USER MANUAL

S311D-XX-L/S311D-XX-H

ADVANCED DIGITAL INDICATORS-TOTALIZERS
4-, 6-, 8-, 11-DIGIT DISPLAY



CE

SENECA®

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ORIGINAL INSTRUCTIONS

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1. MODBUS REGISTERS (optional board)

The indicators of the S311D-XX-L and S311D-XX-H series have 16-bit registers accessible via RS485 serial communication (available if the optional board is used).

CONTACT INFORMATION	
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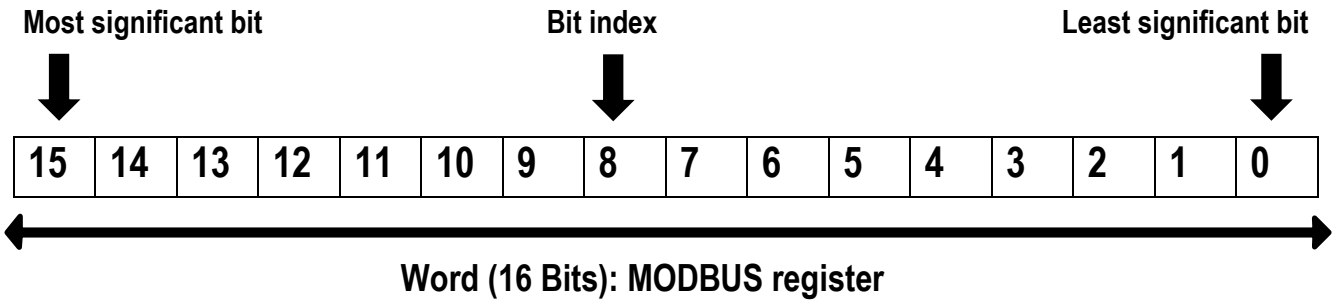
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1.1. MODBUS COMMANDS SUPPORTED

CODE	FUNCTION	DESCRIPTION
03	Read Holding Register	
06	Write Single Register	
16	Write Multiple Registers	

1.2. HOLDING REGISTERS

16-bit Holding Registers have the following structure:



The Bit [x: y] notation shown in the table 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. On the other hand, the symbol * indicates the default value.

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REGISTER	DESCRIPTION	IND: Modbus		R/W
MACHINE ID	Bit [15:8]: Module ID (38 decimal) Bit [7:0]: firmware revision	40001	0	R
FW_CODE	Register containing the internal firmware code of the instrument.	40002	1	R
TYP_INP/AVI	Register for setting the type of input and the number of samples on which to average the measured frequency value.	40003	2	R/W
Bit [15:8]	They set the type of digital input: 1: Reed 6: Photoelectric (Astra) 2: npn 2 wires 7: Hall sensor 3: npn 24 V (3 wires) 8: 24 V input 4: pnp 24 V (3 wires) 9: TTL input 5: NAMUR 10: Variable reluctance			
Bit [7:0]	They set the number of samples on which to average the digital input frequency measurement. Admissible values: 1* – 10.			
HI_D_LONG_MSW	Full scale of frequency measurement display (most significant word).	40004	3	R/W
HI_D_LONG_LSW	Full scale of frequency measurement display (least significant word).	40005	4	R/W
	Sets the display full scale (integer, most significant word): display value associated with the Hi-F value (40009-10) of the input frequency. The decimal point on the integer value set here is given by dP_d (40008). Default: 1000. Minimum and maximum values depending on the number of digits in the display: Minimum value (depending on the number of digits): 4 digits: -1999 6 digits: -199999 8 digits: -19999999 11 (4+7) digits: -1999 Maximum value (depending on the number of digits): 4 digits: 9999 6 digits: 999999 8 digits: 99999999 11 (4+7) digits: 9999			
LO_D_LONG_MSW	Start of scale of frequency measurement display (most significant word).	40006	5	R/W
LO_D_LONG_LSW	Start of scale of frequency measurement display (least significant word).	40007	6	R/W
	Sets the display full scale (integer, most significant word): display value associated with the null value of the input frequency. The decimal point on the integer value set here is given by dP_d (40008). Default: 0. Same maximum and minimum limits as HI_D_LONG (40004-5).			
DP_D/DP_IN/DP_TOT	Decimal point position for frequency value of the HI-F	40008	7	R/W

