

CLx20 V4

User Guide



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1. Introduction

CLx20 is an alarm system available in two versions: the CL220 and the CL520.

Most of the functions are common to both versions, and this user manual covers both.

The CL520 has five alarm sections instead of two, and a built-in buzzer. The CLx20 makes for ease of monitoring objects such as houses, weekend cottages, boats, cars and caravans. The unit has two or five alarm sections to which sensors of different types can be connected. When the sensors are affected, text messages are sent to recipients designated by means of the PC configuration programme called CLx20 Config Tool. Two relay outputs can be remotely controlled through commands sent to the unit via text. To activate or deactivate an alarm, a call is made to the number assigned to the unit. This function is free of charge as the CLx20 only checks the calling number against the access list, then clears the call. Also available as an accessory is a key fob for activating/deactivating an alarm.

The unit is supplied as standard with two temperature sensors. In the CL520, the temperature sensors are connected to a screw terminal block, and lead length can therefore be easily adapted. All functions are explained in the manual and it is recommended that you read through all of these instructions carefully before installing the system. Be sure to follow the instructions for making the correct connections, otherwise you will be in danger of damaging the product or injuring yourself.

ComLink cannot be held responsible or liable if you install or operate the system incorrectly.

The alarm system must be installed in a professional way.

 **Important notes!**

 **Useful Hints!**

2. Connections

2.1 Different types of sensors

All the sensors that are on the market today and have an N/C or N/O function may be connected: IR detectors, magnetic contacts, pressure mats, smoke detectors with alarm outputs, gas detectors, level guards, moisture monitors, glass-break sensors, to name a few. Sensors are subdivided into two types based on the way they function: N/O and N/C. These abbreviations describe the sensor function when the sensor is in a non-alarm state; they are short for the English words 'normally open' and 'normally closed'. A sensor which is not in alarm is in its normal state: for example, a magnetic contact, fixed to the entry door, is in its 'normal position' when the door is closed. Normal sensor function, open (N/O) or closed (N/C), is marked on the package. A sensor sometimes has a double function, that is to say, both N/O and N/C, in which case the sensor function depends on how you connect it. Several sensors may be connected to the same alarm section, but all the sensors must be of the type stated in the PC program Config Tool.

2.2 Alarm sections

The CLx20 has two or five alarm sections to which sensors may be connected and each alarm section can send up to four text messages when the sensor goes into alarm. The texts to be sent and the numbers to which they are to be sent are specified for each message using the Config Tool. The type of sensor connected to the input must be specified in the configuration program. It is also possible to configure the alarm sections individually, so that they are always activated (smoke detectors, for example) or trigger a silent alarm. Remember that the more current-consuming sensors (such as IR detectors) you connect, the shorter is the time any battery backup will last in the event of a power failure. The relays are event controlled and may be automatically controlled when an alarm section is affected.

2.3 Outputs

The CLx20 has two relay outputs along with one output for an external siren and one output for an external LED indicating status. The siren output drives an external siren (if fitted) when an alarm is triggered; duration is configurable in the PC program, where you can also give instructions for the siren to acknowledge the activation/deactivation of an alarm function. Deactivation of the siren when an alarm has been triggered is through a telephone call to the unit. Maximum load on the siren output is 500 mA. The low-voltage relay outputs must not be connected to the mains power supply. A qualified electrician may install an external power relay for controlling 230/110V equipment by means of the unit's internal relay. Please note that only a qualified electrician is allowed to carry out fixed electrical installations! The internal relays can be connected to a maximum of 24 volts at 1 ampere.

The outputs are controlled either using text messages (see Guide to Commands, section 6.6, for the exact wording), or as a function of an alarm-associated event. An output may be activated for a limited period of time (1 second up to 65 000 seconds), turned on/off temporarily, or activated using temperature sensors. The corresponding settings are made in the Config Tool program. To set or activate an output means creating a closure between the two positions in the screw terminal block that are associated with the relay.

2.4 Temperature sensors

The unit is supplied complete with two temperature sensors. Their function is described in the Config Tool. An event (sending a text or controlling a relay output) may be initiated when values exceed or fall below preset values. The current value may be read at any time by querying the unit via a text. The function of the temperature sensors is explained in more detail in section 4.4. Connecting temperature sensors to the CL520 is described in 10.2.



Do not mount a temperature sensor where it may be exposed to direct sunlight and thus to great differences in temperature depending on the weather! This may cause a large number of text messages to be sent without due cause.

2.5 Battery backup including voltage monitoring

The CLx20 has integrated controlled charging of an external battery backup (if fitted). The CLx20 may also be operated on 12-15V DC. If battery voltage drops below 11V, a text will be sent indicating low battery voltage. This feature makes the system ideal for battery monitoring, for example on boats and in caravans, to avoid harmful over-discharging.



The alarm function will be deactivated if there is a power failure and the unit is not fitted with battery backup!

2.6 Monitored current supply

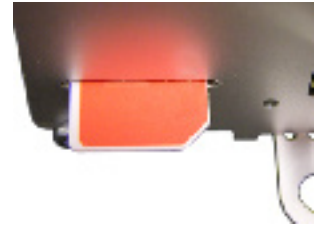
The CLx20 comes with a mains adapter, but it may also be supplied from other voltage sources of 12-15 volts DC or 15-30 volts AC/DC depending on the way the connection is made. Please note that when the unit operates on a lower voltage it will consume more current, meaning that the power-supply capacity must be adjusted accordingly. The CLx20 continuously monitors the supply voltage (230/110V) and sends an alert via text if this is cut off, and a second text when it is restored (provided a battery backup is fitted).

2.7 Screw terminal block

Connections are made via the screw terminal block whose configuration is shown in section 10.1 or 10.2. The block can accept a maximum cable size of 1,5 mm². Make sure there are no loose wires sticking out beside the holes in the connection block. Also, check for correct polarity before connecting the unit to voltage.

3. Installation

It is sometimes advisable to configure the unit before mounting. In that case, carry out the instructions in sections 3.1, 3.4, 3.5 and 4 before installing.



3.1 Installing a SIM card

To use the CLx20, you need a valid GSM subscription configured as follows:



- **Please note that any information stored on the SIM card will be in part erased by an alarm! The SIM card must have at least 20 available text locations!**
- Disabled PIN code. The Config Tool programme will let you disable the PIN.
- Switch the mobile phone back on and verify that it does not ask you to enter the PIN code. If the SIM card requests the PIN code at start-up, the yellow LED will double blink.
- The subscription must support the text service (standard for Swedish cards).
- Prepaid cards may well be used unless you expect messages to be sent very often. You should keep in mind, however, that some telephone operators require the subscription to be registered to avoid the card being rendered invalid after some period.



- The number calling identification service must be enabled in the subscription. Use the Test Mode described in 4.6 to verify and contact your GSM operator and ask for this service to be enabled if it isn't.
- Insert the SIM card with the contact pad facing down (see picture); notice the bevelled corner. Gently push the card straight in. You will very likely notice some slight resistance as the card is seized by the card holder. No need to use force, just push gently until the card comes to a stop.

3.2 Mounting



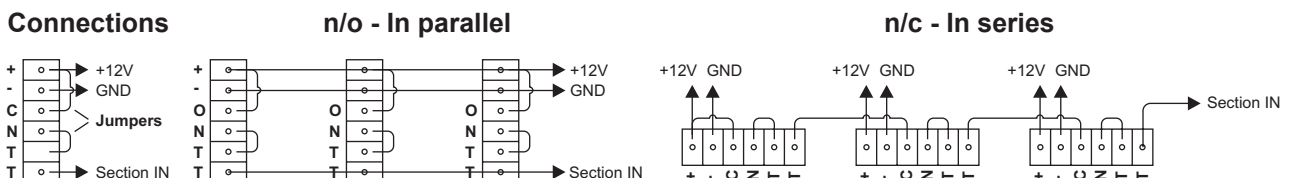
- Mount the CLx20 in place using the screw holes in the sides of the casing, or using a DIN rail.
- Connect the alarm sensors that you will be using to the alarm sections. Also connect up any devices you will be remotely controlling by means of the outputs.
- Connect a sensor to alarm section 1 first of all, then a sensor to alarm section 2, and so on. After that, enter the number of sensors used in the Config Tool (see section 4.1.7).
- Connect the GSM antenna to the antenna connector.
- Connect the power supply unit to the electric socket or other supply voltage in the way intended.
- It is recommended NOT to tin the cables before connecting them to the screw terminal block. Tinning may, in course of time, result in poor contact and unreliable function. The red LED blinks evenly during the start-up period, then changes to short blinks at 3 sec. intervals when the CLx20 has logged-on to the GSM network (see section 9.3). If the unit fails to log on, you may need to move the antenna in order to get better reception. It is a good idea to use the Config Tool reception indicator to find the ideal antenna placement. Check also that the PIN code control is disabled.



