

Data Sheet

Connected Automated Monitoring+



Automated Monitoring+ is our premium solution designed for the most demanding compliance environments in Healthcare and Life Sciences. It includes everything from ultra-low temperature sensors for cryogenic storage, to advanced gas and pressure monitors.



Automated Monitoring+ Functionality

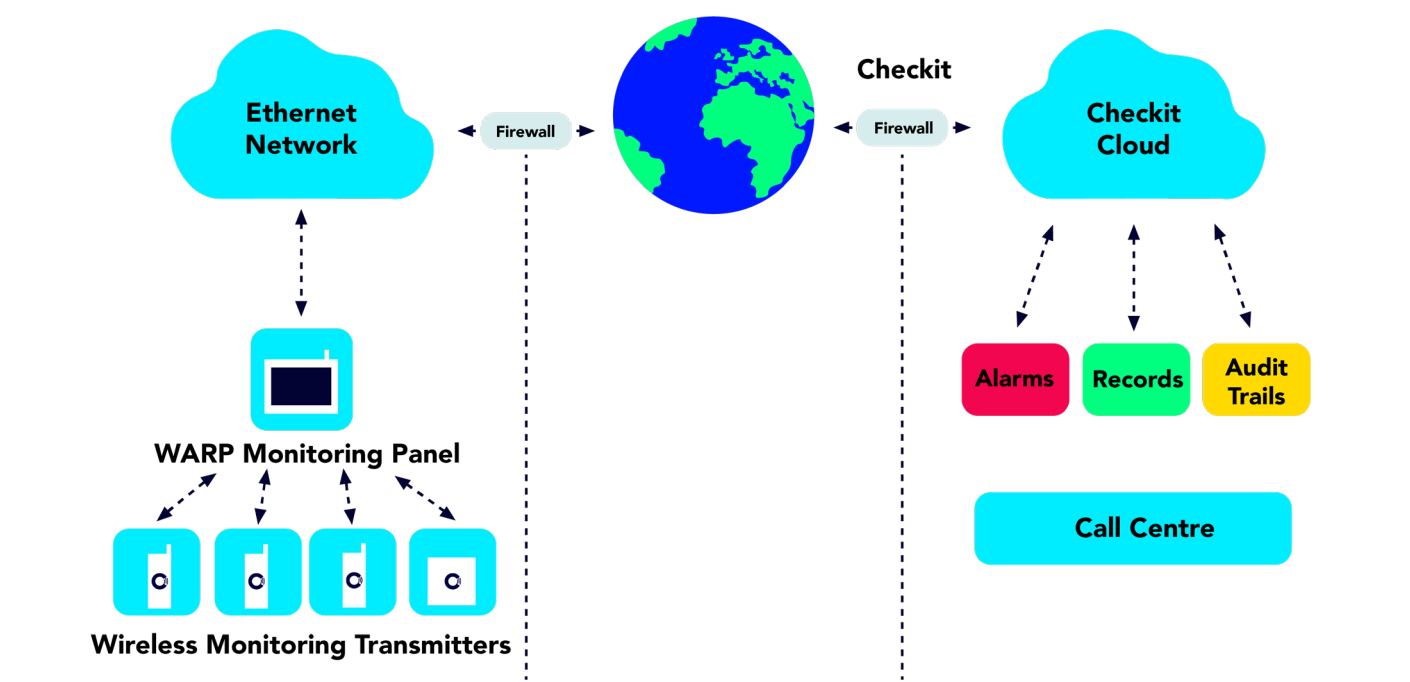
Automated Monitoring+ provides everything you need to monitor and protect your assets in a regulated environment.

- A secure, resilient cloud platform to store data, manage incidents and generate reports
- A reliable, managed wireless network to gather sensor data
- A wide range of sensors, developed to meet the needs of healthcare and life sciences applications for accuracy and calibration

Automated Monitoring+ is designed for organisations that need to comply with exacting standards including CQC, MHRA, 21CFR and GMP.

These capabilities are available under an innovative subscription model that spreads costs and provides certainty through a contract. For a simple regular fee, our "Peace of Mind" contract model provides both the initial hardware and ongoing calibration, support and hardware failure replacements.

