

EWDR985 LX Fan Condenser Serial Communication Protocol

Modbus Manual



1 SUMMARY

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2 MODBUS FUNCTIONS AND RESOURCES

Modbus is a client/server communication protocol for communication between *network* connected devices. Modbus devices communicate using a master-slave technique in which only one device (the master) can send queries. The other *network* devices (slaves) respond by supplying the data requested by the master or by taking the action requested in the query. A slave is any device connected to the *network* which processes information and sends its output to the master using the Modbus protocol.

Masters can *address* individual slaves or send broadcast messages to the entire *network* whereas slaves only return a response to queries addressed to them individually from masters.

The Modbus standard used by Eliwell uses the RTU protocol for data transmission.

2.1 Data format (RTU)

The code model used defines the structure of the messages transmitted on the *network* and the way this information is decoded. The type of code is usually selected according to specific parameters (baud rate, parity, etc...). Some devices only support certain code models but the same one must be used for all the devices connected to a Modbus *network*.

The protocol uses the RTU binary method with the bytes containing:

8 data bits, configurable parity bit (see parameter **PtY**, *default* value= none), 1 stop bit.

NOTE: the baud rate must be set to 9600 bauds.

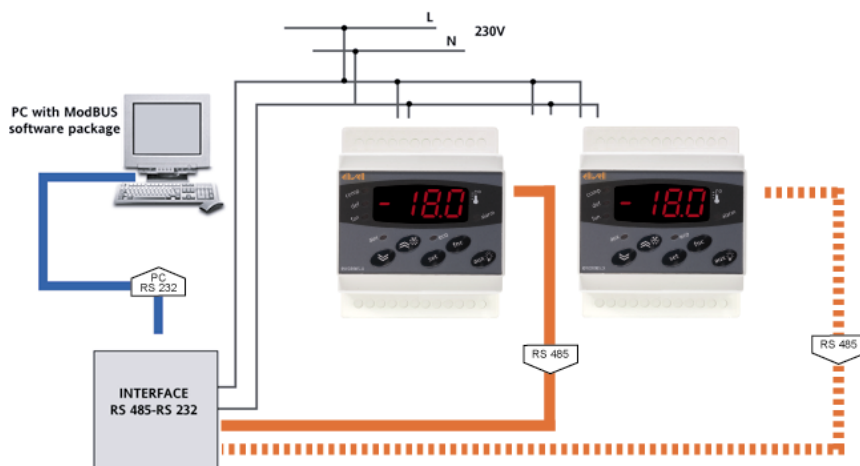
Parameters can be set so that the *device* is fully configurable

Parameters can be changed from the:

- device keyboard
- Copy Card
- by sending the data via the ModBus protocol straight to a single device or by sending a broadcast message using *address* 0 (broadcast *address*)

2.2 Network

Diagram of Modbus connection to multi-unit



PC/Interface connection	RS232 cable
Device/Bus Adapter connection	RS485 cable shielded and twisted (e.g.: Belden cable model 8762)

2.3 Modbus functions available and data areas

Modbus command	Description of command								
3	Reading multiple registers A maximum of 60 consecutive registers can be read. Parameters belonging to two different non-consecutive blocks cannot be read using a single command.								
16	Writing multiple registers A maximum of 60 consecutive registers can be written.								
43	Reading instrument ID. The following fields can be read: <table border="1" data-bbox="769 1908 1441 2042"> <thead> <tr> <th>Field code</th> <th>Field description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Manufacturer ID(="Invensys")</td> </tr> <tr> <td>1</td> <td>Instrument model ID (="0032_0401")</td> </tr> <tr> <td>2</td> <td>Instrument version ID (="00E4_0002")</td> </tr> </tbody> </table>	Field code	Field description	0	Manufacturer ID(="Invensys")	1	Instrument model ID (="0032_0401")	2	Instrument version ID (="00E4_0002")
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0	Manufacturer ID(="Invensys")								
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2	Instrument version ID (="00E4_0002")								

2.4 Address configuration

The device *address* in a ModBus message comprises one byte and consists of the family code and the device code, indicated by *dBA*, made up of parameters *FAA* and *dEA* respectively.

The Device *Address* therefore consists of two nibbles:

- **dEA**: low nibble
- **FAA**: high nibble

To calculate the *address* using parameters *FAA* and *dEA*:

$$dBA = FAA \times 16 + dEA$$

For example: *address* 01 00 (*dEA*=00; *FAA*=01)

Address 0 is used for broadcast queries that are recognized by all the slaves. Slaves do not respond to broadcast queries.

