



**Model 2000
Programmer
EnSonic
Display & Control Unit**

Document code: 10735.M2KCNF.001

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Date January 25, 2004

Publisher Instromet International N.V.

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Revision History	<u>Revision</u>	<u>Remark</u>	<u>Date</u>
	001	First release	25-01-2004

Preface

This document covers the configuration software for the M2000 flow computer which can be used as display and control unit for the EnSonic.

For EnSonic applications the M2000 is configured using the 'Model 2000 Programmer' software. The version 'V3.81e' described in this manual has been used throughout the development of the system and is likely to undergo minor changes. However, the main functionality of the program will not be altered.

Related documents:

'EnSonic Installation Manual'	code: 10735.M2KCNF.001	dd 20-01-2004
'EnSonic User Manual'	code: 10735.USER.002	dd 20-01-2004
'EnSonic Programmer'	code: 10735.ENSCNF.001	dd 25-01-2004
'Model 2000 Gas Flow Computer'	code: Model 2000 issue 6, 202/09-02	dd 16-09-2002

General requirements

The M2000 configuration program runs under the Windows operating systems 95, 98, ME, 2000 and XP. There are no special requirements for the amount of free memory or free hard disk space and the configuration program with sub-directories and related files requires about 32 MB of hard disk space.

The program requires a serial communication port (COM-port) to communicate with the M2000. Systems with USB-ports only can use USB- to COM-port converters. Positive experience has been gained with both programs running simultaneously under Windows-XP and -2000 using EdgePort/4 and Edgeport/8 converters.

The communication between the configuration software and the M2000 takes place via the USB port on the front of the M2000. The connection cable between M2000 and PC should be A to A USB port style.

Startup

The configuration program is started by double-clicking on the program icon, directly after startup a username and password must be entered, see fig 1.



Figure 1, Startup screen

Since all parameters determining the operation of the M2000 can be accessed when in the highest security mode dedicated user accounts may be generated to hide or allow read-only access to specific windows. The username and password may therefore be installation dependent.

After supplying a proper username and password a 'Unit Connection List' window is displayed with a list of configured devices. After setting the proper COM:-port a connection with the unit can be opened by selecting the reference 'EnSonic' and choosing the 'Connect' option is see fig 2. The COM:-port setting can be changed via *Options* in the program's main menu.

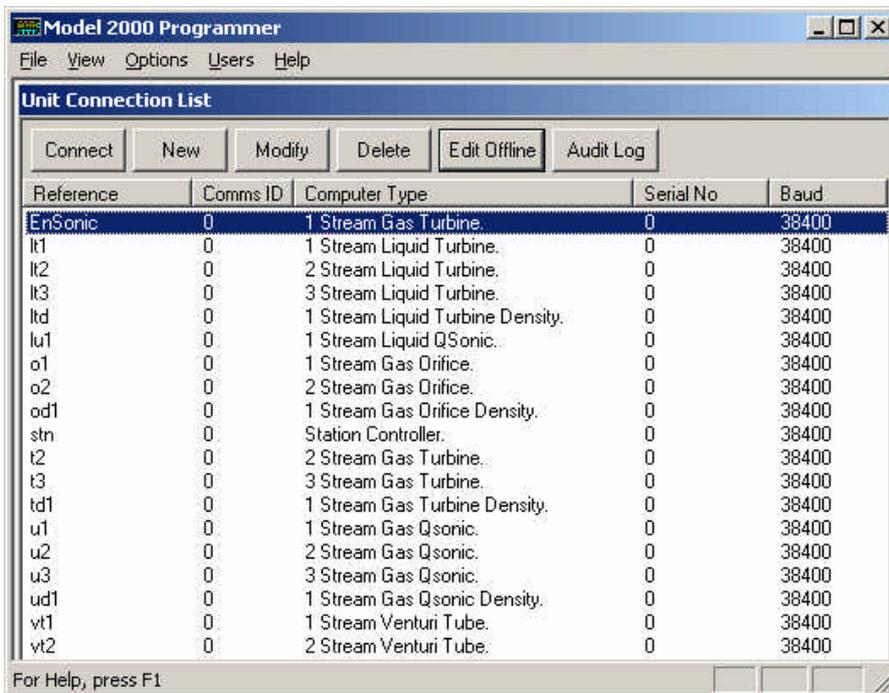


Figure 2, Unit Connection List

In certain situations it may be necessary to configure the unit offline, in this case the *Edit Offline* option must be selected. Keep in mind that when using the *Edit Offline* option the instrument's setup is not read from the unit and that overwriting the unit's setup may cause serious malfunctions. Also when using the *Connect*

option in which the setup is read from the unit prior to entering the edit mode, it is good practice to save the unit's current setup prior to making changes and to save modified setups using appropriate names prior to updating the unit's internal setup.

After establishing a connection with the M2000 a window is opened in which the unit's setup can be modified. By selecting the proper icon in the left part of the window a topic related page is opened in which the topic related data can be modified. Depending on the security level, certain pages may be hidden or read only.

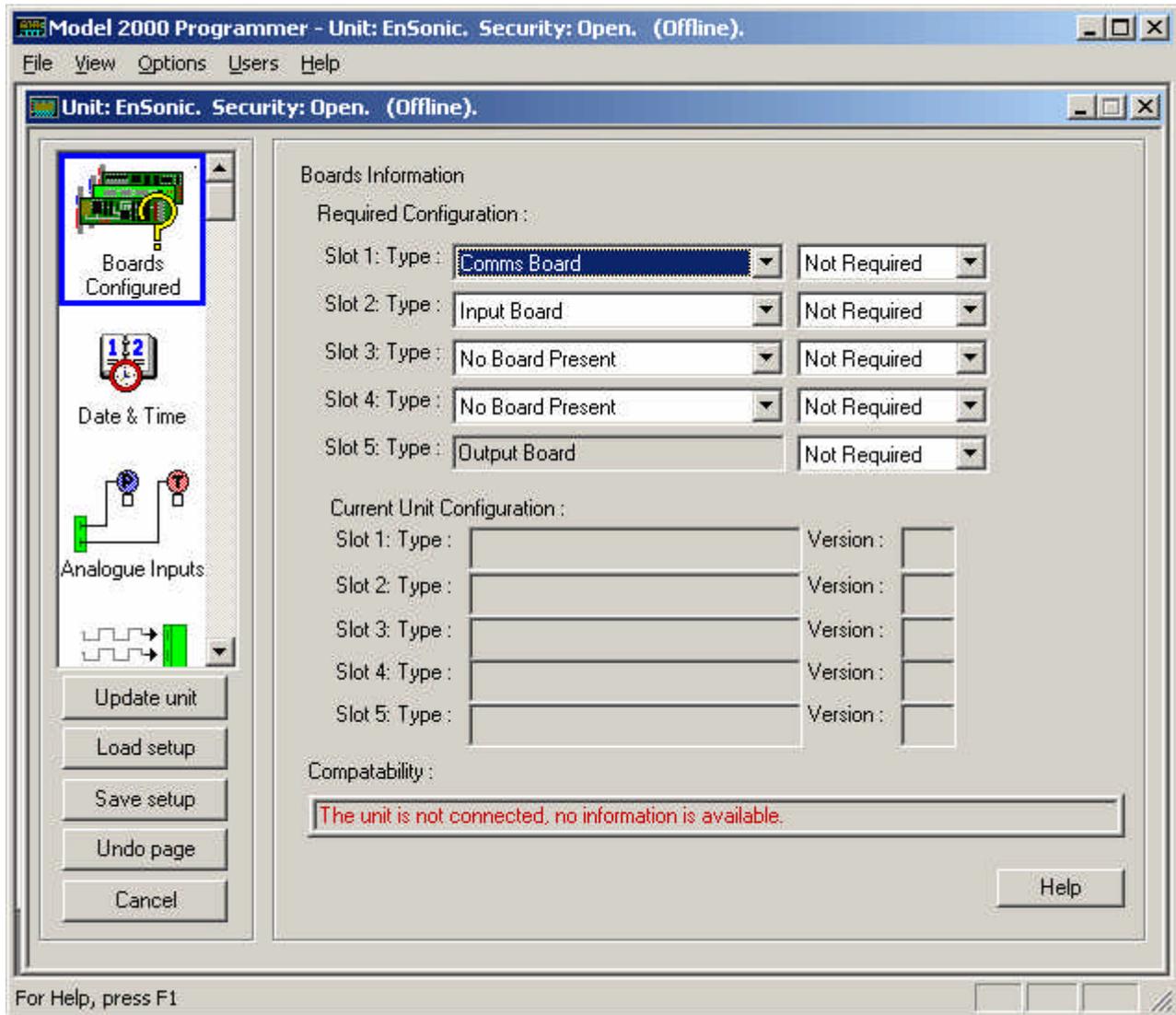
After modifying specific parameters, the new setup must be downloaded to the unit by selecting the Update button. Setup's may be Saved and Loaded. The Undo option only operates on the currently selected page. When switching to a different page the modifications cannot be Undone.

