

# INSTRUCTION MANUAL

Simrad CI300X  
Compass Interface

## **Note!**

*Simrad AS makes every effort to ensure that the information contained within this document is correct. However, our equipment is continuously being improved and updated, so we cannot assume liability for any errors which may occur.*

## **Warning!**

*The equipment to which this manual applies must only be used for the purpose for which it was designed. Improper use or maintenance may cause damage to the equipment or injury to personnel. The user must be familiar with the contents of the appropriate manuals before attempting to operate or work on the equipment.*

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## *Instruction Manual*

This manual is intended as a reference guide for installing equipment connected to the CI300X compass interface unit, for use with the X-series and AP50 autopilot systems. This manual is intended to be used in conjunction with the autopilot manual, and references specific sections in the installation and operation segments of the autopilot manual.

Please take time to read this manual to get a thorough understanding of the operation and system components and their relationship to a complete autopilot system.

## Document revisions

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## Document history

- Rev.– Original Issue
- Rev. A New layout. CD100A included. AP50 included.
- Rev. B CD109 included. Minor corrections in text.

To assist us in making improvements to the product and to this manual, we would welcome comments and constructive criticism. Please send all such – in writing to:

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# 1 INTRODUCTION

The CI300X Compass Interface is an optional module, designed to enable a variety of different equipment to connect into autopilots via RobNet. The CI300X converts the analog inputs into RobNet compatible commands for use by autopilot system components. The CI300X includes 2 RobNet compatible connectors. The CI300X adds the following capabilities to the autopilot system, and allows connection of each of the following simultaneously:

- Gyrocompass Simrad RGC50, RGC10, RGC11 (1:1 synchro)
- Magnetic compass CD100/CD100A/CD109 Course Detector

Analog input of *sine/cosine* for either one of the following:

- Fluxgate compass (For non-Simrad fluxgate compasses)
- Analog windvane (For non-Simrad windvane units. Does not apply for AP35 and AP50 autopilots)

NFU Steering Lever connection for either one of the following:

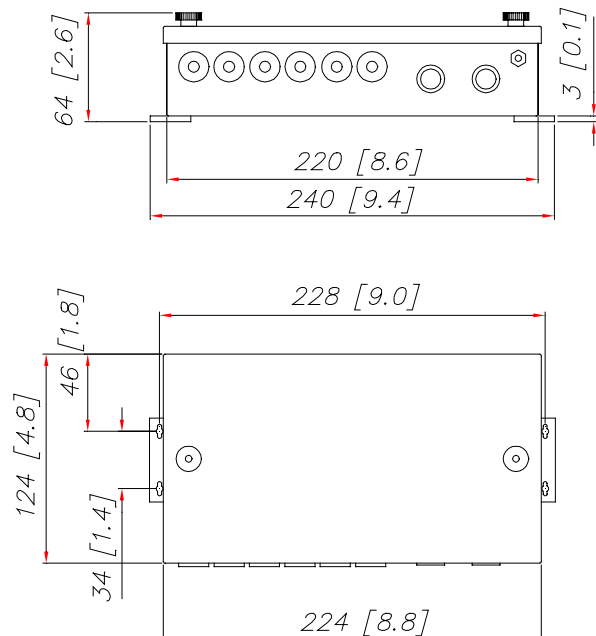
- S9 Steering Lever
- S100 Steering Lever

Note !

*The RFC35/RFC35R Compass may be used in conjunction with any combination of magnetic, gyro, or other manufacturers (non-Simrad) fluxgate compass. Selection of heading source is performed in the Installation Setup and the User Setup menus.*

## 2 TECHNICAL SPECIFICATIONS

Dimensions:	See Figure 2-1
Weight:	0,9 kg (2,0 lbs)
Material:	Epoxy coated aluminum
Environmental Protection:	IP44
Supply and interface:	RobNet, 2 connectors
Power consumption:	2 W
Safe distance to magnetic compass:	0.3 m (1 ft.)
Temperature range:	
Operation:	-25 to +55°C (-13 to +130°F)
Storage:	-30 to +80°C (-22 to +176°F)
Mounting:	Bulkhead-mount
Cable inlets:	Rubber glands for cable diameter 10-14 mm
Gyro compass input:	Synchro 1:1 (RGC10, RGC11, RGC50 gyrocompasses)
Heading:	Sine/cosine max 10 VDC
NFU steering lever input:	Port/starboard potential free contact
External alarm:	Potential free contact



**Figure 2-1 CI300X Dimensions**



## 3 INSTALLATION

### 3.1 CI300X Compass Interface

#### Mechanical Mounting

The CI300X is normally installed inside a console or locker close to the compass sensor to keep cables short. The unit does not have controls that need to be adjusted during installation or use. It should be installed with the cable inlet and the RobNet connectors facing down. The CI300X is designed to operate in a location that provides ambient temperatures below +55°C (+130°F). It is fastened to the panel/bulkhead by the external mounting brackets.

Note !

*For a magnetic compass, a gyrocompass, a windvane, or other manufacturer's fluxgate connected to the CI300X Compass Interface, it is required to perform the automatic compass calibration in order to calibrate the CI300X and the input signal. Refer to the following installation procedures and to the Compass calibration procedure in the respective autopilot manual.*

If a magnetic compass is installed, it is recommended that the CI300X be installed with the reach of the CD100A course detector cable (7 meters length).

Note !

