I. GENERAL REQUIREMENTS

1.- Introduction

The purpose of the project is electric and electronic installations of Drilon Visitor Center.
The following specifications include that part of the contract which consists of the supply of all materials, equipment, and all other services required to realize these complete, functional and safe engineering systems.
The correct functioning of the engineering systems and the implementation of the recommendations of the manufacturer of equipment and materials is an obligation for the Contractor.
Before starting the works, the Contractor must submit for approval the work program together with the methodology for a quality and safe work. He must submit for approval all the other elements necessary to perform the work according to his best experience and technological requirements.

1.1.- SSH Technical Standards and Norms:

SSH HD 60364-7-718:2013
- Low-voltage electrical installations - Part 7-718: Requirements for special installations or locations - Necessary tools and workplaces

SSH HD 60364-7-718:2013/A11:2017
- Low-voltage electrical installations - Part 7-718: Requirements for special installations or locations - Municipal facilities and workplaces

SSH HD 60364-1:2008
- Low voltage electrical installations - Part 1: Basic principles, assessment of general characteristics, definitions

SSH HD 60364-4-41:2007
- Low-voltage electrical installations - Part 4-41: Protection to ensure safety - Protection against electric shock

SSH HD 60364-4-42:2011/A1:2015
- Low-voltage electrical installations - Part 4-42: Protection to ensure safety - Protection against thermal effects

SSH HD 60364-4-43:2010
- Low-voltage electrical installations - Part 4-43: Protection for safety - Protection against overcurrents

SSH HD 60364-4-442:2012
- Low-voltage electrical installations - Part 4-442: Protection to guarantee safety - Protection of low-voltage installations against temporary overvoltage due to earth faults in the high-voltage system and faults in the low-voltage system

SSH HD 60364-4-443:2016
- Electrical installations of buildings - Part 4-44: Protection to guarantee safety - Protection against voltage disturbances and electromagnetic disturbances - Clause 443: Protection against overvoltage of atmospheric origin or due to handling.

SSH HD 60364-4-444:2010/AC:2012
- Low-voltage electrical installations - Part 4-444: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances

SSH HD 60364-5 -51:2009/A11:2013
- Electrical installations of buildings - Part 5-51: Selection and erection of electrical equipment - General rules

SSH HD 60364-5-51:2009
- Electrical installations of buildings - Part 5-51: Selection and erection of electrical equipment - General rules

SSH HD 60364-5-52:2011
- Low-voltage electrical installations - Part 5-52: Selection and installation of electrical equipment - Electrical installation systems

SSH HD 60364-5-53:2015

- Low-voltage electrical installations - Part 5-53: Selection and construction of electrical equipment - Distribution and control equipment

SSH HD 60364-5-534:2016
- Electrical installations of buildings - Part 5-53: Selection and installation of electrical equipment - Isolation, disconnection and control - Clause 534: Devices for protection against temporary overvoltages

SSH HD 60364-5-54:2011
- Low-voltage electrical installations - Part 5-54: Selection and erection of electrical equipment - System of earthing and protective conductors

SSH HD 60364-5-551:2010/A11:2016
- Low-voltage electrical installations - Part 5-55: Selection and installation of electrical equipment - Other equipment - Clause 551: Low-voltage generating equipment

SSH HD 60364-5-557:2013/A11:2016
- Low-voltage electrical installations - Part 5-557: Selection and construction of electrical equipment - Auxiliary circuits

SSH HD 60364-5-559:2012
- Low-voltage electrical installations - Part 5-559: Selection and erection of electrical equipment - Luminaires and lighting installations

SSH HD 60364-5-56:2010/A11:2013
- Low-voltage electrical installations - Part 5-56: Selection and erection of electrical equipment - Safety services

SSH HD 60364-6:2016/A11:2017
- Low voltage electrical installations - Part 6: Verification

SSH HD 60364-7-701:2007/A11:2011
- Low-voltage electrical installations - Part 7-701: Requirements for special installations or places - Places having a shower or bathtub
SSH HD 60364-7-701:2007/AC:2011
- Low-voltage electrical installations - Part 7-701: Requirements for special installations or locations - Placement in places having a shower or bathtub

SSH HD 60364-7-702:2010
- Low-voltage electrical installations - Part 7-702: Requirements for special installations or locations - Swimming pools and fountains

SSH HD 60364-7-703:2005
- Electrical installations of buildings - Part 7-703: Requirements for special installations or locations - Sauna heating rooms and cabins

SSH HD 60364-7-704:2007
- Low-voltage electrical installations - Part 7-704: Requirements for special installations or locations - Construction and demolition site installations
SSH HD 60364-7-705:2007/A11:2012
- Low-voltage electrical installations - Part 7-705: Requirements for special installations or locations - Agricultural and horticultural establishments

SSH HD 60364-8-1:2015
- Low voltage electrical installations - Part 8-1: Energy efficiency

IEC 60364-4-41:2005+A1:2017
- Low-voltage electrical installations - Part 4-41: Protection to ensure safety - Protection against electric shock

IEC 60364-4-44:2007+A1:2015
- Low-voltage electrical installations - Part 4-44: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances

IEC 60364-5-53:2001/A2:2015
- Low-voltage electrical installations - Part 5-53: Selection and construction of electrical equipment - Distribution and control equipment

IEC 60364-6:2006
- Low voltage electrical installations - Part 6: Verification

IEC 60364-7-714:2011
- Electrical installations of buildings - Part 7-714: Requirements for special installations or locations - Outdoor lighting installations

DS IEC/TR 60909-1:2009
- Short-circuit currents in three-phase a.c. systems. - Part 1: Factors for the calculation of short-circuit currents in accordance with IEC 60909-0

DS IEC/TR 60909-2:2009
- Short-circuit currents in three-phase a.c. systems. - Part 2: Electrical equipment data for short-circuit current calculations

SSH EN 60909-0:2001
- Short-circuit currents - in three-phase alternating current systems - Part 0: Calculation of currents

SSH EN 60947-1:2007/A1:2011
- Low voltage distribution and control equipment - Part 1: General rules

SSH EN 60947-1:2007/A2:2014
- Low voltage distribution and control equipment - Part 1: General rules

SSH EN 60947-2:2006/A1:2009
- Low voltage switchgear and controlgear - Part 2: Circuit breakers

SSH EN 60947-2:2006/A2:2013
- Low voltage switchgear and controlgear - Part 2: Circuit breakers

SSH EN 61936-1:2010/A1:2014
- Power installations exceeding 1 kV a.c. - Part 1: Common rules

SSH EN 60076-1:2011
- Power transformers - Part 1: General

SSH EN 60076-11:2004
- Power transformers - Part 11: Dry type transformers

SSH EN 60076-5:2006
- Power transformers - Part 5: Short circuit withstand capability

IEC 60076-12:2009
- Power transformers - Part 12: Loading guidelines for dry-type power transformers

IEC 60076-8:1997
- Power transformers - Part 8: Application guidance

IEC 60947-2:2016
- Low-voltage switchgear and controlgear - Part 2: Circuit breakers

SSH EN 62305-1:2011/AC:2016-11:2016
- Lightning protection - Part 1: General principles

SSH EN 62305-2:2012
- Lightning protection - Part 2: Risk management

SSH EN 62305-3:2011
- Protection against lightning - Part 3: Physical damage to structures and danger to life

SSH EN 62305-4:2011/AC:2016-11:2016
- Lightning protection - Part 4: Electrical and electronic systems inside structures

SSH EN 60228:2005/AC:2005
- Insulated cable conductors

Norms and regulations referred to IEC, EN:
EN 12193 - "Luminaires, lighting - Lighting of sports facilities".
EN 12464-1 - "Luminaires, lighting - Lighting of internal work environments".