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	parameter and totalizer value.			
Bit [15:12]	Not used.			
Bit [11:8]	Position of the decimal point in the display of the frequency measurement (dp_D): 0* = no decimal point (e.g. 12345678) , 1 = first digit (e.g. 1234567.8), 2 = second digit …... N digits display-1. For 11-digit indicators (4+7): max number of decimal places equal to 3.			
Bit [7:4]	Position of the decimal point for the Hi-F parameter (40009-10) (dp_IN): 0* = no decimal point (e.g. 12345678) , 1 = first digit (e.g. 1234567.8), 2 = second digit …. Maximum number of decimal digits depending on the number of display digits: 4 digits: 3, 6 digits: 4, 8 digits: 4, 11 digits (4+7): 3			
Bit [3:0]	Decimal point position in the totalizer display (dp_TOT): 0 *= no decimal point (e.g. 12345678) 1 = first digit (e.g. 1234567.8), 2 = second digit, …. N digits display-1. For 11-digit (4+7) indicator: max number of decimal places equal to 6.			
HI-F_LONG_MSW	Full scale of frequency measurement in Hz (most significant word).	40009	8	R/W
HI-F_LONG_LSW	Full scale of frequency measurement in Hz (least significant word).	40010	9	R/W
	Sets the frequency measurement full scale in Hz (integer, most significant word): associated with the display full scale of the frequency HI_D_LONG (40004-5). The decimal point on the integer value set here is given by dP_IN (40008). Default: 1000. Same maximum and minimum limits as HI_D_LONG (40004-5).			
SET1_LONG_MSW	Alarm 1 threshold (most significant word)	40011	10	R/W
SET1_LONG_LSW	Alarm 1 threshold (least significant word)	40012	11	R/W
	Alarm 1 threshold. Set the value referred to the display scale but without decimal point. For instance, if the value shown on the display scale is 20.0, set 200. Same maximum and minimum limits as HI_D_LONG (40004-5). Default: 500. If totalizer, see TABLE 2.			
HYS1_LONG_MSW	Alarm 1 hysteresis (most significant word)	40013	12	R/W

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HYS1_LONG_LSW	Alarm 1 hysteresis (least significant word)	40014	13	R/W
	Alarm 1 hysteresis. Set the value referred to the display scale but without decimal point. For instance, if the hysteresis value shown on the display scale is 10.00, set 1000. Same maximum and minimum limits as HI_D_LONG (40004-5). Default: 10. No effect on the totalizer.			
SET2_LONG_MSW	Alarm 2 threshold (most significant word)	40015	14	R/W
SET2_LONG_LSW	Alarm 2 threshold (least significant word)	40016	15	R/W
	Alarm 2 threshold. Set the value referred to the display scale but without decimal point. For instance, if the value shown on the display scale is 20.0, set 200. Same maximum and minimum limits as HI_D_LONG (40004-5). Default: 1000. If totalizer, see TABLE 2.			
HYS2_LONG_MSW	Alarm 2 hysteresis (most significant word)	40017	16	R/W
HYS2_LONG_LSW	Alarm 2 hysteresis (least significant word)	40018	17	R/W
	Alarm 2 hysteresis. Set the value referred to the display scale but without decimal point. For instance, if the hysteresis value shown on the display scale is 10.00, set 1000. Same maximum and minimum limits as HI_D_LONG (40004-5). Default: 10. No effect on the totalizer.			
TYP_AL1/TYP_AL2	Sets the operation of the two alarms.	40019	18	R/W
Bit [15:8]	Sets the operation for alarm 1 0*= Alarm not active 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold 3 = Alarm on the minimum held threshold (does not automatically reset) 4 = Alarm on the maximum held threshold (does not automatically reset). 5 = Alarm on the totalizer threshold value. (does not automatically reset).			
Bit [7:0]	Sets the operation for alarm 2. 0*= Alarm not active 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold 3 = Alarm on the minimum held threshold (does not automatically reset) 4 = Alarm on the maximum held threshold (does not automatically reset).			
HI_T_LONG_MSW	Frequency measurement display value corresponding to output maximum value (most significant word).	40020	19	R/W

