

Connectivity



the evolution

Hirolink for Modbus

(09) Items for CCAC (WXG - E1G - EVG) (Microface).doc

English

04/11/03 Release 1.07E

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1. Introduction CCAC (WXG - E1G - EVG) (Microface)

This document contains a description of all data-points that are available via the 'Hirolink for Modbus' from this type of air-conditioner.

IMPORTANT:

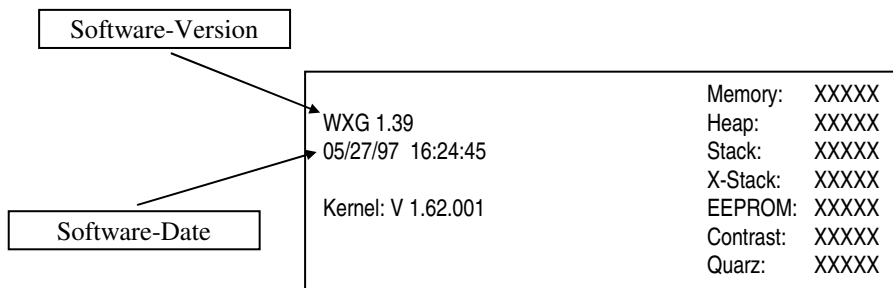
It is vital to the correct integration of the Hirolink into a Modbus-network, that you have read and understood the topics described in the document 'Hirolink for Modbus V X.XX - General Documentation' (X.XX is a placeholder for the current version of the Hirolink). So, if you haven't read this document until now, read it first.

2. Compatibility-List

Before connecting a Hiromatic to the Modbus-Hirolink you must check, if the Hiromatic-software-version is compatible with this version of the Hirolink.

You can do this by checking the labels on the eproms, which are inserted into the Hiromatic and the Microface. The eprom inserted in the Hiromatic must be called WXG + Version-Number (e.g. WXG139) or E1G + Version-Number or EVG L1/L2 + Version-Number.

To make sure that the label on the eproms is correct, you should also check the version-information, that the Hiromatic displays shortly after start-up. This information should look similar to the following illustration:



The important information in this window is only the software-version and the software-date (note that the date-format is mm/dd/yy). Make sure that the software-version installed in your installation matches one of the compatible versions listed below:

Version	Date
1.15	10/28/96
1.20	01/22/97 16:09:47
1.39	05/27/97 16:24:45
1.41.002	07/28/97 11:01:12
1.42	10/07/97 13:30:57
1.51.xxx	---
1.60.xxx	---

3. Items for CCAC (WXG - E1G - EVG) (Microface)

According to the Modbus-protocol-specifications the values and parameters provided by the Hiromatic are represented in 4 groups:

- Coils: Used for changeable, digital values
- Inputs: Used for not changeable, digital values
- Holding Registers: Used for changeable, analog values
- Input Registers: Used for not changeable, analog values

This Hirolink can be compatible with more than one version of this Hiromatic-type and it is possible that there have been extensions in the number of available items from one version to the next.

Therefore the column 'SW-Version' contained in the following lists provides information about the availability of each item depending on the Hiromatic-software-version. For example a entry like '1.15+' means, that this item is available from Hiromatics with software-version 1.15 and higher.

IMPORTANT:

The available data-points shown in the following chapters are numbered starting from 1, according to the Modbus-Protocol-Specification. Still some BMS start numbering the data-points from 0. So, in case that the BMS you are using starts numbering from 0, you have to decrease the listed numbers by 1.

3.1 Coils

Not used on this Hiromatic-type.

3.2 Input-Status

Not used on this Hiromatic-type.

