BBV

Telemetry Interface Installation Guide

Model covered

Rx100

Dome interface

(97002 Iss. 4PCB)

(97002 Iss. 6PCB)

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1. PRE-INSTALLATION CHECKS AND SAFETY PROCEDURES

UNPACKING

Check Packaging - Upon taking delivery of the unit, inspect the packaging for signs of damage. If damage has occurred, advise the carriers and/or the suppliers immediately.

Check Contents - Upon taking delivery of the unit, unpack the unit carefully and check that all the items are present and correct. If any items are missing or damaged, contact your equipment dealer.

Retain Packaging - The shipping carton is the safest container in which to transport the unit. Retain undamaged packaging for possible future use.

IMPORTANT SAFETY PRECAUTIONS

Read Instructions - All relevant safety, installation and operating instructions should be read before attempting to install, connect or operate the unit.

Retain Instructions - All safety, installation and operating instructions should be retained for future reference.

Heed Warnings - All warnings on the unit and in any relevant safety, installation or operating instructions should be adhered to.

Cleaning - Unplug the unit from the power outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.

Water and Moisture - Do not expose the internal electronics of this unit to water or dampness; for example, in an unprotected outdoor installation, or in any area classified as a wet location. The unit as supplied conforms to ingress protection rating IP 67. This rating will be affected by any holes made in the enclosure. Cable entry points should be protected by the use of suitably rated glands and/or flexible conduit. It is not necessary to make further holes in the enclosure for mounting purposes, as mounting holes are provided at the corners of the enclosure outboard of the seal between enclosure and lid.

Accessories - Do not attach this unit to an unstable stand, bracket or mount. The unit may fall, causing serious injury to a person and serious damage to the unit.

Power Sources - This unit should be operated only from the type of power source indicated on the manufacturer's label. If you are not sure of the type of power supply you intend to use, consult your equipment dealer or local power company. For units intended to operate from battery power or other sources, refer to operating instructions.

Power Connector - This unit is equipped with coaxial power connector mounted at the edge of the PCB for low voltage power input. Do not attempt to alter this connector in any way.

Power Cord Protection - Power supply cords should be routed so that they are not likely to be trapped, pinched or otherwise damaged by items in close proximity to them, whether inside the unit or outside it. Particular attention should be paid to cords at plugs, connection units and the point of exit from the unit.

Overloading - Do not overload outlets and extension cords, as this can result in fire or electric shock.

Object and Liquid Entry - Never push objects of any kind into the unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill liquid of any kind on or inside the unit.

Servicing - Servicing of the unit should only be undertaken by qualified service personnel, as opening or removing covers may expose you to dangerous voltages or other hazards.

Damage Requiring Service - Servicing by qualified personnel should be carried out under the following conditions:

(a) When the power-supply cord or plug is damaged.
(b) If liquid has been spilled or objects have fallen into the unit
(c) If the internal electronics of the unit have been exposed to rain or water
(d) If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to normal operation.
(e) If the unit has been dropped or the enclosure is damaged.
(f) If the unit exhibits a distinct change in performance. This indicates a need for service.

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

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

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

Safety During Installation or Servicing - Particular care should be taken to isolate the dome in order to prevent operation while engineering work is being carried out on the Rx100.

Adhere to Safety Standards - All normal safety precautions as laid down by British Standards and the Health and Safety at Work Act should be observed.

WARNING

TO PREVENT DANGER OF FIRE OR SHOCK, DO NOT EXPOSE THE INTERNAL COMPONENTS OF THIS EQUIPMENT TO RAIN OR MOISTURE.

The “lightning flash with arrowhead” symbol inside an equilateral triangle is used to warn the user of this equipment that there are sufficiently high voltages within the enclosure to constitute a risk of electric shock.

The “exclamation point” symbol inside an equilateral triangle is used to alert the user of this equipment to important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

2. INTRODUCTION

GENERAL

The Rx100 telemetry interface is designed to allow control of a variety of integrated dome cameras using BBV's range of up-the-coax telemetry transmitters. See appendix A for a complete list of supported domes.

The Rx100 interface is supplied in an IP 67 rated 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 for any other purpose should be sealed with a non-hardening waterproof sealant, taking care to ensure that the internal electronics are not contaminated.

Rx100 TECHNICAL SPECIFICATION

Power Requirements: RX100 9-12V ac/dc – plug mounted PSU provided
RX100/24 – 24Vac or 230Vac

Current Consumption: RX100 - 100mA @ 12Vdc maximum
RX100/24 – 630mA @ 230Vac maximum

Features:
- Serial data output 2 wire RS485/RS422.
- 4 alarm inputs.
- 1 N/C alarm output.
- Up to 16 pre-set positions can be stored within the Rx100.
- Relay capable of switching 1Kw of lighting.

Engineering Facilities:
- Unit auto-tunes to the coaxial telemetry signal.
- LED readout for continual system status.
- Video launch amplifier provided with Gain and Lift controls.
- Colour-coded cage clamp terminals. Mains terminal connections: Live, Neutral and Earth and Low Voltage.

Telemetry Signals: Telemetry signals either:
- up-the-coax (max distances, 250M of RG59 or 500M of CT125/RG11).
- or twisted pair 0-20mA current loop.

Video Input: 1v p-p 75Ω terminated input via BNC socket.
Video Output: 1v p-p to 4v p-p 75Ω impedance via BNC socket.

Up to 16 full-scene preset positions can be stored within the interface depending upon the model of dome.

Dimensions (external):	**RX100/WBX**	**RX100/24/WBX**
	Width: 190 mm	Width: 190mm
	Length: 280 mm	Length: 380mm
	Height: 130 mm	Height: 130mm
Weight:	1.0Kg	3.6Kg

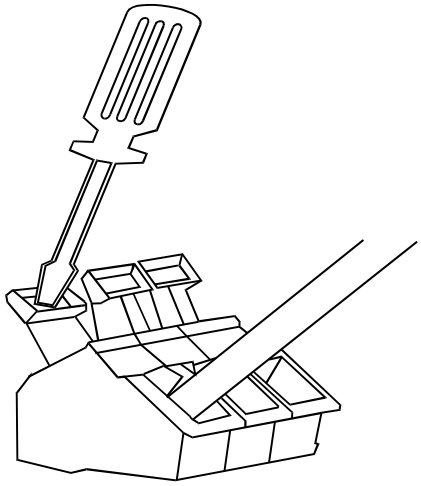
Temperature range: -10° Celsius to +40° Celsius

TRANSMITTER COMPATABILITY CHART

	Tx300	Tx400	Tx400DC	Tx1000	Tx1000DC	Tx1500
Variable Speed	2 Speeds	2 Speeds	Proportional Joystick	2 Speeds	Proportional Joystick	Proportional Joystick
Fixed Speed	✓	✓	✓	✓	✓	✓
Zoom	✓	✓	✓	✓	✓	✓
Focus	✓	✓	✓	✓	✓	✓
Iris	✓	✓	✓	✓	✓	✓
Pre-sets	-	8	8	16	16	16
Patrols	-	2	2	2	2	2
Lights	✓	✓	✓	✓	✓	✓
Autopan	-	✓	✓	✓	✓	✓
Camera Functions	-	✓	✓	✓	✓	✓

CABLE CONNECTION METHOD

Fig. 1: Wago connectors



The WAGO PCB terminal block is a simple-to-use method of attaching cables to PCBs quickly and easily. Prepare cables as follows:

- Use only cable between 0.08 and 2.5 mm^2
- Strip the cable 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.

The procedure for detaching wires is the reverse of the 3 attachment steps, ensuring that **power is disconnected** before starting.

CABLING RECOMMENDATIONS FOR THE Rx100 INTERFACE.

Although BBV do not specify any particular type, manufacturer or supplier of cables, the following ESD Electronic Services (01279 626777) cables have been used successfully for production and testing:

ESD Part Number:	**Description:**
0222586G (100 m)	**Coax Cable (Minimum Specification)** RG59B/U ESD radio frequency coax cable to BS2316 and MIL-C-17 1/0.58mm copper-covered steel wire conductor with solid polythene dielectric, bare copper wire braid and PVC sheath Characteristic impedance: 75 Ohm Capacitance: 22pF/ft
020966D (100 m)	**Orange-Coloured Lighting Output Power Cable (1000 w)** 3183Y PVC-insulated, 3-core cable 1.25mm^2 40/0.2mm annealed copper conductor Current rating: 13 amp
0140467H (100 m)	**20mA Twisted Pair Cable (Minimum Specification)** British Telecom spec CW 1308 2-core 1/0.5mm PVC-insulated Maximum conductor resistance at 20 degrees Celsius: 97.8 ohms/km

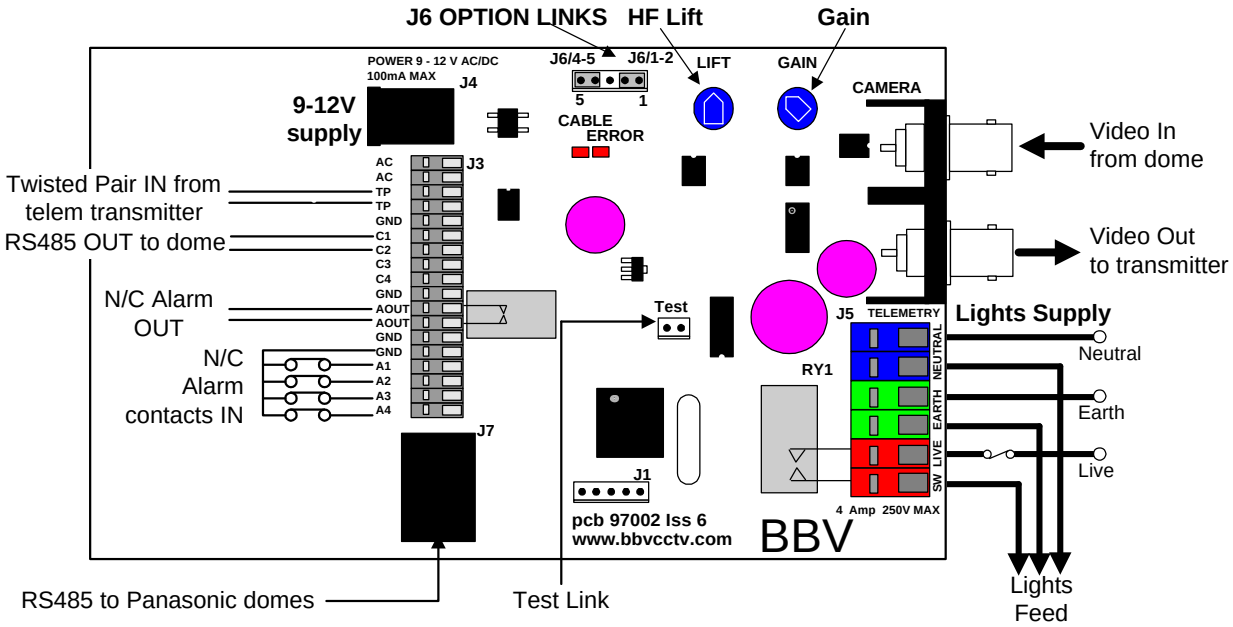
3. INSTALLATION

OPERATING VOLTAGE

The Rx100 requires all connections to the PCB to be made by the installer, and via terminal blocks or by plug and socket. These connections are: power in, video in, video out, and serial data to dome. In addition connections for alarm in, alarm out and lights if required are provided. See fig.2 below for correct connections.

The Rx100 is supplied pre-configured to suit the application for which it is intended, i.e. to control an integrated dome camera.

