

## *Alarm and Supervising-System with Telephone notification and Baby-Phone mobile*



### Changes

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## This and that...

We do not insist having a perfect System already. But we appreciate each Hint and Proposal for a Improvement of the Unit and your Unit. The Software is alive and there is changed a lot also due to your Feedbacks. The last Version of the Software can be found on the Internet for Download. Contact me if you have questions. The Address is at the end of the Document.

Not all Functions are realized in all Units. Check your Order!

## Quick Start

- Connect Power-Supply and Alarm-Sensors in accordance with the wiring-diagram to the Metamorphosis.
- Switch on the device, go to Menu 1 (press key 1) and enter a Telephone-number: First you enter 1 for Telephone-Number. Then you press "\*" and enter your desired Phone-Number. Return to Basic-Menu with the key "\*\*"
- Set the Program-Switch (in the middle of the device) to Position 2,3,4 or 5
- After 30 Seconds the Alarm-System is active
- When you return home, deactivate the System by changing the Program-Switch to Position 1.

- If you install the Software Dialer from the CD (Folder \PC\_Remote\_Control\_by\_Dialer) you have an easy access to all Documents and Parameters.

## Keyboard-Functions

In the Basic-Menu when a message is displayed, you can acknowledge this message and switch off the horn by pressing any key.

From the Basic-Menu (the menu on the display after being switch on) you can select different **Sub-Menus** by pressing the key 1 to 9. In the Sub-Menus you can jump from one value to the other by pressing "#". The flashing Cursor indicates which value is active for Input. So if you input wrong data, press "#" several times until you come again to the desired value. In Menu 4 (Universal-channel) you can go back one Input-field also by key "\*\*".

If you changed the value you can go directly back to Basic-Menu without pressing "#"

Go back or return from the Submenu by pressing "\*\*". From Menu 4 (Universal-channel) you return by pressing "\*\*" twice.

## ***The Program-switch***

(Located in the middle of the device)

**Position 1: Alarm-System off.** Only the 24h-Alarms are active in this Position

**Position 2: Just Ring:** When there was a alarm, only the phone-number will be dialed

**Position 3: Hear:** When there was a alarm, the phone-number will be dialed and you can hear for about 15 second what is going on at home

**Position 12: Alarm immediately:** In this Position the Alarm is activated immediately (Panic-Switch)

## ***Basic-Menu***

(is displayed after the device is switched on)

**First line:** Alarm active /inactive; Number of the last Alarm

**Second line:** Corresponds to the Position of the Program-Switch

### **Functionality in the Basic Menu**

If you press "0" in the Basic-Menu the Alarm-Horn and the Lamp (if there is one connected) will be switched off immediately. If you want to switch the Lamp on press key "#" in the Basic-Menu.

If you press "\*" in the Basic-Menu then you can enter the Password for "switch off Alarm" and for all Submenus.

(Password corresponds to the Settings in Menu 8, Parameter 7,8)

## ***Submenu 1: Telephone-Numbers***

For to use this function you need to have the integrated Dialing-Unit or a GSM-Modem or a Mobile phone connected.

Up to three telephone-numbers can be defined in here. First select Tel-Nr. 1-3. Then press "#" to enter the according number with up to 12 Digits.

Which of the numbers will be dialed depends from the field Tel-Nr.. If you enter 1 or 2 or 3, Number 1 or 2 or 3 will be dialed (just one!). If you enter 12, number 1 and 2 will be dialed. If you enter 13, number 1, 2 and 3 will be dialed subsequently. If you do not want to have a telephone-notification enter Tel-Nr: "0". In this case only the horn is switched on automatic if there was a alarm. You can Test the Telephone-Number if you go to the filed "Test" and you enter key 1. With the key "\*" you cancel a Telephone-call. The Information on the Display will not be displayed during a real Alarm! Depending of Parameter 3 in Menu 8 a Telephone-call is initiated or a SMS is activated,

## ***Submenu 2: Micro on/off, Simulate being at Home***

In here you can activate the Noise-Alarm (Microphone is integrated in the Metamorphosis). In the Settings Menu 8, Parameter 12 you can enter a value for the sensitivity of the Microphone. Standard is "5"

Simulate being at home means that the lamp or any device connected at Relay 6 is switched on in the evening randomly.

## ***Submenu 3: Internal/External Horn on/off, Active Zone***

If you want to have an internal Alarm (Beeper at the device), you can switch it on and off in here

If you want to have an external (loud) Alarm (Horn connected to Relays 7), you can switch it on and off in here

Active Zone: You can assign a special Zone (in Menu 6) to all Channels (inside / outside the house). Using this function you can say for example all Sensors outside the house are in Zone 2 and you can activate only this Zone. Or for

Testing the Sensors one after the other. Here you enter which Zone of the Sensors should be active. If you enter "0" in here, all Alarm-Loops will be active (inside and outside for example).

## ***Submenu 4: Universal Channels 1-20***

Here you can program up to 20 Channels for Alarm and many other Functions.

## ***Overview of the functions of the Universal module***

**Timer:** Device switched Time-controlled (f.e. fridge only at daytime, light only at night etc).

**Start once for a defined Time:** You just setup the running-time of the Timer and then switch the channel on. The Output is active just once for the defined time. After that the channel is switched off.

**Pulses:** Device switched with Pulses. Every minute for 10 seconds or every Monday for 3 hours etc. For example for a generator start etc.

The above Time -Function can be combined with all other functions.

**Simulation of absence:** Often Solar-Systems are installed where people are often absent. You can program a Timer to switch on lights for to simulate the Presence of somebody

**Load-shedding:** Different Loads can be switched off depending from the Battery-Level. With delay switch on and delay switch off (minimum run-time). With Hysteresis (Difference-value between on and off). This can be used for Load-shedding of the Devices connected. First the less important, then the critical ones. Example: Channel 1-5

**Voltage-Control:** Switch on devices if the battery is full etc. For example for to use all Power of the Solar-Panels to switch a Water-Pump etc. With delay on/off and Hysteresis.

**Output Delayed off:** for example to switch on a light by a switch and turn off automatic to save Power. The Start can be by a Push-Button or a Switch.

