

TL3.0 Telemetry Tensile Link

User Manual





Dynamic Load Monitoring (UK) Ltd

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REVISION HISTORY

Revision	Date	Changes
1.0	29.10.2018	Initial Release



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1.0 OVERVIEW

The TL-3.0 Telemetry Link is designed for use with the DLM TW-3.0 Telemetry Handheld and any other product within the d+ range.

The TL-3.0 operates on a free band 2.4GHz frequency and utilises a bespoke frequency hopping protocol which hops frequency 20 times per second to help reduce interference.

The TL-3.0 is "paired" with a receiving device and can be viewed simultaneously on as many receiving devices as required.

The TL-3.0 has a wireless range of 800m; therefore to avoid interference when multiple TL-3.0 devices paired with their own individual display (i.e. another load cell and handheld pair within an 800m radius) they should be configured on different networks.

Some network setup examples are shown overleaf to illustrate the operation.



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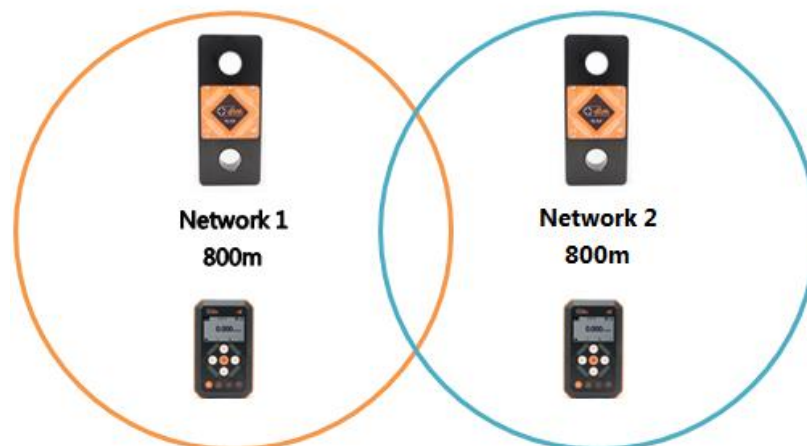
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1.1 NETWORK SETTING EXAMPLES

Example 1: Using two TW-3.0 Handheld devices with two TL-3.0 Telemetry Tensile links within range of each other.

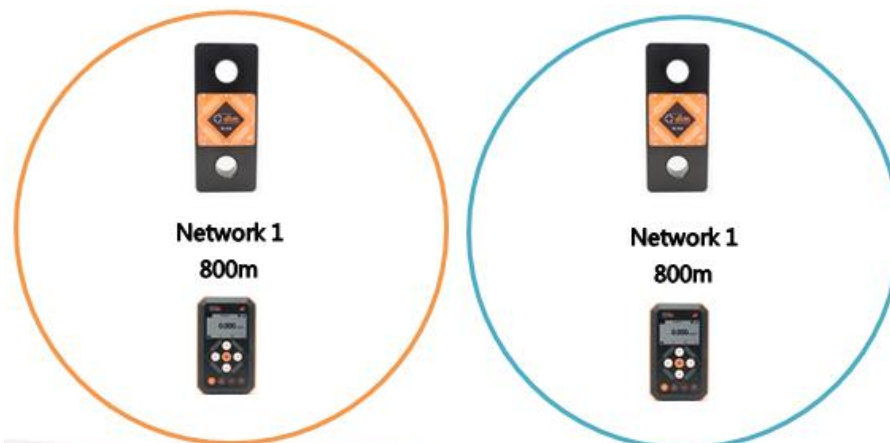
Pair 1 needs to be paired on a network, i.e. **Network 1**

Pair 2 needs to be paired on a different network, i.e. **Network 2**



Example 2: Using two TW-3.0 Handheld devices with two TL-3.0 Telemetry Tensile links outside of the range of each other.

Both pairs can be paired on the same network as they are far enough apart that interference will not occur.



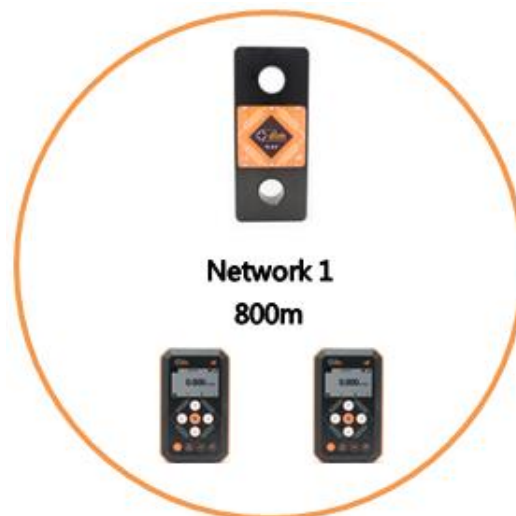
Example 3: Using one TW-3.0 Handheld device with two TL-3.0 Telemetry Tensile links.

