USER MANUAL

MU 7036 EN M

MICROCOMPT+ LOADING TERMINAL DEVICE

Issue	Date	Nature of modifications	Written by	Approved by
M	2020/03/19	Functional changes and improvements Cod 10 to 12 *[EDV548]*	DSM	MV
L	2018/06/22	Memorization of start and end measurement time, injectors code, PPM and volume in case of additivation and/or dyeing*[MDV606]* *This updated version causes a MEMO default and loss of all recordings*	DSM	SH
K	2017/12/12	Density measurement *[PJV144]* Connected MICROCOMPT+ *[PJV120]*	DSM	SH
A	2010/04/23	Creation	DSM	QL

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1 GENERAL PRESENTATION AND FEATURES

1.1 General presentation

The electronic calculator-indicating device MICROCOMPT+ for loading terminal is intended to be fitted on measuring systems to measure liquids other than water such as hydrocarbons. It is usually used for loading tank trucks or rail tankers. It can be used for top loading and bottom loading. Specific functions are identified **BOTTOM** or **TOP**, later in the document.

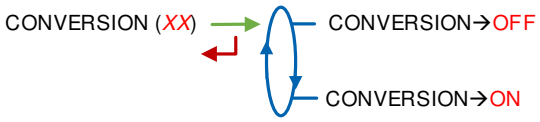
The MICROCOMPT+ calculates and displays:

- Either volume (or mass) in metering conditions – VM. The pictogram 'Vm' appears at the right-hand side of the display
- Or volume converted to base conditions – VBASE. The pictogram 'Vb' appears at the right-hand side of the display
- Or mass – MASS. No pictogram is displayed.

In the document, the indications below means:

VM: Volume measured at metering conditions
VB: Volume at base conditions (converted volume, usually V15)
MVT: Density at temperature, in kg/m^3
MVREF: Density at reference temperature, in kg/m^3
CTL: Conversion coefficient

Configured data are pre-visualized thanks to menus. In the example above, 'XX' corresponds to the value given to the conversion, either OFF or ON.



1.2 Features

The MICROCOMPT+ can take into account the temperature of liquid when it's measured by a Pt100 temperature sensor.

It can manage one or two measuring systems that can operate simultaneously: EMA for the principal product and EMB for the secondary product (for blending or metrological denaturation)

Additivation is also managed by the MICROCOMPT+. Injection is required when an injector number is given by the user. It concerns an additive or a dye which can be denaturant. Configuration of the injectors is made in METROLOGICAL mode. Denaturation can be metrological. Injectors #3 to #5 are used for additivation, dyeing and non-metrological denaturation. Injector #5 is not available if a frequency density meter is managed.

Injectors can be remote on an external equipment called ACDA. The ACDA communicates with the MICROCOMPT+ through the MODBUS network. Then, up to five injectors can be managed, some of them are configured to control the remote injectors (for further information, refer to the operating manual MU 7075 – available in French

version only – especially for preset operations with additive volume greater than 65,536 litres).

For **BOTTOM** and **TOP** applications, if denaturation is metrological, it can be systematic or optional (the basic product is delivered without any denaturant or with a single and regulated denaturant rate).

If injection is not systematic, pollution of the basic product with the injected product is avoided by the use of an anti-pollution valve (example: dye injection to get off-road diesel).

The features for mix prevention (interruption of the rinsing cycle and ending of measurement after injection of a quality) and anti-fraud (pouring presumption in a new compartment) are enabled in METROLOGICAL mode.

Volume conversion can be set in METROLOGICAL mode. It indicates to the MICROCOMPT+ the quantity it has to use for main display:

- Main quantity in volume in metering conditions (VM)
- Main quantity in volume converted to base conditions (VB)
- Main quantity in mass (MASS)

The same main quantity is used for EMA and EMB.

Secondary quantities are displayed during pouring by displaying totalisers or metrological diary depending on the format set for each measuring system at the menu UNIT AND ACCURACY.

Main quantity set	Without conversion	VM	VB	Mass
Displayed quantities – in this order	Only VM	VM, VB and Mass	VB, VM and Mass	Mass, VM and VB

For configurations without volume conversion, the main display is a quantity in metering conditions that can be expressed in: liters, kg, m^3 or nothing.

A density meter can be used for density measurement of EMA. It can be a frequency device (guaranteed/not guaranteed) or an analog device (not guaranteed). The density meter can take into account a density at metering temperature or a density at reference temperature of densities.

The MICROCOMPT+ controls a non-resettable totaliser for each measuring system (EMA and EMB) in which are summed up main quantities. If conversion is active, two more totalisers are available for secondary quantities.

It also controls a non-metrological totaliser in milliliters for each injector.

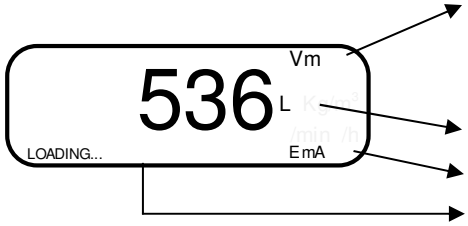
Those totalisers memorize and secure measurement information, which is read from the user interface.

Two serial links are available to communicate with external equipment (mechanical printer, supervision device).

NOTE: If the MICROCOMPT+ communicates with a system via µConfig, the message UCONFIG… appears on the prompter. µConfig is an optional additional tool on PC to access the MICROCOMPT configuration.

1.3 Description

The MICROCOMPT+ has a flameproof case. It has one display:



Volume indication
- Vm: volume in metering conditions
- Vb: volume converted to the reference temperature

Volume unit

Measuring system identification (EMA or EMB)

On the prompter: Additional information
- Product quality, option

It has three pushbuttons:

	Increment a blinking figure or letter Come back to the previous step Stop the measurement
	Select a figure, a letter or a menu
	Validate the data

Use the RFID keys:

	RFID blue key: Level1-User This key is associated to a single MICROCOMPT+. It is used to switch into SUPERVISOR mode
	RFID green key: Level2-Manager Many of these keys can be associated to a single MICROCOMPT+. Likewise, a single key can be associated to one or many MICROCOMPT+. RFID key is used to switch into SUPERVISOR mode. Specific menus are available that allow the manager to configure the MICROCOMPT+ for its communication with the external environment. The specific menus are indicated by green boxes within the ANNEX 1.
	RFID red key: Level3-Maintenance This key doesn't need to be associated to the MICROCOMPT+. It is used to switch into SUPERVISOR mode. Specific menus are available that allow the maintenance operator to change parameters. The specific menus are indicated by red boxes within the ANNEX 1.

2 CONNECTED FEATURES

The wireless connection enables the MICROCOMPT+ to communicate with an embedded computer or with a PC/tablet/portable device, in hazardous area (ATEX).

The connected functions of the MICROCOMPT+ are:

- ⇨ Incoming data flow processing
- ⇨ Management of the communication modules below
- ⇨ Updating of the app, tickets and language catalogues as far as the MICROCOMPT+ has been switched into METROLOGICAL mode.

Communication modules are listed below:

- ⇨ Wi-Fi (IEEE 802.11 b/g/n (2.4GHz) **OR** Bluetooth Low Energy 4.1
- ⇨ GSM (2G, 3G, 4G) / GPS
- ⇨ RFID NFC allowing the reading of an RFID key to switch in SUPERVISOR mode
- ⇨ Ethernet Base 10/100

The GSM module associated to the GPS navigation system allows the device tracking. Two antennas are located outside the MICROCOMPT box.

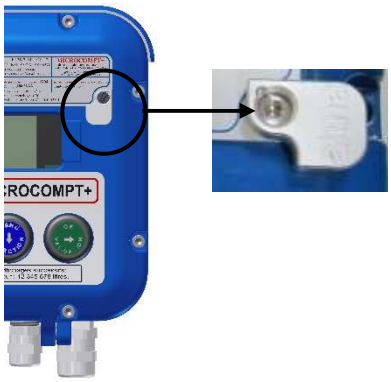
Three tricolor LED on the MICROCOMPT+ front face are showing the wireless connection status as described in the table below:

Left-hand LED: Bluetooth (Blue) or Wi-Fi (Cyan)	***Middle LED: GSM / GPS***	***Right-hand LED: NFC (RFID)***
Steady light:	*Steady light:*	*Flashing light:*

• Blue / Cyan*: Connection OK • Red: Waiting for initialization *Flashing light:* • Blue / Cyan slow flashing: Waiting for connection • Blue / Cyan rapid flashing: Communication in progress • Red: Initialization error	• Purple: Waiting for internet connection • White: Internet connection OK • Red: Waiting for initialization *Flashing light:* • White: Transfer in progress • Red every 2 seconds: Coordinates not found • Green every 2 seconds: GPS OK • Red: Initialization error	• Green: Authentication of the RFID key OK • Red: Authentication error of the RFID key • Green/ Red: RFID key not accepted, but authentication is ok

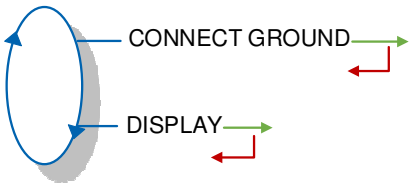
3 CONFIGURATION, SETTINGS AND CALIBRATION

CONFIGURATION: METROLOGICAL mode	SETTINGS: SUPERVISOR mode menu ICOM MENUS	SETTINGS, CALIBRATION: SUPERVISOR mode
§ CONFIGURE THE MICROCOMPT+: METROLOGICAL MODE	§ANNEX 1	§ SET THE MICROCOMPT+: SUPERVISOR MODE
You must configure the MICROCOMPT+ during commissioning and sometimes during metrological controls.	You must set the MICROCOMPT+ before any operation and sometimes during metrological controls (specific menus)	You must set the MICROCOMPT+ before any operation. You must control the accuracy of the MICROCOMPT+ cyclically
This mode allows setting all functional and metrological parameters. The physical features of the equipment, its instrumentation and its use are taken into account.	This mode is used to set or change parameters for ongoing operations of the device. Before using the device for the first time, enter the value of the parameters such as: Additivation, products, communication, instrumentation, display language, connectivity	Used to control the accuracy of the EMA or EMB measuring systems or the injectors by a semi-automatic procedure for verification and calibration of the meter. The procedure can be used for one of the measuring systems and takes into account the last measurement that has been done with the relevant device. Having made the proving of the metering, this menu CALIBRATION allows calculating the error for the purpose of adjusting the coefficient.

NOTE: Only approved persons are permitted to remove the seal	**NOTE**: Only approved persons are permitted to change parameters of the specific menus	**NOTE:** Only approved persons are permitted to change parameters or to make calibration.
- Unseal the cup - Remove the seal	- Put the RFID key at the right side of the display 	- Put the RFID key the right side of the display 
		

4 USE THE MICROCOMPT+: USER MODE

This mode is for ongoing operations of the device.



4.1 Loading

Loading authorization is given by the MICROCOMPT+ on condition that the loading security devices are connected. The loading authorization must have been received by the MICROCOMPT+ from the main computer (communication mode=connected). Loading security devices are different according to the installation and application:

BOTTOM. Main security devices are: ground, overfill probe, vapor arm, loading arm, authorization.

TOP. Main security devices are: ground, arm orientation, arm position, dead-man valve, presence of a ticket, authorization.

In case of disconnection, the MICROCOMPT+ displays the related alarm alternatively with le volume already loaded. Reconnect the device and press green pushbutton to acknowledge the alarm.

During measurement, several information may be displayed depending on the configuration of the measuring system by using blue and green pushbuttons.

Back to normal display is automatic: DO NOT PRESS RED CLEAR BUTTON TO KEEP FROM INTERRUPTING THE MEASURING OPERATION.

- Configuration with EM1

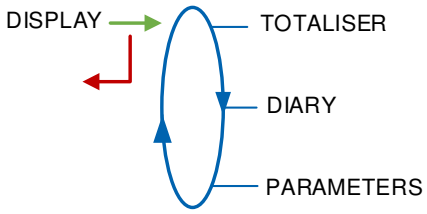
Blue pushbutton	Green pushbutton	Condition
Quantity EM1		
Instantaneous flowrate EM1 (main quantity)		
Instantaneous temperature EM1		With temperature
Instantaneous pressure		With pressure
QUANTITY	Instantaneous density	With density meter in MVT
	Instantaneous reference density	With conversion
	VM EM1	
	VB EM1	With conversion and conversion formula ≠0
	Mass EM1	
	CTL EM1	

- Configuration DUAL with EM2 activated

Blue pushbutton	Green pushbutton	Condition
Quantity EM1		No downstream blender
Quantity EM1 + EM2		Downstream blender
FLOWRATE	Instantaneous flowrate EM1 + EM2	Downstream blender
	Instantaneous flowrate EM1 (main quantity)	
	Instantaneous flowrate EM2 (secondary quantity)	
TEMPERATURE	Instantaneous temperature EM1	With temperature EM1
	Instantaneous temperature EM2	With temperature EM2
Instantaneous pressure		With pressure
Blending rate		Dual as blender

Blue pushbutton	Green pushbutton	Condition
QUANTITY	Instantaneous density EM1	With conversion and density meter in MVT
	Instantaneous reference density EM1	With conversion
	VM EM1	With conversion
	VB EM1	With conversion and conversion formula ≠0
	Mass EM1	
	CTL EM1	
	Instantaneous reference density EM2	With conversion
	VM EM2	With conversion
	VB EM2	With conversion and conversion formula ≠0
	Mass EM2	
	CTL EM2	

4.2 Menu DISPLAY



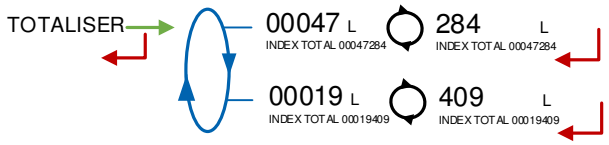
4.2.1 Sub-menu TOTALISER

Totalisers for the principal product (EMA) and the secondary product (EMB) are displayed in this menu.

Each measuring system has one totaliser for the main quantity and two other totalisers for the secondary quantities if conversion is active.

The display format of totalisers depends on the scale interval chosen in metrological mode and the pictogram (L, m3, kg or nothing).

Pictograms indicate the concerned measuring system: EmA or EmB, and the quantity: Vm, Vb, blank for masses.



If the function of control and display of product sub-totalisers is active, more information are also viewable: accumulate non-additive measurements followed by accumulate measurements with denaturation.

If the function of control and display of additive sub-totalisers is active, the injector totaliser value is also viewable.

4.2.2 Sub-menu DIARY

Display sequence of measurement results stored by the MICROCOMPT+. That can be done in two ways:

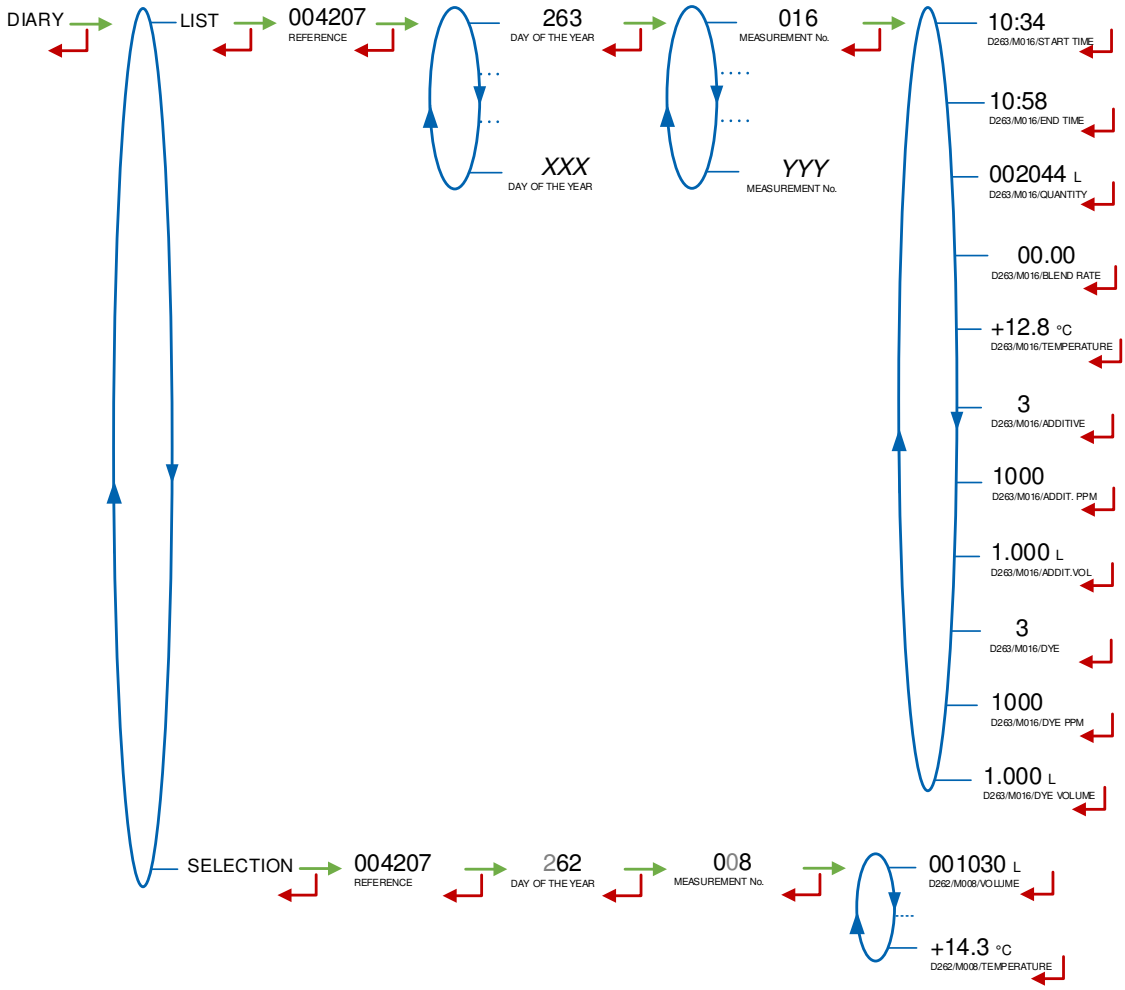
LIST: Display all the measurement details recorded, from the newest to the oldest, sorted by day then by measurement number

SELECTION: Display a specific measurement by selecting the day number

The following item may be displayed, depending on the configuration of the measuring system:

- Measurement start time
- Measurement end time
- Operation identifier (with relevant option)
- Quality indication (with relevant option)
- Volume of the principal product at temperature in °C
- Temperature of the principal product (with relevant option)
- Volume of the principal product at base conditions (with relevant option)
- Density used for conversion to base conditions de base of the principal product (with relevant option)
- Mass of the principal product (with relevant option)
- Objective blending rate or PPM (with relevant option)
- Volume of the secondary product at temperature in °C (with relevant option)
- Temperature of the secondary product (with relevant option)
- Volume of the secondary product at base conditions (with relevant option)
- Density used for conversion to base conditions de base of the secondary product (with relevant option)
- Mass of the secondary product (with relevant option)
- Number of the additive injector
- Additive PPM: additivation rate for 1000 scale intervals of principal product (additive injector ≠0)
- Additive volume (additive injector ≠0)
- Number of the dye injector
- Dye PPM: dyeing rate for 1000 scale intervals of principal product (injector for dye injection ≠ 0)
- Dye volume (injector for dye injection ≠ 0)

Example of the information displayed for the last measurement:


DIARY
LIST
004207
REFERENCE
263
DAY OF THE YEAR
XXX
DAY OF THE YEAR
016
MEASUREMENT No.
YYY
MEASUREMENT No.
10:34
D263/M016/START TIME
10:58
D263/M016/END TIME
002044 L
D263/M016/QUANTITY
00.00
D263/M016/BLEND RATE
+12.8 °C
D263/M016/TEMPERATURE
3
D263/M016/ADDITIVE
1000
D263/M016/ADDIT. PPM
1.000 L
D263/M016/ADDIT.VOL
3
D263/M016/DYE
1000
D263/M016/DYE PPM
1.000 L
D263/M016/DYE VOLUME
SELECTION
004207
REFERENCE
262
DAY OF THE YEAR
008
MEASUREMENT No.
001030 L
D262/M008/VOLUME
+14.3 °C
D262/M008/TEMPERATURE

4.2.3 Sub-menu PARAMETERS

The parameters that are displayed depend on the MICROCOMPT+ configuration:

OVERFILL: Values displayed in case of an overfill situation

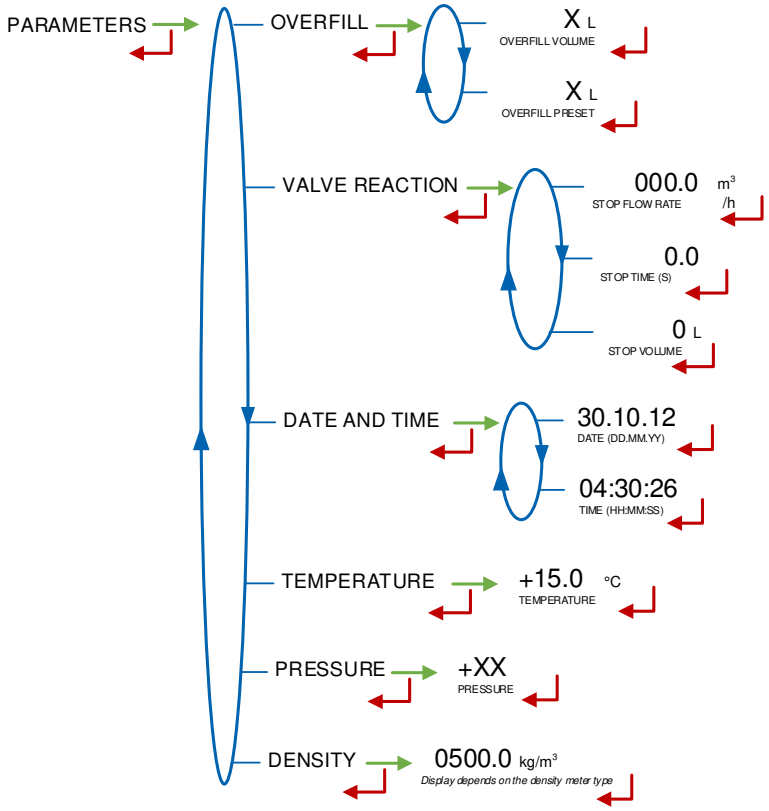
VALVE REACTION: Parameters of the valve given for the last sequence of flow shutoff (except when it stops because of an alarm)

DATE AND TIME: Display of date and time

TEMPERATURE: Instantaneous temperature of the principal product in °C (if taken into account)

PRESSURE: Instantaneous pressure in bar (if taken into account)

DENSITY: Instantaneous density in kg/m^3 (if taken into account). Display depends on the density meter type.



4.3 List of alarms for bottom and top loading

Three tricolor LED on the MICROCOMPT+ front face are showing the wireless connection status as described in the table §2.