Setup Pages

In the following sections the different setup pages are presented. Since the M2000 is used in many instruments and systems it can be configured in many ways and therefore only the pages relevant to the operation of the EnSonic are presented.

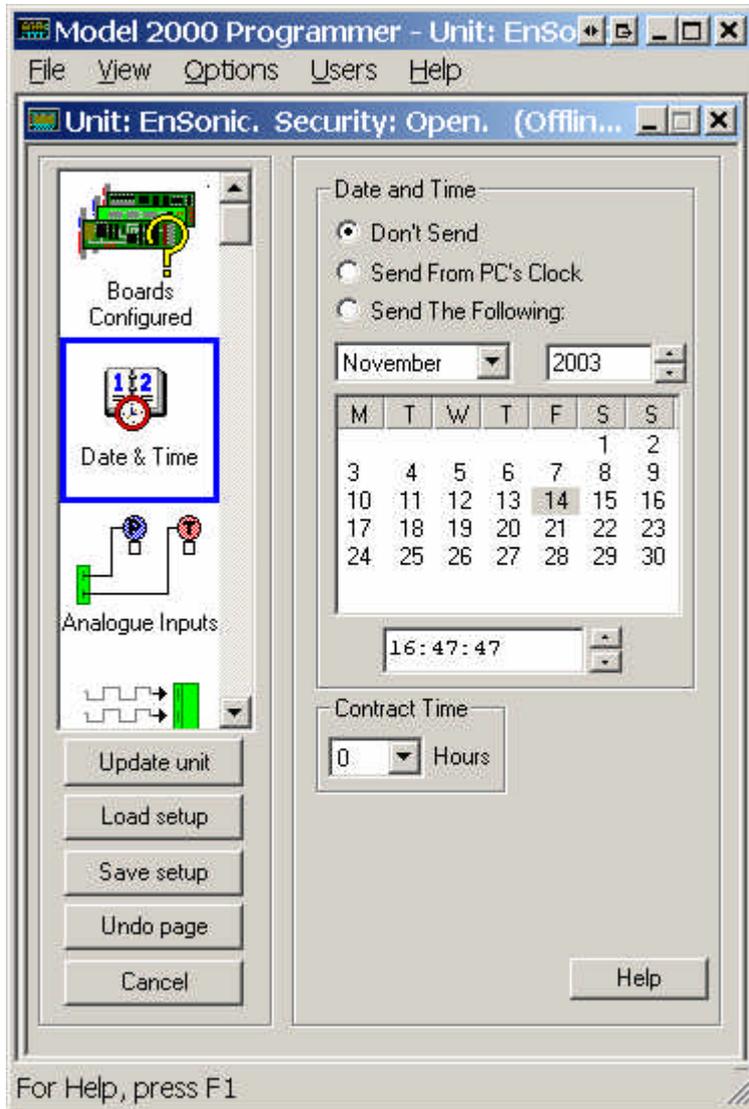
Boards Configured

On this page the boards currently installed in the M2000 are presented. The M2000 should be equipped with an input board and an output board. Normally the M2000 has been setup during manufacturing so no modifications need to be made to this page.



Date and Time

Used to set the clock and the contract time of the M2000. The battery back-up of the M2000 must be enabled otherwise the date and time information will be lost when the unit is switched off. The M2000 date and clock information is used to update the time and date of the EnSonic unit on a regular basis.

