

Modbus protokol for ES950 Optima 311**Standard:** Modbus application protokol specification V1.1a Modbus over serial lin V1.02

Mode:	RTU	(MSB first)	
WWW adresse	Modbus.org		
Baud	0=Modbus Off, 1=9600, 2=19200	default	0
Start bits	1	default	1
Data bits	8	default	8
Stop Bits	1	default	1
Parity	Even	default	Even
Address	1-247	default	1
Registers Map			
Support function	1,2,3,4,5,6,17		



Code	Description	Description
01	Read coils	Read the status off the coils (0X)
02	Read Discrete Inputs	Read the status off discrete inputs. (1X)
03	Read Holding Registers	Read the contents of read/write location (4X)
04	Read Input Registers	Read the contents of read only location (3X)
06	Write Single Register	Used to write a single holding register in a remote device.

01 = read coils (0X)
02 = read discrete inputs (1X)

03 = read holding registers (4X)
04 = read input registers (3X)

06 = write single register

RNR	Data description	R/W	L	Units	Valid response	Remarks
0x0000	Relay 1	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0001	Relay 2	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0002	Relay 3	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0003	Relay 4	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0004	Relay 5	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0005	Relay 6	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0006	Relay 7	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0007	Relay 8	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0008	Relay 9	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0009	Relay 10	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0010	Relay 11	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0011	Not Used Digital out 1	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0012	Not Used Digital out 2	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0013	Not Used Digital out 3	R	1	UINT16	ON/OFF	0=OFF 1=ON
0x0014	Not Used Digital out 4	R	1	UINT16	ON/OFF	0=OFF 1=ON

1x0000	Hygrostat	R	1	UINT16	ON/OFF	0=OFF 1=ON
1x0001	Start/stop	R	1	UINT16	ON/OFF	0=OFF 1=ON
1x0002	Not Used Digital in1	R	1	UINT16	ON/OFF	0=OFF 1=ON
1x0003	Not Used Digital in2	R	1	UINT16	ON/OFF	0=OFF 1=ON
1x0004	Not Used Digital in3	R	1	UINT16	ON/OFF	0=OFF 1=ON
1x0005	Not Used Digital in4	R	1	UINT16	ON/OFF	0=OFF 1=ON

3x0000	T1	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0001	T2	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0002	T3	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0003	T4	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0004	T5	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0005	T6	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0006	T7	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0007	T8	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0008	T9	R	1	UINT16	-30grdC - 70grd C	300=0.0°C
3x0009	T2 Panel	R	1	UINT16	-30grdC - 70grd C	300=0.0°C

3x0101	Alarm	R	1	UINT16	Bits	
3x0102	Inlet fan	R		UINT16	0-100%	
3x0103	Extract fan	R	1	UINT16	0-100%	
3x0104	Bypass	R	1	UINT16	0-100%	
3x0105	Water valve	R	1	UINT16	0-100%	
3x0106	Not Used volt1	R	1	UINT16	0-1000 (0-10V)	0-10V output
3x0107	Not Used volt2	R	1	UINT16	0-1000 (0-10V)	0-10V output
3x0108	Inlet fan RPM	R	1	UINT16	0-9999	
3x0109	Extract fan RPM	R	1	UINT16	0-9999	

3x0200	Programme Version Controller	R	1	UINT16	0-9999	1=0.1
3x0201	Programme Version Display	R	1	UINT16	0-9999	1=0.1
3x0202	Sub Version Controller	R	1	UINT16	0-9999	ascii 97=a, 98=b
3x0203	Sub Version Display	R	1	UINT16	0-9999	ascii 97=a, 98=b
3x0204	ModbusVersion	R	1	UINT16	0-9999	1=0.1
3x0205	Sub ModbusVersion	R	1	UINT16	0-9999	ascii 97=a, 98=b

01 = read coils (0X)
02 = read discrete inputs (1X)

03 = read holding registers (4X)
04 = read input registers (3X)

