



BBV RS422 Telemetry Control Protocol V3 Dec 08



BBV



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BBV RS422 Telemetry Control Protocol

This document describes the protocol used to drive RX45X, RX55X (when BBV422 Telemetry is selected) and BBV StarCard Converters.

Baud Rate: 9600
Parity: None
Data Bits: 8
Stop Bits: 1

The protocol is designed as a single direction, multi-drop RS422 protocol. The RX45X, AC telemetry receiver and RX55X, DC telemetry receiver will be able to provide positional information that will require a separate data pair.

Each command comprises of 8 bytes as follows:

Byte 1 - BBV STX (0xB0)
Byte 2 - Address (0 - 126) 0 = address 1, 126 = address 127
Byte 3 - Described Below
Byte 4 - Described Below
Byte 5 - Described Below
Byte 6 - Described Below
Byte 7 - BBV ETX (0xBF)
Byte 8 - Checksum (XOR of Bytes 1, 2, 3, 4, 5, 6 & 7)

There are two types of command; manual movement commands and additional commands. Byte 4 bit 0 is used to select the command type. Manual commands are selected when Byte 4 bit 0 is 0 and additional commands are selected when Byte 4 bit 0 is 1.

Manual Movement Commands – Byte 4 bit 0 = 0

Byte 3 Bit 7 – ALWAYS 0
Bit 6 – Future Expansion
Bit 5 – Future Expansion
Bit 4 – Future Expansion
Bit 3 – IRIS CLOSE
Bit 2 – IRIS OPEN
Bit 1 – FOCUS FAR
Bit 0 – FOCUS NEAR

Byte 4 Bit 7 – ALWAYS 0
Bit 6 – ZOOM OUT (WIDE)
Bit 5 – ZOOM IN (TELE)
Bit 4 – TILT DOWN
Bit 3 – TILT UP
Bit 2 – PAN LEFT
Bit 1 – PAN RIGHT
Bit 0 – ALWAYS 0 FOR MANUAL COMMANDS

Byte 5 Pan Speed, 0x00 – 0x40, 0x00 = SLOWEST, 0x40 = FASTEST
Byte 6 Tilt Speed, 0x00 – 0x3F, 0x00 = SLOWEST, 0x3F = FASTEST

Additional Commands – Byte 4 bit 0 = 1

To select an additional command instead of a manual command Byte 4 bit 0 must be set to 1. The following table indicates the commands possible and the Byte values.

COMMAND	BYTE 3	BYTE 4	BYTE 5	BYTE 6
SAVE PRESET	0x00	0x03	0x00	0x01 – 0x20 (1 – 32)
ERASE PRESET	0x00	0x05	0x00	0x01 – 0x20 (1 – 32)
GO TO PRESET	0x00	0x07	0x00	0x01 – 0x20 (1 – 32)
LIGHTS RELAY ON	0x00	0x09	0x00	0x01 (auxiliary 1 ON) (see notes for 24June04 on page 3)
LIGHTS RELAY OFF	0x00	0x0B	0x00	0x01 (auxiliary 1 OFF) (see notes for 24June04 on page 3)
WIPER RELAY ON	0x00	0x09	0x00	0x02 (auxiliary 2 ON)
WIPER RELAY OFF	0x00	0x0B	0x00	0x02 (auxiliary 2 OFF)
WASH RELAY ON	0x00	0x09	0x00	0x03 (auxiliary 3 ON) (see notes for 24June04 on page 3)
WASH RELAY OFF	0x00	0x0B	0x00	0x03 (auxiliary 3 OFF) (see notes for 24June04 on page 3)
AUTOPAN ON <i>*CTI ONLY*</i>	0x00 <i>0x00</i>	0x07 <i>0x07</i>	0x00 <i>0x00</i>	0x63 (GO TO PRESET 99) <i>0x44 (GO TO PRESET 68)</i>
AUXILIARY ON	0x00	0x09	0x00	0x01 – 0x08
AUXILIARY OFF	0x00	0x0B	0x00	0x01 – 0x08
ZOOM LENS SPEED	0x00	0x25	0x00	0x00 – 0x03
TX1500 1 # <i>*CTI ONLY*</i>	0x00 <i>0x00</i>	0x03 <i>0x07</i>	0x00 <i>0x00</i>	0x5F (SAVE PRESET 95) <i>0x3D (GO TO PRESET 61)</i>
TX1500 2 # <i>*CTI ONLY*</i>	0x00 <i>0x00</i>	0x07 <i>0x07</i>	0x00 <i>0x00</i>	0x21 (GO TO PRESET 33) <i>0x3E (GO TO PRESET 62)</i>
TX1500 3 # <i>*CTI ONLY*</i>	0x00 <i>0x00</i>	0x07 <i>0x07</i>	0x00 <i>0x00</i>	0x5E (GO TO PRESET 94) <i>0x3F (GO TO PRESET 63)</i>
TX1500 4 # <i>*CTI ONLY*</i> <i>*CTI ONLY*</i>	0x00 <i>0x00</i> <i>0x00</i>	0x0F <i>0x07</i> <i>0x07</i>	0x00 <i>0x00</i> <i>0x00</i>	0x00 <i>0x22 (GO TO PRESET 34)</i> <i>0x40 (GO TO PRESET 64)</i>
RUN PATROL 1 <i>*CTI ONLY*</i>	0x00 <i>0x00</i>	0x07 <i>0x07</i>	0x00 <i>0x00</i>	0x61 (GO TO PRESET 97) <i>0x42 (GO TO PRESET 66)</i>
RUN PATROL 2 <i>*CTI ONLY*</i>	0x00 <i>0x00</i>	0x07 <i>0x07</i>	0x00 <i>0x00</i>	0x62 (GO TO PRESET 98) <i>0x43 (GO TO PRESET 67)</i>
AUTOPAN <i>*CTI ONLY*</i>	0x00 <i>0x00</i>	0x07 <i>0x07</i>	0x00 <i>0x00</i>	0x63 (GO TO PRESET 99) <i>0x44 (GO TO PRESET 68)</i>
*REPORT POSITION	0x00	0x03	0x00	0x63 (SAVE PRESET 99)