EN 12464-2 - "Lighting, lighting - Lighting of external work environments".
EN 12665 - "Luminaires, lighting - Basic criteria for the specification of requirements related to lighting".
EN 13201 - "Road lighting".
EN 15193 - "Energy performance of the building. Energy requirements for lighting".
EN 15232 - "Energy performance of the building. The impact of automation, control and management in a building".
EN 1838 - "Lighting applications. Emergency lighting".
EN 50160 - "Characteristics of the voltage for the energy supplied by the public distributor (OSHE)".
EN 50171 - "Central supply system".
EN 50172 - "Evacuation lighting system".
EN 50174-2 - "Installation of cables".
EN 50272-1 - "Safety requirements for BACK-UP batteries, and installation of batteries". Part 1
EN 50272-2 - "Safety requirements for BACK-UP batteries, and installation of batteries". Part 2
EN 50464-1 - "3-phase 50Hz oil-immersed transformers, from 50kVA to 2500kVA with a maximum voltage of 36kV".
EN 50541-1 - "3-phase 50Hz dry transformers, from 100kVA to 3150kVA with a maximum voltage of 36kV".
EN 55015 - "Limits and methods of measurement of lighting disturbances and similar equipment".
EN 61100 - "Classification of liquid insulation based on flash point and net calorific value".
HD 639 S1/A2 - "Electrical equipment. Residual current equipment without integrated overcurrent protection, for residential and similar use".
IEC 60034-1 - "Rotating electrical equipment (Motors). Evaluation and performance". Part 1
IEC 60038 - "IEC standard relating to voltage".
IEC 60050-191 - "International electrotechnical dictionary. Security and quality of supply".
IEC 60050-601 - "International electrotechnical dictionary. Power generation, transmission and distribution".
IEC 60068-2-30 - "Environmental testing".
IEC 60071-1 - "Coordination of insulation".
IEC 60076-1 - "Power transformers. General". Part 1
IEC 60076-11 - "Power transformers. Dry". Part 11
IEC 60076-12 - "Power transformers. Guide to dry transformers". Part 12
IEC 60076-2 - "Power transformers. Temperature rise for oil-immersed transformers". Part 2
IEC 60076-5 - "Power transformers. Ability to withstand short circuits". Part 5
IEC 60076-6 - "Power transformers. Reactors". Part 6
IEC 60076-7 - "Power transformers. Guide to oil-immersed transformers". Part 7
IEC 60204-1 - "Safety of equipment. General requirements". Part 1
IEC 60204-11 - "Safety of equipment. General requirements at high voltage above 1000V". Part 1
IEC 60255-151 - "Measuring relays and protective devices. Functional requirements for over/under current protection". Part 151
IEC 60269-1 - "Low voltage fuses. General requirements". Part 1
IEC 60269-2 - "Low voltage fuses. Additional requirements regarding the use of fuses". Part 2
IEC 60269-6 - "Low voltage fuses. Additional requirements for fuses for the protection of photovoltaic systems". Part 6
IEC 60282-1 - "High voltage fuses. Current limiting fuses". Part 1
IEC 60296 - "Liquids for electrotechnical applications. Mineral oil for insulating transformers and switches".
IEC 60364-1 - "Low voltage electrical installations. Basic principles, general assessment, characteristics, definitions". Part 1
IEC 60364-4-41 - "Low voltage electrical installations. Protection against voltage drop". Part 4-41
IEC 60364-4-43 - "Low voltage electrical installations. Protection against overcurrents". Part 4-43
IEC 60364-5-52 - "Low voltage electrical installations. Selection and supply of equipment. Connection system". Part 5-53
IEC 60364-5-53 - "Electrical installations in buildings. Selection, supply, isolation, connection / disconnection, and control of equipment". Part 5-54
IEC 60364-5-54 - "Low voltage electrical installations. Selection and supply of electrical equipment. Earthing and PE conduction". Part 5-54
IEC 60364-5-56 - "Low voltage electrical installations. Selection and supply of electrical equipment. Safety". Part 5-56
IEC 60364-6 - "Low voltage electrical installations. Verification". Part 6
IEC 60364-7-710 - "Electrical installations in buildings. Requirements for special installations. Medical environments". Part 7-710
IEC 60364-7-718 - "Low voltage electrical installations. Requirements for special installations. Municipal facilities and workplaces". Part 7-718
IEC 60364-7-729 - "Low voltage electrical installations. Requirements for special installations. Operation and maintenance of roads". Part 7-729
IEC 60529 - "Degree of protection based on enclosures (IP Code)".
IEC 60570 - "Luminaire supply system".
IEC 60598-1 - "Luminaires. General requirements and tests". Part 1
IEC 60598-2-22 - "Luminaires. Special requirements. Luminaires for emergency lighting".
IEC 60617-DB - "Graphic symbols for schematics".
IEC 60664-1 - "Coordination of insulation in low voltage systems. Principles, requirements and tests". Part 1

IEC 60831-1 - "Self-regulating type capacitors for AC systems up to 1kV. General, performance, testing and classification, safety requirements, guidance for their installation and operation". Part 1
IEC 60870-5-101 - "Telecontrol systems". Part 5-101
IEC 60896-21 - "Stationary acid batteries. Test methods". Part 21
IEC 60898-1 - "Electrical equipment. Circuit breakers for protection against overcurrents for residential and similar installations. Circuit breakers for operation in the AC network". Part 1
IEC 60898-2 - "Overcurrent protection devices for residential and similar installations. Devices for operation in AC and DC networks". Part 2
IEC 60947-1 - "Low voltage cell. General rules". Part 1
IEC 60947-2 - "Low voltage cells. Automatic machines". Part 2
IEC 60947-3 - "Low-voltage switchgear. Switches, disconnectors, switch-disconnectors and combined fuse units". Part 3
IEC 60947-4-1 - "Low voltage cells. Counters and inverters. AC semiconductor controllers and starters". Part 4-2
IEC 60947-8 - "Low voltage cells. Control units built on thermal protection for rotating machinery". Part 8
IEC 61000-2-12 - "Electromagnetic compatibility (EMC). Permissible levels for low frequency disturbances in the public medium voltage network". Part 2-12
IEC 61000-2-2 - "Electromagnetic compatibility (EMC). Permissible levels for low-frequency disturbances in the public low-voltage network". Part 2-2
IEC 61000-2-4 - "Electromagnetic compatibility (EMC). Permitted levels for low frequency disturbances in industrial plants". Part 2-4
IEC 61000-3-11 - "Electromagnetic compatibility (EMC). Voltage variation limits, voltage fluctuations in the public low voltage network. Equipment with a current ≤75A". Part 3-11
IEC 61000-3-12 - "Electromagnetic compatibility (EMC). Limits of current harmonics produced by equipment connected to the public low voltage network with currents from >16A to ≤75A per phase". Part 3-12
IEC 61000-3-2 - "Electromagnetic compatibility (EMC). Limits of current harmonics produced by equipment connected to the public low voltage network with a current ≤16A". Part 3-2
IEC 61000-3-3 - "Electromagnetic compatibility (EMC). Signals in low voltage installations. Emission level, frequency bands and levels of electromagnetic disturbances". Part 3 Section 8
IEC 61000-4-15 - "Electromagnetic compatibility (EMC). Test and measurement techniques. Fluctuation measurement. Functional specifications and design". Part 4-15
IEC 61000-4-30 - "Electromagnetic compatibility (EMC). Test and measurement techniques. Power quality measurement methods".
IEC 61000-4-7 - "Electromagnetic compatibility (EMC). Test and measurement techniques. General guidance for harmonics and interharmonics measurement and instrumentation, for the supply system and related equipment". Part 4-7
IEC 61009-1 - "Residual current circuit breakers with integrated overcurrent protection for residential and similar use (RCBOs). General rules". Part 1
IEC 61131-3 - "Programmable controllers. Programming languages". Part 3
IEC 61140 - "Protection against electric shock. Common aspects for installations and equipment".
IEC 61347-1 - "Lighting transformers. General and safety requirements". Part 1
IEC 61347-2-… - "Lighting transformers. Specific requirements". Part 2-...
IEC 61439-1 - "Low voltage cells and their assembly". Part 6
IEC 61547 - "General lighting equipment. Electromagnetic compatibility (EMC) immunity requirements".
IEC 61800-3 - "Speed control systems. Electromagnetic compatibility requirements and specific test methods". Part 3
IEC 61869-1 - "Measuring transformers. General requirements". Part 1
IEC 61869-2 - "Measuring transformers. Additional requirements for current transformers". Part 2
IEC 61869-3 - "Measuring transformers. Additional requirements for voltage transformers". Part 3
IEC 61869-4 - "Measuring transformers. Additional requirements for combination transformers". Part 4
IEC 61936-1 - "Power installations exceeding 1kV in the AC network. Rules". Part 1
IEC 62034 - "Automatic test systems for battery-supplied output lighting".
IEC 62040-1 - "UPS. General and safety requirements for UPS". Part 1
IEC 62040-2 - "UPS. Requirements for electromagnetic compatibility". Part 2
IEC 62040-3 - "UPS. Performance specification method and related testing requirements". Part 3
IEC 62305-2 - "Protection against atmospheric emissions. Risk management". Part 2
IEC 62305-3 - "Protection against atmospheric emissions. Physical damage to the structure and damage to life". Part 3
IEC 62305-4 - "Protection against atmospheric discharges. Electrical and electronic systems without structures". Part 4
IEC 62493 - "Assessment of lighting equipment with respect to human exposure to electromagnetic fields".
IEC 62606 - "General requirements for electric arc detection equipment".
IEC/PAS 62717 - "LED modules for general lighting. Performance requirements".
IEC/TR 61641 - "Low voltage cells and their assembly. Guide for testing under conditions of an arc due to any internal defect".
IEC/TR 62655 - "Tutorial and application guide for high voltage fuses".
IEC/TS 60479-1 - "Effect of current on human beings and animals. General aspects". Part 1

