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FIXED GAS ANALYZER UNIT

AN750 Central Unit

USER MANUAL

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Monitoring the system

For the first 30 seconds after switching on, the AN750 unit displays the main menu page on the screen. During this time, the programme effectuates certain internal controls at the end of which some messages appear on the display.

BOILER 1 is displayed. The visualization of the values changes on the basis of the probes installed.

Attention - Important advice: *the sensors' inputs are protected against short-circuiting and the interruption of the leads that connect the transmitters to the central unit.* If a short-circuit occurs, the electrical mains feed is automatically cut off to the relative input to avoid irreparable damage to the central unit and the sensor (the other sensors continue to function normally). Simultaneously, the yellow "FAULT" LED lights up and stays on and the corresponding relay becomes active. Only after having eliminated the short-circuit is it possible to reset normal operating conditions.

Tecno Control

AN750

GAS ANALYZER
CENTRAL UNIT
1 ÷ 4 BOILERS

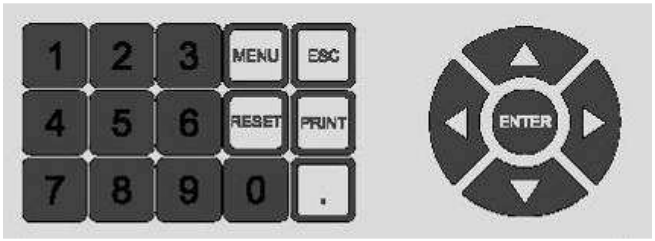
TÜV – L.D. nr. 152

BOILER 1 Methane
Burner ON

Ta	35.6	°C
Tf	135	°C
O_2	5.4	%
CO	75	ppm
CO_2		%
Eta	82	%
Lamb		%
T On	15	%
Mem	5	%

01-01-2005 12:25:32

Utilization of the keypad and general information



The (ENTER) key is for confirming.

The [ESC] key is for exiting from the menu.

The [MENU] key is for entering the main menu and for gaining access to the sub-menus.

The [RESET] key is for cancelling alarm or anomaly indications.

The [PRINT] key is for entering the print-out menu.

The numbers modifiable or to be entered appear on the display using the *cursor* (intermittent black rectangle). The numerical keypad is used (**1, 2, 3, 4, 5, 6, 7, 8, 9, 0 and .**) to enter a number.

The ◁ key is for cancelling a number by shifting the cursor towards the left.

The △ ▽ keys are for shifting inside menus. The ▽ key is for selecting the graphic mode.

The ▷ key is for changing the Unit of Measure and shifting the cursor towards the right (only in Configuration).

N.B. As an alternative to the △ ▽ keys, the numerical key can be utilised that corresponds to the number displayed to the left of the function required. In this case access is directly gained to the function without having to press the "Enter" key.

The unit is supplied already configured on the basis of the probes ordered. The first part (Monitoring) of this manual refers to the utilization of the central unit. The second part (Configuration) refers to configuring in the case of loss of the configuration data and to modify or set the alarm thresholds. It is recommended to protect the access to Configurations by modifying the password.

Reset of the alarms

Press the [RESET] key on the normal visualized display.

Alarm acknowledged

This message appears: "**Alarm acknowledged**" and after a few seconds the normal visualized display appears automatically.
This procedure is carried out to bring the memorized relay outputs back to normal operating conditions when the cause that activated them has returned to normal after the alarm situation.
N.B. *The activation of "FAULT" relays is delayed for 60 seconds, whilst the activation of the "PRE-ALARM" relays is delayed for 30 seconds.*

Visualization of the boilers

To visualize the various boilers, press key [1] for Boiler 1, key [2] for Boiler 2, key [3] for Boiler 3 or key [4] for Boiler 4. If one or more boilers are not active, the corresponding key is not active either.

To simultaneously visualize all the boilers, press [0] on the normally visualized display and a complete synthetic visualization of all boilers configured is displayed. If an area of data appears crossed out, this indicates that the boiler is not configured or not installed.
To return to the normal visualized display of single boilers, press the numerical keys [1] [2] [3] or [4].

	C1 ON ON	C2 ON ON	C3 ON ON	C4
	Methane	Methane	Methane	
Ta	24.4°C	24.4°C	24.4°C	
Tf	135°C	148°C	135°C	
O2	2.51%	3.24%	2.51%	
CO	34PPM	52PPM	34PPM	
CO_2	10.3%	10.3%	10.3%	
Eta				
Lamb	1.14 %	1.14%	1.14%	
T On	254 hours	136 hours	288 hours	
Mem	32%	12%	72%	

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Changing the Unit of Measure

From the boiler visualized display, pressing ▽ will highlight the first probe, at this point you can choose with the keys △ ▽, the probe displayed, pressing ▷ will change the choice of units in **ppm**, **mg/Nm^3**, **mg/kWh** or **%** for probes with units of measure in ppm (eg, CO, NO, NOx, etc..). Press the [ESC] key to deselect the highlighted probe.

Graphics' visualization

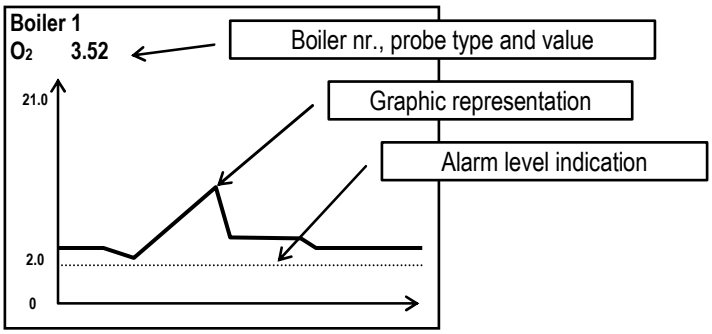
On the boiler visualized display, the first probe is highlighted by pressing the ▽ key. At this point, the probe to be visualized can be selected by using the △ ▽ keys. Pressing the [ENTER] key the updated graphic display appears in real time approximately every second. The value measured, the measure scale and the alarm level (if set) are displayed.

Press the [ESC] key to return to the boiler visualization on the display and then press the [ESC] key again to deselect the highlighted probe.

BOILER 1 Methane
Burner ON

Tf	135	°C
O_2	5.4	%
CO	75	ppm
CO_2		%
Lamb		%
T On	15	%
Mem	5	%

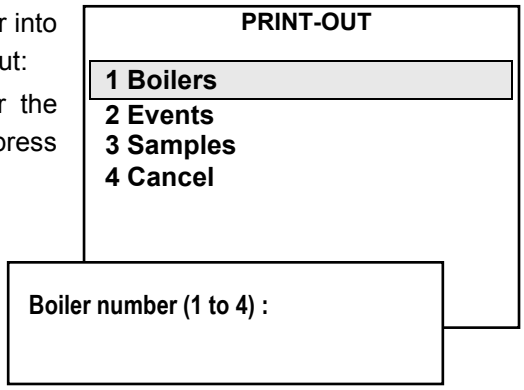
01-01-2005 12:25:32

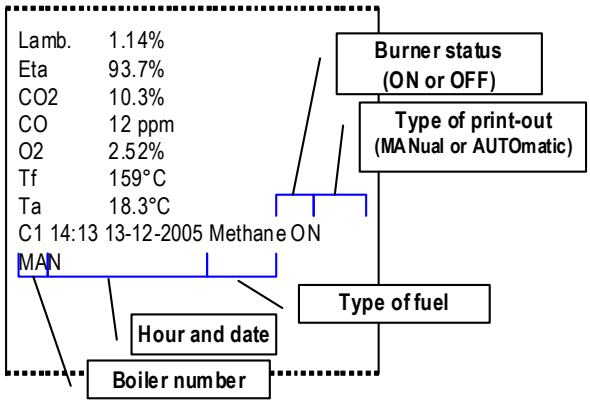


Manual print-out

On the boiler visualized display, press the PRINT key to enter into the print-out menu. From this menu, it is possible to print-out:

1 Boilers: Press key 1 then the ENTER key and enter the number of the boiler to have a data print-out and finally press the ENTER key.





