



Infrastructure External Lighting Brochure

Hinckley DZ3

Electrical Services

June 2023

P22034-WME-XX-XX-TS-E-B001-P2



EST 1928

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Contents

Lighting Layout

Fitting Details – Holophane V Max: VMX.2.LA054.V1.F4L2.W036

Column - finish to be black

Feeder Pillar Cut Out

Cable Calculation

Cable

Earth Pit

Lighting Layout



Statistics					
Description	Symbol	Avg	Max	Min	Min/Avg
Unit 2 Access Road East	+	14 lux	23 lux	6 lux	0.42
Unit 2 Access Road South 10@0.4	+	12 lux	18 lux	5 lux	0.42
Unit 2 Path East	+	9 lux	18 lux	4 lux	0.44
Unit 2 South Path	+	9 lux	19 lux	3 lux	0.33
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Vertical @ Inn @10m	+	0 lux	0 lux	0 lux	N/A
Horizontal spill	+	1 lux	15 lux	0 lux	0.00

DRAWING NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL, STRUCTURAL, AND ALL OTHER RELEVANT INFORMATION DRAWINGS AND DOCUMENTATION.

2. ALL DIMENSIONS ARE IN MILLIMETERS (MM) UNLESS SPECIFICALLY DETAILED WITHIN THE LAYOUT/SUPPORTING DOCUMENTATION.

3. THE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE 18TH EDITION OF THE IET WIRING REGULATIONS (BS 7671:2018) REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

LEGEND

100 DUCT FOR EXTERNAL LIGHTING

DRAW PIT 600x600 MIN INTERNAL OPENING

35W COLUMN MOUNTED ROAD LANTERN Ø8M HOLOPHANE VMX-2.LA054-V1.F4L2.W036

EXTERNAL LIGHTING COLUMN & BOLLARD SLEEVE DETAILS - MET

LOCATIONS OF COLUMNS ARE INDICATIVE ONLY. THE MAIN CONTRACTOR & ARCHITECT SHALL BE RESPONSIBLE FOR CO-ORDINATING THE FINAL LOCATIONS WITH KERB DETAILS ETC

P9
P8
P7
P6
P5
P4
P3
P2
P1

REVISED TO SUIT COMMENTS
REVISED TO SUIT UMC DRAWING
P22034-XXXX-SI-DR-9995 REV P1
CIRCUITS ADDED
REVISED TO SUIT COMMENTS
REVISED TO SUIT COMMENTS
FITTING REFERENCES ADDED
EXISTING COLUMN ADDED
REVISED TO SUIT COMMENTS
PRELIMINARY ISSUE

07/06/2023
22/05/2023
22/05/2023
16/05/2023
16/05/2023
11/05/2023
11/04/2023
13/02/2023
07/02/2023

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PROJECT

Winvic

Hinckley DZ3
Infrastructure

CLIENT

winvic

TITLE

External Landlords Roadway
Lighting Layout
As Proposed

DRAWN
TM

CHECKED
MH

DATE
18P 2023

SCALE
1:250@A0

DWG NO.
P22034-WME-XX-XX-DR-E-0505

REV
P9

Fitting Details

Holophane V Max: VMX.2.LA054.V1.F4L2.W036



AcuityBrands.
Expanding the boundaries of lighting™



V·M·A·X™

ULTIMATE
FLEXIBILITY

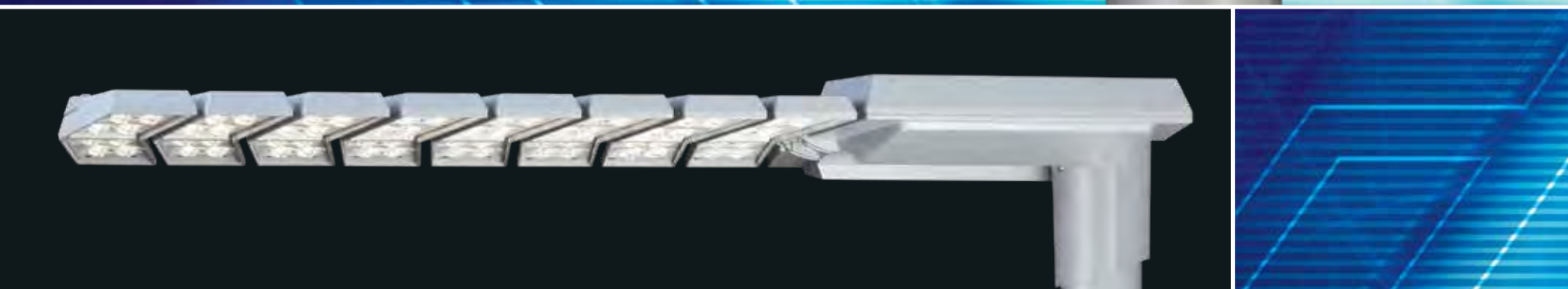
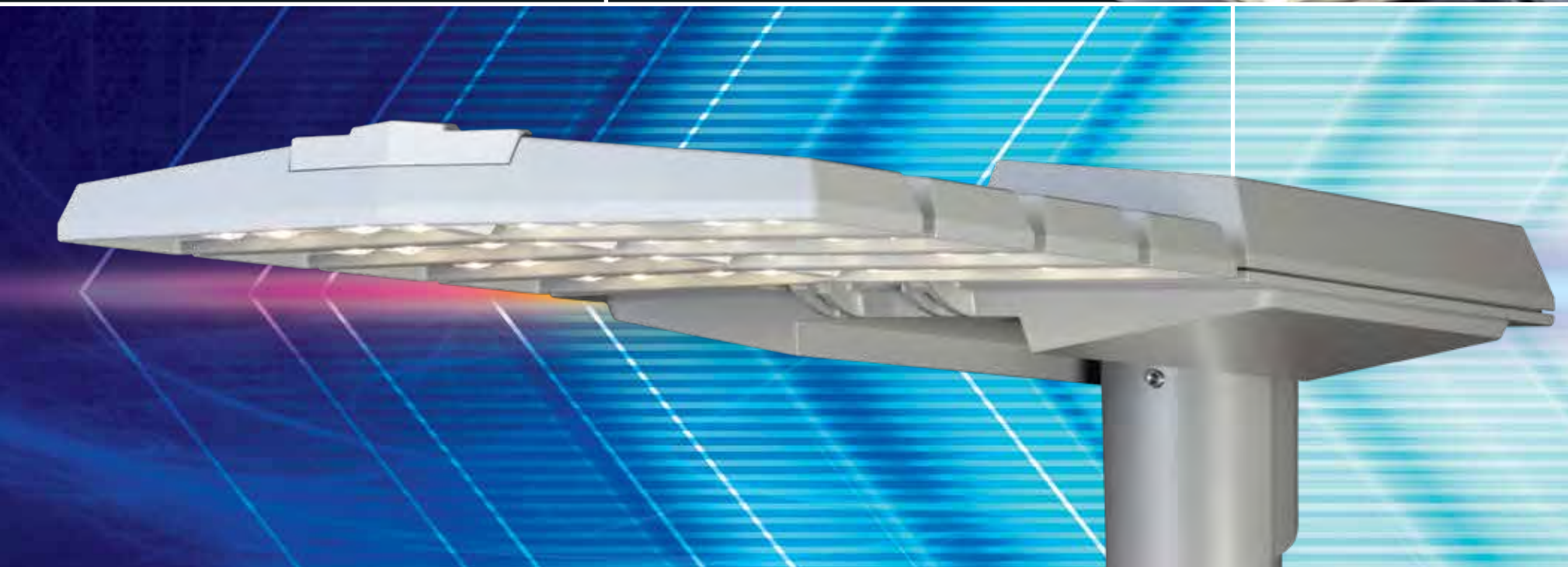
LED



HEA
Highway Electrical Association
Award Winner 2014

PATENTED DESIGN
REGISTERED EUROPEAN DESIGN

V-MAX™



Ultimate flexibility

V-MAX™ is a landmark LED luminaire characterised by its efficiency and revolutionary form.

