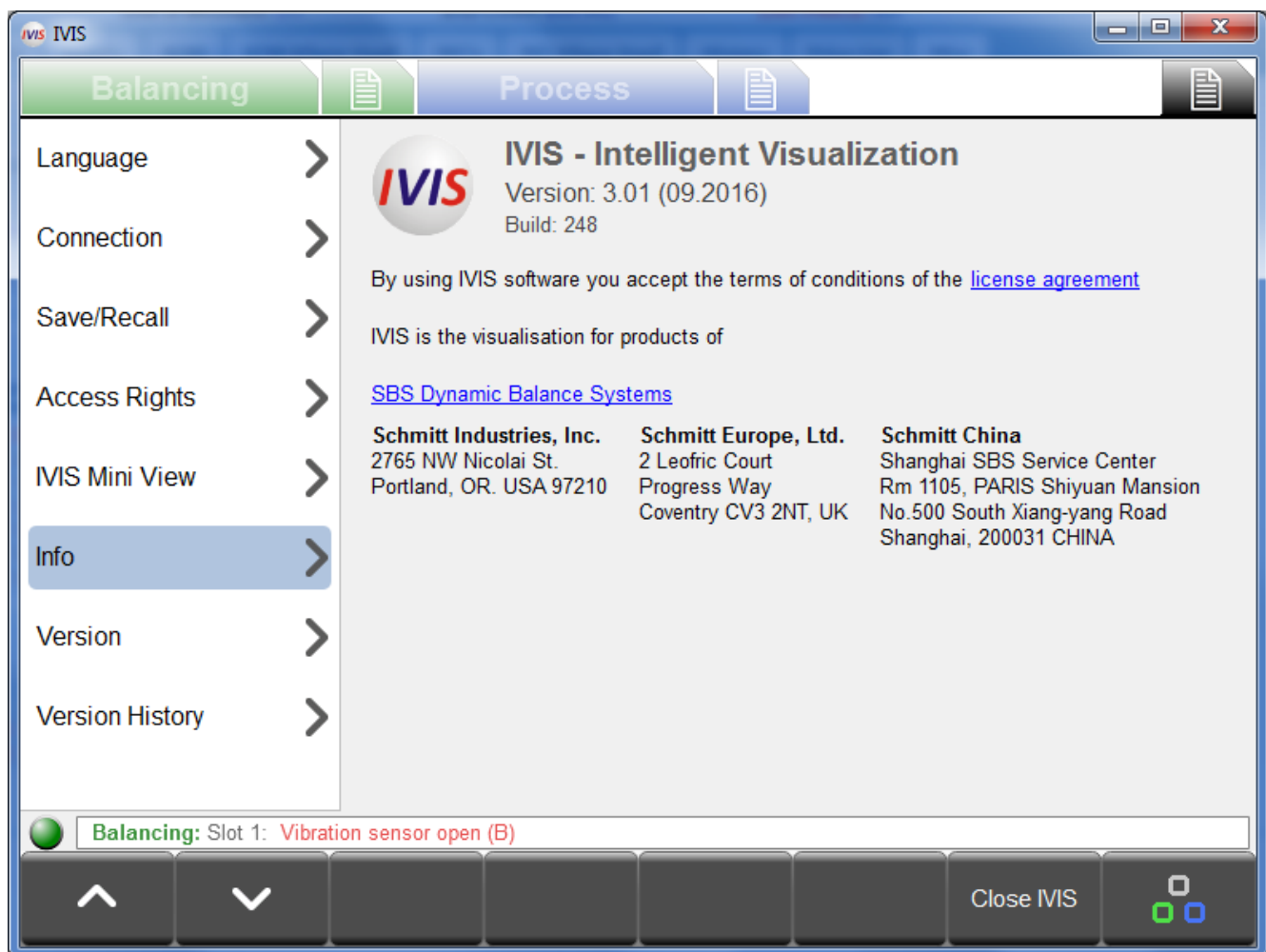


# Manual for IVIS – Intelligent Visualization

with SB-5500

LL-5700 Revision 1.3

Productivity through Precision™



**Manual and Specifications**  
for the  
**Operating Program IVIS**  
for Systems with Model 5500 series Control Unit

**LL- 5700**

Manual Revision 1.3

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## Purpose of the Operating program IVIS

IVIS – Intelligent Visualization was developed as a display and user interface program for all the various functions of the SBS SB-5500 control (Process Control and balancing). Products are operated via a convenient and flexible PC software program, which is easy to install which also provides:

- **User-friendly operation of the system**
- **Simple and clear parameter settings**
- **Clear display of process data, including saved data for Process Control products**
- **A uniform user interface for all devices**

## Operator Safety Summary

Product safety information in all hardware product manuals should be read and understood.

## Installation


The software is unzipped from the supplied download file and the entire IVIS folder and all its contents are simply copied to a folder on the PC or Windows based CNC system. An ethernet cable is connected to establish a link between the PC and the SB5500 control. IVIS can assist in the configuration process by searching for any connected devices.

IVIS provides the user interface for all installed SB5500 functions, including ExactControl, AEMS, and balancing. The SB5500 hardware will continue to function autonomously and independently of the IVIS operating software. IVIS supports multiple instances of IVIS on separate PCs being configured to interface with any SB5500 control, or also a single instance of IVIS can be connected to several SB5500 controls.

### System Requirements and Software Installation

- Windows XP SP3 or later. (Windows CE or Windows Compact 7 is not supported.)
- 1 free Ethernet interface: Communication with the SB-5500 system is via Ethernet.
- Integration into Siemens machine control systems for the start of IVIS of Sinumerik Operate, see page. 4
- A USB memory stick or other appropriate storage device with the current IVIS program.

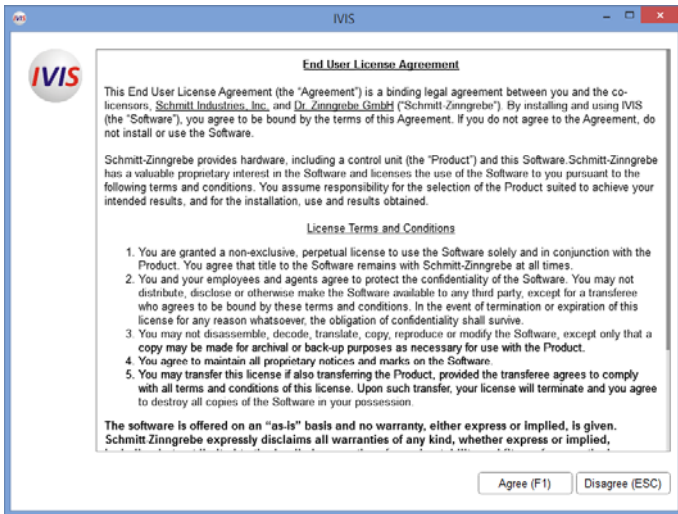
IVIS does not need to be installed under Windows, it is sufficient to copy the complete IVIS directory (with all its files) to any location on the PC. The IVIS.exe program requires read and write access to all files in the directory IVIS.

IVIS can be downloaded from our company website at <http://www.grindingcontrol.com/support/software-firmware/> and click on the  [Secure File Download](#) link. Please contact our sales department to ensure your company email address is setup to use this site.

Since **IVIS.exe** is not installed under Windows it does not appear in the Windows program list.

# Start-up

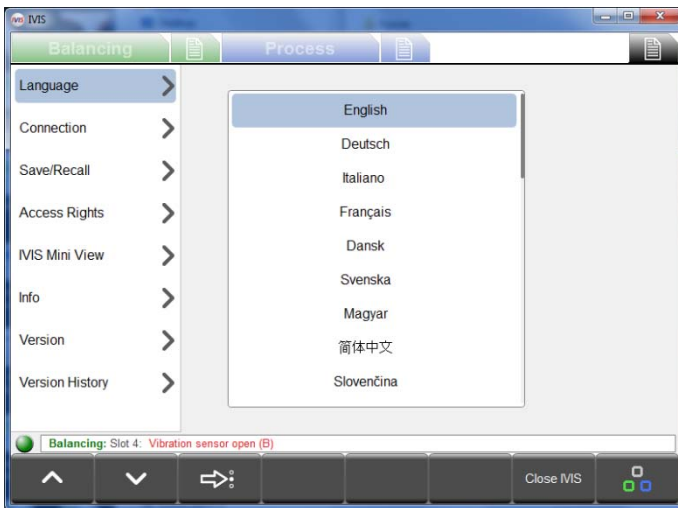
## First Run Start-up



### 1) License Agreement


On initial start, the IVIS license terms are presented. To use IVIS, the license agreement must be accepted.

The text of the license agreement can be consulted at any time on the **Info** screen under general settings for IVIS.

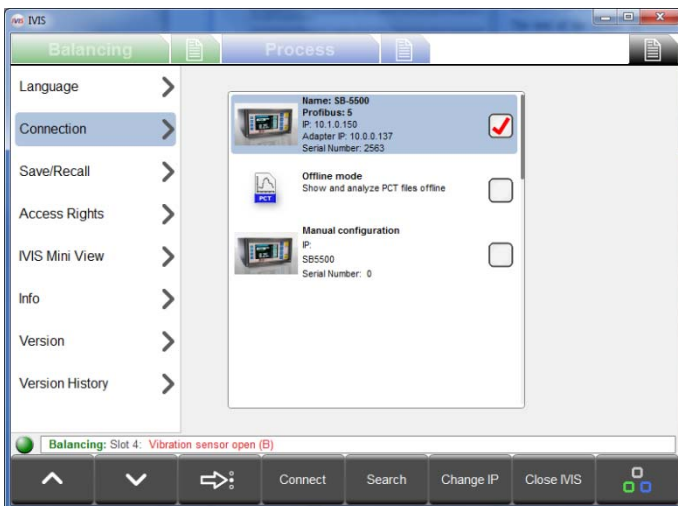


### 2) Select Language

On initial start, the English language is set by default. This can be changed on the **Language** screen under general settings for IVIS:

 key will increment to the next language, or select the desired language from the list using the cursor.

All parameters changes will be automatically saved and set for use when the program is restarted.



### 3) Connection to the Device

IVIS automatically searches the network for devices. All devices found are displayed at the top of device list on the **Connection** screen of general IVIS settings.

When the device IP address is compatible with your PC IP address, the device can be selected and connected.

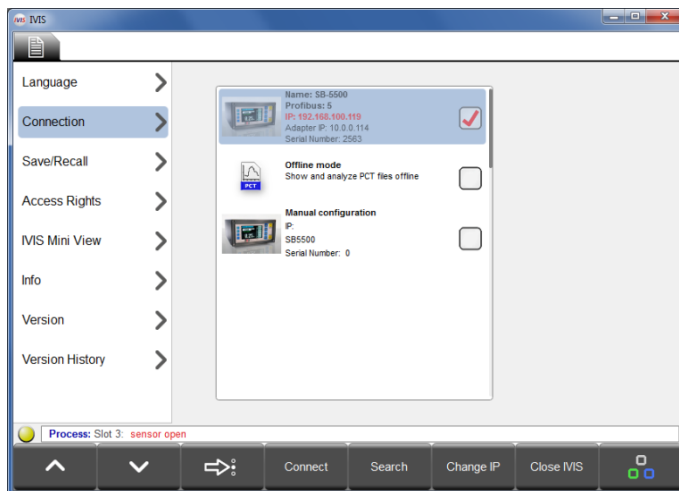
Select the device using the checkbox, and then use the **Connect** key to connect IVIS to the selected device.

