digicom
ENERGY

CATALOGUE - 2022 edition

05 PREDICTIVE SYSTEMS

Today, the planning of maintenance work, the prevention of faults and out-of-service in lifts and escalators, improving service, has become increasingly important.
Being able to detect faults early improves plant management, prevents major economic and environmental repercussions and also safeguards the durability of the installations themselves.

Perfectly efficient installations result from constant monitoring and planned maintenance based on experience gained from sensor data.
The monitoring of lifts and escalators involves the use of intelligent, connected sensors.
Installed close to the point to be monitored, they send data on motor vibrations, stop and out-of-service alarms.

In lifts, the job of the sensors is to send information about car travel, including vibrations, floor positions, door control and out-of-service situations.

WIRELESS

RELIABILITY

SAFETY

In predictive maintenance, electricity monitoring is not neglected in order to complete the solution also from a smart city point of view.
The platform collects data from sensors that constantly monitor the status of the installations.
Thanks to our algorithms, we have the ability to detect possible malfunctions, analysing functionalities better and better and creating a solid platform for future innovation.

ORDER CODE
8D5899

GSM/GPRS module · 3D accelerometer · Backup battery · BLE · GPS · RS232 · RS485 · MQTT

IoT sensor for Lifts

- 2G Module
- 3-Axis Accelerometer
- Integrated algorithm for: Run counting, Sudden lockouts, Electrical blackouts, Abnormal vibrations, Levelling at floor (requires external reed)
- Remote updating

Look@BOX is an IoT sensor for the Lift and Escalator market born from Digicom's experience in the development of BlackBox in the automotive sector. The development of algorithms capable of analysing driving style (driver behaviour) and identifying accidents (crash detection) was the starting point for this product generation.
Look@BOX is designed to be installed on the roof of the car and has the task of "capturing" accelerometer traces.
By means of specific algorithms, it will identify for each run: Direction, Duration, Speed, Distance travelled, Blockages and Abnormal vibrations.
Additional information can then be integrated by remote On/Off contacts via 4 opto-isolated inputs, temperature with the PTC input, and Blackouts using the backup battery.
In addition, with the use of an external sensor, it is also possible to detect floor levelling accurately.
Through the MQTT protocol, Look@BOX will send the data to the Digicom Look@CLOUD platform or to third-party platforms where further Anomaly Detection and Predictive Maintenance algorithms will be defined with the collected data.
Thanks to the Bluetooth interface, it is possible to update and configure the device locally (via APP on Mobile Phone) and interface specific Bluetooth sensors such as Look@DOOR.
The dedicated sensor for the lift car door is able to detect: opening movement, closing movement with relative timing or any barrier activation.

APPLICATIONS
Lifts
Escalators

CERTIFICATIONS
CE Marking
RED
RoHS

PACKAGE CONTENTS
8D5899 LOOK@BOX
Switching power supply unit (IN: 100–240 Vac / 50–60Hz / 0.5A – OUT 12 Vcc / 1A)
2G antenna with 3 metre cable
8 Terminal Block Connectors
Roof mounting kit
Operating Manual

TECHNICAL CHARACTERISTICS

NETWORK TYPE	GSM/GPRS/EDGE Quad-Band: GSM 850 MHz – E-GSM 900 MHz – DCS 1800 MHz – PCS 1900 MHz GSM/GPRS Power Class EDGE Power Class Bluetooth Low Energy (BLE) 4.0 – operating frequencies 2.402- 2.480 GHz, max Power +8 dBm GNSS Receiver 1574.4 to 1576.44 MHz GPS Receiver 1575.42 MH
PROCESSOR	ARM7 EJ-S @260 MHz
GENERAL SPECIFICATIONS	3-Axis Accelerometer Sampling frequency 100Hz Tri-axial data storage of each trip Transfer of trip data via GPRS 4 inputs (e.g. for door opening and closing detection) 1 RS485/RS232
ANTENNA	External GSM
SIM	Mini-SIM support
POWER SUPPLY	12–24 Vcc
BACKUP BATTERY	Internal rechargeable (2x AAA)
TEMPERATURE	from 0°C to +45°C
VARIOUS	Dimensions: 115 × 80 × 45 mm

