j-systems
Engineered Surveillance Solutions

JPTMC-01 PROPORTIONAL PWM PTZ CONTROLLER r6

PC/104 Form Factor IP Based 4-Channel Pulse Width Modulated PTZ Controller With Virtual Joystick Web Interface and Advance PID DC Servo Control

SD-PTZ Controller

Advanced PID DC Servo Loop

IP Based with Web Interface

Virtual Joystick Interface

Small Size PC/104 Form Factor

17 User Defined PTZ Presets

GoTo Preset On Alarm Input

RS 232 / 485 Serial Interface

Supports Pelco D Joysticks

Variable Speed Control of Pan-Tilt Head and Power Zoom Lens

Aux Relay (Pulsed to 18 hrs)

Display 12VDC Bus Voltage

Display Ambient Temperature

Trigger After Preset Function

Low Power Consumption

Precise Preset Repeatability

MiniPage Browser Interface

PWM Encoder or Pot Feedback

PWM PTZ Controller

The JPTMC-01 is an advanced SD (software defined), IP based, proportional PWM (pulse width modulated), 4-channel motion controller. A virtual joystick Web interface allows variable speed PTZ control functions across a LAN, WLAN, or the Internet. The controller features an advanced closed-loop PID (proportional, integral, derivative) DC servo control system offering precise slow speed, variable speed, and jog control for a pan-tilt head and power zoom lens.

This compact PC/104 form factor controller has been designed to provide pan-tilt and zoom, focus positional control for a camera and power zoom lens. A precise jog capability allows small movements making focusing a large power zoom lens easy. In addition to 17 user defined presets, other features include visual and digital positional display, DC supply voltage readout, ambient temperature display, and a SPDT remote control relay which can be turned Pulsed for up to 18 hrs via the web interface.

Features Unique Virtual Joystick Control with Precise Jog Function

FEATURES

- **Designed for Harsh Environments (-40C to +70C)**
- **IP Based with Soft Start and Stop PID Algorithm**
- **17 User Definable Pan, Tilt, Zoom, and Focus Presets**
- **Excellent Preset Repeatability**
- **Jog Control Built In for Use With Large Power Zoom Lenses**
- **Built-In Surge and Lightning Protection**
- **Designed for 9-15VDC Brushed DC Motor Control**
- **Low Power Consumption - Ideal for Green Power Applications**
- **DC Servo Control for Positive Position Holding Capability**

Ideal For
Mobile PTZ Applications
Long Range Surveillance Systems
Monitoring Problem Crime Areas
Controlling Large Power Zoom Lenses

J-Systems, Inc.
1S 678 School Ave., Lombard, IL 60148 • T 630-627-3458 F 630-620-0960
Web Site: http://J-Systems.com • E-Mail: info@J-Systems.com
Specifications Are Subject to Change Without Notice • Jcam is a Trademark of J-Systems, Inc.

Web Interface

Main Control Panel

Shown to the right is the main PWM control panel Web interface and Menu Bar allowing access to the MiniPage, Presets, I/O Config, Network, Calibration, MotionCtrl pages and the J-Systems Web site.

The red circles centered between the red arrows in the Pan-Tilt and Focus - Zoom areas represent the handle for each virtual joystick. By grabbing this circle with your mouse you can drag it to the right to pan right, or drag it up to tilt up and so on. The closer the circle comes to the red arrows, the faster the movement resulting in proportional speed control.

The red arrows act as Jog controls offering small, precise movements for pan, tilt, zoom, and focus. These are extremely useful when using large magnification power zoom lenses.

The linear scales with arrows provide a visual indication of movement direction as well as relative location. A digital display below each scale shows pan-tilt degrees and focus-zoom percentages.

