



# RX45X MK5

Multi-protocol RS485/422 & Up-the-coax AC Telemetry Receiver



## Installation Guide



**Building Block Video Ltd.,**  
17 Apex Park,  
Diplocks Industrial Estate,  
Hailsham, East Sussex, BN27 3JU UK

Tel: +44(0)1323 842727  
Fax: +44(0)1323 842728  
Support: +44(0)1323 444600  
[www.bbvctv.com](http://www.bbvctv.com)

# INDEX

Safety instructions	3
General installation instructions	4
RX45X Technical Specification	5
Overview and set up voltage options	6 /7
Setup of Telemetry Type	8
Setup of Receiver Address	8
RX45X bottom PCB wiring details	9
RX45X top PCB wiring details	10
Wiring example	11
Telemetry – Daisy Chained	12
Telemetry – Star Wired	12
Wiring for specific irises	13
Self Test	14
BBV up-the-coax telemetry	15
Baxall up-the-coax telemetry	15
BBV RS422 telemetry	16
Dennard RS485 (2050 compatible)	17
Burle/Philips/Bosch RS485 telemetry	18
Burle/Philips/Bosch BI-PHASE telemetry	19
VCL/Honeywell TP telemetry	20
Pelco P & D telemetry	21
Sensormatic RS422 telemetry	22
American Dynamics RS422 telemetry	22
Molynx “D” type telemetry	23
Vicon RS422	23
BBV 20mA current loop	24
Meyertech RS485	24
Receiver setup	25
Setting Lens Direction	25
Setting Pan/Tilt speed	25
Diagnostic Aids	25
Cable Length Compensation	25
Programming the receiver	25
Menu structure overview	26
Menus in detail	27
COMMS MENU	27
PRESET MENU	27
ALARM MENU	28
OPTIONS MENU	29
DISPLAY OPTIONS	29
DIAGNOSTICS MENU	30
DEFAULTS MENU	30
TEST MENU	31
ENGINEER MODE	31
MOTOR OPTIONS	31
User guide	36
FEATURE MENU	36

# **SAFETY INSTRUCTIONS**

**Check Contents** - Unpack the receiver carefully and check that all the items are present and correct. If any items are missing or damaged, contact your equipment dealer.

**Servicing** - Servicing of the receiver should only be undertaken by qualified service personnel, as opening or removing covers will expose dangerous voltages.

**Replacement Parts** - If replacement parts are required, ensure that only replacement parts recommended by the product manufacturer are used.

Any modification or repair not undertaken by the equipment manufacturer will invalidate the warranty and may create a fire or safety hazard.

**Pre-installation Checks** - It is recommended that the receiver be bench-tested prior to installation on the site.

**Coax Grounding** - If an outside cable system is connected to the receiver, the cable system must be grounded.

**Safety During Installation or Servicing** - Particular care should be taken to isolate the pan/tilt head in order to prevent operation whilst engineering work is being carried out on the receiver.

NOTE: When connected normally and powered, the head will move during self test of the receiver.

## **Damage Requiring Servicing:-**

- (a) When the power-supply cord or plug is damaged;
- (b) If liquid has been spilled into, or objects have fallen into, the receiver
- (c) If the internal electronics of the receiver have been exposed to moisture
- (d) If the receiver does not operate normally by following the operating instructions
- (e) If the receiver has been dropped or the enclosure is damaged
- (f) If the receiver exhibits a distinct change in performance

**Safety Check** - Upon completion of any service or repairs to the receiver, safety checks should be performed to ensure that the receiver is in proper operating condition.

## **WARNING**

TO PREVENT DAMAGE TO THIS RECEIVER, OR RISK OF FIRE OR SHOCK, DO NOT EXPOSE THE INTERNAL COMPONENTS OF THIS EQUIPMENT TO MOISTURE.

# **GENERAL INSTALLATION INSTRUCTIONS**

The receiver is supplied in an IP67 rated polycarbonate external weatherproof enclosure. It will be necessary to make suitable holes in the enclosure to permit cable entry and exit. Adequately rated cable glands and/or flexible conduit should be used at all times to avoid compromising the protection afforded by the enclosure as supplied. Any holes made in the enclosure should be sealed with a non-hardening waterproof sealant, taking care to ensure that the internal electronics are not contaminated.

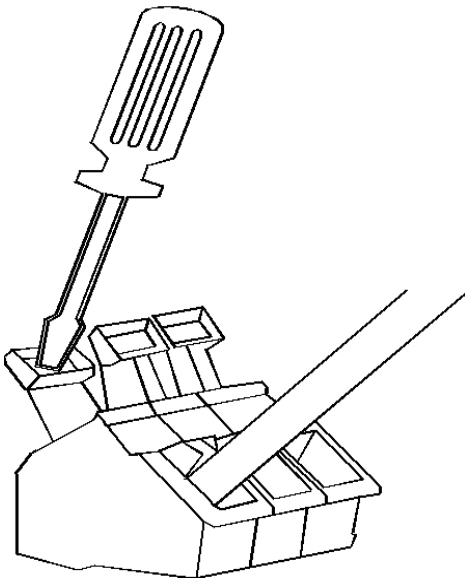
Enclosure mounting holes are provided at the corners of the enclosure, outboard of the seal between enclosure and lid.

## **CABLE CONNECTIONS**

The receiver comprises 2 printed circuit boards mounted one above the other. The lower board contains the power supply and output connectors for the pan/tilt head and auxiliary outputs. The top board has the microprocessor and the low voltage connectors including lens, presets, local alarms, telemetry etc.

Cage clamp connectors are used for all wired connections apart from power supply and video. The diagram below shows how the cage clamp connectors should be used.

**Disconnect power BEFORE connecting and disconnecting wires.**



Prepare wires as follows:

Use only wire between 0.08 and 2.5 mm<sup>2</sup>  
Strip the wire to a length of 5 to 6 mm (0.23 in)

The correct method of attachment is as follows:

1. Press down the relevant terminal block lever with a suitable screwdriver.
2. Insert wire.
3. Remove screwdriver.

To detach wires:-

1. Press down the relevant terminal block lever with a screwdriver.
2. Remove wire

# RX45X TECHNICAL SPECIFICATION

<b>Power Requirements</b>	110Vac or 230Vac or (24Vac as special order)
<b>Max Load</b>	5A @ 230V (1150 W) @ 110V (550W) @ 24V (120W)
<b>Receiver Current Draw</b>	24VA max
<b>Fuses</b>	Auxiliary fuse F3 5A T (20mm ceramic cartridge)
<b>Motor and aux. outputs single pole contacts (snubbed)</b>	Driven at supply voltage or 24Vac selectable by SW2  1. Left Motor 3. Down Motor 5. Autopan (Interlocked with Pan) 7. Wash 2. Right Motor 4. Up Motor 6. Lights (1000W max) 8. Wipe
<b>Telemetry protocols</b>	Up-the-coax telemetry: - BBV & Baxall (standard and alternate) BBV RS422, Dennard RS485, Philips/Bosch RS485 (optional BI-PHASE), VCL RS485, Pelco (P or D) RS485, Sensormatic/AD RS422, Molynx "D" Type, Vicon RS422 BBV 20mA current loop Meyertech RS485 Sony VISCA
<b>Video Input</b>	1v p-p 75Ω terminated input
<b>Video Output</b>	1v to 4v p-p 75Ω impedance output. Video launch amplifier gain <i>LOCALLY</i> & <b>REMOTELY ADJUSTABLE</b>
<b>Lens Drives</b> <b>LOCALLY &amp;</b> <b>REMOTELY ADJUSTABLE</b>	Zoom and focus - adjustable between 6 – 12Vdc. Inching speed - adjustable between 0 – 12Vdc. 1 second inching built in. Iris output – can be set for one of 5 motor lens or Auto-iris override options. In auto-iris mode, the output returns to the preset level 15 seconds after manual iris control. Preset level is adjustable. Each output has red and green LEDs to indicate direction and voltage.
<b>Presets</b> 10 bit resolution (zoom & focus) 13 bit resolution (pan & tilt)	Inputs are provided for pan, tilt, zoom & focus preset feedback pots. Up to 32 full-scene presets can be stored within the receiver, i.e. pan, tilt, zoom, focus. (16 with BBV & Baxall up-the-coax protocols)
<b>Alarm facilities</b>	8 alarm inputs from volts-free normally closed contacts. Output is 1 normally closed volts-free contact which can be set to operate either immediately or when the preset is approached after an alarm input.
<b>Additional facilities</b>	Autopan auxiliary output or software Random Pan Sequential preset patrol with individual programmable preset dwell. Datum - return to preset 1, start preset patrol or random pan after menu programmable duration of inactivity.
<b>Features</b>	LCD display for diagnostic and installation use LEDs for continual system status. On site receiver software updates with the use of the micro SD cards. Programming menu with On Screen Display. 12Vdc/500mA camera power provided. Colour coded outlets – live, neutral, earth and low voltage.
<b>Boxed Dimensions</b>	Width: 380mm, Length: 190mm, Height: 130mm
<b>Weight</b>	3.43kg

# OVERVIEW

The RX45X is designed to drive mains supply voltage or 24Vac operated fixed speed pan/tilt heads.

The receiver can be controlled using either up-the-coax, or a daisy chained or star wired RS422/RS485 network with various protocols depending upon the site and specific controller used. For a control system with a single RS422/RS485 telemetry output, a BBV STARCARD or STARCARD/CONVERTER can be used to allow star wiring of the site.

An on screen menu system allows easy setup, test control and diagnostic display either locally or remotely.