DEVICE CONFIGURATION PARAMETERS			
Par.	Description	Value	Limits
FAA	Family serial <i>address</i>	0	0...14
dEA	Serial <i>address</i> of device	1	0...14
PtY	Setting parity bits (odd, Even, none)	n	o=odd, E=Even, n=none
Stp	Setting stop bits (1b,2b)	1b	1b/2b
Note: If parameters PtY and Stp are changed, the controller must be turned off and then on again after they are changed to operate correctly.			

2.5 Address tables

2.5.1 Description of parameters

The *address tables* contain the necessary read, write and decode information for each single resource accessible in the device.

There are two tables:

- the **parameter** table contains all the device configuration parameters stored in the non-volatile memory of the device.
- the **client table** includes all the I/O and alarm status resources available in the volatile memory of the device.

Description of columns:

INDEX	For the parameter table this value represents the order in which the parameter is displayed in the device menu. For the client table this value is not significant.
FOLDER	This indicates the <i>folder label</i> containing the relevant parameter
LABEL	Indicates the <i>label</i> used to display the parameters in the device menu.
ADDRESS	The whole part represents the MODBUS register <i>address</i> containing the value of the resource to read or write in the instrument. The value after the comma indicates the position of the most significant bit of the data in the register; if it is not stated, it equals zero. This information is always provided when the register contains more than one data element and it is important to understand which bits actually represent the data element (the size of the data indicated in the DATA SIZE column is also considered). Since Modbus registers are the size of one WORD (16 bits), the <i>index</i> after the comma can vary from 0 (least significant bit –LSb–) to 15 (most significant bit –MSb–). Examples (in binary representation the least significant bit is the rightmost bit)

ADDRESS	Register contents	DATA SIZE	value
8806	1350 (0000010101000110)	WORD	1350
8806	1350 (000001010 1000110)	Byte	70
8806,8	1350 (000001010 1000110)	Byte	5
8806,14	1350 (0000010101000110)	1 bits	0
8806,7	1350 (00000 1010 1000110)	4 bits	10

Please note: when the register contains more than one data element, proceed as follows for the write operation:

- read the current value of the register
- modify the bits that represent the relevant resource
- write the register

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

R	the resource is read only
W	the resource is write only
RW	the resource is read/write

DATA SIZE	Indicates size of the data in bits. <table border="0"> <tr><td>WORD</td><td>=</td><td>16 bits</td></tr> <tr><td>Byte</td><td>=</td><td>8 bits</td></tr> <tr><td>"n" bit</td><td>=</td><td>0...15 bits depending on "n"</td></tr> </table>	WORD	=	16 bits	Byte	=	8 bits	"n" bit	=	0...15 bits depending on "n"									
WORD	=	16 bits																	
Byte	=	8 bits																	
"n" bit	=	0...15 bits depending on "n"																	
CPL	When "Y" is indicated, the value read by the register requires conversion because the value represents a number with a sign. In other instances, the value is always positive or null. For the conversion, see below: <table border="0"> <tr><td>if the value of the register is between 0 and 32767,</td><td>the result is the value itself (zero and positive values)</td></tr> <tr><td>if the value of the register is between 32768 and 65535,</td><td>the result is the value of the register - 65536 (negative values)</td></tr> </table>	if the value of the register is between 0 and 32767,	the result is the value itself (zero and positive values)	if the value of the register is between 32768 and 65535,	the result is the value of the register - 65536 (negative values)														
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RANGE	This describes the <i>range</i> of values permitted for the parameter. It can be correlated with other device parameters (indicated with parameter <i>label</i>).																		
DEFAULT	Indicates the factory set value for the standard model of the device.																		
EXP	This is the multiplier <i>index</i> that must be applied to convert the value read by the register to the values indicated in the <i>RANGE</i> and <i>DEFAULT</i> column in order to convert them into the final values based on the unit of measurement indicated in the M.U column. The multiplier is calculated using the exponential function with base 10 and the exponent indicated in the <i>EXP</i> column. When not indicated, its value is 0. Valid values are as below: <table border="0"> <tr><td>Value</td><td></td><td>Corresponding multiplier</td></tr> <tr><td>-2</td><td>=</td><td>10⁻² (0,01)</td></tr> <tr><td>-1</td><td>=</td><td>10⁻¹ (0,1)</td></tr> <tr><td>0</td><td>=</td><td>10⁰ (1)</td></tr> <tr><td>1</td><td>=</td><td>10¹ (10)</td></tr> <tr><td>2</td><td>=</td><td>10² (100)</td></tr> </table>	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)
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.	Unit of measurement of values when converted according to the rules indicated in columns <i>CPL</i> and <i>EXP</i> .																		

