■ **Features**
- Input voltage: 90-305Vac
- Built-in active PFC function: 0.98 Typ.
- High efficiency: 91%
- Constant current/ 0-10V dimming/ clock dimming/ PWM dimming
- Full power at 65%Iomax～100%Iomax (constant power)
- IP65 design for indoor or outdoor installations
- High surge immunity
- Compliance to worldwide safety regulations for lighting
- Suitable for dry/damp locations
- 5 Years Warranty

■ **Specification**

Model		210
MU100R210AQ_CP/P		
Efficiency (Typ.)Note.1		90.5% at 230Vac and full load,88% at 120Vac and full load
Voltage Range (V)Note.2		90～305Vac, OR 127～430Vdc
Voltage Rated (V)Note.2		100～277Vac
Frequency Range (Hz)		47~63
Power Factor		PF>0.98/120VAC, PF>0.96/230VAC, PF>0.92/277VAC at full load;PF>0.9 at 277VAC 65% load
THD		THD< 20% (120-277VAC,65%-100% load)
AC Current (Max.)		1.3A MAX at 115Vac, 0.5A MAX at 230Vac
Inrush Current (Max.)		COLD START 65A(twidth=680μs measured at 50% Ipeak) at 230VAC
Leakage Current (Max.)		0.75mA at 277Vac/60Hz
Output	Rated Output Voltage (V)	71-47
	Output Voltage Range (V)	71-29
	Rated Current (mA)	1400-2100
	Output Current Range (mA)	140-2100
	Rated Power (W)	100
	Output Current Setting Range	6.5%-100% of Io_max
	Constant Power Setting Range	65%-100% of Po_max
	Ripple Current (Typ.)	10% of Io_max. ((PK-PK) /AV) with LED default mode full load,or LED full load)
	Current Tolerance	±5%
	Line Regulation	±1%
	Load Regulation	±3%
	Turn on delay Time	<1s, at 120Vac; <0.5s, at 230Vac
Dimming Control	12Vdc Output Voltage (Vdc)	10.8Vmin.～12Vtyp.～13.2Vmax.
	12Vdc Output Current(Vdc)	0mA~10mA max.
	0~10V/DMI+ Voltage	Absolute maximum voltage -10Vmin~20Vmax
	0~10V/DMI+ Short Current	280uA~450uA (DIM(+)=0)
	DIMMING FUNCTION	Default 0-10V dimming mode. Other dimming modes sets to PWM/Clock Dimming(CLK) by software configuration
Protection	Over Voltage (V)(Typ.)	<100
		Protection type: Voltage limiting.output will not excceed the upper limit voltage , recovers automatically after fault condition is removed.
	Short Circuit	Protection type: Hiccup mode. recovers automatically after short is removed.
	Over temperature	Protection type: Decreases output current,returning to normal after over temperature is removed.
Environment	Operating Temp.	-40~+70℃(Refer to 'Derating Curve')
	Tc	90℃ max
	Operating Humidity	20~95%RH
	Storage Temp., Humidity	-40~+85℃ , 10-95%RH
	Temp. Coefficient	0.03%/℃ (0~50℃)
	Vibration	10-500Hz, 5G 12min/cycle, period for 72min each along X、Y、Z axes
Safety & EMC	Safety Standard	UL8750, UL1012, CSA C22.2 NO.107.1, EN61347-1, EN61347-2-13
	Withstand Voltage	I/P-O/P:3.75kVac, I/P-FG:1.875kVac, O/P-FG:1.5kVac
	Isolation Resistance	I/P-O/P:100M Ohms (500VDC/25℃/70%RH)
	EMC Emission	FCC Part 15 Class B/ EN55015, EN61000-3-2 Class C, EN61000-3-3
	EMC Immunity	EN61000-4-2,3,4,5,6,8,11, EN61547 (Surge: L-N: ±4kV, L,N-FG: ±6kV)
Others	MTBF	300,000 hours, measured at full load, 25℃ ambient temperature MIL-HDBK-217F(25℃)
	Lifetime	>=100 KHrs lifetime (continous) at Tcase = 65 ℃;>=50 KHrs lifetime (continous) at Tcase = 75 ℃(Refer to 'lifetime Curve')
	Dimension(mm)	130*130*70
	Weight (Typ.)	1.1KG

