

Manchester Oxford Road

This document has been created to summarise the lighting and CCTV proposals on the exterior of Manchester Oxford Road station to address Manchester City Council comments and provide justification for decisions made. This is not a design document and should be read alongside the approved design deliverables produced by others for the project.

1 Introduction

Further to the meeting between Network Rail and Manchester City Council (MCC) on Monday 18/12/2023 to review proposals for Manchester Oxford Road Station and specifically the impact on the grade 2 listed structure this document has been compiled in relation to the proposed exterior CCTV and lighting works only.

This document was updated on 19/01/2024 to account for drawing updates and further comments from MCC to summarise the final proposals.

The current proposals as per drawing 175726-STR-XX-XXXX-DRG-EAR-000904 – 3D View - Lighting & CCTV & M&E revision C02 dated 19/01/2024 propose the following as presented in the meeting and shared beforehand:

- 3No. new dome CCTV cameras at the station exterior.
- 3No. new lighting units (flood lights) at the station exterior.

This new lighting and CCTV equipment is required to support the installation of 2No. new ticket windows at the station exterior which are in turn required to allow the installation of the new ticket gate line in the concourse to ease congestion at the station.

The below sections summarise proposed changes to these proposals made to address the MCC comments and justify other aspects where favourable changes with respect to impact on the heritage structure cannot be made.

2 Lighting

Due to the relocation of the ticket windows to the front of the station the lighting at the front of the station needed to be reviewed against current standards– the area will change in purpose from a walking route to ticket windows. The requirements for lighting in this area thus changes as lighting for a walking route is different to that for a ticket window with the latter requiring a higher level of lighting (higher lux level).

A lighting survey was undertaken for this area as part of design development which showed that the existing lighting provided by the strip lighting hanging from the station canopy was insufficient and therefore required additional lighting to meet minimum standards for safety for the new ticket windows.

As the existing lighting in this location was a continuous strip lighting that is located centrally to the existing station canopy and is used to light the full width of the area beneath the station canopy this was not proposed to be altered by this scheme and instead discrete, additional lights were proposed to be installed where required to create the necessary lighting levels.

The proposals were therefore to install 5No. external lights at the station exterior to light the new ticket windows and ticket vending machines to the required lux levels.

The design analysis undertaken showed that flood lights are required above the existing station building shining downwards.

1. The new lights were to be located centrally to the station building “bays” and spaced evenly at every other “bay” for aesthetic purposes.
2. Any cabling/ducting will be hidden from view behind the upstand around the top of the building exterior.
3. Fixings for the lights will not be visible from ground level and no fixings will be into the front face of the wood on the building exterior.
4. Due to height of the lights only the bottom and sides of the lights will be visible from ground level.

2.1 Applicable standards

- BS EN 12464-1:2021 - Light and lighting. Lighting of workplaces Indoor work places
- BS EN 12464-2:2014 - Light and lighting. Lighting of workplaces Outdoor work places
- RIS 7702 Rail Industry Standard for Lighting at Stations
- DfT code of practice for Accessible Railway Stations Version 04

2.2 Proposals following MCC feedback

Following feedback from the council on 18/12/2023 and in January 2024 a review of these proposals has been undertaken and the following changes are proposed:

1. Number of lights proposed at the front of the station reduced from 5 to 3 – This will ensure that new ticket desks are appropriately lit to meet current designs standards and allow the ticket office to safely open. The works will not however fix existing deficiencies regarding lighting levels adjacent to the ticket vending machines and in the station concourse which will require a review in the future and will be explored separately as per point 3.
2. The lighting proposed is that agreed with MCC – Philips LED floodlights Gen 3, see Figure 3
3. A further detailed design will be undertaken to look holistically at the lighting at the station front and concourse which will consider the lighting unit type, colour, location, number and interaction with other lighting. This review will be undertaken with MCC input.

