

DIGITAL LINE COUNTER INSTALLATION MANUAL



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1 INCLUDED PARTS

The following parts are included in the DLC and DLC+ kits:

Table 1.1 - DLC

ITEM	QTY
Digital Line Counter	1
Sensor loom with stainless sensor, 4-pin plug	1
Power loom, 2-wire, 5-pin plug	1
Sensor mounting bracket suit M8 bolt	1
Sensor mounting bracket suit M10 bolt	1
Multipurpose sensor bracket	1
Ø15x1.5mm magnet w/ self-adhesive	3
1.5mm thick magnet surround sticker	3
Magnet cover sticker	6
M5x10 pan head s/s bolt	2
M5x12 pan head s/s bolt	2
M5x16 pan head s/s bolt	2
M5x20 pan head s/s bolt	2
M5x25 pan head s/s bolt	2
M5x30 pan head s/s bolt	2
M5 large diameter flat washer	2
CANBUS connector, 5 pin, M-F	1
Solenoid changeover kit	1

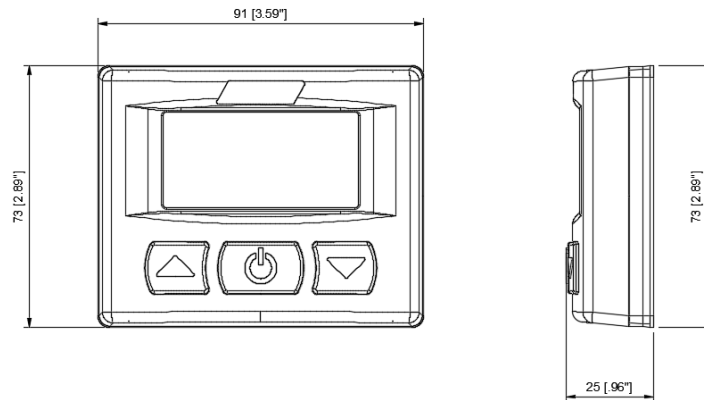
Table 1.2 – DLC+

ITEM	QTY
Digital Line Counter	1
Sensor loom with stainless sensor, 4-pin plug	1
Solenoid Driver loom, 5-wire, 5-pin plug w/ box	1
Sensor mounting bracket suit M8 bolt	1
Sensor mounting bracket suit M10 bolt	1
Multipurpose sensor bracket	1
Ø15x1.5mm magnet w/ self-adhesive	3
1.5mm thick magnet surround sticker	3
Magnet cover sticker	6
M5x10 pan head s/s bolt	2
M5x12 pan head s/s bolt	2
M5x16 pan head s/s bolt	2
M5x20 pan head s/s bolt	2
M5x25 pan head s/s bolt	2
M5x30 pan head s/s bolt	2
M5 large diameter flat washer	2
CANBUS connector, 5 pin, M-F	1
Solenoid changeover kit	1