2.5.2 Table of parameters

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
1	CP	Set	6178	RW	Set point	WORD	Y	LSE ... HSE	0	-1	°C/°F
2	CP	diF	6146	RW	Operating differential	WORD		1 ... 300	20	-1	°C/°F
3	CP	HSE	6180	RW	Maximum settable Set point value	WORD	Y	LSE ... 3020	500	-1	°C/°F
4	CP	LSE	6182	RW	Minimum settable Set point value	WORD	Y	-580 ... HSE	-500	-1	°C/°F
5	CP	OSP	6148	RW	Set point offset	WORD	Y	-300 ... 300	0	-1	°C/°F
6	CP	HC	6714	RW	Operating mode (Heating/Cooling)	BYTE		0 ... 1	1		flag
7	CP	Cit	6715	RW	Minimum compressor output activation time	BYTE		0 ... 250	0		min
8	CP	CAt	6716	RW	Maximum compressor output activation time	BYTE		0 ... 250	0		min
9	CP	Ont	6719	RW	Compressor output ON time if control probe faulty	BYTE		0 ... 250	0		min
10	CP	OFt	6720	RW	Compressor output OFF time if control probe faulty	BYTE		0 ... 250	0		min
11	CP	dOn	6721	RW	Delay in activating compressor output after start-up.	BYTE		0 ... 250	0		sec
12	CP	dOF	6722	RW	Delay in activating compressor output after shut-down.	BYTE		0 ... 250	0		min
13	CP	dbi	6723	RW	Delay between two consecutive switch-ons of compressor output	BYTE		0 ... 250	0		min
14	CP	OdO	6724	RW	Output in activating output after power-on	BYTE		0 ... 250	0		min
15	dEF	dtY	6725	RW	Type of defrost	BYTE		0 ... 2	0		num
16	dEF	dit	6771	RW	Interval between defrosts	BYTE		0 ... 250	6		hours/min/sec
17	dEF	dt1	6726	RW	Unit of measurement for defrost times	BYTE		0 ... 2	0		flag
18	dEF	dt2	6727	RW	Unit of measurement for duration of defrosting	BYTE		0 ... 2	1		flag
19	dEF	dCt	6728	RW	Defrosting time count mode	BYTE		0 ... 3	1		flag
20	dEF	dOH	6729	RW	Delay in activating defrost cycle after start-up	BYTE		0 ... 59	0		min
21	dEF	dEt	6730	RW	Defrost time out	BYTE		1 ... 250	30		min/sec
22	dEF	dSt	6150	RW	End of defrost temperature	WORD	Y	-500 ... 1500	80	-1	°C/°F
23	dEF	dE2	6877	RW	Defrost time out 2 nd evaporator	BYTE		1 ... 250	30		min/sec
24	dEF	dS2	6366	RW	End of defrost temperature 2 nd evaporator	WORD	Y	-500 ... 1500	80	-1	°C/°F
25	dEF	dPO	6731	RW	Defrost activation request after power-on	BYTE		0 ... 1	0		flag
26	dEF	tcd	6152	RW	Compressor output activation/deactivation time before defrosting	WORD	Y	-31 ... 31	0		min
27	dEF	Cod	6732	RW	Time before defrosting during which the compressor output is not activated	BYTE		0 ... 60	0		min
28	FAn	FPt	6733	RW	FSt parameter mode (absolute or relative)	BYTE		0 ... 1	0		flag