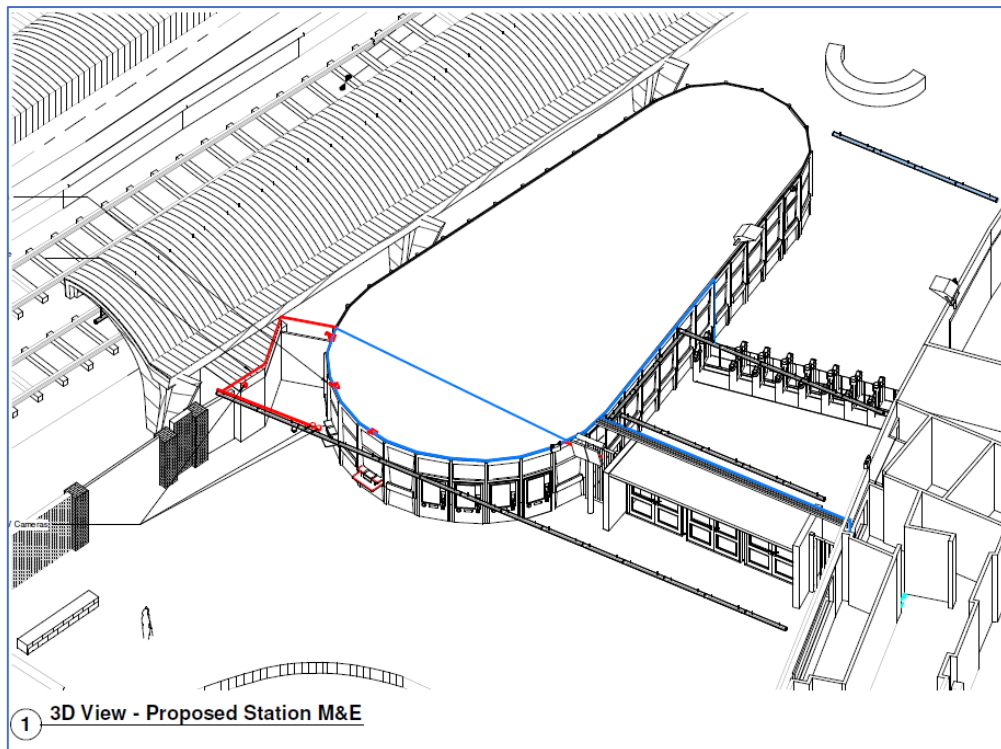


Figure 1 - Extract of 175726-STR-XX-XXXX-DRG-EAR-000904 - 3D View - Lighting & CCTV & M&E revision C02 dated 19/01/2024)

Indicative location of new lighting units shown in image below, note that third new lighting unit will be around the side of the station building and not visible in Figure 2.



Figure 2 - Photo of station exterior 19/12/2023 (new lighting unit locations shown indicatively with red box)



Figure 3 - Photo for proposed 3No. lighting units - manufactured by Philips

Additional information for the proposed lighting units can be found on the Philips website (https://www.lighting.philips.co.uk/prof/outdoor-luminaires/sports-and-area-floodlighting/area-and-recreational-floodlighting/ledinaire-floodlights-gen3/911401884383_EU/product) or within the product data sheet at the end of this document.

2.3 Summary

Following discussion with MCC on 18/12/2023 and January 2024 we have taken on board feedback and reduced the lighting units as part of these works to 3No. all of which will be located central to the “bays” of the station building and all cabling/ducting will be hidden as will all fixings. The 3No. lights will be as per the attached data sheets agreed with MCC.

These 3No. lights will be installed to allow the ticket office to open and a further design will be undertaken taking into account MCC requirements/recommendations to review the lighting in this area and within the station concourse holistically for installation at a later date. It must be noted that the timescale for this second lighting design and subsequent installation will be undertaken as part of this congestion relief project and is not being deferred to the separate Remodelling scheme. The proposed timescale for the subsequent lighting design and installation is within 2024 with a full programme yet to be agreed based on requirements and progress with the initial stage of works.

3 CCTV

This project was originally proposing to install 5No. new CCTV cameras at the front of the station, 4No. on the underside of the station canopy and 1No. on the existing brick wall separating the station exterior and platform 4 to the south.

