SA-2

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SA-2 Sony S9 Protocol Analyser

* USB INTERFACE ....No Power required, Virtual Serial Port
* Bi-directional Analysis Using SA-1 Software.................. Analyses communications in both directions
* STATIC DISPLAY WITH EVENT COUNTERS.................................... Instant overview of operation
* DECODED STATUS DISPLAY .... Status, Commands, and Tallies displayed in text
* TRACE FILE .... Analysis of communications over period
* COMMAND ONLY TRACE ....Trace Commands and Status changes with Time Stamp
* Self Generating Event Fields ....Analyse only those commands used
* COMMAND MODE .... Use to check compatibility of machine
* USER SPECIFIED COMMANDS .... Check response of machine to specific commands
* ON LINE HELP ....Function key explanation and Sony Protocol help file
* Controller and Device LEDs .... Hardware activity indicators

The SA-2 consists an external hardware interface and software to run on any IBM compatible computer running windows 95, 98, 2000, XP. The interface box has two Sony 9 pin female RS422 connectors and one USB connector. The external interface allows the analyser to run on portable computers.
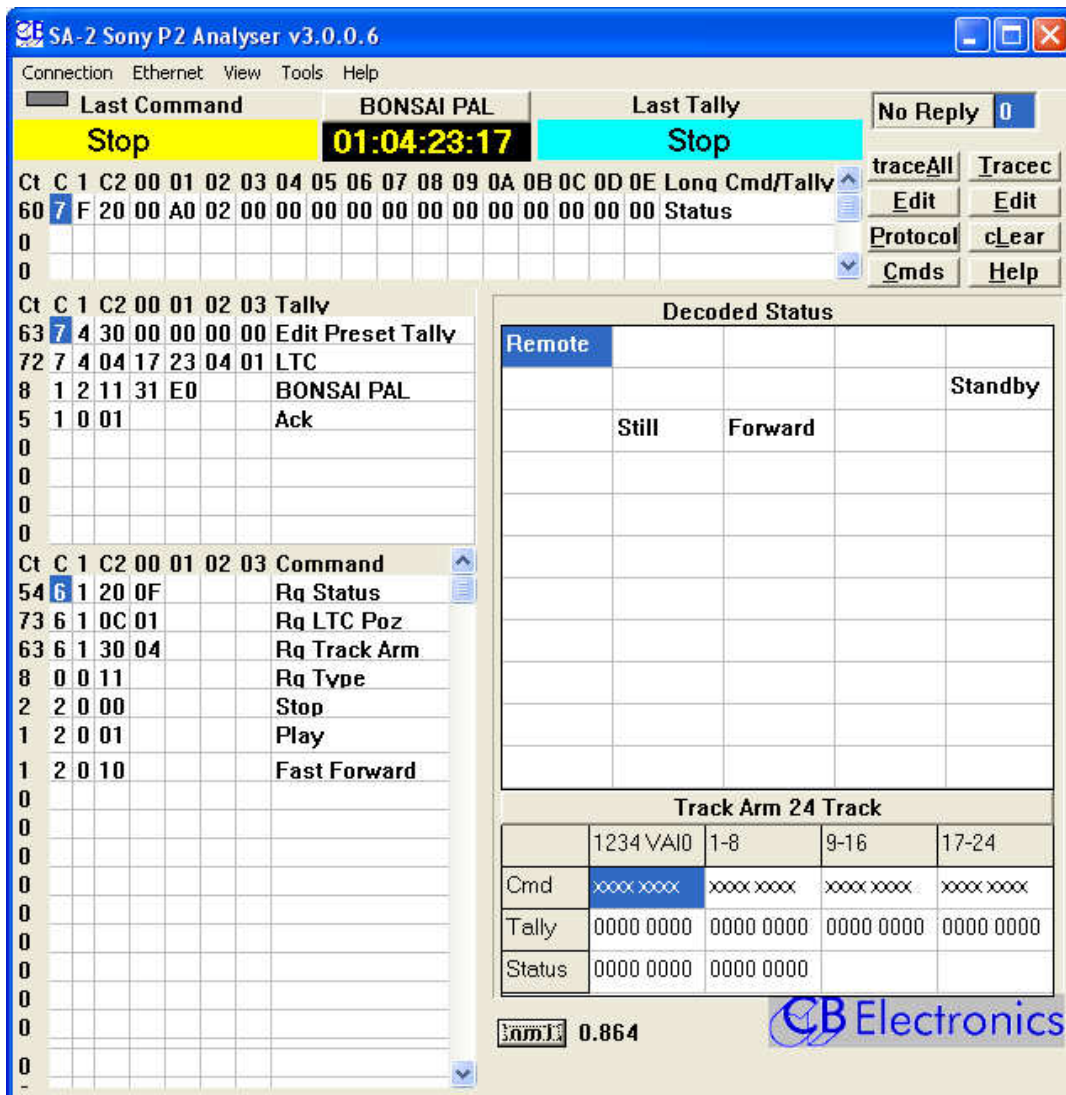
SA-1 Software and Drivers

