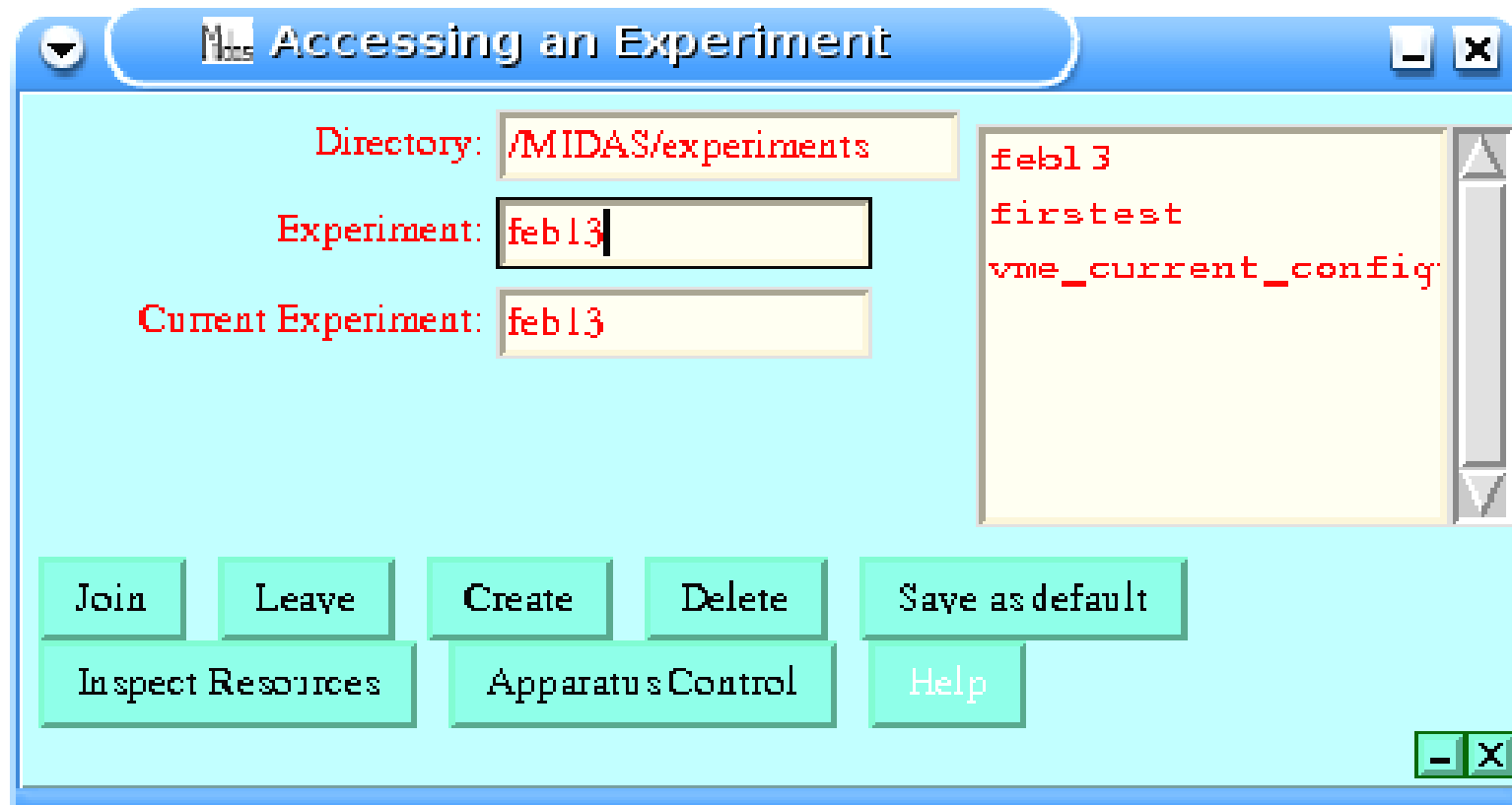


**EURONS 506065:        JRA4 - DLEP**  
**VME-MIDAS operation**

Report:        13-17 March 2006        DAQ system operation

By:            **Pauliina Wright, Subatomic Physics, Chalmers University of Technology**

To open MIDAS, execute **MIDAS-session**. Choose **Data Acquisition** in the menu that pops up. This opens the main menu and the **Session Log** –frame which is a log for how things are working during a measurement. Choose **Access Control** -> **Experiment Access** from the main menu to open the *Accessing an Experiment* – frame.

