

**ONTECH<sup>®</sup>**

## Ontech GSM 9020



**User Manual**

# Welcome

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Thank you for choosing Ontech GSM 99020

We hope that the product will satisfy your needs and that you will find this manual easy to handle and that it guides you in an appropriate way.

If you want to learn more, please visit our web site at [www.ondico.se](http://www.ondico.se), where you can find more information.

Questions can be directed to [support@ondico.se](mailto:support@ondico.se).

SMS text will be shown with gray background and bold text, for example:

**1234#1\*0#**

Also the buttons to be pressed when using a telephone in tone mode (not pulse) is shown in this way.

Text in *italic* indicates a menu in your mobile phone, for example;

*Contacts*

Quotation mark shall never be written in the contacts, it is used in this manual only in order to separate the commands from other text.

Ondico AB is not responsible for damages that may occur due to incorrect use or if the product does not work as desired.

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# Overview

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Ontech GSM 9020 is a combined remote relay and an alarm caller and is communicating over the GSM network. The cabinet is in accordance with IP65.

- The unit is powered by 12 VDC. A 12 V accumulator or the enclosed power adapter can be used.
- Remotely controlled by telephone calls or SMS.
- Alerts and sends GPS position data via SMS
- Relay 230V/10A. Potential free. Can be connected Normally Open or Normally Closed. Has a timer function. Can be programmed to remember position after a power failure.
- Two alarm inputs for corded alarm detectors. Can be set to NO or NC. Can be programmed to activate relay when alarms.
- Wireless alarm detectors will be available during 2009.
- Internal temperature sensor reports temperature.
- External temperature sensor with high accuracy is optional.
- Alerts if the temperature falls below or rise above alarm temperature.
- Thermostat function, temperature regulates the relay.
- GPS receiver (buy optional) can be connected. Reports position, direction and speed in SMS.
- GPS Fence function alerts if unit is moving outside programmed distance to fence. Is set in meters in multiples of 50 meters.
- If internal backup battery (buy optional) is connected the unit will alert if the main power is disconnected. Can be set to be delay in up to 40 minutes.
- Can control extra relay units (Ontech 9010) via short range radio.

# Content in package

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- Ontech GSM 9020
- Antenna
- Users Manuals
- Power adapter 13,8 V

## Get started

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In order to use the unit you must have a SIM card for a GSM mobile telephone and access to a mobile phone. Cash card can be used.

The installation is made in three simple steps:

1. Programming the SIM card
2. Physical installation
3. Test of the unit and its functions

### ***Necessary programming of the SIM card***

1. Insert the SIM card in a GSM mobile phone
2. Deactivate the PINCODE function. See the user manual of the mobile phone.
3. Delete all old contacts from the SIM card if there are any
4. Choose *Contacts* in the mobile phones menu.
  - a. Create a new entry. Name it "PINCODE"
  - b. In the field for telephone number, enter your personal four digit number. This number is the PINCODE you must enter each time you contact your Ontech GSM 9020.
5. Go to "Optional programming of the SIM card" if you want special functions  
**or**
6. Turn off the mobile phone and remove the SIM-card. Go to to "Physical installation" see page 10.

**Make sure that you save all information are on the SIM card and not only in the memory of the GSM telephone. It can be necessary to open the contacts and copy to the SIM card from the memory of the telephone. See the manual of the telephone. Avoid to copy more contacts than necessary to the SIM card. No quotation marks or slashes or similar shall be written, just the text.**

## **Optional programming of the SIM card**

In order to use some of the function you want it can be necessary to program more contacts on the SIM card. See below:

**NB!** To be sure programming is made in a correct way, you can check by requesting an SMS with SIM card settings. See page 31. Do this every time you have changed the SIM card settings.

1. **Create a send list for alarms** (see page 14).
  - 1) Create a new contact. Name it "SMS0" (note that 0 is zero and not the letter O).
  - 2) Enter the mobile phone number for the receiver of the SMS. Save.
  - 3) The following contacts in the send list are named SMS1, SMS2 etc, and the mobile numbers are entered. All numbers from SMS0 to SMS9 can be used, in total 10 different numbers.
  
2. **Set delay for activation of alarm detector (DELAY)** (see page 17).
  - 1) It is possible to set a delayed activation for an alarm detector. This is for giving you time to deactivate the alarm before the unit is sending an alarm.
  - 2) Create a new contact. Name it "DELAYX ". X is the ID of the alarm detector you want to delay (values of 1-8 are permitted).
    - i. Write the numbers of seconds you want to delay in the telephone number field  
Example: You want alarm detector with ID no 6 to be activated with a delay of 45 seconds. In the name field of the contact, write "DELAY6" and in the field for the telephone number write "45".
  
3. **Activate the temperature guard (TEMP)** (see page 20).
  - 1) Create a new contact and name it "DEGREE".
    - i. Write the alarm temperature in the telephone number field. If the alarm temperature is below zero degrees Celsius, add zero ("0") before the temperature. For example; minus 7 degrees C is written as "07".
  - 2) Create a new contact and name it "TEMP".
    - i. In the telephone number field write "1" if you want an alarm if the temperature drops **below** the alarm temperature given

in "DEGREE" or write "2" if you want the alarm when the temperature rises **above** the alarm temperature.

4. **Set active temperature sensor (EXTTEMP)** (see page 20).
  - 1) If you have an external temp sensor (optional) and you want it to control the temperature alarm and thermostat you have to activate it; Create a new contact and name it EXTTEMP.
    - i. In the telephone number field write "1".
  
5. **Active the function "relay activates at alarms" (ALARMRELAY)** (see page 17)
  - 1) Create a new contact and name it "ALARMRELAY".
    - i. In the telephone number field write "1"
  
6. **Activate delay for "Power failure alarm" ( POWERFAIL)** (see page 26).
  - 1) If an internal backup battery (optional) has been connected the unit alarms when the ordinary power is disconnected. It is possible to set a delay for this alarm.
  - 2) Create a new contract and name it "POWERFAIL".
    - i. In the telephone number field, write the number of minutes delay you want (1-40 is allowed)
    - ii. If the digit "0" (zero) is set the function will be deactivated.
  