The TW-3.0 is set to operate on network 1 and both TL-3.0 Telemetry Tensile Links are paired, as channel 1 and channel 2 to the TW-3.0.



Example 4: Using two or more TW-3.0 Handheld devices with one TL-3.0 Telemetry Tensile link.

One TW-3.0 is set to Master on network 1, the second TW-3.0 is set to a Slave on network 1 and the TL-3.0 is paired on channel 1.



2.0 QUICK START

2.1 POWER

Power On:

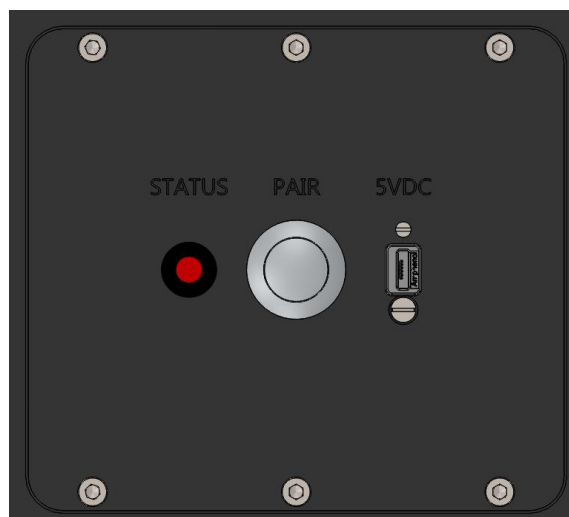
To power the TL-3.0 on for use follow the steps below:

1. Press and hold the PAIR button until the LED becomes solid
2. The LED will flash once every 3 seconds if the TL-3.0 is connected to a receiving device such as the TW-3.0 Handheld Display.
3. The LED will flash once per second if the TL-3.0 is not connected to a receiving device

Power Off:

To power the TL-3.0 off for use follow the steps below:

1. Press and hold the PAIR button, the LED becomes solid and then after 2 seconds turn off



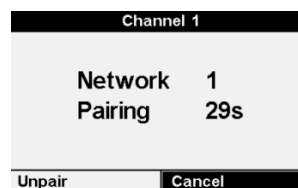
Low Power Mode:

When the TL-3.0 is powered but not connected to a receiving device, it will enter a low power mode which will look for signal once every 30 seconds. This is to conserve battery life when the receiving device is powered off, but it is not possible to reach the TL-3.0 to power it off.

2.2 PAIRING

The TL-3.0 needs to be paired with a receiving device, in order to establish communication with a new device such as the TW-3.0 Handheld follow the steps below:

1. Press the MENU button on the TW-3.0
2. Select the CHANNELS menu
3. Select the CHANNEL with which the new device is to be paired to
4. Scroll down to the PAIR menu option
5. On the device to be paired with the TW-3.0 locate the PAIRING button
6. Ensure the device is powered off
7. Press and hold the PAIR button for 8secs until the LED flashes twice per second
8. Press the PAIR function on the TW-3.0 Handheld
9. A 30 second count down timer will be initiated to search for the new device



10. Once the device has been paired the TW-3.0 will exit the pairing screen and the LED on the new device will blink at once per second briefly

This completes the pairing process; the new device will now be present on the paired channel.

2.3 SAFE RIGGING

The TL-3.0 Telemetry Tensile Link makes up part of the lifting equipment during any and all lifting applications, it is therefore necessary to ensure it is safe to use.

This information below is of a general nature only covering the main points for the safe use of shackles. It may be necessary to supplement this information for specific applications.

General Advice:

- ✓ Store and handle shackles correctly.
- ✓ Inspect shackles before use and before placing into storage.
- ✓ Select the correct pattern of shackle and pin for the application.
- ✓ Allow for the full resultant imposed load.
- ✓ Fully tighten the pin.
- ✓ Ensure the load acts through the centre line of the shackle using spacers if necessary to meet this requirement.
- ✗ Never use the shackle above its WLL
- ✗ Use shackles with bent pins or deformed bodies.
- ✗ Force, hammer or wedge shackles into position.
- ✗ Eccentrically load shackles.
- ✗ Replace the pin with a bolt
- ✗ Fit pins in contact with moving parts which may loosen or unscrew them.
- ✗ Shock load shackles.