You may download SA-1 Windows software and serial port drivers for the SA-2 from our website at www.colinbroad.com the direct url for the download page is www.colinbroad.com/cbsoft/sa2.html

Selecting the SA-2 in the SA-1 Software

After installing the appropriate drivers two more selections must be made before you can use the SA-2 with SA-1 software:-
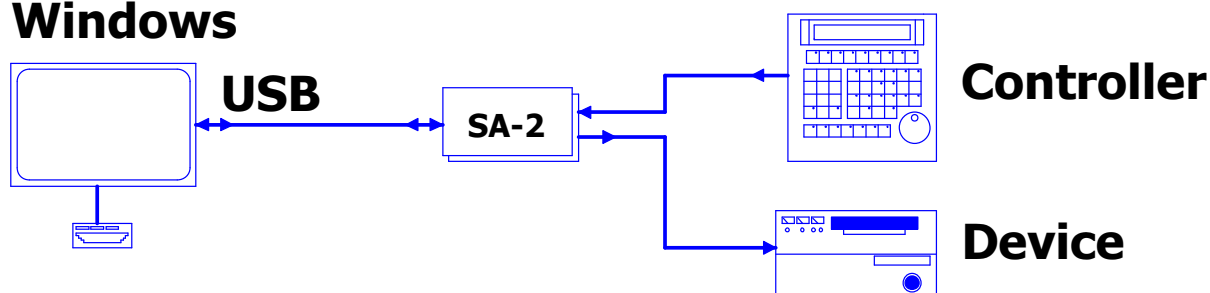
1. Select the appropriate virtual com port
2. Enable SA-2 in the Tools Menu

Using the SA-2

Analyzing communications between Controller and Device

In this mode [CMDS] must be DISABLED, the display shows both commands from the Controller and replies from the device.
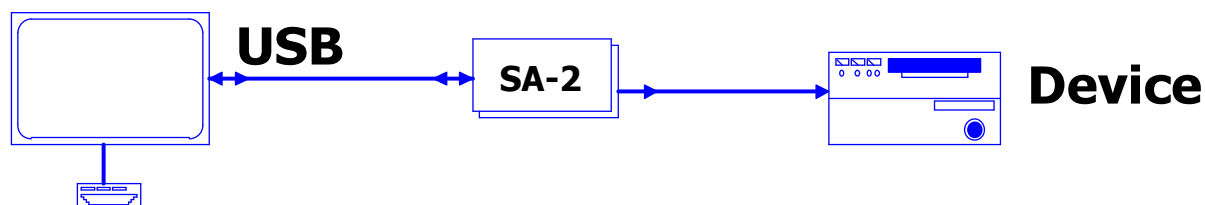

Analyzing the performance of a Device

In this mode [CMDS] must be enabled and a Controller must NOT be connected. Both Commands and status requests are generated by the SA-2 software. The Status requests may be disabled to test the system.