7. **Activation of the GPSFENCE** (see page 23).
  - 1) If a GPS receiver (optional) has been connected you can set it to send an alarm if the unit has been moved from its original position. You can set at which distance from the original position you want the unit to send an alarm.
  - 2) Create a new contact and name it "GPSFENCE".
    - i. In the telephone number field write alarm distance in multiples of 50 meters.  
Example: If you want an alarm when the unit has moved 300 meters away from the original position, write the digit "6" ( $6*50=300$ ). If you want to set 900 meters write 18 ( $18*50=900$ ).



## ***Position of the contacts on the circuit board***

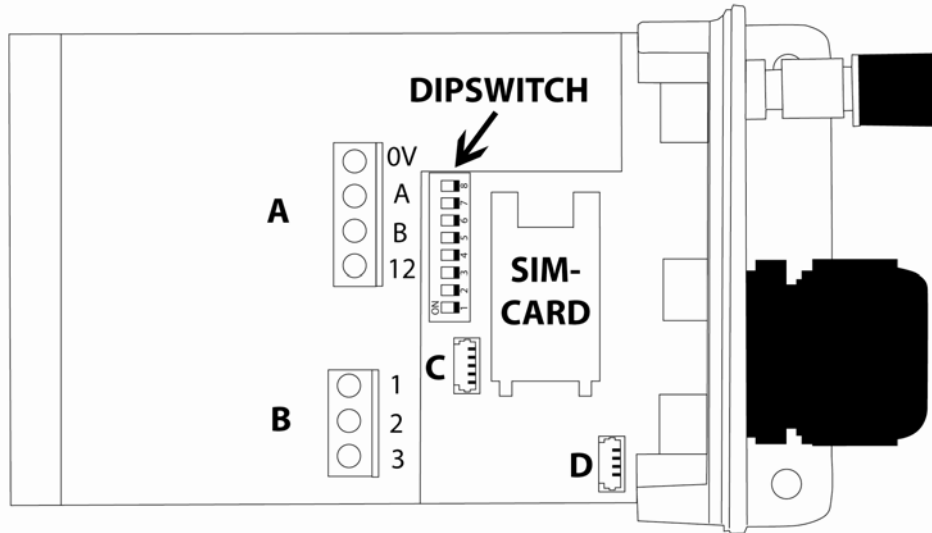


Fig 1. Upper side of the circuit board.

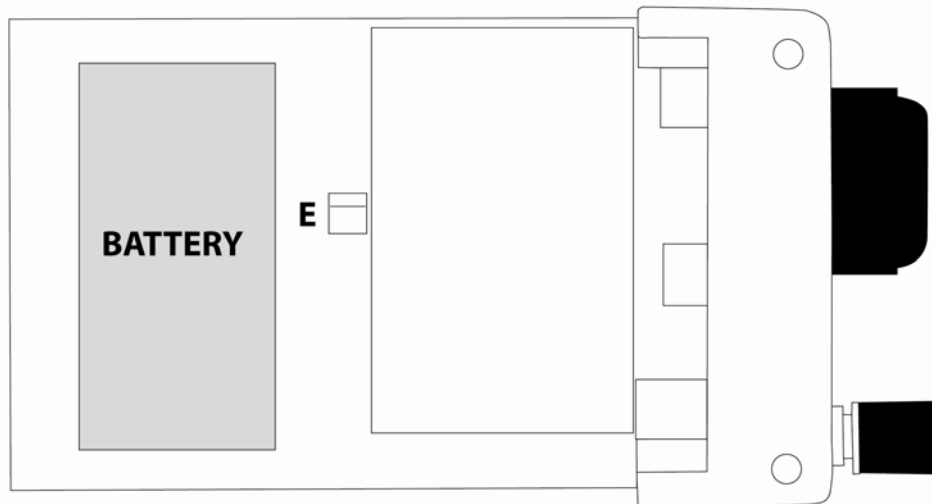


Fig 2. Back side of the circuit board. NB The backup battery is optional and not standard.

## ***Installation of internal backup battery***

If you want to use an internal backup battery (see page 26) you should install this before the physical installation. The backup battery is optional and is not included in the standard package. If you do not install a backup battery, go to section "Physical installation" see page 10.

1. Open the unit by unscrew the two screws on the left and right sides.
2. Turn the unit so you face the under side.
3. Pull carefully the "hood" until you can see connector E on the circuit board. Do not pull longer as there is a risk for the flex cable to the membrane switch to disconnect.

4. Remove the protection paper on the tape on the battery
5. Place the battery according to the figure above.
6. Connect the contact of the battery to connector "E"
7. Push the "hood" back to its original position and replace the screws or continue with the physical installation.

## ***Physical installation***

1. Place the unit on the place of your desire and attach it by using screws in the two holes. The antenna shall point down. If you want to install an internal backup battery this shall be done prior to this physical installation (see above).
2. Open the unit by unscrew the two screws on the left and right sides.
3. Pull carefully the "hood" approximately 5 cm or until you can see the two green screw terminals Do not pull longer as there is a risk for the flex cable to the membrane switch to disconnect.
4. Install the SIM card (see picture).
  - a. The upper part of the SIM card holder is moved to left until you hear a click.
  - b. Fold up the upper part of the SIM card holder.
  - c. Place the SIM card in the upper part. The cut corner of the SIM card shall be positioned in the upper right corner when the upper part of the card holder is folded back.
  - d. Fold back the upper part.
  - e. Lock the upper part by moving it to the right until you hear a click..
5. Open the screw cap by screwing it to the left.
6. Pull the cables through the screw cap.
7. Connect the cables:
  - a. Power. Terminal A. 12VDC. Either the power adapter or an 12V accumulator or both. Plus is connected to connector "+12". Minus is connected to the connector "0V" . **Important.** Do not connect to power at this stage. It can damage the equipment.  
**On power adapter; positive cord is the cord with a white line.**
  - b. Relay (page 12). Terminal B. If you want "Normally Open Relay" (use connector 2 and 3. If you want "Normally Closed Relay" (use connector 1 and 3. Maximum load is 230V/10A .  
**NB. If you shall connect main power, contact a professional electrician.**
  - c. Alarm (page 14). Terminal A. Alarm A is connected to connector "+12" and "A" and alarm B is connected to connector "+12" and "B".

