



PRODUCT CATALOGUE



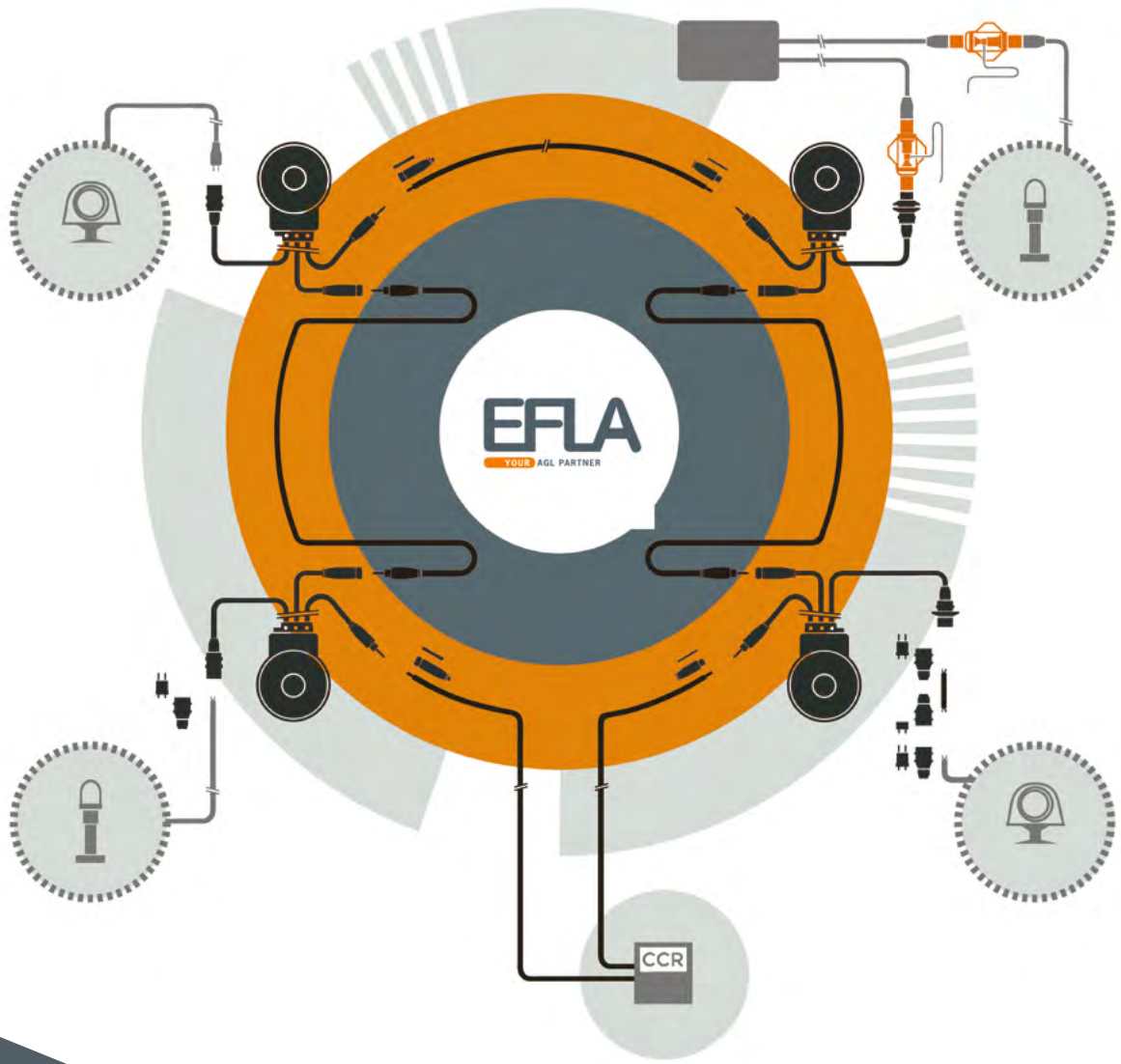


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About us

Seamless Connectivity in Airfield Lighting - EFLA is the only company in the world specializing in seamless power and communication in Airfield Ground Lighting circuitry. We develop, manufacture, and sell series isolation transformers, connector kits, and prefabricated cable leads for airfield lighting circuits.

Our journey

EFLA's story began over 35 years ago in Northern Europe, Finland. Today we are the leading manufacturer and supplier of Airfield Ground Lighting (AGL) electrical circuit components with a true global footprint covering all continents. Our products can be found in most international airports such as Singapore, Sydney, Abu Dhabi, Dubai, Amsterdam, Frankfurt, Madrid, Paris, Beijing, Chengdu, Hongkong, Kuala Lumpur, Delhi, Oslo, and Salt Lake City.

EFLA is a Finnish family-owned business, with a vision to grow together in the long term as individuals and as a company. This goal forms a firm foundation for constantly delivering on promises and exceeding our customers' expectations.

Products meeting global standards

As the passenger numbers are recovering from COVID-19 impacts, many airports are reassessing how to ensure reliable operations while utilizing limited resources more efficiently under tightening flight schedules. Steady airfield ground lighting is a major factor in driving safe takeoffs and landings, as well as operational efficiency.

EFLA products provide the best support for all LED lights and leading airfield light control and monitoring systems. High quality AGL components are manufactured and tested in Finland and delivered to all continents. Each unit is engineered and proven to withstand various environmental conditions ranging from extreme heat to subfreezing temperatures as well as prolonged direct chemical and water exposure common to airfields. Our products are certified and comply with major international standards (FAA, ICAO, IEC), and also national standards (CAAC, MAK).

At EFLA, we are committed to develop high quality products and solutions that minimize environmental impact made by the company's activities. Our production is approved and operates under Quality Management System ISO9001:2015 and Environmental Management System ISO14000:2015 certificates.

Technologies



Encapsulation

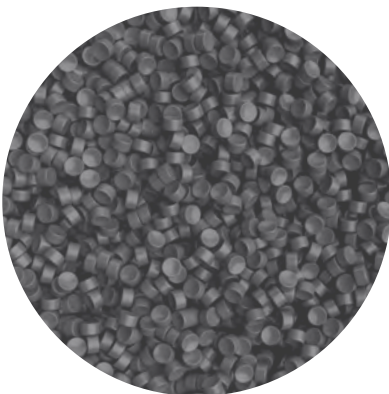
EFLA encapsulation consists of low-pressure insert molding and high-pressure over-molding technologies, which provides durable and hermetically sealed encapsulation for the most sensitive PCBs, embedded cable assemblies, connectors, and various power electronic components in harsh underground electrical environments. EFLA molding technology provides:

- Excellent adhesion
- High production output and cost competitiveness
- Consistent quality of automated manufacturing process

Materials

EFLA works in close collaboration with leading thermoplastic material manufacturers to develop durable and safe products for AGL circuits across the globe. Our products are made with high-performance elastomers, other thermoplastics, tin-plated copper, and brass, to name a few. The materials are carefully selected based on:

- Electrical and mechanical properties
- Resistance to weathering
- UV-radiation and ozone exposure
- Chemical resistance
- Environmental impact



Thermoplastic elastomer (TPE) is modern engineering material compared to thermoset rubbers due to reduced weight, sustainable manufacturing, and 100 % recycling.

Technical competences

EFLA's technical know-how in airfield ground lighting circuit relies on over 35 years experience and co-operation with industry professionals. Today, EFLA is the leading supplier for AGL critical components. At EFLA, we focus on absolute safety and reliability in our production, providing a wide range of high quality connectors, molded cable assemblies and only 100 % factory tested transformers.





