

Flash LED Lighting System

SFL approach,
RTIL threshold,
CGL circling guidance



LED FLASHING SYSTEM: SEQUENTIAL APPROACH THRESHOLD IDENTIFICATION CIRCLING GUIDANCE

Lighting system consisting of new generation high intensity LED fixtures (elevated or inset), for Approach Sequential Flash Light (SFL), threshold identification light (RTIL) and Circling Guidance Light (CGL) for the purpose of providing visual guidance to landing and take-off aircrafts. Contact OCem to evaluate the feasibility of runway lead-in lighting system (Lead-in). Each fixture is controlled by a field unit (FFU). The system supervision unit (FMCU) ensures proper operation and timing of the system.

COMPLIANCE

TS 61827	IEC
Annex 14 - Volume I; Doc 9157 - A.D.M. Part 4-6	ICAO
Stanag 3316	NATO
CS-ADR-DSN	EASA
CAP168 (GBR)	CAA
TP312 (CAN)	TCCA
M.o.S. Part. 139 (AUS)	CASA



APPLICATIONS

Runways: ICAO CAT I, II and III.

Approach Sequential Flash Light (SFL): ICAO Annex 14 Vol. I paragraph 5.3.4.18.

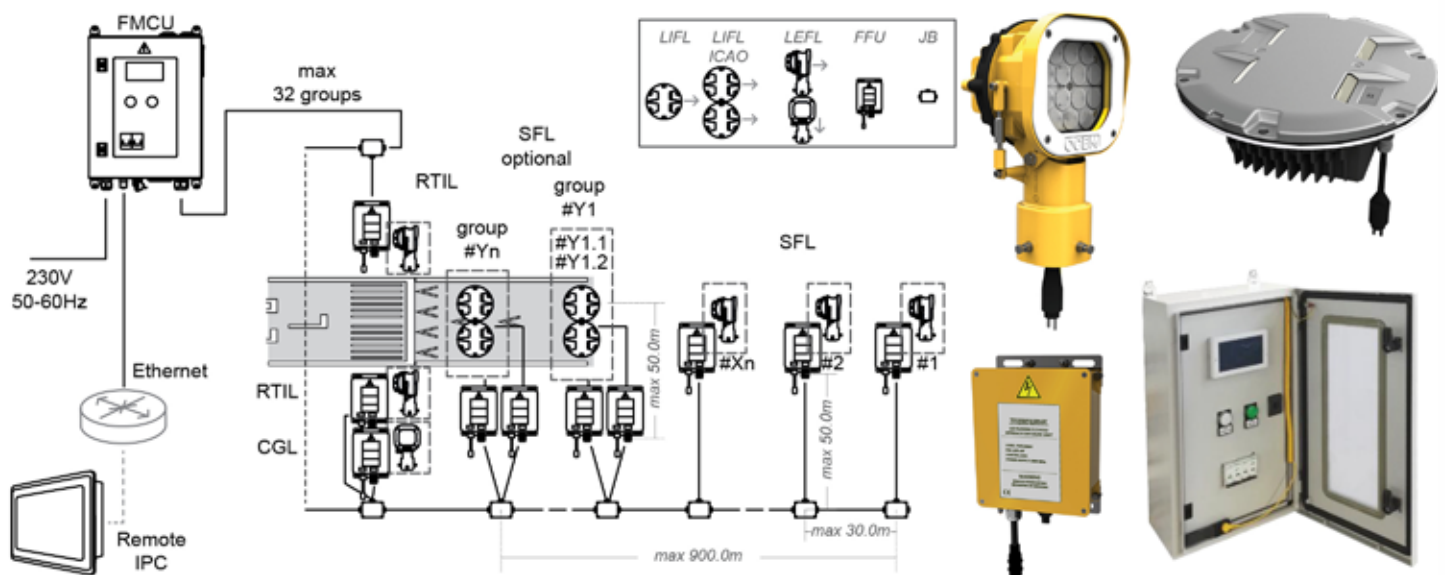
Runway Threshold Identification Light (RTIL): ICAO Annex 14 Vol. The paragraphs 5.3.4.17-18, 5.3.4.34-35, Figure A1-1b, A2-1.

Circling Guidance Lights (CGL): ICAO Annex 14 Vol. The paragraphs 5.3.8.3-4, Figures A1-1b, A2-1.

