



# **SOKORO**

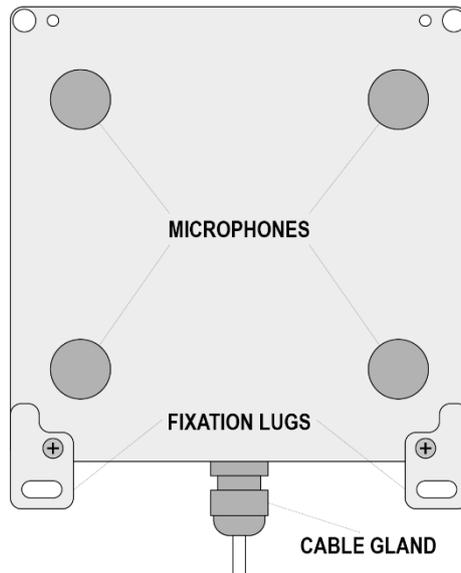
## **Installation and configuration manual**

**V1.0.x**

5 May 2023

## 1. Introduction

SOKORO detectors include an acoustic antenna with 4 microphones arranged on the background plane of the detector (Fig. 1). It is this device that detects sound events and determines the direction of their source.



*Fig. 1: Bottom view of the SOKORO*

## 2. Placement

The detector SOKORO must be placed:

- horizontally, with the microphones directed downwards,
- at a height between 3m and 6m from the ground.

The housing is supplied with 2 fixing lugs which allow either to fix it on the wall or by strapping it on a mast using brackets not supplied (or any other equivalent fixing system). The detector is very light (700 g), it does not require a particularly robust fixing.

## 3. Wiring

Being powered in PoE mode (by the IP network cable 4 pairs cat5e or better), the passage of a single cable is to be expected (cat 5e cable).

### Instructions:

- Open the casing by unscrewing the top cover,
- Introduce the cable through the cable gland,
- Crimp a RJ45 connector at the cable end and connect it to the PoE socket. To crimp the flexible RJ45 socket, after passing the cable through the cable gland, it is necessary to remove the protective cover over a length of approximately 2.5cm. Be careful not to untwist the pairs over a length exceeding 10 to 12mm.
- Close the casing by taking care of the placement of the sealing rubber.

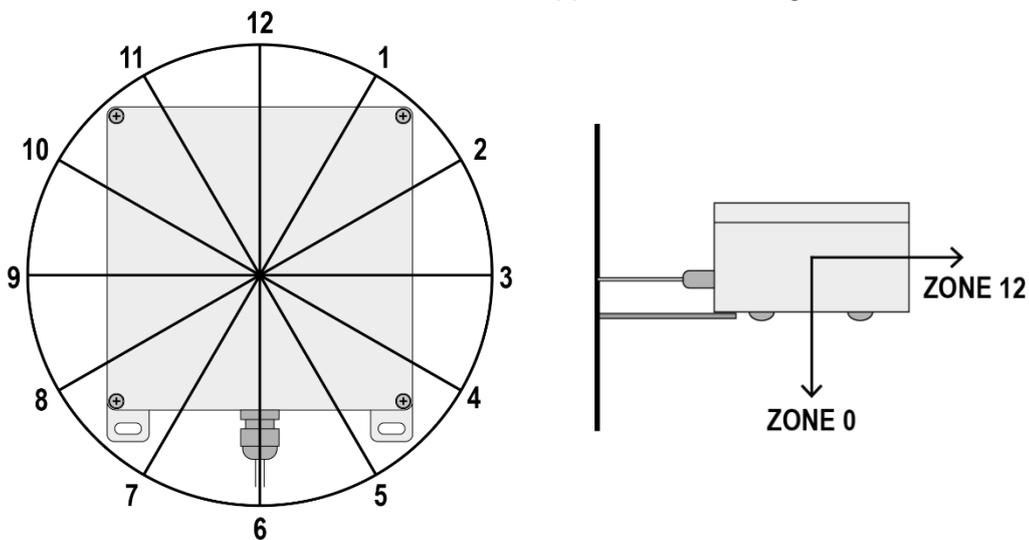
## 4. Configuration

The detector is configured either:

- from its embedded website,
- from the video protection software, to set the actions associated with the notifications.