System overview



Cloud platform

Cloud platform

Cloud platform – secure online software and storage (compliant with/certified to ISO27001 via Checkit Europe Ltd.) and permanent access to the latest software

- High availability platform operation with redundant, secure storage of data
- No separate costs for servers, database management and administration
- Data is stored for 30 years and available on request

		Automated Monitoring+
Sensor data management	Sensor readings are kept securely in replicated cloud stores	✓ 1 minute reading intervals Retention 3 years (extended periods available)
Alerting	- Sensor reading limits - Configurable alert delays - System performance alerts (batteries, signal lost etc) - Alert handling workflow - Automated alerts - 24*7 call centre for voice alerts to on duty staff members	✓ ✓ ✓ 4 stage Email, SMS Option
Reporting and visualisation	- Sensor reading charting - Sensor data report generation - Alert data report generation	✓ pdf ✓ pdf ✓ pdf
Security	- Security model - Two credential model for sign offs - Full audit trails for all user actions	configurable permissions per user ✓ ✓

Wireless Monitoring Network

Network components

- WARP Monitoring Panel (base station for sensor network on customer premises)
- Repeaters (extend range of wireless)

Wireless signalling frequency	868MHz UK/Europe 915MHz US
Signal range	Up to 70ft
Signalling protocols	MiWi based T-Mesh™ self-healing protocols
Remote ethernet connection	Fully configurable IP settings

CAM+ Feature matrix and data sheet

Feature	Description	CAM+
Sensors		
Temperature sensors	Wireless sensors routinely capturing and transmitting temperature data	✓ Accurate sensors for liquid nitrogen, freezers, fridges, ambient and incubators
Other sensors	Wireless sensors routinely capturing and transmitting other environmental data	✓ Door Contacts ✓ Humidity ✓ Pressure ✓ Differential Pressure ✓ CO2 ✓ O2
Calibration	Sensor calibration to ensure the data captured is as accurate as possible and to comply with regulatory standards	✓ UKAS Accredited ISO 17025:2017 calibration
Compliance applications	Compliance & regulatory standards that we are aligned to	✓ CQC ✓ MHRA ✓ EMA ✓ FDA ✓ HTA ✓ 21 CFR Part 11
Approvals	International/governmental approvals for CAM/CAM+	✓ CE, UKCA, FCC
Sensor data		
Sampling rate	Interval between sensor readings	1 minute
Transmission rate	Interval between cloud updates	5 minutes
On device data retention	Period data held on device if connectivity lost (and uploaded to cloud when connectivity restored)	Transmitter - 7 days WARP - Up to 30 years
Cloud Data Retention	Online storage - available in Control Centre reporting Offline storage - available on request	1 year 40 years
Alarming		
Alarm rules	Configuration options for alarm logic fully programmable by the customer	✓ Upper and lower alarm thresholds ✓ Open / closed (for door contacts) ✓ Alarm delays ✓ Operating hours / days

System alarms	Alarms are generated whenever a reading passes through the set limits for longer than the configured delay or when a system error is generated. In both cases, team supervisors are alerted via email; progress in handling the alarm is then recorded in the web Control Centre	✓ Low battery ✓ Connection loss
Alarm notification	Email SMS Phone / call centre Automated escalation	✓ Std ✓ Std Optional
Alarm escalation	Where alerts are not responded to in a predetermined time, they can be set to escalate to senior managers for attention.	Optional
Alarm management	Customer alarm response recorded through web forms via the CAM+ Control Centre - these are then saved with the alarm data. Alarm response managed using customisable mobile alerting / workflow	✓ Four stage workflow Optional
Reporting and visualisation		
Graphical display	Sensor temperature graphing	✓
Sensor data	Sensor data reporting Sensor data download	✓ ✓
Alarm data	Alarm and alarm handling audit trail reporting Alarm and alarm handling audit trail download	✓ ✓
Analytics	Business intelligence insights into sensor performance Analytics API	Optional Optional
Supports GMP / 21 CFR applications	Configurable permissions Audit trails for all system configuration changes Two credential approvals model	✓ ✓ ✓
Control centre library	Single location where customers can upload and store calibration documents, generated reports, etc.	✓
System security		
ISO 27001	Data transmission and storage carried out under our ISO27001 accreditation	✓
Peace of Mind Subscription model		
Hardware	Single payment provides hardware and warranty replacements	✓
Calibration	Maintains calibration appropriate to application	✓ On-site service
Service call out	On site support when you need it for critical deployments	Optional

WARP

monitoring panel

The Wireless Alarm Receiver Panel or WARP receives and records transmissions from the wireless transmitters installed in your facility. The panel is equipped with a multifunction colour screen graphical display and fixed function membrane buttons.

An automatic scrolling window sequentially displays the current value of every sensing probe in the system. FCC identification number: 2A9Q3CHK00471.

Technical Specification

Part No.	GENII/WARP/100 US WARP GENII/WARP/200
AC power adapter	100V-240V 50Hz/60Hz 0.8A
Power input	15V DC, 30W via AC power adaptor.
Rechargeable battery	7 hours standby time from AC power loss
Storage medium	Solid State Drive (SSD)
Storage capacity	40 years, 246 sensing probes, 1 minute frequency
Logging frequency	1 minute
Sensing probe capacity	Up to 246
Signal repeater capacity	Up to 8
Display	Full colour TFT graphical display screen
Remote Ethernet connection	Fully configurable IP settings
Local Ethernet connection	DHCP Automatic panel
User interface	GUI display and membrane push buttons Password access web pages via local Ethernet port

Repeaters

The Wireless Signal Repeater is designed to boost the transmission signal from distant wireless transmitters to the WARP panel. Each signal repeater requires a 24 hour AC power source and is provided with a rechargeable battery that gives up to 21 hours of standby operation. FCC identification number: 2A9Q3CHK00471.

Technical Specification

Part No.	GENII/SRPT/100 US RF Repeater GENII/SRPT/200
AC power adaptor	100V-240V 50Hz/60Hz 0.8A
Power input	12V DC, 1W via AC power adaptor.
Logging frequency	1 minute
Rechargeable battery	Lithium ion 7 hours standby time from AC power loss
Signal range	Up to 70ft
Signalling protocols	Mi Wi based T-Mesh™ self-healing protocols
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

The Ethernet Signal Repeater is designed to enable the WARP to connect to sensors located a considerable distance away, such as on separate floors or even in another building.

The Ethernet Signal Repeater captures the signals from the transmitters and sends them via an ethernet connection to the WARP. Each signal repeater requires a 24 hour AC power source and is provided with a rechargeable battery that gives up to 3 hours of standby operation. FCC identification number: 2A9Q3CHK00472.

Ethernet signal repeater

Part No.	GENII/SRPT/100E US Ethernet Repeater GENII/SRPT/200E
AC power adaptor	100V-240V 50Hz/60Hz 0.8A
Power input	12V DC, 1W via AC power adaptor
Remote ethernet connection	Fully configurable IP settings
Logging frequency	1 minute
Rechargeable battery	Lithium ion battery 7 hours standby time from AC power loss
Signal range	Up to 70ft
Signalling protocols	MiWi based T-Mesh™ self-healing protocols
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

Sensors

Sensors

Our sensor range provides a wide range of sensing options to a high degree of accuracy, supported by our in-house calibration services. Our hardware interfaces allow additional specialist equipment to be easily added as required.

[PT1000 Fridge / Freezer Temperature>>](#)

[PT1000 LN2 / Cryogenic Temperature>>](#)

[NTC Thermistor Fridge/Freezer Temperature>>](#)

[Instrumentation Transducers>>](#)

[PT1000 / Door Contact Dual Monitor>>](#)

[Dual Alarm / Status Contact Monitor>>](#)

[Room Ambient Temperature and Humidity>>](#)

[Integrated Cold Chain Temperature Monitor>>](#)

PT1000 Fridge / Freezer Temperature



This temperature transmitter is designed for installation within either a refrigerator or freezer. The wireless transmitter head is mounted outside of the refrigerator or freezer and a pluggable RTD PT1000 temperature probe is installed inside the fixture. FCC identification number 2A9Q3CHK00471.