06 = write single register

Group0						
4x0000	01) Temperature (°C)	R/W	1	UINT16		
4x0001	02) Domestic hot water temperature (°C)	R/W	1	UINT16		
4x0002	03) Power-patron ON (on/off)	R/W	1	UINT16		
4x0003	04) Hour level 3-4 (on/off)	R/W	1	UINT16		
4x0004	05) Filter change (mon)	R/W	1	UINT16		
4x0005		R/W	1	UINT16		
4x0006	10) Level 1 supply (%)	R/W	1	UINT16		
4x0007	11) Level 2 supply (%)	R/W	1	UINT16		
4x0008	12) Level 3 supply (%)	R/W	1	UINT16		
4x0009	13) Level 1 extract (%)	R/W	1	UINT16		
4x0010	14) Level 2 extract (%)	R/W	1	UINT16		
4x0011	15) Level 3 extract (%)	R/W	1	UINT16		
4x0012	16) T2 adjustment (°C)	R/W	1	UINT16		
4x0013	17) Level 3-4 (hour)	R/W	1	UINT16		
4x0014	18) Filter change autostop (on/off)	R/W	1	UINT16		
4x0015	19) Power-patron (°C)	R/W	1	UINT16		
4x0016	20) Disinfection (on/off)	R/W	1	UINT16		
4x0017	21) Domestic hot water/air (on/off)	R/W	1	UINT16		
4x0018	22) Water reg interval (sec)	R/W	1	UINT16		
4x0019	23) Power reg interval (min)	R/W	1	UINT16		
4x0020	24) Min air volume extract (%)	R/W	1	UINT16		
4x0021	25) Reheat (on/off)	R/W	1	UINT16		
4x0022	26) Sun collector (°C)	R/W	1	UINT16		
4x0023	27) Aux. Relay R9	R/W	1	UINT16		
4x0024	28) Unit stop (on/off)	R/W	1	UINT16		
4x0025	29) Stop defrost (°C)	R/W	1	UINT16		
4x0026	30) Compressor differens (°C)	R/W	1	UINT16		
4x0027	31) Constant (on/off)	R/W	1	UINT16		
4x0028	32) Constant (°C)	R/W	1	UINT16		
4x0029	33) Reduction (on/off)	R/W	1	UINT16		
4x0030	34) Reduce supply (°C)	R/W	1	UINT16		
4x0031	35) Reduce supply speed (%)	R/W	1	UINT16		
4x0032	36) Aux. relay R8	R/W	1	UINT16		
4x0033	37) Earth collector temperature (°C)	R/W	1	UINT16		
4x0034	38) Print version (on/off)	R/W	1	UINT16		
4x0035	39) Min air volume supply (%)	R/W	1	UINT16		
4x0036	40) Min air volume mode	R/W	1	UINT16		
4x0037	41) Modbus mode	R/W	1	UINT16		0=Modbus Off, 1=9600, 2=19200
4x0038	42) Modbus address	R/W	1	UINT16		
4x0039		R/W	1	UINT16		
4x0040		R/W	1	UINT16		
4x0041		R/W	1	UINT16		
4x0042		R/W	1	UINT16		
4x0043		R/W	1	UINT16		
4x0044		R/W	1	UINT16		
4x0045						
4x0046						
4x0047						
4x0048						
4x0049 loopt verder tot 4x0059					

01 = read coils (0X)

02 = read discrete inputs (1X)

03 = read holding registers (4X)

04 = read input registers (3X)

06 = write single register

Group1						
4x0100	Panel fan mode speed switch	R/W	1	UINT16	0-4	0=Off, 1=S1, 2=S2, 3=S3, 4=S4
4x0105	Common ResetFilter	R/W	1	UINT16	0-1	1=reset filter
Group2						
4x0200	Hour	R/W		UINT16	0-23	
4x0201	Minute	R/W		UINT16	0-59	
4x0202	Day	R/W		UINT16	1-7	
4x0203	Date	R/W		UINT16	1-31	
4x0204	Month	R/W		UINT16	1-12	
4x0205	Year	R/W		UINT16	0-99	0= jahr 2000