TOPOLOGY OF THE SYSTEM

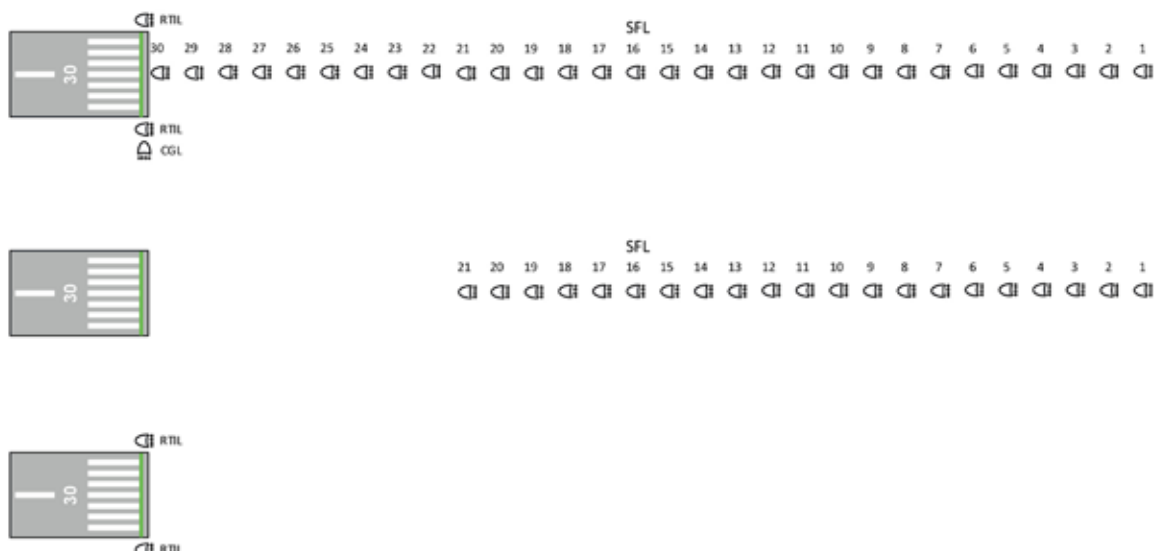
OCEM Airfield Technology FLASH LED is a flashing signal system consisting of:

- FMCU control unit: is the control panel of the system. It manages the supply and the communication with the OCEM Airfield Technology light units installed in the field.
- Light units with elevated LED lights (LEFL) or inset LED lights (single LIFL or double LIFL ICAO). Each unit is equipped by a field unit (FFU).
- Installation accessories and connection.



The system OCEM Airfield Technology FLASH LED can be configured according to requirements:

- Approach Sequential Flash Light (SFL)
- Runway Threshold Identification Light (RTIL)
- Circling Guidance Light (CGL)
- Combined SFL/RTIL/CGL signalling system, with coordinated flashing.



LEFL - ELEVATED LED UNIT

New generation elevated LED light fixture dedicated to the OCEM FLASH system, for unidirectional emissions and with flashing light in the approach flash signalling, for the purpose of providing visual guidance to landing and take-off aircrafts.

CHARACTERISTICS

- Degree of mechanical protection IP67: aluminium body. The front glass does not require sealants and is held in position by a glazing plate and a dedicated gasket.
- Operational temperature range admitted: between -40 °C and +55 °C (between -40 °F and +131 °F).
- Average life of LED: 60.000 h at maximum intensity; 100.000 h under normal operating conditions.
- Lower consumption compared with the traditional fixtures: total absorption (LEFL+FFU) ≤ 52W.
- Light emission: compliant with the ICAO standard (Fig. A2-1).
- Colorimetric coordinates constant over time: colour emitted directly from the LEDs, without the use of coloured filters.
- Low maintenance coefficient: fixtures designed with high modularity and minimal maintenance required over time and common spare parts for all the configurations.
- Absence of adjustments: the light sources are preconfigured and do not require adjustments.
- Easy to install, with body equipped with support for the correct and accurate pointing of the fixture (horizontal and vertical).
- Can only be used in combination with the associated FFU (IP67) (included in the supply).

PERFORMANCE

- Electronics resistant to vibrations. The fixture is provided with supply cable (0,50 m) and plug (L-823).
- Single-phase power supply FFU 230 V_{AC} ±10% 50-60Hz. Power supply cable section 3x6 mm².
- LEFL unit power supply very low voltage (ELV). Power supply cable section 2x2.5 mm².

