

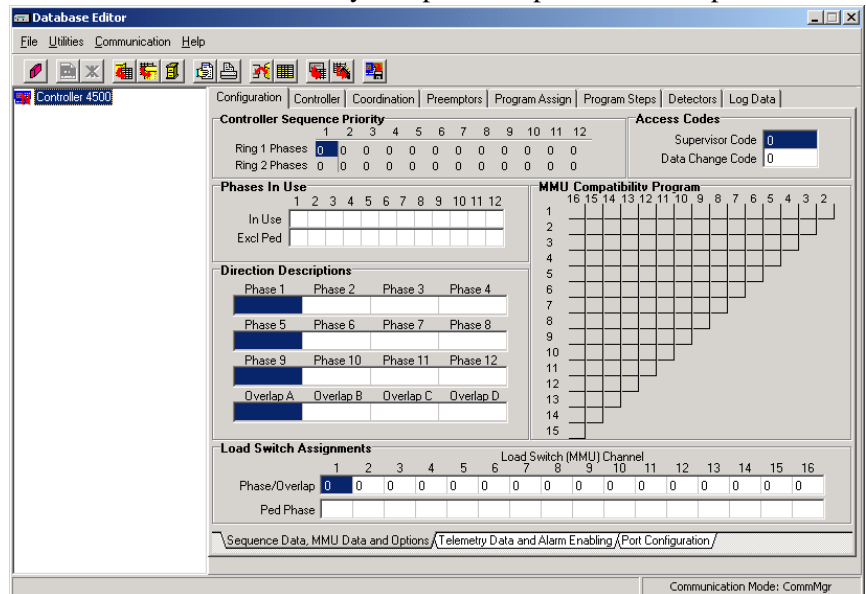
Functional Description

Product Type: ASC/3 SIL

General Product Description

ASC/3 Software in the Loop Controller – ASC/3 SIL

The ASC/3 software has been designed to utilize a hardware abstraction layer. This hardware abstraction layer segregates the traffic application software components from the hardware level interfaces required for the actual ASC/3 controller. This allows a single ASC/3 code base to be conditionally compiled to operate on multiple hardware platforms and operating systems including VxWorks, OS-9, real time Linux, and Windows XP. The ASC/3 SIL (software in the loop) version of the software has been specifically configured to operate as a virtual controller within the VISSIM environment. This allows full ASC/3 controller functionality to be used during simulation runs under VISSIM. The ASC/3 SIL also has the added benefit that it can be run at 10 times normal speed during the simulation run. This greatly reduces the time needed to test a scenario under VISSIM as you are no longer constrained to running the simulation in real time as you do with hardware in the loop simulation.



The ASC/3 SIL is comprised of the software components listed below:

- **Data Manager**
The Data Manager is a Windows application that provides a management tool for managing the controller timing data of the simulated controllers while in the Windows environment. This software uses the same user interface as Econolite's *icons* ATMS system. This software is more intuitive and easier to use than the controllers normal front panel data entry screens. The database file for the ASC/ SIL and an actual ASC/3 controller are identical (and can actually be interchanged).
- **Traffic Control Kernel**
This is the virtual ASC/3 core software that operates under Windows. The traffic control kernel encompasses all internal processing that occurs between the mapped field inputs that are passed from VISSIM and subsequent calculation of commanded field outputs that are passed to VISSIM. The interface to this kernel occurs through data structures defined as the controller input and output buffers (CIB, COB). This clean interface guarantees consistency in traffic control operation between the simulated ASC/3 SIL running under VISSIM and a physical ASC/3 controller.

