


OPERATING MANUAL

MU 7074 EN C TURBOTRONIQUE UNI



C	2017/10/30	Update table of alarms [MDV568] GU 7110 cancels and replaces FM 8012 [MDV544]	DSM	XS
B	2016/06/16	Volume and flowrate accuracy, time-out for automatic recording, 3-decimals display, season setting in metrological mode	DSM	DRA
A	2015/12/14	Creation [MDV423]	DSM	AH
Issue	Date	Nature of modifications	Written by	Approved by

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1 GENERAL PRESENTATION AND DESCRIPTION

The TURBOTRONIQUE UNI is an interruptible measuring system for liquids other than water mounted on road tankers. It can be autonomous or associated to other devices (CTD+ key).

The TURBOTRONIQUE UNI is mainly composed of:

- ⇒ An electronic calculator-indicator UNI associated to an MPLS (Module de Prédétermination et Liaison Série)
- ⇒ An ALMA turbine meter
- ⇒ A gas separator
- ⇒ A non-return valve materializing the transfer point(s) of the measuring system,
- ⇒ A pump ensuring the power supply of the measuring system and whose flowrate and pressure characteristics are compatible with the meter used
- ⇒ A filter to remove foreign bodies, it is integrated in the gas separator or placed between the pump and the gas separator
- ⇒ A set of delivery devices composed of:
 - Either one full hose reel fitted with its closing device,
 - Or a short full hose
- ⇒ A device enabling control of the flowrate, guided by the ALMA UNI calculator-indicator
- ⇒ If applicable, a Pt 100 temperature sensor
- ⇒ If applicable, the sight glass directly placed upstream of the meter, enabling to ensure the absence of air during distribution
- ⇒ If applicable, a guided valve.


The TURBOTRONIQUE UNI is designed to measure volumes of liquid (pre-set or not) and to stop flow when a significant fault occurs. An option takes into account the temperature of liquid.

In option, it may print delivery tickets.

The 'Transfer Key CTD+' option is used to transfer measurements results to a key thanks to an infrared communication between the TURBOTRONIQUE UNI and the key. The data may be downloaded from the key to a PC through USB cable. **CAUTION: the key is not an ATEX device.**

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

The ALMA UNI electronic calculator-indicator guarantees the metering operations and manages alarms from the measuring system.

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On its front face, the UNI device has a LCD backlight protected by a glass to display measurement information which can be read from the user interface. The five buttons have the following functions:



BP5 Light the display during 10 seconds



BP4 Normal mode: return to previous menu
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)
METROLOGICAL mode: select the figure to be modified or select the menu



BP2 Normal mode: validate the selected menu or value
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

When it is not used, it's better to close the UNI cover.

The front face glass must be regularly cleaned for easy readability and better communication with the CTD+ key.

Since the CTD+ key is not ATEX, it must be used outside potentially explosive area.


The UNI device is powered by 2 batteries. The display "Battery" indicates that the batteries must be changed. Batteries must be changed in a non-explosive area. The verification seals have to be broken by authorised personnel only. Refer to the maintenance sheet FM 8009 about replacement of batteries.

A non-return valve has to be placed and sealed between the gas separator and the ADRIANE turbine meter if the liquid level in the separator may be lower than the liquid level in the meter.

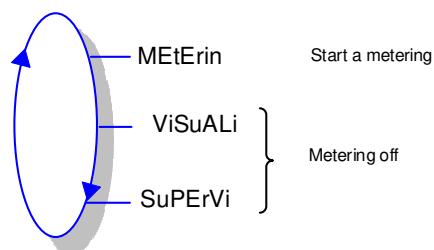
The hose allowing gas removal at the outlet of the gas separator has to be non-pinchable or keep the deformation mark.

3 OPERATION

The TURBOTRONIQUE UNI has 2 operation levels: the USER mode for operation: measurement, visualisation, supervision, and the METROLOGICAL mode for configuration of the device by authorized personnel.

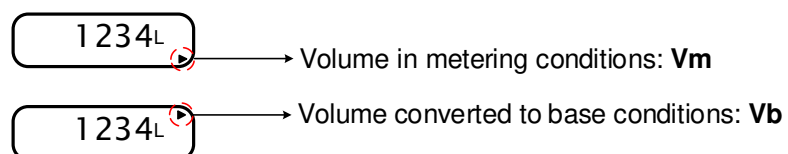
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4 USER MODE



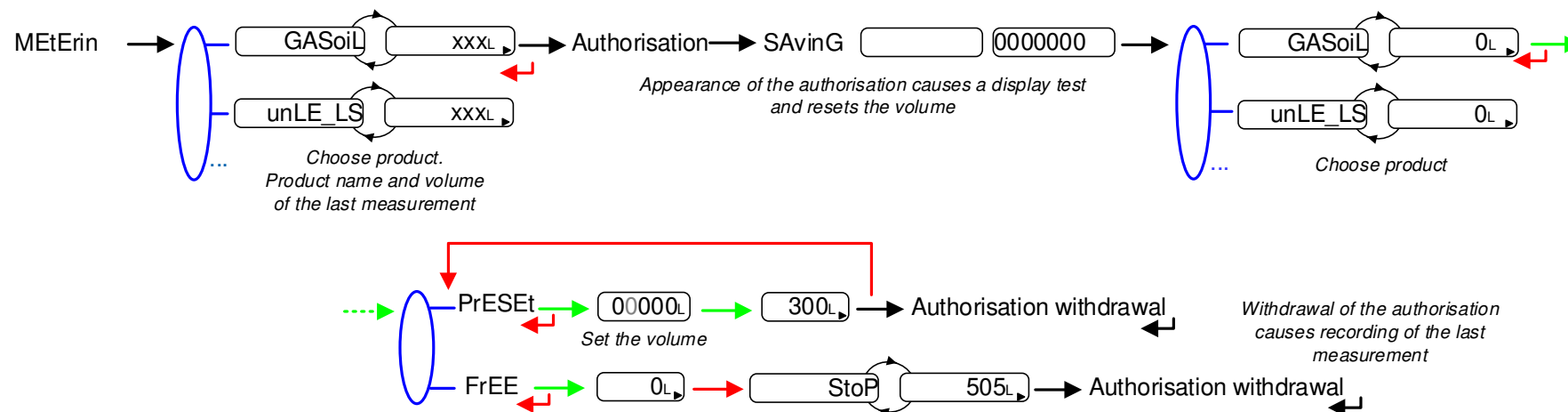
The UNI can be either ON or OFF metering.

