

Smart Agriculture

IoT services for farmers



www.inels.com/agriculture

INELS[®]

ELKO EP



We are traditional, innovative and purely Czech development manufacturer of electronic devices and we have been your partner in the field of electrical autorealization for more than 26 years.

ELKO EP employs 330 people, exports its products to more than seventy countries and has representatives in thirteen foreign branches. The Company of the Year, Visionary of the Year, Global Exporter of the Year, sorted in the Czech TOP 100, are just some of the awards received. Still, we are not finished. We are constantly striving to move forward in the field of innovation and development. That is our primary concern.

Millions of relays, thousands of satisfied customers, hundreds of employees, twenty-six years of research, development and production, thirteen foreign branches, one firm. ELKO EP, an innovative Czech company based in Holešov, where development, production, logistics, service and support go hand in hand. We focus primarily on developing and manufacturing, building automation systems in the residential, commercial and industrial sectors, along a wide range of Smart city facilities and the so-called Internet of Things (IoT).



Farming and modern technology

Every good farmer, be it a grower, a breeder, a winemaker, a beekeeper or a forester, puts a lot of effort and money into the proper management of his production areas, but circumstances do not always allow him

to harvest the crops appropriately. Farmers are particularly worried about weather conditions - temperature fluctuations, unforeseen precipitation, long-term drought, and soil moisture - all result in lower yields.

Meteorological Conditions



Natural disasters



Pests



Diseases



Unpredictable Conditions



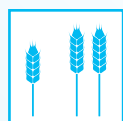
We cannot predict the wind and rain precisely; we can however, monitor and evaluate them very well. Modern technology can make life easier and doesn't work only in homes but in commercial buildings and smart cities. Technology can be a great help also were

you would not expect it - on farms, vineyards, fields or forests, especially if it is automated and communicates efficiently. It makes work easier and more efficient, with better property protection, and helps prevent and speeds up crisis response.

Main MOTIVATORS



Saving money



Higher crop yield



Work efficiency



Worker comfort

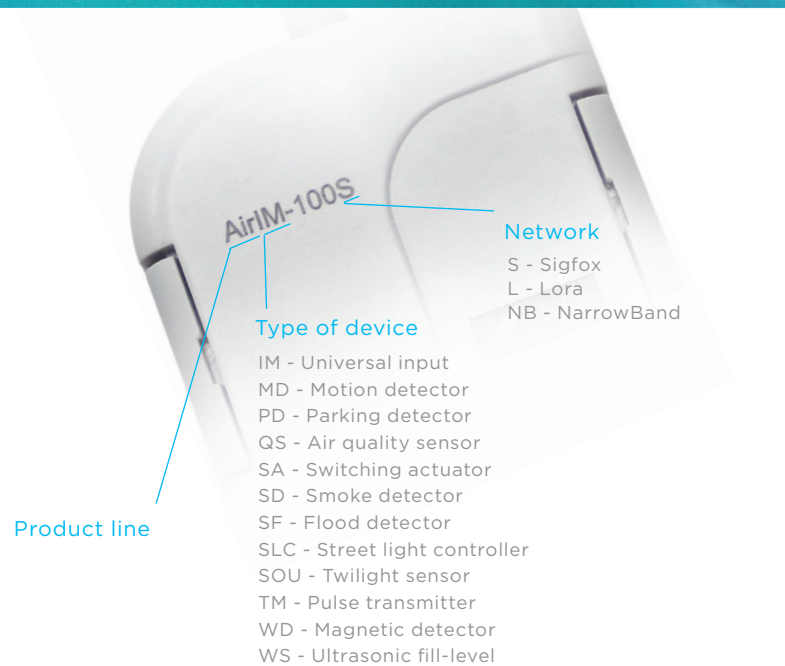


Increase security

iNELS Air

iNELS Air is our response to the dynamically developing network for IoT (Internet of Things). The IoT wireless communications category describes the Low Power Wide Area Network (LPWAN). This technology is designed to provide both full-area outdoor coverage and indoor signal, energy-saving and low-cost operation of individual devices.

The iNELS Air product family devices understand working on the Sigfox, LoRa and NB-IoT networks (protocols).



1 Universal input



2 Universal input - for DIN rail



3 Flood detector



4 Liquid level Sensor



5 Magnetic detector



6 Motion Detector



7 Smoke Detector



8 Air Quality Sensor - carbon dioxide



9 Air Quality Sensor - carbon monoxide



10 Pulse transmitter



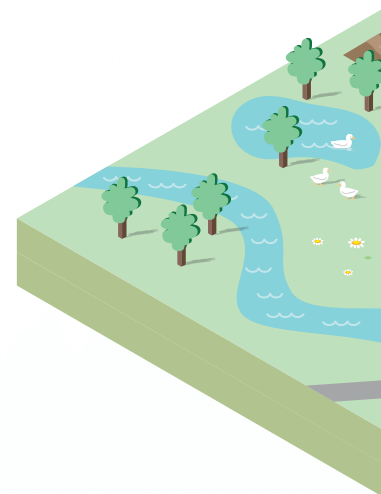
11 Ultrasonic fill-level



12 Street light controller



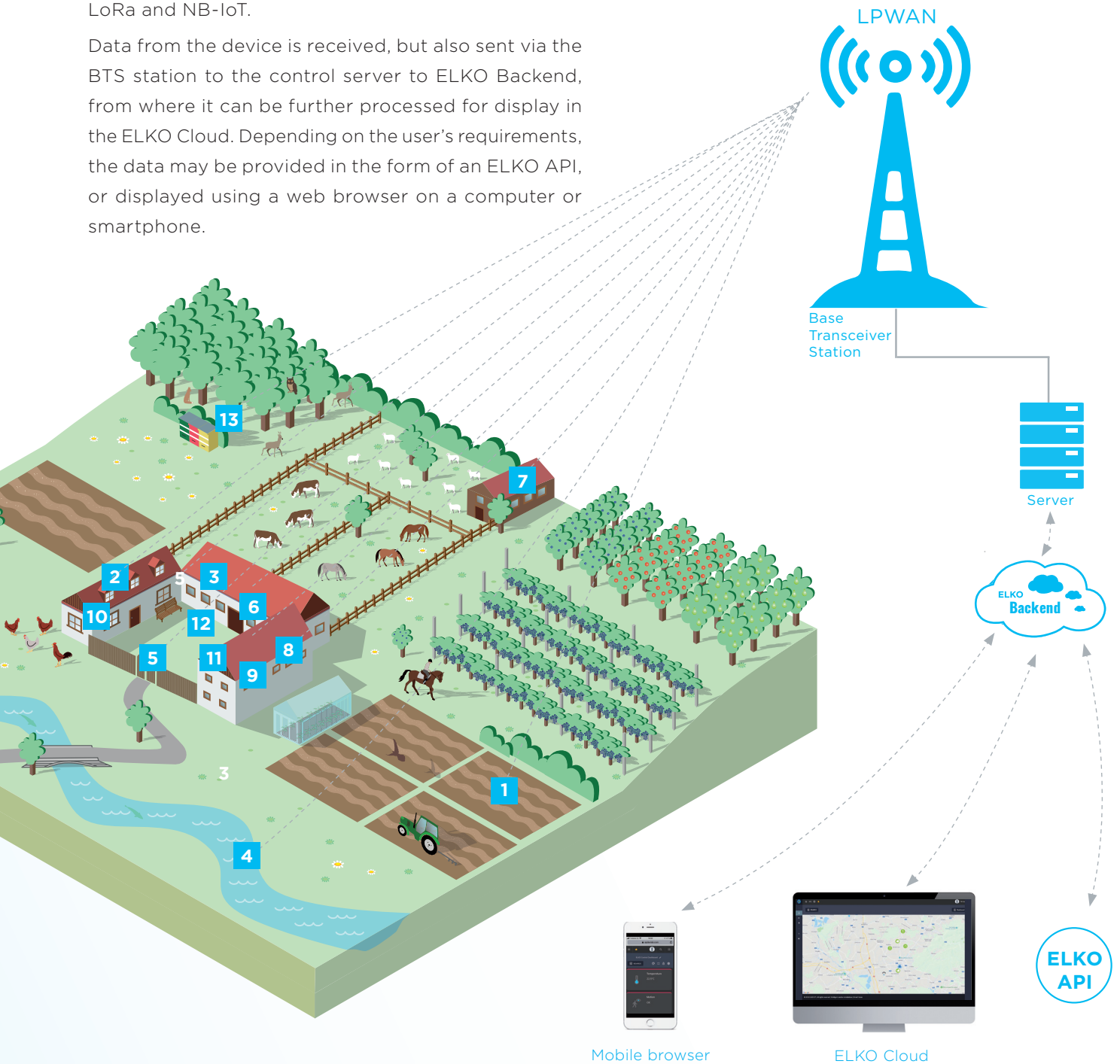
13 Gyroscopic detector





This term includes the concept of connecting appliances, machines, sensors and devices to the structure of an Internet network. This structure uses a specially designed network to transmit small amounts of data with low power consumption over long distances. The iNELS Air concept uses Sigfox, LoRa and NB-IoT.

Data from the device is received, but also sent via the BTS station to the control server to ELKO Backend, from where it can be further processed for display in the ELKO Cloud. Depending on the user's requirements, the data may be provided in the form of an ELKO API, or displayed using a web browser on a computer or smartphone.



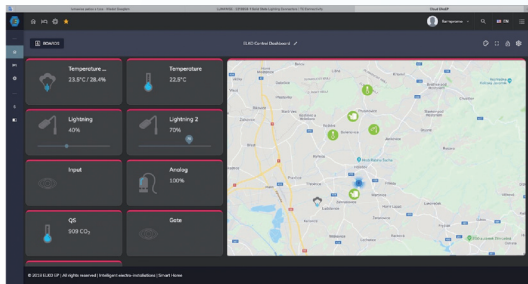
Mobile browser

ELKO Cloud



Display and control

There are several ways to control iNELS Air devices and determine their states. The basic repository of all collected information is the ELKO Backend. From this we can provide information to the user in the form of ELKO API, or directly to ELKO Cloud. This allows you to view the data in the browser application of your smartphone. Notifications can be sent via SMS or directly to your email.



ELKO Cloud

For easy control and display of your data on a computer / laptop, ELKO Cloud is used, which also keeps the history of data from your sensors. ELKO Cloud gives you overall view (maps, datas, graphs).

Signalling

For example, if the pre-set conditions (temperature or other value) are exceeded, the switching light (AirSA-11), for example, lights up the alarm light or switches on the alarm.