The Auto Patrol check box and Relay toggle switch are displayed along with 12VDC bus voltage, ambient temperature, Alarm Input 1 and Alarm Input 2 status. This control is also able to control a remote iris lens and offers two open collector switches to control auxillary equipment.
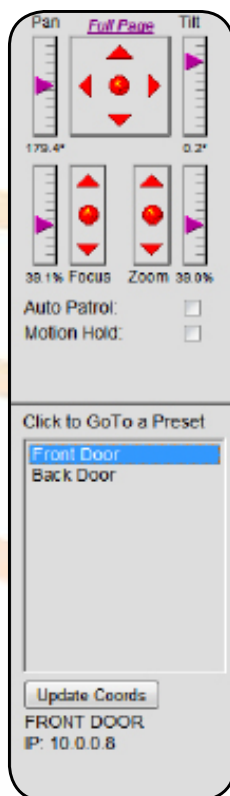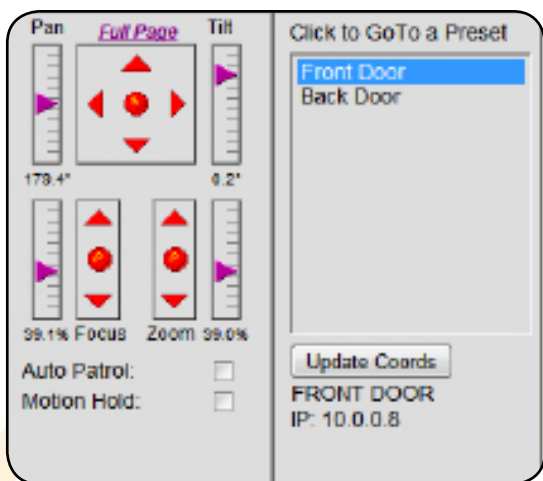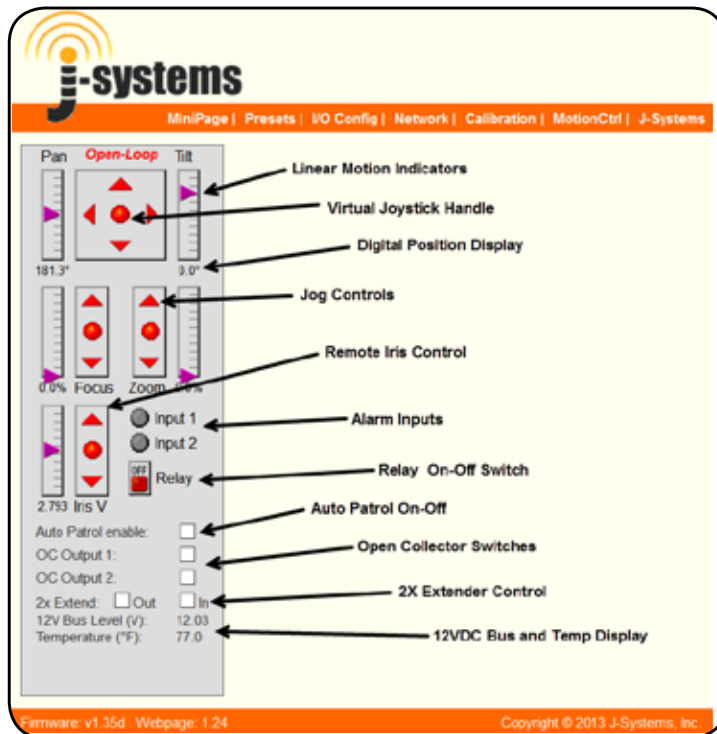
MiniPage

MiniPage is a compact version of the above virtual joystick interface with a list of 'clickable' Presets. This compact interface is ideal for integration into recording software applications such as Milestone's Smart Client.

The shape of the MiniPage can be easily altered by adjusting the width of the browser window.

The MinPage offers full joystick control as well as easy click and go to a user defined Preset location. The Auto Patrol function can also be turned on or off from here. Preset coordinates can also be updated from this page.

A special Motion Hold features allows the closed loop servo system to be disabled to prevent position hunting in very high or gusty winds when using a high power, zoom lens.

Preset Panel

The pop-up Preset panel allows the end user to define 17 presets. Each preset can store pan, tilt, zoom, and focus positional data.   Further, Presets can be selected to be part of an Automated Patrol sequence which allows for an adjustable dwell time at each selected Preset location.

One of the benefits of utilizing multiple closed-loop DC servo systems is the ability of the pan-tilt head, and power zoom lens to exhibit a high degree of Preset repeatability thereby minimizing visual "creep".   The images below are the first and last captured over a 1 Hr, 50 Min. Automated Patrol using a JPTH-13M pan-tilt head and a 320mm power zoom lens (set to 256mm). A new Preset position was selected every 20 seconds accounting for 329 preset movements. Notice the high degree of image repeatability at the end of this automated Patrol sequence..


