



FHP | Performance Specification

**for the
Closed Circuit Television System (CCTV)
at
Westminster Central Reference Library
35 St Martin's Street
London WC2H 7HP**

September 2023

FHP  ESS

**PARTICULARS**

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SECTION 1.00

CONTRACT PARTICULARS AND SCOPE OF WORKS

1.01 THE SITE

Westminster Central Reference Library placed within ground floor, first floor, second floor and third floor in a listed building – grade 2 at 35 St Martin's Street, London WC2H 7HP.

A CCTV system is installed to offer coverage of the public access and reading areas within the library. This existing CCTV system was installed over 10 years ago provided with coaxial wiring and low-resolution cameras. Therefore, the system is to be replaced in its entirety with a new system, incorporating supplementary cameras and CAT5e cables throughout the building to eliminate or reduce as much as possible the current blind spots within the CCTV Cameras' coverage.

The associated area of site can be seen as indicated on the drawing.

1.02 THE PROJECT TEAM

.01 Project Directory

Employer:	Westminster City Council 64 Victoria St London SW1E 6QP
Contract Administrator (CA):	Faithful+Gould 11 Bressenden Place London SW1E 5BY
Services Engineer:	FHP Engineering Services Solutions 17 Bevis Marks London EC3A 7LN

1.03 DEFINITIONS

The following definitions apply to the FHP documentation.

Contractor

The company named in the Contract as being responsible for carrying out the works.

Mechanical Specialist

The Company employed as a domestic sub-contractor to carry out the works.

**Electrical Specialist**

The Company employed as a domestic sub-contractor to carry out the works.

Public Health Specialist

The Company employed as a domestic sub-contractor to carry out the works.

Controls Specialist

The Company employed as a domestic sub-contractor to carry out the works.

Engineering Services Specialists

The description utilised in Clauses of the FHP ESS Specifications where the work described apply to all of the above specialists.

NB: - No distinction shall be drawn between the term Contractor and Mechanical Specialist etc. etc., and the term Contractor shall apply equally to any of the aforementioned Specialists, there being no contractual distinction between one or the other(s).

1.04 DESIGN**.01 General**

These documents are of a Performance nature to achieve the Employers requirements and set out the minimum standards of performance and quality to be achieved by the design and installation carried out by the Contractor.

.02 Schedule of the Contractor's Duties**.001 Stage 1 - Feasibility**

Undertake, in collaboration with the CA, a technical appraisal of the Project in such detail as is necessary to enable the Employer to decide in what form to progress.

Investigate the available range of options affecting:

- Built form: including size, spatial fit, shape, orientation, sub-division, shading, weather and noise protection etc.
- Construction standards: including glazing, thermal and noise insulation, thermal capacity, natural and artificial illumination, ventilation etc.
- Engineering Services and components, including heating, hot water, ventilation, lighting, power, communications and public health



systems etc. their operational relationships, methods of control and means of energy supply, distribution and recovery.

Consult with Local or other Authorities on matters in connection with the Works including the availability of Public and other Utilities and the installation of New Incoming Supplies.

The Contractor shall liaise, place the order, manage, programme, supervise, provide attendance with the Local or other Authorities to ensure that all new supplies are ordered and installed in a timely manner to meet the programme and that the incoming supply installations are complete.

Carry out and report upon an inspection survey to ascertain the strip out, modification, extension or extent of the services to be installed under this contract.

Prepare, or participate in the preparation of a programme for design and construction, taking account of the proposed contract procedures.

Submit a comprehensive report (including Sketch Drawings and outline calculations where necessary) in summary of the options available or the conclusions reached.

.002 Stage 2 - Outline Proposals

Agree with the CA and other members of the design team a programme for this and subsequent stages taking account of the scope and extent of the duties required.

Investigate any reasonably accessible data and information relating to the project and relevant to the works. Consider any reports relating to the works which are made available by the Employer or others.

Consider and select the most suitable system for each of the Engineering Services to be included in the works.

Agree with the CA the preferred design solutions for the project and provide sketch drawings or other documents necessary to clarify the outline design proposals.

.003 Stage 3 - Scheme Design

Develop the outline proposals, execute the full design, select equipment and produce drawings of structural planning requirements associated with the Engineering Services, showing locations and sizes of holes, items of plant, ducts and service runs, also weights of any item affecting the structural design.

Assess and prepare schedules of power, heating and cooling loads as applicable, and confirm insulation and glazing standards with the design



team. Review and update as necessary the general considerations affecting the selection of energy resources.

Submit final scheme designs for each of the Engineering Services to be included in the works, and collaborate with the Employer, CA, and the Employers Engineers in preparing a report to the Employer.

.004 Stage 4 - Detail Design

Undertake the Full Design

Collaborate throughout this stage with the Employer and the CA to ensure that designs of Engineering Services are developed in a manner compatible with the structural and general design concepts.

Agree with the CA the scope of the Installation/Co-ordination Drawings with particular reference to the demarcation of each service.

Prepare the complete design and co-ordination drawings installation drawings for the works.

Incorporate in the co-ordination drawings details of any Engineering Services.

Provide builders work information to the CA based upon co-ordination drawings for the works.

Prepare any report or additional documentation required for consideration of any alternative proposals for the execution of the works.

The Contractor shall obtain all the information which the Specialist Engineering Services Specialists/Suppliers are required to provide in time to meet the Programme. Thoroughly check that the information is complete, dimensions are correct, that account is taken of all related or adjacent work, and that construction is practicable. The Contractor shall then submit to the CA twelve unmarked copies for comment. Any comments provided will not relieve the Contractor, Engineering Services Specialist(s) or the Sub-Engineering Services Specialist(s)/Supplier(s) of their respective responsibilities for design, co-ordination and implementation.

.005 Stage 5 - Installation

Advise the CA on the appointment of the Contractor's site staff.

Collaborate with the Employer and the CA in resolving any problems which may arise from the installation drawings.

Establish appropriate cost control procedures with the CA.

Supply, deliver, install and set to work the Engineering Services Installations in accordance with the contract programme.



Inspect and witness the testing of materials or equipment during manufacture.

Advise the CA as to the need to vary any part of the project for any reason relating to the works.

Provide technical and cost information to the CA to enable the value of any variation to the works to be agreed.

Carry out commissioning and testing procedures and prepare all necessary associated documentation for permanent record thereof.

Operate the system under automatic control for a period of five days prior to offering for hand over.

Prepare, prior to the completion of the works, record drawings, operating instructions and maintenance schedules.

Demonstrate the systems to the Employer and the CA.

.03 Design Proposals

The Contractor shall submit to the CA copies (4 No) of the full detailed design proposals by way of scheme drawings and calculations for record purposes.

The design calculations shall be submitted in a timely manner throughout the design period and not left as one submission and before equipment/drawings are progressed/ purchased.

The Contractor shall be responsible for developing design proposals as necessary to provide a detailed design solution which satisfies all the Employers Engineering Services requirements and for ensuring that the whole of the works are fit for purpose and meets or exceeds the minimum performance levels, materials and workmanship standards specified.

The Engineering Services Specialists shall provide all plant and equipment weight and sizes to the Contractor for checking their effect and acceptance on the structure either directly or through the CA.

The CA will inspect the design/production information, record his comments and return them to the Contractor.

The Contractor shall make any necessary amendments in accordance with any comments, to the CA without delay. Unless and until it is confirmed that re-submission is not required, re-submit for further checking and comment, incorporate any necessary further amendments all as before.

If submitted design/production information differs from the requirements of the Tender document/Contract documents as applicable, each such difference shall be the subject of a request for substitution or variation, supported by all relevant information.



Should any amendment to design/production information required by the CA be considered to involve a variation which has not already been acknowledged as a variation by the CA, the Contractor shall notify the CA, without delay, and in any case within seven days, and not proceed with ordering, fabrication, or fixing until subsequently instructed. Claims for the extra cost of such work, if made after it has been carried out, may not be allowed.

Submit 4 No. copies of final version of design/production information, bound and page numbered in an orderly fashion for permanent record. Take particular note that “as installed” drawings, O&M Manuals, guarantees and the like shall be provided compliant with this specification and as agreed by the CA as being acceptable as a condition precedent to a Certificate of Practical Completion being issued for the whole of the Works of which these specialist works form a part.

1.05 EXTENT OF WORKS

The descriptions included in these documents generally describe the extent and nature of the works, but do not attempt to give a detailed description of the works and moreover do not absolve the Contractor from their responsibility to visit the site and make themselves aware of all factors which may affect the content and programme of works and methods of construction.

No additional costs shall be considered should the Contractor fail to fully familiarise themselves with the complexity of the building and refurbishment works.

The work undertaken by the Contractor shall comprise the survey, design and installation of the services as described in these tender documents.

The survey works required of the Contractor shall be those which are necessary in order to undertake the services design, prepare accurate drawings, and satisfactorily execute the installation.

The work undertaken by the Contractor shall comprise the taking down and removal to scrap of redundant equipment and the installation of new services equipment included in the Tender documents.

The Contractor shall be wholly responsible for the surveys, provision, installation, testing, commissioning and general setting to work of all necessary equipment to complete the installation as described herein, in accordance with the Standard Specification and as shown on the scheme drawings.

The Engineering Services Specifications for this Project comprise:

- Survey and validate the existing power supplies, data points, wiring and containment systems associated with the new CCTV System.
- Preparation of working drawings for approval.
- Strip out of any redundant services.
- Design, provision, and installation of the new required containment.
- Design, provision, and installation of all new required cabling.
- Design, provision, and installation of 29no. new CCTV cameras



- Design, provision, and installation of small power supply as required.
- Design, provision, and installation of new Digital Video Recorder equipment.
- Selection, provision, and installation of a new security enclosure to accommodate the new digital video recorder equipment.
- Provision and installation of CCTV signage.
- Cost Option – 12 months Maintenance Contract.
- Cost Option – Provision of remote viewing system.
- Cost Option – Selection, provision, and installation of a new external IP67 Luminaire controlled by PIR and Solar Photocell sensor at the Long's Court Entrance.
- Testing and commissioning
- Provision of record drawings
- Provision of O&M manuals

The Engineering Services Specifications for this Project comprise:

- FHP ESS Specification for Electrical Services, dated September 2023
- FHP ESS Standard Electrical Specification

Items which are described in the Specifications and not indicated on the drawings and vice versa shall be deemed to be included in the Tender.

The Contractor shall note that the clauses in this Specification are supplementary to those of the Main Contract and shall not modify or override the Main Contract clauses in any way.

The following record drawings and original construction issue drawings are issued to assist the Contractor in both the tender and the works. These drawings are issued for information only, their accuracy cannot be guaranteed, and they shall be checked by the Contractor for accuracy as part of his work associated with producing his working drawings.

1.06 SURVEY AND INVESTIGATION WORKS

The Contractor shall undertake a full survey of the relevant areas of the building to be undertaken during the development of his working drawings in order to both prove co-ordination of services and for developing the most practical routing of services.

No additional costs shall be considered for the Contractor for either underestimating the requirement for detailed survey works or for additional/abortive drawing works resulting from information gleaned during the surveys.

1.07 WORKING DRAWINGS

.01 General

Working drawings for construction shall be produced as required under the terms of the Preliminaries and Conditions Documents. These shall be produced, utilising the available structural survey information and detailed survey works undertaken by the Contractor and issued to the CA for approval prior to ordering materials or putting any work in hand.



