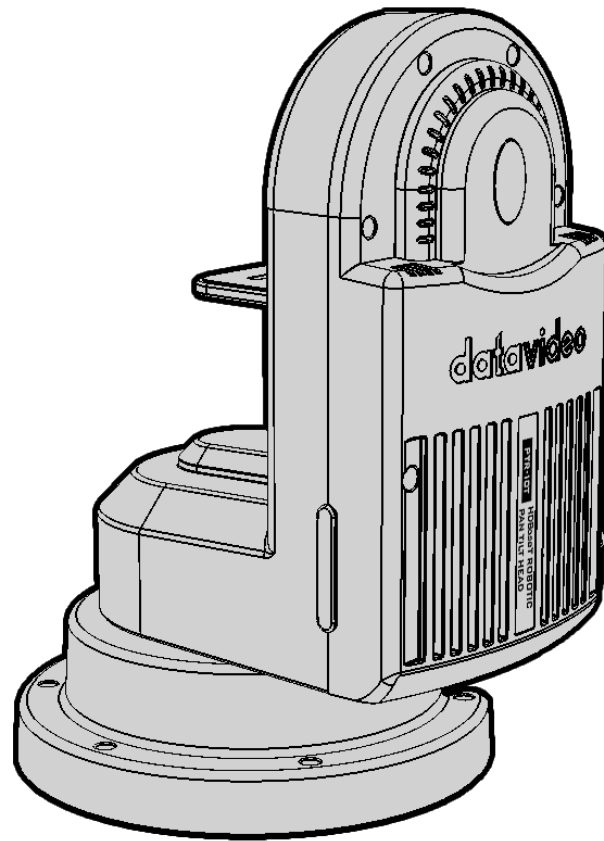




ROBOTIC
PAN TILT HEAD
PTR-10 MARK II
Instruction Manual

www.datavideo.com

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Disclaimer of Product & Services

The information offered in this instruction manual is intended as a guide only. At all times, Datavideo Technologies will try to give correct, complete and suitable information. However, Datavideo Technologies cannot exclude that some information in this manual, from time to time, may not be correct or may be incomplete. This manual may contain typing errors, omissions or incorrect information. Datavideo Technologies always recommend that you double check the information in this document for accuracy before making any purchase decision or using the product. Datavideo Technologies is not responsible for any omissions or errors, or for any subsequent loss or damage caused by using the information contained within this manual. Further advice on the content of this manual or on the product can be obtained by contacting your local Datavideo Office or dealer.

FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Warnings and Precautions

1. Read all of these warnings and save them for later reference.
2. Follow all warnings and instructions marked on this unit.
3. Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this unit in or near water.
5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.
6. Slots and openings on the cabinet top, back, and bottom are provided for ventilation. To ensure safe and reliable operation of this unit, and to protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult your Datavideo dealer or your local power company.
8. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.
9. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord rating.
10. Make sure that the total amperes of all the units that are plugged into a single wall outlet do not exceed 15 amperes.
11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.
12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.



13. Unplug this product from the wall outlet and refer to qualified service personnel under the following conditions:
- When the power cord is damaged or frayed;
 - When liquid has spilled into the unit;
 - When the product has been exposed to rain or water;
 - When the product does not operate normally under normal operating conditions. Adjust only those controls that are covered by the operating instructions in this manual; improper adjustment of other controls may result in damage to the unit and may often require extensive work by a qualified technician to restore the unit to normal operation;
 - When the product has been dropped or the cabinet has been damaged;
 - When the product exhibits a distinct change in performance, indicating a need for service.

Warranty

Standard Warranty

- Datavideo equipment is guaranteed against manufacturing defects for **one (1) year** from the date of purchase.
- A valid purchase invoice or other proof of purchase must be provided when requesting warranty service.
- The warranty period begins on the actual purchase date. If the purchase date cannot be verified, the warranty period will begin **thirty (30) days after shipment** from a Datavideo office.
- Non-Datavideo branded products (products without the Datavideo logo) are covered by a **one-year warranty** from the date of purchase.
- Damage caused by accident, misuse, unauthorized repair, or exposure to sand, grit, or water is **not covered** under warranty.
- Virus or malware infections on computer systems are **not covered** under warranty.
- Any issues caused by unauthorized third-party software installations that are not required by Datavideo systems are **not covered** under warranty.
- All shipping, mailing, or transportation costs, including insurance, are the responsibility of the owner unless otherwise stated.
- **Teleprompter glass is not covered** under warranty.
- Accessories, including **headphones, cables, batteries, metal parts, housings, protective cases, cable reels, and consumable items**, are **not covered** under warranty.
- Warranty is valid only in the country or region of purchase.
- All other claims **not explicitly stated** are not covered.
- Your statutory rights remain unaffected.

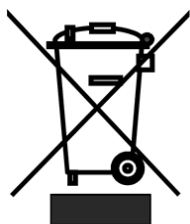
Five Year Warranty

- Starting January 1, 2026, all Datavideo products that are successfully registered on the Datavideo official website are eligible for a **free four-year extended warranty**, in addition to the standard one-year warranty, for a total of **five years of coverage**.



- **Only registrations completed through the Datavideo official website qualify** for the five-year warranty. Registrations completed through local Datavideo offices, resellers, or authorized distributors **are not eligible**.
- Certain parts with limited service life — including **LCD panels, DVD drives, hard drives, solid-state drives, SD cards, USB thumb drives, lighting equipment, non-PCIe cards, and third-party PC components** — are covered by a **one-year warranty only** and are **not eligible** for the extended warranty.
- **Camera modules** are covered by a **three-year warranty from the date of purchase**.

Disposal



For EU Customers only - WEEE Marking

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to

conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



CE Marking is the symbol as shown on the left of this page. The letters "**CE**" are the abbreviation of French phrase "Conformité Européene" which literally means "European Conformity". The term initially used was "EC Mark" and it was officially replaced by "CE Marking" in the Directive 93/68/EEC in 1993. "CE Marking" is now

used in all EU official documents.

1. Product Overview

Datavideo's brand new PTR-10 MARK II is a robotic pan-tilt head that is designed to turn any small size video cameras or block cameras into a PTZ camera.

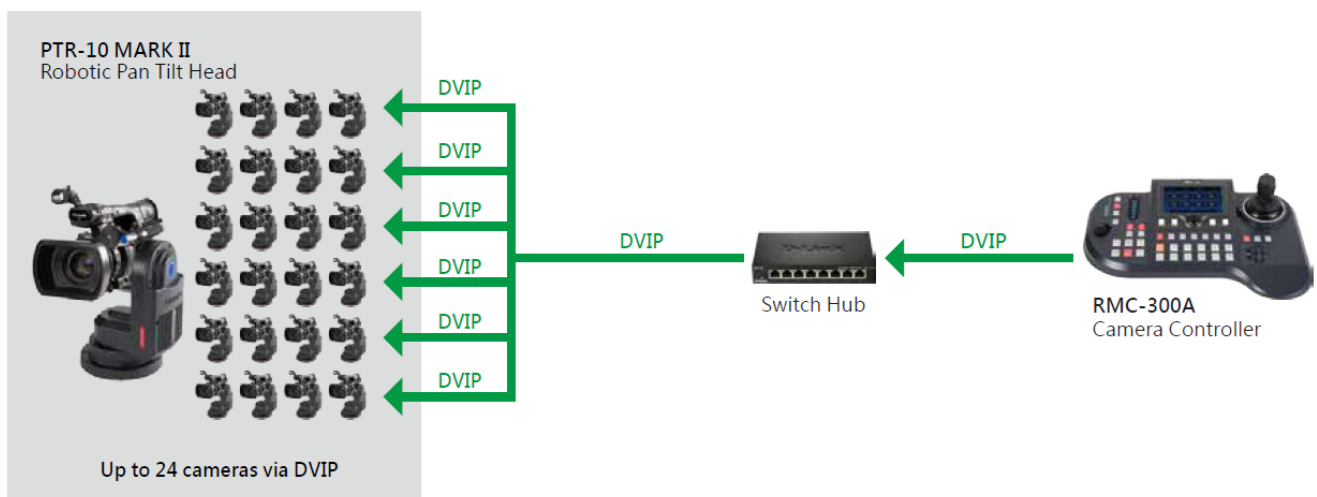
A sleek design fits seamlessly in your studio. With its weight of 3.4 Kg, it can be placed on the heavy-duty tripod or mounted on the wall and ceiling which bring up a lot of flexibilities for your video production.

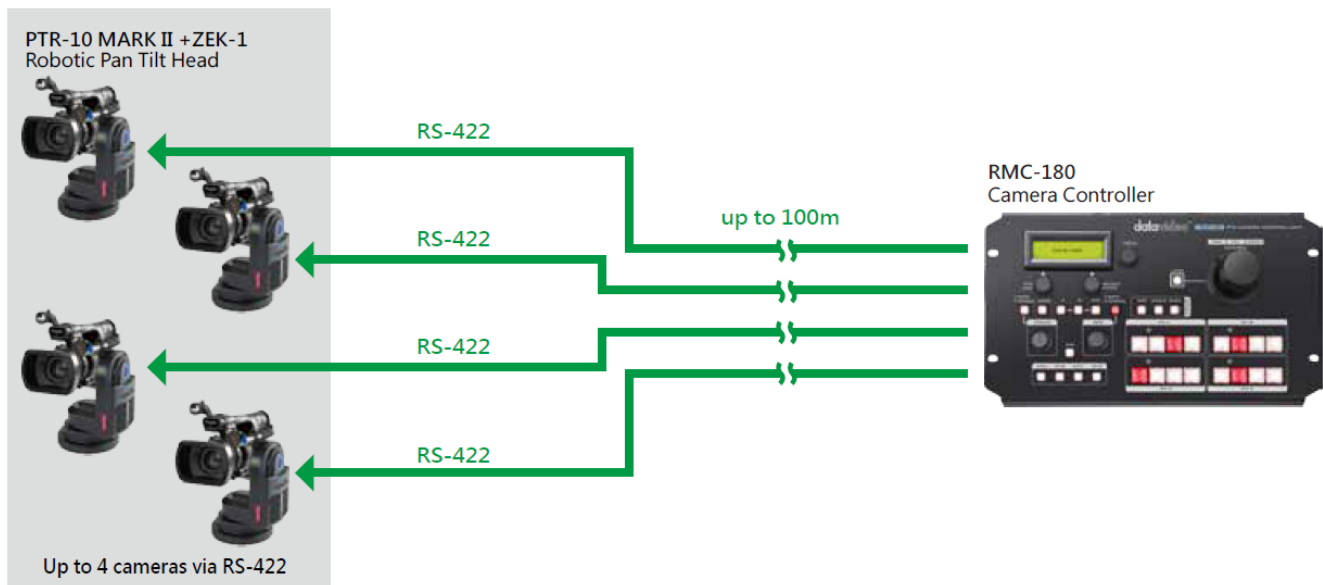
The PTR-10 MARK II can be controlled by IR Controller, VISCA Protocol Controller, Datavideo RMC-180 Camera Controller, RMC-300A Universal Remote Control Panel, and is compatible with serial or Ethernet (DVIP).