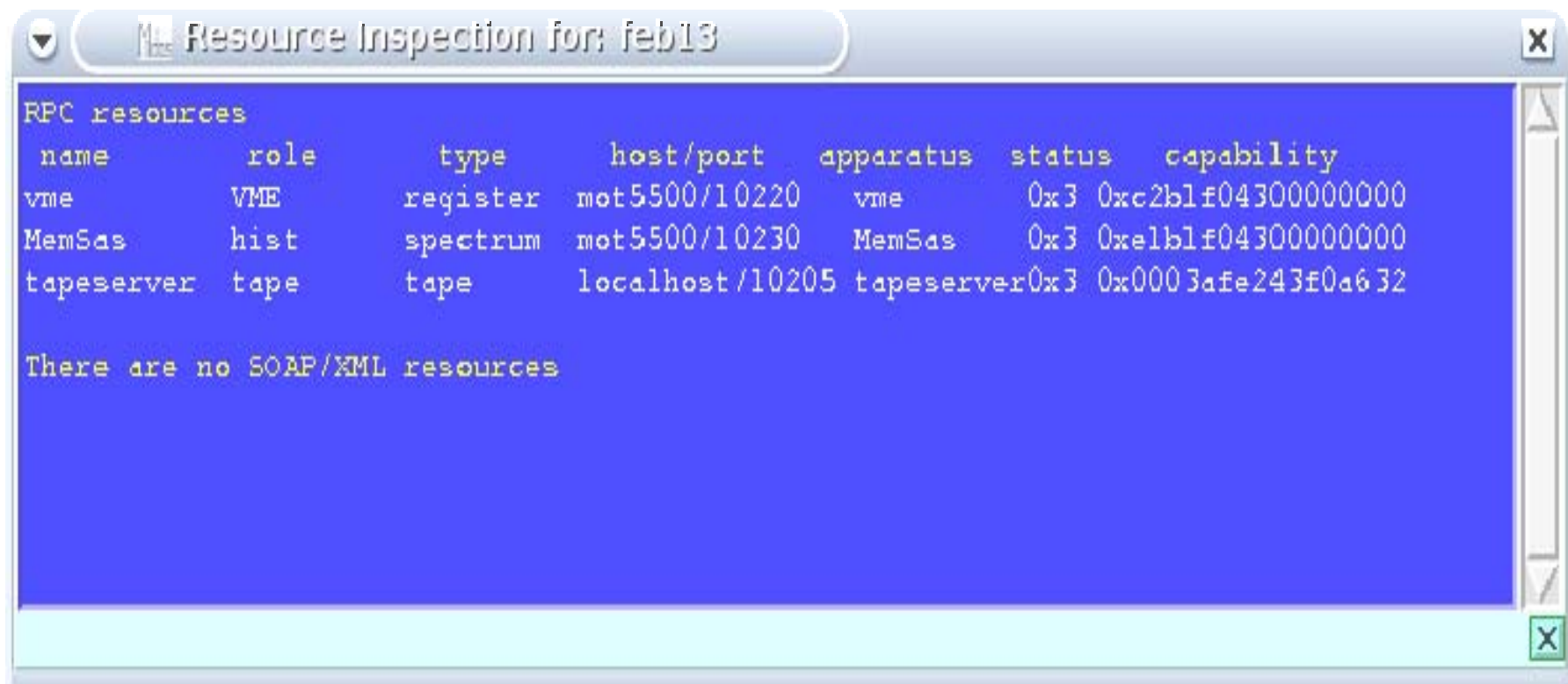


First, create an experiment by typing an appropriate name to the **Experiment**-field and then clicking **Create**. Second, join the experiment with the **Join** -button.

After this choose **Inspect Resources**.

If the **Apparatus Control** is done, i. e. you have joined an earlier experiment, the **Inspect Resources** look like the frame below including vme, MemSas and tapeserver. The tapeserver needs only to be included to save data. If data saving is desired go to **/MIDAS/TapeServer/Linux** and execute the command **./Master** before starting MIDAS. The host for the tapeserver would be the name of the local server. MemSas is needed to be able to plot spectra. Vme communicates with the crate and is always needed.

