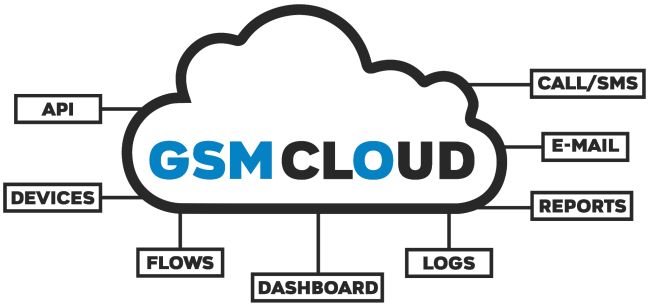
3100
Controller

Table of Contents

To GSMCLOUD

GSMCLOUD is a user-friendly monitoring and control system that uses 5G NB-IoT networks to communicate via a cloud server, i.e. centrally controlled via the Internet and a web browser.



GSMCLOUD consists of a Danish product series with many application possibilities, which can work together in one large common network and which are easy to program. All devices are plug-and-play and can be put together in unlimited combinations.

Examples of use

Electricity spot price: Reduction of the average electricity consumption.

Energy optimization: Save energy with electricity/heating/cooling optimization.

Monitoring of energy: Get an overview of KWh, water and gas consumption.

Logging of data: Reporting technical historical data as needed.

Monitoring: Alarming, condition monitoring and technical alarms.

CTS and Smart Building: Central Condition Control and Management of buildings.

PLC process control: Automation and control of processes.

System integration: Interconnection and integration with other systems.

Advantage

Cloud management: Control, overview and management from one place in the cloud.

Plug-and-Play: Quick and easy installation.

GSM Gateway: Automatic phone calls and SMS messages via the Cloud.

Flow programming: Easy and visual coding via the Cloud with nodes.

IoT network: Uses the future-proof 5G NB-IoT technology.

Dashboards and Apps: Overview on mobile, tablet and desktop.

Reporting: Automatic reports by e-mail and CSV.

API integration: Exchange of data to other systems.

Plug-and-play

GSMCLOUD is easy to install and is made according to the simple plug-and-play principle. That is that you are programming your devices in a few minutes because they are ready for use in advance. You simply need to enter the devices' 15-digit number on the cloud server as soon as you have created a free account at gsmcloud.dk.

All devices have built-in GSM and are delivered including a SIM card, which is already activated and ready for use. The devices therefore work immediately within seconds. You also don't have to familiarize yourself with the technical aspects of the device, it is known in advance by the cloud server.

Plug and play with GSMCLOUD means that you can connect a device with GSM functionality to the GSMCLOUD platform, it will automatically be registered and ready for use without the need for further configuration or integration. GSMCLOUD provides a simple and flexible solution to control and monitor GSM devices in real time, with the plug and play functionality you can quickly start using the platform and gain valuable insight into your GSM-based applications.

Easy programming

GSMCLOUD is very easy to program because you use a so-called visual Flow programming, i.e. that you connect some boxes (nodes) with the mouse on your desktop, then it works immediately. It is even live viewing, i.e. you can, at the same time as programming, see how the devices work and react while the power is on.

You do not need to be an electrician or engineer to program GSMCLOUD devices. Just a little logical thinking is required and you put the units together like Lego blocks and connect them with different kinds of logic.

5G GSM IoT network

All control and monitoring devices used for GSMCLOUD have a built-in GSM modem that works on the 5G IoT network Narrowband IoT (NB-IoT). It stands out by having an exceptionally good signal propagation and is therefore suitable for working in basements, wells and other places where there may normally be poor coverage with other networks.

The GSM network NB-IoT uses approx. 10 times less power compared to regular 2G, 3G and 4G, so battery-powered GSMCLOUD devices last much longer. GSMCLOUD has e.g. battery-powered alarms that can hold power for up to 10 years. It is one of the most advanced IoT networks in the world. NB-IoT also has high stability and large capacity.

Dashboards and Apps

Dashboards (Apps) in GSMCLOUD are user interfaces that display real-time data from GSM devices connected to the platform.

Dashboards can be customized according to one's specific needs and show different metrics and KPIs (Key Performance Indicators) such as temperature, humidity, air quality, or power consumption, depending on what the devices measure and collect data on.

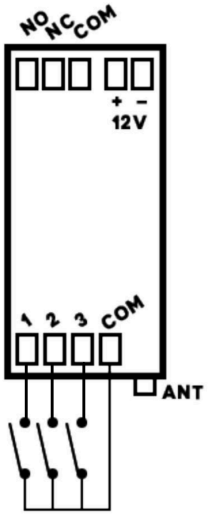
Dashboards provide a quick and intuitive way to get an overview of one's GSM-based applications and can help identify problems and make decisions based on real-time data. GSMCLOUD dashboards can also be shared and accessed from different devices and users, so everyone has access to the same information and data.

Technical data

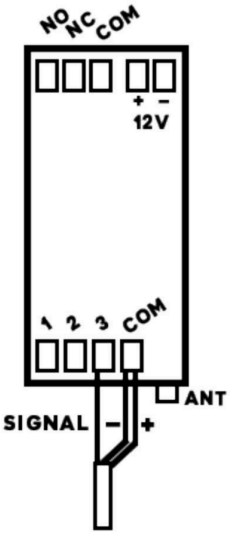
Voltaget:	12V DC
Connection:	Via screw clamps
Power consumption:	Max. 1A (12W)
GSM network:	5G NB-IoT
SIM card:	Built-in (supplied and included in subscription).
Coverage areas:	Denmark, Sweden, Norway, Finland, Germany, Holland, Belgium, England, Ireland, Switzerland, Austria, Italy, Spain, Greece, Bulgaria, Hungary, the Czech Republic, Taiwan, Russia and the United States.
Inputs:	3 inputs that can be combined with: - Digital inputs (ON/OFF) - Temperature sensor type DS18B20 (-30 to +70 gr.C) - Analog input 0-20mA /4-20mA (12V) - Pulse counter (only possible on input 3)
Outputs:	1 piece. potential-free relay NC/NO 230VAC/8A
Working temperature:	-20 to +60 degrees C
Air humidity	<90%
Cabinet dimensions:	85x35x58 mm
Tightness class cabinet:	IP54
Color cabinet:	Grey
Certificate:	THIS
Developed by	GSM Teknik ApS (DK)
Country of manufacture:	Denmark (DK)

Connections

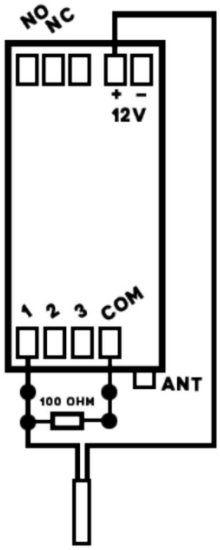
Ddigital inputs (ON/OFF):
Works on all 3 inputs 1-3



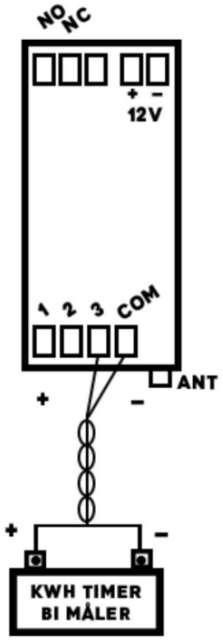
Temperature sensor (DS18B20):
Works on all 3 inputs 1-3
Wire colors are typical
Red = plus, black = minus, yellow = signal



Analog inputs 0-20/4-20mA:
Works on all 3 inputs 1-3
A 100 ohm resistor must be used



Heart rate counter:
Only works on input 3. It is important to reverse plus and minus correctly and use the snog and shielded cable.



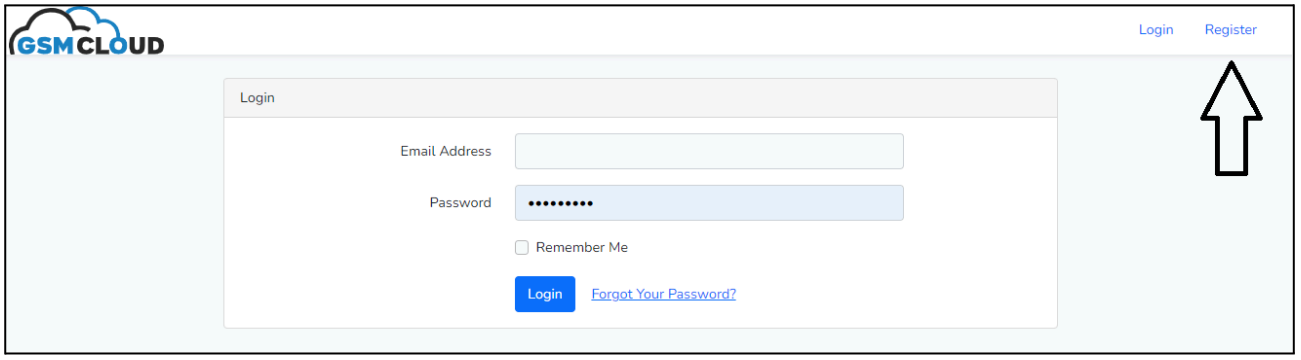
1. Create Account

All programming of GSMCLOUD products takes place on an online platform.
Create an account and get started quickly.