ISO 12100 - "Safety of machinery. General principles for design. Risk assessment and risk reduction".
ISO 13849-1 - "Safety of machinery. General principles for design". Part 1
ISO 14001 - "Environmental Management Systems. Specifications with user guide".
ISO 23570-2 - "Industrial automation and system integration". Part 2
ISO 23570-3 - "Industrial automation and system integration". Part 2
ISO 23601 - "Security identification. Exit and evacuation plan signs".
ISO 50001 - "Energy management system. Requirements and user guide".
ISO 9001 - "Quality management system. Requirement".

1.2.- Quality Assurance

The engineering systems that will be supplied according to these specifications will be standard products of well-known manufacturers and consolidated in the production of electrical materials and equipment, object of this project.
The guarantee of the installed installations, equipment and systems must be submitted to the Supervising Engineer upon completion of the works, before the acceptance and commissioning procedures.
All materials and electrical equipment must be manufactured catalogued and stamped with the quality mark of the place where they are produced. For example, for Italian products the quality mark is IMQ, for German products VDE, etc. or the European Community quality mark CE.
In the absence of a quality mark, a report on compliance with the standard issued by an authorized institution is required. In the absence of this document, the contractor must issue a declaration of conformity in personal responsibility which guarantees that all components of the electrical system are in accordance with the respective standards of the Albanian state and those adopted in EU.
In case of no standards, the conformity report is based on general safety principles.
The conformity of a component of the electrical system with the relevant standard can be declared by the builder also through the manufacturer's catalogue. The above also applies to the materials used as an aid during the work and for the quality and safety of which the contractor remains responsible.

1.3.- Product Supply, Warehousing and Use

Electrical equipment should not be installed on site until environmental conditions are met for this purpose. For products that are installed without fulfilling the appropriate conditions, the Supervising Engineer may be required to replace them without undertaking to reimburse their cost.

1.4.- Procedure for Acceptance of Works

Upon completion of the installation, the contractor should begin testing, measuring and calibrating the electrical and electronic systems.
Tests and measurements must be made in the presence of the Supervising Engineer. Testing means the commissioning of an engineering system in the proper order and in full compliance with the standards, rules and recommendations of the manufacturer. The contractor must first do a preliminary test for the system before requesting the final testing procedure. Only when it is proven that the work of the system or product is complete and satisfactory then the system or the product or its parts will be accepted for final tests and measurements.

1.5.- Testing

The contractor will be responsible for coordinating and performing the necessary tests and measurements before commissioning. Upon completion of the installation, the contractor must notify the Supervising Engineer at least one week in advance that the systems have been proven to work satisfactorily by the contractor's team of engineers and / or the manufacturer's representative and is ready for the final test and acceptance procedures. During the declaration period, the contractor will present the drawings "As-Built Drawings" for the implemented project and "Test / measurement plan" where he will describe in detail the way of testing of the implemented system.

The test plan should contain step-by-step descriptions of the tests and measurements it will perform. It must show that this evidence confirms that the technical requirements of the EN, IEC, KTP standards cited above and the manufacturer's recommendations for the installation and operation of the system have been met.
The measurements, tests and verification procedures for electrical systems and equipment included in this specification shall be in accordance with the relevant provisions and requirements of the International Electro technical Commission (IEC) recommendations, unless expressly stated otherwise in the drawings. This requirement should apply even if there are systems, equipment or materials that are not referred to in these specifications. When the IEC recommendations do not fully cover all provisions and requirements for design, construction, testing, etc. as well as for equipment and components not covered by them, the applicable national standards will apply. Alternatively, the rules of CEE (International Commission for the Approval of Electrical Equipment) and the standards of CENELEC (European Committee for Normalization Electro technique) - Technical regulations for electrical services can be applied.

1.6.- As build drawings

The Contractor must submit to the Supervising Engineer two (2) hard copies of the project "as build" and two (2) electronic copies of it after the completion of works.

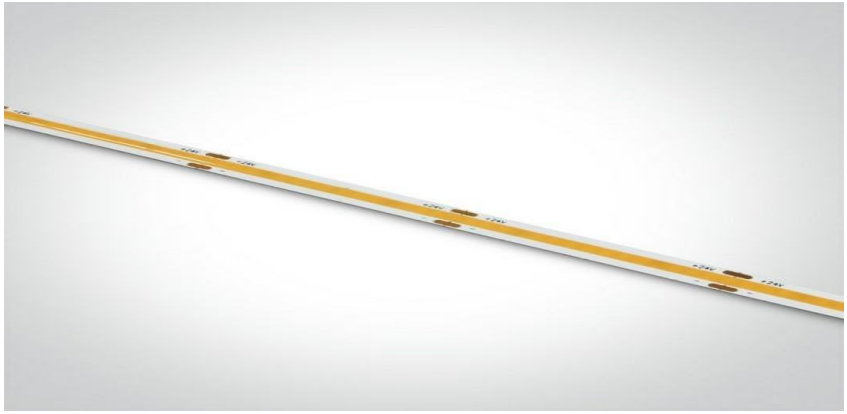
II: TECHNICAL SPECIFICATIONS

1. Lighting Fixtures - luminaires

The contractor before ordering and installation of the lighting fixtures – Luminaires has to do submit the following to the design architect/supervisor:
- Shop Drawings
- A complete description of the procedures for the installation of each phase of the lighting system indicating the type luminaire. its materials, thicknesses, identity codes, special methods for cutting and fitting of the product, and special precautions. The drawings “shop drawings” shall be based on:
    - Field measurements.
    - Test Reports Certificates
    - Manufacturer’s Instructions
- Samples: one complete prototype for each luminaire listed in this chapter and design has to be presented for approval to the design architect, including final colours, textures, etc.

All products must meet the safety and health requirements of the Albania law.

- ***LED Strip Light***



Flexible COB LED light strip, 320LEDs/meter, 8W/meter. Supplied in 5, 10 and 20 meters roll with white PCB and double adhesive tape for a better fixing.

Can be cut every 5cm.

Requires 24V DC constant voltage LED driver.

Complies with standard EN60598-1 and any other specific standards.

Input Type : Constant Voltage

Input Voltage : 24V DC

Protection Class : Class III

Power(Watts) :8 - 10 W/m

IP Rating : IP20

LED Type : COB

Luminous Flux: 730-1000 lumen / m

Output: LED high Output

Colour temperature: 3000K-3500 K

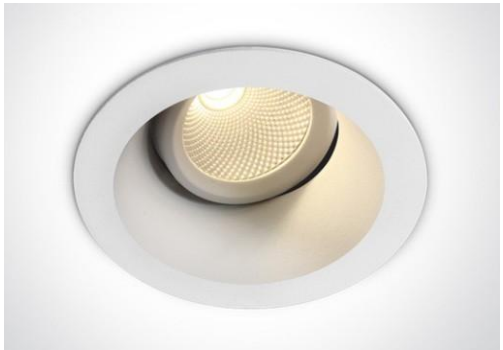
CRI: > 95

Lifetime: > 50.000h

Energy efficiency class: F

Brand : Made in Europe

- ***Recessed Spots Adjustable LED>***



Variable COB LED Adjustable recessed spot, IP20.

Complete with non-dimmable driver.

Complies with standard EN60598-1 and any other specific standards.

