



LSI

Log Sync Interface
user guide

Updated: 28 September 2021

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Operation

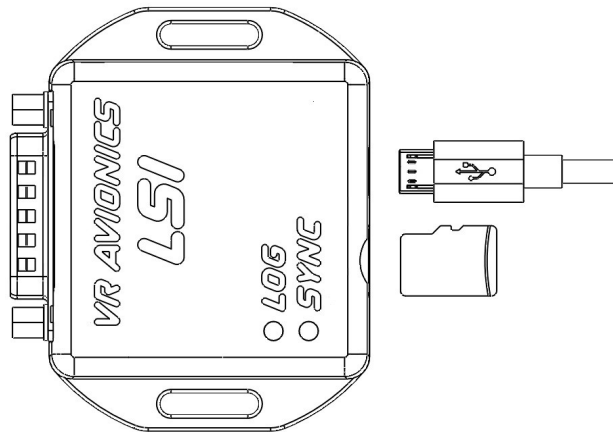
The LSI is a handy accessory that logs, synchronizes, and interfaces with any CAN bus equipped VR LRU.

VR Avionics line-replaceable units (LRU's) constantly send out detailed operational information over CAN bus, and the LSI is able to capture and log all of it to memory card – a micro SD card in this case. This card can be left in the LSI without much worry of running out of memory, and should something of interest have occurred during a passed flight, the card can then be extracted and the log file conveniently inspected on a PC.

Additional to this, the LSI can retrieve and clear data that was recorded on a LRU itself, for example TSLM history logs. This synchronization can easily be done using the same micro SD card used for logging.

For more maintenance related operations, the LSI can also directly connect to a PC via USB cable. This enables troubleshooting tasks such as diagnostic testing of different components, but also firmware updating to unlock future features and settings adjustment to fine tune operation.

Besides an electrical connector, a slot for a micro SD card, and a slot for a USB cable, the LSI comes equipped with LOG and SYNC lights to provide helpful feedback.



Logging Data

To log operational data you need a FAT32 formatted micro SD card with enough free space, and the following folder structure:

- Root folder named "LSI",
- Folder named "LOG" within the "LSI" folder

Note that should you wish to temporarily disable logging at any point while leaving the card in the LSI, you may simply rename the LOG folder to something different, such as "#LOG", and when you want to resume logging again rename it back to "LOG".

Only when a FAT32 formatted micro SD card with the prescribed folder structure is present in a powered LSI, will logging be performed. The LOG light will indicate whenever logging is in progress.

The LSI will create a new log file inside the LOG folder at power-up and continue to log all operational data of any connected VR LRU to that file until power down. Each log file is named LOG#####.VRL where ##### constitutes a number from 0 to 99999. This number corresponds to a LSI configuration setting called [Log File Incremental Reference Number](#). Each new power up this number is automatically incremented. You may override this configuration setting or any other as explained [later in this guide](#).

To view any log file, open SetView and select File → Open Log File... from the top menu. Then browse to the log file you want to view and select Open.

Synchronizing History

To synchronize LRU recorded logs you need a FAT32 formatted micro SD card with enough free space, and the following folder structure:

- Root folder named "LSI",
- Folder named "SYNC" within the "LSI" folder
- Folder named "HIST" or "HIST#" within the "SYNC" folder

Note that the micro SD card used for logging can also be used for synchronization.

Right after power up the LSI will check to see if a folder named "HIST" or "HIST#" exists within the SYNC folder, and if so activate the SYNC light to indicate that a synchronization operation is in progress.

During synchronization the recorded logs on each connected LRU are retrieved to a history file in the HIST folder and then cleared on the LRU. On completion of this the SYNC light turns off and operation resumes as normal.

Also at completion, should the HIST folder have been named "HIST", the LSI will automatically rename this folder to "#HIST". The purpose of changing the name is to ensure that synchronization takes place only once, and that the next time the LSI powers up no synchronization will be done. This necessitates the user to actively rename the "#HIST" back to "HIST" (or "HIST#") to enable another synchronization.

Note that with the HIST folder named "HIST#" synchronization will be performed at each power up before resuming normal operation.

