

SEQUENCER MULTISTREAM CLS3/CLS4 ANNEX

Software version CL 230117

External accessory for the automatic, continuous multiplexing of up to four sample streams to one on-line colorimetric analyzer. The sequencer is connected to the analyzer via a 4 wires cable which provides communication and power supply to the external unit. After connection the analyzer is linked to the sequencer and displays process value, alarm status, channel status and time during operation for all the active channels. Storage of measurement values for all channels inside analyzer's datalogger. Four sampling valves are mounted on the sequencer and ensure sample is available for stream switching. The 4 fast loop reservoirs with level switch mounted on the sequencer ensure flow alarm in case of loss of sample. The sequencer is factory tested, ready for installation and operation.



SPECIFICATIONS

Power supply – the sequencer is powered by the colorimetric analyzer (voltage 100 ... 240 VAC, 50/60Hz)

Sample conditions

Flow rate 100-500 ml /min per stream

Temperature 5 ... 45 °C (41 ... 113 °F)

Inlet pressure max 0.5 bar (4 PSI)

Outlet/drain pressure: ambient pressure

Signal outputs

4-20 mA current outputs measurement values for each sample channel, 2 mA preset value for loss of sample alarm.

Panel / wall mounting

Electronics case: aluminum

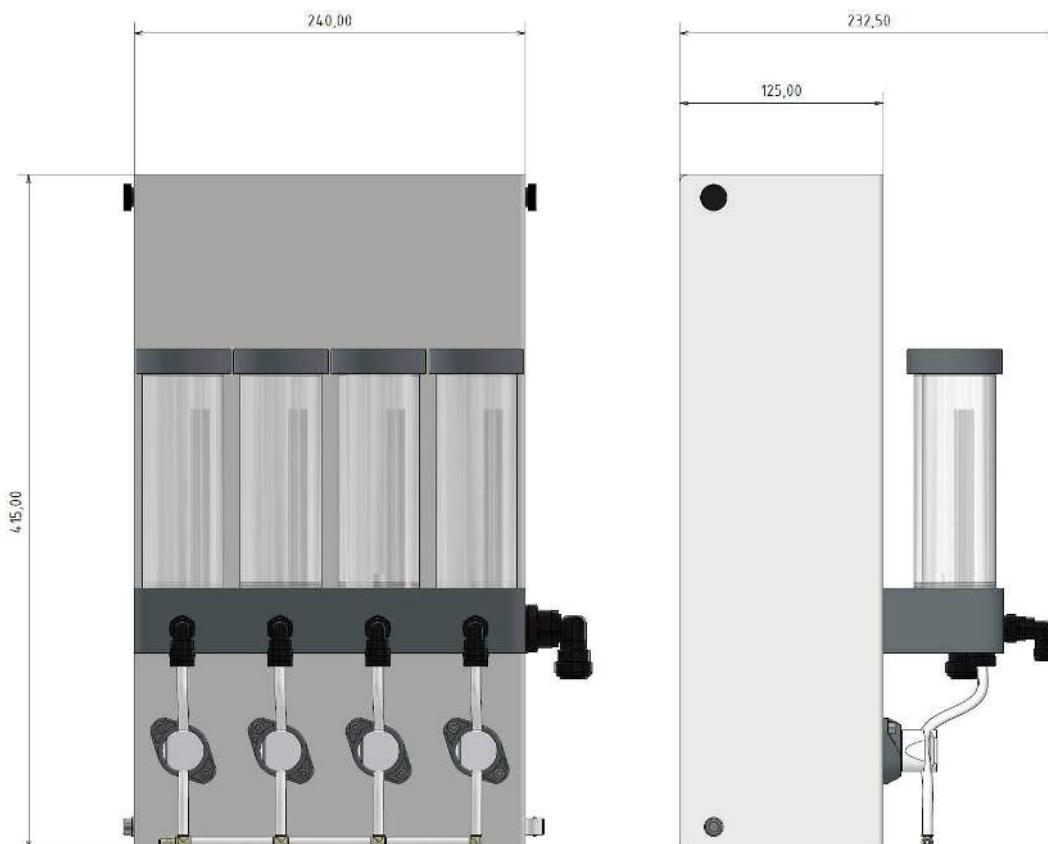
Sample contacting material: silicon, PP, stainless steel, PVC, Buna, Acetal Copolymer, plexiglass