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
29	FAn	FSt	6154	RW	Evaporator fan shut-down temperature	WORD	Y	-500 ... 1500	20	-1	°C/°F
30	FAn	Fot	6156	RW	Evaporator fan start-up temperature	WORD	Y	-500 ... 1500	-180	-1	°C/°F
31	FAn	FAd	6158	RW	Evaporator fan operating differential.	WORD		10 ... 500	20	-1	°C/°F
32	FAn	Fdt	6734	RW	Delay in enabling evaporator fans after defrost cycle	BYTE		0 ... 250	0		min
33	FAn	dt	6735	RW	Dripping time	BYTE		0 ... 250	0		min
34	FAn	dFd	6736	RW	Exclusion of evaporator fans during defrost cycle	BYTE		0 ... 1	1		flag
35	FAn	FCO	6737	RW	Status of evaporator fans when compressor output OFF	BYTE		0 ... 2	1		num
36	FAn	Fod	6738	RW	Status of evaporator fans when door is open	BYTE		0 ... 1	1		flag
37	FAn	FdC	6739	RW	Delay in shut down of evaporator fans after compressor is disabled	BYTE		0 ... 99	0		min
38	FAn	Fon	6740	RW	Time evaporator fans are ON in duty cycle mode	BYTE		0 ... 99	0		min
39	FAn	FoF	6741	RW	Time evaporator fans are OFF in duty cycle mode	BYTE		0 ... 99	0		min
40	FAn	SCF	6372	RW	Condenser fan activation set point	WORD	Y	-500 ... 1500	0	-1	°C/°F
41	FAn	dCF	6374	RW	Condenser fan operating differential.	WORD	Y	-300 ... 300	0	-1	°C/°F
42	FAn	tCF	6888	RW	Condenser fan start-up delay after defrosting	BYTE		0 ... 59	0		min
43	FAn	dCd	6883	RW	exclusion of condenser fans during defrosting	BYTE		0 ... 1	0		flag
44	AL	Att	6744	RW	HAL and LAL parameter modes (absolute or relative)	BYTE		0 ... 1	0		flag
45	AL	AFd	6160	RW	alarm differential	WORD		10 ... 500	20	-1	°C/°F
46	AL	HAL	6184	RW	Maximum alarm threshold	WORD	Y	LAL ... 1500	500	-1	°C/°F
47	AL	LAL	6186	RW	Minimum alarm threshold	WORD	Y	-500 ... HAL	-500	-1	°C/°F
48	AL	PAO	6745	RW	alarm excluded at power on	BYTE		0 ... 10	0		hours
49	AL	dAO	6162	RW	Temperature alarm exclusion time after defrost cycle	WORD		0 ... 999	0		min
50	AL	OAO	6746	RW	High and low temperature alarm exclusion time after door is closed	BYTE		0 ... 10	0		hours
51	AL	tdO	6747	RW	Alarm exclusion time when door is open	BYTE		0 ... 250	0		min
52	AL	tAO	6748	RW	Temperature alarm signal delay time	BYTE		0 ... 250	0		min
53	AL	dAt	6749	RW	Alarm signal for defrost ended timed out	BYTE		0 ... 1	0		flag
54	AL	rLO	6750	RW	External alarm disables controllers	BYTE		0 ... 2	0		num
55	AL	AOP	6751	RW	Polarity of alarm output	BYTE		0 ... 1	0		flag
56	AL	tP	6752	RW	Enables alarm silencing with each button	BYTE		0 ... 1	1		flag

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
57	AL	PbA	6776	RW	Probe enabled for temperature alarm signalling (probe 1 and/or 3)	BYTE		0 ... 3	0		num
58	AL	SA3	6196	RW	Alarm set point for 3 rd probe	WORD	Y	-500 ... 1500	0	-1	°C/°F
59	AL	dA3	6198	RW	Alarm differential 3 rd probe	WORD	Y	-300 ... 300	2	-1	°C/°F
60	Lit	dSd	6780	RW	Light relay enable from door switch	BYTE		0 ... 1	1		flag
61	Lit	dLt	6781	RW	Delay in switching off of light relay after door is closed	BYTE		0 ... 31	0		min
62	Lit	OFL	6782	RW	switching off of cell light button-enabled during delay set in parameter dLt	BYTE		0 ... 1	0		flag
63	Lit	dOd	6717	RW	load switching off enabled when door switch is switched on	BYTE		0 ... 1	0		flag
64	Lit	dAd	6718	RW	Delay in enabling digital inputs	BYTE		0 ... 255	0		min
65	Lit	dOA	6891	RW	FORCED behaviour from digital input	BYTE		0 ... 3	0		num
66	Lit	PEA	6892	RW	enables forced behaviour from digital input	BYTE		0 ... 3	0		num
67	Lit	dCO	6893	RW	delay in enabling compressor after activation of digital input	BYTE		0 ... 250	0		min
68	Lit	dFO	6894	RW	delay in enabling fans after activation of digital input	BYTE		0 ... 250	0		min
69	Lin	L00	6860	RW	Selection of Master, Slave, Echo	BYTE		0 ... 7	1		num
70	Lin	L01	6861	RW	Number of Slaves in <i>network</i> (refers to Master)	BYTE		0 ... 7	0		num
71	Lin	L02	6862	RW	Presence of local Echoes referring to single slave	BYTE		0 ... 2	0		num
72	Lin	L03	6863	RW	Simultaneous or sequential defrosting	BYTE		0 ... 1	0		flag
73	Lin	L04	6864	RW	Distributed display (refers to slave)	BYTE		0 ... 1	0		flag
74	Lin	L05	6865	RW	Activation of <i>network</i> functions	BYTE		0 ... 1	0		flag
75	Lin	L06	6866	RW	Locked Resources at end of defrosting	BYTE		0 ... 1	0		flag
76	Add	dEA	6742	RW	Device <i>address</i>	BYTE		0 ... 14	1		num.
77	Add	FAA	6743	RW	Family <i>address</i>	BYTE		0 ... 14	0		flag
78	Add	Pty	6881	RW	Modbus Parity Bit	BYTE		O/E/n	n		num
79	Add	StP	6882	RW	Modbus Stop Bit	BYTE		1b/2b	1b		flag
80	diS	LOC	6753	RW	Keyboard lock enabled	BYTE		0 ... 1	0		flag
81	diS	PA1	6783	RW	Password 1 value	BYTE		0 ... 250	0		num
82	diS	PA2	6784	RW	Password 2 value	BYTE		0 ... 250	0		num
83	diS	ndt	6754	RW	Display with decimal point	BYTE		0 ... 1	1		flag
84	diS	CA1	6164	RW	Cell probe calibration	WORD	Y	-120 ... 120	0	-1	°C/°F

