

eliwell

ECH 400 SR

Modbus Serial Communication Protocol



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1 MODBUS FUNCTIONS AND RESOURCES

Modbus is a client/server communication protocol between devices connected on a [network](#). Modbus instruments communicate using a master/slave technique in which only one device (master) can send messages. The other devices on the [network](#) (slave) respond by returning the data requested by the master or performing the action indicated in the message sent. A slave is a device connected to the [network](#) that processes information and sends the results to the master using the Modbus protocol.

The master can send messages to individual slaves, or send messages to the whole [network](#) (broadcast), whereas the slave instruments respond to the messages only individually and to the master device.

The Modbus standard used by Eliwell provides for the use of RTU coding for data transmission.

1.1 Data format (RTU)

The coding model used defines the structure of messages transmitted on the [network](#) and the way in which this information is decoded. The type of coding is normally selected according to specific parameters (baud rate, parity, etc.), also, certain devices only support certain coding models, however it must be the same for all the instruments connected to a Modbus [network](#).

The protocol uses the binary RTU method with the byte made up as follows:
8 bits for data, even parity bit (not configurable), 1 stop bit.

NOTE: the transmission speed must be set to 9600 baud.

Setting the parameters allows the [instrument](#) to be fully configurable

They can be modified by means of:

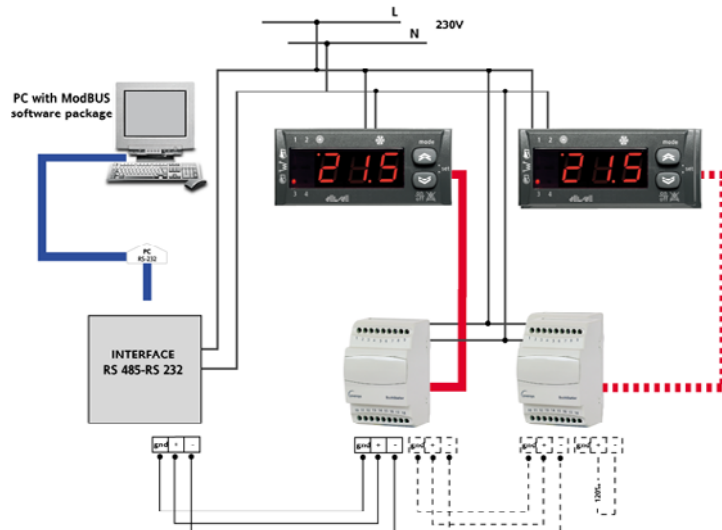
instrument keyboard

copy Card

sending the data using the ModBus protocol, directly to an individual instrument, or by broadcast, using [address 0](#) (broadcast)

1.2 Network

ModBus to
multiple device
connection
diagram



PC / Interface connection	RS232 cable
Device / Bus Adapter connection	5-way TTL connector cable (30cm) (other sizes/lengths available)
Bus Adapter	BA150
Bus Adapter / Interface connection	RS485 cable screened and twisted (e.g. Belden cable model 8762)

1.3 Modbus functions available and data areas

See [Parameters table](#) and [Client table](#)

Product identification

The product in question can be univocally recognised by means of the hexadecimal Family/Release version values. Regarding the product ECH 400 SR:

Fam/Ver: "D302" formed of Family Code D3 (Hex) = 211 and version 02 (Hex)= 2



IMPORTANT! The reading of 2 registers (WORD) must be requested to obtain 1 in response. If reading of only one register is requested a reading of the highest byte will be obtained.



IMPORTANT! To write values to WORD it is necessary to send a write request with 2 registers, and a dimension 2 response will be obtained.

1.4 Address configuration

The [address](#) of a device inside a ModBus message is made up of one byte and is formed of the family code and the instrument code, made up of parameters H65 and H66 respectively.

The [address](#) (Device [Address](#)) is thus formed of two nibbles:

H66: low nibble

H65: high nibble

To calculate the [address](#) starting from parameters H65 and H66;

$$\text{address} = \text{H65} \times 16 + \text{H66}$$

For example: [address](#) (HEX) 16 (H65=01; H66=00)

INSTRUMENT CONFIGURATION PARAMETERS			
Par.	Description	Range	Value
H65	Family serial address	0...14	0
H66	Device serial address	0...14	1

[Address](#) 0 is used for broadcast messages, which are recognised by all slaves. Slaves do not respond to a broadcast type request.

1.5 Address tables

1.5.1 Description of parameters

The [address tables](#) contain the information required to read, write and decode each individual resource accessible in the instrument.

There are two tables:

- the [parameters table](#) contains all the device configuration parameters stored in the instrument's non-volatile memory.
- the [client table](#) includes all the I/O and alarm status resources available in the instrument's volatile memory.

Description of columns:

INDEX For the [parameters table](#) this value represents the order in which the parameter is displayed in the instrument's menu. For the [client table](#) this value is not significant.

FOLDER This indicates the [label](#) of the [folder](#) containing the parameter in question

LABEL This indicates the [label](#) used to display the **parameters** in the instrument's menu.

ADDRESS The whole part represents the [address](#) of the MODBUS register containing the value of the resource to be read or written in the instrument. The value after the point indicates the position of the most significant data bit inside the register; if not indicated it is taken as zero. This information is always provided when the register contains more than one information item, and it is necessary to distinguish which bits actually represent the data (the working size of the data indicated in the column [DATA SIZE](#) is also taken into consideration). Given that the modbus registers have the size of one WORD (16 bit), the [index](#) number after the point can vary from 0 (least significant bit –LSb–) to 15 (most significant bit –MSb–). Examples (in binary form the least significant bit is the first on the right):

ADDRESS	Contents of register	DATA SIZE	Value
8806	1350 (0000010101000110)	WORD	1350

8806	1350	(0000010101000110)	Byte	70
8806,8	1350	(000010101000110)	Byte	5
8806,14	1350	(0000010101000110)	1 bit	0
8806,7	1350	(0000010101000110)	4 bit	10

Important: when the register contains more than one data item, during the write operation proceed as follows:
 read current register value
 modify the bits that represent the resource concerned
 write the register

R/W Indicates the option of reading or writing the resource:

R	the resource is read-only
W	the resource is write-only
RW	the resource can be both read and written

DATA SIZE Indicates the size of the data in bits.

WORD	=	16 bits
Byte	=	8 bits
"n" bit	=	0...15 bits based on the value of "n"

CPL When the field indicates "Y", the value read by the register requires conversion, because the value represents a number with a sign. In the other cases the value is always positive or null.

To carry out conversion, proceed as follows:

- if the value in the register is between 0 and 32.767, the result is the value itself (zero and positive values)
- if the value in the register is between 32.768 and 65.535, the result is the value of the register – 65.536 (negative values)

RANGE Describes the interval of values that can be assigned to the parameter. It can be correlated with other parameters in the instrument (indicated with the parameter *label*).

DEFAULT Indicates the factory-set value for the standard model of the instrument.