3.3 Connecting up typical sensors

3.3.1 IR detector

The screw terminal block in an IR detector has the connections shown in the diagram below. Install jumper between terminals marked '+' and 'C', and install jumper between 'N' and 'T'. Connect the detector's + (plus) supply to pin 5 on the block. Connect the —(minus) supply to pin 3 or pin 7. Connect the remaining terminal, marked 'T', to the input for the section you have selected. **Note** that all sensors connected to a section must have the same type of function, namely n/o or n/c. Do not use the 'Filter Time' feature when an IR detector is connected, set to 0. (See 4.1.6)

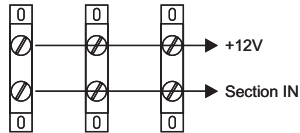
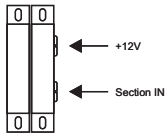


3.3.2 Magnetic contacts

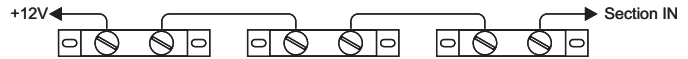
As a rule, a magnetic contact has two connectors. Connect one of them to pin 5 on the CLx20 terminal block, and the other to the input for the section that is to be used (pin 4 or pin 6). It is safe to use different kinds of sensor in combination for the same section, as long as they have the same type of function. If several N/C type sensors are to be connected, they are to be connected in series. N/O type sensors are to be connected in parallel.

Connections

n/o - In parallel

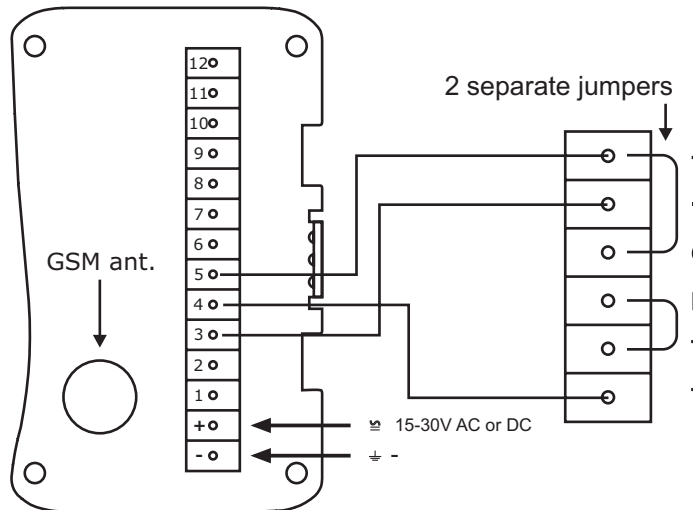


n/c - In series



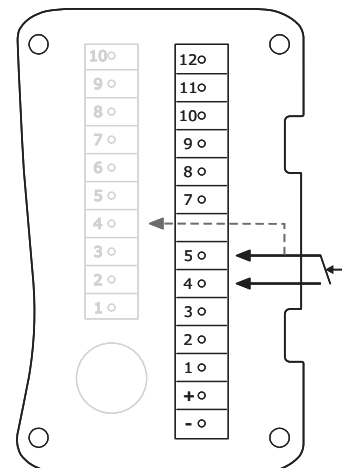
3.3.3 IR detector – description of function

Pin 5 supplies power for the IR detector, earthing is via pin 3. The upper jumper (see diagram) is used to feed the alarm loop with 12 volts from pin 5. Normally the IR detector creates a closure between the terminals marked ‘N’ and ‘C’ (Normally Closed). The lower jumper allows the loop to be continued in order to also include the tamper circuit. The two positions marked ‘T’ in the screw terminal block are connected to a switch that is activated when the IR detector opens. The switch is normally closed. Therefore both the IR circuit (N and C) and the tamper circuit (T and T) are normally closed. The voltage from pin 5 is conducted back to pin 4 (or pin 6) which is a sensor input. If either the IR circuit or the tamper circuit is affected, the loop will be interrupted and the voltage cut off from the input. The alarm unit senses this and starts signalling that an alarm has occurred.




3.3.4 Making or breaking switch

The switch is preferably fed from one of the 12V outputs (pin 5 in 12-pole terminal alternatively pin 4 in the 10-pole terminal of CL520), the return is connected to preferred alarm section. Making switches are configured as n/o (normally open) in the Config Tool and breaking switches as n/c (normally closed).



3.4 USB Installation

CLx20 V4 has an USB port that requires driver installation when it is connected to the computer for the first time. USB drivers are available on the Config Tool CD and may also be downloaded at <http://www.ftdichip.com/Drivers/VCP.htm>. Run the installation file first and then connect the USB cable, the CLx20 will then install itself as a new serial port. You can use the device manager on your PC to find out which port number has been assigned if you are unsure. Open the device manager by pressing  + R on your keyboard, type devmgmt.msc in the field that opens and press OK. You will find USB serial port under ports and it will also show the assigned port number.

3.5 Configuration

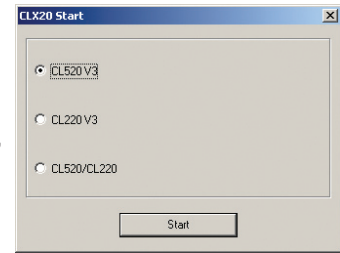
The unit may well be configured before installation, but may also be configured afterwards, if a computer is available at the installation site. Install Config Tool by opening Windows Explorer in the computer and double clicking on the file 'CLx20 Config Tool.exe' (on the CD). Follow the instructions. Connect GSM antenna, the communication cable between the unit and the computer serial port. Enter the designation of the serial port to which you have connected the CLx20. Wait for the green LED to go out, then press the 'Connect' button. Enter the settings required for the functioning of the unit (see section 4). Remember to finish by saving the settings in the unit by pressing the 'Write to unit' button. After configuration, the unit must be restarted in order for it to read in the new settings. Disconnect the communication cable and restart the unit by momentarily switching it off. If a backup battery is fitted, first disconnect the battery, then disconnect the 230/110V supply. Next, switch the 230/110V back on followed by the battery power. This is to avoid a text alarm indicating loss of supply voltage.

3.6 Connecting the supply voltage

Connect the supply voltage taking care to get the polarity right. Also, make sure there are no loose wires hanging out from the side. The power supply unit, or an alternative 15-30V AC or DC power supply, is connected to its intended terminal in the block (see section 9). Sources of power between 12 and 15V DC are connected to the battery connector in the terminal block. Now plug the power supply unit into the electric socket.

4. Configuration

Start Config Tool by clicking on the program icon under Start/Program/ComLink/CLx20 in the Configuration Tool. A window appears in which you choose between connecting to a CL520 V3 or a CL220 V3 (also used for V4). The alternative choice, CL520/CL220, is for connecting to older units.

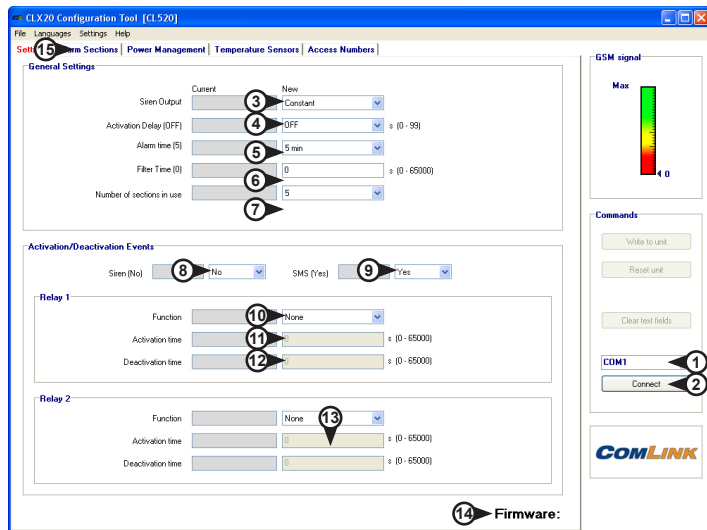


Note. Settings are partially stored on the SIM, previously stored information will be deleted!
The SIM that will be used must be installed in the unit when configuring.

Note. The gray fields shows values as read from the unit, the white fields are used for entering new values that shall be written to the unit.

4.1 Settings

1. Enter the designation of the computer serial port to which the unit is connected.
2. Wait for the green indicator on the CLx20 to go out, then press 'Connect'. Earlier settings are read out and shown in the grey text fields.
3. State the way the siren is to sound when an alarm has been triggered (applies to alarm sections where the siren has been set to sound, items 8 to 12).



4. State how long the monitoring of the alarm sections is to be delayed after a user activates the alarm function (by telephone or key fob). This also results in an entry delay for all sections when the alarm function is activated, except for sections which are constantly monitored.
5. State how long the siren is to sound when an alarm has been triggered (applies to alarm sections with the siren set to sound, items 8 to 12).
6. State how short-lived changes in the status of an alarm section must be for the changes to be ignored, that is to say, how long must a changed state last before the alarm will trigger causing alert messages to be sent via text.



Must be set to '0' when an IR detector is connected to the unit since it's signals sometimes are so short that they may be ignored.

7. State the number of sections to which you have connected sensors (always connect to sections with lower numbers first e.g 1 first, then 2 etc.).
8. State whether the siren is to acknowledge the activation or deactivation of an alarm.
9. State whether a text is to be sent as an acknowledgement of the activation or deactivation of an alarm (only to the person who called).
10. State whether Relay 1 is to be affected when there is an activation or deactivation of an alarm.
None: the relay will not be affected by an activation or deactivation.
On when activated: the relay will be closed when the alarm function is activated.
On when deactivated: the relay will be closed when the alarm function is deactivated.
Time controlled: the relay will be closed during the time entered under items 11 and 12 below.
11. State for what period of time Relay 1 is to be closed when activating the alarm function.
12. State for what period of time Relay 1 is to be closed when deactivating the alarm function.
13. Enter the same settings for Relay 2.
14. The alarm unit's software version number is shown here.
15. Click on the 'Alarm sections' tab to advance to the next screen display

4.2 Alarm sections

1. State whether the program is to check that the country code is used when the phone number for the recipient of the text is entered. It is recommended to include the country code when a phone number is entered, especially if the alarm resides in a mobile object.

The country code check may need to be disabled in some cases, for example if a message is to be forwarded to a pager.

2. State whether an N/O or an N/C sensor is connected to the section.

N/O: the alarm reacts when voltage is applied to the section input (the expected normal state of the input is one of not being connected to voltage).

N/C: the alarm reacts when the voltage disappears from the section input (the expected normal state of the input is one of being constantly connected to voltage).

3. State how the siren is to react if the input is activated.

Quiet: the siren does not sound when the section input is activated; alarm via text only.

Follow alarm time: siren sounds during the time stated in the "Alarm duration" setting (item 7).

Follow input: siren sounds for as long as the input is affected.

4. Enter when the section is to be monitored.

Never: changes in the section input status are ignored; alarms are never generated.



When alarm activated: monitoring starts when the alarm function is activated.

These sections are not monitored when perimeter mode has been activated using the key fob.



Perimeter: The section input is connected to perimeter sensors and monitoring can be separately armed.

The section is also monitored when the alarm has been normally activated.

Always: the section is continuously monitored, irrespective of the alarm function being activated or deactivated.

5. State which relay is to be activated when the alarm section is triggered (note that also temperature sensors can activate the relays). This assumes that conditions according to items 6, 8, 10, 11 and 12 are met (see further information in section 5.5).

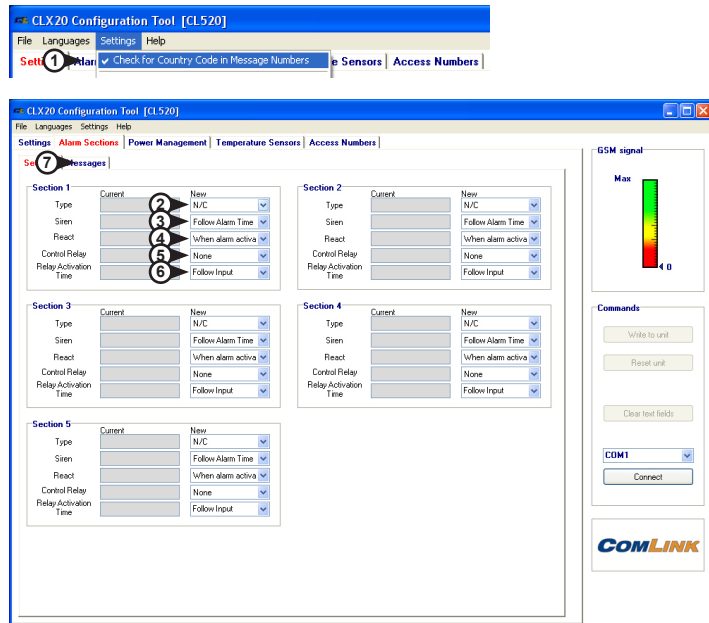
6. State how the relay is to be affected when the alarm section has triggered (This assumes that conditions according to items 6, 8, 10, 11 and 12 are met).

Follow input: the relay (see item 13, page 7) is activated for as long as the section input is affected.

Follow alarm time: the relay is activated during the time stated under item 7.

During the time programmed: select duration alternative or enter your own preferred duration of between 1 and 65000 seconds.

7. Click on the 'Messages' tab to display next screen.

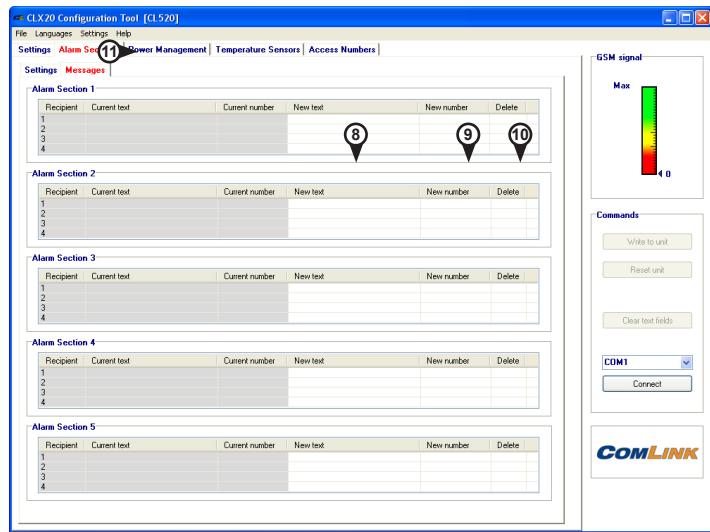


- Double click on the text fields and enter the alarm texts to be sent for each section.

The number of available sections depends on the setting made in section 4.1.7.

Each alarm section can generate four different text messages and send them to different numbers; write each message on a separate line.

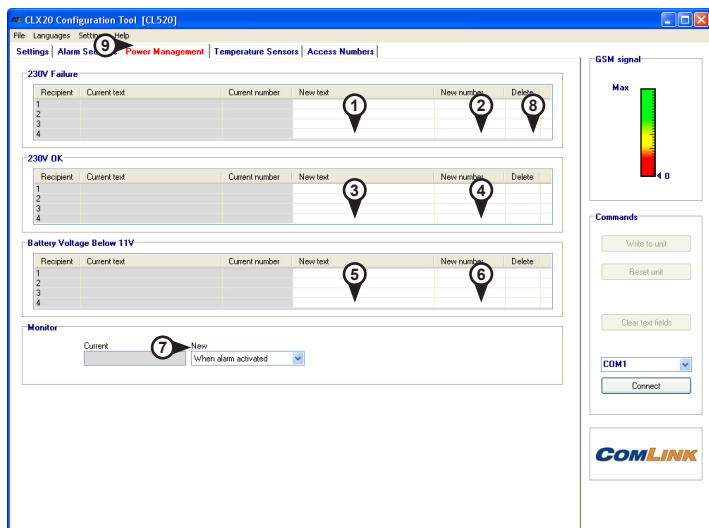
- Enter the telephone number to which the text is to be sent. Note that there is an individual telephone number for each text. The country code is normally included: +46701234567.
- To clear a line of alarm text, click on the empty field beside the line: a cross appears in the 'Delete' box.
- Click on the 'Power Management' tab to view next screen.



4.3 Power supply alarm text

Alarms regarding power supply and battery backup can only be sent if battery backup is fitted.

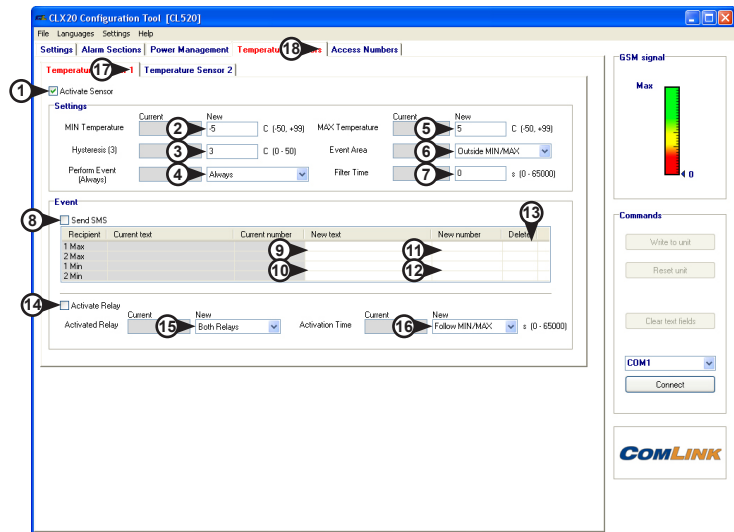
- Enter the alarm texts to be sent when the power supply (230/110V) is cut off (actually, this refers to the supply voltage).
- Enter the telephone number to which the text is to be sent. Note that there is an individual telephone number for each text. The country code is normally included: +46701234567.
- Enter the alarm texts to be sent when the power supply (230/110V) is restored.
- Enter the telephone number to which the text is to be sent.
- Enter the alarm texts to be forwarded when battery voltage drops below 11V (only the battery backup connection is monitored).
- Enter the telephone number to which the text is to be sent.
- State when an alarm is to be sent: always or only when the alarm function is activated.
- To remove a line of alarm text, click on the empty field beside the line: a cross appears in the 'Delete' box. It will be deleted when the settings are saved.
- Click on the 'Temperature Sensors' tab to view next screen



4.4 Temperature sensors



Read more about settings options in section 5.4.



1. Tick the box if the sensor is to be used.
 2. Enter low temperature limit.
 3. Enter temperature hysteresis (deviation before reset).
 4. State when it will be possible to initiate an event (text or relay activation).
 5. Enter high temperature limit.
 6. State whether an event is to be initiated when the temperature goes inside or outside the set temperature limit.
 7. State for how long the temperature, after passing a programmed limit, must stay beyond it before an event can be initiated.
 8. Tick the box if a text message is to be sent when set values (under items 1 to 6) have been exceeded.
 9. Enter text messages to be sent when the maximum temperature limit has been passed (in either direction, according to item 5 above).
 10. Enter text messages to be sent when the minimum temperature limit has been passed (in either direction, according to item 5 above).
 11. Enter the numbers to which messages concerning the maximum temperature limit are to be sent.
 12. Enter the numbers to which messages concerning the minimum temperature limit are to be sent.
 13. To clear a line of alarm text, click on the empty field beside the line: a cross appears in the 'Delete' box.
 14. Tick the box if a relay is to be activated when set values (under items 1 to 6 above) have been exceeded.
 15. State which relays are to be activated when a temperature limit has been passed (outside or inside set limits, under item 1-6).
 16. State how long relays are to remain activated.
- Follow MIN/MAX: The relay is activated when the alarm limit has been passed, and it is restored when hysteresis has been passed.
- Duration: Select a preset duration or enter your own preferred duration (1 to 65 000 seconds).
17. Click on the 'Temperature sensor 2' tab to advance to a next screen display and perform the same settings for the second temperature sensor.
 18. Click on the 'Access number' tab to switch to a next screen display.