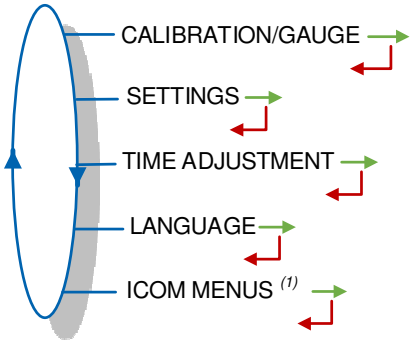
API	DISPLAY	MEANING	ACTION
USER	STOP LOADING	Intentional interruption of the loading operation	Continue or stop the loading operation
	EMERGENCY STOP	Detection of an emergency stop	Check the status of the emergency stop
	COMMUNICATION FAULT	Absence of communication network	Check the status on the control device
	POWER SUPPLY PROBLEM	Power outage during discharge	Check the cause / Restore power supply
	LOW FLOW FAULT	Low flowrate (less than 15m^3/h)	Check the parameters / Check the hydraulic system (valve, strainer, nozzle...)
	HIGH FLOW FAULT	High flowrate (greater than maximum flowrate)	Check the hydraulic system (valve, pumping)
	ZERO FLOW FAULT	Zero flow principal product	Check the hydraulic system (safety valve)
	METERING PROBLEM	Metering problem with the principal measuring device	Check if the pulse transmitter is powered (red indicators)
	OVERFILL FAULT	Over-filling of the compartment	Dry out the wet probe or end measurement
	MANDATORY END	Measurement end is required	End operation
	NO MORE AUTHORISATION	No more loading authorisation	Check the reason on the control device
	GROUND FAULT	Loss of ground signal	Check the connection of the dead-man switch
	VAPOR ARM FAULT	Loss of vapor arm signal	Check the connection of the vapor arm
	TICKET FAULT	No ticket in the local mechanical printer	Check the ticket is well-positioned
	DTQM FAULT	Stop requested by the DTQM system	Deal with the problem on the DTQM/LR system
	LEAKAGE FAULT	Metering detection without measurement	Check the tightness of the loading valve
	SAMPLING FAULT	Problem with the sampler	Check the status of the sampler
	QUALITY SELECTION	No product selected	Choose a product
	TANK EMPTY	Product unavailable	Fill the tank with product
	GAS DETECTED	Detection of gas (principal product circuit EMA)	Make a purge (manual or automatic)
	EMB METERING PROBLEM	Metering problem with the secondary measuring device	Check if the pulse transmitter is powered (red indicators)
	EMB NO FLOWRATE	Zero flow (secondary measuring system)	Check the hydraulic system (safety valve)
	BLENDING RATE FAULT	Inappropriate blending ratio	Check the blending rate set in metrological mode
	EMB LEAKAGE FAULT	Metering detection without injection of secondary product	Check the hydraulic system of the denaturant
	BLENDER FAULT	Problem with the denaturant electronic device	Check the denaturant electronic device
	EMB UNDERFLOW	Flowrate less than the min. flowrate set in metrological mode	Check the hydraulic system (valve, strainer, nozzle...)
	EMB HIGH FLOW	Flowrate greater than the max. flowrate set in metrological mode	Check the hydraulic system (valve, pumping)
	EMB GAS FAULT	Detection of gas (secondary product circuit EMB)	Make a purge (manual or automatic)
	BLENDER GAS FAULT	Detection of gas	Make a purge (manual or automatic)
	DENATUR. TANK EMPTY	Denaturant unavailable	Fill the tank with denaturant
	NO DYEING	Dyeing null	Check the additive hydraulic system
	DYE LEAKAGE	Metering detection without injection	
	DYEING <--->	Dyeing rate too low	Check the additive hydraulic system
	DYEING <+++>	Dyeing rate too high	
	NO ADDITIVATION	Additivation null	Check the additive hydraulic system
	ADDITIVE LEAKAGE	Metering detection without injection	
	ADDITIVATION <--->	Additivation rate too low	Check the additive hydraulic system
	ADDITIVATION <+++>	Additivation rate too high	
	ADDITIVATION FAULT	Problem with the additivation electronic device	Check the additivation electronic device
	DOSING FAULT	Problem with the dosing of the additive	Check the additivation electronic device
	ACDA PROBLEM	Problem with the ACDA (remote injector calculator)	Check the electronic device ACDA

API	DISPLAY	MEANING	ACTION
USER	LINE RINSING FAULT	Rinsing cycle not finished by the injector	Wait for the end of the rinsing cycle. Blocking default if the injector is for denaturant (see ANTI BLENDING configuration)
	INJECT. LEAKAGE	Metering detection on injector XX without injection	Check the additive hydraulic system
	DIARY FAULT	Reset of the events diary	Acknowledge the alarm, check the date in supervisor mode
REPARATOR - NON BLOCKING	DISPLAY FAULT	Problem with display card	If steady alarm, substitution of the display card
	WATCHDOG FAULT	Fault with display or power card or AFSEC+ card	If steady alarm, substitution of the faulty card
	VOLUME CONVER. FAULT	Problem during conversion of volume	If steady alarm, substitution of the AFSEC+ electronic card
	TOTALISER LOST	Loss of totaliser EMA	Substitution of the backup battery
	EMB TOTALISER LOST	Loss of totaliser EMB	Substitution of the backup battery
	TEMPERATURE FAULT	Temperature determination failure EMA	If steady alarm, see a reparator for trouble shooting
	EMB TEMP FAULT	Temperature determination failure EMB	
	VALVE FAULT	Inappropriate reaction of the EMA control valve	If steady alarm, inspect the autorization valve
	EMB VALVE FAULT	Inappropriate reaction of the EMB control valve	
	FILTER FAULT	Filter fouling	The pressure switch and the product line must be cleaned
	ANTI-POLLUTION VALVE	Mismatch between the status awaited and the actual status of the antipollution valve	Check the status of the antipollution valve
	MISMATCH ESDV	Mismatch between the position feedback of the ESDV	Check the metrological configuration, inspect the ESDV
	INJECT CONFIG FAULT	Disparity between metrological parameters values	Remove the disparity
	DYEING CONFIG FAULT	Disparity between metrological parameters values	Remove the disparity
	DENSITY L UNCONFORM.	Measure of the density meter lower than the density low set in supervisor mode	If blocking alarm: end delivery If non blocking alarm: validate
	DENSITY H UNCONFORM.	Measure of the density meter higher than the density high set in supervisor mode	
REPARATOR - BLOCKING	PRINTER FAULT <-> <+>	Problem with the IT2 mechanical printer	If steady alarm, inspect the printer
	MEMOTY LOST <PILE>	Loss of saved memory	Substitution of the backup battery
	MEMORY LOST	Error on SIM memorization	Enter and exit the METRO mode / If steady alarm, substitution of the backup battery
	COEFFICIENTS FAULT	Deviation between coefficient LF/HF greater than 0.5%	Modification of the low flow coefficient (K1)
	PROM FAULT	Loss of software or resident integrity	Substitution of the AFSEC+ electronic card
	RAM FAULT	Saved memory fault	Substitution of the AFSEC+ electronic card
	EEPROM MEMORY LOST	Loss of metrological configuration	Substitution of the AFSEC+ electronic card
	MEMORY OVER LOADED	Loading diary is full	Substitution of the AFSEC+ electronic card
	DATE AND TIME LOST	Loss of date and time	Set date and time in supervisor mode (RFID key)
	POWER BOARD FAULT	Disparity between the software and the version of the power supply board	Remove the disparity
	GAS DETECTOR FAULT	Problem with the EMA gas detector	Check the gas detector
	GAS DETECTOR HIGH	Problem with the high-point gas detector	Check the gas detector
	EMB DETECTOR FAULT	Problem with the EMB gas detector	Check the gas detector
	DENSIMETER MIN FAULT	Measure of the density meter lower than the minimum density set in metrological mode	Check the metrological configuration
	DENSIMETER MAX FAULT	Measure of the density meter higher than the maximum density set in metrological mode	Check the metrological configuration
	NO PULSE DENSIMETER	Unable to receipt pulses from the frequency density meter	Check the density meter
	VISCOSITY FAULT	Viscosity out of range	Check the curve in metrological mode

TOP	DISPLAY	MEANING	ACTION
USER	STOP LOADING	Intentional interruption of the loading operation	Continue or stop the loading operation
	EMERGENCY STOP	Detection of an emergency stop	Check the status of the emergency stop
	COMMUNICATION FAULT	Absence of communication network	Check the status on the control device
	POWER SUPPLY PROBLEM	Power outage during discharge	Check the cause / Restore power supply
	LOW FLOW FAULT	Low flowrate (less than 15m^3/h)	Check the parameters / Check the hydraulic system (valve, strainer, nozzle...)
	HIGH FLOW FAULT	High flowrate (greater than maximum flowrate)	Check the hydraulic system (valve, pumping)
	ZERO FLOW FAULT	Zero flow principal product	Check the hydraulic system (safety valve)
	METERING PROBLEM	Metering problem with the principal measuring device	Check if the pulse transmitter is powered (red indicators)
	OVERFILL FAULT	Over-filling of the compartment	Dry out the wet probe or end measurement
	MANDATORY END	Measurement end is required	End operation
	NO MORE AUTHORISATION	No more loading authorisation	Check the reason on the control device
	GROUND FAULT	Loss of ground signal	Check the connection of the dead-man switch
	TICKET FAULT	No ticket in the local mechanical printer	Check the ticket is well-positioned
	ARM POSITION FAULT	Loading arm in high-position	Check the loading arm position
	ARM ORIENT. FAULT	Problem with the orientation of the arm in low-position	Check the loading arm orientation (left or right)
	ORIENTATION /2 RACKS	Detection of a loading arm oriented on both sides of the rack	Check the loading arm orientation (left or right)
	DEADMAN SWITCH	The dead man switch is not connected	Check the dead man switch
	LEAKAGE FAULT	Metering detection without measurement	Check the tightness of the loading valve
	SAMPLING FAULT	Problem with the sampler	Check the status of the sampler
	QUALITY SELECTION	No product selected	Choose a product
	TANK EMPTY	Product unavailable	Fill the tank with product
	GAS DETECTED	Detection of gas (principal product circuit EMA)	Make a purge (manual or automatic)
	EMB METERING PROBLEM	Metering problem with the secondary measuring device	Check if the pulse transmitter is powered (red indicators)
	EMB NO FLOWRATE	Zero flow (secondary measuring system)	Check the hydraulic system (safety valve)
	BLENDING RATE FAULT	Inappropriate blending ratio	Check the blending rate set in metrological mode
	EMB LEAKAGE FAULT	Metering detection without injection of secondary product	Check the hydraulic system of the denaturant
	BLENDER FAULT	Problem with the denaturant electronic device	Check the denaturant electronic device
	EMB UNDERFLOW	Flowrate less than the min. flowrate set in metrological mode	Check the hydraulic system (valve, strainer, nozzle...)
	EMB HIGH FLOW	Flowrate greater than the max. flowrate set in metrological mode	Check the hydraulic system (valve, pumping)
	EMB GAS FAULT	Detection of gas (secondary product circuit EMB)	Make a purge (manual or automatic)
	BLENDER GAS FAULT	Detection of gas	Make a purge (manual or automatic)
	DENATUR. TANK EMPTY	Denaturant unavailable	Fill the tank with denaturant
	NO DYEING	Dyeing null	Check the additive hydraulic system
	DYE LEAKAGE	Metering detection without injection	
	DYEING <--->	Dyeing rate too low	Check the additive hydraulic system
	DYEING <+++>	Dyeing rate too high	
	NO ADDITIVATION	Additivation null	Check the additive hydraulic system
	ADDITIVE LEAKAGE	Metering detection without injection	
	ADDITIVATION <--->	Additivation rate too low	Check the additive hydraulic system
	ADDITIVATION <+++>	Additivation rate too high	
	ADDITIVATION FAULT	Problem with the additivation electronic device	Check the additivation electronic device

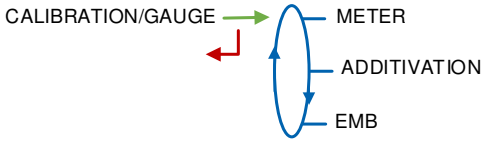
TOP	DISPLAY	MEANING	ACTION
USER	DOSING FAULT	Problem with the dosing of the additive	Check the additivation electronic device
	ACDA PROBLEM	Problem with the ACDA (remote injector calculator)	Check the electronic device ACDA
	LINE RINSING FAULT	Rinsing cycle not finished by the injector	Wait for the end of the rinsing cycle. Blocking default if the injector is for denaturant (see ANTI BLENDING configuration)
	INJECT. LEAKAGE	Metering detection on injector XX without injection	Check the additive hydraulic system
	DIARY FAULT	Reset of the events diary	Acknowledge the alarm, check the date in supervisor mode
REPARATOR - NON BLOCKING	DISPLAY FAULT	Problem with display card	If steady alarm, substitution of the display card
	WATCHDOG FAULT	Fault with display or power card or AFSEC+ card	If steady alarm, substitution of the faulty card
	VOLUME CONVER. FAULT	Problem during conversion of volume	If steady alarm, substitution of the AFSEC+ electronic card
	TOTALISER LOST	Loss of totaliser EMA	Substitution of the backup battery
	EMB TOTALISER LOST	Loss of totaliser EMB	Substitution of the backup battery
	TEMPERATURE FAULT	Temperature determination failure EMA	If steady alarm, see a reparator for trouble shooting
	EMB TEMP FAULT	Temperature determination failure EMB	
	VALVE FAULT	Inappropriate reaction of the EMA control valve	If steady alarm, inspect the autorization valve
	EMB VALVE FAULT	Inappropriate reaction of the EMB control valve	
	FILTER FAULT	Filter fouling	The pressure switch and the product line must be cleaned
	ANTI-POLLUTION VALVE	Mismatch between the status awaited and the actual status of the antipollution valve	Check the status of the antipollution valve
	INJECT CONFIG FAULT	Disparity between metrological parameters values	Remove the disparity
	DYEING CONFIG FAULT	Disparity between metrological parameters values	Remove the disparity
	DENSITY L UNCONFORM.	Measure of the density meter lower than the density low set in supervisor mode	If blocking alarm: end delivery If non blocking alarm: validate
	DENSITY H UNCONFORM.	Measure of the density meter higher than the density high set in supervisor mode	
REPARATOR - BLOCKING	PRINTER FAULT <-> <+>	Problem with the IT2 mechanical printer	If steady alarm, inspect the printer
	MEMOTY LOST <PILE>	Loss of saved memory	Substitution of the backup battery
	MEMORY LOST	Error on SIM memorization	Enter and exit the METRO mode / If steady alarm, substitution of the backup battery
	COEFFICIENTS FAULT	Deviation between coefficient LF/HF greater than 0.5%	Modification of the low flow coefficient (K1)
	PROM FAULT	Loss of software or resident integrity	Substitution of the AFSEC+ electronic card
	RAM FAULT	Saved memory fault	Substitution of the AFSEC+ electronic card
	EEPROM MEMORY LOST	Loss of metrological configuration	Substitution of the AFSEC+ electronic card
	MEMORY OVER LOADED	Loading diary is full	Substitution of the AFSEC+ electronic card
	DATE AND TIME LOST	Loss of date and time	Set date and time in supervisor mode (RFID key)
	POWER BOARD FAULT	Disparity between the software and the version of the power supply board	Remove the disparity
	GAS DETECTOR FAULT	Problem with the EMA gas detector	Check the gas detector
	GAS DETECTOR HIGH	Problem with the high-point gas detector	Check the gas detector
	EMB DETECTOR FAULT	Problem with the EMB gas detector	Check the gas detector
	DENSIMETER MIN FAULT	Measure of the density meter lower than the minimum density set in metrological mode	Check the metrological configuration
	DENSIMETER MAX FAULT	Measure of the density meter higher than the maximum density set in metrological mode	Check the metrological configuration
	NO PULSE DENSIMETER	Unable to receipt pulses from the frequency density meter	Check the density meter
	VISCOSITY FAULT	Viscosity out of range	Check the curve in metrological mode

5 SET THE MICROCOMPT+: SUPERVISOR MODE



(1): The sub-menus are different according to the level of access: Level1-User, Level2-Manager and Level3-Maintenance.

5.1 Menu CALIBRATION/GAUGE



The semi-automatic calibration procedure doesn't take into account the main quantity choice. It presents the partial volume of the last measurement in metering conditions (with a new level of precision).

5.1.1 Sub-menu METER

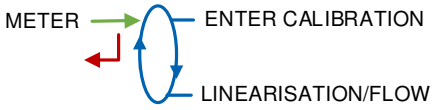
Having made the proving of the metering, this menu is used to do a check of the accuracy of the measuring system EMA or EMB. The MICROCOMPT+ calculates the measuring device error and the new corrected coefficient.

For the EMA measuring system, the possibility is given to linearize the curve on two measuring points.

The volume displayed is the volume at metering conditions (one decimal point) even if volume conversion is activated and whatever the principal quantity is (Vb, Vm or mass).

ENTER CALIBRATION: Display of details of the last measurement made on one of the measuring system. Also used to apply a set flow rate for the following measurement. Also used to apply a set flow rate for the following measurement.

LINEARISATION/FLOW: Display and set the measuring points for flow-correction.



5.1.1.1 Enter calibration

Calibration is proposed for both measuring systems: EMA (for principal product), EMB (for secondary product).

If the blending of principal and secondary products is made upstream the transfer point, the EMA valve remains open during the calibration of EMB only. So it is necessary to close manually the valve of principal product before proceeding to the calibration in that case.

First, fill the gauge (USER mode) in high or low flow with predetermination of the volume.

Switch to SUPERVISOR mode, select CALIBRATION/GAUGE>METER ENTER CALIBRATION and validate.

Enter the reference volume (read on the gauge and corrected), then validate. The following information is then displayed: the signed error in % and the coefficient revised as a function of the error.

Enter a new flowrate value if necessary. This set-flowrate is taken into account by the MICROCOMPT+ for the next operation only, thus avoiding the seal removal.

5.1.1.2 Linearisation/Flow

This menu is used to make a flow-correction for two measuring points (at low and high flowrate). The MICROCOMPT+ stores flowrate and coefficient calibrated values in order to define both correction points: at low and high flowrate.

Linearisation is proposed only for the principal product (EMA). **When you validate the menu LINEARISATION/FLOW, the calibrated values are displayed; you need to unseal the MICROCOMPT+ to switch in METROLOGICAL mode and record the values** via the EMA (PUMP MODE)>METER COEFFICIENT menu.

To linearize the curve, two tests are necessary. Follow the instructions:

- Fill the gauge in high flow [flowminx3]≤high flow<[flowmax], and enter the volume read on the gauge in the menu CALIBRATION/GAUGE>METER>ENTER CALIBRATION as described above
- Fill the gauge in low flow [flowmin]≤flow<[flowminx1.5], and enter the volume read on the gauge in the menu CALIBRATION/GAUGE>METER>ENTER CALIBRATION as described above
- Choose CALIBRATION/GAUGE>METER>LINEARISATION/FLOW and validate. It is then possible to see the coefficients and the flow rates data for the two tests carried out.

If the procedure failed, the MICROCOMPT+ can display the information that follows:

- LARGE GAP K1/K2: Correction between both measuring points >0.5%
- FLOWS TOO CLOSE: High flowrate value is out of range. It needs to be: [flowminx3]≤high flow<[flowmax].
- LO-FLOW OUT OF RANGE: Low flowrate value is out of range. It needs to be: [flowmin]≤low flow≤[flowminx1.5]
- ONLY ONE GAUGE: One of the tests has not been done (at low or high flowrate)
- NO VALID GAUGE: Both tests have not been done (at low and high flowrate).

5.1.2 Sub-menu ADDITIVE TYPE

This menu is used to calibrate the injectors, except the MICRO-BLEND one. At the end of the calibration procedure, enter the true volume to correct the injector coefficient.

At the end of a cycle, if the additive volume is not at zero, press BP1 to input the true volume in order to display the calculated additive coefficient. Press BP1 a second time to edit the coefficient (for metrological injectors, this menu is disabled).

Warning: The coefficient displayed is the one that has been set in METROLOGICAL mode

Note: In some particular cases (metrological denaturation through EMB on injector #1 or systematic dyeing on a dedicated injector), this procedure displays the new coefficient after calibration and proposes to record it after removing the MICROCOMPT+ seal.

5.1.3 Sub-menu EMB

5.1.3.1 EMB blender

For a blender measuring system EMB, use the menu **GAUGING PRESET** to flow EMB only.

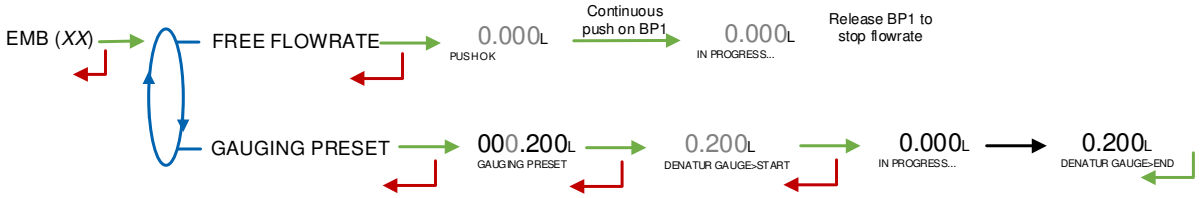
- Enter a preset volume of secondary product and validate with BP1
- Press BP1 one more time to finish the procedure at the end of pouring, or press BP3 to cancel the procedure.

5.1.3.2 EMB metrological denaturant

FREE FLOWRATE: This is to flow the measuring system EMB while keeping BP1 pushed

GAUGING PRESET : This is to flow the measuring system EMB only

When calibrating the measuring system EMB as an injector of metrological denaturant, the MICROCOMPT+ must be unsealed to set the new coefficient which is a metrological parameter.



STEP 1: Conditioning of the gauge

SUPERVISOR>CALIBRATION/GAUGE>EMB (DENATURANT)>FREE FLOW RATE: press green BP1 at least 2 seconds to let denaturant flow. Release BP1 to stop flow.

→ Technician Pushbutton: lets the denaturant flow (gauge conditioning)

STEP 2: Gauging

SUPERVISOR>CALIBRATION/GAUGE>EMB (DENATURANT)>GAUGING PRESET: set the preset volume (Unit: Litre; scale interval: milliliter)

→ Technician Pushbutton: starts the injection of one dose of denaturant inside the gauge

→ MICROCOMPT+: stops automatically the injection

→ Technician Pushbutton: measures the volume in the gauge.

STEP 3: Calibration

SUPERVISOR>CALIBRATION/GAUGE>METER>ENTER CALIBRATION>CHOOSE EM: choose EMB, enter volume and error. The new coefficient is displayed.

→ Technician Pushbutton: sets volume and error in the MICROCOMPT+

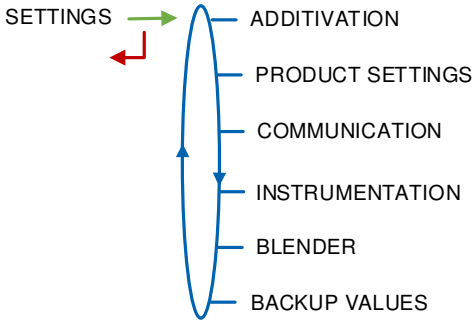
→ MICROCOMPT+ calculates and displays of the new coefficient.

STEP 4: Coefficient memorization

METRO>EMB (DENATURANT)>COEFFICIENT (P/L): enter the new coefficient.

→ Technician Pushbutton: sets the new coefficient in the MICROCOMPT+.

5.2 Menu SETTINGS

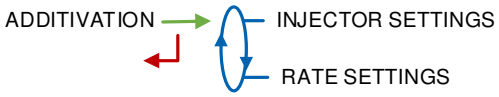


5.2.1 Sub-menu ADDITIVATION

This menu is for the additivation configuration:

INJECTOR SETTINGS: Configuration of the injectors

RATE SETTINGS: Configuration of the additivation general parameters.



5.2.1.1 Injector settings

Configuration of the injectors. There may be up to five injectors depending on the device configurations and options.

In DUAL version, injectors #1 and #2 are not configurable. However, the name of the injected product may be changed. The other parameters, set in METROLOGICAL mode for denaturation, are on read-only access.

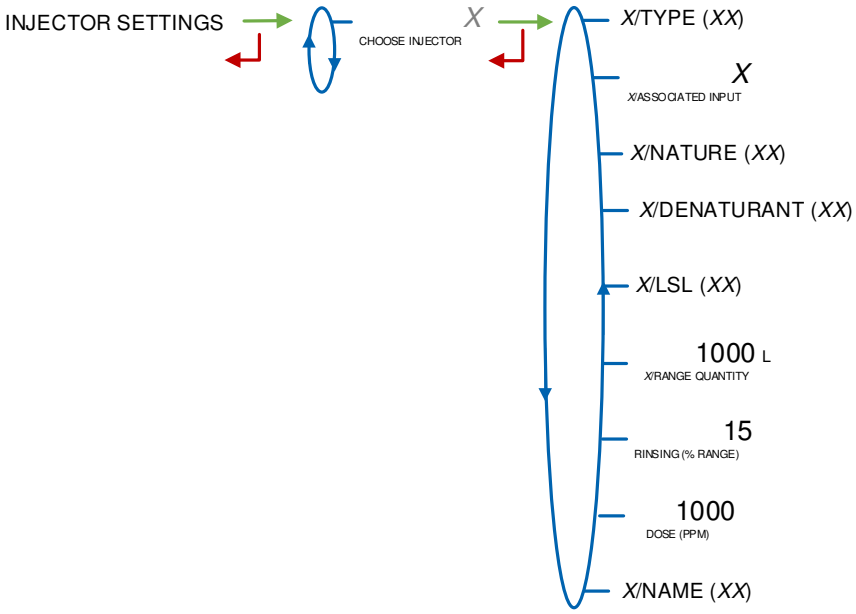
Injectors #1 to #5 are used for additivation, dyeing and non-metrological denaturation.