EXP This is the multiplier *index* to be applied for converting the value read from the register to the values indicated in the *RANGE* and *DEFAULT* column to convert them into the final values according to the measurement unit indicated in the column *M.U.*

The multiplier is calculated with the base 10 exponential function and with the exponent indicated in the *EXP* column. When not indicated the value is 0. The following values are valid:

Value	=	Corresponding multiplier
-2	=	10 ⁻² (0.01)
-1	=	10 ⁻¹ (0.1)
0	=	10 ⁰ (1)
1	=	10 ¹ (10)
2	=	10 ² (100)

M.U. Measurement unit for values converted according to the rules indicated in the *CPL* and *EXP* columns.

1.5.2 Parameters Table

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
Reading holding registers: function code 3											
Write multiple registers: function code 16											
1	SEt	G01	2049	RW	Set point Cooling	WORD	Y	H04 ... H03	120	-1	°C/°F
2	SEt	G02	2050	RW	Set point Heating	WORD	Y	H02 ... H01	400	-1	°C/°F
3	SEt	G03	2051	RW	Set point Heat recovery	WORD		100 ... 700	400	-1	°C/°F
4	CnF	H01	2052	RW	Max set point Heating	WORD	Y	G02 ... 990	600	-1	°C/°F
5	CnF	H02	2053	RW	Min set point Heating	WORD	Y	-400 ... G02	300	-1	°C/°F
6	CnF	H03	2054	RW	Max set point Cooling	WORD	Y	G01 ... 990	300	-1	°C/°F
7	CnF	H04	2055	RW	Min set point Cooling	WORD	Y	-400 ... G01	50	-1	°C/°F
8	CnF	H05	2056	RW	Number of circuits	WORD		0 ... 2	2		num
9	CnF	H06	2057	RW	Number of compressors per circuit	WORD		0 ... 4	2		num
10	CnF	H07	2058	RW	Number of stages per compressor	WORD		0 ... 3	0		num
11	CnF	H08	2059	RW	Compressor selection rule	WORD		0 ... 2	0		num
12	CnF	H09	2060	RW	Circuit selection rule	WORD		0 ... 1	1		flag
13	CnF	H10	2061	RW	Heat pump presence	WORD		0 ... 1	0		flag
14	CnF	H11	2062	RW	AI1 configuration	WORD		0 ... 4	1		num
15	CnF	H12	2063	RW	AI2 configuration	WORD		0 ... 2	1		num
16	CnF	H13	2064	RW	AI3 configuration	WORD		0 ... 5	1		num
17	CnF	H14	2065	RW	AI4 configuration	WORD		0 ... 4	4		num
18	CnF	H15	2066	RW	AI5 configuration	WORD		0 ... 2	2		num
19	CnF	H16	2067	RW	AI6 configuration	WORD		0 ... 4	1		num
20	CnF	H17	2068	RW	Pressure end of scale value	WORD		0 ... 350	300		Kpa*10
21	CnF	H18	2069	RW	ID1 ID2 ID3 ID4 polarity	WORD		0 ... 15	15		num
22	CnF	H19	2070	RW	ID5 ID6 ID7 ID8 polarity	WORD		0 ... 15	15		num
23	CnF	H20	2071	RW	ID9 ID10 ID11 AI4 polarity	WORD		0 ... 15	12		num
24	CnF	H21	2072	RW	AI1 polarity	WORD		0 ... 1	0		flag
25	CnF	H22	2073	RW	AI2 polarity	WORD		0 ... 1	0		flag
26	CnF	H23	2074	RW	ID1 configuration	WORD		0 ... 29	1		num
27	CnF	H24	2075	RW	ID2 configuration	WORD		0 ... 29	2		num
28	CnF	H25	2076	RW	ID3 configuration	WORD		0 ... 29	3		num
29	CnF	H26	2077	RW	ID4 configuration	WORD		0 ... 29	4		num
30	CnF	H27	2078	RW	ID5 configuration	WORD		0 ... 29	5		num
31	CnF	H28	2079	RW	ID6 configuration	WORD		0 ... 29	6		num
32	CnF	H29	2080	RW	ID7 configuration	WORD		0 ... 29	7		num
33	CnF	H30	2081	RW	ID8 configuration	WORD		0 ... 29	12		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
34	CnF	H31	2082	RW	ID9 configuration	WORD		0 ... 29	10		num
35	CnF	H32	2083	RW	ID10 configuration	WORD		0 ... 29	13		num
36	CnF	H33	2084	RW	ID11 configuration	WORD		0 ... 29	11		num
37	CnF	H34	2085	RW	AI4 configuration as digital input	WORD		0 ... 29	0		num
38	CnF	H35	2086	RW	RL2 output relay configuration	WORD		0 ... 20	8		num
39	CnF	H36	2087	RW	RL3 output relay configuration	WORD		0 ... 20	9		num
40	CnF	H37	2088	RW	RL4 output relay configuration	WORD		0 ... 20	10		num
41	CnF	H38	2089	RW	RL5 output relay configuration	WORD		0 ... 20	13		num
42	CnF	H39	2090	RW	RL6 output relay configuration	WORD		0 ... 20	14		num
43	CnF	H40	2091	RW	RL7 output relay configuration	WORD		0 ... 20	15		num
44	CnF	H41	2092	RW	RL2 polarity	WORD		0 ... 1	0		flag
45	CnF	H42	2093	RW	RL3 polarity	WORD		0 ... 1	0		flag
46	CnF	H43	2094	RW	RL4 polarity	WORD		0 ... 1	0		flag
47	CnF	H44	2095	RW	RL5 polarity	WORD		0 ... 1	0		flag
48	CnF	H45	2096	RW	Alarm relay polarity	WORD		0 ... 1	0		flag
49	CnF	H46	2097	RW	Fan output 1 configuration	WORD		0 ... 1	0		flag
50	CnF	H47	2098	RW	Fan output 2 configuration	WORD		0 ... 1	0		flag
52	CnF	H49	2100	RW	Configuration mode selection	WORD		0 ... 1	0		flag
53	CnF	H50	2101	RW	Enabled "dynamic set point"	WORD		0 ... 1	0		flag
54	CnF	H51	2102	RW	Offset "dynamic set point" Cooling	WORD	Y	-500 ... 800	100	-1	°C/°F
55	CnF	H52	2103	RW	Offset "dynamic set point" Heating	WORD	Y	-500 ... 800	100	-1	°C/°F
56	CnF	H53	2104	RW	set point "dynamic set point" Cooling	WORD	Y	-127 ... 127	40		°C/°F
57	CnF	H54	2105	RW	Set point "dynamic Set point" Heating	WORD	Y	-127 ... 127	8		°C/°F
58	CnF	H55	2106	RW	Proportional Band "dynamic set point" Cooling	WORD	Y	-500 ... 800	500	-1	°C/°F
59	CnF	H56	2107	RW	Proportional Band "dynamic set point" Heating	WORD	Y	-500 ... 800	500	-1	°C/°F
60	CnF	H57	2108	RW	AI1 offset	WORD	Y	-127 ... 127	0	-1	°C/°F
61	CnF	H58	2109	RW	AI2 offset	WORD	Y	-127 ... 127	0	-1	°C/°F
62	CnF	H59	2110	RW	AI3 offset	WORD	Y	-127 ... 127	0		°C/10-Kpa*10
63	CnF	H60	2111	RW	AI4 offset	WORD	Y	-127 ... 127	0	-1	°C/°F
64	CnF	H61	2112	RW	AI5 offset	WORD	Y	-127 ... 127	0	-1	°C/°F
65	CnF	H62	2113	RW	AI6 offset	WORD	Y	-127 ... 127	0		°C/10-Kpa*10
66	CnF	H63	2114	RW	Power supply frequency	WORD		0 ... 1	0		flag
67	CnF	H64	2115	RW	Temperature unit (C/F)	WORD		0 ... 1	0		flag
68	CnF	H65	2116	RW	Family serial address	WORD		0 ... 14	0		num
69	CnF	H66	2117	RW	Device serial address	WORD		0 ... 14	1		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
70	CnF	H67	2118	RW	User password	WORD		0 ... 255	0		num
71	CnF	H68	2119	RW	Copy card password	WORD		0 ... 255	1		num
72	CnF	H69	2120	RW	Keyboard presence	WORD		0 ... 1	1		flag
75	ALL	A01	2123	RW	Low pressure bypass time	WORD		0 ... 255	60		sec
76	ALL	A02	2124	RW	Low pressure alarm events per hour	WORD		0 ... 255	4		num
77	ALL	A03	2125	RW	Bypass time for flow switch alarm following pump on	WORD		0 ... 255	15		sec
78	ALL	A04	2126	RW	Active flow switch input duration	WORD		0 ... 255	10		sec
79	ALL	A05	2127	RW	Inactive flow switch input duration	WORD		0 ... 255	10		sec
80	ALL	A06	2128	RW	Flow switch events per hour	WORD		0 ... 255	2		num
81	ALL	A07	2129	RW	Bypass thermal protection compressor alarm	WORD		0 ... 255	10		sec
82	ALL	A08	2130	RW	Events per hour for thermal protection comp. alarm	WORD		0 ... 255	2		num
83	ALL	A09	2131	RW	Events per hour for fan thermal alarm	WORD		0 ... 255	2		num
84	ALL	A10	2132	RW	Bypass anti-freeze alarm	WORD		0 ... 255	4		min
85	ALL	A11	2133	RW	Set point anti-freeze alarm	WORD	Y	-127 ... 127	3		°C/°F
86	ALL	A12	2134	RW	Hysteresis anti-freeze alarm	WORD		0 ... 255	100	-1	°C/°F
87	ALL	A13	2135	RW	Anti-freeze alarm events per hour	WORD		0 ... 255	2		num
88	ALL	A14	2136	RW	Electric heater configuration in OFF or STANDBY	WORD		0 ... 255	0		sec
89	ALL	A15	2137	RW	Set point inlet over temperature alarm	WORD	Y	-127 ... 127	55		°C/°F
90	ALL	A16	2138	RW	Inlet Over temperature duration	WORD		0 ... 255	120		sec*10
91	ALL	A17	2139	RW	Compressor status if inlet over temperature alarm	WORD		0 ... 1	0		flag
92	CP	C01	2140	RW	ON-OFF compressor delay	WORD		0 ... 255	18		sec*10
93	CP	C02	2141	RW	ON-ON compressor delay	WORD		0 ... 255	20		sec*10
94	CP	C03	2142	RW	Hysteresis electric heater	WORD		0 ... 255	10	-1	°C/°F
95	CP	C04	2143	RW	Cooling mode hysteresis	WORD		0 ... 255	100	-1	°C/°F
96	CP	C05	2144	RW	Steps differential	WORD		0 ... 255	150	-1	°C/°F
97	CP	C06	2145	RW	Delay ON/ON compressors	WORD		0 ... 255	3		sec*10
98	CP	C07	2146	RW	Delay OFF/OFF compressors	WORD		0 ... 255	2		sec*10
99	CP	C08	2147	RW	Delay ON first / ON second compressor	WORD		0 ... 255	10		sec
100	CP	C09	2148	RW	Enabled pump-down	WORD		0 ... 1	0		flag
101	CP	C10	2149	RW	Max time pump-down	WORD		0 ... 255	50		sec/10
102	CP	C11	2150	RW	Delay ON-star	WORD		0 ... 900	2		sec/10
103	CP	C12	2151	RW	Running time star	WORD		0 ... 900	5		sec/10
104	CP	C13	2152	RW	Delay start-delta	WORD		0 ... 900	2		sec/10
105	CP	C14	2153	RW	Screw compressor integral time	WORD		0 ... 900	60		sec