The LSI will create a new history file inside the HIST folder only if logs with a size larger than zero was retrieved. Each history file is named MMMMSSSS_#.VRH where MMMM constitutes the LRU name (for example "TSLM"), SSSS constitutes the LRU serial number, and # a unique number that automatically increments every time.

To view any history file, open SetView and select File → Open History File... from the top menu. Then browse to the history file you want to view and select Open.

Interfacing via USB

To perform certain maintenance tasks a USB cable may be used to connect the LSI to a Windows PC (laptop, desktop, or tablet). The LSI accepts a micro USB type B plug.

On the PC, our SetView software (available from vravionics.com) should be installed. Plugging in the USB cable will introduce a new COM port (for example "COM5"). After starting up SetView make sure this new COM port is selected by clicking on the top menu System → Serial Port.

If the COM port does not show up in SetView, you need to install the following driver on your PC:

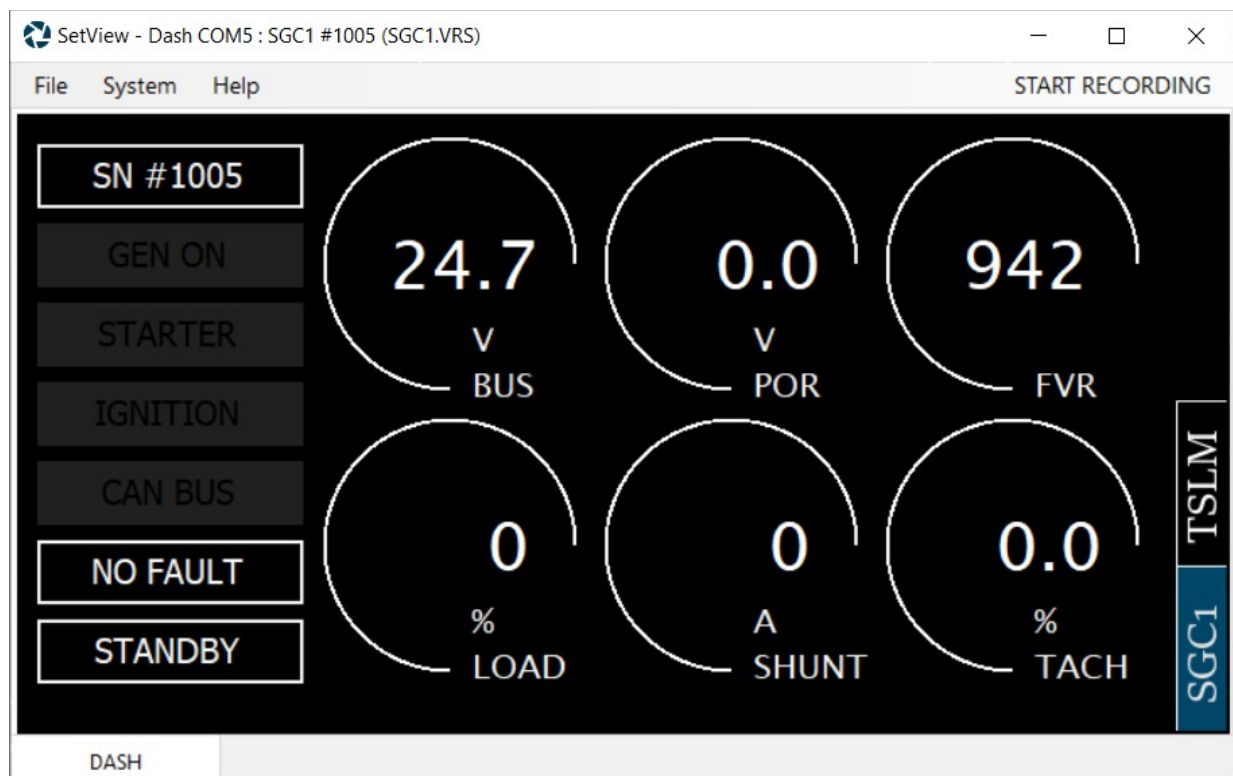
[Universal Windows Driver for USB Interfacing to the LSI](#)

Click on the link above to download the driver zip file to your PC's Downloads folder. When complete, double-click on the file to open it in Windows File Explorer. Click on the Extract All button to extract (unzip) the contents into a new folder. From this folder, double-click on CP210xVCPInstaller_x86.exe if you have 32-bit Windows, or CP210xVCPInstaller_x64.exe if you have 64-bit Windows. Follow the instructions until the driver installation is complete.