If the experiment is new then choose **Apparatus Control** from the previous frame and add the instruments wanted according to the *Experiment Apparatus Control* –frame on the next pages. Inspect resources after finishing apparatus control.



Add MemSas by completing the fields as below. When finished, click **Add Apparatus**.

The screenshot shows a window titled "Experiment Apparatus Control". It contains five rows of input fields, each with a "Select" button to its right:

- Apparatus Name: MemSas
- Apparatus Host: mot5500 (with a tooltip "i. e. VME CPU")
- Apparatus Role: hist
- Apparatus Type: spectrum
- Apparatus Port: 10230

At the bottom of the window are two buttons: "Add apparatus" and "Remove apparatus".

To add tapeserver fill in the fields as below. When finished click **Add Apparatus**.

N. b. the name of the local server would be its real name.

The screenshot shows a window titled "Experiment Apparatus Control". It contains five input fields, each with a "Select" button to its right:

- Apparatus Name:** The text "tapeserver" is entered.
- Apparatus Host:** The text "Name of the local server" is entered.
- Apparatus Role:** The text "tape" is entered.
- Apparatus Type:** The text "tape" is entered.
- Apparatus Port:** The text "10225" is entered.

At the bottom of the window, there are two buttons: "Add apparatus" and "Remove apparatus".

To continue choose **VME Module Control->Control** from the main menu. This will open the *VME Configuration & Control* -frame on the next page. Here desired modules can be added, for example on next page there are one SAC, seven CAENV783 and one CAENV1190.

1. e. for two ADCs there are three **module types** that should be in the VME Configuration & Control Frame:

1. SAC with **index** and **module ID** 1 and **VME addresses A16=0x0400** and **A24=A32=0**. (One SAC is always needed.)
2. CAENV785 with **index** and **module ID** 1 and **addresses A16= A24=0** and **A32=Rotary Switch Number** specified in the CAEN manual (see page 10).
3. CAENV785 with **index** and **module ID** 12 and **addresses A16 =A24=0** and **A32=Rotary Switch Number**. (The number of CAENs is equal to the number of ADCs.)

If needed one may comment the modules with some appropriate names . The modules have to be added one by one. When all the fields are filled just click **Add**. When all modules are added click **Load Configuration into Register Server**.

# VME Configuration & Control Frame

VME Server  vme

Module Type	Module Name	Address Information	Module ID	Comment
SAC	sac#1	0x0400:0x000000:0x00000000:0:0	1	SAC
CAEN V785	v785#1	0x0000:0x000000:0x00200000:0:0	1	ADC0
CAEN V785	v785#2	0x0000:0x000000:0x00210000:0:0	2	ADC1
CAEN V785	v785#3	0x0000:0x000000:0x00220000:0:0	3	ADC2
CAEN V785	v785#4	0x0000:0x000000:0x00230000:0:0	4	ADC3
CAEN V785	v785#5	0x0000:0x000000:0x00240000:0:0	5	ADC4
CAEN V785	v785#6	0x0000:0x000000:0x00250000:0:0	6	ADC5
CAEN V785	v785#7	0x0000:0x000000:0x00280000:0:0	7	ADC8
CAEN V1190	v1190#1	0x0000:0x000000:0x00300000:0:0	8	TDC1

Module Type:  CAEN V1190 Index:  1 Module ID  8 Comment: TDC1

VME address A16  A24  A32  VME Interrupt level  vector

To add vme fill in the fields as below. When finished click **Add Apparatus**.

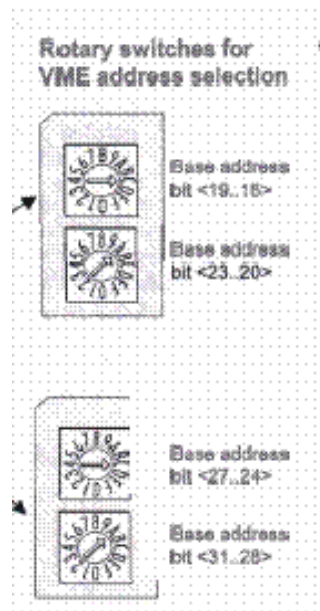
The screenshot shows a window titled "Experiment Apparatus Control". It contains five input fields, each with a red label and a green "Select" button to its right:

- Apparatus Name:** The text "vme" is entered in the input field.
- Apparatus Host:** The text "mot5500" is entered in the input field. To the right of the input field is a small grey box containing the text "i. e. VME CPU".
- Apparatus Role:** The text "VME" is entered in the input field.
- Apparatus Type:** The text "register" is entered in the input field.
- Apparatus Port:** The text "10220" is entered in the input field.