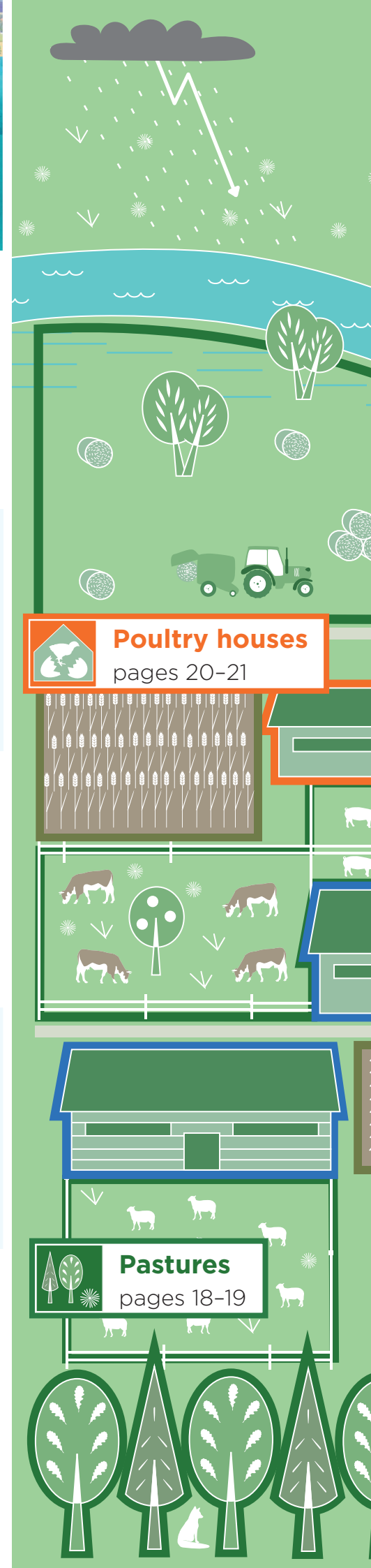
Smartphone

A simple way to check the current status of all connected sensors or detected consumption within your smartphone. Quick overview and easy control wherever you are.



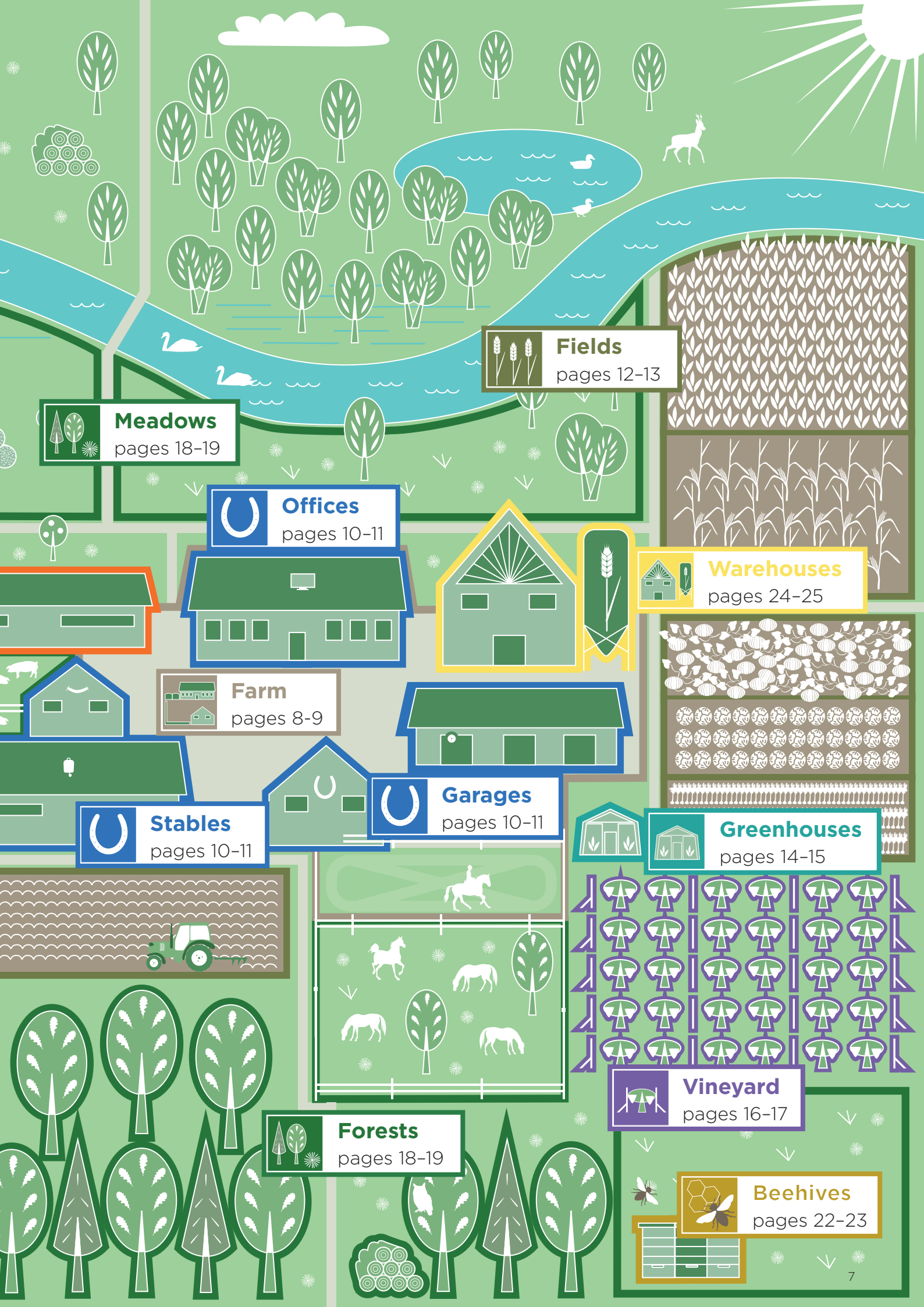
SMS

You can get information about event occurrences by SMS.



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Pastures
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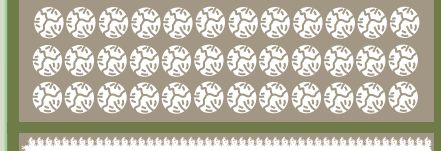
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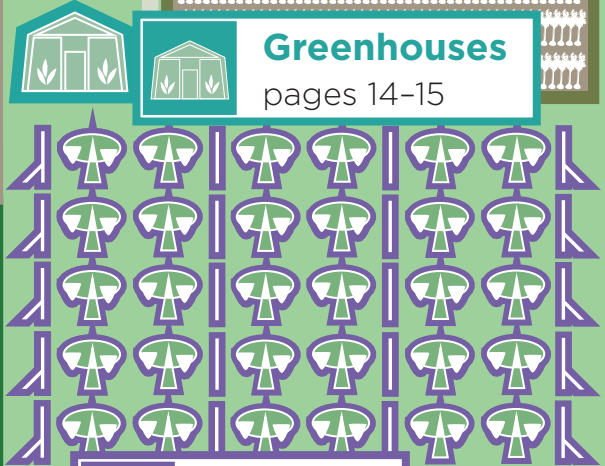
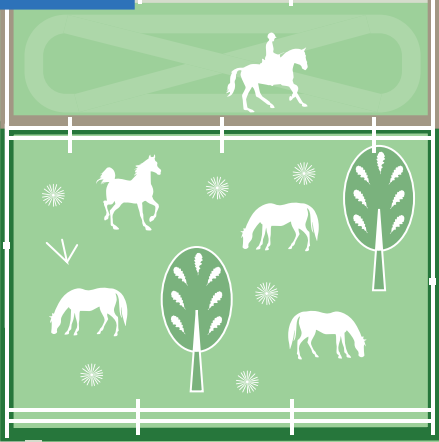
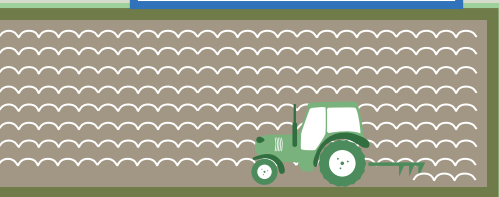
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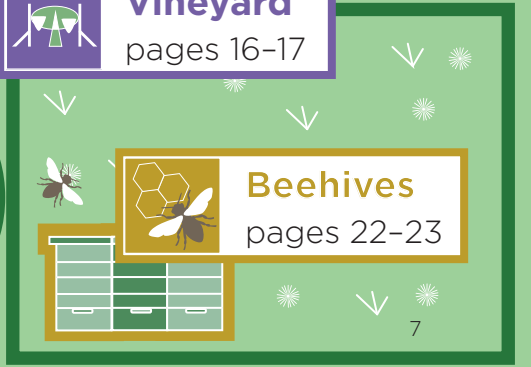
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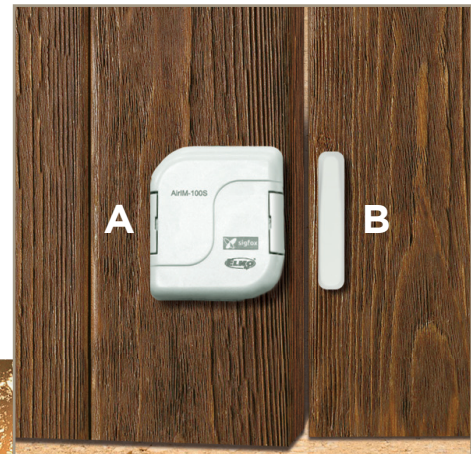


Farm

Every good farmer likes secure areas. After all, here there is everything, buildings, machinery and the harvest from September. The motion sensors and the camera system provide the viewer with the perfect overview of any events in the area, even if they are not present. Noise sensors protect agricultural machinery from theft. In the event that an unauthorized person enters, the owner is immediately informed and can also light the lights in the area and trigger an alarm.

But smart technology can also help to considerably save energy. An example is a light that automatically switches on at dusk, while lit with minimal brightness. When motion is detected, the illumination lights up to full brightness and then decreases to a pre-set value.

Seemingly small but significant relief can be gained with the possibility of the remote opening of gates, and other entrances through a smartphone, which also informs about their possible undesirable opening. The system is fully variable, so the farmer only chooses the elements he currently needs, and then later can add to them at any time.



1 Detection of opening gates and doors

Outdoor magnetic detector AirWD-101

- it can also be used to detect the opening of windows, dormer windows, hatches, cabinets
- magnet (B) controls dry-reed relay (A)
- change of state of the detector message is sent when the magnet is moved away
- user can be informed by SMS, e-mail or smartphone notification
- the operator has the option of closing the door or the gate (see page 10)





2 Twilight sensor

The AirSOU sensor senses the current light intensity at a given location. Depending on the intensity measured, the intensity of the artificial lighting can be adjusted. This simple concept can effectively reduce power consumption.



5 CCTV Camera System

The remote access camera system provides a perfect view of events in an area at any time and from anywhere. The data is stored in the server. The information can be displayed in applications on your computer or smartphone.



3 Noise measurement

The AirNOISE sensor measures the ambient noise level (dB). The device sends a message when the set noise level is exceeded. For example, when a tractor is started unlawfully.