Fig. 2 Rx100 Iss6 PCB connections



Function	Connector	Type	
Power In	J4	2.1mm coaxial	
or	J3/AC-AC	Grey WAGO	
Video In	CAMERA	BNC SOCKET	
Video Out	TELEMETRY	BNC SOCKET	
Twisted Pair Telemetry	J3/TP-TP	Grey WAGO	
Serial to dome	J3/C1-C4-GND	Grey WAGO	
or	J7	FCC68 (Fitted for Panasonic versions)	
Alarm 1 contact in	J3/A1-GND	Grey WAGO	(optional if alarm input required)
Alarm 2 contact in	J3/A2-GND	Grey WAGO	(optional if alarm input required)
Alarm 3 contact in	J3/A3-GND	Grey WAGO	(optional if alarm input required)
Alarm 4 contact in	J3/A4-GND	Grey WAGO	(optional if alarm input required)
Alarm contact out	J3/AOUT-AOUT	Grey WAGO	(optional if alarm input required)
Lighting relay	J5	Coloured WAGO (optional if lights control required)	

(clean contact between orange connectors)

4. SETUP

DIAGNOSTIC AIDS

Two red LEDs and one Green LED are mounted on-board to give simple system status information. Their functions are as follows:

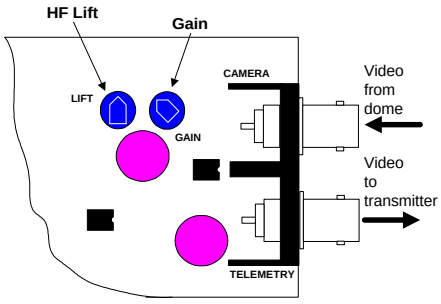
Cable LED		
Regular Blinking	-	Telemetry and video signals are OK.
Blinking but mainly ON	-	No Telemetry from the transmitter.
Blinking but mainly OFF	-	No video from the camera.
Error LED		
On	-	Telemetry transmission error.
Both LEDs		
Off	-	No power or major PCB fault.
Data LED (Iss PCB 4 onwards only)	-	Will flash on and off very fast when data is being sent to the dome.
Test Link	-	Is used to confirm correct operation of the Rx100 and dome and also that the RS485 connection is correct. Shorting the link after the Rx100 is powered up will cause the dome to pan left and zoom in. Removing the link will stop the pan left and will zoom out the lens. This is dependant on dome type.

All BBV equipment is designed to auto-tune and compensate for any discrepancies in the transmitted telemetry signal; there are no further adjustments that need to be made.

VIDEO LAUNCH AMPLIFIER AND CABLE LENGTH COMPENSATION

The interface features a video launch amplifier with two variable controls situated close to the BNC connectors: Lift and Gain. These are pre-adjusted for a cable distance of 500m of CT125, and are adjustable to compensate for video detail or signal losses if and when longer or shorter cable lengths are used to connect the telemetry transmitter to the interface.

Fig. 3 Launch Amplifier



The purpose of each control is:

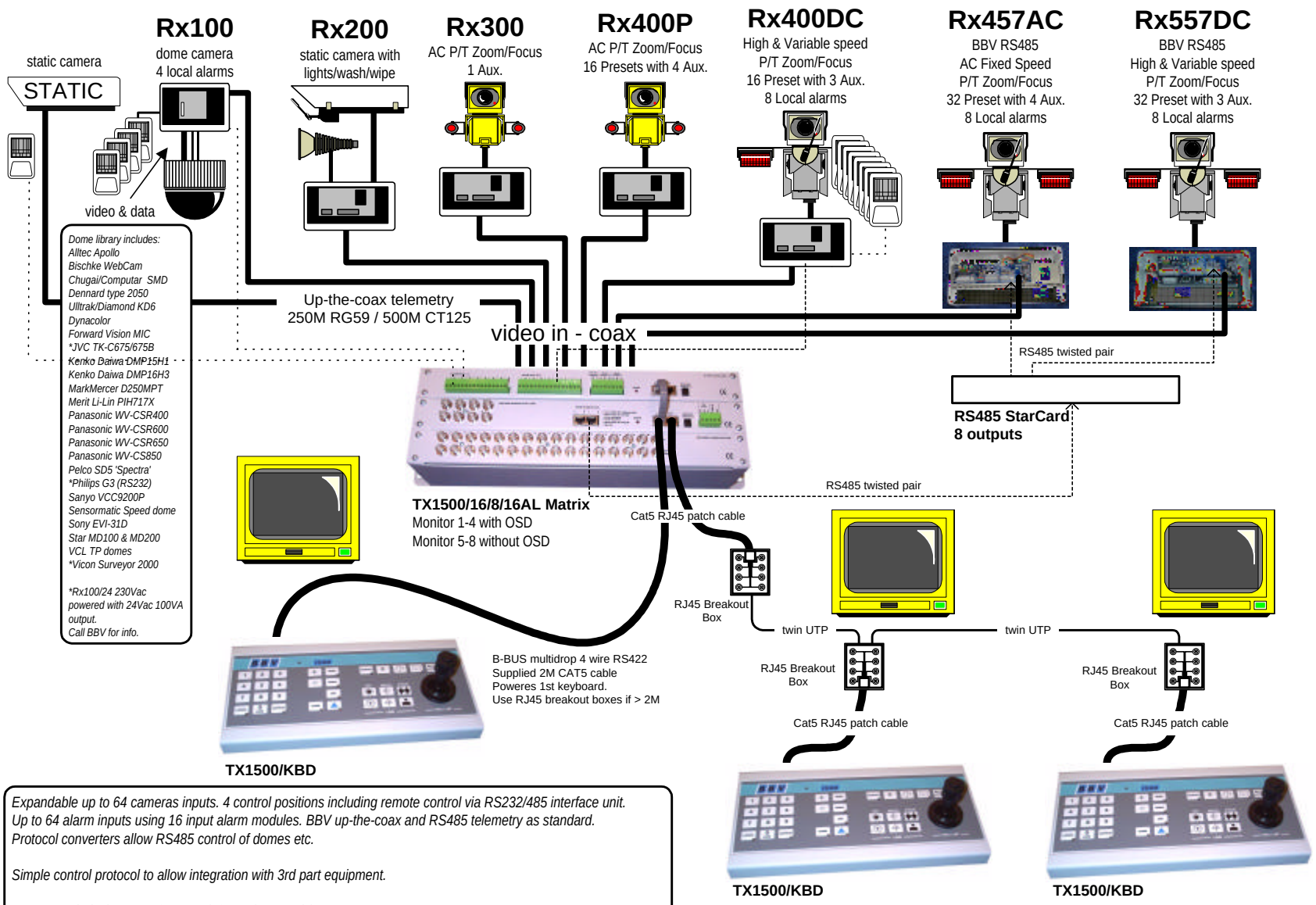
GAIN varies the overall signal level.

LIFT boosts the high frequency component of the video signal. If the high frequency component is too low, picture appears 'washed out' and lacking detail.

Default position adjusted for 500M of CT125.
For shorter cable lengths, turn the Gain control anti-clockwise until 1V p-p is present at the telemetry transmitter. For longer cable lengths, turn the Gain control clockwise until 1V p-p is present at the telemetry transmitter.

4. SYSTEM SCHEMATIC DIAGRAMS

***Fig**.4 SYSTEM SCHEMATIC SHOWING INTEGRATION OF DOME INTO Tx1500 SYSTEM*



Expandable up to 64 cameras inputs. 4 control positions including remote control via RS232/485 interface unit.
Up to 64 alarm inputs using 16 input alarm modules. BBV up-the-coax and RS485 telemetry as standard.
Protocol converters allow RS485 control of domes etc.

Simple control protocol to allow integration with 3rd part equipment.

Contact technical support for more information: +44(0)1323 444600

Fig.5
SYSTEM SCHEMATIC SHOWING INTEGRATION OF DOME INTO Tx1000 SYSTEM.

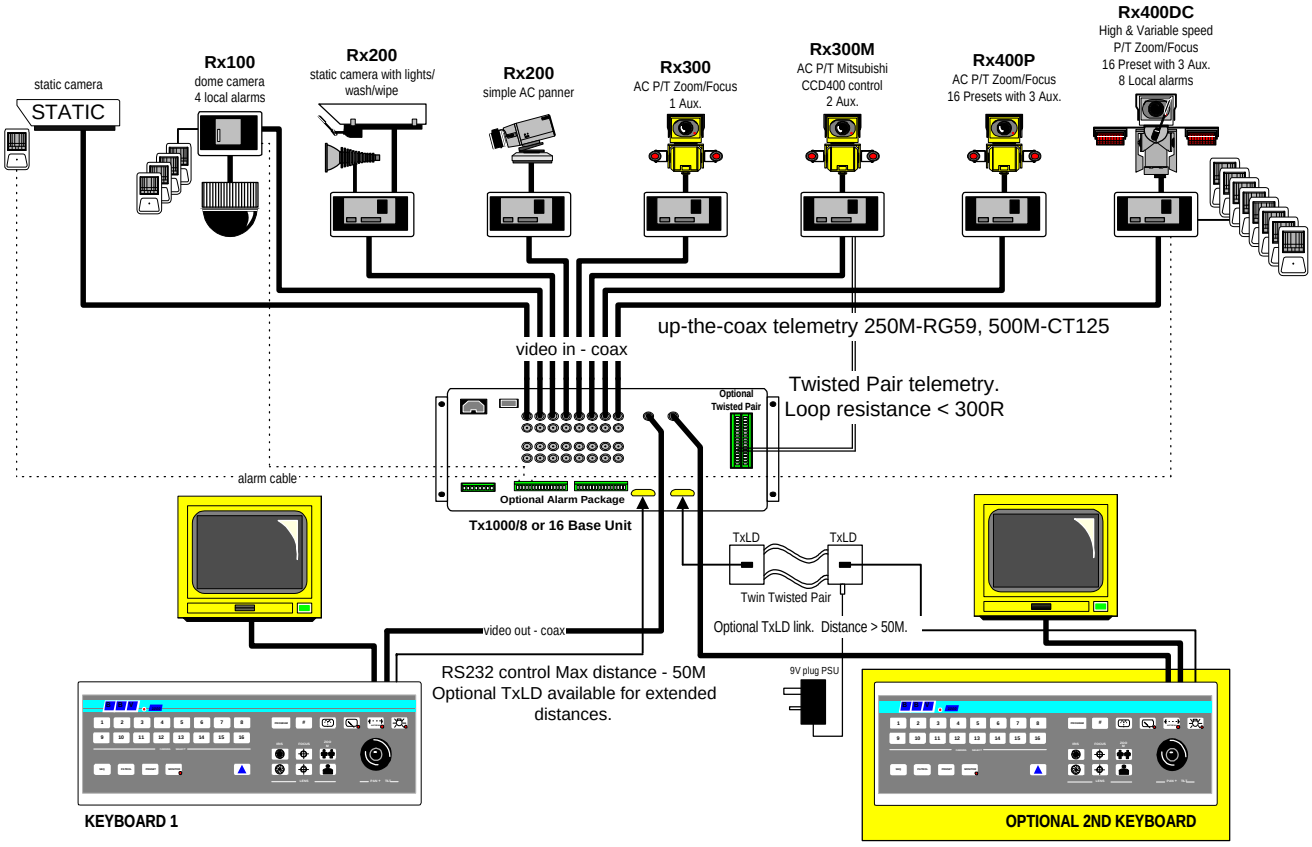
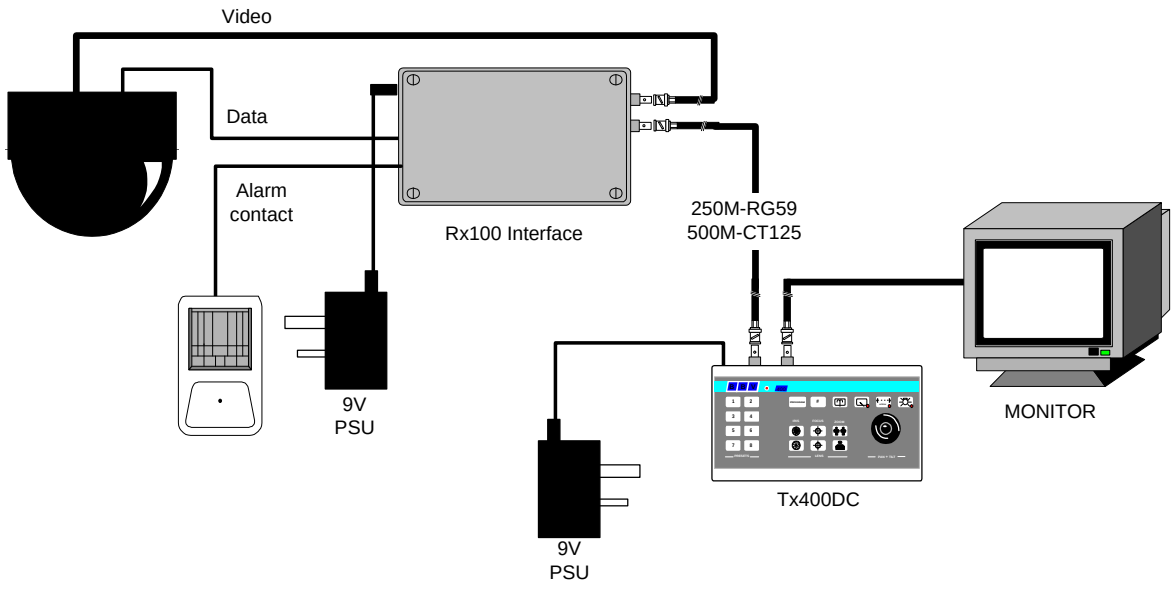


