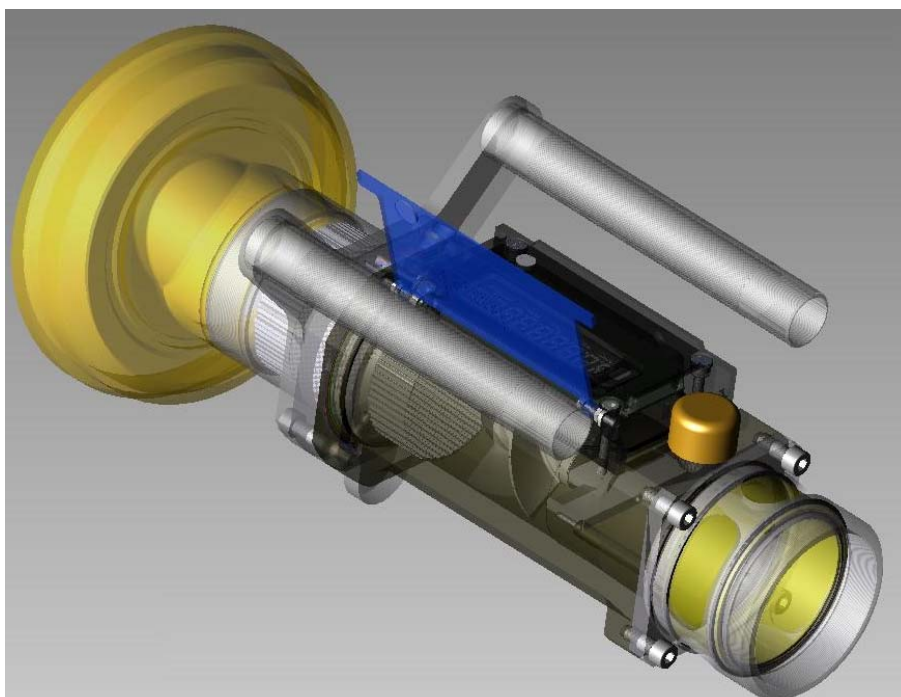



OPERATING MANUAL

MU 7033 EN H FLEXICOMPT AUTONOME+



Document available for software 434v1.07

H	2014/01/13	Use of the key CTD+ during data transfer	DSM	XS
G	2013/09/24	Software evolution (DIM)	DSM	XS
F	2012/09/06	'IR-USB KEY' removal procedure, updating menus MAINTENANCE and VMFT	DSM	XS
A	2009/02/26	Creation – replace MM5014-EN-4	FM	DSM
Issue	Date	Nature of modifications	Written by	Approved by

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1 GENERAL PRESENTATION AND DESCRIPTION

The FLEXICOMPT AUTONOME+ is a measuring system intended to the gravity measurement of products other than water on various installations.

It can :

- ⇒ Measure products when they are delivered to the station,
- ⇒ Monitor the reception of products (lorry/wagon),
- ⇒ Split compartments,
- ⇒ Measure product returns,
- ⇒ And issue tank charts.

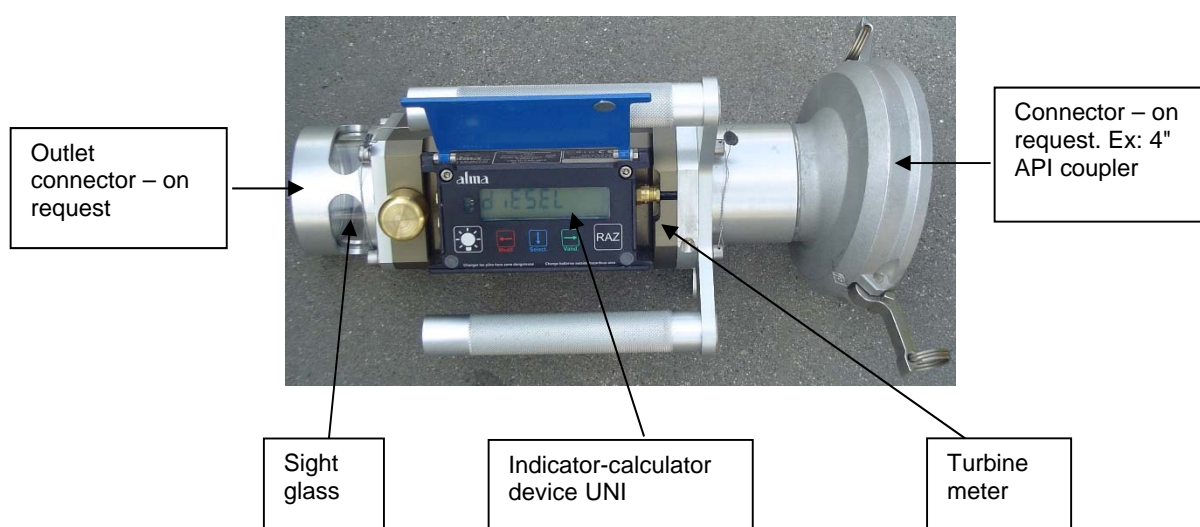
The FLEXICOMPT AUTONOME+ includes:

- ⇒ An intrinsic security indicator-calculator device, type UNI, powered by 2 lithium batteries (4 years life expectancy) fastened to the hydraulic sleeve,
- ⇒ A hydraulic measuring sleeve composed of:
 - An ALMA turbine meter, type ADRIANE DN80-80,
 - A sight glass located downstream of the turbine meter,
 - A vacuum breaker valve,
- ⇒ An appropriate connector: a 4" coupler to connect onto the API adapter, a DN80 quick coupling to connect the unloading hose or any other connector (CAMLOCK, TODO, aviation...),
- ⇒ An appropriate unloading connector: a quick coupling to connect the unloading hose or any other connector (CAMLOCK, TODO, aviation,...).

The FLEXICOMPT AUTONOME+ may be connected to a temperature sensor.

The 'Transfer Key CTD+' option is used to transfer measurements results to a key thanks to an infrared communication between the FLEXICOMPT AUTONOME+ and the key. The data may be downloaded from the key to a PC through USB cable.






The metrological parameters file and the configuration file of the FLEXICOMPT AUTONOME+ may be uploaded separately in order to make an easier monitoring of the instrument (periodic inspection, identification and diagnosis).



The indicator-calculator device, type UNI guarantees the metering operations and manages the faults linked with the metering system.

The operating temperature for the UNI is between -20°C and +50°C.

On the front of the UNI, you can see five buttons:

- BP5  Light the display during 10 seconds
- BP4  Normal mode: return to previous menu
Supervisor and Metrological mode: increment the flashing figure when imputing a value or return to previous menu
- BP3  Normal mode, metering off: select the menu
Normal mode, metering on: display the values (immediate flow, temperature)
Supervisor and Metrological mode: select the figure to be modified or select the menu
- BP2  Normal mode: validate the selected menu or value
Supervisor and Metrological mode: validate the displayed value or validate the selected menu
In case of default: acknowledge the default
- BP1  Reset the volume to zero before a new measurement. The data of the last measurement are then recorded

2 USER RECOMMENDATIONS

2.1 Mobile installation

The vacuum between the connecting device and stripping valve on the FLEXICOMPT AUTONOME+ device must be rigid with a 15 degree angle, a 80mm minimum diameter and a length of less than 80mm.

