R·sensors

Appendix 5

Web Interface NDAS Basic Web UI

User Guide

version 01

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APPENDIX 5. NDAS Basic Web UI web interface

General Information

The document describes the capabilities of the web interface NDAS Basic Web UI version 1.1. The web interface is designed to configure NDAS devices on smartphones and tablets. The web interface can be accessed through the browser of any device connected to the same network to which the device is connected. The device's web interface allows you to perform the same operations as the NDAS program, except for editing the table of recording schedule.

The web interface is supported by NDAS One devices starting with firmware version 3.4, however a full compatibility is guaranteed starting from version 4.3 and higher.

Below is a table of compatibility with the most common browsers.

Microsoft Internet Explorer 11	Windows 7, 8, 10	Full compatibility
Microsoft Edge 17	Windows 10	Partial compatibility
Google Chrome 67	Windows 7, 8, 10 Linux iOS Android	Full compatibility
Mozilla Firefox 61	Windows 7, 8, 10 Linux iOS Android	Full compatibility
Opera 54	Windows Linux MacOS	Full compatibility
Opera mini	iOS Android	Not checked
Safari 11	MAC OS	Not checked
Safari (iOS)	iOS	Full compatibility

Detection of the device and opening of the web interface

Access to the main web page of the interface can be done by referring to the local domain name of the device, represented as <serial number> .local (for example, RS003601.loca l), either directly by an IP address.

To access an IP address, enter “http://xxx.xxx.xxx.xxx” in the address bar, where xxx.xxx.xxx.xxx is the device's IP address.

In case the device operates in the "station" mode, you need to know the IP address. This can be done in the NDAS App. To simplify the search for a device, you can assign a predefined IP to a device. Most networks use the DHCP server of the router to obtain IP. To reserve a specific IP address, refer to the user manual of your router. If there is no DHCP server on the network, the IP address must be set in the static IP settings in the instrument parameters.

If the device operates in the "access point" mode, then the device has its own DHCP server, which always assigns to the device itself the IP address 192.168.0.1.

To access a local domain name:

- On a PC under Windows. In the browser address bar, type the device address in the format http: //XXXXXXXX.local, where XXXXXXXX is the device serial number, for example, RS003601.local.
  To work correctly with local domain names, the Apple Bonjour printing service must be installed, which is available on the FTP server at:
  ftp://download.nordlab.com/NDAS/Miscellaneous/Bonjour/
  and also at the link:
  http: // support. apple.com/downloads/DL999/en_US/BonjourPSSetup.exe

- On MAC OS / iOS devices (MAC, iPhone, iPad). In the address bar of the browser, type the device name in the format http: //XXXXXXXX.local, where XXXXXXXX is the device serial number, for example, http: //RS003601.local. Installation of additional software and services is not required. To simplify work on iOS, it is recommended to install the Bonjour search program, available for download in the App Store, which displays a list of all devices present in the network.

- On Android devices, direct access to the device by the local domain name is not available, so it is recommended to install the “Bonjour search” program, available for download in the Play Market. This program displays a list of all devices present on the network that send mDNS messages. All NDAS digital devices will appear in the list. After tapping on the device you need, a browser window will open with a filled IP address in the address bar.

General principles of the interface

In addition to the full functionality mode, the web interface can be configured to work in a " protected mode". In this mode, only viewing of information is available and the possibility of sending commands and changing parameters is blocked. Protected mode can be enabled and disabled only through the NDAS App program.

For all pages of the web interface, with the exception of the graph viewing page, a single header consisting of the following lines is displayed.
The first line displays either the device name assigned by the user or (in the absence of the name) the serial number.
If “protected mode” is enabled, the second line displays the message “HTML protected mode”.
The last line of the header shows the current state of the device:

- “Cannot start ADC” - a device error or incorrect parameters;
- "ADC ready to start" - the device is ready (waiting for a start on command);
- “Start scheduled” - the device is scheduled to start (start mode on synchronization is enabled, or work on the table is enabled);
- "ADC running" - the process of data registration is in progress.

If protected mode is enabled, most of the controls on the interface pages will be blocked.

The ability to change the parameters on the ADC configuration pages, the scheduler configuration, and the network settings configuration is available if the device status is “ADC ready to start” or “Cannot start ADC”, that is, registration is not running and is not scheduled. If it is necessary to change the parameters when the status of the device is “Start scheduled” or “ADC running”, you must first cancel the registration on the device management page (see the section “device management page).

Interface home page

A home page is a set of buttons, each leading to the corresponding page of the instrument interface.

Device ND004404 WEB UI ADC ready to start Status Signal view Device control ADC config Schedule config Network config Device info FTP root folder	Interface header
	heading Status - device status
	Signal View - viewing signal
	Device control - device management
	ADC config - ADC configuration
	Schedule config - scheduler configuration
	Network config - network configuration
	Device info - general device information
	FTP root folder - device server FTP directory

Device status

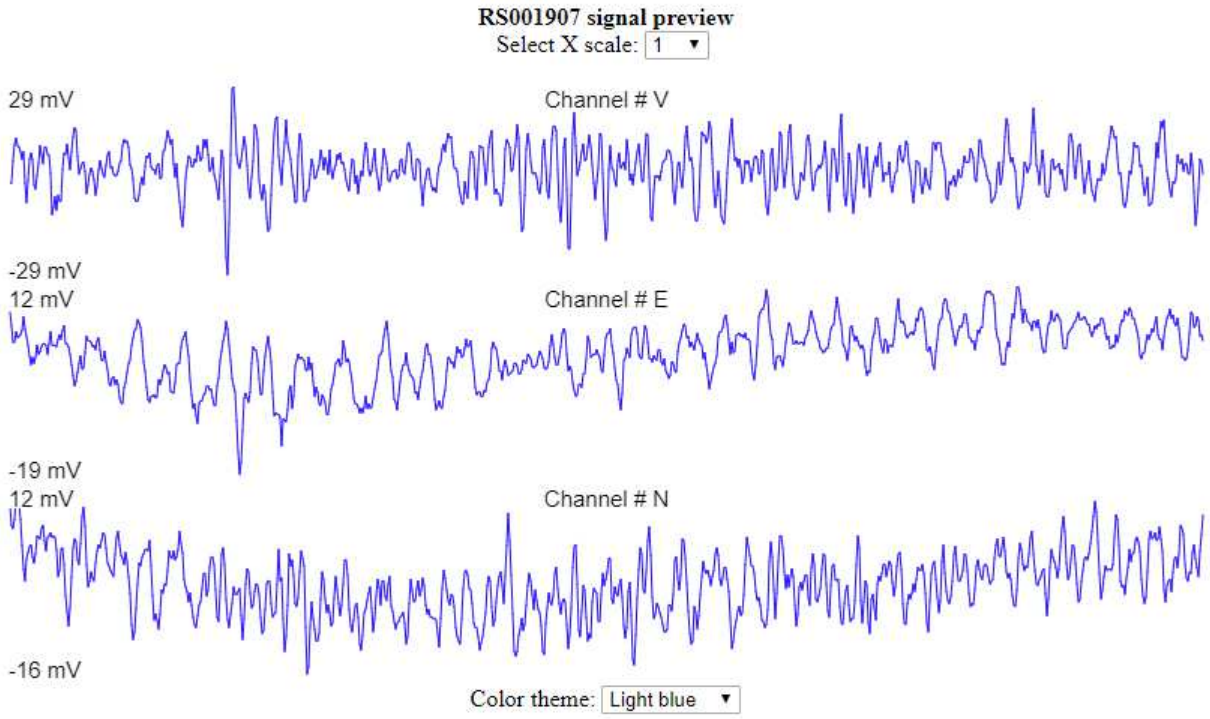
On the device status page the main indicators of the device are displayed. The page is automatically updated once every two seconds.

Device ND004404 status	Interface header
ADC ready to start	
GPS state: fix ok, time synced	(1) Time synchronization and GPS status
Schedule mode: start manually	(2) Current scheduler mode
Free memory: 99 %	(3) Free memory
Wi-Fi strength: -42 dB	(4) Wi-Fi signal level
Calibration signal: disabled	(5) Calibration mode status
Card reader mode: disabled	(6) Data reading mode status (card reader)
Battery voltage: 12.132 V	(7) Voltage of main power supply
Power to sensors: enabled	(8) Sensors power supply (if supported)
Temperature sensor: 33.4°C	(9) Temperature sensor readings
GPS details:	
number of sattelites in view: 11	Number of GPS satellites in view
receiver time: 2018-07-20T12:32:50	GPS receiver time (UTC)
heigth: 214 m	Altitude above sea level
coordinates: 55.9225856, 37.5137024	Coordinates
System up time: 0 days 00:26:15	System up time since last reboot

1. The following GPS clock conditions are possible:
   - no fix - no signal GPS;
   - fix ok, adjusting VCXO - an adjustment of the crystal oscillator is in progress;
   - fix ok, resolving leap seconds - updated data by seconds of coordination;
   - fix ok, time synced - the system is synchronized;
   - fix lost, time synced - the system is synchronized, but the GPS signal is gone;
2. The current mode of the scheduler. 4 modes are possible. A detailed description of the scheduler modes is presented in the section “scheduler setting”.
3. The amount of free memory, expressed as a percentage of the total.
4. Wi-Fi signal strength. A good signal level is -50dB and above. When the signal level is weaker than -60 dB, communication with the device may be unstable.
5. Calibration mode. The following states are possible: disabled, sine, pulse.
6. Displays the status of the card reader mode.
7. Battery voltage. The voltage is measured at the main supply input only.
8. Displays the power status of the sensors. The line “Power to sensors” is displayed only if the mode control is supported in the device (for example, for stand-alone recorders of the NDAS-8226 series). For CME-4x11ND digital seismometers, the sensor power supply is considered to be permanently on. For autonomous seismic stations NDAS-8224, sensor power supply is absent as a hardware function.
9. Temperature Sensor Indications

Viewing the Signal

The page displays channel-by-channel graphs of signals.



For each graph on the left, the maximum and minimum values of the signal in the displayed area are shown. This information allows you to estimate the offset and swing signal. In the center there is an inscription with the name of the channel. The channel name is configured in the NDAS App program. In case the channel is not subscribed, its sequence number is displayed.

Two customizable viewing options are available: scaling the graph along the X axis (top center) and color theme (bottom center). The selected viewing parameters are remembered by the browser and are applied when re-opening the page of the same device.

When the device operates with sampling frequencies of 1000Hz, 500Hz, 250Hz, 125Hz, the preview points are set at a 62.5 Hz rate.
At a sampling frequency of 100 Hz, the refresh rate of the graph will be 50 Hz.
At lower frequency rates, the refresh rate of the graph will be equal to the sampling frequency of the ADC.

Device Management

The device management page allows you to send commands.

ND004404 control ADC ready to start	Interface header
Start acquisition	(1) Start / stop recording
Enable card reader mode	(2) Enable / disable card reader mode
Clear SD card	(3) Clear SD card[1]
Reboot	(4) Restart
Apply test signal single pulse ▼	(5) Enable / Disable test signal Type of test signal

1. Button that controls start / cancel registration.
2. A button that controls the on / off card reader mode.
3. Memory card formatting button. Requires a second click to confirm the command. Execution of the “Clear SD card” command causes the instrument to reboot.
4. Reboot device button.
5. Test button. On CME-4x11ND seismometers, the test signal is fed only to the vertical channel. The following test waveforms are available:
   - Sine 10 Hz of 1 V amplitude
   - Sine 1 Hz of 1 V amplitude
   - Single rectangle pulse of 1 V amplitude
   - Repetitive rectangle pulse of 1 V amplitude

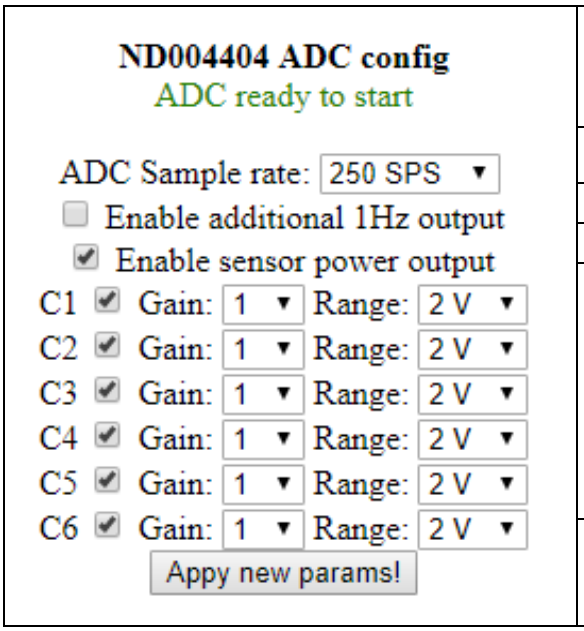
Below is a table describing the conditions for sending the commands.

Command	Under what conditions it is possible
Start recording	Device status - “ADC ready to start”, Card reader mode is off
Stop recording	Status of device “Start scheduled” or “ADC running”
Turn on card reader	Device status - “ADC ready to start” or “Cannot start ADC "
Turning off the card reader	when the mode is on
Cleaning the SD card	Device status -"ADC ready to start" or "Cannot start ADC "
Restarting	Device state -"ADC ready to start"or "Cannot start ADC "
Turning on the test signal	Any device status with the exception of "Cannot start ADC"
Disabling the test signal	When the test signal is on
Selecting the type of test signal	When the test signal is off Any state of the instrument, except for “Cannot start ADC” ADC

ADC configuration

On this page, the ADC operation parameters are configured.

Parameters can be changed if the status of the device is “ADC ready to start” or “Cannot start ADC”. If it is necessary to change the parameters when the status of the device is “Start scheduled” or “ADC running”, it is necessary to cancel the registration on the device management page.



Interface header
(1) ADC sampling rate
(2) Enable recording of 1 Hz signal
(3) Sensor power supply
(4) Individual channel settings: ● Enable / Disable; ● Preamp factor; ● Input range;
(5) Apply Parameter Button

1. Sampling rates are available from 1 Hz to 1000 Hz.
2. When this option is enabled, an additional record is created in parallel with the main record, in which signals are recorded at a sampling rate of 1 sps.
3. The option is available only if mode control is supported in the device (for example, for standalone recorders of the NDAS-8226 series). For CME-4x11 digital seismometers, the sensor power supply is considered to be permanently on. For autonomous seismic stations NDAS-8224, sensor power supply is absent as a hardware function.
4. Individual settings for each channel. The total number of channels depends on the type of device. Input range setting is available only on stand-alone recorders of the NDAS-8226 series.
5. At the clicking of this button, the parameters are applied and the device is rebooted.

Scheduler Settings

On this page, the data registration scheduler is configured.

Parameters can be changed if the status of the device is "ADC ready to start" or "Cannot start ADC". If it is necessary to change the parameters when the status of the device is "Start scheduled" or "ADC running", you must first cancel the registration on the device management page.

ND004404 schedule config ADC ready to start	Interface header
Schedule mode: Start by schedule ▾	(1) Scheduler mode
Start time: Year: 2018 Month: 7 Day: 20 Hour: 16 Min: 30 Sec: 0 Set to now / Set to next hour	(2) Setting start time (3) Quick start time setting
Finish time: Year: 2018 Month: 7 Day: 20 Hour: 17 Min: 0 Sec: 0 Set to one hour / Set to 24 hours ☐ Shutdown device after finish	(4) Setting stop time (5) Quick stop time setting (6) Disabling device after stopping
File split pattern: Single file length: 4 hours ☑ Align splitting to absolute time Year: 1970 Month: 1 Day: 1 Hour: 0 Min: 0 Sec: 0 Set to next hour / Set to next day	(7) Maximum file length (8) Binding Start file to time (9) Set file binding time (10) Quick set binding time
☑ Overwrite old files when SD is full	(11) Overwrite the old files when memory card is full
Warning! Shcedule table contains more than one interaval! Applying new params will clear this settings. List schedule table	(12) View the schedule table
Appy new params!	(13) Parameters button

1. 4 possible scheduler modes are available:
   - Manual mode – start and stop of recording is made manually via NDAS program or web-interface;
   - Immediate start - registration starts automatically when the device is powered on;

- Synchronous start - registration starts automatically after synchronization;
- Work on the table - registration begins and ends automatically at a set time.

Detailed information can be found in the device user manual.

2. The entry fields for the start time allow you to set the year, month, day, hour, minute, and second. The time is entered in UTC format.
3. Quick Setup allows you to automatically fill in the recording start time fields based on the current time.

The “Set to now” button sets the current time, rounding it to the next full minute.
The “Set to next hour” button sets the current time, rounding it to the next full hour.

4. The entry fields for the end of the recording allow you to set the year, month, day, hour, minute, and second. The time is entered in UTC format.
5. Quick Setup allows you to automatically fill in the end time fields based on the start time of the recording.

The “Set to one hour” button sets the recording end time so that the recording duration is one hour.
The “Set to 24 hours” button sets the end time so that the recording duration is one day.

6. The option “Shutdown device after finish” is available in the “work by table” scheduler mode. When this option is enabled, when the last interval is recorded, the scheduler puts the system into ϕ sleep mode, which significantly reduces power consumption. Exit from sleep mode is possible only after powering off the device.
7. The “Single file length” field defines the maximum duration of a single file, expressed in hours. Upon reaching the specified threshold for recording, a new file is created. The minimum duration is 1 hour, the maximum is 240 hours, or 10 days. It should also be taken into account that the maximum recording duration in one file is also limited by the maximum file size in the FAT32 system, which is 4 GB.
8. The option to bind the beginning of the file to time. The option of aligning the beginning of files to a specific time affects the point at which the record will be split and a new file is opened. This option is useful when it is necessary to obtain records of the same time intervals from several instruments that are not started synchronously (not in the table mode). The “split” moments are counted from the alignment time at intervals that are multiples of the specified file length. Detailed information can be found in the device manual.
9. The fields for setting the file beginning binding time allow you to set the year, month, day, hour, minute and second. The time is entered in UTC format.
10. Quick Setup allows you to automatically fill in the file binding time fields based on the current time. The “Set to next hour” button sets the current time, rounding it to the next full hour. The “Set to next day” button sets the current time, rounding it to the next full day.
11. The option of overwriting old files allows the system to delete the oldest files when the memory card is full. Detailed information can be found in the NDAS user manual.

12. Button to view the schedule table. The NDAS app program allows you to set multiple recording intervals in the table mode. The capabilities of the web interface are limited to setting only one (first) interval. However, if the table already contains more than one row, the web interface allows you to view all the entries in the table. At the same time, a warning is displayed that if new parameters are applied, all records of the table except the very first one will be deleted.
13. At the touch of a button, the parameters are applied and the device is rebooted.

View Schedule Table

This page displays the schedule table. The page is available only if the table contains more than one row.

Each line represents a recording interval defined by the start and finish times. For convenience, the times that have already passed are displayed in red, and the times that are in the future - in green.

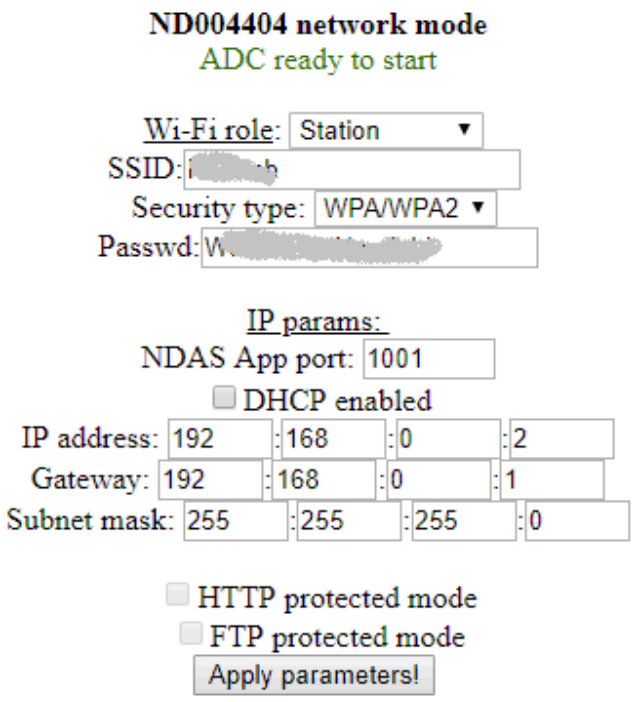
ND004404 schedule table

ADC ready to start

#	Start	Finish
0	2018-07-20 16-30-00	2018-07-20 17-00-00
1	2018-07-20 17-30-00	2018-07-20 18-00-00
2	2018-07-20 18-30-00	2018-07-20 19-00-00
3	2018-07-20 19-30-00	2018-07-20 20-00-00

Configure Network Settings

This page allows you to configure the wireless settings. Parameters can be changed if the status of the device is “ADC ready to start” or “Cannot start ADC”. If it is necessary to change the parameters when the status of the device is “Start scheduled” or “ADC running”, you must first cancel the registration on the device management page.

	Interface header
	(1) Wireless connection mode
	(2) Network settings: network name, password, encryption type
	(3) Port number for NDAS protocol
	(4) Enable DHCP server
	(5) Static IP, mask, Gateway
	(6) HTTP protected mode
	(7) FTP secure mode
	(8) Apply parameters button

1. Selecting a wireless connection:
   - modeStation mode — connecting to a device via a Wi-Fi router;
   - mode "access point" - connect to a device directly;
2. Configure Wi-Fi settings — network name, password, and security type. If the device is in the "access point" mode, the device serial number will be added to the network name. For example, if you specify “NDAS” in the SSID field, devices will create networks with the names NDAS_RS003601, NDAS_ND003501, etc.

Please note that the password length in the “access point” mode cannot be less than 8 characters.

3. The “NDAS App port” field specifies the port number used for data exchange via the NDAS protocol with the NDAS App program. The default value is 1001.
4. The “DHCP enabled” option controls the operation of the built-in DHCP client. When this option is enabled, the device will try to get an IP address from a DHCP server. When disabled, you will need to enter static IP and related parameters.

Control of the option is available only in the "station" mode. In the "access point" mode, the device automatically assigns IP addresses to connected clients, and the option is considered to be always on.

5. Fields for entering the static IP, subnet mask and network gateway address.
6. The option displays the secure mode of the web server (view only). Available only for viewing, change is possible only through the NDAS App program.
7. The option displays the secure mode of the FTP server (read only). Available only for viewing, change is possible only through the NDAS App program.
8. At the touch of a button, the parameters are applied and the device is rebooted.

Information Page

This page provides general information about the device. The user can enter an arbitrary name for the device, which will be displayed in the header of the Web interface instead of the serial number.

Device ND004404 info ADC ready to start Device name: <empty> rename Device details: device model: NDAS8226 data logger NDAS 8200 v1.1 NDAS 8026 v1.1 number of channels: 6 total memory: 29816 MB license status: full firmware version: 4.3 bootloader version: 1.4 web UI version: 1.1 MAC address: A8:1B:6A:65:D1:94 IP address: 192.168.0.182	Interface header Device name Model and hardware versions Number of channels Total memory capacity License type and expiration version Firmware, bootloader and web interface versions MAC address and IP address

Updating web interface files

To update WEB server files, follow these steps:

1) Download the latest version of the web interface from the FTP server at ftp://download.nordlab.com/NDAS;
2) Unzip the archive with the ndas_webserver folder;
3) Place the ndas_webserver folder in the root directory of the device's memory card, making sure that the folder name is correct;
4) Restart the device and wait until the update process is completed;
5) Check the interface version on the Device info page;