

S311D-XX-L / S311D-XX-H Line
Advanced Digital Indicators-Totalizers
4, 6, 8, 11 Digits Display

1. GENERAL SPECIFICATIONS

- Universal opto isolated digital input; admitted types: reed, npn (2 wires or 24 V), pnp (24 V), NAMUR, photoelectric, Hall, 24 V input, TTL, variable reluctance.
- Digital input signal frequency measurement from 0.00015 Hz to 10 kHz.
- Increment or decrement totalizing of the digital input signal.
- View of the frequency measurement and/or totalized value.
- Programmable retransmission of the input value frequency by the isolated analog output (voltage or active/passive current).
- Retransmission of the totalized value by the isolated digital output (Open Collector).
- Totalizer value is saved on non-volatile memory.
- Filter programmable at 20 levels to stabilise reading.
- Totalizer reset by auxiliary digital input, buttons pressure or Modbus register.
- 4, 6, 8 or 11 (4+7) Digits display.
- In case of optional card use, two relay alarms are activable on the input measurement frequency (maximum, minimum, automatically resettable or not).
- Alarms status visible through two leds on the frontal panel.
- RS485 serial communication with MODBUS RTU protocol (by optional board), maximum 32 nodes.
- Two relay outputs (available on the optional card) for alarms signalling.
- Easy navigation on the programming Menu by three buttons on the frontal panel.
- Quick configuration of the alarm thresholds by the Quick Alarms Menu.
- Display contrast settable.
- Very Low Frequency Mode (VLF) automatically set if fmax < 1 Hz.

2. TECHNICAL SPECIFICATIONS

| | |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply: | Code S311D-XX-L: 10-40 Vdc, 19-28 Vac 50-60 Hz, max 3 W. Code S311D-XX-H: 85-265 Vdc 50-60 Hz, max 3 W. |
| Digital Input: | - Reed - npn 2 wires - npn 24 V (3 wires) - pnp 24 V (3 wires) - NAMUR - Photoelectric - Hall - 24 V Input - TTL - Variable Reluctance Max 7 mA |
| Absorbed Current: | 28 Vdc 17 Vdc |
| Sensors Power Supply: | Frequency Range: 0.00015 Hz - 10 kHz Frequency Resolution: < 0.05 % |
| Analog Output: | Generated Current: 0 - 20 mA, max load resistance: 500 Ω Voltage: 0 - 10 V, min load resistance: 1 kΩ Configurable Start and Full scale values. Resolution: 2 A / 1 mV. |

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| | |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Digital Output : | Type: Open Collector, Imax: 50 mA, Vmax: 30 V. |
| Relay output : | Capacity: 8 A / 250 VAc (available only by the optional board). |
| Auxiliary digital input : | Opto isolated, Vmin: 10 V, Vmax: 30 V (available only by the optional board). |
| Error of Voltage / Current output (referred to max measuring range): | Calibration Error: 0.1 % Thermal Coefficient: 0.01 %/K Linearity error: 0.05 % EMI (electromagnetic disturbance): < 1 %. |
| Response Time: | 5 ms. |
| Environmental Conditions: | Temperature: -10 - +60°C Humidity min: 30%, max 90% at 40°C non condensing. Storage Temperature: -20 - +85°C. |
| Isolation: | 1500 Vac among each pair of ports (included the optional card ports). |
| Connections: | - Removable screw terminals, 3.5 mm / 5.08 mm pitch. - Three buttons for menu navigation. |
| Protection: | IP65 (on the frontal with the apposite furnished seal). |
| Dimensions (L x W x H): | 98.2 x 88.5 x 48 mm |
| Standards: | EN61000-6-4/2002-10 (electromagnetic emission, industrial environment). EN61000-6-2/2006-10 (electromagnetic immunity, industrial environment). EN61010-1/2001 (safety). 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

The digital input frequency measurement or the totalizer value is translated into an analog or digital output signal.

The frequency value or as an alternative the totalizer value is displayed; on the 11 (4+7) digits model, both the values are simultaneously displayed (4 digits: frequency value, 7 digits: totalizer value). The values are also available via Modbus RTU protocol upon query by RS485 bus (by the optional card).

3.1 Setting Modalities

All the parameters of the instrument may be set by the Programming Menu or RS485 (by the optional card). The alarms thresholds may be quickly set by the Quick Alarm Menu. Besides the Z-NE33 software has been developed for the programming and the configuration of the module (consult the web site www.seneca.it).