2.2 Stationary installation

The FLEXICOMPT AUTONOME+ measuring system device must be placed within a vertical plan and with a 15 degree angle between his axis and the horizontal axis.

The connecting pipe to the discharge valve must have a 80mm minimum diameter and a length of less than 80mm.

If the length of the pipe exceeds 80mm, only complete discharges of the tank are guaranteed.

The operator must make sure that all of the following conditions are met:

- During the measurement, the FLEXICOMPT AUTONOME+ is placed according to a vertical plan on a horizontal discharge valve. This requirement has been considered as satisfactory when the FLEXICOMPT AUTONOME+ downstream connector is on the lowest position than the upstream connector;

- The flexible or rigid hose, placed between the FLEXICOMPT AUTONOME+ and the collecting tank must have a 80 mm minimum nominal diameter and a 8 m maximum length. It must allow an easy flow product when delivery.

The Alma FLEXICOMPT AUTONOME+ measuring system is a non-interruptible device, so direct sale to the public is prohibited.

NB: the FLEXICOMPT AUTONOME+ cannot be used for pumped applications.

3 IGNITION AND OPERATION

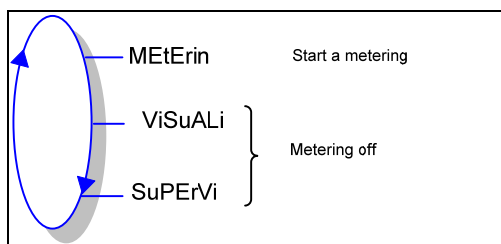
The FLEXICOMPT AUTONOME+ measuring system operates with an empty hose. The operator connects it to the API adaptor and then connects the hose to the FLEXICOMPT AUTONOME+ outlet.

The operating procedure is as follows:

- ⇒ After having reset the indicator to 0 (BP1 RAZ), the operator opens the tank valve. The metering starts as soon as the UNI indicator – calculator device records impulses coming from the turbine. The metered volume is continually displayed on the UNI indicator-calculator device.
- ⇒ For partial emptying:
The operator stops metering by closing the tank valve. The metering stops when the UNI indicator-calculator device notes that the two gas detectors are wet and flow rate is to zero.
- ⇒ For complete emptying:
The operating procedure is identical to the partial emptying procedure but there is no voluntary action on the tank valve.

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4 USER MODE



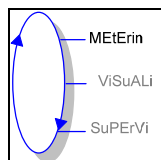
The UNI metering can be either ON or OFF. Metering is ON between the first command level after initialisation or resetting the current volume to zero, and resetting the current volume to zero.

The calculator indicates the displayed quantity by selecting the symbol at the right of the value. When a volume is displayed, the two arrows located on the right of the display screen enable the calculator to indicate if it is a:

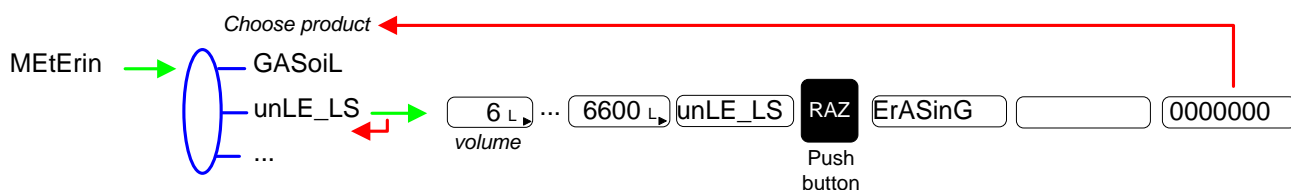
- ⇒ Volume in base conditions. In this case, only the “L” and the arrow in front of Vb appear on the display screen
- ⇒ Volume in measuring conditions. In this case, only the “L” and the arrow in front of Vm appear on the display screen

1234_L → volume at temperature: **Vm**

1234_L → converted volume: **Vb**



4.1 Menu METERING



4.1.1 Visualisation of values during delivery

Use BP3 to display flow rate and temperature during measuring (flow>0). Press:

- One time for flow rate,
- Two times for temperature.

Display returns automatically to the current volume.

4.1.2 Reset

At zero flow conditions, press BP1 RAZ to record the last measurement data and to reset the volume to zero.

4.1.3 CTD+ option: Transfer measurement results to the key

The 'CTD+' option allows to transferring measurements results and parameters to the key.

Then, data can be used on a PC.

The transfer of the measurement results of the N last days is possible when flow rate is zero. N has to be set in SUPERVISOR menu

Transfer measurement results to the key:

1. Place the key on the UNI indicator such as shown below:



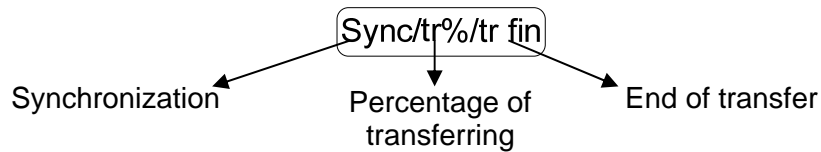
2. Press simultaneously RAZ and Select for at least 2 seconds:



NOTE: Do not plug the USB cable during data transfer.

WARNING: If it's not made that way, it may change the product for the following unloading; so check the product before starting a new one.

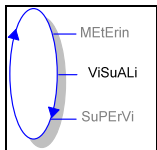
3. Wait the end of transfer and display of message:



The file format is '.csv'.

4. Remove the key

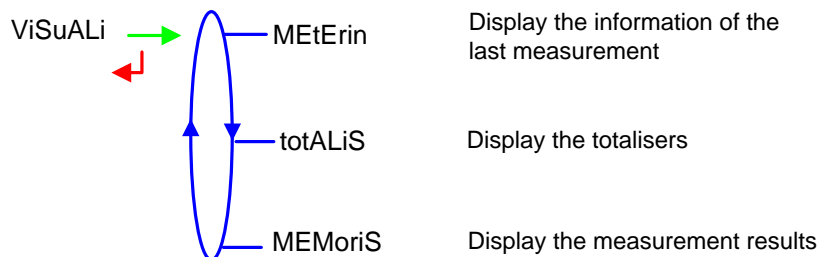
Transfer files to a PC, see §6.



4.2 Menu VISUALISATION

The operator can access various menus and sub-menus by using:

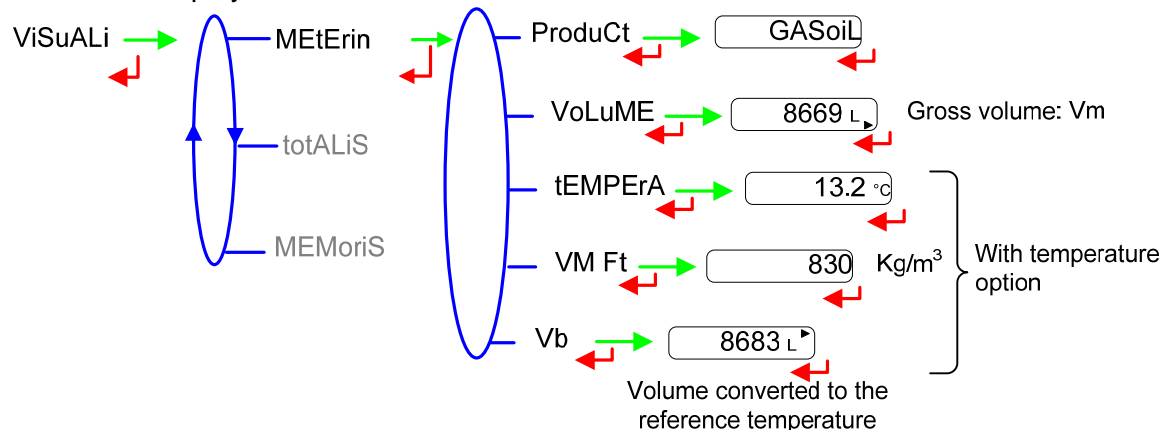
- BP3** select the menu,
- BP2** validate the displayed menu or value
- BP4** return to the previous menu.



