SINEAX A20

Panel Mounting Indicator with OLED data Display

1. GENERAL SPECIFICATIONS

1. GENERAL SPECIFICATIONS
 The A20 module is a panel mounting indicator with OLED datadisplay.
The module has two RS485 serial ports, both supporting MODBUS-RTU protocol:
 Master MODBUS-RTU Port: through it the data exchange with the connected slave

-Master MOUBUS-RTU Port: through it the data exchange with the connected slave I/O modules is performed.

-Slave MODBUS-RTU Port: through it the data acquired from the slave I/O modules and their elaborations are exchanged with a master device. Through this port it is besides possible the indicator software configuration. New Possibility by a self-reading to visualize and read the data written from an modbus-rtu master module connected to the Modbus-rtu slave port(when A20 is in modbus-rtu MASTER modallty)

Besides the module has the following features:

-Complete parameters configurability both by the programming Menu and via software through the Slave RS485.

-Easy naviacing on on the grooramming Menu by three buttons on the frontal panel.

software through the Slave RS485.

-Easy navigation on the programming Menu by three buttons on the frontal panel.
-Possibility to read and at choice to display up to 20 quantities.

New Autoscroll for visualized values
-Possibility to define and display up to 10 elaborated quantities, obtained by the application of mathematical or logical functions on the acquired/elaborated quantities.
-Optional calculation of the moving average for the acquired analog quantities.
-Possibility to force the continuous or trigger writing of 10 quantities relative to the connected slave modules.

-Possibility to define, for each elaborated quantity, an alarm with two individually

-Alarm signalling byAlarm signalling byAlarm signalling warning message or by trigger writing.
-The quantities acquired through the Master MODBUS-RTU port and
theirelaborations are made available to a master device through the Slave MODBUS

-Selectable menu language: Italian, English, French. -Settable display contrast. -Number of quantities to view on the same display screen: 1, 2 or 3 measurements. -Settable number of decimal figures: automatic, 1, 2 or 3. 2. TECHNICAL SPECIFICATIONS

2.1 Power Supply Specifications
Power Supply: 10..40 Vdc, 19..28 Va Consumption: Max: 1 W, mean: 0,5 W
2.2 Master RS485 Specifications
Type: Half-duplex RS485.

32 Stan aster MODBUS-RTU

Max 12 Vdc, Max 350 W (8 X 20 us CAMILLE BAUER SINEAX A20 ENGLISH - 1/21

2.3 Slave RS485 Specifications

Half-duplex RS485. 32 Standard nodes. Slave MODBUS-RTU. Max 12 Vdc, Max 350 W (8 X 20 us) Type: Capacity: Protocol:

-20..85 °C.

dustrial en

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industrial environment). EN61010-1/2001 (safety).

lumidity min: 30%, max 90% at 40°C non-conde

-20.85 °C.
1500 V among each pair of ports.
-Removable screw terminals, 5,08 mm pitch.
-Three buttons for menu navigation.
IP65 (on the frontal panel with the provided seal).
95x4 8x4 0 mm.
EN61000-5-4/2002-10 (electromagnetic emissio

industrial environment). EN61000-6-2/2006-10 (electromagnetic immunity,

2.3 General Technical Fea Environmental Conditions

Storage Temperature: Isolation: Connections:

CE

All circuits must be isolated from the other circuits under dangerous voltage with double isolation. The power supply transformer must comply with EN60742: "Isolated transformers and safety transformers". 3. FUNCTIONING DESCRIPTION

3. FUNCTIONING DESCRIPTION The A20 module is a front-panel display and it is configurable in ModBUS RTU "master" or "slave" modality. The A20 module can display and process the data acquired from the modbus-rtu slave modules in MASTER modality. In the same modality it can make a self-reading (at address #248 of the internal register from 41000 at 41099) for the written data by Modbus-rtu master module connected to the A20 slave not. A20 slave port.

The data exchange with the measurement modules is performed through the Master RS485 port, according to MODBUS-RTU Master protocol; so the acquired data may be viewed by the OLED display.

In Master modality the A20 can read the written data from an master module connected to the A20 slave port.

The three buttons on the frontal panel allow to scroll the acquired data list and to accede

3.1 Setting Modalities
All the module parameters may be set both by the programming menu and through the Slave RS485 port by the apposite configuration tool.
3.2 Data Acquisition through the Master MODBUS-RTU Port

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3.2.1 Number and Types of acquirable data
The instrument may be programmed to acquire up to 20 quantities through the Master

The following data types may be acquired: -Floating-point

In case of Floating-point and Long data types, it is possible to define the order of the two registers which compose the data.
3.2.2 Acquired quantities Moving Average

It is possible to activate for each Long, Word or Floating-point acquired quantities, the moving average calculation on the last 8 read measurements. 3.3 Elaborated Quantities
It is possible to define and view up to 10 elaborated quantities, obtained by the

unctions and operations may be applied on all the acquirable data types. The result may also be viewed or not by display.

An alarm with two individually activable thresholds and corresponding hysteresises

may be associated to each elaborated quantities. 3.3.1 Applicable Functions and Operations

The user has at his disposal different operations to execute on the defined

quantities.

For example the following operations may be used: arithmetic average of two or three quantities. Other operations are: sum, subtraction, multiplication, division, square, cube, square root, etc.