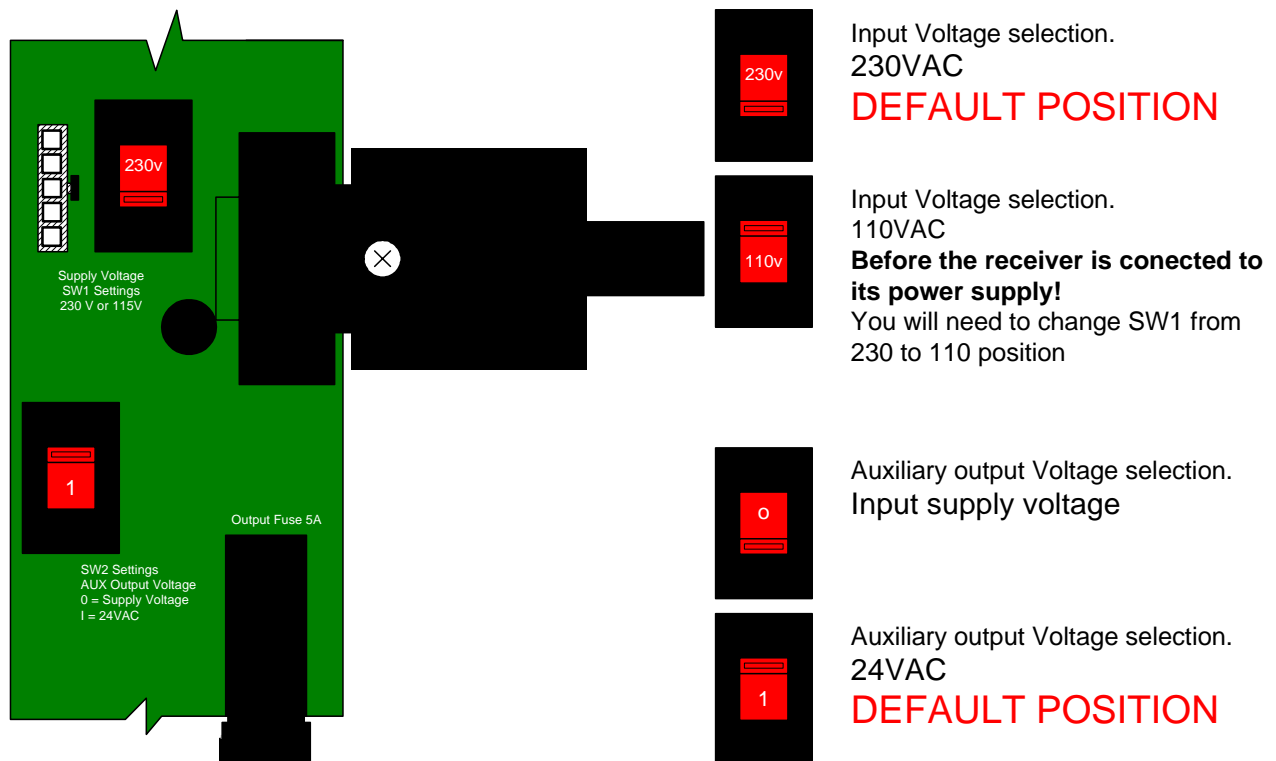
## SET UP VOLTAGE OPTIONS

### **BEFORE CONNECTING POWER**

### **CHANGING AUXILIARY AND HEAD OUTPUT DRIVE VOLTAGE WITH RX45X**

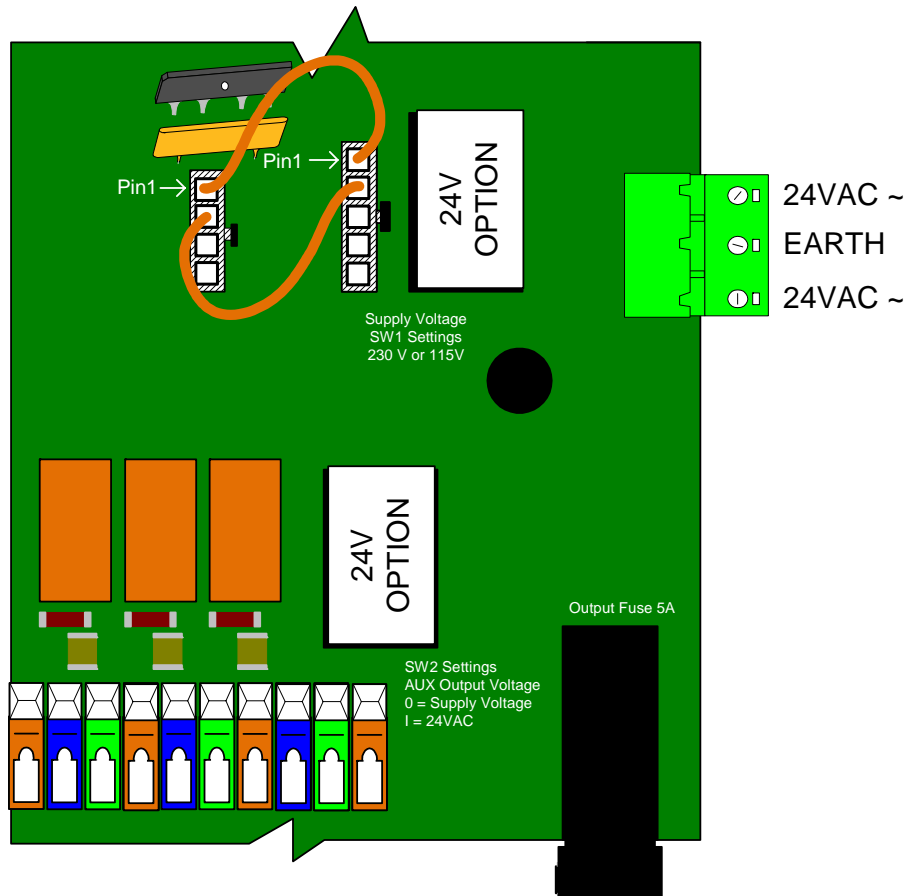
As shipped, these outputs will supply 24Vac. If mains supply voltage is required, with the power to the receiver isolated you will need to change the SW2 from the 1 position to the 0 position.

### **RECEIVER SUPPLY AND OUTPUT OPTIONS**



# SET UP VOLTAGE OPTIONS

The RX45X has 24VAC supply options these would be RX45X/24/24. The switches will set in the factory and a label will be placed over the switches.



**This option is a special order. It allows the unit to be powered from 24VAC.**

## **LOCAL SETUP OF TELEMETRY TYPE AND ADDRESS**

(Useful for off-site setup without video source connected)

As shipped, BBV RS422 protocol is selected. To select other protocols:-

1) Connect a video monitor to the output BNC marked 'TO MATRIX'.

Press and hold **SW2 (MENU/SET)** and power up the receiver.

A menu on a blue background will be shown with 'COMMUNICATIONS' flashing.

2) Release **SW2** and press **SW2** again to select 'COMMUNICATIONS'.

The next screen shows the current telemetry type and receiver address. If these are correct, power down the receiver. (No address shown with coax protocols)

3) To change the telemetry type or address use **SW1/SW3** to highlight 'MENU UNLOCK' and press **SW2** to toggle to 'UNLOCK'.

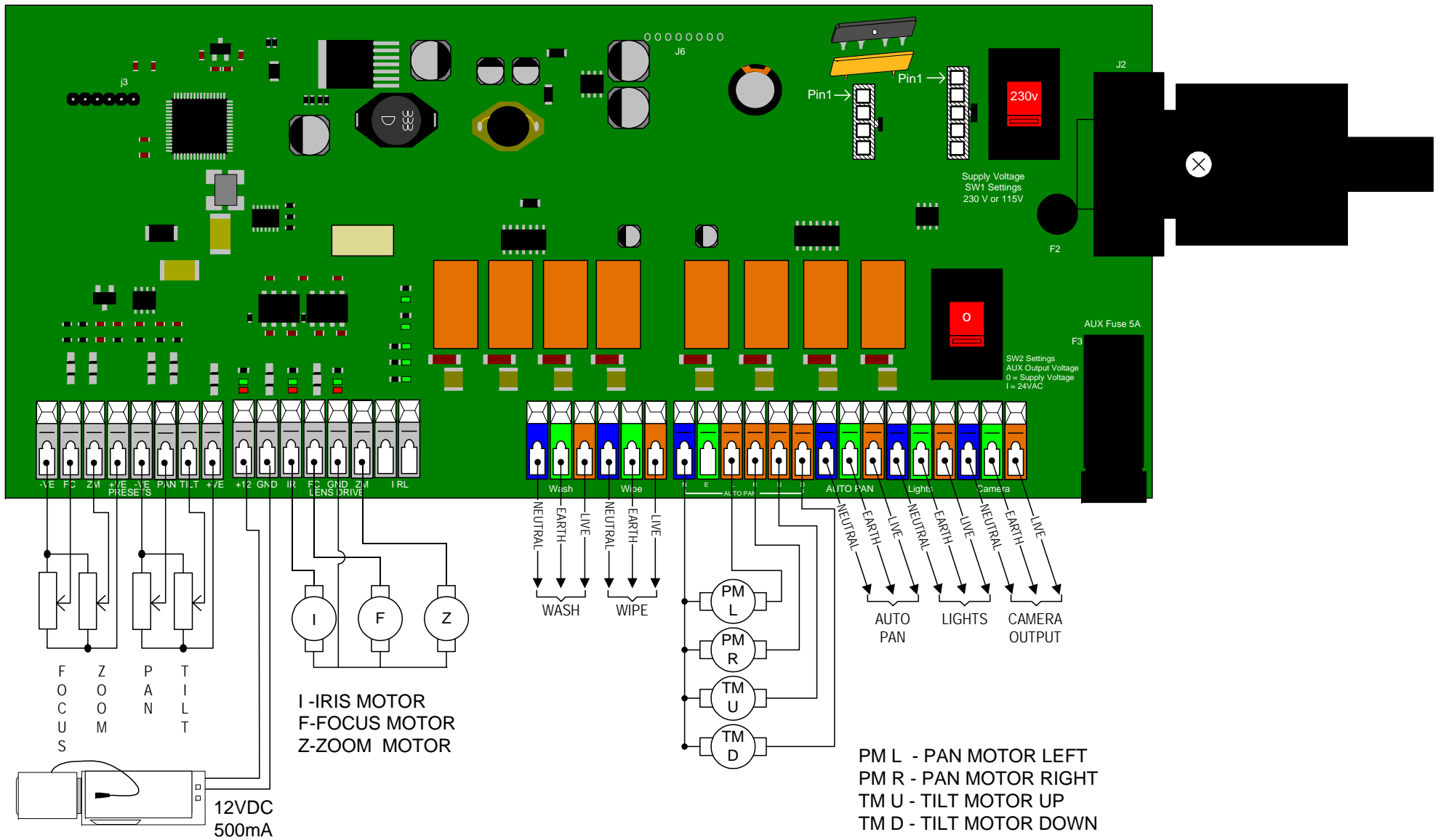
4) Use **SW1/3** to select 'TELEMETRY TYPE' or 'UNIT ADDRESS' and press **SW2** to access submenu. Press **SW1/SW3** to obtain required selection, and then press **SW2** to confirm.

5) With the telemetry type and unit address set correctly, use **SW1/SW3** to highlight 'SAVE CHANGES AND EXIT' and press **SW2**.

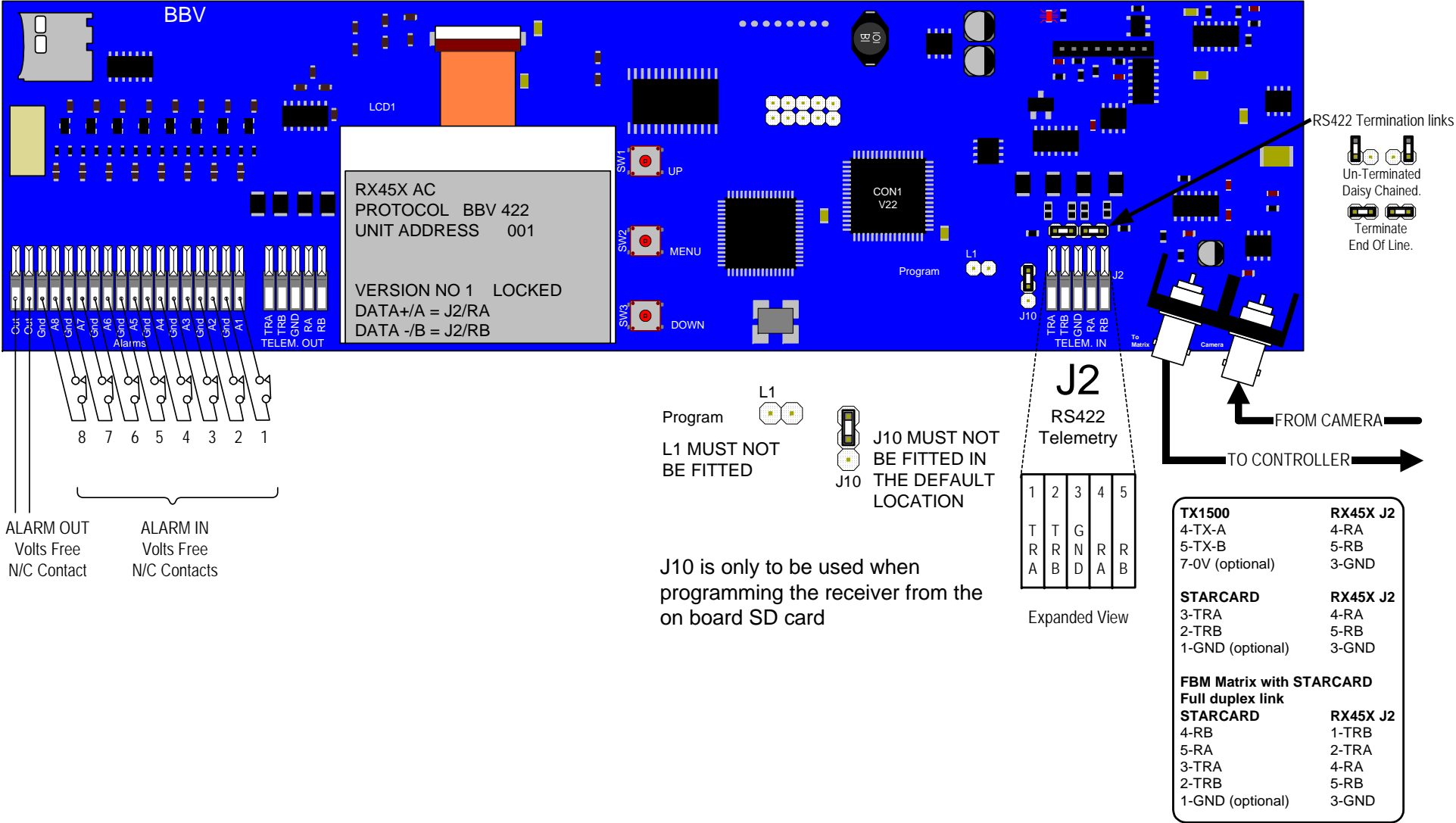
6) The receiver then re-starts. Power off and continue with the physical installation.