The displayed quantity depends on the configuration set in METROLOGICAL mode. The arrow-pictogram located on the right hand of the display screen is used to point out V_m or V_b such as shown below:



4.1 Menu METERING – MEtErin

Appearance of the authorisation causes a display test and resets the volume. Withdrawal of the authorisation causes recording of the last measurement.



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 (if the temperature option is activated).

Display returns automatically to the current volume.

4.1.2 Data recording and volume reset

Appearance of the authorisation resets the volume to zero. Withdrawal of the authorisation causes recording of the last measurement at zero flow conditions.

4.1.3 Printing of a delivery ticket

If a printer is connected to the MPLS device, simply insert a ticket into the printer at the end of measurement and the delivery ticket is printed (see ANNEX).

4.1.4 Transfer the measurement results to a computer – option



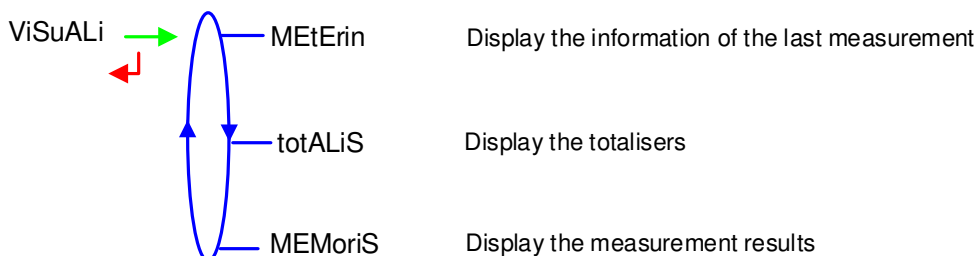
Since the CTD+ key is not ATEX, this operation must be done outside potentially explosive area.

The 'CTD+' option allows to transferring parameters and measurements results to the key. Then, data may be downloaded from the key to a PC through USB cable.

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

Refer to the Operating guide GU 7110 about transferring the measurement results of the UNI indicator device to a computer.

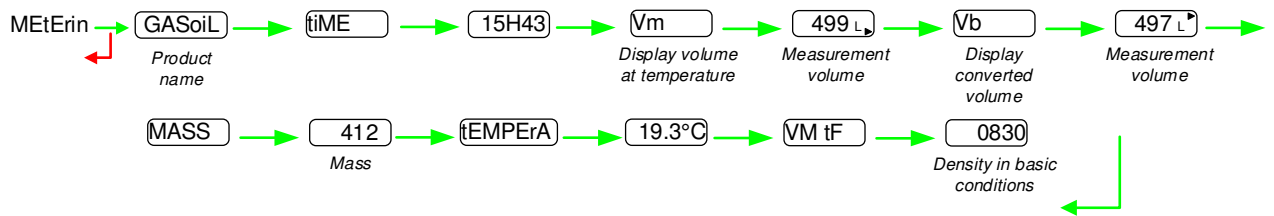
4.2 Menu VISUALISATION – ViSuALi



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

4.2.1 Sub-menu METERING – MEtErin

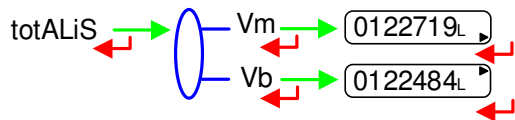
This menu displays the information of the last measurement. Information displayed depends on the calculator configuration.