1.1 Features

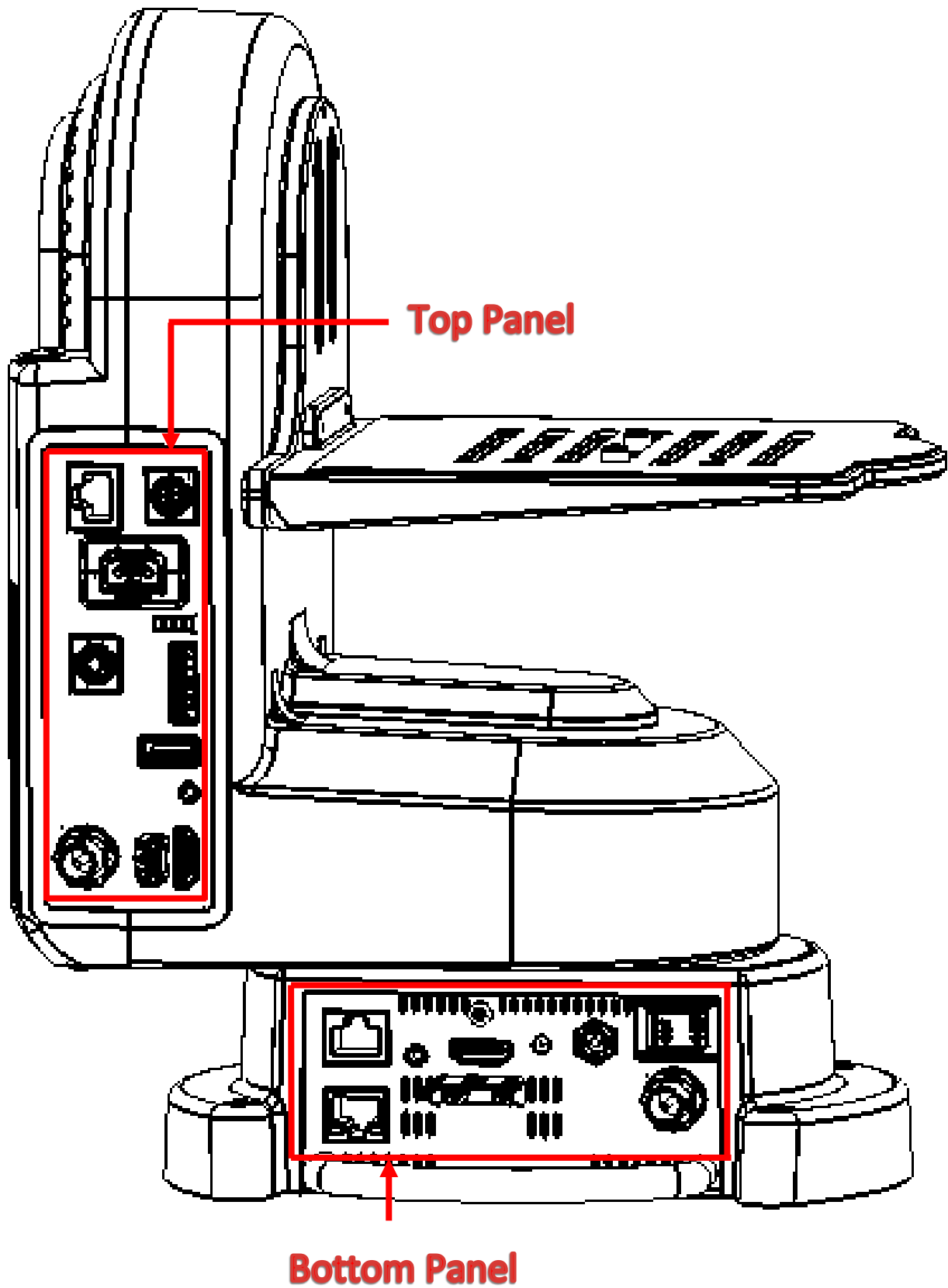
- Strong and sturdy aluminum frame
- Various interfaces: SDI, HDMI, RS-232, RS-422, DVIP, Tally and LANC
- Multiple controller choices: RMC-180, RMC-300A, RMC-300C, HS-1600T and ShowCast 100
- Built-in tally light
- D-tap connector for DC output
- Selectable DC voltage output (7.4 / 8.4 / 10 / 12) for different camera types
- Support optional Datavideo ZEK-1 Zoom Encoder Kit to detect and read out the Zoom position of mounted cameras
- Control Sony, Panasonic, Canon, and JVC cameras
- Easy control of Zoom, Focus, IRIS, Shutter, and White Balance using Datavideo's remote controllers

1.2 System Diagram

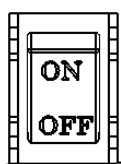
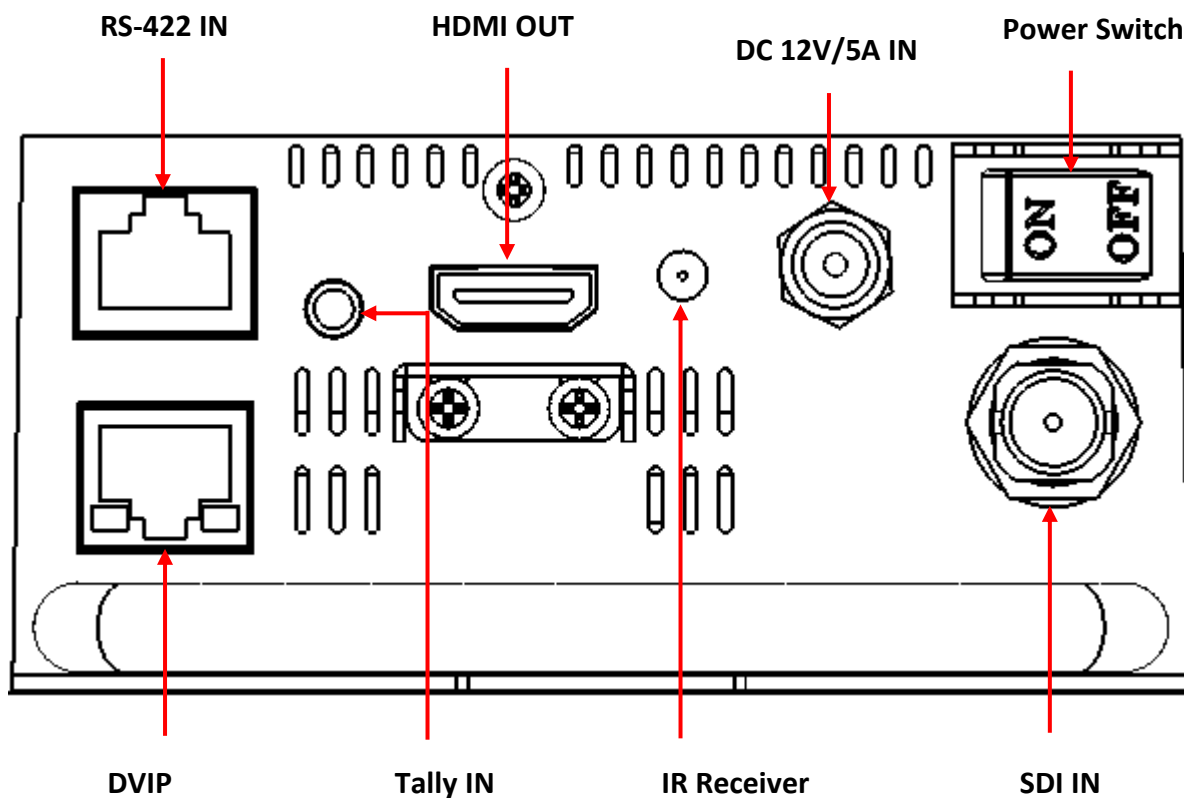




2. System Overview



2.1 Bottom Panel



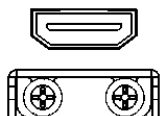
Power Switch

Device power ON/OFF



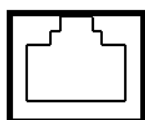
DC 12V/5A IN

DC in socket connects the supplied 12V/5A PSU. The connection can be secured by screwing the outer fastening ring of the DC In plug to the socket.



HDMI OUT

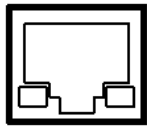
Delivers camera video to external devices such as a video switcher. The OSD menu will overlay on HDMI video output of this port.



RS-422 IN

Connects any VISCA controller utilizing RS-422 interface such as Datavideo's RMC-180 and RMC-300A controller.

See the section on [RS-422 VISCA Communication Protocol](#) for detailed descriptions and example system setup.



DVIP

DVIP port connects the PTR-10 MARK II to an Ethernet switcher or router for remote control. An example of the controller utilizing DVIP port is RMC-300A.

See the section on [DVIP](#) for detailed descriptions and example system setup.



Tally IN

Receives tally information from external devices such as a video switcher.



IR Receiver

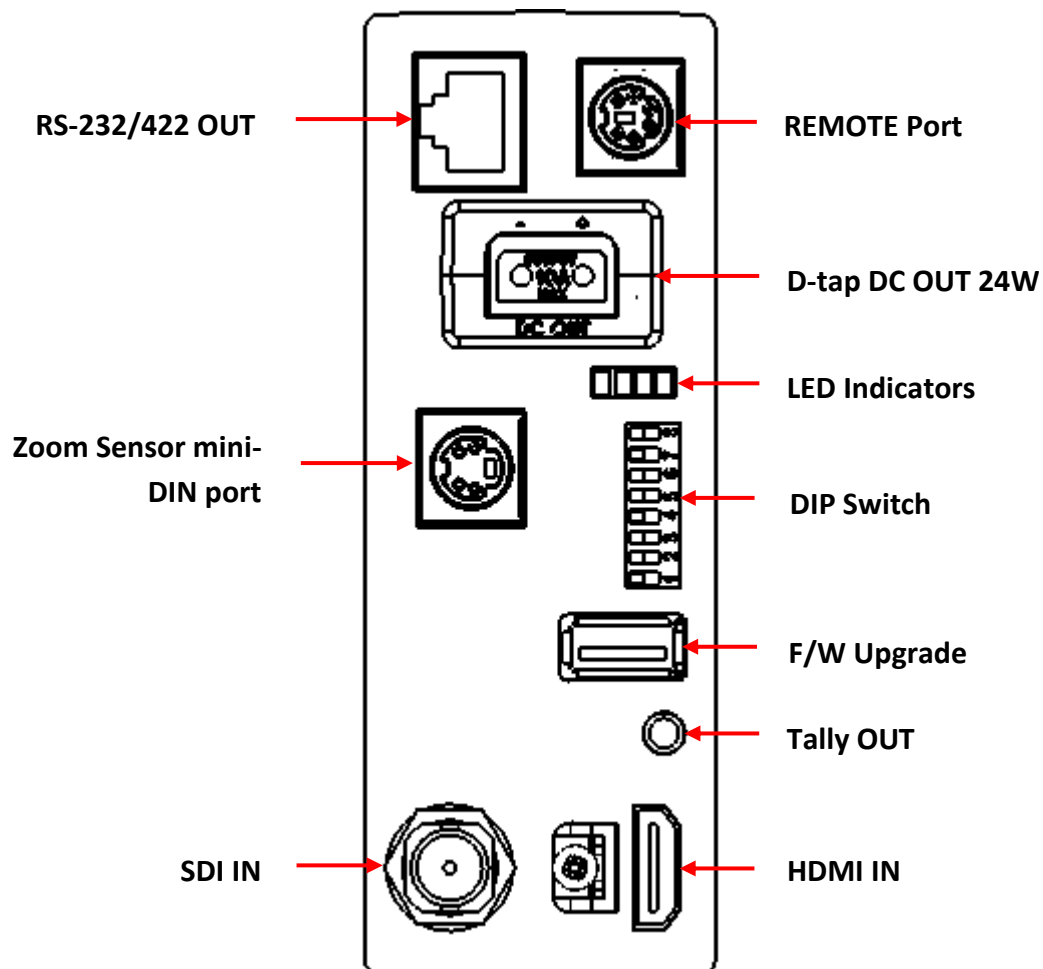
Operate the PTR-10 MARK II by an IR remote control.



SDI OUT

Delivers camera video to external devices such as a video switcher.

2.2 Top Panel





RS-232/422 OUT

Connects to the camera mounted, relaying serial control signals between the camera and controllers via RS-232 or RS-422 interface, which is selectable through the [OSD menu](#).



Zoom Sensor mini-DIN port

Connects to Datavideo's ZEK-1 Zoom Encoder Kit in order to detect and return zoom position of the camera mounted. See the ***ZEK-1 user manual*** for installation instructions and the [Zoom Sensor mini-DIN Port](#) section for more information about using the ZEK-1 to achieve smooth and responsive PTZ camera control.



SDI IN

Video IN from the mounted camera



HDMI IN

Video IN from the mounted camera



Tally OUT

Delivers tally information to the mounted camera.



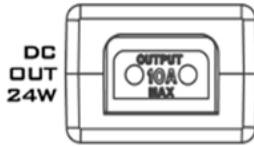
F/W Upgrade

For upgrading to the latest firmware
See [Firmware Update](#)



DIP Switch

For configuring the PTR-10 MARK II.
See [DIP Switch](#)



D-tap DC OUT 24W

The D-tap connector supplies DC power to the camera.

Note: A **D-tap-to-DC5.5** cable accompanying the PTR-10 MARK II is designed for supplying power to Datavideo's block cameras.

12V	10V	8.4V	7.4V

LED Indicators

The LED indicators represent different output voltages that the DC OUT D-tap connector is delivering. See the section on [DIP Switch](#) for selection of output voltage.