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
106	CP	C15	2154	RW	Screw compressor opening time	WORD		0 ... 900	180		sec
107	CP	C16	2155	RW	Screw compressor closing time	WORD		0 ... 900	180		sec
108	CP	C17	2156	RW	Screw compressor hysteresis time	WORD		0 ... 255	3		sec
109	FAn	F01	2157	RW	Fan output configuration	WORD		0 ... 2	0		num
110	FAn	F02	2158	RW	Fan pickup time	WORD		0 ... 255	30		sec/10
111	FAn	F03	2159	RW	Fan phase shift	WORD		0 ... 100	8		num
112	FAn	F04	2160	RW	Triac pulse length	WORD		0 ... 255	20		usec*100
113	FAn	F05	2161	RW	Operation on compressor ON	WORD		0 ... 1	0		flag
114	FAn	F06	2162	RW	Min fan speed Cooling	WORD		0 ... 100	30		num
115	FAn	F07	2163	RW	Silent fan speed Cooling	WORD		0 ... 100	90		num
116	FAn	F08	2164	RW	T/P set point for min fan speed Cooling	WORD	Y	-500 ... 800	300		°C/10-Kpa*10
117	FAn	F09	2165	RW	Proportional band Cooling	WORD		0 ... 255	100		°C/10-Kpa*10
118	FAn	F10	2166	RW	Cut-off differential	WORD		0 ... 255	50		°C/10-Kpa*10
119	FAn	F11	2167	RW	Cut-off hysteresis	WORD		0 ... 255	10		°C/10-Kpa*10
120	FAn	F12	2168	RW	Cut-off bypass time	WORD		0 ... 255	10		sec
121	FAn	F13	2169	RW	Max fan speed Cooling	WORD		0 ... 100	100		num
122	FAn	F14	2170	RW	T/P set point for max fan speed Cooling	WORD	Y	-500 ... 800	420		°C/10-Kpa*10
123	FAn	F15	2171	RW	Min fan speed Heating	WORD		0 ... 100	30		num
124	FAn	F16	2172	RW	Silent fan speed Heating	WORD		0 ... 100	90		num
125	FAn	F17	2173	RW	T/P set point for min fan speed Heating	WORD	Y	-500 ... 800	180		°C/10-Kpa*10
126	FAn	F18	2174	RW	Proportional band Heating	WORD		0 ... 255	50		°C/10-Kpa*10
127	FAn	F19	2175	RW	Max fan speed in Heating	WORD		0 ... 100	100		num
128	FAn	F20	2176	RW	T/P set point for max fan speed Heating	WORD	Y	-500 ... 800	80		°C/10-Kpa*10
129	FAn	F21	2177	RW	Preventilation in Cooling	WORD		0 ... 255	0		sec
130	FAn	F22	2178	RW	Single or separate configuration	WORD		0 ... 1	0		flag
131	FAn	F23	2179	RW	Set point T/P fan in defrost	WORD	Y	-500 ... 800	500		°C/10-Kpa*10
132	FAn	F24	2180	RW	Isteresis fan in defrost	WORD		0 ... 255	40		°C/10-Kpa*10
133	FAn	F25	2181	RW	Enabled heat recovery	WORD		0 ... 3	2		num
134	FAn	F26	2182	RW	Inlet heat recovery probe configuration	WORD		0 ... 2	0		num
135	FAn	F27	2183	RW	Outlet heat recovery probe configuration	WORD		0 ... 15	10		num
136	FAn	F28	2184	RW	Isteresis heat recovery	WORD		0 ... 255	100	-1	°C/°F
137	FAn	F29	2185	RW	Differential heat recovery	WORD		0 ... 255	200	-1	°C/°F
138	FAn	F30	2186	RW	Minimum time heat recovery	WORD		0 ... 255	3		min
139	FAn	F31	2187	RW	Time for power limitation in heat recovery	WORD		0 ... 255	10		sec*10
140	FAn	F32	2188	RW	Set point max outlet water in heat recovery	WORD		0 ... 255	60		°C/°F