With a pioneering modular design the luminaire has been engineered with an approach that subdivides the luminaire system creating a fully scalable, maintainable and upgradeable luminaire that can be used for a range of street lighting applications.

The product design process at Holophane focuses on making the most efficient and modular technology a reality. This aspiration has resulted in developments with a lasting impact. In other words, our work ensures that we are delivering the latest technologies with class leading quality. V-MAX™ is one such development - with its low profile styling, revolutionary modular LED chevron design and customised optics that allow for maximum column spacing, lighting and uniformity.

optics / light source

- > Available with a variety of optical packages for various street lighting standards
- > Lumen packages ranging from 1,000 to 37,000
- > 3000°K, 4000°K and amber colour temperature
- > 100,000 hours life (L90B10) at 15°C tq
- > -10° to +20° tilting*
- > 70 CRI

approvals



IP 66 light engines (IEC60529)
IP 66 gear compartment (IEC60529)

Ta -40°C to +50°C

IK07 - Standard product. IK10 available.

*Maximum values and restrictions apply on mounting option selected

For further information please visit the Holophane website
www.holophane.co.uk



PATENTED DESIGN
REGISTERED EUROPEAN DESIGN

V·MAX

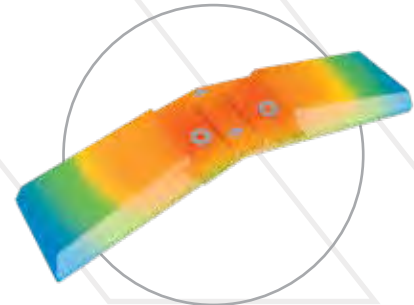
modular design
optical performance
thermal excellence



Thermal management

The revolutionary modular design of V-MAX™ has been created to maximise heat dissipation from the critical electronic components and extends the complete life of the luminaire. Heat generated by the LED Chevron causes air to pass between the V-MAX™ air channel. This rising ambient air draws in more cooler and denser air from under the luminaire and draws away the heat created by the LEDs thus using natural convection.

V-MAX™ utilises all three heat transfer principles of conduction, convection and radiation to ensure that the high powered LEDs mounted to the aluminium backed PCB and electronic drivers are thermally managed well within their limit to maximise system life. This provides market leading light output whilst maintaining a high product life.



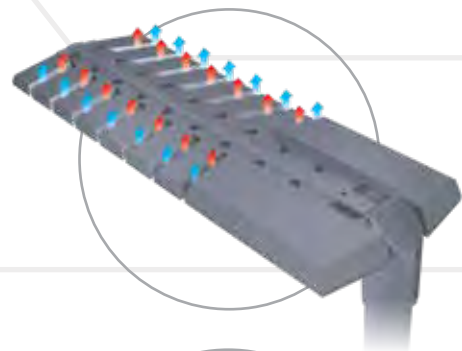
CONDUCTION
FROM THE LEDS AND DRIVER ONTO
THE LED CHEVRON AND RIBBED
GEAR HOUSING RESPECTIVELY.



CONVECTION
FROM LED CHEVRON AND THE AIR
CHANNEL BETWEEN EACH CHEVRON.



RADIATION
HEAT ENERGY FROM THE DRIVER
AND LED CHEVRON IS EMITTED FROM
THE CASTING IN ALL DIRECTIONS.



THERMAL EXCELLENCE

specification

The luminaire consists of a die cast LM6 aluminium housing ((EN AC-44100) (AL.Si12)) which is sealed to IP66 with a close cell gasket and M5 stainless steel fastener that also allows access to the gear cover for electrical termination. Metal core LED boards are mounted directly to the die cast LM6 aluminium ((EN AC-44100)(AL.Si12)) chevron to aid heat dissipation. Each IP66 LED chevron is connected to the main housing via gasketed (co-molded to PMMA 825T with TPE Versaflex OM 9-802CL) plug and play connectors and extruded aluminium alloy 6063 (AlMg0.5Si-T6) spine which will vary in length based on the number of LED chevrons. The 2x2 array of PMMA LED lenses are fused to a PMMA 825T overmold to ensure an IP66 seal is maintained. The luminaire is suitable for post mounting (60/76mm) and side entry (34/42/60mm) with the ability to adjust onsite by -10° to +20° tilt*.

3000K or warmer must be selected for IDA dark sky certification.

*Restrictions apply on selected mounting options



V-MAX™ Dual cable entry to controls and power - with protective cover (not shown).
Note: suitable for cable diameters from 6-10mm.

features and benefits

Revolutionary Design

- > Unique ultra slim design which allows 1 to 8 LED chevrons to be assembled to the gear chamber dependent on the required lighting performance thus ensuring visual and performance consistency for a variety of street lighting schemes.
- > Plug and play LED chevrons that can be upgraded easily in situ, as LED efficiency improves.
- > Suitable for post top or side entry mounting without the requirement for an additional bracket.

Enhanced Thermal Management

- > Designed to ensure that the LED chevrons are mounted to the aluminium spine with an air channel between each chevron to allow convection.
- > Each LED chevron has been designed to act as its own independent heatsink - thus conducting and radiating heat away from the critical LED components.



V-MAX™ Hinged gear housing access.

High Efficiency LED Technology

- > High quality, highly efficient, LEDs used in conjunction with the latest LED drivers ensures that superior lumen per watts and a long system life are achieved.

Fully Controllable Luminaire

- > Developed to offer standalone flexibility for constant lumen output, variable lighting levels and part time regimes.
- > Available with DALI and SR controls options.



axora



V-MAX™ LED Chevron.

modularity

scaleable
maintainable
upgradeable

The V-MAX™ has a modular design that has been developed with an approach that subdivides the luminaire system into individual modules (LED Chevrons) that are fully scalable, maintainable and upgradeable.

Scaleable

V-MAX™ is a fully scaleable luminaire that has been developed around one gear capsule that has the capability to be used with 1 to 8 LED chevrons. This creates a luminaire that ensures visual and performance consistency with a lumen package from 1,000 to 37,000 thus enabling it to be used for all types of residential roads, pedestrian areas, main roads and trunk roads.

