

Firmado el 26/03/2024 10:08:54 : JORDI GARCIA BRUSTENGA, Director General de Estrategia Industrial y de la Pyme de Direccion General de Estrategia Industrial y de la Pequeña y Mediana Empresa.



MINISTERIO  
DE INDUSTRIA  
Y TURISMO

SECRETARÍA DE ESTADO DE  
INDUSTRIA

DIRECCIÓN GENERAL DE ESTRATEGIA  
INDUSTRIAL Y DE LA PEQUEÑA Y  
MEDIANA EMPRESA

E9\*148R00/05\*16715\*00

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COMUNICACIÓN / COMMUNICATION:

|                                                |                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Concerniente a /<br>Concerning: <sup>(1)</sup> | La concesión de homologación / <i>Approval granted</i><br><del>La extensión de homologación / <i>Approval extended</i></del><br><del>La denegación de homologación / <i>Approval refused</i></del><br><del>La retirada de homologación / <i>Approval withdrawn</i></del><br><del>El cese definitivo de producción / <i>Production definitively discontinued</i></del> |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

de un tipo de lámpara en aplicación del Reglamento UN Nº 148 /  
*of a type of lamp pursuant to UN Regulation No. 148*

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lámpara /<br>Lamp: <sup>(1)</sup> | <del>Luz de la placa de matrícula trasera / <i>Rear registration plate illuminating lamp</i></del><br><del>Indicador de dirección / <i>Direction indicator lamp</i></del><br><del>Luz de pare / <i>Stop lamp</i></del><br><del>Luz de posición / <i>Position lamp</i></del><br><del>Luz de galibo / <i>End-outline marker lamp</i></del><br><del>Luz de marcha atrás / <i>Reversing lamp</i></del><br><del>Luz de maniobra / <i>Manoeuvring lamp</i></del><br><del>Luz antiniebla trasera / <i>Rear fog lamp</i></del><br><del>Luz de estacionamiento / <i>Parking lamp</i></del><br><del>Luz de circulación diurna / <i>Daytime running lamp</i></del><br><del>Luz de posición lateral / <i>Side marker lamp</i></del> |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                    |                       |                                                                                  |     |
|----------------------------------------------------|-----------------------|----------------------------------------------------------------------------------|-----|
| Categoría de la lámpara /<br>Category of the lamp: | A, R1                 | Cambio de índice /<br>Change index:                                              | --- |
| Nº de homologación /<br>Approval No:               | E9*148R00/05*16715*00 | Identificador Único (si procede) /<br>Unique Identifier (UI) (if<br>applicable): | --- |

<sup>(1)</sup> Táchese lo que no proceda / *Strike out what does not apply*





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1. Marca de fábrica o comercial del dispositivo o sistema / *Trade name or mark of the device or system*:  
FRISTOM
2. Tipo dado por el fabricante para el dispositivo o sistema / *Manufacturer's name for the type of device or system*:  
FT-147 LED
3. Nombre y dirección del fabricante / *Manufacturer's name and address*:  
FRISTOM Spółka z ograniczoną odpowiedzialnością Spółka komandytowa  
86-014 Sicienko / Polska ul. Przemysłowa 5 NIP: 5542926937, KRS: 0000529238  
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41

Nota / *Note*: Este dispositivo puede ser fabricado en cualquiera de las Plantas de Fabricación que consten declaradas en el Anexo I del Certificado Conformidad Producción en vigor emitido por la UCA. / *This device may be manufactured in any of the Manufacturing Plants declared in Annex I of the Conformity Production Certificate in force issued by the UCA.*

4. Si procede, nombre y dirección del representante del fabricante / *If applicable, name and address of the manufacturer's representative*: ---
5. Dispositivo presentado a homologación el / *Submitted for approval on*: 15/03/2024
6. Servicio técnico encargado de los ensayos de homologación / *Technical service responsible for conducting approval tests*: IDIADA
7. Fecha del informe emitido por dicho servicio / *Date of report issued by that service*: 19/03/2024
8. Número del informe emitido por dicho servicio / *Number of report issued by that service*: PC24030019
9. Breve descripción / *Concise description*:

9.1. En caso de / *In case of*

9.1.1. Una luz de la placa de matrícula trasera / *A rear-registration plate illuminating lamp*:

- Condiciones geométricas de instalación (posiciones e inclinaciones del dispositivo en relación al espacio ocupado por la placa de matrícula y/o diferentes inclinaciones de este espacio) / *Geometrical conditions of installation (position(s) and inclination(s) of the device in relation to the space to be occupied by the registration plate and/or different inclinations of this space)*: ---

9.1.2. Un indicador de dirección / *A direction indicator*: ---

- Activación secuencial de las fuentes luminosas / *Sequential activation of light sources*:  
~~sí~~ / ~~yes~~ - ~~no~~ / ~~no~~ <sup>(1)</sup>

9.1.3. Una luz de marcha atrás / *A reversing lamp*: ---

- La luz sólo puede instalarse en un vehículo como parte de un par de luces / *The lamp shall be installed on a vehicle only as part of a pair of lamps*: ~~sí~~ / ~~yes~~ - ~~no~~ / ~~no~~ <sup>(1)</sup>

9.1.4. Una luz de maniobra / *A manoeuvring lamp*: ---

<sup>(1)</sup> Táchese lo que no proceda / *Strike out what does not apply*

Pº DE LA CASTELLANA, 160, 10ª - 28071 MADRID  
SEDE-E <https://sedesaplicaciones.minetur.gob.es/consultasSGCSI/>

TLF.: 91 349.51.08



Código: 14645085-91343674K34HML9NVNJC Autenticidad verificable en: <https://serviciosmin.gob.es/arce>  
Documento electrónico, página 2 de 6.

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- La altura máxima de montaje / *The maximum mounting height*: ---

9.1.5. Una luz de circulación diurna / *A daytime running lamp*:---

- La intensidad luminosa máxima no excede 700 cd / *Maximum luminous intensity does not exceed 700 cd*: ~~si~~  
~~/yes-no/no~~<sup>(1)</sup>

