

# S-CAT 2

Super CAN Analysis Tool 2

Dearborn Group, Inc.

## Key Benefits

- ✓ The S-CAT2 is a universal network Bus Analyzer for: CAN, Single Wire CAN, ISO 11992, ISO 11898, LIN, KWP2000, J1850, J1939, Honda UART and CANopen.
- ✓ 2nd generation Gryphon: with Linux O/S, AMD Elan CPU.
- ✓ Out of the box: it provides instant nodes on your network.
- ✓ Useful for development, end-of-line testing, system service, Data Acquisition and Hardware-in-the-Loop simulation.
- ✓ Economical personality cards - 2 CAN nodes are built-in.
- ✓ WiFi (802.11b) and 10/100 Ethernet connection to host PC.
- ✓ Diagnostics support: GMLAN, J1939, ISO 15765, OBDII.
- ✓ PCMCIA slot. The 802.11b option will use this slot.
- ✓ Can use competitive database formats such as Vector.
- ✓ Portable - requires a 6 to 32 volt DC supply, < 1 amp.
- ✓ Designed and Made in the USA. Supported everywhere.



## Introduction

The S-CAT2 Bus Analyzer connects your PC to various busses such as CAN, LIN and J1850. S-CAT2 monitors these busses and provides access to them and to the data on them. Data can be read to and from the busses as required. Hercules is the optional user interface software for S-CAT2 and Gryphon.

S-CAT2 has two CAN channels built-in (hi-speed and single wire) and one slot for a standard Gryphon personality card to add other protocols. S-CAT2 connects to a host PC via WiFi or Ethernet and connects to the busses through its front panel.

## S-CAT2

S-CAT2 is an updated and lower cost version of the Gryphon. It adds 100 Mbits/s Ethernet and WiFi 802.11b capability with two integral CAN channels. It has one personality card slot, no LCD screen and a new advanced motherboard. S-CAT2 is electrically the same as the Gryphon and also uses Hercules.

S-CAT2 acts as a gateway which can connect to and communicate to different and multiple busses at the same time. It can pass messages from one protocol to a different one.

S-CAT2 can read and write messages to and from the busses as specified and these messages can be filtered, triggered, created, manipulated and stored by the S-CAT2 hardware.

The S-CAT2 is controlled either by the user interface Hercules or a customer written application using the provided Windows DLLs. Most processing is done in the S-CAT2 hardware providing response times much faster than if done in the PC.

S-CAT2 is a x86 PC running Linux on a FLASH disk. Root access and all other Linux functions are provided. S-CAT2 can be run stand-alone for remote operation or with a host PC.

## Hercules

Hercules provides access to the S-CAT2's internal functions and features. Hercules has intuitive menus to easily and quickly configure the S-CAT2. Hercules specifies the messages to be transmitted, their formats and what to do with received messages such as saving them to a file.

Data collected is manipulated and stored according to specifications set with Hercules. Configuration setups can be saved as well as various data files containing messages.

The user is able to write their own application to access the S-CAT2 directly using provided Windows DLLs using Visual Basic, C, C++, Visual C or Labview. The S-CAT2 also supports SAE J2534 function calls.

Hercules has powerful diagnostic and database capabilities. Systems with internal diagnostic systems are easily developed and debugged with Hercules and S-CAT2. GMLAN, ISO Diagnostics and OBDII are integrated in Hercules and additional proprietary systems are easily installed. J1939, a SAE automotive protocol, is also supported.

High level messages can be converted from raw numbers to plain English acronyms by using the Hercules database.

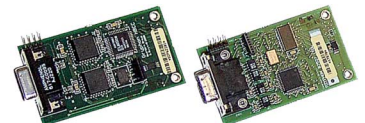
S-CAT2, Gryphon and Hercules are qualified and specified by most major automotive companies and their suppliers.

→ *more...*

## Gryphon Personality Cards:

Shown are Dual CAN and J1850.

There are over 15 cards available plus many custom models.



