OPERATING MANUAL

MU 7036 EN K

MICROCOMPT+ LOADING TERMINAL DEVICE

Issue	Date	Nature of modifications	Written by	Approved by
K	2017/12/12	Density measurement *[PJV144]* Connected MICROCOMPT+ *[PJV120]*	DSM	SH
J	2017/07/17	English software, Volume conversion, Dead-man valve for bottom version, ALMA Gas separator, Copy out configuration for downstream assembly, Display resolution 0.1 *[EDV409, EDV419, EDV430, EDV439, MDV413]* ACDA features *[PJN143]*, ESD valve return signal, Pressure sensor	DSM	MV
H	2015/10/19	Creation *[MDV434]*	DSM	SH

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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 electronic calculator-indicating MICROCOMPT+ terminal device 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.

In the following document, the indications 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.

CONVERSION (*XX*) → CONVERSION→OFF / CONVERSION→ON
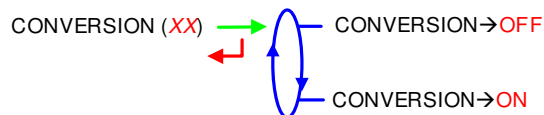
1.2 Features

The electronic calculator-indicating MICROCOMPT+ terminal device 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 calculator. 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 may 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 may be remote on an external equipment called 'ACDA'. The ACDA communicates with the MICROCOMPT+ through the MODBUS network. Then, up to five injectors may be managed, one of them are configured to control the remote injectors (for further information, refer to the operating manual MU 7075, available in French version only).

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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 anti-blending (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 indicated 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.

Conversion is a factory option. It can be activated independently for EMA and EMB. Main quantity and temperature for base conditions remain the same for the MICROCOMPT+. The main display for volume is chosen during the METROLOGICAL configuration of the MICROCOMPT+. For on-going operations:

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 millilitres 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 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's configuration.

1.3 Description

The electronic calculator-indicating device MICROCOMPT+ has a flameproof case.

The front of the MICROCOMPT+ is made of:

- A liquid crystal display (LCD) which is used to display a 6-digit signed quantity and pictograms for units
- A prompter: line of 20-alphanumeric characters for comments
- 3 pushbuttons
- A metrological electronic seal
- An internal switch operated with an ALMA magnetic or RFID key.

Sealed cup protecting access to metrological functions

SUPERVISOR key – magnetic or RFID – to access non-metrological parameters configuration and calibration menu
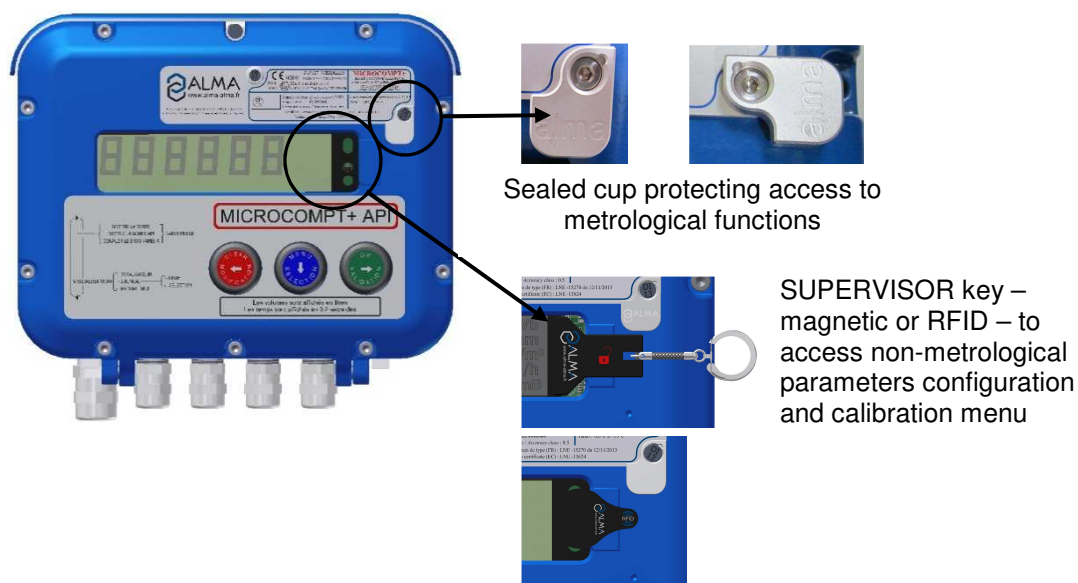
2   CONFIGURATION, SETTING AND CALIBRATION

2.1 Configuration

The configuration of the MICROCOMPT+ is made by an authorized person only. It's done at the putting into use of the measuring system and sometimes during metrological controls.

This mode allows setting all functional and metrological parameters. The physical features of the equipment, its instrumentation and its use are taken into account.

To access the METROLOGICAL mode, the MICROCOMPT+ has to be unsealed. Then turn the electronic sealed located at the right of the LCD display.

Refer to METROLOGICAL MODE.

2.2 Setting

To access the SUPERVISOR mode, the ALMA magnetic or RFID key must be set at the right of the MICROCOMPT+ LCD display. 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: injectors, rates

- Products: name, quality

- Communication

- Instrumentation

- Display language

- Features of the connected MICROCOMPT+

Refer to SUPERVISOR MODE for setup.

2.3 Calibration

Calibration is used to control the accuracy of the measuring systems or the injectors. It's available by the Menu 'CALIBRATION' that proposes a semi-automatic procedure for verification and calibration of the meter. The procedure can be used for one of the measuring systems (EMA and EMB) and takes into account the last measurement that has been done with the relevant system.

Having made the proving of the metering, this menu 'CALIBRATION' allows calculating the error for the purpose of adjusting the coefficient.

Refer to SUPERVISOR MODE.

3   USER MODE

This mode is for ongoing operations of the device.
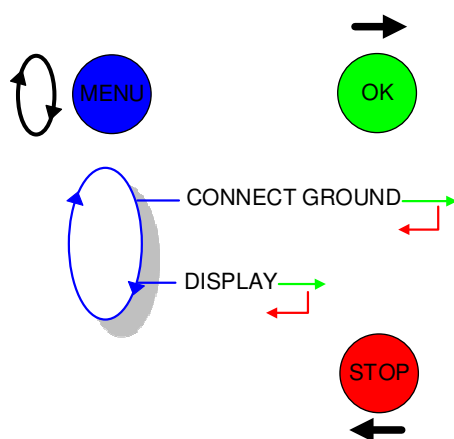
3.1 Loading

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).

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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.

1246 L ⟶ 1246 L ⟶ 1246 L ⟶ 1246 L ⟶ 000000 L ⟶ 1000 L ⟶ 295
CONNECT GROUND   CONNECT OVERFILL   CONNECT VAPOR ARM   >ENTER PRESET   ENTER PRESET   START LOADING   LOADING...

During delivery, 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 DELIVERY.**

- 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)	

Blue pushbutton	Green pushbutton	Condition
	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
QUANTITY	Instantaneous density	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	

3.2 Menu DISPLAY
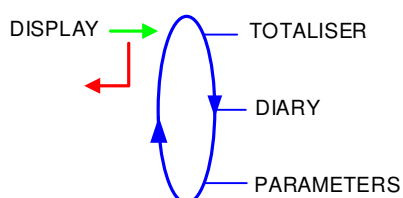
3.2.1 Menu TOTALISER

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.

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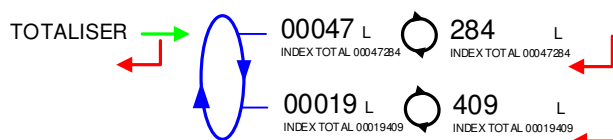
If the function of control and display of 'product' sub-totalisers is active, more information are also viewable: accumulate non-additive measurements followed by accumulate measurements with denaturation.

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

3.2.2 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:

❍ Time of the end of measurement (with relevant option)

❍ 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)

Example of the information displayed for the last measurement:
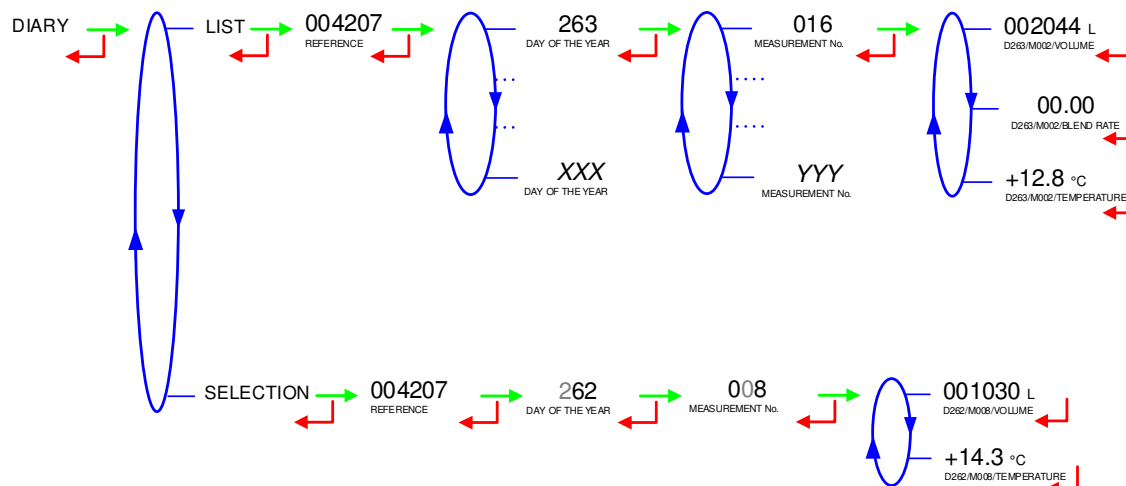
3.2.3 Menu PARAMETERS

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.

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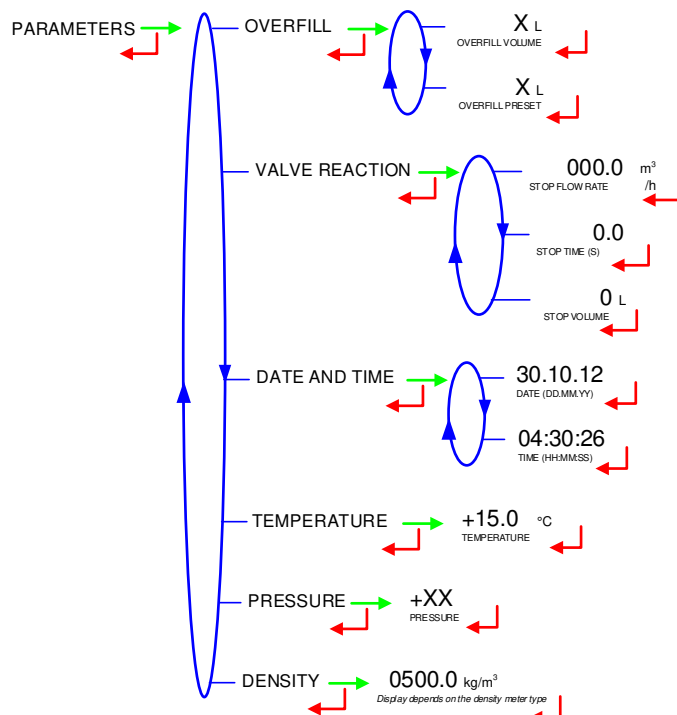
3.3 List of alarms for bottom and top loading

On the MICROCOMPT+ front face, three tricolour LED are showing the wireless connection status as described in the table at §1 in the ANNEXE 1.

| DISPLAY	MEANING	ACTION
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 minimum flowrate)	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	Check the additive hydraulic system
DYEING <--->	Dyeing rate too low	Check the additive hydraulic system
DYEING <+++>	Dyeing rate too high	Check the additive hydraulic system
NO ADDITIVATION	Additivation null	Check the additive hydraulic system
ADDITIVE LEAKAGE	Metering detection without injection	Check the additive hydraulic system
ADDITIVATION <--->	Additivation rate too low	Check the additive hydraulic system
ADDITIVATION <+++>	Additivation rate too high	Check the additive hydraulic system
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
INJECT. LEAKAGE	Metering detection on injector XX without injection	Check the additive hydraulic system

(Left margin labels: BOTTOM, USER)

|	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)
	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	If steady alarm, see a reparator for trouble shooting
	VALVE FAULT	Inappropriate reaction of the EMA control valve	If steady alarm, inspect the authorization valve
	EMB VALVE FAULT	Inappropriate reaction of the EMB control valve	If steady alarm, check the 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
	DENSITY H UNCONFORM.	Measure of the density meter higher than the density high set in supervisor mode	If non blocking alarm: validate
REPARATOR - BLOCKING	PRINTER FAULT <+> <->	Problem with the IT2 mechanical printer	If steady alarm, inspect the printer
	MEMORY 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 (supervisor 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

DISPLAY	MEANING	ACTION
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 minimum flowrate)	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
SELECTION QUALITY	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	Check the additive hydraulic system
DYEING <-->	Dyeing rate too low	Check the additive hydraulic system
DYEING <+++>	Dyeing rate too high	Check the additive hydraulic system
NO ADDITIVATION	Additivation null	Check the additive hydraulic system
ADDITIVE LEAKAGE	Metering detection without injection	Check the additive hydraulic system
ADDITIVATION <-->	Additivation rate too low	Check the additive hydraulic system
ADDITIVATION <+++>	Additivation rate too high	Check the additive hydraulic system
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

TOP

USER

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	DISPLAY	MEANING	ACTION
USER	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
	DENSITY H UNCONFORM.	Measure of the density meter higher than the density high set in supervisor mode	If non blocking alarm: validate
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 (supervisor 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

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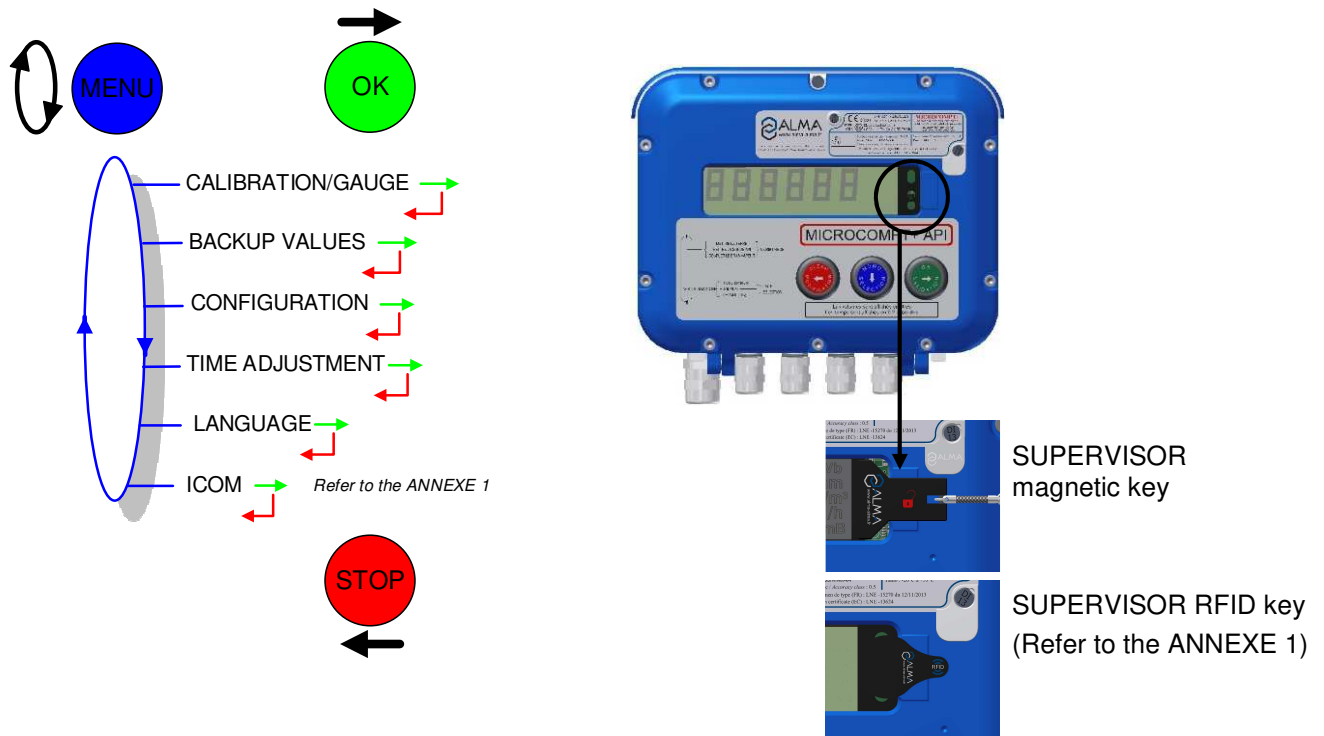
4.1 Menu CALIBRATION/GAUGE
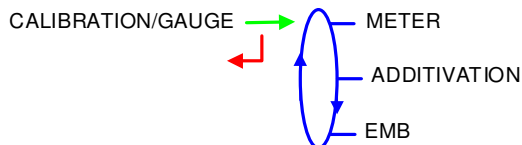
The semi-automatic calibration procedure doesn't take into account the main quantity choice. It presents the partial volume of the last measurement in in metering conditions (with a new level of precision).

4.1.1 Sub-menu METER

Having made the proving of the metering, this menu allows you to check the accuracy of the measuring system EMA or EMB by calculating the measuring device error and the new corrected coefficient.

For the EMA measuring system, the possibility is given to linearize the curve on 2 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.

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

4.1.1.1 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 or without predetermination of the volume.