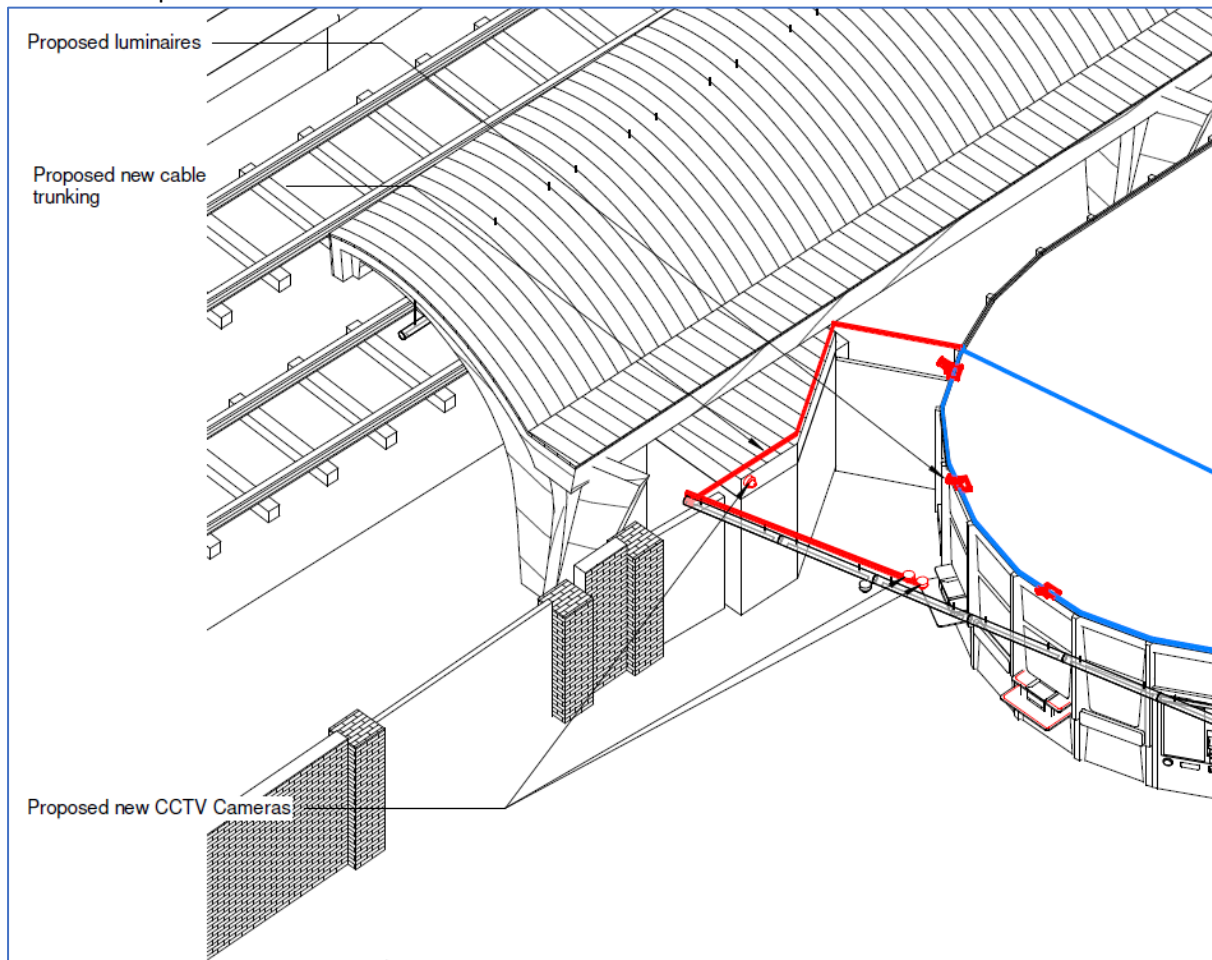


Figure 4 - Extract of 175726-STR-XX-XXXX-DRG-EAR-000904 - 3D View - Lighting & CCTV & M&E revision C02 dated 19/01/2024

Options and other alternatives to fixing to the existing timber soffit of the canopy:

- High level discussion was carried out in the optioneering stage to weigh up alternatives to the camera locations i.e. not fixing to the canopy.
- Due to the high clarity of images required for security standards the number and close proximity of the cameras to the proposed ticket windows is an unavoidable requirement in order to meet standards.
- The ticket office cannot open without the required CCTV coverage being achieved.
- Gantry brackets or CCTV columns were considered but the opinion around designing and installing a gantry(s) or goal post(s) arrangement in which to rig up or locate the CCTV cameras was thought to be too oppressive an installation and would further ruin and obstruct the view of the station exterior when approaching the station. Any new columns would also be detrimental to passenger flow.
- Cameras installed in close proximity to the existing strip lighting was thought to reduce the visual impact on the approach and be a simpler installation than a new gantry / series of posts.
- 1No. new camera is to be installed on the wall between platform 4 and the new ticket windows, however it is not possible to install any more on this wall whilst achieving clarity of images to the 2No. new ticket windows.

