

# MICROPROCESSOR CAMERA CONTROL SYSTEM

## MPC SERIES

For Color or Monochrome  
CCTV Systems

The Microprocessor Camera Control (MPC) System is designed and manufactured by Cohu to reduce the cost of CCTV system installations and improve command and control for security/surveillance operations.

The MPC can reduce total equipment and installation costs by up to 20% for systems that exceed 1,000 feet in distance (cameras to monitors). For systems that reach 5,000 feet, the savings are 50% or more compared to traditional multi-conductor cable systems. This is accomplished by installing lower-cost individual video and control cables and by eliminating separate control units.

The MPC makes use of state-of-the-art technology with flexibility to fit most users' custom needs. A standard mini-system of one-camera site control is expandable to 223 camera sites, 32 monitors, and 32 multi-operator Master and Remote stations. Larger system configurations are available upon request.

The MPC utilizes a microprocessor-based CPU, and controls the following: camera and monitor selection, lens operation (iris, focus, and zoom functions), and all pan/tilt commands. Digital control signals are transmitted from the MPC by one or more of three formats: RS-422 serial-data balanced line, RS-232 serial line, or DTMF signals over a twisted pair. The MPC transmitter is compatible with existing systems where receivers utilize one of these transmission formats.

The MPC incorporates the latest technology in surge protection to protect power and data inputs against voltage surges caused by lightning and other sources.

Options available to the user are the Preset Option and the Camera Video Switching Option. The Preset Option controls up to 10 preset positions for each camera. The Camera Video Switching Option allows manual switching or random camera sequencing of up to 16 cameras per monitor for as long as 60 seconds per camera. In addition to these, autoscan, color, and bright light limiter control options are also available. For total flexibility and integration, the MPC can be operated with CAMS software from Cohu. See the data sheet or our website.

For additional information on expansion capabilities, options, and accessories, consult the Cohu Applications Engineering Group in San Diego or your local Cohu representative.



*An MPC with CAMS computerized control offers outstanding versatility and flexibility to systems with up to 223 sites.*

### FEATURES

- Controls up to 223 camera sites
- Expand to 31 remote operator stations
- Compatible with RS-422, RS-232, DTMF
- Operator control of pan/tilt, lens functions
- Digitized control signals
- Operator programmable
- Distances up to 5 miles (8 km) with shielded twisted pair
- Power and data line surge protection

### OPTIONS

- Preset control for up to 10 positions
- Autoscan, color and bright light limiter controls
- Video switching/sequencing
- RS-422 balanced-line service
- Multiple RS-232 ports
- Software control with CAMS

# MPC - MICROPROCESSOR CAMERA CONTROL SYSTEM

## THE MPC SYSTEM

The Cohu microprocessor control (MPC) system provides the latest technology in a computer controlled system. Programming and operating the MPC system is simple and requires no special training.

The MPC control system includes master control panels, remote control panels, preset control panels, control receivers, and RS-422 distribution units. Commands to the control receivers at the camera site are via a single twisted pair cable (shielded if preferred) using RS-422 digital data or optional DTMF or by other communication channels if RS-232. All of the units in the system may be connected in a "daisy chain", or by the use of an RS-422 distribution unit, in a "star" pattern with up to ten legs.

Cameras, monitors and limited camera selection access can be assigned to a specific MPC station with our unique systems approach.

The standard control priority is first call up priority. When the camera site is in use, a busy indicator is illuminated on the numeric display readout.

## THE MPC MASTER CONTROL PANEL

The MPC master control panel performs as the system CPU.

The functions performed include 1) polling remote control panels for command/camera selection input, 2) routing operator commands to correct control receiver, 3) controlling video switchers, 4) implementing commands received via RS-232, 5) implementing control priority, 6) setting system parameters such as the RS-422 baud rate, 7) non-volatile storage of camera sequence and camera selection data, 8) selection of data transfer (RS-422 2-way, RS-422 1-way, or DTMF) for each camera site, 9) implementing functions unique to a particular system (such as priority lockout or camera/monitor access assignment) that may be defined to implement non-standard requirements on a system by system basis, 10) RS-232 (single or dual), and 11) DTMF control.

Other system options may be tailored as appropriate for any user system.