- d. External temperature sensor (page 20). Contact C. Connect the connector.
    - e. Adapter for GPS-receiver (page 23). Contact D. Connect the connector.
8. When all desired cables have been connected, turn the screw cap clockwise in order to create a tight seal. You can use plastic tape around the bundle of cables to make it thicker and that way create a tighter seal.
9. Set the DIP-switches in desired positions. Factory default is OFF setting for all switches.
  - a. Switch 1. Set to ON if you want the wired alarm inputs to be NC. See page 34.
  - b. Switches 2-5 are used to set the radio channel for short range radio communication with Extra relays or wireless alarm detectors. See page 28.
  - c. Switch 6. Set to ON if you do not use the short range radio and wants to turn it off in order to decrease power consumption. See page 25.
  - d. Switch 8. Set to ON if you want the relay to "remember" its position in case of a power failure. See page 13.
10. Push the "hood" back to its original position and replace the screws and also the screw on top of the hood.
11. Connect the power cable to the accumulator and/or the power adapter to the mains.
  - a. The green lamp starts to flash for about 45 seconds.. This indicates that the unit is searching and connecting to an GSM network.
  - b. The green lamp stops flashing and lights constantly. The unit is now connected to the GSM network and is ready to use.
  - c. If the green lamp not stops flashing and also the red lamp starts flashing, this means:
    - i. No SIM card installed
    - ii. The pin code of the SIM card is not deactivated (see page 6).

## ***Check the SIM card settings***

It is recommended to control the SIM card setting after installation. See page 31.

Do as follows:

1. Send an SMS to the unit with a request of the SIM card setting. Write ABCD#8\*2# (where ABCD is the PINCODE you have programmed to the SIM card).
2. The unit replies with an SMS with the settings.

## ***Testing the unit***

When you have installed the unit it is recommended to test the function. Call the unit or send SMS to control the relay. Test the alarm inputs if used. Ask for status SMS to check temperature.

## **Functions**

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### ***Remote relay***

With this function you can call the unit or send an SMS and activate or deactivate the 230V/10A relay.

**NB. If you shall use main power, contact a professional electrician.**

**Normally Open**     Connect the cables to connector 2 and 3 on terminal "B". When activated the relay will connect the two connectors (and when deactivated the connectors are disconnected).

**Normally Closed**     Connect the cables to connector 1 and 3 on terminal "B". When activated the relay will disconnect the connectors (and when deactivated the connectors are connected).

### **Control the relay manually**

You can activate and deactivate the relay by pushing on the button on the front. When the relay is activated the red lamp is lit.

### **Control the relay with a telephone**

1. Call the unit. Be sure you use tone mode on the telephone.
2. The unit answers with a beep.
3. Press your PINCODE and then #.

Exemple: **1234#**

If the PINCODE is correct the unit replies with a beep. If it is not correct the call is disconnected. Call again and try.

4. **Activate the relay** by pressing the buttons as follows::

**1\*1#**

The unit confirms with a beep. If there are two beeps, try again.

5. **Deactivate the relay** by pressing the buttons as follows:

**0\*1#**

The unit confirms with a beep. If there are two beeps, try again.

6. **Activate the relay with timer function**

The relay can be set to be activated during a preset number of hours (1-99)

Press the buttons as follows:

**1\*1\*T#** (T= the number of hours you want the relay to be active).

The unit confirms with a beep. If there are two beeps, try again.

After you have made one operation you can directly continue with another operation without calling up again. When you have completed all operations, then hang up.

## **Control the relay with SMS**

1. **Activate the relay**, send an SMS to the unit with the following text:

**ABCD#1\*1#** (where ABCD is your personal PINCODE)

2. **Deactivate the relay**, send an SMS to the unit with the following text:

**ABCD#0\*1#** (where ABCD is your personal PINCODE)

3. **Activate the relay with timer function**

The relay can be set to be activated during a preset number of hours (1-99)

Send an SMS with the following text

**ABCD #1\*1\*T#** (where ABCD is your personal PINCODE, T= the number of hours you want the relay to be active).

### **Tip!**

Instead of the symbol \* you can use all letters (uppercase or lowercase) on button 7 (p, q, r or s).

Instead of the symbol # you can use all letters (uppercase or lowercase) on button 9 (w, x, y or z).

### **Tip!**

If you not are sure about the settings of the unit, you can request a SIM card setting SMS, see page 29.

## **The position of the relay after a power failure**

If there is a power failure and the relay is activated, it will change to deactivated position. When the power returns it will not remember the position it had before the power failure.

If DIP switch 8 is set to position ON, the unit will remember the position of the relay had before the power failure.

## **Alarm**

Ontech GSM 9020 can alarm in many different ways. All alarms are sent as SMS to the telephone numbers on the alarm list (see page 7).

The unit can be programmed so the relay activates when there is an alarm, see page 17.

### **Wired alarm**

Two alarm inputs where alarm detectors can be connected. Can be set as *Normally Open (NO)* or *Normally Closed (NC)*.

### **Wireless alarm**

In the year 2009 Ondico AB will start to sell different wireless alarm units which communicate with Ontech 9020. Up to 7 different alarm detectors can be connected. The wireless alarm detectors planned are A. Motion detector, B. Magnet switch/Alarm box and C. Emergency Alarm button. Also a remote control to turn on/off the alarm will be offered.

### **Temperature alarm**

The temperature alarm is triggered if the temperature rises above or drops below the preset alarm temperature. See page 20.

### **GPS alarm**

If a GPS receiver is connected the unit can be set to alarm if it is moved a preset number of meters from its original position. See page 23.

### **Battery alarm**

The unit alarms if the battery needs to be charged or if the battery is empty.

### **Power failure alarm**

If an internal backup battery is connected the unit will alarm if the main power fails. A delay of this alarm can be set to up to 40 minutes. See page 26.

## **Wired alarm**

### **Connect an alarm detector**

When an alarm detector is activated it will either close or open an electric circuit. It can be a magnetic switch detector, a level detector, a motion detector or any other kind of sensor..

To connect an alarm detector the unit must be opened. The alarm detectors are connected to Terminal A, see page 10.