Application example: Temperature control using relay output

Min temp:	8 (switch on at 8°C or 46°F)	Max temp:	99 (not used)
Hysteresis:	4 (switch off at 12°C or 54°F)	Event Area:	Outside MIN/MAX
Perform Event:	Always (independent of activation state)		
Filter Time:	60 (short temperature variations are ignored)		
Send text (text):	Not ticked	Activate relay:	Ticked
Activated relay:	Choose 1 or 2	Activation time:	Follow MIN/MAX

With these settings the relay contacts will close while the temperature is below 8°C. The relay contacts will open when the temperature reaches 12°C. The target temperature can be altered using the text command "T1 B=20".

4.5 Access numbers

1. Enter the phone numbers which are to have access, that is to say, to be authorized to remote control the alarm (including +46).



The number in pos. 1 will receive system related error messages.

2. Click on the empty field beside the line to make a cross appear indicating that the number is to be written to the unit. The field will be automatically marked when a new number is entered. This is most often used in connection with saved profiles.



Tick the write field and leave the number field empty in order to clear the space individually.

3. Press the 'Write to unit' button to save the settings you have made. Switch off, and connect the software to check the settings made. Saved settings will be read out automatically on connection and shown in the grey text fields.



Note that the alarm unit must be restarted in order for the settings to come into effect.

4. Press the 'Reset unit' button to empty the SIM card or to reset the unit to the factory settings. A dialogue box is shown where you can select an alternative.

5. Press the 'Clear text field' button to empty all text and number fields in the program.

6. Check signal strength at the installation location. If necessary, the antenna may be moved to improve reception.

7. Under 'File' there are menu options for saving and bringing up profiles. All the settings for a unit can be stored here.

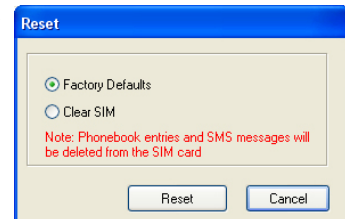
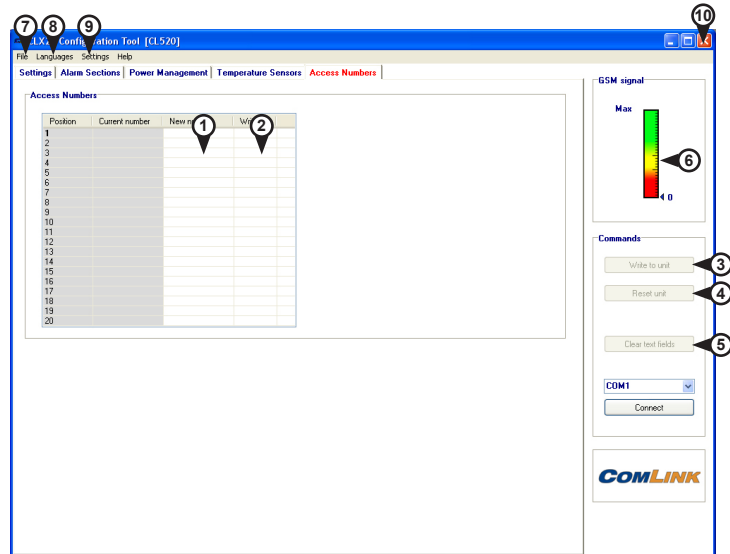


You will be asked to save new or current values when saving a profile. Current values are the ones read from the unit and presented in the gray fields on the left. New values are the ones you entered in the white fields on the right. The white fields for new values will be updated when loading a profile, even if they were originally saved as current values.

8. Under 'Languages', select the preferred program language.

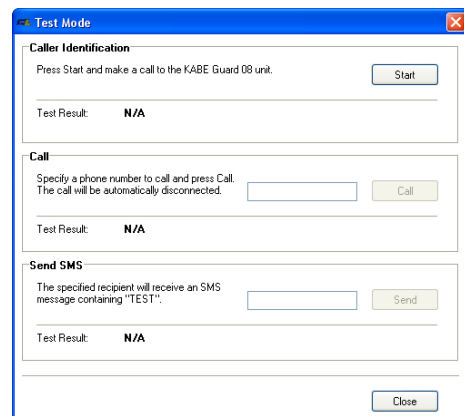
9. Under 'Settings' you can disable the checking of the country code for a recipient's number.

10. Click on the cross to close the program. Note that the unit must be restarted (not forgetting the battery backup, if fitted) in order for the settings to come into effect.



4.6 Test Mode

Test Mode is available under the 'Settings' menu item. It is used to verify Caller ID on incoming calls, creating outgoing calls and sending texts.



5. Functions

5.1 Access control

In the CLx20 Config Tool there is an access list which can hold up to 20 numbers. On the list are those who are authorized to activate/deactivate the alarm function and send commands via text. If the phone number is not on the list, the unit will ignore the command or call. If the calling number is not shown when someone makes a call to the unit, the command or call is ignored. It is not possible to remotely control the unit by phoning from an unlisted number. Unlisted subscriber numbers may be used if you call the unit's telephone number prefixing it with *31# (The service provider may not support this feature).

5.2 Supply voltage monitoring

The supply voltage (mains adapter connection, alternatively 15-30 volts AC/DC in the 2-pole terminal block) is continuously monitored. Provided that a battery backup is fitted, alerts may be sent by text when the supply voltage is cut off and when it is restored.

5.3 Battery backup monitoring

The battery voltage connected (battery backup connection 12-15 volts DC pins 1 and 2 in the 12-pole terminal block) is continuously monitored. If battery voltage drops below 11 volts, an alert may be sent by text. This function may be used to warn in advance of the backup battery nearing depletion. Where the unit is operating on backup battery power only (on a boat, for example), such a low-battery alert provides an early warning of over discharging. Over-discharging a lead battery damages the battery and should be avoided, because its capacity suffers and its freezing-point rises sharply.

5.4 Temperature monitoring

The unit is supplied complete with two temperature sensors. Sensor functions are configured using the Config Tool. Current temperature can always be read by sending '?' in a text to the unit. Read more about status queries in section 6.5. A number of settings determine when an event is to be initiated (alarm via text or activation of a relay). On CL220 temp sensor 1 is shorter than sensor 2.



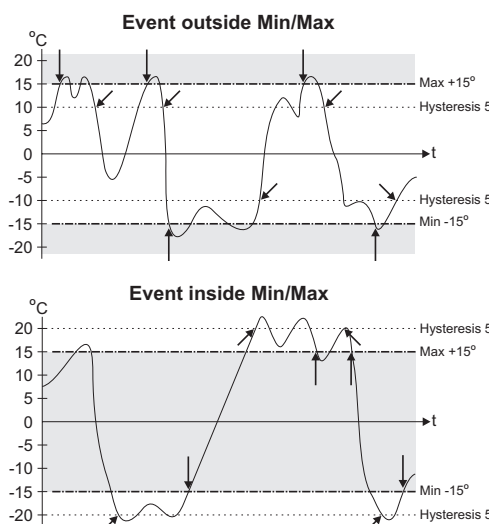
An alarm limit you do not wish to use can be moved so that events are not initiated without due cause. You could, for instance, shift minimum temperature to minus 50 if you want an event to be initiated only when maximum temperature has been passed.

5.4.1 Max/Min temperature limits

Two temperature limits may be entered for each sensor. How the preset limits will be used depends on the other settings.

5.4.2 Hysteresis

In this case, hysteresis indicates by how many degrees the temperature is allowed to vary before an event can be initiated again. The value applies to the two maximum and minimum limits entered. If an event has been initiated due to a temperature limit having been passed (vertical arrow), the entered hysteresis temperature must be passed (diagonal arrow) in order to enable this event to be initiated again. You may consider the hysteresis an 'reset level'.



5.4.3 Event outside/inside Min/Max

An event may be initiated either when the temperature moves outside set limits or when it moves inside set limits.

An event is indicated by a vertical arrow in the diagram. Please note that for an event to be initiated again, the temperature must pass the set hysteresis temperature.

Hysteresis is the level where the alarm is reset so that a new event can take place (see section 5.4.2)

When there is an alarm outside Min/Max, the hysteresis temperature is inside set limits; when an alarm is inside Min/Max, the hysteresis temperature is outside set limits.

5.4.4 Determining when an event is to be initiated

You can decide when an event should be initiated, either at any time or only when the alarm function is activated (see section 6.1 & 6.2).

5.4.5 Activation delay

In order to restrict the number of events due to quick changes in temperature, an activation delay may be programmed. In such cases, the temperature must have passed the set temperature limit (hysteresis) and stayed passed it for the preset length of time before an event is allowed to be initiated (or to be restored at the hysteresis level).

5.5 Event-controlled relays

Relays may be controlled by a text message, by a section in alarm, or by a temperature sensor.