## THE MPC CONTROL PANEL

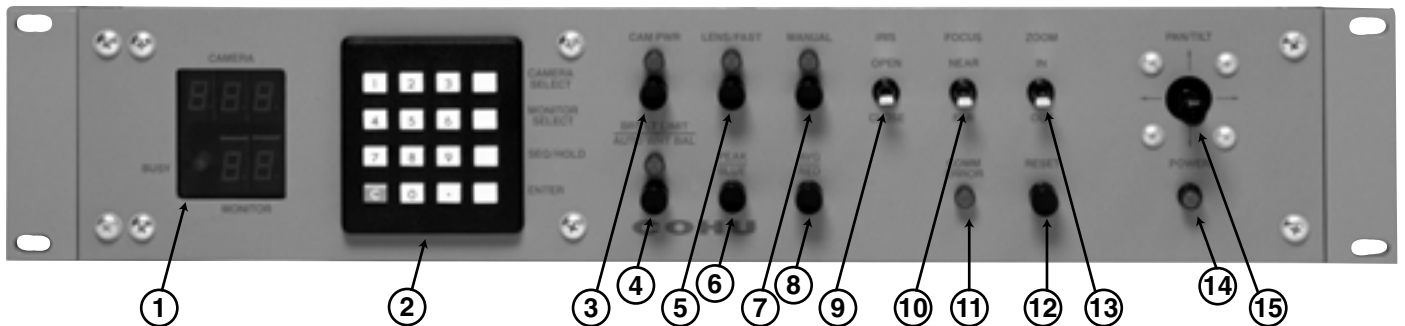
The MPC master control panel and MPC remote control panels serve as operator control units. The MPC control panel is designed for fast, efficient use with little operator training. The layout and clearly designated functions provide the operator quick command and control.

A digital keypad is used to enter monitor/camera selection, sequence programming, sequence/hold commands, and system parameter programming (master only). A numeric display indicates the camera and monitor selection. The busy LED indicator illuminates if the camera is already under control by another operator.

A joystick is used for pan/tilt control, toggle switches for zoom, focus and iris, and push button switches and LED status indicators for camera power, lens speed, and automatic/manual iris select.

Up to three auxiliary push buttons and LED indicators are also available as options for control of bright light limit on/off, peak/avg adjust, auto color balance, on/off manual white balance, or other user defined controls.

## COMMAND/CONTROL FOR SELECTED CAMERA SITE



### 1. NUMERIC DISPLAY

CAMERA  
Indicates camera site selected  
BUSY  
Indicates camera site in use  
MONITOR  
Indicates which monitor the selected camera out is being directed to

### 2. PUSHBUTTON KEYPAD

Provides selection of:  
CAMERA SELECT KEY  
Activates camera selection function  
MONITOR SELECT KEY  
Activates monitor select function  
ENTER KEY  
Completes the selection function

### 3. CAMERA POWER

SELECTS POWER ON/OFF. LAMP INDICATES POWER ON.

4. BRIGHT LIGHT LIMITER/  
AUTO WHITE BALANCE  
B&W – turns bright light limiter on/of. Lamp indicates bright light limiter on.  
Color – select auto or manual white balance. Lamp indicates auto.

### 5. LENS/FAST

Select lens speed for focus and zoom functions. Lamp on indicates fast mode.

### 6. PEAK/BLUE

B&W – adjusts peak average toward peak.  
Color – adjusts more blue in manual white balance.

### 7. MANUAL

Select automatic/manual iris selection. Lamp on indicates manual control mode.

### 8. AVERAGE/RED

B&W – adjusts peak average toward average.  
Color – adjusts more red in manual white balance.

### 9. IRIS OPEN-CLOSE

Opens and closes lens iris when MANUAL mode is activated.

### 10. FOCUS NEAR-FAR

Controls lens focus.

### 11. COMM ERR LAMP

Communication error – indicates communication failure with camera control receiver.

### 12. RESET SWITCH

Restarts the microprocessor

### 13. ZOOM IN-OUT

IN brings subject closer on monitor, OUT moves it farther away.

### 14. POWER LAMP

Green indicates the control panel has power (On-Off switch is on rear panel).

### 15. PAN/TILT JOYSTICK

Moving joystick to any position through a full 360° activates the panning (right-left) and/or tilting (up-down).

## MPC CONTROL RECEIVER

The MPC control receiver receives command data from the MPC master control panel, decodes the command data, performs error checking, and acts on valid data to drive the pan/tilt unit (if applicable) and camera controls.