4.2.2 Sub-menu TOTALISER – totALiS

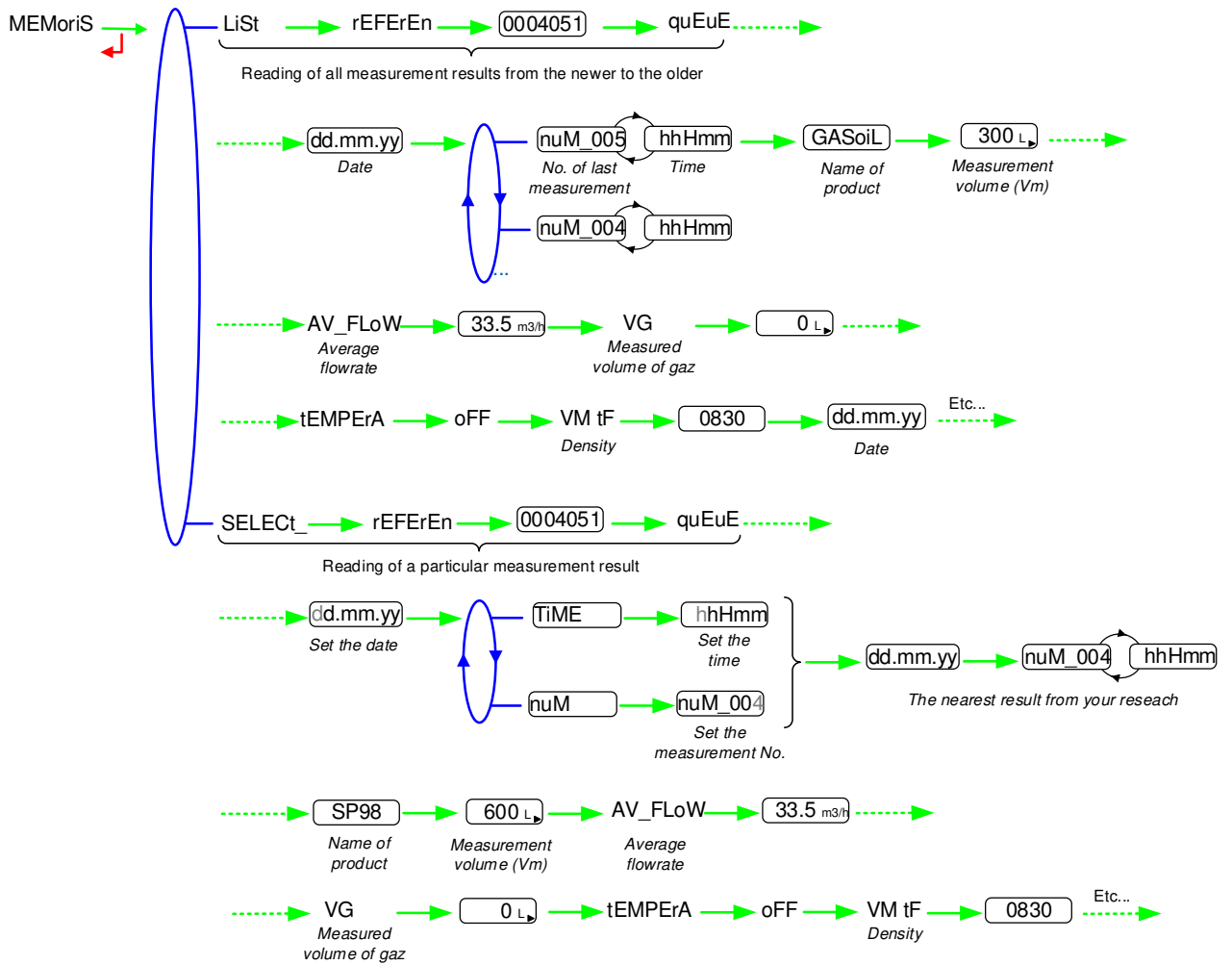
This menu displays:

- The totaliser of volume in metering conditions (Vm)
- The totaliser of volume converted to base conditions (Vb) if the temperature option is activated.

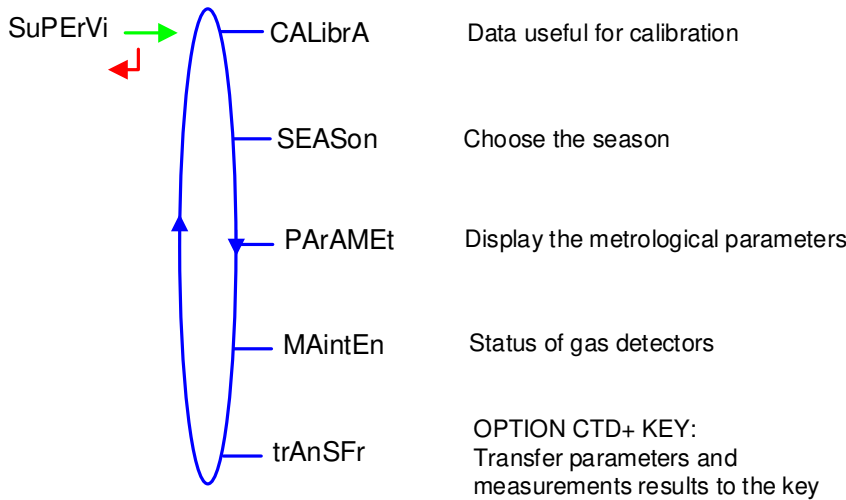


4.2.3 Sub-menu MEMORISATION – MEMoriS

This menu displays the measurements results. Information displayed depends on the calculator configuration. Temperature, converted volume (Vb), mass and density are only displayed if the temperature option is activated.

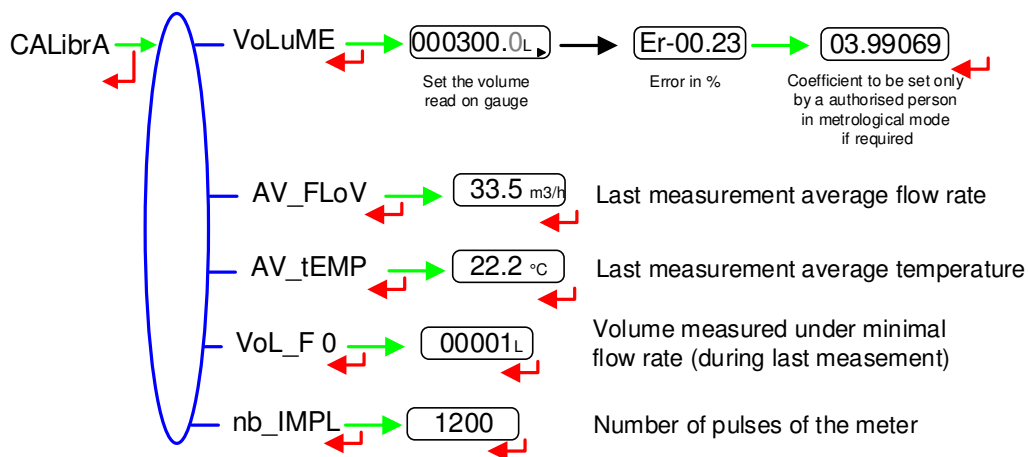


4.3 Menu SUPERVISOR – SuPERVi



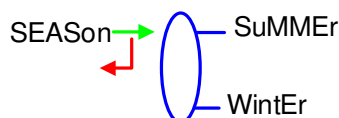
4.3.1 Sub-menu CALIBRATION – CALibrA

Check the measuring system accuracy during the calibration with a gauge. This menu is available after a measurement sequence when the measurement results are recorded (following RAZ or withdrawal of authorisation).