3.3 Holding Register

Register #	Usage	Range; Unit	SW-Version
1	Status-Report-Acknowledge	See explanation below	1.15+
2	HM-System On/Off	0 -> Hiromatic System Off; 1 -> Hiromatic System On	1.15+
3 -18	Single Alarm-Status (MIC 1 - 16)	See explanation below	1.15+
19-34	Single Unit System On/Off (MIC 1 - 16)	0 -> Single Unit System Off; 1 -> Single Unit System On	1.15+
35-50	Heater Working Hours (MIC 1 - 16)	0 - 32000; [h]	1.15+
51-66	Humidifier Working Hours (MIC 1 - 16)	0 - 32000; [h]	1.15+
67-82	Compressor 1 Working Hours (MIC 1 - 16)	0 - 32000; [h]	1.15+
83-98	Conditioner Working Hours (MIC 1 - 16)	0 - 32000; [h]	1.15+
99-114	Sleep Mode Reset (MIC 1 - 16)	0 -> No, 1 -> Yes, 2 -> Auto	1.15+
115-130	Sleep Mode Second Interval TO Minutes (MIC 1 - 16)	0 - 59; [min]	1.15+
131-146	Sleep Mode Second Interval TO Hours (MIC 1 - 16)	0 - 23; [h]	1.15+
147-162	Sleep Mode Second Interval FROM Minutes (MIC 1 - 16)	0 - 59; [min]	1.15+
163-178	Sleep Mode Second Interval FROM Hours (MIC 1 - 16)	0 - 23; [h]	1.15+
179-194	Sleep Mode First Interval TO Minutes (MIC 1 - 16)	0 - 59; [min]	1.15+
195-210	Sleep Mode First Interval TO Hours (MIC 1 - 16)	0 - 23; [h]	1.15+
211-226	Sleep Mode First Interval FROM Minutes (MIC 1 - 16)	0 - 59; [min]	1.15+
227-242	Sleep Mode First Interval FROM Hours (MIC 1 - 16)	0 - 23; [h]	1.15+
243-258	Low Pressure Delay Time (MIC 1 - 16)	0 - 5; [min]	1.15+
259-274	Low Humidity Warning (MIC 1 - 16)	0 -> No, 1 - 99; [%RH]	1.15+
275-290	High Humidity Warning (MIC 1 - 16)	0 -> No, 1 - 99; [%RH]	1.15+
291-306	Low Temperature Warning (MIC 1 - 16)	0 -> No, 1 - 99; [°C]	1.15+
307-322	High Temperature Warning (MIC 1 - 16)	0 -> No, 1 - 99; [°C]	1.15+
323	Number of Standby Units	0 - 16	1.15+
324-338	not used		1.15+
339-354	Humidity Integral Factor (MIC 1 - 16)	4 -> No, 5 -15; [min]	1.15+
355-370	Temperature Integral Factor (MIC 1 - 16)	4 -> No, 5 -15; [min]	1.15+
371-386	Humidity Proportional Band (MIC 1 - 16)	5 - 20; [%RH]	1.15+
387-402	Temperature Proportional Band (MIC 1 - 16)	10 - 100; [1/10 K]	1.15+
403	Shared Parameters	0 -> No, 1 -> Yes	1.15+
404-418	not used		1.15+
419-434	Fanspeed (MIC 1 - 16)	29 -> No, 30 - 100; [%]	1.15+
435-450	Supply Air Setpoint (MIC 1 - 16)	5 - 25; [°C]	1.15+
451-466	Room Humidity Setpoint (MIC 1 - 16)	19 -> No; 20 - 80; [%RH]	1.15+
467-482	Room Temperature Setpoint 1 (MIC 1 - 16)	50 - 400; [1/10 °C]	1.15+
483-498	Room Temperature Setpoint 2 (MIC 1 - 16)	4 -> No, 5 - 40; [1/10 °C]	1.30+
499-514	Compressor 2 Working Hours (MIC 1 - 16)	0 - 32000; [h]	1.30+
515-530	Freecooling Working Hours (MIC 1 - 16)	0 - 32000; [h]	1.35+
531-546	Stop Freecooling at (MIC 1 - 16)	0 -> No, 1 - 25; [K]	1.35+
547-562	Freecooling Difference between room and glycol temperature (MIC 1 - 16)	0 -> No, 1 - 25; [K]	1.35+
563-578	Freecooling Difference between room and ambient temperature (MIC 1 - 16)	0 -> No, 1 -> EFC, 1 - 25; [K]	1.35+

Status-Report-Acknowledge (Holding Register #1):

Read the document 'Hirolink for Modbus V X.XX - General Documentation' (X.XX is a placeholder for the current version of the Hirolink) for a description on how to use this data-point.

