PC8

Panasonic Protocol Converter

Installation Guide

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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 receiver 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 & retain instructions - All relevant safety, installation and operating instructions should be read before attempting to install, connect or operate the unit, and retained for future reference.

Heed warnings - All warnings on the unit and 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 IP67. 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.

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.

Coax grounding - If an outside cable system is connected to the unit, be sure the cable system is grounded.

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

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.

This symbol is used to warn the user of this equipment that there are sufficiently high voltages within the enclosure to constitute a risk of an electric shock.

This symbol is used to warn the user of this equipment to important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Technical Specification

Power Requirements	9Vdc 500mA
Input	2 or 4 wire RS485 (switch selectable, SW3/8) Panasonic RS485 9600,N,8,1 or 19200,N,8,1
Outputs	8 * RS485, either 2 or 4 wire Maximum cable run approx 4000 Feet/1200m
Facilities	LED as power and data indication
Other Outputs	RS232 monitor output via chassis mounted DB9 connector.
Boxed Dimensions	19” 1U rack 100mm deep rack mountable case.

Version History

V16 16 Mar 2016	Added support for Pelco D at 2400, 4800 or 9600 baud.
V15 09 Feb 2016	Updated connections and removed the reference to the uSD Card
V14 24 Feb 2012	Addition of special Panasonic Pass-Through mode – see page 13
V10.2 5 Mar 2009	Update to show new 00007-6 PCB format.
V10.1 6 Sept 2007	Addition of notes concerning Vicon dome integration and SX650 matrix firmware.
V10 17 August 2007	Added support for Vicon dome protocol at 4800 or 9600 baud
V9 11 May 2007	Added Wash/Wipe support for Pelco protocol
V8 14 July 2006	Added support for Dennard dome protocol at 9600 baud
V7 8 Sept 2005	Added support for Pelco P at 2400, 4800 or 9600 baud
V2 5 March 2004	Improved control, LED status improved, added support for patrol and path
V1 26 Mar 2003	VCL TP protocol (9600,N,8,1)

2. INTRODUCTION

GENERAL

The unit is designed to allow control of 3rd party domes from a Panasonic control system. It can be configured for either 2 wire, half duplex or 4 wire, full duplex telemetry.

Site communications must be set to either 9600 or 19200 Baud, No parity, 8 data bits and 1 stop bit. (9600 is the preferred baud rate)

It has been tested with the Panasonic SX150 mini matrix, SX550 matrix, SX650 matrix and HD316 DVR in both 2 and 4 wire modes.

A RS232 serial output is provided via a DB9F to aid with diagnostics and trouble shooting.

Panasonic Camera Address Range
The converter is designed to respond to a range of 8 camera addresses. SW5 is used to set the camera range that the converter will respond to. If the switch is set incorrectly it is possible to cause intermittent or sluggish control if any camera shares this address.

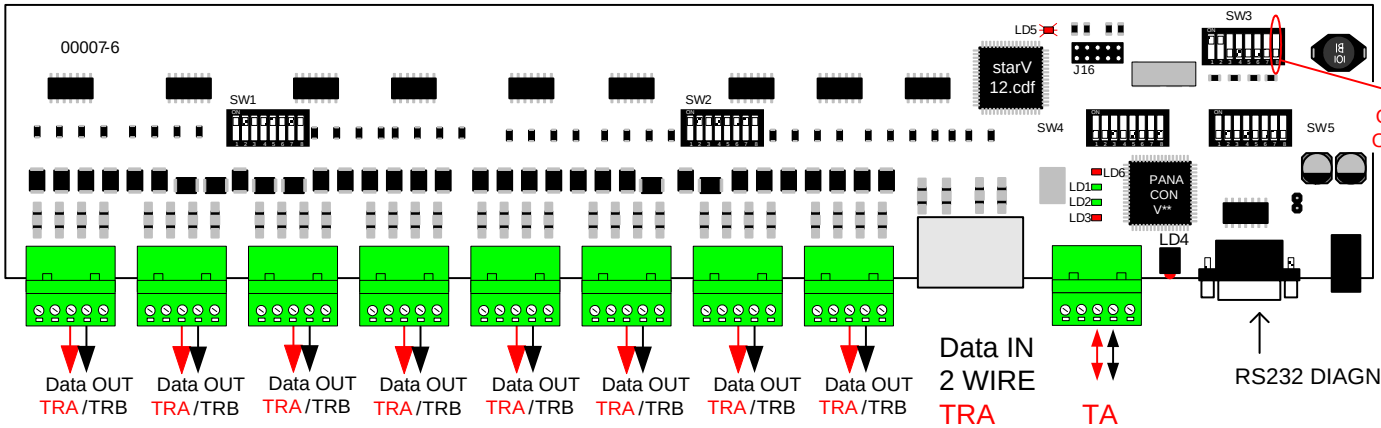
Output Protocol
SW5 is used to select the protocol of the dome that is to be controlled.