9.2. Por función de luz de señalización y categoría / *By light signalling function and category*:

- Para la instalación en el exterior ~~o en el interior o ambos~~<sup>(1)</sup> / *For mounting either outside or inside or both*<sup>(1)</sup>
- Color de luz emitida / *Colour of light emitted*:
  - Luz de posición / *Position lamp*: ~~roja / red~~ - blanca / *white* - ~~ambar / amber~~ - ~~incolora / colourless~~<sup>(1)</sup>
- Número, categoría(s) y tipo de la(s) fuente(s) luminosa(s) / *Number, category and kind of light source(s)*:
  - Luz de posición / *Position lamp*: 6 x LED (White color) + 6 x LED (Red color)
- Luz homologada para fuente(s) luminosa(s) sustitutiva(s) de LED. En caso afirmativo, categoría de la(s) fuente(s) de luz sustitutiva(s) de LED / *Lamp approved for LED substitute light source(s). If yes, category of LED substitute light source(s)*:
  - Luz de posición / *Position lamp*: ~~si/yes~~ - no / *no*<sup>(1)</sup>
- Voltaje y potencia / *Voltage and wattage*:
  - Luz de posición / *Position lamp*: 12/24V, 0.7W / 1.5W
- Módulo de fuente de luz / *Light source module*:
  - Luz de posición / *Position lamp*: ~~si/yes~~ - no / *no*<sup>(1)</sup>
- Código de identificación específico del módulo de fuente de luz / *Light source module specific identification code*:
  - Luz de posición / *Position lamp*: ---
- Solo para instalación limitada en altura igual o inferior a 750 mm por encima del suelo, si procede / *Only for limited mounting height of equal to or less than 750 mm above the ground, if applicable*:
  - Luz de posición / *Position lamp*: ~~si/yes~~ - no / *no*<sup>(1)</sup>
- Condiciones geométricas de instalación y variaciones relacionadas, si se da el caso / *Geometrical conditions of installation and relating variations, if any*: ---
- Aplicación de una guía de control electrónica/control de intensidad variable de la(s) fuente(s) luminosa(s) / *Application of an electronic light source control gear/variable intensity control*:
  - Luz de posición / *Position lamp*:
    - (a) Formando parte de la luz / *Being part of the lamp*: ~~si/yes~~ - no / *no*<sup>(1)</sup>
    - (b) No formando parte de la luz / *Being not part of the lamp*: ~~si/yes~~ - no / *no*<sup>(1)</sup>
- Tensión(es) de entrada suministrada(s) por la guía de control electrónica/control de intensidad variable la(s) fuente(s) luminosa(s) / *Input voltage(s) supplied by an electronic light source control gear/variable intensity control*: ---

<sup>(1)</sup> Táchese lo que no proceda / *Strike out what does not apply*



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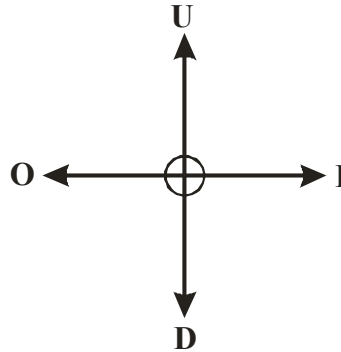
- Fabricante de la guía de control electrónica/control de intensidad variable de la(s) fuente(s) luminosa(s) y número de identificación (cuando la guía de control de la fuente luminosa forma parte de la luz pero no está incluida en el cuerpo de la luz) / *Electronic light source control gear/variable intensity control manufacturer and identification number (when the light source control gear is part of the lamp but is not included into the lamp body): ---*
  - Intensidad luminosa variable, si procede / *Variable luminous intensity, if applicable: sí/yes - no / no* <sup>(1)</sup>
  - Función(es) producida(s) por una luz interdependiente que forma parte de un sistema de luces interdependientes, si procede / *Function(s) produced by an interdependent lamp forming part of an interdependent lamp system, if applicable: ---*
- 9.3. La luz de posición delantera, ~~luz de posición trasera, luz de pare, luz de galibo, luz de circulación diurna~~ <sup>(1)</sup> es sólo para uso en un vehículo equipado con un testigo que indique el fallo / *The front position lamp, ~~rear position lamp, stop lamp, end-outline marker lamp, daytime running lamp~~* <sup>(1)</sup> is only for use on a vehicle fitted with a tell-tale indicating failure: sí / yes - ~~no / no~~ <sup>(1)</sup>
10. Posición de la marca de homologación / *Position of the approval mark*: Ver documentación suministrada por el fabricante. / *See documentation supplied by the manufacturer.*
11. Motivo(s) de la extensión (si procede) / *Reason(s) for extension (if applicable): --*
12. Se concede/~~deniega/~~extiende/~~retira~~ la homologación <sup>(1)</sup> / *Approval granted/~~extended/refused/withdrawn~~* <sup>(1)</sup>
13. Homologación concedida para los dispositivos destinados a ser utilizados en vehículos ya en uso únicamente / *Approval granted for devices to be used on vehicles already in use only: sí/yes - no / no* <sup>(1)</sup>
14. Lugar / *Place*: Madrid
15. Fecha / *Date*: Ver firma electrónica. / *See electronic signature.*
16. Firma / *Signature*:
- EL DIRECTOR GENERAL DE ESTRATEGIA INDUSTRIAL Y DE LA PEQUEÑA Y MEDIANA EMPRESA
- P.D. Orden ITU/103/2024, de 8 de febrero de 2024
17. La lista de los documentos depositados ante la Autoridad de homologación de Tipo que ha concedido la homologación se adjunta a la presente comunicación y puede obtenerse previa solicitud. / *The list of documents deposited with the Type Approval Authority which has granted approval is annexed to this communication and may be obtained on request.*
- Informe del ensayo. / *Test report.*
  - Documentación suministrada por el fabricante. / *Documentation supplied by the manufacturer.*

<sup>(1)</sup> Táchese lo que no proceda / *Strike out what does not apply*





**SUPERFICIE ILUMINANTE / ILLUMINATING SURFACE**



| <b>Límite superior /<br/>Upper boundary<br/>“U” (mm)</b> | <b>Límite inferior /<br/>Down boundary<br/>“D” (mm)</b> | <b>Límite interior /<br/>Inner boundary<br/>“I” (mm)</b> | <b>Límite exterior /<br/>Outer boundary<br/>“O” (mm)</b> |
|----------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
| <b>14</b>                                                | <b>14</b>                                               | <b>16</b>                                                | <b>15</b>                                                |

\* LOS RESULTADOS PRESENTADOS SE REFIEREN ÚNICAMENTE A LA MUESTRA ENSAYADA.  
THE PRESENTED RESULTS REFER ONLY TO THE TESTED SAMPLE.

\* QUEDA TERMINANTEMENTE PROHIBIDA LA REPRODUCCIÓN PARCIAL DE ESTE INFORME SIN PERMISO EXPRESO DE IDIADA.  
THE PARTIAL REPRODUCTION OF THIS REPORT WITHOUT THE PERMISSION OF IDIADA IS COMPLETELY FORBIDDEN.

\* EL LABORATORIO HA CALCULADO LA INCERTIDUMBRE DE MEDIDA ASOCIADA A LOS RESULTADOS.  
MEASUREMENT UNCERTAINTY OF THE RESULTS HAS BEEN CALCULATED BY THE LABORATORY.