Switch to SUPERVISOR mode, choose 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 (%)
- 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.
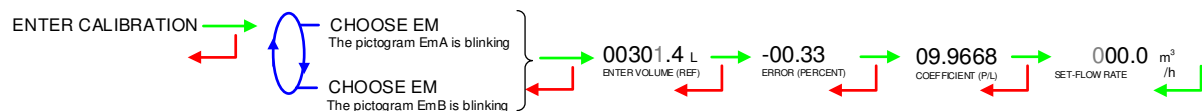
4.1.1.2 Linearisation/Flow

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 LINEARISARION/FLOW, the calibrated values are displayed; **you need to unseal the MICROCOMPT+ to switch in METROLOGICAL mode and enter the value**s via the EMA>METER COEFFICIENT menu.

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

- Fill the gauge in high flow $[\text{flow}_{min}\times3] \leq \text{high flow} < [\text{flow}_{max}]$, 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 $[\text{flow}_{min}] \leq \text{low flow} \leq \text{flow}_{min}\times1.5]$, 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 has failed, the following alarms may be displayed:

- 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: $[\text{flow}_{min}\times3] \leq \text{high flow} < [\text{flow}_{max}]$

- LO-FLOW OUT OF RANGE: Low flowrate value is out of range. It needs to be: $[flow_{min}] \leq low\ flow \leq flow_{min} \times 1.5]$

- 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 or high flowrate).

LINEARISATION/FLOW → 0.9.9890 → 5.3 m³ → 09.9845 → 29.6 m³
LF COEFFICIENT (K1)   LOW FLOW RATE /h   HF COEFFICIENT (K2)   HIGH FLOW RATE /h

4.1.2 Sub-menu ADDITIVATION

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.

ADDITIVATION → 1 → 0 → 0 → 0
INJECTOR No. (XX)   1/XX→START   1/XX INJECTION   END OF CYCLE
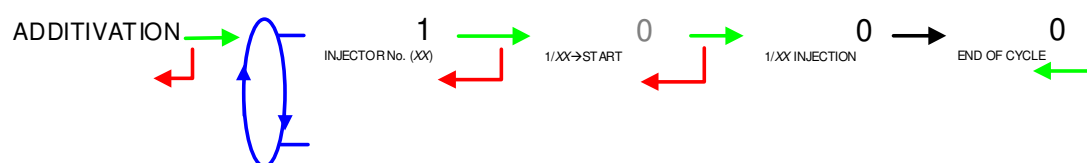
At the end of a cycle, if the additive volume is not at zero, press BP1 to input the true volume in order to display the calculated additive coefficient. Press BP1 a second time to edit the coefficient (for metrological injectors, this menu is disabled).

Warning: The coefficient displayed is the one that has been set in METROLOGICAL mode
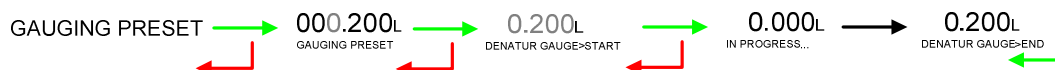
Note: In some particular cases (metrological denaturation through EMB on injector #1 or systematic dyeing on a dedicated injector), this procedure displays the new coefficient after calibration and proposes to record it after removing the MICROCOMPT+ seal.

4.1.3 Sub-menu EMB

EMB (XX) → FREE FLOWRATE
          GAUGING PRESET

4.1.3.1 EMB blender

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

GAUGING PRESET → 000.200L → 0.200L → 0.000L → 0.200L
GAUGING PRESET   DENATUR GAUGE>START   IN PROGRESS...   DENATUR GAUGE>END

- 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.

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4.1.3.2 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.
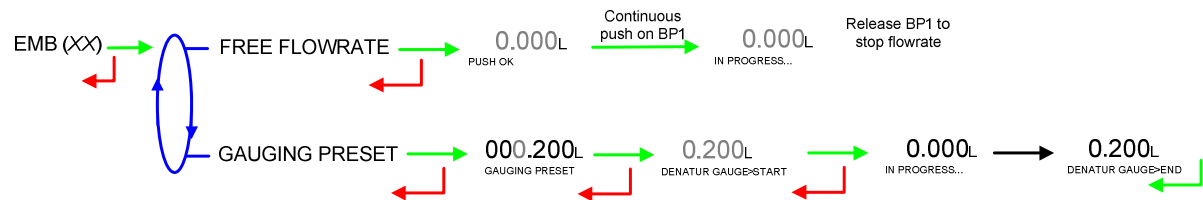
STEP 1: Conditioning of the gauge

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: millilitre)

→   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 memorisation.

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

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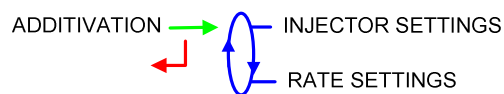
4.2 Menu CONFIGURATION

CONFIGURATION → ADDITIVATION

PRODUCT SETTINGS

COMMUNICATION

INSTRUMENTATION

BLENDER
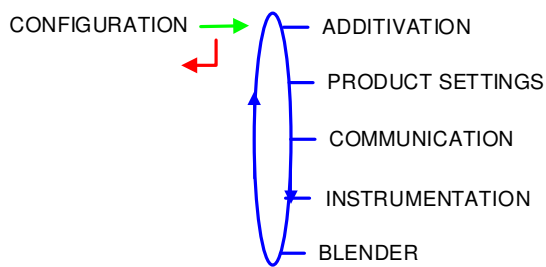
4.2.1 Sub-menu ADDITIVATION

This menu is for the additivation configuration:

INJECTOR SETTINGS: Configuration of the injectors

RATE SETTINGS: Configuration of the additivation general parameters.

ADDITIVATION → INJECTOR SETTINGS

RATE SETTINGS

4.2.1.1 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 read-only 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.
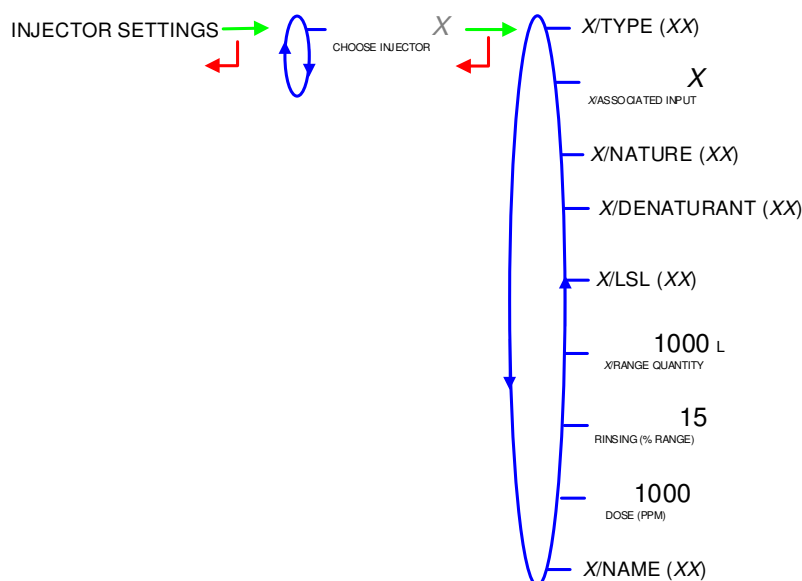
Possible combinations for the injectors' configuration:

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

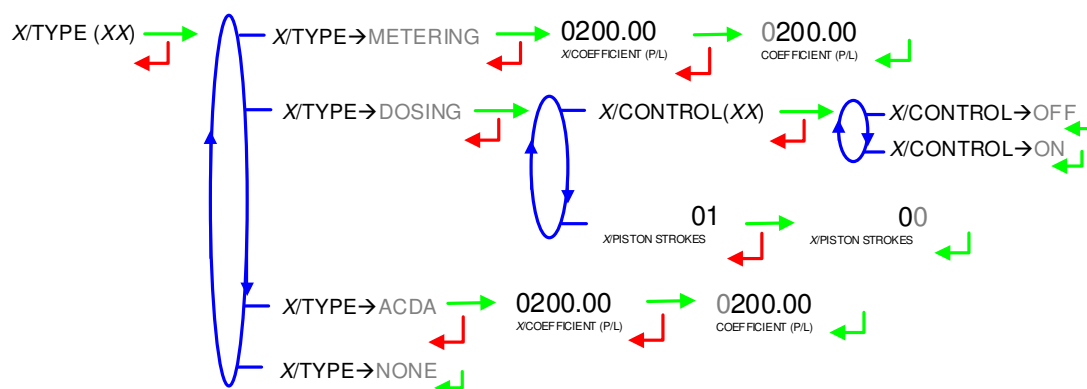* Injecteur#5 is not available if the density meter is activated.

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 indicating device.

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b) Associated input

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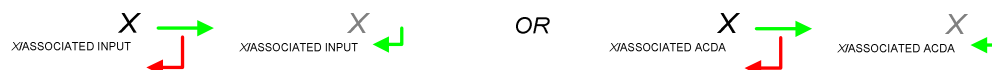
c) Nature of the product

Choose the nature of the injected product: additive or dye.
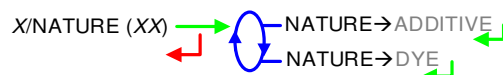
d) Denaturant

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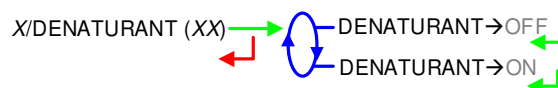
e) LSL input

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

f) Range quantity

Enter the range quantity of principal product that should 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

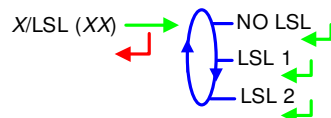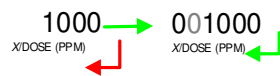This menu is used to define the volume of additive or dye (PPM for injection): volume in millilitres of the dose to be injected for 1000 litres of product.

i) Name of the product

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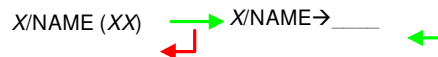
4.2.1.2 Rate settings

This menu is used to configure the additivation minimum and maximum rates beyond which an alarm is triggered.
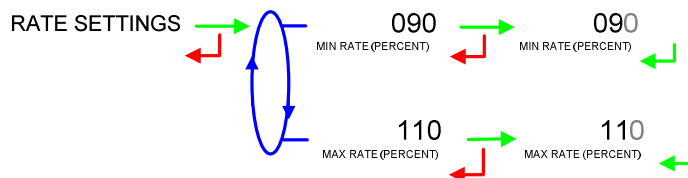
4.2.2 Sub-menu PRODUCT SETTINGS

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: Density range for control of the loaded quality

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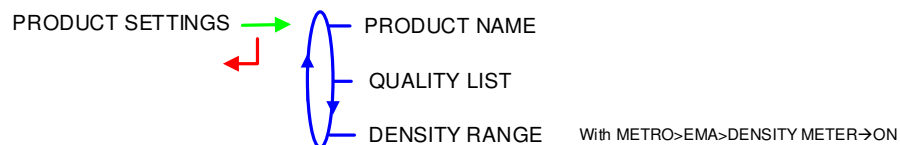
4.2.2.1 Product name

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

PRODUCT NAME (*XX*) ➝ PRODUCT NAME➝NONE

4.2.2.2 Quality list

This menu is available when the MICROCOMPT+ is operating in autonomous mode (CONFIGURATION>COMMUNICATION>MODE➝AUTONOME).

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 authorisation 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 6 characters, which will be proposed to the driver at the beginning of the measurement.

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

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

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

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

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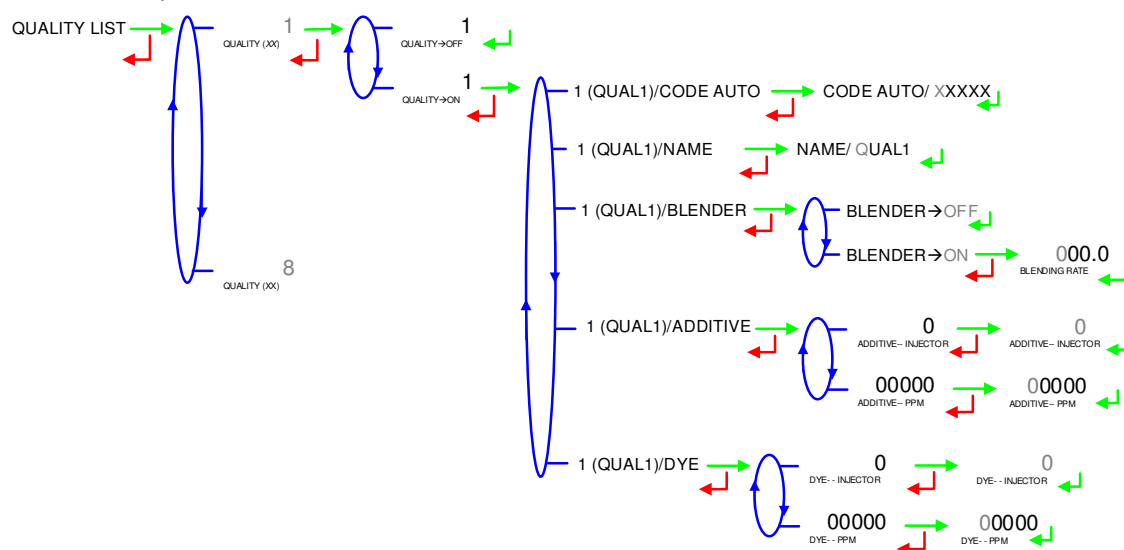
4.2.2.3 Density range

If the option density meter is active (METRO>EMA>DENSITY METER$\rightarrow$ON). Set the 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.
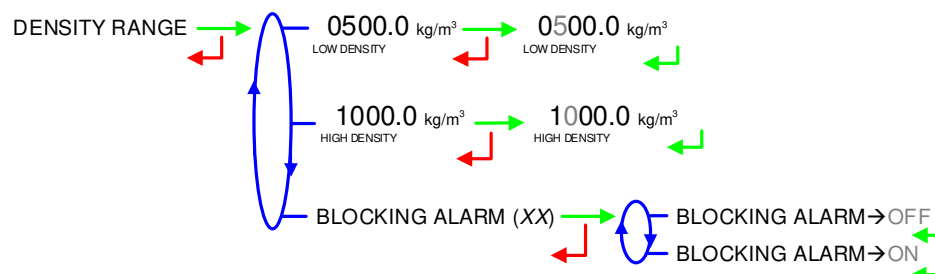
4.2.3 Sub-menu COMMUNICATION

This menu allows to define the configuration of the communication with the control device (main computer). If it's done in METROLOGICAL mode (METRO>CONFIGURATION>COMMUNICATION>MODE$\rightarrow$SUPERVISOR), it has priority. But it may be define by this menu.

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

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

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

4.2.4 Sub-menu INSTRUMENTATION

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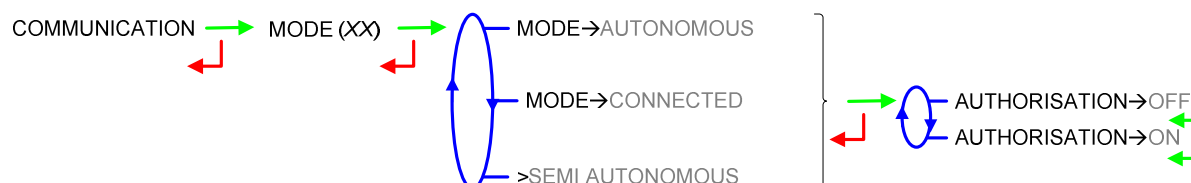
4.2.4.1 DTQM

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

DTQM (*XX*) → DTQM→OFF
DTQM→ON

4.2.4.2 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: 2s

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

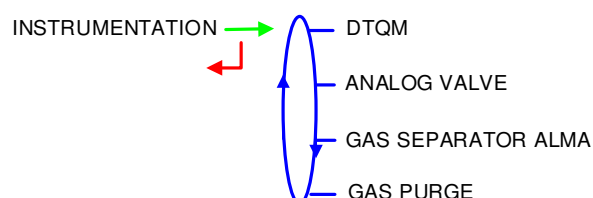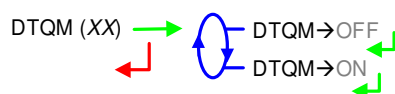**VANNE ANA-I MAX**: Maximum current variation for each cycle (default value: 1mA).

ANALOG VALVE → 00.27 → 00.27
ANALOG VALVE-CYCLE   ANALOG VALVE-CYCLE

150.0 m^3 → 150.0 m^3
ANALOG VALVE-MAX FLOW /h   ANALOG VALVE-MAX FLOW /h

003.0 m^3 → 003.0 m^3
ANALOG VALVE-HYSTERESIS /h   ANALOG VALVE-HYSTERESIS /h

01.00 → 01.00
ANALOG VALVE-I MAX   ANALOG VALVE-I MAX
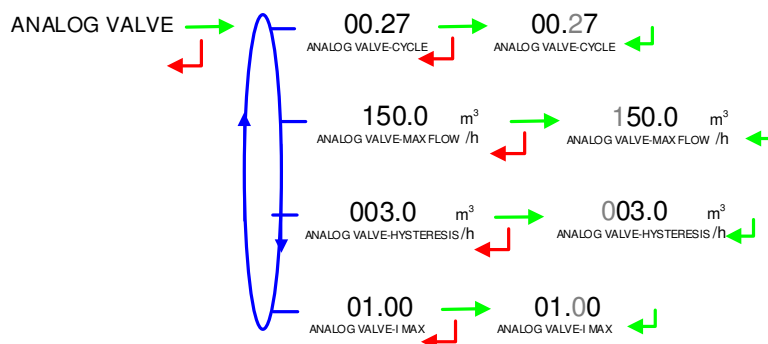
4.2.4.3 Gas separator ALMA

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.

GAS SEPARATOR ALMA → 00 → 00
FILTRATION TIMER   FILTRATION TIMER
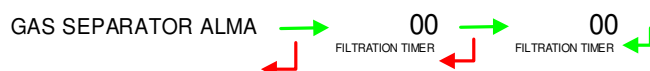
4.2.4.4 Gas purge

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

GAS PURGE → 00 → 00
PURGE TIMER MAX   PURGE TIMER MAX
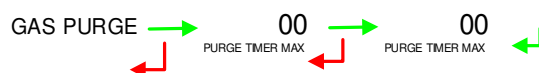
The message NO GAS PURGE appears if the system is not taken into account.