With the correct COM port selected in SetView, and the LRU system powered (including the LSI), the Dash panel should appear on SetView similar to that shown below.

A tab will appear (in the lower right side) for each VR LRU present on the CAN bus. You can click on these tab(s) to select and view other LRU Dash instruments.

The example below shows the Dash panel for SGC1, with a optional TSLM tab to that LRU's Dash.



From here maintenance tasks may be performed as described in the next sections.

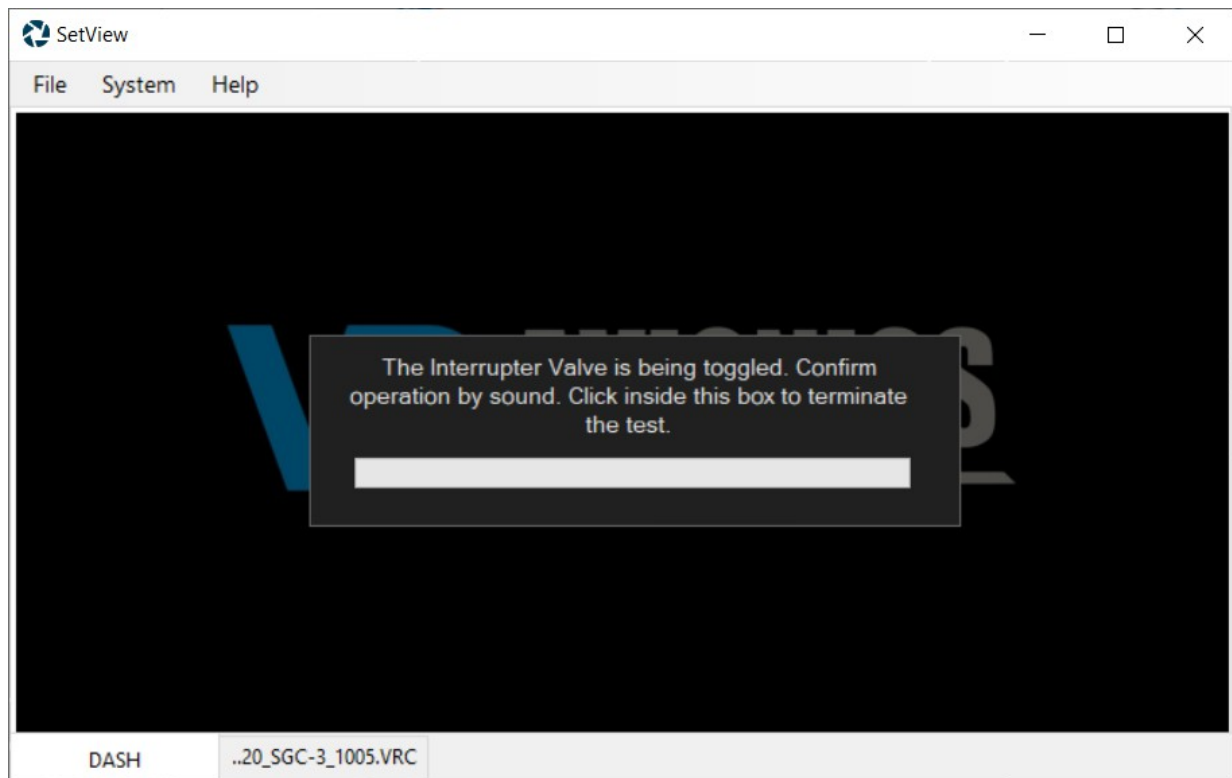
Doing Diagnostic Tests

To perform a diagnostic test for a particular LRU, ensure this LRU's tab is selected on the bottom right side of the Dash panel in SetView (see example in previous section).

Now select the diagnostic test you want performed from the SetView top menu:

System → Diagnostic Function → (test you want performed)

The example below shows a diagnostic test being performed on the interrupter valve via a TSLM.