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
141	FAn	F33	2189	RW	Set point max outgoing recovery pressure	WORD	Y	-500 ... 800	500		°C/10-Kpa*10
142	FAn	F34	2190	RW	Enabled condenser compensation Cooling	WORD		0 ... 1	0		flag
143	FAn	F35	2191	RW	Offset condenser compensation	WORD	Y	-500 ... 800	-20		°C-Kpa*100
144	FAn	F36	2192	RW	Set point condenser compensation	WORD	Y	-127 ... 127	25		°C/°F
145	FAn	F37	2193	RW	Proportional band for condenser compensation	WORD	Y	-500 ... 800	50		°C-Kpa*100
146	PUP	P01	2194	RW	Water pump configuration	WORD		0 ... 1	0		flag
147	PUP	P02	2195	RW	Pump ON - compressor ON delay	WORD		0 ... 255	15		sec
148	PUP	P03	2196	RW	Compressor OFF - pump OFF delay	WORD		0 ... 255	15		sec
149	PUP	P04	2197	RW	Enabled second water pump	WORD		0 ... 1	0		flag
150	PUP	P05	2198	RW	Pump running hours for rotation	WORD		0 ... 255	100		ore*100
151	Fro	r01	2199	RW	Electric heater configuration in defrost	WORD		0 ... 1	0		flag
152	Fro	r02	2200	RW	Enabled electric heater Cooling mode	WORD		0 ... 1	0		flag
153	Fro	r03	2201	RW	Enabled electric heater Heating mode	WORD		0 ... 1	0		flag
154	Fro	r04	2202	RW	Configuration electric heater 1 probe	WORD		0 ... 3	0		num
155	Fro	r05	2203	RW	Configuration electric heater 2 probe	WORD		0 ... 3	0		num
156	Fro	r06	2204	RW	Electric heater configuration in OFF or STANDBY	WORD		0 ... 1	0		flag
157	Fro	r07	2205	RW	Set point electric heater 1 Heating	WORD	Y	r10...r09	4		°C/°F
158	Fro	r08	2206	RW	Set point electric heater 1 Cooling	WORD	Y	r10...r09	4		°C/°F
159	Fro	r09	2207	RW	Max set point electric heater	WORD	Y	r10 ... 127	10		°C/°F
160	Fro	r10	2208	RW	Min set point electric heater	WORD	Y	-127 ... r09	-10		°C/°F
161	Fro	r11	2209	RW	Hysteresis electric heater	WORD		0 ... 255	100	-1	°C/°F
162	Fro	r12	2210	RW	Enabled electric heater linked	WORD		0 ... 1	0		flag
163	Fro	r13	2211	RW	Set point electric heater 2 Heating	WORD	Y	r10...r09	2		°C/°F
164	Fro	r14	2212	RW	Set point electric heater 2 Cooling	WORD	Y	r10...r09	2		°C/°F
165	Fro	r15	2213	RW	Enabled supplementary Electrical Heaters in Heating	WORD		0 ... 1	0		flag
166	Fro	r16	2214	RW	Differential supplementary electric heater 1	WORD		0 ... 255	250	-1	°C/°F
167	Fro	r17	2215	RW	Differential supplementary electric heater 2	WORD		0 ... 255	250	-1	°C/°F
168	dFr	d01	2216	RW	Defrost enable	WORD		0 ... 1	0		flag
169	dFr	d02	2217	RW	Set point T/P start defrost	WORD	Y	-500 ... 800	30		°C/10-Kpa*10
170	dFr	d03	2218	RW	Cumulative time before defrost start	WORD		0 ... 255	8		min
171	dFr	d04	2219	RW	Set point T/P end defrost	WORD	Y	-500 ... 800	100		°C/10-Kpa*10
172	dFr	d05	2220	RW	Max defrost time	WORD		0 ... 255	10		min
173	dFr	d06	2221	RW	Valve delay at defrost start	WORD		0 ... 255	10		sec
174	dFr	d07	2222	RW	Dripping time	WORD		0 ... 255	10		sec
175	dFr	d08	2223	RW	Delay circuits defrost	WORD		0 ... 255	30		min

