User Manual

Eleksen Connected Worker Platform

eleksen
smart workforce safety

Eleksen Connected Worker Operating Manual

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Contents

1. Safety Regulations

1.1 Correct use

The HUB is part of an integrated Eleksen system which incorporates several elements.

The Eleksen Hub does not replace the primary safety devices.

This Hub and associated products and devices are designed to enhance the overall safety of the wearer. By giving local visible and audio alerts/alarms to the wearer and other people within the vicinity, so warning the user and fellow workers of the threat of danger.

Information gathered by the Hub from the associated devices will be transmitted to the control centre. This information is gathered in real time and used to identify any perceived danger areas.

This information can be analysed and presented using a management information system to give tabulated or graphical displays to enhance health and safety for the workforce.

When in use the Hub provides the wearer the ability to alert fellow workers and control centre, they are in distress. The Hub and garment will go into alarm mode:

- Hub will vibrate (Haptic)
- Hub LED lights will flash
- Hub will emit a loud sound
- LED on garment will flash red (colour is configurable at time of order)
- In the control centre the 'Dashboard' will also go into alarm status giving visible and audio alert
- Supervisor phone will be notified
- The Hub (wearer) will be identified and location displayed on the dashboard
- The nature of the alert will be displayed (i.e. SOS – Gas- Noise etc)

Appropriate action can be taken to address the alert – Evacuation, Search and Rescue, supervisory intervention, local worker groups informed via the Eleksen communication system.

1.2 Liability Information
Placeholder

2. Product Description
2.1 Eleksen Connected Worker Solution

The garment has an array of sensors and devices that enable real-time monitoring and data analysis of multiple workers' health, wellbeing, and exposure to potential hazards, and environmental and situational dangers – such as noise, gas, vibration and dangerous proximity or collision. The data is collected and transmitted to the Connected Worker Platform which displays data from all specified workers simultaneously and in real time.

The smart worker platform allows real-time device validation, monitoring of and reporting on of the industrial workforce for health and safety in the field. It also optimizes the gathering of the data collected on a continuous basis for predictive safety improvements and increased productivity. Once the real-time alert, reporting and compliance data has been swiftly and securely acquired and stored, user organizations can interrogate and analyse it to reveal patterns, trends, causes, and opportunities to drive efficiencies.
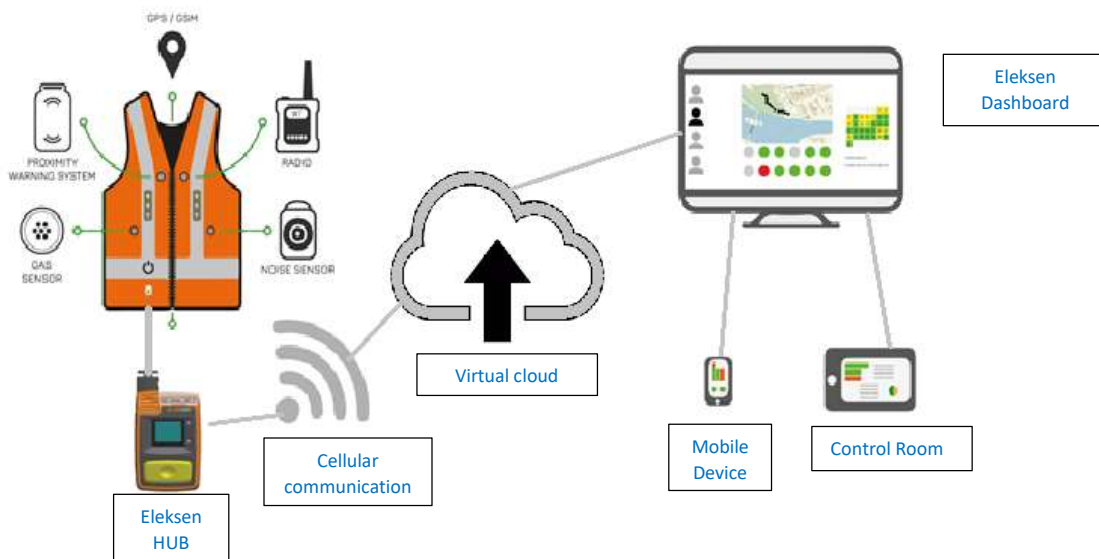

