instruments

SOFRASER

THERMOSET 9731

Technical Manual

Ref.: 238-33/2

Quality System certified

SOFRASER

ZI, 15 rue Nobel
45700 Villemandeur - France
info@sofraser.com - www.sofraser.com
+33 (0) 238 85 77 12 - Fax +33 (0) 238 85 99 65

IMPORTANT

THE OFFSET ADJUSTMENT IN THE AIR
MUST BE THE FIRST TASK COMPLETED.

Offset adjustment procedure is detailed

in § 4.2.

TABLE DES MATIÈRES

1. Overall presentation

The measuring chain is composed of two inseparable elements: the sensor and the electronic processor.

1.1 Working principle

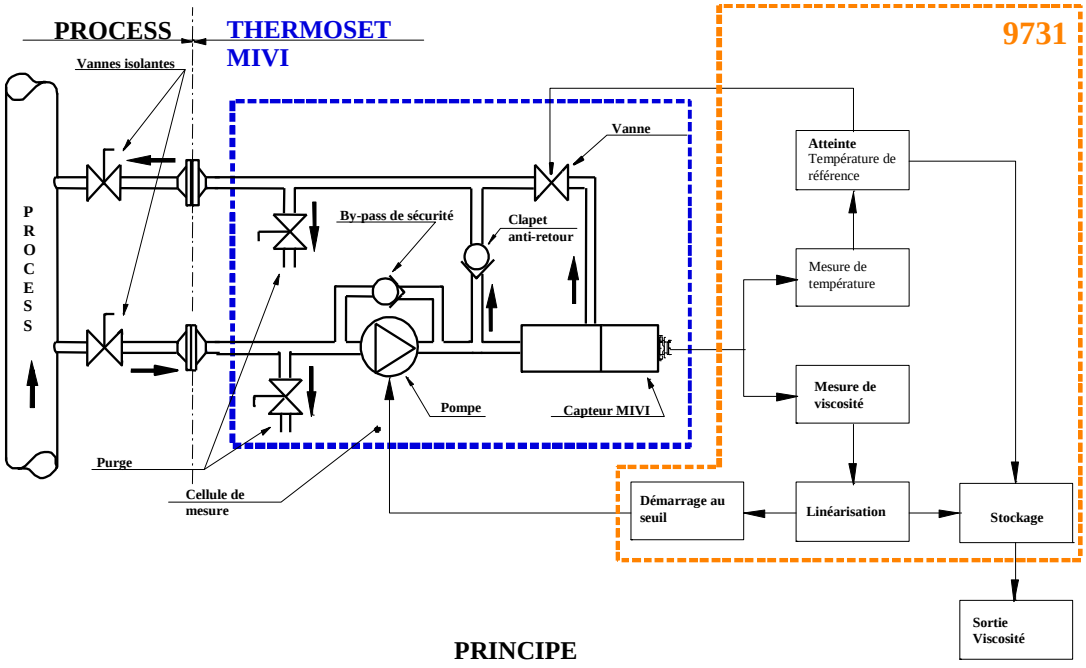
The fluid is contineously drawn from the process line with the pump. During a selected time, the electropneumatic valve (On-Off valve) is opened to renew the fluid inside the Thermoset's pipes at the process temperature.

Then this valve is closed. The fluid's circulation is stopped inside the viscosity measuring chamber. The loaded check valve enables the fluid to circulate in the by-pass. Thus the fluid temperature inside the measuring chamber decreases.

When the fluid temperature reaches the reference temperature, the viscosity value is memorized by the 9731 processor.

Immediately, the electro-pneumatic valve is opened to renew the fluid inside the measuring chamber. Then the measuring cycle starts again.

The measuring cycle depends on the difference between the process temperature and the reference temperature.