Example: Channel 7-11;

**Alarm-Messages and Action:** For example if any Value (Voltage, Temperature) is inside a critical range a Alarm can be activated and / or a Telephone-call, SMS etc. Example: Channel 6, Battery empty

**Alarm-System:** Using moving-Detectors etc. or door-switches (in the cabinet etc) you can build up a Alarm-System for to protect your equipment. Alarm can be by a Siren or a Telephone-call or a SMS if you have a Mobile-Phone connected. Example: Channel 7-11

**Cooling:** For example the solar panel. You can Input the Temperature-Setpoint with Hysteresis and Pulses for the cooling-pump. Example: channel 12

**Heating:** For example a glass-house if it may not get too cold. With Temperature-Setpoint and Hysteresis.

**Level-Control with analog Sensors:** for example for the Tank of the cooling water.

**Level-Control with 1 or 2 digital Sensors:** for example refill for a certain time if the empty Level is coming.

**Interlock with an Input:** Pump only active if no empty-Level.

**Interlock with an Output:** Dosing only active if the Pump is running.

**Difference-Regulation:** For example for Solar-thermal Systems for the Temperature-Difference-Regulation

### **Activating Channel by SMS**

If you send a SMS with the Text Meta81 or Meta91 to the Metamorphosis, you can activate a Universal-channel by selecting Input 81 (for SMS with the Text Meta81) or 91 (for SMS with the Text Meta91). If all conditions are ok and you send the SMS the output will be switched on. By Sending the SMS with the Text Meta80 or Meta90 the Module is deactivated again

In each Module you can define two Inputs and two Outputs. Inputs can be analog or digital, Outputs Relais or Transistor or virtual, to be used in other Modules. Or it can be a Telephone-notification.

## ***How to Program the Channels?***

**Hint:** In the for Universal Modules with key „\*“ you can jump one Input-field back. If you wait a little bit and press „\*“ again, then jump to the next field back. Two times key „\*“ (without break) jumps back to the main Menu.

In Menu 8 Parameter 33 you setup the number of used Channels. This value should correspond to the number of values you are using!

If you use Type 4 for Alarm, then the Alarm will be activated central via the Program-Switch

*Display:* **Ch1 on for /all**  
**00:00 00s 00min**

If you select Nr. 1 from the Ground-Menu, you can first input for which Channel (1-20) you want to set the Data. With ”#” you jump to the next Input-Field. If you made an Error, press ”\*” to jump back to the last field. Press twice “\*” to go the Basic-Menu again.

First you select the according Channel-Nr 1-20.  
Then you can switch the Channel on and off  
Next to this you see the actual Status of the Channel (on or off)

Here you can enter the Start-Time for Pump 1 (or device 1). First you enter the hour (0-23) for Start of the pump. Then press “#” and you can input the minute you want to have the pump been started.

With the next “#” you can say how long you want to have the pump running:

If you enter “0” then the pump will be started only depending from the Set-value you give in the next menu;

If you enter a value from 1-60 then the unit is seconds.

If you enter a value from 101-160 then the Unit will be minutes. For example value 102 means 2 minutes.

If you enter a value from 201-224 then the Unit will be hours. For example value 203 means 3 hours.

If you enter 1-60 for “all..” it means that every 1-60 minutes the pump will run as long as you wrote in “for..”; One Example: If you want to have the pump on all ten minutes and for 30 Seconds on: You input 30 (Second) at “for” and 10 (minutes) at “all”;

If you input 101 -124 for “all.. “ that means 1-24 hours the pump is switched on;

One Example: every third hour for 10 minute: Input of 10 at “for” and 103 for “all”

If you input 201-207 for “all.. “ that means every 1-7 day the pump is on for the time you wrote in “on..”;



**Note:** if you use the Function “on all”, “hour” and “minute” they have a different meaning; The first value is the Start-hour, the second value the Stop hour. If the hour-value is “0” then the Output runs continuously with the defined Parameters.

### Actual Value, Setpoint, Hysteresis, Type

If you press “#” again you have the next **Menu 2** for to define the **Setpoints**

*Display: 1:99.9%>SP:99.9%*

1 The first character indicates the Channel-Number

Then you see the **Actual Value**, you can not change. Note that the value is actualized only every minute.

</> allows you to define whether the Output should be active if the Actual Value (for example Humidity) is less then the Setpoint (< = Input "0") or if the Actual Value is higher then the Setpoint (for example Cooling the glass-house). (> = Input "1").

**SP:** Here you define the **Setpoint** (0..100.0) . The Unit depends from the Type in the next Menu.

If you enter “0” then the Function “Analogue Sensors” is disabled and is only Time-Controlled or by Level-Switches..

*Display: Hys:9.9% Typ:1(0=%;1=°C)*

**Hys:** For the Setpoint you can define a **Hysteresis** for the Switch Back-Point. For example you define Start Cooling at 40 °C. With a Hysteresis of 5.0 the Output is switched on at 40°C and off at 35°C. If you make a small Hysteresis the Output is switched frequently.

**Typ:** With Type you define whether it is a

**0: Voltage-Control:** Monitoring of the Battery-voltage for example. Unit is V.

With Telephone-Notification? Then set the Output 1 or 2 to 16 and Input a Telephone-Number. This works also if the Alarms are not activated by the Program-Switch

**Type 1: Temperature-Control**, Unit °C; Telephone-Notification like Typ 0

**Type 2: Level-Control** or Dosing, Unit %; Telephone-Notification like Typ 0

**Type 10-12:** same like channel 0-2 but act as **Alarm-channels**

That means once it has been activated by a Analogue or digital Input a Timer is started (defined in “Delay on”).

Now the Alarm can be reset by the Program-Switch at Position “1”.

If not, an Alarm is generated with all conditions Setup by Menu 1 and 3 (Telephone-Call, internal/external Alarm) etc.

After an Alarm a Break-Time (Delay\_off-Time in Minutes) is started in order not to generate too many Alarms subsequently.

With Telephone-Notification? Then set the Output 1 or 2 to 16 and Input a Telephone-Number in Menu 1

### Type 20-23: Interlock

In this Case the Output is only reset by the defined conditions and has to be set by another Channel.

For example: switch off the Pump if the Temperature is more than 85 °C

### Delay on/off

If you press “#” again you have the next **Menu Delay on/off:**

Here you can define a **Delay-on** Time in seconds for to Start the Output. This is interesting if the Actual-Value is very unstable. You can also see the actual value for Delay on in here. Disable this function with Value "0".

Here you can define a **Delay-off** Time in seconds / minutes / hours for to Stop the Output delayed. This is interesting if the Actual-Value is very unstable and you want to have the Output on at least for a certain time.