KR600 - Low-leakage transformers to series circuit

FAA AC 150 5345-47, L-830 / L-831, 60 Hz / 50 Hz
EN 61823



KR600 is used to supply the current in the AGL series circuit and to provide a separation point between the primary and secondary circuits. Thermoplastic elastomer (TPE) encapsulated KR600 series transformers are designed in toroidal shape, which provides superior electrical performance. Toroidal is a symmetric “donut” shape which ensures the lowest leakage inductance. It also supports single lamp control and more advanced control and monitoring requirements. KR600 is the most energy efficient transformer on the market. Transformers are Intertek certified to FAA AC and approved by IEC. They also comply with ICAO Annex 14 and several other national standards (CAAC, MAK).

Electrical characteristics

- Rated power 10–500 W
- Rated current 6.6 A/6.6 A , other currents upon request
- Rated Voltage 5000 V/600 V
- Power factor > 0.97
- L (leak) 20 μ H–130 μ H
- L (magn) 13.0 mH–64 mH



Materials

- Thermoplastic elastomer (TPE) is a modern material with excellent electrical and mechanical properties, which has great resistance against typical chemicals used in airfields, weathering, UV-radiation and ozone exposure, as well as temperature effects up to 135 °C (275 °F).
- Tin-plated copper or brass for the contact parts, while the socket is supplied with a copper beryllium sleeve-type spring, ensuring adequate contact pressure.

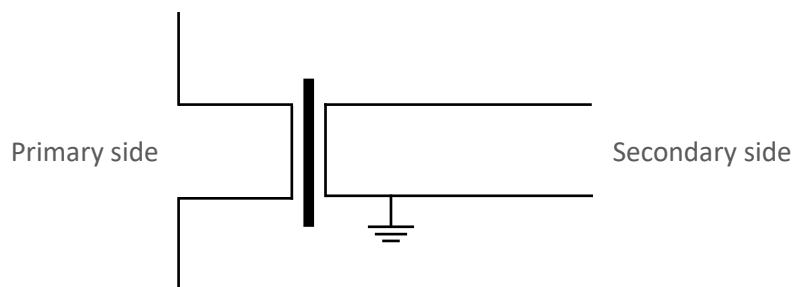
Connections

Standard KR600 series

Primary leads	2 x 60 cm/1.969 ft, 1 x 6 mm ²
Primary connector type	FAA L-823 Style 2 Plug & Style 9 Receptacle
Secondary lead	1 x 1.2 m/3.937 ft, 2 x 2.5 mm ²
Secondary connector type	FAA-L-823 Style 8

KR600 with or without earthing (grounding)

EFLA supplies transformers with or without earthing. The earthing is connected to the end of the secondary winding on the side of the larger socket. This means that the bigger socket of the secondary side is grounded.



Electrical information

EFLA Type with Earthing	EFLA Type without Earthing	FAA Type	Rated Power [W]	Rated Current [A]	Power Range [W]	Load [Ω]	Efficiency [%]	Power Factor
KR621	KR621.1	L-830-16 L-831-16	10/15	6.6/6.6	10–15	0.34*	> 70	> 0.97
KR625	KR625.1	L-830-17 L-831-17	20/25	6.6/6.6	20–25	0.57*	> 70	> 0.97
KR631	KR631.1	L-830-1 L-831-1	30/45	6.6/6.6	25–60	0.57–1.38	> 85	> 0.97
KR636	KR636.1	L-830-3 L-831-3	65	6.6/6.6	50–85	1.15–1.95	> 85	> 0.97
KR641	KR641.1	L-830-4 L-831-4	100	6.6/6.6	80–125	1.84–2.87	> 85	> 0.97
KR646	KR646.1	L-830-18 L-831-18	150	6.6/6.6	120–178	2.75–4.08	> 90	> 0.97
KR651	KR651.1	L-830-6 L-831-6	200	6.6/6.6	160–230	3.67–5.28	> 90	> 0.97
KR661	KR661.1	L-830-10 L-831-10	300	6.6/6.6	220–338	5.05–7.75	> 90	> 0.97
KR681	KR681.1	L-830-14 L-831-14	500	6.6/6.6	400–523	12.00*	> 90	> 0.97

* According to FAA AC 150/5345-47

Leakage inductances

EFLA Type with Earthing	EFLA Type without Earthing	Power [W]	Short Circuited current [A]	Open Circuited voltage [V]	L (magn) [mH]	L (leak) [μ H]
KR621	KR621.1	10/15	< 6.7	< 8	13.0	< 20
KR625	KR625.1	20/25	< 6.7	< 8	13.0	< 20
KR631	KR631.1	30/45	< 6.7	< 13	16.0	< 30
KR636	KR636.1	65	< 6.7	< 16	19.0	< 40
KR641	KR641.1	100	< 6.7	< 23	14.0	< 40
KR646	KR646.1	150	< 6.7	< 25	24.0	< 60
KR651	KR651.1	200	< 6.7	< 41	25.0	< 60
KR661	KR661.1	300	< 6.7	< 70	35.0	< 100
KR681	KR681.1	500	< 6.7	< 100	64.0	< 130

Customized transformers

In addition to our standard 6.6 A/6.6 A series isolation transformers, EFLA can develop and supply customized transformers according to various technical requests and global specifications. Please contact us to discuss further about your needs.

Dimensions

EFLA Type with Earthing	EFLA type without Earthing	D [mm]	L [mm]	H [mm]	Weight [kg]
KR621	KR621.1	89	115	45	1.03
KR625	KR625.1	89	115	45	1.03
KR631	KR631.1	105	128	57	1.6
KR636	KR636.1	120	145	54	1.9
KR641	KR641.1	130	155	59	2.4
KR646	KR646.1	146	192	60	3.1
KR651	KR651.1	146	192	65	3.3
KR661	KR661.1	146	192	77	4.0
KR681	KR681.1	146	192	96	5.33

Accessories for transformers



Transformer hanger - TS1

STAINLESS STEEL AISI316 hanger to place transformers in good order and away from water and dirt in underground pit holes. There are two ways to install hanger; either by screwing it on the wall or hanging it on rail.

Sustainability

- Lighter weight and reduced material usage thanks to sustainable and compact design, resulting in optimal performance with lower environmental impact.
- High energy-efficient 360-degree toroidal transformers minimize power losses and contribute to overall system efficiency and energy-savings.
- Flexible power range supports optimized power usage in the AGL circuits.





KR500 - Transformers to series circuit

FAA AC 150 5345-47, L-830 / L-831, 60 Hz / 50 Hz
EN 61823



KR500 is used to supply the current in the AGL circuit and to provide a separation point between the primary and secondary circuits. KR500 series offers standard transformer features. Transformers are Intertek certified to FAA AC. They also comply with ICAO Annex 14 and MAK.

Electrical characteristics

- Rated power 30–300 W
- Rated current 6.6 A/6.6 A , other currents upon request
- Rated voltage 5000 V/600 V
- Power factor > 0.97

Materials

- Thermoplastic elastomer (TPE) is a modern material with excellent electrical and mechanical properties, which has great resistance against typical chemicals used at airfields, weathering, UV-radiation and ozone exposure, as well as temperature effects up to 135 °C (275 °F).
- Tin-plated copper or brass for the contact parts, while the socket is supplied with a copper beryllium sleeve-type spring, ensuring adequate contact pressure.