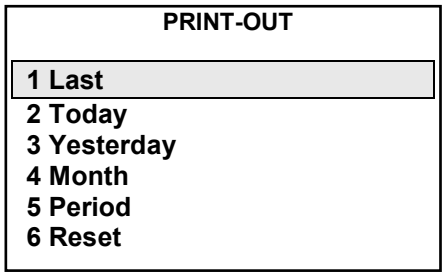
< Example of "Boiler" print-out

2 Events: Press key 2 , then select the memorized Event to print out from the menu.

3 Samples: Press key 3 to select which memorized Sample to print out.

4 Cancel: Press key 4 to cancel a print-out being printed.

A sub-menu directly appears for the ***Events*** item in which the selection can be made of which data to print out. For the ***Samples*** item the boiler number must be selected to have a data print-out and then the sub-menu appears in which the selection of data to be printed can be made.



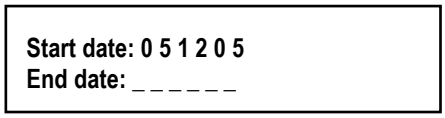
1 Latest: The 20 most recent sets of data recorded are printed.

2 Today. All sets of data of the current day are printed.

3 Yesterday: All sets of data of the previous day are printed.

4 Month: All sets of data of the current month are printed.

5 Period: The start date of printing and the end date of printing in day/month/year format is requested.

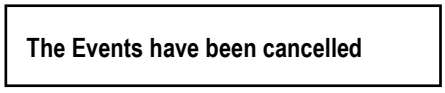


If there are no events to print out, this message appears:
"There are no events in the indicated period" or **"Archive empty"**

If there are events to print out, this message appears:
"Print-out activated"

6 Reset If this function is selected, it is possible to cancel the data in the memory for both ***Events*** and ***Samples*** items.

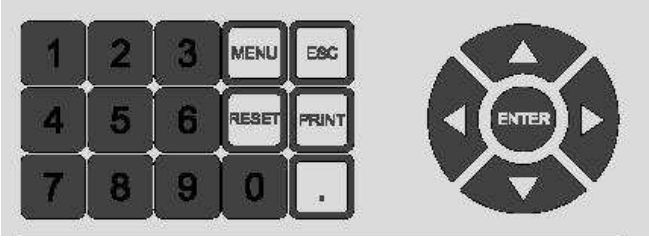
ATTENTION: ***Replying "YES" to the confirmation request, all data in the memory will be cancelled permanently.***



Configuration of the central unit

THE FOLLOWING INSTRUCTIONS CONTAINED IN THIS MANUAL INCLUDE THE CONFIGURATION PROCEDURES OF THE SYSTEM THAT MUST BE CARRIED OUT BY QUALIFIED AND AUTHORIZED PERSONNEL.

Utilization of the keypad and general information



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The ◁ key is for cancelling a number by shifting the cursor towards the left.

The ▷ key is for shifting the cursor towards the right.

The △ ▽ keys are for shifting inside menus. The ▽ key is for selecting the graphic mode.

The △ (ENTER) keys are for shifting up and down the menus.

N.B. As an alternative to the △ ▽ keys, the numerical key can be utilised that corresponds to the number displayed to the left of the menu required. In this case access is directly gained to the function without having to press the "Enter" key.

NOTE

The AN750 unit is supplied already configured on the basis of the probes ordered. These instructions are only in the case of losing the configuration data or to modify or set the alarm thresholds. The message on the right will be displayed if no sensor has been configured.

NO BOILER CONFIGURED
Press ESC for configuration

DD-MM-YYYY HH:MM:SS

From the main menu, the configuration menu is entered by pressing the [MENU] key. The access code will be requested to be entered (refer to Chapter "Password").
Also refer to the "*Programming diagram*" on page 15.

IMPORTANT NOTICE

Before making configuration changes, in particular the addition or deletion of probes, or addition or deletion of boilers, data analysis, in the internal memory dell'AN750 have to be printed or downloaded to a PC via the Softtware management SW750RC (see the specific manual).
The parameters that, when changed cause the loss of data analysis, are listed in the following pages with the phrases:

THIS WILL ERASE MEMORY DATA
or
AMENDMENT OF THE PARAMETER CLEAR MEMORY DATA

Main menu

The page now displayed shows a list of configurable values.

Scroll up and down using the △ ▽ keys to select the function to gain access to and then confirm with the ENTER key, *or more simply, press the numerical key corresponding to the item of the required menu.*

Main Menu

01 Boilers
02 Events archive
03 Samples archive
04 Password
05 Clock
06 Printer status
07 Save configuration
08 Reset configuration
09 Language
10 ModBus address PCPort
11 Printer
12 Version info

Configuration of the boilers

The possibility of selecting the item that is required appears on the display. To select that item, press the corresponding number key.

Configuration

1 Configure
2 Duplicate
3 Delete
4 Delete samples

Selecting the "**1-Configure**" item, the parameters of the boilers can be configured up to a maximum of four boilers
Selecting the "**2-Duplicate**" item, the configuration of a complete boiler can be duplicated to avoid repeating the same operation manually.
Selecting the "**3-Delete**" item, a complete boiler can be cancelled from the configurations. ***THIS WILL ERASE MEMORY DATA.***
Selecting the "**4-Delete samples**" item, all samples can be cancelled from the memory. ***THIS WILL ERASE MEMORY DATA.***
Next, selecting the "**1-Configure**" item, another page appears on the display with the number of the boiler to be configured.
The described operations for this procedure can be applied to the other boilers.
To select, press the corresponding numerical key.
The configuration of the boiler selected now appears.

To select an item, scroll up and down using the △ ▽ keys, or press the corresponding numerical key.

Select boiler

1 Boiler 1
2 Boiler 2
3 Boiler 3
4 Boiler 4

Configuration: Boiler 1

1 Fuel 1
2 Fuel 2
3 Parameters
4 Fix time printing
5 Enable
6 Disenable
7 Probes
8 Reset timer

Fuel

By selecting "**1-Fuel 1**" you can choose the fuel used.
Selecting the "**2-Fuel 2**" you can choose the fuel for dual fuel burners.
This will be selected automatically by means of the closure of the consensus fuel (**Cc**).

NOTE: The choice of fuel is required because the coefficients are automatically set for the values calculated.

Unless otherwise specified at the order, the factory is set to CNG (Methane). So, if the fuel used is different, it should be set to the one used.

Fuel

01 Natural gas (Methane)
02 Gasoil
03 Town gas
04 Fuel oil
05 Propane
06 Butane
07 LPG
08 BTZ
09 MTZ
10 ATZ
11 Wood 0hr
12 Wood 17hr
13 Wood 50hr
14 Sansa (olive residues)

N.B. For wood fuels, the fuel type is selected on the basis of its average humidity.

