

ESS™ PLATFORM

Easy Switch Solutions™



User Manual

ESS™ Control 1.1.0

Version 29/10/2014

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1. Introduction

The ESS™ Control software is a software solution for path selection in a microfluidic environment. Used with an ESS™ platform (a SWITCHBOARD and a combination of 2-SWITCH™ and M-SWITCH™), ESS™ Control provides a quick and user-friendly control of up to four (4) M-SWITCH™ and eight (8) 2-SWITCH™. Many features have been imagined to enable you to customize your ESS™ to your specific needs and simplify your daily use of the ESS™. ESS™ Control is compatible and provides its best performances associated with FLUIGENT MAESFLO™ software for pressure and flow-rate control.

A script editor supplements ESS™ Control to allow for the programming of complete actuation sequences on your connected ESS™ devices.

The ESS™ Control user manual describes how to use the ESS™ Control for your day-to-day work. It describes all the ESS™ Control features that will help you to control your microfluidic system. Detailed explanations about script writing as well as answers to frequently asked questions are also provided, to enable you to make the most of ESS™ Control performances and features.



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2. System Requirements

This installation requires one of the following Microsoft operating systems:

- Windows XP Service Pack 3
- Windows Vista x86
- Windows Vista x64
- Windows 7 x86
- Windows 7 x64
- Windows 8 x86
- Windows 8 x64

This installation requires that version 3.1 of the MSI (Windows Installer) Engine is installed on your computer. If you do not have MSI 3.1 or later, the installer updates the engine automatically and might require that you restart your computer.

The ESS™ Control software requires:

- A minimum of 512 Mo of RAM (2 Go recommended)
- Minimum process or Intel Pentium 1.6 GHz
- Minimum screen size 800 x 600

3. Installation Instructions

Before installing the ESS™ Control software, log on as Administrator or as a user with Administrator privileges. The ESS™ Control software setup program must have Administrator privileges because the program modifies the configuration registry of your system. Complete the following steps to install the ESS™ Control software:

1. Plug your ESS™ Control USB key. The installer launches if your USB key plays data automatically. If the installer does not launch automatically, navigate into the USB key files using Windows Explorer and launch the setup.exe file from your ESS™ Control software USB key.
2. The installation wizard guides you through the necessary steps to install the ESS™ Control software. You can go back and change values where appropriate by clicking the **Back** button. You can exit the setup where appropriate by clicking **Cancel**.
3. When the installation is complete, click **Finish**.

4. How to start

4.1 Material needed to use ESS™ Control

The FLUIGENT devices below are needed for starting ESS™ Control. All the devices must be connected to your computer.

- One (1) powered SWITCHBOARD on “ON” position and connected via USB to the computer (cf. ESS™ User manual).
- The SWITCHBOARD alone does not enable you to implement path selection in your microfluidic system. Connect at least one (1) 2-SWITCH™ or one (1) M-SWITCH™ to your SWITCHBOARD to build your circuit with path selection possibilities.



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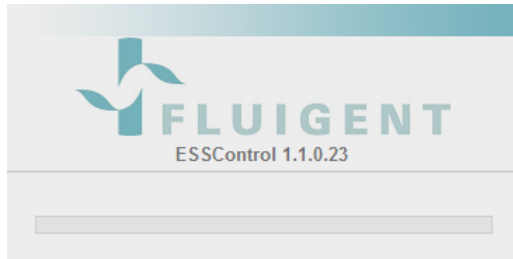
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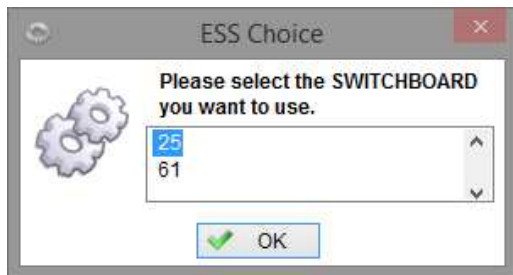
4.2 Starting ESS™ Control



- ▶ Double click on the ESS™ Control shortcut on your desktop to launch ESS™ Control.



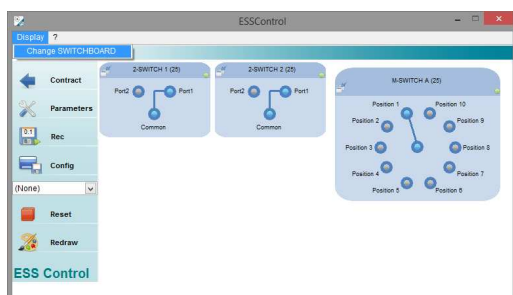
- ▶ A splash screen indicating the name and version of software appears during the software loading.



- ▶ If several SWITCHBOARD are connected to the same computer, a window will appear to ask you to select the SWITCHBOARD that you want to display in the ESS™ Control (only one SWITCHBOARD can be displayed and controlled at a time).



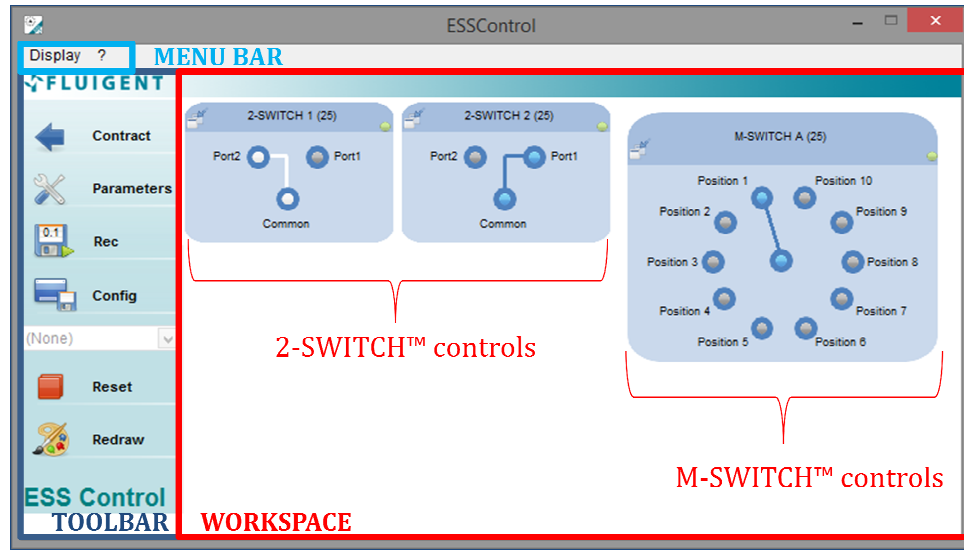
- ▶ At the ESS™ Control first launch, a message will appear to ask you to create the Config and the Record folders. Click OK.



- ▶ The ESS™ Control Main Panel appears, with the Toolbar at the left and the Workspace at the right. The ESS™ Control Workspace is automatically adjusted to the number of 2-SWITCH™ and M-SWITCH™ connected to the selected SWITCHBOARD.

- ▶ Once the software has been launched you can change the SWITCHBOARD that is displayed in ESS™ Control easily with the menu **Display>>Change SWITCHBOARD**.

5. ESS™ Control Main Panel (expanded)



Description

The ESS™ Control Main Panel consists in:

- ▶ A **Toolbar** on the left (dark blue rectangle).
- ▶ A **Workspace** (red rectangle) displaying the controls of all the 2-SWITCH™ and M-SWITCH™ connected to the SWITCHBOARD.
- ▶ A **Menu bar** (light blue rectangle) at the top.