Injectors #6 to #8 may be configured as ACDA.

Injector #5 is not available when a frequency density meter is used.

But if dyeing is forced (METROLOGICAL configuration), values are on readonly access. One of these messages appears: METRO. DENATURANT or METRO. DYEING.

The configuration of an injector associated to EMA_ACDA or EMB_ACDA must be done directly on the ACDA indicating device. If one of the features of such an injector is changed, then the message ACDA METRO appears. La configuration doit se faire directement sur l'indicateur ACDA.



Possible combinations for the injectors configuration:

Configuration	Metro: DUAL→ON	Metro: DUAL→OFF
Injector#1 **Injector#2**	• None •	• None • Metering • Dosing •
Injector#3 **Injector#4** **Injector#5***	• None • Metering • Dosing •	• None • Metering • Dosing •
Injector#6 **Injector#7** **Injector#8**	• ACDA	• ACDA

*Injecteur#5 is not available if the density meter is activated.

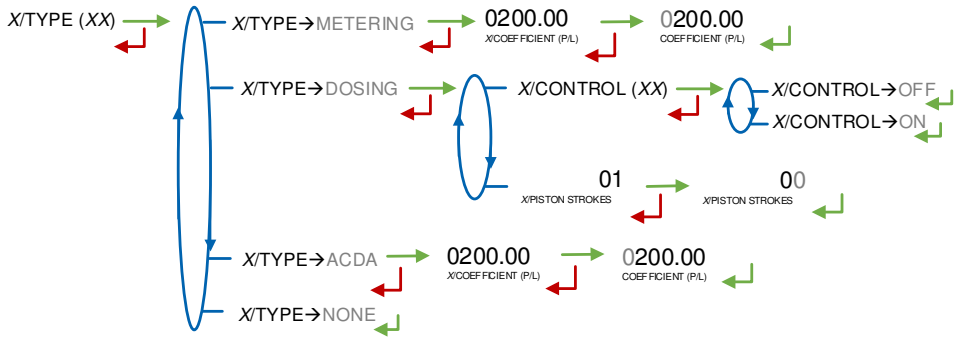
a) Injector type

Choose the injector type:

METERING: Metering-type injector (MIV or PAM). Display and set the injector coefficient

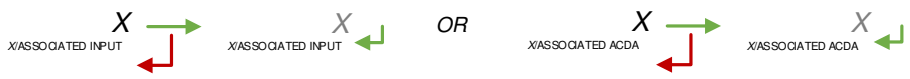
DOSING: Dosing-type injector with or without feedback control (GATE PACK, HYROLEC). Enter the piston strokes needed to inject the dose.

ACDA: Remote injector controlled by the ACDA. In case of a metrological injector, it must be set up directly on the ACDA.



b) Associated input

Choose the input associated to the injector (meter or control) or choose the ACDA injector associated to the MICROCOMPT+ injector.

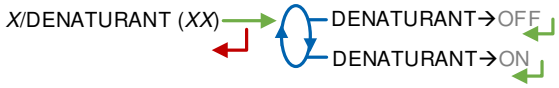


c) Nature of the product

Choose the nature of the injected product: additive or dye.

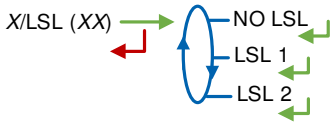
d) Denaturant

This menu is used to declare an injector as denaturant. It reinforces the controls (anti-fraud and mix prevention). An alarm forces the end of measurement.



e) LSL input

Choose the LSL input associated to the injector of additive, dye or denaturant.



f) Range quantity

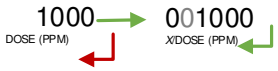
Enter the range quantity of principal product that must be between 200 and 5000 litres.

g) Rinsing quantity

This menu is used to define the rinsing quantity as a percentage of the range quantity. **It needs to be between 10-30%.** It corresponds to the quantity of product required after an injection so that the line is no longer seen as 'contaminated'.

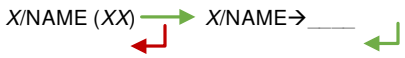
h) Dose volume

This menu is used to define the volume of additive or dye (PPM for injection): volume, in milliliters of the dose to be injected for 1000 litres of product.



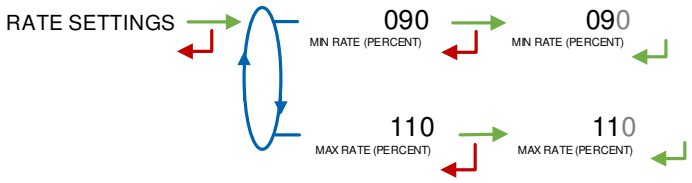
i) Name of the product

Enter the name of the injected product: injector label (6 characters).



5.2.1.2 Rate settings

This menu is used to configure the additivation minimum and maximum rates beyond which an alarm is triggered.

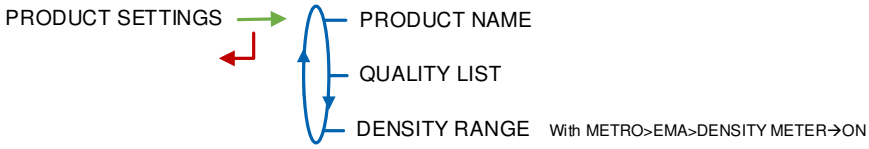


5.2.2 Sub-menu PRODUCT SETTINGS

PRODUCT NAME: Name of the product that the MICROCOMPT+ displays in USER mode when pre-measuring conditions are met.

QUALITY LIST: Configuration of quality elements (product, additive, dye).

DENSITY RANGE: Available if the option density meter is active in METROLOGICAL mode: EMA>DENSITY METER→ON. Limit values to ensure the control of the measured quantity



5.2.2.1 Product name

Name of the principal product (6 characters). Default display: NONE

5.2.2.2 Quality list

This menu is available when the MICROCOMPT+ is operating in autonomous mode (CONFIGURATION>COMMUNICATION>MODE→AUTONOMOUS). It allows to configure the up to 8 qualities for the additivation and/or dyeing of the principal product (according to option). Depending on the option chosen in METROLOGICAL mode (CONFIGURATION>LOGIC>OPTIONS>OPTION→CODE 01), the quality to be loaded may be chosen at the beginning of each measurement or automatically fixed by the status of the authorization inputs.

When quality exits QUALITY→ON, it is defined as follows:

(QUAL1)/CODE AUTO: Code corresponding to the combination of status of the digital inputs for the automatic determination of the quality. Depends on the metrological and factory configuration

(QUAL1)/NAME: Name of the quality up to six characters, which will be proposed to the driver at the beginning of the measurement. Maximum number of characters: 6

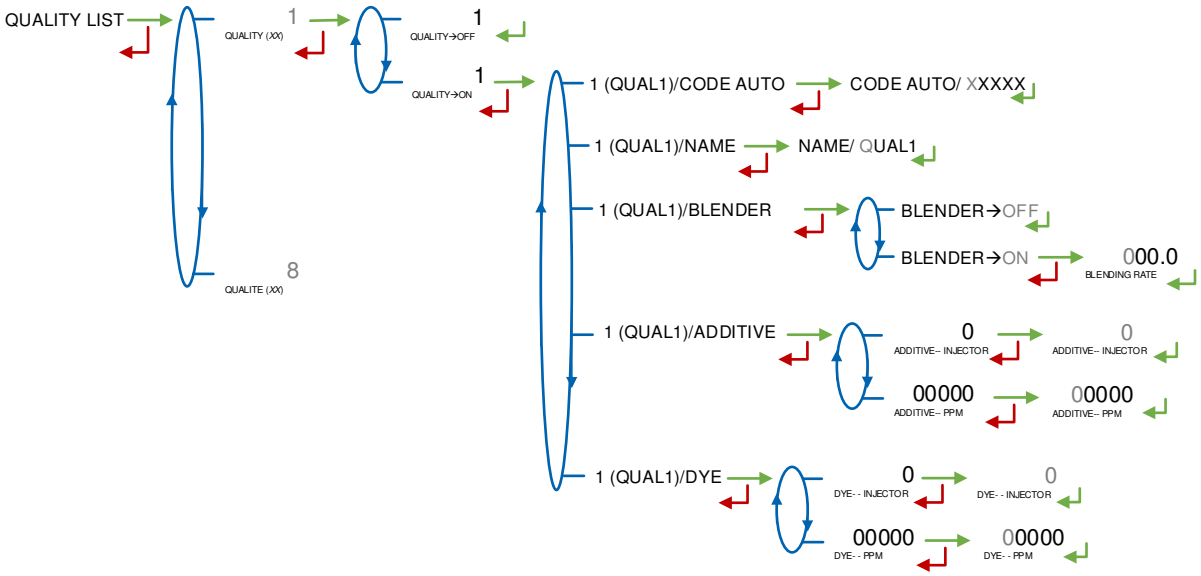
(QUAL1)/BLENDER: In case of blending. Enter the blending rate using menu.

(QUAL1)/ADDITIVE: In case of additive injection. Specify:

- **ADDITIVE--INJECTOR**: The number of the injector assigned. Enter a null value for 'no additivation'
- **ADDITIVE--PPM**: The additivation rate for 1000 scale intervals of principal product.

(QUAL1)/DYE: In case of dye injection. Specify:

- **DYE--INJECTOR**: The number of the injector assigned. Enter a null value for 'no dyeing'
- **DYE--PPM**: The dyeing rate for 1000 scale intervals of principal product.



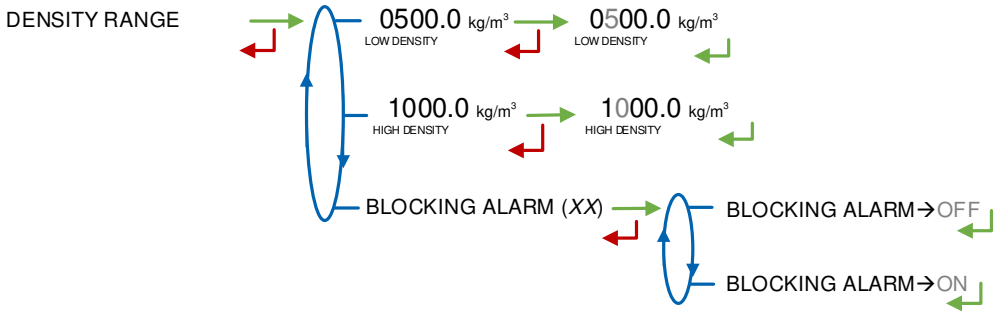
5.2.2.3 Density range

If the option density meter is active (METRO>EMA>DENSITY METER→ON). Enter limit values laid down by the owner to ensure the control of the measured quantity. Density unit is kg/m^3.

LOW DENSITY: Enter the low density value in kg/m^3.

HIGH DENSITY: Enter the high density value in kg/m^3.

BLOCKING ALARM: Decide whether the alarm is blocking or not.



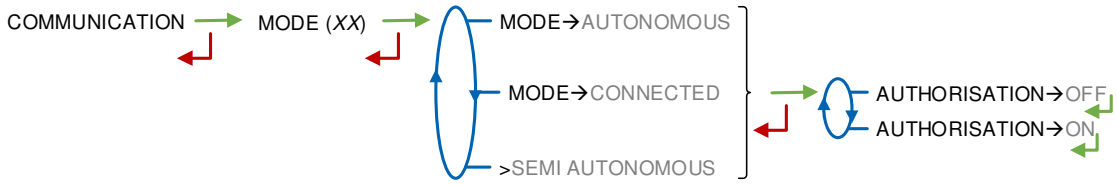
5.2.3 Sub-menu COMMUNICATION

This menu allows to define the configuration of the communication with the control device (main computer). If it's done in METROLOGICAL mode it has priority. But it can be define by this menu.

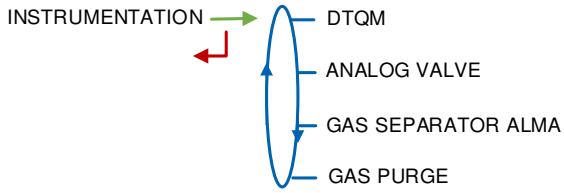
AUTONOMOUS: The MICROCOMPT+ operates in autonomous mode (security management) with or without the useful authorization.

CONNECTED: The MICROCOMPT+ operates with the control device (main computer) with or without the useful authorization.

SEMI AUTONOMOUS: The MICROCOMPT+ operates in autonomous mode (security management) with or without the useful authorization. The MICROCOMPT+ takes into account the authorization given by the control device if connected.

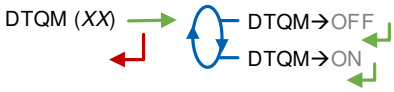


5.2.4 Sub-menu INSTRUMENTATION



5.2.4.1 DTQM

BOTTOM. If the external sealing device on the loading station breaks down, this menu is used to disable the DTQM input. MICROCOMPT+ enables it again when the problem is solved.



5.2.4.2 Analog valve

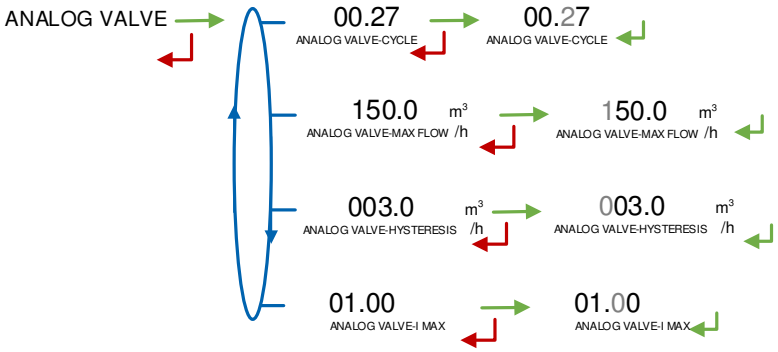
This menu is used to adjust the parameters of the 4-20mA analog valve.

ANALOG VALVE-CYCLE: Cycle time in seconds which cannot be lower than 300ms. Default value: 2sec

ANALOG VALVE-MAX FLOW: Maximum flowrate when the valve is totally open.

ANALOG VALVE-HYSTERESIS: Maximum permissible deviation between the set-flowrate and real value of flow in m^3/h.

ANALOG VALVE-I MAX: Maximum current variation for each cycle (default value: 1mA).



5.2.4.3 Gas separator ALMA

This menu is used to set up a filtration timer, which must be between 0.0 and 9.9 seconds. It is used to control the wet or dry status of one of the DG3001 gas detectors installed at low and high points of the ALMA gas separator.

5.2.4.4 Gas purge

This menu is used to set up the maximum timer of a purge sequence. The value must be between 1 and 120 seconds.

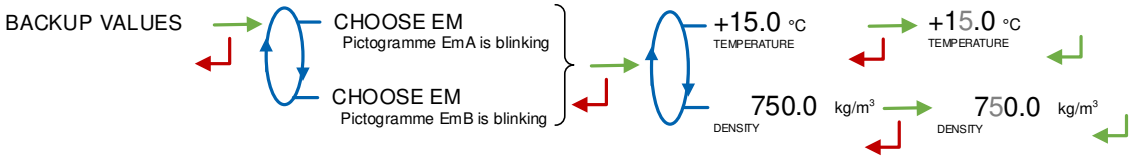
The message NO GAS PURGE appears if the system is not taken into account.

5.2.5 Sub-menu BLENDER

This menu is useful in DUAL version, if the secondary measuring system has been activated as a blender in METROLOGICAL mode (except when the value is given by the main computer SESAME II). The blending rate can be modified in SUPERVISOR mode.

5.2.6 Sub-menu BACKUP VALUE

This menu allows setting the backup values for temperature and density for both measuring systems EMA and EMB. It is available when the menu METROLOGICAL>CONFIGURATION>CONVERSION is ON and if the density meter is activated.

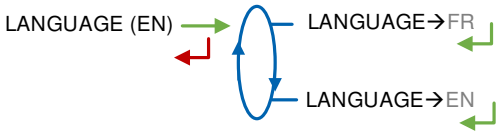


5.3 Menu TIME ADJUSTMENT

Date and time are set in METROLOGICAL mode. You can adjust time (±2h) one time a day. Use French format, for example: 14.41 means 2.41 pm.

5.4 Menu LANGUAGE

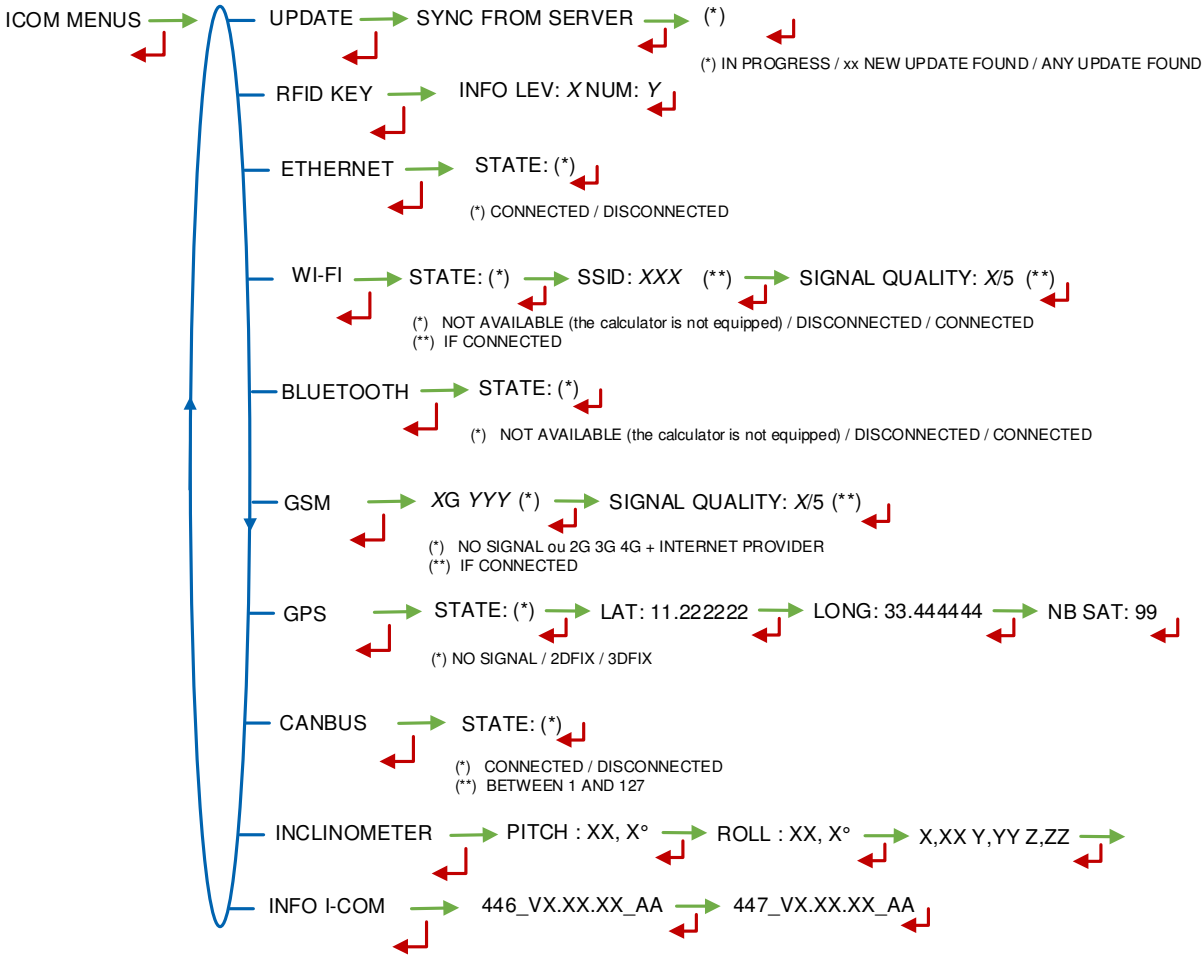
This menu is available if a translation catalogue is uploaded in the MICROCOMPT+.



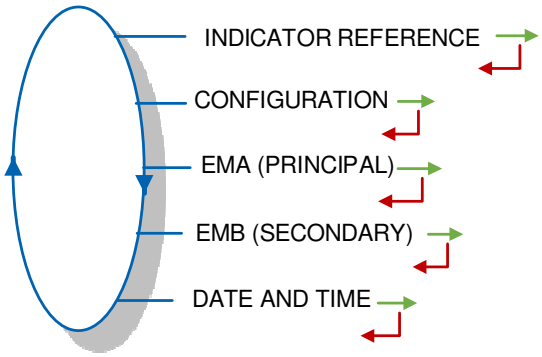
5.5 Menu ICOM MENUS

The sub-menus are different according to the level of access: The ANNEX 1 shows all the sub-menus available.

Put the RFID blue key Level1-User to display the available parameters as shown below:



6 CONFIGURE THE MICROCOMPT+: METROLOGICAL MODE

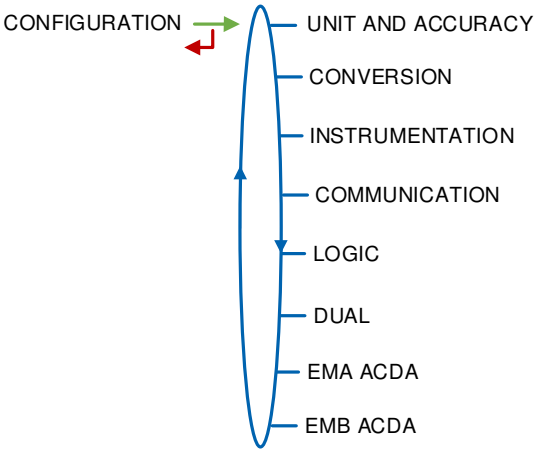


Regardless of the main quantity choice, some parameters will be define there in volume at metering conditions (VM): minimum quantity, flowrates ranges, etc.

6.1 Sub-menu INDICATOR REFERENCE

Set the MICROCOMPT+ serial number (5 figures) then the slave number that is useful for commissioning and maintenance operations with the µConfig tool.

6.2 Menu CONFIGURATION



6.2.1 Sub-menu UNIT AND ACCURACY

This menu is different with or without conversion. When the DUAL option described at §6.2.6 is active, that is to say when the MICROCOMPT+ manages two measuring systems (EMA and EMB), a specific menu appears that allows to choose the measuring system before configuring units and accuracy.

Find below the display and setup format of quantities:

Scale and precision of display	Quantity	Totaliser
L, kg or nothing	123456 + picto(*)	« 123456 / 789___ » + picto(*)
L, kg or nothing with precision 10^{-1}	12345.6 + picto(*)	« 123456 / 789.0__ » + picto(*)
L, kg or nothing with precision 10^{-2}	1234.56+ picto(*)	« 123456 / 789.01__ » + picto(*)
L, kg or nothing with precision 10^{-3}	123.456 + picto(*)	« 123456 / 789.012__ » + picto(*)
Volume in m^3	123456 m^3	« 123456 / 789___ » m^3
Volume in m^3 with precision 10^{-1}	12345.6 m^3	« 123456 / 789.0__ » m^3
Volume in m^3 with precision 10^{-2}	1234.56 m^3	« 123456 / 789.01__ » m^3
Volume in m^3 with precision 10^{-3}	123.456 m^3	« 123456 / 789.123__ » m^3

(*)picto= L, kg or nothing, depending on metrological configuration.

However, the input and display mask is automatically adjusted by the MICROCOMPT+ for the value being displayed. This enables the edition of values that can strongly vary.

Thereby, you may have to set an intermediate value of flowrate in order to switch from a huge value to a tiny value. So the MICROCOMPT+ will change the format for the next input.