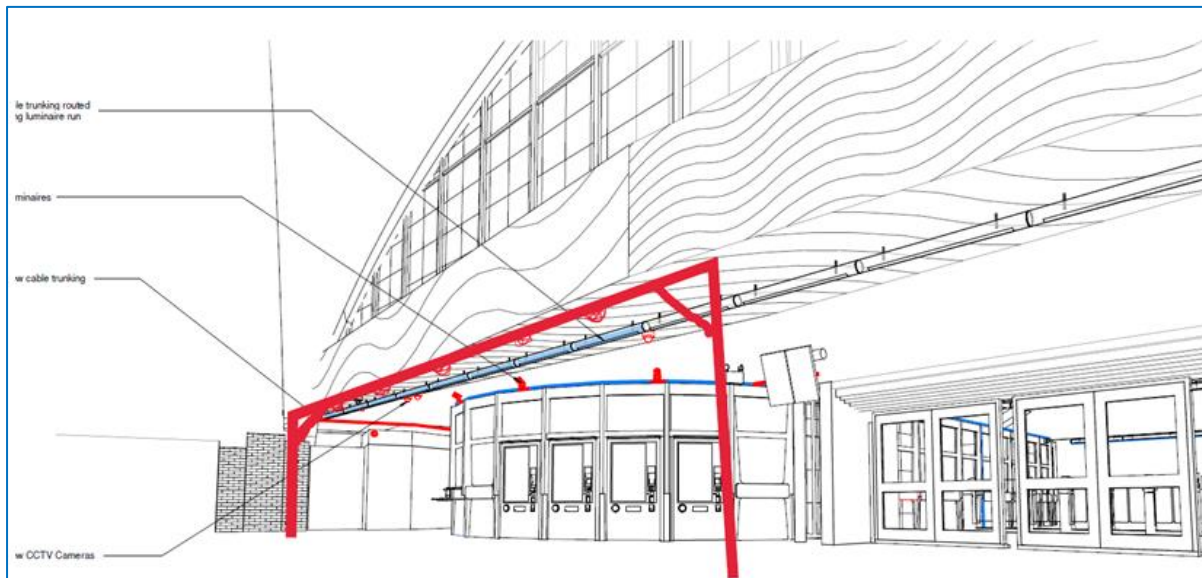


Figure 5 - Indicative proposal for a CCTV gantry at station exterior to avoid fixing to canopy.

Following feedback from the council on 18/12/2023 a review of these proposals has been undertaken and the following changes are proposed:

1. Number of CCTV cameras proposed reduced from 5No. to 3No. – This will ensure that new ticket desks are appropriately covered to meet current designs standards and allow the ticket office to safely open. The works will not however fix existing deficiencies regarding the CCTV system as a whole which will require a review in the future and will be explored separately as part of a Northern CCTV scheme. This reduces the proposed number of cameras fixed to the canopy from 4No. to 2No. and these 2No. cameras will also be adjacent to each other but pointed in different directions. This reduces the visual impact and number of fixings into the canopy by 50% from original proposal presented on 18/12/2023. The vision plot for these cameras is shown in Figure 7.
2. The 2No. remaining CCTV cameras on the station canopy will be relocated as close to the existing strip lighting as possible and be located on the station building side to reduce visibility of the cameras on approach to the station whilst not impacting clarity of images.
3. Route of cabling to these two cameras has been reviewed and at this time an extension of the existing canopy mounted galvanized steel conduit is proposed that will sit on the building side of the strip lighting as close as possible to limit visual impact. A 25/32mm diameter circular conduit is currently proposed.

Figure 6 indicatively shows the location of the 2No. new CCTV cameras however note that as the existing strip lighting is significantly deeper than the new CCTV cameras will be hidden behind it from this view of the station exterior.



Figure 6 - Indicative location of new CCTV cameras in relation to canopy/station exterior as a whole (pink X denoting location)