Group3 (Calendar change merged hour+Min)						
4x0500	1	R/W	1	UINT16		HB:Hour LB:Min
4x0501	2	R/W	1	UINT16		HB:Hour LB:Min
4x0502	3	R/W	1	UINT16		HB:Hour LB:Min
4x0503	4	R/W	1	UINT16		HB:Hour LB:Min
4x0504	5	R/W	1	UINT16		HB:Hour LB:Min
4x0505	6	R/W	1	UINT16		HB:Hour LB:Min
4x0506	7	R/W	1	UINT16		HB:Hour LB:Min
4x0507	8	R/W	1	UINT16		HB:Hour LB:Min
4x0508	9	R/W	1	UINT16		HB:Hour LB:Min
4x0509	10	R/W	1	UINT16		HB:Hour LB:Min
4x0510	11	R/W	1	UINT16		HB:Hour LB:Min
4x0511	12	R/W	1	UINT16		HB:Hour LB:Min
4x0512	13	R/W	1	UINT16		HB:Hour LB:Min
4x0513	14	R/W	1	UINT16		HB:Hour LB:Min
4x0514	15	R/W	1	UINT16		HB:Hour LB:Min
4x0515	16	R/W	1	UINT16		HB:Hour LB:Min
4x0516	17	R/W	1	UINT16		HB:Hour LB:Min
4x0517	18	R/W	1	UINT16		HB:Hour LB:Min
4x0518	19	R/W	1	UINT16		HB:Hour LB:Min
4x0519	20	R/W	1	UINT16		HB:Hour LB:Min
4x0520	21	R/W	1	UINT16		HB:Hour LB:Min
4x0521	22	R/W	1	UINT16		HB:Hour LB:Min
4x0522	23	R/W	1	UINT16		HB:Hour LB:Min
4x0523	24	R/W	1	UINT16		HB:Hour LB:Min
4x0524	25	R/W	1	UINT16		HB:Hour LB:Min
4x0525	26	R/W	1	UINT16		HB:Hour LB:Min
4x0526	27	R/W	1	UINT16		HB:Hour LB:Min
4x0527	28	R/W	1	UINT16		HB:Hour LB:Min
4x0528	29	R/W	1	UINT16		HB:Hour LB:Min
4x0529	30	R/W	1	UINT16		HB:Hour LB:Min
4x0530	31	R/W	1	UINT16		HB:Hour LB:Min
4x0531	32	R/W	1	UINT16		HB:Hour LB:Min
4x0532	33	R/W	1	UINT16		HB:Hour LB:Min
4x0533	34	R/W	1	UINT16		HB:Hour LB:Min
4x0534	35	R/W	1	UINT16		HB:Hour LB:Min
4x0535	36	R/W	1	UINT16		HB:Hour LB:Min
4x0536	37	R/W	1	UINT16		HB:Hour LB:Min
4x0537	38	R/W	1	UINT16		HB:Hour LB:Min
4x0538	39	R/W	1	UINT16		HB:Hour LB:Min

01 = read coils (0X)

02 = read discrete inputs (1X)

03 = read holding registers (4X)

04 = read input registers (3X)