Colour White

Material Aluminium

Shape Circular

Protection rating: IP20

LED Type COB

Light Source LED: built in

Power: 7 watt

Luminous Flux: 560 lumen

Voltage: 220-240V 50/60Hz

Beam Angle : 60°

Colour temperature: 3000K-3500 K

CRI: > 90

Lifetime: > 50.000h

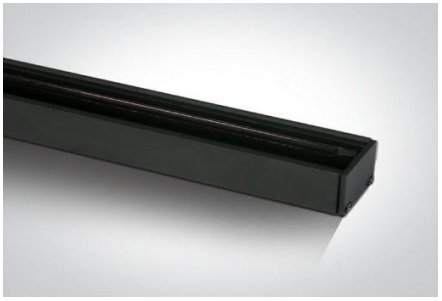
Diameter : 95mm

Cutout Hole Diameter : 80mm

Depth Required : 110mm

Brand : Made in Europe

- **Magnetic Surface Profiles**



Suspended magnetic track light made of extruded aluminium profile;

Black magnetic profile ON/OFF and DALI 48V .

Max 10m/driver, Max 400W/circuit. Complete with 2pcs end caps.

Colour : Black

Material : Aluminium

Shape : Rectangular

Protection rating: IP20

Protection Class: Class III

Input Type Constant Voltage

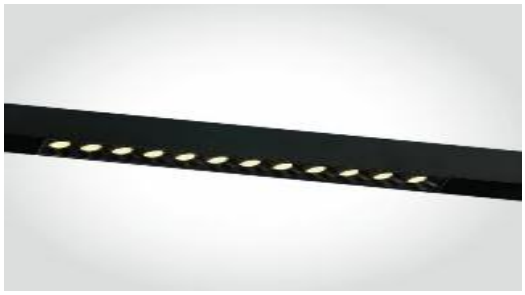
Input Voltage 48V DC

Power(Watts) 400W/Circuit

Lifetime: > 50.000h

Brand : Made in Europe

- ***Linear Spot Magnetic Lights>***



Variable Black Linear spots magnetic profile light.

Suitable for magnetic profiles.

Complies with standard EN60598-1 and any other specific

Colour : Black

Material : Aluminium

Shape Rectangular

Protection rating: IP20

LED Type COB

Light Source LED: built in

Power: 12 watt

Luminous Flux: 960 lumen

Input Type Constant Voltage

Input Voltage 48V DC

Beam Angle : 50°

Colour temperature: 3000K-3500 K

CRI: > 90

Lifetime: > 50.000h

Brand : Made in Europe

- ***Spot Magnetic Lights>***

Variable LED spot for magnetic profiles.

Suitable for all magnetic profiles.

Complies with standard EN60598-1 and any other specific standards.

Colour : Black

Material : Aluminium

Shape Circular

Height 100mm

Diameter 58mm

Protection rating: IP20

LED Type COB

Light Source LED: built in

Power: 12 watt

Luminous Flux: 960 lumen

Input Type Constant Voltage

Input Voltage 48V DC

Beam Angle : 38°

Colour temperature: 3000K-3500 K

CRI: > 90

Lifetime: > 50.000h

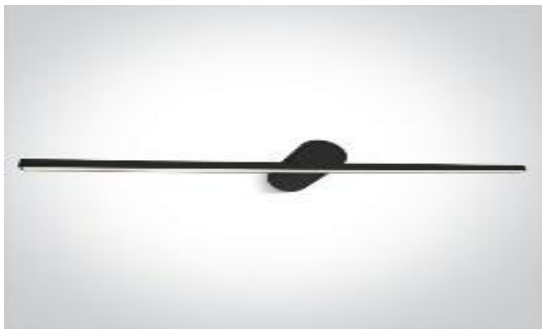
Brand : Made in Europe

- LED insulator cables: Round Dimmable Flexible Neon LED Strip 360 220V AC 120 LED/m in white

Specifications:
LED strip SMD 2835 / IP67 / 120 LEDS pm / Energy class: A +
Power: 12.5 watt
Luminous Flux: 1486 lumen / m
Input Type Constant Voltage
Input Voltage 48V DC
Beam angle: 360º
Lens type: Mat
Material: PVC
Diameter: Ø25 mm
Minimum Radius of curvature: 120mm
Working system temperature: -20 ° C ~ + 50 ° C
Colour temperature: 3000K-3500 K
CRI: > 90

Lifetime: > 50.000h
Constructor must make a mock-up to be sure that the effect is the same as in render
Documentation accompanying the product:
Manufacturer conformity certification to the product standard
Brand : Made in Europe

- **Lighting for picture**



Variable fitting IP44.
Supplied with non-dimmable LED driver.
Complies with standard EN60598-1 and any other specific standards.

Colour : Black

Material : Aluminium

Diffuser Material PC

Shape Rectangular

Length 600mm

Width 130mm

Height 70mm

Protection rating: IP44

Input Voltage 220-240V

Light Source LED built in

LED Type SMD

Power: 14 watt

Luminous Flux: 1200 lumen

Input Type Constant Voltage

Input Type Constant Current

Input Current 350mA

LED Type SMD

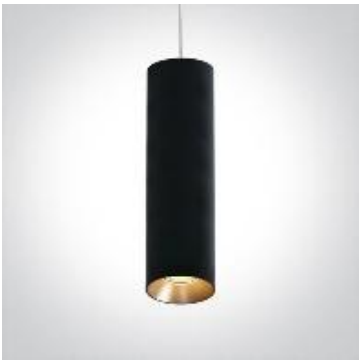
Colour temperature: 3000K-3500 K

CRI: > 90

Lifetime: > 50.000h

Brand : Made in Europe

- **CYLINDER PENDANTS**



Pendant.

Reflector must be ordered separately.

Complies with standard EN60598-1 and any other specific standards.

Colour : Black

Material : Aluminium

Diffuser Material PC

Shape Circular

Height 400mm

Diameter 75mm

Protection rating: IP44

Input Voltage 100-240V

Power(Watts) 10W

IP Rating IP20

Light Source Replaceable lamp

Lamp Holder GU10

Number of Lamps 1

LAMP

Type LED

Power: 7 Watt

Colour temperature: 3000K-3500 K

CRI: > 90

Lifetime: > 50.000h

Brand : Made in Europe

- **Floor Pendant**

Stylish floor lamp, made of white colour marble round base with antique brass arm and adjustable sphere shade
Complies with standard EN60598-1 and any other specific standards.

Mounting: Floor

Material: Metal, Marble

Colour: White, Antique brass

Dimensions: Diameter of shade: 300mm, Height: 1980mm, Length: 1650mm, Diameter of base: 350mm

Socket: E27

Power: 1 x 60W

Voltage: 220V-240V

LAMP

Type LED

Power: 12 Watt

Colour temperature: 3000K-3500 K

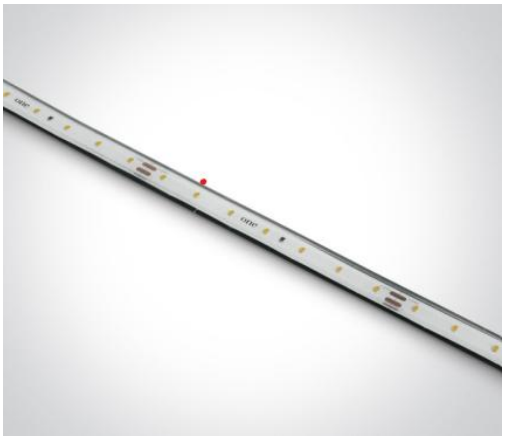
CRI: > 90

Lifetime: > 50.000h

Lifetime: > 50.000h

Brand : Made in Europe

- ***Waterproof LED Strip Light***



Waterproof LED light strip, with SMD2216 LEDs, 70LEDs/meter4-5 watt/m . Supplied in 5, 10 and 20 meters roll with white PCB and double adhesive tape for a better fixing.

Can be cut every 10cm.

Complies with standard EN60598-1 and any other specific standards.

