

Serialization and Traceability of Storage Products

Introduction

Virtium's focus is to provide high-reliability storage products to OEMs making infrastructure and communications equipment for the Internet of Things. These OEMs demand complete traceability not only of the hardware bill of materials, but also firmware and manufacturing facilities. This document outlines Virtium's serialization and label markings, and how they relate to traceability.

Note: Virtium sometimes accommodates a customer-specific requirement. Those labels may look different than the ones described herein.

What Information is Traceable From the Label?

The following list includes product information that is traceable using Virtium's standard serialization:

- Bill of Materials: NAND flash, controller, PCB, active and passive components
- Firmware
- Manufacturing: location, line, date and work order

What Are The Components of Virtium's Storage Label Marking?

- Virtium Model Number
- Numeric string containing the work order and serial number
 - *Note: the label serial number is not the same as the machine generated internal serial number. See internal serial number discussion below.*
- Date code

Model Number

The model number provides the most detailed information. Multiple designations within the model number indicate various physical and mechanical specifications, as well as branding and customization information. The model number contains: brand; interface and form factor; product class; operating temperature; capacity; NAND flash; controller; and firmware.

An example model number for Virtium's 64GB 2.5" SATA 6G SLC, I-temp SSD is:

VSFB25PI064G-100

Figure 1 provides a breakdown of the model number information, specifying the significance of each alpha-numeric variable.

V	SF		B25			P	I	xxxG				-	yyy or yyyy			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Figure 1: Model Number

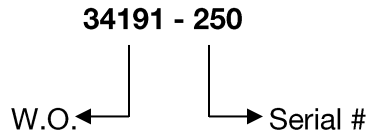
1	MANUFACTURER
V	Virtium
2-3	BRAND
SF	StorFly®
TD	TuffDrive®
4-6	INTERFACE AND FORM FACTOR
A25	GEN1, SATA 2.0, 2.5", 9.5 MM
B25	GEN2, SATA 3.0, 2.5", 7.0 MM
A18	GEN1, SATA 2.0, 1.8", 5 MM
B18	GEN2, SATA 3.0, 1.8", 5 MM
P25	PATA 2.5", 9.5 MM
200	GEN1 MO-297, SLIMSATA
202	GEN2 MO-297, SLIMSATA
300	GEN1 MO-300, MSATA
302	GEN2 MO-300, MSATA
BM4	GEN2 M.2 SATA 3.0 22x42MM
BM8	GEN2 M.2 SATA 3.0 22x80MM
CFA	COMPACTFLASH, TYPE I
CFS	GEN1 CFAST
CS2	GEN2 CFAST
U21	USB 2 10-PIN, 2.54MM PITCH
U22	USB 2 10-PIN, 2MM PITCH
U24	USB 2/3 SHORT KEY
U25	USB 2/3, LONG KEY
7	PRODUCT CLASS
P	PE Series
C	CE Series
X	XE Series
R	RE Series
8	OPERATING TEMPERATURE
C	Commercial Temperature 0° to 70°C
I	Industrial Temperature -40° to 85°C
9-12	CAPACITY
xxxM	MB - 1,000,000 bytes
xxxG	GB - 1,000,000,000 bytes
xxxT	TB - 1,000,000,000,000 bytes
13	DASH
-	" - "
14-17	VIRTIUM PROPRIETARY
yyy	<ul style="list-style-type: none"> Firmware/hardware/features for both standard/custom products Customer specific requirements
yyyy	

Figure 2: Decoder

Numeric String Containing Work Order and Serial Number

The string containing the work order number and the serial number is *locked*, and always consists of a five digit work order number followed—after the dash—by a three digit serial number.

An example is as follows:



This numeric string ties the individual unit from the specified batch to the work order document, which contains the manufacturing location; day, month, and year that the individual unit was produced; the manufacturing line; firmware; NAND flash type and manufacturer; controller type and manufacturer; firmware; active components; lot (batch) number; and *locked* bill of materials.

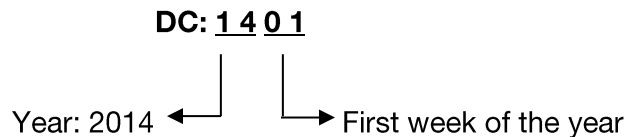
The work order number further allows Virtium to track and extrapolate errors associated with one work order (and any batch associated with that work order) to similar errors stemming from the same root problem in other work orders. This applies to errors or defects in component parts.

The “-250” indicates that there were 250 units in the batch. The serial number will not exceed three digits because a maximum of 999 units are produced in a single batch.

Date Code

The Date Code is the final identifying number in the serialization system, and it indicates the week and year in which the individual unit, and larger batch, was manufactured on for quick reference. Beyond this, the work order contains more detailed date or manufacturing information.

An example is as follows:



Virtium Internal Serial Number

Virtium uses an internal serialization system generated by manufacturing software, which is different than the numbering on the outside label. A customer may identify this number by looking into the device’s internal identification. The internal serial number is only utilized by Virtium and does not affect traceability to any of the information discussed in this document.

Full traceability is available through the numbering system on the unit’s exterior label.

Label Example

Figure 3 depicts a typical label with standard serialization as a reference for the labels by product breakdown that follows.

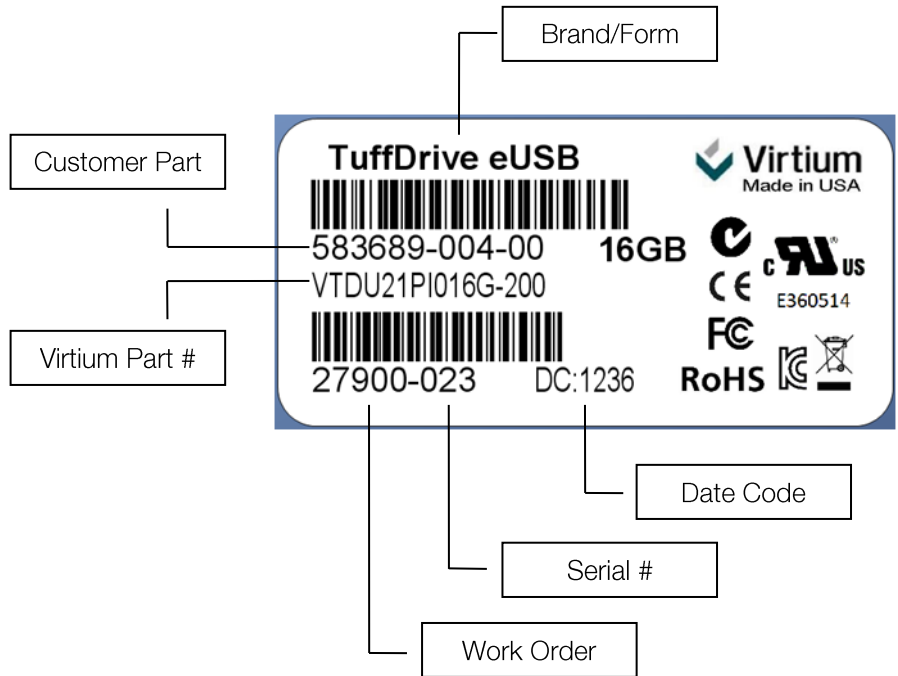


Figure 3: Annotated Standard Label

StorFly Products

- 2.5" SSD
- 1.8" SSD
- CFast
- Slim SATA
- mSATA
- M.2

TuffDrive Products

- Compact Flash
- USB Keys
- eUSB Modules

Virtium manufactures memory and storage solutions for the world's top industrial embedded OEMs. For 18 years we have designed, built and supported our products in the USA - fortified by a network of global locations. Our world-class technology and unsurpassed support provide a superior customer experience that continuously results in better industrial embedded products for our increasingly interconnected world.

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30052 Tomas | Rancho Santa Margarita, CA 92688
 Phone: 949-888-2444 | Fax: 949-888-2445
www.virtium.com