Single Alarm-Status (Holding Registers #3 - #18):

This item holds a value which represents the current alarm-state of single Microface.

It can be written to in order to perform either a 'Alarm Acknowledge'- or a 'Alarm Reset'-command on a single Microface:

2 .. Alarm Reset:

This command will reset all alarms, warnings and messages currently present on a Microface. As a consequence alarms, warnings and messages that are inactive will disappear, will active alarms, warnings and messages will be reported again.

4 .. Alarm Acknowledge:

This command will acknowledge all alarms, warnings and messages present on a Microface. As a consequence alarms, warnings and messages that were in an unacknowledged state will be acknowledged after the command.

When read, the value corresponds to the following states:

0 .. No alarm present

1 .. Message acknowledged (inactive)

3 .. Message acknowledged (active)

5 .. Message not acknowledged (inactive)

7 .. Message not acknowledged (active)

9 .. Warning acknowledged (inactive)

11.. Warning acknowledged (active)

13.. Warning not acknowledged (inactive)

15.. Warning not acknowledged (active)

17.. Alarm acknowledged (inactive)

19.. Alarm acknowledged (active)

21...Alarm not acknowledged (inactive)

23.. Alarm not acknowledged (active)

25.. Alarm and warning acknowledged (inactive)

27.. Alarm and warning acknowledged (active)

29.. Alarm and warning not acknowledged (inactive)

31.. Alarm and warning not acknowledged (active)

The terms 'acknowledged' and 'not acknowledged' define, if the reset-push-button on the Hiromatic has been pressed once in order to silence the buzzer or if the command 'Alarm Acknowledge' has been performed.

The terms 'active' and 'inactive' define, if the alarm, warning or message is still active, which means that after performing a alarm-reset (either by sending the appropriate command via the Modbus-network or by pressing the reset-push-button on the Hiromatic a second time) the alarm or warning will be reported again.

NOTE:

Although you can read the alarm-state of the whole system, it is not possible to issue a 'Alarm Acknowledge'- or 'Alarm Reset'-command for the whole system. Instead you have to issue these commands for each Microface separately.

3.4 Input-Register

Register #	Usage	Range; Unit	SW-Version
1	Event-ID	ID identifying the event	1.15+
2	Controller-ID	Controller-ID, where the event occurred	1.15+
3	Minute	Minute, when event occurred	1.15+
4	Hour	Hour, when event occurred	1.15+
5	Date	Date, when event occurred	1.15+
6	Event-Type	0 -> message, 1 -> warning, 2 -> alarm, 3 and 4 -> reset	1.15+
7	System Alarm	See explanation below	1.15+
8	System Status	See explanation below	1.15+
9-24	Cooling Ramp (MIC 1 - 16)	0 - 100; [%]	1.15+
25-40	Status Dehumidification (MIC 1 - 16)	0 -> Off, 1 -> On	1.15+
41-56	Status Electrical Heater 2 (MIC 1 - 16)	0 -> Off, 1 -> On	1.15+
57-72	Status Electrical Heater 1 (MIC 1 - 16)	0 -> Off, 1 -> On	1.15+
73-88	Status Compressor 1 (MIC 1 - 16)	0 -> Off, 1 -> On	1.15+
89-104	Status Fan (MIC 1 - 16)	0 -> Off, 1 -> On	1.15+
105	Shared Room Humidity (average of all room-humidity-sensors) (MIC 1 - 16)	0 - 100; [%RH]	1.15+
106-120	not used		1.15+
121	Shared Room Temperature (average of all room-temperature-sensors) (MIC 1 - 16)	-300 - 1000; [1/10 °C]	1.15+
122-136	not used		1.15+
137-152	Single Status (per Unit) (MIC 1 - 16)	See explanation below	1.15+
153-168	Humidifier Current	0 - 4000; [1/100 A]	1.15+
169-184	Hirotemp 1 Value 2 (MIC 1 - 16)	-300 - 1000; [1/10 °C]	1.15+
185-200	Hirotemp 1 Value 1 (MIC 1 - 16)	-300 - 1000; [1/10 °C]	1.15+
201-216	Supply Air Temperature (MIC 1 - 16)	-300 - 1000; [1/10 °C]; see explanation below	1.15+
217-232	Room Humidity (MIC 1 - 16)	0-1000; [1/10 %RH]; see explanation below	1.15+
233-248	Room Temperature (MIC 1 - 16)	-300 - 1000; [1/10 °C]; see explanation below	1.15+
249-264	Actual Temperature Setpoint (MIC 1 - 16)	50 - 400; [1/10 °C]	1.30+
265-280	Status Compressor 2 (MIC 1 - 16)	0 -> Off; 1 -> On	1.30+
281	Shared Glycol Temperature (average of all glycol-temperature-sensors) (MIC 1 - 16)	-300 - 1000; [1/10 °C]	1.35+
282-296	not used		1.35+
297-312	Glycol Temperature (MIC 1 - 16)	-300 - 1000; [1/10 °C]	1.35+
313	Shared Outdoor Temperature (average of all outdoor-temperature-sensors) (MIC 1 - 16)	-300 - 1000; [1/10 °C]	1.35+
314-328	not used		1.35+
329-344	Outdoor Temperature (MIC 1 - 16)	-300 - 1000; [1/10 °C]	1.35+
345-360	Freecooling Status (MIC 1 - 16)	0 -> FC Off; 1 -> FC Start; 2 -> FC On; 3 -> No FC Mode	1.35+
361-376	Radcooler Ramp (MIC 1 - 16)	0 - 100; [%]	1.35+
361-376	Analoge Output Ramp 2 (MIC 1 - 16) (follows the setting of the 2 nd analoge output)	0 - 100; [%]	1.60.032+