**NOTE:** If using Pelco P or Pelco D telemetry check that the baud rate and parity settings are correct for the controller being used. Generally Pelco P is 9600 baud, No parity, and Pelco D is 2400 baud, Even parity.

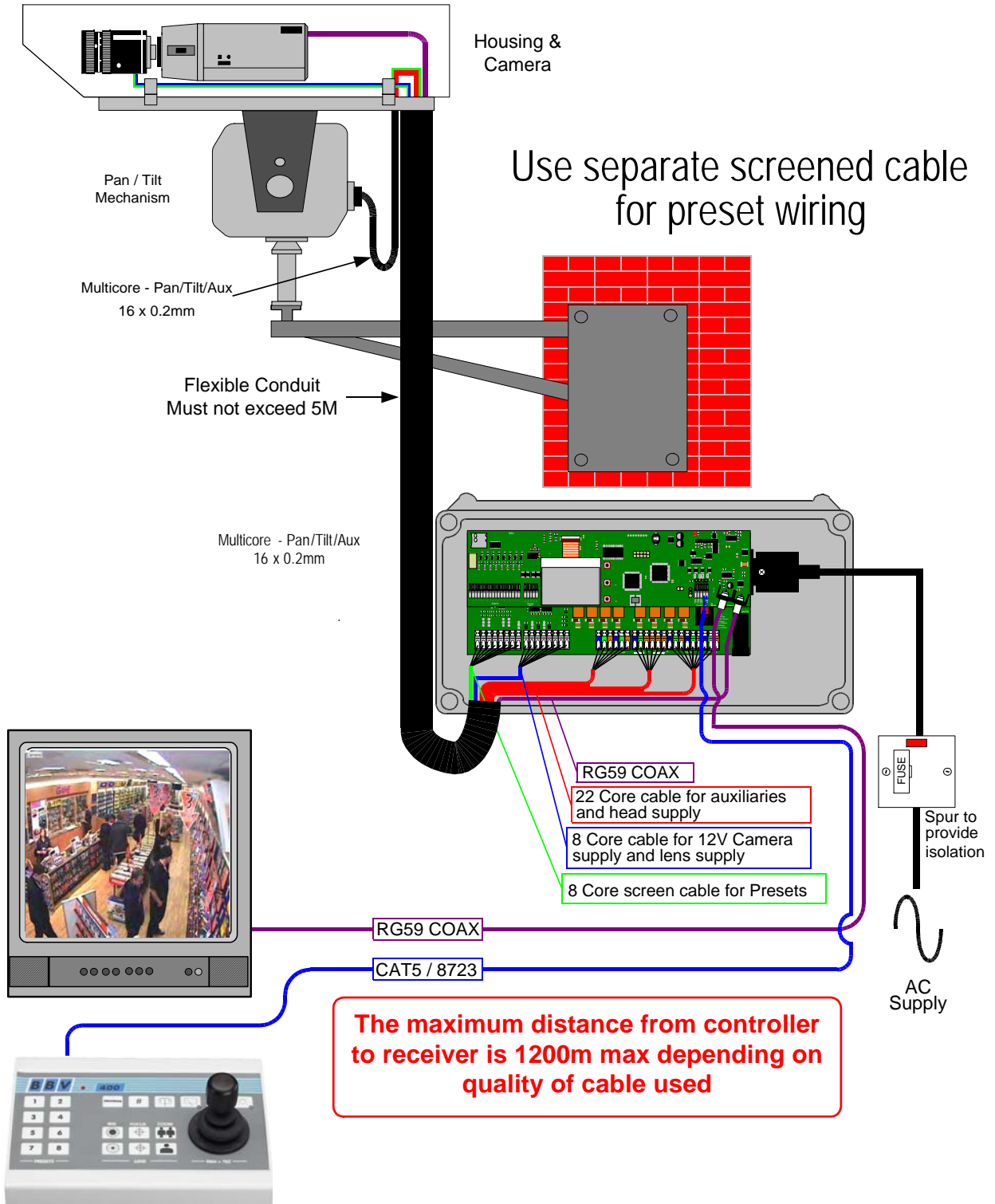
# PSU/LOWER BOARD CONNECTIONS



# LOGIC/UPPER BOARD CONNECTIONS

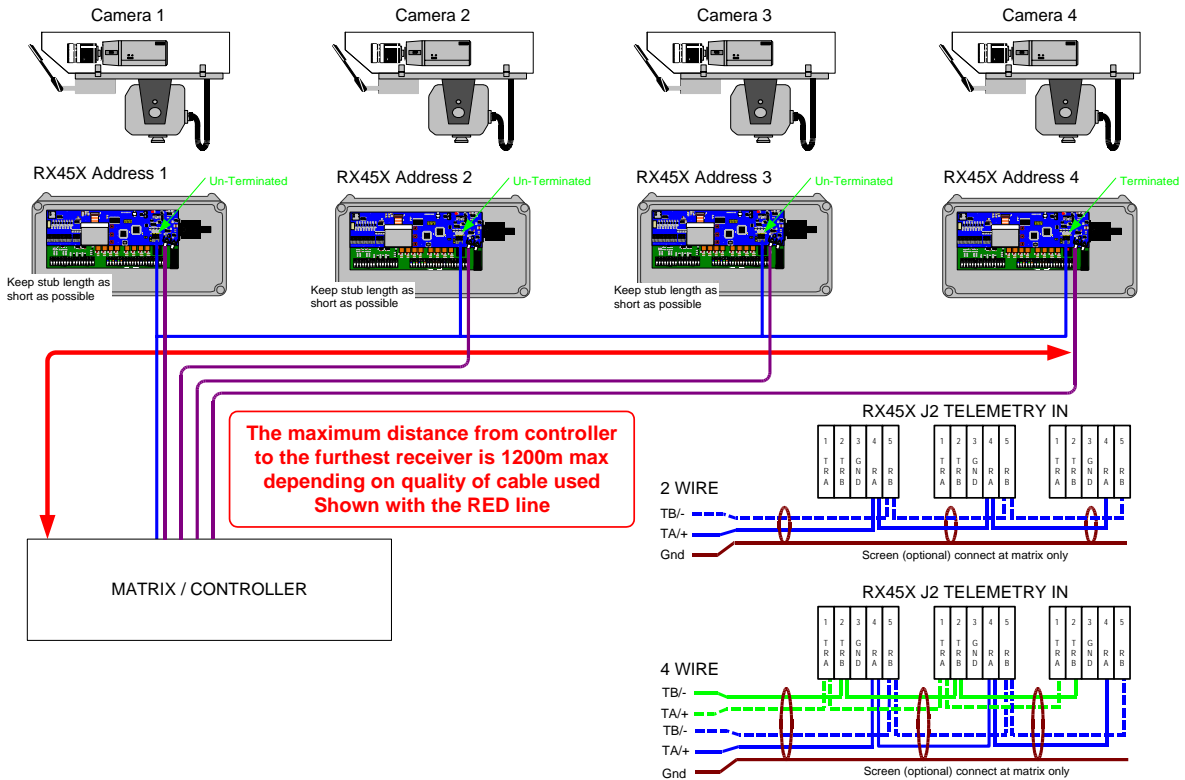


# HEAD & LENS WIRING EXAMPLE



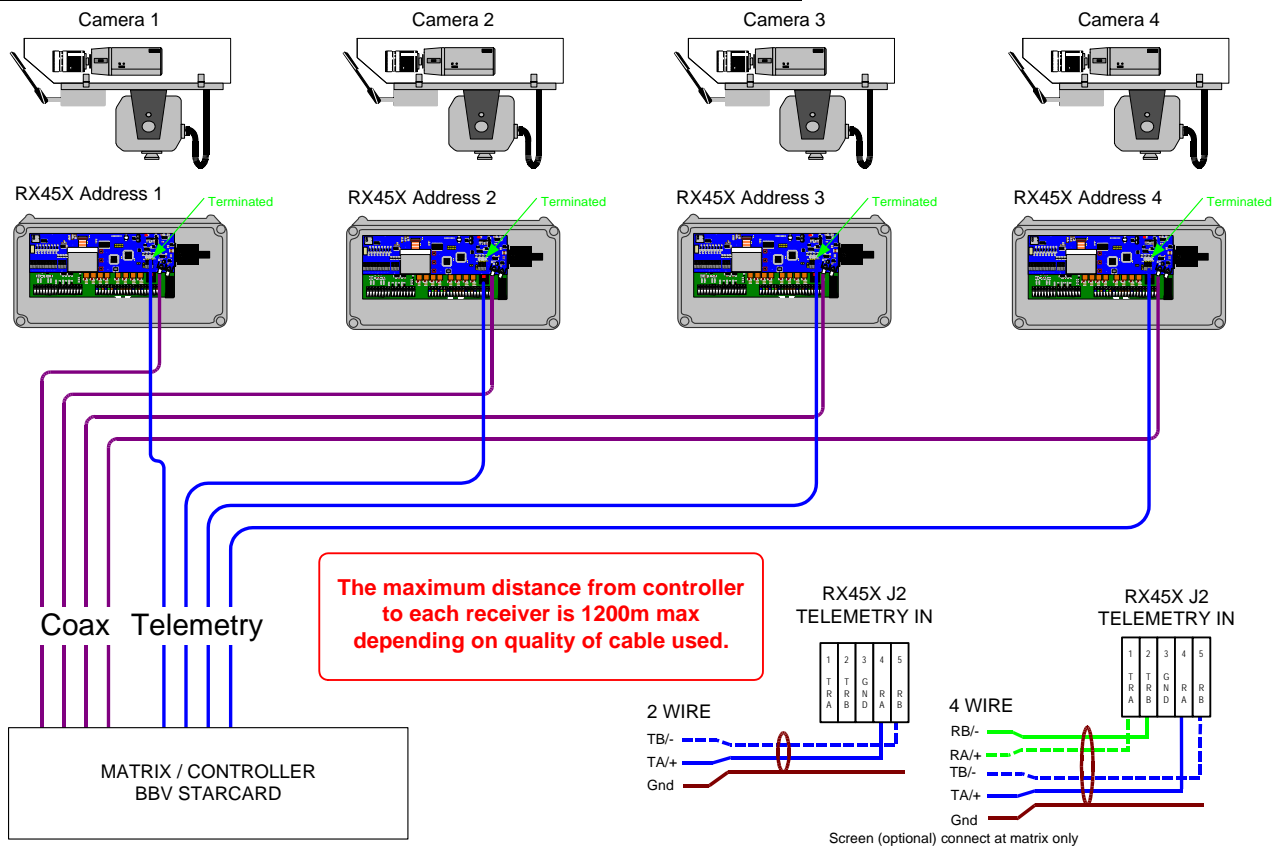
The diagram shows a simple single camera system using a BBV TX400DC/RS422 and Rx45X using BBV RS422 twisted pair telemetry.

# DAISY CHAINED TELEMETRY EXAMPLE



When using a daisy chained RS422/485 system, the stubs must be kept as short as possible and no longer than 25cm. Intermittent and/or sluggish control can be the result of excessive stub lengths.