Connections

Standard KR500 series

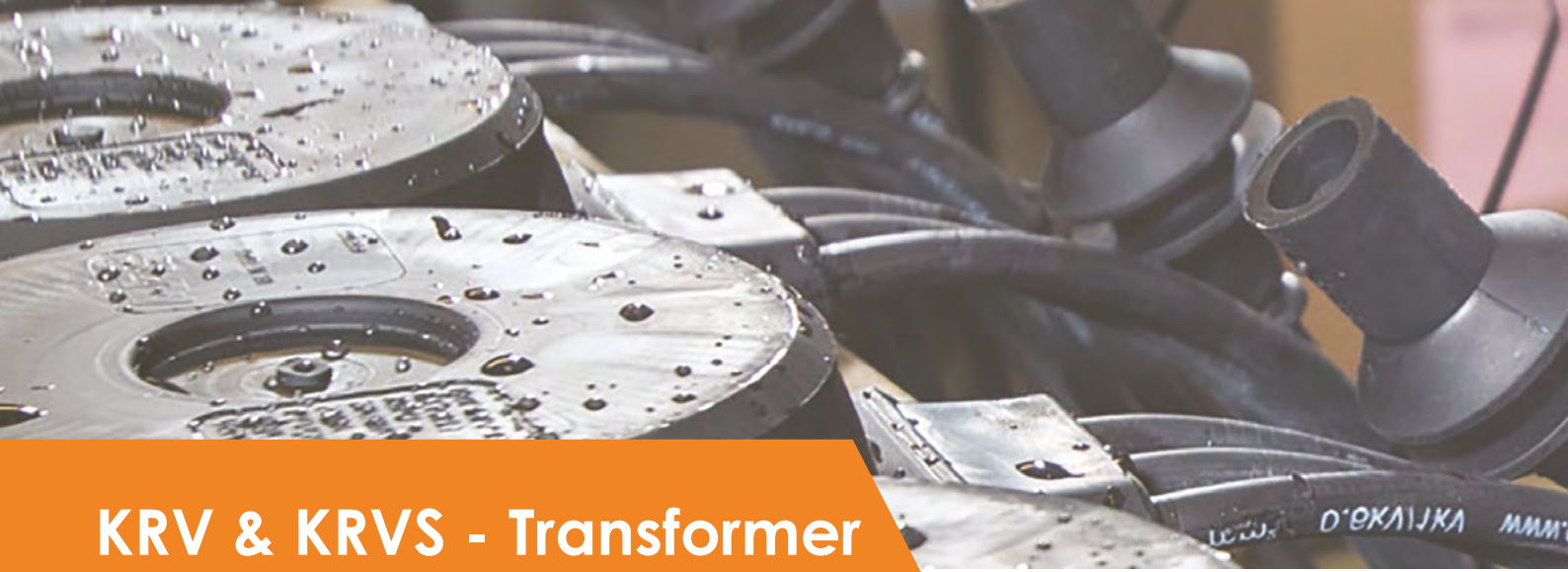
Primary leads	2 x 60 cm/1.969 ft, 1 x 6 mm ²
Primary connector type	FAA L-823 Style 2 Plug & Style 9 Receptacle
Secondary lead	1 x 1.2 m/3.937 ft, 2 x 2.5 mm ²
Secondary connector type	FAA-L-823 Style 8

Electrical information

EFLA Type with Earthing	EFLA Type without Earthing	FAA Type	Rated Power [W]	Rated Current [A]	Power Range [W]	Load [Ω]	Efficiency [%]	Power Factor
KR531	KR531.1	L-830-1 L-831-1	30/45	6.6/6.6	25–60	0.57–1.38	> 85	> 0.97
KR536	KR536.1	L-830-3 L-831-3	65	6.6/6.6	50–85	1.15–1.95	> 85	> 0.97
KR541	KR541.1	L-830-4 L-831-4	100	6.6/6.6	80–125	1.84–2.87	> 85	> 0.97
KR546	KR546.1	L-830-18 L-831-18	150	6.6/6.6	120–178	2.75–4.08	> 90	> 0.97
KR551	KR551.1	L-830-6 L-831-6	200	6.6/6.6	160–230	3.67–5.28	> 90	> 0.97
KR561	KR561.1	L-830-10 L-831-10	300	6.6/6.6	220–338	5.05–7.75	> 90	> 0.97

Dimensions

EFLA Type with Earthing	EFLA Type without Earthing	D [mm]	L [mm]	H [mm]	Weight [kg]
KR531	KR531.1	105	128	57	1.6
KR536	KR536.1	125	167	60	1.9
KR541	KR541.1	146	192	60	3.0
KR546	KR546.1	146	192	60	3.1
KR551	KR551.1	146	192	65	3.3
KR561	KR561.1	146	192	77	4.0



KRV & KRVS - Transformer to parallel circuit



KRV

The KRV transformers are installed using EFLA's standard KD510-series primary connector kits or prefabricated cable leads and assemblies or extension cords. Also, end caps KDCVO1 can be used at the end of a circuit.



KRVS

The KRVS transformers are installed using EFLA's standard KD501- and KD502-series secondary connector kits or prefabricated secondary leads, cable assemblies and extension cords. The end cap KDVS.END is used at the end of a circuit. The transformers can be connected by using a prefabricated distribution connector KDCV.P2R.

Characteristics

- Suitable for helidecks, helipads and other applications requiring direct connection to normal line voltage (for example, 230 VAC) and designated secondary voltage input
- TPE encapsulated parallel transformers provides superior electrical performance
- The standard primary voltage - 230 VAC
- The current rating of 20 A
- Frequency of 50/60 Hz



Connections

	KRV	KRVS
Primary leads	2 x 60 cm/1.969 ft	60 cm/1.969 ft
Primary connector type	T-connector FAA L-823 Style 2 Plug & Style 9 Receptacle	FAA L-823 Style 1
Secondary lead	1 x 1.2 m/3.937 ft, 2 x 2.5 mm ²	60 cm/1.969 ft
Secondary connector type	FAAL-823 Style 8	FAA L-823 Style 7

Electrical information

EFLA type for KRV	EFLA type for KRVS	Primary voltage	Secondary voltage	Secondary power
KRV530	KRVS530	230 V	6.8 V	45/50 W
KRV536	KRVS536	230 V	9.85 V	65 W
KRV540	KRVS540	230 V	15.2 V	100 W
KRV545	KRVS545	230 V	22.7 V	150 W
KRV550	KRVS550	230 V	30.2 V	200 W

Dimensions

EFLA type for KRV	EFLA type for KRVS	D [mm]	L [mm]	H [mm]	Weight [kg]
KRV530	KRVS530	100	125	55	1.4
KRV536	KRVS536	126	168	56	1.5
KRV540	KRVS540	147	193	60	2.3
KRV545	KRVS545	147	193	60	2.4
KRV550	KRVS550	147	193	63	3.3

Customized transformers

In addition to our standard 6.6 A/6.6 A series isolation transformers, EFLA can develop and supply customized transformers according to various technical requests and global specifications. Please contact us to discuss further about your needs.

Accessories for transformers

EFLA type	Description
KDCVO1	End cap for KRV-series
KDVS.END	End cap for KRVS-series
KDCV.P2R	Distribution connector for KRVS-series

KDVS.END



KDCVO1



KDCV.P2R





EFLA products are proudly presented
across the globe.