Parameters of Bolilers

Parameters: Boiler 1	
Sampling time [0-2000 min]	: 10
Start-up time [180-1200 sec]	: 240
Auto-printing time [0-900 sec]	: 0
CO washing level [0-40000 ppm]	: 0
CO washing time [0-30 min]	: 3
O2 reference	: 0.00
NOx reference level [0.1-25]	: 5.00
Condensing boiler ?	: NO

Selecting the "**3-*Parameters***" item, the analysis parameters of Boiler 1 can be modified or setting.

The *Sampling time* is the number of minutes each time the measured and calculated values are memorized (only if in the programming of the probe "YES" has been selected under the "Memorize samples" item). It is recommended to utilize a time proportioned to the functional characteristics of the boiler. The value set in the factory is 10 minutes.

The *Start-up time* is the time that passes between the ignition of the burner flame (Burner consensus) and the start of the fumes' analysis. This time period, connected to the functional characteristics of the boiler ensures that insignificant values are not measured (excessive CO, etc.) during the initial combustion phase. The value set in the factory is 4 minutes.

The *Auto-printing time* is the required time set for printing the data automatically.
This function is not preset in the factory and therefore its utilization parameters are left for the customer to select on the basis of the customer's requirements. It must be kept in mind that the alternative to this function is the "**4-Fix time printing**" function.
It is recommended to utilize a time interval proportioned to the functional characteristics of the boiler.
If the *SW750RC management software* installed on a PC is utilized, this function cannot be used.

The *CO washing level* is the value in ppm at which the automatic washing of the CO cell is activated (only the AN510) if there is an excess of CO in the combustion fumes. It is normally set in the factory at 0 ppm. It is recommended to utilize this parameter only if the CO exceeds 4000 ppm, due to the particular characteristics of the boiler.

The *CO washing time* is the time interval during which the washing of the CO cell (only the AN510) remains active. It is normally set in the factory at 0 minutes.
It is recommended to utilize a time interval proportioned to the functional characteristics of the boiler.

The *O_2 reference* is for calculating the value of undiluted pollutants (e.g., CO, NO etc.); in other words, the dry fumes calculated on the basis of the oxygen reference set according to council and regional standards. This calculated value is visualized with an asterisk next to the symbol.
It is not normally set in the factory.

Condensing boiler is an optional user parameter not connected to any standards. If the boiler is a condensing boiler and the "Oxidizing air temperature" probe 1 is installed, also on the display appears the efficiency value (Cond) calculated bearing in mind the recovery of heat from the fumes, as well as from the normal efficiency value (Eta) calculated on the basis of the norm. It is not normally set in the factory.

NOTE: In the menu ***Parameter boilers (from 2 to 4)***, is the item ***Common ambient probe***, that allowing you to set whether to use the ambient probe connected to the boiler 1 (See page 9).

Fix time printing

Printing times for Boiler 1	
1	12:00
2	_ _ _ _
3	_ _ _ _
4	_ _ _ _
5	_ _ _ _
6	_ _ _ _
7	_ _ _ _
8	_ _ _ _

Select the item to modify
Enter 0000 to cancel any item
ESC to exit.

Selecting the "**4-Fix time printing**" item, up to 8 time intervals can be set at which an automatic print-out of the data analyzed of the selected boiler is printed.

Important advice: ***if the burner is OFF, the print-out is not effectuated at the preset time, but will be effectuated at the successive ignition of the burner; this ensures that print-outs are always printed with valid data. Furthermore, to obtain significant data, an adequate Start-up time must be set (refer to the preceding page).***

Enable - Disable

Do you want to disable? NO
Do you want to disable? YES
Boiler Disabled

Selecting the "**5-Enable**" item, the functioning of the boiler can be enabled. This operation is inverted for the **6-Disable** item.
Selecting the "**6-Disable**" item, the functioning of the boiler can be disenabled, e.g., for maintenance or when there are faults to the boiler. It blocks the recording of data and inhibits the activation of the relative alarm relays (if the alarm thresholds are configured).

Probes

Select probe
1 Ambient temperature
2 Smoke temperature
3 Oxygen
4 Carbon monoxide
5 Probe 5
6 Probe 6
7 Probe 7
8 Probe 8

Selecting the "**7-Probes**" item, the probes of the boiler selected can be configured, modified or added.

The following indications are valid for the parameters of all probes (refer to the table on page 13).
The **Minimum Full Scale** is normally zero; it is the value from which the measuring scale starts from.
The **Maximum Full Scale** is the value of the Full Scale of the probe to be configured.
The **Offset** is normally zero, but can be modified as a fine calibration.
The **Prealarm** value is entered if required (the intervention of the relay is delayed by 30 seconds).
The **Alarm** value is entered if required (the intervention of the relay is delayed by 30 seconds).
The measurements are archived in the memory and can be transferred into a PC using the SW750RC management software if the **Memorize samples** is selected as "YES". If "NO" is selected, the probe values are only visualized on the display. ***AMENDMENT OF THE PARAMETER CLEAR MEMORY DATA.***

Ambient temperature probe

Parameters: Boiler 2

Sampling time [0-2000 min]	: 10
Start-up time [180-1200 sec]	: 240
Auto-print interval [0-900 sec]	: 0
CO washing level [0-40000 ppm]	: 0
CO washing time [0-30 min]	: 3
O_2 reference	: 0.00
NOx reference level [0.1-25]	: 5.00
Common ambient probe ?	**:SI**
Condensing boiler ?	: NO

The *1-Ambient temperature* is the TS325 probe used for measuring the preheated oxidizing air temperature or the TS326 probe for measuring the ambient temperature (**Ta**).
IMPORTANT ADVICE: *The probe installed and configured of Boiler 1 can be utilized as the common ambient temperature probe for other boilers, if the other boilers suck in oxidizing air from the environment. If this is the case, select "YES" under the "Common Ambient Temperature Probe" item from the menu "Configuration: Boiler 2" > "Parameters" > "Parameters: Boiler 2". Obviously, the air probe of Boiler 1 can be used as the common ambient air temperature probe for the other boilers and install other probes for the direct measuring of the preheated oxidizing air temperature.*

Sub-menu	Value
Minimum range	0.00
Maximum range	100 or 400 ***(NOTE 1)***
Offset	0.00
Prealarm	Enter the value if required
Alarm	Enter the value if required
Alarm delay (s)	Enter the value if required
Prealarm delay (s)	Enter the value if required
Fault delay (s)	Enter the value if required
Store samples	YES

NOTE 1 *– Two probes can be utilized with different Full Scales on the basis of the connected utilization.*
Model TS325 = 0-400°C scale *for preheated oxidizing air.*
Model TS326 = 0-100°C scale *for oxidizing air and utilizable as a common ambient temperature probe.*

Smoke temperature probe

The *2-Fumes' temperature* is the TS325 probe to be installed on the flue expansion joint for measuring the fumes' temperature (**Tf**).

Sub-menu	Value
Minimum Full Scale	0.00
Maximum Full Scale	400
Offset	0.00
Prealarm	Enter the value if required
Alarm	Enter the value if required
Alarm delay (s)	Enter the value if required
Prealarm delay (s)	Enter the value if required
Fault delay (s)	Enter the value if required
Store samples	YES

Oxygen probe

The *3-Oxygen* is the TS236 probe for directly measuring the residual oxygen (**O_2**) in the fumes.