These three (3) parts are detailed hereafter.

5.1 Toolbar

5.1.1 General description



1. Contract / Expand Main Panel

This button allows you to contract or expand the main panel so that you can respectively, trim the panel to the Toolbar and Menu bar only or access the entire main panel.

A: the Main panel is expanded. It shows **Contract** to indicate the action that will be done if clicked.

B: the Main Panel is contracted. The **Contract / Expand** buttons is grayed to indicate that a part of the window is masked, and it shows **Expand** to indicate the action that will be done if clicked.

2. Parameters

Gives access to ESS™ Control Parameters dialog. *See §6 for more details.*

3. Rec / Pause

When the **Rec** button is activated, the positions of all the connected M-SWITCH™ and 2-SWITCH™ are logged at the sampling rate indicated on the button (here 0.1s).

When activated the **Rec** (Record) button becomes grayed to indicate that a recording is being done, and shows **Pause**. To stop the recording, click on **Pause**. *See §5.1.2 for more details.*

4. Config

Save the current positions of all 2-SWITCH™ and M-SWITCH™ as a configuration that you can reuse by clicking on the **Config** button. A dialog box will open so that you can name the configuration and choose its file path. *More details in §5.1.3.*

5. Configuration list

All saved configurations of the folder selected in the Parameters dialog box (*see §6.2*) are displayed in this drop-down menu.

You can apply a configuration by clicking on it on the drop-down menu.

You can choose which configurations you want to display in the menu by ticking them in Parameters (*see §6.2*).

6. Reset

Clicking on this button sets all connected M-SWITCH™ and 2-SWITCH™ to their Position 1.

7. Redraw

This button enables you to refresh the Workspace to update the SWITCH controls if some connections of new devices or disconnections of existing devices have been made.

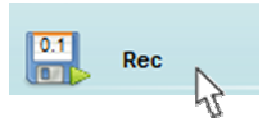
Also, it enables you to go back to the default display of all your devices if you have been using the Dock / Undock feature (*see §5.2 and §5.3 for details on the Dock / Undock feature*). It also resets the rotation direction to 'The shortest' for the M-SWITCH™ (*see §5.3*).

8. Status bar

This line indicates to the user the last operation that has been done by ESS™ Control.

See §5.4 to check all the possible Status lines.

5.1.2 Record



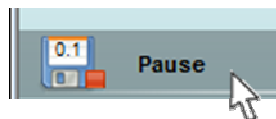
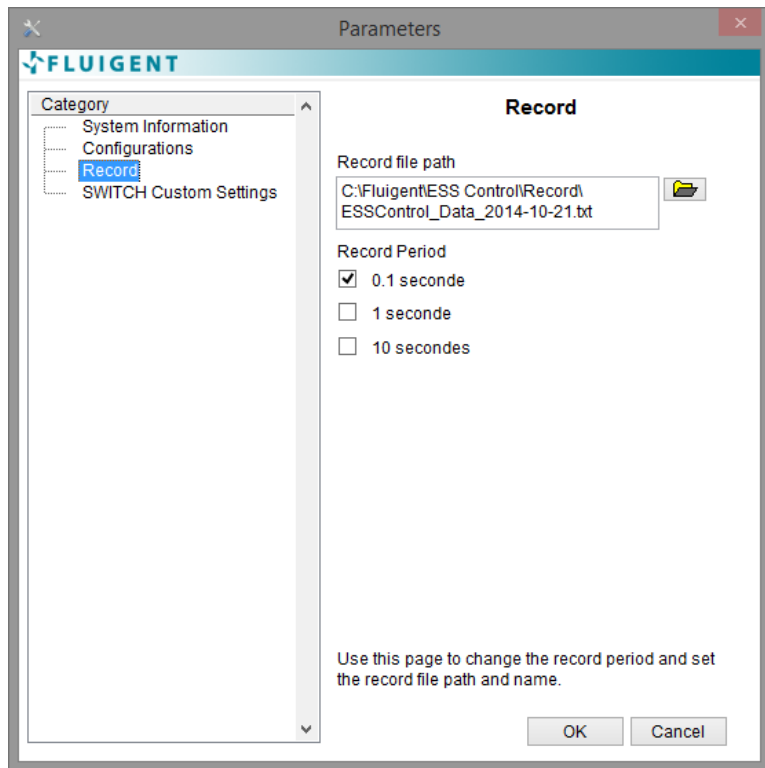
To start a recording of your devices operations, click on **Rec** on the Toolbar:

- ▶ The number displayed on the **Rec** icon label is the sampling rate of the recording. To change the sampling rate, click on **Parameters** and then on the Record Category (see §6.3).
- ▶ If it is your first recording with this ESS™ Control session, a file dialog will open to let you decide of the file name and file path of your recording.
 - The start path and the default file name are from the Parameters>>Record Category (see §6.3).
 - If nothing has been changed in the Parameters dialog box before actuating **Rec**, then:
 - The default file name is **ESSControl_Data_yyyy-mm-dd.txt** (where yyyy-mm-dd is the date of the day).
 - The default file path is **C:\Fluigent\ESS Control\Record**.

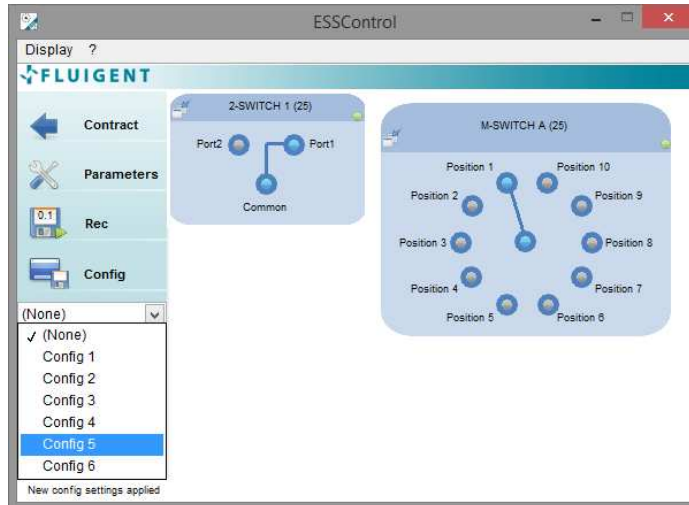
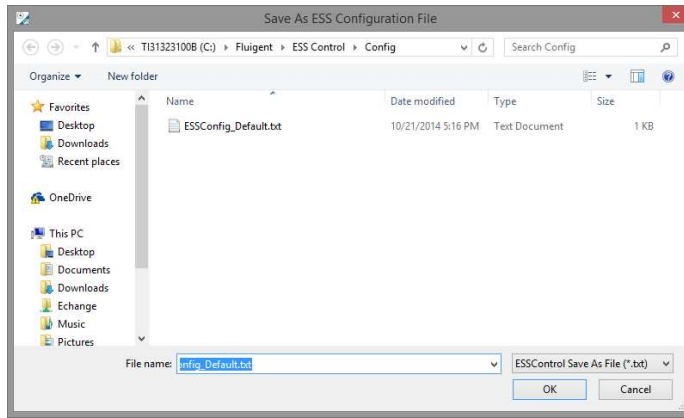
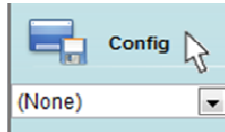
Click on OK on the file dialog to start recording. The **Rec** button becomes a **Pause** button (grayed to indicate that a recording is being done), and a Status line indicates “Record started”. If you click on Cancel, then the recording is not started, and a Status line indicates “Record cancelled”.

