

MIX-AND-MATCH

A LUCID
IoT DEVICE
BUILDING
STRATEGY

LEGIOBOX IoT DEVICE PHILOSOPHY

To ensure that your IoT solution will work worry-free for many years, Avic has put all its experience and creativity in its comprehensive range of LegioBox devices: from its compact and rugged enclosure to its flexible and clever interface configuration scheme.



IoT DEVICES FOR ANY JOB

All LegioBox devices are built from the same set of function blocks, sharing a common design base of tried-and-tested modules. Avic supplies IoT devices with the most widely used functions from stock, but can also rapidly create application-specific designs from its IoT device building block library.

Working out-of-the box, the tight integration of the LegioBox IoT devices with the Avision

IoT Platform makes their operation and management as simple as possible. Generic functions such as device management, secure communication, data storage and processing have been put to the test in many solutions, giving you the peace of mind that your device will not fail on you.

With Avic's LegioBox devices, your IoT solution will work flawlessly, and deliver the results that you seek to achieve.



Standard

- IoT devices with the most common interfaces
- Deliverable from stock



Customized

- IoT devices with a selectable set of interfaces
- Deliverable with short leadtimes

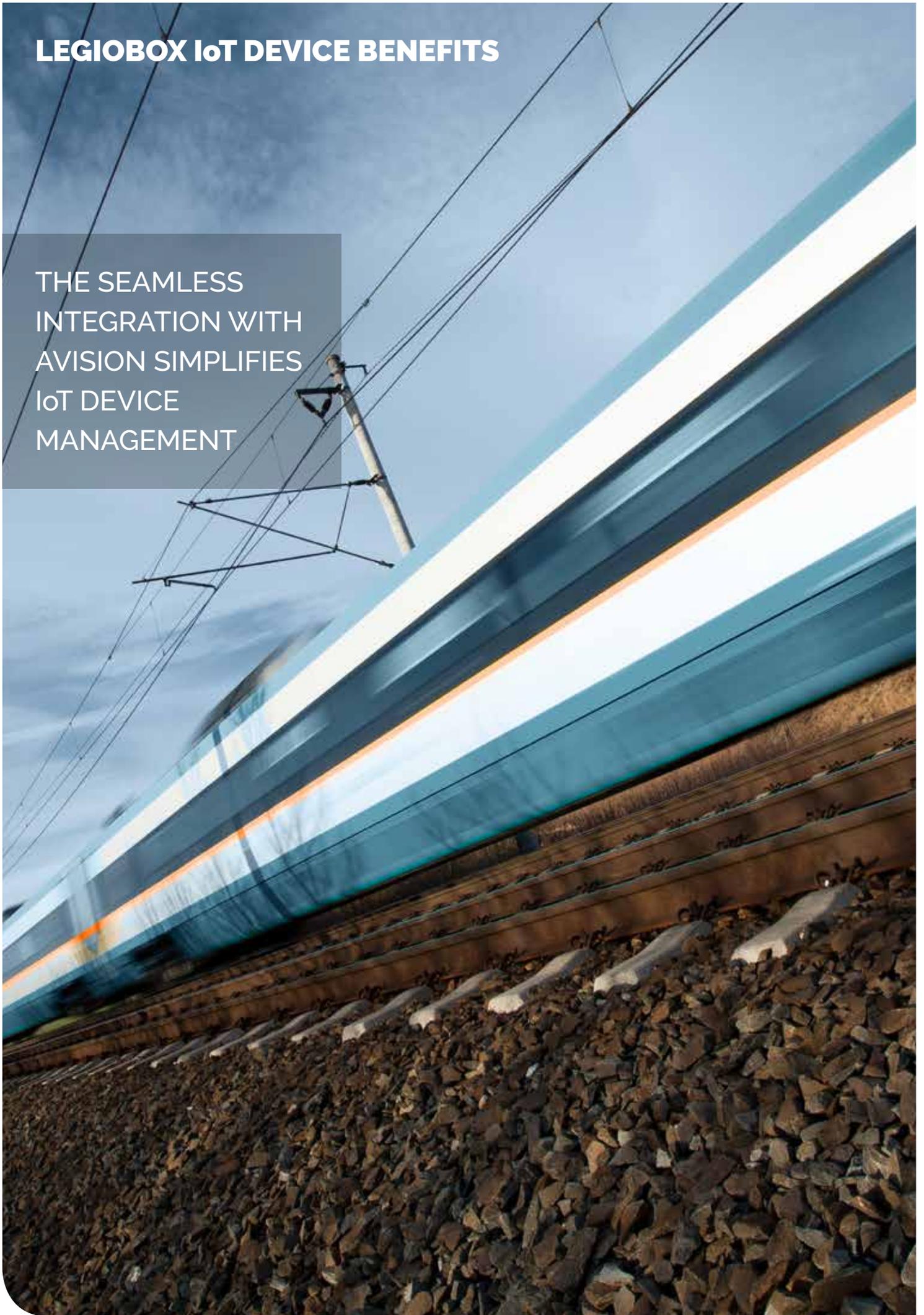


Tailor-made

- IoT devices built to specification
- Short implementation cycles

LEGIOSBOX IoT DEVICE BENEFITS

THE SEAMLESS
INTEGRATION WITH
AVISION SIMPLIFIES
IoT DEVICE
MANAGEMENT



AT THE HEART OF IoT

Devices are the workhorse of the Internet of Things. Without devices, there is no IoT. Because every application has its own specific requirements, finding a suitable IoT device can be quite an ordeal. The Avic LegioBox devices very likely will prove to be the perfect fit for your IoT solution.



RUGGED, RELIABLE, AND ENERGY-EFFICIENT

The Avic LegioBox IoT devices are designed for operation in harsh environments with ample protection against the roughest conditions, with minimal power consumption. Hooking up sensors has been made as simple as possible with standardized connectors.