At the bottom of the window, there are two cyan buttons: "Add apparatus" and "Remove apparatus". The window has standard Windows-style window controls (minimize, maximize, close) in the top right and bottom right corners.



## V785 & V1190

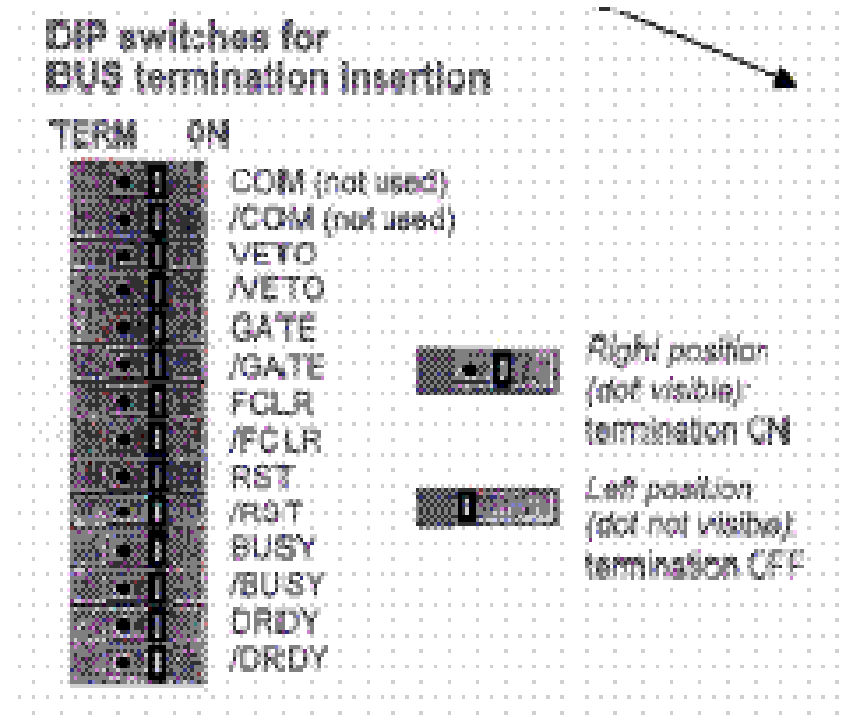


<i>ADC 0</i>	<i>ADC1</i>	<i>ADC2</i>	<i>TDC1</i>
<i>0</i>	<i>1</i>	<i>2</i>	<i>0</i>
<i>2</i>	<i>2</i>	<i>2</i>	<i>3</i>
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

## V785 terminator switches

GATE-busline  
Only the last ADC in the  
Bus should be terminated

Terminator off **red light**  
Terminator on **green light**



To modify a module click on them in the *VME Configuration & Control* –frame. A setup frame in which desired changes can be made will pop up. Below the *CAENV785 Setup & Monitor* - frame.

