



USER MANUAL

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Revision History

Revision	Description
A	First edition

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1. Introduction

Congratulations on your purchase of an Intellisteer Wireless Controller. This simple yet powerful system is designed to free you from the need to hand steer your boat from the helm, providing wireless jog steering control from anywhere on your boat.

There is an Intellisteer model suitable for almost any boat. Whether you have cable or hydraulic steering, with an autopilot or without, Intellisteer has a configuration that can provide you with the freedom of wireless steering.

This manual covers the installation and operation of the standalone version of the Intellisteer, designed to interface with an existing autopilot and drive installation whether or not the existing course computer is operational. As long as the drive unit is functional, Intellisteer can control it.



If you do not have an existing autopilot installation, there are other Intellisteer system packages which bundle the wireless controller with a specially designed steering drive unit.

These include:

- **Intellisteer Type R** provides remote steering for auxiliary or primary outboards or even sterndrives
- **Intellisteer Type S** provides a helm replacement for remote steering of cable steered boats
- **Intellisteer Type T** provides a helm replacement for remote steering of cable steered boats with tilt steering
- **Intellisteer Type H** provides remote steering for hydraulically steered boats.

Instructions covering the installation of these Intellisteer steering drives is included with the drive units in the system kits.

More information can be found at www.intellisteer.com

2. Installation

The Intellisteer Wireless Controller is designed to be used with any reversing steering drive unit requiring less than 25A peak operating current, whether mechanical or hydraulic. While Intellisteer can be integrated with an Autopilot Course Computer, it does not require one to operate. It is not suitable for use with “all in one” cockpit autopilots with an integrated course computer.

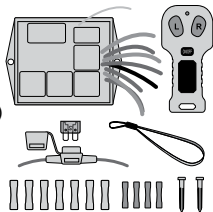
It is also not suitable for use on boats with a positive ground system.

It should not be fitted to boats where the maximum horsepower of the engines exceeds the maximum horsepower rating for the vessel as stated on the vessel manufacturers tag.

2.1 Included Parts

Before installation, check your kit includes all required parts:

- Intellisteer Wireless Receiver
- Intellisteer Wireless Pendant
- Pendant Lanyard
- 7 Blue Crimp Connectors (14-16GA)
- 4 Red Crimp Connectors (18-22 GA)
- 25A Inline fuse & Fuse Holder
- 2 Mounting Screws



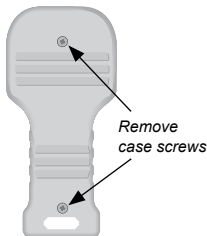
2.2 Tools required

- Medium (#1) Phillips screwdriver for Receiver mounting screws.
- Multi-meter for troubleshooting
- Hand crimp tool (double action recommended)

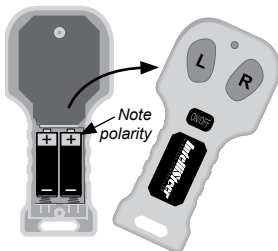
2.3 Battery Installation or Replacement

The pendant is powered by two A23 batteries (supplied pre-installed in pendant). To replace these batteries:

- Remove two screws on back of pendant.
- Turn over button side up and separate two halves of pendant.
- Install or replace the 2 batteries, noting the correct polarity.



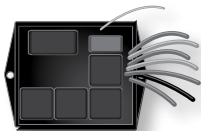
- Bring the two halves back together, ensuring that the rubber keypad membrane is seated properly.
- Replace the two screws - do not over-tighten.
- Dispose of old batteries properly.



If the unit will not be used for a long period of time, it is recommended that the batteries be removed to prevent damage due to leakage from a discharged battery.

2.4 Mounting Receiver

The Receiver should be mounted where it has access to the drive unit wiring and a 12v power supply (ideally close to the autopilot course computer if fitting to a boat with an autopilot system). Although the Receiver is waterproof the location should not be exposed to the elements to protect the wiring connection from corrosion. If this is not possible, all connections should be protected using adhesive heatshrink sleeving.



Intellisteer Receiver

Mount the receiver using the two self-tapping screws supplied.