*This CI300X is not weatherproof, and must be installed in a dry location!*

### CI 300X Connector Placement and Pinout

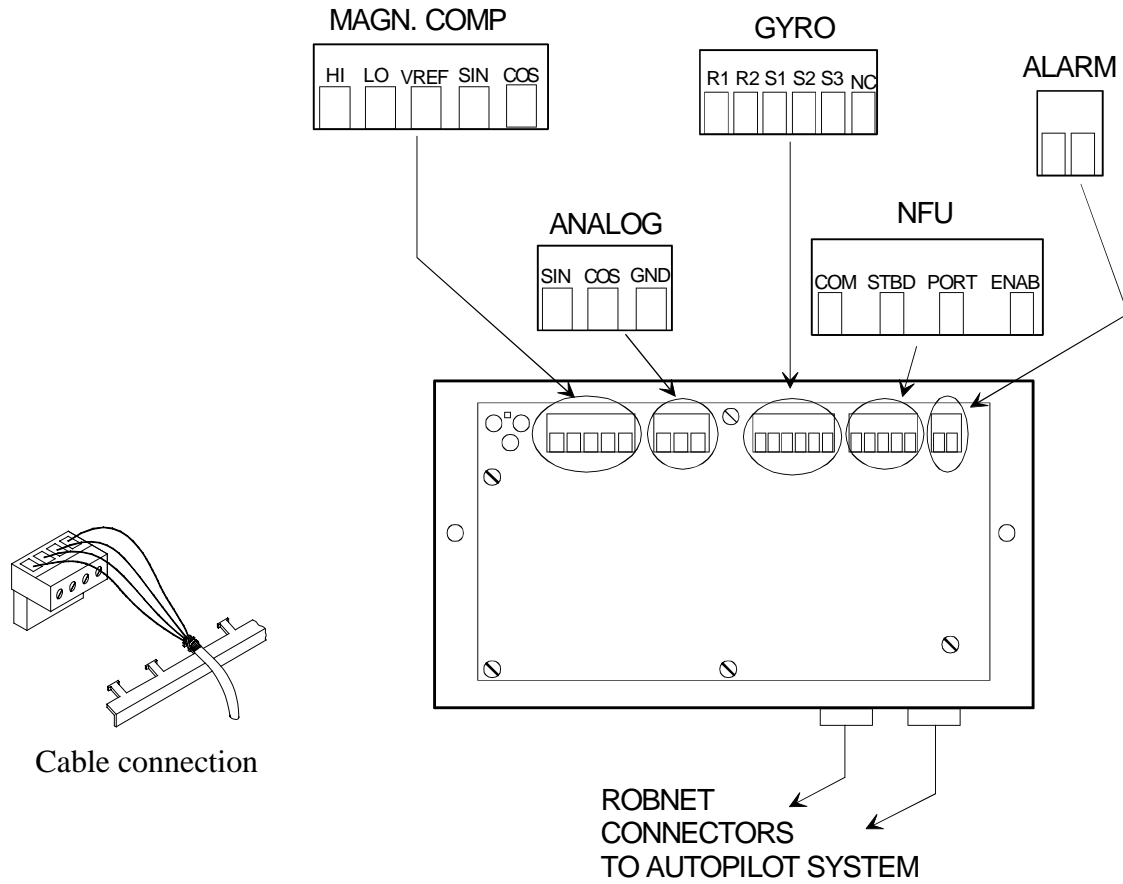
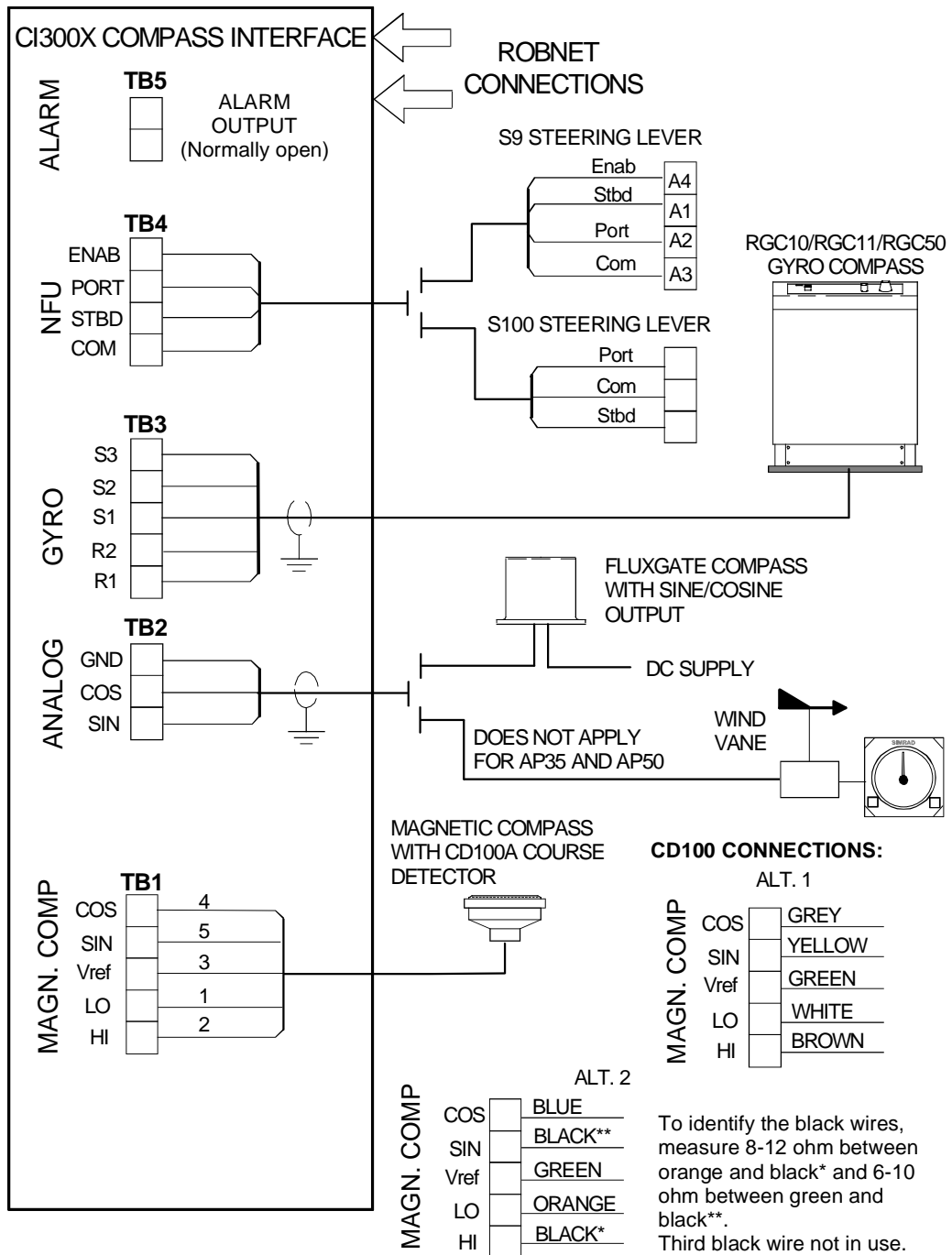


Figure 3-1 CI300X Connector Placement and Pinout

### Connection Diagram



**Figure 3-2 CI300X Interconnection Diagram**

Note !

