

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

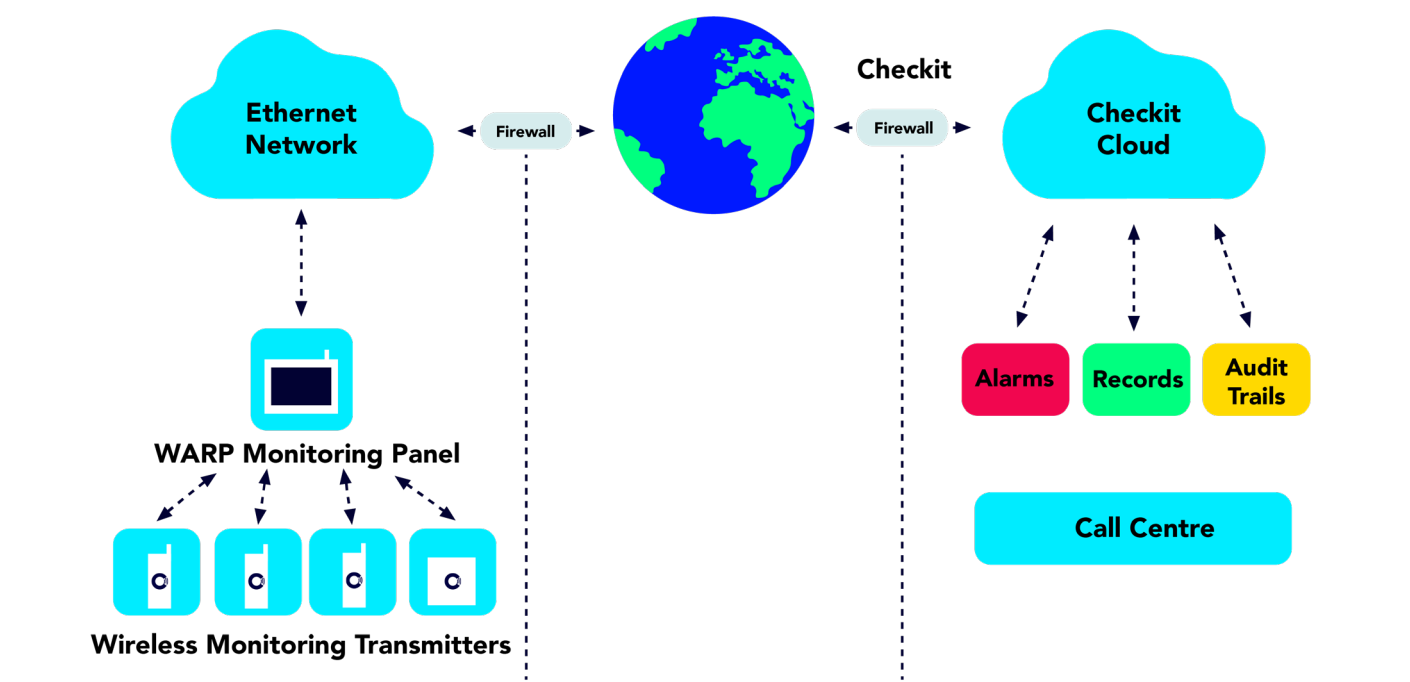
Automated Monitoring+ provides everything you need to monitor and protect your assets in a regulated environment.

- 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.

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

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

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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