Maintainable

Maintainability is the ease with which a product can be maintained in order to isolate defects, correct defects and replace faulty components without having to replace components that are not affected. V-MAX™ has been designed to deliver all of these benefits to the end user - throughout the lifecycle of the product. With its 'plug and play' LED chevrons which can be replaced in-situ V-MAX™ is the complete maintainable LED streetlighting solution.



MODULAR DESIGN

modularity

Upgradeable

The modularity of V-MAX™ makes this LED luminaire future proof. The LED Chevrons can be upgraded easily in situ - not only making the luminaire fully maintainable but completely upgradeable - as LED efficiency improves so can your luminaire.



Step 1
Undo the LED chevron from the luminaire spine



Step 2
Disconnect the old LED chevron using the 'plug & play' connectors



Step 3
Remove the old LED chevron



Step 4
Detached LED chevron



Step 5
Plug in new LED chevron using existing 'plug & play' connectors on the luminaire spine



Step 6
Mount new LED chevron to the luminaire spine



optical performance

V-MAX™

The unique design of the V-MAX™ LED chevrons utilises efficient LEDs with a 2x2 optical system which works seamlessly to deliver the desired street lighting performance for all types of environments from pedestrian areas to trunk roads.

This high performance 2x2 optical system can be optimised for all lighting classes and geometries. This lens system delivers many distributions and is recessed within the LED chevron which aids in the prevention of light pollution.



OPTICAL
PERFORMANCE

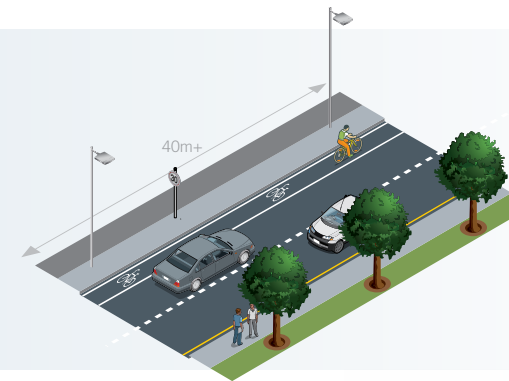
optical performance

V·M·A·X™

typical spacings

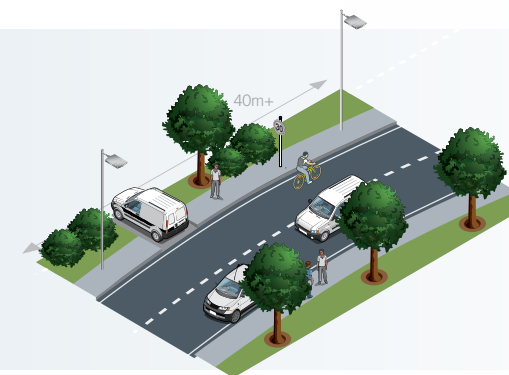
pedestrian area P4

- > Luminaire on a 6m column with 0.5m outreach.
- > Column mounted 2m from the edge of the road.
- > Total road width of 10m.
- > Footpath of 2m each side.



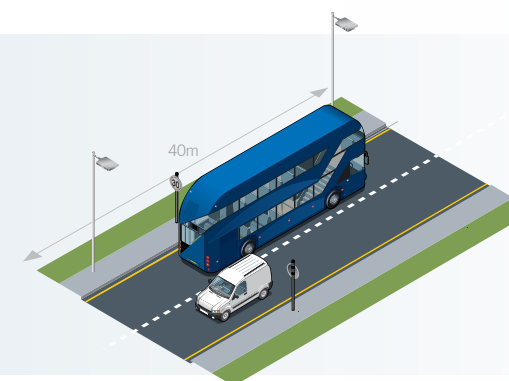
residential road P2

- > Luminaire on a 8m column with 0.5m outreach.
- > Column mounted 3.5m from the edge of the road.
- > Total road width of 12m.
- > Footpath of 3.5m each side.



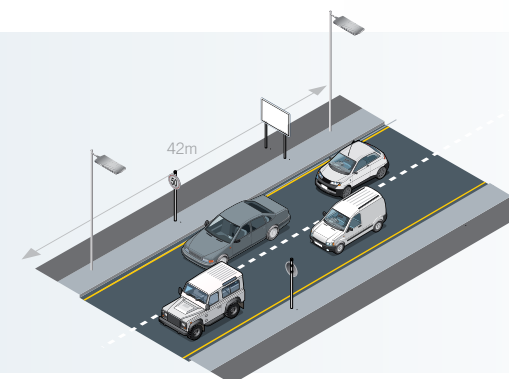
main roads M4

- > Luminaire on a 8m column with 0.5m outreach.
- > Column mounted 1.50m from the edge of the road.
- > Road width of 7.5m (two lanes 3.75m each).



trunk roads M2

- > Luminaire on a 12m column with 0.5m outreach
- > Column mounted 1.5m from the edge of the road.
- > Road width of 7.5m (two lanes 3.75m each).





V-MAX™ 0° tilt



V-MAX™ 5° tilt

applications

BS 5489:2012
BSEN13201

Residential lighting
Pedestrian areas
Main roads
Trunk roads
Dual carriageways
Car parks

weight (with control gear)

VMX V1 version	6kg
VMX V2 version	8kg
VMX V3 version	9kg
VMX V4 version	10kg
VMX V5 version	12kg
VMX V6 version	14kg
VMX V7 version	15kg
VMX V8 version	17kg

TA

-40°C to 50°C

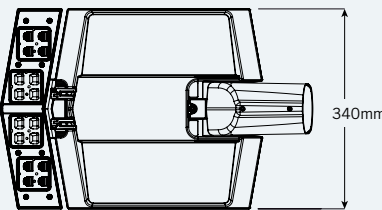
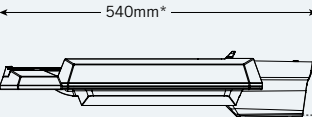
windage (effective projected area)

VMX V1 version	0.034m ²
VMX V2 version	0.037m ²
VMX V3 version	0.039m ²
VMX V4 version	0.042m ²
VMX V5 version	0.044m ²
VMX V6 version	0.046m ²
VMX V7 version	0.049m ²
VMX V8 version	0.051m ²

Side Mounting

V1 version

.SE1 Ø 34mm / 42mm**
.SE2 Ø 42mm / 60mm
.SE3 Ø 34mm / 42mm only



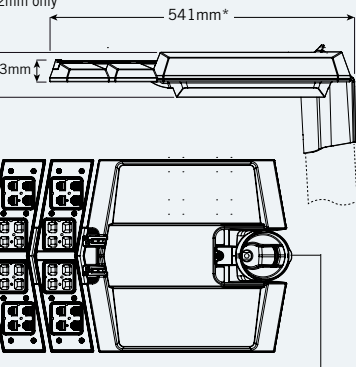
* This dimension is applicable to .SE1 / .PT1 only
** .SE1 (60mm if internal reducer is removed)

Post Mounting

V2 version



dimensions in mm



.PT3 Ø 34mm / 42mm only
.PT2 Ø 42mm / 60mm only
.PT1 Ø 60mm / 76mm only

tilting range (Please refer to installation sheet for details of tilting range)