The connector on the terminal has the following markings:

0V	Ground
A	Alarm input A
B	Alarm input B
+12	Voltage 12 V

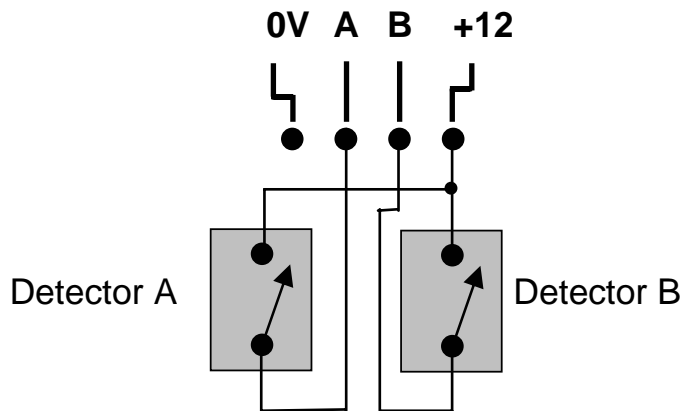
### **Switch from Normally Open to Normally Closed mode**

Locate the DIP-switch, see Fig 1.

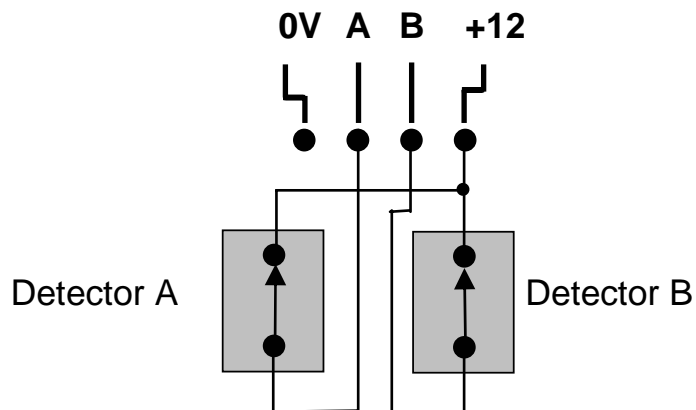
Factory default for switch 1 is OFF. This mean the alarm inputs are set to NO mode. The unit sends an ALARM A if connectors "A" and "+12" are connected and ALARM B if connectors "B" and "+12" are connected.

If DIP switch 1 is set to ON the mode is switched to NC. The unit sends ALARM A if connectors "A" and "+12" are disconnected and ALARM B if connectors "B" and "+12" are disconnected.

## Suggestion for connection of alarm detectors in Normally Open (NO) mode



## Suggestion for connection of alarm detectors in Normally Closed (NC) mode



## Wireless alarm detectors

In the 2009 Ondico AB will market wireless alarm detectors. These can be easily connected to work together with Ontech GSM 9020.

Up to 7 different detectors can be connected. On Ondico website [www.ondico.se](http://www.ondico.se) we will inform more about this!



## Delayed activation of alarm detector

Sometimes it can be desired to delay the activation of an alarm detector. This is for example when you want to go inside the house and deactivate the alarm before it sends alarm messages.

Program the SIM card (see page 7) as follows:

- 1) Create a new contact. Name it "DELAYX ". X is the ID of the alarm detector you want to delay (values of 1-8 are permitted).

- i. Write the numbers of seconds you want to delay in the telephone number field

Example: You want alarm detector with ID no 6 to be activated with a delay of 45 seconds. In the name field of the contact, write "DELAY6" and in the field for the telephone number write "45".

## Activation of relay when alarming – Alarmrelay

This function activates the relay when the unit is alarming. This function is useful if you for example have an alarm detector that alarms when water level is too high, the relay is activated and turns on a pump.

- The function is activated by adding a contact on the SIM card and name it "ALARMRELAY". In the telephone number field, write "1" (see page 7).
- The function is deactivated by removing the contact from the SIM card.

## Turn off/on the alarm function

Each time you start up Ontech GSM 9020 the alarm function is turned on 60 seconds after the green lamp has stopped flashing. This delay is because you shall have time enough to move away from the alarm detectors (compare with an ordinary alarm). If you do not want the alarm function to be active, you can deactivate it. If you do not have any alarm detector connected, you do not have to think about this.

### Turn off/on the alarm function with a telephone

1. Call up the unit. Be sure you use tone mode on the telephone.
2. The unit answers with a beep.
3. Press your PINCODE and then #.

Example: **1234#**

If the PINCODE is correct the unit replies with a beep. If it is not correct the call is disconnected. Call again and try.

4. Turn off the alarm function by pressing buttons

- 7\*0#**. The unit replies with a beep. Hang up the receiver. If the unit replies with two beeps, try again.
- Turn on the alarm function by pressing buttons **7\*1#**. The unit replies with a beep. Hang up the receiver. If the unit replies with two beeps, try again.

### Turn off/on the alarm function with an SMS

- To turn off the alarm function, send an SMS with the following message: **ABCD#7\*0#** (where ABCD is your PINCODE)
- Turn on the alarm function again by sending an SMS with the following message: **ABCD#7\*1#** (where ABCD is your PINCODE)

### Turn off/on the alarm function with the remote control

In the year 2009 Ondico AB will start to sell a remote control. This is used to turn off/on the alarm.

More information will be published on our web site [www.ondico.se](http://www.ondico.se).

### Tip!

If you want to know if the alarm is turned on or off, you can check this by requesting a status SMS from the unit (see page 29). When the alarm is turned on there is an asterisk (\*) before the name **Ontech9020**, It looks like this: **\*Ontech9020**.

## When the unit is alarming

### Alarm list

When an alarm is activated an SMS will be sent to all mobile telephone numbers on the alarm list. How to create this list; see page 7. Up to ten different persons can be alerted.

### Alarm SMS

Alarm SMS and Status SMS looks identical and shall be interpreted as follows:

Example	Explanation
<b>*Ontech9020</b>	Asterisk (*) means alarm function is turned on
<b>Alarm:</b>	
<b>1ab, 3b</b>	Indicates all alarms that have been activated since the last acknowledge. The number indicates the units ID number, Ontech 9020 is always no 1, and the others refer to the extra units ore wireless alarm detectors connected. Note that these inputs not can send an alarm again before the

	alarm has been acknowledged.
<b>Inputs:</b>	
<b>1b</b>	Indicates the alarm input that still is activated. In this example the SMS means that inputs 1a, 1b and 3b has been activated since the last acknowledge and that input 1b is still activated.
<b>Units:</b>	
<b>1*,3,4*</b>	Indicates the units communicating with the Ontech GSM 9020. Unit number 1 is always Ontech GSM 9020. The other numbers refers to the extra relays (Ontech 9010) connected. An asterisk (*) after the number indicates that the relay is turned on. If Ontech GSM 9020 loose contact with one of the extra relays unit its ID number will not be shown in the SMS.
<b>Temp: 24; 24,2</b>	Gives the temperature in degrees C. The first number refers to the internal temperature sensor; the second number refers to external temperature sensor, if connected. If not connected -- will be written instead. If there is an asterisk, for example <b>*24,2</b> before the number this indicates that the unit has sent a temperature triggered by this sensor.
<b>Tstat: 25</b>	Indicates the set temperature for the thermostat function. If thermostat not is activated the message is <b>Tstat: OFF</b> .