For “Delay on” and „Delay off“ the value can be defined in seconds (Input 1-99), Minutes (Input 1.01-1.99) or hours (Input

2.01-2.99). 1.07 means 7 Minutes for example.  
You can also see the actual value for Delay off in here.  
Disable this function with Value "0".

### **Input/Output**

If you press “#” again you have the next **Menu Input/Output:**

*Display:* **Input:101 (33+44) Range: 1-204**

**Output:1 (35+36) Range: 1-20**

Here you select the according **Input**

Analogue Input: 1-15

Noise-Detector 16

Digital Input: 101-108

Radio-Sensor: 21-26

SMS-Input: Input 81 and 91

See Appendix for List of Inputs

In Line 2 you select the according **Output** (1-20)

Output 1 and 8-15 is Transistor-Output (only 12/24 V)

Output 2-7 is a Relay-Output (also 220V/380V)

Output 16 initiates a Telephone-call. The Telephone-number defined in Menu 4 is called

Output 17-20 are virtual Outputs, that means they can be used for to combine two channels together. There is no Hardware for that but if you select this Output, you can check for this Output in another Channel as Input 2 condition.

In ( ) you see the Terminals where you have to connect your wires.

### **Input 2 (additional Input or Zone)**

If you press “#” again you have the next **Menu additional Input**

Here you can select a additional Input as another Start-Condition

Or a Zone number in order to get it only activated if the according Zone (Menu 4) is activated

*Display:* **In2:1/101 (33+44);** (33+44 = Terminal-Number)

**Range:**

Interlock by Digital Output: 1-20

Another Analogue Input: 51-66

SMS-Input: Input 81 and 91

Activation by Digital Input: 101-108

Activation by Radio-Sensors: 201-204

If you have two Digital Sensors (two Level-Sensors) you can select the according Digital Input (101-108) or Radio-Sensor (201-204) in here.

For example for a Level-Control: Input 1 switches the Output on, Input 2 switches it off.

The actual Status for the Input 2 is Displayed after “:” (1 in this example).

Input 2 can also be a **Interlock or Enable-Signal** by an Output from another channel. In this way you can combine different channels.

Select 1-20 for the according Output (17-20 are virtual Outputs, no Hardware for that).

**Example 1:** no Irrigation if Rain-Sensor of Channel 6 is more than xy and Humidity of channel 1 is more than 50 %.

For that you select in Menu 1 Channel 6 (Channel for the Rain-Sensor) as Output Nr 17.

In Menu 1 Channel 1 (Humid-Channel) you select this Output 16 as Input 2 (additional Start-condition).

**Example 2:** If you want to have a **Dosing-Channel** you can define here which other Output (Irrigation-Output) must be on during Dosing.

**Input 2 can also be a second Analogue Input.** In this way you can compare two Analog-Values and the Setpoint will be replaced by the external Analog-Value.

**Example:** Activate if Temperature-Difference is more than 15 °C

Input 2 can also be a **Interlock or Enable-Signal** by a Input. (no Irrigation if Level min). Select 101-108 for the according Digital Input or 201-204 for Radio-Sensors.

If you want to use only Input 2, Set Input 1 to "0"

With this Settings you can have **the following Options:**

Input 1 < 100 and Input 2 = 0: Analogue Switch  
 Input 1 > 100 and Input 2 = 0: Digital Switch with one Sensor  
 Input 1 > 100 and Input 2 > 100 : Digital Switch with 2 Sensors  
 Input 1 < 100 and Input 2 < 100: Analogue Switch with Enable by Channel 1-15  
 Input 1 < 100 and Input 2 > 100: Analogue Switch with Enable by Digital Input 1-8 (101-108)

In ( ) you see the Terminals where you have to connect your wires.

**Display: Input ok = 0/1?**

Here you can define whether the Channel should be active (Output = 1) if Sensor Input = 1 or if the Sensor Input = 0. This depends from the Type of Sensor or if you want to have an Interlock or Enable-Function by Input 2.

**Output 2:**

Here you can define another Output to get two devices being switched on by one channel. For example the Irrigation-Valve and a Booster-Pump. But you can also select virtual Outputs 16-20 in here and check at another channel at Input 2 about the Status. In this way you can combine different channels.

Example: Channel 1-5 are Irrigation-channels with a valve. If any of this channels is active, the Booster-Pump should be on. Set for each channel as Output 2 the Booster-Pump. Channels can work in parallel on the same output.

Output 1 and 8-15 is Transistor-Output (only 12/24 V)

Output 2-7 is a Relay-Output (also 220V/380V)

Output 16 initiates a Telephone-call. The Telephone-number defined in Menu 4 is called

Output 17-20 are virtual Outputs, that means they can be used for to combine two channels together. There is no Hardware for that but if you select this Output, you can check for this Output in another Channel as Input 2 condition.

**Next Alarm in x min**

Here you define a Time in min for the next Alarm being generated in order for not to have always an Alarm.

Set this value to "0" if you use channel-Type 10-20 for a Switch-Button to activate a light for example.

Return from all sub-menu by pressing "\*"



➤ **Hints:**

- With the Input of „0“ at the Timers (first Display), the Timer-Function is deactivated. In this case the Output is activated only by the Setpoint of the Analog-Function-Modul
- With the Input of „0“ at the Setpoint, the Analog-Function is deactivated. In this case the Output is activated only by Time.
- If you have selected Typ 3 Alarm, then the Output is activated after the Delay-Time. If you have selected as Output 1 „16“, then a Telephone-Notification / SMS will be activated. After the Activation the "Delay-off"-Time is activated and Resets the Output again. After a waiting Time of 10 minutes, the Alarm is active again (if conditions are fulfilled).

If the channel does not switch on although the conditions are ok check

- If the actual Sensor Value is 0 then for safety the Pump is not switch on (no Sensor is connected)
- Parameters in Menu 2 can disables the Pump to Start. Verify that this function is off if you don't need it
- don't forget to input the time in Menu 7 after the Device has being switched off

***Submenu 5: Automatic Activate Alarm by Timer***

The Alarm-System can be activated automatic by a Timer, for example every day when you are in the office. Enter Start-Time and running-Time in here. If you enter "0" for all values the function is disabled.

