ISS Small Seminar Room Specification

v1.9

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Contents

This specification must be used in conjunction with the installation guidelines document. Always check the [latest documents versions](#).

A small seminar room would typically have the following properties:

- Flat-floored teaching space.
- Guideline size: Up to 30m².
- Guideline capacity: Up to 24 people.

Podium

1. The teaching desk lectern solution for a small seminar room is the TopTec VMS desk or equivalent for Lancaster University with Pod 4 for 24" screens, a Toptec Neptune rack must be supplied to fit to the desk, or similar single rack desk solution.

2. The Control Panel Housing to be hinged from the top to allow access for servicing.

3. The teaching desk must be positioned in line with the prescribed table layout of the room and be installed in front of the teaching wall facing towards the student seating area. If applicable lockable castors should be supplied and the unit should be moveable but left with the castors locked down.

4. When providing power to the teaching desk a single power feed to the unit must be used, with the exception of the power feed to the PC which should be separate. It should not be possible for the user of the equipment to power cycle the unit themselves. A smart PDU with control to reboot all equipment in the rack must be installed. The PDU must also have a physical front panel button or menu option to reboot the unit locally. The PDU must be behind the locked door of the cabinet to prevent unauthorised access.

5. Up to eight number network connections will be required into the teaching desk, a small offline network switch can be used for local LAN data such as Dante, these must be separated from any LU Network connections. Sufficient quantity of CAT6 data lines should be provided as patch cables from a connection box in the wall through a channel in the floor to the desk to allow these to be routed to the equipment. The number of sockets required must be determined at System Design stage.

PC/confidence monitor

6. The installation should provide a suitable 24" display which will act as the PCs monitor as well as providing a confidence monitor for all the AV inputs provided. If the display screen or projector is interactive then there is no need for this display to have interactive features.

7. The display screen should be mounted in the monitor pop up of the desk.

Projector/wall mounted display screen/interactive display

8. A suitable wall mounted display screen of sufficient size appropriate to the dimensions of the room should be considered. This should include the facility for interaction, either by providing an interactive LCD/LED touchscreen, or by providing an interactive whiteboard/projector combination. It is recognised that the size of some seminar rooms will dictate which technology is appropriate.

    Appendix A can be used to determine which display type must be used.

9. Any display must be capable of:

- Displaying an image of 4K resolution.
- RS232 control.
- Minimum 10w integrated speakers or speaker bar.
- Anti-reflective coating.
- Toughened screen glass

10. Any projector must fulfil the following requirements:

- Minimum of 6000 ANSI lumens.
- 16:9 and 16:10 format compatible.
- 1920x1200 native resolution
- Serial control interface.
- Support for resolutions at least up to WUXGA.
- Support for the PJLink control protocol.

11. The projector should be ceiling-mounted on a Unicol type pole.

12. In some cases, a ceiling mount may not be practical and in this case a rear mounting with a long throw lens should be used.

13. Consideration must be given to health and safety regulations covering working at height, in relation to projector maintenance.

14. Two CAT6 cables for signaling must be installed to each display/projector both correctly terminated and tested.

Projection screen

15. In the case of a short throw projector then a fixed screen is appropriate. A borderless screen is the preferred choice for any fixed screens.

16. If a non-short throw projector is fitted, a new, electrically powered 16:10 projection screen must be provided. The screen should be powered from a fused spur located immediately above the screen and above any false ceiling. If appropriate, the screen should be controlled from the control system, lowering when the system is powered on and raising when powered off. The control system should allow for the user to raise the screen if needed without a full power down of the projector.

PC

17. Lancaster University ISS will supply a PC to be installed in the Lectern. The PC will take up 3U of rack space.

18. The installer must provide a 3U rack mounted shelf which must prevent the PC from moving back in its rack and also from being removed from the front of the rack.

19. The following parts of the PC must be accessible to the end user: Optical drive; USB ports; power button.

20. The PC must be powered separately from the lectern to ensure the PC has constant power and not affected from a system power cycle.

21. The PC will be supplied by ISS; the installation must provide:

- C13 10A power input.
- HDMI or DisplayPort output to video scaler/switcher.
  Installer must specify which connection so a PC can be configured.
- USB output to interactive display.

- USB output to USB sockets on lectern connection panel and or confidence monitor.
- Cat6 ethernet connection.
- Audio out to audio switcher via 3.5mm or HDMI/DisplayPort as appropriate.