## Acknowledge an alarm

When an alarm detector has triggered the alarm it has to be acknowledged, before the unit can send another alarm. Temperature alarms, GPS fence alarm and power fail alarm do not have to be acknowledged.

### Acknowledge an alarm manually

Press the button on the front of the unit at least once. Note that also all alarm from the extra relays (Ontech 9010) will be acknowledged.

### Acknowledge an alarm with a telephone

1. Call up the unit. Be sure you use tone mode on the telephone.
2. The unit answers with a beep.
3. Press your PINCODE and then #.

Example: **1234#**

If the PINCODE is correct the unit replies with a beep. If it is not correct the call is disconnected. Call again and try.

4. Acknowledge the alarm by pressing the buttons **9#**. The unit replies with a beep. Hang up the receiver. If the unit replies with two beeps, try again. Also alarms from extra relays (Ontech 9010) will be acknowledged.

### **Acknowledge an alarm with SMS**

1. Send an SMS to the unit with the following message: **ABCD#9#** (ABCD is your PINCODE). Also alarms from extra relays (Ontech 9010) will be acknowledged.

## ***Temperature***

### **Temperature sensors**

Ontech GSM 9020 will by default use the internal temperature sensor for controlling and alarming. The accuracy is +/- 3 degrees C. The internal temperature sensor is also affected by the relay. If the relay is activated it will indicate 1-2 degrees higher than normal, due to heat produced by the relay.

If you wish higher accuracy (+/- 1) we recommend you to purchase the external temperature sensor "Ontech Temp Sensor 9020\_002".

If you wish to use the external temperature sensor for controlling the thermostat and triggering the temperature alarm you have to program the SIM card for this purpose (see page 7).

Create a new contact and name it EXTTEMP and in the telephone number field write "1". NB. The external temperature sensor is not delivered together with Ontech GSM 9020. It is optional.

### **Temperature alarm**

#### **Default setting**

If the temperature alarm is turned on the unit will send an alarm if the temperature drops below 5 degrees C. The alarm does not have to be acknowledged but the unit will not send another alarm before the temperature has reached at least 6 degrees C. The temperature alarm is not activated by default.

Activate the temperature alarm as follows:

- 1) Create a new contact and name it "TEMP".

In the telephone number field write "1" if you want an alarm if the temperature drops **below** 5 degrees C or write "2" if you want the alarm when the temperature rises **above** 5 degrees C.

The unit will send an SMS alarm to all the telephone numbers on the alarm list if the temperature drops below/rises above 5 degrees C.

The function is deactivated by removing TEMP contact from the SIM card.

### **Setting alternative triggering temperature for the temperature alarm**

You can set an alternative temperature of your choice for the temperature alarm.

The alarm does not have to be acknowledged. The unit cannot send another temperature alarm before it has changed more than one degree from set alarm temperature.

- If the alarm is set to alarm when it drops below temperature X it will not send another alarm before it has risen **above** X+1 degrees.
  - If the alarm is set to alarm when it rises above temperature X it will not send another alarm before it has dropped **below** X-1 degrees.
- 1) Create a new contact and name it "DEGREE".
    - i. Write the alarm temperature in the telephone number field. If the alarm temperature is below zero degrees Celsius, add zero ("0") before the temperature. For example; minus 7 degrees C is written as "07".
  - 2) Create a new contact and name it "TEMP".
    - i. In the telephone number field write "1" if you want an alarm if the temperature drops **below** the alarm temperature given in "DEGREE" or write "2" if you want the alarm when the temperature rises **above** the alarm temperature.

The unit will send an SMS alarm to all the telephone numbers on the alarm list if the temperature drops below/rises above the set alarm temperature.

The function is deactivated by removing TEMP contact from the SIM card.

### **Thermostat function**

If an electrical radiator is connected to the relay the unit can be used as a remote thermostat controller.

By programming the desired temperature the unit will scan the temperature and activate the relay (and thus turn on the radiator) if the temperature drops one degree C below the set temperature. The surrounding air will be warmer and when the temperature rises one degree C above the set temperature it will deactivate the relay (turning off the radiator).

First connect the radiator to the relay. (See page 10). This shall be done by a professional electrician.

### **Activate the thermostat from a telephone**

1. Call up the unit. Be sure you use tone mode on the telephone.
2. The unit answers with a beep.
3. Press your PINCODE and then #.

Example: **1234#**

If the PINCODE is correct the unit replies with a beep. If it is not correct the call is disconnected. Call again and try.

4. Dial **2\*D#** where D=the desired temperature. The unit confirms with a short beep. Hang up. If the unit replies with two beeps, try again.

### **Deactivate the thermostat from a telephone**

1. Call up the unit. Be sure you use tone mode on the telephone.
2. The unit answers with a beep.
3. Press your PINCODE and then #.

Example: **1234#**

If the PINCODE is correct the unit replies with a beep. If it is not correct the call is disconnected. Call again and try.

4. Dial **2#**.The unit confirms with a short beep. Hang up. If the unit replies with two beeps, try again.

### **Activate the thermostat with SMS**

1. Activate the thermostat function by sending an SMS with the following content:

**ABCD#2\*D#** where ABCD is your personal PINCODE. D is the desired temperature.

### **Deactivate the thermostat with SMS**

1. Deactivate the thermostat function by sending an SMS with the following content:

**ABCD#2#** where ABCD is your personal PINCODE.

## GPS positioning

By connecting a GPS receiver Ontech GSM 9020 will upon request send an SMS with position, direction, speed and time. The unit can also be set to alarm if the unit is moving outside a predefined distance from the original position (GPS Fence).

### GPS receivers

On the web site [www.ondico.se](http://www.ondico.se), we will publish information about recommended GPS receivers that has been tested to work together with Ontech GSM 9020.