These drawings shall be fully co-ordinated and incorporate dimensioned details of all services, cross-over details of services showing spatial requirements, items requiring access, sizes and positions of all access traps and panels etc. The Contractor shall carry out a full survey of the site and incorporate such information onto his co-ordinated installation drawings.

The working drawings shall incorporate all required builders work details.

From the information provided, the Contractor shall prepare or shall cause his Engineering Services Specialist, Specialist Suppliers/Specialist Sub Engineering Services Specialists to prepare all necessary co-ordination installation drawings, shop drawings, diagrams and schedules to a minimum scale of 1:50 or 1:20 as may be required to illustrate in detail the arrangements of the various sections of the Works and to identify and describe the various components for the proper execution and installation of the Works in accordance with the best trade practices in a neat and skilled manner to the satisfaction of the CA.

The installation drawings shall be fully co-ordinated with the requirements of all Engineering Services Specialists, whether domestic or nominated, and with the building and its associated services and shall indicate all necessary dimensions for the integration of the works properly within the detail of the building in a compatible manner with the structural and architectural and Employer's requirements.

The Contractor shall prepare his co-ordinated installation drawings in accordance with the agreed contract programme. The Contractor shall attend regular co-ordination meetings and, having agreed layouts, the Contractor shall be then fully responsible for the correctness of his co-ordinated installation drawings, and any subsequent co-ordination clashes shall be corrected at the Contractor's own expense.

The Contractor shall, by reference to the survey drawings, be responsible for ascertaining that his works are fixed correctly in relation to the elements of the building and any special features or fittings attached to it and shall take all steps and measures to ensure that a good and acceptable appearance is achieved which is to the CA's satisfaction.

All Contractor's Co-ordinated Installation Drawings shall be stamped as such and no work shall be carried out other than on drawings commented on by the CA as described hereunder.

.02 Builders work Drawings

Builderswork drawings and/or schedules shall be prepared by the Contractor to show requirements for architectural or structural provisions necessary to facilitate the execution of the Works and allow its integration into the contract. Such drawings shall include requirements for ducts, holes, chases, trenches, foundations, bases and supporting structures for plant or equipment etc and all related making good requirements. Such drawings shall be submitted to the CA in accordance with the Contract Conditions and agreed programme.



1.08 SCOPE OF CONTRACT

- .01 The works covered by the Contract comprise the services as defined in this performance specification.
- .02 The Contractor shall include for all work described in this specification and for all necessary work both temporary and permanent that may be required for the proper and correct fixing and functioning of the installation whether particularly mentioned in this specification or shown on the contract drawings or not.
- .03 The works shall include full design (including calculations and design drawings), setting out, the preparation of detailed drawings, working drawings, scaffolding, plant, all labour and labour supervision, the supply, delivery to site, storage, transportation of materials and erection of all materials and components necessary for the complete and satisfactory installation, testing, commissioning, operation, correction of defects, completion, handing over, operational and maintenance manuals.
- .04 The Contractor shall allow for all cost in providing office huts, stores etc, telephones, power supplies etc that may be required for the execution of the contract works.
- .05 Should any alterations or additions to the existing services be involved the Contractor shall inform the EA immediately and shall arrange when the work required is to be carried out and shall include for such reinstatement and adjustment as is necessary to ensure the continued satisfactory operation of the affected services.

1.09 INFORMATION/DRAWING REVIEW

The Contractor Co-ordinated Installation Drawings, builders work drawings and Information will be reviewed by the CA and returned with a review code as described below. Upon receipt of such drawings bearing the CA's review code and signature, the Contractor shall immediately take such action as demanded by the CA's review code. The review codes as referred to herein shall be defined as:

- Code A** Information acceptable, work may proceed in accordance with the Contract and Specifications, no further review necessary.
- Code B** Information acceptable in principle, work may proceed in accordance with the Contract and Specifications provided that comments annotated on drawings and/or accompanying schedules are incorporated. Incorporate comments on drawings and resubmit.
- Code C** Information not of acceptable standard, work may not proceed. Correct and/or provide additional intonation and resubmit for review.

Drawings returned to the Contractor for amendment must be re-submitted showing the nature of the amendment in a revision schedule on the drawing, together with the revision number or letter and the date of the revision. The areas amended on the drawing shall be highlighted by means of a 'balloon'.



The CA will review and comment upon the overall layout of plant and equipment, ducting, pipework, cabling, trunking, conduit etc. shown on the co-ordinated installation drawings and their general location in addition to the type and size of such items, in so far as they conform to the Employer's requirements.

The exact position in the Works of items relative to grid lines, floors, beams, ceilings, walls and other structural items and any other services is the Contractor's responsibility and the CA's review and comment does not absolve the Contractor from this responsibility.

The Contractor shall review the co-ordinated installation drawings to satisfy himself that they are in accordance with the Contract. The drawing review and comment procedure shall not relieve the Contractor from responsibility for:

- Any deficiency or inaccuracy or non-compliance with the Contract or of the specifications.
- Any error in the proper fixing of the Works.

The necessity of providing any work required by the Contract or the Specification not indicated on the installation drawings.

Twelve copies of each of the Code A drawings and their revisions shall be issued by the Contractor to the CA.

1.10 LIAISON BETWEEN ENGINEERING SERVICES SPECIALISTS AND MANUFACTURERS

The Contractor shall ensure that the closest possible liaison is made between other Specialists and Manufacturers.

The Contractor shall ensure that all aspects of the works whether mechanical, electrical, controls or building are closely co-ordinated as no extra costs shall be accepted for any works required due to non compliance with this Clause.

The Contractor shall ensure that where necessary, the manufacturer and equipment suppliers receive copies of the electrical and mechanical and building drawings and complete information to ensure the above is fulfilled.

The Contractor shall ensure that where necessary they are provided with all information necessary to ensure complete compatibility.

The Contractor shall ensure that the closest possible liaison is made between and with manufacturers, suppliers and his Specialist Engineering Services Specialists to ensure complete works compatibility.

The Contractor shall ensure that all aspects of the works, whether Engineering Services or Building, are closely co-ordinated as no extra costs will be accepted for any works required due to the Engineering Services Specialist's non-compliance.

The Contractor shall be responsible for ensuring manufacturers and equipment suppliers shall receive details of relevant Engineering Services and Building drawings and information to enable the co-ordination to be achieved.



1.11 INSPECTION OF THE SITE

The Contractor shall be deemed to have visited the site to establish the details, site conditions and existing services before submitting his tender bid.

No claim for extra costs shall be considered in respect of any item the existence of which could have been established by inspection of the site.

The Contractor shall make all arrangements to visit the site during the tender period with the EA.

The Engineering Services Specialists shall liaise with each other to ensure minimum interference between works.

1.12 INSTALLATION WITHIN THE EXISTING FABRIC

Where items of equipment or work are located within confines of the new or existing interior fabric, the Contractor shall ensure that all services do not obstruct the fabric installation in such a way that the required equipment cannot be installed or existing equipment cannot be reinstated.

The Contractor shall also carry out the relocation and co-ordination of existing services to enable the new services to be installed.

The Contractor shall liaise with the CA at all times to ensure that the required aesthetic criteria are achieved.

1.13 CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS

Tenders shall note that the project comes within the full requirement of the above Regulations and shall make due allowance for this fact. Risk Assessments are issued under separate cover.

The Contractor shall fulfil all relevant duties in accordance with the above Regulation including the requirement to produce Method Statements and Risk Assessments for approval by the CA, and shall make due allowance for this within the tender.

1.14 ORIGIN OF EQUIPMENT

All equipment installed shall comply fully with all relevant Standards and Regulations and (unless written authorisation to the contrary is given by the EA) shall have been manufactured in a country within the EEC.

1.15 EARLY PLANT DELIVERIES AND EXTENDED WARRANTIES

The Contractor shall include in their tender for the timely delivery and protection of all equipment, materials, and plant as may be necessary to ensure the works proceed in accordance with the overall programme together with extended warranties to ensure all manufacturers run for at least the full defects liability period, which is a minimum of 12 months from the date of Practical Completion and up to the date of issue of the Certificate of Making Good Defects.



Where the project has a series of phased Handovers, the 12 month run shall run from the date of the final Handover.

1.16 PLANT INSTALLATION

The Contractor shall include full costs for craneage and general movement of all plant and equipment into all areas of the works, together with subsequent re-assembly of disassembled plant. He shall make himself fully aware of all limitations in respect of lorry size, crane lift, use of existing hoist, limiting factors in access to, in, and around the site. No additional costs shall be considered for the Contractor for under-estimating the difficulty of plant access or for providing plant in a dismantled condition as may be required due to limitations on access.

1.17 WORKMANSHIP

The Contractor shall carry out the works to a high quality of workmanship as described in the FHP ESS Standard specifications. Any part of the installation deemed by the EA to be unacceptable shall be replaced at the Contractor's expense.

1.18 ORDERING OF MATERIALS

Any sizes or extent of equipment contained in the Tender Specification or on the Tender drawings are indicative of the Minimum Client Requirements and are included for illustration only to assist the Contractor with the development of his design for pricing purposes.

The use of these documents as a basis for ordering materials shall be at the sole discretion and responsibility of the Contractor. No claim shall be allowed for additional costs arising from such ordering unless items are verified in writing beforehand by the EA.

1.19 BUILDERSWORK

The Contractor shall ensure all builderswork associated with the services installation (removal of fabric for access to carry out the works to existing services, holes, sleeves, bases, weathering, trenching, excavations etc) are included in the tender sum.

The Engineering Services Specialists shall provide full details of access requirements in terms of temporary demolition and rebuild of walls, riser shafts etc that may be required in order for the Contractor to carry out the works.

The Engineering Services Specialists shall provide full details of all access panels required in ceilings, walls and other elements of the fabric for supply and install by the Contractor to ensure that full and safe access is provided to all services for maintenance and replacement.

No additional costs will be considered for builderswork or weathering details omitted from the tender.

All builders work details shall be shown on the working drawings.



1.20 PROGRAMME

The Contractor shall produce a project construction programme reflecting the timescales for the incorporation of the installations. The program is to contain details as described in the contract preliminaries. The programme shall particularly include for trench/excavation works of which shall be agreed prior with the client.

The Contractor shall provide information during the Contract in accordance with the Contract Programme.

When preparing the Programme the Contractor shall make allowance for completing such design and the production information, checking, inspection by the EA, any subsequent amendment(s), resubmission(s) and inspections and testing and commissioning works etc.

1.21 SUPPORTS, HANGERS AND FIXINGS

The Contractor shall prepare and issue for comments to the CA prior to commencement of works, drawings and details showing proposed method of support, including fixings to the structure.

The Contractor shall provide all supports and fixings necessary for the works and shall not assume that any brackets or supports will be provided for their use.

The Contractor shall provide and issue for comments to the CA prior to commencement of works, drawings and details showing the method of support of all services.

1.22 PROTECTION AND CLEANING OF MATERIALS, WORKS AND THE SITE

The Contractor shall include in his Tender for taking all necessary precautions to protect equipment, surrounding buildings, and materials from damage and theft during the execution of the works and shall be liable for such damage and theft.

Goods shall be ordered with protective packaging where practicable and these shall be maintained in their position as long as possible.

The Contractor shall provide full protection for all equipment and materials, fixed or unfixed, to prevent mechanical damage, ingress of dirt, dust and/or moisture.

Precautions must be taken and all protection provided to safeguard the works during frost and inclement weather.