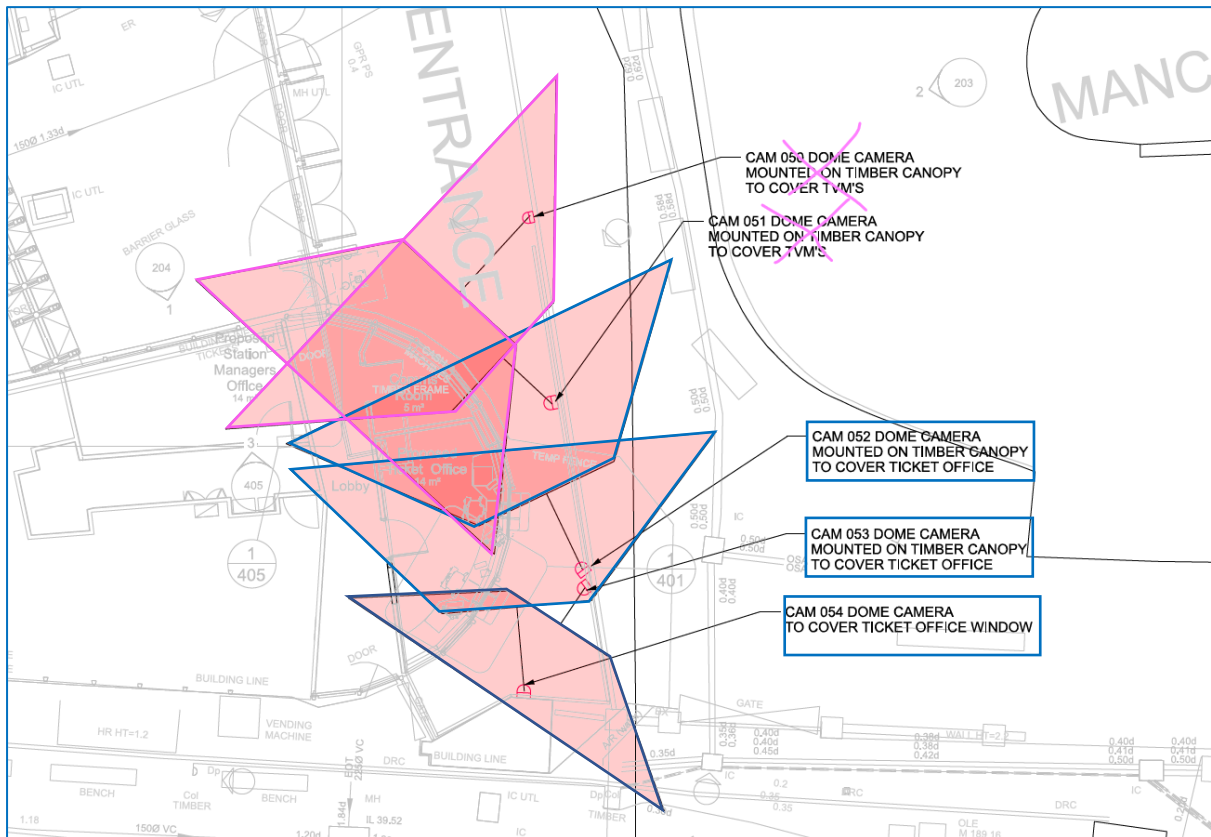


Figure 7 - Extract of CCTV vision plot from Telecoms Detailed design (2No. cameras removed from scope following MCC feedback denoted with pink X and pink vision plot outlines)



Figure 8 - Existing CCTV camera adjacent to strip lighting viewed from front.



Figure 9 - Existing strip lighting located central to station canopy.



Figure 10 - Strip lighting located central to station canopy width (19/12/2023)

A 1.6m extension of ducting could be provided beneath/adjacent to the lighting system for the new CCTV cables with fixings into the canopy (see Figure 11, Figure 12 and Figure 8 – this would be as per the existing CCTV camera installed by others but extend further.

- Note following discussion with Selux it was confirmed that the existing strip lighting units cannot be used to contain the CCTV cables and therefore a new route is required
- Fixing directly to existing strip lighting was not considered to be a feasible proposal as these items haven't been designed to carry or cantilever additional units. The light units are designed to hold and contain lighting and cable runs and not to be clamped around or fixed into. To do so could compromise the life span of the unit.



Figure 11 - Existing CCTV camera adjacent to strip lighting with ducting visible (taken from building side)



Figure 12 - Existing CCTV camera, associated trunking on underside of canopy and additional trunking on rear face of canopy (taken from building side)



Figure 13 – Existing ducting fixed beneath/beside strip lighting – 3.2m extension of galvanised steel conduit

3.1 Summary

These proposed changes will reduce the visual impact of the new CCTV system to 2No. dome head cameras on the station canopy which will be located next to each other, behind the strip lighting and visibility of the new cabling route will be limited to a very short section (3.2m) of new galvanised steel conduit to match existing.

The 2No. cameras will also be located next to each other rather than at 3No. separate locations on the canopy as previously detailed. The 2No. cameras are also located far towards the edge of the canopy (3.2m from end of 21.7m lighting strip) and not centrally located thus limiting the visual obstruction.



Ledinaire floodlights gen3

BVP164 LED36/840 PSU 30W SWB MDU CE

Ledinaire floodlights gen3, 30 W, 3600 lm, 4000 K, CRI80, Symmetrical wide beam, MDU1, IP65

This Ledinaire floodlights range contains a selection of popular off-the-shelf LED luminaires that comes with the Philips high quality levels at a competitive price. Reliable, energy-efficient and affordable – just what you need.