22. A wall mount camera bracket must be supplied. A USB webcam will be supplied with the PC or users laptop for mounting adjacent to the teacher desk with a ¼" thread. USB extenders will be required to return the signal to the PC or laptop.

Wireless BYOD

23. A wireless connection device should be provided to allow mobile devices to be connected to the display. The device must not rely on using an internal wireless router for connections to devices. The device must be supplied with a 5 year Education perpetual software subscription.

Video scaler/switcher

24. A suitable video switcher must be used to switch inputs instead of using the display or projector to switch sources.

25. All sources should be scaled to the native resolution of the main display.

26. It must be possible for the user to blank the feed to the display or projector whilst leaving signal displaying on the confidence monitor.

27. A spare HDMI input must be kept available in each room on the switcher to allow for an additional presentation source to be added in future. This input must not be shared with another source.

Audio

28. An audio system to provide program sound should be installed; all signals shall be able to be switched to the program sound speakers.

29. One or multiple Ceiling Mounted Beam Forming Microphones sufficient to cover the whole room to include tutor and student seating areas must be specified. With appropriate mounting systems and safety cables. All microphones must be fully EQ'd for the room with appropriate gain structures applied.

30. A Microsoft Teams Certified DSP audio system to provide program sound and audio conference feeds to the PC as well as to a laptop via USB should be installed. The USB drivers must be class compliant to avoid the need for vendor specific drivers to be installed. Room specific echo cancellation and feedback suppression must be applied to the DSP.

31. If the room has a wall mounted display screen then wall mounted speakers must be included for program sound, the displays internal speakers must be by-passed. All input channels must be balanced, and a suitable mix should also be provided to the induction loop.

32. An overall volume control with a programmed default level shall be provided on the control system.

33. Wall speakers should be of good quality and be supplied with a full back-box and all necessary baffling. Gain structure, appropriate EQ and delays should be used dependent on the space, to ensure a consistent audio experience.

34. A suitable multi-channel amplifier shall be provided to power the loudspeakers.

Assistive hearing system

35. An inductive loop shall be provided in all seminar rooms, this should provide a voice signal as captured by:

    - the wireless microphone and white button style microphone located on the top of the lectern desk *or*
    - a white ceiling-mounted microphone above the lectern.

36. The assistive hearing system must provide a suitable mix of program sound as well as voice.

37. The finished and tested system shall comply with all current legislation.

Desk connectivity

38. The Desk should be fitted with the following items on an angled control panel housing:

    a. 1 x laptop HDMI lead.
    b. 1 x laptop network RJ45 connections on input plate on control panel housing.
    c. 2 x 5a power sockets on control power housing fused separately to the rest of the rack for laptops.
    d. USB socket connected to PC.
    e. USB socket for laptop devices to access room camera and microphones via DSP
    f. Control pad for control fitted into the control panel housing.

39. The HDMI leads must be presented through the hinged control panel housing to the switcher input with suitable restraint inside the equipment rack. This is to avoid the need for an input plate so that cables cannot be removed from the room. For servicing the HDMI cable must be coupled within the CPH.

40. 1 x HDMI output from projector feed for lecture capture in the rear of the desk.

41. A USB 3.0 HDMI video capture device with be provided by LU for use with the HDMI output. A USB connection from the microphone DSP will be required for lecture capture or Video Calling. The USB feed for the DSP and Webcam must switch between either the PC or a laptop automatically when a laptop device is connected or disconnected. The PC will be the default source.

Control system

42. A controlpad or keypad must be installed in the TopTec desk.
    A controlpad/keypad should have a button layout as shown in Appendix C.

43. The control system should be a controller of appropriate capability for the features of the room. The control system should provide a means of controlling all inputs and outputs of the system as well as interfacing to elements of the room such as a powered screen (if fitted).

44. Control of input switching when via an 8 button Control Pad will allow:

    a. Display power on/off.
    b. Source selection.
    c. Volume control – up/down, audio mute.
    d. Blank screen (if supported by display).

45. When a button on the control panel is pressed the button should illuminate to indicate the command was received as below:

    a. The power on/off button should remain illuminated whilst the system is powered on.

b. The power on/off button should flash whilst the system powers down (this may be brief or not included if the screen is quick to power down).
c. The chosen source button should remain illuminated when that source is selected.
d. The volume up and volume down buttons should briefly illuminate for each press.
e. The audio mute button should flash slowly whilst muting is active.
f. If present, the blank screen button should flash slowly when active.

