ULS ULTRASONIC LEVEL SENSORS
MODBUS PROTOCOL ADDRESS TABLE

COIL ADDRESS TABLE

Coil Address (hex)	Parameter Name	Parameter Description	Count of Bit	Value	Read/ Write
0x00	OUT1_SET	1. Open Drain Out = High	1 bit	Default value=0 0=Inactive 1=Avtive	Read/ Write
0x01	OUT1_CLEAR	1. Open Drain Out = Low			
0x02	OUT2_SET	2. Open Drain Out = High			
0x03	OUT2_CLEAR	2. Open Drain Out = Low			

In order for the relay outputs to be controlled by the coil parameters, the corresponding output function type (mode) must be OFF.

HOLDING REGISTER ADDRESS TABLE

	Holding Register Address (hex)	Parameter Name	Parameter Description	Count of Bit	Default Value	Read/ Write
	0x00	DECIMAL_POINTS	Decimal point location on the screen display (0=A, 1=A.A, 2=A.AA, 3=A.AAA 4=A.AAAA)	16 bit (word)	1	Read/ Write
Relay 1 Output	0x01	SET1A_HIGH	Set-1A value [MSB]	16 bit (H word)	0	Read/ Write
	0x02	SET1A_LOW	Set-1A value [LSB]	16 bit (L word)	250	
	0x03	SET1B_HIGH	Set-1B value [MSB]	16 bit (H word)	0	
	0x04	SET1B_LOW	Set-1B value [LSB]	16 bit (L word)	350	
	0x05	MODE1	Function Type (0=OFF, 1=Stand, 2=Band, 3=Catch, 4=Dual, 5=Periodic)	16 bit (word)	1	
	0x06	DELAY1_HIGH	Delay time (seconds) [MSB]	16 bit (H word)	0	
	0x07	DELAY1_LOW	Delay time (seconds) [LSB]	16 bit (L word)	0	
	0x08	HYSUP1_HIGH	Upper hysteresis value [MSB]	16 bit (H word)	0	
	0x09	HYSUP1_LOW	Upper hysteresis value [LSB]	16 bit (L word)	0	
	0x0A	HYSDOWN1_HIGH	Lower hysteresis value [MSB]	16 bit (H word)	0	
	0x0B	HYSDOWN1_LOW	Lower hysteresis value [LSB]	16 bit (L word)	0	
	0x0C	OFFSET1_HIGH	Offset value [MSB]	16 bit (H word)	0	
	0x0D	OFFSET1_LOW	Offset value [LSB]	16 bit (L word)	0	
	0x0E	CONDITION_MODE1	Normally state of Open Drain Out (0=N.C.=Off 1=N.O.=On)	16 bit (word)	0	

HOLDING REGISTER ADDRESS TABLE

	Holding Register Address (hex)	Parameter Name	Parameter Description	Count of Bit	Default Value	Read/ Write
Relay 2 Output	0x0F	SET2A_HIGH	Set-2A value [MSB]	16 bit (H word)	0	Read/ Write
	0x10	SET2A_LOW	Set-2A value [LSB]	16 bit (L word)	350	
	0x11	SET2B_HIGH	Set-2B value [MSB]	16 bit (H word)	0	
	0x12	SET2B_LOW	Set-2B value [LSB]	16 bit (L word)	500	
	0x13	MODE2	Function type (0=OFF, 1=Stand, 2=Band, 3=Catch, 4=Dual, 5=Periodic)	16 bit (word)	1	
	0x14	DELAY2_HIGH	Delay time (seconds) [MSB]	16 bit (H word)	0	
	0x15	DELAY2_LOW	Delay time (seconds) [LSB]	16 bit (L word)	0	
	0x16	HYSUP2_HIGH	Upper hysteresis value [MSB]	16 bit (H word)	0	
	0x17	HYSUP2_LOW	Upper hysteresis value [LSB]	16 bit (L word)	0	
	0x18	HYSDOWN2_HIGH	Lower hysteresis value [MSB]	16 bit (H word)	0	
	0x19	HYSDOWN2_LOW	Lower hysteresis value [LSB]	16 bit (L word)	0	
	0x1A	OFFSET2_HIGH	Offset value [MSB]	16 bit (H word)	0	
	0x1B	OFFSET2_LOW	Offset value [LSB]	16 bit (L word)	0	
	0x1C	CONDITION_MODE2	Normally state of Open Drain Out (0=N.C.=Off 1=N.O.=On)	16 bit (word)	0	

*MSB (Most Significant Bit) or H word (HIGH): Represents the 16 bits which are significant for a 32-bit number.
*LSB (Least Significant Bit) or L word (LOW): refers to the 16 bits which are small for a 32-bit number.
* For values to be entered with H word and L word, the function code Write Multiple Register (0x10) must be used and both values must be entered at any time. The decimal point value for these values is always 3.
* For example to set the value of SET1A to 66.5, SET1A_HIGH =1000 (1.000d), SET1A_LOW = 964 (0.965d).

HOLDING REGISTER ADDRESS TABLE

	Holding Register Address (hex)	Parameter Name	Parameter Description	Count of Bit	Default Value	Read/ Write
RS-232 and RS-485	0x3F	UART_PROTOCOL	Protocol selection (0 = ASCII, 1 = MB_RTU, 2 = MB_ASCII)	16 bit (word)	1	Read/ Write
	0x40	UART_ADRESS	Address information for network connection (1 to 247)		1	
	0x41	UART_BAUD	Baudrate (0=600, 1=1200, 2=2400, 3=4800, 4=9600, 5=14400, 6=19200, 7=38400, 8=57600, 9=115200)		4	
	0x42	UART_PARITY	Parity (0=None, 1=Odd, 2=Even)		0	
	0x43	UART_PERIOD	Period (in 1 / ms)		100	

*MSB (Most Significant Bit) or H word (HIGH): Represents the 16 bits which are significant for a 32-bit number.
* LSB (Least Significant Bit) or L word (LOW): refers to the 16 bits which are small for a 32-bit number.
* For values to be entered with H word and L word, the function code Write Multiple Register (0x10) must be used and both values must
be entered at any time. The decimal point value for these values is always 3.
* For example to set the value of SET1A to 25.5, SET1A_HIGH = 0 (0d), SET1A_LOW = 25500 (25.500d).
** Analogue output set by parameter Analog_Output_Set only works when Analog_Output = 0. When Analog_Output = 1, the analogue
output is not in device control, the value from the sensor is transferred directly.

INPUT REGISTER ADDRESS TABLE					
Input Register Address (hex)	Parameter Name	Parameter Description	Count of Bit	Default Value	Read/ Write
0x01	DECIMAL_POINTS	Decimal point location on the screen display (0=A, 1=A.A, 2=A.AA, 3=A.AAA 4=A.AAAA)		1	
0x02	PROCESS_VALUE	Current value displayed on device screen		-	
0x03	VALLEY_VALUE	The highest value read since the device was turned on		-	
0x04	PEAK_VALUE	The lowest value read since the device was turned on		-	
0x05	DIGITAL_IOS	Status of External Tare Module (4.bit), status of 1st and 2nd relays (bit 0 and 1) [00000 = All Inactive, 10011 = All Active]	16 bit (word)	00000	Read-only
0x06	TARE_STATUS	Process Value indicates whether the value is tare or not. 0 = no tare, 1 = tare		0	

Function Code Definitons	
Read Coil	0x01
Read Holding Register	0x03
Read Input Register	0x04
Write Single Coil	0x05
Write Single Register	0x06
Write Multiple Coils	0x0f
Write Multiple Register	0x10