Fig. 6 SIMPLE SINGLE CAMERA SYSTEM

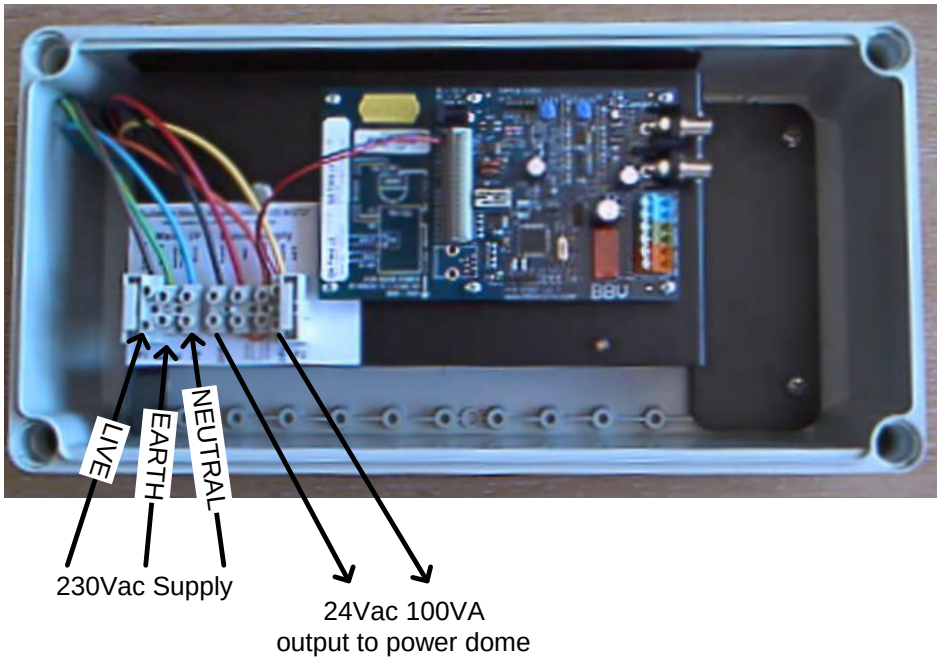


Appendix A - Dome addendums & connection details

BBV Rx100/24 Supply Additional information *(iss. 4 pcb)*

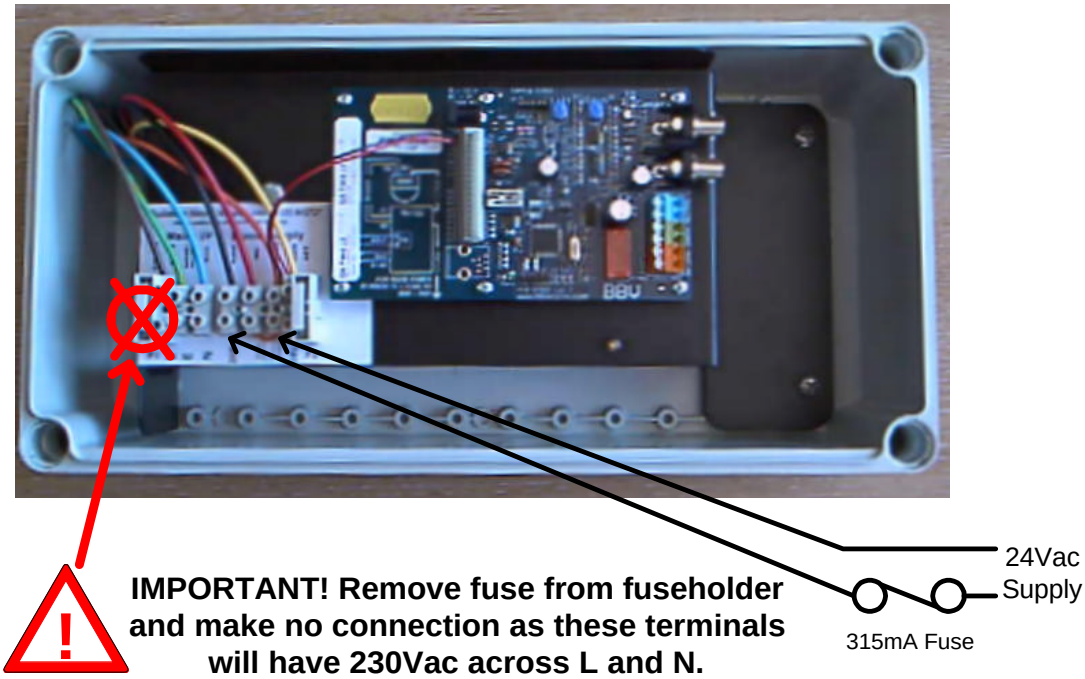
The RX100/24 can be powered from either 230Vac or 24Vac. The diagrams below shows the connections that should be made for each supply voltage. Please note that when powered from 24Vac the 230Vac terminals will be at mains voltages. To prevent the risk of shocks the fuse must be removed from the fuse holder and no connections made to L and N. The 24Vac supply must be fused with a 315mA to protect the supply wiring.

Fig 7. RX100/24 iss. 4 pcb Connection details when operating from a 230Vac supply.



Important! When operating the unit from 24Vac, the fuse from the 230Vac connector fuse holder must be removed. No connections must be made to this connector, as it will have 230Vac across the L & N terminals.

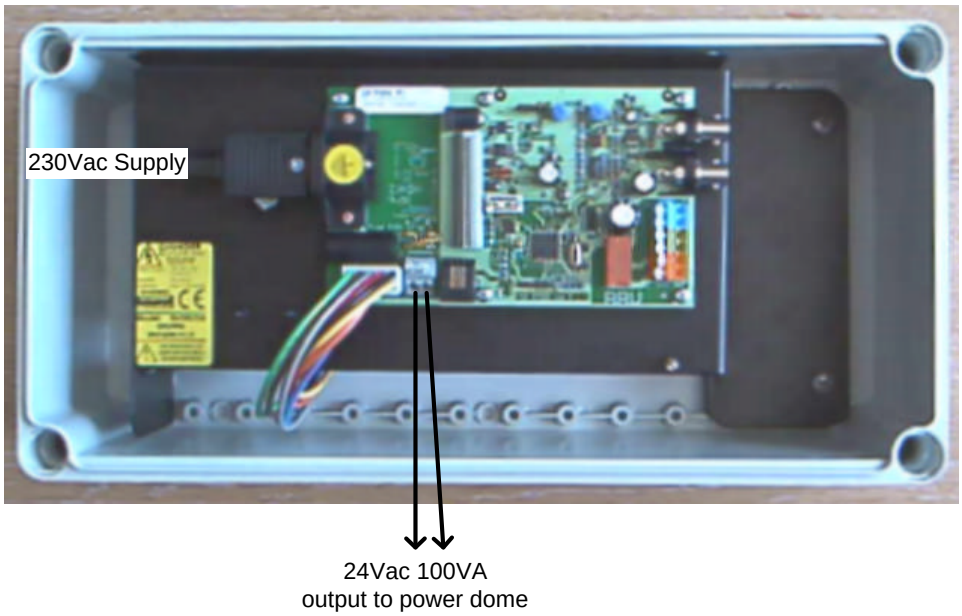
Fig 8. RX100/24 iss. 4 pcb Connection details when operating from a 24Vac supply.



BBV Rx100/24 Supply Additional information *(iss. 6 pcb)*

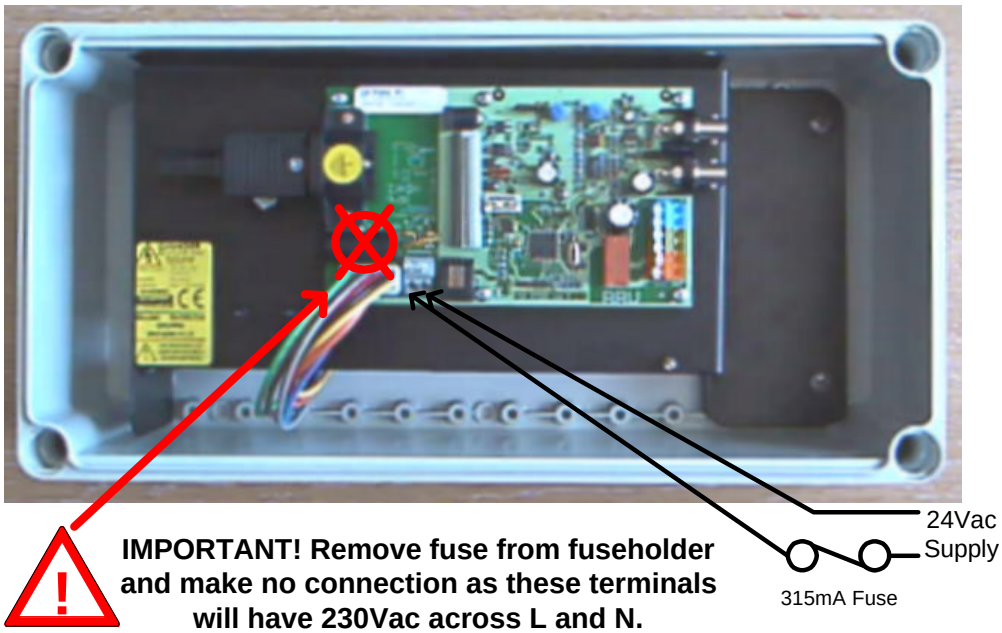
The RX100/24 can be powered from either 230Vac or 24Vac. The diagrams below shows the connections that should be made for each supply voltage. Please note that when powered from 24Vac the 230Vac terminals will be at mains voltages. To prevent the risk of shocks the fuse must be removed from the fuse holder and no connections made to L and N. The 24Vac supply must be fused with a 315mA to protect the supply wiring.

Fig 9. RX100/24 iss. 6 pcb Connection details when operating from a 230Vac supply.



Important! When operating the unit from 24Vac, the fuse from the 230Vac connector fuse holder must be removed. No connections must be made to this connector, as it will have 230Vac across the L & N terminals.

Fig 10. RX100/24 iss. 6 pcb Connection details when operating from a 24Vac supply.



BBV Rx100 *Interface Receiver*

Addendum to manual for the following domes:

360 Vision VisionDome

Rx100 software RX1_31V1
(for use with PCB 97002 issue 4 only)

Application Notes

The RX 100 provide the following functionality when controlling the above mentioned domes

Variable speed Pan/Tilt.
Zoom/Focus, Focus/Iris Override returning to auto after Zoom In/Out.
16 Full scene presets.
2 preset patrols.
Slow preset tour. Started by pressing AUTOPAN (As patrol 1 but slow speed movement and 10 second dwell)
5 minute datum/park driving to preset 1 or slow preset tour. Disabled by removing link J6/1-2
Program up to 16 privacy zones

Additional commands:
AUTOPAN: Pressing the AUTOPAN key will run the domes preset tour at slow speed between the patrol 1 preset positions.

