ENDOALPHA

Table of Contents

Introduction

The ENDOALPHA's Audio/Video Peripheral (AVP) product is an integrated system that facilitates work flow and improves efficiencies by providing the capability to configure devices for audio/video routing within and outside of the O.R. or procedure room via a medical-grade touch screen. This advanced technology features a user-friendly graphical user interface (GUI) for its audio, video, and computer routing capabilities. The AVP's "Plug & Play" design simplifies operation, while the modular-based programming structure enables rapid deployment with minor modifications.

The touch screen is the most commonly used interface for the AVP. It provides control over external elements, such as observation cameras, video routing capabilities, and video conferencing, which fall under ENDOALPHA'S Video Management solutions. However, the AVP also offers many other medical and nonmedical device-controlling functions as well, such as room lighting control, iPod and other auxiliary music device control, and endosurgical device integration.

The AVP system features the following advantages.

Control

Peripheral equipment is controlled from a single or dual touch screens. It enables surgeons and nursing staff to work at the same time, thus enhancing the performance level of the medical procedure room.

Communication

Advanced communication systems and control over external cameras enable AVP transmission to dedicated locations throughout the operating suite and beyond.

Video Management

Managed control for displays, local DVR, and routable sources increase the overall surgical resource management capabilities.

Environment

Room lighting brightness and music selection and volume can be adjusted to each situation.

Integration

Medical data management and PACS image and data integration of the Hospital Information System (HIS) provides rapid access to all the patient data required.

Main Features

The main features of the AVP are as follows:

Modular and versatile

The AVP is designed as a modular control system adapted to peripheral devices meeting each hospital's requirements without compromising the capabilities to update and/or modify the medical procedure room. Each AVP is a package defined by inherent software modules with options to upgrade. The modular construction of the AVP ensures the possibility to update/modify the system at a later date.

Integration

The AVP switching module enables the medical procedure room to share information with different departments, importing and exporting data and images via DICOM communication standards (via an optional DVR).

Control centers

With rational integration of medical and peripheral equipment, the AVP is equipped with a touch screen control system providing total versatility, stability, information management capabilities, and control over equipment.

Open system and personalized design

Since the system links equipment using communication standards, the AVP adapts to different technologies. The system can be updated to respond to future needs.

Several elements of the system configuration can vary and be defined by the user without affecting the master program:

- The number and types of imaging sources available for input (sources)
- The number and types of video monitors available for display (destinations)
- Room lighting controls
- Video Conferencing
- Button labels and icons on the user interface (defined by the facility)

Once the AVP has been installed, Olympus provides the necessary training for all staff involved in the surgical area (surgeons, nurses, and technicians).

A full range of maintenance contracts ensures system support. Olympus can provide immediate technical response in compliance with the quality protocols that only the official Olympus Technical Support service can guarantee. For details, please contact your local Olympus representative, or contact the Olympus Technical Assistance Center at (800) 848-9024 (7:00 A.M. – 8:00 P.M. EST).

Important Information – Please Read

This section provides important safety information for users and facility personnel, including Dangers, Warnings, and Cautions.

Intended Use

The ENDOALPHA Audio/Video Peripheral (AVP) product has been designed to provide central control over a series of auxiliary audio/video displays, audio/video conferencing equipment, observation camera, and room lights used in medical or surgical procedure rooms. The device provides routing and distribution of the surgical image processor's video to primary and auxiliary displays.

Do not use this product for any purpose other than its intended use.

- Never connect devices to the AVP system that are not approved for use with Olympus' AVP product.
- Always consult Olympus prior to the connection of third-party equipment. Equipment should be connected by certified Olympus Technicians only.
- The AVP rack and iPod® must be located at least 1.5 m away from the patient (see Appendix A).
- Read all AVP system-related documentation before operating the system.
- Consult Olympus for any questions regarding use of the system by:
    - Contacting an Olympus representative; or
    - Contacting the Olympus Technical Assistance Center at (800) 848-9024 (7:00 A.M. – 8:00 P.M. EST).