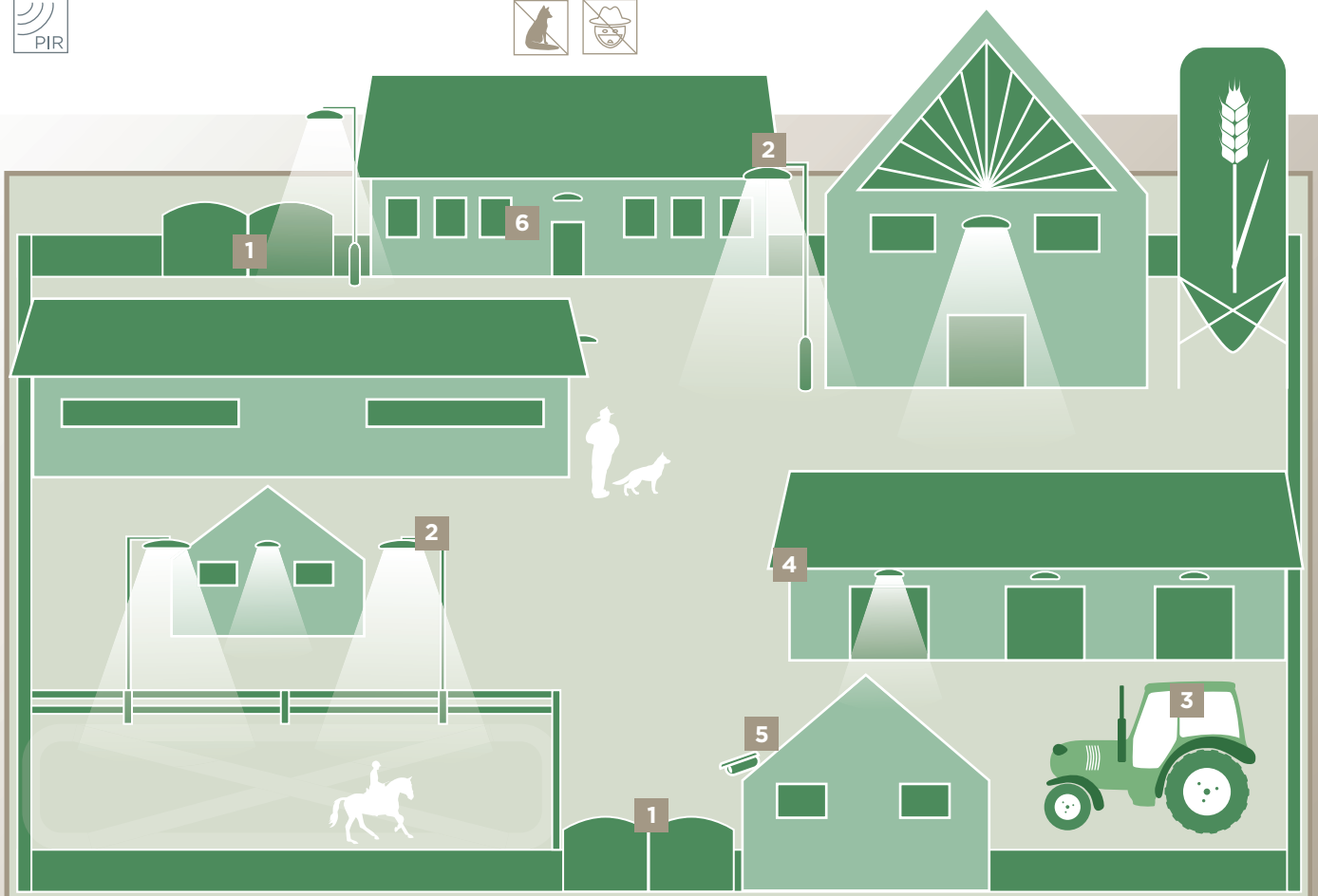
6 Device status monitoring

The AirIM universal input (for DIN rail), in conjunction with the appropriate monitoring relay, monitors the current status of the appliances and detects critical and emergency conditions.



4 Motion detection

The AirMD-101 outdoor motion detector is designed to detect the movement of people, machines and animals in the monitored outdoor area.





Farm buildings

Smart technologies make farm work much easier. ELKO EP offers a wide range of monitoring sensors connected to a comprehensive unified system that can evaluate individual data and provide the user with important information for proper and effective management, and or critical states.

Other sensors highlight open gates, doors or windows, strangers, the presence of undesirable substances in the air of farm buildings, and also monitor the state of feed and the supply of fresh water to farm animals. Additionally, with disasters such as fire or leaking water, the farmer is warned in time and can intervene before large-scale damage occurs.

Garages for parking expensive agricultural machines and their accessories tend to be the target of thieves, so it is advisable to provide these facilities with some of the monitoring safeguards.

An important part of each farm is also the office where it is possible to rely on smart lighting technology, maintaining pre-set climatic conditions, theft security, evidence of arrivals and departures of staff, or controlling energy consumption.



1 Gate remote control

Switching actuator
AirSA-11

- the switch actuator can be used to remotely switch gate driver
- the actuator is equipped with a relay with a changeover contact, which enables to switch up to 16A





2 Intrusion Detection

The AirMD-100 indoor magnetic detector is used to detect open gates, doors and windows where there is a risk of intrusion of unauthorized persons or the escape of livestock.



5 Smoke Detector

The Air SD smoke detector notices the presence of smoke in the room, an alarm is triggered and the operator is alerted immediately.



3 Maintain pre-set conditions

In this case, the AirIM universal input records the current room temperature and humidity. This makes it possible to guard and ensure ideal breeding conditions.



6 Motion detection

The AirMD indoor motion detector detects movement of persons, animals or machinery in the interiors of buildings.



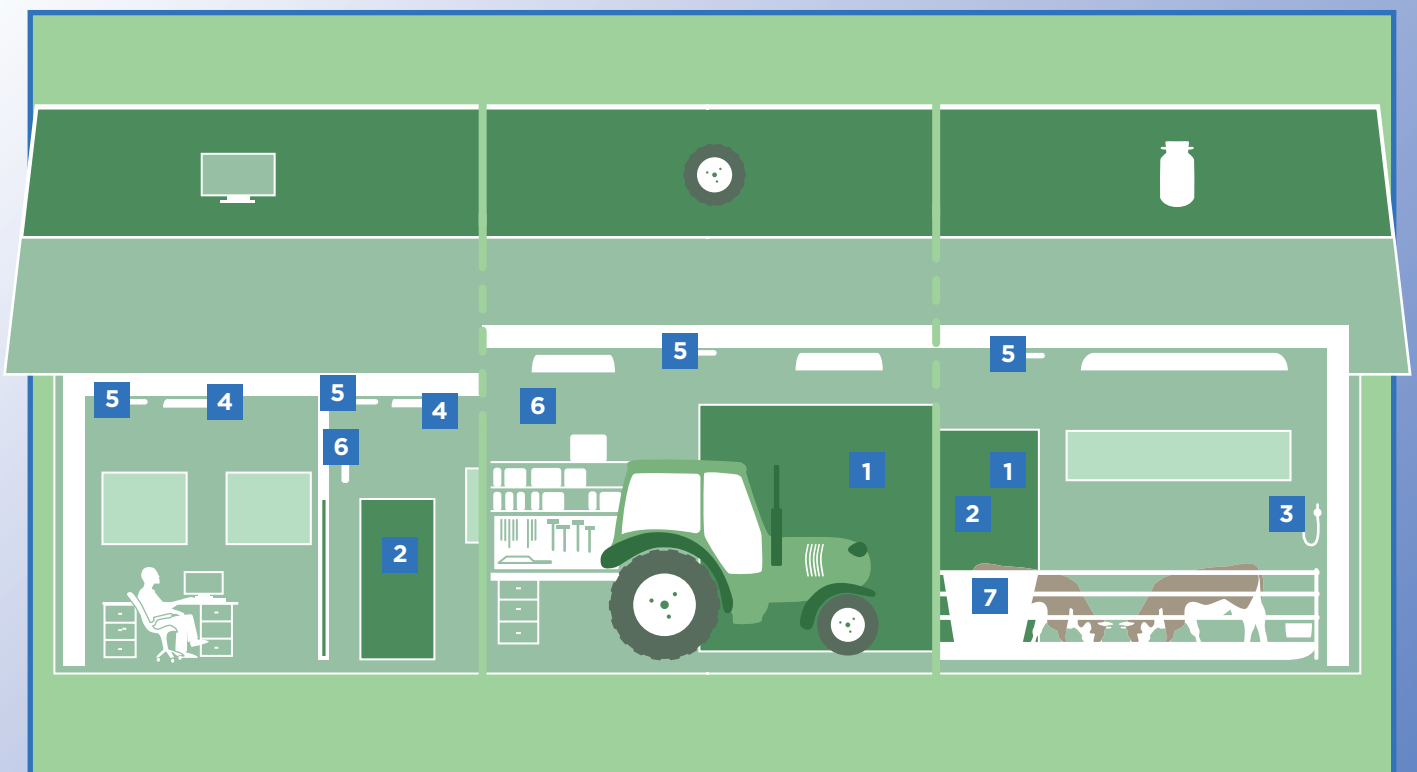
4 Lighting control

Also in halls, buildings or offices, it is desirable to regulate the intensity of light sources. The Air-SLC actuator works for this purpose. Nowhere will be lit unnecessarily. (More in catalogue Smart Street Lighting)



7 Automatic dispensing of feed and fluids

Switching actuator AirSA-11 allows setting of time schedule in ELKO Cloud to switch e.g. feed or liquid dispensers.



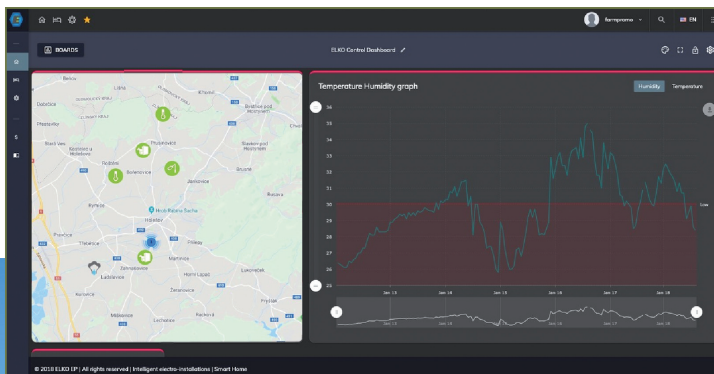


Fields

Information on the current state of conditions in the fields is essential for timely and correct decision-making on further crop cultivation. Sensors and weather stations can monitor the state of the conditions (temperature, humidity and soil, precipitation, wind strength and direction) on production areas. The data is stored in the ELKO Cloud. The information can be displayed clearly in applications on your computer or smartphone. The recorded data is further evaluated and subsequently developed. Farmers can therefore decide in time on the appropriate procedures to take, thus eliminating possible harvest losses or, on the contrary, increasing production.

Humidity level assessment has a significant meaning especially when determining of fuel consumption of agriculture machines - When tyres are slipping because of wet soil, then fuel consumption can increase up to twice.

When exceeding or falling below the critical level, the system immediately sends the information to a mobile phone. Frequent risks are for example floods that commit massive damage. Smart technology helps to warn against their threat in a timely manner. Farmers can, as far as it is possible, allow the floodwater to spill out of their fields, for example into the meadows.



1 Measurement of current crop conditions

universal input
AirIM

- universal input can be understood as universal device for connecting of various sensors or detectors
- it monitors temperature and humidity in the cover, but its capability can be extended by leaf wetness sensor, soil humidity sensor and many other ones
- sends data to server at regular intervals
- you can conveniently view your data in a PC application or smartphone





2 Leaf wetness

The AirIM-100 universal input with the highly sensitive PHYTOS-31 sensor is designed for moisture and icing detection. This allows the prevention of fungal crop diseases.



5 Liquid level sensor

The AirIM universal input with the appropriate probe detects the water level, if the critical threshold is exceeded, an alert will be sent to the farmer.