PT1 (76mm / 60mm spigot)

Standard Tilt	Additional Tilt**	Combined tilts	
Position A: 0°	Maximum (1): +10°	Position A: 0°	Position B: +5°
Position B: +5°	Minimum (2): -7.5°	Position A1: +10°	Position B1: +15°
		Position A2: -7.5°	Position B2: -2.5°

PT2 (60mm / 42mm spigot)

Standard Tilt	Additional Tilt †	Combined tilts	
Position A: 0°	Maximum (1): +15°	Position A: 0°	Position B: +5°
Position B: +5°	Minimum (2): -7.5°	Position A1: +15°	Position B1: +20°
		Position A2: -7.5°	Position B2: -2.5°

SE1 (60mm spigot)

Standard Tilt	Additional Tilt**	Combined tilts		
Position A: 0°	Maximum (1): +10°	Position A: 0°	Position B: +2.5°	Position C: -2.5°
Position B: +2.5°	Minimum (2): -7.5°	Position A1: +10°	Position B1: +12.5°	Position C1: +7.5°
Position C: -2.5°		Position A2: -7.5°	Position B2: -5°	Position C2: -10°

SE2 (60mm / 42mm spigot)

Standard Tilt	Additional Tilt †	Combined tilts		
Position A: 0°	Maximum (1): +15°	Position A: 0°	Position B: +2.5°	Position C: -2.5°
Position B: +2.5°	Minimum (2): -7.5°	Position A1: +15°	Position B1: +17.5°	Position C1: +12.5°
Position C: -2.5°		Position A2: -7.5°	Position B2: -5°	Position C2: -10°

SE3 (42mm / 34mm spigot)

Standard Tilt	Additional Tilt ‡	Combined tilts		
Position A: 0°	Maximum (1): +9°	Position A: 0°	Position B: +2.5°	Position C: -2.5°
Position B: +2.5°	Minimum (2): -3°	Position A1: +9°	Position B1: +11.5°	Position C1: +6.5°
Position C: -2.5°		Position A2: -3°	Position B2: -0.5°	Position C2: -5.5°

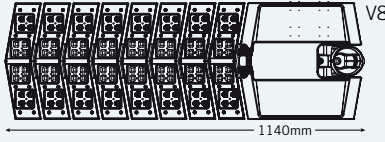
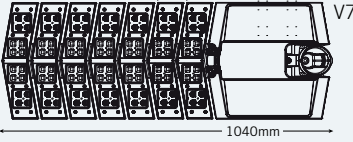
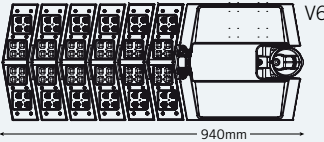
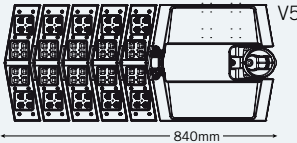
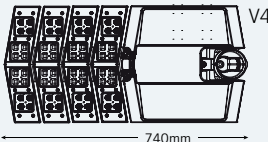
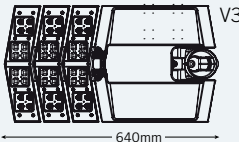
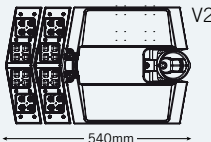
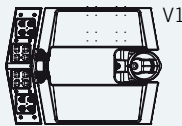
*** Spigot must be 60mm Ø and at least 130mm in length
† Spigot must be 42mm Ø and at least 130mm in length
‡ Spigot must be 34mm Ø and at least 130mm in length

The V-Max luminaire is designed when post top mounted (.PT1) to be suitable for a column main shaft diameter of no greater than 89mm. The column mounting spigot should be no greater than 76mm diameter with a spigot length of 135mm minimum. All other configurations please refer to Holophane representative for advice.



dimensions in mm

Post top



Note: The specifications of the Holophane luminaire represents typical values. All descriptions, illustrations, drawings and specifications in the Holophane catalogue and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.



Code	V-Max Luminaire										
Code	Series (required)										
	Series 2										
Code	Lamp Type (required)										Replace X with 3 for 3000K; 4 for 4000K or A for Amber (amber only available up to 24,000 lumens)
.LR1X	LED light engine producing c.1000 lm with a nominal 3000K or 4000K colour temperature										
.LR2X	LED light engine producing c.2000 lm with a nominal 3000K or 4000K colour temperature										
.LR3X	LED light engine producing c.3000 lm with a nominal 3000K or 4000K colour temperature										
.LA02X to	LED light engine producing c.2000 lm with a nominal 3000K, 4000K or amber colour temperature Options between 2,000 and 37,000 lmns are available in 1000 lumen increments										
.LA37X	LED light engine producing c.37000 lm with a nominal 3000K, 4000K or amber colour temperature										
Code	Operating package (required)										ordering details - luminaire
.V1	1 LED chevron										
.V2	2 LED chevrons										
.V3	3 LED chevrons										
.V4	4 LED chevrons										
.V5	5 LED chevrons										
.V6	6 LED chevrons										
.V7	7 LED chevrons										
.V8	8 LED chevrons										
Code	Optic (required)										
.X2L2	X2L2 optical setting**										
.X2L3	X2L3 optical setting**										
.L2Q1	L2Q1 optical setting										
.L3Q1	L3Q1 optical setting										
.F4L2	F4L2 optical setting**										
.F4L4	F4L4 optical setting**										
.L2L3	L2L3 optical setting										
.L2L4	L2L4 optical setting										
.F4Q1	F4Q1 optical setting**										
.D4D4	D4D4 optical setting										
Code	Fixing method (required)										
.PT1	Post top 76/60mm only										
.PT2	Post top 42/60mm only										
.PT3	Post top 34/42mm only										
.SE1	34/42mm side entry (with internal reducer) - 60mm side entry when internal reducer is removed										
.SE2	42/60mm side entry only										
.SE3	34/42mm side entry only										
Code	Colour (required)										
.C3	Green (RAL6013)										
.C4	Graphite (RAL7011)										
.C6	Smooth Grey (RAL7035)										
.C7	Black (RAL 9005)										
.C9	Metallic Silver (RAL9006)										
.RAL****	RAL Colour (Customer choice)										
Code	Electrical Class (option)										
.CII	Class II*										
Code	Photocell† (option)										suitable photocell/node supplied by others
.T5***	Complete with 5-pin dimming NEMA ANSI C136.41 socket without locking top										
.T5T***	Complete with 5-pin dimming NEMA ANSI C136.41 socket with weather proof locking top										
.T7***	Complete with 7-pin dimming NEMA ANSI C136.41 socket without locking top										
.T7T***	Complete with 7-pin dimming NEMA ANSI C136.41 socket with weather proof locking top										
.T1	Complete with NEMA socket (to accept standard NEMA photocell)										
.TSZ ⁺	Complete with miniature 70 lux factory fitted photocell (Zodion SS12)										
.TSZA ⁺	Complete with miniature 55 lux factory fitted photocell (Zodion SS12)										
.TSZB ⁺	Complete with miniature 35 lux factory fitted photocell (Zodion SS12)										
.TZ01	Complete with 4-Pin Zhaga Socket - Top (suitable photocell/node supplied by others) with weather proof locking top.‡										
.TZ02	Complete with 4-Pin Zhaga Socket – Bottom (suitable node/presence detector supplied by others) with weather proof locking top.‡										
Code	Paint finish (option)										
.C	Enhanced paint finish										
Code	Dimming Outputs (option)										
.LRD	DALI electronic control gear										
.LRT750006	pre-set to dim to 75% between 12am to 6am										
.LRT502206	pre-set to dim to 50% between 10pm to 6am										
.LRT502006	pre-set to dim to 50% between 8pm to 6am										
.LRT502207	pre-set to dim to 50% between 10pm to 7am										
.LRT500006	pre-set to dim to 50% between 12am to 6am										
.LRT*****	Customer specified pre-set dimming										
Code	Control Gear (option) Over the life of the luminaire										
.CL7	Programmed to deliver 70%										
.CL8	Programmed to deliver 80%										
.CL9	Programmed to deliver 90%										
Code	Auxiliary Circuits (option)										
.CPROTEC	With 10kV/10kA surge protection										
Code	Cable Entry (option) (max length catered for)										
.FL431 to	4 metres of 1.5mm² 3 core single cable “flex”										
.FL1431	14 metres of 1.5mm² 3 core single cable “flex”										
.FL432 to	4 metres of 1.5mm² 3 core double cable “flex”										
.FL1432	14 metres of 1.5mm² 3 core double cable “flex”										
.FL451 to	4 metres of 1.5mm² 5 core single cable “flex”										
.FL1451	14 metres of 1.5mm² 5 core single cable “flex”										
.FL4312 to	4 metres of 2.5mm² 3 core single cable “flex”										
.FL14312	14 metres of 2.5mm² 3 core single cable “flex”										
.FL4322 to	4 metres of 2.5mm² 3 core double cable “flex”										
.FL14322	14 metres of 2.5mm² 3 core double cable “flex”										
Code	IK Rating (option)										
.PC	Polycarbonate Lens										
Example	VMX	.2	.LA234	.V5	.L2Q1	.PT1	.C9				

