

How to configure an NDC-5 Multiplexer



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NDC-5 Configuration Guide

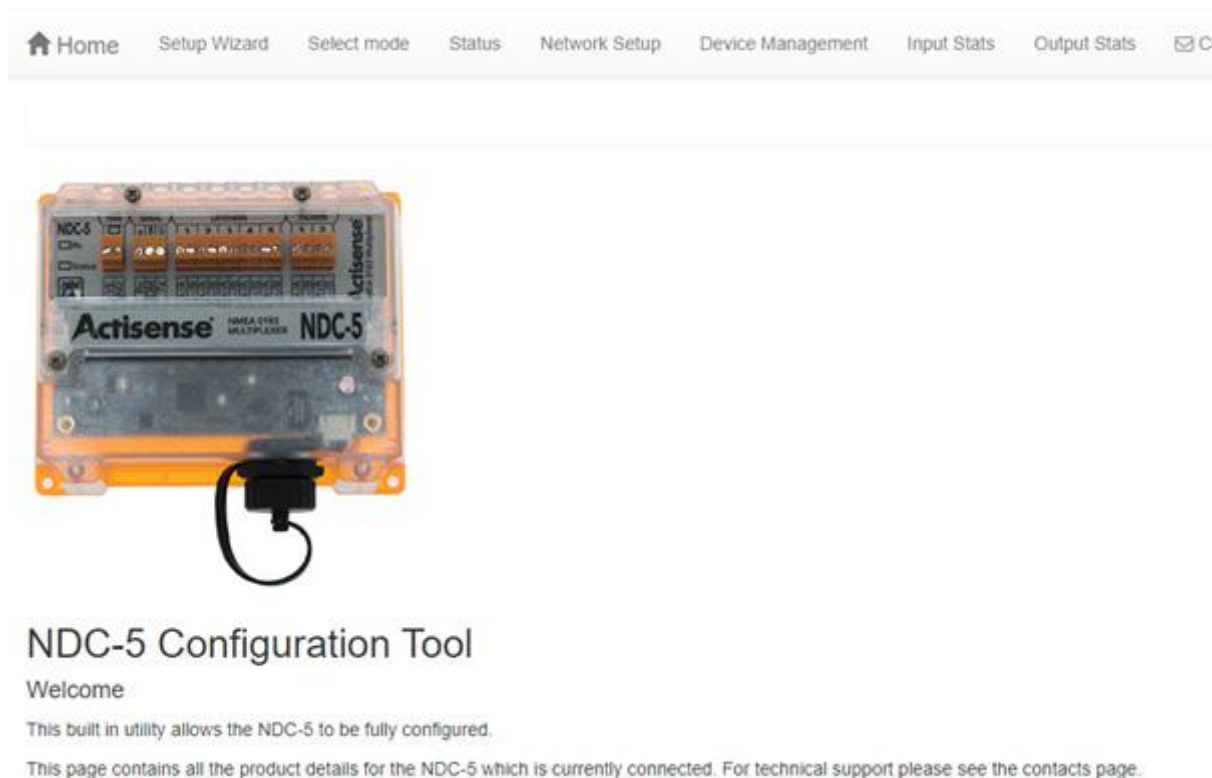
Guide to configuring an NDC-5

The Actisense NDC-5 is a very powerful multiplexer / router, capable of filtering, advanced filtering, directing sentences to specific connected listeners, and auto bauding. With this guide, the user will be able to better understand the power and capability of the NDC-5 within an NMEA 0183 network.

Connecting to the device

Full details on connecting to the web interface on the product are found within the NDC-5 User Manual, which is downloadable from our website. For the example used here, the device is connected to a DHCP network router via an Ethernet cable.

To connect to the device, enter 'http://ndc-xxxxxx' into any web browser (xxxxxx is replaced by the serial number, e.g. ndc-123456). Once the device has been connected to, the following web page will appear:



This is the 'home page' for the web interface, giving an overview of product info including firmware version, web file version, power, current operating mode selected etc...

From here, any of the different pages can be accessed using the ribbon at the top of the page.