Facility Requirements Planning Guide

This Facility Requirements Planning Guide contains a general overview of the ENDOALPHA AVP product, along with the consulting and design services that Olympus provides. This guide also outlines some common customer facility and key personnel requirements.

Terms Used in this Guide

The following terms are used in this manual:

ENDOALPHA

Olympus' Endoalpha product is an integrated audio/video system that provides Control for medical devices, Video Management (audio/video routing) via a medical-grade touch screen, Documentation and reporting (PACS, HIS and image capture via DVR), Workspace Design, Project Management, and Service Solutions within and outside a medical procedure suite.

Audio/Video Peripheral (AVP)

AVP is an ENDOALPHA product model that provides central Control and Video Management over a series of auxiliary audio/video and medical devices, including displays, audio/video conferencing equipment, observation camera, room lights, music devices, and more.

Video Management

A segment of ENDOALPHA's product solutions included with the AVP. Video Management solutions typically include audio, video, and computer routing capabilities.

Sterile field

The area immediately around a patient that has been prepared for a surgical procedure. The sterile field includes the scrubbed team members, who are properly attired, and all furniture and fixtures in the area.

Non-sterile field

The physical area contained within the medical procedure room that is not defined by the sterile field. Sterile personnel cannot reach across non-sterile fields or touch non-sterile items contained in it. Non-sterile personnel or items cannot pass into the sterile field.

Unpacking and Placement

Do not unpack the AVP upon arrival. Only certified Olympus technicians should unpack the equipment from the shipping enclosures. Until then, store the equipment in a dry, enclosed location. Refer to Environmental Factors in this manual for temperature and humidity specifications.

System Installation

All parts of the AVP are installed by certified Olympus technicians only. Prior to installation, the hospital/facility's Information Technology and/or other personnel configure the network. Olympus personnel do not configure the network.

Transporting or Moving the Equipment

If the AVP rack needs to be moved for repair, maintenance, or some other reason, consult Olympus before doing so. The AVP must be transported in an environment between -4º and 140ºF.

System and Module Description

The Olympus AVP product is an integrated system comprised of modular components, as described below.

Integrated System

The AVP system is comprised of three parts:

- **AVP Rack** – Contains all nonmedical equipment (see Figure 1). The rack includes the system controller, screen controller, audio system, and AVP matrix.
- **AVP Cabling** – Includes all cabling between the AVP rack and the different elements inside the medical procedure room.
- **AVP Peripheral Equipment** – Includes a single touch screen, iPod docking station, view-only displays, and optional CD/MP3 player, observation camera, and DVR recorder.

AVP Rack

Modular System

The modular concept targets standard system configurations ranging from basic to advanced. The customer can order the AVP with all the necessary flexibility provided by the current product offerings (see Appendix A). The AVP communicates with the following series of modules.

- **User interface module** – Represents the elements used to communicate and interact with the AVP. The AVP uses a single touch screen to communicate and interact with all devices in the system.
- **Audio & video routing module** – Enables audio/video transmission within the medical procedure room, connecting input signals to output destinations, such as a high-definition display.
- **Audio player module** – The AVP supports iPod audio and optional MP3/CD players.
- **Display module** – Supports up to 5 controllable displays mounted on surgical arms, walls, or desktops throughout the O.R. and other rooms.
- **Digital Video Recorder (DVR) module** – The AVP provides interfaces to DVR for image and video recording capabilities, including support for single standard definition recording, single channel high-definition recording, or dual-channel digital video recording.
- **Observation camera module** – For viewing the medical procedure room.
- **Audio conferencing module** – For controlling volume from the audio inputs, microphone selection, and telephone functions.
- **Video conferencing module (optional)** – For conducting audio/visual conference calls. Audio and video are streamed from and to remote devices in locations outside the medical procedure room (such as between rooms within the facility), and/or outside of the facility (such as between buildings, campuses, etc.). Each of these rooms at the local facility can control a video conference call with a site outside of the medical procedure room.

