LED Flashing System

APPROACH SEQUENTIAL FLASH
RUNWAY THRESHOLD IDENTIFICATION
CIRCLING GUIDANCE

COMPLIANCES

ICAO: Annex 14, Volume I, Aerodrome Design Manual Part 4-5-6
EASA: CS-ADR-DSN Book1
IEC: TS 61827
FAA: EB-67D
STANAG: 3316
CASA: MOS 139 (AUS)

APPLICATIONS

Flashing light system for Approach Sequential Flash Light (SFL), Runway Threshold Identification Light (RTIL) and Circling Guidance Light (CGL).

BENEFITS

- Variable number of synchronized flashing lights
- Variable flash duration (T_{ON}): typically between 16.67ms and 133.3ms
- Two standard flashing frequencies (1-2Hz). Customizable flashing periods also supported
- Different flashing modes supported, such as sequenced flashing, contemporary flashing, clustered flashing
- Three Configurable Luminance Levels: High (100%), Medium (10%), Low (3%)
- Single light monitoring function in any state
- Local Control with Industrial Grade Touch Screen
- Remote Control Integrated in Ocem Airport Lighting Control and Monitoring System (ALCMS) or easily interfaceable with other platforms.

FEATURES

Flash Master Control Unit (FMCU)
Power supply: Single Phase, 230 VAC (+/-10%), 50-60 Hz
IP Class: IP43
Electrical Protection: Input and Output Circuit Breaker
Environment Temperature: -10°C to +50°C
Installation: Metal Housing Wall Mounted
Humidity (not condensed): 20-90%
Max Altitude: 2500 m
Dimensions: 50 x 30 x 25 cm
Weight: 15 kg

Flash Field Unit (FFU)
Power supply (from FMCU): Single Phase, 230 VAC(+/-10%), 50-60 Hz
IP Class: IP67
Environment Temperature: -40°C to +55°C
Max Altitude: 2500 m
Dimensions: 22 x 25 x 12 cm

Flashing Lights
Both elevated (LEFL) and inset (LIFL) fixtures available.

Power Consumption	
FMCU	25W
LEFL (incl. FFU)	52W
LIFL (incl. FFU)	52W

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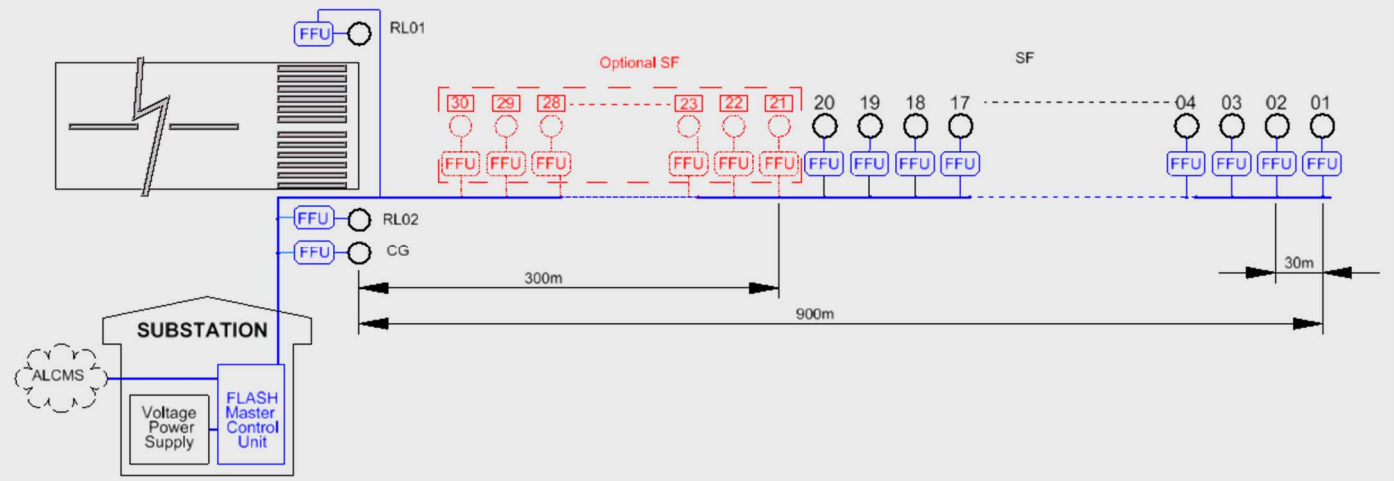

SYSTEM ARCHITECTURE

- 1 Flash Master Control Unit (FMCU), typically placed in a substation
- N Flash Field Units (FFU), one for each elevated/inset light
- Max distance between FMCU and FFU: 5 km (approx)
- Max distance between FFU and light fixture: 50 m
- FFU power supply: from FMCU