Up to four IVIS program instances can be simultaneously connected to a single device.

In addition to any found devices, two items are always listed last on the device list.

**Offline mode** is used for connection of IVIS only for viewing saved PCT files on the local computer.

**Manual Configuration** is discussed following.

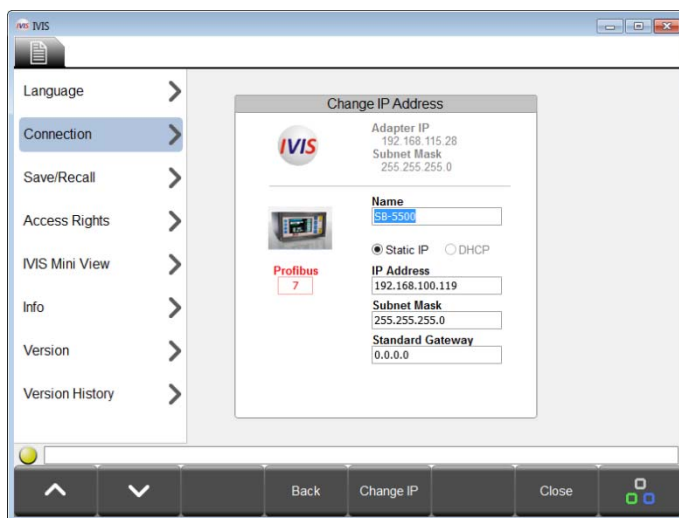


#### 4) Change Device IP settings if needed.

If a device is found with an IP address which is **not compatible** with the local adapter (PC) address, this address will appear in red and the device will be greyed out (unavailable for connection).

The device search may be restarted at any time by using the Search key.

**Note:** if no device is found, please check the DHCP/Static setting is correct, check the wiring and make sure that the IVIS program is not blocked by a firewall.



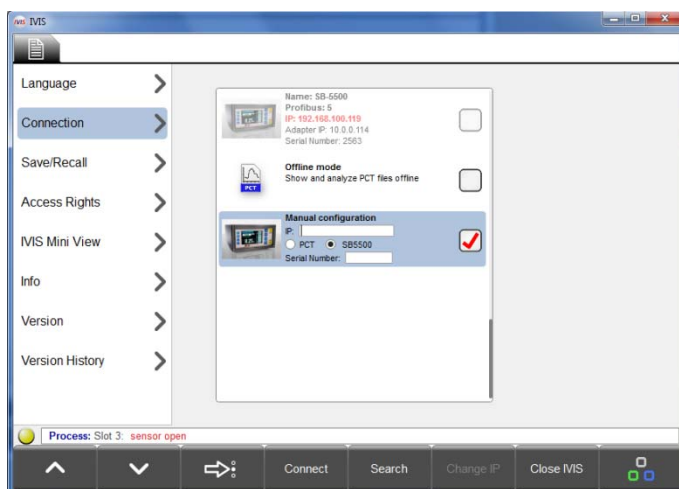
To resolve an IP address compatibility problem, select the device and use the Change IP key to open the window for communication settings.

The IP address and subnet mask of the PC adapter are displayed next to the IVIS icon as a configuration aid. DHCP should be selected only when a DHCP server is in use on the network. Otherwise select the static IP address, Subnet mask, and gateway settings which are compatible with the PC adapter and use the Change IP key to save settings.

The network is searched again for devices. Changes to the settings may take some time to complete, depending on the device type and the complexity of the network. If the new settings for the device do not appear after 15 seconds, initiate a new search using the Search key.

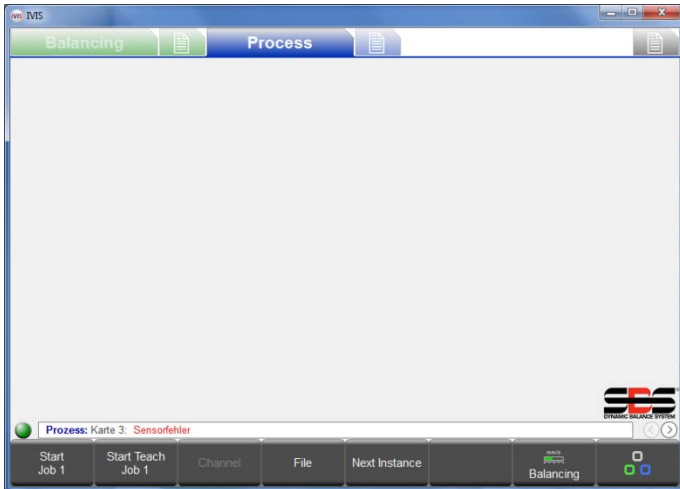
Once the device settings are compatible, select the device using the checkbox, and then use the Connect key to connect IVIS to the selected device.

**Note:** The Profibus ID and an assigned device name can also be changed on this screen.



The **Manual configuration** option at the bottom of the device list must be used in cases where IVIS is connected via a router. Select the type of device (SB5500) and type in a compatible fixed IP address, and the serial number of the SB5500. A VPN connection is recommended to ensure connection across routers, or other steps must be taken to ensure that ports and IP address assignments are compatible.

## Startup after First Run



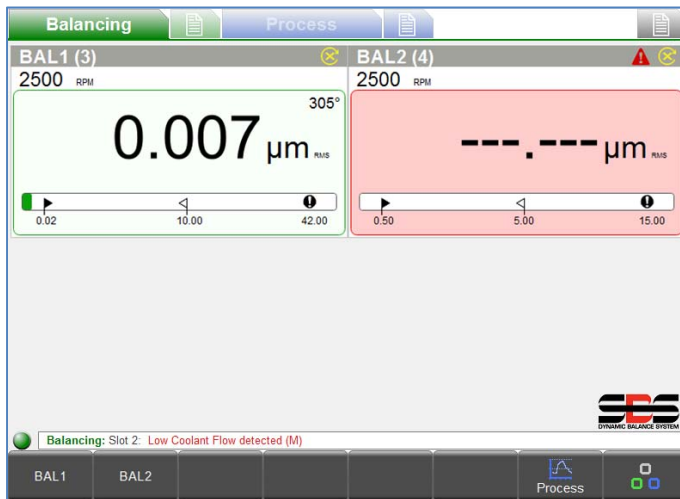
Successful connection of the IVIS program with the SB-5500 is indicated by the green dot (connection indicator) at the bottom left above the menu bar. Yellow color indicates connection is being attempted, and red color indicates a failed connection attempt. The Process and/or Balance View tabs for the installed products will also be displayed.

When the SB-5500 power is cycled, it will take about 10 seconds for the control unit to fully reboot and re-establish connection to IVIS.

IVIS automatically saves connection information as well as the last screen position and window size and restores these settings when the program is restarted.

Whenever a process card is installed in the SB-5500, the default IVIS view will be the most recently selected Process view. If that view is the Job, Instance, or Channel view of the ExactControl card, then the display is initially empty of data until a process has been setup or started.

## Integration on Siemens Machine Control



When integrated with machine controls the following command line options can be additionally helpful:

**IVIS.exe -noFrame**

IVIS starts without a window frame and header.

**IVIS.exe -fullscreen**

IVIS starts without a window frame and header, as with "-noFrame", and also starts the application in full screen mode. On small screens the space is optimally utilized.

## Sinumerik 840Dsl with Sinumerik Operate

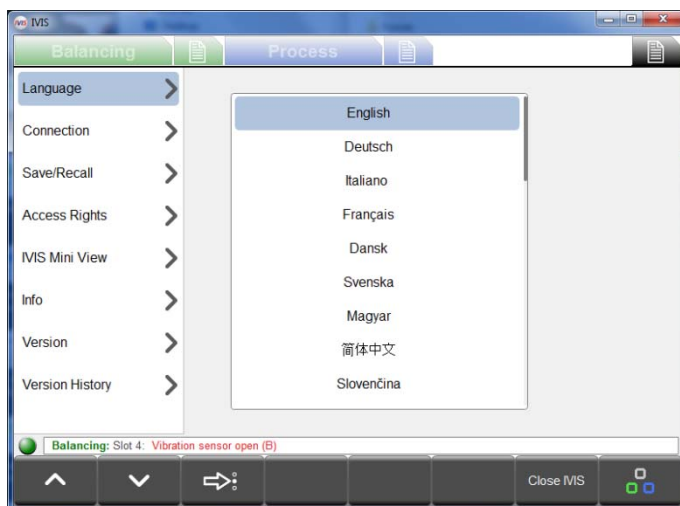
For details please refer to the IVIS Manual file provided with IVIS software, located in the IVIS\manuals directory.

## Fanuc / Bosch Rexroth / Heidenhain

IVIS can run on these CNC controls if the PC based version of the control with Windows is used. The software framework of these CNC controls provides a mechanism like "...start an external application...". For this case we recommend using the command line option "-fullscreen".



## IVIS Overview






When IVIS is connected to a device, the display automatically adjusts to the hardware configuration. The operating areas are divided into tabs.

The **Balancing** tab shows balancing functions.

The **Process** tab shows process monitoring functions (ExactControl and AEMS).

For each view (Balancing or Process) the related parameters can be found and set quickly using the associated parameters tab:

-  Balancing Parameters
-  Process Parameters
-  General IVIS Settings

### IVIS Operation

IVIS is operated mainly via the 8 menu keys in the menu bar. These keys are assigned different functions based on the operational context. These keys provide the operator with the functional choices for product operation, based on the operation being performed. They can be operated via the soft keys of the machine control panel, or via the PC keyboard (F1 ... F8), or by using the cursor.


### Key: Process / Balancing



Use this key to switch the focus between the Process view and the Balance view (when both types of product are installed in the SB-5500).

### Key: Rotate



The  key increments between each of the different tabs of the operating areas:



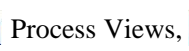
Balance View



Balancing Parameters,



Process Views,




Process Parameters,





General IVIS Settings.


### Editing parameters

Use the  and  keys to select which item to view, or use the up/down arrow keys on the PC.

Use the  key: to increment through the displayed list, or select the desired option using the cursor.

Use the  key to select the parameter options menu for the selected parameter. This symbol displayed next to a parameter onscreen indicates a menu of options exists for the parameter.

Enter parameter settings by using the PC keyboard. A virtual keypad is also accessible using the  symbol for all parameters which require text or value input. Use the Enter Key to save changes and exit the virtual keypad. Use the left and right arrow keys to select from an available list of parameters.