Note: *The modular distribution is closely related to your ENDOALPHA AVP system order, since it defines the different modules chosen from the AVP configuration.*

Three System Types Available

Your facility can order one of three available system types, depending on purchased modules, optional features, and configuration. In addition, custom systems for nurse's stations, conference rooms, or hubs are available.

See below for available system types.

ENDOALPHA AVP System Types

Function / Features	AVP-01-101	AVP-01-102	AVP-01-103
VIDEO			
19" Nurse Touch Panel	•	•	•
19" Surgeon Touch Panel	**Optional**	**Optional**	**Optional**
HDSDI Router (Digital)	**4x4**	**8x8**	**8x8**
RGBHV Router (Computer)	**8x8**	**8x8**	**16x16**
S-Video Router (Room Camera, C-Arm, Etc.)	**8x8**	**8x8**	**16x16**
AUDIO			
Audio Package • Audio Conference • iPod Dock and Control • Auxiliary Line Input	**Optional**	**Optional**	**Optional**
VIDEO CONFERENCE			
Video Conference Package • Adds Video Conference to Audio Package	**Optional**	**Optional**	**Optional**
CONTROL			
Digital Video Recorder	**Optional**	**Optional**	**Optional**
Room Lights	**Optional**	**Optional**	**Optional**
Observation Camera	**Optional**	**Optional**	**Optional**
UCES Shared Touch Screen Interface	**Optional**	**Optional**	**Optional**

Customization and Configurability

The AVP system in each facility is unique. Prior to installation, your facility meets with our product specialists to map the AVP system accordingly. This includes the number and types of devices, how devices are selected on the user interface, where the facility employs room lighting, which DVR (Digital Video Recorder) model is being used, whether or not video conferencing is part of the AVP system, and so on. Customization provides flexibility for the present as well as for future needs and growth.

In addition, the AVP's graphical user interface (GUI) is comprised of text and graphics selected by the facility for naming and depicting devices in the system. Source devices (Endocam, Vitals, Observation Camera, etc.) can be organized on the GUI by procedure, staff member, shift, or any other way you desire through the use of tabs, which are labeled according to the your specifications. In addition, function buttons throughout the AVP system, such as the Olympus "Help" button, can be labeled according to the facility's specifications. An example AVP user interface is provided in the following figure.

Updates to the configuration, such as the addition of new devices in the system, or name and icon changes to buttons and tabs, can be done easily by our product engineers. Contact Olympus for more information.

AVP User Interface (Showing Optional Video Conference Controls & Observation Camera Video)

Olympus AVP Integration Services

Olympus offers the following consulting and design services to its ENDOALPHA AVP customers.

Requirements Review and Analysis

Olympus will interview designated personnel to review desired audio, video, audiovisual, presentation and communication systems capabilities. The Client and Client's Architect will be provided with overall information relative to current and projected systems applicable to the client's requirements. The results of the analysis will be documented and submitted to the Client for approval.

Facility Layout

A preliminary facility layout (see illustrations on pages 16 and 17) will be prepared after consultation with the Client and Architect regarding resultant findings of the requirements analysis.

Installation, Engineering, and Electrical Code Requirements

The Installation, Engineering, Electrical Code requirements, and cost associated with all AVP electrical requirements are the responsibility of the owner. It is the owner's responsibility to review and approve all conduit and equipment placement.

Engineering Support

Olympus will verify electrical requirements, heat load data, and interior design considerations to best accommodate the AVP system. Olympus will specify required AVPcable to be provided and coordinated for installation by others, and determined by Olympus.

Electrical: Olympus will specify AVP system electrical requirements to the Architect for incorporation in the electrical engineering drawings. Included will be the specifications for all conduit, junction boxes, AC outlets (with individual current requirements), speaker enclosures, and remote control interface devices required or installed by the general or electrical contractor (see Common Electrical Engineering Drawing on page 17).

Lighting: Olympus will advise the Client and the Architect regarding lighting as it affects the AVP system. Overhead room lights and surgical lights will be considered.