2 INSTALLATION OF DISPLAY

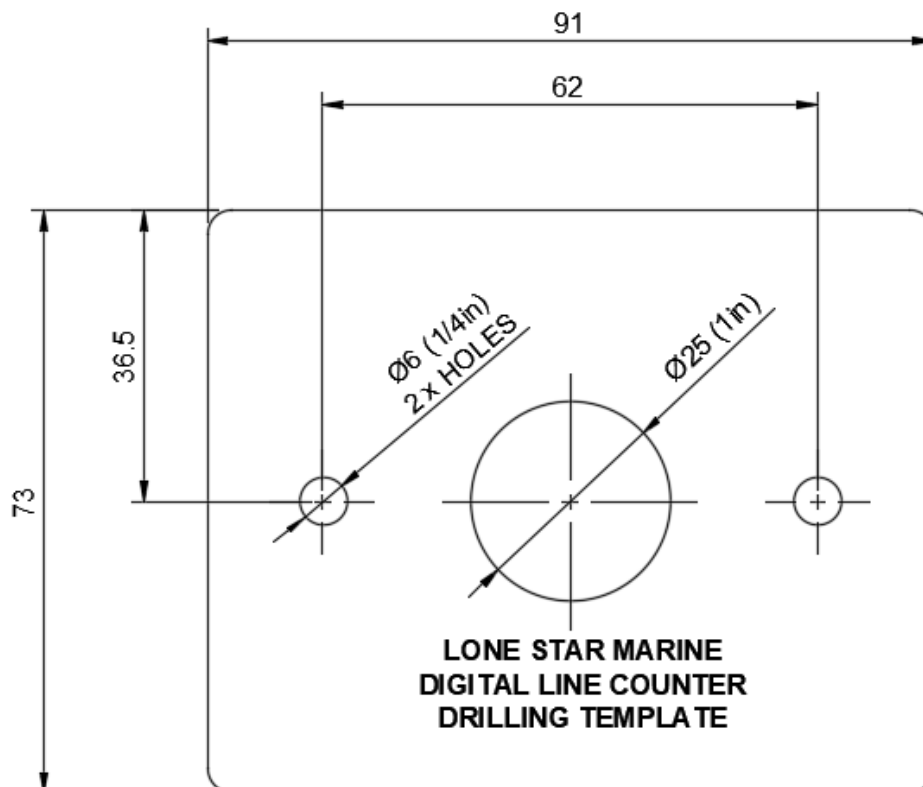
2.1 DRILLING DASHBOARD

2.1.1 MEASUREMENTS OF UNIT



Cut out full size template below and stick to dash where DLC will be positioned. Pilot drill each hole using 2mm drill bit. Finish drill all holes using sizes shown on template. Deburr all holes, front and back of dashboard.

2.1.2 TEMPLATE CUT OUT



2.2 MOUNTING DISPLAY

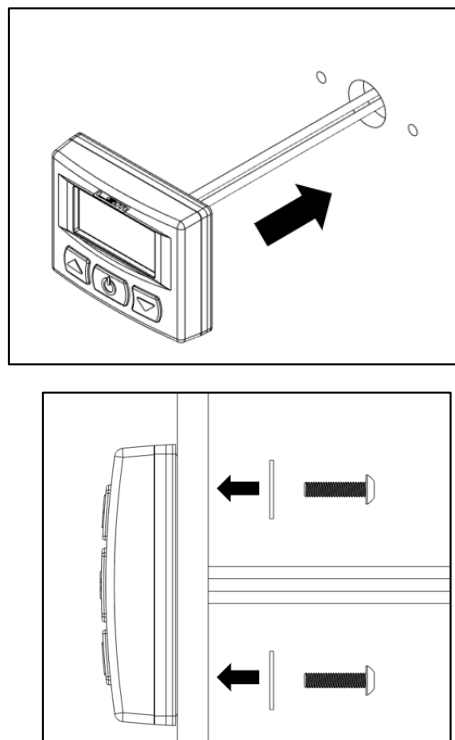
2.2.1 BOLT LENGTH TO SUIT DASH THICKNESS

Due to the DLC having blind threaded bosses, the bolt length is dependent on dashboard thickness. Refer Table 2.0 for what length bolts suit.

Table 2.0

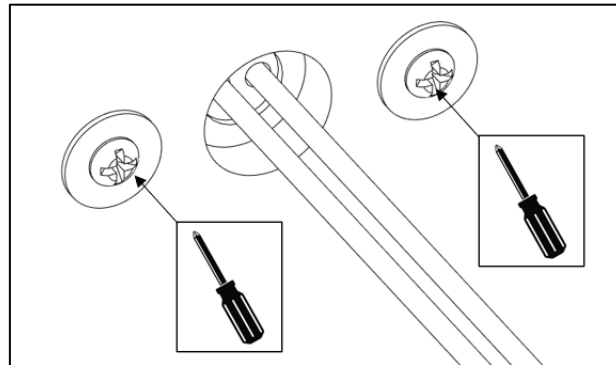
Dashboard Thickness	Use bolts
Up to 4mm	M5x10
4-7mm	M5x12
7-10mm	M5x16
10-15mm	M5x20
15-20mm	M5x25
20-25mm	M5x30

2.2.2 FITTING UNIT TO DASH



Pass cables through hole then fit unit to dashboard. Fit washers and bolts (refer Bolt Length table above). Hand tighten bolts and check unit is level on dashboard.

