MANVIA SAMPLE SEQUENCERS

INSTALLATION, OPERATION & MAINTENANCE MANUAL

manvia

SAMPLE SEQUENCERS SQ-2 / SQ-4 / SQ-8

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Notes on Safety

In this manual, you will find various notes categorized under the following levels with the signal words “DANGER” and “CAUTION”.

 **DANGER**	**Indicates a hazardous situation which, if materialized, could result in a serious injury and even in death.**
 **CAUTION**	**Indicates a hazardous situation which, if materialized, could result in material damage or a moderate injury.**

 **DANGER**	Never use the input and output signals of the unit for operations that may threaten human life or cause damage to systems.
	Turn off the power supply when you set up the unit, connect new cables, or perform maintenance or inspections. Failure to do so could cause electric shock or damage to the unit.
	Never touch any terminals while the power is on. Otherwise, electric shock may occur.

 **CAUTION**	Periodically check that the terminal screws on the power supply terminal block and mounting nuts are firmly tightened. Using the unit with loose screws may result in fire or malfunction.
	Connect the cables correctly to the terminals of the TS Series unit in accordance with the specified voltage and wattage. Failure to supply the correct voltage or wattage, or improper cable connection may cause fire, malfunction, or damage to the unit
	Do not attempt to repair, disassemble, or modify the unit Series SQ-2, SQ-4 o SQ-8, Manvia is not responsible for any damages resulting from repairs, disassembly, or modification by unauthorized personnel.
	Do not use sharp-pointed tools to press touch screen. Doing so may damage the screen.
	Only personnel who possess the required knowledge and technical skills are authorized to set up the unit, connect the cables, and perform maintenance and inspections.

1 APPLICATIONS

The SQ-2, SQ-4 and SQ-8 Sequencers offer the possibility of measuring up to 8 samples with a single sodium or silica analyzer. In addition the SQ-4 and SQ-8 can manage the measurement of two analyzers simultaneously.

2 SPECIFICATIONS

Number of samples	SQ-2, maximum 2 SQ-4, maximum 4 SQ-8, maximum 8
Number of analyzers	SQ-2, maximum 1 SQ-4, maximum 2 SQ-8, maximum 2
Inputs from the Analyzer	Digital input to indicate end of analysis (Batch Mode). Digital input to indicate that the analyzer is in Calibration. Digital Input to indicate that the Analyzer is in Alarm. Analog input 4-20mA 37Ω.
Sequencer Outputs	Analog output for each sample Output Digital Alarm Analyzer Digital Output Status Sample Active
Operator Interface	Touch screen 4,3” color
Power	Input voltage 100-240 Vac 50/60Hz 120W
Dimensions	SQ-2 200x300x155 mm SQ-4 300x300x210 mm SQ-8 300x300x210 mm

3 GENERAL DESCRIPTION

3.1 Modes of Operation

The sample sequencer has two modes of operation programmed.

3.1.1 Batch mode

It is used for analyzers that take a sample, produce an analytical result and then emit a digital signal to indicate that the process has finished.

3.1.2 Continuous mode

It is used for analyzers that continuously produce an analytical result.

3.2 Inputs and Outputs

The sequencer has a variety of inputs and outputs available that we will describe below.

3.2.1 Analog inputs

There is an analog input for the SQ-2, and two for the SQ-4 and SQ-8, which allow reading 4-20mA signals from the analyzers.

The sequencer converts these analog signals into engineering units, represents the values on the screen and outputs these same values through the analog outputs (a specific range can be established for each analog output), converted into 4-20 mA signals.

3.2.2 Digital Alarm Input

Up to two digital alarm inputs are available. One per analyzer, the total number depends on the sequencer model.

These inputs are used to pick up the alarm from the analyzer. An analyzer alarm will cause the description to be displayed on the sequencer screen. In turn this alarm will cause the alarm output of the sequencer to be activated.

The appearance of the alarm from the analyzer and its permanence for a configurable time (1 minute predetermined), causes the sampling of that line is finished, its valve is closed and the

programmed sequence, is continued to the next sample. This sequence will continue to occur indefinitely, until for some of the samples, the alarm disappears. This alarm, is usually associated with the loss of flow in the sample, but it can occur due to any other type of failure of the analyzer, which does not allow to guarantee a correct measurement.

3.2.3 Digital Input Calibration

There is one calibration input per analyzer. These inputs are used to indicate that the analyzer is performing a calibration.

When this signal is received the sequencer stops the sequence until the indication is cleared. At this point the sequence continues where it stopped.

3.2.4 Batch Digital Input.

An input per analyzer, will indicate the end of the measurement if it is working in Batch mode.

3.2.5 Digital outputs. Valves

Up to 8 valves (SQ-8) can be operated, distributed between 2 analyzers in any combination.

3.2.6 Analog Outputs

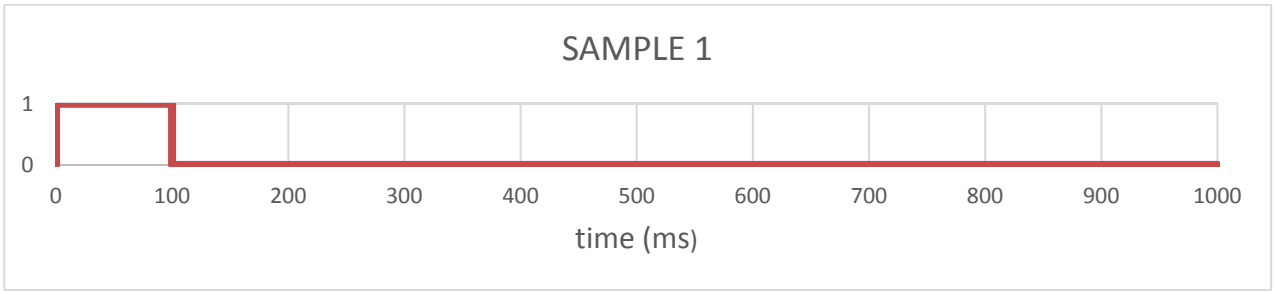
The sequencer has up to 8 analog outputs. These outputs are 4-20 mA outputs. When a valid reading of the analyzer is taken for a given sample, the Sequencer updates the corresponding signal at the appropriate output. When the sample is not currently being analyzed, the Sequencer maintains the corresponding signal at the appropriate output at its last known value.

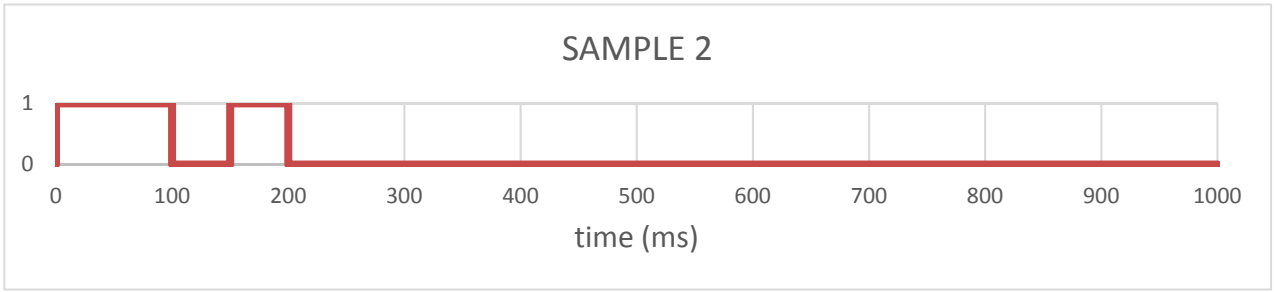
The values are not taken into account in case of alarm.

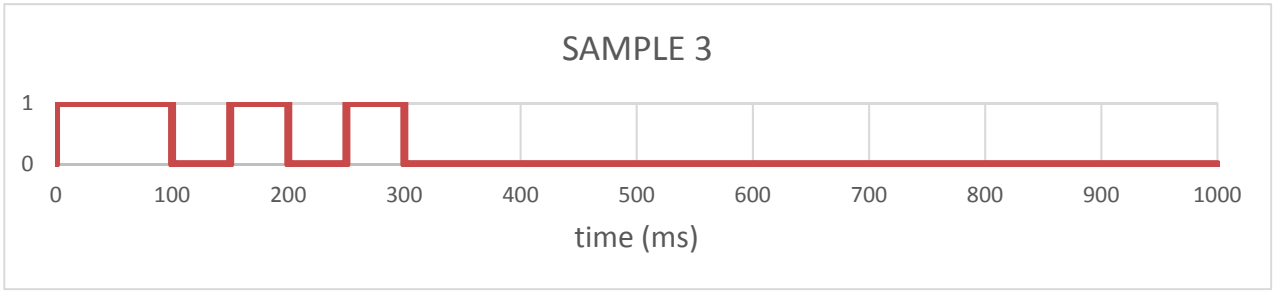
3.2.7 Digital Outputs

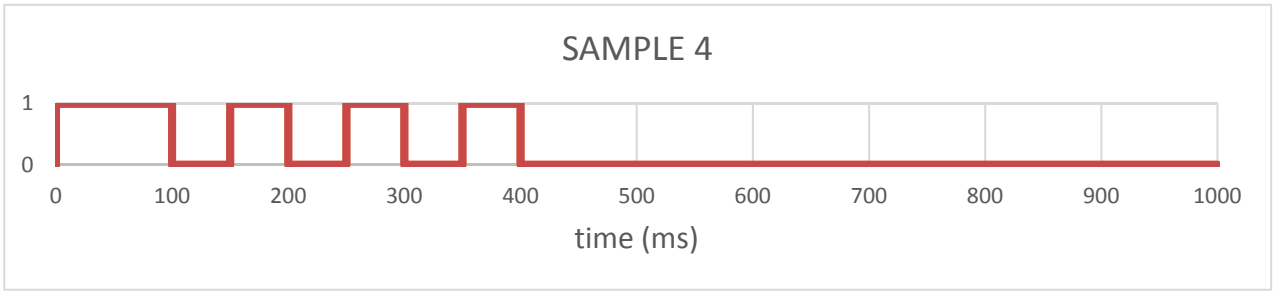
The sequencer, has a fault alarm output, for each analyzer and a sample status signal, for each analyzer. The alarm output, replicates the analyzer's alarm and the status output, indicates the active sample for each analyzer, with a pulse code.

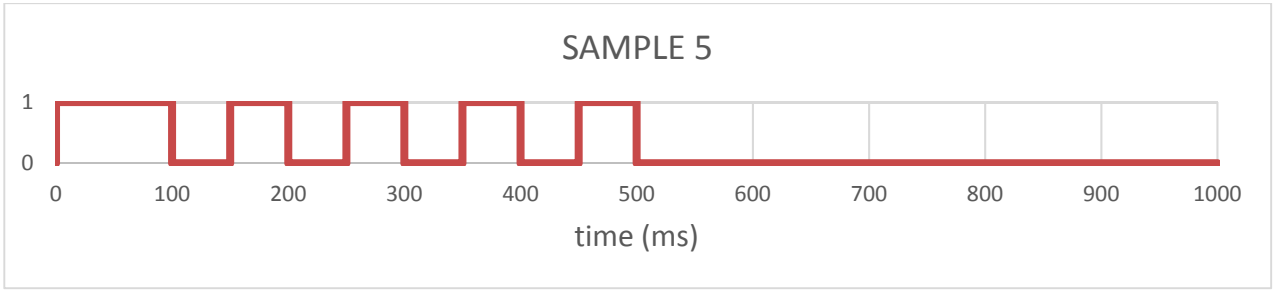
This pulse code, always starts with a rising edge, that lasts 100 ms, followed by a falling edge of 50 ms and then, ascending pulses of 50 ms, separated at 50 ms intervals, having as many pulses as the correlative number of the sample minus one , as shown in the following graphs:.

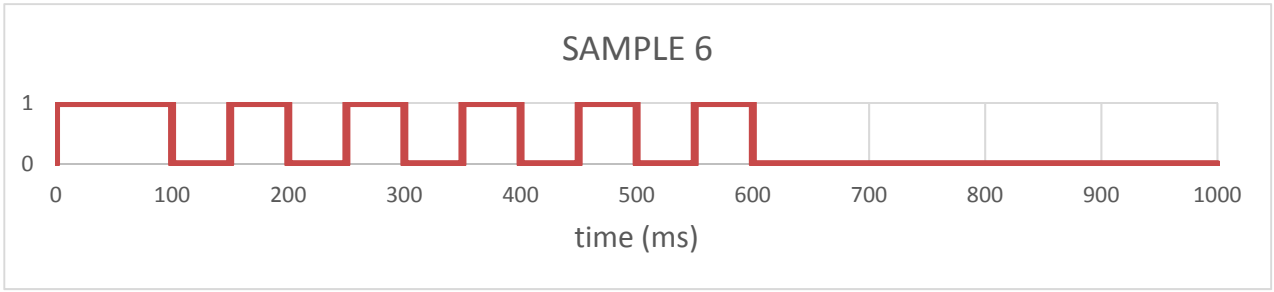


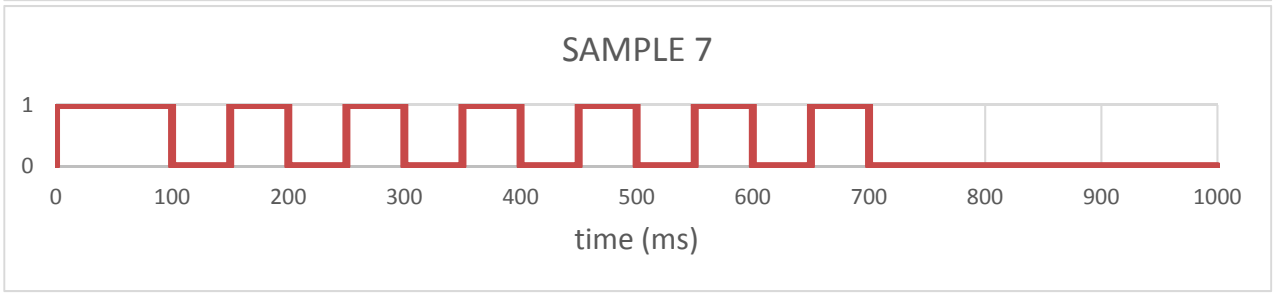


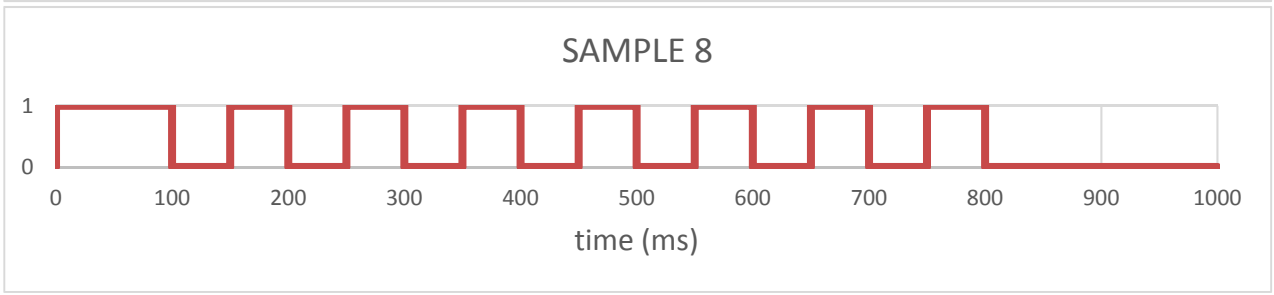





SAMPLE 5
1
0
0 100 200 300 400 500 600 700 800 900 1000
time (ms)