Heat Loads: Heat load and ventilation data for the AVP equipment will be provided to the Architect for use in determining the HVAC system design and specifications.

***Note**: The maximum heat load from the AVP is calculated at 3,400 BTU/Hr.*

Structural: Dimensional and weight specifications for AVP equipment will be provided to the Architect for use in the structural analysis and facility design.

***Note**: The approximate weight of the AVP is 300 lbs.*

Electrical Requirements

The following requirements must be provided to the facility's Electrical Contractor.

Electrical Specifications for AVP Equipment

- All power receptacles should be labeled "FOR AVP USE ONLY."
- All specified mounting heights are to center of device unless otherwise noted.
- All AVP equipment shall be powered by dedicated circuits.
- All AVP circuits should be free of any inductive loads.
- All AVP circuits should originate from the same electrical panel.

Specifications for AVP Cable Pulls (Runs)

- All cable runs shall be continuous. Cable splices will not be accepted unless noted otherwise.
- Cable runs through plenum spaces must be plenum-rated or shall be installed within rigid conduit.
- Cables not run in conduit must be supported by J-Hooks every four (4) feet.
- Route cables away from power sources and motors to avoid EMI.

Conduit Specification for AVP Equipment

Conduits shown within the AVP drawing represent the interconnection of AVP equipment. The exact path of the conduits will be determined by the Electrical Contractor.

Conduit Requirements

- The Electrical Contractor shall provide pull strings in all AVP conduit runs.
- The Electrical Contractor shall provide a minimum of one pull box for every 100' of conduit run.
- There must be a pull box for every 270° of conduit bend.
- No more than three 90° bends per conduit run. If more than three bends are required, a fully accessible junction box must be provided.
- Access panels must be provided to all junction boxes.
- The use of flexible conduit is not acceptable without written approval from Olympus.