Input Voltage : 220 V AC

Protection Class : Class III

Power(Watts) :4 - 5 W/m

IP Rating : IP68

LED Type : COB

Luminous Flux: 370-500 lumen / m

Output: LED high Output

Colour temperature: 3000K-3500 K

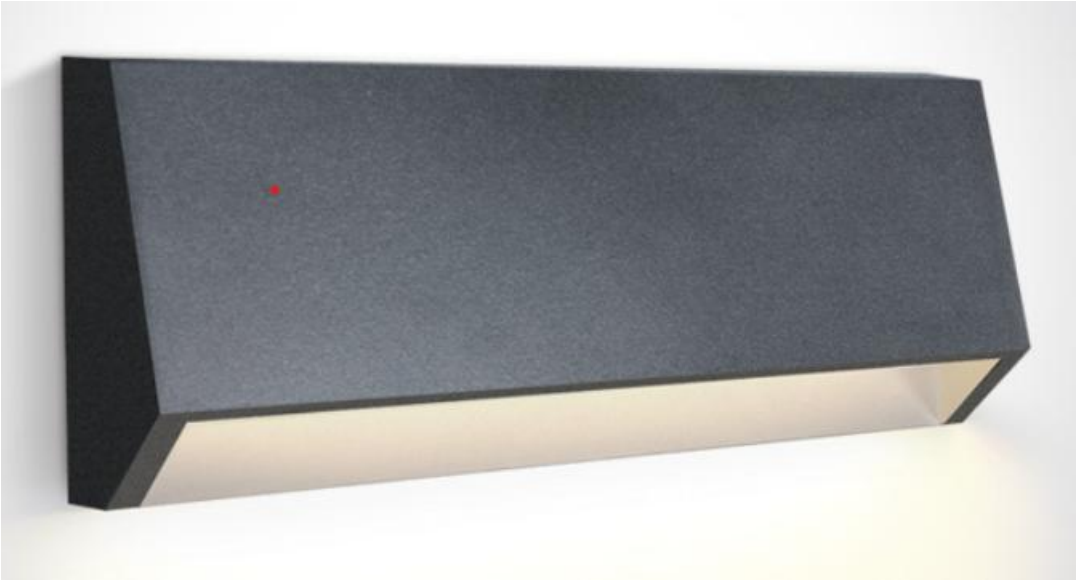
CRI: > 90

Lifetime: > 50.000h

Energy efficiency class: F

Brand : Made in Europe

- ***Recessed Spots Adjustable LED>***



Spot outdoor wall light, IP65, ideal for both indoor and outdoor installation.

Complies with standard EN60598-1 and any other specific standards.Complies with standard EN60598-1 and any other specific standards.

Colour Anthracite

Material ABS

Shape Rectangular

Protection rating: IP65

LED Type COB

Light Source LED: built in

Power: 4 watt

Luminous Flux: 220 lumen

Voltage: 220-240V 50/60Hz

Colour temperature: 3000K-3500 K

CRI: >80

Lifetime: > 50.000h

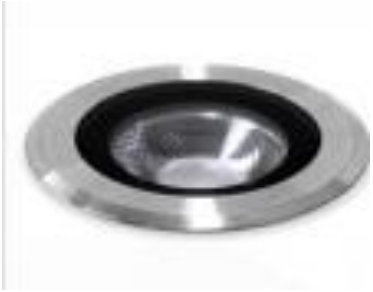
Length 220mm

Width 37mm

Height 80mm

Brand : Made in Europe

- ***Outdoor Soot light***



Variable COB LED Adjustable recessed spot, IP68.

Complies with standard EN60598-1 and any other specific standards.

Colour gray

Material Aluminium

Shape Circular

Protection rating: IP68

LED Type COB

Light Source LED: built in

Power: 5- 7 watt

Luminous Flux: 560 lumen

Voltage: 220-240V 50/60Hz

Beam Angle : 60°

Colour temperature: 3000K-3500 K

CRI: > 90

Lifetime: > 50.000h

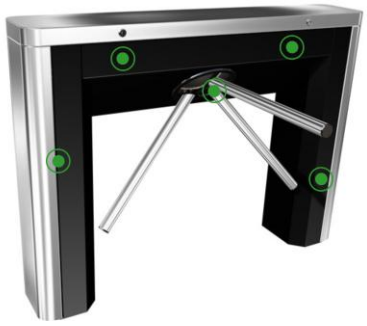
Diameter : 90mm

Cutout Hole Diameter : 75mm

Depth Required : 57mm

Brand : Made in Europe

- **Tripod Turnstiles**



Automatic Systems

Well-built for increased durability, our tripod turnstiles efficiently control high throughput. Since they can be installed inside or outside buildings, our tripod turnstiles provide unfailing control of occasional user abuse.

Main benefits:

- Bi-directional turnstile made especially for quick access control in areas with high traffic but limited space.
- Non-removable stainless steel arms to prevent vandalism.
- Durable, corrosion-resistant, heavy-duty mechanism for extended service life.

Robust

- IP44 rated.
- Functions in temperatures as low as -40°C
- Arm is able to resist load and impact.

Reliable

- Built to withstand intensive operation (single-user throughput up to 20 pers./min).
- Built to detect fraudulent activity: jump-over and crawl-under detection.

Comfortable for end-users

- 550mm free passage width.
- Collapsible arms for easy evacuation in case of power outage / emergency that won't hinder the users passage.
- LED pictograms for intuitive use and high throughput in both directions
- Smooth and silent operation.

Easy to maintain & monitor

- LAN-connectivity to Building Maintenance Systems, using web-based interfaces or a dedicated software monitoring, enabling the supervision of all operation performances

- **RACK**

Free Standing Cabinets W=600mm D=800mm with LCD thermometer

Size

: W X D X H (mm) - 600x800x1980. Weights Kg: 80 kg

Color: Black RAL 9005

Product is with Glass Front door with Handled Lock, Rear Solid Metal Hinged

Door style with "O" type Barrel Lock.

CONSTRUCTION DETAILS:

Access to enclosure:

Front door is integrated with decorative metal housing and full length smoked, shatterproof, antistatic, 4,0mm thickness glass with single point locking handled lock.

Front doors have decorative PVC Stripes charming the attraction, Anthracite Grey for RAL 7035 Light Grey Cabinets and Light Grey for RAL 9005 Black cabinets.

Front door opening direction is set right to left, but reversible to left to right at site with removing the hinge system. Hinge System is spring loaded easy operating version, which allows you to remove the whole front door from cabinet in seconds. No need of any tool during installation or removal of front door.

Front doors have 235degree opening angle, which allows easy access to enclosure, while installation or afterwards the maintenance processes.

Rear Doors are lockable and removable with barrel style lock, multi folded bending technology with 8 fold bending provides the rigidity.

Rear doors are with spring loaded hinge system can be removed in seconds from enclosure. No need of any tools while installing or removing the rear door.

Rear doors have 120degree opening angle

CONSTRUCTION DETAILS:

Side Panels are lockable and removable with barrel style lock and 2pcs PVC snap lockers per side panel, Multi folded bending technology applied with 8 fold bending provides the rigidity. Easy mechanical locking of panel to main frame with snap capture system allows easy attachment of panels and easy removal in seconds while installation in process. No need of any tools while installing or removing the side panels.

19'' rails Free Standing cabinets are with automated silk-screen U numbering, depends on size 1U to 42U, same from top to bottom or bottom to top results to same U height selection. No matter from where you have started counting. 19'' rails are 4 fold bending surfaces, 1,5mm thickness provides the high load capacities. The 19'' rails are made of steel with 8-12 micron zinc plating for corrosion resistance. 19'' rails are adjustable in depth. For easy adjustment purpose, no need to detach the screws, just easethe screws and slide them in the channels on the top/bottom chassis bends.

Side Horizontal Support Bar in depth; up to 26U the 19'' rails are _xed to just to and bottom case. Higher than 26U the cabinets are integrated with 1 set (left/right) , 1,5mm thickness Z type made of Steel + 8-12 micron zinc plated side horizontal support bar

All design features provide 4 way access to your enclosure and equipment, easy to reach to enclosure and equipment for all infrastructure installations and maintenance needs.

CK-Line Cabinets has a decorative ABS header unit. For volume orders or projects, please coordinate with sales department to select any other color application than Anthracite Grey or Black standarts.

