# Project TXB-C

**3 August 2007**

## Confidential

### Product Proposal

Marketing Project unknown

| Change History | | |
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| Rev | Date | Change Reason |
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| Author(s) |
|---|
| Eric Hamilton |


[1] $Header: d:/TXB-Cohu/Project/RCS/PTXB-C.tex,v 1.13 2007-08-03 10:26:41-07 Hamilton Exp Hamilton $

# 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 in two modes. One is to work with the older series of Cohu PTZ units known as the MPC Series of equipment. The other is the newer series of PTZ units known as the I Series. Changing between the two modes may require the use of a DIP Switch.

1. The MPC Series of PTZ equipment has a reduced number of presets (10) and operates in fixed speed mode only.
2. The I Series of PTZ equipment has a "full" set of presets (64) and operates in variable speed mode.

The format of the absolute pointing angle data, and the replies, is different for the two series of PTZ units.

## 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 Australia.

## 2.3 Product Features, Performance & Benefits

The TXB-C will be designed to fit inside a modern Pelco unit unobtrusively and have the Pelco unit appear to a Cohu camera operator exactly like a Cohu 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-C.

## 2.4 Competitive Product Comparison

Sennetech makes a translation unit that resides at a head end and generates Cohu protocol from Bosch Manchester code. A search of their web site shows no other options for generating Cohu protocol. There are no other known translator products.

## 2.5 Appearance & Human Factors

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

[2] `$Header: d:/TXB-Cohu/Project/RCS/ABlock1.inc,v 1.5 2007-06-04 12:20:36-07 Hamilton Exp Hamilton $`

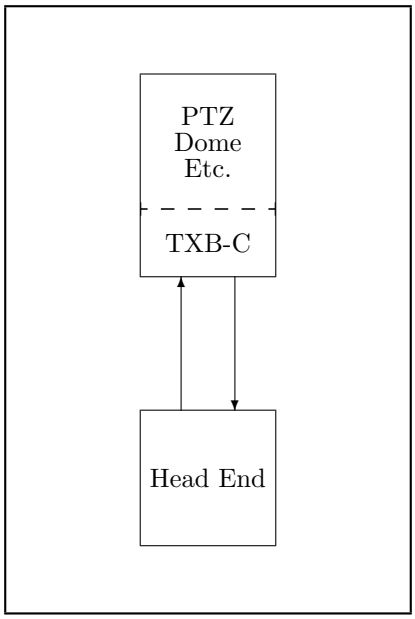


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Figure 1: Location of the TXB-C when in use

### 2.6 Product Compatibility

1. The TXB-C will accept Cohu camera commands and send replies as outlined in the various Cohu and Georgia State Department of Transportation bid documents.
2. The TXB-C will generate Pelco D Protocol commands as described in Pelco document TF-0001.
3. The TXB-C must be designed in conform to TF-0016.
4. The TXB-C must operate correctly in at least the following Pelco products:
   (a) Mini Spectra
   (b) Spectra II
   (c) Spectra III
   (d) Spectra IV
   (e) Esprit
   (f) ExSite
   (g) And other units that have an accessory socket.

## 3 Specific Product Requirements

The TXB-C 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.
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-485 or RS-485 mode in four wire format. The baud rates are: 300, 600, 1200, 2400, 4800, 9600, 19200 and 38400 baud. 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-Cohu translator board has a single eight position DIP Switch on it. The switches are used as follows in the TXB-Cohu: (**Bold entries are the default positions.**)

   (a) **SW1-8**: Termination of the receive RS-485 line from the head end.
      i. **On is terminate the line**,
      ii. Off is do not terminate the line.

   (b) **SW1-7**: Termination of the transmit RS-485 line to the head end.
      i. **On is terminate the line**,
      ii. Off is do not terminate the line.

   (c) **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.
      i. On enter test mode,
      ii. **Off normal operation.**

   (d) **SW1-5**: 2 or 4 wire RS-485 modes of head end communications.
      i. On use 2 wire RS-485 standard for head end communications.
      ii. **Off use 4 wire RS-485 standard for head end communications.**

   (e) **SW1-4**: Operate in MPC or iDome mode.
      i. On use iDome conventions for angle readouts and preset numbering.
      ii. **Off use MPC conventions for angle readouts and preset numbering.**

[3]RS-422 and RS-485 have identical voltage levels when in use. The TXB-C will always operate in RS-485 mode as it is more "universal" than RS-422. There is a choice between using two or four wire RS-485 communications modes only.

(f) **SW1-3**, **SW1-2** and **SW1-1**: These are the baud rate selection switches. They select the following baud rates:

i. 0:**9,600 with No parity**
ii. 1: 300 with No parity
iii. 2: 600 with No parity
iv. 3: 1,200 with No parity
v. 4: 2,400 with No parity
vi. 5: 4,800 with No parity
vii. 6: 19,200 with No parity
viii. 7: 38,400 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-C shall meet all requirements of TF-0016.

### 3.1.1 Environmental

The TXB-C 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-C shall be ROHS compliant.

### 3.1.2 Mechanical

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

### 3.1.3 Performance

1. The TXB-C shall receive commands in serial over a two or four wire RS-485 control circuit.
2. The TXB-C shall be able to translate Cohu commands into the nearest equivalent D Protocol commands with no operator intervention. There are two formats of Cohu commands that the TXB-C must be able to work with.
3. The TXB-C must have a new “pass through” mode to support down loading of the Spectra III, Spectra IV and ExSite.
4. The TXB-C must be able to process, or “pass through”, D Protocol commands.
5. The TXB-C must be able to “pass through” P Protocol commands.

### 3.1.4 Potential Problems

1. Understanding the various protocol documents from Cohu will be a challange.

### 3.1.5 Power

The TXB-C 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. Cohu protocol documents. Additional detailed information about Cohu protocols and other background material are contained in the following publications:
   (a) Various protocol documents from Cohu included all of the following:
      i. "3500pro.pdf"
      ii. "3850pro.pdf"
      iii. "iDomeiViewLCUCommProtocol.pdf"
      iv. "mpc2221pro.pdf"
      v. "mpc232pro.pdf"
      vi. "mpc422pro.pdf"

   These documents were all downloaded from the Cohu web site (`www.cohu-cameras.com`) and carefully examined. Excerpts from all of them are in the Pelco document "Cohu Protocols".
   (b) "CCTV (Rev 8.0) 936 04-18-05 (1).pdf". This part of a solitition for bid from the Department of Transportation for the state of Georgia. It contains the Cohu Protocol to be implemented for that project.
   (c) An additional document that was downloaded from the Cohu web site was the documentation on the Cohu GUI, WinMPC "1032v42.pdf". WinMPC, a windows Glass Keyboard program was also downloaded and provided much useful information.

## 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-C | Panasonic Protocol Converter | $15 | $50 | 100 |

## 4.2 Explanation of Model Scheme

- **TXB:** Translator Board
- **C:** Cohu, incorporating RS-485 MPC Series and iDome 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 Cohu 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-C 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.

Cohu equipment available for testing:

1. **WinMPC**: A Glass Keyboard Windows based GUI.
2. **iViewII**: A follow on the the older Cohu Esprit based PTZ systems.
3. Other equipment as it becomes available.

## 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