**CAEN V785 ADC Setup & Monitor**

Module number:   CEO Address  Event Counter  Act on ALL modules? ☐

**Module Setup**

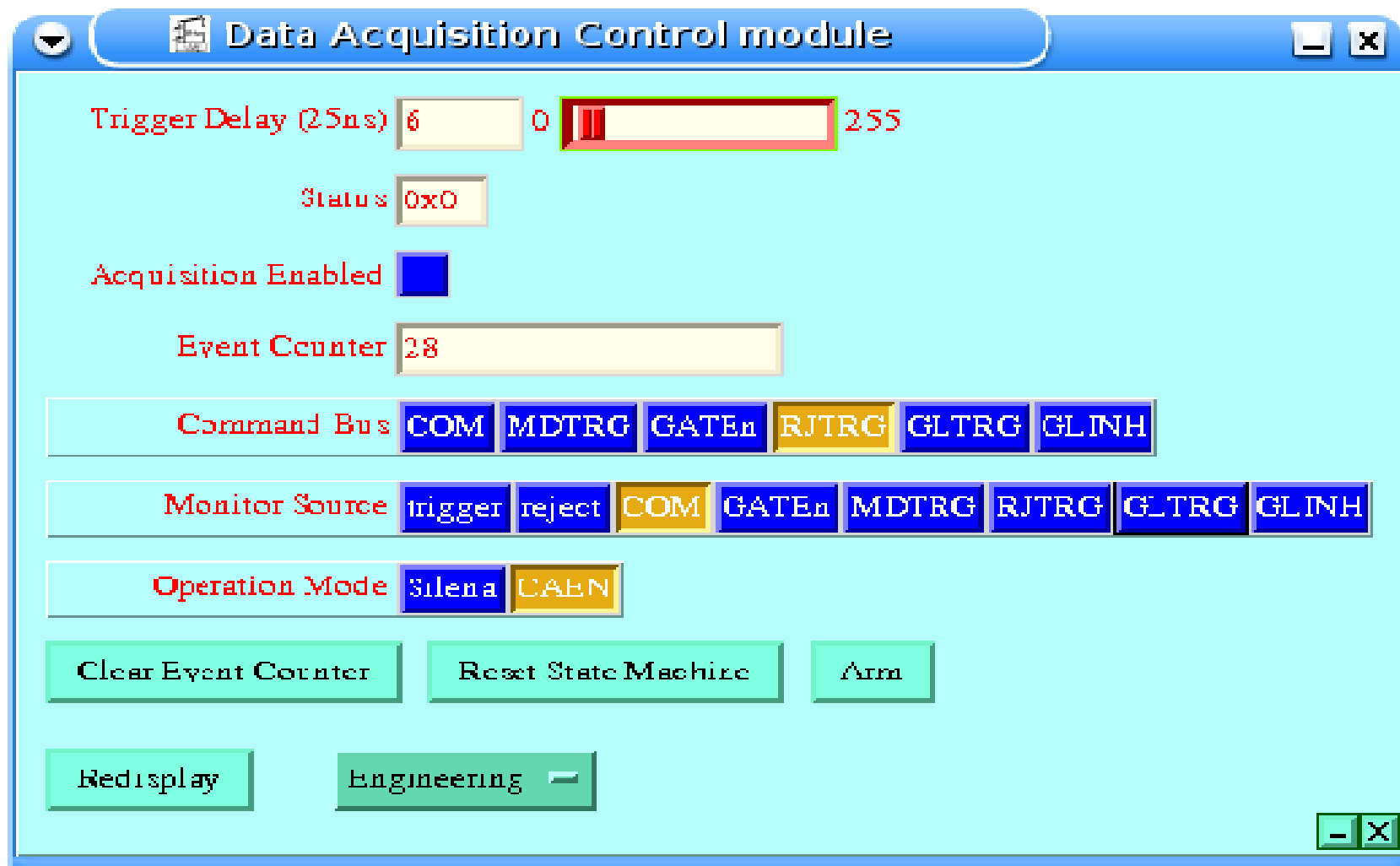
ADC controller   Overflow suppression   Zero suppression

Fast Clear Window    Zero Suppression Threshold Resolution

**ADC Enables and Thresholds** Act on ALL ADCs? ☐

0	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	1	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	2	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	3	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255
4	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	5	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	6	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	7	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255
8	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	9	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	10	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	11	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255
12	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	13	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	14	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	15	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255
16	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	17	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	18	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	19	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255
20	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	21	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	22	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	23	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255
24	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	25	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	26	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	27	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255
28	<input checked="" type="checkbox"/>	.6	0	<input type="text" value="0"/>	255	29	<input checked="" type="checkbox"/>	15	0	<input type="text" value="0"/>	255	30	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255	31	<input checked="" type="checkbox"/>	16	0	<input type="text" value="0"/>	255

In **VME Module Control->SAC** one can find the Data Acquisition Control module. This can be checked during a measurement and should look like the one below.



To start a measurement, choose **Experimental Control** from the main menu. The *MIDAS Data Acquisition Experiment Control* –frame will pop up.