In standard, all Header Unit upper left corner _tted with a Digital Thermometer with 1 meter cable probe, integrated with 2 lithium battery with 2 year life, measurement once for every minute

Standards and Compliances:

ISO 9001:2008

Quality Management System

EN 61587 -1:2012

Mechanical Structures for Electronic Equipment

IEC 297-1, 19'' mounting

IEC 297-2 Overall cabinet dimentions

CE conform to

EN 60950-1:2006

Information Technology

Equipment – Safety – Part-1-

General Requirements

Environment Friendly;

* ISO 14001 Environmental

Management System

* RoHS compliancy

* % 100 Recyclable Material

II PIPES, PANELS, BREAKERS, CABLES, TRAYS

- Flexible PVC conduit for recessed installation

Resistance to compression: 750N

Shock resistance: class 3; 2kg, 100 mm height, at - 5 °C

Ordinary installation temperature: -5°C / +60°C

Insulation resistance: > 100 Mohm with 500V for 1 minute

Fire resistance: fire-retardant

Reference standards, markings and marks

CE marking; IMQ approval certificate; EN 50086-1; EN 50086-2-2 standards

Requirements and tests

Verification of correct installation

Documentation accompanying the product

Product Data Sheet

- **Rigid PVC conduit for wall-mount installation, LSZH**

Type series heavy polyamide-based halogen-free self-extinguishing and resistant to glow wire test at 850 ° C

Material: Polyamide Compressive strength: 1250N

Impact resistance: Class 3 2kg from 100 mm to - 5 ° C

Permanent installation and application temperatures: -5 °C / +60 °C

Insulation resistance:> 100 Mohm at 500V for 1 minute

Resistance to spread of flame retardant Color: RAL 7035 gray

Accessories: T, curves and joint accessories

Reference standards, markings and marks

CE marking; EN 50086-1; EN 50086-2-2 standards

Requirements and tests

Verification of correct installation

Documentation accompanying the product

Product Data Sheet

- **Junction Box, Wall Mounted, PVC**

Compressive strength: 750N

Impact resistance: Class 3 2kg from 100 mm to - 5 ° C

Permanent installation and application temperatures: -5 °C / +60 °C

Insulation resistance:> 100 Mohm at 500V for 1 minute

Resistance to spread of flame: retardant

Color: RAL 7035 gray

Supplied with plastic cover which include screw and mounting accessories.

A tag reporting the systems supplied by the junction box will be reported with the following tags (if present):

· Ordinary power

· Safety power

· Fire & smoke detection

· IT & Data

The tags will be realized using labels with the characters high at least 10mm and using indelible ink.

Accessories: -

Reference standards, markings and marks: CE marking

Requirements and tests:

Verification of correct installation

Documentation accompanying the product:

- **Junction Box, Recessed, PVC**

Compressive strength: 750N

Impact resistance: Class 3 2kg from 100 mm to - 5 ° C

Permanent installation and application temperatures: -5 °C / +60 °C

Insulation resistance :> 100 Mohm at 500V for 1 minute

Resistance to spread of flame: retardant

Cover Color: white

Supplied with plastic cover which include screw and mounting accessories.

Accessories: -

Reference standards, markings and marks: CE marking

Requirements and tests:

Verification of correct installation

Documentation accompanying the product:

Product datasheet

- **ELECTRIC PANEL BOARDS**

Maximum temperature 40°C

Minimum temperature -10°C

Maximum relative humidity <= 95%

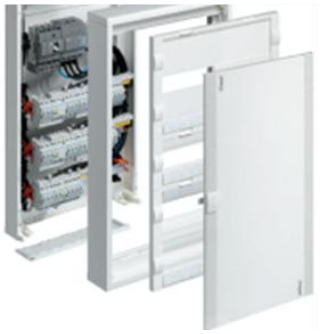
Environment normal

Installation indoor

CONSTRUCTION FEATURES

Must be made of sheet steel 20/10 mm self-supporting, painted with epoxy enamel upon degrease, pickling and phosphating.

Must be equipped with front doors that open to the type invisible zipper and closing by means of screws snap to cover the parts in voltage, and provided with slotted holes for the drive of the equipment.



The apparatus shall be equipped with a screen-printed label for identification of users.

Jumpers are not allowed between switches, but all the links, will have to head to bars distribution of drilled CU abundantly sized, immediately downstream of the main switch; The outgoing lines would each have fixed terminal equipped with separators PVC one for each terminal.

The terminal and the input terminal of the main switch must have screens with IP 4X.

The connections inside the electrical panels must be carried out by overlapping surfaces previously stagnant and the connection must be made by interposing terminals compression.

The wires connecting the busbar downstream of the main switch and circuit derivatives and between them and the output terminal must have the following minimum sections:

- 6 mm2 for switches up to 25 A:
- A caliber greater than that of the output line corresponding to the upper ones

Any transformers for power supply of auxiliary services should be included at the top of the control cabinet and carpentry will be aired; must also have the neutral or ground connection.

The type of installation (eg, recessed, protruding, etc..) Must be in accordance with the intended use of the room, the size of the frame itself and the demands of the client, to the recessed panels must be provided a lining frame.

Equipment

The preparation of the framework, as well as the installations of isolation and protection of the lines shown in the diagrams of individual cadres, must include:

- Group of measurement;
- Internal distribution busbars;
- Terminal blocks for control systems;

- Segregation Screens;
- Support insulators busbars;
- Stainless steel screws;
- Insulating cable duct for cabling Flanges for connection to cable ducts;
- Silkscreened plates. In the case of use for HVAC
- Buttons;
- Selectors;
- Indicator lights;
- Wiring;
- Modular terminal blocks, terminals, equipotential;
- Manual front panel switches;
- Signal lamps front pane;
- Contactors, thermal overload relays, auxiliary relays;
- Safety transformer for auxiliary circuits.

Accessories

These electrical panels will be fitted with the following accessories:

• 4 lifting eyes
• 2 terminals grounded
• plate features switchboard Reference standards, markings and marks Standards EN 61439-1, EN 61439-2

Requirements and tests

To be performed in the factory building and consisting of the acceptance tests required:

- Verification of temperature-rise limits (type test);
- verification of dielectric properties (type test);
- verification of short-circuit withstand (type test);
- verify the efficiency of the protection circuit (type test);
- checking the connection between the masses and the protection circuit (type test);
- verification of clearances in air and surface (type test);
- verification of the mechanical function (type test);
- verification of the degree of protection (type test);
- insulation - Dielectric tests (routine test);
- verification of the protective equipment and the electrical continuity of the protective circuits (individual test;
- Checking the insulation resistance (individual test).

Documentation accompanying the product

- assembly drawings and installation;
- designs front panel with distribution utilities and services;
- characteristics of switchgear and protection and auxiliary devices;
- functional wiring diagrams, single-line and data sheets; 1 copy is inserted in a special pocket inside the enclosure;
- declaration of conformity of the equipment supplied with the prototypes that have passed the type tests;
- operating and maintenance manuals;
- certificates of acceptance tests;
- List of recommended spare parts for commissioning and two years of operation.

- **Circuit Mini Breakers**

Mini circuit breakers are with thermos magnetic protection characteristics, class B, C and with short circuit power of 25/15/10 kA at 380V / 220V as given in the drawings.

They must be suitable for operation at room temperature where they will be installed. Input terminals should be equipped with a suitable insulated cover so as not to allow direct interference with screwdrivers or hand.

For their specific parameters refer to the principal schemes in the drawings.

Requirements and tests

To be performed in the factory building and consisting of the acceptance tests required:

- verify the efficiency of the protection circuit (type test);
- verification of the mechanical function (type test);

Documentation accompanying the product

- characteristics of mini breaker and protection
- declaration of conformity of the equipment supplied with the prototypes that have passed the type tests;
- certificates of acceptance tests;

- **Multi -core power cable HEPR insulated (M16 quality), Cu**

Cable for power distribution and signals, for static indoor and outdoor application, on land, in water, indoors, in cable ducts but in conditions when the cable is not exposed to mechanical stress or tensile strain. Used in industrial plants or civil installations, where higher current and thermal loads are expected (conductor operating temperature up to 90 ° C), in conditions that require higher flexibility and better combustion resistance.

The cable is manufactured according to the standard EN 50575: 2014 + EN 50575 / A1: 2016 and in accordance with the requirements of the European Regulation of Construction Products (CPR EU 305/11).

The CPR class is Cca-s3, d1, a

Requirements and tests:

Check the right cable's identification tag in the electric panel board

Documentation accompanying the product:

Manufacturer conformity certification to the product standard

Product Data Sheet

- **Conductor FS17/ N07V-K, 450 / 750V, Cu, flexible**

Flexible conductor with copper wire according to CEI 20-29 class 5

PVC insulation of quality S17

Turning radius 4-6 x Ø,

CPR class of fire resistance - class Cca-s3, d1, a3.

