AW-E800 Multi-purpose Camera

WJ-NT104 Ethernet Transmitter

CamPan ©

Remote Control System for Panasonic's Multi-purpose Cameras

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CamPan is a computer remote control system for multi-purpose **Panasonic** cameras, models AW-E300, AW-E600 and AW-E800A. The ***CamPan*** system overcomes the barriers usually met by control systems, such as distance, maximum number of cameras, and number of control posts. All these aspects do not pose an obstacle with Panasonic multi-purpose systems controlled by ***CamPan***.

Introduction

As its very name indicates, the great advantage of this multi-purpose range is its combination of versatility and quality in a compact and light camera body. Indeed, these cameras admit multiple configurations, thanks to a wide range of accessories and an innovating system of optional cards which are installed in the body of the camera. In this way, it is possible to adapt each camera to the requirements of each application and in accordance with the budget. Worthy of special attention, among the possible configurations, is the advanced automated studio system, that allows doing without a camera operator, thus achieving a considerable reduction in costs. Multi-purpose cameras represent a real revolution in the field of TV production, borne out by their use in programs like 'Gran Hermano', sport events broadcasted by TVE, or as set cameras in Localia TV and Antena 3 Television studios.

The multi-purpose range includes the AW-E800A, AW-E600, AW-E300 and AW-E300S camera models. These are 3CCDs cameras, with digital signal processing (DSP)

of 10 bits, which results in a horizontal resolution of up to 850 lines; a signal to noise ratio of up to 63 dB, and a minimal illumination which is below usual levels. The multi-purpose range includes 2/3", ½ and 1/3" cameras, with the possibility of 16:9 panoramic format in the AW-E800A model. With the installation of optional cards, the multi-purpose cameras can function with maximum video quality, both in RGB, components or in SDI. Undoubtedly, the multi-purpose cameras offer the quality required by the most demanding studio applications, with the added advantage of a smaller size and a lower cost.

Just as important as the cameras, are the robotized pan/tilt heads, models AW-PH300A and AW-PH600, for indoors and outdoors respectively. Their precision and speed and, particularly, their low noise level are distinctive features of Panasonic pan/tilt heads. These heads allow the movement of cameras to be remotely controlled from a simple control panel, using joysticks. The CamPan system permits this control to be effected at long distances, using the most common of transmission means, such as the conventional telephone line or an Ethernet network. Moreover, the CamPan system can handle a large number of cameras, and admits multiple control panels with access to all cameras in the system.

Description of CamPan system

The system consists of software and hardware elements; the first are installed in a standard PC under *Windows*, while the second is made up of converter modules for the various transmission means possible: conventional telephone network, digital telephone network RDSI, Ethernet or Optic Fiber.

The software allows the control of a large number of cameras (up to 64, initially), with complete access to all parameters: **lens** (iris, zoom and focus), **camera** (gain, pedestal, white balance, electronic shutter, etc), **pan/tilt head** (pan, tilt, speed, etc) and **outdoor housing** (wiper, heater, etc). All adjustments are performed very intuitively using the mouse, through different dialogue windows.

In the standard configuration of a multi-purpose automated system, the movement of the pan/tilt head and that of the lens are controlled from a very simple panel based on joystick type controls. The great sensitivity of these controls allows a smooth and precise operation. In order to maintain this easy control, the CamPan system envisages the possibility of connecting this same panel (**AW-RP301**) to the operating computer, through

an **LPA-PR-P** converter module. Although it is an option --for the control can be effected solely by software--, it is particularly recommended that the AW-RP301 panel be included in the CamPan system.

The program includes a data base which allows grouping the cameras in a logical way, so as to speed up the control of the system. For example, cameras can be grouped according to sets or rooms in order to ease the task of the operator. On the data base, each camera is linked either to a telephone number (for control through modem) or to a IP address (for control via Ethernet). Likewise, the data base permits assigning a logical name to a camera, so as to make the operation of the control system easier and more intuitive.