2.2.3 TIGHTENING TORQUE



Max tightening torque on M5 fasteners into plastic housing is **10Nm**.

3 SENSOR & MAGNET INSTALLATION

DLC kit includes 3 magnets. You can choose to use 1 or 2 magnets on the drum. 2 magnets will give more accurate readings. For winches over 300mm diameter, it is recommended to fit two magnets. Keep third magnet as a spare.

Clean the sides of the drum to remove any grease, dirt or other contaminants where magnets will be placed.

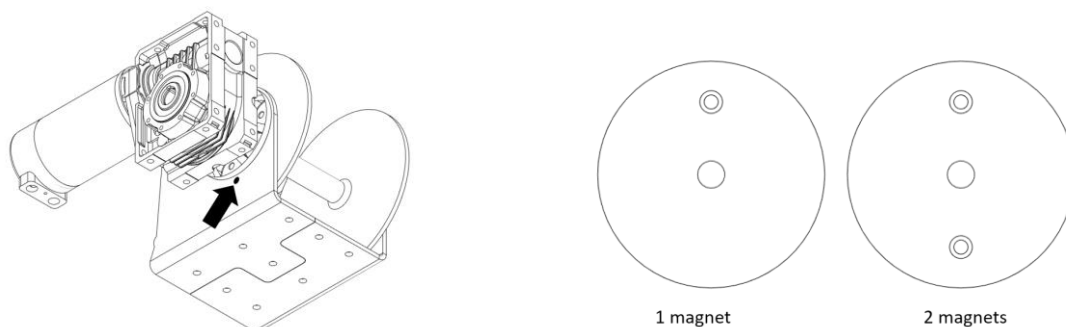
3.1 LSM WINCHES – CRADLE MOUNT

Post July 2023 GX series winches have a 12mm tapped hole underneath the collar. If your winch does not have this or if you choose to mount the sensor to the collar, proceed to 3.2.

LSM recommends installing the sensor prior to installing the winch into the boat.

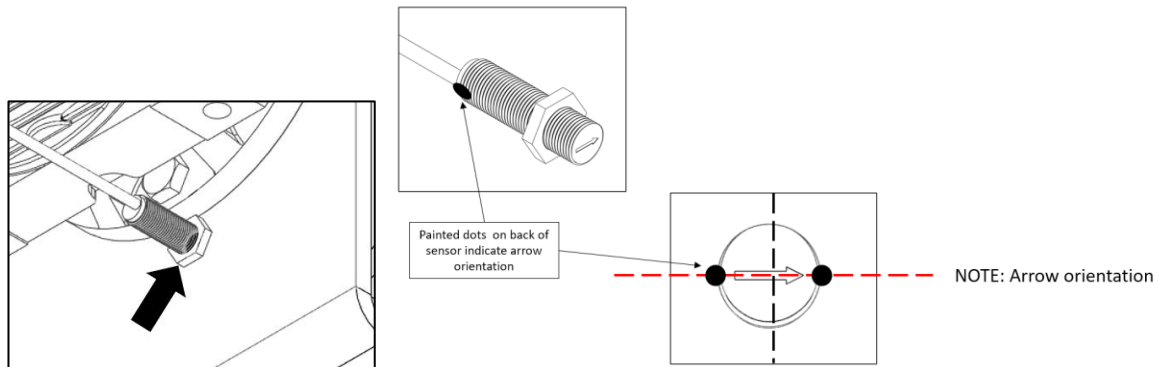
3.1.1 STEP 1

Mark the drum side plate through the threaded sensor hole using a permanent marker, this will give the user the exact location for the magnet (step 3.1.3). If fitting two magnets, turn drum 180 degrees and make second mark.