3 Weather station

The AirMETEO weather station detects wind speed, direction, temperature, humidity and light level directly in the field.



6 Seismic sensor

The AirSEIS seismic sensor senses vibrations belonging to cars of unauthorized persons. An alert is sent when excessive vibration is detected.



4 Measurement of soil moisture

The AirIM universal input with external humidity sensor ECH-20 GS-1 records and sends current status information, at a depth of 25 to 30 cm below ground.



7 Noise measurement

The AirNOISE sensor measures the ambient noise level (dB). In case of a sudden increase in noise, it sends information about the event. For example, when a tractor is started unlawfully.





Greenhouses

Greenhouses allow provision for the almost perfect conditions for the growth of crops, practically at any time of the year. Fruit is therefore weather-independent and more bountiful than when growing outdoors.

However, in greenhouses, it is necessary to ensure optimal conditions for growth, i.e. correct temperature, humidity, intensity and length of lighting, and to ensure ventilation and more. Smart technology connected to the central unit will record data on current greenhouse

conditions and the farmer can make a decision on the next cultivation process on their basis. The ideal conditions, however, can be monitored and maintained by the system without the intervention of a human being

Smart technology can completely control the entire operation of greenhouses. Moisture sensors trigger irrigation only when it is needed, in case of lack of sunshine, the light with the pre-set colour spectrum switches on, if it starts to rain, the windows are closed, when the rain stops they open again.

Greenhouses under the control of smart technology will always deliver a perfect harvest that will please with both the high yield and the quality of the crops and of course especially the great taste.



1 Measurement of soil moisture

Universal input + Soil humidity sensor
AirIM + ECH-20 GS-1

- monitors the current humidity status in the soil
- sends data to the ELKO Cloud repository at regular intervals
- you can conveniently view your data on a PC platform or smartphone





2 Measurement of current crop conditions

The AirIM universal input with temperature and humidity sensor records the current state of the quantities in the crops.



5 Air quality monitoring

If the AirQS sensor detects the exceedance of the critical CO₂ values, the windows will be automatically opened, for example, in combination with the AirSA-11 actuator.



3 Twilight sensor

The AirSOU sensor controls the intensity of the greenhouse lighting. If the intensity of natural light drops below the desired value, it can activate the artificial light.



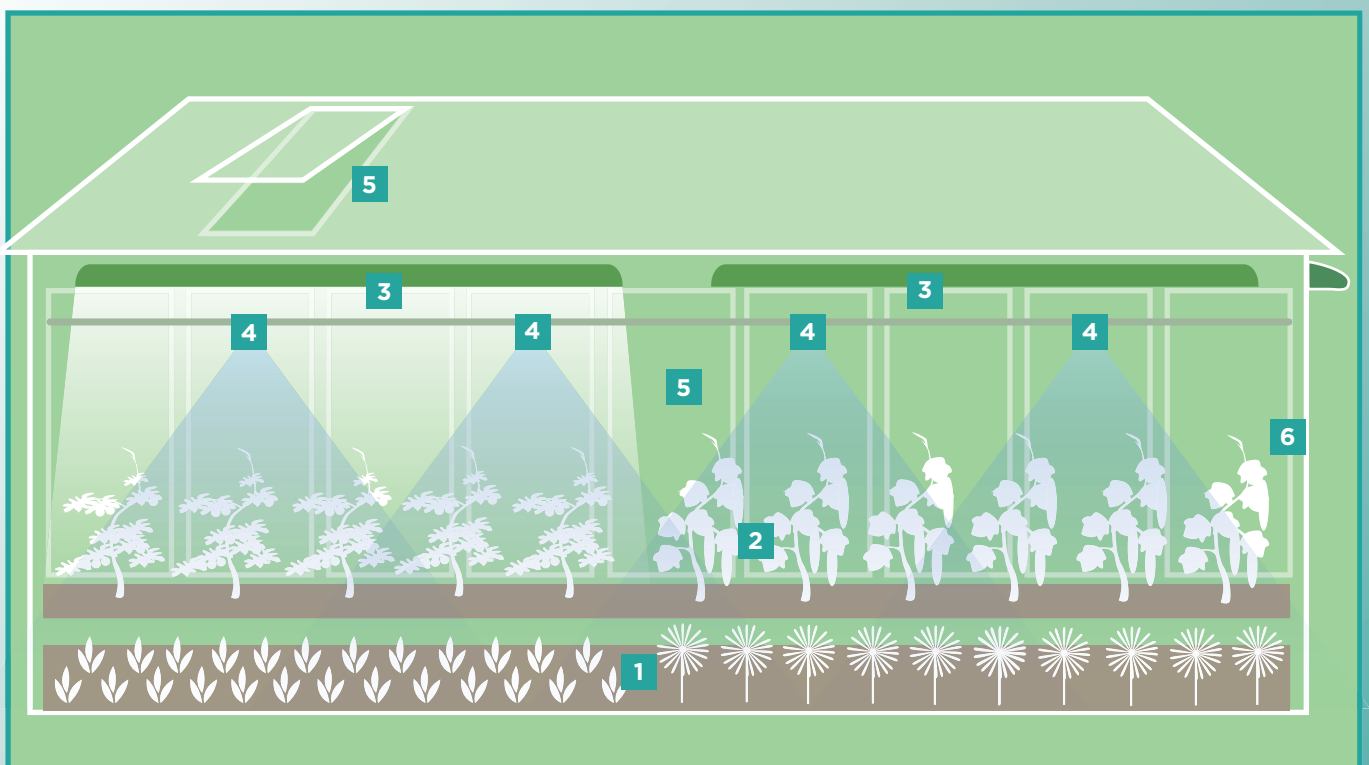
6 Device status monitoring

The AirIM universal input (for DIN rail), in conjunction with the appropriate monitoring relay, monitors the current status of the appliances and detects critical and emergency conditions.



4 Automatic irrigation

If the system detects a shortfall of the soil moisture condition, the irrigation starts automatically with the valve AirValve being operated.





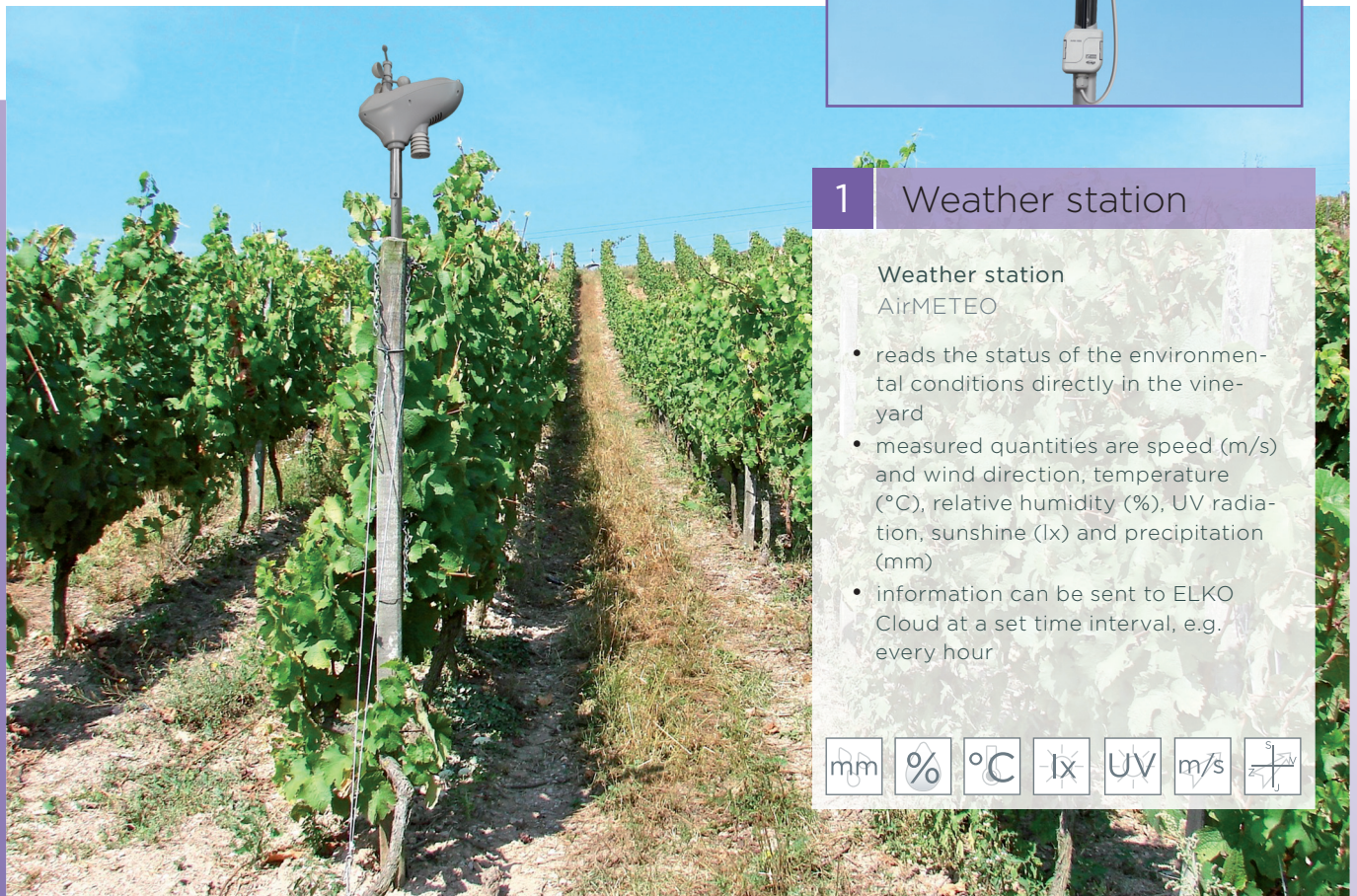
Vineyard

The basis for producing delicious wines is healthy and mature grapes. Furthermore, it depends on the skill, experience and capabilities of the winemaker.

Smart technology can also help with providing a good foundation. The main use is to find current actual data on the meteorological situation and the current conditions not only in the vineyard itself but also in the soil where the temperature and humidity are sensed.

Using weather stations and other sensors connected to the ELKO Cloud, we can closely monitor many variables that can prevent unwanted losses. If the set values are exceeded, the winemaker is notified by SMS or notification on his smartphone.

Our technology will also help protect harvesting or technical equipment from theft. The gyroscopic sensor senses vibrations from cars that are being driven through, and the vital information is instantly sent by alert directly to their phones. There is also the appropriate deployment of motion sensors. Thanks to them, the lights in the respective part of the vineyard can be switched on to warn unauthorized people that they are known about.



1 Weather station

Weather station AirMETEO

- reads the status of the environmental conditions directly in the vineyard
- measured quantities are speed (m/s) and wind direction, temperature (°C), relative humidity (%), UV radiation, sunshine (lx) and precipitation (mm)
- information can be sent to ELKO Cloud at a set time interval, e.g. every hour





2 Measurement of current crop conditions

The AirIM universal input with temperature and humidity sensor records the current state of the quantities in the crops.



4 Seismic sensor

The AirSEIS seismic sensor senses vibrations belonging to cars of unauthorized persons. An alert is sent when excessive vibration is detected.



