




SPECIFICATION FOR AUDIO CONFERENCE SYSTEM (L-S34)


CKE.LS.06.34.(00).2023

JKR 20300-0139-23

**CAWANGAN KEJURUTERAAN
ELEKTRIK**

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1.0 GENERAL

1.1 SCOPE

- 1.1.1 This section of the Specification describes and specifies requirements for the supply, delivery, installation, testing, commissioning and handing over in approved working order and maintenance during the Defects Liability Period (DLP) of the whole Audio Conference System in accordance with Conditions of Contracts, Bill of Quantities, Drawings and other related documents.

1.2 TECHNICAL PARTICULARS


- 1.2.1 Tenderers shall submit at the time of tendering all catalogues, detailed technical particulars and guarantees in respect of the equipment offered. The tenderers shall bind all these documents. No departure from these technical particulars and guarantees shall be permitted except with the written approval of the Superintendent Officer (S.O) and/or S.O's Representative.

1.3 GUARANTEES

- 1.3.1 The Tenderers shall guarantee all equipment to be supplied under this contract against faulty design, materials and workmanship at the manufacturer's works within the DLP.

1.4 ELECTRICAL SYSTEM

- 1.4.1 All equipment shall be rated for operation on a 230/400V (within the tolerance as defined in MS IEC 60038; 230/400V, +10%, -6%), 3 phase, 4 wire, 50Hz system with solidly earthed neutral.

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2.0 DESCRIPTION


2.1 SYSTEM DESCRIPTION

2.1.1 The system generally consists of the following components:

2.1.1.1 Central Control Unit

2.1.1.2 Chairman Unit

2.1.1.3 Delegate Unit

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3.0 EQUIPMENT

3.1 CENTRAL CONTROL UNIT

3.1.1 The central control unit manages the operation of the whole audio conference system, provides electrical power to the chairman and delegate units as well as providing external audio input and output connections to the installation. To cater for the total number of delegate units as specified in the drawing or bill of quantities, expansion units or additional central control units may be required. The cost of all these expansion or additional shall deem to be included in the Contract.

3.1.2 The central control unit shall comply with the following minimum technical specifications:


Type	:	Rack mount
Audio conference connection	:	Chairman and all delegate units
External audio input (line in)	:	1 no.
Audio output (line out)	:	1 no.
Level/volume control	:	Master, line in and line out

3.1.3 Interconnecting cables to and from the chairman or delegate units shall be supplied together with the central control unit.

3.2 CHAIRMAN UNIT

3.2.1 The chairman unit shall comply with the following minimum technical specifications:

Type	:	Table top or recessed type as specified in the drawings or bill of quantities
Control button	:	Microphone on/off; Priority button
Indicator	:	LED lights up when microphone is in use
Loudspeaker	:	Built-in for table top type; or Separate loudspeaker panel for recessed installation
Microphone		
Type	:	Electret condenser
Polar pattern	:	Uni-directional
Frequency response	:	150Hz to 10kHz
Length	:	300 mm for standard stem (default); or 450 mm for extended stem
Others	:	For recessed installation, the microphone shall be of detachable type and complete with a recessed microphone panel.

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3.2.2 Interconnecting cable to delegate units shall be supplied together with the chairman unit.

3.3 DELEGATE UNIT

3.3.1 The delegate unit shall comply with the following minimum technical specifications:

Type	:	Table top or recessed type as specified in the drawings or bill of quantities
Control button	:	Microphone on/off;
Indicator	:	LED lights up when microphone is in use
Loudspeaker	:	Built-in for table top type; or Separate loudspeaker panel for recessed installation
Microphone		
Type	:	Electret condenser
Polar pattern	:	Uni-directional
Frequency response	:	150Hz to 10kHz
Length	:	300 mm for standard stem (default); or 450 mm for extended stem
Others	:	For recessed installation, the microphone shall be of detachable type and complete with a recessed microphone panel.

3.3.2 Interconnecting cables to other delegate units shall be supplied together with the delegate unit.

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4.0 WIRING

4.1 GENERAL

- 4.1.1 General system of wiring, conduits, trunking, cable tray or cable ladder, wiring accessories etc. shall be referred to the latest JKR Specification for Low Voltage Internal Electrical Installation (L-S1).
- 4.1.2 Interconnection cables between chairman and delegate unit, or to other delegate units shall be concealed where possible. Cables shall be properly fixed and arranged in orderly manner.

4.2 SERVICE COLOUR IDENTIFICATION


- 4.2.1 All conduits and electrogalvanised sheet steel (EGSS) trunking for the system shall be clearly identified and distinguished from other services.
- 4.2.2 EGSS trunking for the audio conference system shall be identified using black "AUDIO VISUAL" letterings over white background. The letterings shall have a minimum height of 15 mm but need not exceed 50 mm, and at an interval not more than 5000 mm and at any bends. All letterings shall be clearly legible, and to the satisfaction of the S.O and/or S.O's Representative.
- 4.2.3 Colour bands for conduits identification shall be as specified in the latest JKR Specification for Low Voltage Internal Electrical Installation (L-S1) or as approved by the S.O and/or S.O's Representative.