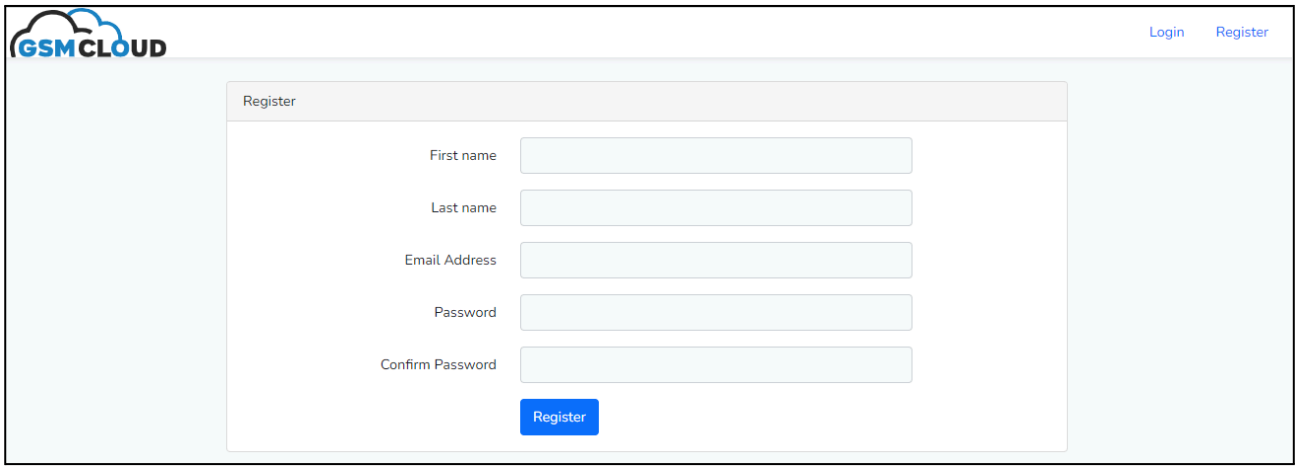
Please note that a credit card must be linked to pay for the subscription and any consumption of SMS and phone calls. The first 30 days is a free trial period for the devices themselves, but if you want to use SMS and phone calls, the credit card must first be linked.

How to create an account:

Go to the website:www.gsmcloud.dk and click on the link "Register" at the top right of the page.



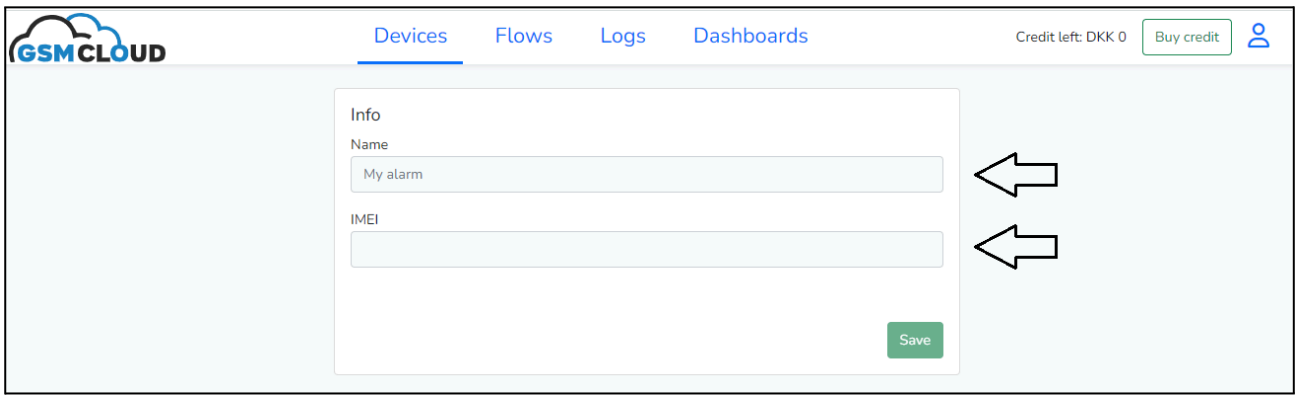
Then fill in your name, email and desired password. Then press the “Register” button.



Now your account is created and ready to use.

2. Add device

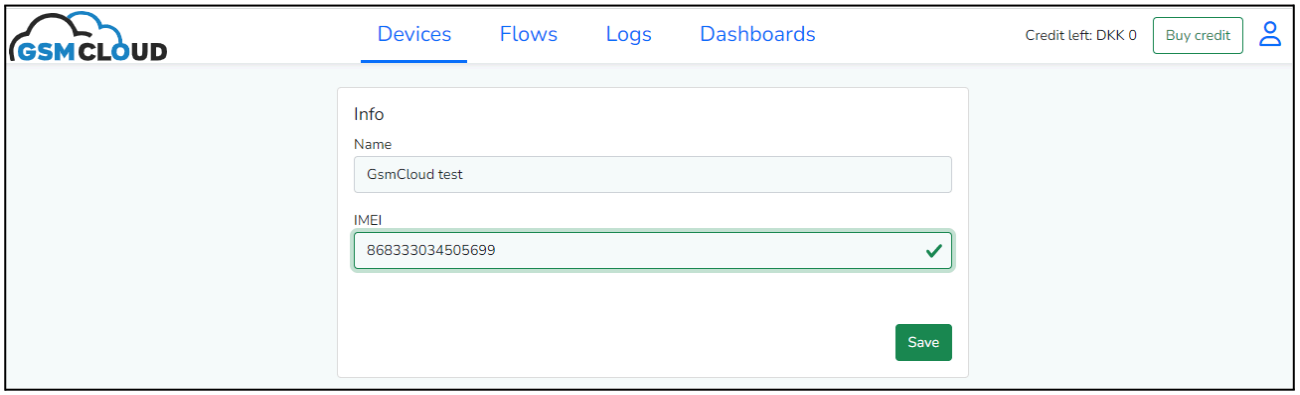
The first tab on the menu is called “Devices”. This is where you create your physical units.



Press the “Create” button and it will ask for the desired name and the device's IMEI number, which is a unique 15-digit number found on a sticker on the side of the device below the barcode.

Name e.g. your device “Alarm”.

As soon as the IMEI number is entered, a list will automatically appear with different options:

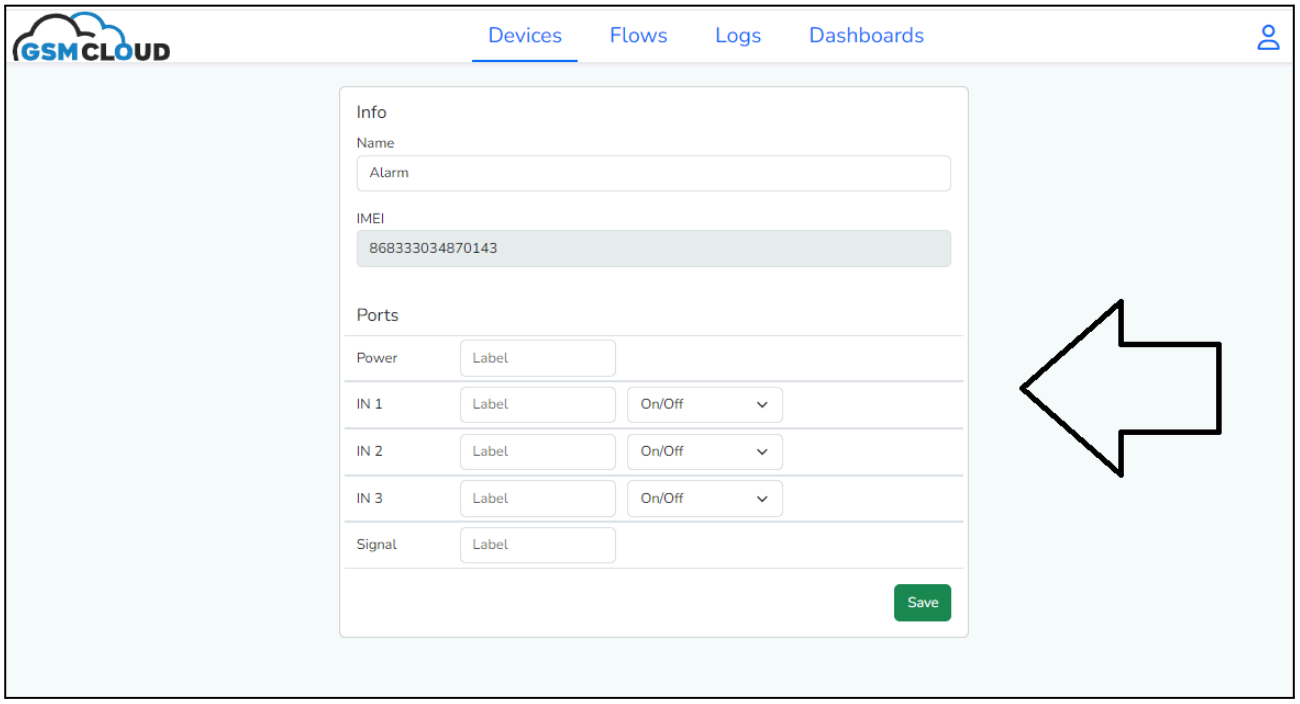


Press the "Save" button and the device is created.

If the device has already been created or is not known, an error message will appear:
”The IMEI is already in use. Please delete the other device before trying to create a new one”

If that happens, get in touch your dealer and ask for assistance.