Click on **Pause** to stop the recording. The **Pause** button becomes a **Rec** button again (non-grayed). A Status line indicates “Record stopped”.

If nothing is updated in the Parameters dialog box, all next recordings will be written automatically in the file selected at the first actuation of the **Rec** button, further to the lines of the previous recordings.



5.1.3 Configuration Save / Apply



To save the current positions of your connected devices as a configuration, click on the **Config** button.

A file dialog will open to let you decide of the file name and file path of your configuration:

- ▶ The start path and the default file name are from the Parameters>>Configurations Category (see §6.2).
- ▶ If nothing has been changed in the Parameters dialog box before clicking on **Config**, then:
 - The default file name is **ESSConfig_Default.txt**
 - The default file path is **C:\Fluigent\ESS Control\Config**.

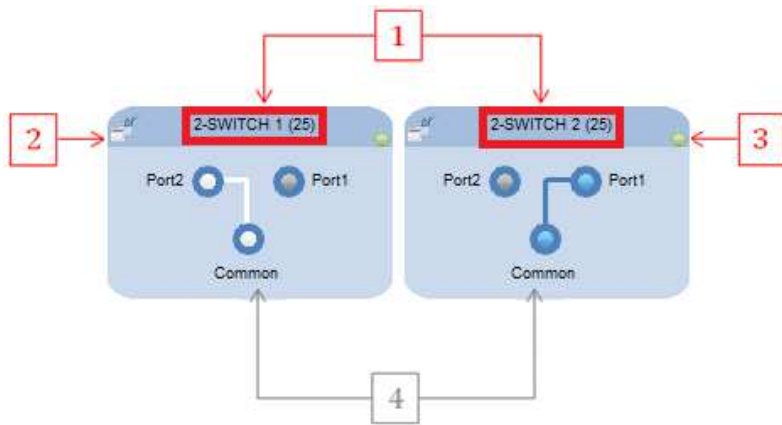
Click on OK to save your configuration with the entered file name and file path. A Status line indicates “Configuration saved”. If you click on Cancel, then the configuration is not saved.

The saved configurations immediately appear in the **Configuration list drop-down menu**. To apply a saved configuration to your ESS™, click on the configuration in the drop-down menu.

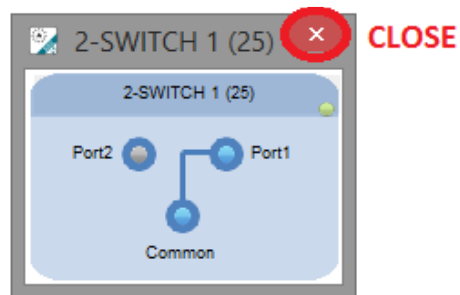
You can choose which configurations you want to display in the Configuration list by selecting their file path and ticking them in the Parameters Configurations Category.

5.2 2-SWITCH™ control

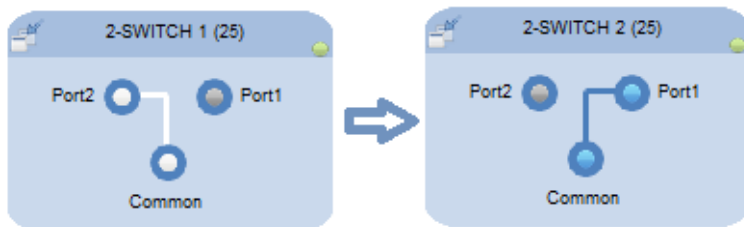
Description



[Dock / Undock](#)



[Change position](#)



1. 2-SWITCH™ Identification

The name of the 2-SWITCH™ appears in the top banner. The default name of a 2-SWITCH™ on the Workspace is “2-SWITCH # (####)” where:

- ▶ The first number is **the number of the 2-SWITCH™ port** where the device is connected on the SWITCHBOARD (i.e. ranging from 1 to 8).
- ▶ The second number between brackets is the **serial number of the SWITCHBOARD** to which the 2-SWITCH™ is connected. This number (**SN**) can be found on the FLUIGENT supplier’s label of the SWITCHBOARD.
- ▶ On the top figure at the left, we can see that :
 - The 2-SWITCH™ at the left is connected to the **2-SWITCH™ port #1** of the SWITCHBOARD SN 0025.
 - The 2-SWITCH™ at the right is connected to the same SWITCHBOARD but on the **2-SWITCH™ port #2**.
 - **NB:** Only devices connected to the same SWITCHBOARD can be shown on the same Workspace at the same time.

2. Dock / Undock button

This button enables to undock the 2-SWITCH™ control from the Workspace and to display it in an **independent window**.

To dock the 2-SWITCH™ control back into the Workspace, either close the control window or click on **Redraw** on the Toolbar (see §5.1).

3. Software connection indicator

This indicator shows you whether the 2-SWITCH™ is correctly detected by ESS™ Control.

- ▶ If the indicator is **green**, the 2-SWITCH™ is detected by ESS™ Control. Actions can be operated on the 2-SWITCH™ from ESS™ Control.
- ▶ If the indicator is **red**, the 2-SWITCH™ is not detected by ESS™ Control. User orders for this 2-SWITCH™ will not be performed.

4. 2-SWITCH™ State diagram

- ▶ This part of the control shows you the **current position** of the 2-SWITCH™, also shown by the light indicators on the 2-SWITCH™ front face (cf. ESS™ User Manual). The fluidic working principle of the 2-SWITCH™ is detailed in the ESS™ User Manual.
- ▶ **To change the position of the 2-SWITCH™**, simply click on the wanted port as shown here opposite.

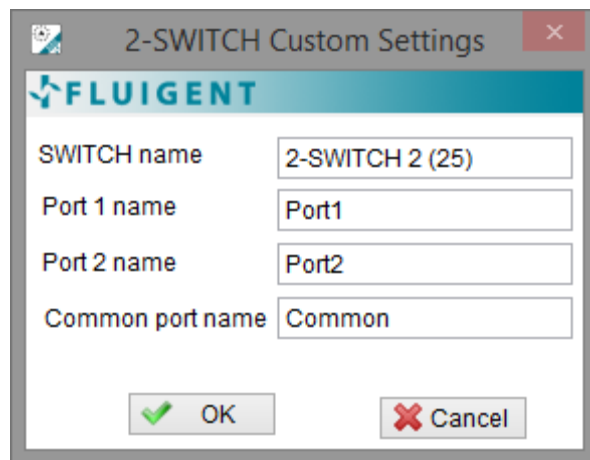
Custom settings menu



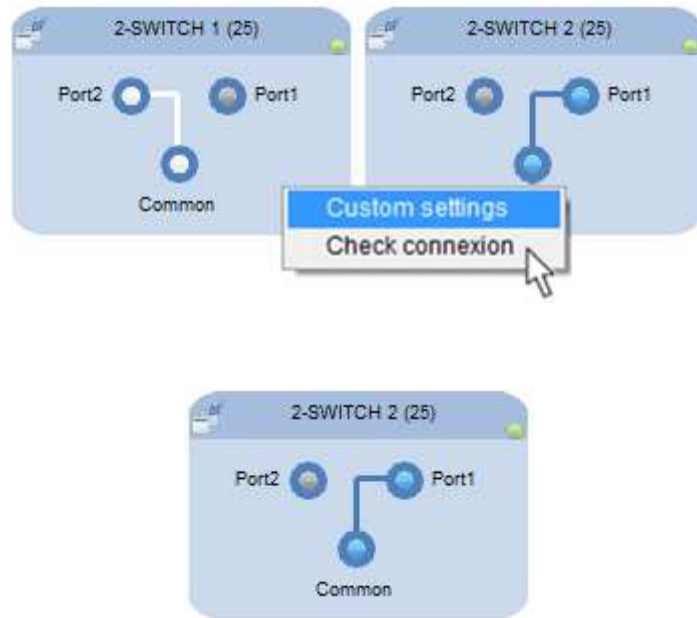
By right-clicking on a 2-SWITCH™ control on the Workspace, you can access the **2-SWITCH™ Custom settings menu** for this device.

