
Clarity Controls
Sykam S5200


AS

ENG

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1	Sykam S5200 autosampler	4
2	Requirements	4
3	Installation procedure	5
3.1	Autosampler Setup - Communication	5
3.1.1	Signalization of injection	5
3.2	Clarity Configuration	7
4	Method Setup	9
4.1	Injection Settings.....	9
4.2	Derivatization Settings.....	10
5	Device Monitor and Wash Dialog.....	14
6	Sequence	15

1 Sykam S5200 autosampler

This manual describes the setting of the **Sykam S5200 autosampler**. The control module enables direct control of the instrument over serial line.



Fig. 1. Sykam S5200 Autosampler

Direct control means that the autosampler can be completely controlled from the **Clarity** environment. Instrument method controlling the sample preparation conditions will be saved in the measured chromatograms.

2 Requirements

- Clarity Installation CD ROM with AS Control module (p/n A26).
- Free serial port in the PC

Note: *Modern computers usually have only 1 (if any) serial (COM) port installed. To use more devices requiring the port, the **MultiCOM** adapter (p/n MC01) is available.*

- Straight serial DB9F-DB9M cable (p/n SK02).

Note: *Cables are not part of **Clarity** Control Module. It is strongly recommended to order required cables together with the Control Module.*

3 Installation procedure

3.1 Autosampler Setup - Communication

The autosampler communicates with the PC using straight RS232 DB9F-DB9M cable. No baudrate setting is necessary on either side.

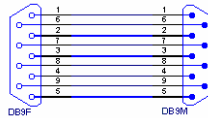


Fig. 2. RS232 DB9F-DB9M cable

Note: Only pins 2, 3 and 5 need to be connected. However, full RS232 DB9F-DB9M cable will work just as fine.

The S5200 has to be in the **SERIAL OPERATION MODE**. You can switch it to this mode by pressing **MENU** on front panel, use cursor keys (or key **3**) to enter **INSTRUMENT CONFIGURATION MENU**, then use arrow keys to move to **OPERATION MODE** setting and use **SELECT ▲** and **SELECT ▼** to switch to **SERIAL**.

It is recommended (though not necessary) to connect the **S5200** autosampler with the PC via the start cable, as shown on the fig Fig. 3. This connection is made from the **Remote Control** connector of the autosampler to the **A/D converter** input.

3.1.1 Signalization of injection

When the sampler injects, the data acquisition and methods should start. There are two alternatives how to inform Clarity about finished injection.

- Select **Sykam S5200** sampler as a source of **Start (Dig. Input)**.
- When using the optional starting wire, select the appropriate digital input of the U-PAD as a source of **Start (Dig. Input)**.

Using sampler as a source of start is convenient since this approach does not need

any wiring. However, it adds delay and small time uncertainty.

Using detector as a source of start gives excellent repeatability but requires wire from sampler to the detector.

Sampler emits start signal in both of these scenarios so you can wire the instruments anyway. (Note that firmware in some instruments does not handle starting from wire and from computer at the same time and may freeze as a result.)

If you decide to use wiring, connect wires to pins 5-9 (normally open) or 7-9 (normally closed) in sampler's REMOTE CONTROL connector.

Note: *You will need the DB9F connector, to which the contacts have to be attached.*

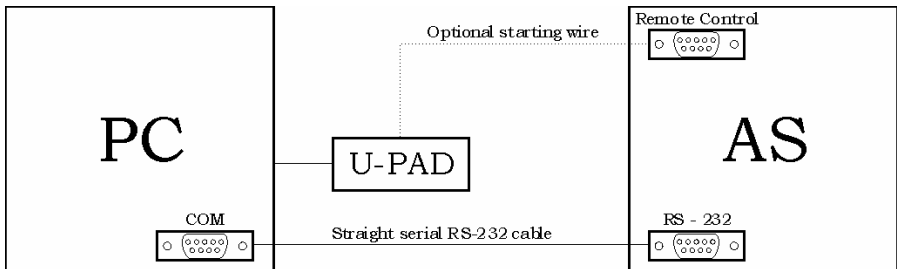


Fig. 3. **CTC Combi PAL LC scheme of connection**

Instead of the U-PAD, the optional starting cable can be connected to any other A/D converter (e.g. DataApex INT7 card). For the connection to be used for starting the data acquisition, the U-PAD (or the respective A/D converter) must be set as device used for **Start** input in the **System Configuration** dialog (see Fig. 6).