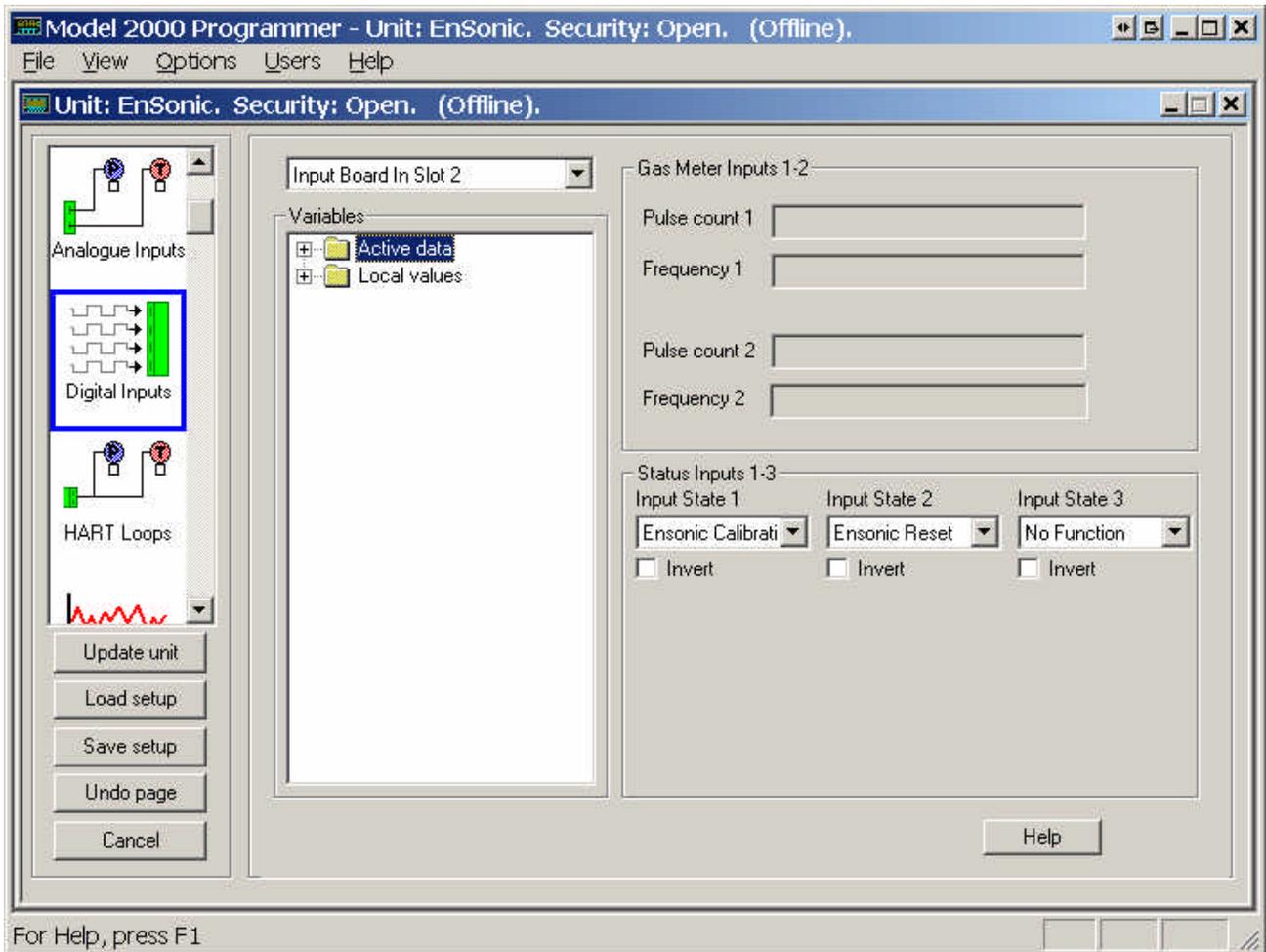


Analogue Inputs

This page is not used.

Digital Inputs

Used to configure the digital inputs of the M2000. The function of the 'Status Inputs 1-3' can be selected via the pull down list, the relevant selections are: 'Ensonic Calibration' and 'Ensonic Reset'. When the specific input is activated for approx. 1 sec the calibration or reset command is recognised. The inputs can be Inverted. Normally the inputs are connected via a relay to the 24 VDC supply on the backside of the unit, see the M2000 hardware manual for details.



The three digital inputs are located on the back of the M2000: Output Board terminals A1, B3 and A3. Jumpers 6, 8 & 10 on the input board have to be fitted.

Hart Loops

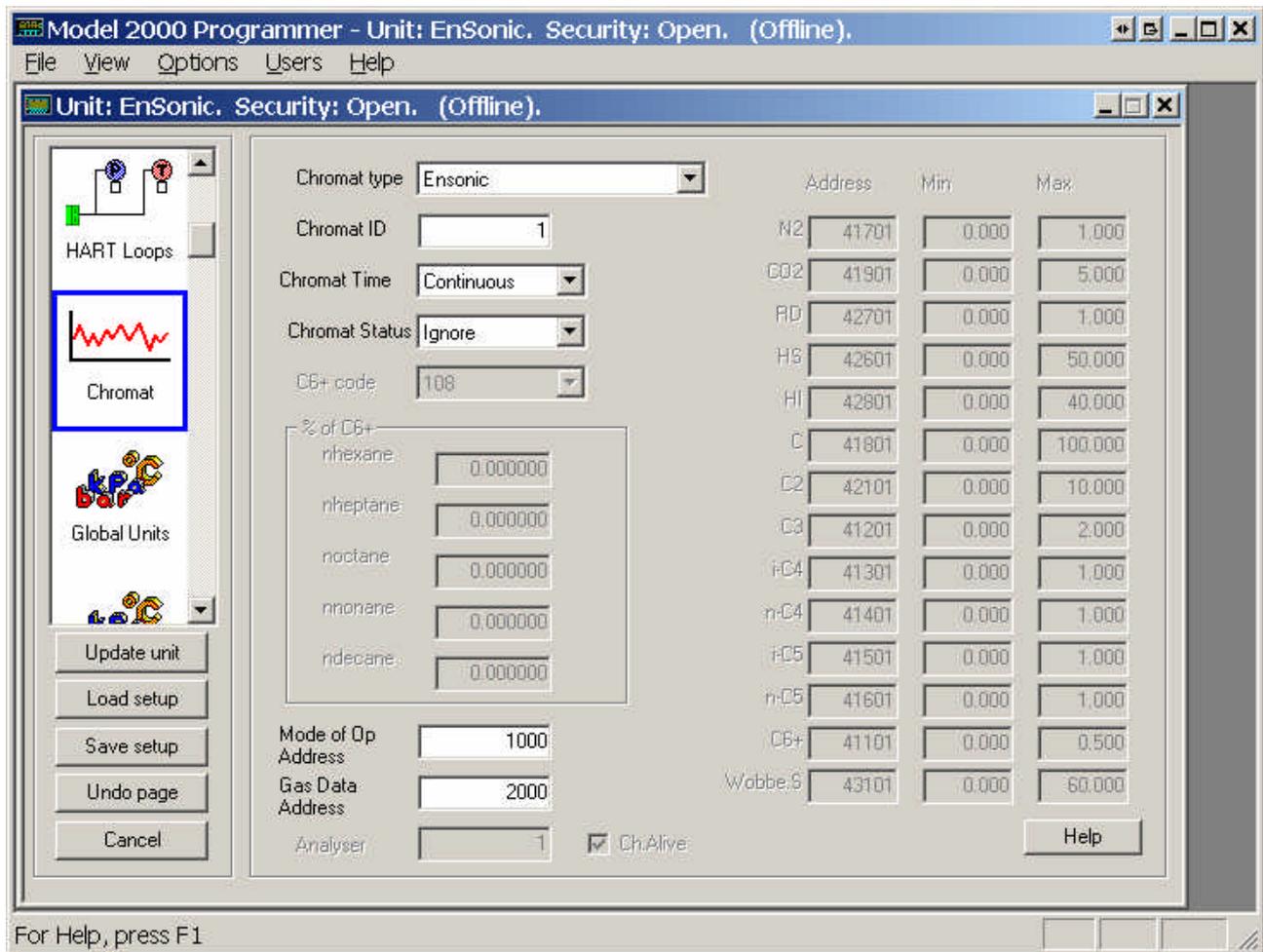
This page is not used.

Chromat

This page presents the parameters used to communicate with Chromatograph like equipment like the EnSonic.

Available items:

- Chromat type: EnSonic must be selected here.
- Chromat ID: identity number of unit, default: 1
- Chromat Time: time interval for polling the EnSonic, default: continuous
- Chromat Status: how to react on chromat status, default: Ignore
- Mode of Op Address: Modbus address where the mode of operation of the chromat device is presented, must match the Modbus setting of the EnSonic
- Gas Data Address: the Modbus start address where the measurement data is presented, the length of the data block is fixed and hard coded. This setting must match the Modbus setting of the EnSonic.



Global Units

This page is not used.

Station Units

This page is not used.

Station Pressure & Temperature 1 and 2

This page is not used.

Turbine 1

This page is not used.

MT Pressure 1

This page is not used.