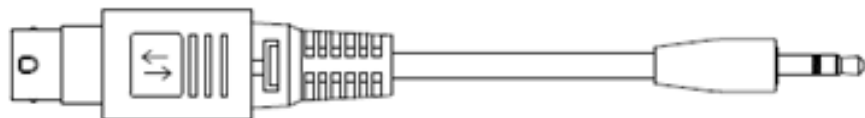


REMOTE

Connect through a remote cable to various camera brands in order to control camera's zoom and focus as well as other functions. See the [REMOTE](#) section for cable pinout information, connection instructions as well as a list of compatible cameras.

Note: A remote cable (8pin mini-din to 2.5mm phone jack) accompanying the PTR-10 MARK II is designed for connecting to various camera brands.

Warning: The 8pin snap-and-lock mini-din connector of the remote cable will be securely fastened once plugged into the Remote port. To remove, use two fingers to gently hold the part of the plug labelled by two arrows then pull the connector outward.



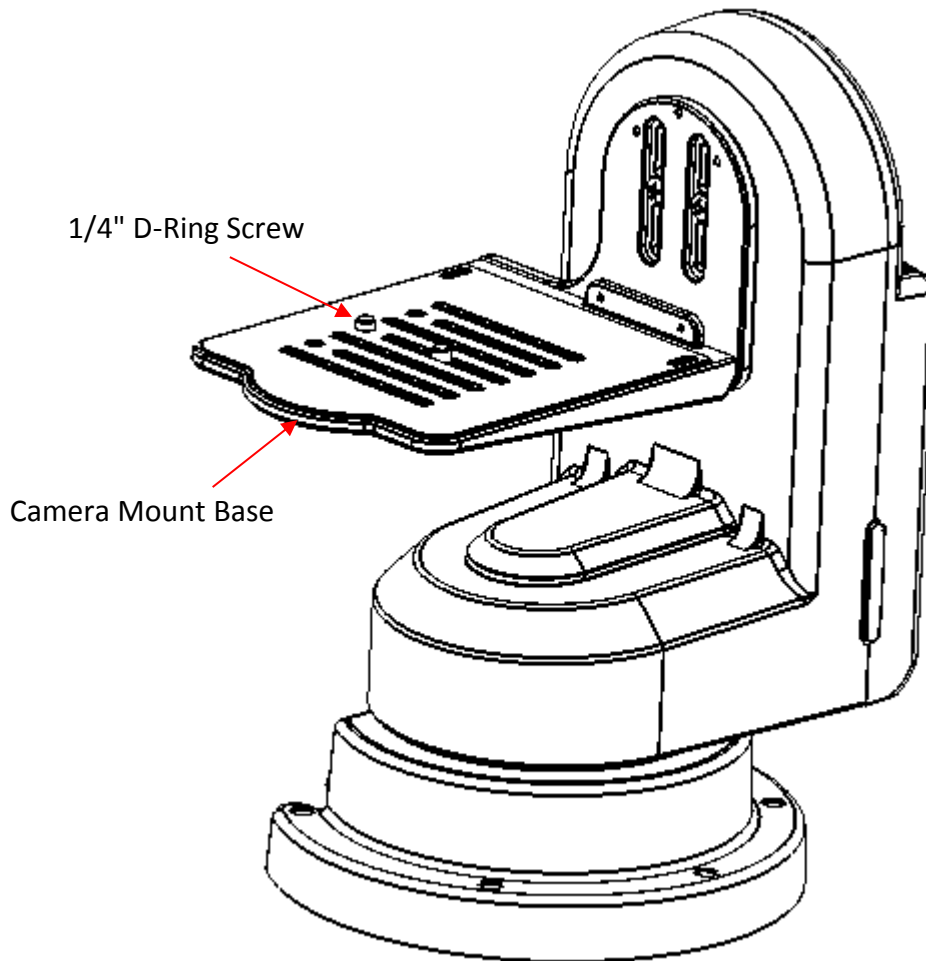
2.3 Installing your Camera

Follow the steps outlined below to install the camera:

1. First place the camera on the camera mount base.
2. Align the 1/4" screw hole found at the base of the camera with the 1/4" screw hole in the camera mount base.

Note: If there is only a 3/8" threaded screw hole at the base of the camera, put a 3/8" to 1/4" nut adapter in the hole then tighten with a coin or a flat head screwdriver.

3. Lastly secure the camera with a 1/4" hand screw.



Note: It is recommended to use a flat head screwdriver to tighten the 1/4" D-ring screw as this can more effectively secure the screw.

3. Connections

Before starting to use your robotic pan tilt head, make sure you have connected the power and camera video.

3.1 *Power*

DC 12V/5A IN

DC in socket connects the supplied 12V/5A PSU. The connection can be secured by screwing the outer fastening ring of the DC In plug to the socket.

D-tap DC OUT 24W

The D-tap connector supplies DC power to the camera.

3.2 *Video*

SDI / HDMI IN

Video IN from the mounted camera via SDI or HDMI interface.

SDI / HDMI OUT

Delivers camera video to external devices such as a video switcher via SDI or HDMI interface.

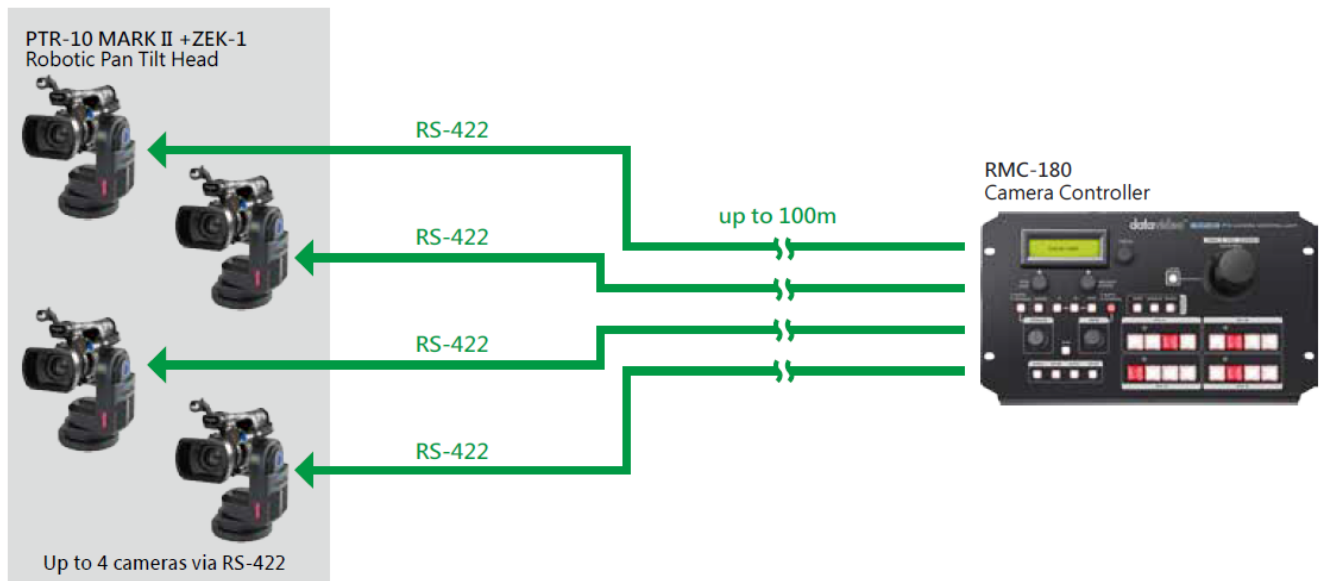
4. Control Functions

Various control methods are described in this section.

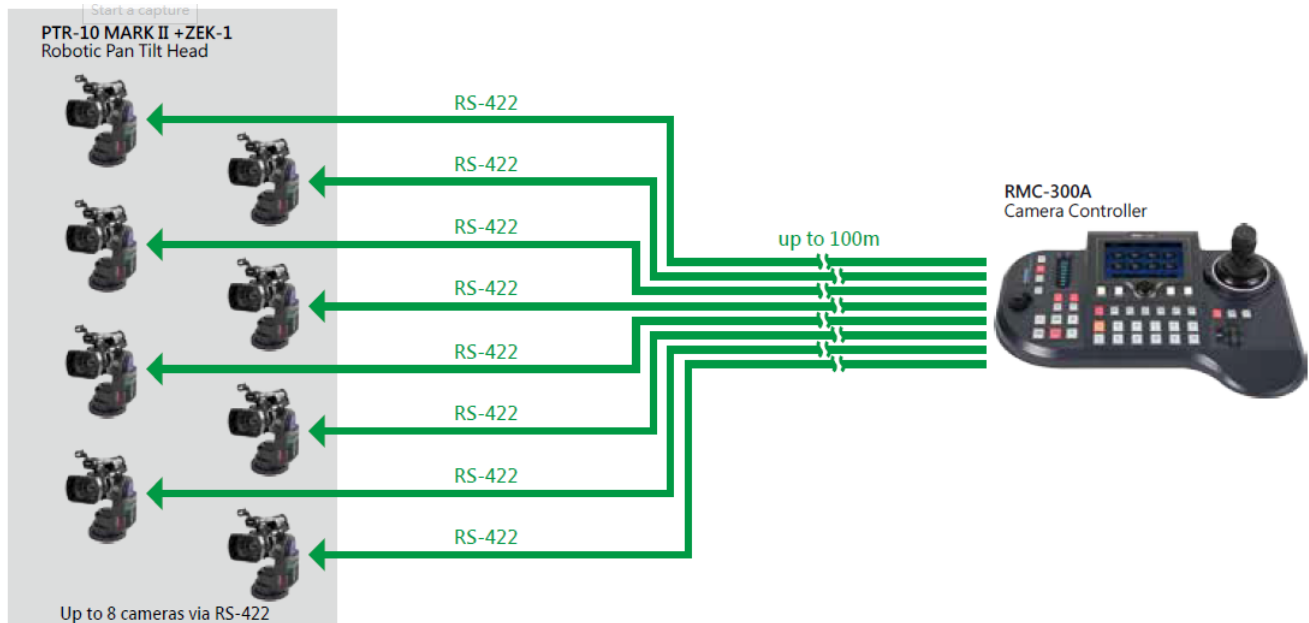
4.1 RS-422 VISCA Communication Protocol

Via RS-422 VISCA communication protocol, the RMC-180 and RMC-300A Camera Controllers are designed to control up to 4 and 8 PTR-10 MARK II devices respectively. See the diagrams below for example system setups

RMC-180 Camera Controller



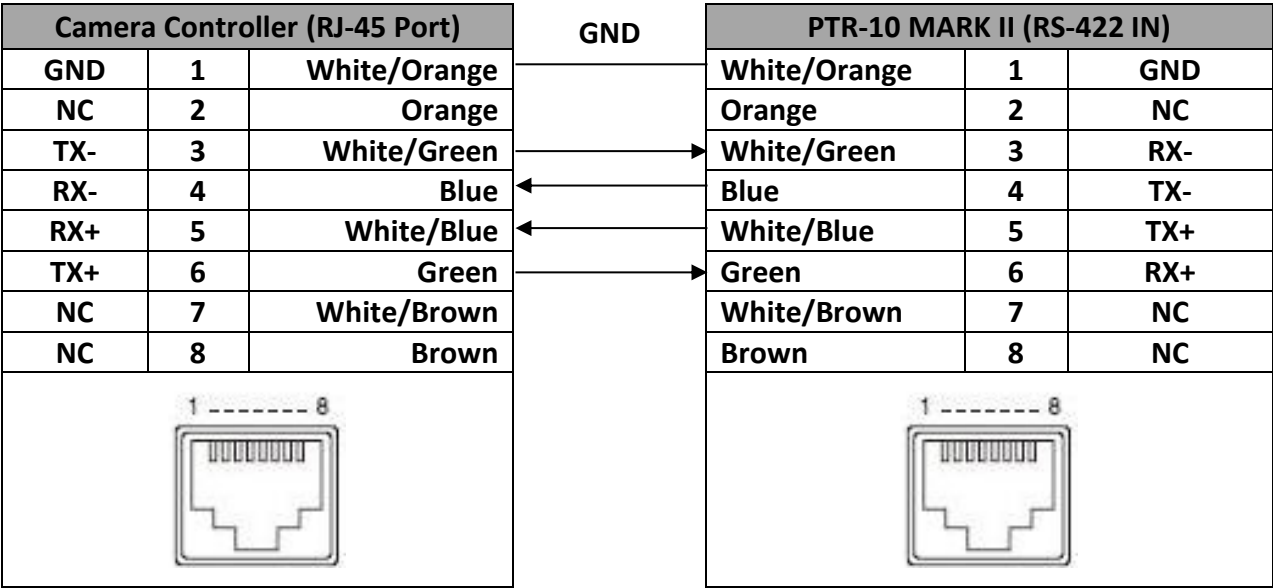
RMC-300A Camera Controller



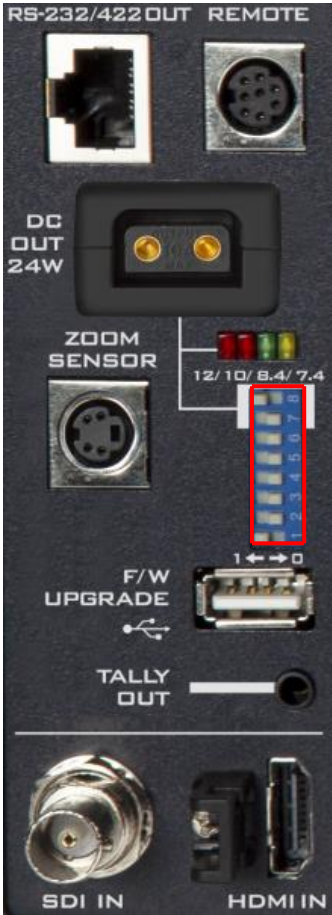
To control the camera mounted on PTR-10 MARK II using the camera controller, first connect one of the RJ-45 ports provided on the controller rear to PTR-10 MARK II's RS-422 IN port via an RJ-45 cable. Then depending on the protocol used, either connect PTR-10 MARK II to the camera via the Remote