Sub-menu	Value
Minimum Full Scale	0.00
Maximum Full Scale	21.0 or 25.0 ***(NOTE 2)***
Offset	0.00
Not alarm band (max)	Enter the value if required
Not alarm band (min)	Enter the value if required
Alarm delay (s)	Enter the value if required
Fault delay (s)	Enter the value if required
Store samples	YES

NOTE 2 *– If the AN510/..O unit is utilized as an alternative to the TS236 or the TS237 for measuring the extracted oxygen, the Full Scale is* ***25.0%***
Examples:
Model TS236 o TS237 = 0÷21.0 % O_2
Model AN510../..O = 0÷25.0 % O_2

Carbon monoxide probe

The *4-Carbon monoxide* is the AN510 probe for measuring the extracted carbon monoxide (**CO**) in the fumes.

Sub-menu	Value
Minimum Full Scale	0.00
Maximum Full Scale	40000 ***(NOTE 3)***
Offset	0.00
Prealarm	Enter the value if required
Alarm	Enter the value if required
Alarm delay (s)	Enter the value if required
Prealarm delay (s)	Enter the value if required
Fault delay (s)	Enter the value if required
Store samples	YES

NOTE 3 *– Different Full Scales can be utilized on the basis of the AN510 model that is connected.*
Examples:
Model AN510../..C1 = 0-10000 ppm CO
Model AN510../..C2 = 0-4000 ppm CO
And other model up to 40000 ppm F.S.

Other probes

The *5-Probe 5, 6-Probe 6, 7-Probe 7 and 8-Probe 8* probes are configurable based on requirements. They can be configured for all parameters listed below.
The following indications, apart from those already illustrated are valid for the parameters of these probes (refer to the table on page 13).
The **Probe** type can be selected on the basis of which probe has been installed.
The **Alarm** is normally ascending which means the scale goes from 0 towards a positive Value and the alarms are activated by exceeding the Value set.
The **Unit of Measure** is chosen on the basis of the type of probe selected.

Sub-menu	Value
Probe type	Dpr (Vacuum) / Pr (Pressure) / NO / NO_2 / SO_2 / CH_4 amb / CH_4 combustion chamber
Alarm mode	**Ascending** / Descending
Minimum Full Scale	0.00
Maximum Full Scale	9999 ***(Maximum set Value)***
Offset	0.00
Unit of Measure	Pa / °C / LEL / mm / mg/Nm^3 / mg/KWh / ppm
Prealarm	Enter the value if required
Alarm	Enter the value if required
Alarm delay (s)	Inserire il valore se richiesto
Prealarm delay (s)	Inserire il valore se richiesto
Fault delay(s)	Inserire il valore se richiesto
Store samples	NO / **YES**

Burner hour counter

Selecting the "**8-Reset timer**" item zeroes the "***Ton***"; in other words, the sum of the functioning hours of the selected boiler's burner.

Do you want to reset? NO
Do you want to reset? YES
Reser completed

Events

Selecting from the main menu, the "**2-Events archive**" item visualizes the memorized events not yet printed or downloaded.

Events archive

10:23:07 12-04-05 System start
18:14:05 24-04-05 C2 CO faulty
18:25:36 24-04-05 Disabling

Availability of data over long periods

Storage capacity

1.Max=22500 Att=9408 Auton.=45.5 dd
2.Max=28125 Att=8757 Auton.=13.5 dd
3.Max=22500 Att=954 Auton.=149.6 dd
4.Max=22500 Att=954 Auton.=149.6 dd

Press a key

Selecting from the main menu, the "**3-*Samples archive***" item and next "**1-A*rchive status***" item, verifies how much autonomy the internal memory of the AN750 unit has, after having set all the above-described parameters. This depends on how many probes have been installed (configured "*Memorize samples YES*"), the "*Sampling time*" selected for each boiler, "*Parameters*" and the number of ignitions of the burner.
The autonomy indicated is the time within which it is necessary to manually print or download the data to a PC using the SW750RC management software. If the PC is always connected to the AN750 unit, this operation becomes automatic and the quantity of data memorisable depends only on the space available on the hard disk of the PC.

ATTENTION – IMPORTANT ADVICE : If the PC is not always connected to the AN750 unit, is recommended periodically controlling the quantity of memory available in the main menu, last line "MEM".

	Availability Table Data on the basis of the number of configured boilers			
CONFIGURED PROBES	**Boiler 1 (AN750/C1)**	**Boiler 2 (AN750/C2)**	**Boiler 3 (AN750/C3)**	**Boiler 4 (AN750/C4)**
Tf, O_2 and CO	694 days	347 days	231 days	173 days
Tf, O_2, CO, Dpr and Pr	496 days	248 days	165 days	124 days

The "*Table"* indicates the availability of data over long periods (Memorization autonomy). The values (expressed in days) are calculated considering: the *Sampling time* set at 10 minute intervals for all the configured boilers, a 24-hour functioning time of the boiler (Burner consensus ON) and also considering that the memorization of the values (data) is effectuated calculating the average of the values within the last 60 seconds of the *Sampling time* set.

View samples stored for each boiler

Samples archive

1 Archive status
2 Show boiler 1
3 Show boiler 2
4 Show boiler 3
5 Show boiler 4

Selecting from the main menu, the "***3-Samples archive*** " and then the boiler concerned with "**Show boiler**" displays the stored samples of the selected boiler, sorted by date.
Scroll up and down the stored samples, using the △ ▽ keys.

1st level code (Password)

Selecting from the main menu, the "**4-Password**" item, you can set, modify or cancel the password.
The password is an access key that protects the settings of the system from tampering by inexpert personnel. If wants to modify the configuration, enter the keyword correctly.

From the main menu, press key [4] to select the Password sub-menu.
Utilize the numerical keys to enter the code (maximum 8 numbers). Press the (ENTER) key to confirm.

Insert password: _ _ _ _ _ _

Insert password: * * * * * * * *
Reinsert password: _ _ _ _ _ _

New password stored

Once again, enter the same code to verify that it is correct. Then press (ENTER) key to confirm. From this moment on, all modification operations will be protected by the code (Password).

If the re-entered code is different, this message appears:
If this occurs, repeat the code entering operation.

ERROR
Different password

ATTENTION: To avoid tampering or making involuntary modifications to the configuration parameters set, it is recommended to modify the preset Password. Remember to write down and keep the Password code (maximum 6 numbers) in a safe and secure place.
If you lose the Password, contact our customer service, which will provide an emergency code

***Preset PASSWORD* = 2600**

Cancellation of the password

To delete or change the password you must selecting from the main menu, the "**4-Password**" item, enter your current password, then operate just like its setting. At the prompt, "**Enter Password**" leave all blank characters, if you want to delete it, or enter a new one.

Date and hour

Selecting from the main menu, the "**5-Clock**" item, you can adjusts the clock:
Utilize the numerical keys to enter the date in Day, Month and Year format (e.g., 9th February 2012 is 090212) and the hour in the Hour and Minutes format (e.g., 10 past 12 is 1210).

Press the ENTER key to confirm.

Clock
Date (DDMMYY) _ _ _ _ _ _
Hours (HHMM) _ _ _ _

Printer

Selecting from the main menu, the "**6-Printer status**" item, you can verifies the functional parameters of the printer.
If the paper is ABSENT, the paper roll could have finished or the door of the paper holder is open. The other parameters must be marked as OK. If not, there could be functioning problems of the printer head (temperature) or the electrical feed circuit of the printer (voltage). In this case, contact our service centre.

Printer status

Paper	**PRESENT**
Temperature	**OK**
Voltage	**OK**

2nd level Password

Selecting from the "Main Menu", the "**7-Save configuration**" item or the "**8-Load configuration**" item, a request is made to enter a Password.
These items are protected by a second level Password *that is reserved for service assistance personnel and cannot be used by the user*.

