

## Camden Stables Market Horse Hospital Façade Works Mechanical and Electrical Services Design Statement

### 1.0 Introduction

The existing shop units are generally serviced via above ground services either routed internally to the building or across the existing external façade of the building. The refurbishment works to the horse hospital retail units includes remodelling of the façade to the shop units which at present have existing above ground drainage from the upper floors of the building routed through them. The proposal is that the existing unsightly services be removed where possible and replaced with new below ground service arrangements.

### 2.0 Existing Services Arrangements

#### 2.1 Drainage

The existing drainage service pipework from the upper floor of the building are run to external at high level ground floor and are routed through the existing shop fronts where they drop to pickup below ground drainage. Four number existing drainage drops have been identified which are indicated on the existing services layout drawing number D4558.ME.01. It is intended that these existing drainage connections are maintained but diverted to be routed internally within the ground floor shop unit where they will make connection to modified below ground drainage.

#### 2.2 Floodlighting

The existing shop front elevation is provided with discharge floodlight within each bay of the façade. It is proposed that these luminaires will be removed.

### 3.0 Proposed Services Arrangements

#### 3.1 Drainage

It is proposed that the existing below ground drainage arrangements are to be modified to accommodate the relocation of the existing drainage drops from external to the building to internal within the retail units. In addition new below ground drainage is to be provided to the remodelled shop units as indicated on drawing D558.ME.02. The proposals (subject to detailed design) will also include for extension to the existing below ground drainage to provide future connections for units 93-95 and to facilitate the removal of the existing horizontal external drainage run across unit 93 when that area of the building is refurbished in the future.

### **3.2 Lighting**

The existing floodlighting to the building will be removed and new wall mounted LED lantern luminaires provided at high level on the building façade.

Luminaires will be Iguzzini City Woody wall mounted fittings as used elsewhere on the site and as per data sheets attached to this document and as indicated on drawing no. D4558.ME.02.

Emergency lighting to the area will be provided by 2 x 10W LED twin spot self-contained non maintained emergency luminaires with integral battery backs at positions as indicated on drawing No. D4558.ME.02.

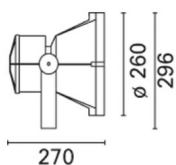
### **3.3 Mains Cold Water Services**

As part of the refurbishment works the existing below ground Mains cold Water services (MCWS) are to be modified to provide new check metered 25mm OD MDPE water service in to each of the reconfigured retail units. New MDPE PE 80 blue pipework will be routed below ground in a common trench with the drainage and telecom ductwork from the front of the retail units externally to the rear of the units internally. Position of connections and typical installation details are as indicated on drawings No D4558.ME.02 & ME.03.

### **4.4 WIFI & CCTV**

Where indicated it is proposed that new weatherproof wireless access points and CCTV dome camera are to be provided on the building façade. These shall be served from new wiring routed internally to the building mounted on new cable tray installed at high level at ground floor level within the retail units.

may 2016

**Woody**

**code**  
BU96

**Technical description**

Spotlight designed to use Neutral White COB LED lamps and a 30° flood optic. Can be installed at ground level, on walls (using screw anchors) and on pole mounting systems. Consists of an optic assembly, component box, glass-holder frame and bracket. The optical assembly, component box, and glass-holder frame are made of EN1706AC 46100LF aluminium alloy and subjected to a multi-step, pre-treatment process, in which the main phases are degreasing, fluorozirconation (a protective surface film) and sealing (with a nano-structured silane layer). The next painting stage consists of a primer and a liquid acrylic paint, cured at 150°C, with a high level of weather and UV ray resistance. The 4 mm thick, tempered, sodium-calcium, closing glass is colourless, transparent and a seal is included. The 50/60 Shore A silicone seal is subjected to a post-curing treatment, in an oven, for 4 hours at 220 °C. The glass unit is fixed to the frame with silicone. The product comes complete with a neutral white colour, monochrome COB LED circuit, an optic with a 99.93% super-pure aluminium OPTIBEAM reflector with a polished, anodized surface and built-in electronic ballast. Zinc-coated stainless steel ballast holding plate; simplified extraordinary maintenance thanks to quick-coupling connectors between the control gear and the LED and the control gear and the wiring terminal block. Painted aluminium alloy box and rear cover, complete with spacers and captive screws. The floodlight can be adjusted by  $\pm 115^\circ$  in the vertical plane using a painted steel bracket, with a graduated scale showing 10° steps and mechanical stops to guarantee stable aiming of the beam of light. Horizontal aiming is performed using the holes and slots in the bracket. Access to the optical assembly is simpler thanks to a nickel-plated brass decompression valve which eliminates the product internal vacuum. Set up for pass-through wiring using a double M24x1.5 nickel-plated brass cable gland (suitable for cables with 7÷16mm diameter). All external screws used are made of A2 stainless steel and are of the captive type. The luminaire technical characteristics conform to EN60598-1 standards and particular requirements.