Start of Patrol

End of Patrol
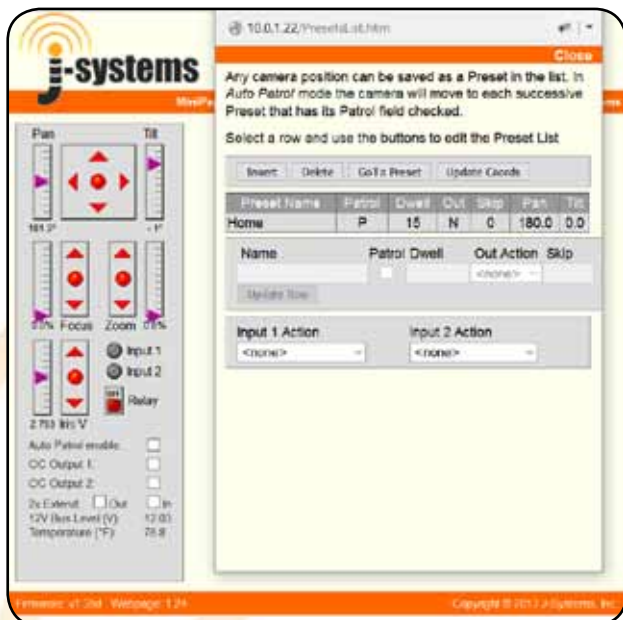
The two built in analog alarm inputs can be used to trigger a Preset event. At the bottom of the Preset panel there are two drop down selection boxes where you can select a preset to go to on alarm or to pulse the Aux relay if that function is enabled.

The use of alarms to trigger a preset movement is ideal to quickly and automatically move the camera to view a door where an alarm has been tripped. This function can also be used to trigger an audio annoncement such as "you have entered a restricted area and are under video surveillance"

A new Preset Trigger function has been added to generate a trigger after the Preset has been reached. This allows an ftp image to be sent ot a high resolution still camera to triggered. This trigger function prevents the capture of blurred images. The trigger event can be skipped X number of Preset cycles to prevent the accumulation of a large amount of images. The Preset Trigger funtion is Preset selectable.
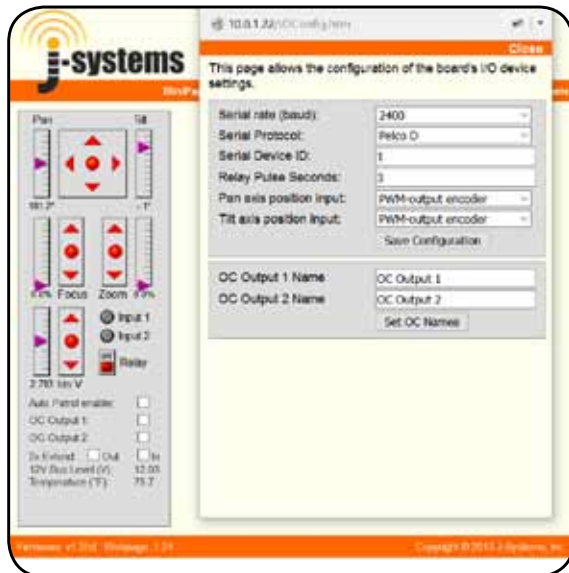
I/O Config Panel

The JPTMC-01 can be configured for an RS-232 or RS-485 serial input. Any device that supports the Pelco D protocol such as an IP camera, video server or compatible Pelco D joystick can be utilized for direct control of the pan tilt head and power zoom lens.
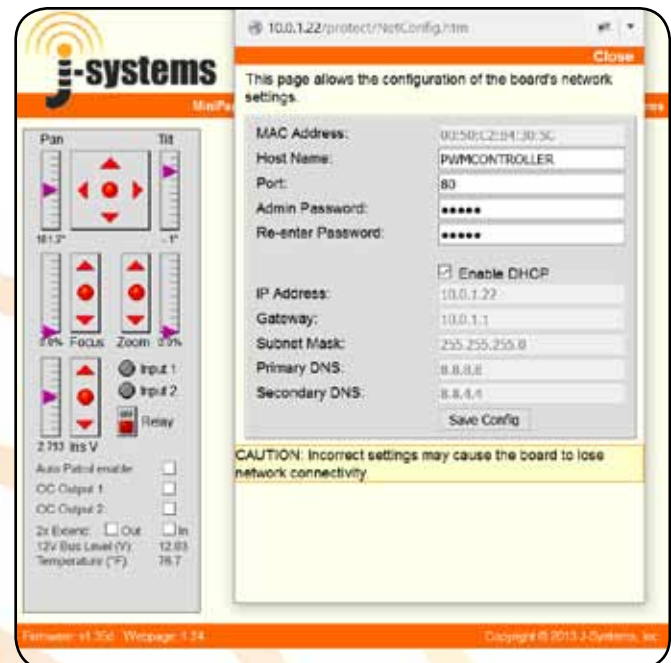
Selection of RS-232 or RS-485 protocol is via jumpers located on the PWM controller and is ideal where a transition from a legacy CCTV system to a newer IP system is in progress or planned. The Pelco D protocol translator supports pan, tilt, focus, zoom, presets, Aux relay on-off, as well as, Pan and Tilt Queries, Stop and GoP and GoT commands. Serial interface control and IP interface control can function in parallel.