Note.1: Measured at full load and steady-state temperature in 25℃ ambient(Efficiency will be about 2% lower if measured immediately after startup);   Note. 2: Derating may be needed under low input voltage, Please Refer to 'Derating Curve' ;
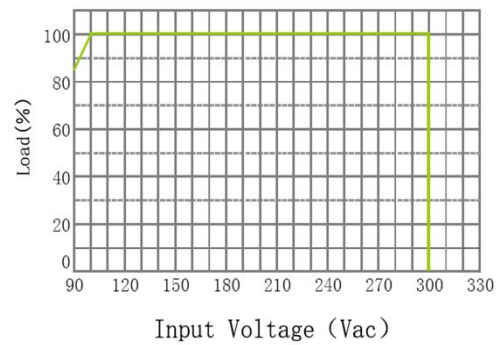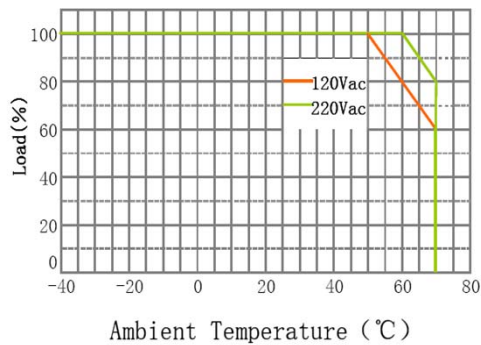
Derating Curve

V/I Curve

Note: Output current setting range with constant power 65%Iomax~100%Iomax.
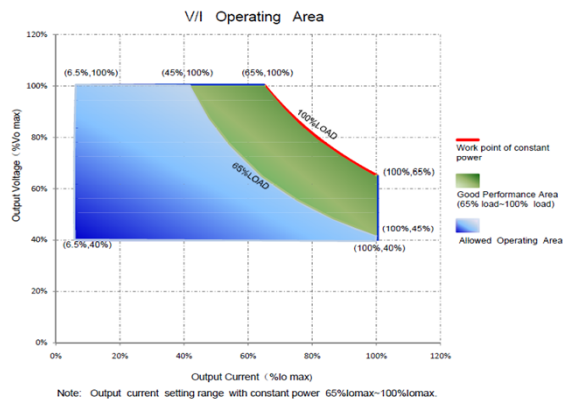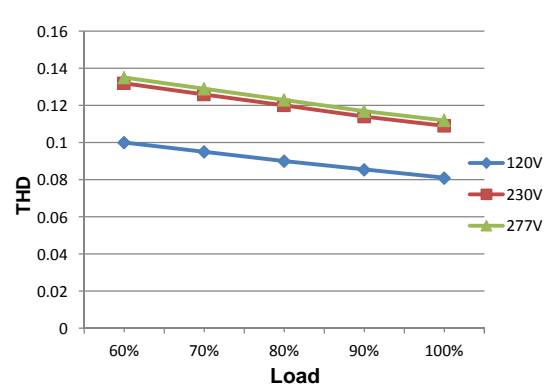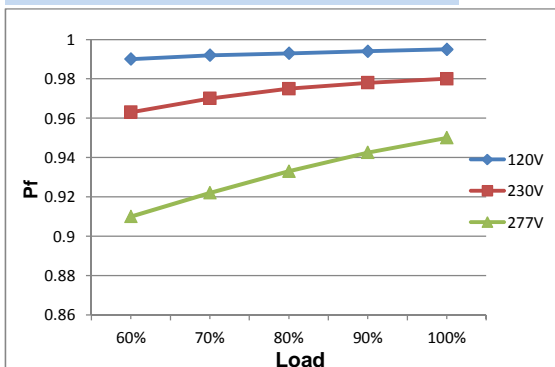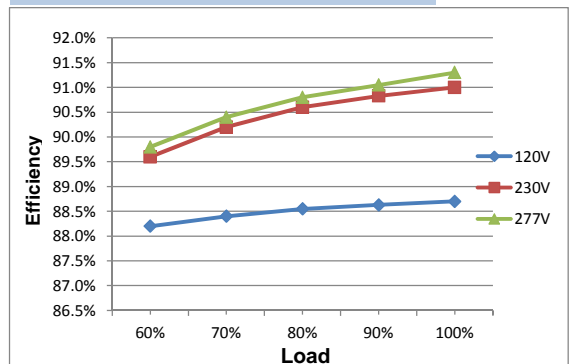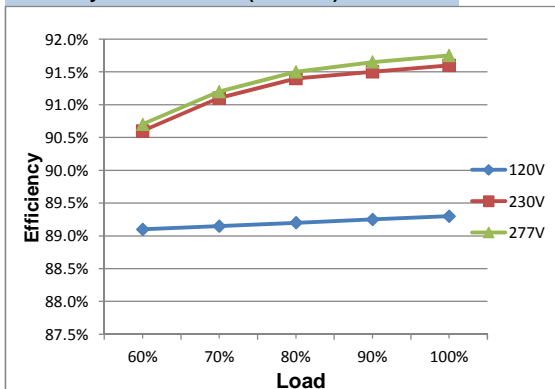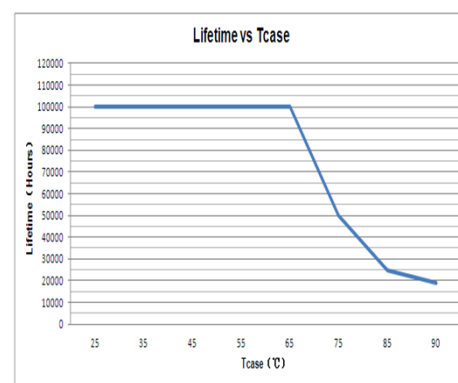
THD Curve