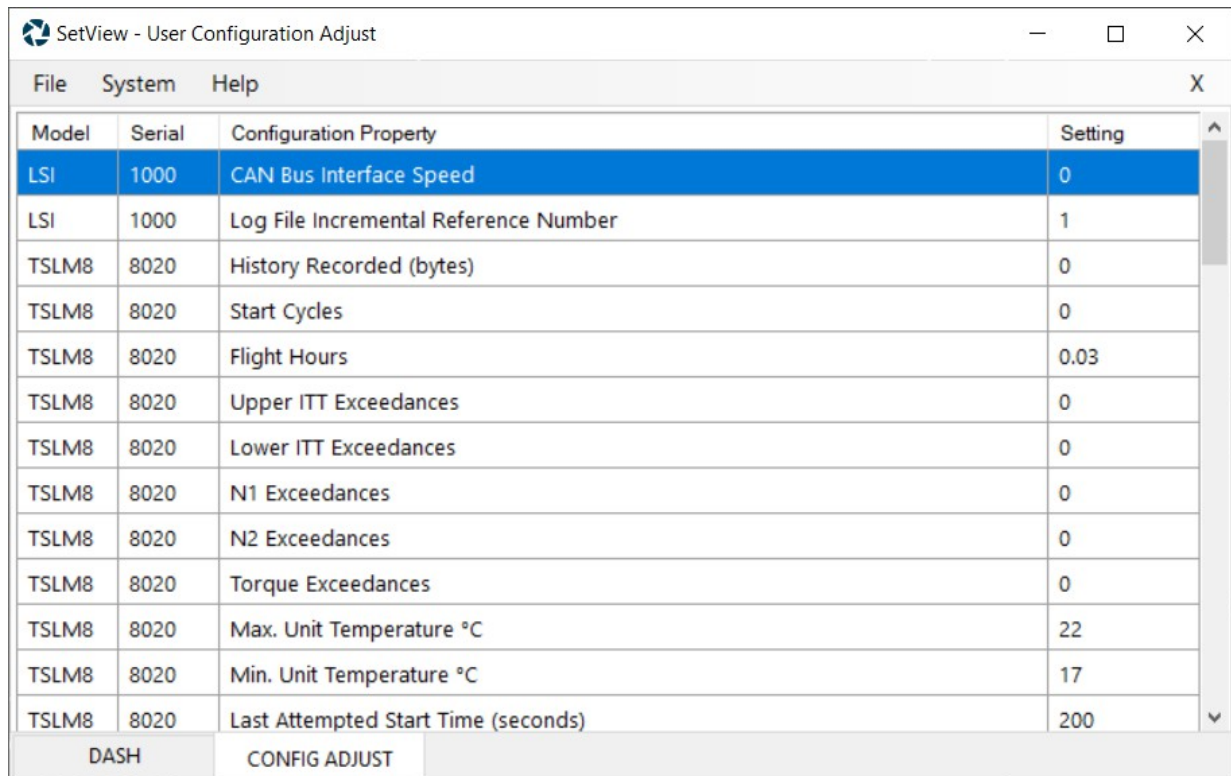


Adjusting Configuration Settings

To make adjustments to the configuration settings of any LRU (including that of the LSI), select from the SetView top menu:

System → Adjust Configuration

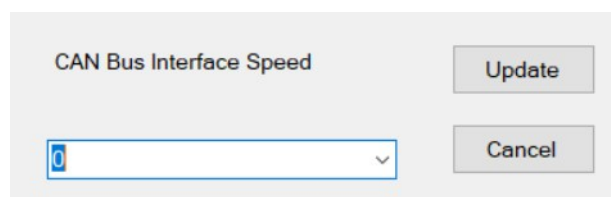
The example below shows the configuration adjust tab for a LSI with connected TSLM.