The following page shows the details of SW4 and SW5 switch settings.

SX650 matrix notes.
Poor control including just two speed control can be experienced if the wiring or switch settings including the 2/4 wire switches on the rear of the matrix are incorrect.

If these are checked to be correct and control is still poor the matrix firmware may need upgrading. Please contact your Panasonic service department who should be able to provide a link the firmware and upgrade software. The matrix should be running at least V3.01.

Internal view showing switches V15 Software



LD1 = Dome RS422/485 out

LD2 = Panasonic RS422/485 in

LD3 = Checksum ERROR or command for camera out of range

LD5 = Converter Mode

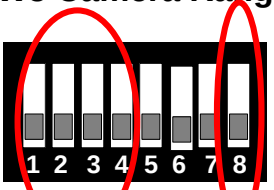
LD6 = Not used

Data OUT
TRA = A/+
TRB = B/-

Data IN
2 WIRE
TRA — TA
TRB — TB

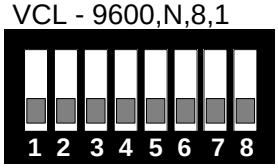
Data IN
4 WIRE
TRA — RA
TRB — RB
RA — TA
RB — TB

SW5 Camera Range

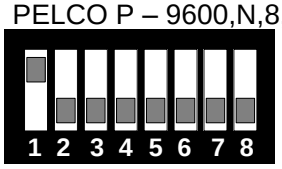


SW4 Output Protocol

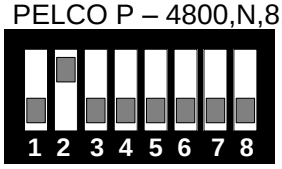
VCL - 9600,N,8,1



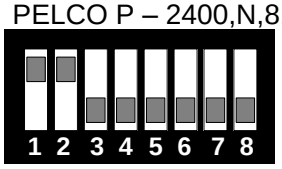
PELCO P – 9600,N,8,1



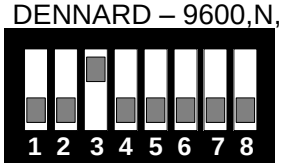
PELCO P – 4800,N,8,1



PELCO P – 2400,N,8,1

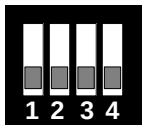


DENNARD – 9600,N,8,1



SW5/1-4 Camera range

1 - 8



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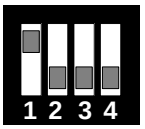

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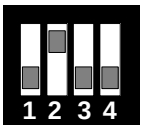

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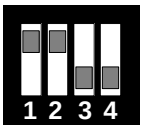

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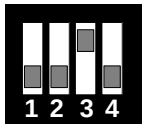

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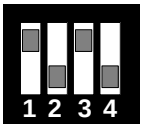