Status-Report-Block (Input Register #1 - #6):

Read the document 'Hirolink for Modbus V X.XX - General Documentation' (X.XX is a placeholder for the current version of the Hirolink) for a description on how to use these data-points.

System-Alarm (Input Register #7):

This item holds a value, which represents the current alarm-state of the whole system. This alarm-state is calculated from the single alarm-states of each Microface and holds the highest of those alarm-states. The single alarm-states can be read using the appropriate Holding Registers.

The values correspond to the following states:

- 0 .. No alarm present
- 1 .. Message acknowledged (inactive)
- 3 .. Message acknowledged (active)
- 5 .. Message not acknowledged (inactive)
- 7 .. Message not acknowledged (active)

- 9 .. Warning acknowledged (inactive)
- 11 .. Warning acknowledged (active)
- 13 .. Warning not acknowledged (inactive)
- 15 .. Warning not acknowledged (active)

- 17 .. Alarm acknowledged (inactive)
- 19 .. Alarm acknowledged (active)
- 21 .. Alarm not acknowledged (inactive)
- 23 .. Alarm not acknowledged (active)

- 25 .. Alarm and warning acknowledged (inactive)
- 27 .. Alarm and warning acknowledged (active)
- 29 .. Alarm and warning not acknowledged (inactive)
- 31 .. Alarm and warning not acknowledged (active)

The terms 'acknowledged' and 'not acknowledged' define, if the reset-push-button on the Hiromatic has been pressed once in order to silence the buzzer or if the command 'Alarm Acknowledge' has been performed.

The terms 'active' and 'inactive' define, if the alarm, warning or message is still active, which means that after performing a alarm-reset (either by sending the appropriate command via the Modbus-network or by pressing the reset-push-button on the Hiromatic a second time) the alarm or warning will be reported again.