The detector's 360° listening area is divided into 12 zones of 30°. One additional zone 0, facing downwards, indicates that the source is located under the detector (Fig. 2).

When the SOKORO sends a notification, it indicates the zone which corresponds to the direction of the detected source: e.g., "source located at 2 o'clock", "source located at 7 o'clock", etc. The "12 o'clock" direction is the one opposite the cable gland.



*Fig. 2: (left) Top view of the SOKORO indicating the directions towards which the camera is oriented after a notification. (right) Side view of the SOKORO indicating the direction of zone 12 (front) and zone 0 (bottom).*

The parameters can be reset to the factory configuration by pressing the push button on the electronic card for about 10 seconds and then releasing it. The reboot then takes place.

### 4.1. Operating Modes

The SOKORO has two operating modes:

- **Detached mode:** it operates autonomously, it is not controlled by VMS type supervision software. Notifications are sent to a listening server to be defined or directly to a PTZ camera. This is the default mode.
- **Attached mode:** it is controlled by the VMS which, alone, can configure it and transmit commands to it. Notifications are sent to the VMS.

The configuration website adapts to the current operating mode:

- **Detached mode:** it allows you to configure the SOKORO.



- **Attached mode:** it is reduced to a simple role of displaying the operating parameters of the SOKORO. No intervention is possible. The settings can only be made from the VMS supervision software.

The documentation will therefore focus on the **detached mode**.

## 4.2. Configuration website

To access the SOKORO configuration website:

- Connect the SOKORO to a PoE injector and link it to a PC,
- Change the PC network parameters to set it in the SOKORO network:
  - o IP address: **10.25.100.x**
  - o Subnet mask: **255.255.255.0**
  - o Gateway: **10.25.100.1**
- In a browser webpage, type the SOKORO default IP address: **10.25.100.10**,
- Log in the configuration website using the default login (these login details must be changed after first login):
  - o Username: admin
  - o Password: admin

You can also access the configuration site using curl:

```
curl -u admin:admin -X GET http://10.25.100.10/configs.cgi?guid=xxx
```

The configuration website has 4 pages:

- **Connections**
- **Notifications**
- **Monitoring**
- **Settings**

All pages offer a link [Print this page](#) to build up a detector configuration folder.

### Connections

At first login, it is mandatory to change the connection parameters because all detectors have, by default, the same IP address: **10.25.100.10**.

Placed without modification in the same network, several detectors would seriously disrupt its operation.

When the IP address, the subnet mask and the gateway address have been changed, it is necessary to restart the detector. To do this, click on the button "Restart the detector".

## Connections Parameters

<b>Connections</b>	SOKORO : 10.25.100.10 - CHIHIRO-v0.32.19 - SOKO-v0.9.0 - f412fa469700	
<b>Notifications</b>	MAC : <input type="text" value="ac:1f:0f:11:88:bb"/>	The restart of the detector takes about 2 minutes <input type="button" value="Restart the detector"/>
<b>Settings</b>	IP Address: : <input type="text" value="10.25.100.10"/>	
<b>Options</b>	Subnet Mask : <input type="text" value="255.255.0.0"/>	<input type="button" value="Upgrade firmware"/>
	Gateway : <input type="text" value="10.25.1.1"/>	
<a href="#">Print this page</a>	<input checked="" type="checkbox"/> Use the 802.1x protocol	
	Username : <input type="text"/>	
	Password : <input type="text"/>	
	<input type="button" value="Save"/>	

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**Warning:** the IP address of the detector having changed, the URL of the website as well and it must be modified in the browser to find the connection to the configuration website.

If the detector has changed networks, it is necessary to reset the network interface of the configuration PC.

It is also possible to define detector Subnet Mask and to use a routed network by indicating the address of the Gateway allowing access to the routed detector network.