Language

Selecting fom the "Main Menu", "**09-Language** " you can select your preferred language from "**1 Italian**" or "**2-English**" or "**3 Francais**".

ModBus Adderss PCPort

Selecting from the "Main Menu", "**10 ModBus address PCPort**" you can select the ModBus Address (RTU binary) and the communication speed (2400, 4800, 9600 or 19200 baud), which takes place via the serial port RS232 or RS485 with the following parameters: no parity, 8 data bits, 1 stop bit.

ModBus address PCPort [00=OFF]: 0

ModBus address PCPort [00=OFF]: 1
ModBus speed : 2400

Reading the status of boilers, is done by the command Read Holding Registers (code 03). For each boiler are available 10 consecutive registers (from 0 to 9 for the first, from 100 to 109 for the second, and so on). Since the generated values are word (16-bit signed), in order to represent decimal numbers, certain values are multiplied by a coefficient, which is defined in the table opposite.
The data is updated approximately every second. The register of valid data, indicates whether or not to consider the data in other registers. The value becomes 1 when the boiler to the burner system, and becomes 0 when the burner is turned off.

Index	Description	Coefficient
0	Ambient Temperature (°Celsius)	10
1	Flue gas temperature (°Celsius)	1
2	Oxygen (%)	100
3	CO (ppm)	1
4	NO (ppm)	1
5	CO_2 (%)	10
6	Efficency (%)	10
7	Excess air (%)	10
8	Time (ore)	1
9	Valid data (0=NO, 1=SI)	1

***NOTE**: The address of the control panel is menu selectable and can be chosen between 1 and 100. If you set the address to 0 disables the Modbus protocol in favor of the native protocol to connect to the management software SW750.*

Printer

Selecting from the "Main Menu" "**11 PRINTER**" you can select with ▷ key, if the printer is "*Present*" or "*Absent*". Standard use is selected "Present" to enable printing functions described in the previous chapters.

Printer: Present

Printer: Absent

CAUTION: *If you choose "Absent" will be asked to select the ModBus address, as described in the previous section but using the communication port of the printer (terminal placed on the printed circuited and indicated with RS232-A). This port is available as a special version only available at time of order. In this case, there will be external to the AN750, the RS232 port, referred to as COM2 and a switch can manually turn on the printer as described in the Installation Manual attached to special realization.*

Firmware version and serial number

Selecting from the "Main Menu" "**12-Version info**" item, you can visualize the Tecnocontrol's address and web and e-mail references.

Version 1.x
Serial number NNNNNNN / NNNN
Tecnocontrol s.r.l.
Via Miglioli 47
20090 Segrate (MI)
Tel 02.26922890 Fax 02.2133734
Web: http://www.tecnocontrol.it
e-mail info@tecnocontrol.it

Technical characteristics of the AN750 central unit

Power supply	230V AC (-15/+10%) - 50 Hz (±10%)
Maximum absorbed power at 230V	35VA
Protection fuses	0.5A (5x20)
Operating temperature	Temperature from +5 to +45°C Humidity from 15% to 95%
Storage temperature	Temperature from -20 to 50°C Humidity from 15% to 98%

Analogical inputs (for each boiler installed)	4 analogical 4-20 mA linear passive 4 analogical 4-20 mA linear active with 19V DC output
Analogical inputs maximum charge	400 ohms
Logic inputs	2 ON/OFF for Fuels consensus and Burner consensus ON.
Outputs	3 general relays + 1 relay for each boiler module with voltage-free changeover contacts.
Relay capacity	3A (1A) – 230V AC

Serial port for the SW750RC management software (optional)	1 x RS232 serial port (1 x RS485 serial port as an optional)

Display	Blue background-illuminated LCD graphic display, ¼" VGA STN 320 x 240 pixel
Printer	Thermal graphic 203 dpi with easy paper loading
Thermal paper	Rolls 57.5 mm wide
Keypad	Numerical keys and function keys

Dimensions (H x W x D)	370 x 317 x 150 mm
Mounting	Wall-mounting using 3 wall plugs
Degree of protection	IP65
Weight	Approximately 5 kgs

Technical characteristics of the ES750(*) boiler expansion printed circuit board

Analogical inputs (for each boiler installed)	4 x 4-20 mA linear passive 4 x 4-20 mA linear active with 19V DC output
Analogical inputs maximum charge	400 ohms
Logic inputs	2 ON/OFF for Fuels consensus and Burner consensus ON.
Outputs	1 relay with voltage-free changeover contacts
Relay capacity	3A (1A) – 230V AC

(*) Installable in the AN750 to obtain the maximum configuration for 4 boilers. In other words, YES can add 3 ES750 to the AN750/C1, 2 ES750 to the AN750/C2, 1 ES740 to the AN750/C3 and nothing to the AN750/C4 because it is complete.

Table of peripheral units that can be connected to the AN750 (Max. 8 for each boiler)

Initials	To measure	Model	F.S. Min	F.S. Max	Unit of Measure	Input number	Probe nr. Configuration
Ta [1]	Oxidizing air temperature	**TS345**	0	400	°C	I1	1
	Ambient air temperature	**TS346**	0	100	°C	I1	1
Tf	Fume's temperature	**TS345**	0	400	°C	I2	2
O_2	Oxygen	**TS236**	0	21.0	%	I5	3
CO	Carbon monoxide	**AN510** [2]	0	1000	ppm	I6	4
NO	*Nitrogen oxide (option)*		0	1000	ppm	I7	7
SO_2	*Sulphur dioxide (option)*		0	1000	ppm	I8	8
CH_4 amb	METHANE *in the environment*	**TS292KM**	0	20	%LIE	I3	5
CH_4 cam	METHANE *into combustion chamber*	**AN400/I**	0	100	%LIE	I4	6
Dep	Depression *to Chimney base*	**TS352** [3]	0	200	mm or Pa	I3	5
Pr	Pressure *into combustion chamber*		0	200	mm or Pa	I4	6

[1] *Choose one of the two probes indicated.*

[2] *The standard AN510 unit only has the CO sensor with a 0-1000ppm scale; the other sensors can be added on request. Different Full Scales (max 40000 ppm) can be utilized on the basis of the model of AN510 connected and sensors installed. Always refer to the technical specifications of the AN510 instructions.*

[3] *If you utilize this probe; it is not possible to use the TS292KM and the AN40/I.*

Password reminder and customer notes

It is recommended to fill the form with the parts "Password", "Installation date" and "Serial number" as a reminder.