Any damaged or defective items shall be replaced to the satisfaction of the CA, at the Contractor's own cost.

Immediately prior to Practical Completion of the works, the Contractor shall thoroughly clean down the works in an approved manner, and ensure the installation, including all equipment, is free from dust, dirt, moisture and other foreign matter. The necessary Practical Completion Certificate may not be issued until this work has been approved by the EA.

On sites where the building occupier remains during the works, the Contractor shall carry out appropriate protective measures to ensure that no damage occurs to the building or its



contents to the detriment of the building occupier. Any damage caused through breach of this condition shall be rectified at the Contractor's expense as shall any other damage caused by the Contractor. At all stages of the project the Contractor is to clear away all rubbish, dust, etc. from the work site as soon as it occurs. At the end of each working shift the Contractor shall clean and clear all rubbish, tools, materials away from all occupied and access areas. If required to maintain the use of the building by the occupier, the Contractor shall provide hoardings, temporary services and routes of passage throughout the building to the satisfaction of the EA.

1.23 TESTING AND COMMISSIONING

The Contractor shall include for all labour, materials, apparatus and properly calibrated and certified instruments for carrying out testing and commissioning.

The Contractor shall in accordance with the testing and commissioning section(s) of the FHP ESS Standard Specifications forward to the EA certified copies of results obtained from testing and commissioning.

The EA or his nominated representative will be required to witness the satisfactory testing and commissioning of all the Engineering Services Specialists installed works whether tested and commissioned in sections or otherwise.

The Works, or sections thereof, should first be tested, commissioned and proved by the Contractor prior to offering to the EA for witness testing. A minimum of three days' notice should be provided to the EA of all testing and commissioning requiring witness testing. Testing and commissioning results should be forwarded to the EA for his information and use prior to site witness testing.

Should the Contract Works or sections thereof fail the witness test or not be available for witness testing at the appointed time resulting in abortive visits by the EA, the Contractor shall become liable to a charge for the EA to re attend the re testing or re commissioning and the costs deducted from the Contract Sum.

The Charge shall be deducted from the next or subsequent valuations.

1.24 HANDOVER

The installations shall only be considered complete when the works are officially approved and accepted by the EA, as set out below.

- .01** The completion to the satisfaction of the EA of all testing and commissioning as stipulated hereinafter. Records of tests shall be provided by the Engineering Services Specialist.
- .02** Record drawings, charts, diagrams, etc. have been submitted, approved and supplied.
- .03** A complete demonstration of the works shall be carried out with full functional controls tested and demonstrated to show proper working. Instructions shall be given to the Employer's staff providing sufficient information for correct use and maintenance of the installed systems by the Employers staff or their agents.



1.25 RECORD DOCUMENTATION

.01 General

The Contractor shall submit to the EA for comments at least TWO WEEKS prior to Practical Completion a fully completed set of Record Documents which must clearly show all details, sizes, types, exact locations of services and equipment, and descriptions of all materials, equipment and other elements as installed, provided and executed under the Contract Works.

These will undergo a similar review and comment procedure as for Contractor's Coordinated Installation Drawings/Information.

These drawings must be free of any licence or ownership and allowing the Employer free use in whatever way he requires.

The record documentation shall form part of the Health and Safety File.

The Operating and Maintenance Manuals and Record Drawings shall be fully comprehensive and cover all the installed services.

Where retained services are to be re-utilised the Operating and Maintenance Manuals and Record Drawings shall be prepared and issued by the Contractor so as to describe the whole of the services installation, both new and existing.

No additional costs shall be considered should the Contractor fail to take full account of the implications and extent of works required to comply with this requirement.

.02 Operating and Maintenance Manuals

Each Operating and maintenance manual shall include:

- A full description of each of the systems installed written to ensure that the Employer's staff fully understand the scope and facilities provided
- A description of the mode of operation of all systems including safety precautions to be taken during operation
- Diagrammatic drawings of each system indicating principal items of plant, equipment, valves etc
- A full set of top quality paper prints of all record drawings together with an index
- Legend for all colour coded services
- Schedules of equipment stating locations, duties and performance figures. Each item must have a unique number cross-referenced to the record and diagrammatic drawings and schedules



- The name, address and telephone number of the manufacturer of every item of plant and equipment together with catalogue list numbers
- Manufacturers' technical literature for all items of plant and equipment, assembled specifically for the project, excluding irrelevant matter and including detailed drawings, electrical circuit details and operating and maintenance instructions
- A copy of all Test Certificates (including but not limited to electrical circuit tests, emergency lighting test, fire alarm tests, corrosion tests, pressure tests, type tests, works tests start and commissioning tests) for the installations and plant, equipment, valves etc. used in the installations
- A copy of all manufacturers' guarantees or warranties
- Starting up, operating and shutting down instructions for all equipment and systems installed
- Control sequences for all systems installed
- Recommendations as to the preventative maintenance frequency and procedures to be adopted to ensure the most efficient operation of the systems
- Lubrication schedules for all lubricated items
- A list of normal consumable items
- A list of recommended spares to be kept in stock by the Employer, being those items subject to wear or deterioration and which may involve the Employer in extended deliveries when replacements are required at some future date
- Procedures for fault finding
- Emergency procedures, including telephone numbers for emergency services

.03 Record Documents

At Practical Completion, the Contractor shall provide to the EA Maintenance Manuals as follows:

- Two Sets of Operation and Maintenance Manuals
- Two sets of top quality paper prints
- Two Memory Stick of all Record Drawings based on the Autocad System (drawings to be in both .dwg and .pdf formats) i.e. one Memory Stick for FHP and one set for the Employer.



- Two Memory Stick of the Operation and Maintenance Manuals including Memory Stick of manufacturer's data i.e. one Memory Stick for FHP ESS and one set for the Employer or as determined by the Contract Preliminaries.

.04 Presentation of Manuals

The manuals shall be A4 in size, in plastic covered, loose leaf, four ring binders with hard covers, each indexed, divided and appropriately cover titled. Drawings larger than A4 to be folded and accommodated in the binders so that they may be unfolded without being detached from the rings.

.05 Maintenance Instructions and Warranties

The Contractor shall retain copies on site of maintenance instructions and Warranties delivered with components and equipment, or if not delivered, the Contractor shall obtain information co-incident with the delivery of equipment, for access by the EA/Employer throughout the Contract and handed over to EA on or before Practical Completion.

All warranties shall be included in the Manual. The Warranty start date shall be the date of Practical Completion. The Warranty completion shall be the End of Defects Liability Period.

Failure to provide the above will cause Practical Completion to be refused and Liquidated Damages Clauses may be invoked.

Notify EA of telephone numbers for emergency services of Engineering Services Specialists, Artists and Tradesmen, Suppliers and Statutory Authorities which may be required by the Employer, after Practical Completion.

1.26 TRAINING OF EMPLOYER'S STAFF

The Contractor shall allow a period or periods which may not be consecutive equating to a minimum of 1 day, or as directed by the EA, to instruct the Employer's staff in operating, maintaining and servicing the entire CCTV system. The final period of training of Employer's staff must be carried out when all systems are functional and a hands on operation can be performed. All training must be completed to the satisfaction of the EA.

1.27 BRITISH STANDARDS AND CODES OF PRACTICE

The services shall be designed and installed to the quality and standards as described herein and also the latest editions of the following documents:

- Local Planning Requirements
- Building Regulations
- Health and Safety at Work Act
- The Human Rights Act 1998
- The Data Protection Act 1998
- The freedom of Information Act 2000



- The Private Security Industry Act 2001
- The Clean Neighbourhoods and Environment Act 2005
- The Protection of Freedoms Act 2012
- Road Traffic Acts
- The Management of Health and Safety Regulations
- The Electricity at Work Regulations
- The Electricity Supply Regulations
- The Regulations for Electrical Installations, issued by the Institute of Electrical Engineers
- Construction (Design and Management) Regulations (CONDAM)
- Environmental Health Recommendations
- Fire Officer Requirements and Precautions Act
- CIBSE Design and Commissioning Codes
- Current Water Supply (water fitting) Regulations
- Institute of Plumbing Recommendations
- Local Bylaws
- Clients Insurance Requirements (Copies shall be provided upon request)
- FOC Rules
- British Standards Institution Documentation
- Current Codes of Practice
- Control of Pollution Act
- The Construction Regulations Act
- Plumbing Engineering Services Design Guide
- Local Regulatory Authority
- Information Technology - European Committee for Electrotechnical Standardisation (CENELEC)

The works shall be carried out to meet the requirements of all relevant product standards, legal requirements and statutory regulations such as ISO 9001:2008, NSI Quality Schedule SSQS 101, British Standards (e.g. BS EN50132, PD6662 & BS EN50131), NSI Codes of Practice and Health & Safety obligations (e.g. NACP2, NACP11, NACP20 & NACP30).

In addition, the following shall be adhered to where relevant:

- BS EN 62676 Video surveillance systems for use in security applications
- BS EN 62676-1-1 Video System Requirements
- BS EN 62676-1-2 Video Transmission – General Video Transmission - Requirements
- BS EN 62676-2-1 Video Transmission Protocols – General Requirements
- BS EN 62676-2-2 Video Transmission Protocols – IP Interoperability implementation based on HTTP and REST services
- BS EN 62676-2-3 Video Transmission Protocols – IP Interoperability implementation based on web services
- BS EN 62676-3 Analog and Digital Video Interfaces
- BS EN 62676-4 Application guidelines
- BS EN 60529 Degrees of Protection provided by Enclosures (IP Code)
- BS EN 50132-7 CCTV surveillance systems for use in security applications: Application guidelines
- BS 5979 Remote centres receiving signals from fire and security systems. Code of practice



- BS 7671 Requirements for electrical installations. IET Wiring Regulations.
- BS 7958 CCTV Management and Operation – Code of Practice
- BS 8418 Installation and remote monitoring of detector activated CCTV systems – Code of practice
- BS 8495 Code of Practice for digital CCTV recording systems for the purpose of image export to be used as evidence
- BS 8591 Remote centres receiving signals from alarm systems – code of practice
- BS 10008 Evidential weight and legal admissibility of electronic information

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SECTION 2.00

CLOSED CIRCUIT TELEVISION SYSTEM

2.01 INTRODUCTION

This specification details the requirements for the replacement of the existing CCTV system within the Westminster Central Reference Library located at 35 St Martin's Street, London WC2H 7HP.

It shall be considered that the building is a listed building – grade 2, therefore all the works shall be carried out with the intent of respecting and protecting the building characteristics.

The Contractor shall design, provide, install, test, set to work and commission the cabling and equipment of the new CCTV system as described by the details herein.

This specification shall be read in conjunction with the drawing appended herein.

2.02 SURVEY AND VALIDATION WORKS

The Contractor shall allow to attend site and carry out a comprehensive survey in order to fully familiarise themselves with the site and understand the extent of the works required, as detailed within this specification.

During attendance, the contractor shall identify the proposed locations of equipment and routes for cabling, containment, power supplies and data points.

The contractor shall carry out the following survey/validation works prior to carrying out the primary works detailed within this specification:

- The contractor shall validate the existing small power and data system within the Management Office and across the building, confirming the suitability of deriving power supply and data service for the new CCTV system and the external light at the Long's Court entrance.

2.03 OUTLINE SCOPE OF WORKS

The works associated with this contract comprise the installation of a dedicated CCTV system, which includes all necessary civil works, installation of power supplies etc.