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## Hercules:

### Transmit Frame Table

Frame Identifier

Frame Acronym

Data

Hot-Key

### Scrolling Monitor

Timestamp

Frame Acronym

### Statistics Graph

Average Bus Load

The screenshot displays the Hercules software interface with several windows open. The 'Transmit Frame Table' window shows a table with columns: Line No, Frame ID, Protocol, Frame Acronym, Data, Channel, Hot Key, Type, Interval, and ms. The 'Scrolling Monitor' window shows a table with columns: Line No, TimeStamp, Channel, Frame ID, H..., Frame Acronym, Protocol, Data, and Rx/Tx. The 'Statistics Graph' window shows a line graph of Average Bus Load (ABL) in percentage over time. The 'Diagnostic Configuration' window shows settings for Address Type, Channel, Protocol, Interval, and a list of services.

Tool Bar

Frame IDs found on bus

Status Indicators

Error Report

System Messages

Diagnostics Configuration

Tester Status

Diagnostic Services Available

PIDs Supported

## Sending and Receiving Messages:

The S-CAT2 sends and receives messages on the bus like any node. Transmitted messages are specified by the user and sent periodically, by a hot-key or as a result of a specified message being received (the Responder). The S-CAT2 can emulate nodes or modules that are not yet physically present in the system by using the Responder function.

## Viewing CAN Messages:

Messages can be viewed in several ways and one way is to display the CAN message identifier, timestamp, data (if any) and acronym as shown above. This data can be recorded to be sent to third party software for detailed analysis. Statistics and bus information can also be displayed in various formats.

The above screen shows some captured CAN traffic. Both 11 bit and 29 bit frames are shown on the same network. The frames are sent out on S-CAT2's Channel A and received on Channel B. These frames to be transmitted are specified in the Transmit Frame Table.

## Transmit Frame Table (TFT):

This table is specified by the user and contains the frames that are transmitted to the CAN bus by a hot-key or periodic action or by the Responder. Multiple tables can be saved for recall.

## Filters:

Hercules can filter messages to be displayed and recorded. Up to 50 filters can be specified and the identifier and data can be selected as a 1, 0 or Don't Care. Each filter can be set as a block or pass and can be individually activated and saved in a configuration file.

## Triggers:

When Hercules detects a condition such as an error, a specified identifier or data pattern, or a time-out, a trigger is then created. Actions include stopping the buffer or sending special S-CAT2 commands. Triggers are configured similar to Filters. The buffer will contain messages before and after the event and this ratio can be changed. These messages can be filtered if desired and saved to a text file. This recorded file can be played back on the bus.

## Diagnostic Mode:

Network systems have two modes of operation. Normal mode is where ordinary traffic flow is present on the bus. Diagnostic mode is when a module sends out information relating to its diagnostics and will allow a device to query it.

Hercules has powerful diagnostic capabilities and supports both public and proprietary diagnostic systems. Proprietary databases can be created and loaded into Hercules. Acronyms, identifiers and other useful information will be displayed on the PC screen and can be saved to files. GMLAN, ISO 15765, J1939 and OBDII are supported.

## Responder:

The Responder sends a frame or frames in response to a user specified frame being received. Filtering configuration is the same as in the filters. Each responder frame will activate a specified entry or entries in the Transmit Frame Table (TFT).

## UCS and Blocks:

UCS and Blocks are two embedded programming utilities. UCS is a simple text system to transmit messages in sequences. Blocks is more powerful and flexible, using C statements to make calls to Hercules using a built-in editor and compiler.

## Acronyms and the Database:

Each frame consists of an identifier, from 0 to 8 data bits and various housekeeping bits. Hercules uses a database to substitute acronyms for a particular message frame or data. A database can be constructed by the user for proprietary and confidential systems.

Hercules can decode information embedded in the data bytes no matter how they are encoded even if on a bit by bit basis.

## For more information:

For more information regarding the S-CAT2, Gryphon, Hercules and other products, to find technical specifications, pricing or to locate your local representative, contact the Dearborn Group at sales@dgtech.com, visit www.dgtech.com or call at (248) 488-2080.

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