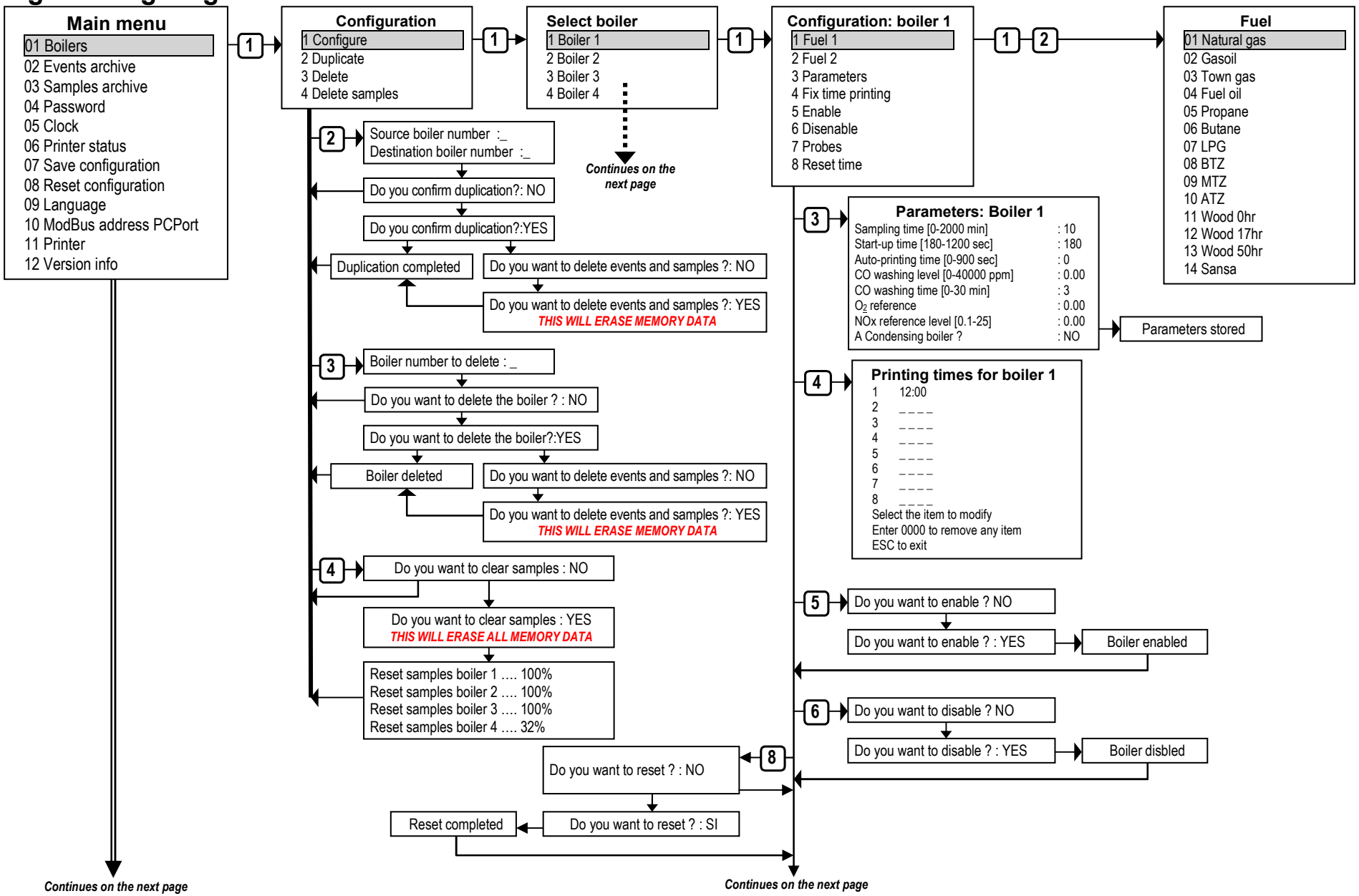
Furthermore, it is recommended to conserve this and other documentation supplied with the peripheral units in the technical documentation folder of the district heating central boiler plant.

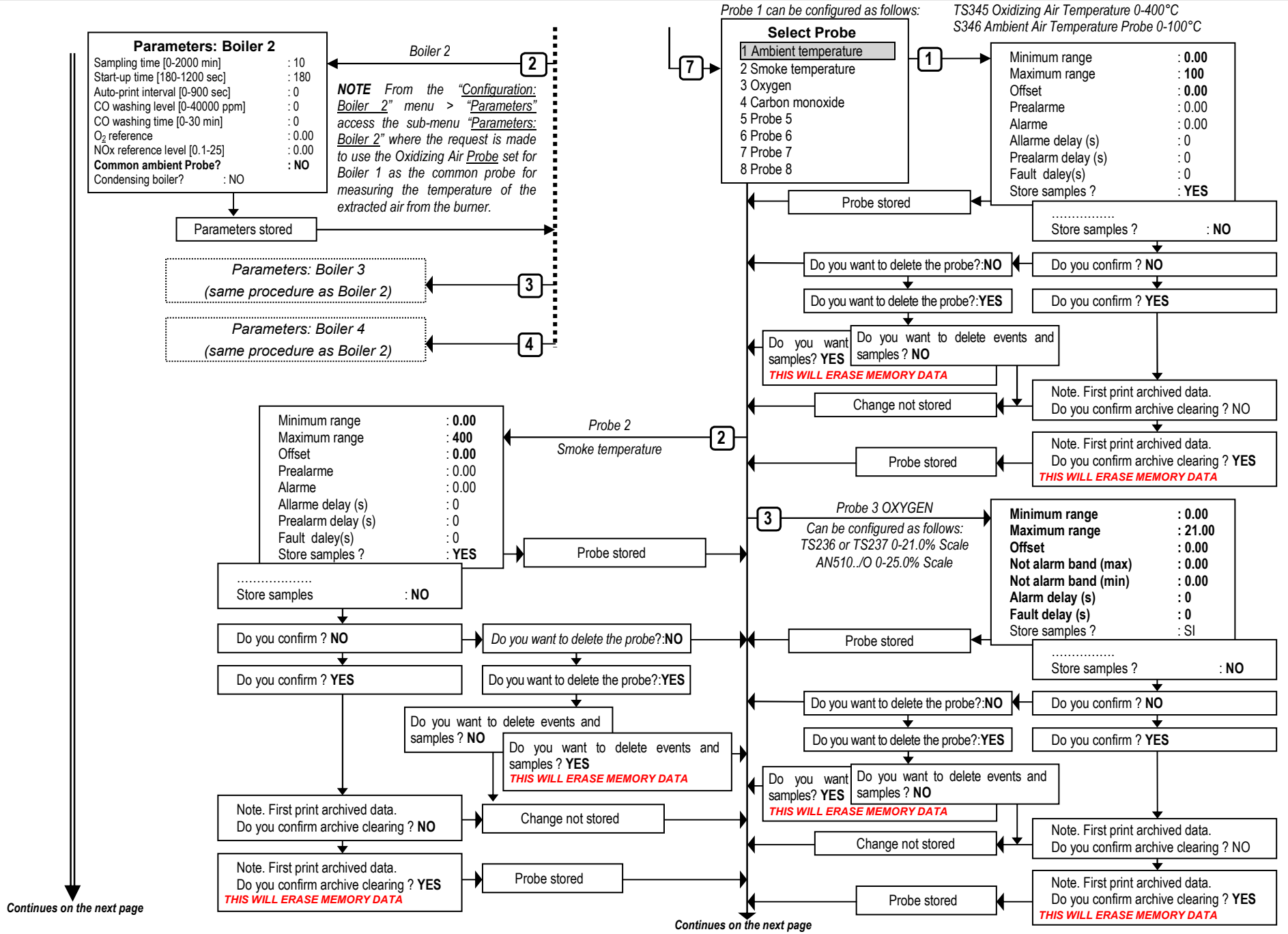
N.B.