If the values are preceded by this display '-----'; it means they are no longer guaranteed.

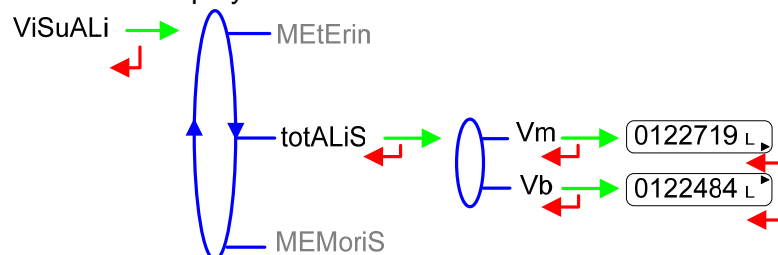
4.2.1 Sub-menu METERING

This menu displays the information of the last measurement.



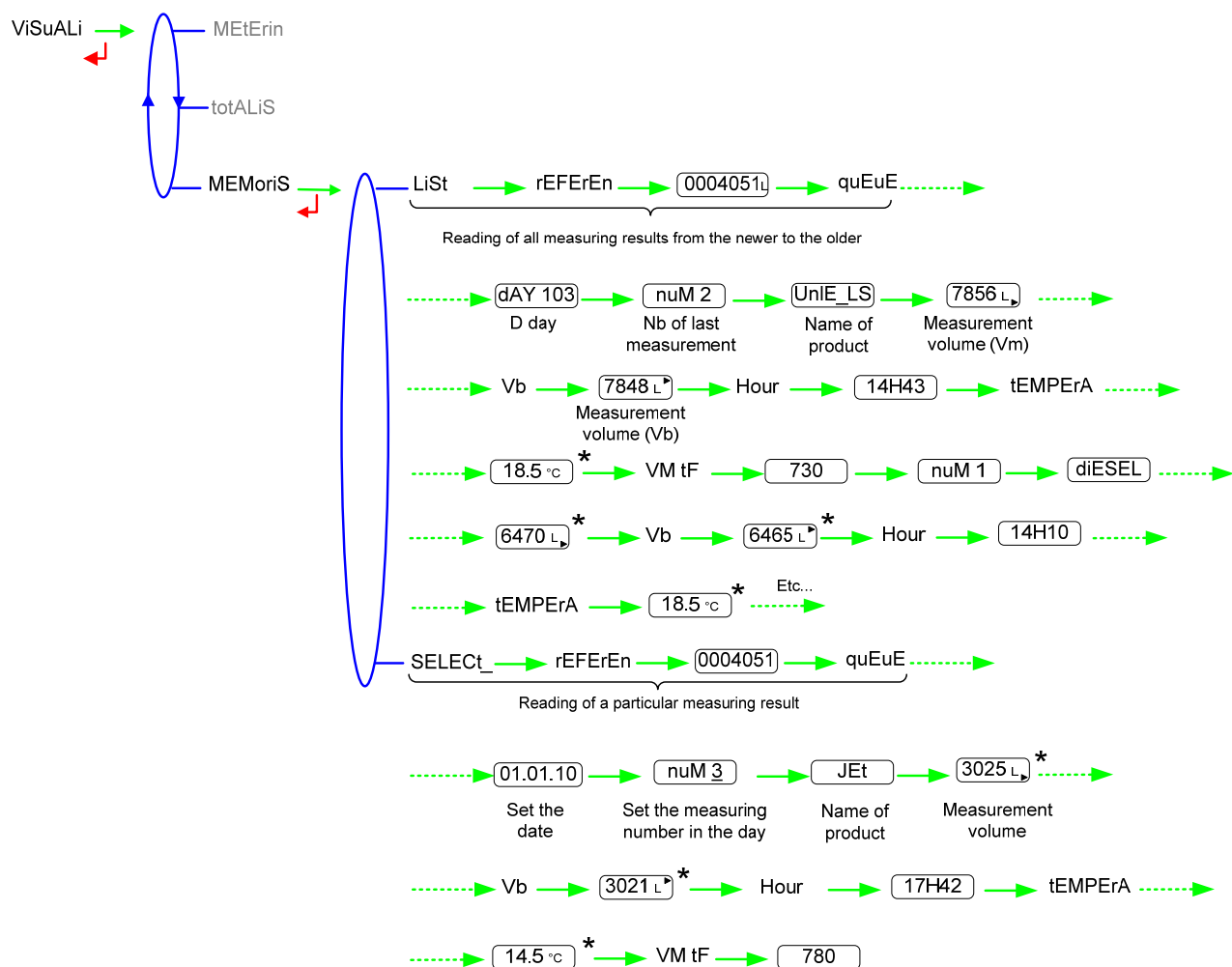
4.2.2 Sub-menu TOTALISER

This menu displays the totalisers.

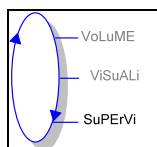


4.2.3 Sub-menu MEMORISATION

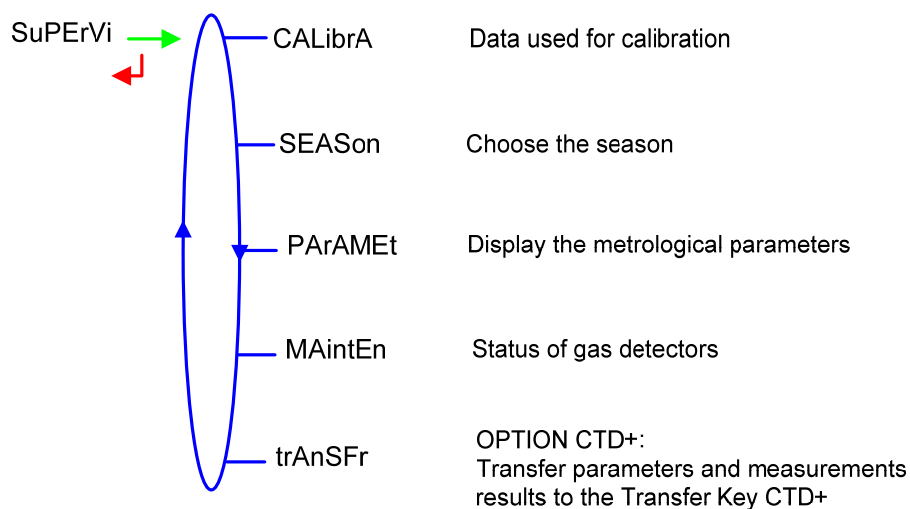
This menu displays the measurements results. The temperature, the converted volume and the density are only displayed if the temperature option is activated.