When checking a CB system you may email trace the communications using traceAll or Tracec and email the files to Support@colinbroad.com for further analysis.

Manual

To access the online pdf manual use 'Menu/Help/English' or 'Menu/Help/French'.

ANALYSIS

The static decoded display shows the commands sent and status returned in individual data fields each of which has its own event counter. By observing the event counters the user has an instant overview of the system. By clearing the display the user may determine the order in which commands are sent.

The following headings are used on this screen

C1	CMD1 Displayed as Hexadecimal
C2	CMD2 Displayed as Hexadecimal
00..0E	Data byte 0 .. Data byte 14 Displayed as Hexadecimal
Ct	Event Counter
XX	Undefined communication data

There are 5 main windows on the screen as follows

Long Cmd/Tally

Ct	C 1	C2	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	Long Cmd/Tally
7	7	F	20	00	20	03	00	80	41	00	00	08	00	00	00	0F	00	00	Status
0																			
0																			

Status data and any command/Tally longer than 6 bytes excluding checksum

Tally

Ct	C 1	C2	00	01	02	03	Tally
20	7	4	04	00	00	03	00	LTC
40	7	4	30	41	0F	00	00	Edit Preset Tally
40	1	2	11	F1	1D			DA-88 PAL
8	1	0	01					Ack
1	1	1	12	40				Nak Framing
0								
0								
0								

Tally response data from controlled device excluding checksum

Command

Ct	C 1	C2	00	01	02	03	Command
67	6	1	20	0F			Rq Status
53	6	1	0C	01			Rq LTC Poz
80	6	1	30	04			Rq Track Arm
7	0	0	11				Rq Type
4	4	2	30	41	0F		Edit Preset Cmd
1	2	0	61				Full EE On
1	2	0	63				Select EE On
1	2	0	00				Stop
1	2	0	01				Play
1	2	4	31	00	00	03	00	Locate
0								

Command data from the controller excluding checksum

Last Command

Last Command

Locate 00:03:00:00

Last command (not data request) sent by the controller

Last Tally

Last Tally

Stop

The Last tally data received, decoded motion Status (Play, Stop, Jog, Shuttle, Wind, Record).

Position

 The last position data received from the controlled device.

Machine Name

 The machine id is translated when known to the Machine Name, note some machines can report different id's. When not known the ID is displayed in HEX as $ABCD .To find the Hexadecimal ID look in the Tally window.

Depressing the Machine ID button will open a PDF file with notes on machines and their setup, these have been built up over a number of years. Any additional data from users is always welcome.

Decoded Status

The 7x 20 status data decoded on a bit for bit basis. Tally status (Play, Stop, Jog, Shuttle, Wind, Record) are decoded and displayed as 'Last Tally'. All other status bits are displayed in the status grid.

Note: Clicking anywhere on the status grid will reveal the names of all the status bits.

Track Arming

Track Arm 8 Track				
	1234 VAI0	1-8	9-16	17-24
Cmd	1000 0010	1111 0000		
Tally	1000 0010	1111 0000	0000 0000	0000 0000
Status	1000 0010	1111 0000		

Compare the data windows to check for any errors

The track arming command data (4x 30 Edit Preset Command)

The track arm tally (7X 30 Edit preset status)

The track arm information from the status data (7x 20 status data)

 A counter that will increment every time the controlled device does not respond within a timeout period to a command.