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
85	diS	CA2	6166	RW	Calibration of evaporator probe	WORD	Y	-120 ... 120	0	-1	°C/°F
86	diS	CA3	6168	RW	Calibration of probe	WORD	Y	-120 ... 120	0	-1	°C/°F
87	diS	CAI	6755	RW	Intervention of calibration	BYTE		0 ... 2	0		num
88	diS	LdL	6170	RW	Minimum value that can be displayed	WORD	Y	-550 ... HdL	-550	-1	°C/°F
89	diS	HdL	6172	RW	Maximum value that can be displayed	WORD	Y	LdL ... 3020	1500	-1	°C/°F
90	diS	ddL	6756	RW	Locked Resources at end of defrosting	BYTE		0 ... 2	0		num
91	diS	Ldd	6777	RW	Time out for display lock after end of defrosting	BYTE		0 ... 255	0		min
92	diS	dro	6786	RW	°C or °F selection	BYTE		0 ... 1	0		flag
93	diS	ddd	6757	RW	Display of fundamental state	BYTE		0 ... 3	0		num
94	CnF	H00	6785	RW	Selection of NTC/PTC type of analogue input	BYTE		0 ... 1	0		flag
95	CnF	H02	6758	RW	Time for activation of functions from keyboard	BYTE		0 ... 15	5		sec
96	CnF	H06	6778	RW	Aux/light button or Digital Input active when instrument is off	BYTE		0 ... 1	1		flag
97	CnF	H08	6779	RW	Operating mode on stand-by	BYTE		0 ... 2	0		num
98	CnF	H11	6174	RW	Configurability and polarity digital input 1	WORD	Y	-9 ... 9	0		num
99	CnF	H12	6200	RW	Configurability and polarity digital input 2	WORD	Y	-9 ... 9	0		num
100	CnF	H21	6759	RW	Digital output 1 configurability	BYTE		0 ... 10	0		num
101	CnF	H22	6760	RW	Digital output 2 configurability	BYTE		0 ... 10	0		num
102	CnF	H23	6761	RW	Digital output 3 configurability	BYTE		0 ... 10	0		num
103	CnF	H24	6762	RW	Digital output 4 configurability	BYTE		0 ... 10	0		num
104	CnF	H25	6763	RW	Digital output 5 configurability	BYTE		0 ... 10	0		num
105	CnF	H31	6764	RW	UP button configurability	BYTE		0 ... 8	0		num
106	CnF	H32	6765	RW	DOWN button configurability	BYTE		0 ... 8	1		num
107	CnF	H33	6766	RW	ESC button configurability	BYTE		0 ... 8	2		num
108	CnF	H40	6767	RW	inversion of ST1 with ST2 enabled	BYTE		0 ... 1	0		flag
109	CnF	H41	6768	RW	Presence of cell probe	BYTE		0 ... 1	1		num
110	CnF	H42	6769	RW	Presence of evaporator probe	BYTE		0 ... 1	1		num
111	CnF	H43	6770	RW	Presence of 3 rd probe	BYTE		0 ... 2	0		flag
112	CnF	H45	6876	RW	Defrost start-up mode for applications with two evaporators	BYTE		0 ... 2	1		num
113	CnF	tAb	6176	R	Map code	WORD		0 ... 1999	0		num
114	HCP	SHH	6188	RW	Maximum HACCP alarm threshold	WORD	Y	-550 ... 1500	100	-1	°C/°F
115	HCP	SLH	6190	RW	Minimum HACCP alarm threshold	WORD	Y	-550 ... 1500	-100	-1	°C/°F