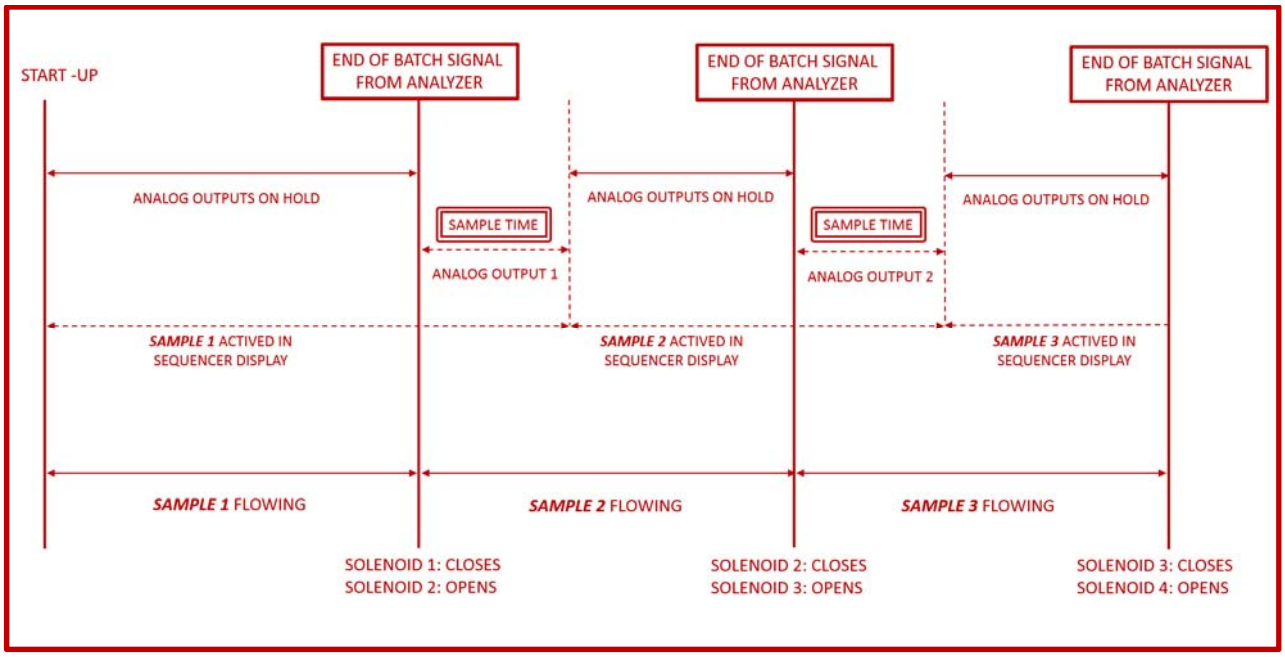

SAMPLE 6
1
0
0 100 200 300 400 500 600 700 800 900 1000
time (ms)


SAMPLE 7
1
0
0 100 200 300 400 500 600 700 800 900 1000
time (ms)

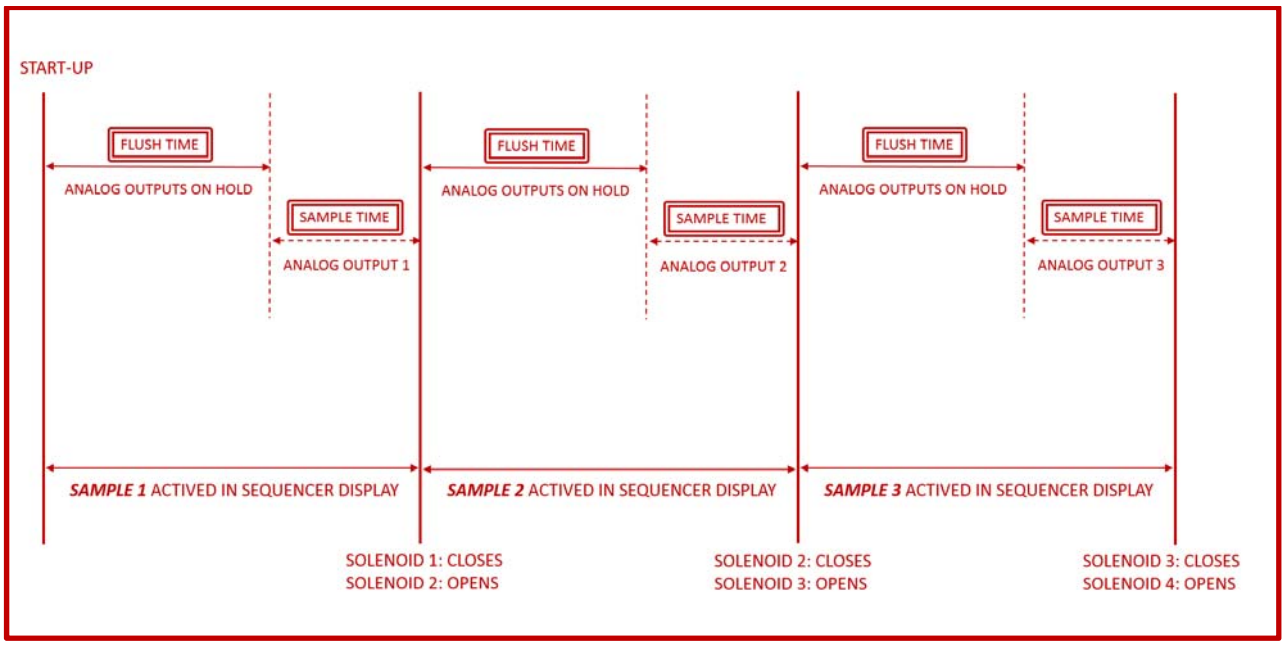

SAMPLE 8
1
0
0 100 200 300 400 500 600 700 800 900 1000
time (ms)

3.3 Operation mode chronograms

3.3.1 Batch mode



3.3.2 Continuous mode

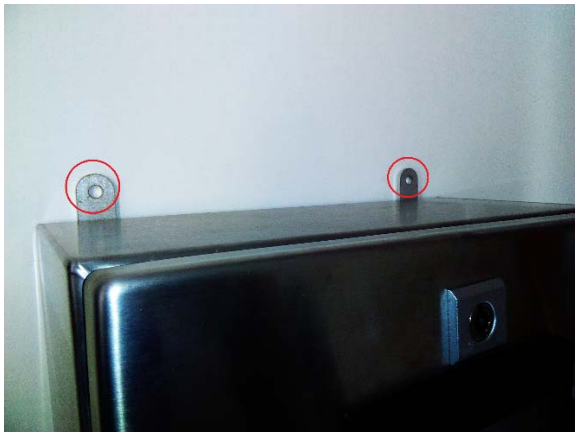


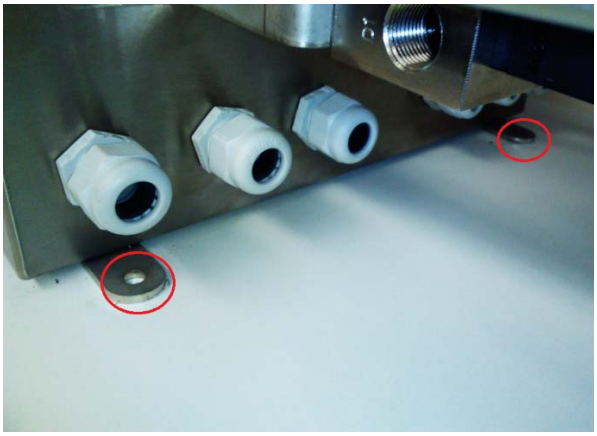
4 INSTALLATION

CAUTION: The necessary protective equipment must be used in order to avoid knocks, cuts and entrapments during installation. Follow this procedure for correct installation:

4.1 Mechanical

This device incorporates four brackets in order to fix it to a vertical wall. The sequencer must be mounted in vertical position, using four M-6 bolts in order to fix it to a smooth and bare wall.





If manifold is not integrated in controller structure, this must be fixed as close as possible to controller in order to minimize response times and cable and tubing paths. The manifold body incorporates four holes for M-6 screws in order to fix it.

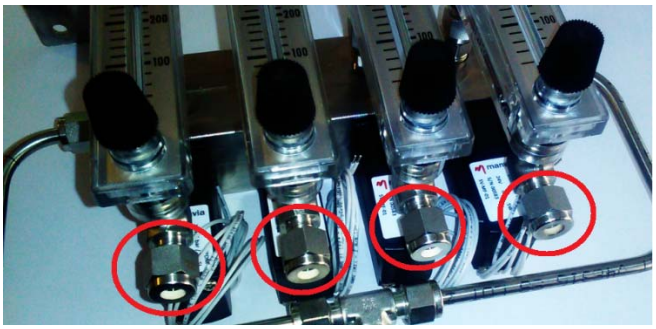
4.2 Process connections

4.2.1 Sample inlet connections

There are two types of possible sample inlet connections to manifold: Connections to rotameter inlets and directly to valves inlet in case of manifold without rotameters.

The number of connections varies from two to eight as maximum.

Connections are 1/4” OD for manifolds that incorporates rotameters:



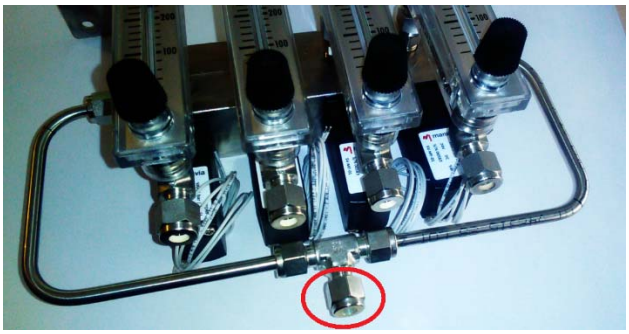
Connections are 1/8” NPTF for manifolds without rotameters:

Sample outlet tubes length must be as short as possible, in order to avoid excessive response time.

4.2.2 Sample outlet connections

There are only two possibilities: One sample outlet or two sample outlets. It depends on the number of analyzers associated to sequencer.

In any case, connection type is 1/4" OD and is located in the lower part of the manifold. In case of two outlets, it will be required two independent valve blocks in manifold.



Sample outlet tubes length must be as short as possible, in order to avoid excessive response time.

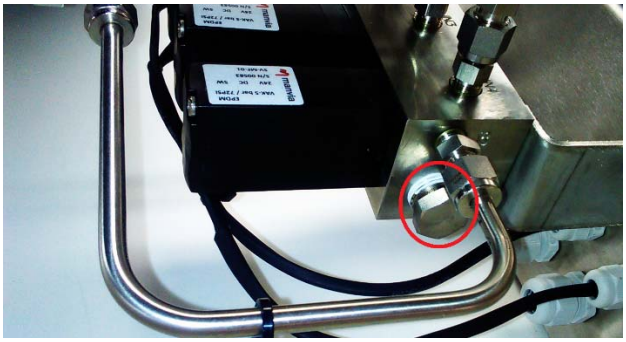
4.2.3 Drain connections

Depending on the number of associated analyzers, the number of drain connections will be one or two.

Connections type is 3/8" NPTF and is located in the left side of valves block for manifolds with only one drain connection and in both sides for manifolds with two drain connections.

Drain tubes length must be as short as possible, and minimum size 3/8" OD in order to avoid backpressure in valves block.

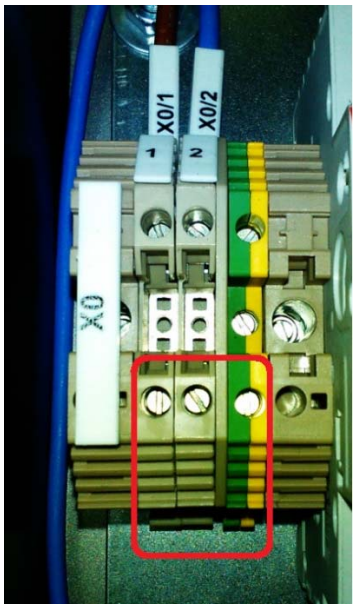
Not used drain connections are plugged to avoid undesired leaks.



4.3 Electrical connections

4.3.1 Power supply connection

Sequencer must be electrically supplied by connecting power supply cable to terminals X0. Required cable has to be three wires and size of wires must be 4 mm² or AWG 12 (L+N+PE). Before connect cable, voltage supply must be checked and must be between 100-240 VAC 50/60 Hz.



M-20 gland must be used to pass the cable through controller box wall and when wires are connected, gland must be fitted to avoid cable movements.

4.3.2 Analogic input connections

Maximum of two analogic signals connection could be required depending on the sequencer model and associated analyzers number. Each analogic input has to be wired individually by means of two wires 2,5 mm² or AWG 14 shielded cable. Wires must be connected to X1 terminals as shown in attached electrical schemes for each sequencer model.

Cables must be passed through controller box wall by means of M-16 glands and when wires are connected, gland must be fitted to avoid cable movements.

4.3.3 Digital input connections

All digital inputs from the same analyzer must be wired by using an only cable with the desired number of wires, up to four wires as maximum for three signals. In the case of two analyzers associated to the same controller, two cables are required. Wires must be connected to X1 terminals as shown in attached electrical schemes for each sequencer model.

Cables must be passed through controller box wall by means of M-20 glands and when wires are connected, gland must be fitted to avoid cable movements.

4.3.4 Analogic output connections

Analogic outputs must be wired individually by using two wires 2,5 mm² shielded cables. Wires must be connected to X1 terminals as shown in attached electrical schemes for each sequencer model.

Cables must be passed through controller box wall by means of M-16 glands and when wires are connected, gland must be fitted to avoid cable movements.

4.3.5 Digital output connections

All digital outputs regard to the same analyzer must be wired by using an only cable with the desired number of wires, up to three wires as maximum for two signals. In the case of two analyzers associated to the same controller, two cables are required. Wires must be connected to X1 terminals as shown in attached electrical schemes for each sequencer model.

Cables must be passed through controller box wall by means of M-20 glands and when wires are connected, gland must be fitted to avoid cable movements.

4.3.6 Solenoid valve connections

In the case of not integrated manifolds with the controller, valves have to be wired from manifold to controller. Each valve must be wired individually by using the valve cables included in the manifold supply. Wires must be connected to X1 terminals as shown in attached electrical schemes for each sequencer model.

Cables must be passed individually through controller box wall by means of M-12 glands and when wires are connected, gland must be fitted to avoid cable movements.

For the case of integrated manifold with the controller, valves have been connected previously to sequencer shipment and is not required to do any connection.