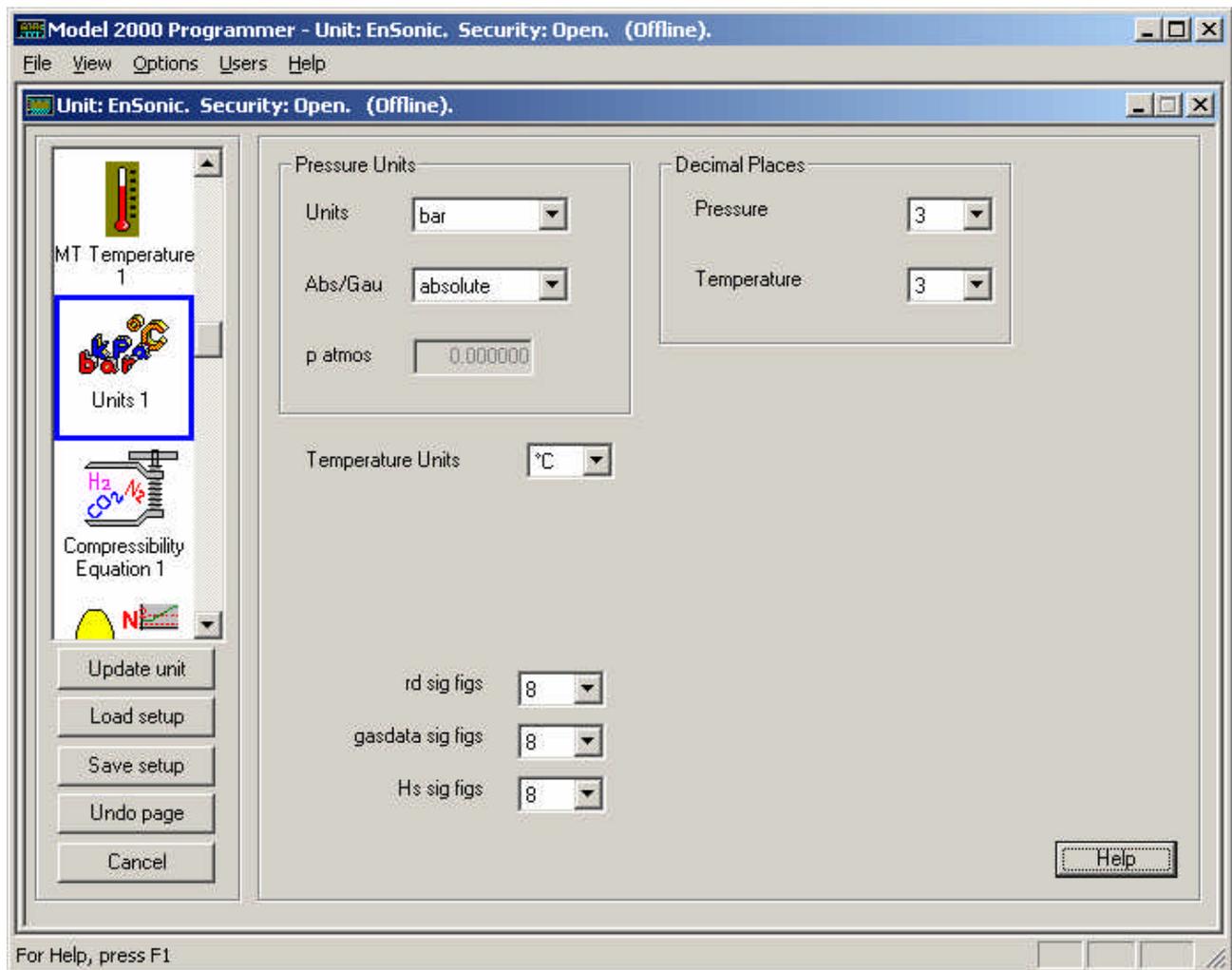
MT Temperature 1

This page is not used.

Units 1

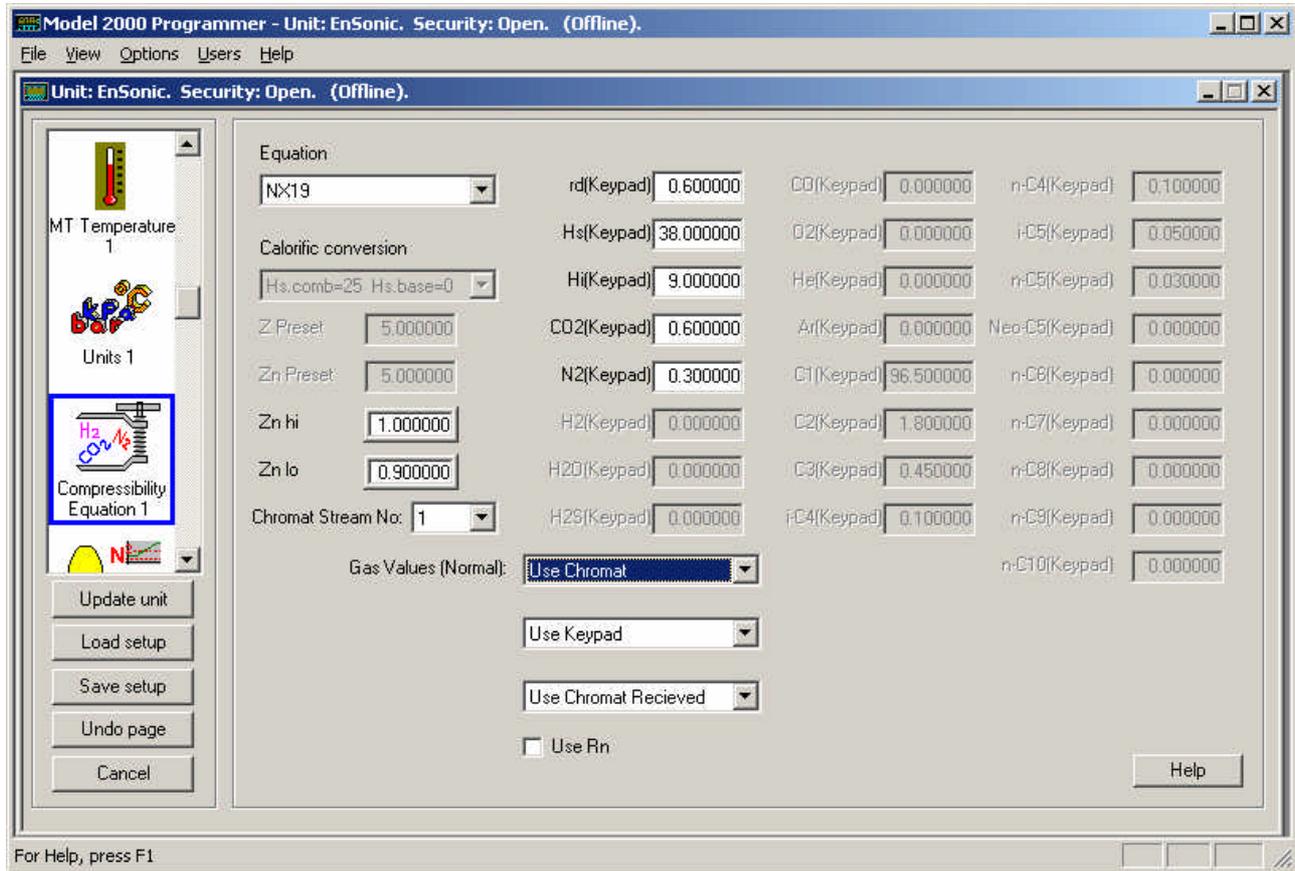
On this page the number of significant digits can be set for various parameters:

- rd sig figs : number of significant digits for the relative density
- gasdata sig figs : number of significant digits for the gasdata
- Hs sig figs : number of significant digits for the heating value



Compressibility Equation 1

The only relevant parameter on this page is the 'Chromat Stream No'. If this parameter is not set the M2000 simply does not poll the EnSonic Modbus registers. Default value: 1.



Gas Data Alarms 1

This page is not used.

Relative Density Meter 1

This page is not used.

Scaling Factors 1

This page is not used.