\* LA REGLA DE DECISIÓN UTILIZADA, SEGÚN LA NORMA ILAC-G8, HA SIDO LA DECLARACIÓN BINARIA DE ACEPTACIÓN SIMPLE  
THE DECISION RULE USED, ACCORDING TO THE ILAC-G8 STANDARD, WAS THE BINARY STATEMENT FOR SIMPLE ACCEPTANCE

## INFORMATION FOLDER:

FIRST APPLICATION  
DATE: 15.03.2024

### 1. Specification data

|                             |                                |                 |
|-----------------------------|--------------------------------|-----------------|
| Type                        | FT-147 LED                     |                 |
| Trade name or mark          | Fristom                        |                 |
| Variants                    | See drawing                    |                 |
| Function                    | front position ; rear position |                 |
| Color                       | white and red color            |                 |
| Rated                       | Voltage                        | 12/24V          |
|                             | Wattage                        | 0,75/1,5W       |
| Applicable Regulation       |                                | R148            |
| Light Source and connection |                                | See drawing     |
| Location of marking         | Light Source marks             | See the drawing |
|                             | Trade mark                     | See the drawing |
|                             | Approval mark                  | See the drawing |

### 2. Construction and material

| Construction | Material                         | Remarks |
|--------------|----------------------------------|---------|
| Lenses       | Defined on the technical drawing | --      |
| Reflectors   | Defined on the technical drawing | --      |
| Bases        | Defined on the technical drawing | --      |

### 3. Name and address of manufacturer:

**FRISTOM Spółka z ograniczoną odpowiedzialnością Spółka komandytowa**  
86-014 Sicienko / Polska  
ul. Przemysłowa 5  
NIP: 5542926937, KRS: 0000529238  
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41

### 4. REASON OF THE APPROVAL EXTENSION:

-

**NOTE :** APPROVAL MARKINGS ARE SHOWN IN THE ATTACHED DRAWING.  
THIS INFORMATION FOLDER CONSISTS OF 1 PAGES

**Manufacturer:**  
FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.  
86-014 Sicienko / Polska  
ul. Przemysłowa 5  
NIP: 5542926937, KRS: 0000529238  
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



|                                    |                            |                          |
|------------------------------------|----------------------------|--------------------------|
| <b>Drawn by:</b><br>Karol Jonoszak | <b>Date:</b><br>14-03-2024 | <b>Sheet:</b><br>1 of 12 |
|------------------------------------|----------------------------|--------------------------|

**Type:** FT-147 LED

**LED front and rear position lamp**

**Light source:**

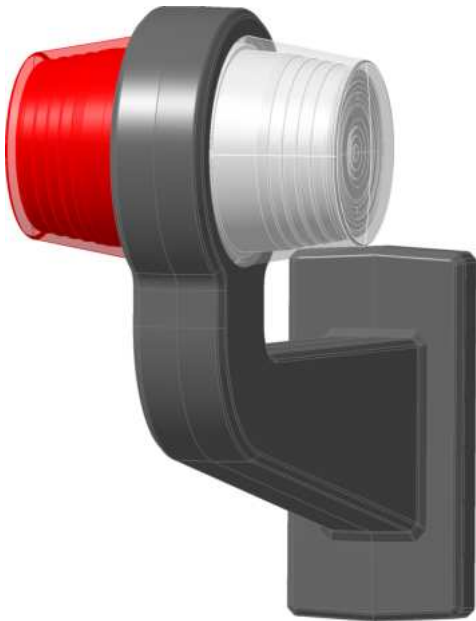
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

**Description:**

isometric lamp view

This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |



**Manufacturer:**  
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**Drawn by:** Karol Jonoszak  
**Date:** 14-03-2024  
**Sheet:** 2 of 12

**Type:** FT-147 LED

LED front position lamp

**Light source:**

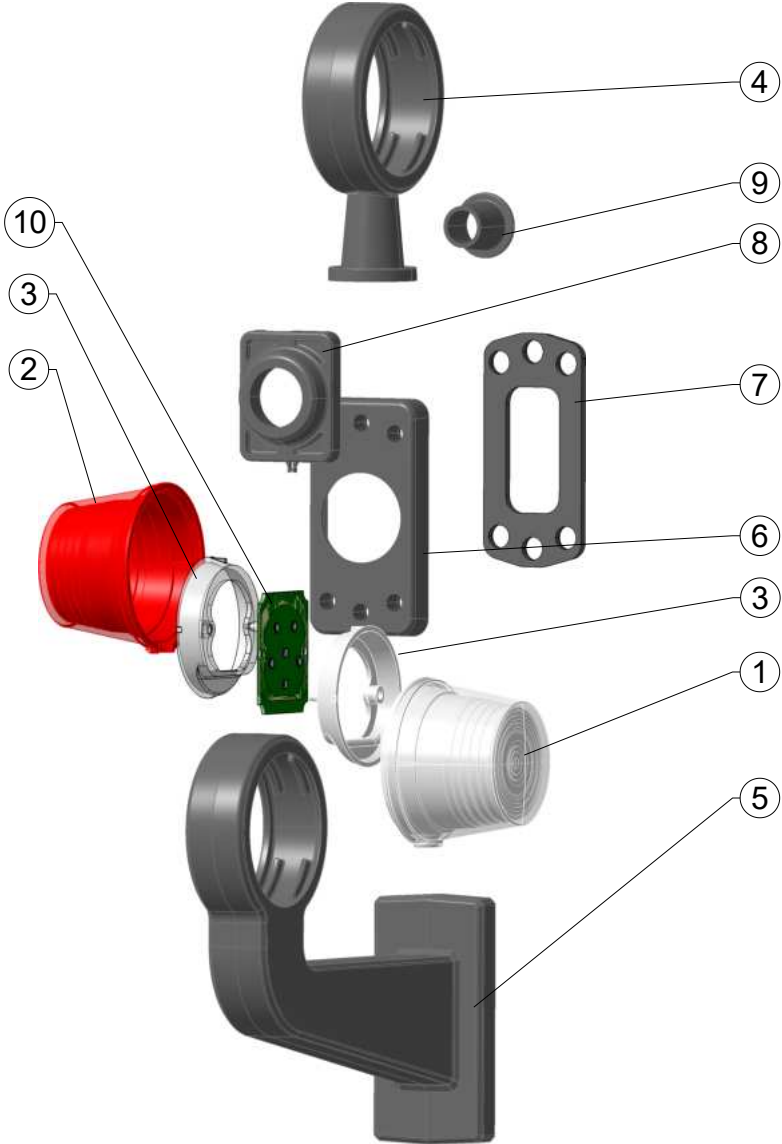
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

**Description:**

isometric lamp view

This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |



|    | Description               |
|----|---------------------------|
| 1  | Lampshade white           |
| 2  | Lampshade red             |
| 3  | Inner sealing ring        |
| 4  | Mounting bracket A        |
| 5  | Mounting bracket F        |
| 6  | Fixing element            |
| 7  | Overmoulded reinforcement |
| 8  | Clamping bracket          |
| 9  | Sleeve                    |
| 10 | PCB                       |

Manufacturer:  
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Drawn by: Karol Jonoszak  
Date: 14-03-2024  
Sheet: 3 of 12

Type: **FT-147 LED**

LED front and rear position lamp

Light source:

LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

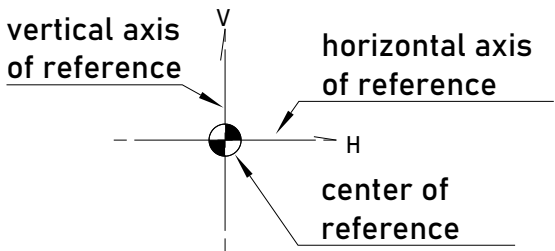
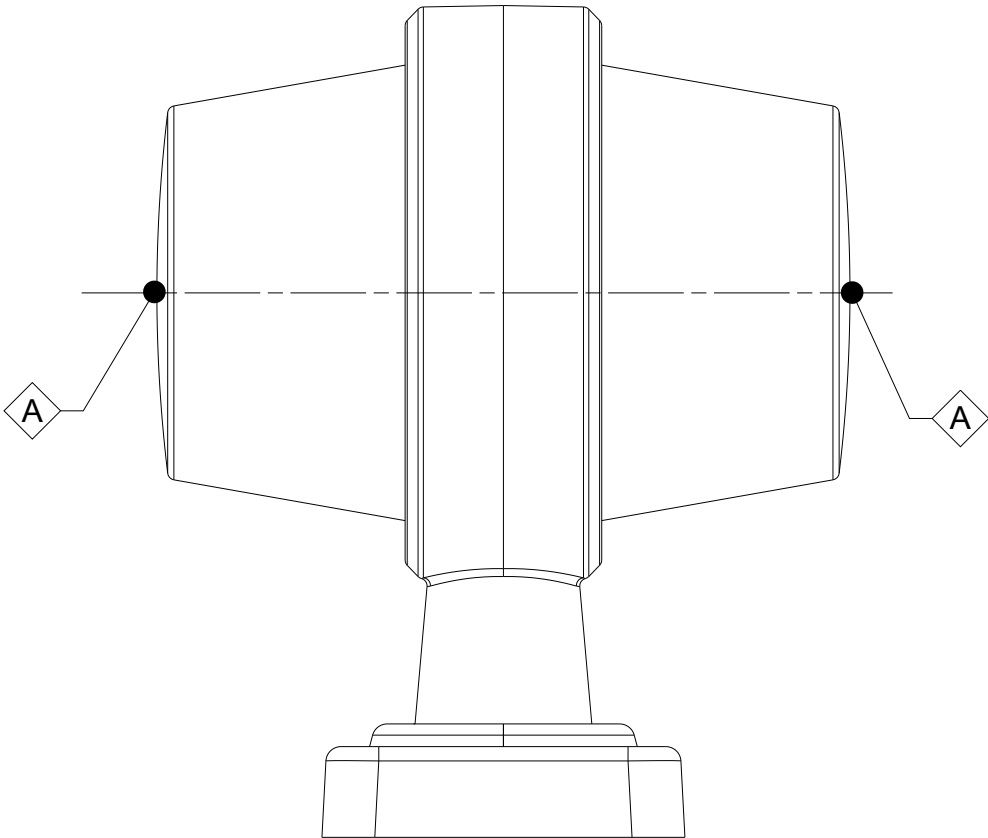
Description:

general drawing , light  
emitting areas

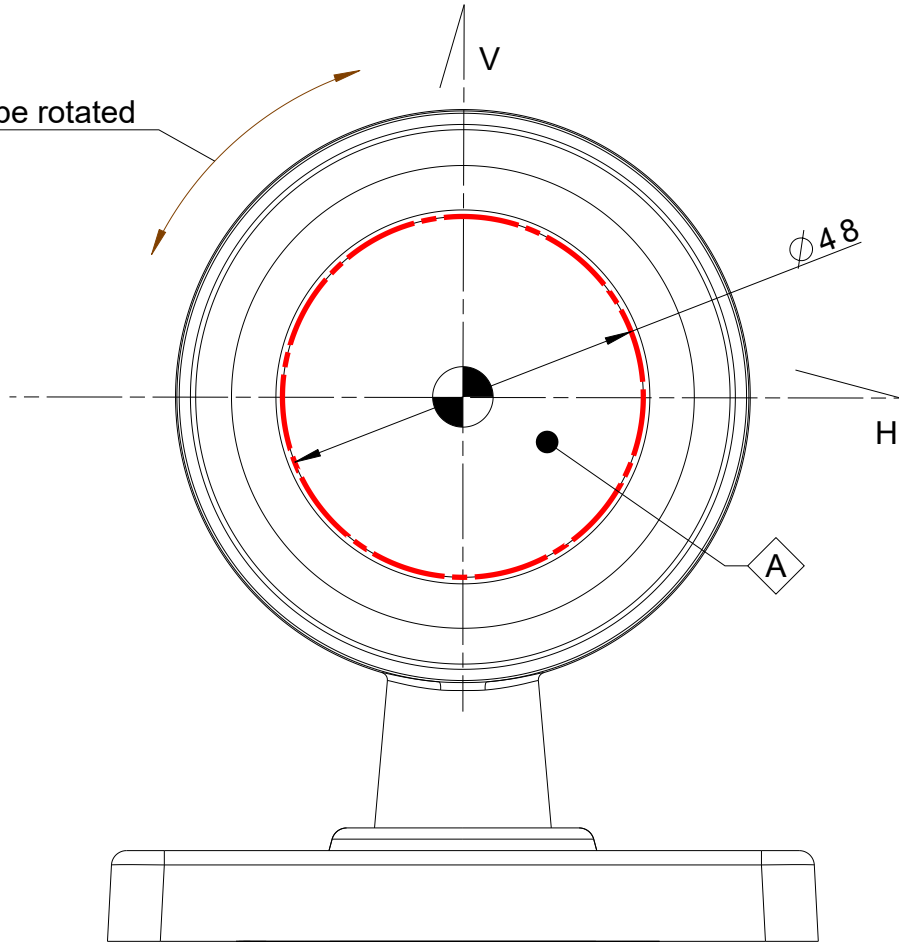
This drawing is a part of the application for approval

Material used in manufacturing :

| part                      | material                       | color             |
|---------------------------|--------------------------------|-------------------|
| lampshade                 | PMMA                           | red transparent   |
| lampshade                 | PMMA                           | clear transparent |
| mounting bracket          | TPE SEBS                       | black             |
| inner sealing ring        | ABS                            | red or black      |
| fixing element            | PP                             | black             |
| overmoulded reinforcement | PA GF 30                       | black             |
| PCB                       | FR4                            |                   |
| sealing                   | potting compound - epoxy resin |                   |



can be rotated



A light emitting area [rear position light R1  
or front position light A1]

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Drawn by: Karol Jonoszak  
Date: 14-03-2024  
Sheet: 4 of 12

Type: **FT-147 LED**

LED front position lamp

Light source:

LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

Description:

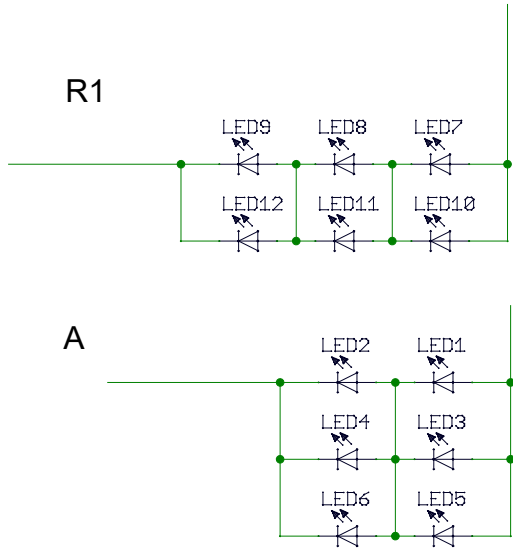
approval , trademark and electrical parameters markings  
electrical connection of LED's

This drawing is a part of the application for approval

Material used in manufacturing :

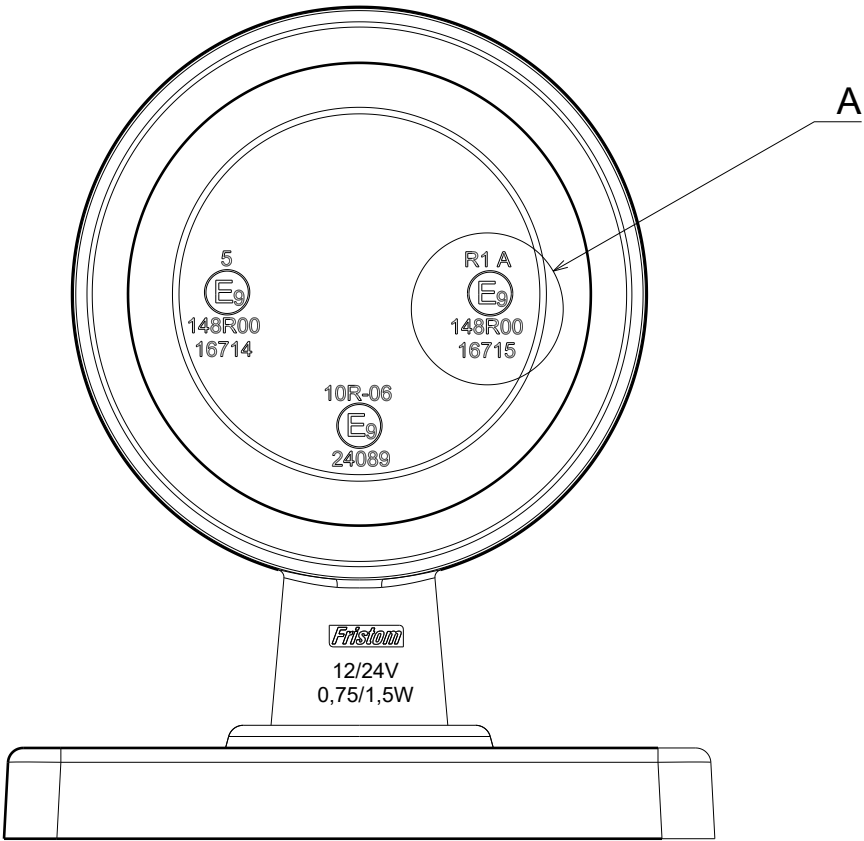
| part                      | material                       | color             |
|---------------------------|--------------------------------|-------------------|
| lampshade                 | PMMA                           | red transparent   |
| lampshade                 | PMMA                           | clear transparent |
| mounting bracket          | TPE SEBS                       | black             |
| inner sealing ring        | ABS                            | red or black      |
| fixing element            | PP                             | black             |
| overmoulded reinforcement | PA GF 30                       | black             |
| PCB                       | FR4                            |                   |
| sealing                   | potting compound - epoxy resin |                   |

electrical connection

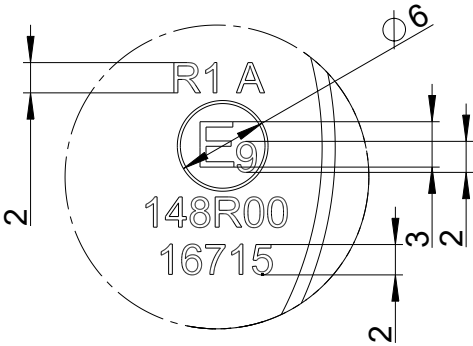


electrical data

12/24 V DC input  
0,75/1,5W



approval marking dimensions



Detail A  
Scale: 2:1

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|                  |              |               |
|------------------|--------------|---------------|
| <b>Drawn by:</b> | <b>Date:</b> | <b>Sheet:</b> |
| Karol Jonoszak   | 14-03-2024   | 5 of 12       |

**Type:** **FT-147 LED**

**LED front position lamp**

**Light source:**

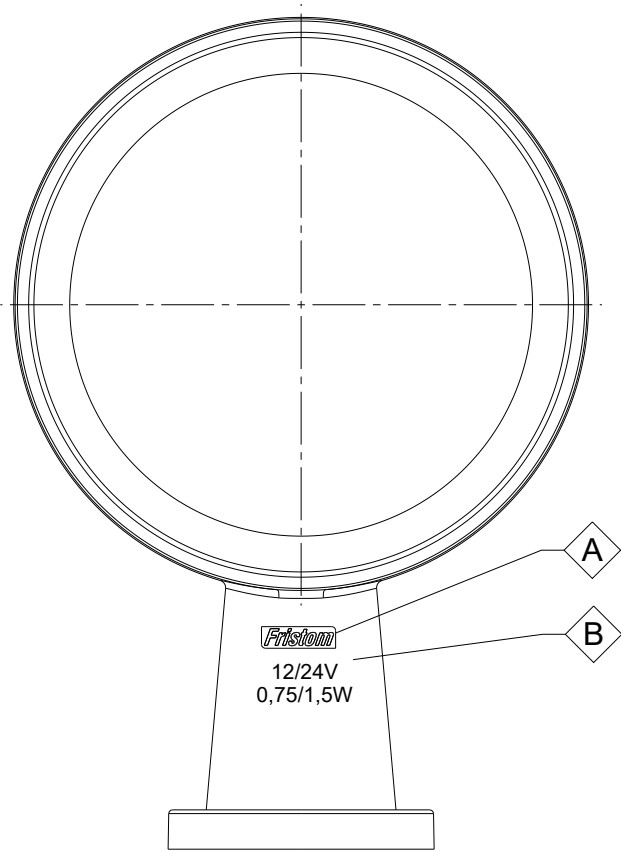
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

**Description:**

approval , trademark and electrical parameters markings

This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |



|   |                     |
|---|---------------------|
| A | trademark location  |
| B | electric parameters |



Detail A

**Manufacturer:**  
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|                                    |                            |                          |
|------------------------------------|----------------------------|--------------------------|
| <b>Drawn by:</b><br>Karol Jonoszak | <b>Date:</b><br>14-03-2024 | <b>Sheet:</b><br>6 of 12 |
|------------------------------------|----------------------------|--------------------------|