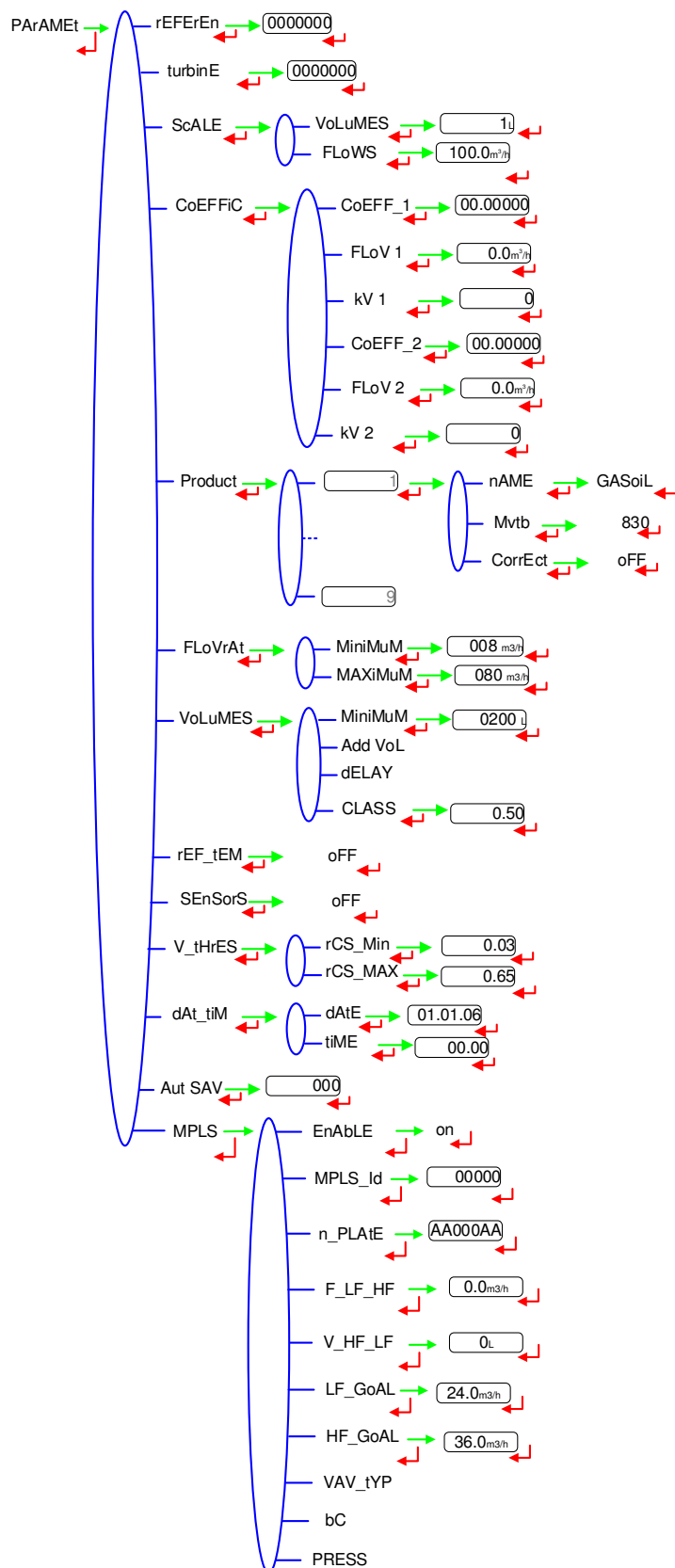
4.3.2 Sub-menu SEASON – SEASon

Season is set in METROLOGICAL mode. This menu is used to change from summer to winter time (and back again).