## MPC PRESET CONTROL PANEL

The present control panel installed near the MPC control panel provides push buttons for operator call-up and programming of presets. LEDs display status of preset positions.

## MPC RS-422 DISTRIBUTION UNIT

The RS-422 distribution unit provides for ten twisted pair connections for MPC system data communication to control receivers and remote control panels if a single daisy chain is not convenient.

### SPECIFICATIONS

#### ELECTRICAL

##### Input Voltage

- (a) 105-130V ac, 50/60 Hz
- (b) 210-260V ac, 50/60 Hz

##### Input Power

- Control Panel: 20 Watts
- Receiver: 25 Watts, exclusive of camera, heater, and pan/tilt power
- Preset Panel: 0.025 Watts (from control panel)
- RS-422 Dist. Unit: 15 Watts

##### Surge Protection

- Power Line: 20 joules, peak current 2500 amps
- Data Line: 100 amps for 1 ms half value pulse width

#### ENVIRONMENTAL

##### Ambient Temperature Limits

- Operating:
  - Control Panel: 0 to 50° C (32° to 122° F)
  - Receiver: -40 to 60° C (-40° to 140° F)
  - Preset Panel: -10 to 50° C (14° to 122° F)

- RS-422 Dist. Unit: -20 to 60° C (-4° to 140° F)
- Storage:
  - Control Panel and Receiver: -40 to 85° C (-40° to 185° F)
  - Preset Panel: -30 to 70° C (-22° to 157° F)
- RS-422 Dist. Unit: -54 to 70° C (-65° to 157° F)

##### Ambient Air Pressure

- Sea level to equivalent of 10,000 feet (3,000m)

##### Humidity

- Control Panel: 95% relative
- Receiver: 100% relative

##### Vibration

- 5 to 30 Hz with 0.03 inches total excursion. From 30 to 1,000 Hz, with peak random vibrations of 5 g's without damage or degradation

##### Shock

- 15 g's in any axis under non-operating conditions. MIL-E-5400T, paragraph 3.2.243.6

#### MECHANICAL

##### Dimensions

- Control Panel: 3.5"H x 12.5"D x 19.0"W (8.9cm x 26.7cm x 48.3cm)
- Receiver: 5.4"H x 10.0"D x 13.5"W (13.3cm x 25.4cm x 34.3cm)
- Preset Panel: 1.72"H x 8.25"D x 19.0"W (4.4cm x 21.0cm x 48.3cm)
- RS-422 Dist. Unit: 1.72"H x 8.20"D x 19.0"W (4.4cm x 20.8cm x 48.3cm)