3.1.2 STEP 2

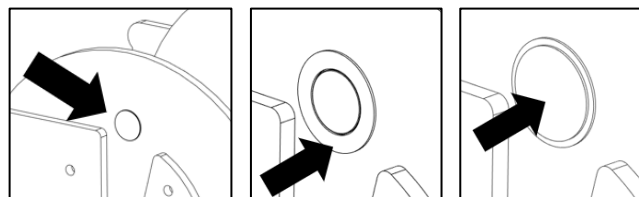
Remove 1 of the two lock nuts supplied with the sensor. Only one lock nut is used for this installation. Screw the sensor into the threaded hole on the motor side of the winch.



The sensor must be orientated with the arrow perpendicular to the direction of travel. There are two paint dots on the sensor to assist with orientation. The two dots must correspond with crossing the center of the magnet. Leave approximately 5mm gap between the sensor and the drum side plate. Tighten lock nut.

3.1.3 STEP 3

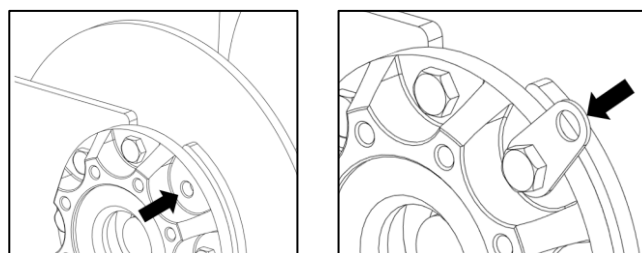
Rotate drum to expose mark(s) on drum side plate made in STEP 1. Ensure surface is clean. Stick self-adhesive $\varnothing 15 \times 1.5$ magnet on top of each mark, followed by surround sticker and cover sticker as shown below:



3.2 LSM OR OTHER WINCHES – COLLAR MOUNT

3.2.1 STEP 1

Remove one collar mounting bolt and fit suitable sensor bracket. The kit is supplied with 3x brackets, one to suit M8 mounting bolts, one to suit M10 mounting bolts, and a third that can be cut and drilled to size. Tighten bolt to the following torque (M8 = 17Nm, M10 =34Nm)

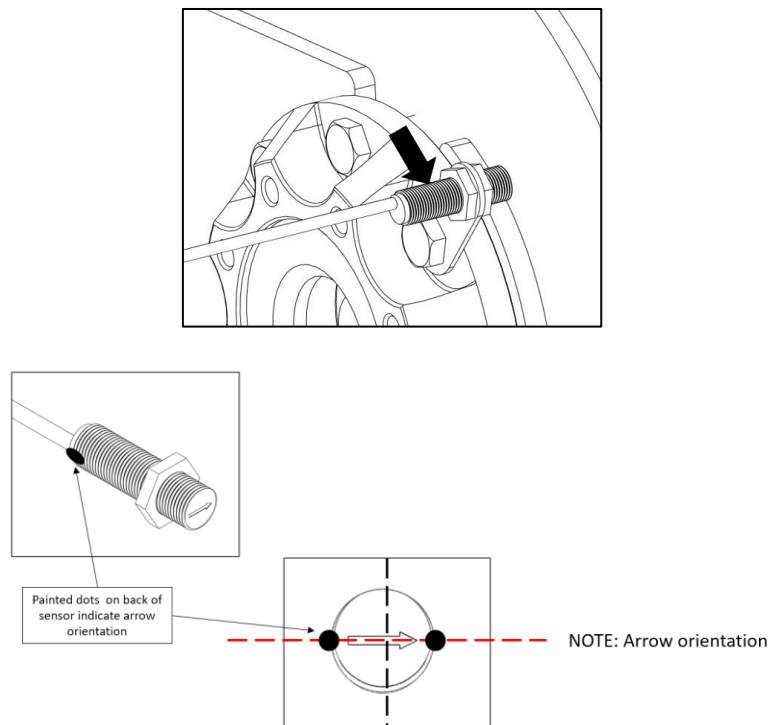


Mark the drum side plate through the hole in the bracket using a permanent marker, this will give the user the exact location for the magnet (step 3.2.3).

For winches that require two magnets, rotate drum 180 degrees and mark the drum for the additional magnet location.