Primary Connectors

FAA AC 150/5345-26, L-823, Styles 3 & 10, Class B ICAO Annex 14, Part 5, Electrical Systems

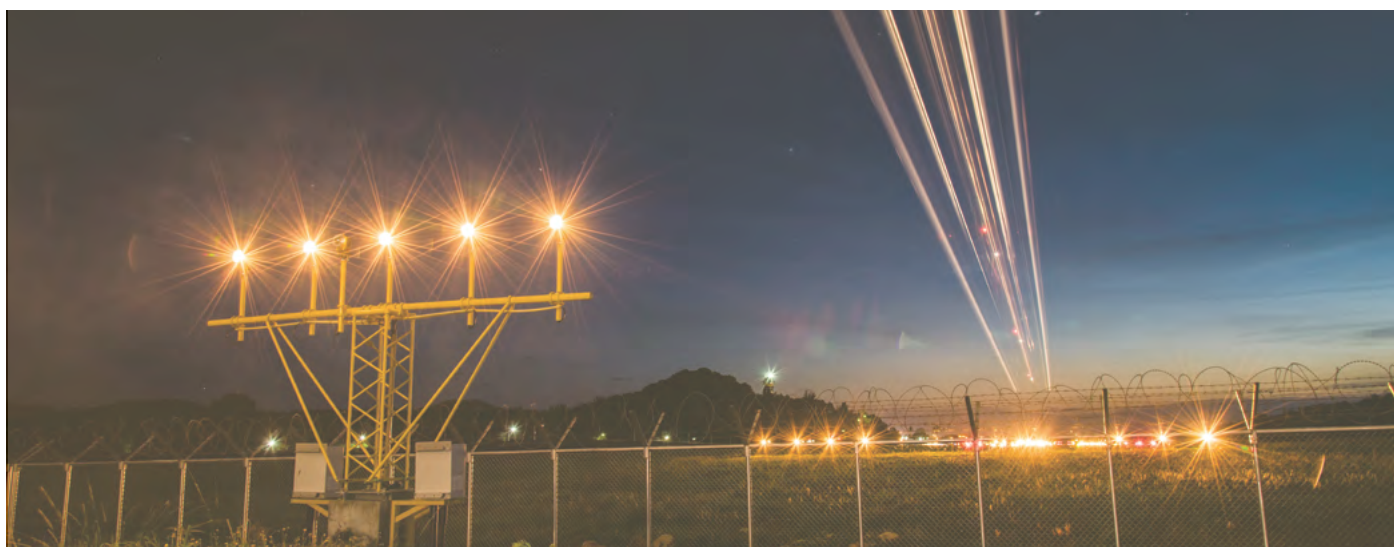
The primary circuit is the foundation of an AGL system. Connectors are the most sensitive parts of the primary circuit and therefore, high-quality connectors are the easiest way to increase the reliability of airfield lighting circuits.

Main features

- EFLA connectors provide watertight and durable installation in any environment.
- Attached manuals and videos facilitate a fast and simple installation.
- EFLA's primary connectors are packed and delivered in kits including all the necessary parts for making the assembly on primary cables.
- Each primary connector kit contains components for a pair (a plug and a receptacle).

Electrical characteristics

- Superior insulation resistance by thermoplastic elastomer (TPE)
- Nominal rating: 25 A and 5000 V
- Cable diameter 7.0–19.0 mm (0.275–0.827 inches)
- Conductor size 6–13 mm² (8–6 AWG)
- ROHS compliance with EU directive NO2002/95/EC
- Available for both screened (shielded) and unscreened (unshielded) cables.





KDL C/W Cable Gland

KDL1 & KDL10 are the most robust and fastest-to-install connectors in the market, designed for a fast-and-easy watertight connection between the primary cable and the series isolating transformer.

- KDL is fitted with unique cable gland, which tolerates bending well and one connector fits to a wide range of cable diameters.
- Highest insulation resistance is provided by three insulation barriers. Screen continuity without crimping minimizes risk for leakages.
- KDL connectors are Intertek certified to FAA AC.

KDL1 for screened cable



KDL10 for unscreened cable



Technical data

EFLA Type	Conductor Size [mm ²]	AWG	Cable Diameter [mm/inch]	Diameter at Wire Insulation [mm/inch]	Diameter & Length of Assembly [mm/inch]
KDL1	6	8	9.0–17.0 mm 0.354–0.669"	7.5–13.0 mm 0.295–0.512"	42 mm, 276 mm 1.654", 10.886"
KDL1.6	10	6	9.0–17.0 mm 0.354–0.669"	7.5–13.0 mm 0.295–0.512"	42 mm, 276 mm 1.654", 10.886"
KDL10	6	8	7.0–17.0 mm 0.276–0.669"	7.0–13.0 mm 0.276–0.512"	34 mm, 268 mm 1.339", 10.551"
KDL10.6	10	6	9.0–17.0 mm 0.354–0.669"	7.0–13.0 mm 0.276–0.512"	34 mm, 268 mm 1.339", 10.551"

KD Classic

KD Classic primary connector design has been the industry requirement for over 30 years. This silicon filled connector is fast to install and insulated screen continuity is available as an option. KD Classic fits with a wide range of cable sizes and is Intertek certified to FAA AC. Available for screened cables (KD500-series) and unscreened cables (KD510-series).

KD500 for screened cable



KD510 for unscreened cable



Technical data

EFLA Type	Conductor size [mm ²]	AWG	Cable diameter [mm, inch]	Diameter at wire insulation [mm, inch]	Diameter/Length of assembly [mm, inch]
KD500	6	8	10.0–14.5 mm, 0.393–0.570"	7.0–10.5 mm, 0.275–0.413"	23.5/222 mm, 0.925/8.74"
KD500.1	6	8	14.0–18.5 mm, 0.551–0.728"	10.0–13.5 mm, 0.393–0.531"	23.5/222 mm, 0.925/8.74"
KD500.6	6	8	8.5–11.5 mm, 0.334–0.452"	5.0–7.5 mm 0.196–0.295"	23.5/222 mm, 0.925/8.74"
KD500.2	10	6	14.0–18.5 mm, 0.551–0.728"	10.0–13.5 mm, 0.393–0.531"	23.5/222 mm, 0.925/8.74"
KD500.5	10	6	10.0–14.5 mm, 0.393–0.570"	7.0–10.5 mm, 0.275–0.413"	23.5/222 mm, 0.925/8.74"
KD510	6	8	10.0–14.5 mm, 0.393–0.570"	7.0–10.5 mm, 0.275–0.413"	23.5/222 mm, 0.925/8.74"
KD510.1	6	8	14.0–18.5 mm, 0.551–0.728"	10.0–13.5 mm, 0.393–0.531"	23.5/222 mm, 0.925/8.74"
KD510.6	6	8	8.5–11.5 mm, 0.334–0.452"	5.0–7.5 mm 0.196–0.295"	23.5/222 mm, 0.925/8.74"
KD510.2	10	6	14.0–18.5 mm, 0.551–0.728"	10.0–13.5 mm, 0.393–0.531"	23.5/222 mm, 0.925/8.74"
KD510.5	10	6	10.0–14.5 mm, 0.393–0.570"	7.0–10.5 mm, 0.275–0.413"	23.5/222 mm, 0.925/8.74"

KDR Resin

KDR Resin connector is designed for extreme conditions. KDR connector comes with polyurethane resin, which is poured inside the connector housing upon installation. This provides a permanent connection between connector housing and cable, which cannot be dismantled.

KDR600 for screened cable



KDR610 for unscreened cable



Technical data

EFLA Type	Conductor size [mm ²]	AWG	Cable diameter [mm, inch]	Diameter/Length of assembly [mm, inch]
KDR600	6	8	9.0–19.0 mm, 0.354–0.748"	31/270 mm, 1.22/10.62"
KDR600.2	10	6	9.0–19.0 mm, 0.354–0.748"	31/270 mm, 1.22/10.62"
KDR610	6	8	9.0–19.0 mm, 0.354–0.748"	31/270 mm, 1.22/10.62"
KDR610.2	10	6	9.0–19.0 mm, 0.354–0.748"	31/270 mm, 1.22/10.62"

Screen continuity

The standard screen continuity for both KD500 & KDR600 is a 300 mm long, 2.5 mm² tinned copper wire, with added yellow green jacket as default on KDR600. The same jacket is available for KD500 with part number named KD500.X/YG.



KD500.X



KDR600.X
KD500.X/YG



Accessories for primary connectors

EFLA Lock



The reusable EFLA Lock secures the connection when connectors are connected together or to transformers. EFLA Lock makes the connection resistant up to 25 kg pulling force.

Protection Hat



An open connector should be protected against water and dirt. The protection hat is an easy way to protect your assembled connectors before transformer installation.

Reinforced Lock



The reinforced lock is a stronger option for the normal EFLA Lock. It is secured with screws and makes the connection resistant for pulling force up to 50 kg.