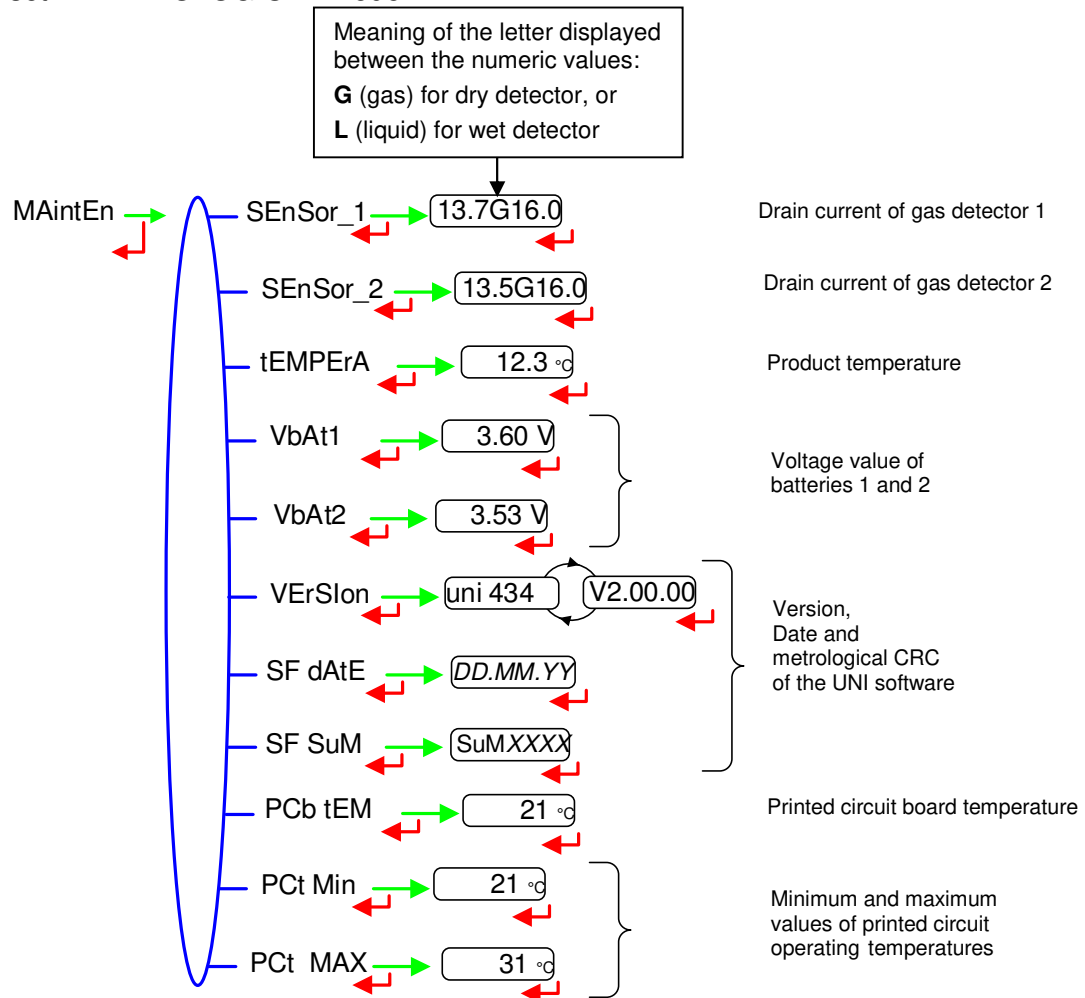
4.3.3 Sub-menu PARAMETERS – PARAMeT

This menu displays the parameters set in METROLOGICAL mode.



4.3.4 Sub-menu MAINTENANCE – MAIntEn

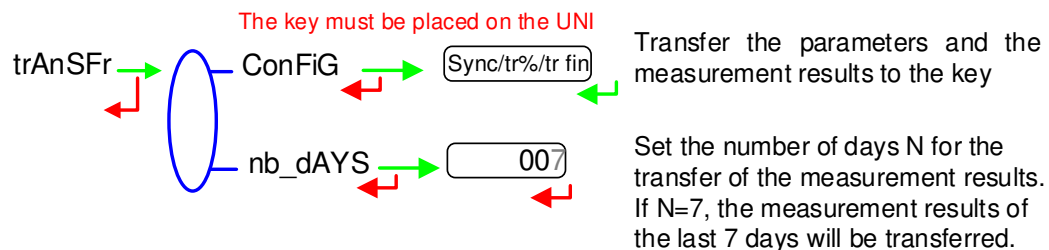
This menu displays the drain current (mA) of the gas detectors and the reference current set in METROLOGICAL mode.



4.3.5 Sub-menu TRANSFERT – trAnSFr

Since the CTD+ key is not ATEX, this operation must be done outside potentially explosive area.

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'. Refer to the Operating guide GU 7110.



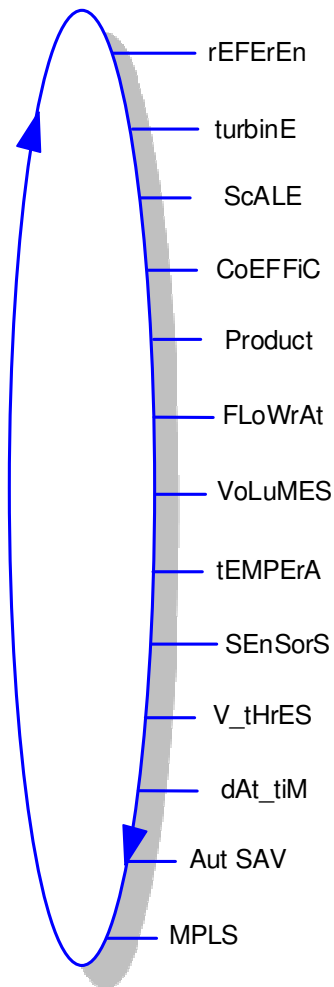
NOTE: Do not plug the USB cable during data transfer

4.4 List of alarms

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.

		DISPLAY	MEANING	ACTION
USER	MPLS	oVerFlo	Volume greater than 4 194 304 liters	Reset the device
		LoW_Flo	Flow rate less than the setting minimal flow rate	Check the hydraulic configuration and the flowing
		SEnSor1	High gas detector fault (GDh)	Use the maintenance menu to check the status of the detector
		SEnSor2	Low gas detector fault (GDI)	Use the maintenance menu to check the status of the detector
		StoP	Intentional interruption of delivery	Stop delivery
		Author	The autorisation has been removed during pouring	The measurement is ended
		LEAK	Counting of a volume greater than or equal to 1 liter (metering off)	Acknowledge the alarm to end measurement
		dEFPrEd	Volume \geq preset volume+1% the minimum quantity	Acknowledge the alarm
		VALvE	Pouring while GDh dry	Check the valve is operating properly
		REPARATOR		FLoV_
FrEQ_	Frequency fault			Check the parameters
COEFF_	Difference two coefficients is greater than 0,5%			Check the coefficients setup
MEtEr	Problem of metering with the meter			Check the setup
HiGH_FL	Flow rate greater than the setting maximal flowrate			Check the setup
LF_HiGH	Flow greater than 20m ³ /h while GDh dry			Check the setup
dAtE	Loss of date and time			Set date and time in metrological mode
GAS	GDh is wet but GDI is dry			Check the hydraulic configuration / Check the detector status
drY MEt	When using a pump. The volume of gas is greater than the minimum measured quantity			Stop metering
CoIL	Loss of pulse transmitter signal			Check the connection with the pulse transmitter
tEMPERA	Temperature less than -20°C or greater than 50°C			Check the temperature sensor (measure and calibration)
diSPLAY	LCD display fault			If steady alarm, substitution of the UNI
doG	Fault with card			If steady alarm, substitution of the UNI
ProGrAM	Error on the checksum of the metrological data			If steady alarm, substitution of the UNI
rAM	Saved memory fault			If steady alarm, substitution of the UNI
MEMoriS	Bad writing into the memory			If steady alarm, substitution of the UNI
FuLL	If a measurement result, not older than 3 months, is about to be erased			If steady alarm, substitution of the UNI
MEtro_	Configuration loss			If steady alarm, substitution of the UNI
bAttErY	Low battery			Substitution of the batteries
totAL_	Totaliser fault			If steady alarm, substitution of the UNI
dEF_MEM	Loss of backup data concerning the last measurement	If steady alarm, substitution of the UNI		
dEF_CoM	Communication fault with IRDA link	Check the IRDA link		
rECEPt	Problem of communication protocol between the calculator-indicator UNI and the MPLS device	Check the compatibility of the software version of the MPLS device with the calculator-indicator UNI		

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.