***Submenu 6: Delay Channel, Zone, Type***

The **Channel-number** refers as following

- 1-15 = Analog-channels
- 16 = Noise-Detector
- 21-30 = Radio-Sensors
- 101-108 = Digital Inputs

**Delay:** Each Channel can be delayed. In here you give the time in Milliseconds and seconds.

For example 0.5 means 0.5 seconds = 500ms. If you enter "0" there will be no delay.

**Channel Zone:** You can enter a Zone (1-255) for each channels in here. With this you can make Alarm-Areas (outside / inside etc) and you can easily Test one Alarm after the other. This refers to Menu 3 "Active Zone" where you define which Zone is active

Zone = 24: This Channel is always on independent from Timer, switch .....; This is useful for Smoke-Detectors etc.

Zone = 100: This channel is always off. If the Sensor is broken for example or you do not want to use it temporally.

### Channel-Type:

With the Channel-Type you can program individual Channel-Reactions in case of an Alarm

Typ 0=Normal (int. Alarm, ext. Alarm, Telephone-notification, Send SMS depending from general Settings Menu 2+3)

Typ 1= Switch on Relay 1 with Alarm (from Limit-Value or normal Alarm); no Alarm-Horn, no Telephone-notification.

The Time the Relay is on is depending from the Parameter 10, Menu 8 (Time Horn is on after Alarm)

Typ 2= Switch on Relay 2 with Alarm, Rest like before

Typ 3= Switch on Relay 3 with Alarm, Rest like before

Typ 4= Switch on Relay 4 with Alarm, Rest like before

Typ 5= Switch on Relay 5 with Alarm, Rest like before

Typ 6= Switch on Relay 6 with Alarm, Rest like before

Typ 7= Switch on Relay 7 with Alarm, Rest like before

Typ 10= Only internal Alarm (Beeper) for this channel; This overrides the general Settings in Menu 3

Typ 20= Only external (loud) Alarm; This overrides the general Settings in Menu 3

Typ 30= internal and external (loud) Alarm; This overrides the general Settings in Menu 3

Typ 40= Call Telephone; Call a Telephone-number by Line or Mobile-Phone; horn according to general Settings Menu 3

You can also have a combination of both:

Typ 11=Relay 1 + Only internal Alarm

Typ 12=Relay 2 + Only internal Alarm etc.

Typ 21=Relay 1 + external Alarm etc

## Submenu 7: Input of time / Output Voltage

Here, you can input the Date and Time. After the device had been switched off, you have to input this time again.

Furthermore the **Output-voltage**, which can be adjusted with the regulator at the right side, will be displayed in here.

This voltage can be used for any device with 3-10V and max. 1A. See appendix for electrical connection. Be careful not to change the voltage when a device is connected. This could destroy the device!

## Submenu 8: Basic-Settings

Here you have a lot of Basic-Settings. First you select the Value-Number, then you enter the according Data

Parameter	Name	Description
1	Delay active	Time to leave the Alarm-System after activation; Standard 30 sec
2	Delay deactivate	Time to deactivate the Alarm-System after coming back home; Standard 30 sec
3	Send SMS	in case of an Alarm send a SMS? 0=off ; 1=on
4	Receive SMS	for to switch any of the Relays by SMS from Remote; see list below for the SMS-Text you have to send; 0=off; 1=on
5	Radio-Transmitter	If you have Radio-Sensors, activate the function in here. Radio-Sensors are channel 21-36
6	ext. deactivate	if you want to deactivate the Alarm with an external Switch. 0=off; 1-28 = Input-Number. Look Appendix for the Input-List So it can be any Analogue or Digital Input, wiring like the Sensors
7	Code Alarm off	Password for to switch off the Alarm; 0=Function disabled
8	Code Data Input	Password for to change the Settings; 0=Function disabled
9	Language	English or German; 0=German, 1=English
10	Time Horn on	Time Horn is on after Alarm; Standard: 30 sec
11	Pulse-Dialing	0=DTMF(Tone)-Dialing; 1=Pulse-Dialing
12	Level Mic Alarm	Level for Noise-Alarm; Standard: 5
13	Time Beep	Time Beep in Telephone after Alarm; Standard: 15 sec
14	Time Hear	Time Hearing at the Telephone; Standard: 15 sec
15	Time Speak	Time Speaking at the Telephone; Standard: 0 sec; in

16	Time Switch	future Time Switching at the Telephone; Standard: 0 sec; in future
17	Time Lamp on	Time external Lamp on after Alarm; Standard: 180 sec
18	ext. Panic Switch	Activate external Panic-Switch. The contact is at Input Digital 1 (Pin 47 and 48) like Sensor 11. 0=off; 1=on;
19	Time next Alarm	Time between two Alarms in min (0-255); Standard: 5 min
20	Charging Voltage Lead Battery	Voltage Charging: Voltage to charge the Lead-Battery if connected (Preset 13,7V) and activated (Parameter 37)
21	Max.Alarms/hour	Max. Number of Alarms in one hour
22	Country-Code	Note: for Germany (49) you have to type 94!; same for other countries!
23	Alarms in EPROM	Should the Alarms be stored in EEPROM?
24	Reset all Data	All Datas are set to Standard Settings (= 1)
25	Number of NimH-Cells	If you have a NiCd-Backup, then you can enter the number of cells in here.
26	Nicd/NimH Selection	Select Battery-Type Nicd/NimH
27	Capacity NimH	Here you Input the "mAh-Value" of <b>one</b> cell of the NiCd/NimH-cells you want to load. You find it printed on the batteries.
28	Analogue Input-Type	This depends from the Type of Sensors you are using at each Analogue Input. Type 0: Voltage (Battery-Voltage or internal Voltage regulator) Type 1: 10 K NTC Temperature-Sensor (used for Temperature-Measuring normally) Type 2: 4,7 K NTC Temperature-Sensor Type 3: linear Type 4: free Range defined by Parameter 52-55 Type 5: internal NimH-Measuring
29	Analogue Range Start	If you select Type 4 in Parameter 28 you can setup the Range by Parameter 29-32; You can do this if you measure two Input-values (Analogue Range Start and End) and look at the according values in the Menu 8 Analogue in. At Parameter 29 you enter the Start-value
30	Analogue Range End	Here you enter the End-value
31	Raw Start	Raw-Value Start reads the value in Menu 8 for the according Start-Value
32	Raw End	Raw-Value End reads the value in Menu 8 for the according End-Value
33	Number of channels	Here you can define the active number of channels in Menu 4. Maximal is 20. Good option to for testing just one channel
34	Number for Simulation	Here you can select any Input for to Setup a Simulation-Value in Parameter 57. The Input can be Analogue (1-15) or Digital (101-108) with "0" or "1" or Radio-Sensor (21-26)
35	Simulation-Value	Here you Set the Simu-Value of the Input selected in Parameter 56
36	Factor for Simu with Regulator	If you Simulate the value with the Regulator, you can give a factor here for better testing
37	Lead Battery charge	If you have a lead-Battery connected for charging you can activate charging here with "1". Charging voltage at Parameter 20

## **Switching the Relays by SMS**

This function is activated by Menu 8 Parameter 4.