Fig. 1

2.2 HUB overview

The Eleksen™ Smart Connected Hub, acts as both transmitter and receiver, that transmits data at a configurable interval period over a 12-hour shift, working in correlation with the Eleksen™ Connected Worker Platform real-time module. This ensures that both the worker and the control centre are alerted to any imminent danger. If at any point the Hub loses cellular connection, it will continue to gather data and deliver alerts to the "worker", and it will upload the missed data to the control centre once it comes back into range or alternatively when the HUB is plugged into the Hub Station.
The stored data will be transmitted via WiFi to the dashboard.

2.3 Instrument overview

Fig. 2

HUB functionality

1. HUB LED's (4 multi coloured LED's)

2. UP scroll button

3. DOWN scroll button

4. Master button

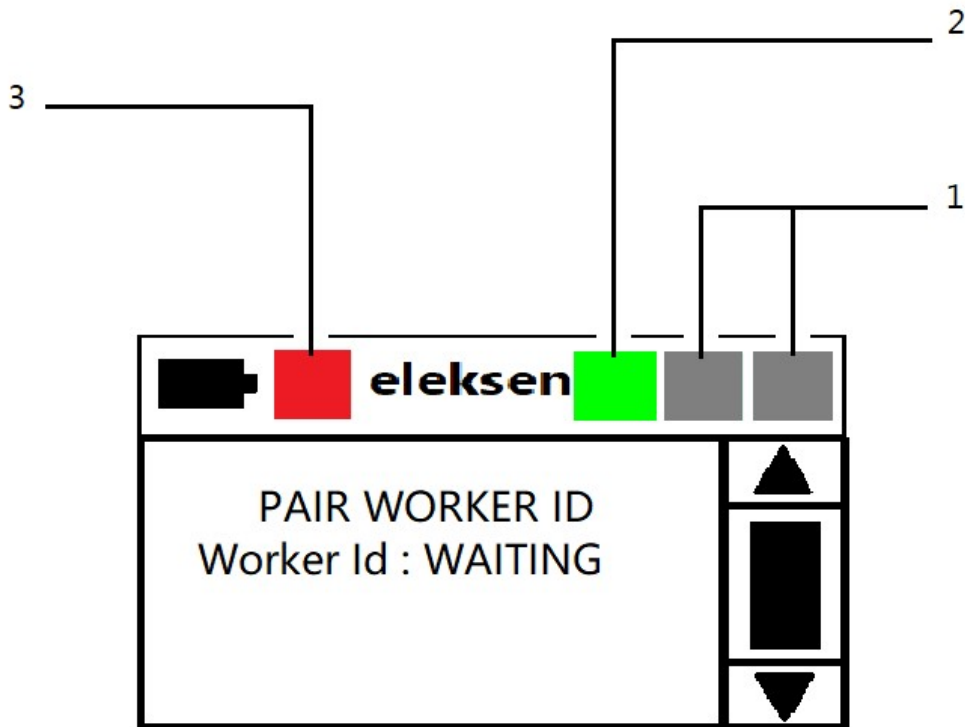5. Garment loom connector

6. OLED screen

2.4 OLED Screen Overview

Small icon

The top part of the OLED screen displays the Hub communication status.

There are three areas where the icons display/flash/disappear as the communication services are detected and activated. These three sections collectively inform the user the current Hub status.

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Fig. 3

OLED Screen overview [wireframe]

1. Connectivity status area
2. Near Field Communication [NFC] status area
3. Location information area

Note: Under the status bar is the main OLED screen which gives step by step instructions to the user.

