Project TXB-BBV

15 August 2007

Confidential

Product Proposal

Marketing Project 1003

Change History		
Rev	Date	Change Reason
A	15 August 2007	Pre-Original release

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Contents

List of Figures

1 Scope

This document is the property of the Pelco Marketing Department (although it was written by Engineering) and is the design criteria for development of new products. Approval of this document authorizes the Pelco Engineering Department to begin the Preliminary Design that defines the overall product development goals.

2 General Description

This project description describes a TXB which operates on systems untilizing the Building Block Video (**BBV**) series of CCTV protocols.

2.1 Business Objective

To allow Pelco products to operate in a competitor's environment.

2.2 Product Reputation and Market Segment

Pelco has an excellent reputation and the largest installed base of CCTV cameras in the world. This translator will allow Pelco to capture additional market share. The largest market share increase will probably be in The United Kingdom (Britain).

2.3 Product Features, Performance & Benefits

The TXB-BBV will be designed to fit inside a modern Pelco unit unobtrusively and have the Pelco unit appear to a BBV camera operator exactly like a BBV unit. It is expected that there will be some minor "fundamental" design differences between the systems. They will be reduced as much as possible with the TXB-BBV.

2.4 Competitive Product Comparison

None are known.

2.5 Appearance & Human Factors

The TXB-BBV shall be designed to conform to the TF-0016 design guide lines. Once installed it will be not be visible to the user.

2.6 Product Compatibility

1. The TXB-BBV will accept BBV camera commands as viewed in data captures.

2. The TXB-BBV will generate Pelco D Protocol commands as described in Pelco document TF-0001.

3. The TXB-BBV must be designed in conform to TF-0016.

4. The TXB-BBV must operate correctly in at least the following Pelco products:

   4.1 Mini Spectra

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[2]$Header: d:/TXB-BBV/Project/RCS/ABlock1.inc,v 1.6 2007-08-06 13:19:57-07 Hamilton Exp Hamilton $
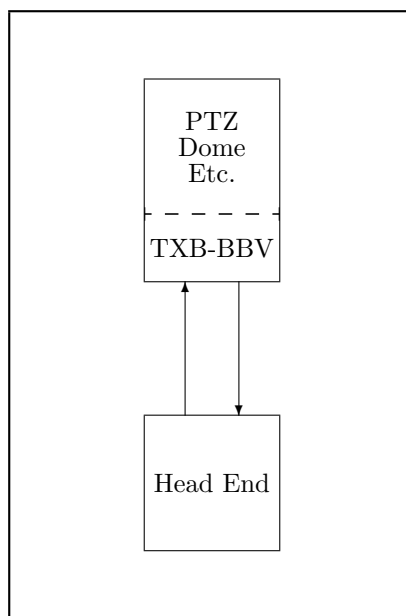
$RCSfile: ABlock1.inc,v $

Figure 1: Location of the TXB-BBV when in use

4.2 Spectra II

4.3 Spectra III

4.4 Spectra IV

4.5 Esprit

4.6 ExSite

4.7 And other units that have an accessory socket.

3   Specific Product Requirements

The TXB-BBV shall incorporate the following features:

1. Use a low amount power.

2. Have high parts commonality with current in stock items at Pelco. Preference shall be given to using the current TXB-H board.

3. It is desirable to have the unit be able to download software upgrades over the RS-422/RS-485 input lines[3].

4. When operating in 4-wire RS-485 mode, it must be possible to download an attached Spectra, or equivalent.

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[3]RS-422 and RS-485 have identical voltage levels when in use. The TXB-BBV will operate in both modes.

5. When operating in 2-wire RS-485 mode, it would be desirable to be possible to download an attached Spectra, or equivalent.

6. Communications with the head end will be in RS-422 or RS-485. The baud rates are: 2400, 4800, 9600, and 19200. With 9600 baud being the default.

7. DIP Switches must be in the same orientation that the DIP Switches are on the Spectra line of equipment. I.e. the least significant bit of an address must be on the physical left end of the switch, etc.

8. DIP Switch Usage:

   The new TXB-BBV translator board has a single eight position DIP Switch on it. The switches are used as follows in the TXB-BBV: (**Bold entries are the default positions.**)

   8.1 **SW1-8**: Termination of the receive RS-422/RS-485 line from the head end.

      8.1.1. **On is terminate the line**,
      8.1.2. Off is do not terminate the line.

   8.2 **SW1-7**: Termination of the transmit RS-422/RS-485 line to the head end.

      8.2.1. **On is terminate the line**,
      8.2.2. Off is do not terminate the line.

   8.3 **SW1-6**: Factory test of the DIP Switches. When this switch is on a binary display of the positions of **SW1-1** through **SW1-6** are displayed on the Pelco PTZ's video output. This is intended to allow testing to verify that all switches accessable from software are properly connected. **SW1-7** and **SW1-8** (receive and transmit terminations) may not be accessed from software and are not displayed.

      8.3.1. On enter test mode,
      8.3.2. **Off normal operation.**

   8.4 **SW1-5**: 2 or 4 wire RS-485 modes of head end communications. Ignored in RS-422 mode.