The relay can be activated at activation or deactivation of the alarm (see section 4.1.10-13).

The relay can be controlled by a command via a text message (read more in section 6.4 & 6.6).

The relay can be activated via an alarm section if programmed section event criteria are met (refer to section 4.1) The relay can be activated by a temperature sensor if the criteria for an event are met (section 4.4). In that case, the relay operates (closes) at the vertical arrow and releases when the temperature reaches the next diagonal arrow.



There are several ways to activate the relay outputs, check your settings carefully so that the relays are not activate unintentionally by the wrong events.

5.6 Perimeter mode

A reduced activation of the alarm function is known as perimeter mode and can be provided if a key fob is fitted or by sending a text message to the unit.. Only the sections configured for perimeter mode will then be monitored. This function is used when the perimeter of an object is to be monitored (magnetic contacts on doors and windows, for example) but not the inside of the house – useful at night or if domestic animals are left behind in the object. By pressing and holding the button on the key fob for three seconds you activate the perimeter mode. (also see section 6.2)



These sections are also monitored at normal activation.

5.7 Events when activating/deactivating

In conjunction with the activation/deactivation of an alarm function, various events may be initiated. In the Config Tool you state whether acknowledgement is to be made via text and siren, and whether relays are to be activated. This function may be used to activate lighting in conjunction with activation and/or deactivation. Note that several functions in the unit can activate the relay outputs.

6. Operation

6.1 Activating the alarm

Using a call:

To activate the alarm function you call the GSM number assigned to the unit. Provided that function is normal, and depending on the operator chosen, you will hear one of the following tones in the receiver: 'number unobtainable', 'number engaged' and 'call cannot be connected'.

Using a text message:

Activate the alarm function by sending a text message with ALARM ON.

Using key fob:

Normal alarm function can be activated by briefly pressing the key fob button (accessory). Activation will not be acknowledged with a text in this case.

Using a keypad:

CL520 can be fitted with a keypad as an accessory, Activation will not be acknowledged with a text in this case.

Depending on what has been entered in the Config Tool configuration program, the unit will respond by sending a text saying 'Alarm ON', and may also acknowledge activation of the alarm by a short siren beep. The alarm may also be configured with delayed activation in order to give you time to leave the building. A relay output may also be activated in conjunction with an alarm function activation, if such a combination has been entered in the Config Tool. An external LED double blinks to indicate an activated alarm function.



The CLx20 will only accept control commands (text and incoming calls) from numbers that are held on the access list. In order for the unit to be able to 'see' what number is calling and compare it with those on the list, the number must be displayed. A subscription whose number is not listed in the telephone directory does not show its number to the called party, which means that such numbers cannot be used for remote controlling. Unlisted subscriber numbers may be used if you call the unit's telephone number prefixing it with *31# (The service provider may not support this feature), and may we suggest that you store the entire number - *31#0701234567 – in your mobile's phone book.



Store the number for CLx20 in your mobile's phone book and call it 'Summer Cottage', for example. All texts received from the unit will then be displayed as coming from the 'Summer Cottage'. You will not even have to remember the number when you call to activate/deactivate the alarm.

6.2 Activating Perimeter mode

Using a text message:

Send a text message to the unit with PERIMETER ALARM ON

Using key fob:

If a key fob is programmed to the CL520, you can activate perimeter mode by pressing and holding down the button for three seconds. Only the sections set to 'perimeter mode' in Config Tool will then be monitored. The internal buzzer indicates perimeter mode by beeping three times (short-long-short). Activation will not be acknowledged with a text in this case.

The external LED (accessory) will indicate activated Perimeter mode by blinking rapidly for 30 seconds and then starting to double blink.



These sections are also monitored at normal activation.

6.3 Deactivating the alarm function

Using a call:

Call the GSM number assigned to the unit.

Using a text message:

Deactivate the alarm function by sending a text message with ALARM OFF.

Using key fob:

The alarm function can be deactivated by briefly pressing the key fob button (accessory). Action will not be acknowledged with a text in this case.

Using a keypad:

Activation will not be acknowledged with a text in this case.

Depending on what has been programmed in the Config Tool configuration program, the unit will respond by sending a text saying 'ALARM OFF', and may also acknowledge deactivation of the alarm by two short siren beeps.



You can also deactivate a triggered alarm by any of these methods.

6.4 Remote control of outputs

Two relay outputs may be remotely controlled by sending a text message with a command to the CLx20. Relay 1 (R1) and Relay 2 (R2) are connected to the screw terminal block. Activating an output, i.e. putting it in the ON position, means that a closure is created between the relay's two connections in the block. This closure can be used just like a switch to turn on and turn off devices connected to the relay. The relay is of the low-current type, which means a maximum load of 24 volts and 1 ampere. A qualified electrician may connect the relay to an external power relay for controlling equipment that requires a higher voltage. Please refer to the text Command List (section 6.6) for further information.

6.5 Fixed-word messages that can be sent from the CLx20

A text message will be sent to the person who calls the unit to turn on or turn off an alarm function. No-one else will receive such a message. A query concerning the current status may be sent using the “?” command.

ALARM ON/OFF/PERIMETER ON

If the ‘SMS when activating/deactivating’ function has been activated in Config Tool (that is to say, it is in the ON state), the CLx20 will send the message as a text to the person who called to activate/deactivate the alarm.

Alarm ON, section X FAILED! Input will be ignored if it does not reset within 30 seconds. / PERIMETER PROTECTION ON, Section X FAILED! Input will be ignored if it does not reset within 30 seconds

Either message will be sent as a text to the person who called to activate the alarm, if one of the alarm sections (which one is indicated by substituting X with the section number) is not in the expected state. If you have, in Config Tool, stated that the alarm section has been connected to a sensor of the N/O type (normally open), the loop is expected to be open when the alarm is activated. The CLx20 will wait 30 seconds for the alarm section to return to its normal state. If this does not happen, the sensor will be considered faulty and will be ignored. A message (see below) will be sent to inform about this. If the alarm section returns to its normal state within that 30 seconds, the CLx20 will work normally and monitor all the alarm sections. If several alarm sections are faulty, the message may, for example, read **Alarm ON, sections 1 and 2 FAILED! Input will be ignored if it does not reset within 30 seconds.**

The message **Alarm ON, section X ignored** or **PERIMETER PROTECTION ON, Section X ignored** will be sent as a text to the person who called to activate the alarm, if one of the alarm sections (which one is indicated by substituting X with the section number) has not returned to its normal state within 30 seconds. Alarm sections that are not indicated in the message will still be activated and trigger alarms if they are affected. The status of the alarm sections may be interrogated at any time by using the “?” command. Should several alarm sections be faulty, the message may read ‘Alarm ON, sections 1 and 2 ignored’, which means that none of the indicated alarm sections will be monitored. The relay outputs will function normally.

Cannot activate alarm, deactivate first /

Cannot activate Perimeter Protection, deactivate alarm first

The alarm was already activated (either in normal or perimeter mode) when an attempt was made to activate it by sending a text message. Note that it is not possible to switch between normal and perimeter mode without deactivating first.

System related error messages may also be sent to the number stored in position number 1 on the list of access numbers.

Failed reading on temp sensor # The temperature sensor has not responded to a query. This could be due to a loose connection or a damaged cable.

Temp sensor #x is missing The temperature sensor does not respond at all. If it is not connected, it should not be activated (see section 4.4). A cable breakdown may be the cause here. The message will be sent when the temperature sensor has failed to respond to several queries, so this message could come after the ‘Failed reading’ message.

6.6 Text commands

Below please find explanations of the commands which users on the access list can send from their mobile phones to the unit.

Several commands may be sent together in the same message if each command is separated by a semicolon.

Command	Explanation
?	Query status
Reply from unit	Explanation
STATUS: Alarm=OFF S1=OK S2=OK S3=Fail S4=OK S5=OK T1=-5 T2=21 R1=ON R2=OFF Ext Power=OFF Batt=12.8 Signal=23	Alarm function is deactivated section 1 is OK (voltage is applied if n/c, no voltage if n/o) section 2 is OK section 3 failed (no voltage applied to input if N/C, or voltage if N/O) section 4 is OK section 5 is OK Temperature sensor 1 indicates -5°C Temperature sensor 2 indicates +21°C Relay is activated (closure between pin 9 and 10 in screw terminal block) Relay 2 is not activated Power supply unit not connected, or there is no 230/110V supply Backup battery voltage measured at 12,8V Signal strength measured at 23 (min=0, max=31)

Command	Explanation
!	Query concerning general configuration.
Reply from unit	Explanation
CONFIG: Siren=Const Siren Ack=OFF Text Ack=ON Activation Delay=30 sec Alarm Time=5 min Filter=5 sec sections=5 W Power=Always SW 4.1.414	Siren sounds continously (alternatively, pulses) Acknowledgement of activation/deactivation via siren turned off. Acknowledgement of activation/deactivation via text turned on. Activation delay turned on and set to 30 seconds. Alarm period is 5 minutes. Filter period for inputs is 5 seconds. Unit is configured with 5 sections. Supply voltage continuously monitored. Software version installed in unit.

Command	Explanation
ALARM ON	Activate alarm functions in standard mode.
Possible replies	Explanation
ALARM ON	Alarm functions are activated and sections that are configured for normal or perimeter mode are monitored.
Cannot activate alarm, deactivate first	Alarm functions have already been activated, the alarm must be deactivated before it can be activated.