Programming

46. The source code must be handed to ISS upon completion for the purposes of backup and restoration when required.

47. Automatic shutdown of the system should be included if the system has not been used for 3 hours, not used means no buttons pressed on the control system, no motion detected by the panel motion sensor (if fitted) and no active video source.

48. If equipment varies Lancaster University will confirm full functionality of the control system. Before sign off can be agreed the system will undergo full user testing as shown in appendix D.

49. All firmware must be the latest approved versions as indicated by Lancaster University at the time of install.

50. All code is subject to agreed change control procedures and must not be modified without the express agreement and scheduling by Lancaster University.

Remote monitoring and control

51. The control system must interface with the Universities room management system (RMS) and must provide a minimum of:

a. Projector or display screen power status.
b. Source input usage.
c. Projector lamp hours (if projector present).
d. Projector filter times (if projector present).
e. The status of all connected devices.
f. Remote control of the touch panel if present.
g. Power usage.
h. Error statuses of all connected devices.
i. Current volume level.

The contractor must liaise with ISS to determine the exact requirements of the integration required.

Occupancy Sensor

52. A suitable occupancy sensor to be provided to allow the control system to monitor and control power state. If no activity is detected within the space or does register a button press from the control panel within a programmed time period, the system will be automatically shut down to reduce power consumption.

Cabling and installation

53. All cables entering or leaving the teaching desk must be protected by an umbilical cord with a moveable distance of approx. 2 metres. There should be strain relief to the umbilical cord of a shorter length than the cord to prevent accidental damage to cables when moving the unit.

54. All cabling should run in suitable containment above the suspended ceiling, in wall voids or under the floor. Permitted containment options include copex, cable baskets or concealed trunking. **Surface Mounted trunking and visible cable snakes will not be permitted**, except cables between the floor box and the teaching desk, which should be braided in a black umbilical.

    - All cabling must be run in suitable containment, e.g. circular polypropylene flexible conduit.
    - It is not acceptable to share a cable conduit with power or data cabling.
    - Where three compartment shared trunking is used power cabling, data cabling and AV cabling must run in separate compartments.
    - Where individual conduits are installed for AV cabling 40mm conduit is preferred. Two 25mm conduits for AV cabling are also acceptable. This is the minimum requirement, additional conduits maybe requested depending on the number of cables required for the installation.
    - Cables running in ceiling voids must be installed within suitable containment used for AV cabling only sufficient to meet all current Fire, Electrical and Health and Safety regulations and be rated for CPR Cca or higher.

55. For Example:

    Cables should be contained in 32mm Kopex e.g. - https://uk.rs-online.com/web/p/conduit/0623710/

    Fixed to the soffit/slab with Metal Tie wraps, plastic ties must not be used e.g. - Metal Tie Wraps - https://uk.rs-online.com/web/p/cable-ties/1235035/

    The metal tie wraps must be looped through Flat hanger screws fixed with a nylon wall plug to the soffit/slab at no more than 1m intervals e.g. - https://www.gexpro.com/usg/Root-Category/Fasteners/Fixture-Hardware/Hangers%2C-Bolts/Screws---Flat-Hanger/Multiple-631-Flat-Hanger-Screw/p/523430

56. The containment must not be fixed to any existing Data cabling baskets or trays as this contravenes the ISS Networking Installation specifications

57. All cables must be labelled at both ends with the following information

58. Signal Type, Source, Destination E.G. Sig - HDMI, Src – PC, Dest – Switch Input 1

59. In all cases the floor box should be able to be fully closed; this may necessitate right angle connectors for shallow floor boxes. The floor box should also be screwed shut to prevent user access.

60. Final Build schematics showing all devices and connectivity must be provided for video signals, audio signals and control signals as well as the rack build layout.

61. Manufacturer, model, serial numbers and MAC Addresses of all equipment in each room should be provided to LU as part of the handover process.

Whiteboard

62. New vitreous enamel magnetic whiteboards should be provided in each Seminar room, these should be fixed mounted and cover as much of the teaching wall as possible. In the case of an

electric screen then where possible it should avoid covering whiteboards when in use. If a display screen is used then they should be installed either side of the display screen if space allows, otherwise they should be installed on other wall space. Additional whiteboards may be required on walls other than the main teaching wall, dependent on space.