The contractor shall design, supply, deliver, install, test, set to work, commission, and leave in working order the following outline scope of works:

- Survey and validate the existing power supplies, data points, wiring and containment systems associated with the new CCTV System.
- Preparation of working drawings for approval.
- Strip out of any redundant services.
- Design, provision, and installation of the new required containment.
- Design, provision, and installation of all new required cabling.
- Design, provision, and installation of 29no. new CCTV cameras
- Design, provision, and installation of small power supply as required.



- Design, provision, and installation of new Digital Video Recorder equipment.
- Selection, provision, and installation of a new security enclosure to accommodate the new digital video recorder equipment.
- Provision and installation of CCTV signage.
- Cost Option – 12 months Maintenance Contract.
- Cost Option – Provision of remote viewing system.
- Cost Option – Selection, provision, and installation of a new external IP67 Luminaire controlled by PIR and Solar Photocell sensor at the Long's Court Entrance.
- Testing and commissioning
- Provision of record drawings
- Provision of O&M manuals

Any items not specifically included within this specification, which can reasonably be assumed to form part of the works shall be included by the contractor.

2.04 CAMERAS

The contractor shall allow to design, provide and install 25no. new cameras with Hardwired Data Transmission and Hardwired Power Supply, of which shall be installed wall mounted as shown on the drawings.

The cameras shall be installed to ensure coverage of the field of view, as shown on the drawings, is achieved. It is appreciated that there will be some blind spots in the corners of the field of view. Although, **the Contractor is responsible to ensure there is no blind spot within the following rooms/spaces due to a Client's requirement to get 100% coverage of these areas.**

- RL03-08 Stairs
- RL02-11 Stairs
- RL02-12 Circulation
- RL02-14 Library work area
- RL02-02 Book Storage
- RL01-06 Stairs
- RL01-07 Music Library
- RLG-07 Stairs
- RLG-12 Main library
- External camera on ground floor

The cameras shall be as provided by Hikvision and shall be of the model as follows:

- Model 1: 8MP ColorVu Strobe Light model or equal and approved.
- Model 2: 4MP AcuSense Motorized Varifocal Bullet Network Camera or equal and approved.
- Model 3: 12MP DeepinView Fisheye Network Camera or equal and approved.

The new cameras shall be installed according to the following camera schedule, coverage, and model (their location shall be as indicated on FHP Drawings):



- RL03-08 Stairs – Third Floor
 - Camera: model 1
 - Camera Location: Wall mounted at high level within the stairs
 - Camera Coverage: 88° area
 - Coverage Purpose: Monitor & Observe

- RL02-11 Stairs – Second Floor
 - Camera: model 1
 - Camera Location: Wall mounted at high level within the stairs
 - Camera Coverage: 88° area
 - Coverage Purpose: Monitor & Observe

- RL02-12 Circulation – Second Floor
 - Camera: model 1
 - Camera Location: Wall mounted at high level within the Circulation area
 - Camera Coverage: 88° area
 - Coverage Purpose: Monitor & Observe

- RL02-14 Library work area – Second Floor

2no cameras shall be installed in this room that shall be as indicated below.

 - Camera: model 1
 - Camera Location: Wall mounted at high level within the Library work area
 - Camera Coverage: 88° area
 - Coverage Purpose: Monitor & Observe

- RL02-02 Book Storage – Second Floor

2no cameras shall be installed in this room that shall be as indicated below.

 - Camera: model 1
 - Camera Location: Wall mounted at high level within the Book Storage
 - Camera Coverage: 88° area
 - Coverage Purpose: Monitor & Observe

- RL01-06 Stairs – First Floor
 - Camera: model 1
 - Camera Location: Wall mounted at high level within the stairs
 - Camera Coverage: 88° area
 - Coverage Purpose: Monitor & Observe

- RL01-07 Music Library – First Floor

7no cameras shall be installed in this room as indicated within FHPESS tender drawings.

 - Camera: model 1
 - Camera Location: Wall mounted at high level within the Music Library



- Camera Coverage: 88° area
- Coverage Purpose: Monitor & Observe

1no camera shall be installed at high level as shown on the tender drawings

- Camera: model 3
- Camera Location: Ceiling mounted at high level within the Music Library
- Camera Coverage: 180° area
- Coverage Purpose: Monitor & Observe

- RLG-07 Stairs – Ground Floor

2no cameras shall be installed in this room that shall be as indicated below.

- Camera: model 1
- Camera Location: Wall mounted at high level within the stairs
- Camera Coverage: 88° area
- Coverage Purpose: Monitor & Observe

- RLG-12 Main Library – Ground Floor

9no cameras shall be installed in this room that shall be as indicated below of 8MP.

- Camera: model 1
- Camera Location: Wall mounted at high level within the Main Library
- Camera Coverage: 88° area
- Coverage Purpose: Monitor & Observe

- Camera: model 3
- Camera Location: Ceiling mounted at high level within the Main Library
- Camera Coverage: 180° area
- Coverage Purpose: Monitor & Observe

- External camera on the ground floor of the building

- Camera Model: model 2
- Camera Location: Wall mounted (location aligned with FHP Drawings)
- Camera Coverage: 108° area
- Coverage Purpose: Monitor & Observe
- IP Rated: IP67

Cameras shall be wall mounted using Camera Mounting Adapters as provided by Hikvision, to fix the cameras on the walls at the locations as shown on the drawings.

The contractor shall allow to provide and install all other ancillaries as required to provide a working system and all necessary to achieve the client's requirements.

2.05 POWER SUPPLIES

The contractor shall allow to design, provide and install power supplies for all new CCTV cameras as required to make the system fully operable.



.01 General

The contractor shall validate the existing 13Amps Switched Fused Double Socket outlet serving the existing Network Video Recorder, NVR, within the Management Office, ensuring they are suitable to be retained

The cameras are all PoE and shall be served by Cat 5 cabling emanated from the new Digital Video Recorder, DVR.

.02 External Lighting

The contractor shall design, provide and install the required power supply to the proposed new external luminaire at the Long's Court door entrance. The power supply for this light shall be derived from the Distribution Board located within the Management Office, and the wiring system shall be accommodated within a new 50x50mm PVC Trunking to be wall mounted.

2.06 DIGITAL VIDEO RECORDING EQUIPMENT

The contractor shall design, provide and install a new Digital Video Recorder, DVR.

All cameras shall be connected back to the recorder via a hardwired network using CAT-5 cables.

A network video recorder shall be installed in the NVR Enclosure if required. The new DVR shall be ISD-7732NXI-M4/X M Series and provided by Hikvision, or equal and approved, and shall have the following characteristics as a minimum:

- 32-Channel capacity
- 16TB Hard Drive Disk
- H.264 Video compression
- Remote Connection Availability
- 12MP Resolution Recording
- HDMI & VGA Output
- c/w Keyboard and Mouse

The recorders shall come complete with 16TB of storage and ensure all cameras are recorded for the full 31 days as per the industry standard.

The storage retention capacity shall be calculated based on the cameras recording at 10 frames per second at full resolution on a recording cycle of 24 hours per day.

The contractor shall allow for fully programming and commissioning the new CCTV system to achieve the client's requirements are fully met and satisfied. This shall include setting up remote connection, as per the client's requirements.

The contractor shall include for system user training.



2.07 COST OPTION - REMOTE VIEWING

The contractor shall cost for a specialist contractor to liaise with the Client to arrange a date and time suitable to install software and set-up a remote viewing portal on the client's chosen device(s). This will enable the client to monitor the CCTV footage from a remote PC away from the site and a portable handheld device, such as Smartphone or Tablet.

2.08 EQUIPMENT ENCLOSURE

The contractor shall design, provide and install a new security enclosure located within the Management Office.

The new enclosure shall be large enough to accommodate all necessary equipment as per the existing installation and fit within the space available. All equipment shall be installed secure and tidied within the DVR Enclosure that shall be a lockable security enclosure.

The specialist contractor shall liaise with the client and enquire as to where the key for the lockable enclosure shall be located.

2.09 CONTAINMENT

The contractor shall allow to design, provide and install new containment as required for the installation of the CCTV system and any other equipment power supplies.

The contractor shall allow to provide and install new 50mm x 50mm white PVC trunking as to contain all CCTV cabling. This shall be installed wall mounted to avoid any penetration and any deterioration of the building fabric as the building is a listed with grade 2.

The contractor shall ensure all containment system is installed according to the building requirements and ask for client's permission before starting any installation works.

All cabling shall be installed in full accordance with manufacturer's installation instructions.

2.10 CABLE

The contractor shall allow to design, provide and install a wiring system between the recording equipment and the cameras as required. Cabling to cameras shall be installed within the dedicated trunking as aforementioned.

All CAT 5 cabling installed shall be CAT5 Network Cable – Low Smoke Zero Halogen (CAT5-LSZH) within the building, and not exceed a length of 100m per camera.

CAT 5 cabling shall be as provided by Beldon, or equal and approved.

All cabling and wiring shall be installed in a neat and unobtrusive manner, with all wiring being concealed within wall mounted containment as detailed in the previous section of this specification.



2.11 SIGNAGE

The contractor shall allow to design, provide and install 10no. CCTV signs at the main entrance and across the building as to ensure compliance with the Data Protection Act.

The sign shall state that 'CCTV recording is in operation on this site'.

The contractor shall install 1no. sign, of which shall be installed on the main entrance at the front of the building. The contractor shall ensure the sign is fixed completely rigidly as to ensure no accidental or vandals' removal is possible.

Exact location to be agreed on-site with Client.

2.12 COST OPTION - MAINTENANCE

The contractor shall provide costs option for a 12-month maintenance contract which would include 24-hour response. The maintenance cost should include for any call-out costs.

2.13 COST OPTION – EXTERNAL LIGHTING SYSTEM

The contractor shall provide costs option for design, provide and install a new external luminaire located at the Long's Court door entrance.

The new external luminaire shall be IP67 rated and controlled by a PIR and Photocell sensor to switch on during the night to avoid vandalism.

2.14 TESTING AND COMMISSIONING

The CCTV system shall be fully tested and commissioned with test sheets included within the O&M Manuals.

The contractor/electrical specialist shall allow for 2no. Demonstrations to the Engineer and client's representatives of the finished installation.

2.15 DEFECTS PERIOD

The Contractor shall include in their tender for the timely delivery and protection of all equipment, materials, and plant as may be necessary to ensure the works proceed in accordance with the overall programme together with extended warranties to ensure all manufacturers run for at least the full defects liability period, which is a minimum of 12 months from the date of Practical Completion and up to the date of issue of the Certificate of Making Good Defects.

2.16 LABELLING AND IDENTIFICATION

The Contractor/Electrical Specialist shall allow to provide and install labelling and identification in accordance with the details contained in this specification.



.01 Extent of Work

The Contractor/Electrical Specialist shall supply and install all necessary labelling and identification to all equipment, material, components and systems of the electrical services installation.

All signs and labels shall be displayed in accordance with BS 5378-2:1980, Chapter 51 section 514 conforming to the IEE Wiring Regulations and as agreed with the Engineer.