To be able to connect a GPS receiver you must use an GPS adapter "Ontech GPS adapter OND-9020\_003". This is optional and is not included in the Ontech GSM 9020 package.

### Connecting an GPS receiver

See page 10 for how to connect the Ontech GPS adapter: OND-9020\_003. The adapter is connected to contact D.

### Request GPS data from the unit

You request GPS data from Ontech GSM 9020 by sending an SMS with the following content:

**ABCD#8\*1#** where ABCD is your personal PINCODE. The unit will reply with an SMS similar to this example:

<b>*Ontech 9020</b>	Asterisk (*) means alarm function is turned on
<b>Last valid GPS:</b>	
<b>57d38.440N</b>	Latitude: degrees and minutes (N or S)
<b>10d28.000E</b>	Longitude: degrees and minutes (E or W)
<b>Speed: 0 knots</b>	Speed
<b>Dir XXX</b>	Direction. XXX is the degree
<b>Time 10:48:53</b>	Time at latest reading (UCT-time, like GMT).
<b>Date: 2009-02-28</b>	Date at latest reading (UCT-time)

If there is no GPS receiver connected or if there is no GPS signal the following SMS will be sent:

**No GPS Data**

### GPS alarm / GPS fence

A GPS fence is a function which means that an alarm will be sent if the unit has moved away more then a certain distance from its original position. The distance is set in multiples of 50 meters, for example 50 m, 100, m 150 m etc.

The **original position** is the position the unit has one minute after start up. If the unit has been powered but the alarm function has been turned off (see page 17) **original position** is the position the unit has one minute after the alarm has been turned on again.

## Setting

To activate the function:

- 1) Create a new contact on the SIM card and name it "GPSFENCE".
  - a. In the telephone number field write the number for the distance from original position to GPS fence. Write the multiple to multiply with 50 meters.  
Example: If you wish the unit to send an alarm when it has moved 300 meters from its original position, write in the telephone number field "6" (as  $6*50=300$ ). If you want an alarm at 900 meters, write "18" ( as  $18*50=900$ ).

When you start up the unit after programming the SIM card, verify the GPS function by requesting an SMS with GPS data, see page 23.

The GPS fence alarm is turned off when you turn off all others alarm (see page 17). You can also turn it off by deleting the GPSFENCE contact on the SIM card.

## When there is an GPS fence alarm

If the unit has moved outside the GPS fence an alarm SMS will be sent to all phone numbers on the alarm list. The SMS is similar to this:

<b>*Ontech 9020</b>	Asterisk (*) means alarm function is turned on
<b>GPS alarm!!!</b>	
<b>Last valid GPS:</b>	
<b>57d38.440N</b>	Latitude: degrees and minutes (N or S)
<b>10d28.000E</b>	Longitude: degrees and minutes (E or W)
<b>Speed: 0 knots</b>	Speed
<b>Dir XXX</b>	Direction. XXX is the degree
<b>Time 10:48:53</b>	Time at latest reading (UCT-time, like GMT).
<b>Date: 2009-02-28</b>	Date at latest reading (UCT-time)



## **GPS Tracking**

In the year 2009 Ondico AB will start up a service that makes it possible to track how the Ontech 9020 is moving on a Google Map.

More information will be available on our web site [www.ondico.se](http://www.ondico.se).

### **Important**

Be aware of the power consumption of the GPS receiver. It is approximately 40-50 mA and makes the battery time shorter.

## ***Power supply***

### **Connecting power supply and charging**

Ontech 9020 can be power supplied in different ways:

1. With the enclosed Power Adapter (13,8V).
2. With a 12 V accumulator.

Both the adapter and the accumulator is connected to terminal A and the "+12" and "0V" connectors (See page 10). Be careful to get the polarity right, otherwise the unit can be damaged!

If both the accumulator and the power adapter are connected, the accumulator will be charged as long as the power adapter is connected to the main power.

The accumulator acts like a backup battery in case of power failure.

### **WARNING!**

Manganese batteries or other not rechargeable batteries may not be used.

### **Decrease power consumption**

In order to decrease power consumption you can turn off the short range radio if it not is used. The power consumption will then decrease with about 10 mA.

The short range radio is not used if there is no extra relays (Ontech Relay 9010) or wireless alarm detectors.

### ***Low battery***

Ontech GSM 9020 will alarm at battery as follows:

- If the voltage between connector "+12" and "0V" drops below 12 Volt an SMS will be sent to all telephone numbers on the alarm list with the following content:

**Charge battery!**

- If the voltage between connector "+12" and "0V" drops below 11 Volt an SMS will be sent to all telephone numbers on the alarm list with the following content:

**Battery empty !**

None of the low battery alarms needs to be acknowledged.

### **Important!**

If there has been a low battery alarm the unit has to be restarted or the voltage must rise above 12.5 V before it can send a new low battery alarm.

## ***Internal backup battery***

As an option an internal backup battery, "Ontech Backup Battery 9020\_001" can be purchased. This is mounted inside the cabinet according to the instruction on page 9.

### **Power failure alarm**

If an internal backup battery is connected and the voltage drops below 8 Volt an SMS will be sent to all the telephone numbers on the alarm list with the following content:

**No main power.**

The alarm function, the GPS and the relay will be disconnected. The temperature measurements will not be affected.

When the backup battery is discharged an SMS will be sent to all telephone numbers on the alarm list with the following content:

**Internal battery empty. 9020 shuts down.**

The unit shuts down.

### **Delayed power failure alarm**

The unit can be programmed to delay a power failure alarm. This can be useful if the unit is connected in an area with short main power failures and you do not want alarm SMS if the power returns after a short while.

Do as follows:

- 1) Create a new contract and name it "POWERFAIL".
  - i. In the telephone number field, write the number of minutes delay you want (1-40 is allowed)
  - ii. If the digit "0" (zero) is set the function will be deactivated.

## **Turn off/turn on the unit if an internal backup battery is connected**

To turn off the unit without disconnecting the power, push the button and hold for 5 seconds.

To turn it on again, push the button and hold for 5 seconds.

## Short range radio – extra relays

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Ontech GSM 9020 has a 2.4 GHz short range radio. This is used to communicate with extra relays (Ontech Relay 9010) and/or wireless alarm detectors (available year 2009).

If the short range radio not is in use it is recommended to turn it off in order to lower the power consumption. Do this by setting DIP switch number 6 to position ON, see page 25.