Table for flowrates, expressed in scale interval per minute:

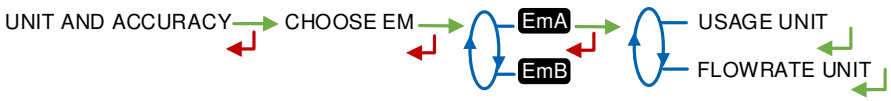
Flowrate value	Display format
0 – 66.5	12.345 L/min
66.6 and more	12345 L/min

Table for flowrates, expressed in K-scale interval per hour:

Flowrate value	Display format
0 – 0.5	1.234 m^3/h
0.6 – 6.5	12.34 m^3/h
6.6 – 666.5	123.4 m^3/h
666.6 and more	12345 m^3/h

6.2.1.1 With CONVERSION→OFF

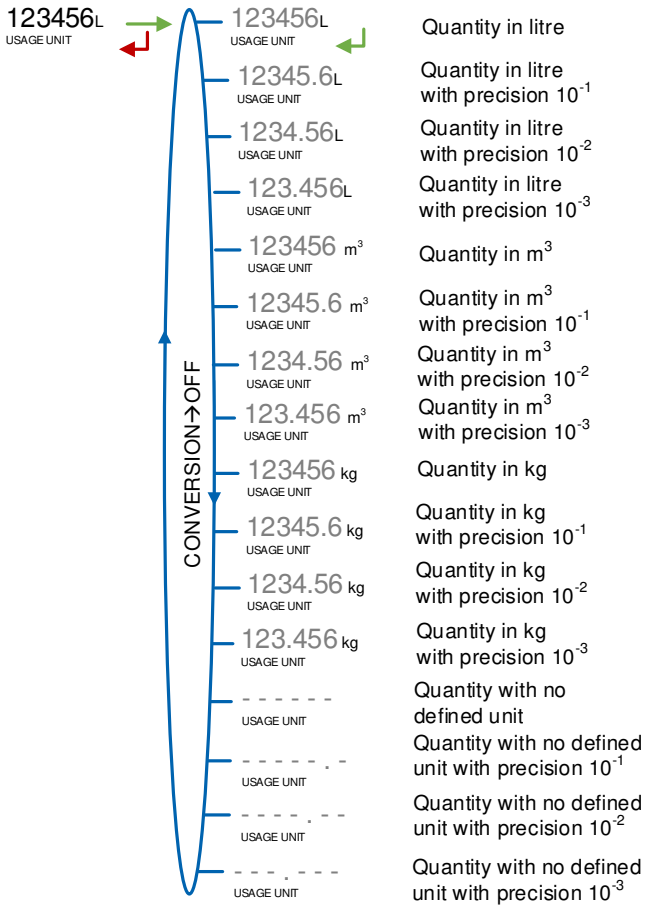
When two measuring systems are set, the first step is to choose the measuring system to be configured EMA or EMB:



Unit configuration must be done for both measuring systems.

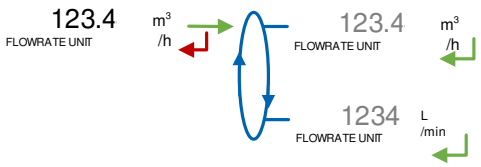
USAGE UNIT: Choose the unit and the accuracy of the quantity that will be displayed and printed. Enter a generic quantity: volume (L or m^3), mass (kg) or undefined unit. If you choose the unit 'kg' or undefined unit, the MICROCOMPT+ counts scale intervals.

For example for a mass flowmeter, select the kg-unit or the undefined unit and then choose the precision. In that case, a label with the mass-unit 't' (for tons) will have to be applied on the MICROCOMPT+ display.

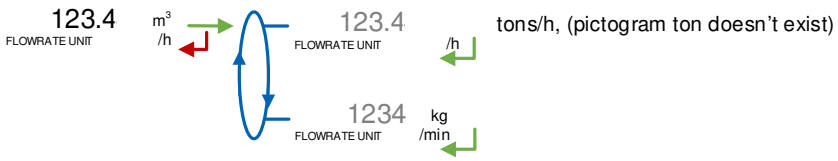


FLOWRATE UNIT: Choose the unit of the flow rate that will be displayed and printed. Units for flowrates are unique for each measuring system and are compatible with the displayed or edited value (scale interval per minute or kilo-scale interval per hour) for the displayed precision (from 0 to 3 decimals depending on the value to be displayed).

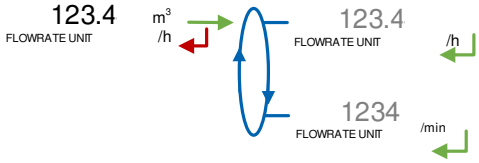
<u>Usage unit: L or m^3</u>



<u>Usage unit: Kg</u>

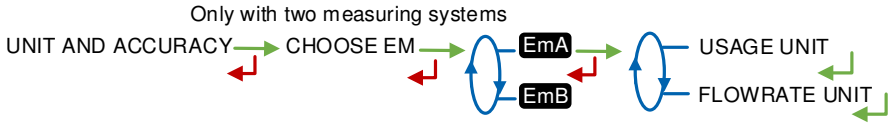


Usage unit: undefined



6.2.1.2 With CONVERSION→ON

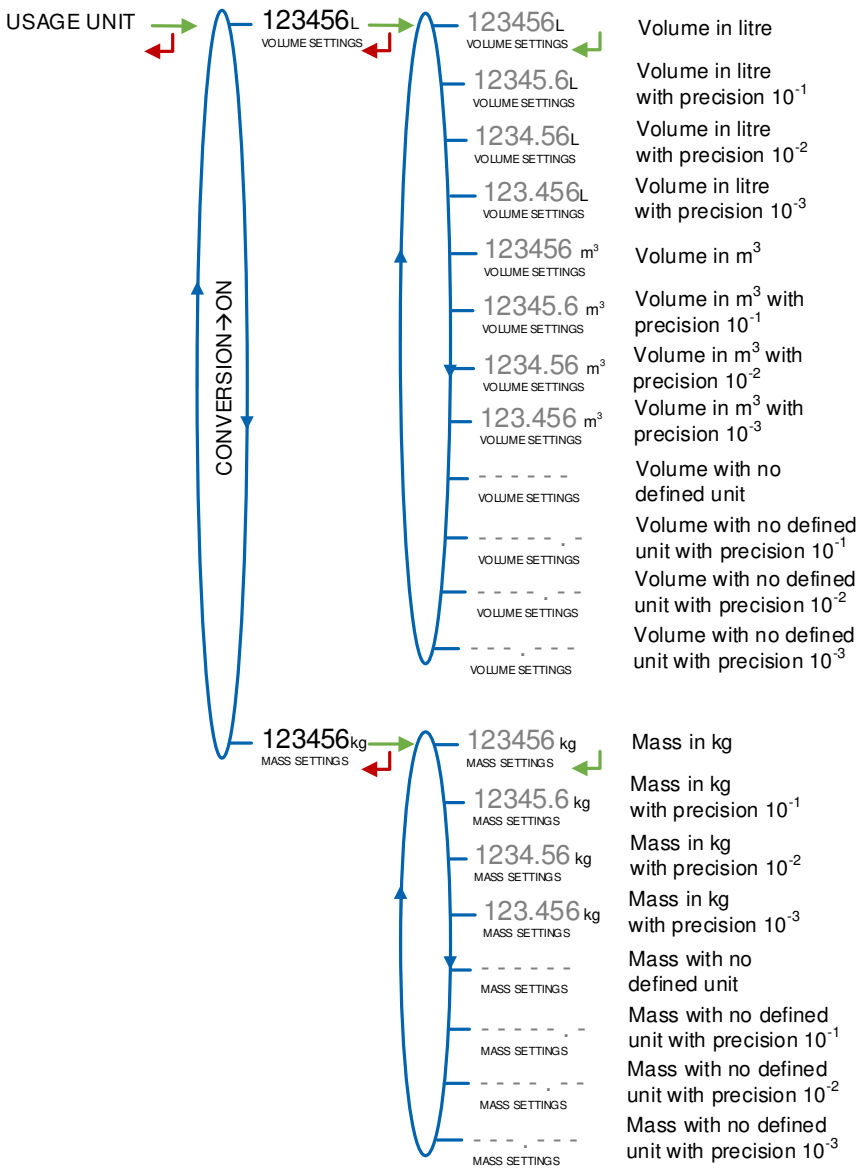
This menu is used to configure units for volume and mass. When two measuring systems are set, the first step is to choose the measuring system to be configured EMA or EMB:



Unit configuration must be done for both measuring systems.

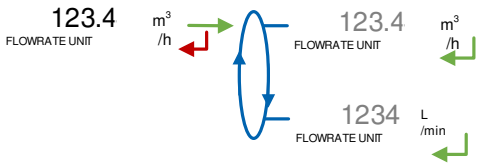
USAGE UNIT:

- **VOLUME SETTINGS**: Choose the unit and the accuracy of the volume that will be displayed and printed.
- **MASS SETTINGS**: Choose the unit and the accuracy of the mass that will be displayed and printed.

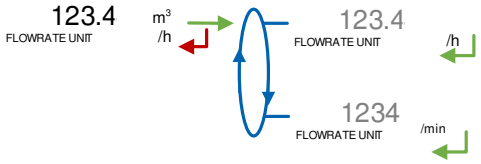


FLOWRATE UNIT: Choose the unit of the flow rate that will be displayed and printed. Units for flowrates are unique for each measuring system and are compatible with the displayed or edited value (scale interval per minute or kilo-scale interval per hour) for the displayed precision (from 0 to 3 decimals depending on the value to be displayed).

Usage unit: L or m³

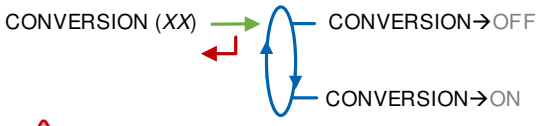


Usage unit: undefined



6.2.2 Sub-menu CONVERSION

This menu is used to validate operation with or without conversion of volume measured in base conditions and mass calculation.



Changing the status forces the reset of the metrological diary by causing a MEMORY LOST fault.

When conversion is active, set the parameters that follow. Choices are made for both EMA and EMB measuring systems:

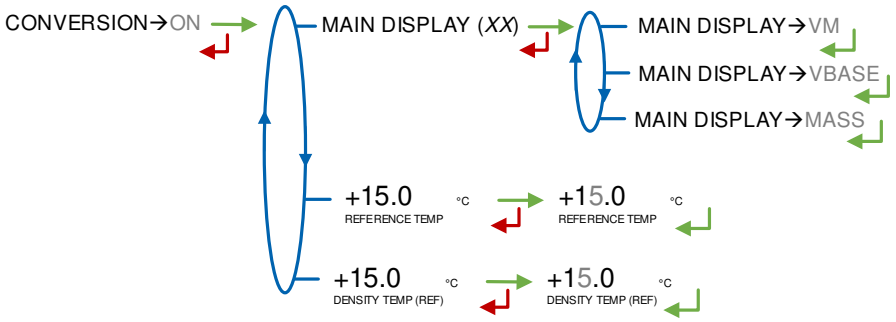
MAIN DISPLAY: Choose the type for displayed quantity (**VM**: volume in metering conditions, **VBASE**: volume converted to base conditions or **MASS**: mass)

REFERENCE TEMP.: Record the reference temperature for conversion. Default value: 15°C for the most common conversion.

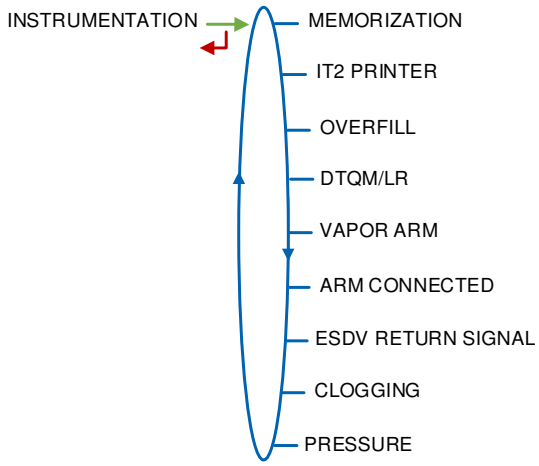
DENSITY TEMP (REF): Record the reference temperature for set up densities. Default value: 15°C for density at 15°C (MV15).

Changing one of the reference temperature values resets the metrological diary by causing a MEMORY LOST fault.

The conversion table is chosen during the configuration of each measuring system.



6.2.3 Sub-menu INSTRUMENTATION



6.2.3.1 Memorization

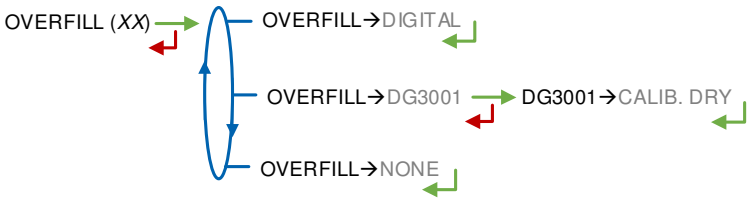
Operation with or without memorization. If it's not active, the metrological diary display won't be viewable in user mode.

6.2.3.2 IT2 printer

Operation with or without IT2 ticket mechanical printer. Specify whether another ticket printing device is connected.

6.2.3.3 Overfill

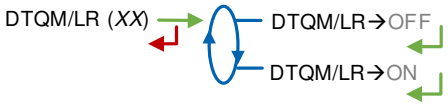
Control of the overfill protection (digital or DG3001).



6.2.3.4 DTQM

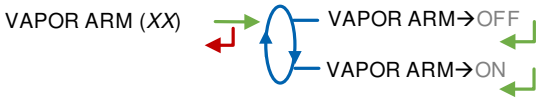
BOTTOM. Operation with or without DTQM.

In case of failure of the DTQM electronic seal, the input can be disabled in SUPERVISOR mode (CONFIGURATION>INSTRUMENTATION>DTQM).



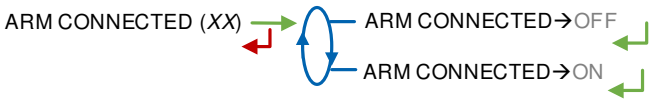
6.2.3.5 Vapor arm

BOTTOM. Operation with or without control of the vapor arm.



6.2.3.6 Arm connected

BOTTOM. Operation with or without control of the loading arm connection to the truck.



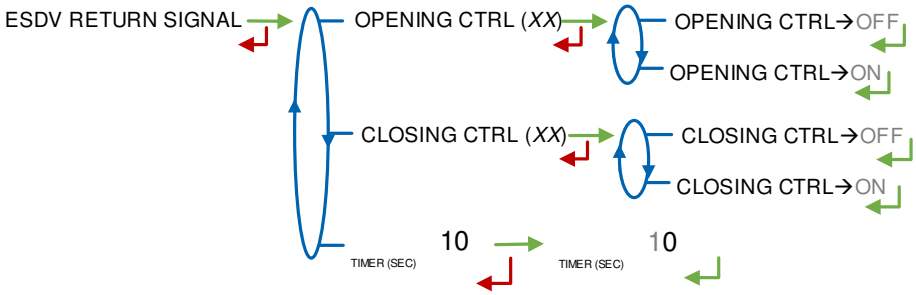
6.2.3.7 ESDV return signal

BOTTOM. This menu is used to set up the return signal of the emergency shutdown valve (ESDV):

OPENING CTRL: Instrumentation of the input 'open ESDV return signal'.

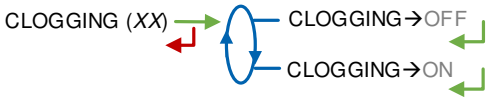
CLOSING CTRL: Instrumentation of the input 'close ESDV return signal'.

TIMER: Control of the position mismatch. The value is set to zero to disable this control. The set up value corresponds to the maximum duration before alarm is triggered (in seconds)



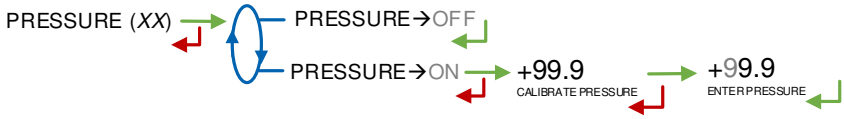
6.2.3.8 Clogging

Operation with or without control of the clogging filter fouling.



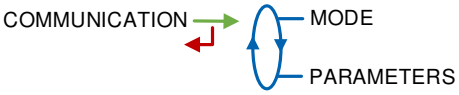
6.2.3.9 Pressure

When activated, this menu is used to calibrate a pressure sensor for two measuring points minimum. Set the value in bar. The pressure measured can be displayed during the measurement in USER mode.



6.2.4 Sous-menu COMMUNICATION

This menu allows to configure the communication with the control device (main computer).



6.2.4.1 Mode

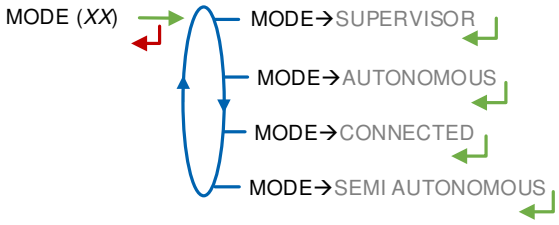
Communication mode with the control device (main computer):

SUPERVISOR: The choice will be done in SUPERVISOR mode (CONFIGURATION>COMMUNICATION>MODE).

AUTONOMOUS: The MICROCOMPT+ operates in autonomous mode (security management) with or without the useful authorization.

CONNECTED: The MICROCOMPT+ operates with the control device (main computer) with or without the useful authorization.

SEMI AUTONOMOUS: The MICROCOMPT+ operates in autonomous mode (security management) with or without the useful authorization. The MICROCOMPT+ takes into account the authorization given by the control device if connected.



6.2.4.2 Parameters

a) SESAME II:

Definition of the communication protocol SESAME II:

NUMBER OF INJECTORS: Operation with the ALMA SESAME II eight injectors protocol (the three injectors protocol is for old versions only).

The menu SUPERVISOR>SETTINGS>ADDITIVATION>INJECTORS SETTINGS is used to set the number of injectors controlled by the MICROCOMPT+.

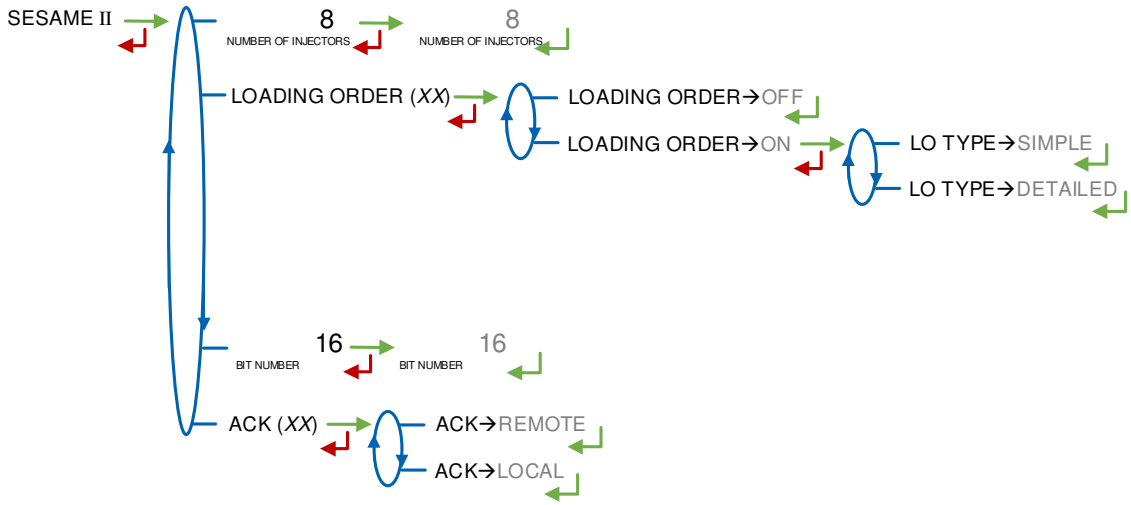
LOADING ORDER: Operation with loading order (LO) or without loading order, (multi-customer). With LOADING ORDER→ON, Specify the display on the MICROCOMPT+ is simple (customer No., injectors No) or detailed

(additional information such as product name, additive, dye, denaturant, rates).

BIT NUMBER: Operation with ALMA SESAME II network with 16 or 32-bits data coding of the volume

ACK: Acknowledgement of the major alarms can be made in 2 ways:

- **REMOTE**: By the control device (remote acknowledgement)
- **LOCAL**: On the MICROCOMPT+



b) Communication port

Two communication ports are available on the MICROCOMPT+.

COM1: RS485 port. If COM1 is already used to control an MICRO-BLEND additivation device, a ticket mechanical printer or a mass flowmeter, COM1 configuration is useless (specific factory configurations)

COM2: RS485 port

Any protocols are MODBUS data protocol and use the slave number set in INDICATOR REFERENCE menu. Several protocols can be configured on a same link. Configuration of the protocols for each communication port:

SESAME II: Communication over the ALMA SESAME II network. This is an authorization and secured transmission network

MEMO DIARY: Communication over a metrological diary to retrieve measurement data on the control device (main computer)

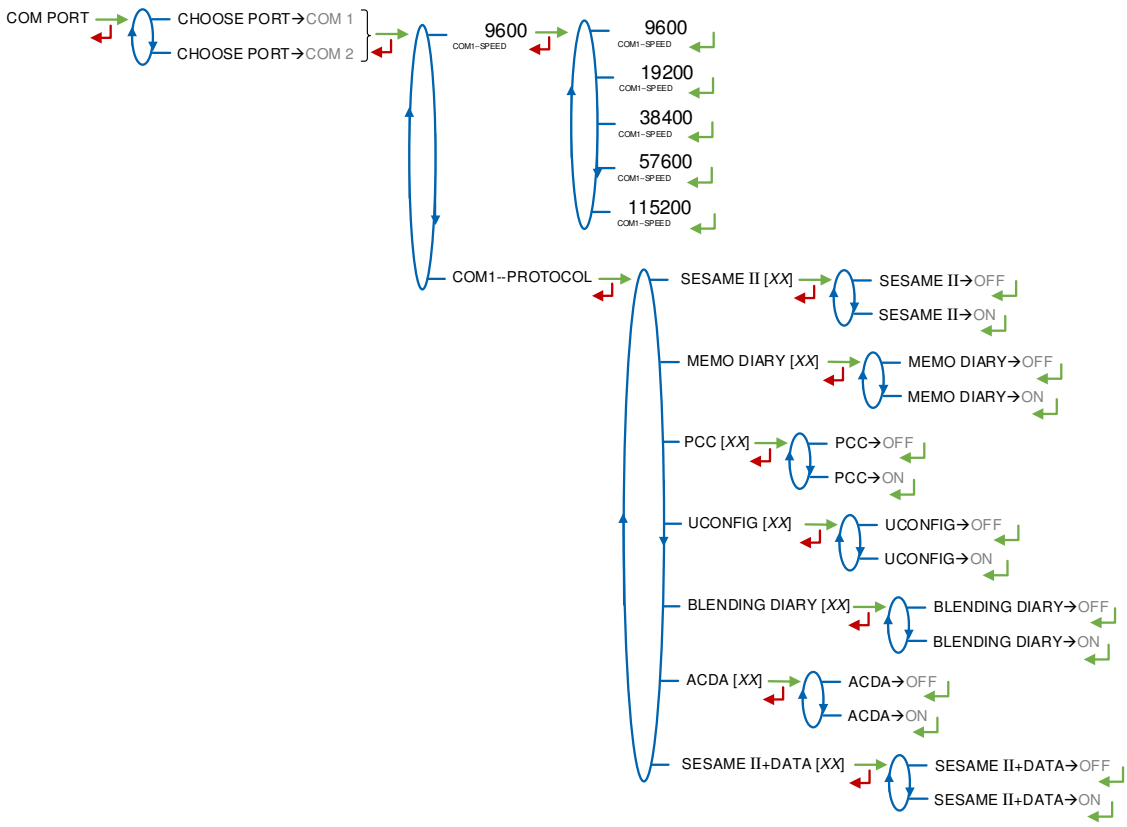
PCC: Proofread of the metrological diary with PCC-recorder extension

UCONFIG: Communication over the ALMA protocol µConfig. It is useful to transferring data between MICROCOMPT+ and the control device (main computer)

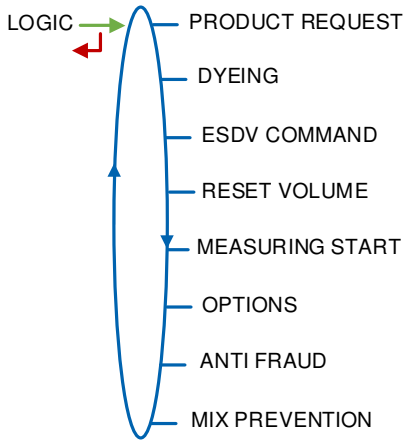
BLENDING DIARY: Diary of the blender flowrates for the last operation

ACDA: Expansion of injection possibilities through a remote external system ACDA

SESAME II+DATA: Extension to SESAME II network for additional data



6.2.5 Sub-menu LOGIC

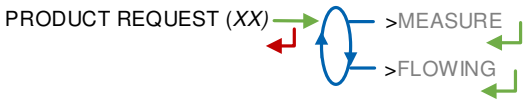


6.2.5.1 Product request

Configuration of the product request.