Command	Explanation
ALARM OFF	Deactivate alarm functions.
Possible replies	Explanation

Command	Explanation
ALARM OFF	Alarm functions has been deactivated.

Command	Explanation
ALARM PERIMETER	Activate alarm functions in perimeter mode.
Possible replies	Explanation
PERIMETER PROTECTION ON	Alarm functions has been activated in perimeter mode and the sections that has been configured for perimeter mode will be monitored, sections that has been configured for normal mode will not be monitored.
Cannot activate Perimeter Protection, deactivate alarm first	Alarm functions have already been activated, the alarm must be deactivated before it can be activated

Command	Explanation
S[1-5]	Query section configuration
Example	Explanation
S1 S3;S4	Query configuration for section 1 Query configuration for sections 3 and 4
Reply from unit	Explanation
SECTION1: TYPE=N/C Siren=Timer React=W.AI.Act Relay=RE1 Relay Time=Follow	section number Indicates type of sensor for which input is configured: N/O or N/C Indicates siren sound: silent, follow=follow input, timer – time Indicates when input is to be monitored: Shell (perimeter), Never Always, W.AI.Act=when alarm function is activated Indicates which relay is to be controlled: RE1, RE2, BOTH Indicates how long relay is to be activated: Follow, Alarm, Time

Command	Explanation
T[1-2]	Query temperature sensor configuration
Example	Explanation
T1 T1;T2	Query configuration for temperature sensor 1 Query configuration for temperature sensors 1 and 2
Reply from unit	Explanation
SENSOR1: Active=YES Min=-5 C Max=0 C Hyst=1 C Trigger=Inside React=Always Filter=0 sec Text=YES Relay=YES Relay=RE1 Relay Time=2 sec	Sensor number Active YES/NO Set minimum temperature is -5°C Set maximum temperature is 0°C Hysteresis is set to 1 degree Generate event inside max/min, outside max/min Indicates when temperature sensor is to be monitored Shell (perimeter), Never, Always. W.AI.Act=when alarm function is activated Indicates for how long the temperature, after passing a programmed limit, must stay beyond it before an event can be initiated Indicates whether a text message is to be sent: YES/NO Indicates whether relay is to be activated: YES/NO Indicates which relay is to be activated: RE1, RE2, BOTH Indicates how long relay is to be activated: Follow, Alarm, Time.

Command	Explanation
R[1-2]	Query relay function when activating/deactivating alarm function
Example	Explanation
R1 R1;R2	Query configuration of relay 1 Query configuration of relays 1 and 2
Reply from unit	Explanation
RELAY1: Activity=None Activation time=5 sec Deactivation time=10 sec	Relay number Event: None, Timer controlled, Follow activation – ON when alarm function is activated, ON When alarm function is Deactivated Time for controlling relay when activating alarm function Time for controlling relay when deactivating alarm function.

Command	Explanation
!!!	Query total configuration (results in unit sending 10 texts!)
Reply from unit	Explanation
	Unit responds by sending total configuration information via text.

Command	Explanation
RESET	Reset all settings to factory settings.

Command	Explanation
ALARM TIME=[0-9]	State how long the alarm is to remain triggered after input is affected. Further alarm conditions in section during alarm time will not generate more texts. Other sections affected during alarm time can still send one text each; they too will then be blocked until the alarm time has expired. Siren and relay may be activated during the alarm time.
Example	Explanation
ALARM TIME=1	Alarm time is set to 1 minute; siren and/or relay set to follow the alarm time will be activated during this time. Any text message may only be sent once per section during the alarm time.
Note	
You can check a setting by sending the '!' command in a text to the unit.	

Command	Explanation
R[1/2]=[ON/OFF/time] R[1/2] [A-C=value]	Activates/deactivates relay output. Adjusts setting for an event when activating/deactivating
Example	Explanation
R1=ON R2=120 R1 A=1 R1 B=5 R1 C=60	Activates output 1 for the time being. Activates output 2 for two minutes, a time between 1 and 65 000 seconds may be programmed. Activate output during time set as stated under B and C below when activating/deactivating alarm function. A=Event, 0=None, 1=Timer (B and C below are used), 2=Follow activation (activate output when alarm function is activated), 3=inverted function of '2' – activate output when deactivating alarm function. Activate output 1 for 5 seconds when activating alarm. B= Time in seconds during which the relay is affected when an alarm is activated. Activate output 1 for 1 minute when deactivating. C= Time in seconds during which the relay is affected when deactivation is carried out.
Note	
You can query a setting by sending the '?' command as a text to the unit. Sending 'R1' or 'R2' as a text to the unit will result in a read-out of how the relay is controlled when activation/deactivation of the alarm function is carried out.	

Command	Explanation
SIREN ACK=[ON/OFF]	Acknowledgement by siren when activating/deactivating alarm function
Example	Explanation
SIREN ACK=ON SIREN ACK=OFF	Short siren beep indicates activation, two beeps, deactivation No acknowledgement by siren when activating/deactivating
Notera	
You can check a setting by sending the '!' command as a text to the unit.	

Command	Explanation
SMS ACK=[ON/OFF]	Acknowledgement via text of switched alarm functions.
Example	Explanation
SMS ACK=ON SMS ACK=OFF	Predefined text is sent to the person who called to switch alarm functions. No text is sent when the alarm is activated/deactivated.
Note	
You can check a setting by sending the '!' command as a text to the unit.	

Command	Explanation
S[1-5] [A-E]=[value]	Configuration settings for section
Example	Explanation
S1 A=0	<p>Sensors of the N/C type are connected to section 1, see settings below. S1=section 1 (1 – 5 may be entered). A=Sensor type: 0=N/C, 1=N/O. B=Siren sound: 0=silent, 1=Follow alarm time, 2=Follow input. C=React: 0=Never, 1=When alarm function is activated, 2=Perimeter mode, 3=Always. D=Control relay: 0=None, 1=Relay 1, 2=Relay 2, 3=Both. E=Relay activation time: 0-65000s, 65001=Follow input, 65002=Follow alarm time.</p>
Note	<p>You can query a setting by sending the 'S1' command as a text to the unit ('S2' for section 2, and so on). If you leave out the (A-E) parameter, it follows that the unit will respond by giving the settings for that section.</p>

Command	Explanation
T[1-2] [A-K]=[value]	Configuration setting for temperature sensor.
Example	Explanation
T1 A=1	<p>T1=Temperature sensor 1 (1 – 2 may be entered). A=Activate sensor: 1=Yes, 0=No. B=Minimum temperature: -50...+80 (use +/-). C=Maximum temperature: -50...+80 (use +/-). D=Hysteresis: 0 – 50. E=Event: 0=outside min/max, 1=inside min/max. F=Event: 1=When alarm function has been activated, 3=Always. G=Activation delay: 0 – 65000 seconds. H=Send a text whenever there is an event: 0=No, 1=Yes. I=Activate relay whenever there is an event: 0=No, 1=Yes. J=Control relay: 0=None, 1=Relay 1, 2=Relay 2, 3=Both. K=Relay activation time: 0-65000s, 65001=Follow input, 65002=Follow alarm time.</p>
Note	<p>You can query a setting by sending the 'T1' command as a text to the unit (T2 for sensor 2). If you leave out the (A-K) parameter, it follows that the unit will respond by giving the settings for that sensor</p>

7. Indications

7.1 LED Indications

Three LEDs indicate the units operating mode. The LEDs indicate mode independently and not in combination.

7.1.1 Red

Red LED indicates GSM status.

Quick flash with 3 sec. interval:	Logged on to provider
Slow flash 50/50:	Not logged on to provider, searching or invalid SIM.
Off:	Turned off / not operating.

7.1.2 Yellow

Yellow LED provides SMS (text) and SIM-card related information as well as fault indications.

Off:	Normal operating mode
Lit:	Sending / receiving a SMS (text)
1 flash:	No SIM inserted
2 flash:	PIN-code activated (not supported)
3 flash:	No GSM coverage
(4 flash)	Reserved
5 flash	GSM Module fault

7.1.3 Green

Green LED indicates general operating mode.

Off:	Alarm deactivated
Lit:	Alarm section fails
Double flash:	Alarm activated
Quick flash during 30 sec:	Perimeter activation (typically followed by double flash)
Slow flash:	Start-up procedures at power up.

The status LED (Light Emitting Diode) is an extension of the green LED and will match it's indications. In configuration mode the green and yellow leds will flash simultaneously.

7.2 Audible indications

1 short	Normal activation of alarm
2 short	Deactivation of alarm
3 short	Perimeter activation of alarm
short-long-short long	Indicates a faulty input at activation

7.3 Fault indication when section fails at activation.

A fault will be indicated on the siren output, on internal summer on the CL520 and on green (and external red) LED

A 30 second grace period will start when a section fails at activation, during this time the section is expected to return to its normal state. The fault is indicated by an audible short-long-short-long beep instead of one or three short beeps. The short-long-short-long sequence will be heard again if the sections have not returned to their normal state before the period ended. The failing sections will be ignored during the activations period when this happens. Green (and external red) LED will also be lit as long as the section fails, they will return to a double flash when the section returns or when the 30 second period has ended. If the unit was activated using a call or text message it will also indicate the fault via a text message to the originator.

8. Describing the functions

You activate and deactivate an alarm by means of a call to the GSM number installed in the unit, a text message or by pressing the key fob button. If a phone call is made or text is received, the CLx20 will check the number against the numbers on the access list. If the number is authorized, the unit will switch to an activated/deactivated state.