In a system with one Ontech GSM 9020 and one or more extra relays or wireless alarm detectors all has individual ID numbers. Up to 8 different unique numbers can be used, 1-8. Ontech GSM has always number 1.

With the DIP switches 2-5 the radio channel for the short range radio is set. In Ontech GSM 9020 as well as in extra relay (Ontech Relay 9010) and the wireless alarm detectors these DIP switches are delivered in position OFF. If another radio channel shall be used, be sure to set the DIP switches 2-5 **exactly the same** in all units in the system.

# Reference

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## ***SMS from the unit***

### **Alarm SMS / Status SMS**

The alarm SMS and the status SMS are identical. The alarm SMS is sent to all the telephone numbers on the alarm list.

You can request a status SMS by sending an SMS to the unit with the following content:

**ABCD#8#** where ABCD is your personal PINCODE.

You will immediately receive an SMS as below.

You cannot request status from an ordinary telephone, only with SMS.

Status SMS is only sent to the telephone that requested the status.

<b>Example</b>	<b>Explanation</b>
<b>*Ontech9020</b>	Asterisk (*) means alarm function is turned on
<b>Alarm:</b>	
<b>1ab, 3b</b>	Indicates all alarms that have been activated since the last acknowledge. The number indicates the units ID number, Ontech 9020 is always no 1, and the others refer to the extra units or wireless alarm detectors connected. Note that these inputs not can send an alarm again before the alarm has been acknowledged.
<b>Inputs:</b>	
<b>1b</b>	Indicates the alarm input that still is activated. In this example the SMS means that inputs 1a, 1b and 3b has been activated since the last acknowledge and that input 1b is still activated.
<b>Units:</b>	
<b>1*,3,4*</b>	Indicates the units communicating with the Ontech GSM 9020. Unit number 1 is always Ontech GSM 9020. The other numbers refers to the extra relays (Ontech 9010) connected. An asterisk (*) after the number indicates that the relay is turned on. If Ontech GSM 9020 loose contact with one of the extra relays unit its ID number will not be shown in the SMS.
<b>Temp: 24; 24,2</b>	Gives the temperature in degrees C. The first number refers to

	<p>the internal temperature sensor; the second number refers to external temperature sensor, if connected. If not connected -- will be written instead.</p> <p>If there is an asterisk, for example *24,2 before the number this indicates that the unit has sent a temperature triggered by this sensor.</p>
<b>Tstat: 25</b>	Indicates the set temperature for the thermostat function. If thermostat not is activated the message is <b>Tstat: OFF</b> .

## SMS about power supply

The SMS sent to alert about the power supply are as follows

Content in SMS	Meaning
<b>Charge battery!</b>	Is sent when voltage is dropping below 12 Volt
<b>Battery empty!</b>	Is sent when voltage is dropping below 11 Volt
<b>No main power!</b>	<p>Is sent only if an internal backup battery has to be connected.</p> <p>Is sent when voltage is dropping below 8 Volt.</p> <p>Relay, alarm function and GPS are disconnected.</p>
<b>Internal battery emty. 9020 shuts down!</b>	<p>Is sent only if an internal backup battery has to be connected.</p> <p>Is sent when voltage is dropping below 3.7 Volt</p> <p>The unit is shutting down.</p>

## SMS about GPS

If there is a GPS receiver connected you can request GPS data by sending an SMS to the unit with the following content:

**ABCD#8\*1#** where ABCD is your personal PINCODE.

You will immediately receive an SMS as below:

<b>*Ontech 9020</b>	Asterisk (*) means alarm function is turned on
<b>Last valid GPS:</b>	

<b>57d38.440N</b>	Latitude: degrees and minutes (N or S)
<b>10d28.000E</b>	Longitude: degrees and minutes (E or W)
<b>Speed: 0 knots</b>	Speed
<b>Dir XXX</b>	Direction. XXX is the degree
<b>Time 10:48:53</b>	Time at latest reading (UCT-time, like GMT).
<b>Date: 2009-02-28</b>	Date at latest reading (UCT-time)

If the GPS Fence alarm is activated and the unit has moved outside the fence all telephone numbers on the alarm list will receive a GPS SMS.

## SMS showing the SIM card settings

If you want to control the settings of the SIM card you can request an SMS that shows most of the SIM card settings. Send an SMS to the unit with the following content:

**ABCD#8\*2#** where ABCD is your personal PINCODE.

You will immediately receive an SMS as below:

Content	Exlanation
<b>*Ontech 9020</b>	Asterisk (*) means alarm function is turned on
<b>Alarmrelay:</b>	Alarmrelay function; <b>ON</b> or <b>OFF</b>
<b>Tempwatch:</b>	< indicates if the unit alarms when the temperature drops <b>below</b> set temperature. > indicates if the unit alarms when the temperature rises <b>above</b> set temperature.
<b>Temp sens:</b>	Indicates which temperature sensor that controls alarms and thermostat; <b>INT</b> =internal sensor, <b>EXT</b> =den external sensor.
<b>GPSfence:</b>	<b>OFF</b> =The GPS fence function is turned off. The number indicates the distance from the original position to the GPS fence. The number shall be multiplied with 50 in order to get the distance in meter.
<b>Ver</b>	Shows software version. Useful when contacting support.

## Commands

This description is valid both for telephone button and SMS text.

Command	Explanation
<b>ABCD#</b>	All telephone calls and SMS starts with your personal PINCODE of 4 digits.
<b>#</b>	When writing this symbol you are sending a command to the unit Thus, the symbol ends a command. If you have misspelled, you can use this symbol to restart the command.
<b>*</b>	This symbol is used as a separator inside a command
<b>1*N#</b>	Used to activate a relay. N=the ID of the unit.
<b>0*N#</b>	Used to deactivate a relay. N=the ID of the unit.
<b>1*N*T#</b>	Used to activate a relay with timer function. N=the ID of the unit. And T= the number of hours you want the relay to be active.
<b>2#</b>	Used to turn off the thermostat function
<b>2*D#</b>	Used to turn on the thermostat function (0-29 degrees C)
<b>7*1#</b>	Used to turn on the alarm function.
<b>7*0#</b>	Used to turn off all alarms (valid for all alarms except low battery alarms)
<b>8#</b>	Status SMS request
<b>8*1#</b>	Request for GPS data.
<b>8*2#</b>	Request for SIM card settings
<b>9#</b>	Used to acknowledge alarms

- All SMS must begin with your personal PINCODE.
- It is possible to send multiple commands in the same SMS or telephone call. The symbol **#** separates the commands.
- When operating with a telephone call all commands are confirmed with a beep. Two beeps indicate a failure. Try again!
- Instead of the symbol **\*** you can use all letters (uppercase or lowercase) on button 7 (p, q, r or s).
- Instead of the symbol **#** you can use all letters (uppercase or lowercase) on button 9 (w, x, y or z).