Product data

General Information			
Lamp family code	-	Standard tilt angle post-top	-
Light source replaceable	No	Standard tilt angle side entry	-
Number of gear units	Unit	Correlated Colour Temperature	4000 K
Driver included	Yes	Luminous efficacy (rated) (nom.)	120 lm/W
Light source engine type	LED	Colour rendering index (CRI)	>80
Lighting Technology	LED	Flickering value (PstLM)	1
Embedded control	Movement and light sensor (On/Off)	Stroboscopic effect	5
CE mark	Yes	Light source colour	840 neutral white
Warranty period	3 years	Optical cover type	Glass
Flammability mark	-	Luminaire light beam spread	110° x 110°
ENEC mark	-	Optic type outdoor	Symmetrical wide beam
Glow-wire test	Temperature 650 °C, duration 30 s	Operating and Electrical	
EU RoHS compliant	Yes	Input Voltage	220 to 240 V
Light Technical		Line Frequency	50 or 60 Hz
Upwards light output ratio	0	Initial CLO power consumption	- W
Luminous Flux	3,600 lm	Average CLO power consumption	30 W
		End CLO power consumption	- W

Ledinaire floodlights gen3

Inrush current	1.22 A
Inrush time	0.0072 ms
Power Consumption	30 W
Power Factor (Fraction)	0.9
Connection	Flying leads/cables
Cable	Cable 1.0 m without plug
Number of products on MCB of 16 A type B	64

Temperature

Ambient temperature range	-20 to +40 °C
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Controls and Dimming

Dimmable	No
Driver/power unit/transformer	Power supply unit (On/Off)
Constant light output	No

Mechanical and Housing

Housing material	Aluminium die cast
Reflector material	Polycarbonate
Optic material	Glass
Optical cover/lens material	Tempered glass
Fixation material	Steel
Housing Colour	Grey
Mounting device	Mounting bracket adjustable
Optical cover/lens shape	Flat
Optical cover/lens finish	Clear
Overall length	133 mm
Overall width	220 mm
Overall height	53 mm
Effective projected area	0.017 m²
Dimensions (height x width x depth)	53 x 220 x 133 mm

Approval and Application

Ingress protection code	IP65 [Dust penetration-protected, jet-proof]
Mech. impact protection code	IK07 [2 J reinforced]
Surge Protection (Common/Differential)	Luminaire surge protection level up to 2 kV differential mode and 2 kV common mode

Sustainability rating	-
Protection class IEC	Safety class I
Photobiological risk	Photobiological risk group 1 @200mm to EN62778
Photobiological risk specification	0.2 m

Initial Performance (IEC Compliant)

Luminous flux tolerance	+/-10%
Initial chromaticity	(0.380, 0.380) SDCM <5
Power consumption tolerance	+/-10%
Init. Color Rendering Index Tolerance	+/-2

Over Time Performance (IEC Compliant)

Control gear failure rate at median useful life	5 %
50,000 h	
Lumen maintenance at median useful life*	80
50,000 h	

Application Conditions

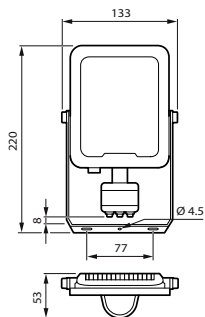
Performance ambient temperature Tq	25 °C
Maximum dim level	Not applicable

Product Data

Order product name	BVP164 LED36/840 PSU 30W SWB MDU CE
Full product name	BVP164 LED36/840 PSU 30W SWB MDU CE
Full EOC	871951453477399
Order code	53477399
Material no. (12 NC)	911401884383
SAP numerator – quantity per pack	1
EAN/UPC — Product/Case	8719514534773
Numerator – packs per outer box	16
EAN/UPC - Case	8719514534872