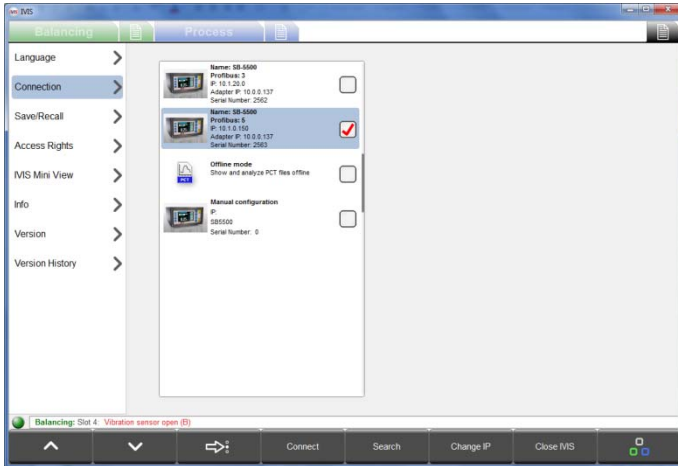
All changes made to parameters are saved immediately as edits are made. One exception is made when editing process control job parameters. When such parameters are changed, the word “modified” will display in red in the top right corner of the parameters screen and the  button will be available on the menu bar. Pressing undo will revert any changed settings on this screen to the last saved state, to help prevent any changes made in error. This functionality

depends on the current context. When in a submenu (e.g. a Strategy submenu) the undo button only affects the submenu items. An undo when editing a job reverts the entire job

## General IVIS Setting

### Language

At the first run the English language is set by default. Select the desired language.

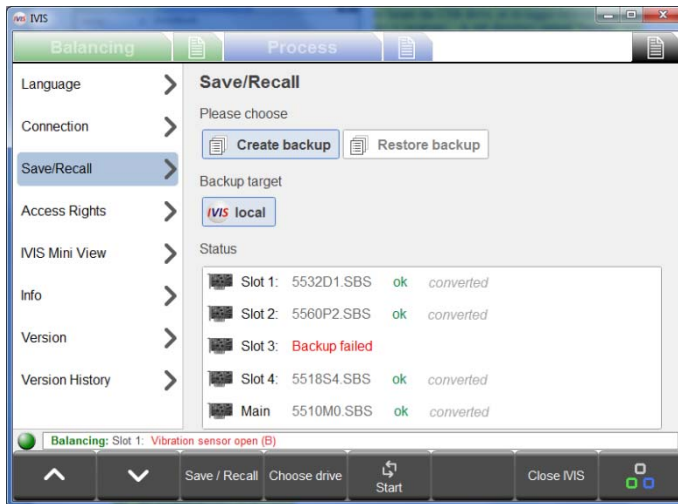


### Connection

IVIS automatically scans the network for devices. All devices found are displayed.

The red checkmark indicates which device is connected.

For detailed description for setting the connection, see the First Run Startup section.



### Save/Recall

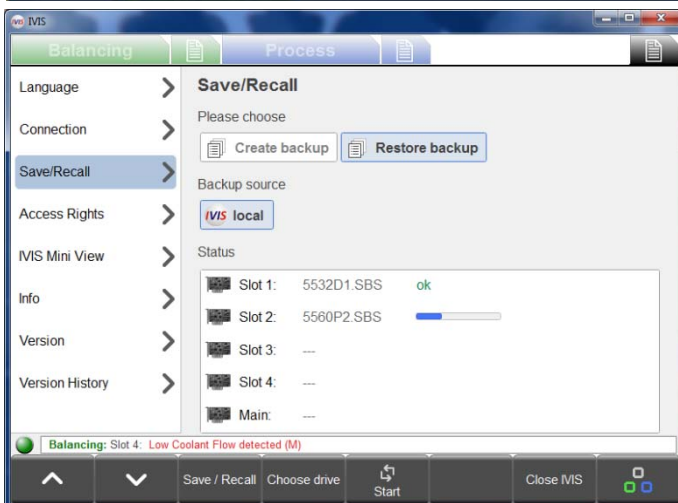
The Save function allows user settings for each installed device card in the SB-5500 control to be saved to individual files. The Recall function allows these files to be used to send saved settings to the same or another connected SB-5500.

Save or Restore function is selected by clicking on the buttons onscreen **Create backup** or **Restore backup**. Also use the Save/Recall menu button to toggle between these functions.

Where the settings files are stored can be selected. The default is the IVIS program directory. Any attached USB drive will be automatically located and can also be used as the storage location. Available USB drives will be listed under Backup target. If the drive is connected after IVIS is started, use the **Choose Drive** menu button to locate the USB drive, or to toggle between available drive locations. A sub directory named “backup” will be automatically created on the backup target drive and used as the file location.

When Restore backup function is selected, the status area will show the message “Valid backup found, Press Start to recall settings” if there are available settings files on the selected Backup target.

Transfer of the settings files for either backup or restore is initiated via the Start button. All supported cards in a connected SB5500 series controller will be transferred to/from the controller and IVIS at this time.



During the transfer of settings, a transfer status bar for each card will be displayed along with the overall status of all transfers. If an installed card doesn't support the save/recall function, or a data transfer error occurs, the status area will indicate a failure in red for that card.

When settings recall is completed, the controller will wait a few seconds and then automatically disconnect from all current IVIS instances. The IVIS instances will automatically reconnect and update with the new settings. As with any ethernet connection, this reconnection can take up to a couple minutes to take place. While this process is pending, IVIS will display a screen indicating that it needs to reconnect.

The settings files are named using the card type and the slot number, formatted as follows:

**55nnyx.SBS**

**nn** - the product number of the card.

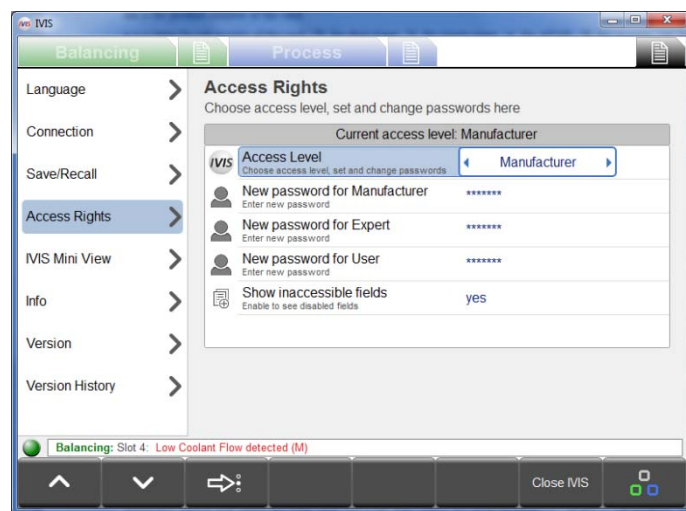
**y** - a letter for sub models of the card: 'D' for dual plane, 'S' for single plane, 'A' for AEMS, 'P' for process, 'M' for main or an underscore '\_' for no extra info. The letter 'R' is reserved for firmware update files.

**x** - the slot number from 1 to 4. Main will always have 0 for the slot number.

For reference, .SBS files will also be converted to a human readable .txt file in the same folder at the same time the .SBS files are created. This will happen automatically, but only when the .NET framework 4 is installed on the PC, otherwise no .txt file will be created. The status area of the screen will display „Converted“ for each.TXT file creation.

The main PCB settings are saved when creating a backup. Settings for main are limited to connection settings (ethernet and Profibus) as well as language selection. For this reason it may make sense to not include this file when using restore to setup a new control unit, allowing for differences in connection settings.

Restore will only transfer settings to device cards in the target SB-5500 which match both the card type and the slot number (1-4) of the saved configuration. When a matching file is not found at the target location, the slot will be skipped in the restore process.




## Access Rights



To enable control of access to certain functions such as making settings changes, a user access rights system is provided in IVIS. There are three customer access levels provided:

1. **User** - access for the machine operator.
2. **Expert** - access for the process manager.
3. **Manufacturer** - full access for all functions for machine setup.
4. Service - SBS service staff access only.

For details on which parameters are accessible under each access level, see Appendix A on page 26.

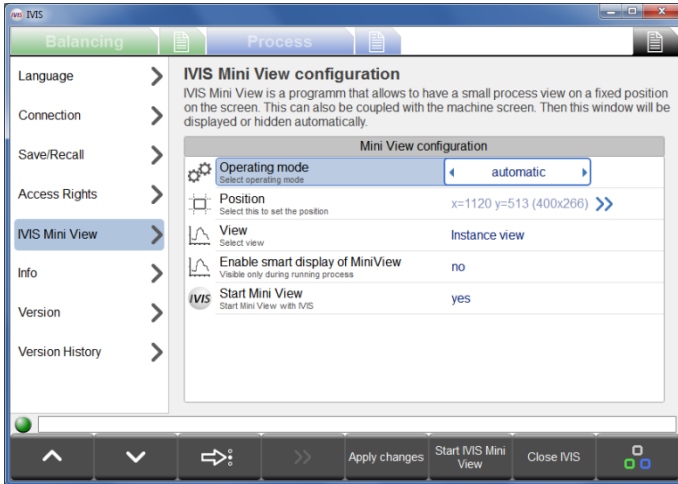
Passwords for each of the three user levels are empty by default at IVIS installation, so full access is permitted. To enable protected use of one of the Access Rights levels, create a new password for that access level.

The above screen shows that you can change or set a password for the currently active access level, as well as for any lower access level. The  symbol will be displayed next to the **New Password for...** entry area which is used to set or reset the password for each access level shown. A password can be reset to empty by deleting an existing password.

The currently active access level is always displayed in the grey bar at the top of the menu list. Use the Access Level selection box next to the  symbol to select another access level. It is always possible to select a lower access level for use without entering a password. To select a higher access level, you must enter the password for that access level, assuming a password has been setup. When password entry is required to change access level, the  symbol is displayed next to the **Password** entry area. Enter the password followed by Enter, then verify the current access level has changed, as displayed in the grey bar at the top of the menu list. When configuration or other high level access use

is completed, it is important to set the access level back down to the appropriate user level. When the IVIS program is closed, it will restart with the last active access level.

The **show inaccessible fields** option is a global setting for all access levels which allows control over the view of parameters which are not accessible for the active access level. **Yes** setting means all parameters are shown and inaccessible ones are greyed out and not usable. **No** setting means inaccessible parameters are removed from display.



## IVIS Mini View

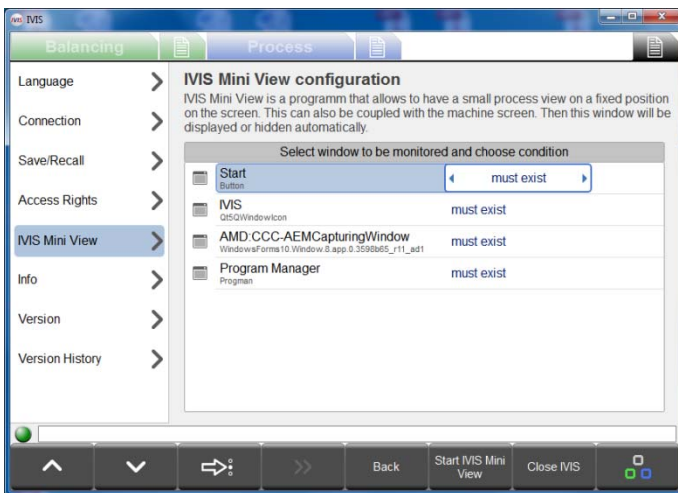
The Mini View is a separate executable program that can be run on the PC to provide a small view of the essential status information from IVIS. The Mini View can run independently of IVIS, and can be set to display at a fixed position and size on the screen. The Mini View can be placed on the machine screen to allow this view to be displayed or hidden automatically. A number of parameters are available to help setup how and when Mini View is displayed.