Advanced Features	Tx400	Tx1000	Tx1500	DM DS/DS2/BX2 Mux
180 degree pan flip	'#' 1	'#' WASH	1 '#'	*889 002 or *889 10 10 2
Privacy SET (enable)	'#' 2	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
Privacy CLEAR (disable)	'#' 3	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4
Reset dome parameters	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

The dome and Rx100 are linked using RS485 for control and video for the camera signal.

Rx100	Description	Dome connection
J3-C1	TX-/B	D-
J3-C2	TX+/A	D+

Notes:
The dome address must be set at 1 for all the cameras that are controlled using a Rx100. Check with the dome manual if you have any doubts.

The alarm output relay opens for approx 5 seconds upon power up and following any active alarm input.

If the slow preset tour is running, start patrol 1 & 2 is inhibited. The dome will be driven to a preset following an alarm activation. 60 seconds after alarm, the tour will restart. A manual goto preset and lens control will stop the tour leaving the AUTOPAN led on until the next manual pan command.

A datum/park mode is offered that drives the dome to preset 8 following 5 minutes of inactivity. This can be disabled by removing the link fitted across J6/pin 4 & 5.

Privacy zone programming.
The keystrokes shown assume use of a TX1500. Use the keystroke shown above if using another controller.

Programming a zone
The Rx100 can be used to program 16 privacy zones. The same procedure that is used to program a preset position is used to program or clear a privacy zone. To instruct the Rx100 to program a privacy zone press 2# followed by program preset 1 – 16. The screen will then go blank showing that the privacy zone has been set.

Clearing a zone
To clear/delete a privacy zone press 3# followed by program preset 1 – 16. The relevant privacy zone will then be disabled and the dome will move to show the zone that has been disabled so that the zone can easily be re-enabled if disabled in error.

J6 Links
J6/1-2 fitted to enable the 5 minute datum mode. After 5 minutes of inactivity the dome will be driven to either preset 1 or a slow preset tour is started depending upon link J6/4-5. J6/4-5 fitted = goto preset 1, removed = start slow preset tour.

Intended for up-the-coax control.
When using 20mA TP telemetry control maybe slightly sluggish.

Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Bischke SN-15AH/PPHS
Variable High Speed P/T Head.

Rx100 software RX1_B1V1

Application Notes

The RX 100 provide the following functionality when controlling the above mentioned head

Variable speed Pan/Tilt.
Zoom/Focus
16 Full scene presets.
2 preset patrols (can be disabled by removing link J6/1-2)
4 alarm inputs driving to preset 1 - 4.

Additional commands:

Advanced Features	Tx1000	Tx400DC	DM Mux
Reset dome parameters (Disable return to Home)	'#' LIGHTS	'#' 4	*889 005

RS232 connections as follows:

Rx100	Description	Head PSU connection
J3-C3	TXD	A(RXD)
J3-GND	Ground	GND

Notes:
Keep the RS232 between receiver and head power supply as short as is practical to avoid undue interference.
The head must be set to RS232 using DIP1-SW11 ON. DIP2-SW1 ON, SW2 OFF, SW3 ON, SW4 OFF
The alarm output relay opens for approx 5 seconds upon power up and following any active alarm input.

The head does not support independent pan / tilt speeds therefore during operation, if the head is for example panning fast and the control joystick is tilted up slowly then the pan speed will also slow down.

Links
Preset patrol is enabled by first linking J6/1-2. If patrol is not required then removing this link disables the facility.
If the head is mounted inverted, 'i.e. hanging from a ceiling mount', Fit link J6/4-5 to swap right/left directions. Remove this link when the head is mounted normally.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Daiwa DMP16-H3
Borsatec BT270FF / BT271FF

Rx1_D3V6 S/W for issue 4 pcb only

Up-the-coax telemetry only ***NOT*** *20mA*

Application Notes

The RX 100 provide the following functionality when controlling the above mentioned dome:

Variable speed Pan/Tilt,
Zoom/Focus, Autofocus following a Zoom In/Out
16 Full scene presets.
2 preset patrols.
4 alarm inputs moving to preset 1 - 4

Additional commands:

DOME REMOTE RESET can be started by pressing the following keystroke.
Tx400/400DC – '#'4 Tx1000 - '#'LIGHTS Tx1500 – 4'#' DM *889 005 or *889 10 10 5

A 5 minute inactivity datum is available.
Link J6/1-2 fitted enables the datum operation.
Link J6/4-5 selects the operation to perform if datum is enabled.
J6/4-5 fitted - Rx100 will drive dome to preset position 1
J6/4-5 removed - Rx100 will start preset patrol 1

RS485 control of dome using the following connections:

Rx100	Description	Dome
J3-C1 TX/RX-	Data-	RS485-
J3-C2 TX/RX+	Data+	RS485+

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

The dome will stop pan movement following 1 complete rotation at a constant speed. Presumably this is some form of safety feature to prevent the dome spinning permanently should data be lost.

Set the dome address to 01 using the two rotary switched under the 'sleeve'. The top switch, nearest the ceiling must be on '1' and the lower switch on '0'. The 6-position DIP switch was set as follows:
1,3,6 ON
2,4,5 OFF

Shorting the TEST link after power up will pan the dome LEFT and ZOOM IN. Releasing the short will stop pan and zoom out. This is allows confirmation of correct wiring and switch settings at the dome.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Dennard type 2050 dome.

RX1_D2V9

For use with Rx100 PCB 97002 issue 4 only.

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus
16 full scene presets (additional presets can be programmed using dome's menu)
2 preset patrols
4 alarm inputs driving to preset 1 - 4 or dome sequence 001 - 004, link selectable

Advanced Features	Tx400DC	Tx1000	Tx1500	DM Mux
Dome User Menu	1 '#'	'#' WASH	1 '#'	*889 002 or *889 10 10 2
Dome Supervisor Menu	2 '#'	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
Dome Service Menu	3 '#'	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4

The domes internal Sequence 001 can be started by pressing AUTOPAN. The sequence must be programmed from the dome supervisor menu.

RS485 control of dome using the following connections:

Rx100	Description	Dome	7 pin socket
J3-C1	TX-	Bs (White)	Pin 3
J3-C2	TX+	As (Orange)	Pin 4

Notes:
The alarm output relay opens for approx 5 seconds upon power up and following local alarm activation.

Accessing the dome menus.
Press relevant key combination to display menu. To select highlighted menu item, perform a goto preset 1 function as follows:- Tx1000 Hold the PRESET key and tap the CAM1 key, Tx400 press the PRESET1 key.

The cursor can be moved using the standard pan/tilt keys or joystick. If the cursor direction is reversed, the pan and tilt cursor directions can be reversed from the SUPERVISOR, USER OPTIONS, CURSOR CONTROL REVERSE menu.

Presets positions greater than 17 can be programmed using the dome's menu and can be built into dome sequences. Please refer to dome manual for specific instructions regarding programming of sequences.

Local alarm can trigger either a dome preset sequence or goto a preset position depending upon the link J6/4-5. Complex alarm handling can be offered using a combination when used with the dome sequences. Eg when the link is fitted, an alarm can force the dome to a specific preset for a period. The dome can then move to another preset position at a programmed speed. Useful if an alarm area is say a fence line or building line with several doors/windows. Please view our web site for more information. **www.bbvcctv.com**

Links	Function
J6/1-2	Enable datum mode if fitted (goto preset 1 after 2 minutes if inactivity)
J6/4-5	Select between presets or sequence following local alarm. Fitted = sequence 1-4, Removed=preset 1-4

A TEST link is used to confirm correct operation of the Rx100 and dome and also that the RS485 connection is correct. Shorting the link after the Rx100 is powered up will cause the dome to zoom in. Removing the link cause the dome to zoom out. The green data led should also flash to indicate RS485 sent to the dome.

If the TEST link is shorted when power is applied to the Rx100 will cause a receiver self test function to start. This is an advanced function that BBV support engineers may request during fault diagnosis. To stop the self test, remove the link and power the Rx100 off and on again.

To prevent difficulty when navigating through the dome menu local alarm input 1 is disabled for 4 minutes after the menu is displayed. To enable the alarm when out of the menu please press zoom in or zoom out. The alarm will then be re-enabled.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following dome:

Dynacolor 7720

*COAXIAL TELEMETRY ONLY **NOT** 20mA*

(Software version RX1_D4V4 issue 4 97002 pcb)

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus
16 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 – 4

Additional Features		Tx400	Tx1000	Tx1500	DM Sprite	DM/DS/DSL/DS2
Dome Menu and ENTER	(twice)	'#' 1	'#' WASH	1 '#'	*889 002	*889 10 10 2
Exit Dome Menu		'#' 2	'#' WIPE	2 '#'	*889 003	*889 10 10 3
Dome Reset	(3 times)	'#' 4	'#' LIGHTS	4 '#'	*889 005	*889 10 10 5

Menu access – example using the Tx1500 system
Press 1# 1# will display the dome's menu and put the Rx100 in menu mode. In this mode the joystick allows navigation and either IRIS OPEN or IRIS CLOSE or 1# is used when ENTER is required. After exiting the menu, press 2# to set the Rx100 back into normal mode and the joystick will then revert to pan/tilt control.

Dome Reset
This command will cause the dome to carry out a system reset, including erasing any preset positions and programming. This command must be used with extreme caution. To activation the dome reset, the command must entered 3 times, eg for the Tx1500, press 4# 4# 4#.

Cruise
Recording: The dome has a built in cruise facility allowing the operator to record and playback a period of manual dome movement. The exact procedure varies depending upon the control equipment and version of dome firmware. The example shown assumes that the dome is controlled using a Tx1500.
To record the cruise, you must enter the dome menu using 1# 1# and navigate to the RECORD START entry within the CRUISE menu. After pressing the ENTER command using 1# you must exit the dome menu using 2# to allow the joystick to be used to move the dome around the intended area. To complete the cruise, press the Dome Menu command twice using 1# 2# to allow the joystick to be used to navigate to the RECORD END line. Pressing the ENTER command using 1# saves the cruise. Navigate out of the menu and exit the dome menu using 2#.
Playback: The cruise can be started by pressing the AUTOPAN key on the controller.

Return to home: Link J6/pin 4-5 if fitted will cause the dome to return to preset 8 after 5 minutes of inactivity.

Speed select: Two versions of dome protocol are published. The early version has uses speeds 0 – 8 and the later version has speeds 0 – 15. Link J6/1-2 when fitted selects the later version and removed the earlier version. If the dome speed controls are very 'sluggish' then try operation with the link in the other position.

RS485 control of dome. Data rate, 9600 Baud, No parity, 8 Data bits, 1 Stop bits

Connection details:

Dome	Description	Rx100
D-	RS485 Data -	J3/C1
D+	RS485 Data+	J3/C2

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.
*Check with the DM multiplexer manual for exact procedure for entering * commands.*

Dome switch settings:
Early dome - Set dome address to 1: 8 way switch 1 ON, 2-7 OFF. 4 way switch 1-3 ON, 4 OFF.
Later dome – Dome ID switch: 1 ON, 2-8 OFF. Duplex/Simplex switch:1-2 OFF. Dynacolor protocol S2:1-4 OFF, S1:1-3 ON

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Forward Vision protocol including MIC 300 series dome and compatible equipment.