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
176	dFr	d09	2224	RW	Configuration end defrost probe circuit 1	WORD		0 ... 5	1		num
177	dFr	d10	2225	RW	Configuration end defrost probe circuit 2	WORD		0 ... 5	3		num
178	dFr	d11	2226	RW	Delay ON compressors defrost	WORD		0 ... 255	10		sec
179	dFr	d12	2227	RW	Enabled defrost compensation	WORD		0 ... 1	0		flag
180	dFr	d13	2228	RW	Offset defrost compensation	WORD	Y	-500 ... 800	-30		°C/10-Kpa*10
181	dFr	d14	2229	RW	set point defrost compensation	WORD	Y	-127 ... 127	5		°C/°F
182	dFr	d15	2230	RW	Proportional band for defrost compensation	WORD	Y	-500 ... 800	-100		°C/10-Kpa*10
183	ESP	N01	2231	RW	ID12 ID13 ID14 ID15 polarity	WORD		0 ... 15	0		num
184	ESP	N02	2232	RW	ID12 configuration	WORD		0 ... 29	0		num
185	ESP	N03	2233	RW	ID13 configuration	WORD		0 ... 29	0		num
186	ESP	N04	2234	RW	ID14 configuration	WORD		0 ... 29	0		num
187	ESP	N05	2235	RW	ID15 configuration	WORD		0 ... 29	0		num
188	ESP	N06	2236	RW	RL9 output relay configuration	WORD		0 ... 20	0		num
189	ESP	N07	2237	RW	RL10 output relay configuration	WORD		0 ... 20	0		num
190	ESP	N08	2238	RW	RL11 output relay configuration	WORD		0 ... 20	0		num
191	ESP	N09	2239	RW	RL12 output relay configuration	WORD		0 ... 20	0		num
192	ESP	N10	2240	RW	RL13 output relay configuration	WORD		0 ... 20	0		num
193	ESP	N11	2241	RW	AI7 configuration	WORD		0 ... 2	0		num
194	ESP	N12	2242	RW	AI8 configuration	WORD		0 ... 2	0		num
229		G01	6145	RW	Parameter visibility	WORD		0 ... 770	3		num
230		G02	6146	RW	Parameter visibility	WORD		0 ... 770	3		num
231		G03	6147	RW	Parameter visibility	WORD		0 ... 770	3		num
232		H01	6148	RW	Parameter visibility	WORD		0 ... 770	3		num
233		H02	6149	RW	Parameter visibility	WORD		0 ... 770	3		num
234		H03	6150	RW	Parameter visibility	WORD		0 ... 770	3		num
235		H04	6151	RW	Parameter visibility	WORD		0 ... 770	3		num
236		H05	6152	RW	Parameter visibility	WORD		0 ... 770	3		num
237		H06	6153	RW	Parameter visibility	WORD		0 ... 770	3		num
238		H07	6154	RW	Parameter visibility	WORD		0 ... 770	3		num
239		H08	6155	RW	Parameter visibility	WORD		0 ... 770	3		num
240		H09	6156	RW	Parameter visibility	WORD		0 ... 770	3		num
241		H10	6157	RW	Parameter visibility	WORD		0 ... 770	3		num
242		H11	6158	RW	Parameter visibility	WORD		0 ... 770	3		num
243		H12	6159	RW	Parameter visibility	WORD		0 ... 770	3		num
244		H13	6160	RW	Parameter visibility	WORD		0 ... 770	3		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
245		H14	6161	RW	Parameter visibility	WORD		0 ... 770	3		num
246		H15	6162	RW	Parameter visibility	WORD		0 ... 770	3		num
247		H16	6163	RW	Parameter visibility	WORD		0 ... 770	3		num
248		H17	6164	RW	Parameter visibility	WORD		0 ... 770	3		num
249		H18	6165	RW	Parameter visibility	WORD		0 ... 770	3		num
250		H19	6166	RW	Parameter visibility	WORD		0 ... 770	3		num
251		H20	6167	RW	Parameter visibility	WORD		0 ... 770	3		num
252		H21	6168	RW	Parameter visibility	WORD		0 ... 770	3		num
253		H22	6169	RW	Parameter visibility	WORD		0 ... 770	3		num
254		H23	6170	RW	Parameter visibility	WORD		0 ... 770	3		num
255		H24	6171	RW	Parameter visibility	WORD		0 ... 770	3		num
256		H25	6172	RW	Parameter visibility	WORD		0 ... 770	3		num
257		H26	6173	RW	Parameter visibility	WORD		0 ... 770	3		num
258		H27	6174	RW	Parameter visibility	WORD		0 ... 770	3		num
259		H28	6175	RW	Parameter visibility	WORD		0 ... 770	3		num
260		H29	6176	RW	Parameter visibility	WORD		0 ... 770	3		num
261		H30	6177	RW	Parameter visibility	WORD		0 ... 770	3		num
262		H31	6178	RW	Parameter visibility	WORD		0 ... 770	3		num
263		H32	6179	RW	Parameter visibility	WORD		0 ... 770	3		num
264		H33	6180	RW	Parameter visibility	WORD		0 ... 770	3		num
265		H34	6181	RW	Parameter visibility	WORD		0 ... 770	3		num
266		H35	6182	RW	Parameter visibility	WORD		0 ... 770	3		num
267		H36	6183	RW	Parameter visibility	WORD		0 ... 770	3		num
268		H37	6184	RW	Parameter visibility	WORD		0 ... 770	3		num
269		H38	6185	RW	Parameter visibility	WORD		0 ... 770	3		num
270		H39	6186	RW	Parameter visibility	WORD		0 ... 770	3		num
271		H40	6187	RW	Parameter visibility	WORD		0 ... 770	3		num
272		H41	6188	RW	Parameter visibility	WORD		0 ... 770	3		num
273		H42	6189	RW	Parameter visibility	WORD		0 ... 770	3		num
274		H43	6190	RW	Parameter visibility	WORD		0 ... 770	3		num
275		H44	6191	RW	Parameter visibility	WORD		0 ... 770	3		num
276		H45	6192	RW	Parameter visibility	WORD		0 ... 770	3		num
277		H46	6193	RW	Parameter visibility	WORD		0 ... 770	3		num
278		H47	6194	RW	Parameter visibility	WORD		0 ... 770	3		num
280		H49	6196	RW	Parameter visibility	WORD		0 ... 770	3		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
281		H50	6197	RW	Parameter visibility	WORD		0 ... 770	3		num
282		H51	6198	RW	Parameter visibility	WORD		0 ... 770	3		num
283		H52	6199	RW	Parameter visibility	WORD		0 ... 770	3		num
284		H53	6200	RW	Parameter visibility	WORD		0 ... 770	3		num
285		H54	6201	RW	Parameter visibility	WORD		0 ... 770	3		num
286		H55	6202	RW	Parameter visibility	WORD		0 ... 770	3		num
287		H56	6203	RW	Parameter visibility	WORD		0 ... 770	3		num
288		H57	6204	RW	Parameter visibility	WORD		0 ... 770	3		num
289		H58	6205	RW	Parameter visibility	WORD		0 ... 770	3		num
290		H59	6206	RW	Parameter visibility	WORD		0 ... 770	3		num
291		H60	6207	RW	Parameter visibility	WORD		0 ... 770	3		num
292		H61	6208	RW	Parameter visibility	WORD		0 ... 770	3		num
293		H62	6209	RW	Parameter visibility	WORD		0 ... 770	3		num
294		H63	6210	RW	Parameter visibility	WORD		0 ... 770	3		num
295		H64	6211	RW	Parameter visibility	WORD		0 ... 770	3		num
296		H65	6212	RW	Parameter visibility	WORD		0 ... 770	3		num
297		H66	6213	RW	Parameter visibility	WORD		0 ... 770	3		num
298		H67	6214	RW	Parameter visibility	WORD		0 ... 770	3		num
299		H68	6215	RW	Parameter visibility	WORD		0 ... 770	3		num
300		H69	6216	RW	Parameter visibility	WORD		0 ... 770	3		num
301		H70	6217	RW	Parameter visibility	WORD		0 ... 770	3		num
302		H71	6218	RW	Parameter visibility	WORD		0 ... 770	3		num
303		A01	6219	RW	Parameter visibility	WORD		0 ... 770	3		num
304		A02	6220	RW	Parameter visibility	WORD		0 ... 770	3		num
305		A03	6221	RW	Parameter visibility	WORD		0 ... 770	3		num
306		A04	6222	RW	Parameter visibility	WORD		0 ... 770	3		num
307		A05	6223	RW	Parameter visibility	WORD		0 ... 770	3		num
308		A06	6224	RW	Parameter visibility	WORD		0 ... 770	3		num
309		A07	6225	RW	Parameter visibility	WORD		0 ... 770	3		num
310		A08	6226	RW	Parameter visibility	WORD		0 ... 770	3		num
311		A09	6227	RW	Parameter visibility	WORD		0 ... 770	3		num
312		A10	6228	RW	Parameter visibility	WORD		0 ... 770	3		num
313		A11	6229	RW	Parameter visibility	WORD		0 ... 770	3		num