# STAR WIRED TELEMETRY EXAMPLE



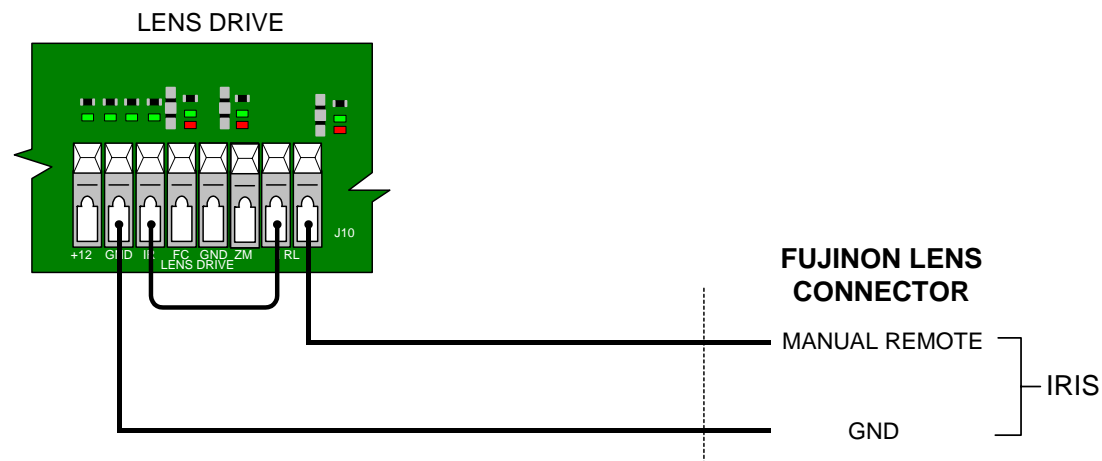
# IRIS TYPE & WIRING FOR SPECIFIC IRISES

Use **MAIN/OPTIONS/IRIS TYPE** menu to select iris type. In the Rx45X there are a group of options these include:

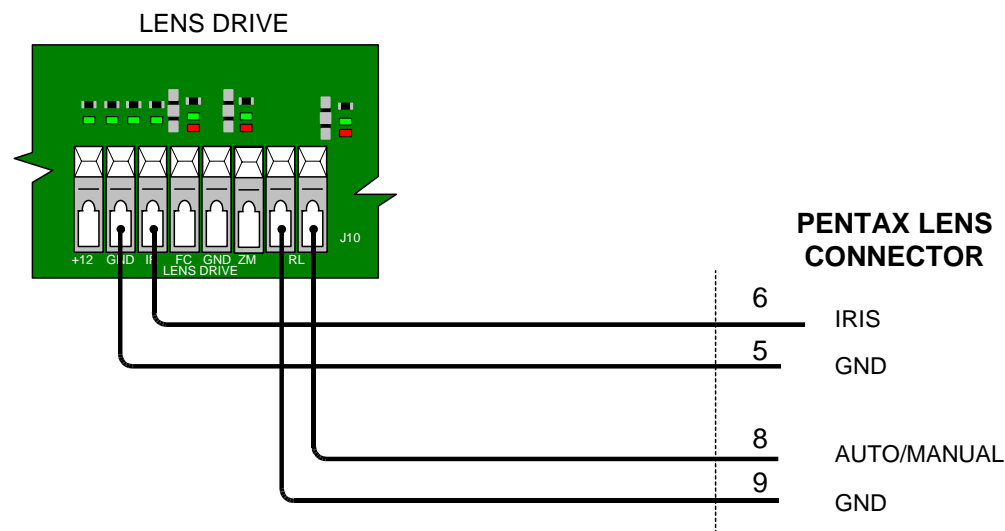
Rx45X option	Voltage range	Iris override relay used`	Application
MOTOR	-12V - +12V	NO	Standard motor driven lens
PENTAX	-12V - +12V	YES	Override
FUJINON	2.5V - 5.5V	YES	Override
COMPUTAR	1.5V - 5.5V	YES	Override
SEIKO	2.5V - 12V	NO	Override
COSMICA	2.5V - 5.5V	NO	Override

Most zoom lenses have a built in auto iris that that reacts to the video level leaving the camera. Some lens have the option to override this. It is recognised as iris override how this works depends on the lens make & model. Refer to lens specific manual for connections. When you press an Iris open or an Iris close the receiver will take control of the lens and depending on the Iris button you press the video image will get brighter or darker. Once you release the Iris button it will stay like that for 15 seconds then it will return to auto iris mode.

## FUJINON Example Rx45X



## PENTAX Example Rx45X



# SELF-TEST

After wiring the head and lens to the receiver, carry out a self test by pressing both **UP (SW1)** and **DOWN (SW3)** buttons simultaneously on the receiver top PCB. All receiver outputs will activate in turn for 2-3 seconds.

***The head will move during the self test.***

The self test can also be started remotely by using the receiver's on screen menu with the self test progress being shown by two status lines as below:-

**FUNCTION** ← shows the current function being driven.

**Pxxxx Txxxx Zxxxx Fxxxx** ← shows feedback voltages for pan, tilt, zoom and focus.

Each value will change smoothly as the corresponding function is driven.

The values shown will be in the range Zoom & Focus 0000 -1023. 0000 = 0V and 1023 = 5V.

Pan & Tilt 0000 -8192. 0000 = 0V and 8192 = 5V.

Function	Active output RX45X
PAN LEFT	J4/3
PAN RIGHT	J4/4
TILT DOWN	J4/6
TILT UP	J4/5
ZOOM IN/TELE (to end stop)	J10/ZM
ZOOM OUT/WIDE (to end stop)	J10/ZM
FOCUS NEAR	J10/FC
FOCUS FAR	J10/FC
IRIS OPEN	J10/IR
IRIS CLOSE	J10/IR
AUX LIGHTS	J4/12
AUX AUTOPAN (RX45X ONLY)	J4/9
AUX WASHER	J11/3
AUX WIPER	J11/6

During the self test, the presence and sense of each preset input is recorded. Following the self test the display shows if the preset inputs for pan, tilt, zoom and focus were detected.

The pan/tilt head and lens outputs are driven for approx 5 seconds to indicate the results. If the drive led is GREEN then preset for this output is ok and if RED then not ok.

# TELEMETRY PROTOCOL SPECIFIC INFORMATION

Up-the-coax telemetry uses one coaxial cable to carry both the video signal from the camera and telemetry from the controller. Recommended maximum cable distance for this type of telemetry is 250M using RG59 and 500M using CT125. Other site conditions must also be taken into consideration.

## BBV UP-THE-COAX TELEMETRY

The receiver supports 16 preset positions with BBV up-the-coax telemetry.

Key presses for menu access:-

Controller type -	TX400	TX1000	TX1500
<b>MAIN MENU</b>	<b>'# 1</b>	<b>'# WASH</b>	<b>1 '#</b>
<b>FEATURE MENU</b>	<b>'# 3</b>	<b>'# AUTOPAN</b>	<b>3 '#</b>

Use the joystick during menu navigation. Up or Down to highlight different items, and Right or Left to confirm or change the selected value.

The red power led will show the status of the telemetry signal as follows:

Very slow flash – No video and No telemetry.

1 second flash but mainly ON – video ok, No telemetry.

1 second flash equal OFF and ON – video ok, telemetry ok

## BAXALL STANDARD & ALTERNATE UP-THE-COAX TELEMETRY

Use 'Standard' telemetry with the ZT3, ZT4 and ZT5 controllers.

Later controllers may have options to select between the two types.

The receiver supports 16 preset positions with Baxall up-the-coax telemetry.

Key presses for menu access:-

<b>MAIN MENU</b>	<b>CAMERA ON/OFF</b>
<b>FEATURE MENU</b>	<b>AUTOPAN</b>

Use the joystick for menu navigation. Up or Down to highlight different items, and Right or Left to confirm or change the selected value.

The red power led will show the status of the telemetry signal as follows:

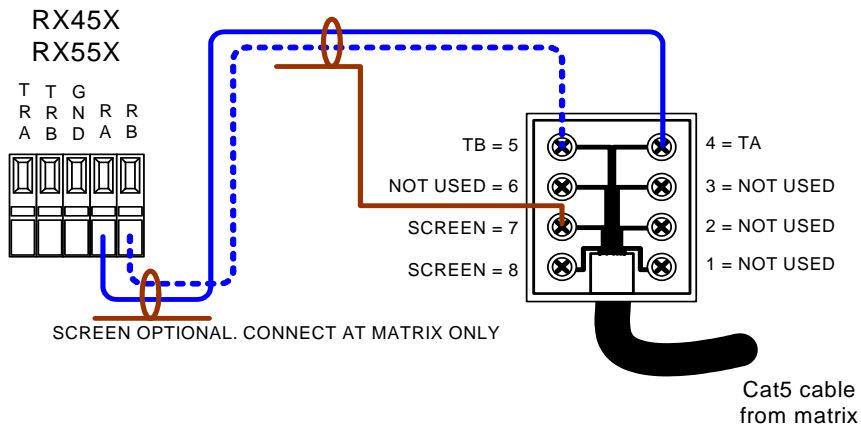
Very slow flash – No video and No telemetry.

1 second flash but mainly ON – video ok, No telemetry.

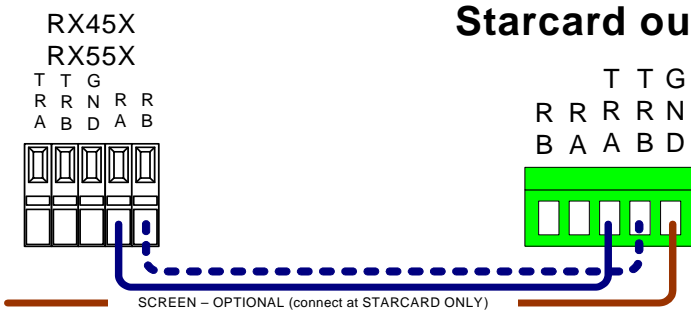
1 second flash equal OFF and ON – video ok, telemetry ok

# BBV RS422 TELEMETRY

BBV RS422 uses a single twisted pair for simplex telemetry control.



## Using a BBV STARCARD with star wired telemetry.



Address range is 1 – 128. (Use only 1 – 16 with a TX1000)

The receiver supports 32 preset positions with BBV RS422 telemetry. Limit of 16 with TX1000.

Key presses for menu access:-

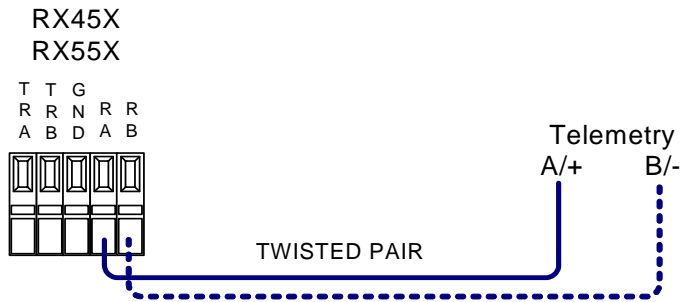
Controller -	<b>TX1000/MK2</b>	<b>TX1500</b>
<b>MAIN MENU</b>	<b>'#' WASH</b>	<b>1 '#'</b>
<b>FEATURE MENU</b>	<b>'#' AUTOPAN</b>	<b>3 '#'</b>

Use the joystick for menu navigation. Up or Down to highlight different items, and Right or Left to confirm or change the selected value.

The red power led flashes off when a valid telemetry command is received.

## DENNARD RS485 (2040/2050/2055/2060 etc dome compatible)

Using this protocol allows a mix of 2040/2050/2055/2060 etc Dennard domes and conventional pan/tilt heads from a single control system



Address range 1 – 64.

The receiver supports 32 preset positions with Dennard RS485 telemetry.

The receiver auxiliary outputs can be driven using the following:

AUX 1 = WASH                      AUX 2 = WIPE                      AUX 3 = LIGHTS

Autopan is started with START SEQUENCE 1 (AUX 46)

Preset PATROL is started using GOTO/CALL PRESET 98

Random Pan is started with GOTO/CALL PRESET 99

Key presses for menu access:-

**MAIN MENU - GOTO/CALL PRESET 93 (or NORMAL DOME MENU COMMAND)**

**FEATURE MENU – GOTO/CALL PRESET 94**

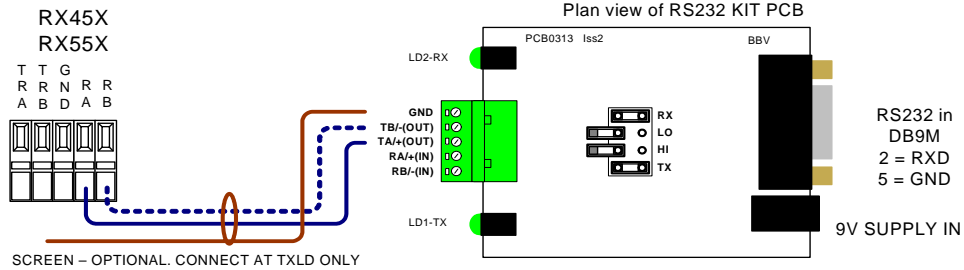
Use the joystick for menu navigation. Up or Down to highlight different items, and goto preset 1 or iris open to confirm or change the selected value.