ORDER CODE
8D5903

BLE | Long lasting battery | 3D accelerometer | Small size

IoT Sensor for Lift doors

- Bluetooth 5.0 Low Energy
- Integrated door function detection algorithm
- Integrated 3D accelerometer
- Long-life replaceable battery

Look@DOOR is Digicom's IoT sensor specifically designed to detect the correct operation of lift doors.
Doors are one of the critical points of the lift system, which can generate a variety of problems.
The latest generations of connected lifts transmit data to the cloud with all the information from the control panel (and thus also the doors).
But there is no easy way to receive information from the lift for the entire installed fleet.
Digicom's Look@DOOR together with the Look@BOX Gateway represent "the state of the art" in remote lift diagnostics capable of reporting malfunctions.
This makes it possible to intervene promptly in the event of problems or to anticipate maintenance based on use of the lift.
Look@DOOR uses BLE 5.0 technology to transmit door status information via the Look@BOX device and includes a 3-axis accelerometer sensor capable of detecting door openings/closings and barrier interventions.
The sophisticated integrated algorithm developed by Digicom makes it possible to detect the number of openings and closings attached to the detected times. Similarly, it detects the number of barrier interventions, reporting everything to the Look@CLOUD Cloud.
Look@DOOR installation is very simple thanks to its small size and its fixing by means of double-sided adhesive tape.
Using the specific APP, you can also associate the sensor with the Look@BOX Gateway for the creation of the entire ecosystem.
Look@DOOR is installed on the inside door of the car and connects to the "Box" on the roof of the lift.
Once the Look@DOOR system has been activated, the Look@BOX Gateway starts to send data to the Cloud, which will signal any anomalies.
This makes it possible to intervene promptly in the event of problems or to anticipate scheduled maintenance based on use of the lift.

APPLICATIONS
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PACKAGE CONTENTS
8D5903 LOOK@DOOR
Quick Guide

TECHNICAL CHARACTERISTICS

RADIO MODULE	Bluetooth Low Energy (BLE) Radio Operating frequency: 2.4 – 2.485Ghz Transmission power: 2.51mW Maximum radio range: 3–4 metres in an unobstructed area (see BLE specifications)
POWER SUPPLY	CR2477N 950mAh 3Volt lithium battery (operating time approx. 4 years)
VARIOUS	Dimensions 36 × 36 × 18mm Weight 25 g

4G LiftGATE 4000

#Predictive systems

ORDER CODE
8D5910

4G/3G/2G · BLE · 868 MHz radio · Wi-Fi · VoLTE · Backup battery · Ethernet · RS232 · RS485 · MQTT

4G Gateway IoT for Lifts and Escalators

- 4G VoLTE Ready
- Integrated backup battery
- Remote management via SMS
- MQTT support
- Custom application support

This is the technological HUB that connects all devices and sensors in the lifts and plays the strategic role within the solution. Its versatility and integration with our wireless sensor devices and integration with our Cloud make it one of the most comprehensive in the lift scenario.
With 4G LIFTGATE 4000, it is possible to set up monitoring and predictive maintenance solutions applicable to all existing lifts. Emergency telephone systems, displays, sensors and cameras are shared in the one device that can also connect the control panel to a Cloud. The 4 LAN ports increase its potential in lift car digitisation solutions.
Only one SIM card, or two if backup is required, is needed to manage all the lift's needs: from voice support for SOS and periodic calls, to control panel telemetry via LAN. Full integration with the Cloud using the MQTT protocol.
With the 868MHz radio interface, you can connect our intelligent wireless sensors to detect abnormal situations (blockages, rope elongation, alarm triggers, temperatures and motor vibrations).