### IEEE 802.1x

The connection to a 802.1x network is done with the PEAP (Protected EAP) authentication method. Tick the box “Use the 802.1x protocol”, enter the username and password of the network, then click “Save”.

### Firmware update

Click on the “Upgrade firmware” button to start the update procedure.

### Language

The two small flags allow you to choose the display language for the website. They are only present on this page but affect the entire content of the site.

## Notifications



**Connections**

Notifications

Settings

Options

[Print this page](#)

### Notifications

SOKORO : 10.25.100.10 - CHIHIRO-v0.32.19 - SOKO-v0.9.0 - f412fa469700

Notification protocols::  AXIS  DAHUA  HANWHA  HIKVISION  UNVIEW  
 VisiMAX  
 HTTP  TCP  UDP

Identifier (max. 24 char)::   
This identifier is included in the notification messages HTTP, TCP et UDP. It is trimmed at 32 characters.

Listening server for notifications

IP Address::   
Listening port::   
Presets offset::   
Username:   
Password:

Emission of a test notification (selected zone)

Zone:

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### Notification protocols

Choose the notification protocol (HTTP, TCP, UDP) or the brand of the camera to notify. TCP notifications are enabled by default.

- **HTTP**

These requests are in the form of a GET type HTML form submission. They can be treated as such by an HTTP 1.1 listening server. They comply with the HTTP cgi version 1.1 standard and are of the form:

*GET http://10.25.100.10/configs.cgi?guid=f412fa455818 HTTP/1.1*

- **TCP**

This protocol is completely secure; however, the transmission of the notification is a little slower (between 150 and 200ms).

A TCP notification results in:

- the opening, by the detector, of a TCP session,
- the transmission of the notification frame,
- then the closing of the TCP session.

Generic TCP notifications are typically identified by the listener server using a mechanism of "filtering by content" of the notification frame.

Generic TCP notifications are in the JSON format:

```
{
  "type": "NOTF",
  "time": "0000:07:40",
  "date": "2023_03-30-14-51-08-874",
  "smb": "f412fa455818",
  "kerv": "CHIHIRO-v0.27.3",
  "detv": "SOKO-v0.9.0",
}
```



```
"detrn": "USS-SENSIVIC",  
"cdet": 0,  
"cprf": 3,  
"sub_category": "Test_Notification",  
"category": "Test_Notification",  
"confirmation": 0,  
"likelihood": 0,  
"preset": 102,  
"guid": "f412fa455818"  
}
```

- **UDP**

UDP notifications are characterized by the emission of a single frame. This notification is rapid (less than 100ms) but can be lost on a low-quality network. Generic UDP notifications are in the JSON format and are of the same form as the TCP notifications.

- **Generic notifications**

These notifications are intended for integrators who want to develop their own notification management interface.

## Listening server for notifications

Notifications can be sent directly to a listening server or directly to a supported PTZ camera. To do so, certain specific parameters are mandatory. Communication with the camera is secured and the definition of an operator account is necessary.

The procedure of connecting a SOKORO to a PTZ camera requires a few steps:

### **About the IP network**

- Ensure that the SOKORO and the camera can communicate with each other. *if they are not in the same Ethernet segment, remember to indicate to the SOKORO the subnet mask and/or the address of the gateway to be used.*

### **About the camera**

- Create a user account (with at least "operator" rights). *This account will allow the SOKORO to authenticate itself to the camera.*
- Define the 13 prepositions that will correspond to the zones 0 to 12 detected by the SOKORO. *These prepositions must be consecutive from a preset offset to be noted (e.g. between 100 and 112, the preset offset being 100)*
- Ensure that web port (80) is associated with "Digest" authentication. *The SOKORO uses this type of authentication to be recognized by the camera.*

### **About the SOKORO**

- Check the network settings to ensure that the SOKORO can access the camera.
- In the "Notifications" tab of the SOKORO configuration website:
  - o Check the radio button corresponding to the chosen camera,
  - o Set the IP address of the camera as the address of the listening server,
  - o Set listening port to 80,
  - o Set the offset of the Presets with the presets offset used above,



- Specify the username and password of the camera user account.