This 2-SWITCH™ Custom settings menu enables you to **enter and apply your own customized names** for the 2-SWITCH™ and its fluidic ports thanks to different text boxes. These names will then be displayed on the 2-SWITCH™ control in the Workspace by clicking on OK.

Warning: the customized names will be applied to the current ESS™ Control session when the OK button is clicked, but they will not be saved for a later use. If you wish to save your 2-SWITCH™ custom settings, please go to the Parameters dialog box, SWITCH Custom Settings Category (see §6.4).



Check connection



By right-clicking on a 2-SWITCH™ control on the Workspace, you can access the Check connection feature for this device.

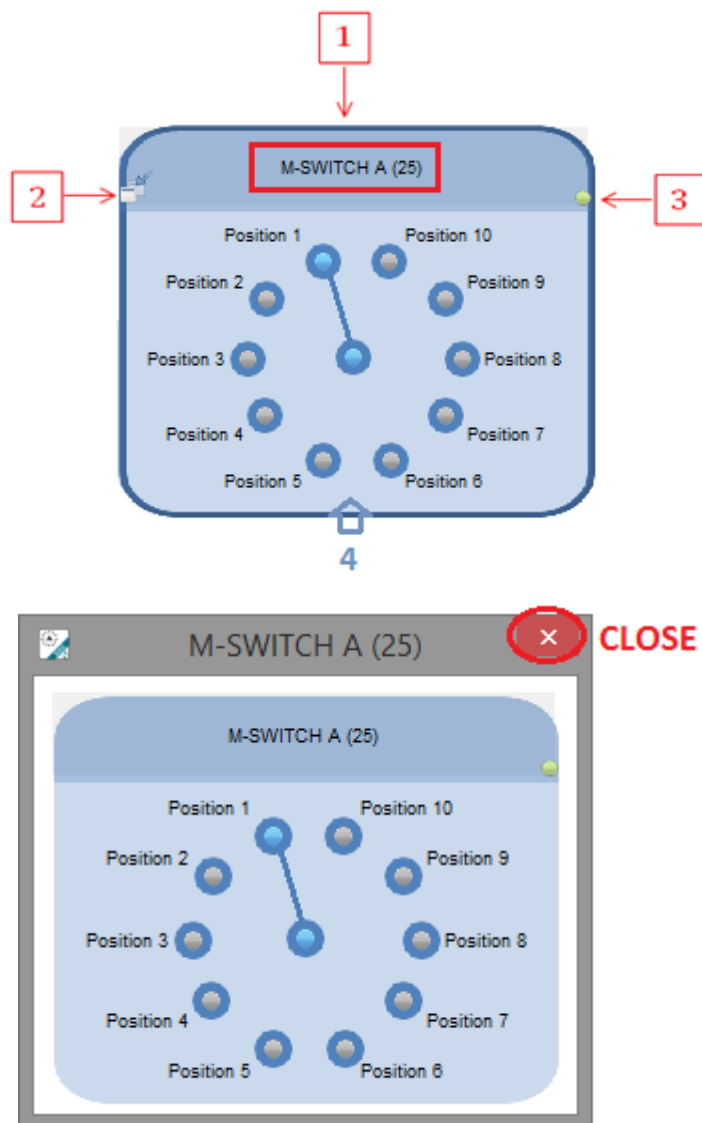
The Check connection feature is used to visually identify the device on the experimental set-up. When activated, it lights up:

- The green indicator of the RJ45 port of the device.
- The green indicator of the RJ45 port of the SWITCHBOARD to which it is connected.
- The green indicators will stay activated for 5 seconds.
- Meanwhile, the corresponding control on the Workspace is highlighted as shown here opposite at the bottom.

The Check connection feature can also be activated manually on the SWITCHBOARD by pushing the button indicating the 2-SWITCH™ RJ45 port number.

5.3 M-SWITCH™ control

Description



1. M-SWITCH™ Identification

The name of the M-SWITCH™ appears in the top banner. The default name of an M-SWITCH™ on the Workspace is "M-SWITCH # (####)" where:

- ▶ The first letter is **the letter of the M-SWITCH™ port** where the device is connected on the SWITCHBOARD (i.e. ranging from A to D).
- ▶ The number between brackets is the **serial number of the SWITCHBOARD** to which the M-SWITCH™ is connected. This number (SN) can be found on the FLUIGENT supplier's label of a SWITCHBOARD.
- ▶ On the top figure at the left, we can see that:
 - The M-SWITCH™ is connected to the **M-SWITCH™ port #A** of the SWITCHBOARD SN 0025.
 - **NB:** only devices connected to the same SWITCHBOARD can be shown on the same Workspace at the same time

2. Dock / Undock button

This button enables to undock the M-SWITCH™ control from the Workspace and to display it in an **independent window**.

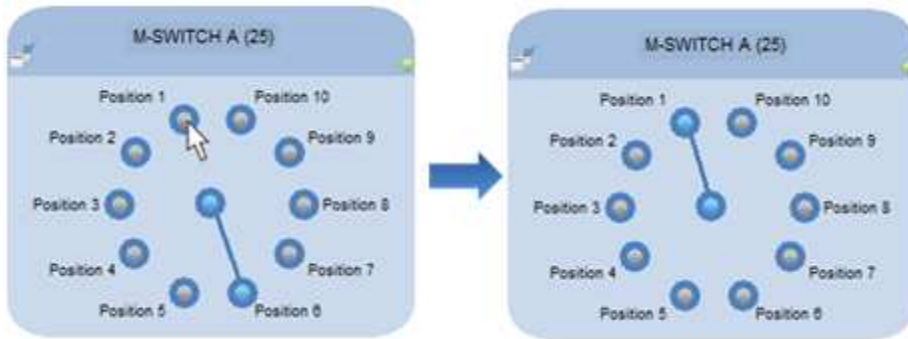
To dock the M-SWITCH™ control back into the Workspace, either close the control window or click on **Redraw** on the Toolbar (see §5.1).

3. Software connection indicator

This indicator shows you whether the M-SWITCH™ is correctly detected by ESS™ Control.

- ▶ If the indicator is **green**, the M-SWITCH™ is detected by ESS™ Control. Actions can be operated on the M-SWITCH™ from ESS™ Control.
- ▶ If the indicator is **red**, the M-SWITCH™ is not detected by ESS™ Control. User orders for this M-SWITCH™ will not be performed.