The control system is based on the serial RS-232C protocol. For short distances, the connection of robotized cameras can be made directly, without the need of additional elements. However, for remote control at longer distances, either through analogic telephone network, RDSI, Ethernet or Optic Fiber, LPA external modules are required for the conversion of protocols.

Although CamPan is, strictly speaking, a control system, it offers some integration of the video signals coming from the cameras. Indeed, the CamPan system allows controlling remotely the commutation of an audio and video routing switcher, and so to handle the signals coming from the cameras. Likewise, it is possible to establish a low resolution monitoring on the control PC through optional Ethernet transmitters.

Control through telephone line

The control system through a telephone line (analog or digital) is adequate to span long distances between the cameras and the central control post. In this configuration, each camera requires an **LPA-P** converter module associated with the corresponding modem. Several cameras can be grouped at each destination using a multiplexer, model **LPA-5CM-P**. This multiplexer has been designed to control a maximum of 5 cameras, but it would not be difficult to expand this capacity. In this way, up to 5 cameras are connected to one modem, although each camera requires its own LPA-P module.

Also, the multiplexer allows remote control of an audio and video routing switcher, which receives the signals from the cameras, so that the selection of a camera made through CamPan entails the automatic commutation of the routing switcher in order to monitor the video signal coming from that camera. The protocol used for controlling the routing switcher is RS232/RS422.

Control through Ethernet

The control system through Ethernet does not require establishing a telephone link each time a camera needs to be controlled. This feature gives the system a greater agility and freedom, and results in a considerable economic benefit. Control through an Ethernet network is suitable for multi-purpose systems with a large number of cameras, and also for long distances. Also, the Ethernet system allows using more than one AW-RP301 control panel, and each panel has access to all robotized cameras within the application. These additional panels are connected directly to the network without going through the central PC (optional with this system), which results in even greater agility and speed. In this configuration, each camera requires a **LPA-P-NET** converter module. For their part, any additional panels which are directly connected to the network do it through the **LPA-PR-P-NET** module. In short, the LPA modules provide an IP address to the camera or to the panel, respectively.

The control system through Ethernet permits the association to a video routing switcher, so that the control of the cameras follows automatically the commutations on the routing switcher. In this case, the routing switcher needs a HUB-NET converter module. Integration of control and video greatly simplifies the procedure to be followed by the user.

Low-resolution monitoring through Ethernet

With the integration of Panasonic's **WJ-NT104** video transmitter in the CamPan system, it is possible to view images from the cameras on the control PC itself, without the need to resort to the video radio-link. Is must be borne in mind that the radio-link is usually expensive and, besides, these radio-links are normally shared. In any case, it would be possible to do without the video monitor, since the control program allows the installation of a video capture card.

The WJ-NT104 Ethernet transmitter provides low-resolution images at a rate which depends, naturally, on the topology of the network used and the global traffic involved. As a guideline, in a local Ethernet (without accessing the Internet) a refresh rate of about 10 frames per second is obtained: a value which could be increased in the future with the introduction of a new transmitter with greater capacity. The WJ-NT104 transmitter has 4 camera inputs, with different image viewing modes. The capacity can be increased with a 16-input multiplexer, or even with a routing switcher for up to 128 camera inputs. Naturally, the image refresh rate will be affected depending on the number of video sources connected to the WJ-NT104. Images are monitored on a 320x320 pixels window. Viewing is direct as the IP address of the NT104 transmitter is associated to the camera information on the system data base.

As we have said, camera control and viewing are integrated under one program, although they follow different paths. As a result, a control via modem can be combined with monitoring through Ethernet with full compatibility. However, the Ethernet option for control and monitoring allows simplifying the system considerably. To that effect, **LPA-P-NET** converter modules have an IP address assigned to them, as do other elements in an Ethernet network.

In short, the CamPan system provides greater flexibility to Panasonic's multi-purpose cameras, and widens the scope of applications where these cameras can be used.