



E9\*3R02/17\*23099\*00 REV. 01

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**REVISIONES ACEPTADAS EN EL EXPEDIENTE DE HOMOLOGACIÓN /  
REVISIONS APPROVED FOR THE HOMOLOGATION**

**E9\*3R02/17\*23099\*00**

**REV. 01**

A la vista de lo expuesto en el informe nº /  
*Regarding the test report No:*

PC20060446

Del servicio técnico /  
*Of the technical service:*

IDIADA

En lo que se refiere a la homologación cuya contraseña es /  
*Concerning the homologation under approval number:*

E9\*3R02/17\*23099\*00

Fecha / *Date:*

29/08/2019

Concedida al dispositivo / *Granted to device:*

Marca / *Make:*

FRISTOM

Tipo / *Type:*

FT-230 LED

Fabricante / *Manufacturer:*

FRISTOM SPÓLKA Z OGRANICZONA  
ODPOWIEDZIALNOSCIA SPÓLKA  
KOMANDYTOWA  
UL. PRZEMYSŁOWA 5, 86-014  
85416 SICIENKO  
SICIENKO (POLONIA)

Esta Subdirección acepta para su ~~inclusión~~ / sustitución <sup>(1)</sup> en el correspondiente expediente de homologación, la siguiente documentación / *This Subdirection accepts the following documentation for ~~inclusion~~ / replacement <sup>(1)</sup> in the homologation package:*

- a) Comunicación / *Communication:* Sin cambios / *No changes*
- b) Informe de ensayo / *Test report:* Sin cambios / *No changes*
- c) Documentación técnica / *Technical documentation:* Documentación actualizada (el marcaje en la carcasa ha cambiado) / *Documentation updated (markings on housing has been changed)*

Firma / *Signature:*

EL SUBDIRECTOR GENERAL DE CALIDAD Y SEGURIDAD INDUSTRIAL  
Resolución P.D. del DIRECTOR GENERAL DE INDUSTRIA Y DE LA PYME de 25-10-2012

<sup>(1)</sup> Táchese lo que no proceda / *Delete as appropriate*





**INFORME N° / REPORT No. PC20060446**

RELATIVO A LA HOMOLOGACIÓN DE DISPOSITIVOS CATADIÓPTICOS PARA VEHÍCULOS A MOTOR Y SUS REMOLQUES SEGÚN EL REGLAMENTO ECE 3.02 / *CONCERNING THE APPROVAL OF RETRO-REFLECTING DEVICES FOR POWER-DRIVEN VEHICLES AND THEIR TRAILERS ACCORDING TO REGULATION 3.02 ECE*

**REV. 01**

Nombre y dirección del fabricante /  
*Manufacturer's name and address*

: FRISTOM SPÓLKA Z OGRANICZONA  
ODPOWIEDZIALNOSCIA SPÓLKA  
KOMANDYTOWA  
UL. PRZEMYSŁOWA 5, 86-014  
85416 SICIENKO  
SICIENKO (POLONIA)

Marca comercial / *Trade mark*

: FRISTOM

Tipo / *Type*

: FT-230 LED

Lugar y fecha de emisión del informe /  
*Place and date of test report issue*

: L'Albornar, Santa Oliva (Tarragona)  
18/06/2020

CONCLUSIONES / *CONCLUSIONS*: Analizado el motivo de la modificación que se detalla en el Anexo a este informe, el dispositivo presentado **CUMPLE** las prescripciones relativas a la homologación de dispositivos catadiópticos de Clase IIIA en aplicación del Reglamento ECE 3.02 y se acepta para su sustitución en los expedientes N° PC19060183 / *Taking into account the reason of the modification as detailed in the Annex attached to this report, this device **FULFILLS** the prescriptions with regard to the approval of Class IIIA retro reflecting devices in application of Regulation 3.02 ECE, and it accepts for replacement in the reports PC19060183.*