3.2 Retransmission Modalities

The instrument allows the following retransmission modalities:

Analog Output: The digital input frequency measurement is translated into an analog output signal (voltage or current).

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3.7 Password for access to the menu

It is possible to enable the protection of the Programming Menu by password. The Quick Alarm Menu is instead password free.

4. BUTTONS AND TERMINALS POSITION

FRONTAL PANEL: BUTTONS / LEADS

REAR SIDE: TERMINALS

RS485-Aux. Dig. Input Relay 2 Relay 1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Power Supply Output Dig. Input

5. ELECTRICAL CONNECTIONS

POWER SUPPLY: Verify the code on the label applied to the indicator.

Code S311D-XX-L Code S311D-XX-H

10 + 40 Vdc 3.0 W 1 85 + 265 Vdc 3.0 W 2B

19 + 28 Vdc 3.0 W 2A

DIGITAL INPUT

Reed nnp 2 wires nnp 24 V (3 wires) pnp 24 V (3 wires) NAMUR

Photoelectric Hall 24 V Input TTL Input Variable Reluctance

DIGITAL OUTPUT

Voltage Generated Current Ext. Power Supply

Active Output (powered) Unpowered passive

Imax=VIR/50 mA

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OPTIONAL BOARD CONNECTIONS

Relay Output 1 (8 A/250 Vac) Relay Output 2 (8 A/250 Vac)

N.C. N.C.

N.A. N.A.

Com. Com.

Example of Totalizer Reset by the auxiliary digital input, internally supplied by the module

17 7 10 18

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Parameters settable from Menu : S.C.A.L.L.

| | | | |
|------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| dPIn | Decimal Point position in Hi-F | 0 = no decimal point (ex: 00009999) 1 = first digit (ex: 000099.99) 2 = second digit (ex: 00009.999) 3 = third digit (ex: 0000.9999) 4 = fourth digit (ex: 000.9999, only for 6 and 8 digits models) | 0 = No decimal Point |

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Parameters settable from Menu : A.L.L. / A.L.2.

Alarm 1 parameters: accessible from A.L.1. menu and identified by the final index 1.
Alarm 2 parameters: accessible from A.L.2. menu and identified by the final index 2.

| | | | |
|------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| SEt1 | Alarm 1 Threshold | Value referred to the displayed frequency value (decimal point set by dP.d). Settable value in the following ranges: | 500 |
| SEt2 | Alarm 2 Threshold | Display Digits Number Min. Limit Max. Limit | 1000 |
| HYS1 | Alarm 1 Hysteresis | 4 -1999 9999 6 -199999 999999 8 -19999999 99999999 11 (4+7) -1999 9999 | 10 |
| HYS2 | Alarm 2 Hysteresis | 11 (4+7) -1999 9999 | 10 |
| LYP1 | Alarm 1 Type | 0 = Alarm disabled 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold (the reset is not automatic) 4 = Retained alarm on the maximum threshold (the reset is not automatic) | 0: Al 1 disabled |
| LYP2 | Alarm 2 Type | 0 = Alarm disabled 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold (the reset is not automatic) 4 = Retained alarm on the maximum threshold (the reset is not automatic) | 0: Al 2 disabled |
| RLY1 | Relay 1: N.O./N.C. | Relay Functioning: 0 = normally opened relay (N.O.) 1 = normally closed relay (N.C.) | 0: N.O. |
| RLY2 | Relay 2: N.O./N.C. | Relay Functioning: 0 = normally opened relay (N.O.) 1 = normally closed relay (N.C.) | 0: N.O. |

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Parameters settable from Menu : C.O.N.F.

| | | | |
|------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| FUnC | Indicator Functioning Type | 0 = function of frequency measurement and totalizer view. 1 = only function of frequency measurement value view. 2 = only function of totalizer view. | 0: Freq. and Tot. |
| IrES | Enables the reset of the totalizer by buttons and auxiliary digital input. | 0 = enables the reset of the totalizer from panel and auxiliary digital input. 1 = disables the reset of the totalizer from panel and auxiliary digital input. | 0: Enabled |
| PRSS | Enables the Password for the access to menu | Setting a value different from 5477, the password (always 5477) will be required at the start of the menu. | 5477: Password disabled |