06 = write single register

4x0539	40	R/W	1	UINT16		HB:Hour LB:Min
4x0540	41	R/W	1	UINT16		HB:Hour LB:Min
4x0541	42	R/W	1	UINT16		HB:Hour LB:Min
4x0542	43	R/W	1	UINT16		HB:Hour LB:Min
4x0543	44	R/W	1	UINT16		HB:Hour LB:Min
4x0544	45	R/W	1	UINT16		HB:Hour LB:Min
4x0545	46	R/W	1	UINT16		HB:Hour LB:Min
4x0546	47	R/W	1	UINT16		HB:Hour LB:Min
4x0547	48	R/W	1	UINT16		HB:Hour LB:Min
4x0548	49	R/W	1	UINT16		HB:Hour LB:Min
4x0549	50	R/W	1	UINT16		HB:Hour LB:Min
4x0550	51	R/W	1	UINT16		HB:Hour LB:Min
4x0551	52	R/W	1	UINT16		HB:Hour LB:Min
4x0552	53	R/W	1	UINT16		HB:Hour LB:Min
4x0553	54	R/W	1	UINT16		HB:Hour LB:Min
4x0554	55	R/W	1	UINT16		HB:Hour LB:Min
4x0555	56	R/W	1	UINT16		HB:Hour LB:Min
4x0556	57	R/W	1	UINT16		HB:Hour LB:Min
4x0557	58	R/W	1	UINT16		HB:Hour LB:Min
4x0558	59	R/W	1	UINT16		HB:Hour LB:Min
4x0559	60	R/W	1	UINT16		HB:Hour LB:Min
4x0560	61	R/W	1	UINT16		HB:Hour LB:Min
4x0561	62	R/W	1	UINT16		HB:Hour LB:Min
4x0562	63	R/W	1	UINT16		HB:Hour LB:Min
4x0563	64	R/W	1	UINT16		HB:Hour LB:Min
4x0564	65	R/W	1	UINT16		HB:Hour LB:Min
4x0565	66	R/W	1	UINT16		HB:Hour LB:Min
4x0566	67	R/W	1	UINT16		HB:Hour LB:Min
4x0567	68	R/W	1	UINT16		HB:Hour LB:Min
4x0568	69	R/W	1	UINT16		HB:Hour LB:Min
4x0569	70	R/W	1	UINT16		HB:Hour LB:Min

Group4 (Calendar change merged Speed+Reduction)

4x0600	1	R/W	1	UINT16		HB: Speed LB: Reduction
4x0601	2	R/W	1	UINT16		HB: Speed LB: Reduction
4x0602	3	R/W	1	UINT16		HB: Speed LB: Reduction
4x0603	4	R/W	1	UINT16		HB: Speed LB: Reduction
4x0604	5	R/W	1	UINT16		HB: Speed LB: Reduction
4x0605	6	R/W	1	UINT16		HB: Speed LB: Reduction
4x0606	7	R/W	1	UINT16		HB: Speed LB: Reduction
4x0607	8	R/W	1	UINT16		HB: Speed LB: Reduction
4x0608	9	R/W	1	UINT16		HB: Speed LB: Reduction
4x0609	10	R/W	1	UINT16		HB: Speed LB: Reduction
4x0610	11	R/W	1	UINT16		HB: Speed LB: Reduction
4x0611	12	R/W	1	UINT16		HB: Speed LB: Reduction
4x0612	13	R/W	1	UINT16		HB: Speed LB: Reduction
4x0613	14	R/W	1	UINT16		HB: Speed LB: Reduction
4x0614	15	R/W	1	UINT16		HB: Speed LB: Reduction
4x0615	16	R/W	1	UINT16		HB: Speed LB: Reduction
4x0616	17	R/W	1	UINT16		HB: Speed LB: Reduction
4x0617	18	R/W	1	UINT16		HB: Speed LB: Reduction
4x0618	19	R/W	1	UINT16		HB: Speed LB: Reduction

01 = read coils (0X)

02 = read discrete inputs (1X)

03 = read holding registers (4X)

04 = read input registers (3X)