Realizado/ *Performed by*



Joan Fonts Sala  
INGENIERO DE ENSAYOS  
*TEST ENGINEER*

V. B°./ *Revised by:*



Ramon Santafè Guiu  
JEFE DE DEPARTAMENTO  
*DEPARTMENT MANAGER*

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

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



Se acepta para su sustitución en el correspondiente expediente de homologación N° PC19060183, la siguiente información / *It accepts the following information for replacement in the homologation information package N° PC19060183:*

- a) Comunicación / *Communication*: Sin cambios / *No changes*
- b) Informe de ensayo / *Test report*: Sin cambios / *No changes*
- c) Documentación técnica / *Technical documentation*: Documentación actualizada (el marcaje en la carcasa ha cambiado) / *Documentation updated (markings on housing has been changed)*

Lugar / *place*: L'Albornar, E-43710 Santa Oliva (Tarragona)  
 Fecha / *date*: 18/06/2020



Joan Fonts Sala  
 INGENIERO DE ENSAYOS  
 TEST ENGINEER

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

\* QUEDA TERMINANTEMENTE PROHIBIDA LA REPRODUCCION PARCIAL DE ESTE INFORME SIN PERMISO EXPRESO DE IDIADA.  
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DOCUMENTACIÓN TÉCNICA /  
*TECHNICAL DOCUMENTATION*

## INFORMATION FOLDER:

FIRST APPLICATION  
DATE: 3.06.2020

### 1. Specification data

Type	FT-230 LED	
Trade name or mark	Fristom	
Variants	-	
Function	Stop ; rear position ; rear fog ; retro reflector class IA ; reversing ; registration plate light, direction indicator	
Color	red light color , white light color , amber light color	
Rated	Voltage	12V/24V
	Wattage	S1-1,5W/3W ; R1+L-1,5/3W;F1-2/4W;AR-2,8/5,5W;2a-4,5/9W
Applicable Regulation		R03;R04;R06;R07;R23;R38
Light Source and connection		<ul style="list-style-type: none"><li>- rear position light : 4 LED's serial connected in 7 parallel sections</li><li>- stop light : 3 LED's serial connected in 2 parallel sections</li><li>- registration plate light: 3 LED's serial connected in 1 section</li><li>- direction indicator : 3 LED's serial connected in 6 parallel sections</li><li>- rear fog light : 4 LED's serial connected in 3 sections</li><li>- reversing light : 3 LED's serial connected in 4 sections</li></ul>
Location of marking	Light Source marks	See the drawing
	Trade mark	Marked on lampshade
	Approval mark	Marked on lampshade

### 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 Revision:

- markings on housing has been changed

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

**FRISTOM**  
Spółka z ograniczoną odpowiedzialnością Sp. k.  
86-014 SICIENKO, ul. Przemysłowa 5  
tel. 52 360 90 50  
www.fristom.com.pl  
NIP 5542926937 REGON 341640907  
MIGHAŁ DYBICZ

PC20060446

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.  
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Drawn by: Date:

Michał Dybicz

20-05-2020

sheet Nr.

1/7

Type

FT-230 LED - rear LED multifunction lamp

Material used in manufacturing :

- lampshade PC transparent clear
- colimator AR PMMA transparent clear
- colimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- 1A reflector PMMA transparent red
- registration plate reflector ABS white
- PCB FR4
- potting compound epoxy resin