Preset Counters 1

This page is not used.

Base Conditions 1

This page is not used.

Mode Switch 1

This page is not used.

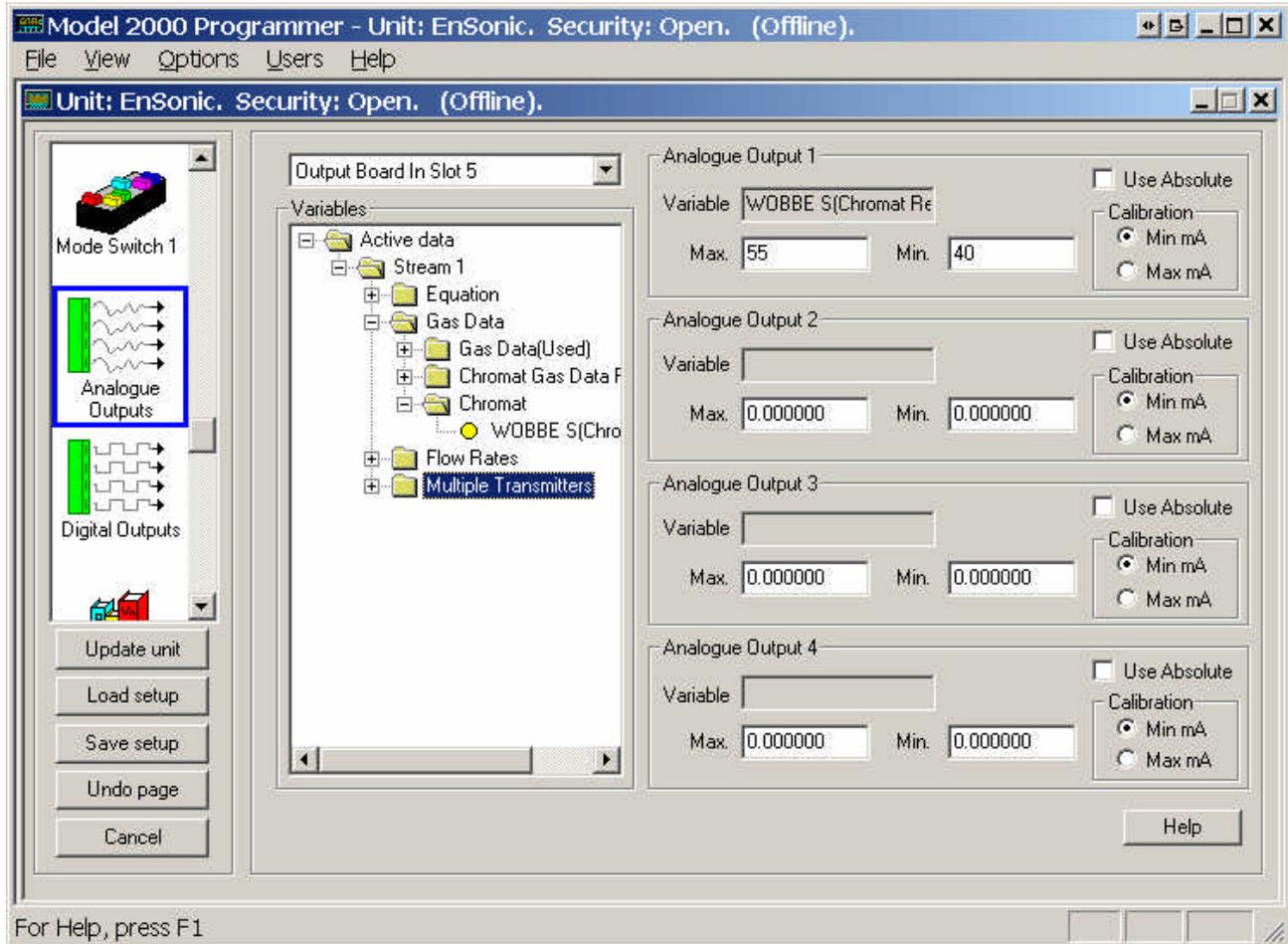
Analogue Outputs

On this page the 4-20 mA current outputs of the M2000 can be configured. Each output is configured easily by dragging and dropping the required parameter in the Variable box and setting the upper and lower limit.

Available items (per output):

- Variable: the selected output parameter
- Max / Min: upper and lower value of the range of the selected output parameter.
- Use Absolute: converts negative numbers to positive ones
- Calibration Min / Max mA: when calibrating output use min or max current.
-

The current output range (0-20 mA or 4-20 mA) is determined by jumper settings on the output board.



The analog outputs are located on the back of the M2000: Output Board terminals A13 / B13, A14 / B14, A15 / B15 and A16 / B16; terminal row A: positive (+) , terminal row B: negative (-).

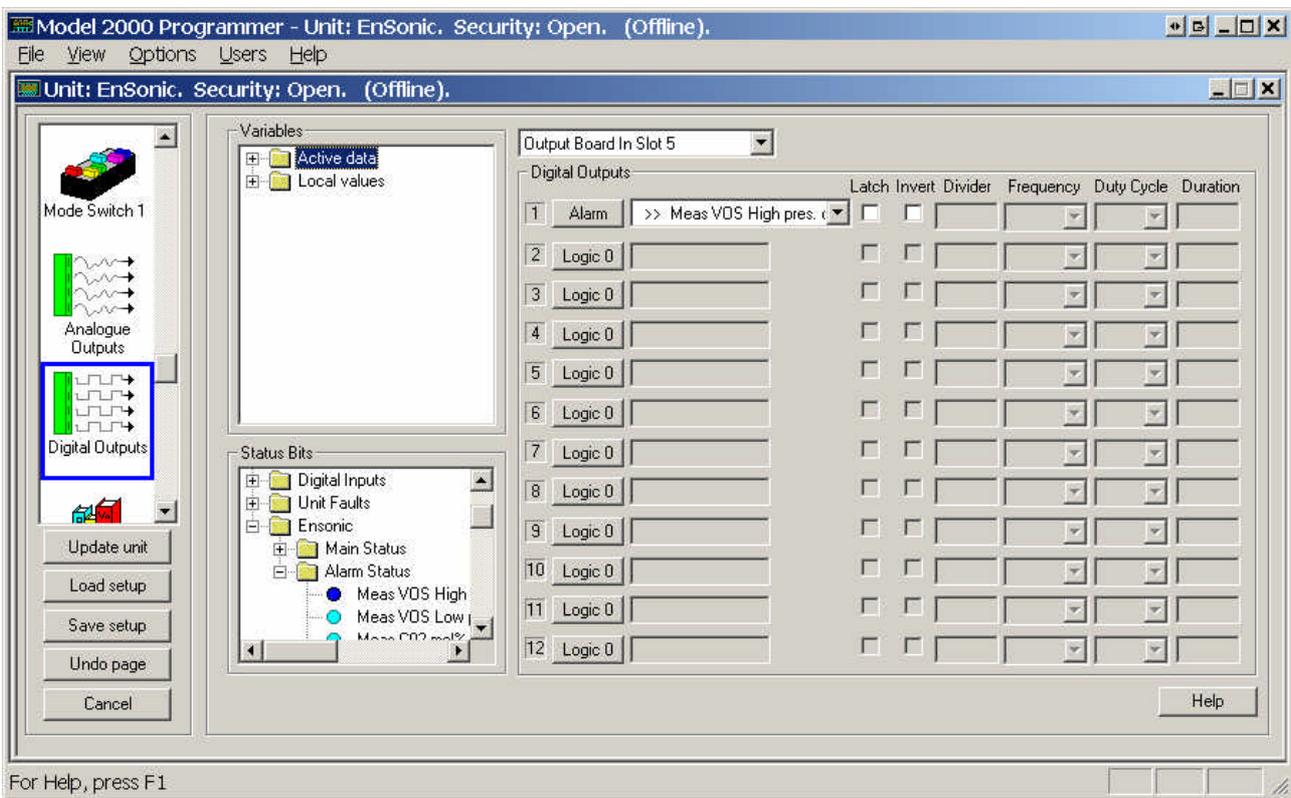
Digital outputs

On this page the settings of the digital outputs are displayed. Each output board in the M2000 has 12 digital outputs which can be configured in many ways. The outputs are configured easily by selecting the proper function (: 'Alarm') and dragging and dropping the selected parameter to the output box.