After changes to Mini View parameters are made, use the Apply Changes key to save.

The Start/Stop Mini View key will start or stop the Mini View program. The Mini View program must be already started in order to display.

## Operating Mode

The operating mode configures Mini View to run correctly on the machine screen of different CNC platforms. The Automatic setting will detect the CNC type and is the best setting for most installations. If this is not working, try selecting your CNC device type from the list, HMI Advanced, Sinumerik Operate, or Bosch Rexroth.



The Window setting allows display of the Mini View to be attached to the state of a specific window in the operating system. The options menu for this setting presents a list of the currently running program windows. The user can select a window and associate display of the Mini View (when it is running) with this window.

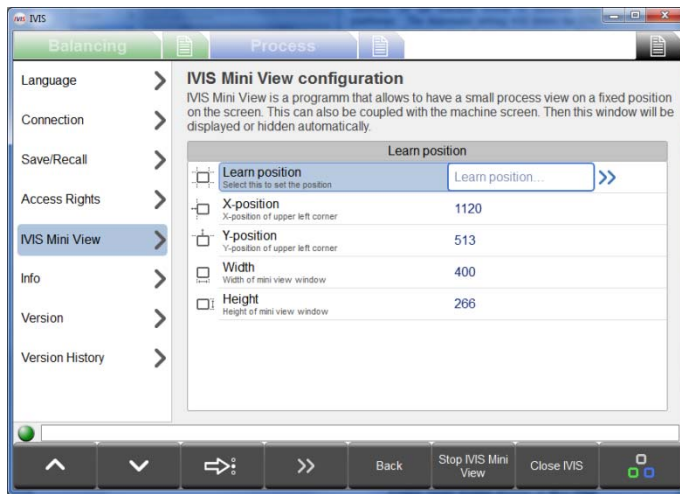
The association options include:

**Must Exist** – Mini View is displayed when the selected window is running.

**Isn't Minimized** – Mini View is displayed when this window is running and not minimized.

**Has Focus** – Mini View is displayed when this window has focus (is currently selected).

The Process setting allows display of the Mini View to be attached to a running process in Windows, so that the display will be active during the time the selected process is running.



## **View**

This option configures the content of the Mini View which can display either the Instance View or the Channel View. The Instance view will split the Mini View display area to show all Instances in the current Job. Channel view has an option menu to allow configuration of the two channels to be shown.

## **Enable smart display of Mini View**

This option allows display of Mini View only during a running process. The Mini View is then displayed only from the time the Process Start is activated until three seconds after the Process Stop signal is activated.

## **Start Mini View**

This option will start the Mini View program whenever the IVIS program is started.

## **Mini View automatic start**

The Mini View can be configured to automatically be started when a Siemens CNC control is first started. The supplied file IVIS\Siemens\Sinumerik Operate\cfg\systemconfiguration.ini contains the following line which should be implemented on the CNC, with the comment removed from the line and the file location path edited as needed:

```
;PROC601= image:="d:\IVIS\IvisMiniView.exe", process:=IVIS_MINI, background:=true
```

## **Mini View Command Line Interface**

d:\IVIS\IvisMiniView.exe <setting> is a command line interface which can be used by the CNC control to control the position and function of the IVIS Mini View.

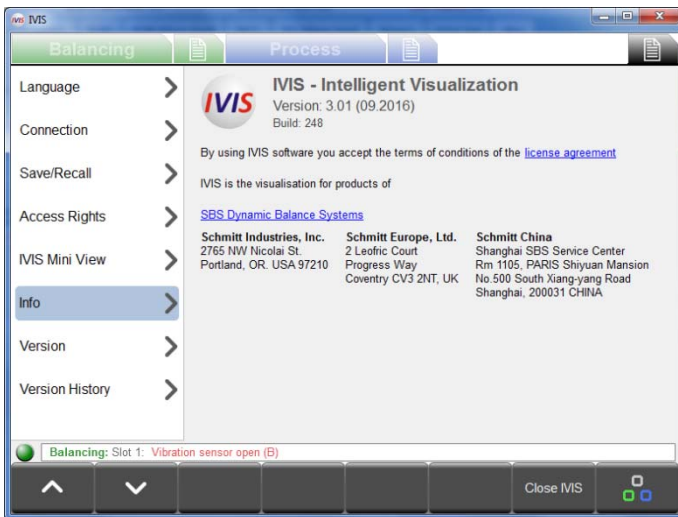
d:\IVIS\IvisMiniView.exe -help will display a help screen (English language only) with details of the available commands for this interface.

## **Position**

Mini View is set by the user to display at a fixed position and size on the Windows desktop. When Mini View is shown it will always display on top of other windows or programs.

The position and size of the Mini View window can be set using the manual settings on this screen, or the Learn Position option menu can be used to show an outline of the window on screen. The outline can be moved or resized as needed onscreen and the current settings can then be saved.

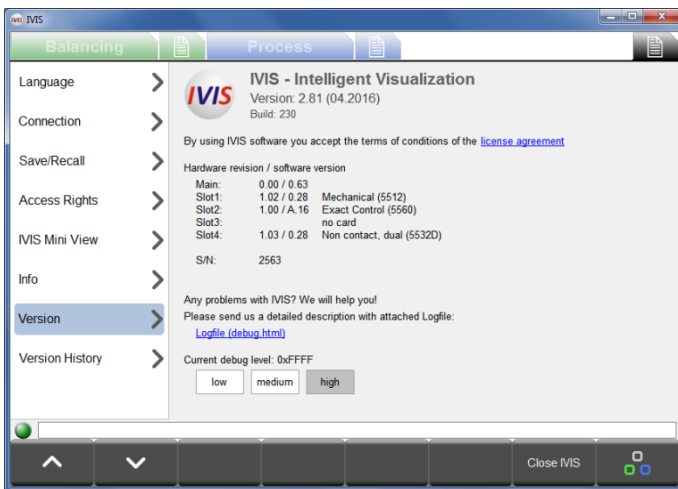




## Info

In this menu item general information about IVIS is summarized:

- IVIS Software Version and date
- Text of License Agreement
- Contact information to the manufacturer for customer service and links to the websites



## Version

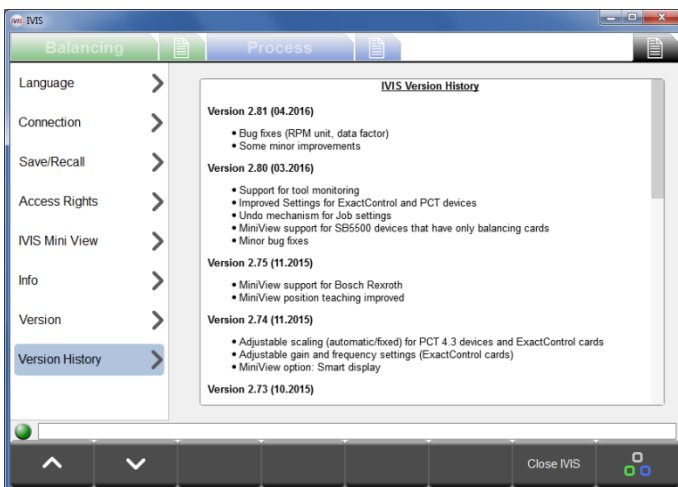
Under this menu item the information of the associated hardware can be accessed.

One can also find the program Logfile, which is stored in an html file. The debug level is set by default to low.

If problems are experienced with IVIS or product operation, it is suggested to change this setting to HIGH in order to capture maximum information regarding the system status.

Click on the Logfile link to open the debug.html file in your installed browser program.


The debug.html file will be needed by IVIS support for addressing any technical support questions or problems.



## Version history

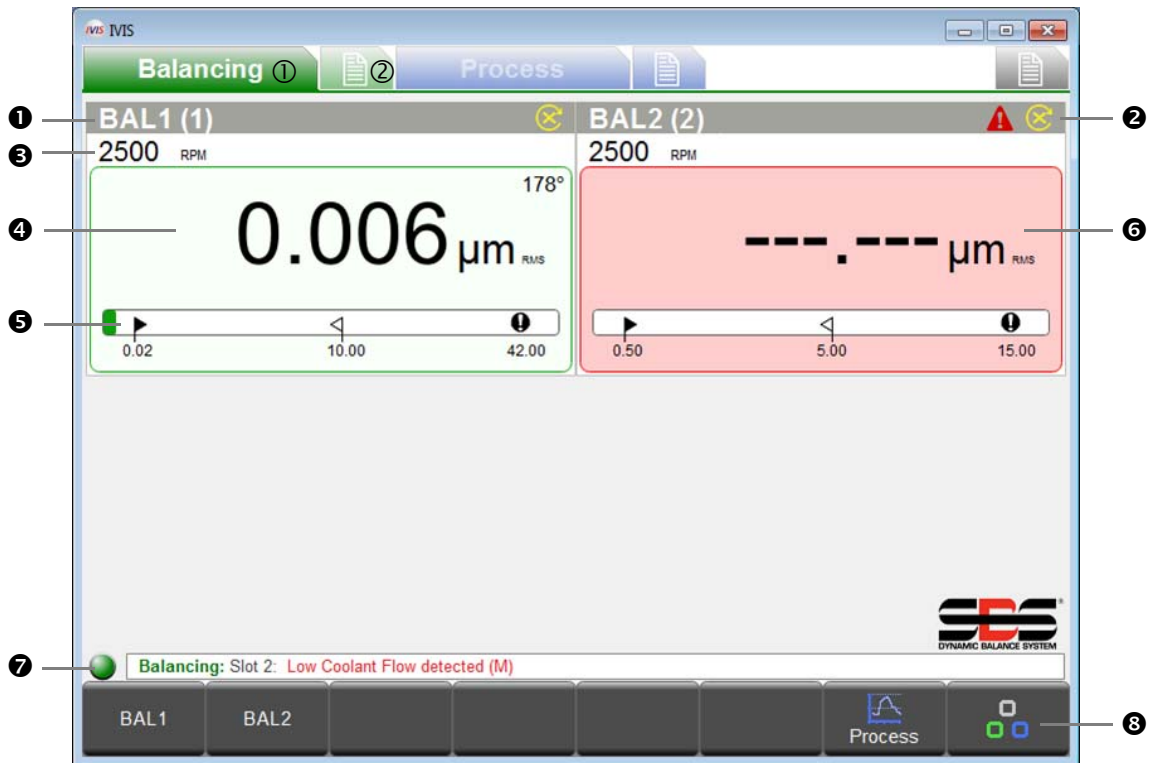
Log of all changes to the IVIS software.