**MIDAS Data Acquisition Experiment Control**

VME: Stop Go ☒

Readout: Stop Go ☒

STOP GO

SETUP

Histogramming Enabled ☒ Histogram None All Scalers —

TS Transfer Enabled ☒

Tapes: Stop Go Tape Server Enabled ☒ Tape Control

Tapes in Use /dev/file/0 Run Number 4

Tape Rate (Kbytes/sec) 0 Tape Used (%) 0

Good events 21221 /sec 51 Bad events 55 /sec 0

Redisplay Statistics Spectra — Setup Options — Advanced —

When measuring first time click on **Setup** and choose **Setup everything**.

To save data to a file one chooses **Tape Control** which opens the *Tape Drive Control* - frame, see next page.

When all desired fields in the *Tape Drive Control* are filled, close the *Tape Drive Control* and go back to *MIDAS Data Acquisition Experiment Control* –frame. Ensure that the fields **Histogramming Enabled** and **Tape Server Enabled** are marked before starting a measurement with the **GO** -button. To stop a measurement click **STOP**.

The **Advanced** –button has a debug function which one can find in **Advanced->Configurations->Test->Debug Frame**.

To save data the field **/dev/file/0** must be allocated. To specify the file name fill click **Load Tape** and fill in the name in the field **NEW Volume name** which pops up after allocating. Click **continue** when finished. In the field at the bottom of *Tape Drive Control* -frame the user may specify e. g. run number and a label for the experiment. This field gives just information to the user and is neglected by the program while running.

The screenshot shows a window titled "Tape Drive Control" with a light blue background. At the top, there are three columns: "Available Drives", "Allocated?", and "Status". Below these columns are two rows of drive information. The first row shows "/dev/null/0" as available, not allocated, and "Not In Use". The second row shows "/dev/file/0" as available, allocated, and "allocated". To the right of each drive entry are two buttons: "Unload Tape" and "Load Tape". Below the drive table, a message box states: "You have requested to initialise a new tape on /dev/file/0. You may supply a volume name for the tape or accept the default supplied. Then click on the Continue button or click on the Cancel button to abort". Below this message is a text field for "NEW Volume name:" containing "EXPT2", and two buttons: "Continue" and "Cancel". At the bottom of the window, there are several status fields: "Blocks written:" with a value of 45, "Kbytes written:" with a value of 1440, "Kbytes/sec:" with a value of 0, and "Tape written %" with a value of 0. Below these are three more fields: "Run Number" with a value of 4 and up/down arrows, "Run Name Prefix" with a value of R, and "Experiment Name" with a value of Expt2. At the bottom left, there are two buttons: "Redisplay" and "Help". At the bottom right, there are two buttons: "Stop" and "Go".

Available Drives	Allocated?	Status	Unload Tape	Load Tape
/dev/null/0	No	Not In Use	Unload Tape	Load Tape
/dev/file/0	Yes	allocated	Unload Tape	Load Tape

You have requested to initialise a new tape on /dev/file/0  
You may supply a volume name for the tape or accept the default supplied.  
Then click on the Continue button or click on the Cancel button to abort