* These values may be preceded by this display: -----
It means they are no longer guaranteed

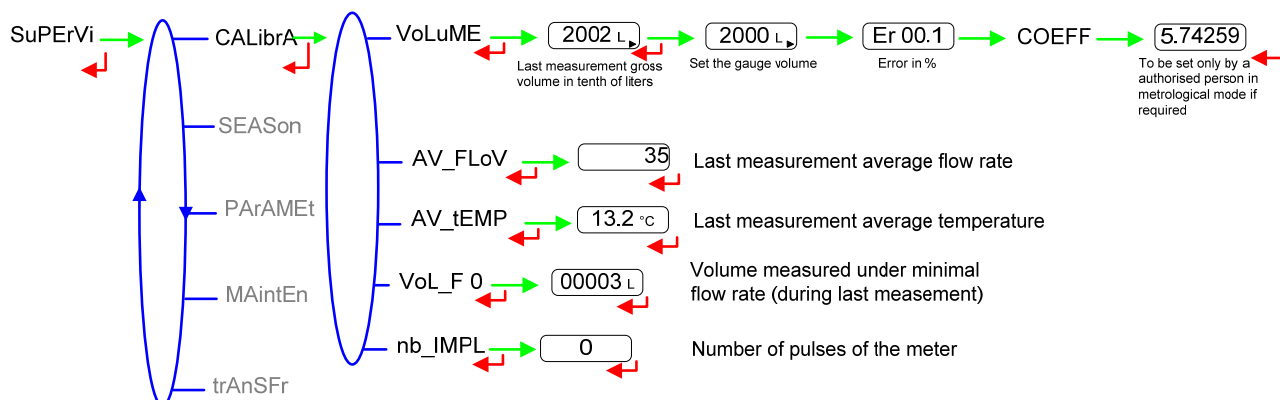


4.3 Menu SUPERVISOR



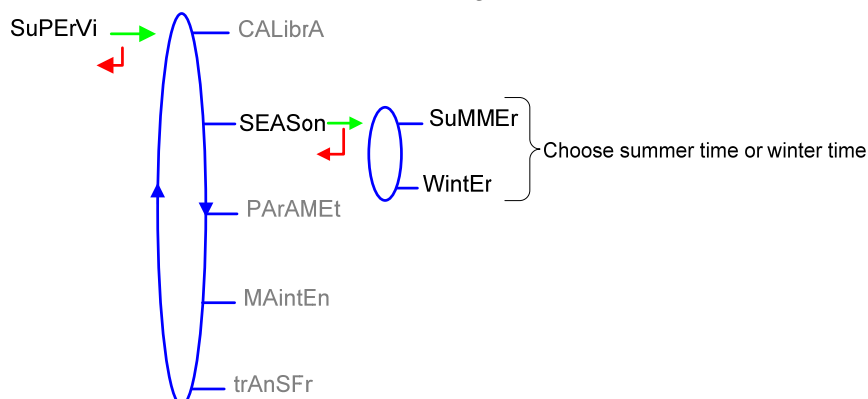
4.3.1 Sub-menu CALIBRATION

Check the measuring system accuracy during the calibration with a gauge.



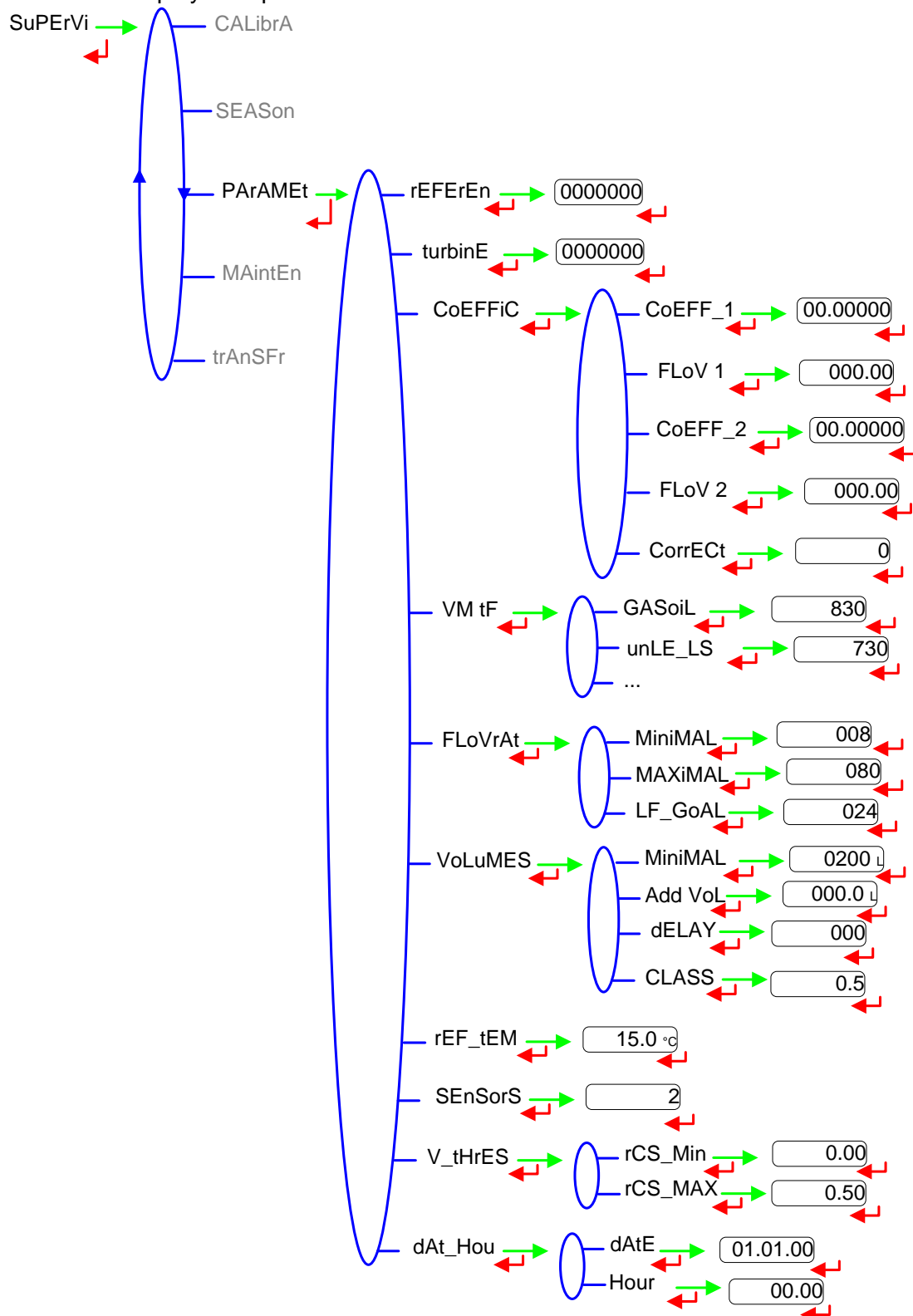
4.3.2 Sub-menu SEASON

Choose the season in order to change from summer to winter time (and back again).