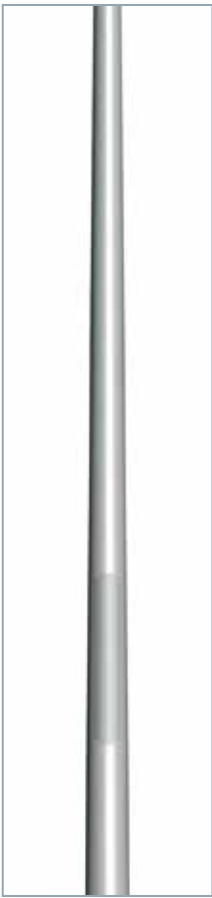
† Not available in Class II. *Not available with CPROTEC. **Restrictions apply on lumen packages. ***Must be configured with .LRD. +Not suitable for CII. ‡ Not available with .LRD
Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

Where the V-Max luminaire is installed in a situation subject to updraft/vibration caused by high speed HGV traffic, then a safety tether accessory (available from Holophane separately and at extra cost) should be specified and deployed.

To find out more please visit www.holophane.co.uk

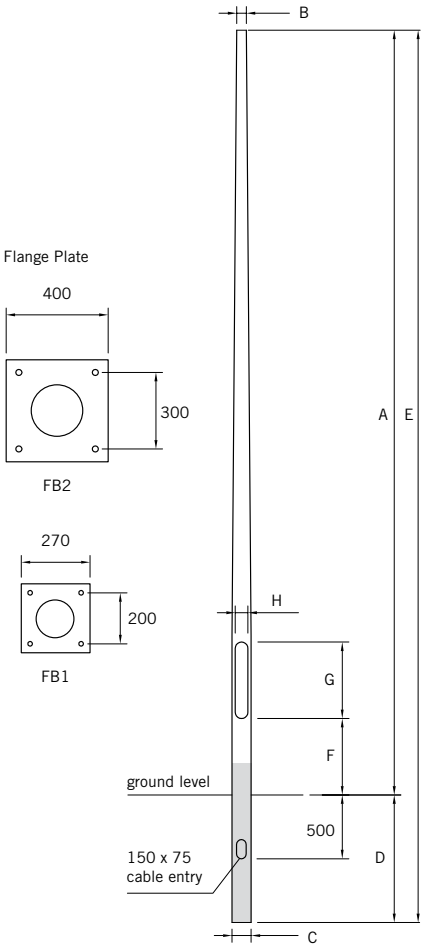
Column - finish to be black

standard columns
conical aluminium



Holophane products
that are suitable

- aeris large
- aeris medium
- denver pole
- petxina
- QSM
- QSS
- seattle flood
- signature II
- urbandeco
- vista
- vista junior



Height (m)	Nominal Height	Top Diameter	Root End Diameter	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Weight kg*	Bending Moment Nm
drawing ref	A	B	C	D	E	F	G	H		
3m std	3000	75	150	800	3800	600	600	100	15	5340
4m std	4000	75	150	800	4800	600	600	100	18	5070
5m std	5000	75	150	800	5800	600	600	100	21	4940
6m std	6000	75	150	1000	7000	600	600	100	25	4870
8m std	8000	75	165	1200	9200	600	600	100	38	6900
8m hd	8000	75	180	1200	9200	600	600	100	43	9120
10m std	10000	75	200	1500	11500	600	600	100	72	16190

* Exclusion TBC

3-6m Poles	Flange Plate FB1	Bolts	M18 x 330
8-10m Poles	Flange Plate FB2	Bolts	M18 x 330