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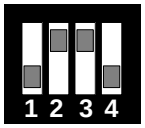
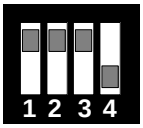


57 - 64



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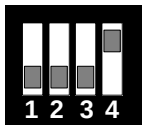

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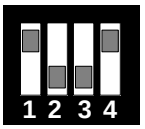

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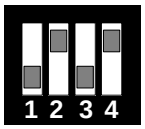

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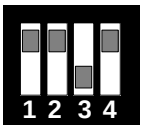

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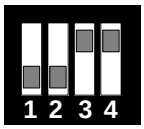
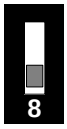
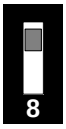


SW5/8 Panasonic Baud

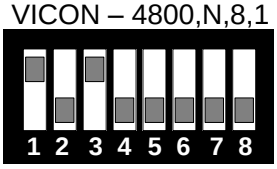
9600



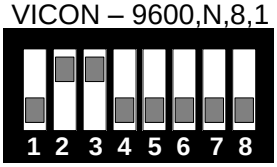
19200



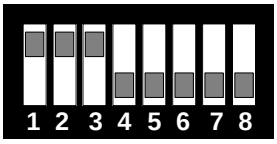
VICON – 4800,N,8,1



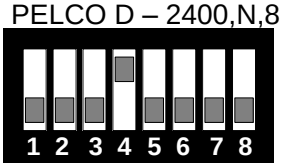
VICON – 9600,N,8,1



PANASONIC
PASS-THROUGH

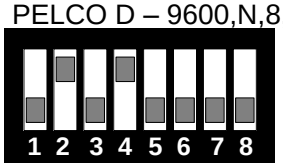


PELCO D – 2400,N,8,1

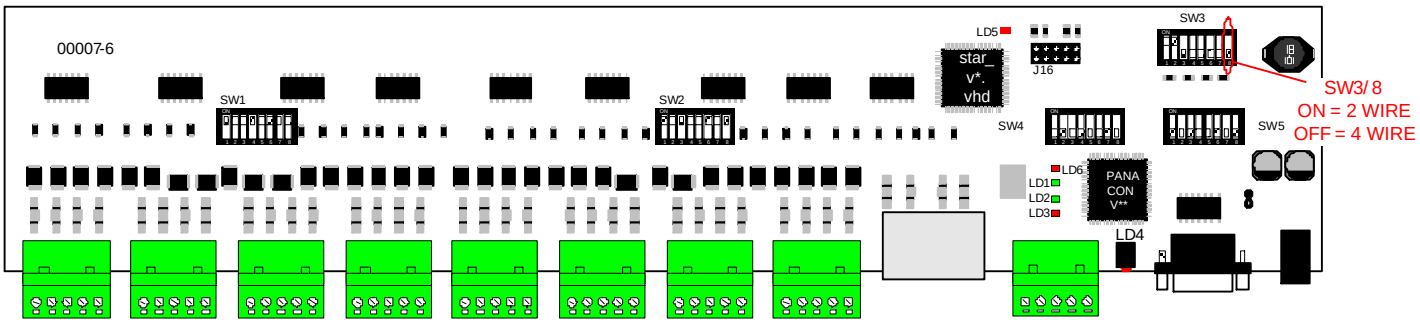


PELCO D – 4800,N,8,1

PELCO D – 9600,N,8,1



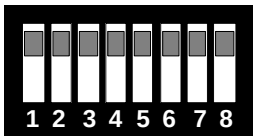
Switch details main Starcard PCB



Starcard PCB Switches

SW1 - RS485 line termination for outputs 1 - 4 ON = termination ON (Default)

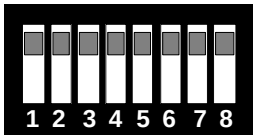
SW1/1 & 1/2 = Output 1 termination
SW1/3 & 1/4 = Output 2 termination
SW1/5 & 1/6 = Output 3 termination
SW1/7 & 1/8 = Output 4 termination