Available items (per digital output):

- Output function: button to select between: 'Logic 0', 'Logic 1', 'Alarm', 'Pulse', 'Flow Dir', 'Swt Inp' and 'Valve'; for the EnSonic all outputs are set to 'Alarm'
- Output parameter: when the 'Alarm' function is selected a text box appears on the right side of the selection button and items from the tree structure in the left part of the page can be dragged to this text box. More than one item can be placed in a text box in which case the alarm conditions are OR-ed.
- Latch: -
- Invert: the state of the output is inverted

Details on how to connect the digital outputs are given in the M2000 manual.



The digital outputs are located on the back of the M2000: Output Board terminals A1 / B1, ..., A12 / B12. Normally these outputs are used to drive external relays.

Logging

This page is not used.

Modbus

This page is not used.

Data To Print

This page is not used.

Print Jobs

This page is not used.

Ports

On this page the settings of the communication ports can be changed.

Available items:

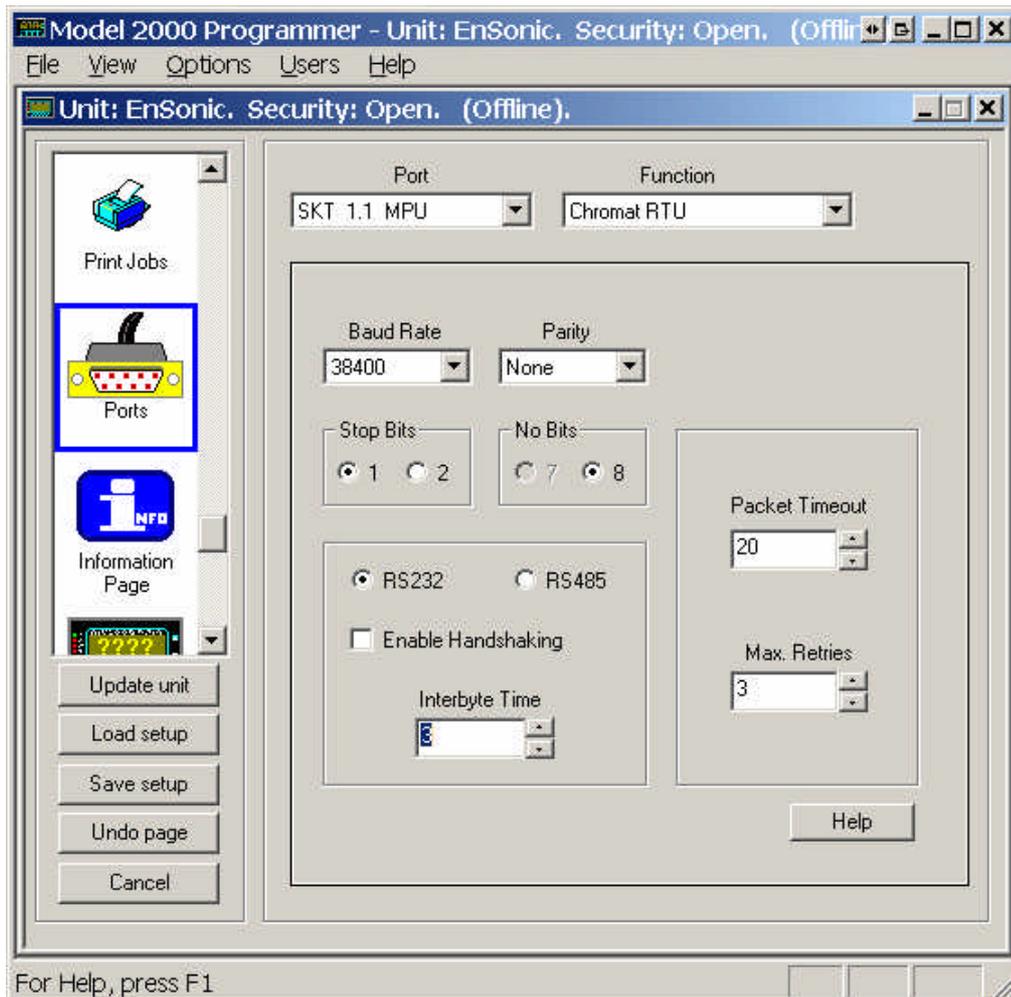
- Port: the M2000 unit has 2 ports (SKT 1.1 MPU and SKT 1.2 MPU) which can be configured independently
- Function: selection of the various output modes, for the EnSonic 'Chromat RTU' should be selected

And per port the following items can be set:

- Baud rate: communication speed, default: 38400
- Parity: parity checking, default: none
- Stop bits: 1 or 2 stop bits, default: 1
- No bits: total number of bits, default 8
- RS232 / RS485: function select
- Enable handshaking: hardware handshake enabled when selected
- Interbyte time: time delay between successive bytes, default: 3
- Packet timeout: default 20
- Max. Retries: number of retries before alarm is raised.

Remarks:

- the settings of the port used for communication with the EnSonic must match the settings of the EnSonic Port
- the pin settings of the 9-pin sub-D connector for the RS232 protocol (pins 2, 3 and 5) are different from the pin setting for the RS485 protocol (pins 6 and 9), see the M2000 manual for details.
- the communication ports are located on the back of the M2000: MPU board SKT 1 and SKT 2