Protection degree: IP54

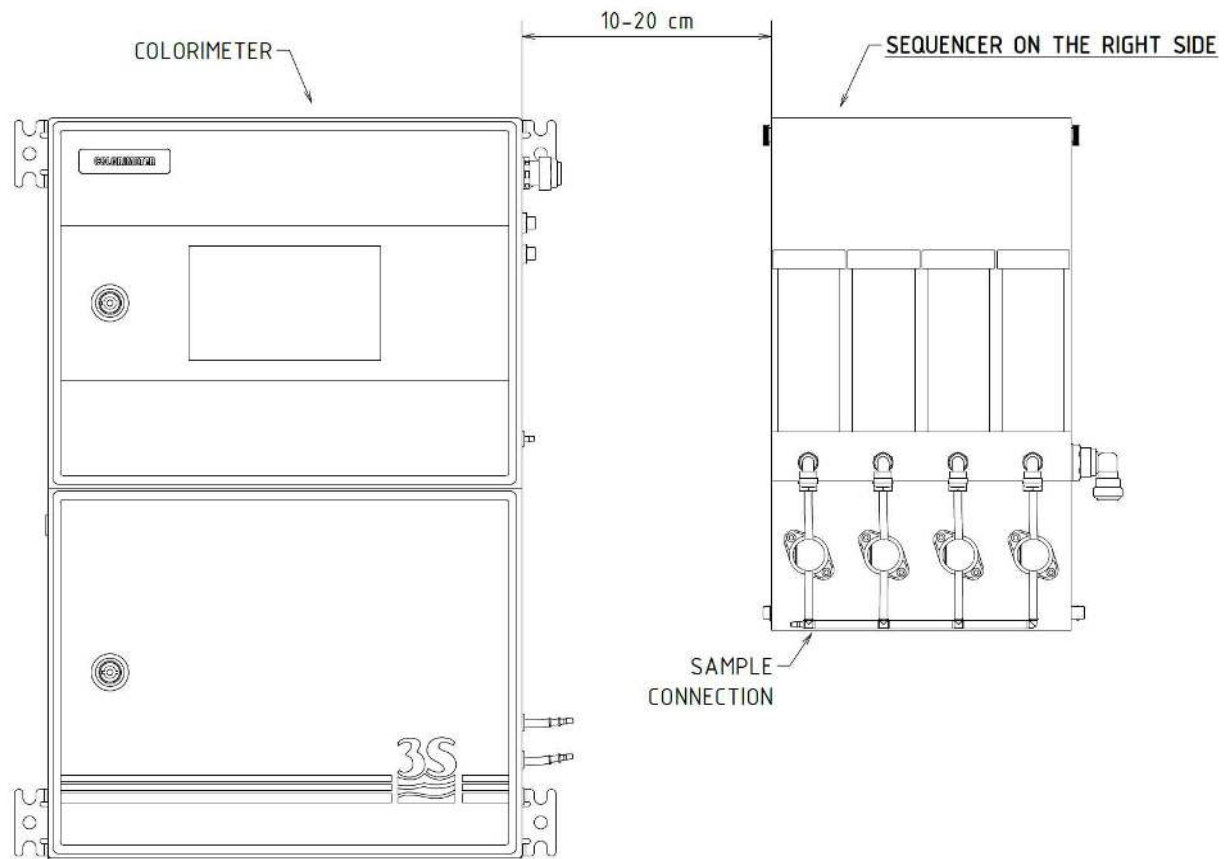
Electrical connectors: screw clamps

Panel dimensions: 415 x 240 x 232,50 mm

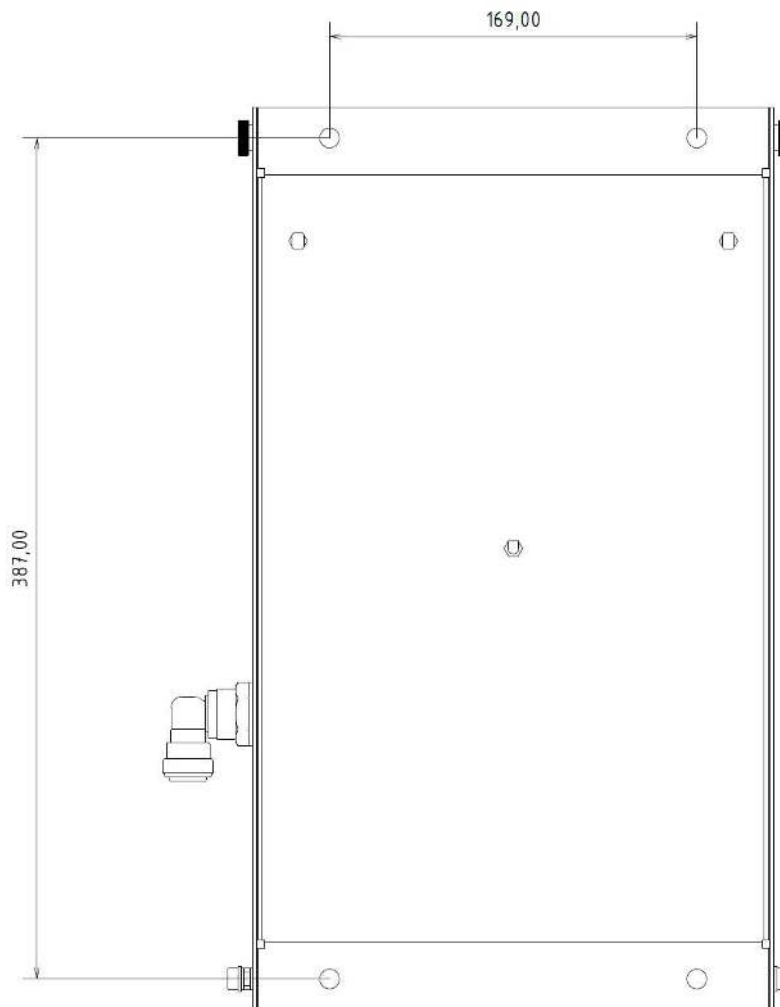
Weight: 5 kg



INSTALLATION PROCEDURE



1. Locate a wall with a suitably smooth surface to mount the sequencer for wall mounting
2. Mark 4 holes on the wall for the position of the sequencer
3. Drill 4 holes for M8 screws



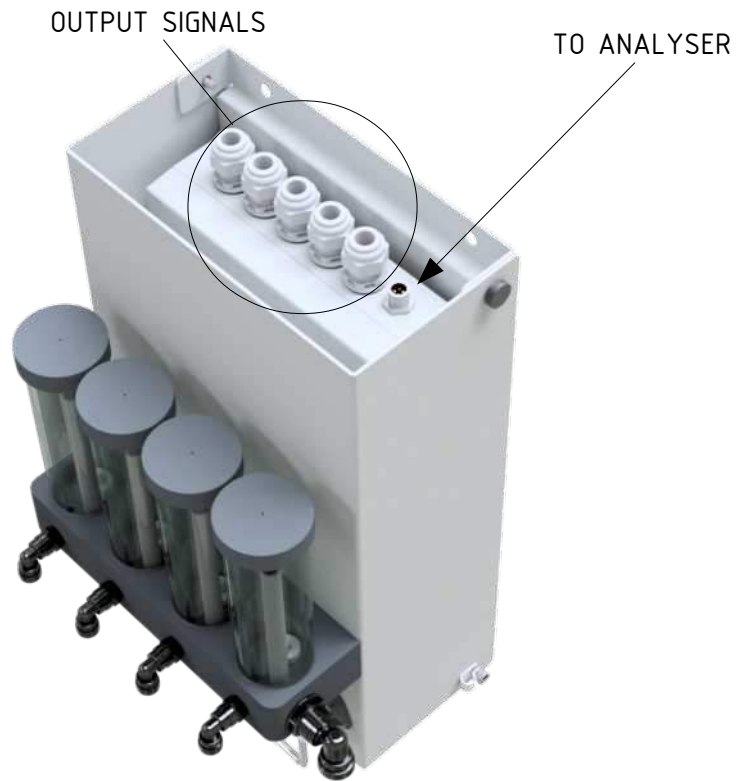
4. Mount the sequencer on the right of the analyzer
5. Ensure the sequencer is surely placed

ELECTRICAL CONNECTIONS

Connect the M12 connectors cable from the analyser to the sequencer connector on the top left side of the electronic box (as shown)

Connect the 4-20 mA outputs:

- open the electronic box of the sequencer by removing the two upper fixing screw and capsizing down the front hydraulic block. Open the electrical box on the back plate (8 screws)



- connect the outputs, ensuring you get the right polarity



- close the electronic box of the sequencer

HYDRAULIC CONNECTIONS

- the installation site should be as near the sampling point as possible
- the drain line should be properly dimensioned and positioned at a downward slope to allow the drain of analysed sample (**gravity drain**) and the overflow coming from external fast-loop reservoirs.
- connect the drain to the waste line using a 12 mm OD

WARNING: the sample drain must be at ambient pressure with no restriction or counterpressure. Please verify that this condition has been strictly respected during installation.