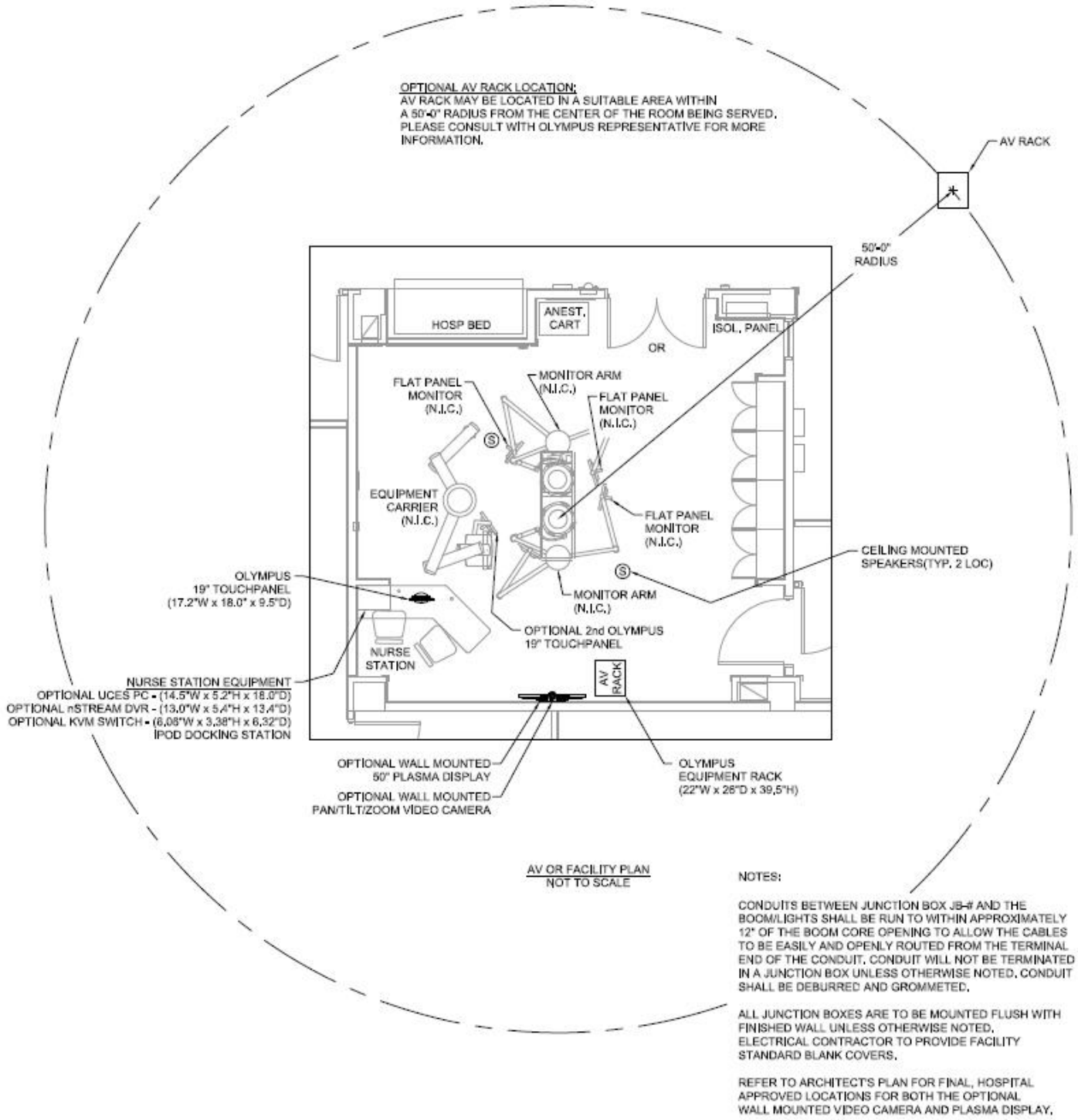
Legend

The Electrical legend on the following page is provided for the Electrical Contractor.