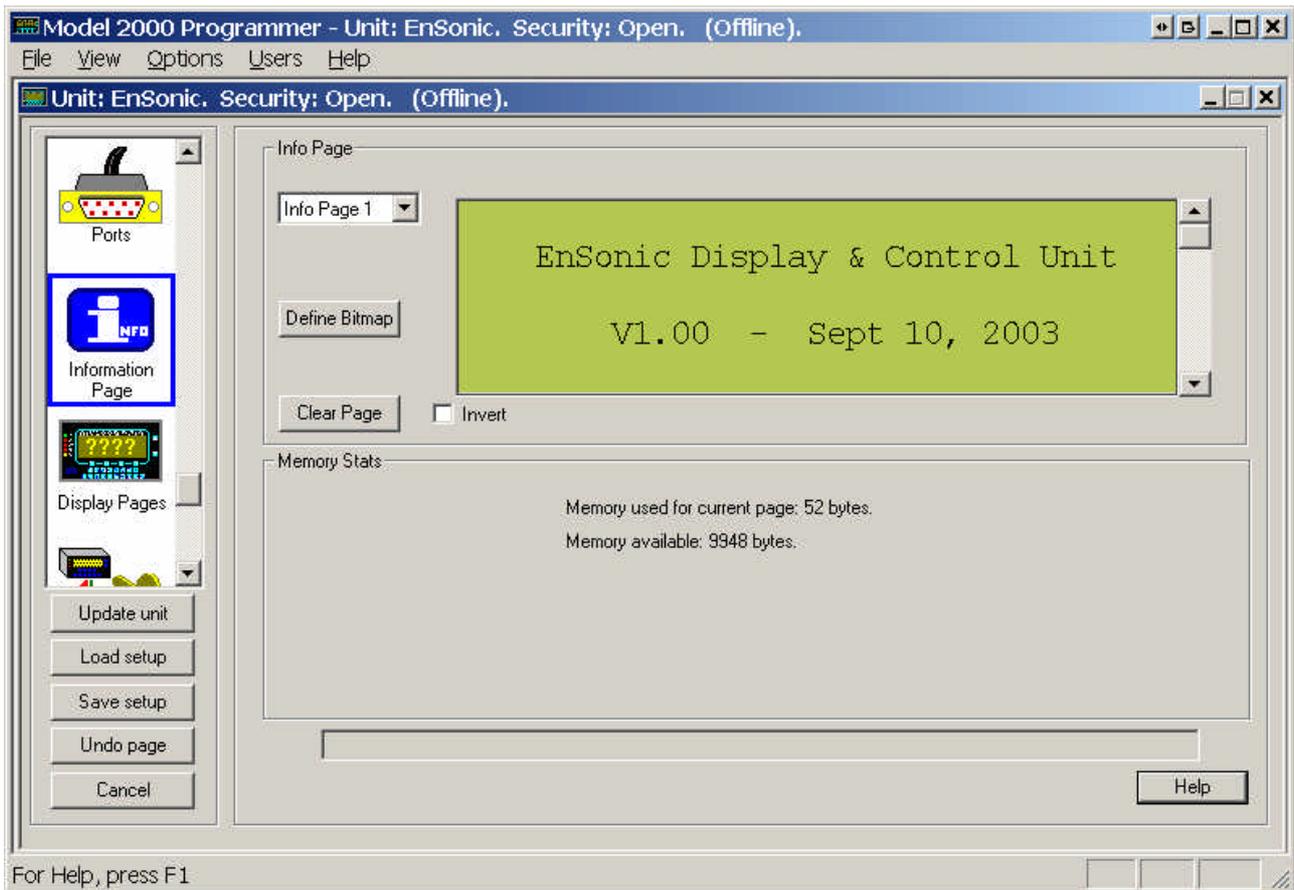


Information Page

The M2000 has 6 info pages on which various data can be displayed. Normally this page will be set during manufacturing but users can store their own data in these pages.

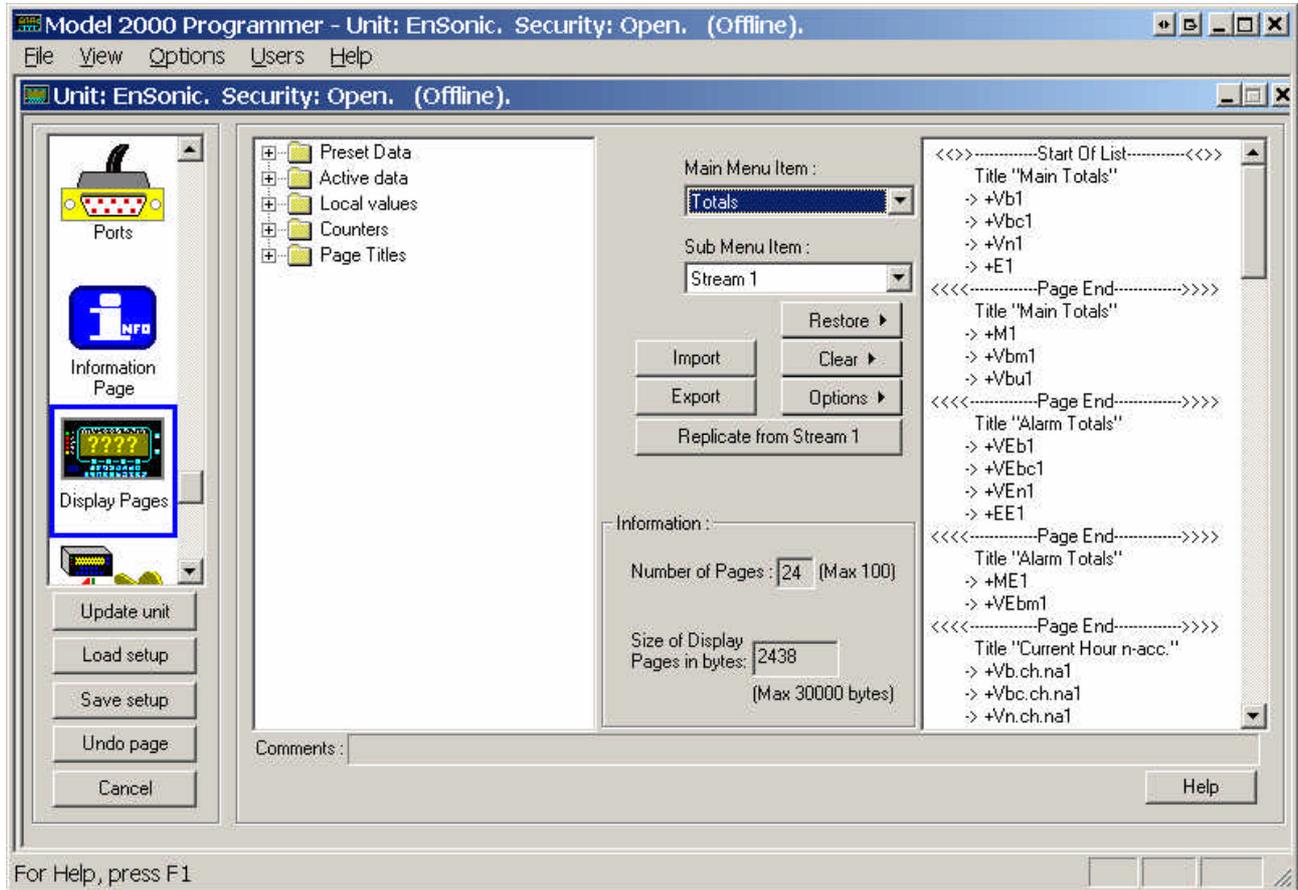
Available items:

- Info page 1 to 6: page selection
- Define bitmap: a range can be selected in which a bitmap can be loaded, when the range has been selected a 'Load Bitmap' button is displayed
- Clear Page: deletes all information on the current page
- Invert: invert page