If so programmed into the Config Tool, the unit will acknowledge by text and/or siren that switching has been carried out. Please note that only the person who called the unit will receive an acknowledgement via text.

When the alarm is activated by the key fob, acknowledgement will be made through siren and LED indication only (with the CL520, also through buzzer). If you hold down the button for more than three seconds, the unit will be activated in perimeter mode. This is indicated by the external LED blinking rapidly for 30 seconds (with the CL520, by the buzzer giving off a short-long-short sound).

With activation delay, monitoring of the alarm sections will start when the delay time has expired. Please note that activation delay time also causes an alarm delay. A triggered section which alarm function is activated will not generate an alarm until the delay time has expired (with the exception of the sections that are continuously monitored – they will signal an alarm at once).

The CLx20 will check that the alarm sections are in the state programmed into the Config Tool. If an input should be in an incorrect state for more than 30 seconds, it will be ignored. Whenever a monitored alarm section is triggered (by being affected) the siren will sound according to the settings made in the Config Tool (see section 4). The text entered in Config Tool for the affected section will be sent, and the alarm section will not generate any more text messages for the duration of the set alarm time.

Should a second alarm section be affected while the first alarm is going on, the texts entered in Config Tool for that second section will be sent – the original alarm duration does not change. When the alarm period expires, normal monitoring will be resumed, meaning that if a section is affected, the siren will be sounding (or alarming silently) for a further alarm period, and the predefined messages will be sent again. This indicates that something is still affecting the sensors in the triggered object. A person who is on the access list may call the unit at any time to deactivate the alarm function.

The relay outputs are event controlled and can be activated whenever inputs are affected, temperature sensors pass set limits, or activation/deactivation is performed. The relay outputs may then be connected to, for example, lighting and to cooling, heating and pumping control, to mention just a few functions.

9. Remote (CL520 accessory)

9.1 Key fob learning

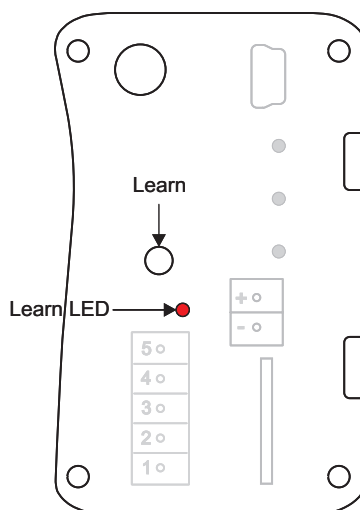
You can learn up to 8 key fobs into your alarm.

Note! Carefully read item 1-6 before you begin learning the key fobs into the alarm.

1. All key fobs must be programmed in a sequence.
2. Press the learn button and keep it pressed until the learn LED is lit. Release the learn button (this action will erase all key fobs from the alarm).
3. Press the button on the key fob when the learn LED starts flashing and keep it pressed until the LED is permanently lit. You can choose any button you please to control the alarm.
4. Release the button. If more key fobs are to be learnt into the alarm repeat from no 4 with the next key fob.
5. When the last key fob has been learnt wait until the learn LED goes off.

The key fobs are now learnt into the alarm and ready to use, please verify that they are all functioning.

If you want to add a new key fob or replace an old one all key fobs must be learnt again in the same sequence.



9.2 Battery replacement

Open the key fob by removing the screw on the back of the unit, replace the battery with a new button cell of CR2032 type.



10. Fault-tracing

‘The CLx20 sends a text saying Input failed when I try to activate the alarm’.

- Check that all sensors are in a non-alarm state when you set the alarm. If you left open a door with a magnetic contact or passed an infrared detector on your way to the phone to make the call to set the alarm, then that message will be sent.

‘The CLx20 sends a text saying Input ignored when I try to set the alarm’.

- Check that the alarm section has been correctly configured in the PC program Config Tool. For example, an N/C type sensor will cause this error if you have stated that an N/O type sensor has been connected.
- Check that all the sensors are in working order.
- Check that all the cables are in order and the connections correctly made.
- Check that there are no insects in the sensor.

‘I get an error message when I try to connect using Config Tool: The selected action failed’.

- Check that you have entered the correct COM port before pressing ‘Connect’.
- Check that the green LED indicator is not lit before you press ‘Connect’.
- Check that the SIM card has been correctly installed.
- Check that the SIM card does not require a PIN code.
Do a test using a standard mobile telephone.

‘I get an error message when I try to connect using Config Tool: Could not open com port’.

- Check that no other software is using the COM port. A sync program for mobile phones may block the COM-port. Disable any such software, then have a go again.

‘The CLx20 unit does not get activated when I call it’.

- Check that the ‘calling number identification’ function is enabled in the unit’s SIM card. Then make a test call using a standard mobile phone.
- Check that the number you are calling from is listed in the telephone directory. Make a test call from a standard mobile telephone.
- Check that the number you are calling from is on the access list.
- Check that the green LED indicator is not lit.

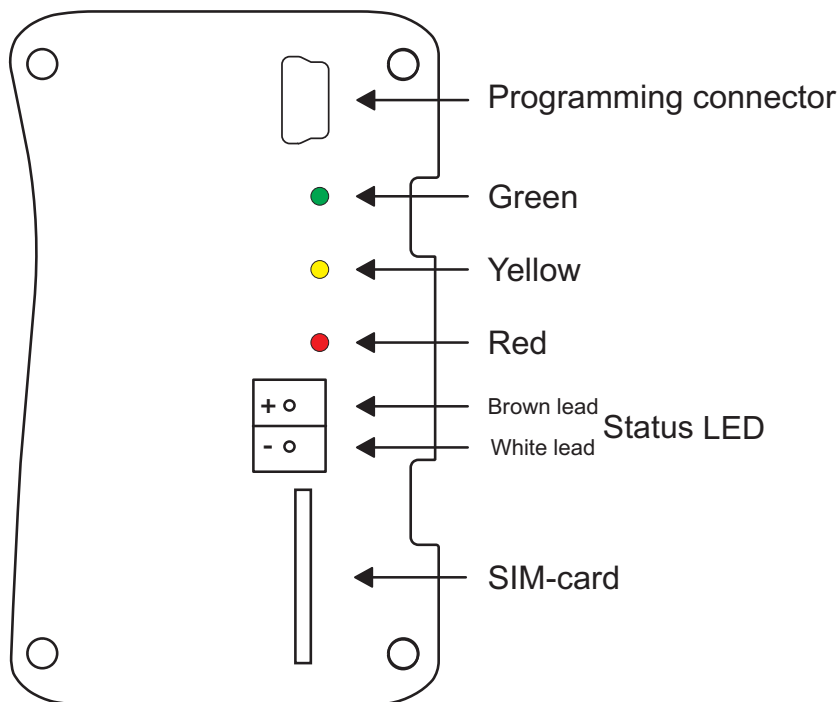
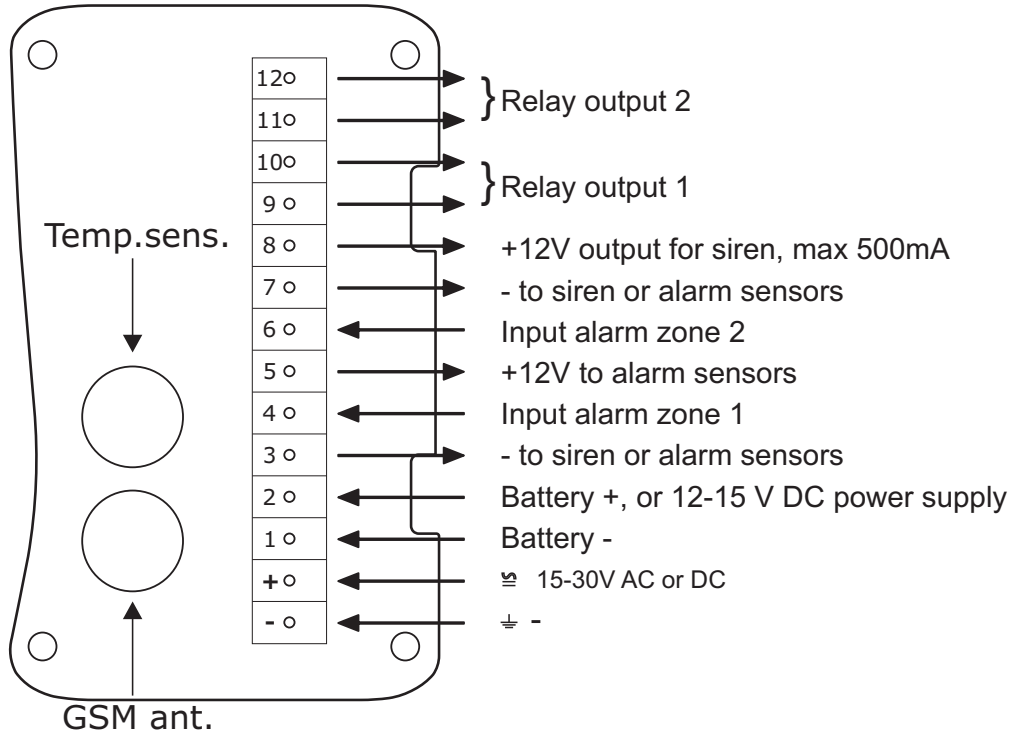
‘The CLx20 does not log-on to the GSM network (the red LED indicator does not flash briefly every three seconds)’.