## Close Program

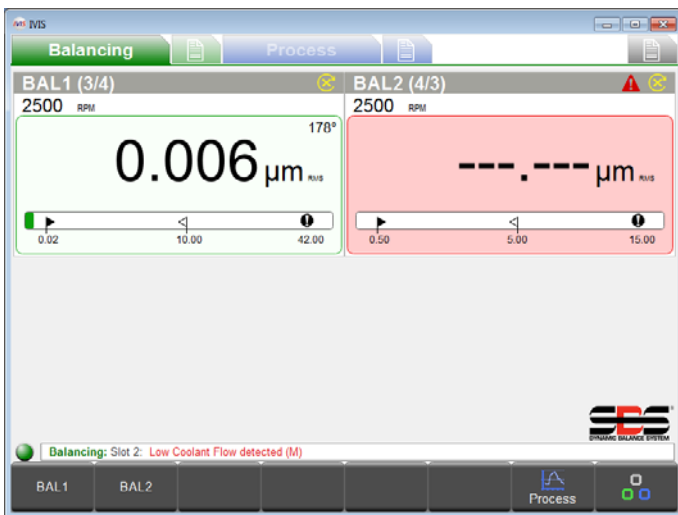
The Close IVIS menu key will close IVIS. The program can also be closed by pressing Alt + F4 or the  Close key at top right of the program window.

# Balancing View

## Balancing Overview



- ① Balance view, ② Balance parameters
- ① 5-digit assigned name of the balance card (default names are SLO1 thru SLO4). User can define a name for the slot on the parameters screen, which will be displayed with the slot number following (x).
- ② Status indication for any error messages, see Status Line ⑦
- ③ Current spindle speed (if available)
- ④ Current balance/vibration value: The display units, as well as the measurement type (amplitude, RMS, peak to peak measurement), are both displayed and can be selected in the balance parameters screen.
- ⑤ Graphical display of unbalance:
  - ▶ Limit: target balance level, ◀ Limit: maximum imbalance (tolerance), ! Limit: Safety warning (critical)
- ⑥ Background color: **green**: Balance is OK and is in the acceptance range, **yellow**: unbalance is above the acceptable balance tolerance, so a rebalance operation is required. **red**: unbalance has exceeded the critical safety limit.
- ⑦ Status Line: Displays the connection between IVIS and equipment as well as any status messages.
- ⑧ Menu bar with function keys

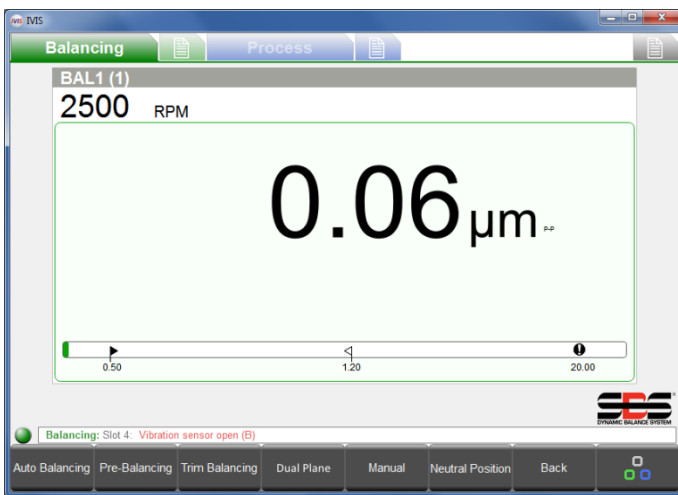


## Balance Operations

If more than one balance card is present, the desired card first should be selected by using the menu bar keys or by using the cursor.

This assigned name for each card will appear on the keys of the menu bar (in this example BAL1 or BAL2).

The name of the balance card is editable under the balance parameters.



Note: all menu keys shown in this figure will not appear on screen at the same time.

The available functions are displayed based on the type of balance card installed (automatic, two-plane, Manual balance, etc.) as well as the current function.

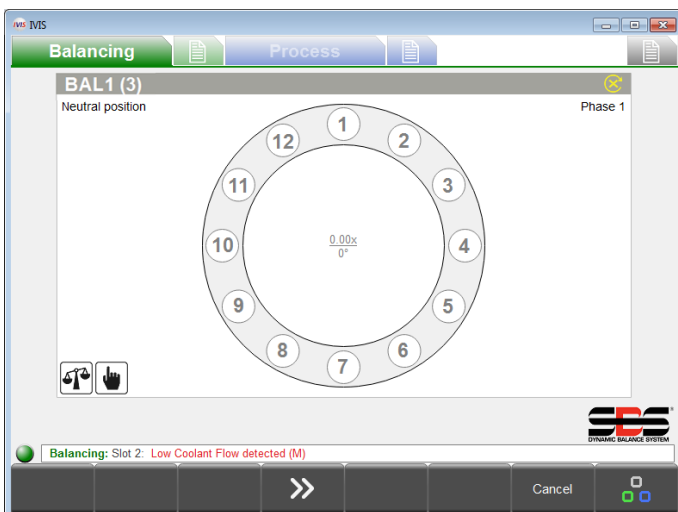
For a detailed description of functions, refer to the instruction manual supplied with SB-5500 control.

## Key: Auto Balancing

Use the Auto Balancing key to start the balancing process for all balance cards which support automatic balancers.



This symbol is displayed during the balancing cycle, along with the current status of the process.



## Key: Pre-Balancing

Any basic imbalance (e.g. caused by a grinding wheel change) can be compensated for by using pre-balancing.

This process allows the manual placement of weights to be used to roughly balance the new wheel, so that automatic balancer can achieve balance with less compensation.

There are five different balancing strategies available (Figure at left shows fixed location strategy).



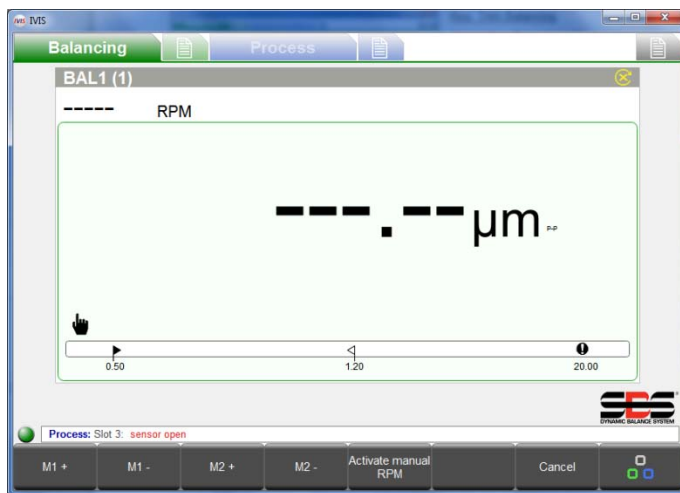


### Key: Trim Balancing

At any time after a successful pre-balance of a wheel, a simpler rebalance cycle can be performed if it is required without having to perform a new initial run.

### Key: Single Plane / Dual Plane

If dual plane balance cards are installed in SB-5500 (-D type cards must be paired in slot 1-slot 2, or in slot 3-slot 4) then you can choose between one-plane operation or two-plane operation. This mode affects the automatic balancing and pre balancing cycles.



### Key: Manual

In configurations with automatic balancing the balance weights can be moved manually using the M1+ M1-, M2+ M2- keys.

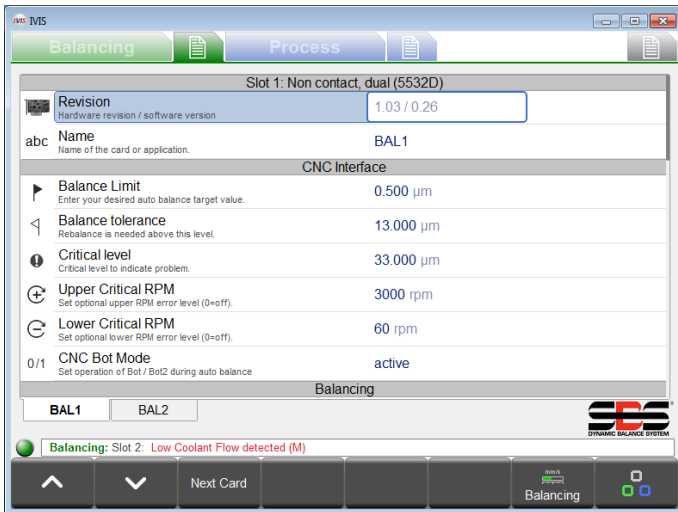
When no RPM signal is present, the Activate manual RPM key can be used to set the RPM filter to the setting determined by the manual RPM parameter.

### Key: Neutral Position

Use this key to initiate moving the weights in the balancer to neutral (opposite) positions. This function only operates with non-contact type balancers which are configured with optional zero weight position sensors.

### Key: Back

Press the Back key to return to the overview of all balance cards and exit the parameter menu.



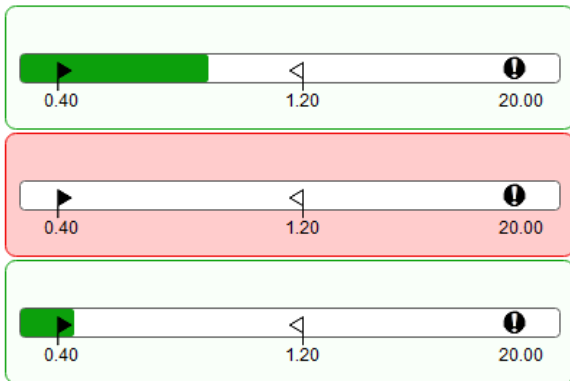
## Balancing Parameters Overview

In the balancing settings menu all the parameters for each existing balance card are displayed, broken down by topic. Clickable tabs at the bottom of the parameter list show the card names, to allow selection of the desired balance card. Also the Next Card key can be used to move from one card to the next.

The up and down arrow keys allow movement from one parameter to the next, or each value is clickable.

All parameters are saved immediately after a change.

For a more detailed description of balancing functions and parameters, see the manual that came with SB5500 control.



