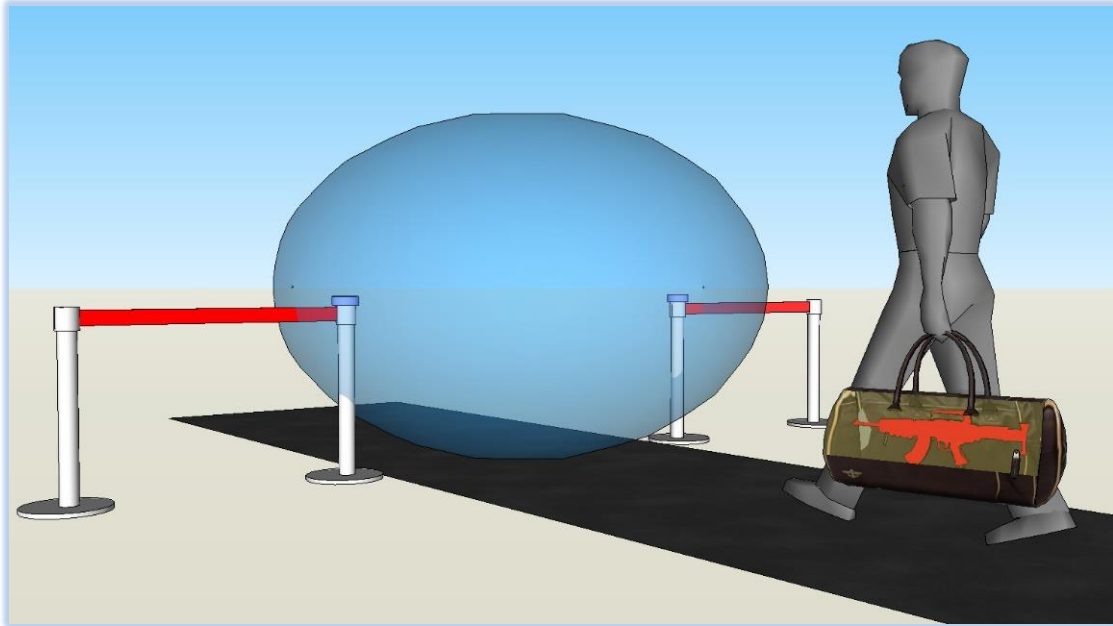# SNOOPER-DP RLY Installation/Operation Manual

Version 4.1


MAGO Technology
2022.08.01 revision

- ✓ **SNOOPER-DP** is an innovative solution for **detecting a HIDDEN METAL OBJECT** inside a pocket or bag **without body check**.
- ✓ The system can detect **CONCEALED WEAPONS** such as daggers and rifles those made of ferrous materials.
- ✓ **SNOOPER-DP** has the elaborate function of **compensation** about the magnetic disturbance from the large-sized moving metal objects such as an **ELEVATOR** or a **BUS** near the system.
- ✓ Sensor modules of the system were designed to be installed **on the standard barrier poles**.
- ✓ The system consists of a **DP Controller board** and **two of micro MAD Sensors** (Barrier poles are sold separately.)
- ✓ **SNOOPER-DP** system can be set up easily with a notebook PC or it can be connected to the user's security system by the standard Ethernet LAN.

1. Specifications

< Table 1. Specifications >

	Value	Note
Input Power	**DC12V**	**Use 2A adaptor**
Output	**Relay & Ethernet**	Digital data communication & Relay output
Sensors	**2**	Two DP Sensors
Controller	**1**	DP Controller
Led	**1**	Detection Level
Operation Temperature	**-10℃ ~ 50℃**	Industrial Spec.

2. Installation


<Figure 1. Installation of two DP Sensors>
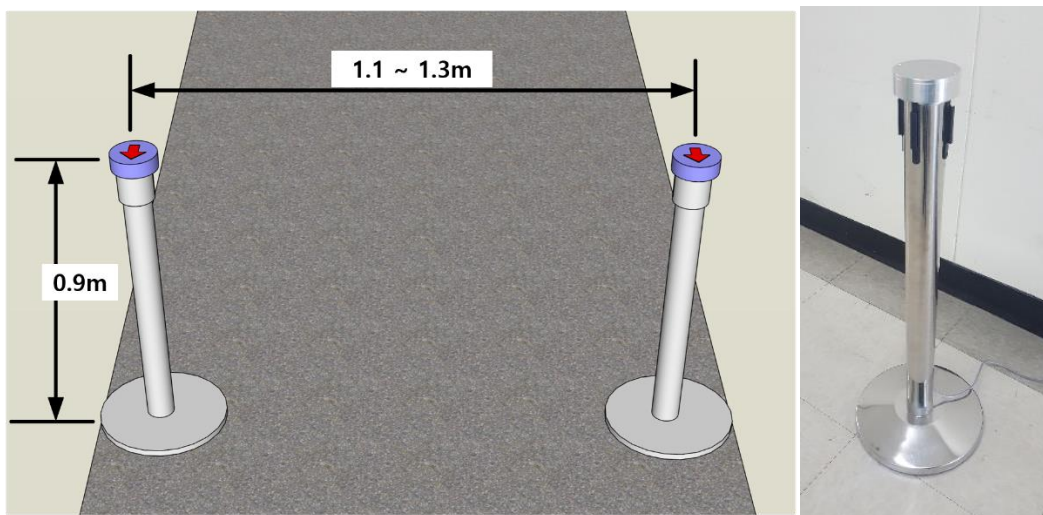
- **Step 1. Install SNOOPER-DP Sensors**

  Install two sensor heads of the system **on the barrier poles** as figure 1.