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Using Shackles Safely

Do not attempt lifting operations unless you understand the use of the equipment, the slinging procedures and the mode factors to be applied.

Do not use defective shackles or unidentified pins.

Shackles should be fitted so that the body takes the load along its centre line and is not subjected to side bending loads. When connecting a number of sling legs, and similar applications, position them so that they do not impose a side load on the shackle jaws. Use spacers to position them if necessary.

With bolt and nut pins ensure the nut jams on the inner end of the thread and not on the eye of the shackle. The bolt should be free to rotate with minimal side float. The split cotter pin must be fitted before making a lift.

When using shackles with slings in choke hitch, or in other applications where there may be movement, place the pin through the eye or link of the sling and never in contact with the bight of the choke or moving parts which may cause the pin to unscrew.

In-service Inspection and Maintenance

Maintenance requirements are minimal. Keep shackles clean, the threads free of debris and protect from corrosion.

Regularly inspect shackles and, in the event of the following defects, refer the shackle to a Competent Person for thorough examination: illegible markings; distorted, worn, stretched or bent body; bent pin; damaged or incomplete thread forms; nicks, gouges, cracks or corrosion; incorrect pin; any other defect.



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2.4 CHARGING AND BATTERY LIFE

The TL-3.0 contains a single Li-Polymer battery pack which is charged via the USB port on the front of the TL-3.0. **WARNING! DO NOT CHARGE BELOW 0°C**

The power source can be supplied from any PC/laptop or any mains to USB charger plug of suitable quality. **WARNING:** Cheap charging devices often fail to meet the requirements of the Electrical Equipment Regulations Act 1994, as a minimum any charger plug must have a CE mark, shown below. It is the responsibility of the operator to ensure any charger plug is safe to use.



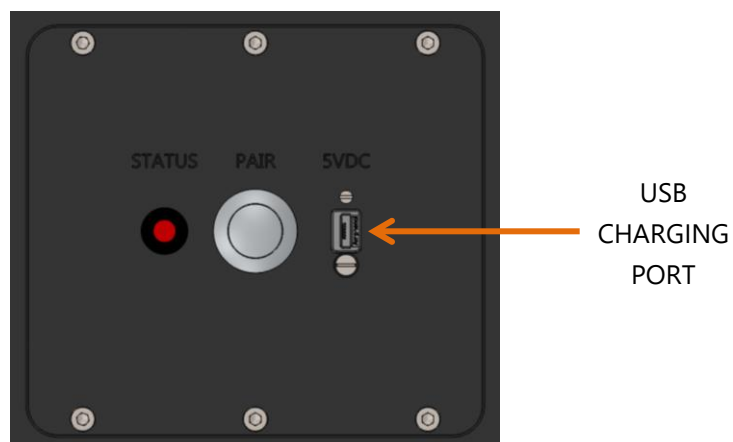
The time taken to fully charge the TL-3.0 will depend on the type of charger, a simple calculation is:

$$\text{Charge Time (hours)} = \text{Battery capacity (mAh)} \div \text{charging current (mA)}$$

For example:

2000mAh battery capacity charging from a laptop at 500mA:

$$2000 \div 500 = 4 \text{ hours}$$





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The battery life of the TL-3.0 depends on the how it is being used, the lower the sample rate the longer the battery life will be. One example is:

Sample rate	Ambient Temperature	Battery Life
1Hz	20°C	700Hours

WARNING! DO NOT CHARGE BELOW 0°C



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3.0 TECHNICAL SPECIFICATIONS

3.1 SUMMARY

Loadcell Material	Body – 2014 T6 Aircraft Aluminium Side Plates – Acetal (Polyoxymethylene Plastic)
Design	Designed to fit fed spec shackle / Pairing switch / Signal LED / Charging socket
Bridge Resistance	350Ω or 700Ω
Battery	3.7V Li-Po Rechargeable battery
Battery Life	700 hours continuous (2 years storage)
Charger	USB/5VDC
Operating Temperature	-20°C to +60°C
Handheld Display	One or more TW-3.0 displays
Frequency	2.4GHz
Range	Up to 800m line of sight
Calibration	Calibration and proof load certificates to BS EN 10002/2 1992
Protection	IP67
Packaging	Rugged watertight cast up to 50T / Custom made wooden case for larger capacities
Approvals	CE approved and FCC compliant (pending)