Key Icon: LED's flashing

Fig. 4

2.4.1 Screen icons

Area 1:   Connectivity status area
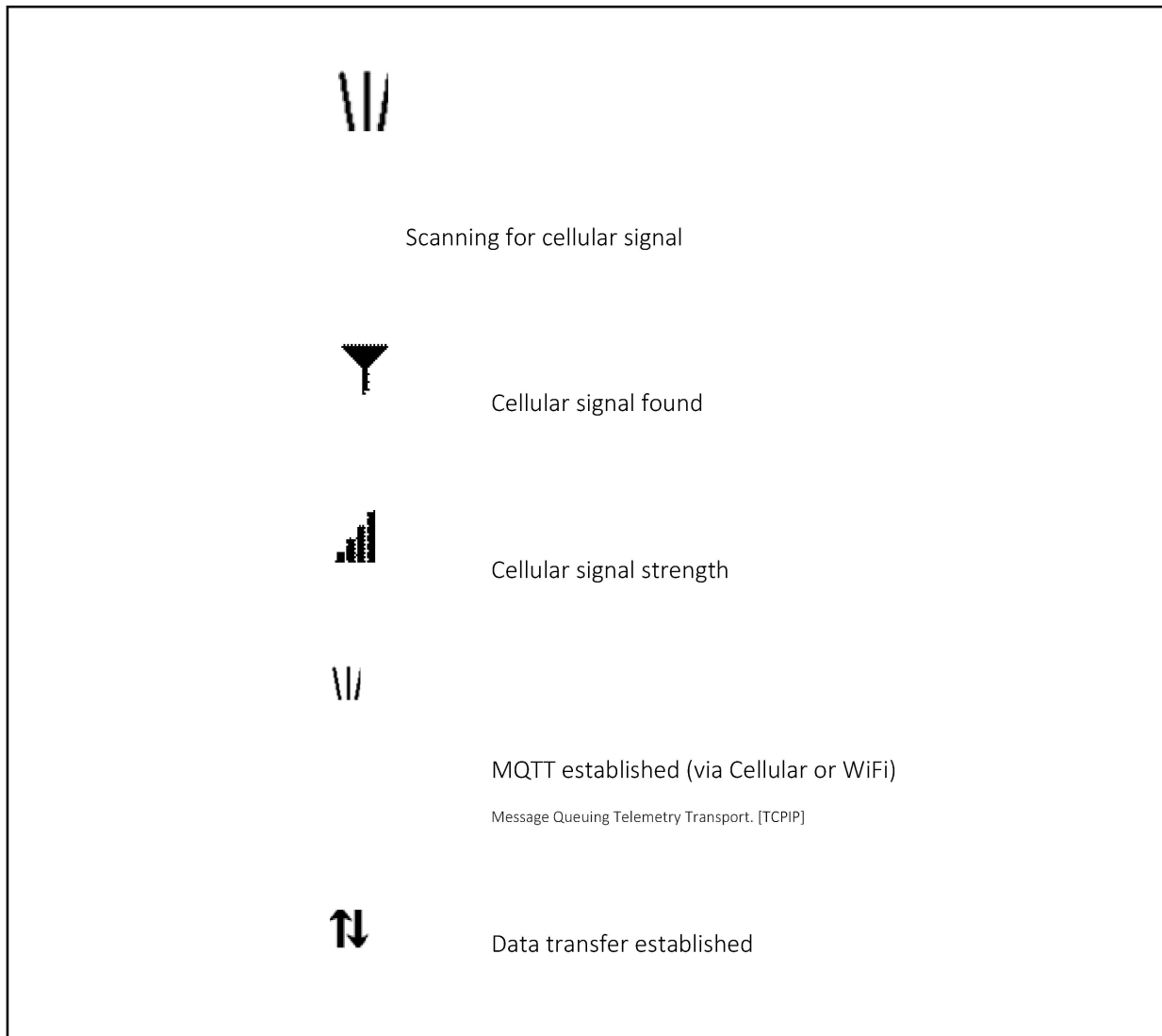
Scanning for cellular signal

Cellular signal found

Cellular signal strength

MQTT established (via Cellular or WiFi)

Message Queuing Telemetry Transport. [TCPIP]