(97002 Issue 4 PCB)

RX1_F1V3

Application Notes

Variable 16 speed Pan/Tilt.
Zoom/Focus
16 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 - 4

Advanced Features	Tx400	Tx1000	Tx1500	DM Mux DSL/DS2/BX2
AUTO FOCUS ON/OFF	'#' 1	'#' WASH	1 '#'	*889 002 or *889 10 10 2
DIGITAL ZOOM ON/OFF	'#' 2	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
MANUAL/AUTO EXPOSURE	'#' 3	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4
IR FILTER IN/OUT	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

RS485 control of dome using the following connections:

Rx100	Description	Dome
J3-C1	RS485 IN(A)	Yellow
J3-C2	RS485 IN(B)	White

Notes:
The alarm output relay opens for approx 5 seconds upon power up and following local alarm activation.

A local alarm opening contact will cause the dome to move to the respective preset position. After 60 seconds the dome will revert to preset patrol if the patrol was active before the alarm occurred.

Links	Function
J6/4-5	Enable datum mode: Goto preset 1 or start Patrol 1 2 minutes after last activity. Fitted = enabled.
J6/1-2	Select datum function: Fitted = goto preset 1, Removed = start Patrol 1

TEST link when shorted will drive the dome LEFT and ZOOM IN. Removing the short will stop pan and ZOOM OUT. This is used to gain confidence that the wiring between Rx100 and dome is correct. The GREEN DATA led will flash when a command is sent to the dome.

For correct operation, ensure that the dome/head address is set to 01.
Please contact Forward Vision for exact procedure on +44(0)870 011 3131.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following dome:

JVC TK-C676 675B combination camera

Rx100 software RX1_J2V2

Application Notes

The RX 100 provides the following functionality when controlling the above mentioned domes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus can be enabled/disabled from the dome menu.
16 Full scene presets.
2 preset patrols.
Slow patrol or dome autopan from controller AUTOPAN key
4 alarm inputs driving to preset 1 - 4.

Additional commands:

TK-C676	Tx400DC Tx1000		Tx1500	DM System Sprite, DS, DS2, BX2
OPEN MENU and BACK (Twice)	'#'1'	#' WASH	1 '#'	*889 002 or *889 10 10 2
SET	'#' 2	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
Togggle ExDR	'#' 3	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4
Cycle Mono Mode	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

RS485 control of dome using the following connections:

Rx100	Description	Dome connection
J3-C1	TX-	CONTROL RX- (D)
J3-C2	TX+	CONTROL RX+ (C)

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

Camera switch settings:
MACHINE ID – set both rotary switches to '0'
8 way DIL switch, all OFF apart from 8 which should be ON to enable the RS485 termination, point-to-point, simplex.

On screen display of preset position, HOME - P16 or MANUAL during manual control. The on screen display can be enabled/disabled using dome switch SW3, ON = Display off, OFF = Display on.

J6 links.
J6/1-2: Link fitted across J6/1 and J6/2 (default) to allow the ExDR and MONO mode status to be displayed. Remove this link if you are programming a dome camera title and do not want to display the ExDR and MONO status.

J6/4-5: Fitted (default) dome will perform a slow patrol between programmed presets when AUTOPAN pressed. Removed will send autopan start to the dome.

DOME MENU
Pressing #1 twice will display the dome's menu. The joystick is then used to navigate through the dome menu. #2 sends a SET command to the dome and #1 twice whilst the menu is displayed sends a BACK command.
If the #1 command doesn't work press a focus key before sending #1.

Pressing #1 FOUR times within 2 seconds will display the dome's service menu.

PRESET POSITIONS
The dome has a home preset position which is preset 00.
To enable this preset to be programmed when using the Rx100/JVC676 programming preset 1. BBV Presets 2 – 16 refer to the dome presets 2 – 16.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following dome:

Merit Li-Lin
PIH-717X
PIH-7000 series
PIH-7600 series

(Rx1_L1V5 software with 97002 issue 4 PCB)

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus
16 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 - 4

Advanced Features	Tx400	Tx1000	Tx1500	DM Sprite/DS/DSL/DS2/BX2
Toggle dome AutoPan	'#' 1	'#' WASH	1 '#'	*889 002 or *889 10 10 2
Enable Auto-Iris	'#' 2	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
Dome reset step 1	'#' 3	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4
Dome reset step 2	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

Procedure to program preset positions. The procedure must be followed to program new preset positions and also to re-program existing positions.

The keystrokes shown below assume use of a Tx1000.
1) Select GOTO PRESET number to program eg 1
`Hold PRESET tap 1`
2) Move dome to new position using joystick and lens keys.
3) Select PROGRAM PRESET to save new position.
`Press PROGRAM 1 1`

RS485 connections between Rx100 and dome.

PIH717(DB15) or	PIH7000/7600	Description	Rx100
Pin 14	TXDI-	-Data	J3/C1
Pin 15	TXDI+	+Data	J3/C2

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.
A 2 minute datum mode is available. 2 minutes after the last manual command, the dome will either move to preset 1 or start an autopan. Fit link J6/1-2 to enable this feature. J6/4-5 fitted = autopan, removed = goto preset 1.

All dome preset positions can be deleted using #3 followed by #4 within 1 second.

Check with the DM multiplexer manual for exact procedure for entering * commands.

IMPORTANT: Dome settings: Select dome address #1.

To aid diagnostics and confirm correct connection between the Rx100 and dome, the TEST link when shorted will drive the dome LEFT until the short is removed. Whilst the Rx100 is sending data to the dome the GREEN DATA will flash.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Mark Mercer 150 and D250/500 series

RX1_M1V5 (issue 4 97002 PCB)

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus override, Iris override
16 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 – 4

2 minute datum (park) mode, link selectable as either preset 1 or slow preset patrol.

Advanced Features	Tx400	Tx1000	Tx1500	DM Mux/DS/DSL/DS2/BX2 etc
Pan 'U'-turn (180deg flip)	'#' 1	'#' WASH	1 '#'	*889 002 or *889 10 10 2
Dome Reset	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

A slow preset patrol can be started by pressing AUTOPAN. The preset dwell is fixed at 20 seconds with a dome speed of 1.

RS485 control of dome using the following connections:

Rx100	Description	Dome	6 pin connector
J3-C1	TX/RX-	RS485 B	Pin 4 (RED)
J3-C2	TX/RX+	RS485 A	Pin 3 (GREEN)

Notes:
The alarm output relay opens for approx 5 seconds upon power up and following a local alarm activation.

Links	Function
J6/1-2	Enable 2 minute inactivity datum mode if the link is fitted.
J6/4-5	Select datum operation, fitted = goto preset 1, removed = start slow preset patrol.

Only operational whilst the dome is not running a patrol.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following camera:

Mitsubishi CCD400E. (RS232 Controlled)

RX1_M2V1

Application Notes

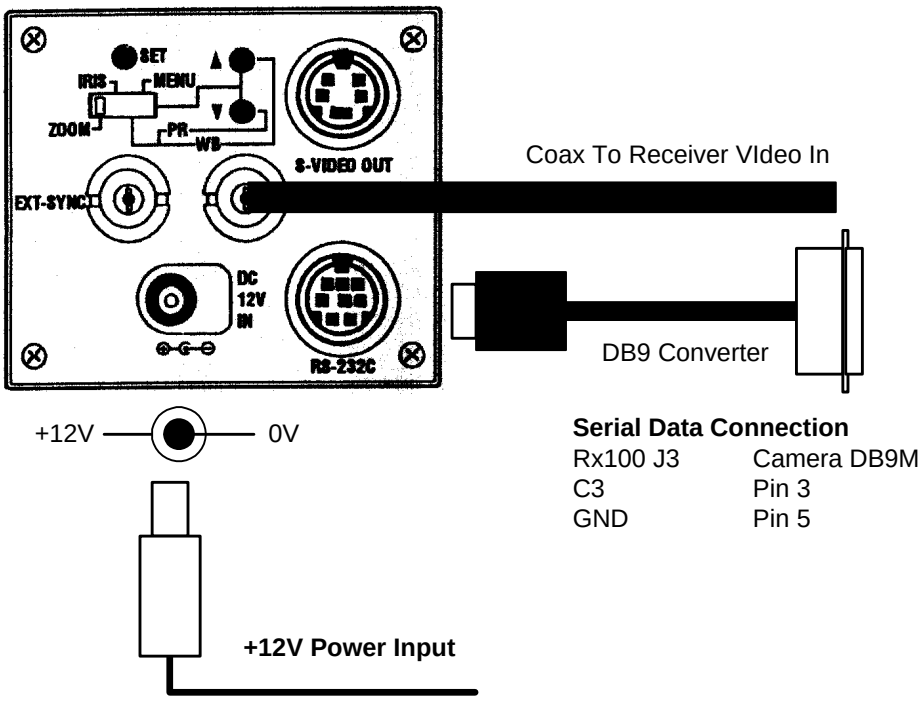
Manual zoom with 1 second slow inching
Manual focus override - returns to autofocus after holding focus key for 1 second
Iris override - returns to auto iris after holding iris key for 1 second
Cycle shutter speed
Cycle white balance options
Cycle backlight compensation - Set to 0 by holding iris key for 1 second
Reset camera to default settings
16 lens/camera setting presets

Advanced Features	Tx1000	Tx400DC	DM Mux
Shutter speed 1/50,1/120,1/250,1/500,1/1000,1/2000,1/4000,1/10000	'#' WASH	'#' 1	*889 002
White Balance INDOOR,OUTDOOR,FL.LIGHT,LOCK,AUTO	'#' WIPE	'#' 2	*889 003
Backlight Compensation -30 - +30	'#' AUTOPAN	'#' 3	*889 004
Reset Camera settings 1/50, AUTO, AUTO IRIS, AUTO GAIN	'#' LIGHTS	'#' 4	*889 005

RS232 control of using the following connections:

Rx100	Description	Camera	9 pin DB Male
J3-C3	TxData-	RXD	Pin 3
J3-GND	Ground	SG	Pin 5

CCD400 Rear Panel View

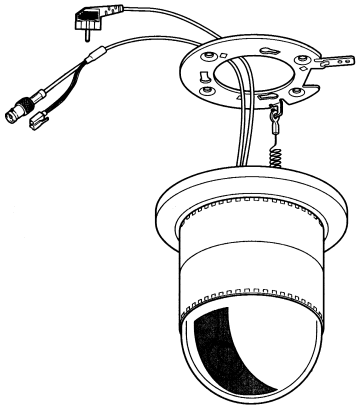


Serial Data Connection

Rx100 J3	Camera DB9M
C3	Pin 3
GND	Pin 5

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:



Panasonic WV-CSR400 series.
WV-CSR600 series.
WV-CSR650 series.

Rx1P1V5B SOFTWARE FOR 97002 ISSUE 4 PCB ONLY

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus, Iris Open/Close(AutoFocus with 600 & 650 series)
16 full scene presets (600 & 650 series dome)
2 preset patrols (600 & 650 series dome)
4 alarm inputs driving to preset 1 - 4. (600 & 650 series dome)
Autopan

Advanced Features	Tx400	Tx1000	Tx1500 DM Sprite/DSL/DS2/BX2	
Entry/Exit Dome Menu	'#' 1	'#' WASH	1 '#'	*889 002 or *889 10 10 2
SET (select menu item)	'#' 2	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
ESC (back to previous menu)	'#' 3	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4
SPECIAL2 (for special menus)	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

Autopan is started by selecting Autopan on the Transmitter. The Autopan stops can be programmed from within the dome menu. Please refer to dome user manual for exact details.

RS485 control of dome. Connect dome FCC-68 plug into J7 of Rx100. If the dome cable requires extending, connect cores as follows:

Dome Cable	Description	Rx100
Yellow	Data-	J3/C1
Green	Data+	J3/C2

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

Accessing the dome menus.
Press either '#'WASH , '#'1 or *889 002 key strokes to Enter Menu. Use Pan/Tilt to highlight item. Press either '#'WIPE, '#'2 or *889 003 key strokes to select menu item. To exit from menu, press either '#'WASH, '#'1 or *889 002.

Check with the multiplexer manual for exact procedure for entering * commands.