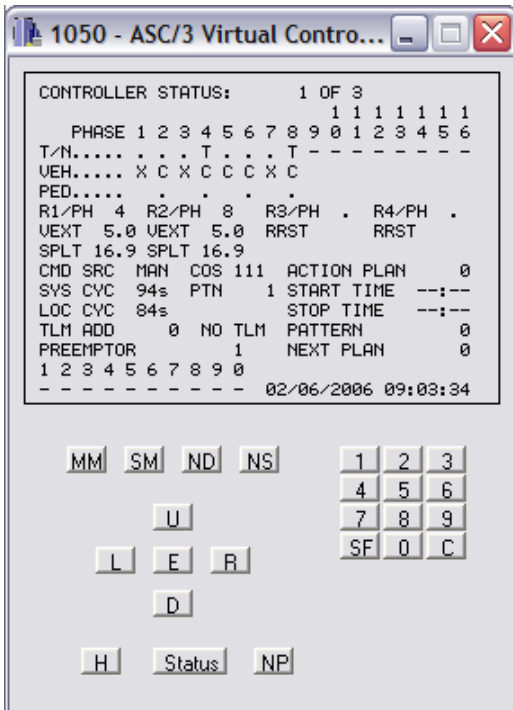


ASC/3 SIL

General Product Description

- Controller Front Panel Simulator**

The user interface for the ASC/3 controller was designed to utilize a generic screen processing engine that generates data entry screens loaded from a script file. As with other software components within the ASC/3, the data entry module for the ASC/3 has been developed to run in a Windows environment. A graphical user interface (GUI) was also developed to simulate the 16 line x 40 character display and keypad found on the ASC/3 physical controller. This GUI permits the display of status and data along with the changing of all user data settings within the simulated ASC/3 controllers running under VISSIM. Any changes made to the controller settings are stored in the simulated controller's database (unique fo reach simulated controller).



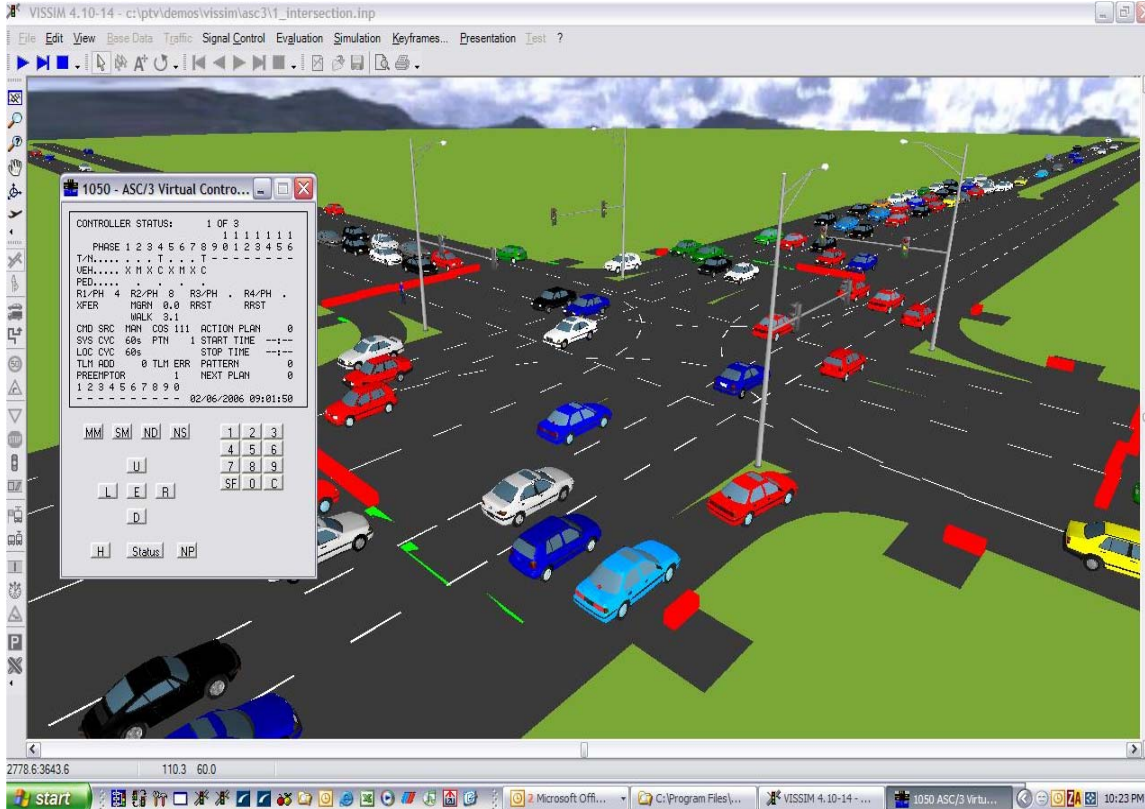
- VISSIM DLL Interface**

This interface couples the ASC/3 simulated controllers to VISSIM. The interface allows VISSIM to pass detector and other I/O functions to the simulated ASC/3 controllers and to receive controller status information back.



ASC/3 SIL

General Product Description



These components, unified under the Windows operating environment and integrated with VISSIM, provide the ability to simulate one or more intersections with a unifying controller management interface and the ability to model both standard and custom saturated timing strategies.