



LINK-4

Wireless Crane Gateway

Model STL100, STL100W



Installation and User Manual

Revision 03 – June 2022

© CASWA Pty Ltd – 2021



CONTENTS

| | | |
|----------|---|-------------------------------------|
| 1 | OVERVIEW..... | 4 |
| 1.1 | Operation Summary..... | 4 |
| 2 | SPECIFICATIONS..... | 5 |
| 2.1 | Physical Specifications | 5 |
| 2.2 | Electrical Specifications..... | 6 |
| 2.3 | Communication Specifications..... | Error! Bookmark not defined. |
| 3 | INSTALLATION DETAILS | 7 |
| 3.1 | Prior to Installation | 7 |
| 4 | STARTUP PROCEDURE..... | 8 |
| 4.1 | Plug In Power | 8 |
| 4.2 | LED Indicator Lights..... | 8 |
| 4.3 | STARTUP PROCEDURE..... | 10 |
| 5 | SIM CARD AND 4G CONNECTIVITY | 11 |
| 5.1 | SIM CARD REFRESH | 11 |
| 6 | SETTING UP REAL TIME ALERTS ON YOUR DEVICE | 11 |
| 6.1 | WEB PORTAL SETUP | 12 |
| 6.1.1 | Plug In your RFID Card reader | 12 |
| 6.1.2 | Hold your Software Licence card over the card reader, | 12 |
| | as indicated by the diagram on the right..... | 12 |
| 6.1.3 | Downloading the CASWA.CardReader software..... | 13 |
| 6.1.4 | Installing the Software | 13 |
| 6.1.5 | Accessing the inspector..... | 14 |
| 6.1.6 | Picking your Settings | 15 |
| 6.2 | FIELD SERVICE UTILITY (FSU) SETUP..... | 16 |
| 6.2.1 | Installing the Field Service Utility (FSU) | 16 |
| 6.2.2 | Launching the application | 17 |
| 6.2.3 | Connecting to the MaxOut..... | 17 |
| 6.2.4 | Managing Firmware | 18 |
| 6.2.5 | Setting Your Parameters | 22 |





1 OVERVIEW

The Link-4 gathers live data from your *HoistNet* devices (such as *Liftlog* and *AccessPack*), connects them to the internet, and uploads the operating data to the cloud in real-time.

The Link-4 also enables you to receive live analysis, download abilities and reports, as well as receive instant alerts and notifications if your device is being operated incorrectly; giving you real-time piece of mind on how your equipment is being used in the field.

1.1 Operation Summary

The Link-4 is designed to connect all of your Hoistnet devices to the internet, so you can store your data on the cloud, and gain real-time analysis of how your devices are being operated. All of our Hoistnet devices such as *Liftlog* and *MaxOut* transmit their data via Bluetooth, which can then be picked up by the Link 4 at a range of up to 100m. The Link-4 then uses its built-in mobile sim card to transmit that data via your local 4G network, to be sent onto the cloud for viewing and analysis.

A Link-4 can receive data from up to 99 Hoistnet devices simultaneously, and only requires a power adaptor to function. The device comes pre-configured, so requires no extra configuration for basic operations. To access all of the Link-4's full capabilities though please read further ahead in this manual.



Figure 1: A Link-4 in Operation



2 SPECIFICATIONS

2.1 Physical Specifications

| | |
|----------------------|-----------------|
| Overall length (mm): | 198 |
| Overall width (mm): | 132 |
| Overall height (mm): | 38 |
| Weight (kg): | 0.2 |
| Mounting: | Adhesive Velcro |

