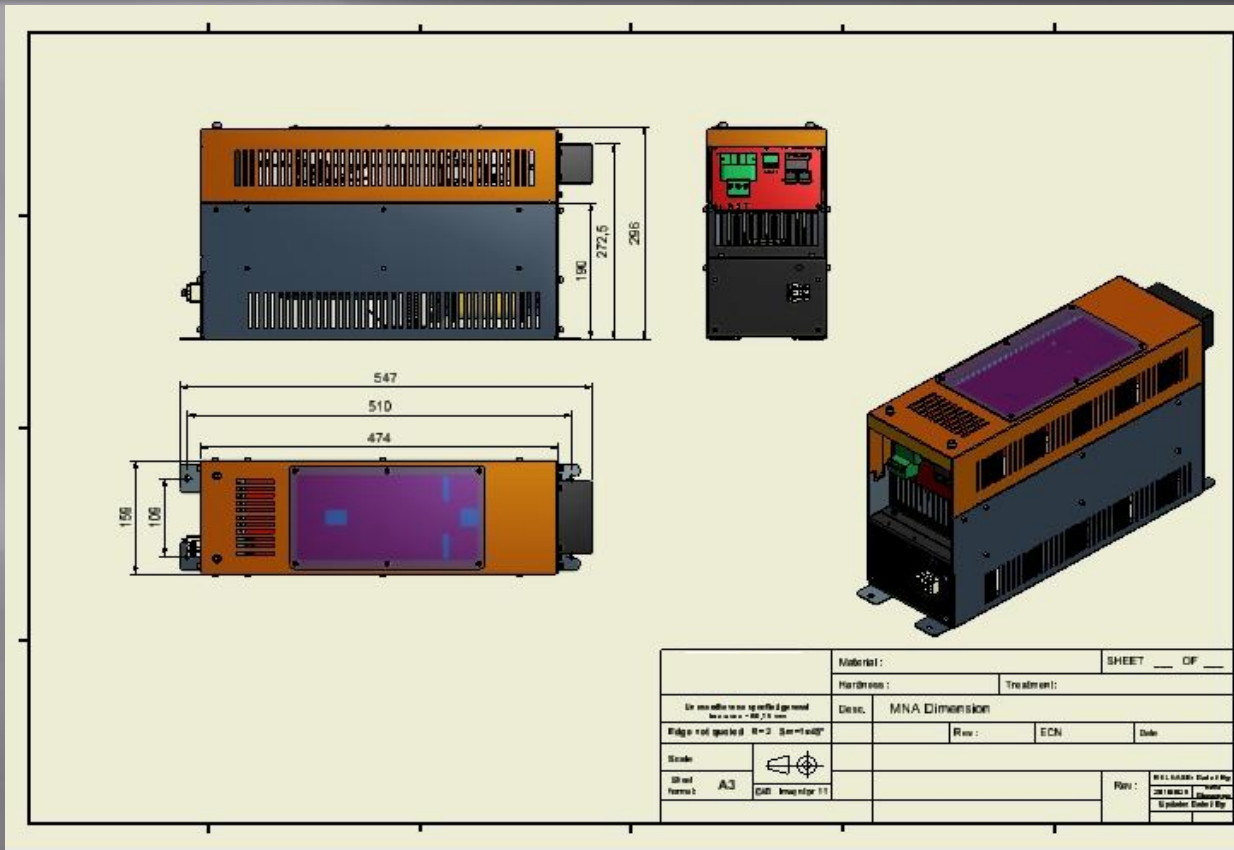
HLTA12



MECHANICAL DRAWING

MNA - 3KW to 12KW $\geq 400V$

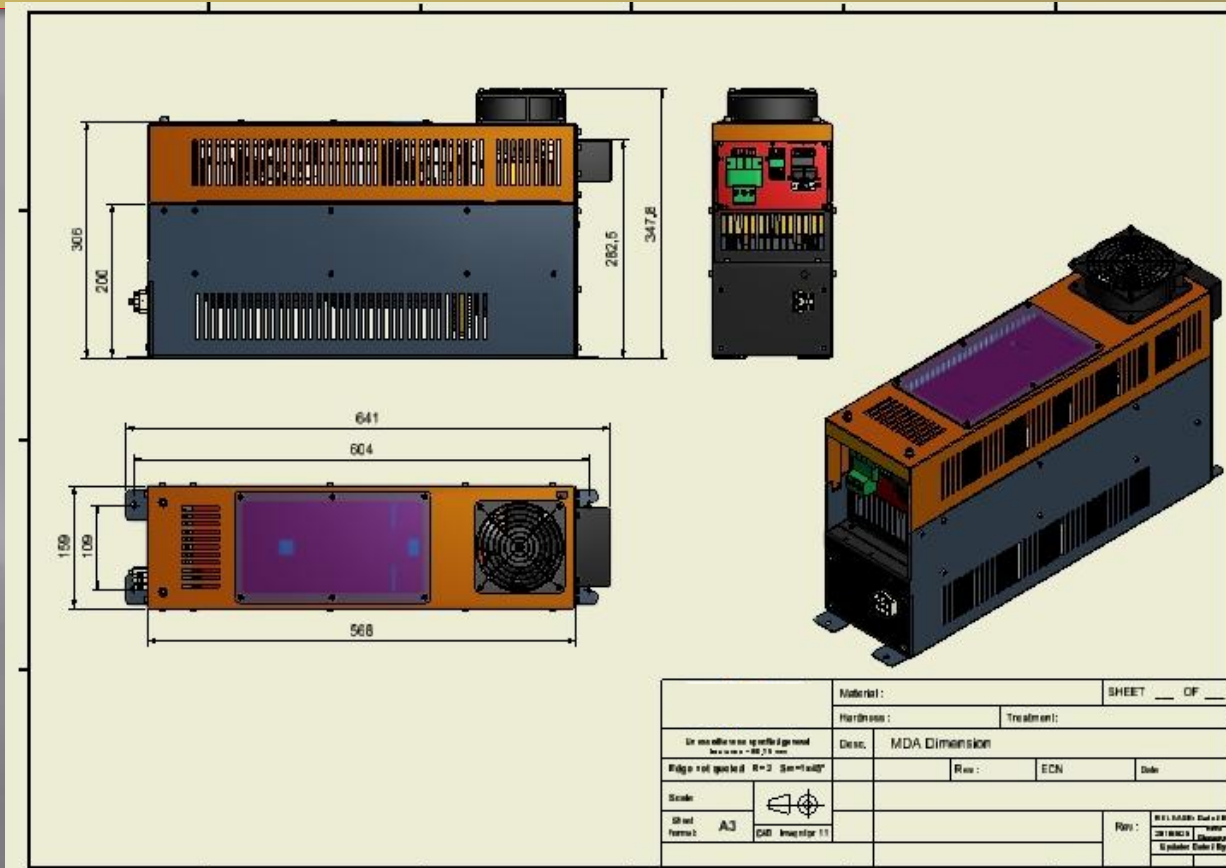
H LTA18/25



MECHANICAL DRAWING

MDA / MDW – 13KW to 17KW

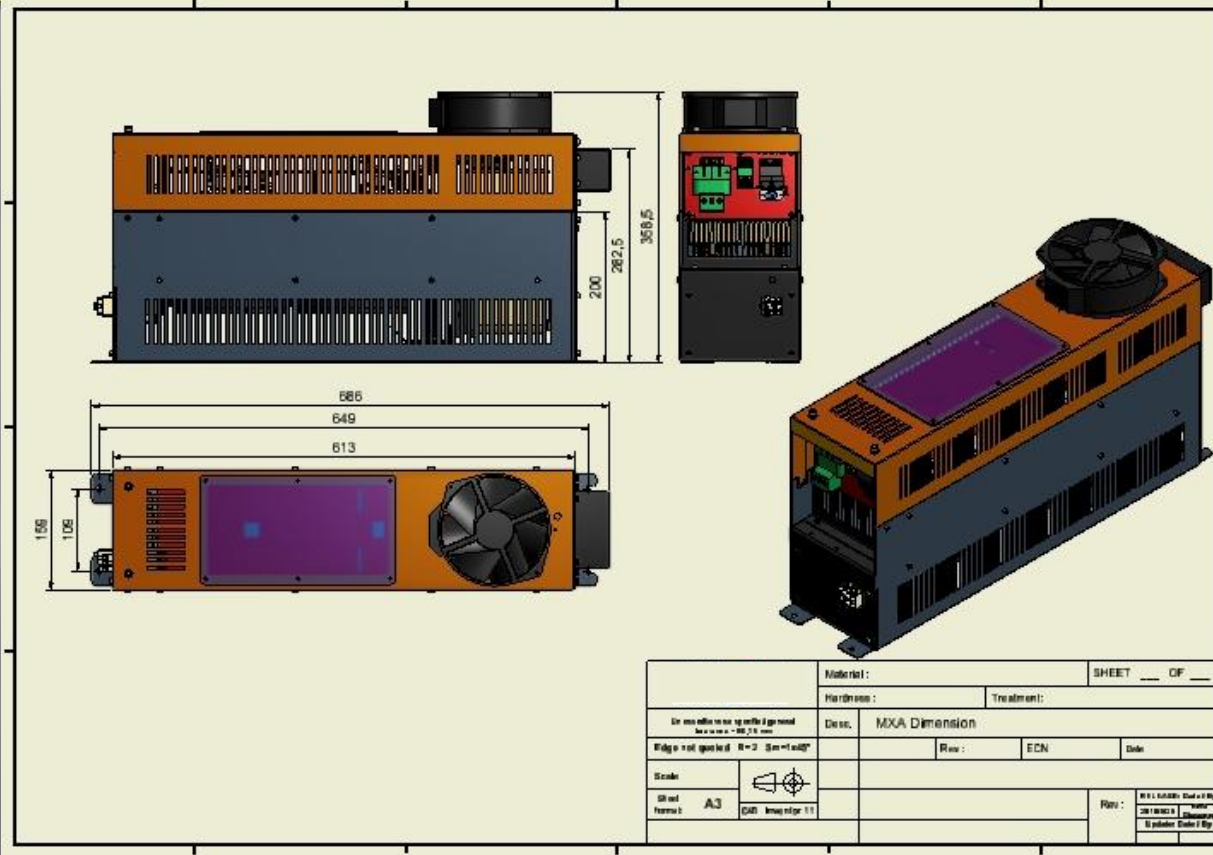
HVTA



MECHANICAL DRAWING

MXA / MXW – 18KW to 30KW

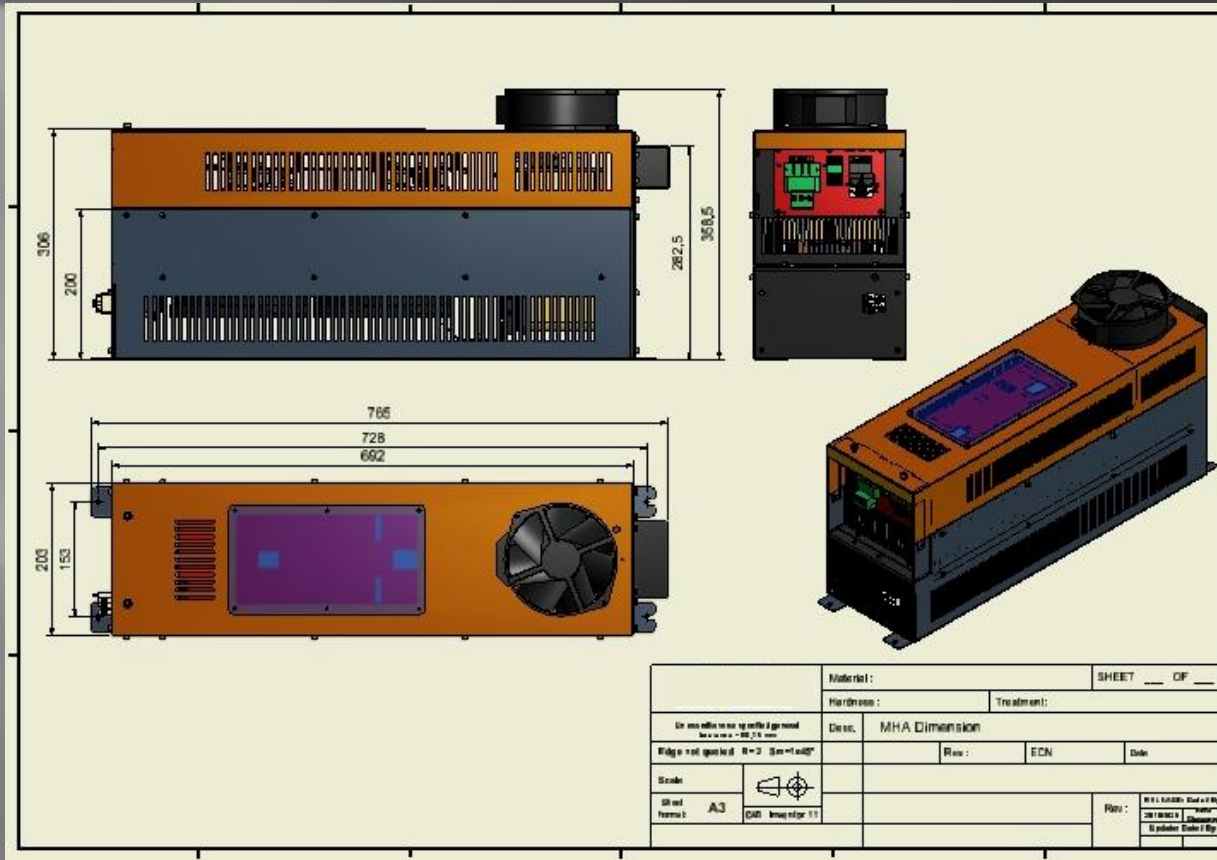
HMSA/XA



MECHANICAL DRAWING