*The CD100 is a previous model and its cable has a connector that must be cut off for connection to the CI300X.*

Note !

*If an R3000X Remote Control is connected to CI3000X TB4, the mode selection will not work, only the rudder commands.*

### 3.2 Magnetic Compass with CD100/CD100A/CD109 Course Detector

A magnetic compass requires the use of the CD100/CD100A/CD109 Course Detector for installation with the CI300X. The course detector excited by a signal from the CI300X, translates compass heading into a sine/cosine signal used by the CI300X. The CI300X converts the analog sine/cosine values into a digital signal and makes the magnetic heading available on the RobNet network for use by the autopilot.

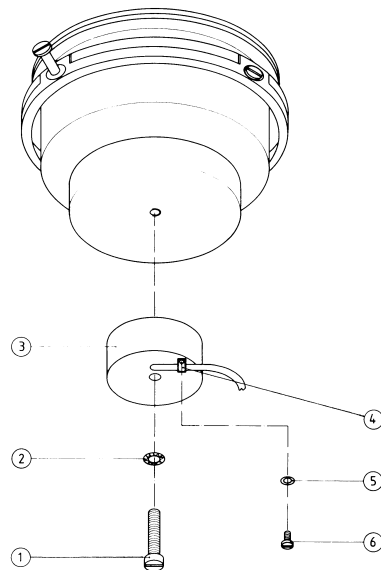
The installation of the magnetic compass and the course detector requires that a qualified compass adjuster compensate the magnetic card on the compass prior to performing the autopilot compass calibration. The compass calibration will automatically adjust for the minimum/maximum voltage levels provided by the course detector, however the compensation for on board magnetic deviation must be provided by external magnets or correcting spheres.

Note !

*Failure to properly compensate the magnetic card of the compass may result in heading errors and degraded autopilot operation.*

#### CD100A Mechanical Mounting

The compass must be fully gimballed and have a flat surface underneath to fit the CD100A. Make hole for a 6 mm screw in the bottom of the compass and mount the CD100A as shown on the drawing. Secure the 6 mm screw through the center hole of the CD100A. Make sure the cable does not prevent the compass from moving freely in the gimbals.

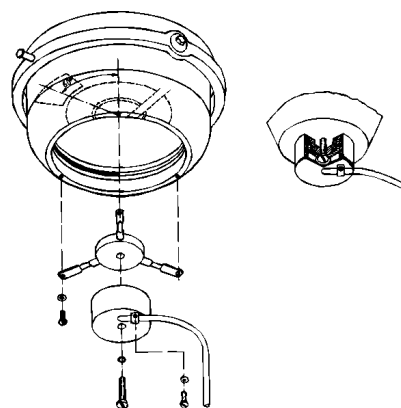


1	Screw M6x25mm, non magnetic
2	Washer, non magnetic
3	Course detector
4	Cable clamp, nylon
5	Washer, non magnetic
6	Screw M3x10mm, non magnetic

Note!

Lock nut on mounting screw (pos. 1) for transportation only. To be removed before mounting.

Figure 3-3 CD100A mounting



When the course detector is mounted on a reflector compass, use the supplied tripod holder.

### CD109 Course Detector

For retrofit installations a CD109 Course Detector may be connected to the CI300X according to Figure 3-4:

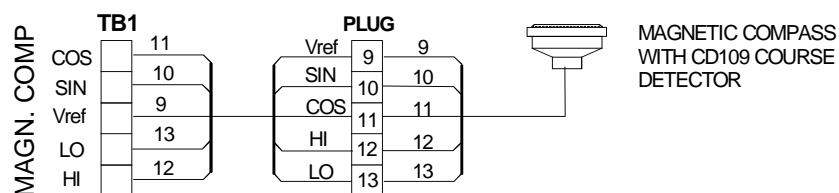


Figure 3-4 CD109 Connections to CI300X

### Adjusting the Course Detector

The alignment of the course detector is performed to provide an initial adjustment of the heading read-out of from the compass. This alignment needs to be performed as a rough alignment only. The autopilot provides the feature of “COMPASS OFFSET” that enables you to alter the heading read-out from the autopilot control unit during the sea trial settings and adjustments.

Initial alignment of the course detector is performed as follows:

(This procedure assumes the autopilot system has been installed, and the Dockside, and Interface settings have been successfully performed, with the MAGN: option set to CI300X in the Interface Setup Menu.)

1. Turn on the autopilot system
2. Select the “Magn Compass” as the current heading source from the User Setup Menu (refer to the autopilot manual.)
3. Observe the heading read-out on the autopilot control unit.

4. Observe the heading read-out on the compass card. If the heading on the autopilot control unit is more than 20 degrees from the heading indicated on the compass card, turn the course detector slightly by hand until heading readout is within  $\pm 20^\circ$  of ships heading. Tighten the course detector fastening screw.
5. Perform the Compass calibration in accordance with the autopilot Seatrial menu. Refer to the autopilot instruction manual.
6. Use the Compass offset setting in the Seatrial menu to add any additional offset required to get the autopilot heading to agree with the magnetic card heading.

Note !

*Do not turn the course detector after the calibration procedure has been performed.*

### 3.3 Other Manufacturers Fluxgate Compasses

The CI300X compass interface unit allows other manufacturers (non-Simrad) fluxgate compasses to be connected into autopilot systems. The fluxgate compass must provide a 3-wire sine/cosine output with an output voltage in accordance with the CI300X specifications. (Refer to page 6).