SW1 setting showing termination ON

SW2 - RS485 line termination for outptus 5 - 8 ON = termination ON (Default)

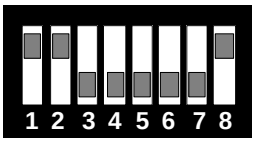
SW2/1 & 2/2 = Output 5 termination
SW2/3 & 2/4 = Output 6 termination
SW2/5 & 2/6 = Output 7 termination
SW2/7 & 2/8 = Output 8 termination



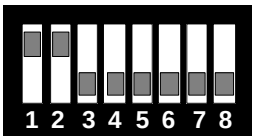
SW2 setting showing termination ON

SW3 - Option selection.
SW3/1 and SW3/2 - RS485 input line termination ON = termination ON (Default)
SW3/3-7 MUST BE OFF
SW3/8 - 2 or 4 wire selection. ON = 2 WIRE, OFF = 4 WIRE

SW3 setting showing 2 wire mode selected and RS485 input termination ON



SW3 setting showing 4 wire mode selected and RS485 input termination ON



VCL TP protocol

Function	Panasonic Procedure
Program preset 1 – 32	As normal
Goto preset 1 – 32	As normal
Enable Privacy zone 100 – 127	Program preset 64 Followed by goto preset 1 – 28 (1 = zone 100)
Disable Privacy zone 100 – 127	Program preset 63 Followed by goto preset 1 – 28 (1 = zone 100)
Define Preset Patrol – START	Program preset 62 Followed by 3 preset commands per preset position PRESET NUMBER - GOTO PRESET 1-32 SPEED - GOTO PRESET 1-63, 64 = fastest DWELL – GOTO PRESET 1-64 (x 2 seconds)
Define Preset Patrol – STOP	Program preset 61
Start Preset Patrol	AUTOPAN
Path 5 LEARN start	PATROL LEARN or Program preset 60 Use joystick to move dome around required path
Path 5 LEARN stop	PATROL STOP or Program preset 59
Path 5 PLAYBACK	PATROL PLAY

Preset positions
The unit supports 32 preset positions per dome. Use the standard Panasonic method to program a preset and also to goto preset.

Preset Tour 1
The dome's preset tour 1 can be defined as follows
PROGRAM PRESET 62 : the converter is now waiting for 3 preset calls per position
GOTO PRESET 1-32 : this is the preset position that is being programmed
GOTO PRESET 1-64 : this is the speed, 1-63 are increasing speeds and 64 is maximum
GOTO PRESET 1-64 : this is the dwell in 2 seconds to stay at the preset position
PROGRAM PRESET 61 : this is the end of the tour definition

Example presets 1,2,8,16
PROGRAM PRESET 62 – start definition
GOTO PRESET 1 – preset position 1
GOTO PRESET 64 – maximum speed
GOTO PRESET 10 – 20 second dwell

GOTO PRESET 2 – preset position 2
GOTO PRESET 20 – slowish speed
GOTO PRESET 15 – 30 second dwell

GOTO PRESET 8 – preset position 8
GOTO PRESET 1 – very slow speed
GOTO PRESET 2 – 4 second dwell

GOTO PRESET 16 – preset position 16
GOTO PRESET 63 – fast speed
GOTO PRESET 1 – 2 second dwell

PROGRAM PRESET 61 – end definition

Privacy Zones
The dome's 28 privacy zones can be set or cleared as follows:

To SET a zone
1. Move the camera to show the scene that is to be blanked.
2. PROGRAM PRESET 64 : SET PRIVACY COMMAND
3. GOTO PRESET 1-28 : PRIVACY ZONE TO USE

The screen will now be blank showing that the privacy zone has been set and enabled.