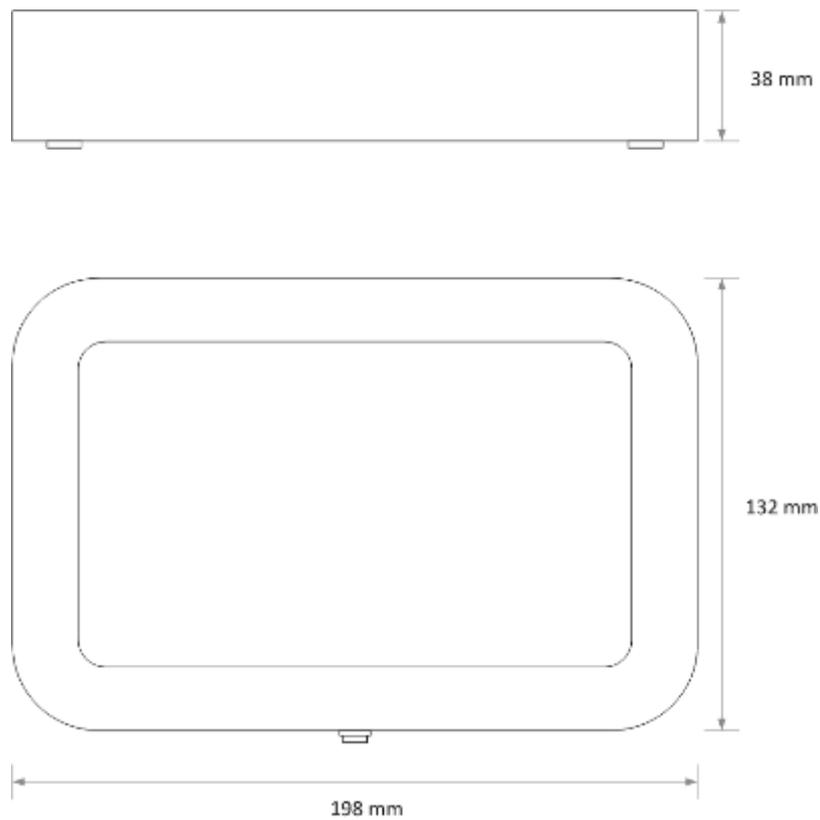


Figure 2: Case Dimensions



2.2 Electrical Specifications

| Parameter | Description | Min | Typ | Max | Units |
|------------------------------|----------------|------|-----|-----|-------|
| V_{in} | Supply voltage | | 5 | | VDC |
| I_{in} | Supply current | | 1 | | A |
| Operating Temperature | | -40C | | 85C | C |

Note: Extended operation at maximum temperature will reduce the life of the device.



3 INSTALLATION DETAILS

3.1 Before Installation

Before installing your Link-4 device visually inspect the device and check that:

- (a) the type of input marked on the front of the device is appropriate for your application;
- (b) the case is not damaged and fits together securely;
- (c) the power terminal is secure;



Figure 3: Link4 Front Face



4 STARTUP PROCEDURE

4.1 Plug-In Power

At the bottom of the Link-4, there is a round 5V power input. The power supply for which will be included by SoleDigital upon purchase of a Link4 unit. By default, an Australian type “I” plugged power supply will be included with your Link-4, but other plug types can be included upon request.

To begin the installation process simply plug your adaptor into a wall outlet, and then into the Link-4 unit via the round power input on the bottom, as demonstrated in the diagram below.

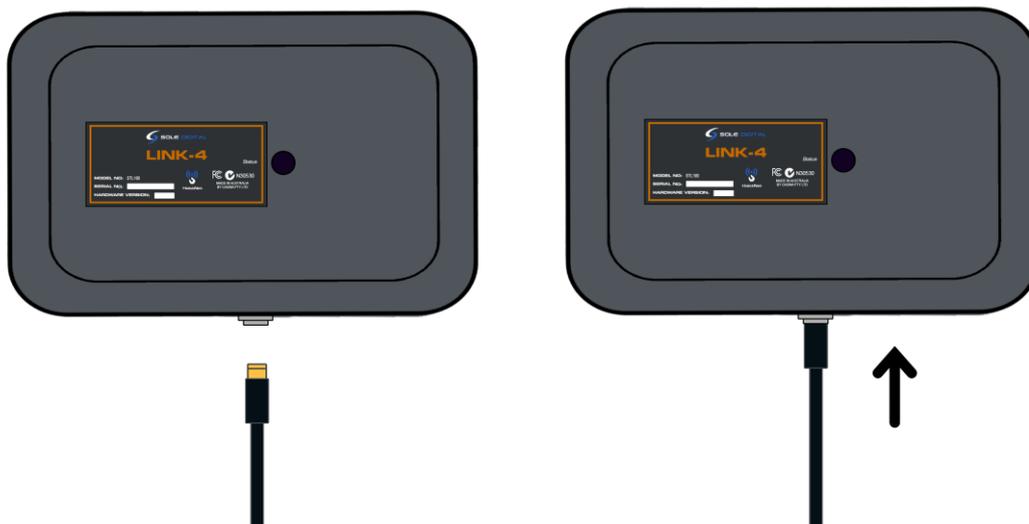


Figure 4: Plugging in a Link-4

4.2 LED Indicator Lights

On the face of the Link-4 is one LED indicator light, which will either display a Green, Red, or Blue light. Each of the colours will indicate different situations, so please examine the below diagrams for a reference guide to each of the light indications.



NO LIGHT ON = No Power

If there is no power running to the unit, check your adaptor is the correct voltage and that there is power running to your Link-4



RED LIGHT = Fault

There is some fault in the unit, whether it is not connected to a device yet, or is failing to find a 4G signal to broadcast on. If you see a Red Light upon startup though, this will be normal. Please refer to section 4.3 for further guidance on the startup procedure for the Link-4



BLUE LIGHT = Connecting

When the Link-4 is displaying a Blue light this means the device is attempting to connect with a nearby Hoistnet device via Bluetooth.



GREEN LIGHT = Connected

When the Link-4 is displaying a Green Light it means that a connection has been made and the device is operating as per normal.



4.3 STARTUP PROCEDURE

Upon connecting the Link-4 to power the device should go through the following steps. If you disconnect Link-4 from its power source, the device will recycle through these steps. If the device remains in the RED phase for longer than 3 minutes, check to make sure your Link-4 has a 4G signal and is within range of the Hoistnet device you are attempting to connect to.