PRINCIPE

Figure 1 : working principle of the Thermoset 9731

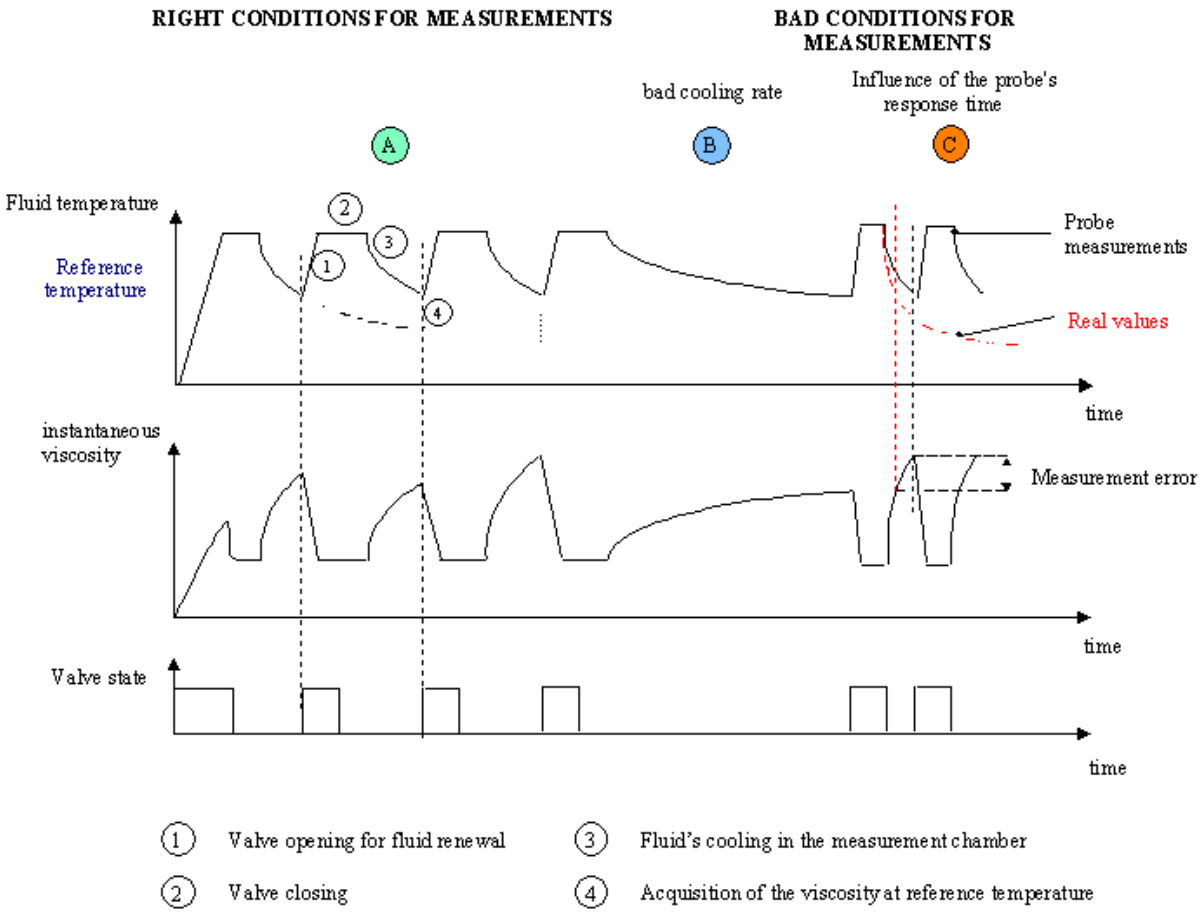


Figure 2 : acquired data examples

1.2 General drawings of the Thermoset 9731

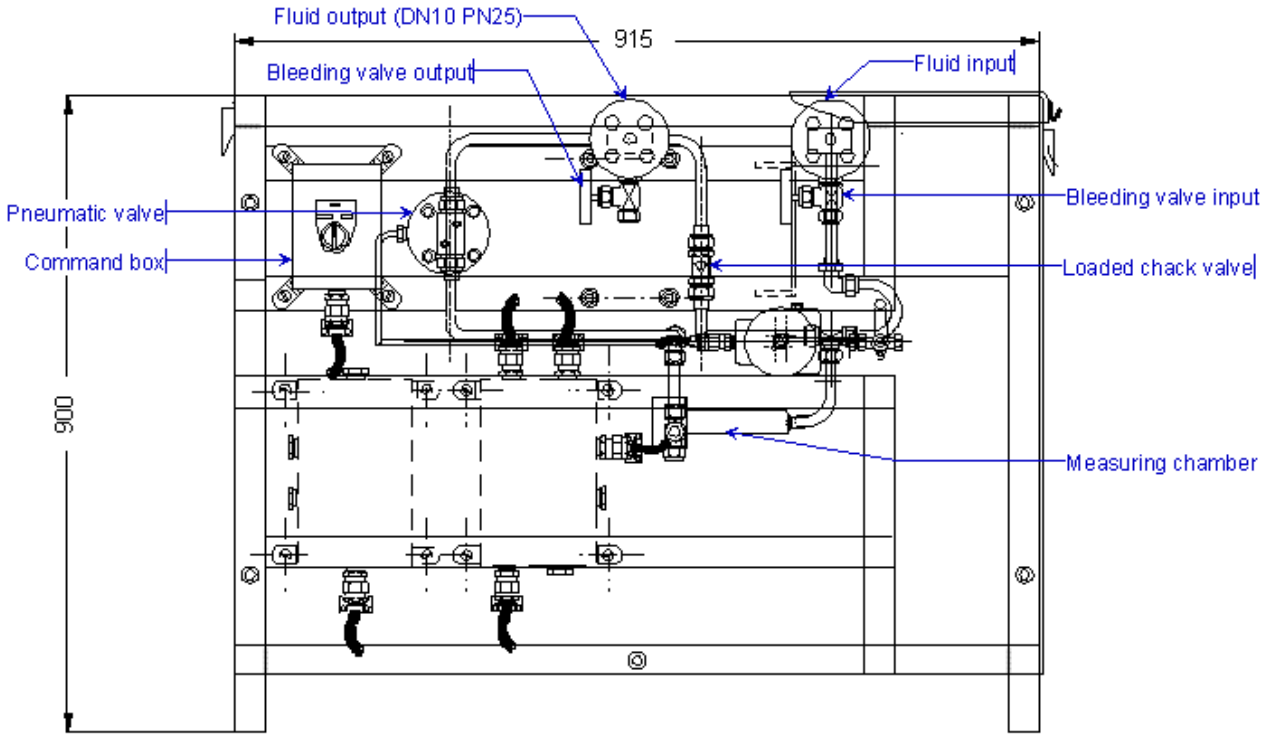


Figure 3 : front view of the Thermoset

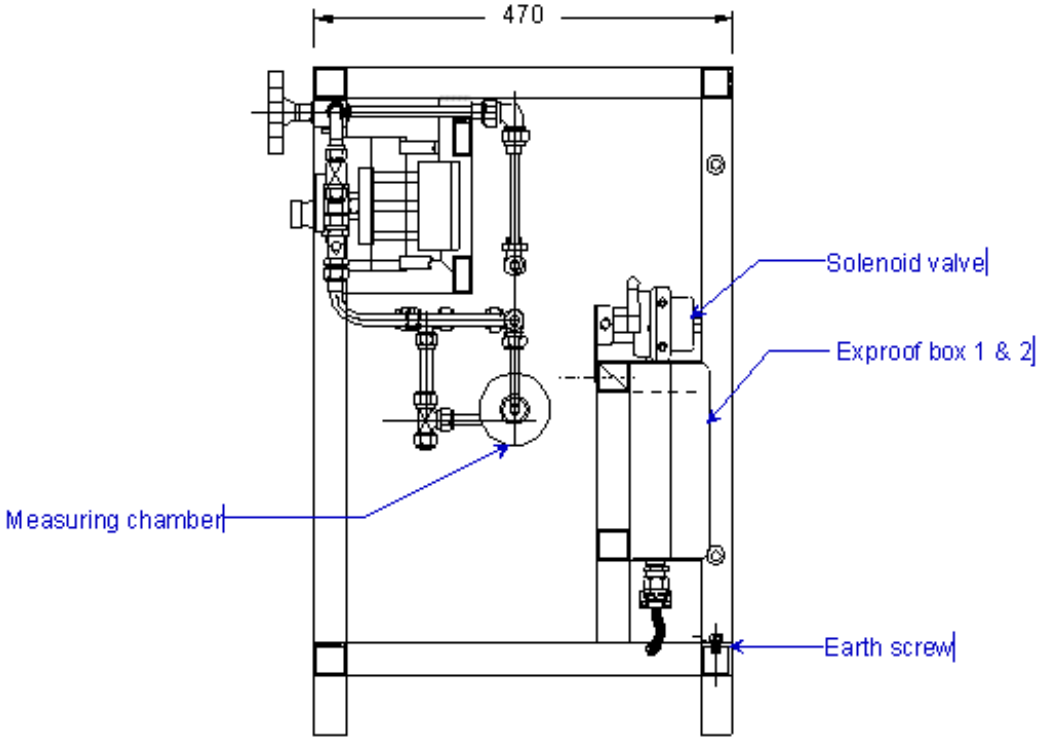


Figure 4 : side view of the Thermoset

1.3 Viscosity measurement chain

1.3.1 The MIVI sensor

The sensitive part of the sensor is a vibrating rod resonating at its own frequency. The rod's amplitude decreases when the fluid viscosity increases.

The operation principle of the equipment makes that the provided viscosity information is relative: in the same fluid, at the same conditions the information is the same. But for 2 rheologically different fluids the response can be different (despite it is perfectly repeatable).

The sensor is manufactured and calibrated with its processor following a specific viscosity range (see the calibration report and the end of the manual).

A rod protector is supplied with the sensor. It has to be screwed each time the sensor is removed from the measuring chamber to protect the sensor's rod. If vibrating rod is knocked, MIVI calibration may be modified.

The sensor is fixed on the measuring chamber by means of 4 long screws.

Before stopping the process, we advise to rince the THERMOSET pipes.

1.3.2 The 9731 electronic device

Its functions are:

- Activates the control elements (motor, electro-pneumatic valve, …);
- Supplies the sensor with power and processes the viscosity information;
- Displays and transmits the measurements: instantaneous viscosity and viscosity at reference temperature, temperature, density (in option);

It is composed of two software modes:

1.3.2.1 USING Mode

The "USING" Mode makes it possible to visualize in different forms viscosity and temperature values.

- Visualization with bargraphs, acquisition graph
- Access to the sensor identification data
- Access to the "ADAPTATION" Mode blocks starting from the principal menu

1.3.2.2 ADAPTATION Mode

The "ADAPTATION" Mode makes it possible to adapt the displayed data, parameters, settings and configuration of the processor according to the using conditions.

- The "display" block makes it possible to display the outputs status, the relays status and the raw data. It also makes it possible to choose the viscosity and temperature units as well as the way to correct viscosity values. Using this menu, the user can also reach any window of the software by entering the window digit and choose the language (French or English).

- The “Process” block makes it possible to set the parameters for a continuous use on process. It can also initiate the starting and rinsing stages, to check the electrical diagram states, the relays states and to set the acquisition parameters. Besides, it can also adjust the temperature regulation of the Thermoset vessel.