port (LANC/BX-Lens) through a remote cable or via the RS-232/422 OUT port (RS-232/RS-422) through an RJ-45 cable. For information about the remote cable, see the section on [Remote OUT](#).

See below for information about RJ-45 cabling (RS-422 wiring scheme between the camera controller and PTR-10 MARK II) in the RS-422 setup.



Please note that bit 4 of the DIP switch on PTR-10 MARK II devices must be set to OFF prior to establishing physical connection. See the [DIP Switch](#) section for detailed information.

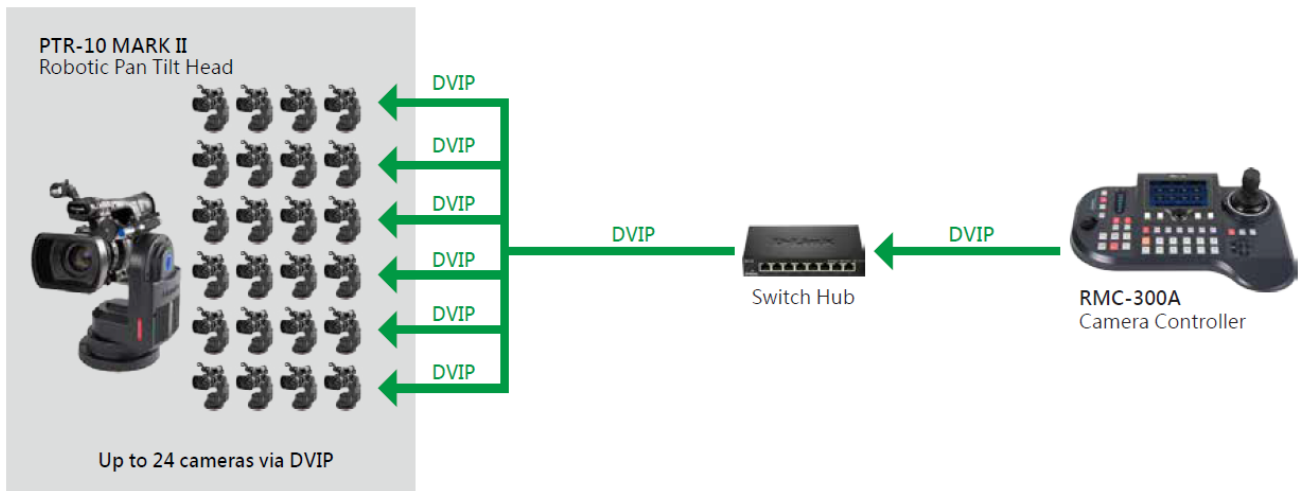


For operations of specific controllers, see the relevant user manual.

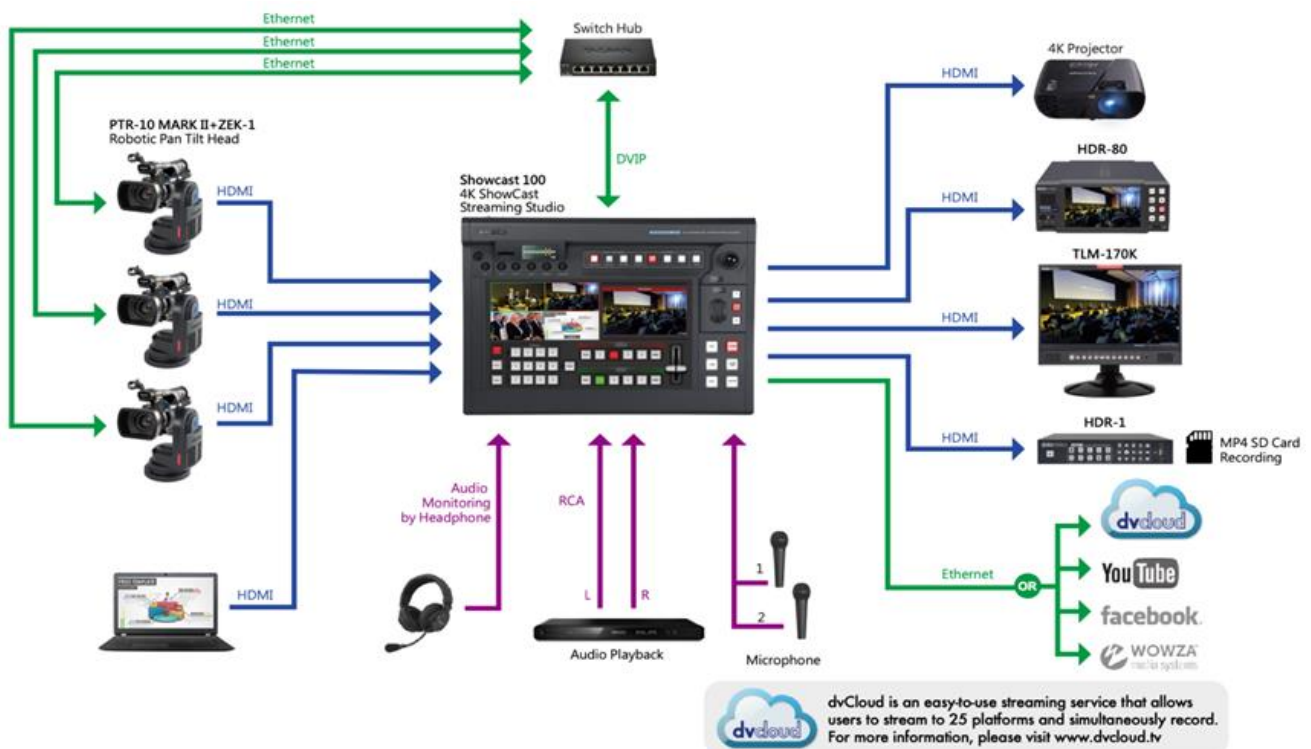
4.2 DVIP

To control multiple PTR series devices using DVIP, first connect them to the same network via DVIP port. See the diagrams below for two examples of system connection setup in a DHCP / LAN network.

The first system diagram shows that the RMC-300A camera controller allows you to control up to 24 PTR series devices simultaneously. For operation of the RMC-300A, see the user manual for instructions.



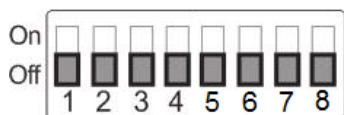
In the second diagram, the Showcast 100 4K ShowCast Streaming Studio communicates with the PTR-10 MARK II devices through a switch hub.



PTR series device usually has a default static IP address of 192.168.100.XXX. Using an RJ-45 Ethernet cable, the unit can be directly connected to a Windows-based computer assigned of an IP address with the same first three octets as the unit's default IP address. The following setup procedure

outlined below should allow you to initially configure the unit before moving it to an existing DHCP / LAN network.

1. First using an RJ-45 Ethernet cable, connect the **DVIP port** of your PTR series device to a Windows computer assigned of an IP address with the same first three octets as the device's default IP address.
2. Locate the DIP switch on your PTR series device.



3. Set DIP Switch position 4 to ON.



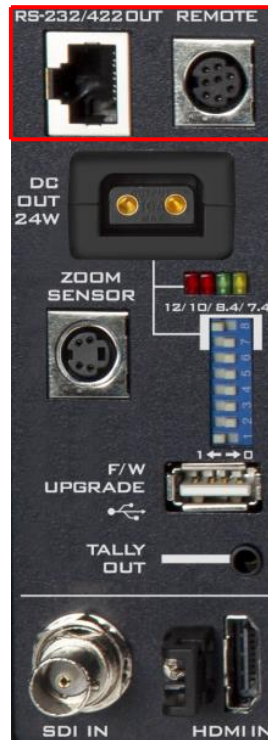
4. Set **DVIP baud rate** to 115200.
5. Download the DVIP Configuration Tool from the product page.
6. On the PC, open the DVIP Configuration Tool by double clicking "**DVIP_ConfigureTools.exe**".
7. After the DVIP Configuration Tool is opened, select your network interface card and click the "**OK**" button.
8. On the DVIP Device List, you will then be able to see the Device Name, MAC address and IP address of the connected device.
9. Set the network to DHCP then click the "**Save**" button to write the new settings into the device.
10. Right after the "**Save**" button is clicked, you will be able to see a prompt message at the top right corner to request for a device reboot for the new settings to become effective.
11. Reboot the device to apply the new settings.



4.3 Remote OUT

In the OSD menu, there are four connection modes available in the **Remote OUT Mode** option for the user to select in order to connect your PTR-10 MARK II device to the camera mounted. The four modes of connection are BX Lens, LANC, RS-232C and RS-422.

If BX Lens or LANC is selected, use the Remote Port to connect. If RS-232C or RS-422 is selected, use the RS-232/422 OUT port to connect.



Remote Port

The **Remote** port, when connected to the camera mounted, allows you to access certain functions of various camera brands such as **ZOOM** and **FOCUS**. To use this function, you will need to first enable LANC or BX-Lens mode by accessing the OSD menu option, **Remote Out Mode**, on your PTR-10 MARK II device. Follow the menu path below:

5. Remote Control

→6. Set Remote Out

→1. Remote Out mode

- 2-Port Pana
- LanC (JVC)
- LanC (Panasonic)
- LanC (Canon)
- LanC (Sony)
- OK Protocol-2
- OK Protocol-1
- BX-Lens
- RS-232C
- RS-422

Click the link below to download the table that lists all cameras supported by the PTR series devices.