- connect the samples by using a 6 mm OD to their push-in tube fitting . Be aware that the maximum sample flowrate should not exceed 500 ml/min . Install a needle valve, if needed, to obtain a proper flow regulation.
- connect the analyser sample line to the sampling valves manifold accordingly to the label using the soft ¼ OD norprene or silicon tubing





MAINTENANCE

- cleaning the plexiglass avoiding alcohol or aggressive liquids, or abrasive material
- replace the pinch valve tubing every 3 months with silicon ¼ OD tubing only

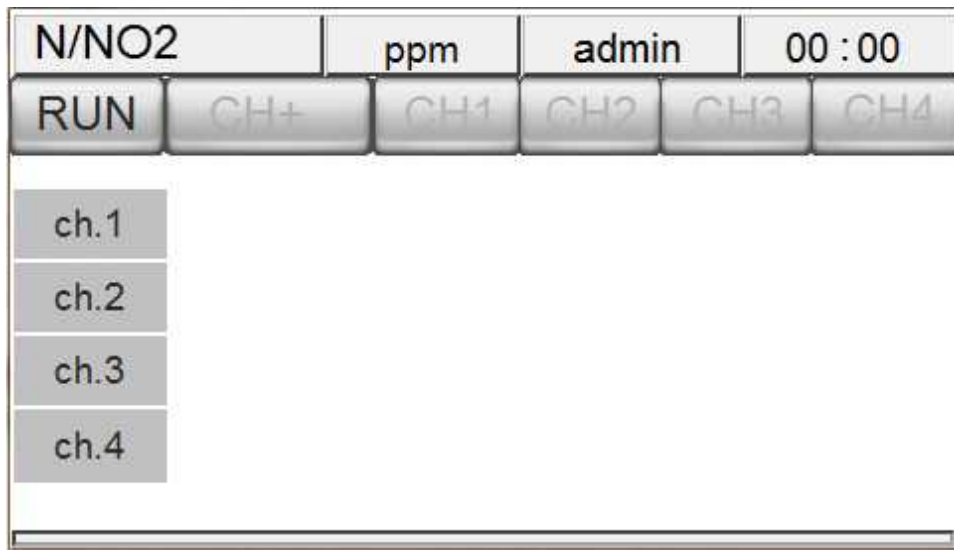
WARNING: other than silicon tubing materials or dimension could not be suitable for the pinch valves, eventually causing cross contaminations.

ADDITIONAL SOFTWARE PAGES ON THE COLORIMETER

SEQUENCER PAGE

Simply pressing in the white part of the COLORIMETER main page you will access to the sequencer main page:

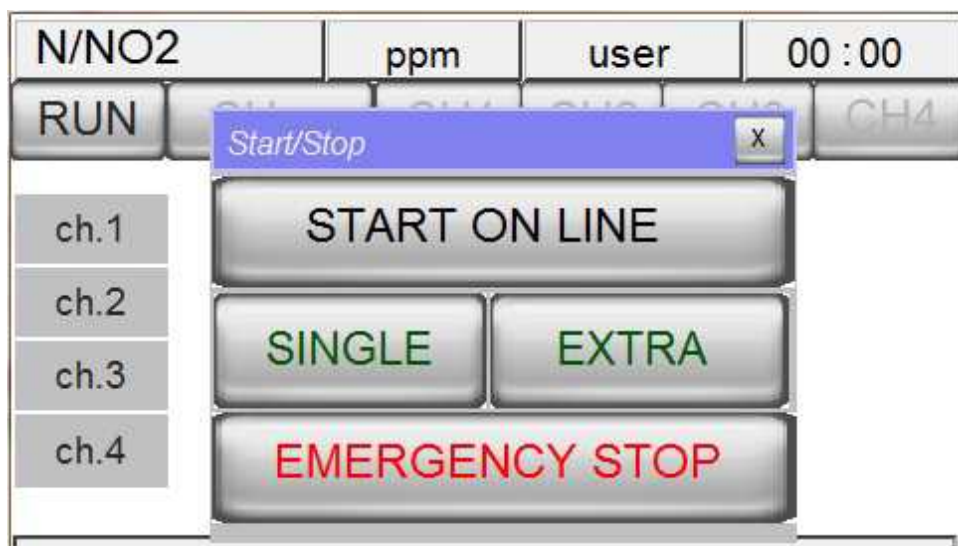
CH1 CH2 CH3 CH4 buttons will be enabled after login with admin password. These buttons allow to enable or disable each channel. This function should be used with the analyzer in STAND BY mode, when ONLINE the buttons are disabled.



CH+ button will be enabled after login with service password. This button allows to manually open each valve of the sequencer manifold. Once pressed, the next valve (following the sequence 1-2-3-4-1...) will be activated. If a channel is not enabled, or there's no liquid detected, the activated valve will be the next in the sequence. In the case all the channels are not enabled (or missing the liquid) the sequence will set a waiting condition and the LOSS OF SAMPLES alarm will be raised.

This function should be used with the analyzer in STAND BY mode, when ONLINE the button is disabled (as shown in the picture).

Pressing **RUN**, the following page will be displayed:



START ON-LINE: this button allows to force the analyzer to online operations; this means that pressing this button the analyzer will perform a continuous cyclic analysis with the sequence CH1 CH2 CH3 CH4 of the active selected channels . This condition is identified as online and ONLINE is displayed on the button. Pressing again the button the analyser will finish the cycle in progress and then stop in stand-by mode. At the beginning of a new analysis, the next channel valve will be activated, if there's no liquid detected inside the next stream reservoir, the sequence will immediately jump to the next available channel. In the case all the streams are not present or enabled, the LOSS OF SAMPLES alarm will be raised and the analyser will stop at the end of the current cycle. When at least one of them will be available again, then the analyser will start a new cycle. Apart from the general LOSS OF SAMPLES alarm, each stream has his own Sample alarm condition, that can be identified by the channel analog output set to 2 mA. Note that if the liquid alarm occurs when the analysis cycle has already started, the current sequencer valve remain activated (no sequence jumping) to avoid cross contamination of results. This is quite a common case, since everytime the arrival of a sample is interrupted, the liquid level inside his reservoir is still detected. In order to avoid cycles running without sample (wrong analytical results) the Level Jumping option should be set , as below described in SERVICE MENU.

SINGLE

This command allows to start the analyzer performing one cycle of analysis on the active channel. At the end of the cycle, the analyzer will turn in stand-by conditions waiting for a new user's command.

EXTRA

This command allows to start the analyzer performing one extra cycle of the programmed autofunction. At the end of the cycle, the analyzer will turn in stand-by conditions waiting for a new user's command.

EMERGENCY STOP: this command will stop immediately the analyzer at the current step of the analysis in progress; the analyzer will go in MANUAL STOP condition. On the main screen will appear the message

“manual stop” red coloured and the FAULT contact will be activated. To restart the analyzer after an emergency stop is necessary to reset the fault pressing **RESET EM. STOP** yellow coloured. This will force the analyzer to stand-by conditions.

SERVICE MENU

Login with admin password and access to hidden service page.

-In order to use the sequencer , **Sequencer** function should be enabled to YES.

Service #2			
Dual Streams NO	Sequencer NO	00000 000,0	English Deutsch Francais Chinese
Back light delay min. 30		0,00 0,000	
Linear factor 1.000	factor 1.0	Average range (Abs) +/- 0.0080	Result average Yes
Logout min 5	Modbus slave i.d. 0	Averaged Abs 0.0000	Real Abs 0.0000
Program update enable YES	No level jumping YES	Jumping from step 4	to step 19

-The function Jumping from step ... to step allows to have a further check in the cycle of the sample presence. In case of loss of sample the analyzer will skip all the steps between the two selected.

In the above example if there's no liquid in the reservoir during the cycle step 4 , the analysis cycle jump directly to step 19 , and no reagent addition, or any calculation or logged result will be executed.