HOW TO ORDER

example: LEFL- SF -	
Use [Colour]	
SF = Approach SFL segment [White]	
RL = RTIL threshold identifier segment [White]	
CG = Circling Guidance CGL [White]	
00 = Unscheduled unit	
Arctic kit option	
A = With Arctic kit*	

* Version with separate 48 V power supply (to be supplied with dedicated line).

In the example **LEFL - SF**: overhead light LED unit for OCEM FLASH system, LEFL model configured for SFL approach use. Unidirectional fixture with white colour lamps. System equipped with special support and cable with bipolar plug (L-823), complete with associated FFU power unit.

INSTALLATION KIT

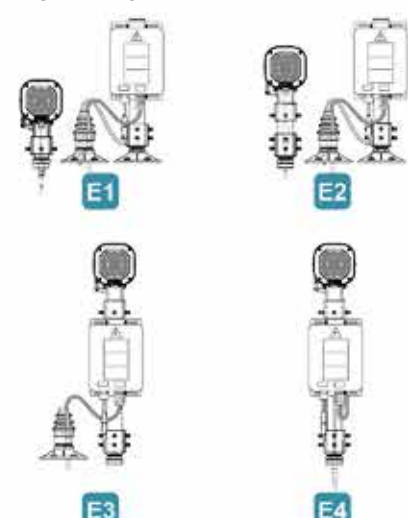
Code	Description	Features
PAACK0004	Installation kit	Installation type E1 (direct separate-fastening)
PAACK0005	Installation kit	Installation type E2 (separate-fastening on the pole)
PAACK0006	Installation kit	Installation type E3 (fastening on single pole)
PAACK0007	Installation kit	Installation type E4 (fastening on single pole)



PHOTOMETRY LEFL



INSTALLATION EXAMPLE





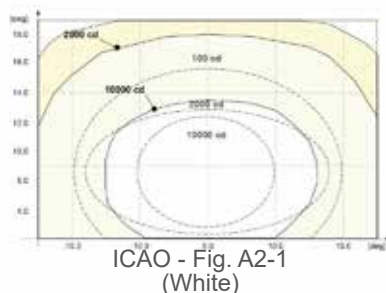
LIFL - INSET LED UNIT

New generation inset LED light fixture dedicated to the OCEM FLASH system, for unidirectional emissions and with flashing light in the approach flash signalling, for the purpose of providing visual guidance to landing and take-off aircrafts.

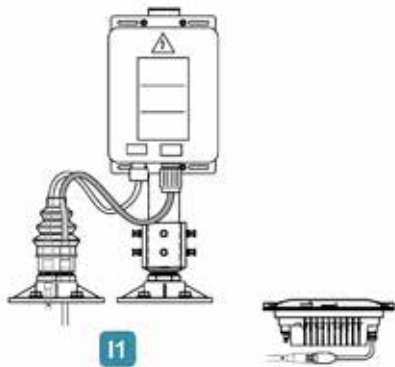
CHARACTERISTICS

- Degree of mechanical protection IP68: forged aluminium dome. The prisms, equipped with dedicated gaskets, do not require sealants and are held in position by a fastening plate.
- Operational temperature range admitted: between -40 °C and +55 °C (between -40 °F and +131 °F).
- Average life of LED: 60.000 h at maximum intensity; 100.000 h under normal operating conditions.
- Lower consumption compared with the traditional fixtures: total absorption (LIFL+FFU) $\leq 52W$. The LIFL version - I is made up of 2 devices and relevant field units with total absorption LIFL-I+2xFFU $\leq 104W$
- Light emission: compliant with the ICAO standard (Fig. A2-1).
- Colorimetric coordinates constant over time: colour emitted directly from the LEDs, without the use of coloured filters.
- Low maintenance coefficient: fixtures designed with high modularity and minimal maintenance required over time and common spare parts for all the configurations.
- Absence of adjustments: the light sources are preconfigured and do not require adjustments.
- No adjustments: no optical adjustment is required after replacement of the LED modules or the prisms.
- Can only be used in combination with the associated FFU (IP67) (included in the supply).