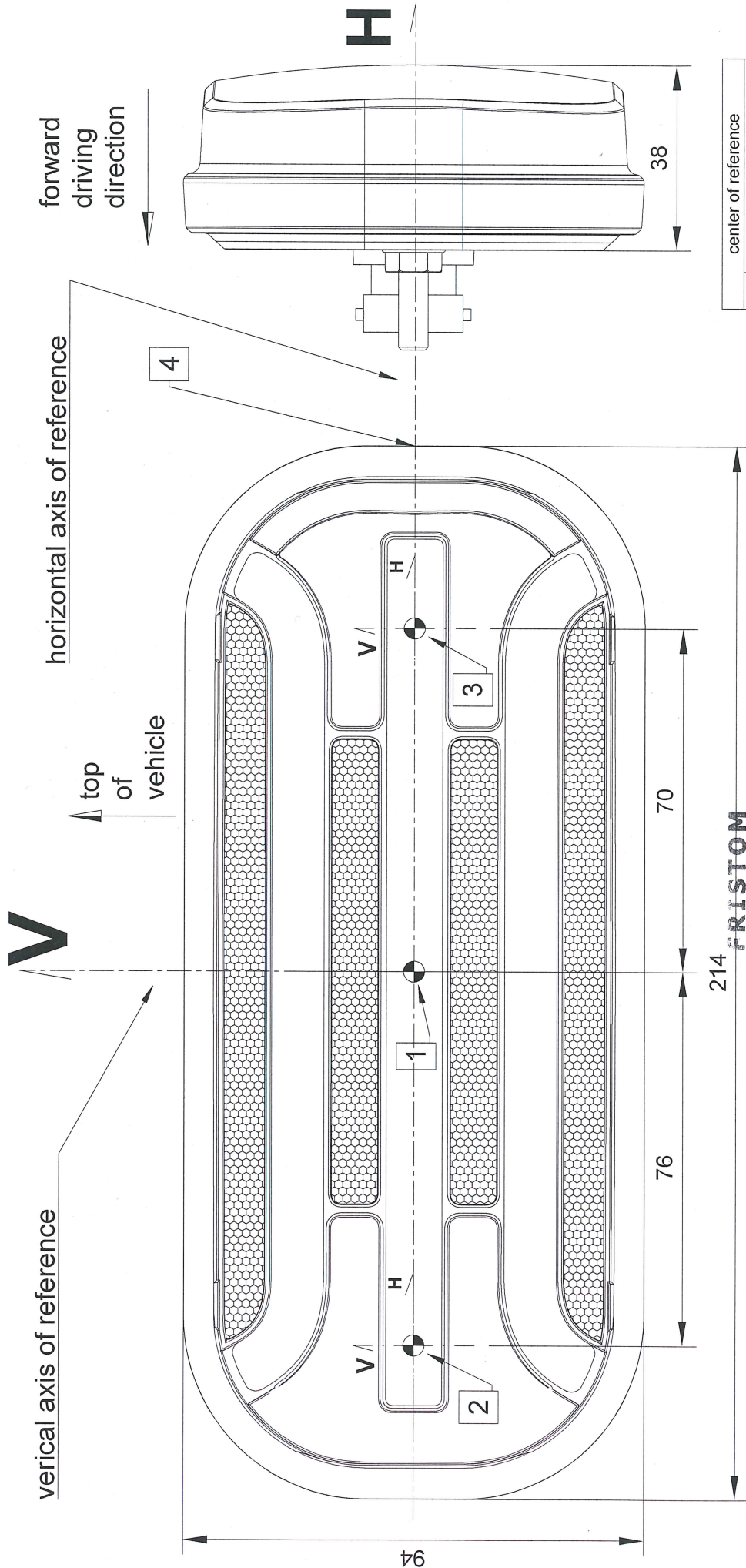
light source

LED CHIP's SMD chip mounted  
AR - 12 LED's - white light color  
F1 - 12 LED's - red light color  
R1 - 28 LED's - red light color  
S1 - 16 LED's - red light color  
2a - 18 LED's - red light color  
L - 3 LED's - white light color

sheet description

general drawing / lamp functions / assembly on vehicle

This drawing is a part of the application for approval



center of reference	
1	direction indicator 2a (dynamic)
2	reflex reflector 1A
3	rear position R1
4	rear fog F1 or reversing AR
5	stop S1
6	registration light L