TRACE

At any time the operator may save the serial traffic to a trace file on disc, this may be sent to the equipment provider for analysis. There are two different trace types available, Trace All and Trace Command as follows:

Trace All

 Trace all communications on the bus, each message is saved as a line in the file. It is not recommended that this be used for a long period! The format is as follows:

```
Time Source: Data
40.542 D: 77 20 00 A0 03 00 00 40 00 7A
40.552 C: 61 0C 01 6E
40.562 D: 74 04 00 55 02 80 4F
40.572 C: 61 20 77 F8
```

Where time is represented in Seconds and Milliseconds (Subject to the computer latency an thread)
C: Indicates Controller Command / Data Request
D: Indicates Device Reply

Trace Command

Tracec   Trace All commands and status changes, each command or status change is saved as a line compete with the current timecode value on the same line. Where a command/request from the controller is not answered by the controlled device this is logged with the command sent. When the controlled device replies with a NAK, the nak is printed with the current timecode, nak type, and last command sent (if known). The Format is as follows:-

```
Time            Position        Command/Status   Code
17:09:56.524    01:00:06:21     Play             20 01 21
17:09:56.534    01:00:06:21     Play             20 01 21
17:09:56.614    01:00:06:21     Set Color frm    41 35 01 77
17:09:56.654    01:00:06:21     Variplay Fwd     21 12 44 77
17:09:56.694    01:00:06:21     Status Offset 0  77 20 00 80 08 00 00 00 00 1F
17:09:56.734    01:00:06:21     Variplay Fwd     21 12 45 78
17:09:56.774    01:00:06:21     Variplay Fwd     21 12 46 79
```

Time
Hours:Minutes:Seconds.Milliseconds, If this is incorrect then check your computer clock.

Position
Timecode as per last reported position.

Command/Status
Decoded Text Version of the Hexadecimal Command

Code
Hexadecimal code of the command/status data including checksum

Once the user terminates the trace the trace file is opened with notepad, to keep the trace file for later select **Save As** and save under a different name.

The **[Edit]** key beneath the **[traceAll]** or **[Tracec]** keys can be used to open the last trace file of either type.

Other Keys

Protocol   The protocol button opens a text file with S9 protocol information, the user can add to notes this at any, if you find something new please advise us so that we can add it to the file.

cLear   The Clear button clears all windows on the screen, this is particulary usefull if you wish to know the sequence of a string of commands.

Help   The Help key will open this pdf file in French or English.

COMMANDS

Cmds   A command panel is opened using the **[Cmds]** button; the SA-2 should be disconnected from the controller and connected to the machine only at this point.
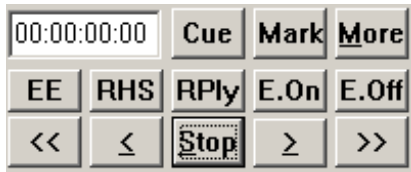
The user may then issue commands directly to the machine using the mouse. Background status, position, type, and track arming requests are run by the software to update the position and tally fields. The following standard commands are available on the keyboard: -

STOP : PLAY : FAST FWD : FAST RVS : REVERSE PLAY : LOCATE-CUE: MONITOR

More
By clicking on the More button further commands are enabled:-

Record Track enables : A1-A4, V, Asemble, D1-D16

User Programmable Commands
A, B, C, D are four user programmable keys so that specific command strings may be issued. By depressing the right mouse key the user may change these commands.

The first byte of the command will open as many boxes as needed by the defined by the lower nibble.