Power Factor VS. Load Curve

Efficiency VS. Load Curve(47V/2.1A)

Efficiency VS. Load Curve(71V/1.4A)

Life Time VS. Tcase (Ref.Full load at 120Vac and 277Vac)

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■ Instruction

1.Field Programmable Topology

| Programmable Diver | —cable— | Programmer | —USB cable— | [laptop] |
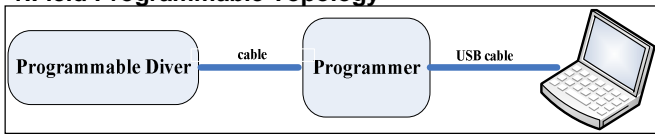
The programmable driver can be programmed by using special PC software and the programmer module.

2.Dimming Interface Description

Pin description

Pin	Name	Value	Description	Wire Color
1	Vaux 12V	10.8V-13.2V	Passive dimmers power supply	BK/WH
2	Dim+/Program	0-10V	Dimming/Programming input	PURPLE
3	Dim-	0V	DC Ground	GRAY

3.Dimming Software Function Instruction

■ Adjustable Output Current(AOC)

Adjustable Output Current (AOC)

Module Current 1050 mA

Max Current 1050 mA Power 150 W

Users can set the rated current between 10%*Max Current and 100%*Max Current

■ PWM

Input a PWM signal from the 2nd pin(Dim+/Program) of the dimming interface to change the output current.User can set "Positive Logic" or " Negative Logic" of the PWM signal. PWM duty circle: 1%~99%(it has both positive and negative logics), frequency: 500Hz~5kHz, 3V~10V is high,-0.3V~0.8V is low.

■ Adjustable Startup Time(AST)

Adjustable Startup Time (AST)

Start Fadeup Time 5 s

Set driver's "Start Fade up Time". It means how much time the driver costs to achieve the "Module Current " that the user set. The valid value is 0s, 1s, 2s, 5s, 10s, 20s, 40s.

Dimming Interface Selection(DIS)
○ 1-10V ● PWM ○ Smart Midnight ClockDIM ○ Fixed ClockDIM ○ No Dimming

PWM Logic(PWML)

Positive Or Negative Logic +
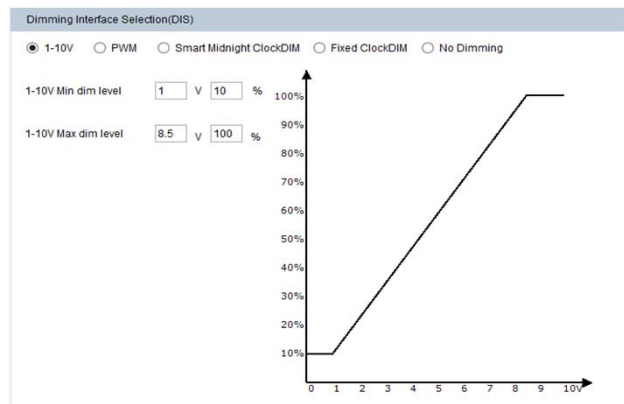
■ Fade Time(FT)