Data transfer established

Fig. 5

Area 2: Near Field Communication [NFC] status area

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Scanning Near Field Communication [NFC]

NFC Found

Fig. 6

Area 3: Location information area

GNSS located (geographic location established)

WiFi

Bluetooth

Cell tower location
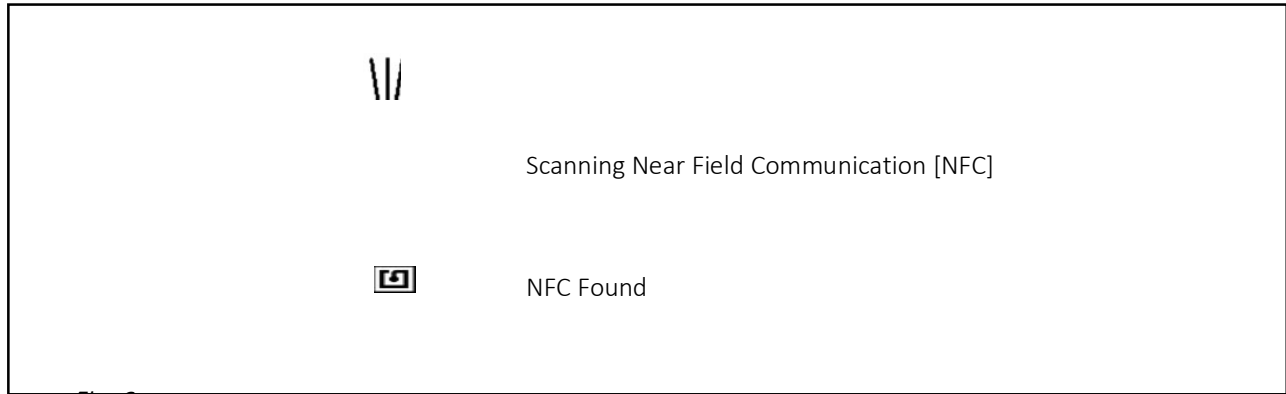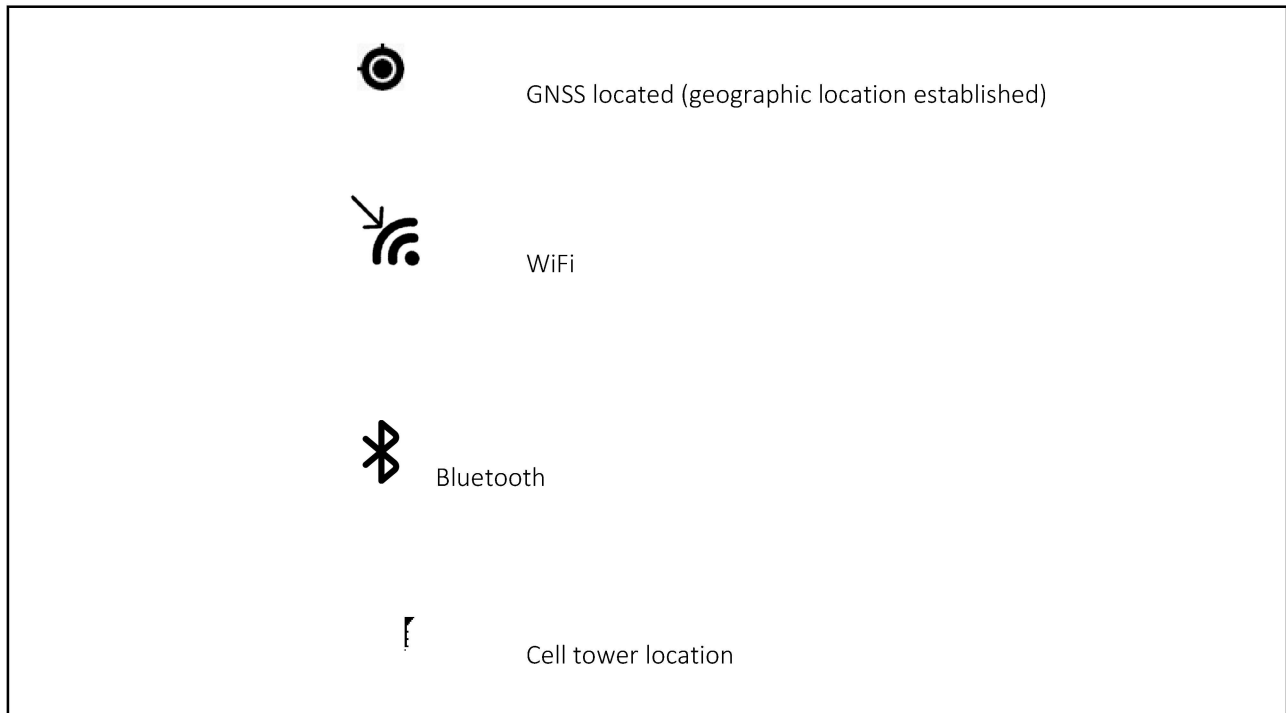
Fig. 7