System-Status (Input Register #8) and Single Status (Input Registers #137 - #152):

This item holds a value, which represents the current system-state of the whole system and of the single Microfaces. The values correspond to the following states:

- 0 .. Alarm Off
- 1 .. Manual
- 2 .. Local Off
- 3 .. System Off
- 4 .. Standby Alarm
- 5 .. Standby
- 6 .. Sleep / Off
- 7 .. System On
- 8 .. Warning On
- 9 .. Alarm On
- 10 .. Sleep

Supply Air Temperature (Input Register #201 - #216), Room Temperature (Input Registers #233 - #248) and Room Humidity (Input Registers #217 - #232):

In case of NO Humitemp-sensor being used to measure the current room temperature and humidity, the 'Supply Air Temperature'-input-registers will hold the current room temperature and the 'Room Temperature' - and 'Room Humidity'-input-registers will be invalid. With Hirolink for MODBUS V 2.88, starting from the E1G and EVG EPROM applications, in case of no Humitemp, the ambient temperature can be read both in Supply Air Temperature (Input Register #201 - #216), Room Temperature (Input Registers #233 - #248) registers.

3.5 Events

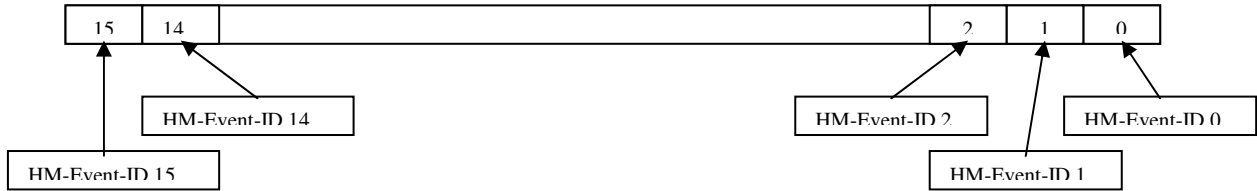
3.5.1 Event-Registers

Starting from 'HL for Modbus - V 2.85', there is the possibility to read the current state of a single event through Input-Registers, each bit of these registers represents the state of one event:

Examples:

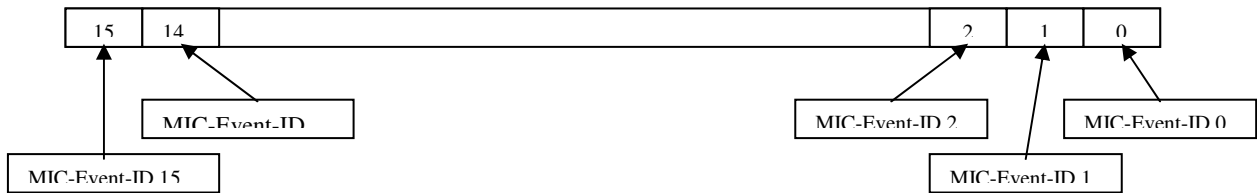
Input-Register #5001:

State of Hiromatic-events from ID 0 to 15



Input-Register #5009:

State of Microface-events from ID 0 to 15 from Microface with ID #1



Register #	Usage
5001	Hiromatic-events #0-#15
5002	Hiromatic-events #16-#31
...	...
5008	Hiromatic-events #112-#127
5009	Microface #1-events #0-#15
5010	Microface #1-events #16-#31
...	...
5016	Microface #1-events #112-#127
5017	Microface #2-events #0-#15
5018	Microface #2-events #16-#31
...	...
5024	Microface #2-events #112-#127
...	...
5129	Microface #16-events #0-#15
5130	Microface #16-events #16-#31
...	...
5136	Microface #16-events #112-#127

The following chapter contains a list with all events available for this unit-type. Unused event-IDs will always be set to 0.

NOTE:

Events of type 'Message' and 'Reset' (see Event-list in the following chapter), will NOT cause a bit to be set in the Event-registers when they are reported by the Hiromatic. Furthermore, the events 'UNIT CONNECTED' (Event-ID 100) and 'UNIT NOT CONNECTED' (Event-ID 101), which are generated by the Hirolink itself, are also NOT available as single bits within the Event-registers.

These events are only available through the 'Status Report Block' (Input registers #1 - #6).

For these controls boards and its applications the event registers are upgraded only if the 'Status-Report-Acknowledge' jumper is set; so Hirolink does the upgrades mandatorily (for more information see Modbus General Documentatio Chapter '5.4 The Status-Report').