APPLICATIONS
Lifts
Escalators

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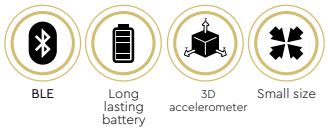
Complies with EN 81-28

PACKAGE CONTENTS
8D5910 4G LIFTGATE 4000
Ethernet cable
12VDC, 1.5A power supply unit
4G antenna with 3 m cable
Wi-Fi antenna
3 terminal block connectors
Quick Guide

TECHNICAL CHARACTERISTICS

NETWORK TYPE	4G/LTE-FDD bandwidths B1/B3/B7/B8/B20 (2100/1800/2600/900/800/MHz) HSPA+/UMTS/WCDMA bandwidths B1/B5/B8 (2100/850/900MHz) GSM/GPRS bandwidths B3/B8 (1800/900MHz)
SPEED	4G/LTE DL150Mbps / UL50Mbps, HSPA+/UMTS/ WCDMA DL 21.6Mbps /UL 5.76Mbps
INTERFACES	4 door LAN RJ45 10/100Mbps 2 doors FXS (for analogue telephone and Intercom) 2 Slots for SIM cards of any operator (also e-sim) Dual-Band Wi-Fi radio (2.4/5 GHz) IEEE 802.11a/b/g/n/ac 1 Radio 868MHz interface for sensors 1 BLE (Bluetooth) interface 1 Digital Input 1 Relay Output (n.o. and n.c.) 1 12VDC output – 150 mA
TELEPHONE INTERFACE	Voice Interface: FXS Call type: Tone (DTMF)
FUNCTIONALITY	Remote management via SMS for connection (ON/OFF), Status and Reboot DHCP Server and MAC reservation support Periodic Watch Dog with reboot every 24 hours Upgradeable Firmware
ANTENNAS	2 4G/3G/2G antennas, 1 external on SMA (Main) connector and one internal (DIV) 1 external Wi-Fi antenna on SMA-R connector
POWER SUPPLY	9–32VDC
BACKUP BATTERY	Integrated Lithium Polymer 3.7 VDC – 4,000mAh
TEMPERATURE	from -10ºC to +50ºC
VARIOUS	Material and weight: Aluminium, 300g. Dimensions 145 × 112 × 50 mm Installation: 35mm DIN rail (not included) or table

ORDER CODE
8D5906



IoT sensor for electric motors, escalators and lifts

- Bluetooth 5.0 Low Energy
- Integrated door function detection algorithm
- Integrated 3D accelerometer
- Long-life replaceable battery

Look@INDUSTRY is Digicom's IoT sensor specifically designed to detect the operation of electric motors in escalators or lifts.
Monitoring motors and winches is a problem that is not easy to solve, especially when coupled with reduction systems as in the case of winches.
Various problems can be generated in motors, from mechanical problems in the bearings to loss of insulation.
Digicom posed the problem of how to detect any anomalies in advance in order to therefore carry out checks or maintenance in advance. This led to the creation of Look@INDUSTRY.
A battery-operated Bluetooth sensor equipped with a 3-axis accelerometer that, installed on winches and motors, can detect variations or anomalies with respect to the standard track.
The data collected by Look@INDUSTRY is sent to our Look@Cloud via one of our gateways (Look@BOX or 4G LIFTGATE).
Equipped with algorithms, they allow optimised data collection and battery management for years* before replacement.
*Battery life depends on configuration and number of detections.
Look@INDUSTRY uses BLE 5.0 technology to transmit vibration status information detected by a 3-axis accelerometer sensor.
The installation of Look@INDUSTRY is very simple thanks to its small size and its fixing by means of a magnet or double-sided adhesive tape.
Using the specific APP, you can also associate the sensor with the Gateway for the creation of the entire ecosystem.
Look@INDUSTRY is installed on the motor or winch at the most critical point for monitoring (such as in the gearmotor assembly).
Once the Look@INDUSTRY system has been activated, the Gateway starts sending data to the Cloud, which will signal any anomalies.
This makes it possible to intervene promptly in the event of problems or to anticipate scheduled maintenance based on use of the escalator or lift.