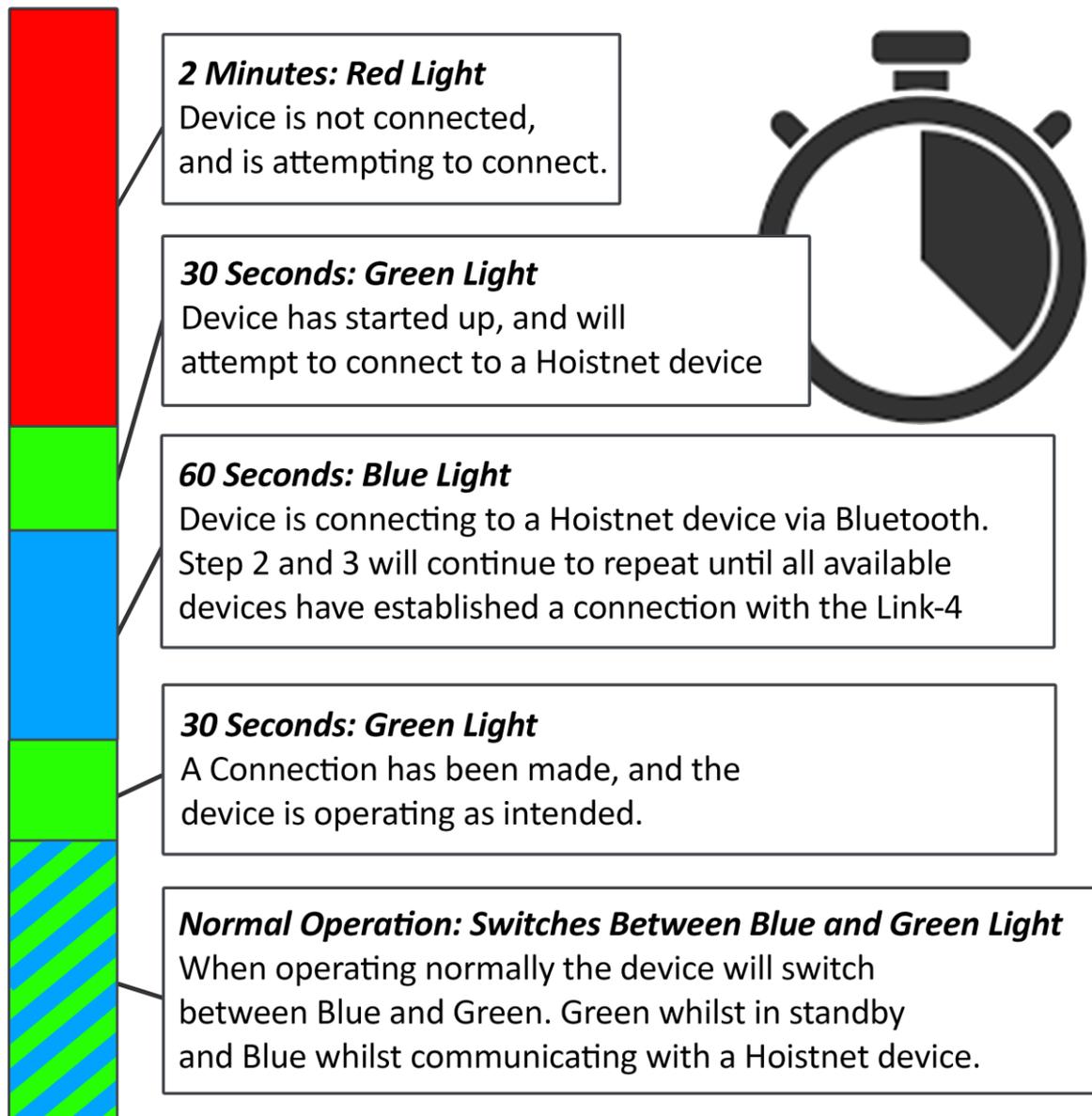


Figure 5: Link4 Startup Timeline



5 SIM CARD AND 4G CONNECTIVITY

Whilst your Link 4 connects to Hoistnet devices via Bluetooth, it connects to the cloud and the outside world via a 4G signal using the inbuilt SIM Card. The SIM card will be inserted and set up by SoleDigital before shipping, so it is important to let the Sole Digital staff know what county your Link-4 will be operating in before shipping, so a corresponding SIM card can be inserted into the unit to connect with your countries local telephone network.

5.1 SIM CARD REFRESH

The Link-4 comes with an annual subscription fee from Sole Digital, with this subscription fee being used to fund and replenish credit on the SIM Card to maintain operability. As long as the annual fee is up to date, you will not need to do anything further to maintain the Link-4's connection with the outside world, and Sole Digital will be responsible for making sure the SIM card remains in operation. If your SIM card does stop functioning though, it may mean that your subscription fee has not been paid. In this case please confirm with your accounts team that they have processed the annual invoice, or contact Sole Digital to determine the cause of the fault.