3.5.2 Event-List

IMPORTANT:

If you intend to read the current events through the ‘Status Report Block’ (Input-Registers #1 -#6), please read the document ‘Hirolink for Modbus V X.XX - General Documentation’ (X.XX is a placeholder for the current version of the Hirolink) for a detailed description on how to use these data-points.

In the following list you can see all Events and Event-IDs available for WXG-units:

Event-ID	Event-Description	Event-Type	SW-Version
0	GENERAL ALARM	Reset	1.15+
1	COMPRESSOR 1 HIGH PRESSURE	Alarm	1.15+
2	COMPRESSOR 1 LOW PRESSURE	Alarm	1.15+
3	HIGH CHILLED WATER TEMPERATURE	Warning	1.15+
4	LOW CHILLED WATER FLOW	Warning	1.15+
5	ELECTRICAL HEATERS OVERHEATED	Warning	1.15+
6	FAN FAILURE	Warning	1.15+
7	FAN FAILURE	Alarm	1.15+
8	CLOGGED FILTERS	Warning	1.15+
9	WATER LEAKAGE DETECTED	Warning	1.15+
10	WATER LEAKAGE DETECTED	Alarm	1.15+
11	USER INPUT TRIGGERED	Warning	1.15+
12	USER INPUT TRIGGERED	Alarm	1.15+
13	EXTERNAL HUMIDIFIER FAILURE	Warning	1.15+
14	HUMIDIFIER HIGH CURRENT	Warning	1.15+
15	HUMIDIFIER FAILURE	Warning	1.15+
16	HUMIDIFIER FAILURE	Warning	1.15+
17	HUMIDIFIER CYLINDER WARNING	Warning	1.15+
18	HIGH ROOM TEMPERATURE	Warning	1.15+
19	LOW ROOM TEMPERATURE	Warning	1.15+
20	HIGH ROOM HUMIDITY	Warning	1.15+
21	LOW ROOM HUMIDITY	Warning	1.15+
22	HIGH ROOM TEMPERATURE (EEAP)	Warning	1.15+
23	LOW ROOM TEMPERATURE (EEAP)	Warning	1.15+
24	HIGH ROOM HUMIDITY (EEAP)	Warning	1.15+
25	LOW ROOM HUMIDITY (EEAP)	Warning	1.15+
26	CONDITIONER WORKING HOURS EXCEEDED	Warning	1.15+
27	COMPRESSOR 1 WORKING HOURS EXCEEDED	Warning	1.15+
28	HUMIDIFIER WORKING HOURS EXCEEDED	Warning	1.15+
29	PTC SENSOR FAILURE	Warning	1.15+
30	ROOM SENSOR FAILURE	Warning	1.15+
31	ROOM SENSOR FAILURE	Alarm	1.15+
32	EEAP SENSOR FAILURE	Warning	1.15+
33	WATER PRESENCE SENSOR FAILURE	Warning	1.15+
34	NETWORK FAILURE	Warning	1.15+
35	OUT OF MEMORY	Warning	1.15+
36	UNIT ON	Message	1.15+
37	UNIT OFF	Message	1.15+
38	SLEEP MODE	Message	1.15+
39	STANDBY MODE	Message	1.15+
40	POWER ON	Message	1.15+
41	POWER OFF	Message	1.15+
42	UNIT 1 DISCONNECTED	Alarm	1.15+
43	UNIT 2 DISCONNECTED	Alarm	1.15+
44	UNIT 3 DISCONNECTED	Alarm	1.15+
45	UNIT 4 DISCONNECTED	Alarm	1.15+
46	UNIT 5 DISCONNECTED	Alarm	1.15+
47	UNIT 6 DISCONNECTED	Alarm	1.15+