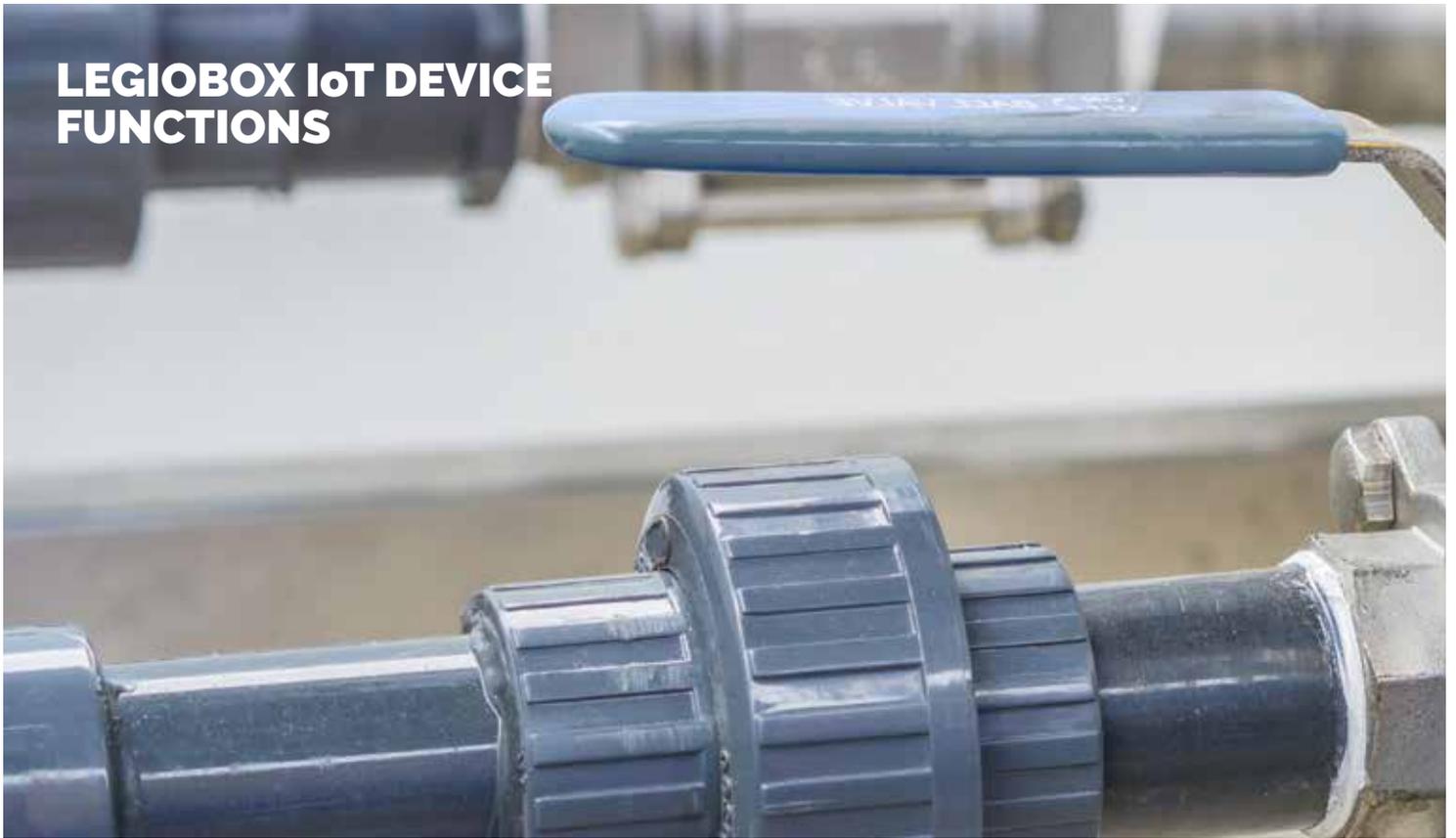
WIDE CHOICE OF FUNCTIONS

Whatever functionality your IoT solution demands, the LegioBox IoT devices will meet the requirements. Avic's smart device design allows virtually any arrangement of functions.

SEAMLESS INTEGRATION WITH AVISION

Perhaps that greatest advantage the LegioBox devices have to offer is the close integration with the Avision IoT Platform, letting you define the functional behavior without programming. Out-of-the-box, a LegioBox will work plug&play, and can be managed directly from your IoT solution to produce the value that needs to be delivered.

LEGIOBOX IoT DEVICE FUNCTIONS



THE PERFECT FIT FOR ANY SOLUTION

All LegioBox IoT devices share a common base of functional entities, to support a wide variety of applications.

The various function blocks are designed to be combined as needed. The most common configurations are supported by the standard LegioBox IoT devices, that can be altered for customized solutions. Taking it one step further, new function blocks can be integrated to create tailor-made IoT devices.



CELLULAR

Secure and reliable mobile networking connectivity gives you total independence of local communication infrastructure



WIRELESS

Locally connecting and managing many, many devices is made simple with the AVIC wireless WISE RF networking function.

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SERIAL DATA

Industry-standard data protocols such as ModBus are supported through serial RS232 and RS485 interfaces.



NETWORKING

LAN and WiFi interfaces provide fast connectivity in case of a locally present IT network infrastructure.



MOTION

Integrated accelero-meters detect three-dimensional motion, shock and vibration, to determine moving object conditions.



POSITION

A full-featured GNSS geo-location receiver, that supports geo-fencing, keeps track of your IoT device on the map.



DATA STORAGE

The LegioBox has sufficient memory to store application data, and can also be equipped with an SD memory card.



MONITORING

The LegioBox device monitors signal levels automatically using configurable threshold values, and generates alarms.



MEASUREMENT

Analog and digital sensor interfaces make it possible to measure any physical quantity that your solution requires.



EVENT / STATE

Digital inputs can be used to monitor states, or to detect and count the occurrence of relevant events.



CLIMATE

Integrated ambient sensors can measure actual environmental conditions: pressure, temperature, as well as humidity.



CONTROL

Digital device outputs can be activated to implement local intelligent control functions to enhance your solution.



USER INTERFACE

Visual indicators and buttons provide a basic form of user interaction that can be tailored to the needs of the solution.