3.2.2 STEP 2

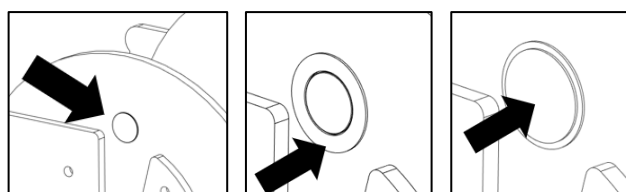
Fit sensor to bracket with one lock nut per side. Leave approximately 5mm gap between the sensor and the drum side plate.



The sensor must be orientated with the arrow perpendicular to the direction of travel. There are two paint dots on the sensor to assist with orientation. The two dots must correspond with crossing the center of the magnet. Leave approximately 5mm gap between the sensor and the drum side plate. Tighten lock nut.

3.2.3 STEP 3

Rotate drum to expose mark(s) on drum side plate made in STEP 1. Ensure surface is clean. Stick self-adhesive $\varnothing 15 \times 1.5$ magnet on top of each mark, followed by surround sticker and cover sticker as shown below:



3.3 OTHER WINCHES

3.3.1 STEP 1

Mount sensor bracket to winch assembly using one of the three brackets provided in the kit. Refer the Step 3.2 for options for LSM winches for possible mounting arrangements.

3.3.2 STEP 2

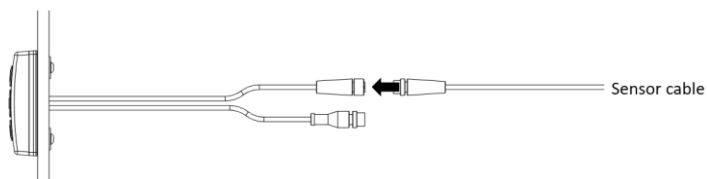
Fit sensor to bracket with one lock nut per side. Leave approximately 5mm gap between the sensor and the drum side plate. Ensure sensor is orientated correctly – see Sensor Orientation. Tighten lock nut.

3.3.3 STEP 3

Fit magnet to side of drum ensuring it passes the sensor. Ensure surface is clean, follow steps 3.2.3 for magnet installation.

4 WIRING DLC

4.1 SENSOR LOOM (4-PIN CONNECTOR)



Route sensor loom from winch, along vessel to dashboard. Connect sensor loom to display using mating 4-pin connector fitted to display.

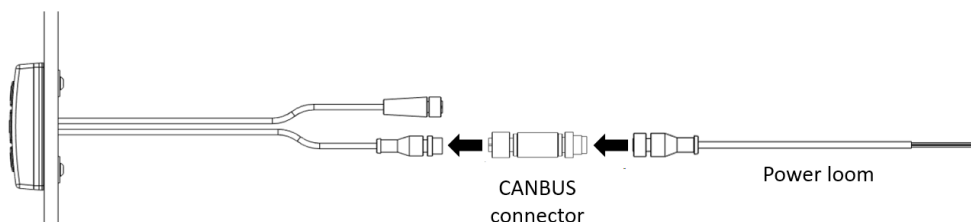
IMPORTANT: Ensure sensor is fitted to the winch before connecting sensor loom to the display.

Sensor lead is 5m long. If a longer length is required, additional 5m extension leads are available, part number DLC-EL.

4.2 POWER LOOM (5-PIN CONNECTOR)

There are two options to power the unit, DLC or DLC+.

4.2.1 DLC : DIGITAL LINE COUNTER, NO SOLENOID CONTROL

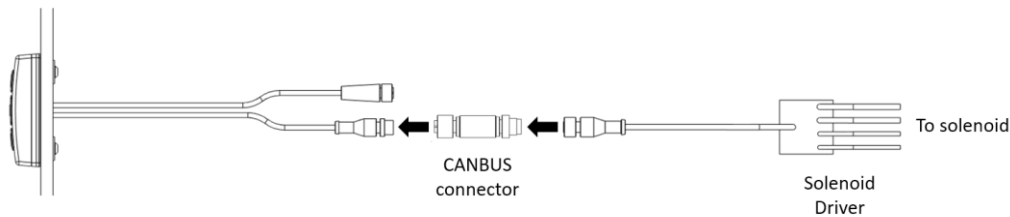


Power loom has a 5-pin connector with only 2 wires, red and black. Connect RED to Positive, and BLACK to Negative.