06 = write single register

4x0619	20	R/W	1	UINT16	HB: Speed LB: Reduction
4x0620	21	R/W	1	UINT16	HB: Speed LB: Reduction
4x0621	22	R/W	1	UINT16	HB: Speed LB: Reduction
4x0622	23	R/W	1	UINT16	HB: Speed LB: Reduction
4x0623	24	R/W	1	UINT16	HB: Speed LB: Reduction
4x0624	25	R/W	1	UINT16	HB: Speed LB: Reduction
4x0625	26	R/W	1	UINT16	HB: Speed LB: Reduction
4x0626	27	R/W	1	UINT16	HB: Speed LB: Reduction
4x0627	28	R/W	1	UINT16	HB: Speed LB: Reduction
4x0628	29	R/W	1	UINT16	HB: Speed LB: Reduction
4x0629	30	R/W	1	UINT16	HB: Speed LB: Reduction
4x0630	31	R/W	1	UINT16	HB: Speed LB: Reduction
4x0631	32	R/W	1	UINT16	HB: Speed LB: Reduction
4x0632	33	R/W	1	UINT16	HB: Speed LB: Reduction
4x0633	34	R/W	1	UINT16	HB: Speed LB: Reduction
4x0634	35	R/W	1	UINT16	HB: Speed LB: Reduction
4x0635	36	R/W	1	UINT16	HB: Speed LB: Reduction
4x0636	37	R/W	1	UINT16	HB: Speed LB: Reduction
4x0637	38	R/W	1	UINT16	HB: Speed LB: Reduction
4x0638	39	R/W	1	UINT16	HB: Speed LB: Reduction
4x0639	40	R/W	1	UINT16	HB: Speed LB: Reduction
4x0640	41	R/W	1	UINT16	HB: Speed LB: Reduction
4x0641	42	R/W	1	UINT16	HB: Speed LB: Reduction
4x0642	43	R/W	1	UINT16	HB: Speed LB: Reduction
4x0643	44	R/W	1	UINT16	HB: Speed LB: Reduction
4x0644	45	R/W	1	UINT16	HB: Speed LB: Reduction
4x0645	46	R/W	1	UINT16	HB: Speed LB: Reduction
4x0646	47	R/W	1	UINT16	HB: Speed LB: Reduction
4x0647	48	R/W	1	UINT16	HB: Speed LB: Reduction
4x0648	49	R/W	1	UINT16	HB: Speed LB: Reduction
4x0649	50	R/W	1	UINT16	HB: Speed LB: Reduction
4x0650	51	R/W	1	UINT16	HB: Speed LB: Reduction
4x0651	52	R/W	1	UINT16	HB: Speed LB: Reduction
4x0652	53	R/W	1	UINT16	HB: Speed LB: Reduction
4x0653	54	R/W	1	UINT16	HB: Speed LB: Reduction
4x0654	55	R/W	1	UINT16	HB: Speed LB: Reduction
4x0655	56	R/W	1	UINT16	HB: Speed LB: Reduction
4x0656	57	R/W	1	UINT16	HB: Speed LB: Reduction
4x0657	58	R/W	1	UINT16	HB: Speed LB: Reduction
4x0658	59	R/W	1	UINT16	HB: Speed LB: Reduction
4x0659	60	R/W	1	UINT16	HB: Speed LB: Reduction
4x0660	61	R/W	1	UINT16	HB: Speed LB: Reduction
4x0661	62	R/W	1	UINT16	HB: Speed LB: Reduction
4x0662	63	R/W	1	UINT16	HB: Speed LB: Reduction
4x0663	64	R/W	1	UINT16	HB: Speed LB: Reduction
4x0664	65	R/W	1	UINT16	HB: Speed LB: Reduction
4x0665	66	R/W	1	UINT16	HB: Speed LB: Reduction
4x0666	67	R/W	1	UINT16	HB: Speed LB: Reduction
4x0667	68	R/W	1	UINT16	HB: Speed LB: Reduction
4x0668	69	R/W	1	UINT16	HB: Speed LB: Reduction
4x0669	70	R/W	1	UINT16	HB: Speed LB: Reduction

01 = read coils (0X)

02 = read discrete inputs (1X)

03 = read holding registers (4X)

04 = read input registers (3X)

06 = write single register

Group5 (Defrost program merged Before cooling surface+Cooling surface)						
4x0700	1	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0701	2	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0702	3	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0703	4	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0704	5	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0705	6	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0706	7	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0707	8	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0708	9	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0709	10	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0710	11	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0711	12	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0712	13	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0713	14	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0714	15	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0715	16	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0716	17	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0717	18	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0718	19	R/W	1	UINT16		HB:Before cooling LB:cooling surface
4x0719	20	R/W	1	UINT16		HB:Before cooling LB:cooling surface

01 = read coils (0X)
 02 = read discrete inputs (1X)

03 = read holding registers (4X)
 04 = read input registers (3X)

06 = write single register