POWER OPTIONS

The LegioBox device can be powered from various mains and battery voltage sources, and has an integrated UPS.



TIMEKEEPING

The continuously running real-time clock is synchronized at regular intervals to provide accurate timing data.



PLUG & PLAY

LegioBox devices are built for plug&play operation: right out of the box they enable ease-of-use and rapid deployment.



Avic LegioBox **SolarGate**

The LegioBox SolarGate is Avic's solar-powered IoT device, targeted at solutions that need to operate independently of, or supported by external power supplies. When the ambient light is sufficient, the integrated photovoltaic panel charges the LegioBox SolarGate internal battery that ensures uninterrupted operation. Various cellular interfaces are available to meet the application communication bandwidth requirements.

Many different sensor types in varying combinations can be connected to the LegioBox SolarGate, as well as digital inputs and serial interfaces. The LegioBox SolarGate runs entirely stand-alone from its integrated power sources, and also generates all sensor supply voltages. Using Avic's WISE wireless networking protocol, additional sensor nodes such as the LegioBox NanoWise or PicoWise can be connected.

The LegioBox SolarGate works reliably under harsh and ever-changing weather conditions, protected by its ruggedized and UV-resistant enclosure. Mounting accessories are available to ensure that the LegioBox SolarGate is securely installed during operation.

STANDARD FEATURES

- Cellular communication interface
- Holder for replaceable SIM card
- Integrated solar panel
- UPS power supply backup
- Internal barometer and thermometer
- SD card storage memory
- Ruggedized IP-66 enclosure
- Sensor supply voltage generation
- High-precision 24-bit analog-to-digital conversion
- Push-in terminal connectors

PRODUCT OPTIONS

- Pt-1000 temperature sensor interface
- 4-20mA sensor intrerfaces
- 0-10VDC sensor interface
- Digital inputs
- RS-232 data communication port
- RS-485 data communication port
- Geo-localisation
- Relative humidity sensor (internal)
- Dual, orthogonal accelerometer (internal)
- WISE wireless networking



Avic LegioBox **NanoGate**

The LegioBox NanoGate is a compact and highly energy-efficient, yet powerful IoT device with a comprehensive set of application interfaces. The clever LegioBox NanoGate product architecture allows almost any configuration of interfaces to compose the functionality for your IoT solution. Internally, the LegioBox NanoGate offers a number of integrated sensors to even further enhance your application.

For local and remote communication, the LegioBox NanoGate provides a number of wired and wireless data communication interfaces. Thus, the LegioBox NanoGate can serve as a wireless hub for sensors, or as a gateway for a wireless sensor network. The versatility of the LegioBox NanoGate makes it a perfect fit for almost any IoT project.

The LegioBox NanoGate is designed to withstand even the harshest conditions, protected by its ruggedized enclosure, and high-quality weatherproof connectors. Mounting accessories are available to ensure that the LegioBox NanoGate is always securely installed during operation. Its power management architecture selectively activates the functionality only when it's needed, minimizing energy consumption and conserving battery life.

STANDARD FEATURES

- Cellular communication interface
- Holder for replaceable SIM card
- Internal antennas
- UPS power supply backup (mains versions)
- Internal barometer and thermometer
- SD card storage memory
- Ruggedized IP-67 enclosure
- Sensor supply voltage generation
- High-precision 24-bit analog-to-digital conversion
- M12-style sensor connectors

PRODUCT OPTIONS

- Pt-1000 temperature sensor interface
- 4-20mA sensor intrerfaces
- 0-10VDC sensor interface
- Digital inputs
- RS-232 data communication port
- RS-485 data communication port
- Geo-localisation
- Relative humidity sensor (internal)
- Dual, orthogonal accelerometer (internal)
- WISE wireless networking

ELECTRICAL DATA

Power supply	Battery-powered or mains-powered, with back-up batteries (UPS)
Mains supply voltage	6-32 VDC input voltage
Sensor supply voltage	15 VDC, max. 40mA (output)
Primary battery types	4 AA-size cells, Alkaline or Lithium chemistries
Rechargeable battery types	4 AA-size cells, Li-Ion chemistry (AVIC-approved types only)
Current consumption	7 μ A 0.12 mA 0.6A (stand-by average peak)