To CLEAR a zone
1. PROGRAM PRESET 63 : CLEAR PRIVACY COMMAND
2. GOTO PRESET 1-28 : PRIVACY ZONE TO CLEAR

The dome will now show the scene that the privacy zone was originally blanking. If you have made a mistake and this zone must be blanked then without moving the dome just follow the instructions above to SET the zone again.

Learned Path
A path is a learned tour that allows an operator to program the dome to move around specific areas for example a fence line etc. The converter uses VCL tour 5 as the path.

To DEFINE a path
1. Move the dome to the position that you would like the dome to start from.
2. From the matrix keyboard select PATROL LEARN or PROGRAM PRESET 60
3. Use the joystick to move the dome around the required path
4. From the matrix keyboard select PATROL STOP or PROGRAM PRESET 59

To PLAY a path
Press AUTOPAN to start playback of the tour.

Pelco P/D specific functionality

Manual proportional control of pan/tilt and zoom/focus/iris
Support for preset 1 – 64 (preset 33 should not be used as this is a special Pelco preset)
The dome menu can be displayed using the conventional key strokes used to access dome menus from the Panasonic controller. Please refer to the Panasonic manual for this information.

Once the dome menu is displayed the joystick is used to navigate the cursor and the CAM or ENTER key is used to simulate the Pelco IRIS OPEN key.

When navigating the dome menu you must wait for approx 2 seconds between repeated ENTER key presses to allow control with the HD316 DVR range.

Once EXIT is selected from the dome menu you must perform a camera “setup off” from the Panasonic controller otherwise pan/tilt control will be slow and fixed speed.

DENNARD protocol

Function	Panasonic Procedure
Program preset 1 – 32	As normal – refer to Panasonic Manual
Goto preset 1 – 32	As normal – refer to Panasonic Manual
Display Menu	As normal – refer to Panasonic Manual
	Use the Joystick to move the dome cursor and either the joystick button or ENTER. In addition GOTO PRESET 1 can be used as enter.
Patrol playback	Either AUTOPAN or PATROL

Ensure that the dome address matches the address that the Panasonic equipment is sending using the Yellow and Blue rotary switches in the dome.

Preset positions
The unit supports 32 preset positions per dome. Use the standard Panasonic method to program a preset and also to goto preset.

The dome may display a message asking “Edit Preset Text: YES/NO” after a program preset is sent from the controller. Use the joystick to select YES or NO and send “GOTO PRESET 1” as ENTER. This is a dome feature.

VICON protocol (4800 or 9600 baud)

Function	Panasonic Procedure
Program preset 1 – 32	As normal – refer to Panasonic Manual
Goto preset 1 – 32	As normal – refer to Panasonic Manual
Display Menu	As normal – refer to Panasonic Manual Use the Joystick to move the dome cursor and either the joystick button or SET. SET sends an AP command ESC sends an AI command AUX1 & AUX2 are also used within the Vicon menu.
TOUR 80 playback	PATROL
AUTOTOUR 88 playback	AUTOPAN

Ensure that the dome address matches the address that the Panasonic equipment is sending using the address switch on the dome base plate.

Supports 4800 and 9600 baud rates. Please select the baud rate required using SW1 as diagram on page 6.

With a Vicon Surveyor 2000 dome ensure the following switch settings are used.
VPS
DUPLEX
RS422

Data connection between PC8 and dome

PC8	Dome
TRA	COMM IN+
TRB	COMM IN-

Notes

Some notes that can help installation of the PC8 with a Panasonic matrix to a site with existing Vicon domes:

1. When star wiring a single dome from a PC8 output set the dome to RS422.
2. Daisy chaining multiple cameras from a PC8 output set the dome to RS485.
3. Some domes do not auto detect the baud rate on power up which will prevent control if the dome is not set to the same baud rate as the PC8. To force the dome to auto detect
    a. power off dome
    b. set dome to vicoax (Vicon up the coax instead of RS422/485 control)
    c. power on dome then power off after 10 second
    d. set dome to VPS and power on
4. If all else fails and you do can not control the dome just try swapping the data cable between TRA & TRB on the PC8 output. It is possible that the data cable may have a joint in a junction box between the PC8 and the dome.