FRISTOM

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IDIADA

PC20060446

NIP/5542926937 REGON 341640907

MICHAŁ DYBICZ

## Manufacturer

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**Drawn by:** **Date:** **20-05-2020**

Michał Dybicz

**sheet Nr.** **2/7**

## Type

**FT-230 LED - rear LED multifunction lamp**

### light source

LED CHIP's SMD chip mounted  
R1 - 12 LED's - white light color  
R2 - 12 LED's - red light color  
R1 - 26 LED's - red light color  
S1 - 6 LED's - red light color  
2a - 18 LED's - amber light color  
L - 3 LED's - white light color

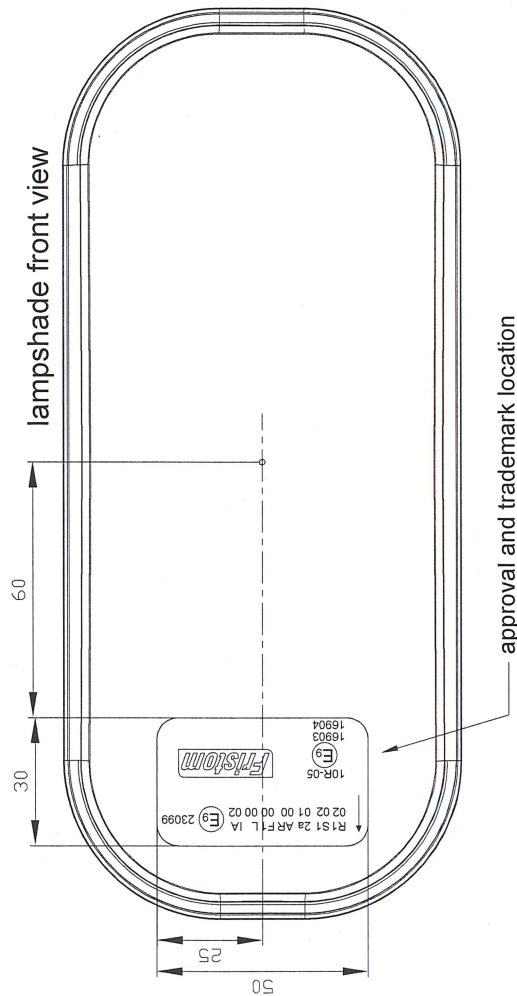
### sheet description

markings approvals, electrical parameters and connections

This drawing is a part of the application for approval

## Material used in manufacturing :

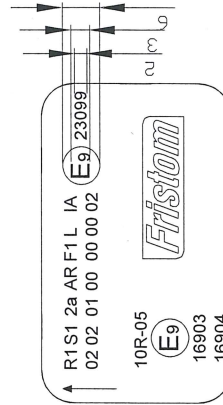
- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- 1A reflector PMMA transparent red
- registration plate reflector ABS white
- PCB FR4
- potting compound epoxy resin



## Electrical parameters

stop light	12V/24Vdc 1,5W/3W
rear fog	12V/24Vdc 2W/4W
reversing	12V/24Vdc 2,8W/5,5W
rear position light + reg. plate light	12V/24Vdc 1,5W/3W
direction indicator	12V/24Vdc 4,5W/9W

## approval marking dimensions:



## connection of LED's in function circuits:

- rear position light : 4 LED's serial connected in 7 parallel sections
- stop light : 3 LED's serial connected in 2 parallel sections
- registration plate light: 3 LED's serial connected in 1 section
- direction indicator : 3 LED's serial connected in 6 parallel sections
- rear fog light : 4 LED's serial connected in 3 sections
- **reverse light** : 3 LED's serial connected in 4 sections

## FRISTOM

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86-014 ŚCIENKO, ul. Przemysłowa 5  
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MICHAŁ DYBICZ

**IDIADA** PC20060446

Manufacturer

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Drawn by: Date:

Michał Dybicz 20-05-2020

sheet Nr.