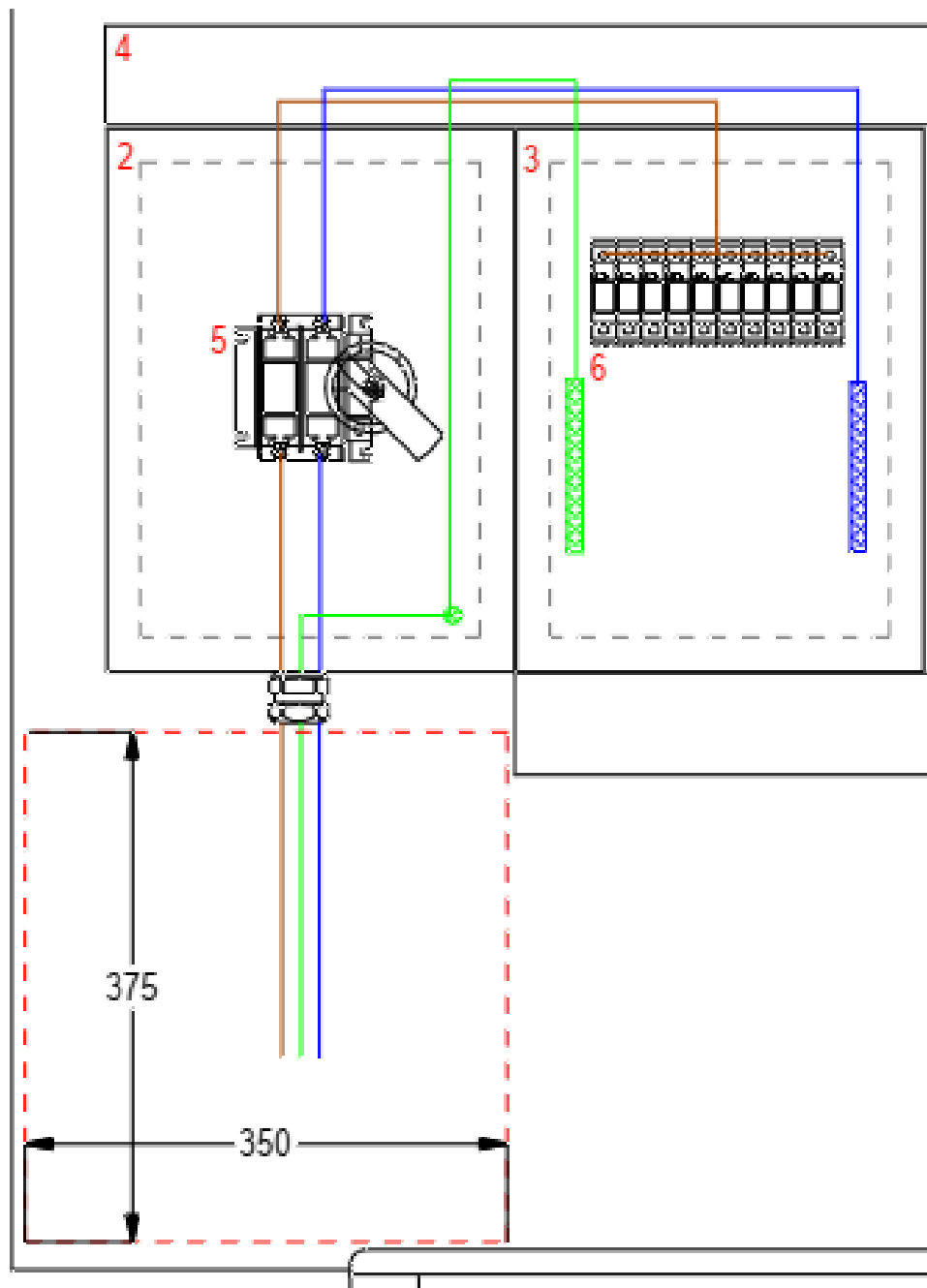
Flange Plate and J-Bolt information will be confirmed at time of order due to the necessity in ensuring the correct plate and J-Bolts are supplied.

std = Standard hd = Heavy Duty

Column type to be confirmed at time of order as this is based on luminaire weight, windage and geographical location.

Feeder Pillar Cut Out

Feeder Pillar Cut Out



Cable Calculation

Cable Calculation Report

Project Reference: Hinckley DZ3
Document No: Adoptable Road
Created By: tmeredith

Job Number: E-7393
Created On: 15/05/2023
Revised By:

Reg Auth: BS7671:2018+A2
Rev Date:
Revision:

Calculated in accordance with BS 7671:2018+A2:2022

Active Source: Matrix FP

Circuit

Id No.: Column Ltg E01 to E05
Connected From: FP1/1/L1
Load Type: Lighting, radial circuits

Comments:

Name:
To: Column Ltg E01 to E05

Design Current Ib (A): 1.0
Length to First Fitting (m): 10.00

Protective Device

[a] = Auto, [f] = Fixed, [m] = Max.

Overcurrent Protection: Schneider, Acti9 MCB, iC60H Type B, BS EN60947-2
Rating In (A): 10 [f]

Overload Setting Ir (A): N/A
AFDD: N/A

Conductors

[a] = Auto, [f] = Fixed, [d] = Double

Multicore 90°C thermosetting armoured *RUN TO 70°C Cu Table 4D4 **1 x 1 x 3c** **Size (mm²):** 4.0 [f]
Euro Class: Undefined **Length (m):** 150 **Max Length for Volt Drop(m):** 1680.50
Neutral: 4.0 mm² [a]
70 - In conduit or ducting in the ground

Rating Factors

[u] = User Defined

Ground Temperature (°C) = 20.0 **Ctg** = 1.00 [BS 7671:2018+A2:2022, Table 4B2] **Cable spacing (m)** = 0.25 **Cgg** = 0.80
Circuits In Group = 2 [BS 7671:2018+A2:2022, Table 4C3] **Depth of Lay (m)** = 0.6 **Cd** = 1.01
Thermal Resistivity = 2 **Cs** = 1.050
3rd Harmonics (%) = 0.00 **Ch** = 1.00
Buried Circuit **Cc** = 0.9 [Appendix 4 5.1.1 (iii) b]

Cable sizing (A)

Sized For: Phase Current Carrying Capacity

Auto-sized for current-carrying capacity and voltage drop limits.

Design Current Ib = 1.0 **Voltage drop limit** = 7.51 V (BS 7671:2018+A2:2022 App. 4)
Device Rating In = 10 **Overload Setting Ir** N/A **[Ir > Ib]**
Min. Cable Capacity Iz = 10.5 **[It > Iz]**
Actual Cable Rating It = 37.0

Load Current and Voltage Drop	L1	L2	L3	Neutral
Design Current Ib (A/PF)	1.0 / 0.95	0.0 / 0.00	0.0 / 0.00	1.0
3rd Harmonic Current (A)	0.0	0.0	0.0	0.0
Voltage Drop - This circuit (V/%)	0.76 / 0.33	0.00 / 0.00	0.00 / 0.00	
Voltage Drop - From Source (V/%)	0.76 / 0.33	0.00 / 0.00	0.00 / 0.00	

Earth Fault

Circuit Protective Conductor (mm²)

Arm 21 + Int 4 [a]

[a] = Auto, [f] = Fixed

Earth Fault Loop Impedance (Ω)	Ze 0.13000	Z1 0.82500	Z2 0.52731	Zs 1.43449	Max. Zs 4.57083 *	Earth Fault Current (kA) 0.15
Disconnection time (s)	From characteristic : 0.01 * Maximum for circuit [a]: 0.40					
Circuit Protective Conductor (mm²)	Arm 21 + Int 4 [a]					
CPC Adiabatic check (mm²)	CPC Section = Arm 8.4 + Int 4 Total = 12.4 Min. Section = 0.13					

Note: Earth Fault Current and Max Zs have been factored by Cmin

*From OCPD characteristic

Phase Fault

Phase Fault Current Max./Min. (kA)	Source End: 10.000 / 10.000	Load End: 0.166 / 0.139
Protective Device Breaking Capacity (kA)	Icu: 15	Ics: 7.5
Adiabatic Check:	CPD Energy Let-through (A²s): 192.63	Adiabatic Limit k²S² (A²s): 211.60 x 10³

Cable Calculation Report

Project Reference: Hinckley DZ3
Document No: Adoptable Road
Created By: tmeredith

Job Number: E-7393
Created On: 15/05/2023
Revised By:

Reg Auth: BS7671:2018+A2
Rev Date:
Revision:

Calculated in accordance with BS 7671:2018+A2:2022

Active Source: Matrix FP

Circuit

Id No.: Column Ltg E06 to E10
Connected From: FP1/1/L2
Load Type: Lighting, radial circuits

Comments:

Name:
To: Column Ltg E06 to E10

Design Current Ib (A): 1.0
Length to First Fitting (m): 35.00

Protective Device

[a] = Auto, [f] = Fixed, [m] = Max.