PHOTOMETRY LIFL-I



INSTALLATION EXAMPLE



PERFORMANCE

- Electronics resistant to vibrations. The fixture is provided with supply cable (0,50 m) and plug (L-823).
- Single-phase power supply FFU 230 V_{AC} $\pm 10\%$ 50-60Hz. Power supply cable section 3x6 mm².
- LIFL unit power supply very low voltage (ELV). Power supply cable section 2x2.5 mm².

HOW TO ORDER

example: LIFL- I - SF	
Type	I = ICAO (2 coupled units) L = Low intensity (single unit)
Use [Colour]	00 = Unscheduled unit SF = Approach SFL segment [White] RL = RTIL threshold identifier segment [White] CG = Circling Guidance CGL [White]

In the example **LIFL - L - SF**: inset light LED unit for OCEM FLASH system, LIFL model configured for low intensity SFL approach use. Unidirectional single fixture with white colour lamps. System equipped with cable with bipolar plug (L-823), complete with associated FFU power unit.

INSTALLATION KIT

Code	Description	Features
PAACK0008	Installation kit	Installation type I1 (fastening on pole)

FMCU - CONTROL UNIT

Control panel, unique for each runway head, coordinates and supervises the operation of the system. Supplies power to the light units and takes care of communication with the field units

The FMCU constitutes the interface between the remote control system and the light units on the field and performs several functions:

- Local control and monitoring of the flashing system (through touchpad);
- Adjustment of the operating parameters of the flashing system;
- Synchronization of the FFU field units;
- Diagnostic monitoring of the status of the light units.

Each FFU unit receives supply and configuration parameters from the FMCU and focuses on managing the light emission LED LIFL or associated LEFL. All the diagnostic information of the light unit are transmitted to the control unit.

The system configuration and the ID of each FFU device can occur through the local control panel of the FMCU control unit.



CHARACTERISTICS

- Degree of mechanical protection IP43: Metal enclosure with front door with key lock.
- Operational temperature range admitted: between 0 °C and +55 °C (between +32 °F and +131 °F) with relative humidity 20-90 % (without condensation).
- Possibility of managing up to 32 fixture units (LIFL/LEFL + FFU).
- Variable flash duration (T_{ON} : 16.67 - 133.3 ms).
- Two standard operating frequencies (1 Hz/2 Hz) with customised flash period.
- Possibility to configure different types of flashes: sequential, simultaneous, fixture units.
- 3 brightness levels: high (100 %), medium (30 %) and low (10 %).
- Individual monitoring system of the light fixtures LIFL or LEFL associated.
- Local control panel with touch screen. System configuration operations (new unit installation, replacement of existing units). Graphic representation of the status of the implemented FLASH system.
- Remote control integrated in OCES ALCMS (Ethernet RJ45 - Modbus TCP)
- Remote control easily interfaceable with other monitoring and control platforms.

PERFORMANCE

- Electrical input and output protection.
- Single-phase power supply 230 V_{AC} ±10% 50-60Hz. Power supply cable section 2x6-35 mm² (+ PE).
- FMCU power consumption: 25 W.

HOW TO ORDER

example: FMCU- 0- 1	
Remote control	
0 = Modbus TCP Interface	
1 = Integrated electromechanical interface	
Local interface	
1 = Touch-pad	

In the example **FMCU - 0 - 1**: control unit for OCES FLASH system, FMCU model. Local control panel with touch-pad device. Equipped with Modbus TCP Interface for the remote control.



INSTALLATION ACCESSORIES

All fixtures installed on the pole are supplied without pole and without any frangible coupling. Installation elements must be ordered separately.