Different colors.

Working voltage 450 / 750V.

Test voltage 3000V, operating temperature -5 ° + 70 ° C,

temperature in s.c.: 160 ° C.

Manufactured according to IEC 60332-1-2, CEI 20-14, CEI UNEL 35716-35016, EN 50525, EN 50575: 2014, EN 50575 / A1: 2016 standards.

Requirements and tests:

Check the right cable's identification tag in the electric panel board

Documentation accompanying the product:

Manufacturer conformity certification to the product standard

- **Cable FTP, Cat6.a.**

Unshielded FTP, 4 twisted pairs, LS0H sheath, cat. 6a, cables with 24 AWG copper conductors, ISO-IEC 11801 compliant, halogen-free compound resistant to flame propagation acc. to IEC 60332-3 (LSHF-FR, LSFROH, FRNC-C), external diameter 7,8 mm. Behavior in fire: IEC 60332-1 23 AWG Annealed bare solid copper. Meets EIA/TIA 568-B.2-1 Category 6 specifications, Passed UL 444 test and meets CM and CMR ratings. Support for Fast Ethernet and Gigabit Ethernet IEEE 802.3/5/12,Voice,ISDN, ATM 155 & 622 Mbps and Broadband.

Requirements and tests:

Check the right cable's identification tag in the electric panel board

Documentation accompanying the product:

Manufacturer conformity certification to the product standard

Product Data Sheet

- **Audio Matrix Processor**

32x32 processing matrix

• 12x12 local analogue I/O

• I/O Port for expansion or audio networking, up to 128x128

• Dante 96kHz optional cards (AES67 and DDM ready)

• 32 configurable processing outputs – up to 32 mono / 16 stereo zones

• Sound management tools

o 4x Automatic Mic Mixer

o AEC (Acoustic Echo Cancellation)*

o ANC (Ambient Noise Compensation)

o Priority ducking

o 8-band PEQ, dynamics and delay on every input and zone

o Speaker processing with x-over filter, delay, limiter and PEQ

*with optional module

• 96kHz FPGA core with ultra-low latency

• Compatible with Allen & Heath IP1, IP6, IP8 remote controllers

• 2x2 local GPIO plus networkable GPIO interface

• Front panel screen and 8x programmable SoftKeys

• 16 user profiles

• Event scheduler

• Internal stereo playback

- **Wallplate controller**

Compatibility	AHM Processors, Avantis Mixers, dLive S Class and C Class Surfaces, dLive MixRacks
Style	Decora Faceplates
Network	Ethernet L3-Based Remote Controller, Up to 32 IP Controllers
Control	Dual-Function Rotary Encoder (Push-and-Turn)
Display	LCD, Color
Color	White
Power	PoE (Power over Ethernet)

- **Audio Matrix Processor**

TYPE	Passive two-way pendant speaker, ported bass reflex
FREQUENCY RESPONSE (1)	98Hz-20kHz ± 3dB -10dB @ 56Hz
DRIVERS	
LF: 5.25” /1” high-temp voice coil, coated paper cone, rubber surround, ferrite motor, pressed steel chassis	
HF: 0.75” silk dome, neodymium motor	
RATED POWER (2)	50W AES, 200W peak
RECOMMENDED AMPLIFIER	VIA2004 (for low-impedance operation)
SENSITIVITY(4)	86dB / 1W(4V) / 1m (full space)
MAXIMUM SPL (9)	109dB peak
NOMINAL IMPEDANCE	16Ω
DISPERSION (-6dB)	150° conical up to 7kHz
CROSSOVER	3kHz passive (LF and HF auto-resetting fuses
TRANSFORMER TAPS	

70V: 30w / 15w / 7.5w / 3.75w

100V: 30w / 15w / 7.5w

RECOMMENDED HIGH-PASS FILTER 60Hz 24dB/oct

ENCLOSURE UL 94V-0 rated ABS baffle and enclosure

FINISH Black or white

GRILLE Perforated steel, powder-coated, bayonet fitting

CONNECTORS Ceramic connector (in and link)

DIMENSIONS

(OD) 246mm x (D) 238mm

(OD) 9.7in x (D) 9.35in

- **Amplifier**

Type Four-Channel Class D Amplifier

Power Output* 4 X 500w Into 4 Ohms

4 X 250w Into 8 Ohms

Gain 32 Db

Cooling Vari-Speed Fans, Front-To-Back Airflow

Maximum Ambient Temperature 40°C (105°F)

Analogue In/Link (4 Channels) 4 X Female, 4 X Male Neutrik™ Xlr

Analogue Input Impedance 5 Kω Typical, Balanced

Maximum Analogue Input Level +20dbu

Amplifier Outputs 4 X Neutrik Speakon™ Nl4

Audio Performance

Frequency Response 20hz - 20khz +/- 0.45db, 4 Ohm Load

Total Harmonic Distortion 0.003% Typical, 1khz @ 1w

Power Supplies

Type 2 X High Current, High Frequency

Ac Input Operating Range 100-240v +/-10%

45 - 65hz

Mains Connector 1 X Neutrik Powercon™

Total System Efficiency 89% (4 X 250w Into 8 Ohms)

Dimensions (W) 482 X (H) 2u/88mm X (D) 441mm

(W) 19in X (H) 2u/3.5in X (D) 17.4in

Incl Handles And Optional Rear Support

- **Digital mixer**

• Rack-mountable Digital Mixer for Live, Studio and Installation
• 48 Input Channels
• 16 Local Mic Inputs (XLR)
• 2 ¼” Stereo Inputs (TRS)
• 1 3.5mm Stereo Input
• 36 Total Busses
• 12 Stereo Mix (Aux or Group) + Main
• PAFL Bus
• 14 Assignable Local Outputs (12 XLR + 2 ¼” TRS)
• AES Digital Output
• Dedicated Talkback mic input (XLR)
• ¼” TRS Headphone out with dedicated control
• SLink EtherCON connection for remote audio using dSnake/ME, DX or GigaACE/GX protocol (128x128 channels)
• I/O Port for Option Card (including 3rd party protocols – Dante/Waves)
• 8 Mute Groups
• 8 DCA Groups
• 8 Stereo FX with dedicated FX Returns
• DEEP Processing Ready
• RackFX Effects suite
• 7" colour touchscreen
• 8 Assignable SoftKeys
• Dedicated physical controls for channel processing
16+1 Faders with 6 Layers for 96 assignable Channel Strips
• Motorised faders for sends on faders, GEQ fader flip and mix recall
• 16 Backlit LCD Channel Strip displays
• Chromatic Channel Metering

- Integrated Surface Illumination
- Single/Dual Footswitch Control
- Input channel pairs switchable mono/stereo
- Patchable Insert points
- Input processing – Trim, HPF, Gate, PEQ, Compressor, Delay
- Output processing – Graphic EQ, PEQ, Compressor, Delay
- DEEP Automatic Mic Mixing
- 2 31/61 Band Real Time Analysers
- Quick copy/paste/reset for parameters
- User Permissions to restrict operator access
- 300 Scene memories per show
- Channel Safes, Global and per Scene Recall Filters
- FX, processing and channel Libraries
- SQ-Drive for stereo and multitrack recording/playback direct to USB drive
- USB transfer of Scenes, Libraries, Shows
- 32x32 channel USB streaming to/from Mac/PC
- MIDI via USB or TCP/IP, including DAW control options
- Remote mixing apps for iPad, Android, Mac and PC
- Compatible with ME personal monitoring range

- **LED Wall**

- Pixel Pitch 1.953 mm
- Panel Size (W x H x D) 1000 x 250 x 42 mm
- Panel Diagonal 1,031 mm
- Panel Resolution 512 x 128 pixels
- Pixel Density 262,144 pixels/m^2
- Panel Area 0.25 m^2
- Panel Weight 6.4 kg, 26 kg/m
- Module Size (W x H) 250 x 250 mm
- Modules/Panel (W x H) 4 x 1
- LEDs per Module 16,386
- Power Used (max) 100 Watts/Panel, 400 W/m2
- Power Used (avg) 30 Watts/Panel, 120 W/m2
- Brightness 800 nits (max)
- Viewing Angle 160°/140° (H/V)

- **Orpheo Mikro LX2 8GB**

KEYPAD

Fully configurable

3 programmable keys (yellow, green, red)