The contractor shall re-label the supply feeding the basement located in Switchroom C. This currently is labelled as serving the 'AIB' demise and shall be changed for the

.02 Label Types

The following principle colour co-ordination of signs/labels shall apply:

Warning -	Yellow background with black lettering
Mandatory -	Blue background with white lettering
General information -	White background with black lettering
Emergency -	Green background with white lettering
Prohibition -	White background with red lettering
Fire Fighting -	Red background with white lettering (except extinguishers which have particular colours)

.03 Warning Notices

All items of equipment or enclosures within which voltages exceeds 250 volts or separate enclosures or items of equipment that allow simultaneous human contact with live parts exceeding 250 volts to be so arranged that before access may be gained, a warning of the maximum voltage present shall be visible i.e. "DANGER 500 VOLTS".

Where switchgear is concerned which forms a unit construction the label to be centrally placed and preferable on the bus bar section. The number of labels to be determined by the size of the switchboard but at least one label every two metres length of switchboard to be provided.

Each switchboard shall have the primary warning triangle sign denoting "Caution, Risk of Electric Shock".

Where an isolator leaves any part of equipment or enclosure "live" when in the off position a warning notice to be used indicating that the equipment is not totally isolated and giving instructions for achieving further isolation.

Warning labels shall be fixed to high voltage cables or their protective covering at 1.5 metres (max) intervals with lettering 10mm. high in red on a white background.

A safety sign shall be fixed to every enclosure associated with a high voltage discharge lamp installation e.g. inductors, resistors, capacitors and transformers.



In addition a supplementary sign to be located below the warning sign which shall be located below the warning sign which shall be 10mm x 50mm yellow background with 5mm. black lettering stating DANGER plus the highest open circuit voltage to earth (i.e. 5000 volts A.C).

.04 General Information/Identification Labels

All electrical equipment shall be labelled to ensure correct identification and give essential operating functions which relate to each other.

All these labels shall conform to a white background with black lettering.

The main incoming switch to state:

- Main Isolator
- Rating
- Phase
- Voltage
- Incoming Cable Size in mm² and Cable Type System Earthing

Individual switch fuse, MCCB, isolator to state:

- The circuit which it controls with a general description of type of load
- Rating
- Phase
- Outgoing Cable Size in mm² and Cable Type

The main bus bar/main panel construction in addition to the warning/safety notices shall state:

- The British Standards to which it complies
- Fault Rating
- Classification Reference
- IP Rating

All distribution boards shall have external labels which state:

- Voltage
- Maximum Rating of Protective Devices Uses
- Type of Load Connected

All distribution boards shall have internal labels which state:

- Main cable size in mm²
- Phase Colour Indication
- Circuit Number*
- Description of Circuit*
- Circuit Protective Device Rating*
- Actual Circuit Current*



- Circuit Cable*

This applies to all final circuits and these labels/circuit charts to be completed in clear printing in black ink on a white background.

The individual phases to be identified with its phase colour of L1, L2, and L3 respectively.

Where a distribution arrangement incorporates contactors, time switches, relays, indicator lights and push buttons each of these to be labelled and indicate its function i.e. ON/OFF/AUTO together with what it controls i.e. "LIGHTING", "OVERRIDE SWITCH", and "TIMESWITCH FOR EXTERNAL LIGHTING".

These labels to conform to a white background with black lettering.

Local switchgear/isolators and control gear to have individual labels which shall be black lettering on a white background. These labels to indicate:

- Equipment Title
- Current Rating, Phase, Voltage
- Circuit Reference

The ON/OFF functions to be clearly indicated using an appropriate label where the operating positions are not clearly indicated on the equipment itself.

All junction boxes which form a marshalling point and junction point for fire alarm system, security systems and communication systems to have a label with black lettering and white background.

These labels to indicate:

- The Wiring System Enclosed
- Voltage
- Circuit(s) Reference

Additional Information/Identification Labels

Consideration to be given to the following:

- Particular identification of socket outlets
- Particular identification of switch/fused spur outlets
- Particular identification of lighting switches
- Particular identification of communication systems, special circuits
- Particular identification of building management system special circuits

.05 Emergency Labels

Where an item of equipment and or switchgear is designated for emergency operation the labelling shall be white lettering on a green background.



This labelling to be clearly indicate the item of equipment/ function it performs together with the emergency action required to be undertaken.

.06 Prohibition Labels

Where an item of equipment and/or switchgear is designated for prohibited use i.e.:

- “Danger Switch Off When Not in Use”
- “Do Not Switch Off”
- “Emergency Stop”

This labelling to be red lettering on a white background.

.07 Fire Fighting Labels

Where a particular item of equipment and/or switchgear is designated for fire fighting use i.e. “a fire alarm switch on a main switchgear panel” then this shall be clearly and differently indicated with a label which shall have white lettering on a red background.

.08 Labelling Material

The material to be a composite plastic component with three layers of rigid plastic (040” ABS) materials. The letter colour being the centre element of the composite and when engraved the composite to then expose the colour. The method to be as commonly referred to as “TRAFFOLYTE”.

All lettering to be upper case in capitals and generally the height of lettering that shall be used to be as follows:

- 6mm for Identification Labels
- 12mm for Warning Notices
- 12mm for the Principle Wording of an Emergency Sign
- 6mm for the Secondary Working of an Emergency Sign

The fixing used for all labels to be either bolted with gripping washer or riveted with space washers behind each rivet.

Two fixings to be provided for labels with a height up to 25mm. and where labels have a greater height than these four fixings – one in each corner of the label to be provided.



APPENDIX 1

DRAWING

Issued under separate cover



APPENDIX 2

TENDER SUMMARY

Issued under separate cover

DS-2CD2646G2-IZS

4 MP AcuSense Powered-by-DarkFighter Motorized Varifocal Bullet Network Camera

 AcuSense



Empowered by deep learning algorithms, Hikvision AcuSense technology brings human and vehicle targets classification alarms to front- and back-end devices. The system focuses on human and vehicle targets, vastly improving alarm efficiency and effectiveness.

- High quality imaging with 4 MP resolution
- Excellent low-light performance with powered-by-DarkFighter technology
- Motorized varifocal lens for easy installation
- Clear imaging against strong backlight due to 120 dB true WDR technology
- Efficient H.265+ compression technology
- Focus on human and vehicle targets classification based on deep learning
- Audio and alarm interface available
- Water and dust resistant (IP67) and vandal-resistant (IK10)

▪ Specification

Camera	
Image Sensor	1/3" Progressive Scan CMOS
Max. Resolution	2688 × 1520
Min. Illumination	Color: 0.003 Lux @ (F1.4, AGC ON), B/W: 0 Lux with IR
Shutter Time	1/3 s to 1/100,000 s
Day & Night	IR cut filter
Angle Adjustment	Pan: 0° to 355°, tilt: 0° to 90°, rotate: 0° to 360°
Lens	
Lens Type	Varifocal lens, motor-driven lens, 2.8 to 12 mm
Focal Length & FOV	2.8 to 12 mm, horizontal FOV 108° to 30°, vertical FOV 56° to 17°, diagonal FOV 131° to 35°
Lens Mount	Ø14
Iris Type	Fixed
Aperture	F1.4
DORI	
DORI	2.8 to 12 mm: Wide: D: 64.0 m, O: 25.4 m, R: 12.8 m, I: 6.4 m Tele: D: 190 m, O: 75.4 m, R: 38.0 m, I: 19.0 m
Illuminator	
Supplement Light Type	IR
Supplement Light Range	Up to 60 m
Smart Supplement Light	Yes
IR Wavelength	Yes
Video	
Main Stream	50 Hz: 25 fps (2688 × 1520, 1920 × 1080, 1280 × 720) 60 Hz: 30 fps (2688 × 1520, 1920 × 1080, 1280 × 720)
Sub-Stream	50 Hz: 25 fps (1280 × 720, 640 × 480, 640 × 360) 60 Hz: 30 fps (1280 × 720, 640 × 480, 640 × 360)
Third Stream	50 Hz: 10 fps (1920 × 1080, 1280 × 720, 640 × 480, 640 × 360) 60 Hz: 10 fps (1920 × 1080, 1280 × 720, 640 × 480, 640 × 360) *Third stream is supported under certain settings.
Video Compression	Main stream: H.265/H.264/H.265+/H.264+ Sub-stream: H.265/H.264/MJPEG Third stream: H.265/H.264 *Third stream is supported under certain settings.
Video Bit Rate	32 Kbps to 8 Mbps
H.264 Type	Baseline Profile/Main Profile/High Profile
H.265 Type	Main Profile
Bit Rate Control	CBR/VBR
Scalable Video Coding (SVC)	H.264 and H.265 encoding
Region of Interest (ROI)	1 fixed region for main stream and sub-stream
Audio	
Audio Type	Mono sound

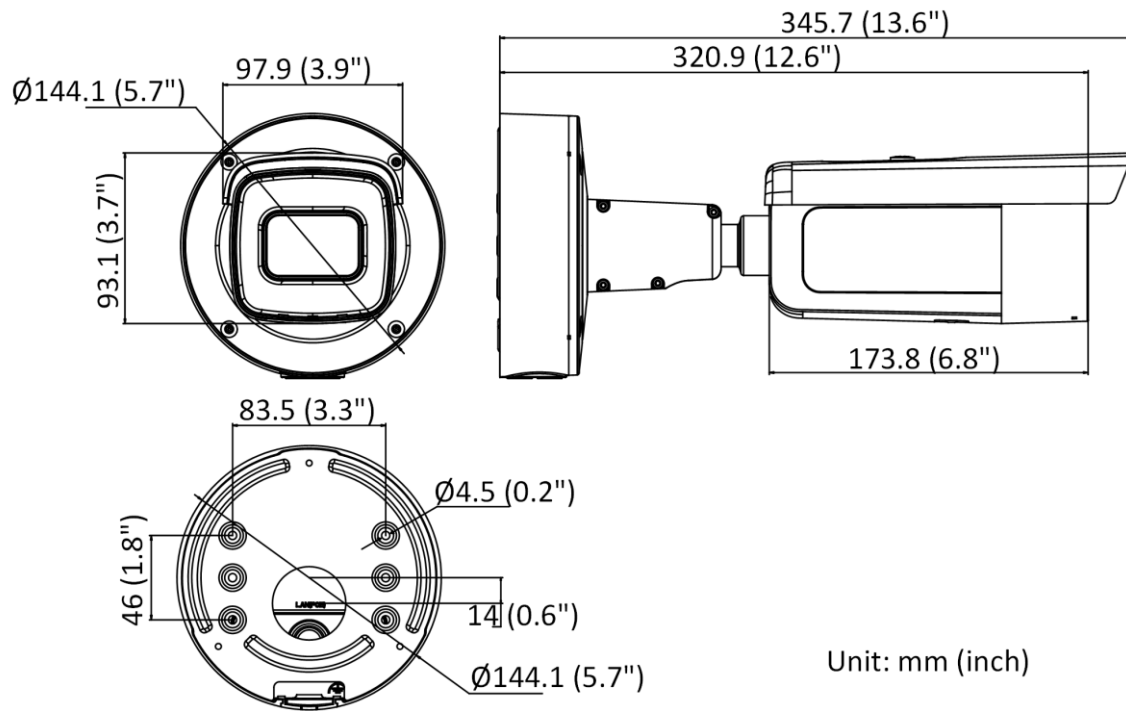
Audio Compression	G.711/G.722.1/G.726/MP2L2/PCM/MP3/AAC-LC
Audio Bit Rate	64 Kbps (G.711ulaw/G.711alaw)/16 Kbps (G.722.1)/16 Kbps (G.726)/32 to 192 Kbps (MP2L2)/8 to 320 Kbps (MP3)/16 to 64 Kbps (AAC-LC)
Audio Sampling Rate	8 kHz/16 kHz/32 kHz/44.1 kHz/48 kHz
Environment Noise Filtering	Yes
Network	
Protocols	TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, NTP, UPnP, SMTP, IGMP, 802.1X, QoS, IPv4, IPv6, UDP, Bonjour, SSL/TLS, PPPoE, SNMP, ARP, WebSocket, WebSockets
Simultaneous Live View	Up to 6 channels
API	Open Network Video Interface (PROFILE S, PROFILE G, PROFILE T), ISAPI, SDK
User/Host	Up to 32 users. 3 user levels: administrator, operator and user
Security	Password protection, complicated password, HTTPS encryption, IP address filter, Security Audit Log, basic and digest authentication for HTTP/HTTPS, TLS 1.1/1.2, WSSE and digest authentication for Open Network Video Interface
Network Storage	NAS (NFS, SMB/CIFS), Auto Network Replenishment (ANR), Together with high-end Hikvision memory card, memory card encryption and health detection are supported.
Client	iVMS-4200, Hik-Connect, Hik-Central
Web Browser	Plug-in required live view: IE 10, IE 11, Plug-in free live view: Chrome 57.0+, Firefox 52.0+, Edge 89+, Local service: Chrome 57.0+, Firefox 52.0+, Edge 89+
Image	
Image Parameters Switch	Yes
Image Settings	Rotate mode, saturation, brightness, contrast, sharpness, gain, white balance adjustable by client software or web browser
Day/Night Switch	Day, Night, Auto, Schedule
Wide Dynamic Range (WDR)	120 dB
SNR	≥ 52 dB
Image Enhancement	BLC, HLC, 3D DNR
Interface	
Ethernet Interface	1 RJ45 10 M/100 M self-adaptive Ethernet port
On-Board Storage	Built-in memory card slot, support microSD card, up to 512 GB
Audio	1 input (line in), 3.5 mm connector, max. input amplitude: 3.3 Vpp, input impedance: 4.7 KΩ, interface type: non-equilibrium; 1 output (line out), 3.5 mm connector, max. output amplitude: 3.3 Vpp, output impedance: 100 Ω, interface type: non-equilibrium
Alarm	1 input, 1 output (max. 24 VDC/24 VAC, 1 A)
Reset Key	Yes
Event	
Basic Event	Motion detection (human and vehicle targets classification), video tampering alarm, exception
Smart Event	Line crossing detection, intrusion detection, region entrance detection, region exiting detection (support alarm triggering by specified target types (human and vehicle)) Scene change detection