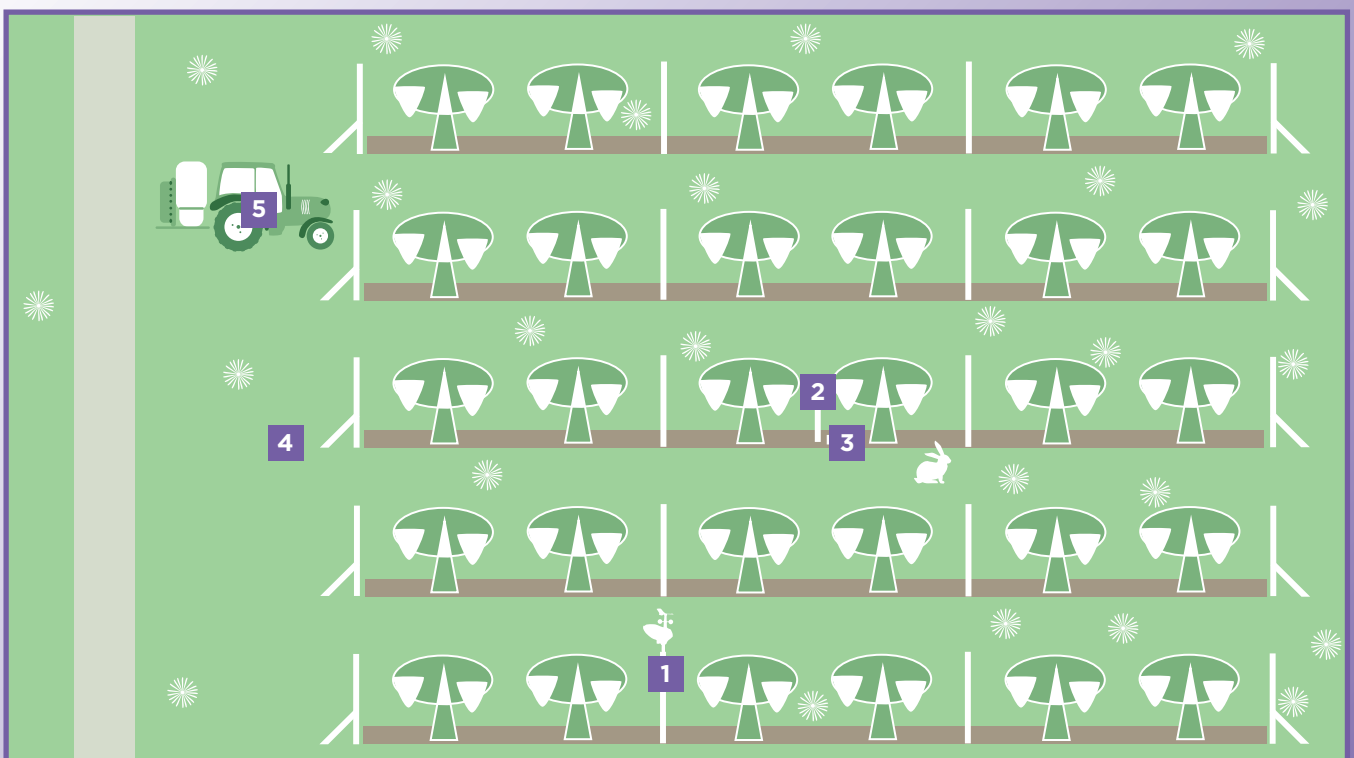
3 Measurement of soil moisture

The AirIM universal input with external humidity sensor records and sends current status information, at a depth of 25 to 30 cm below ground.



5 Noise measurement

The AirNOISE sensor measures the ambient noise level (dB). In case of a sudden increase in noise, it sends information about the event. For example, when a tractor is started unlawfully.





Forests, meadows and pastures

Extensive meadows, pastures and forest stand full of trees, wildlife, and often the field or forest nurseries, place tremendous demands and require the proper care. Watching hundreds of hectares and taking care of everything that's happening to them is a superhuman task. Not in the 21st century in the world of smart technology. Forests, meadows and pastures can be guarded, protected, and cared for by iNELS Air detectors. Fires, movement of people and animals, air quality, and the theft of hay, logs or technical equipment. All this and much more can be monitored by a combination of remote access detectors.

In the pastures and paddocks, it saves the time and work, with automatic water replenishment or the remote opening of a gate or door. An break in the fence is detected immediately, not by an on-the-spot check.

A locator pinned to halters or collars will help to trap the stolen or escaped animals. The driveways and commodities themselves can be watched through the camera system, motion detectors and gyro sensors. In case of any unusual situation, a signal is sent, which informs the owner directly via mobile phone through the ELKO Cloud. For example, if we calculate the cost of a gyroscope sensor against the price of a stolen log, the investment definitely pays off.



1 Securing stored wood

Gyroscopic detector AirGYRO

- the gyro detector responds to position change, the information is instantly sent to the server
- farmers are instantly notified by a smart phone or SMS message that logs are being handled, so they can intervene against thieves in a timely manner





2 Detection of open gates and entrances

The AirMD-100 outdoor magnetic detector is used to detect open doors or gates where there is a risk of intrusion of unauthorized persons or the escape of livestock.



5 Automatic dispensing of feed and fluids

Switching actuator AirSA-11 allows setting of time schedule in ELKO Cloud to switch e.g. feed or liquid dispensers.



3 Seismic sensor

The AirSEIS seismic sensor senses vibrations belonging to cars of unauthorized persons. An alert is sent when excessive vibration is detected.



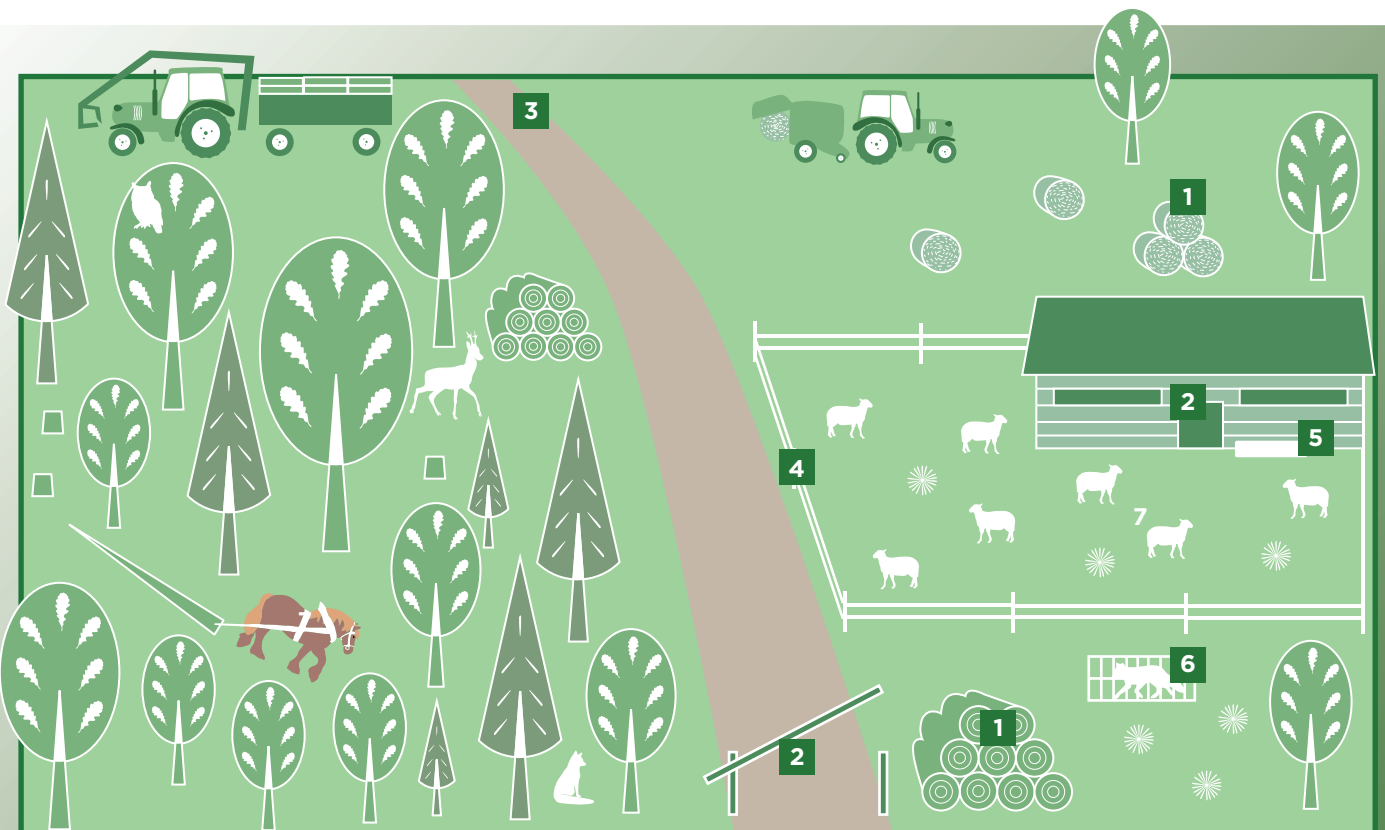
6 Security against intruders

The trap holds the vermin and the AirIM input module alerts the farmer to its capture.



4 Identify the interruptions in fences

The AirIM universal input with a current relay or a current transformer is used to detect faults (reduced effectiveness due to overhanging branches, grasses growing through or breaks) in the electric fence.





Poultry and hatchery

Meat and eggs are inherent among basic food and raw materials for further processing. Honest breeders are trying to maintain maximum quality of the entire process from hatching through fattening up to the daily care of the difficult conditions favourable for breeding. Whether its chickens, geese, ducks, turkeys, or less traditional species like quails and pheasants, it's always necessary to ensure that poultry is provided with the ideal conditions for healthy growth.

For example, with hatching, temperature is a key factor that has to be stable at all times. At the time of hatching, an excess of harmful gases escapes from the eggs, which can endanger the life of the hatching chickens. Therefore, it is necessary to monitor the air quality, to regulate ventilation and to intervene immediately when dangerous levels are detected.

For poultry breeding, it is also necessary to provide suitable light conditions, imitating daylight, not only in terms of its colour spectrum, but also in the length and intensity of the light. In seasons with a shorter daylight time, it is necessary to artificially ensure the extension of the light in the halls and its regulation, imitating the onset of daylight and twilight.

For the successful growth of poultry, it is necessary to maintain all the mentioned quantities in pre-set values.



1 Timed illumination

Twilight sensor + Automat with dimming
AirSOU + DIM-2

- detects the current outdoor lighting intensity and controls the intensity of indoor artificial lighting
- simulate day and night to modulate the biorhythms of laying hens





2 Intrusion Detection

The AirMD-100 indoor magnetic detector is used to detect open gates, doors and windows where there is a risk of intrusion of unauthorized persons or the escape of livestock.



5 Smoke Detector

The AirSD smoke detector alerts for the presence of smoke in the hall and the farmer is immediately notified.



3 Measurement of the actual conditions

The AirIM universal input with temperature and humidity sensor records the current state of the quantities in the hall and ensures ideal breeding conditions.