Note: *Typical wiring of controlled instruments is described in the Clarity **Getting Started** manual.*

3.2 Clarity Configuration

- In the **System Configuration** dialog press the **Add** (① in Fig. 6) button to invoke the **Available Control Modules** dialog.

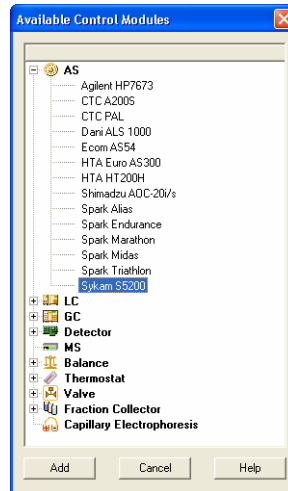


Fig. 4. Available Control Modules

- Select the **Sykam S5200** and press the **Add** (②) button.
- The **Sykam S5200 Setup** dialog will appear.

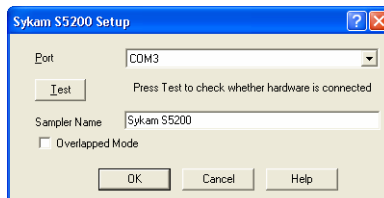


Fig. 5. Sykam S5200 Setup

- Fill in the **COM Port**. Use the **Test** button to check whether the hardware is connected to the selected port.

If the **S5200** autosampler was not detected, make sure the device is switched to the **SERIAL MODE** (see chapter 3.1 on pg. 5), data cables

are connected and correct COM port is selected.

- Fill in the name of the sampler.
- Check **Overlapped Mode** if you want to optimize sequence processing time by starting the derivatization of the vial while analysis of the previous vial is still in progress.
- Press the **OK** button.

The **Sykam S5200** will appear in the **Setup Control Modules** ③ list of the **System Configuration** dialog.

- Drag the sampler icon from the **Setup Control Modules** list on the left side to the desired **Instrument** tab ④ on the right side ⑤ (or use the **→** button ⑥ to do so).

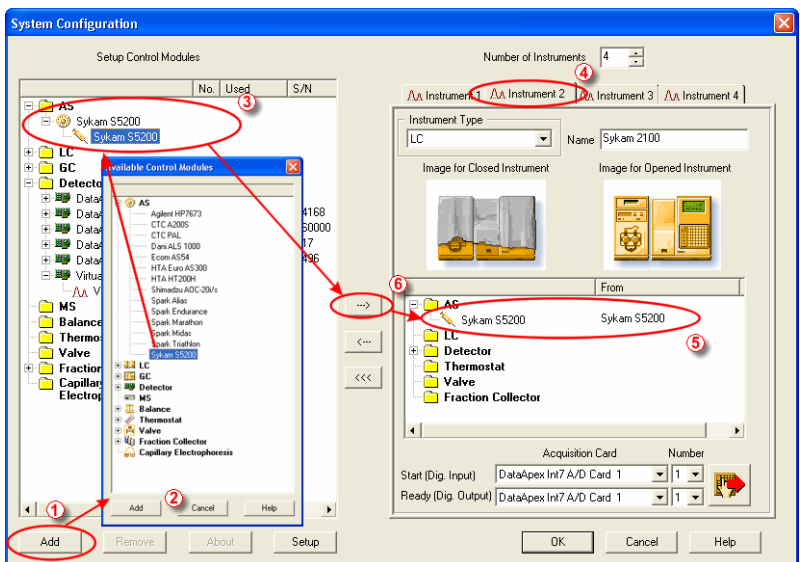


Fig. 6. System Configuration

- Choose either **Sykam S5200** autosampler or your A/D converter as **Start** input. Using sampler gives lower reproducibility, but works even without wiring.
- Set the correct **Start** input and (in the case of A/D converter) **Ready** output numbers.