IMPORTANT: The positive (red) wire must be connected to a source which ensures the display is always on when the anchor winch is powered, such as the winch solenoid or circuit breaker.

4.2.2 DLC+ : DIGITAL LINE COUNTER, WITH SOLENOID CONTROL

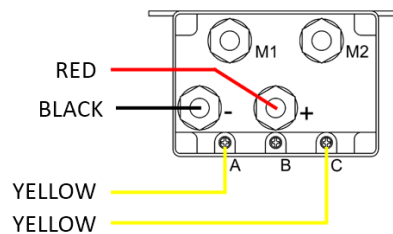
The LSM Digital Line Counter can control solenoid operated anchor winches with the addition of a Solenoid Driver.



Connect Solenoid Driver loom to display via 5-pin connector. The Solenoid Driver box will power the display, therefore will replace the 2-wire loom (if fitted, see section 4.2.1).

4.3 CONNECTION TO SOLENOID

Connect Solenoid Driver box to solenoid as shown:



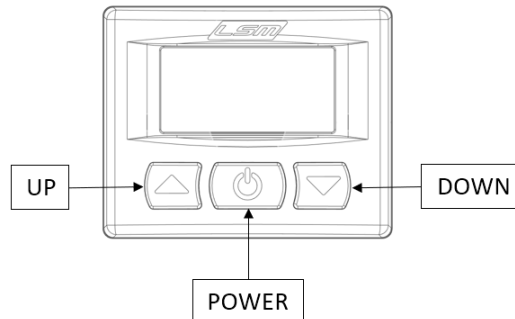
It is not important which yellow wires are connected to A and C. The drive direction of the winch can be toggled in the display menu, see 6.2.6.

The Digital Line Counter is now connected to the winch solenoid and ready to control the winch.

It is recommended to still have a hard wired rocker switch for winch operation as a redundancy.

5 OPERATION

5.1 BUTTONS



The Digital Line Counter has 3 buttons to control all operations of the unit:

Button	Description
Power	Hold to turn screen off Double press (2 pushes within 1 second) to enter Main Menu Select menu item (when in menu mode)
Up	Raise anchor (rope in) when connected to solenoid via solenoid driver Navigate up (when in menu mode)
Down	Lower anchor (rope out) when connected to solenoid via solenoid driver Navigate up (when in menu mode)

5.2 MENU OPTIONS

5.2.1 RESET TO FULL.

Resets line counter to full drum with anchor in. The Software assumes the winch is now full, based on rope/chain inputs (see 6.2.4). Press Power button to confirm reset, DLC will revert to main screen displaying 0 units.

5.2.2 AUTO RETRIEVE

Automatically retrieves line back to pre-set alarm distance. Note – the last few meters must be retrieved under supervision. Press any button at any time to stop Auto retrieve function.

5.2.3 UNITS.

Change units of measure from meters, feet or fathoms. Press Power button to select chosen setting.

5.2.4 ALARM SET UP.

Sets the distance from zero the unit will display an alarm note. User to set to 0 to turn off alarm. If using Auto Retrieve function, ensure Alarm is set to at least 5m or 15ft initially. This distance can be reduced after the line has settled onto the drum.

5.2.5 WINCH SET UP.

5.2.5.1 DRUM SET UP.

LSM presets – User can select from pre-configured Lone Star Marine GX series winches. Scroll down to the winch you are fitting the counter to and press the power button to select the winch.

Custom – this allows the user to enter custom measurements of a winch drum. Enter measurements for Shaft diameter, Drum diameter and Drum width.

5.2.5.2 ROPE SPEC.

User to enter rope diameter and length specifications in this menu.

5.2.5.3 CHAIN SPEC.

User to enter chain size and length specifications in this menu. The chain setting can be toggled on/off if no chain is fitted.

5.2.6 FLIP COUNT.

The Digital Line Counter should count up when the line is being paid out and count down as the line is being retrieved. If the DLC is counting backwards, select this menu item to toggle the sense direction by pressing the power button. The unit will then return to the main operation screen.