Ledinaire floodlights gen3

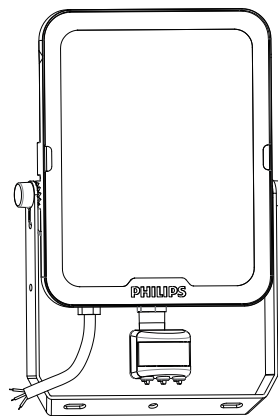
Dimensional drawing



PHILIPS

LED Floodlight

BVP164



220V
240V

50Hz
60Hz



IK07

IP65

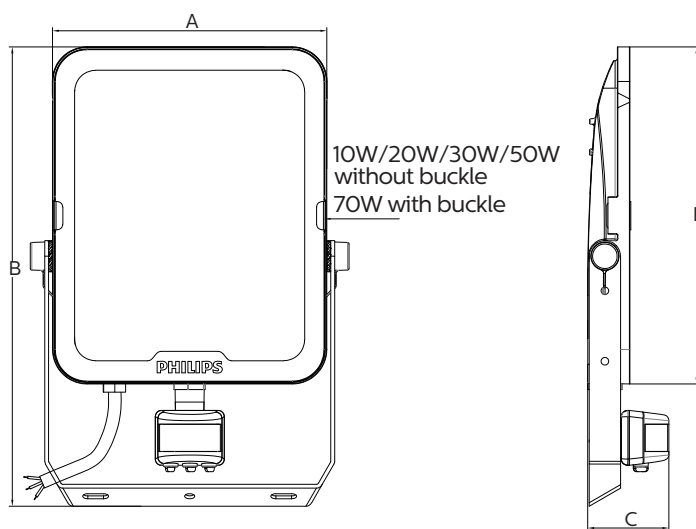


Max.
40 °C
Min.
-25 °C

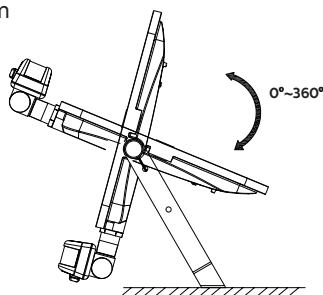
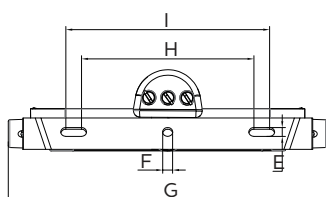
Ta
25 °C



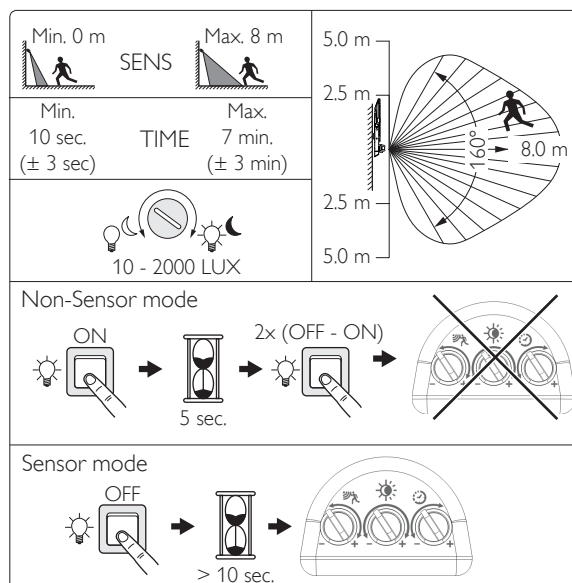
	Flux (lm)	Power (W)	Energy efficiency class of light source	Beam	m ²	kg
BVP164 LED12/830 PSU 10W SWB MDU CE	1100	10	F	100°~120°	0.005	0.29
BVP164 LED12/840 PSU 10W SWB MDU CE	1200	10	E		0.005	0.29
BVP164 LED12/865 PSU 10W SWB MDU CE	1200	10	E		0.005	0.29
BVP164 LED24/830 PSU 20W SWB MDU CE	2200	20	F		0.008	0.38
BVP164 LED24/840 PSU 20W SWB MDU CE	2400	20	E		0.008	0.38
BVP164 LED24/865 PSU 20W SWB MDU CE	2400	20	E		0.008	0.38
BVP164 LED36/830 PSU 30W SWB MDU CE	3300	30	F		0.017	0.63
BVP164 LED36/840 PSU 30W SWB MDU CE	3600	30	E		0.017	0.63
BVP164 LED36/865 PSU 30W SWB MDU CE	3600	30	E		0.017	0.63
BVP164 LED60/830 PSU 50W SWB MDU CE	5500	50	F		0.028	0.89
BVP164 LED60/840 PSU 50W SWB MDU CE	6000	50	E		0.028	0.89
BVP164 LED60/865 PSU 50W SWB MDU CE	6000	50	E		0.028	0.89
BVP164 LED84/830 PSU 70W SWB MDU CE	7700	70	F		0.038	1.19
BVP164 LED84/840 PSU 70W SWB MDU CE	8400	70	E		0.038	1.19
BVP164 LED84/865 PSU 70W SWB MDU CE	8400	70	E		0.038	1.19



The exposed wire length : 10/20/30/50W 1000mm
The exposed wire length : 70W 2000mm



Dimensions in mm					
	10W	20W	30W	50W	70W
A	63.8	82	117	150	175
B	155	172	220	263	293
C	52	52	53	53	53
D	82.8	100	145	185	215
E	4.2	4.2	4.5	6.5	6.5
F	4.2	4.2	4.5	6.5	6.5
G	79	97	133	173	203
H	35	50	70	90	110
I	45	60	85	110	130