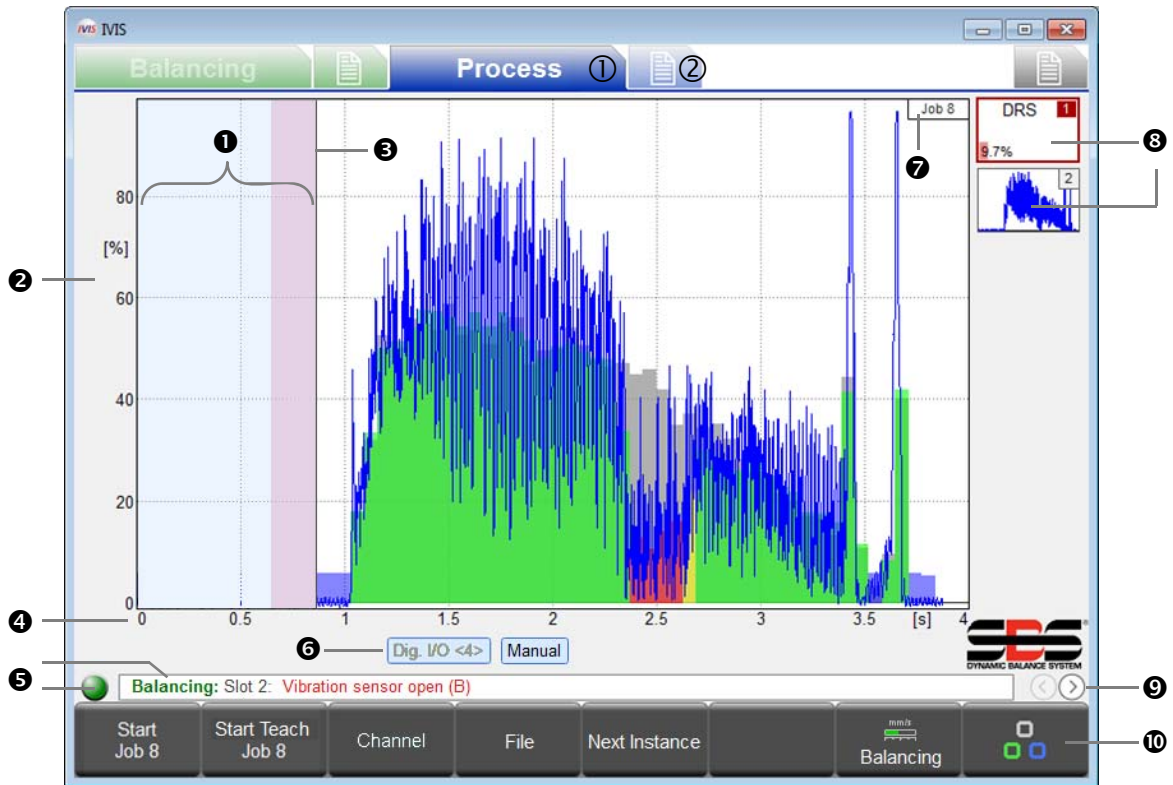
## Balancer Mini View

The Balancer Mini View is displayed only when no process cards are installed in the SB5500 control. Each balancer card is shown in order by slot number and indicated by a bar graph showing the current balance condition. The bar graphs will scale to fit all installed balance cards to the assigned mini view area.

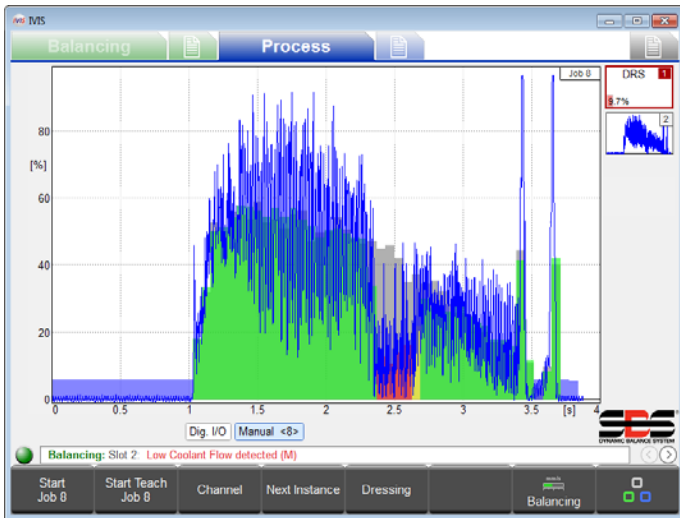
If a Process Control card is installed, then this view is not shown. Instead balance bar graphs can be configured to be displayed as part of the desired Process view instead.

# ExactControl Process View

## ExactControl Process Overview



- ① Process View, ② Process parameters
- ① Idling time: The Measurement signal is shown for one second prior to the start. The pink region is the Idling time used for acquiring the average signal level in the Relative measurement method.
- ② Y axis: amplitude of the measurement signal in % of full input range
- ③ Start time: Processing starts at the CNC/PLC Start signal, the Profibus Start signal, or the IVIS Start Job key.
- ④ X axis: process timeline, from cycle start continuing to cycle stop, even for several hours as appropriate.
- ⑤ Connection indicator: The colored dot shows connection status between IVIS and the SB-5500. Green color indicates connection, yellow indicates connection is being attempted, and red indicates a failed connection attempt. Scrolling SB-5500 error messages are displayed to the right of the status indicator.
- ⑥ Channel label: The highlighted label shows which channel is currently displayed. For Digital and Profibus channels the start number is shown <in parentheses>.
- ⑦ Job which was selected and started
- ⑧ Symbol instance shows the surveillance strategy and the result of monitoring (here: 9.7% error). Up to a total of 4 job instances can be added.
- ⑨ Select Process View (Job, Instance, Channel, AEMS)
- ⑩ Menu bar with function keys.



It is critical to understand that process screens always show the results of the most recently run current process. This means these screens will be blank when IVIS or the SB-5500 is started up, since there are no current process results to show.

The measurement data are displayed in the graphics area and automatically scaled so that the measurement signal is completely on screen. The beginning of data recording is pictured at left at zero seconds, at the same time that the process Start was activated. The monitoring and recording ends with process Stop.

## Process data display

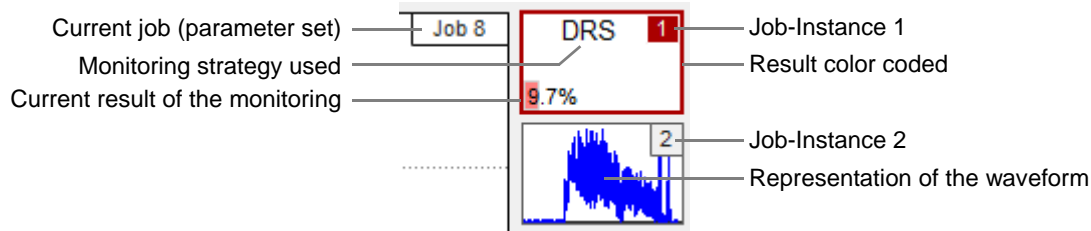
The IVIS display automatically adapts to the hardware and parameters configuration.

On Process screens you can use the PC arrow keys to change how the signal is displayed on the screen for the current Job. Use the arrow keys alone to change the gain or scaling of the displayed data for either the Y or X axis. Use the arrow keys together with the "Shift" key to change the signal offset or view window of the screen.

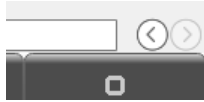
Automatic scaling is turned off for the current Job when the display is changed using the arrow keys. When another Job is selected, IVIS is restarted, or the spacebar is pressed, automatic screen scaling becomes active again.

## Instance Symbol: Result of Monitoring

The symbols for each instance in the Job view are used to indicate all important status information of the process, and are continually updated. The operator gets a quick overview of the current result of the monitoring.

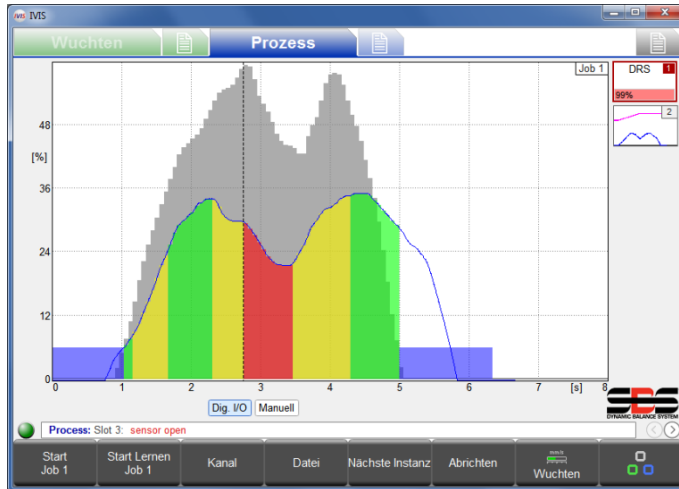


## Process View selection



The round arrow keys at the bottom right of the screen just above the menu bar are used to switch between the available process views.

IVIS in conjunction with an ExactControl Card offers the following possible views of the process:

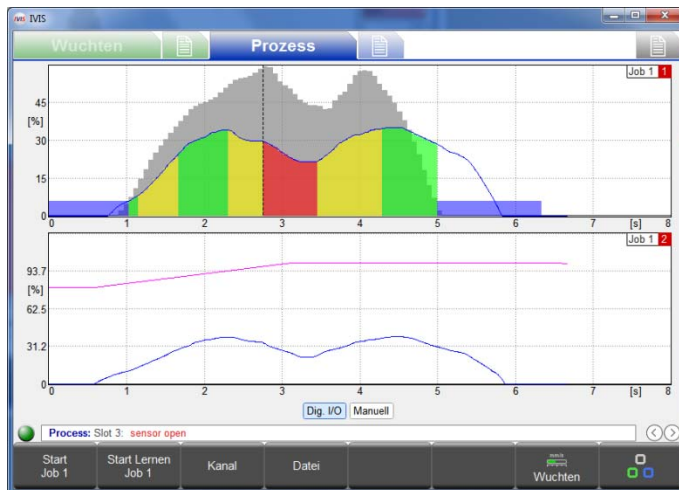


### Job View

Displays all Instances associated with a Job as icons on the right side of the screen. Details of the one currently selected instance are displayed full screen.

An Instance is defined as a specific monitoring strategy (along with required parameters for evaluation) applied to an assigned input signal. The job (all associated instances) is evaluated during a defined process time, between process Start and process Stop.

The channel is the Digital, Profibus, or manual channel used to initiate the process Start/Stop.



### Instance View

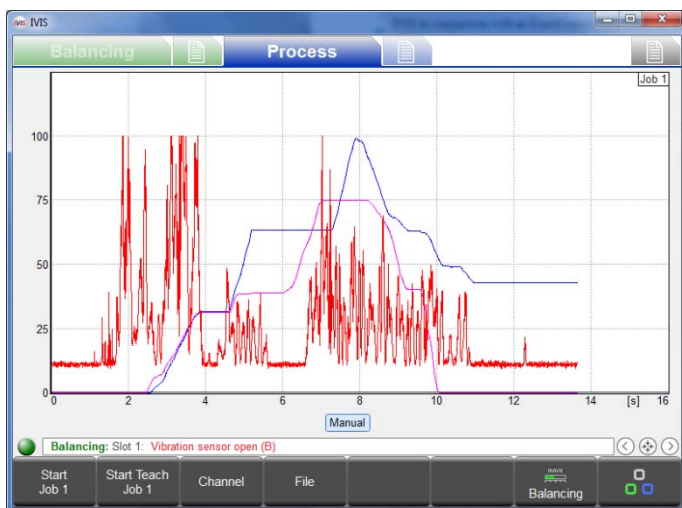
The screen is divided to show full displays of all current instances (maximum of 4) associated with the currently active Job.



