EVIS | BEANAIR<sup>®</sup> SENSORS BRAND

#### WIRELESS IOT INCLINOMETER SENSORS

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#### SATEVIS<sup>®</sup> ALPHA-INC KOMPAKT

WIRELESS IOT BI-AXIS INCLINOMETER Scalable Measuring Range (±30° and ±55°) SATEVIS<sup>®</sup> ALPHA-INC KOMPAKT WIRELESS IOT TRI-AXIS INCLINOMETER

> SCALABLE MEASURING RANGE (±10° and ±85°)



IOT INDOOR GATEWAY IOT OUTDOOR GATEWAY IOT SOLAR GATEWAY









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#### **1. TECHNICAL SUPPORT**

For general contact, technical support, to report documentation errors and to order manuals, contact **SATEVIS**<sup>®</sup> Technical Support Center (STSC) at: <u>tech-support@beanair.com</u>

For detailed information about where you can buy the **BeanAir**<sup>®</sup> equipment/software or for recommendations on accessories and components visit:

#### www.satevis-systems.com

To register for product news and announcements or for product questions contact **SATEVIS**<sup>®</sup> Technical Support Center (STSC).

Our aim is to make this user manual as helpful as possible. Please keep us informed of your comments and suggestions for improvements. **SATEVIS**<sup>®</sup> appreciates feedback from the users.

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#### 2. VISUAL SYMBOLS DEFINITION

Symbols	Definition
	Caution or Warning – Alerts the user with important information about SATEVIS® wireless IOT Sensors. if this information is not followed, the equipment /software may fail or malfunction
	Danger – This information MUST be followed if not you may damage the equipment permanently or bodily injury may occur.
i	Tip or Information – Provides advice and suggestions that may be useful when installing SATEVIS Wireless IOT Sensors.

#### **3. ACRONYMS AND ABBREVIATIONS**

AES	Advanced Encryption Standard
CCA	Clear Channel Assessment
CSMA/CA	Carrier Sense Multiple Access/Collision Avoidance
GTS	Guaranteed Time-Slot
kSps	Kilo samples per second
LDCDA	Low duty cycle data acquisition
LLC	Logical Link Control
LQI	Link quality indicator
MAC	Media Access Control
PER	Packet error rate
POE	Power Over Ethernet
RF	Radio Frequency
SD	Secure Digital
UPS	Uninterruptible power supply
USB OTG	USB On The Go
WDAQ	Wireless DAQ
WSN	Wireless Sensor Networks

### 4. SATEVIS<sup>®</sup> ALPHA-INC-Kompakt

4.1.1 Unbox your SATEVIS<sup>®</sup> ALPHA-INC-Kompakt

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Open the Device box



#### 4.1.2 Drawing

Small Form Factor Antenna 2dBi

65

• 😔

••• 91.75

4





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232

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212: 1

#### 4.2.2 How to Power SATEVIS® Device



Figure 1 : Unscrew the 4 screws from the lid

Figure 3 : Please do not use screwdrivers or other

tools to remove the battery, as this may damage



QUICKSTART

**Figure 2** : Hold the base of the casing securely then remove the battery by pulling the Hookand-loop strap



**Figure 4** : Carefully replace the new Battery Type D-Type (only Lithium Thionyl-Chloride), then make sure that the case is securely closed.



6

the circuit board.

Satevis  $\circledast$  device can be powered from both USB and Battery Power. If you Power from USB , you don't need to power on battery power.



- 4.2.1 Non-Contact Buttons and LEDS description
  - The Device is provided with :
  - -2 M8 cap
  - -M8 to USB cable
  - -1 Magnet
  - -1x 25cm Self-Fusing Tape
  - -High Gain Antenna 5dBi or Small Form Factor Antenna 2dBi Use the Magnet to:
  - Hello ! : Check sensor status
  - Sensor Zeroing: Automatic Zero offset







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#### 4.2.3 Interface for External Power supply

#### M8 6pin Socket (MALE, A-CODING)- Pin assignation



#### M8 6pin Plug (FEMALE, A-CODING)- Pin assignation



Interface Name	5VDC Voltage	USB DATA -	USB DATA +	Not used	Not Used	GND
M8 Pin assignation	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Wire Color (A-coding)	BROWN	WHITE	GREY	BLUE	GREEN	PINK

#### 5. Device commissioning on your cloud software (Example with TTN)



#### 5.2 Change your Lora settings with Satevis® LINK Software

1. Connect your Satevis  $\ensuremath{\textcircled{B}}$  device to your PC/Laptop with USB /M8 cable adapter provided with it



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All

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Settings

Best match

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**QUICKSTART** 



Satevis Com 1.3 RJCP.IO X communication software by File Server Device Info Com Cnfiguration Port COM16 ~ Handshake Config Start NOT\_CONNECTED Device Lora Configuration Terminal Your Satevis® software X displays connected confirming to connection to your satevis® device Handshake Config 13.02.2024 10:28:27Start Fail Timeout: Connection not established 13.02.2024 10:31:36Ping with Acquittal sent to device 13.02.2024 10:31:36Ping with Acquittal sent to device 13.02.2024 10:31:36Ping response with OK Acquittal was received ssage: 13.02.2024 10:31:37Start communication request with acquittal sen sage: 13.02.2024 10:31:37Start communication request with acquittal sen CONNECTED Disconnect Ping Terminal 11