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.

The option to display the volume in metering conditions (Vm) or the volume converted to base conditions (Vb) is made in METROLOGICAL mode when the temperature menu is activated.

5.1 Menu REFERENCE – rEFErEn

Set the serial number of the electronic calculator-indicator UNI.

rEFErEn → ↵

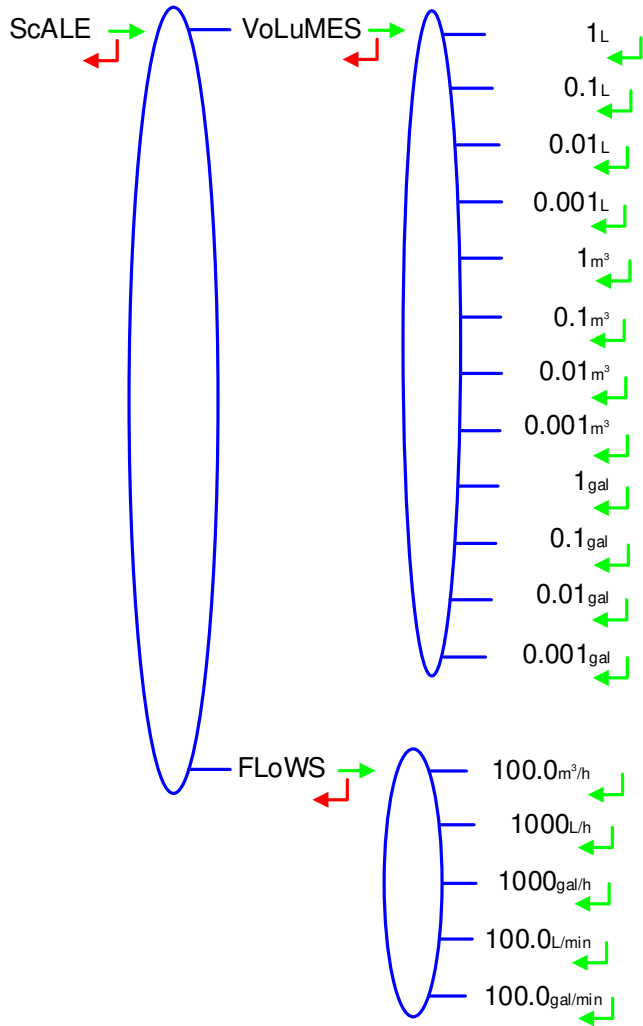
5.2 Menu TURBINE – turbinE

Set the serial number of the turbine meter.

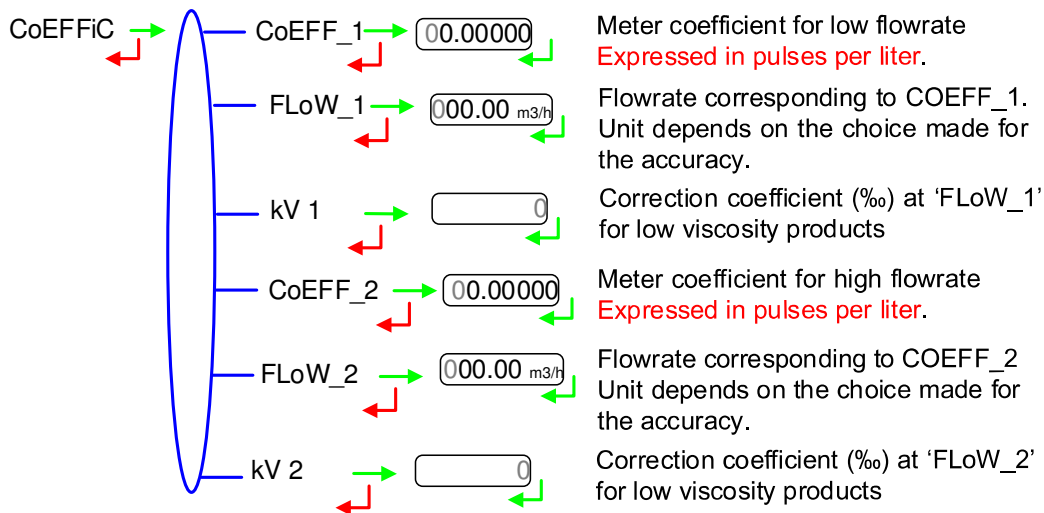
turbinE → ↵

5.3 Menu SCALE – ScALE

Choose the unit and accuracy for volume and flowrate.