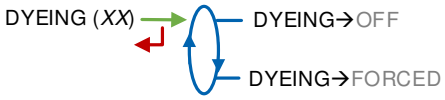
MEASURE: The product request is activated during the whole measurement

FLOWING: The product request is activated when the valve is operated. The pump starts within 5 seconds (timer).



6.2.5.2 Dyeing

This menu is used to activate and configure systematic and non-metrological dyeing.



In case of forced dyeing, choose the type of additivation device: **ACDA** or **METERING**, then set the parameters:

CHOOSE INJECTOR: Choose the injector for systematic dye injection

ASSOCIATED INPUT: Associated input intended as pulse counter

<u>The six following parameters are not applicable with metrological ACDA:</u>

COEFF (PULSE/L): Injector coefficient in pulse/litre

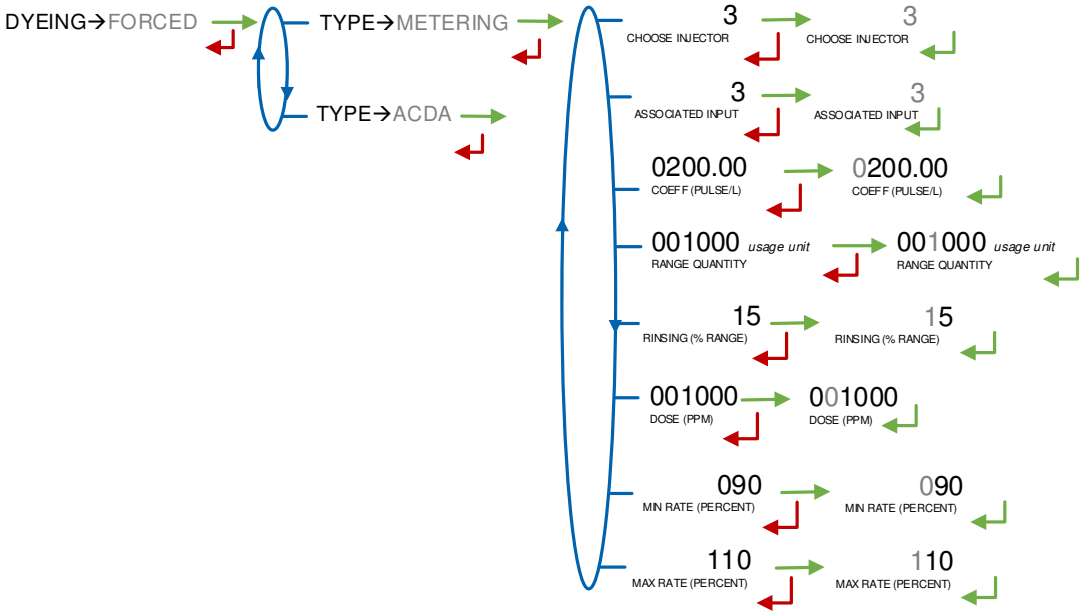
RANGE QUANTITY: Quantity of principal product for an injection, according to the usage unit

RINSING (% RANGE): Rinsing quantity as a percentage of the range quantity.

DOSE (PPM): Concentration of product injected into the main product (ppm). Volume (in milliliters) of the dose to be injected for 1000 scale intervals of product

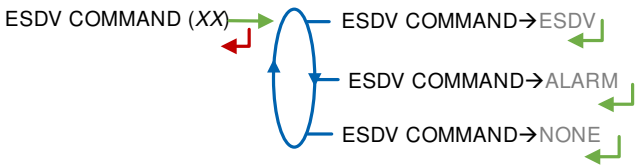
MIN RATE (PERCENT): Dyeing minimum rate below which an alarm is triggered

MAX RATE (PERCENT): Dyeing maximum rate below which an alarm is triggered



6.2.5.3 ESDV command

The emergency shutdown valve ESDV-output can be used to trigger the safety valve or an alarm.



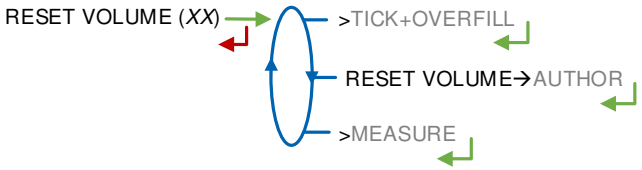
6.2.5.4 Reset volume

BOTTOM. This menu is used to configure the triggering event that resets the MICROCOMPT+ partial counter.

TICK+OVERFILL: Reset over disconnection of loading security devices (ground, overfill probe…)

AUTHOR: Reset over authorization lost

MEASURE: Reset over measurement ends



6.2.5.5 Measuring start

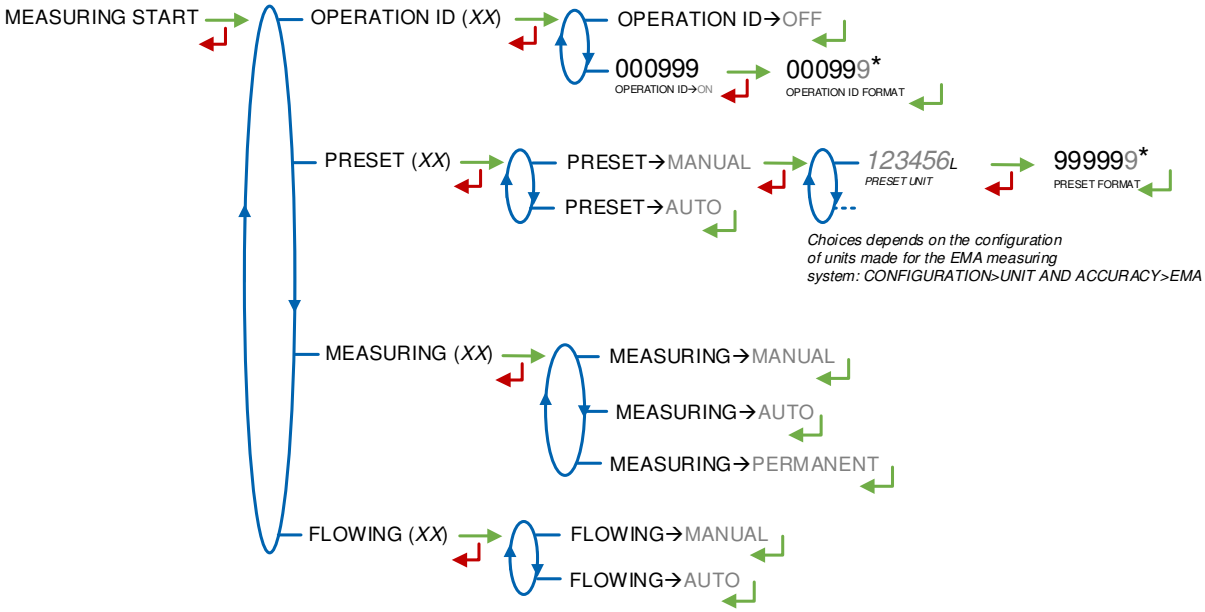
This menu is used to choose the MICROCOMPT+ operating mode before the measurement starts.

OPERATION ID: Input mask* for operation identifier. It defines the format of data to limit input errors. The operation identifier is set by the user before starting loading. If the mask is set to '39999', the value set in USER mode may not exceed '40000'.

PRESET: Input mask* for preset quantity. It defines the format of data to limit input errors. Choose the unit for preset quantity, then enter the volume. **Note**: scale interval and accuracy proposed depends on the choices made for the units of the EMA measuring system: CONFIGURATION>UNIT AND ACCURACY>EMA and can't be lower than them

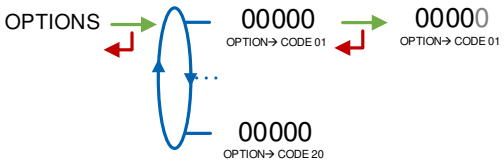
MEASURING: Condition for the MICROCOMPT+ to start measuring

FLOWING: Condition for the MICROCOMPT+ to start flowing



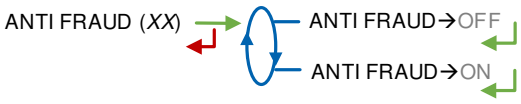
6.2.5.6 Options

See the ANNEX 3 to have explanations about the codes for the MICROCOMPT+ options configuration.



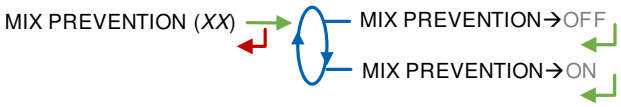
6.2.5.7 Anti-fraud

A presumption of a change of compartment is considered as a fraud. This menu allows you to activate additional injections of denaturant in the case of fraud.



6.2.5.8 Mix prevention

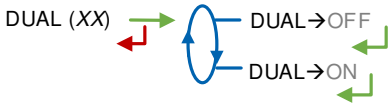
This menu allows you to activate or not control and appearance of a rinsing default of the line at the beginning of a measurement.



6.2.6 Sub-menu DUAL

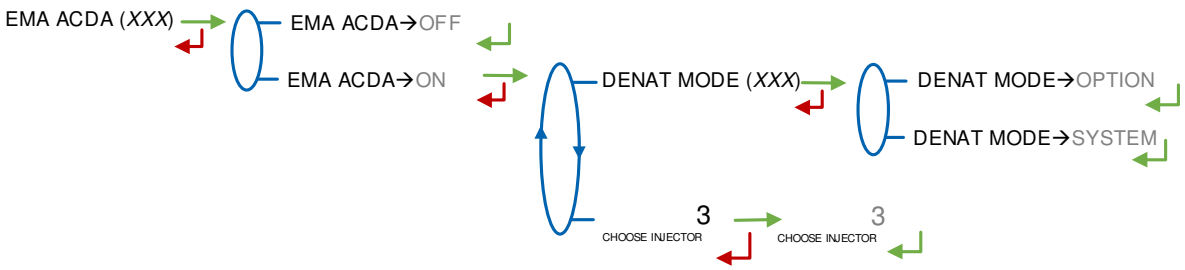
This menu is used for DUAL version to activate the secondary measuring system called EMB which is available for blending or metrological denaturation.

Changing the status forces the reset of the metrological diary by causing a MEMORY LOST fault.



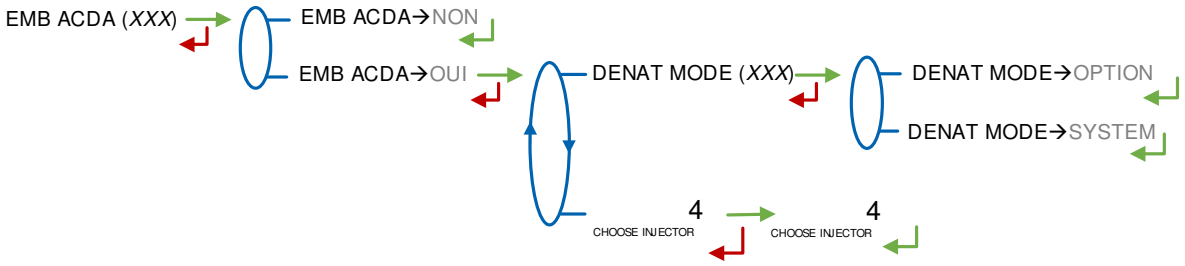
6.2.7 Sub-menu EMA ACDA

This menu is used to activate through EMA an ACDA remote additional measuring system for injection. It is possible to choose the type of denaturation which may be systematic (choose **SYSTEM**) or optional (choose **OPTION**). Then set the injector number.

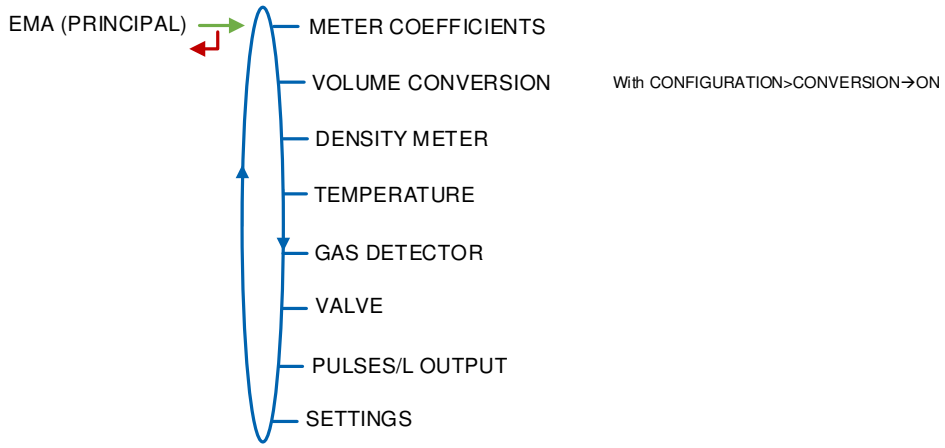


6.2.8 Sub-menu EMB ACDA

This menu is used to activate through EMB an ACDA remote additional measuring system for injection. It is possible to choose the type of denaturation which may be systematic (choose **SYSTEM**) or optional (choose **OPTION**). Then set the injector number.



6.3 Menu MEASURING SYSTEM EMA (PRINCIPAL)



6.3.1 Sub-menu METER COEFFICIENT

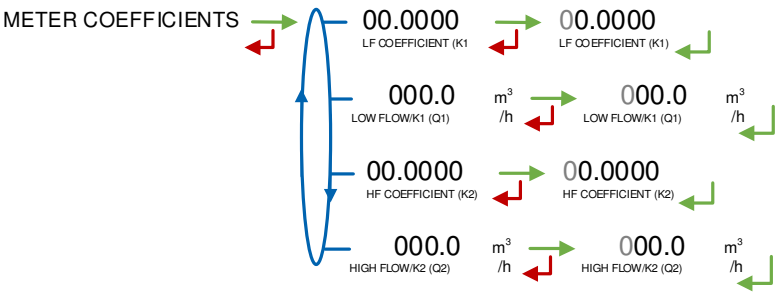
Enter the coefficient of the measuring system meter (pulses/liter).

LF COEFFICIENT (K1): Coefficient for low flow (pulses/liter)

LOW FLOW/K1 (Q1): Low flow reference (m^3/h)

HF COEFFICIENT (K2): Coefficient for high flow (pulses/liter)

HIGH FLOW/K2 (Q2): High flow reference (m^3/h)

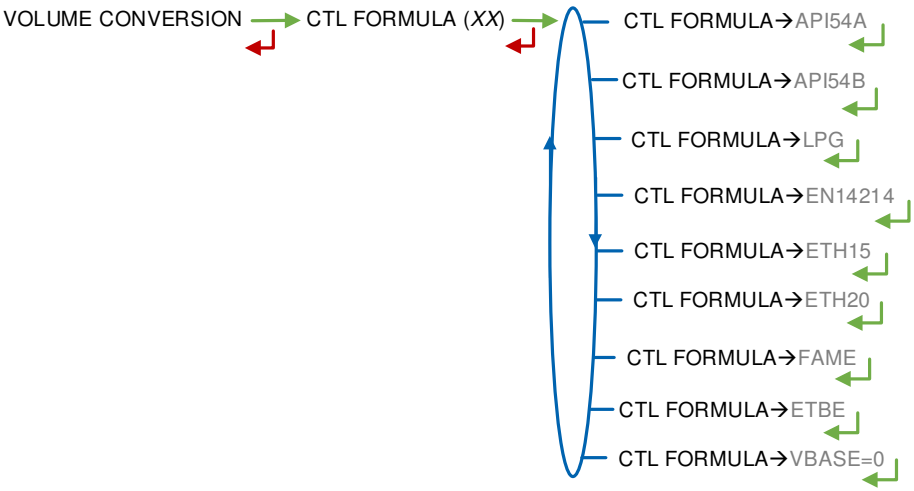


6.3.2 Sub-menu VOLUME CONVERSION

This menu is available when conversion is active. Choose the conversion table. A list of the conversion formula or tables recorded in the MICROCOMPT+ is proposed.

The choice of the conversion formula causes an implicit definition of valid density and temperature ranges to guarantee the conversion result.

Changing the status forces the reset of the metrological diary by causing a MEMORY LOST fault.

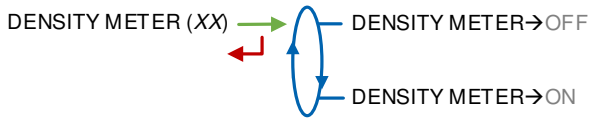


Choose the conversion table according to the product:

Conversion formula	Product
API54A	Crude products
API54B	Refined products
LPG	LPG and bitumen
EN14214	Blended biofuels
ETH15	Ethanol at 15°C
ETH20	Ethanol at 20°C
FAME	Fatty acid methyl esters
ETBE	Ethyl tert-butyl ether
VBASE=0	No conversion: The volume at base conditions is not calculated

6.3.3 Sub-menu DENSITY METER

This menu is used to operate with a density meter or not. Density unit is kg/m^3.



When the option is active, the parameters of the density meter has to be set:

TEMP (REF): If the conversion is not active (CONVERSION→OFF), the reference temperature corresponds to the instantaneous temperature. If the conversion is active (CONVERSION→ON), the reference temperature can be rather the instantaneous temperature, then choose TEMP (REF)→INSTANT or the density reference temperature, then choose >T REF. MV.

INPUT: Configuration of the density meter whether it is a frequency or an analog device

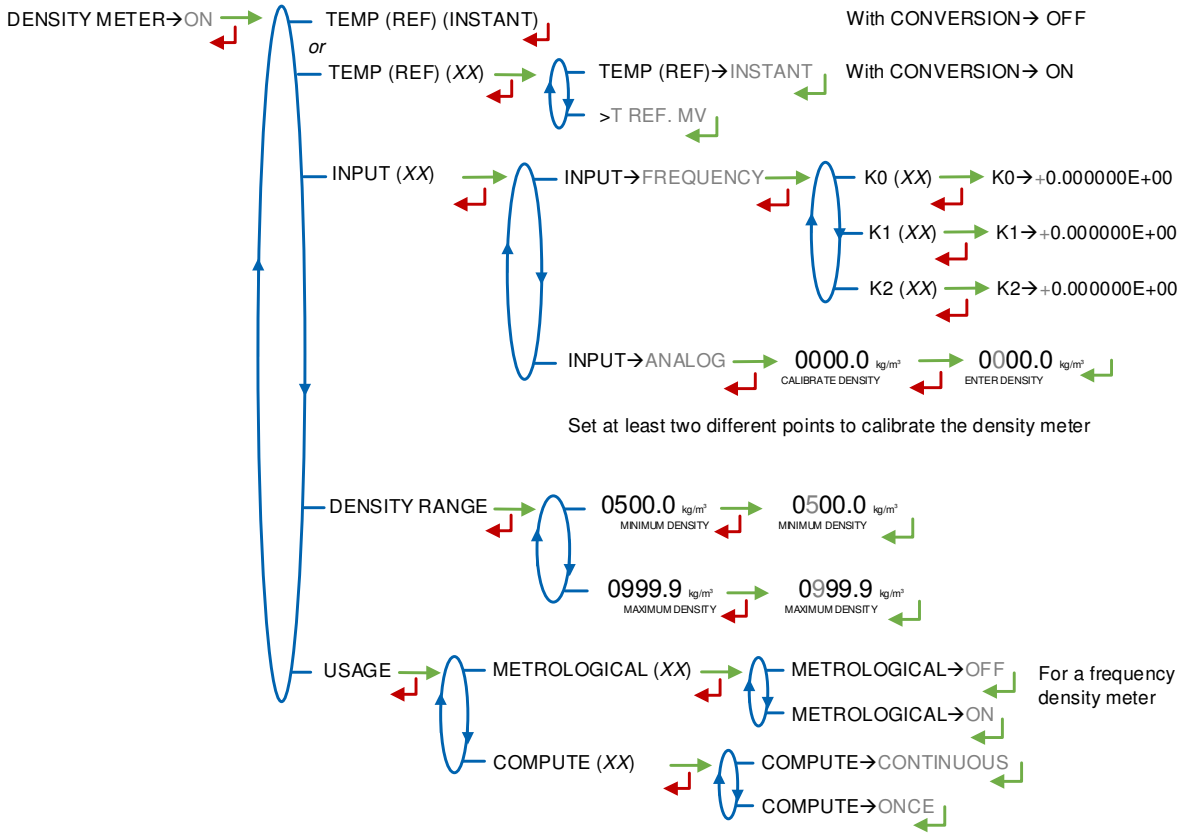
- Frequency density meter: set the coefficients K0, K1 and K2, according to the standard NF M08-16
- Analog density meter: calibrate the device for two measuring points minimum.

DENSITY RANGE: Set the minimum and maximum density values above which a blocking alarm is triggered.

USAGE:

- **METROLOGICAL**: In that case, the density value is acquired continuously, then choose if all values resulting from this measure are guaranteed or not.

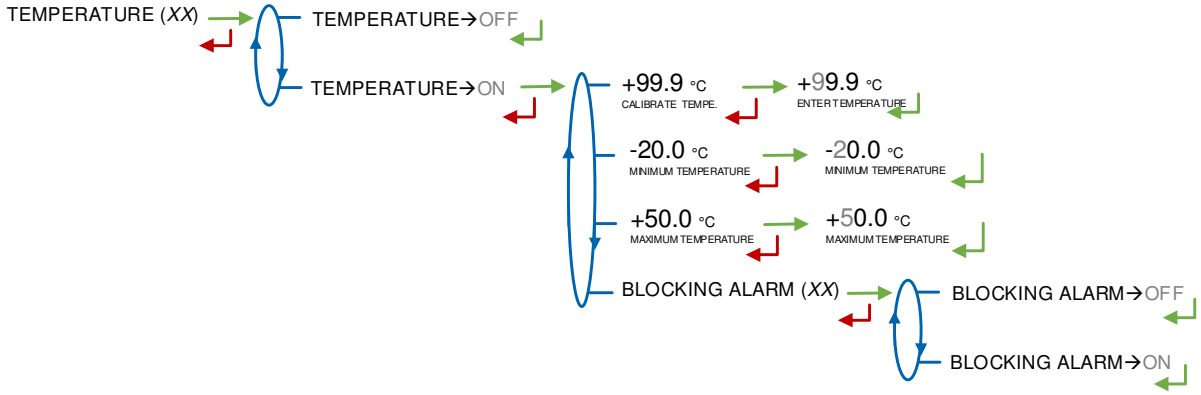
  Warning: An analog device can't be configured that way.
- **COMPUTE**: Choose if the density value is set once at the beginning of the measurement or if it's acquired continuously.



6.3.4 Sub-menu TEMPERATURE

This menu is used to calibrate the temperature into the MICROCOMPT+ for EMA. Depending on the probe, it's possible to:

- Calibrate temperature
- Set the minimum temperature below which an alarm is triggered
- Set the maximum temperature below which an alarm is triggered
- Decide whether the alarm is blocking or not.



6.3.5 Sub-menu GAS DETECTOR

This menu is used to define the gas separator type and features:

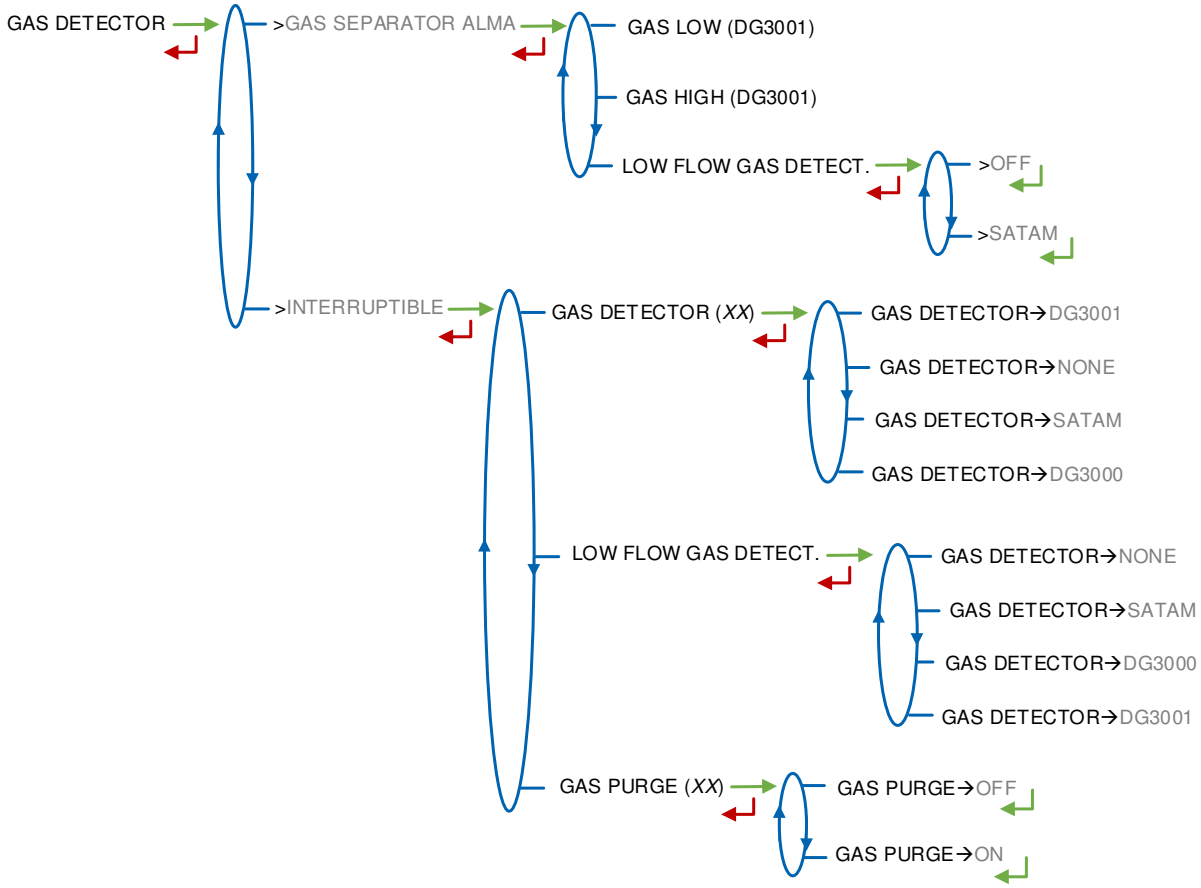
GAS SEPARATOR ALMA: Control the status of the gas detectors of the ALMA separator SGA 80 or SGA 150. The possibility is given to configure a digital input for low flow detector.

- **GAS LOW**: Gas detector at low point of the separator. Check the gas detector is dry and acknowledge
- **GAS HIGH**: Gas detector at high point of the separator. Check the gas detector is dry and acknowledge
- **LOW FLOW GAS DETECT**: Configuration of a digital input for low flow detector.

INTERRUPTIBLE: Define what kind of gas detectors the separator is equipped with and if a purge device is acknowledge.

- **GAS DETECTOR**: Choose the type of gas detector at separator low point. During a measurement, when this detector is dry, the MICROCOMPT+ stops metering.
  - **NONE**: No gas detector
  - **SATAM**: Digital-type detector
  - **DG3000**: Analog detector without calibration
  - **DG3001**: Analog detector with calibration. Make sure the gas detector is dry and validate.
- **LOW FLOW GAS DETECTOR**: Gas detector at high point of the separator. During a measurement, when this detector is dry, the MICROCOMPT+ switches to low flowrate to increase the level of liquid in the separator. Choices are the same as above

- **GAS PURGE**: Define whether the gas separator is equipped with a purge device or not. The purge is done at the acknowledgement of the relevant gas detection alarm.



6.3.6 Sub-menu VALVE

This menu is used to define the valve type:

HYDRAULIC: Hydraulic valve type BRODIE, BROOKS or EMERSON (incremental)

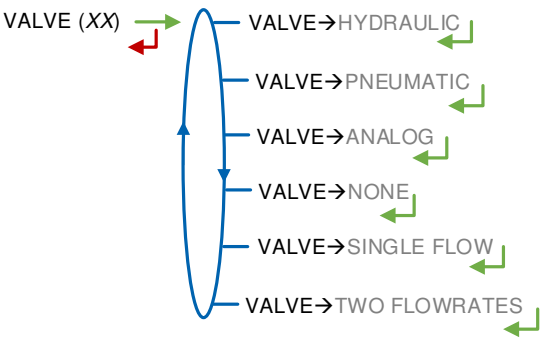
PNEUMATIC: Pneumatic valve type CAMFLEX (incremental)

ANALOG: Analog valve

NONE: No valve

SINGLE FLOW: Solenoid-type valve (digital without flow control)

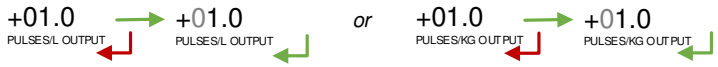
TWO FLOWRATES: Two-stage valve (digital with 2-flow control)



6.3.7 Sub-menu PULSES/L OUTPUT

Copy out the partial quantity measured by EMA.

Record the number of pulses that the MICROCOMPT+ must generate for each display-unit counted in the totaliser. Enter a null value to disable the function. Examples according to the main usage unit:



Note: If a negative value is set, the copy is done on a single channel. The other channel is like the situation: in or out pouring.

6.3.8 Sub-menu SETTINGS

6.3.8.1 Quantity settings

FIXED QUANTITY: Fixed quantity (quantity that is not delivered to the customer)

LF→HF:

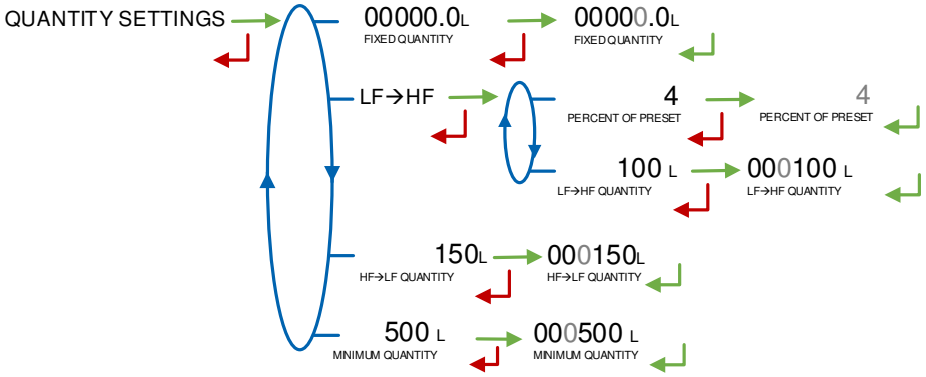
API. Both conditions below are required to switch from low to high flowrate

TOP. Only the second condition below is required to switch from low to high flowrate

- **PERCENT OF PRESET**: Percent of preset (between 0 and 6%). The threshold of transition from low to high flowrate corresponds to the sum of the volume PERCENT OF PRESET added with the LF→HF VOLUME
- **LF→HF QUANTITY**: Quantity beyond which the MICROCOMPT+ switches from low to high flowrate.

HF→LF QUANTITY: Quantity beyond which the MICROCOMPT+ drives the low flowrate at the end of a preset measurement.

MINIMUM QUANTITY: Minimum quantity

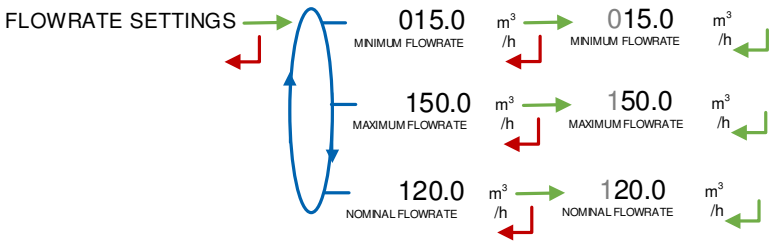


6.3.8.2 Flowrate settings

MINIMUM FLOWRATE: Minimum flowrate below which an alarm is triggered

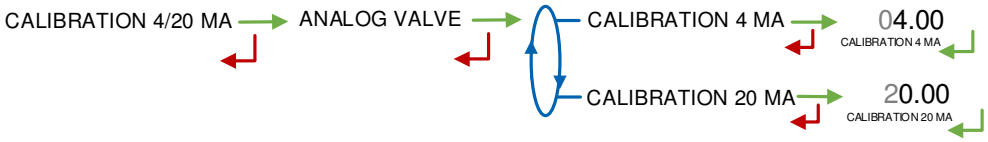
MAXIMUM FLOWRATE: Maximum flowrate above which an alarm is triggered

NOMINAL FLOWRATE: Set-flowrate relating to high flowrate regulation



6.3.8.3 Calibration analog output

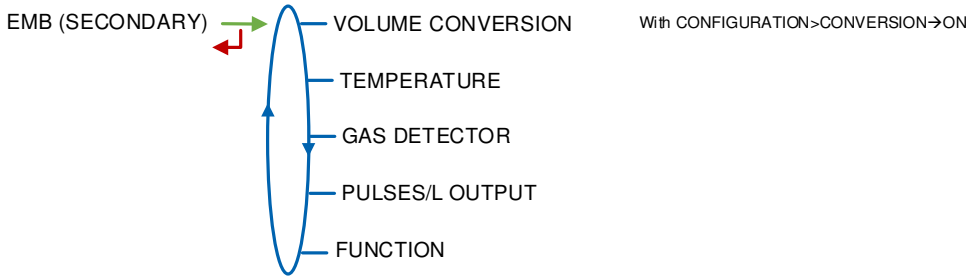
Configuration of the current range of the 4-20 mA output mainly to regulate the analog valve properly.



Note: This dialog remains frozen displaying ANALOG VALVE as longer as a measuring system is being configured with this kind of valve. This is to prevent any unintentional flowing during the calibration.

6.4 Menu MEASURING SYSTEM EMB (SECONDARY)

This function is active when CONFIGURATION>DUAL is ON. The secondary measuring system EMB is available for blending or metrological denaturation. If the function is not active, EMB (NOT AVAILABLE) is displayed and the menus are not available.

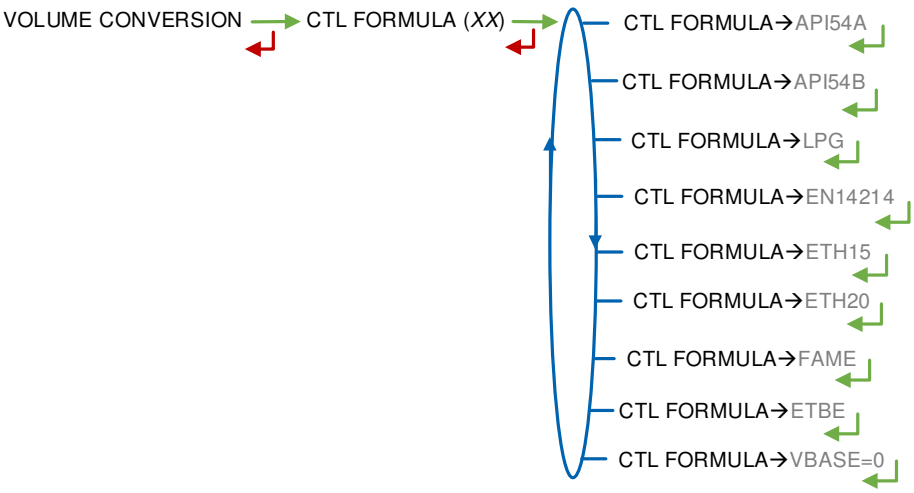


6.4.1 Sub-menu VOLUME CONVERSION

This menu is available when conversion is active. Choose the conversion table. A list of the conversion formula or tables recorded in the MICROCOMPT+ is proposed.

The choice of the conversion formula causes an implicit definition of valid density and temperature ranges to guarantee the conversion result.

Changing the conversion formula forces the reset of the metrological diary by causing a MEMORY LOST fault.



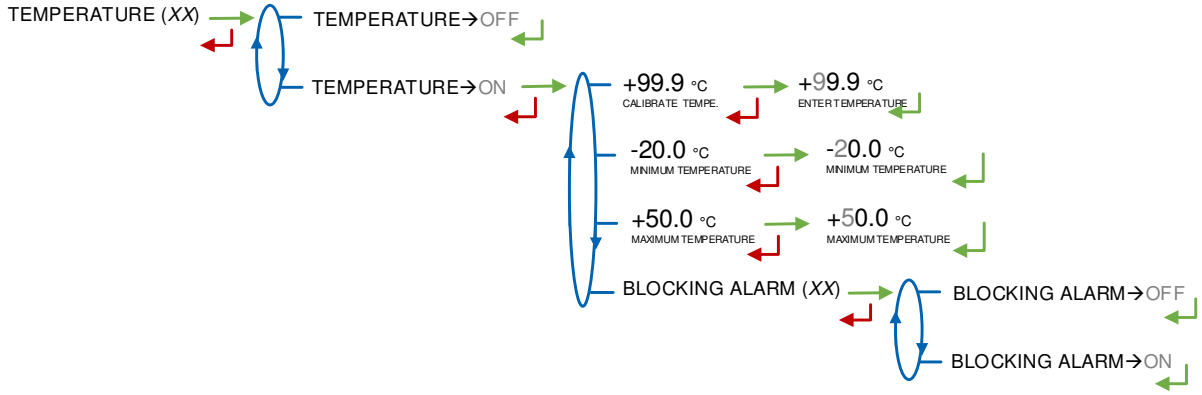
Choose the conversion table according to the product:

Conversion formula	Product
API54A	Crude products
API54B	Refined products
LPG	LPG and bitumen
EN14214	Blended biofuels
ETH15	Ethanol at 15°C
ETH20	Ethanol at 20°C
FAME	Fatty acid methyl esters
ETBE	Ethyl tert-butyl ether
VBASE=0	No conversion: The volume at base conditions is not calculated

6.4.2 Sub-menu TEMPERATURE

This menu is used to calibrate the temperature into the MICROCOMPT+ for EMB. Depending on the probe, it's possible to:

- Calibrate temperature
- Set the minimum temperature below which an alarm is triggered
- Set the maximum temperature below which an alarm is triggered
- Decide whether the alarm is blocking or not.

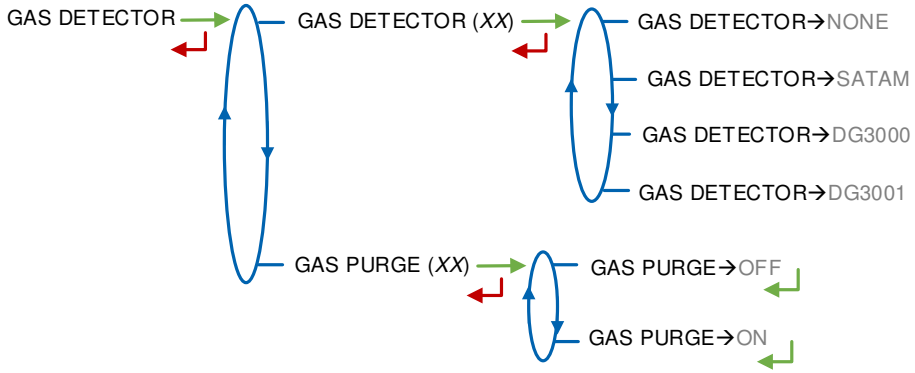


6.4.3 Sub-menu GAS DETECTOR

GAS DETECTOR: Gas detector at high point of the separator. During a measurement, when this detector is dry, the MICROCOMPT+ switches to low flowrate to increase the level of liquid in the separator.

- **NONE**: No gas detector
- **SATAM**: Digital-type detector
- **DG3000**: Analog detector without calibration
- **DG3001**: Analog detector with calibration Check the gas detector is dry and acknowledge

GAS PURGE: Define whether the gas separator is equipped with a purge device or not. The purge is done at the acknowledgement of the relevant gas detection alarm.



6.4.4 Sub-menu PULSES/L OUTPUT

Copy out the partial quantity measured by EMB.

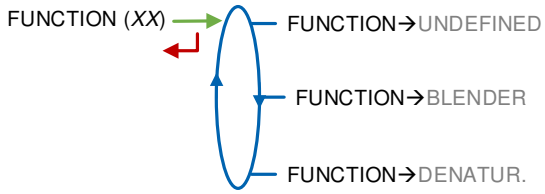
Record the number of pulses that the MICROCOMPT+ must generate for each display-unit counted in the totaliser. Enter a null value to disable the function.

Note: If a negative value is set, the copy is done on a single channel. The other channel is like the situation: in or out pouring.

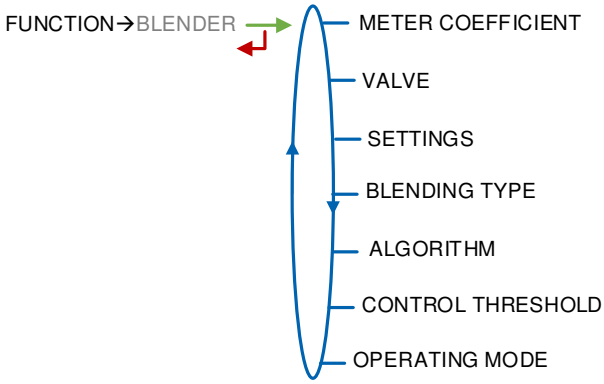
6.4.5 Sub-menu FUNCTION

Define whether EMB is used for blending or for metrological denaturation.

Validating the modification of the EMB function forces the reset of the metrological diary and the EMB totalisers.



6.4.5.1 Function blender



a) Meter coefficient

Set the metering coefficient.

b) Valve

This menu is used to define the valve type:

HYDRAULIC: Hydraulic valve type BRODIE, BROOKS or EMERSON (incremental)

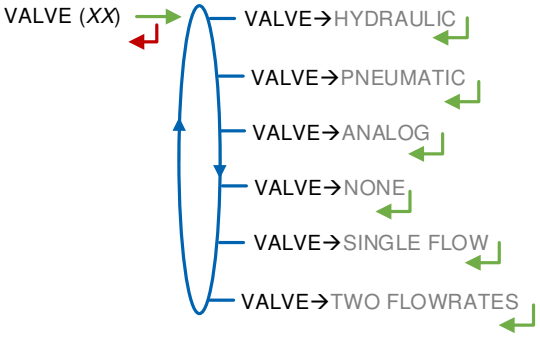
PNEUMATIC: Pneumatic valve type CAMFLEX (incremental)

ANALOG: Analog valve

NONE: No valve

SINGLE FLOW: Solenoid-type valve (digital without flow control)

TWO FLOWRATES: Two-stage valve (digital with 2-flow control)



c) Settings

This menu allows you to configure the quantity and flowrates set values for the EMB blender.

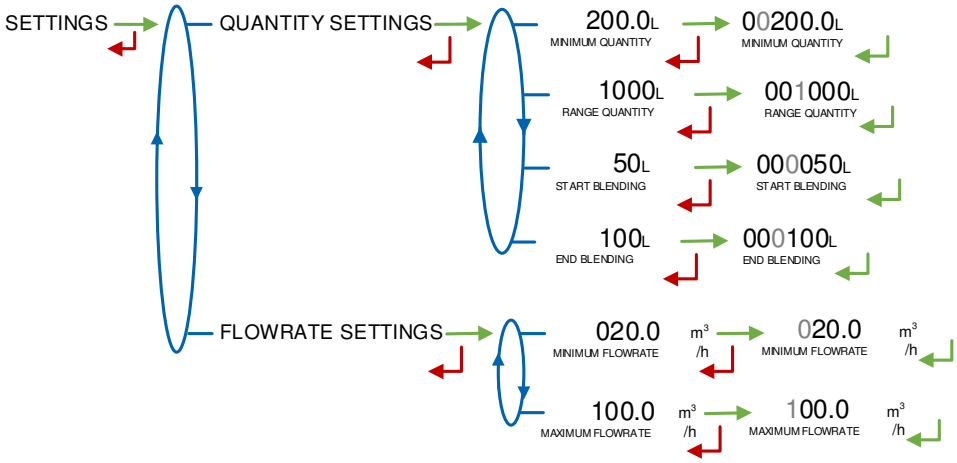
QUANTITY SETTINGS:

The MICROCOMPT+ injects a dose per range, starting after the dead quantity: START BLENDING and finishing as soon as the rinsing volume has been reached: END BLENDING.

- **MINIMUM QUANTITY**: Minimum quantity
- **RANGE QUANTITY**: Range quantity of principal product EMA
- **START BLENDING**: EMA high flowrate dead quantity at the beginning of a blending operation or after an intermediate stop
- **END BLENDING**: EMA dead or rinsing quantity at the end of a range

FLOWRATE SETTINGS:

- **MINIMUM FLOWRATE**: Minimum flowrate below which an alarm is triggered
- **MAXIMUM FLOWRATE**: Maximum flowrate above which an alarm is triggered



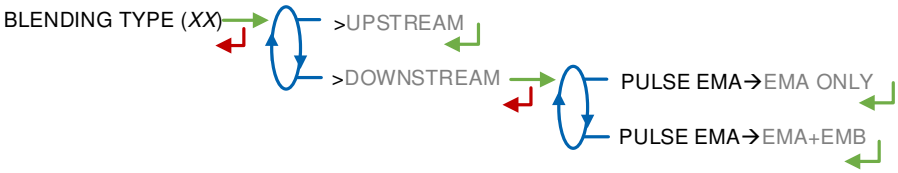
d) Blending type

Define the hydraulic assembly for blending:

UPSTREAM: The blending of principal and secondary products is made upstream the transfer point. Products are counted together.

DOWNSTREAM: The blending of principal and secondary products is made downstream the EMA transfer point. Products are counted separately. Note: the values are not guaranteed when the blending rate is greater than 5% (display alternately with dashes). A choice is given for calculation and copy out of the overall volume:

- **PULSE EMA→EMA ONLY**: The copy EMA reflects the quantity counted by the EMA measuring system and the pulses output set for the EMA
- **PULSE EMA→EMA+EMB**: The copy EMA reflects the non-metrological sum of the quantities counted by both EMA and EMB and the pulses output set for the EMA.



