Actisense
Award Winning NMEA Specialists

Important Notices
The device to which this manual relates complies with the Electromagnetic Compatibility requirements according to EN60945. The unit should always be used in conjunction with appropriately approved, shielded cable and connectors as per NMEA 0400 to ensure compliance. A declaration of conformity is available for download at www.actisense.com.

If the device to which this manual relates is to be installed within five metres of a compass, please refer to the 'Compass Safe Distance' section in the 'Technical Specifications' table.

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Fair Use Statement

Product Registration
Please register your product via the online form at:
http://www.actisense.com/product-registration/

Your product package includes a unit serial number. The serial number is six digits long and can be found below the barcode on the label. Your registration will assist Actisense Support to link your product to your details, simplifying any future assistance you may require.

Product Disposal
Please dispose of this product in accordance with the WEEE Directive. The product should be taken to a registered establishment for the disposal of electronic equipment.

Technical Accuracy
To the best of our knowledge the information contained in this document was correct at the time it was produced. Active Research Ltd cannot accept liability for any inaccuracies or omissions.

The products described in this manual and the specifications thereof may be changed without prior notice. Active Research Ltd cannot accept any liability for differences between the product and this document. To check for updated information and specifications please check actisense.com.

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Product Guarantee
This product comes with a three year 'return to base' guarantee. If you suspect that the unit is faulty please refer to the Troubleshooting Section of the User Manual before contacting support.

It is a requirement of the guarantee that all installations of electronic equipment follow the NMEA 0400 specification. Any connection to a battery or power supply must meet the mandatory essential safety requirements that may be imposed by local regulatory agencies.

Actisense products are intended for use in a marine environment, primarily for below deck use. If a product is to be used in a more severe environment, such use may be considered misuse under the Active Research Ltd guarantee.

Introduction & Features
The five NMEA 0183 inputs can be routed to any of the two NMEA 0183 outputs, as well as the serial and Ethernet ports providing a highly customisable network. The bi-directional serial port and Ethernet port also allow for simple configuration and diagnostics using Actisense software.
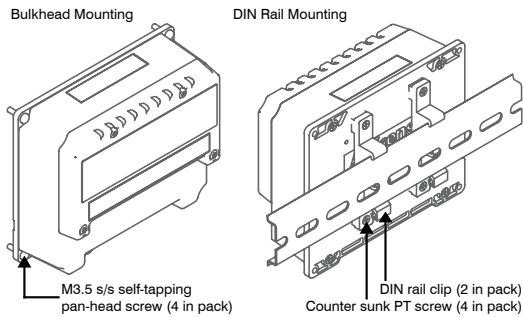
Industry leading isolation is provided on all inputs and outputs as standard, so that connected devices safely avoid hazardous ground loops, the number one cause of product failure in NMEA 0183 networks. This makes the NDC-5 robust enough to handle any NMEA 0183 installation.

Before getting started
The wire colours used in this quick start guide are in accordance with the NMEA 0183 specification (v.4.10, June 2014) and are for illustration purposes only. Please ensure you check the wiring colours in the installation instructions for the device you wish to interface to the NDC-5.

Mounting the NDC-5

The NDC-5 can be mounted using a DIN rail (kit sold separately) or directly on to a flat bulkhead using the screw holes in each corner of the orange base.

Bulkhead Mounting   DIN Rail Mounting

M3.5 s/s self-tapping
pan-head screw (4 in pack)

DIN rail clip (2 in pack)
Counter sunk PT screw (4 in pack)

Powering the NDC-5

The NDC-5 can operate between 9 and 35 VDC and will typically use 110mA at 12 VDC. The power supply should be connected to the NDC-5 in accordance with the diagram below.
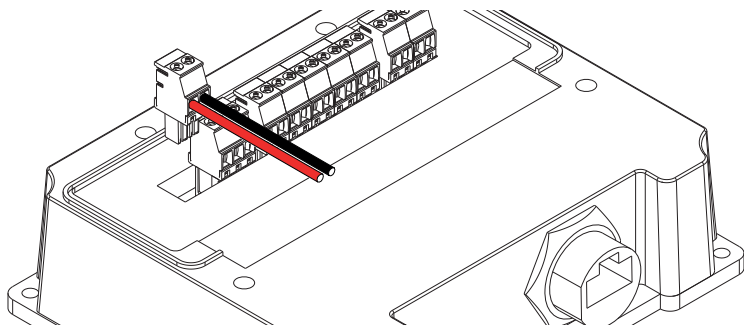
Web browser configuration tool

The Configuration Tool for the NDC-5 is built-in and can be accessed via the Ethernet connection. An internet connection is not required to access the Configuration Tool. The factory default log-in for both username and password is "admin". A future firmware update will allow individual username and password log-ins to be remembered and used.

Standard Ethernet networks

If the NDC-5 is connected to an Ethernet network containing both DHCP and DNS servers, launch any popular web browser and enter 'http://ndc-xxxxxx' in to the address bar (replacing 'xxxxxx' with the product's serial number).

Direct connections or basic Ethernet networks

If the NDC-5 is connected directly to a PC (or the Ethernet network does not have a DHCP server), the NDC-5 will communicate using auto-IP by default. The auto-IP process can take up to 60 seconds to complete.

Connecting to Devices

Strands of wire must not be twisted before inserting in to the connector, this will ensure a much more secure termination than if the wires are twisted. A small flat headed screwdriver (2-3mm) is needed to loosen the screws on the pluggable connectors for the wires to be inserted or removed.
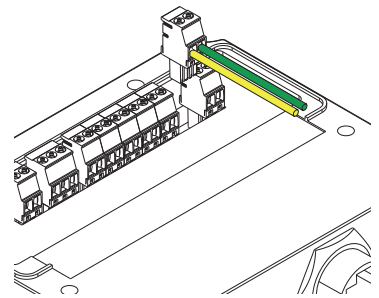
NMEA 0183 connections

| NDC-5 Label	Talker A/+	Talker B/-	Listener A/+	Listener B/-
NMEA 0183 device label	NMEA 0183 Listener/RX/ NMEA IN 'A/+'	NMEA 0183 Listener/RX/ NMEA IN 'B/-' or 'GND'	NMEA 0183 Talker/TX/ NMEA OUT 'A/+'	NMEA 0183 Talker/TX/ NMEA OUT 'B/-' or 'GND'

Connecting to an NMEA 0183 Talker
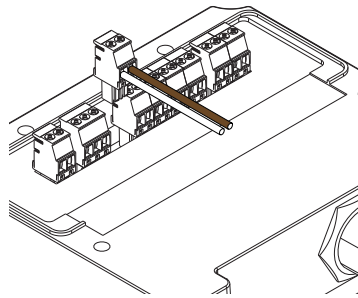
Connecting to an NMEA 0183 Listener

RS232 (serial PC) connections

NDC-5 Label	Serial IN	Serial COM	Serial OUT
Connects to DB9 Serial Port	Pin 3 / TXD	Pin 5 / GND	Pin 2 / RXD
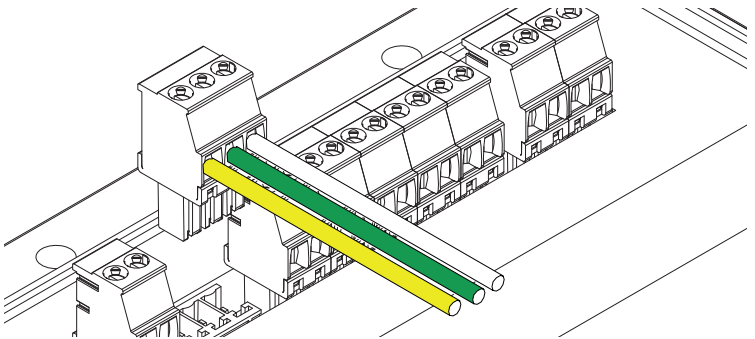
LED Behaviour - note: when illuminated, the Ethernet LED is visible through the case next to the Ethernet port

LED	Colour	State	Description	User action
Power	Blue	Pulsing	Indicates presence of power	None required
Status LED	Red	Flashing/ solid	Buffer Full – Overload condition, sentences are being dropped.	Connect device to PC browser and review configuration as a connected device may not receive all sentences
	Yellow	Flashing/ solid	Warning, buffer is filling. Duplicate deletion is managing to maintain output capacity by deleting older copies of sentences	Review configuration to understand the required rates of sentences which is acceptable to any connected device
	Green	Flashing/ solid	No error	No action required
	-	Off	No data passing through outputs. Either no input data, or if RX LED is active it means all data is blocked.	Check if connected Talker is sending data. If it is, review configuration.
RX	Green	Flashing	Data available on any one of the NDC-5 inputs	No action required
	-	Off	No data available on this input or autobaud detection in progress (up to 20 seconds)	Check if connected Talker is sending data. If it is, review configuration.
Ethernet	Green	Flashing	Data activity on the Ethernet port	No action required
	-	Off	No data available	Check data Ethernet network
Power and status (Combined)	Power = blue Status = red	Power = on, Status = on	Critical HW Error Both Power & Status LEDs are solid	Return to manufacturer if this persists after a power reset