



Declaration of Conformity to EU RoHS Directive 2011/65/EU

Pulse Electronics manufactures products at Pulse Operations or with selected Manufacturing Partners

Pulse Electronics
15255 Innovation Drive #100
San Diego, CA 92128
Tel: 858-674-8100

Part number: HX1188NL

This is to certify that the parts/products listed above meet the requirements of the **RoHS Directive 2011/65/EU**. The following table lists the restricted materials and their respective allowable limits:

RoHS Restricted Substance	Allowable Limit
Cadmium and its compounds*	100 ppm (0.01 weight %)
Mercury and its compounds	1000 ppm (0.1 weight %)
Hexavalent chromium and its compounds	1000 ppm (0.1 weight %)
Lead and its compounds **	1000 ppm (0.1 weight %)
Polybrominated biphenyls (PBB)	1000 ppm (0.1 weight %)
Polybrominated diphenyl ethers (PBDE)	1000 ppm (0.1 weight %)
Phthalate (2 - ethyl hexyl ester (DEHP)	1000 ppm (0.1 weight %)
Butyl Benzyl Phthalate (BBP)	1000 ppm (0.1 weight %)
dibutyl phthalate (DBP)	1000 ppm (0.1 weight %)
Di Iso Butyl Ortho Phthalate (DIBP)	1000 ppm (0.1 weight %)

If parts/products take advantage of any exceptions, please check which exemption(s):

1. Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):

- (a) For general lighting purposes < 30 Watts
- (b) For general lighting purposes \geq 30 Watts and < 50 Watts
- (c) For general lighting purposes \geq 50 Watts and < 150 Watts
- (d) For general lighting purposes \geq 150 Watts: 15 mg
- (e) For general lighting purposes with circular or square structural shape and tube diameter \leq 17 mm
- (f) For special purposes: 5 mg

2a. Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):

- (1) Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2)
- (2) Tri-band phosphor with normal lifetime and a tube diameter \geq 9 mm and \leq 17 mm (e.g. T5)

- (3) Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8)
- (4) Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12)
- (5) Tri-band phosphor with long lifetime ($\geq 25,000$ h)

2b. Mercury in other fluorescent lamps not exceeding (per lamp):

- (1) Linear halophosphate lamps with tube diameter > 28 mm (e.g. T10 and T12): 10 mg
- (2) Non-linear halophosphate lamps (all diameters): 15mg
- (3) Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)
- (4) Lamps for other general lighting and special purposes (e.g. induction lamps)

3. Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):

- (a) Short length (≤ 500 mm)
- (b) Medium length (> 500 mm and ≤ 1500 mm)
- (c) Long length (> 1500 mm)

4a. Mercury in other low pressure discharge lamps (per lamp)

4b. Mercury in High Pressure Sodium (vapor) lamps for general lighting purposes not exceeding (per burner) in lamps with improved color rendering index $R_a > 60$:

- (I) $P \leq 155$ W
- (II) $155 < P \leq 405$ W
- (III) $P > 405$ W

4c. Mercury in other High Pressure Sodium (vapor) lamps for general lighting purposes not exceeding (per burner):

- (I) $P \leq 155$ W
- (II) $155 < P \leq 405$ W
- (III) $P > 405$ W

4d. Mercury in High Pressure Mercury (vapor) lamps (HMPV)

4e. Mercury in metal halide lamps (MH)

4f. Mercury in other discharge lamps for special purposes not specifically mentioned in Annex

5a. Lead in glass of cathode ray tubes

5b. Lead in glass of fluorescent tubes not exceeding 0.2% by weight

6a. Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight

6b. Lead as an alloying element in aluminium containing up to 0.4% lead by weight

6c. Copper alloy containing up to 4% lead by weight

7a. Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)

7b. Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission, and network management for telecommunications

7c-I. Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound

7c-II. Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher

7c-III. Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC

8a. Cadmium and its compounds in one shot pellet type thermal cut-offs

8b. Cadmium and its compounds in electrical contacts

9. Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75% by weight in the cooling solution

9b. Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications

11a. Lead used in C-press compliant pin connector systems

11b. Lead used in other than C-press compliant pin connector systems

12. Lead as a coating material for the thermal conduction module C-ring

13a. Lead in white glasses used for optical applications

13b. Cadmium and lead in filter glasses and glasses used for reflectance standards

14. Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight

15. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages

16. Lead in linear incandescent lamps with silicate coated tubes

17. Lead halide as radiant agent in High Intensity Discharge (HID) lamps used for professional reprography applications

18a. Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as specialty lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba) 2MgSi2O7:Pb)

18b. Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi2O5:Pb)

19. Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact Energy Saving Lamps (ESL)

20. Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)

21. Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses

23. Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm and less

24. Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors

25. Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring

26. Lead oxide in the glass envelope of Black Light Blue lamps

27. Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125dB SPL and above) loudspeakers

29. Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC

30. Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more

31. Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)

32. Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes

33. Lead in solders for the soldering of thin copper wires of 100 μm diameters and less in power transformers

34. Lead in cermet-based trimmer potentiometer elements

36. Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display until 1 July 2010

37. Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body

38. Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide

39. Cadmium in color converting II-VI LEDs ($< 10 \mu\text{g Cd per mm}^2$ of light-emitting area) for use in solid state illumination or display systems until 1 July 2014

Signature: *Kevin*

Date: 09/21/2017

Name: Kevin Zhou

Phone: 86-769-85538871

Title: Manager

Email: kevinzhou@pulseelectronic.com