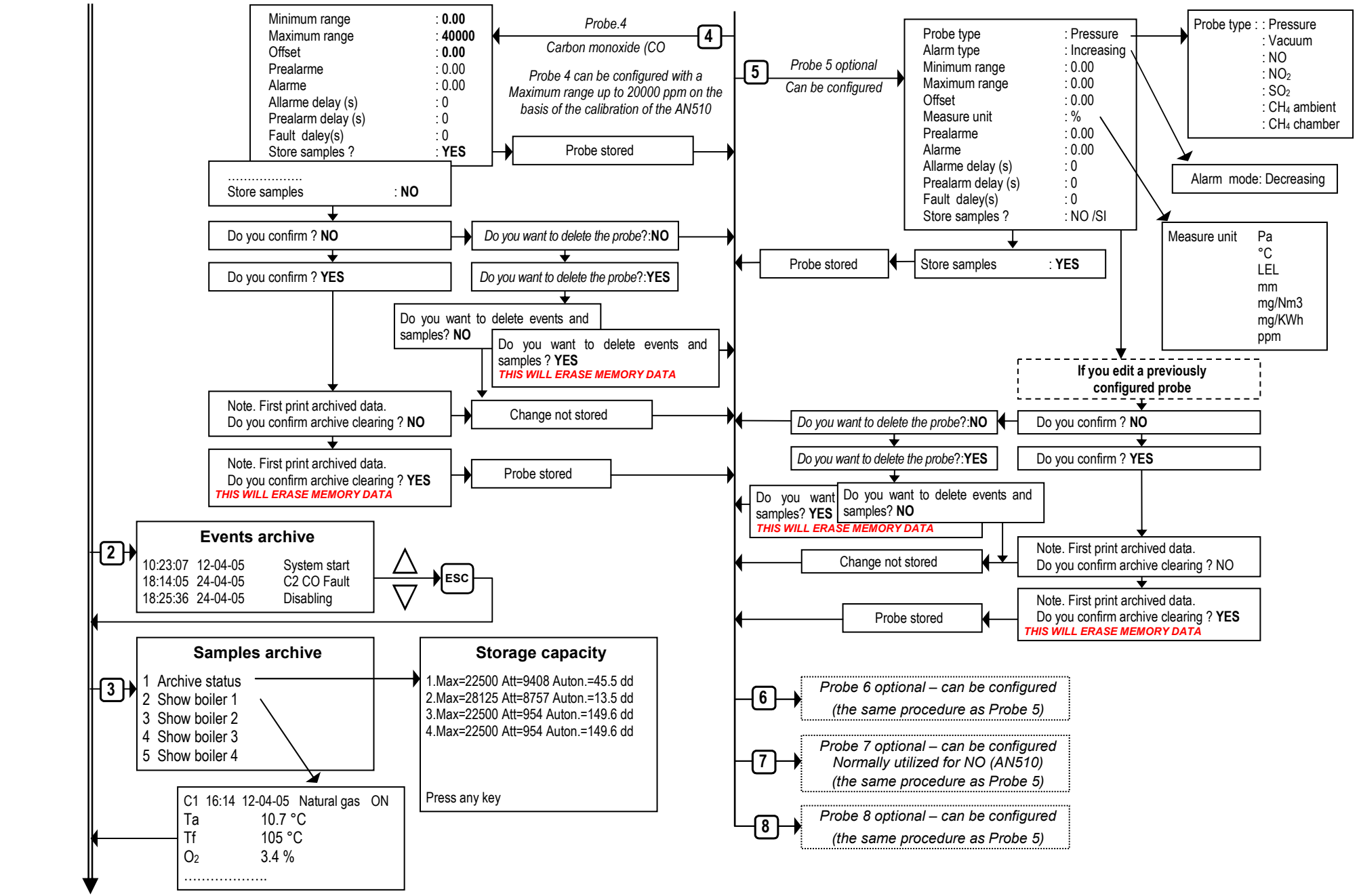
Password	***Installation date***	***Serial number***

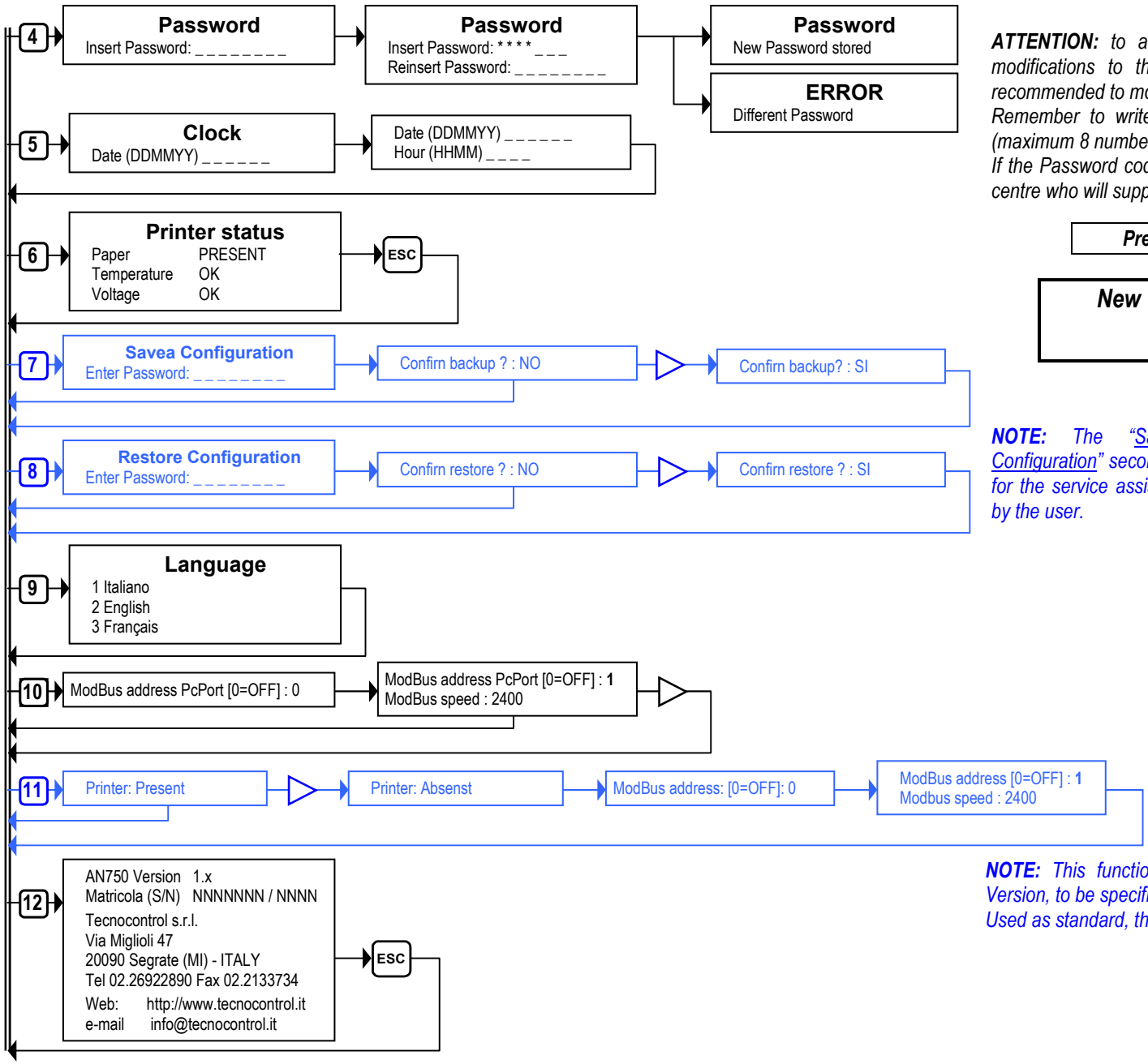
ATTENTION: it is recommended to write and store the password (max 6 numbers) in a safe place. In case of loss of the Code, contact our customer service, which will provide an emergency code.