Now you have to decide how the inputs should be configured. If, for example, must work as a water alarm with a level switch/float on input 1, then you do not have to change anything, but simply press the "Save" button at the bottom.



Here is a description of what "Ports" means:

- Power: It tells later whether the device has power or not.
- IN 1: Input 1, which can be selected as either “On/Off”, “0-20mA” or “Digital temperature”.
- IN 2: Input 2, which can be selected as either “On/Off”, “0-20mA” or “Digital temperature”.
- IN 3: Input 1, which can be selected as either “On/Off”, “0-20mA”, “Digital temperature” or “Counter”.
- Signal: This is the signal strength that shows how good the antenna coverage is.

All ports can be renamed to something else. This is done by writing the new name in "Label" and pressing "Save". You do not need to change these names.

If you later want to correct the name of the device or change the port's hub etc., you can press "Edit" on the "Devices" overview page.

When you have pressed "Save", you return to the overview page and are in the "Devices" tab. Now your device is created and ready for the next step.

3. Create Flows

Flows is the next step, which is where you program the 3100 Controller and give it different functions.

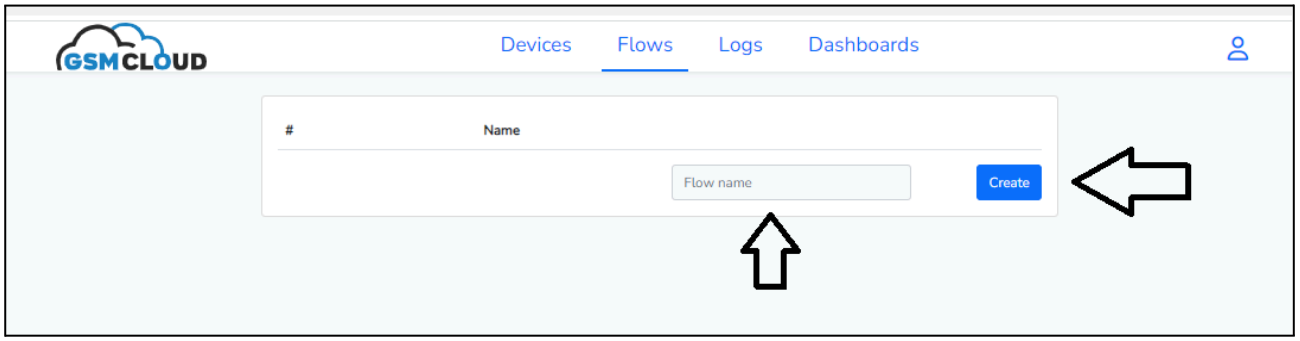
Flows is an abbreviation of Flow programming, i.e. you apply a form of logic in a visual form instead of having to apply coding.

Flow programming is a way of programming that focuses on how data moves through the system, rather than thinking about step-by-step instructions.

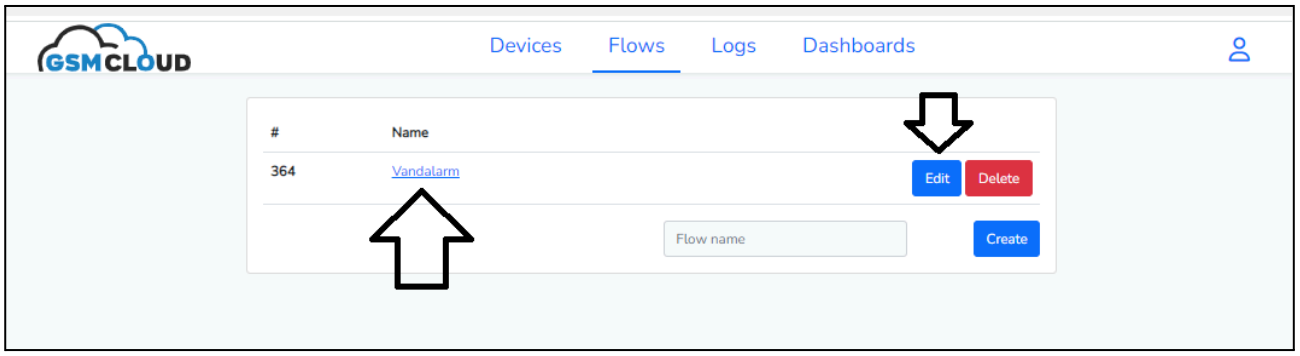
Flow programming makes it easier to break down large and complex systems into smaller, reusable parts that can be understood and maintained more easily.

GSMCLOUD uses Flow programming and calls it "Flows".

Start by selecting “Flows” in the menu bar. Here you can, for example, create a flow that you call "Water alarm" and press the "Create" button.



After this, your Flow "Water alarm" has been created and is now ready to be customized. Press the "Edit" button or click on the "Water alarm" link. You will then come to your new flow, which is called "Water alarm":

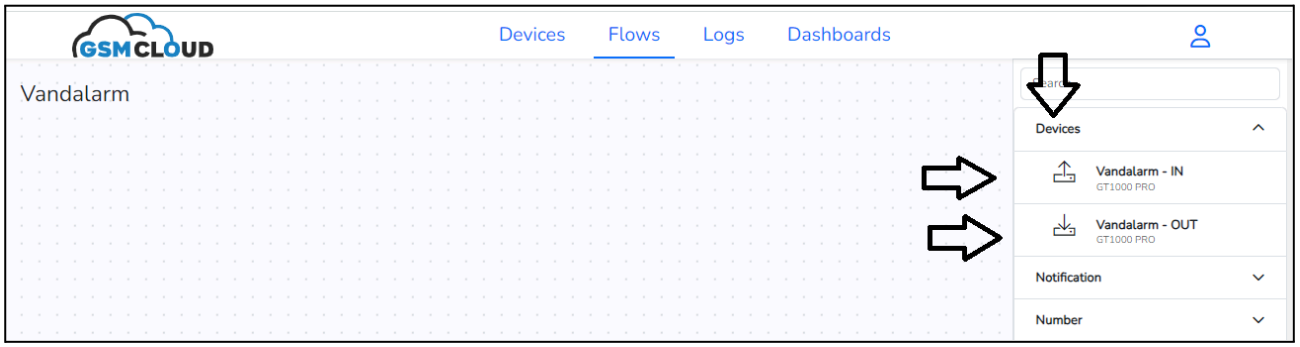


Flows-menu: Devices

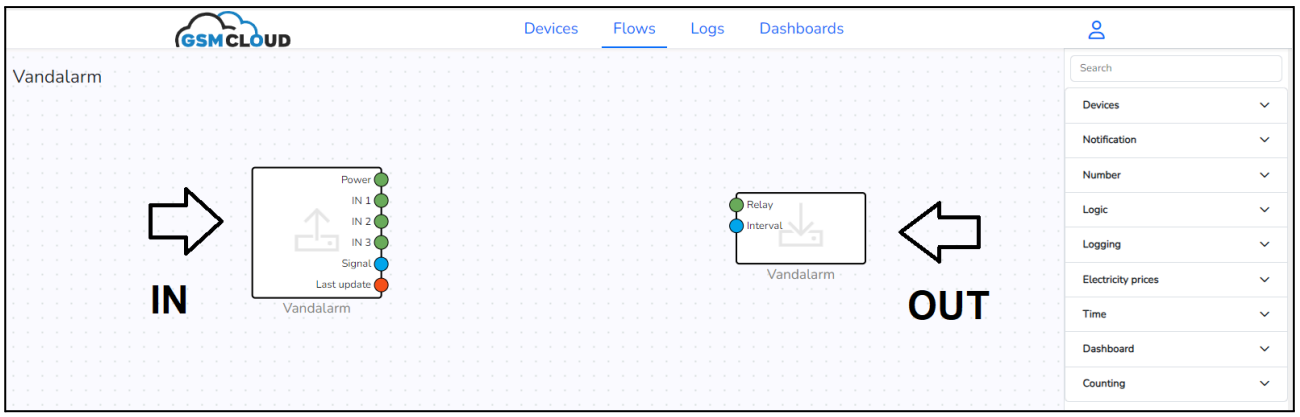
Now you have an empty "desktop" where you have a new submenu "Devices".

Here you can see your device on the right, which you created and called Water Alarm.