5 OPERATION

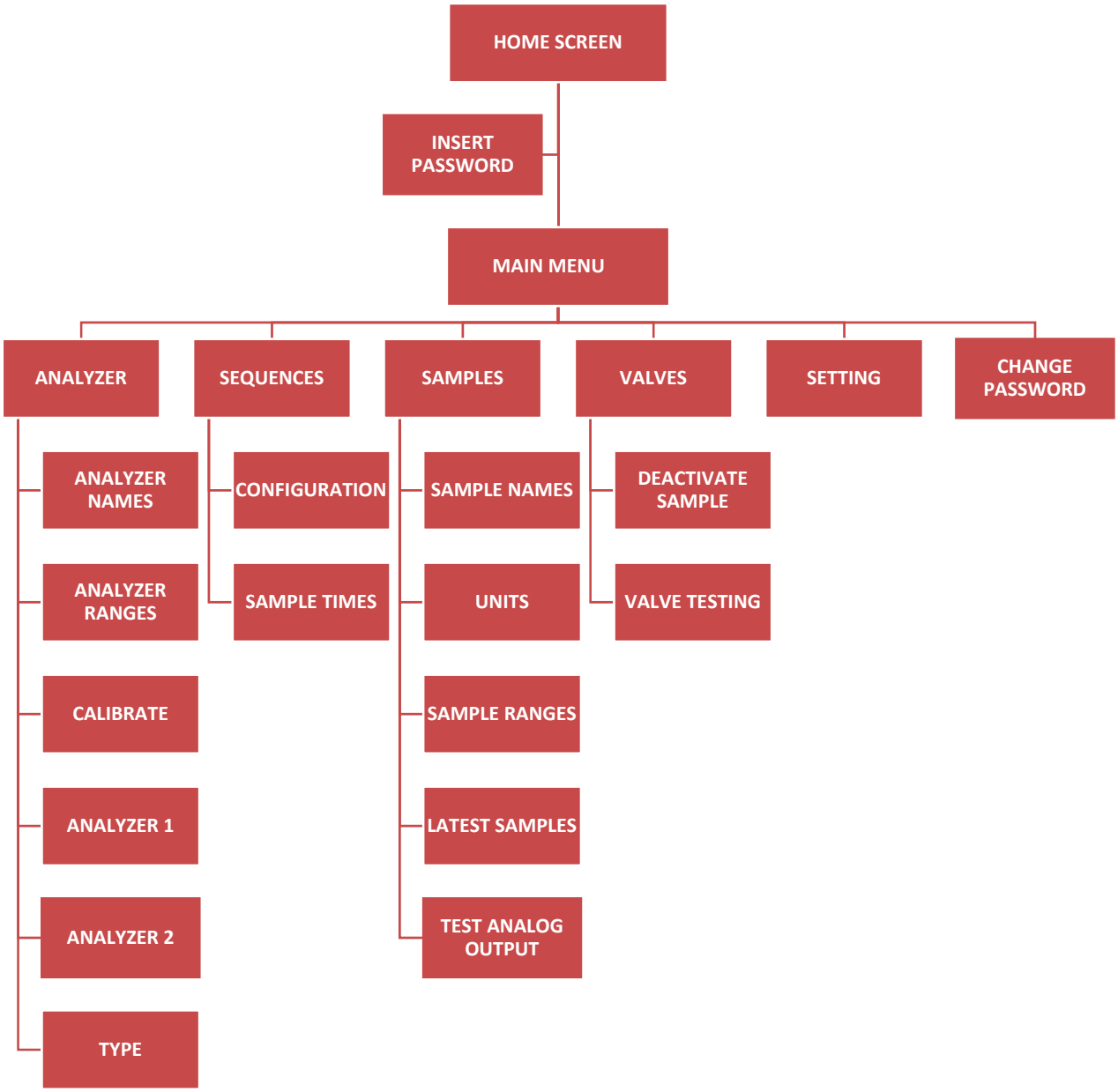
5.1 Description panel operation

From the home screen when clicking on MENU command button, will take us to the sequencer main menu.

With the ESC button located in the lower right corner, you can return to the initial screen.

Several screens, will have an alphanumeric keypad to enter data. Use this keypad to enter the required data. Press the ENTER button, when finished or the ESC button, to exit without making changes.

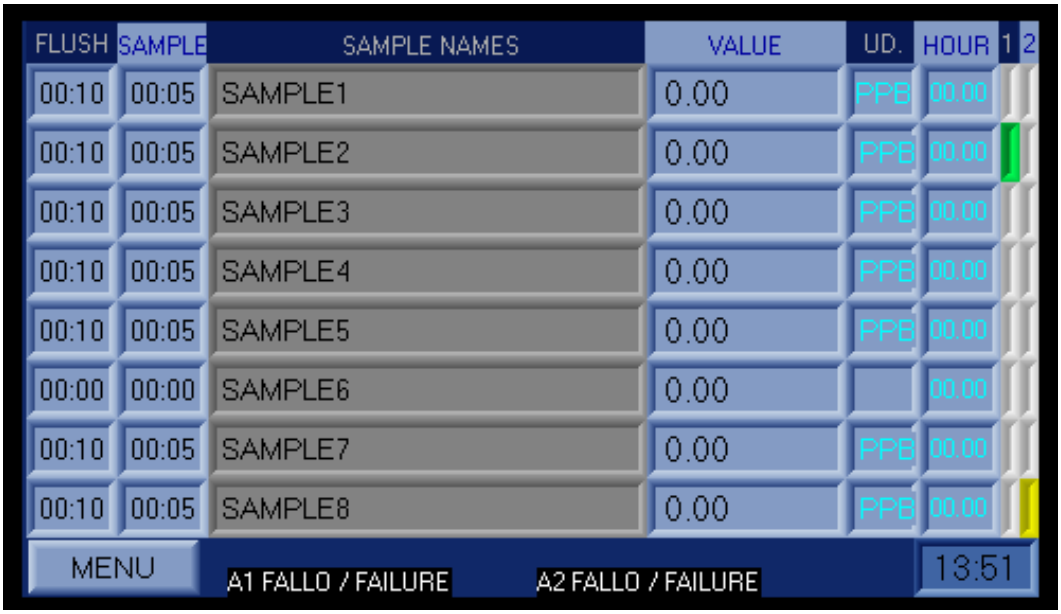
5.2 Screen navigation scheme



5.3 Home screen

This is the screen in which the Sequencer starts. In it, you can see the status of every sample. Also, it can be seen, flushing time and sampling time (only in continuous mode) value, time of last measured sample and currently active sample.

By means of a green box indicates the sample that is in process in the analyzer 1, and with a yellow box in the analyzer 2



The alarm / fault indication messages of each analyzer are displayed as:

- A1 CALIB. ON: Active calibration in Analyzer 1
- A1 FAILURE / A1: failure in Analyzer 1
- A2 CALIB. ON: Active calibration in Analyzer 2
- A2 FAILURE / A2: failure in Analyzer 2

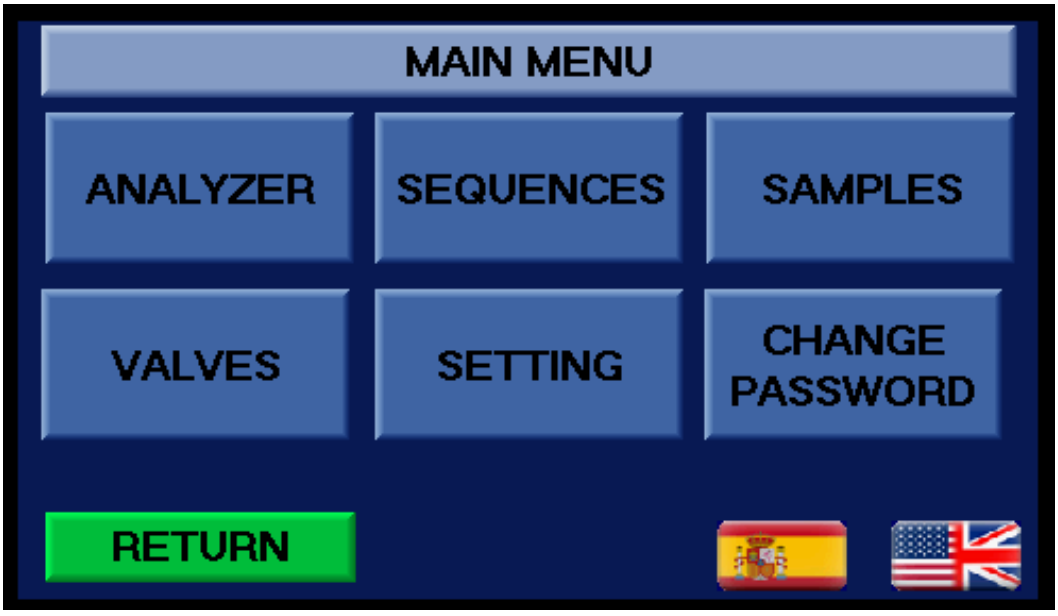
From this screen, we can access the rest of the sequencer configuration, by pressing the MENU button.

Then, we will be asked for a password. By default it is 00000. We validate with the VALIDATE button.

Once the password is entered, it will remain active until 5 minutes without interacting with the screen have gone.

5.4 Main Menu

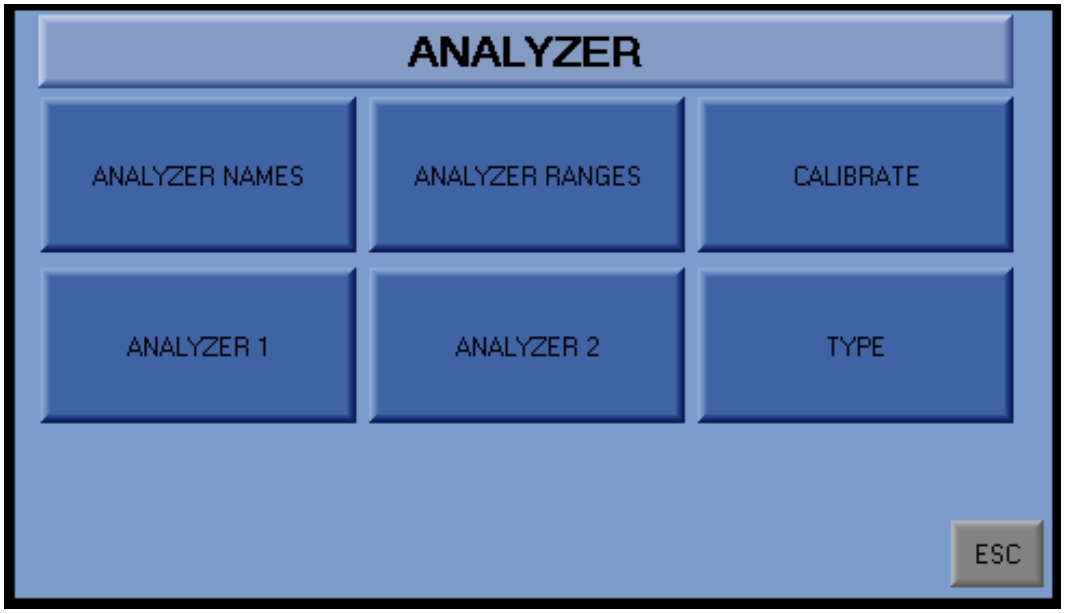
From this screen, we can access to other menus as Analyzer, Sequences, Samples, Valves, Setting and Change Password. Also in this menu, we can change the language.



5.4.1 Analyzer

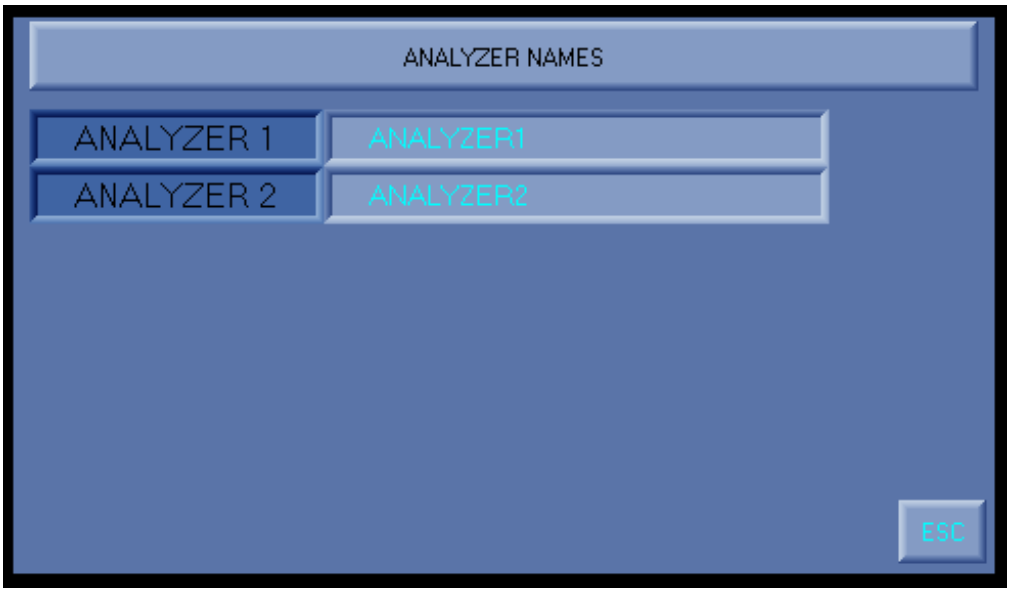
From this screen we access

- Analyzer Names: We configure the name assigned to each Analyzer.
- Analyzer Ranges: We can adjust the range of the analog signal of each Analyzer.
- Calibrate: In order to set the low (4mA) and high (20mA) values of the analog inputs from the Analyzers.
- Analyzer 1: Graphics and performance data of Analyzer 1.
- Analyzer 2: Graphics and performance data of Analyzer 2.
- Type: Allows to choose the operation mode.



5.4.1.1 Analyzer names

In this screen, we enter the name of each analyzer, which will be replicated in the screens that make reference to the same one.

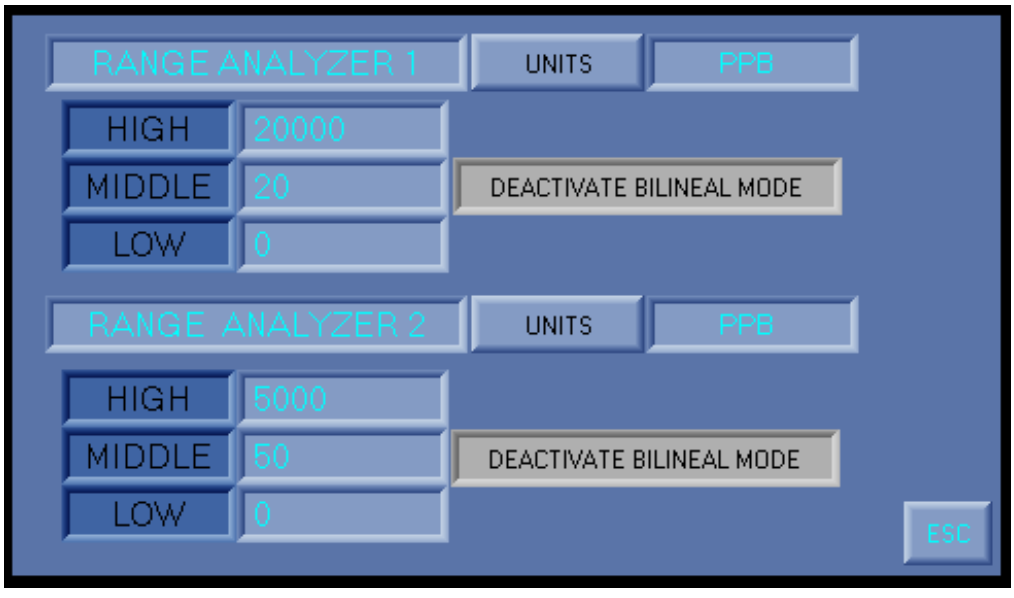


5.4.1.2 Analyzer Ranges

In this screen, we introduce the ranges of the analog signal of each Analyzer.

- Range High value for 20mA.
- Range Low value for 4mA.
- Medium range value for 12mA (only for bilinear mode).