Wireless networking

63. A review of the wireless coverage of each seminar room should be undertaken by ISS Networking and if necessary, additional high-level CAT6 data points should be provided to support wireless access points.

Physical space

64. The room should contain one analogue clock with second hand affixed to the wall opposite the main teaching wall. The clock must be PoE powered and take a time signal using an NTP server.

Room Acoustics

65. Considerations must be given to the acoustics of the space in particular ambient noise levels and reverberation times, with appropriate acoustic treatments applied to the walls and or ceiling. A meeting room should have an ambient noise level of no more than 50db and the RT60 (reverberation time) should be less than 1 second. The minimum expected standard is BS8233.

Appendix A – Screen size calculator

The height of the display screen should be no less than the distance from the centre of the screen to the furthest audience member divided by 5.3, i.e. **D / 5.3 > H** (where screen height = H; distance to further audience member = D). *AETM Audio Visual Design Guidelines 2nd Edition Rules for Screen Size and Sightlines.*
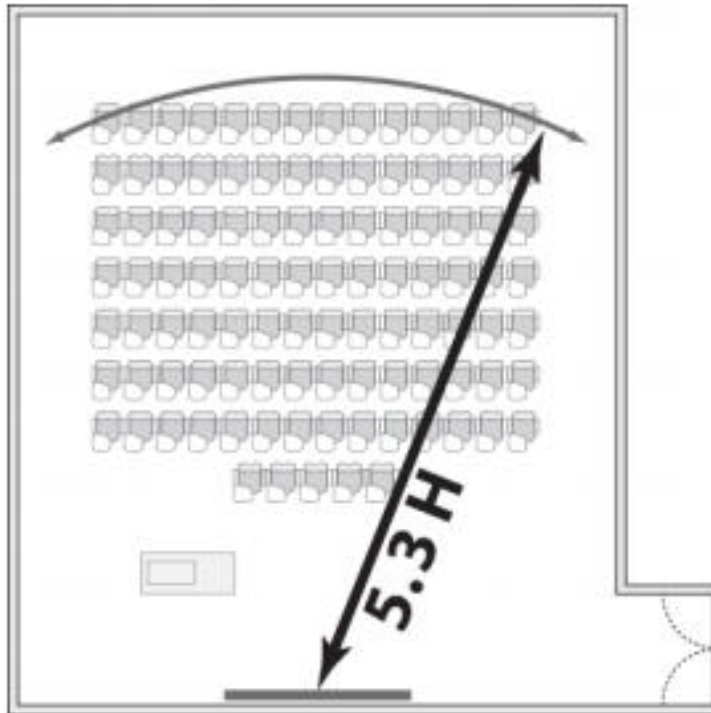
Appendix B - Panel layout for input plate
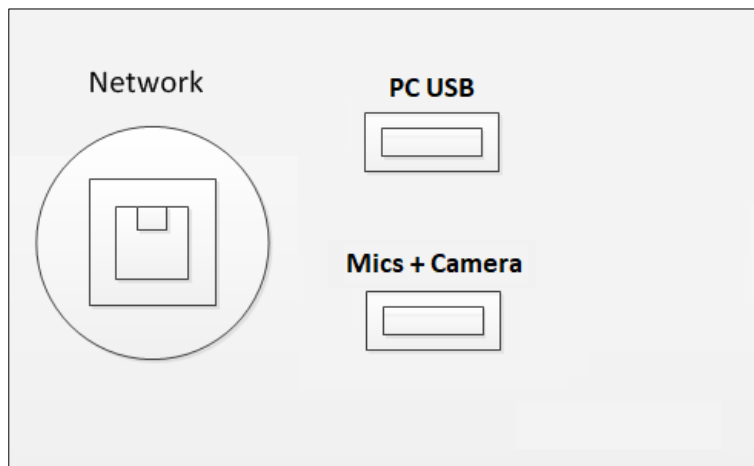
Appendix C – Controlpad Layout

Will be confirmed once system design is complete

Appendix D - Sign-off documentation

All work is subject to final sign-off and approval. All elements of the installation including the control system and interfaces to external systems must be shown as working.

The sign-off documentation will be provided at the start of the project and can also be [found here](#) for reference.