<table>
<tr><td rowspan="3">ALMA</td><td>MU 7036 EN K</td><td rowspan="3">Page 28/79</td></tr>
<tr><td>MICROCOMPT+ LOADING TEMINAL DEVICE</td></tr>
<tr><td>This document is available at www.alma-alma.fr</td></tr>
</table>

4.2.5 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.

BLENDER (ON) 00.00 00.00
BLENDING RATE BLENDING RATE

4.2.6 Sub-menu BACKUP VALUES

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.

BACKUP VALUES CHOOSE EM
Pictogramme EmA is blinking

CHOOSE EM
Pictogramme EmA is blinking

+15.0 °C
TEMPERATURE

+15.0 °C
TEMPERATURE

750.0 kg/m³
DENSITY

750.0 kg/m³
DENSITY
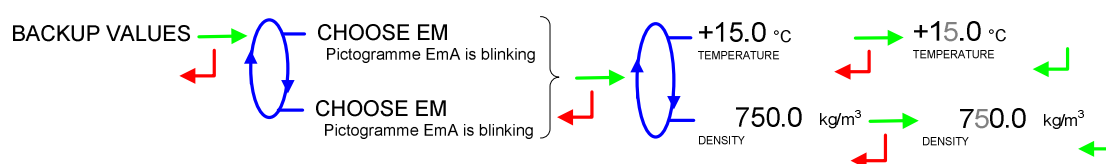
4.3 Menu TIME ADJUSTMENT

Date and time are set in METROLOGICAL mode. The hour may be adjusted (±2h) one time a day through this menu (use French format: 14.41 means 2.41 pm).

TIME ADJUSTMENT 14.41 e.g. 14.41 means 2.41 pm
TIME (HH:MM)

4.4 Menu LANGUAGE

This menu allows you to choose the display language. It is available if a translation catalogue has been uploaded in the MICROCOMPT+.

LANGUAGE (EN) LANGUAGE→FR

LANGUAGE→EN
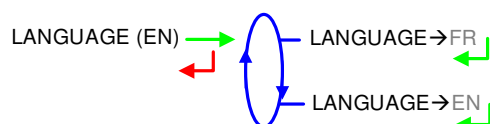
4.5 Menu ICOM

Refer to the ANNEXE 1: Features of the connected MICROCOMPT+.

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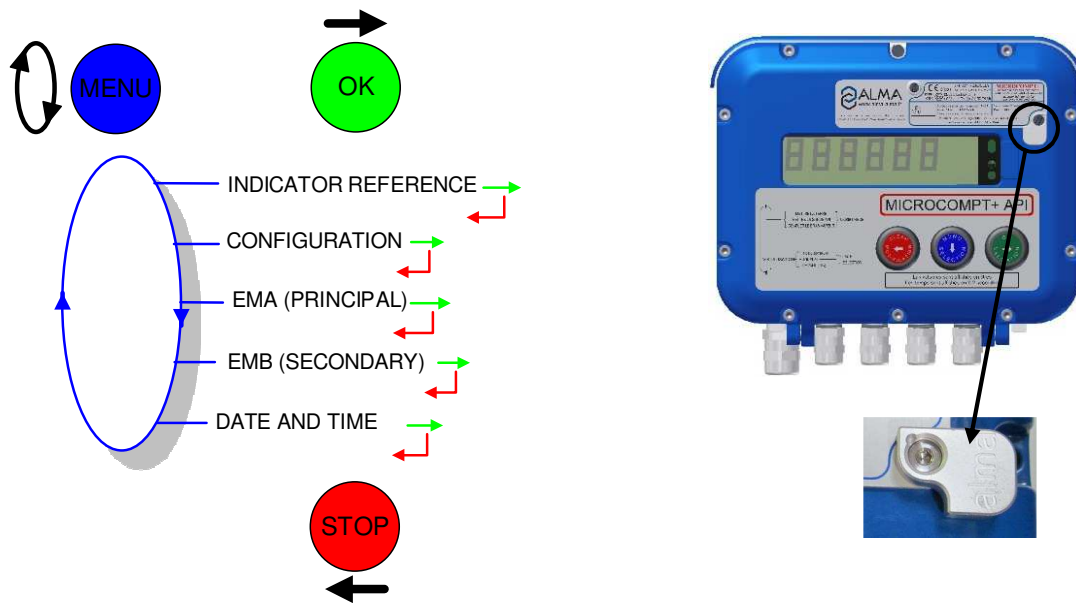
Regardless of the main quantity choice, some parameters will be define there in volume at metering conditions (VM): minimum quantity, flowrates ranges, etc.

5.1 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.

00001
INDICATOR REFERENCE

00001
INDICATOR REFERENCE

001
SLAVE No.

5.2 Menu CONFIGURATION

CONFIGURATION

UNIT AND ACCURACY

CONVERSION

INSTRUMENTATION

COMMUNICATION

LOGIC

DUAL

EMA ACDA

EMB ACDA

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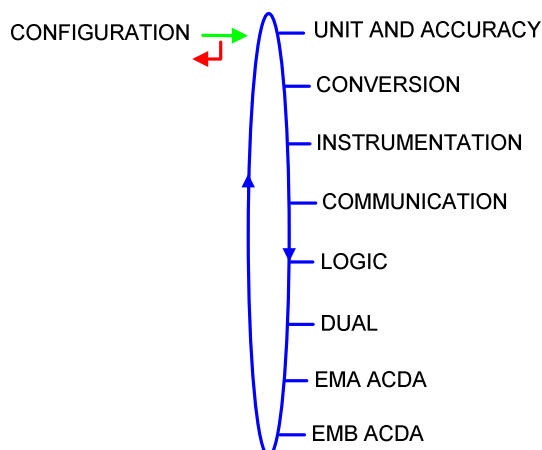
5.2.1 Sub-menu UNIT AND ACCURACY

This menu is different depending on whether the conversion is active or not. When the DUAL option described at §5.2.6 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.

Below is shown the format for display or setting 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 vary strongly.

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

5.2.1.1 If CONVERSION→OFF

When two measuring systems are set, unit configuration must be done for both measuring systems. The first step is to choose the measuring system to be configured:
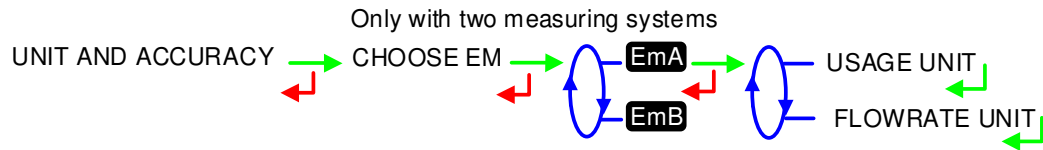
USAGE UNIT: Choose the unit and the accuracy of quantity that will be displayed and printed. A generic quantity is set, it can be a volume (L or m^3), a mass (kg) or without any unit. If kg-unit or undefined-unit is chosen, then the MICROCOMPT+ will count scale intervals.

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 tonnes) will have to be applied on the MICROCOMPT+ display.

FLOWRATE UNIT: Choose the unit of flowrate 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).

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Usage unit: L or m³

123.4   m³
FLOWRATE UNIT   /h
                        123.4   m³
                        UNIT FOR FLOWRATE   /h

                        1234   L
                        UNIT FOR FLOWRATE   /min

Usage unit: kg

123.4   m³
FLOWRATE UNIT   /h
                        123.4   /h
                        UNIT FOR FLOWRATE   tonnes/h, (pictogram tonne doesn't exist)

                        1234   kg
                        UNIT FOR FLOWRATE   /min

Usage unit: undefined

123.4   m³
FLOWRATE UNIT   /h
                        123.4   /h
                        UNIT FOR FLOWRATE

                        1234   /min
                        UNIT FOR FLOWRATE
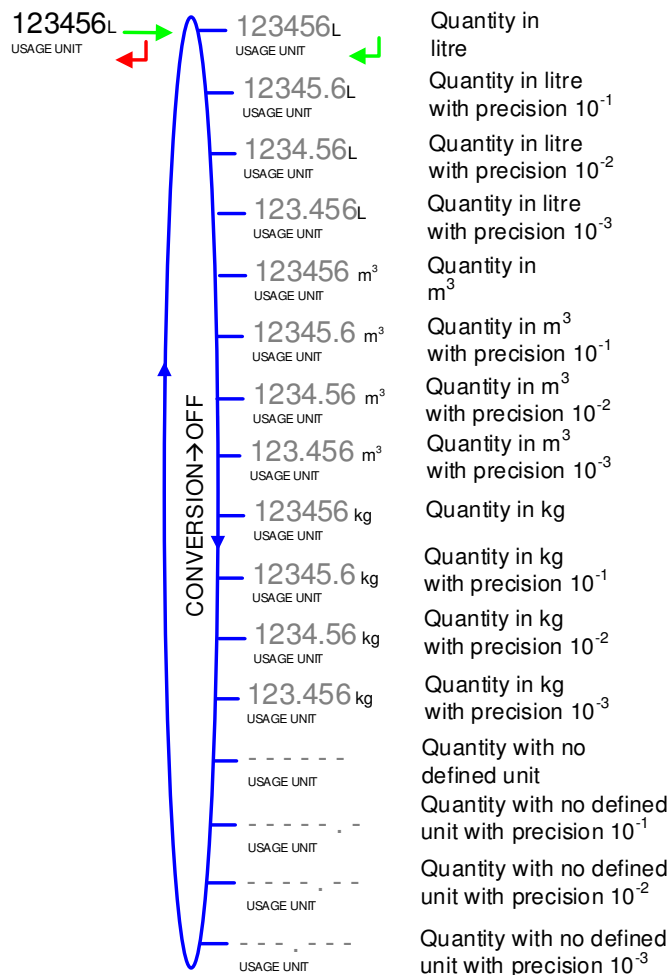
5.2.1.2 If CONVERSION→ON

This menu is used to configure units for volume mass. When two measuring systems are set, unit configuration must be done for both measuring systems. The first step is to choose the measuring system to be configured:
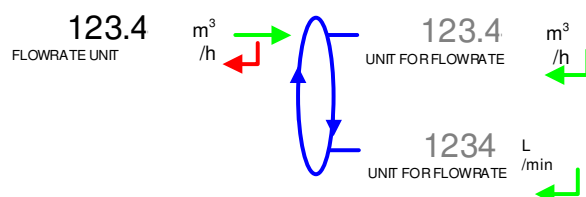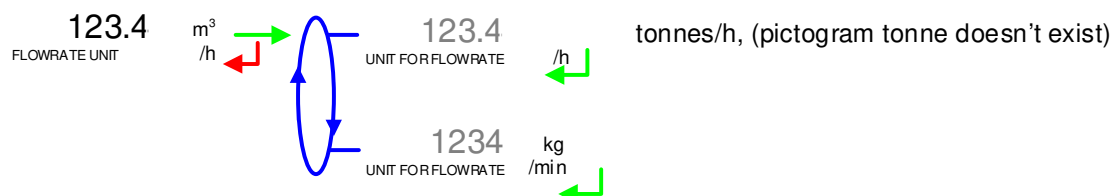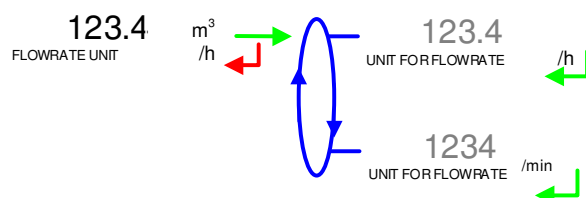
Only with two measuring systems

UNIT AND ACCURACY → CHOOSE EM → EmA → USAGE UNIT
                                 EmB   FLOWRATE UNIT

USAGE UNIT:

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

		Volume in litre
USAGE UNIT → 123456 L VOLUME SETTINGS → 123456 L VOLUME SETTINGS		

123456 L — Volume in litre

12345.6 L VOLUME SETTINGS — Volume in litre with precision 10^{-1}

1234.56 L VOLUME SETTINGS — Volume in litre with precision 10^{-2}

123.456 L VOLUME SETTINGS — Volume in litre with precision 10^{-3}

123456 m³ VOLUME SETTINGS — Volume in m³

12345.6 m³ VOLUME SETTINGS — Volume in m³ with precision 10^{-1}

1234.56 m³ VOLUME SETTINGS — Volume in m³ with precision 10^{-2}

123.456 m³ VOLUME SETTINGS — Volume in m³ with precision 10^{-3}

- - - - - - VOLUME SETTINGS — Volume with no defined unit

- - - - - . - VOLUME SETTINGS — Volume with no defined unit with precision 10^{-1}

- - - - . - - VOLUME SETTINGS — Volume with no defined unit with precision 10^{-2}

- - - . - - - VOLUME SETTINGS — Volume with no defined unit with precision 10^{-3}

CONVERSION→ON

123456 kg MASS SETTINGS → 123456 kg MASS SETTINGS — Mass in kg

12345.6 kg MASS SETTINGS — Mass in kg with precision 10^{-1}

1234.56 kg MASS SETTINGS — Mass in kg with precision 10^{-2}

123.456 kg MASS SETTINGS — Mass in kg with precision 10^{-3}

- - - - - - MASS SETTINGS — Mass with no defined unit

- - - - - . - MASS SETTINGS — Mass with no defined unit with precision 10^{-1}

- - - - . - - MASS SETTINGS — Mass with no defined unit with precision 10^{-2}

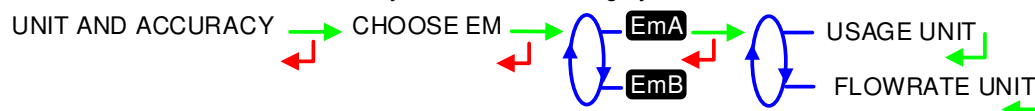- - - . - - - MASS SETTINGS — Mass with no defined unit with precision 10^{-3}

FLOWRATE UNIT: Choose the unit of flowrate 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).
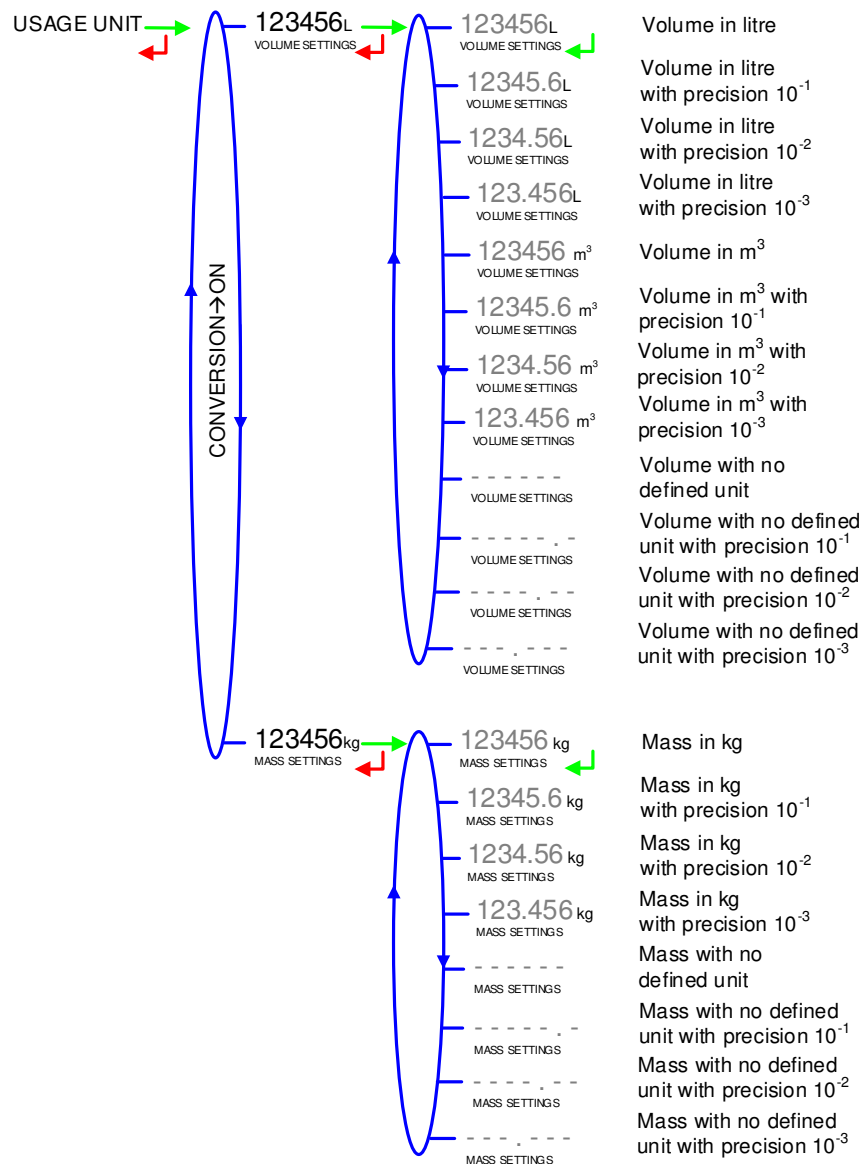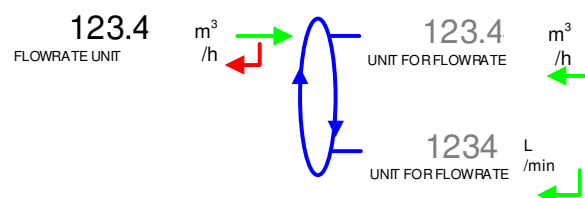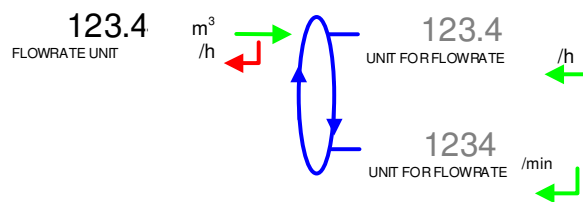
Usage unit: L or m³