It is split into 2 parts: “Water alarm - IN” and “Water alarm - OUT”:

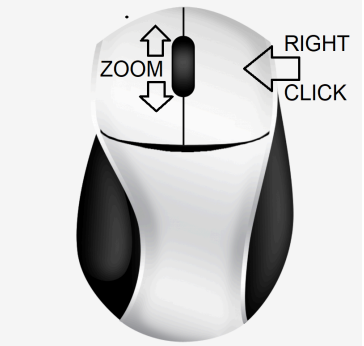


Press once on each of these IN and OUT icons under the “Devices” menu in the right menu. Then they automatically enter the desktop. You can also left-click on them and drag them onto the desktop to your desired location:



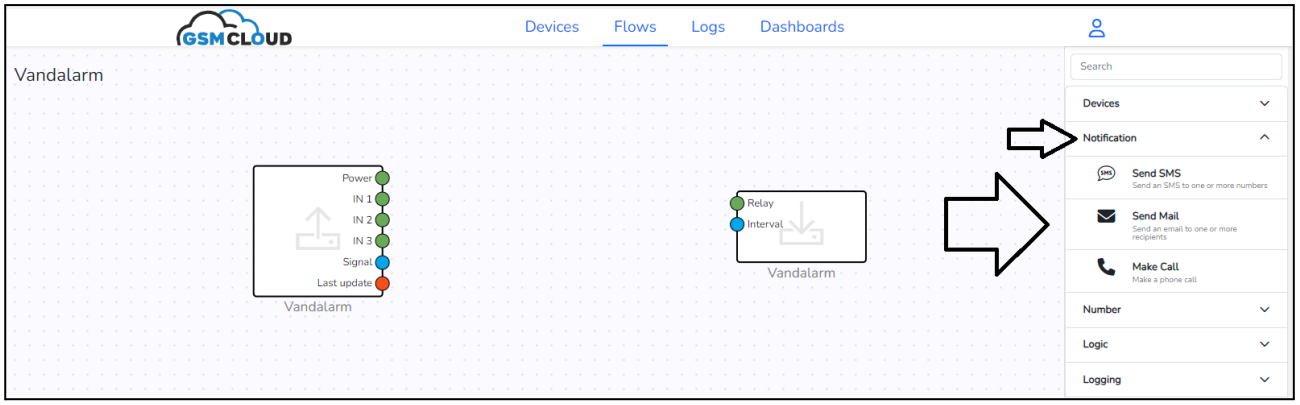
TIPS:

- When you now need to work on the "desktop" in Flows, you can zoom in and out with the scroll wheel on the mouse.
- You can also move around the "desktop" by right-clicking on the mouse, so that you move the centering as needed.



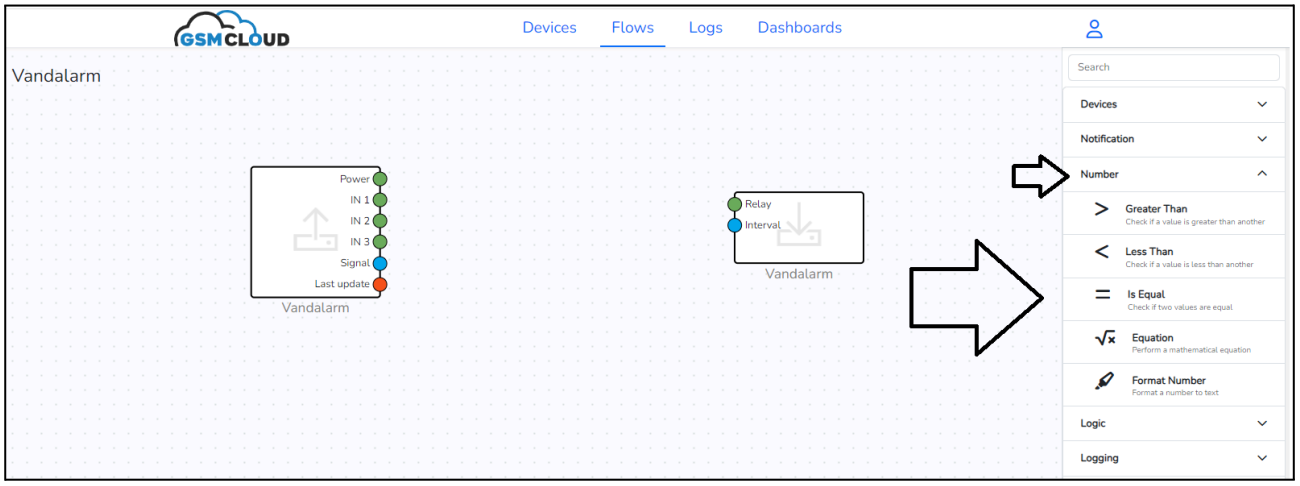
Flows-menu: Notification

The next submenu is called "Notification" and consists of some so-called Flow nodes, which are function boxes for communicating e.g. by SMS, email or call. These nodes are placed on the desktop and connected to each other and to the modules via lines, so that they work together.



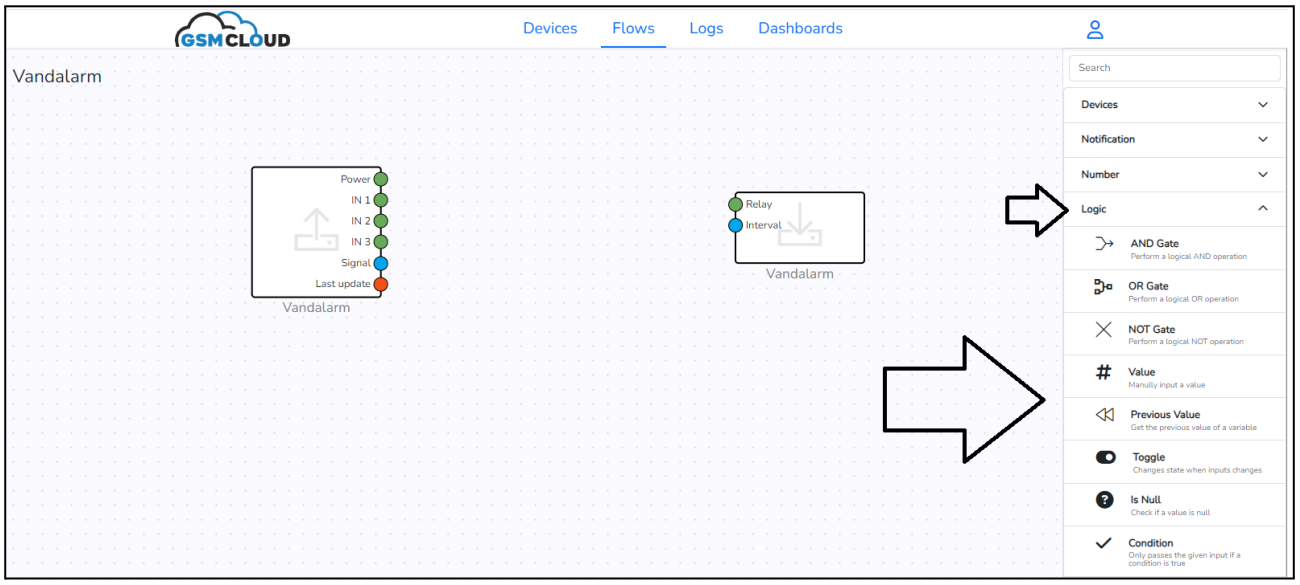
Flows-menu: Number

The next sub-menu is called “Number”, and here are also some Flow nodes, which are some function boxes that process numbers and which can be placed on the desktop and connected to each other via lines, so that they work together that way.



Flows-menu: Logic

The next sub-menu is called “Logic”, and here are also some Flow nodes, which are some function boxes that process logical values such as true “true” or false “false” and which can be placed on the desktop and connected to each other via lines.



Flows-menu: Logging

The next sub-menu is called “Logging”, and here are some Flow nodes that process data and save it in different logs. Read more in section 4.

Flows-menu: Electricity prices

The next sub-menu is called “Electricity prices”, and here are some Flow nodes that automatically obtain daily electricity prices so they can be used to build flows.

Flows-menu: Time

The next submenu is called “Time”, and here are some Flow nodes, which are used to build a flow with date and time. For example control with pulses, turning on and off based on times, etc.

Flows-menu: Dashboard

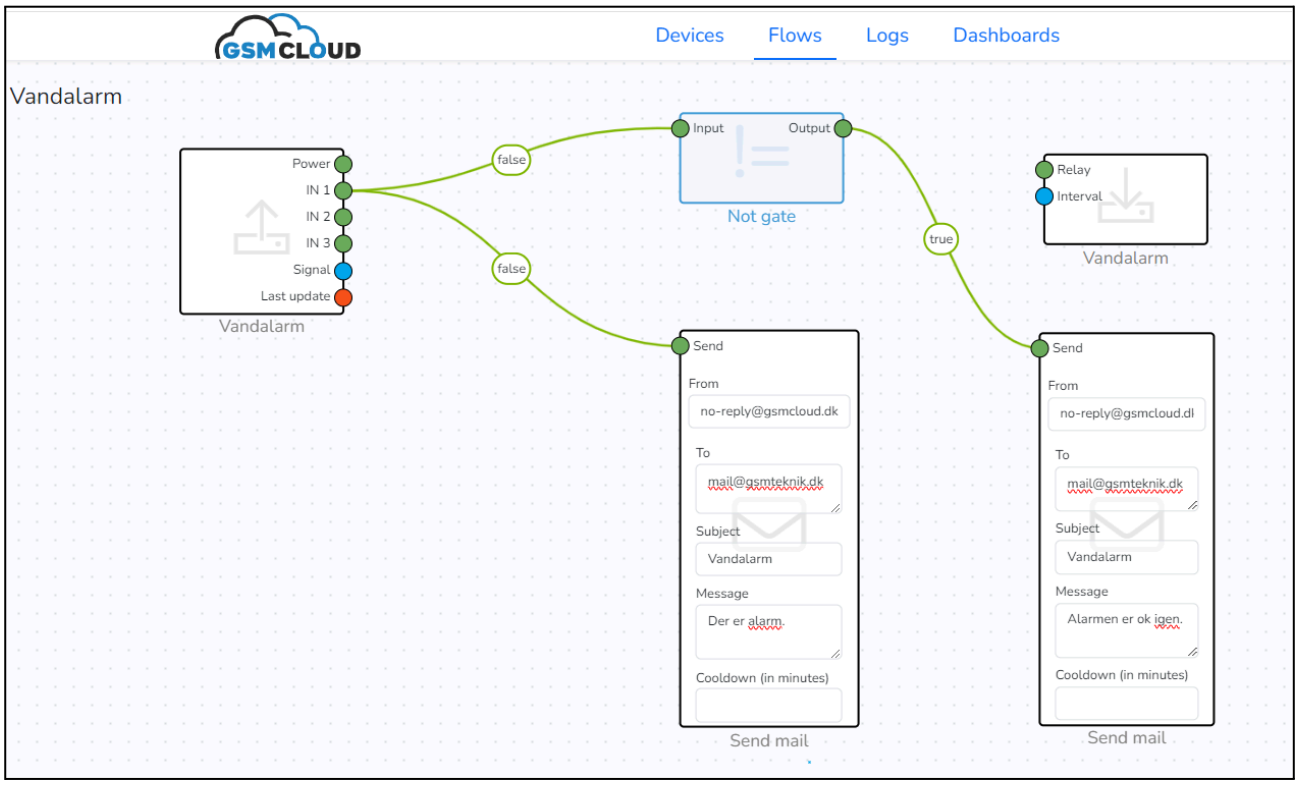
The next sub-menu is called “Dashboard”, and here are some Flow nodes which are used to build a dashboard ie. nodes that connect the flow to the dashboard. Read more in section 5.