2.5 Crimp Connections

Positive crimp connections are critical to reliable operation - ensure that the stripped wires are fully inserted into the crimp, and that the crimp is fully made. Using a double-action hand crimping tool will give the best results, although a standard single-action crimp can work well if used correctly. Pull lightly on the wires after crimping to ensure a positive connection.

2.6 Connecting To A Standalone Drive Unit

Typically there are 4 wires from a steering drive unit: two heavy wires to drive the motor, and two lighter wires to actuate the clutch (for a mechanical drive) or bypass solenoid (for a hydraulic drive) if required. Some drives do not have a clutch – refer to your drive instructions for confirmation.

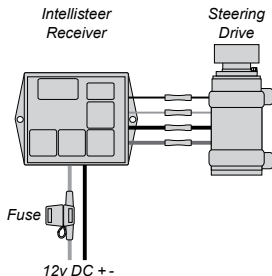
Cut back and strip the drive input and clutch wires from the drive unit and connect to the Intellisteer Receiver as shown in Table 1, using the supplied crimp connectors. If the steering direction does not match that indicated on the Pendant, the drive input wires can be reversed. See Troubleshooting section for more details.

Drive clutches do not usually have a polarity and the two wires can be connected either way round. If the drive does indicate a polarity, match to the clutch input on the Intellisteer Receiver: + to Drive Unit Clutch 1, and – to Drive Unit Clutch 2.

Fit the supplied inline fuse to the 12V+ wire, and connect the ground line directly to the Intellisteer Receiver ground wire.

Intellisteer Receiver	Connection
Red	Power 12v +
Black	Power Ground –
Blue	Drive Unit Input +
Green	Drive Unit Input –
Orange	Drive Unit Clutch 1
Purple	Drive Unit Clutch 2

Table 1



NOTE - For a standalone drive installation the 4 Course Computer wires (Yellow, Yellow/Green, Brown/Pink) are not used, and should be wrapped with electrical tape and secured.

2.7 Connecting To An Autopilot System

Typically there are 4 wires between the autopilot course computer and drive unit: two heavy wires to drive the motor, and two lighter wires to actuate the clutch (for a mechanical drive) or bypass solenoid (for a hydraulic drive) if required. Some drives do not have a clutch – refer to your drive instructions for confirmation.

Disconnect the drive output and clutch wires from the course computer and connect these to the corresponding drive unit input and drive unit clutch wires on the Receiver as per Table 2, using the supplied crimp connectors. Connect the Course Computer Drive Output and Course Computer Clutch wires from the Receiver to the corresponding connectors on the course computer - refer to your autopilot manual for the wire colour coding between the autopilot course computer and drive unit.

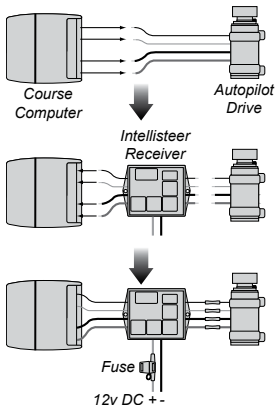
Autopilot drive clutches do not usually have a polarity and the two wires can be connected either way round. If the autopilot clutch output does specify a polarity, connect Course Computer Clutch Output + to Course Computer Clutch 1 on Receiver, and Drive Unit Clutch 1 to + clutch input on Drive.

Fit the supplied inline fuse to the 12V+ wire, and connect the ground line directly to the Intellisteer Receiver ground wire.

NOTE: Additional crimp connectors are supplied if it is not possible to locate the Receiver close enough to the course computer to be wired directly to it as described above and it is necessary to splice the Receiver into the middle of the wiring run.

IntelliSteer Receiver	Connection
Red	Power 12v +
Black	Power 0v -
Yellow	Course Computer Drive Output +
Yellow/ Green	Course Computer Drive Output -
Brown	Course Computer Clutch 1
Pink	Course Computer Clutch 2
Blue	Drive Unit Input +
Green	Drive Unit Input -
Orange	Drive Unit Clutch 1
Purple	Drive Unit Clutch 2

Table 2



2.8 Power Cable Gauge Recommendations

As power to the drive unit is supplied by the Intellisteer Receiver when operating, it is recommended that a minimum of 14GA wire be used for the power connection. Heavier gauge wire may be required for longer runs and/or larger drive units.