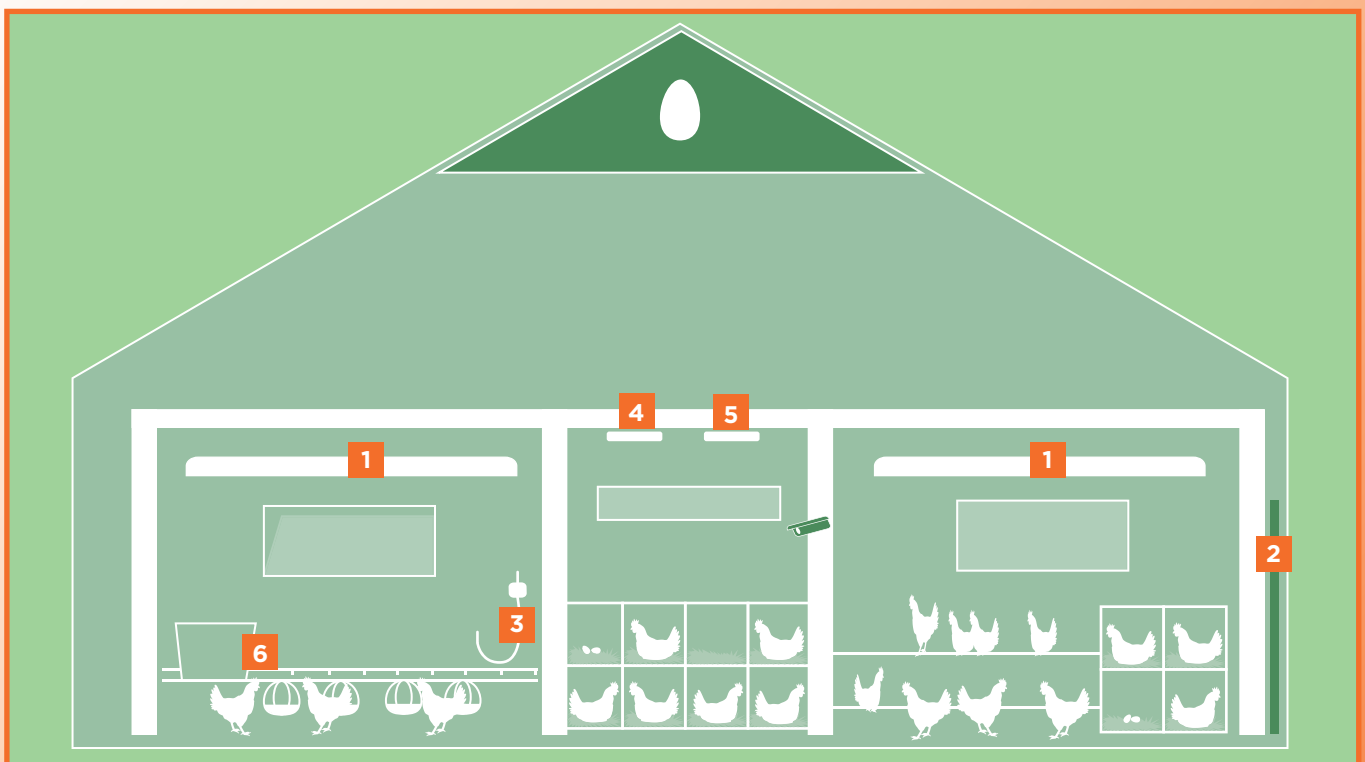
6 Automatic dispensing of feed

Switching actuator AirSA-11 allows setting of time schedule in ELKO Cloud to switch e.g. feed dispensers.



4 Air quality monitoring

If the AirQS sensor detects the exceedance of the critical CO₂ values, the windows will be automatically opened or notifications sent to the breeder.





Beehives

The mass of a hive provides beekeepers with important information on the condition of the colony, and of course the size of the colony. But getting them using a mechanical beehive scale is almost unrealistic. Convenient and efficient solutions are offered by smart technology.

An electronic scale is permanently stationed directly under the hive. The sensor reads the weight and ambient temperature at regular intervals and sends the data to the ELKO Cloud. The beekeeper can display the current data, history, or convert it to clear graphs. The data gathered informs the beekeeper of the stock, through the feeding season, hibernation, or any extraordinary situation. Thanks to this information, the

beekeeper can not only plan activities throughout the year, but also intervene in a timely manner in emergency situations of which he is informed on his mobile phone.

The overall picture of the colony is complemented by data from meteorological stations located near the apiary.



1 Weight sensing of hives

Electronic weighing scale AirBEE

- the electronic weight scales, located permanently under the hive, senses the weight at specified time intervals
- data is stored in the ELKO Cloud and can be conveniently viewed by the beekeeper on a computer or in the application on his smartphone





2 Weather station

The AirMETEO weather station detects wind speed, wind direction, temperature, humidity, or light level directly at the apiary.



5 Noise measurement

The closed mobile apiary can be monitored by the AirNOISE noise sensor, which reports the engine sound of any connected vehicle.



3 Protection against rodents

The AirRAT motion detector, based in the rodent bait box, monitors their activity.



6 Seismic sensor

The AirSEIS seismic sensor senses vibrations belonging to cars of unauthorized persons. An alert is sent when excessive vibration is detected.



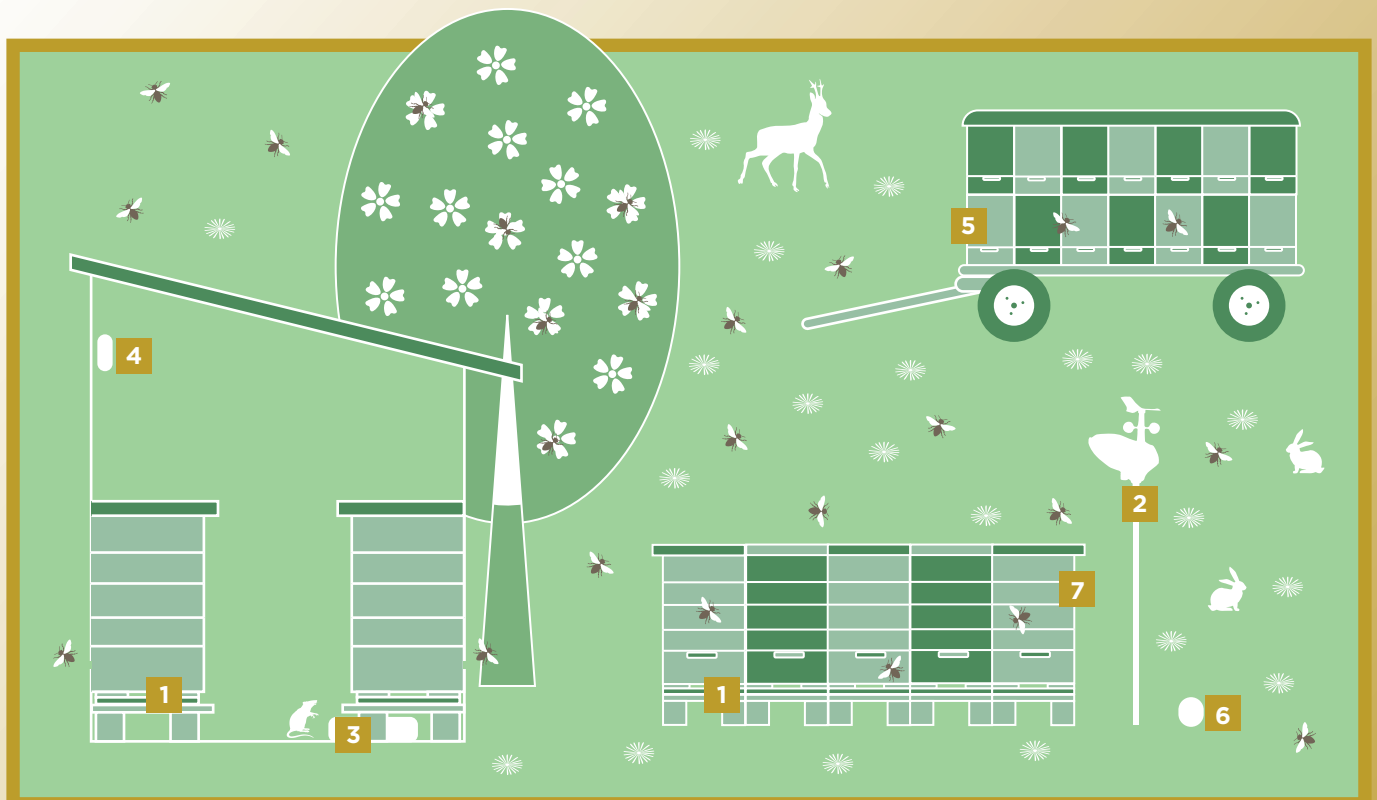
4 Anti-theft security

The AirMD indoor motion detector sends alerts about the movement of people or animals the closed space of the apiary.



7 Anti-theft security

The AirGYRO gyrosopic sensor warns beekeeper in case of unauthorized manipulation with loose hives.





Silos, granaries, warehouses, barns

Smart technologies are usable to maintain the right conditions for longer storage of products. Sensors inserted into the crop piles of the farmer's crop will alert the farmer to the conditions present that are conducive to the formation and spread of rot and mould. They can also check the status of the conditions and the level of filling of containers that cannot be seen.

The grain preservation in the silos is ensured by the CO₂ produced, if there is not enough, the air quality sensor will warn of the shortage. There is a high risk of fire in the storage areas, so it is highly desirable to provide them with smoke detectors.

The monitoring relay monitors the state of machines such as grain silos and conveyors, cleaners, dryers, fans, and other devices, and detects their critical and emergency conditions. Universal sensors monitor the current status of the passage of current or voltage and draws attention to any fluctuations.



1 Protection against rodents

Rodent trap AirRAT

- motion detector located bait box monitors their activity
- in this way it informs about their presence and calls for intervention
- a trap can also serve to physically eliminate rodents





2 Measurement of the actual conditions

The AirIM universal input records the current status of the variables (temperature and humidity) in the product storage area.



5 Smoke Detector

The AirSD smoke detector detects that there is a source of smoke in the room and sends a notification.



3 Ultrasonic fill-level

Areas requiring special conditions, such as silos, can be equipped with the AirWS ultrasonic fill-level that reports the density of the bulk or liquid.