Fully backlit

Elastomer

OUTPUT

1 built-in High Quality loudspeaker

2 outputs for Stereo headphones (ideal for peak visiting days/hours)

ACCESSIBILITY

Keypad with raised markers for the visually impaired

Compatible with induction loops (hearing impaired)

Ergonomic design

Lanyard

AUTONOMY & CHARGING

Standard charger / 19'' compatible, can be integrated into existing furniture / Wall-mounted

Available for 24 units

Autonomy: about 18 hours between two full loads

Standby mode after a configurable time of inactivity

Charging time: fully charged in 6 hours (Li-Ion Polymer battery)

COLOURS

Black - other colours available upon request

SYNCHRONISATION & AUTOMATIC TRIGGERING

Infrared, Radio Frequency, NFC (device tracking)

Synchronization with video (SMPTE time code, lip sync...) and with other systems (Show Controller)

PROGRAMMING INTERFACE

User-friendly Orpheo Manager™ Software

OLED DISPLAY

128 x 96 pixel colour screen

Backlighting

ANEX

Standard table

Norme / *Standards*	Descrizione / *Description*
CEI 11-17 Luglio / July 2006	Impianti di produzione, trasmissione e distribuzione di energia elettrica. Linee in cavo *Power transmission and distribution plants. Cable lines*
CEI 20-13 Giugno / June 1992 + Var. 1-2-3-4 IEC 60502 pqa	Cavi con isolamento estruso in gomma per tensioni nominali da 1 a 30 kV *Extruded rubber insulated cables for rated voltages from 1 to 30 kV*
Norma CEI 20-14 (IEC 60502 pqa)	CAVI ISOLATI CON PVC DI QUALITA' R2 CON GRADO D'ISOLAMENTO SUPERIORE A 3 (per sistemi elettrici con tensione nominale da 1 a 20kV) *PVC insulated cables (R2 quality) with insulating degree greater than 3 (for electrical system with nominal voltage between 1 and 20kV)*
CEI 20-19/4 Giugno / June 2006 HD 22.1-22.2-22.3-22.4-22.7-22.8	Cavi isolati con gomma con tensione nominale non superiore a 450/750 V *Rubber-insulated cables for rated voltage up to 450/750 V*
CEI 20-20 Luglio / July 2006 HD21.1-21.2-21.3-21.4-21.5-21.7-21.8-21.9	Cavi isolati con polivinilcloruro con tensione nominale non superiore a 450/750 V *Polyvinylchloride insulated cables for rated voltage up to 450/750 V*
CEI 20-22 Luglio / July 2006 CEI 20-22/3-4 Gennaio / January 2002 EN 60332-3-4 CEI EN 50266-2-4 Gennaio / January 2002	Prove d'incendio su cavi elettrici / Fire tests on power cables
CEI 20-35/1-2 Luglio / July 2006 CEI EN 60332-1-2 Luglio / July 2006	Prova di non propagazione della "amma sul singolo cavo verticale *Testing of not-propagation of %ame for a single vertical cable*
CEI 20-36/4-0 Settembre / September 2007 EI 20-36/5-0 Ottobre / October 2003 CEI EN 50200 Settembre / September 2007 CEI EN 50362 Ottobre / October 2003	Prova di resistenza al fuoco dei cavi elettrici *Fire resistance test on power cable*

CEI 20-37/0 Novembre / November 2002	Prove sui gas emessi durante la combustione dei materiali prelevati dai cavi *Test on gases evolved during combustion of material from cables*
Serie CEI 20-37/3 Febbraio / February 2006	Misura della densità del fumo di cavi che bruciano in condizioni de"nite / Measurement of smoke density of burning cables under de"ned conditions
Serie CEI 20-37/2 Settembre / September 1999 Serie CEI EN 50267/2 Settembre /September1999	Prove sui gas emessi durante la combustione dei materiali prelevati dai cavi *Test on gases evolved during combustion of material from cables*
Serie CEI EN 50268 Febbraio / February 2006 CEI 20-37/4-0 Novembre / November 2006	Misura della densità del fumo di cavi che bruciano in condizioni de”nite *Measurement of smoke density of burning cables under de”ned conditions*

CEI 20-37/4-0 Novembre / November 2006	Determinazione dell’indice di tossicità dei gas emessi *Determination of toxicity index of evolved gases*
CEI 20-37/6 Settembre / September 1887	Parte 6: Misura della densità del fumo emesso dai cavi elettrici sottoposti a combustione in condizioni de”nite.- Metodo dei 300 grammi *Part 6: Measurement of smoke emissions thickness for power cables during combustion under de”ned conditions - 300 gram method*
CEI 20-38/1 Settembre / September 1997	Cavi isolati con gomma non propaganti l’incendio e a basso sviluppo di fumi dei gas tossici e corrosivi; Parte I Tensione nominale Uo/U non superiore a 0,6/1 kV / *Fire retardant cables, with low emission of toxic and corrosive gases, insulated rubber; Part I Rated voltage Uo/U up to 0,6/1 kV*
CEI 20-40 Ottobre 1998 / V1-2004/V2-V2 2004	Guida per l’uso di cavi a bassa tensione *Guide to use of low voltage cables*
CEI 20-45 Giugno / June 2003	Cavi resistenti al fuoco isolati con mescola elastomerica con tensione nominale Uo/U non superiore a 0,6/1 kV / *Fire resistant cables, elastomeric compound insulated with rated voltage Uo/U up to 0,6/1 kV*
CEI 20-67 Gennaio 2001	Guida per l’uso dei cavi 0,6/1 kV *Guide to use of 0,6/1 kV cables*

CEI 20-37/4-0 Novembre / November 2006	Determinazione dell'indice di tossicità dei gas emessi *Determination of toxicity index of evolved gases*
CEI 20-37/6 Settembre / September 1887	Parte 6: Misura della densità del fumo emesso dai cavi elettrici sottoposti a combustione in condizioni de"nite.- Metodo dei 300 grammi *Part 6: Measurement of smoke emissions thickness for power cables during combustion under de"ned conditions - 300 gram method*
CEI 20-38/1 Settembre / September 1997	Cavi isolati con gomma non propaganti l'incendio e a basso sviluppo di fumi dei gas tossici e corrosivi; Parte I Tensione nominale Uo/U non superiore a 0,6/1 kV / *Fire retardant cables, with low emission of toxic and corrosive gases, insulated rubber; Part I Rated voltage Uo/U up to 0,6/1 kV*
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CEI 20-67 Gennaio 2001	Guida per l'uso dei cavi 0,6/1 kV *Guide to use of 0,6/1 kV cables*
CEI 20-91Febbraio / February 2010 CEI 20-91; V1 Ottobre / October 2010	Cavi elettrici con isolamento e guaina elastomerici senza alogeni non propaganti la "amma per applicazioni in impianti fotovoltaici *Fire retardant and halogen free electric cable with elastomeric insulation and sheath for use in photovoltaic systems (PV)*
CEI 20-105 Agosto 2011	Cavi elettrici resistenti al fuoco, non propaganti la fiamma, senza alogeni, con tensione nominale 100/100 V per applicazioni in sistemi fissi automatici di rivelazione e di segnalazione allarme d'incendio *Fire resistant, flame retardant, halogen free cables with rated voltage U0/U 100/100 V for automatic fire detection and fire alarm systems*
HD 620 Gennaio / January 2010	Cavi da distribuzione con isolamento estruso per tensioni nominali da 3,6/6 (7,2) kV a 20,8/36 (42) kV inclusi *Distribution cables with extruded insulation for rated voltages from 3,6/6 (7,2) kV up to and including 20,8/36 (42) kV*
IEC 60502-2 Marzo / March 2005	Cavi energia con isolamento estruso e loro accessori per tensioni nominali da 1 kV (Um = 1,2 kV) a 30 kV (Um = 36 kV) *Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV)*
HD 21-15	Cavi unipolari isolati con mescola termoplastica senza alogeni, per installazioni "sse" *Single core cables, insulated with halogen-free thermoplastic compound, for "xed wiring"*
IEC 60840	Cavi energia con isolamento estruso e loro accessori per tensioni nominali superiori a 36 kV (Um = 42 kV) "no a 150 kV (U max 170 kV) *Power cables with extruded insulation and their accessories for rated voltages above 36 kV (Um = 42 kV) up to 150 kV (Um = 170 kV)*