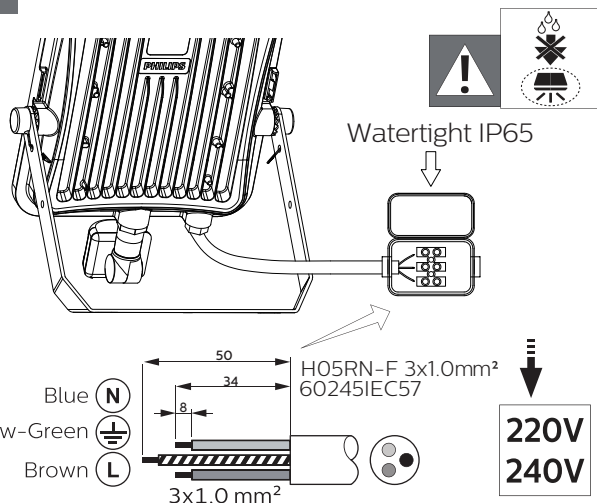




Install the luminaire according to the national regulations. 3P terminal, the terminal is at least rated voltage 250V.

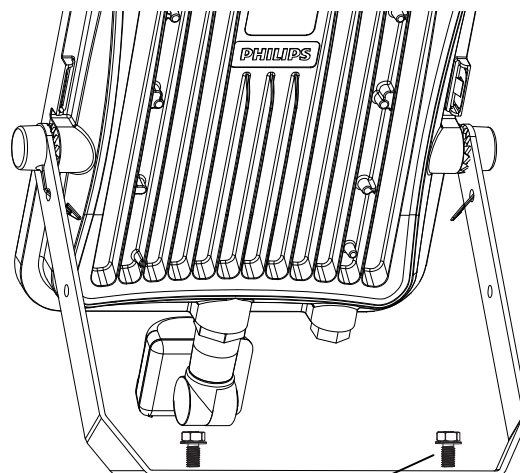


If the luminaire is higher >3 m, the use of 2nd fixing security system is needed.



- Always use IP65 or higher IP rated junction box/connector for wiring connection.
- The Luminaire should never be used in submerged wet conditions e.g. under water, soil, snow etc.
- The wiring connection should also never be used in submerged wet conditions e.g. water, soil, snow etc. OR use IP68 junction box.
- The warranty is void, in case any of the instructions / guidelines are not followed as per given mounting instruction.
- This product is not supplied with any junction box / connector.
- For further clarification, please contact the manufacturer.

1a



2x
10W/20W/30W:M4
50W/70W:M6

1b



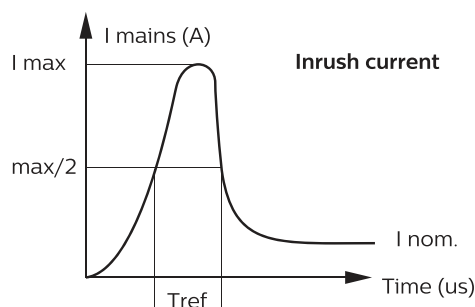
2a



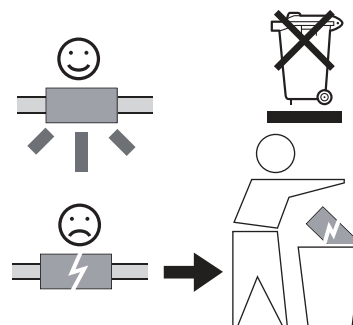
Fasten the bolt
Torque:Nm

	10W	20W	30W	50W	70W
Torque(Nm)	3	3	3	8	8

2b



	10W	20W	30W	50W	70W
Electrical characteristics					
I _{max} (A)	0.78	1.1	1.22	1.68	3.64
T _{ref} (μs)	6.48	7.4	7.2	8.2	22.2
MCB Floodlight Max.					
B-10 A	136	68	45	27	19
B-16 A	218	109	73	44	31
C-10 A	159	80	53	32	23
C-16 A	254	127	85	51	36



- The luminaire shall be installed or maintained by a qualified electrician and wired in accordance with the latest IEE electrical regulations or the national requirements.
- The external flexible cable or cord of this luminaire cannot be replaced; if the cord is damaged, the luminaire shall be destroyed.
- The light source of this luminaire is not replaceable; when the light source reaches its end of life the whole luminaire shall be replaced.
- Luminaire must not be used or stored in corrosive environment where hazardous materials such as sulphur, chlorine, phthalates, etc. are present.