123.4 m³ FLOWRATE UNIT /h → 123.4 m³ UNIT FOR FLOWRATE /h

1234 L UNIT FOR FLOWRATE /min

Usage unit: undefined

123.4   m³
FLOWRATE UNIT   /h

123.4
UNIT FOR FLOWRATE   /h

1234
UNIT FOR FLOWRATE   /min

5.2.2 Sub-menu CONVERSION

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

CONVERSION (*XX*)

CONVERSION→OFF
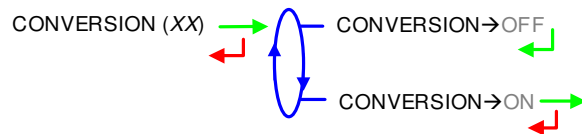
CONVERSION→ON

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

When conversion is active, the following parameters must be set. 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, **MASS**: mass)
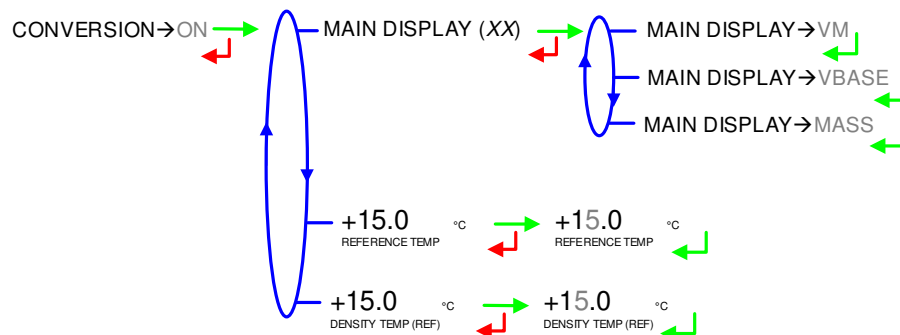
REFERENCE TEMP. : Enter the reference temperature for conversion. Default value: 15°C for the most common conversion

DENSITY TEMP (REF): Enter the reference temperature for set up densities. Default value: 15°C for density at 15°C (MV15)
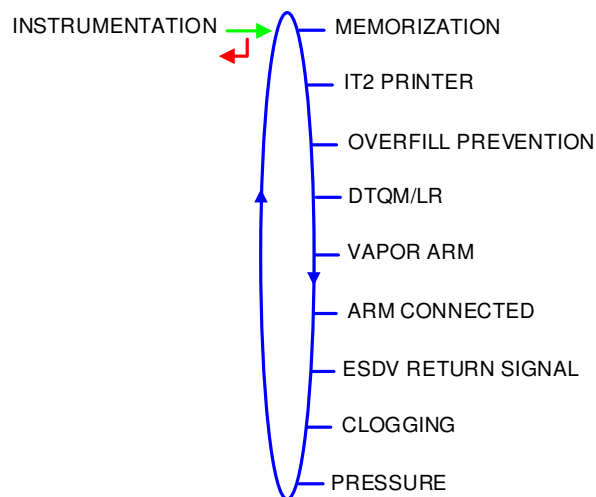
⚠ Changing one of the reference temperature values forces the reset metrological diary by causing a 'MEMORY LOST' fault.

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

CONVERSION→ON

MAIN DISPLAY (*XX*)

MAIN DISPLAY→VM

MAIN DISPLAY→VBASE

MAIN DISPLAY→MASS

+15.0 °C
REFERENCE TEMP

+15.0 °C
REFERENCE TEMP

+15.0 °C
DENSITY TEMP (REF)

+15.0 °C
DENSITY TEMP (REF)

5.2.3 Sub-menu INSTRUMENTATION

INSTRUMENTATION — MEMORIZATION

IT2 PRINTER

OVERFILL PREVENTION

DTQM/LR

VAPOR ARM

ARM CONNECTED

ESDV RETURN SIGNAL

CLOGGING

PRESSURE

5.2.3.1 Memorization

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

MEMORIZATION (*XX*) — MEMORIZATION→OFF

MEMORIZATION→ON
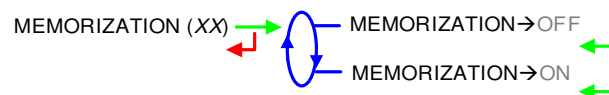
5.2.3.2 IT2 mechanical printer

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

IT2 PRINTER (*XX*) — IT2 PRINTER→OFF — TICKET (*XX*) — TICKET→OFF

IT2 PRINTER→ON   TICKET→ON
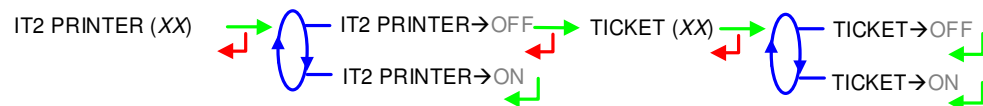
5.2.3.3 Overfill prevention

Control of the overfill protection (digital or DG3001).

OVERFILL (*XX*) — OVERFILL→DIGITAL

OVERFILL→DG3001 — DG3001→CALIB. DRY
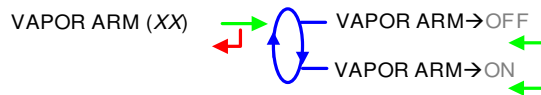
OVERFILL→NONE

5.2.3.4 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).
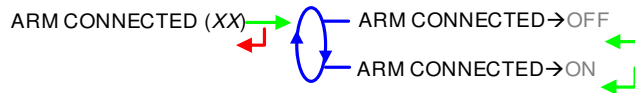
DTQM/LR (*XX*) — DTQM/LR→OFF

DTQM/LR→ON
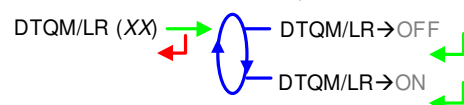
5.2.3.5 Vapor arm

BOTTOM. Operation with or without vapor arm.

VAPOR ARM (*XX*) ⟶ VAPOR ARM→OFF

VAPOR ARM→ON

5.2.3.6 Arm connected

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

ARM CONNECTED (*XX*) ⟶ ARM CONNECTED→OFF
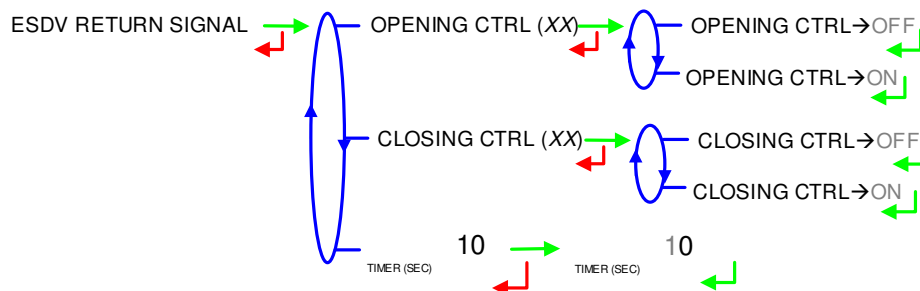
ARM CONNECTED→ON

5.2.3.7 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' (ON/OFF)

CLOSING CTRL: Instrumentation of the input 'close ESDV return signal' (ON/OFF)

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)

ESDV RETURN SIGNAL ⟶ OPENING CTRL (*XX*) ⟶ OPENING CTRL→OFF

OPENING CTRL→ON

CLOSING CTRL (*XX*) ⟶ CLOSING CTRL→OFF

CLOSING CTRL→ON

TIMER (SEC) 10 ⟶ TIMER (SEC) 10

5.2.3.8 Clogging

Operation with or without control of the clogging filter fouling.

CLOGGING (*XX*) ⟶ CLOGGING→OFF

CLOGGING→ON
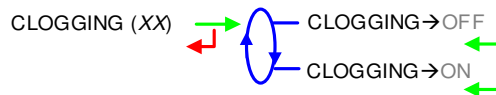
5.2.3.9 Pressure

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

PRESSURE (*XX*) → PRESSURE→OFF

PRESSURE→ON → +99.9 CALIBRATE PRESSURE → +99.9 ENTER PRESSURE
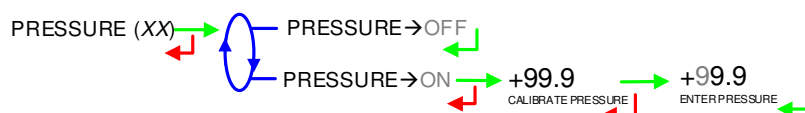
5.2.4 Sub-menu COMMUNICATION

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

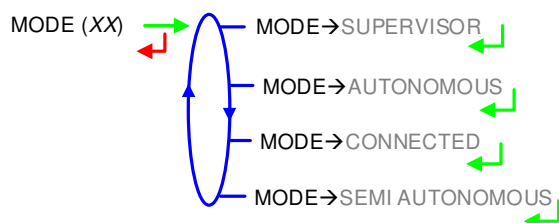COMMUNICATION → MODE / PARAMETERS

5.2.4.1 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 authorisation.

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

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

MODE (*XX*) → MODE→SUPERVISOR / MODE→AUTONOMOUS / MODE→CONNECTED / MODE→SEMI AUTONOMOUS

5.2.4.2 Parameters

a) SESAME II

Definition of the communication protocol SESAME II:

NUMBER OF INJECTORS: Operation with ALMA SESAME II network with a maximum of eight injectors

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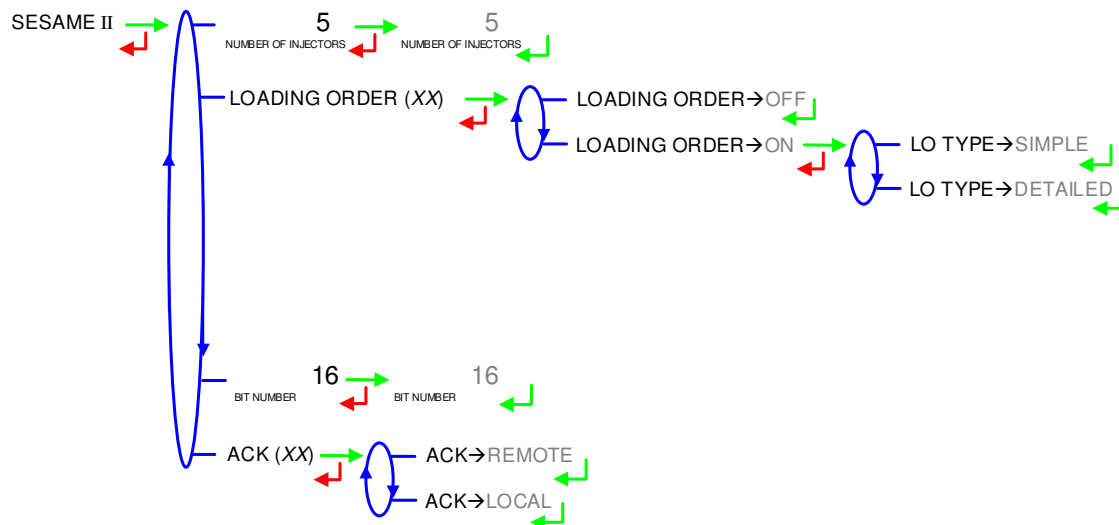
BIT NUMBER: Operation with ALMA SESAME II network with 16 or 32-bits data coding of the volume

ACK: Acknowledgement of the major alarms can be made in 2 ways:
- **REMOTE**: By the control device (remote acknowledgement)
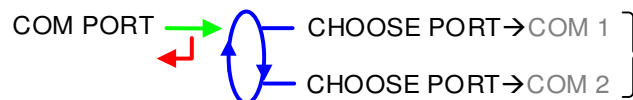
- **LOCAL**: On the MICROCOMPT+

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, which is an authorisation and operations secured transmission network.

METROLOGICAL 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

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CHOOSE PORT→COM X

9600 COMX–SPEED

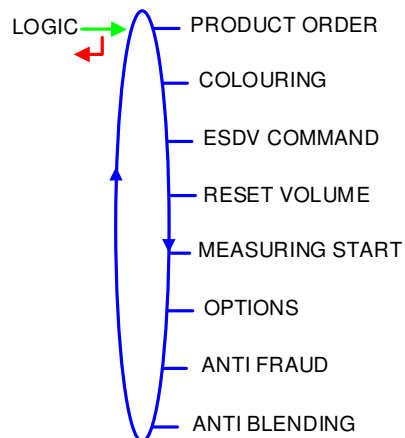9600 COMX–SPEED — Choose the communication speed of the network (bauds)

19200 COMX–SPEED

38400 COMX–SPEED

57600 COMX–SPEED

115200 COMX–SPEED

COMX- - PROTO

SESAME II [XX] → SESAME II→OFF / SESAME II→ON

METROLOGICAL DIARY [XX] → >OFF / >ON

PCC [XX] → PCC→OFF / PCC→ON

UCONFIG [XX] → UCONFIG→OFF / UCONFIG→ON

BLENDING DIARY [XX] → BLENDING DIARY→OFF / BLENDING DIARY→ON

ACDA [XX] → ACDA→OFF / ACDA→ON

SESAME II+DATA [XX] → SESAME II+DATA→OFF / SESAME II+DATA→ON

5.2.5 Sub-menu LOGIC

LOGIC →
- PRODUCT ORDER
- COLOURING
- ESDV COMMAND
- RESET VOLUME
- MEASURING START
- OPTIONS
- ANTI FRAUD
- ANTI BLENDING

5.2.5.1 Product order

Configuration of 'product request'.

MEASURE: 'Product request' is activated during whole measurement.

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FLOWING: 'Product request' is activated when the valve is operated. The pump starts within 5 seconds (timer).
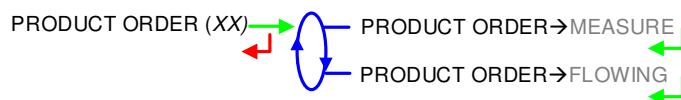
5.2.5.2 Dyeing

This menu is used to activate and configure systematic and non-metrological dyeing.
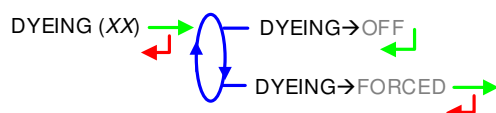
In case of forced dyeing, choose the type of additivation device: **ACDA** or **METERING**, then set the parameters:

CHOOSE INJECTOR: Choose the injector for systematic dye injection

ASSOCIATED INPUT: Associated input intended as pulse counter

The six following parameters are not applicable with metrological ACDA:

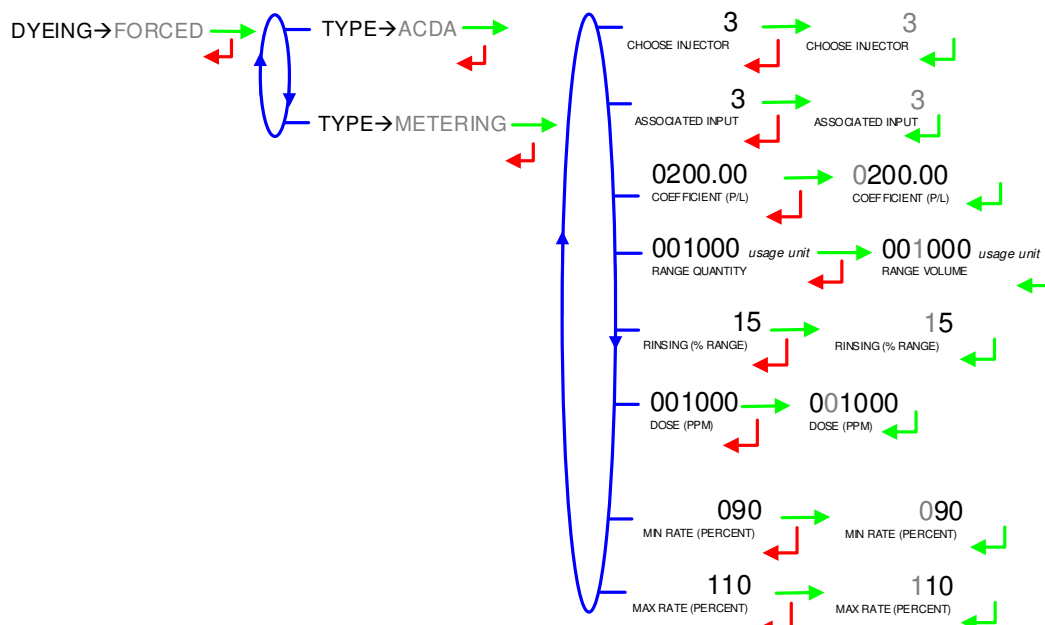**COEFFICIENT (P/L)**: Injector coefficient in pulse/litre

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 millilitres) of the dose to be injected for 1000 litres of product
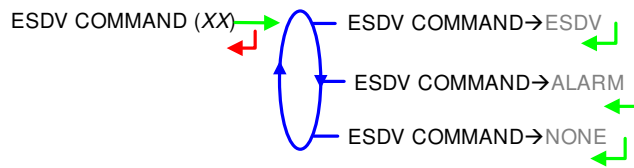
MIN RATE (PERCENT): Dyeing minimum rate below which an alarm is triggered

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

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5.2.5.3 ESDV command

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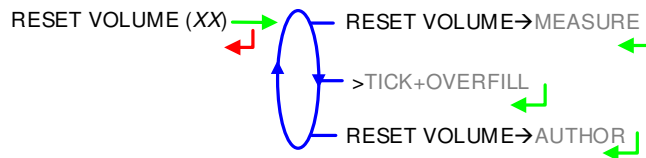

5.2.5.4 Reset volume

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

MEASURE: Reset over measurement ends

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

AUTHOR: Reset over authorisation lost
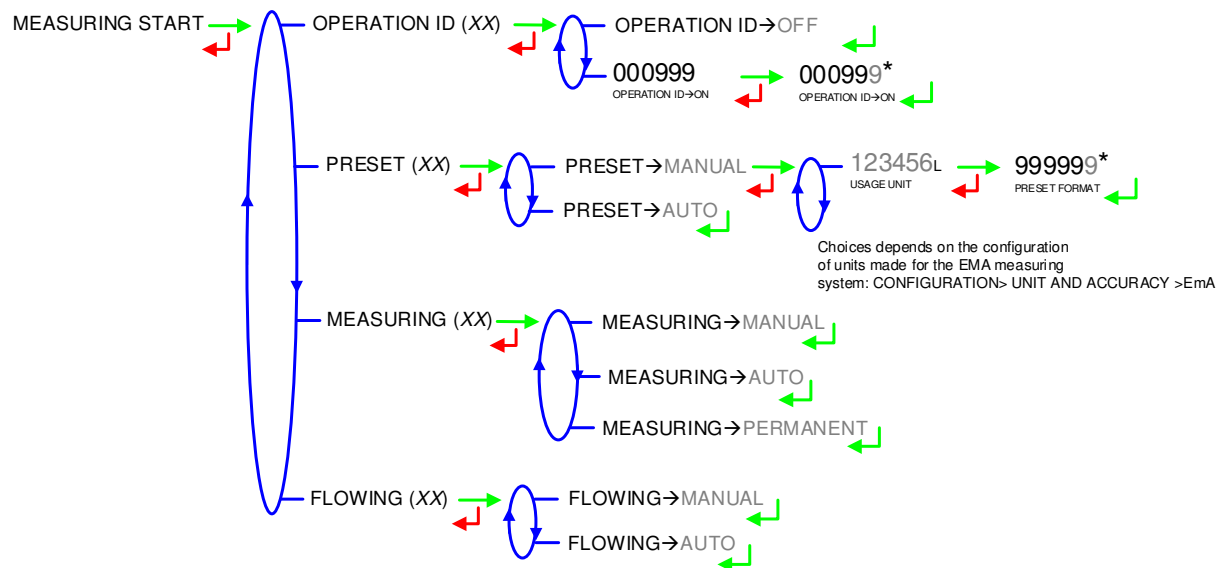

5.2.5.5 Measuring start

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 '4000'.

