



TS-3.0 TELEMETRY SHACKLE LOAD CELL USER MANUAL



REVISION HISTORY

Revision	Date	Changes
1.0	29.10.2018	Initial release
2.0	23.04.2019	Content update
3.0	31.07.2020	Content update
4.0	16.12.2021	Trademark update

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1.0 OVERVIEW

The **TS-3.0 Telemetry Shackle Load Cell** is designed for use with the DLM TW-3.0 Telemetry Handheld and any other product within the d+ range.

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

The TS-3.0 has a wireless range of 800m; therefore to avoid interference when multiple TS-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.

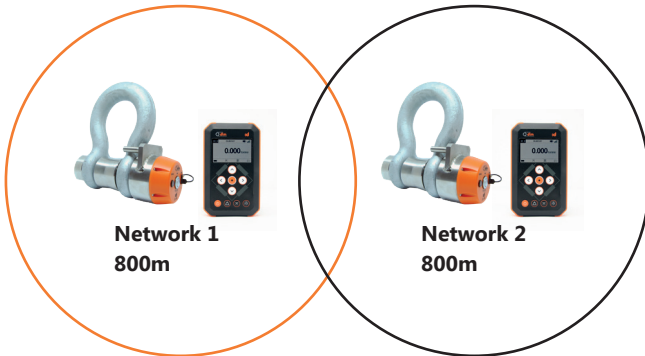
Some network setup examples are shown overleaf to illustrate the operation.

1.1 NETWORK SETTING EXAMPLES

EXAMPLE 1: Using two **TW-3.0 Handheld devices** with two **TS-3.0 Telemetry Load Shackles** within range of each other.

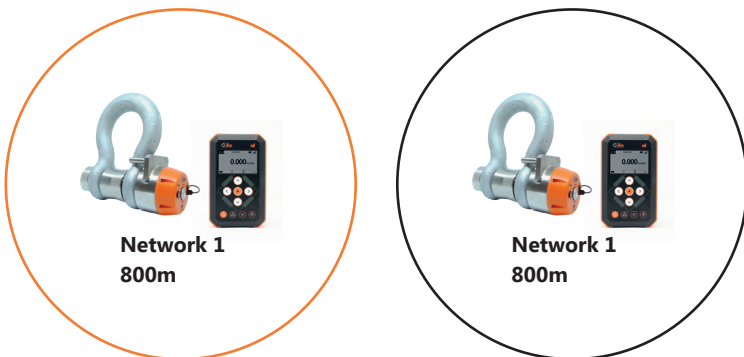
Pair 1 needs to be paired on a network, i.e. **Network 1**

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 **TS-3.0 Telemetry Load Shackles** 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 **TS-3.0 Telemetry Shackle Load Cells**.

The **TW-3.0** is set to operate on **network 1** and both **TS-3.0 Telemetry Load Shackle** 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 **TS-3.0 Telemetry Load Shackle**.

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 TS-3.0 is paired on **channel 1**.



2.0 QUICK START

2.1 POWER

Power On:

To **power the TS-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 **three seconds** if the TS-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 TS-3.0 is not connected to a receiving device

Power Off:

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

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



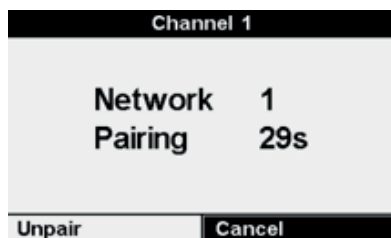
Low Power Mode:

When the **TS-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 TS-3.0 to power it off.

2.2 PAIRING

The **TS-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 eight seconds 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 **TS-3.0 Telemetry Shackle** 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
- ☐ Never use shackles with bent pins or deformed bodies.
- ☐ Never force, hammer or wedge shackles into position.
- ☐ Never eccentrically load shackles.
- ☐ Never replace the pin with a bolt
- ☐ Never fit pins in contact with moving parts which may loosen or unscrew them.
- ☐ Never shock load shackles.

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.

When rigging the shackle always ensure that the painted side of the shackle is located on the same side as the load pin head such that the orange side of the shackle is closest to the orange cap on the load pin.



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.

2.4 CHARGING AND BATTERY LIFE

The TS-3.0 contains a single Li-Polymer battery pack which is charged via the USB port on the front of the TS-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 TS-3.0 will depend on the type of charger, a simple calculation is:

Charge Time (hours) = Battery capacity (mAh)
÷ charging current (mA)

For example: 3x Ni-MH AA batteries with 2000mAh capacity charging from a laptop at 500mA:

$$1050 \div 500 = 2.1 \text{ hours}$$

The battery life of the TS-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:



USB Charging Port

Sample rate	Ambient Temperature	Battery Life
1Hz	20°C	350Hours

3.0 TECHNICAL SPECIFICATIONS

3.1 SUMMARY

Shackle Material	Body – 14-PH H1150 + 1150D Stainless Steel Shackle – Forged, quenched and tempered steel End Cap – Acetal (Polyoxymethylene Plastic)
Design	Designed to fit Crosby shackle / Pairing switch / Signal LED / Charging socket
Bridge Resistance	700Ω
Battery	3.7V Li-Po Rechargeable battery
Battery Life	350 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 ISO 7500-1:2018 Class 1
Protection	IP67
Packaging	Custom made wooden case
Approvals	CE approved and FCC compliant