Primary Connector Adapter



Solves the problem of making simple primary installation in limited space by allowing the male and female connector to be assembled in a 180° angle. The unit complies with FAA-L-823 styles 2 and 9 wiring 8.3 mm², AWG8, 5 kV. The order code is KDCA.U-29.

Suggested crimping tools

	Manual Crimping Tools	Electric Crimping Tools
Primary connectors	Elpress GWB 4099C KLAUKE K05/6 KLAUKE K24 KLAUKE K18	Elpress PVL 130S - WB4099





EFLA connectors provide watertight and durable installation in the most demanding environments.



Secondary Connectors

FAA AC 5345-26, L-823, Type II, Class B, ICAO: Aerodrome Design Manual Part 5

The secondary circuit supplies power to light fixture and delivers control and monitoring data. High quality secondary connectors ensure watertight connection along with seamless power and communication.

Main features

- EFLA connectors provide watertight and durable installation in any environment.
- Attached manuals and videos facilitate a fast and simple installation.
- EFLA's secondary connectors are packed and delivered in kits including all the necessary parts for making the assembly on secondary cables.
- The plug and receptacle are delivered separately.

Electrical characteristics

- Superior isolation resistance by thermoplastic elastomer (TPE)
- Nominal rating: 20 A and 600 V
- Cable diameter 8.5–18 mm (0.334–0.708")
- Wire diameter 2.8–8mm (0.110–0.314")
- Conductor size 1.5–6 mm² (16–10/8 AWG)





KD501/502 for Two Core Cable (Style 5 & 12)

KD501/502 have been the industry requirement for over 30 years. This waterproof silicon filled connector is used with double insulated two core cables, 3-pin also available. KD501/502 connectors are fast to install, and Intertek certified to FAA AC.

KD501-series (Plug)



KD502-series (Receptacle)



KD3P/3R for Three Core Cable

KD3P-series (Plug)



KD3R-series (Receptacle)



Dimensional data

EFLA type two core cable	EFLA type 3-pole secondary connector	Type	Conductor size	AWG	Cable diameter	in inches
KD501	KD3P	Plug	1.5–2.5 mm ²	16–14	8.5–13.5 mm	0.334–0.531
KD501.1	KD3P.1	Plug	4.0–6.0 mm ²	12–10/8	11.5–18.0 mm	0.157–0.708
KD501.2	KD3P.2	Plug	4.0–6.0 mm ²	12–10/8	8.5–13.5 mm	0.334–0.531
KD502	KD3R	Receptacle	1.5–2.5 mm ²	16–14	8.5–13.5 mm	0.334–0.531
KD502.1	KD3R.1	Receptacle	4.0–6.0 mm ²	12–10/8	11.5–18.0 mm	0.157–0.708
KD502.2	KD3R.2	Receptacle	4.0–6.0 mm ²	12–10/8	8.5–13.5 mm	0.334–0.531

KD503 for Two Single Core Wires (Style 4 & 11)

KD503 connectors have been industry requirement for over 30 years. This connector is filled with silicon and used with two single core wires. Connector is fast to install and Intertek certified to FAA AC.

KD503-series (Plug)



KD503R-series (Receptacle)



Dimensional data

EFLA Type	Type	Conductor Size	AWG	Wire Diameter
KD503	Plug	1.5–2.5 mm ²	16–14	2.8–4.0 mm, 0.110–0.157"
KD503.1	Plug	4.0–6.0 mm ²	12–10/8	3.8–5.5 mm, 0.149–0.216"
KD503.2	Plug	4.0–6.0 mm ²	12–10/8	2.8–3.4 mm, 0.110–0.133"
KD503.3	Plug	4.0–6.0 mm ²	12–10/8	5.0–8.0 mm, 0.196–0.314"
KD503/R	Receptacle	1.5–2.5 mm ²	16–14	2.8–4.0 mm, 0.110–0.157"
KD503R.1	Receptacle	4.0–6.0 mm ²	12–10/8	3.8–5.5 mm, 0.149–0.216"
KD503R.2	Receptacle	4.0–6.0 mm ²	12–10/8	2.8–3.4 mm, 0.110–0.133"
KD503R.3	Receptacle	4.0–6.0 mm ²	12–10/8	5.0–8.0 mm, 0.196–0.314"

Accessories for secondary connectors

Offers a quick solution to handle more complex secondary circuit application requirements in terms of parallel transformer setting, double loading on secondary and short impedance on secondary side.

- A special solution for special secondary circuit requirements
- Easy and fast installation

KDCA.P2R



KDCA.2PR



In some cases, it is possible to use two loads after one AGL series transformer. KDCA.P2R has been designed for this purpose. The distance between connectors is approx. 20 cm.

Materials: Both of the above mentioned products are made by assembling prefabricated products in combination.

If the load supplied by standard AGL series transformers is insufficient, it is possible to use two AGL series transformers connected through KDCA.2PR. Distance between connectors is approx. 20 cm.

Note: When the secondary circuit is earthed, only one of the transformers can have the earthing option.

KDC506.SHORT



This connector is designed for the short-circuited secondary side of an unused AGL transformer, almost eliminating the impedance of the secondary side. It also operates as a watertight cap.

Current rating: 20 A, Voltage rating: 600 V

KDCY.P2R



KDCY.P2R provides an easy and space-saving way to use two loads after one AGL series transformer.

KDCY.P2R has a similar internal wiring setup as KDCA.P2R, making it suitable for installations where a long cable is not wanted/needed.

Suggested crimping tools

Conductor size	Manual Crimping Tools	Electric Crimping Tools
1.5–2.5 mm ²	Elpress DKB 0760	Elpress PVL 130S - RB0560
4.0–6.0 mm ²	Elpress GWB 4099C	Elpress PVL 130S - WB4099





Prefabricated Leads

FAA AC 5345-26 Class A, Type I and II, FAA-L-824, MIL-C-3432, ICEA S-66-524, MIL-C-4921

The fastest and most secure method to build an AGL circuit is to use factory molded prefabricated leads. They provide 100 % adhesion between connector housing and cable, minimizing human error during installation work.

Main benefits

- Easy and fast installation.
- EFLA prefabricated leads and extension cords provide watertight and durable connection to any environments.
- Nominal ratings:
 - 5000 V/25 A for primary leads
 - 600 V/20 A for secondary leads
- Possible customization according to requested cable length and all FAA Style options. Special prefabricated leads that meet the frangibility requirement are also available.

KDC Primary Leads for Unscreened Cable

KDCP510 & KDCR510 are used for connecting the transformer to the primary circuit. KDC primary leads guarantee the highest possible dielectric strength for AGL circuit, since the cable's outer sheath and all connections involved are made from the same thermoplastic elastomer (TPE) material. EFLA primary leads are manufactured in accordance with the specifications FAA L-824, MIL-C-3432, ICEA S-66-524, and MIL-C-4921.

- Superior insulation resistance by thermoplastic elastomer (TPE)
- Conductor is a bare copper, 19 strands/ min 6 mm², upon request AWG 8 (8.3 mm²)
- Nominal rating: 5000 V
- Style connector variants: Style 2 (Plug) and Style 9 (Receptacle)

Primary leads are manufactured and delivered according to requested cable length and either in prefabricated leads (connector on one end) or extension cords (connector on two ends). Primary leads fit with EFLA Lock, which prevents accidental release of primary circuit.



KDCP510-series (Style 2)

KDCR510-series (Style 9)



Ordering information

KDCX510 . **X** . **X**

EFLA type

Cable cross section

Cable length

EFLA type			Cable cross section		Cable length	
KDCP510	Primary plug	Style 2	6	6 mm ²	Standard lengths	Customized lengths, for example
KDCR510	Primary receptacle	Style 9	8	8.3 mm ²	30 (cm)	55 (cm)
KDCE510	Extension cable	Style 2 & 9			60 (cm)	500 (cm)
					100 (cm)	1000 (cm)
					150 (cm)	

For example, EFLA part number KDCP510.6.100 means 100 cm long prefabricated primary lead with 6 mm² cable cross section, with Style 2 plug and open free end on the other side.