The red power led flashes off when a valid telemetry command is received.

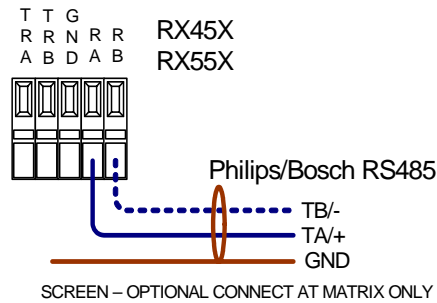
# BURLE/PHILIPS/BOSCH TELEMETRY

Several methods of connecting Burle/Philips/Bosch telemetry are available; BI-PHASE, RS232 and RS485. BI-PHASE and RS485 allow long cable runs between the controller and telemetry receiver. RS232 is only for short lengths and requires a BBV RS232 KIT installed at the controller to convert to RS485 which will drive the RX45X and RX55X receivers.

## RS232 TELEMETRY USING TXLD LINE DRIVER



**RS485** telemetry is supported by some equipment manufacturers.

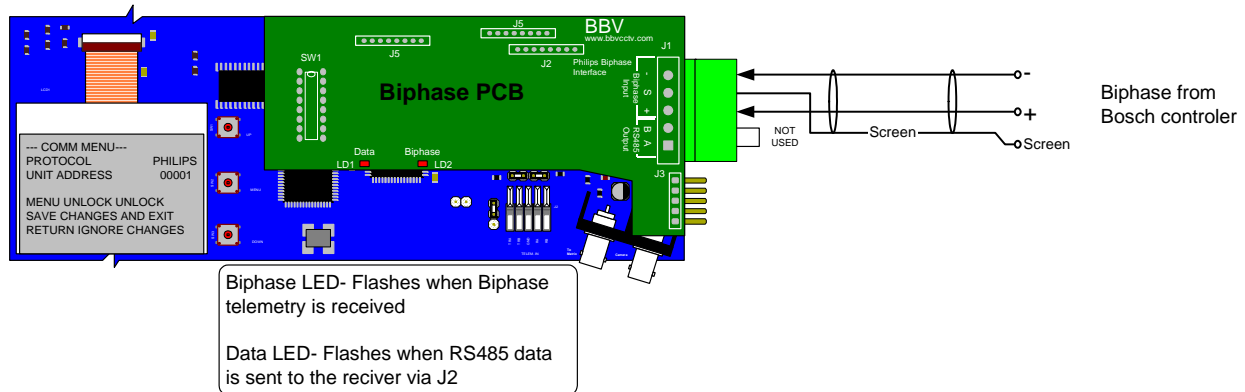


## BURLE/PHILIPS/BOSCH BI-PHASE TELEMETRY

Single screened twisted pair cable is used to connect from the BI-PHASE controller to the receiver.

BI-PHASE telemetry requires an optional BBV BI-PHASE CARD to be fitted to the receiver which is connected as shown below.

This would normally be factory fitted when a receiver with BI-PHASE OPTION is ordered. It is possible to retrofit the BI-PHASE board, with a connector needing to be soldered on to the receiver top board in position J6.



Address range is 1 – 16385.

The receiver supports up to 32 preset positions.

The receiver auxiliary outputs can be driven using the following:

AUX 1 = LIGHTS                      AUX 2 = WIPE                      AUX 3 = WASH

Preset PATROL is started using AUX 8 ON or GOTO/CALL PRESET 98

Random pan/Autopan is started with GOTO/CALL PRESET 97

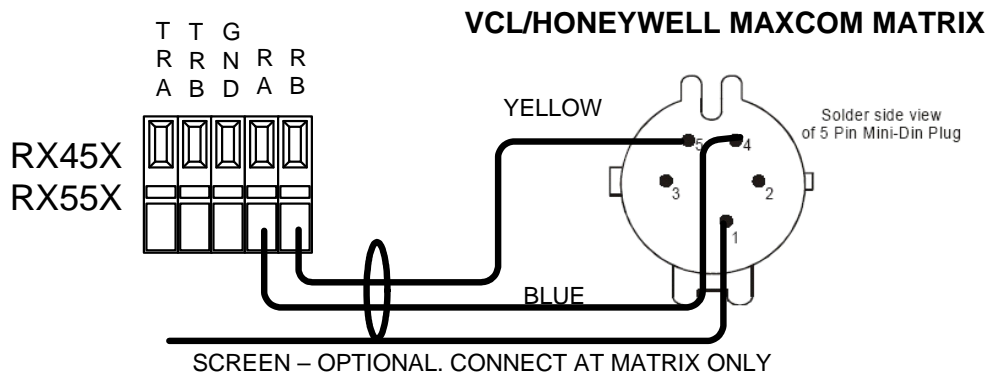
Key presses for menu access:-

**MAIN MENU - AUX 46 ON**

**FEATURE MENU – GOTO/CALL PRESET 94**

Use the joystick for menu navigation. Up or Down to highlight different items, and Right or Left to confirm or change the selected value.

# VCL/HONEYWELL TP TELEMETRY



Address range is 1 – 128.                      The receiver supports up to 32 preset positions.

The receiver auxiliary outputs can be driven using the following:

AUX 1 = LIGHTS    (PRESET 85 = LIGHTS ON, PRESET 86 = LIGHTS OFF)

WIPE = WIPE        (PRESET 83 = WIPE ON, PRESET 84 = WIPE OFF)

WASH = WASH       (PRESET 81 = WASH ON, PRESET 82 = WASH OFF)

0 AUTOPAN or AUTOPAN will start Random/Auto Pan.

1 AUTOPAN will start PATROL 1

2 AUTOPAN will start a random patrol

Key presses for menu access:-

**MAIN MENU - GOTO/CALL PRESET 95**

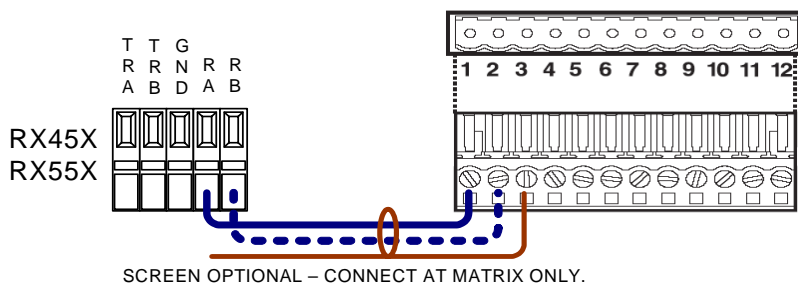
**FEATURE MENU – GOTO/CALL PRESET 96**

Use the joystick for menu navigation. Up or Down to highlight different items, and Right or Left to confirm or change the selected value.

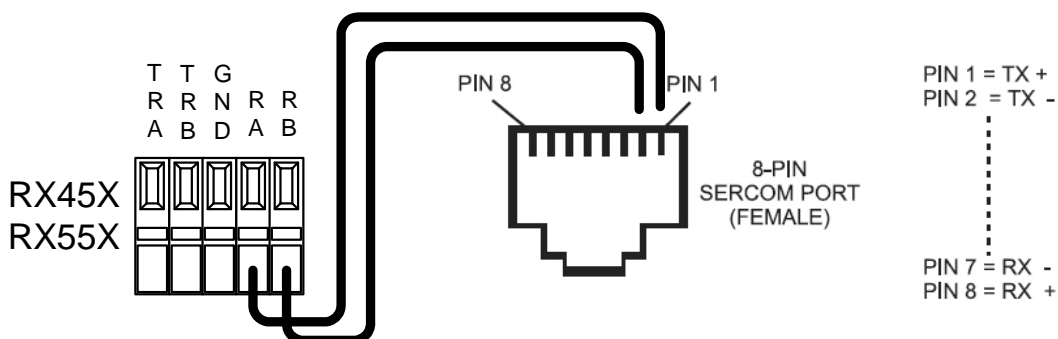
# PELCO P & PELCO D TELEMETRY

Using single twisted pair.

## PELCO P & D WITH CM6700/6800 MATRIX



## PELCO P & D WITH CM9740/9760/9780 MATRIX



Pelco P address range is 1 – 32 and Pelco D address range is 1 – 254.

The receiver supports up to 32 preset positions.

The receiver auxiliary outputs can be driven using the following:

AUX 1 = LIGHTS                      AUX 2 = WIPE                      AUX 3 = WASH

**Select PELCO P <DM AUX NUMBERS> protocol** to allow the DM keyboard to drive the receiver auxiliary outputs correctly.

AUX 0 = WASH                      AUX 1 = WIPE                      AUX 2 = LIGHTS

Autopan is started with GOTO/CALL PRESET 97

Preset PATROL is started using GOTO/CALL PRESET 98

Random Pan is started with GOTO/CALL PRESET 99

Key presses for menu access:-

**MAIN MENU - GOTO/CALL PRESET 95**

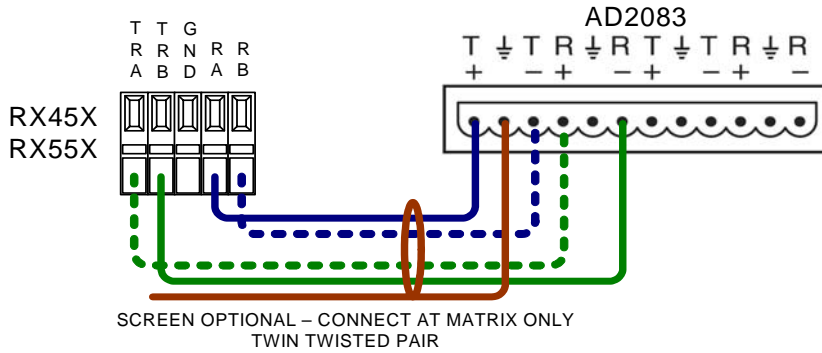
**FEATURE MENU – GOTO/CALL PRESET 94**

Use the joystick for menu navigation. Up or Down to highlight different items, and IRIS OPEN to confirm or change the selected value.

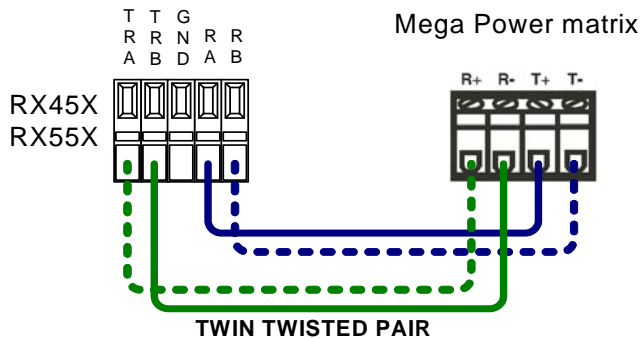
The red power led flashes off when a valid telemetry command is received.

# SENSORMATIC/AMERICAN DYNAMICS RS422 TELEMETRY

## AMERICAN DYNAMICS AD2083 PROTOCOL DISTRIBUTOR



## AMERICAN DYNAMICS/SENSORMATIC MEGAPOWER MATRIX



Address range is 1 – 99.

The receiver supports either 32 direct preset positions or absolute preset positioning depending on the controller type. For example a current model of Mega Power 48 matrix supports 96 presets per camera.

The receiver auxiliary outputs can be driven using the following:

AUX 1 = WASH                      AUX 2 = WIPE                      AUX 3 = LIGHTS

Key presses for menu access:-

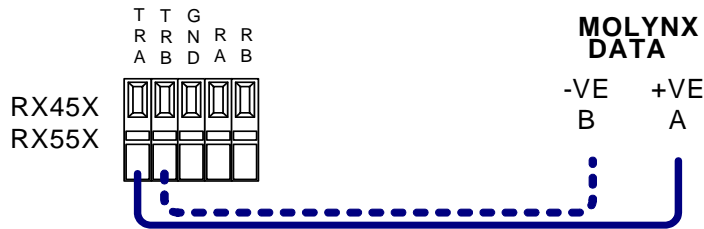
**MAIN MENU - PRESS IRIS OPEN & FOCUS & ZOOM OUT**

**FEATURE MENU – PRESS IRIS OPEN & FOCUS & ZOOM IN**

Use the joystick for menu navigation. Up or Down to move the highlighted item and Right or Left for enter or to change the selected value.