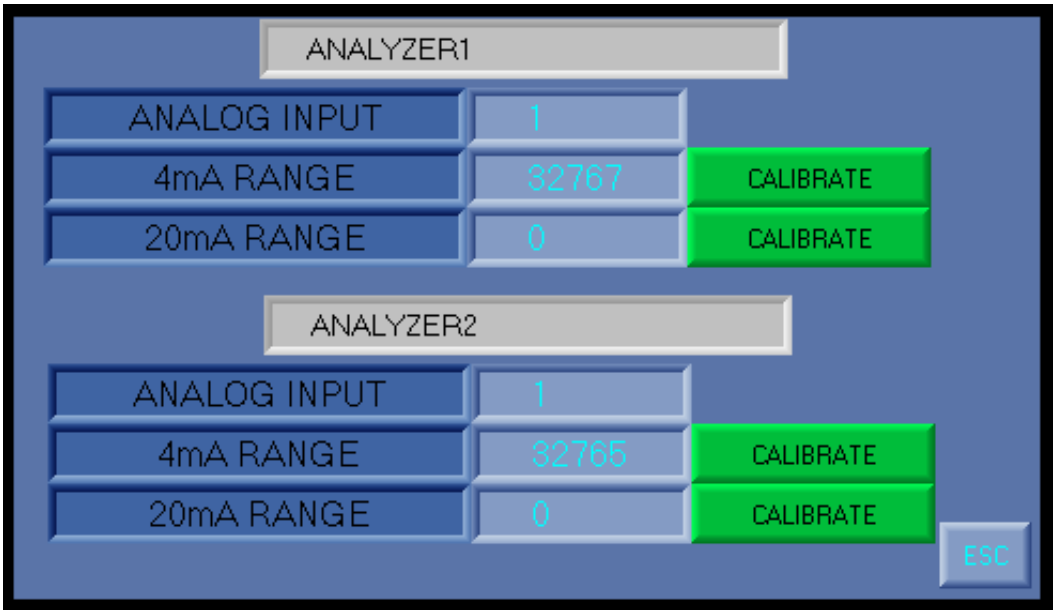
The Bilinear mode can be activated / deactivated (from 4mA to 12 mA low range, from 12mA to 20mA high range) by pressing command button for every analyzer. Also the units of measure can be introduced for each Analyzer.



5.4.1.3 Calibrate

From this screen, we can calibrate the analog inputs of each Analyzer. Standard values are:

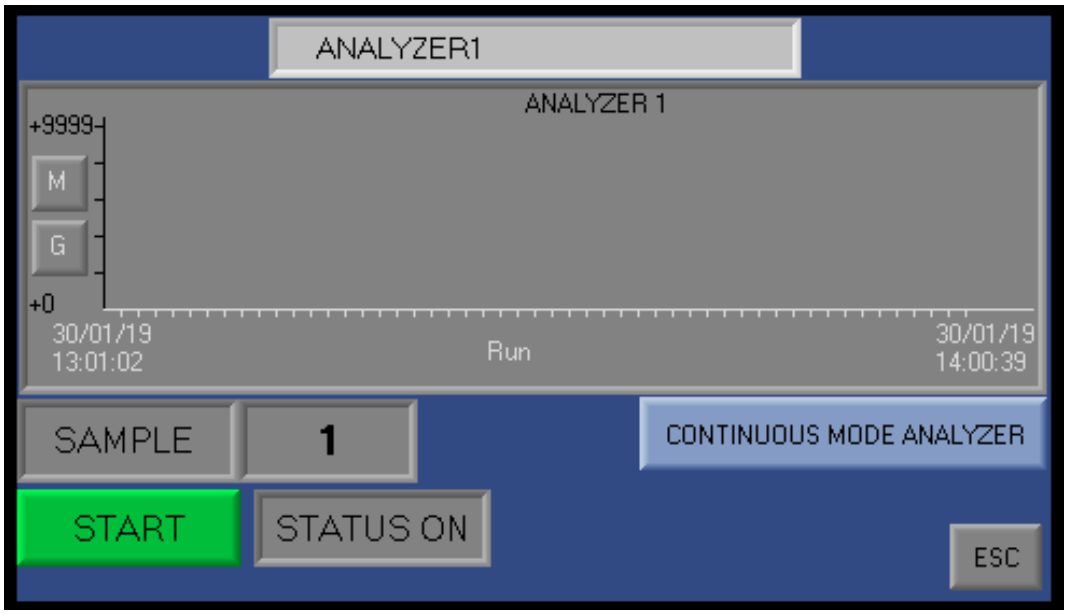
- 4mA :=3277
- 20mA := 16383



5.4.1.4 Analyzer 1 / Analyzer 2

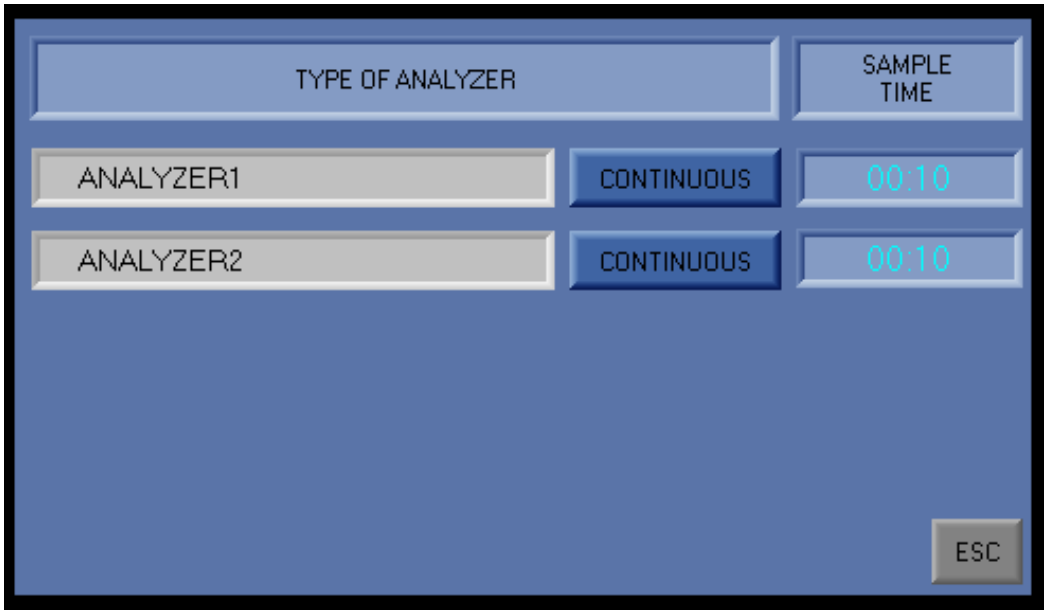
In this screen, we can see the trend curve of the analog signal of the analyzer and the number of sample that is analyzing.

By pressing the START / STOP button, you can start or stop sampling.



5.4.1.5 Type

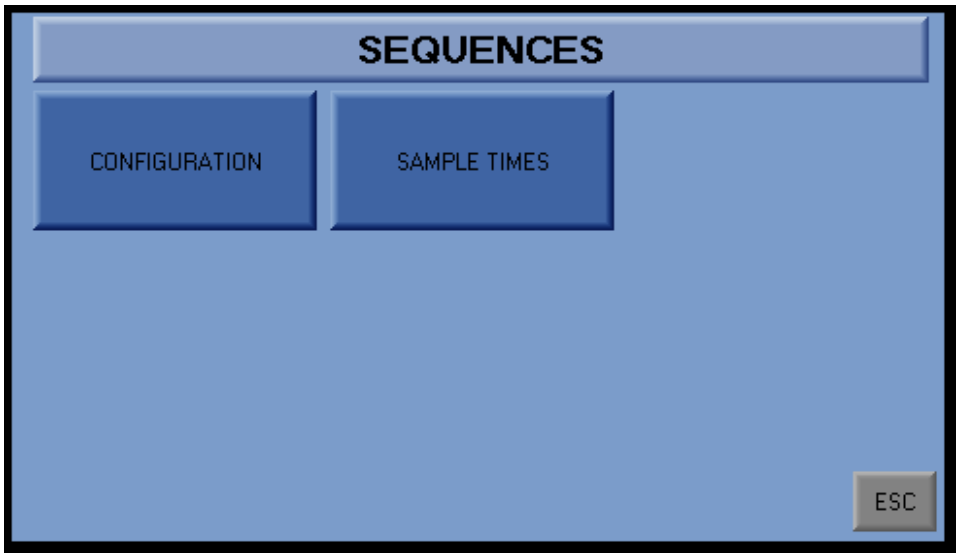
From this screen select the mode of operation of the Analyzers: Continuous or Batch



5.4.2 Sequences

From this screen we access to:

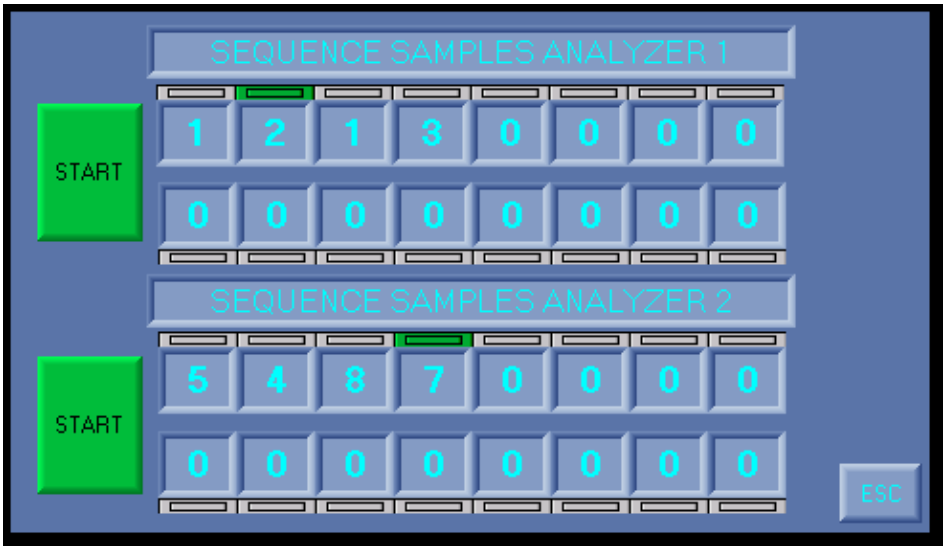
- *Configuration:* In order to define, the sequences of the samples of the Analyzers
- *Sample Times:* In order to specify the flushing and analysis times for each sample.



5.4.2.1 Configuration

In this screen, we can specify up to a total of 16 positions per analyzer. In it, we will write the order, which we want the samples be sequenced.

By pressing the START / STOP button, we start or stop the sequence of each analyzer.



5.4.2.2 Sample Times

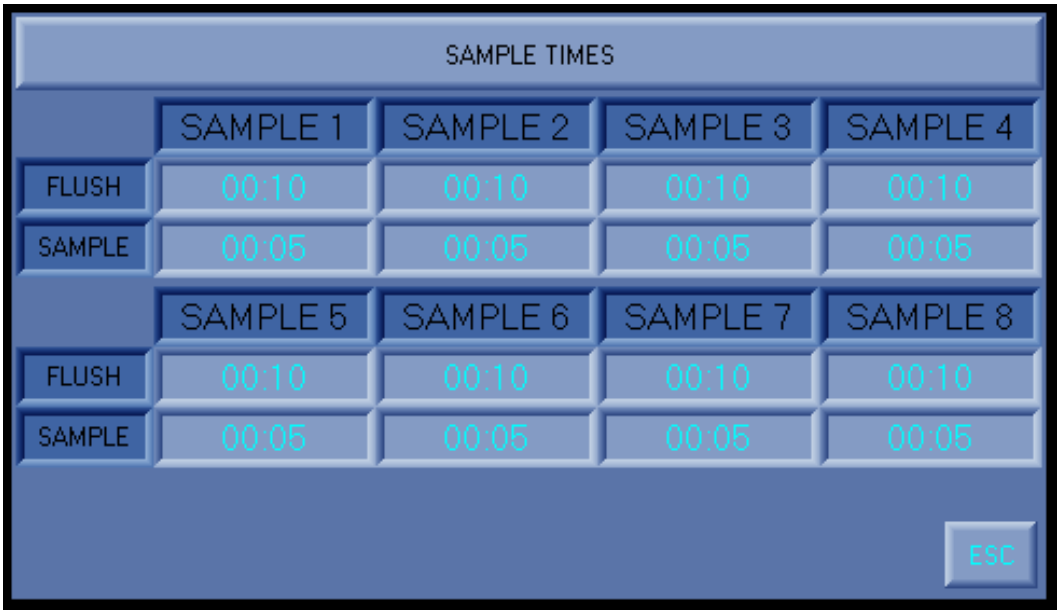
On this screen, the flush and Sample times are set. The maximum value that can be entered is 59 minutes and 59 seconds.

In continuous mode

- Flush: Time it takes to get the sampling line rinsed of previous sample.
- Sample: Time for the analyzer is performing a right measurement and the value is shown.

In Batch Mode

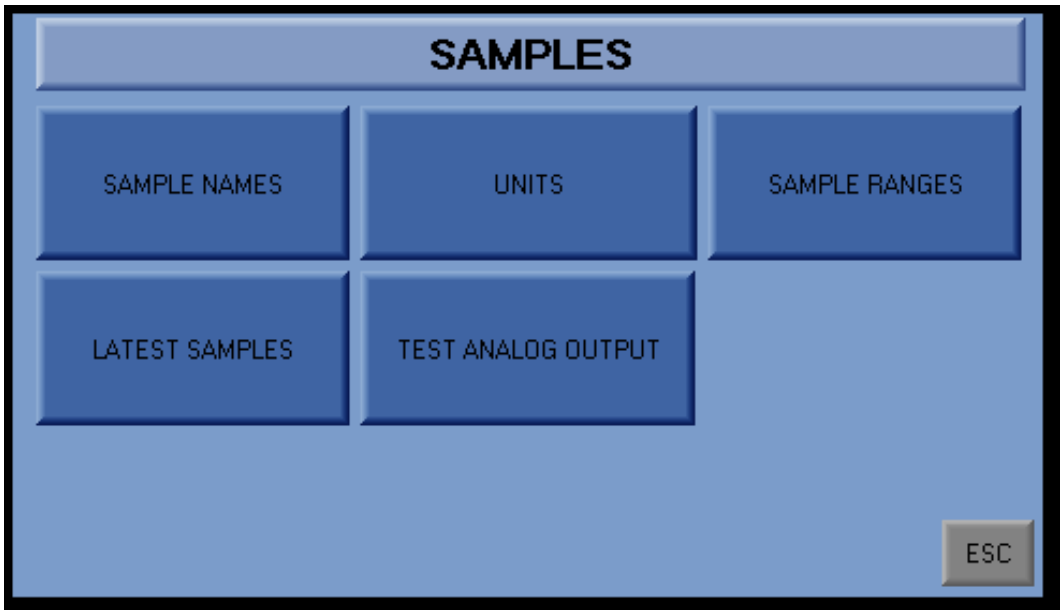
These times do not apply in this mode. The sample change, is performed only in case of receiving the Batch or Alarm signal from the Analyzer.