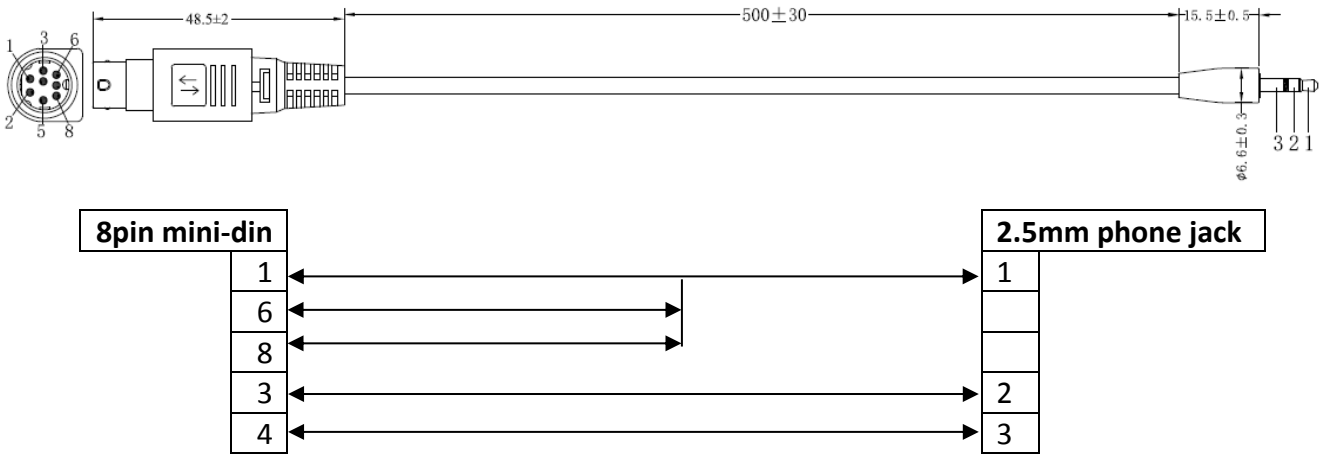
<https://www.datavideo.com/file/download?id=3514>

LANC

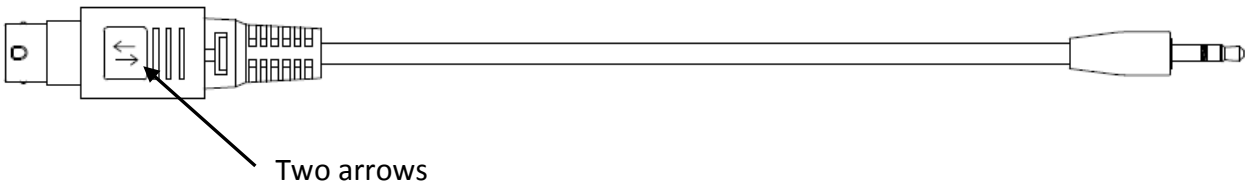
As cameras of different manufacturers offer different PTZ speeds, we have broken down LanC mode into four different options which are LanC (Sony), LanC (Panasonic), LanC (Canon) and LanC (JVC). Each brand's LanC option is customized to allow you to better control the camera. If you are using

camera brands other than Sony, Panasonic, Canon and JVC, we recommend setting Remote Out Mode to LanC (Sony).

If the LANC mode is enabled, connect the Remote port of PTR-10 MARK II to the camera's 2.5 mm earphone jack via a remote cable. The remote cable is an 8pin mini-din to 2.5mm phone jack cable as depicted below. The pinout information is also shown.



Warning: The 8pin snap-and-lock mini-din connector of the remote cable will be securely fastened once plugged into the Remote port. To remove, use two fingers to gently hold the part of the plug labelled by two arrows then pull the connector outward.



Camera models allowing you to access certain camera functions in LANC mode are listed in the table below.

Please note that Datavideo has specifically designed and manufactured the cable for connecting the REMOTE port. The remote cable will be shipped along with the product. The part number of the cable is G07620000138.

The table below lists all camera brands and models that work with the corresponding LanC options as well as the functions that you can access via the PTR-10 MARK II.

LanC (Sony)

Model	Brand	Power Consumption	DC Input	Accessible Fucntions
PXW-Z280V	Sony	24 – 31 W	12V	Zoom, Focus, Iris, OSD Menu, OSD Display, Shutter, White Balance Mode, Gain and ND
Z90	Sony			Zoom and Focus
PXW-Z190V	Sony	22 – 29 W	12V	Zoom, Focus, Iris and White Balance
PXW-Z150	Sony	6.3 – 6.6 W	8.4V	Zoom, Focus and Iris
HNR-NX5R	Sony	7.5 – 7.8 W	8.4V	Zoom, Focus, Iris and White Balance

Model	Brand	Power Consumption	DC Input	Accessible Functions
FS7	Sony			Zoom, Focus, Iris and White Balance
FS5	Sony			Zoom and Focus

LanC (Panasonic)

Model	Brand	Power Consumption	DC Input	Accessible Functions
AG-CX350PX	Panasonic	11.5 – 17 W	12V	Zoom and Focus
AG-UPX360MC	Panasonic	11.5 – 17 W	12V	
BGH-1	Panasonic		12V	Zoom, Focus and Iris

LanC (JVC)

Model	Brand	Power Consumption	DC Input	Accessible Functions
GY-HC550/500	JVC	24 W	12V	Zoom, Focus and Iris
GY-HM660	JVC	12 W	12V	Zoom, Focus, Iris and White Balance

LanC (Canon) / OK Protocol

Model	Brand	Power Consumption	DC Input	Accessible Functions
XF705	Canon	20.8 W	24V	Zoom, Focus, Iris and White Balance
XF605	Canon		24V*	
XF405	Canon	8.4 W	8.4V	Zoom and Focus
XF305	Canon	8.5 – 8.9 W	8.4V	
XA-55	Canon			Zoom, Focus, Iris and White Balance
XA-40/45	Canon			Zoom, Focus and Iris
XLH1	Canon	7.8 W	7.4V	Zoom and Focus
XHG1	Canon	7.1 – 7.3 W	7.4V	

***Use the camera's power supply instead of the power supplied by PTR-10 MARK II.**

BX-Lens

If the BX-Lens mode is selected, use Sony's 8 pin to 8 pin remote control cable to establish device connection, which allows you to adjust the zoom function **ONLY**. The supported cameras are Sony's PXW-X200 (X280) and EX3. Datavideo's part number of the 8 pin to 8 pin remote control cable is G07620000133. See the table below for the required DC input and power consumption of the supported cameras.

Model	Brand	Power Consumption	DC Input	Accessible Functions
PXW-X200 (X280)	Sony	18 – 23 W	12V	Zoom
EX3	Sony			Zoom

2-Port Pana

2-Port Pana is a Remote Out mode designed specifically for controlling Panasonic cameras via the PTR-10T MARK II. Supported cameras are listed in the table below:

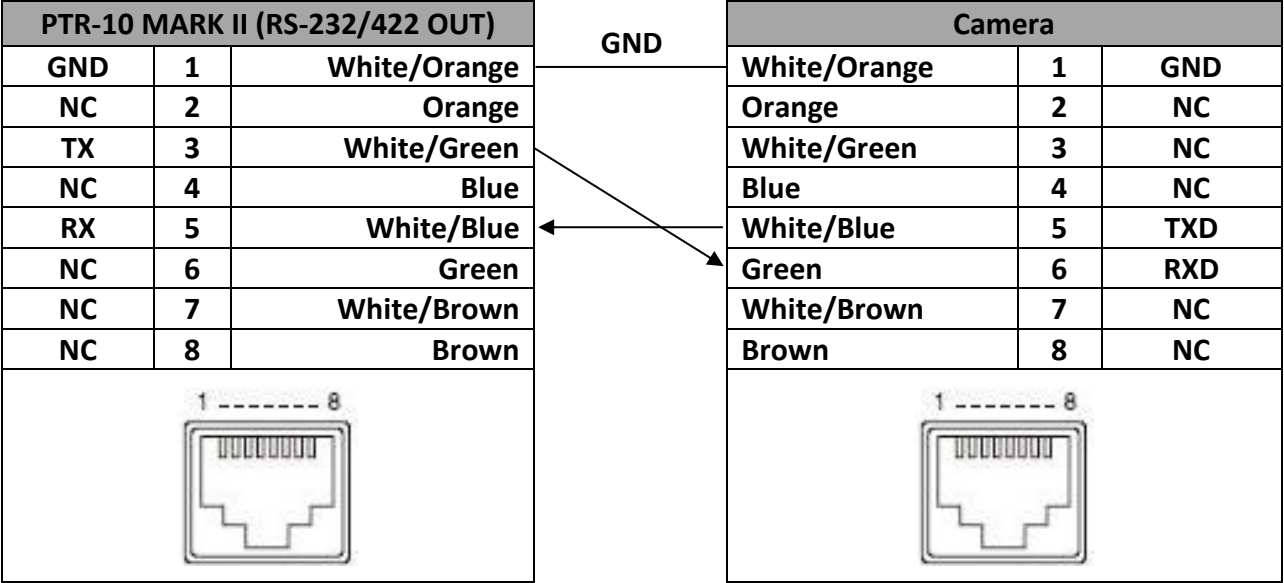
Model	Brand	Power Consumption	DC Input	Accessible Functions
AG-UX180MC	Panasonic	19.7 W	12V	Zoom, Focus and Iris
AG-HPX265	Panasonic			
AG-HPX255	Panasonic			

To use the 2-Port Pana mode, you will need the PCB-1 camera control box which is designed to establish connection between the PTR-10T MARK II and the Panasonic camera mounted thereon. After connection is established, you will be allowed to adjust the camera’s zoom, focus and iris. See the PCB-1’s user manual for installation and operations.

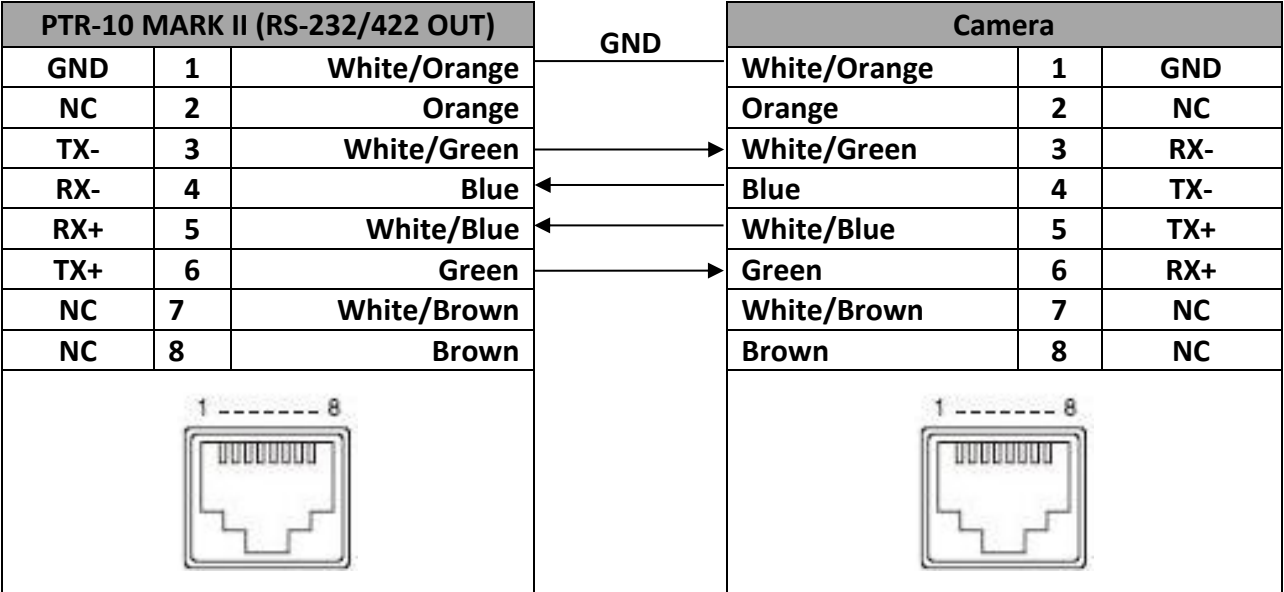
RS-232/422 OUT

If either of the **RS-422** and **RS-232** modes of connection is selected in **Remote Out Mode**, you may mount Datavideo’s BC-80 or BC-200 on the PTR-10 MARK II and use a custom made RJ-45 cable to establish physical connection. See below for pinout information.