4 Method Setup

When you add Sykam S5200 to the configuration, new **AS** tab appears in the **Method Setup** dialog, enabling the setting of the AS control method.

AS tab holds settings related to the injection in general, as well as settings related to the derivatization only.

4.1 Injection Settings

The first tab of the **Method Setup – AS** dialog contains injection method parameters.

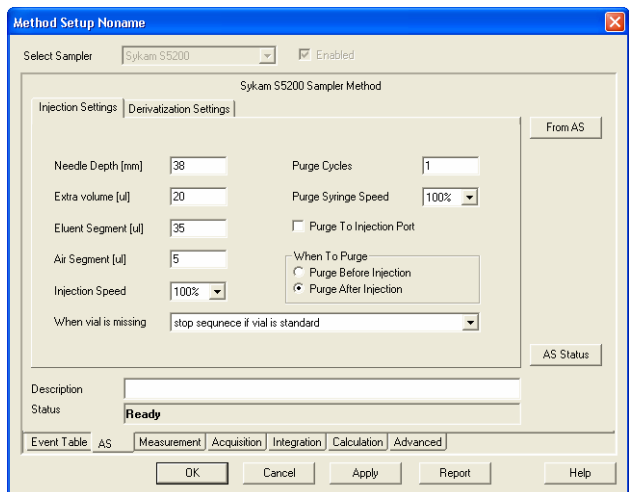


Fig. 7. Method Setup – AS – Injection Settings

Needle Depth

Specifies the depth of the injection needle movement. This value has to be adjusted to specific vials (e.g. Eppendorf vials use Needle Depth of 39 mm). Larger number means deeper penetration.

Caution!

*Avoid setting the **Needle Depth** too high as you can damage the vial or the needle.*

Extra Volume

The volume of the sample that is aspirated in addition to the injected volume. This amount is used to overfill the injection valve.

Eluent Segment

The eluent segment is specific volume of wash solution for delivering the sample into the sample loop.

Air Segment

Sets the size of the air segment between the taken sample and the eluent. This feature prevents the mixing of the eluent and the sample which would lead to an inaccurate sample injection.

Injection Speed

Selects different speed for the syringe movement during injection, reagents adding and mixing.

Purge Cycles

Specifies the number of times the syringe should be flushed.

Purge Syringe Speed

Selects different speed for the syringe movement during purge.

Purge To Injection Port

Selects the port to which the wash step will be performed. If left unchecked, the wash will be performed to the **Washing Port**.

When vial is missing

Determines behavior when the sampler detects the vial is missing.

4.2 Derivatization Settings

Derivatization is an optional process of mixing sample with reagents A, B and C. It is well described in the **Sycam S5200 manual**. The only difference is that **Clarity** expects sample vials at positions 1 – 60 and mixing vials at respective positions 61 – 120.

For example, if you specify to analyze vials 3 to 8 in **Clarity Sequence Table** and select a method with derivatization enabled, vials in positions 63 to 68 will be used for mixing.

It is possible to use methods both with the derivatization and without derivatization in the same sequence. It is up to the user to make sure that no vial is derivatized more than once and no vial in range 61 to 120 is used for derivatized injection. However, vials 61 – 120 can be used for the injection that does not use the derivatization, even in the sequence that uses both types of methods.

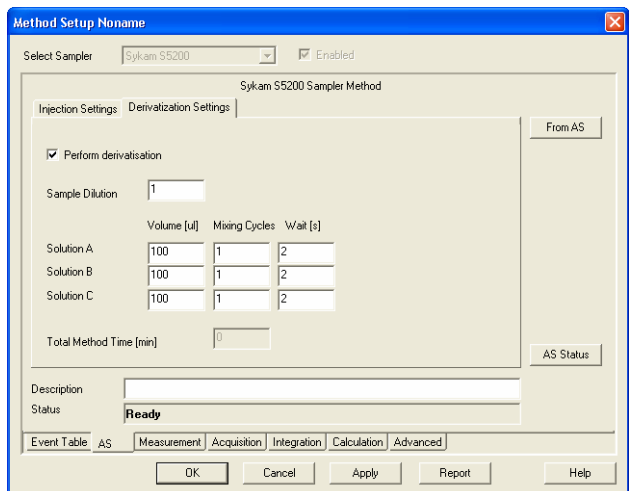


Fig. 8. Method Setup – AS – Derivatization Settings

Perform derivatization

Determines whether the sample should be derivatized before the injection. When disabled, the sample will be injected in its original state.