5.4.3 Samples

From this screen we access to:

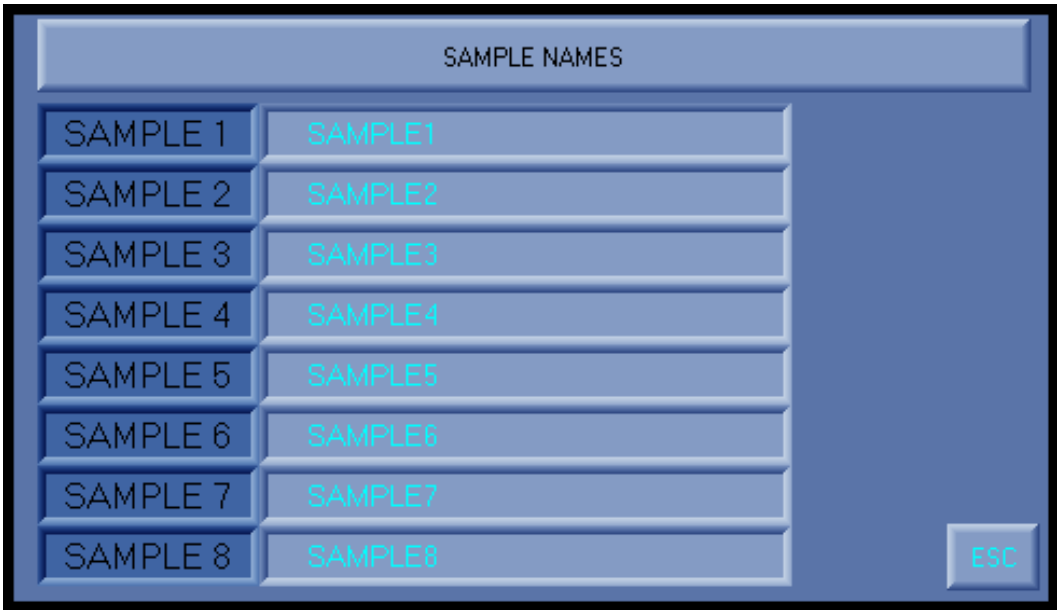
- *Sample Name: To* set the name that defines each Sample.
- *Units:* To define the engineering units of each Sample.
- *Sample Ranges:* To set the range of the analog output of each Sample.
- *Last Samples:* Here the last value taken from each sample is stored.
- Test analog outputs: Here is possible to manually modify the values of the analog outputs



5.4.3.1 Sample Names

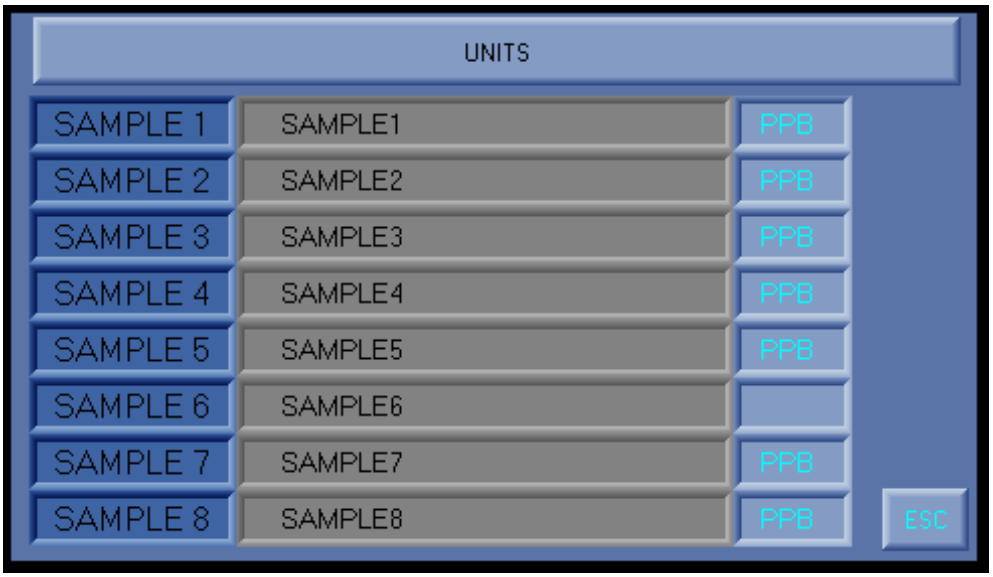
In this screen, we enter the name assigned to each sample. There are available 30 characters.

This name, will be reflected in the other screens where sample data are displayed.



5.4.3.2 Units

On this screen, the engineering units of each sample can be seen. They are defined or modified, in the Analyzer 1 and Analyzer 2 screens of the Analyzer menu, depending on which analyzer each sample corresponds to.



5.4.3.3 Sample Ranges

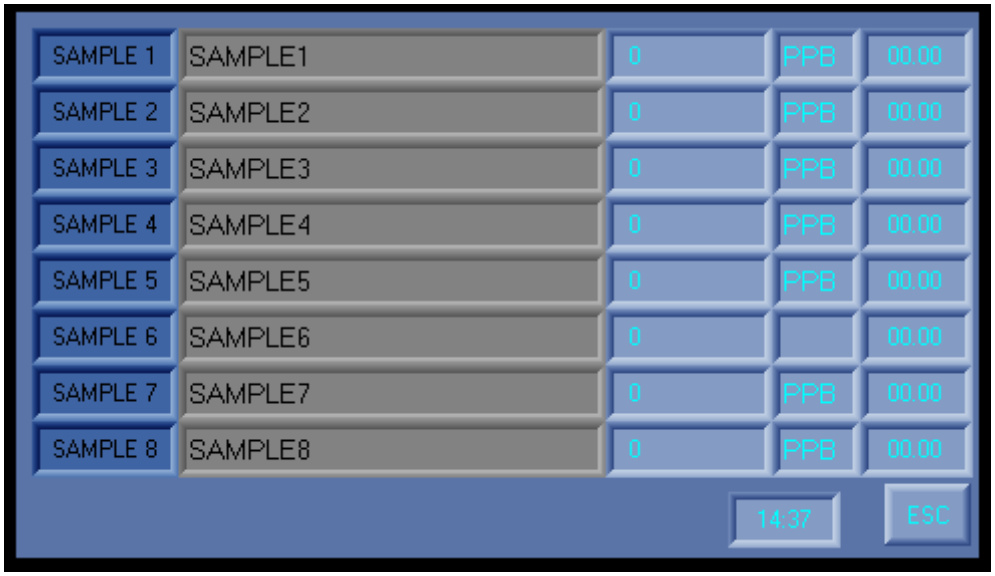
In this screen we introduce the high range and the low range corresponding to each analog output.

- Range High value for 20mA
- Range medium value for 12mA (if adjusted in 0, is not used).
- Range Low value for 4mA

5.4.3.4 Latest Samples

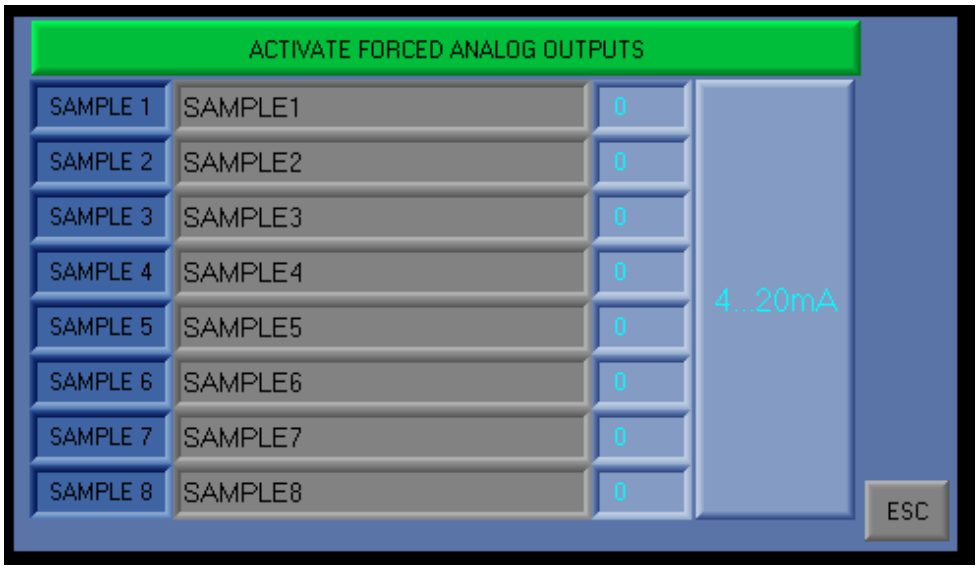
Here the information of the last analyzed samples is stored.

- Name of the sample.
- Last value.
- Units.
- Time of the last sample.



5.4.3.5 Test analog outputs

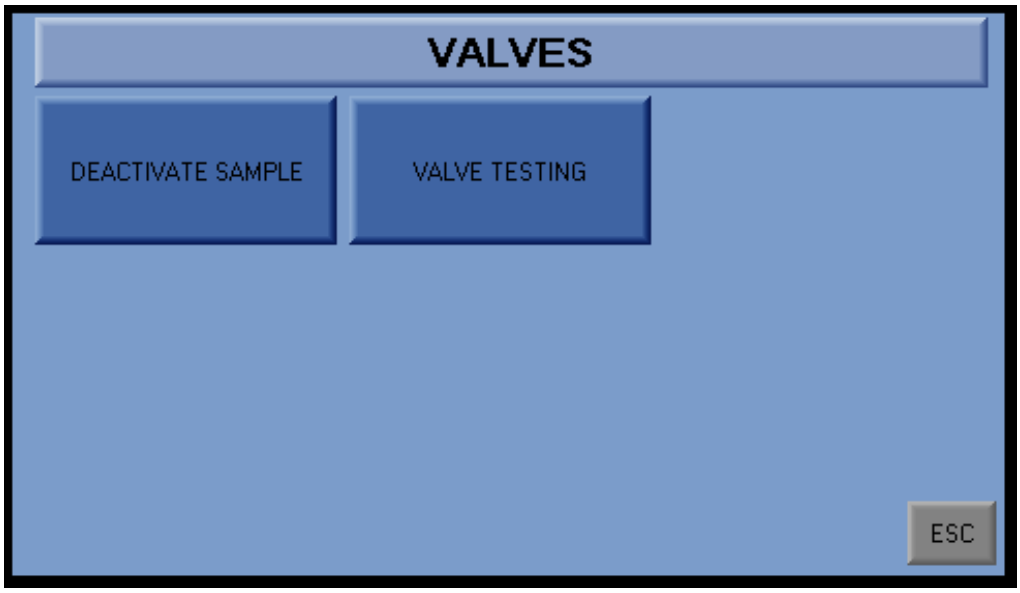
In this screen we can enter values from 4 to 20 mA, with the force button, these values will be written to the analog outputs.



5.4.4 Valves

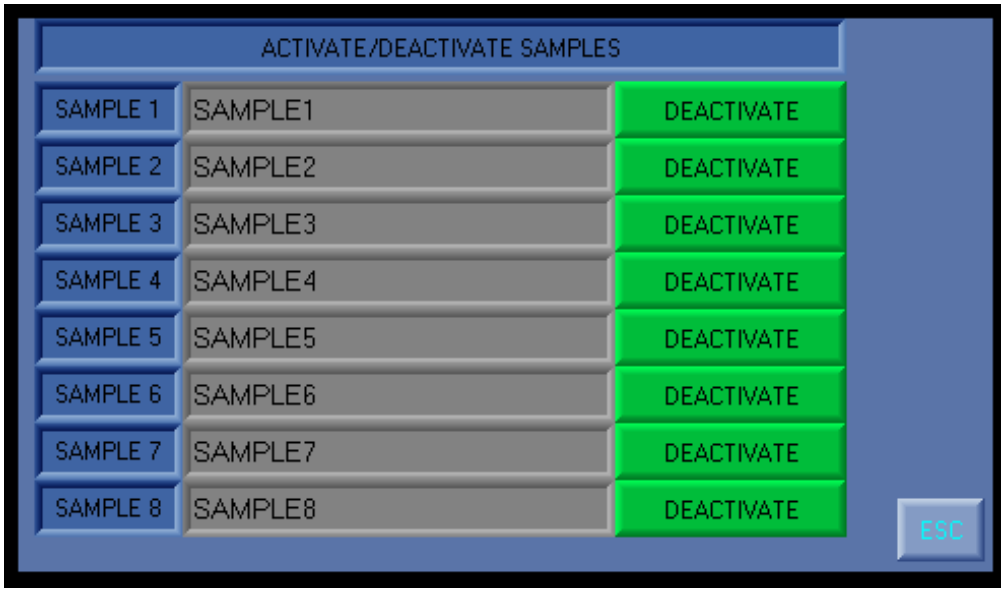
From this screen we access to.

- *Disable Sample:* To analyze and analyze multiple Samples.
- *Test Valves:* For testing the valves of each Sample.



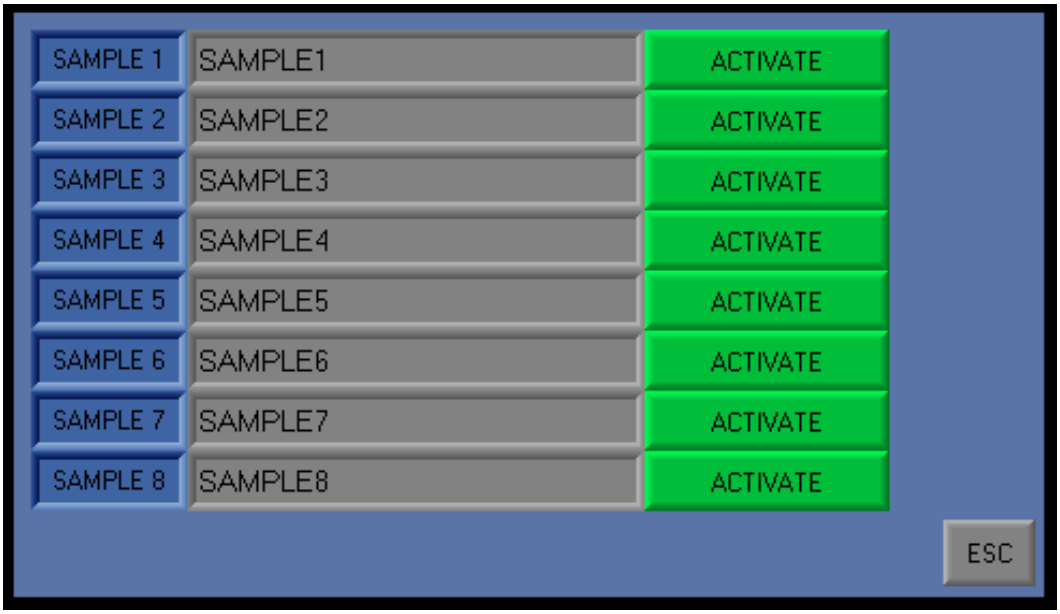
5.4.4.1 Disable Sample

If you want a line not to be sampled, it will be disabled from this screen. This is not taken into account in the sequence and skip to the next configured sample.



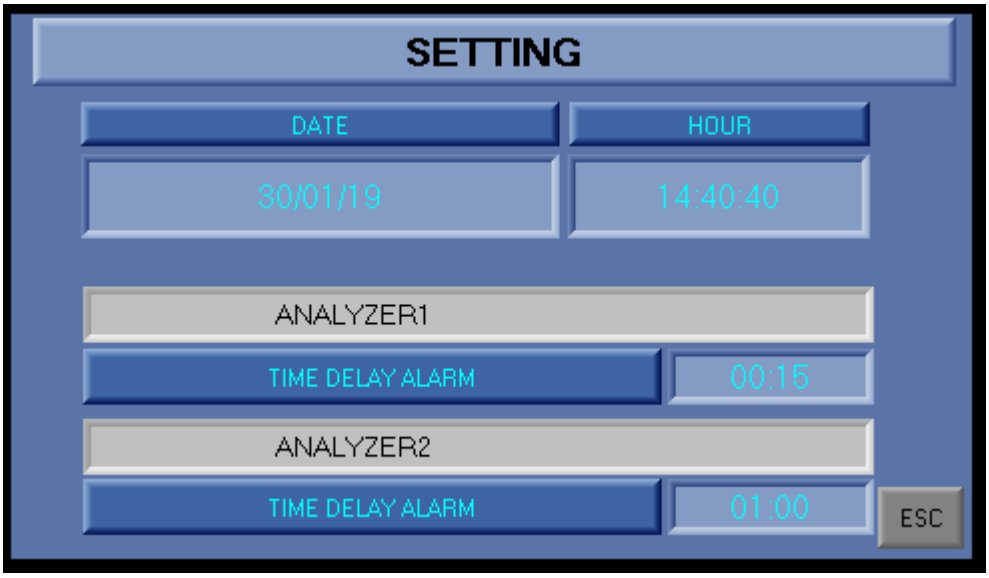
5.4.4.2 Testing Valves

In order to check the operation of the valves giving the samples to the Analyzers, this screen is used. From it, we can open / close each of the valves.