RS-232



RS-422



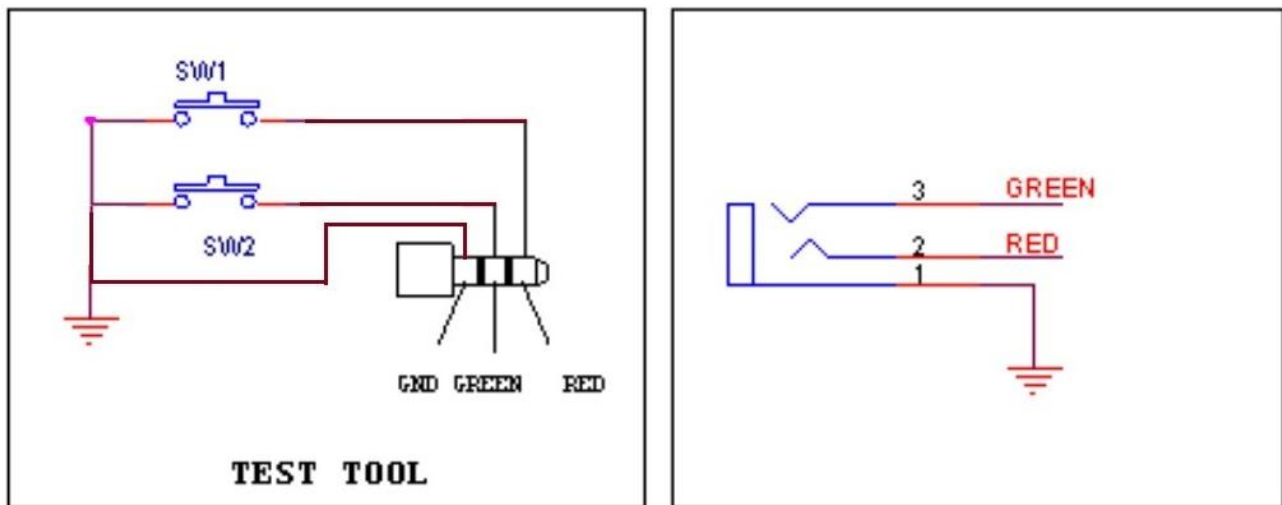
4.4 Tally

Two tally sockets can be found on your PTR series device. **Tally IN** receives tally information from external devices such as a video switcher. **Tally OUT** delivers tally information to the mounted camera.

Tally Light Definitions

Message	On Air/Live	Standby/Cued	Free/Safe
Light	Red	Green	No Light

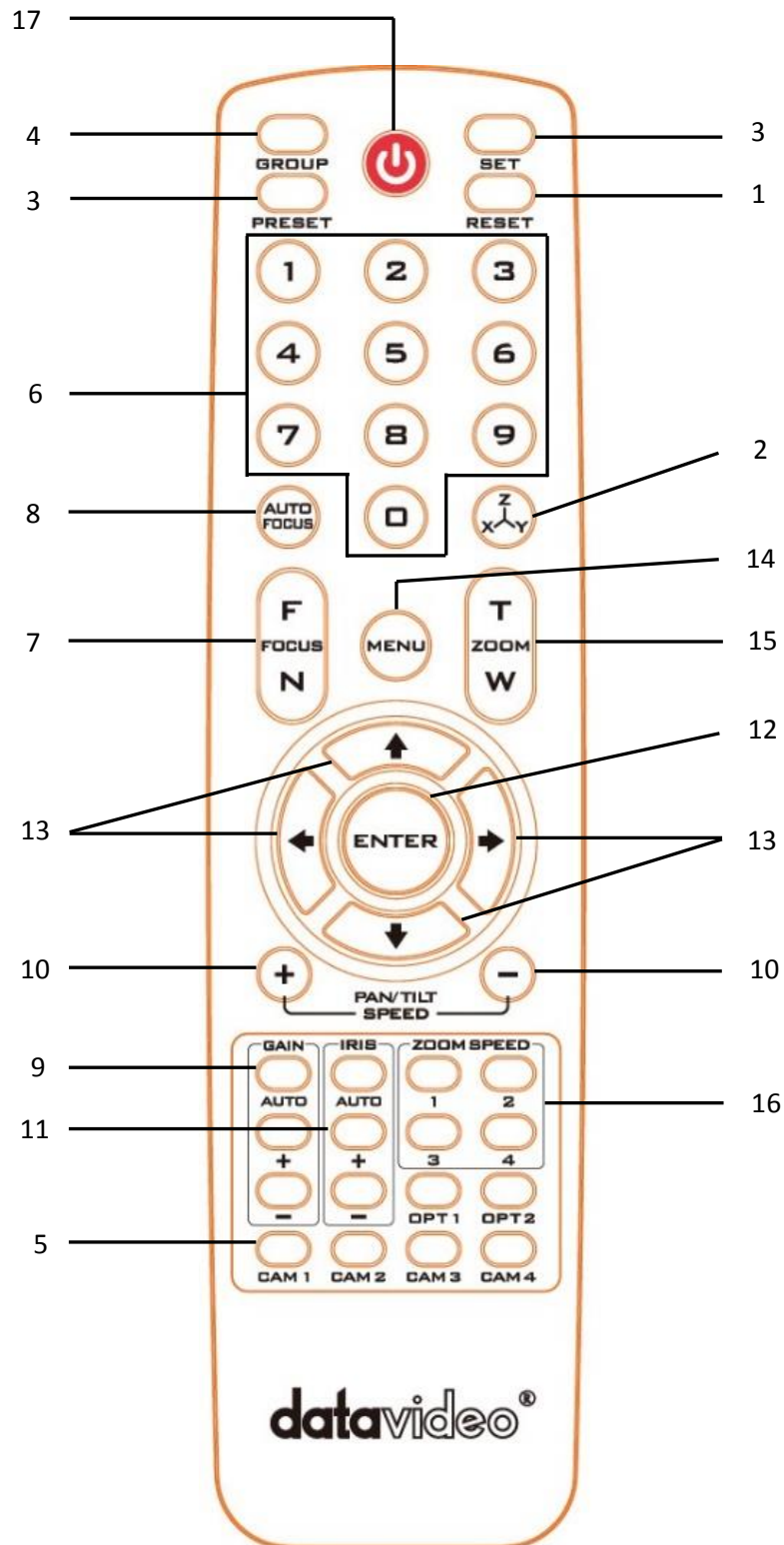
A simple test tool is illustrated in the diagram below.



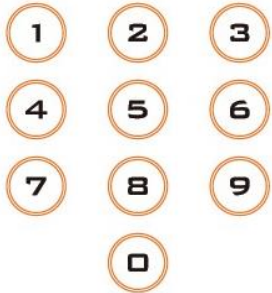
4.5 IR Remote Control

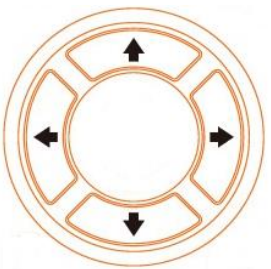
The PTR-10 MARK II can be controlled using the standard infrared (IR) remote control or the compatible RMC-1AT controller.

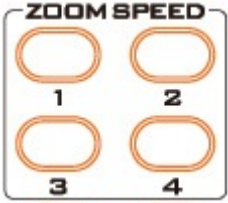
Standard



No.	Buttons	Descriptions
1		Press the RESET button to restore the device's default settings.
2		Press the Home button to return the PTR-10T MAKR II's pan, tilt and zoom positions to the home settings.
3	 	Saving PAN/TILT Presets The PTR-10 MARK II is equipped with 50 PAN/TILT presets. To save PAN/TILT settings to presets, you should first move the camera to a desired PAN/TILT position then press the number keys to select a preset number (1-50). Finally press the SET button to store the PAN/TILT settings (Note: You can also issue the save command using the RS-422 protocol). Recalling PAN/TILT Presets First press the number keys to select a preset number (1-50) then press the PRESET button to recall the PAN/TILT settings.
4		Enabling the GROUP motion activates automatic camera movements. Each group consists of up to 16 PAN/TILT presets allowing automatic movement of cameras to these positions in the order configured in the group. Recalling Group The PTR-10 MARK II is equipped with 8 groups. To recall a group, first press the number keys to select a group number (1-8) then press the GROUP button to enable it. Saving Group Settings To configure the group setting, first open the OSD menu, then select MEMORY. Each group allows you to select up to 16 presets from the PRESET NO. option for automatic movements of the camera mounted. You can set the stop time for each preset. Furthermore, in the NEXT POSITION option, set RETURN to repeat the group motion and the rest for single group motion. Group Cancel Press Enter or Reset button to terminate GROUP motion.

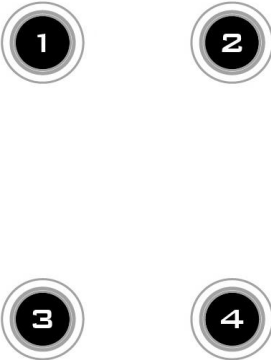
No.	Buttons	Descriptions
5	Camera Select 	Select CAM1-CAM4 in a multi-camera environment Assign an ID number to the camera intended for operation through setting the IR Group ID in the OSD menu; see the menu path below. 5. Remote Control → 5. Set IR → IR Group ID → CAM 1 – 4 Press CAMERA SELECT (CAM 1~ CAM4) buttons to navigate between four cameras assigned of the CAM ID previously.
6	Position Setting 	Various combinations of settings (position, zoom, focus, gain control and iris control) can be saved to presets using the number keypad. Adjust Preset Point Adjust position, zoom, focus, gain control and iris of the camera. Set up Preset Point Press any of the preset numbers 1~50 and then press the SET button (see the SET button description). Recall saved setting Press any of the preset numbers 1~50 and then press the PRESET button (see the PRESET button description). Set up Group Scan mode Press any of the group numbers 1~8 and then press the GROUP button (see the GROUP button description). Return Camera Lens to the Front Press number 0 and then press PRESET button.
7	Focus Setup 	Manually focus camera lens on a subject Press either (F) FAR button or (N) NEAR button to manually focus the camera lens onto the subject.
8	Auto Focus Control 	Automatically focus camera lens on a subject Press the Auto FOCUS button to automatically focus the camera lens onto the subject such that it is positioned at the center of the screen.

No.	Buttons	Descriptions
9	Gain Control 	Adjust Brightness Press GAIN+ button to increase the brightness or GAIN- button to decrease the brightness of the environment. To cancel the function or return to default setup, press the Auto button.
10	P/T Speed 	Adjust Pan/ Tilt Speed Press SPEED + / - button to switch to adjust Pan/Tilt speed (up/down).
11	Auto Iris Control 	Make the subject appear brighter Adjust the iris opening (aperture), to control the amount of light coming through the lens (i.e. the "exposure"). Press IRIS+ button to enlarge the iris opening to allow more light to come in so that the subject appears brighter and press IRIS- button to shrink the iris opening to allow less light to come in so that the subject appears less bright. To cancel the function or return to default setup, press the Auto button.
12	ENTER 	ENTER Menu ENTER key
13	Direction Arrows 	Change camera direction Press arrow buttons to change the direction of the camera head. Stop Preset Point Auto Scan mode Press any of the DIRECTION buttons. Select Menu Option Press UP or DOWN arrow button to select menu options. Enter/Exit Sub-Menu Option Press ENTER or RIGHT arrow button to enter sub- menu; press LEFT arrow button to leave sub-menu. Adjust Setup Value Press UP or DOWN arrow button to adjust parameter values.

No.	Buttons	Descriptions
14	Menu Button 	Enter or Exit Menu Options
15	Zoom In / Out Buttons 	Zoom Press either (T) TELE button to zoom in on the subject such that it appears to be close to the camera or (W) WIDE button to zoom out from the subject such that it appears to be far away from the camera.
16	Zoom Speed Button (4 speed selection) 	Adjust Zoom In/Out Speed Press button 1/2/3/4 to switch between different speeds with 1 being the highest and 4 being the lowest.
17	Standby Button 	Press to enter PTR-10 MARK II into standby mode and press again to wake the device from standby mode.

RMC-1AT



No	Function Keys	Descriptions
1		Power Button Press to switch between Standby and Operation modes.
2		Camera Select Keys 1-4 In a multi-camera environment, use the camera select keys (CAM1 – CAM4) to navigate between the four cameras. Follow the menu path, Main/Remote Control/Set IR/IR Group ID , to assign an ID number from 1 to 4 to the cameras intended for operation.
3		Preset Keys 1 – 4 Use the preset keys to save and recall PTZ settings. Saving to the Preset Key: First configure the camera's focus, zoom, pan and tilt settings, then press the STR key followed by one of the preset keys to save to the selected preset. Recalling the Preset: Simply press one of the preset keys to load the settings saved therein.
4		Focus Button Auto focus will be disabled as the Focus button (either F or N) is pressed. Press F to focus on a far object and N to focus on a near object.
5		Zoom Button The zoom function adjusts the size of the image. Press T (telephoto lens) to zoom in on a subject from far away and W (wide-angled lens) to zoom out.
6		PT Joystick Use the joystick to pan and tilt the camera head. Press the up and down arrow keys to tilt; press the left and right arrow keys to pan. While the OSD menu is opened, press the up and down keys to move between options. Press the right and left keys to toggle between values. Press the center button to enter a sub menu or confirm a selection. To exit a sub menu, press the MENU or Back button.