APPLICATIONS
Lifts
Escalators

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PACKAGE CONTENTS
8D5906 LOOK@INDUSTRY
Quick Guide

TECHNICAL CHARACTERISTICS

RADIO MODULE	Bluetooth Low Energy (BLE) Radio Operating frequency: 2.4 – 2.485Ghz Transmission power: 2.51mW Maximum radio range: 3–4 metres in an unobstructed area (see BLE specifications)
POWER SUPPLY	CR2477N 950mAh 3Volt lithium battery (operating time approx. 4 years)
VARIOUS	Dimensions 36 × 36 × 18mm Weight 25 g

Radio Button

#Predictive systems

ORDER CODE
8D5898RA
8D5898R

868 MHz radio | Alarm | RS485 | Inputs outputs

IoT 868Mhz sensor for industrial applications

- 868MHz radio
- Opto-isolated inputs
- Digital outputs
- RS485 serial

Radio Button is an industrially developed sensor for lift and escalator applications.
Compact and robust, it combines an 868MHz radio and a microprocessor to manage algorithms and signalling via inputs (opto-isolated on/off), outputs or RS485 serial interface.
The extended power supply provides a 9–28 VDC input or battery (AA non-rechargeable) in custom applications.
There is an activation button that can be used in different modes according to customisations and configurations.
Radio Button finds applications, together with the 4G LIFTGATE equipped with an 868MHz radio, as an external radio sensor to transmit information to the Cloud or as a remote button in the Coppy series remote alarm. In this application it can also be used as a flood sensor in the pit.
With specific algorithms it can be used as a handrail wear detector (via external inductive sensors).
Radio Button sends 868MHz radio messages with a proprietary protocol for greater security and robustness in transmission, capable of covering excellent distances in complex environments.
Its alive message management also allows its correct operation to be monitored.
Equipped with an external SMA antenna, it can be remote-controlled for more complex applications.

APPLICATIONS
Lifts
Escalators
Industrial

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PACKAGE CONTENTS
8D5898RA FULL RADIO BUTTON
Omnidirectional 868 MHz stylus antenna
Wall mounting bracket
Quick Guide

OTHER VERSIONS
8D5898R Power supply 2 AA batteries

TECHNICAL CHARACTERISTICS

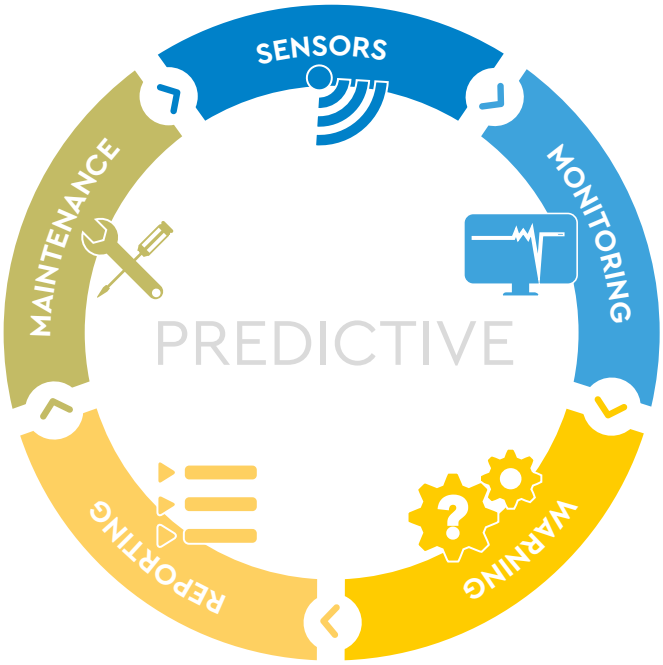
RADIO MODULE	868 MHz radio Operating frequency: 868.65 MHz Frequency bandwidth 868.600 – 868.700 MHz Maximum transmission power +10 dBm
GENERAL SPECIFICATIONS	Integrated button 2 opto-isolated inputs for external buttons/sensors 2 Digital outputs CPU: STM32 RS485 serial 3 Status LEDs
ANTENNA	External with SMA/f connector
POWER SUPPLY	9–28 VDC
BATTERY	1.5V AA stylus min. 3000mAh (version 8D5898R only)
TEMPERATURE	-10 +50°C
VARIOUS	Dimensions 90 x52 × 63 mm Weight 140 g

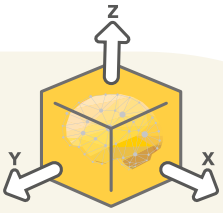
The perfect efficiency of the systems depends on careful and planned maintenance based on experience.