3/7

Type

FT-230 LED - rear LED multifunction lamp

light source

LED CHIP's SMD chip mounted  
AR - 12 LED's - white light color  
F1 - 12 LED's - red light color  
R1 - 28 LED's - red light color  
S1 - 16 LED's - red light color  
2s - 16 LED's - red light color  
L - 3 LED's - white light color

sheet description

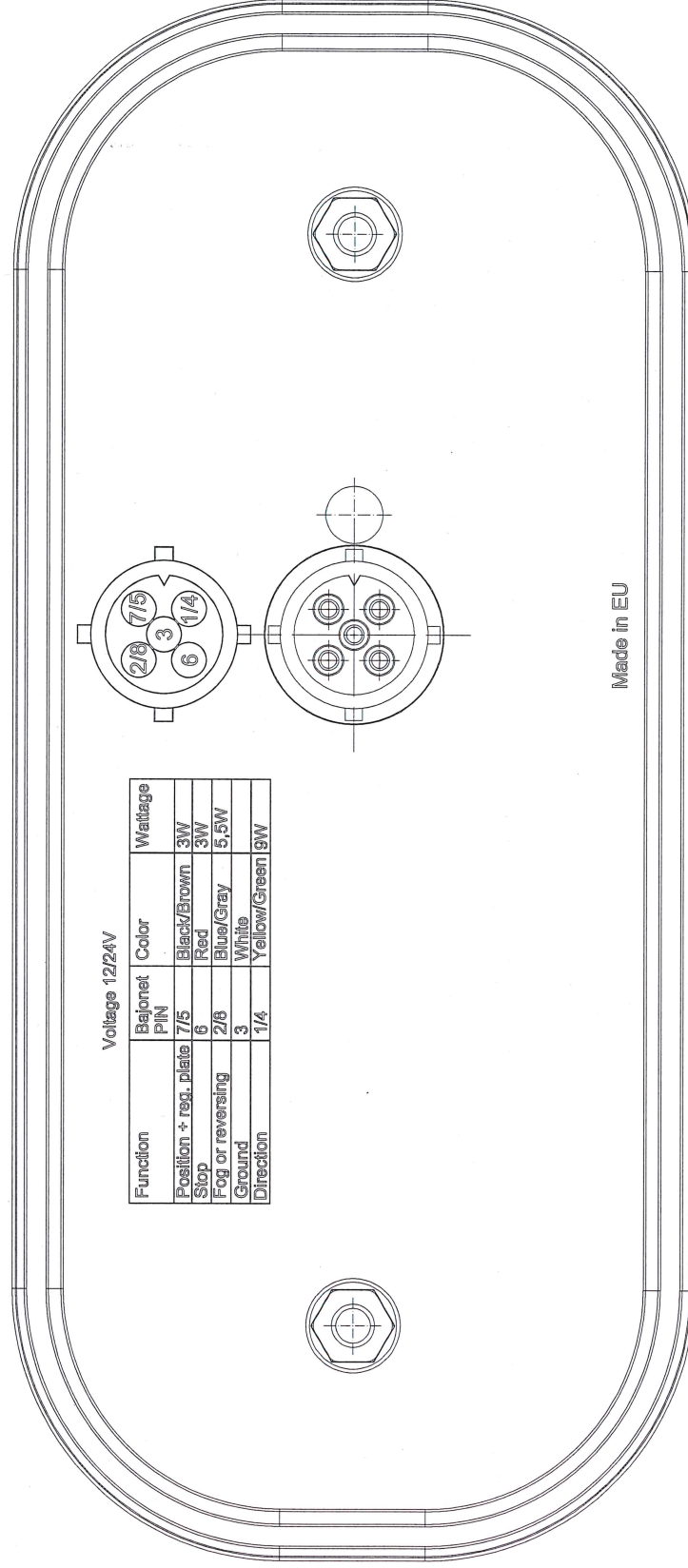
markings of electrical parameters

This drawing is a part of the application for approval

Material used in manufacturing :