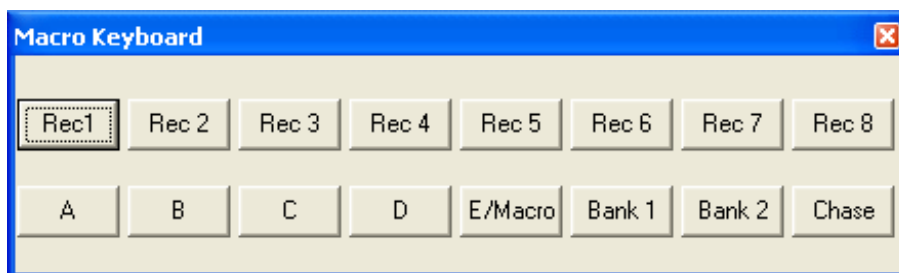Right Clicking the More/Less button will enable even more commands:-
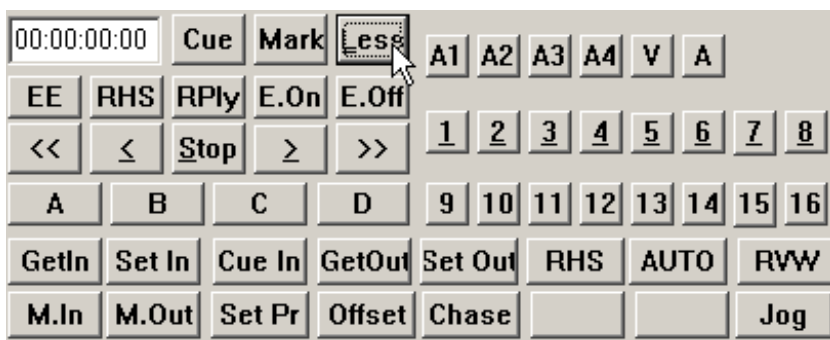
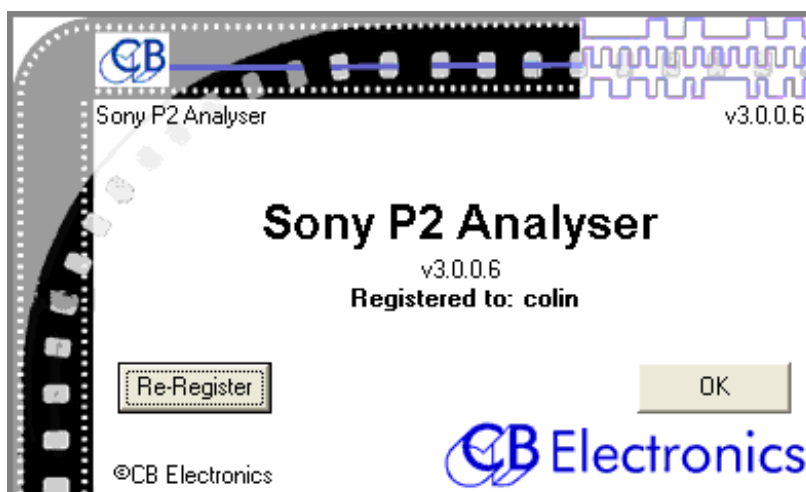Note: The extra RHS button is a command and not monitor mode.

More Commands

About Macro Mon Com1

Macro This key is used to access the Soundmaster and CB Electronics special Macro command window. This is only required for testing special functions.
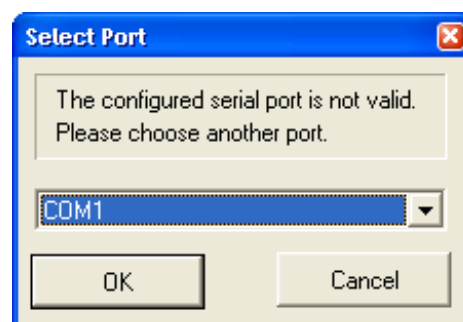

About This key is used to access the initial flash screen and registration

Serial Port Selection

Com1 This key is used to select the serial port used by the SA-1 Software or the virtual serial port on the SA-2, The current serial port is made invalid, a window then opens displaying the available com ports:

Cables

Sony 9 pin Cable		
9 pin 'D' Male on cable (Both Ends)	Cable Colour	Function (Controlled Device)
1		
2	Brown	Tx-
3	Red	Rx+
4	Screen+Black	Gnd
5		
6		
7	Green	Tx+
8	White	Rx-
9		
In most applications you can use a Male-Male cable from a computer supply shop for this.		

Sony Tx-Rx Invert 9 pin Cable		
9 pin 'D' Male on cable	Cable Colour	9 pin 'D' Female on Cable
2	Brown	8
3	Red	7
4	Screen+Black	Gnd
5		
6		
7	Green	3
8	White	2
9		