PANASONIC PASS-THROUGH

This is a special mode which is used to force a Panasonic matrix to output 9000 series telemetry commands.

It is especially used when site wiring does not allow duplex telemetry.

The PC8 is connected to the Panasonic matrix in the usual way using the master screw terminal connector or RJ45.

The receivers/domes will be set to 4 wire telemetry but only a single pair is used to connect the from the PC8 TRA/TRB outputs to the receiver/dome RA/RB pair.

For full details of this function please liaise with Panasonic Technical.

Tx1000		The Tx1000 MK2 series combines a video switch with the simplicity of installation associated with coax controlled systems. These combinations provide a flexible, cost-effective control solution for both internal and external pan / tilt / zoom and dome applications. Like all BBV products, simplicity of use and aesthetic casework are inherent in the design. The Tx1000 series supports coaxial telemetry and BBV422 telemetry as standard and 20mA twisted pair operation as an option, allowing integration with infrared, microwave and fibre-optic links, IP links an optional factory-fitted alarm card with programmable functions is available for connection to up to 16 external detection devices.
Tx1500		The Tx1500 series combines a state-of-the-art-video matrix with the simplicity of installation associated with coax controlled systems. This combination provides a flexible and cost-effective control solution for internal and external pan / tilt / zooms and dome applications. The Tx1500 series supports BBV up-the-coax and BBV 422 twisted pair Telemetry as standard, allowing integration with IR, microwave and fibre-optic Links IP. Modules can be added allowing control of several different domes or receiver types on one system. 20mA telemetry available via add-on optional Tx/MK2/TPO Additional 16-way alarm cards with programmable functions are available for connection of up to 16 external detection devices per card. Up to 6 alarm cards can be added, either local to the Tx1500, or distributed around the site allowing up to 96 inputs. System features include variable sequence dwell time, advanced alarm options including multiple events per alarm and keypad programmed to limit access to cameras and monitors
FBM		Available from 16 to 512 camera inputs and 16, 32, 48 or 64 monitor outputs. Distributed units allow systems of up to 4,096 cameras to be designed Up to 16 keypads Up to 512 alarm inputs The FBM series combines a state-of-the-art video matrix with the simplicity of installation associated with all BBV products. This combination provides a flexible and cost-effective control solution for both internal and external pan / tilt / zooms and dome applications. The FBM series supports BBV422/485 twisted pair telemetry as standard, allowing integration with IR, microwave and fibre-optic links. Modules can be added, allowing control of several different domes or receiver types on one system. Coaxial output cards are available for up-the-coax control of PTZ and domes. Additional alarm cards with programmable functions are available for connection of up to 16 external detection devices per card. Up to 32 alarm cards can be added either locally to the FBM or distributed around the site, allowing up to 512 inputs. Programmable features include variable sequence dwell time, multiple events and programmable alarm text per alarm upon activation. Keyboards can be programmed to limit access to cameras and monitors.
AD121 Converter		The AD 1-2-1 converter is designed to provide single address protocol conversion. The AD 1-2-1 converter accepts AD422 data from a single source, converts it to one of the range of possible RS485/422 protocols.
BBV121 Converter		The BBV 1-2-1 converter is designed to provide single address protocol conversion. The 1-2-1 converter accepts RS485/422 data from a single source, converts it to one of a wide range of possible RS485/422 protocols.
Star Repeater 16		The Star Repeater 16 provides a simple and cost-effective solution in the installation of RS422/485 telemetry systems. The Star repeater 16 takes RS422/485 data from one source and repeats it across 16 isolated outputs, which can be wired in a star format. This unit is optimized for camera systems that only require unidirectional commands.
Starcard		The Starcard provides a simple and cost-effective solution in the installation of RS485/422 telemetry systems. The Starcard takes RS485/422 data from one source and distributes it across 8 isolated outputs which can be wired in a star format or allow up to 31 cameras to be daisy chained. 8 RS422/485 outputs to allow star wiring of telemetry systems and Tx1500 Key boards and alarm Cards can also be used when star wiring is required for other systems
Starcard Converter		The Starcard Converter is designed to provide simple and cost effective RS485/422 protocol conversion. The Starcard converter accepts RS485/422 Data from one source converts it to one of a wide range of possible RS485/422 protocols and distributes it across eight isolated outputs. The outputs can be wired in a star format or a daisy format to allow up to 31 cameras to be controlled from each output.
ASGARD HD Decoder		The Asgard HD Decoder is a 30fps, 1080p standalone unit, which facilitates the streaming of camera images from one or more media servers, without the need of a PC. This enables display monitors to be mounted remotely around the premises or network. The unit can be additionally controlled by simple CGI commands from control workstations or hand held devices.