Linkage	Upload to NAS/memory card/FTP, notify surveillance center, trigger recording, trigger capture, send email, audible warning
Deep Learning Function	
Face Capture	Yes
General	
Power	12 VDC \pm 25%, 1.08 A, max. 13 W, \varnothing 5.5 mm coaxial power plug, reverse polarity protection PoE: 802.3at, Class 4, 42.5 V to 57 V, 0.36 A to 0.27 A, max. 15 W
Material	ADC12
Dimension	\varnothing 144.1 mm \times 345.7 mm (\varnothing 5.7" \times 13.6")
Package Dimension	385 mm \times 190 mm \times 180 mm (15.2" \times 7.5" \times 7.1")
Weight	Approx. 1445 g (3.2 lb.)
With Package Weight	Approx. 2571 g (5.7 lb.)
Storage Conditions	-30 °C to 60 °C (-22 °F to 140 °F). Humidity 95% or less (non-condensing)
Startup and Operating Conditions	-30 °C to 60 °C (-22 °F to 140 °F). Humidity 95% or less (non-condensing)
Language	33 languages English, Russian, Estonian, Bulgarian, Hungarian, Greek, German, Italian, Czech, Slovak, French, Polish, Dutch, Portuguese, Spanish, Romanian, Danish, Swedish, Norwegian, Finnish, Croatian, Slovenian, Serbian, Turkish, Korean, Traditional Chinese, Thai, Vietnamese, Japanese, Latvian, Lithuanian, Portuguese (Brazil), Ukrainian
General Function	Anti-flicker, heartbeat, mirror, privacy mask, flash log, password reset via email, pixel counter
Approval	
EMC	FCC (47 CFR Part 15, Subpart B); CE-EMC (EN 55032: 2015, EN 61000-3-2: 2014, EN 61000-3-3: 2013, EN 50130-4: 2011 +A1: 2014); RCM (AS/NZS CISPR 32: 2015); KC (KN 32: 2015, KN 35: 2015)
Safety	UL (UL 60950-1); CB (IEC 60950-1: 2005 + Am 1: 2009 + Am 2: 2013); CE-LVD (EN 60950-1: 2005 + Am 1: 2009 + Am 2: 2013); LOA (IEC/EN 60950-1)
Environment	CE-RoHS (2011/65/EU); WEEE (2012/19/EU); Reach (Regulation (EC) No 1907/2006)
Protection	IP67: IEC 60529-2013, IK10: IEC 62262:2002

▪ Available Model




DS-2CD2646G2-IZS(2.8-12mm)

▪ **Dimension**



▪ **Accessory**

▪ **Optional**

DS-1476ZJ-SUS Corner Mount	DS-1275ZJ-S-SUS Vertical Pole Mount	DS-2251ZJ Pendant Mount
		

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DS-2CD2387G2-LSU/SL

8 MP ColorVu Strobe Light and Audible Warning Fixed Turret Network Camera

ColorVu



Hikvision ColorVu technology provides 24/7 vivid colorful images with F1.0 advanced lenses and high performance sensors. F1.0 super-aperture collects more light to produce brighter images. Advanced sensor technology can vastly improve the utilization of available light.

- High quality imaging with 8 MP resolution
- Efficient H.265+ compression technology
- Clear imaging against strong backlight due to 130 dB WDR technology
- Focus on human and vehicle targets classification based on deep learning
- 24/7 colorful imaging
- Active strobe light and audio alarm to warn intruders off
- Provide real-time security via built-in two-way audio
- Audio and alarm interface available
- Water and dust resistant (IP67)

▪ Specification

Camera	
Image Sensor	1/1.2" Progressive Scan CMOS
Max. Resolution	3840 × 2160
Shutter Speed	1/3 s to 1/100,000 s
Min. Illumination	Color: 0.0005 Lux @ (F1.0, AGC ON), 0 Lux with white light
Day & Night	24/7 Color imaging
Angle Adjustment	Pan: 0° to 360°, tilt: 0° to 75°, rotate: 0° to 360°
Lens	
Lens Type	Fixed focal lens, 2.8 and 4 mm optional
Focal Length & FOV	2.8 mm, horizontal FOV 102°, vertical FOV 52°, diagonal FOV 124° 4 mm, horizontal FOV 88°, vertical FOV 47°, diagonal FOV 104°
Lens Mount	M mount
Iris Type	Fixed
Aperture	F1.0
Depth of Field	2.8 mm: 4 m to ∞ 4 mm: 6.2 m to ∞
DORI	
DORI	2.8 mm: D: 96 m, O: 38 m, R: 19 m, I: 9 m 4 mm: D: 102 m, O: 40 m, R: 20 m, I: 10 m
Illuminator	
Supplement Light Type	White Light
Supplement Light Range	Up to 30 m
Smart Supplement Light	Yes
Video	
Main Stream	50 Hz: 25 fps (3840 × 2160, 3200 × 1800, 2688 × 1520, 1920 × 1080, 1280 × 720) 60 Hz: 24 fps (3840 × 2160) 30 fps (3200 × 1800, 2688 × 1520, 1920 × 1080, 1280 × 720)
Sub-Stream	50 Hz: 25 fps (1280 × 720, 640 × 480, 640 × 360) 60 Hz: 30 fps (1280 × 720, 640 × 480, 640 × 360)
Third Stream	50 Hz: 10 fps (1920 × 1080, 1280 × 720, 640 × 480, 640 × 360) 60 Hz: 10 fps (1920 × 1080, 1280 × 720, 640 × 480, 640 × 360)
Video Compression	Main stream: H.265/H.264/H.264+/H.265+ Sub-stream: H.265/H.264/MJPEG Third stream: H.265/H.264
Video Bit Rate	32 Kbps to 16 Mbps
H.264 Type	Baseline Profile/Main Profile/High Profile
H.265 Type	Main Profile
Bit Rate Control	CBR/VBR
Scalable Video Coding (SVC)	H.264 and H.265 encoding
Region of Interest (ROI)	1 fixed region for main stream and sub-stream
Audio	
Environment Noise Filtering	-U: Yes
Audio Sampling Rate	-U: 8 kHz/16 kHz/32 kHz/44.1 kHz/48 kHz

Audio Compression	-U: G.711ulaw/G.711alaw/G.722.1/G.726/MP2L2/PCM/MP3/AAC-LC
Audio Bit Rate	-U: 64 Kbps (G.711ulaw/G.711alaw)/16 Kbps (G.722.1)/16 Kbps (G.726)/32 to 192 Kbps (MP2L2)/8 to 320 Kbps (MP3)/16 to 64 Kbps (AAC-LC)
Network	
Simultaneous Live View	Up to 6 channels
API	Open Network Video Interface (Profile S, Profile G, Profile T), ISAPI, SDK , ISUP
Protocols	TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, NTP, UPnP, SMTP, IGMP, 802.1X, QoS, IPv4, IPv6, UDP, Bonjour, SSL/TLS, PPPoE, SNMP, WebSocket, WebSockets
User/Host	Up to 32 users. 3 user levels: administrator, operator and user
Security	Password protection, complicated password, HTTPS encryption, IP address filter, Security Audit Log, basic and digest authentication for HTTP/HTTPS, TLS 1.1/1.2, WSSE and digest authentication for Open Network Video Interface
Network Storage	NAS (NFS, SMB/CIFS), auto network replenishment (ANR)
Client	iVMS-4200, Hik-Connect, Hik-Central
Web Browser	Plug-in required live view: IE 10, IE 11 Plug-in free live view: Chrome 57.0+, Firefox 52.0+, Edge 89+ Local service: Chrome 57.0+, Firefox 52.0+, Edge 89+
Image	
Wide Dynamic Range (WDR)	130 dB
SNR	≥ 52 dB
Privacy Mask	8 programmable polygon privacy masks, mask color or mosaic configurable
Day/Night Switch	Day, Night, Auto, Schedule
Image Enhancement	BLC, HLC, 3D DNR
Image Parameters Switch	Yes
Image Settings	Rotate mode, saturation, brightness, contrast, sharpness, gain, white balance adjustable by client software or web browser
Interface	
Ethernet Interface	1 RJ45 10 M/100 M self-adaptive Ethernet port
On-Board Storage	Built-in memory card slot, support microSD/microSDHC/microSDXC/TF card, up to 512 GB
Built-in Microphone	Yes
Built-in Speaker	1.5 W, 10 cm: 95 dB
Audio	1 input (line in), max. input amplitude: 3.3 Vpp, input impedance:4.7 KΩ, interface type: non-equilibrium 1 output (line out), max.output amplitude: 3.3 Vpp, output impedance: 100 Ω, interface type: non-equilibrium
Alarm	1 input, 1 output (max. 24 VDC, 1 A)
Reset Key	Yes
Event	
Basic Event	Motion detection (support alarm triggering by specified target types (human and vehicle)), video tampering alarm, exception (network disconnected, IP address conflict, illegal login, HDD full, HDD error)
Smart Event	Line crossing detection, intrusion detection, region entrance detection, region exiting detection (support alarm triggering by specified target types (human and vehicle)), scene change detection