The red power led flashes off when a valid telemetry command is received.

## MOLYNX “D” TYPE TELEMETRY



Address range is 1 – 256. The receiver supports up to 16 preset positions.

The receiver auxiliary outputs can be driven using the following:

AUX = LIGHTS                      WIPE = WIPE                      WASH = WASH

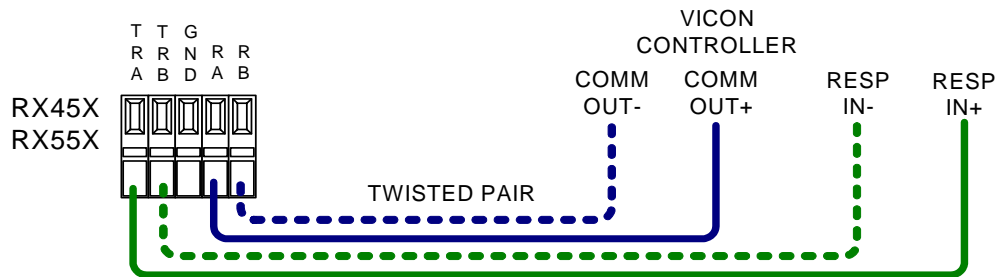
Key presses for menu access:-

**MAIN MENU                      AUX 1**

**FEATURE MENU                AUX 2**

Use the joystick for menu navigation. Up or Down to highlight different items, and Right or Left to confirm or change the selected value.

## VICON RS422



The receiver may be controlled without the ‘RESP’ pair but the auxiliary output status and alarms are not returned to the controller.

Address range 1 – 255. The receiver supports 32 preset positions.

The receiver auxiliary outputs can be driven using the following:

AUX 1 = WASH                      AUX 2 = WIPE                      AUX 3 = LIGHTS

Key presses using the V1411-DVC keyboard for menu access:-

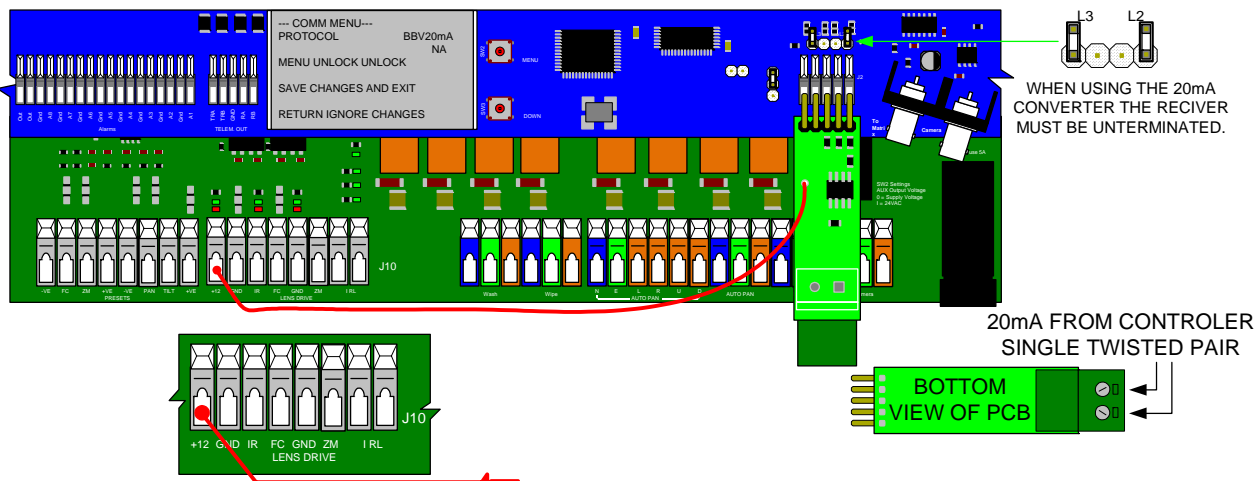
**MAIN MENU - SAVE PRESET 94**

**FEATURE MENU – GOTO/CALL PRESET 94**

Use the joystick for menu navigation. Up or Down to highlight different items and goto preset 1 or iris open to confirm or change the selected value.

The red power led flashes continuously when connected to the controller.

# BBV 20mA TELEMETRY USING 98005 CONVERTER



The receiver supports 16 preset positions with TX1000 controller, 8 with TX400.

Key presses for menu access:-

Controller -	TX400	TX1000/MK2	TX1500
<b>MAIN MENU</b>	<b>#1</b>	<b>'#' WASH</b>	<b>1 '#'</b>
<b>FEATURE MENU</b>	<b>#3</b>	<b>'#' AUTOPAN</b>	<b>3 '#'</b>

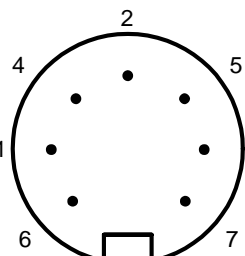
Use the joystick for menu navigation. Up or Down to highlight different items, and goto preset 1 or iris open to confirm or change the selected value.

## MEYERTECH

### ZoneVu PORT CONNECTIONS

Pin	NAME
1	RS485/422 RX+
2	DATA 0V DC
3	RS422 TX+
4	RS485/422 RX-
5	RS422 TX-
6	+12V DC
7	0V DC
CASE	GND SCREEN

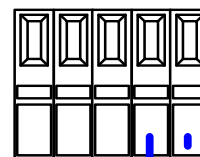
### ZoneVu PORT



### RX45X/55X

J4 Connector

T T G  
R R N R R  
A B D A B



Address Range 1 – 999

The Receiver supports 32 Presets

Key Presses for Receiver menu access:-

<b>MAIN MENU</b>	<b>Select Preset 95 Enter</b>
<b>FEATURE MENU</b>	<b>Select Preset 94 Enter</b>

Use the Joystick for Menu Navigation & Pan Right to Enter

All Camera Control Commands are issued by ZoneVu ZVK-77D Keyboard Joystick & on screen menu structure.

Please refer to ZoneVu ZVK-77D Keyboard Manual

# RECEIVER SETUP

## **SET THE LENS DRIVE DIRECTION.**

If, after wiring the pan/tilt head, any lens function is found to drive in the opposite direction, e.g. pressing 'ZOOM IN' causes the lens to zoom out, then this can be corrected by using the receiver's **MAIN/OPTIONS/ZOOM FOCUS IRIS** menu.

**A self test must be performed after changing the lens driving direction.**

## **SET PAN/TILT SPEED WITH RX55X.**

The receiver can be adjusted to a pan/tilt head's motor characteristics.

Use the **MAIN/MOTOR OPTIONS** menu.

Use the lowest speed settings for 'MIN PAN' and 'MIN TILT' that allows the head to move without stalling as soon as the joystick is moved. This gives the greatest speed range.

The maximum pan and tilt speeds can be reduced to prolong head life. The default speed is maximum, 255, which can be reduced to the minimum speed settings.

## **DIAGNOSTIC AIDS**

A single LED labelled POWER is lit while the receiver is powered.

This LED will flash off when the receiver has received correct telemetry data including correct receiver address.

Additional diagnostic aids are available in the receiver's **MAIN/DIAGNOSTICS** menu.

## **CABLE LENGTH COMPENSATION**

The receiver incorporates a remotely adjustable video launch amplifier to compensate for video cable losses.

The gain can be adjusted from 0 to 255 in the receiver's **MAIN/OPTIONS** menu, the default value is 0 (minimum). As gain is increased, high frequency lift is increased.

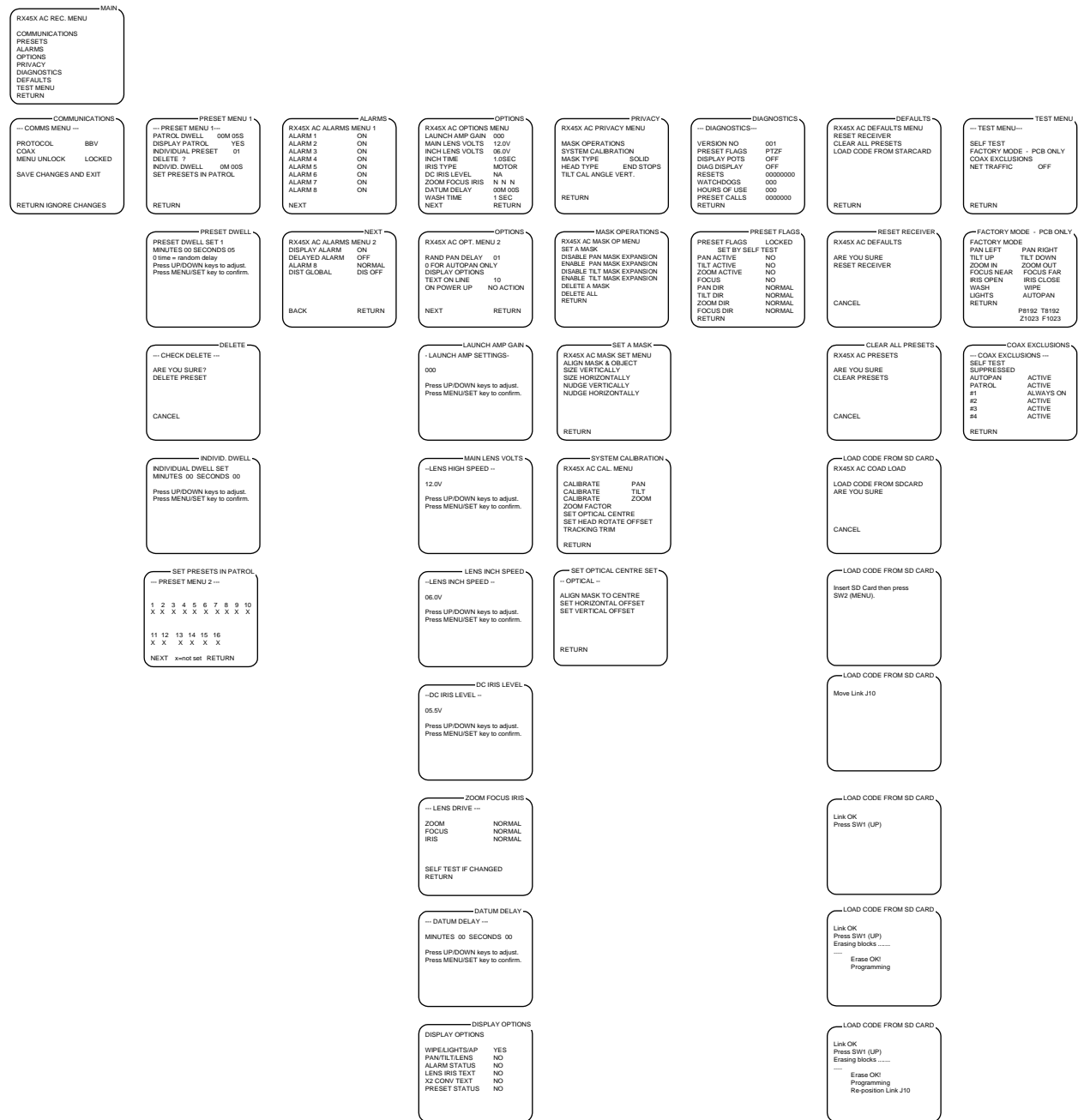
# PROGRAMMING THE RECEIVER

An easy to use menu structure allows programming of the receiver's advanced features. The menu can be accessed either locally using the 3 push buttons on the receiver or remotely using the telemetry controller.

**Local access:** - Pressing the **MENU/SET (SW2)** button displays the '**MAIN**' menu. Pressing the **UP (SW1)** or **DOWN (SW3)** button moves the flashing highlight up or down. Pressing **MENU/SET (SW2)** again displays the selected sub menu, or confirms a value or choice. To exit the menu structure, select '**EXIT**' from the '**MAIN**' menu. The receiver resets and resumes normal operation. The menu will automatically exit after a period with no button presses.