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
116	HCP	drA	6772	RW	Minimum holding time in critical area before alarm is signalled	BYTE		0 ... 99	10		min
117	HCP	drH	6773	RW	HACCP alarm reset time from last manual reset	BYTE		0 ... 250	24		hours
118	HCP	H50	6774	RW	Enables storage of HACCP alarms with/without alarm relay enabling	BYTE		0 ... 2	0		num
119	HCP	H51	6775	RW	HACCP alarm storage exclusion time (button or digital input)	BYTE		0 ... 250	0		min
120	PrE	H34	6880	RW	Number of errors allowed per maximum/minimum pressure switch input	BYTE		0 ... 15	0		num
121	CnF	H48	6867	RW	Presence of RTC	BYTE		0 ... 1	0		flag
125	dEF	dE1-H	6788	RW	Hours of start of 1 st daily defrost	BYTE		0 ... 24	24		hours
126	dEF	dE2-H	6789	RW	Hours of start of 2 nd daily defrost	BYTE		0 ... 24	24		hours
127	dEF	dE3-H	6790	RW	Hours of start of 3 rd daily defrost	BYTE		0 ... 24	24		hours
128	dEF	dE4-H	6791	RW	Hours of start of 4 th daily defrost	BYTE		0 ... 24	24		hours
129	dEF	dE5-H	6792	RW	Hours of start of 5 th daily defrost	BYTE		0 ... 24	24		hours
130	dEF	dE6-H	6793	RW	Hours of start of 6 th daily defrost	BYTE		0 ... 24	24		hours
131	dEF	dE7-H	6794	RW	Hours of start of 7 th daily defrost	BYTE		0 ... 24	24		hours
132	dEF	dE8-H	6795	RW	Hours of start of 8 th daily defrost	BYTE		0 ... 24	24		hours
133	dEF	dE1-m	6796	RW	Minutes of start of 1 st daily defrost	BYTE		0 ... 59	0		min
134	dEF	dE2-m	6797	RW	Minutes of start of 2 nd daily defrost	BYTE		0 ... 59	0		min
135	dEF	dE3-m	6798	RW	Minutes of start of 3 rd daily defrost	BYTE		0 ... 59	0		min
136	dEF	dE4-m	6799	RW	Minutes of start of 4 th daily defrost	BYTE		0 ... 59	0		min
137	dEF	dE5-m	6800	RW	Minutes of start of 5 th daily defrost	BYTE		0 ... 59	0		min
138	dEF	dE6-m	6801	RW	Minutes of start of 6 th daily defrost	BYTE		0 ... 59	0		min
139	dEF	dE7-m	6802	RW	Minutes of start of 7 th daily defrost	BYTE		0 ... 59	0		min
140	dEF	dE8-m	6803	RW	Minutes of start of 8 th daily defrost	BYTE		0 ... 59	0		min
141	dEF	F1-H	6804	RW	Hours of start of 1 st festive defrost	BYTE		0 ... 24	24		hours
142	dEF	F2-H	6805	RW	Hours of start of 2 nd festive defrost	BYTE		0 ... 24	24		hours
143	dEF	F3-H	6806	RW	Hours of start of 3 rd festive defrost	BYTE		0 ... 24	24		hours
144	dEF	F4-H	6807	RW	Hours of start of 4 th festive defrost	BYTE		0 ... 24	24		hours
145	dEF	F5-H	6808	RW	Hours of start of 5 th festive defrost	BYTE		0 ... 24	24		hours
146	dEF	F6-H	6809	RW	Hours of start of 6 th festive defrost	BYTE		0 ... 24	24		hours
147	dEF	F7-H	6810	RW	Hours of start of 7 th festive defrost	BYTE		0 ... 24	24		hours
148	dEF	F8-H	6811	RW	Hours of start of 8 th festive defrost	BYTE		0 ... 24	24		hours