3.2 BATTERY SPECIFICATION

	Minimum	Nominal	Maximum	Unit
Type	Battery pack			
Quantity	1			
Chemistry	Li-Po			
Voltage	3.4	3.6	3.9	V
Capacity	2000			mAh

3.3 WIRELESS SPECIFICATION

	Minimum	Maximum	Unit
License	2.4GHz Licence Exempt		
Radio Type	Transceiver		
Modulation	FHSS		
Frequency	2.402	2.480	GHz
Power		<100	mW
Channels	79		

3.4 PHYSICAL SPECIFICATION

	Specification	Unit
1T / 2T		
Dimensions	214 x 81 x 16	Overall L x W x D in mm
Weight	1.0	Kg
5T		
Dimensions	260 x 109 x 25	Overall L x W x D in mm
Weight	2.0	Kg
12T		
Dimensions	260 x 109 x 40	Overall L x W x D in mm
Weight	2.6	Kg
17T		
Dimensions	320 x 127 x 45	Overall L x W x D in mm
Weight	4.0	Kg



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25T		
Dimensions	340 x 127 x 50	Overall L x W x D in mm
Weight	5.0	Kg
35T		
Dimensions	370 x 149 x 50	Overall L x W x D in mm
Weight	6.5	Kg
50T		
Dimensions	395 x 160 x 73	Overall L x W x D in mm
Weight	11.0	Kg
80T		
Dimensions	465 x 180 x 98	Overall L x W x D in mm
Weight	18.0	Kg
100T		
Dimensions	535 x 220 x 100	Overall L x W x D in mm
Weight	26.5	Kg
120T		
Dimensions	535 x 240 x 100	Overall L x W x D in mm
Weight	29.5	Kg
150T		
Dimensions	587 x 260 x 125	Overall L x W x D in mm
Weight	43.5	Kg
200T		
Dimensions	658 x 320 x 125	Overall L x W x D in mm
Weight	62.0	Kg
300T		
Dimensions	790 x 370 x 147	Overall L x W x D in mm
Weight	100.5	Kg
400T		
Dimensions	950 x 500 x 175	Overall L x W x D in mm
Weight	200.0	Kg
500T		
Dimensions	950 x 500 x 200	Overall L x W x D in mm
Weight	220.5	Kg



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4.0 WARRANTY

Subject to the terms and conditions set out below, Dynamic Load Monitoring (UK) Ltd (hereinafter '**DLM**' or 'the company') warrants its products against defects in materials or workmanship for a period of one year from the date of original purchase.

Should a circumstance or condition be observed which might give rise to a claim under this warranty; the user should immediately take the unit out of operation. The item should then be returned carriage paid (including any and all taxes and duties) to **DLM**. It is advisable to notify **DLM**, by telephone or fax, of the details of the case prior to dispatch.

The extent of the company's liability under the terms of this warranty shall be the repair or replacement of the defective product, or defective part thereof, and the decision whether to repair or replace shall be made by **DLM** at its sole discretion.

After completion of any remedial work / replacement, the company will return the goods carriage paid.

Exclusions

Defects arising from the following circumstances are excluded from the benefit of this warranty:

- Unauthorised modification;
- Misuse, mishandling, abuse;
- Improper or inadequate maintenance;
- Operation outside the environmental specifications of the product.



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5.0 STANDARDS AND APPROVALS

5.1 CE Mark

Simplified EU Declaration of Conformity for Radio Equipment Directive (2014/53/EU)

This text is provided as an example of what should be included in the user manual as per 2014/53/EU Annex VII with the name of the manufacturer and product(s) inserted in the relevant places

This information is provided for information purposes only and the accuracy of the text is not guaranteed and may be checked at in the relevant language version of 2014/53/EU published on the EU EUR-LEX website at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0053>