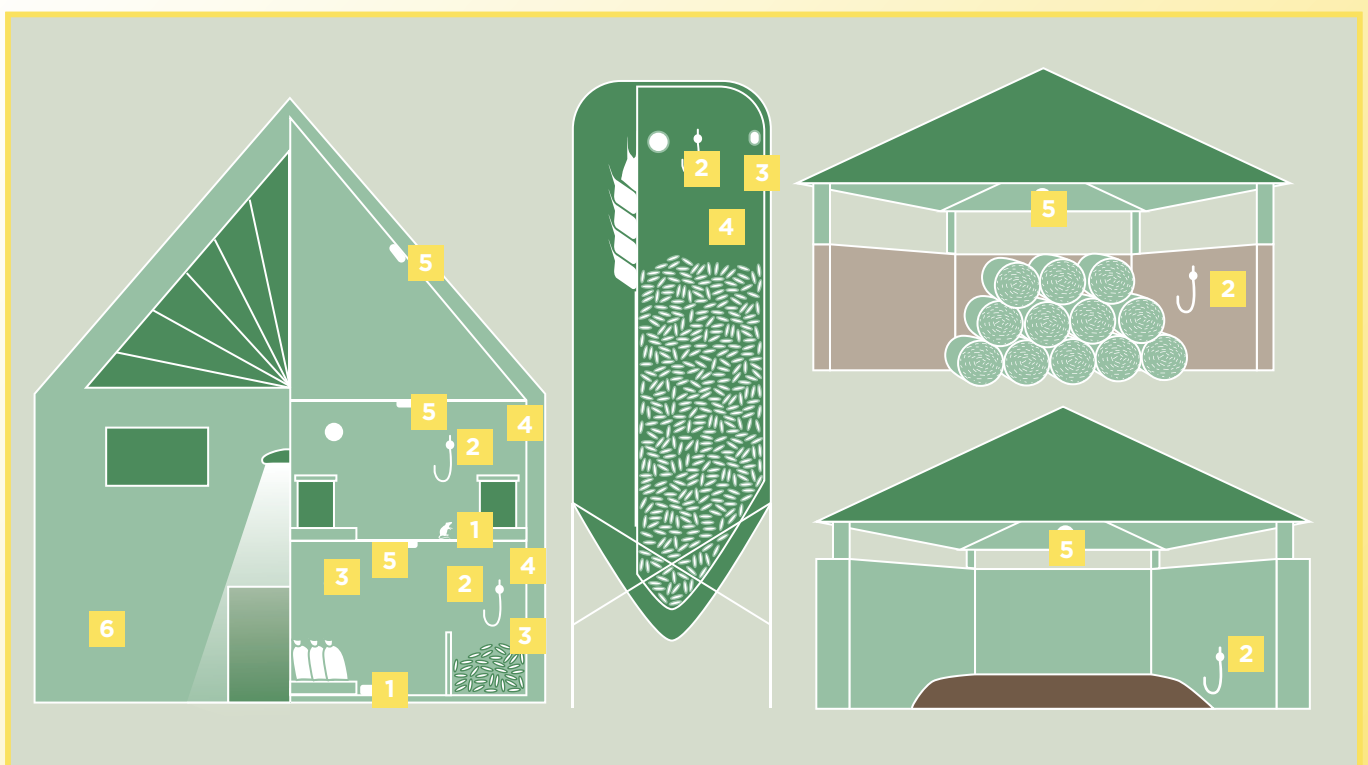
6 Device status monitoring

The AirIM universal input (for DIN rail), in conjunction with the appropriate monitoring relay, monitors the current status of the appliances and detects critical and emergency conditions.



4 Air quality monitoring

If the AirQS sensor detects the exceedance of the critical CO₂ values, the windows will open automatically. Conversely, in areas requiring the presence of CO₂, it will alert the farmer if its status is low.



Actuators

Lighting control



Module for control of lighting

AirSLC-100L/DALI

- lighting switching and control
- DALI communication with ballast is used to control light intensity (alternatively 0-10V)
- continuous power supply 110 - 230V AC
- enhanced IP65 protection (dust and splash protection)



LWES



NEMA

Outdoor lighting control module

DALI: AirSLC-100L/LWES/DALI
AirSLC-100NB/LWES/DALI
AirSLC-100L/NEMA/DALI
AirSLC-100NB/NEMA/DALI

0-10V: AirSLC-100L/LWES/0-10V
AirSLC-100NB/LWES/0-10V
AirSLC-100L/NEMA/0-10V
AirSLC-100NB/NEMA/0-10V

- designed to measure light intensity
- DALI or 0-10V communication is used for intensity control
- internal illumination sensor, range 5 - 100,000 Lx
- internal temperature sensor in the range -30 ... 70 ° C
- protection IP66, UV resistant
- power type LUMAWISE ENDURANCE S. (LWES) or NEMA SOCKET (NEMA)

Detectors

Motion detection



Motion detector (indoor)

AirMD-100S, AirMD-100L,
AirMD-100NB

- detects people moving in a supervised area
- adjustable detector sensitivity
- battery power



Motion detector (outdoor)

AirMD-101L, AirMD-101NB

- detects the movement of people, machines or animals in the monitored area
- adjustable detector sensitivity
- battery power
- enhanced IP65 protection (dust and splash protection)



Magnetic detector (indoor)

AirWD-100S, AirWD-100L,
AirWD-100NB

- primarily designed to detect opening / closing windows, doors or gates
- activation occurs by removing the magnet from the detector
- activation occurs by removing the magnet from the sensor
- battery power

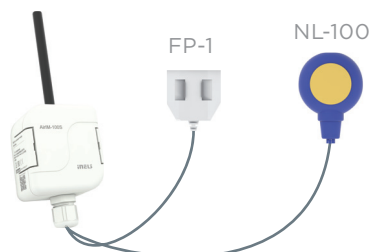
Liquids, level



Flood detector

AirSF-100S, AirSF-100L,
AirSF-100NB

- the activation occurs after flooding the bottom contacts on the detector
- sound and vibration signalling
- battery power
- enhanced IP68 protection



Universal input and probes

AirIM-100S, AirIM-100L, AirIM-100NB and FP-1, NL-100

- it measures the level and warns of flooding or lack of water in the tank
- FP-1 - Flood probe
- NL-100 - Plastic float sensor

Smoke detection



Smoke detector

AirSD-100S, AirSD-100L,
AirSD-100NB

- detects smoke, temperature and humidity
- automatic testing of functionality
- battery power
- dimension 120 mm × 36 mm
- weight 176 g

Switching



Switching actuator

AirSA-11L, AirSA-11NB

- the switch actuator can be used to remotely switch appliances
- the actuator is equipped with a relay with a switching contact, which enables to switch high current loads up to 16A
- continuous power supply 110 - 230V AC
- enhanced IP65 protection (dust and splash protection)



Magnetic detector (outdoor)

AirWD-101S, AirWD-101L,
AirWD-101NB

- primarily designed to detect opening / closing windows, doors or gates
- activation occurs by removing the magnet from the detector
- status change information is sent to server
- battery power
- enhanced IP65 protection (dust and splash protection)



Gyroscopic detector

AirGYRO-100L, AirGYRO-100NB

- responds to changing its location
- sends a message to the server when it is detected
- battery power
- enhanced IP65 protection (dust and splash protection)



Rodent trap

AirRAT-100S, AirRAT-100L,
AirRAT-100NB

- the motion detector located in the rodent bait box monitors their activity
- in this way it informs about their presence and calls for action
- battery power

Sensores

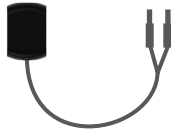
Measurement of energy consumption



Pulse transmitter

AirTM-100S, AirTM-100L,
AirTM-100NB

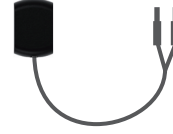
- wireless pulse transducer designed for sensing pulses from energy meters (electricity meters, gas meters, water meters)
- information about pulse counts (consumption) is sent to the server
- battery power
- enhanced IP65 protection (dust and splash protection)



LED sensor

LS

- senses pulses from gauges that use LED flashes for indication
- the sensor is placed outside the meter by fixing it to the appropriate location
- length of cable 3 m



Magnetic sensor

MS/WS

- detects the magnetic pulses that are generated by turning the indicator on / off of the gauge dial
- the sensor is placed outside the meter by fixing it to the appropriate location
- length of cable 3 m

Fill level detection



Ultrasonic fill-level

AirWS-100S, AirWS-100L,
AirWS-100NB

- informs about the filling level of the container, storage tank or garbage cans
- resistance to dirt, dust, moisture and fogging
- battery power
- protection IP65 is suitable for installation in demanding environments



Seismic sensor

AirSEIS-100L, AirSEIS-100NB

- senses the vibration from its surroundings and thereby detects movement of vehicles, persons or animals
- battery power
- enhanced IP65 protection (dust and splash protection)

Monitoring



Universal input (for DIN rail)

AirIM-100S, AirIM-100L,
AirIM-100NB,
AirIM-100S/M, AirIM-100L/M

- in conjunction with the sensor, it measures the actual temperature, humidity or mediates meteorological data
- in conjunction with the relevant monitoring relay, monitors the current status of the appliances and detects critical and emergency states
- 24-240 V AC power supply in the cabinet design, or IP65 battery power
- in I-MODULE design, rack-mount or IP65 enclosure for outdoor use



Soil humidity sensor

ECH-20 GS-1

- high accuracy $\pm 0.03\%$
- resistant to environmental and water penetration
- dimension 89 mm \times 18 mm \times 7 mm



Weather station

AirMETEO

- provides information on speed (km/h): 0 ... 180 km/h and wind direction, temperature ($^{\circ}\text{C}$): -30°C ... 65°C , relative air humidity (%): 1 ... 99 % ($\pm 5\%$), UV radiation, sunshine (lx): 0 ... 400 kLux, $\pm 15\%$, and precipitation (mm): 0 ... 9999 mm
- battery power
- network Lora, NarrowBand



Noise sensor

AirNOISE

- measures the ambient noise level (dB)
- dynamic range is from below 27 dBA to 145 dB
- frequency range extends from 10 Hz to 12 kHz
- light surface microphone for general purpose measurements on planar and curved surfaces

Air quality



Air quality sensor - carbon dioxide (CO₂)

AirQS-100S, AirQS-100L,
AirQS-100NB

- measurement of CO₂
- automatic testing of functionality
- continuous power supply 12-240 V AC / DC
- sensitivity 300 ... 5000 ppm, accuracy 5 % (0 ... 180 ppm)
- dimension 120 mm × 36 mm
- weight 185 g



Air quality sensor - carbon monoxide (CO)

AirQS-101S, AirQS-101L,
AirQS-101NB

- safety device for CO concentration monitoring
- information about the actual temperature and humidity
- battery power
- sensitivity 0 ... 10000 ppm, accuracy 5 % (0 ... 500 ppm)
- dimension 120 mm × 36 mm
- weight 184 g

Twilight



Twilight sensor

AirSOU-100S, AirSOU-100L,
AirSOU-100NB

- allows you to capture the current lighting intensity and to control the intensity of artificial lighting thanks to this information, thereby reducing power consumption
- battery power
- enhanced IP65 protection (dust and splash protection)



Temperature sensor

TC

- the sensor is made from a NTC thermistor with a PVC end
- temperature range 0 ... + 70 ° C
- length 100 mm
- weight 5 g



Temperature sensor

TZ

- the sensor is made of an NTC thermistor, which is embedded in metal end cap by heat-conductive putty
- temperature range -40 ... +125 ° C
- length 110 mm
- weight 4,5 g

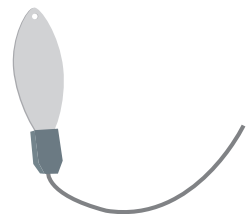


Combined sensor

HTML2500LF

- measures temperature and humidity
- humidity range 1 ... 99% (± 3%)
- temperature range - 40 ... + 85 ° C
- length 326 mm
- weight 17,5 g