PRESET: Choose the unit for preset quantity and enter the input mask* to limit entry errors. **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.

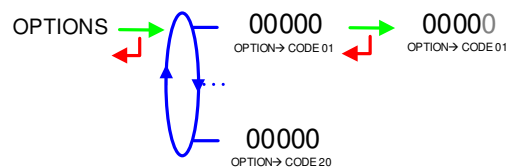**MEASURING**: Condition for the MICROCOMPT+ to start measuring

FLOWING: Condition for the MICROCOMPT+ to start flowing

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5.2.5.6 Options

Refer to the ANNEXE 3 to have explanations about the codes for the MICROCOMPT+ options configuration
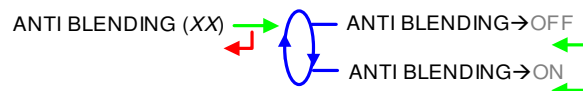

5.2.5.7 Anti-fraud

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.
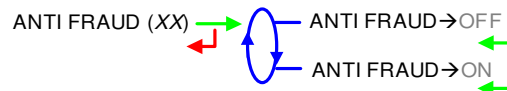
5.2.5.8 Anti-blending

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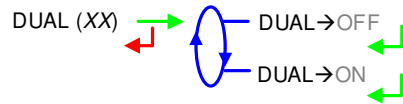
5.2.6 Sub-menu DUAL

This menu is used for DUAL version to activate the secondary measuring system called EMB which is available for blending or metrological denaturation.
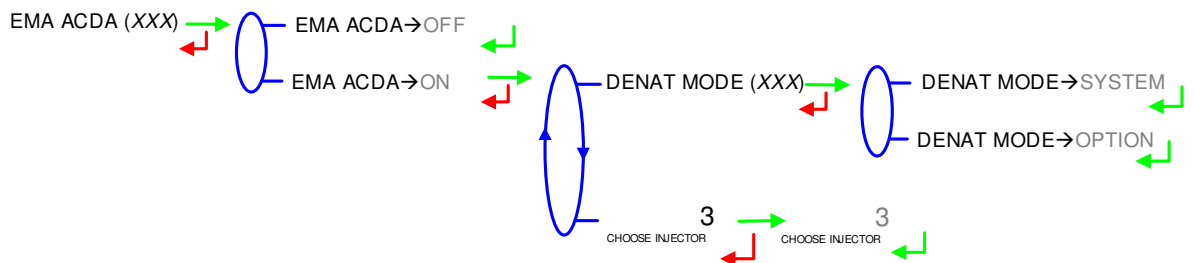
Changing the status forces the reset metrological diary by causing a 'MEMORY LOST' fault.

DUAL (*XX*) → DUAL→OFF
DUAL→ON

5.2.7 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.

EMA ACDA (*XXX*) → EMA ACDA→OFF
EMA ACDA→ON → DENAT MODE (*XXX*) → DENAT MODE→SYSTEM
DENAT MODE→OPTION
3 CHOOSE INJECTOR → 3 CHOOSE INJECTOR

5.2.8 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.

EMB ACDA (*XXX*) → EMB ACDA→OFF
EMB ACDA→ON → DENAT MODE (xxx) → DENAT MODE→SYSTEM
DENAT MODE→OPTION
4 CHOOSE INJECTOR → 4 CHOOSE INJECTOR

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	This document is available at www.alma-alma.fr	
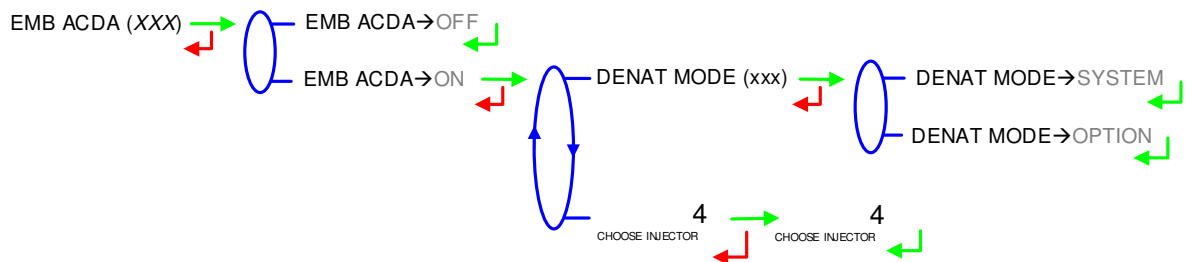
5.3 Menu MEASURING SYSTEM EMA (PRINCIPAL)

EMA (PRINCIPAL) — METER COEFFICIENT

VOLUME CONVERSION   With CONFIGURATION>CONVERSION→ON

DENSITY METER

TEMPERATURE

GAS DETECTOR

VALVE

PULSES OUTPUT

SETTINGS
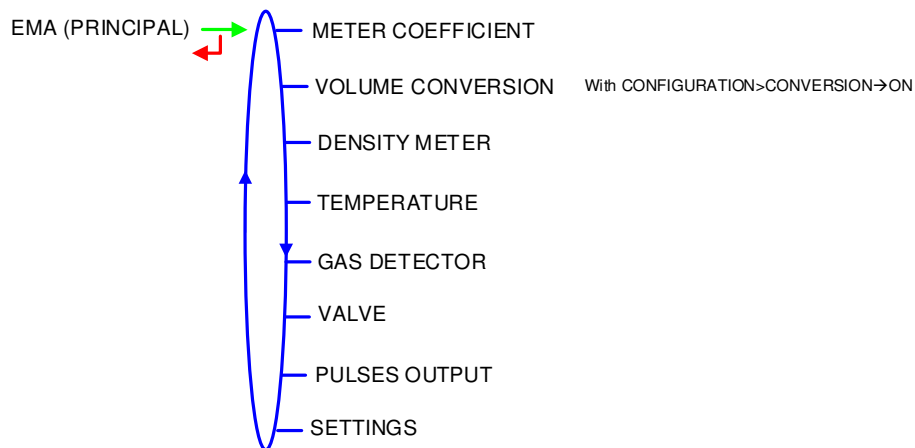
5.3.1 Sub-menu METER COEFFICIENT

This menu is used to set the coefficient of the measuring system meter (pulses/litre)

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

LOW FLOWRATE/K1 (Q1): Low flow reference (m$_3$/h)

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

HIGH FLOWRATE /K2 (Q2): High flow reference (m$_3$/h)

METER COEFFICIENT

00.0000	00.0000
LF COEFFICIENT (K1	LF COEFFICIENT (K1
000.0 m³ /h	000.0 m³ /h
LOW FLOW/K1 (Q1)	LOW FLOW/K1 (Q1)
00.0000	00.0000
HF COEFFICIENT (K2)	HF COEFFICIENT (K2)
000.0 m³ /h	000.0 m³ /h
HIGH FLOW/K2 (Q2)	HIGH FLOW/K2 (Q2)

5.3.2 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 conversion formula forces the reset metrological diary by causing a 'MEMORY LOST' fault.

Choose the conversion table according to the product:
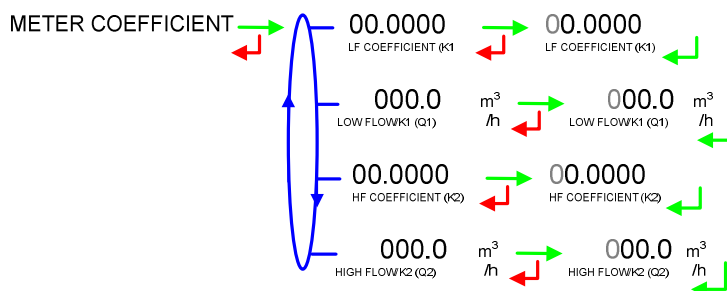
Conversion formula	Product
API54A	Crude products
API54B	Refined products
GPL	LPG and bitumen
EN14214	Biofuels
ETH15	Ethanol at 15°C
ETH20	Ethanol at 20°C
FAME	Fatty acid methyl esters for diesel engines
ETBE	Ethyl tertio butyl ether
VBASE=0	No conversion: The volume at base conditions is not calculated

5.3.3 Sub-menu DENSITY METER

This menu is used to operate with a density meter or not. Density unit is kg/m^3.
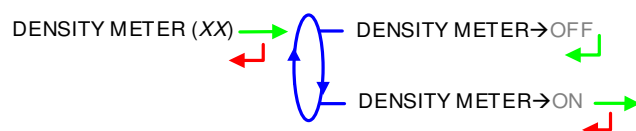
When the option is active, the parameters of the density meter has to be set:

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

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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.

Enter at least two different points to calibrate the density meter

For a frequency density meter
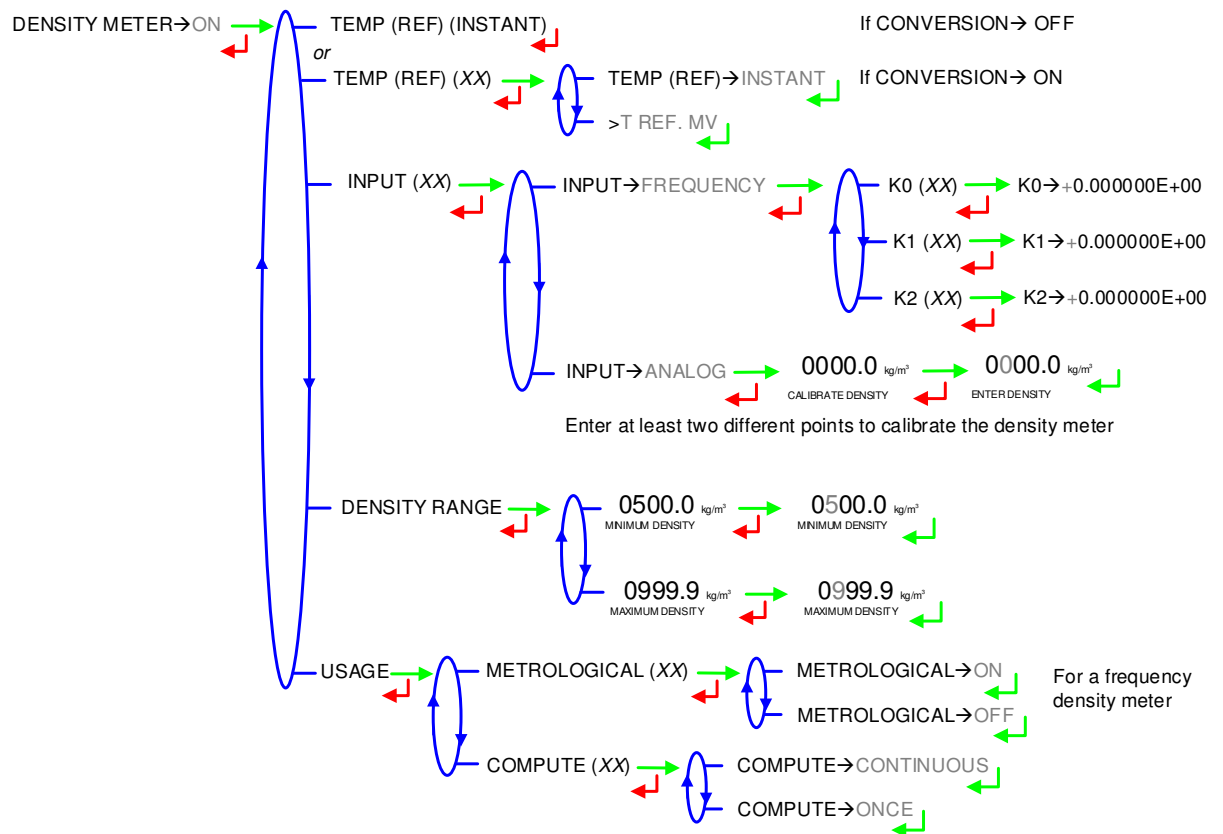
5.3.4 Sub-menu TEMPERATURE

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 above which an alarm is triggered
- ❍ Decide whether the alarm is blocking or not.
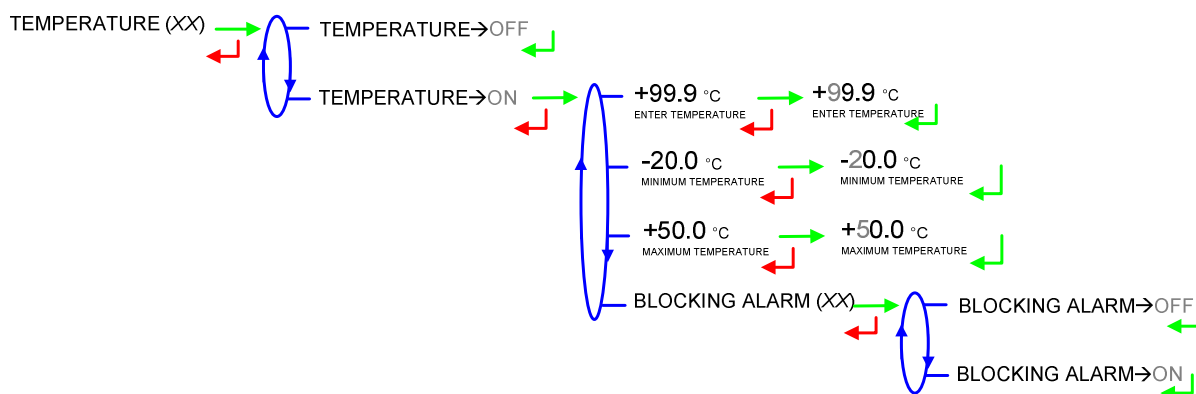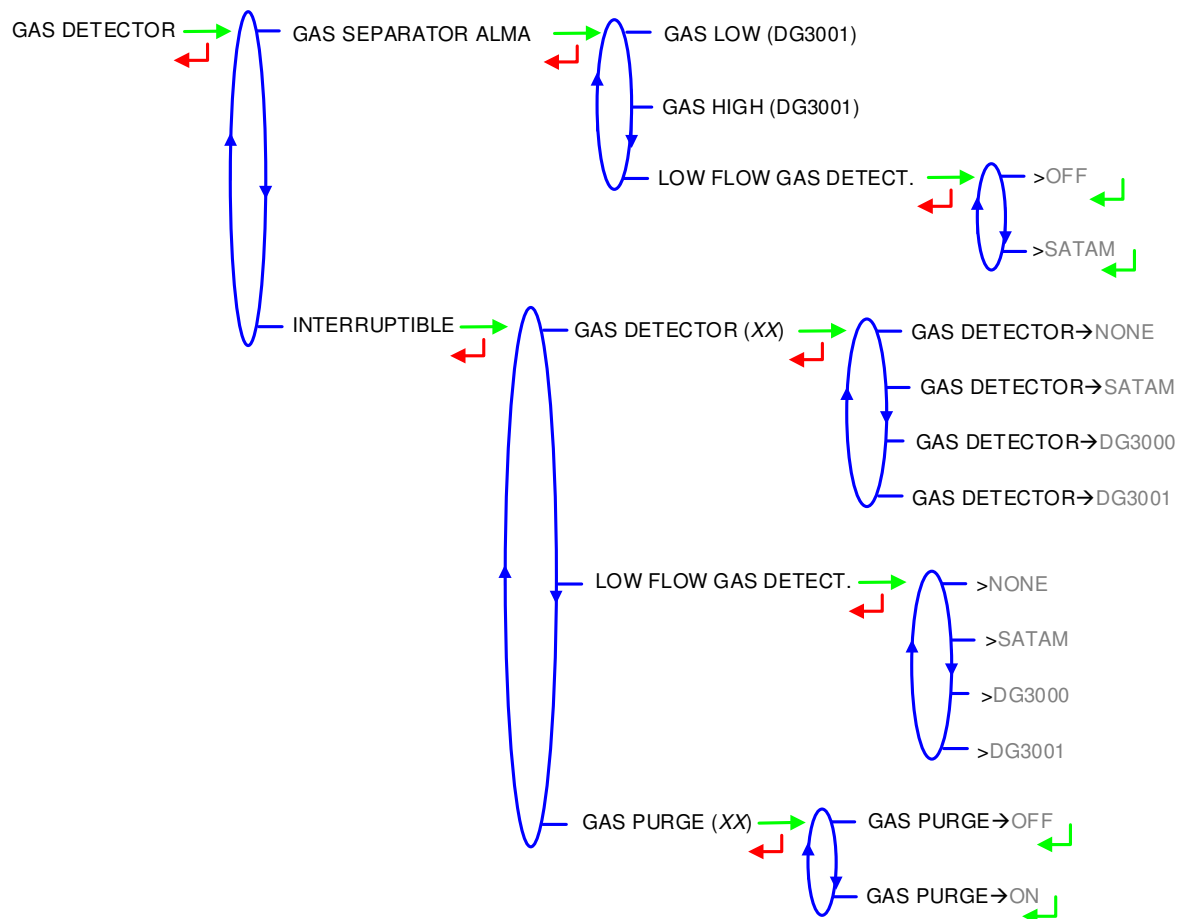
5.3.5 Sub-menu GAS DETECTOR

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

GAS SEPARATOR ALMA: Check 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. Check the gas detector is dry and acknowledge
- **LOW FLOW GAS DETECT**: Choose the type of gas detector at separator high point. 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.