Overcurrent Protection: Schneider, Acti9 MCB, iC60H Type B, BS EN60947-2
Rating In (A): 10 [f]

Overload Setting Ir (A): N/A
AFDD: N/A

Conductors

[a] = Auto, [f] = Fixed, [d] = Double

Multicore 90°C thermosetting armoured *RUN TO 70°C Cu Table 4D4 **1 x 1 x 3c** **Size (mm²):** 4.0 [f]
Euro Class: Undefined **Length (m):** 165 **Max Length for Volt Drop(m):** 1655.50
Neutral: 4.0 mm² [a]
70 - In conduit or ducting in the ground

Rating Factors

[u] = User Defined

Ground Temperature (°C) = 20.0 **Ctg** = 1.00 [BS 7671:2018+A2:2022, Table 4B2] **Cable spacing (m)** = 0.25 **Cgg** = 0.80
Circuits In Group = 2 [BS 7671:2018+A2:2022, Table 4C3] **Depth of Lay (m)** = 0.6 **Cd** = 1.01
Thermal Resistivity = 2 **Cs** = 1.050
3rd Harmonics (%) = 0.00 **Ch** = 1.00
Buried Circuit **Cc** = 0.9 [Appendix 4 5.1.1 (iii) b]

Cable sizing (A)

Sized For: Phase Current Carrying Capacity

Auto-sized for current-carrying capacity and voltage drop limits.

Design Current Ib = 1.0 **Voltage drop limit** = 7.68 V (BS 7671:2018+A2:2022 App. 4)
Device Rating In = 10 **Overload Setting Ir** N/A **[Ir > Ib]**
Min. Cable Capacity Iz = 10.5 **[It > Iz]**
Actual Cable Rating It = 37.0

Load Current and Voltage Drop	L1	L2	L3	Neutral
Design Current Ib (A/PF)	0.0 / 0.00	1.0 / 0.95	0.0 / 0.00	1.0
3rd Harmonic Current (A)	0.0	0.0	0.0	0.0
Voltage Drop - This circuit (V/%)	0.00 / 0.00	0.96 / 0.41	0.00 / 0.00	
Voltage Drop - From Source (V/%)	0.00 / 0.00	0.96 / 0.41	0.00 / 0.00	

Earth Fault

Circuit Protective Conductor (mm²)

Arm 21 + Int 4 [a]

[a] = Auto, [f] = Fixed

Earth Fault Loop Impedance (Ω)	Ze 0.13000	Z1 0.90750	Z2 0.58005	Zs 1.56940	Max. Zs 4.57083 *	Earth Fault Current (kA) 0.14
Disconnection time (s)	From characteristic : 0.01 * Maximum for circuit [a]: 0.40					
Circuit Protective Conductor (mm²)	Arm 21 + Int 4 [a]					
CPC Adiabatic check (mm²)	CPC Section = Arm 8.4 + Int 4 Total = 12.4 Min. Section = 0.12					

Note: Earth Fault Current and Max Zs have been factored by Cmin

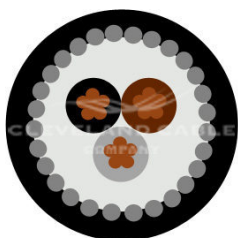
*From OCPD characteristic

Phase Fault

Phase Fault Current Max./Min. (kA)	Source End: 10.000 / 10.000	Load End: 0.151 / 0.126
Protective Device Breaking Capacity (kA)	Icu: 15	Ics: 7.5
Adiabatic Check:	CPD Energy Let-through (A²s): 159.44	Adiabatic Limit k²S² (A²s): 211.60 x 10³

Cable

BS6724 LSZH MULTICORE MAINS & CONTROL (1.5 - 16MM)



APPLICATION

Used in power networks, indoor, outdoor, underground. Can be used in cable ducting for installation where fire, smoke emissions and toxic fumes create a potential threat to life and equipment.

CABLE STANDARDS

BS6724, Acid gas emission to BS EN 50267 (IEC 60754-1)

Smoke emission to BS EN 50268 (IEC 61034)

Flame propagation: IEC 60332-1, IEC60332-3, BS EN 50265, Category C; BS EN 50266

BASEC Approved

CONSTRUCTION

Conductor: Plain Annealed Stranded Copper Conductors

Insulation: Cross Link Polyethylene (XLPE)