Flows-menu: Counting

The last sub-menu is called “Counting”, and here are some Flow nodes, which are used to count either pulses or values.

Example of Flow: Water Alarm

Here is a description of how to create a flow for an alarm:



Oprettelse step-by-step:

1. You have already inserted the IN/OUT devices. You place IN furthest to the left and OUT you furthest to the right, as in the image above.
   The IN module is the box with “Power”, “IN1”, “IN2”, “IN3” etc.
   The OUT module is the box with "Relay" and "Interval".

2. Get 1 pc. "Not gate" node from the Logic menu and place it roughly as in the example.

3. Get 2 pcs. "Send Mail" notes in from the Notification menu and place them roughly as in the example.

4. Now connect all the devices and the nodes with each other as shown in the above image. You connect them by placing the mouse on the round circle and holding down the left click and moving the mouse to the other round circle and releasing the left click. Then it automatically draws a line. If you want to delete a line, you will have to delete one node, bring in a new one and draw a new line.

Description of what happens in this "Water alarm" flow:

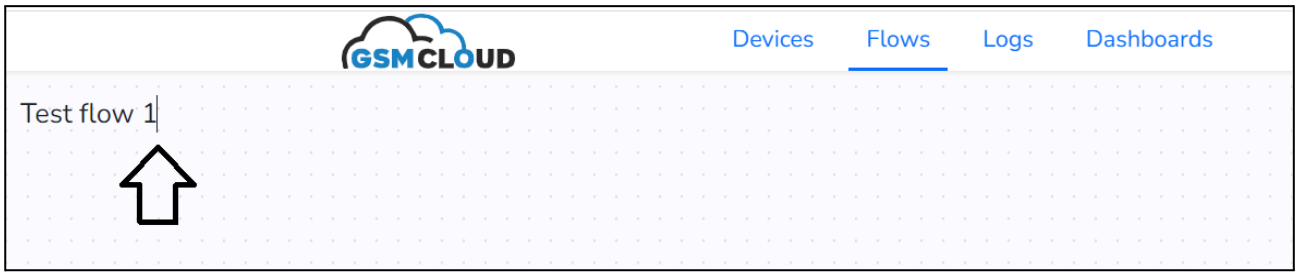
Overall, this simple flow shows how an email is sent in case of an alarm and also an email when the alarm is ok again.

IN1 on the unit module on the left is the signal coming from the level switch. It is connected so that it closes the connection, ie. if too much water comes in and the float faces upwards, then the connection is short-circuited "true" and an alarm must be given. If it faces downwards and there is no alarm, then the signal is interrupted, i.e. "false". In the example, IN1 shows the line "false", i.e. that there is no alarm.

The signal from IN1 is transferred to "Input" on the "Not gate" node, which reverses the signal on "output" so that instead of being false, it becomes true. Thus, the alarm signal from IN1 will now be "true" further in the process if there is no alarm.

TIPS:

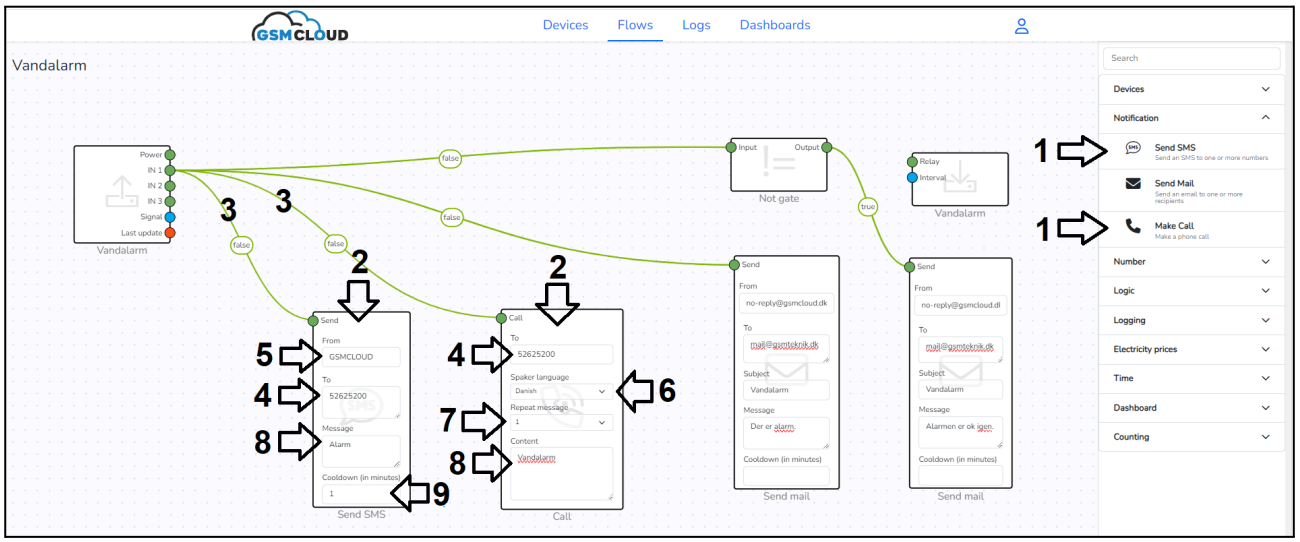
- You delete a node or a device on the desktop by selecting it and pressing the "Delete" key.
- Avoid using the "Delete" key to correct texts in the Flow, because then it deletes the node or unit. Instead, place the cursor in the text and use the "Backspace" key to delete.
- You can change the name of the Flow by clicking on the flow name at the top left. Then you overwrite the text and use backspace to delete with.



Send SMS or call

In our flow example "Water alarm" it has only been made so that the device sends an email in the event of an alarm. If you also want it to call or send SMS, then you can build on the flow and add extra nodes. Please note that it costs extra every time you send an SMS or call. It therefore also requires that you have a credit card associated with it, which is described in section 6.

Example of being able to send SMS and make calls:

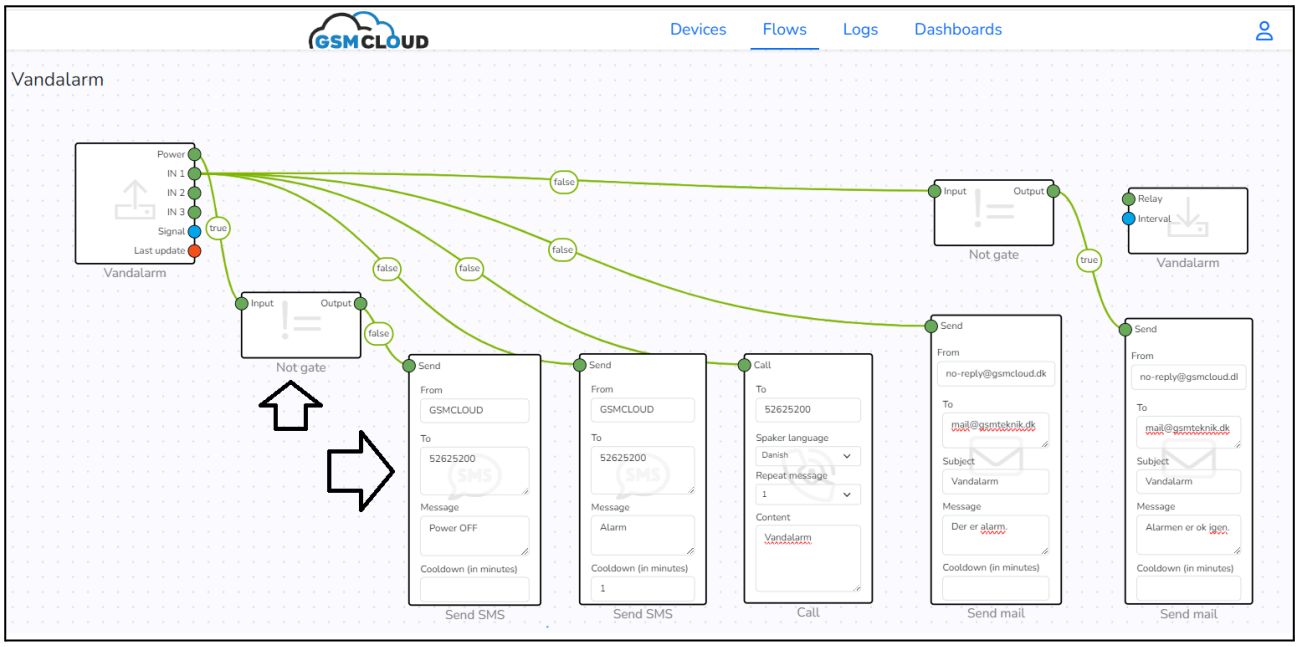


Here's how you do it:

1: Press the buttons "Send SMS" and "Send mail" in the "Notification" menu.
2: Place the nodes in approximately the same place as shown in the image above.
3: Draw lines from “output” to “send” and Call” as shown in the picture.
4: Write the phone numbers to which the nodes should send or call. Do you want it to be sent or several numbers are called, then press "Enter" between each dialed number so that they are on top of each other.
5: Write the name or number from which the SMS is to be sent (max. 11 numbers or letters).
6: Choose whether the reading should be in Danish or English.
7: Choose how many times the reading should be repeated.
8: Write the text to be sent as an SMS or read aloud.
9: Enter a value for “Cooldown” in minutes. If the field is empty ie. zero, then the system can send many SMSes in a row. If it says e.g. 1, then one minute will pass before it can send One SMS again etc.