Technical Specification

Part No.	GENII/FRZ/100/A & 100/B US FRZ-A Transmitter GENII/FRZ/200/A US FRZ-B Transmitter GENII/FRZ/200/B
Sensor type	RTD PT-1000 sensor
Temperature Range	-100.0 to +200.0°C
Full Range Accuracy	+/- 0.2°C
Full Traceability	Yes
Unique Serialization	Yes
Probe Cable Length	2.0M (6.5ft)
Power source	Lithium-thionyl chloride battery, 3.6V size AA.
Battery life	3-4 years
Traceability	Full SI
Local memory storage	7 days
Calibration options	Single point Multi-point
Warranty	12 months (unless Peace of Mind applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

PT1000 LN2 / Cryogenic Temperature

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This temperature transmitter is designed for installation within either a LN2 (liquid nitrogen) tank or flask container.

The wireless transmitter head is mounted outside of the fixture and a special pluggable RTD PT1000 temperature probe is installed inside of the tank or flask.

Two probe types are available depending on application. These are:

- A** - Suitable for mounting in LN2 storage tanks
- B** - Suitable for mounting in LN2 storage flasks

Technical Specification

Part No.	GENII/FRZ/101/TNK/A - Suitable for mounting in LN2 storage tanks GENII/FRZ/101/FLK/A - Suitable for mounting in LN2 storage flasks
Sensor type	RTD PT-1000 sensor
Temperature Range	-200.0 to +40.0°C
Full Range Accuracy	+/- 0.3°C
Full Traceability	Yes
Unique Serialization	Yes
Probe Cable Length	2.0M (6.5ft)
Power source	Lithium-thionyl chloride battery, 3.6V size AA.
Battery life	3-4 years
Traceability	Full SI
Local memory storage	7 days
Calibration options	Single point Multi-point
Warranty	12 months (unless Peace of Mind applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

NTC Thermistor Fridge / Freezer Temperature

This temperature transmitter is designed for installation within either a refrigerator or freezer when extended probe cable lengths are required, for example, in coolers or walk in freezers.

The wireless transmitter head is mounted outside of the refrigerator or freezer and a pluggable NTC thermistor temperature probe is installed inside the fixture.

This transmitter is a single channel (single probe) device.

The NTC thermistor probe bead characteristic is type 10K3A. FCC identification number: 2A9Q3CHK00471.

Technical Specification

Part No.	GENII/NTC/101/A US NTC Transmitter GENII/NTC/200/2
Sensor type	NTC Thermistor type 10K3A
Temperature Range	-50.0 to +40.0°C
Full Range Accuracy	+/- 0.2°C
Full Traceability	Yes
Unique Serialization	Yes
Probe Cable Length	3.0M (10.0ft), 15.2M (50.0ft)
Power source	Lithium-thionyl chloride battery, 3.6V size AA.
Battery life	3-4 years
Traceability	Full SI
Local memory storage	7 days
Calibration options	Single point Multi-point
Warranty	12 months (unless Peace of Mind) applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

Room Ambient Temperature and Humidity



The room ambient sensing transmitter is designed specifically for installing into open room environments.

The wireless transmitter is surface mounted on a wall in an appropriate location within the room.

This transmitter is capable of sensing both temperature and humidity levels in an ambient environment. FCC identification number: 2A9Q3CHK00471.

Technical Specification

Part No.	GENII/AMB/100EA US Ambient Transmitter GENII/AMB/200EA
Sensor type	Sensiron SHT-85 sensor
Temperature Range	-40.0 to +123.0°C
Full Range Accuracy	+/- 0.2°C +/-3%RH
Full Traceability	Yes
Unique Serialization	Yes
Power source	Lithium-thionyl chloride battery, 3.6V size AA.
Battery life	3-4 years
Traceability	Full SI
Local memory storage	7 days
Calibration options	Single point Multi-point (temperature only)
Warranty	12 months (unless Peace of Mind applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90%

Instrumentation Transducers



This transmitter is designed for connection to specialist instrumentation transducers for non temperature applications.

This transmitter type is typically used for the sensing and recording of O2 (Oxygen), CO2 (Carbon Dioxide), pressure, differential pressure, high temperature, etc.