Model	Serial	Configuration Property	Setting
LSI	1000	CAN Bus Interface Speed	0
LSI	1000	Log File Incremental Reference Number	1
TSLM8	8020	History Recorded (bytes)	0
TSLM8	8020	Start Cycles	0
TSLM8	8020	Flight Hours	0.03
TSLM8	8020	Upper ITT Exceedances	0
TSLM8	8020	Lower ITT Exceedances	0
TSLM8	8020	N1 Exceedances	0
TSLM8	8020	N2 Exceedances	0
TSLM8	8020	Torque Exceedances	0
TSLM8	8020	Max. Unit Temperature °C	22
TSLM8	8020	Min. Unit Temperature °C	17
TSLM8	8020	Last Attempted Start Time (seconds)	200

DASH CONFIG ADJUST

You may double click on or scroll to the setting you want adjusted and hit enter. The example below shows that done for the [CAN Bus Interface Speed](#) setting for the LSI.



CAN Bus Interface Speed

Update

0

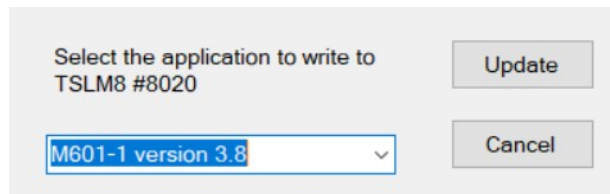
Cancel

Updating Firmware

To update LRU firmware (or change the application running on it), select from the SetView top menu:

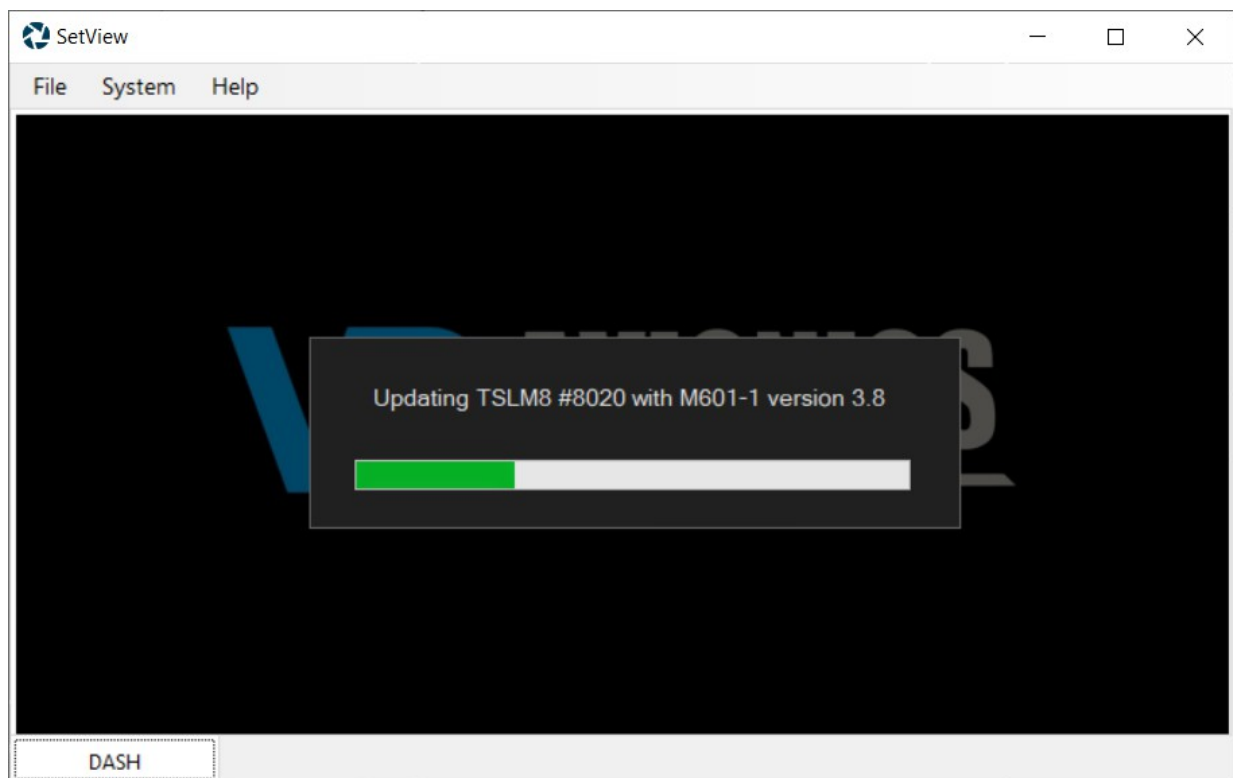
System → Change Application

Starting with a dialog box asking whether to update the LSI firmware, subsequent dialog boxes will ask the same for those LRU's. Below is an example of a dialog box for a TSLM with serial number 8020:



Click Update to update, and Cancel to skip updating specific LRU firmware.