- lampshade PC transparent clear
- colimator AR PMMA transparent clear
- colimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- 1A reflector PMMA transparent red
- registration plate reflector ABS white
- PCB FR4
- potting compound epoxy resin

Electrical parameters marked on housing backside - bajonet version view



Voltage 12/24V

Function	Bajonet PIN	Color	Wattage
Position + reg. plate	7/5	Black/Brown	3W
Stop	6	Red	3W
Fog or reversing	2/8	Blue/Gray	5,5W
Ground	3	White	
Direction	1/4	Yellow/Green	9W

FRISTOM

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Drawn by: Date: sheet Nr.

Michał Dybicz 20-05-2020 4/7

Type

FT-230 LED - rear LED multifunction lamp

light source

LED CHIP's SMD chip mounted  
AR - 12 LED's - white light color  
F1 - 12 LED's - red light color  
S1 - 28 LED's - red light color  
S2 - 18 LED's - red light color  
2a - 18 LED's - red light color  
L - 3 LED's - white light color

sheet description

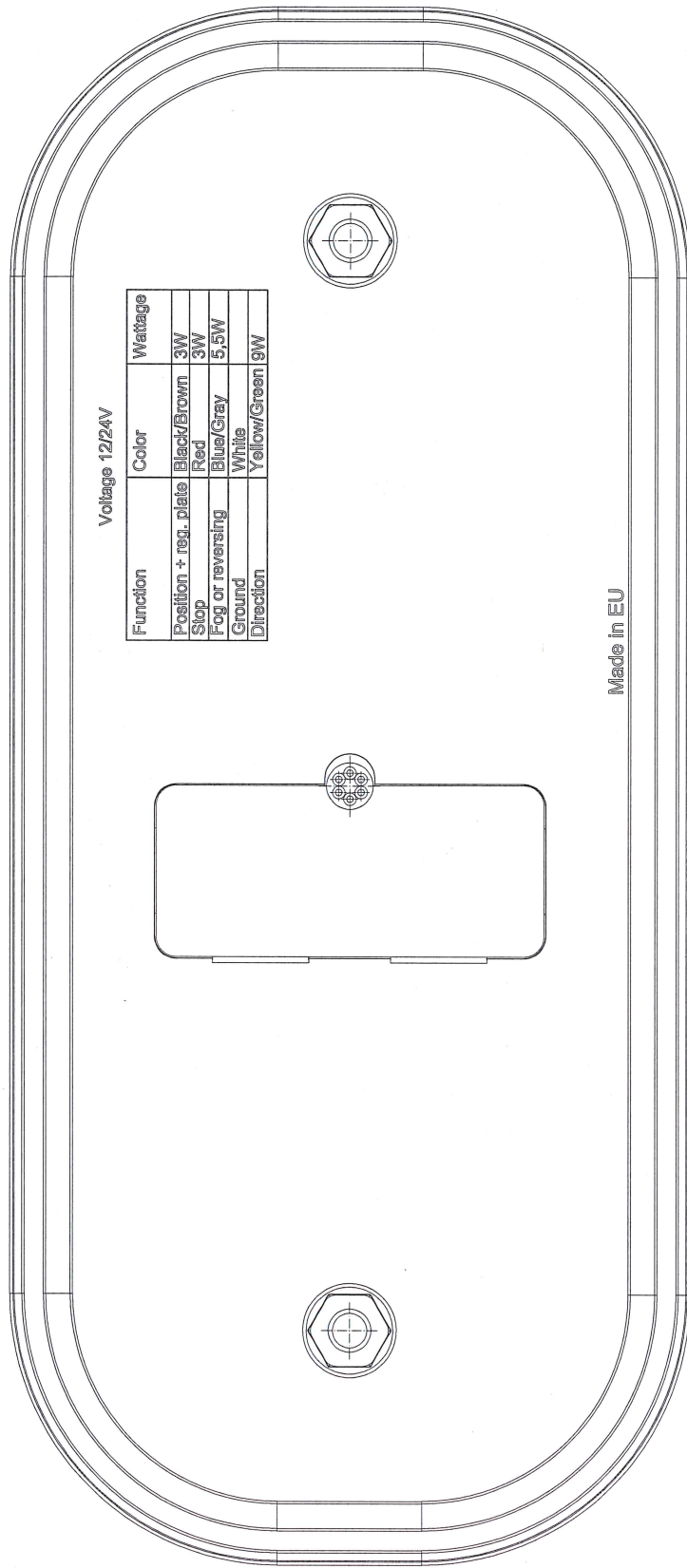
markings of electrical parameters

This drawing is a part of the application for approval

Material used in manufacturing :

- lampshade PC transparent clear
- colimator AR PMMA transparent clear
- colimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- 1A reflector PMMA transparent red
- registration plate reflector ABS white
- PCB FR4
- potting compound epoxy resin

Electrical parameters marked on housing backside - cable version view



Voltage 12/24V

Function	Color	Wattage