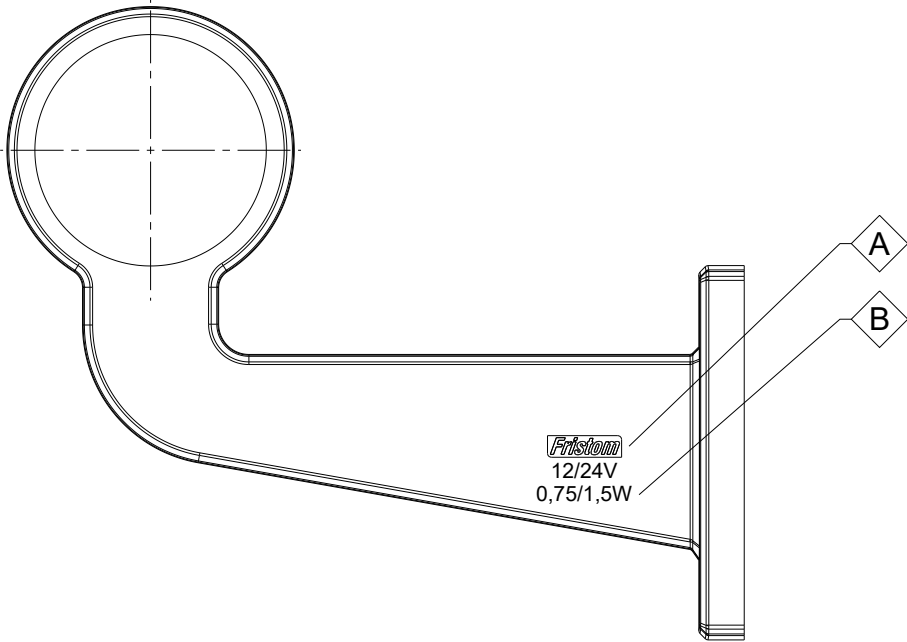
**Type:** **FT-147 LED**

**LED front position lamp**

**Light source:**  
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

**Description:**  
approval , trademark and electrical parameters markings  
  
This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |



|   |                     |
|---|---------------------|
| A | trademark location  |
| B | electric parameters |



Detail A

Manufacturer:  
FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.  
86-014 Sicienka / Polska  
ul. Przemysłowa 5  
NIP: 5542926937, KRS: 0000529238  
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by: Karol Jonoszak  
Date: 14-03-2024  
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Type: **FT-147 LED**

LED front position lamp

Light source:

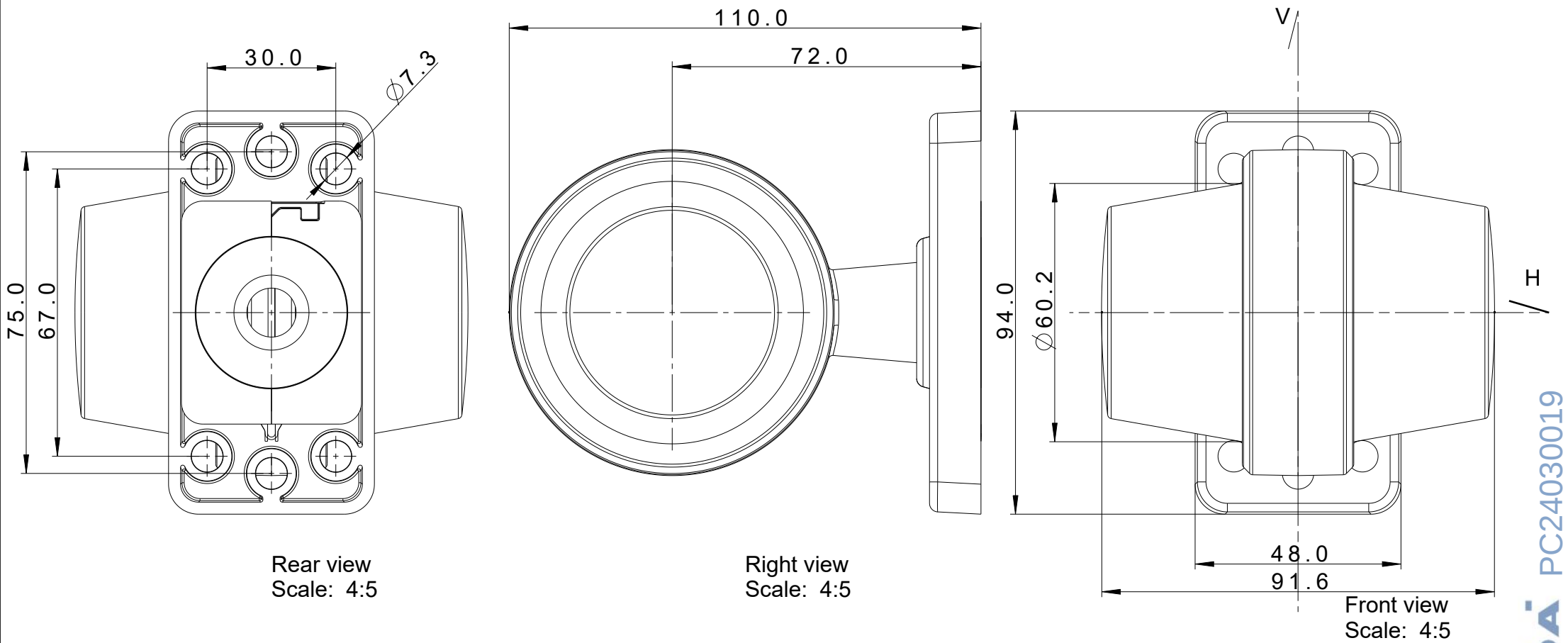
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

Description:

general drawing

This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |



**Manufacturer:**  
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**Drawn by:** Karol Jonoszak  
**Date:** 14-03-2024  
**Sheet:** 8 of 12