Please note, that if this is the first time using the device, or the web cache has been cleared, then the username and password are required. UN = Admin, PW = Admin.

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Setup Wizard

Selecting the set-up wizard option will go to a page where all pre-existing user defined configurations can be modified, and a new configuration can be created for the device. The following page will appear when the setup wizard option is selected:

The screenshot shows a web interface for configuring a user-defined mode. At the top left is a 'Previous' button. Below it is the heading 'User-Defined'. There are two radio button options: 'NDC_5' (selected) and 'New User Mode'. Below 'New User Mode' is a link for a 'Detailed description of new user mode'. At the bottom of this section are 'Previous', 'Cancel', and 'Next' buttons. Below these buttons are two text input fields: 'Mode Name:' containing 'NDC_5' and 'Mode Description:' containing 'NDC_5'.

If the device is being used for the first time, there will be no options other than 'New User Mode' in this page as it will be a new configuration for the first time.

Once the New User Mode option is selected, the page presented will allow for a custom name and description to be given to the configuration, and a mode to base the new configuration from using another user defined mode:

Once the mode has been named and a base configuration selected, the baud rate configuration page will be shown. Here the baud rate is individually configurable for each input port and output port, and a 'friendly name' can be given to each port. There are two routes that can be taken here for talker devices connected to the inputs:

1. The device is left on the autobaud configuration, meaning that the NDC-5 will adjust the baud rate on each input port dependant on the baud rate of the talker device connected to it.

(Autobaud is only available on Ports 1-4, Input 5 is fixed to 4800).

2. The device can be configured for each port manually, giving the user more control over the configuration if the autobaud feature is not preferred.

After configuring the Input ports, the Output ports can be configured. The Output ports can be set up to either follow the baud rate on the chosen Input or set to a manually selected value. It is important to highlight that only Output 1 can be set to 115200 baud; Output 2 has a maximum baud rate of 38400.

Warning: Manually setting the output baud rate slower than the input baud rate may result in the loss of data due to limited bandwidth. Consult the Stats page to view the output loading. The Status LED on NDC-5 will also indicate overload status - consult user manual.

Once the device's Input and Output ports have been configured for desired baud rates and named, the mode will be set like the image below:

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Operating mode: NDC_5

Bi-directional Ports SERIAL	Baud Rate 115200 ▼		
Input Ports	AutoBaud	Baud Rate	Friendly Name
IN1	on ▼	4800 ▼	GPS 1
IN2	on ▼	4800 ▼	GPS 2
IN3	on ▼	4800 ▼	AIS
IN4	on ▼	4800 ▼	USG-2
IN5		4800 ▼	WIND
Output Ports	Baud Rate Follows	Baud Rate	Friendly Name
OUT1	MANUAL ▼	38400 ▼	NGW-1
OUT2	MANUAL ▼	4800 ▼	AP

From this point onwards, the Friendly names entered in the previous page for the baud rate configuration will prove very useful in setting up the rest of the steps on the current user mode, because they carry through.

The next web page on the configuration is for defining alarms and how they operate.

Alarms

The alarm feature is a powerful feature of the NDC-5. It allows the user to identify various states and have a message sent by the NDC-5 to identify what Alarm has triggered. (Message must be enabled by ticking 'Action: Send Message' option for each alarm):

- Autoswitch: NDC-5 will Autoswitch (if enabled) between one or more inputs, and will output the following message if Autoswitch is performed:

\$MXALR,hhmmss,004,NDC-5|208505|Autoswitch

- Data Overload: NDC-5 will determine if too much data is being sent at one time to a port, and will output the following message if enabled:

\$MXALR,hhmmss,002,NDC-5|208505|Combine: Data overload

- Low Voltage: NDC-5 will notify if the voltage level is too low for the device, and will output the following message:

\$MXALR,hhmmss,003,NDC-5|208505|Voltage Alert: PWR <Measured Voltage>

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Basic Routing

Basic routing functions on the NDC-5 are designed to give the user control over which Outputs receive sentences from the Inputs. The purpose of routing is to essentially dismiss messages that are not required for certain devices. This is better explained in the example below, where the following has been configured:

Basic Routing		
Input Ports	SERIAL	OUT1 (NGW-1)
	<input type="button" value="Clear All"/> <input type="button" value="Set All"/>	<input type="button" value="Clear All"/> <input type="button" value="Set All"/>
SERIAL	<input type="radio"/> BLOCK ALL	<input type="radio"/> BLOCK ALL
IN1 (GPS 1)	<input checked="" type="radio"/> PASS ALL	<input checked="" type="radio"/> PASS ALL
IN2 (GPS 2)	<input type="radio"/> BLOCK ALL	<input type="radio"/> BLOCK ALL
IN3 (AIS)	<input checked="" type="radio"/> PASS ALL	<input type="radio"/> BLOCK ALL
IN4 (USG-2)	<input type="radio"/> BLOCK ALL	<input checked="" type="radio"/> PASS ALL
IN5 (WIND)	<input type="radio"/> BLOCK ALL	<input checked="" type="radio"/> PASS ALL

- IN 1 GPS data goes to Serial, OUT 1 and OUT 2
- IN 2 GPS is being blocked to every output in this example
- IN 3 AIS goes to Serial and OUT 2
- IN 4 USG-2 goes to OUT 1

Note that the friendly names are used here to provide easy identification of the device on each input. This is extremely useful for an installer who may be visiting the vessel for the first time, as it saves a large amount of time which would otherwise be spent tracing wires back to understand what device is connected to each I/O Port.

Advanced Routing

Basic routing here gives a good amount of control over the Inputs and Outputs, however sometimes it is required to go further into the connections and define what messages specifically from each Input device are sent to each Output. This is where advanced routing comes in.

For example, if the GPS on IN 1 is sending 10 messages, but only 3 of these are required for the NGW-1 then the advanced routing can be used to filter out unnecessary sentences. Advanced routing is an extremely powerful tool which can be used to reduce the amount of 'traffic' from messages going to a certain Listener, which can be especially useful if the device connected to the output has a lower baud rate (lower bandwidth).

Once the NMEA 0183 talker (GPS) is sending data to the NDC-5, the 'Capture Live Sentences' option in the Advanced Routing page can be used to automatically populate the table with every sentence currently available. These sentences must be ticked to 'Enable Rule', which will begin to further populate the table with 'Block' and 'Pass' options for each output.

From here, all sentences which are not required for the specified Outputs must be blocked, and the ones required for each listener set to 'pass'. See diagram below:

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Capture live sentences

Advance Routing

Input Channel	Rule (sentence)	Enable Rule	SERIAL		OUT1 (NGW-1)	
			Clear All	Set All	Clear All	Set All
IN1 (GPS 1)	GPDTM	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	BLOCK
IN1 (GPS 1)	GPGGA	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	PASS
IN1 (GPS 1)	GPGLL	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	PASS
IN1 (GPS 1)	GPGSA	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	BLOCK
IN1 (GPS 1)	GPGSV	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	BLOCK
IN1 (GPS 1)	GPRMB	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	PASS
IN1 (GPS 1)	GPRMC	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	BLOCK
IN1 (GPS 1)	GPVTG	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	BLOCK
IN1 (GPS 1)	GPXTE	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	BLOCK
IN1 (GPS 1)	GPZDA	<input checked="" type="checkbox"/>	<input type="radio"/>	BLOCK	<input type="radio"/>	BLOCK

Autoswitch Configuration

Autoswitching is a function where the device determines if the data on the Input is present and will switch to another user determined Input if it is not.

By selecting the tick box for ASW 1 or/and ASW 2, it enables the Autoswitch function on the device, and by selecting the 'Config' button it will prompt a second dialogue box to appear where the priority of the devices can be defined.

As seen in this screenshot, the NDC-5 has been configured on ASW1 to have IN1 as the primary, and to switch to IN2 as the secondary if IN1 fails. The priority is defined from left to right, where left is highest priority.