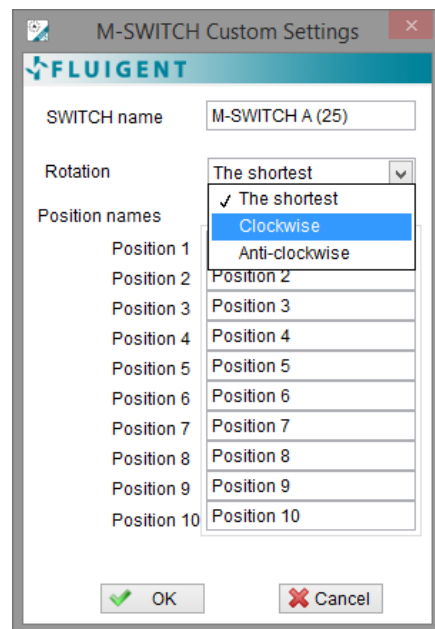
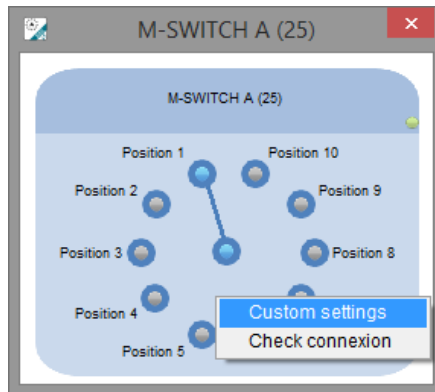
Change position



4. M-SWITCH™ State diagram

- ▶ This part of the control shows you the **current position** of the M-SWITCH™. The fluidic working principle of the M-SWITCH™ is detailed in the ESS™ User Manual.
- ▶ **To change the position of the M-SWITCH™**, simply click on the wanted port.

Custom settings menu



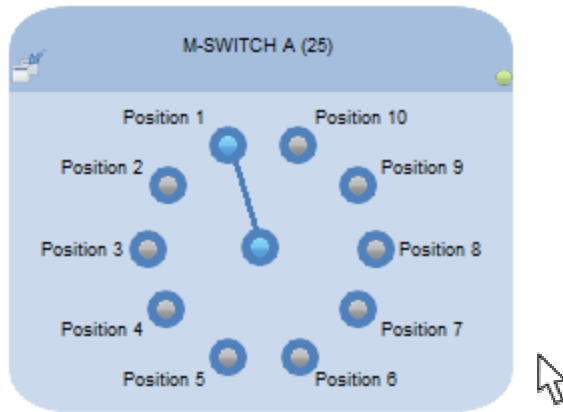
By right-clicking on an M-SWITCH™ control on the Workspace, you can access the **M-SWITCH™ Custom settings menu** for this device.

This M-SWITCH™ Custom settings menu enables you to:

- ▶ Change the **direction of rotation** of the M-SWITCH™, with the Rotation drop-down list. Three (3) settings are possible:
 - **The shortest (default setting):** the M-SWITCH™ goes from one position to another with the shortest path, i.e. clockwise or anti-clockwise depending on the positions locations.
 - **Clockwise:** the M-SWITCH™ systematically goes to a new position with a clockwise motion.
Warning: actuation times can be longer than with the shortest motion setting.
 - **Anti-clockwise:** the M-SWITCH™ systematically goes to a new position with an anti-clockwise motion.
Warning: actuation times can be longer than with the shortest motion setting.

- ▶ **Enter and apply your own customized names** for the M-SWITCH™ and its fluidic ports. These names will then be displayed on the M-SWITCH™ control in the Workspace.
 - **SWITCH name text box:** to enter a customized name for the device.
 - **Position names text boxes:** to enter customized names for the different ports of the device.
Warning: the customized names will be applied to the current ESS™ Control session when the OK button is clicked, but they will not be saved for a later use. If you wish to save your M-SWITCH™ custom settings, please go to the SWITCH Custom Settings Category in the Parameters dialog box (see §6.4).

Check connection

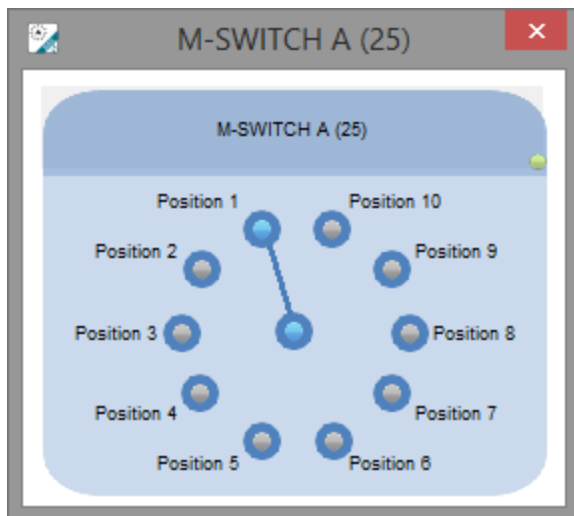


By right-clicking on an M-SWITCH™ control on the Workspace, you can access the Check connection feature for this device.

The Check connection feature is used to identify visually the device on the experimental set-up. When activated, it lights up:

- The green indicator of the RJ45 port of the device.
- The green indicator of the RJ45 port of the SWITCHBOARD to which it is connected.
- The green indicators will stay activated for 5 seconds.
- Meanwhile, the corresponding control on the Workspace is highlighted, as shown here opposite at the bottom.

The Check connection feature can also be activated manually on the SWITCHBOARD by pushing the button indicating the M-SWITCH™ RJ45 port number.



5.4 Status line overview

The following table sums up all the Status lines that can be displayed in the Status bar (see §5.1). **NB:** A maximum of two Status lines can be displayed at the same time.

Status line
SWITCH user action
SWITCH undock/dock
SWITCH settings updated
New config settings applied
New record settings applied
Record started/stopped/cancelled
Configuration saved
Configuration applied
Reset applied
Script started/stopped
Script new Cmd « time »
SWITCH has been added/removed
Wrong SWITCH type connected on port X

5.5 Connection / Disconnection of devices

If you need to change your device configuration by disconnecting devices, adding devices or changing of SWITCHBOARD ports for some devices, simply operate your modifications (be careful to respect the M-SWITCH™ and 2-SWITCH™ RJ45 ports on the SWITCHBOARD). Status lines will appear to indicate the operations that have been made (see §5.1 and §5.4). Once you are done, simply click on the **Redraw** button (see §5.1) to refresh your Workspace.

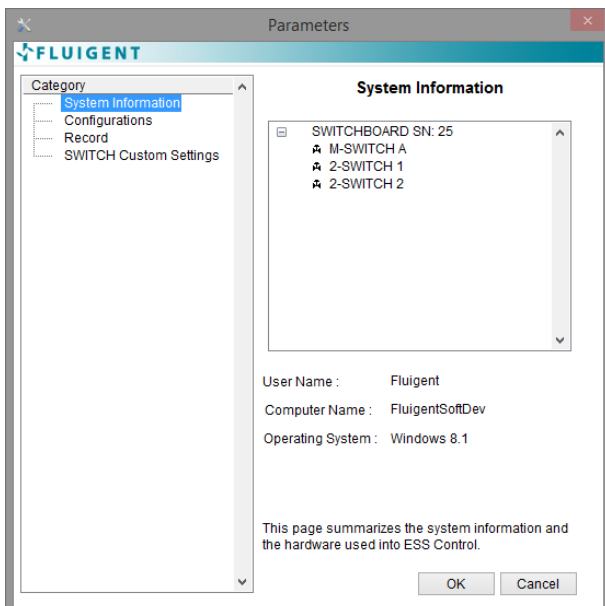
6. ESS™ Control Parameters dialog box

On the ESS™ Control Main Panel, click on the Parameters button in the Toolbar to display the Parameters dialog box.