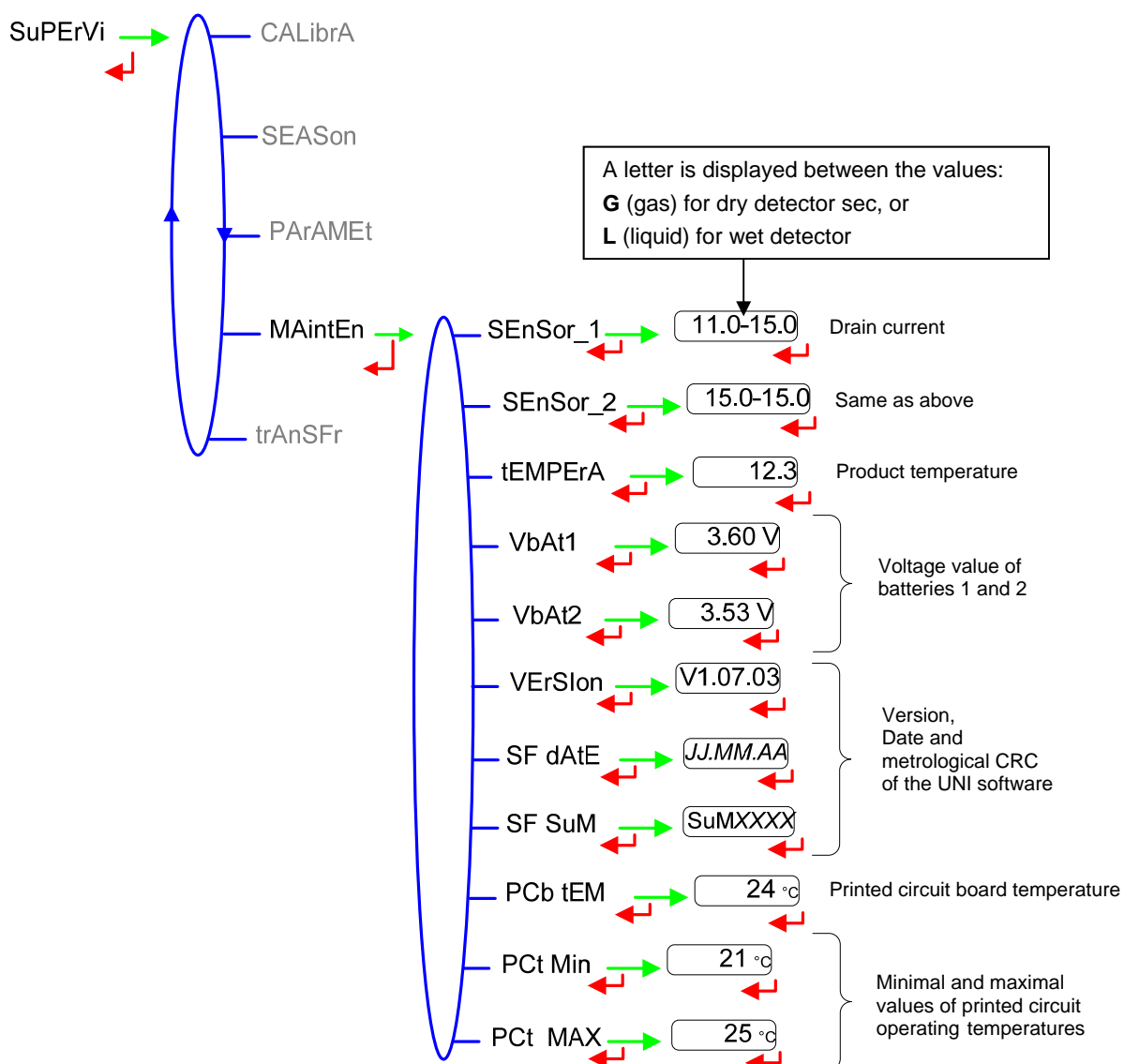
4.3.3 Sub-menu PARAMETERS

This menu displays the parameters set in METROLOGICAL mode.



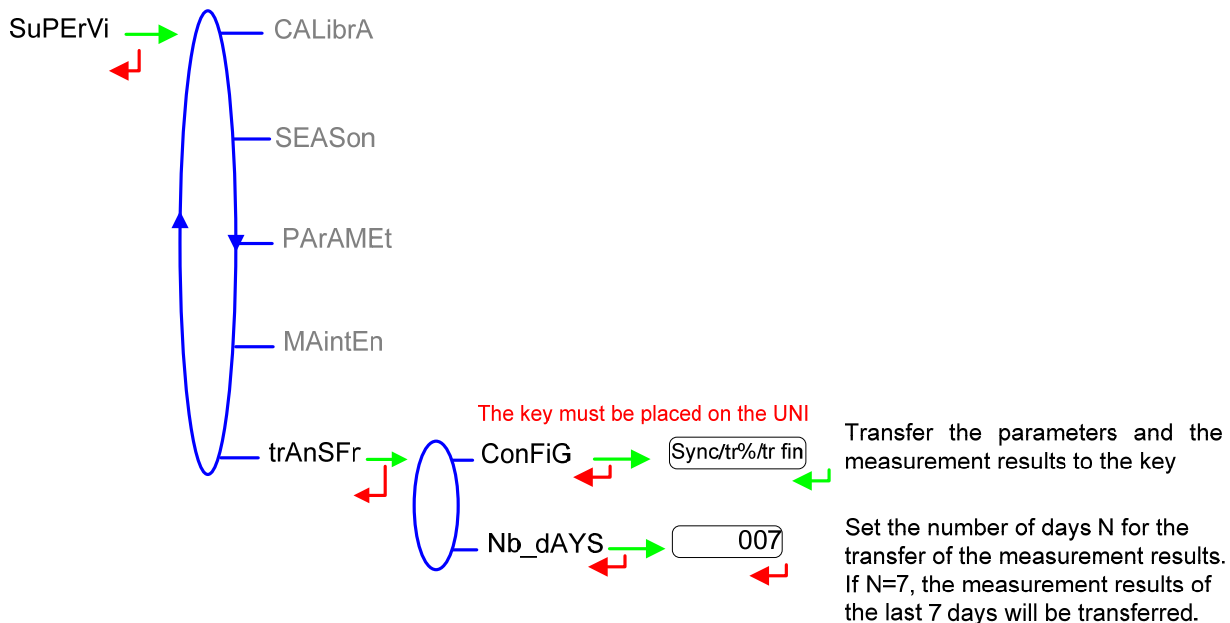
4.3.4 Sub-menu MAINTENANCE

This menu displays the drain current (mA) of the gas detectors and the reference current set in METROLOGICAL mode, as well as the product temperature.



4.3.5 Sub-menu TRANSFER – OPTION

This sub-menu is available with the 'Transfer Key CTD+' option. It is used to transfer to the key the parameters set in METROLOGICAL mode and the measurement results and to download it to a PC. The file format is '.csv'. Transfer files to a PC, see §6.