Message in case of power failure

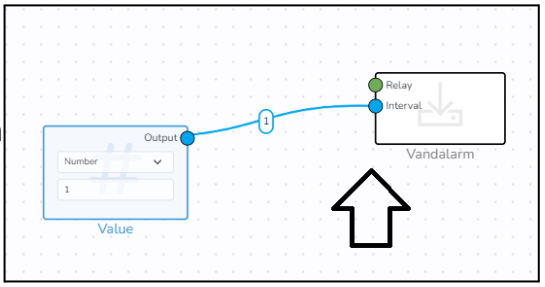
If you want to receive an SMS message in the event of a power failure, you can add an SMS node as shown in the picture. A "Not gate" node must be introduced in front of:



The SMS message is sent when the signal to the SMS node goes from "false" to "true". When the device has power, "Power" shows the signal "true", and when the device loses power, the signal goes "false".

TIPS:

- The server updates all signals approx. every 10 seconds.



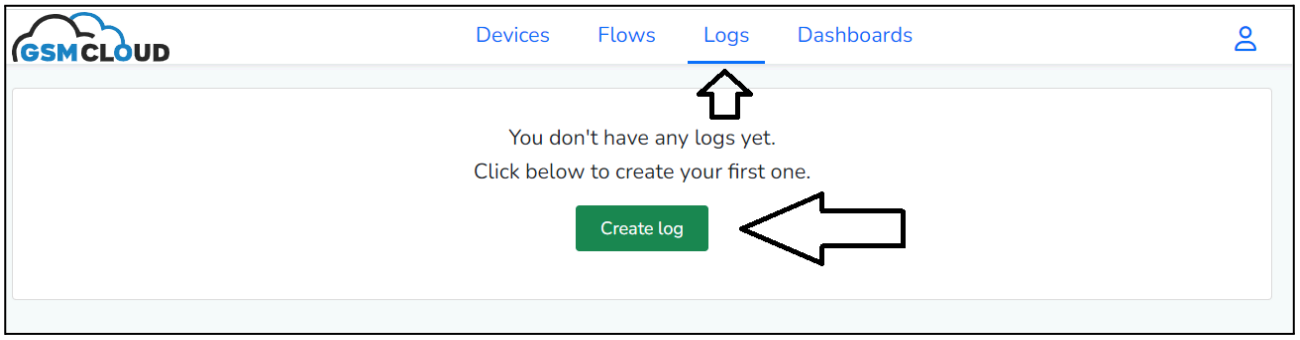
- If you want it to only update e.g. every minute, then you need to change the “Interval” value on the OUT part of the device. You can, for example, do by adding a value to it with the "Value" node in the "Logic" menu as shown in the picture:

  Note that the value “1” means 1 minute.

4. Create Logs

The third main menu item is called "Logs" here you can log data as needed. You can create all the logs you want, without restrictions.

The first time you go to the "Logs" page, you will see a green button "Create log", which you press to create your first log.



After this, the first Log appears on the TV list. It is called "Unnamed log", and you can rename it to e.g. "Water alarm" by placing the cursor with the mouse over "Unnamed log", right-clicking with the mouse and writing the new name. Tap a random spot on the desktop and the name is saved.

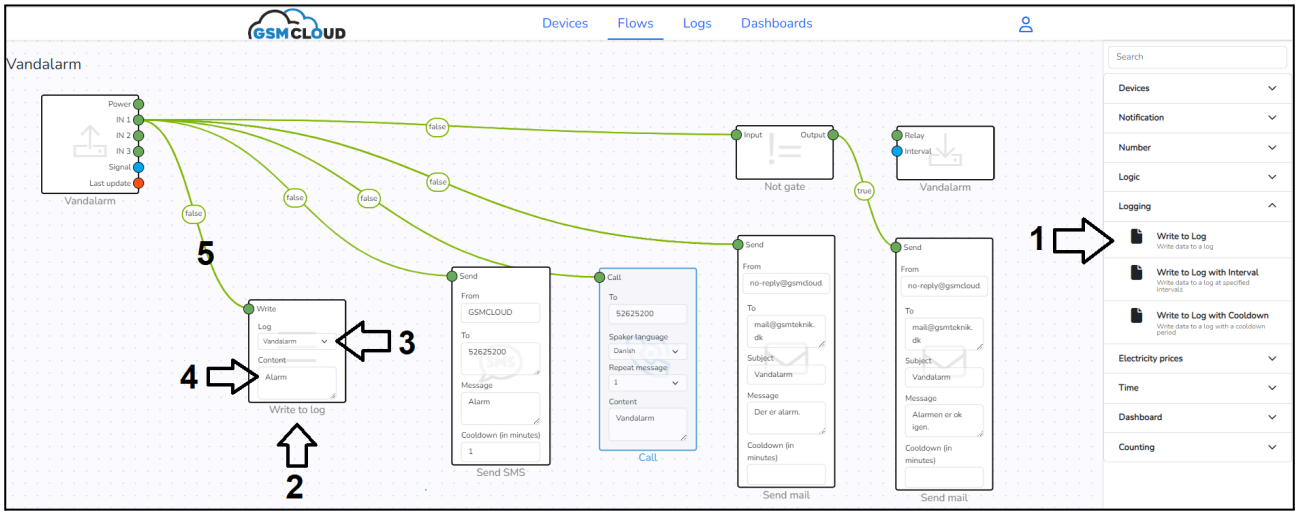
Now you have a log ready to use in your Flow. Then go back to "Flows" and open your "water alarm" flow.

TIPS:

- You can press the "Clear log" button to delete the contents of your log.
- You can delete the entire log and remove it completely by pressing the "Delete" button.
- The "Schedule" button can automatically send you emails with the contents of the log, e.g. daily with the latest new logs within 24 hours.

You must then:

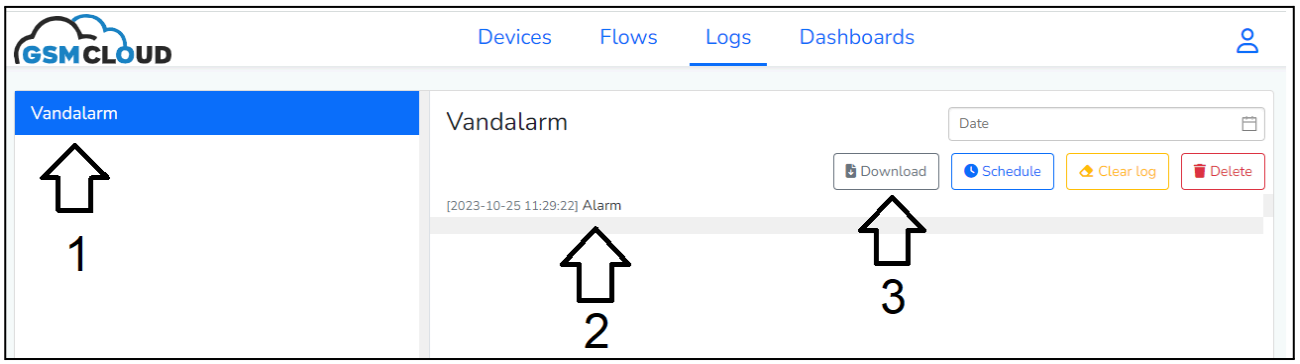
1: Click on the "Write to log with pulse" node in the "Communication" menu and it enters the flow.
2: Place the node as shown in the picture.
3: Select log "Water alarm" in the field.
4: Write an optional text in the "Content" field. This text will then be logged now that there is an alarm.
5: Draw a line from “Output” to “Write” as shown in the picture. When the signal on this line goes from false to true, the text "alarm", which is saved under point 4, will automatically be logged.



This is a simple example of how to log. That is you can go back in time and see what events have taken place.