  ✓ **The direction** of two sensor heads **should be the same toward the passage** (figure 2. Please refer the arrows on the top plate of the sensor.)

  ✓ The setup distance between two sensors is **1.1 ~ 1.3 meter**.

  ✓ The vertical position of two sensors is about **0.9 meter** from the floor.

  ✓ Two sensors must be fixed on the solid pillar which never move or shake.

<Figure 2. The direction of the two sensor heads>
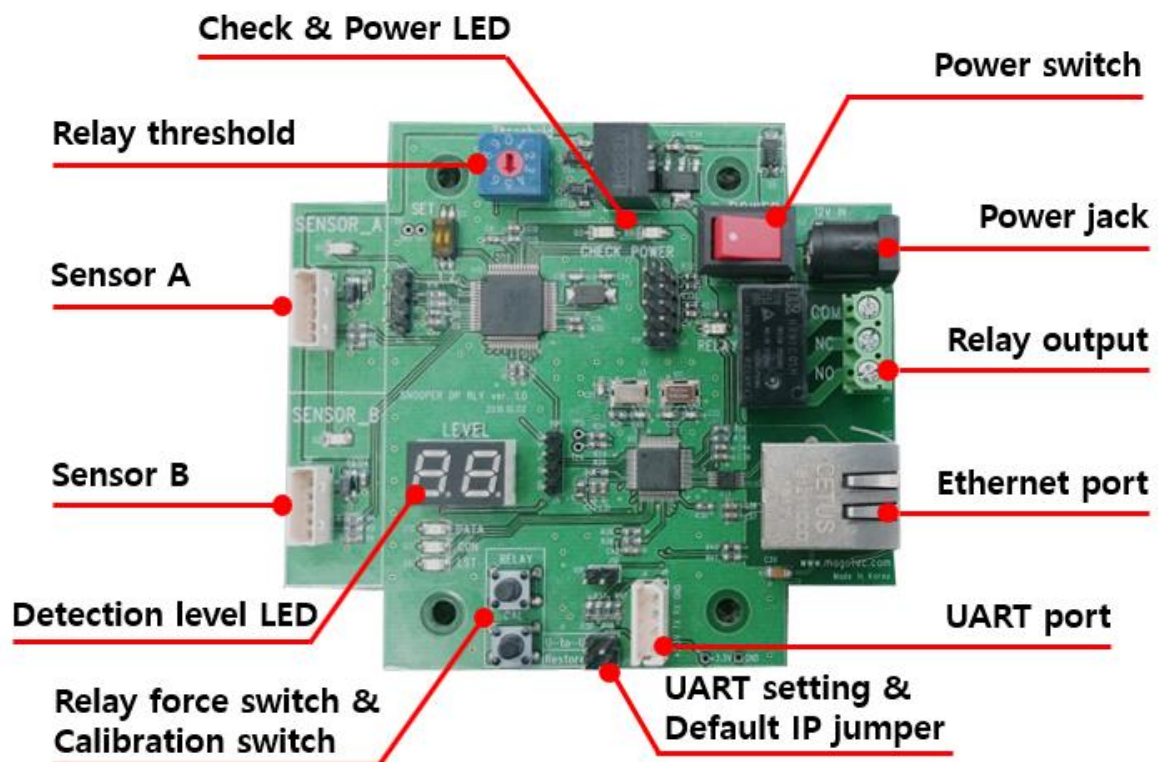