Today, machine learning and AI systems allow data to be collected, identifying any process delays, reducing unexpected downtime.

This is predictive maintenance.

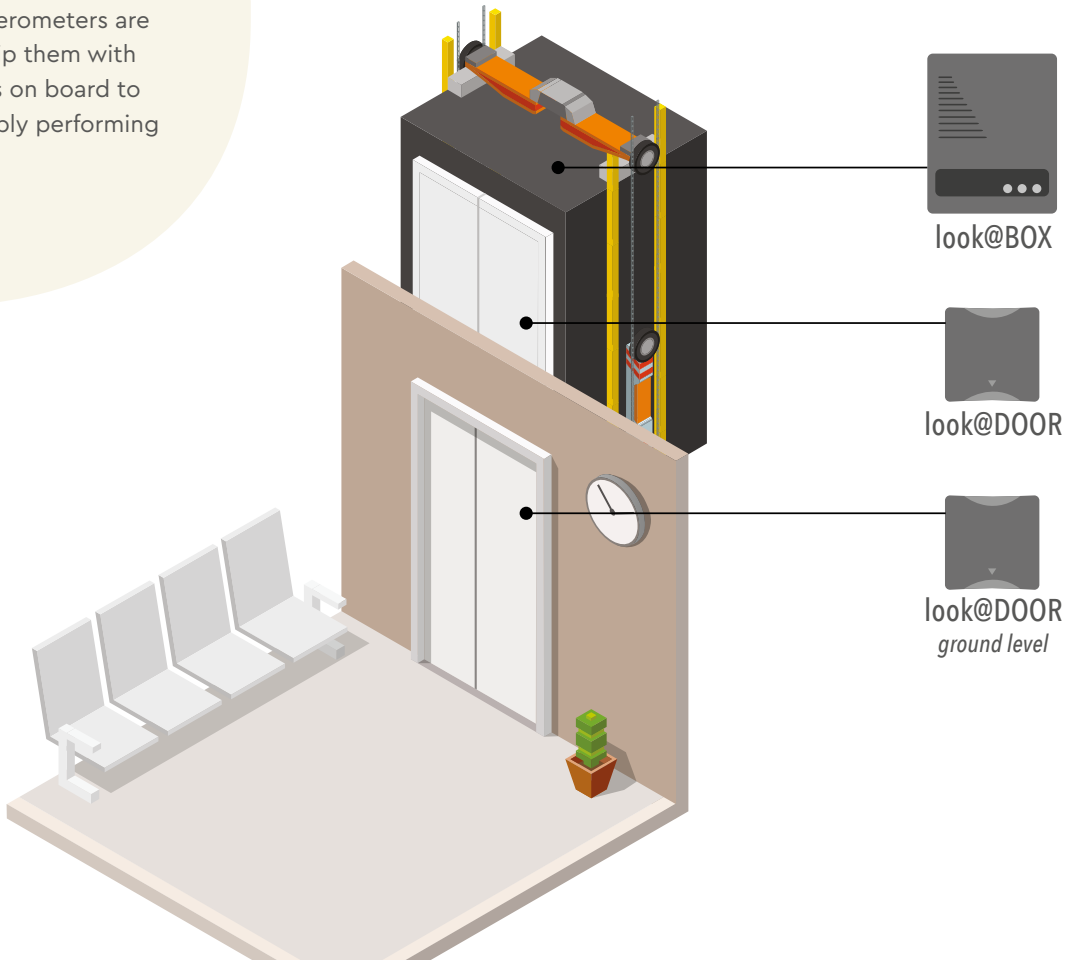
Digicom has been working for some years on the development of dedicated algorithms that allow intelligent data collection with an important reduction in the generated data traffic with a relevant cost saving.

