# Certificate of RoHS Compliance

## RoHS Directive 2011/65/EU (RoHS 2) with amendment (EU) 2015/863 (RoHS 3)

TT Electronics with our brand BI Technologies certifies, to its knowledge, products packaged as RoHS compliant or having the "LF" option in the Manufacture Part Number (MPN), conform to requirements of RoHS 3, or Directive 2015/863, which adds 4 phthalates to RoHS 2 Directive 2011/65/EU. Declarations also include additional substances related to POPs and REACH regulation. Specifically, the products do not exceed the allowable limits for the following restricted substances:

- Inclusion of SOC (Ten Substance) subjected to Restriction
  - Lead - ≤ 0.1 %
  - Mercury - ≤ 0.1 %
  - Cadmium - ≤ 0.01%
  - Hexavalent chromium - ≤ 0.1%
  - Polybrominated biphenyls (PBB) - ≤ 0.1%
  - Polybrominated diphenyl ethers (PBDE) - ≤ 0.1%
  - Deca-PDE - ≤ 0.1%
  - PFOS - ≤ 0.1%
  - Asbestos - ≤ 0.1%
- Inclusion of Four Plasticizer
  - Bis(2-ethylhexyl) phthalate (DEHP) - ≤ 0.1%
  - Butyl benzyl phthalate (BBP) - ≤ 0.1%
  - Dibutyl phthalate (DBP) - ≤ 0.1%
  - Diisobutyl phthalate (DIBP) - ≤ 0.1%
- PFOA(Perfluorooctanoic acid) 24 substances

RoHS compliance means these products comply with current RoHS requirements for all substances listed above. Any exemptions conform to the current published RoHS Annex III. Where designed to be soldered at high temperatures, RoHS compliant products are suitable for use in typical lead-free processes.

This status is based on our understanding of RoHS and our knowledge of the materials used to manufacture our products as of July 24, 2019.

We hereby certify that our product series listed below are compliant with all requirements and exemptions set by the European RoHS 3 Directive 2015/863 and RoHS 2 Directive 2011/65/EU.

Exempt per Exceptions: [1] 6(b), [2] 6(c), [3] 7(c)-1, [4] 8(b), [5] 34

---

Single Turn Trimmer

Surface Mount: 22x[5], 23x[5], 35x[5]

Through Hole: 25x[5], 36x[5], 37x[5], 38x, 39x, 62x[3], 72x[5], 82x[5], 83x[5], 91x[5], 93x[5]

Multi-Turn Trimmer

Surface Mount: 43x[2,5], 44x[2,5], 45x[2,5]

Through Hole: 64x[2,5], 66x[2,5], 67x[2,5], 68x[2,5], 78x[2,5], 84x[2,5], 89x[2,5], 90x[2,5]

---

Precision Potentiometer

Single Turn CP & Wire Wound: 33xx[2], 338x[2], 51xx, 53xx[2], 54xx, 56xx[2], 57xx, 61xx[2], 618x[2], 62xx, 63xx[2], 66xx[2]

Multi-Turn CP & Wire Wound: Ax[2], Bx, Cx[2], Dx, Ex, 72xx[2], 73xx[2], 74xx[2], 76xx[2], 81xx[2], 93xx

Panel Potentiometers: P080x, P090x[2], P09x, P110x, P120x[2], P140x, P160x[1,2], P161[2], P162[2], P163[2], P164, P165, P166, P170x, P230x[2], P231x, P232x, P233x, P260x[2], P261x[2], P265x[2], P270x, P271x[2], P272x[2], P278x[2]

Linear Potentiometer: 404x, 424x, 434x, 474x, 484x

---

Slide Potentiometers

Single PSxx-1:LM1001[2], PS15-1, PS20-1, PS30-1, PS40-1, PS45-1, PS60-1, PS100-1, PSxxL, PSM050S, PSS1, PSL2[2]