MECHANICAL DATA

Dimension (l x w x h)	114 x 129 x 48 mm
Weight	375 g
Enclosure material	ASA, UV-resistant

ENVIRONMENTAL DATA

Operating temperature	-30°C/+80°
Storage temperature	-45°C/+85°
Ingress protection class	IP-67
Mechanical impact class	IK-08

WIRELESS COMMUNICATION PERFORMANCE

Receive sensitivity	-110dBm (BER10 ⁻³)
Transmit power	25mW/14dBm
Frequency / bitrate	868 MHz / 5 kpbs
Communication range	600 meter

REGULATORY COMPLIANCE

Electromagnetic comp.	EN 61000-3-2, 61000-2-2, 61000-6-3, 61000-6-1
Safety	EN 60950
Radio communication	EN 300-220, 301-489

PRODUCT SELECTION GUIDE

PRODUCT VERSION		COMMUNICATION					POWER			SENSORS								
Application areas	Order code	GPRS/2G	NB-IoT	RS232	RS485	WISE RF	24VDC mains	Battery-powered	UPS	0-10VDC	Pt-1000	4-20mA	Digital-input	Rel. humidity	Barometer	Temperature	Geo-localization	Accelerometer (2)
Outdoor RF hub	NG00130	●	-	-	-	●	●	-	●	-	-	-	-	-	●	●	●	-
Indoor RF hub	NG00131	●	-	-	-	●	●	-	●	-	-	-	-	●	●	●	-	-
Telemetry outdoor	NG00132	●	-	-	●	-	●	-	●	4	2	2	2	-	●	●	●	-
Telemetry indoor	NG00133	●	-	-	●	-	●	-	●	4	2	2	2	●	●	●	-	-
Telemetry autonomous	NG00134	●	-	-	-	-	-	●	-	4	2	2	2	-	●	●	●	-
Accelero	NG00247	●	-	-	-	-	●	-	●	4	2	2	2	-	●	●	-	●
Outdoor RF hub	NG00135	-	●	-	-	●	●	-	●	-	-	-	-	-	●	●	●	-
Indoor RF hub	NG00136	-	●	-	-	●	●	-	●	-	-	-	-	●	●	●	-	-
Telemetry outdoor	NG00137	-	●	-	●	-	●	-	●	4	2	2	2	-	●	●	●	-
Telemetry indoor	NG00138	-	●	-	●	-	●	-	●	4	2	2	2	●	●	●	-	-
Telemetry autonomous	NG00139	-	●	-	-	-	-	●	-	4	2	2	2	-	●	●	●	-
Accelero	NG00254	-	●	-	-	-	●	-	●	4	2	2	2	-	●	●	-	●



Avic LegioBox **PicoGate**

The LegioBox PicoGate is Avic's most compact IoT device, designed for space-constrained applications that require only a few sensor values. Equipped with either a GRPS or NB-IoT cellular modem, the PicoGate performs its measurements independently of local communication infrastructure. For local interfacing to peripheral devices through serial links, the PicoGate features a RS-232 or RS-485 data communication port.

Various analog and digital sensors can be connected to the LegioBox PicoGate, that - thanks to the integrated sensor supply voltage generation - do not require additional power sources for performing measurements. The LegioBox PicoGate also provides digital inputs and integrated environmental sensors. For local user alerting, the PicoGate has a buzzer that creates an audible signal.

The LegioBox PicoGate is designed to work in any-weather outdoor applications, as well as indoor in situations where compliance with hygiene standards must be guaranteed. Mounting accessories are available to ensure that the LegioBox PicoGate is securely installed during operation.