- The “Settings” block makes it possible to set the current outputs, the alarms, the bargraphs and the graphs scales. The user can also choose how to set the kinematic viscosity calculation protocol, to make the zero adjustment in the air, to define and enable the viscosity filter and to set the date and time.
- The “Parameters” block makes it possible to set the viscosity corrections, to read and change the compensation table, to set the density coefficient and to modify the security codes.
- The “Configuration” block makes it possible to set the whole unit using the manufacturing parameters (thermal drift correction, calibration data) and to enable or disable the options of the Thermoset.

1.3.3 Checking the equipment at the receipt

At first, check the supply conformity with the ordered equipment, mainly the presence of the parts necessary for the equipment mounting.

In case of subnormal operation *a)* or *b)*, check as follows:

- Power supply, connections, cables,
- The good condition of the vibrating rod (no bending on knock damages).

Anyway, do not hesitate to contact the distributor.

1.3.4 Periodic checking

Conformity to regulations relative to Quality Insurance implicates a periodic control of the measuring equipment used in the manufacturing operations, taking in consideration (or correcting) their drift in time.

It is proved that this equipment drift is negligible. However, it is good to check their aspect and their response once a year, at the same time as the other process equipment.

A fast test is many times available, when the sensor active part is in air, or immersed in a cleaning or rinsing solution. As long as these values stay similar, we can say that the sensor operation is right among its whole range (if no intermediate re-programming occurred).

1.3.4.1 Zero adjustment in the air

The clean and dry rod is vibrating in air when the offset adjustment is carried out.

The amplitude, corrected with an offset, Vbrut, must be shift according to the procedure.

1.3.4.2 Modification of the previous calibration

The device has been programmed in order to answer to your needs. These features are noted on the factory specification pages at the end of this document.

At first, be sure that the modification is necessary, and not consecutive of a non coherent comparative information (different measuring conditions, bad standards, inaccurate or wrong laboratory measurements,…).

The calibration parameters are protected and can only be modified with the security code.

For modifications of calibration, contact your distributor.