<Figure 3. Bottom of DP Sensor>
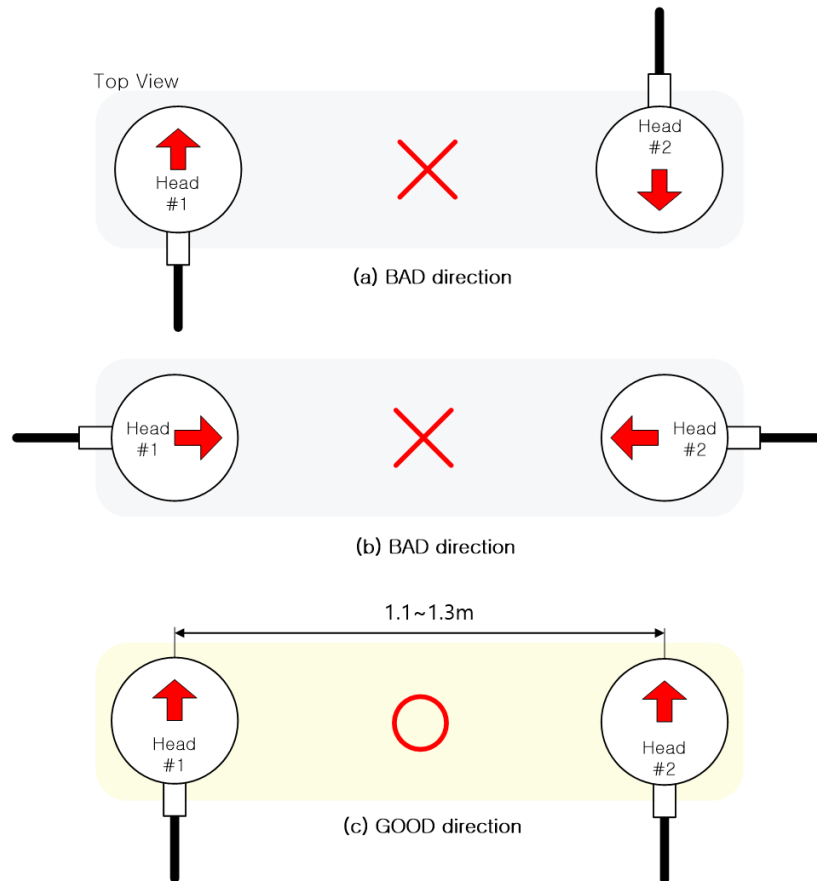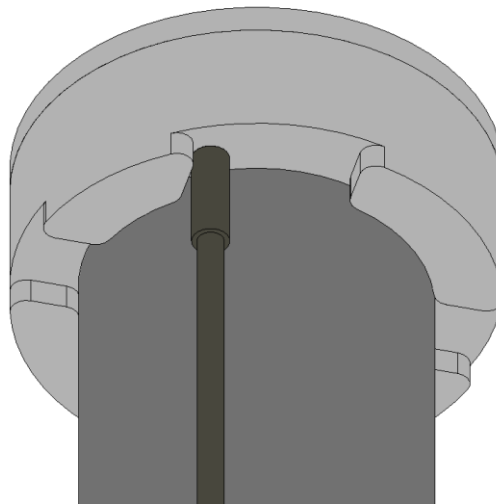
- **Step 2. Connect the sensors to the DP controller**

  There are two sockets for **SNOOPER-DP** sensors on the controller which named '**Sensor A**' and '**Sensor B**'. Each sensor should be connected to the socket. Make it sure the power is off while connecting.

- **Step 3. Connect the DP controller to PC**

  There are two communication interfaces on the DP controller. One is '**UART interface**' and the other is '**Ethernet Interface**'. The UART port can be connected with a PC using the UART port. The Ethernet port can be connected with an **ACCESS POINT** by a standard Ethernet cable.

- **Step 4. Turn on the SNOOPER-DP**

  ✓ Use '**Power S/W**' to turn on the DP controller, and the power LED will be on.
  ✓ Two LEDs beside each sensor socket will be on when the sensor is working.

- **Step 5. Start the DP application on PC**

  After 'Step 4', user can communicate with the **DP-controller** by UART interface or Ethernet (please refer section 4.) The **SNOOPER-DP** Controller send a packet at every specific time. The information of protocol and communication is in another document of '**SNOOPER-DP Protocol**'.

3. Components on a SNOOPER-DP Controller

<Figure 4. Components of a DP Controller>

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<Table 2. Description of the components on the DP controller>

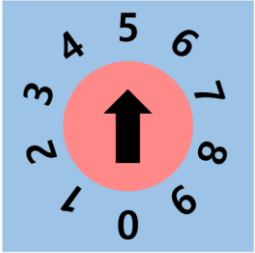| Name	Description
Power switch	The switch is to turn on and off the controller.
Power LED	Power LED is turned on when the DP Controller is powered-on.
Power Jack	User should use DC 12V, 2A adapter.
Sensor A & B	Each sensor is connected to this socket respectively.
LED of Sensors	**Sensor** LED (the LED near the socket) is turned on when each connected sensor sends data to the controller. **Sensor** LED is turned off either the SNOOPER-DP sensor is not connected or doesn't send any data to the controller.
Ethernet LED	**LST** LED indicates that the DP controller is working as a TCP Server on the connected network. **CON** LED is turned on when there is a client that is connected to the controller. **DATA** LED indicates that the DP controller sends or gets any data from/to a client.
Default IP	User can reset the controller with the default IP address by 'Jumper' setting when the current saved IP address has a problem.
Relay output	The relay turns on if the detection level is higher than the detection threshold.
Relay threshold	User can set relay threshold.
Detection level LED	The level of the detected signal is displayed.
Relay force switch	Relay is forced ON.
Calibration switch	Calibration of both sensors is executed.

<Table 3. UART setting>

Jumper Set	Detail
	1. Set 'Jumper' at red mark 2. +3.3V level UART signal is output.

<p align="center"><Table 4. Default IP address on boot-up></p>

Jumper Set	Boot-up Detail

	1. Set 'Jumper' at red mark
	Boot-up with default IP Address
	      Static IP Address 192.168.0.222
	      Subnet Mask 255.255.255.0
	      Gateway 192.168.0.1
	2. Remove 'Jumper' at red mark
	3. Boot-up with saved IP Address

* User can manually set the IP Address of a SNOOPER-DP system (IP address, Subnet mask, Gateway) by the supported application program. Please refer Section 5.

<p align="center"><Table 5. Detection threshold setting></p>

Threshold		Detail
0	User setting	 User can set the relay threshold using the rotary switch. If the detection level is higher than the relay threshold, the **Relay turns ON.** The threshold '0' is a user-set threshold that can be set in DP software**(refer to 'SNOOPER-DP Protocol' document)**. **※ Caution : The relay threshold and software threshold are different.** **Example :** **Detection level > Relay threshold → Relay turns on** **Detection level > Software threshold → Software alarm sounds**
1	30	
2	60	
3	90	
4	120	
5	150 **(default)**	
6	180	
7	210	
8	240	
9	270	

4. SNOOPER-DP app. software
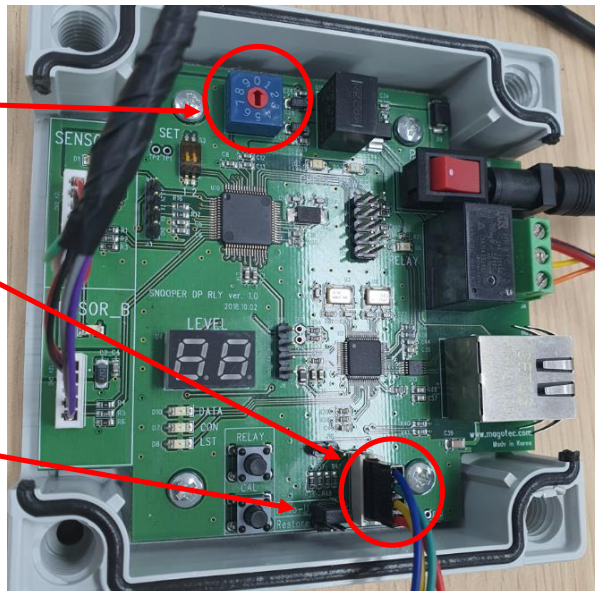
4.1 Connection and Control with the SNOOPER-DP app.

Step 1. Place two sensor heads and connect the cable to the DP controller

① Before power on the system, fix two sensor heads on the fixtures first.

② With a SNOOPER-USB cable, user can easily make the connection between the DP controller and PC.

③ For using a LAN system, connect a standard LAN cable between the DP controller and an access point device of your internal network.

④ After power-on, the sensor start calibration automatically, so **DO NOT MOVE** the sensor after power-on.
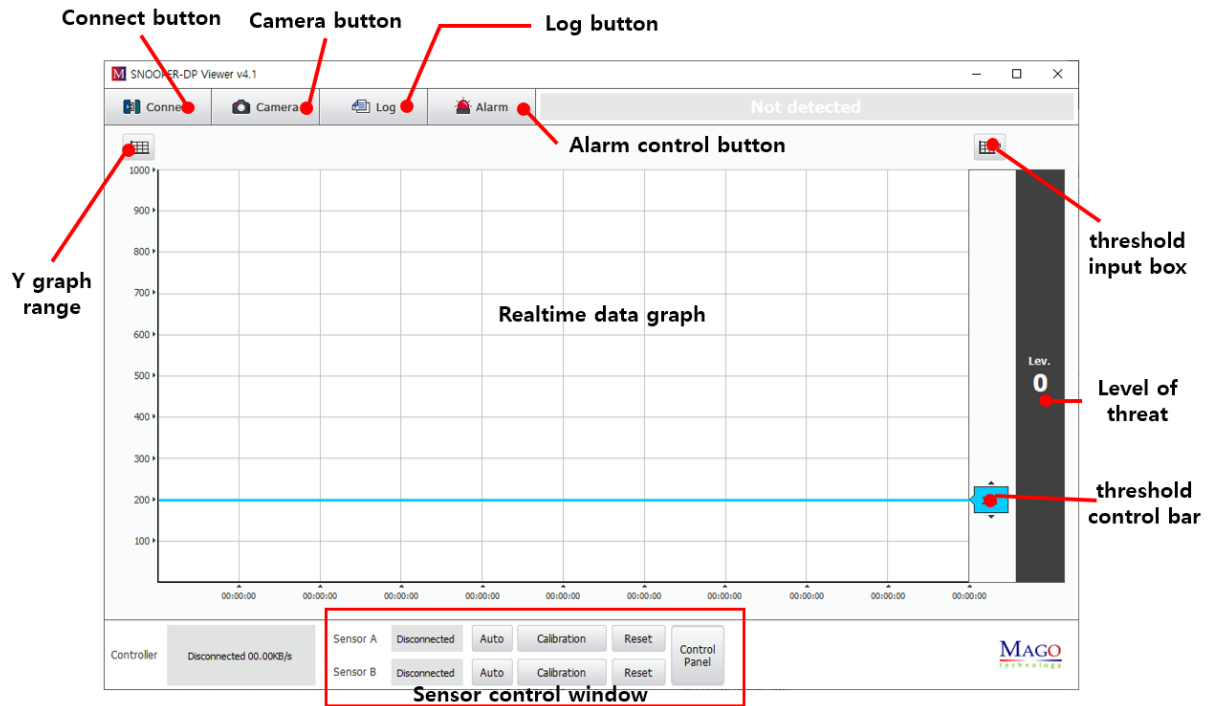
Set the **rotary S/W** at **0**

Put the other side of USB connector
(check: RED is the lowest)

Check the jumper is **ON**
at U-to-U

Step 2. Run the DP application (v4.1)
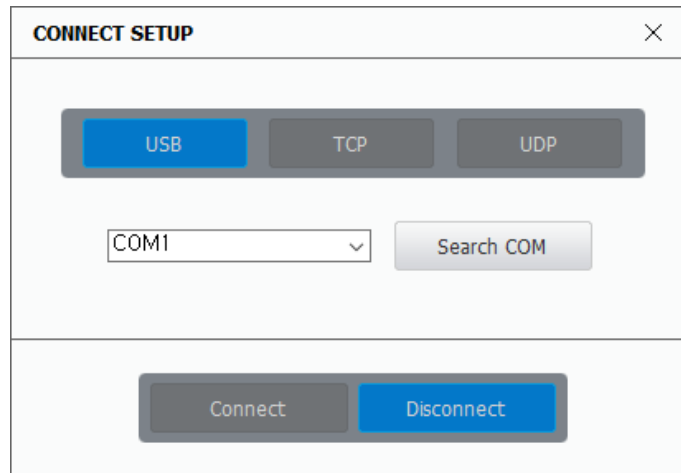
· Run the **SNOOPER-DP app** on your PC

<Figure 5. Screen of the SNOOPER-DP App. v.4.1>

<Table 6. Description of the screen >

Name	Description
Real-time data graph	The size(quantity of magnetic anomaly) of the target object are shown on this screen in real time.(The resolution of X-axis is about 6ms)
Connect button	Set up the connection between PC and DP controller.
Camera button	Set up the camera that is connected to the PC.
Log button	Open a windows that shows all the commands and answers to/from the controller.
Alarm control button	Selection of alarm sound and time.
Sensor control window	This menu is for setup the status and characteristics of two sensors.
Threshold input box	Manually type the **software threshold** for the alarm (this threshold is for the alarm of PC S/W, not the RELAY in the DP controller)
Threshold control bar	User can set the **software threshold** by mouse move. (this threshold is for the alarm of PC S/W, not the RELAY in the DP controller)
Level of threat	Shows the level(size) of the detected object(Level 1-8).

Step 3. Set up the connection mode

<Figure 6. Screen of the CONNECTION menu>

① Push the "**CONNECT**" button and run connection setup menu.
② Select the **COMMUNICATION MODE** (between PC and the SNOOPER board)
③ For using LAN system, just press the button of **CONNECT** when you use the default IP address, and if you changed the IP address then modify it and press the button.

After **STEP 3**, the app. start to show the streaming signal from the SNOOPER-DP system in real time.

Step 4. Setting the user's parameters
A. Set the software threshold for the alarm (PC)
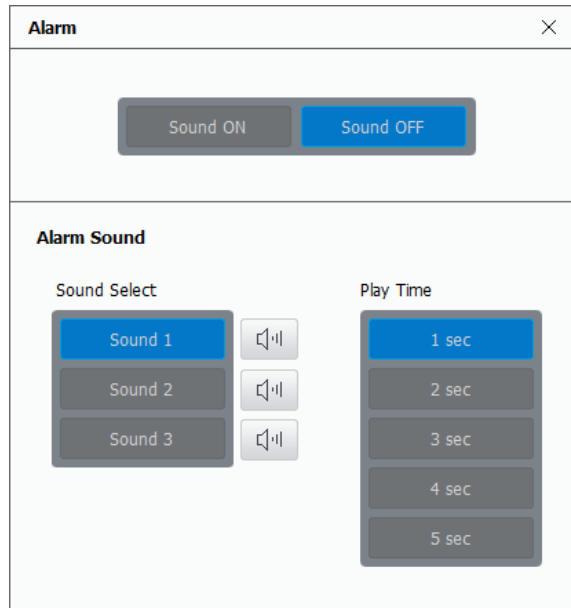　　① Open the **threshold input box**, and type the user's threshold.
　　② Click and drag the **threshold control bar**.
B. Set the range of Y of the data screen
　　① Click the **Y graph range** button.
　　② Type the value of max. Y.
C. Choose the alarm type and time
　　① Click the **alarm** button.
　　② Choose the type and time of alarm.

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<Figure 7. Window of alarm setup >

D. Setup of the camera for the system (USB or IP)

① Click the **Connect** button in CAMERA menu.

② Choose the USB or IP interface for the camera.

③ Check the **AUTO CAPTURE** to save automatically the still picture from the camera when the alarm signal is ringing.

④ It saves 3 sequential pictures (interval is 300ms) and a data graph when the alarm goes off.

<Figure 8. Window of CAMERA setup >

※ Double-click to view the full size of the screen.
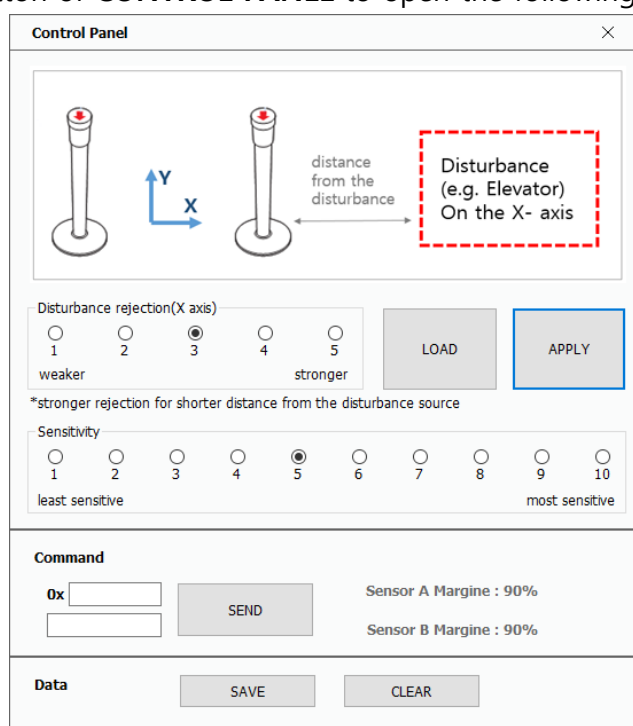
Step 5. Sensor Control menu

<Figure 9. Sensor control window>

<Table 7. Message box>

Message	Detail
Disconnected	The sensor is disconnected.
Normal Operation	The sensor is working in normal operation.
Calibrating	The sensor is on calibrating.

<Table 8. Buttons of sensor control menu>

button	Description
Auto	Automatically re-calibration of the sensor when the change of temperature detected.
Calibration	re-calibration of the sensor manually.
Reset	Reset the sensor including initialization.
Control Panel	Open the control Panel of the sensor

- Click the button of **CONTROL PANEL** to open the following window

<Figure 10. Sensor control panel>

A. Disturbance rejection(X axis)

User can adjust the intensity of the disturbance rejection (X-axis.) If there is an elevator or a large-sized moving iron(source of disturbance) in the line of X axis of the installed sensors, then higher value of this function will be helpful (default value is 3.)

B. Sensitivity

User can adjust the overall sensitivity from **1** to **10**. Default value is **5**, and the higher value is more sensitive for the overall system.
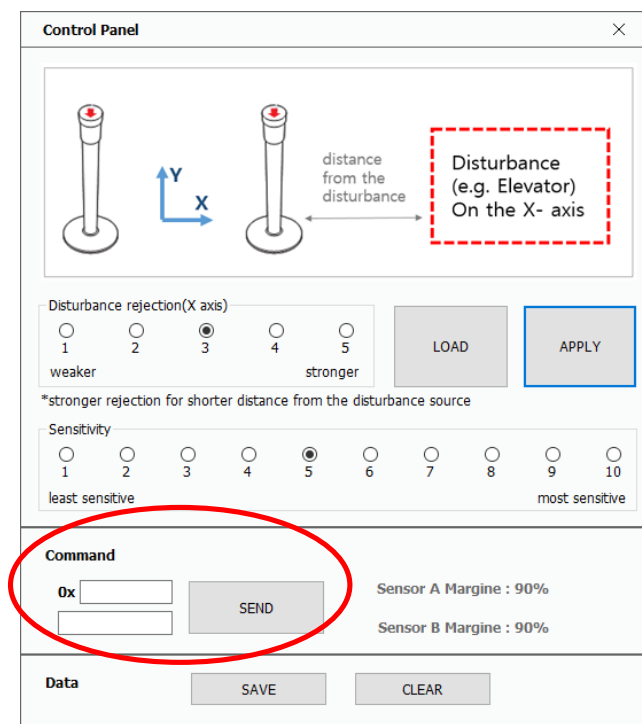
C. Button of LOAD / APPLY

① **APPLY** button set the current parameters to EEPROM in the DP Controller, so even if the system is rebooted, the setting parameters are stationary as the final status.

② **LOAD** button recall the current staus of the two parameters(**disturbance rejection** and **sensitivity**)

4.2 Setting the HARDWARE THRESHOLD of the RELAY in DP controller

Step 1. Make connection to the DP controller with PC App.

① Run the app, and make connection to the DP system.

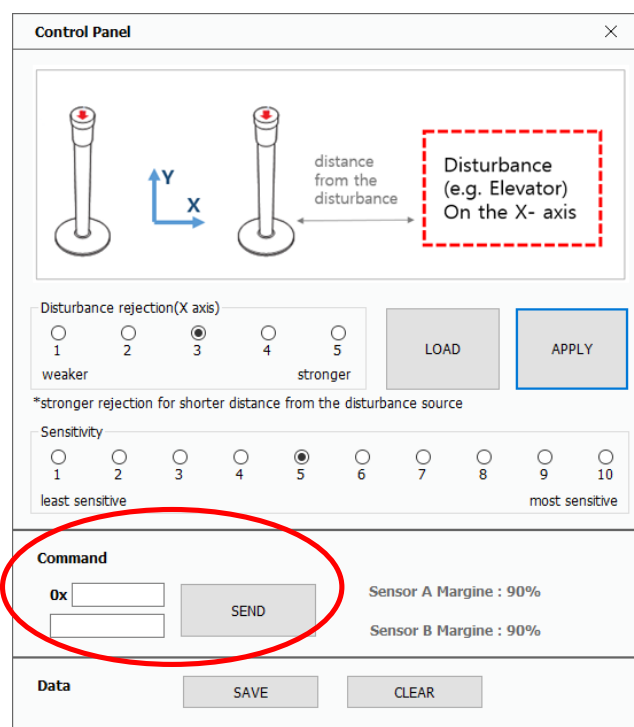② Click the button of **CONTROL PANEL** and open the sensor control panel.

<Figure 11. Text-box of command>

Step 2. Send the command of setting the hardware threshold of the RELAY

① Input the command of '**4A**' at the command box beside SEND button, and type the value of threshold (e.g. 150) at the below data box.

② Push the SEND button.

③ Then the value of **hardware threshold** will be stored at EEPROM in the DP board, so the value is maintained even if the power is reset.

4.3 Setting the minimum ON-time of the RELAY in the DP controller

Step 1. Make connection to the DP controller with PC App.

① Run the app, and make connection to the DP system.

② Click the button of **CONTROL PANEL** and open the sensor control panel.

<Figure 10. Sensor control panel>

Step 2. Send the command of setting the minimum time

① Input the command of '**4C**' at the command box and type the minimum time of the relay at the below data box.
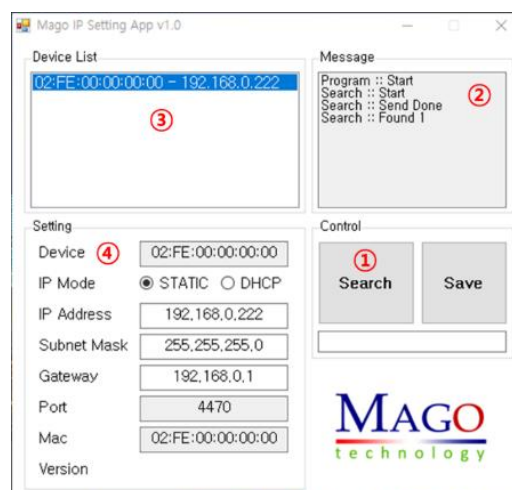
(unit is ms; 1500 means 1.5 sec, 3000 means 3.0 sec)

② Push the SEND button.

③ Then the value of minimum on time will be stored at EEPROM in the DP board, so the value is maintained even if the power is reset.

4.4 Restore parameters to the value of factory default

① Input the command of '**40**' at the command box and '**0**' at the below data box

② Push the SEND button.

5. Ethernet network setting

5.1 IP setting app.

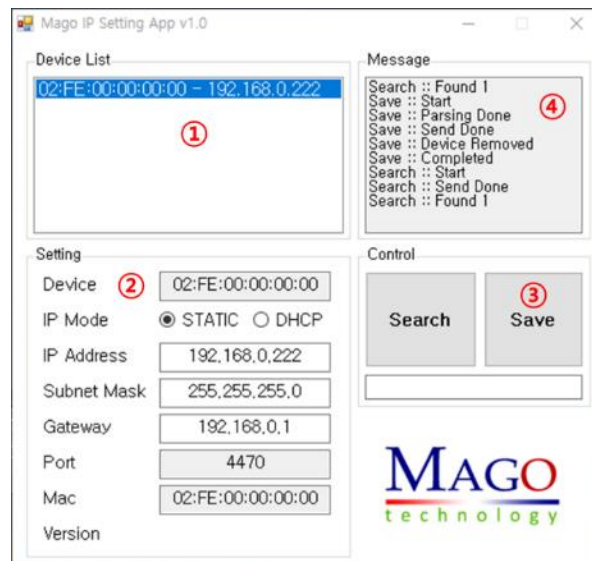**<Figure 11. Network information by the IP setting app>**

Step 1. Click the 'Search' button.

Step 2. Check the message(**②**) "Search::Start", "Search::Send Done", "Search::Found."

Step 3. Select the device (Mac-IP) in the device list (**③**)

Step 4. Network information is shown on the list (**④**)

　　* The SNOOPER-DP should be in the same network group with the PC.
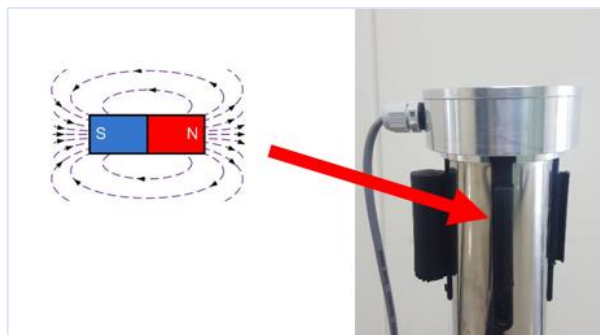
5.2 Saving network information

<Figure 12. Saving network information>

Step 1. Select the device which you want to set in the list (①)

Step 2. Set the network information in the message screen (④)

Step 3. Click the 'Save' button.

Step 4. Check the message(④) "Save::Start", "Save::Parsing Done", "Save::Send Done", "Save::Device Removed", "Save::Completed."

✓ Load and check the information again after all the process of 5.2.

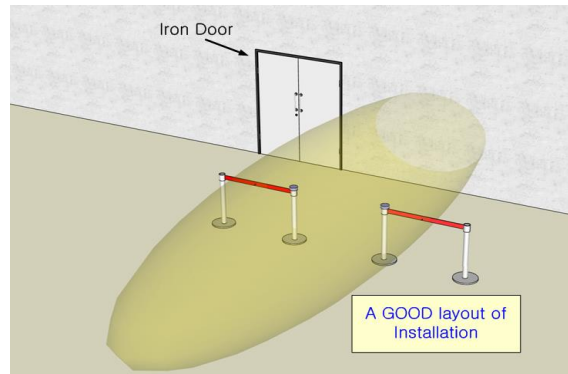# 6. Trouble Shooting

6.1 Magnetic Calibration process

· If the calibration process of a sensor module does not finish within 30 seconds, then check the strong magnetic materials near the sensor.

· For example, rarely some of the barrier poles have a magnet inside the belt tensioner.

6.2 An iron door or elevator near the sensor

· If the movement of the iron door or elevator near the sensor causes disturbance, please install the system as the stepped direction as the figure 9, or move the system 2~3 meters away of it.

<Figure 14. Install two sensors as a stepped direction near an iron door>

6.3 Magnetic buttons or ornaments

<Figure 15. Magnetic ornaments may cause the perturbation of the magnetic field>

· If a magnetic object is attached to the user's cloth, **SNOOPER-DP** may make some output signals.

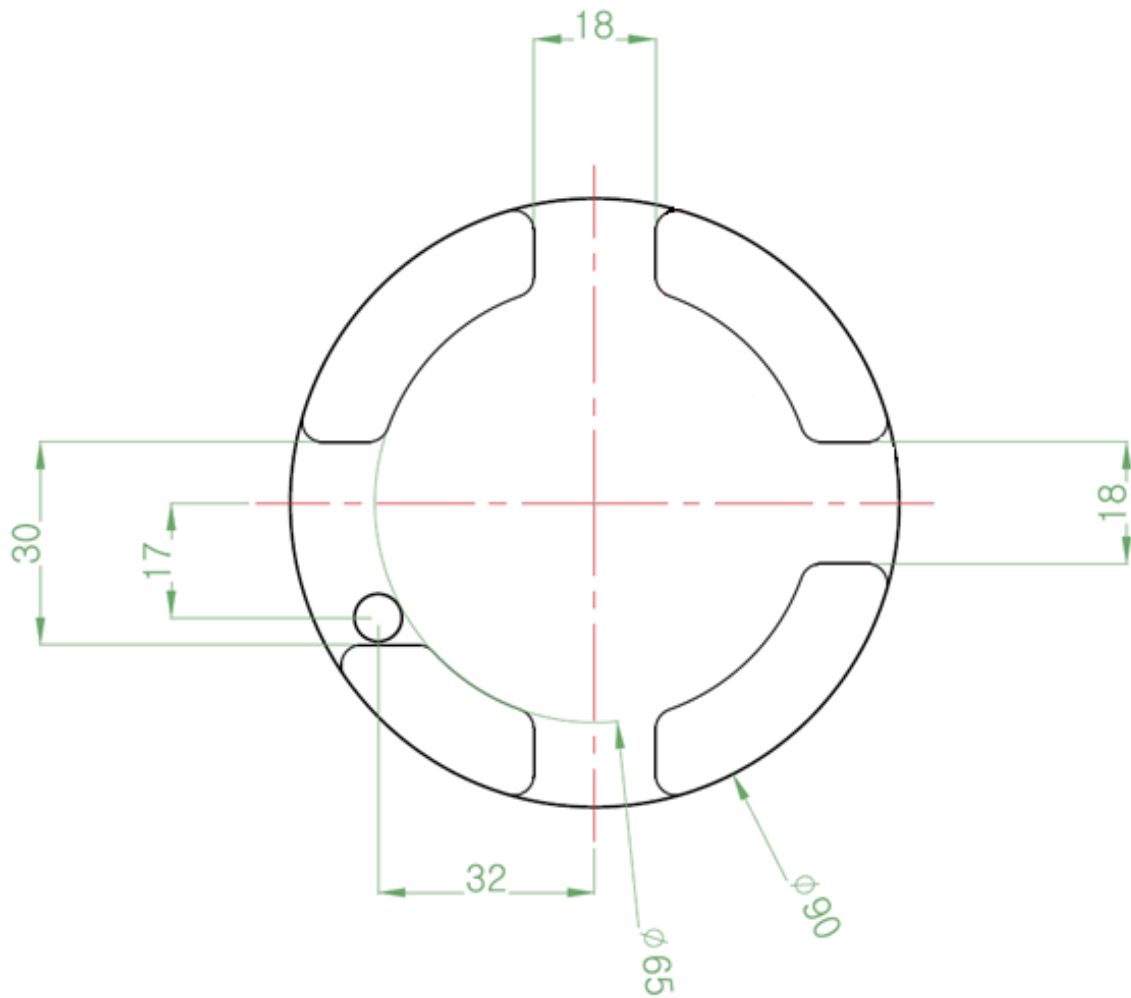· Some shoes have iron skeleton inside its bottom of the shoe.

6.4 Do not open the sensor cover

· OPENNING THE SENSOR COVER makes temperature changes and random disturbances, so **DO NOT OPEN** the sensor cover.

7. Dimension of the Sensor case

※Bottom

❖ Please contact to sales@magotec.com

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