Bedding: LSZH

Armouring: Galvanised Steel Wire Armour

Sheath: Low Smoke and Zero Halogen

Sheath Colour: Black

CHARACTERISTICS

Voltage Rating: 600/1000 Volts

Temperature Limits: -25°C to +90°C

Minimum Bending Radius: As per cable manufacturer datasheet

CORE IDENTIFICATION

2 Core: Brown Blue

3 Core: Brown Black Grey

3 Core: Brown Blue G/Y (up to 35mm²)

4 Core: Brown Black Grey Blue

5 Core and above - up to 6mm² 8 White**

2, 3, 4 or 5 Core 1.5 - 2.5mm² White

Also available as: Brown Black Grey Blue G/Y

Should not be installed at temperatures below 0°C or above +40°C

LSF BS6724 CABLE - DIMENSIONS

CCC CODE	CONDUCTOR SIZE (MM²)	STRANDING (MM)	NO OF CORES	WEIGHT (Kg/Km)	OVERALL DIAMETER (MM)	GLAND SIZE (MM) ALI (MM)	CLEAT SIZE
LSF2X1/5	1.5	7/0.53	2	260	11.00	20/16	0.5
LSF3X1/5**	1.5	7/0.53	3	295	11.20	20/16	0.5
LSF4X1/5	1.5	7/0.53	4	350	12.50	20S	0.5
LSF5X1/5	1.5	7/0.53	5	362	12.90	20S	0.6
LSF7X1/5	1.5	7/0.53	7	398	13.70	20S	0.6
LSF10X1/5	1.5	7/0.53	10	650	18.00	20	0.8
LSF12X1/5	1.5	7/0.53	12	680	18.00	20	0.8
LSF19X1/5	1.5	7/0.53	19	885	20.60	25	0.9
LSF27X1/5	1.5	7/0.53	27	1310	25.10	32	1.0
LSF37X1/5	1.5	7/0.53	37	1590	27.50	32	1.1
LSF48X1/5	1.5	7/0.53	48	1958	31.00	32	1.4
LSF2X2/5	1.5	7/0.53	2	270	12.20	20S	0.5
LSF3X2/5**	2.5	7/0.67	3	360	12.80	20S	0.6
LSF4X2/5	2.5	7/0.67	4	410	13.50	20S	0.6
LSF5X2/5	2.5	7/0.67	5	435	14.70	20	0.6
LSF7X2/5	2.5	7/0.67	7	520	15.60	20	0.7
LSF10X2/5	2.5	7/0.67	10	250	20.00	25	0.8
LSF12X2/5	2.5	7/0.67	12	905	21.00	25	0.9
LSF19X2/5	2.5	7/0.67	19	1360	25.00	32	1.0
LSF27X2/5	2.5	7/0.67	27	1760	30.00	32	1.2
LSF37X2/5	2.5	7/0.67	37	2185	33.00	40	1.4
LSF48X2/5	2.5	7/0.67	48	3003	37.30	40	1.6
LSF2X4	4	7/0.85	2	381	13.10	20S	0.6
LSF3X4**	4	7/0.85	3	435	13.70	20S	0.6
LSF4X4	4	7/0.85	4	495	14.90	20	0.6
LSF5X4	4	7/0.85	5	583	16.35	20	0.7
LSF7X4	4	7/0.85	7	760	18.20	20	0.8
LSF12X4	4	7/0.85	12	1266	24.24	25	1.0
LSF19X4	4	7/0.85	19	1701	27.61	32	1.2
LSF27X4	4	7/0.85	27	2347	32.30	40	1.4
LSF2X6	6	7/1.04	2	405	14.10	20	0.6
LSF3X6**	6	7/1.04	3	490	14.80	20	0.6
LSF4X6	6	7/1.04	4	670	17.30	20	0.7
LSF5X6	6	7/1.04	5	823	18.39	20	0.8
LSF7X6	6	7/1.04	7	1100	21.90	25	0.9
LSF2X10	10	7/1.35	2	600	16.10	20	0.7
LSF3X10	10	7/1.35	3	750	17.90	20	0.8
LSF4X10	10	7/1.35	4	885	19.30	25	0.8
LSF5X10	10	7/1.35	5	1106	20.91	25	0.9
LSF7X10	10	7/1.35	7	1500	25.00	25	1.0
LSF2X16	16	7/1.70	2	905	19.00	25	0.8
LSF3X16**	16	7/1.70	3	990	20.00	25	0.8
LSF4X16	16	7/1.70	4	1195	22.00	25	0.9
LSF5X16	16	7/1.70	5	1695	25.19	25	1.0
LSF7X16	16	7/1.70	7	2150	28.10	32	1.2

LSF BS6724 – CARRYING CAPACITY (AMPERES)

CONDUCTOR CROSS - SECTIONAL AREA MM ²	REFERENCE METHOD C (CLIPPED DIRECT)		REFERENCE METHOD E (IN FREE AIR OR ON A PERFORATED CABLE TRAY, HORIZONTAL OR VERTICAL)		REFERENCE METHOD D (DIRECT IN GROUND OR IN DUCTING IN GROUND, IN OR AROUND BUILDINGS)	
	1 TWO CORE CABLE SINGLE-PHASE AC OR DC	1 THREE OR 1 FOUR CORE CABLE THREE-PHASE AC	1 TWO CORE CABLE SINGLE-PHASE AC OR DC	1 THREE OR 1 FOUR CORE CABLE THREE-PHASE AC	1 TWO CORE CABLE SINGLE-PHASE AC OR DC	1 THREE OR 1 FOUR CORE CABLE THREE-PHASE AC
1.5	27	23	29	25	25	21
2.5	36	31	39	33	33	28
4	49	42	52	44	43	36
6	62	53	66	56	53	44
10	85	73	90	78	71	58
16	110	94	115	99	91	75

THE ABOVE IS IN ACCORDANCE WITH 18TH EDITION OF IET WIRING REGULATIONS

BS6724 LSZH MULTICORE MAINS & CONTROL (1.5-16MM) - VOLTAGE DROP

NOMINAL CROSS SECTIONAL AREA MM ²	TWO CORE CABLE DC	TWO CORE CABLE SINGLE-PHASE AC MV/A/M	THREE OR FOUR CORE CABLE THREE-PHASE AC MV/A/M
1.5	31	31	27
2.5	19	19	16
4	12	12	10
6	7.9	7.9	6.8
10	4.7	4.7	4
16	2.9	2.9	2.5

THE ABOVE IS IN ACCORDANCE WITH 18TH EDITION OF IET WIRING REGULATIONS

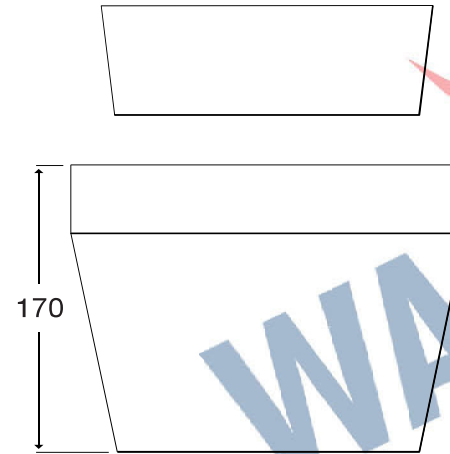
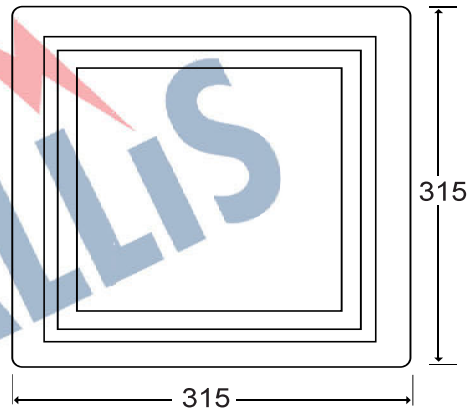
CONDUCTOR OPERATING TEMPERATURE: 90°C

R = RESISTIVE COMPONENT
X = REACTIVE COMPONENT
Z = IMPEDANCE VALUE

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Earth Pit

Concrete Earth Inspection Housings



The Wallis concrete inspection pits are load rated to 4,500kg and are suitable for most types of earthing and lightning protection installations.

Lids are available in 2 types, one with a central lifting eye for industrial applications. The other with a unique plain lid non trip surface which is ideal for public and pedestrian areas, shopping arcades, supermarket forecourts, mosques and cinemas where trip hazards are a potential problem,

The base is designed to accept a diagonal earth bar.



BS EN 62561-5

Lid Type	L mm	W mm	H mm	Unit Weight kg	Pack Quantity	Part Number
Central Lifting Eye	315	315	170	24	1	ERH 02W

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NOTE: ALL DIMENSIONS SHOWN ARE IN MM, IF IN ANY DOUBT PLEASE ASK.

WALLIS DESCRIPTION		CONCRETE EARTH HOUSING WALLIS (WITH CENTRAL LIFTING EYE)	PART NAME	ERH02W				
			MATERIAL	CONCRETE				
WALLIS PART NUMBER		ERH 02W	DRG.NO.	ERH02W	REV	1	SHEET 1 OF	

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