314		A12	6230	RW	Parameter visibility	WORD		0 ... 770	3		num
315		A13	6231	RW	Parameter visibility	WORD		0 ... 770	3		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
316		A14	6232	RW	Parameter visibility	WORD		0 ... 770	3		num
317		A15	6233	RW	Parameter visibility	WORD		0 ... 770	3		num
318		A16	6234	RW	Parameter visibility	WORD		0 ... 770	3		num
319		A17	6235	RW	Parameter visibility	WORD		0 ... 770	3		num
320		C01	6236	RW	Parameter visibility	WORD		0 ... 770	3		num
321		C02	6237	RW	Parameter visibility	WORD		0 ... 770	3		num
322		C03	6238	RW	Parameter visibility	WORD		0 ... 770	3		num
323		C04	6239	RW	Parameter visibility	WORD		0 ... 770	3		num
324		C05	6240	RW	Parameter visibility	WORD		0 ... 770	3		num
325		C06	6241	RW	Parameter visibility	WORD		0 ... 770	3		num
326		C07	6242	RW	Parameter visibility	WORD		0 ... 770	3		num
327		C08	6243	RW	Parameter visibility	WORD		0 ... 770	3		num
328		C09	6244	RW	Parameter visibility	WORD		0 ... 770	3		num
329		C10	6245	RW	Parameter visibility	WORD		0 ... 770	3		num
330		C11	6246	RW	Parameter visibility	WORD		0 ... 770	3		num
331		C12	6247	RW	Parameter visibility	WORD		0 ... 770	3		num
332		C13	6248	RW	Parameter visibility	WORD		0 ... 770	3		num
333		C14	6249	RW	Parameter visibility	WORD		0 ... 770	3		num
334		C15	6250	RW	Parameter visibility	WORD		0 ... 770	3		num
335		C16	6251	RW	Parameter visibility	WORD		0 ... 770	3		num
336		C17	6252	RW	Parameter visibility	WORD		0 ... 770	3		num
337		F01	6253	RW	Parameter visibility	WORD		0 ... 770	3		num
338		F02	6254	RW	Parameter visibility	WORD		0 ... 770	3		num
339		F03	6255	RW	Parameter visibility	WORD		0 ... 770	3		num
340		F04	6256	RW	Parameter visibility	WORD		0 ... 770	3		num
341		F05	6257	RW	Parameter visibility	WORD		0 ... 770	3		num
342		F06	6258	RW	Parameter visibility	WORD		0 ... 770	3		num
343		F07	6259	RW	Parameter visibility	WORD		0 ... 770	3		num
344		F08	6260	RW	Parameter visibility	WORD		0 ... 770	3		num
345		F09	6261	RW	Parameter visibility	WORD		0 ... 770	3		num
346		F10	6262	RW	Parameter visibility	WORD		0 ... 770	3		num
347		F11	6263	RW	Parameter visibility	WORD		0 ... 770	3		num
348		F12	6264	RW	Parameter visibility	WORD		0 ... 770	3		num
349		F13	6265	RW	Parameter visibility	WORD		0 ... 770	3		num
350		F14	6266	RW	Parameter visibility	WORD		0 ... 770	3		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
351		F15	6267	RW	Parameter visibility	WORD		0 ... 770	3		num
352		F16	6268	RW	Parameter visibility	WORD		0 ... 770	3		num
353		F17	6269	RW	Parameter visibility	WORD		0 ... 770	3		num
354		F18	6270	RW	Parameter visibility	WORD		0 ... 770	3		num
355		F19	6271	RW	Parameter visibility	WORD		0 ... 770	3		num
356		F20	6272	RW	Parameter visibility	WORD		0 ... 770	3		num
357		F21	6273	RW	Parameter visibility	WORD		0 ... 770	3		num
358		F22	6274	RW	Parameter visibility	WORD		0 ... 770	3		num
359		F23	6275	RW	Parameter visibility	WORD		0 ... 770	3		num
360		F24	6276	RW	Parameter visibility	WORD		0 ... 770	3		num
361		F25	6277	RW	Parameter visibility	WORD		0 ... 770	3		num
362		F26	6278	RW	Parameter visibility	WORD		0 ... 770	3		num
363		F27	6279	RW	Parameter visibility	WORD		0 ... 770	3		num
364		F28	6280	RW	Parameter visibility	WORD		0 ... 770	3		num
365		F29	6281	RW	Parameter visibility	WORD		0 ... 770	3		num
366		F30	6282	RW	Parameter visibility	WORD		0 ... 770	3		num
367		F31	6283	RW	Parameter visibility	WORD		0 ... 770	3		num
368		F32	6284	RW	Parameter visibility	WORD		0 ... 770	3		num
369		F33	6285	RW	Parameter visibility	WORD		0 ... 770	3		num
370		F34	6286	RW	Parameter visibility	WORD		0 ... 770	3		num
371		F35	6287	RW	Parameter visibility	WORD		0 ... 770	3		num
372		F36	6288	RW	Parameter visibility	WORD		0 ... 770	3		num
373		F37	6289	RW	Parameter visibility	WORD		0 ... 770	3		num
374		P01	6290	RW	Parameter visibility	WORD		0 ... 770	3		num
375		P02	6291	RW	Parameter visibility	WORD		0 ... 770	3		num
376		P03	6292	RW	Parameter visibility	WORD		0 ... 770	3		num
377		P04	6293	RW	Parameter visibility	WORD		0 ... 770	3		num
378		P05	6294	RW	Parameter visibility	WORD		0 ... 770	3		num
379		r01	6295	RW	Parameter visibility	WORD		0 ... 770	3		num
380		r02	6296	RW	Parameter visibility	WORD		0 ... 770	3		num
381		r03	6297	RW	Parameter visibility	WORD		0 ... 770	3		num
382		r04	6298	RW	Parameter visibility	WORD		0 ... 770	3		num
383		r05	6299	RW	Parameter visibility	WORD		0 ... 770	3		num
384		r06	6300	RW	Parameter visibility	WORD		0 ... 770	3		num
385		r07	6301	RW	Parameter visibility	WORD		0 ... 770	3		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
386		r08	6302	RW	Parameter visibility	WORD		0 ... 770	3		num
387		r09	6303	RW	Parameter visibility	WORD		0 ... 770	3		num
388		r10	6304	RW	Parameter visibility	WORD		0 ... 770	3		num
389		r11	6305	RW	Parameter visibility	WORD		0 ... 770	3		num
390		r12	6306	RW	Parameter visibility	WORD		0 ... 770	3		num
391		r13	6307	RW	Parameter visibility	WORD		0 ... 770	3		num
392		r14	6308	RW	Parameter visibility	WORD		0 ... 770	3		num
393		r15	6309	RW	Parameter visibility	WORD		0 ... 770	3		num
394		r16	6310	RW	Parameter visibility	WORD		0 ... 770	3		num
395		r17	6311	RW	Parameter visibility	WORD		0 ... 770	3		num
396		d01	6312	RW	Parameter visibility	WORD		0 ... 770	3		num
397		d02	6313	RW	Parameter visibility	WORD		0 ... 770	3		num
398		d03	6314	RW	Parameter visibility	WORD		0 ... 770	3		num
399		d04	6315	RW	Parameter visibility	WORD		0 ... 770	3		num
400		d05	6316	RW	Parameter visibility	WORD		0 ... 770	3		num
401		d06	6317	RW	Parameter visibility	WORD		0 ... 770	3		num
402		d07	6318	RW	Parameter visibility	WORD		0 ... 770	3		num
403		d08	6319	RW	Parameter visibility	WORD		0 ... 770	3		num
404		d09	6320	RW	Parameter visibility	WORD		0 ... 770	3		num
405		d10	6321	RW	Parameter visibility	WORD		0 ... 770	3		num
406		d11	6322	RW	Parameter visibility	WORD		0 ... 770	3		num
407		d12	6323	RW	Parameter visibility	WORD		0 ... 770	3		num
408		d13	6324	RW	Parameter visibility	WORD		0 ... 770	3		num
409		d14	6325	RW	Parameter visibility	WORD		0 ... 770	3		num
410		d15	6326	RW	Parameter visibility	WORD		0 ... 770	3		num
411		N01	6327	RW	Parameter visibility	WORD		0 ... 770	3		num
412		N02	6328	RW	Parameter visibility	WORD		0 ... 770	3		num
413		N03	6329	RW	Parameter visibility	WORD		0 ... 770	3		num
414		N04	6330	RW	Parameter visibility	WORD		0 ... 770	3		num
415		N05	6331	RW	Parameter visibility	WORD		0 ... 770	3		num
416		N06	6332	RW	Parameter visibility	WORD		0 ... 770	3		num
417		N07	6333	RW	Parameter visibility	WORD		0 ... 770	3		num
418		N08	6334	RW	Parameter visibility	WORD		0 ... 770	3		num
419		N09	6335	RW	Parameter visibility	WORD		0 ... 770	3		num
420		N10	6336	RW	Parameter visibility	WORD		0 ... 770	3		num