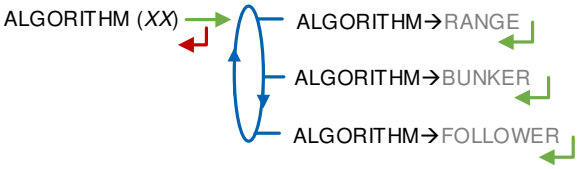
e) Algorithm

Regulation for blending function can be made in different ways according to blending algorithm:

RANGE: Blending is made by range of principal product

BUNKER: The bunker mode is a variation of the range mode: the preset volume is used as the unique range volume

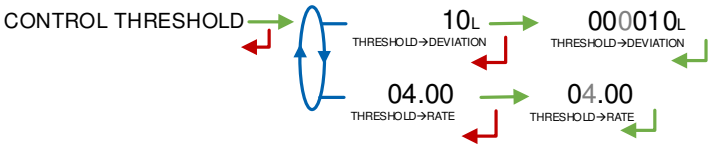
FOLLOWER: Blending for a regulation as close to the final goal as possible.



f) Control threshold

THRESHOLD→DEVIATION: Permissible maximum deviation volume, expressed in litres of secondary product

THRESHOLD→RATE: Deviation between minimum and maximum satisfaction rate



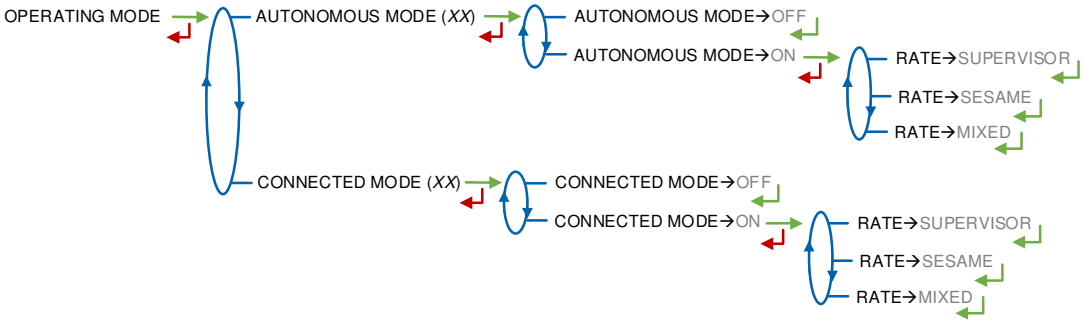
g) Operating mode

Define and activate the operating mode which can be autonomous or connected. No activation means no blending. The blending is ordered in different ways:

SUPERVISOR: Systematic blending is made in accordance with the blending rate set in SUPERVISOR mode

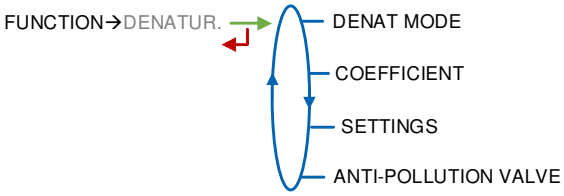
SESAME: Blending is made in accordance with the instruction of the SESAME II main computer

MIXED: Blending is made if required by the SESAME II main computer, in accordance with the blending rate set in SUPERVISOR mode.



6.4.5.2 Function denaturant

In case of metrological denaturation, the volume unit automatically set is the litre, with a precision of one thousandth of a litre.



a) Mode denaturant

Metrological denaturation may be optional or systematic:

OPTION: Requested by SESAME II network or through the quality control
SYSTEM: With any EMA measurements.

b) Meter coefficient

Set the metering coefficient.

c) Settings

This menu allows you to configure the quantity and flowrates set values for the EMB denaturant.

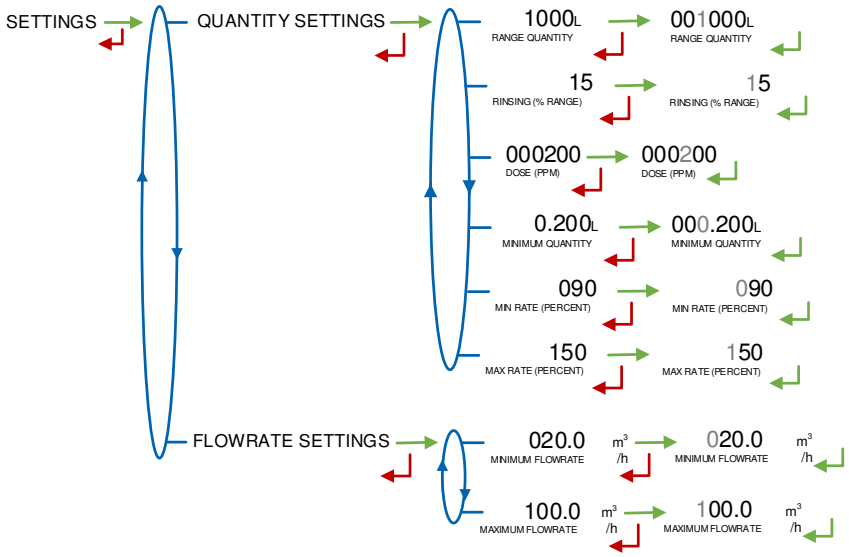
QUANTITY SETTINGS:

- **RANGE QUANTITY**: Range quantity of principal product EMA
- **RINSING (% RANGE)**: Rinsing quantity as a percentage of the range quantity.
- **DOSE (PPM)**: Concentration of product injected into the main product (ppm). Equivalent to the dose injected in millilitres for 1000 litres of product
- **MINIMUM QUANTITY**: Minimum quantity
- **MIN RATE (PERCENT)**: Minimum satisfaction rate between 90 and 95%

- **MAX RATE (PERCENT)**: Maximum satisfaction rate between 105 and 150%

FLOWRATE SETTINGS:

- **MINIMUM FLOWRATE**: Minimum flowrate below which an alarm is triggered
- **MAXIMUM FLOWRATE**: Maximum flowrate above which an alarm is triggered



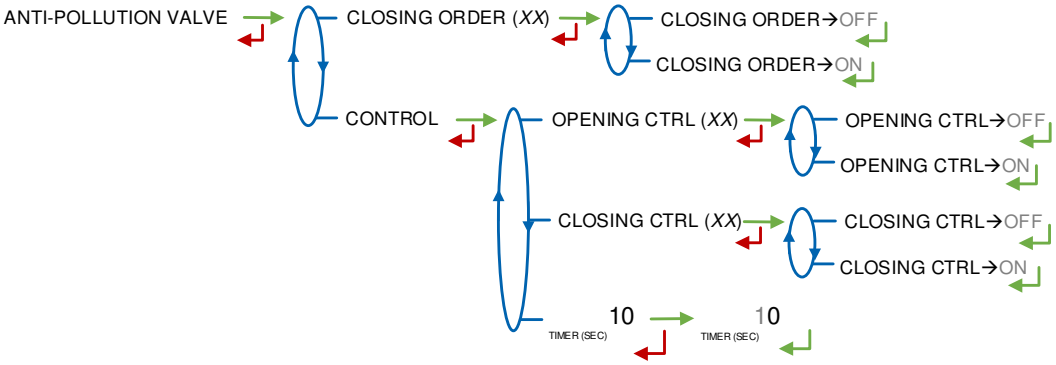
d) Anti-pollution valve

This menu is used to configure the control of the anti-pollution valve.

OPENING CTRL: Feedback control of the open position sensor

CLOSING CTRL: Feedback control of the close position sensor

TIMER: 10 seconds-timer to decide on a possible position deviation (default value).



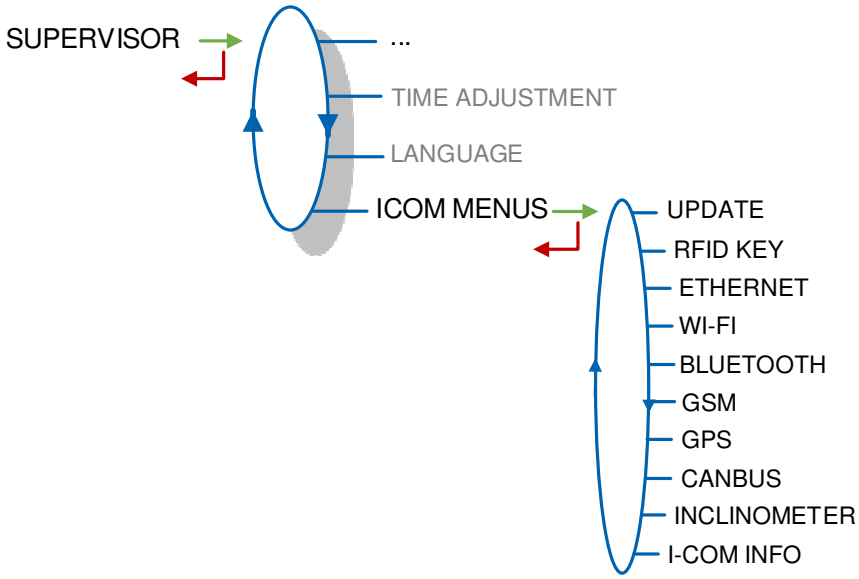
6.5 Menu DATE AND TIME

Record the date. Then record the time at French format and validate (e.g. 14.41 means 2.41 pm).

ANNEX 1: PRESENTATION OF THE MENU SUPERVISOR>ICOM MENUS

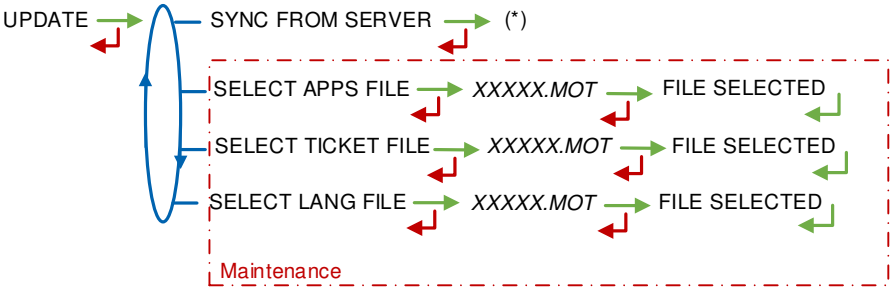
The sub-menus are different according to the level of access:

- ⇨ Level1-User: The sub-menus are not highlighted. See Menu ICOM MENUS for simplified presentation
- ⇨ Level2-Manager: The sub-menus are indicated in green boxes
- ⇨ Level3-Maintenance: The sub-menus are indicated in red boxes



1.1. Menu UPDATE

The MICROCOMPT+ connects to the server via Wi-Fi, Bluetooth, Ethernet or GSM.



(*) IN PROGRESS / xx NEW UPDATE FOUND / ANY UPDATE FOUND

SYNC FROM SERVER: Synchronization of the updated files from ALMA server. If an update of the functions or the communication configuration is uploaded, it will be applied on the next reboot of the MICROCOMPT+.

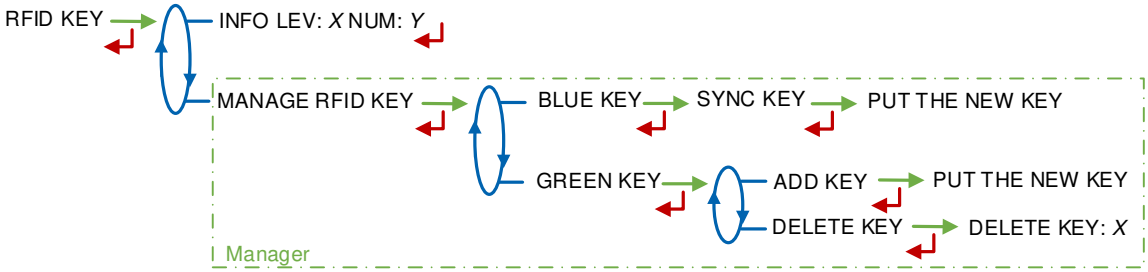
SELECT APPS FILE(*) – *Access restricted to the Maintenance*: Used to display and select the version(s) of the application available on the SD card. NO FILE is displayed if there's no file to download.

SELECT TICKET FILE(*) – *Access restricted to the Maintenance*: Used to display and select the version(s) of the ticket file available on the SD card. NO FILE is displayed if there's no file to download.

SELECT LANG FILE(*) – *Access restricted to the Maintenance*: Used to display and select the version(s) of the translation catalogue available on the SD card. NO FILE is displayed if there's no file to download.

(*) Selected files are automatically downloaded onto the AFSEC board when switching the MICROCOMPT+ into 'Resident' mode. See the operating manual MU 7037 (§2).

1.2. Menu RFID KEY



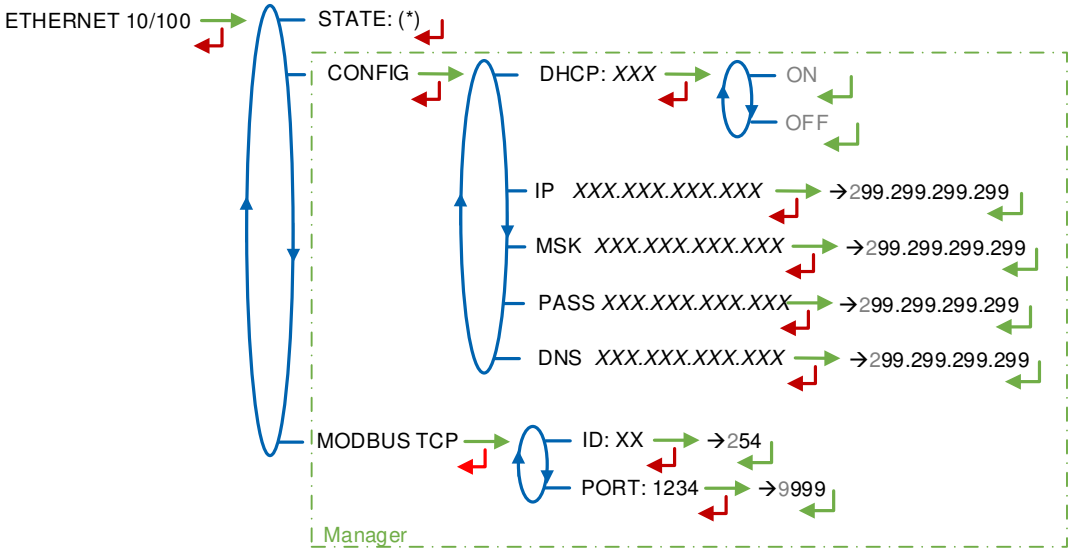
INFO: Display of the level and the identifier of the RFID key (blue key: Level1-User, green key: Level2-Manager, red key: Level3-Maintenance)

MANAGE RFID KEY – *Access restricted to the Manager*:

BLUE KEY: Used to associate an RFID key Level1-User to the MICROCOMPT+

GREEN KEY: Used to associate an RFID key Level2-Manager to the MICROCOMPT+ or to remove keys that have already been associated.

1.3. Menu ETHERNET



(*) CONNECTED / DISCONNECTED

STATE: Status of the Ethernet connection

CONFIG – *Access restricted to the Manager*:

DHCP: If ON is enabled, IP parameters can be initialized through the DHCP protocol. If OFF is enabled, parameters are set manually

IP: IP: eMICROCOMPT+ IP address

MSK: Subnet mask (IP mask for the internal IP address allocation)

PASS: Gateway (IP Address for the internet access of the Ethernet interface)

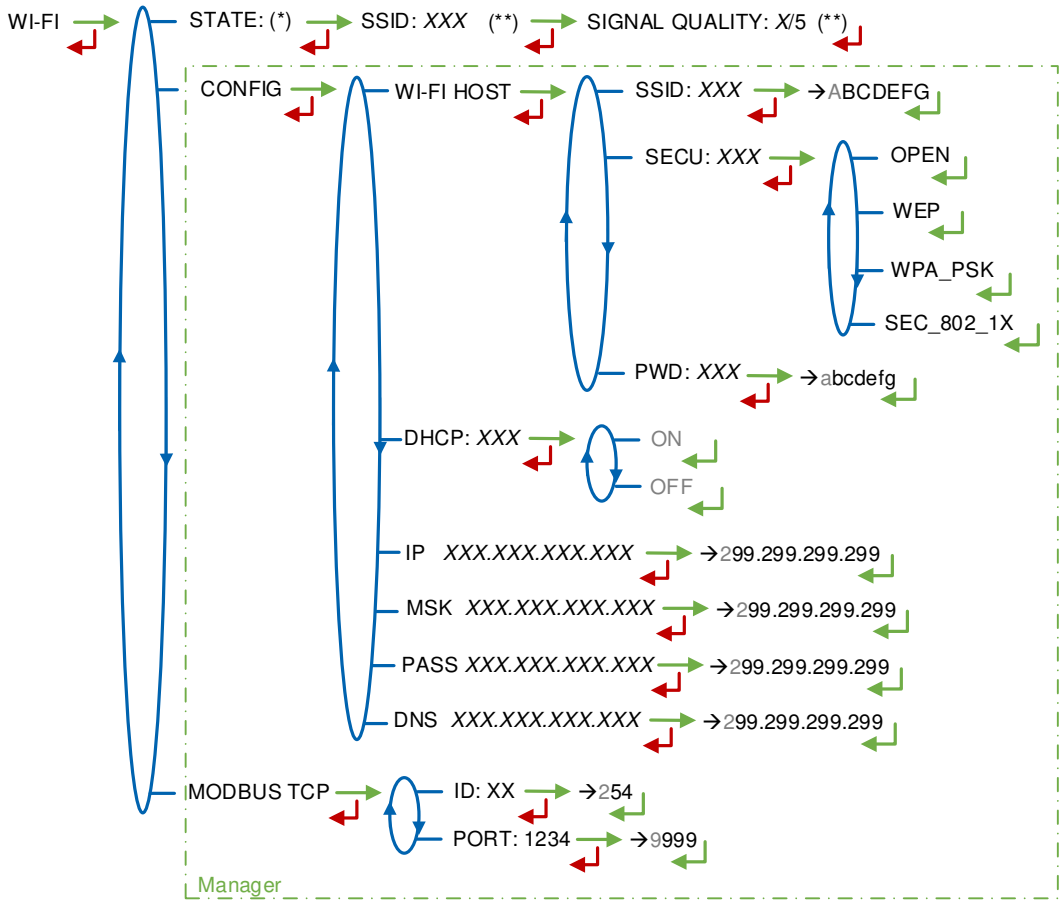
DNS: IP Address to access a DNS server

MODBUS TCP – *Access restricted to the Manager*:

ID: eMICROCOMPT+ Modbus identifier between 0 and 255

PORT: TCP/IP access port for Modbus protocol

1.4. Menu Wi-Fi



(*) NOT AVAILABLE (the calculator is not equipped) / DISCONNECTED / CONNECTED
(**) IF CONNECTED

STATE: Status of the Wi-Fi connection. If connection is successful, you can do a check of SSID and quality

CONFIG – *Access restricted to the Manager*:

WI-FI HOST: Set the characteristics of the wireless network access point

SSID: 32 characters-alphanumeric key that identifies the wireless network uniquely

SECU: Type of security protocol for the network

OPEN: Free Wi-Fi

WEP: Encryption protocol by a key encoded in 64 or 128 bits

WPA_PSK: Encryption protocol by a 128 bits-dynamic key

SEC_802-1X: Encryption protocol compatible with the standard IEEE 802.1X

PWD: Network password. Permitted character: <space>!"#$%&'()*+,-./ 0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijkl mnopqrstuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

DHCP: If ON is enabled, IP parameters can be initialized through the DHCP protocol. If OFF is enabled, parameters are set manually

IP: IP: eMICROCOMPT+ IP address

MSK: Subnet mask (IP mask for the internal IP address allocation)

PASS: Gateway (IP Address for the internet access of the Ethernet interface)

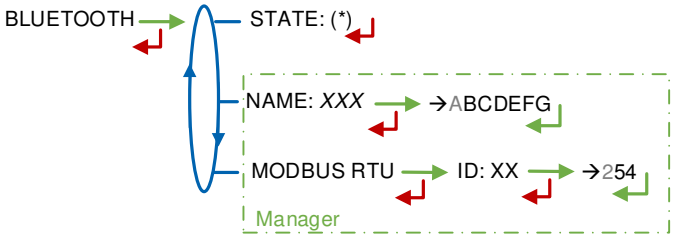
DNS: IP Address to access a DNS server

MODBUS TCP – *Access restricted to the Manager*:

ID: eMICROCOMPT+ Modbus identifier between 0 and 255

PORT: TCP/IP access port for Modbus protocol

1.5. Menu BLUETOOTH



(*) NOT AVAILABLE (the calculator is not equipped) / DISCONNECTED / CONNECTED

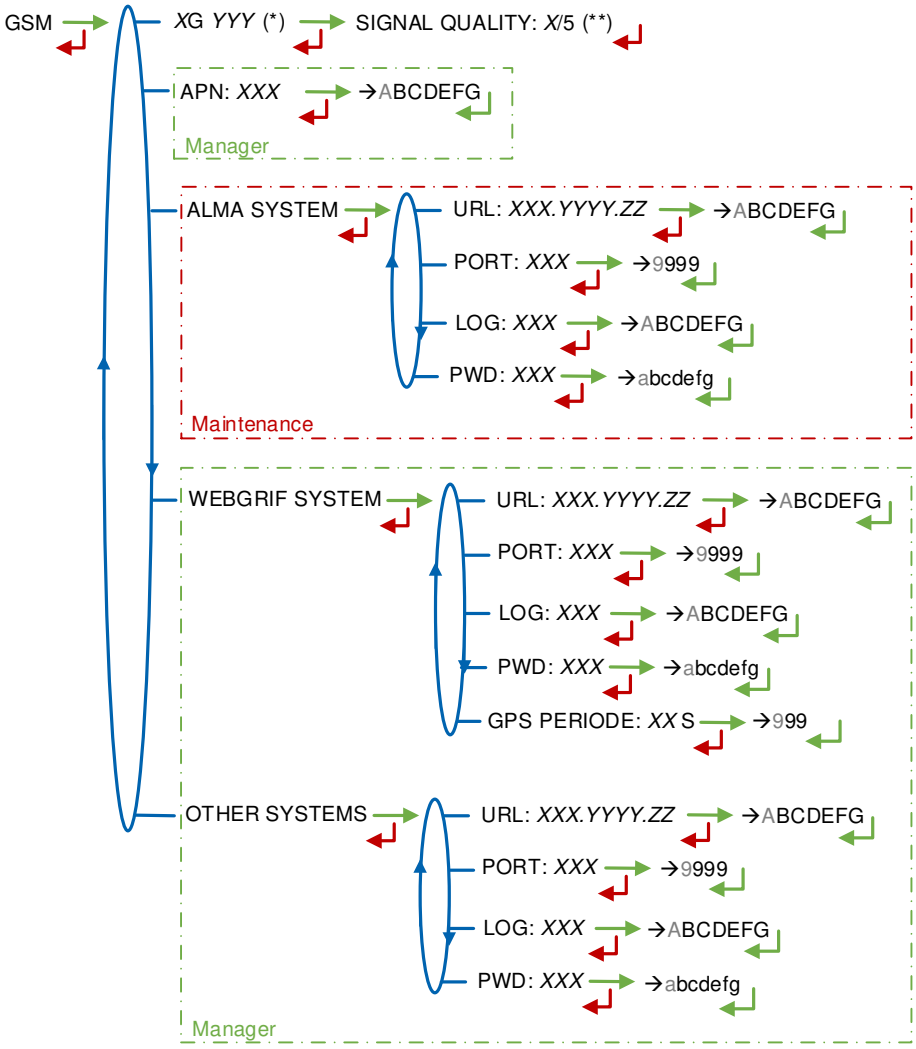
STATE: Status of the Bluetooth connection

NAME – *Access restricted to the Manager*: Set the connection name

MODBUS RTU – *Access restricted to the Manager*:

ID: Modbus identifier via Bluetooth (between 1 and 254)

1.6. Menu GSM



(*) NO SIGNAL ou 2G 3G 4G + INTERNET PROVIDER
(**) IF CONNECTED

XG YYY: The signal is being received: the type of mobile network is displayed (with X=2 for 2G, X=3 for 3G, and X=4 for 4G) according to the protocols GSM / GPRS / EDGE, UMTS / HSPA+ / LTE, followed by the name of the service provider. Otherwise NO SIGNAL is displayed

APN – *Access restricted to the Manager*: Name of the internet access point, only if ALMA does not supply it

ALMA SYSTEM – *Access restricted to the Maintenance*: Information of connection to the ALMA FTP server for files transfer

URL: Web address of the ALMA FTP server (host)

PORT: ALMA FTP server port, default value: 21

LOG: ALMA FTP server identifier

PWD: ALMA FTP server password. Permitted characters: <space>!"#$%&'()*+,-./ 0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr stuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

WEBGRIF SYSTEM – *Access restricted to the Manager*: Information of connection to the Webgrif FTP server for files transfer

URL: Web address of the Webgrif FTP server (host)

PORT: Webgrif FTP server port, default value: 21

LOG: Webgrif FTP server identifier

PWD: Webgrif FTP server password. Permitted characters: <space>!"#$%&'()*+,-./ 0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr stuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

GPS PERIOD: Backup period of GPS coordinates (from 1 to 999 seconds)

OTHER SYSTEM – *Access restricted to the Manager*: Information of connection to the FTP server for files transfer

URL: Web address of the FTP server (host)

PORT: FTP server port, default value: 21

LOG: FTP server identifier

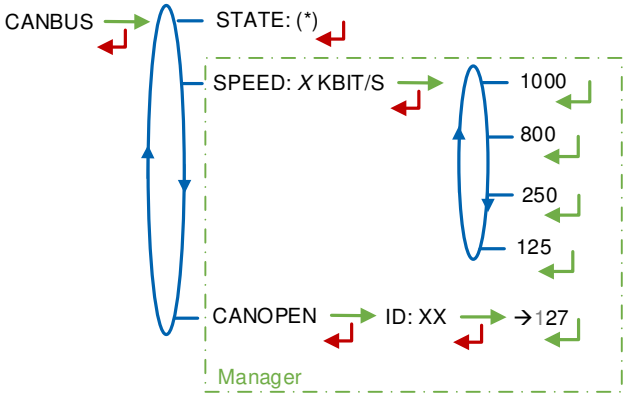
PWD: FTP server password. Permitted characters: <space>!"#$%&'()*+,-./ 0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr stuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

1.7. Menu GPS

(*) NO SIGNAL / 2DFIX / 3DFIX

STATE: The signal is being received: the type of signal is displayed 2DFIX or 3DFIX. Validating the data makes the GPS coordinates appear (latitude then longitude), and lastly appears the number of satellites which signals are simultaneously received (that gives information about the position accuracy). Otherwise NO SIGNAL is displayed.