NOTE: Do not plug the USB cable during data transfer

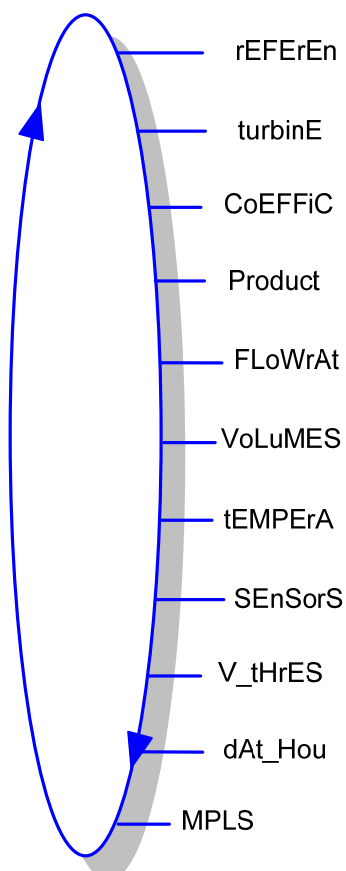
4.4 Faults list

Should a fault occur, the UNI displays the word "ALArM" and the fault title on the display (using some or all of the seven digits) followed by the displayed value. The operator acknowledges the fault by pressing down BP2 (even when pouring). Apart from battery related faults, persistent faults cannot be acknowledged.

Once the fault is acknowledged, the selected value is displayed alternately with "-----" to indicate that the measured values are no longer guaranteed.

ALARM	FAULT
ProGrAM	Error on the checksum of the metrological data
rAM	Metrological configuration RAM fault
Faults acknowledgeable in METROLOGICAL mode	
MEtro_	Configuration loss
COEFF_	Coefficient fault (disparity between parameter values)
dAtE	Date loss
FLoV_	Flow setting fault (disparity between parameter values)
FrEQ_	Frequency fault (disparity between parameter values)
MEMoriS	Bad writing into the memory
Faults acknowledgeable	
dEF_MEM	Loss of backup data concerning the last measurement
SEnSor1	High gas detector fault (GDh)
SEnSor2	Low gas detector fault (GDI)
LoW_FLo	Flow rate less than the setting minimal flow rate
HiGH_FL	Flow rate greater than the setting maximal flowrate
LF_HiGH	Flow rate greater than 20m ³ /h when GDh is dry
GAS	GDh is wet but GDI is dry
doG	Watch dog fault
ovErFLo	Volume greater than 9 999 999 liters
MEtEr_	Discordance between the two metering channels
bobinE	Loss of pulse transmitter signal
dEF CoM	Communication fault on the IRDA link
totAL	Totaliser fault
diSPLAY	LCD display fault
FuLL	Saturation of secured memorisation: more than 99 measurements per day
bAttErY	Low battery
tEMPErA	Temperature less than -20°C or greater than 50°C

5 METROLOGICAL MODE




The configuration parameters can only be modified after the processor configuration switch on the electronic card has been switched over. Only authorized personnel can modify these parameters. All other interventions must be carried out by authorised personnel since the metrological character of the FLEXICOMPT AUTONOME+ may be modified. Exit the METROLOGICAL mode thanks to the switch; the device is then reset.



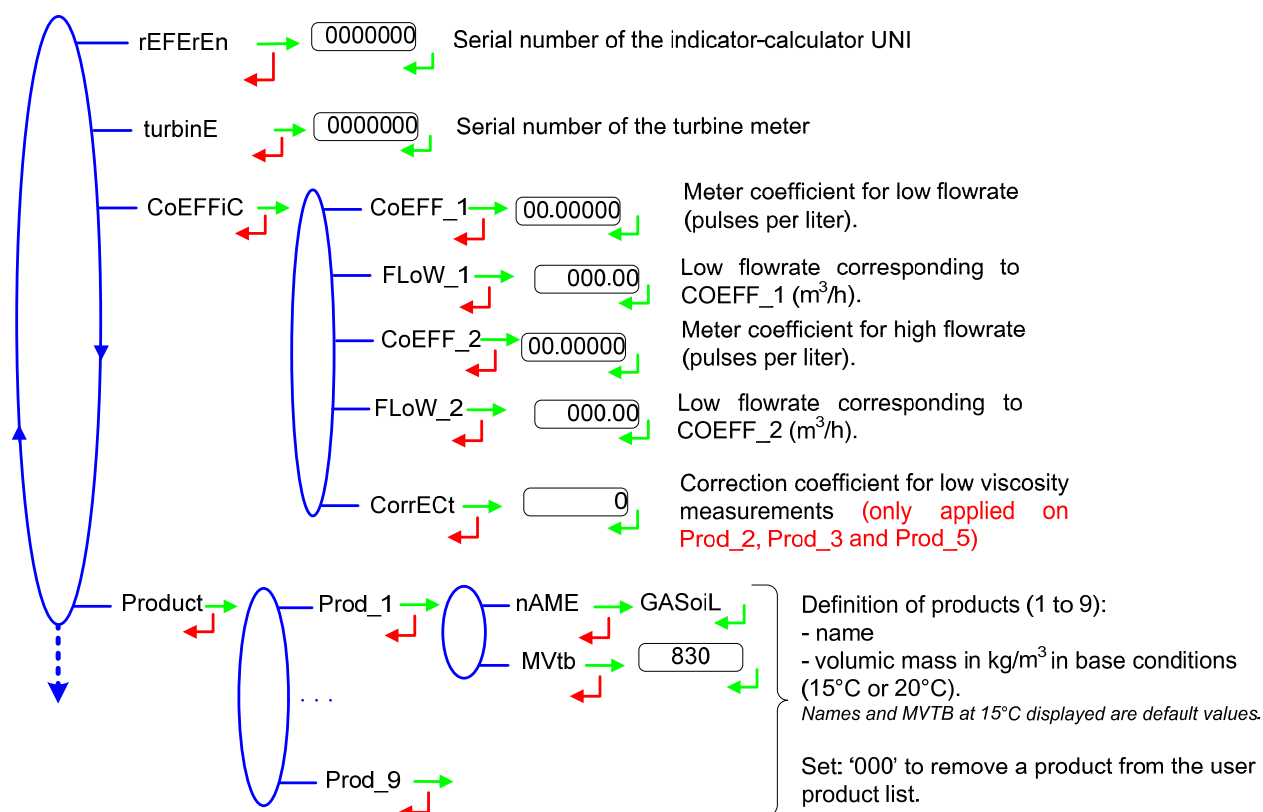
IMPORTANT

Setup should be done under cover, metering off, with dry gas detectors (see § 5.3).

