

Documentation

SiLA Driver for QUANTIFOIL BioShake Devices

(Driver Version 1.1.4)

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Changes

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07.02.2013	1.0-001	First edit		SKo
30.09.2013	1.0-002	New driver version	Updates for driver version 1.0.3	SKo
20.12.2013	1.0-003	New driver version	Updates for driver version 1.0.5	SKo
04.08.2014	1.0-003	Error correction		Bepa
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1 Installing and running the driver

1.1 Install

Copy all files belonging to the driver to a folder on a local hard disk drive.

1.2 Start

To run the driver, start the application **EQUIcon.SiLAServiceRunner.exe**. The user running the application must be authorized to enable the web service to listen to the configured port. Alternatively the application can be run as Administrator.

Enter the service's base address (URI) (e.g. `http://localhost:9999/SiLAService.BioShake`) and click on [Create]. The label **RUNNING** on the left side indicates that the driver has been started successfully. To stop the driver, click on [Dispose].

To use the auto start feature a command line parameter has to be passed to the application containing an XML file. The XML file has to look like the given file `ServiceConfig.xml`:

```
<?xml version="1.0"?>
<ArrayOfConfigurationItem xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <ConfigurationItem>
    <Enabled>true</Enabled>
    <CommandQueueLength>0</CommandQueueLength>
    <ParallelCommands>1</ParallelCommands>
    <ServiceUri>http://localhost:9999/SiLAService.BioShake</ServiceUri>
    <ServiceType>BioShake</ServiceType>
  </ConfigurationItem>
</ArrayOfConfigurationItem>
```

Figure 1: File listing `ServiceConfig.xml`

Attention: Don't modify any other entry than `<ServiceUri>`!

1.3 Logging and service contact

To watch the log entries, click [On] on the [Logging] tab.

To view the log file, click [Open log file] on the [Logging] tab and select a log file in the opened dialog. The selected file will be opened with the application that has been assigned to the `.log` file extension.

The application provides the possibility to contact the service via sending an email that contains a log file. To enable this feature, the SMTP host used for sending emails has to be specified in the file **EQUIcon.SiLAServiceRunner.exe.config** before the application is started. The default values for the mail receiver and sender address can also be specified here.

For sending an email, click [Mail to Service] on the [Logging] tab. In the opened dialog the receiver address [To] and the sender address [From] will be filled with the default values if specified in the application config file. If existing, the current log file will be selected. To select another log file to send press the button [...]. A mail message might be added using the [Message] field. Once the mandatory fields [To], [From] and [Subject] have been filled, the [Send] button will be enabled. Click on it to send the mail.

2 Using the driver via SiLA

The first SiLA command sent to the driver has to be *Reset*.

Before initializing the device, a configuration has to be set containing the entries for the serial port to be used for communicating with the device, a valid license file and the default shake speed.

The configuration has to look like:

```
<?xml version="1.0" encoding="utf-8"?>
<ParameterSet xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">

  <!-- The COM port to be used for the RS232 communication -->
  <Parameter parameterType="String" name="PortName">
    <String>COM1</String>
  </Parameter>

  <!-- Name and location of the license file -->
  <Parameter parameterType="String" name="LicenseFile">
    <String>license_file.lic</String>
  </Parameter>

  <!-- The shake speed to be used if no speed is specified (in RPM) -->
  <Parameter parameterType="Int32" name="DefaultShakeSpeed">
    <Int32>500</Int32>
  </Parameter>

</ParameterSet>
```

Figure 2: File listing SiLAservice.QInstruments.BioShake_SampleConfiguration.xml

Modify the appropriate entries of the delivered sample configuration file `SiLAservice.QInstruments.BioShake_SampleConfiguration.xml` and pass it as parameter `configXML` of the `SetConfiguration` command. Alternatively you may send the `GetConfiguration` command and modify the appropriate entries in the received response data before using it as parameter `configXML` of the `SetConfiguration` command (see `Get/SetConfiguration`).

After that the *Initialize* command can be send. If the device has been initialized successfully all other commands can be used.

3 Available SiLA commands

3.1 Overview

The device driver provides all mandatory commands and all required commands for the Shaker device class (*Shake*, *Get/SetParameters*) as well as the optional commands *Get/SetConfiguration* and the device specific commands *Start/StopTemperatureControl*. The

device specific commands *PrepareForInput*, *PrepareForOutput*, *LabwareReceived* and *LabwareRemoved* will only have an effect for devices providing the ELM functionality.

This chapter describes how the commands are working. Concerning the mandatory commands only the commands performing device specific actions are described due to the general behavior of all mandatory commands is contained in their WSDL description.

3.2 Mandatory Commands

3.2.1 Reset

If a serial connection to the device is opened, it will be closed.

3.2.2 Initialize

A connection to the device via the serial interface (com port) configured will be opened.

If a connection has been successfully established the device's serial number will be retrieved and the license file specified in the configuration will be validated.

If a valid license has been found the device parameters will be read to determine if the device supports the features *Temperature Control* and *ELM* (edge locking mechanism). Furthermore the minimum and maximum values for the shake speed and the temperature (if supported) will be read from the device.

Finally the shaker will be set to the home position.

3.3 Required Commands

3.3.1 Shake

After sending this command the shaker will be shaking at the set shake speed for the given duration.

The shake speed can be set via the *Get/SetParameters* command.

If the given duration is invalid an error will be returned.

3.3.2 Get/SetParameters

The device's parameter set contains only one parameter *ShakeSpeed* (in rpm) that is used for by the Shake command. If the parameter hasn't been set yet the value of the configuration entry *DefaultShakeSpeed* is used (see *Get/SetConfiguration*).

3.4 Optional Commands

3.4.1 Get/SetConfiguration

The configuration contains the following entries (all mandatory):

- *DefaultShakeSpeed* The shake speed (in rpm) that will be used by the *Shake* command as long as the shake speed hasn't been set via the *Get/SetParameters* command
- *LicenseFile* The name (and path) of the license file to be used

- *PortName* The name of the serial port to be used for the connection (e.g. "COM1")

The configuration has to be set after the *Reset* and before the *Initialize* command.

3.5 Device Specific Commands

3.5.1 StartTemperatureControl

The temperature control will be set to the given target temperature (in °C). If the boolean parameter *waitForCompletion* is true the command will periodically read the current temperature and return as soon as the target temperature has been reached. If the parameter is false the command will return immediately after the target temperature has been set.

The returned estimated duration for this command is 0 (=unspecified).

If the device doesn't support temperature control or the given temperature is out of range an error will be returned.

3.5.2 StopTemperatureControl

The temperature control will be stopped.

If the device doesn't support temperature control an error will be returned.

3.5.3 PrepareForInput

The edge locking clamps will be opened.

If the device doesn't support ELM nothing will happen.

3.5.4 PrepareForOutput

The edge locking clamps will be opened.

If the device doesn't support ELM nothing will happen.

3.5.5 LabwareReceived

The edge locking clamps will be closed.

If the device doesn't support ELM nothing will happen.

3.5.6 LabwareRemoved

The edge locking clamps will be closed due to it is recommended by the manufacturer to not let the clamps stay opened for a longer time.

If the device doesn't support ELM nothing will happen.