Monitoring relay



Leaf wetness sensor

PHYTOS-31

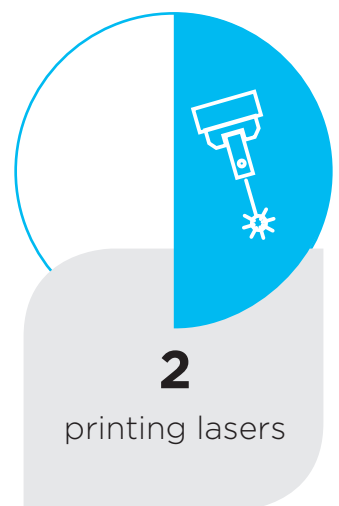
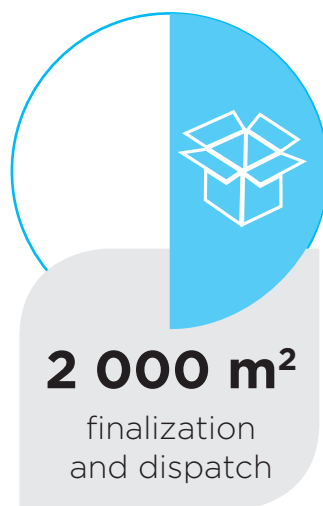
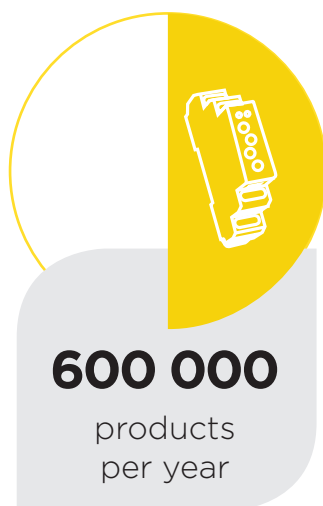
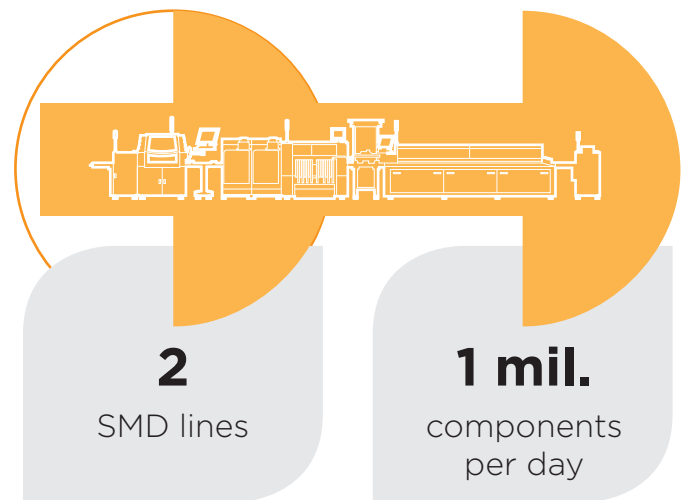
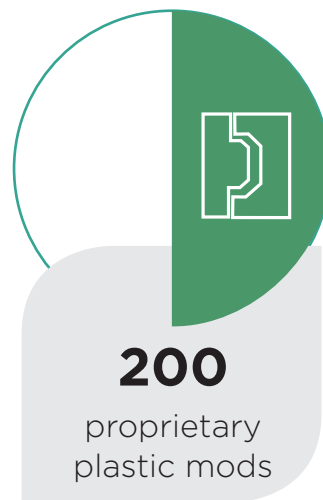
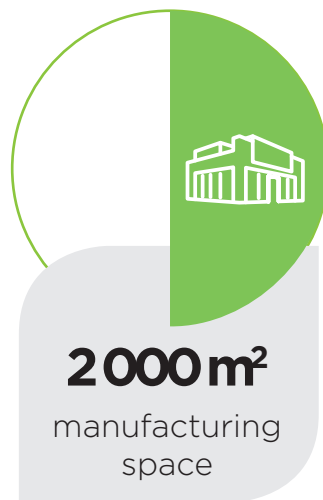
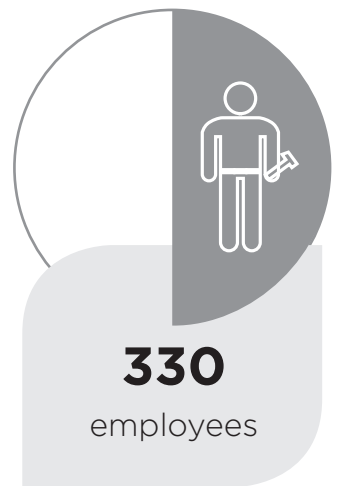
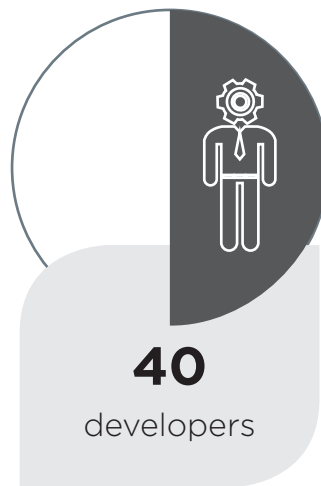
- very sensitive humidity and icing sensor
- without calibration
- dimension 112 mm x 58 mm x 7,5 mm
- length of cable 5 m

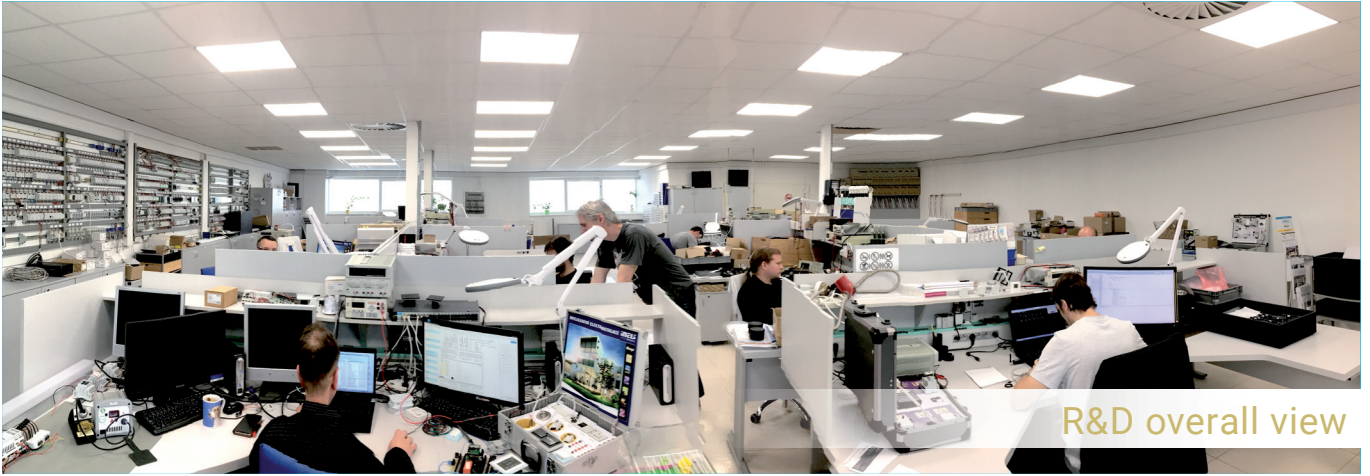


Relevant monitoring relay

- catalogue sensors and monitoring relays

Others just resell HOWEVER, WE DEVELOP AND MANUFACTURE PRODUCTS OURSELVES!





R&D overall view



Manufacturing hall

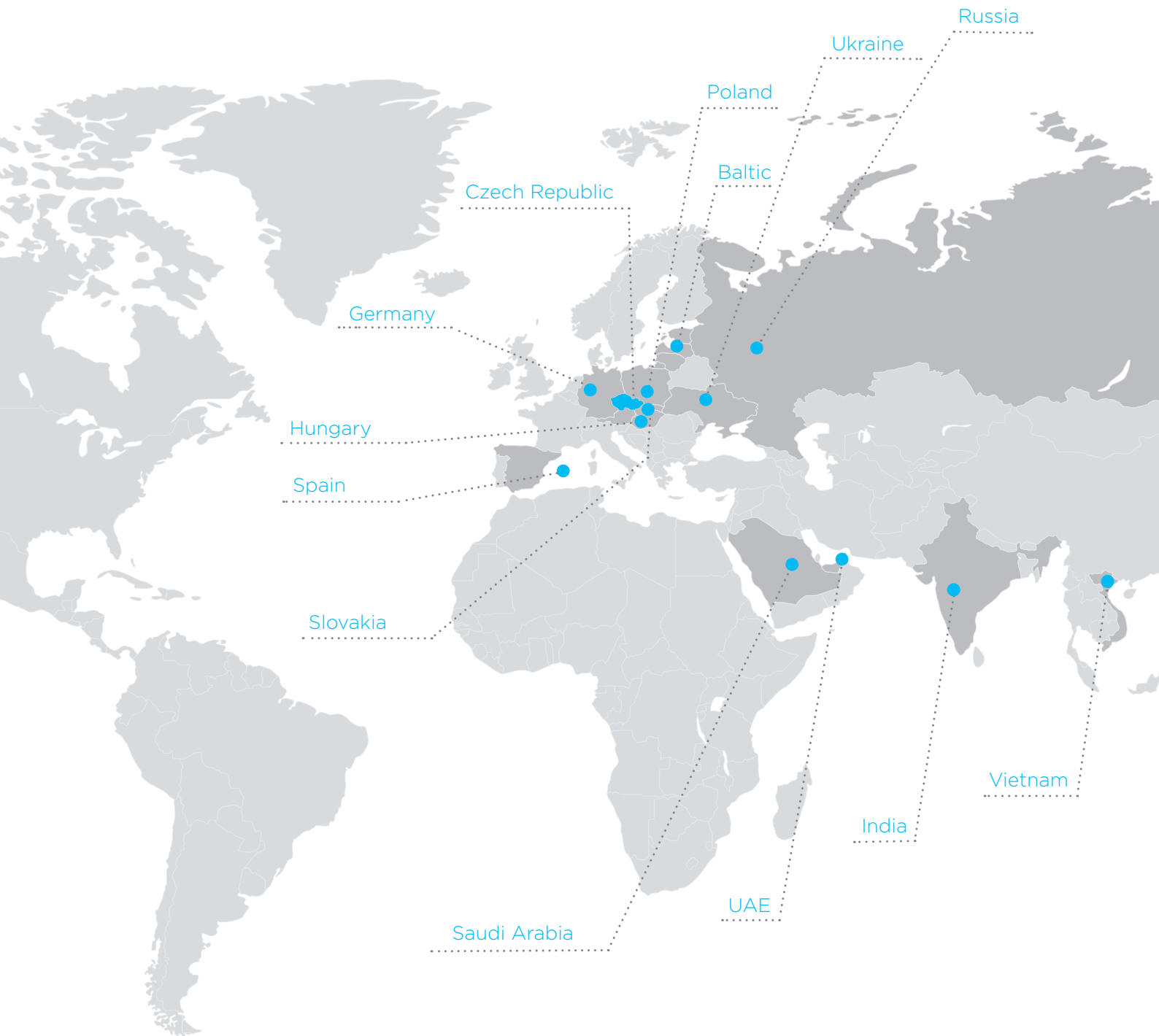


Testing lab



Finalization and dispatch

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