STANDARD FEATURES

- Cellular communication interface
- Holder for replaceable SIM card
- Internal antennas
- UPS power supply backup (mains versions)
- Internal thermometer
- Ruggedized IP-67 enclosure
- Sensor supply voltage generation
- M8-style sensor connectors
- Buzzer

PRODUCT OPTIONS

- Pt-1000 temperature sensor interface
- 4-20mA sensor interface
- 0-10VDC sensor interface
- Digital input
- RS-232 data communication port
- RS-485 data communication port
- SDI-12 serial sensor interface
- Relative humidity sensor (internal)
- Barometer (internal)
- Accelerometer

ELECTRICAL DATA

Power supply	Battery-powered or mains-powered, with back-up batteries (UPS)
Mains supply voltage	6-32 VDC input voltage
Sensor supply voltage	15 VDC, max. 40mA (output)
Primary battery types	2AA-size cells, Alkaline or Lithium chemistries
Rechargeable battery types	2 AA-size cells, Li-Ion chemistry (AVIC-approved types only)
Current consumption	13 μ A 0.25 mA 1.2A (stand-by average peak)

MECHANICAL DATA

Dimension (l x w x h)	63 x 97 x 34 mm
Weight	140 g
Enclosure material	ASA, UV-resistant

ENVIRONMENTAL DATA

Operating temperature	-30°C/+80°
Storage temperature	-45°C/+85°
Ingress protection class	IP-67
Mechanical impact class	IK-08

REGULATORY COMPLIANCE

Electromagnetic comp.	EN 61000-3-2, 61000-2-2, 61000-6-3, 61000-6-1
Safety	EN 60950
Radio communication	EN 300-220, 301-489

PRODUCT SELECTION GUIDE

PRODUCT VERSION		COMMUNICATION					POWER			SENSORS								
Application areas	Order code	2G/GPRS	NB-IoT	RS232	RS485	SDI-12	24VDC mains	Battery-powered	UPS	0-10VDC	Pt-1000	4-20mA	Digital-input	Rel. humidity	Barometer	Temperature	Buzzer	Accelerometer
Serial RS232	PG00149	●	-	●	-	-	●	-	●	-	-	-	1	-	-	●	-	-
Serial RS485	PG00150	●	-	-	●	-	●	-	●	-	-	-	1	-	-	●	-	-
Telemetry current	PG00151	●	-	-	-	-	●	-	●	-	-	-	1	-	-	●	-	-
Telemetry voltage	PG00152	●	-	-	-	-	●	-	●	-	-	-	1	-	-	●	-	-
Telemetry temperature	PG00153	●	-	-	-	-	●	-	●	-	1	-	1	-	-	●	-	-
Temperature humidity	PG00154	●	-	-	-	-	●	-	●	-	1	-	1	●	●	●	●	-
Current autonomous	PG00155	●	-	-	-	-	-	●	-	-	-	2	2	-	-	●	-	-
Voltage autonomous	PG00156	●	-	-	-	-	-	●	-	2	-	-	2	-	-	●	-	-
Temperature auton.	PG00157	●	-	-	-	-	-	●	-	2	-	-	2	-	-	●	-	-
Telemetry temperature	PG00163	-	●	-	-	-	●	-	●	-	-	-	2	-	-	●	-	-
Serial SDI-12	PG00255	●	-	-	-	●	●	-	●	-	-	-	1	-	-	●	-	-
Accelero	PG00258	●	-	-	-	-	-	●	-	-	1	-	-	-	-	●	-	●



Avic LegioBox **BasicGate**

The LegioBox BasicGate is Avic's all-round IoT device for stand-alone operation in industrial environments. It can be powered either from universal AC mains or 24 VDC, supported by an internal back-up battery. The

LegioBox BasicGate can either connect to a local area network (Ethernet), or through cellular networks using its 2G/3G or LTE modem. The LegioBox BasicGate supports a multitude of industry-standard process interfaces, as well as data communication ports.

The LegioBox BasicGate allows any of its six analog sensor interfaces to be configured as 4-20mA current, Pt-1000 thermometer, or 0-10VDC voltage sensor. In addition, the LegioBox BasicGate provides four digital inputs, as well as 8 user-definable LED indicators. Sensors and other peripherals can be connected to the LegioBox BasicGate in any arrangement.