CTI ONLY

These additional commands are only supported in the Coax Telemetry Interface range: CTI/1 CTI/8 & CTI/16 to give easier support when integrating with 3rd party equipment.

The REPORT POSITION command is intended to be used to allow the RX457 or RX557 to report back the current pan/tilt/zoom and focus preset positions when installed with a preset pan/tilt head and lens. Each position will give a value between 0 and 1023 depending on the limit stop positions and pan/tilt and lens type.

This feature is not currently supported however the proposed response would be.

0xB0, ADDRESS, PAN HIGH, PAN LOW, TILT HIGH, TILT LOW, ZOOM HIGH, ZOOM LOW, FOCUS HIGH, FOCUS LOW, 0xBF, CHECKSUM

Each value will be sent as two bytes with bit 7 = 0 as shown in the example for Pan Positions.

PAN LOW Bit 7 = 0
 Bit 0 – 6 = bits 0 – 6 of value

PAN HIGH Bit 7 = 0
 Bit 0 – 2 = bits 7 – 9 of value

The Checksum will be the XOR of all bytes from 0xB0 to 0xBF

Revision changes:

- V1 24 June04 PSC – WASH and LIGHTS auxiliary numbers have been swapped as the previous document was in error. LIGHTS should be auxiliary 1 and WASH should be auxiliary 3.

- V3 04 Dec 08 DL – Additional command for CTI/1 CTI/8 & CTI/16 to give easier support when integrating with 3rd party equipment.

Increased the address range to 1 - 127

Other BBV products.

Product	Description
TX300	Single camera desktop telemetry transmitter with BBV up-the-coax & 20mA telemetry, Pan/Tilt/Lens & Lights
TX400	As TX300 inc Wash, Wipe, Autopan, 8 presets, preset patrol.
TX400DC	As TX400 including joystick for proportional Pan/Tilt control.
TX1000 MK2	8 or 16 camera, 2 monitor telemetry transmitter. Up to 2 keyboards. BBV up-the-coax and RS422 standard with options for alarm inputs and 20mA telemetry.
TX1500	Mid size matrix 16 – 96 camera, 8 monitor. Up to 4 control positions (keyboard & remote control) options for alarms, remote control, BBV up-the-coax and RS485 telemetry.
FBM range	Large size matrix. Configurable up to 4096 cameras and 64 monitor outputs. Up to 8 control positions (keyboard & remote control) options for alarms, remote control RS485 telemetry with various options. Please call to discuss requirements.
RX100	Dome Interface with options to drive a large library of dome cameras. BBV up-the-coax and 20mA telemetry.
RX200	AC receiver for Pan only heads or static cameras, Wash/Wipe/Lights. BBV up-the-coax and 20mA telemetry.
RX300	AC receiver for Pan/Tilt/Zoom/Focus/Iris Override and 1 Auxiliary output. BBV up-the-coax and 20mA telemetry.
RX400P	AC full function receiver. PTZFI 4 Auxiliary outputs, 16 presets. BBV up-the-coax and 20mA telemetry.
RX400DC	24Vdc high/variable speed receiver. 16 presets, 8 local alarm inputs, 3 Auxiliary outputs. BBV up-the-coax and 20mA telemetry.
RX45X (AC) RX55X (DC) Multi RS485 protocol and BBV up-the-coax telemetry receivers	Multiple RS485/422 and BBV up-the-coax controllable AC and DC receivers. These receivers are controlled from an expanding range of serial protocols as listed below. 110/230Vac supply. PTZFI, 64 presets, preset patrol, 8 local alarm inputs, 12V 500mA supply output. OSD for remote diagnostics. 3 Aux. outputs RX55X or 4 Aux. outputs RX45X. Optional Privacy board. BBV RS485, COAX & 20mA, BAXALL COAX, DENNARD RS485, MOLYNX PELCO P/D RS485, VCL/HONEYWELL RS485, PHILIPS/BOSCH RS485 (OPTIONAL BI-PHASE INPUT), SENSORMATIC/AD RS422 VICON RS422 CIRRUS AUDIO MONITORING
STARCARD STARCARD/CONVERTER	8 * RS485 output, 2 wire simples RS422, 4 wire full-duplex RS422, 2 wire half-duplex RS485. Optional STARCARD/CONVERTER offering protocol conversion to drive an increasing range of 3 rd party protocols.
ACCESSORIES	CTI/16 16 camera, RS422 to up-the-coax converter TxLD (bidirectional RS422-RS232 converter) 98005 (bidirectional 20mA-RS232 converter) AD RS422 (American Dynamics) protocol converters