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
149	dEF	F1-m	6812	RW	Minutes of start of 1 st festive defrost	BYTE		0 ... 59	0		min
150	dEF	F2-m	6813	RW	Minutes of start of 2 nd festive defrost	BYTE		0 ... 59	0		min
151	dEF	F3-m	6814	RW	Minutes of start of 3 rd festive defrost	BYTE		0 ... 59	0		min
152	dEF	F4-m	6815	RW	Minutes of start of 4 th festive defrost	BYTE		0 ... 59	0		min
153	dEF	F5-m	6816	RW	Minutes of start of 5 th festive defrost	BYTE		0 ... 59	0		min
154	dEF	F6-m	6817	RW	Minutes of start of 6 th festive defrost	BYTE		0 ... 59	0		min
155	dEF	F7-m	6818	RW	Minutes of start of 7 th festive defrost	BYTE		0 ... 59	0		min
156	dEF	F8-m	6819	RW	Minutes of start of 8 th festive defrost	BYTE		0 ... 59	0		min
157	nAd	E00_1	6820	RW	Enables functions during events on 1 st day	BYTE		0 ... 4	0		num
158	nAd	E00_2	6821	RW	Enables functions during events on 2 nd day	BYTE		0 ... 4	0		num
159	nAd	E00_3	6822	RW	Enables functions during events on 3 rd day	BYTE		0 ... 4	0		num
160	nAd	E00_4	6823	RW	Enables functions during events on 4 th day	BYTE		0 ... 4	0		num
161	nAd	E00_5	6824	RW	Enables functions during events on 5 th day	BYTE		0 ... 4	0		num
162	nAd	E00_6	6825	RW	Enables functions during events on 6 th day	BYTE		0 ... 4	0		num
163	nAd	E00_7	6826	RW	Enables functions during events on 7 th day	BYTE		0 ... 4	0		num
164	nAd	E00_ED	6827	RW	Enables functions during events every day	BYTE		0 ... 4	0		num
165	nAd	E02_1	6828	RW	Duration of event 1 st day	BYTE		0 ... 99	0		hours
166	nAd	E02_2	6829	RW	Duration of event 2 nd day	BYTE		0 ... 99	0		hours
167	nAd	E02_3	6830	RW	Duration of event 3 rd day	BYTE		0 ... 99	0		hours
168	nAd	E02_4	6831	RW	Duration of event 4 th day	BYTE		0 ... 99	0		hours
169	nAd	E02_5	6832	RW	Duration of event 5 th day	BYTE		0 ... 99	0		hours
170	nAd	E02_6	6833	RW	Duration of event 6 th day	BYTE		0 ... 99	0		hours
171	nAd	E02_7	6834	RW	Duration of event 7 th day	BYTE		0 ... 99	0		hours
172	nAd	E02_ED	6835	RW	Duration of daily event	BYTE		0 ... 99	0		hours
173	nAd	E03_1	6836	RW	Enables daily or holiday defrosting 1 st day	BYTE		0 ... 1	0		flag
174	nAd	E03_2	6837	RW	Enables daily or holiday defrosting 2 nd day	BYTE		0 ... 1	0		flag
175	nAd	E03_3	6838	RW	Enables daily or holiday defrosting 3 rd day	BYTE		0 ... 1	0		flag
176	nAd	E03_4	6839	RW	Enables daily or holiday defrosting 4 th day	BYTE		0 ... 1	0		flag
177	nAd	E03_5	6840	RW	Enables daily or holiday defrosting 5 th day	BYTE		0 ... 1	0		flag
178	nAd	E03_6	6841	RW	Enables daily or holiday defrosting 6 th day	BYTE		0 ... 1	0		flag
179	nAd	E03_7	6842	RW	Enables daily or holiday defrosting 7 th day	BYTE		0 ... 1	0		flag
181	nAd	E01_1-H	6844	RW	Hour of start of event 1 st day	BYTE		0 ... 23	0		hours

INDEX	FOLDER	LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
182	nAd	E01_2-H	6845	RW	Hour of start of event 2 nd day	BYTE		0 ... 23	0		hours
183	nAd	E01_3-H	6846	RW	Hour of start of event 3 rd day	BYTE		0 ... 23	0		hours
184	nAd	E01_4-H	6847	RW	Hour of start of event 4 th day	BYTE		0 ... 23	0		hours
185	nAd	E01_5-H	6848	RW	Hour of start of event 5 th day	BYTE		0 ... 23	0		hours
186	nAd	E01_6-H	6849	RW	Hour of start of event 6 th day	BYTE		0 ... 23	0		hours
187	nAd	E01_7-H	6850	RW	Hour of start of event 7 th day	BYTE		0 ... 23	0		hours
188	nAd	E11-ED-H	6851	RW	Hour of start of event every day	BYTE		0 ... 23	0		hours
189	nAd	E01_1-m	6852	RW	minutes of start of event 1 st day	BYTE		0 ... 59	0		min
190	nAd	E01_2-m	6853	RW	minutes of start of event 2 nd day	BYTE		0 ... 59	0		min
191	nAd	E01_3-m	6854	RW	minutes of start of event 3 rd day	BYTE		0 ... 59	0		min
192	nAd	E01_4-m	6855	RW	minutes of start of event 4 th day	BYTE		0 ... 59	0		min
193	nAd	E01_5-m	6856	RW	minutes of start of event 5 th day	BYTE		0 ... 59	0		min
194	nAd	E01_6-m	6857	RW	minutes of start of event 6 th day	BYTE		0 ... 59	0		min
195	nAd	E01_7-m	6858	RW	minutes of start of event 7 th day	BYTE		0 ... 59	0		min
196	nAd	E11-ED-m	6859	RW	Minutes of start of event every day	BYTE		0 ... 59	0		min
205	PrE	PEn	6889	RW	Number of errors allowed per maximum/minimum pressure switch input	BYTE		0 ... 15	0		num
206	PrE	PEi	6890	RW	Minimum/maximum pressure switch error count time	BYTE		1 ... 99	1		min