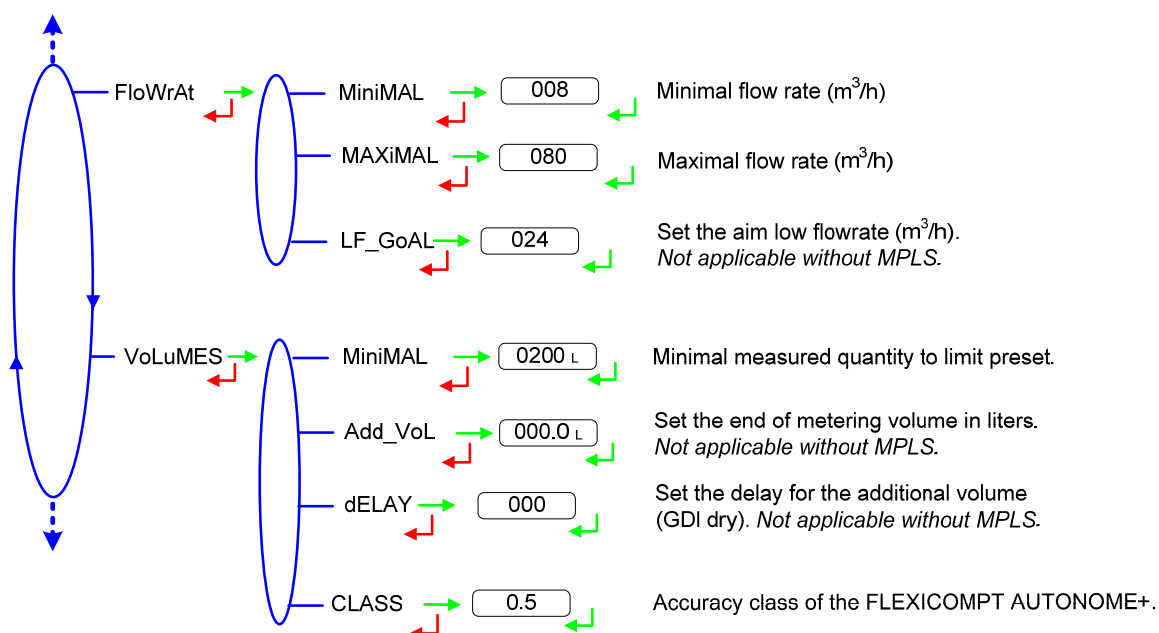
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5.1 Menus REFERENCE, TURBINE, COEFFICIENTS, VMFT

A correction can be applied for low viscosity measurements. The correction coefficient can be applied on three products: Prod_2, Prod_3, and Prod_5.



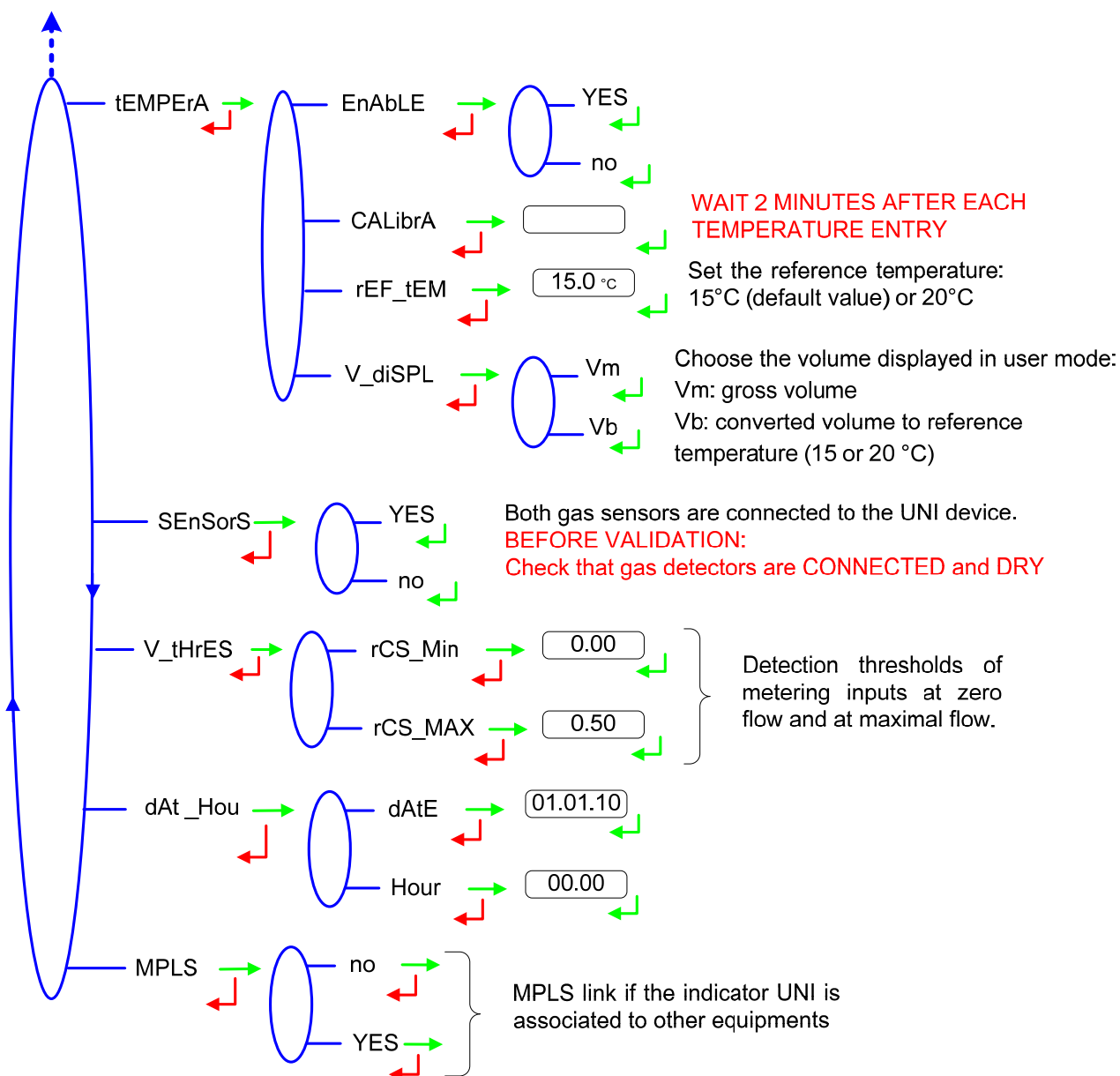
5.2 Menus FLOW RATES, VOLUMES



5.3 Menus **TEMPERATURE, GAS DETECTORS, THRESHOLDS, DATE, MPLS**

The temperature calibration can be done either on two measuring points or on a single measuring point (menu CALibrA).

- Two temperature measuring points:
The measure must be done outside the range -20 to +50°C. Adjust the PT100 simulator to a value < -20°C, wait for 15 seconds before setting the temperature into the calculator. Then do the same for a value > +50°C.
- Single temperature measuring point:
The measure must be done in the range -20 to +50°C.