**Type:** **FT-147 LED**

**LED front position lamp**

**Light source:**

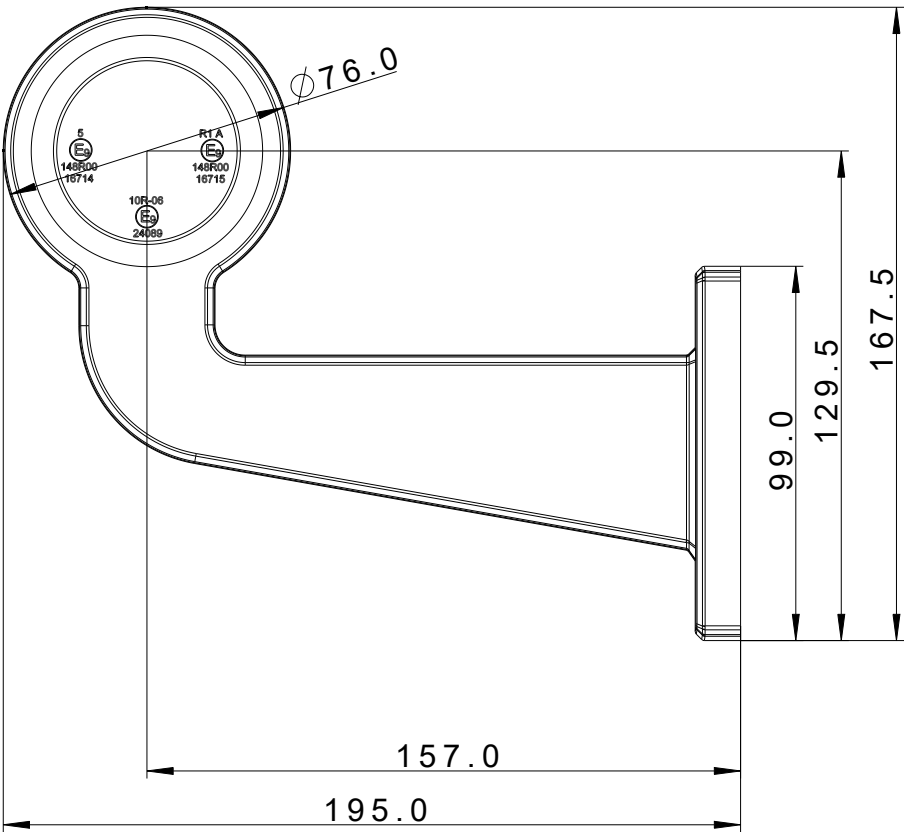
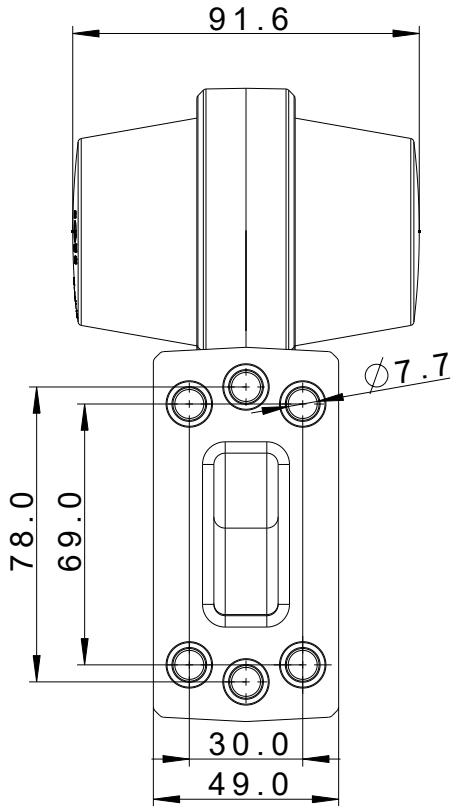
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

**Description:**

**general drawing**

This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |



Front view  
Scale: 1:2

Manufacturer:  
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Drawn by: Karol Jonoszak  
Date: 14-03-2024  
Sheet: 9 of 12

Type: FT-147 LED

LED front position lamp

Light source:

LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

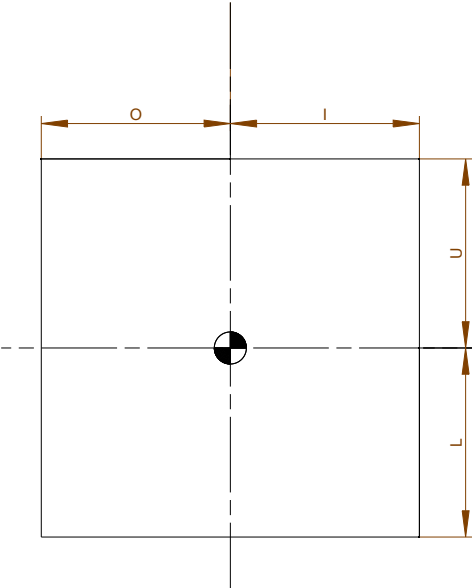
Description:

lighting surface

This drawing is a part of the application for approval

Material used in manufacturing :

| part                      | material                       | color             |
|---------------------------|--------------------------------|-------------------|
| lampshade                 | PMMA                           | red transparent   |
| lampshade                 | PMMA                           | clear transparent |
| mounting bracket          | TPE SEBS                       | black             |
| inner sealing ring        | ABS                            | red or black      |
| fixing element            | PP                             | black             |
| overmoulded reinforcement | PA GF 30                       | black             |
| PCB                       | FR4                            |                   |
| sealing                   | potting compound - epoxy resin |                   |



| lighting surface |                         |                         |                         |                         |
|------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| function         | U (upper limit)<br>[mm] | L (lower limit)<br>[mm] | O (outer limit)<br>[mm] | I (inner limit)<br>[mm] |
| A1               | 24                      | 24                      | 24                      | 24                      |
| R1               | 24                      | 24                      | 24                      | 24                      |

Determining the lower, upper and lateral limits of the illumination surface of the lamp device.

According to ECE regulation 48/06 " Instalation of light-signalling devices clause 2.10.3.2.

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Drawn by: Karol Jonaszak  
Date: 14-03-2024  
Sheet: 10 of 12

Type:  
**FT-147 LED**  
LED front position lamp

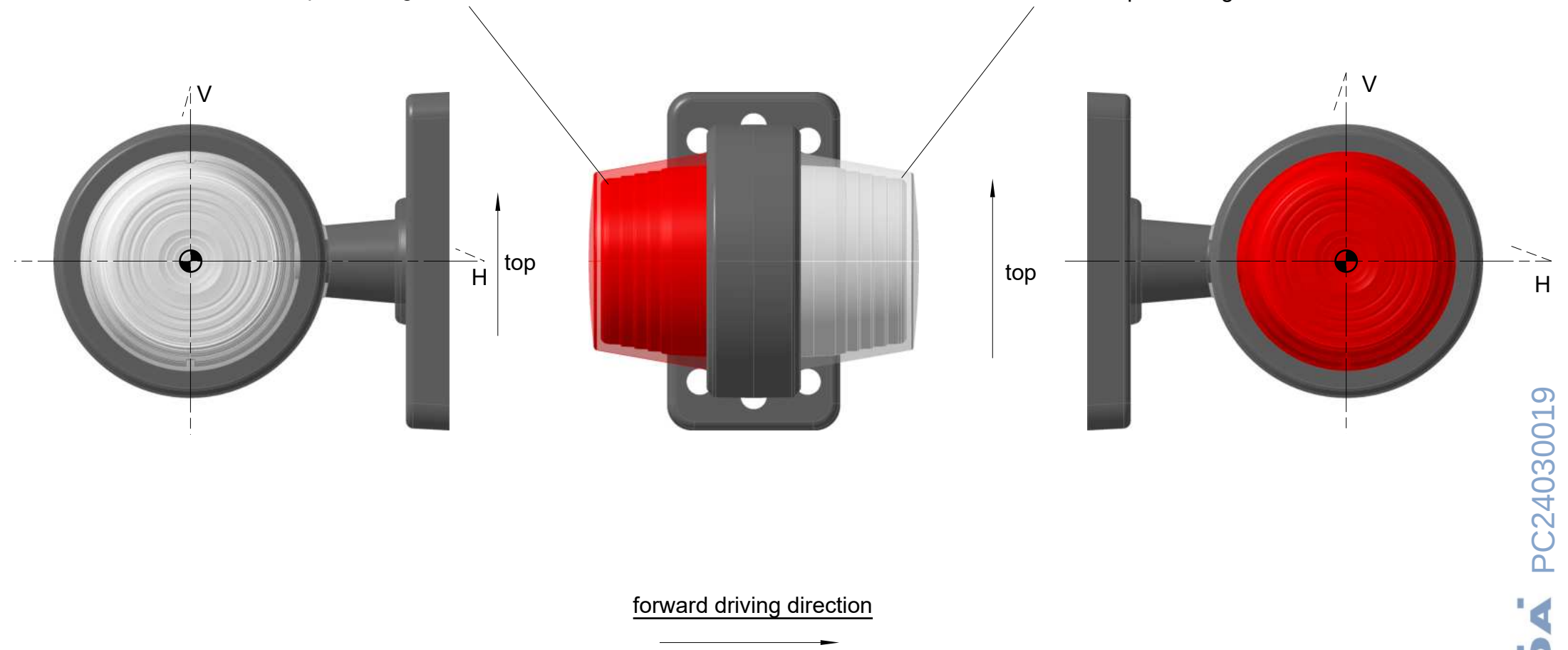
Light source:  
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