Two versions of this transmitter type are available

for connecting to a wide range of industry standard transducers. These are:

- Type 1
 - 4 – 20ma 24VDC loop powered transducers.
- Type 2
 - 0 - 10VDC externally powered transducers.

FCC identification number: 2A9Q3CHK00471.

Technical Specification

Part No.	GENII/420/101/A GENII/010/101/A US 4-20mA Transmitter GENII/INST/200/A US 0-10V Transmitter GENII/INST/200
Power Source	Lithium-thionyl chloride battery, 3.6V size AA.
Battery life	3-4 years
Traceability	Full SI
Local memory storage	7 days
Calibration options	Single point Multi-point
Warranty	12 months (unless Peace of Mind applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

PT1000 Temperature / Door Contact Dual Monitor

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This temperature transmitter is designed for installation within either a refrigerator or freezer to measure temperature whilst at the same time monitoring a door status contact.

The wireless transmitter head is mounted outside of the refrigerator freezer and a pluggable RTD PT1000 temperature probe is installed inside of the fixture. The door status monitor input is connected to a separate magnetic door switch.

Technical Specification

Part No.	GENII/DCT/102/A
Sensor type	RTD PT-1000 sensor Digital input magnetic door contact switch
Temperature Range	-100.0 to +200.0°C
Full Range Accuracy	+/- 0.2°C
Full Traceability	Yes
Unique Serialization	Yes
Probe Cable Length	2.0M (6.5ft)
Door Contact Cable Length	2.0M (6.5ft)
Power source	Lithium-thionyl chloride battery, 3.6V size AA.
Battery life	3-4 years
Traceability	Full SI
Local memory storage	7 days
Calibration options	Single point Multi-point
Warranty	12 months (unless Peace of Mind applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

Dual Alarm / Status Contact Monitor

This transmitter is designed to monitor clean contact digital inputs derived from equipment status and/or alarm contacts.

The clean contact status/alarm input connection cable length is 2.0M (6.5ft).magnetic door switch.

The wireless transmitter head is mounted outside of the specific fixture and pluggable cables are connected to the appropriate status/alarm contacts provided by the fixture manufacturer.

Technical Specification

Part No.	GENII/CCM/102/A
Typical Monitored Contacts	Magnetic Door AC Power Failure Refrigerator/Freezer Fault Incubator Fault Gas Alarmed Systems Incubator CO2 Alarm Refrigeration Plant Status Refrigeration Plant Alarm BAC-T Alarm
Refrigeration Compressor Monitored Contacts	Fault HP Cutout LP Cutout Run Status Motor Trip
Battery life	3-4 years
Traceability	Full SI
Local memory storage	7 days
Calibration options	Single point Multi-point
Warranty	12 months (unless Peace of Mind applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

Integrated cold chain

temperature logger

An accurate and robust stand-alone device intended for the monitoring and recording of medical/scientific products during transportation. Providing an uninterrupted chain of temperature recordings and end-to-end product temperature traceability.

Features

- **Journey reporting**
Instantly available at point of delivery with the visual display and pdf journey report file.
- **Journey history integration**
Integrate recorded history logs with our cloud-based, fixed storage temperature monitoring and recording services.

Technical Specification

Part No.	GENII/TTMU/100
Compliance	EN 12830:1999
Sensing Options	Configurable Internal or External PT1000 RTD
Display scale	Configurable °C or °F
Measurement range	-200.0 to +40.0°C (-328.0 to 104.0°F)
Resolution	0.1°C
Tolerance	25.0 to 40.0°C (+77.0 to 104.0°F) = +/-0.5°C (0.90°F) -25.0 to 25.0°C (-3.0 to 77.0°F) = +/-0.3°C (0.54°F) -100.0 to -25.0°C (-148.0 to -3.0°F) = +/-0.5°C (0.90°F) -200.0 to -100.0°C (-328.0 to -148.0°F) = +/-0.75°C (1.30°F)
Logging frequency	Configurable between 5 seconds to 24 hours
Storage capacity	32,000 data points 10 minutes = 222.0 Days, 5 minutes = 111.0 Days , 1 minute = 22.0 Days, 30 Seconds = 11.0 Days, 15 Seconds = 5.5 Days, 10 Seconds = 2.7 Days, 5 Seconds = 1.8 Days
Temperature alarms	Up to 6 individually pre-configured alarm zones. Above temperature threshold value below temperature threshold value alarm delay time.
Battery life	Lithium-thionyl chloride battery, 3.6V size AA. 18 months minimum (return to supplier battery replacement)
Certification	12 months calibration/validation certificate
Dimensions	115mm x 50mm x 20mm
Protection	IP52
Equipment warranty	12 months (unless Peace of Mind applies)
Operating conditions	0°C (32°F) to 40°C (104°F), humidity of 0 to 90% RH