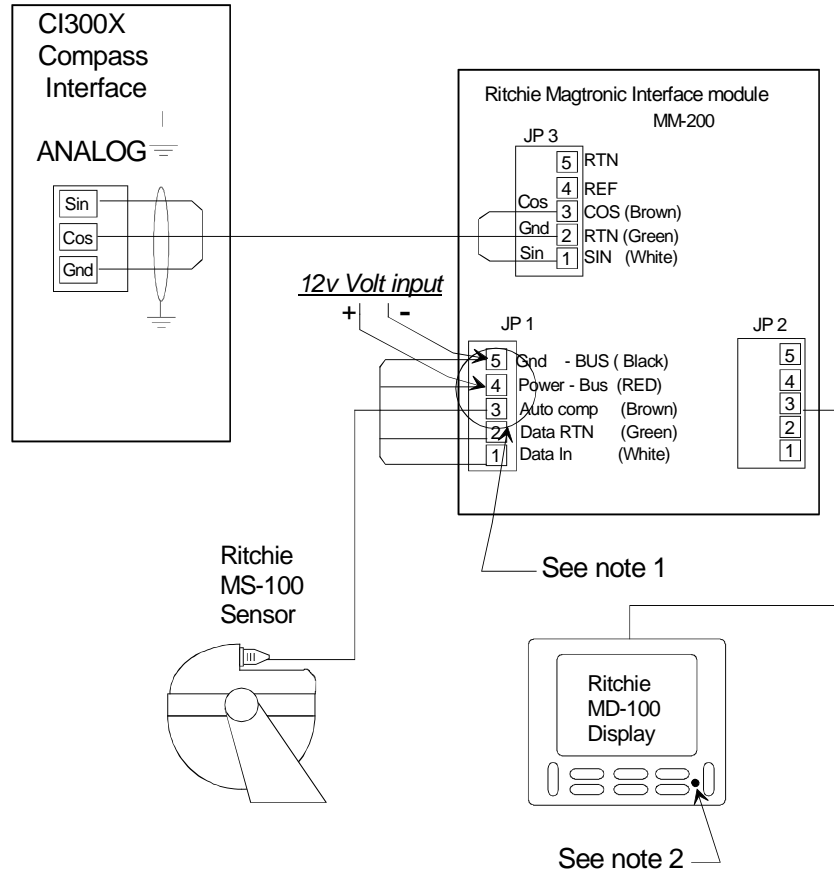
If an analog fluxgate compass is connected to the CI300X, an analog windvane (sine/cosine) can not be used in the autopilot system. (Wind input must then be by NMEA 0183 data input only).

#### **Ritchie Magtronic (Model MS-100 Heading Sensor) Installation**

The Ritchie Magtronic heading sensor may be installed either as a stand-alone heading sensor or in combination with the Ritchie Digital compass display. In either configuration it is required that the MM-200 interface module be installed as part of the system, to provide a sine/cosine output that is compatible with the CI300X analog input.

Note that the Ritchie compass must be compensated after installation, and prior to performing the autopilot compass calibration setup procedure. The Ritchie AUTO compensation procedure will set the internal compensation for the Ritchie compass to compensate for on-board magnetic deviation. It is further required that the autopilot compass calibration procedure be performed ***after*** the Ritchie auto calibration is performed, to allow the CI300X to automatically calibrate for the voltage swing of the sine/cosine signals output from the Ritchie Magtronic/MM-200 system. Refer to section 4.3 page 22 for Ritchie auto compensation procedure.

It is also required that a separate 12 Volt input be supplied to the Ritchie Magtronic compass as indicated on the following diagram.



**Figure 3-5 CI300X connection to Ritchie Magtronic Compass**

Notes regarding auto compensation of Ritchie heading sensors:

1. If heading sensor is installed without the MD-100 display:  
 Connect Terminal 3 of JP1 (BROWN wire ACI Bus) to Terminal 5 (Black wire GND) with a jumper wire to set the heading sensor into AUTO CALIBRATE mode. Perform auto compensation procedure with jumper connected. Disconnect the jumper prior to doing autopilot Comp. calibration, and leave jumper disconnected during normal operation. (Refer to section 4.3 page 22).
2. If Ritchie MD-100 Digital Display is installed, compass compensation mode can be accessed by pressing a pencil point into small opening as shown. Perform auto compensation of Ritchie sensor prior to doing autopilot Comp. calibration. (Refer to section 4.3 page 22.)

### B & G Super Halcyon 3 Installation

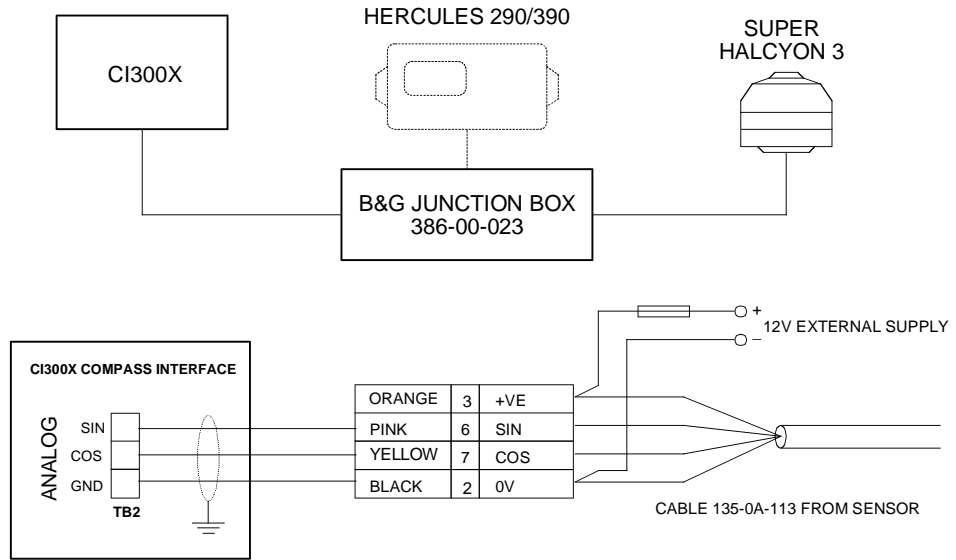


Figure 3-6 B & G Super Halcyon 3 Installation

### VDO Adis 360 Installation

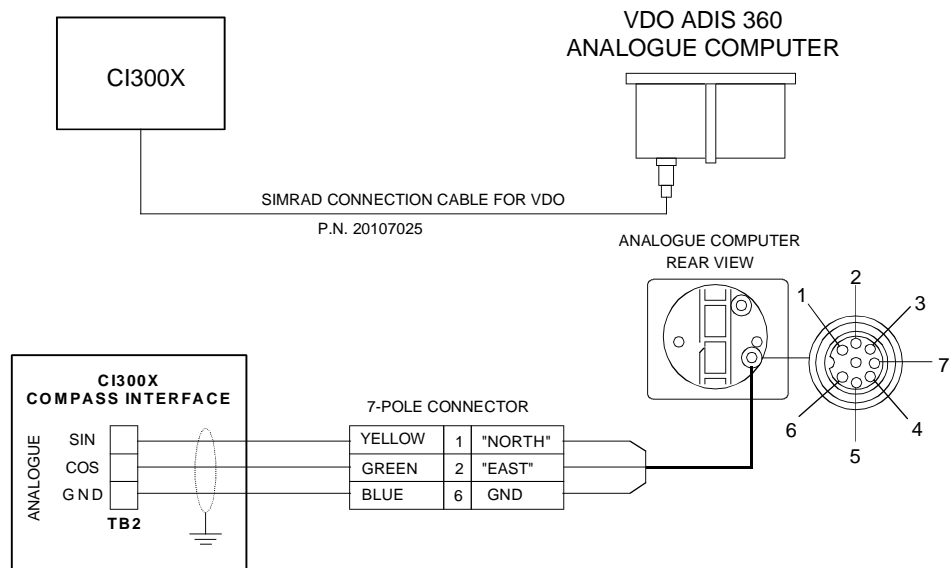
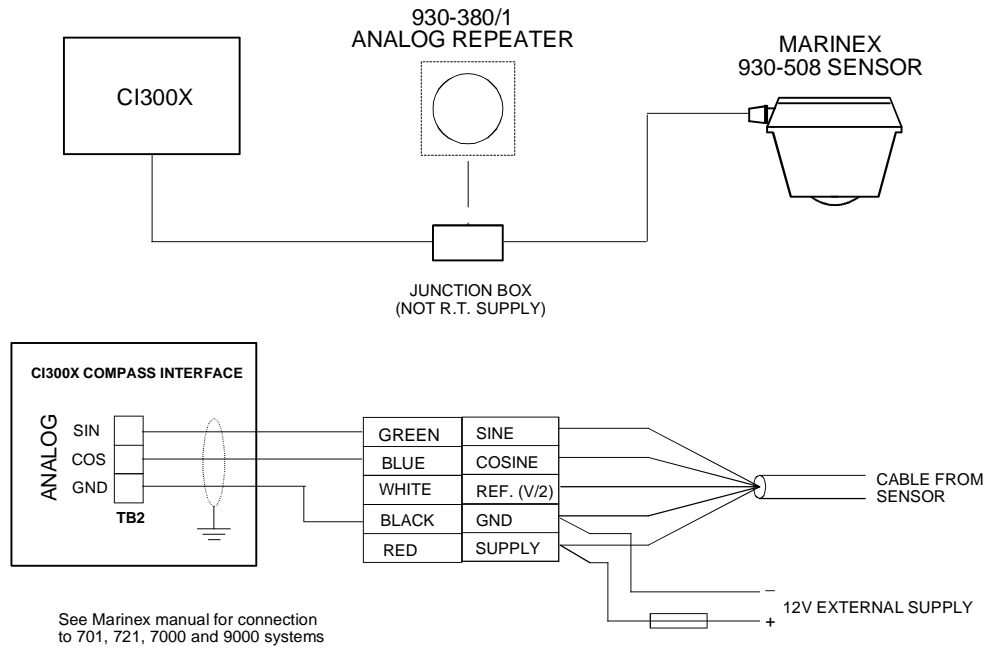


Figure 3-7 VDO Adis 360 Installation



### Marinex 930-508 Installation



**Figure 3-8 Marinex 930-508 Installation**

### 3.4 Analog Windvane Installation

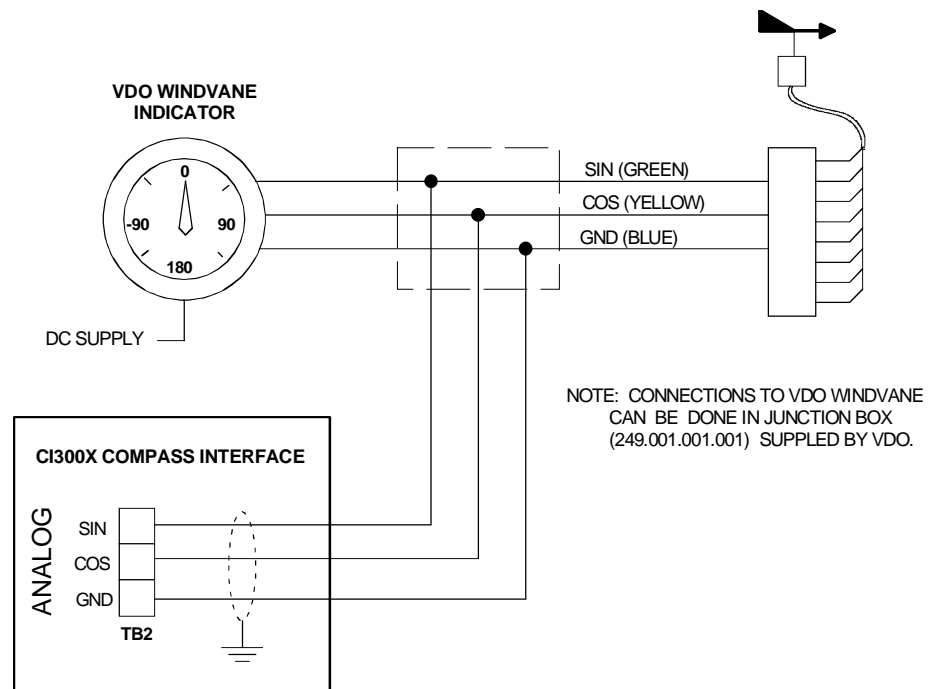
Installation of analog windvanes involves 3 steps:

1. Mechanical installation of windvane
2. Performing installation interface setup to assign the Wind menu selection in the Interface Setup menu to CI300X.
3. Performing windvane calibration procedure (similar to compass calibration) and windvane offset to align the precise wind angle. Windvane Calibration and Windvane Offset appear as added items to the Seatrial Settings Menu only when Wind is set to CI300X in the Interface Setup Menu.

Note!

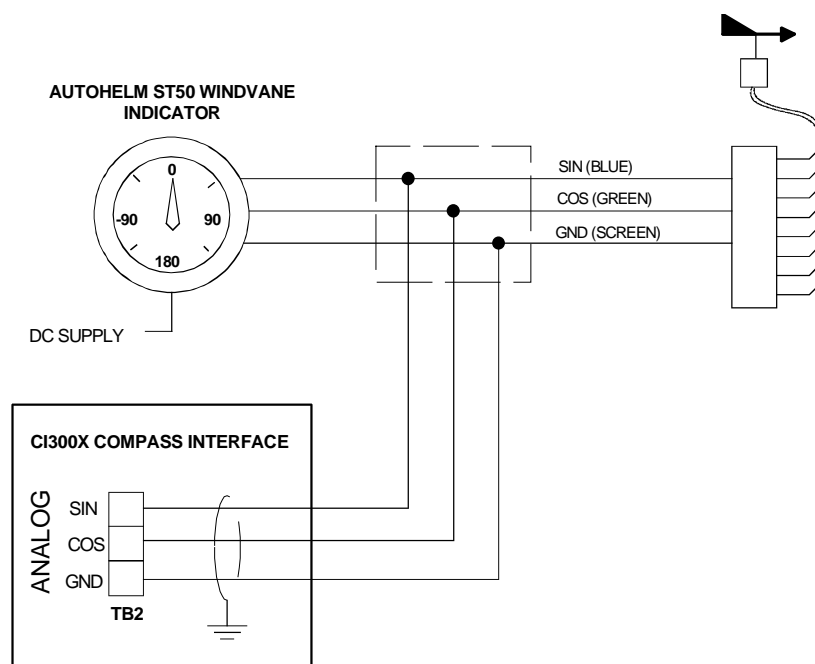
*Analog windvane installation does not apply for AP35 and AP50 autopilots.*

#### VDO Windvane Connection to CI 300X



**Figure 3-9 CI300X connection to VDO windvane system  
(402.102./4/7)**

## Autohelm ST50 Windvane Connection to CI 300X



**Figure 3-10 CI300X connection to Autohelm ST50 windvane system**

### 3.5 Simrad RGC Gyrocompasses (1:1 synchro)

**Mechanical Installation (refer to specific gyrocompass manual)**

#### Electrical connection to CI 300X

The CI300X enables direct 1:1 synchro connection from the output of a Simrad RGC50, RGC10 or RGC11 Gyrocompass. Refer to the diagram on page 9 and Gyro manual for specific details on interconnection of a Simrad gyro into the CI300X.

Note !

*The RGC Signal Interface Unit may be simultaneously connected to the RGC50, RGC10 or RGC11 Gyrocompass while the CI300X Compass Interface unit is connected.*

The Compass Offset within the autopilot allows for correction of the gyro heading as displayed on the autopilot control unit. If there is a significant difference between the gyro heading as displayed on the Gyro Compass Card and the autopilot heading, you will be able to dial in an offset value into the autopilot to present a correct heading on all autopilot control units. The offset allows for correction of heading, but will not correct for reversed heading direction. (When boat turns clockwise, heading counts down instead of up.) For this situation, you will need to swap the wiring of one of the secondary synchro phases.

The procedure detailed below provides a method for determining if the gyro heading is turning in the correct direction, and also describes how to insert a fixed compass offset.

### **Initial Heading and Heading Change Test**

This section describes how to verify that the heading read-out on the autopilot is following the correct direction of change along with the gyro. In some installations, it may be encountered that the autopilot heading read-out is different from the gyro heading. Two possibilities of error may exist:

1. Compass read-out on the autopilot is different from the gyro card read-out, but the difference in heading is a fixed difference through the entire rotation of the boat. This condition can be correct by simply dialling in the correct heading value from the Seatrial Menu item called Compass Offset, which is presented directly after the Compass Calibration menu item, from the Seatrial Settings Menu.
2. Compass heading on the autopilot is changing in the reverse direction from the gyro. (Autopilot heading decreases when the gyro card heading increases.) If this condition exists, it will be necessary to swap any of the following synchro secondary winding connections-into the CI300X:

Swap S1 with S2, or swap S2 with S3, or swap S1 with S3. In any case, after swapping one pair of secondary windings at the input to the CI300X, it will be necessary to re-do the Compass Calibration and re-enter the compass offset value to present a correct heading on the autopilot display.

#### **To verify the correct heading and correct heading direction:**

(This procedure assumes that the following items a - f have been accomplished already):

- a. Autopilot system has been correctly installed
- b. The gyrocompass has been installed and connected to CI300X Compass Interface.

- c. The gyrocompass has been turned on and allowed to settle for at least 3 hours.
- d. Autopilot Dockside settings have been completed.
- e. Autopilot Interface setup has been completed, with Gyro menu item assigned to CI300X in the Interface Settings Menu.
- f. Autopilot User Setup has been accessed with Gyro selected as the current heading sensor.

If items a - f are done, then:

1. Observe autopilot heading read-out compared to gyro. Write down the autopilot heading and the gyro heading.
2. Manually turn gyro to offset the gyro card reading, or unbolt the gyro and rotate it to obtain a change in heading, and watch the autopilot read-out. If the gyro heading change *increases* 10 degrees, and the autopilot read-out *increases* 10 degrees, then the synchro connection is acceptable. If the gyro heading *increases*, and the autopilot heading *decreases*, then it will be necessary to swap one set of wire connections: for example swap the wires connected to S1 and S2 into the CI300X. (Be careful not to short wires during this exercise: 110V- 400 Hz present).
3. After verifying or correcting the gyro direction with the autopilot heading read-out, it may be necessary to offset the heading read-out on the autopilot display. This will be done during the Sea-trial, directly after the compass calibration procedure is done, using the COMPASS OFFSET menu item to dial in a corrected heading for the autopilot display.

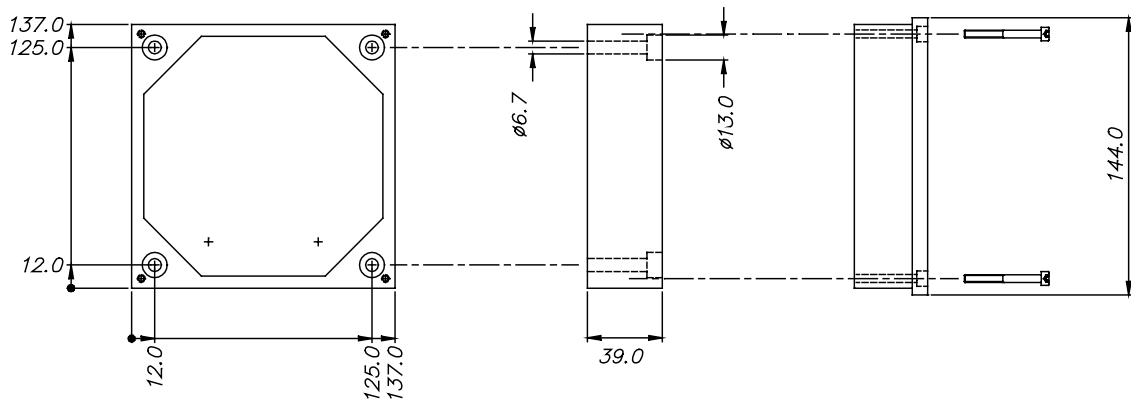
## 3.6 Steering Levers (NFU)

### S9 Steering Lever

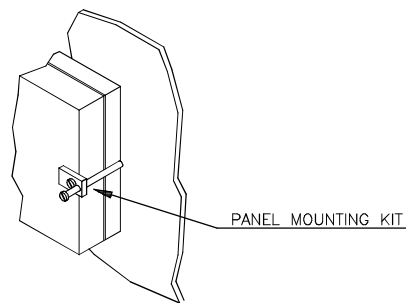
The S9 Steering Lever can be added to an autopilot system to provide remote non-follow up steering capability. The S9 is designed to be mounted in exposed locations. If it is installed in an exposed location, it is recommended to insure that the cable entry glands are tightened properly around the cable, and in addition some silicone sealant be added around cable to further eliminate water intrusion.

Note !

*You can only install one (1) S9 lever per autopilot system. The mode switching capability of the autopilot system allows for only a single S9 lever.*



**Figure 3-11 S9 Steering Lever, bulkhead mounting**



**Figure 3-12 S9 Steering Lever, Panel mounting**

Electrical connections: refer to Figure 3-2.

### S100 Steering Lever

This NFU remote control can be added to an autopilot system to provide non-follow up steering capability. The S100 lever is not designed to be mounted in exposed locations.

Note !

*There is no mode switching capability when using the S100 Steering Lever*

Electrical connections: refer to Figure 3-2.

## 4 SETUP AND CALIBRATIONS

### 4.1 Interface setup procedure

Upon installation and connection of any of the compass units that connect to the CI300X, it is required to configure the compasses in the autopilot Interface Setup Menu.

The procedure to access the Interface Setup Menu is detailed in the autopilot manual.

If you installed any of the following compasses, it will be necessary to assign CI300X to the appropriate menu selection in the Interface settings menu:

Magnetic Compass: Assign MAGN: CI300X

Gyro compass (RGC50 or RGC10/11) Assign GYRO: CI300X

Other manufacturers fluxgate: Assign FLUXG: CI300X

In addition, if you connected an analog windvane, you will need to assign CI300X to the Interface menu setting for WIND (Does not apply for AP35 and AP50 autopilots).

### 4.2 Magnetic Compass Compensation Prior to Sea Trial Calibration within the Autopilot

It is not within the scope of this appendix to describe how to compensate a magnetic compass. However, if the magnetic compass card is not compensated for on-board magnetic deviation, the heading read-out on the autopilot may be in error, and the steering performance of the autopilot system may be degraded.

### 4.3 Other Fluxgate Calibration Prior to Autopilot Calibration

This section provides detailed instructions on how to calibrate some non-Simrad fluxgate compasses prior to performing the autopilot Compass Calibration procedure. The following is the sequence required for proper calibration of both the non-Simrad fluxgate compass and the autopilot system:

Procedure	Purpose
Other manufacturers fluxgate Compass Calibration	Calibrates internal deviation corrections inside non-Simrad fluxgate compass.
Autopilot Compass Calibration	Adjusts for the Minimum - Maximum voltage swing of sin/cos input to CI300X from non-Simrad fluxgate compass.
Autopilot Compass Offset	Permits continuous offset of heading read-out on autopilot display

What this means is that you will need to do separate calibration/compensation maneuvers in order to satisfy both the calibration requirements of the fluxgate compass and the calibration requirement of the autopilot system. In addition, when both calibrations are completed, the Compass Offset feature in the autopilot system will allow you to offset the heading read-out if there is a constant offset for all headings. (Compass Offset can be used instead of mechanically turning the fluxgate sensor.)

Note that if the non-Simrad fluxgate compass includes a remote display or is connected into a display system in addition to the autopilot, that using the Compass Offset will only affect the heading read-out on the autopilot system displays. In the case where additional non-Simrad remote displays are connected to the fluxgate sensor, it is recommended to mechanically turn the fluxgate sensor to correct for any offset instead of using the Compass Offset feature in the autopilot system.

## Ritchie Magtronic Compass Compensation

### Calibration procedure (for Ritchie magtronic heading sensor without a Ritchie display).

1. Supply 12V to the Ritchie compass system.
2. Install a jumper wire at JPI terminal 3 to JP1 terminal 5 (Brown wire ACI bus connected to Black wire- GND)
3. Rotate the vessel through two complete 360 degree turns. Each turn should take longer than 1 minute to complete.
4. Remove the jumper wire that was installed in STEP 2 above.
5. Proceed to the autopilot sea-trial procedure (including Compass Calibration and Compass Offset.)



**Calibration procedure (for Ritchie magtronic compass with a Ritchie display)**

1. Supply 12V to the Ritchie compass system.
2. Turn on the Ritchie compass display.
3. Insert a small pointed tool into the small round button on the right side of the Ritchie display (refer to Note 2 on page 13) The Ritchie compass display will show the word COMP to indicate the auto compensation is in effect.
4. Rotate the vessel through two complete 360 degree turns. Each turn should take longer than 1 minute to complete. At the completion of successful compensation, the Ritchie display will indicate “DONE”.
5. Proceed to the autopilot Seatrial procedure (including Compass Calibration and Compass Offset.)

**B&G Super Halcyon Compass Compensation**

See procedure enclosed with the B&G Super Halcyon Compass.

**VDO Adis 360 compensation**

See procedure enclosed with the VDO Adis 360 Compass.

## 5 TESTING OPTIONAL EQUIPMENT CONNECTED TO CI 300X

### 5.1 Compass Testing

#### Testing Magnetic Compasses and Non-Simrad Fluxgate Compasses

Testing magnetic compasses and non-Simrad fluxgate compasses will require the following:

1. External power must be turned on (if fluxgate compass is used).
2. The Dockside Setup Menu must be successfully completed.
3. The Autopilot Interface Menu must be accessed and the correct compass menu selection must be set to CI300X.
4. The User Setup Menu must be set so that the correct compass is selected as the current compass sensor.
5. The heading on the autopilot display should match the compass heading. A method of determining if the heading sensor that is selected is providing signal to the autopilot system is to bring a magnetic object close to the compass (or fluxgate sensor) to see if the heading changes on the autopilot display.
6. If the heading on the autopilot changes when a magnetic object is moved around the selected compass, then proceed to follow the procedures for compass compensation, and also the autopilot Compass Calibration procedure. Only after the compass has been compensated, and the autopilot Compass Calibration has been done, should the Compass Offset adjustment be set to correct the autopilot heading to be the actual ship's heading.

#### Testing Simrad RGC Gyrocompasses

Testing the RGC50 or RGC10/RGC11 Gyrocompasses connected to an autopilot system will require the following:

1. The RGC gyro must be turned on and stabilized (3-4 hours required for gyro to stabilize).
2. The Dockside Setup Menu must be successfully completed.
3. The autopilot Interface Menu must be accessed and the Gyro Menu selection must be set to CI300X.
4. The User Setup Menu must be set so that the Gyro is selected as the current compass sensor.

5. The heading on the autopilot display should match the gyro heading. If it doesn't, proceed with the procedure detailed in "Initial Heading and Heading Change Test" page 18 for details on how to test the gyro heading and heading change.

## 5.2 Steering Lever Testing

If the system includes either an S9 or an S100 Steering Lever, it is mandatory that the test for direction of movement be performed at the dock to verify that the rudder moves in the correct direction. Since the S9 levers can be installed in either orientation of lever pointing up or down, the PORT or STBD command direction may need to be changed in the wiring to the CI300X Compass Interface.

The following table provides a description of the actions that will result in the autopilot system with either the S9 lever or the S100 lever installed.

Note !

*If the "Lock" function is enabled in the autopilot system any steering lever connected to CI300X will be disabled. In a "Wheelmark" system, all steering levers are locked at power on.*

Type of lever used	Action in STBY Mode	Action with pilot in AUTO mode	Action with pilot in NAV mode	Mode Switching method
S9 lever (with integral mode switch)	Rudder moves when lever is offset to PORT or STBD. (Lever must be lifted before use)	When lever is lifted mode switches to STBY, and the lever is in command. When lever is offset to PORT or STBD, the rudder moves. When the lever is pressed down, the mode returns to the AUTO mode, and set course is the present heading. Keeps Work mode if set before lever is lifted.	When lever is lifted mode switches to STBY, and the lever is in command. When lever is offset to PORT or STBD, the rudder moves. When lever is pressed down, the mode returns to AUTO mode, and set course is the present heading. Keeps Work mode if set before lever is lifted.	Internal switch in S9 lever
S100 lever	Rudder moves when lever is offset to PORT or STBD.	Course change is 1 degree/second, then 2 degrees/sec.	None	Mode must be switched to STBY from control unit.

**Caution**

*When either the S100 or S9 lever are activated, command is transferred to the steering lever. All control units will show “Inactive”. To regain command at any control unit, you must press a mode button (STBY, AUTO, NAV).*

*If an S100 lever is used, it must be installed within reach of a control unit so that mode switching can be accomplished from the control unit.*

**Note !**

*In an AP50 “Wheelmark” system, all remote levers are locked at “power on”. A quick double press on the master unit’s STANDBY button enables the levers.*

**Testing the S9 Steering Lever:**

1. Set the autopilot into STANDBY mode. Note the rudder angle.
2. Pull up on the S9 lever to unlock the lever and set the lever “Active”. Note that all Control units in the system show “Inactive”.
3. Move the lever to PORT.
4. If the rudder moves to PORT proceed with the testing. If not, then turn the autopilot system off, and swap the wires at the CI300X into the NFU terminals marked PORT and STBD. Then repeat steps 1-4, and continue with step 5.
5. Go back to the S9 lever, and push it in, and then pull the handle back out to re-activate the lever. Repeat steps 2 and 3 except move the S9 handle to STBD.
6. If the Rudder moves to STBD, then the lever direction connections are correct.

**S100 Steering Lever testing:**

1. Set the autopilot into STANDBY mode.
2. Move the lever on the S100 to PORT for 3 seconds. The lever will become “Active” and all control units should become “Inactive”
3. If the rudder moves to PORT proceed with the testing. If not, then turn the autopilot system off, and swap the wires at the CI300X into the NFU terminals marked PORT and STBD. Then repeat steps 1-3, and continue with step 4.
4. Repeat steps 2 and 3 except move the S100 handle to STBD.
5. If the Rudder moves to STBD, then the lever direction connections are correct.

## 6 SPARE PARTS LIST

22081137	CI300X Compass Interface
22082044	CI300X PCB Ass'y
20193256	Box
20193264	Cover
44138816	Cover Nutknobs
20191607	RobNet Cable 7 m (23') with Male Connectors
44139400	Cover for Plug