MHA – 22KW to 30KW

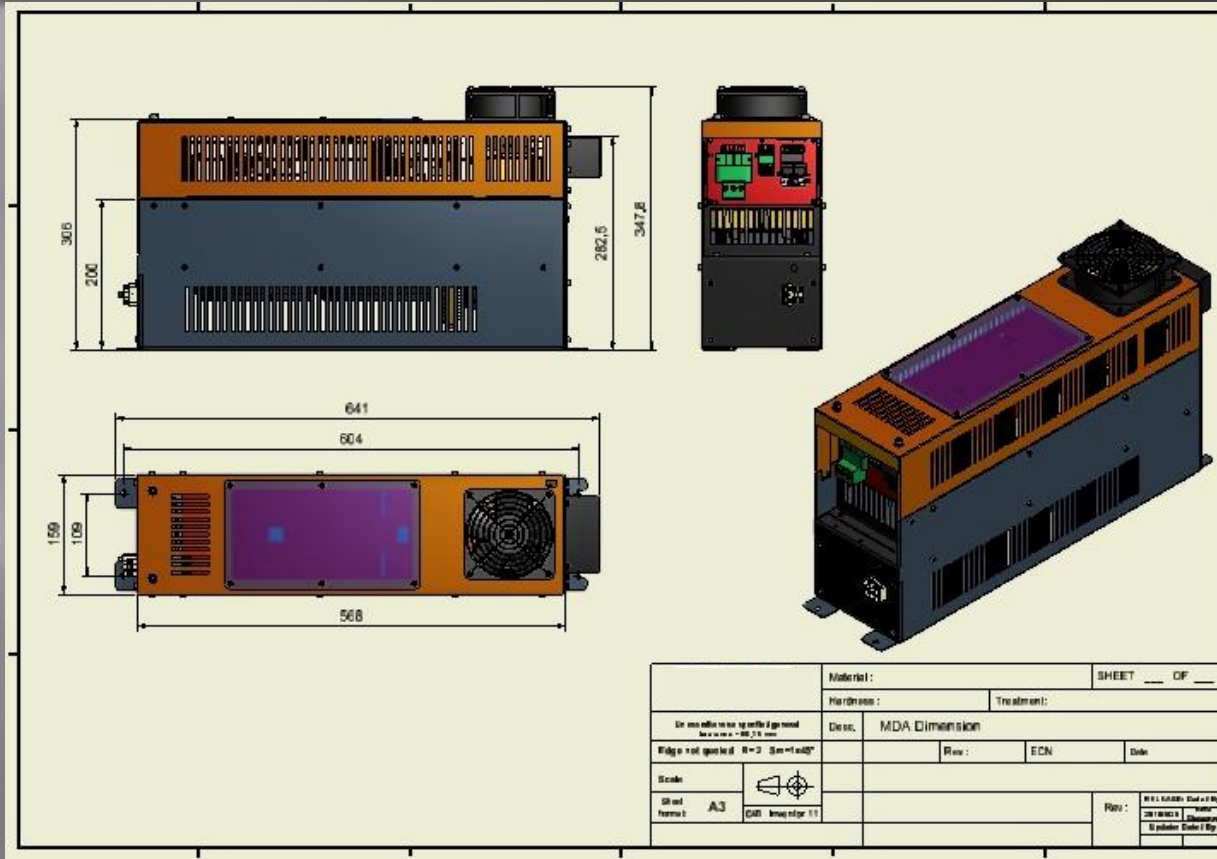
HMHA



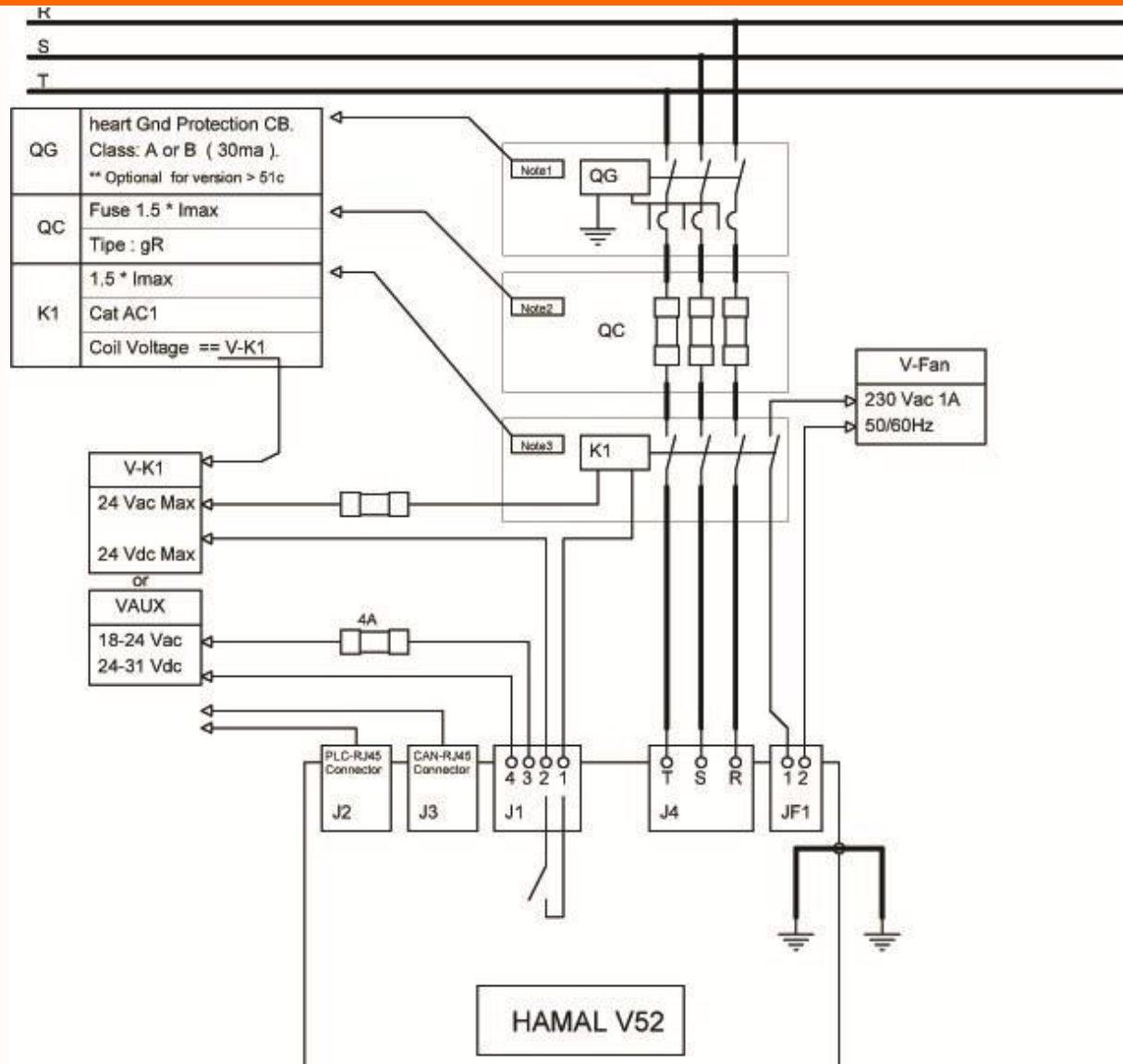
MECHANICAL DRAWING

XENON MDC – 5KW to 10KW

HMGA



HAMAL Connection



COMPARISON CHART

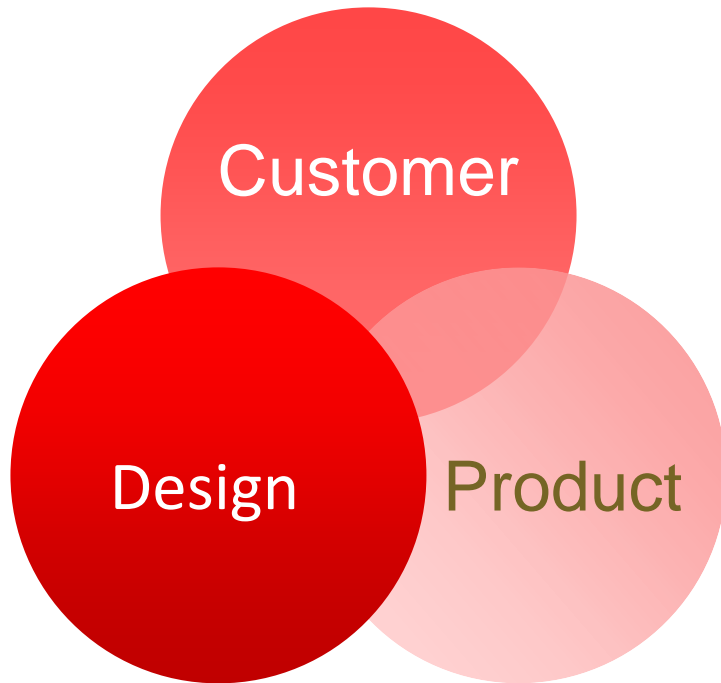
**YYY-Charm
HAMAL**

**New
Revelutionized
Technology**

**State Of The Art
Equipment That
Is Relaiable**

	Traditional Electromagnetic	SCR-Regulated	Switching Mode	