Linkage	Upload to NAS/memory card/FTP, notify surveillance center, trigger record, trigger capture, send email
Deep Learning Function	
Face Capture	Yes
General	
Power	12 VDC ± 25%, 0.63 A, max. 8.5 W, Ø5.5 mm coaxial power plug, reverse polarity protection PoE: 802.3af, Class 3, 36 V to 57 V, 0.24 A to 0.15 A
Material	Cover: metal, main body: metal
Dimension	Ø138.3 mm × 120.1 mm (Ø5.4" × 4.7")
Package Dimension	170 mm × 170 mm × 150 mm (6.7" × 6.7" × 5.9")
Weight	Approx. 900 g (2.0 lb.)
With Package Weight	Approx. 1190 g (2.6 lb.)
Storage Conditions	-30 °C to 60 °C (-22 °F to 140 °F). Humidity 95% or less (non-condensing)
Startup and Operating Conditions	-30 °C to 60 °C (-22 °F to 140 °F). Humidity 95% or less (non-condensing)
Language	33 languages English, Russian, Estonian, Bulgarian, Hungarian, Greek, German, Italian, Czech, Slovak, French, Polish, Dutch, Portuguese, Spanish, Romanian, Danish, Swedish, Norwegian, Finnish, Croatian, Slovenian, Serbian, Turkish, Korean, Traditional Chinese, Thai, Vietnamese, Japanese, Latvian, Lithuanian, Portuguese (Brazil), Ukrainian
General Function	Anti-flicker, heartbeat, mirror, password reset via e-mail, pixel counter
Approval	
EMC	FCC: 47 CFR Part 15, Subpart B CE-EMC: EN 55032: 2015, EN 61000-3-2: 2019, EN 61000-3-3: 2013 + A1: 2019, EN 50130-4: 2011 + A1: 2014 RCM: AS/NZS CISPR 32: 2015 IC: ICES-003: Issue 7 KC: KN32: 2015, KN35: 2015
Safety	UL: UL 62368-1 CB: IEC 62368-1: 2014 + A11 CE-LVD: EN 62368-1: 2014/A11: 2017
Environment	CE-RoHS: 2011/65/EU WEEE: 2012/19/EU Reach: Regulation (EC) No 1907/2006
Protection	IP67: IEC 60529-2013

▪ **Typical Application**

Hikvision products are classified into three levels according to their anti-corrosion performance. Refer to the following description to choose for your using environment.

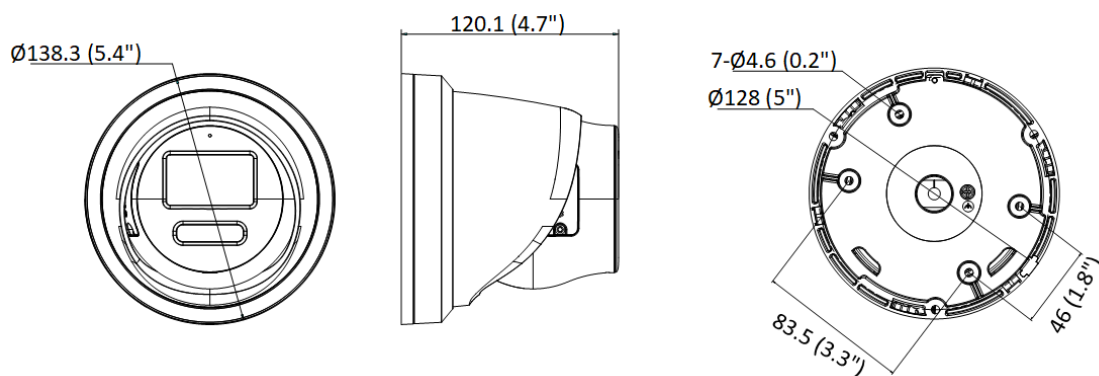
This model has NO SPECIFIC PROTECTION.

Level	Description
Top-level protection	Hikvision products at this level are equipped for use in areas where professional anti-corrosion protection is a must. Typical application scenarios include coastlines, docks, chemical plants, and more.
Moderate protection	Hikvision products at this level are equipped for use in areas with moderate anti-corrosion demands. Typical application scenarios include coastal areas about 2 kilometers (1.24 miles) away from coastlines, as well as areas affected by acid rain.
No specific protection	Hikvision products at this level are equipped for use in areas where no specific anti-corrosion protection is needed.

▪ **Available Model**

DS-2CD2387G2-LSU/SL (2.8/4 mm)







▪ **Dimension**



Unit: mm (inch)

▪ **Accessory**

▪ **Optional**

DS-1280ZJ-PT6 Junction Box	DS-1271ZJ-140 Pendant Mount	DS-1276ZJ-SUS Corner Mount	DS-1273ZJ-140B Wall Mount	DS-1275ZJ-SUS Vertical Pole Mount
				
<p data-bbox="165 685 331 752">DS-1273ZJ-140 Wall Mount</p> 				

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DS-2CD63C5G1-IVS 12 MP DeepinView IR Network Fisheye Camera

DeepinView^{series}

IMMERVISION
enables®



DS-2CD63C5G1-IVS is a fisheye network camera capable of providing a 360-degree panoramic image of its scene. The progressive scan CMOS sensor provides high-resolution images of up to 3504 × 3504. Up to 20 live view display modes, designed for 3 mount types, meet various user preferences. Three independently controlled IR lights offer a range of 15 m and provide good vision in low or even zero-light environment.

- Heatmap: based on deep learning algorithms, the camera counts people and presents an intuitive map
- Multi dewarping modes: the image can be dewarped to normal image for viewing intuitively
- Built-in mic and speaker: the camera supports two-way audio for real-time audio security monitoring and communication
- Built-in IR light: an IR range of 15 meters provides good visibility in low or even zero-light environments
- High resolution 12 MP: capturing clear images even when dewarped into 4-image PTZ mode
- Each image is clear and detailed
- Panomorph lens RPL: 89VVT
- Water and dust resistant (IP67) and vandal resistant (IK10)

▪ Specification

Camera	
Image Sensor	1/1.8" Progressive Scan CMOS
Max. Resolution	3504 × 3504
Min. Illumination	Color: 0.03 Lux @ (F2.2, AGC ON), B/W: 0.006 Lux @ (F2.2, AGC ON), B/W: 0 Lux with IR
Shutter Time	1 s to 1/100,000 s
Day & Night	IR cut filter
Lens	
Lens Type	Fixed focal lens, 1.29 mm
Focal Length & FOV	1.29 mm, horizontal FOV 180°, vertical FOV 180°
Iris Type	Fixed
Aperture	F2.2
Depth of Field	0.2 m to ∞
DORI	
DORI	D: 27.9 m O: 11.1 m R: 5.6 m I: 2.8 m
Illuminator	
Supplement Light Type	IR
Supplement Light Range	Up to 15 m
Supplement Light Number	3
Smart Supplement Light	Yes
IR Wavelength	850 nm
HEOP	
Open Resources	Memory: 60 MB, Smart RAM: 800 MB, eMMC: 2 GB
Computing Power	2 TOPS
Open Capability	HEOP 2.0 OpendevSDK
Deep Learning Structure	Caffe, TensorFlow, PyTorch
Programming Language	C, C++

Video	
Main Stream	Fisheye View: 3504 × 3504, 3024 × 3024, 2560 × 2560, 2048 × 2048 180 Panorama View: 3072 × 2304, 2048 × 1536 180 Dual Channel Panorama View: 3072 × 1152 Panorama View: 3072 × 2304, 2048 × 1536 4PTZ View: camera 01/camera 02/camera 03/camera 04: 1600 × 1200 Fisheye + 3PTZ View: camera 01: 2560 × 2560, 2048 × 2048, 1280 × 1280 camera 02/camera 03/camera 04: 1600 × 1200 4PTZ Fusion View: 3200 × 2400, 2048 × 1536
Sub-Stream	Fisheye View: 720 × 720, 480 × 480 180 Panorama View: 640 × 480, 320 × 240 180 Dual Channel Panorama View: 640 × 480, 320 × 240 Panorama View: 640 × 360, 320 × 240 4PTZ View: camera 01/camera 02/camera 03/camera 04: 640 × 480, 320 × 240 Fisheye + 3PTZ View: camera 01: 720 × 720 camera 02/camera 03/camera 04: 640 × 480, 320 × 240
Video Compression	Main stream: H.265+/H.265/H.264+/ H.264, Sub-stream: H.265/H.264/MJPEG
Video Bit Rate	32 Kbps to 16 Mbps
H.264 Type	Baseline Profile, Main Profile, High Profile
H.265 Type	Main Profile
Bit Rate Control	CBR, VBR
Scalable Video Coding (SVC)	H.264 and H.265 encoding
Region of Interest (ROI)	4 fixed regions for each stream
Fisheye Display	
Mount Type	Support wall/table/ceiling mounting
Decoding Mode	Support hardware decoding and software decoding
Display Mode	20 display modes in total, Software decoding: fisheye view, 180 panorama view, 360 panorama view, 360 panorama + PTZ, 360 panorama + 3PTZ, 360 panorama + 6PTZ, 360 panorama + 8PTZ, 2PTZ, 4PTZ, fisheye + 3PTZ, fisheye + 8PTZ, hemisphere, AR hemisphere, cylinder, Hardware decoding: fisheye view, 180 panorama view, 180 dual channel panorama, panorama view, 4PTZ, fisheye + 3PTZ, 4PTZ fusion

Audio	
Audio Compression	G.711/G.722.1/G.726/MP2L2/PCM/MP3/AAC-LC
Audio Bit Rate	64 Kbps (G.711ulaw/G.711alaw)/16 Kbps (G.722.1)/16 Kbps (G.726)/32 to 192 Kbps (MP2L2)/8 to 320 Kbps (MP3)/16 to 64 Kbps (AAC-LC)
Audio Sampling Rate	8 kHz/16 kHz/32 kHz/48 kHz
Environment Noise Filtering	Yes
Network	
Protocols	TCP/IP, ICMP, HTTP, HTTPS, FTP, SFTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, PPPoE, NTP, UPnP, SMTP, SNMP, IGMP, 802.1X, QoS, IPv4, IPv6, UDP, Bonjour, SSL/TLS, ISUP, ARP, WebSocket, WebSockets
Simultaneous Live View	Up to 20 channels
API	Open Network Video Interface (Profile S, Profile G, Profile T), ISAPI, SDK, ISUP
User/Host	Up to 32 users 3 user levels: administrator, operator, and user
Security	Password protection, complicated password, HTTPS encryption, 802.1X authentication (EAP-TLS, EAP-LEAP, EAP-MD5), watermark, IP address filter, basic and digest authentication for HTTP/HTTPS, WSSE and digest authentication for Open Network Video Interface, RTP/RTSP over HTTPS, control timeout settings, security audit log, TLS 1.2, host authentication (MAC address)
Network Storage	NAS (NFS, SMB/CIFS), Auto Network Replenishment (ANR), Together with high-end Hikvision memory card, memory card encryption and health detection are supported.
Client	iVMS-4200, iVMS-4500, iVMS-5200, Hik-Connect
Web Browser	Plug-in required live view: IE 10, IE 11, Plug-in free live view: Chrome 57.0+, Firefox 52.0+, Edge 89+, Safari 11+, Local service: Chrome 57.0+, Firefox 52.0+, Edge 89+
Image	
Image Parameters Switch	Yes
Image Settings	saturation, brightness, contrast, sharpness, white balance, AGC, adjustable by client software or web browser
Day/Night Switch	Day, Night, Auto, Schedule, Alarm Trigger
Wide Dynamic Range (WDR)	Digital WDR
Image Enhancement	BLC, HLC, 3D DNR, Distortion Correction, Defog
Privacy Mask	8 programmable polygon privacy masks
Picture Overlay	LOGO picture can be overlaid on video with 128 × 128 24 bit bmp format.
Interface	
Ethernet Interface	1 RJ45 10 M/100 M/1000 M self-adaptive Ethernet port
On-Board Storage	Built-in memory card slot, support microSD/microSDHC/microSDXC card, up to 256 GB
Built-in Microphone	Yes, 4 built-in microphones
Built-in Speaker	Yes, 1 built-in speaker
Audio	1 input (line in), 3.5 mm connector, max. input amplitude: 3.3 Vpp, input impedance: 4.7 KΩ, interface type: non-equilibrium, 1 output (line out), 3.5 mm connector, max. output amplitude: 3.3 Vpp, output impedance: 100 Ω, interface type: non-equilibrium
Alarm	2 inputs, 2 outputs (max. 24 VDC, 1 A)
RS-485	1 RS-485 (Half duplex, HIKVISION, Pelco-P, Pelco-D, self-adaptive)