## ***Push button***

One push at the button activates or deactivates the relay.  
One push is also used to manually acknowledge an alarm.  
Push and hold for 5 seconds to turn on/turn off the unit.



## ***The lamps***

On the front of the cabinet there are two lamps, one red and one green.

### GREEN LAMP

Flashing	Flashes when establishing connection with GSM network during start up.
On (no flashing)	The unit is turned on and has contact with GSM network.

### RED LAMP

On (no flashing)	The relay is activated
Off	The relay is deactivated
Flashing	One alarm has been activated and is not acknowledged.

### RED AND GREEN LAMP

Both are flashing	SIM card is missing or Pincode on SIM card is not deactivated. See page 6.
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## ***The DIP switch***

The unit has 8 DIP switches (see page 9). The functions of the switches are as follows:

<b>DIP switch no</b>	<b>Function</b>
1	OFF= Alarm A and B are set to mode Normally Open. ON= Alarm A and B are set to mode Normally Closed.
2	These four switches are used to set the radio channel. If extra relays (Ontech Relay 9010) or wireless alarms are used in a system all units must have the same radio channel settings.
3	
4	
5	
6	OFF=Short range radio turned on. ON= Short range radio turned off.
7	Not in use
8	OFF=The relay will not remember position in case of power failure. ON= OFF=The relay will remember position in case of power failure.

Position OFF on the DIP switches is downwards compared to the text on the switch. All switches are set to OFF as factory default.

# Tip!

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## Cash card

If you are using SIM cash card, be aware that many network operators demands you are sending at least one SMS or make one call every year. Some also demands you refill at least once a year. Check with your operator.

## Multiple commands in the same SMS or call

It is possible to execute multiple commands in the same SMS or call. The sign # separates all the command lines.

If you, for example want to acknowledge an alarm but also want to activate the relay, you press:

**ABCD#9#1\*1#**

All individual commands will be replied with a beep. If there is a fault, the unit replies with two beeps.

## Using other letters for # and \*

Instead of the symbol \* you can use all letters (uppercase or lowercase) on button 7 (p, q, r or s).

Instead of the symbol # you can use all letters (uppercase or lowercase) on button 9 (w, x, y or z).

## Checking SIM card settings

If you not are sure about the settings of the SIM card, you can request an SIM card setting SMS, see page 29.

## Status-SMS

If you not are sure about the settings of the unit, you can ask it for a status-SMS. See page 29.

## To long distance between Ontech GSM 9020 and Extra relays or wireless alarm detectors

A built-in function in all Extra relays and wireless alarm detectors is a radio repeater. This means that each extra unit increases the working range with about 30 meters. If one extra unit is out of range, another extra unit can be connected somewhere between the extra unit that is far away and Ontech GSM 9020 .The extra unit will link the other two units together.

**Check if the extra unit (Ontech GSM 9020) has contact with the master unit**

One push of the button on the extra unit (Ontech Relay 9010) switches the relay but is also sending information about this to Ontech GSM 9020. This unit acknowledges back that it has received the information. During this process the red lamp on the extra unit will flash. The process shall not take more than 3 seconds, if more, the extraunit probably lost contact with Ontech GSM 9020.

# Troubleshooting

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Symptom	Reason
Both the red and green lamp is flashing on Ontech GSM 9020	<p>The unit cannot read the SIM-card</p> <ul style="list-style-type: none"> <li>• Check that the PINCODE is deactivated. See page 6.</li> <li>• Check that the position of the SIM-card in the unit is correct.</li> <li>• Check the SIM-card in a mobile phone in order to check the SIM-card.</li> </ul>
The green lamp is flashing on Ontech GSM 9020	<p>No connection with the GSM network</p> <ul style="list-style-type: none"> <li>• Check if the area is covered by using the SIM card in a mobile phone..</li> <li>• Check that the antenna is correctly mounted.</li> <li>• Test with another SIM card.</li> </ul>
The unit has no contact with extra units or wireless alarms	<p>Different radio channels</p> <ul style="list-style-type: none"> <li>• Check so all units in a system has the same radio channel. See page 28 .</li> </ul>
Ontech GSM 9020 has no contact with an individual extra unit.	<p>Out of radio range</p> <ul style="list-style-type: none"> <li>• Check by moving the extra unit closer to the master unit.</li> <li>• Check that the extra unit has a unique ID. See page 28.</li> <li>• Place one more extra unit in the middle of the distance between the slave unit that lost contact and the master unit.</li> </ul>
The unit do not react on SMS	<p>Wrong mobile number</p> <ul style="list-style-type: none"> <li>• Check that the mobile number is correct</li> </ul> <p>Wrong PINCODE</p> <ul style="list-style-type: none"> <li>• Check that your PINCODE is correct. The easiest way to do this is to call up the unit from an ordinary telephone and enter the PINCODE and then #. If the PINCODE is correct the unit will reply with a beep. If not, the unit will hang up.</li> </ul>

# Technical specifications

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GSM	Trippelband GSM 900/1800/1900
GSM subscription	All kinds, also cash card
Relay	Potential free, 230V/10A
Serial interface	Special for GPS adapter
Short range radio	Frequency 2,4 GHz Power output 1 mW
Alarm inputs	Activated either by NO or NC mode Maximalt +/-50 V, 5 mA
Inernal backup battery	Oprtional. Li polymer 4,2 V, 1100 mAh
External power supply	9-16 VDC
Power consumption	Nominal <0,5 W Max 4 W
Temperature range	-20°C to +40°C
Certified	Compliance EMC, LVD and R&TTE directive

# Declaration of conformity

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Ondico AB, Datavägen 14A, 436 32 Askim, Sweden, hereby declares that the product Ontech GSM 9020 is in conformity with the provisions of the Radio & Teleterminal directive R&TTE 1999/5/EG.



[www.ondico.se](http://www.ondico.se)