The receiver menu can be displayed remotely from most controllers. Refer to the specific protocol instructions.

# RECEIVER MENU STRUCTURE OVERVIEW



# Detailed description of the receiver menu system follows

COMMUNICATIONS

--- COMMS MENU ---

PROTOCOL	PELCO P
UNIT ADDRESS	1
BAUD RATE	9600
PARITY	NONE

MENU UNLOCK      LOCKED  
SAVE CHANGES AND EXIT

RETURN IGNORE CHANGES

Unit address must be unique and match camera number  
RS485 baud rate 2400/4800/9600 (PELCO ONLY)  
Parity NONE/EVEN/ODD (PELCO ONLY)

Must be set to UNLOCKED to allow setting of above  
All settings are saved and receiver is reset

Return to MAIN menu

PRESET MENU 1

--- PRESET MENU 1 ---

PATROL DWELL	00M 05S
DISPLAY PATROL	YES
INDIVIDUAL PRESET	01
DELETE ?	
INDIVID. DWELL	00M 00S
SET PRESETS IN PATROL	

RETURN

Dwell in minutes & seconds during preset patrol

Display preset number during patrol (YES/NO)

Select preset (1-32) SET = preset programmed

Delete current preset (if SET above)

YES = is in preset patrol.

Override patrol dwell for this preset in minutes & seconds

Select the presets to be included in the preset patrol. Presets are automatically added to the patrol when saved.

RETURN to MAIN MENU

PRESET DWELL

PRESET DWELL SET 1

MINUTES 00 SECONDS 05  
0 time = random delay

Press UP/DOWN keys to adjust.  
Press MENU/SET key to confirm.

Dwell in minutes & seconds during preset patrol

This is in 5 second intervals upto 4 minutes & 15 seconds or 00 minutes & 00 seconds for random delay.

DELETE

--- CHECK DELETE ---

ARE YOU SURE?  
DELETE PRESET

CANCEL

Select the individual preset number then use the joystick to go to DELETE PRESET and this preset will be removed from the receiver including the preset patrol.

RETURN to PRESET MENU 1

SET PRESETS IN PATROL

PRESET MENU 2

1	2	3	4	5	6	7	8	9	10
X	X	X	X	X	X	X	X	X	X
11	12	13	14	15	16				
X	X	X	X	X	X				

NEXT    X=not SET    RETURN

This screen enables you to see if a preset is included in the Patrol. If there is a P below the number it is included in the Patrol. If there is a X then it will not be included into the Patrol.

NEXT to 17 - 32, or RETURN to MAIN menu

ALARMS

RX45X AC ALARMS MENU 1

ALARM 1	ON
ALARM 2	ON
ALARM 3	ON
ALARM 4	ON
ALARM 5	ON
ALARM 6	ON
ALARM 7	ON
ALARM 8	ON

NEXT

Each local alarm input can be disabled individually. Set to OFF to disable the alarm input and set to ON to enable the alarm input

Display the ALARM MENU 2

NEXT

RX45X AC ALARMS MENU 2

DISPLAY ALARM	ON
DELAYED ALARM	OFF
ALARM 8	NORMAL
DIST GLOBAL	DIS OFF

BACK                      RETURN

Receiver OSD displays ALARM message when ON. When OFF, the alarm output operates immediately. When alarm 8 is set to GLOBAL, alarm inputs 1-7 are disabled when alarm input 8 is shorted to ground.

When delayed alarm is ON, the alarm output operates only as the head approaches the preset position to prevent a triggered video transmission/recording system from sending 'blurred' frames.

BACK to ALARM menu 1, or RETURN to MAIN menu

OPTIONS

RX45X AC OPTIONS MENU

LAUNCH AMP GAIN	000
MAIN LENS VOLTS	12.0V
INCH LENS VOLTS	06.0V
INCH TIME	1.0SEC
IRIS TYPE	MOTOR
DC IRIS LEVEL	NA
ZOOM FOCUS IRIS	N N N
DATUM DELAY	00M 00S
WASH TIME	1 SEC

NEXT                      RETURN

Coax cable compensation 0-255, 255 = maximum gain  
 Lens drive voltage 3-12V, set to suite lens  
 Set the drive voltage for first second of travel.  
 Set lens iris type or 3 motor lens  
 Sets iris voltage range for lens autoiris override  
 Allow each lens function to be reversed  
 Delay in mins/secs before return to preset 1, 0=never  
 Seconds that WASH output is active following WIPE

Display OPTIONS MENU 2

OPTIONS

RX45X AC OPT. MENU 2

RAND PAN DELAY            01  
 0 FOR AUTOPAN ONLY  
 DISPLAY OPTIONS  
 TEXT ON LINE                10  
 ON POWER UP                NO ACTION

NEXT                                  RETURN

Random pan delay, 1=fast, 10=slow, 0=AUTOPAN which requires an optional card within the pan/tilt head.  
 Goto DISPLAY OPTIONS submenu.  
 Position of status line on screen, 1=top, 10=bottom  
 Select goto PRESET 1/RANDOM PAN/PATROL 1/NO ACTION

BACK to OPTIONS menu 1, or RETURN to MAIN menu

LAUNCH AMP GAIN

- LAUNCH AMP SETTINGS-

000

Press UP/DOWN keys to adjust.  
 Press MENU/SET key to confirm.

When setting 0 in the RAND PAN DELAY this will activate the autopan relay on the bottom board for heads that support this function.

Enables and disables different OSD options.  
 Selects the default line that the OSD will be displayed.  
 When the receiver boots up it can do one of the following:  
 PATROL, PRESET 1 or RANDOM PAN

BACK to OPTIONS menu 1, or RETURN to MAIN menu

ZOOM FOCUS IRIS

--- LENS DRIVE ---

ZOOM NORMAL  
 FOCUSNORMAL  
 IRIS    NORMAL

SELF TEST IF CHANGED

RETURN

NORMAL/REVERSE  
 NORMAL/REVERSE  
 NORMAL/REVERSE

Initiate self test if any drives changed to ensure preset feedback is correct

RETURN to OPTIONS MENU

DISPLAY OPTIONS

DISPLAY OPTIONS

WIPE/LIGHTS/AP                YES  
 PAN/TILT/LENS                NO  
 ALARM STATUS                 NO  
 LENS IRIS TEXT                NO  
 X2 CONV TEXT                 NO  
 PRESET STATUS                NO

RETURN

YES/NO YES=display auxiliary status  
 YES/NO YES=show pan/tilt/zoom/focus/iris status  
 YES/NO YES=display local alarm input open circuit  
 YES/NO YES=display when iris is under manual control  
 YES/NO YES=display when the lens multiplier is engaged  
 YES/NO YES=display when the head & lens has achieved it preset

RETURN to OPTIONS 2 MENU

PRIVACY

RX45X AC PRIVACY MENU

MASK OPERATIONS  
SYSTEM CALIBRATION  
MASK TYPE SOLID  
HEAD TYPE END STOPS  
TILT CAL ANGLE VERT.

RETURN

Goto MASK OPERATIONS submenu.  
Goto SYSTEM CALIBRATION submenu.  
Selects between SOLID or TRANSLUCENT zones  
Selects between END STOPS or NO END STOPS  
Selects between VERT. or 45 DEG.

RETURN to MAIN MENU

SET A MASK

RX45X AC MASK SET MENU

ALIGN MASK & OBJECT  
SIZE VERTICALLY  
SIZE HORIZONTALLY  
NUDGE VERTICALLY  
NUDGE HORIZONTALLY

RETURN

Find the location you wish to mask  
Use zoom IN & OUT to increase height of the zone  
Use zoom IN & OUT to increase width of the zone  
Use zoom IN & OUT to to move the zone up or down  
Use zoom IN & OUT to to move the zone up or down

RETURN to PRIVACY MENU

MASK OPERATIONS

RX45X AC MASK OP MENU

SET A MASK  
DISABLE PAN MASK EXPANSION  
ENABLE PAN MASK EXPANSION  
DISABLE TILT MASK EXPANSION  
ENABLE TILT MASK EXPANSION  
DELETE A MASK  
DELETE ALL

RETURN

Goto SET A MASK submenu.  
Turns off the left or right auto expansion  
Turns on the left or right auto expansion  
Turns off the top and or bottom auto expansion  
Turns on the top and or bottom auto expansion  
Goto DELETE A MASK submenu.  
Goto DELETE ALL submenu.

RETURN to PRIVACY MENU

SET A MASK

RX45X AC MASK SET MENU

ALIGN MASK & OBJECT  
SIZE VERTICALLY  
SIZE HORIZONTALLY  
NUDGE VERTICALLY  
NUDGE HORIZONTALLY

RETURN

Find the location you wish to mask  
Use zoom IN & OUT to increase height of the zone  
Use zoom IN & OUT to increase width of the zone  
Use zoom IN & OUT to to move the zone up or down  
Use zoom IN & OUT to to move the zone up or down

RETURN to PRIVACY MENU

SYSTEM CALIBRATION

RX45X AC CAL. MENU

CALIBRATE PAN  
 CALIBRATE TILT  
 CALIBRATE ZOOM  
 ZOOM FACTOR  
 SET OPTICAL CENTRE  
 SET HEAD ROTATE OFFSET  
 TRACKING TRIM  
  
 RETURN

Starts the Pan axis calibration  
 Starts the TILT axis calibration  
 Starts the ZOOM calibration  
 Selects Zoom Factor X10 to X100

RETURN to PRIVACY MENU

SET OPTICAL CENTRES

-- OPTICAL --

ALIGN MASK TO CENTRE  
 SET HORIZONTAL OFFSET  
 SET VERTICAL OFFSET

Select a mask  
 Use zoom IN & OUT to adjust  
 Use zoom IN & OUT to adjust

RETURN

RETURN to PRIVACY MENU

DIAGNOSTICS

--- DIAGNOSTICS---

VERSION NO 001  
 PRESET FLAGS PTZF  
 DISPLAY POTS OFF  
 DIAG DISPLAY OFF  
  
 RESETS 00000000  
 WATCHDOGS 000  
 HOURS OF USE 000  
 PRESET CALLS 0000000  
 RETURN

Receiver software version  
 Goto PRESET FLAGS submenu  
 Display preset pot values. 0000=0V 1023=5V Z & F  
 Display pan tilt speeds 8192=5V P & T  
  
 Number of receiver power-ups.  
 Number of processor auto-resets (supply glitches)  
 Hours receiver powered  
 Number of preset calls  
 RETURN to MAIN MENU

PRESET FLAGS

PRESET FLAGS LOCKED  
 SET BY SELF TEST  
 PAN ACTIVE NO  
 TILT ACTIVE NO  
 ZOOM ACTIVE NO  
 FOCUS NO  
 PAN DIR NORMAL  
 TILT DIR NORMAL  
 ZOOM DIR NORMAL  
 FOCUS DIR NORMAL  
 RETURN

Toggle to UNLOCK to alter settings.  
 During a self test, the receiver senses the presence and direction of preset input voltages. Should the receiver incorrectly sense the presence or direction then this menu allows manual setting. Toggle between YES/NO to enable/disable presets for each movement axis. The direction can be toggled between NORMAL or REVERSED if the head/lens drives in the wrong direction during a preset call. Please use with caution to prevent mis-operation.  
 RETURN to MAIN MENU

DEFAULTS

RX45X AC DEFAULTS MENU  
 RESET RECEIVER  
 CLEAR ALL PRESETS  
 LOAD CODE FROM STARCARD  
  
 RETURN

These three items should be used with caution!  
 Set receiver to factory defaults. All preset/patrol settings etc will be cleared.  
 Erase ALL preset positions only.  
 Upgrade the receiver software from the Micro SD card  
  
 RETURN to MAIN MENU

RESET RECEIVER

RX45X AC DEFAULTS  
 ARE YOU SURE  
 RESET RECEIVER  
  
 CANCEL

This item should be used with caution!  
 Set receiver to factory defaults  
  
 A second menu will be displayed to display an ARE YOU SURE message!  
  