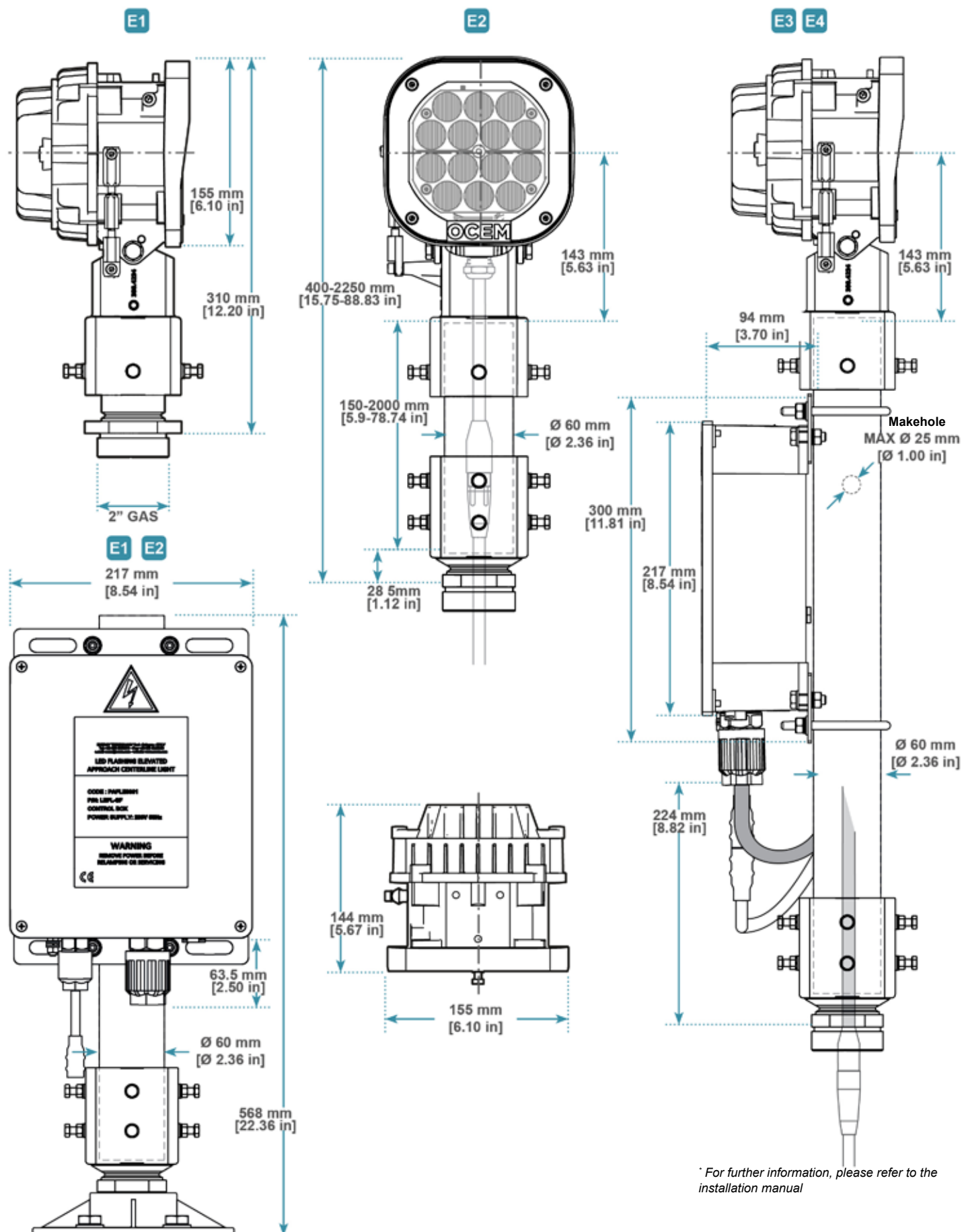
The installation kit prepared by OCEM Airfield Technology include the parts required to complete the installation of the devices, for the most common different configurations. All the installation elements can also be ordered individually, to meet every installation requirement.

The aluminium pole (Ø 60 mm) is available in standard length versions from 0.15 to 2.0 m. The pole can be cut to size according to the installation project.