CONTROL AND MONITORING

- Monitoring and control functions from both local interface and remote system (ALCMS)
- Communication ALCMS <==> FMCU
  - Modbus TCP
- Communication FMCU => FFU
  - Powerline communications through power cables
  - Synchronization messages
  - Control messages
  - FW update (optional)
- Communication FFU => FMCU
  - Powerline communications through power cables
  - LED status information
  - Diagnostic information (state, faults, etc.)
- LED status monitored by each FFU

DIAGNOSTICS

- The diagnostic algorithm is always ON to detect possible malfunctions.
- The system is designed to be very fast at start-up and in the recovery phase after a potential power shortage.

Flash Master Control Unit

LSFL - 0 - 1

Basic P/N:

Configuration:
0 No WEB Server

HMI:
1 Touch Screen

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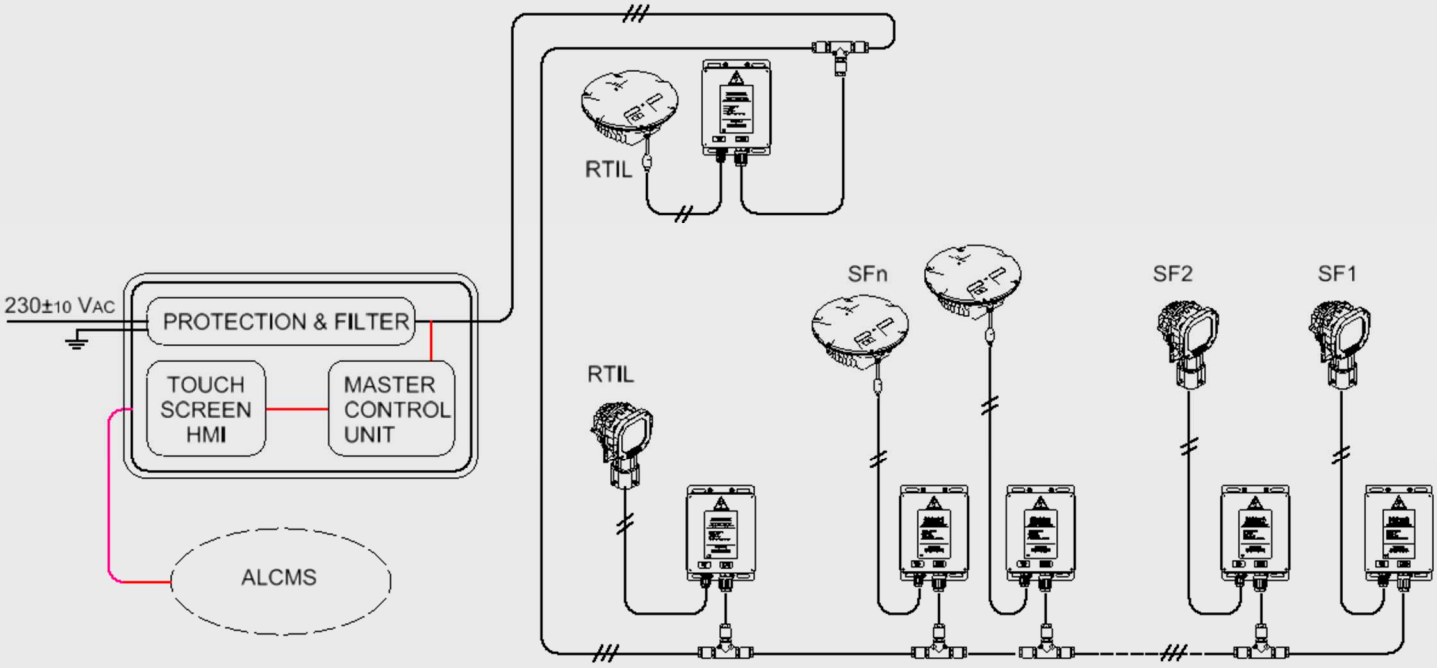
INTERFACE TO ALCMS

- Interface: Ethernet (RJ45)
- Protocol: MODBUS over TCP



COMMUNICATION BETWEEN FMCU AND FFU

- Echelon Lonworks protocol
- Powerline communications
- Frequency band: CENELEC EN 50065-1 (A and C band)
- Dual-carrier frequency
- Mo-Demodulation: CSMA, BPSK, FEC, DSP enhanced receiver
- Working temperature: -40 to +55 °C