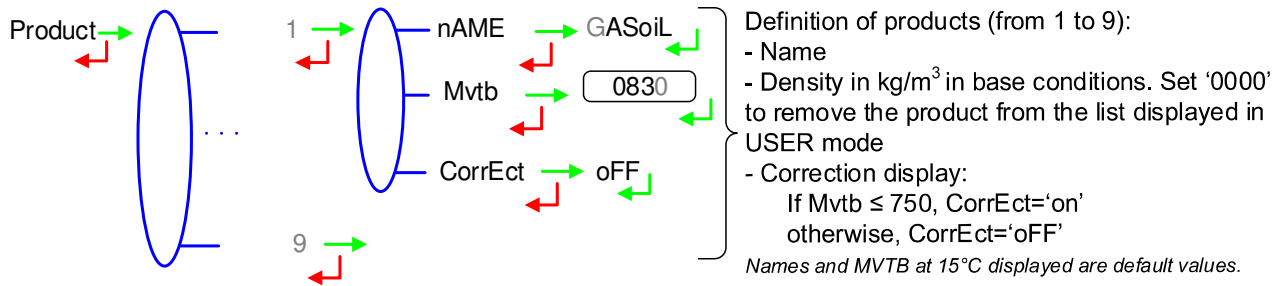
5.4 Menu COEFFICIENT – CoEFFiC



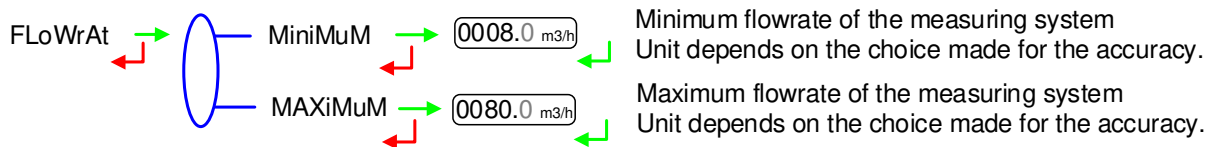
When parameters FLoW_1 and FLoW_2 are set to zero, parameters CoEFF_2 and kV 2 are not applied.

5.5 Menu PRODUCTS – Product

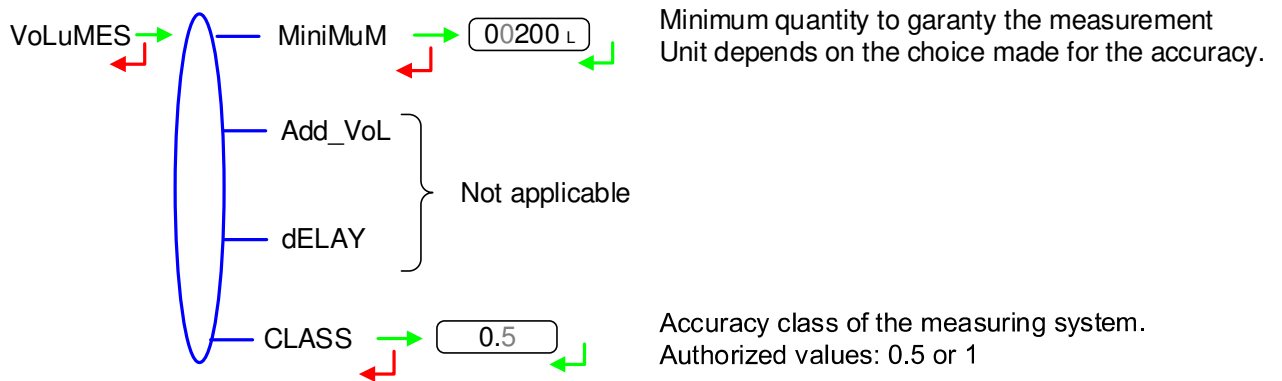
Definition of products.



5.6 Menu FLOWRATES – FLoWrAt



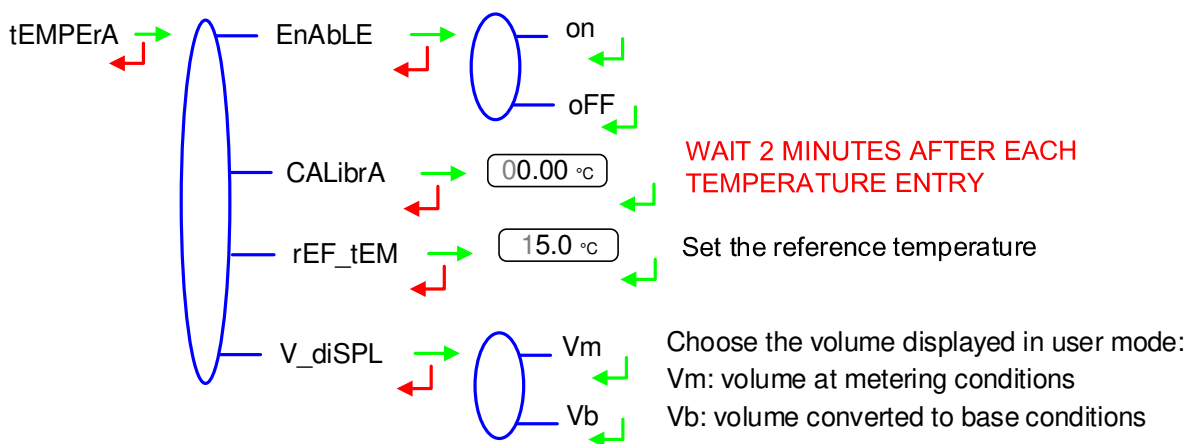
5.7 Menu VOLUMES – VoLuMES



5.8 Menu TEMPERATURE – tEMPErA

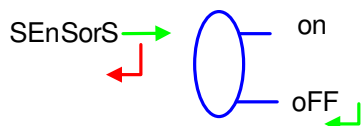
The temperature calibration can be done either on two measuring points or on a single measuring point (menu CALibrA).

- 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.



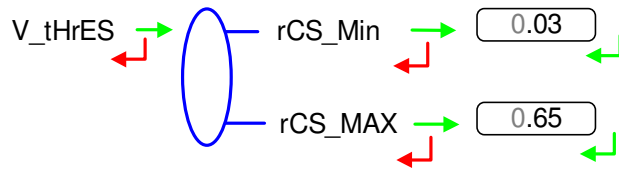
5.9 Menu GAS SENSORS – SEnSorS

The TURBOTRONIQUE UNI doesn't control gas detection. Validate **SEnSorS** → **oFF**



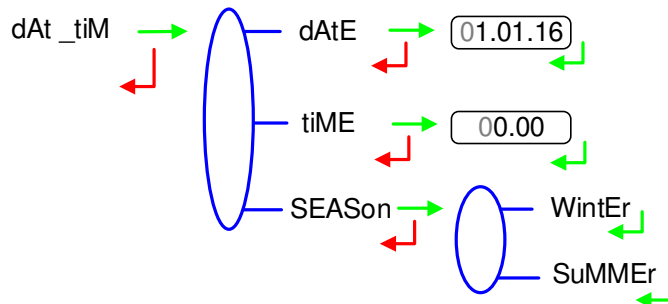
5.10 Menu THRESHOLDS – V tHrES

Detection thresholds of metering inputs at zero flow and at maximal flow.