Code	Description	Features
303.7350	Flange	Base flange Ø 155 mm with threading 2" GAS
315.1062	Base plate	Base plate Ø 305 mm L-867 with gasket and cable gland with threading 2" GAS
315.1228	Deep base	Base FAA L-867 (Class IA, size B) depth: 610 mm ("24")
315.1230	Deep base	Base FAA L-868 (Class IA, size B) depth: 610 mm ("24")
315.1420	Flange	Flange with blade guard ring for base FAA L-868 (size B) complete with gasket and screws
PABAJ0003	Low base	Low base 12" with cable gland M25 (cable diameter: 10-18 mm) complete with gaskets, screws and supply system (composed by cable: bipolar 2.5 mm ² , socket kit FAA L-823 Style 12 and internal ground cable). Cover L868 B in plywood (for installation)
712.1034	Resin	Epoxy resin for low base (10 l)
712.1035	Quartz	Resin-coated quartz for low base (25 kg)
013.0010	Ryton ring	2 ring set (ryton) for socket support (within pipe elbow)
013.0008	Pipe elbow	Zinc-coated steel pipe elbow (threaded upper entrance 2" - 11 GAS)
315.3712	Support pole 1000 mm	Support pole Ø 60 mm H = 1000 mm
315.3713	Support pole 1500 mm	Support pole Ø 60 mm H = 1500 mm
315.3714	Support pole 2000 mm	Support pole Ø 60 mm H = 2000 mm
SPPAM0010	Components in kit "b1"	Flange Ø 155 + Coupling + Hood + Connector kit 48V-230V
SPPAM0011	Components in kit "a1"	Direct fastening coupling + Connector kit 48V (notes: flange not supplied)
SPPAM0012	Components in kit "c"	Flange Ø 155 + Coupling + Pole H = 500 mm with plug
SPPAM0013	Components in kit "a2"	Coupling + Pole H = 500 mm + Connector kit 48V (notes: flange not supplied)
SPPAM0014	Components in kit "b3"	Flange Ø 155 + Coupling + Hood + Connector kit 48V
SPPAM0015	Components in kit "a4"	Coupling + Connector kit 230V (notes: flange not supplied)
155.7200	Components in kit "a3"	Only Coupling 2" (notes: flange not supplied, pole not supplied)
332.4560	Optical pointing system	Levelling and orientation device for fixture on support pole with frangible coupling
332.3240	Optical pointing system	Levelling and orientation device for fixture on frangible pole (requires support 332.4571)
332.4571	Support for optical system	Dedicated support for levelling device 332.3240.
798.0006	Maintenance tool	Carved tubular key 22 mm bulkhead connector
332.4301	Template	Positioning template and levelling for inset base
332.4351	Optical pointing system	Orientation device for inset base (requires support 332.4301)
332.4330	Optical pointing system	Positioning template and levelling for inset base with orientation device for inset base. Complete sealed, plastic resin suitcase kit for storing equipment
332.4140	Maintenance tool	Withdraw lever of inset fixture (to be used in pairs - two pieces are needed)