TOUCH-SCREEN INTERFACE

- Installation and configuration of a new unit
- Replacement of an existing unit
- Communication hub through the AGL
- Visual representation of the flash system topology

CHARACTERISTICS

- Mounted in the cabinet in which the FMCU unit is placed
- Customizable interface
- Suitable to install and configure the FFUs and the FMCU directly on field or remotely
- With Modbus TCP communication protocol built-in, it can be potentially interfaced to any compatible control system

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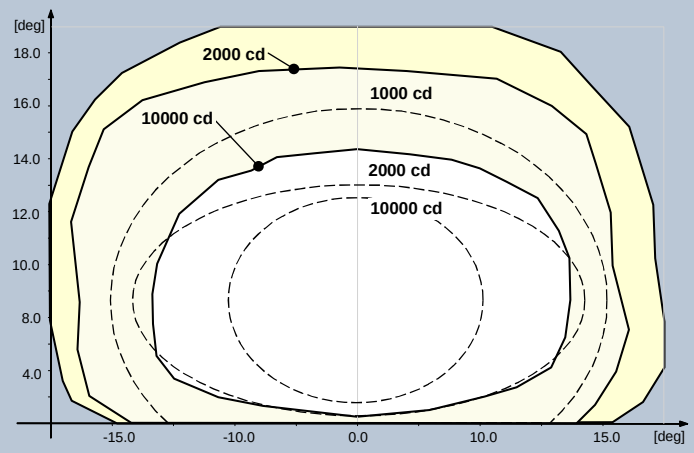
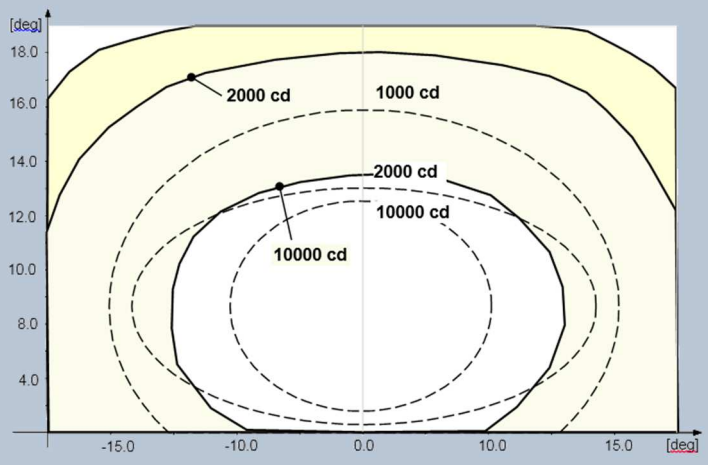
PHOTOMETRIC PERFORMANCES



LEFL - Fig. 1 ICAO Fig. A2-1 – White



LIFL - Fig. 2 ICAO Fig. A2-1 – White
The reported photometric performance refers to the case of **two inset fixtures** used together.

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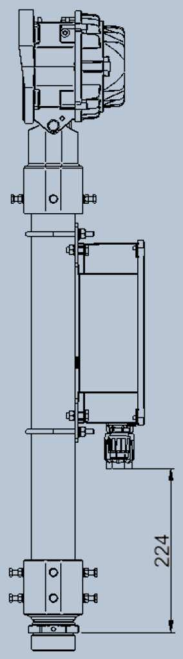
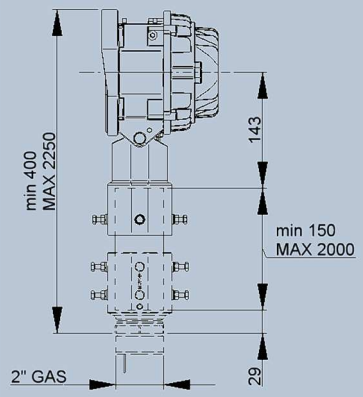
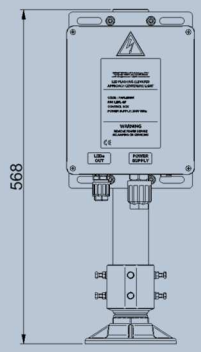


Combined LEFL-FFU configuration



Separate LEFL configuration



Separate FFU configuration

LEFL - SF

Basic P/N

Function:
See Table A.