Dual PSxx-2: PSS2, PS20-2, PS30-2, PS45-2, PS60-2, PS45G, PS60G, PS100-2, PSxxM,

---

MagnePot Non-Contacting Rotary Position Sensor

Rotary Position: 6127xx[2], 6153xx, 8156xx

Motion Position Sensor

Position Sensor: PHS04, PHS07, PHS11

---

Steering Sensors

Standard SX-42xx: SX-4289A[2]

Standard SX-43xx: SX-4300A[2], SX-4388A[2]

Standard SX-44xx: SX-4400A, SX-4404A[2], SX-4413A[2], SX-4414A[2], SX-4417E, SX-4428A, SX-4429A[2], SX-4431A[2], SX-4432A[2], SX-4433A[2], SX-4441A, SX-4450A, SX-4458D, SX-4462A, SX-4471, SX-4472A, SX-4473A, SX-4474A, SX-4475A[2], SX-4476A[2], SX-4479A[2], SX-4485[2], SX-4486[2], SX-4487A[2], SX-4491A[2], SX-4492[2], SX-4497C, SX-4493C

Standard SX-45xx: SX-4503A/B, SX-4505[2]

Custom SX-42xx: SX-4236L, SX-4284C, SX-4285C, SX-4285D, SX-4286D, SX-4293C, SX-4293E, SX-4294E

Custom SX-43xx: SX-4309B, SX-4313B, SX-4321B, SX-4335B, SX-4335E, SX-4373B, SX-4385B, SX-4390B

Custom SX-44xx: SX-4407B, SX-4408B, SX-4418A, SX-4430A, SX-4434A, SX-4462A, SX-4465A, SX-4470A, SX-4444B, SX-4451B, SX-4467A, SX-4489A

Custom SX-45XX: SX-4517A, SX-4519A, SX-4521A

---

Encoders & Turn Counting Dials:

Encoders: EN05[2], EN08, EN09[2], EN11[1,2], EN12[2], EN16

Counting Dials: 21xx, 26xx, RBx

# ANNEX III

| No. | Substance | Scope & dates of applicability |
|---|---|---|
| 1 | Mercury in single capped (compact) fluorescent lamps not exceeding (per burner): | |
| 2(a) | Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp): | |
| 3 | Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp): | |
| 4(a) | Mercury in other low pressure discharge lamps (per lamp) | |
| 4(b) | Mercury in high pressure sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: | |
| 4(c) | Mercury in other high pressure sodium (vapour) lamps for general lighting purposes not exceeding (per burner): | |
| 4(d) | Mercury in high pressure mercury (vapour) lamps (HPMV) | |
| 4(e) | Mercury in metal halide lamps (MH) | |
| 4(f) | Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex | |
| 4(g) | Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: | |
| | (a) 20mg per electrode pair + 0.3mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20° C; | |
| | (b) 15mg per electrode pair + 0.24mg per tube length in cm, but not more than 80 mg, for all other indoor applications. | |
| 5(b) | Lead in glass of fluorescent tubes not exceeding 0.2% by weight | |
| 6(a) | Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight | |
| 6(b) | Lead as an alloying element in aluminium containing up to 0.4% lead by weight | |
| 6(c) | Copper alloy containing up to 4% lead by weight | |
| 7(a) | Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead) | |
| 7(c)-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. | |

| | | |
|---|---|---|
| 7(c)-II | Lead in dielectric ceramic in capacitors for a rated voltage of 125V AC or 250V DC or higher | |
| 7(c)-IV | Lead in PZT based dielectric ceramic materials for capacitors which are part of integrated circuits or discrete semiconductors | |
| 8(b) | 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 | |
| 9(b) | Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications | |
| 13(a) | Lead in white glasses used for optical applications | |
| 13(b) | Cadmium and lead in filter glasses and glasses used for reflectance standards | |
| 15 | Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages | |
| 18(b) | 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 ($BaSi_2O_5$:Pb) | |
| 21 | Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses | |
| 24 | Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors | |
| 29 | Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (1) | |
| 32 | Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes | |
| 34 | Lead in cermet-based trimmer potentiometer elements | |
| 37 | Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body | |
| 41 | Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council (2)) | |