BBV design and manufacture a wide range of CCTV products, specialising in protocol conversions. If you can't see what you require, please call for assistance.

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Rx10X		The Rx10X is designed to offer a simple solution for applications where there is a need to control one of a variety of 3rd Party Dome Cameras. The receiver offers considerable opportunities for upgrading existing BBV telemetry systems as it is now possible to add a wide range of integrated domes into the system.
Rx200/WBX		The Rx200 offers control of AC driven pan only or wash / wipe / lights for static cameras. The compact dimension of this PCB allows it to be fitted within a camera housing or dome as an alternative to the more usual weather-proof enclosure.
Rx300/WBX		The Rx300 offers control of AC driven pan, tilt and zoom cameras, whether mounted externally or internally. This gives you entry level control of AC Pan/Tilt/Focus with 1 auxiliary output. Controlled by BBV up-the-coax and 20mA twisted pair. The compact dimensions of the PCB allow it to be fitted within camera housing as an alternative to the more usual weather-proof enclosure.
Rx400/WBX		The Rx400P Telemetry Receiver is ideal for controlling full function ac pan/tilt/zoom Cameras in an external environment where accessories such as wiper, washer etc. are the norm. The Rx400P offers up to 16 full scene presets. These may be used as a method of visually patrolling large areas of a site. They may be interlinked with detection devices in automated system designs. Presets effectively reduce reliance on the operator.
Rx25X		The Rx25X Multiple Protocol Auxiliary Relay Receiver is designed to offer a simple, cost effective solution to activate an auxiliary output, for example to activate a Washer, Wiper or Lights in a static Camera application via a twisted pair cable. The compact dimensions of the PCB allows fitting within the camera housing.
Rx35X/WBX		The Rx35X is a telemetry receiver with ac pan and tilt outputs. It supports BBV RS422, Pelco P, Pelco D, Molynx D type, Sensormatic RS422, Vista RS485 & VCL RS485 telemetry and it allows entry level control of ac pan/tilt and zoom/focus with a wiper auxiliary output. The compact dimensions of the PCB allow it to be fitted within a camera housing as an alternative to the more usual weather proof enclosure. The unit is suitable for 230V mains operation. As a factory fitted option, the receiver can be supplied to operate from 24Vac or 110Vac. This option must be specified at the time of order.
Rx45X/WBX		The Rx45X MK5 is designed to control fixed speed AC pan & tilts heads from BBV and Baxall up-the-coax telemetry and a range of BBV485/422 telemetry protocols. The receiver offers system designers the option of using traditional P/T/Z heads for applications where it is necessary to specify a range of camera / lens combinations.
Rx55X/WBX		The Rx55X MK5 is designed to control variable speed DC pan & tilts heads from BBV and Baxall up-the-coax, and a range of RS485/422 telemetry protocols. The receiver offers system designers the option of using traditional P/T/Z heads for applications where it is necessary to specify a range of camera / lens combinations.