2.4.2 Typical small icon sequence during initial start up

1.

Scanning for NFC

2.

Scanning for cellular signal (tower)

3.

Establishing MQTT protocol (Data transfer over TCPIP protocol via Cellular or WiFi)

4.

Data transfer established

5.

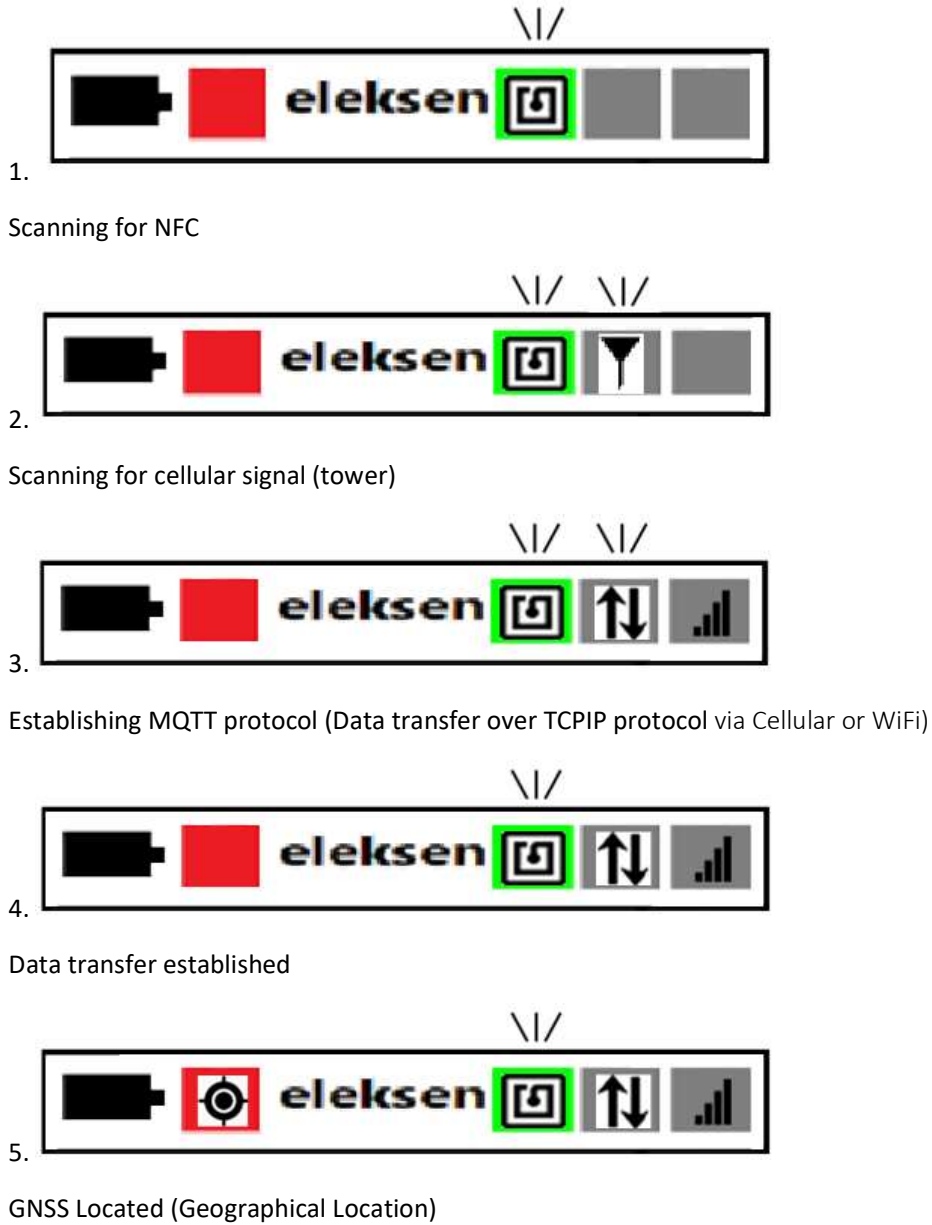GNSS Located (Geographical Location)

Fig. 8

OLED Screen icons

Data archive in progress

Hub on charge

Battery full

WiFi

Fig. 9

3. Operation

3.1 Removing HUB from Hub Station

3.1.1 – Only remove the Hub from the HUB Station when all LED's are green.

Green status: HUB fully charged and ready for use.

Hub LED status

OLED Screen Icon - Device fully charged

3.1.2 – Status RED: **Do not** remove Hub

Battery is not fully charged

Hub is undergoing a firmware update

Hub is uploading user data

Hub LED status

OLED Screen Icon – Device charging

3.2 HUB Removed from Hub Station

3.2.1 HUB behaviour when removed from HUB Station

When the Hub has been removed from the Hub station the OLED will be blank while the Hub performs a POST (power on self-test). During the POST the Hub will perform a range of LED/Haptic/Sounder test cycles as detailed below.

Firmware release format:

Release level	DD/MM
V0.11	06 06

Hub removed from Hub station.

2 Second

Sounder

1 Seconds

OLED Screen Icon with Firmware version   3 Seconds

Haptic   Sounder

Hub LED Status ● ● ● ●

FAIL
Worker
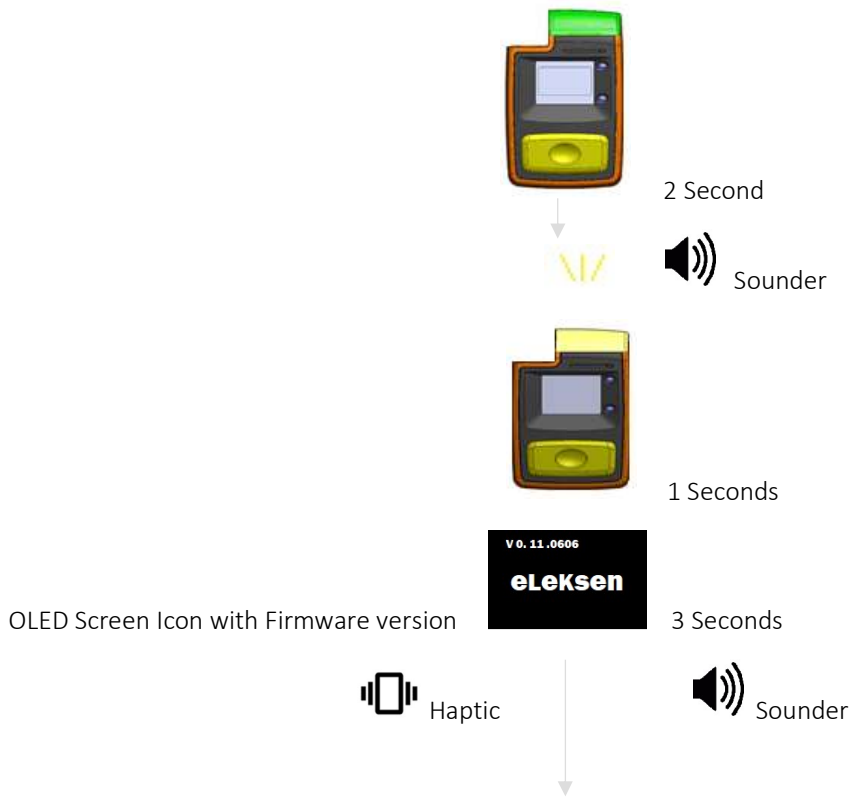
OLED Screen

\|/

NOTE: The NFC icon will flash

Press the master button to re initiate the NFC process

3.2.2 Connecting the worker ID to the Eleksen Hub

Worker ID (ICEid)

Rear of Hub

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1. **Touch** ICEid tag against rear of Hub in area shown
2. **Hub screen** Displays worker ID

Haptic   Sounder

NOTE: If worker ICE id is not peformed within approximately eight minutes the Hub will go into sleep mode to preserve battery life. If the Hub enters sleep mode please refer to 3.2.6 to re-activate the Hub and then return to 3.2.3

3.2.3 Connect devices to Hub using device ICEid tag/s

Continue to add devices as shown above.

The Screen will identify the devices attached and count the total number of devices paired with the Hub. When all devices are attached <u>then</u> attach the garment to the Hub.

3.2.4 Connecting Hub to garment

When garment is plugged into the Hub LED's will flash green

Haptic   Sounder

OLED Screen

This screen is dependant on worker profile on Eleksen dashboard

3.2.6 Worker not connected to Hub (not ICEid) for 8 minutes Hub enters sleep mode.

To 'wake up' the Hub press the master button continually

Haptic   Sounder

Go to **3.2.2** Connecting the worker ID to the Eleksen Hub

4. Maintenance

4.1

Placeholder

5. Tech Spec

5.1

Connectivity	4G LTE: Cat M1/NB-IoT GPRS 4-Band Wi-Fi 802.11 b/g/n Dual mode Bluetooth® 4.2 incl. BLE (Bluetooth low energy) GPS / A-GPS / GLONASS / BeiDou / Galileo NFC ISM (SRD) Receive only
Cellular Frequency Bands	LTE Cat M1 Half-Duplex LTE CAT NB1 Half-Duplex Bands 2, 3, 4, 5, 8, 12, 13, Band 20 2G GPRS/EGPRS GSM 850MHz, E-GSM 900 MHz, DCS 1800MHz, PCS 1900MHz

Dimensions	101*69*25mm
Weight	161g
Ports	Eleksen™ Connector
Dedicated Keys	Alarm/ Man-Down / Active Visibility / Menu "Big Button" functionality
Display	High Contrast OLED
Battery	Re-chargeable Lithium Polymer 12 hours use in normal operating mode
Charge Time	<5 Hours
Housing	Hi-Vis Polycarbonate/Silicone Rubber
IP Rating	IP65 in normal operating mode
Operating Temp	0 to 40
Storage Temp	-5 to 40
Audible Alarm	90dB
Vibrating Alarm	Standard
Visual Alarm	4 ultra-bright multicolor LEDs when used standalone

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6. Regulatory

6.1 FCC and ISED Canada Compliance

Manufacturer: Wearable Technologies Ltd

Country of origin: United Kingdom

This device complies with part 15 of the FCC Rules and ISED Canada licence-exempt RSS standard(s). 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.

6.2 EU Compliance

Wearable Technologies Ltd. hereby declares that this wireless device is in compliance with Directive 2014/53/EU.

A copy of the EU Declaration of Conformity, including device frequency bands and maximum radio-frequency power, is available at https://eleksen.com/regulatory

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6.3 Modules used within this design

Cellular module:

FCC ID: XPYUBX18ZO01

ISED ID: 8595A-UBX18ZO01

BT/WiFi module:

FCC ID: 2AC7Z-ESPWROOM32

ISED ID: 21098-ESPWROOM32

6.4 SAR

The highest reported FCC and ISED SAR for stand-alone body exposure conditions and simultaneous transmission exposure conditions are 0.98 W/kg and 1.04 W/kg, respectively.