1.4 ATEX Certification

1.4.1 Agreement

MIVI sensors are in agreement with 94/9/EC directive (ATEX) for equipments installed in explosive gas atmospheres or in presence of combustible dust

 II 2G (gas) Ex d IIC T2 to T6

Be sure the sensor's certification is in accordance with the security level required on your process location: area classification, equipments group, protection method, gas type, temperature codes…

Area classification and equipments installation rules are detailed into IEC 7910 and EN 60 079 standards for gas or EN 61 241 standards for dust.

To always keep the maximum security level, do not open it. We moreover recommend installing the sensor in a horizontal position or with the cable gland oriented to the ground.

Check as often as possible that the information indicated on the sensor's identification plate is still visible.

1.4.2 Items certification

The whole set is not Exproof certified, but all the electrical parts are individually approved following the ATEX directive 94/9/EC.

Here you have the list of the electrical parts approved with their safety level:

Items	Security level
MIVI sensor	II 2 G Ex dIIC T2 à T6*
Motor	II 2 G Ex dIIB T4
Reducer	II 2 GD Ex ck T3 X
Pump	II 2 GD X
Connection box	II 2 G Ex dIIB T6
Solenoid valve	II 2 G Ex dIIC T6
Temperature probes	II 2 GD Ex dIIC T6 / T4

* The marking temperature for MIVI sensor depends on the process temperature.

Periodically check the identification plates are still readable.

1.4.3 Precautions of installation and use

In order to guarantee the requirements of safety in explosive area, it is imperative to respect the following instructions:

- The user must ensure himself of the stability of the installation of THERMOSET-MIVI (installation on plane flagstone, sealing, fixing by screwing,…). It is important to take care that no risk of formation of spark exists by frotement frame with an external element.
- The user must evaluate the risks of adiabatic compression being able to provide upstream of the THERMOSET-MIVI. If a risk exists, the user must set up upstream a system of safety.

- The site and the electric installation must ensure a lightning protection. The electric means of protection which will be set up will not have to call into question the equi-potentiality of the earths of the THERMOSET-MIVI.
- The earth of the THERMOSET-MIVI must be connected to the earth of the electric installation.
- The electric installation upstream of the THERMOSET-MIVI must ensure the normal conditions of operation of the THERMOSET-MIVI. **In the event of failure, it is imperative for the user to provide suitable electric protections.**
- The cables must be protected from any mechanical deterioration by setting out of chute and/or underground routing.
- The user will ensure himself of the chemical compatibility of the liquid to analyze with stainless 316L, PTFE and VITON in order to avoid any deterioration by corrosion or release of exothermic reactions.
- Do not move heavy loads near the THERMOSET-MIVI without particular precautions in order to avoid any deterioration and formation of spark by friction.
- It is forbidden to dismount sheets during the operation of the THERMOSET-MIVI. In the event of need, the power supply will have to be cut before and a time to wait will have to be respected to allow the cooling of hot parts of the THERMOSET-MIVI.
- The user must make sure that the THERMOSET-MIVI is always fed in liquid to ensure the operational safety of the gear pump.
- Respect imperatively the extreme entry temperatures of the fluid (see plate of marking).
- The user must make sure that no obstacle, such as the closing of an isolating valve, comes to block the circulation of the fluid at exit of the THERMOSET-MIVI. In the event of obstruction, a rise in pressure would lead to the deterioration of equipment such as the pump. This pump has nevertheless a by-pass valve making it possible to ensure an operation without risk until a discharge pressure of 160 bars. The user can for example envisage either a unloading circuit or a pressure control of exit of the THERMOSET-MIVI.
- It is forbidden to carry out a cleaning by water jet on the THERMOSET-MIVI during its operation or under tension.

1.4.4 The Thermoset frame

If it doesn't need special precautions for its installation, the frame has to be fixed on the ground, sheltered from the wind and bad weathers.

Install the frame in order to always be able to dismount the side plates and to access to the commands, drain cocks and connections.

Connect the Thermoset to the process pipe and to the water pipe by means of the stainless steel flanges DN 10 PN25. The connection pipes between the Thermoset and the process pipe have to be as short as possible and covered with a thermal insulation.

The inlet maximum pressure is **16 bars**. In case of a higher inlet pressure, install a pressure reducing device before the Thermoset's pump.

2. Checks and maintenance

2.1 Periodical checks

2.1.1 Generalities

The Quality standards require a periodic checking of the process instruments to take in consideration or correct their drift in time.

Although the MIVI's drift is insignificant, the sensor's appearance and response have to be checked once a year at least.

In most cases, this is a fast checking. Indeed, at the end of each production, the process installation is cleaned, rinsed and sometimes dried. Thus you can check the viscosity value indicated by the MIVI sensor either in the air (viscosity null) or in the cleaning solution (known viscosity). When the sensor's indication is almost equal to the reference viscosity we can admit the sensor's response is valid on all the sensor's range (also if the sensor's calibration has not been changed).

2.1.2 Sensor's offset adjustment

It has to be done only if the vibrating rod is clean and dry.

1) In Using mode of the 9731, on the Settings/Offset window, follow the instructions.

2) When it is done, a value appears and is saved into the processor.

2.1.3 Possible modification of the calibration

The viscometer has been manufactured and calibrated following your needs: see the configuration report at the end of the manual.

Before changing the manufacture calibration, be sure this modification is really necessary and is not the result of a wrong comparison of viscosity values: temperature influence, standard oils validity, lab viscometer accuracy,…

The MIVI 9731's calibration consists in measuring standard oils' viscosities and then adjust the table n°2 of the 9731 processor with these values.

