

SENSECOM-IDN

LPWAN communication device with RFID reader

Purpose

The **SENSECOM-IDN** series is designed for **reading of RFID** (entry cards) with sending of this data over the **NB-IoT** wide area network. It is battery powered and with about 5 reads per day has a battery life of **>2 years without battery replacement**. The device is suited for harsh industrial and outdoor environments.

Typical use:

Monitoring of personnel access to premises, workplaces, technologies at remote locations, at checkpoints during errands, etc. The device is not intended for the gateways of companies with a higher number of employees or a higher frequency of card reading.

Description of equipment:

The **SENSECOM-IDN1 and IDN2** is a battery-powered device that, at the push of a button (activation), can read an RFID code (typically an access card) and send the read data via the NB-IoT wide area network to cloud storage for further processing. Up to 5 RFID codes can be transmitted within one message (one transmission).



After pressing the button, the device is activated for 5sec to read RFID (one card). After 30sec from successful RFID read, a message with the read code is sent to the network. During these 30sec, another RFID can be read when the button is pressed again (at the same time the time to send is extended to another 30sec). All read RFID codes (without duplication) are sent. Then the device goes back to sleep mode with almost zero power consumption. Actual transmission time depends on the time to log into the NB-IoT network (typically within 5sec, may take several minutes if changing network or base station)

The IDN1 model has one button and the IDN2 model has two buttons to distinguish the purpose of reading, e.g. arrival/departure.

The device includes temperature and relative humidity sensors to monitor critical environmental conditions. The device can be remotely reconfigured, device and modem firmware upgraded, or previously stored data (>1500 reads) can be sent from flash memory.

The device is designed to be mounted on a wall or structure. It is in a plastic housing (ABS material) with IP67 protection (outdoor), the housing can be mounted in 4 corners. The antennas for RFID and for transmitting to the network are located in the inner part of the lid of the device. The activation buttons (waterproof, anti-vandal) are accessible from the side.

Technical parameters

The reading part

Parameter	SENSECOM-IDN1	SENSECOM-IDN2
Type and number of readers	1x RFID	
RFID reading activation	1 button	1 of 2 possible buttons (the button allows to distinguish the purpose of reading)
Card code sent	Standard full RFID card (or index if stored on the card).	
Collection of loading codes into messages	The device composes 1-5 RFID codes (or RFID indices) into a common message. Sending takes place after 30s from the last or after the fifth RFID read in the series.	
Internal sensors in the device	Temperature sensor Relative humidity sensor	

Communication part

Parameter	SENSECOM-IDN1, IDN2
Network for data transmission	NB-IoT - mobile operators' low-power wide area network (LPWAN) - the flat rate for network traffic is typically 10 years (or 5 years or a year)
Antenna NB-IoT	Embedded
Types of uplink messages	<ul style="list-style-type: none"> ▪ Value (with 1-5x RFID codes and activation button identification) ▪ Configuration (after reset, after configuration change) ▪ Alarm - exceeding humidity or temperature thresholds ¹ ▪ Keep-Alive 24h - system report on the functionality of the device and the status of the battery, signal, etc.
Downlink message types and upgrades	<ul style="list-style-type: none"> ▪ Configuration change request (when sending a Keep-Alive uplink message, 1x/day) ¹ ▪ Requirement to forward data from datalogger/flash memory (on any uplink message) ¹ ▪ Request to upgrade the control FW or modem FW (on any uplink message) ¹
Access to data	<ul style="list-style-type: none"> ▪ SENSEPARAM portal (with data normalization), configurable callback for data transfer to own database, ad-hoc data download to CSV file. ▪ Direct transfer of UDP packets to customer database (by setting routing)
Datalogger (data storage)	Built-in flash memory for remote or local reading of the last min. 1500 RFID codes
LED signalling	RFID reading activation. Successful/failed RFID read. Establishing connection and sending to NB-IoT.

Device safety and security functions (physical and data)

Parameter	SENSECOM-IDN1, IDN2
Detection of critical values and changes	Alarm message when humidity, temperature parameters are exceeded or changed
Monitoring the operation of the device	The device sends at least a system Keep-Alive message every 24h
Protection against data loss	The device stores the data (datalogger) from each reading in memory with a time stamp (min. 1500 last measurements). After a communication failure with the network, the device broadcasts the previously unsent data.
Integrity of message content	The integrity of message transmission is ensured by the authentication mechanisms of the NB-IoT network.
Data encryption	E2E encryption with the AES-256 algorithm can be activated on the device (decryption takes place on the SENSEPARAM server)

Design and power supply

Parameter	SENSECOM-IDN1, IDN2
Power	Lithium battery (non-rechargeable) 3,6V, replaceable, size D, type SAFT LSH 20 (13 Ah)
Estimated battery life	>2 years in normal operation, i.e. 5 messages sent per day (possible FW upgrade is equivalent to about 2 months of consumption in normal operation)
Activation button	Type anti-vandal, metal, waterproof, located on the side of the device
Coverage	IP67 - outdoor
Weight	200g
Operating conditions	-25° to +75°C, relative humidity <90%, atmospheric pressure >800kPa
Housing dimensions	160x80x60mm (dimensions without external handles)
Housing material	ABS

¹Remotely adjustable