Position + reg. plate	Black/Brown	3W
Stop	Red	3W
Fog or reversing	Blue/Gray	5,5W
Ground	White	
Direction	Yellow/Green	9W

Made in EU

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Drawn by: Date: sheet Nr.

Michał Dybicz 20-05-2020 5/7

Type

FT-230 LED - rear LED multifunction lamp

light source

LED CHIP's SMD chip mounted  
AR - 12 LED's - white light color  
F1 - 12 LED's - red light color  
R1 - 28 LED's - red light color  
S1 - 6 LED's - red light color  
2a - 1 LED's - amber light color  
L - 3 LED's - white light color

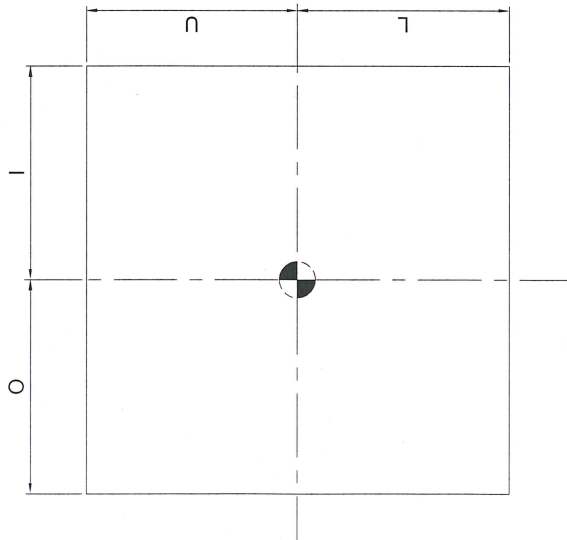
sheet description

lighting surface

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Material used in manufacturing :

- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- IA reflector PMMA transparent red
- registration plate reflector ABS white
- PCB FR4
- potting compound epoxy resin



lighting surface

function	U (upper limit) (mm)	L (lower limit) (mm)	O (outer limit) (mm)	I (inner limit) (mm)
reversing AR	25	25	30	30
rear fog F1	25	25	30	30
rear position R1	37	37	85	85
stop S1	16	16	17	17
direction indicator 2a	5	5	88	88
reflex reflector IA	39	39	75	75

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

According to European Directive 91/663/EEC , Annex I "Installation of lighting and light-signalling devices" clause 1.9.2.

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

IDIADA

PC20060446

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Drawn by: Date: sheet Nr.