 RETURN to MAIN MENU

CLEAR ALL PRESETS

RX45X AC PRESETS  
 ARE YOU SURE  
 CLEAR PRESETS  
  
 CANCEL

This item should be used with caution!  
 Will erase ALL preset positions only.  
 A second menu will be displayed to display an ARE YOU SURE message!  
  
 RETURN to MAIN MENU

RX45X AC PRESETS  
 ARE YOU SURE  
 CLEAR PRESETS  
  
 CANCEL

This item should be used with caution!  
 Will erase ALL preset positions only.  
 A second menu will be displayed to display an ARE YOU SURE message!  
  
 RETURN to MAIN MENU

LOAD CODE FROM SD CARD  
 RX45X AC CODE LOAD  
 LOAD CODE FROM SD CARD  
 ARE YOU SURE  
 CANCEL

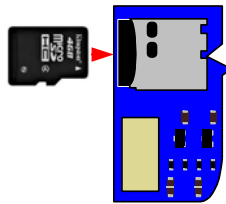
This item should be used with caution!

Will update the Firmware that runs the receiver.

RETURN to DEFAULTS MENU

LOAD CODE FROM SD CARD  
 Insert SD Card then press  
 SW2 (MENU).

Insert the SD Micro card at this time.



LOAD CODE FROM SD CARD  
 Move Link J10

Move the HEADER from the default position to the flash program position



THE DEFAULT LOCATION



THE FLASH PROGRAM LOCATION

LOAD CODE FROM SD CARD  
 Link OK  
 Press SW1 (UP)

When the link is fitted to the FLASH PROGRAM position the display will change.



THE FLASH PROGRAM LOCATION

LOAD CODE FROM SD CARD

Link OK  
 Press SW1 (UP)  
 Erasing blocks .....

.....

Erase OK!  
 Programming

The unit is now being reprogrammed.

The old software is erased.  
 New software is loaded for the MICRO SD card

LOAD CODE FROM SD CARD

Link OK  
 Press SW1 (UP)  
 Erasing blocks .....

.....

Erase OK!  
 Programming  
 Re-position Link J10

The unit is now reprogrammed.

When the HEADER is fitted to the DEFAULT position the receiver will restart



THE DEFAULT LOCATION

TEST MENU

--- TEST MENU---

SELF TEST  
 FACTORY MODE - PCB ONLY  
 COAX EXCLUSIONS  
 NET TRAFFIC OFF

RETURN

Starts receiver self test procedure  
 displays the ENGINEER MODE screen  
 Goto COAX EXCLUSIONS submenu.  
 BBV use to display RS422 telemetry commands when ON

RETURN to RECEIVER MENU

FACTORY MODE - PCB ONLY

FACTORY MODE  
 PAN LEFT PAN RIGHT  
 TILT UP TILT DOWN  
 ZOOM IN ZOOM OUT  
 FOCUS NEAR FOCUS FAR  
 IRIS OPEN IRIS CLOSE  
 WASH WIPE  
 LIGHTS AUTOPAN  
 RETURN

P8192 T8192  
 Z1023 F1023

Can only be accessed locally.  
 Allows each output to be tested individually  
 Select the required output and press SW2.  
 The output will drive until SW2 is released.  
 If ZOOM/FOCUS/IRIS are driving in reverse  
 use OPTIONS menu and toggle between REVERSE/  
 NORMAL

RETURN to TEST MENU

The preset values are shown by default

COAX EXCLUSIONS

--- COAX EXCLUSIONS ---

SELF TEST	SUPPRESSED
AUTOPAN	ACTIVE
PATROL	ACTIVE
#1	ALWAYS ON
#2	ACTIVE
#3	ACTIVE
#4	ACTIVE

RETURN

To prevent unwanted actions on noise site you can exclude different function

RETURN to TEST MENU

# USER GUIDE

Select the camera to control using the telemetry controller. Use pan/tilt commands and lens functions to control the camera. Multiple functions can be controlled simultaneously, e.g. Pan Left and Tilt Down.

The receiver OSD can be set to display auxiliary functions (see detailed menu) as below:-

W Wipe auxiliary output is active

L Lights auxiliary output is active

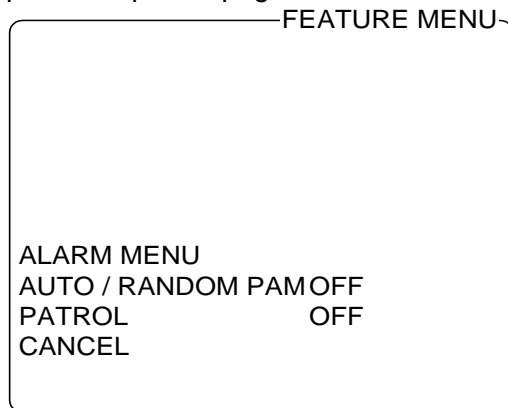
← OR → Random Pan is running

**PROGRAMMING PRESETS.** Refer to the specific controller manual.

*Ensure that none of the drives ARE AT A LIMIT STOP as intermittent preset operation could occur.*

*Note: preset functions require a preset head for pan/tilt positioning and a preset lens for zoom/focus positioning.*

This is the FEATURE MENU which is displayed after pressing the relevant keys shown in the protocol specific pages.

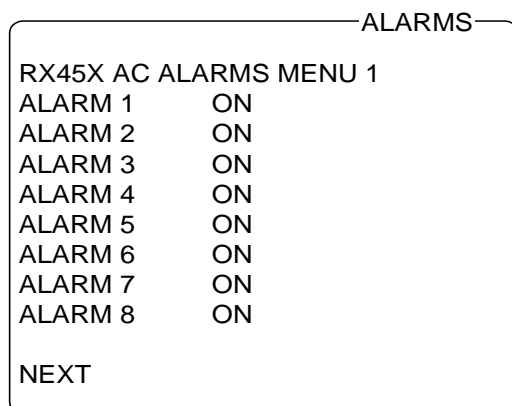


Use the UP/DOWN keys to choose a line, and LEFT or RIGHT to toggle ON/OFF or display ALARM MENU

Display ALARM menu to enable/disable alarm inputs  
Start RANDOM PAN or AUTO PAN  
Start preset patrol  
Quit menu

'RANDOM PAN' starts a random panning sequence until either a manual command or a local alarm occurs.

'PATROL' starts the preset patrol sequence until a pan/tilt command resumes manual control. The OSD displays P and the preset number if 'display patrol' has been set.



Each local alarm input can be disabled or enabled individually.  
Setting to OFF disables the alarm input and setting to ON enables the alarm input

Use the UP/DOWN keys to choose a line, and LEFT or RIGHT to toggle ON/OFF

Return to the FEATURE MENU

When an alarm input is activated, the receiver drives the head to the corresponding preset position, i.e. alarm 1 activates preset 1.







## Extend your BBV Warranty from 12 months to 3 years

As of the 1<sup>st</sup> September 2008 BBV have offered our customers the opportunity to extend the standard 12 month warranty to 3 years.



You must register for the extended warranty within 12 months of the date of manufacture.

### How to register for the 3 year warranty

Registering for the new, longer 3 year warranty term is quick and easy.

Either:

Complete the warranty application card that comes in the box with your BBV product, and return it FREEPOST to BBV:

BBV 3 Year Warranty	
If this card is returned with the serial number of the product and the Installation company details BBV will extend the warranty period from 12 Months to 36 Months.	
<input type="checkbox"/> Number of Units, _____	Start Serial No. _____ Final Serial No. _____
Contact Name _____	
Company Name _____	
Please could you send me information especially on:	
Phone Number _____	<input type="checkbox"/> Rx100s
Site Name _____	<input type="checkbox"/> Rx45x & Rx55x
Address 1 _____	<input type="checkbox"/> FBM Video Matrices
Address 2 _____	<input type="checkbox"/> Tx1500 Video Matrices
Address 3 _____	<input type="checkbox"/> Starcard & Starcard Converters
Post Code _____	<input type="checkbox"/> BBV Quad
e-mail address _____	<input type="checkbox"/> Pick A Point
Do you read:  	
<input type="checkbox"/> I do not require any other further product information, Please refer to WWW.BBVCTV.COM for terms, conditions & exclusions	
<small>VAT Reg No. 62178439 Registered in England No. 2862921 Registered office: 17 Apex Park Diplocks Way Hailsham East Sussex UK BN27 3JJ</small>	

Or alternatively:

Register online at: [www.bbvctv.com](http://www.bbvctv.com)

Simply enter your details on the 'Warranty Cover' page.



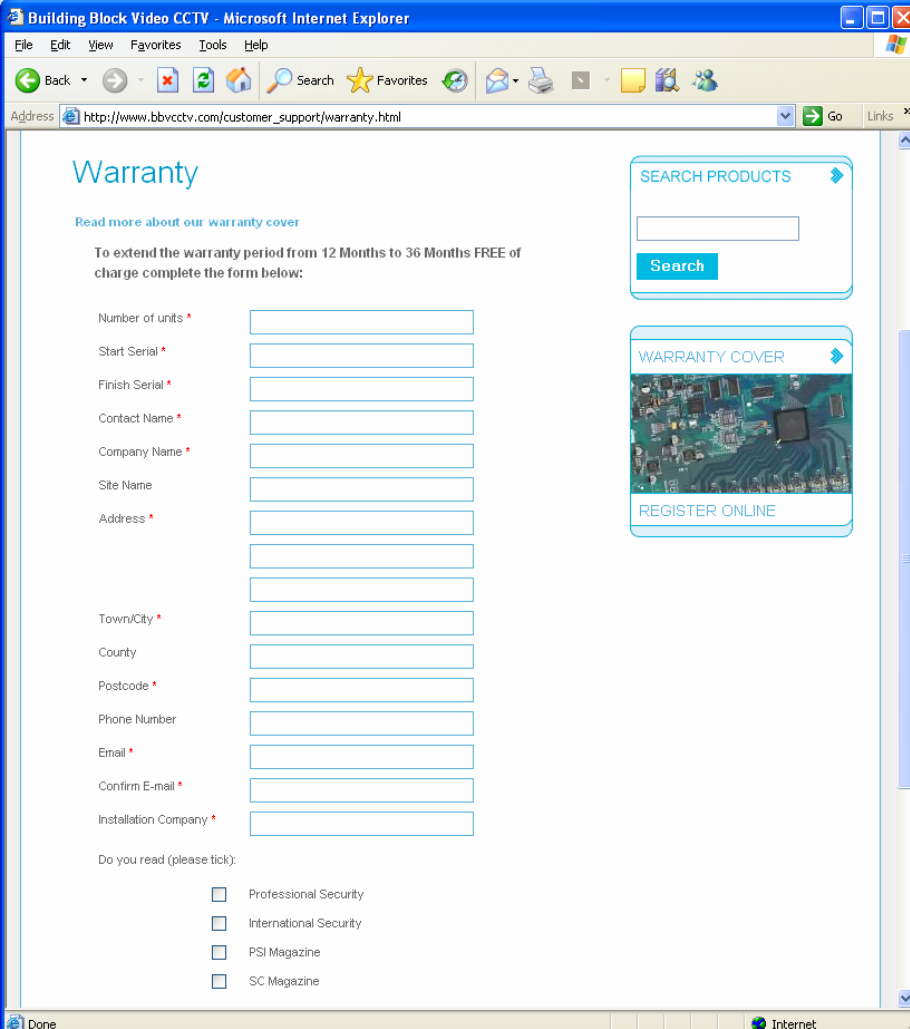
**Building Block Video Ltd**

Tel: + 44 (0) 1323 842727

Fax: + 44 (0) 1323 842728

Support: + 44 (0) 1323 444600

[www.bbvctv.com](http://www.bbvctv.com)



Building Block Video CCTV - Microsoft Internet Explorer

Address: [http://www.bbvctv.com/customer\\_support/warranty.html](http://www.bbvctv.com/customer_support/warranty.html)

## Warranty

Read more about our warranty cover

To extend the warranty period from 12 Months to 36 Months FREE of charge complete the form below:

Number of units \*

Start Serial \*

Finish Serial \*

Contact Name \*

Company Name \*

Site Name

Address \*

Town/City \*

County

Postcode \*

Phone Number

Email \*

Confirm E-mail \*

Installation Company \*

Do you read (please tick):

Professional Security

International Security

PSI Magazine

SC Magazine