KDCE510.X.X

Extension cord with plug (Style 2) & receptacle (Style 9)



KDC Secondary Leads

KDC secondary leads are used for connecting the transformer and the secondary circuit. KDC secondary leads with double insulated two core cable provides unique dielectric strength for secondary circuit, since cable's outer sheath and all connections are made from same thermoplastic elastomer (TPE). Secondary leads are delivered either in prefabricated leads or in extension cords. Secondary leads are available with various cable diameter and with frangible break-away feature. KDC secondary leads are Intertek certified to FAA AC and fulfill specifications MIL-C-3432, MIL-C-4921 and ICEA S-66-524.

- Superior insulation resistance by thermoplastic elastomer (TPE)
- Copper conductors: 1.5 mm², 2.5 mm², 4 mm²; Class 5 (IEC60228)
- Nominal rating: 600 V
- Style connector variants: style 1, 6, 7, 8 and break-away

The leads are available with two-core cables or with two single core wires. The two-core cable is also available with higher temperature resistant wires.

KDC Secondary Leads for Two Core Cable

KDC501-series (Style 1)



KDC502-series (Style 7)



KDC508-series (Style 8)



KDC507-series (Style 7)



KDCE501.X.X

Extension cord with plug (Style 1) & receptacle (Style 7)



KDC Secondary Leads for Two Single Wires

KDC503-series (Style 1)



KDC503R-series (Style 7)



KDC506-series (Style 6)



KDC506S-series (Style 6)



With Zyrad 150 °C / 300 °F

With Teflon 200 °C / 390 °F

Also available in ZYRAD wires: KDCZ506 and KDCZ506S or Teflon wires: KDCT506 and KDCT506S

Dimensions

Conductor size	Diameter of insulation approx. [mm]	Outer diameter [mm]	Max. conductor resistance at 20 °C [ohm/km]
2 x 1.5 mm ²	0.85	8.5±0.3	13.10
2 x 2.5 mm ²	0.85	9.7±0.3	7.41
2 x 4 mm ²	0.9	11.7±0.3	4.95
1 x 1.5 mm ²	0.8	3.2±0.3	13.70
1 x 2.5 mm ²	1.2	4.6±0.3	8.21
1 x 4 mm ²	1.2	5.0±0.3	4.95
1 x 2.5 mm ² (Teflon)	0.6	2.9±0.1	13.7
1 x 2.5 mm ² (Zyrad)	0.8	3.7±0.1	13.7

Ordering information

KDC(E)50X . X . X . (X) I → Free end type

EFLA type

Cable cross section












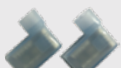

Cable length

EFLA type			Cable cross section		Cable length	
KDC501	secondary plug	Style 1	1	1.5 mm ²	Standard lengths	Customized lengths, for example
KDC502	secondary receptacle	Style 7	2	2.5 mm ²	30 (cm)	55 (cm)
KDC503	secondary plug	Style 1	4	4 mm ²	60 (cm)	500 (cm)
KDC503R	secondary receptacle	Style 7			100 (cm)	1000 (cm)
KDC506	secondary plug	Style 6			150 (cm)	
KDC506S	secondary plug	Style 6				
KDCT506	secondary plug	Style 6				
KDC507	secondary receptacle	Style 7				
KDC508	secondary receptacle	Style 8				
KDCE501	extension cable	Style 1 & 7				

For example, EFLA part number KDC501.2.100 means 100 cm long prefabricated secondary two-core cable lead with 2.5 mm² cable cross section, with Style 1 plug and open free end on the other side.

Free end of the leads

The standard free end is sheath stripping of 5 cm. The following connectors are available.

		Free end type
	2 pcs 1.5–2.5 mm ² 6.3 mm flat connectors, uninsulated	KDCO1
	2 pcs 1.5–2.5 mm ² 6.3 mm flat connectors with common insulator	KDCO2
	2 pcs 1.5–2.5 mm ² 6.3 mm flat connectors with single insulators	KDCO3
	2 pcs 2.5 mm ² M4 cable shoes	KDCO10
	2 pcs 1.5–2.5 mm ² M6 cable shoes	KDCO11
	2 pcs 0.5–1.5 mm ² M4 cable shoes	KDCO12
	2 pcs 1.5–2.5 mm ² M5 cable shoes	KDCO13
	2 pcs 0.75–1.5 mm ² flat connectors, uninsulated	KDCO14
	2 pcs 1.5 mm ² flag connectors, uninsulated	KDCO15
	2 pcs 1.5–2.5 mm ² flag connectors, uninsulated	KDCO16
	2 pcs 1.0–1.5 mm ² flag connectors, uninsulated	KDCO17
	2 pcs 1.5 mm ² insulated flag connectors	KDCO18
	2 pcs 1.5–2.5 mm ² wire-end claws	KDCO19



**EFLA shields electrical connections
in AGL** - especially in the most
demanding environments.

KDC7 Extension Cords for Frangible Masts

Frangible KDC7 connector is designed with break-away point and protected with a special sleeve. Upon an impact, connector breaks safely and does not cause additional hazard, like ignition of kerosin. KDC7 connectors are fully compliant with ICAO Aerodrome Design Manual Part 6, frangibility requirements.

- Superior insulation resistance by thermoplastic elastomer (TPE)
- Nominal rating: 20 A and 600 V
- Conductor size 1.5–4 mm² (16–10/8 AWG)
- ROHS compliance with EU directive NO2002/95/EC



Proven frangibility

- Full scale impact tested break-away mechanism according to the ADM Part 6 Chapter 5 and FAA AC 150/5345-45C, section 4
- Ensure proper frangibility behavior of mast structure
- Prevent any additional hazards in case of an impact, like fires or cable wrapping around the aircraft

Lowest cost of ownership

- Easy and fast plug and play installation on-site
- Maintenance-free solution for the whole frangible mast lifespan including cable assemblies and mount ties

Extension cord information

Type	Extension cord, plug & receptacle
Housing	TPE molded
Cross section	Two-core
Dual insulation	EPR-insulated & TPE-sheathed
Core insulation	Special EPR compound
Outer sheath	Halogen-free TPE compound (IEC 60752-2 / EN 50267-2-3)
Conductors	Copper, Class 5 (IEC 60228)
Nominal voltage	600 V
Temperature range	-40 °C to +120 °C (-40 °F to +248 °F)
Short term short circuit temperature resistance	300 °C (570 °F)
Bending radius	5D
Specifications	FAA L-824, MIL-C-3432, MIL-C-4921 & ICEA S-66-524 ICAO ADM6 FAA AC 150/5220-23

Ordering information

KDC X . X . X



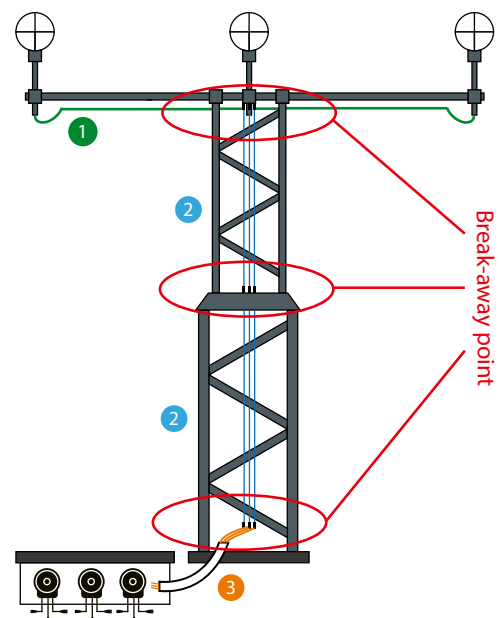
EFLA Type		Cable cross section		Cable length	
KDC7P		1	1.5 mm ²	Standard lengths	Customized lengths, for example
KDC7R		2	2.5 mm ²		
KDCE7P-7R		4	4 mm ²	30 (cm)	55 (cm)
KDCE7P-502				60 (cm)	500 (cm)
KDCE501-7R				100 (cm)	1000 (cm)
				150 (cm)	

EFLA Type	Break-away plug	Break-away receptacle	Style 1 plug	Style 7 receptacle	Free end	
KDC7P	x				x	
KDC7R		x			x	
KDCE7P-7R	x	x				
KDCE7P-502	x			x		
KDCE501-7R		x	x			

For example, EFLA part number KDCE7P-7R.2.100 means 100 cm long prefabricated secondary two-core cable lead with 2.5 mm² cable cross section, with break-away plug & receptacle.