Note: If you have purchased your Link 4 in one country, but are moving to another country and are hoping to use the Link-4 in that country you must contact Sole Digital so the appropriate settings adjustments can be made. In most cases, this change can be executed remotely by Sole Digital, but in some cases, you may be required to switch out the SIM card inside the device. For more advice on this process please speak to a member of the Sole Digital technical team.

6 SETTING UP REAL-TIME ALERTS ON YOUR DEVICE

The Link-4 allows you to receive real-time notifications for several different events including overload pulls, sidepulls and transient spike overloads. These alerts will be measured by your devices like a *Liftlog* or *Maxout*, analysed and then sent to your designated email by the Link-4. Depending on the type of device you are receiving data from you will either enable the alerts via the Field Service Utility Software (FSU) or via the Sole Digital Web Portal. Make sure to identify the device you will be receiving the load signal from and use the corresponding chapters of this manual to properly institute it. This will mean ***using Step 6.1 for the Web Portal set-up, or Step 6.2 for the Fsetup***, for which device corresponds with which method please read the first paragraph of the 2 steps.



6.1 WEB PORTAL SETUP

IMPORTANT: The Web Portal Setup Only applies to **LIFTLOG** and **ACCESSPACK** products, if you are trying to set up alerts from a different device please skip to step 6.2.

For this method you will need to grab your RFID card reader, USB Type B Cable, and Software Licence Access Pack Card. The Software Licence card is different to your regular Accesspack card, and can be identified via the words “Software Licence” along the right hand side, as demonstrated in the diagram below.



**Figure 6: RFID Reader and USB-TYPEB Cable (Left)
AccessPack Software Licence Card with Distinguishing Feature Highlighted (Right)**

6.1.1 Plug-In your RFID Card reader into a PC

6.1.2 Once powered up place your Software Licence card into the card reader, as indicated by the diagram on the right.

Note: If the light on the RFID doesn't turn Green upon presentation of your card it may mean that you have not downloaded the CASWA.Cardreader software. If this is the case please proceed to the next step. If your card does register right away feel free to skip to step 6.1.5.





6.1.3 Downloading the CASWA.CardReader software

First, you will need to visit the Sole Digital website to download the card reader software, the software can be found at >> <https://www.soledigital.com.au/AccessPack.html> (1). You will need to scroll down the page and click on the [Downloads] tab (2) and then proceed to the [Card-reader-setup] link (3). Once you double-click on the link the program will begin downloading.

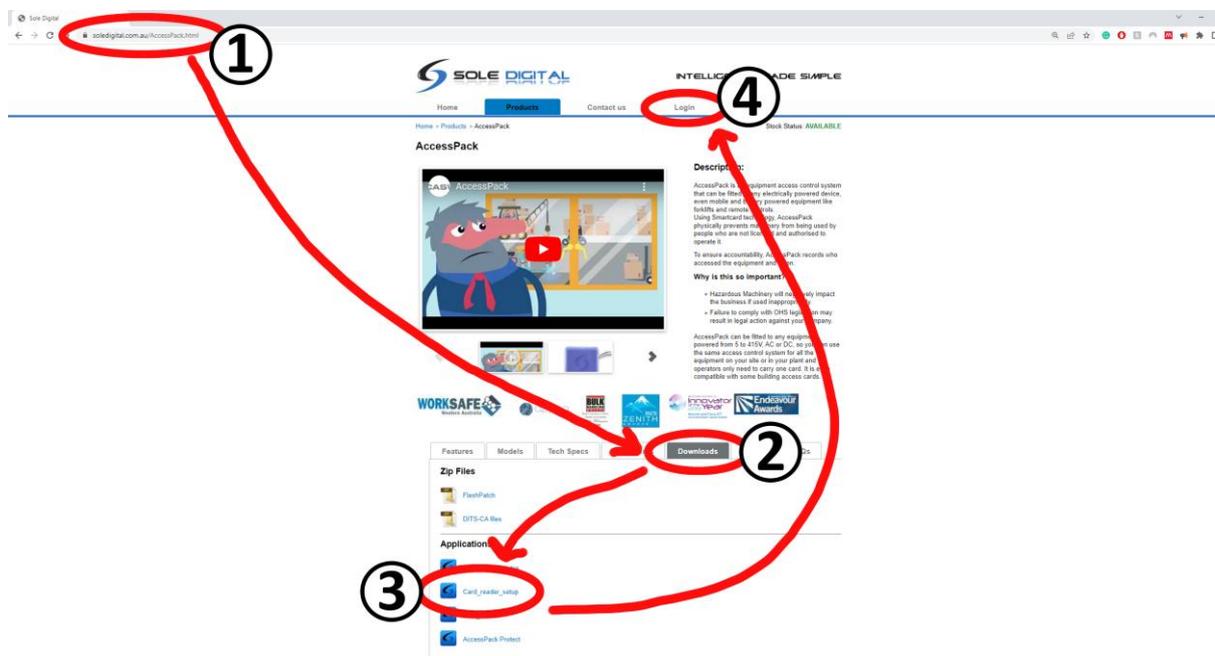


Figure 7: How to Download the Card Reader Software

6.1.4 Installing the Software

Upon opening the [Caswa.CardReader.Service.Installer] prompts will appear to install the program, simply follow the prompts. Once installed you will then need to restart your computer to complete the process.