2.2 Rinsing the system

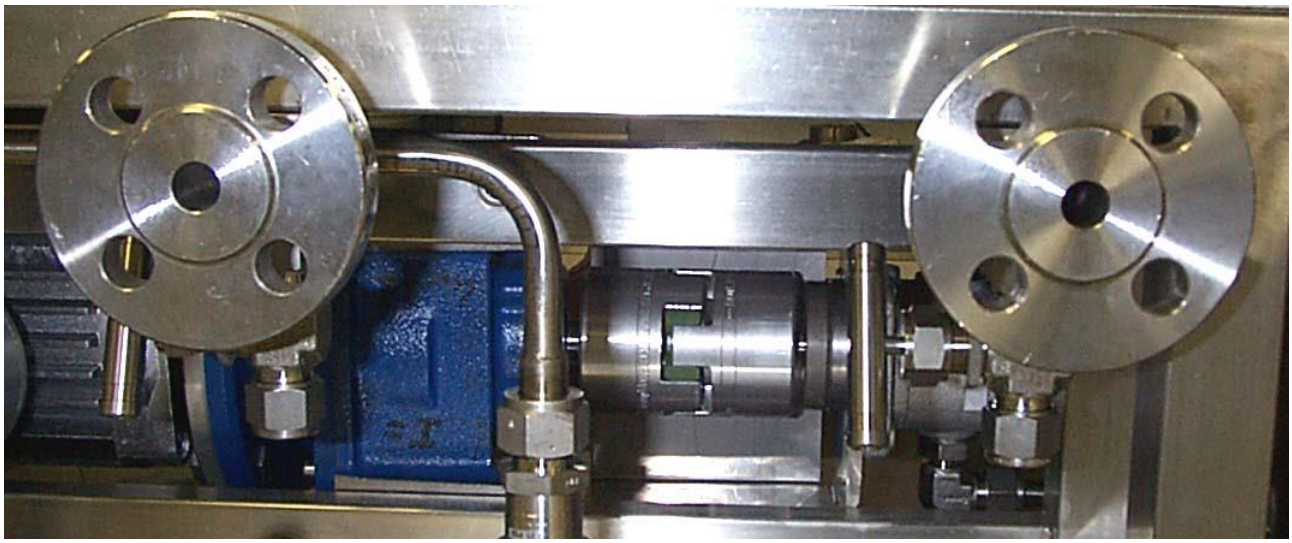
The rinsing operation depends on the rinsing solution source:

- Either the solution comes directly from the process line: in this case, no extra connection is needed.
- Or the solution comes from an external source: in this case, two insulating valves have to be installed as described § 1.1:

Close these valves

Connect the solution inlet to the drain valve near the inlet flange DN10.

Connect the solution outlet to the drain valve near the outlet flange DN10.



Outlet on the left, inlet on the right.

The rinsing cycle is done in two times:

1. Secondly, cleaning of all the others parts.
2. Firstly, cleaning of the measuring chamber and the tubes connected to it,

Thus, to clean the set, proceed as follows:

1. Adjust the reference temperature on the 9731 processor higher than the rinsing solution's temperature.
2. Adjust the fluid renewal time in the 9731 processor to obtain a satisfactory cleaning of the measuring chamber.
3. Then, adjust the reference temperature lower than the rinsing solution's temperature: thus, a solution quantity will be trapped into the measuring chamber while the rinsing solution will flow through the loaded valve.
4. Once the rinsing cycle is finished, re-configure the fluid renewal time and the reference temperature with the process' values.

2.3 Maintenance

2.3.1 Maintenance of the moto-reducer

The motor's oil level has to be checked periodically to increase the motor's lifespan (see array hereunder).

Oil temperature	Checking period (hours)
< 60 °C	25 000
60°C – 80°C	15 000
80°C – 95°C	12 500

Recommended Lubrication oil: synthetic oil SHELL Tivela SC 320

It is imperative to regularly control the state of the motor reducer and the pump's shafts and to control every month the shaft alignment.

It is necessary to verify every week the state of the seal of the shaft gear motor.

Thus, in case of oil leak, it is imperative to proceed either to the change of the seal or the replacement of the shaft by the manufacturer of the gear motor.

2.3.2 Electrical interventions

All the maintenance actions must be realized out-tension.

2.3.3 Electrical Wiring

All the electrical connections are to be shown on the electrical drawings enclosed with the technical files.

3.The 9731 processor

3.1 Main view “monitor”

3.1.1 Browsing

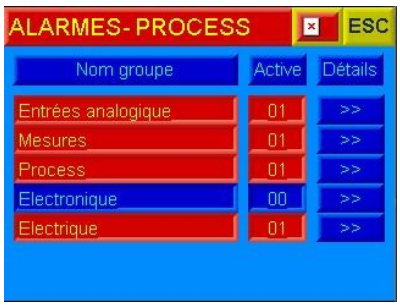
: This button makes it possible to go back to the previous screen.


: This button makes it possible to go back to the main view “monitor”.

3.1.2 Diagnosis

When a abnormal activity is detected by the processor, an “ALARM” icon appears on the “monitor” view and it is flashing.

Push this warning allows the user to display the details about this abnormal activity.



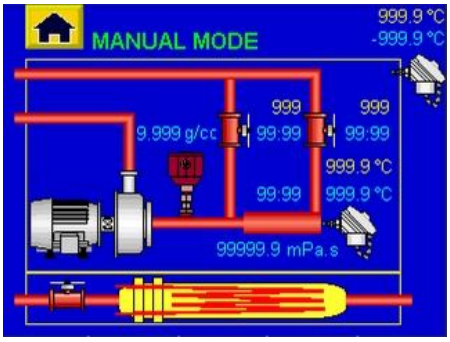
Follow the instructions displayed on the window to know what ID is selected and to see the comment in order to debug the system.