GAS DETECTOR → GAS SEPARATOR ALMA → GAS LOW (DG3001)

GAS HIGH (DG3001)

LOW FLOW GAS DETECT. → >OFF

>SATAM

INTERRUPTIBLE → GAS DETECTOR (*XX*) → GAS DETECTOR→NONE

GAS DETECTOR→SATAM

GAS DETECTOR→DG3000

GAS DETECTOR→DG3001

LOW FLOW GAS DETECT. → >NONE

>SATAM

>DG3000

>DG3001

GAS PURGE (*XX*) → GAS PURGE→OFF

GAS PURGE→ON

5.3.6 Sub-menu VALVE

This menu is used to define the valve type:
HYDRAULIC: Hydraulic valve type BRODIE, BROOKS or EMERSON (incremental)
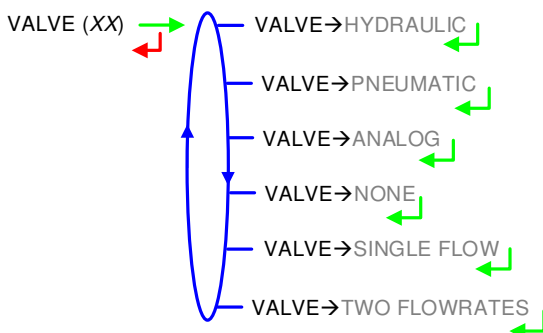**PNEUMATIC**: Pneumatic valve type CAMFLEX (incremental)
ANALOG: Analog valve
NONE: No valve
**SINGLE FLOW**: Solenoid-type valve (digital without flow control)
TWO FLOWRATES: Two-stage valve (digital with 2-flow control)

VALVE (*XX*) → VALVE→HYDRAULIC

VALVE→PNEUMATIC

VALVE→ANALOG

VALVE→NONE

VALVE→SINGLE FLOW

VALVE→TWO FLOWRATES

5.3.7 Sub-menu PULSES OUTPUT

Copy out the partial quantity measured by EMA.

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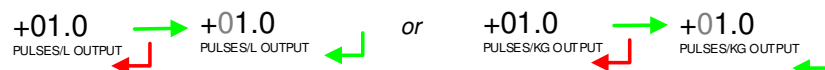
Note: If a negative value is set, the copy is done on a single channel. The other channel is like the situation: in or out pouring.

5.3.8 Sub-menu SETTINGS

5.3.8.1 Quantity settings

This menu allows you to configure the quantity set values.

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

LF→HF:

BOTTOM. 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: Set the quantity beyond which the MICROCOMPT+ drives the low flowrate at the end of a preset measurement.

MINIMUM QUANTITY: Set the minimum quantity
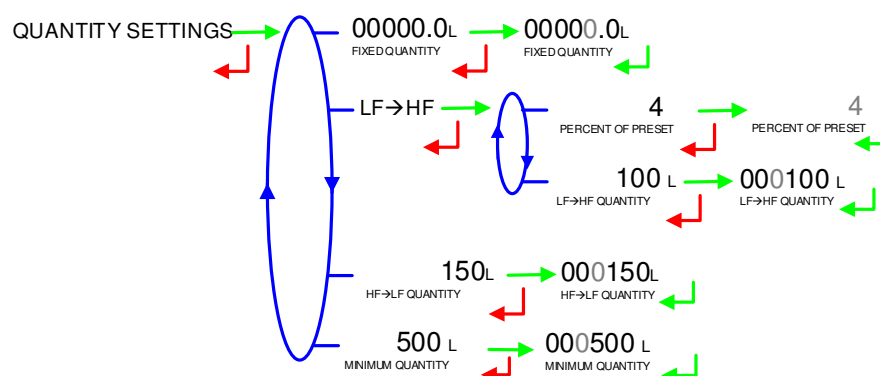
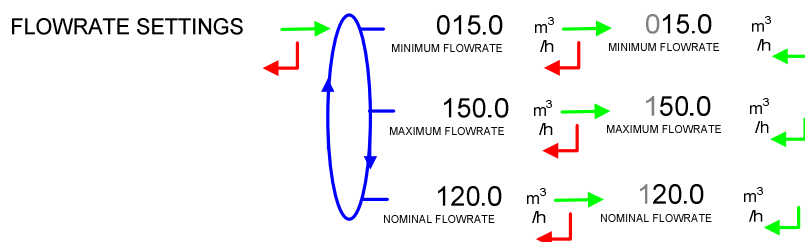5.3.8.2 Flow rates settings

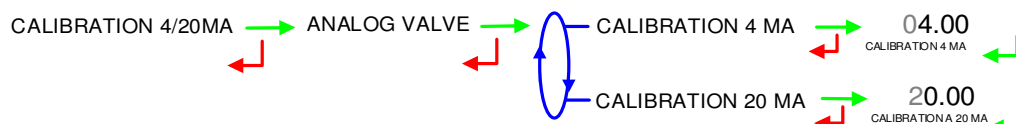**MINIMUM FLOWRATE**: Minimum flowrate below which an alarm is triggered

MAXIMUM FLOWRATE: Maximum flowrate above which an alarm is triggered

NOMINAL FLOWRATE: Set-flowrate relating to high flowrate regulation.
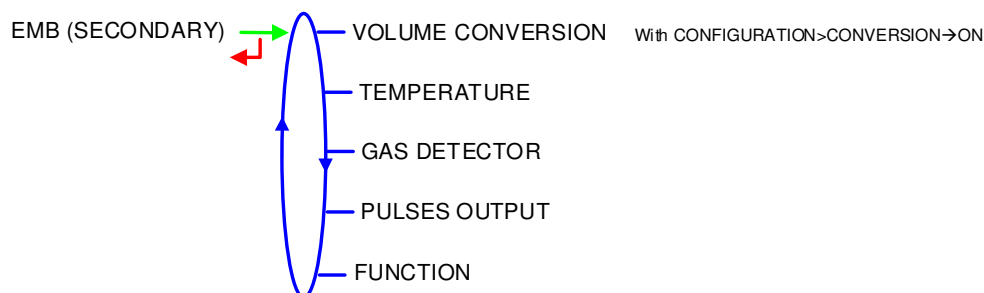
5.3.8.3 Calibration analog output

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.

5.4 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.

5.4.1 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 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
GPL	LPG and bitumen
EN14214	Biofuels
ETH15	Ethanol at 15°C
ETH20	Ethanol at 20°C
FAME	Fatty acid methyl esters for diesel engines
ETBE	Ethyl tertio butyl ether
VBASE=0	No conversion: The volume at base conditions is not calculated

5.4.2 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 above which an alarm is triggered

❍ Decide whether the alarm is blocking or not.
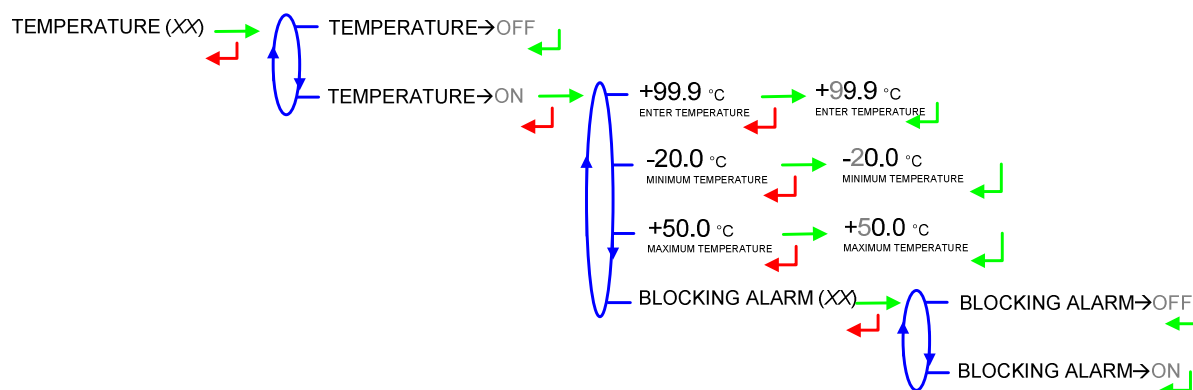
5.4.3 Sub-menu GAS DETECTOR

GAS DETECTOR: Define what kind of gas detectors the separator is equipped with. Choose the type of 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
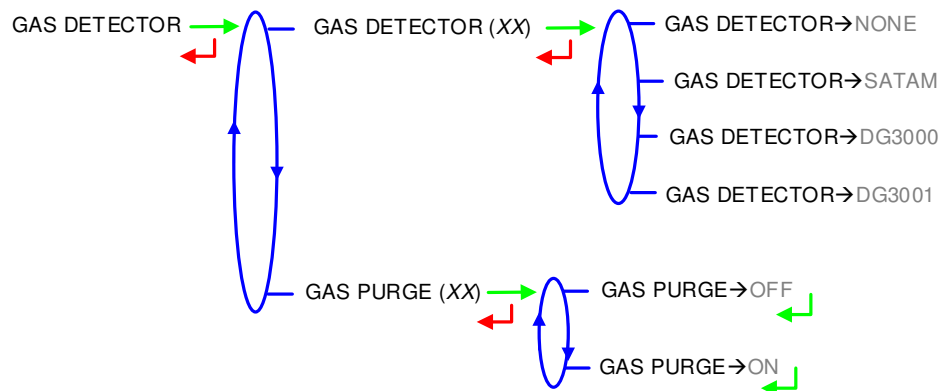- **DG3001**: Analog detector with calibration. Check the gas detector is dry and acknowledge

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.

5.4.4 Sub-menu PULSES OUTPUT

Copy out the partial quantity measured by EMB.

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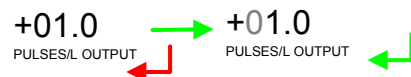
Note: If a negative value is set, the copy is done on a single channel. The other channel is like the situation: in or out pouring.

5.4.5 Sous-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.
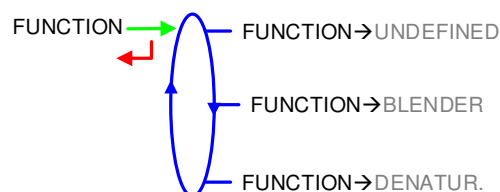
5.4.5.1 Function→blender

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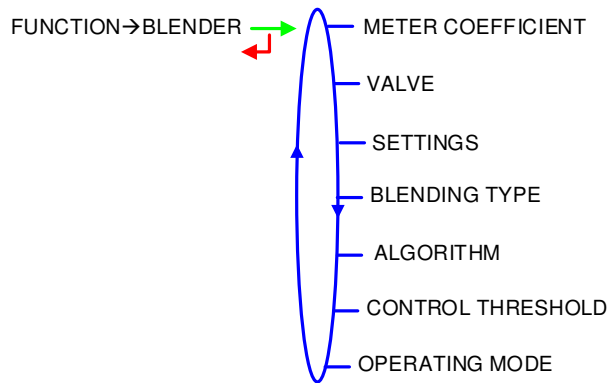
a) Meter coefficient

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)
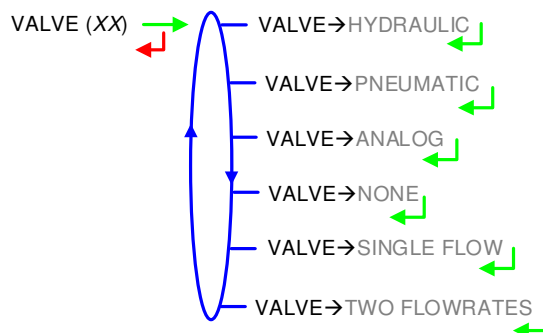
c) Settings

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
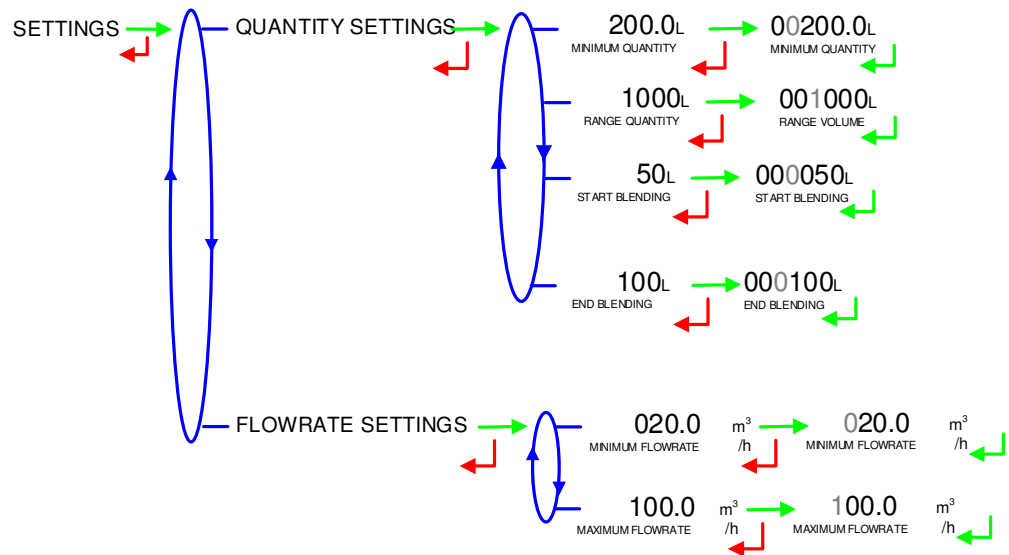
d) Blending type

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. A choice is given for calculation and copy out of the overall volume: EMA ONLY or EMA+EMB which is a non-metrological sum. Note: the values are not guaranteed (displayed alternately with dashes) when the blending rate is greater than 5%.

- **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.
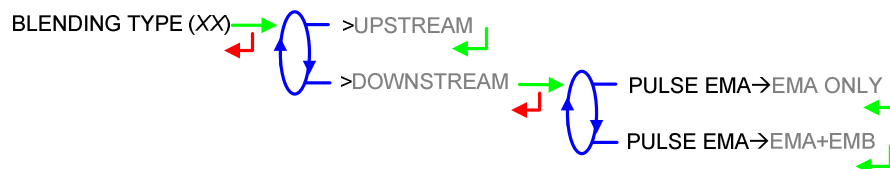
e) Algorithm

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
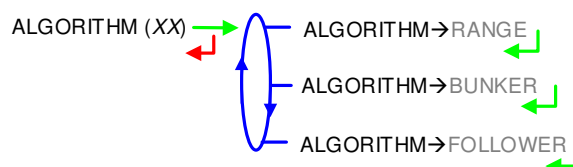
f) Control thresholds

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

THRESHOLD→RATE: Deviation between minimum and maximum satisfaction rate

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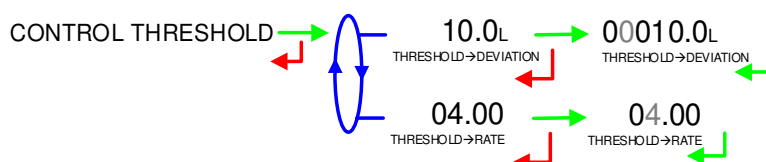
g) Operating mode

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.
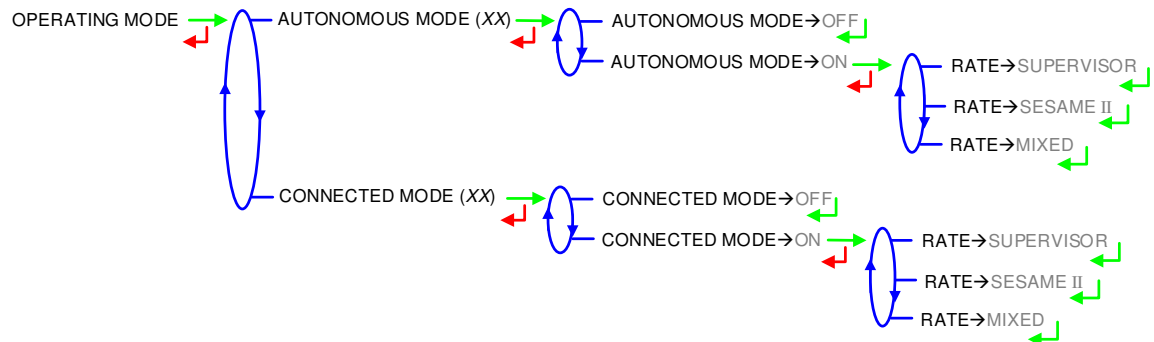
5.4.5.2 Function→denaturant

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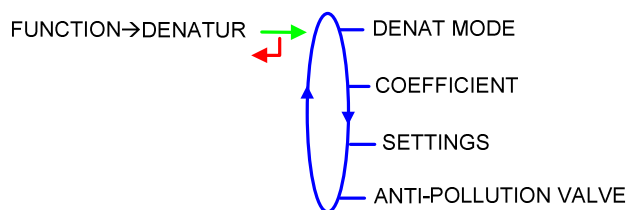
a) Mode denaturant

Metrological denaturation may be optional or systematic:

OPTION: Requested by SESAME II network or through the quality control

SYSTEM: With any EMA measurements.
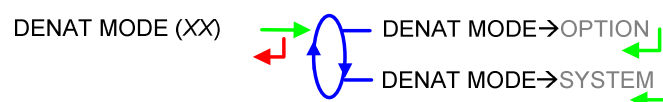
b) Meter coefficient

Set the metering coefficient.