Upon restarting your computer head back to the Sole Digital Website >> >> <https://www.soledigital.com.au/AccessPack.html> and then click on the Login tab near the top of the page (4).



6.1.5 Accessing the inspector

This stage of the process is done via the SoleDigital website portal >>

<https://www.soledigital.com.au/AccessPack.html>, via the [Login] tab on the page. The portal login can be found near the top of the Sole Digital website as indicated by Step (4) in Figure 7.

With an RFID reader plugged into the computer and having clicked on the [Login] page, you will be directed toward a webpage prompting you to swipe your *AccessPack* card. Once you placed your card onto the RFID reader as indicated in step 6.1.2, the page will then automatically direct you into the inspector interface. Once open the inspector should take around 10 seconds to populate, and the light on your RFID reader will begin to oscillate between Green and Red. Once the inspector has been populated with your devices in the left-hand side panel, remove your card from the RFID reader. The light at the top of the reader will now turn Red.

On the inspector interface, you will see all of your allocated devices populated in the left-hand column, like the example below. In our example here we are trying to make adjustments to our [LS12 Forklift] located in our [Workshop]. On the dropdown menu select your device's location, and then click on the device you are trying to receive alerts from. Upon selection, the devices options will appear in the main window. To set up alert alerts you will then need to click on the [Alert Settings] icon.

The alert settings button will then bring you to the [Alert Settings Menu]

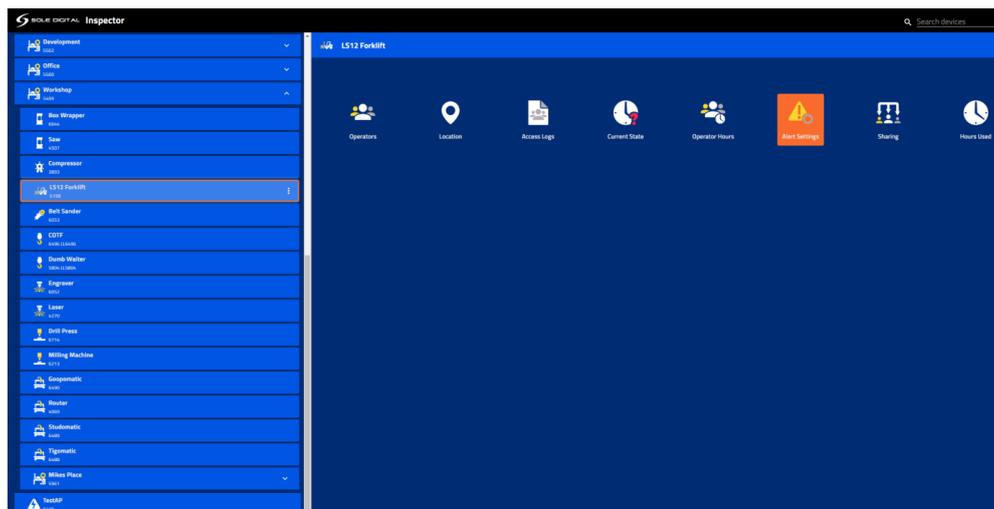


Figure 8: The Inspector Interface

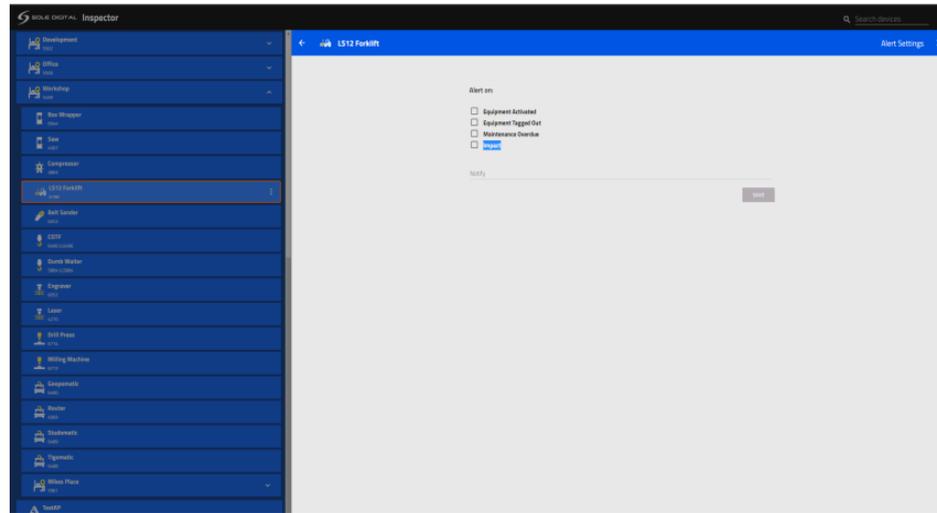


Figure 9: The Alert Settings Menu

6.1.6 Picking your Settings

In our example here our alert settings menu has 4 options:

- **Equipment Activated:** To receive an email when the equipment is activated.
- **Equipment Tagged Out:** To receive an email when an operator turns off the equipment for maintenance.
- **Maintenance Overdue:** To receive an email when your equipment is overdue for maintenance or inspection
- **Impact:** To receive an email when your equipment (a forklift in our example) receives a G-Force shock through a collision.

Note: Impact Detection may not be available on your device depending on which device you have installed.

Simply click each scenarios checkbox you wish to receive notifications about. You will need to then select an email for the notification to be sent to, in our example, we have chosen to send our notifications to tech@caswa.com. So if any of our alerts are triggered on our example forklift here, our technical team will be sent an email with the details of the event.

Once you have designated a receiving email and checked the appropriate boxes, then press the [Save] button below and the changes will be implemented in the system.



6.2 FIELD SERVICE UTILITY (FSU) ALERT SETUP

IMPORTANT: The FSU Setup Only applies to **MAXOUT**, **SIDEWISE** and **HIBEAM** products, if you are trying to set up alerts from a different device please skip to step 7.

The Link-4 allows you to receive real-time notifications for several different events including overload pulls, sidepulls and transient spike overloads. These alerts will be measured by your devices like a *Liftlog* or *MaxOut*, and sent to your designated emails via the Link-4. Make sure to identify the device you will be receiving the load signal from, and either uses Step 6.1 for the Web Portal set-up, or Step 6.2 for the FSU setup.

For our example in this step we will be setting Overload notifications from a *Maxout* device, using the *Link-4* to send the notifications to our tech team's email address. For the *Maxout*, *Sidewise* and *Hibeam* devices this process is set up through Sole Digital's Field Service Utility software. If you already have the FSU installed on your computer, feel free to skip to step 6.2.2. If you haven't currently got the FSU installed on your computer continue on step 6.2.1.

6.2.1 Installing the Field Service Utility (FSU)

Most Sole Digital products are designed to be commissioned via our FSU software using a laptop computer, so for this process, you will need to make sure you have a computer ready to go. You will also need a **CASWA LINK-2 Bluetooth Modem** (Pictured Below in Figure 10) and the Field Service Utility (FSU) software application, version 17.1 or higher, loaded on a laptop.



Figure 10: A Link2 Bluetooth Modem

To download the FSU software you will need to visit the SoleDigital website, download the FSU program and install it onto your Windows PC. For the program to function correctly you will need to make sure your PC is operating with Windows 7 or above, if you require a version of the FSU program that is compatible with operating systems before Windows 7 please contact the SoleDigital team directly as universal support is no longer provided for operating systems that pre-date Windows 7.



The FSU software can be downloaded from the [Download] tab on the following link >>
<https://www.soledigital.com.au/MaxOut.html>

Note: You should check this location periodically for updates.

6.2.2 Launching the application

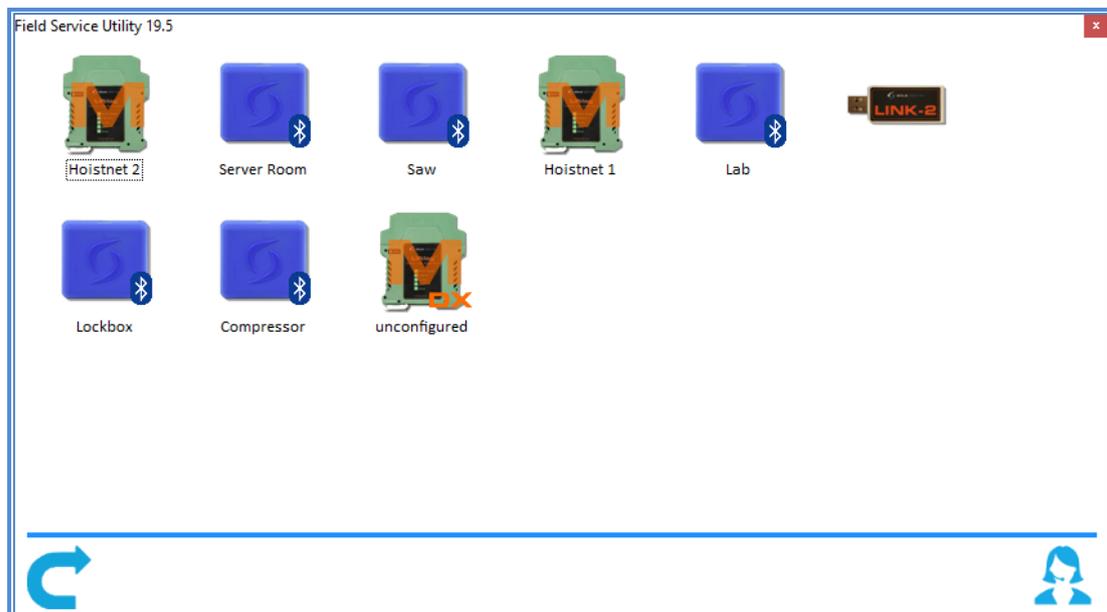
Once the program has been installed onto your computer, double-click on the FSU program icon:



6.2.3 Connecting to the MaxOut

Upon opening the FSU program will automatically use the Link-2 to scan for all of the Bluetooth-enabled devices within range. This process takes approximately 10-20 seconds, and once completed your devices will populate the program with a list of all your SoleDigital devices like in the example

diagram below. In our example here MaxOut's are depicted by a  icon.





If the particular MaxOut unit you are trying to work on is not found, ensure it is powered up and press  to repeat the search.

*Note: The Bluetooth link between the Laptop and Maxout is within approximately **100m**.*

If you require live support for any of Sole Digital products, either go to our website or open a remote support session, by pressing the  icon.

Otherwise, select the Maxout you wish to receive notifications from by double-clicking on the desired icon.

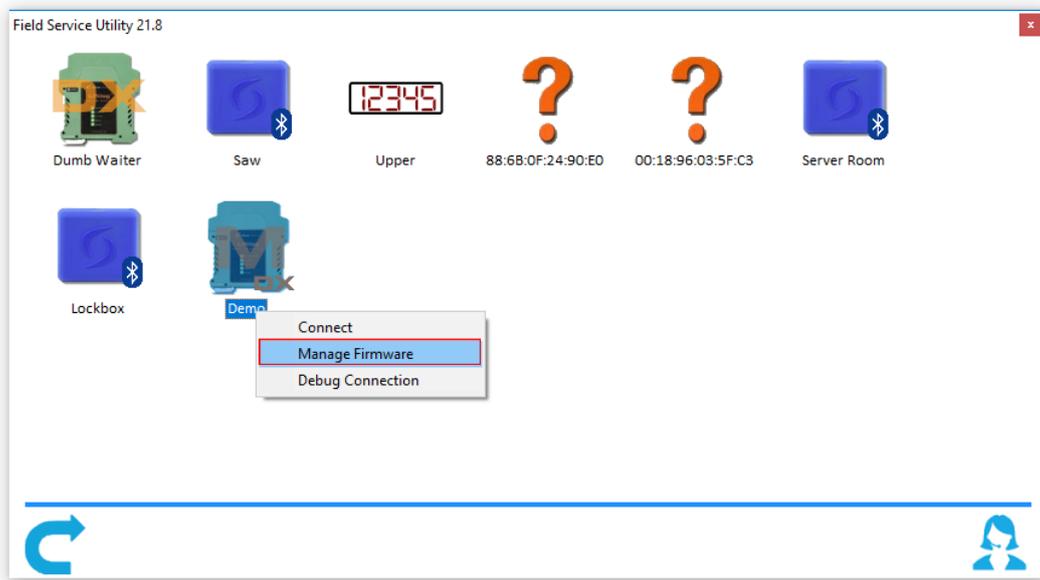
When you click on the MaxOut unit you are tethering your Link-4 too it should bring up the settings interface for the unit. If an interface like the example in step 6.2.5 appears, then you can skip past step 6.2. If the MaxOut does not bring up that interface it likely means you will require a firmware update for your MaxOut, in which case please continue onto step 6.2.4.

6.2.4 Managing Firmware

Firmware updates are not always required and you should only be updating your firmware if you:

- a) Specifically want a new feature that is only available in later versions;
- b) Are experiencing a problem that has been rectified by a later version;
- c) Are experiencing a problem and need to roll back to an earlier firmware version that didn't cause the problem you are experiencing; or
- d) Have been specifically instructed to do so by your MaxOut supplier.

To check for new firmware versions or to access old firmware versions, return to the Device Display screen and right click the desired equipment icon. Select 'Manage Firmware'.