5.4.5 Settings

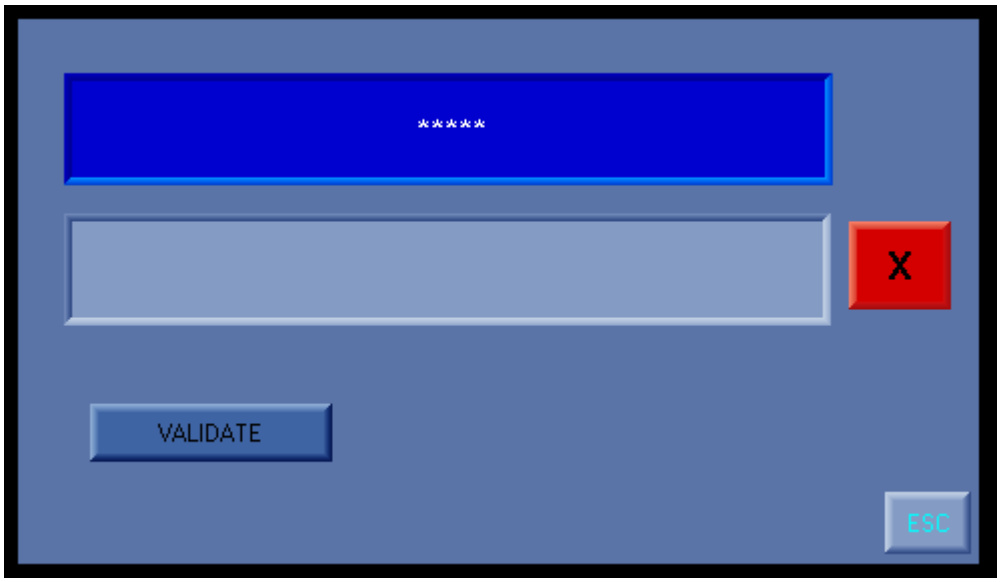
From this screen we can change the date and time of the sequencer and enter the alarm delay time for each Analyzer.



5.4.6 Change password

To change the password, you must enter the same password in both boxes, for confirmation. If they are different, the red button with the cross appears and although we validate, the password change will not be made.

If both are equal, when validating, the password change will be formalized.



6 MAINTENANCE

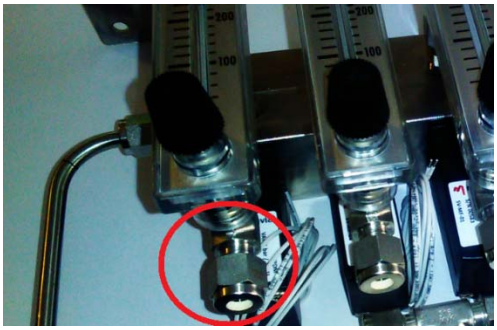
Sequencer when used for demineralized water analysis, doesn't require preventive maintenance (for other cases, it may require frequent cleaning of all components in the manifold block). Only in the case of fail of the flow control components is required to do maintenance operations.

6.1 Rotameter replacement

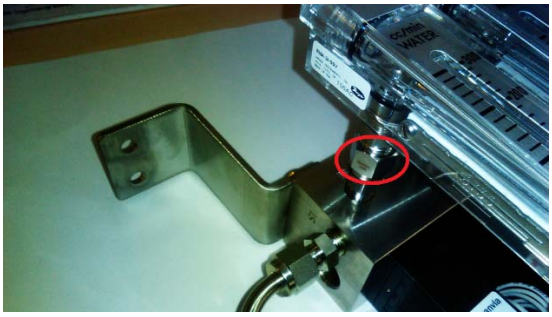
CAUTION: The necessary protective equipment must be used in order to avoid knocks, cuts and entrapments during installation.

- First of any other operation, it will be ensured that there is no flow in affected rotameter stream or in any other stream of the manifold, these lines must be blocked.

- Disconnect by using an appropriate wrench, the desired rotameter from the tubing (1/4” OD connection).



- Disconnect the rotameter from manifold body (1/4” OD connection).



- Disconnect both connection fittings (elbow and straight connector) from rotameter body.
- Insert o-rings supplied with new rotameter inside both rotameter connections.

- Connect both connection fittings from used rotameter in new rotameter connections.
- Connect the rotameter to manifold body (1/4" OD connection).
- Connect the new rotameter to the sample stream tubing (1/4" OD connection).
- Finally, enable sample flow, regulate it in the rotameter to 200 cm^3/min approximately and verify that there isn't any leak.

6.2 Solenoid valve replacement

CAUTION: The necessary protective equipment must be used in order to avoid knocks, cuts and entrapments during installation. Follow this procedure for correct installation:

- First of any other operation, it will be ensured that there is no power supply to solenoid valves. To ensure it, Q1 circuit breaker must disabled.

- Then, solenoid valve cable must be disconnected from terminals block X1 and the corresponding gland must be loosened, until remove cable is possible.
- After, remove solenoid valve connector and coil by unscrewing the two long screws. Remove valve and seals.

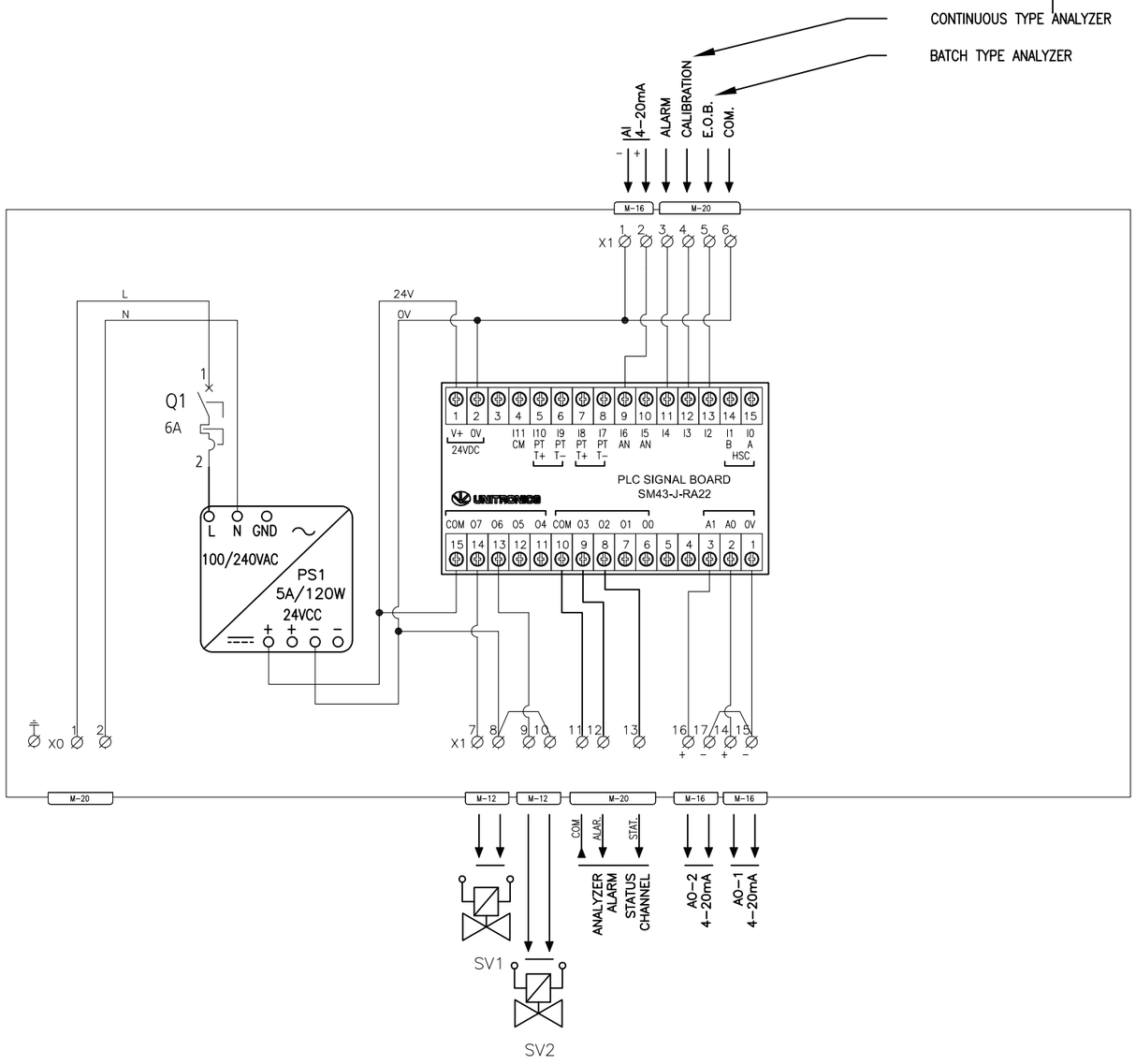
- Install new seals (supplied with valve) in valves block, and new coil and connector.
- Valve cable wires must be connected to X1 terminals as shown in attached electrical schemes for each sequencer model.

- Cable must be passed through controller box wall by means of an M-12 gland and when wires are connected, gland must be fitted to avoid cable movements.

6.3 Spare parts

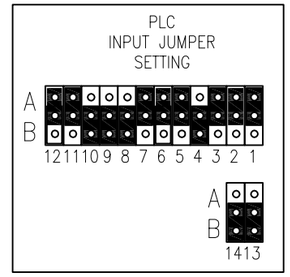
SECUENCER SPARE PARTS	
Part #	**Name**
SV-MF-01	Solenoid valve
FI-01	Rotameter w/regulation valve 20-300 ml/min

ANNEX 1. ELECTRIC SCHEMES



MATERIAL LIST

ID	QTY.	DESCRIPCIÓN	FABRICANTE	REFERENCIA
BOX	1	ENCLOUSURE AISI 304 300x200x155 IP66 TYPE 4X	RITTAL	AE 1002.600
Q1	1	CIRCUIT BREAKER 1P 6A Curve C,	ABB	S201 C6
PS1	1	POWER SUPPLY UNIT 24VDC 60W	PHOENIX CONTACT	2902992
PLC	1	PLC WITH 4.3" COLOR TOUCHSCREEN HMI AND ONBOARD I/O.	UNITRONICS	SM43-J-RA22
X1	18	TERMINAL WDU2,5 mm	WEIDMÜLLER	1020000000
PE/G	1	EARTH TERMINAL WPE2,5 mm	WEIDMÜLLER	1010000000
	2	TOP END WEW 35/2	WEIDMÜLLER	1061200000
	3	CABLE GLAND POL CAP–TOP M16 IP68	OBO	V–TEC VM16
	3	LOCKNUT M–16x1,5	OBO	116 M16 LGR PA
	3	CABLE GLAND POL CAP–TOP M20 IP68	OBO	V–TEC VM20
	3	LOCKNUT M–20x1,5	OBO	116 M20 LGR PA
	2	CABLE GLAND POL CAP–TOP M12 IP68	OBO	V–TEC VM12
	2	LOCKNUT M–12x1,5	OBO	116 M12 LGR PA



ELECTRICAL SCHEMATIC SEQUENCER SQ-2 (2 CHANNELS)

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
00	JUN-2019	INITIAL ISSUE	FJFB	IFA	IFA

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ORIGINAL EDITION				FORMAT	SCALE
DRAWN	FJFB			A-3	S/E
CHECKED	IFA				
APPROVED	IFA				

PROJECT: SWAS EQUIPMENT (SEQUENCER)

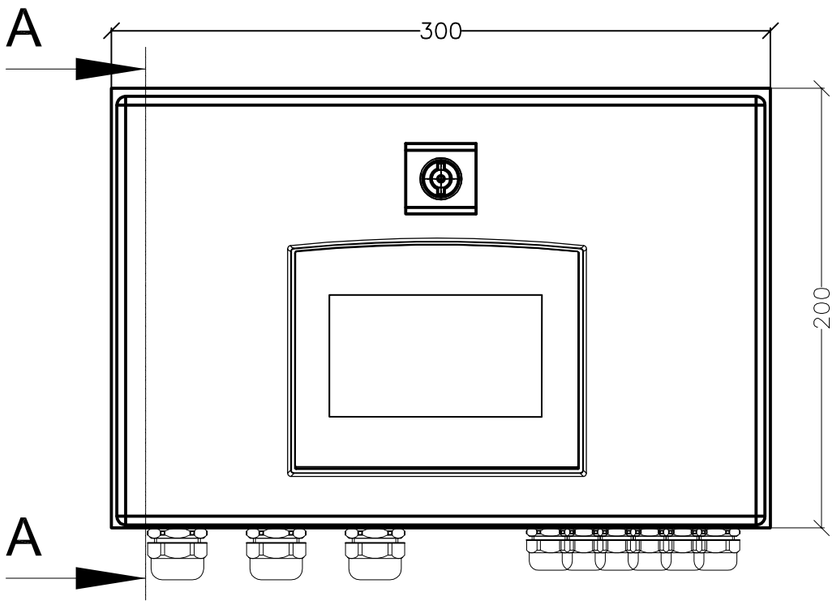
DRAWING Nr: DE-SQ

SHEET : 1

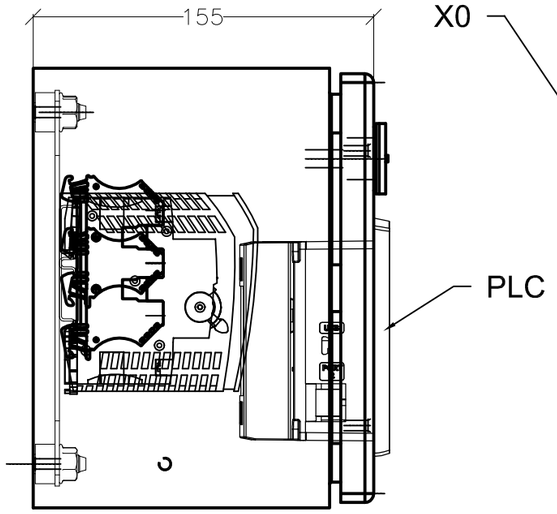
SHEET Nr: 6

DRAWING TITLE: ELECTRICAL SCHEMATIC SEQUENCER SQ-2, SQ-4 SQ-8 (2, 4, 8 CHANNELS)

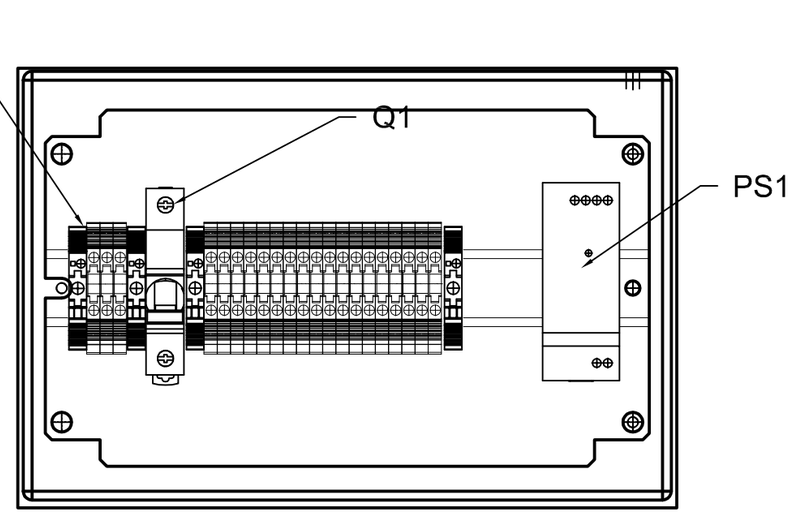
ELECTRICAL SCHEMATIC
SEQUENCER SQ-2
(2 CHANNELS)