      8.4.1. On use 2 wire RS-485 standard for head end communications.
      8.4.2. **Off use 4 wire RS-485 standard for head end communications.**

   8.5 **SW1-4**: Operate in RS-422 or RS-485 mode.

      8.5.1. On use RS-485 conventions for head end communications. Switch SW1-3 will be used to determine if 2 or 4 wire configureation is to be used.
      8.5.2. **Off use RS-422 conventions for head end communications.**

   8.6 **SW1-2** and **SW1-1**: These are the baud rate selection switches. They select the following baud rates:

      8.6.1. 0: **9,600 with No parity**
      8.6.2. 1: 2,400 with No parity
      8.6.3. 2: 4,800 with No parity
      8.6.4. 3: 19,200 with No parity

         I.e. **0** = **SW1-3** off, **SW1-2** off and **SW1-1** off,
         and **3** = **SW1-3** off, **SW1-2** on and **SW1-1** on.

9. Software must be written in a high order language. (C or other, not assembly.)

3.1 Specifications

The TXB-BBV shall meet all requirements of TF-0016.

3.1.1 Environmental

The TXB-BBV shall operate at all temperatures that the host unit operates. Except for the temperature range and that has been reduced to be $-20 \rightarrow +40^o$C.

The TXB-BBV shall be ROHS compliant.

3.1.2 Mechanical

The TXB-BBV shall meet all requirements of TF-0016.

3.1.3 Performance

1. The TXB-BBV shall receive commands in serial over a two or four wire RS-485/RS-422 control circuit.

2. The TXB-BBV shall be able to translate BBV commands into the nearest equivalent D Protocol commands with no operator intervention. There are several formats of BBV commands that the TXB-BBV must be able to work with.

3. The TXB-BBV must have a new "pass through" mode to support down loading of the Spectra III, Spectra IV and ExSite.

4. The TXB-BBV must be able to process, or "pass through", D Protocol commands.

5. The TXB-BBV must be able to "pass through" P Protocol commands.

3.1.4 Potential Problems

1. Understanding the various protocol documents from BBV will be a challange. So far three different versions of BBV's CCTV protocol have been discoverd.

3.1.5 Power

The TXB-BBV shall operate on either +5 or +12 VDC provided by its host. It shall use less than one watt of energy.

3.2 Safety/Performance/Agency Compliance

This product must meet all requirements of the following agencies:

1. FCC Class B.

2. UL

3. CSA

4. Others as needed.

3.3   Referenced Documents

The following documents are referenced in this document or were used in generating this proposal.

1. **TF-0001**: This is the Pelco internal version of the D Protocol specification.

2. **TF-0016**: This is the Pelco design document for TXBs.

3. Various protocol documents from BBV included all of the following:

   3.1 BBV RS422 Telemetry Control Protocol 24June04.pdf

   3.2 BBV tp and coax protocol 1.4 Oct05.pdf

   3.3 Tx1000 RS232 control protocol V1.9 6Sep02.pdf

   3.4 Tx1500 control protocol Draft 24Jan03 PSC.pdf

   These documents were all downloaded from the BBV web site (`www.BBVCCTV.com`) and carefully examined.

3.4   Installation & Service Requirements

This product must be easy to install and not require non-standard tools. If the requirement of special tools is unavoidable, Pelco will provide them.

3.5   Overseas Models

There is no difference between domestic and overseas models, other than the slight chance that different agency approvals may be required.

4   Model Numbering Scheme

4.1   Proposed Model Numbers

Model #	Description	Cost Goal	Dealer Price	% of units sold
TXB-BBV	Building Block Video Protocol Converter	$15	$50	100

4.2   Explanation of Model Scheme

- **TXB:** Translator Board

- **BBV:** BBV, incorporating RS-485 and RS-422 Series of protocols.

5   Miscellaneous Product Objectives

5.1   Prototype Evaluation Requirements (Test Plan)

Testing will be done in two phases. The first phase will be performed by the software engineer and hardware engineer using prototype units and all available BBV equipment. When the designers/implementors believe that the TXB is correctly implemented, the second phase of testing will be started. Phase two consists of having a small prototype run of ten boards to be made.

The build of ten TXB-BBV units and their use in checking the accuracy of the protocol translations will be allocated as follows:

1. Two for internal engineering testing.

2. Two for Test and Validation.

3. Two for Compliance Testing.

4. Two for Beta testing.

5. One for Tech Manuals.

6. One as a spare.

BBV equipment available for testing:

1. **TX1000 Virtual Keypad**: A Glass Keyboard Windows based GUI from BBV.

2. **DMS Sprite 2**: A DVR with builtin support for the BBV protocols.

3. **GlassKeyboard**: This is not a real BBV product but has been modified by Pelco to support the BBV protocol.

5.2   Phase-In/Phase-Out Strategy

There is no equivalent unit now being manufactured by Pelco.

5.3   Initial Override Forecast

None.

5.4   Estimate of Mature Volume

The primary goal of this unit is to allow sales of Spectra and Esprit units in areas where we can not sell them currently. A first estimate is that after six months of quantity availability, that sales will be in the about 50 units per month, and this includes the Spectras, etc., that will be sold with them.

Index