Enter the “logs” menu and find the log content by:

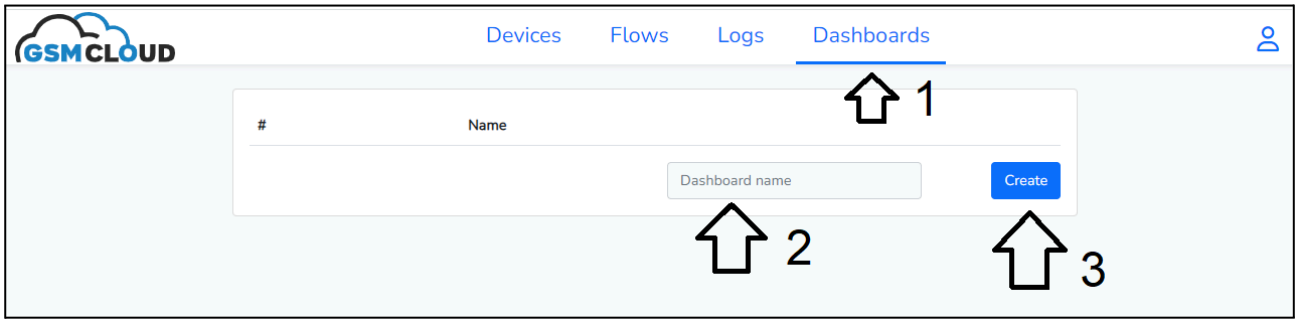
1: Click on the log named "Water alarm"
2: View the last alarm event.
3: You can download the log by pressing the “Download” button. A CSV file is then downloaded.



5. Create Dashboard

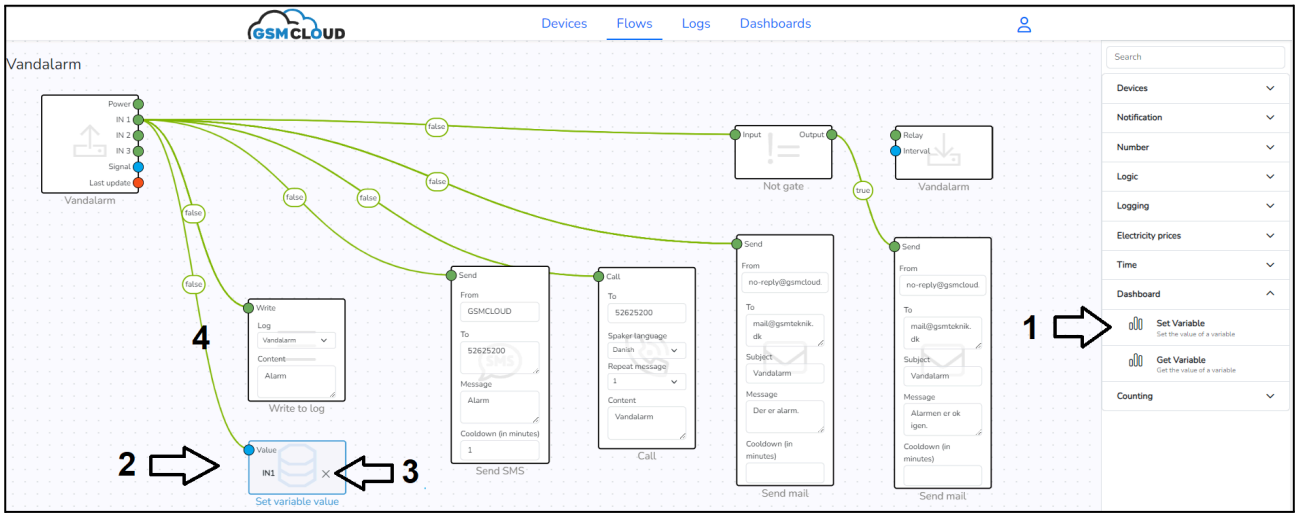
The fourth main menu item is called “Dashboards”. Here you can create your own dashboards, which are a kind of Apps. You can create all the dashboards you want.

To create a dashboard:
1: Go to the “Dashboards” page.
2: Click with the mouse on "Dashboard name" and rename it to e.g. "Water alarm".
3: Press the “Create” button.



The next step is to tell the dashboard which values it should present in the dashboard.
These values must be retrieved in Flowet. Therefore, you have to go into the flow and add a node that automatically obtains these values and numbers.

Go to the “Flow” menu.



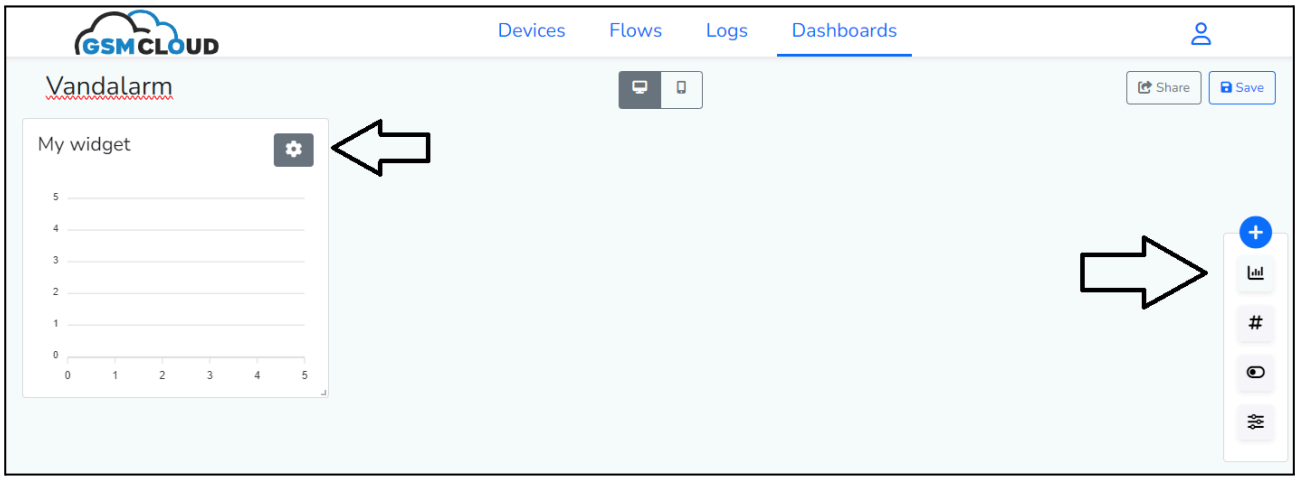
1: Select the submenu "Communication" and press the node "Set Variable".
2: Place the “Set Variable” as shown in the image above.
3: Press in the field "Set Variable" and press the button "Create new". Write e.g. “IN1” i the “name” field. Press the "Save" button and now select "IN1". After this, “IN1” will appear in “Set Variable” needs.
4: Draw a line from “Output” to “Value” as shown in the above image.
Now we have to go back to the "Dashboard" menu and edit further on our dashboard.

Press the "Edit" button next to "water alarm" in the dashboard overview.

Now there will be an empty desktop with the name "Water Alarm".

Press the "Edit" button to edit and add so-called Widgets to the desktop.

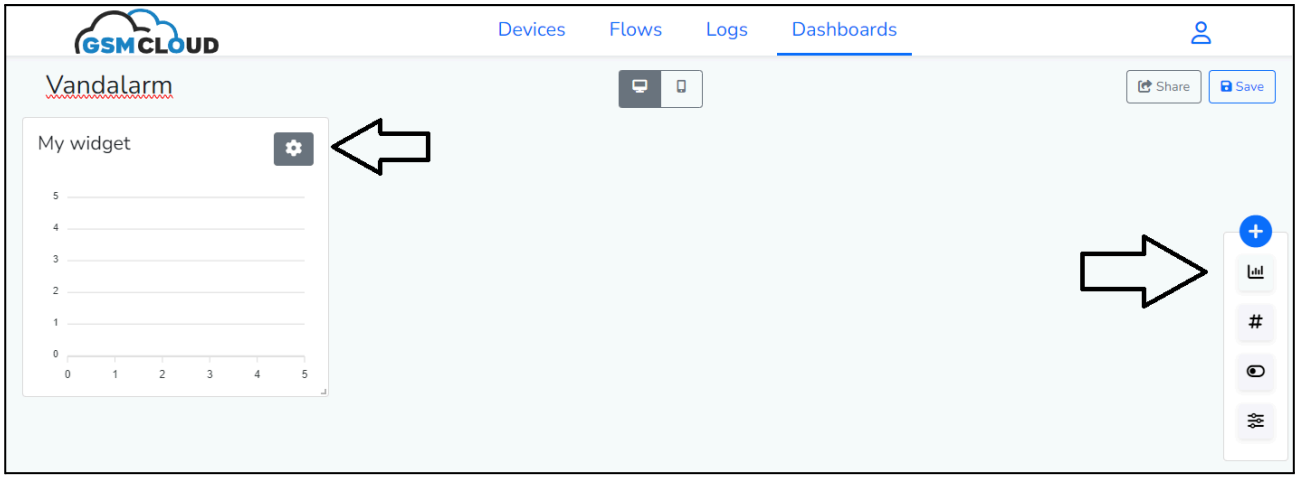
Now a menu appears on the right-hand side, where there are 4 options.