No	Function Keys	Descriptions
7		Reset Button While the OSD menu is open, navigate to the desired setting item. With the item highlighted, press and hold the reset button for approximately 5 seconds. The selected item will be restored to its factory default value.
8		STR Button Use the STR button along with the preset keys to save the PTZ settings. See Preset Keys 1 – 4 for more information.
9		AF Button Press to enable Auto Focus.
10		Back Button Press to return the camera head to its default position. When the OSD menu is opened, press to return to the previous item on the menu.
11		MENU Button Press the “MENU” button to open the OSD menu on the connected monitor. See OSD Menu for descriptions of various menu options.
12		AT Buttons No function is assigned to these four buttons.

OSD Menu

The OSD menu allows you to modify various device settings such as pan and tilt and control protocols. Pressing the menu button on your remote control opens the OSD menu shown below.

OSD MENU
1. Set Camera
2: Set Motor
3: Memory
4: Video Mode
5: Remote Control
6: System
7: Reset P/T
8: Escape

The table below summarizes the main option items and their sub-options.

Main Options								
	Set Camera	Set Motor	Memory	Video Mode	Remote Control	System	Reset P/T	Escape
Sub-Options	1. OSD FUNC.	1. P/T Acceleration	1. Preset Position	1. Selection Way	1. PAN/TILT Reverse	1. Tally Light	1. Reset Pan/Tilt	
	2. Menu Func.	2. P/T Speed	2.Group-1	2. Video Mode	2. Remote Source	2. Model No.		
	3. Pana-Focus CMD Times	3. PAN Torque	3. Group-2	3. HDMI Mode	3. Set RS-422	3. Power-Out Volt.		
	4. Pana-Focus MIN SPD	4. Tilt Torque	4. Group-3	4. Escape	4. Set DVIP	4. Power Out Offset		
	5. Escape	5. Pan Offset	5. Group-4		5. Set IR	5. Display		
		6. Tilt Offset	6. Group-5		6. Set Remote Out	6. Reset All		
		7. Pan Min Limit	7. Group-6		7. PTZ INFO. output	7. Update Software		
		8. Pan Max Limit	8. Group-7		8. Append Zoom POS. TO P/T	8. Escape		
		9. Tilt Min Limit	9. Group-8		9. Escape			
		10. Tilt Max Limit	10. Escape					
		11. Pan L/R Offset						
		12. Tilt U/D Offset						
		13. Escape						

Details of all options in the on-screen menu are listed in the table below.

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description
1. Set Camera	1. OSD FUNC.			
	2. MENU FUNC.			
	3. Pana-Focus CMD TIMES	2 – 20 (Step size: 1)		
	4. Pana-Focus MIN SPD	0 – 7 (Step size: 1)		
	5. Escape			
2. Set Motor	1. P/T Acceleration	Auto	Use this mode only if the ZEK-1 Zoom Encoder Kit is installed. See Section 4.6 Zoom Sensor mini-DIN Port for more information.	
		Fast	For responsive camera control; push the joystick slightly to pan/tilt the camera but may blur the image.	
		Middle		
		Slow	For smooth camera control; slow motor acceleration maintains stable image quality.	
	2. P/T Speed	Auto Speed	Use this mode only if the ZEK-1 Zoom Encoder Kit is installed. See Section 4.6 Zoom Sensor mini-DIN Port for more information.	
		Normal		
		X2, Sports		
	3. PAN torque ADJ	LOW		
		+1~+5		
	4. TILT torque ADJ	LOW		
		+1~+5		
	5. PAN Offset ADJ	+5.4		
		+4.5		
		+3.6		
		+2.7		
		+1.8		
		+0.9		
		0.0		
		-0.9		
		-1.8		
		-2.7		
		-3.6		
		-4.5		
		-5.4		
	6. TILT Offset ADJ	+6.3		

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description
		+5.4		
		+4.5		
		+3.6		
		+2.7		
		+1.8		
		+0.9		
		0.0		
		-0.9		
		-1.8		
		-2.7		
		-3.6		
		-4.5		
		-5.4		
		-6.3		
	7. PAN Min Limit	-170 – -1		
	8. PAN Max Limit	+1 – +170		
	9. TILT Min Limit	-45 – -1		
10. TILT Max Limit	+45 – +1			
11. Pan L/R Offset	0 – 80; Step: 1 (0.056°)			
12. Tilt U/D Offset	-99 – +99; Step: 1 (0.028°)			
13. Escape				
3. Memory	1. Preset Position	1-50 P/T	1. P/T Speed	1 – 18
		51. ESCAPE	2. Escape	
			2. Group – 1	1-16
	ITEM ON/OFF	ON/OFF		
	SPEED LIMIT	1~18		
	WAITING TIME	0~180		
	NEXT POSITION	NEXT ITEM		
		RETURN		
		GROUP – 1		
		GROUP – 2		
		GROUP – 3		
		GROUP – 4		
		GROUP – 5		
		GROUP – 6		
	GROUP – 7			
	GROUP – 8			
	ESCAPE			
	17. ESCAPE			
	3. Group – 2	1-16	PRESET NO.	1~50
			ITEM ON/OFF	ON/OFF
			SPEED LIMIT	1~18

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description
			WAITING TIME	0~180
			NEXT POSITION	NEXT ITEM
				RETURN
				GROUP – 1
				GROUP – 2
				GROUP – 3
				GROUP – 4
				GROUP – 5
				GROUP – 6
				GROUP – 7
				GROUP – 8
			ESCAPE	
		17. ESCAPE		
	4. Group – 3	1-16	PRESET NO.	1~50
			ITEM ON/OFF	ON/OFF
			SPEED LIMIT	1~18
			WAITING TIME	0~180
			NEXT POSITION	NEXT ITEM
				RETURN
				GROUP – 1
				GROUP – 2
				GROUP – 3
				GROUP – 4
				GROUP – 5
				GROUP – 6
				GROUP – 7
				GROUP – 8
			ESCAPE	
		17. ESCAPE		
	5. Group – 4	1-16	PRESET NO.	1~50
			ITEM ON/OFF	ON/OFF
			SPEED LIMIT	1~18
			WAITING TIME	0~180
			NEXT POSITION	NEXT ITEM
				RETURN
				GROUP – 1
				GROUP – 2
				GROUP – 3
				GROUP – 4
				GROUP – 5
				GROUP – 6
				GROUP – 7
				GROUP – 8
			ESCAPE	
		17. ESCAPE		
	6. Group – 5	1-16	PRESET NO.	1~50

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description			
			ITEM ON/OFF	ON/OFF			
			SPEED LIMIT	1~18			
			WAITING TIME	0~180			
			NEXT POSITION	NEXT ITEM			
				RETURN			
				GROUP – 1			
				GROUP – 2			
				GROUP – 3			
				GROUP – 4			
				GROUP – 5			
				GROUP – 6			
				GROUP – 7			
			GROUP – 8				
			ESCAPE				
			17. ESCAPE				
			7. Group – 6	1-16		PRESET NO.	1~50
						ITEM ON/OFF	ON/OFF
	SPEED LIMIT	1~18					
	WAITING TIME	0~180					
	NEXT POSITION	NEXT ITEM					
		RETURN					
		GROUP – 1					
		GROUP – 2					
		GROUP – 3					
		GROUP – 4					
		GROUP – 5					
		GROUP – 6					
		GROUP – 7					
	GROUP – 8						
	ESCAPE						
	17. ESCAPE						
	8. Group – 7	1-16					PRESET NO.
			ITEM ON/OFF	ON/OFF			
			SPEED LIMIT	1~18			
			WAITING TIME	0~180			
			NEXT POSITION	NEXT ITEM			
				RETURN			
				GROUP – 1			
				GROUP – 2			
				GROUP – 3			
				GROUP – 4			
				GROUP – 5			
				GROUP – 6			
				GROUP – 7			
			GROUP – 8				
			ESCAPE				

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description
		17. ESCAPE		
	9. Group – 8	1-16	PRESET NO.	1~50
			ITEM ON/OFF	ON/OFF
			SPEED LIMIT	1~18
			WAITING TIME	0~180
			NEXT POSITION	NEXT ITEM
				RETURN
				GROUP – 1
				GROUP – 2
				GROUP – 3
				GROUP – 4
GROUP – 5				
GROUP – 6				
GROUP – 7				
GROUP – 8				
	ESCAPE			
	17. ESCAPE			
10. Escape				
4. Video Mode	1. Selection Way	BY MENU		
		BY SWITCH		
	2. OSD Size	1280 x 720		
		1920 x 1080		
		3840 x 2160		
	3. HDMI Mode	RGB444		
		YUV422		
4. Escape				
5. Remote Control	1. PAN/TILT Reverse	OFF		
		P		
		T		
		P+T		
	2. Remote Source	RS-422, SW	Configurable using bottom DIP switch ONLY	
	3. Set RS-422	CAMERA ID MODE	BY MENU	
			BY SWITCH	
		CAMERA ID	1~7	
		RS-422 BAUD RATE	9600	
			19200	
			38400	
			115200	
		Recall’s Response	Tailer	
	Leader			
	ESCAPE			
	4. Set DVIP	DVIP BAUD RATE	9600	
			19200	
			38400	
			115200	

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description
	5. Set IR	ESCAPE		
		IR GROUP ID	CAM1~4	
		ESCAPE		
	6. Set Remote Out	Remote Out Mode	2-Port Pana	
			LANC (JVC)	
			LANC (Panasonic)	
			LANC (Canon)	
			LANC (Sony)	
			OK-Protocol-2	
			OK-Protocol-1	
			BX Lens	
			RS-232C	
			RS-422	
		Remote Out Baud Rate	9600	
			19200	
			38400	
			115200	
		Remote Out ID	1–7	
		BX ZOOM OFFSET	3	
			2	
			1	
			0	
			-1	
			-2	
			-3	
		ZOOM Encoder Mode	Tilta-Reverse	
			Tilta-CTL	
			Reverse	
			Normal	
			Off	
		Tilta Torque	5	
			10	
			15	
			20	
			25	
			30	
			35	
			40	
			45	
			50	
			55	
			60	
			65	
			70	
			75	

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description
			80	
			85	
			90	
			95	
			99	
		Tilta Zoom Offset	0 – 990 (Step size: 10)	
		ESCAPE		
	7. PTZ INFO. Output	ON/OFF		
	8. Append Zoom POS. TO P/T	ON/OFF		
9. Escape				
6. System	1. Tally Light	RED/GREEN		
		GREEN		
		RED		
		OFF		
	2. Model No.	0150/0010		
	3. Power-Out Volt.	12V		
	4. Power Out Offset	0		
		0.2		
		0.4		
		0.6		
		0.8		
		1.0		
		1.2		
	5. Display	P/T OSD	PAN OSD	ON/OFF
			TILT OSD	ON/OFF
			CZOOM OSD	ON/OFF
			FOCUS OSD	ON/OFF
			ESCAPE	
		Debug OSD	DEBUG IR OSD	ON/OFF
			DEBUG CAM. OSD	ON/OFF
			DEBUG RS422 OSD	ON/OFF
			DEBUG DVIP OSD	ON/OFF
			DEBUG M_CTL OSD	ON/OFF
			DEBUG REG. OSD	ON/OFF
			DEBUG VOUT TEST	ON/OFF
			ESCAPE	
		ESCAPE		
	6. Reset All	YES/NO		
	7. Update Software	SW VERSION	ESCAPE	
		MB CPU	V00.49a	

First Level Main Options	Second Level Sub-Options	Third Level Parameters	Fourth Level Parameters	Sub-Option Description
		MCTL CPU	V00.31	
		UPDATE ALL	YES/NO	
		ESCAPE		
	8. Escape			
7. Reset Pan/Tilt	Reset Pan/Tilt	YES/NO		
8. Escape				

4.6 Zoom Sensor mini-DIN Port

The zoom sensor mini-DIN port allows you to connect the ZEK-1 Zoom Encoder Kit, which is an electromechanical device that adds automatic zoom positioning to the camcorder mounted on PTR-10/10T MARK II Robotic Pan Tilt Head. See the **ZEK-1 user manual** for installation instructions.

With the ZEK-1 installed, you can set **P/T Acceleration** and **P/T Speed** to **Auto** (recommended) for smooth PTZ camera control.

The P/T Acceleration defines the rate at which the pan and tilt movement will reach its top speed. When set to **Auto**, the acceleration changes according to the zoom direction. When zooming out, the acceleration increases for responsive PTZ movement; when zooming in, the acceleration decreases for smooth PTZ movement.

The P/T Speed defines how fast or slow the pan and tilt movement will be. The PTR device offers 18 levels of speed of P/T movement. When set to **Auto**, the speed changes according to the zoom direction as well. When zooming out, the speed will be automatically increased to 18 for responsive PTZ movement. When zooming in, the speed will be automatically decreased to a value in the range between 3 and 6 for smooth PTZ movement.

To set P/T Acceleration and P/T Speed, follow the menu paths below:

Setting **P/T Acceleration** to **Auto**

Set Motor

- ➔ P/T Acceleration
- ➔ Auto

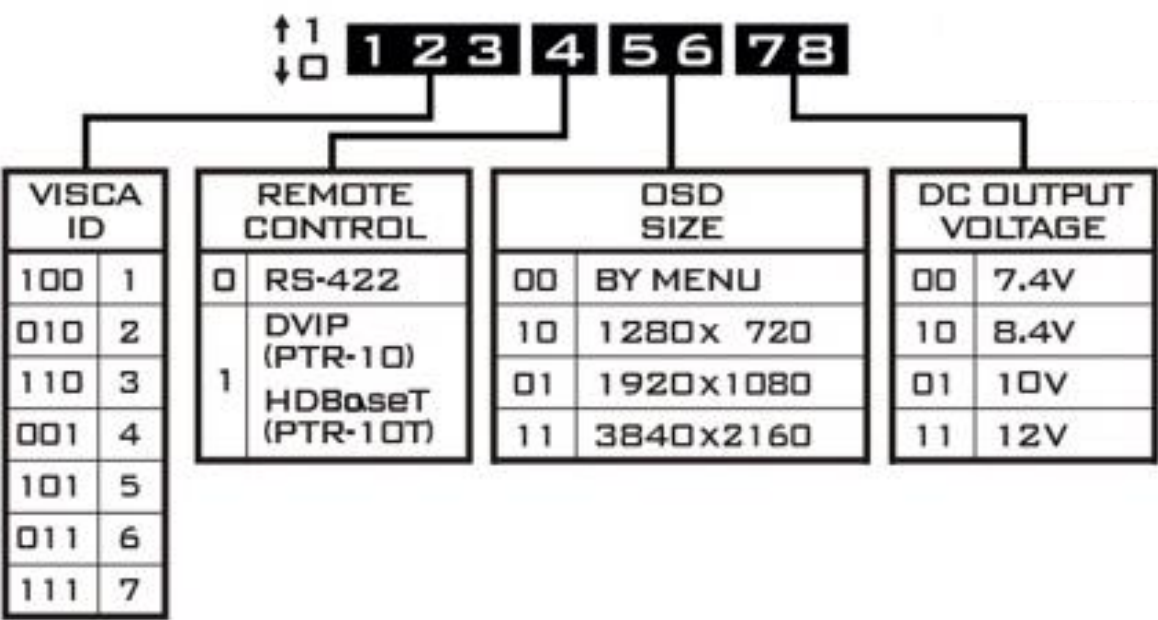
Setting **P/T Speed** to **Auto**

Set Motor

- ➔ P/T Speed
- ➔ Auto

5. DIP Switch

The DIP Switch can be found on one of the system panels and allows the user to set the device’s VISCA ID, enable remote control (DVIP or RS-422), configure the image size, and select the DC output. *See the table below for various settings.*



6. Firmware Update

Datavideo usually releases new firmware containing new features or reported bug fixes from time to time. Customers can either download the firmware as they wish or contact their local dealer or reseller for assistance.

This section outlines the firmware upgrade process which should take ***approximately few minutes to complete***.

The existing settings should persist through the *firmware upgrade process*, which should not be interrupted once started as this could result in a non-responsive unit.

6.1 Firmware Upgrade Requirements

- USB thumb drive
- Latest firmware files

6.2 Upgrade Procedure

- 1) Copy firmware image files (MB and MCTL) into the root directory of a USB hard drive (<16 GB) and insert it into the F/W Upgrade USB port.

- 2) Use the IR remote control to open the OSD menu.

Note: If you are using more than one camera in your environment, first select the camera by pressing the corresponding CAM button; the default is CAM1.



- 3) Main Menu

=> 6: SYSYEM

=> 7: UPDATE SOFTWARE

=> UPDATE ALL

=>YES

=> ENTER

- 4) Wait for another five minutes until the following lines appear on the screen

- Updated Mot-BD=>OK.
- Updated MCPU =>OK

The OSD menu screen will flash "Write OK/Power ON Again" alternately; the update process should take approximately 5-7 minutes to complete.

- 5) Turn off the device by unplugging the power cord and plug the power cord back into the socket to turn on the device again.

- 6) FW Update is complete.

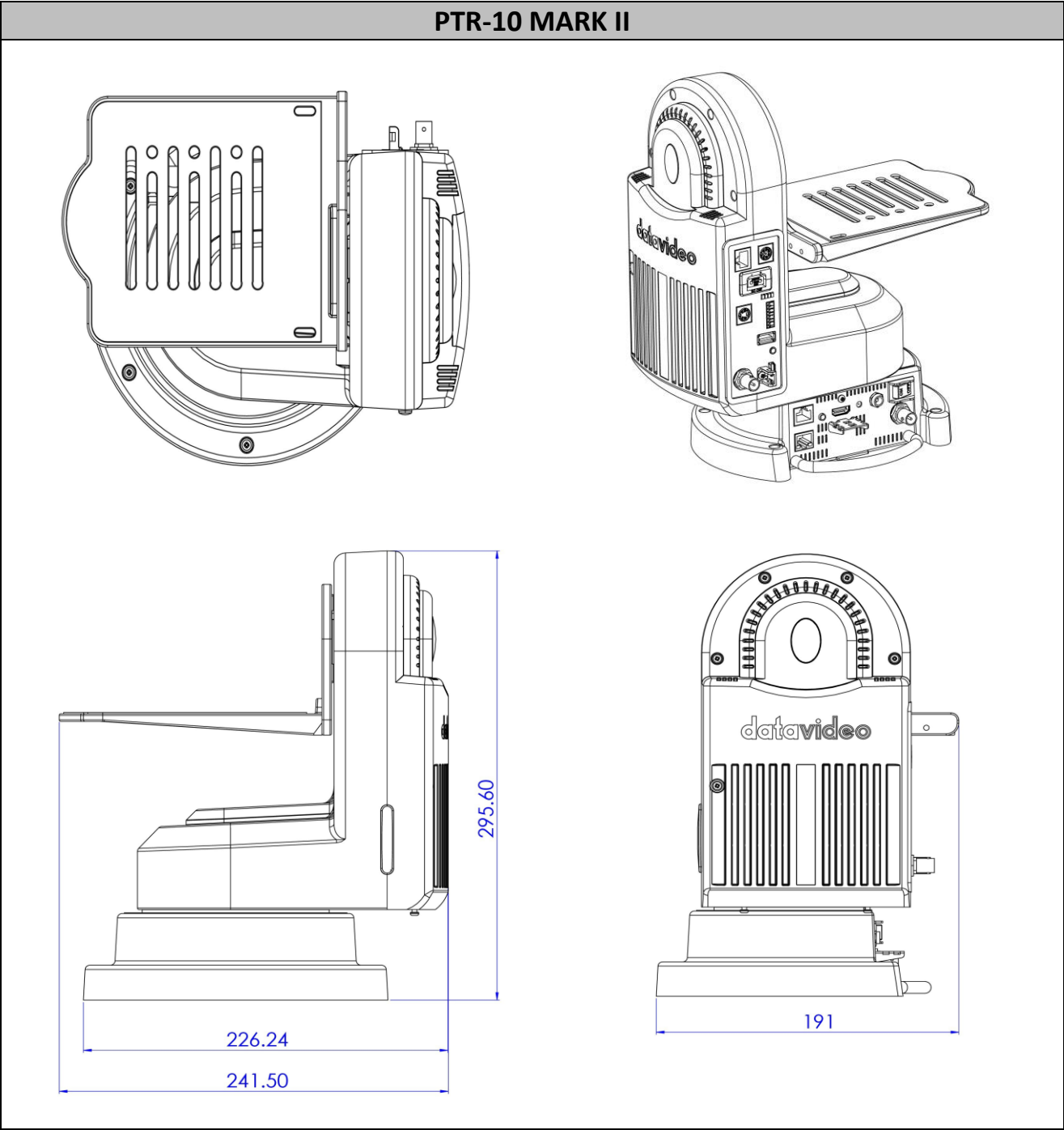
7. Frequently-Asked Questions

This section describes problems that you may encounter while using PTR-10 MARK II. If you have any questions, please refer to related sections and follow all suggested solutions. If problem still exists, please contact your distributor or the service center.

No.	Problems	Solutions
1.	The device stops responding unexpectedly.	When the PTR-10 MARK II is overloaded, the device power will be automatically disconnected. To resume power, first turn off the device, unplug the power cable for more than 15 seconds, then reconnect the power and turn on the device.
2	DC Out does not supply power.	Once the short circuit protection is activated to cut the power, you will need to reboot the device to resume supplying power to the camera.
3	How to prevent activation of short circuit protection after we start supplying power to the device.	We recommend establishing all cable connections to the camera first before switching ON the PTR-10 MARK II.
4	The PTR-10 MARK II fails to respond to commands issued by the remote control and RMC-180.	This issue is caused by incomplete boot. To solve this issue, shut down PTR-10 MARK II and wait for 5 seconds before turning on the power again.
5	Only a 3/8" threaded screw hole is found at the base of the camera so cannot secure the camera with the 1/4" hand screw.	Put a 3/8" to 1/4" nut adapter in the 3/8" threaded screw hole and tighten then secure the camera with a 1/4" hand screw.
6	How to achieve smooth PTZ camera control?	In the OSD menu, set P/T Acceleration to Slow for smooth PTZ camera control. Follow the menu path below: 2. Set Motor ➔ P/T Acceleration ➔ Slow
7	How to achieve responsive PTZ camera control?	In the OSD menu, set P/T Acceleration to Fast for responsive PTZ camera control. Follow the menu path below: 2. Set Motor ➔ P/T Acceleration ➔ Fast
8	Can HBT-11 power up the PTR-10 MARK II?	No, HBT-11 cannot power up the PTR device. Please use HBT-12 and connect using a solid Ethernet cable only. 

No.	Problems	Solutions
9	Is ZEK-1 required for controlling the Sony Z280 camcorder via LANC?	No, ZEK-1 is not required. You can gain full PTZ control of the Sony Z280 camcorder via LANC alone. However, it is recommended to connect ZEK-1 to enhance the PTZ control by setting the PTR device's P/T Acceleration and P/T Speed to AUTO. See Section 4.6 Zoom Sensor mini-DIN Port for more information.

8. Dimensions



All measurements in millimeters (mm)

9. Specifications

Product Name	Robotic Pan Tilt Head
Model Number	PTR-10 MARK II
Video I/O Interface	HDMI x 1 SDI x 1
Video Output Format	2160p 29.97/25 1080p 59.94/50 1080i 59.94/50 720p 59.94/50
Supported Controller	RMC-180 / RMC-300A RMC-300C ShowCast 100 VISCA Protocol Controller IP Control IR Remote
Pan/Tilt Range	PAN: 340° MAX TILT: +45° to -45° MAX
Pan/Tilt Speed	PAN: 0.12 – 15° / Sec TILT: 0.06 – 10° / Sec
Presets	50 PAN/TILT positions
Control Distance	RS-422: 1200 m DVIP: 100 m
Control Protocol	Sony VISCA DVIP
Control Interface	RS-422 / DVIP
Control Output	RS-232 RS-422 BX-Lens Lanc
Maximum Load	4.0 Kg Max.
Power Requirement	DC 12V – 18V / 3A (Without Camera) DC 12V – 18V / 5A (With Camera)
Power Supply	DC 12 / 10 / 8.4 / 7.4V, 24W Max
Operating Temp.	0 – 40°C
Operating Humidity	10 – 80%
Storage Temp.	-10 – 60°C
Storage Humidity	5 – 80%
Weight	3.4 Kg
Dimensions (LxWxH)	230 x 190 x 300 mm
Optional Accessories	ZEK-1 WM-10 WM-11 CM-10

Service & Support

It is our goal to make owning and using Datavideo products a satisfying experience. Our support staff is available to assist you to set up and operate your system. Contact your local office for specific support requests. Plus, please visit www.datavideo.com to access our FAQ section.

Please visit our website for latest manual update.

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