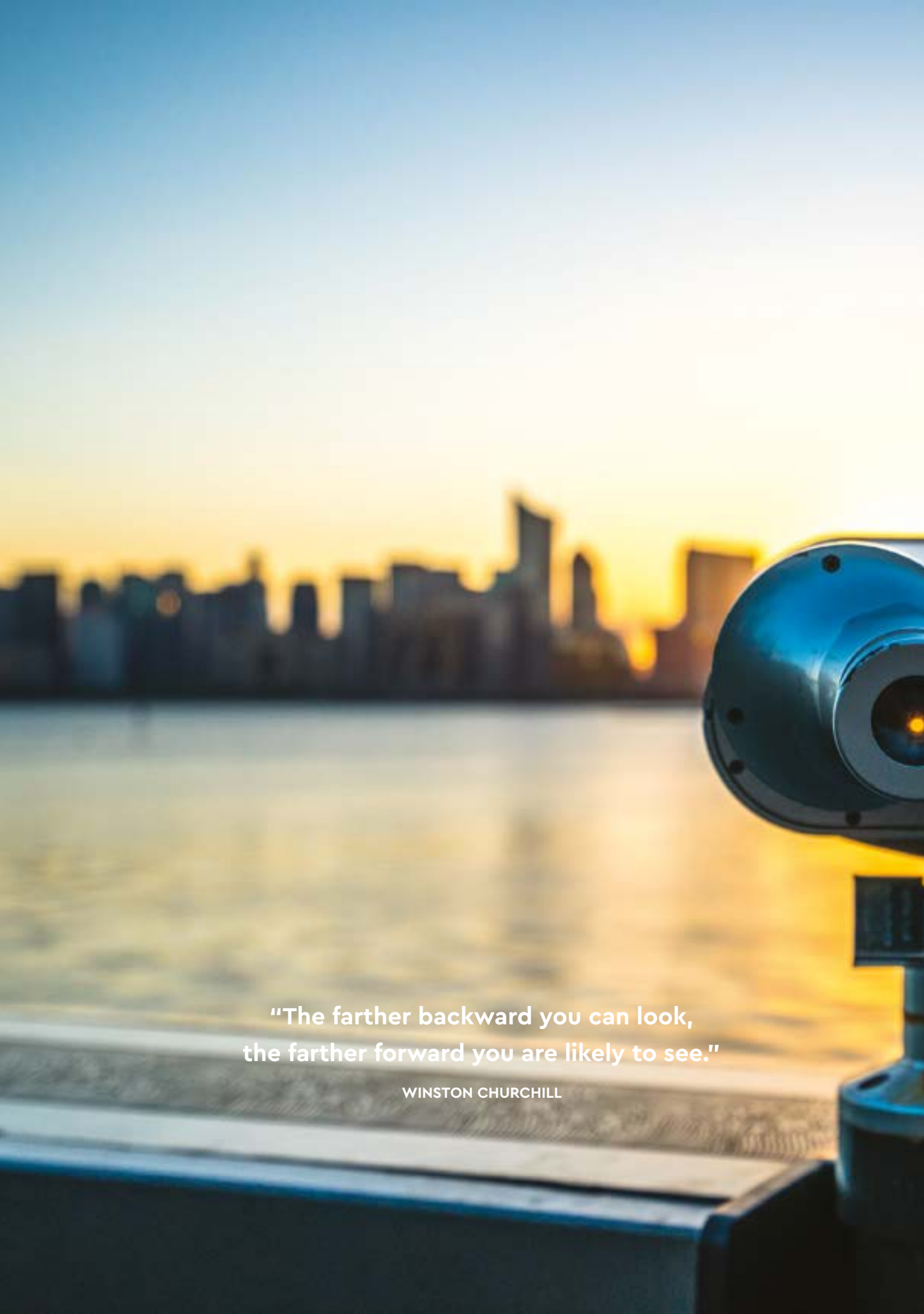




3D SMART ACCELEROMETERS
Key players of the predictive

The applications that can be created with accelerometers are countless, just equip them with efficient algorithms on board to make them incredibly performing IoT sensors.




"The farther backward you can look,
the farther forward you are likely to see."
WINSTON CHURCHILL

PREDICTIVE MAINTENANCE

Where?

In everyday life the planning of maintenance interventions, the prevention of breakdowns and breakages in buildings has become increasingly important. Being able to identify anomalies early allows to avoid important economic and environmental consequences.

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