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Parameters settable from Menu : S.C.A.L.L.

| | | | |
|------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-d | Start scale of frequency measurement view | Value displayed if the measured frequency is 0. Value on the following ranges: | 0 |
| Hi-d | Full scale of frequency measurement view | Value displayed if the measured frequency is Hi-F. Value on the following ranges: | 1000 |
| dP-d | Decimal Point position on frequency measurement view | 0 = no decimal point (ex: 12345678) ... 1 = first digit (ex: 1234567.8) ... N display digits-1 11 digits models (4 + 7): max number of decimal digits equal to 3. | 0 = No decimal point |
| FiLl | Filter level | 0 = no filter 1 - 20 | 3 |
| RuI | Number of samples on which the frequency average is calculated. | Selectable Values: 1 - 10. | 1 |

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Parameters settable from Menu : O.U.E..

| | | | |
|------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-t | Frequency Display Value associated to the minimum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 0 |
| Hi-t | Frequency Display Value associated to the maximum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 1000 |
| LYP | Retransmitted output type | 1 = 0 - 10 V 2 = 4 - 20 mA 3 = 0 - 20 mA 4 = totalizer digital output | 2: 4 - 20 mA |

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Parameters settable from Menu : b.U.S..

| | | | |
|------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| Addr | MODBUS Address | Settable values: from 1 to 255. | 1 |
| dEL | Delay on the answer | Number of pauses of 6 characters each to be entered between the end of the Rx message and the start of the Tx. Settable values: 0, 255. | 0: No Delay |
| BRUD | Serial communication speed | Serial communication speed in baud: 0 = 1200 1 = 2400 2 = 4800 3 = 9600 4 = 14400 5 = 19200 6 = 38400 7 = 57600 | 6: 38400 |

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Parameters settable from Menu : I.N.P.E.

| | | | |
|------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Symbol Parameter | Parameter Name | Description and setting range | Default Value |
| LYPE | Input type | 1 = Reed 2 = npn 2 wires 3 = npn 24 V (3 wires) 4 = pnp 24 V (3 wires) 5 = NAMUR 6 = Photoelectric 7 = Hall 8 = 24 V Input 9 = TTL Input 10 = Variable Reluctance | 3: npn 24 V (3 wires) |
| Hi-F | Full Scale Value (Hz) | Full scale value of the frequency measurement. It defines also the frequency value of the digital input signal, associated to the display maximum value (Hi-d). | 1000 Hz |

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Parameters settable from Menu : O.U.E..

| | | | |
|------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-t | Frequency Display Value associated to the minimum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 0 |
| Hi-t | Frequency Display Value associated to the maximum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 1000 |
| LYPE | Retransmitted output type | 1 = 0 - 10 V 2 = 4 - 20 mA 3 = 0 - 20 mA 4 = totalizer digital output | 2: 4 - 20 mA |

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Parameters settable from Menu : b.U.S..

| | | | |
|------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| Addr | MODBUS Address | Settable values: from 1 to 255. | 1 |
| dEL | Delay on the answer | Number of pauses of 6 characters each to be entered between the end of the Rx message and the start of the Tx. Settable values: 0, 255. | 0: No Delay |
| BRUD | Serial communication speed | Serial communication speed in baud: 0 = 1200 1 = 2400 2 = 4800 3 = 9600 4 = 14400 5 = 19200 6 = 38400 7 = 57600 | 6: 38400 |

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Parameters settable from Menu : S.C.A.L.L.

| | | | |
|------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-d | Start scale of frequency measurement view | Value displayed if the measured frequency is 0. Value on the following ranges: | 0 |
| Hi-d | Full scale of frequency measurement view | Value displayed if the measured frequency is Hi-F. Value on the following ranges: | 1000 |
| dP-d | Decimal Point position on frequency measurement view | 0 = no decimal point (ex: 12345678) ... 1 = first digit (ex: 1234567.8) ... N display digits-1 11 digits models (4 + 7): max number of decimal digits equal to 3. | 0 = No decimal point |
| FiLl | Filter level | 0 = no filter 1 - 20 | 3 |
| RuI | Number of samples on which the frequency average is calculated. | Selectable Values: 1 - 10. | 1 |

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9. SUMMARY OF BUTTONS ACTIONS (in view mode)

On the following table we give a summary of the actions which may be performed during the view phase (not programming phase). To effectively execute the actions, it is necessary to press the buttons for some seconds.