5.2.7 FLIP DRIVE.

When the Digital Line Counter is being used to control the winch solenoid, this option allows the user to reverse the drive direction of the solenoid.

5.2.8 CAN COM.

Select CAN communication if the solenoid driver is fitted. If this is not enabled, the DLC will not be able to control the winch solenoid.

5.2.9 MAGNET SET UP.

User to input the number of magnets fitted to the winch drum. Refer Table 3.0.

6 UNIT CONFIGURATION (FIRST START)

For new anchor winch installations, spool the anchor winch and record how much rope and chain is fitted. For existing anchor winch installations, the user will need to know what rope and chain specifications are fitted to the existing drum winch.

Note – the rope length does not need to be exact, an estimate is OK.

Enter menu mode by pressing the power button two times in one second. The following items must be entered for the Digital Line Counter to operate correctly:

Winch set up (select a LSM product, or enter custom drum dimensions), rope details, chain details.

7 GENERAL USAGE

7.1 BASIC OPERATION

Press the Power button to turn the screen on or off. The counter will continue to count even with the screen off. If any button is pressed the screen will turn on.

With the solenoid driver fitted, the Up and Down buttons will control the anchor winch.

As rope is paid out (lowering anchor) the counter will count up. If 20m of rope is paid out the display will read 20m.

When the rope is being retrieved, the counter will count down to 0m at which time the anchor should be in or near the bow sprit.

7.2 OVERCOUNT

When the line is fully retrieved and the anchor is in the bow sprit, the counter may not read zero, it may read below zero, for example -5m.

To reset the overcount, press the power button twice within 1 second to enter Menu mode, and the first option is reset to full.

Press Power button to select, and the unit will return to the main screen reading zero.

7.3 ACCOUNTING FOR ROPE STRETCH

Rope will stretch and pack in the drum tighter after initial spooling. This will throw out the count initially.

Nylon anchor rope stretches up to 10% of it's length during initial use, with HMPE rope stretching much less.

During initial uses the counter will almost definitely go into Overcount. Take note of the overcount (5m, 10m, etc), then reset to zero as instructed above.

After 6-7 drops make an average of the overcount. If the overcount has averaged say 10m on the previous 6-7 drops, go back into the drum setup 8.2.5.2 and add that averaged length to the overall length.

Example, if you initially had the length at 90m, make it 100m. This should then have your count much more accurate.

The above procedure may have to be repeated if you start anchoring in deeper water after initial setup.

If you usually anchor in say 30m of water, then start anchoring in 60m of water, rope normally not used & stretched will now be in play and DLC may go into overcount again. If this is the case repeat Accounting for Rope Stretch procedure again as above.

8 WIRELESS APP

Go to www.lonestarmarine.com.au to download the latest version of the wireless app when available.

9 TROUBLE SHOOTING

9.1.1 SCREEN NOT POWERING UP

Ensure power or solenoid driver leads are properly connected to solenoid as in sections 6,7. Ensure Circuit breaker is engaged with power to solenoid.

9.1.2 SENSOR NOT READING COUNT.

Ensure sensor is orientated as stated in Section 3 and is within 3mm of magnet. Ensure magnets are in place.

9.1.3 COUNT IS GOING THE WRONG DIRECTION

Flip Count as in section 5.2.6

9.1.4 DRUM IS GOING THE WRONG DIRECTION WHEN OPERATED THROUGH DLC

Flip Drive as in section 5.2.7

9.1.5 COUNT WAS ACCURATE BUT NOW ITS NOT OR DRUM IS NOT READING AT ALL.

Ensure magnets are in place on the drum.

9.1.6 DLC KEEPS GOING INTO OVERCOUNT

See Accounting for Rope Stretch above

9.1.7 DLC KEEPS GOING INTO UNDERCOUNT

Incorrect rope length may have been entered. Reduce the Overall rope length as in 8.2.5.2 by the undercount amount.

10 SPARE PARTS

Spare Part Code	Description
SOL-DR	Solenoid driver add-on for DLC. This is an add on kit for the DLC to allow solenoid control.
DLC-EL	Additional 5m sensor loom extension. Can be joined together for extended runs.
DLC-M	3x replacement magnets, includes surround stickers and cover stickers.
DLC-S	Replacement sensor, including 3x sensor mounts.