Examples of screens detailing an alarm status:

3.1.3 View

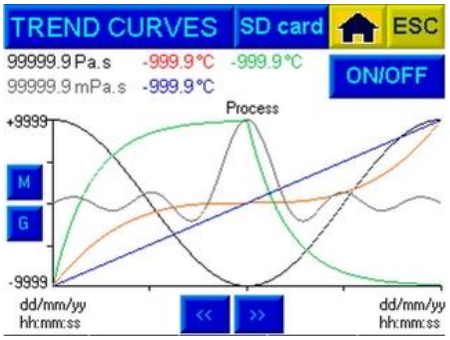
From the “monitor”, the user can switch within several views representing the process going. Some data are also displayed. Only push « VIEW » in the top right hand corner of the monitor page.

The “Process” block makes it possible to see in real-time the circuit in which the product is flowing. At any time, it is possible to know if the liquid goes to one of the two normal directions: by-pass or in the measuring chamber. Besides, some viscosity and temperature data are displayed in this window.



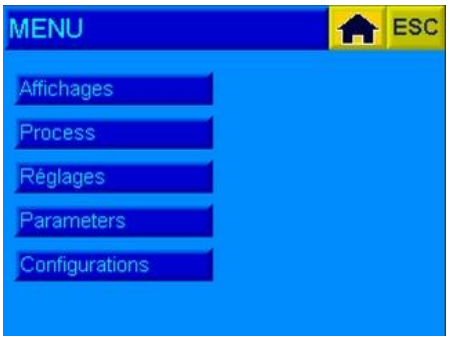
The “Graph” blockmakes it possible to see in real-time the recorded measurements. There are instantaneous viscosity, memorized viscosity at reference temperature, the reference temperature, the chamber temperature and the vessel temperature.

It is possible to divide into squares for a better reading (button G) and to browse with the X axis to go back to previous records.



3.2 Processor features

The 9731 allows the user to adjust the displays data, the parameters, the settings and the device configuration according to the process conditions.



3.2.1 The Displays block

The “Displays” block makes it possible to display the main features of the processor in order to be sure that the configurations entered are the right ones. It also makes it possible to enable or disable the basic options of the processor.

- Languages

The language can be set on this window: French or English.

- Window access

Each window of the software is labeled with a digit in the bottom right-hand corner. In this block, it is possible to reach any window by entering this digit.

- Cyclic display

The cyclic display makes it possible to pass the predefined windows on the monitor view. The graphs, process and alarms screens can be selected. The displayed time for a window can be chosen. This time is the same for all views.

- Viscosity units

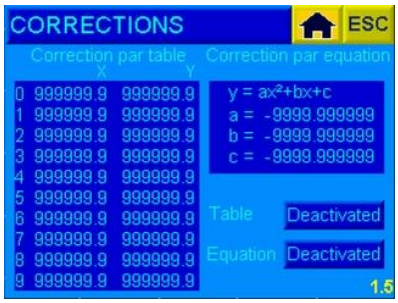
This block allows the user to choose the viscosity units within: mPa.s, Pa.s, cP, P, cSt, St.

- Temperature units

This block allows the user to choose the temperature units within: °C, °F.

- Viscosity corrections

Two ways to correlate the measurements are possible in order to correct the viscosity values: a table and a second-order equation. In this menu, it is possible to enable or disable these correlation ways and to see their adjustment parameters.

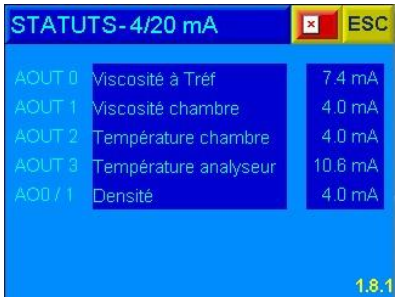


- Temperature corrections

On the same basis, for every temperature probe inside the TH7 (chamber and vessel), it is possible to correct the display with a linear function. The parameters of this function are to be enabled in this menu.

- Status

Finally, the current outputs status, the relays status and the manufacturing data can be read on this screen. No change can be done.



3.2.2 The “Process” block

The “Process” block makes it possible to set some parameters for a continuous use on process.

- Starting stage

This stage wants to check that the hydraulic circuit of the Thermoset is working just fine. It also makes it possible to warm up the entire system for a quicker use.

It is possible to set the circulation time in the two loops of the circuit, it is also possible to set the temperature to reach before switching to the automatic mode. Besides, the user can decide to enable or disable the initialization step.

After every start of the Thermoset, Sofraser recommends to always go through this initialisation step.

- Rinsing stage

This stage uses the same circuits as the starting stage and makes it possible to rinse the circuit. In the same way, the user can set the circulation time in each loop and decide the number of cycles. This stage can be enabled or disabled.

Between two different products to measure, Sofraser highly recommends to always rinse the hydraulic system.

- Automatic mode

This space is dedicated to the distributor where he can set the reference temperature, as well as the temperature and filling parameters associated with it.

- Process alarms

This screen makes it possible to set the alarms connected to the process monitoring. These are the IDs from 09 to 14. Each ID has its own parameters. Follow the instructions displayed on the window.

- Electrical test

In this block, the user can rapidly check the main electrical connections for the equipments installed in the Thermoset vessel: pump, solenoid valve for the measuring chamber and the solenoid valve for the heat exchanger.

- Regulation

The option for the regulation of the temperature inside the vessel can be enabled It is then very important to choose the temperature set-point, in order to be placed in the best conditions.

Contact the distributor to define this temperature set-point.

3.2.3 The Settings block

The Settings block makes it possible to configure most of the variables of the Thermoset 9731. The user has to be in touch with a skillfull person that can validate all the settings (project manager, site manager,…).

- Offset

This step is the most decisive one in the start-up chain. The offset adjustment in the air is the basis of the entire mathematical algorithm entered in the manufacturing parameters. Setting a wrong offset value can damage all the measurements done after that.

It has to be done while the MIVI rod is clean and dry. The sensor is vibrating in the air for at least fifteen minutes, the process conditions are very stable (temperature, pressure, vibrations…). The MIVI has to be mounted in his measuring chamber, of course.