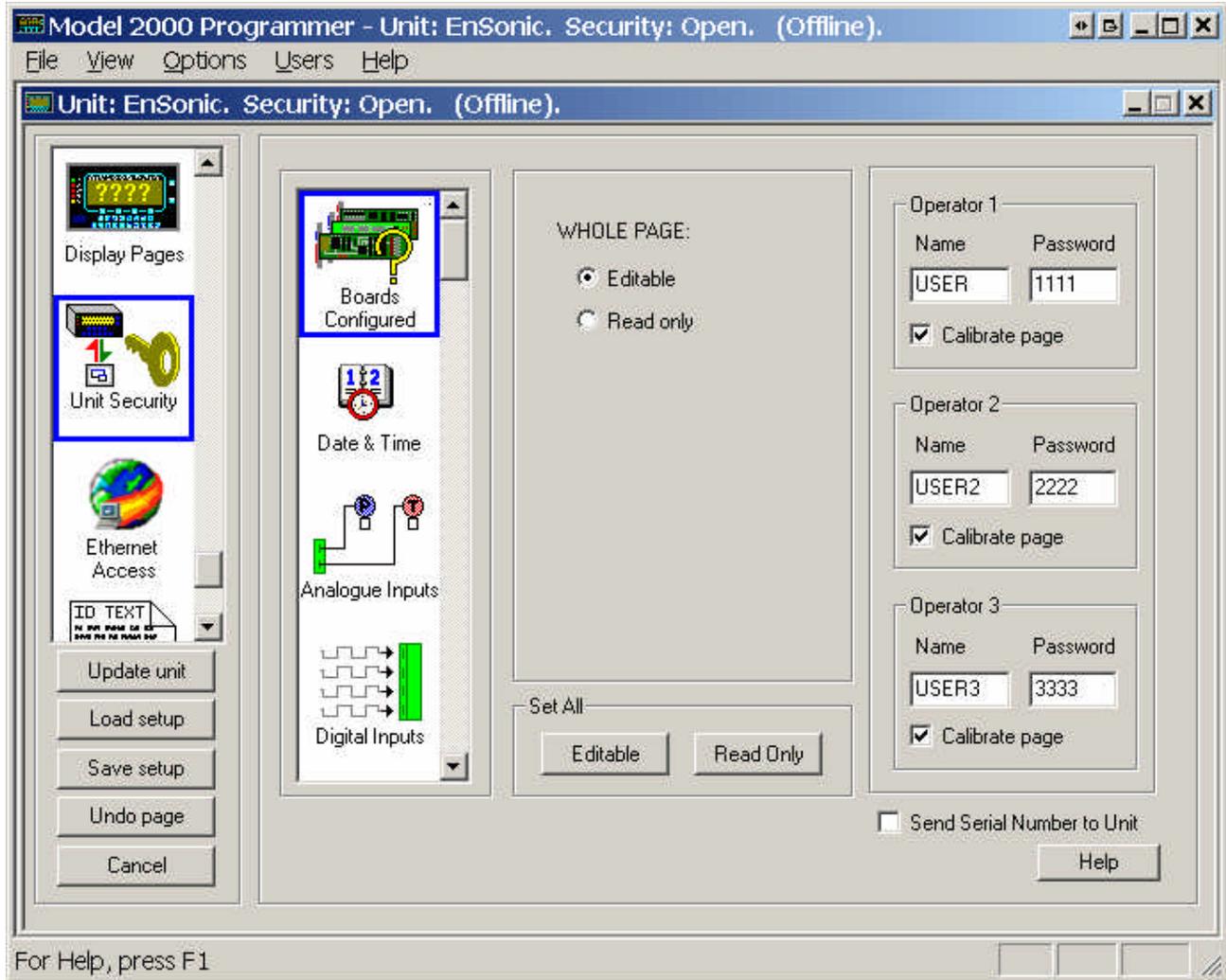
Display Pages

On this page the output pages of the M2000 are configured. Since this page has been set during manufacturing and can be modified by experienced users only no detailed information is given on how to change the display pages of the M2000.



Unit Security

Allows the supervisor of the system to make certain pages editable or read only. Names and Passwords for three operators can be set. Since this page is not intended to be used by the user, no additional information is presented.

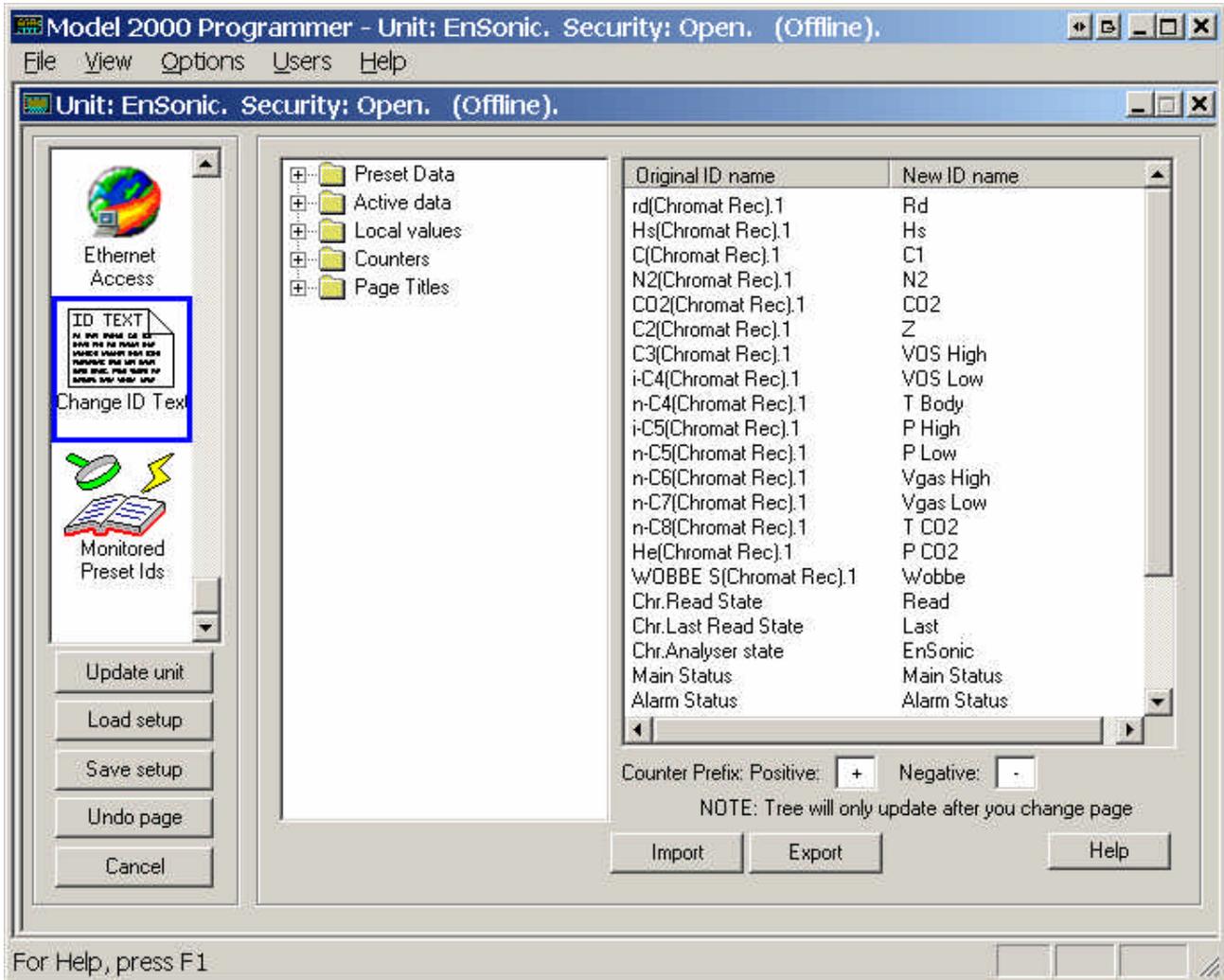


Ethernet Access

This page is not used.

Change ID Text

On this page the text labels belonging to the displayable items can be modified. Since this page is closely related to the 'Display Pages' page and has been set during manufacturing, it should not be modified.



Monitored Preset Ids

This page is not used.