For the boolean quantities the following operations may be executed: AND and OR.

For the boolean quantities the following operations may be executed: AND and OR. All the operations are listed on the section 4.2.2.
3.3.2 Alarms on elaborated quantities
An alarm may be associated to each not boolean elaborated quantity.
The following parameters may be individually activated: High Threshold, Low Threshold, Hysteresis on the Low Threshold. When the quantity value is greater than the High Threshold, the high alarm condition is activated; the alarm condition ends when the quantity value is < High Threshold -

High Hysteresis. When the quantity value is smaller than the Low Threshold, the low alarm condition is ctivated; the alarm condition ends when the quantity value is > Low Threshold he alarm conditions are displayed by an alarm message, alternated to the value of

the quantity on the display list.

2. Acquired and Flaborated Quantities Scaling.

2. Acquired and Flaborated Quantities Scaling.

2. During the definition of an acquired or elaborated quantity, it is possible to decide

also its scaling. So the DATA OFFSET and the SCALE FACTOR parameters have to be set.

The resulting Scaled Quantity is: SCALE FACTOR * Original quantity+ DATA OFFSET

3.5 Display Data List

The user may decide just during the definition phase of a reading or function, to display to value or not. Once the quantity insertion procedure has been finished, it is always possible on able/disable its presence on the display list: also the position on the display list.

av be modified late

3.6. Data Writing through the Master MODBUS RTU port
3.6.1 Number and Types of writable data
The instrument may be set to write through the Master RS485 port, up to 10 quantities relative to the connected I/O modules

3.6.2 Writing Modalities: Continuous or Trigger

nstead in case of analog register writing, at the end of the alarm condition the writing pregation only ends to be executed.

3.7 Configuration through the Slave MODBUS RTU port

4.1 Navigation modalities on the programming Menu
4.1 Access to the Programming Menu
When the module is in view phase, press theOK MENÜ button to accede to the menu: on
the lower part of the display the following message appears: OK: MAIN MENU; until this
message is visible (for approsimately 40 sec), the pressure of the OK MENU button
allows the access to the menu and to view the MAIN MENU.
4.1.2 Buttons Meaning

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On the programming menu, the buttons have the following functionalities:

DOWN Button

It allows to scroll the menu items downwards in order to place on the item of interest. The selected item is marked by a flashing cursor at its left.

-During the setting of the numeric or literal values, it allows to select the figure or the letter of interest; a pressure entails the passage to the figure of previous numeric value (ex. 2->1) or to the previous alphabetic letter (ex.B->A).

next position. At the end of the parameter setting, the confirmation of the set value is required.
-Since the button has many functionalities, its meaning is sometimes indicated on the lower part of the display.

During the editing or modify phase, the first figure flashes: the pressure of the UP button increases the value of a unit, a pressure of DOWN decreases the value of a unit, a pressure of DOWN decreases the value of a unit, by pressing the OK MENU button, the value set for the figure is confirmed and the procedure goes on with the next figure. The position modify is marked by theflashing of the next figure, in case of signed parameters, for the first figure only "or "-" signs may be selected (always by the UP and DOWN buttons). Once also the last figure has been modified, the pressure of the OK MENU button entails the passage to the Confirmation Menu which allows to save the setting, return to the parameter setting or exitfrom the setting. Literal Parameter Modify
During the editing or modify phase, the first letter flashes: the pressure of the UP button entails the view of the next alphabetic letter (ex A->B), the pressure of the DOWN button entails the view of the previous alphabetic letter (B->A), by pressing the OK MENU button the letter set for that position is confirmed and the procedure continues with the letter of the ext position. The position modify is marked by the flashing of thenext letter.

Once also the last letter has been modified, the pressure of the OK MENU button entails the passage to the Confirmation Menu which allows to save the settling, return to the During the editing or modify phase, the first figure flashes: the pressure of the UP button

mation Menu which allows to save the setting, return to the parameter setting or exit from the setting

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4.1.4 Exit from menu The exit from the programming menu is performed by selecting Exit from the Main Menu or from the Setup Menu. If the buttons are not used for approximately 40 sec, the instrumen automatically exits from the menu and returns to view mode.

4.2 Menu Description_____

Writings Menu | Setup Menu | he submenus structure is described on the schemes on pages 19, 20 and 21. This section | stead illustrates all the parameters which may be set for each submenu.

ows to define the data to read from the I/O modules connected through the Master RS485 port and the data came from an modbus master module through the RS485 slave

position on the display list. Readings Setting Modalities For each defined reading, it is possible to set the following parameters:

Description
Identification name for the reading.

#248 for the mod A20 RS485 slave port

Register address

Modbus address of the data to read on the correspondent slave I/O module.

The register for the self-reading are from 41000 to 41099 at address #248.
Use the following addressing modality depending on the utilized Modbus function and on the data type to read:

| ADDRESSES | DATATYPE | FUNCTION | |
|-----------|---------------------------|----------|--|
| .10000 | Boolean | 01 | |
| 000120000 | Boolean | 02 | |
| 000140000 | Float/Long Int/ Short Int | 04 | |
| 000150000 | Float/Long Int/ Short Int | 03 | |

For example if we want to read an holding register with address 40002 then the Register Address has to be set at 40002.

<u>Data Format.</u>
It sets the data type to read. The following formats may be select-Float: 32-bit floating point format
-Long Integer: 32-bit integer format
-Short Integer: 1-bit integer format

Reading Order (only for Float or Long Integer formats)
Order of the two words which constitute Float or Long Integer data. The following items may be selected: -MSW first: The most significant word is read before, then the least significant one

Data Display Format (Decimal Figures) only for Floa t or Long/Short Integer

Office Display

Formals.).

Number of decimal figures to view after the decimal point:

Automatic: Maximum Displayable Number of decimal figure.

Max 1 Figure: 1 decimal figure after the decimal point.

Max 2 Figures: 2 decimal figures after the decimal point.

Max 3 Figures: 3 decimal figures after the decimal point.

Boolean Logic (only for Boolean format)

logic of boolean Data: the same logic value present on the I/O module register is displayed. e: the negated logic value of the one present on the I/O module register is

Measure Units (only for Float, Long and Short forma ts)

<u>Data Offset (only for Float, Long and Short formets</u>)
It represents with the scale factor one of the two parameters defining the data scaling. The Data Offset value may be both long and float. The resulting scaled quantity depends on the Data Offset according to the following formula:

Scaled Quantity = Scale Factor * Read quantity + Da ta Offset

Scale Factor (only for Float, Long and Short format s) it represents with the Data Offset one of the two parameters defining the data scaling. The Scale Factor value may be both long and float. The resulting scaled quantity depends on the Scale Factor according to the following formula: Scaled Quantity = Scale Factor *Read quantity + Da is 0.0 float.

Time Average (only for Float, Long and Short format s)
By activation (YES) of this functionality, the moving average value is calculated on the last 8 readings. The mean value is displayed (if enaled).

 $\underline{\text{Display Data}}_{\text{By selecting YES, the data will be displayed. Also the position on the display list may be}$

4.2.2 FUNCTIONS MENU It allows to define some Fun elaborated quantities. This menu allows to: Eurotions obtained by the elaboration of one or more read or/and

Functions Setting Modalities

For each function the following settings are possible:

| Operation Code | Operation | Operands Number | Operands and Resulting Quantity Format |
|-------------------|--------------------|--------------------|---|
| 0 | Identity | 1 | Integer (Long/Word) and Float |
| 1 | Sum of 2 | 2 | Integer (Long/Word) and Float |
| 2 | Sum of 3 | 3 | Integer (Long/Word) and Float |
| 3 | Subtraction | 2 | Integer (Long/Word) and Float |
| 4 | Multiplication | 2 | Integer (Long/Word) and Floa |
| 5 | Division | 2 | Integer (Long/Word) and Floa |
| 6 | Square | 1 | Integer (Long/Word) and Floa |
| 7 | Cube | 1 | Integer (Long/Word) and Floa |
| 8 | Square Root | 1 | Integer (Long/Word) and Floa |
| 9 | Math. Average of 2 | 2 | Integer (Long/Word) and Floa |
| 10 | Math. Average of 3 | 3 | Integer (Long/Word) and Floa |
| 11 | Logical AND of 2 | 2 | Boolean |
| 12 | Logical AND of 3 | 3 | Boolean |
| 13 | Logical OR of 2 | 2 | Boolean |
| 14 | Logical OR of 3 | 3 | Boolean |
| 15 | Bit extraction 015 | 1 | Integer (Word) |

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<u>input N. 1 or 2 or 3</u>

It selects the read or elaborated quantities among which the operation will be performed and the previously defined readings and functions (if their data type is supported may be selected. Depending on the operation type, it will be possible to select 1, 2 or 3 operand:

Data Display Format (Decimal Figures) (only for Flo at or Long/Short Integer Formats).

Number of decimal figures to view after the decimal point:

-Automatic:

-Max 1 Figure:

1 decimal figure after the decimal point

-Max 2 Figure:

2 decimal figures after the decimal point

-Max 3 Figure:

2 decimal figures after the decimal point

Measure Units (only for Float, Long and Short forma ts)
It allows to insert a measure unit, settable letter by letter

Data Offset (only for Float, Long and Short formats)

Scale Factor (only for Float, Long and Short format s)
It represents with the Data Offset one of the two parameters defining the data scaling.
The Scale Factor value may be both long and float. The resulting scaled quantity depends on the Scale Factor according to the following formula:
Scaled Quantity = Scale Factor* Elaborated not sca led quantity + Data Offset

Alarm Threshold (only for Float, Long and Short for mats)
By activating this functionality (YES), it is possible to define the alarm thresholds.
These threshold may be both activated, both disbled or individually enabled. So the user

enu Fuat.
-Low Threshold: Low Alarm threshold. The value may both Long and Float.
-Low Threshold Hysteresis: Hysteresis of the low threshold. The value may tand Float.

-Positive: the displayed logic value is the operation result. -Negative: the displayed logic value is the negation of the operation result.

Boolean Logic (only for Boolean format)

The Functions Menu is illustrated on the schemes on pages 19 and 20.

continuous or trigger writings on the quantities of an I/O module ows to define some continuous or t

The Writings Menu allows to:

1) Insert a new writing.
2) Delete a previously defined writing.
3) Modify a previously defined writing.

Writings Setting Modalities
The following settings are pe ring settings are possible for each writing: The following settings are possible to each immigal. It allows to select that a select that a select that a select that a select the read or elaborated quantity which will be involved on the writing operation. This quantity may be used on the following ways:

1) If we select a Read Quantity or a Function without active alarms: the value of this quantity (analog or digital) will be continuously written on the I/O register which will be set by the

2) if we select a Function with at least an activated alarm threshold: it is possible to choose between the continuous writing of the function on the I/O register (as in point 1)

writing only in case of alarm condition (with the correspondent alarm end action). In this last case it will be possible to write a constant, a bit or the quantity selected at the beginning in this field.

Address of the slave I/O module connected to the Master RS485 and where the data will be written. Values from 1 to 247.
Register Address

Modbus address of the register which will be written

Use the following addressing modality depending on the utilized Modbus function and on

| ADDRESSES | DATATYPE | FUNCTION |
|------------|---------------------------|---|
| 110000 | Boolean | 05 |
| 4000150000 | Boolean | 06 read-modify-write: write the single bit on the register withou modifying the other ones. |
| 4000150000 | Float/Long Int/ Short Int | 06/16 |

CAMILLE BAUER CAMILLE BAUER SINEAX A20 ENGLISH - 10/21 So if we want to write an Holding Register with address 40003 on the I/O slave, then the

Enable Trigger (only if a function with at least an active thresho Id has been selected In Data Select)

in Data Select)
This functionality may be activated only if a function with at least an active threshold has been set in Data Select.
By selecting Yes, the trigger writing is enabled (the writing is executed only if the selected function is in alarm condition). If the trigger is disabled, the continuous writing is performed.

<u>Alarm Threshold</u> (only if the trigger has been enabled in Trigger Enable) If the trigger has been enabled (writing on alarm) irrigger fabile, it is possible to decide the threshold which will be associated to the writing (it is not possible to enable the writing

on both the thresholds): High Threshold: It enables the writing at the overcoming of the high threshold (only if it was enabled on the associated function; otherwise the option does not appear). Low Threshold: It enables the writing if the function is inferior to the low threshold (only if it was enabled on the associated function; otherwise the option does not appear).

Data to Write. (only if the trigger has been enabled in Trigger Enable)
It sets the data type which will be written. The following formats may be selected:
-Boolean 1 (0): in case of alarm condition a specified bit will be forced to the logical value 1 while at the end of the alarm condition it is forced to logical value 0.
-Boolean 0 (1): in case of alarm condition is specified bit will be forced to the logical value 0 while at the end of the alarm condition it is forced to logical value 1.
-Word: sets the 16 bits integer value which will be written in case of alarm condition.

When the alarm ends the value is no more written. When the alarm ends the value is no more written.

Data Value: in case of alarm condition, the selected (in Data Select field) fun written. In this case it is necessary to set the output format (see Output Format field output format is long or float, it is also necessary to specify the writing data order (M: or LSW first). At the end of the alarm condition the function writing stops.

<u>Output Format</u> (only if the trigger has not been enabled in Enable Trigger if Data Value has been selected in Data to Write)

It sets the data type to write. The following formats are selectable:

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loat: 32-bit floating point format -Long Integer: 32-bit integer format -Short Integer: 16-bit integer formal in case of Float or Long integer formats, it is necessary to set also the Reading Order of the

-MSW first: The high word is transmitted first, then the low one.
-LSW first: The low word is transmitted first, then the high one. Writing Modalities (only if a boolean reading / function has been sele cled in Data Select or if Boolean 1 (10) // Boolean 0 (11) has been set in Data to Write.

If we want to write a boolean value it is necessary to specify the writing modalities;

-Single Output: The value is written by using the function 05 (write single coil). Pay attention to have opportunely set the register address in Register Address (in this case addresses

rom 1 to 10000). Read-Modify-Write: the bit value is written by using the function 06 (write singleregister) of 16-bit register writing. In this case only the specified bit is modified while the remaining bits of the word are not changed. Pay attention to have opportunely set the register address in Realister Address fin this case addresses from 40001 to 50000).

Bit Index (only if the data to write is boolean and if Read-Modify-Writhas be en selected in Writing Mode).
If the Value to write is boolean and if the Read-Modify-Write writing mode has been selected, it allows to select the index of the bit to write within the 16-bit word. Settable value from 0 a o. The Writings Menu is illustrated on the schemes on pages

4.2.4 SETUPMENU It allows to set the system general parameters and the communication ports parame
1) Language Selection.
2) Number of data displayed on the same screen.
3) Display contrast setting.

The following settings are possible: <u>Language</u> It allows to select the module language: Italian, English, French.

<u>Contrast</u> It sets the display contrast. Values from 1 to 15.

5) Modbus Slave port parameters

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SYSTEM PARAMETERS
It allows to set the comm cation parameters of the two RS485 ports Master Module sizen I imeout esents the reception timeout of the master module: maximum time in which the r waits for an answer from the connected slaves modules before declaring the iten falled. Values from 10 ms to 2,55 s (default 100 ms).

Tx/Rx/Baud Rate
It sets the port communication speed. Admitted values: 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200. Default: 38400. Delay between polis Delay time that the master waits before sending the request to a connected slave. Values from 10 ms to 2,55 s (default: 100 ms).

Address assigned to the instrument when it is used as a Modbus slave. Default: 1.

Parity Type of parity control of the port: absent, even, odd. Default: absent.

Tx/Rx Baud Rate It sets the port communication speed. Admitted values: 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200. Default:38400.

Answer Delay Answer Delay, Number of pauses of 6 characters each to be entered between the end of the Rx message and the start of the Tx. Settable value: 0...20. Default: 0.

For more informations on Setup Menu, refer to the schemes on page 21

Scroll Enable or disable the automatic scroll function for the visualized va-In view mode the indicator displays the values of the quantities defined on the display list imay view 1,0 or 3 data for screen. If all the data may not be viewed on the same screen, press the UP and DOWN buttons to move of a position the data on the list. Below an example of 3 data for screen:

VAR1 10 W

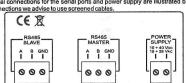
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6. TERMINALS AND BUTTONS POSITION FRONTAL PANEL: DISPLAY AND BUTTONS



7. ELECTRICAL CONNECTIONS
The electrical connections for the serial ports and power supply are illustrated below. For



8. ERROR SIGNALLINGS

 ENVIOR ORDIVELINGS
 he errors are directly viewed by display.
 he possible signallings and their meaning are listed below. They flashes instead of the unantity numeric value. If no data has been inserted on the Display list, the LIST EMPTY y numen ae is disc

itessage is unsprayed. 3.1 Reading Error Signallings NOANSWER: the I/O module connected through the master RS485 port does not answer. SLAVE ERROR: an error message has been received from the I/O module connected through the master RS485 port. the to an error on the answer of the I/O module connected through the master RS485 port.

through the ma through the master RS44b port.
SINGLE ERRORD: presence of a generic error (of any nature).
8.2 Functions Error Signallings
BAD INPUT: the value of one or more operands is not available.
DIVISION_BY_ZERO: the operation involves a division by a null quantity.

DIVISION BY_ECRU. He uper attornmenters a transite by stress of the Signallings TOO HIGH: the function value is greater than the high threshold. TOO LOW: the function value is smaller than the low threshold.

9. MODBUS REGISTERS ACCESSIBLE THROUGH THE SLAVE RS485 PORT The read and elaborated quantities are available within blocks of 16-bit registers and are accessible by the slave RS485 serial communication. In the below tables the notation Bit (xy) indicates all bits from x to y. For example Bit (2:1) indicates bit 2 and bit 1, and serves to illustrate the meaning of the various united combinations of the values of the two bits. The 16-bit Holding Registers have the following structure:

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> 15|14|13|12|11|10|9|8|7|6|5|4|3|2|1|0| 9.1 Supported MODBUS COMMANDS
>
> Godice Funzione
>
> 3.1 Read Holding Registers Reading of word registers up to 4 Read Input Registers Reading of word registers up to 8.0 Reading of word registers up to 8.0 Reading of word registers up to 9.4 Read Input Registers Reading of word registers up to 9.4 Read Input Registers Reading of word registers up to 9.4 Re

Least significant bi

9.2 MEMORY MAP FOR READ AND ELABORATED QUANTITIES All registers areRead Only. READ DATA The values are represented in flaoting point (32 bits - 2 Modb us registers).

Most significant bit Bit Index

Only one floating point value can be read a time.

ADDRESS: REGISTER NAME ADDRESS: REGISTER NAME 40802 : DATA_LSW_READ1 10801 : DATA MSW READ1 IDROS - DATA MSW READ2 40804 DATA LSW READ2 40806 : DATA LSW READ3 0805 : DATA MSW READ3 40808 DATA LSW READ4 10807 : DATA MSW READ4 40810 DATA LSW READS INRIG - DATA MSW READS 40811 : DATA_MSW_READ6 40812 DATA LSW READ6 0814 : DATA_LSW_READ7 40813 : DATA MSW READ7 40816 : DATA_LSW_READ8 40815 : DATA MSW READ8 40818 - DATA LSW READS 40817 : DATA MSW READ9 40820 : DATA_LSW_READ10

40824 : DATA_LSW_READ12 40826 : DATA LSW READ13 0825 : DATA MSW READ13 40827 DATA MSW READ14 40828 : DATA LSW READ14 0829 : DATA_MSW_READ15 40830 : DATA_LSW_READ15 10831 : DATA MSW READ16 40832 : DATA_LSW_READ16 40833 - DATA MSW READ17 40834 · DATA I SW READ17 0835 - DATA MSW READIR 40836 : DATA LSW READ18 40838 : DATA LSW READ19 10839 - DATA MSW READ20 40840 : DATA LSW READ20

ELABORATED DATA
The values are in floating point (32 bits 2 Modbus registers), only one floating point value
can be read at a time.

| ADDRESS: REGISTER NAME | ADDRESS: REGISTER NAME |
|----------------------------|----------------------------|
| 10901 : DATA_MSW_FUNCTION1 | 40902 : DATA_LSW_FUNCTION1 |
| 10903 : DATA_MSW_FUNCTION2 | 40904 : DATA_LSW_FUNCTION2 |
| 10905 : DATA_MSW_FUNCTION3 | 40906 : DATA_LSW_FUNCTION3 |
| 0907 : DATA_MSW_FUNCTION4 | 40908 : DATA_LSW_FUNCTION4 |
| 0909 : DATA_MSW_FUNCTION5 | 40910 : DATA_LSW_FUNCTION5 |
| 0911 : DATA_MSW_FUNCTION6 | 40912 : DATA_LSW_FUNCTION6 |
| 0913 : DATA_MSW_FUNCTION7 | 40914 : DATA_LSW_FUNCTION7 |
| 0915 : DATA_MSW_FUNCTION8 | 40916 : DATA_LSW_FUNCTIONS |

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919 : DATA MSW FUNCTION10 40920 : DATA LSW FUNCTION10

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ne same acquirable data types may be written:

acquired or elaborated quantity. Trigger Writing The writing is associated to the value of a previously defined elaborated quantity. If two alarm thresholds or at least one of them have been defined for thequantity, it is possible to enable the writing only at the verifying of one of the alarm conditions. In case of single bit writing, a naction of alarmend is performed.

All the menu parameters may be programmed through the Slave RS485 port; so the complete programmation of the instrument is possible. The apposite software is available: it allows an easy configuration of the module.

The programming menu allows to completely configure the module on all the functionalities described in Chapter 3.
4.1 Navigation modalities on the programming Menu

Meaning t has three buttons: UP. DOWN, OK MENÙ.

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UP Button

- It allows to scroll the menu items towards the top, in order to place on the item of interest.

The selected item is marked by a flashing cursor at its left.

- During the setting of the numeric or literal values, it allows to select the figure or the letter of interest; a pressure entails the passage to the figure of following numeric value (ex. 1, -2) or to the next alphabetic letter (exA->B).

OK MENU Button

-Access to the programming menu (see 4.1.1 Access to the programming menu)
-It allows to confirm the item selected by UP and DOWN buttons and so to pass at the next
screen. The selected item is marked by a flashing cursor at the left of the item. -During the setting of numeric or literal values, it allows to confirm the figure or the letter
selected by the UP and DOWN buttons. Once the value of the figure or letter has been
confirmed, the procedure automatically continues with the figure or letter in the

4.1.3 Parameters Modify Once the user has selected (by subsequent pressures of the 3 navigation buttons) an item which entails the setting of one or more parameters, the editingor modify of the parameters are performed figure by figure (if numeric), letter by letter(if literal).
Numeric Parameter Modify

The table containing the admitted characters is on Appendix A

Modify a previously defined reading.
 Decide if the read data will be viewed or not and in the first case to select the data

ss_in master modality uses the addresses from #1 to #247 for communicatule; it is also possible to execute the auto-reading function at the admodbus registers written previously from a master module connected

| RESSES | DATATYPE | FUNCTION | |
|--------|---------------------------|----------|--|
| 00 | Boolean | 01 | |
| .20000 | Boolean | 02 | |
| .40000 | Float/Long Int/ Short Int | 04 | |
| .50000 | Float/Long Int/ Short Int | 03 | |

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chosen. The Readings Menu is illustrated on the schemes on page 19.

Insert a new functio 2) Delete a previously defined function. 3) Delete a previously defined function and quickly modify only the alarm thresholds. 4) Delctide If the elaborated data will be viewed or not and in the first case to select the data

| Operation Code | Operation | Operands Number | Operands and Resulting Quantity Format |
|-------------------|--------------------|--------------------|---|
| 0 | Identity | 1 | Integer (Long/Word) and Float |
| 1 | Sum of 2 | 2 | Integer (Long/Word) and Float |
| 2 | Sum of 3 | 3 | Integer (Long/Word) and Float |
| 3 | Subtraction | 2 | Integer (Long/Word) and Float |
| 4 | Multiplication | 2 | Integer (Long/Word) and Float |
| 5 | Division | 2 | Integer (Long/Word) and Float |
| 6 | Square | 1 | Integer (Long/Word) and Float |
| 7 | Cube | 1 | Integer (Long/Word) and Float |
| 8 | Square Root | 1 | Integer (Long/Word) and Float |
| 9 | Math. Average of 2 | 2 | Integer (Long/Word) and Float |
| 10 | Math. Average of 3 | 3 | Integer (Long/Word) and Float |

may define:
-High Threshold: High Alarm thresohold. The value may both Long and Float.
-High Threshold Hysteresis: Hysteresis of the high threshold. The value may be

<u>Display Data</u> By selecting Yes the data will be displayed. Also the position on the display list may be

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<u>Data View</u> It allows to choose how many data (rows) to display on the same screen: 3 rows, 2 rows, 1

40821 : DATA MSW_READ11

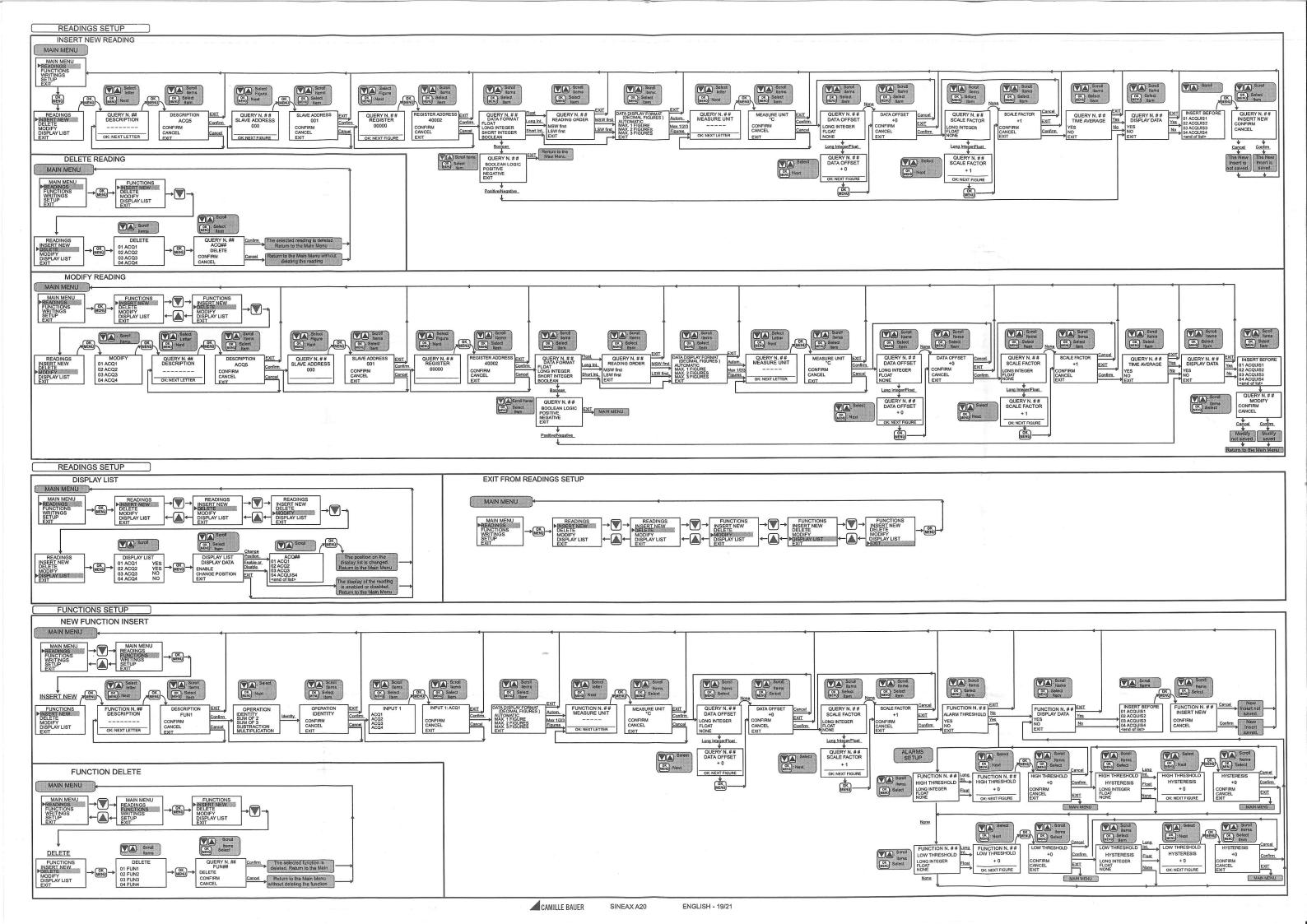
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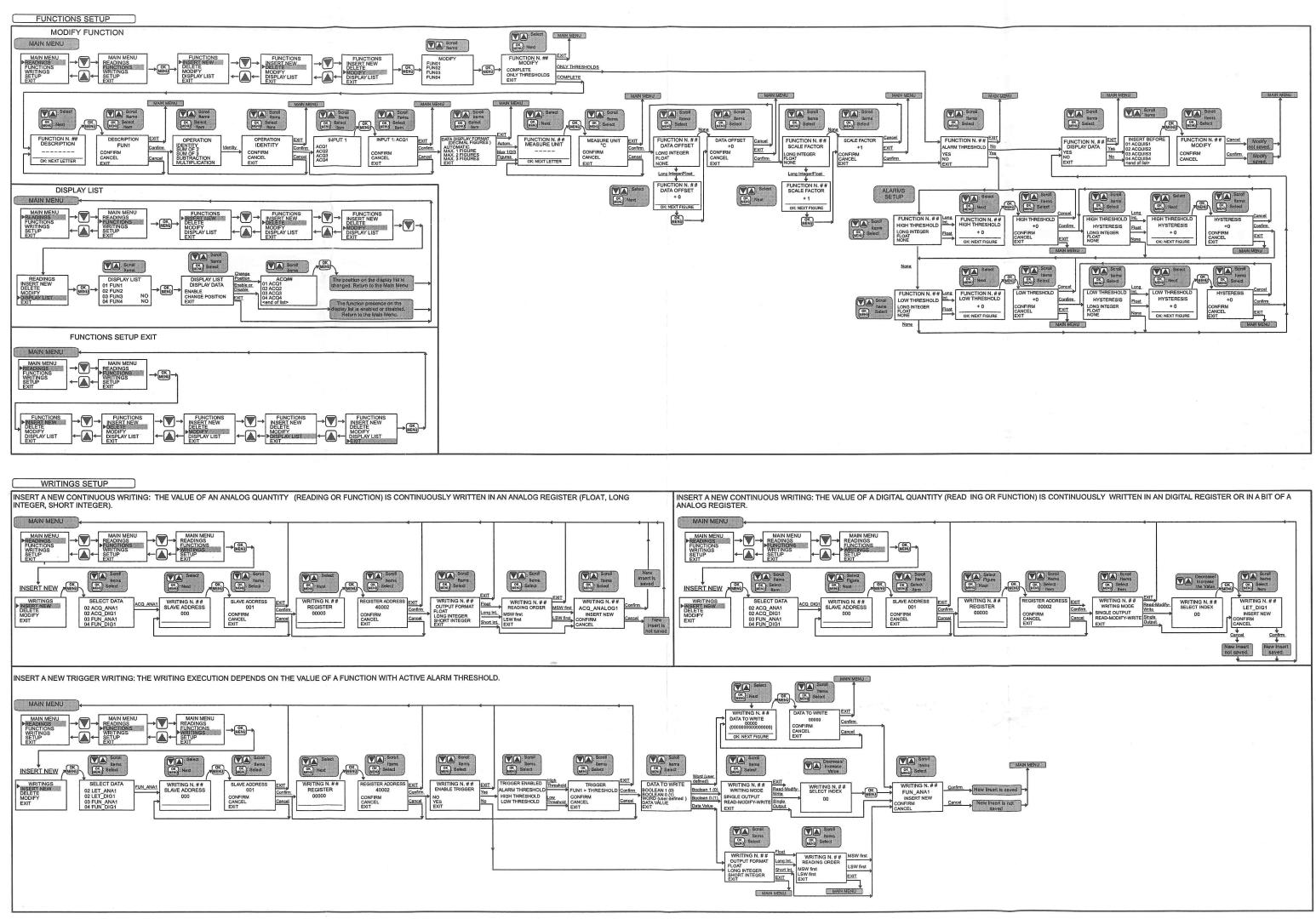
40822 : DATA LSW READ11

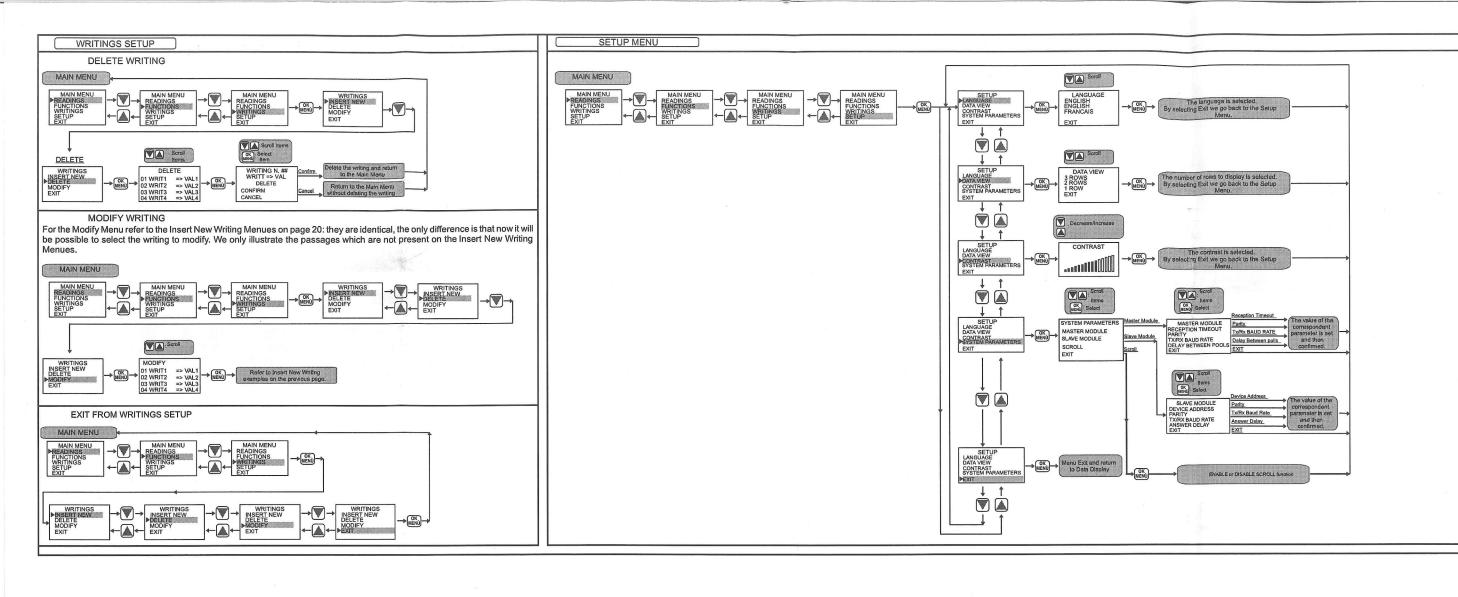
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Appendix A

We are going to list the characters which may be inserted for the literal parameters setting. They are listed in the order in which they may be selected by the UP and DOWN buttons.

Characters admitted for all the literal parameters except Measure Unit: A...Z 0...9 % ' - . / Admitted Characters for Measure Unititeral parameter A...Z a...z 2 3 αβ Γπ Σ σ μ τ Φ θ Ω δ φ ε % ' () / °



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This symbol, found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product, please contact your local city office, waste disposal service or the retail store where you purchased this product.

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