Michał Dybicz 20-05-2020 6/7

Type

FT-230 LED - rear LED multifunction lamp

light source  
LED CHIP's SMD chip mounted  
AR - 12 LED's - white light color  
F1 - 12 LED's - white light color  
F1 - 12 LED's - red light color  
S1 - 28 LED's - red light color  
S1 - 18 LED's - red light color  
S1 - 18 LED's - white light color  
L - 3 LED's - white light color

sheet description  
variant tradenames

This drawing is a part of the application for approval

Material used in manufacturing :

- lampshade PC transparent clear
- colimator AR PMMA transparent clear
- colimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- 1A reflector PMMA transparent red
- registration plate reflector ABS white
- PCB FR4
- potting compound epoxy resin

FT-230 COF LED DI	FT-230 COF LED DI 6-functional LED rear lamp with the position, reversing, STOP, an indicator and a number plate lights with reflector, 1 m cable.
FT-230 COF LED DI Mxx	FT-230 COF LED DI 6-functional LED rear lamp with the position, reversing, STOP, an indicator and a number plate lights with reflector, Mxx cable.
FT-230 COF LED DI BAJONET 5PIN	FT-230 COF LED DI 6-functional LED rear lamp with the position, reversing, STOP, an indicator and a number plate lights with reflector, 5 PIN Bayonet connector.
FT-230 NT COF LED DI	FT-230 NT COF LED DI 5-functional LED rear lamp with the position, reversing, STOP, an indicator and without a number plate lights with reflector, 1 m cable.
FT-230 NT COF LED DI Mxx	FT-230 NT COF LED DI 5-functional LED rear lamp with the position, reversing, STOP, an indicator and without a number plate lights with reflector, Mxx cable.
FT-230 NT COF LED DI BAJONET 5PIN	FT-230 NT COF LED DI BAJONET 5PIN 5-functional LED rear lamp with the position, reversing, STOP, an indicator and without a number plate lights with reflector, 5 PIN Bayonet connector.
FT-230 NT PM LED DI	FT-230 NT PM LED DI 5-functional LED rear lamp with the position, fog, STOP, an indicator lights, without a number plate light with reflector, 1 m cable.
FT-230 NT PM LED DI Mxx	FT-230 NT PM LED DI 5-functional LED rear lamp with the position, fog, STOP, an indicator lights, without a number plate light with reflector, Mxx cable.
FT-230 NT PM LED DI BAJONET 5 PIN	FT-230 NT PM LED DI 5-functional LED rear lamp with the position, fog, STOP, an indicator lights, without a number plate light with reflector, 5 PIN Bayonet connector.
FT-230 PM LED DI	FT-230 PM LED DI 6-functional LED rear lamp with the position, fog, STOP, an indicator and a number plate lights with reflector, 1 m cable.
FT-230 PM LED DI Mxx	FT-230 PM LED DI 6-functional LED rear lamp with the position, fog, STOP, an indicator and a number plate lights with reflector, Mxx cable.
FT-230 PM LED DI BAJONET 5PIN	FT-230 PM LED DI 6-functional LED rear lamp with the position, fog, STOP, an indicator and a number plate lights with reflector, 5 PIN Bayonet connector.
	where x is number from 0 till 9

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Drawn by:	Date:	sheet Nr.
Michał Dybicz	20-05-2020	7/7

Type

FT-230 LED - rear LED multifunction lamp

Material used in manufacturing :

- lampshade PC transparent clear
- colimator AR PMMA transparent clear
- colimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- 1A reflector PMMA transparent red
- registration plate reflector ABS white
- PCB FR4
- potting compound epoxy resin

light source

LED CHIP's SMD chip mounted  
AR - 12 LED's - white light color  
F1 - 2 LED's - red light color  
R1 - 26 LED's - red light color  
S1 - 6 LED's - red light color  
2a - 18 LED's - amber light color  
L - 3 LED's - white light color

sheet description

positioning of registration plate light

This drawing is a part of the application for approval

distance

registration plate 520x120

level

lamp level [mm]	distance [mm]
20	30
22	35
23	50
36	150
39	165

FRISTOM

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