<p><i>Dynamic Load Monitoring (UK) Ltd</i> tímto prohlašuje, že tento <i>TL-3.0</i> je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 2014/53/EU.</p>
<p>Undertegnede, <i>Dynamic Load Monitoring (UK) Ltd</i> erklærer herved, at følgende udstyr <i>TL-3.0</i> overholder de væsentlige krav og øvrige relevante krav i direktiv 2014/53/EU.</p>
<p>Hiermit erkläre, <i>Dynamic Load Monitoring (UK) Ltd</i> dass sich das Gerät <i>TL-3.0</i> in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 2014/53/EU befindet.</p>
<p>Käesolevaga kinnitab, <i>Dynamic Load Monitoring (UK) Ltd</i> seadme <i>TL-3.0</i> vastavust direktiivi 2014/53/EU põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.</p>
<p>Hereby, <i>Dynamic Load Monitoring (UK) Ltd</i> declares that <i>TL-3.0</i> is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.</p>
<p>Por medio de la presente <i>Dynamic Load Monitoring (UK) Ltd</i> declara que el <i>TL-3.0</i> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 2014/53/UE.</p>
<p>ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ, <i>Dynamic Load Monitoring (UK) Ltd</i> ΔΗΛΩΝΕΙ ΟΤΙ <i>TL-3.0</i> ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2014/53/ΕΕ.</p>
<p>Par la présente, <i>Dynamic Load Monitoring (UK) Ltd</i> déclare que l'appareil <i>TL-3.0</i> est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 2014/53/UE.</p>
<p>Con la presente, <i>Dynamic Load Monitoring (UK) Ltd</i> dichiara che questo <i>TL-3.0</i> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2014/53/UE.</p>
<p>Ar šo <i>Dynamic Load Monitoring (UK) Ltd</i> deklare, ka <i>TL-3.0</i> atbilst Direktīvas 2014/53/ES būtiskajām prasībām un citiem ar to saistītajiem noteikumiem,</p>

<p>Šiuo <i>Dynamic Load Monitoring (UK) Ltd</i> deklaruoja, kad šis <i>TL-3.0</i> atitinka esminius reikalavimus ir kitas 2014/53/ES Direktyvos nuostatas.</p>
<p>Hierbij verklaart , <i>Dynamic Load Monitoring (UK) Ltd</i> dat het toestel <i>TL-3.0</i> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 2014/53/EU.</p>
<p>Hawnhekk, <i>Dynamic Load Monitoring (UK) Ltd</i>, jiddikjara li dan <i>TL-3.0</i> jikkonforma mal-ħtigijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 2014/53/UE.</p>
<p>Alulírott, , <i>Dynamic Load Monitoring (UK) Ltd</i> nyilatkozom, hogy a <i>TL-3.0</i> megfelel a vonatkozó alapvető követelményeknek és az 2014/53/EU irányelv egyéb előírásainak.</p>
<p>Niniejszym <i>Dynamic Load Monitoring (UK) Ltd</i> oświadcza, że <i>TL-3.0</i> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 2014/53/UE.</p>
<p><i>Dynamic Load Monitoring (UK) Ltd</i> declara que este <i>TL-3.0</i> está conforme com os requisitos essenciais e outras disposições da Directiva 2014/53/UE.</p>
<p><i>Dynamic Load Monitoring (UK) Ltd</i> izjavlja, da je ta <i>TL-3.0</i> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2014/53/EU.</p>
<p><i>Dynamic Load Monitoring (UK) Ltd</i> týmto vyhlasuje, že <i>TL-3.0</i> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 2014/53/EÚ.</p>
<p><i>Dynamic Load Monitoring (UK) Ltd</i> vakuuttaa täten että <i>TL-3.0</i> tyyppinen laite on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.</p>
<p>Härmed intygar <i>Dynamic Load Monitoring (UK) Ltd</i> att denna <i>TL-3.0</i> står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 2014/53/EU.</p>
<p>Hér með lýsir <i>Dynamic Load Monitoring (UK) Ltd</i> yfir því að <i>TL-3.0</i> er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 2014/53/EU.</p>
<p><i>Dynamic Load Monitoring (UK) Ltd</i> erklærer herved at utstyret <i>TL-3.0</i> er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 2014/53/EU.</p>
<p>Noi, <i>Dynamic Load Monitoring (UK) Ltd</i>, declarăm pe propria noastră răspundere că produsul <i>TL-3.0</i> este în conformitate cu cerințele esențiale și celelalte prevederi aplicabile ale Directivei 2014/53/UE.</p>



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5.2 FCC

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- 1) This device must accept any interference and
- 2) This device must accept any interference received including interference that may cause undesired operation

Changes or modifications not expressly approved by Dynamic Load Monitoring Ltd. could void the user's authority to operate the equipment.



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