Fade Time(FT)

Fadeup Time 1 s

Set driver's "Fade up Time". This function is available in the Smart Midnight ClockDIM and Fixed ClockDIM mode; It means how much time the driver costs to achieve another dimming level from previous dimming level. The valid value is 0s, 1s, 2s, 5s, 10s, 20s, 40s.

Output current percentage graph (100% / 10% vs 0% to 100% PWM duty cycle)
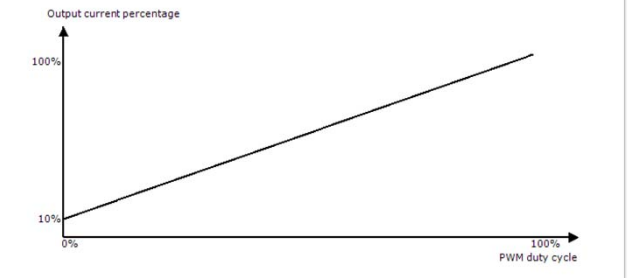
■ 1-10V

Allow users to set the max and min output current and corresponding output voltage to clarify the 1-10V dimming curve. Input a 0~10V signal from 2nd pin of the dimming interface. Default: input ≤1V, output current 10%; input ≥ 8.5V, output current 100%.

Dimming Interface Selection(DIS)
● 1-10V ○ PWM ○ Smart Midnight ClockDIM ○ Fixed ClockDIM ○ No Dimming

1-10V Min dim level 1 V 10 %

1-10V Max dim level 8.5 V 100 %

Dimming curve graph (10% to 100% vs 0 to 10V)

■ **Instruction**

■ Integrated Dynadimmer
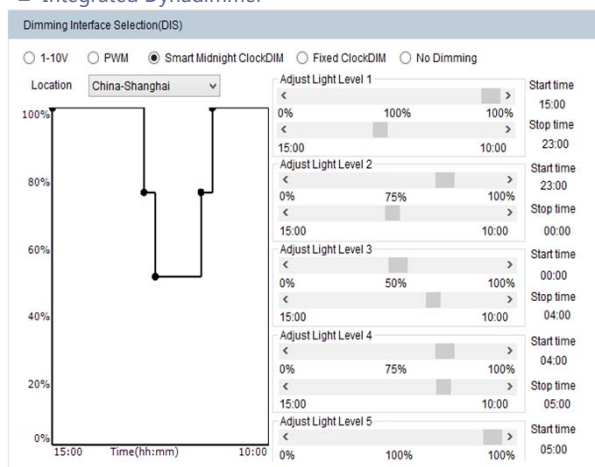
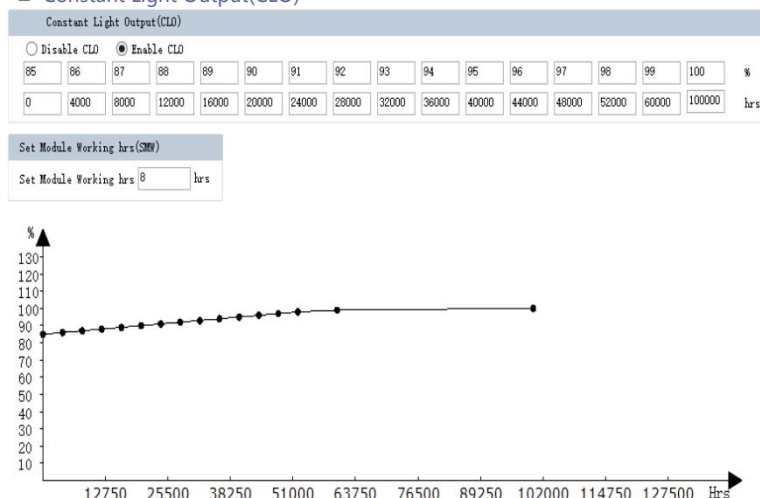Integrated Dynadimmer allows dimming to predefined light levels based on the nightly operating time. With flexibility in setting time and light levels, the user can configure the driver for specific locations and application needs. Using Integrated Dynadimmer, it is possible to set up to 5 dim levels and time intervals. The driver does not have a real time clock. Instead it runs a virtual clock, determined by the length of nightly operating hours. After 3 ON-OFF cycles, the driver will calculate the virtual clock time. A valid ON-time is defined as a period during which the driver operates continuously for ≥4 hours to ≤24 hours. For example, if the requirement in summer is: 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75% (other time 100% or Off). The driver should be powered on for 7h, so it can calculate the virtual clock time as 22:00. Then we can set the dimming plan: 22:00~23:00: 100%, 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75%. From summer to winter, the valid ON-time changes day by day. The driver should be powered on for 17h in winter, and it also can calculate the virtual clock time as 17:00. Then the dimming plan is 17:00~23:00: 100%, 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75%, 05:00~10:00: 100%. From the above, if we set the dimming plan as shown in the picture, after repeating the driver ON-time for 3 consecutive days, the dimming plan takes effect from the 4th day onwards. Each day the driver powered on, it has a different start time according to the virtual clock time. So the driver can satisfy different requirements for different seasons.