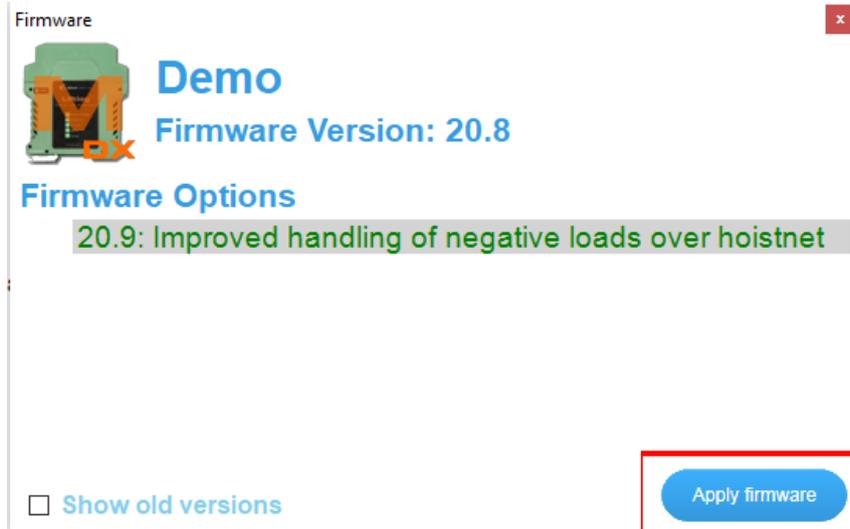
A new window will pop up showing the FSU software connecting to the device. When this is complete, the window will show the name of the device, its current firmware version and a list of newer firmware that is available for the device.



If you need to roll back to an earlier version, check the 'Show old versions' box in the lower-left corner of the window.



Select a firmware version and then press the <Apply firmware> button that appears in the lower right corner of the window:



The display will change to the following:





As the message states, **DO NOT switch off the MaxOutDX or the computer running the FSU software or remove the Link2 modem** until you are told to do so. If either device loses power then the MaxOutDX may become unusable and the device will need to be returned to your supplier for repair. Newer MaxoutDX units with the old display and “select” button can be recovered from a failed firmware update on-site by powering the MaxoutDX while holding down the select button.

The old display will show the text “Refresh”. While the display shows this you can try to update the firmware again. If you’re unsure about how to recover your MaxoutDX after a failed firmware update please contact support.

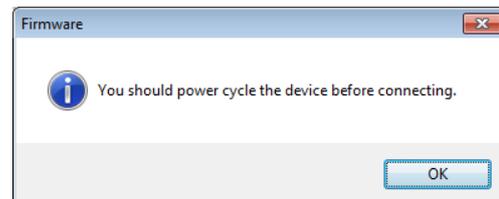


When the firmware has finished updating successfully you will see a  **Success** message in the popup window and also be told to power cycle the device before reconnecting:

Firmware



Demo
Firmware Version: 20.8 -> 20.9:





Close this window, wait for the manage firmware window to close (this may take 20 seconds) and power cycle the device as instructed. You will be returned to the first FSU screen, Manage Connections.

Wait a few seconds after power cycling the device and then select the device you wish to connect to by double-clicking the device.

6.2.5 Setting Your Parameters

All configuration options for the MaxOut are now shown on a single screen. To calibrate the other parts of the MaxOut please refer to the MaxOut manual available on the Sole Digital website here >> (<https://www.soledigital.com.au/MaxOut.html>) this manual will just be focusing on the Alert Notification part of the process that pertains to the Link-4.

As you can see on the left-hand side of the interface you will have a range of options for the Load Limit History parameters.

MaxOutDX

Hoist ID
STAHL 5-TON

Load Limit History
The load limit has been activated times
The biggest overload was kg
The last overload was kg

Send alerts to

Input type 0-10V

Input Voltage
 AC DC

Traffic Lite
SetPoint Load (kg) N/C N/O Single mode
1 -82
2 -1
3 -1

Load limits

| Zone | Local Limit | Combined Limit | HoistNet | |
|------|---------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|
| | | | 1 | 2 |
| 1 | <input type="text" value="10000"/> kg | <input type="text" value="-1"/> kg | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | <input type="text" value="10000"/> kg | <input type="text" value="-1"/> kg | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3 | <input type="text" value="10000"/> kg | <input type="text" value="-1"/> kg | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4 | <input type="text" value="10000"/> kg | <input type="text" value="-1"/> kg | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5 | <input type="text" value="10000"/> kg | <input type="text" value="-1"/> kg | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6 | <input type="text" value="10000"/> kg | <input type="text" value="-1"/> kg | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Zone 1 is active.
The contacts will open if the load on this device exceeds 10000kg

Contact 13 N/C N/O

-5kg

Load Summing

HoistNet
link 1 Unbound disconnected
link 2 Unbound disconnected

fw Ver 22.2



7 ROUTINE MAINTAINANCE

It is always a good idea to do some basic routine maintenance to ensure the Link-4 is operating to the best of its ability. The amount of maintenance required will differ depending on the environment your Link-4 is housed in. If the Link-4 is housed in a hot, dusty or dirty environment we would recommend conducting the following checks once a month, in contrast to an office environment in which case the following steps will only need to be carried out once every 6 months.

Our recommendations are to

- Check the device for dirt and grime, and wipe down the Link-4 with a damp cloth if required
- Check the Link-4s power supply for tears, cracks and faults.
- Check that the LED is still functioning, if it isn't double-check the power supply is working.
- Check the email is still receiving data and notifications from the Link-4, if you can't find any emails from the device log into the interface and double-check that the email is set correctly.