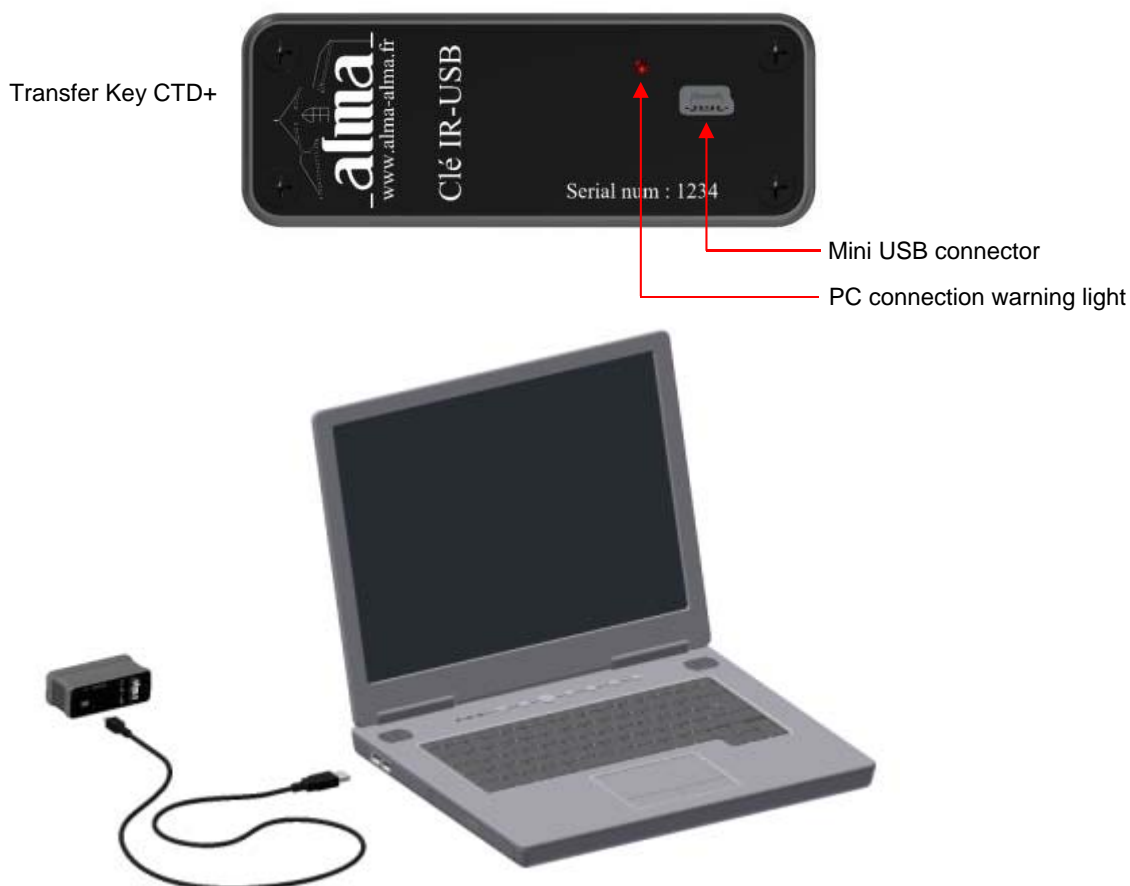


6 TRANSFER DATA TO A PC – OPTION

The 'Transfer Key CTD+' option is used to transfer measurements results and parameters to a key. The data may be downloaded from the key to a PC through USB cable.

----- Read instructions up to the end of this section -----

Transfer files from the key to a PC:



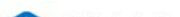
1. Connect the USB 2.0 cable to the key
2. Connect the USB 2.0 cable to the PC
- A red led on the key lights on to indicate that it is detected by the PC.
3. Access the key directory (see PC documentation)

The measurements results files are named 'M0000123' where 123 is the FLEXICOMPT AUTONOME+ reference number.

The parameters files are named 'P0000123' where 123 is the FLEXICOMPT AUTONOME+ reference number.



Files should be renamed before being stored in the backup directory.

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Compte rendu des mesurages de l'UNI n° 0000002 le 13/04/2012 à 11:20																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O		
1	Compte rendu des mesurages de l'UNI n° 0000002 le 13/04/2012 à 11:20															
2	Totalisateur	11072 L														
3	Totalisateur	11101 L														
4	Tension Pile 3.01	V	KO													
5																
6	Quantième	Numéro du	Date	Heure	Produit	Volume brut	Volume de l	Température	Masse (Kg)	Défaut	DEF_MEM	DOG	DEPASSE	MESUR	DEB_BAS	DEB
7																
8	104	7	13/04/2012	11:20	SP98	689	691	12.4	504							
9	104	6	13/04/2012	11:17	SP98	406	407	12.1	297							
10	104	5	13/04/2012	11:15	SP-ETH	2001	2008	12.4	1465							
11	104	4	13/04/2012	11:11	SP-ETH	301	302	12.1	220							
12	104	3	13/04/2012	11:10	GAZOLE	1611	1615	12.2	1340							
13	104	2	13/04/2012	11:06	GAZOLE	3100	3107	12.2	2578							
14	104	1	13/04/2012	10:57	GAZOLE	2908	2915	12.3	2419							


File M0000123

Paramètres UNI n°0000002 le 13/04/2012 à 11:20					
A	B	C	D	E	F
1	Paramètres UNI n°0000002 le 13/04/2012 à 11:20				
2	Version du l	438 v01.00.01			
3	Date du logi	23/03/2012			
4	Tension Pile	3.01 V			
5	N° de série d	1			
6	Coefficient K	5.71670	imp/L	Petit Débit Q.00.0	m3/h
7	Coefficient K	5.71670	imp/L	Grand Débit .00.0	m3/h
8	Correction vi	0			
9	Rcsmin (%)	0.00			
10	Rcsmax (%)	50.00			
11	Produit 1	GAZOLE	Masse Volun	830	Kg/m3
12	Produit 2	SP-ETH	Masse Volun	730	Kg/m3
13	Produit 3	SP98	Masse Volun	730	Kg/m3
14	Produit 4	FOD	Masse Volun	840	Kg/m3
15	Produit 5	AVGAS	Masse Volun	740	Kg/m3
16	Produit 6	JET	Masse Volun	780	Kg/m3
17	Produit 7	PROPANE	Masse Volun	0	Kg/m3
18	Produit 8	BUTANE	Masse Volun	0	Kg/m3
19	Produit 9	GPL	Masse Volun	0	Kg/m3
20	Débit minim	8	m3/h		
21	Débit maxim	80	m3/h		
22	Petit débit ol	24	m3/h		
23	Quantité Mir	200	L		
24	Volume forfa	0	L		
25	Delai	0	L		
26	Classe d'exa	0.5			
27	Volume affic	Vm			
28	Température	15.0	°C		
29	Pente mesur	7.769698e-03			
30	Zéro mesure	89.432	Ohm		
31	Courant Refe	15.6	mA		
32	Courant Refe	14.3	mA		
33	Contrast LCD	38.00			
34	Association	Non			
35	Température	9.0	°C		
36	Température	35.0	°C		

File P0000123



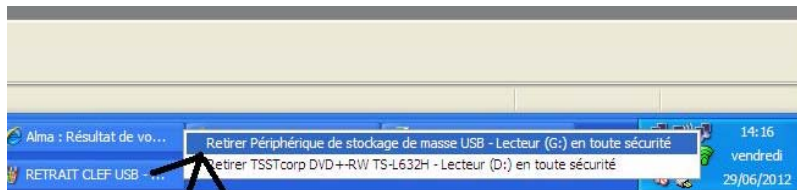
FOLLOW THE INDICATION BELOW TO REMOVE THE KEY:

- Left click on the  icon at the right hand corner of the task bar



LEFT CLICK ON THE ICON

- Right click on « Safely remove the USB mass storage device... »



CHOOSE AND CLICK

- Wait the message and check the green led is off. The key is then turned off.



WAIT UNTIL THE MESSAGE ALLOWING THE KEY REMOVAL

- Disconnect the USB cable from the PC.

NOTE: Depending on the version of the PC operating system, the removal of the key may require the closure of other files of the same type.