

SENSECOM-DI6

Communication unit for 6 digital (binary) inputs.

Účel



SENSECOM-DI6K

The unit **SENSECOM-DI6** is simple monitoring communication device for monitoring of **1 to 6 digital (potential-free) inputs** with sending info about their status and changes via nationwide IoT network **SIGFOX**.

The device is optimized for battery operation, the expected endurance is more than **10 years** (with 1 message per day). The **SENSECOM-DI6K** model is connected to an external antenna.

Typical applications:

Signaling of emergency situations on industrial facilities and buildings, e.g. monitoring of water levels in shafts, reservoirs and watercourses with floats, etc.



SENSECOM-DI6 for detection of water levels with floats

Device description:

The unit **SENSECOM-DI6** allows to connect **1 to 6 digital (binary) potential-free inputs**.

The electronics of the device is most of the time in sleep mode with minimal power consumption. On any input's change it sends a message via IoT network **SIGFOX** to the cloud storage. The status of individual inputs and information on which sensor (s) occurred the change is available there. The **DI6K model** with external antenna is suitable when the device is placed in metal cabinet, structures and locations constraining network availability.

Message types

Types of transmitted messages between **SENSECOM-DI6** and the cloud:

- **Status message** - periodical values message containing the sensors and accelerometer status.
- **Alarm message** - a values message generated when inputs change is detected or manipulation (accelerometer) threshold is exceeded.
- **Keep-Alive message** – 24h system periodical message sent by the device.
- **Downlink acknowledge message** - System response to received downlink.
- **Configuration message** – configuration status obtained after successful receipt and processing of downlink.
- **Downlink message** - message received by the device from SIGFOX back-end as a part of the first message processing after each Keep-Alive message. It is used for eventual configuration adjustment of the device.

Data processing

In the SIGFOX cloud, measured values are typically available for processing within 7 seconds (max 15s). The data can be accessed in a normalized form via the SENSEPARAM.COM

portal. Information can be obtained using the call-back mechanism (push method), REST-API (SIGFOX only), or by downloading to a CSV file (manually).

Device security

Due to the accelerometer, the device is able to indicate tampering. In case of violation, it sends immediately the alarm message. The device also sends 1x / day system Keep-Alive message with information about battery voltage and processor temperature. Missing Keep-Alive detects device disconnection or failure. Message transmission has assured integrity using AES-128 algorithm (message spoofing avoidance). The device firmware can be supplemented with encryption via AES-128CTR.

Remote setup and FW upgrade

Period of status messages (24h default), inner sensors sensitivity or their de/activation can be set remotely once a day (via downlink). In places with poor coverage of the SIGFOX network, the device may not be able to receive a downlink message even though the uplink message has been received regularly by the network. Remote FW upgrade is not possible.

Device casing:

The device is designed to be attached to a vertical flat surface or bracket. The device is in a plastic case (ABS) with dimensions 160x80x85mm (h-w-d), with flanges. The housing is IP65 (or IP67-68 using silicone). The device includes internal antenna (PCB based) or SMA connector for external antenna with gland for coax cable (DI6K model). Both models include 1-6 glands for sensors cables (6x M16 glands as a default).

Technical parameters

Parameter	Value	
SENSECOM Model	DI6	DI6K
Type of connectable inputs	Digital - binary (contact) potential-free input, eg. relay contacts, make and break contact	
Number of inputs	1 - 6	
Frequency of measurement	1 sec (adjustable to 255 sec)	
Supplementary inner sensors	Accelerometer (adjustable 4 sensitivity levels, default: enabled and with high sensitivity)	
Transmission network	SIGFOX (ISM band 868MHz)	
Uplink message types	<ul style="list-style-type: none"> ▪ Periodical status ▪ Alarm (any input change or manipulation) ▪ Initial or changed configuration ▪ Keep-Alive 24h ▪ Downlink acknowledgement 	
Period of status messages	24h-default (remotely adjustable 10-1440min, step 10min)	
Accessibility of data	SIGFOX back-end (max 12 Bytes payload) or SENSEPARAM portal (with normalized data): <ul style="list-style-type: none"> ▪ Call-back (push) ▪ REST-API (SIGFOX B/E only) ▪ Email notification ▪ SMS notification (SENSEPARAM only) ▪ CSV download 	
Antenna	Internal PCB antenna for ISM band (868MHz)	External antenna for ISM band (with coax cable via gland to SMA connector) – hat type for metal horizontal surface mounting, alternatively plate one for gluing to a vertical non-metallic surface (surface like plastic, glass, etc.).
Connectable to repeater	SENSECOM-WSH, SENSECOM-WSHD	
Power supply	Lithium battery (non-rechargeable) 3,6V, replaceable, size C, type SAFT LS 26500 (7,7Ah)	
Sensors connectivity	Cables 5-10mm in diameter via independent glands (M16) for particular channels (default). Casing options to order: 1-6x M12 glands (3-6.5mm cables) or 1-2x M25 glands with 2 or 3 holes in sealing insert (6mm cables) or M32 gland with 6 holes in sealing insert (5mm cables)	
Expected battery life without battery replacement	>10 years with 2 messages a day (Status + Keep-Alive)	
Housing protection	IP65 (IP67-68 with silicon)	
Weight	200g	
Operational temperature	-25°to +65°C	
Case dimensions	160x80x85 mm (dimensions without brackets and glands)	

Pouzdro zařízení

Pouzdro: materiál ABS, krytí IP65 (se silikonem IP67), rozměry bez vnějších úchytlů a průchodek: 160x80x85 mm, Průchodky standardně 6x M16 k čidlům a 1x M16 k ext. anténě (DI6K model)

Klobouková anténa (Pro DI6K model)

Pásmo: ISM (868 MHz)
Krytí: IP65 (se silikonem IP67)
Kabel: RG58 s SMA-M konektorem, délka standardně 0,5m (max. 2,5m na objednávku)
Klobouk antény: Ø143x34mm