**Installation**

The luminaire can be floor, ceiling or wall-mounted using the supporting bracket fixed with screw anchors (Fisher type or similar) for concrete, cement and solid brick or various other available accessories. It can also be installed on a MultiWoody or CityWoody pole system.

**Size (mm)**  
ø260x270

**Colour**  
Grey (15)

**Weight (kg)**  
4.57

**Mounting**

wall arm | pole arm | ground surface | wall surface | ground anchored | wall bracket | ceiling surface | u-bracket | pole-top


**Wiring info**

Control gear complete with DALI dimmable electronic ballast (220÷240V ac 50/60Hz) and quick-coupling terminals.

**Notes**

Dimming function with pushbutton (DIM PUSH): for this option consult the instructions included in the package.

Complies with EN60598-1 and pertinent regulations

 **IK08 IP67**

**Product configuration: BU96+LED**

LED: LED Neutral

**Product characteristics**

Total lighting output [Lm]: 3894,5  
Total power [W]: 42,7  
Luminous efficacy (lm/W, real value): 91,2  
Life Time: 100.000h - L80 - B10 (Ta 25°C)  
Number of optical assemblies: 1

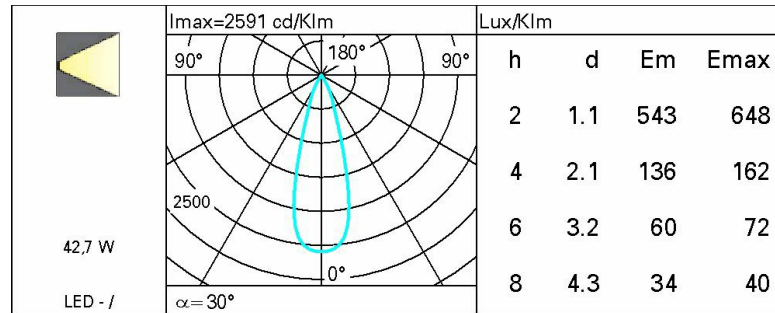
Total luminous flux at or above an angle of 90° [Lm]: 0  
Emergency luminous flux [Lm]: /  
Voltage [V]: -  
Life Time: 88.000h - L80 - B10 (Ta 40°C)

**Optical assembly Characteristics 1**

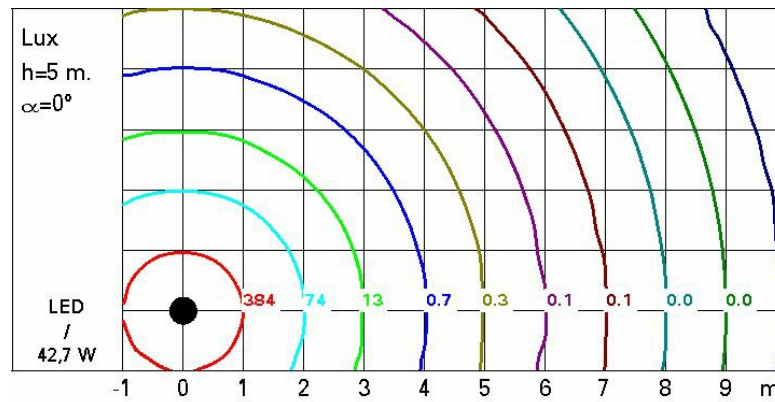
Light Output Ratio (L.O.R.) [%]: 78  
 Lamp code: LED  
 ZVEI Code: LED  
 Nominal power [W]: 35  
 Nominal luminous [Lm]: 5000  
 Lamp maximum intensity [cd]: /  
 Beam angle [°]: 30°