- Check that the SIM card does not require a PIN code.
- Check that the coverage area of your chosen operator is adequate.
- Check that the SIM card is correctly inserted.

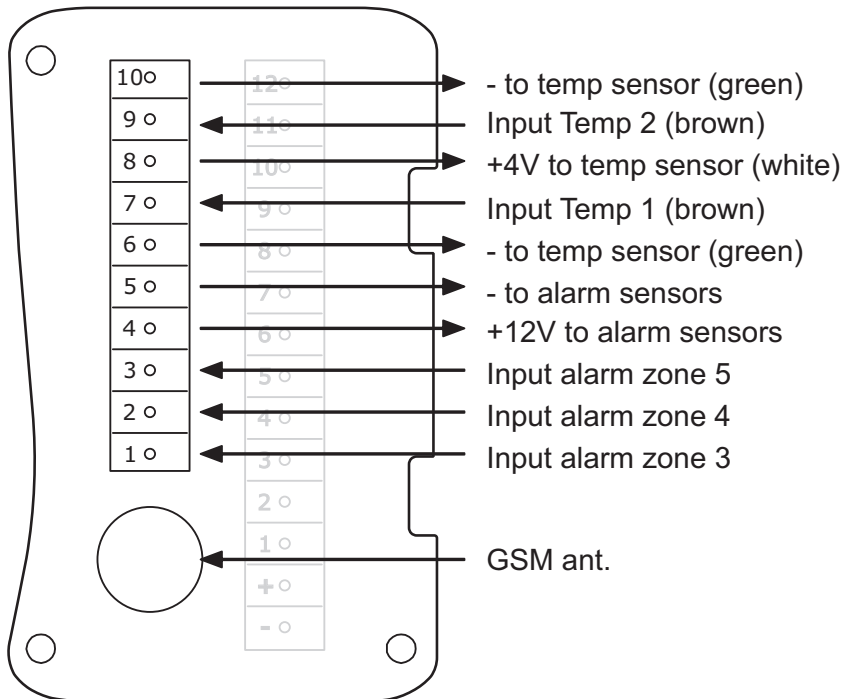
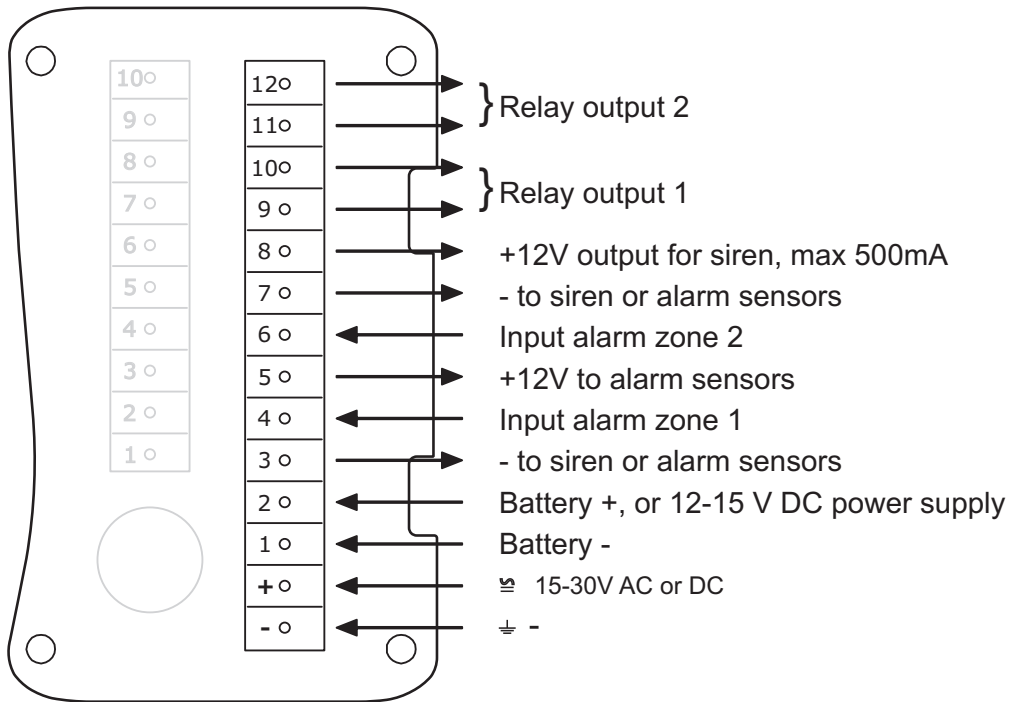
11. Specifications

11.1 Connector description CL220

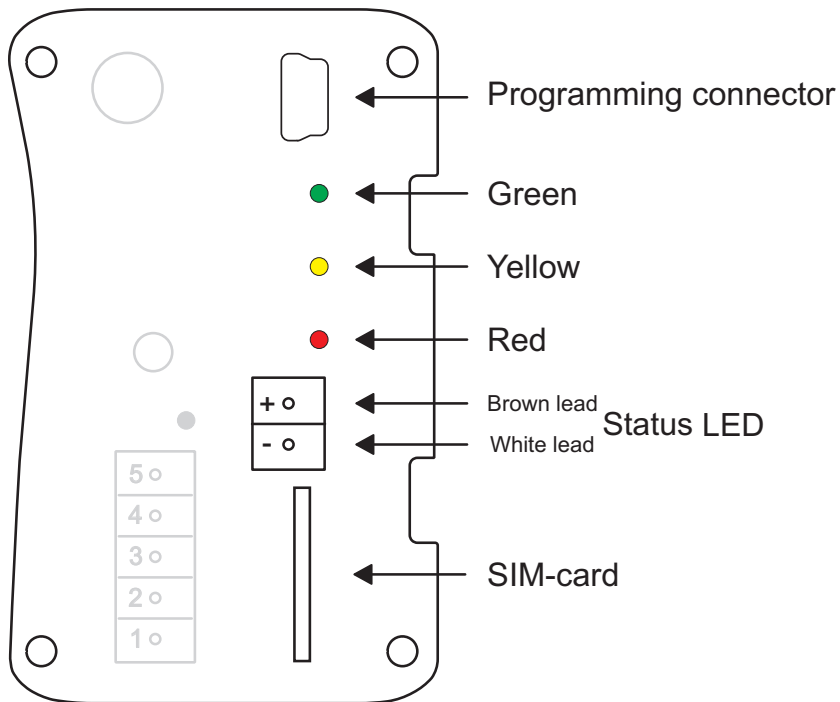
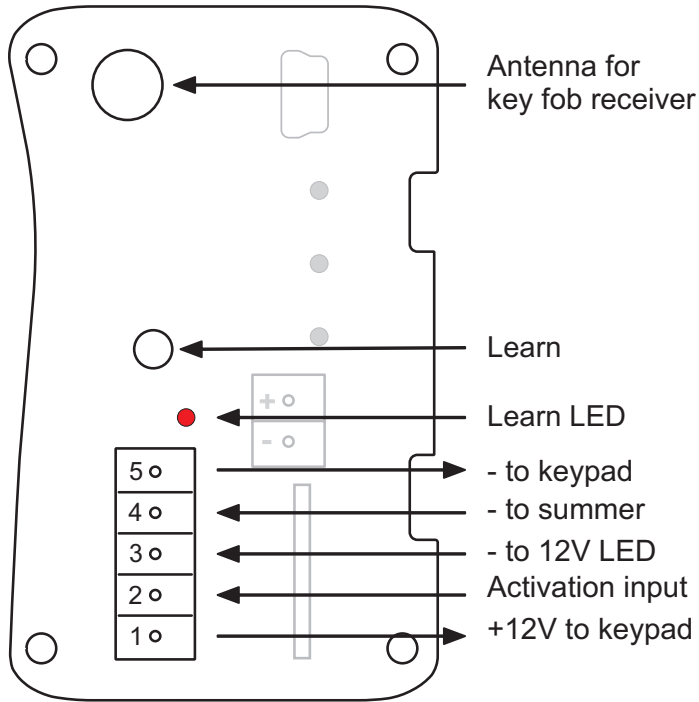
Note that temp sensor 1 on CL220 has a short cable (30cm)



11.2 Connector description CL520 right side



11.3 Connector description CL520 left side



11.4 Package contents

- CL220 / CL520 unit
- GSM Antenna
- External status LED
- 2 x temperature sensors
- Power supply 24V DC
- Pluggable screw terminal blocks
- This user guide
- Config Tool CD

11.5 Technical data

Supply power:	12-15V DC or 15-30 V AC or DC
Supply current nom:	35mA @12V DC
Supply current max:	1A @12V DC
Battery backup time:	Approx.. 2 days with 1,2Ah backup battery (depending on the number of connected sensors)
Inputs:	2/5 alarm section inputs for N/O or. N/C sensors (4-24V DC) 2 inputs for temperature sensors
Outputs:	2 NO relay outputs, max. 24V, 1 A +12V DC max 500mA, output for siren. 1 output for external status LED
Operating temperature:	-40 - +85°C
Casing:	Aluminium
Dimensions:	80 x 67 x 41mm
Cable area max:	1,5mm ²

11.6 Accessories

Key fob, waterproof casing, key pad, external battery backup, external siren and most standard sensors

- CL220 / CL520 unit
- GSM Antenna
- External status LED
- 2 x temperature sensors
- Power supply 24V DC
- Configuration cable USB
- Pluggable screw terminal blocks
- This user guide
- Config Tool CD