TABLE A

CODE	SEGMENT	COLOR
SF	SFL	WHITE
RL	RTIL	WHITE
CG	CGL	WHITE
00	NOT PROGRAMMED	WHITE

(*) Supporting pole and breakable coupling must be ordered separately

NOTE: every ordered LEFL includes the corresponding FFU

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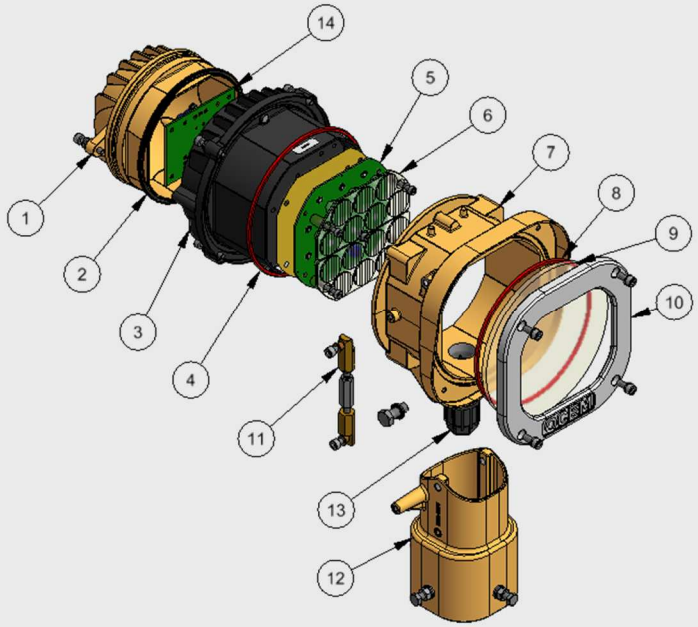
RENEWAL PARTS FOR LIGHT UNIT

1 Cover with electronic
2 Cover gasket
3 LED module support
4 LED module support gasket
5 LED module
6 Lens array for LED module
7 Body
8 Transparent front protection gasket
9 Transparent front protection
10 Transparent front protection holder plate (painted white)
11 Vertical aiming adjusting device
12 Special support
13 Power connector
14 Electronic interface
FFU Flash Field Unit



LIGHT ACCESSORIES

013.0010	Set of two ryton rings for receptacle support inside pipe elbow
013.0008	Galvanized steel pipe elbow with upper threaded end only (2" - 11 GAS thread)
315.3210	Galvanized steel pipe elbow with both threaded ends (2" - 11 GAS thread)
315.1228	Base L-867, Class IA, Size B, 24” Deep
315.1062	Baseplate for L-867 base with gasket (2” - 11 GAS thread)
303.6060	Breakable coupling for direct mounting
155.7200	Breakable coupling for pole
315.3710	Pole dia.60 mm, h 150 mm
315.3711	Pole dia.60 mm, h 500 mm
315.3712	Pole dia.60 mm, h 1000 mm
315.3713	Pole dia.60 mm, h 1500 mm
315.3714	Pole dia.60 mm, h 2000 mm
GMMMN0065	Support for separate FFU configuration
332.4560	Levelling and alignment device for light on supporting pole
332.3240	Levelling and alignment device for light on frangible mast
332.4571	Support for device P/N 332.3240
798.0006	Special tubolar wrench 22 mm for bulkhead connector (13)
011.3520	Secondary plug kit L-823 style 5
011.3523	Secondary receptacle kit L-823 style 12
011.3542	3 pole secondary plug kit
011.3545	3 pole secondary receptacle kit
169.5340	Double power electric coupling kit
DECVK0004	L-823 plug kit and cable gland for 303.6060 breakable coupling

FFU
Flash Field Unit

Shipping Weights and Volumes		
	Light Unit	**FFU**
Weight (Kg)	2.2	2.6
Volume (m^3)	0.006	0.007

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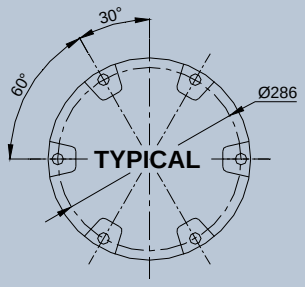
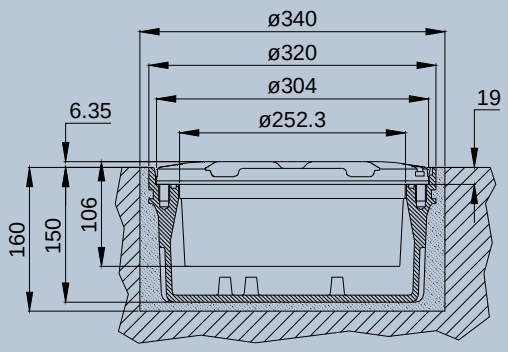
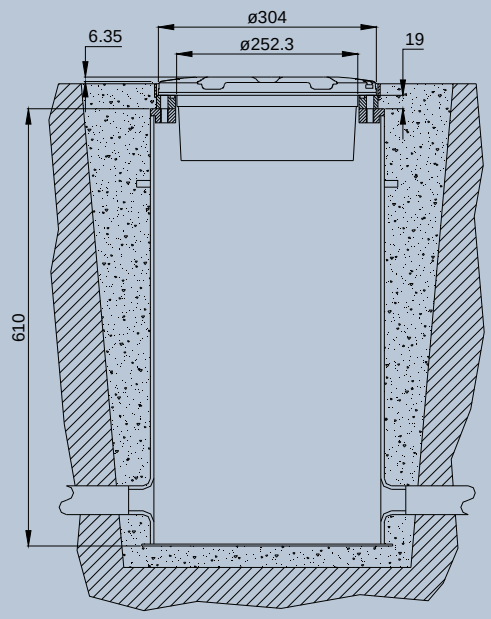