Use this dialog box to set ESS™ Control parameters. You can customize the appearance and operating mode of ESS™ Control:

- ▶ **Category:** Lists the parameter options to customize the appearance and operating mode of ESS™ Control. Select an option in the Category list box (left panel) to display the parameter options in the dialog box (right panel).
 - **System Information:** Information on the hardware controlled by ESS™ Control.
 - **Configuration:** Set options for configuration files.
 - **Record:** Set options for log files.
 - **SWITCH Custom Settings:** Save and load settings for M-SWITCH™ and 2-SWITCH™ custom names.

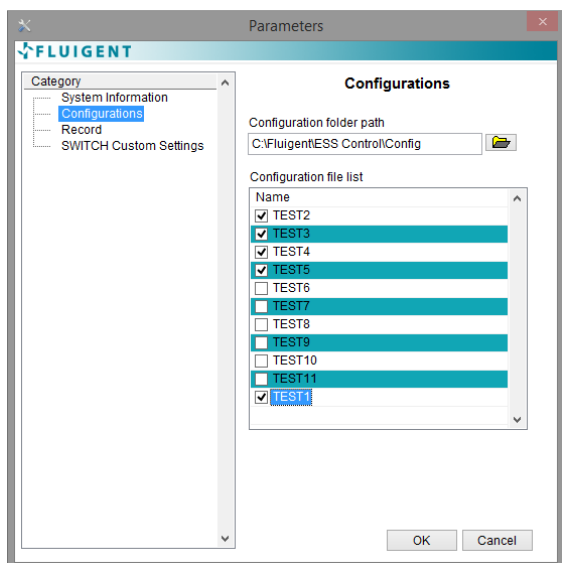
6.1 System Information (ESS™ Control Parameters dialog box)



This category enables you to visualize all the ESS™ devices controlled by the ESS™ Control session.

- ▶ One SWITCHBOARD with its serial number SN. This number can be found on FLUIGENT supplier's label of the SWITCHBOARD.
- ▶ All M-SWITCH™ devices connected to the SWITCHBOARD with indicated SN, along with the letter of the SWITCHBOARD M-SWITCH™ RJ45 port to which they are connected.
- ▶ All 2-SWITCH™ devices connected to the SWITCHBOARD with indicated SN, along with the numbers of the SWITCHBOARD 2-SWITCH™ RJ45 port to which they are connected.
- ▶ Complementary information about the computer where ESS™ Control is launched is also given.
- ▶ **Warning:** the displayed information is the state of your ESS™ platform at the last click on the Parameters button in the Toolbar (see §5.1); all subsequent updates are not taken into account.

6.2 Configurations (ESS™ Control Parameters dialog box)



Configurations consist in a set of positions for a set of connected devices. They can be defined and saved from the Main Panel by clicking on the **Config** button on the Toolbar (see §5.1.3).

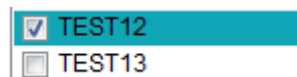
In the Configurations Category of the Parameters dialog box, you can choose which configurations you want to display in the drop-down menu of the Main Panel (Configuration list, see 5.1.3) by:

- ▶ Selecting the folder path where the configurations you want to use are saved.

Configuration folder path

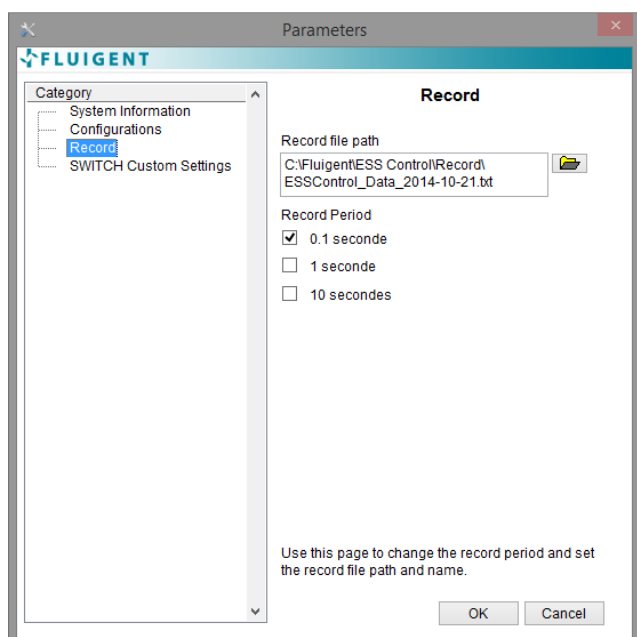
C:\Fluigent\ESS Control\Config

- ▶ Ticking the boxes in front of the configurations of this folder that you want to access in the Configuration list.



Click OK to save and apply your configuration settings and go back to the Main Panel.

6.3 Record (ESS™ Control Parameters dialog box)



You can log the positions of all your connected M-SWITCH™ and 2-SWITCH™ for as long as you want by clicking on the **Rec** button on the Main Panel Toolbar (cf. §5.1.2).

In the Record Category of the Parameters dialog box, you can choose the file name and file path where the log will be saved. FLUIGENT advises you to favour saving your recordings in folders located at C:\Fluigent\ESS Control.

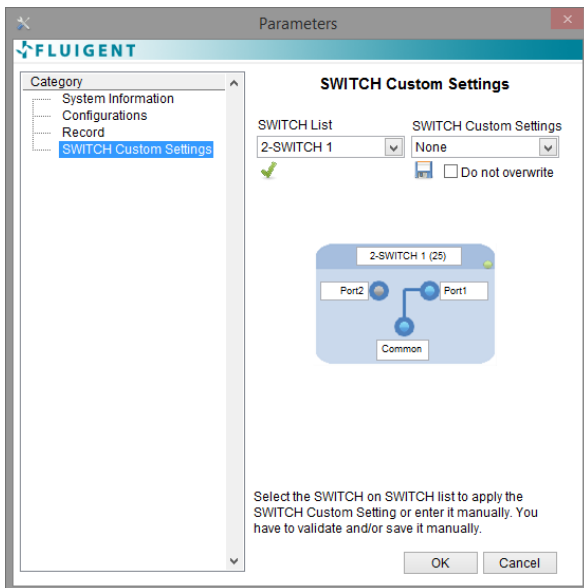
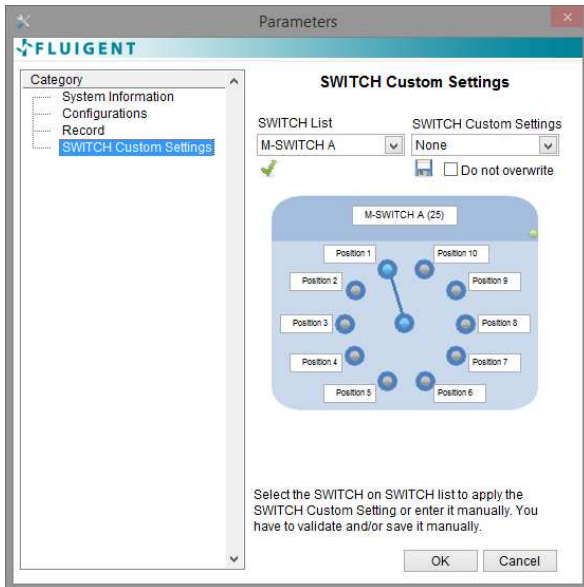
You can also adjust the sampling rate of your recording, with a choice between three (3) time periods. Select your preferred sampling rate by ticking the corresponding box.