Refer to the table below for wire gauge recommendations:

Total Current on Circuit	Conductor Sizes (Gauge) for 10% Voltage Drop – 12 VOLTS																		
	Length of conductor from source of current to the product and back to the source – in feet.																		
	10	15	20	25	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
5 Amps	18	18	18	18	18	16	16	14	14	14	12	12	12	12	12	10	10	10	10
10 Amps	18	18	16	16	14	14	12	12	10	10	10	10	8	8	8	8	8	8	6
15 Amps	18	16	14	14	12	12	10	10	8	8	8	8	8	6	6	6	6	6	6
20 Amps	16	14	14	12	12	10	10	8	8	8	6	6	6	6	6	6	4	4	4
25 Amps	16	14	12	12	10	10	8	8	6	6	6	6	6	4	4	4	4	4	2

2.9 Verify Installation

- Check that the mounting and all connections are tight and secure.
- Turn on the system with the Pendant On/Off button.
- Press the **L** or **R** buttons, and ensure that the boat steers in the correct direction - if not, reverse the polarity of the drive connections.
- If you are interfacing with an Autopilot course computer, turn the Pendant off and ensure that the Autopilot operates correctly as normal. Any problems likely relate to the polarity of the clutch or drive connections - refer to the troubleshooting guide.
- Once you have verified the installation, you should familiarize yourself with the operation of the Intellisteer Wireless Controller while at the dock.

3. Operation

The Intellisteer Wireless System can be used for steering control while trolling, or more generally as a second steering station on the boat.

IMPORTANT: It is critical that the operator keeps a watch for hazards at all times while underway - it is the operator's responsibility to ensure safe navigation of the vessel.

3.1 Power On/Off

If interfaced with an Autopilot, the Autopilot must be turned off or put into standby mode before activating the Intellisteer Wireless Controller to prevent interactions between the two controllers. If both Intellisteer and the Autopilot are steering at the same time, unpredictable results can occur.

Press the black **ON/OFF** button on the Pendant to activate the Intellisteer Wireless System. The LED will turn red for approximately 2 seconds during initialization, then flash once every two seconds to indicate that the system is operational.

When the Intellisteer Wireless System is on, the pendant jog steering buttons are active.



When the **L** or **R** button is pushed, the clutch is engaged, and the drive is activated. The LED indicator flashes continuously while the steering buttons are pressed and the Pendant is transmitting.

When the button is released, the clutch is disengaged and manual steering is re-enabled.

Press **ON/OFF** to power off the Intellisteer and return to normal operation - the pendant LED will stop flashing and the autopilot will be reconnected.

3.2 Steering

With the system powered on press **L** or **R** on the pendant to steer the boat to the Left or Right. As long as **L** or **R** is depressed, power will be supplied to the drive unit and it will keep steering further in the indicated direction until the button is released. To return the steering to straight ahead, it will be necessary to centre the rudder by pressing the opposite button until the boat is steering straight ahead. With practice quite precise steering control can be achieved.



3.3 Auto Shut-off

If the Intellisteer is not used for 30 minutes the Pendant will automatically power down to save battery life. To re-activate the Pendant, simply press the **ON/OFF** button.

3.4 Overload Protection

To prevent electrical or mechanical damage in the event that the drive unit is driven all the way to one end of the steering system travel the Intellisteer Receiver incorporates overload protection. If the drive unit “hits the stops” and can go no further, but power continues to be applied, the Intellisteer Receiver will disconnect power to the drive unit. To reconnect power to the drive unit, simply steer the boat in the other direction.

Hydraulic pumps have higher current demands than mechanical drives, and can generate large current spikes when the steering direction is quickly reversed. In this situation, rapidly changing steering direction back and forth between **L** and **R**, with no pause between the button pushes, can cause large current spikes which may trigger the overload protection circuit. If this occurs, simply wait for 1 second, then steer the boat in the other direction from the last button push. This will reset the overload circuit.