■ Constant Light Output(CLO)

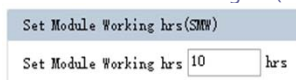### ■ Integrated Dynadimmer Time Based
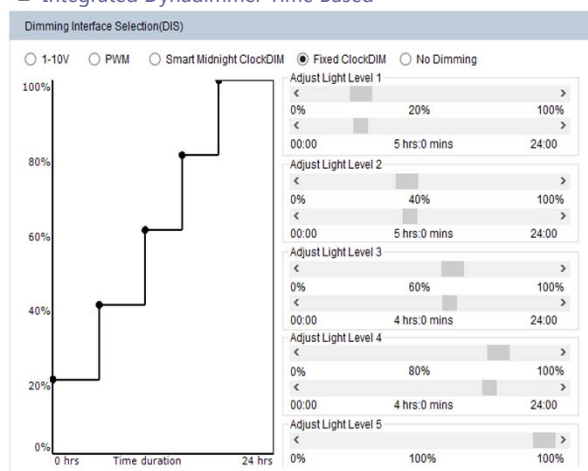
Allow users to separate 24hrs into 5 sections and corresponding output current.

■ No Dimming

The driver will be in constant output mode.

■ Set MODULE Working hrs(SMW)

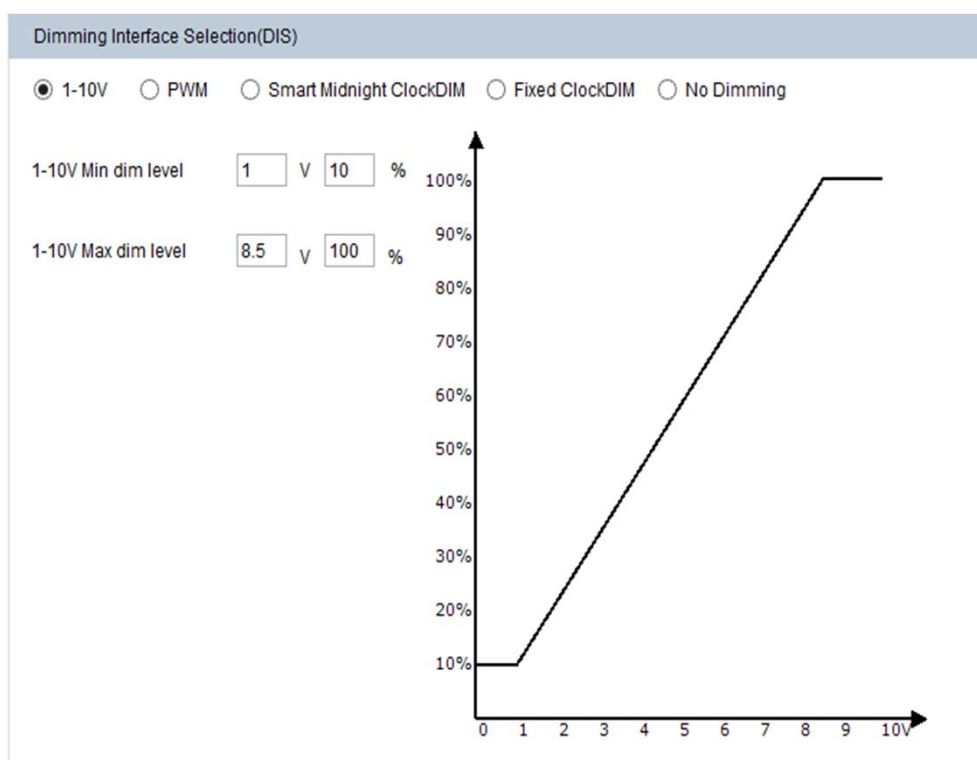User can check how much time the driver works through this function.