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Access to Programming Menu | Access to Quick Alarms Menu |
| By pressing the button for some seconds and if FUnC=0 has been set, the indicator switches to the frequency view (except 11 digits model). | By pressing the button for some seconds and if FUnC=0 has been set, the indicator switches to the totalizer view (except 11 digits model). |
| Retained Alarms reset. | Totalizer Reset (if this functionality has been enabled by setting IrES=0). |

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12.2 Holding Registers

The 16-bit Holding Registers have the following structure:

Most significant Bit Bit Index Least significant bit

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

Word (16 bits): MODBUS Register

In the table the notation Bit [x:y] 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. Default values are indicated with the * symbol.

| | | | |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|
| REGISTER | Description | IND. | R/W |
| MACHINE ID | Bit [15:8]: module ID (38 decimal) Bit [7:0]: external firmware revision | 40001 | R |
| FW_CODE | Register containing the internal code of the firmware. | 40002 | R |
| TYP_INP/AVI | Register for the setting of the input type and of the samples number on which the frequency average is calculated. | 40003 | R/W |
| Bit [15:8] | Set the digital input type: 1: Reed 2: npn 2 wires 3: npn 24 V (3 wires) 4: pnp 24 V (3 wires) 5: NAMUR 6: Photoelectric 7: Hall Sensor 8: 24 V Input 9: TTL Input 10: Variable reluctance | | |
| Bit [7:0] | Set the samples number on which the frequency measurement average value will be calculated. Admitted Values: 1-10. | | |
| Hi_D_LONG_MSW | Full Scale value of frequency measurement view (Most significant word). | 40004 | R/W |
| Bit [15:0] | Set the full scale value of the frequency measurement view scale (integer, most significant word); display value associated to Hi-F value (40009-10) of the input frequency. The decimal point on the set integer value is given by dP_d (40008). Default: 1000. Minimum Value (depending on the digits number): 4 Digits: 1999 6 Digits: 199999 8 Digits: 1999999 11 (4+7) Digits: 1999 | | |
| Hi-F_LONG_MSW | Full scale of frequency measurement in Hz (Most significant Word). | 40009 | R/W |
| Bit [15:8] | Full scale of frequency measurement in Hz (integer, most significant word); associated to the view frequency full scale HI_D_LONG (40004-5). The decimal point on the set integer value is decided by dP_IN (40008). Default: 1000. The maximum and minimum limits are the same of HI_D_LONG (40004-5). | | |

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12.1 Supported MODBUS Commands

| | | |
|------|--------------------------|-----------------------------------------------|
| Code | Function | Description |
| 03 | Read Holding Registers | Reading of word registers up to 16 at a time. |
| 06 | Write Single Register | Writing of a word register. |
| 16 | Write Multiple Registers | Writing of word registers up to 16 at a time. |

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Parameters settable from Menu : E.O.E..

| | | | |
|------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| rREt | Totalizer Reducing Ratio | It sets the value the totalizer will be divided for. Admitted Values: 1 - 250. | 1 |
| dP-t | Decimal point position on the totalizer view. | 0 = no decimal point (ex: 123456) 1 = first digit (ex: 12345.6) 2 = second digit (ex: 1234.56) ... N display digits-1. 11 digits models (4 + 7): max number of decimal digits equal to 6. | 0: No decimal point |

By confirming with OK/MENU, all the parameters are saved in flash memory and after some instants the module is reset.

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10. ERROR SIGNALLINGS

The errors are directly viewed through display. We are going to list all the possible signalings with the correspondent meaning:

- nnnn: Frequency Measurement value to display > Hi-d value of the 2.5% or if the frequency value > maximum displayable.
- Eerr: at the start may signal an error on the calibration memory. The functioning of the module is blocked while the Modbus communication is available (if optional card).