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5.0 TESTING AND COMMISSIONING


5.1 TEST AND TEST CERTIFICATES

- 5.1.1 After the installation work has been completed and before Certificate of Practical Completion is issued, the whole system shall be tested for compliance and performance. Functional test shall be conducted to indicate correct operation and performance of all equipment.
- 5.1.2 The S.O and/or S.O's Representative reserves the right to be present at all tests and the Contractor shall give at least one (1) week notice in writing to the S.O and/or S.O's Representative for this purpose. In any case, no test shall be carried out without prior approval of the S.O and/or S.O's Representative. Copies of all the test certificates together with as installed drawings properly bound and titled shall be submitted to the S.O and/or S.O's Representative within one (1) week after the completion of the testing.

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6.0 WARRANTY AND SUPPORT

- 6.1 During the DLP, the Contractor shall be responsible for the warranty and support of the complete installation. All rectification works on defects shall be carried out by skilled person. All labour, materials, tools and parts necessary to rectify the defect due to manufacturing or installation faults shall be supplied and executed at the Contractor's cost.
- 6.2 The warranty and support, as well as defects to be rectified and making good shall include but not limited to the following:-
- 6.2.1 Repairs and replacement of all equipment and accessories that become faulty due to manufacturing and installation defects whether it is under the manufacturer's warranty or not;
 - 6.2.2 Replacement and making good of all wiring and accessories;
 - 6.2.3 Making good any damage to floor, ceiling or wall areas etc. which had not been properly made good arising out of his work; and
 - 6.2.4 All other works deemed as necessary by the S.O and/or S.O's Representative.
- 6.3 All works shall be carried out as soon as the Contractor is being informed by the S.O and/or S.O's Representative or the occupant, and shall be completed within a reasonable time except under emergency situation. If the Contractor fails to comply with the above requirements, the S.O and/or S.O's Representative reserves the right to engage another party to carry out the work, in which case, the Contractor shall be responsible for all the expenses incurred.

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7.0 SHOP DRAWINGS AND AS-BUILT DOCUMENTS

7.1 SHOP DRAWINGS

7.1.1 Two (2) sets of prints of shop drawings for construction and/or installation shall be submitted to the S.O and/or S.O's Representative for approval. The Contractor shall prepare and submit shop drawings for the whole work or parts of the work at least two (2) weeks before the work begins. If the shop drawings submitted are not acceptable by the S.O and/or S.O's Representative, the Contractor shall amend and re-submit the shop drawings within two weeks from the date of return of the shop drawings. No work shall be carried out without the shop drawings being approved by the S.O and/or S.O's Representative.

7.1.2 The shop drawings shall include and show the following:

7.1.2.1 Co-ordinated dimensioned general arrangements, layouts and positions of accessories, equipment racks and all others necessary for the complete installation;

7.1.2.2 Schematic line diagrams of the installation;

7.1.3 The cost of all these shop drawings is deemed to be included in the Contract.

7.2 AS-BUILT DOCUMENTS

7.2.1 As-built documents shall consist of but not limited to the as installed drawings, manuals, certificates, catalogues, inventories and parts lists.

7.2.2 The as installed drawings shall comprise of:


7.2.2.1 Site plan;

7.2.2.2 External cable routes;

7.2.2.3 Internal layout plans; and

7.2.2.4 Schematic diagrams.

7.2.3 These drawings shall be labelled at the lower right hand corner with the Electrical Contractor's name and address, date of commissioning, scale, drawing number (the drawing number to be obtained from the S.O and/or S.O's Representative), title and following particulars:

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- 7.2.4 If the drawings submitted are not according to the actual installation at site and/or not acceptable to the S.O and/or S.O's Representative, the Contractor shall amend and re-submit the drawings within two (2) weeks from the date of return of the drawings to the satisfaction of the S.O and/or S.O's Representative.
- 7.2.5 Manual and documents for the installation shall be supplied. It shall comprise of:
- 7.5.1.1 Installation manual;
 - 7.5.1.2 Operation manual;
 - 7.5.1.3 Service and maintenance manual;
 - 7.5.1.4 Inventories list;
 - 7.5.1.5 Product data and catalogue;
 - 7.5.1.6 Warranty certificates; and
 - 7.5.1.7 Installation test results.
- 7.2.6 Each of the as built documents shall be bound together with hard cover and submitted in minimum four (4) sets upon issuance of Certificate of Practical Completion of the project.
- 7.2.7 In addition, one (1) set of the as installed drawings shall be submitted in the form of original document, and four (4) sets in physical digital storage.
- 7.2.8 The cost of all these prints, manuals, tools etc. whether or not provided in the Bill of Quantities, is deemed to be included in the Contract.