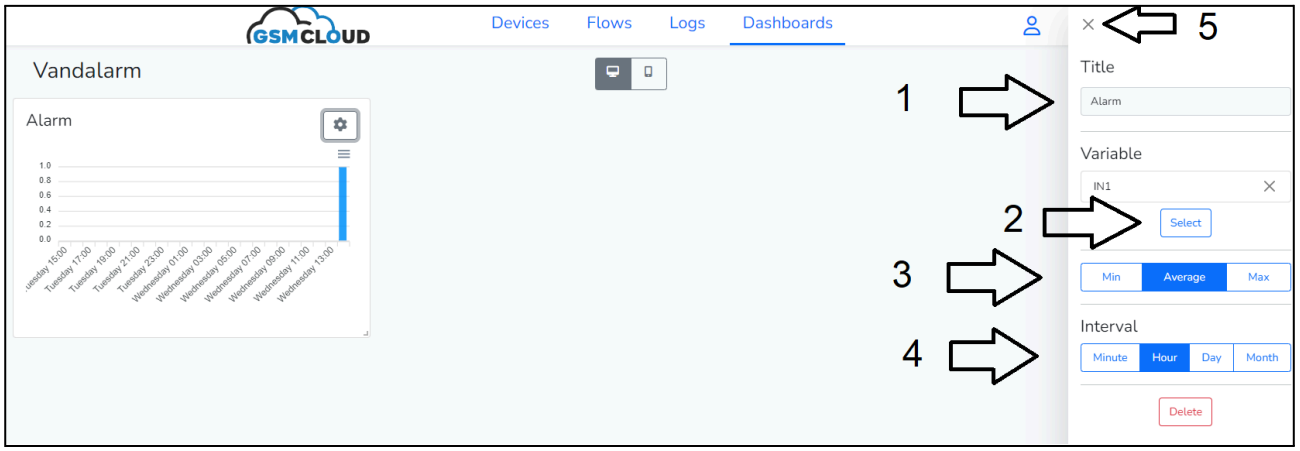
Press the top icon below the “+” symbol, which looks like this: 

This is an icon that creates a widget that displays a graph of events.

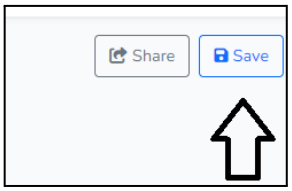
A widget called "My widget" will then appear on the screen. Press the button  .



The next steps are to edit "My Widget" so that it gets a different name and displays the graphs that you want.

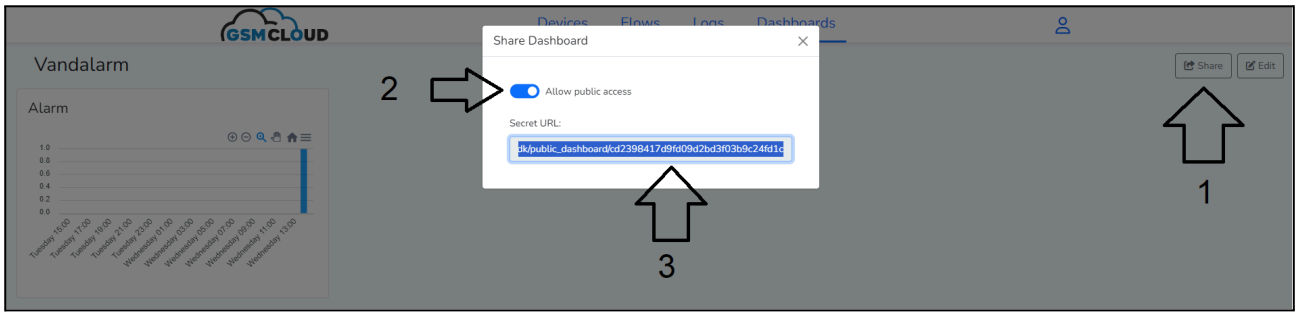


1: Give the new widget a different name, e.g. “Alarm”. Type with the mouse.
2: Press "Select" and choose the variable "IN1" that we created a little while ago.
3: Choose which value to display. "Average" shows the average value in the selected interval.
4: Select the desired interval that the graph should display in loop. Eg. "Hour", where they then show it
last 24 hours with a new value every hour.
5: Save the settings by pressing the "X" at the top, after which the window will close down and you should
save by pressing the "Save" button.



Now we just need to be able to share a secure link, so that the dashboard e.g. can be viewed on a mobile phone, tablet or desktop.

This is done as follows:



1: Press the “Share” button.
2: Activate the button with the text "Allow public access"
3: Select the long URL with the mouse and press "Ctrl-C" to copy the url.
4: Send e.g. this url by mail to yourself or those who will use it.
5: Press the url's link and a dashboard will appear.

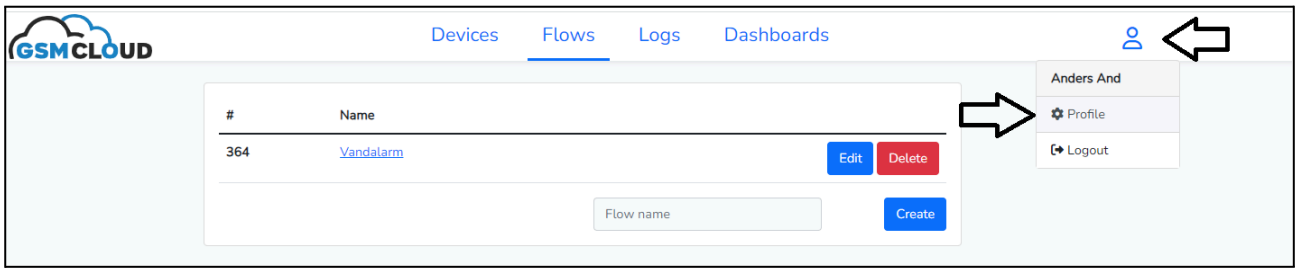
Note that the link is only valid if the dashboard is not subsequently edited. If you edit, you must create a new link and send it forward again. The dashboard updates the result automatically every minute.

6. Add credit card

In order to get GSMCLOUD to send SMS messages or call the phone, you need to have a credit card linked to the account. You also pay a monthly subscription for the device from the same credit card. The first 30 days are free to test with, but not with SMS and phone calls.

Once you have created a credit card, an invoice is sent once a month for the amount withdrawn with a specification of consumption. It is therefore important that you fill in all information on your profile, such as company name, CVR number, address etc.

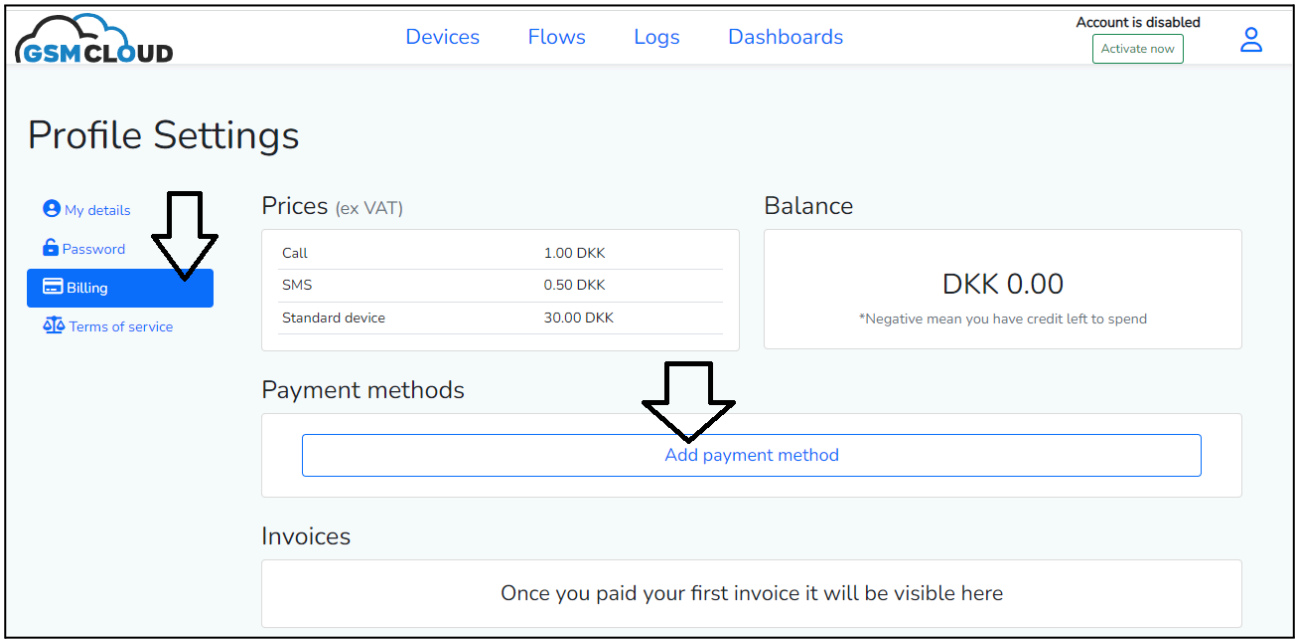
You do this by pressing the person symbol at the top right:



Then press "Profile" in the small menu under your name.

Now select "Billing" in the menu on the left and you can see the current rates.

Add a credit card such as Visa-Dankort, Visa or Mastercard by pressing "Add payment method"



Now you are ready to use GSMCLOUD at full scale.

7. Support

Do you have questions or need help?

Contact our hotline:

Telephone: **+45 93 10 24 34**

Email: **support@gsmcloud.com**

Opening hours: **Monday to Thursday at 9 - 16 and Friday at 9 - 15.**

Our team is always ready to assist you!

We are dedicated to providing the best possible customer service and product experience. We are always ready to listen to any challenges and all kinds of questions and provide the necessary assistance to solve any problems as quickly and efficiently as possible.

To note: