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FUNCTIONAL DESCRIPTION

R-LINK WATCH

The R-Link watch is designed specifically for harsh working environments to monitor various workplace health and safety hazards and to allow a level of communication with the wearer. The watch is assigned to a wearer each day using an RFID identity card, which also allows for determining which functionality is afforded to the wearer. The watch provides the following functionality

- **HAVS monitoring**: The watch determines exposure to hand arm vibration using a triaxle accelerometer. An RFID tool tag can be used to identify the tool, and it's expected vibration emission in m/s^2. The watch will calculate a daily HAV exposure based on the detected trigger time from the accelerometer and the tool tag vibration emission. In parallel based on a correction algorithm for the transmissibility between the grip point and wrist the watch will calculate a second daily HAV exposure-based on an estimated vibration at the grip point in real time. The employer decides which HAV exposure is used for the watch display and subsequent reports. The watch will provide direct feedback to the wearer of their HAV exposure level and provide haptic alerts based on personalised thresholds for exposure set based on the identity card.

- **Proximity Warning**: The watch is enabled with Ultra-Wideband (UWB) to determine the distance using the time of flight between the watch and another source of UWB. Principally this is implemented by the watch determining the distance between itself and a device branded as a beacon. The beacon is configured with an exclusion range. The watch records when, for how long and the beacons GPS tracked location for when it was within the exclusion range of the beacon.

- **IIoT interoperability**: The watch is enabled with Bluetooth technology to allow data sharing with other sensor technologies which Reactec have a IioT partnership agreement with. This includes for instance the XD-One+ from Trolex. The R-Link watch can pair to the XD-One+ personalising the data gathered by the XD-One+ to the watch wearer.

- **2-way messaging:** Via the Reactec Analytics software, messages can be set to be provided by the watch at specific times daily or at another appropriate interval. The messages can be arranged requiring them to be acknowledged by the wearer through the watch buttons. Messages can be scheduled to be delivered in advance or live if a watch is within communication range of a gateway.

WRIST STRAP

The wrist strap is designed to allow wearing the R-Link watch throughout the workday. It should be worn snuggly on the wrist. Alternate versions of the design exist for quick release if there is risk of snagging or for individuals with specific skin allergies.

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GATEWAY

All data collected by the R-Link watch is automatically and securely transmitted to the Reactec Analytics cloud-based software via a gateway device. For efficient end-of-day data management, each watch should be returned to a charger or a gateway with charging docks. Up to three 10-bay chargers can be positioned within the communication range of a gateway, supporting a maximum of 32 watches.

CHARGER

The R-Link watch should be charged fully before starting work. The charger can charge manage up to 10 watches.

BEACON

The beacon is equipped with UWB technology to establish a configurable exclusion zone. It is also equipped with GPS to track any incursions within its exclusion zone.

REACTEC ANALYTICS SOFTWARE

All monitored data gathered by the R-Link watch is transmitted to the online Reactec Analytics software for intelligent reporting. The Reactec Analytics software is also required to administer the range of functionality of the Reactec R-Link system.

TECHNICAL SPECIFICATIONS

MEMORY

Storage:	1MB Flash, 256KB RAM
Tool records:	200
PPI records:	40 beacons, 240 breaches / beacon
Safe Zone records:	40 zones, 80 entries per zone
Beacon records:	50 beacons, 40 entries per beacon
Dust records:	3240

COMMUNICATIONS

Operator and tag communications:	Close range RFID (13.56MHz) Max Range: 2 cm
Gateway, auxiliary sensor & beacon communications:	Bluetooth Low Energy 5.0 Max Range: 80 meters
Proximity detection:	Ultra-Wideband channels 5 & 9 (6.5 GHz & 8.0 GHz) Max Range: 25 meters

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CALIBRATION

The R-Link accelerometer's IC interface is factory calibrated for sensitivity (So) and Zero-g level (TyOff). Trimming values are stored in a non-volatile memory and downloaded into the registers during each active operation, requiring no midlife calibration.

PWS DETECTION ACCURACY

UWB proximity detection accuracy @ 0-10 meter < 30 cm
UWB proximity detection accuracy @ 10 -15 meter < 1 m
UWB proximity detection accuracy @ 15 - 20 meter < 3 m
All figures are subject to limitations of radio frequency technology and should be verified as fit for purpose in specific application and environment

BATTERY

3.7V, 300mAh, Internal lithium ion polymer rechargeable battery, not user serviceable.

CHARGE TIME

Fully discharged to 100%	3 hrs
8hrs use for HAV only to 100%	1hr
8hrs use for PPI & HAV to 100%	2hrs

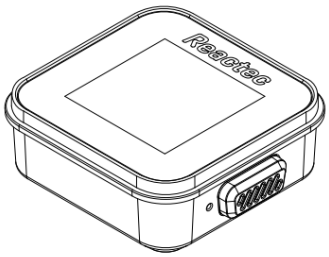
BATTERY LIFE

HAV & PPI mode:	14hrs
HAV only mode:	>48 hours
500 charging cycles:	>80%

PHYSICAL & ENVIRONMENTAL

DIMENSIONS

Width:	41.1 mm
Depth:	41.5 mm
Thickness:	16.3 mm



WEIGHT

Module:	28 grams

CONSTRUCTION

Module base:	Polybuytylene Terephthalate
Module glass:	Corning Gorilla Glass 3
Strap:	ESTANE SKN TPU

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TEMPERATURE RANGE & HUMIDITY

Operating:	-10°C to +40°C.
Storage:	-20°C to +40°C.
Humidity:	up to 100% RH

ENVIRONMENT & INGRESS PROTECTION

Suitable for Indoor and Outdoor use

Wet and dusty environments:	Up to Pollution Degree 4
Maximum altitude:	2000m
Ingress protection:	IP67

STORAGE

Max 6 months when battery fully charged
Store in a cool dry place away from direct sunlight.

STANDARDS & CERTIFICATIONS

INGRESS STANDARDS

EN60529/IEC60529 to IP67
UL50E type 4

EMC & RADIO STANDARDS

EN61236-1, EN 301 489-1, EN 301-489-3, EN 301 489-17, EN 300 328, EN 300 330, EN 302 065-1, EN 302 065-2,
47 CFR Part 15 Subpart C, FCC 47 CFR Part 15 Subpart F
RSS-GEN, RSS-210, RSS-220, RSS-247

SAFETY STANDARDS

EN61010-1, EN IEC 62311
IEC 61010-1, UL61010-1, CAN/CSA 61010-1

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Prevention engineering for workplace health.

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