You can switch on and off Relays by sending a SMS to the Metamorphosis.

In this Case the Automatic is switched off for this Relay

For to switch you have to Send the following SMS-Text to the Metamorphosis:

Switch on Output 1: Meta11

Switch off Output 1: Meta10

Switch on Relays 2: Meta21

Switch off Relays 2: Meta20

Switch on Relays 3: Meta31

Switch off Relays 3: Meta30

Switch on Relays 4 :Meta41

Switch off Relays 4: Meta40

Switch on Relays 5: Meta51

Switch off Relays 5: Meta50

Switch on Relays 6: Meta61

Switch off Relays 6: Meta60

Switch on Relays 7: Meta71

Switch off Relays 7: Meta70

Activate the Alarm-Sequence (Beep, hear, speak etc) : Meta99

Switch back to Automatic (all by SMS activated Relay are free again for the Automatic): Meta00 (Alarm-System is still active!)

After activation a Relay by SMS you get a SMS for Acknowledge

Using this option you need a Siemens Mobile-Phone with Modem (S25, S35, C35 etc). And you need to activate in Settings "FAX-Data-Mode receive" and "SP/Data-Mode send". And also deactivate IrDa and "Sprechgarnitur". No other communication (to Logview etc) may be active on the serial Port of the Metamorphosis. For to be sure switch off and on the Unit.

## ***Submenu 9: Status Outputs and Manual Mode***

If you select Nr. 9 from the Basic-Menu, you can see which Output is on (#) and which is off (.). In this case the automatic is still active. But if you switch one of the Outputs Manually on or off (Key 1-8), you are in Manual-Mode and the Alarm-System is off, until you return from this Submenu.

**Outputs:** 1=MOSFET-Output, not used

2= Relay 2: not used

3= Relay 3: used for Noise-Detektor on; can be used for other purpose if Noise-Alarm is not used (Set Time in Menu 8, Parameter 14 to 0 sec.)

4= Relay 4: used for Speaker; can be used for other purpose if "Speak"-Function Alarm is not used (Set Time in Menu 8, Parameter 15 to 0 sec.)

5= Relay 5: not used

6= Relay 6: Alarm-Lamp

6= Relay 7: External Horn

8= internal Beeper

## ***How the Alarm-System is working?***

If you turn the Program-Switch to Position 2 or 3 or 4 or 5 or 6, the Alarm-System is activated after 30 seconds and you have time to leave the room. An alarm can be detected by the integrated Noise-Detector or with any other Sensor connected to the device. If there is a alarm, and you did not enter a telephone-number (Menu 1) the alarm-horn will be switched on after a short delay (Depending from Settings in Menu 3). Optional there is a Output at which you can connect a Lamp for example. This is a good way to get the thief think there is somebody coming.

If you Input a telephone-number this number will be dialed if there was a alarm. First there are several "Beeps" to identify the Alarm-System. Afterwards you can hear for about 15 sec. what is happening in the room. Another Beep: Now you can speak through the telephone into the room (provided that a loudspeaker is connected). After another two "Beeps": Now you can get the external horn switched on if you say "horn" or "alarm" or any other word loud in the telephone (suppose it is

not activated in Menu 3).

If you have a Mobile phone connected the System dials via the Mobile phone. If you select in Menu 8, Parameter 3 "send SMS", a SMS will be generated.

When there was a alarm "active" will be displayed on the LCD for not to give information to the "thief". The alarm-horn and lamp is deactivated after about 3 minutes (Time in Menu 8, Parameter 10 and 17). To get know how the alarm-system works select "Test" in Menu 1 and watch what is displayed on the LCD-Display.

To **deactivate** the Alarm when coming back, set the Program-Switch at Position "1" or press "\*" to cancel the Alarm-Routine. If you entered a Password for this, you have to input the right Password. That means Alarm can not be deactivated by the Program-Switch and keyboard if the Password is not valid. Password is automatically Reset after 5 minutes.

### **More Hints**

- If there are wired symbols on the LCD-Display you can reset the Display (without need to Restart the Unit) by pressing the key „0“ twice.
- With the PC-Software Dialer you can start (in Pull-Down Menu "Data") the Data-Transfer for the Software "Logview". Logview is a excellent Software (Freeware! You find it on the CD) to see the runtime measurement-values as graphic or list-view. And for to Export it to File Formats as CSV, ASCII, HTML, RTF and Excel, BMP, JPG, GIF and PNG and many more.
- With the PC-Software Dialer (in Pull-Down Menu "Data") you can upload, change and download the Parameters of Menu 8. And also the Parameters of the Universal Module.
- With the PC-Software Dialer the Name of all Inputs can be free defined and downloaded. Which this Text the SMS is generated and also in Menu 4 you have the according information if you select the Input.
- For switching the **Horn off** press "0" in the Basic Menu
- If the Display shows wired Symbols, press "\*" or Restart the Unit
- There will be no more than three Alarms one hour.
- If there is "**inactive**" in the Basic-Menu there can be different reasons:
  - more than three Alarms one hour
  - delay-time after switch on (Menu 8, Parameter 1)
  - ext. deactivate enabled (Menu 8, Parameter 1)
  - Program-Switch at Position 1 "off"
- Timer (Menu 5) programmed (not 0) and not active
- You can connect a **Lamp** to the Unit (Relay 6). It gets switched on, after there was an Alarm, to simulate that somebody is coming. But you can switch this lamp manually on with the key "#" in the Basic-Menu and off with key "0"
- You get a Alarm if the Analog-Values changes more than 10 digits or if the Digital Inputs changes. That means it is up to you whether you use low active or high active Sensors.
- With the Voltage Regulator you can Test the complete System. If you keep the key "\*" pressed during switch on the Device, you are in Simulation-Mode. Now all analog-Inputs correspond to the position of the Voltage Regulator and you can simulate Alarms, Limit-Values etc.
- Channel 8 (Program-Switch) is normally deactivated (Menu 3, Channel 8: Zone is set to 100). If you want to have a Alarm if somebody turns the Program-Switch set Zone of Channel 8 to "0".
- For the Analog-Channels you can set the Measurement-Range in the Header of the Software (Source-Code). Translate and download the Program afterwards.
- When you go to a Submenu, the Alarm-System is no more active. So return to Basic-Menu for to have the System active!
- If you connect a PC to the Metamorphosis and you Start the Program "Dialer" (on CD) you can easily supervise and change all the Parameters by the PC or Laptop. (see Chapter "change Parameters with PC")
- You can reactivate the Standard-Settings in Menu 8, Parameter 24
- 24h-Alarm-Loops (always active) are defined with Menu 3, Zone 24; They can be deactivated with Zone 100
- As long as you have "Receive SMS" switched on, you can not Remote-Control the Unit by a PC because the serial Port is used.
- If the Radio-Transmitters are switched on, the keyboard could be delayed sometimes (if it is receiving a Signal)
- Following company provide a new intelligent Sensor-Technology: Fa. DORMA GmbH, Ennepetal

### **Electrical Hints**

- For electrical wiring open the box with the two screws. Terminal-Numbers refer to the Terminal-List.  
If there are not enough holes in the box, you can break the plastic at the prepared place. Put a hole in the plastic plug (you get is separated in a plastic bag) to get the cable through and then you put it in the Metamorphosis.
- If you want to have accurate Measurement, the cable for Analog-Sensors should have a shield. And this shield should

be connected to Ground on one side.

- In order to have more security from loose cable-connections, make a notch in the cable in the Metamorphosis (If somebody can fall over the cable)

### ***Loading of a 12V-Accumulator***

For more Security you should connect a 12 V Accumulator to the Metamorphosis, because thieves often try to deactivate the Electrical-System first. You can charge a 12V Lead-Accumulator with this Device . See Terminal-List for the Electrical connection

### ***USB-Adapter:***

If you do not have a serial Port, then you can use a USB-Adapter. For this install the driver from the CD first and then Plug in the USB-cable and connect the serial cable with the Adapter and the Metamorphosis.

### ***Loading of new Software***

To load new Software into the Metamorphosis you have to Start the Program „**BootLoader.exe**“ (on the CD in the \Boot-Loader-Folder).

- ➔ Connect Data-cable to Serial Port. If you have no serial Port, install the USB-serial-Adapter first.
- ➔ Start the Program, Select Options „19200 Baud“ and the according COM-Port.
- ➔ Then „File“, „Select File“ and navigate to the according \*.bin file.
- ➔ Then „File“ „Upload“
- ➔ If only "Sending #123" appears, switch the Metamorphose off and on.
- If still no Download-Window is popping up, something with the cable is wrong or with the Metamorphose
  
- If you want to make Programm-changes you must install first the Software BASCOM from the CD (you get it with the Metamorphosis). To install it call \BASCOM-AVR\Setup.exe. Install to the folder C:\BASCOM-AVR (**and not to C:\Programme\MCS Electronics\BASCOM-AVR as recommended**)
- To make your own programs, install \Bascom\_new\_Version\update.bat as well to get the latest Version of BASCOM
- After you downloaded the Program-Files from the Internet you have to unpack the files first by double-click on the .exe file. If you get a .zip-file you have to use Win-zip or you can install the Windows-Commander from the CD to unpack it.
- Now connect the cable (you get with the Metamorphosis) to the parallel Interface of the PC (big plug) and at the appliance (the plug with two cables coming out) and switch it on.
- Start the Software using the Explorer and Double-Click on C:\BASCOM-AVR\Bascavr.exe. But you can also go to the Start-Button and Programs and \ MCS Electronics\BASCOM-AVR to Start it.
- Select „Options“, „Programmer“; Select MCS-Bootloader
- Select "File" and "Open" and open the file with the extension .bas (from Floppy or where you have it after downloading and unpacking it from Internet).
- Then select in the Menu "Program", "Send to Chip" or simply press key "F4".
- Then Press button "Chip" and "Autoprogram". The program will be loaded now
- After everything is downloaded, switch off and on again the Metamorphosis. Now the new Software should run
- For additional Testing you can use the internal Terminal-Program (Ctrl + T); Make these adjustments:
  - Go to Options, Communication and set the Baudrate to 19200 and also at Compiler, Chip, Communication, Baudrate Problems? The cable is connected in the right way? The Metamorphosis was switched on? Try to reload the Program again.

**Note:** If you are using BASCOM frequently you should buy the license for about 80 Euro at

**MCS Electronics:**

[http://www.mcselec.com/index.php?page=shop.product\\_details&flypage=shop.flypage&product\\_id=86&category\\_id=5&option=com\\_phpshop&Itemid=1](http://www.mcselec.com/index.php?page=shop.product_details&flypage=shop.flypage&product_id=86&category_id=5&option=com_phpshop&Itemid=1)

### ***Overview Functions by the PC-Software Dialer***

- Select the according serial COM-Port. If you use a USB-Adapter the according COM-Port has to be selected.
- Select the according Software and you have access to all documents and Plans by the Menu „Software and „Doku“.
- Monitoring and fully control of the Metamorphosis (changing of all Parameter etc). This can be realized also by modem and Mobile-Phone. You can press the keys with the mouse or with the key Alt + Number.
- Loading of the stored Measurement-Values in a Text-File pressing the key „Load Data to PC“

- Open this file with Measurement-values by the Menu "Data, View Uploaded Data"
- Loading of a new Program; Start the „Bootloader“-Software from the Menu. In there you have to select the serial COM-Port and the according Program.
- If you have a Modem connected then you can dial with „Telephone“ the according number. In this Menu you can also disconnect the connection.
- The connection can be established by Mobile phone as well.
- Activation of the Sending of Data to Logview or any other Program by the Menu Data, „Data, Send Data for Logging (LogView)“. After activation Stop the Dialer and Start Logview. And select as Device "Metamorphose\_Solar\_e". Refer to Document "Logview-Info" for more Information.
- All Parameters which are Setup in Menu 8 can be uploaded to a Text-File by the Menu "Data, Get Parameters".
- They can be modified in the Text-File. Select the File by Menu Data, change Parameters. Then they can be loaded again to the Metamorphosis by Menu "Data, Send Parameter". By that you have more Information on each Parameter and a backup of your Data is possible.
- All Parameters which are Setup in the Universal-Module can be uploaded to a Text-File by the Menu "Data, Get Data Universal-Module".
- They can be modified in the Text-File. Select the File by Menu Data, change Parameters. Then they can be loaded again to the Metamorphosis by Menu "Data, Send Data Universal-Module". By that you have more Information on each Parameter and a backup of your Data is also possible.
- By the Button „Display all Data“ you can enlarge the Display and more Data are shown. But for the Input of Data it is better to press the Button "Stop Display for Input of Data" temporarily.
- By the key "Simulation" a Simulation-Value for testing can be Setup
- In Menu "Data, Edit Input/Output-List" the Name of all Inputs and Outputs can be Setup for Documentation. For the Alarm-System (later the other Units as well) it can be downloaded to the Metamorphosis by Menu "Data, Send Input/Output-List". With this Text the SMS is generated and also in Menu 4 you have the according information if you select the Input.

### ***Installation and loading of the Protocol on the PC, Change Parameters with the PC***

- To load the Protocol of the Alarms (Alarm-Nr and Time) on the PC you have to install the Software "Dialer" first from the CD. For this call \Dialer\install.bat on the CD.
- If you have **Vista** in order to register the OCX you have to do the following:  
Call Programms, Accessories, Command; right click on that and Select „run as Administrator“; and „continue“; Then navigate in the folder c:\Metamor using  
Cd ..  
Cd ..  
C:  
Cd Metamor  
There call „register“; Finish with „Exit“
- Now connect the Metamorphosis with the cable, connect the plug with two cables to the Metamorphosis. Put the other side with the small plug with "PC" written on it (not the big plug you used for downloading Software!) at the serial interface of the PC (small plug at the backside).
- Start the program C:\Meta\Dialer.exe
- After the start selected the COM-Port. Begin with COM1 and if it doesn't work (no Display) select COM2
- Now press the button "Upload"; the data will now be loaded and "End" will be displayed when finished.
- Now you can look at the data with the Function "Data" and "View uploaded data" you can write comments, print it and import them in Microsoft Word or Excel for example (import to Excel: File, open, Typ "all files", then go to folder C:\Meta\data.txt, then Data is separated by Blank)

### **Feature-List Alarm-System:**

- Any alarm-sensors can be connected like Moving-detectors, door or window-contacts, Fire-Sensor, Temperature-Sensor, Water-Alarm and even a cheap modified **Pulse-Clock** to get a Alarm if the Pulse is to low (for children for example).
- You have up to **seven Analogue** (temperature etc, two are internal wired) and **eight digital Inputs** (Moving-Detector etc) totally of 15 Alarm-Channels. Each Channel can manage several Sensors. And there can be moving-detectors etc. at the Analogue Inputs as well.
- Analog-Inputs work as **Differential-Measurement**, that means a little change in the value generates a Alarm
- Each Analogue and digital alarm can be time **delayed** individually from Millisecond till 10 sec.

- Each Sensor can be activated individually (for Testing for example) or you can activate **up to 255 Groups or Zones**. For example if you want to supervise Alarms only in the garden, in special rooms etc.
- For each Analog-Sensor you can input **two Set-Points** (Temperature too high, too low etc.) which generates a Alarm. For each Set-Point you can define a specific delay-Time.
- All Channels can **switch on any defined Relays** on in case of Alarm (for cooling something etc.)
- All Channels can be programmed individually as internal (silent) Alarm, external (loud) Alarm, internal and external Alarm, call Telephone, Send SMS. But you can select this functions generally as well (for all Sensors the same)
- You can also connect up to **16 Radio-Sensors**. They can be Analogue (Temperature etc.) or Digital (Moving-Detector etc.). You can have a specific Delay-Time, Zone, two Set-Points for each channel as well.
- A Message is generated if the Radio-Sensors need a replacement of the battery (**Battery empty Detection**).
- So wired Sensors or Radio-Sensors, what is better? The Metamorphosis can manage both!
- Additionally a **noise-detector** is already integrated in the Unit. A simple external noise-detectors can also be connected
- You can define each Channel as a 24h-Channel. That means this Sensor is always active, for example for Smoke-Detectors.
- Integrated **Timer** for to have the Alarm-System activated automatic at given Times (at nighttime for example)
- The Activation of the Alarms can done by a **external Switch** (also radio-switch) as well
- You can connect a Modem or Mobile-Phone to the Metamorphosis. The selected Phone-number is dialed using the Mobile-Phone
- You can **get a SMS** in case of a Alarm with the according Alarm-Channel-Number (suppose a Mobile-Phone is connected)
- You can **Send a SMS** to the Metamorphosis as well and switch all Output-Relays by SMS on and off or activate a Alarm.
- **How it works?** If there is a alarm a pre-selected telephone number (up to three!) is called. You hear Beep as a Alarm-Signal. Then you can hear what happens at home. Afterwards you can speak to the room and may be shock the thief. Finally a alarm-horn or something else can be switched on via Telephone. The Alarm-horn is switched off after about three minutes. There is a waiting-time until the next alarm is generated. No more than three Alarms in one hour.
- If the Program switch is in Position "**telephone call possible**" you can also phone to your home and hear what happens at homes speak or switch like mentioned before
- You can input **three different telephone-numbers**. These are dialed one after another or you can select only one number.
- There are following **operating modes**: off, just ringing, hear, speak. switch, telephone call possibly (including hearing, speaking, switching).
- This Alarm-System can be used very well in order to supervise children as a kind of **Babyfon** (using the noise-alarm and optional a Moving-Detector). It can replace the Baby-Phone in the house (no telephone-costs if you use the program "just ringing"). With the vibration-Alarm of the Mobile-Phone you also have a alarm in a loud ambient. Several children can be supervised in different rooms!
- You can also use it for the **supervision of a shop**. If somebody is coming in, the Mobile-Phone gives Alarm
- For old or sick people you can a activate a **Help-Call**. Through a remote-control or a Radio-Transmitter the Alarm can be activated. Against false-Alarms, you get a Beep after activation and then you have to confirm it.
- The alarm system can be buffered in many ways, so that a Power-failure does not deactivate the Alarm-System. By a

9V block-battery or by a lead-battery (there is a load-controller integrated in the Metamorphose) or with NiCd/NimH-Akkumulatoren (there is Optional a load-controller for this as well)

- You have up to **five** more free **Outputs** (4 Relays, one Transistor) to switch or Program whatever you want (Alarm-Horn, Alarm-Light, door switches etc)
- There is a **High voltage extension-unit** (shocking but not dangerous!) for a Object- Protection for example
- You have a Protocol for all Alarm-Events with Channel-Number and Date/Time. You can easy upload it to a PC with the cable you get.
- Very flexible but **very Simple Handling** of the Options. This is a Main-Aspect of this Alarm-System. No complicated programming of a Sound-chip is necessary. Just connect the external Sensors and the Telephone-line, define a Phone-Number and switch it on, that's it. The other aspect is **Reliability and Flexibility**. These are the Fundamentals for the development of the Metamorphosis.
- Anyway these are just some possibilities. But it is a flexible and open System. You get what you want! Send your demand and we program it! And you can easy download the Software! You can get all necessary Software and Cable for this. This programming takes place through the language "Basic". (see Demo on Metamorphosis-CD)
- It is an **Open System** which can be assembled according to your specific demand. You can select of a range of the ELV Radio-Sensors (Temperature, Humidity, Wind, Rain). You have many Cable-Sensors for Temperature, Pressure, Brightness, Alarm-Switches, Motion-Detectors, Counter etc). There is a Interface to the wonderful Software LogView (Freeware) for to display Process-Data. You get the Open Source-Software Dialer for to Monitor and Control the Unit. You can program and download your own Programms (The Basic-Compiler is free for small Programs).

## Appendix

### *Digital Output:*

[see here for the according Terminals](#)

**1 = MOSFET-Output: Load 1** (external Terminal); Max. 10A

**2 = Relay-Output 2**

**3 = Relay-Output 3**

Relay 3 + 4 could not be used with different voltages

**4 = Relay-Output 4**

**5 = Relay-Output 5**

Relay 5+6 could not be used with different voltages

**6 = Relay-Output 6**

**7 = Relay-Output 7**

**All Relay maximal 16A, 220 /400 V**

**8 = Beeper** (intern); not wired for Solar charge-Controller

**9 = MOSFET-Output: Load 2** (external Terminal); max. 10A

**10 = MOSFET-Output: Load 3** (external Terminal); max. 10A

**11 = MOSFET-Output: Load 4** (external Terminal); max. 10A

**12 = MOSFET-Output: Load 5** (external Terminal); max. 10A

**13 = MOSFET-Output: Load 6** Terminal 211 (+), 212(-) (interne Terminal)

**14 = MOSFET-Output: Load 7** Terminal 110 (+), 111(-) (interne Terminal)

**15 = internal NiCd-Relay** (1A)

**16 = Telephone-Call:** internal Relay

17 = Virtual Output (for use in other Modules)

18 = Virtual Output (for use in other Modules)

19 = Virtual Output (for use in other Modules)

20 = Virtual Output (for use in other Modules)

21 = Output Text only for Message

### *Analogue Inputs*

(Reference to the Number 1-22, Resolution 10 bit)

- 1 = Battery Voltage (internal)
- 2 = Output-Voltage (Plus at Terminal 43, Minus at 44)
- 3 = Sensor 3 (Signal Plus 5V from Terminal 59, Signal at Terminal 61)
- 4 = Sensor 4 (Plus from Terminal 62, Signal at Terminal 63)
- 5 = Sensor 5 (Sensor at Terminal 62 and 64)
- 6 = Sensor 6: Temperature Compensation Ambient Temperature (internal; if external then Signal at Terminal 71 and 72)
- 7 = internal
- 8 = Program-Switch (internal)
- 9 = Light Sensitive Sensor (LDR) Measuring at Terminal 74+75
- 10 = external Sensor Temperature (for Humid-Sensors): Measuring at Terminal 74+76
- 11 = internal Sensor Temperature. Terminal 77 and 78
- 12 = Load-Current 2 Output 1+2
- 13 = Load-Current 1 Output 3-5
- 14 = Solar- Current
- 15 = Voltage NiCd / NimH
- 16 = Minimal-Value Analog-Input
- 17 = Maximal-Value Analog-Input
- 18 = Runtime-Value Output
- 21 = Counter 1 (Input 84 + 86)
- 22 = Counter 2 (Input 85 + 86)

### ***Digital Inputs***

(Reference to the Number 101-108, all Potential free)

- 101 = Digital-Input 1 (Terminal 47+48) Empty Alarm,
- 102 = Digital-Input 2 (Terminal 47+49) Empty Pump on
- 103 = Digital-Input 3 (Terminal 50+51) Container full
- 104 = Digital-Input 4 (Terminal 50+52)
- 105 = Digital-Input 5 (Terminal 53+54)
- 106 = Digital-Input 6 (Terminal 53+55)
- 107 = Digital-Input 7 (Terminal 56+57)
- 108 = Digital-Input 8 (Terminal 56+58)

### ***ELV-Radio-Sensors***

(Reference to the Number 201-216, ELV Receiver needed)

- 201 = ELV Radio-Sensor 1 Wind Speed
- 202 = ELV Radio-Sensor 2 Wind Direction
- 203 = ELV Radio-Sensor 3 Temperature
- 204 = ELV Radio-Sensor 4 Humidity
- 205 = ELV Radio-Sensor 5 Rain
- 206 = ELV Radio-Sensor 6 Light
  
- 211 = ELV Radio-Sensor Humidity 1
- 212 = ELV Radio-Sensor Humidity 2
- 213 = ELV Radio-Sensor Humidity 3
- 214 = ELV Radio-Sensor Humidity 4
- 215 = ELV Radio-Sensor Humidity 5
- 216 = ELV Radio-Sensor Humidity 6

### ***Input/Output-Mapping***

Input-Nr	used for	Terminal	Type	Universal-Channels	Function
1		59+60	Analogue 1/U_Batt	1	
2		45+46	Analogue 2	2	



\* the other wires direct to the device

**Contact:**

Alternative Technology

Stefan Schraner

Franz-Ludwig-Str.2

97072 Würzburg

Germany

**Telephone:** 0049 931 72353

Internet: [www.alternative-technology.de](http://www.alternative-technology.de)

**Email:** [StefanSchraner\(at\)yahoo.de](mailto:StefanSchraner(at)yahoo.de)