1.8. Menu CANBUS



(*) CONNECTED / DISCONNECTED
(**) BETWEEN 1 AND 127

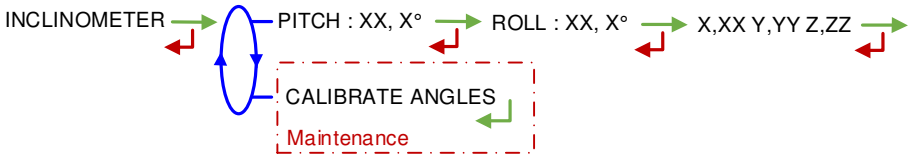
STATE: Status of the CANBus connection

SPEED – *Access restricted to the Manager*: Speed of the CANBus connection

CANOPEN – *Access restricted to the Manager*:

ID: Identifier for the CANopen protocol (between 1 and 127)

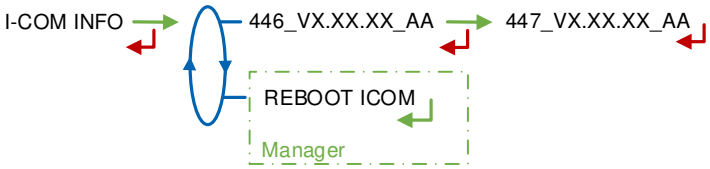
1.9. Menu INCLINOMETER



PITCH…: Used to display the bank angles of the truck and the inclinometer raw data

CALIBRATE ANGLES – *Access restricted to the Maintenance*: Used to reset the angles 'pitch' and 'roll' when the truck has a horizontal position in order to correct the assembly tolerances of the MICROCOMPT+ on the truck.

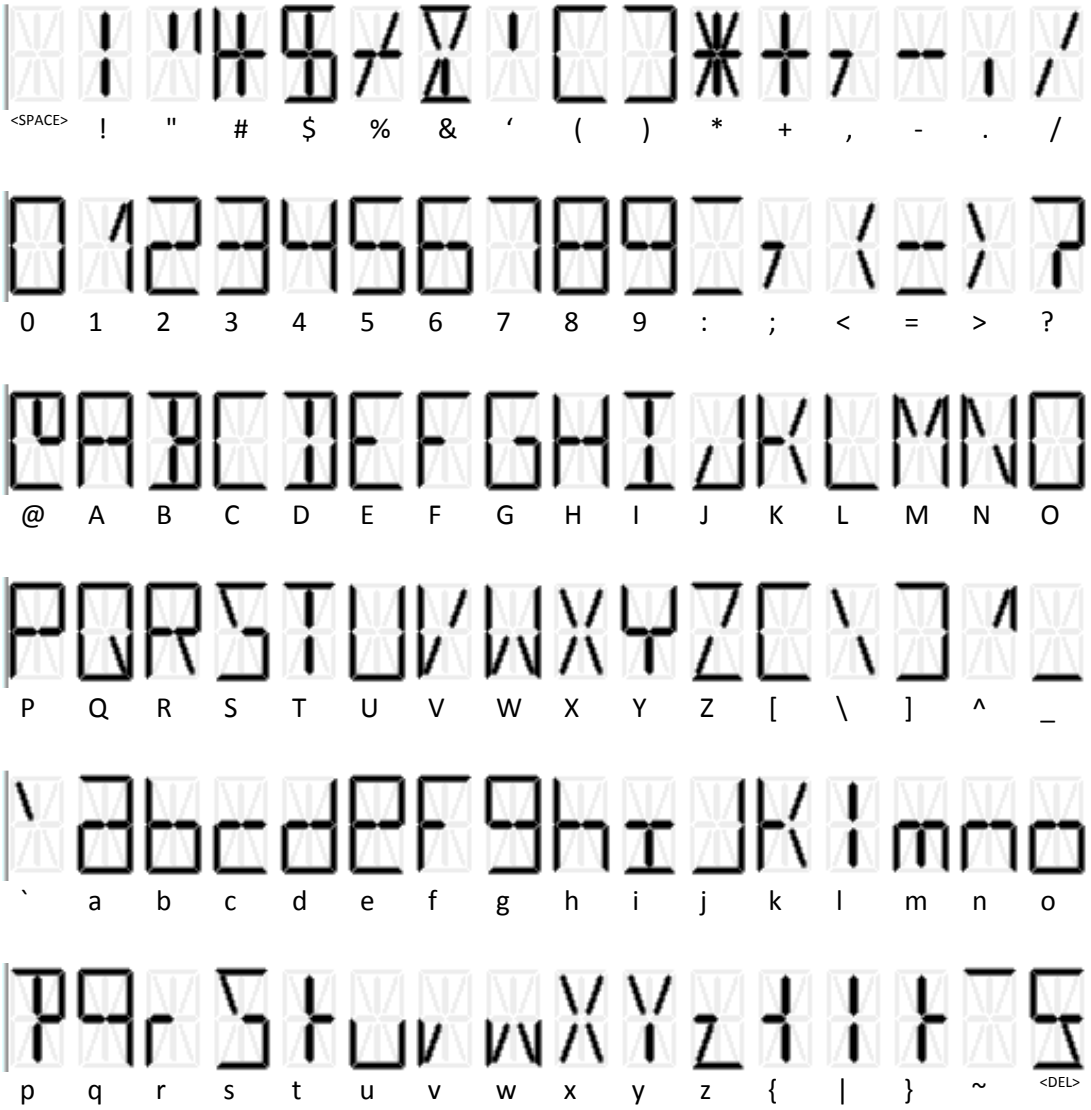
1.10. Menu I-COM INFO



446_V…: Software's number and version

REBOOT COM – *Access restricted to the Manager*: Reset of the 'interface com' board.

ANNEX 2: VIZUALISATION OF THE PERMITTED CHARACTERS ON THE MICROCOMPT+



ANNEX 3: TABLE FOR SESAME II UNITS

<table>
<tr><td colspan="2" rowspan="3"></td><td colspan="3">Configuration of the MICROCOMPT+</td></tr>
<tr><td colspan="2">Without unit
In litre
In kg</td><td rowspan="2">In m³</td></tr>
<tr><td>Standard</td><td>Cod07 = 1oooo (change the format of quantities in Sesame II network)</td></tr>
<tr><td rowspan="4">Information exchanged through Sesame II</td><td>Preset
Volume already loaded
Control volume
EMA volume
EMA leakage volume
Set preset
EMA converted volume</td><td rowspan="2">Scale interval
(123 is 123 litres for example)</td><td rowspan="2">X 10
(123 is 12.3 litres for example)</td><td>In litre
(123 is 123 litres for example)</td></tr>
<tr><td>EMA totaliser</td><td>In m3
(123 is 123000 litres for example)</td></tr>
<tr><td>EMB volume
EMB converted volume
EMB totaliser</td><td colspan="3">BLENDING x 10 (123 is 12.3 litres for example)
(*) DENAT METRO in millilitre (123 is 123 millilitres, for example)</td></tr>
<tr><td>Volume, dose or totaliser of additive or dye</td><td colspan="3">In millilitre (123 is 123 millilitres, for example)</td></tr>
</table>

(*) Warning: Sesame II data for EMB as a metrological denaturant are available on the Sesame II network only through code (Cod04=oooXo).

ANNEX 4: CODES

Each code sets specific operation according to the following tables:

Cod 01

Option	Meaning
Xoooo	**TOR input** for gas detection on EMA: **1**: EMA standard Gas TOR input **2**: (ALIM_V3 only) Gas TOR input for switch in low flow **3**: Idem 1 + 2 **Any other values**: No effect
o**X**ooo	Authorization becomes emergency shutdown or 'dead-man' security (**BOTTOM** only): **1**: 'authorization' input is managed as an emergency shutdown **2**: Idem 1, reverse input polarity **3:** For **BOTTOM** configuration only, 'authorization' input is managed as 'dead-man' function **Any other values**: No effect *Note: Twisting 'authorization' into 'dead-man' is justified if Cod02 is also used to define the 'dead-man' control functionality*
oo**X**oo	Use of sub-totalisers: **1**: Control and display of 'products' sub-totalisers in accordance with denaturation **2**: Display of totalisers per injector **3**: Idem 1 + 2 **Any other values**: No display
ooo**XX**	Configuration for quality control <u>in autonomous mode</u>: **99**: Activation of the quality control mode (list in supervisor mode): before beginning measurement, the MICROCOMPT+ displays a list to choose the quality in autonomous mode **88**: Activation of the quality control mode (list in supervisor mode): quality is automatically determined in accordance with the authorization TOR inputs. WARNING: ALIM_V3 only **Any other values**: Detail above
ooo**X**o	Code for additive injector in autonomous mode: **0**: No additive injection in autonomous mode **8, 9**: See above **n**: The injector #n is used for additivation in autonomous mode
oooo**X**	Code for dye injector in autonomous mode: As above for dye injection

Cod 02

For **TOP** loading configuration: The Cod02 allows activation of the dead-man switch control. For **BOTTOM** loading configuration: This features is available by twisting the authorization input (refer to Cod01).

Option	Meaning
XXXoo	The dead-man switch is activated if Cod02 = XXXoo is different from '000' If Cod03 = oXooo with 'dead-man' function in volume: • **Volume x 100** for dead-man switch control. If Cod03 = oXooo with 'dead-man' function in duration: • **Time in seconds** for dead-man switch control. *Note: The dead-man switch control may be disabled in some cases – See below*
ooo**XX**	If Cod03 = oXooo with 'dead-man' function in volume: • **Volume x 10 in low flow** for dead-man switch. If Cod03 = oXooo with 'dead-man' function in duration: **Time in seconds x 10 in low flow** for dead-man switch.

⇨ The 'dead-man switch' function is activated if Cod02 = **XXX**oo is non-zero

⇨ The option configuration in 'duration' rather than in 'quantity' (see Cod03 = o**X**ooo below)

⇨ The option 'dead-man switch' bypass doesn't disable the functionality (see Cod03 = o**X**ooo below)

It is therefore possible to instrument a dead-man switch that is not active for automation (disabled with Cod03) but which is used for the 'dead-man control' functionality

⇨ If 'dead-man switch' is forced by the network SESAME II, the functionality is disable (see Cod03 = oooo**X** below)

⇨ The 'free-service' mode can be considered for this functionality (see Cod03 = **X**oooo below)

⇨ For **BOTTOM** configuration, the authorisation input needs to be managed as 'dead-man' function (refer to Cod01).

If the functionality is enable:

1. The MICROCOMPT+ checks the transition of status of the 'dead-man switch' before: - Volume is XXX00 litres (Cod02 = **XXX**oo) - Or duration is XXX seconds (Cod02 = **XXX**oo and Cod03 = o**X**ooo is at least 4).

   Otherwise, the MICROCOMPT+ forces a low flow, uses factory option ALERTE_HOMME_MORT_ON if described, and proceeds to stage 2

2. Following stage 1, the MICROCOMPT+ checks the transition of status of the 'dead-man switch' before: Volume is XX00 litres (Cod02 = ooo**XX**) Or duration is XX seconds (Cod02 = ooo**XX** and Cod03 = o**X**ooo is at least 4).

   Otherwise the default DEAD MAN SWITCH appears.

Cod 03

For **TOP** loading configuration only (except oXooo in some cases):

<table>
<tr><th>Option</th><th>Meaning</th></tr>
<tr><td>Xoooo</td><td>TOP single side:
1: The MICROCOMPT+ has only a left side
2: The MICROCOMPT+ has only a right side
4: The dead-man switch functionality (see Cod02) is enable only with 'free-service' mode
5: Idem 4 + 1
6: Idem 4 + 2
Any other value: Top bi-side. Dead-man switch control according to Cod02 without any change</td></tr>
<tr><td>oXooo</td><td>TOP loading MICROCOMPT+ only:
<table>
<tr><th></th><th>Bypass SECURIM</th><th>Bypass Dead-man switch</th><th>Function ‘dead-man’</th></tr>
<tr><td>0</td><td>-</td><td>-</td><td>Volume</td></tr>
<tr><td>1</td><td>ON</td><td>-</td><td>Volume</td></tr>
<tr><td>2</td><td>-</td><td>ON</td><td>Volume</td></tr>
<tr><td>3</td><td>ON</td><td>ON</td><td>Volume</td></tr>
<tr><td>4</td><td>-</td><td>-</td><td>Duration</td></tr>
<tr><td>5</td><td>ON</td><td>-</td><td>Duration</td></tr>
<tr><td>6</td><td>-</td><td>ON</td><td>Duration</td></tr>
<tr><td>7</td><td>ON</td><td>ON</td><td>Duration</td></tr>
</table>
Any other values: Idem modulo 8

BOTTOM loading MICROCOMPT+ only:
0-3: ‘Dead-man’ function in volume
4-9: ‘Dead-man’ function in time</td></tr>
<tr><td>ooXoo</td><td>TOP loading MICROCOMPT+ only:
1: Ground (left or right) forcing via network SESAME II.
Physical ground is uploaded in the network SESAME II
2: Idem 1 with the requirement to remove forcing between each measurement
5: Idem 1 but the 'logical ground' is uploaded in the network SESAME II (final combination between physical ground and forcing)
Any other values: No ground forcing
Note: Forcing is not taken into account with a single-side configuration (see above)</td></tr>
<tr><td>oooXo</td><td>TOP loading MICROCOMPT+ only:
1: Forcing of the arm direction (left, right or locking) via network SESAME II
2: Idem 1 with the requirement to remove forcing between each measurement
Any other values: No forcing of the arm direction
Note: Forcing is not taken into account with a single-side configuration (see above)</td></tr>
<tr><td>ooooX</td><td>TOP loading MICROCOMPT+ only:
1: Forcing of the arm down-position or dead-man switch via network SESAME II
2: Idem 1 with the requirement to remove forcing between each measurement
3:Idem 1 with a prohibition on forcing arm down-position and dead-man switch simultaneously
4: Idem 1 + 2 + 3
Any other values: No forcing
Note: Forcing of dead-man switch via network SESAME II has no effect if dead-man switch is forced to TRUE elsewhere (see above)
Note 2: Forcing of dead-man switch disables control of dead-man switch (see above)</td></tr>
</table>

Cod 04

Option	Meaning
Xoooo	Bitmask on the 3 authorization inputs for quality selection, in autonomous mode: **1 to 7**: Bitmask to apply on inputs #1, #2, #3 with respectively bits 0, 1 and 2 of the mask. Inputs are 0 or 1. Mask = 1: Input #1 Mask = 2: 2 * Input #2 Mask = 3: 2 * Input #2 + Input #1 Mask = 4: 4 * Input #3 Mask = 5: 4 * Input #3 + Input #1 Mask = 6: 4 * Input #3 + 2 * Input #2 Mask = 7: 4 * Input #3 + 2 * Input #2 + Input #1 *e.g.: Mask = 1 means that input #1 is used, Mask = 3 means that inputs #1 and #2 are used* **Any other values**: Same as Mask = 7 (the 3 inputs are used)
o**X**ooo	**1:** Activates the display of the additive name and displays « BLEND » on the prompter if the blender is requested during a measurement. Displays the dye name if there's enough place on the prompter. **2:** Activate the display of rate details on the prompter during a measurement **Any other values**: No effect
oo**X**oo	**1** The presence of the PCC is not required. If the PCC is present but not working, starting a measurement is impossible **Any other values**: PCC is metrological. Its presence is necessary ; it must communicates to the MICROCOMPT+ it is operational to enable a measurement
ooo**X**o	**≠0**: Activates the EMB information update on the network SESAME II if EMB is set for metrological denaturation **0**: No EMB information on the network SESAME II if metrological configuration
oooo**X**	**1:** Prohibits MODBUS writings on COM1 **2:** Prohibits MODBUS writings on COM2 **3:** Prohibits MODBUS writings on COM1 and COM2 **Any other values**: No effect

Cod 05

Option	Meaning
Xoooo	Not used
o**X**ooo	If X is non-zero, the MICROCOMPT+ is allowed to blend without waiting for EMA to switch in high flow
oo**X**oo	The MICROCOMPT+ makes a blending according to the inverse algorithm (downstream assembly with a required rate greater than the ratio of the flow rates EMA/EMB). If X is non-zero, the MICROCOMPT+ changes its functionalities as follows: • The rinsing may not be equal to the rinsing volume, if this volume is greater than the volume EMA to be loaded • No pollution control of the line due to the lack of rinsing after activation of a 'high rate' blending
ooo**XX**	Not used

Cod 06

Option	Meaning
Xoooo	Disable the menu 'CONTINUE?' / 'END OPERATION?' during alarms acknowledgement: **0**:Menus are enabled (by default) **1:** Menu is disabled only for 'remote acknowledgements' **2**: Menu is disabled for acknowledgement with OK pushbutton or for 'auto acknowledgements', or for TOP loading: acknowledgement with low arm or contacts removal **3:** Menu is disabled in any case
o**X**ooo	**1:** Disable display
oo**X**oo	**1:** Reverse the polarity of the LSL inputs
ooo**X**o	**1: Specify a 'wide' preset end coefficient:** • The time before the control of the valve closure is extended (100 seconds instead of 10) • The duration of the control of the valve closure is reduced (5 seconds instead of 15) • The maximum value of the preset end coefficient is multiplied by 16 • Disable the default 'VALVE'
oooo**X**	**1:** The request for the injector #1 pump remains active during a stop

Cod 07

Option	Meaning
Xoooo	**1:** Increase precision of quantities exchanged via the SESAME II protocol when the MICROCOMPT+ is configured without units, in liter or in mass with an accuracy of one decimal)
o**X**ooo	**1:** Remove the ESDV control in case of any injector leakage
oo**XYZ**	**000:** No 'addit tout' injector (injection of all doses from the first range) **Otherwise:**XYZ allows to activate the i^{th} injector (i = 1 to 8) by adding the value $2^{(i-1)}$ to this figure. e.g.: XYZ = 1 only the injector #1 is 'addit tout' XYZ = 1 + 2 = 3 for the injectors #1 et #2, XYZ = 1 + 2 + 4 = 7 for the injectors #1, #2 et #3, etc.

Cod 08

Option	Meaning
Xoooo LCN	**#0**: IF **TOP** configuration AND: anti-fraud control activated AND: in measurement status AND: a metrological denaturant injector is requested. THEN: Any forcing of low-arm via SESAME II network is ignored AND: An absence of flow is not a suspicion of fraud. *Note: A metrological denaturant injector is requested:* • IF: DUAL + metrological denaturation AND: configuration in systematic OR: Injector #1 is requested • IF: With ACDA AND: The ACDA of EMA is set AND: configuration in systematic OR: The relevant injector is requested • *Idem for the ACDA of EMB* **0**:No effect
o**X**ooo	Number of decimals for setting the metering coefficient of blender EMB: **#0**: XX.XXXX (default format) **#1**: XXXXX.X **#2:** XXXX.XX **#3:** XXX.XXX **#4**: XX.XXXX (default format) **#5**: X.XXXX **Any other values**: Idem #0

Option	Meaning
oo**X**oo	Position accuracy of an incremental valve (hydraulic or pneumatic) for **EMA**: **#0**: Standard position at +/- Qmax / 30 (with Qmax=maximum flowrate) **#1**: Position at +/- Qmax / 60 **#2:** Position at +/- Qmax / 90 … **#8:** Position at +/- Qmax / 270 **#9:** Position at +/- Qmax / 300
ooo**X**o	As above for EMB
oooo**X** EPPLN	**#0**: Modify the equation for output 'En Mesurage' (in measurement): With this option the output 'En Mesurage' is set to TRUE by default (inverse logic compared to a conventional management). It is set to FALSE at the beginning of a measurement. At the end of a measurement, the output comes to TRUE again at the beginning of the secured transmission. (the status of the conventional output 'En Mesurage' changes at the end of the secured transmission). **0**: No effect

Cod 09 – LCN

Option	Meaning
o**X**ooo	Do not inject an anti-fraud dose in case of a stop on a 'no dyeing' alarm: **0**: Standard operation, a dose is always injected after a stop **1:** Particular operation to prevent the activation of anti-fraud after an alarm #47 (NO DYEING) **Any other values**: Idem 0
oo**X**oo	**TOP MICROCOMPT+** only: After an anti-fraud injection, the range offset is disabled: **0**: Standard operation, a new range starts after an anti-fraud injection **1:** Particular operation to avoid range offset (such as **BOTTOM MICROCOMPT**) **Any other values**: Idem 0
ooo**X**o	Shut **the anti-pollution valve between injections:** **0**: Standard operation, the anti-pollution valve is open until the expected end of all injection cycles **1:** Particular operation: cut-off of the anti-pollution valve between each injection cycle **Any other values**: Idem 0

Cod 10

Option	Meaning
Xoooo	Used to postpone the first injection of the **injector #1**: 0: Standard operation 1: Injection after 50 litres 2: Injection after 100 litres 3: Injection after 150 litres etc... in intervals of 50 litres 8: Injection after 400 litres 9: Injection after 450 litres
o**X**ooo	Idem for **injector #2**
oo**X**oo	Idem for **injector #3**
ooo**X**o	Idem for **injector #4**
oooo**X**	Idem for **injector #5**

Cod 11

Option	Meaning
XXXoo	When flowing starts, timer before triggering the zero flow alarm, in seconds.
ooXoo	Specific option for SASCA. Ignore faults, end the measurement when a fault occurs **0**: Standard operation **1:** Ignore authorization and overfill faults **2:** Ignore zero flow fault
oooo**X**	Disable the limit for additive and blending faults during a measurement (add_0, add_I, add_S, col_0, col_I et col_S) **0**: Standard operation **1:** Disable the occurrence limit

Cod 12

Option	Meaning
Xoooo	Enable the consideration of pushbuttons control via Modbus/TCP (with ICOM: **0**: Ignore the Modbus/TCP commands to force pushbuttons **1:** Ignore the Modbus/TCP commands to force pushbuttons
*o**X**XXX*	*Not used*

Cod 13 to Cod 20: Not used

RELATED DOCUMENTS

GU 7036_1	Operating guide MICROCOMPT+ FOR BOTTOM LOADING
GU 7036_2	Operating guide MICROCOMPT+ FOR TOP LOADING
GU 7036_3	Operating guide MICROCOMPT+ FOR BOTTOM LOADING BLENDER/DENATURANT
GU 7036_4	Operating guide MICROCOMPT+ FOR TOP LOADING BLENDER/DENATURANT
DI 104	MICROCOMPT+ LOADING TERMINAL DEVICE
MU 7075	Operating manual ACDA (French version only)
FM 8001	Diagnostic support for power supply failure
FM 8002	Diagnostic support for a display failure
FM 8003	Diagnostic support for DEB_0 or ZERO FLOW DEFAULT alarm
FM 8004	Diagnostic support for GAS or PRESENCE GAS alarm
FM 8005	Diagnostic support for METERING PROBLEM alarm
FM 8011	Configuration of jumpers and adjustment of metering thresholds on the AFSEC+ electronic board
FM 8013	Replacement of the backup batteries on the AFSEC+ electronic board
FM 8500	Adjustment of a BOTTOM MICROCOMPT+
FM 8510	Adjustment of a temperature chain in a MICROCOMPT+