# Specification

## T0050 Luminaire – Column Head Lighting

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# 1 Purpose

The purpose of this document is to outline the mini mum performance specification for column head luminaires for use on the London Underground.

For simplicity, this document makes reference to Light Emitting Diode (LED) technology, however other lighting technologies will also be considered.

# 2 Scope

This Specification applies to Transport for London (TfL)

Transport for London is in the process of establishing Supplier framework contracts with lighting manufactures to procure products that will demonstrate the most superior whole life costs and performance for its given use.

# 3 Requirements

## 3.1 General

3.1.1 The Supplier shall comply with all requirements contained within this document.

3.1.2 The luminaire and all components such as control gear or lamps shall be Conformité Européenne (CE) marked.

3.1.3 The Supplier shall demonstrate full compliance with the CE Declaration of Conformity in the form of a certificate.

3.1.4 The CE Declaration of Conformity shall be backed up with test results demonstrating full compliance to all standards and criteria. These test results shall form part of the Suppliers submission.

3.1.5 The Supplier shall complete the Lighting Product Specification Criteria for each submission.

## 3.2 Standards

The luminaire shall comply with all relevant London Underground, British and International standards. These include but are not limited to those listed in the following.

### 3.2.1 London Underground standards

| | |
|---|---|
| S1066 | Lighting of London Underground Assets |
| S1069 | Low voltage electrical installations |
| S1085 | Fire safety performance of materials |
| S1123 | Requirements for matching electrical loads to supplies when making changes to low voltage infrastructure |
| S1212 | Production of a Reliability Case |
| S1222 | Electromagnetic Compatibility |



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### 3.2.2 British and European standards and guidance

| | |
|---|---|
| BS 6853 | Code of practice for fire precautions in the design and construction of passenger carrying trains |
| BS EN 12600:2002 | Glass in building. Pendulum test. Impact test method and classification for flat glass |
| BS EN 13032 | Light and lighting |
| BS EN 50126 | Railway applications (RAMS) |
| BS EN 55011 | Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement |
| BS EN 55015:2013 | Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment |
| BS EN 60529:2013 | Degrees of protection provided by enclosures (IP code) |
| BS EN 60598 | Luminaires |
| BS EN 61000 | Electromagnetic compatibility |
| BS EN 61347-2-13:2006 | Lamp control gear. Particular requirements for dc. or ac supplied electronic control gear for LED modules |
| BS EN 61547:2009 | Equipment for general lighting purposes. EMC immunity requirements |
| BS EN 62031:2015 | LED modules for general lighting – Safety specifications |
| BS EN 62262:2002 | Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code) |
| BS EN 62384:2006 | DC or AC supplied electronic control gear for LED modules. Performance requirements |
| BS EN 62471:2008 | Photobiological safety of lamp & lamp systems |
| BS EN 62504:2014 | General lighting / Light emitting diode (LED) products and related equipment. Terms and definitions |
| BS EN 62612:2013 | Self-ballasted LED lamps for general lighting services with supply voltages > 50 V – Performance requirements |
| BS EN ISO 4589 | Plastics. Determination of burning behaviour by oxygen index |



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| | |
|---|---|
| Directive 2004/108/EC | Electromagnetic compatibility (EMC) |
| HSG 38 – 1997 | Lighting at Work |
| PD IEC/TR 62696:2011 | Luminaires. Application of the IK code IEC 62262 |

### 3.2.3 International standards and guidance

| | |
|---|---|
| ASSIST Publication Volume 1, Issue 1 May 2012 | Flicker Parameters for Reducing Stroboscopic Effects from Solid-state Lighting Systems |
| IEC/PAS 62717 | LED modules for general lighting – Performance requirements |
| IEC/PAS 62722 | Luminaire Performance |
| IES-LM-79-08 | Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products |
| IES-LM-80-08 | Approved Method: Measuring Lumen Maintenance of LED Light Sources |
| ISO 16933:2007 | Glass in building - Explosion-resistant security glazing - Test and classification for arena air-blast loading |

## 3.3 Physical Construction of Luminaire

3.3.1 Access to individual luminaires in public areas shall require the use of a tool.

3.3.2 Luminaires shall have a modular design so that components are replaceable upon failure, become life expired or redundant. For example:

- Drivers.
- LED panel/module.
- Battery and inverter.
- Diffuser.
- Reflectors / Refractors.
- Surge Protection.



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3.3.3 Luminaires shall be designed to maintain their International Protection (IP) rating throughout its lifecycle and not degrade due to maintenance and periodic testing.

3.3.4 The cable connection to the luminaire shall not compromise its IP rating.

3.3.5 The Supplier shall provide glands to maintain the IP rating of the fitting during installation. This shall include glands for both single and multicore cables.

3.3.6 The IP rating shall be determined when the luminaire is free standing and not mounted during testing.

3.3.7 Diffusers and lids shall have captive fixings.

3.3.8 The luminaire body shall be available in different colours upon request.

3.3.9 Where lids are removable, the luminaire shall have provision for additional fixings through the use of chains or lanyards.

3.3.10 The luminaire shall be rated at IP65.

3.3.11 The luminaire shall be rated at IK08.

3.3.12 Adaptable mounting options, side entry or post top, adjustable in 5° increments between +10° and -10°.

3.3.13 Heat sink arrangements must not be a natural trap for rainwater, bird droppings or other material

3.3.14 Input terminals shall each be large enough to accommodate 2 off 4mm$^2$ conductors.

3.3.15 Diffusers shall have the option to be coated with polymeric resin or equivalent technology to reduce the accumulation of dirt and grime.

## 3.4 Operation and Maintenance

3.4.1 The Supplier shall submit a manufactures installation instruction specifying how the luminaire should be installed.

3.4.2 The manufactures installation instruction shall specify the correct installation method for cable glands, through the provision of photographs.

3.4.3 The Supplier shall submit an Operation and Maintenance (O&M) manual specifying how the luminaire should be maintained.

3.4.4 The O&M manual shall include wiring diagrams for the luminaire.

3.4.5 The Supplier shall demonstrate how the following maintenance activities can be executed through the provision of photographs

- Cleaning.
- Relamping.
- Replacement of luminaires and their individual components.
- Access for inspection.



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