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HI_T_LONG_LSW	Frequency measurement display value corresponding to output maximum value (least significant word).	40021	20	R/W
	Display value of the frequency measurement corresponding to the maximum value of the retransmitted output. Set the value referred to the display scale but without decimal point. Example: if the value shown on the display scale is 10.0, set 100. Default: 1000. Same maximum and minimum limits as HI_D_LONG (40004-5).			
LO_T_LONG_MSW	Frequency measurement display value corresponding to output minimum value (most significant word).	40022	21	R/W
LO_T_LONG_LSW	Frequency measurement display value corresponding to output minimum value (least significant word).	40023	22	R/W
	Display value of the frequency measurement corresponding to the minimum value of the retransmitted output. Set the value referred to the display scale but without decimal point. Example: if the value shown on the display scale is 10.0, set 100. Default: 0. Same maximum and minimum limits as HI_D_LONG (40004-5).			
CONTRAST	Sets the display contrast.	40024	23	R/W
Bit [15:0]	Sets the display contrast: values from 1 (minimum contrast) to 20 (maximum contrast) Default: 10.			
PASSWORD	Enables / disables the password for the access to the programming value	40025	24	R/W
Bit [15:0]	By setting a value other than 5477, the password will be requested when starting the programming menu (always 5477). Default: 5477.			
RLY1_AL1/RLY2_AL2	Sets the rest status of relay outputs 1 and 2 (if optional board)	40027	26	R/W
Bit [15:8]	Sets the operation of relay 1 (if optional board) 0* = normally open relay 1 = normally closed relay			
Bit [7:0]	Set the operation of relay 2 (if optional board) 0* = normally open relay 1 = normally closed relay			
UP_DOWN/TYP_OUT /FILT	Increasing or decreasing totalizer setting, Retransmitted output type, Filter.	40028	27	R/W
Bit [15:12]	Sets the increasing or decreasing totalizer: 0*= The totalizer increases by one unit at each rising edge of the digital input. 1 = The totalizer decreases by one unit at each rising edge of the digital input.			
Bit [11:8]	Sets the type of retransmitted output:			

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	1 = output 0 – 10V 2* = output 4 – 20mA 3 = output 0 – 20mA 4 = totalizer impulsive digital output.			
Bit [7:0]	Sets the filter level. Admissible values: 0= no filter, 1 - 20. Default: 3.			
RATIO_TOT	Sets the totalizer ratio.	40029	28	R/W
Bit [15:0]	Sets a value by which to divide the totalizer. Permitted values: 1 -9999. Default: 1.			
ADDR_PAR	Register for setting the module address and parity check.	40030	29	R/W
Bit [15:8]	They set the gateway address. Admissible values from 0x01 to 0xFF (decimal values in the range 1-255, Default: 1).			
Bit [7:0]	They set the type of parity check: 00000000 (0)*: no parity (NONE) 00000001 (1): even parity (EVEN) 00000010 (2): odd parity (ODD)			
BAUDR_DELAY	Register for setting the baud rate and response delay time.	40031	30	R/W
Bit [15:8]	Serial communication speed in baud: 00000000 (0x00): 1200 00000100 (0x04): 14400 00000001 (0x01): 2400 00000101 (0x05): 19200 00000010 (0x02): 4800 00000110 (0x06)*: 38400 00000011 (0x03): 9600 00000111 (0x07): 57600			
Bit [7:0]	They set the delayed response time. Represents the number of pauses of 6 characters each between the end of the Rx message and the beginning of the Tx message. Default: 0.			
FREQ_LONG_MSW	Value of the displayed frequency value (long format, most significant word)	40042	41	R
FREQ_LONG_LSW	Value of the displayed frequency value (long format, least significant word)	40043	42	R
TOT_LONG_MSW	Totalizer value (long format, most significant word).	40044	43	R/W
TOT_LONG_LSW	Totalizer value (long format, least significant word).	40045	44	R/W
FREQ_FLOAT_MSW	Value of the frequency measurement in Hz (Floating Point format, most significant word).	40046	45	R
FREQ_FLOAT_LSW	Value of the frequency measurement in Hz (Floating Point format, least significant word).	40047	46	R
FREQ_SHORT	Measurement of the frequency in scale 0 – 10000.	40048	47	R
	Measurement of the frequency in scale 0 – 10000. It is 0: if the value displayed on the FREQ_LONG			

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	(40041-42) display is equal to LO_T_LONG (40022-23, value of the displayed frequency corresponding to the minimum value of the retransmitted output). It is 10000: if the value displayed on the FREQ_LONG (40041-42) display is equal to LO_T_LONG (40020-21, value of the displayed frequency corresponding to the maximum value of the retransmitted output). Limited: 0 – 11000.			
STATUS	Error and alarm reporting.	40049	48	R
Bit [15:9]	Not used			
Bit 8	1: Alarm 2 active.			
Bit 7	1: Alarm 1 active.			
Bit 6	1: Predictor activated.			
Bit 5	1: If the value to be displayed is: > d-I H of 2.5 %.			
Bit 4	Not used.			
Bit 3	1: Totalizer saving failure			
Bit 2	Not used.			
Bit 1	1: The events (rising edges of the digital input) occur with too high a frequency and the instrument temporarily suspends the measurement.			
Bit 0	1: Damaged calibration eeprom. Contact Seneca srl to solve the problem.			
COMANDI	Sends commands to the module.	40050	49	R/W
Bit [15:0]	- By writing 0xC1A0 (decimal 49568), the reset (restart) is ordered. - By writing 0xAA00 (decimal 43520), the totalizer is reset and the totalizer alarms are reset. - By writing 0xAA03 (decimal 43523), the alarms of the totalizer are reset.			

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