Break-away points are illustrated as below

Extension cord type	
1	Lighting fixture cabling
2	Mast cabling
3	Transformer pit cabling



Lightning Protection

Secure fail-safe supply of AGL series circuit

Airfield ground lighting devices, such as light fixtures, have always been vulnerable to damage and destruction due to their exposed positioning on aerodromes and heliports, as well as their connection to high-power electrical networks.

With the transition to LED, circuits now include more and more sensitive electronics. Lightning strikes are one of the major hazards at airfields. Depending on the region, a mid-size airport can be hit by up to 2000 lightning strikes per year on the aircraft maneuvering and movement areas. Direct lightning strike to runways or taxiways may cause massive blackout and equipment damage for even hundreds of light fixtures and transformers.

Sheriff for secondary circuit

Sheriff surge protection device (SPD) protects airfield ground lighting equipment and systems upon lightning strike and surge, preventing power failure to spread in a circuit. Sheriff SPD is patented for lightning and surge protection for AGL circuit, helipads and helidecks.

Sheriff SPD operational status is verified by a portable tester, e.g. annual check or after the lightning strike has hit the runway or taxiway. Portable tester is battery operated and easy to use



EFLA Sheriff surge protection device (SPD) to secondary circuit protects airfield ground lighting equipments and system from damages upon lightning strike. Sheriff can be installed in an existing AGL pit or in a deep base.

With Sheriff, airports are able to protect investment payback time and secure Fail-Safe supply against lightning strikes and surges.





Electrical characteristics

Operational voltage	Max. 190 Vac RMS
Operational peak voltage	Max. 275 Vac
Operational frequency	50/60 Hz
Power consumption at 6.6 A ac	2 W
Voltage drop at 20 A dc	220 mV
Plug	L-823 Style 1
Receptacle	L-823 Style 7
Earthing contact	M5 Brass screw terminal according to EN61823
DC discharge voltage at 100 V/s	Min. 275 Vdc Max. ~415 Vdc
Insulation resistance [IR] 100 V	$> 10^9 \Omega$
Capacitance	1 MHz $<$ 5 pF
Impulse discharge current (Line to ground)	20,000 A, 8/20 μ s $>$ 10 operations 4,000 A, 10/350 μ s $>$ 10 operations 8,000 A, 8/20 μ s $>$ 10 operations 12,000 A, 10/350 μ s $>$ 10 operations
Operating and storage temperature	-40 °C to +85 °C (-40 °F to +185 °F)

* The earthing wire is recommended to be stranded copper wires with a minimum 16 mm² conductor size

Dimensions and connections

Height [H]	40 mm (1.6 inches)
Length [L]	160 mm (6.3 inches)
Width [W]	80 mm (3.2 inches)
Colour	Yellow
Male connector	FAA L-823 Style 1
Female connector	FAA L-823 Style 7
Earthing connector	M3 Brass Screw terminal according to EN61283

Ordering information

EFLA Type	Description
Sheriff	Sheriff Lightning arrester
Inspector	Portable Tester

Cables and Wires

Unscreened Primary Cable

Primary series circuit cables are used in airfield ground lighting (AGL) series circuits to connect the CCR with the primary windings of the series transformers.

EFLA offers TPE insulated unscreened/unshielded primary cables. The same cable is used in EFLA's transformers, prefabricated leads and extension cords. Cable insulation has a nominal voltage of 5000 V to ground. Standard copper conductor cross section is 6 mm², 19 strands with bending radius 6D, and is also available AWG8 / 8.3 mm².



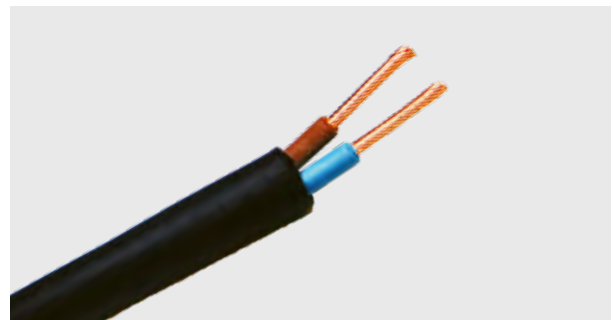
Technical Information

Conductor	Valid for 6 mm ² (EFLA default) or 8.3 mm ² (AWG8) uncoated copper according to ICEA S-96-659 19-wire class C	
Core insulation	TPE	
Insulation thickness	2.80 mm	
Outer diameter approx.	8.7–9.2 mm for 6 mm ² or 9.2–9.8 mm for 8.3 mm ² (AWG8)	
Color	Black	
Operating voltage	5000 V	
High voltage test	acc. to ICEA S-96-659 § 4.4.1	
DC current resistance at 20 °C	Cross section [mm²] 6 mm ² (EFLA default) or 8.3 mm ² (AWG8)	Max. conductor resistance [Ω/km] acc. to ICEA S-96-659 § 2.4
Temperature range	-50 °C to +70 °C (-58 °F to +158 °F)	
Short circuit temperature	150 °C (302 °F)	
Bending radius	6D (D = cable-∅)	

Secondary Cables & Wires

Secondary series circuit cables are used in airfield ground lighting (AGL) series circuits to connect the transformer with the secondary series circuit.

EFLA offers a wide range of secondary wires and double insulated two core cables which are used in AGL circuit between isolation transformer and light fixture. Cable insulation has a nominal voltage of 600 V to ground. Suggested copper conductor cross section is 2.5 mm² / AWG12. To limit power losses for long cable lengths EFLA offers also cross section of 4 mm² / AWG10 for more extreme cable lengths.



Technical Information

Conductor	The conductor consists of bare annealed copper according to class 5 of IEC 60228	
Dual insulation	EPR-insulated & TPE-sheathed	
Core insulation	Special EPR compound	
Outer sheath	Halogen-free TPR compound (IEC 60752-2 / EN 50267-2-3)	
Insulation thickness	min. 0.85 mm	
Color	Black, Yellow/Green (YG)	
Operating voltage	U/U ₀ 450/750 V	
Test voltage	6000 V DC	
Nominal voltage	600 V	
DC current resistance at 20 °C	Cross section [mm²]	Max. conductor resistance [Ω/km]
	1.5, 2.5, 4	13.7
Temperature range	-40 °C to +120 °C (-40 °F to +248 °F)	
Short term short circuit temperature resistance	300 °C (570 °F)	
Bending radius	Installation: 5 x D	
	Dynamic: 10 x D	