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT*	EXP	M.U.
421		N11	6337	RW	Parameter visibility	WORD		0 ... 770	3		num
422		N12	6338	RW	Parameter visibility	WORD		0 ... 770	3		num
423		SEt	6339	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
424		tp	6340	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
425		Err	6341	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
426		id	6342	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
427		PAr	6343	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
428		PSS	6344	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
429		OHR	6345	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
430		Coo	6346	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
431		HEA	6347	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
432		CnF	6348	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
433		CP	6349	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
434		FAn	6350	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
435		ALL	6351	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
436		PUP	6352	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
437		Fro	6353	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
438		dFr	6354	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
439		ESP	6355	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
440		OH1	6356	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
441		OH2	6357	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
442		OH3	6358	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
443		OH4	6359	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
444		OP1	6360	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
445		OP2	6361	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num
446		rC	6362	RW	<i>Label</i> visibility	WORD		0 ... 770	3		num

* **NOTE:** Each parameter can be assigned a "visibility value" as described below:

Value	Meaning
3	The parameter or <i>label</i> is always visible
258	The parameter or <i>label</i> is visible if the user password is entered correctly (password = Pa H67)
770	The parameter or <i>label</i> is visible if the user password is entered correctly (password = Pa H67). The parameter cannot be modified.
768	The parameter is only visible using a PC

1.5.3 Client Table

INDEX	FOLDER	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
Read input register: function code 4										
1		4097	R	Analog input 1 – AI1	WORD	Y	-670 ... 3020	0	-1	°C/°F
2		4098	R	Analog input 2 – AI2	WORD	Y	-670 ... 3020	0	-1	°C/°F
3		4099	R	Analog input 3 – AI3	WORD	Y	-670 ... 3020	0	-1	°C/°F
4		4100	R	Analog input 4 – AI4	WORD	Y	-670 ... 3020	0	-1	°C/°F
5		4101	R	Analog input 5 – AI5	WORD	Y	-670 ... 3020	0	-1	°C/°F
6		4102	R	Analog input 6 – AI6	WORD	Y	-670 ... 3020	0	-1	°C/°F
7		4103	R	Analog input 7 – AI7	WORD	Y	-670 ... 3020	0	-1	°C/°F
8		4104	R	Analog input 8 – AI8	WORD	Y	-670 ... 3020	0	-1	°C/°F
Reading holding registers: function code 3										
Write multiple registers: function code 16										
9		16485,13	R	Digital input 1 – DI1	1 bit		0 ... 1	0		num
10		16485,12	R	Digital input 2 – DI2	1 bit		0 ... 1	0		num
11		16485,11	R	Digital input 3 – DI3	1 bit		0 ... 1	0		num
12		16485,1	R	Digital input 4 – DI4	1 bit		0 ... 1	0		num
13		16485,2	R	Digital input 5 – DI5	1 bit		0 ... 1	0		num
14		16485,0	R	Digital input 6 – DI6	1 bit		0 ... 1	0		num
15		16485,3	R	Digital input 7 – DI7	1 bit		0 ... 1	0		num
16		16485,6	R	Digital input 8 – DI8	1 bit		0 ... 1	0		num
17		16485,7	R	Digital input 9 – DI9	1 bit		0 ... 1	0		num
18		16485,5	R	Digital input 10 – DI10	1 bit		0 ... 1	0		num
19		16485,8	R	Digital input 11 – DI11	1 bit		0 ... 1	0		num
20		16485,4	R	Digital input 12 – DI12	1 bit		0 ... 1	0		num
21		16485,9	R	Digital input 13 – DI13	1 bit		0 ... 1	0		num
22		16485,14	R	Digital input 14 – DI14	1 bit		0 ... 1	0		num
23		16485,15	R	Digital input 15 – DI15	1 bit		0 ... 1	0		num
24		16485,10	R	Digital input 16 – DI16	1 bit		0 ... 1	0		num
25		16505,8	R	Digital input 17 – DI17	1 bit		0 ... 1	0		num
26		16505,9	R	Digital input 18 – DI18	1 bit		0 ... 1	0		num
27		16505,13	R	Digital input 19 – DI19	1 bit		0 ... 1	0		num
28		14337	R	Analogic output 1 – AN1	WORD		0 ... 255	0		num