Traditional light sources suffer from depreciation in light output over time. This applies to LED light sources as well. The CLO feature enables LED solutions to deliver constant lumen output through the life of the light engine. Based on the type of LEDs used, heat sinking and driver current, it is possible to estimate the depreciation of light output for specific LEDs and this information can be entered into the driver. The driver counts the number of light source working hours and will increase output current based on this input to enable CLO.

When the CLO feature is enabled, the driver nominal output current will be defined by the CLO percentage as shown by the equation below:

Driver target nominal output current = CLO percentage * AOC. For example, in the CLO profile shown in Figure, between 52,000-60,000 working hours, the CLO percentage is set at 98%. Assuming the nominal AOC is set to 500mA, the driver output current with CLO enabled will be 0.98 x 500 = 600 mA.

The CLO percentage can be set to a value between 85%-100%, in increments of 1%. The LED module working hours can be set at any value between (0-100,000 hours).

SHANGHAI MOONS' AUTOMATION CONTROL CO., LTD.
Add: No.168, Mingjia Road, Shanghai 201107, P.R.China
Tel: +86 (0)21 52634688   Website: www.moons.com.cn

■ **Programmable Plan**

■ **Adjustable Output Current(AOC)**

Adjustable Output Current(AOC)

Module Current `2100` mA

Max Current `2100` mA Power `100` W

■ **0-10V Dimming(Factory default settings)**

Dimming Interface Selection(DIS)

◉ 1-10V   ○ PWM   ○ Smart Midnight ClockDIM   ○ Fixed ClockDIM   ○ No Dimming

1-10V Min dim level `1` V `10` %

1-10V Max dim level `8.5` V `100` %

■ Mechanical Specification

Dimensions (Unit: mm)

AC INPUT UL SJTW PVC
(3*AWG#18) ODØ7,8±0.3
WHITE(ACN)
BLACK(ACL)
YE-GN(GND)

650±30
50±5
10±2
4634140206039

DC OUTPUT UL SJTW PVC
(2*AWG#18) ODØ7.3±0.3
RED (V+)
BLUE (V-)

50±5
10±2
4634140206040
YELLOW(Vaux 12V)
PURPLE(DIM+)
GRAY(DIM-)
DIMMING CONTROL WIRE UL 21996PVC
(3*AWG#18)ODØ7,8±0.3

220±20
4634140206269
10±2
50±5

46.0 [1.811]
70.0 [2.756]
300±20

113.0 [4.449]
Ø 7.0 [Ø0.276]
113.0 [4.449]
Ø 130.0 [Ø5.118]
M10*1,5-18h

■ Label

MOONS' LED Driver
Energy Saving Solutions

Vaux 12V YE
Dim+ Program PU
Dim- GR

AC/L BLACK
AC/N WHITE
⏚
YE-GN

MU100R210AQ_CP/P
P/N:
Input Voltage :120-277Vac 50/60Hz
Input Current :1.3A
Output Voltage :29~71Vdc
U-OUT :100V
Output Current :2100mA Max
Output Power:100W
Suitable for use in Wet Locations
For Connections Use Wire Rated for at
Least 90℃ (194℉)
Type HL
Class P
MADE IN CHINA

OUTPUT
V- BLUE ●
V+ RED ●

cULus LISTED E348796

IP65
SELV
RoHS

RoHS Compliance:

Our products comply with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.

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