			Electronic	HPE Power control
Working Frequency	50/60Hz	50/60hz	200~400Hz	Variable from 18 to 60Khz
Full load efficiency		from 30 to 80%	>90	>92% < 96
Dimming Efficiency	from 30 to 80%	very low in dimming	>90 (3 phase only)	always >92
Power factor	very low in dimming	very bad	>90	96
Control Type	Open circuit	Current / voltage shift phase analog control	Current or Power	"Vectorial " Power
Wave form	Sinusoidal Voltage Current with big harmonic distortion	Big harmonic distortion in voltage and current	Square Wave Amplitude controlled	Square Wave re-strike less
Regulation range	40to 100% with step	40 to 100% step less	20-100% stepless	20-100% step less 2%-100% in long stand-by
Stand-by Power	40% typical	40 %typical	15%typical	2/3% in long stand by mode
Ignition + Warm up time	2 minute typical	2 minute typical	1 minute	10 to 45 sec(tunneling)
Response time	200ms	2 seconds	0.5 sec	8ms
Plc interface	Digital	Analog +digital	Analog digital	Analog + digital
Size & Weight		for 17kw = 150kg	for 17kw = 40kg	for 17kw = 15kg

INTELLIGENT UV INVERTER BALLAST--HAMAL



1. Our number 1 priority is a satisfied customer .
2. We tailor our design to meet with customer requirement and needs
3. We produce products that is designed to meet with customer requirements.

THANK YOU!

Contact: Kevin

Xiamen Charm Impact Import & Export Co., Ltd.

E-mail: YYY-Charm@foxmail.com xmb_sales@163.com

Cell-phone: +0086-(0)-15159281187(whatsapp) Skype: kevinkevin388

www.yyy-charm.com

www.uvballastsupplying.com