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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
- **RINSING (% RANGE)**: Rinsing quantity of the injector as a percentage of the range quantity
- **DOSE (PPM)**: Concentration of product injected in the principal product (in 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
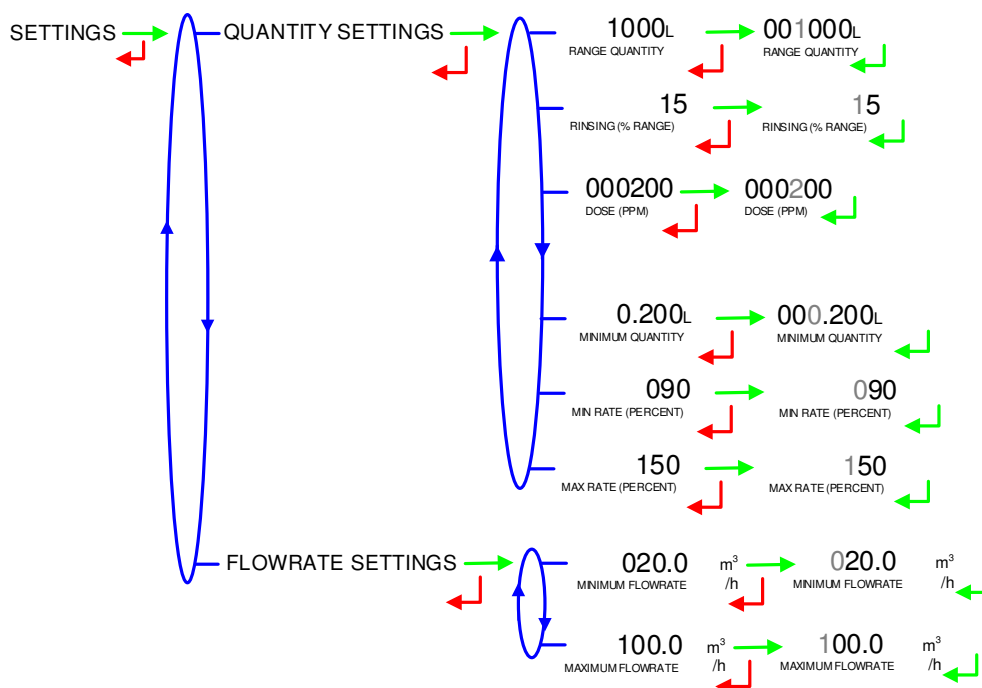
d) Anti-pollution valve

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

CLOSING ORDER: TOR output used to send a closing order to the valve

CONTROL: 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)

ANTI-POLLUTION VALVE   CLOSING ORDER(*XX*)   CLOSING ORDER→OFF

CLOSING ORDER→ON

CONTROL   OPENING CTRL(*XX*)   OPENING CTRL→OFF

OPENING CTRL→ON

CLOSING CTRL(*XX*)   CLOSING CTRL→OFF

CLOSING CTRL→ON

10   10

TIMER (SEC)   TIMER (SEC)
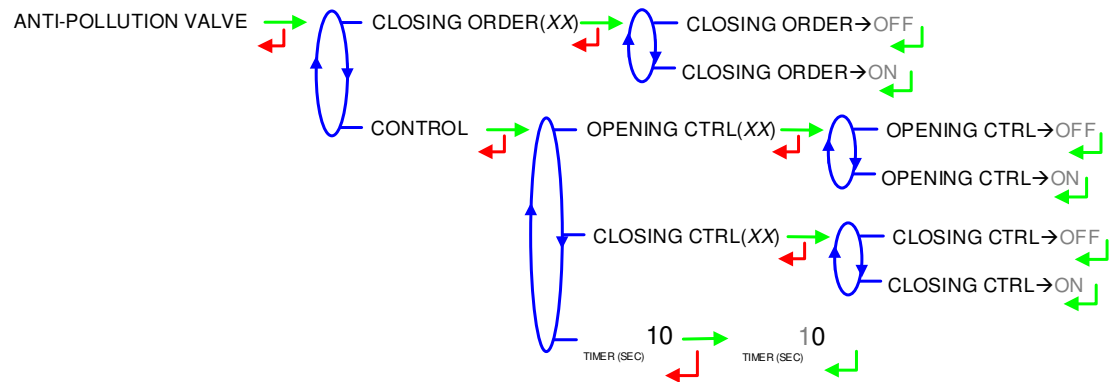
5.5 Menu DATE AND TIME

Enter the day, the month and the year and then enter the time at French format (e.g. 14.41 means 2.41 pm).

DATE AND TIME   06.12.17   14.41

DATE (DD.MM.YY)   TIME (HH:MM)

ANNEXE 1: FEATURES OF THE CONNECTED MICROCOMPT+

1. GENERAL PRESENTATION

The connected functions of the calculator-indicator MICROCOMPT+ are the following:

⇨ 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 wireless connection enables the MICROCOMPT+ to communicate with an embedded computer or with a PC/tablet/portable device.

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

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

Left-hand LED: Wi-Fi or Bluetooth	Middle LED: GSM / GPS	Right-hand LED: NFC (RFID)
Steady light: • Blue* / Cyan*: Connection OK • Red: Waiting for initialisation *Flashing light:* • Blue / Cyan slow flashing: Waiting for connection • Blue / Cyan rapid flashing: Communication in progress • Red: Initialisation error	*Steady light:* • Purple: Waiting for internet connection • White: Internet connection OK • Red: Waiting for initialisation *Flashing light:* • White: Transfer in progress • Red every 2 seconds: Coordinates not found • Green every 2 seconds: GPS OK • Red: Initialisation error	*Flashing light:* • Green: Authentication of the RFID key OK • Red: Authentication error of the RFID key • Green/ Red: RFID key not accepted, but authentication is OK

(*) Blue: Bluetooth; Cyan: Wi-Fi

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2. MENU SUPERVISOR>ICOM

Driver RFID key – White – Level 0

This key allows to identify the driver.

User RFID key – Blue – Level 1

This key is associated to a single calculator-indicator MICROCOMPT+. It is used to switch into SUPERVISOR mode to access the ICOM menu.

Manager RFID key – Green – Level 2

Many of these keys can be associated to a single calculator-indicator MICROCOMPT+. Likewise, a single key can be associated to one or many calculator-indicators MICROCOMPT+. RFID key is used to switch into SUPERVISOR mode to access the ICOM menu. 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 document.

Maintenance RFID key – Red – Level 3

This key doesn't need to be associated to the calculator-indicator MICROCOMPT+. It is used to switch into SUPERVISOR mode to access the ICOM menu. Specific menus are av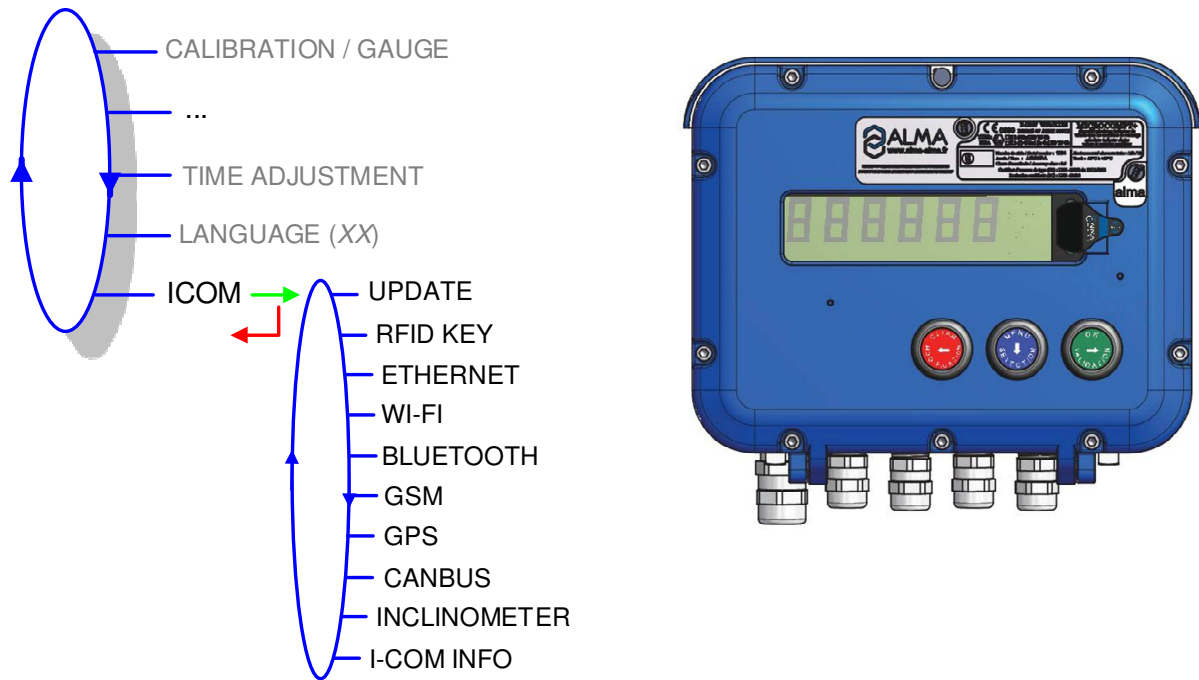ailable that allow the maintenance operator to change parameters. The specific menus are indicated by red boxes within the document.

CALIBRATION / GAUGE
...
TIME ADJUSTMENT
LANGUAGE (XX)
ICOM
- UPDATE
- RFID KEY
- ETHERNET
- WI-FI
- BLUETOOTH
- GSM
- GPS
- CANBUS
- INCLINOMETER
- I-COM INFO

2.1. Menu UPDATE

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

UPDATE → SYNC FROM SERVER → (*)

SELECT APPS FILE → XXXXX.MOT → FILE SELECTED
SELECT TICKET FILE → XXXXX.MOT → FILE SELECTED
SELECT LANG FILE → XXXXX.MOT → FILE SELECTED

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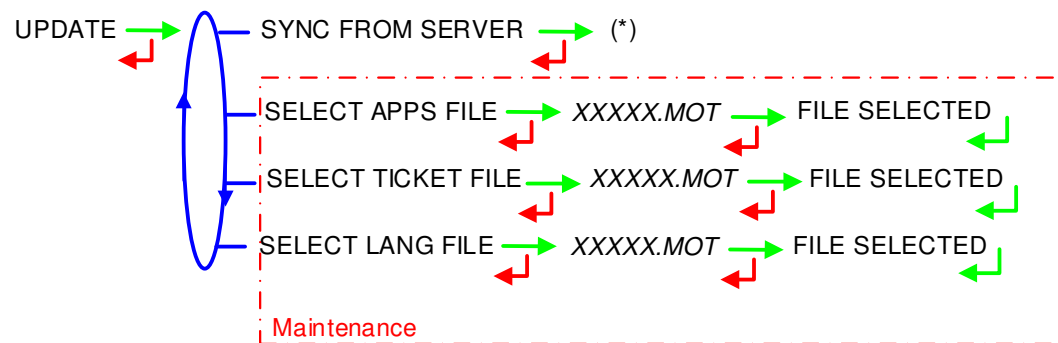
(*) IN PROGRESS / xx NEW UPDATE FOUND / ANY UPDATE FOUND

SYNC FROM SERVER: Synchronisation 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. Refer to the operating manual MU 7037 (§2).

2.2. Menu RFID KEY
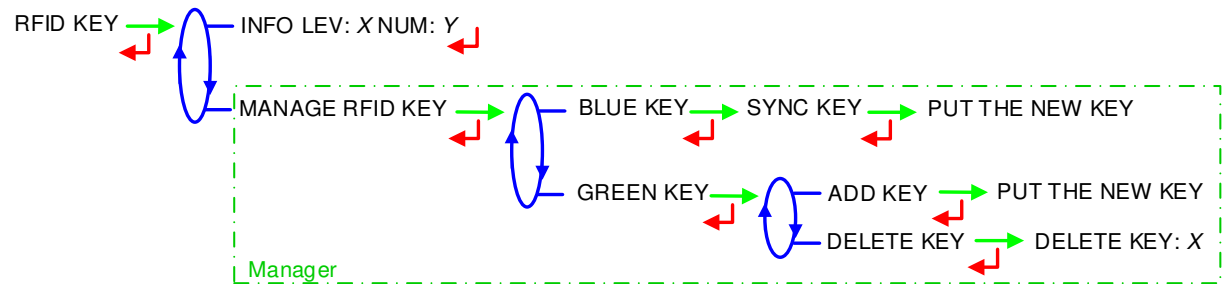
INFO: Display of the level and the identifier of the RFID key (Level 1/Blue/User, Level 2/Green/Manager, Level 3/Red/Maintenance)

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

BLUE KEY: Used to associate a user RFID key to the MICROCOMPT+

GREEN KEY: Used to associate a manger RFID key to the MICROCOMPT+ or to remove keys that have been associated to the calculator-indicator.

2.3. Menu ETHERNET
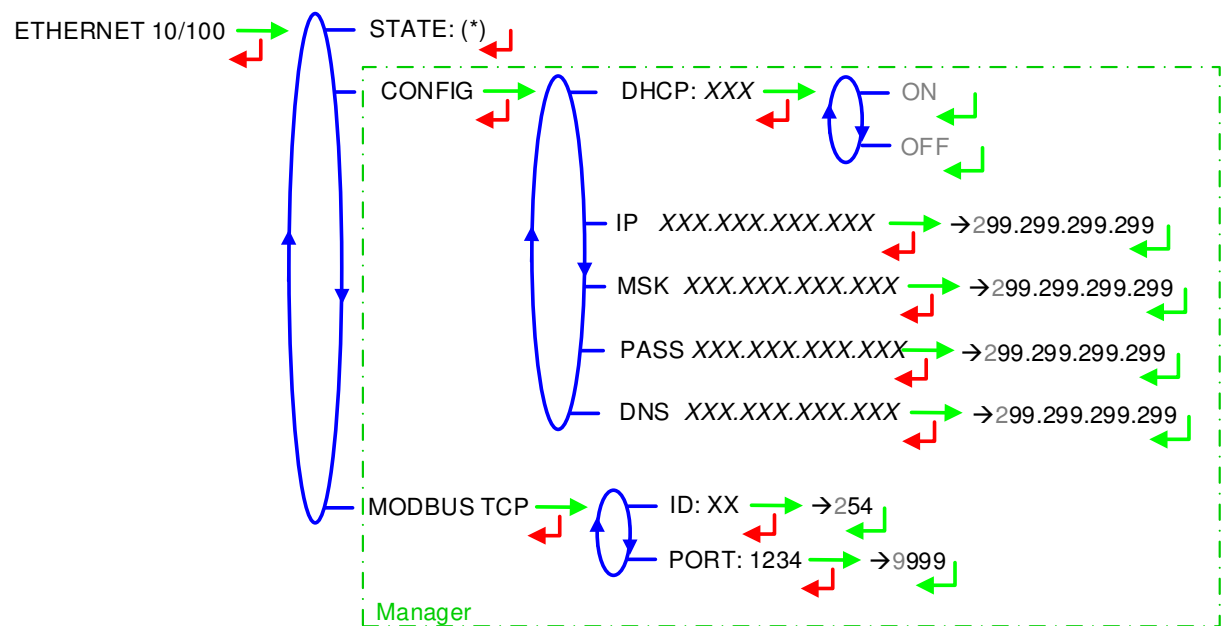
(*) CONNECTED / DISCONNECTED

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: MICROCOMPT+ 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

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MODBUS TCP – *Access restricted to the Manager*:

ID: MICROCOMPT+ Modbus identifier between 0 and 255

PORT: TCP/IP access port for Modbus protocol

2.4. Menu WI-FI
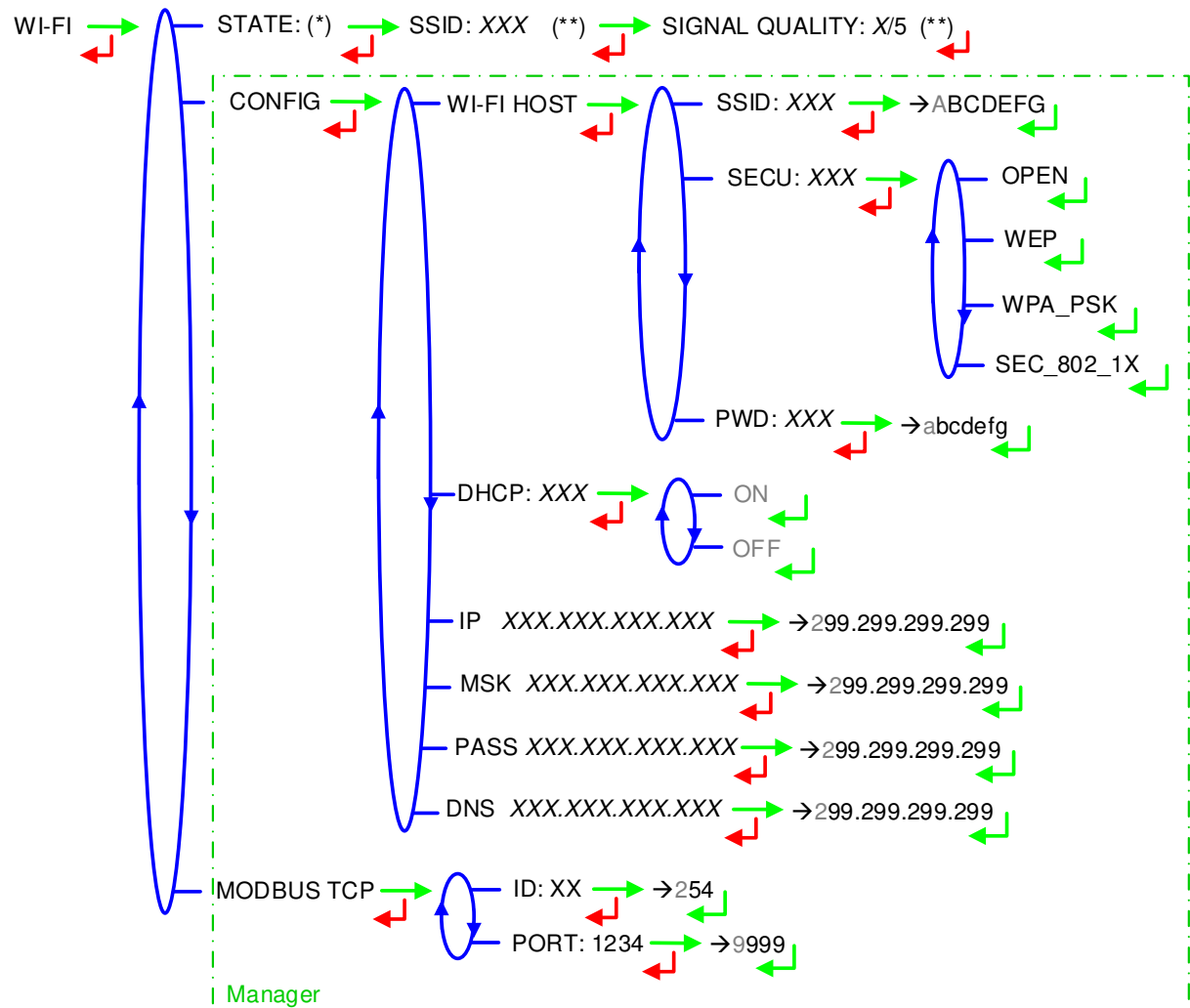
(*) NOT AVAILABLE (the calculator is not equipped) / DISCONNECTED / CONNECTED
(**) IF CONNECTED

STATE: Status of the Wi-Fi connection. If connection is successful, SSID and quality can be checked

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 characters: <space>!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghij

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klmnopqrstuvwxyz{|}~<DEL> (Refer to §3 visualisation 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: MICROCOMPT+ 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: MICROCOMPT+ Modbus identifier between 0 and 255

PORT: TCP/IP access port for Modbus protocol

2.5. Menu BLUETOOTH
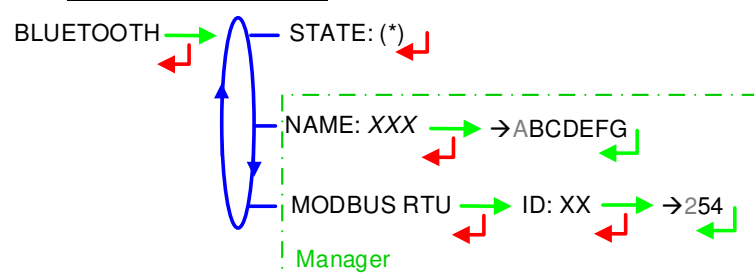
(*) NOT AVAILABLE (the calculator is not equipped) / DISCONNECTED / CONNECTED

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)

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2.6. Menu GSM
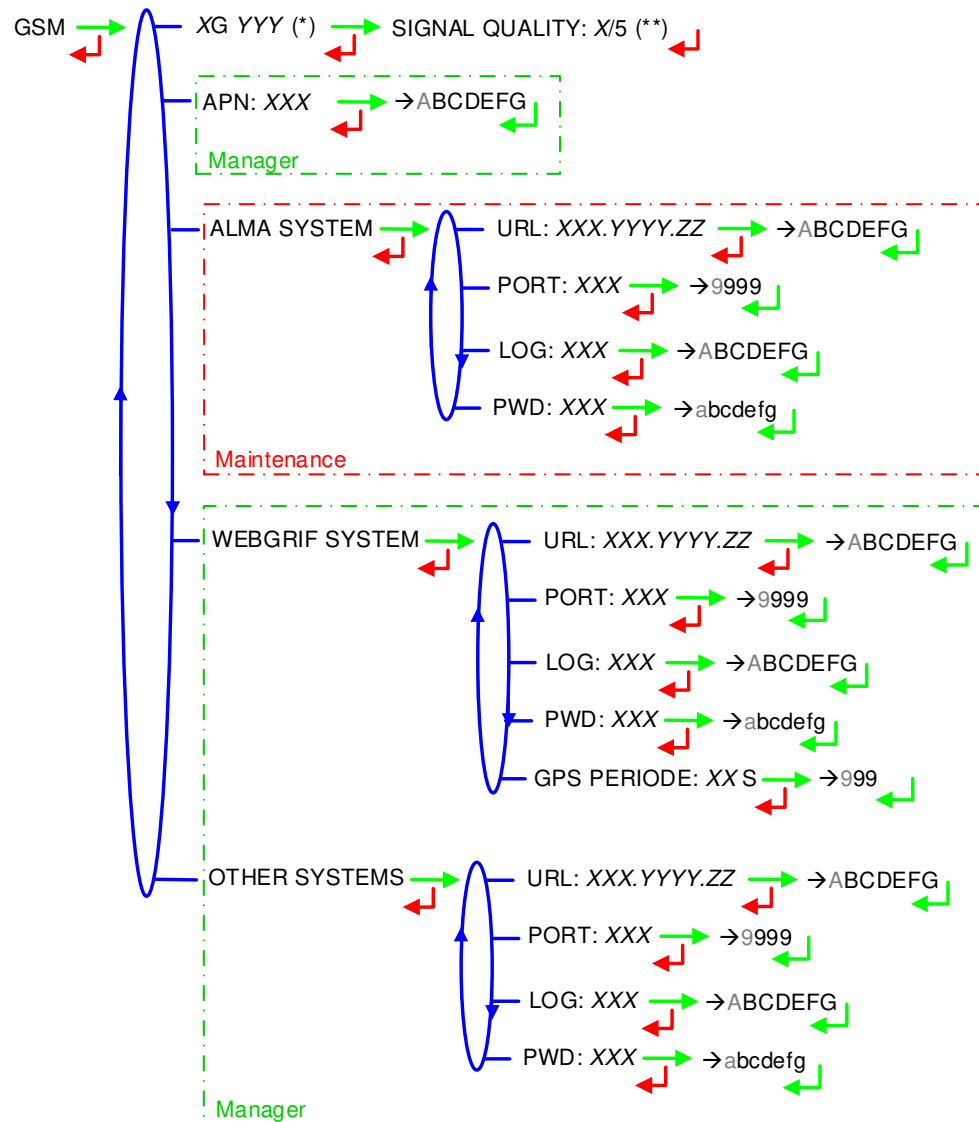
(*) NO SIGNAL ou 2G 3G 4G + FOURNISSEUR D'ACCES
(**) IF CONNECTED

*X*G *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

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[\]^_`abcdefghijklmnopqrstuvwxyz{|}~<DEL> (Refer to §3 visualisation on the MICROCOMPT+ display)

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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[\]^_`abcdefghijklmnop qrstuvwxyz{|}~<DEL> (Refer to §3 visualisation 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[\]^_`abcdefghijklmnop qrstuvwxyz{|}~<DEL> (Refer to §3 visualisation on the MICROCOMPT+ display).

2.7. 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.

2.8. Menu CANBUS
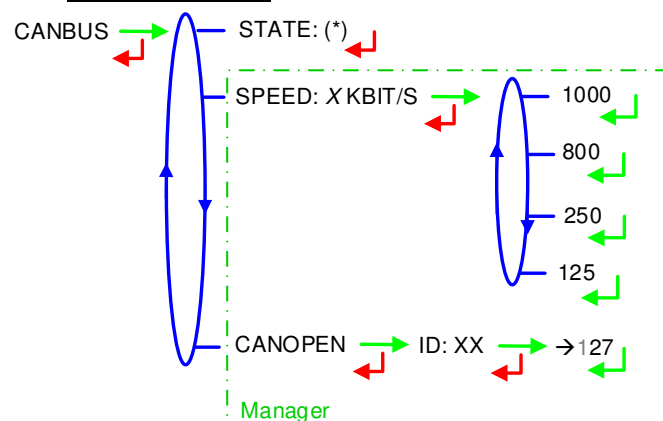
(*) CONNECTED / DISCONNECTED
(**) BETWEEN 1 AND 127

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)

2.9. Menu INCLINOMETER

INCLINOMETER → PITCH : XX, X° → ROLL : XX, X° → X,XX Y,YY Z,ZZ →

CALIBRATE ANGLES
Maintenance

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.

2.10.   Menu I-COM INFO

I-COM INFO → 446_VX.XX.XX_AA → 447_VX.XX.XX_AA

REBOOT ICOM
Manager
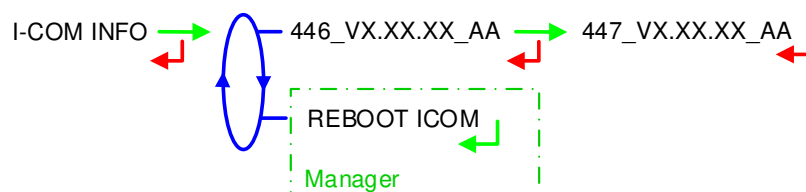
446_V...: Software's number and version

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

3. VISUALISATION OF THE PERMITTED CHARACTERS ON THE MICROCOMPT+

Visualisation of the permitted characters on the MICROCOMPT+ display:

| <SPACE> | ! | " | # | $ | % | & | ' | (|) | * | + | , | - | . | / |

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |

| @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |

| P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |

| ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |

| p | q | r | s | t | u | v | w | x | y | z | { | | | } | ~ | <DEL> |

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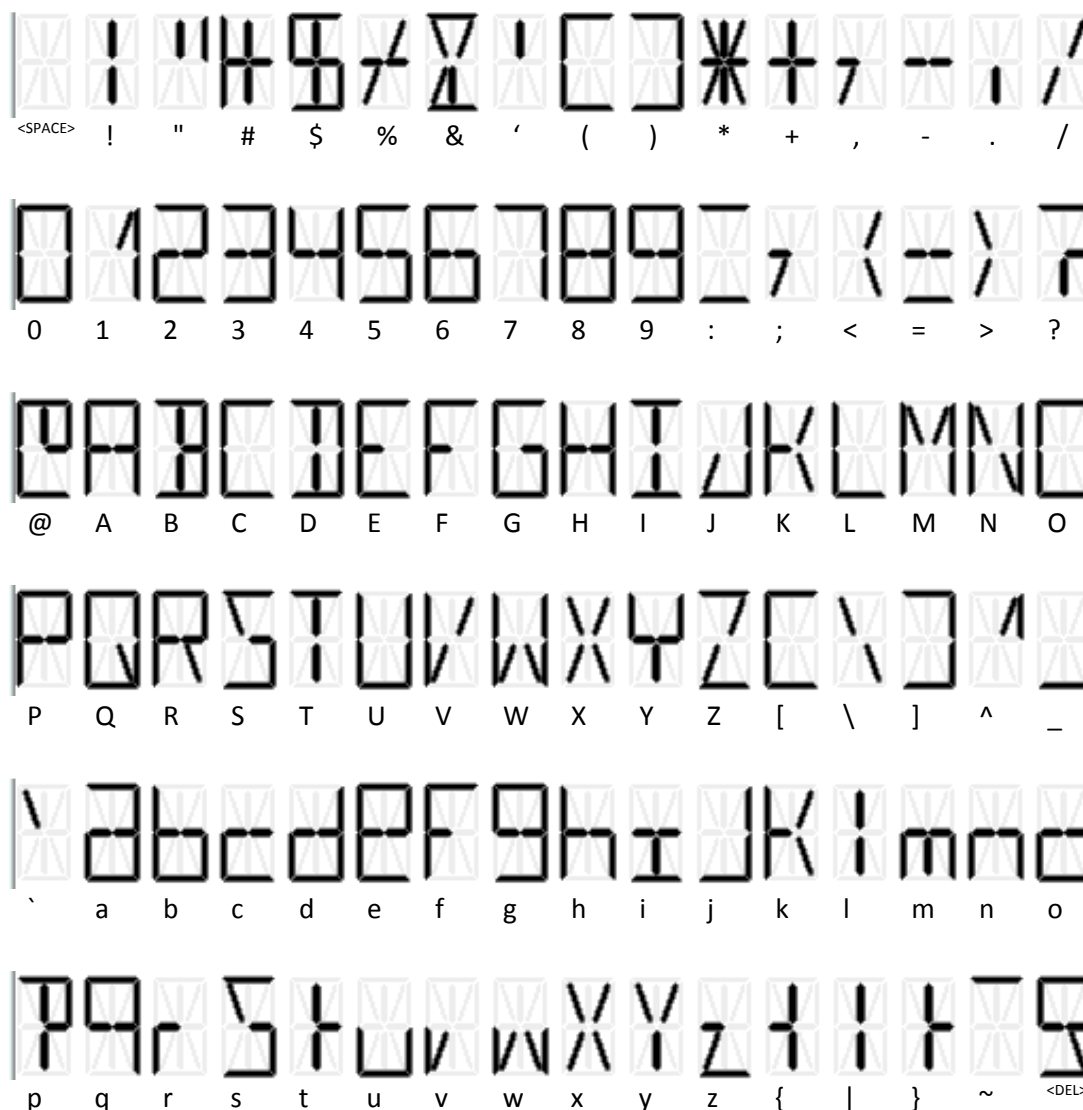
ANNEXE 2: TABLE FOR SESAME II UNITS

		Configuration of the MICROCOMPT+		
		Without unit In litre In kg		In m³
		Standard	Cod07 = 1oooo (change the format of quantities in Sesame II network)	
Information exchanged through Sesame II	**Preset** **Volume already loaded** **Control volume** **EMA Volume** **EMA Leakage volume** **Set preset** **EMA Converted volume**	Scale interval (123 is 123 litres for example)	X 10 (123 is 12.3 litres, for example)	In litre (123 is 123 litres for example)
	EMA Totaliser			In m3 (123 is 123 000 litres, for example)
	EMB Volume **EMB Converted volume** **EMB Totaliser**	BLENDING x 10 (123 is 12.3 litres, for example) (*) DENAT METRO in millilitre (123 is 123 millilitres, for example)		
	Volume, dose or totaliser of additive or dye	In millilitre: millilitre (123 is 123 millilitres, for example)		

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

ANNEXE 3: 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 value: Void
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 value: Void
	Note: Twisting 'authorisation' 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 value: No display
ooo**XX**	Configuration for quality control in autonomous mode:
	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 value**: 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

<u>Cod 02</u> – **TOP.**

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 authorisation input (refer to Cod01).

Option	Meaning
XXXoo	The dead-man switch is activated if Cod02 = XXXoo is different from '000' If Cod03 = oXooo <u>with 'dead-man' function in volume</u>: • **Volume x 100** for dead-man switch control. If Cod03 = oXooo <u>with 'dead-man' function in duration</u>: • **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 <u>with 'dead-man' function in volume</u>: • **Volume x 10 in low flow** for dead-man switch. If Cod03 = oXooo <u>with 'dead-man' function in duration</u>: • **Time in seconds x 10 in low flow** for dead-man switch.

⇨ The 'dead-man switch' function is activated if Cod02 = XXXoo is non-zero
⇨ The option configuration in 'duration' rather than in 'quantity' (see Cod03 = oXooo below)
⇨ The option 'dead-man switch' bypass doesn't disable the functionality (see Cod03 = oXooo 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 = ooooX below)
⇨ The 'free-service' mode can be considered for this functionality (see Cod03 = Xoooo below)
⇨ For **BOTTOM** configuration, the authorisation input <u>needs</u> 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 46 = DEAD MAN SWITCH appears.

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<u>Cod 03</u> – **TOP.**

For **TOP** loading configuration only (<u>except o**X**ooo in some cases</u>)

Option	Meaning
Xoooo	**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
o**X**ooo	**TOP loading MICROCOMPT+ only:** <table><tr><td></td><td>**Bypass SECURIM**</td><td>**Bypass Dead-man switch**</td><td>**Function 'dead-man'**</td></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 value**: Idem modulo 8 **BOTTOM loading MICROCOMPT only:** **0-3** : 'Dead-man' function in volume, **4-9** : 'Dead-man' function in time
oo**X**oo	**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 value**: No ground forcing *Note: Forcing is not taken into account with a single-side configuration (see above)*
ooo**X**o	**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 value**: No forcing of the arm direction *Note: Forcing is not taken into account with a single-side configuration (see above)*
oooo**X**	**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 value**: No forcing *Note: Forcing of dead-man switch via network SESAME II is void 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)*

<u>Cod 04</u>

Option	Meaning
Xoooo	Bitmask on the 3 authorization inputs for quality selection, in autonomous mode: **1 à 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 *Example: Mask = 1 means that input #1 is used, Mask = 3 means that inputs #1 and #2 are used* **Any other value**: 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 value**: Void
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 value**: 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 value**: Void

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-eme injector (i = 1 to 5) by adding the value $2^{(i-1)}$ to this figure Example: XYZ = 1 only the injector #1 is 'addit tout' XYZ = 1 + 2 = 3 for the injectors #1 et #2, XYZ = 1 + 2 + 4 = 5 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: Void

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 **Other values**: Idem #0
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

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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 value**: 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 value**: 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 value**: Idem 0

Cod 10 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
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
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 an BOTTOM MICROCOMPT+
FM 8510	Adjustment of a temperature chain on MICROCOMPT+