The Aux relay pulse time is set on this page. The duration is up to 65,636 sec or roughly 18 hours.

This page also allows selection of the feedback method; either potentiometers or PWM encoders.

Network Panel

The Network Web page offers the ability to run in DHCP mode or set your own static IP network parameters. The "Admin" password can also be changed from this page.
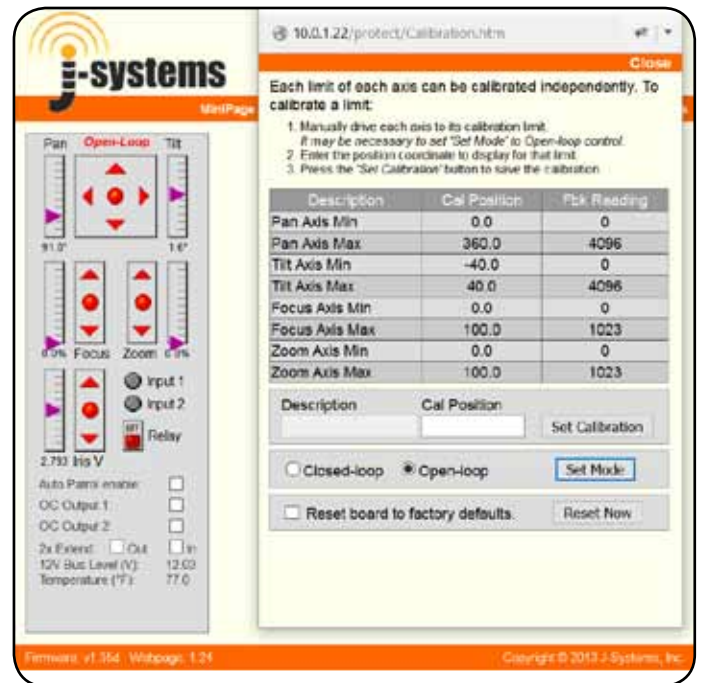
Calibration Panel

The Calibration Web page is used to set pan, tilt, zoom and focus soft movement limits and to define the scale limits that will be displayed on the Control panel.

All movement limits are set with the control in it's Open-Loop mode. Once calibrated, the control is placed back into the Closed-Loop mode for precise DC servo control.

MotionCtrl Panel

The MotionCtrl interface controls the PID (proportional, integral, derivative) terms along with other variables that control the overall functionality of the controller.

While end users will generally not need to adjust the PID parameters, an advanced PID tuning aid is built-in. This feature provides axis impulse response data which can be plotted in Excel to show the overshoot or dampening for each axis. An example of a properly tuned Pan axis is shown below
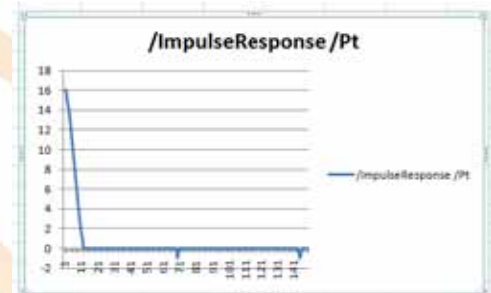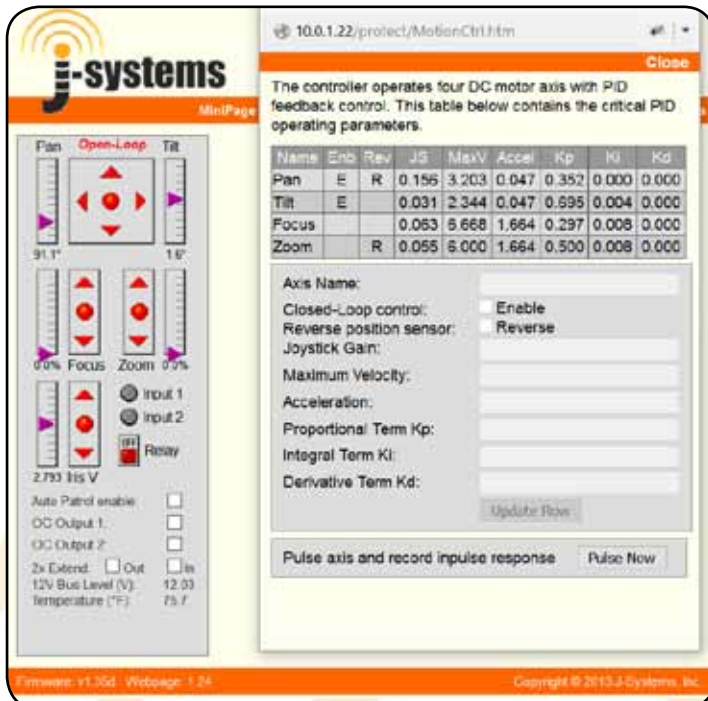

In the event one axis of feedback polarity has to be reversed, that can be accomplished using the Reverse Position Sensor check box. An axis can also be removed from the closed loop system.

J-Systems Menu Tab

This tab will take you to the J-Systems web site for User Manual or firmware updates as needed.

System Configurations

The JPTMC-01 PWM controller is available as a stand-alone PCB, mounted in a NEMA 4X enclosure with waterproof connectors, or as a complete IP based, wireless, PTZ system with camera, power zoom lens, and wireless communications (cellular or microwave). OEM versions are also available in quantity (consult factory for details).
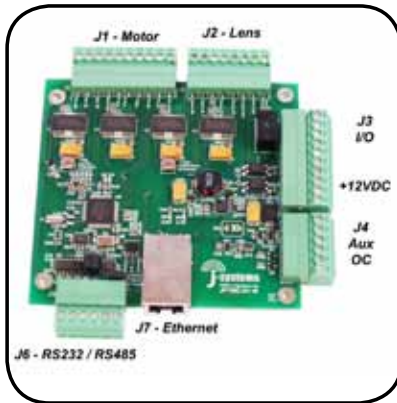
JPTMC-01 PWM Controller

JPTMC-01 PWM Controller in
NEMA 4X Enclosure
with JPTH-13M PT Head and Cable
(also available larger JPTH-35 PT Head)

Large power zoom lenses have been tested up to
1500mm. Power zoom lenses must have preset
pots built in.

JPTMC-01 PWM Controller
in NEMA 4X Enclosure

NOTE:
An API is available which offers the OEM the ability to develop thier own program for controlling the PWM controller. There is also a Quick Start Guide that covers Pelco D querries and responses for the serial programmer to follow.

We have custom designed hundreds of systems using various size PT heads, power zoom lenses, cameras, and outdoor enclosures. Many have utilized cellular and microwave communications. Please call to discuss your specific application needs.

Please Call for Engineering Assistance   630-627-3458

Control Parameters

Variable Speed Control	Pulse Width Modulation (PWM) w/ Virtual Joystick
PWM Frequency	Approx. 1KHz
Start - Stop Profile	Soft Start and Stop All Axes
DC Servo Control	Closed Loop PID Algorithm (tunable & adjustable)
Channels	4 (pan-tilt-zoom-focus)
Calibration Method	Ability to Run In Open-Loop Servo Mode
PID Loop Tuning	Built-In PID Tuning Software (Graph to Excel)
Jog Control	Approx. 0.10 deg per jog (w/ PWM Encoders)
Form Factor	PC/104
Positional Accuracy	+/- 0.01 deg w/JPTH-13M PT Head & PWM Encoders
Position Indicators	Linear Pointers and Digital Display

Functions

Pan-Tilt Positional Control	Brushed 12VDC Motor
Zoom Focus Control	Lenses w/ Brushed 12VDC Motors & Feedback Pots
Presets (PTZ and F)	17 User Defined Presets for Pan,Tilt, Zoom, & Focus
Aux. Relay	User Controlled, Pulsed Up To 18 Hrs
Analog Alarm Inputs	Two 4 to 40 VDC Analog Alarm Inputs.
Alarm Actions	Pulsed Relay on Alarm or GoTo Preset Position
Motion Limits	User Defined Soft Limits
Patrol Function	Any Or All of 17 Presets w/ Adjustable Dwell Time
12VDC DVM	Displays 12VDC Bus Voltage +/- .05V or 1%
Temperature Readout	Deg F at PCB Level +/- 3 degs F

Operating Parameters

Operating Voltage	9 to 15VDC
Operating Temperature	-40C to +70C
Power Consumption	1.3 watts (excluding external loads)
Overload Current	Automatic Stalled Motor Protection
Connectors	1-RJ45, Pluggable Screw Terminal Edge Connectors
ESD Protection	All I/O Pins Protected
RS-232 / RS-485	Jumper Selected (Supports Pelco D Protocol)

API Available