### Channel View

The screen is divided to show full displays of all current instances ran by multiple jobs initiated by two separate channels. The top half of the screen displays one channel, and bottom half of the screen displays the second channel.

See the ExactControl manual for more details on Instances, Jobs, and Channels



## Overlay View

This view allows comparison of different signal sources in one plot to help with signal evaluation and diagnosis (e.g. Tests of two AE sensors at different positions). This screen shows one view with an overlay of all signals for all instances within the current Job. Only the process signals without any process evaluation result indications are displayed. Signals presented are color coded as follows:

Instance 1 Blue

Instance 2 Purple

Instance 3 Red

Instance 4 Black



## AEMS View

This view is available only when an AEMS card is installed and uses a different set of keys for operation of the AEMS card, see AEMS View section following for more detail.

### Key: Start Job

This key starts the currently selected Job via the manual channel (selected under Process Parameters menu). This can be useful for setup and evaluation of Jobs, as well as recording process data for off-line evaluation.

PCT data files produced from the manual channel are named **M\*.PCT**. For more details on PCT file locations and names, consult the ExactControl manual.

**Data recording does not stop when the IVIS program is terminated. Data can continue to be stored on the local SD memory of the ExactControl card as long as the job continues to run. Data can be recorded over long periods of time, even weeks or months. This recording is stopped when the Stop key is pressed or the power to the SB5500 is turned off.**

### Key: Start Teach Job

This key starts a Teach process via the manual channel for all instances associated with the current Job which require Teach process data. Teaching in process is shown by a flashing of the Job / instance numbers in light blue color.

### Key: Stop Teach Job

Ends the current Teach process and saves resulting Teach data.



## Key: Channel

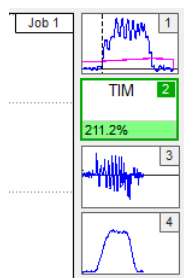
This key shows the channel selection menu, where the user can select a channel to view. Only channels which have data from a current process are selectable, and other channel keys are shown as not available. If no Channel has current process data then this key is not available.

## Key: File

This key opens the File menu where the user can access and display saved PCT files, with recorded process data. Files accessible are for the connected device. When connected to the SB-5500, files stored on the ExactControl card are available as well as files stored on the local PC. Files can be copied from the SB-5500 to the PC.

Use **Offline mode** under the general settings Connection screen to access files stored on the local PC when not connected to any device. For more detailed information on the File functions see the ExactControl manual.

## Key: Next Instance

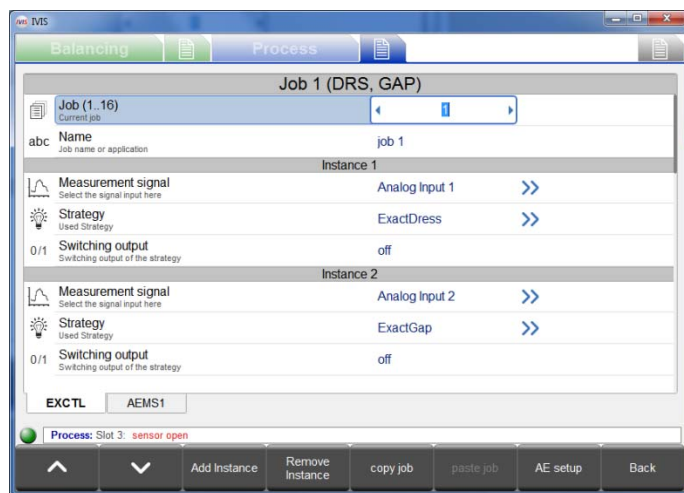


Pressing this key on the Job view switches the display focus to the next instance associated with the current job and process results for that instance are displayed full screen.

## ExactControl Process Parameters Overview

Up to 16 independent jobs (sets of monitoring instances) can be assigned. A job can be run (Started and Stopped) via either the manual channel (Start/Stop key on the menu bar), by a digital signal or a Profibus signal.

Clickable tabs at the bottom of the parameter list show the user assigned names of cards installed (default name is SLOT1, SLOT2, etc.). Click these tabs to select the desired card, or the Next Card key can be used to move from one card to the next.



## Edit Job: Job and Instance

Select the job to be edited. Each Job can be named for ease of reference.

Add, remove, or edit existing instances associated with the selected job.

When parameters are edited for an existing Job, the word "modified" in red color in the upper right corner indicates that parameters have been changed on screen and will be saved when the menu is exited.

The Undo key in the menu bar allows all modified settings to be returned to the saved settings. This can help prevent changes made in error to Jobs.

## Add Instance

A new instance is added to the Job (up to four maximum). The instance will not be configured until parameters are set or edited.

## Remove Instance

The instance on which the cursor is positioned is deleted.

## Copy Job

All settings of a job can be copied with the Copy Job key and pasted into another job number. This saves time and ensures error-free transmission of the parameter settings.

Copy and paste of the job also works with two IVIS program instances and device boundaries (via the clipboard in the operating system)

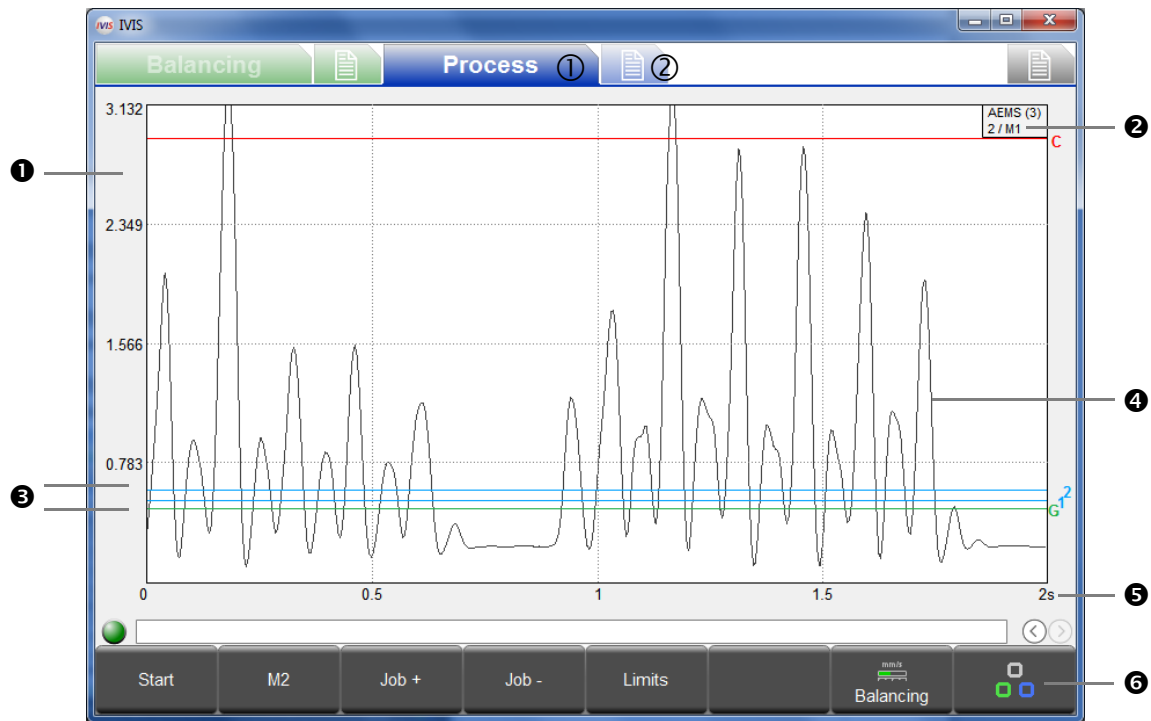
For a more detailed description of ExactControl operation and settings, see the hardware manual supplied with ExactControl card with SB5500 control.



# AEMS View

## AEMS Process Overview

The AEMS view will be the only Process view in cases where the AEMS card is the only installed process card in the SB-5500. In cases where both AEMS and ExactControl cards are installed, the AEMS view will be selectable as one of the available process views (in addition to Job view, Instance view, and Channel view).



- ① Process view, ② AEMS parameters
- ① Y-axis: signal level of the measurement signal
- ② Name assigned to AEMS card and Slot number (x) in SB-5500 control. Second line indicates the current Job (1-16) / the set mode (M1/M2)
- ③ 4 Limits: **green**: Gap (contact), **blue**: Limit 1 and Limit 2, **red**: Crash (safety limit)
- ④ Measuring signal of the acoustic sensor
- ⑤ X-axis: time in seconds. Real-time scrolling display of the acoustic signal level with adjustable time scale.
- ⑥ Menu bar

### Key: Stop/Start

This key stops and starts the real-time display of the signal level in the graphics area.

### Key: M2 / M1

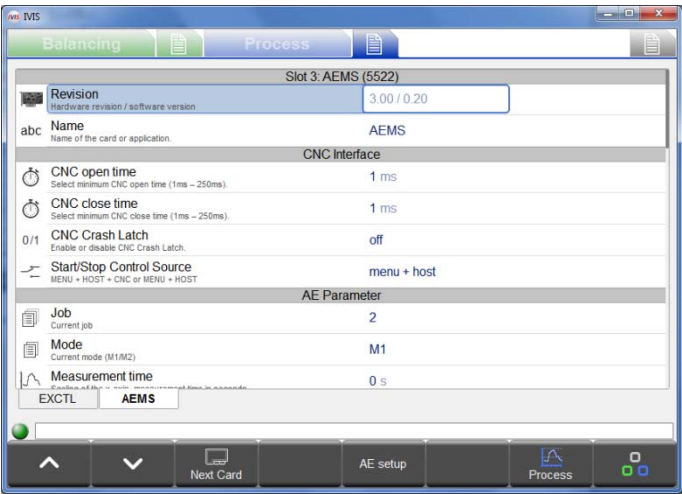
M1 or M2 key switches to the shown parameter set (M1 or M2).

### Key: Job + / Job -

These keys switch to the next or previous job.

Key: Limits

In this menu, the limits for Gap, limit 1, limit 2 and crash can be adjusted.



AEMS Parameters Overview

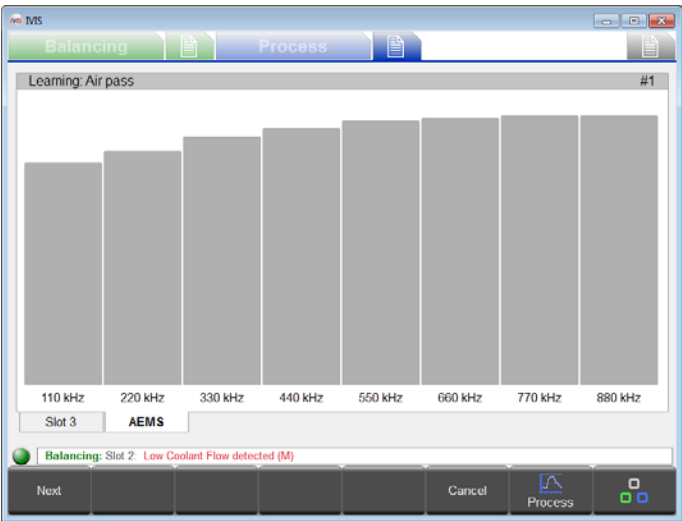
For each AEMS card installed, the parameters are listed, broken down by topic.