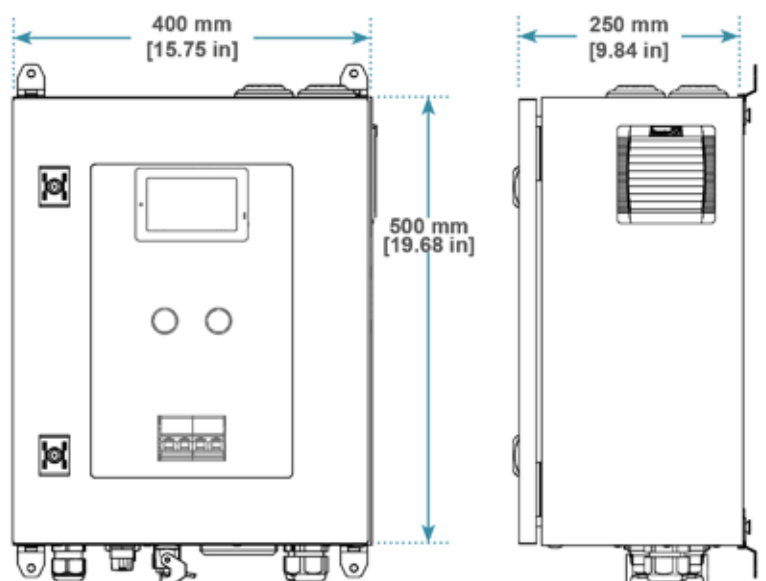
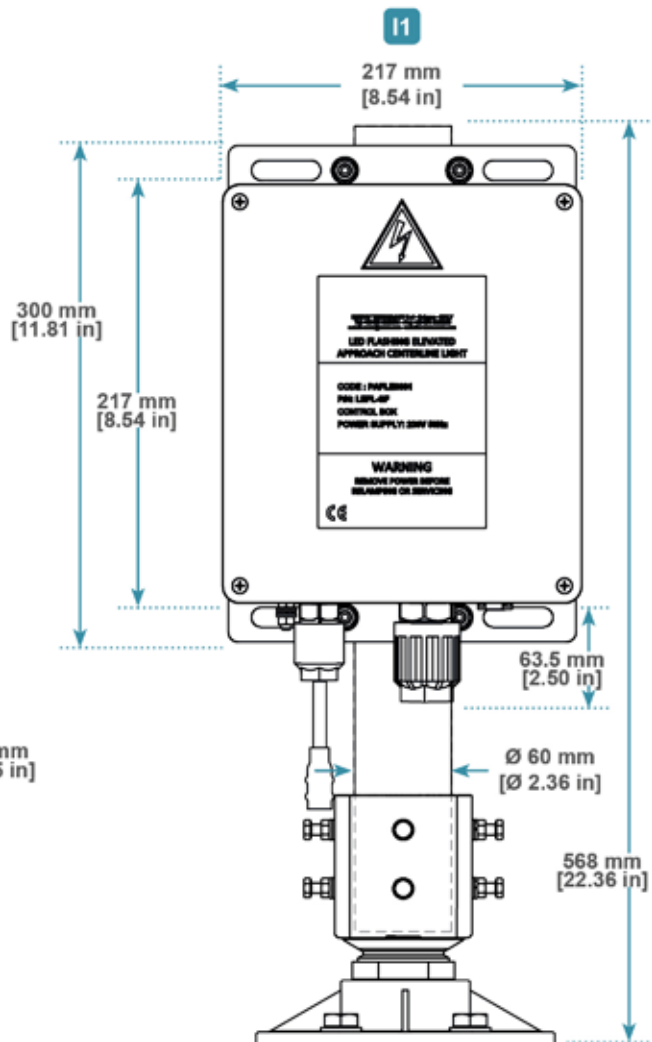
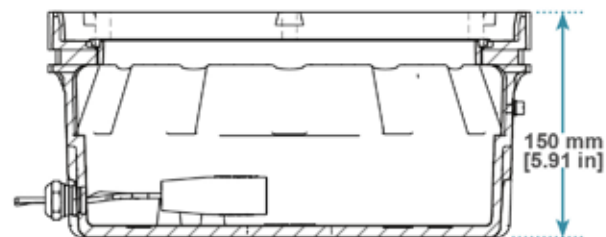
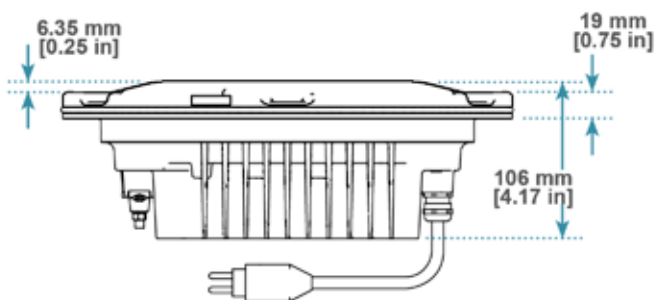
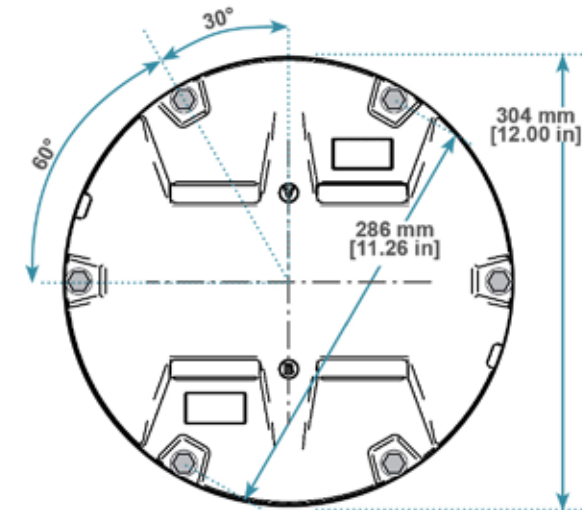
For further information on the composition of the FLASH system to be realized, for a proper identification of device installation plans and installation conditions, please refer only to the airport project and the relevant Regulations in force.

TECHNICAL DRAWINGS (LEFL+FFU)



* For further information, please refer to the installation manual

TECHNICAL DRAWINGS (LIFL+FFU/FMCU)



WEIGHT AND DIMENSIONS

	IP	dimensions [mm]	weight [kg]
LEFL	IP67	157x144x310	2.2
LIFL	IP68	Ø12" h106	6.1
FFU	IP67	220x250x120	2.6
FMCU	IP43	500x400x250	25.0

The Manufacturer reserves the right to modify or update the technical parameters at any time without prior notice to Customer.