To prevent this accidental activation of the overload protection circuit with hydraulic systems, simply wait for 1 second between releasing one steering button and pushing the other.

4. Adding Or Replacing A Pendant

Your IntelliSteer Pendant and the Receiver are paired using a unique code, ensuring that only your Pendant will control your Receiver. The Pendant and Receiver are paired at the factory and are ready to use out the box.

The IntelliSteer Receiver can be paired with two Pendants at the same time, in which case it can be controlled by either one. If the user attempts to pair with a third Pendant it will take the place of the first Pendant paired - only two Pendants can be paired at a time.

4.1 Pairing Pendant To Receiver

1. Turn the Pendant on.
2. Disconnect power to the Receiver (remove inline fuse, turn off breaker, etc).
3. Wait 10 seconds, then reconnect power to the Receiver.
4. Within 5 seconds of restoring power to the Receiver, press both the **L** and **R** buttons on the Pendant at the same time.
5. Immediately after pressing both the **L** and **R** buttons, press the **On/Off** button twice in succession.
6. The units are now paired!



5. Appendix

5.1 Warnings

Always maintain a permanent watch, this will allow you to respond to situations as they develop. Failure to maintain a permanent watch puts yourself, your vessel and others at serious risk of harm.

This product must be installed and operated in accordance with the instructions provided. Failure to do so could result in personal injury, damage to your vessel and/or poor product performance.

In the event of UNCONTROLLED remote steering or other EMERGENCY situations, return to MANUAL steering is provided by turning the Intellisteer System OFF with the Pendant **On/Off** button. If this is not practical, the helm can be forced to one side or the other to manually override the autopilot drive and power to the Receiver should be removed as quickly as possible. It is STRONGLY advised that the helmsman be formally familiarized with this OVERRIDE procedure.

Do NOT install in a location where it will be exposed to a hazardous/flammable atmosphere (such as near fuel tanks).

Some autopilot drives connect directly to the helm wheel and incorporate a manual clutch release. While this clutch is engaged, it may be difficult or impossible to manually override the autopilot drive. For this type of installation, users should familiarize themselves with the use of the clutch release so as to allow quick return to manual control in the event of an emergency.

5.2 Troubleshooting

Pendant does not operate correctly (LED indicator not operating normally)

- Check or replace Pendant batteries.

Receiver is not operating

- Check or replace 25A inline fuse.
- Check power supply polarity, and correct if it is reversed. The receiver is protected against reverse polarity, and no damage will result. However the unit will not operate if the power supply leads are reversed.
- Overload protection may have been activated. Try steering in the other direction to reset the overload protection

Clutch does not operate correctly when Intellisteer is steering

- Check Intellisteer clutch output polarity and correct if reversed (the clutch on most autopilot drive units is not polarity sensitive, however some are)

Clutch operates correctly when Intellisteer is steering, but not when the Autopilot is

- Check Intellisteer clutch input polarity and correct if reversed.

Steering is Reversed on Intellisteer Operation

- Reverse drive polarity between the Intellisteer Receiver and the drive unit.

Steering is Reversed on Autopilot Operation

- Reverse drive polarity between the course computer and the Intellisteer Receiver.

No communication between Pendant and Receiver

- Re-pair Pendant and Receiver
- There may be signal interference if the boat has steel bulkheads/decks or there are other metallic objects between the Pendant and Receiver. Consider relocating the Receiver to a place where there is no metal blocking the signal.