Number of lamps for optical assembly: 1  
 Socket: /  
 Ballast losses [W]: 7,7  
 Colour temperature [K]: 4000  
 CRI: 80  
 Wavelength [nm]: /  
 MacAdam Step: <3

**Polar**



**Isolux**



march 2016

**Wall-mounted arm for small-body Maxiwoody projector without bracket****code**  
5984**Technical description**

It is made of bent 70-micron hot galvanised sheet steel type EN10130 FEP01 Am UNI 5866. The lower section of the structure is equipped with guides for the power supply cable. The arm is complete with an aluminium cast support and an aluminium die-cast flange treated by a phosphochromatisation process and fixed to the support by socket-head screws M10. The arm is anchored to the optical assembly by means of two socket-head screws M10x16 mm fixed to the specific seats at the arm end. The external section has two studs with a graduated scale to aim the projector. The fitting can rotate on the vertical plane by 15° towards the wall and 30° towards the outside. The system is fixed to the wall by means of two through socket-head screws M10x130 mm inserted in the front of the flange. The installer can decide where the power supply cable will pass. Surface treatment of the arm by texturised liquid painting. All nuts and bolts are in stainless steel.

**Installation**

Wall application by fischer screws M10.

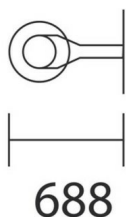
**Size (mm)**  
537x215x168**Colour**  
Grey (15)**Weight (kg)**  
2.75**Wiring info**

The installer can decide where the power supply cable will pass.

**Notes**

Distance from the wall to Maxiwoody projector centre = 500 mm.

Complies with EN60598-1 and pertinent regulations

**960°C**

# MR72

Dual-band 2x2 MIMO 802.11ac Access Point with dedicated security and RF optimization radio and Bluetooth low energy Beacon and scanning radio



### High performance cloud-managed 802.11ac wireless

The Cisco Meraki MR72 is a three-radio, cloud-managed 2x2 MIMO 802.11ac access point. Designed for general purpose next-generation deployments in harsh outdoor locations and industrial indoor conditions, the MR72 provides performance, security, and manageability.

The MR72 provides a maximum 1.2 Gbps data rate with concurrent 802.11ac and 802.11n 2x2:2 MIMO radios, and security and spectrum visibility via a third radio dedicated to 24x7 WIDS/WIPS and automated RF optimization. An integrated Bluetooth low energy (BLE) radio delivers Beacon functionality and BLE device scanning.

The combination of cloud management, 802.11ac, full-time RF environment scanning, and an integrated Bluetooth technology delivers the high throughput, reliability, and flexibility required by the most demanding business applications like voice and high-definition streaming video, both today and tomorrow.

### MR72 and Meraki cloud management: A powerful combo

The MR72 is managed through the Meraki cloud, with an intuitive browser-based interface that enables rapid deployment without training or certifications. Since the MR72 is self-configuring and managed over the web, it can even be deployed at a remote location without on-site IT staff.

The MR72 is monitored 24x7 via the Meraki cloud, which delivers real-time alerts if the network encounters problems. Remote diagnostics tools enable real-time troubleshooting over the web, meaning multi-site, distributed networks can be managed remotely.

The MR72's firmware is always kept up to date from the cloud. New features, bug fixes, and enhancements are delivered seamlessly over the web, meaning no manual software updates to download or missing security patches to worry about.

## Product Highlights

- Ideal for outdoor and industrial indoor environments
- 2x2:2 802.11ac, 1.2 Gbps aggregate dual-band data rate
- 24x7 real-time WIPS/WIDS and spectrum analytics via dedicated third radio
- Integrated Bluetooth low energy Beacon and scanning radio
- Forms point-to-point links with optional sector antennas
- Self-healing, zero-configuration mesh
- Integrated enterprise security and guest access
- Application-aware traffic shaping
- Self-configuring, plug-and-play deployment

# Recommended Use Cases

## Outdoor coverage for high client-density corporate campuses, educational institutions, metro Wi-Fi, and parks

- Provide high-speed access to a large number of clients
- Point-to-multipoint mesh

## Indoor coverage for industrial areas (e.g., warehouses, manufacturing facilities)

- Reliable coverage for scanner guns, security cameras, and POS devices
- High speed-access for iPads, tablets and laptops

## Long distance point-to-point links

- Build a long-distance bridge between two networks
- Two MR72s can establish up to a 20 km link using high-gain antennas

# Features

## Aggregate data rate of up to 1.2 Gbps

A 5 GHz 2x2:2 802.11ac radio and a 2.4 GHz 2x2:2 802.11n radio offer a maximum combined aggregate dual-band data rate of 1.2 Gbps. Technologies like transmit beamforming and enhanced receive sensitivity allow the MR72 to support a higher client density than typical enterprise-class access points, resulting in fewer required APs for a given deployment. Band steering further enhances overall throughput, by moving 5 GHz-capable clients to the 5 GHz radio, maximizing the capacity in the 2.4 GHz range for older 802.11b/g clients.

## Rugged industrial design

The MR72 is designed and tested for salt spray, vibration, extreme thermal conditions, shock and dust and is IP67 rated, making it ideal for extreme environments. Despite its rugged design, MR72 has a low profile and is easy to deploy.

## Third radio dedicated to security and RF optimization

The MR72's sophisticated, dedicated dual-band third radio scans the environment continuously, characterizing RF interference and containing wireless threats like rogue access points. No more need to choose between wireless security, advanced RF analysis, and serving client data: a dedicated third radio operates without any impact to client traffic or throughput.

## Bluetooth low energy Beacon and scanning

An integrated Bluetooth low energy radio provides seamless deployment of BLE Beacon functionality and effortless visibility of BLE devices within range of the AP. The MR72 enables the next generation of location-aware engagement right out of the box.

## Automatic cloud-based RF optimization

The MR72's sophisticated, automated RF optimization means that there is no need for the dedicated hardware and RF expertise typically required to tune a wireless network. The real-time full-spectrum RF analysis data collected by the dedicated third radio is continuously fed back to the Meraki cloud. The Meraki cloud then automatically tunes the MR72's channel selection, transmit power, and client connection settings for optimal performance under the most challenging RF conditions.

## Secure wireless environments using 24x7 Air Marshal

No longer choose between a wireless intrusion prevention system (WIPS) and serving client data: thanks to the dedicated third radio, Air Marshal, a highly optimized built-in WIPS, scans continuously for threats and remediates them as commanded, all without disrupting client service. Alarms and optional auto-containment of rogue APs are configured via flexible remediation policies, ensuring optimal security and performance in even the most challenging wireless environments.

## Integrated enterprise security and guest access

The MR72 features integrated, easy-to-use security technologies to provide secure connectivity for employees and guests alike. Advanced security features such as AES hardware-based encryption and WPA2-Enterprise authentication with 802.1X and Active Directory integration provide wire-like security while still being easy to configure. One-click guest isolation provides secure, Internet-only access for visitors. Our policy firewall (Identity Policy Manager) enables group or device-based, granular access policy control.

## Application-aware traffic shaping

The MR72 includes an integrated layer 7 packet inspection, classification, and control engine, enabling you to set QoS policies based on traffic type. Also included is integrated support for Wireless Multi Media (WMM), 802.1p, and DSCP. Prioritize your mission critical applications, while setting limits on recreational traffic, e.g., peer-to-peer and video streaming.

## High performance mesh

The MR72's advanced mesh technologies, like multi-channel routing protocols and multiple gateway support, make it possible to cover hard-to-wire areas and improve network resilience. In the event of a switch or cable failure, the MR72 will automatically revert to mesh mode.

## Self-configuring, self-optimizing, self-healing

When plugged in, the MR72 automatically connects to the Meraki cloud, downloads its configuration, and joins the appropriate network. The MR72 then self-optimizes, determining the ideal channel, transmit power, and client connection parameters. As necessary, it will also self-heal, responding automatically to switch failures and other errors.