2.5.3 Client Table

INDEX	FOLDER	ADDRESS	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	DEFAULT	EXP	M.U.
1		8522	R	Analogue input 1	WORD	Y	-670 ... 3020	0	-1	°C/°F
2		8524	R	Analogue input 2	WORD	Y	-670 ... 3020	0	-1	°C/°F
3		8526	R	Analogue input 3	WORD	Y	-670 ... 3020	0	-1	°C/°F
4		8528	R	Analogue input 1 (control) 1	WORD	Y	-670 ... 3020	0	-1	°C/°F
5		8530	R	Analogue input 2 (control) 1	WORD	Y	-670 ... 3020	0	-1	°C/°F
6		8532	R	Analogue input 3 (control) 1	WORD	Y	-670 ... 3020	0	-1	°C/°F
7		8802,0	RW	Lights ON	1 bits		0 ... 1	0		num
8		8802,1	RW	Lights OFF	1 bits		0 ... 1	0		num
9		8802,2	RW	Enables Economy function	1 bits		0 ... 1	0		num
10		8802,3	RW	Disables Economy function	1 bits		0 ... 1	0		num
11		8802,4	RW	Auxiliary ON	1 bits		0 ... 1	0		num
12		8802,5	RW	Auxiliary OFF	1 bits		0 ... 1	0		num
13		8802,6	RW	Instrument ON	1 bits		0 ... 1	0		num
14		8802,7	RW	Instrument OFF	1 bits		0 ... 1	0		num
15		8803,0	RW	Alarm Silencing	1 bits		0 ... 1	0		num
16		8803,1	RW	Enabling of Manual Defrost	1 bits		0 ... 1	0		num
17		8803,2	RW	Enables RTC writing	1 bits		0 ... 1	0		num
18		8803,3	RW	Reset changed parameters indicator	1 bits		0 ... 1	0		num
19		8803,4	RW	OFF for maintenance	1 bits		0 ... 1	0		num
20		8567	RW	Command enabling timeout from serial.	WORD		0 ... 65535	0		sec
21		9027,4	R	Status of digital input 1	1 bits		0 ... 1	0		num
22		9027,5	R	Status of digital input 2	1 bits		0 ... 1	0		num
23		8821,0	R	High temperature alarm analogue input 3	1 bits		0 ... 1	0		num
24		8821,1	R	Analogue input 1 faulty	1 bits		0 ... 1	0		num
25		8821,2	R	Analogue input 3 faulty	1 bits		0 ... 1	0		num
26		8821,3	R	Low temperature alarm analogue input 3	1 bits		0 ... 1	0		num
27		8821,4	R	External alarm (digital input)	1 bits		0 ... 1	0		num
28		8821,5	R	High temperature alarm analogue input 1	1 bits		0 ... 1	0		num
29		8821,6	R	Low temperature alarm analogue input 1	1 bits		0 ... 1	0		num
30		8821,7	R	Open door alarm	1 bits		0 ... 1	0		num
31		8822,0	R	Clock error	1 bits		0 ... 1	0		num

<i>INDEX</i>	<i>FOLDER</i>	<i>ADDRESS</i>	<i>R/W</i>	<i>DESCRIPTION</i>	<i>DATA SIZE</i>	<i>CPL</i>	<i>RANGE</i>	<i>DEFAULT</i>	<i>EXP</i>	<i>M.U.</i>
32		8822,1	R	Communication master/slave failed	1 bits		0 ... 1	0		num
33		8822,2	R	End of defrost due to time-out	1 bits		0 ... 1	0		num
34		8822,4	R	Flat battery alarm	1 bits		0 ... 1	0		num
35		8822,5	R	Pressure switch alarm	1 bits		0 ... 1	0		num
36		8822,6	R	Pressure switch alarm (manual reset)	1 bits		0 ... 1	0		num
37		8825,0	R	Controller reduced set point active	1 bits		0 ... 1	0		num
38		8825,1	R	Controller Stand by active	1 bits		0 ... 1	0		num
39		8825,2	R	Lights	1 bits		0 ... 1	0		num
40		8825,4	R	Auxiliary controller active 1	1 bits		0 ... 1	0		num
41		8763,4	R	Relay 1	1 bits		0 ... 1	0		num
42		8763,3	R	Relay 2	1 bits		0 ... 1	0		num
43		8763,2	R	Relay 3	1 bits		0 ... 1	0		num
44		8763,1	R	Relay 4	1 bits		0 ... 1	0		num
45		8763,0	R	Relay 5	1 bits		0 ... 1	0		num

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