Updates	Comment
28 July, 2003	I forgot
28 August 2003	Complete bar code reader info

1. MDT mezzanine board serial numbers and subfields

$$\omega_1\omega_0\text{-}X_2X_1X_0\text{-}y_1y_0\text{-}Z_4Z_3Z_2Z_1Z_0$$

Sequential 5 digit *serial number*

Two digit *assembly revision*

Three digit pc *board identifier*

Two digit *check sum*
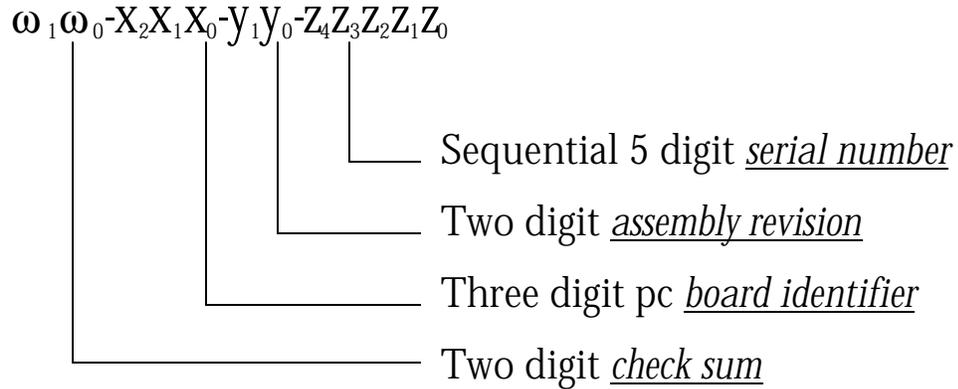
1.1 Board identifier

The three digit code, $X_2X_1X_0$, is as follows

X_2 : Number of layers in associated chamber; 3 or 4

X_1 : Type of associated hedgehog card; 1, 3, or 4

X_0 : PC board revision, 0,...,9

eg. MDT432 : Four layer chamber, Type 3 hedgehog card, pc board revision 2.

1.2 Assembly revision

A two digit number associated with a parts list (see section 2.2). This number is incremented when values of components are revised.

1.3 Serial number

A five digit sequential serial number identifying each assembled board. If component changes are subsequently required after initial assembly, only the assembly revision is incremented, not the serial number. **The serial number for each issue of the board is re-started at 00001.**

1.4   Check sum

A two digit check sum, $\omega_1 \omega_0$, is appended to both chip and mezzanine board bar codes. See section 3.1.4 for details.

2. Parts lists

MDT4xx and MDT3xx cards have similar, but not identical parts lists. Therefore, separate lists will be maintained for each. The parts lists will have identifiers as follows.

$$MDT.y_1y_0.\text{txt}$$

Two digit *assembly revision*
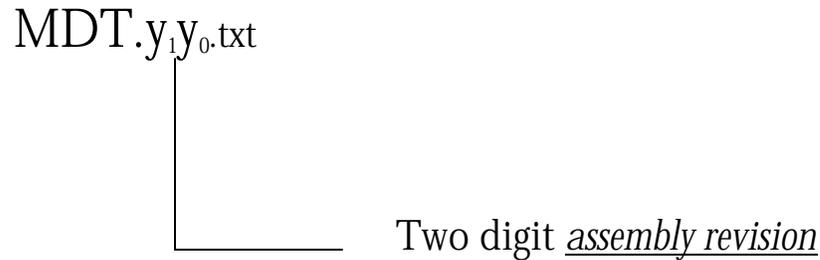
### 2.1   Chamber type identifier (No longer used)

Parts lists for the 3-layer and 4-layer chambers differ only in one aspect: the number of Samtec connectors on the backside of the board. This minor difference has now been

noted on the parts list. Thus the **chamber type identifier**, X_2, distinguishing between 3-layer and 4-layer chambers will no longer be used. The parts lists will have only a single 2-digit field as described in section 2.2.

2.2   Assembly revision

The **assembly revision** is a sequential two digit number which is incremented on revisions of a parts list for all mezz card types.

3. MDT-ASD chip serial numbers

Each chip will be individually labeled with a unique serial number in bar code and human readable formats. The serial number fields are described below

$$\omega_1\omega_0\text{-}y_5y_4y_3\text{-}y_2y_1y_0$$

Six digit _serial number_

Check sum
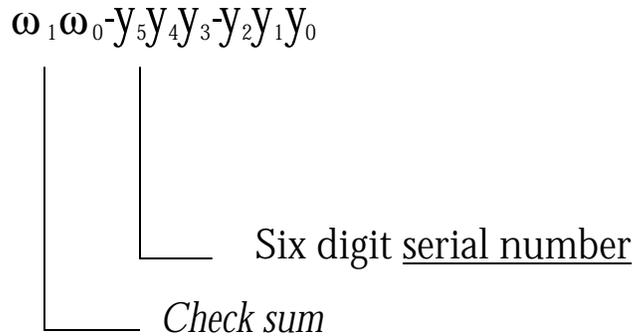
3.1   Serial number field

The six digit serial number will have the following properties

3.1.1   Sequential with leading zeros starting with 000,001

3.1.2   Hyphen delimited after the third digit for human readability.

3.1.3   Bar coded using 2D "Data-Matrix" format. Bar code format also contains a **check sum.**

3.1.4   The **check sum, $\omega_1\omega_0$** is derived from the serial number as _the the sum of the six serial number digits_, $y_5\ y_4\ y_3\text{-}\ y_2\ y_1\ y_0$

MDT-ASD labels will necessarily undergo harsh treatment due to pcb processing. They will be subjected to soldering temperatures and cleaning environments. The check digit is included to prevent bar-code reading errors due to label damage and to enable serial number recovery.

An example is shown below for chip no. 72,761

23-072-761

Note that 23 is the sum of the six digit sequential serial number 072-761 and is included in both the bar-code and human readable formats.

4. Bar code label details

4.1   Code

Bar codes are produced in a standard 2-D code referred to as "Data Matrix". The codes are generated by software called "TagPrint Pro" from Tyton Hellerman.

4.2   Label stock

The actual label stock is "Lasertab Markers". The model number of the product is LAT-25-652-10 which comes in 8.5" x 11" sheets with 286 labels per sheet and may be printed on a standard laser printer. The labels are heat and chemical resistant sufficient for standard pcb assembly and cleaning.

4.3   Bar Code reader

The recommended bar code reader is from Symbol Technologies, Inc. This unit will read all standard 1-D bar codes as well as the 2-D code. The items you will need are :

Description	Part Number
Vision 4000 Image Scanner	VS4004-1000
Power supply (US)	50-1400-008
Synapse Smart Cable	STI80-0200
Synapse Smart Adapter	25-1658-20

Please go to the Symbol Technologies web site for details

http://www.symbol.com/products/barcode_scanners/barcode_handheld_vs4000.html