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Parameters settable from Menu : E.O.E..

| | | | |
|------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| rREt | Totalizer Reducing Ratio | It sets the value the totalizer will be divided for. Admitted Values: 1 - 250. | 1 |
| dP-t | Decimal point position on the totalizer view. | 0 = no decimal point (ex: 123456) 1 = first digit (ex: 12345.6) 2 = second digit (ex: 1234.56) ... N display digits-1. 11 digits models (4 + 7): max number of decimal digits equal to 6. | 0: No decimal point |

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Parameters settable from Menu : E.O.E..

| | | | |
|------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-t | Frequency Display Value associated to the minimum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 0 |
| Hi-t | Frequency Display Value associated to the maximum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 1000 |
| LYPE | Retransmitted output type | 1 = 0 - 10 V 2 = 4 - 20 mA 3 = 0 - 20 mA 4 = totalizer digital output | 2: 4 - 20 mA |

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Parameters settable from Menu : E.O.E..

| | | | |
|------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-t | Frequency Display Value associated to the minimum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 0 |
| Hi-t | Frequency Display Value associated to the maximum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 1000 |
| LYPE | Retransmitted output type | 1 = 0 - 10 V 2 = 4 - 20 mA 3 = 0 - 20 mA 4 = totalizer digital output | 2: 4 - 20 mA |

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11. ORDER CODES

| | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code | Description |
| S311D | Indicator - totalizer with universal digital input. |
| Display | -4 4 digits -6 6 digits -8 8 digits -11 +7 digits |
| Power Supply | -H 85, 265 VAc -L 10, 40 Vdc / 19, 28 VAc |
| Options | -O Optional card: RS485 ModBus Port, 2 relay alarms and auxiliary digital input. -I Isolation: 1500 Vac among each port -T Calibration and configuration Service. |

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Parameters settable from Menu : E.O.E..

| | | | |
|------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-t | Frequency Display Value associated to the minimum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 0 |
| Hi-t | Frequency Display Value associated to the maximum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 1000 |
| LYPE | Retransmitted output type | 1 = 0 - 10 V 2 = 4 - 20 mA 3 = 0 - 20 mA 4 = totalizer digital output | 2: 4 - 20 mA |

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Parameters settable from Menu : E.O.E..

| | | | |
|------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-t | Frequency Display Value associated to the minimum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 0 |
| Hi-t | Frequency Display Value associated to the maximum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 1000 |
| LYPE | Retransmitted output type | 1 = 0 - 10 V 2 = 4 - 20 mA 3 = 0 - 20 mA 4 = totalizer digital output | 2: 4 - 20 mA |

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Parameters settable from Menu : E.O.E..

| | | | |
|------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Parameter Symbol | Parameter Name | Description and setting range | Default Value |
| LO-t | Frequency Display Value associated to the minimum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 0 |
| Hi-t | Frequency Display Value associated to the maximum value of the output. | Limits for the scaling of the retransmitted output. Decimal point set by dP.d. Settable values on the following limits: | 1000 |
| LYPE | Retransmitted output type | 1 = 0 - 10 V 2 = 4 - 20 mA 3 = 0 - 20 mA 4 = totalizer digital output | 2: 4 - 20 mA |