NEW Volume name: EXPT2   Continue   Cancel

Blocks written: 45   Kbytes written: 1440   Kbytes/sec: 0   Tape written % 0

Run Number 4   Run Name Prefix R   Experiment Name Expt2

Server state: Stop   Go   No Storage

Redisplay   Help

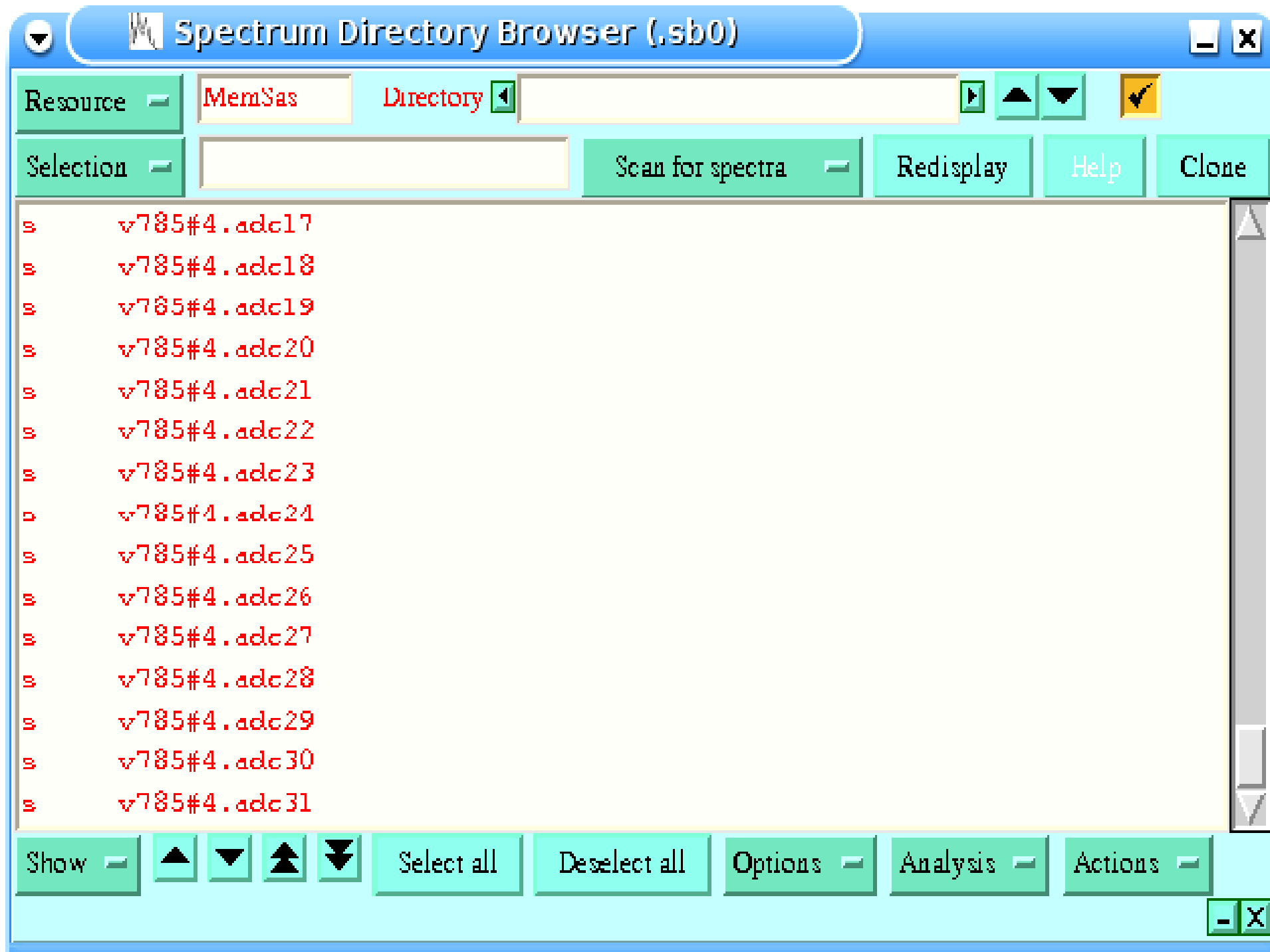
To plot a spectra choose **Spectra->Spectrum Browser** in the *MIDAS Data Acquisition Experiment Control* –frame. This open the *Spectrum Directory Browser* –frame on the next page.

Choose **Resource->Memsas** to do on-line data analysis. Mark the channels you want to plot and click **Show**. This results in the *Displaying Spectra* -frame on page 17. For off-line data analysis one may specify the current file in the **Directory** –field.

When spectra is displayed you can among other functions do a curve fit, see the graph in the middle on page 19. First mark the actual area and backgrounds by clicking with left mouse button in the graph. Then choose **peakfit** from **Analysis**. To expand a graph, mark the desired area and then choose **View->expand**.

Delete all former data with **Actions->just zero** in the *Spectrum Directory Browser*.





# Displaying Spectra (.sd.s0)

View

Arrange

Analysis

Tags & Fits

Channel

Help

Clone



Reset

Refresh



new

current

linear

slicing off

32768

/MemSas/Stat

0

1789

2661

512

/MemSas/v785#1.adc0

0

2210

2217 2220

2233

2246

2255

2259

2266

512

/MemSas/v785#1.adc1

0

1886

2209

Manuals to MIDAS can be founded in

<http://npg.dl.ac.uk/MIDAS/>

<http://www.targisol.csic.es/ISOCO/VME>