Reset Key	1 Reset Key
Event	
Basic Event	Motion detection, video tampering alarm, alarm input and output, exception (network disconnected, IP address conflict, illegal login, HDD full, HDD error)
Smart Event	Line crossing detection, intrusion detection, region entrance detection, region exiting detection, scene change detection, audio exception detection, defocus detection, unattended baggage detection, object removal detection
Linkage	Upload to FTP/NAS/memory card, notify surveillance center, send email, trigger alarm output, trigger recording, trigger capture
Deep Learning Function	
People Counting	Counts people entering, exiting and passing by separately (The data is stored in the flash.) Supports real-time uploading and uploading by statistic cycle Sends email reports on daily, weekly, monthly or annually basis Supports up to 3 detection regions, and independent arming schedule and linkage method
Queue Management	Supports up to 8 detection regions, and independent arming schedule and linkage method Supports 2 detection modes: regional people queuing-up, waiting time detection Generates reports to compare the efficiency of different queuing-ups and display the changing status of one queue Supports raw data export for further analysis Supports real-time data uploading and scheduled data uploading Regional people queuing-up: supports 4 alarm trigger conditions, including greater than threshold, less than threshold, equal to threshold, not equal to threshold Waiting time detection: supports 1 alarm trigger condition, including greater than threshold
Heat Map	A graphic description of visits (by calculating amount of people or amount of dwell time) in a configured area., Two report types are available, space heat map and time heat map line chart.
Intersection Analysis	Detects and analyze flow in an intersection-like scene, and generate reports Support one intersection of up to 10 ways
General	
Power	12 VDC \pm 20%, 1 A, max. 11.5 W, two-core terminal block, PoE: IEEE 802.3af, Class 3, max. 12.5 W
Material	Metal
Dimension	\varnothing 140.3 mm \times 59.4 mm (\varnothing 5.5" \times 2.3")
Package Dimension	260 mm \times 230 mm \times 135 mm (10.2" \times 9.1" \times 5.3")
Weight	Approx. 715 g (1.58 lb.)
With Package Weight	Approx. 1206 g (2.66 lb.)
Storage Conditions	-40 °C to 60 °C (-40 °F to 140 °F). Humidity 95% or less (non-condensing)
Startup and Operating Conditions	-40 °C to 60 °C (-40 °F to 140 °F). Humidity 95% or less (non-condensing)
Language	33 languages: English, Russian, Estonian, Bulgarian, Hungarian, Greek, German, Italian, Czech, Slovak, French, Polish, Dutch, Portuguese, Spanish, Romanian, Danish, Swedish, Norwegian, Finnish, Croatian, Slovenian, Serbian, Turkish, Korean, Traditional Chinese, Thai, Vietnamese, Japanese, Latvian, Lithuanian, Portuguese (Brazil), Ukrainian

General Function	Heartbeat, flash log, password reset via email, password protection, one-key reset, anti-banding
Heater	Yes
Cable Length	0.31 m (1.02 ft.)
Approval	
EMC	CE-EMC: EN 55032:2015+A1:2020, EN 50130-4:2011+A1:2014, EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A1:2019+A2:2021, EN 50121-4: 2016+A1:2019, RCM: AS/NZS CISPR 32: 2015, IC: ICES-003: Issue 7, KC: KN32: 2015, KN35: 2015
Safety	UL: UL 62368-1, CB: IEC 62368-1: 2014+A11, CE-LVD: EN 62368-1: 2014/A11: 2017, BIS: IS 13252 (Part 1): 2010/IEC 60950-1: 2005
Environment	CE-RoHS: 2011/65/EU, WEEE: 2012/19/EU, Reach: Regulation (EC) No 1907/2006
Protection	IP67: IEC 60529-2013, IK10: IEC 62262:2002

▪ Typical Application

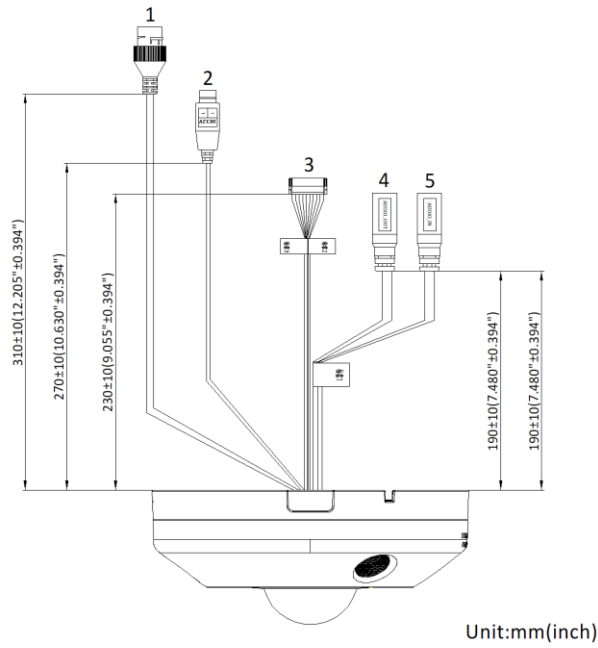
Hikvision products are classified into three levels according to their anti-corrosion performance. Refer to the following description to choose for your using environment.

This model has NO SPECIFIC PROTECTION.

Level	Description
Top-level protection	Hikvision products at this level are equipped for use in areas where professional anti-corrosion protection is a must. Typical application scenarios include coastlines, docks, chemical plants, and more.
Moderate protection	Hikvision products at this level are equipped for use in areas with moderate anti-corrosion demands. Typical application scenarios include coastal areas about 2 kilometers (1.24 miles) away from coastlines, as well as areas affected by acid rain.
No specific protection	Hikvision products at this level are equipped for use in areas where no specific anti-corrosion protection is needed.

▪ Physical Interface

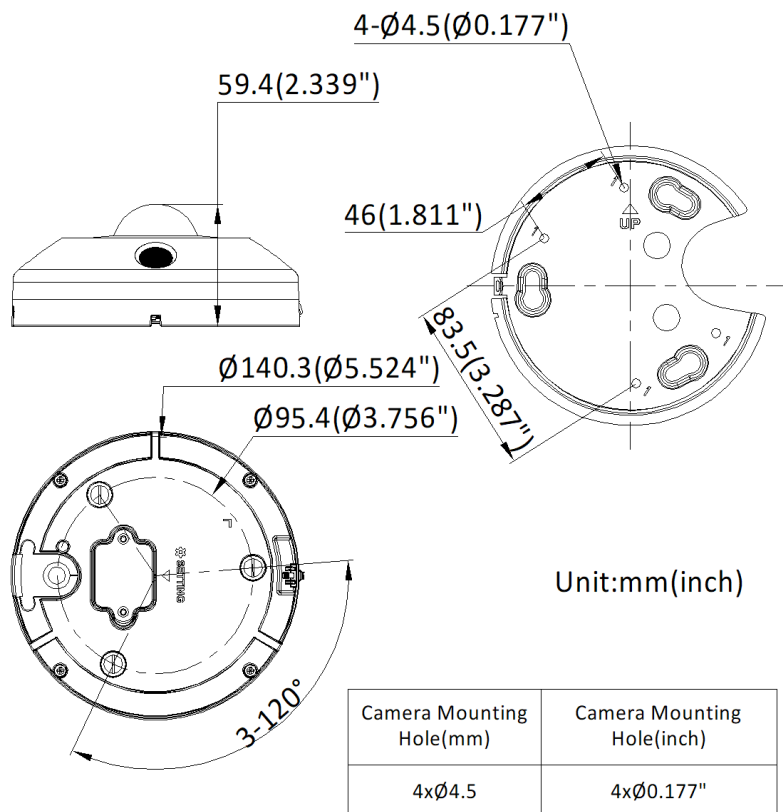
No.	Interface Description
1	Network Interface
2	Power Interface
3	Alarm Interface, RS-485
4	Audio Output Interface
5	Audio Input Interface



▪ Available Model

DS-2CD63C5G1-IVS(1.29mm)

▪ Dimension



▪ **Accessory**

▪ **Optional**

DS-1276ZJ-SUS Corner Mount	DS-2280ZJ-WA140 Junction Box	DS-1275ZJ-SUS Vertical Pole Mount	DS-1273ZJ-140B Wall Mount	DS-1273ZJ-140 Wall Mount
				
DS-1271ZJ-140 Pendant Mount				
				

**It is recommended to use DS-1276ZJ-SUS and DS-1275ZJ-SUS with DS-1273ZJ-140 or DS-1273ZJ-140B.*

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DS-9664NI-M8 M Series 8K NVR

Key Feature

- Up to 64-ch IP camera inputs
- Up to 2-ch@32 MP + 2-ch@8 MP/10-ch@8 MP/20-ch@4 MP/40-ch@1080p decoding capacity
- Up to 400 Mbps incoming bandwidth and 400 Mbps outgoing bandwidth
- 2 HDMI (different source) and 2 VGA (different source) interfaces, 8K or dual 4K video outputs
- Supports special cameras, including people counting camera, ANPR (automatic number plate recognition) camera, and fisheye camera
- Advanced streaming technology enables smooth live view in poor network conditions
- Supports RAID 0, 1, 5, 6, 10 and N+M hot spare for even more reliable data storage, effectively avoids data loss risks



Professional and Reliability

- H.265+ compression effectively reduces the storage space by up to 75%
- Dual-stream recording saves bandwidth
- Adopt stream over TLS encryption technology which provides more secure stream transmission service
- Support double verification for playback and downloading
- Solar-powered camera is connectable through OTAP protocol. NVR would get stream when user requests, and camera would send back videos according to the schedule

HD Video Output

- Provide independent HDMI and VGA outputs
- HDMI video output at up to 8K or dual 4K resolution

Storage and Playback

- 8 SATA interfaces for HDD connection (up to 16 TB capacity per HDD)
- 1 eSATA interface for HDD connection
- 16-ch synchronous playback