IMPORTANT: Dome settings: Select dome address 01. Communications must be 19200, N, 8, 1. If dome cannot be controlled, see dome manual section to reset dome to factory default.

The Panasonic CS-850 can be controlled using an Rx100 with Rx1_P1V6 software order code RX100/Panasonic CS850.

The TEST link will pan the dome left whilst shorted. The video out BNC must be disconnected before the TEST link is fitted. The GREEN DATA flashes when data is sent from the Rx100.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Panasonic WV-CS850 / 860

Software Rx1_P1V7

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus, Iris Open/Close (Hold for auto-iris)
16 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 – 4
Autopan/Patrol learn-play using autopan key

Advanced Features	Tx400	Tx1000	Tx1500	DM Sprite/DS/DS2/BX2
ENTRY/EXIT Dome Menu	'#' 1	'#' WASH	1 '#'	*889 002 or *889 10 10 2
SET (select menu item)	'#' 2	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
ESC (back to previous menu)	'#' 3	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4
SPECIAL2 (for special menus)	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

A dome RESET ALL command can be sent by holding either '#'LIGHTS or '#'4 for 5 seconds when not within the menu. Care must be used with this command as the dome is set to default and user settings are erased.

The dome's internal PATROL can be LEARNED using the dome menu. Setting the AUTO PAN KEY to PATROL will allow the patrol to be PLAYED by pressing AUTOPAN on the controller.

RS485 control of dome. Connect dome FCC-68 plug into J7 of Rx100. If the dome cable requires extending, connect cores as follows:

Dome Cable	Description	Rx100
Yellow	Data-	J3/C1
Green	Data+	J3/C2

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

Accessing the dome menus.
Press either '#'WASH , '#'1 or *889 002 key strokes to Enter Menu. Use Pan/Tilt to highlight item. Press either '#'WIPE, '#'2 or *889 003 key strokes to select menu item. '#'WASH , '#'3 or *889 004 is used to ESCAPE back to previous menu. SPECIAL2 menus are accessed using '#'LIGHTS, '#'4 or *889 005. To exit from menu, press either '#'WASH, '#'1 or *889 002.

Check with the multiplexer manual for exact procedure for entering * commands.

Dome Switch settings: The following procedure must be followed to ensure that the dome is set-up correctly for terminated 4 wire RS485 at 19200 Baud and address 1. Remove the dome from it's base before each step and reconnect to the base after changing the switches.

Step 1: Address switches 2,4 and 5 ON
Step 2: Address switches 1,3,4 and 5 ON
Step 3: Address switches 1 and 8 ON. 4 Way switch 1 ON to select 4 wire, terminated RS485.

Panasonic WV-CSR400/600/650 domes can be controlled using a different version of Rx100 software. Please contact BBV for further information or check out our web site www.bbvcctv.com

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following dome:

Pelco Spectra (P-mode RS485 protocol)

(Software version RX1_P2V6)

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus
16 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 - 4
Dome Pattern definition and playback

Advanced Features	Tx1000	Tx400	DM-Sprite	DM-DSL/DS/DS2
Display dome menu (preset 95)	'#' WASH	'#' 1	*889 002	*889 10 10 2
Enter within menu (iris open)	'#' WIPE	'#' 2	*889 003	*889 10 10 3
Pattern define start	'#' AUTOPAN	'#' 3	*889 004	*889 10 10 4
Pattern define stop	'#' LIGHTS	'#' 4	*889 005	*889 10 10 5

To record a Pattern, direct the camera to the required starting position. Hold '#' and tap 'AUTOPAN'. The dome will now record pan/tilt and lens movement up to a time limit. To stop the recording, hold '#' and tap 'LIGHTS'. To play the recorded Pattern, press the AUTOPAN key only. The dome will repeatedly run the Pattern until either the joystick is moved or an alarm occurs.
(The example shows Tx1000 keystrokes, please substitute the keystroke for the controller used.)

Menu access:
Use '#' WASH to display menu. Navigate using the joystick and IRIS OPEN to select. When used with control systems without iris keys, eg DM Digital Sprite Lite, use *889 003 or *889 10 10 3

Return to home: Can be programmed from the Dome menu.

RS485 control of dome. Data rate, 9600 Baud, No parity, 8 Data bits, 1 Stop bits

Connection details:

Dome	Description	Rx100
RX-	RS485(B) input	J3/C1
RX+	RS485(A) input	J3/C2

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.
*Check with the DM multiplexer manual for exact procedure for entering * commands.*

Dome settings: Select dome address 1, P-MODE PROTOCOL and 9600, N, 8, 1.

Improvements with P2V6 software:
Link J6/1-2 is used to select the function that is used to drive the Esprit AUX outputs.

Function	Link fitted Esprit AUX No	Link removed Esprit AUX No
LIGHTS	**1**	**2**
WIPER	**2**	**1**
WASHER	**3**	**3**

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following dome:

Philips AutoDome including G3A and G3B
(RS232 control only, not Bi-Phase compatible)

Software version RX1_P3V10
For use with Rx100 PCB 97002 issue 4 only.

Application Notes

Variable speed Pan/Tilt.. Zoom/Focus, Autofocus. 16 full scene presets. 2 preset patrols. 4 alarm inputs driving to preset 1 – 4. Dome AutoPlay record & playback. Preshot title, Zone title, Menu Access

Advanced Features		Tx400DC	Tx1000	Tx1500	DM Sprite	DS/DSL/DS2/BX2
Display Menu	(Aux 46)	'#' 1	'#' WASH	'#' 1	*889 002	*889 10 10 2
Program Zone Title	(Aux 63)	'#' 2	'#' WIPE	'#' 2	*889 003	*889 10 10 3
Record AutoPlay start/stop	(Aux 100)	'#' 3	'#' AUTOPAN	'#' 3	*889 004	*889 10 10 4
RESET DOME!	(Set 899)	'#' 4	'#' LIGHTS	'#' 4	*889 005	*889 10 10 5

RS232 control of dome. Data rate, 9600 Baud, No parity, 8 Data bits, 1 Stop bits

Connection details:

Dome	Description	Rx100 or DMP100/124
RxD	RS232 I/P	J3/C1
Gnd	Gnd	J3/GND

Notes:
Configuration links:
J6/pin 1-2 *is used to select the address that the unit outputs. Fitted(Default) = Address 1, Removed = Address 10,000.*
Removing the link allows the receiver to be used as an alarm input unit for domes that are controlled using bi-phase telemetry. This will work with late model domes with post 2002 software.

J6/pin 4-5 *Removed – preset title text is programmed following a save preset command by automatically issuing a aux(62) command.*
Fitted(Default) – the preset text command is not sent and the existing text is retained.

The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

The dome must be RS232 controllable. BI-PHASE domes cannot be controlled.
Dome settings: Select dome address #0 or #1. Communications must be 9600, N, 8, 1. The G3 Basic address is software programmable, however as default the dome is addressed as #0. If the dome address is not #0 or #1 then the dome will require reprogramming using a Philips controller or removing link J6/1-2.

A TEST link is used to confirm correct operation of the Rx100 and dome and also that the RS485 connection is correct. Shorting the link after the Rx100 is powered up will cause the dome to pan left and zoom in. Removing the link cause the dome to zoom out and stop panning left. The green data led should also flash to indicate RS485 sent to the dome.

If the TEST link is shorted when power is applied to the Rx100 will cause a receiver self test function to start. This is an advanced function that BBV support engineers may request during fault diagnosis. To stop the self test, remove the link and power the Rx100 off and on again.

Using the advanced features when using a BBV Tx1000DC

Menu Access: Press and HOLD # and tap WASH TWICE will display the dome's menu.
Use the joystick to navigate the cursor. **FOCUS FAR** or **FOCUS NEAR** can be pressed to enter the next menu item or to return press either **IRIS OPEN** or **IRIS CLOSE**. When completely out of the menu issue a goto preset command to put the interface into normal mode. Press and HOLD **PRESET** whilst taping **1** will move to preshot 1.
Program Zone Title: Press and HOLD # and tap WIPE will allow the title for the current zone to be programmed.
Use the joystick as described on screen. Use the following keystrokes to program the text:
FOCUS NEAR – Select a current character, **FOCUS FAR** – Clear character, **IRIS CLOSE** – Backspace and **IRIS OPEN** – Return
Record Autoplay: Press and HOLD # and tap AUTOPAN will allow autoplay 'A' to be recorded.
Press **FOCUS FAR** or **FOCUS NEAR** to start the recording or **IRIS CLOSE** to abandon recording. Once recording has started, use the joystick and focus keys as required. To end the recording, press and **HOLD #** and tap **AUTOPAN**. The recording can be replayed continuously be pressing the **AUTOPAN** key.
Reset dome defaults: Press and HOLD # and tap LIGHTS TWICE to display the dome's software version. Repeating the key strokes for a THIRD time will issue a SET 899 to reset the dome including ALL PRESET POSITIONS.
USE WITH EXTREME CARE AS ALL THE DOME PROGRAMMING WILL BE LOST.

Programming preshot text. To program a preshot position press **PROGRAM** then **1** followed by number of the preshot. EG to program preshot 1 press **PROGRAM 1 1**. To program preshot 2 press **PROGRAM 1 2**. To program preset 14 press

PROGRAM 1 14. After the preshot has been programmed the interface issues an AUX 62 to display the preshot text menu. The same keystrokes are used to program preshot text as when programming zone titles.

Using the advanced features when using a BBV Tx400DC

Menu Access: Press and HOLD # and tap 1 TWICE will display the dome's menu

Use the joystick to navigate the cursor. **FOCUS FAR** or **FOCUS NEAR** can be pressed to enter the next menu item or to return press either **IRIS OPEN** or **IRIS CLOSE**. When completely out of the menu issue a goto preset command to put the Rx100 into normal mode. Press **1** will move to preshot 1.

Program Zone Title: Press and HOLD # and tap 2 will allow the title for the current zone to be programmed.

Use the joystick as described on screen. Use the following keystrokes to program the text:

FOCUS NEAR – Select a current character, **FOCUS FAR** – Clear character, **IRIS CLOSE** – Backspace and **IRIS OPEN** – Return

Record Autoplay: Press and HOLD # and tap 3 allow autoplay 'A' to be recorded.

Press **FOCUS FAR** or **FOCUS NEAR** to start the recording or **IRIS CLOSE** to abandon recording. Once recording has started, use the joystick and focus keys as required. To end the recording, press and **HOLD #** and tap **3**. The recording can be replayed continuously be pressing the **AUTOPAN** key.

Reset dome defaults: Press and HOLD # and tap 4 TWICE to display the dome's software version. Repeating the key strokes for a THIRD time will issue a SET 899 to reset the dome including ALL PRESET POSITIONS.
USE WITH EXTREME CARE AS ALL THE DOME PROGRAMMING WILL BE LOST.

Programming preshot text. To program a preshot position press and HOLD **PROGRAM** then tap the preshot require, 1 – 8.

EG to program preshot 1 press and HOLD **PROGRAM** then tap **1**. To program preshot 2 press and HOLD **PROGRAM** and tap **2**. To program preset 8 press and HOLD **PROGRAM** and tap **8**. After the preshot has been programmed the Rx100 issues an AUX 62 to display the preshot text menu. The same keystrokes are used to program preshot text as when programming zone titles.

Using the advanced features when using a DM Sprite and Digital Sprite keyboard.

The DM units use a series of * commands to access the advanced features. The Digital Sprite or DS does not have a '0' key instead the '10' key is used when ever the '0' key is mentioned. Eg to access the dome menu on a System Sprite you would key *889 002 and on the Digital DS you would key in *889 10 10 2. The examples below assume control from the Digital Sprite keyboard. If a System Sprite is used then please use the '0' key whenever the '10' key is mentioned.

Menu Access: *889 10 10 2 repeated TWICE will display the dome's menu

Use the joystick to navigate the cursor. **FOCUS FAR** or **FOCUS NEAR** can be pressed to enter the next menu item or to return use ***889 10 10 3** which simulates an iris command. When completely out of the menu issue a goto preset command to put the Rx100 into normal mode. Pressing **PRESET** followed by **10 1** will goto preshot 1.