INDEX	FOLDER	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
29		14338	R	Analogic output 2 – AN2	WORD		0 ... 255	0		num
30		16783,1	R	Out 1	1 bit		0 ... 1	0		num
31		16783,2	R	Out 2	1 bit		0 ... 1	0		num
32		16783,3	R	Out 3	1 bit		0 ... 1	0		num
33		16783,4	R	Out 4	1 bit		0 ... 1	0		num
34		16783,5	R	Out 5	1 bit		0 ... 1	0		num
35		16783,6	R	Out 6	1 bit		0 ... 1	0		num
36		16783,7	R	Out 7	1 bit		0 ... 1	0		num
37		16783,0	R	Alarm	1 bit		0 ... 1	0		num
38		16783,15	R	Out 9	1 bit		0 ... 1	0		num
39		16783,14	R	Out 10	1 bit		0 ... 1	0		num
40		16783,12	R	Out 11	1 bit		0 ... 1	0		num
41		16783,13	R	Out 12	1 bit		0 ... 1	0		num
42		16783,11	R	Out 13	1 bit		0 ... 1	0		num
43		16509,0	RW	Cool mode	1 bit		0 ... 1	0		num
44		16509,1	RW	Heat mode	1 bit		0 ... 1	0		num
46		17301,3	R	Digital control of temperature controller	1 bit		0 ... 1	0		num
47		17301,5	R	Enable autotest	1 bit		0 ... 1	0		num
48		17301,7	R	Keyboard change-over enabled	1 bit		0 ... 1	0		num
49		16511	R	Operating hours compressor 1	WORD		0 ... 65535	0		num
50		16513	R	Operating hours compressor 2	WORD		0 ... 65535	0		num
51		16515	R	Operating hours compressor 3	WORD		0 ... 65535	0		num
52		16517	R	Operating hours compressor 4	WORD		0 ... 65535	0		num
53		16519	R	Operating hours Pump 1	WORD		0 ... 65535	0		num
54		16521	R	Operating hours Pump 1	WORD		0 ... 65535	0		num
55		16969,8	R	Remote OFF	1 bit		0 ... 1	0		num
56		16969,9	R	High pressure alarm	1 bit		0 ... 1	0		num
57		16969,10	R	Low pressure alarm	1 bit		0 ... 1	0		num
58		16969,11	R	Thermal protection compressor	1 bit		0 ... 1	0		num
59		16969,12	R	Thermal protection fan	1 bit		0 ... 1	0		num
60		16969,13	R	Antifreeze alarm threshold exceeded circuit 1	1 bit		0 ... 1	0		num
61		16969,14	R	Analog input error	1 bit		0 ... 1	0		num
62		16969,15	R	Analog input error	1 bit		0 ... 1	0		num
63		16969,0	R	High pressure compressor 1	1 bit		0 ... 1	0		num
64		16969,1	R	Pump thermal protection 1	1 bit		0 ... 1	0		num

INDEX	FOLDER	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
65		16969,2	R	Pump thermal protection 2	1 bit		0 ... 1	0		num
66		16969,3	R	Thermal protection compressor	1 bit		0 ... 1	0		num
67		16969,4	R	High pressure compressor 2	1 bit		0 ... 1	0		num
68		16969,5	R	High pressure alarm	1 bit		0 ... 1	0		num
69		16969,6	R	Low pressure alarm	1 bit		0 ... 1	0		num
70		16969,7	R	Thermal protection compressor	1 bit		0 ... 1	0		num
71		16971,8	R	Thermal protection fan	1 bit		0 ... 1	0		num
72		16971,9	R	Antifreeze alarm threshold exceeded circuit 2	1 bit		0 ... 1	0		num
73		16971,10	R	Analog input error	1 bit		0 ... 1	0		num
74		16971,11	R	Analog input error	1 bit		0 ... 1	0		num
75		16971,12	R	High pressure compressor 3	1 bit		0 ... 1	0		num
76		16971,13	R	Antifreeze alarm (secondary)	1 bit		0 ... 1	0		num
77		16971,14	R	Analog input error	1 bit		0 ... 1	0		num
78		16971,15	R	Thermal protection compressor	1 bit		0 ... 1	0		num
79		16971,0	R	High pressure compressor 4	1 bit		0 ... 1	0		num
80		16971,1	R	Analog input error	1 bit		0 ... 1	0		num
81		16971,2	R	Flow switch alarm	1 bit		0 ... 1	0		num
82		16971,3	R	Analog input error	1 bit		0 ... 1	0		num
83		16971,4	R	Analog input error	1 bit		0 ... 1	0		num
84		16971,5	R	Error on digital inputs change-over	1 bit		0 ... 1	0		num
85		16971,6	R	Inlet water high temperature alarm	1 bit		0 ... 1	0		num
86		16971,7	R	Recovery flow switch	1 bit		0 ... 1	0		num
87		16973,8	R	Remote OFF	1 bit		0 ... 1	0		num
88		16973,9	R	Maximum circuit pressure switch 1 (manual reset)	1 bit		0 ... 1	0		num
89		16973,10	R	Minimum circuit pressure switch 1 (manual reset)	1 bit		0 ... 1	0		num
90		16973,11	R	Compressor thermal protection alarm 1 (manual reset)	1 bit		0 ... 1	0		num
91		16973,12	R	Thermal protection fan	1 bit		0 ... 1	0		num
92		16973,13	R	Antifreeze alarm threshold exceeded circuit 1 (manual reset)	1 bit		0 ... 1	0		num
93		16973,14	R	Analogue input failure 2 (manual reset)	1 bit		0 ... 1	0		num
94		16973,15	R	Analogue input failure 3 (manual reset)	1 bit		0 ... 1	0		num
95		16973,0	R	High pressure compressor 1	1 bit		0 ... 1	0		num
96		16973,1	R	Pump thermal protection 1 (manual reset)	1 bit		0 ... 1	0		num
97		16973,2	R	Pump thermal protection 2 (manual reset)	1 bit		0 ... 1	0		num
98		16973,3	R	Compressor thermal protection alarm 2 (manual reset)	1 bit		0 ... 1	0		num

INDEX	FOLDER	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
99		16973,4	R	High pressure compressor 2	1 bit		0 ... 1	0		num
100		16973,5	R	Maximum circuit pressure switch 2 (manual reset)	1 bit		0 ... 1	0		num
101		16973,6	R	Minimum circuit pressure switch 2 (manual reset)	1 bit		0 ... 1	0		num
102		16973,7	R	Compressor thermal protection alarm 3 (manual reset)	1 bit		0 ... 1	0		num
103		16975,8	R	Thermal protection fan	1 bit		0 ... 1	0		num
104		16975,9	R	Antifreeze alarm threshold exceeded circuit 2 (manual reset)	1 bit		0 ... 1	0		num
105		16975,10	R	Analogue input failure 5 (manual reset)	1 bit		0 ... 1	0		num
106		16975,11	R	Analogue input failure 6 (manual reset)	1 bit		0 ... 1	0		num
107		16975,12	R	High pressure compressor 3	1 bit		0 ... 1	0		num
108		16975,13	R	External circuits alarm threshold exceeded (manual reset)	1 bit		0 ... 1	0		num
109		16975,14	R	Analogue input failure 7 (manual reset)	1 bit		0 ... 1	0		num
110		16975,15	R	Compressor thermal protection alarm 4 (manual reset)	1 bit		0 ... 1	0		num
111		16975,0	R	High pressure compressor 4	1 bit		0 ... 1	0		num
112		16975,1	R	Analogue input failure 1 (manual reset)	1 bit		0 ... 1	0		num
113		16975,2	R	Flow switch (manual reset)	1 bit		0 ... 1	0		num
114		16975,3	R	Analogue input failure 4 (manual reset)	1 bit		0 ... 1	0		num
115		16975,4	R	Analogue input failure 8 (manual reset)	1 bit		0 ... 1	0		num
116		16975,5	R	Error on digital inputs change-over (manual reset)	1 bit		0 ... 1	0		num
117		16975,6	R	High inlet water temperature (manual reset)	1 bit		0 ... 1	0		num
118		16975,7	R	Recovery flow switch (manual reset)	1 bit		0 ... 1	0		num

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