Programming diagram




Parameters: Boiler 2
Sampling time [0-2000 min] : 10
Start-up time [180-1200 sec] : 180
Auto-print interval [0-900 sec] : 0
CO washing level [0-40000 ppm] : 0
CO washing time [0-30 min] : 0
O2 reference : 0.00
NOx reference level [0.1-25] : 0.00
Common ambient Probe? : NO
Condensing boiler? : NO
Boiler 2
2
NOTE From the "Configuration: Boiler 2" menu > "Parameters" access the sub-menu "Parameters: Boiler 2" where the request is made to use the Oxidizing Air Probe set for Boiler 1 as the common probe for measuring the temperature of the extracted air from the burner.
Parameters stored
Parameters: Boiler 3
(same procedure as Boiler 2)
3
Parameters: Boiler 4
(same procedure as Boiler 2)
4
Probe 1 can be configured as follows:
TS345 Oxidizing Air Temperature 0-400°C
S346 Ambient Air Temperature Probe 0-100°C
7
Select Probe
1 Ambient temperature
2 Smoke temperature
3 Oxygen
4 Carbon monoxide
5 Probe 5
6 Probe 6
7 Probe 7
8 Probe 8
1
Minimum range : 0.00
Maximum range : 100
Offset : 0.00
Prealarme : 0.00
Alarme : 0.00
Allarme delay (s) : 0
Prealarm delay (s) : 0
Fault daley(s) : 0
Store samples ? : YES
Probe stored
Store samples ? : NO
Do you want to delete the probe?:NO
Do you confirm ? NO
Do you want to delete the probe?:YES
Do you confirm ? YES
Do you want to delete events and samples ? NO
Do you want to delete events and samples? YES
THIS WILL ERASE MEMORY DATA
Change not stored
Note. First print archived data.
Do you confirm archive clearing ? NO
Probe stored
Note. First print archived data.
Do you confirm archive clearing ? YES
THIS WILL ERASE MEMORY DATA
Probe 2
Smoke temperature
2
Minimum range : 0.00
Maximum range : 400
Offset : 0.00
Prealarme : 0.00
Alarme : 0.00
Allarme delay (s) : 0
Prealarm delay (s) : 0
Fault daley(s) : 0
Store samples ? : YES
Probe stored
Store samples : NO
Do you confirm ? NO
Do you want to delete the probe?:NO
Do you confirm ? YES
Do you want to delete the probe?:YES
Do you want to delete events and samples ? NO
Do you want to delete events and samples ? YES
THIS WILL ERASE MEMORY DATA
Note. First print archived data.
Do you confirm archive clearing ? NO
Change not stored
Note. First print archived data.
Do you confirm archive clearing ? YES
THIS WILL ERASE MEMORY DATA
Probe stored
3
Probe 3 OXYGEN
Can be configured as follows:
TS236 or TS237 0-21.0% Scale
AN510../O 0-25.0% Scale
Minimum range : 0.00
Maximum range : 21.00
Offset : 0.00
Not alarm band (max) : 0.00
Not alarm band (min) : 0.00
Alarm delay (s) : 0
Fault delay (s) : 0
Store samples ? : SI
Probe stored
Store samples ? : NO
Do you want to delete the probe?:NO
Do you confirm ? NO
Do you want to delete the probe?:YES
Do you confirm ? YES
Do you want to delete events and samples ? NO
Do you want to delete events and samples? YES
THIS WILL ERASE MEMORY DATA
Note. First print archived data.
Do you confirm archive clearing ? NO
Change not stored
Note. First print archived data.
Do you confirm archive clearing ? YES
THIS WILL ERASE MEMORY DATA
Probe stored
Continues on the next page
Continues on the next page


Minimum range : 0.00
Maximum range : 40000
Offset : 0.00
Prealarme : 0.00
Alarme : 0.00
Allarme delay (s) : 0
Prealarm delay (s) : 0
Fault daley(s) : 0
Store samples ? : YES
Probe.4
Carbon monoxide (CO
Probe 4 can be configured with a Maximum range up to 20000 ppm on the basis of the calibration of the AN510
4
Probe stored
.....
Store samples : NO
Do you confirm ? NO
Do you want to delete the probe?:NO
Do you confirm ? YES
Do you want to delete the probe?:YES
Do you want to delete events and samples? NO
Do you want to delete events and samples ? YES
THIS WILL ERASE MEMORY DATA
Note. First print archived data.
Do you confirm archive clearing ? NO
Change not stored
Note. First print archived data.
Do you confirm archive clearing ? YES
THIS WILL ERASE MEMORY DATA
Probe stored
2
Events archive
10:23:07 12-04-05 System start
18:14:05 24-04-05 C2 CO Fault
18:25:36 24-04-05 Disabling
ESC
3
Samples archive
1 Archive status
2 Show boiler 1
3 Show boiler 2
4 Show boiler 3
5 Show boiler 4
Storage capacity
1.Max=22500 Att=9408 Auton.=45.5 dd
2.Max=28125 Att=8757 Auton.=13.5 dd
3.Max=22500 Att=954 Auton.=149.6 dd
4.Max=22500 Att=954 Auton.=149.6 dd
Press any key
C1 16:14 12-04-05 Natural gas ON
Ta 10.7 °C
Tf 105 °C
O2 3.4 %
.....
Continua nella prossima pagina
5
Probe 5 optional
Can be configured
Probe type : Pressure
Alarm type : Increasing
Minimum range : 0.00
Maximum range : 0.00
Offset : 0.00
Measure unit : %
Prealarme : 0.00
Alarme : 0.00
Allarme delay (s) : 0
Prealarm delay (s) : 0
Fault daley(s) : 0
Store samples ? : NO /SI
Probe type : : Pressure
: Vacuum
: NO
: NO2
: SO2
: CH4 ambient
: CH4 chamber
Alarm mode: Decreasing
Measure unit Pa
°C
LEL
mm
mg/Nm3
mg/KWh
ppm
Store samples : YES
Probe stored
If you edit a previously configured probe
Do you confirm ? NO
Do you want to delete the probe?:NO
Do you confirm ? YES
Do you want to delete the probe?:YES
Do you want to delete events and samples? NO
Do you want to delete events and samples? YES
THIS WILL ERASE MEMORY DATA
Note. First print archived data.
Do you confirm archive clearing ? NO
Change not stored
Note. First print archived data.
Do you confirm archive clearing ? YES
THIS WILL ERASE MEMORY DATA
Probe stored
6
Probe 6 optional – can be configured
(the same procedure as Probe 5)
7
Probe 7 optional – can be configured
Normally utilized for NO (AN510)
(the same procedure as Probe 5)
8
Probe 8 optional – can be configured
(the same procedure as Probe 5)



ATTENTION: *to avoid tampering or making involuntary modifications to the configuration parameters set, it is recommended to modify the preset* ***Password****.*
Remember to write down and keep the Password code (maximum 8 numbers) in a safe and secure place.
If the Password code is lost, contact our service assistance centre who will supply an emergency code.

Preset PASSWORD = 2600

New Customer PASSWORD

_ _ _ _ _ _ _ _

NOTE: *The "Save Configuration" and "Restore Configuration" second level Passwords are codes reserved for the service assistance personnel and are not utilzable by the user.*

NOTE: *This function is only utilizabile such as: Specia Version, to be specified when ordering.*
Used as standard, the printer is selected: "Present" .