48	UNIT 7 DISCONNECTED	Alarm	1.15+
49	UNIT 8 DISCONNECTED	Alarm	1.15+
50	UNIT 9 DISCONNECTED	Alarm	1.15+
51	UNIT 10 DISCONNECTED	Alarm	1.15+
52	UNIT 11 DISCONNECTED	Alarm	1.15+
53	UNIT 12 DISCONNECTED	Alarm	1.15+
54	UNIT 13 DISCONNECTED	Alarm	1.15+
55	UNIT 14 DISCONNECTED	Alarm	1.15+
56	UNIT 15 DISCONNECTED	Alarm	1.15+
57	UNIT 16 DISCONNECTED	Alarm	1.15+
58	COMPRESSOR 2 HIGH PRESSURE	Alarm	1.20+
59	COMPRESSOR 2 LOW PRESSURE	Alarm	1.20+
60	COMPRESSOR 2 WORKING HOURS EXCEEDED	Warning	1.20+
61	OUTDOOR TEMPERATURE SENSOR FAILURE	Warning	1.20+
62	GLYCOL TEMPERATURE SENSOR FAILURE	Warning	1.20+
63	FREECOOLING STOPPED FOR 1 HOUR	Message	1.20+
64	ON-OFF BY HIROMATIC NOT ENABLED	Warning	1.60+
65	SMOKE ALARM	Warning	1.60+
66	NO POWER (USER INPUT)	Message	1.60+
67	POWER ON (USER INPUT)	Message	1.60+
68	USER INPUT 2 TRIGGERED	Warning	1.60+
69	USER INPUT 2 TRIGGERED	Alarm	1.60+
70	NO CONNECTION TO UNIT 1	Warning	1.60+
71	COMPRESSOR 1 MOTOR PROTECTION	Alarm	1.60+
72	COMPRESSOR 2 MOTOR PROTECTION	Alarm	1.60+
73	FIRE ALARM	Alarm	1.60+
74	OUT OF MEMORY	Warning	1.60+
75	CONDENSER 1 FAN FAILURE	Warning	1.60+
76	CONDENSER 2 FAN FAILURE	Warning	1.60+
77	HIROBUS ERROR	Warning	1.60+
78	SUBGROUP-ID NOT UNIQUE	Warning	1.60+
79	SUBGROUP-UNIT 1 NOT CONNECTED	Warning	1.60+
80	SUBGROUP-UNIT 2 NOT CONNECTED	Warning	1.60+
81	SHARE ROOM SENSOR FAILURE	Warning	1.60+
82	SHARE ROOM SENSOR FAILURE	Alarm	1.60+
83	SHARE OUTDOOR TEMP. SENSOR	Warning	1.60+
84	SHARE GLYCOL TEMP. SENSOR	Warning	1.60+
85	UNIT SYNCHRONISATION (=Short Reset)	Message	1.60+
86	HUMIDIFIER HIGH TEMPERATURE	Alarm	1.60+
87	HUMIDIFIER OVERFLOW	Alarm	1.60+
88	HEATER 1/2 WORKING HOURS EXCEEDED	Alarm	1.60+
89	FREECOOLING WORKING HOURS EXCEEDED	Alarm	1.60+
90	AIRFLOW DEVICE NOT READY, PLS. CHECK	Alarm	1.60+
100	UNIT CONNECTED	Message	1.15+
101	UNIT NOT CONNECTED	Message	1.15+

4. Document-Changes

This appendix contains all changes that have been applied to this document up to the current version:

1. Changes from V 1.00 to V 1.01

- The chapter describing 'Networking Systems' has been removed, because it is now available in the document 'Hirolink for Modbus V X.XX - General Documentation' (X.XX is a placeholder for the current version of the Hirolink).
- Also all descriptions regarding the 'Status-Report' have been moved to this document.

2. Changes from V 1.01 to V 1.02

- The description of the Holding Registers #563-#578 was corrected (a value of 1 sets this parameter to 'EFC').

3. Changes from V 1.02 to V 1.03

- The order of the input registers 313 'Shared outdoor temperature' and 329-344 'Outdoor temperature' was corrected.

4. Changes from V 1.03 to V 1.04

- Explanation of input-registers 'Supply Air Temperature', 'Room Temperature' and 'Room Humidity' added.

5. Changes from V 1.04 to V 1.05

- Upgrade of the Event list.

6. Changes from V 1.05 to V 1.06

- A note regarding the ambient temperature sensor has been added to the chapter 3.4.

7. Changes from V 1.06 to V 1.07

- Events description for 88,89 and 90 corrected.
- Input register 361 – 376 updated for eeprom version 1.60.032.