Description:  
**positioning on vehicle**  
This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |

function: rear position light R1

function: front position light A1



Manufacturer:  
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Drawn by: Karol Jonoszak  
Date: 14-03-2024  
Sheet: 11 of 12

Type: FT-147 LED

LED front position lamp

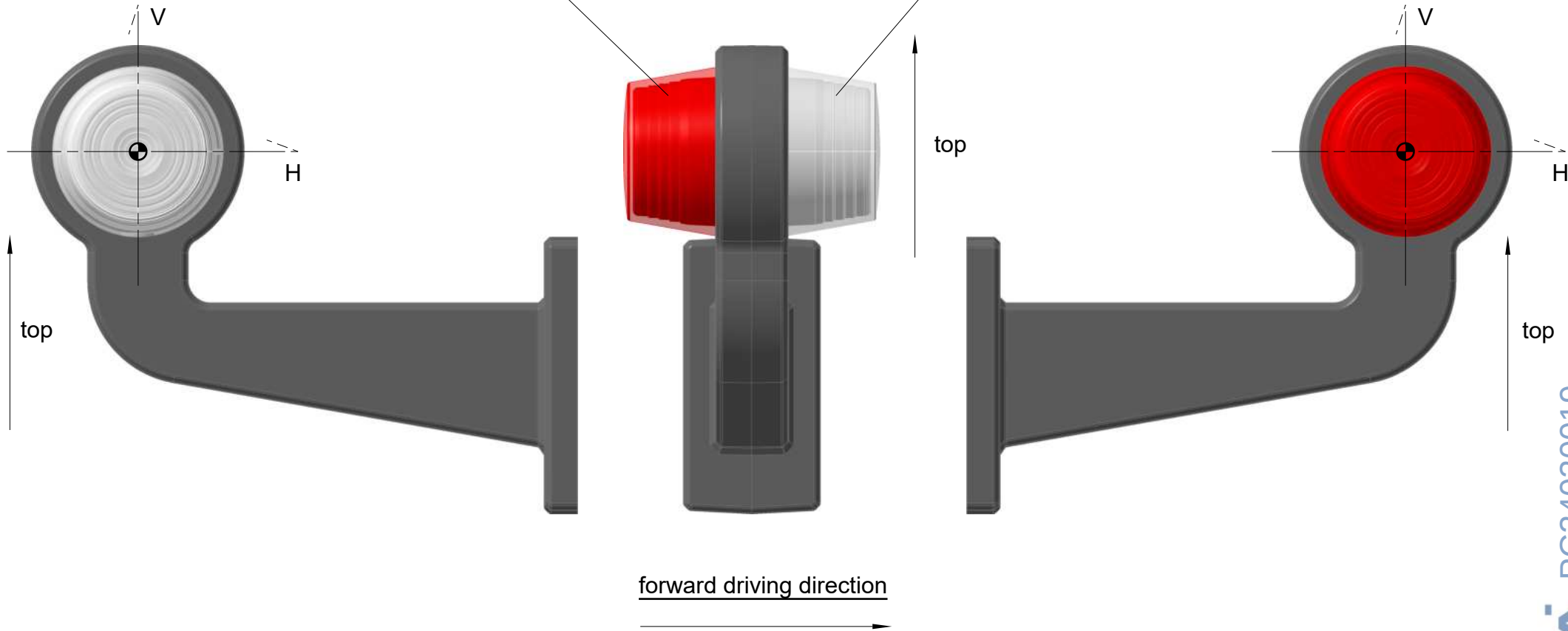
Light source:  
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

Description:  
positioning on vehicle  
This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |

function: rear position light R1

function: front position light A1



**Manufacturer:**  
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|                                    |                            |                           |
|------------------------------------|----------------------------|---------------------------|
| <b>Drawn by:</b><br>Karol Jonoszak | <b>Date:</b><br>14-03-2024 | <b>Sheet:</b><br>12 of 12 |
|------------------------------------|----------------------------|---------------------------|

Type: **FT-147 LED**

LED front position lamp

**Light source:**  
  
LED CHIP SMD chip mounted  
6 LED's white light color  
6 LED's red light color

**Description:**  
  
**variants / tradenames**  
  
This drawing is a part of the application for approval

| Material used in manufacturing : |                                |                   |
|----------------------------------|--------------------------------|-------------------|
| part                             | material                       | color             |
| lampshade                        | PMMA                           | red transparent   |
| lampshade                        | PMMA                           | clear transparent |
| mounting bracket                 | TPE SEBS                       | black             |
| inner sealing ring               | ABS                            | red or black      |
| fixing element                   | PP                             | black             |
| overmoulded reinforcement        | PA GF 30                       | black             |
| PCB                              | FR4                            |                   |
| sealing                          | potting compound - epoxy resin |                   |

|                    |                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------|
| FT-147 A B/C LED   | LED white/red clearance marker lamp on a short straight rubber bracket with a cable.       |
| FT-147 A C/Z LED   | LED red/yellow clearance marker lamp on a short straight rubber bracket with a cable.      |
| FT-147 A Z/Z LED   | LED yellow/yellow clearance marker lamp on a short straight rubber bracket with a cable.   |
| FT-147 F L B/C LED | LED white/red clearance marker lamp left on a long L-shaped rubber bracket with a cable.   |
| FT-147 F P B/C LED | LED white/red clearance marker lamp right on a long L-shaped rubber bracket with a cable.  |
| FT-147 F L C/Z LED | LED red/yellow clearance marker lamp left on a long L-shaped rubber bracket with a cable.  |
| FT-147 F P C/Z LED | LED red/yellow clearance marker lamp right on a long L-shaped rubber bracket with a cable. |
| FT-147 F Z/Z LED   | LED yellow/yellow clearance marker lamp on a long L-shaped rubber bracket with a cable.    |