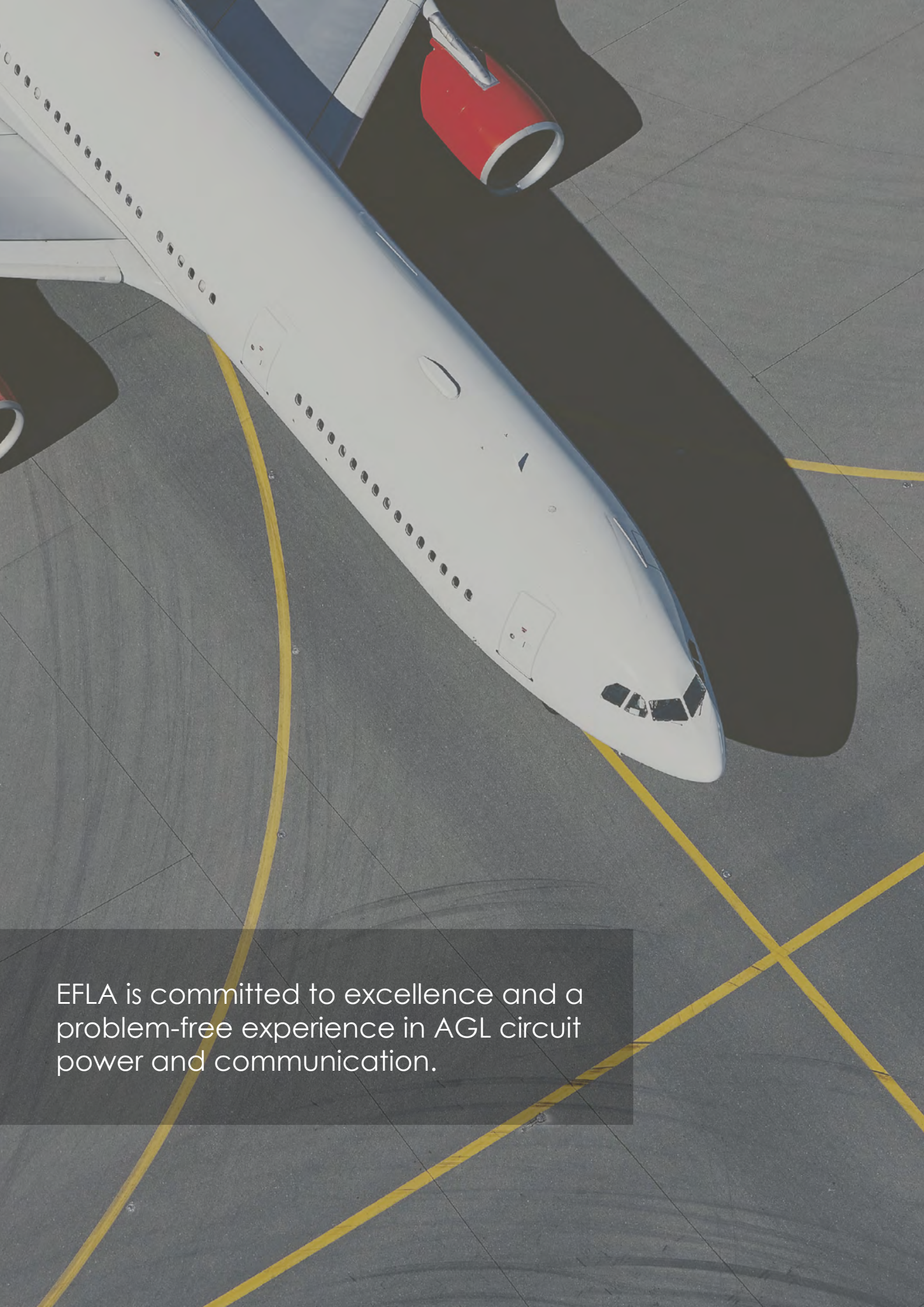
Dimensions

Conductor size	Diameter of insulation approx. [mm]	Outer diameter [mm]	Max. conductor resistance at 20 °C [ohm/km]
1 x 6 mm ²	2.8	9.0±0.3	3.08
1 x 8.3 mm ²	2.8	9.5±0.3	2.00
2 x 1.5 mm ²	0.85	8.5±0.3	13.10
2 x 2.5 mm ²	0.85	9.7±0.3	7.41
2 x 4 mm ²	0.9	11.7±0.3	4.95
1 x 1.5 mm ²	0.8	3.2±0.3	13.70
1 x 2.5 mm ²	1.2	4.6±0.3	8.21
1 x 4 mm ²	1.2	5.0±0.3	4.95
1 x 2.5 mm ² (YG*)	1.2	4.7±0.3	8.21
1 x 4 mm ² (YG)	1.2	5.0±0.3	4.95
1 x 2.5 mm ² (Teflon)	0.6	2.9±0.1	13.7
1 x 2.5 mm ² (Zyrad)	0.8	3.7±0.1	13.7

* YG: yellow green jacket for earth wires

Ordering information

EFLA type		
OK6	Primary cable	1 x 6 mm ²
PEJ42	Primary cable	1 x 8.3 mm ²
OK44	Secondary wire	1 x 1.5 mm ²
PEJ62	Secondary wire	1 x 2.5 mm ²
PEJ72	Secondary wire (Teflon)	1 x 2.5 mm ²
OK46	Secondary wire (Zyrad)	1 x 2.5 mm ²
PEJ60	Secondary wire	1 x 4 mm ²
OK105	Secondary wire (YG)	1 x 2.5 mm ²
OK103	Secondary wire (YG)	1 x 4 mm ²
PEJ36	Secondary cable	2 x 1.5 mm ²
PEJ63	Secondary cable	2 x 2.5 mm ²
PEJ64	Secondary cable	2 x 4 mm ²



EFLA is committed to excellence and a problem-free experience in AGL circuit power and communication.



Weights and Packing

Primary connector kits

EFLA type	Weight [g] / 1 pc	Standard packing [pcs]	Full carton weight [kg]	Volume [cbm]	Box size
KDL1 series	310	50	16	0.03	40 x 30 x 25 cm
KDL10 series	200	50	11	0.03	40 x 30 x 25 cm
KD500 series	130	60	8	0.03	40 x 30 x 25 cm
KD510 series	110	60	6.9	0.03	40 x 30 x 25 cm
KDR600/610 series	320	20	6	0.03	40 x 30 x 25 cm

Secondary connector kits

EFLA type	Weight [g] / 1 pc	Standard packing [pcs]	Full carton weight [kg]	Volume [cbm]	Box size
KD501-503 series	50	100	5.5	0.03	40 x 30 x 25 cm
KD3P & KD3R	50	100	5.5	0.03	40 x 30 x 25 cm

Transformers

EFLA type with Earthing	EFLA type without Earthing	D [mm]	L [mm]	H [mm]	Weight [kg]	Standard packing [pcs]	Gross weight [kg]	Pallet size
KR621	KR621.1	89	115	45	1.03	260	293	120 x 80 x 67 cm
KR625	KR625.1	89	115	45	1.03	260	293	120 x 80 x 67 cm
KR631	KR631.1	105	128	57	1.6	208	358	120 x 80 x 67 cm
KR636	KR636.1	120	145	54	1.9	180	370	120 x 80 x 67 cm
KR641	KR641.1	130	155	59	2.4	160	393	120 x 80 x 67 cm
KR646	KR646.1	146	192	60	3.1	144	475	120 x 80 x 67 cm
KR651	KR651.1	146	192	65	3.3	126	445	120 x 80 x 67 cm
KR661	KR661.1	146	192	77	4.0	108	460	120 x 80 x 67 cm
KR681	KR681.1	146	192	96	5.33	90	505	120 x 80 x 67 cm
KRV530	KRVS530	100	125	55	1.4	208	317	120 x 80 x 67 cm
KRV536	KRVS536	126	168	56	1.5	160	265	120 x 80 x 67 cm
KRV540	KRVS540	147	193	60	2.3	144	357	120 x 80 x 67 cm
KRV545	KRVS545	147	193	60	2.4	144	370	120 x 80 x 67 cm
KRV550	KRVS550	147	193	64	3.3	126	440	120 x 80 x 67 cm



EFLA

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