Light Fixture 12” dia.



Shallow Base 12” dia.



L-868 Deep Base 12” dia.

LIFL - I -SF

Basic P/N

Configuration:

I = ICAO compliant (two inset fixtures and two field unit boxes are used, flashing synchronously) (*)

L = low intensity (a single inset fixture and a single field unit is used)

Function:

See Table A.

TABLE A

CODE	SEGMENT	COLOR
SF	SFL	WHITE
RL	RTIL	WHITE
CG	CGL	WIHTE
00	NOT PROGRAMMED	WHITE

(*) Note that for Full Compliance with ICAO Requirements inset fixtures must be installed in pairs.

NOTE: every ordered LIFL includes the corresponding FFU

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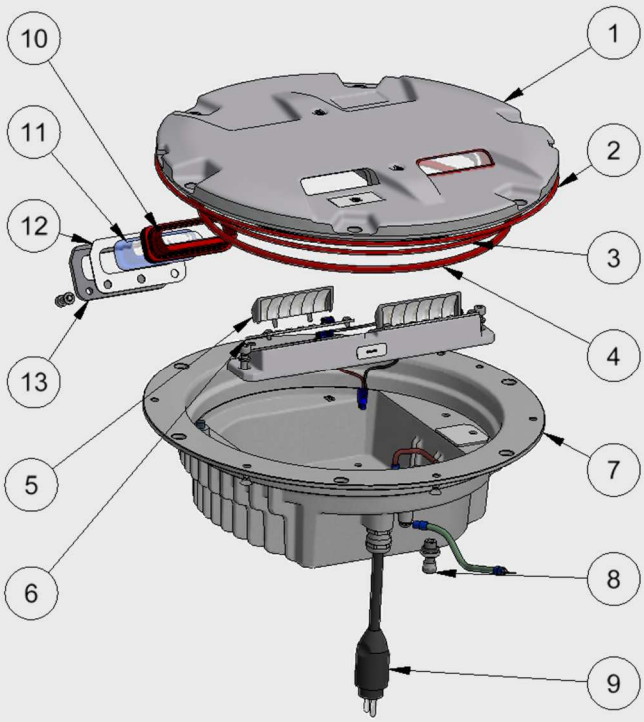
RENEWAL PARTS FOR LIGHT UNIT

1 Dome with prisms and gaskets
2 O-Ring for dome (external)
3 O-Ring for dome (internal)
4 O-Ring for lower cover
5 Reflector
6 LED module
7 Lower cover with electronic, plug and valve
8 Valve for watertightness test
9 FAA L-823 plug
10 Prism Gasket
11 Prism
12 Prism holder gasket
13 Mounting plate
FFU Flash Field Unit



LIGHT ACCESSORIES

315.1230	Base L-868 type, class IA, size B, 24” deep *
315.1420	Flange ring with pavement dam for L-868 base, size B, with O-Ring and bolts
PABAJ0003	Shallow base, 12" dia., with gasket and hardware
GMMMN0065	Support for FFU
712.1034	Setting material for shallow base, 10 lt
712.1035	Quartz for shallow base, 25 kg
332.4301	Positioning jig for 8"-12" dia. shallow base, without optical device
332.4351	Optical device for positioning jig to allow a very precise light unit orientation
332.4330	Watertight/shockproof plastic case complete with positioning jig for base and optical device
332.4140	Lifting tool (2 pieces to work properly)

* Sectional bases may be required depending upon the paving technique

FFU
Flash Field Unit

SYSTEM ACCESSORIES

CEGNV0002 **H** Distributor for cable ext.dia. of 12…20mm
CEGNV0003 **T** Distributor for cable ext.dia. of 12…20mm

Shipping Weights and Volumes

	Light Unit	FFU
Weight (kg)	6.1	2.6
Volume (m^3)	0.006	0.007

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