4.3. Specification

Wireless Controller & Receiver

Frequency: 315MHz or 433.92 MHz

Meets FCC, CE, and BS EN 60945:2002 EMC standards

Operating temperature range -30C to +80C

Handheld and receiver can be paired in field

Pendant and receiver auto-off in 30 minutes if no usage

Over 1 Million control codes provide enhanced security

Handheld Pendant

Water resistant

Supplied with 2x 23A batteries

Wireless Receiver & Motor Controller

Waterproof

Motor drive capability up to 25A

Over load protection

Reverse polarity protection

12VDC nominal (9-16V DC operating range)

Offers pass-through capability for Autopilot motor and clutch control circuits

Can be controlled by up to two Pendants

4.4. FCC/CE Statements

The IntelliSteer Wireless Controller complies with the FCC Code of Federal Regulations, Title 47, Part 15 regarding unlicensed transmissions:

- This device will not cause harmful interference with other equipment
- This device must accept any interference received, including interference which may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

4.5. Limited Warranty

Canada Metal (Pacific) Ltd., manufacturer of IntelliSteer and associated products warrants the original end user (the “Purchaser”), provided that the recommended installation and maintenance procedures set forth in the manual that has been provided with the Equipment (the “Manual”) have been followed, and subject always to the other provisions of this Agreement, that the Equipment is free from defects in workmanship and materials, under normal use and service and will perform substantially in accordance with the specifications set forth in the Manual; Electronics are covered for a period of one (1) year from the date of purchase of the Equipment by

the Purchaser, while the Drive Unit is covered for a period of two (2) years from the date of purchase of the Equipment by the Purchaser.

This Limited Warranty covers the cost of shop labor and materials when the defective Equipment are delivered to Canada Metal (Pacific) Ltd.

NOTICE OF DEFECT. The Limited Warranty will not apply to any defective Equipment unless written notice of such defect is given to Canada Metal (Pacific) Ltd., by mail to Customer Service at 7733 Progress Way, Delta, BC, Canada, V4G 1A3, or by facsimile to Canada Metal (Pacific) Ltd. At 1-604-952-2650, and is received by Canada Metal (Pacific) Ltd. Within ten (10) days of the date upon which the defect first become known to the Purchaser. Notices sent by mail will be deemed to be received by Canada Metal (Pacific) Ltd. on the seventh (7th) day first following the date of posting in North America and on the tenth (10th) day next following the date of posting anywhere else in the world. Notices sent by facsimile will be deemed to be received by Canada Metal (Pacific) Ltd. on the date of transmission with appropriate answerback confirmation.

WARRANTY LIMITATIONS. The Limited Warranty shall not be effective and shall be void, if the Equipment or its components are (i) not installed or used under normal conditions as recommended by Canada Metal (Pacific) Ltd.; (ii) subjected to abuse, neglect, or carelessness; (iii) altered or repaired by anyone not authorized by Canada Metal (Pacific) Ltd. during the term of this Limited Warranty; (iv) subjected to all non-pleasure use; (v) subjected to use exceeding twelve (12) volt (v) direct current (dc); (vi) subjected to use exceeding vessel trolling speeds.

This Limited Warranty does not cover, and Canada Metal (Pacific) Ltd. is not responsible for structural elements of the vessel upon

which the Equipment is installed, or any electrical or mechanical fittings, or components not supplied by Canada Metal (Pacific) Ltd. Canada Metal (Pacific) Ltd. is not responsible for the proper installation of the Equipment or its supporting components, and it is the responsibility of the Purchaser to ensure that the supporting elements, and the Equipment's connection thereto, are properly engineered. The Purchaser shall periodically inspect all structural and supporting elements of the vessel and Equipment for signs of wear, corrosion, and/or visible deterioration. The Purchaser shall discontinue use of the Equipment at the first indication of deterioration.

The Limited Warranty shall not be valid except when delivered by an authorized dealer, representative or installing boat builder or shipyard, and the Purchaser shall not be entitled to rely on any other representations or warranties, whether oral or written, except as provided in this limited warranty.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES. ANY WARRANTY IMPLIED BY STATUTE AND NOT EXCLUDED HEREIN, INCLUDING WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS IN EFFECT ONLY DURING THE DURATION OF THE EXPRESS WARRANTY SET FORTH HEREIN.

This warranty gives the Purchaser specific legal rights, and the Purchaser may also have other rights which may vary from country to country or state to state. This warranty shall be constructed pursuant to the laws of the Province of British Columbia.

IntelliSteer

W I R E L E S S S T E E R I N G

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