Program Zone Title: *889 10 10 3 will allow the title for the current zone to be programmed.

Use the joystick as described on screen. Use the following keystrokes to program the text:

FOCUS NEAR – Select a current character, **FOCUS FAR** – Clear character, ***889 10 10 4** – Backspace and ***889 10 10 3** – Return

Record Autoplay: *889 10 10 4 will allow autoplay A to be recorded.

Press **FOCUS FAR** or **FOCUS NEAR** to start the recording or ***889 10 10 3** to abandon recording. Once recording has started, use the joystick and focus keys as required. To end the recording, press ***889 10 10 4**. The recording can be replayed continuously be pressing the **AUTOPAN** key.

Reset dome defaults: *889 10 10 5 repeated TWICE to display the dome's software version. Repeating the key strokes for a THIRD time will issue a SET 899 to reset the dome including ALL PRESET POSITIONS.
USE WITH EXTREME CARE AS ALL THE DOME PROGRAMMING WILL BE LOST.

Programming preshot text. To program a preshot position press and hold the **PRESET** button until the display asks for preset number. Use the camera keys to enter a 2 digit number from 01 – 16. Use the **10** key to represent 0. After the preshot has been programmed the Rx100 issues an AUX 62 to display the preshot text menu. The same keystrokes are used to program preshot text as when programming zone titles. EG to program preshot 2, press and hold **PRESET**, wait for the display, press **10** then **2**.

Control from DM Digital Sprite 2 systems

The new DM Digital Sprite 2 (DS2) keyboard now supports iris directly again. Therefore navigation through the menus will be easier.

BBV Rx100 & Rx100/24 Samsung SCC-641 Interface

Addendum to Rx100 manual

(Rx100 software version RX1_S5V2 and issue 4 97002 pcb)

Application Notes

The Rx100 allows control of the following dome features: Variable speed Pan/Tilt, Zoom/Focus/Iris, 16 full scene presets, 2 preset patrols, 4 alarm inputs driving to preset 1 – 4, Dome Pattern 1 playback using the AUTOPAN key ,Menu Access

Advanced Features	BBV Tx1000	BBV Tx400	DM Sprite	DS/DSL
Display Menu (Twice)	'#' WASH	'#' 1	*889 002	*889 10 10 2
Turn Menu Off	'#' WIPE	'#' 2	*889 003	*889 10 10 3
ENTER within menu	'#' AUTOPAN	'#' 3	*889 004	*889 10 10 4
Dome FACTORY RESET	'#' LIGHTS	'#' 4	*889 005	*889 10 10 5

RS485 control of dome. Data rate link selectable using J6/1-2. Fitted = 9600,N,8,1 and removed = 19200,N,8,1

Connection details:

Dome	RX100
RX-	J3/C1
RX+	J3/C2

Notes:
J6/pin 1-2 is used to select the baud rate to drive the dome, either 9600 or 19200 baud.
Fitted(Default) = 9600,N,8,1 Removed = 19200,N,8,1(used if experience run on problems with 20mA telemetry)

The dome's SW500 and SW501 switches must be set as follows:
SW500 sets the dome's address to 01. 1 = ON, 2,3,4,5,6,7,8 = OFF
SW501 is used to set the dome's RS485 baud rate, Termination and protocol selection.
For 9600 baud set as follows: 1,2,3,5 = ON 4,6,7,8 = OFF
For 19200 baud set as follows: 1,2,3,4 = ON 5,6,7,8 = OFF

Menu Access when using a BBV Tx1000DC
Display Menu: Press and HOLD # and tap **WASH** **TWICE** will display the dome's menu.
Use the joystick to navigate the cursor and HOLD # and tap **AUTOPAN** as **ENTER**.
Turn Menu Off: Press and HOLD # and tap **WIPE**
Dome FACTORY RESET: Press and HOLD # and tap **LIGHTS** **THREE** times to return the dome to factory defaults.

Menu Access when using a BBV Tx400DC
Display Menu: Press and HOLD # and tap **1** **TWICE** will display the dome's menu.
Use the joystick to navigate the cursor and HOLD # and tap **3** as **ENTER**.
Turn Menu Off: Press and HOLD # and tap **2**
Dome FACTORY RESET: Press and HOLD # and tap **4** **THREE** times to return the dome to factory defaults.

Menu Access when using DM DS/DSL/DS2
Display Menu: *889 10 10 2 **TWICE** will display the dome's menu**.**
Use the joystick to navigate the cursor and ***889 10 10 4** as **ENTER**.
Turn Menu Off: *889 10 10 3
Dome FACTORY RESET: *889 10 10 5 **THREE** times to return the dome to factory defaults.

CAUTION – READ BEFORE PERFORMING A DOME FACTORY RESET!
USE WITH EXTREME CARE AS ALL THE DOME PROGRAMMING INCLUDING PRESET POSITIONS WILL BE LOST.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Sensormatic Speeddome
Rx100 Software RX1_S3V2

(issue 4 97002 pcb only)

Coaxial telemetry ONLY. Not twisted pair!

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus, Iris Open/Close
7 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 – 4
Pattern 1 define – play using Autopan key

Advanced Features	Tx1000	Tx400	DM DS/DS2/BX2
Start/Stop PATTERN1 Definition	'#' WASH	'#' 1	*889 002 or *889 10 10 2
(Press AUTOPAN to Run Pattern1)			
Dome Menu	'#' LIGHTS	'#' 4	*889 005 or *889 10 10 5

RS485 control of dome 4800 Baud, No parity, 8 data bits, 2 stop bits.

Dome Cable	Description	Rx100
RS422 IN-/Data In-	Data-(B)	J3/C1
RS422 IN+/Data In+	Data+(A)	J3/C2

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

Accessing the dome menus.
Press either '#'LIGHTS , '#'4 or *889 005 key strokes to Enter Menu. Use Pan/Tilt/zoom/focus functions are then used to navigate through menu structure. Please refer to individual dome manual for exact operation of menu.

Check with the multiplexer manual for exact procedure for entering * commands.

IMPORTANT:
Dome settings: Select dome address 01 or 001.
Communications must be 4800, N, 8, 2 – RS422, ***NOT SensorNet.***

The interface software is based on 1997 protocol and has been tested with Ultradome IV, Ultradome VI and original Speeddome.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following camera:

Sony EVI-D31 Webcam

(RX1_S4V2 with issue 4 97002 PCB)

Coaxial telemetry ONLY.
Not twisted pair.

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus with manual override (returns to auto following zoom command)
6 full scene presets
2 preset patrols
4 alarm inputs driving to preset 1 – 4

Advanced Features	Tx400	Tx1000	Tx1500 DM Sprite/DS2/BX2	
Toggle Backlight compensation	'#' '1'	'#' WASH	1 '#'	*889 002 or 10 10 2
Cycle White Balance	'#' '2'	'#' WIPE	2 '#'	*889 003 or 10 10 3
AUTO, INDOOR, OUTDOOR				
Toggle AutoExposure/Bright mode	'#' '3'	'#' AUTOPAN	3 '#'	*889 004 or 10 10 4
Iris keys used in Bright mode				
Reset dome to default	'#' '4'	'#' LIGHTS	4 '#'	*889 005 or 10 10 5

RS232 control of dome 9600 Baud, No parity, 8 data bits, 1 stop bit. The camera uses a sub-miniature 8 pin DIN socket. A Sony supplied VISCA to DB9 RS232 cable may help with installation.

Connection details:

Camera Pin	Description	Rx100
5	Receive Data	J3/C1
4 or 6	Ground	J3/GND

Notes:
Link J6/1-2 selects a 5 minute datum mode. If fitted and no activity for 5 minutes, the camera will drive to either preset 1 or start PATROL 1 depending on link j6/4-5, fitted = Goto Preset 1, removed = start PATROL 1.

The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

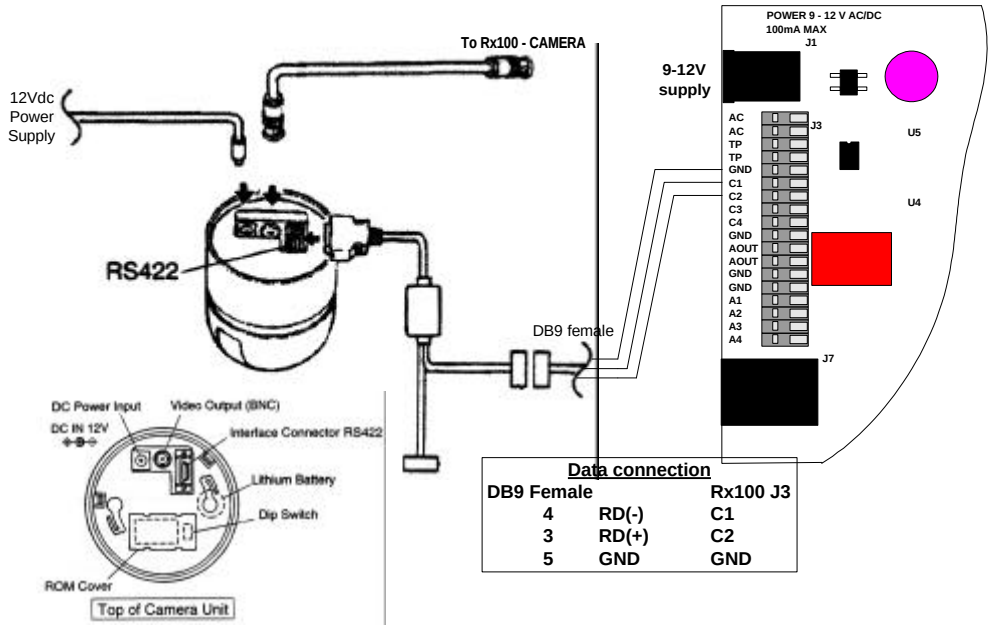
Check with the multiplexer manual for exact procedure for entering * commands.

IMPORTANT:
Ensure that CAMERA NO switch on the camera rear panel is set to 1.
As communications is RS232 please limit cable from Rx100 to camera to less than 5M.

Rx 100 *Interface Receiver*

Addendum to manual for the following camera:

STAR MD-100



Data connection

DB9 Female		Rx100 J3
4	RD(-)	C1
3	RD(+)	C2
5	GND	GND

The dome must be powered from a 12Vdc supply.

Data connection via 3 wire RS422 using DB9 female to supplied dome cable and J3 on the Rx100.
Video connection from BNC socket on dome base to 'CAMERA' BNC socket on the Rx100.

NOTE:
Ensure that all switches on DIP switch set to OFF.

COMMISSIONING
Connect dome and Rx100 as shown. Link Rx100 video out to telemetry transmitter using coaxial cable.
Power up Rx100 first, cable LED should blink.
Next dome can be powered at which point a self-test is performed. Both pan and tilt are checked.
The dome is ready for operation.

FEATURES
The Rx100 provides the following features.

Tx400DC Tx1000DC Pan/Tilt 18º/Sec Joystick Joystick Zoom Zoom keys Zoom keys Focus Focus keys Focus keys Save pre-set Hold PROGRAM **& tap** 1 - 8 **Press** PROGRAM **then** 1 **then** 1-16 **Goto pre-set Tap** 1 - 8 **Hold** PRESET **& tap** 1 - 16 **Start Patrol 1 Hold** PROGRAM **& tap** AUTOPAN **Hold** PATROL **& tap** 1 **Start Patrol 2 Hold** PROGRAM **& tap** LIGHTS **Hold** PATROL **& tap** 2 **Autopan between preset 7 & 8 Tap** AUTOPAN **after programming preset positions 7 & 8. Tap** AUTOPAN **after programming preset positions 7 & 8. Camera Shutter Hold** # **& tap** 1
(toggle Fixed/Auto) Hold # **& tap** WASH
(toggle Fixed/Auto)
Local alarm activation 1-4 will drive dome at 90º/Sec to pre-set position 1-4 if programmed.

Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Chugai SMD-08II, SMD-12, SMD-12II, SMD-20
Sanyo VCC-9200P
Star MD-800, MD-1200S, MD-1200H, MD-2000

Application Notes

The RX 100 provide the following functionality when controlling the above mentioned domes

Variable speed Pan/Tilt, from 0.8deg/sec to 120deg/sec.
Zoom/Focus, Autofocus following a Zoom In/Out.
(Autofocus enabled with link fitted on J6 pin 4/5)
16 Full scene presets.
2 preset patrols.
4 alarm inputs.

Additional commands:
AUTOPAN: Pressing the AUTOPAN key will run the domes in-built swing feature. Preset positions 1 & 8 must be programmed before the swing is started. Preset 1 is the right hand stop, preset 8 is the left hand stop. Tilt and lens can be adjusted whilst the dome is swinging.

180deg PAN AUTO FLIP is accomplished by pressing either '#'WASH on Tx1000 or '#'1 on Tx400.

DOME REMOTE RESET can be started by pressing either '#'LIGHTS on Tx1000 or '#'4 on Tx400.

RS485 control of dome using the following connections:

Rx100	Description	Dome mounting bracket
J3-C1 TX/RX-	Data-	Pin 2
J3-C2 TX/RX+	Data+	Pin 1

Notes:
The alarm output relay opens for approx 2 seconds upon power up. This can be used to signal power loss, etc.

When programming a preset position, control is prohibited until the dome has stored the position into it's eeprom memory, approx 1-2 seconds.

Following a goto preset command, all further commands are ignored until the dome has reached it's preset position including any alarm input.

If swing is running, start patrol 1 & 2 is inhibited. The dome will be driven to a preset following an alarm activation. 60 seconds after alarm, swing will restart. If a manual goto preset is pressed, the dome will stop swinging and move to the preset position. The AUTOPAN led will be on until the next manual pan command.

BBV Rx100 *Interface Receiver*

Addendum to manual for the following dome:

Diamond/Ultrak KD6 Dome
RX1_D1V5 (up-the-coax telemetry only)
Issue 4 97002 PCB with 877 processor.

Application Notes

Variable speed Pan/Tilt.
Zoom/Focus, Iris override, Auto exposure ON/OFF
16 Full scene presets.
2 preset patrols.
4 alarm inputs driving to preset 1 - 4.

Advanced Features		Tx400	Tx1000	TX1500	DM Mux or DS/DS2/BX2
DOME MENU	(pshot 90)	'#'1	'#' WASH	1'#'	*889 002 or *889 10 10 2
Auto Exposure	(*auto-iris*) toggle (pshot 92)	'#' 2	'#' WIPE	2'#'	*889 003 or *889 10 10 3
Program PTZ Tour1	toggle (pshot 83/86)	'#' 3	'#' AUTOPAN	3'#'	*889 004 or *889 10 10 4
Start PTZ Tour1	(pshot 80)	'#' 4	'#' LIGHTS	4'#'	*889 005 or *889 10 10 5

VectorScan 0 is started by pressing AUTOPAN and is programmed using the dome menu (see notes).

A datum or home facility is provided. This is link selectable to either move to preset 1 or start VectorScan 0. Link J6/1-2 fitted enables datum mode. Link J6/4-5 fitted selects preset 1 and removed selects VectorScan 0. The timeout is fixed at 5 minutes after the last movement command.

RS485 control of dome using the following connections:

Rx100	Description	Dome connection
J3-C1	TX/RX-	RX-
J3-C2	TX/RX+	RX+

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

Whilst within PATROL1, PATROL2, VECTORSCAN or PTZ Tour a local alarm input will drive the dome to the active alarm preset position at full speed. The dome will remain in this position for approx 60 seconds, after which time the patrol, VectorScan etc will resume. Additionally, if the dome is running PATROL1 or 2 a manual preset command will move the dome to this preset position for 60 seconds before continuing with the patrol.

The dome must be configured as follows:
Select 9600 Baud communications. To use the dome's advanced features including the menu, select MAXPRO telemetry. The exact switch setting for MAXPRO telemetry depends on the dome's internal firmware version as below:

Version	**S4-1**	**S4-2**	**S4-3**	**S4-4**
J/K	**closed**	**open**	**open**	**open**
H	**open**	**closed**	**open**	**open**
G	**closed**	**open**	**open**	**closed**

Three rotary switches set the dome address to 000. S1 = '0', S2 = '0', S3 = '0'.

The dome menu allows setting of several internal dome features. Once activated using '#'WASH etc, navigate using the pan/tilt direction keys/joystick. Generally the IRIS OPEN key is used as a ENTER key and the IRIS CLOSE key is used as an ESCAPE key. The dome manual should explain in greater detail.

On screen text can be enabled using the dome menu.

It is recommended that the dome is operated with the auto exposure set to ON to allow automatic compensation for varying lighting conditions.

Due to the dome protocol requirements, telemetry control is up-the-coax only. 20mA twisted pair telemetry is not currently supported. (Software version Rx1_D1V5)

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

VCL TP protocol Microsphere/Orbiter range.

Rx100 software RX1_V1V8
(for use with PCB 97002 issue 4 only)

Application Notes

The RX 100 provide the following functionality when controlling the above mentioned domes

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus following a Zoom In/Out.
16 Full scene presets.
2 preset patrols.
Slow preset tour. Started by pressing AUTOPAN
5 minute datum/park driving to preset 8 disabled by removing link J6/4-5
Program up to 16 privacy zones

Additional commands:
AUTOPAN: Pressing the AUTOPAN key will run the domes preset tour at slow speed between the patrol 1 preset positions.

Advanced Features	Tx400	Tx1000	Tx1500	DM DS/DS2/BX2 Mux
180 degree pan flip	'#' 1	'#' WASH	1 '#'	*889 002 or *889 10 10 2
Privacy SET (Toggle Mono/Colour)	'#' 2	'#' WIPE	2 '#'	*889 003 or *889 10 10 3
Privacy CLEAR (Auto Mono/Colour)	'#' 3	'#' AUTOPAN	3 '#'	*889 004 or *889 10 10 4
Reset dome parameters	'#' 4	'#' LIGHTS	4 '#'	*889 005 or *889 10 10 5

The dome and Rx100 are linked using RS485 for control and video for the camera signal.

Rx100	Description	Dome connection
J3-C1	TX-/B	D-
J3-C2	TX+/A	D+

Notes:
The dome address must be set at 1 for all the cameras that are controlled using a Rx100. With an Orbiter Gold, set the address to 1 with all switches of DILSW2 ON. Select VCL protocol with all switches of DILSW1 OFF. Check with the dome manual if you have any doubts.

The alarm output relay opens for approx 5 seconds upon power up and following any active alarm input.

If the slow preset tour is running, start patrol 1 & 2 is inhibited. The dome will be driven to a preset following an alarm activation. 60 seconds after alarm, the tour will restart. A manual goto preset and lens control will stop the tour leaving the AUTOPAN led on until the next manual pan command.

A datum/park mode is offered that drives the dome to preset 8 following 5 minutes of inactivity. This can be disabled by removing the link fitted across J6/pin 4 & 5.

Privacy zone programming.
Link J6/1-2 must be fitted to allow programming of privacy zones.
– The keystrokes shown assume use of a TX1500. Use the keystroke shown above if using another controller.

Programming a zone
The Rx100 can be used to program 16 privacy zones, 100 – 115. The same procedure that is used to program a preset position is used to program or clear a privacy zone. To instruct the Rx100 to program privacy press 2# followed by program preset 1 – 16. The screen will then go blank showing that the privacy zone has been set.

Clearing a zone
To clear/delete a privacy zone press 3# followed by program preset 1 – 16. The relevant privacy zone will then be disabled.

Mono/Colour switching
If manual mono/colour switching is required then link J6/1-2 must be removed. This will disable the privacy zone set/clear features.

BBV Rx 100 *Interface Receiver*

Addendum to manual for the following domes:

Vicon Surveyor 2000 dome.

Software Rx1_V2V6
(issue 4 97002 pcb only)

Application Notes

The RX 100 provide the following functionality when controlling the above dome.

Variable speed Pan/Tilt.
Zoom/Focus, Autofocus with manual override.
16 full scene presets (additional presets available using dome's menu)
2 preset patrols
4 alarm inputs driving to preset 1 - 4.

Additional commands:
RUN TOUR 80.
Pressing the AUTOPAN key will start the dome's Tour 80. The tour is programmable using the dome's menu and allows a complex preset patrol, autopan or auto tour to be programmed. Refer to the dome programming manual for exact details.

Advanced Menu Feature	Tx1500	Tx1000	Tx400DC	DM Mux
*Dome Menu – Store preset 94 (also AP once in menu)	1 '#'	'#' WASH	'#' 1	*889 002
AI (used as escape in menu)	2 '#'	'#' WIPE	'#' 2	*889 003
AUX1	3 '#'	'#' AUTOPAN	'#' 3	*889 004
AUX2	4 '#'	'#' LIGHTS	'#' 4	*889 005

*Link J6/pin 1-2 must be fitted to access dome menu. Removing link will disable dome menu. On first entering the menu, the dome may autopan and/or access the pan/tilt menu. This is acceptable and simply pressing the AI function will allow the main menu to be displayed.

RS485 control of dome using the following connections:

Rx100	Description	Dome Interface Board
J3-C1	TX/RX-	COMM IN-
J3-C2	TX/RX+	COMM IN+

Notes:
The alarm output relay opens for approx 5 seconds upon power up. This can be used to signal power loss, etc.

If the dome's tour 80 is running, start patrol 1 & 2 is inhibited. The dome will be driven to a preset following an alarm activation. 60 seconds after alarm, the tour will restart. A manual goto preset and lens control will stop the tour leaving the AUTOPAN led on until the next manual pan command.

Accessing the dome menu.
Press '#'1 to display menu. Use pan/tilt keys or joystick to move cursor. '#'1 now acts as the AP key and '#'2 as the AI key as described on screen. '#'3 and '#'4 are used as AUX1 and AUX2 during menu programming.

Presets positions greater than 17 can be programmed using the dome's menu. These can be built into Tour 80 which is started by pressing the AUTOPAN key. Please refer to dome manual for specific instructions.

IMPORTANT:
Dome switch settings: S1 selects dome address, please set to address 2, S1/2=ON others OFF.
S2 is used to select control method and video standard. Set to VPS with S2/2=OFF. (SW2 all OFF)

For older versions of dome that do not support auto baud rate detect ensure that baud set for 9600.
Please check Vicon manual to confirm switch settings.

Appendix B - Trouble shooting guide.

Symptom: No video from interface.
Possible causes:
Camera is not powered or not connected to ‘CAMERA’ BNC on interface.
Check power and cabling.
Interface is not powered.
Check power.
Video out not connected to ‘TELEMETRY’ BNC on interface.
Check cabling.
If the after following the above check list video still not present then remove both BNCs from the interface and connect together using a female/female barrel connector to check video path from camera to control point.

Symptom: No camera control but lights relay operates with LIGHTS key on transmitter.
Possible causes:
Dome data cable is not connected correctly.
Check cabling, most commonly due to data cables swapped.
Dome configuration switches if fitted not set correctly.
Check configuration.

Symptom: No camera control and lights relay not operating.
Possible causes:
Interface not seeing Telemetry signal.
Check that telemetry is present on video cable using either oscilloscope or adjust v.hold on monitor to view frame blanking period and check for black/white band. If missing, power down/up the transmitter.
Should this fail, swap video between working and non-working channels.
Earth loops can interrupt telemetry operation if sufficiently severe.
If hum bars are apparent, fit isolation transformer to coaxial cable.
Check cable and error LEDs on interface.
See SETUP section earlier in this manual for correct indication.

If the problem persists having followed the above steps, technical assistance can be received from Building Block Video. Tel: +44 (0)1323 444600