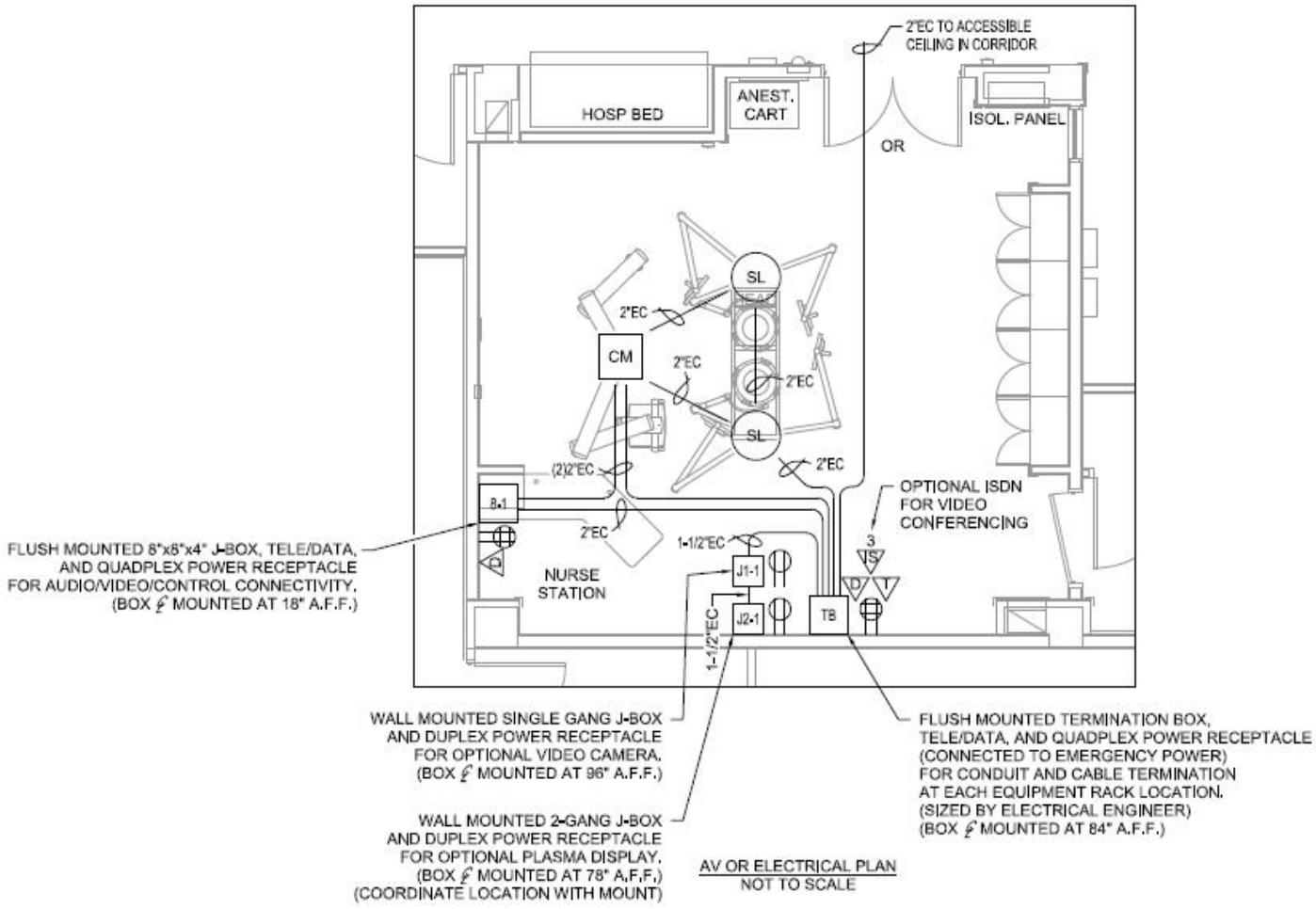
Legend

	Wall-mounted duplex power receptacle, 15 Amp (Minimum), 120 VAC dedicated ground and neutral. Mount at base height unless noted otherwise.
	Wall-mounted quadplex power receptacle, 15 Amp (Minimum), 120 VAC dedicated ground and neutral. Mount at base height unless noted otherwise.
	Ceiling-mounted duplex power receptacle, 15 Amp (Minimum) 120 VAC dedicated ground and neutral.
	EMT Conduit stub up.
LV	Single gang junction box (ceiling mounted) for projection screen low voltage interface.
J1	Single gang junction box mounted @ height specified.
J2	Double-gang junction box mounted @ height specified.
4-#	4X4X3 screw cover NEMA Junction box mounted @ height specified.
6-#	6X6X4 screw cover NEMA Junction box mounted @ height specified.
12-#	12X12X4 screw cover NEMA Junction box mounted @ height specified (12-1 dash number represents a specific box location).
TB-#	Conduit/cable termination box mounted @ height specified and sized by electrical contractor (12”X12”X4” minimum).
JB-#	Conduit/cable pull junction box mounted above accessible ceiling specified and sized by electrical contractor (12”X12”X4” minimum).
T	Wall-mounted analog telephone jack (POTS) (number next to symbol represents quantity of lines).
IS 3	Wall-mounted ISDN (number next to symbol represents quantity of lines).
D	Wall-mounted data jack (LAN) (number next to symbol represents quantity of lines) [Facility standard- (2) tele/(2) data per connection].
S	Speaker – ceiling-mounted, unless noted otherwise.
SL	Surgical light mount/flat panel monitor mount.
CM	Boom carrier mount.
ANES	Anesthesia column.
SLC	Surgical light control panel.
N.I.C.	Not in contract.

Example Common Facility Layout Drawing



Example Common Electrical Engineering Drawing



***Note**: The ENDOALPHA AVP rack and iPod must be located at least 1.5 m (about 5 feet) away from the patient. See Appendix A.*

Client and Architect Briefings

Olympus will provide periodic project updates to the Client and the Architect to keep them informed of the project status. Topics may include design considerations, Client and Architect requirements and concerns, proposed solutions, and scheduling issues.