11 MAINTENANCE AND USE

The DLC will not prevent accident, injury, or death when used with an anchor winch. Keep hands and feet, children, pets, ect away from the winch when in use.

Ensure the DLC is turned off when boat is underway.

Do not attempt to connect DLC or DLC+ to solid state relays or other electrical systems other than is specified in the installation guide.

Do Not continue to press the up button once the anchor is in the fully retracted position.

Do Not engage the up switch after the anchor is fully locked into the bowsprit. This may damage the bowsprit, your vessel, or cause the transmission to lock up.

Do Not rely on the DLC auto-retrieve function to seat anchor into the bowsprit. This must be performed by the operator.

Do Not engage the winch while the boat is underway. Doing so will most certainly cause damage to the vessel and could cause injury or death.

Lone Star Marine claims no liability in the event of intentional or accidental discharge of the anchor while the boat is underway.

Always dis-engage the circuit breaker when the winch is not in use.

Lightly rinse your winch, chain, and sensor with freshwater periodically after use.

Avoid water spray directly at magnets on drum.

Avoid using petroleum-based lubricants or cleaning chemicals on magnet facia & surrounds.

Clean DLC facia with a damp soft cloth. Avoid harsh chemicals & water spray directly to the facia.

Release tension on the winch & dis-engage the circuit breaker before putting the boat away for extended periods of time.

12 MANUFACTURING GUARENTEE

The LSM DLC is manufactured & tested in Australia under strict Quality Control conditions. We guarantee this product to be free from Mechanical & Electrical defects on the date of purchase.

13 LIABILITIES

Lone Star Marine or its distributors will not be liable in the event of damage, accident, injury, or death as the result of use, misuse or installation of this product. Lone Star Marine or its distributors will not be liable in the event of damage, accident, injury, or death as the result of mechanical or electrical failure of this product. Always keep hands away from the winch and rope while in

operation. LSM winches are very powerful and can cause serious injury if hands, fingers or other body parts are caught between the drum and cradle or caught up in the rope & chain. Please keep children and pets away from this product while in use.

14 WARRANTY

14.1 RECREATIONAL USE

The DLC features a 2 Year Warranty against electrical or mechanical defect. Proof of purchase must be presented in the event of a warranty claim. Warranty does not cover damage of rope or chain when in use. Warranty does not cover anchor loss or rope and chain replacement. Warranty does not cover bow sprit or vessel damage due to use or misuse. Warranty does not cover damage from faulty installation. Warranty does not cover screens from damage due to impact, abrasives, or sun. Warranty does not cover lost magnets, damaged sensors or plugs.

14.2 COMMERCIAL USE

The DLC features a 2 Year Warranty against electrical or mechanical defect. Proof of purchase must be presented in the event of a warranty claim. Warranty does not cover damage of rope or chain when in use. Warranty does not cover anchor loss or rope and chain replacement. Warranty does not cover bow sprit or vessel damage due to use or misuse. Warranty does not cover damage from faulty installation. Warranty does not cover screens from damage due to impact, abrasives, or sun. Warranty does not cover lost magnets, damaged sensors or plugs.

15 TERMS & CONDITIONS

Always have your winch system installed by a professional. LSM will not warranty damage or malfunction due to improper installation.

Use cable size recommended in this document for each winch. LSM does not warranty motor damage due to undersized cable or faulty connections.

Winches are to be used for raising and lowering your anchor only. LSM will not warrant winches used for any other purpose without prior written consent.

In the event of a warranty claim or fault email a description of the issue to your retailer or sales@lonestarmarine.com.au along with the place and date of purchase, a description of you issue & a picture if applicable. LSM or their distributors may request additional information and pictures. LSM value our customers and will determine the most efficient course of action to get you back on the water as soon as possible.

Damaged items will be replaced or rebuilt at the discretion of LSM.

Freight & Labour charges may be covered through our dealer network only (if applicable & at the discretion on LSM and our Offices).