Click OK to save and apply your record settings, and go back to the Main Panel.

- ▶ The selected sampling rate is written on the label of the **Rec** icon on the Main Panel Toolbar.
- ▶ After changing the file name or file path, at the next actuation of the **Rec** button in the Main Panel, a file dialog will open for you to confirm this new destination. Then, as long as the Record file path is not modified in the Parameters dialog box, all recordings will automatically be written in this file one after the other.



6.4 SWITCH Custom Settings (ESS™ Control Parameters dialog box)

6.4.1 Description of the Parameters SWITCH Custom Settings Category



The **SWITCH Custom settings menu** allows you to customize names for the SWITCH and its fluidic ports. In the SWITCH Custom Settings Category of the Parameters dialog box, you can load, set and save the SWITCH Custom Setting.

You can select a connected SWITCH in the **SWITCH List** drop-down list and choose the SWITCH Custom Setting you want to set from the SWITCH Custom Settings drop-down list **or** enter manually the SWITCH and its fluidic port names.

- ▶ Selecting a connected SWITCH from the **SWITCH List** drop-down list will populate the **SWITCH Custom Settings** drop-down list with the appropriate items.
- ▶ Selecting an item from the **SWITCH Custom Settings** drop-down list sets the SWITCH and fluidic port names on the SWITCH representation.
- ▶ You can manually enter the SWITCH and fluidic port names on the SWITCH representation.
- ▶  Clicking **Apply** will immediately update the SWITCH display on the Workspace. (**NB:** the applied Custom Settings will not be kept if the Change SWITCHBOARD feature is activated (cf. §7.1)).
- ▶  Clicking **Save** will update the SWITCH Custom Settings lookup table depending on the option you ticked. The lookup table is saved on the ESSControl.xml only if you click **OK** on the Parameters dialog.
 - If the SWITCH Custom Setting is a new one a new entry in the lookup table is created.
 - Else you can choose if you want to **overwrite** an existing SWITCH Custom Setting or not and the entry will, or not, be updated in the lookup table. **Do not overwrite**
- ▶ FAQ: I do not remember which SWITCHBOARD RJ45 port number / letter is associated with a customized device. (See §11 for the answer.)
- ▶ FAQ: How can I delete saved Custom settings so they do not appear in the SWITCH Custom Settings list any longer? (See §11 for the answer.)

6.4.2 Information elements on the SWITCH Custom Settings XML file

Every SWITCH Custom Setting must have a definition in the **ESSControl.xml** file, saved in **C:\Program files\Fluigent\ESS Control\data**. When the Parameters SWITCH Custom Settings dialog page is launched it parses this file and uses any SWITCH Custom Setting it finds to populate the SWITCH Custom Settings list.

The SWITCH Custom Setting file is an XML file that specifies the content of the SWITCH display. You can add SWITCH Custom Settings by copying an existing default SWITCH Custom Setting definition available in note of this document.

Use the following XML tags and structure to customize the SWITCH Custom Settings. If you are not familiar with XML, refer to www.w3.org/XML for more information.

6.4.2.1 Understanding SWITCH Custom Setting File XML Tags

The first line of the SWITCH Custom Setting file includes the XML version. All other tags inside the file must be enclosed in <ESSControlData> tags as shown below:

```
<?xml version="1.0" encoding="utf-8" standalone="no" ?>

<ESSControlData xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="../Data/ESSControl.xsd">
<!-- Insert tags here -->
</ ESSControlData >
```

The following table defines the XML tags you can use in the SWITCH Custom Setting file.

Tag/Attributes	Parent Tag	Required	Number of Tags within the Parent Tag	Description
ESSControlData	-	Yes	-	Contains all SWITCH Custom Setting definitions.
Switch	ESSControlData	Yes	1	Defines a SWITCH Custom Setting.
dock	Switch	No (unused)	1	Specifies if the SWITCH display is dock or not.
type	Switch	Yes	1	Specifies the SWITCH type: 2-SWITCH™ or M-SWITCH™
SwName	Switch	Yes	1	Specifies the custom SWITCH name.
PortNames	Switch	Yes	1	Defines SWITCH port names.
Val	PortNames	Yes	3 or 10	Specifies the custom port names in the port order.
Bounds	Switch	No (unused)	1	Defines the SWITCH window display top left corner position within the Workspace.
left	Bounds	No (unused)	1	Specifies the left coordinates relative to the top left corner of the Workspace.
top	Bounds	No (unused)	1	Specifies the top coordinates relative to the top left corner of the Workspace.

6.4.2.2 Validating with the Fluigent XML Schema

XML schema files (.xsd) are definition files that constrain an XML file to a certain format. You must validate your modification using the ESSControl.xsd XML schema to be able to use it in the ESS™ Control software. If the SWITCH Custom Settings file is not compatible with the ESSControl.xsd schema you will not be able to load the Parameters SWITCH Custom Settings dialog page.

Note:

- Default 2-SWITCH™ definition:



```
<Switch dock="true" type="2-SWITCH">
  <SwName>2-SWITCH</SwName>
  <PortNames>
    <Val>Port1</Val>
    <Val>Port2</Val>
    <Val>Common</Val>
  </PortNames>
</Switch>
```

- Default M-SWITCH™ definition:

```
<Switch type="M-SWITCH">
  <SwName>M-SWITCH</SwName>
  <PortNames>
    <Val>Position1</Val>
    <Val>Position2</Val>
    <Val>Position3</Val>
    <Val>Position4</Val>
    <Val>Position5</Val>
    <Val>Position6</Val>
    <Val>Position7</Val>
    <Val>Position8</Val>
    <Val>Position9</Val>
    <Val>Position10</Val>
  </PortNames>
</Switch>
```

FAQ: How to validate the ESSControl.xml file? (See §11 for the answer.)



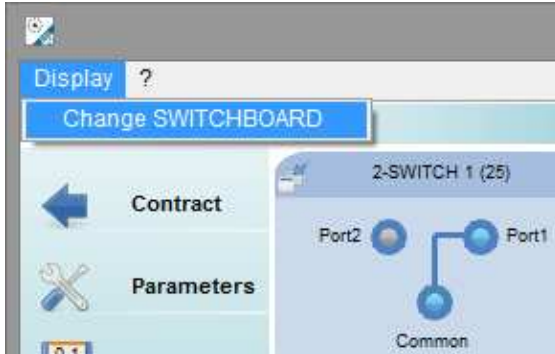
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7. ESS™ Control Menu bar

7.1 Display Menu

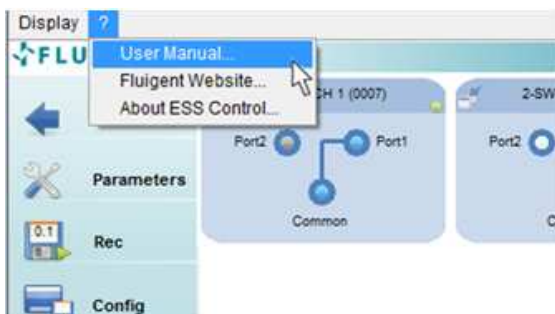


The Display menu enables you to change the SWITCHBOARD displayed on ESS™ Control, as explained in §4.2.