5.11 Menu DATE AND TIME – dAt tiM

This menu is used to set date and time of the day and select the season. The menu SuPErVi>SEASon of USER mode can also be used to change from summer to winter time (and back again).



When you validate the season, 'dEL yES' then 'dEL Ok' appear to indicate that the measurement results have been deleted from flash memory.

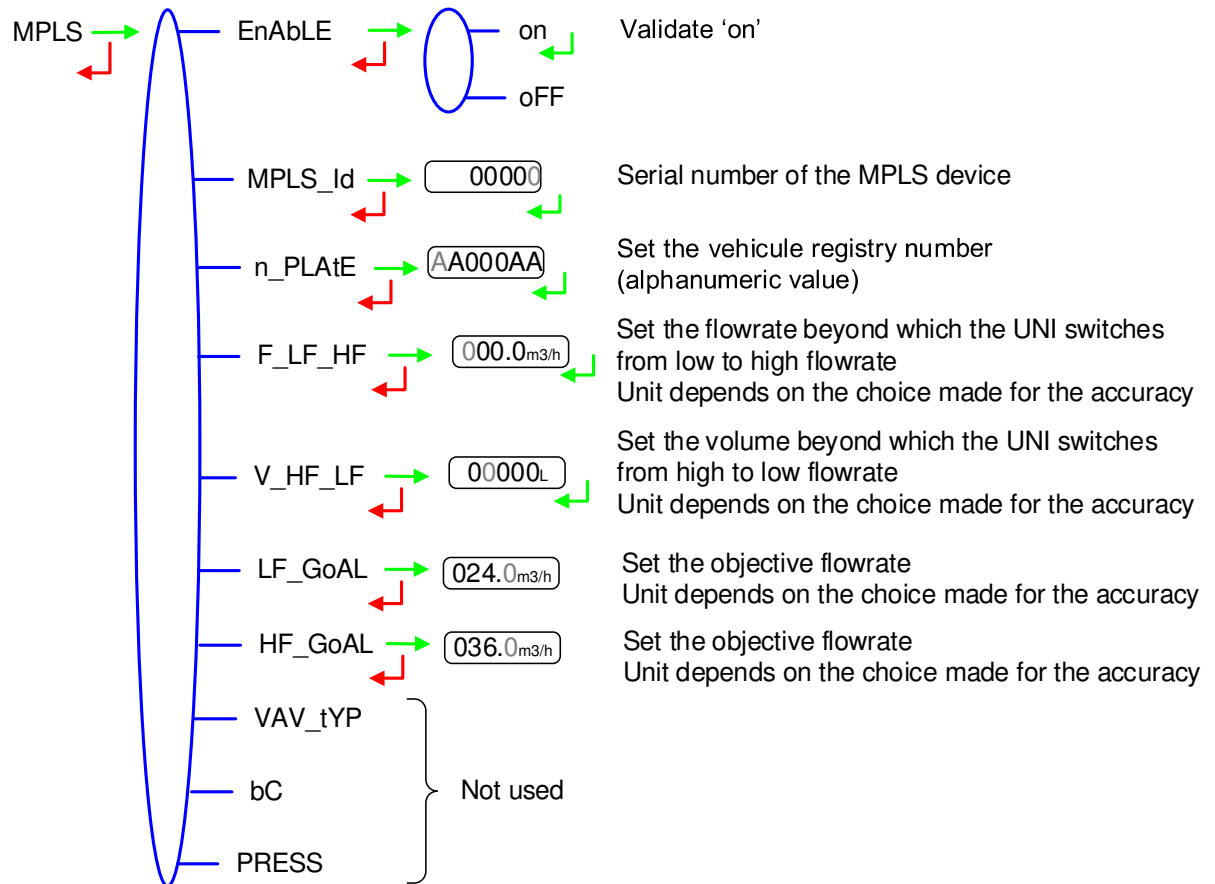
5.12 Menu AUTOMATIC RECORDING – Aut SAV

Set this parameter to '0' for the TURBOTRONIQUE UNI to operate properly.



5.13 Menu MPLS – MPLS

This menu must be activated. Validate **EnAbLE**→**on** for the TURBOTRONIQUE UNI to operate properly



ANNEX

Delivery ticket for interruptible measuring systems connected to a printer

Installation:	AA09C01
Indicateur/Indicator:	0000000123
Date (../MM/20..):	21/10/2015
Quantieme/Calendar:	295
Numero/Number:	001
Heure de fin/ End time:	15:22
Produit/Product:	GAZoLE
Quantite livree/ Quantity delivered:	0000499 (L)
Totalisateur/Totaliser:	
Index avant/before:	0012387
Index apres/after:	0012886
<p>En cas de litige, les resultats de mesurage memorises par l'indicateur font foi. In case of dispute, the measurement results stored by the main indicating device providing proof.</p>	

RELATED DOCUMENTS

GU 7074	Operating guide: UNI MPLS / Turbotronique UNI
GU 7110	Operating guide: Transfer the measurement results of the UNI indicator to a computer
FM 8009	Replacement of the batteries of the UNI indicator device
FM 8014	Replacement of the battery on the CTD+ key
FM 8505	Adjustment of an ALMA measuring system equipped with a UNI indicator device
FM 8509	Adjustment of temperature in the UNI indicator device
DI 017	Installation guide: Turbotronique UNI