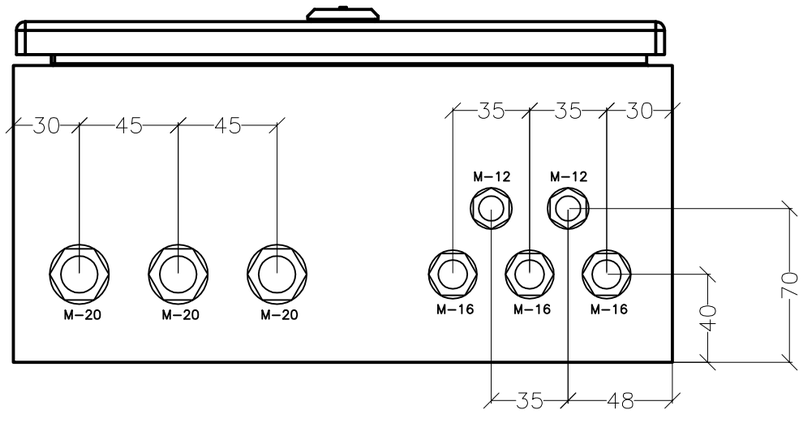
Front view



Side view
Section A-A



Mounting plate



Bottom View

00	JUN-2019	INITIAL ISSUE	FJFB	IFA	IFA
REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED

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FOR APPROVAL ☐	AS BUILT ☒		DRAWN	FJFB			A-3	S/E
			CHECKED	IFA				
			APPROVED	IFA				

PROJECT:

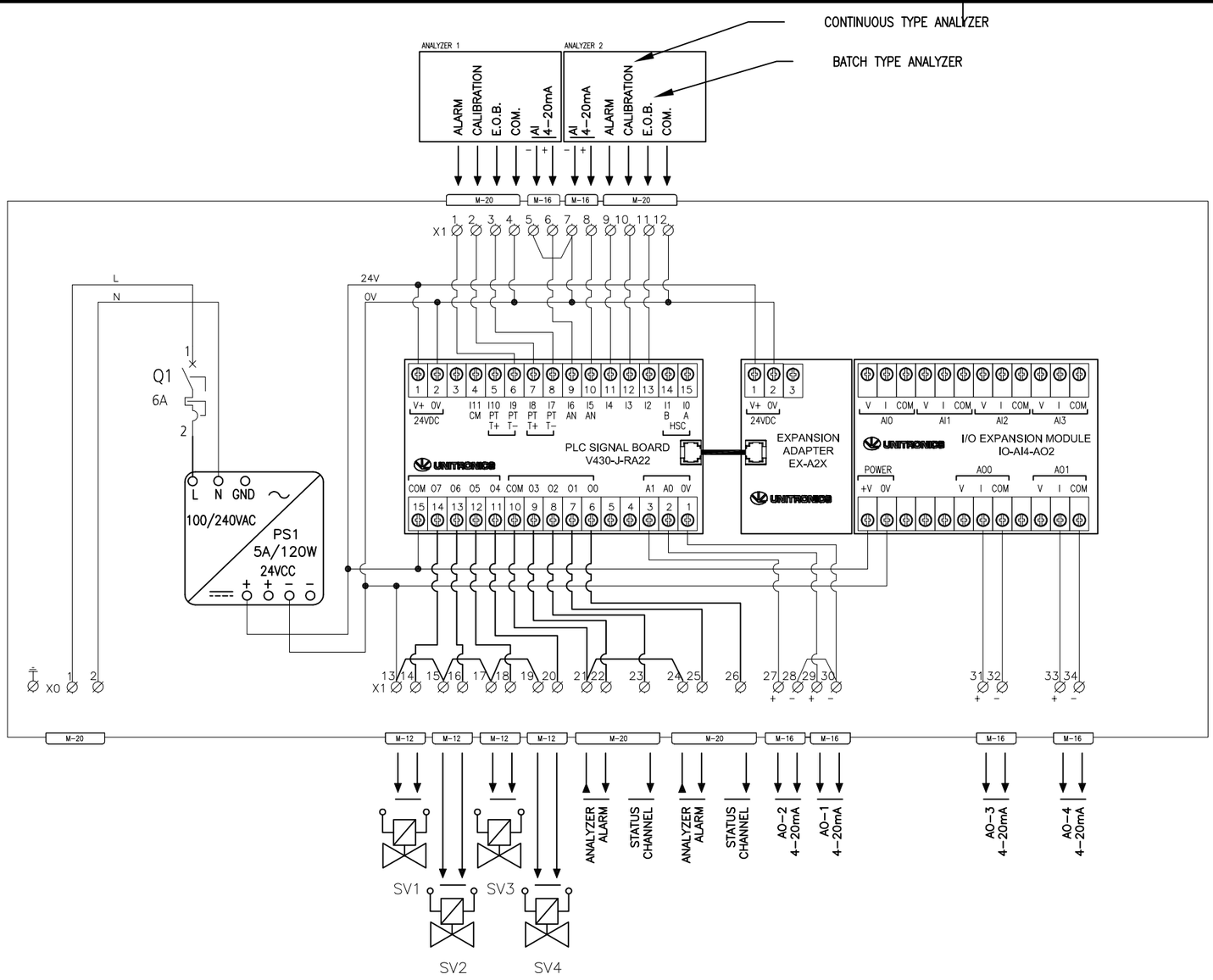
SWAS EQUIPMENT (SEQUENCER)

DRAWING Nr: DE-SQ

SHEET : 2

SHEET Nr: 6

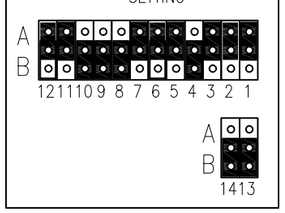
DRAWING TITLE:
ELECTRICAL SCHEMATIC SEQUENCER SQ-2, SQ-4 SQ-8
(2, 4, 8 CHANNELS)



MATERIAL LIST

ID	QTY.	DESCRIPCIÓN	FABRICANTE	REFERENCIA
BOX	1	ENCLOUSURE AISI 304 300x300x210 IP66 TYPE 4X	RITTAL	AE 1003.600
Q1	1	CIRCUIT BREAKER 1P 6A Curve C,	ABB	S201 C6
PS1	1	POWER SUPPLY UNIT 24VDC 60W	PHOENIX CONTACT	2902992
PLC	1	PLC WITH 4.3" COLOR TOUCHSCREEN HMI AND ONBOARD I/O.	UNITRONICS	V430-J-RA22
EX-A2X	1	EXPANSION MODULE ADAPTER	UNITRONICS	EX-A2X
AI4-AO2	1	EXPANSION MODULE 4 ANALOG INPUTS, 2 ANALOG OUTPUTS	UNITRONICS	IO-AI4-AO2
X1	2	TERMINAL WDU2,5 mm	WEIDMÜLLER	1020000000
PE/G	1	EARTH TERMINAL WPE2,5 mm	WEIDMÜLLER	1010000000
X2	17	TERMINAL WDK2,5 mm	WEIDMÜLLER	1021500000
	3	TOP END WEW 35/2	WEIDMÜLLER	1061200000
	6	CABLE GLAND POL CAP-TOP M16 IP68	OBO	V-TEC VM16
	6	LOCKNUT M-16x1,5	OBO	116 M16 LGR PA
	5	CABLE GLAND POL CAP-TOP M20 IP68	OBO	V-TEC VM20
	5	LOCKNUT M-20x1,5	OBO	116 M20 LGR PA
	4	CABLE GLAND POL CAP-TOP M12 IP68	OBO	V-TEC VM12
	4	LOCKNUT M-12x1,5	OBO	116 M12 LGR PA

PLC
INPUT JUMPER
SETTING



ELECTRICAL SCHEMATIC SEQUENCER SQ-4 (4 CHANNELS)

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00	JUN-2019	INITIAL ISSUE	FJFB	IFA	IFA

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FOR APPROVAL ☐ AS BUILT ☒

ORIGINAL EDITION				FORMAT	SCALE
DRAWN	FJFB			A-3	S/E
CHECKED	IFA				
APPROVED	IFA				

PROJECT:

SWAS EQUIPMENT (SEQUENCER)

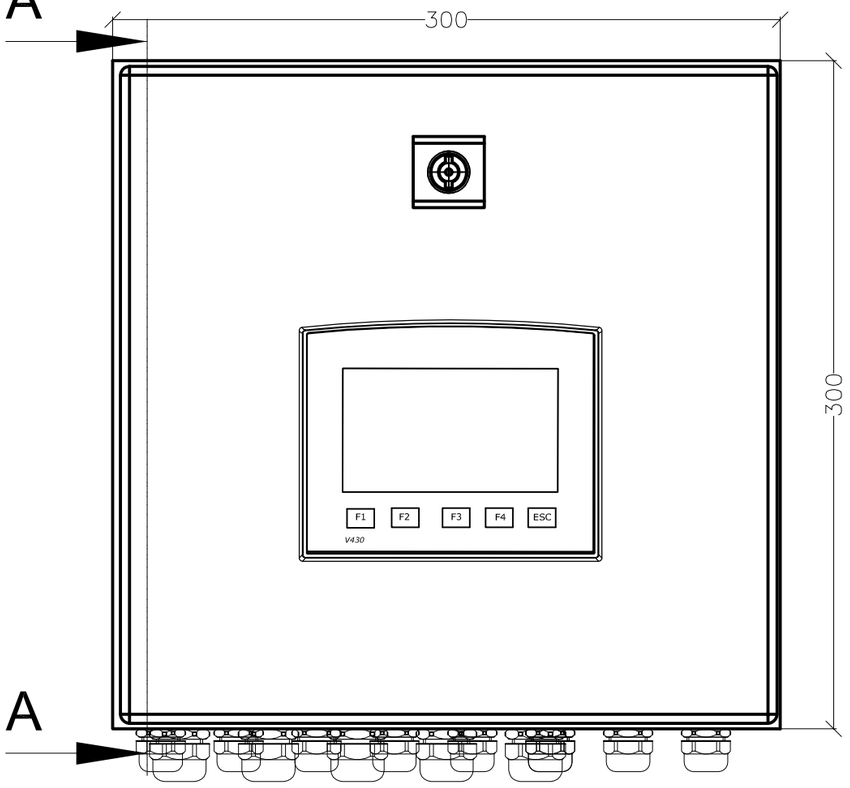
DRAWING Nr: DE-SQ

SHEET : 3

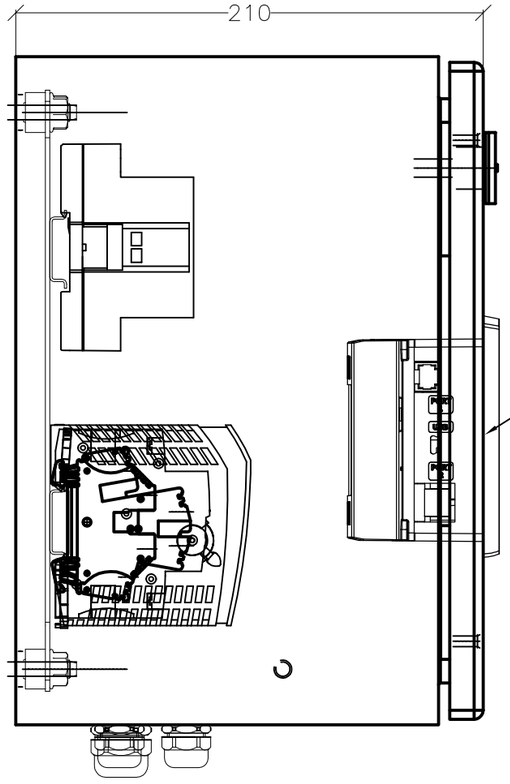
SHEET Nr: 6

DRAWING TITLE:
ELECTRICAL SCHEMATIC SEQUENCER SQ-2, SQ-4 SQ-8
(2, 4, 8 CHANNELS)

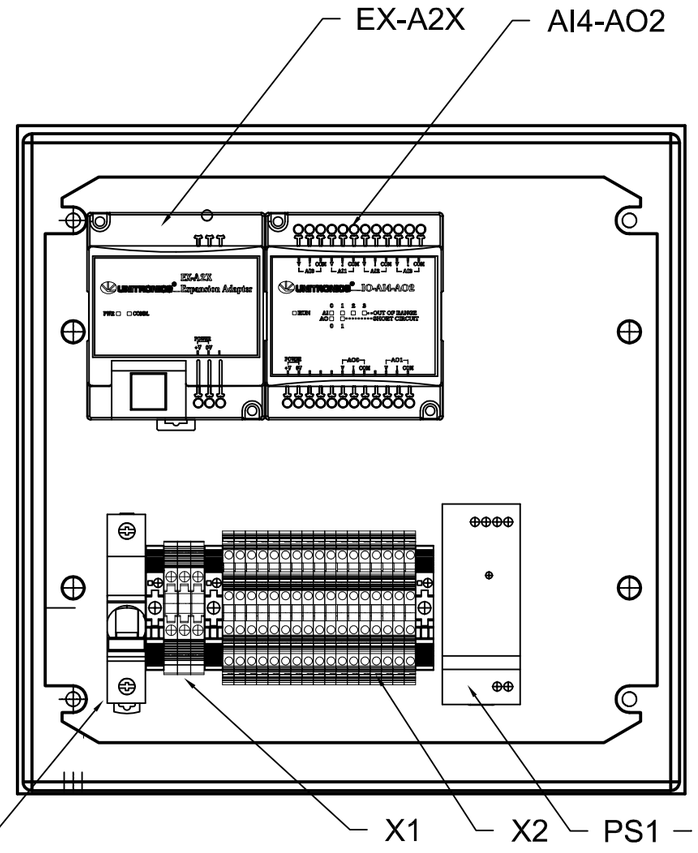
ELECTRICAL SCHEMATIC
SEQUENCER SQ-4
(4 CHANNELS)



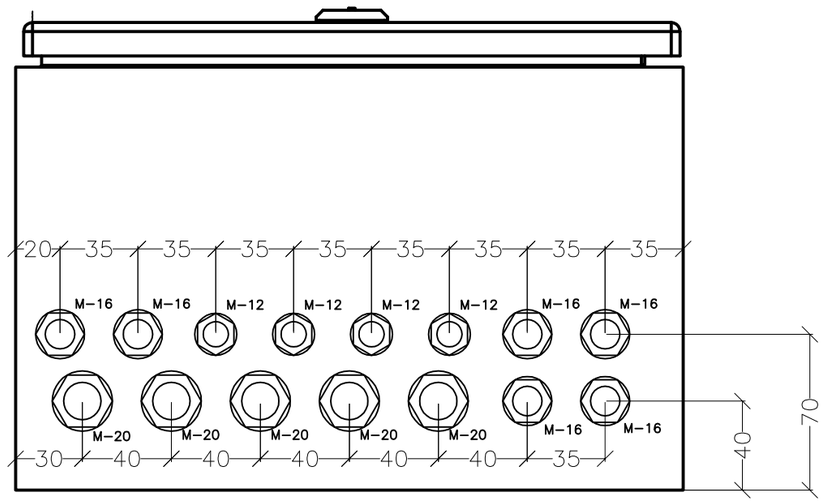
Front view



Side view
Section A-A



Mounting plate



Bottom View

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
00	JUN-2019	INITIAL ISSUE	FJFB	IFA	IFA