The example below shows the progress bar to expect after clicking "Update" to a dialog box.

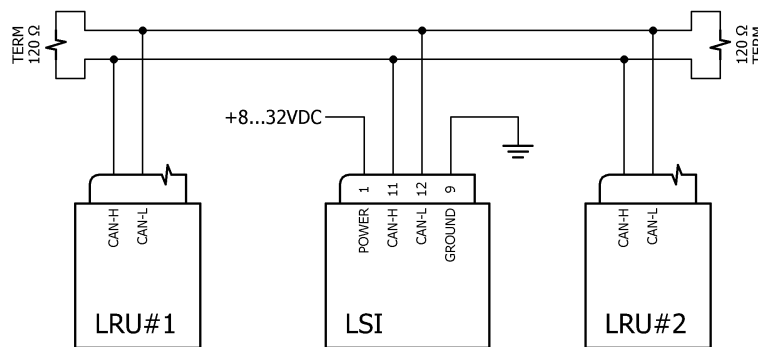


When the process of doing or skipping updates have been completed for each connected LRU, the Dash panel ([similar that shown here](#)) should again appear.

Installation

Electrical Connection

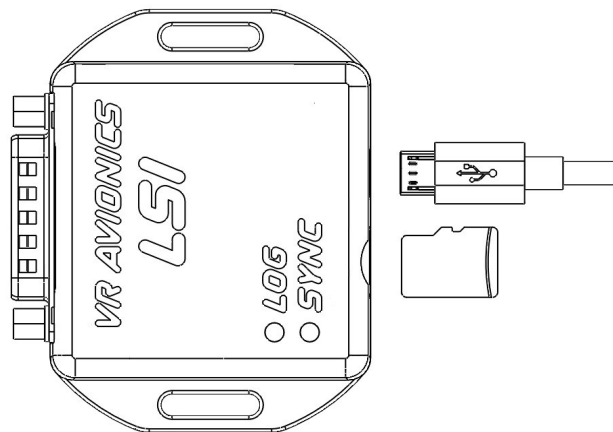
Electrical connection of the LSI is via only four wires – power and ground as well as the two CAN bus lines, CAN-H and CAN-L. It works from 12V or 24V aircraft electrical systems and draws very little current. The circuit below shows how to hook up the LSI to any theoretical system.



The pins used for CAN-H and CAN-L are specified in each LRU's operational and installation manual.

Mounting Considerations

The LSI can be mounted anywhere that is convenient to reach, whether to plug in a USB cable or to insert (or extract) a micro SD card. Since the unit is housed in a plastic enclosure, locations exposing it to excessive heat should be avoided.



Configuration

The LSI have adjustable configuration settings that determine how it functions. These settings can be accessed by Windows laptop or PC running our SetView software connected via USB cable to the LSI. These settings can be viewed by performing from SetView a "Synchronize", and adjusted by performing an "Adjust Configuration" operation (as described earlier).

General Settings

#	Configuration Setting	Minimum	Maximum	Factory
1	CAN Bus Interface Speed	0	4	0
2	Log File Incremental Reference Number	0	99999	0

CAN Bus Interface Speed

This sets the speed in Kbps (kilo bits per second) of the CAN bus interface. Options are as follows:

Setting	CAN Bus Speed (Kbps)
0	142.8 (default)
1	125
2	250
3	500
4	1000

For LRU's to communicate with each other all of them need to run at the same speed.

Log File Incremental Reference Number

This sets the number (#####) in the log file name (shown below) for the next time logging is performed. Note that this number is automatically incremented after a new log file was created, meaning this setting typically does not need any adjustment.

LOG#####.VRL

For example, if this number is 123, the next log file name will be LOG00123.VRL