# Specifications

## Radios

One 2.4 GHz 802.11b/g/n, one 5 GHz 802.11a/n/ac, one dedicated for dual-band WIPS & spectrum analysis, and one dedicated to Bluetooth low energy (2.4 GHz)

Concurrent operations of all radios

Max data rate 1.2 Gbit/s

Operating bands:

FCC (US)	CE (Europe)
2.412-2.484 GHz	2.412-2.484 GHz
5.150-5.250 GHz (UNII-1)	5.150-5.250 GHz (UNII-1)
5.725 -5.825 GHz (UNII-3)	5.250-5.350 GHz (UNII-2)
	5.470-5.600, 5.660-5.725 GHz (UNII-2e)

## 802.11ac and 802.11n Capabilities

2 x 2 multiple input, multiple output (MIMO) with two spatial streams

Maximal ratio combining (MRC)

Beamforming

20 and 40 MHz channels (802.11n), 20, 40, and 80 MHz channels (802.11ac)

Packet aggregation

## Power

Power over Ethernet: 37 - 57 V (802.3af compatible)

Power consumption: 13.87 W max (802.3af)

Power over Ethernet injector sold separately

## Mounting

Mounts to walls and vertical poles.

Mounting hardware included

## Physical Security

Security screw included

Anti-tamper cable bay

Concealed mount plate

## Environment

Operating temperature: -40 °F to 140 °F (-40 °C to 60 °C)

IP67 environmental rating

## Physical Dimensions

10.1" x 6.22" x 3.3" (256 mm x 158 mm x 83 mm) including mounting bracket

Weight: 3.1 lbs. (1.4 kg)

## Interfaces

1 x 100/1000Base-T Ethernet (RJ45)

Four external N-type female antenna connectors

## Security

Integrated policy firewall (Identity Policy Manager)

Mobile device policies

Air Marshal: Real-time WIPS (wireless intrusion prevention system) with alarms

Rogue AP containment

Guest isolation

Teleworker VPN with IPsec

PCI compliance reporting

WEP, WPA, WPA2-PSK, WPA2-Enterprise with 802.1X

TKIP and AES encryption

VLAN tagging (802.1q)

## Quality of Service

Advanced Power Save (U-APSD)

DSCP

802.1p

Layer 7 application traffic shaping and firewall

## Mobility

PMK and OKC credential support for fast Layer 2 roaming

L3 roaming

## LED Indicators

1 power/booting/firmware upgrade status

## Regulatory

RoHS

For country-specific regulatory information, please contact Meraki sales

## Warranty

1 year hardware warranty with advanced replacement included

## Ordering Information

MR72-HW	Meraki MR72 Cloud Managed 802.11ac AP
MA-INJ-4-XX	Meraki 802.3at Power over Ethernet Injector (XX = US/EU/UK/AU)
MA-ANT-20	Meraki Dual-Band Omni Antennas
MA-ANT-21	Meraki 5 GHz Sector Antenna
MA-ANT-23	Meraki 2.4 GHz Sector Antenna
MA-ANT-25	Meraki Dual-Band Patch Antenna

Note: Meraki Enterprise license required.



## RF Performance Table

Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
2.4 GHz	802.11b	11 Mb/s	19 dBm	-84
2.4 GHz	802.11g	6 Mb/s	17 dBm	-87
		54 Mb/s	17 dBm	-70
2.4 GHz	802.11n (HT20)	MCS0/8/16 HT20	18 dBm	-85
		MCS7/15/23 HT20	15 dBm	-67
2.4 GHz	802.11n (HT40)	MCS0/8/16 HT40	18 dBm	-83
		MCS7/15/23 HT40	15 dBm	-63
5 GHz	802.11a	6 Mb/s	20 dBm	-92
		54 Mb/s	18 dBm	-73
5 GHz	802.11n (HT20)	MCS0/8/16 HT20	20 dBm	-90
		MCS7/15/23 HT20	17 dBm	-70
5 GHz	802.11n (HT40)	MCS0/8/16 HT40	20 dBm	-87
		MCS7/15/23 HT40	17 dBm	-68
5 GHz	802.11ac (HT80)	VHT-MCS0/8/16 HT80	20 dBm	-84
		VHT-MCS9/15/23 HT80	15 dBm	-58

\* Maximum hardware capability shown above. Transmit power is configurable in increments of 1 dB and is automatically limited to comply with local regulatory settings.

# AXIS M30 Network Camera Series - Outdoor models

Outdoor-ready, fixed mini-domes with HDTV and 360°/180° panoramic views



- > Compact, vandal-resistant, outdoor-ready design
- > Wide-angle and 360°/180° panoramic views
- > HDTV/multi-megapixel video
- > Built-in IR illumination
- > Day/Night functionality
- > Input/output ports for external devices