Final AVP Design Layout

Olympus will prepare and provide the final layout drawings.

Facility Infrastructure Requirements

Olympus will prepare and provide final electrical and control requirements and drawings.

Construction Coordination

Olympus shall provide the following construction coordination services to facilitate installation work and to minimize Client downtime.

Site Inspections During Construction – An Olympus project manager will perform site inspections during construction to verify compliance of the related installation of supporting infrastructure requirements to the AVP design specification. Olympus will submit a requirement list to the Client and the Architect for correction of noncompliant areas. Olympus will confirm completion of the construction site and work prior to installation of the AVP system. The following list outlines the requirements for completion of construction:

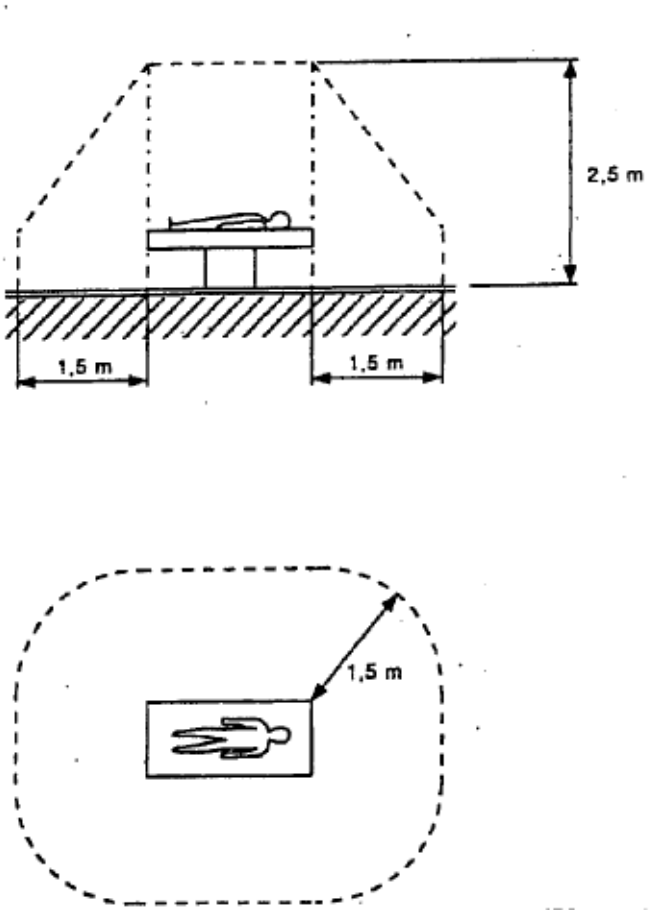
- Interior construction complete
- Wet work complete (painting, masonry, concrete, etc.)
- Electrical - electrical power provided to designated audiovisual outlets and Olympus specified cable pulled room-to-room and through booms, conduit, junction boxes, or plenum spaces, with indicated cable extended from source point and destination point (25 feet additional cable length left hanging and available for termination by Olympus; must be field verified by Olympus and confirmed with Olympus)
- Related structural components installed (support brackets, seismic restraint, etc.)
- Windows, doors and trim installed (including locks for security purposes)
- Wall finishes complete (wall covering, etc.)
- Grid system and ceiling
- Back boxes for ceiling speaker installed (with Olympus-specified speaker cable pulled into each box and at least three feet of cable extended and clear from back box)
- Flooring, floor covering, and baseboards complete
- Millwork installed and finished
- Lighting installed (fixtures and dimming or control systems)
- All related work to be performed by others (including all CFE)

On-site System Installation and Testing – Olympus will install the AVP product at the Client site when the facility is prepared. After the systems are installed, final testing will occur.

User Training – After final testing, end-user operational and maintenance training for designated Client personnel will be provided.

Documentation – Once system validation and end-user training have been completed, equipment manuals and final system drawings will be submitted to the Client.

Appendix A. Patient Distance from the AVP system



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