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	1050			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
	6.5T	
Dimensions	144 x 102 x 52	Overall 148 x x D in mm
Weight	3.4	Kg
	12T	
Dimensions	201 x 147 x 72	Overall H x W x D in mm
Weight	7.5	Kg
	25T	
Dimensions	300 x 216 x 103	Overall H x W x D in mm
Weight	20.9	Kg

	55T	
Dimensions	433 x 310 x 145	Overall H x W x D in mm
Weight	56.5	Kg
	85T	
Dimensions	527 x 340 x 162	Overall H x W x D in mm
Weight	87.2	Kg
	120T	
Dimensions	647 x 428 x 208	Overall H x W x D in mm
Weight	148.0	Kg
	200T	
Dimensions	838 x 530 x 279	Overall H x W x D in mm
Weight	329.8	Kg
	300T	
Dimensions	996 x 585 x 325	Overall H x W x D in mm
Weight	486.6	Kg
	400T	
Dimensions	1114 x 665 x 376	Overall H x W x D in mm
Weight	798.9	Kg
	500T	
Dimensions	1190 x 710 x 398	Overall H x W x D in mm
Weight	977.0	Kg

4.0 SERVICE AND REPAIR

Any dirt should be cleaned from the handset using a damp cloth.

The internal circuitry of the TS-3.0 is sealed, in the event of damage the unit should be returned to an approved Dynamic Load Monitoring service centre for repair.

If the TS-3.0 is no longer required it should be disposed of correctly, batteries should not be thrown in general waste.

5.0 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.

6.0 STANDARDS AND DECLARATION OF CONFORMITY

6.1 CE MARK

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

Hawnhekk, Dynamic Load Monitoring (UK) Ltd, jiddikjara li dan TS-3.0 jikkonforma mal- ħtiġijiet essenzjali u ma provvediment i oħrajn relevanti li hemm fid-Dirrettiva 2014/53/ UE.
Alulírott, , Dynamic Load Monitoring (UK) Ltd nyilatkozom, hogy a TS-3.0 megfelel a vonatkozó alapvető követelményeknek és az 2014/53/EU irányelv egyéb előírásainak.
Niniejszym Dynamic Load Monitoring (UK) Ltd oświadcza, że TS-3.0 jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 2014/53/UE.
Dynamic Load Monitoring (UK) Ltd declara que este TS-3.0 está conforme com os requisitos essenciais e outras disposições da Directiva 2014/53/UE.
Dynamic Load Monitoring (UK) Ltd izjavlja, da je ta TS-3.0 v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2014/53/EU.
Dynamic Load Monitoring (UK) Ltd tímto vyhlasuje, že TS-3.0 splňa základné požiadavky a všetky príslušné ustanovenia Smernice 2014/53/EÚ.
Dynamic Load Monitoring (UK) Ltd vakuuttaa täten että TS-3.0 tyyppinen laite on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Härmed intygar Dynamic Load Monitoring (UK) Ltd att denna TS-3.0 står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 2014/53/EU.
Hér með lýsir Dynamic Load Monitoring (UK) Ltd yfir því að TS-3.0 er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 2014/53/EU.
Dynamic Load Monitoring (UK) Ltd erklærer herved at udstyret TS-3.0 er i samsvar med de grundlæggende krav og øvrige relevante krav i direktiv 2014/53/EU.
Noi, Dynamic Load Monitoring (UK) Ltd, declarăm pe propria noastră răspundere că produsul TS-3.0 este în conformitate cu cerințele esențiale și celelalte prevederi aplicabile ale Directivei 2014/53/UE.

A copy of the signed Declaration of Conformity can be found here:

www.dlm-uk.com/downloads/certificates

6.2 UKCA MARK

Hereby, Dynamic Load Monitoring (UK) Ltd declares that TS-3.0 is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

6.3 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.

6.4 IC

This radio transmitter module, IC: 25789 -TS-3.0, has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed in the tables in with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Le présent émetteur radio, IC:24373-FM3N, a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Manufacturer	Part Number	Gain
Molex	47950-0011	2.6 dBi

This device contains a licence-exempt transmitter that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS-247. Operation is subject to the following two conditions:

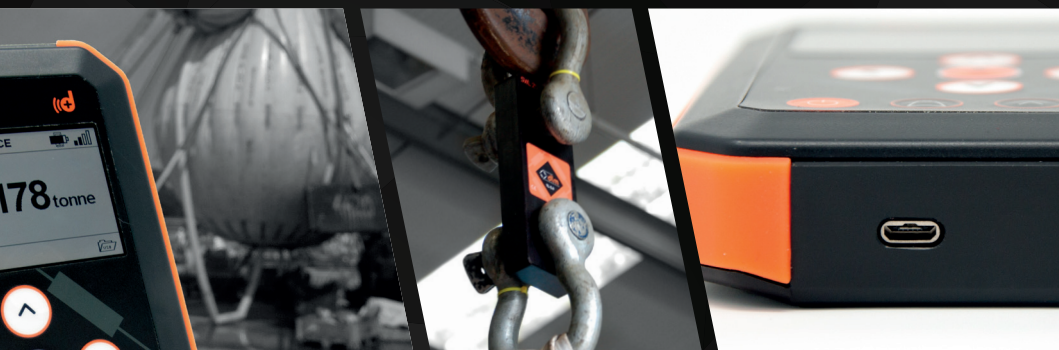
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes

1. l'appareil nedit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

The safe distance for human exposure to electromagnetic field is 20 cm.

La distance de sécurité pour l'exposition humaine au champ électromagnétique est de 20 cm.



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