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FOR INFORMATION ☐	FOR CONSTRUCTION ☐	ORIGINAL EDITION				FORMAT	SCALE
FOR APPROVAL ☐	AS BUILT ☒	DRAWN	FJFB			A-3	S/E
		CHECKED	IFA				
		APPROVED	IFA				

PROJECT:

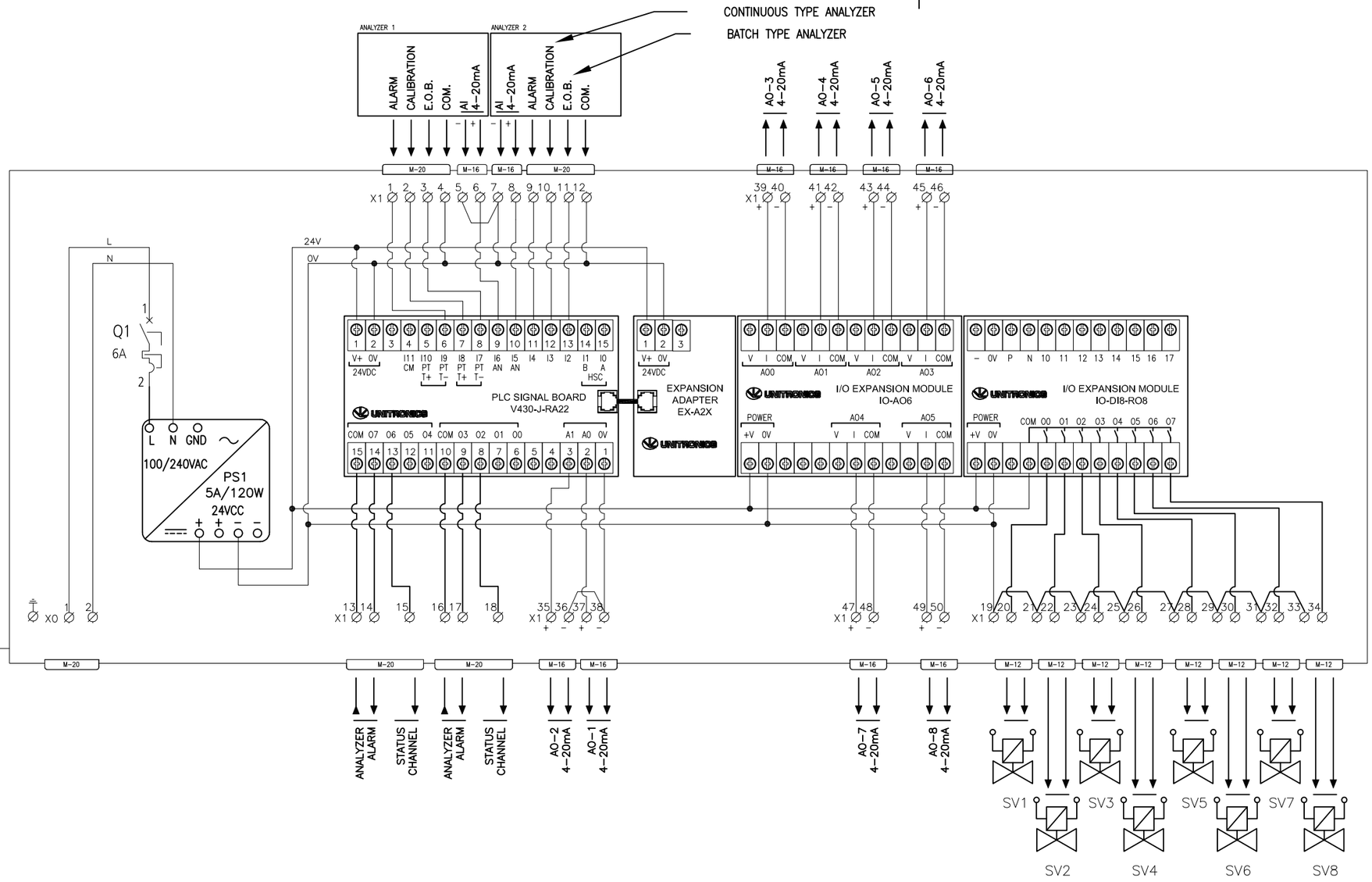
SWAS EQUIPMENT (SEQUENCER)

DRAWING Nr: DE-SQ

SHEET : 4

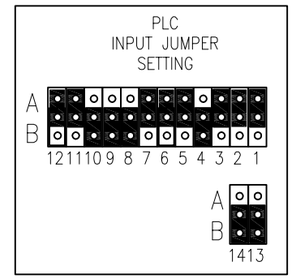
SHEET Nr: 6

DRAWING TITLE:
ELECTRICAL SCHEMATIC SEQUENCER SQ-2, SQ-4 SQ-8
(2, 4, 8 CHANNELS)



MATERIAL LIST

ID	QTY.	DESCRIPCIÓN	FABRICANTE	REFERENCIA
BOX	1	ENCLOUSURE AISI 304 300x300x210 IP66 TYPE 4X	RITTAL	AE 1003.600
Q1	1	CIRCUIT BREAKER 1P 6A Curve C,	ABB	S201 C6
PS1	1	POWER SUPPLY UNIT 24VDC 60W	PHOENIX CONTACT	2902992
PLC	1	PLC WITH 4.3" COLOR TOUCHSCREEN HMI AND ONBOARD I/O.	UNITRONICS	V430-J-RA22
EX-A2X	1	EXPANSION MODULE ADAPTER	UNITRONICS	EX-A2X
AO6	1	EXPANSION MODULE 6 ANALOG OUTPUTS	UNITRONICS	IO-AO6
DI8-RO8	1	EXPANSION MODULE 4 ANALOG INPUTS, 2 ANALOG OUTPUTS	UNITRONICS	IO-DI8-RO8
X1	2	TERMINAL WDU2,5 mm	WEIDMÜLLER	1020000000
PE/G	1	EARTH TERMINAL WPE2,5 mm	WEIDMÜLLER	1010000000
X2	25	TERMINAL WDK2,5 mm	WEIDMÜLLER	1021500000
	3	TOP END WEW 35/2	WEIDMÜLLER	1061200000
	10	CABLE GLAND POL CAP-TOP M16 IP68	OBO	V-TEC VM16
	10	LOCKNUT M-16x1,5	OBO	116 M16 LGR PA
	5	CABLE GLAND POL CAP-TOP M20 IP68	OBO	V-TEC VM20
	5	LOCKNUT M-20x1,5	OBO	116 M20 LGR PA
	8	CABLE GLAND POL CAP-TOP M12 IP68	OBO	V-TEC VM12
	8	LOCKNUT M-12x1,5	OBO	116 M12 LGR PA



ELECTRICAL SCHEMATIC SEQUENCER SQ-8 (8 CHANNELS)

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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PROJECT: --

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ORIGINAL EDITION				FORMAT	SCALE
DRAWN	FJFB			A-3	S/E
CHECKED	IFA				
APPROVED	IFA				

PROJECT: SWAS EQUIPMENT (SEQUENCER)

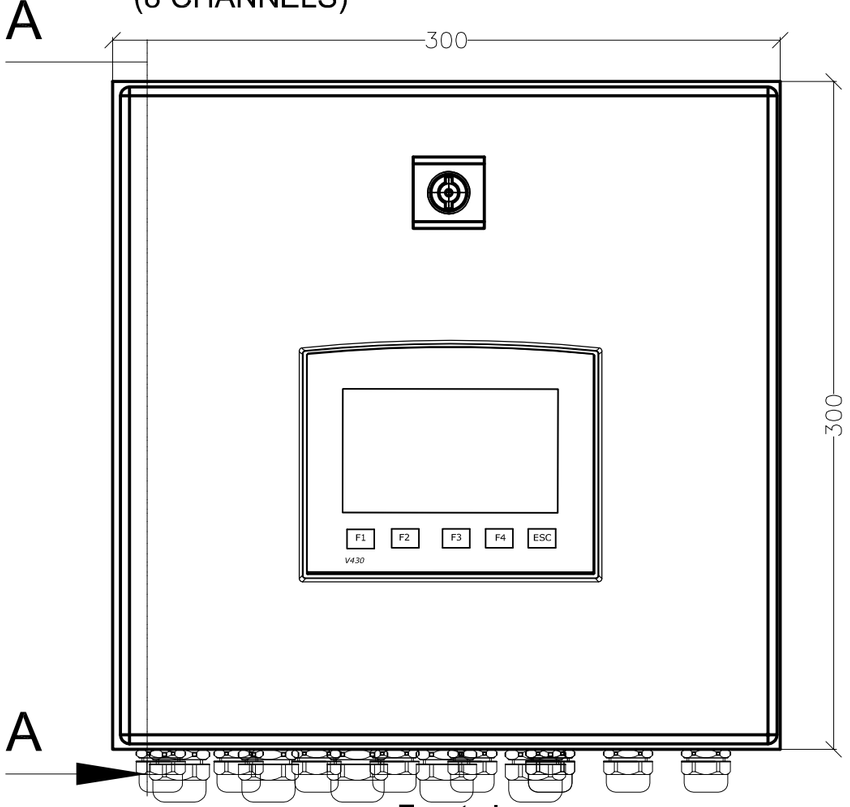
DRAWING Nr: DE-SQ

SHEET : 5

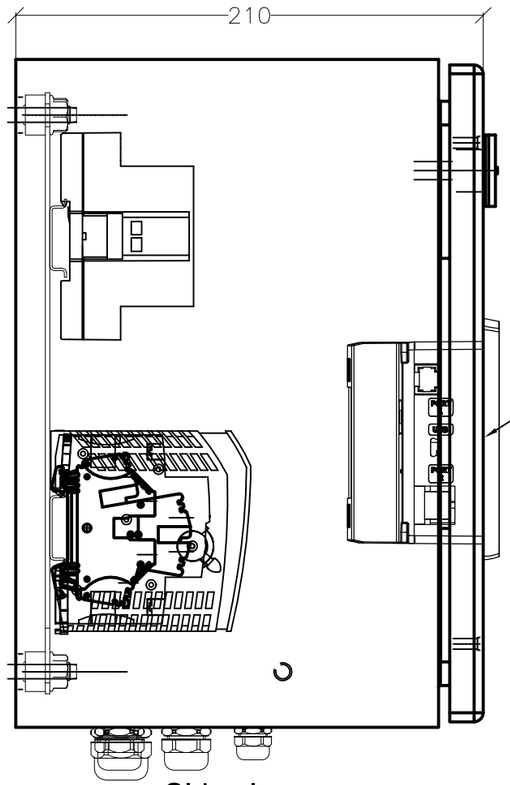
SHEET Nr: 6

DRAWING TITLE: ELECTRICAL SCHEMATIC SEQUENCER SQ-2, SQ-4 SQ-8 (2, 4, 8 CHANNELS)

ELECTRICAL SCHEMATIC
SEQUENCER SQ-8
(8 CHANNELS)

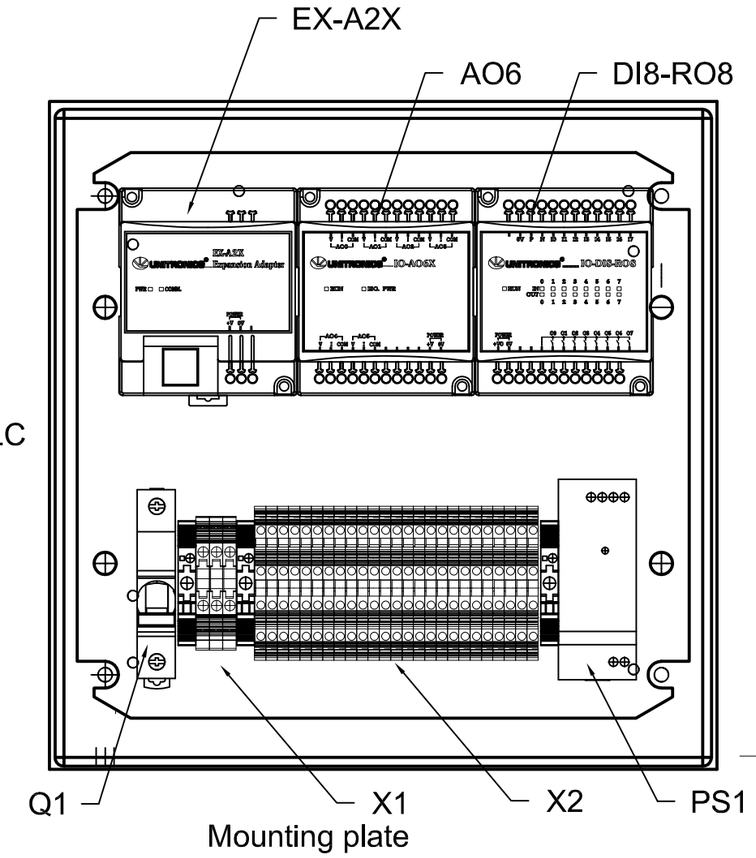


Front view

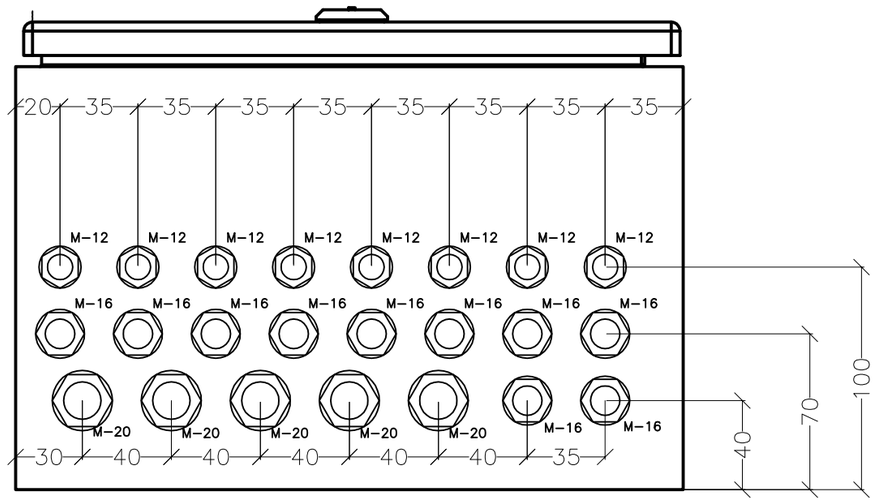


Side view

Section A-A



Mounting plate



Bottom View

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
00	JUN-2019	INITIAL ISSUE	FJFB	IFA	IFA

CLIENT: --

PROJECT: --

ENGINEERING SUPERVISION: manvia ESPAÑA

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ORIGINAL EDITION				FORMAT	SCALE
DRAWN	FJFB			A-3	S/E
CHECKED	IFA				
APPROVED	IFA				

PROJECT:

SWAS EQUIPMENT (SEQUENCER)

DRAWING Nr: DE-SQ

SHEET : 6

SHEET Nr: 6

DRAWING TITLE: ELECTRICAL SCHEMATIC SEQUENCER SQ-2, SQ-4 SQ-8 (2, 4, 8 CHANNELS)

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33211 - Porceyo
Asturias - España
(+34) 984 20 45 49
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