Protected by a robust die-cast aluminum enclosure, the LegioBox BasicGate is designed to work in heavy-duty industrial environments. Mounting accessories are available to ensure that the LegioBox BasicGate is securely installed during operation.

STANDARD FEATURES

- Cellular, LAN or WiFi communication interface
- Holder for replaceable SIM card
- UPS power supply backup
- SD card storage memory
- Robust, metal IP-67 enclosure
- Sensor supply voltage generation
- High-precision 24-bit analog-to-digital conversion
- Push-in terminal connectors

PRODUCT OPTIONS

- Pt-1000 temperature sensor interfaces
- 4-20mA sensor interfaces
- 0-10VDC sensor interfaces
- Digital inputs
- RS-232 data communication port
- RS-485 data communication port
- Wide-input AC or 24VDC supply voltage



Avic LegioBox **PicoWise**

The LegioBox PicoWise is a small but powerful IoT device that is designed to operate as a node in wireless sensor network. The LegioBox PicoWise excels in applications that require high-resolution sensor measurements from many isolated locations, e.g. in food-chain temperature monitoring, or in greenhouse climate control. Different versions of the PicoWise can be combined to serve the specific needs of the IoT solution. Please contact Avic for more information on the benefits and features of the PicoWise wireless networking technology.

Various analog and digital sensors can be connected to the LegioBox PicoWise, that - thanks to the integrated sensor supply voltage generation - do not require additional power sources for performing measurements. The LegioBox PicoWise also provides digital inputs and integrated environmental sensors. For local user alerting, the PicoWise has a buzzer that creates an audible signal.

The LegioBox PicoWise is designed to work in any-weather outdoor applications, as well as indoor in situations where compliance with hygiene standards must be guaranteed. Mounting accessories are available to ensure that the LegioBox PicoWise is securely installed during operation.

STANDARD FEATURES

- WISE RF communication
- Internal antenna
- UPS power supply backup (mains versions)
- Internal thermometer
- Ruggedized IP-67 enclosure
- Sensor supply voltage generation
- M8-style sensor connectors

PRODUCT OPTIONS

- Pt-1000 temperature sensor interfaces
- 4-20mA sensor intrerfaces
- 0-10VDC sensor interfaces
- Digital inputs
- RS-232 data communication port
- RS-485 data communication port
- SDI-12 serial sensor interface
- Relative humidity sensor (internal)
- Barometer (internal)
- Accelerometer



Avic LegioBox **LightGate**

The LegioBox LightGate IoT device is unique in its kind: shaped as signal lamp, it conceals a rich set of features. Operating from 24VDC or 24VAC supply voltages, with a back-up battery to cope with power outages, it connects analog sensors, digital inputs, and serial interfaces. And of course, it also illuminates LEDs at varying patterns to signal the detection of user-definable conditions.

The LegioBox LightGate provides interfaces for 4-20mA current, Pt-1000 thermometer, or 0-10VDC voltage analog sensors. The sensor supply voltages are generated by the LegioBox LightGate, making external powering of sensors unnecessary. In addition, the LegioBox LightGate provides three digital inputs, as well as a relay for control purposes. Furthermore, the LegioBox LightGate offers a number of integrated environmental sensors.

The LegioBox LightGate is well suited to work in any-weather outdoor applications. Its clever housing design makes installation, e.g. onto cabinet enclosures, by simply tightening a single mounting screw, very straightforward.

STANDARD FEATURES

- Cellular communication
- Internal antenna
- UPS power supply backup
- LED signal function
- Ruggedized IP-67 enclosure
- Pt-1000 temperature sensor interfaces
- 4-20mA sensor interfaces
- 0-10VDC sensor interfaces
- Sensor supply voltage generation
- Digital inputs

PRODUCT OPTIONS

- WISE RF communication
- RS-232 data communication port
- RS-485 data communication port
- Control relay
- Internal thermometer
- Relative humidity sensor (internal)
- Barometer (internal)
- Accelerometer (internal)

IoT made simple.



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