



# Quick Start Guide

# PRO-BUF-2

## Intelligent Type Approved NMEA Buffer

Web: [www.actisense.com](http://www.actisense.com)  
 Email: [sales@actisense.com](mailto:sales@actisense.com)  
 Tel: +44 (0)1202 746682  
 UK, BH17 0GE  
 Dorset  
 Poole  
 21 Harwell Road  
 Active Research Ltd



Connect without limits



## Important Notices

The device to which this manual relates complies with the Electromagnetic Compatibility requirements according to: IEC60945:2002-08, DNVGL-CG-0339:2019 & IACS UR E10 Rev7. 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](http://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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## 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.

## Product Registration

Please register your product via the online form at [www.actisense.com/support/prodreg](http://www.actisense.com/support/prodreg).

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 Guarantee

All Actisense products are provided with a 3 year guarantee as standard. To activate the 5-year guarantee offered with this product please complete product registration either online at [www.actisense.com/support/prodreg](http://www.actisense.com/support/prodreg) or by completing and returning the warranty card supplied in the box with the product.

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

PRO-BUF-2 is reliable, robust, type approved device which provides industry leading isolation on all inputs and outputs as standard, enabling safe connection of all devices and avoiding hazardous ground loops. With two NMEA 0183 inputs, twelve NMEA 0183 outputs, a bi-directional serial port and an Ethernet port, the PRO-BUF-2 is a perfect solution for large networks on commercial shipping, class society vessels and leisure vessels.

The PRO-BUF-2 is designed to suit the majority of NMEA 0183 systems and ready to go 'out of the box' by simply hard-wiring the two mode inputs as required which can drastically reduce installation time with no complicated setup required. Helpful LEDs indicate power, data in, data out, status and the alarm status to aid diagnostics.

## Before getting started

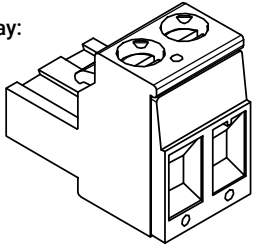
The wire colours used in this quick start guide are in accordance with the NMEA 0183 specification (v.4.10, June 2014) and are for illustration purposes only. Please ensure you check the wiring colours in the installation instructions for the devices you wish to interface to the PRO-BUF-2.

# Terminals

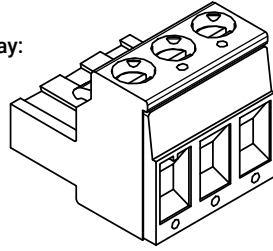
The PRO-BUF-2 comes with 2-way and 3-way screw connectors. Screwless connectors are available as an accessory.

## Screw Connector

2-way:



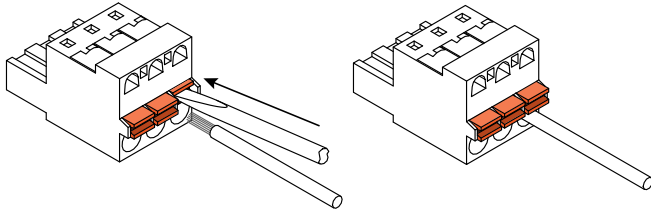
3-way:



## Screwless connector

Open the clamp inside the screwless connector by pressing down on the orange button with a small (2mm) flat headed screwdriver. This will allow the wire to be inserted. For best connections do not twist the wire strands.

Release the orange button to lower the clamp on to the wire strands for a secure termination.



## RF Ground

The shield from each Listener should be connected to the  $\text{rfl}$  terminal on the PRO-BUF-2 'Isolated Talkers' ports. All  $\text{rfl}$  terminals are connected internally and form a common bonding point at the RF ground stud.

The RF ground stud should be connected to the vessels RF ground plate using a minimum conductor size of 8 AWG (10mm<sup>2</sup>) in accordance with NMEA 0400, (in version 3.1, this is in section 3.2).

## Operating Modes

The PRO-BUF-2 can be configured manually using the 'Mode' pins (also referred to as 'hard-wiring') or user configured via the Configuration Tool. Manually configuring the PRO-BUF-2 takes priority over any user configuration.

## Hard-wiring the operating modes

For a list of modes and how to set them up, please refer to the 'Mode Table' sheet included with the PRO-BUF-2 or available from the PRO-BUF-2 'Downloads' page on the Actisense website.

## LED functions

Name	Description
'PWR'	Pulses blue to indicate presence of power.
'Out'	Flashes at a rate determined by baud rate and data length.
'In'	Flashes on receipt of valid data.
'Serial' In/Out	As 'In' & 'Out' above.
'Ethernet'	Green LED for activity, yellow LED for line speed: off = 10Mbps, on = 100Mbps.
'Alarm'	Red during alarm condition.
'Mode'	Number of flashes = mode number. Refer to 'Mode Table' sheet for full details.
'Status'	LED Changes colour depending on buffer state. Refer to User Manual for full details.

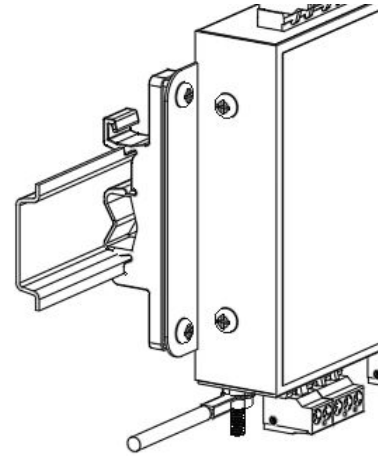
# DIN rail fixing

Install the DIN rail in the desired location.

Attach the PRO-BUF-2 to the DIN rail as shown in the diagrams below.

Ensure the PRO-BUF-2 sits flush against the Actisense DIN-KIT-1 clips, and that the rail clips are securely fastened to the DIN Rail.\*

Please note, the Actisense DIN-KIT-1 is an accessory, and is not supplied with the PRO-BUF-2.



## Web browser configuration tool

The Configuration Tool for the PRO-BUF-2 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".

Standard Ethernet networks

If the PRO-BUF-2 is connected to an Ethernet network containing both DHCP and DNS servers, launch any popular web browser and enter '//probuf-xxxxxx' in to the address bar (replacing 'xxxxxx' with the product's serial number).

Direct connections or basic Ethernet networks

If the PRO-BUF-2 is connected directly to a PC (or the Ethernet network does not have a DHCP server), the PRO-BUF-2 will communicate using auto-IP by default. The auto-IP process can take up to 60 seconds to complete.

## Basic tech specs

Power Supply	
Input Supply Voltage	10 to 35 V DC
Input Supply Current	325mA max @ 12V DC (all outputs @ full drive into 100 ohm loads)
NMEA 0183 Port - Listener & Talker	
Compatibility	RS422 & RS232 compatible. RS485 Listener compatible
Speed / baud rate	4800 to 38400 bps
Talker Output Current Drive	20 mA maximum per output
Isolation	
NMEA 0183 Listener	OPTO-Isolated, Hi-Pot tested to 1000V
NMEA 0183 Talker	Uses IsoDrive™, Hi-Pot tested to 1000V
Serial Port	Uses IsoDrive™, Hi-Pot tested to 1000V
Alarm Relay	Hi-Pot tested to 1000V
Ethernet Port	2kV for 60s
Mechanical	
Mounting	Bulkhead mount or DIN rail mount (DIN kit 1)
Connectors	Pluggable 2/3-way screw terminals, 5.08mm pitch (12 to 30 AWG)
Approvals and Certifications	
Compass Safe Distance	750mm