Clickable tabs at the bottom of the parameter list show the card names installed. Click to select the desired card, or the Next Card key can be used to move from one card to the next.

Parameters changes are saved immediately after edit.

AE Setup

A learning cycle is used to set system gains for the acoustic signal. Air (no contact) signal level and the Work signal generated by normal grinding or dressing process are recorded separately (left picture shows the air level). The signal levels for Air and Work are compared across of all frequency ranges. The frequency with the best signal ratio is proposed as to be the monitored frequency (pictured right). A learn cycle helps select the best frequency range for monitoring for best process results, but the proposed frequency may not be best for your application..



Quality	Frequency	Work pass / Air pass
7.4	110 kHz	1.707 / 0.231
9.2	220 kHz	1.262 / 0.137
4.3	330 kHz	0.477 / 0.111
2.6	440 kHz	0.245 / 0.094
1.4	550 kHz	0.118 / 0.082
1.4	660 kHz	0.098 / 0.072
1.4	770 kHz	0.086 / 0.063
1.0	880 kHz	0.058 / 0.056

Current: 20.9 220 kHz 2.762 / 0.132

For a detailed description of AEMS Learn cycle, parameters and operation, see the hardware manual supplied with AEMS card with SB5500 control.

# Maintenance – Support

## Software Update

It is sufficient to copy a new version of the IVIS program version into the existing directory IVIS directory on the PC and replace the existing. All IVIS configuration settings are saved in file d:\\IVIS\\config\\config.xml. This file and the logfile are not included in a new version of IVIS, so will not be replaced. All device settings (Balance and Process parameters) are stored on the device and so are not affected by an IVIS update.

Before updating IVIS, it is suggested that a backup copy of the existing directory IVIS be created so you can at any time switch to the previous version again.

Before you update IVIS when integrated with Sinumerik Operate, please delete under

**<hmisl>/compat/user**

in the file oemframe.ini the following section:

```
[IVIS]
hOEMFrameWnd=A01AC
hOEMFrameTask=0D10
hOEMAppWnd=50188
hOEMAppTask=0
hOEMAppWndRelatedOEMAppTask=0D00
hOEMAppThread=0001
```

This ensures that Sinumerik Operate can launch and display the new IVIS program version correctly.

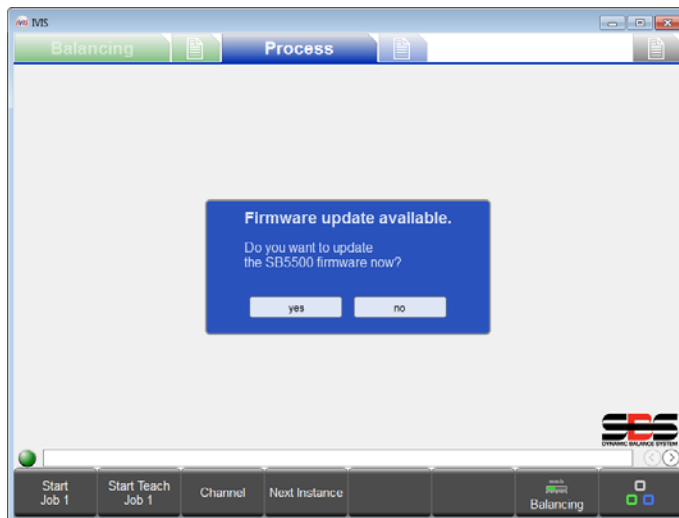
## Software Uninstall

The IVIS program is not Windows installed, it is only copied to a directory on the PC and can be started from there. The program therefore does not appear in the list of installed programs in Windows.

The directory, and thus the program IVIS can be easily deleted from the PC, if it is no longer needed. A typical Windows uninstall is not necessary because all log files are only stored in the IVIS Directory.

## SB-5500 Firmware Update with IVIS

IVIS can display the required steps in performing a firmware update of the SB-5500 control. The following are the messages that appear during this update in the IVIS:



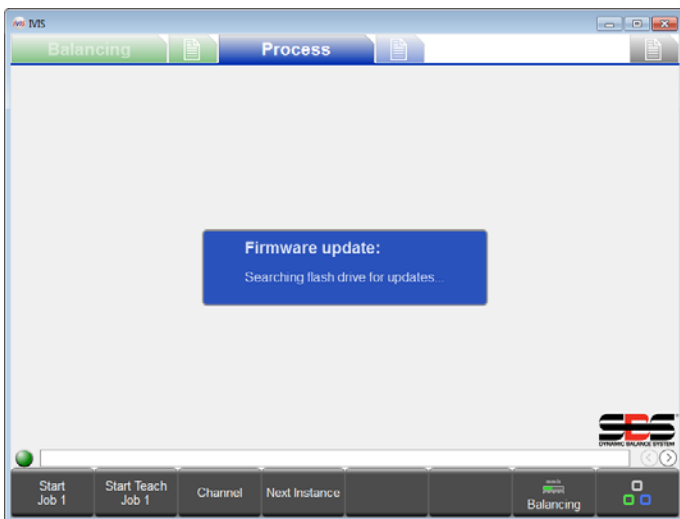
### 1. USB memory stick recognized

This message appears when a USB flash drive is inserted in the SB-5500 with device firmware files on the root of the flash drive.

Firmware update files can be downloaded from the SBS website at:

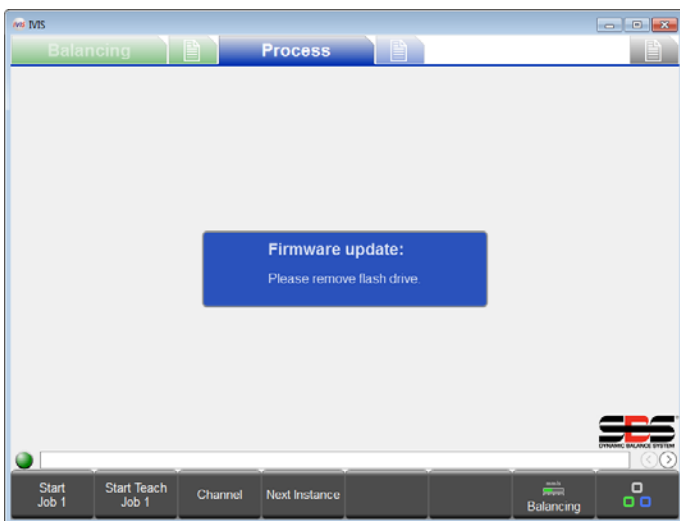
<http://www.grindingcontrol.com/support/software-firmware/>

To start the update, click the **Yes** key. Click **No** to abort the update and remove the flash drive from the SB-5500



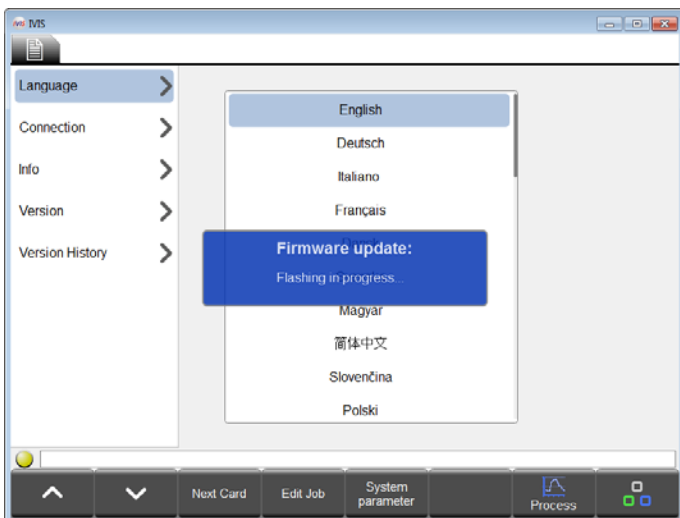
## 2. Firmware update begins

The USB flash drive is searched for the latest version and this is then automatically copied to the system.



## 3. Remove USB stick

Copying was successful. The USB stick must be removed for the upgrade to proceed.



## 4. Firmware executed

During the update you will be disconnected from IVIS and the SBS 5500 controller will run the update automatically. This process may take a while, up to two minutes if the control has a display.

After the update, the system reconnects to IVIS, recognizable by the green link status at the bottom left, above the menu bar. The system is now ready for use again.

## Logfile

Operation status of the IVIS program is logged to an html file. This file should be sent by the customer to our support staff when any unexpected disturbances to the program occur. See the general IVIS settings **Version** menu for details.

## Support

For further information, contact the machine builder or SBS at:

**Schmitt Industries, Inc.**

2765 NW Nicolai St  
Portland, Oregon 97210 USA

Tel.: +1 503.227.7908  
Fax: +1 503.223.1258

[sbs-tech@schmitt-ind.com](mailto:sbs-tech@schmitt-ind.com)  
[www.grindingcontrol.com](http://www.grindingcontrol.com)

**Schmitt Europe Ltd**

Ground Floor Unit 2  
Leofric Court, Progress Way  
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Coventry, CV3 2NT, England

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Fax: +44 (0) 2476 450 456

[enquiries@schmitt.co.uk](mailto:enquiries@schmitt.co.uk)  
[sbs-de@schmitt-ind.com](mailto:sbs-de@schmitt-ind.com)

## Appendix A: Parameters with Required Access Rights

### Access Levels:

1: User

2: Expert

3: Manufacturer

<b>Balancing Parameters</b>	<b>Level</b>	<b>ExactControl Parameters</b>	<b>Level</b>
Card name	1	Job number	1
Balance limit	1	Job name	1
Balance tolerance	1	Display balancing from slot	1
Balance speed	1	Y scaling (yes/no, %)	1
Hydro auto direction	1	Signal input	2
Prebalance weight units	1	Frequency range	2
Prebalance trial weight	1	Gain	2
Manual RPM	1	Inverted measurement	2
Resolution	1	Measuring method	2
Amplitude units	2	Idling time	2
Balance critical level	2	Interval for diff. Measurement	2
Critical RPM	2	Profibus amplification	2
Low RPM	2	Signal offset	2
Bot relay	2	Filter type	2
Dual plane RPM Source	2	Filter time	2
Prebalance compensation type	2	Strategy Evaluation Parameters	3
Vibration units	2	Switching output	2
		<b>ExactControl System Parameters</b>	
<b>MiniView settings</b>		Profibus signal source	2
Mode	2	RPM Signal configuration	3
MiniView position	2	CNC Configuration type	3
MiniView view	2		
MiniView smart display	2	<b>AEMS Parameters</b>	
Start MiniView with IVIS	2	Card name	1
Position x	2	Current Job	1
Position y	2	Current Mode	1
Width	2	Graph time (x axis)	1
Height	2	Display balancing from slot	1
MiniView channel 1	2	CNC open time	2
MiniView channel 2	2	CNC close time	2
MiniView attached to process	2	Crash latch	2
MiniView attached to window	2	Start/Stop control	2