**Note:** These settings are saved immediately after clicking the “Save” button, there is no need to restart the detector.

From then on, the notifications issued by the SOKORO are sent as "preset commands" to the camera.

#### **Warnings:**

- By default, the SOKORO notifies the number of the zone corresponding to the direction of the source (number from 0 to 12, see Fig. 2). However, presets 0 to 12 are often already used by the camera. The preset offset allows you to define different presets. E.g., if the preset offset is set to 100 and if the SOKORO detects a source in zone 3, the notification will be associated with number 103. Make sure that the offset of the indicated presets corresponds to the presets defined on the camera: **preset = preset offset + zone number.**
- If a preset command is sent to an undefined preset position, it will be ignored silently.
- If a preset command is sent to a preset position in which the camera is already located, it is also ignored.

#### **Emission of a test notification (selected zone)**

Once the supervision software has been configured, it is possible to send "test notifications" to verify the reception and processing of notification frames.

**Note:** This notification can simply be used by the monitoring software in a script without necessarily resulting in an alarm to the operator.

#### **Supported VMS supervision softwares**

Most VMS have a plugin to pilot a SOKORO. If not, a pilot can be developed using the SOKORO API.

## Settings



**Settings**

**Connections** SOKORO : 10.25.100.10 - CHIHIRO-v0.32.19 - SOKO-v0.9.0 - f412fa469700

**Notifications** The settings you can make here are sensitive. The proposed values should be modified only in full knowledge of the facts. The predefined values are indicated between parentheses. In case of doubt return to it.

**Settings** The 'Tests & Demos' profile is only intended to be used to perform tests and demonstrations of the equipment. Learning is deactivated, detection notifies many false alarms. During Normal operations, it is fundamental to choice an operating cycle

**Options**

[Print this page](#)

**Sound characteristics**

Sound Pressure 4.3 mPa

**Parameters for the learning engines**

Profile (Medium vigilance)  ▾

Inhibition time(10)sec.

**Parameters for the direction engine**

Angular reference(0)

**Notified events counters**

Detections: 265

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### Sound characteristics

The sound pressure recorded by the microphones in milliPascals (mPa) and in decibels (dB).

### Parameters for the learning engine

After changing a parameter, click the “Save” button.

- **Profile**  
This parameter determines the sensitivity of the detector. By default, the vigilance of the SOKORO is set to medium (█████). ████████ = High vigilance; █ = Low vigilance.  
**Warning:** The vigilance profile called “Tests & demos” is abnormally sensitive and must not be used in operation.
- **Inhibition time**  
Time during which the detection is stopped after an alarm (between 4s and 120s). By default, the inhibition time is set to 30 seconds.

### Parameters for the direction engine

- **Angular reference**  
The zone at 12 hours (zone 12) is by default the one in front of the SOKORO, opposite to the wiring hole. If you want to rotate the zones, e.g., to align zone 12 with the North direction, precise here the desired rotation angle.

### Notified event counter

Counter of the notifications (alarms) since the detector’s last powering up. To reset this counter, click the “Rest to zero” button.

## Options



**Options**

SOKORO : 10.25.100.10 - CHIHIRO-v0.32.19 - SOKO-v0.9.0 - f412fa469700

**Modification of the authentication profile to the website**

User name:

Password:

**NTP Configuration**

NTP Server:

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### Modification of the authentication profile to the website

Change here the login username and password to the configuration website

### NTP Configuration

Enter here a NTP Server to synchronize SOKORO time with other devices, then click “Set”.

## 5. Technical specifications

### Power

- PoE; Power consumption: 1W

### Environment

- Temperature: from -40°C to +85°C
- Humidity: up to 95% without condensation

### Dimensions

- Casing: grey ABS IP65
- 160 mm x 160 mm x 90 mm
- Weight: 700g

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