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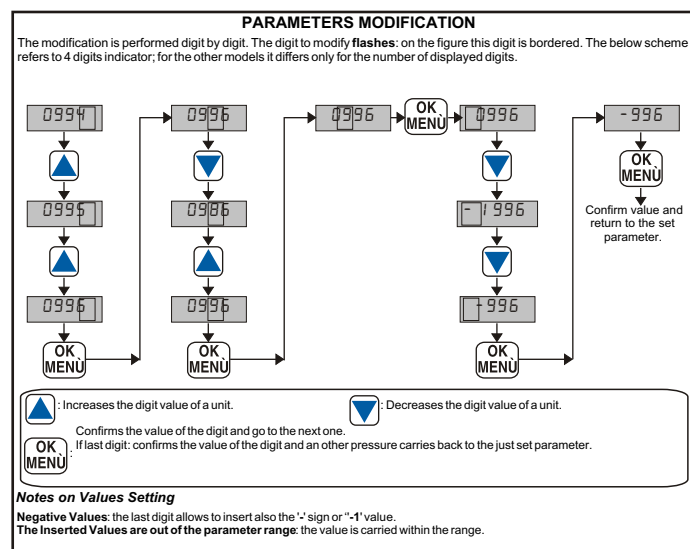
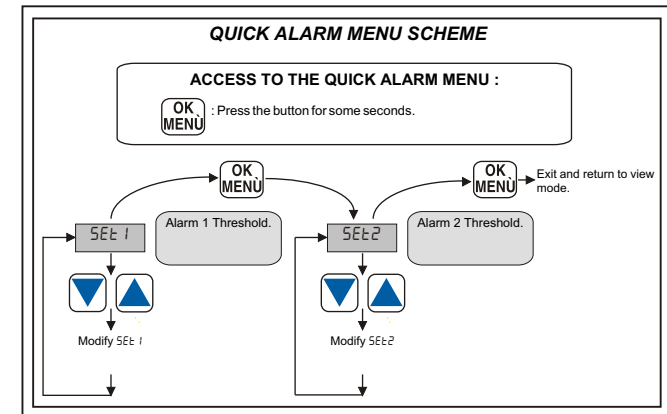
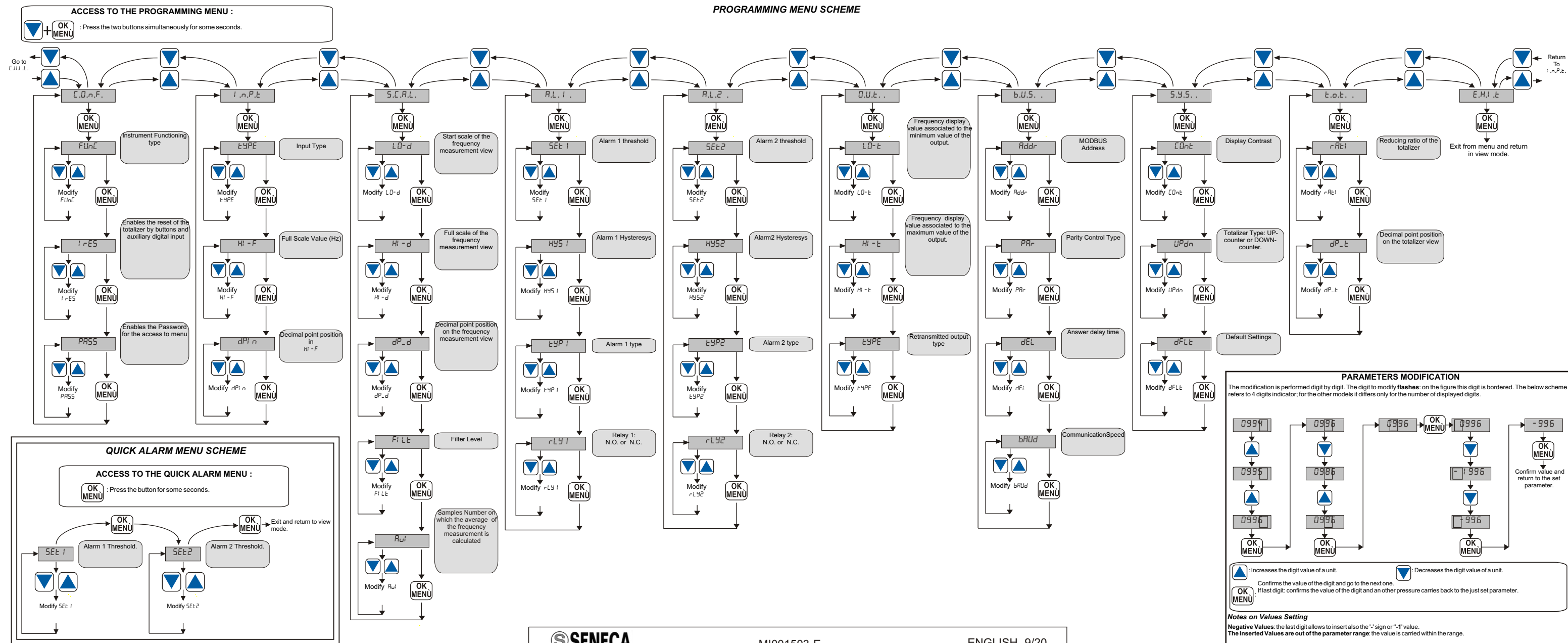
12. MODBUS REGISTERS (Optional Card)

The S311D-XX-L and S311D-XX-H lines indicators have MODBUS 16 bits (words) registers, accessible by RS485 serial communication (available in case of optional card use).

12.1 Supported MODBUS Commands

| | | |
|------|--------------------------|-----------------------------------------------|
| Code | Function | Description |
| 03 | Read Holding Registers | Reading of word registers up to 16 at a time. |
| 06 | Write Single Register | Writing of a word register. |
| 16 | Write Multiple Registers | Writing of word registers up to 16 at a time. |

PROGRAMMING MENU SCHEME



7. SETTABLE VALUES FOR MULTIPLE CHOICE PARAMETERS

The various options for the multiple choice parameters are listed below. Default values are indicated with the * symbol.

7.1 C.O.n.F. (FUNCTIONING CONFIGURATION)

FUnC
Selects the functioning type:
0* = function of frequency value and totalizer value view.
1 = only function of frequency value view.
2 = only function of totalizer view.
IrES
Enables the reset of the totalizer by panel and auxiliary digital input:
0* = enabled.
1 = disabled.

7.2 I.n.P.t. (DIGITAL INPUT)

tYPE
Selects the input type among the following:
1 = Reed
2 = npn 2 wires
3* = npn 24 V (3 wires)
4 = pnp 24 V (3 wires)
5 = NAMUR
6 = Photoelectric
7 = Hall
8 = 24 V Input
9 = TTL Input
10 = Variable Reluctance

7.3 S.C.R.L. (DISPLAYED VALUE SETTING)

FiLt
It sets the filter level. Admitted values:
0 = no filter
1 - 20. Default: 3.

RuI
Number of samples on which the frequency measurement average is calculated. Admitted Values: 1 - 10. Default: 1.

7.4 R.L.1./R.L.2. (ALARM 1 AND ALARM 2 SETTING)

tYPE1 / tYPE2
Sets the alarm type:
0* = Disabled Alarm
1 = Alarm on the minimum threshold
2 = Alarm on the maximum threshold
3 = Retained alarm on the minimum threshold (reset is not automatic)
4 = Retained alarm on the maximum threshold (reset is not automatic).

0* = normally opened relay
1 = normally closed relay.

7.5 O.U.t. (RETRANSMITTED OUTPUT SETTING)

tYPE
Sets the type of the retransmitted output:
1 = 0 - 10 V output 2* = 4 - 20mA output
3 = 0 - 20 mAoutput 4 = totalizer/digital output.

7.6 b.U.S. (RS485 SETTING)

Addr
Selects the slave Modbus address. Values from 1 to 255. Default: 1.
PR-
Selects the parity control of the serial communication:
0* = None 1 = Even 2 = Odd.
dEL
Sets the response delay time. Values: 0 - 255. 0* = no delay, 1 = 1 pause, etc.
bAUd
Sets the Baudrate :

7.7 S.Y.S. (SYSTEM)

COnt
Sets the display contrast: values from 1 (minimum contrast) to 20 (maximum contrast). Default: 10.
UPdn = 1200 3 = 9600 6* = 38400
Totalizer Type: UP-counter or DOWN-counter 7 = 57600
0* = The totalizer increases of 0.01 at each rising edge of the digital input.
1 = The totalizer decreases of a unit at each rising edge of the digital input.

7.8 t.o.t. (TOTALIZER SETTING)

rReI
Totalizer reducing ratio: value for which the totalizer will be divided.
Admitted Values: 1..250. Default: 1.

7.8 d.F.L.t. (DEFAULT SETTING)

1 = Default setting for all the parameters.

rLY1 / rLY2
Sets the functioning of the correspondent relay (if optional card):



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8. SETTING EXAMPLES

8.1 Modification parameters examples

We are going to illustrate an example of 'Hi - d' parameter modification for a 6 digits model. In this example the digit to modify, that in the real case flashes, is bordered:

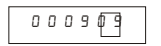
Once the parameter to modify has been selected, the set value is for example:



The pressure of the DOWN button entails:



DOWN has brought the digit to the maximum value. Now the pressure of OK/MENU buttons entails the position shift of the digit to modify:



The pressure of the UP button entails:



that is the digit has been increased of a unit. To set a negative value, place on the most significant digit by subsequent pressures of OK/MENU button :



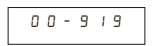
By pressing the DOWN button:



The last digit is brought to the most negative value: -1. By pressing the DOWN button :



Now the minus sign is obtained replacing the first non-useful zero of the set value. By pressing the OK/MENU button the set value is confirmed:



A further pressure of the OK/MENU button, entails the return to the voice correspondent to the just modified parameter:

