

An Introduction to the Versatile Layout Control Bus (VLCB)

MERG has a long history of progressive ideas and developing solutions for model railroaders. The Kitlocker has become a major resource for members, and Local Control Buses (LCBs) have become a major reason for many kits.

CBUS® has grown from being a system built by a small group of people to a versatile system used and further developed by many people on a variety of platforms. This demands well defined documentation for a system that acts as the glue to bind everything together and make new projects genuinely useful, rather than just one-off curiosities. Unfortunately, the CBUS documentation and feature set has not grown accordingly to support this new usage and the CBUS team has shown little interest in addressing this situation.

For this reason, a group of members have come together to document and extend CBUS under the name of VLCB. The intention is to enable more members to contribute to the project base in a uniform and open manner.

The Problem

This effort was prompted by the growing problems with CBUS due to a disjoin between its growing popularity, the limitations of features, and deficiencies in documentation.

CBUS requires access to a lot of hidden knowledge that can be difficult to find and is not definitive. The only formal document for CBUS is the *Specification Document*, which amounts to little more than a listing of opcodes. The only supporting documents are the *Developer's Guide*, which is just a guide and neither controlled nor definitive, and the *FCU User Guide*. Even the FCU does not fully comply with the Developer's Guide. This lack of documentation results in CBUS module designers having to interpret what information is available.

Whilst the specification document is copyright, the opcodes are not and are in the public domain. MERG members are thus free to create a LCB based upon CBUS functionality that is robust, full function and with excellent documentation. This is needed to support further development and to give members a good source of information.

Outline

VLCB uses a structured series of documents that will be subject to configuration control. This will lead to a consistency of application design and assured interoperability.

Fundamental is that the system aims to be compatible with CBUS 4.0 Specification Rev 8j. This can only be an aim due to the vagueness of the CBUS specification and past interpretation by module developers. Whilst it is possible that CBUS and VLCB may diverge in the future, VLCB will retain backwards compatibility with CBUS at this point. Due to the

CBUS spec vagueness, this compatibility is regarded as being with existing CBUS modules and the FCU.

The team has developed a system of documentation that allows flexibility for designers whilst still instilling a discipline that ensures a standard of operability that has not been seen in CBUS. This will allow designers to add documentation of their designs and test for compatibility with other components of the LCB, using a test suite currently being developed, thus gaining a formal compatibility approval mark. This overall architecture is itself the subject of a controlled document.

The structure allows for layers of documentation and the depth to which a designer needs to go will be dependent upon the complexity of their design. Key will be a VLCB Management and Administration Group (see Charter) who will be responsible for ensuring that standards are maintained and issuing amendments (opcodes, etc) in a timely manner where necessary.

It is hoped that the standards of management, administration and documentation set out for VLCB will be adopted by CBUS. In this event, CBUS and VLCB may well be able to merge at some time in the future.

Footnote: CBUS is a registered trademark owned by Dr. M. Bolton.