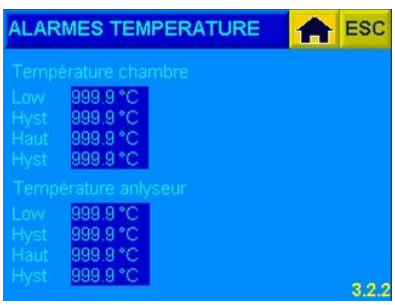
It is possible to adjust the offset in the air in two different ways: automatically and manually.

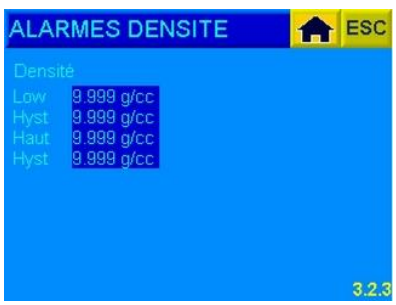
If the process conditions allow it (environment stability, maintenance), the offset adjustment in the air can be done automatically.

For the start-up, the offset must be adjusted in the air in a manual way with the distributor and/or with Sofraser support. In this case, the user pushes the “MANU” button, enters the code 1 and enters the new offset value.

- Alarms

The viscosity, temperature and density alarms can be set in this block.





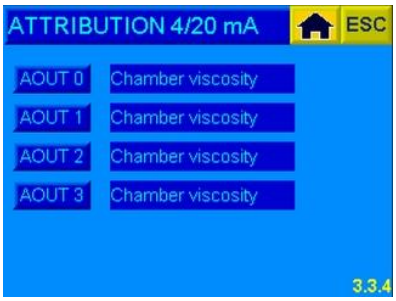
It is possible to allocate any relay to any alarm in this block.

Moreover, all the pre-wired relays can be checked in the block “relay test”.

- Current outputs

In the same way as the alarms, the current outputs for viscosity, temperature and density can be set in ths block.

It is possible to allocate all the external data (instantaneous viscosity, memorized viscosity, chamber temperature and vessel temperature) to aux sorties courant AOUT allant de 0 à 3 dans le bloc « attribution des sorties ».



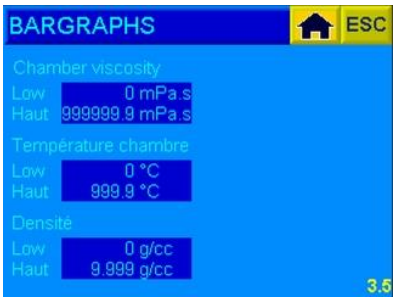
The last block makes it possible to check how the 4/20 mA current outputs respond. In this window, the user can enter the current value he wants (between 4 mA and 20 mA) and check physically with an ammeter the real current on the pin.

- Density choice

In this tab, the user can choose to have the kinematic viscosity with the help of a constant density coefficient or with the help of the value given by the density meter.

- Bargraphs

In this block, the user can enter the scales for the bargraphs displayed on the main page “monitor”, on the right hand of the window.



- Graphs

In this block, the user can set the scales of the displayed curves in the window “VIEW” of the main page “monitor”.

- Date / time settings

The user can set the date and time in this window.

3.2.4 The “Parameters” block

This block makes it possible to set the different parameters that can help to influence the output data calculated by the processor. Besides, the user can define the security codes.

- Viscosity corrections

This window is the same as described in the “Displays” block. All lines can be modified here. Values entered in the table or in the equation can be modified here.

- Pt100 correction

In the same way as the viscosity correction, this window is as the one described in the “Displays” block. Coefficients for the linear functions can be changed here.

- Density coefficient

In the case the kinematic viscosity is calculated with a density coefficient, this coeeficient can be set here.

- Security codes

The code 0 is dedicated to Sofraser. The code 1 is for the distributor.

The codes 2 and 3 are free to use in order to define the level access to the software. By default they are both set to 1111.

The code 2 gives access to the “Process”, “Settings” and “Parameters” blocks. The code 3 gives access to the viscosity and temperature units settings, and the viscosity and temperature corrections.

3.2.5 The Configurations block

This block is dedicated to Sofraser. All the manufacturing parameters and settings are stored in this tab.

3.3 The SD card

The SD car dis specifiically formated in order to communicate with the 9731 electronic device.

Warning : Format the SD card would lead to the impossibility to store or transfer any data from the 9731 electronic device.
NEVER FORMAT THE SD CARD.

During the measuring cycles, it is possible to save, in CSV format, the magnitudes measured by the different equipments of the Thermoset. Here they are:

- Date
- Heure
- Viscosité dans la chambre
- Température dans la chambre
- Viscosité à température de référence
- Température de référence
- Densité
- Température dans le caisson
- Offset
- Amplitude brute
- Signal de coil
- Température de coil (*10)
- Fréquence

The saving files are located to this path:
Main page monitor \ VIEW \ Graph \ SD card

It is enough to enter the saving file name, then the acquisition step (in seconds).
Example: 5 s means that the 9731 saves the data every 5 seconds.

The data are then stored in the EXCEL directory in the SD card root.

4. MODBUS serial communication

By connecting a RJ-12 cable on the pins 51 and 52 of the 9731 main terminal block, the user can communicate with the electronics through the MODBUS protocol.

The requests sent under this protocol make it possible to build the data acquisition channel for the quantities wanted by the user.

The serial port parameters are:

- Baud rate: 57 600 baud
- Data bits: 8 bits
- Parity: none
- Stop bit: 1 bit

4.1 A few definitions

Here is the way on how the MODBUS frames are written.