Warning: Changing SWITCHBOARD during an ESS™ Control session resets all default settings (SWITCH Custom Settings, docked/undocked devices...).

FAQ: The Change SWITCHBOARD feature is no longer accessible in the Display menu. (See §11 for the answer).

7.2 Help Menu



The Help menu enables you to access the information about ESS™ Control:

- ▶ Open this manual on your computer by clicking on ? >> User Manual...
- ▶ Go to Fluigent Website by clicking on ? >> Fluigent Website...
- ▶ Display the About ESS™ Control window by clicking on ? >> About ESS™ Control...



8. Warning and error messages

8.1 SWITCHBOARD Status messages



You need to have at least one **powered SWITCHBOARD connected by USB** to your computer to launch ESS™ Control. If no SWITCHBOARD is connected when ESS™ Control is launched, the first Error message appears.

- ▶ Click OK to close the message.
- ▶ ESS™ Control launch is stopped.
- ▶ Be sure that a SWITCHBOARD with power supply "ON" is connected by USB to your computer before starting again ESS™ Control.



If the SWITCHBOARD is removed while you are working with ESS™ Control (no power supply, or USB cable disconnected), the second message will appear. No operation can be made on the devices (software connection indicator red, see §5.2 and 5.3). To resume working with your devices, switch the power back on, or connect the USB cable.



If no M-SWITCH™ or 2-SWITCH™ are connected to your SWITCHBOARD, the last message will appear.

8.2 Cases of red Software detection indicator

The Software detection indicator of a control (at the right of the identification banner of the M-SWITCH™ and 2-SWITCH™ controls, see §5.2 and §5.3) should be green to enable you to use the corresponding device. It can become red for several reasons:

- ▶ The device has been disconnected from the SWITCHBOARD.
 - If you want to connect it back to your system, please check that both RJ45 connectors (on the device and on the SWITCHBOARD) are correctly plugged. A Status line should indicate that a device has been connected at a given port. The Software detection indicator becomes green again.
 - If you do not wish to use this device any more, you can click on **Redraw** in the Toolbar (see §5.1) to refresh the Workspace and only display the controls associated with connected devices.
- ▶ The SWITCHBOARD is not connected to the ESS™ Control computer: the message “The SWITCHBOARD has been disconnected or is unavailable” should have appeared (see § 8.1). In this case, all displayed control should present a red Software detection indicator.
 - Check that the SWITCHBOARD is powered, i.e. that the power supply is plugged to the mains and to the power supply connector on the SWITCHBOARD, and that the ‘O/I’ switch is on ‘I’. The green power led must be lighted.
 - Check that the SWITCHBOARD is connected to the ESS™ Control computer by a USB cable.



- ▶ Your device has not been connected to a correct RJ45 port on the SWITCHBOARD.
 - Please note that RJ45 ports on the SWITCHBOARD are dedicated to one type of SWITCH device only. The first four (4) from the left are compatible with M-SWITCH™ only, and the following eight (8) are compatible with 2-SWITCH™ only.
 - If you connect by mistake a 2-SWITCH™ on an M-SWITCH™ RJ45 port on the SWITCHBOARD (or vice-versa) the Software detection indicator of the control is red, and a Status error line (in red, see §5.4) indicates “Wrong SWITCH type connected on port #”, with # being the letter or the number of the concerned port.
 - Please make sure that all your devices are connected to suitable ports. Click on **Redraw** (in the toolbar, see §5.1) if needed to refresh the Workspace.

9. Scripts

A script editing tool is provided with ESS™ Control, so that you can write sequences of position commands on your connected M-SWITCH™ and 2-SWITCH™, and synchronize them. Please refer to the Script Module User Manual to learn how to write and run your scripts.

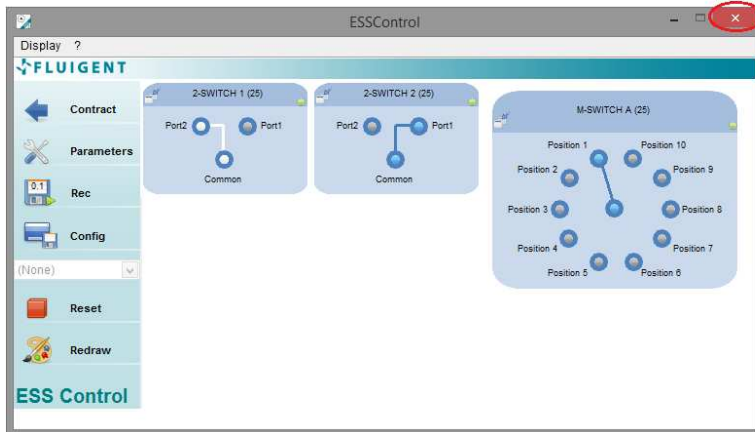


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10. Quitting ESS™ Control



EXIT
ESS CONTROL

To quit ESS™ Control, click on the Windows close button at the top right of the ESS™ Control Main Panel window.

A message will appear to ask you to confirm that your intention is to close ESS™ Control.



11. Frequently Asked Questions (FAQ)

§6.4.1 I do not remember which SWITCHBOARD RJ45 port number / letter is associated with a customized device.

There are several ways to check which is the RJ45 port associated with a device with a customized name:

- ▶ Check the System Information Category in the Parameters dialog box (see §6.1). The default names (with RJ45 port number / letter) of all connected devices are displayed, with the associated customized names between brackets. **Warning:** the displayed information is the state of your ESS™ platform at last click on the Parameters button in the Toolbar (see §5.1); all subsequent updates are not taken into account.
- ▶ Activate the Check connection feature to light up the green RJ45 indicators on the device and its SWITCHBOARD RJ45 port (see §5.2 and §5.3)
- ▶ You can also undock the customized device (see §5.2 and §5.3). The title of the undocked independent window is the default name of the device (with its RJ45 port number / letter)

§6.4.1 How can I delete saved Custom settings so they do not appear in the SWITCH Custom Settings list any longer?

You need to modify the XML file associated with the SWITCH Custom Settings to do so (ESSControl.xml). Please read §6.4.2 to learn about the XML file architecture.

§6.4.2 How to validate the ESSControl.xml file?

The ESSControl.xml file use the XML Schema ESSControl.xsd located right next to it. You need to use some tools or add-ons or web interface to validate the XML document provided the ESSControl.xsd as ML schema.

§7.1 The Change SWITCHBOARD feature is no longer accessible in the Display menu.

This feature is only accessible when more than one (1) SWITCHBOARD have been continuously connected to the ESS™ Control computer since its launch. If two (2) SWITCHBOARD were present at the ESS™ Control launch and one (1) is disconnected during the ESS™ Control session, the Change SWITCHBOARD feature becomes unavailable and remains so even if the disconnected SWITCHBOARD is connected back. Please restart ESS™ Control with both SWITCHBOARD to make the feature available again.



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