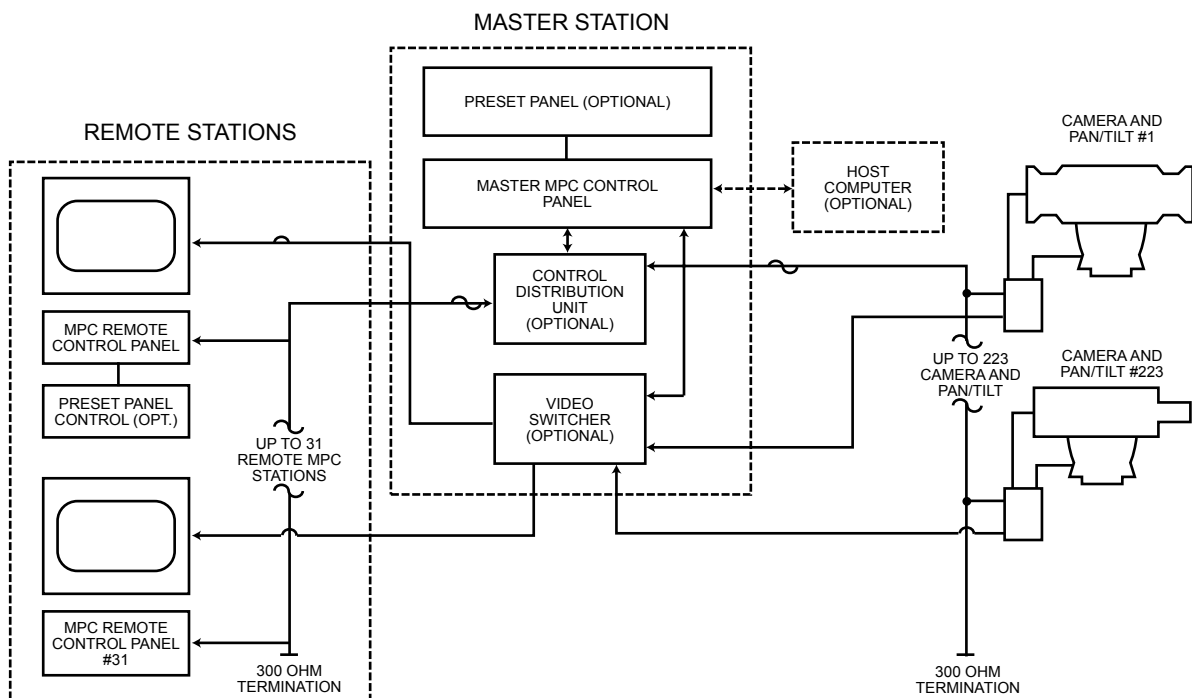
##### Weight

- Control Panel: 10.4 lbs. (4.7 kgs)
- Receiver: 17.8 lbs. (8.1 kgs)
- Preset Panel: 2.3 lbs. (1.02 kg)
- RS-422 Dist. Unit: 4.2 lbs. (1.9 kgs)

##### Enclosure

- Control Panel, Preset Panel, RS-422 Dist. Unit: 19" (48.3cm) rack mount
- Receiver: NEMA-4 weather proof box

### TYPICAL MPC SYSTEM



# MPC - MICROPROCESSOR CAMERA CONTROL SYSTEM

## ORDERING INFORMATION

### CONTROL PANEL

<b>MPC</b>	—	<b>X</b>	—	<b>X</b>		<b>XX</b>	/	<b>XX/---/XX</b>
<b>System</b>		<b>Panel Configuration</b>		<b>Input Power</b>		<b>Front Panel Options</b>		<b>System Options</b>
MPC		M Master R Remote		0 None 1 115 VAC, 50/60 Hz 2 230 VAC, 50/60 Hz		00 Basic MPC 01 Bright Light Llimiter 02 BLL/Peak/Avg 03 Auto Scan 04 White Balance 05 BLL/Peak/Avg/White Balance		(As required) 51 Preset* 52 RS-232, Single° 53 RS-232, Dual° 54 Video Switcher, Parallel° 56 DTMF° + Master or Remote ° Master Only <i>Note: Multiple Options require slash (/) between numbers</i>

### CONTROL RECEIVER

<b>MPC-D</b>	—	<b>X</b>		<b>X</b>		<b>X</b>	/	<b>XX</b>
<b>System</b>		<b>Input Power</b>		<b>Camera Power</b>		<b>Pan/Tilt Power</b>		<b>Options</b>
MPC-D		1 115 VAC, 60 Hz 2 230 VAC, 50/60 Hz		1 115 VAC 2 230 VAC 4 12 VAC		0 None 1 115 VAC 2 230 VAC 3 115 VDC 6 24 VAC		(As required) 56 DTMF

### AUXILIARY EQUIPMENT & CABLES

<b>MPC</b>	—	<b>XX</b>	—	<b>XXX</b>
<b>System</b>		<b>Configuration</b>		<b>Auxiliary Equipment</b> <b>Cables</b>
MPC		AE Auxiliary Equipment CA Cable		<b>000</b> None <b>001</b> Preset Panel <b>112</b> RS-422 Distribution Unit (115 VAC, 60 Hz) <b>212</b> RS-422 Distribution Unit (230 VAC, 50/60 Hz) <b>234</b> Master Control Panel to RS-422 Distributor Unit <b>236</b> Control Receiver to Camera <b>237</b> Control Receiver to Vicon Pan/Tilt <b>238</b> Control Receiver to Pelco Pan/Tilt (with-PP opt.) <b>239</b> RS-232 Type (Null Modem) <b>240</b> Master Control Panel to Remote Control Panel Remote Control Panel to Remote Control Panel <b>241</b> Control Panel to Preset Panel <b>242</b> Remote Control Panel to RS-422 Distribution Unit <b>243</b> Control Receiver to RS-422 Distribution Unit <b>244</b> Master Control Panel to Control Receiver <b>245</b> Control Receiver to Pelco Pan/Tilt (without-PP opt.)

ISO-9001 Certified

Cohu, Inc./Electronics Division



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Cohu, Inc., Electronics Division