Tx = 17 3 00 60 00 06 07 54

17: slave number

3: reading function

00 60: starting address

00 06: number of words (1 word = 2 bytes)

07 54: CRC (automatic)

Rx = 17 3 12 00 00 00 01 00 00 03 248 03 116 00 230 99 09

17: slave number

3: reading function

12: number of read bytes (6 words)

00 00 00 01 00 00 03 248 03 116 00 230: content of the 6 words

99 09: CRC (automatic)

<CRC> is the Cyclic Redundancy Check which is an error-detecting code designed to detect accidental changes to raw computer data.

5.Specific Notes and factory setting

Bloc Process

PHASE DEMARRAGE			
Temps chambre de mesure	00 :30	Temps clapet	00 :30
Température min mode AUTO	105.0	Phase démarrage	ACTIVEE

PHASE RINCAGE			
Temps chambre de mesure	00:30	Temps clapet	00:30
Nombres de cycles	10	Phase rinçage	NON ACTIVEE

MODE AUTOMATIQUE			
Température Tréf	100.0	Temps remplissage chambre	00:30

ALARMES SECURITE				
ALARMES 1				
Température analyseur	BAS	10.0	HAUT	50.0
Température chambre	BAS	90.0	HAUT	150.0
Thermostat pompe	00:00	1	01:00	
ALARMES 2				
ALARMES 3				
Température entrée refroidisseur	BAS	150.0	HAUT	200.0
Température sortie refroidisseur			HAUT	150.0

REGULATION (OPTION)			
Consigne analyseur	N/A °C	Consigne déblindage	N/A °C

Bloc Réglages

ALARMES				
Viscosité chambre	BAS	0.0	HAUT	10000.0
	HYST	0.0	HYST	0.0
Viscosité à Tréf	BAS	0.0	HAUT	10000.0
	HYST	0.0	HYST	0.0
Température chambre	BAS	90.0	HAUT	150.0
	HYST	0.0	HYST	0.0
Température analyseur	BAS	10.0	HAUT	50.0
	HYST	0.0	HYST	0.000
Densité	BAS	0.0	HAUT	1.000
	HYST	0.0	HYST	0.000

ATTRIBUTION RELAIS							
Relais O8	ID 0	Relais O9	ID 1	Relais O10	ID 3	Relais 011	ID 09
Relais O12	ID 10	Relais O13	ID 11	Relais O14	ID 17	Relais 015	ID 20

SORTIES 4/20 mA			
		Valeur physique	Valeur sortie courant
Viscosité chambre	BAS	0.0	4
	HAUT	10000.0	20
	DEFAUT		4
Viscosité à Tréf	BAS	0.0	4
	HAUT	10000.0	20
	DEFAUT		4
Température chambre	BAS	0.0	4
	HAUT	150.0	20
	DEFAUT		4
Température analyseur	BAS	10.0	4
	HAUT	50.0	20
	DEFAUT		4
Densité AO 0	BAS	0.000	4
	HAUT	1.000	20
	DEFAUT		4

ATTRIBUTION 4/20 mA			
AOUT 0	Viscosité à Tréf	AOUT 1	Viscosité chambre
AOUT 2	Température chambre	AOUT 3	Température analyseur

CHOIX DENSITE			
Densimètre	ACTIVE	Coefficient	NON ACTIVE

BARGRAPHES				
Viscosité chambre	Min	0	Max	10000.0
Température chambre	Min	0	Max	150.0
Densité	Min	0	Max	1.000

GRAPHIQUES					
Viscosité chambre	Min	Max	Viscosité à Tréf	Min	Max
	0.0	10000.0		0.0	10000.0
Température chambre	Min	Max	Température Tréf	Min	Max
	0.0	150.0		90.0	110.0
Température analyseur	Min	Max			
	0.0	100.0			

FILTRE			
Nombre de valeurs	PAS DE FILTRE	Cadence d'acquisition	N/A

OPTIONS		
Densimètre	ACTIVE	
Régulation	NON ACTIVE	

Autre

LIAISON SERIE			
PORT 1	RS 232	PORT 2	RS 485

Bloc Paramètres

CORRECTIONS VISCOSITE						
Correction par table						
	X	Y				
Ligne 0	0.0	0.0				
Ligne 1	999999.9	999999.9				
Ligne 2	999999.9	999999.9				
Ligne 3	999999.9	999999.9				
Ligne 4	999999.9	999999.9				
Ligne 5	999999.9	999999.9				
Ligne 6	999999.9	999999.9				
Ligne 7	999999.9	999999.9				
Ligne 8	999999.9	999999.9				
Ligne 9	999999.9	999999.9				
Correction par équation	A	0,000000	B	1,000000	C	0,000000

CORRECTION TEMPERATURE				
Température chambre	A	1.0000	B	0.0000
Température chambre	A	1.0000	B	0.0000

COEFFICIENT DENSITE	
Coefficient [g/cc]	1.000

CODES DE SECURITE			
CODE 2*	1111	CODE 3*	1111

* CODE 2 – CODE 3 : codes par défaut, modifiables.

CODE 0 et CODE 1– non communiqués.

S'il est nécessaire d'intervenir dans les menus demandant le CODE 1, contactez votre distributeur.

Bloc Configuration

TABLE TC		
	X	Y
Ligne 0	517	200.0
Ligne 1	578	165.0
Ligne 2	612	145.0
Ligne 3	655	120.0
Ligne 4	688	100.0
Ligne 5	732	75.0
Ligne 6	776	50.0
Ligne 7	826	21.6
Ligne 8	862	1.0
Ligne 9	999	0

DONNÉES D'ÉTALONNAGE N° DE SÉRIE : EFZ 3075	
Y0	7104,5074
a	-79,9963
b	0,4611
c	0,5861
d	-115,8565
e	3,2900
Offset	16 mV
Gamme de viscosité	10 000 cP
Gamme de température	150 °C
Fréquence	300 Hz
Capacité d'accord	670 nF
Version du programme	V1.0.S

Date : 11.12.2012

Visa : RIR