Regulatory Approval

Europe: CE, UKCA

United States: FCC

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the Federal Communications Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The portable transmitters with antenna comply with FCC/IC RF exposure limits for general population / uncontrolled exposure.

If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, we suggest you try to correct the interference as follows:

1. Reorient or relocate the receiving antenna
2. Increase the distance between the equipment and receiver
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
4. If the above are not successful, consult the dealer or radio/TV technician.

FCC Caution: any changes or modifications not approved by the party responsible for compliance may void your authority to operate the device.

Product Disposal



All Checkit components comply with European Directives 2011/65/EC and 2012/19/EC on the restrictions of the use of dangerous substances in electric and electronic equipment as well as their waste disposal. The Waste Electrical and Electronic Equipment (WEEE) symbol on the product and packaging indicates that the product must not be disposed of with normal household waste: it must be disposed of by arranging to return to a designated collection point for the recycling of waste electrical and electronic equipment. Doing so helps ensure that the equipment is recycled in a manner that protects human health and the environment and conserves natural resources.

Peace of mind contract and service options

Peace of mind contract & service options



Checkit has pioneered the development of a Peace of Mind model that provides everything you need to run your Automated Monitoring+ system for a simple regular payment. Peace of Mind includes

Hardware – supply and replacements – all required equipment and any replacements needed to maintain performance

- In the event of failure, hardware will be replaced throughout the contract
- Rapid, remote diagnosis of hardware issues to reduce downtime
- Self-swap or engineer site visit (Automated Monitoring+ 4R) options available

Calibration – initial and ongoing – calibration options to keep your system operating to specification

- Connected Automated Monitoring+, on-site, non-disruptive traceable annual calibration carried out by our engineers, to your choice of 1, 2 or 3 points (UKAS accredited for UK customers)
- Calibration maintained by switching out sensor elements as needed. Options for customer or Checkit to perform the swaps
- Temperature mapping service also available for Checkit Europe Ltd customers

Monitoring & support – 24/7/365 sensor alerts and support service options to ensure you know when something needs attention

- Automated sensor alerts by text or email, plus alert calling option from our 24/7/365 staffed Alarm Calling Service Centre (Automated Monitoring+)

- Helpdesk and support portal: product issues and questions supported remotely (during office hours)

Maintenance - ongoing system maintenance and software upgrades to keep your system running

- Cloud, app and embedded software are periodically updated to improve performance and increase functionality (applies to functionality within the edition purchased)
- Annual preventative maintenance health check (Automated Monitoring+ delivered with calibration)

For further information about our Automated Monitoring+ Peace of Mind offerings please refer to our [Peace of Mind Guide](#), together with our [Terms of Service](#) and [Automated Monitoring+ Service Level Sheet](#).

Peace of mind contract & service options

Supporting regulated businesses:

Automated Monitoring+ is suitable for businesses operating under the requirements of MHRA / CQC / GMP / 21CFR part 11.

	Automated Monitoring+
Hardware	✓
Breakdown replacement	✓
Self-swap plus engineer site visits as required	✓
Calibration	Single or multiple point options
Initial	✓
Traceable calibration	✓ standard (UKAS 17025 accredited for UK customers)
Ongoing calibration	Engineer on-site service (non-disruptive)
Preventative maintenance health check	✓
Temperature mapping	option for Checkit Europe Ltd. customers
Monitoring & support	
24/7/365 Automated alerting	✓
24/7/365 Alarm Calling Service Centre	option
Helpdesk and support portal	✓
Cloud platform	✓
Software maintenance	✓
Extended data retention	option

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