Checking the checkbox will cause other settings on this tab to become editable.

The sample will be taken from sample vial to the mixing vial, specified amounts of reagents will be added and resulting mix will be injected.

Sample dilution

Specifies the amount that will be taken from the sample vial to use in derivatization process. The volume taken is calculated as a multiple of **Sample Amount** set in the **Sequence Table** and the **Sample Dilution** parameter.

Note: *The amount set in the **Sequence Table** will be injected to the column from the mixing vial.*

Volume

Specifies the volume of the reagent to add to the mixing vial.

If the volume is set to zero, then the reagent will not be added and no mixing cycles and no waiting will be performed for that reagent.

Mixing Cycles

Determines how many times the mixing vial should be mixed.

If the volume of certain reagent is zero, associated mixing and waiting steps will be skipped.

Wait

Determines how many seconds should the module wait for reaction before doing next step.

If the volume of certain reagent is zero, associated mixing and waiting steps will be skipped.

Total Method Time

This setting is not used if the **Overlapped Mode** (see pg. 8) is disabled. It represents the total time to analyze one sample. In overlapped mode, the module takes into account the length of the derivatization (only waiting times at present) and starts the derivatization before the end of the analysis of the previous vial so the derivatization will be almost finished when the previous analysis ends.

However, the **Total Method Time** parameter cannot be calculated exactly from the lengths of instrument methods since the durations may depend on factors not known at the start of the

acquisition (for example temperature settling time depends on the room temperature).

Note: *If you set this parameter too small, the derivatization will start and finish earlier and the sample will have to wait for injection, which may impair results.*

5 Device Monitor and Wash Dialog

When the sampler is idle, you can issue a wash cycle from the **Device Monitor** window using the **Wash** button. The **Wash** dialog will appear.

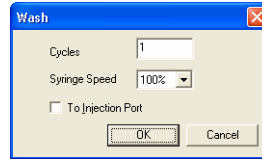


Fig. 9. *Device Monitor - Wash dialog*

Cycles

Determines how many times the syringe will be rinsed.

Syringe Speed

Selects different speed for the syringe movement during the purge.

To Injection Port

Selects the port to which the wash step will be performed. If left unchecked, the wash will be performed to the **Washing Port**.

OK

Wash operation will be executed when **OK** button is pressed.

6 Sequence

To use the autosampler in the **Clarity** sequence, following conditions must be met:

- Correct settings for the **Start** input must be set in the **System configuration** dialog (see Fig. 6).
- The sequence must be set as *Active* in the **Sequence Options** dialog.
- All methods used in the sequence must have the **External Start** enabled and the **Autostop** time set.

Note: *If the selected method uses the derivatization, the **I/V** field in the sequence table has to be set to 1 for every row performed according to that method (thus, if the sample has to be measured more than once, it has to be split to several vials prior to the analysis).*

Standard sequence operation

After the sequence start, the AS control method will be sent to the sampler and **Clarity** will wait for the injection signal from the sampler. After receiving it, the run starts and after finishing, the method for the next injection will be sent to the sampler.

Overlapped mode sequence operation

After the sequence start, the AS control method will be sent to the sampler and **Clarity** will wait for the injection signal from the sampler. After receiving it, the run starts. The AS control module checks the remaining time of the current running method (specified in the **Total Method Time** field of the **Method Setup – AS – Derivatization Settings** dialog) and when it is less than the derivatization time of the method on the next row, it sends the next row method to the sampler.

Note: *Due to hardware limitations, the sampler head may continue moving, inject or even trigger the start of the analysis (if the wire to the detector is present) when you abort the sequence. In such case **Clarity** will treat the signal as incoming external start and perform the analysis as a single run.*

Note: *Autosampler control is not available during Single Run operation.*