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4. Click on Lora Configuration Satevis Com 1.3 RJCP.IO X to get Device EUI, Join EUI, File Server Device Info App Root Kev Com Cnfiguration Port COM16 Config Handshake 2024 10:28:27Start Fail Timeout: Connection not established 02.2024 10:31:36Ping with Acquittal sent to device 24 10:31:36Ping with Acquittal sent to device : 13.02.2024 10:31:36Ping response with OK Acquittal was rece : 13.02.2024 10:31:37Start communication request with acquittal ser sage: 13.02.2024 10:31:37Start communication request with acquittal sen Stop CONNECTED Ping Disconnect Device Lora Configuration Terminal

Join/App EUI , App Root Key can be changed from this - Lora Configuration X tabPage1 tabPage2 field LoraWan Versio Device EL App EU App Root K Region Co Join Mod Stop Validate Update Device EUI can not be Get Config LMS changed as it contains our Lora Configuration Lo Manufacturer ID E1-01-01-51-55-64 5-FE-63-17-50-45-B6-56-A8-64-70-90-B1-32 12 Close

**5**. REGION CODE can be changed from here, make sure your Antenna is compatible with this frequency.

oravian Version			D.4.
levice EUI			00-80-E1-01-01-51-55-64
pp EUI			01-01-01-01-01-51-55-67
op Root Key			46-9C-45-FE-63-17-50-45-B6-56-A8-64-70-90-B1-32
egion Code	REGION_AS923	~ REGION_A	AS923 REGION_EU868
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	REGION_IN865		
date	REGION_US915		
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AFTER VALIDATING YOUR NEW SETTINGS, YOUR DEVICE WILL RESTART WITH THESE NEW SETTINGS.

• 915MHZ (Frequency Range 902-928MHz) antenna covers • US915 (North America) , AU915 (Australia), KR920

(KOREA) and AS923(ASIA)

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#### 5.3 Register your Satevis® device on TTN

Iora-test-b ID: test-lora-beri	perlin <sup>in</sup>				
Last activity 25 seconds a	go 🗇			🙏 8 End devices 🛛 🚉 1 0	Collaborator Or 2 API keys
eneral information			Live data		See all activity
oplication ID	test-lora-berlin	<b>%</b>	↑ 21:37:14 eui-6080ei	Forward uplink data message	
eated at	Jan 18, 2023 21:03:26		↑ 21:36:39 eui-0000e1	Forward uplink data message	
	20		↑ 21:36:14 eui-0080e1	<ul> <li>Forward uplink data message</li> </ul>	
st updated at	Jan 18, 2023 21:03:26		↑ 21:35:56 eui-0080e1	<ul> <li>Forward uplink data message</li> </ul>	
			↑ 21:35:49 eui-8088e1	Forward uplink data message	
			↑ 21:35:39 eui-0088e1	<ul> <li>Forward uplink data message</li> </ul>	
End devices (8)			Q Search	=+ Import end devices	+ Register end device
1D 0	Name ©	DevEUI	oL	inEUI	List activity @

#### End device type

Input method ⑦

- Select the end device in the LoRaWAN Device Repository
- Enter end device specifics manually

• Click on Enter end device specs manually

Applications > lora-test-berlin	> End devices
Register end devi	ce
Does your end device have a LoR	aWAN <sup>®</sup> Device Identification QR Code? Scan it to speed up onboarding.
Scan end device QR code	Device registration help
End device type	
Input method ②	- Politiki Device Department
Select the end device in the i	okawali Jevice Repository
<ul> <li>Enter end device specifics in</li> </ul>	moany
Frequency plan ⑦ *	
Europe 863-870 MHz (SF9 for R	(2 - recommended)
LoRaWAN version ⑦*	
LoRaWAN Specification 1.0.2	
Regional Parameters version ⑦	•
RP001 Regional Parameters 1.0	.2 revision B
	Sender Bertouaron Aurora
Show advanced activation, LoRa	NAN class and cluster settings ~
Select your	frequency plan Lorawan version is 1.0.2 •
RP0	01 Regional Parameters 1.0.2 revision B







#### 6. Sensor Installation

**Satevis**® device comes with a three-axis inclinometer, it can be easily mounted directly on both vertical and Horizontal structures



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## Or inclinometer sensors Or inclinometer senso

#### 7. Sensor Zeroing





**Figure 2** : To enable the sensor zeroing function, hold the magnet on 'Sensor Zeroing" Label for more than 10s.

#### 8. Checking Sensor Status on site



**Figure 1** : After installing the Alpha-Inc-Kompakt inclinometer, the field operator can check at any moment if the sensor is working properly



**Figure 2** : By Holding the magnet on the 'Hello!' label for more than 10s, the sensor wakes-up and transmits to the Lorawan network the data measurement followed by the system diagnostic ( battery status and network quality).



**Figure 3** : The Activity LED blinks in blue, the sensor zeroing starts on both X and Y axis . When this process is done, the Activity led will blink again in blue color and transmits a data measurement to the Lorawan® network. If the sensor zeroing process is not done correctly [ the device is moving] the Activity Led will blink in Red color.



**Figure 4** : The Sensor-zeroing process can be also done remotely from the cloud software.



**Figure 3** : The Activity Led blinks in green color, confirming that a data measurement is transmitted to the Lorawan network.



**Figure 4** : The field operator can check on Satevis® Cloud software (or a third-party cloud software) if his sensor is working properly.

## 

#### QUICKSTART

#### 9. Where to find more Technical Information?

- For mode technical litterature, please visit our White Paper Page: <u>https://www.satevis-systems.com/white-paper.html</u>
- Please refer to the SATEVIS<sup>®</sup> Alpha-INC-Kompakt user manual section for more information https://www.satevis-systems.com/files/User-Manual-SATEVIS-LORA-AL-PHA-INC-MR-PS.pdf
- Facing technical problems ? Contact our technical support team at : tech-support@beanair.com



